

Wade, Sharon

From: jreeder1946@gmail.com
Sent: Tuesday, June 19, 2018 11:46 AM
To: Junis, Charles M
Cc: Wade, Sharon
Subject: [External] Re: Docket No. W-218, Sub 497 – Application of Aqua North Carolina, Inc., for a General Increase in its Rates and Charges
Attachments: Aqua North Carolina letter about messaging system.docx
Follow Up Flag: Follow up
Flag Status: Flagged

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Dear Mr. Charles Junis, PE

The brown water complaints you are hearing about from Aqua customers are caused by oxidized manganese and iron in the well water. I am a retired water treatment professional that service municipal water treatment plants and well as paper mills and power plants, so I understand the problem and know there isn't much of a safety hazard and it can usually be cleared by running the water longer. Some of the wells have higher levels than others and it gets especially frequent in the summer months when the wells are drawn down due to irrigation of lawns and shrubs. The draining of the water towers causes the pumps to work harder to refill the tower and causes the ground water to get lower and draw in more of the metals. When this happens, the water has fine suspended solids in it of the manganese and iron and adds a brown color to the water. This also happens when Aqua flushes the systems about twice a year, since these suspended solids tends to settle out in the distribution pipes and are then dislodged when the flushing takes place. As I noted in my other email, the users of water are not adequately or timely warned when this happens and are often subject to starting to shower and bathe in this water and ruining a load of laundry. I know that Aqua is attempting to add some filtration and treatment to the worst of their wells, and that is probably the basis for some of their rate increase request.

Contacting Aqua is very difficult and usually leaves you with the feeling that you are wasting your time. I have written the president of Aqua-North Carolina about the poor communication and got no response. I have attached a copy of that letter to this email. As I said, any attempt to call the Cary office if futile and you are directed to a call center, which I believe is at the headquarters in Pennsylvania.

Sincerely,

John Reeder

From: Junis, Charles M
Sent: Tuesday, June 19, 2018 11:24 AM
To: jreeder1946@gmail.com
Cc: Wade, Sharon
Subject: Docket No. W-218, Sub 497 – Application of Aqua North Carolina, Inc., for a General Increase in its Rates and Charges

Dear Mr. John Reeder,

Thank you for your correspondence concerning the application of Aqua North Carolina for authority to increase its rates and charges for water and sewer utility service in North Carolina. The issues raised in your correspondence are important to the identification and resolution of issues this case. Please respond to the following questions for us to better identify and investigate the issues you have experienced:

1. Please describe the water quality (e.g. color and taste) in greater detail, including frequency and/or dates of discolored water events. Has the water quality improved?
2. Have you contacted Aqua about the water quality? If so, when and what information did Aqua provide to you about water quality?

A copy of your correspondence and this response will be given to the Chief Clerk of the North Carolina Utilities Commission for filing in the docket. Please note that written statements are not evidence unless those persons appear at a public hearing and testify concerning the information contained in their written statements.

The Public Staff represents the using and consuming public in utility matters before the Commission. It is our job to look out for consumer interests and advocate for rates that are fair and reasonable to customers while also ensuring safe and reliable service. We are conducting a thorough audit into Aqua's records and will make a recommendation to the Commission regarding the requested rate increase. You may view your letter and other documents related to the proceeding by visiting the Commission's website www.ncuc.net and searching for Docket No. W-218, Sub 497.

Thank you again for your interest in this matter.

Charles M. Junis, PE
Engineer
Public Staff - North Carolina Utilities Commission
430 N. Salisbury Street, Suite 2074
4326 Mail Service Center
Raleigh, NC 27699-4300
919.733.5610 (Main Office)
919.733.0891 (Direct)
919.715.6704 (Fax)
charles.junis@psncuc.nc.gov

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From: jreeder1946@gmail.com [mailto:jreeder1946@gmail.com]
Sent: Monday, June 18, 2018 3:33 PM
To: Legal1 <Legal1@psncuc.nc.gov>
Subject: [External] Aqua's rate increase issue

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Dear Sirs:

We live in the Stonebridge subdivision in NW Wake County, served by Aqua, and have lived here since 1984. Aqua bought the water company, Hasty Utilities, providing service when we moved here and over the years, Aqua has gotten worse in three noticeable ways:

1. Brown water is a fairly common issue. I understand this is caused by oxidized manganese and iron coming from the wells. We are concerned about our health and property values.
2. Communications from Aqua is either non-existent or confusing. Aqua either does not warn us of a system cleansing for which brown water is anticipated or tells us the wrong dates. They never seem to let us know when the issue has been resolved. So we never know how to plan or when it is safe to use the water. I have received text messages advising me of a flushing in my area and the dates given are 2 weeks before I received the message.
3. When we and our neighbors attempt to contact Aqua to ask questions or make comments we get confusing information at best. It seems that each person gets different answers to the same questions. The office in Cary, NC will not answer a call from a customer and we have to call a call center in another state which is not well informed about our situation in North Carolina.

Before Aqua is granted any increases or concessions, the company should be required to provide reliable and timely information to customers and to clearly explain the brown water issues, why the brown water is occurring, what are the dangers and implications of the brown water, and what procedures customers need to take to mitigate impacts as well as to provide up the date notifications of dates that customers should implement brown water mitigation procedures including the real date when it is safe to use the water again. These dates need to be accurate and specific to the local areas affected; they should not be blanket notifications over long periods of time including multiple locations unless all of those locations are specifically affected.

Aqua's apparent inability to provide quality, clean water on a reliable basis is a significant concern for us as property owners, affected both our quality of life and our property values. We ask the Commission to require Aqua to fix the increasingly frequent issues regarding brown water and to monitor Aqua's customer notifications and communications over some reasonable period of time (at least one year) and to seek regular feedback from customers to determine that Aqua has complied; any consideration of Aqua's request for rate increases and any other concessions should be predicated on compliance.

John Reeder
720 Lanham Place
Raleigh, NC 27615

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March 1, 2018

Shannon B. Becker

Aqua North Carolina

202 MacKenan Court

Cary, NC 27511

Dear Mr. Becker,

I am a customer that received your letter dated February 6, 2018 explaining all of the good things that Aqua North Carolina has done since 2014 and plans on doing in the future. I live in the Stonebridge subdivision in North Raleigh. I have rarely had the brown water issues so often mentioned by neighbors on the forum on our website. I am a retired water treatment professional who sold and serviced large industrial paper mills and power plants, as well as some municipal water treatment plants in North Carolina. I am aware of the problems involved with removing suspended particles of oxidized iron and manganese from water. I have often explained to my neighbors about the issue and while it is unsightly, it does not really impact the safety of the drinking water and advised them to just let their faucet run a little to clear it out.

There is one issue, however, that Aqua North Carolina really needs to improve upon relating to the flushing procedure you do about twice a year in our area. Your notification system for letting people know about the flushing is useless because the information passed on to the customers has already happened, won't happen in the time frame mentioned on the message, or does not apply to many of the people getting the message. I got text messages in January about flushing in our subdivision and the dates given were the previous week or two weeks ago. I have gotten boil water warnings on my telephone answering machine and it turned out it was for a subdivision several miles away. The passing on of dated or incorrect information leads to people not paying any attention to your messages and they when they do wash their clothes and it comes out stained they are angry because they didn't know when the flushing was going to happen. I know that you operate in many subdivisions and you are trying to inform people, but your system needs an update so that it can better identify the customers that are going to be impacted by the action you are informing people about with your messages. Please investigate getting a better system for reaching out to your customers in an accurate and timely manner.

Sincerely,

John Reeder

720 Lanham Place

Raleigh, NC 27615

Wade, Sharon

From: Junis, Charles M
Date: Friday, June 22, 2018 3:34 PM
To: Brooks, Austin
Cc: Wade, Sharon
Subject: Docket No. W-218, Sub 497 – Application of Aqua North Carolina, Inc., for a General Increase in its Rates and Charges

Dear Mr. Austin Brooks,

Thank you for your correspondence concerning the application of Aqua North Carolina for authority to increase its rates and charges for water and sewer utility service in North Carolina. The issues raised in your correspondence are important to the identification and resolution of issues this case. Please respond to the following questions for us to better identify and investigate the issues you have experienced:

1. Please describe the water quality (e.g. color and taste) in greater detail, including frequency and dates of discolored water events. Has the water quality improved?
2. Have you contacted Aqua about the water quality? If so, when and what information did Aqua provide to you about water quality?

A copy of your correspondence and this response will be given to the Chief Clerk of the North Carolina Utilities Commission for filing in the docket. Please note that written statements are not evidence unless those persons appear at public hearing and testify concerning the information contained in their written statements.

The Public Staff represents the using and consuming public in utility matters before the Commission. It is our job to look out for consumer interests and advocate for rates that are fair and reasonable to customers while also ensuring safe and reliable service. We are conducting a thorough audit into Aqua's records and will make a recommendation to the Commission regarding the requested rate increase. You may view your letter and other documents related to the proceeding by visiting the Commission's website www.ncuc.net and searching for Docket No. W-218, Sub 497.

Thank you again for your interest in this matter.

Charles M. Junis, PE
Engineer
Public Staff - North Carolina Utilities Commission
430 N. Salisbury Street, Suite 2074
4326 Mail Service Center
Raleigh, NC 27699-4300
919.733.5610 (Main Office)
919.733.0891 (Direct)
919.715.6704 (Fax)
charles.junis@psncuc.nc.gov

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From: Brooks, Austin
Sent: Thursday, June 21, 2018 11:49 AM
To: Legal1 <Legal1@psncuc.nc.gov>
statements@ncuc.net
Subject: Aqua Hearing 6/25/18

To whom it concerns,

Could this email be passed along for the hearing on Monday? I wanted to share these photos from my home taken last week. We were not notified of line flushing in our area either. I reached out to customer service but have not received a response at this time. While the water may be safe to consume it is causing property destruction. The mineral deposits clog pipes, stains bathroom fixtures, stains laundry, etc. There have been a few water main breaks in our neighborhood subdivision recently. We are on the Bayleaf water network. If we had the ability to choose a different utility provider for water, we would. Justifying this rate hike due to infrastructure cost is not acceptable if the "improved" equipment is in place currently. Clearly the process in place is not working. Please let me know if you have any additional questions for me.

Sincerely,

Austin Brooks

Environmental & GIS Technician
Department of Environmental Quality
Division of Energy, Mineral and Land Resources
Dam Safety Program

E-mail : austin.brooks@ncdenr.gov
Phone: 919-707-9208

1612 Mail Service Center
Raleigh, NC 27699-1612

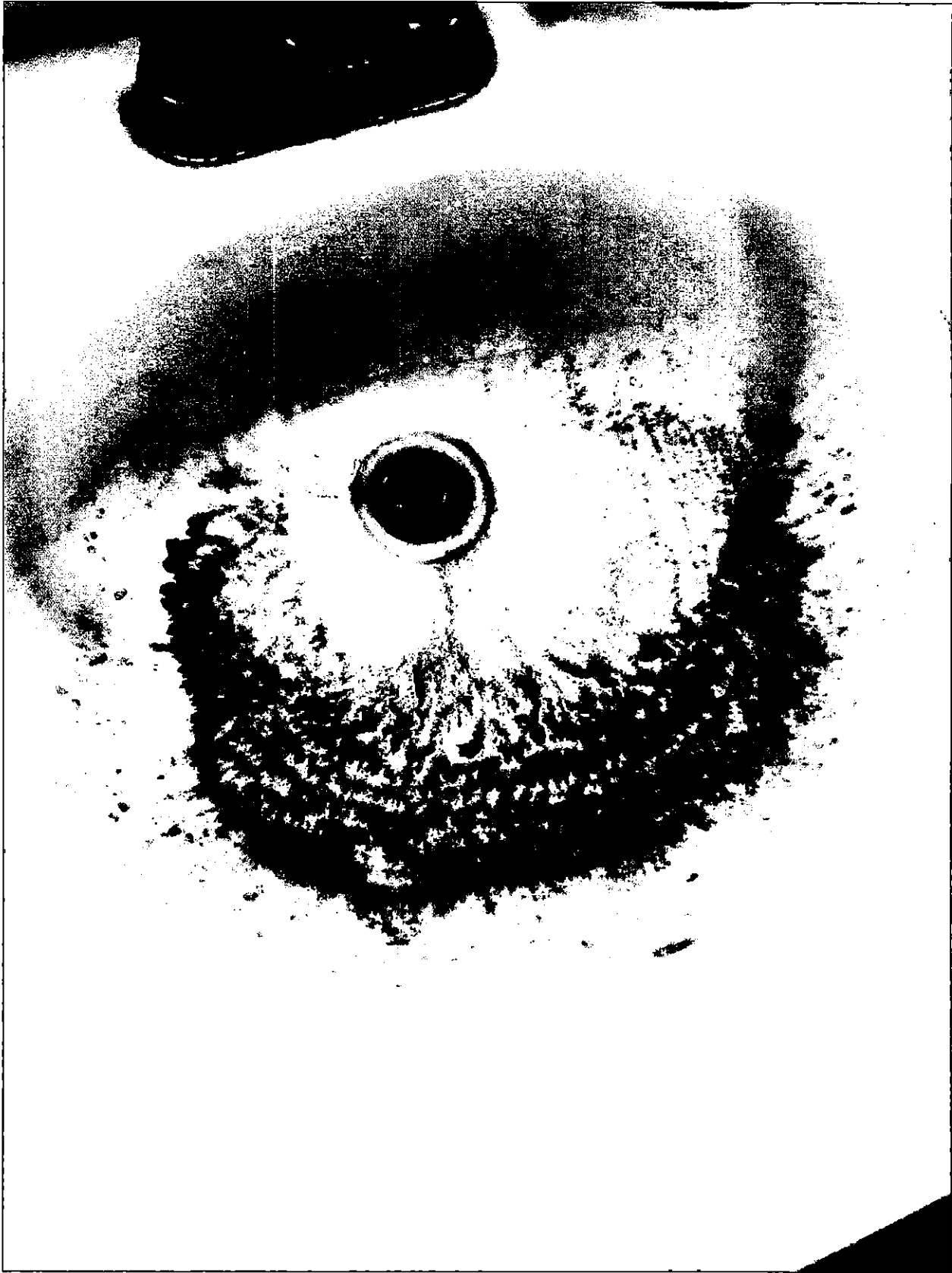


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From: Austin Brooks [<mailto:adbroom5@ncsu.edu>]
Sent: Wednesday, June 20, 2018 10:26 PM
To: Brooks, Austin <austin.brooks@ncdenr.gov>
Subject: [External]

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Austin Brooks

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Wade, Sharon

From: Junis, Charles M
Sent: Friday, July 20, 2018 9:54 AM
To: slstrom@nc.rr.com
Cc: Wade, Sharon
Subject: Docket No. W-218, Sub 497 – Application of Aqua North Carolina, Inc., for a General Increase in its Rates and Charges

Dear Mr. and Mrs. Brad Strom,

Thank you for your correspondence concerning the application of Aqua North Carolina for authority to increase its rates and charges for water and sewer utility service in North Carolina. The issues raised in your correspondence are important to the identification and resolution of issues this case. Please respond to the following questions for us to better identify and investigate the issues you have experienced:

1. Please describe the water quality (e.g. color and taste) in greater detail, including frequency of discolored water events. Has the water quality improved?
2. When have you recently contacted Aqua and what information did Aqua provide to you about water quality?
3. Please provide the dates and times of when the photographs and video were taken. Did you contact Aqua on those dates?

A copy of your correspondence and this response will be given to the Chief Clerk of the North Carolina Utilities Commission for filing in the docket. Please note that written statements are not evidence unless those persons appear at a public hearing and testify concerning the information contained in their written statements.

The Public Staff represents the using and consuming public in utility matters before the Commission. It is our job to look out for consumer interests and advocate for rates that are fair and reasonable to customers while also ensuring safe and reliable service. We are conducting a thorough audit into Aqua's records and will make a recommendation to the Commission regarding the requested rate increase. You may view your letter and other documents related to the proceeding by visiting the Commission's website www.ncuc.net and searching for Docket No. W-218, Sub 497.

Thank you again for your interest in this matter.

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charles.junis@psncuc.nc.gov

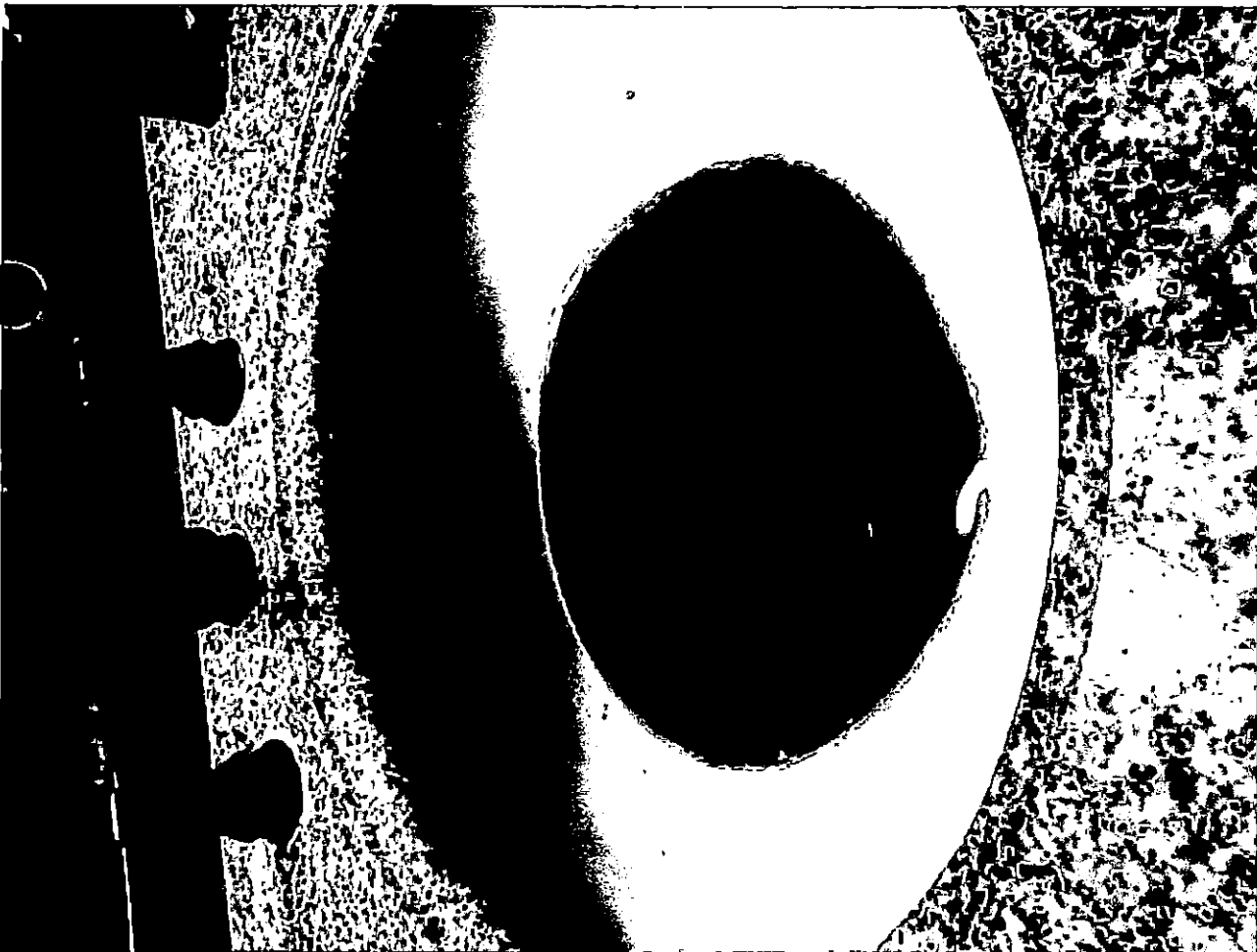
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From: Sharon Strom [<mailto:slstrom@nc.rr.com>]
Date: Thursday, July 19, 2018 12:02 PM
To: Wade, Sharon <sharon.wade@psncuc.nc.gov>
Subject: [External] Aqua water quality

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Good afternoon,

I understand you are compiling complaints on Aqua water quality. I will keep this short. We have been experiencing water quality issues for several years. I have ruined clothes, had to buy bottled water, taken showers in dirty water, and are eventually going to have to purchase a \$7000 water filtration system for our home. Aqua's response to my repeated complaints is to have someone come out and flush my lines then charge me for the water usage. Here are a few pictures of water at my home.





Would you drink, cook or wash in this water? Our trust is gone in safe clean drinking water.

Thank you for your time.

Brad and Sharon Strom
1017 Andiron Lane
Raleigh, NC 27614

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Wade, Sharon

From: Jordan Preve <jpreve@gmail.com>
Sent: Wednesday, August 01, 2018 10:40 AM
To: Junis, Charles M
Cc: Wade, Sharon; johnla@ncleg.net
Subject: [External] Re: Docket No. W-218, Sub 497 – Application of Aqua North Carolina, Inc., for a General Increase in its Rates and Charges
Attachments: AQUA - JPREVE - FILTRATION EQUIP.pdf; AQUA - JPREVE - CLEAR WATER BASELINE ANALYSIS.pdf; AQUA - JPREVE - AQUA LAB RESULTS.pdf
Follow Up Flag: Follow up
Flag Status: Completed

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Charles:

Thanks for the quick reply - I've also copied the legislative assistant for NC40's state rep on this reply as Aqua's been an ongoing issue with the district. To answer your questions:

- 1. Please describe the water quality (e.g. color and taste) in greater detail, including frequency of discolored water events.**
We've had a filtration system installed (*AQUA - JPREVE - FILTRATION EQUIP*) nearly since completion of our finish plumbing, so thankfully we haven't had to experience in our day-to-day activities the problems with raw water quality our neighbors have. Recently I replaced our prefilter for the whole-house filtration system, and found the "old" filter cartridge to be saturated in a reddish substance that stained my hands and nails (requiring extensive scrubbing for a few days) and had turned the filter housing from white to a tannish shade. Upon inspecting the replacement filter a few days later, it had already changed from white to that same tan color.

Additionally, I had a baseline test (*AQUA - JPREVE - CLEAR WATER BASELINE ANALYSIS*) performed prior to our filter installation and move-in (labeled it post-filter by accident) **when the water was subjectively clear**. Lab analysis showed the water was hard, high in dissolved solids, moderately corrosive*, with both iron and manganese present.

Unfortunately this same lab wasn't available for performing an on-demand analysis later when brown water events were being reported by the neighbors.

- 2. Have you contacted Aqua about the water quality? If so, when and what information did Aqua provide to you about water quality?**
So this is a funny one - overall, I would qualify their responsiveness to queries about water quality as evasive, and certainly not helpful without significant prodding over months. I had reached out via phone to Aqua North Carolina prior to our home closing to request their latest lab analysis for the Coachmans' Trail water system, and had no response.

On Tuesday, 2017-01-24, I used Aqua America's online form to request the three most recent lab reports

for the well system serving the house at Coachmans' Trail. I received an auto reply that day, and an email response from their Bryn Mawr, PA customer service department stating that "an appointment has been sent over to our Laboratory on your behalf. A technician will contact you within 24 hours to address your concerns". I have no record of a response, but if there was any contact it did not yield a laboratory report or any kind of water analysis.

On Tuesday 2017-04-04, I emailed Robert Krueger of Aqua America to request the same lab analysis.

With no response from Mr. Krueger, followed up with a C. Poole of Aqua America via email on the same thread on Monday 2017-05-01, with no response ever received from Mr. Poole.

With no response from Mr. Poole, on Thursday 2017-05-04 I contacted Linda Raynor at NC DENR via email asking if she had a regional contact for Aqua or a contact at DENR/DEQ who could provide water quality results for Aqua's wells, noting the trouble I'd had in receiving a response from Aqua.

On Friday 2017-05-05, I received a blank message from Mark English with Aqua America, containing only a PDF attachment (*AQUA - JPREVE - AQUA LAB RESULTS*) which appeared to be inorganic-only lab results for four different wells in the vicinity of our property during 1Q 2017.

It was not clear if this was all of the water samples analyzed, or if these were "cherry picked" by Mr. English in response to my inquiry, nor was it clear whether his email was prompted by my message to Ms. Raynor, Mr. Poole, or Mr. Krueger.

It should be noted that the Aqua samples exhibited wide variability in their results - compared to my single sample, Aqua's tests demonstrated both lower and higher pH (ranging from 6.0 to 7.5), lower and higher iron (from ND to 1.01 mg/L), lower and higher manganese (ND to 0.6 mg/L), and different trace metal results. **This variability in both chemistry and contents is what makes filtration of Aqua's water in our homes so difficult and expensive, and demonstrates Aqua is well aware of both the variability in, and average deficiency in, their water supply quality.**

3. **Please provide the approximate cost of the filtration system installed in your home and when it was installed.**

Our filtration system consists of [in order of flow] a sediment cartridge filter, a backwashing iron filter with additional pH correction media, and a salt-based water softener with chlorine-resistant resin to deal with the "treated" water from Aqua. Additionally, we have a reverse osmosis and carbon filter for potable water supply in our kitchen. Line item details for the equipment are attached (*AQUA - JPREVE - FILTRATION EQUIP*).

Cost of the equipment for the system:	\$4046.54
Cost to install filtration equipment:	\$ 292.82
<u>Cost to repipe the corroded copper water lines (w/ PEX):</u>	<u>\$1900.00</u>
Total cost to deal with Aqua's problems:	\$6239.36

The system was put into service in December 2017 when we moved in to the house and has an ongoing maintenance cost of approximately \$15/mo including filter cartridge replacement and iron-treating salt supplies.

I should add that the original porcelain fixtures to the home were unusable in the renovation given the brown/black staining from the untreated water supply. In fact, one of our new fixtures is lightly stained from the plumbers putting the toilet into use with raw water prior to the installation of our filtration.

Thanks for your time, and please let me know if I can provide any further supporting detail or answer any other questions you may have about our problems with Aqua in the neighborhood.

-Jordan Preve

On Wed, Aug 1, 2018 at 7:54 AM Junis, Charles M <Charles.Junis@psncuc.nc.gov> wrote:

Dear Mr. Jordan Preve,

Thank you for your correspondence concerning the application of Aqua North Carolina for authority to increase its rates and charges for water and sewer utility service in North Carolina. The issues raised in your correspondence are important to the identification and resolution of issues this case. Please respond to the following questions for us to better identify and investigate the issues you have experienced:

1. Please describe the water quality (e.g. color and taste) in greater detail, including frequency of discolored water events.
2. Have you contacted Aqua about the water quality? If so, when and what information did Aqua provide to you about water quality?
3. Please provide the approximate cost of the filtration system installed in your home and when it was installed.

A copy of your correspondence and this response will be given to the Chief Clerk of the North Carolina Utilities Commission for filing in the docket. Please note that written statements are not evidence unless those persons appear at a public hearing and testify concerning the information contained in their written statements.

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Thank you again for your interest in this matter.

Charles M. Junis, PE

Engineer

Public Staff - North Carolina Utilities Commission

430 N. Salisbury Street, Suite 2074

4326 Mail Service Center

Raleigh, NC 27699-4300

919.733.5610 (Main Office)

919.733.0891 (Direct)

919.715.6704 (Fax)

charles.junis@psncuc.nc.gov

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From: Jordan Preve [mailto:jpreve@gmail.com]
Sent: Friday, July 27, 2018 2:59 PM
To: Junis, Charles M <Charles.Junis@psncuc.nc.gov>
Cc: Wade, Sharon <sharon.wade@psncuc.nc.gov>
Subject: [External] aqua north carolina / coachmans trail / water filter sample.

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Charles:

Was sent your way by other Coachmans' Trail homeowners with similar issues and thought you'd find my filter change today relevant to the topics around Aqua NC's quality and rate increase justifications (attached).

Please let me know if you'd like this guy bagged and mailed in, would be happy to provide it as a physical exhibit. Not the most clogged in the neighborhood, but we also have pretty low usage for the area.

Thanks!

Jordan Preve

308 Dunstable Ct

Raleigh, NC 27614

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QUOTATION

BRANCH: WILKINSON SUPPLY CO. PAGE 1 OF 1
RALEIGH, NC DATE: 06/16/17
PHONE: 919-834-0395
FAX: 919-834-0253

QUOTE#: 169955
BRANCH: 1
QUOTE DATE: 06/14/17
EXPIRATION DATE: 07/14/17
SALESPERSON: HOUSE ACCOUNT
JOB NUMBER: JORDAN PREVE
JOB NAME:
SELECTED BY: BOB VAN SANT

CASH SALE TO , NC 27608 SHIP TO , NC 27608

Table with columns: LN, RT, ITEM#, DESCRIPTION, QTY, PRICE, PER, EXTENDED. Includes items like STWA OXY2.10M.DH 1CU IRON FILTER W/M BED, STWA HL34 3/4 FIP 2-1/2X20 OPAQUE DBL FILTER HOUSING, STWA BRK.1020 WALL BRACKET FOR 3/4 FILTER HOUSING H34 HL34 HOT34, STWA SW2005 5 MICRON CARTRIDGE, STWA NES-1.5-C150 1.5CF W/CR MEDIA, STWA QCRO.50.PUMP REVERSE OSMOSIS SYSTEM, INCOMING FRT BACKCHARGE TO VENDOR. Subtotal: 3773.00, Sales Tax: 273.54, Total: 4046.54

Jordan Preve
700 Sandown Pl.
Raleigh, NC 27614

Attn : Jordan Preve

Project No. : 715391
Date Reported : 10/25/17
Date Activated : 10/18/17
Date Due : 10/25/17
Date Validated : 10/25/17

4425 Manchester Rd

Kalamazoo, MI 49001

Phone 269 381-9666

Fax 269 381-9698

www.karlabs.com

Project

Description : Analysis of water from Test Kit-180

Dear Client,

The laboratory analysis of your water is presented in this report. The purpose was to screen for key indicators of water quality, quickly and at a low cost, while maintaining professional laboratory data quality. This report cannot be used for Safe Drinking Water Act regulatory compliance purposes because it does not comply with all of the U.S. EPA regulations, mainly in the area of sample collection.

The "Result" column contains guidelines for interpreting the results. USEPA Maximum Contaminant Levels (MCL's) are included which should not be exceeded to protect health. MCL's in brackets [] are aesthetic water qualities such as taste, odor, or color. Values in braces { } are non-USEPA MCL's such as World Health Org., Canada, etc. *Many contaminants listed on the report do not yet have MCL's set for drinking water, a consequence of being on the leading edge of contaminant testing.*

The low cost of our lab-grade water sampling kits does not include a professional one-on-one consultation regarding specific water problems or health concerns. Please visit the USEPA drinking water website at <http://water.epa.gov/drink/>, or contact your local Health Department for information specific to your water supply. Always talk to your doctors about health concerns, and show them this report. Thank you for the pleasure and opportunity to serve you!

Respectfully submitted,

The professional staff at KAR Laboratories, Inc.

KAR Laboratories, Inc. maintains Full Certification status for Bacteriology, Inorganics, Regulated Organics and Synthetic Organics through USEPA, Michigan Department of Environmental Quality, and Indiana State Department of Health. This report cannot be used for the purposes of regulatory compliance due to sampling limitations and varying local regulations. Results are invalid if report is not presented in its entirety. The laboratory does not own the data and cannot provide copies. The owner of this data is Jordan Preve.

DRINKING WATER LABORATORY REPORT

Client: **Jordan Preve**

Project No. : **715391**

Date Reported: **10/25/17**

Analysis of water from Test Kit-180

Sample ID	"308D-Post Filter"	Date Received :	10/18/17
Sampled By :	Jordan Preve	Sample Type :	domestic
Sample Date :	10/16/17	Sample No. :	715391-01W
Sample Time :	1334		

Test	Result	Method, Date, Analyst	Supplemental Info.
Water Test Kit-Anions <i>(For internal lab use)</i>	See below	EPA 300.0A 10/18/17 ALK	
Water Test Kit-Metals (MS) <i>(For internal lab use)</i>	See below	EPA 200.8 10/18/17 NHM	
Water Test Kit-Metals (OES1) <i>(For internal lab use)</i>	See below	EPA 200.7 10/18/17 JHB	
Prep, 1631 <i>(For internal lab use)</i>	Completed	EPA 1631E 10/18/17 NHM	
Aluminum, total <i>A common element occasionally found in water in trace amounts. Elevated levels may be associated with forms of dementia, such as Alzheimer's disease.</i>	<0.05 mg/L MCL: [0.050 mg/L] None found (acceptable result)	EPA 200.7 10/18/17 JHB	DB Avg: 0.0956 DB Max: 21.3
Antimony, total <i>A trace element; occasionally found in water in trace amounts. High levels of antimony can increase blood cholesterol and decrease blood glucose.</i>	<0.005 mg/L MCL: 0.006 mg/L None found (acceptable result)	EPA 200.8 10/18/17 NHM	DB Avg: 0.0051 DB Max: 0.036
Arsenic, total <i>A trace element; occasionally found in water. High arsenic symptoms may include fatigue, depression, weight loss, hair loss, nausea or white lines across fingernails and toenails.</i>	<0.002 mg/L MCL: 0.01 mg/L None found (acceptable result)	EPA 200.8 10/18/17 NHM	DB Avg: 0.0028 DB Max: 0.177
Barium, total <i>A common element; frequently found in water in trace amounts. Elevated levels may increase blood pressure.</i>	0.14 mg/L MCL: 2 mg/L	EPA 200.7 10/18/17 JHB	DB Avg: 0.0764 DB Max: 3.57
Beryllium, total <i>A trace element; occasionally found in water in trace amounts. High levels can cause intestinal lesions.</i>	<0.002 mg/L MCL: 0.004 mg/L None found (acceptable result)	EPA 200.8 10/18/17 NHM	DB Avg: 0.002 DB Max: 0.01
Bismuth, total <i>A trace element; occasionally found in water in trace amounts.</i>	<0.1 mg/L None found (acceptable result)	EPA 200.8 10/18/17 NHM	DB Avg: 0.1017
Boron, total <i>An essential plant nutrient; frequently found in water.</i>	<0.05 mg/L MCL: [0.5-5] mg/L None found (acceptable result)	EPA 200.7 10/18/17 JHB	DB Avg: 0.1363 DB Max: 21.9
Cadmium, total <i>A trace element; occasionally found in water in trace amounts. Elevated levels can cause kidney disease and/or hypertension.</i>	<0.001 mg/L MCL: 0.005 mg/L None found (acceptable result)	EPA 200.8 10/18/17 NHM	DB Avg: 0.001 DB Max: 0.007
Calcium, total <i>A common mineral usually found in water and a primary contributor to water hardness. Calcium is an important nutrient for the human body.</i>	38.6 mg/L	EPA 200.7 10/18/17 JHB	DB Avg: 36.2777 DB Max: 1,250
Cerium, total <i>A trace element; occasionally found in water in trace amounts.</i>	<0.005 mg/L None found (acceptable result)	EPA 200.8 10/18/17 NHM	DB Avg: 0.0052 DB Max: 0.616
Cesium, total	<0.02 mg/L None found (acceptable result)	EPA 200.8 10/18/17 NHM	DB Avg: 0.0204 DB Max: 0.08
Chromium, hexavalent <i>An industrial contaminant often associated with dye production, wood preservation, or metal plating.</i>	<0.01 mg/L None found (acceptable result)	EPA 200.7 10/18/17 JHB	DB Avg: 0.0105 DB Max: 0.137

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KAR Laboratories, Inc.

DRINKING WATER LABORATORY REPORT

Client: *Jordan Preve*

Project No. : **715391**

Date Reported: **10/25/17**

Analysis of water from Test Kit-180

Sample ID : "308D-Post Filter"		Date Received : 10/18/17	
Sampled By : Jordan Preve		Sample Type : domestic	
Sample Date : 10/16/17		Sample No. : 715391-01W	
Sample Time : 1334			
Test	Result	Method, Date, Analyst	Supplemental Info.
Chromium, total <i>A common element; occasionally found in water in trace amounts.</i>	<0.01 mg/L MCL: 0.1 mg/L <i>None found (acceptable result)</i>	EPA 200.7 10/18/17 JHB	DB Avg: 0.0103 DB Max: 0.14
Cobalt, total <i>A trace element; occasionally found in water in trace amounts.</i>	<0.02 mg/L <i>None found (acceptable result)</i>	EPA 200.7 10/18/17 JHB	DB Avg: 0.0203 DB Max: 0.24
Copper, total	0.11 mg/L MCL: 1.3 mg/L	EPA 200.7 10/18/17 JHB	DB Avg: 0.1103 DB Max: 40.1
Dysprosium, total	<0.01 mg/L <i>None found (acceptable result)</i>	EPA 200.8 10/18/17 NHM	DB Avg: 0.0102 DB Max: 0.101
Erbium, total	<0.01 mg/L <i>None found (acceptable result)</i>	EPA 200.8 10/18/17 NHM	DB Avg: 0.0101 DB Max: 0.051
Europium, total	<0.01 mg/L <i>None found (acceptable result)</i>	EPA 200.8 10/18/17 NHM	DB Avg: 0.0101 DB Max: 0.031
Thulium, total	<0.01 mg/L <i>None found (acceptable result)</i>	EPA 200.8 10/18/17 NHM	
Gallium, total	<0.02 mg/L <i>None found (acceptable result)</i>	EPA 200.8 10/18/17 NHM	DB Avg: 0.0204
Germanium, total	<0.01 mg/L <i>None found (acceptable result)</i>	EPA 200.8 10/18/17 NHM	DB Avg: 0.0101 DB Max: 0.018
Gold, total	<0.02 mg/L <i>None found (acceptable result)</i>	EPA 200.8 10/18/17 NHM	DB Avg: 0.0206 DB Max: 0.788
Hafnium, total	<0.01 mg/L <i>None found (acceptable result)</i>	EPA 200.8 10/18/17 NHM	DB Avg: 0.0101 DB Max: 0.015
Holmium, total	<0.01 mg/L <i>None found (acceptable result)</i>	EPA 200.8 10/18/17 NHM	DB Avg: 0.0101 DB Max: 0.02
Indium, total	<0.02 mg/L <i>None found (acceptable result)</i>	EPA 200.8 10/18/17 NHM	DB Avg: 0.0204
Iridium, total	<0.01 mg/L <i>None found (acceptable result)</i>	EPA 200.8 10/18/17 NHM	DB Avg: 0.0101
Iron, total <i>A common mineral often found in water, and a minor contributor to hardness. Elevated levels will affect taste and cause staining (laundry, fixtures, etc.).</i>	0.10 mg/L MCL: [0.3 mg/L]	EPA 200.7 10/18/17 JHB	DB Avg: 0.2677 DB Max: 165
Lanthanum, total	<0.01 mg/L <i>None found (acceptable result)</i>	EPA 200.8 10/18/17 NHM	DB Avg: 0.0103 DB Max: 0.346
Lead, total <i>Frequently found in water made corrosive by softening or demineralizing. Higher levels of Lead can cause abdominal pains, constipation, fatigue or depressed appetite. Long-term exposure may cause nerve or kidney damage, anemia, or learning disabilities in children.</i>	<0.001 mg/L MCL: 0.015 mg/L <i>None found (acceptable result)</i>	EPA 200.8 10/18/17 NHM	DB Avg: 0.0069 DB Max: 3.1

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DRINKING WATER LABORATORY REPORT

Client: *Jordan Preve*

Project No. : **715391**

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Analysis of water from Test Kit-180

Sample ID : "308D-Post Filter"		Date Received : 10/18/17	
Sampled By : <i>Jordan Preve</i>		Sample Type : domestic	
Sample Date : 10/16/17		Sample No. : 715391-01W	
Sample Time : 1334			
Test	Result	Method, Date, Analyst	Supplemental Info.
Lithium, total <i>A common ion; occasionally found in water.</i>	<0.05 mg/L <i>None found (acceptable result)</i>	EPA 200.7 10/18/17 JHB	DB Avg: 0.0567 DB Max: 3.92
Lutetium, total	<0.01 mg/L <i>None found (acceptable result)</i>	EPA 200.8 10/18/17 NHM	DB Avg: 0.0101
Magnesium, total <i>A common mineral usually found in water, and a primary contributor to hardness.</i>	7.9 mg/L	EPA 200.7 10/18/17 JHB	DB Avg: 11.5059 DB Max: 954
Manganese, total <i>A common element occasionally found in water; an essential mineral and a minor contributor to hardness. Elevated manganese levels can disrupt the nervous system and regeneration of hemoglobin.</i>	0.051 mg/L MCL: [0.05 mg/L]	EPA 200.7 10/18/17 JHB	DB Avg: 0.0748 DB Max: 281
Mercury by EPA 1631 <i>A toxic, trace element. Mercury can cause kidney disease.</i>	<0.025 ug/L MCL: 2 ug/L <i>None found (acceptable result)</i>	EPA 1631E 10/18/17 NHM	DB Avg: 0.026 DB Max: 1.74
Molybdenum, total <i>A trace element; occasionally found in water in trace amounts.</i>	<0.02 mg/L MCL: [0.07] mg/L <i>None found (acceptable result)</i>	EPA 200.7 10/18/17 JHB	DB Avg: 0.0215 DB Max: 6.93
Niodymium, total	<0.01 mg/L <i>None found (acceptable result)</i>	EPA 200.8 10/18/17 NHM	DB Avg: 0.0103 DB Max: 0.31
Nickel, total <i>A common element; occasionally found in water in trace amounts. Elevated levels may cause dermatitis or nasal irritation.</i>	<0.02 mg/L MCL: 0.1 mg/L <i>None found (acceptable result)</i>	EPA 200.7 10/18/17 JHB	DB Avg: 0.0228 DB Max: 2.6
Niobium, total	<0.05 mg/L <i>None found (acceptable result)</i>	EPA 200.8 10/18/17 NHM	DB Avg: 0.0511
Osmium, total	<0.005 mg/L <i>None found (acceptable result)</i>	EPA 200.8 10/18/17 NHM	
Palladium, total	<0.01 mg/L <i>None found (acceptable result)</i>	EPA 200.8 10/18/17 NHM	DB Avg: 0.0101 DB Max: 0.014
Phosphorus, total, by ICP <i>A common element and essential nutrient; occasionally found in water. Phosphates are sometimes added to water to reduce the corrosion of metal pipes.</i>	<0.5 mg/L <i>None found (acceptable result)</i>	EPA 200.7 10/18/17 JHB	DB Avg: 0.5573 DB Max: 159
Platinum, total	<0.01 mg/L <i>None found (acceptable result)</i>	EPA 200.8 10/18/17 NHM	DB Avg: 0.0101
Potassium, total <i>A common ion usually found in water.</i>	2.3 mg/L	EPA 200.7 10/18/17 JHB	DB Avg: 3.5397 DB Max: 901
Praseodymium, total	<0.01 mg/L <i>None found (acceptable result)</i>	EPA 200.8 10/18/17 NHM	DB Avg: 0.0102 DB Max: 0.081
Rhenium, total	<0.01 mg/L <i>None found (acceptable result)</i>	EPA 200.8 10/18/17 NHM	DB Avg: 0.0101
Rhodium, total	<0.01 mg/L <i>None found (acceptable result)</i>	EPA 200.8 10/18/17 NHM	DB Avg: 0.0101

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DRINKING WATER LABORATORY REPORT

Client: **Jordan Preve**

Project No. : **715391**

Date Reported: **10/25/17**

Analysis of water from Test Kit-180

Sample ID : "308D-Post Filter"		Date Received : 10/18/17	
Sampled By : Jordan Preve		Sample Type : domestic	
Sample Date : 10/16/17		Sample No. : 715391-01W	
Sample Time : 1334			
Test	Result	Method, Date, Analyst	Supplemental Info.
Rubidium, total <i>A trace element; occasionally found in water in trace amounts.</i>	<0.01 mg/L <i>None found (acceptable result)</i>	EPA 200.8 10/18/17 NHM	DB Avg: 0.0112 DB Max: 1.61
Ruthenium, total	<0.01 mg/L <i>None found (acceptable result)</i>	EPA 200.8 10/18/17 NHM	DB Avg: 0.0101
Samarium, total	<0.01 mg/L <i>None found (acceptable result)</i>	EPA 200.8 10/18/17 NHM	DB Avg: 0.0102 DB Max: 0.082
Scandium, total	<0.01 mg/L <i>None found (acceptable result)</i>	EPA 200.8 10/18/17 NHM	DB Avg: 0.0101
Selenium, total <i>A trace element and essential mineral; occasionally found in water in trace amounts. High levels may cause hair or fingernail loss, numbness in fingers and toes, or circulatory problems.</i>	<0.005 mg/L MCL: 0.05 mg/L <i>None found (acceptable result)</i>	EPA 200.8 10/18/17 NHM	DB Avg: 0.0052 DB Max: 0.143
Silicon, total <i>A likely dietary requirement for several organisms including humans.</i>	13.2 mg/L	EPA 200.7 10/18/17 JHB	DB Avg: 7.575 DB Max: 18.6
Silver, total <i>A trace element; occasionally found in water in trace amounts. Higher levels may cause discoloring of skin.</i>	<0.005 mg/L MCL: [0.1 mg/L] <i>None found (acceptable result)</i>	EPA 200.8 10/18/17 NHM	DB Avg: 0.0083 DB Max: 30
Sodium, total <i>A common ion usually found in water. Low-sodium diets should be under 20 mg/L. Water softeners that use sodium chloride for regeneration will increase the amount of sodium in the softened water.</i>	12.0 mg/L MCL: [20 mg/L]	EPA 200.7 10/18/17 JHB	DB Avg: 55.7884 DB Max: 2.030
Strontium, total <i>A common element; frequently found in water.</i>	0.2 mg/L MCL: [1.5] mg/L	EPA 200.7 10/18/17 JHB	DB Avg: 0.404 DB Max: 38.8
Sulfur, total, by ICP <i>Commonly present in the form of sulfate; occasionally present in the form of sulfide, which produces a "rotten egg" odor.</i>	8.0 mg/L	EPA 200.7 10/18/17 JHB	DB Avg: 17.3761 DB Max: 1,550
Tantalum, total	<0.05 mg/L <i>None found (acceptable result)</i>	EPA 200.8 10/18/17 NHM	DB Avg: 0.0511
Tellurium, total	<0.01 mg/L <i>None found (acceptable result)</i>	EPA 200.8 10/18/17 NHM	DB Avg: 0.0101
Terbium, total	<0.01 mg/L <i>None found (acceptable result)</i>	EPA 200.8 10/18/17 NHM	DB Avg: 0.0101 DB Max: 0.019
Thallium, total <i>A trace element; seldom found in water. Elevated levels can cause hair loss, changes in the blood, or kidney, digestive, or liver problems.</i>	<0.002 mg/L MCL: 0.002 mg/L <i>None found (acceptable result)</i>	EPA 200.8 10/18/17 NHM	DB Avg: 0.002 DB Max: 0.009
Thorium, total	<0.02 mg/L <i>None found (acceptable result)</i>	EPA 200.8 10/18/17 NHM	DB Avg: 0.0204 DB Max: 0.022
Thulium, total	<0.01 mg/L <i>None found (acceptable result)</i>	EPA 200.8 10/18/17 NHM	DB Avg: 0.0101
Tin, total	<0.1 mg/L <i>None found (acceptable result)</i>	EPA 200.8 10/18/17 NHM	DB Avg: 0.1022 DB Max: 3.7

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DRINKING WATER LABORATORY REPORT

Client: **Jordan Preve**

Project No. : **715391**

Date Reported: **10/25/17**

Analysis of water from Test Kit-180

Sample ID "308D-Post Filter"		Date Received : 10/18/17	
Sampled By : Jordan Preve		Sample Type : domestic	
Sample Date : 10/16/17		Sample No. : 715391-01W	
Sample Time : 1334			
Test	Result	Method, Date, Analyst	Supplemental Info.
Titanium, total	<0.01 mg/L <i>None found (acceptable result)</i>	EPA 200.8 10/18/17 NHM	DB Avg: 0.0106 DB Max: 0.432
Tungsten, total	<0.05 mg/L <i>None found (acceptable result)</i>	EPA 200.8 10/18/17 NHM	DB Avg: 0.0511 DB Max: 0.185
Uranium, total <i>A naturally-occurring radioactive element occasionally found in water and a potential indicator of other radioactive problems. Uranium is primarily a chemical toxicant, with radiation playing a small role, or no role at all.</i>	<0.005 mg/L MCL: 0.03 mg/L <i>None found (acceptable result)</i>	EPA 200.8 10/18/17 NHM	DB Avg: 0.0139 DB Max: 2.14
Vanadium, total <i>A trace element; occasionally found in water in trace amounts. Vanadium may cause respiratory problems and inhibit sodium and potassium in ATP production.</i>	<0.02 mg/L <i>None found (acceptable result)</i>	EPA 200.8 10/18/17 NHM	DB Avg: 0.0205 DB Max: 0.312
Ytterbium, total	<0.01 mg/L <i>None found (acceptable result)</i>	EPA 200.8 10/18/17 NHM	DB Avg: 0.0101 DB Max: 0.038
Yttrium, total	<0.01 mg/L <i>None found (acceptable result)</i>	EPA 200.8 10/18/17 NHM	DB Avg: 0.0103 DB Max: 0.575
Zinc, total <i>A common element frequently found in water in trace amounts; often found in water from plumbing systems containing galvanized (zinc-plated) piping.</i>	0.04 mg/L MCL: [5 mg/L]	EPA 200.7 10/18/17 JHB	DB Avg: 0.1286 DB Max: 18.7
Zirconium, total	<0.05 mg/L <i>None found (acceptable result)</i>	EPA 200.8 10/18/17 NHM	DB Avg: 0.0515 DB Max: 4
Bacteria, E. coli <i>4% of kit samples are tested Positive.</i>	Negative <i>Negative indicates this bacteria was not detected by this screening method.</i>	SM 9223 B 10/18/17 EIF	
Bacteria, total coliform <i>39% of kit samples are tested Positive, often due to a dirty faucet aerator and/or improper sampling.</i>	Negative <i>Negative indicates this bacteria was not detected by this screening method.</i>	SM 9223 B 10/18/17 EIF	
Alkalinity (as CaCO3) <i>A collective measure of the ability of water to maintain pH, or more specifically, to neutralize acid. Typically falls in a 100-400 mg/L range.</i>	130 mg/L	SM 2320 B 10/18/17 LPK	DB Avg: 144.227 DB Max: 1,520
Bicarbonate (as CaCO3) <i>A common mineral usually found in water, and the primary contributor to alkalinity.</i>	130 mg/L	SM 2320 B 10/19/17 LIM	DB Avg: 142.2003 DB Max: 1,400
Bromide <i>A common ion frequently found in water and a byproduct of bromine disinfection.</i>	<0.1 mg/L <i>None found (acceptable result)</i>	EPA 300.0A 10/18/17 ALK	DB Avg: 0.1758 DB Max: 152
Carbonate (as CaCO3) <i>A common mineral frequently found in water, and a minor contributor to alkalinity.</i>	0.15 mg/L	SM 2320 B 10/19/17 LIM	DB Avg: 1.9524 DB Max: 207
Chlorate <i>A disinfection biproduct occasionally found in a chlorinated water.</i>	0.4 mg/L MCL: [0.7] mg/L	EPA 300.0A 10/18/17 ALK	DB Avg: 0.1604 DB Max: 58.4
Chloride <i>A common ion usually found in water. Higher levels may impart a salty taste, weaken metal plumbing or inhibit plant growth.</i>	8.3 mg/L MCL: [250 mg/L]	EPA 300.0A 10/18/17 ALK	DB Avg: 48.4354 DB Max: 3,500

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DRINKING WATER LABORATORY REPORT

Client: **Jordan Preve**

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Analysis of water from Test Kit-180

Sample ID "308D-Post Filter"		Date Received : 10/18/17	
Sampled By : Jordan Preve		Sample Type : domestic	
Sample Date : 10/16/17		Sample No. : 715391-01W	
Sample Time : 1334			

Test	Result	Method, Date, Analyst	Supplemental Info.
Clarity, estimated <i>Clarity is a measure of the distance that can be seen through the water, analogous to the meteorological term "visibility". It is calculated from the Turbidity result. For more information, please see Turbidity.</i>	>1130 mm	SM2130 10/18/17 LIM	
Color <i>Usually a faint yellow color, often due to iron but occasionally due to tannins from plant material.</i>	<5 color units MCL: [15 c.u.] None found (acceptable result)	SM 2120 B 10/19/17 EIF	DB Avg: 7.9111 DB Max: 50
Conductivity <i>A measure of the water's ability to conduct electricity; often used as an indicator of total dissolved solids.</i>	319 micromhos/cm	SM 2510 B 10/18/17 LPK	DB Avg: 518.7986 DB Max: 12,300
Corrosivity (Aggressive) <i>A measure of the water's tendency to corrode metal or form mineral scale. A value greater than 12 indicates non-aggressive (not corrosive) water. A value below 10 indicates extremely aggressive (corrosive). A value of 10-12 suggests that the water is moderately aggressive.</i>	11.3	STPNO 8073 10/19/17 LIM	
Corrosivity (Langlier) <i>A measure of the water's tendency to corrode metal or form mineral scale. A negative value indicates a tendency to corrode, and a positive value indicates a tendency to form scale. A value near zero is neutral. A thin coating of scale inside a metal pipe may help protect it from corrosion.</i>	-0.6 S.U.	SM 2330 B 10/19/17 LIM	
Corrosivity (Ryznar) <i>A measure of the water's tendency to corrode metal or form mineral scale. A value greater than 8.0 indicates a tendency to corrode, and a value less than 7.0 indicates a tendency to form scale. A value near 7.5 is neutral. A thin coating of scale inside a metal pipe may help protect it from corrosion.</i>	8.3 S.U.	SM 2330 B 10/19/17 LIM	
Fluoride <i>A common ion, sometimes found naturally in water, but usually added to municipal waters to prevent tooth decay.</i>	<0.1 mg/L MCL: 4 mg/L [2] None found (acceptable result)	EPA 300.0A 10/18/17 ALK	DB Avg: 0.4043 DB Max: 169
Hardness <i>The combined effect produced mostly by naturally-occurring calcium and magnesium in the water. Hardness classifications: soft (0-17 mg/L), slightly hard (18-60 mg/L), moderately hard (61-120 mg/L), hard (121-180 mg/L) and very hard (>180 mg/L).</i>	129 mg/L (as CaCO3)	SM 2340 B 10/19/17 LIM	DB Avg: 137.9577 DB Max: 4,990
Hardness (ppg) <i>Another way to express hardness. Hardness classifications: soft (0-1.0 ppg), slightly hard (1.1-3.5 ppg), moderately hard (3.6-7.0 ppg), hard (7.1-10.5 ppg) and very hard (>10.6 ppg). 1 ppg = 17.12 mg CaCO3/L.</i>	7.5 grains/gallon	SM 2340 B 10/19/17 LIM	DB Avg: 8.0634 DB Max: 291
Nitrogen, nitrate	<0.1 mg/L MCL: 10 mg/L None found (acceptable result)	EPA 300.0A 10/18/17 ALK	DB Avg: 1.124 DB Max: 98.9
Nitrogen, nitrite	<0.1 mg/L MCL: 1 mg/L None found (acceptable result)	EPA 300.0A 10/18/17 ALK	DB Avg: 0.1349 DB Max: 9.5
Orthophosphate <i>A corrosion-inhibiting chemical sometimes used in public water supplies to reduce Lead concentrations.</i>	0.3 mg/L	EPA 300.0A 10/18/17 ALK	DB Avg: 0.4488 DB Max: 120
PH <i>A measure of whether a water is acidic or basic. Usually between 6.5 and 8.5.</i>	7.1 S.U. MCL: 6.5-8.5su	SM 4500-H B 10/18/17 LPK	DB Avg: 7.624 DB Max: 11.4
Resistivity <i>A measure of the water's ability to resist electrical conductance. It is calculated as the reciprocal of the Conductivity result.</i>	3130 ohms/cm	EPA 120.1, KQ220 10/18/17 LIM	
Salinity <i>The dissolved salts in water. Public water supplies are typically under 0.5ppt.</i>	0.158 ppt	SM 2520 B 10/18/17 LIM	DB Avg: 24.8201 DB Max: 2,920
Silica (calc. from Silicon) <i>A common mineral; some dissolved silica is often found naturally in water. This result was calculated from the "Silicon, total" test and provides the theoretical maximum Silica concentration.</i>	28.2 mg/L	EPA 200.7 10/18/17 LIM	DB Avg: 15.373 DB Max: 132

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DRINKING WATER LABORATORY REPORT

Client: **Jordan Preve**

Project No. : **715391**

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Analysis of water from Test Kit-180

Sample ID "308D-Post Filter"		Date Received : 10/18/17	
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Sample Date : 10/16/17		Sample No. : 715391-01W	
Sample Time : 1334			
Test	Result	Method, Date, Analyst	Supplemental Info.
Sodium ads. ratio, adjusted <i>Many soil scientists recommend that the Adjusted SAR value be used for waters high in calcium or bicarbonate; primarily groundwater used for crop irrigation.</i>	0.50	KAR 10/19/17 LIM	DB Avg: 6.4337 DB Max: 146
Sodium adsorption ratio <i>Farmers use this index to evaluate the sodium-loading potential in an irrigated soil. Irrigation water with a high SAR value may cause soil dispersion, crusting, poor seedling emergence, slower infiltration and percolation rates, and poor aeration.</i>	0.46	KAR 10/19/17 LIM	DB Avg: 8.7299 DB Max: 260
Sulfate <i>A common ion usually found in water. A low level actually improves taste and is an additive in some beverages. High levels can cause aesthetic problems or a laxative effect.</i>	26 mg/L MCL: [250 mg/L]	EPA 300.0A 10/18/17 ALK	DB Avg: 49.7536 DB Max: 4,860
Turbidity <i>Turbidity is a measure of the cloudiness in the water and is influenced by the amount and nature of suspended organic and inorganic material in water. The source could be fine sand, silt, clay, organic material, particles of iron and manganese or other metal oxides, rust from corroding piping, or carbonate precipitates.</i>	<1 NTU MCL: {0.3} None found (acceptable result)	SM 2130 B 10/18/17 MID	DB Avg: 3.4573 DB Max: 685
Tot. diss. solids, estimated <i>An estimate of all salts and minerals dissolved in the water. High levels can leave residues on fixtures.</i>	210 mg/L MCL: [500 mg/L]	EPA 120.1 10/18/17 LIM	DB Avg: 354.6237 DB Max: 11,100
Volatiles TICs (For internal lab use)	None found	EPA 524.2 10/18/17 JAR	
Per Test Kit-VOCs (internal lab use)	See below	EPA 524.2 10/18/17 JAR	
Prep, VOA (For internal lab use)	Completed	EPA 524.2 10/18/17 JAR	
1,1,1,2-Tetrachloroethane	<0.5 ug/L None found (acceptable result)	EPA 524.2 10/18/17 JAR	DB Avg: 0.5
1,1,1-Trichloroethane	<0.5 ug/L MCL: 200 ug/L None found (acceptable result)	EPA 524.2 10/18/17 JAR	DB Avg: 0.5027 DB Max: 6.2
1,1,2,2-Tetrachloroethane	<0.5 ug/L MCL: {1} ug/L None found (acceptable result)	EPA 524.2 10/18/17 JAR	DB Avg: 0.5
1,1,2-Trichloroethane	<0.5 ug/L MCL: 5 ug/L None found (acceptable result)	EPA 524.2 10/18/17 JAR	DB Avg: 0.5
1,1-Dichloroethane	<0.5 ug/L MCL: {20} ug/L None found (acceptable result)	EPA 524.2 10/18/17 JAR	DB Avg: 0.5005 DB Max: 1
1,1-Dichloroethene	<0.5 ug/L MCL: 7 ug/L None found (acceptable result)	EPA 524.2 10/18/17 JAR	DB Avg: 0.505 DB Max: 13
1,1-Dichloropropene	<0.5 ug/L None found (acceptable result)	EPA 524.2 10/18/17 JAR	DB Avg: 0.5
1,2,3-Trichlorobenzene	<0.5 ug/L None found (acceptable result)	EPA 524.2 10/18/17 JAR	DB Avg: 0.5

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KAR Laboratories, Inc.

DRINKING WATER LABORATORY REPORT

Client: *Jordan Preve*

Project No. : **715391**

Date Reported: **10/25/17**

Analysis of water from Test Kit-180

Sample ID : "308D-Post Filter"			
Sampled By : <i>Jordan Preve</i>		Date Received : 10/18/17	
Sample Date : 10/16/17		Sample Type : domestic	
Sample Time : 1334		Sample No. : 715391-01W	
Test	Result	Method, Date, Analyst	Supplemental Info.
1,2,3-Trichloropropane	<0.5 ug/L MCL: (0.8) ug/L None found (acceptable result)	EPA 524.2 10/18/17 JAR	DB Avg: 0.5
1,2,3-Trimethylbenzene	<0.5 ug/L None found (acceptable result)	EPA 524.2 10/18/17 JAR	DB Avg: 0.518 DB Max: 43
1,2,4-Trichlorobenzene	<0.5 ug/L MCL: 70 ug/L None found (acceptable result)	EPA 524.2 10/18/17 JAR	DB Avg: 0.5
1,2,4-Trimethylbenzene	<0.5 ug/L None found (acceptable result)	EPA 524.2 10/18/17 JAR	DB Avg: 0.544 DB Max: 100
1,2-Dibromo-3-chloropropane	<0.2 ug/L MCL: 0.2 ug/L None found (acceptable result)	EPA 524.2 10/18/17 JAR	DB Avg: 0.2
1,2-Dichlorobenzene	<0.5 ug/L MCL: 600 ug/L None found (acceptable result)	EPA 524.2 10/18/17 JAR	DB Avg: 0.5
1,2-Dichloroethane	<0.5 ug/L MCL: 5 ug/L None found (acceptable result)	EPA 524.2 10/18/17 JAR	DB Avg: 0.5
1,2-Dichloropropane	<0.5 ug/L MCL: 5 ug/L None found (acceptable result)	EPA 524.2 10/18/17 JAR	DB Avg: 0.5
1,3,5-Trimethylbenzene	<0.5 ug/L None found (acceptable result)	EPA 524.2 10/18/17 JAR	DB Avg: 0.5118 DB Max: 27
1,3-Dichlorobenzene	<0.5 ug/L MCL: (7) ug/L None found (acceptable result)	EPA 524.2 10/18/17 JAR	DB Avg: 0.5
1,3-Dichloropropane	<0.5 ug/L MCL: (20) ug/L None found (acceptable result)	EPA 524.2 10/18/17 JAR	DB Avg: 0.5
1,4-Dichlorobenzene	<0.5 ug/L MCL: 75 [5] ug/L None found (acceptable result)	EPA 524.2 10/18/17 JAR	DB Avg: 0.5
1-Chlorobutane	<5 ug/L None found (acceptable result)	EPA 524.2 10/18/17 JAR	DB Avg: 5
2,2,4-Trimethylpentane	<5 ug/L None found (acceptable result)	EPA 524.2 10/18/17 JAR	DB Avg: 5
2,2-Dichloropropane	<0.5 ug/L None found (acceptable result)	EPA 524.2 10/18/17 JAR	DB Avg: 0.5
2-Butanone (MEK)	<25 ug/L None found (acceptable result)	EPA 524.2 10/18/17 JAR	DB Avg: 25.7255 DB Max: 700
2-Chloroethylvinyl ether	<10 ug/L None found (acceptable result)	EPA 524.2 10/18/17 JAR	DB Avg: 10

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DRINKING WATER LABORATORY REPORT

Client: *Jordan Preve*

Project No. : **715391**

Date Reported: **10/25/17**

Analysis of water from Test Kit-180

Sample ID	"308D-Post Filter"	Date Received :	10/18/17
Sampled By :	Jordan Preve	Sample Type :	domestic
Sample Date :	10/16/17	Sample No. :	715391-01W
Sample Time :	1334		

Test	Result	Method, Date, Analyst	Supplemental Info.
2-Chlorotoluene	<0.5 ug/L <i>None found (acceptable result)</i>	EPA 524.2 10/18/17 JAR	DB Avg: 0.5
2-Hexanone	<50 ug/L <i>None found (acceptable result)</i>	EPA 524.2 10/18/17 JAR	DB Avg: 50
2-Methylnaphthalene by 524.2	<5 ug/L <i>None found (acceptable result)</i>	EPA 524.2 10/18/17 JAR	DB Avg: 5
2-Nitropropane	<50 ug/L <i>None found (acceptable result)</i>	EPA 524.2 10/18/17 JAR	DB Avg: 50
4-Chlorotoluene	<0.5 ug/L <i>None found (acceptable result)</i>	EPA 524.2 10/18/17 JAR	DB Avg: 0.5
4-Methyl-2-pentanone (MIBK)	<50 ug/L <i>None found (acceptable result)</i>	EPA 524.2 10/18/17 JAR	DB Avg: 49.9829 DB Max: 7.2
Acetone <i>Organic solvent; occasionally found in water if work was recently done on the plumbing system.</i>	<20 ug/L <i>None found (acceptable result)</i>	EPA 524.2 10/18/17 JAR	DB Avg: 20.4498 DB Max: 300
Acetonitrile	<50 ug/L <i>None found (acceptable result)</i>	EPA 524.2 10/18/17 JAR	DB Avg: 50
Acrolein	<20 ug/L MCL: {320} ug/L <i>None found (acceptable result)</i>	EPA 524.2 10/18/17 JAR	DB Avg: 20
Acrylonitrile	<2 ug/L MCL: {10} ug/L <i>None found (acceptable result)</i>	EPA 524.2 10/18/17 JAR	DB Avg: 2
Allyl chloride	<50 ug/L <i>None found (acceptable result)</i>	EPA 524.2 10/18/17 JAR	DB Avg: 50
Benzene	<0.5 ug/L MCL: 5 ug/L <i>None found (acceptable result)</i>	EPA 524.2 10/18/17 JAR	DB Avg: 0.5294 DB Max: 61
Bromobenzene	<0.5 ug/L <i>None found (acceptable result)</i>	EPA 524.2 10/18/17 JAR	DB Avg: 0.5
Bromochloromethane	<0.5 ug/L <i>None found (acceptable result)</i>	EPA 524.2 10/18/17 JAR	DB Avg: 0.5112 DB Max: 11
Bromodichloromethane <i>A disinfection byproduct occasionally found in a chlorinated water.</i>	1.1 ug/L MCL: {16} ug/L	EPA 524.2 10/18/17 JAR	DB Avg: 2.6259 DB Max: 66
Bromoform <i>A disinfection byproduct occasionally found in a chlorinated water.</i>	<0.5 ug/L MCL: {80} ug/L <i>None found (acceptable result)</i>	EPA 524.2 10/18/17 JAR	DB Avg: 1.0077 DB Max: 83
Bromomethane	<0.5 ug/L <i>None found (acceptable result)</i>	EPA 524.2 10/18/17 JAR	DB Avg: 0.5

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DRINKING WATER LABORATORY REPORT

Client: *Jordan Preve*

Project No. : **715391**

Date Reported: **10/25/17**

Analysis of water from Test Kit-180

Sample ID "308D-Post Filter"		Date Received : 10/18/17	
Sampled By.: <i>Jordan Preve</i>		Sample Type : domestic	
Sample Date : 10/16/17		Sample No. : 715391-01W	
Sample Time : 1334			
Test	Result	Method, Date, Analyst	Supplemental Info.
<i>Methyl cyclopentane</i>	<50 ug/L <i>None found (acceptable result)</i>	EPA 524.2 10/18/17 JAR	DB Avg: 49.994 DB Max: 35
<i>Methyl formate</i>	<50 ug/L <i>None found (acceptable result)</i>	EPA 524.2 10/18/17 JAR	DB Avg: 50
<i>Methyl iodide</i>	<5 ug/L <i>None found (acceptable result)</i>	EPA 524.2 10/18/17 JAR	DB Avg: 5
<i>Methyl methacrylate</i>	<50 ug/L <i>None found (acceptable result)</i>	EPA 524.2 10/18/17 JAR	DB Avg: 50
<i>Methyl t-butyl ether (MTBE)</i>	<5 ug/L MCL: {15} ug/L <i>None found (acceptable result)</i>	EPA 524.2 10/18/17 JAR	DB Avg: 5.0508 DB Max: 120
<i>Methylacrylate</i>	<50 ug/L <i>None found (acceptable result)</i>	EPA 524.2 10/18/17 JAR	DB Avg: 50
<i>Dichloromethane</i>	<0.5 ug/L MCL: 5 ug/L <i>None found (acceptable result)</i>	EPA 524.2 10/18/17 JAR	DB Avg: 0.5043 DB Max: 6.9
<i>N-Amyl acetate</i>	<50 ug/L <i>None found (acceptable result)</i>	EPA 524.2 10/18/17 JAR	DB Avg: 50
<i>N-Butanol</i>	<500 ug/L <i>None found (acceptable result)</i>	EPA 524.2 10/18/17 JAR	DB Avg: 500
<i>N-Butylbenzene</i>	<0.5 ug/L <i>None found (acceptable result)</i>	EPA 524.2 10/18/17 JAR	DB Avg: 0.5004 DB Max: 1.5
<i>N-Decane</i>	<5 ug/L <i>None found (acceptable result)</i>	EPA 524.2 10/18/17 JAR	DB Avg: 5
<i>N-Nonane</i>	<5 ug/L <i>None found (acceptable result)</i>	EPA 524.2 10/18/17 JAR	DB Avg: 5
<i>N-Propanol</i>	<500 ug/L <i>None found (acceptable result)</i>	EPA 524.2 10/18/17 JAR	DB Avg: 500
<i>N-Propylbenzene</i>	<0.5 ug/L <i>None found (acceptable result)</i>	EPA 524.2 10/18/17 JAR	DB Avg: 0.5
<i>Naphthalene</i>	<0.5 ug/L <i>None found (acceptable result)</i>	EPA 524.2 10/18/17 JAR	DB Avg: 0.5019 DB Max: 4.8
<i>Nitrobenzene by 524.2</i>	<500 ug/L <i>None found (acceptable result)</i>	EPA 524.2 10/18/17 JAR	DB Avg: 500
<i>O-Xylene</i>	<0.5 ug/L MCL: {300} ug/L <i>None found (acceptable result)</i>	EPA 524.2 10/18/17 JAR	DB Avg: 0.5462 DB Max: 99

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KAR Laboratories, Inc.

DRINKING WATER LABORATORY REPORT

Client: *Jordan Preve*

Project No. : **715391**

Date Reported: **10/25/17**

Analysis of water from Test Kit-180

Sample ID : "308D-Post Filter"			
Sampled By : <i>Jordan Preve</i>		Date Received : 10/18/17	
Sample Date : 10/16/17		Sample Type : domestic	
Sample Time : 1334		Sample No. : 715391-01W	
Test	Result	Method, Date, Analyst	Supplemental Info.
Octane	<5 ug/L None found (acceptable result)	EPA 524.2 10/18/17 JAR	DB Avg: 5
P-Isopropyltoluene	<0.5 ug/L None found (acceptable result)	EPA 524.2 10/18/17 JAR	DB Avg: 0.5
Pentane	<5 ug/L None found (acceptable result)	EPA 524.2 10/18/17 JAR	DB Avg: 5.0032 DB Max: 13
Propionitrile	<50 ug/L None found (acceptable result)	EPA 524.2 10/18/17 JAR	DB Avg: 50
Propyl acetate	<50 ug/L None found (acceptable result)	EPA 524.2 10/18/17 JAR	DB Avg: 50
Sec-Butylbenzene	<0.5 ug/L None found (acceptable result)	EPA 524.2 10/18/17 JAR	DB Avg: 0.5
Styrene	<0.5 ug/L MCL: 100 ug/L None found (acceptable result)	EPA 524.2 10/18/17 JAR	DB Avg: 0.501 DB Max: 2.5
Tert-Amyl methyl ether	<5 ug/L None found (acceptable result)	EPA 524.2 10/18/17 JAR	DB Avg: 5
Tert-Butanol	<50 ug/L None found (acceptable result)	EPA 524.2 10/18/17 JAR	DB Avg: 51.7056 DB Max: 4,000
Tert-Butylbenzene	<0.5 ug/L None found (acceptable result)	EPA 524.2 10/18/17 JAR	DB Avg: 0.5
Tetrachloroethene	<0.5 ug/L MCL: 5 ug/L None found (acceptable result)	EPA 524.2 10/18/17 JAR	DB Avg: 0.5045 DB Max: 6.3
Tetrahydrofuran (THF) <i>An organic solvent; occasionally found in water if work was recently done on the plumbing system.</i>	<10 ug/L None found (acceptable result)	EPA 524.2 10/18/17 JAR	DB Avg: 17.8725 DB Max: 4,000
Toluene	<0.5 ug/L MCL: 1000 ug/L None found (acceptable result)	EPA 524.2 10/18/17 JAR	DB Avg: 0.6706 DB Max: 100
Trans-1,2-Dichloroethene	<0.5 ug/L MCL: 100 ug/L None found (acceptable result)	EPA 524.2 10/18/17 JAR	DB Avg: 0.5
Trans-1,3-Dichloropropene	<0.5 ug/L MCL: (0.5) ug/L None found (acceptable result)	EPA 524.2 10/18/17 JAR	DB Avg: 0.5
Trans-1,4-Dichloro-2-butene	<0.5 ug/L None found (acceptable result)	EPA 524.2 10/18/17 JAR	DB Avg: 0.5
Trichloroethene	<0.5 ug/L MCL: 5 ug/L None found (acceptable result)	EPA 524.2 10/18/17 JAR	DB Avg: 0.5017 DB Max: 1.3

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KAR Laboratories, Inc.

DRINKING WATER LABORATORY REPORT

Client: *Jordan Preve*

Project No. : **715391**

Date Reported: **10/25/17**

Analysis of water from Test Kit-180

Sample ID : "308D-Post Filter"			
Sampled By : <i>Jordan Preve</i>		Date Received : 10/18/17	
Sample Date : 10/16/17		Sample Type : domestic	
Sample Time : 1334		Sample No. : 715391-01W	
Test	Result	Method, Date, Analyst	Supplemental Info.
Trichlorofluoromethane	<0.5 ug/L MCL: (150) ug/L None found (acceptable result)	EPA 524.2 10/18/17 JAR	DB Avg: 0.5006 DB Max: 1.3
Trichlorotrifluoroethane	<0.5 ug/L None found (acceptable result)	EPA 524.2 10/18/17 JAR	DB Avg: 0.5
Trihalomethanes, total <i>The sum of the 4 individual trihalomethane disinfectant byproducts.</i>	2.7 ug/L MCL: 80 ug/L	EPA 524.2 10/19/17 LIM	DB Avg: 12.6627 DB Max: 360
Trimethyl-o-acetate	<50 ug/L None found (acceptable result)	EPA 524.2 10/18/17 JAR	DB Avg: 50
Vinyl acetate	<50 ug/L None found (acceptable result)	EPA 524.2 10/18/17 JAR	DB Avg: 50
Vinyl chloride	<0.5 ug/L MCL: 2 ug/L None found (acceptable result)	EPA 524.2 10/18/17 JAR	DB Avg: 0.6709 DB Max: 20
Lead by GC-gasoline range	<100 ug/L None found (acceptable result)	EPA 524.2 10/18/17 JAR	DB Avg: 100.4382 DB Max: 1,200

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"<" (less than sign) indicates NOT FOUND. The number to the right of "<" is the lowest concentration that the test can detect (the reporting limit)

Terms	Explanation
Test	The property or contaminant we tested for in your water sample
Result	The actual laboratory findings of your test will be in BOLD font
MCL	The Maximum Contaminant Level that should not be exceeded: USEPA Primary, [USEPA Secondary], (WHO, Canada, Etc.) - See Page 1
Method	The analytical test procedure that we used to measure that Test
Date	The date the test was performed
Analyst	The initials of the analyst who performed that Test
DB Avg	The numerical average from the KAR Laboratories database of about 10,000 USA test kit results from 2013-2016. For non-detected samples, the reporting limit is used. For reference use only; some calculations may be misleading due to varying reporting limits
DB Max	The highest test result from the KAR Laboratories database of about 10,000 USA test kit results from 2013-2016. For reference use only

Units of Measure	
mg/L is milligrams per liter, also known as parts per million (ppm)	ppb is parts per billion
ug/L is micrograms per liter, also known as parts per billion (ppb)	gpg is grains per gallon
ppm is parts per million	S.U. is Standard Units
ppt is parts per thousand	NTU is Nephelometric Turbidity Units
micromhos/cm is micromhos per centimeter	

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DESCRIPTION OF TESTS AND IF NECESSARY, TREATMENT

Always consult your doctor for health-related issues and show him/her your Analytical Report. Please consult your water treatment professional, well driller, and local health department for treatment advice. Our expertise is measurement science and we cannot and will not advise customers on topics outside of our expertise. This is because we are not doctors, we do not know about the water in your area, and we must remain scientifically objective. Please refer to the body of our Analytical Report for U.S. EPA Maximum Contaminant Levels and how they relate to YOUR water sample. Primary MCLs (example: MCL=0.5ug/L) should NOT be exceeded. Secondary MCLs are indicated in brackets [] (example: MCL=[0.5ug/L]) and are not health related and usually for aesthetic reasons (taste, color, iron staining, water spotting, etc.). Below is information based upon common questions we get:

Bacteria, E. coli and total Coliform These bacteria come from human and animal wastes and are found throughout the environment. Most coliform bacteria are not a health threat, but some strains are pathogenic. Testing for Coliforms is used to indicate whether other potentially harmful bacteria may be present. Kitchen faucets with an aerator screen, infrequently used faucets, and outdoor faucets are more prone to grow bacteria. It is not uncommon for the sample to become contaminated by touching the threads on the vial and/or placing the cap on a counter top. Chlorination/flushing of the well and plumbing system will help reduce or eliminate the bacteria. Most public water systems maintain a beneficially low concentration of chlorine to control bacteria.

Clarity Directly calculated from the Turbidity test result, it's a measure of the distance that can be seen through the water. Please see Turbidity for more information.

Corrosivity, Langelier Saturation Index A negative value indicates the water will tend to be corrosive in the distribution system. A positive value indicates the water will tend to deposit calcium carbonate forming scales in the distribution system. If the Langelier Index is close to zero, then the water will neither be strongly corrosive nor scale forming.

Corrosivity, Ryznar Stability Index A value of 6 or less indicates a tendency to form scale. A value 8 or more indicates a tendency to corrode metal. A value near 7 (neutral) may be slightly scale-forming or corrosive. A thin coating of scale inside a metal pipe may help protect it from corrosion.

Chlorate Chlorate can enter drinking water from several sources, including from hypochlorite or chlorine dioxide disinfectant use, ozone oxidation of hypochlorite or chlorine, pesticide runoff or paper mill discharges. Chlorate is also used in explosives and as a pesticide. Hypochlorite and chlorine dioxide use as disinfectants are by far the principal sources in drinking water.

Fluoride Fluoride is naturally present in some water. Community water fluoridation is the adjustment of the natural fluoride level in public water systems to an optimal level to prevent tooth decay. It's added to achieve a low parts-per-million concentration (ppm). We've seen one case of over-fluorination that caused stomach illness to children at an elementary school and the neighborhood. The use of fluoride has been controversial for several decades. The USEPA primary limit is 4.0, the USEPA secondary limit is 2.0, and the DHSS level is 0.7 to prevent dental fluorosis.

Hardness If a resin-bed water softener is being used, the Calcium and Magnesium results should be low (less than 5 mg/L). If they're not, double-check the softener's settings and make sure the end of the suction line in the brine tank isn't clogged with salt sludge. A well-maintained resin bed should last about 20 years.

Copper A common toxic contaminant in many drinking waters that we test. Usually attributable to the water distribution system and is directly effected by the corrosivity of the source water. The USEPA Primary Drinking Water limit is 1.3mg/L (1300ug/L).

Lead A common toxic contaminant in many drinking waters that we test. Usually attributable to the water distribution system and is directly effected by the corrosivity of the source water. The USEPA Primary Drinking Water limit is 0.015mg/L (15ug/L).

Uranium Uranium is naturally occurring in the soil and rock of certain regions, and decomposes to Radon and Radium, making Uranium a potential indicator of these other toxic breakdown products.

Nitrate The largest use of nitrates is in fertilizer. In the body, nitrates are converted to nitrites. Infants below six months of age who drink water containing nitrate in excess of the maximum contaminant level (MCL) could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue baby syndrome. The long-term effects of Nitrate on adults is still being studied.

Salinity The saltiness or dissolved salt content of water. Groundwater, inland lakes, and rivers are typically less than 0.5 parts-per-thousand (ppt). Brackish water is 0.5 to 30 ppt. Seawater and brines are 30 to 50 ppt.

Sodium adsorption ratio (SAR) Commonly used as an index for evaluating the sodium hazard associated with an irrigation water supply. Irrigation waters having high SAR levels can lead to the build-up of high sodium levels in soil over time, which in turn can adversely effect soil infiltration and percolation rates, due to soil dispersion. Additionally, excessive SAR levels can lead to soil crusting, poor seedling emergence and poor aeration.

Sodium ads. ratio, adjusted For high calcium and/or bicarbonate waters, primarily groundwater at elevated CO₂ content used for crop irrigation, many soil scientists recommend that the Adjusted SAR formula be used.

Silica A small amount of silica is dissolved in drinking water from contact with soil.

Sulfate Usually found in drinking water. The USEPA secondary limit is 250ppm. Concentrations above 250ppm can cause gastrointestinal disturbances such as diarrhea. Sulfate in lower concentrations can actually improve the taste of water and is sometimes added to beverage products for that reason.

Sulfur Usually found in drinking water and is most often directly attributable to the sulfate ion (SO₄) but will include other unidentified forms of sulfur as well.

Total Organic Carbon TOC does not identify specific organic contaminants. It will, however, detect the presence of all carbon-bearing molecules, thus identifying the presence of any organic contaminants, regardless of molecular make-up. A general water quality criteria for TOC is 2 mg/L for treated water and 4 mg/L for source water. TOC levels in chlorinated water influence the amount of Total Trihalomethanes (TTHMs) that are formed in that water.

Turbidity A cloudy or milky appearance of water. Turbidity is due to particles scattering or absorbing light, giving the water a cloudy appearance. Turbidity is caused by suspended particles such as rust, silt, limestone, microorganisms, etc. Turbidity should be below 5 nephelometric turbidity units (NTU), while systems that filter must ensure that the turbidity does not exceed 1 NTU, or 0.5 NTU for conventional or direct filtration in at least 95% of the daily samples for any two consecutive months.

Chloroform, Bromoform, Bromodichloromethane, Dibromochloromethane The maximum allowable concentration of the sum of these is 80 ug/L. These compounds are collectively called Total Trihalomethanes (TTHM) and are commonly found in municipal water supplies. Trihalomethanes are formed when chlorine is used to disinfect water for drinking and represent a group of chemicals called disinfection byproducts. They are a byproduct of the reaction of chlorine or bromine with organic matter present in the water being treated. A good charcoal filter is effective at removing trihalomethanes from water, just be sure to change the charcoal bed frequently to avoid bacteria and mold buildup.

Total Trihalomethanes (TTHM's) See above "Chloroform, Bromoform, Bromodichloromethane, Dibromochloromethane"

Ethylene dibromide EDB is very rarely found in drinking water. We can report it down to 0.2 ug/L. The extremely low EPA MCL 0.05 ug/L detection limit is beyond the scope of our value-centric kits. We are however EPA certified to analyze EDB using EPA Method 504 at additional cost. Please give us a call if you have reason to believe this is a concern in your situation.

PCBs Polychlorinated biphenyls are highly toxic but very rarely found in drinking water. We report down to 2 ug/L in Kit-270 and 0.5 ug/L in Kit-360. The extremely low EPA MCL 0.5 ug/L detection limit is beyond the scope of our

value-centric Kit-270. We are however EPA certified to analyze PCB using EPA Method 508 at additional cost. Please give us a call if you have reason to believe this is a concern in your situation.

VOC TICs Volatile Organic Tentatively Identified Compounds - in a GC-MS volatile analysis using EPA method 524.2, we directly calibrate the instrument using a 5-point calibration curve with pure, authentic analytical standards. These are called "target analytes". But we also have the ability to detect other contaminants during the course of the test, and will report these "Tentatively Identified Compounds" that we may find. We use the NIST mass spectral database of about 250,000 compounds to identify the contaminant, then do a "raw" quantification. It's called raw because we did not directly calibrate the instrument with that authentic compound, but we have a pretty good idea what response it will provide. So statistically, we report the TICs to only one significant figure, whereas we use more significant figures elsewhere for organics. We rarely detect TICs, but when we do, they're a very good thing to know about.

SVOC TICs Semi-Volatile Organic Tentatively Identified Compounds - In a GC-MS semi-volatile analysis using EPA Method 525.2, we directly calibrate the instrument using a 5-point calibration curve with pure, authentic analytical standards. These are called "target analytes". But we also have the ability to detect other contaminants during the course of the test, and will report these "Tentatively Identified Compounds" that we may find. We use the NIST mass spectral database of about 250,000 compounds to identify the contaminant, then do a "raw" quantification. It's called raw because we did not directly calibrate the instrument with that authentic compound, but we have a pretty good idea what response it will provide. So statistically, we report the TICs to only one significant figure, whereas we use more significant figures elsewhere for organics. We rarely detect TICs, but when we do, they're a very good thing to know about.

Created on August 4, 2017 by KAR Laboratories

Environmental Conservation Laboratories, Inc.
 102-A Woodwinds Industrial Court
 Cary, NC 27511
 Ph: (919) 467-3090 Fax: (919) 467-3515



www.encolabs.com

INORGANIC CHEMICAL ANALYSIS

WATER SYSTEM ID #: 03-92-373 County: Wake
 Name of Water System: Bayleaf
 Sample Type: Entry Point Special/Non-compliance
 Location Where Collected: Well: 1(IOC) - COACHMANS TRAIL(123) - DUNSTABLE NEXT TO TENNIS COURTS
 Facility ID No: P06
 Location Code: 006
 Collected By: Brandon Rhiner
 Mail Results to:
 Aqua NC - Cary (AQ002)
 Attn: Mark English
 202 MacKenan Court
 Cary, NC 27511
 Phone #: (919) 653-5779
 Fax #: 0-

Collection Date	Collection Time
01/17/17	03:00 pm

LABORATORY ID #: 37724

SAMPLE UNSATISFACTORY

RESAMPLE REQUIRED

CONTAM CODE	CONTAMINANT	METHOD CODE	REQUIRED REPORTING LIMIT (R.R.L.)	NOT DETECTED (i.e <R.R.L.) (X)	QUANTIFIED RESULTS*	ALLOWABLE LIMIT
1005	Arsenic	200.8	0.005 mg/L	X	mg/L	0.01 mg/L
1010	Barium	200.8	0.4 mg/L	X	mg/L	2 mg/L
1015	Cadmium	200.8	0.001 mg/L	X	mg/L	0.005 mg/L
1020	Chromium	200.8	0.02 mg/L	X	mg/L	0.1 mg/L
1024	Cyanide (total)	335.4	0.05 mg/L	X	mg/L	0.2 mg/L
1025	Fluoride	300.0	0.1 mg/L	X	mg/L	4 mg/L
1028	Iron	200.7	0.06 mg/L	X	mg/L	0.3 mg/L
1032	Manganese	200.8	0.01 mg/L	X	mg/L	0.05 mg/L
1035	Mercury	245.1	0.0004 mg/L	X	mg/L	0.002 mg/L
1036	Nickel	200.8	0.1 mg/L	X	mg/L	N/A
1045	Selenium	200.8	0.01 mg/L	X	mg/L	0.05 mg/L
1052	Sodium	200.7	1 mg/L		31.5 mg/L	N/A
1055	Sulfate as SO4	300.0	5 mg/L	X	mg/L	250 mg/L
1074	Antimony	200.8	0.003 mg/L	X	mg/L	0.006 mg/L
1075	Beryllium	200.8	0.002 mg/L	X	mg/L	0.004 mg/L
1085	Thallium	200.8	0.001 mg/L	X	mg/L	0.002 mg/L
1925	pH	4500H-B	N/A	N/A	6.9 units	6.5-8.5 units

*Note: Except for Iron and Manganese, if result exceeds allowable limit, the laboratory must fax analytical results to the State within 48 hours.

	DATE:	TIME:
ANALYSES BEGUN:	01/18/2017	1:27 pm
ANALYSES COMPLETED:	01/27/2017	11:13 am

Laboratory Log #: CZ19034-01

Certified By: Bill Scott Bill Scott

COMMENTS:

Environmental Conservation Laboratories, Inc.
 102-A Woodwinds Industrial Court
 Cary, NC 27511
 Ph: (919) 467-3090 Fax: (919) 467-3515



www.enclabs.com

INORGANIC CHEMICAL ANALYSIS

WATER SYSTEM ID #: 03-92-373 County: Wake

Name of Water System: Bayleaf

Sample Type: Entry Point Special/Non-compliance

Location Where Collected: Well: 2(IOC) - COACHMANS TRAIL(123) - COACHMANS WAY BESIDE CLUBHOUSE

Facility ID No: P07

Location Code: 007

Collected By: Brandon Rhiner

Collection Date	Collection Time
03/30/17	03:50 pm

Mail Results to:

Aqua NC - Cary (AQ002)

Attn: Mark English

202 MacKenan Court

Cary, NC 27511

Phone #: (919) 653-5779

Fax #: 0 -

LABORATORY ID #: 37724

SAMPLE UNSATISFACTORY

RESAMPLE REQUIRED

CONTAM CODE	CONTAMINANT	METHOD CODE	REQUIRED REPORTING LIMIT (R.R.L.)	NOT DETECTED (i.e < R.R.L.) (X)	QUANTIFIED RESULTS*	ALLOWABLE LIMIT
1005	Arsenic	200.8	0.005 mg/L	X	mg/L	0.01 mg/L
1010	Barium	200.8	0.4 mg/L	X	mg/L	2 mg/L
1015	Cadmium	200.8	0.001 mg/L	X	mg/L	0.005 mg/L
1020	Chromium	200.8	0.02 mg/L	X	mg/L	0.1 mg/L
1024	Cyanide (total)	335.4	0.05 mg/L	X	mg/L	0.2 mg/L
1025	Fluoride	300.0	0.1 mg/L	X	mg/L	4 mg/L
1028	Iron	200.7	0.06 mg/L		0.532 mg/L	0.3 mg/L
1032	Manganese	200.8	0.01 mg/L		0.0247 mg/L	0.05 mg/L
1035	Mercury	245.1	0.0004 mg/L	X	mg/L	0.002 mg/L
1036	Nickel	200.8	0.1 mg/L	X	mg/L	N/A
1045	Selenium	200.8	0.01 mg/L	X	mg/L	0.05 mg/L
1052	Sodium	200.7	1 mg/L		7.67 mg/L	N/A
1055	Sulfate as SO4	300.0	5 mg/L	X	mg/L	250 mg/L
1074	Antimony	200.8	0.003 mg/L	X	mg/L	0.006 mg/L
1075	Beryllium	200.8	0.002 mg/L	X	mg/L	0.004 mg/L
1085	Thallium	200.8	0.001 mg/L	X	mg/L	0.002 mg/L
1925	pH	4500H-B	N/A	N/A	6.0 units	6.5-8.5 units

*Note: Except for Iron and Manganese, if result exceeds allowable limit, the laboratory must fax analytical results to the State within 48 hours.

	DATE:	TIME:
ANALYSES BEGUN:	04/03/2017	9:06 am
ANALYSES COMPLETED:	04/12/2017	3:17 pm

laboratory Log #: CA05012-01

Certified By: Bill Scott Bill Scott

COMMENTS:



INORGANIC CHEMICAL ANALYSIS

WATER SYSTEM ID #: 03-92-373 County: Wake
 Name of Water System: Bayleaf
 Sample Type: Entry Point Special/Non-compliance
 Location Where Collected: Well: 3(IOC) - COACHMANS TRAIL(123) - ACROSS FROM 11617 TROTtenham
 Facility ID No: P08
 Location Code: 008
 Collected By: Brandon Rhiner
 Mail Results to:
 Aqua NC - Cary (AQ002)
 Attn: Mark English
 202 MacKenan Court
 Cary, NC 27511
 Phone #: (919) 653-5779
 Fax #: 0-

Collection Date	Collection Time
01/18/17	10:55 am

LABORATORY ID #: 37724

SAMPLE UNSATISFACTORY

RESAMPLE REQUIRED

CONTAM CODE	CONTAMINANT	METHOD CODE	REQUIRED REPORTING LIMIT (R.R.L.)	NOT DETECTED (i.e < R.R.L.) (X)	QUANTIFIED RESULTS*	ALLOWABLE LIMIT
1005	Arsenic	200.8	0.005 mg/L	X	mg/L	0.01 mg/L
1010	Barium	200.8	0.4 mg/L	X	mg/L	2 mg/L
1015	Cadmium	200.8	0.001 mg/L	X	mg/L	0.005 mg/L
1020	Chromium	200.8	0.02 mg/L	X	mg/L	0.1 mg/L
1024	Cyanide (total)	335.4	0.05 mg/L	X	mg/L	0.2 mg/L
1025	Fluoride	300.0	0.1 mg/L	X	mg/L	4 mg/L
1028	Iron	200.7	0.06 mg/L		0.123 mg/L	0.3 mg/L
1032	Manganese	200.8	0.01 mg/L		0.0252 mg/L	0.05 mg/L
1035	Mercury	245.1	0.0004 mg/L	X	mg/L	0.002 mg/L
1036	Nickel	200.8	0.1 mg/L	X	mg/L	N/A
1045	Selenium	200.8	0.01 mg/L	X	mg/L	0.05 mg/L
1052	Sodium	200.7	1 mg/L		23.5 mg/L	N/A
1055	Sulfate as SO4	300.0	5 mg/L	X	mg/L	250 mg/L
1074	Antimony	200.8	0.003 mg/L	X	mg/L	0.006 mg/L
1075	Beryllium	200.8	0.002 mg/L	X	mg/L	0.004 mg/L
1085	Thallium	200.8	0.001 mg/L	X	mg/L	0.002 mg/L
1925	pH	4500H-B	N/A	N/A	6.4 units	6.5-8.5 units

*Note: Except for Iron and Manganese, if result exceeds allowable limit, the laboratory must fax analytical results to the State within 48 hours.

	DATE:	TIME:
ANALYSES BEGUN:	01/20/2017	1:23 pm
ANALYSES COMPLETED:	01/27/2017	10:38 am

Laboratory Log #: CA00819-01

Certified By: Bill Scott Bill Scott

COMMENTS:

Environmental Conservation Laboratories, Inc.
 102-A Woodwinds Industrial Court
 Cary, NC 27511
 Ph: (919) 467-3090 Fax: (919) 467-3515



www.encolabs.com

INORGANIC CHEMICAL ANALYSIS

WATER SYSTEM ID #: 03-92-373 County: Wake
 Name of Water System: Bayleaf
 Sample Type: Entry Point Special/Non-compliance
 Location Where Collected: Well: 4(IOC) - COACHMANS TRAIL(123) - 11301 COACHMANS WAY - BAYLEAF
 Facility ID No: P09B
 Location Code: 074
 Collected By: Brandon Rhiner
 Mail Results to:
 Aqua NC - Cary (AQ002)
 Attn: Mark English
 202 MacKenan Court
 Cary, NC 27511

Collection Date	Collection Time
03/23/16	01:10 pm

Phone #: (919) 653-5779
 Fax #: 0-

LABORATORY ID #: 37724 SAMPLE UNSATISFACTORY RESAMPLE REQUIRED

CONTAM CODE	CONTAMINANT	METHOD CODE	REQUIRED REPORTING LIMIT (R.R.L.)	NOT DETECTED (i.e < R.R.L.) (X)	QUANTIFIED RESULTS*	ALLOWABLE LIMIT
1005	Arsenic	200.8	0.005 mg/L	X	mg/L	0.01 mg/L
1010	Barium	200.8	0.4 mg/L	X	mg/L	2 mg/L
1015	Cadmium	200.8	0.001 mg/L	X	mg/L	0.005 mg/L
1020	Chromium	200.8	0.02 mg/L	X	mg/L	0.1 mg/L
1024	Cyanide (total)	335.4	0.05 mg/L	X	mg/L	0.2 mg/L
1025	Fluoride	300.0	0.1 mg/L	X	mg/L	4 mg/L
1028	Iron	200.7	0.06 mg/L		1.01 mg/L	0.3 mg/L
1032	Manganese	200.8	0.01 mg/L		0.600 mg/L	0.05 mg/L
1035	Mercury	245.1	0.0004 mg/L	X	mg/L	0.002 mg/L
1036	Nickel	200.8	0.1 mg/L	X	mg/L	N/A
1045	Selenium	200.8	0.01 mg/L	X	mg/L	0.05 mg/L
1052	Sodium	200.7	1 mg/L		9.98 mg/L	N/A
1055	Sulfate as SO4	300.0	5 mg/L		6.7 mg/L	250 mg/L
1074	Antimony	200.8	0.003 mg/L		0.00431 mg/L	0.006 mg/L
1075	Beryllium	200.8	0.002 mg/L	X	mg/L	0.004 mg/L
1085	Thallium	200.8	0.001 mg/L	X	mg/L	0.002 mg/L
1925	pH	4500H-B	N/A	N/A	7.5 units	6.5-8.5 units

*Note: Except for Iron and Manganese, if result exceeds allowable limit, the laboratory must fax analytical results to the State within 48 hours.

	DATE:	TIME:
ANALYSES BEGUN:	03/25/2016	9:35 am
ANALYSES COMPLETED:	03/31/2016	9:48 am

Laboratory Log #: CZ02853-01


Certified By:

Bill Scott

Bill Scott

COMMENTS:

Wade, Sharon

: Rick Pfeiffer <pifemo@gmail.com>
Thursday, August 16, 2018 3:48 PM
To: Junis, Charles M
Cc: rick pfeiffer; Wade, Sharon; mjenkins@charlestonmanagementgroup.com; ICE Pfeiffer
Subject: [External] Re: Docket No. W-218, Sub 497 – Application of Aqua North Carolina, Inc., for a General Increase in its Rates and Charges

CAUTION: External email. Do not click links or open attachments unless verified. Send all suspicious email as an attachment to

Good afternoon Charles,

Let me respond to your email requests.

1. I have labeled each picture and also included them as attachments. Hopefully they appear as such.
2. The water tastes funny out of the kitchen faucet. We have a filter on our refrigerator and the water definitely tastes better coming out of the filter. However, the ice is horrible with a very strong taste, which I attribute to being a result of the water we are getting.
3. The brown water seems to occur if the faucet or tub has not been used for a while. Nevertheless, this should not happen. See the upstairs tub and upstairs sink brown water pics.
4. It seems like every couple of weeks we have problems with our water, i.e. grey water with particulate that settle. See the master sink pic (with lines drawn in the bottom particulate) and powder room toilet pic.

Additionally, we finally had a visit from Aqua yesterday, and they ran the outside faucet for quite a while and then took a sample. Attached is the levels they determined in that water sample. The iron and manganese, after much running of this outside faucet, I understand, are well beyond acceptable limits! Michael, the system operator, was the person who came out. He was very professional and said he was going to send an email, when he got back in his truck, about our levels of iron and manganese.

Here is a question for you - at these levels, is it harmful to ingest water with these levels of manganese/Iron? Just really wondering about how safe it is. Thanks for any education here.

I hope I have addressed what you need. If you want additional information, I will be happy to provide it. Just let me know. Thank you for your interest in helping to resolve this overdue situation.

Sincerely,

AQUA

Checked Residence For:

Water Quality

Water Quality Results:	Chlorine	<u>.68</u> mg/l
	pH	<u>7.4</u>
	Phosphate	<u>1.01</u> mg/l
	Iron	<u>2.02</u> mg/l
	Manganese	<u>.293</u> mg/l
	Hardness	_____ mg/l

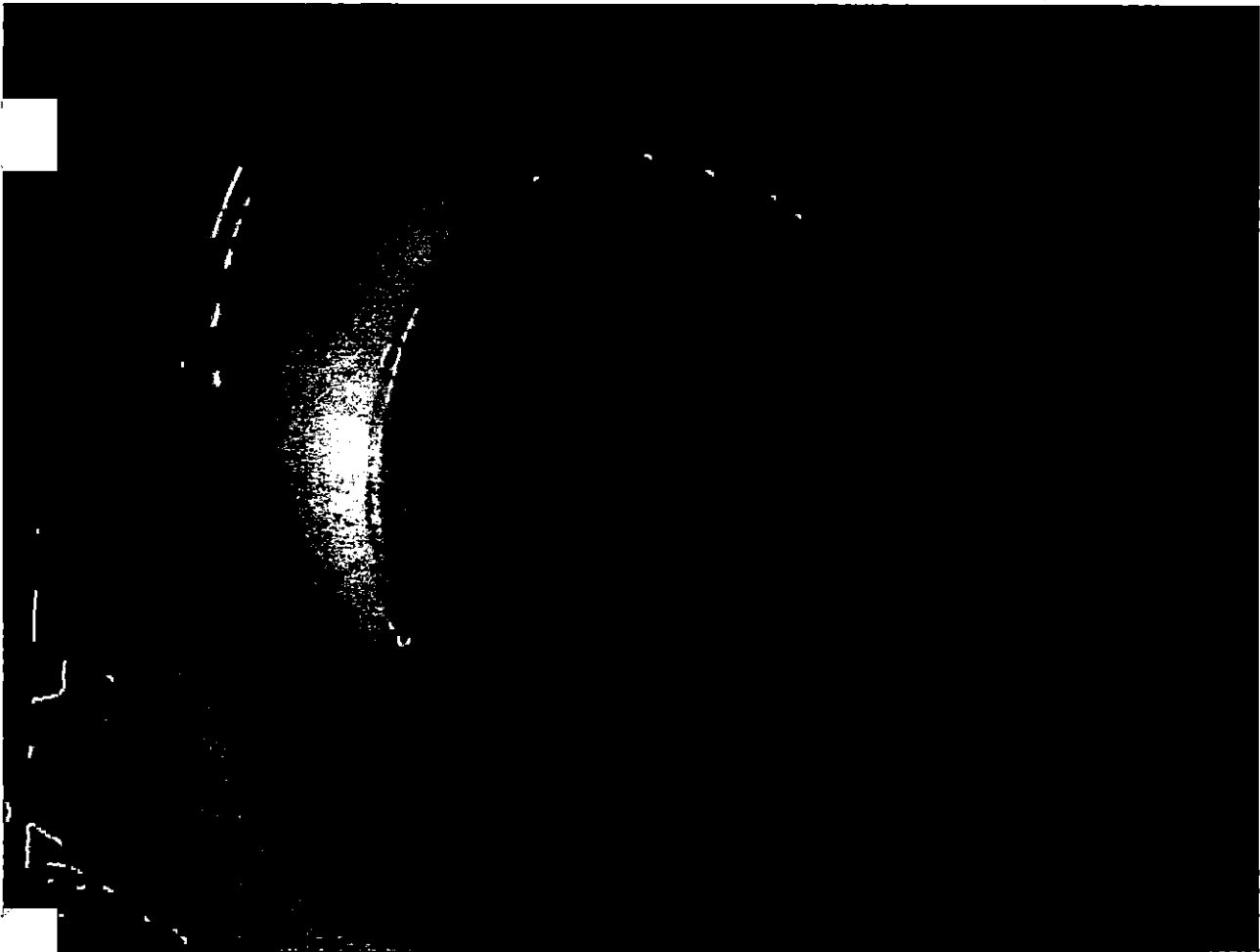
Discolored Water

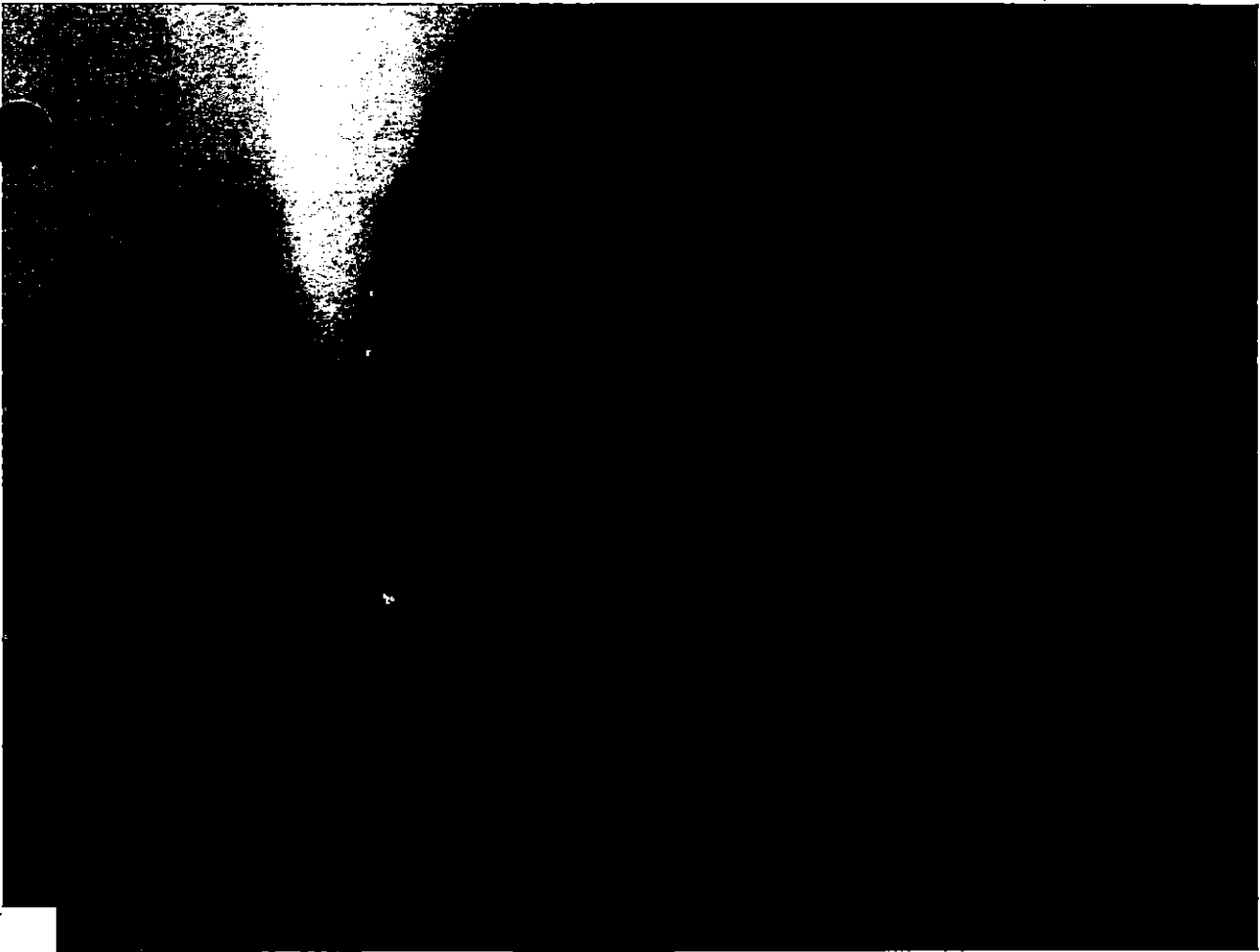
Taste/Odor

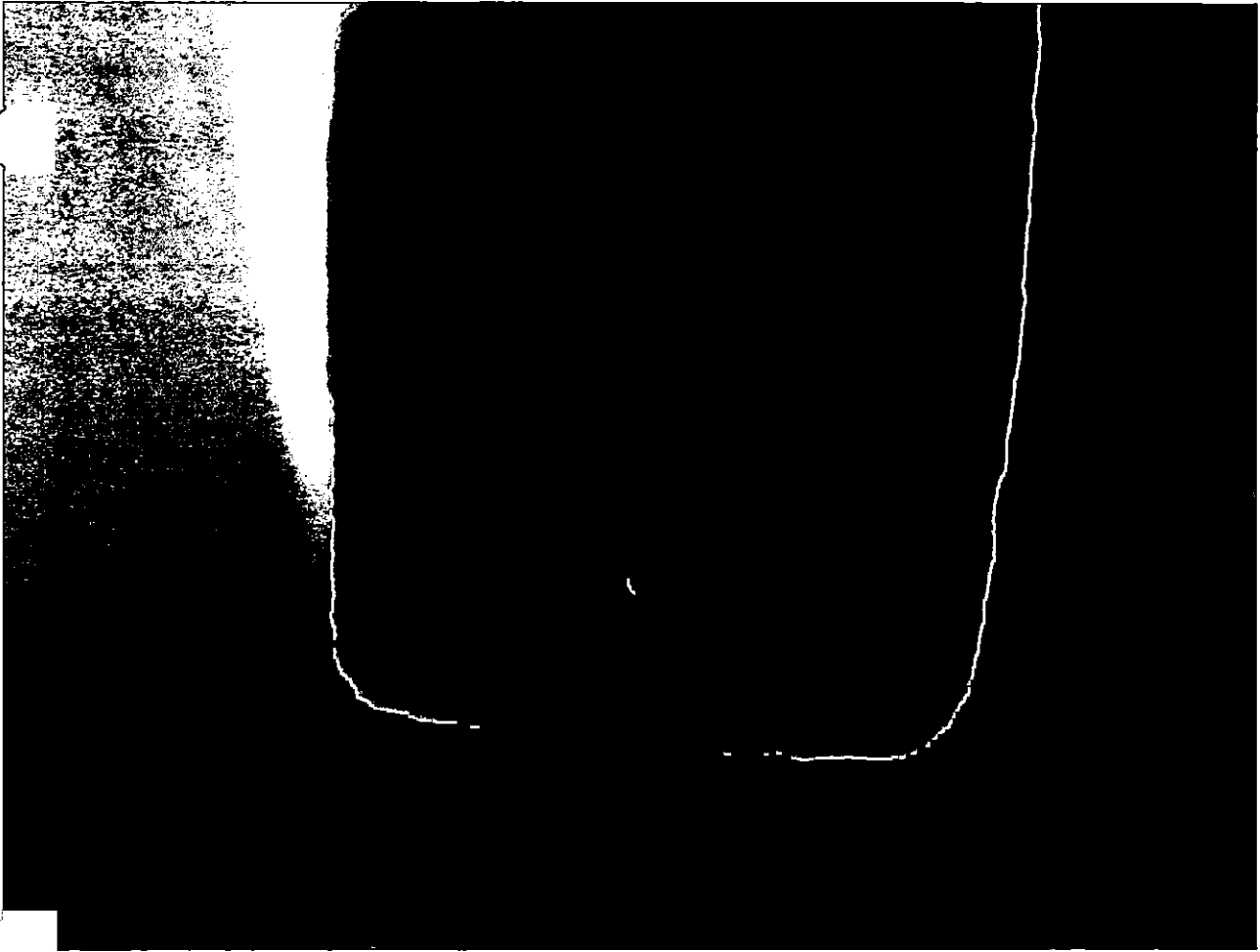
Action Taken:

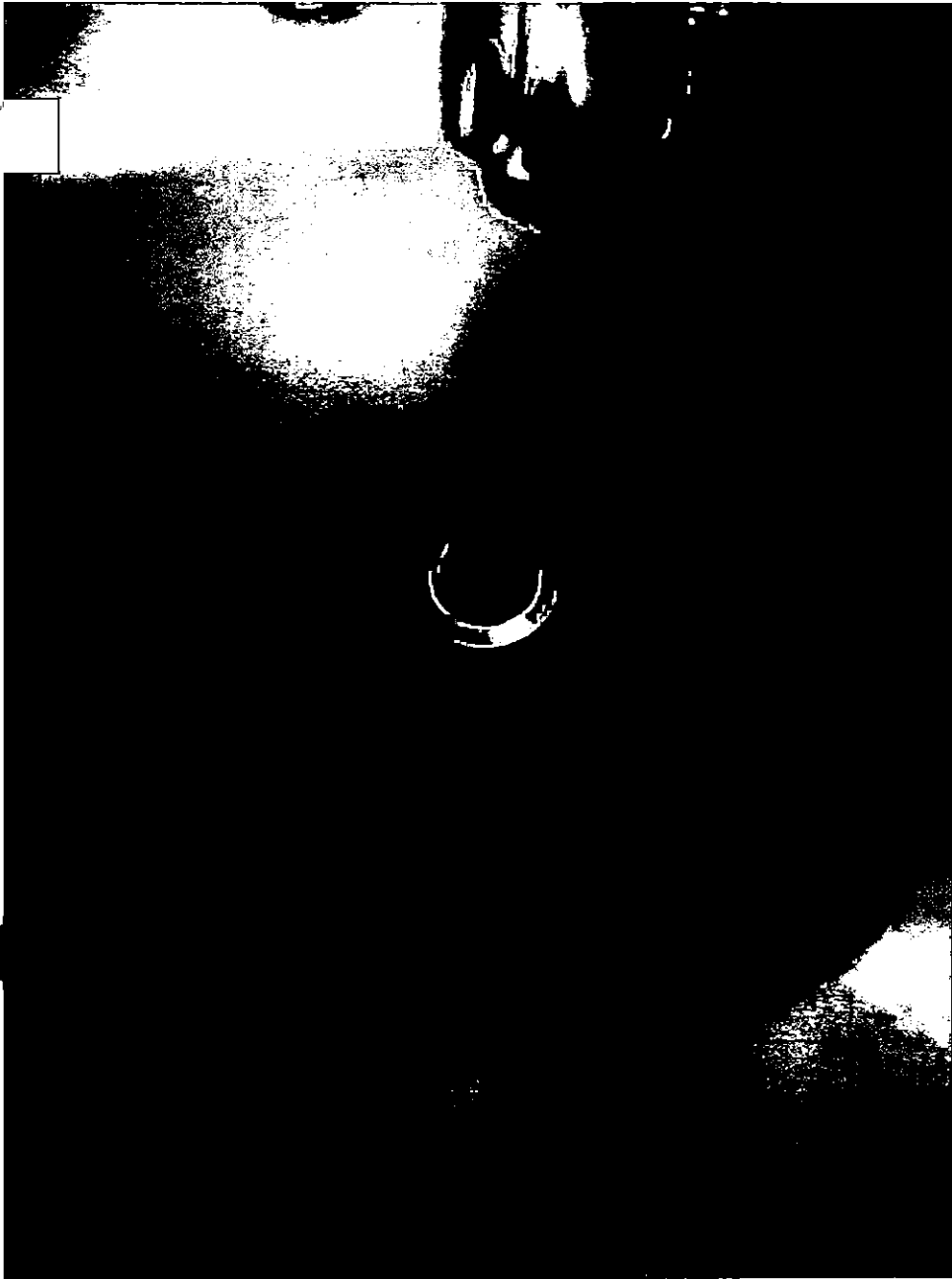
- Flushed Outside Faucets
- Recommend Customer Flush In-side Faucets
- Recommend Customer Flush Water Heater
- Delivered Iron-Out

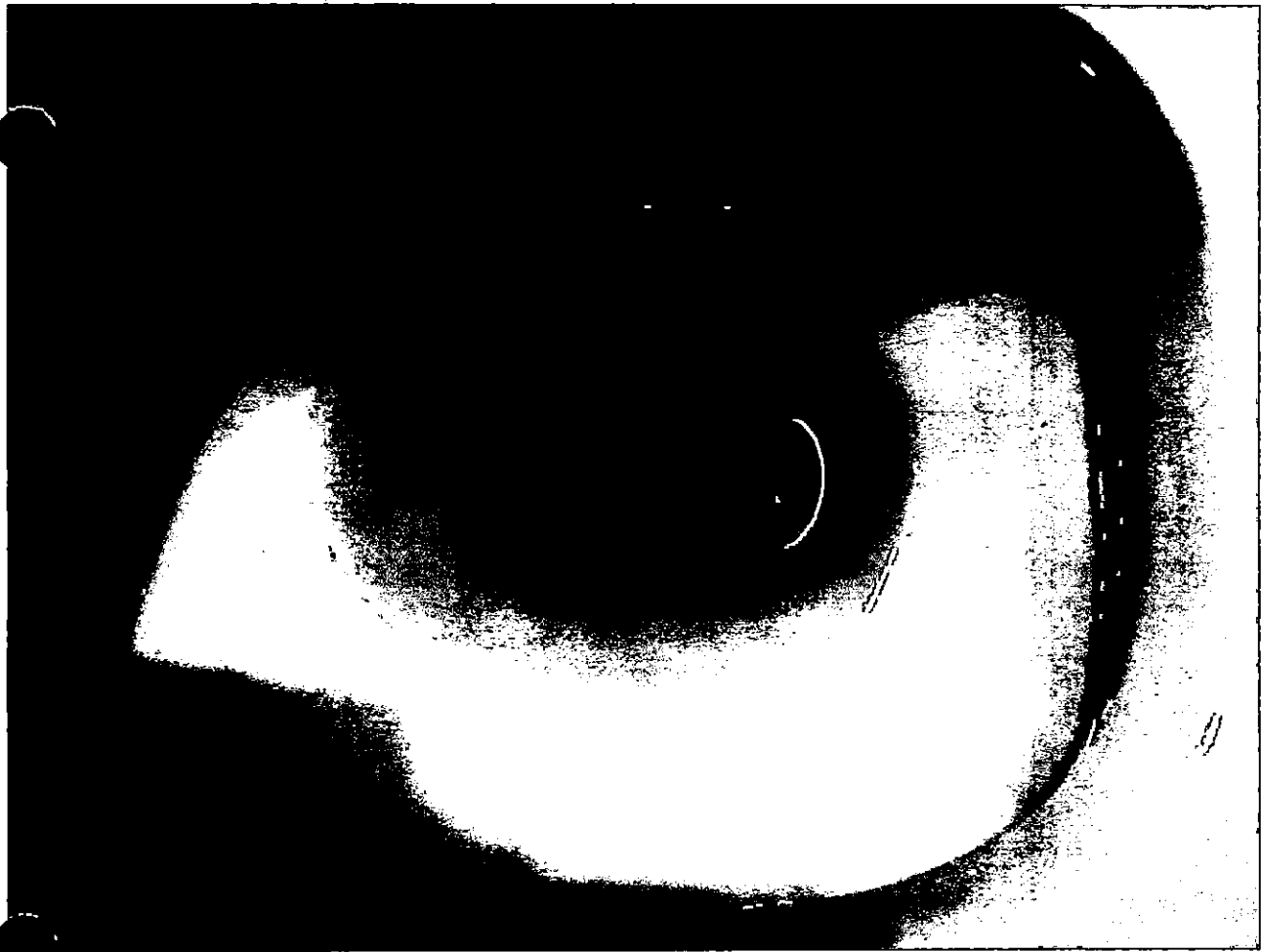
Additional Remarks: Source water quality issue



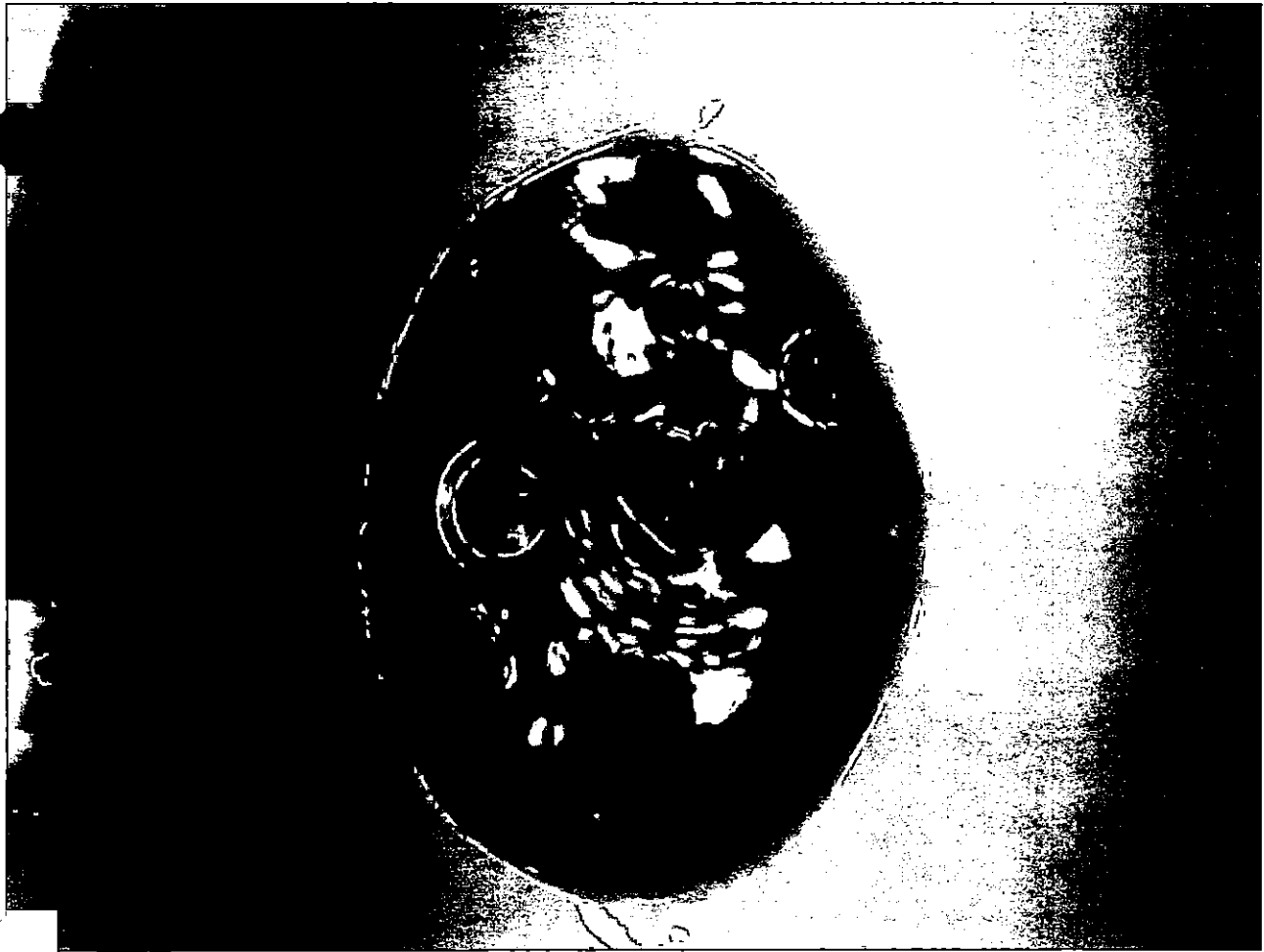




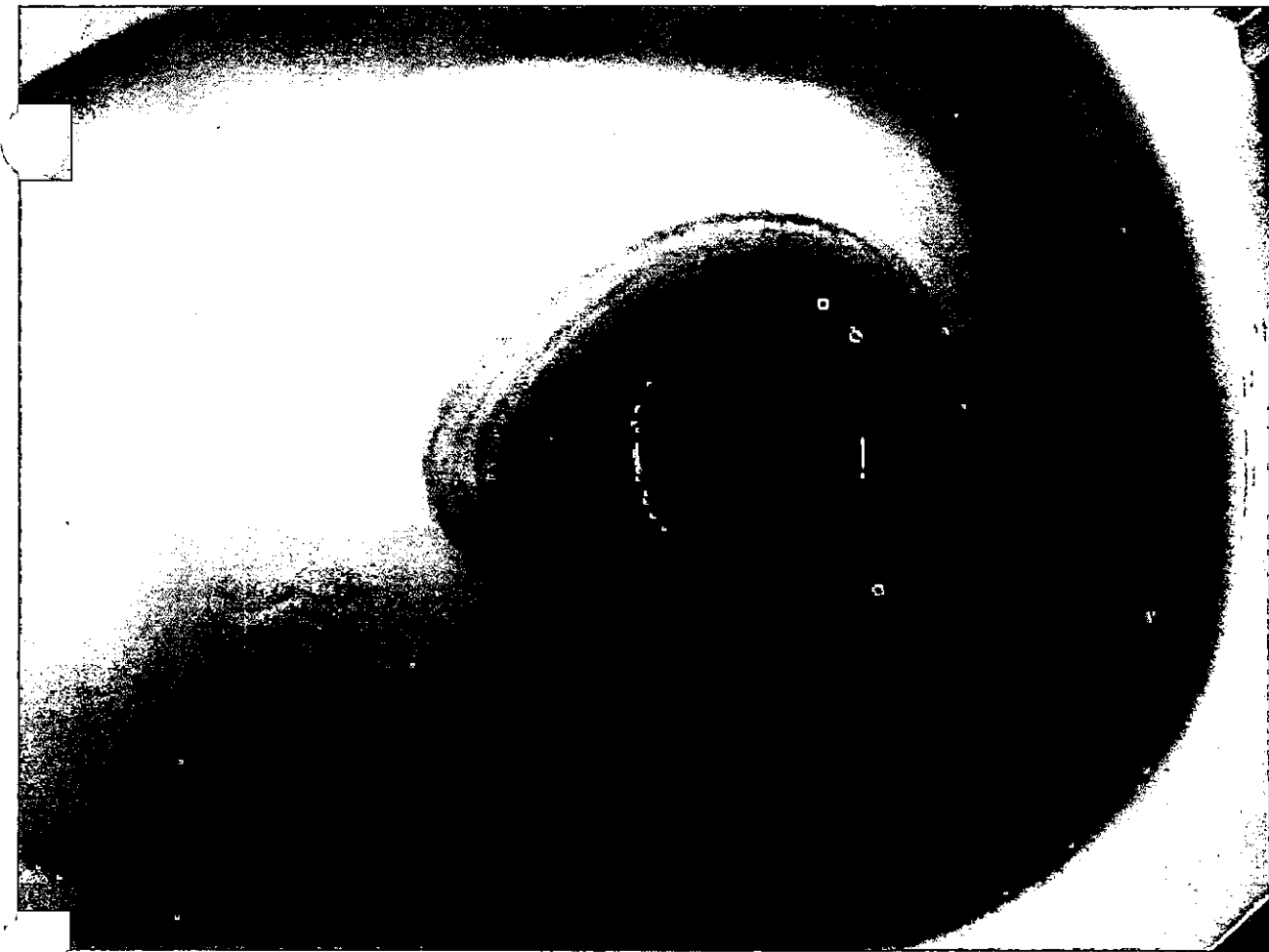












On Aug 15, 2018, at 8:47 AM, Junis, Charles M <Charles.Junis@psncuc.nc.gov> wrote:

I/A

Aqua North Carolina, Inc.
Docket No. W-218, Sub 497
Aqua North Carolina, Inc.
Public Staff Engineering Data Request No. 12

Requested by: Charles Junis Email: charles.junis@pshcnc.nc.gov
Date requested: June 12, 2018 Phone: 919-733-0891
Due date: June 26, 2018

Subject of Data Request: Utility Plant in Service, Reserve and Depreciation Expense

For responses in Excel format, please include all working formulas.

1. Please provide a complete detailed copy of the cost and benefit analysis performed specific to the plant in service, depreciation, meter retirements, return on rate base, and operations of Aqua North Carolina (Aqua NC) as to the reasonableness and prudence of the installation of AMR radio transmitting drive by water meters, versus the prior non-AMR meters and alternative meter technologies including, but not limited to, AMI.

Response:

Aqua NC did not complete a cost/benefit analysis specific to the criteria listed above. Aqua NC considers this part of our company-wide (Aqua. America) operationally driven Meter Replacement Program. The service life component from the last proceeding as compared to this proceeding is very similar since the meter account includes a mix of investments such as meters, meter installations and meter pits. The overall meter retirements have generally been consistent with past practices as the average service life has changed from 25 years to 24 years. Newer technology could shorten the average service life of the meters, however, due to group depreciation; the remaining life method; and the variability of assets within the entire account, the asset value will be recovered over the remaining life of all assets.

Prepared by:
Bernie Thompson
Director, Procurement
Aqua North Carolina

John Spanos
Senior Vice President
Gannett Fleming Valuation and Rate Consultants

Lori Messinger
Aqua North Carolina
Controller

I/A

Aqua North Carolina, Inc.
Docket No. W-218, Sub 363A
Public Staff Mobile AMR Data Request No. 2

Requested By: William Grantmyre
Date Requested: March 3, 2017
Date Due: March 17, 2017

Email: william.grantmyre@psncuc.nc.gov
Phone: 919-733-0977

Question 1

Q. Based on information contained in requisition no. 181246 from Mueller Company dated April 7, 2014 (copy attached), provided by Aqua, the Public Staff has found that the cost of a standard 5/8" X 3/4" SG Hersey water meter is \$38.43 including tax. The installation cost that Aqua paid to the outside contractors at Lancer Acres and Beard Acres to install RF ready 5/8" X 3/4" model 420 meters was \$45.00 per meter (copies attached). The Public Staff believes the cost to install the standard 5/8" X 3/4" standard residential meter for an entire subdivision using an outside contractor should be considerably less than \$45.00 per meter paid for RF ready meters, per invoices from the Lancer Acres and Beard Acres replacement projects. An update to Aqua's AMR Cost Benefit Analysis using the \$38.43 meter cost and the very high \$45.00 labor cost would result in a Net Favorable Impact of a minimum increase in rates of \$.30 per customer per month. This unfavorable additional cost per customer per month of \$.30 does not include any costs relating to the retirement of Aqua's existing residential water meters.

a. Please provide an explanation and supporting documentation as to why an additional minimum cost of \$.30 per month per customer plus retirement of Aqua's existing residential meters benefits the customers.

A. Aqua NC is committed to proactively addressing its aged meter infrastructure and installing a meter change-out program in North Carolina and all of the states with which it operates. The company-wide program for all other states utilizes the use of a mobile AMI (AMR) (RF) technology. As Aqua NC is the only state in the Aqua America (Aqua) footprint not pervasively using AMR technology, an incremental cost benefit analysis was prepared supporting our conversion from manual read meters to RF in coordination with the meter change out program. The underlying assumption employed by Aqua NC in preparing the cost benefit analysis presented to the Public Staff on December 13, 2016 was intended to provide an incremental cost analysis to install RF ready meters with an ERT device beginning in 2017, versus a manual meter, as part of its recently initiated aged meter change out program.

The original presentation analysis included an estimated installation price (an exchange cost since this represents the disconnection of the old meter and reconnection of the new meter) of both standard manual read and RF meters. This cost was based on prevailing market conditions in Aqua's other states from recent projects. While we anticipated a significant reduction in our cost to replace meters in Aqua NC, the install cost was not deemed germane to our analysis as this cost is estimated to be the same regardless as to whether it is a manual or RF meter. That said, Aqua NC's updated installation price from our national vendor is currently <\$45 per meter. The cost of \$45 is consistent with the 2014 exchange cost as noted by the Public Staff in its question above. However, the install cost has no net impact on the incremental cost to our customers as

there may only be a nominal installation difference when an RF versus a manual meter is installed at the time of an aged meter change out. Based on this and since the installation cost does not change if it is a manual or AMR meter, the same amount of labor, and cost, should be used for both replacement types. Public Staff's update in its minimum cost calculation of \$.30 per month (Exhibit 1) that reflected a \$45 cost for only the standard meter installation while maintaining the original estimated RF meter installation cost of \$71.86 is incorrect. An update to the Public Staff AMR Cost Benefit Calculation (Exhibit 1 – *Public Staff AMR Cost Benefit Calculation*) showing this correction is included in the Revised Aqua AMR Cost Benefit Calculation (Exhibit 2 – *Revised AQUA AMR Cost Benefit Calculation*).

The cost of the standard meter referenced in the Public Staff's calculation in Exhibit 1 of \$38.43 for a standard 5/8" x 3/4" SG Hersey/ Mueller, was the price of this meter in 2014. The \$47.75 used in Aqua NC's presentation represented the current distributor's quoted price for this same meter. Aqua, if it purchased an equivalent manual Badger meter directly from the manufacturer in significant volume, it would potentially be able to purchase them at a tax affected price of \$42.17 (\$39.50 tax affected using a 6.75% rate = \$42.17) per unit in 2017, per the attached quote noted as Exhibit 3 – *Meter Quote*. No other states within the Aqua America footprint, however, are purchasing these manual meters at any significant volume since the company has made a commitment to mobile AMR (RF) technology to facilitate its meter change out program. For purposes of this response and to maintain a conservative calculation, Aqua has updated its AMR Cost Benefit Calculation on Exhibit 2 to include the \$42.17 per manual meter price.

The retirement of meters does not negatively affect the customer as there is no change to rate base and any unrecovered or undepreciated costs will continued to be recovered through the group depreciation mechanisms and depreciation rate true-ups.

Aqua NC is initiating a water meter change-out program in 2017 using AMR (RF) technology. As meters age, moving parts within the meter casing begin to deteriorate and wear out, forcing the need for replacement. The new AMR (RF) meters being installed will read at periodic intervals that facilitate leak detection and provides other customer service benefits unavailable by conventional and older style manual read meter devices. The AMR (RF) meters give Aqua NC the ability to detect higher than average flows or continuous flows during off-peak hours. These are usually indications of leaks in a homeowner's water system. Oftentimes, toilets and other fixtures can run excessively without a homeowner knowing it. Aqua NC will be able to proactively assist a homeowner in troubleshooting maintenance issues that can serve to minimize the duration of a leak and prevent abnormally high bills that typically occur when leaks go unaddressed for several months as may be the case under the use of a manual read meter bill today. A secondary benefit from timelier leak detection is the general improvement in customer experience and decrease in costly truck rolls required to address billing issues caused from high consumption. Billing concerns related to high consumption may have previously taken several months to identify and resolve through several operator visits to the customer's home, multiple calls to the Call Center, and at times, escalated management attention. Not only is this technology expected to improve the general customer experience, but it is expected to reduce costs (versus a manual meter) that would otherwise be included in rates.

In addition to the anticipated significant customer benefits that are expected to result from the transition from the use of manual meters to a mobile AMI (AMR) (RF) technology, Aqua NC has made the corrections discussed throughout this response to its cost benefit calculation as noted in

Exhibit 2 – *Revised AQUA AMR Cost Benefit Calculation*. Aqua NC retained the conservative beneficial impacts to cost reductions to meter reading expense and service order completion. The updated result continues to calculate an incremental favorable impact of \$0.05 per month per customer and excludes the positive customer and operational benefits that are expected to result from the integration of AMR (RF) meter technology.

Prepared by:

Bernie Thompson, Supply Chain Management/Fleet

Jim Schurr, Verve Consulting, LLC

Aqua Pennsylvania, Inc.

(610)520-6382

EXHIBIT 1 - Public Staff AMR Cost Benefit Calculation

**AQUA North Carolina
AMR Cost Benefit Analysis**

INCREMENTAL COST CALCULATION:

5/0/07 MEMBER DISTRIBUTION	STANDARD METER	AMR (RF) METER	DIFFERENCE
METER COST STANDARD	\$ 38.43	\$ 57.48	\$ 19.05
EST. ITRON NC INSTALLATION PRICE (1)	45.00	71.86	26.86
ERT (RF) DEVICE		57.00	57.00
INCREMENTAL COST CALCULATION:	\$ 83.43	\$ 186.34	\$ 102.91

(1) INSTALLATION PRICE INCLUDES PROJECT MANAGEMENT, QUALITY CONTROL AND ADMINISTRATIVE

ANNUAL DEPRECIATION:

COST	\$ 102.91
USEFUL LIFE	31.25
ANNUAL	\$ 3.29
MONTHLY	\$ 0.27

COST PER STANDARD METER

INSTALLATION PRICE ASSUMPTION

IN DEBT OR EQUITY BASIS	PERCENTAGE	AMOUNT	PERCENTAGE	AMOUNT	REVENUE REQUIREMENT
L.T. Debt	0.5	50.63	0.0529	0.9886	\$ 2.67
Equity	0.5	50.63	0.0975	0.6296	7.84
			ANNUALLY		\$ 10.52
			MONTHLY		\$ 0.88

SUMMARY:

DEPRECIATION	\$ 0.27
RETURN	0.88
REVENUE REQUIREMENT	\$ 1.15

- (1) One half convention used for first year; 1.00 half year of depreciation at \$1.00/month for 6 months
- (2) Cost rates Aqua's most general rate case under dated May 2, 2014, Docket No. W-218, Sub 2-53
- (3) Retention Factors- Public Service of North Carolina's pending general rate case, Docket No. G-55, Sub 5-5

REDUCTION IN OPERATIONAL EXPENSES AND REDUCTIONS

METER READING COST ANALYSIS - MONTHLY

PERIOD	STANDARD METER	AMR (RF) METER	DIFFERENCE
MONTHLY READS	69,388	69,388	-
AVERAGE READS / HOUR	37.50	264.39	227
REQUIRED HOURS READING (PER MONTH)	1,850	262	1,588
COST PER HOUR	\$ 28.09	\$ 28.09	\$ 28.09
MONTHLY METER READING COST	\$ 51,976	\$ 7,372	\$ 44,604

METER RD EXP REDUCTION:	44,604
METERED CUSTOMERS	69,388
O&M REDUCTION PER CUST	\$ 0.64

**SERVICE ORDERS:
REDUCTION IN FIELD SERVICES ORDERS**

TYPE OF ORDER	STANDARD METER	AMR (RF) METER	DIFFERENCE
CHECK READ	2,002	1,743	259
HIGH CON'S	811	786	25
MOVE IN	13,069	9,621	3,448
MOVE OUT	3,949	3,653	295
TOTAL	19,831	15,803	4,028
FIELD SERVICE ORDERS	1,653	1,317	335
AVERAGE HOURS / SVC ORDER	1.054	1.054	1.054
SERVICE ORDER HOURS	1,742	1,388	354
COST PER HOUR	\$ 41.71	\$ 41.71	\$ 41.71
MONTHLY SPEND (\$/Os)	72,650	57,095	14,754

FIELD OPS REDUCTION:	\$ 14,754
AQUA NC CUSTOMERS	69,388
O&M REDUCTION PER CUST	\$ 0.21

INCREMENTAL COST vs. CUSTOMER BENEFIT

DESCRIPTION	MONTHLY IMPACT	ANNUAL IMPACT	TOTAL IMPACT
REVENUE REQUIREMENT			
DEPRECIATION		0.27	
RETURN		0.88	\$ 1.15
O&M EXPENSE REDUCTION			
METER READING		\$ 0.64	
FIELD OPERATIONS (SVC ORDERS)		0.21	0.85
NET UNFAVORABLE IMPACT			\$ (0.30)

EXHIBIT 2 - Revised AQUA AMR Cost Benefit Calculation

AQUA North Carolina AMR Cost Benefit Analysis			
INCREMENTAL COST CALCULATION:			
METER COST STANDARD	STANDARD RATE	AMR (M) METER	DIFFERENCE
	\$ 42.17	\$ 57.48	\$ 15.31
EST. IRON N.C. INSTALLATION PRICE (1)	45.00	45.00	-
ERT (RF) DEVICE	-	57.00	57.00
INCREMENTAL COST CALCULATION:	\$ 87.17	\$ 159.48	\$ 72.31
<small>(1) INSTALLATION PRICE INCLUDES PROJECT MANAGEMENT, QUALITY CONTROL AND ADMINISTRATIVE</small>			
RETURN ON INVESTMENT	COST OF EQUITY	DEPRECIATION FACTOR	REVENUE REQUIREMENT
LT Debt 0.5	35.58	0.0579	\$ 1.89
Equity 0.5	35.58	0.0976	\$ 5.51
		ANNUALLY	\$ 7.39
		MONTHLY	\$ 0.62
SUMMARY:			
DEPRECIATION			\$ 0.19
RETURN			\$ 0.52
REVENUE REQ			\$ 0.81
MONTHLY O&M EXPENSE REDUCTIONS			
METER READING COST ANALYSIS - MONTHLY			
MONTHLY READS	STANDARD RATE	METER READING COST	DIFFERENCE
	69,388	69,388	-
AVERAGE READS / HOUR	37	264	227
REQUIRED HOURS READING (PER MONTH)	1,875	262	1,613
COST PER HOUR	\$ 28.09	\$ 28.09	\$ 28.09
MONTHLY METER READING COST	\$ 52,678	\$ 7,372	\$ 45,306
REDUCTION IN FIELD SERVICES ORDERS			
CHECK READ	STANDARD RATE	METER READING COST	DIFFERENCE
	2,002	1,743	259
HIGH CONS	811	786	25
MOVE IN	13,069	9,621	3,448
MOVE OUT	3,949	3,653	296
TOTAL	19,831	15,803	4,028
FIELD SERVICE ORDERS	1,653	1,317	336
AVERAGE HOURS / SVC ORDER	1.054	1.054	1.054
SERVICE ORDER HOURS	1,742	1,308	354
COST PER HOUR	\$ 41.71	\$ 41.71	\$ 41.71
MONTHLY SPEND (\$/O's)	72,650	57,895	14,754
INCREMENTAL COST vs. CUSTOMER BENEFIT			
REVENUE REQUIREMENT	MONTHLY PER CUSTOMER	TOTAL	DIFFERENCE
DEPRECIATION	0.19		
RETURN	0.62	\$ 0.81	
O&M EXPENSE REDUCTION			
METER READING	\$ 0.65		
FIELD OPERATIONS (SVC ORDERS)	0.21	0.86	
NET FAVORABLE IMPACT			\$ 0.05
ANNUAL DEPRECIATION:			
COST		\$ 72.31	
USEFUL LIFE		31.25	
ANNUAL		\$ 2.31	
MONTHLY		\$ 0.19	
O&M REDUCTION PER CUSTOMER			
READER EXP REDUCTION:		\$ 45,306	
METERED CUSTOMERS		69,388	
O&M REDUCTION PER CUST		\$ 0.65	
O&M REDUCTION PER CUSTOMER			
FIELD OPS REDUCTION:		\$ 14,754	
METERED CUSTOMERS		69,388	
O&M REDUCTION PER CUST		\$ 0.21	

(1) One half convention used for first year 1.00 half year of depreciation at \$18/month for 6 months
 (2) Cost rates Aqua's most general rate case order dated May 2, 2014, Docket No. 14-218 Sub 343
 (3) Retention Factors - Public Service of North Carolina's pending general rate case, Docket No. G-55 Sub 155

EXHIBIT 3 – Meter Quote

Message: [X] [TYPE] [ACTION] [AD] [1] [2] [3] [4] [5] [6] [7] [8] [9] [10] [11] [12]

All,
This is a quote from Badger for a 5/8" "dumb" composite meter. It is comparable to the Hershey meters in NC (price = \$44.45 each), but has a bigger chamber for a longer life.

Thanks, Matt

From: Watts, Thomas [mailto:twatts@badgermeter.com]
Sent: Tuesday, September 13, 2016 10:06 AM
To: Fasbinder, Matt
Subject: RE: [EXTERNAL] Meter Pricing

Matt,
I can provide the polymer M25 meter with a local register \$39.50. Let me know if you need anything else.
Thank you,
Tom

From: Fasbinder, Matt [mailto:MFasbinder@aquaservice.com]
Sent: Monday, September 12, 2016 12:19 PM
To: Watts, Thomas [mailto:twatts@badgermeter.com]

AQUA North Carolina
AMR Cost Benefit Analysis

REFERENCES/NOTES

Exhibit C
Meter &
Install

INCREMENTAL COST CALCULATION:

5/8" x 3/4" METERED SERVICE	STANDARD METER	AMR (RF) METER	DIFFERENCE
METER COST STANDARD	\$ 38.43	\$ 57.48	\$ 19.05
EST. ITRON N.C INSTALLATION PRICE (1)	45.00	71.86	26.86
ERT (RF) DEVICE		57.00	57.00
INCREMENTAL COST CALCULATION:	\$ 83.43	\$ 186.34	\$ 102.91

(1) INSTALLATION PRICE INCLUDES PROJECT MANAGEMENT, QUALITY CONTROL AND ADMINISTRATIVE

MUELLER PRICE FOR 5/8x3/4 SG HERSEY w/ 6.75% Sales Tax
SM INSTALL FROM LANCER/BEARD ACRES
ENDPOINT VENDOR PRICING SUPPORT AVAILABLE IF REQUIRED
3 YEAR CONTRACTED PRICE (DELIVERY INCLUDED)

ANNUAL DEPRECIATION:	COST	\$ 102.91
	USEFUL LIFE	31.25
	ANNUAL	\$ 3.29
	MONTHLY	\$ 0.27

TAB 5 - DEPRECIATION RATE

RATE OF RETURN:

RETURN ON RATE BASE	COST RATE (2)	RETENTION FACTOR (3)	REVENUE REQUIREMENT (PER CUSTOMER)
Debt	0.5	0.0529	\$ 2.68
Equity	0.5	0.0975	7.84
		ANNUALLY	\$ 10.52
		MONTHLY	\$ 0.88

* CURRENT DEBT COST IS LESS THAN USED IN CALCULATION
* FUTURE ROE MAY VARY FROM CALCULATION ASSUMPTIONS

SUMMARY:	DEPRECIATION	\$ 0.27
	RETURN	0.88
	REVENUE REQUIREMENT	1.15

- (1) One half convention used for first year: 1.08 half year of depreciation at \$18/month for 6 months)
(2) Cost rates Aqua's most general rate case order dated May 2, 2014, Docket No. W-218, Sub 363
(3) Retention Factors- Public Service of North Carolina's pending general rate case, Docket No. G-5, Sub 565

FINANCIAL COST / BENEFIT (PER CUSTOMER)

INCREMENTAL COST vs. CUSTOMER BENEFIT		
LINE ITEM	MONTHLY PER CUSTOMER	TOTAL
REVENUE REQUIREMENT		
DEPRECIATION	0.27	
RETURN	0.88	\$ 1.15
O&M EXPENSE REDUCTION		
METER READING	\$0.64	
FIELD OPERATIONS (SVC ORDERS)	0.21	0.86
NET FAVORABLE IMPACT		\$ (0.30)

I/A

Aqua North Carolina, Inc.
Docket No. W-218, Sub 497
Aqua North Carolina, Inc.
Public Staff Engineering Data Request No. 22

Requested by: Charles Junis Email: charles.junis@psncuc.nc.gov
Date requested: July 6, 2018 Phone: 919-733-0891
Due date: July 20, 2018

Subject of Data Request: UPIS Meters Follow-up

For responses in Excel format, please include all working formulas.

Question 1

- Q. Please provide a complete detailed copy of any and all cost and benefit analyses performed by Aqua North Carolina (Aqua NC) as to the reasonableness and prudence of the installation of AMR radio transmitting drive by water meters, versus prior non-AMR meters and alternative meter technologies including, but not limited to, AMI.
- A. Please see the attached files:
1. EDR22 Q1 – AMR Meter Replacement Benefit Analysis
 2. EDR22 Q1 – AQUA NC BUSINESS CASE

Prepared by: L. Gresehover

AMR METER REPLACEMENT BENEFIT ANALYSIS

What is AMR technology?

Automatic Meter Reading (AMR) technology is a transmitter attached to a meter that sends a radio signal from each meter to a mobile collector that records the meter reading. The meter readings are collected without having to visit each customer's property and manually open a meter box. It eliminates the need for a meter reader to go on a customer's property from door to door. Instead, a meter reader will drive to a nearby location and receive the radio signals from a vehicle. Meter readings are then seamlessly transferred to the Customer Information System (CIS) for billing and other uses.

AMR History and Background

Aqua North Carolina, Inc. (Aqua) is replacing conventional meters that are reaching the end of the useful life in a timely and prudent fashion along with adding Automatic Meter Reading (AMR) technology. Aqua America began this program over a decade ago and has had positive results with AMR technology. Every operating subsidiary in the Aqua America footprint utilizes AMR technology, as do most of the major water companies throughout the country.

Aqua submits that, similar to the electric industry, AMR meters are an industry norm and considered a best practice in the water industry. Municipal water systems in North Carolina are utilizing AMR technology. AMR meters are in place in every jurisdiction within Aqua's footprint and all have been approved as a prudent rate base investment by respective state commissions including Pennsylvania, Texas, Indiana, Illinois, Ohio, New Jersey and Virginia.

Furthermore, Aqua is not aware of any North Carolina Utilities Commission (Commission) precedent that would indicate a reasonable and timely transition to AMR technology for a utility would be considered imprudent. In fact, the Commission has held in the past that reading meter remotely yields customer benefits including: (i) more accurate meter reading and billing, and (ii) less intrusion, as meter readers do not have to enter a customer's property.¹

Many factors and changes have led to the adoption of AMR technology in the utility industry, including on the electric and gas side.

¹ In the Matter of Dominion North Carolina Power -- Investigation of Existing Rates and Charges DOCKET NO. E-22, SUB 412 During 2003, the Company made a significant investment in new metering technology in North Carolina. The Company converted nearly half of its customer meters in North Carolina to an automated meter reading (AMR) system. Over 53,000 of Dominion's North Carolina customers are now having their meters [*27] read remotely, which yields customer benefits including: (i) *more accurate meter reading and billing, and (ii) less intrusion, as meter readers do not have to enter a customer's property. Other improvements have focused on outage management and response.*

Most notably, over the last several decades, advances in technology have allowed for improvements to the meter reading and billing process.

Location of the Water Meter

For background purposes, Aqua has over 730 water systems, most of which were built by various developers. Many of Aqua's water meters are located at the edge of the customer's property. The location still requires that a utility employee must physically come on to a customer's property. In addition, meters are not all in the same location and their individual location on a customer's property varies by system. Reading some meters for Aqua customers require access over a fence, are located under porches, in the woods, under extended trailers, or require some contact with household pets. See below for an example where a customer built over the water meter.



In the electric industry, many of the meters in decades past were located inside the home which was also an additional incentive for AMR replacement. However, the specific location of a meter on a customer's property does not nullify the benefits of moving to AMR technology. Physical visits to each individual water meter (wherever it is located) involve risk. Technologies like AMR minimize this risk.

Lastly, while all meter readers are required to wear Aqua uniforms, in today's modern era there are instances where customers do not like intrusion on to their property for various safety concerns.

Aqua AMR Program

Similar to how the electric industry began its AMR program in North Carolina², Aqua is proceeding in phases. Specifically, for Aqua, there are approximately 9,100 radio frequency meters in place. In this area, it used to take three meter readers about 50 hours to complete the monthly meter reading cycle (one week and three days worth of reading). With the AMR technology, it now takes one meter reader less than 22 hours to read it all (three days to complete).

Thus, as mentioned above there are cost savings – in Aqua's Fayetteville region, the Company was able to attrite one field position and one administrative position since the last rate case.

² *In the Matter of Request of Dominion North Carolina Power for Approval of Temporary Waiver of Rule R8-13(9)c DOCKET NO. E-22, SUB 338*

For calendar year 2003, Dominion is replacing approximately 525,000 residential and small business meters with Automatic Meter Reading (AMR) meters throughout its service territory in Virginia and North Carolina. Out of approximately 115,213 meters in its North Carolina service territory, the Company plans to replace 53,109 meters with AMR meters in Roanoke Rapids, Ahoskie, and Elizabeth City.

Project Description

Aqua received \$2,093,076 State Revolving Fund (SRF) money with zero percent interest to replace 9,173 aging water meters.

Aqua replaced water meters for 9,173 water customers in the Fayetteville area with the primary raw water source being ground water. This project included changing water meters and adding the AMR technology for existing customers.

Aqua has identified AMR technology as the best available technology to manage customer usage and billing. As stated earlier, AMR technology sends a radio signal from each meter to a mobile collector that records the meter reading. The meter readings are collected without having to stop at each property and manually open a meter box. Meter readings are then seamlessly transferred to the Customer Information System (CIS) for billing and other uses. Converting to AMR technology will significantly reduce the man-hours required to read water meters and reduce human errors associated with meter reading. The benefits from the reduced labor costs have been captured on the attached cost benefit analysis but Aqua expects the labor costs to reduce further as the routes are optimized and the entire Fayetteville area is converted to AMR technology. In these cases, staff can be used to perform other tasks that are geared toward proactive and preventative operations and maintenance measures

producing a more efficient water system and even better customer service. The benefits from reducing human errors cannot be directly captured in an economic analysis but the benefits are clear. Reducing human errors presents a more reliable water bill to our customers, reduces billing issues and reduces complaints from our customers. Reducing the human error will increase the over customer service satisfaction and decrease the number of customers calls to the call center. Additionally, Aqua expects to reduce costs for re-billing customers.

Other benefits of the AMR technology include:

- a. Security and safety for our workforce
- b. Reduced risk of crashes and injuries for our workforce
- c. Reduced vehicle operating costs
- d. Health and sanitation by eliminating walking in the area
- e. Reduction in re-billing costs
- f. Decreased customer calls and abandoned calls
- g. Increase in overall customer satisfaction
- h. Increased leak documentation with 30 days worth of data available
- i. Reduced vehicle emissions and higher air quality
- j. Reduced billing errors

- k. More efficient and accurate meter reading and water consumption

The attached analysis shows that the reduced labor costs offset the proposed revenue requirement needed for this project to be considered prudent and acceptable as a utility plant addition.

ERT Installation Justification

North Carolina

Equity	52.18%
Debt	47.82%
ROE	9.50%

Vendor	ERT Installation	Operator Labor Annually for Manual Read
Number of Customers	9173	
\$/ERT	\$ 78.19	
Labor Hours	22	192
Hourly Labor Rate	\$ 27.55	\$ 27.55
Labor Cost	\$ 7,273.20	\$ 63,475
Vehicle Availability		\$ 4,720
ERT Installation Cost	\$717,237	
Total Capital Cost	\$717,237	
Cap Depreciation Cost	\$23,137	
Revenue Requirement	\$35,554	
Interest Cost	\$0	
Total Cost	\$65,964	\$68,195

Notes:

Capital Cost includes ERT Installation

Capital Finance Cost depreciation

Interest Cost of Capital

Vehicles

2 vehicles saved, 8 days for 12 months

31 yr 3.23%

0.00%

\$590 /month

\$	67.25	ERT
\$	7.00	ERT Install
\$	1.44	Stake
\$	2.50	Stake Install
\$	78.19	
\$	27.55	Labor Rate

BUSINESS CASE

AQUA North Carolina
AMR Cost Benefit Analysis

INCREMENTAL COST CALCULATION:

5/8" x 3/4" METERED SERVICE	STANDARD METER	AMR (RF) METER	DIFFERENCE
METER COST STANDARD	\$ 47.75	\$ 57.48	\$ 9.73
EST. ITRON N.C INSTALLATION PRICE (1)	71.86	71.86	\$ -
ERT (RF) DEVICE	-	57.00	57.00
INCREMENTAL COST CALCULATION:	\$ 119.61	\$ 186.34	\$ 66.73

(1) INSTALLATION PRICE INCLUDES PROJECT MANAGEMENT, QUALITY CONTROL AND ADMINISTRATIVE

ANNUAL DEPRECIATION:	COST	\$ 66.73
	USEFUL LIFE	31.25
	ANNUAL	\$ 2.14
	MONTHLY	\$ 0.18

RATE OF RETURN:

RETURN ON RATE BASE		COST RATE (2)	RETENTION FACTOR (3)	REVENUE REQUIREMENT (PER CUSTOMER)
LT Debt	0.5	32.83	0.9986	\$ 1.74
Equity	0.5	32.83	0.6296	5.08
			ANNUALLY	\$ 6.82
			MONTHLY	\$ 0.57

SUMMARY:	DEPRECIATION	\$ 0.18
	RETURN	0.57
	REVENUE REQUIREMENT	0.75

- (1) One half convention used for first year: 1.08 half year of depreciation at \$.18/month for 6 months)
- (2) Cost rates Aqua's most general rate case order dated May 2, 2014, Docket No. W-218, Sub 363
- (3) Retention Factors- Public Service of North Carolina's pending general rate case, Docket No. G-5, Sub 565

BUSINESS CASE

MONTHLY O&M EXPENSE REDUCTIONS

METER READING:

METER READING COST ANALYSIS - MONTHLY			
LINE ITEM	MANUAL (CURRENT STATE)	MOBILE AMR (RF) (FUTURE STATE)	DIFFERENCE
MONTHLY READS	69,388	69,388	-
AVERAGE READS / HOUR	37.50	264.39	227
REQUIRED HOURS READING (PER MONTH)	1,850	262	1,588
COST PER HOUR	\$ 28.09	\$ 28.09	\$ 28.09
MONTHLY METER READING COST	\$ 51,976	\$ 7,372	\$ 44,604

* Estimated manual meter read rate of 300 per 8 HR day supported by various industry publications.

METER READER EXPENSE REDUCTION:	\$ 44,604
AQUA NC MANUAL METERED CUSTOMERS	69,388
O&M REDUCTION PER CUSTOMER	\$ 0.64

SERVICE ORDERS:

FIELD SERVICES ORDER ANALYSIS			
SERVICE ORDER TYPE	N.C. CURRENT STATE	N.C. FUTURE STATE	DIFFERENCE
CHECK READ	2,002	1,743	259
HIGH CONS	811	786	25
MOVE IN	13,069	9,621	3,448
MOVE OUT	3,949	3,653	296
TOTAL	19,831	15,803	4,028
MONTHLY FIELD SERVICE ORDERS	1,653	1,317	336
AVERAGE HOURS / SVC ORDER	1.054	1.054	1.054
SERVICE ORDER HOURS	1,741	1,388	354
COST PER HOUR	\$ 41.71	\$ 41.71	\$ 41.71
MONTHLY SPEND (\$/Os)	72,628	57,878	14,750

SERVICE ORDER DIFFERENCE (REDUCTION)	\$ 14,750
AQUA NC MANUAL METERED CUSTOMERS	69,388
O&M REDUCTION PER CUSTOMER:	\$ 0.21

BUSINESS CASE

FINANCIAL COST / BENEFIT (PER CUSTOMER)

<i>INCREMENTAL COST vs. CUSTOMER BENEFIT</i>		
LINE ITEM	MONTHLY PER CUSTOMER	TOTAL
REVENUE REQUIREMENT		
DEPRECIATION	0.18	
RETURN	0.57	\$ 0.75
Q&M EXPENSE REDUCTION		
METER READING	\$ 0.64	
FIELD OPERATIONS (SVC ORDERS)	0.21	0.86
NET FAVORABLE IMPACT		\$ 0.11

BUSINESS CASE

AQUA - NORTH CAROLINA

AQUA

METER READING EFFICIENCY

DIVISION	CURRENT STATE ⁽¹⁾			FUTURE STATE ⁽²⁾			CHANGE IN READ HRS
	# OF ROUTES	METERS	READ HOURS	# OF ROUTES	METERS	READ HOURS	
MANUAL READS	MANUAL READ - 47.2 RDS / HR ⁽¹⁾			NO MANUAL READS			
CARY	68	33,456	708.8	-	-	-	(708.8)
DENVER	52	16,578	351.2	-	-	-	(351.2)
FAYETTEVILLE	16	5,696	120.7	-	-	-	(120.7)
HIGH POINT	12	5,529	117.1	-	-	-	(117.1)
SURRY	8	4,695	99.5	-	-	-	(99.5)
WILMINGTON	14	2,212	46.9	-	-	-	(46.9)
TOTAL MANUAL	170	68,166	1,444.2	-	-	-	(1,444.2)
RF READS	RADIO FREQUENCY - 329 RDS / HR ⁽¹⁾			RADIO FREQUENCY - 272 RDS / HR ⁽²⁾			
CARY	1	528	1.6	16	34,699	127.6	126.0
DENVER	1	1,122	3.4	8	18,074	66.4	63.0
FAYETTEVILLE	3	9,006	27.4	8	15,010	55.2	27.8
HIGH POINT	-	-	-	3	5,646	20.8	20.8
SURRY	-	41	0.1	3	4,836	17.8	17.7
WILMINGTON	-	24	0.1	2	2,284	8.4	8.3
TOTAL RF	5	10,721	32.6	40	80,549	296.1	263.5
TOTAL (RF & MR)	175	78,887	1,476.8	40	80,549	296.1	(1,180.6)

(1) ANALYSIS USES OBSERVED 2016 READS PER HOUR FOR BOTH MANUAL AND EXISTING RF FOR CURRENT STATE CALCULATION

(2) FORECAST READS PER HOUR RATE DERIVED FROM EXISTING "LIKE SYSTEMS" IN TEXAS, VIRGINIA, GREATER PA AND EXISTING NC RF

✓ *Route Consolidation & Optimization*

AQUA

BUSINESS CASE

READ SUMMARY FROM PIVOT BELOW AND LINKED DETAIL						
COMMENT	STATE	STATE	RF READS			
			READS	TIME	RATE	
	10	SE PA	3,964,025	5,052	784.63	
"LIKE" N.CAROLINA	15	GREATER PA	727,166	2,571	282.80	
	23	OHIO	564,415	1,699	332.12	
	24	ILLINOIS	222,377	914	243.19	
	25	NEW JERSEY	518,618	1,738	298.36	
"LIKE" N.CAROLINA	31	TEXAS	420,527	1,700	247.36	
TOO SMALL	32	INDIANA	3,795	17	228.00	
"LIKE" N.CAROLINA	34	VIRGINIA	214,717	939	228.62	
"LIKE" N.CAROLINA	35	NORTH CAROLINA	77,024	234	329.49	
			6,712,664	14,865	451.57	
RF READS						
COMMENT	STATE	STATE	READS	TIME	RATE	
"LIKE" N.CAROLINA	15	GREATER PA	727,166	2,571	282.8	
"LIKE" N.CAROLINA	35	NORTH CAROLINA	77,024	234	329.5	
"LIKE" N.CAROLINA	31	TEXAS	420,527	1,700	247.4	
"LIKE" N.CAROLINA	34	VIRGINIA	214,717	939	228.6	
			1,439,434	5,444	264.4	

- ✓ *Our systems in Greater PA, Texas and Virginia are most analogous to our North Carolina operations*

BUSINESS CASE

FORECAST REDUCTION IN SERVICE ORDERS

"LIKE" STATES SVC ORDER					
SERVICE ORDER TYPE	PA (NON-SE)	TEXAS	VIRGINIA	TOTAL	% OF READS
MOVE IN	8,312	8,036	2,898	19,246	12.2%
MOVE OUT	3,584	2,951	772	7,307	4.6%
CHECK READ	2,065	690	732	3,487	2.2%
HIGH CONS	375	857	340	1,572	1.0%
	14,336	12,534	4,742	31,612	20.0%

NORTH CAROLINA PROFORMA SVC ORDERS					
SERVICE ORDER TYPE	NCS/O TOTAL	% OF READS	NC WITH "LIKE" %	DECREASE	MONTHLY DECREASE
MOVE IN	13,069	16.57%	9,621	3,448	287
MOVE OUT	3,949	5.01%	3,653	296	25
CHECK READ	2,002	2.54%	1,743	259	22
HIGH CONS	811	1.03%	786	25	2
	19,831	25.14%	15,803	4,028	336

- ✓ *Fewer field completed service orders = Safer working conditions*
- ✓ *Less driving time = Lower emissions & favorable environmental impact*

AQUA.

I/A

**AQUA NORTH CAROLINA, INC.
DOCKET NO. W-218, SUB 363
ACCOUNTING DATA REQUEST NO. 55**

Requested By: Kathy Fernald
Date Requested: November 22, 2013
Due Date: December 5, 2013

Question No. 11

AMR Meters

- Q. a. Please provide copies of the paid invoices from all outside contractors that installed AMR meters for Aqua from April 1, 2012 through October 31, 2013.
- b. Please provide the total number of AMR meters installed from April 1, 2012 through October 31, 2013.
- A. a. Please find attached the following files:
"ADR55 Q11 invoices a.pdf"
"ADR55 Q11 invoices b.pdf"
"ADR55 Q11 invoices c.pdf"
"ADR55 Q11 invoices d.pdf"
"ADR55 Q11 invoices e.pdf"
"ADR55 Q11 invoices f.pdf"
"ADR55 Q11 invoices g.pdf"
- b. Aqua installed 9,813 AMR-RF meters from April 1, 2012 through October 31, 2013.

Prepared By:

Tammy Bernard
Senior Accountant
Aqua North Carolina, Inc.
(919) 653-6970

PLEASE
REMIT
TO:

MUELLER COMPANY
FOR: MUELLER SERVICE CO.
23418 NETWORK PLACE
CHICAGO, IL 60673-1234

Mueller Service Co.

ASSESSMENT • MAINTENANCE • INSTALLATION

ORIGINAL INVOICE

PLEASE EXAMINE THIS INVOICE WHICH IS
SUBJECT TO THE TERMS AND CONDITIONS
ON THE REVERSE SIDE. IF THERE ARE ANY
QUESTIONS PLEASE NOTIFY US.

SOLD TO: AQUA NORTH CAROLINA, INC.
202 MacKenan Ct.
Cary, NC 27511

SHIP TO: SAME

SPECIAL NOTE: A BACK ORDER HAS BEEN
ENTERED FOR ALL ITEMS NOT SHIPPED.

Credit Card Account (Default Code)

PLEASE REFER
TO THIS NUMBER ON
ANY INQUIRY.

Credit Card Default Customer Id:

CUST ACCT NO	CLASS	SHIP ORD. NO	STATE	TERRITORY
70143601				

TERMS: NET 30 DAYS INVOICE DATE: 05/22/2013 INVOICE NUMBER: MSC-4682-33

SHIPPING METHOD ORDER ENTRY DATE CUSTOMER P.O. NUMBER
12.01014

QTY	ITEM	UNIT COST	ACQTY	AC COST
0	07 5/8" x 3" Resetter	\$8.00		\$0.00
0	09 5/8" x 7" Resetter	\$8.00		\$0.00
0	04 2" Meter - Aqua	\$165.00		\$0.00
0	03 1.5" Meter - Aqua	\$125.00		\$0.00
0	02 1" Meter - Aqua	\$35.00		\$0.00
3	11 Water Meter Lid	\$8.00		\$24.00
6	08 5/8" x 4" Resetter	\$8.00		\$48.00
2	10 Water Meter Box	\$60.00		\$120.00
74	06 Mounting Rod	\$2.50		\$185.00
74	05 MIU Radio	\$7.00		\$518.00
74	01 5/8" Meter - Aqua	\$29.00		\$2,146.00

TOTAL INVOICE **\$3,041.00**

BRETTON WOOD HILLS

35-7400 - 88767

PLEASE
REMIT
TO:

MUELLER COMPANY
FOR: MUELLER SERVICE CO.
23418 NETWORK PLACE
CHICAGO, IL 60673-1234

Mueller Service Co.

ASSESSMENT • MAINTENANCE • INSTALLATION

ORIGINAL INVOICE

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SOLD TO: AQUA NORTH CAROLINA, INC.
202 Mackenan Ct.
Cary, NC 27511

SHIP TO: SAME

SPECIAL NOTE: A BACK ORDER HAS BEEN
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Credit Card Account (Default Code)

PLEASE REFER
TO THIS NUMBER ON
ANY INQUIRY.

Credit Card Default Customer Id:

CUST ACCT NO	CLASS	SHIP ORD. NO	STATE	TERRITORY
70143601				

TERMS: NET 30 DAYS	INVOICE DATE: 05/22/2013	INVOICE NUMBER: MSC-4682-34
SHIPPING METHOD	ORDER ENTRY DATE	CUSTOMER P.O. NUMBER: 12.01014

QTY	ITEM #	DESCRIPTION	UNIT PRICE	TOTAL PRICE
0	03	1.5" Meter - Aqua	\$125.00	\$0.00
0	09	5/8" x 7" Resetter	\$8.00	\$0.00
0	04	2" Meter - Aqua	\$165.00	\$0.00
1	07	5/8" x 3" Resetter	\$8.00	\$8.00
1	08	5/8" x 4" Resetter	\$8.00	\$8.00
1	02	1" Meter - Aqua	\$35.00	\$35.00
6	11	Water Meter Lid	\$8.00	\$48.00
1	10	Water Meter Box	\$60.00	\$60.00
66	05	Mounting Rod	\$2.50	\$165.00
66	05	MIU Radio	\$7.00	\$462.00
65	01	5/8" Meter - Aqua	\$29.00	\$1,885.00

TOTAL INVOICE **\$2,671.00**

MARLBORO

35-7400-88763

misspoint

8	01	5/8" Meter - Aqua	\$29.00	\$29.00
0	02	1" Meter - Aqua	\$95.00	\$95.00
0	03	1.5" Meter - Aqua	\$125.00	\$125.00
0	04	2" Meter - Aqua	\$165.00	\$165.00
8	05	MIU Radio	\$7.00	\$56.00
0	06	Mounting Rod	\$2.50	\$20.00
0	07	5/8" x 3" Resetter	\$8.00	\$0.00
1	08	5/8" x 4" Resetter	\$8.00	\$8.00
0	09	5/8" x 7" Resetter	\$8.00	\$0.00
0	10	Water Meter Box	\$60.00	\$0.00
1	11	Water Meter Lid	\$8.00	\$8.00

<p>PLEASE REPLY TO THIS NUMBER ON ANY INQUIRY.</p> <p>Page 1 of 2</p>		<p>70143601</p>	
<p>SPECIAL NOTE: A BACK ORDER HAS BEEN ENTERED FOR ALL ITEMS NOT SHIPPED.</p>			
<p>70143601</p>		<p>NET 30 DAYS</p>	
<p>INVOICE DATE 06/19/2013</p>		<p>ORDER ENTRY DATE 06/19/2013</p>	
<p>INVOICE NUMBER MSC-4706-03</p>		<p>CUSTOMER P.O. NUMBER 1201014</p>	
<p>SHIP TO:</p> <p>SAME</p>		<p>TO:</p> <p>MUELLER COMPANY 2418 NETWORK PLACE CHICAGO, IL 60673-1234</p>	
<p>PLEASE EXAMINE THIS INVOICE WHICH IS SUBJECT TO THE TERMS AND CONDITIONS ON THE REVERSE SIDE, IF THERE ARE ANY QUESTIONS PLEASE NOTIFY US.</p>			
<p>SOLD TO:</p> <p>AQUA NORTH CAROLINA, INC. 202 Mackenon Ct. Cary, NC 27511</p>		<p>PLEASE REPLY TO THIS NUMBER ON ANY INQUIRY.</p>	
<p>ORIGINAL INVOICE</p>			
<p>MUELLER SERVICE CO. ASSESSMENT • MAINTENANCE • INSTALLATION</p>		<p>MUELLER SERVICE CO. 2418 NETWORK PLACE CHICAGO, IL 60673-1234</p>	

PLEASE
REMIT
TO:

MUELLER COMPANY
FOR: MUELLER SERVICE CO.
23418 NETWORK PLACE
CHICAGO, IL 60673-1234

Mueller Service Co.

ASSESSMENT • MAINTENANCE • INSTALLATION

ORIGINAL INVOICE

PLEASE EXAMINE THIS INVOICE WHICH IS
SUBJECT TO THE TERMS AND CONDITIONS
ON THE REVERSE SIDE. IF THERE ARE ANY
QUESTIONS PLEASE NOTIFY US.

If you have any questions concerning this invoice, please call: (813) 764-8183

SOLD TO: AQUA NORTH CAROLINA, INC.
202 MacKenan Ct.
Cary, NC 27511

SHIP TO: SAME

SPECIAL NOTE: A BACK ORDER HAS BEEN
ENTERED FOR ALL ITEMS NOT SHIPPED.

PLEASE REFER
TO THIS NUMBER ON
ANY INQUIRY.

Page 2 of 2

CUST ACCT NO	CLASS	SHIP ORD. NO	STATE	TERRITORY
70143601				

TERMS: NET 30 DAYS	INVOICE DATE: 06/19/2013	INVOICE NUMBER: MSC-4706-03
SHIPPING METHOD	ORDER ENTRY DATE	CUSTOMER P.O. NUMBER: 12.01014

TOTAL INVOICE \$324.00

Reference / Point of Contact
WESTPOINT

35-7400 - 91761

PLEASE
REMIT
TO:

MUELLER COMPANY
FOR: MUELLER SERVICE CO.
23418 NETWORK PLACE
CHICAGO, IL 60673-1234



ASSESSMENT • MAINTENANCE • INSTALLATION

ORIGINAL INVOICE

PLEASE EXAMINE THIS INVOICE WHICH IS
SUBJECT TO THE TERMS AND CONDITIONS
ON THE REVERSE SIDE. IF THERE ARE ANY
QUESTIONS PLEASE NOTIFY US.

If you have any questions concerning this invoice, please call: (815) 764-8183

SOLD TO: AQUA NORTH CAROLINA, INC.
202 Mackenan Ct.

Cary, NC 27511

SHIP TO:

SAME

**SPECIAL NOTE: A BACK ORDER HAS BEEN
ENTERED FOR ALL ITEMS NOT SHIPPED.**

PLEASE REFER
TO THIS NUMBER ON
ANY INQUIRY.

Page 1 of 2

CUST ACCT NO	CLASS	SHIP DRD. NO	STATE	TERRITORY
70143601				

TERMS:	NET 30 DAYS	INVOICE DATE	06/19/2013	INVOICE NUMBER	MSC-4706-04
SHIPPING METHOD		ORDER ENTRY DATE		CUSTOMER P.O. NUMBER	
				12.01014	

QTY	ITEM NO	ITEM DESCRIPTION	UNIT PRICE	NET TOTAL
368	01	5/8" Meter - Aqua	\$29.00	\$10,672.00
0	02	1" Meter - Aqua	\$35.00	\$0.00
0	03	1.5" Meter - Aqua	\$125.00	\$0.00
0	04	2" Meter - Aqua	\$165.00	\$0.00
370	05	MIU Radio	\$7.00	\$2,590.00
370	06	Mounting Rod	\$2.50	\$925.00
18	07	5'8" x 3" Resetter	\$8.00	\$144.00
10	08	5'8" x 4" Resetter	\$8.00	\$80.00
0	09	5'8" x 7" Resetter	\$8.00	\$0.00
2	10	Water Meter Box	\$60.00	\$120.00
30	11	Water Meter Lid	\$8.00	\$240.00

Montibello

PLEASE
REMIT
TO:

MUELLER COMPANY
FOR: MUELLER SERVICE CO.
23418 NETWORK PLACE
CHICAGO, IL 60673-1234

Mueller Service Co.

ASSESSMENT • MAINTENANCE • INSTALLATION

ORIGINAL INVOICE

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QUESTIONS PLEASE NOTIFY US.

If you have any questions concerning this invoice, please call: (815) 764-8183

SOLD TO: AQUA NORTH CAROLINA, INC.
202 Mackenan Ct.
Cary, NC 27511

SHIP TO: SAME

SPECIAL NOTE: A BACK ORDER HAS BEEN
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ANY INQUIRY.

Page 2 of 2

CUST ACCT NO	CLASS	SHIP ORD. NO	STATE	TERRITORY
70143601				

TERMS: NET 30 DAYS	INVOICE DATE: 06/19/2013	INVOICE NUMBER: MSC-4706-04
SHIPPING METHOD	ORDER ENTRY DATE	CUSTOMER P.O. NUMBER: 12.01014

QTY	UNIT	DESCRIPTION	UNIT COST	NET TOTAL
TOTAL INVOICE				\$14,771.00

Reference / Point of Contact
MONTIBELLO

35-7400-91703

I/A

AQUA North Carolina AMR Cost Benefit Analysis

INCREMENTAL COST CALCULATION:

5/8" x 3/4" METERED SERVICE	STANDARD METER	AMR (RF) METER	DIFFERENCE
METER COST STANDARD	\$ 47.75	\$ 57.48	\$ 9.73
EST. ITRON N.C INSTALLATION PRICE ⁽¹⁾	57.26	71.86	\$ 14.60
ERT (RF) DEVICE	-	57.00	57.00
INCREMENTAL COST CALCULATION:	\$ 105.01	\$ 186.34	\$ 81.33

(1) INSTALLATION PRICE INCLUDES PROJECT MANAGEMENT, QUALITY CONTROL AND ADMINISTRATIVE

ANNUAL DEPRECIATION:

COST	\$ 81.33
USEFUL LIFE	31.25
ANNUAL	\$ 2.60
MONTHLY	\$ 0.22

RATE OF RETURN:

RETURN ON RATE BASE			COST RATE ⁽²⁾	RETENTION FACTOR ⁽³⁾	REVENUE REQUIREMENT (PER CUSTOMER)
LT Debt	0.5	40.01	0.0529	0.9986	\$ 2.12
Equity	0.5	40.01	0.0975	0.6296	6.20
				ANNUALLY	\$ 8.32
				MONTHLY	\$ 0.69

SUMMARY:

DEPRECIATION	\$ 0.22
RETURN	0.69
REVENUE REQUIREMENT	0.91

One half convention used for first year: 1.08 half year of depreciation at \$.18/month for 6 months)

Cost rates Aqua's most general rate case order dated May 2, 2014, Docket No. W-218, Sub 363

Retention Factors- Public Service of North Carolina's pending general rate case, Docket No. G-5, Sub 565

MONTHLY O&M EXPENSE REDUCTIONS

METER READING:

METER READING COST ANALYSIS - MONTHLY			
LINE ITEM	MANUAL* (CURRENT STATE)	MOBILE AMR (RF)	DIFFERENCE
MONTHLY READS	69,388	69,388	-
AVERAGE READS / HOUR	37.50	264.39	227
REQUIRED HOURS READING (PER MONTH)	1,850	262	1,588
COST PER HOUR	\$ 28.09	\$ 28.09	\$ 28.09
MONTHLY METER READING COST	\$ 51,976	\$7,372	\$ 44,604

* Estimated manual meter read rate of 300 per 8 HR day supported by various industry publications.

METER READER EXPENSE REDUCTION:	\$ 44,604
AQUA NC MANUAL METERED CUSTOMERS	69,388
O&M REDUCTION PER CUSTOMER	\$ 0.64

SERVICE ORDERS:

FIELD SERVICES ORDER ANALYSIS			
SERVICE ORDER TYPE	N.C. CURRENT STATE	N.C. FUTURE STATE	DIFFERENCE
CHECK READ	2,002	1,743	259
HIGH CONS	811	786	25
MOVE IN	13,069	9,621	3,448
MOVE OUT	3,949	3,653	296
TOTAL	19,831	15,803	4,028
MONTHLY FIELD SERVICE ORDERS	1,653	1,317	336
AVERAGE HOURS / SVC ORDER	1.054	1.054	1.054
SERVICE ORDER HOURS	1,741	1,388	354
COST PER HOUR	\$ 41.71	\$ 41.71	\$ 41.71
MONTHLY SPEND (\$/Os)	72,628	57,878	14,750

SERVICE ORDER DIFFERENCE (REDUCTION)	\$ 14,750
AQUA NC MANUAL METERED CUSTOMER	69,388
O&M REDUCTION PER CUSTOMER:	\$ 0.21

FINANCIAL COST / BENEFIT (PER CUSTOMER)

INCREMENTAL COST vs. CUSTOMER BENEFIT		
LINE ITEM	MONTHLY PER	TOTAL
REVENUE REQUIREMENT		
DEPRECIATION	0.22	
RETURN	0.69	\$ 0.91
O&M EXPENSE REDUCTION		
METER READING	\$ 0.64	
FIELD OPERATIONS (SVC ORDERS)	0.21	0.86
NET FAVORABLE IMPACT		\$ (0.05)

I/A

Public Staff
Junis Exhibit 8

Aqua Response to EDR 51 Q1

Calculation of Average Labor Cost per Aqua Meter Exchange

		Notes	Public Staff Adjusted
Average Labor Rate (\$ / hr)	\$ 21.21	Meter Reads, Utility Technicians, and Facility Operators can all exchange meters. This represents the average hourly labor rate for these positions. See backup sheet for more information.	\$ 15.23
Average Duration Meter Exchange (hr)	1.5	50% of meters are replace in kind, average 1 hr including drive time. 50% meters require additional plumbing work in the pit / curb stop, 2 hr including drive time.	0.54
Average Labor Costs for Meter Installation (\$ / meter)	\$ 31.81		\$ 8.22
Allocation of Overhead	80%	Average overhead allocated to labor, see EDR 29 response.	80%
Average Labor + OH per Meter Exchange	\$ 57.26		\$ 14.80

Public Staff Calculation of Average Duration Meter Exchange

Hours/workday	8	hours
Drive time (to and from site)	1	hour
Paperwork/administrative tasks (e.i. timesheets, quantities, data)	0.5	hour
Hours dedicated to meter replacements	6.5	hours
Meter replacements/dedicated hour	2.29	(1)
Meter replacements per day (2.29 repl./hour x 6.5 hours)	14.89	
Meter replacements/ workday hour (14.89 repl./ 8 hours)	1.86	
Hours/meter replacement	0.54	hour
Minutes/meter replacement	32	minutes

(1) Based on information from industry professional and my personal experience, 75% of the meter replacements are in-kind (standard-standard) averaging 15 minutes while 25% require additional work averaging 1 hour.

I/A

AQUA North Carolina AMR Cost Benefit Analysis

INCREMENTAL COST CALCULATION:

5/8" x 3/4" METERED SERVICE	STANDARD METER	AMR (RF) METER	DIFFERENCE
METER COST STANDARD	\$ 38.43	\$ 57.56	\$ 19.13
EST. ITRON N.C INSTALLATION PRICE ⁽¹⁾	14.80	69.84	\$ 55.04
ERT (RF) DEVICE	-	61.14	61.14
INCREMENTAL COST CALCULATION:	\$ 53.23	\$ 188.54	\$ 135.31

(1) INSTALLATION PRICE INCLUDES PROJECT MANAGEMENT, QUALITY CONTROL AND ADMINISTRATIVE

ANNUAL DEPRECIATION:

COST	\$ 135.31
USEFUL LIFE	31.25
ANNUAL	\$ 4.33
MONTHLY	\$ 0.36

RATE OF RETURN:

RETURN ON RATE BASE			COST RATE ⁽²⁾	RETENTION FACTOR ⁽³⁾	REVENUE REQUIREMENT (PER CUSTOMER)
LT Debt	0.5	66.57	0.0529	0.9986	\$ 3.53
Equity	0.5	66.57	0.0975	0.6296	10.31
				ANNUALLY	\$ 13.84
				MONTHLY	\$ 1.15

SUMMARY:

DEPRECIATION	\$ 0.36
RETURN	1.15
REVENUE REQUIREMENT	1.51

One half convention used for first year; 1.08 half year of depreciation at \$.18/month for 6 months)

Cost rates Aqua's most general rate case order dated May 2, 2014, Docket No. W-218, Sub 363

Retention Factors- Public Service of North Carolina's pending general rate case, Docket No. G-5, Sub 565

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COST PER HOUR	\$ 28.09	\$ 28.09	\$ 28.09
MONTHLY METER READING COST	\$ 51,976	\$ 7,372	\$ 44,604

* Estimated manual meter read rate of 300 per 8 HR day supported by various industry publications.

METER READER EXPENSE REDUCTION:	\$ 44,604
AQUA NC MANUAL METERED CUSTOMERS	69,388
O&M REDUCTION PER CUSTOMER	\$ 0.64

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FIELD SERVICES ORDER ANALYSIS			
SERVICE ORDER TYPE	N.C. CURRENT STATE	N.C. FUTURE STATE	DIFFERENCE
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HIGH CONS	811	786	25
MOVE IN	13,069	9,621	3,448
MOVE OUT	3,949	3,653	296
TOTAL	19,831	15,803	4,028
MONTHLY FIELD SERVICE ORDERS	1,653	1,317	336
AVERAGE HOURS / SVC ORDER	1.054	1.054	1.054
SERVICE ORDER HOURS	1,741	1,388	354
COST PER HOUR	\$ 41.71	\$ 41.71	\$ 41.71
MONTHLY SPEND (S/Os)	72,628	57,878	14,750

SERVICE ORDER DIFFERENCE (REDUCTION)	\$ 14,750
AQUA NC MANUAL METERED CUSTOMER	69,388
O&M REDUCTION PER CUSTOMER:	\$ 0.21

FINANCIAL COST / BENEFIT (PER CUSTOMER)

INCREMENTAL COST vs. CUSTOMER BENEFIT		
LINE ITEM	MONTHLY PER	TOTAL
REVENUE REQUIREMENT		
DEPRECIATION	0.36	
RETURN	1.15	\$ 1.51
O&M EXPENSE REDUCTION		
METER READING	\$ 0.64	
FIELD OPERATIONS (SVC ORDERS)	0.21	0.86
NET FAVORABLE IMPACT		\$ (0.66)

I/A

ANC Water- Total

Part	Quantity (1)	Aqua Unit Cost (2)	Adjustment	Pro Forma Unit Cost	Original Rate Base	Adjustment	Depreciation Expense Δ (3.30%)
ERT	19,768	\$ 61.14	\$ (61.14)	\$ -	\$ 1,208,615.52	(1,208,616)	\$ (39,884.31)
Meter	17,441	\$ 57.56	\$ (19.13)	\$ 38.43	\$ 1,003,903.96	(333,646)	\$ (11,010.33)
Installation	17,441	\$ 69.84	\$ (55.04)	\$ 14.80	\$ 1,218,079.44	(959,953)	\$ (31,678.44)
Alloc. Costs	19,768	\$ 17.76	\$ (17.76)	\$ -	\$ 351,079.68	(351,080)	\$ (11,585.63)
		\$ 206.30	\$ (153.07)	\$ 53.23	\$ 3,781,678.60	\$ (2,853,294.17)	\$ (94,158.71)

ANC Water- 2017

Part	Quantity (3)	Aqua Unit Cost (2)	Adjustment	Pro Forma Unit Cost	Original Rate Base	Adjustment
ERT	16,162	\$ 61.14	\$ (61.14)	\$ -	\$ 988,144.68	(988,145)
Meter	14,908	\$ 57.56	\$ (19.13)	\$ 38.43	\$ 858,104.48	(285,190)
Installation	14,908	\$ 69.84	\$ (55.04)	\$ 14.80	\$ 1,041,174.72	(820,536)
Alloc. Costs	16,162	\$ 17.76	\$ (17.76)	\$ -	\$ 287,037.12	(287,037)
					\$ 3,174,461.00	\$ (2,380,908.16)

ANC Water- 2018

Part	Quantity (3)	Aqua Unit Cost (2)	Adjustment	Pro Forma Unit Cost	Original Rate Base	Adjustment
ERT	3,606	\$ 61.14	\$ (61.14)	\$ -	\$ 220,470.84	(220,471)
Meter	2,533	\$ 57.56	\$ (19.13)	\$ 38.43	\$ 145,799.48	(48,456)
Installation	2,533	\$ 69.84	\$ (55.04)	\$ 14.80	\$ 176,904.72	(139,416)
Alloc. Costs	3,606	\$ 17.76	\$ (17.76)	\$ -	\$ 64,042.56	(64,043)
					\$ 607,217.60	\$ (472,386.01)

Total \$ (2,853,294.17)

- (1) Quantity is the number of parts reported by the Company in response to EDR 46 Q3.
- (2) Aqua Unit Cost is the average cost reported by the Company in response to EDR 29 Q4.
- (3) Provided as a supplemental response to EDR 29 by Tammy Bernard.

Brookwood Water- Total

Part	Quantity (4)	Aqua Unit Cost (5)	Adjustment	Pro Forma Unit Cost	Original Rate Base	Adjustment	Depreciation Expense Δ (3.30%)
ERT	9,009	\$ 68.69	\$ (68.69)	\$ -	\$ 618,828.21	(618,828)	\$ (20,421.33)
Meter	9,009	\$ 70.46	\$ (32.03)	\$ 38.43	\$ 634,774.14	(288,558)	\$ (9,522.42)
Installation	9,009	\$ 69.84	\$ (55.04)	\$ 14.80	\$ 629,188.56	(495,855)	\$ (16,363.23)
Alloc. Costs	9,009	\$ 17.76	\$ (17.76)	\$ -	\$ 159,999.84	(160,000)	\$ (5,279.99)
		\$ 226.75	\$ (173.52)	\$ 53.23	\$ 2,042,790.75	\$ (1,563,241.68)	\$ (51,586.98)

Brookwood Water- 2012

Part	Quantity (6)	Aqua Unit Cost (5)	Adjustment	Pro Forma Unit Cost	Original Rate Base	Adjustment
ERT	1,766	\$ 68.69	\$ (68.69)	\$ -	\$ 121,306.54	(121,307)
Meter	1,766	\$ 70.46	\$ (32.03)	\$ 38.43	\$ 124,432.36	(56,565)
Installation	1,766	\$ 69.84	\$ (55.04)	\$ 14.80	\$ 123,337.44	(97,201)
Alloc. Costs	1,766	\$ 17.76	\$ (17.76)	\$ -	\$ 31,364.16	(31,364)
					\$ 400,440.50	\$ (306,436.32)

Brookwood Water- 2013

Part	Quantity (6)	Aqua Unit Cost (5)	Adjustment	Pro Forma Unit Cost	Original Rate Base	Adjustment
ERT	7,243	\$ 68.69	\$ (68.69)	\$ -	\$ 497,521.67	(497,522)
Meter	7,243	\$ 70.46	\$ (32.03)	\$ 38.43	\$ 510,341.78	(231,993)
Installation	7,243	\$ 69.84	\$ (55.04)	\$ 14.80	\$ 505,851.12	(398,655)
Alloc. Costs	7,243	\$ 17.76	\$ (17.76)	\$ -	\$ 128,635.68	(128,636)
					\$ 1,642,350.25	\$ (1,256,805.36)

Total \$ (1,563,241.68)

- (4) Quantity is the number of parts reported by the Company in response to Sub 363 ADR 55 Q4.
- (5) Aqua Unit Cost is the average cost reported by the Company in response to EDR 29 Q4. Exceptions being the ERT prices per invoices (Sub 363 ADR 55 Q8) and meters prices per invoices (Sub 363 ADR 55 Q2).
- (6) Calculated based on ratio of all Brookwood meters replaced in 2012 and 2013 (EDR 24 Q4).

Public Staff
Junis Exhibit 11

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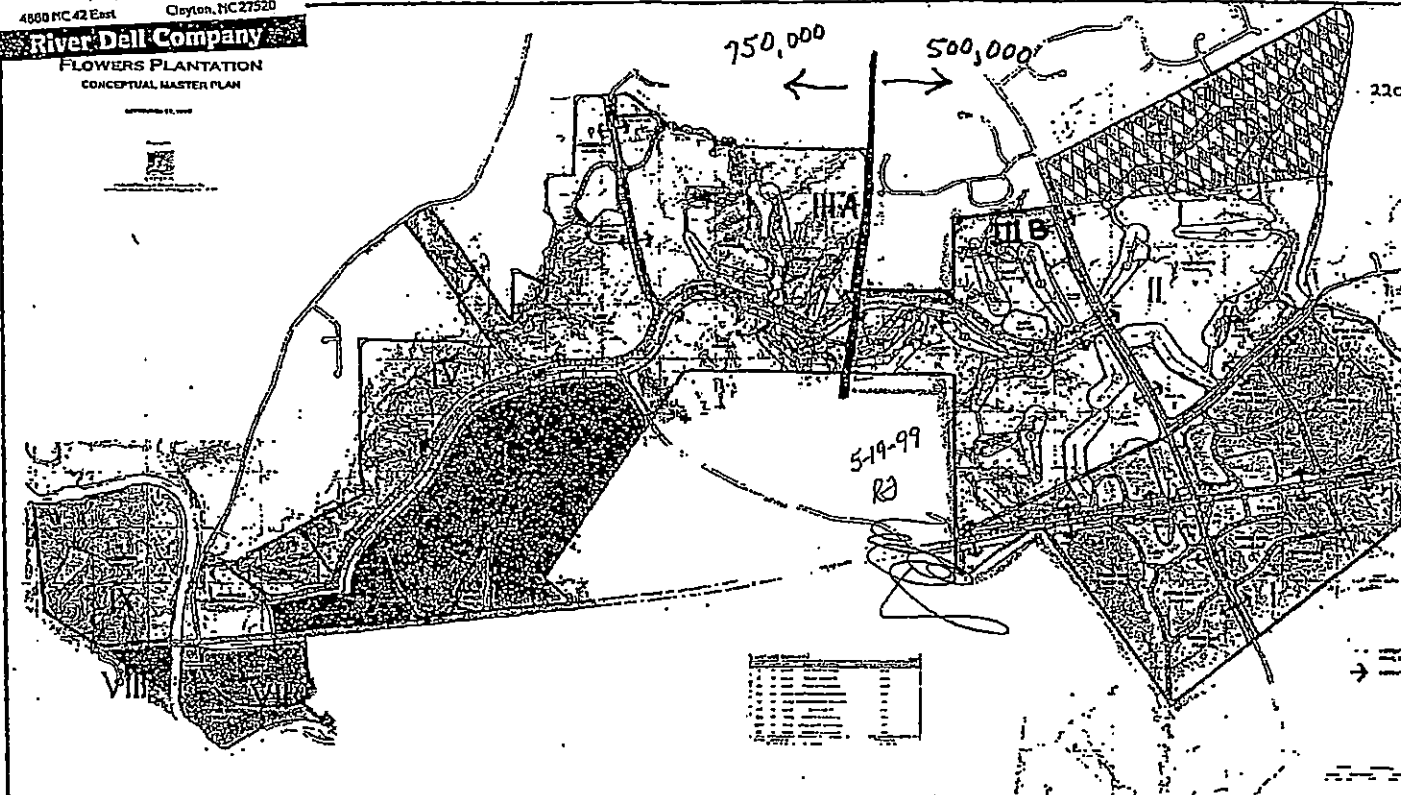
NEUSE RIVER
NEUSE COLONY WWTP

↔

BUFFALO CREEK
JOHNSTON COUNTY
PURCHASED CAPACITY

REBECCA FLOWERS FINCH
Broker
(919) 553-3084
Toll Free 1-800-343-0659
Fax (919) 553-3888
4800 NC 42 East Clayton, NC 27520

River Dell Company
FLOWERS PLANTATION
CONCEPTUAL MASTER PLAN



OFFICIAL COPY
Sep 10 2018

FI/19

PURCHASE AGREEMENT
between
RIVER DELL UTILITIES, INC
and
REBECCA FLOWERS FINCH d/b/a RIVER DELL COMPANY
and
HEATER UTILITIES, INC.
for the Purchase of the
WATER AND WASTEWATER UTILITY SYSTEMS SERVING
NEUSE COLONY II
and
FLOWERS PLANTATION

Johnston County, North Carolina

January 14, 1999

Index

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PURCHASE AGREEMENT

**STATE OF NORTH CAROLINA
COUNTY OF JOHNSTON**

This Purchase Agreement (Agreement), made this the ^(23~~3~~) 14 day of January, 1999, by and between RIVER DELL UTILITIES, INC., hereinafter "RDU", a North Carolina corporation, whose mailing address is 4880 NC Hwy. 42 East, Clayton, North Carolina 27520, RIVER DELL COMPANY, a sole proprietorship whose owner is Rebecca Flowers Finch, hereinafter "River Dell," whose mailing address is 4880 NC Hwy. 42 East, Clayton, North Carolina 27520, and HEATER UTILITIES, INC., hereinafter "Heater," a corporation, whose mailing address is P.O. Box 4889, Cary, North Carolina 27519;

WITNESSETH

THAT WHEREAS, River Dell is the owner of certain lands (approximately 1,200 acres) in Johnston County, Wilders Township, located on both the north and south sides of N.C. Hwy. 42 near the Neuse River and also located on the east and west sides of State Road 1003, and shown on Exhibit A, attached hereto, hereinafter referred to as "Flowers' Plantation;" and

WHEREAS, River Dell is the developer of Neuse Colony Subdivision and the owner of all undeveloped lands in Neuse Colony II Subdivision which is located on the south side of N.C. Hwy 42 across from Flowers' Plantation (see Exhibit A); and

WHEREAS, RDU has applied for and has been issued approval of the community water system plans and specifications serving Neuse Colony II Subdivision, said plans approved under the North Carolina Division of Health Services Serial No., 89-7075, North Carolina Division of Environmental Health, hereinafter "DEH," Serial No. 95-08755, and Serial No. 97-12068; and

WHEREAS, RDU has applied for and has been issued a NPDES Discharge Permit from the North Carolina Division of Environmental Management, now known as Division of Water Quality, hereinafter referred to as "DWQ," said permit being Permit No. NC0064564 expiring May 31, 1998, with the permit renewal still pending; and

WHEREAS, RDU has received from DWQ authority in Permit No. NC0064564 to begin construction of the wastewater facilities to serve Flowers' Plantation, a portion of Neuse Colony II Subdivision and Bennett Place, the wastewater facilities to be constructed in phases, the first phase being a 50,000 gallon per day (gpd) wastewater treatment plant (WWTP), which has been installed and is in operation, and increasing to a 750,000 gpd WWTP in 250,000 gpd increments as needed, with the 50,000 gpd WWTP being removed upon completion of the first 250,000 gpd WWTP expansion; and

WHEREAS, RDU has applied for and has been issued a Certificate of Public Convenience and Necessity, hereinafter referred to as "Certificate" from the North Carolina Utilities Commission, hereinafter referred to as "Commission," to provide water utility service to the first phases of Neuse Colony II Subdivision (Docket No. W-949) and has been issued an Order Recognizing Contiguous Extension dated May 16, 1997, to its present Certificate to serve phases B, C, and D of Neuse Colony II Subdivision (Docket No. W-949, Sub 3); and

WHEREAS, the present water utility facilities, hereinafter referred to as "Existing Water Facilities," have been installed for the production, storage, and distribution of the water to serve initial phases of the Neuse Colony II Subdivision being Sections B, C, D and Bennett Place; and

WHEREAS, River Dell in conjunction with developers, has plans to install additional water system facilities hereinafter referred to as "Future Water Facilities - Flowers Plantation" for the distribution of water to serve the initial phases of Flowers'

on, which consists of approximately 1200 acres; said Future Water Facilities are to
phases; and

WHEREAS, River Dell has installed and/or has plans to install wastewater collection and treatment facilities, to provide wastewater utility service to Neuse Colony II Subdivision and Bennett Place hereinafter referred to as "Existing Wastewater Facilities" and to the phases of Flowers' Plantation, which consists of approximately 1200 acres which shall be installed in phases, hereinafter referred to as "Future Wastewater Facilities - Flowers Plantation;" and

WHEREAS, RDU has requested, and Heater has agreed, that Heater purchase, own, and operate said Existing Water Facilities, the Existing Wastewater Facilities, Future Wastewater Facilities - Neuse Colony II, Future Water Facilities - Neuse Colony II, Future Water Facilities - Flowers' Plantation, and Future Wastewater Facilities - Flowers' Plantation, and acquire by transfer the DEH and DWQ permits and the Commission Certificates; and

NOW, Therefore, for and in consideration of the premises and of the rights, powers, and duties hereinafter set forth to be performed by each party, RDU, River Dell and Heater do mutually agree as follows:

1. REPRESENTATIONS AND WARRANTIES OF RDU

RDU hereby represents and warrants as follows:

A. Organization in Good Standing

RDU is a North Carolina corporation, duly organized, validly existing and in good standing under the laws of the state of North Carolina, has a current certificate of authority to do business in North Carolina and has all the requisite power and authority to own, lease and operate its properties, to carry on its business as now being conducted and to enter into this Agreement and perform its obligations hereunder.

B. Authority Relative to Agreement

The execution, delivery and performance of this Agreement by RDU has been duly and effectively authorized by all necessary corporate actions. This Agreement has been duly executed by RDU and is a valid, legally binding and enforceable obligation of RDU in accordance with its terms.

C. Effective Agreement

The execution, delivery and performance of this Agreement by RDU and the consummation of the transactions contemplated hereby will not (a) require the consent, approval or authorization of any person, corporation, partnership, joint venture or other business association or public authority other than the Commission; (b) violate with or without the giving of notice or the passage of time or both, any provisions of law now applicable to RDU; or (c) result in a violation of RDU's charter or bylaws.

D. RDU Legal Owner

RDU is the legal owner of and has fee simple marketable title to all the assets being transferred in this Agreement to Heater free and clear of all liens and encumbrances. The only exception is the Neuse Colony II wastewater lift station .2 acre lot, which shall be conveyed to Heater by easement and bill of sale with RDU or River Dell later conveying to Heater this lot by deed once fee simple title is obtained.

E. RDU Shall Not Encumber Assets

From and after the date of the execution of this Agreement, RDU will not dispose of or encumber any of the assets being purchased by Heater under this Agreement.

F. RDU Shall Permit Full Examination

RDU shall permit a full examination by Heater's authorized representatives of all existing contractual obligations, physical systems, assets, real estate and rights of way for all the assets being transferred to Heater under this Agreement.

G. Agreement-Does Not Violate Judicial Orders

The execution and consummation of this Agreement by RDU and the conveyance of all the assets being transferred herein will not violate any judicial, governmental or administrative order, award, judgment, or decree applicable to RDU, or the assets being transferred to Heater.

H. No Other Contracts

There are no existing contracts or commitments of whatsoever type or nature in effect with respect to the assets being transferred to Heater except for those set forth in the exhibits provided herein. RDU is not aware of any default by any party to any such agreement.

I. No Liens or Encumbrances

There are no liens, claims, or encumbrances of whatsoever type or nature upon or against any of the assets being purchased by Heater, included but not limited to deeds of trust, financing statements or security agreements filed under the uniform commercial code either in Johnston County, hereinafter referred to as "County," or with the North Carolina Secretary of State. The only exception is the fee simple title to the land at Lift Station Neuse Colony II, which is included in a bankruptcy action now pending, but from which RDU or River Dell will obtain fee simple absolute title and then convey fee simple absolute title to Heater.

J. Execution of Future Agreements

After the execution of this Agreement and prior to closing, all new developer agreements entered into by RDU and/or River Dell, shall be consistent with the terms of this Agreement as to the Existing Water Facilities, Existing Wastewater Facilities, Future Wastewater Facilities - Neuse Colony II, Future Water Facilities - Flowers Plantation, Future Wastewater Facilities - Flowers Plantation, or any of the assets being transferred to Heater.

K. No Knowledge of Existing Pending Actions

RDU has no knowledge of pending actions, suits, or proceedings, at law or in equity, before any federal or state court, department, commission, board,

bureau, agency or instrumentality which involves the possibility of any judgment, assessment or liability which would affect the title of RDU or would be a lien on any of the assets being acquired by Heater pursuant to this Agreement, or revenues generated by the water or wastewater systems or would materially adversely affect Heater's use of the assets being purchased. The only exception is a pending bankruptcy action which includes the fee simple title for the land at the wastewater lift station at Neuse Colony II.

L. Environmental

RDU has not during the period RDU owned the well lots, WWTP lot, lift station lots or other real property being conveyed in this Agreement, introduced to the real property any hazardous waste substances. RDU has no knowledge of any such hazardous waste substance being introduced to the real property by other parties including prior to the time RDU acquired the real property. For purposes of this paragraph, the definition of the term "hazardous waste substance" shall be that set out in Section 101(4) of the Federal Comprehensive Environmental Response, Compensation and Liability Act, except that for purposes of this Agreement, the term also shall include (i) petroleum (crude oil) and natural gas (whether existing as a gas or a liquid) and (ii) any substance defined as hazardous or toxic by any state or local regulatory agency having jurisdiction over the operations of RDU.

M. No Prepaid Tap Fees or CIAC

Except as disclosed on Exhibit F, RDU has not received any prepaid tap fees, connection fees or advances for construction or cash contributions in aid of construction for which the construction has not been completed or the customer has not been connected to the water and/or wastewater utility system.

2. **REPRESENTATIONS AND WARRANTIES OF RIVER DELL**

A. **Contracts**

River Dell represents and warrants that there are no existing contracts or commitments of any type whatsoever or nature in effect with respect to water or wastewater utility service to Neuse Colony II or any portion of Flowers Plantation except as set forth in Exhibits B, C, and D attached hereto. River Dell is not aware of any default by any party to any such agreement.

3. **REPRESENTATIONS AND WARRANTIES OF HEATER**

Heater hereby represents and warrants as follows:

A. **Organization; Good Standing; and Power**

Heater is a corporation duly organized, validly existing and in good standing under the laws of the state of South Carolina and has a current certificate of authority to do business in North Carolina, and has all requisite corporate power and authority to own, lease, and operate its properties, to carry on its business as now being conducted and to enter into this Agreement and perform its obligations hereunder.

B. **Authority Relative to Agreement**

The execution, delivery and performance of this Agreement by Heater has been duly and effectively authorized by all necessary corporate actions. This Agreement has been duly executed by Heater and is a valid, legally binding, and enforceable obligation of Heater in accordance with its terms.

C. **Effect of Agreement**

The execution, delivery and performance of this Agreement by Heater and the consummation of the transactions contemplated hereby will not (a) require the consent, approval or authorization of any person, corporation, partnership, joint venture or any other business association or public authority other than the Commission; (b) violate with or without the giving of notice or passage of time or both any provisions of law now applicable to Heater; or (c) result in a violation of Heater's charter or bylaws.

4. **EXISTING WATER FACILITIES PROVISIONS (NEUSE COLONY II AND BENNETT PLACE)**

A. **System To Be Conveyed**

RDU agrees to convey to Heater, by warranty deed, easements and bill of sale, all currently installed water system facilities, including, but not limited to, the distribution mains, wells, well lots, pumphouses, pumps, storage tank(s), controls, electrical equipment, services, meters, and all other equipment necessary to provide water utility service to Neuse Colony II and Bennett Place Subdivisions.

B. **Easements for Distribution Mains**

If any distribution mains are not within publicly dedicated rights of way, then RDU shall convey to Heater a perpetual easement, with a total width of 20 feet centered on the main, for ingress, egress, regress, and access, to operate, maintain, repair and replace the main and appurtenant equipment.

C. **Conveyance of Well Lots**

- i. The well lots shall be conveyed by RDU to Heater by general warranty deed conveying fee simple marketable title subject to condition subsequent. The well lots shall meet all DEH requirements and shall contain an area of a minimum size of 200 feet square containing a minimum of 100 feet in all directions from the well head. The well lots conveyed to Heater shall be re-conveyed to RDU by special warranty deed free and clear of all encumbrances at such time as the water production facilities on the well lots are no longer in service providing water utility service to Neuse Colony II and Bennett Place Subdivisions.
- ii. Each well lot shall front upon a publicly dedicated street to provide free and reasonable access to the well house. In the event the well lots do not front upon a publicly dedicated completed street, RDU will convey to Heater a 20 foot wide perpetual easement for ingress,

egress, regress, and access, with a ten foot wide gravel access road to the well house.

D. Transfer of Certificate

Heater shall apply to the Commission, as soon as reasonably practical after execution of this Agreement, for a transfer of the Certificate to provide water utility service to the residents of Neuse Colony II Subdivision and for a Certificate for Bennett Place, which has not previously had a Certificate issued by the Commission.

E. Purchase Price

The purchase price for the Existing Water Facilities shall be the payment to RDU as a pass through of the Commission approved water connection fees of \$2,000 per residential connection, collected by Heater for lots served by the Existing Water Facilities in Neuse Colony II. These payments shall be made to RDU quarterly. There will not be a purchase price paid by Heater for Bennett Place as there will not be any water connection fees at Bennett Place.

F. Title Insurance and Surveys For Well Lots

RDU agrees at RDU's expense, in addition to conveying all of the Existing Water Facilities, easements, and land, to also furnish to Heater, title insurance insuring the well lots to be marketable fee simple subject to condition subsequent title free and clear of any and all liens and encumbrances along with a current plot plan showing improvements for each well lot including the distance from the well head to each property line surveyed and sealed by a registered surveyor. RDU's attorneys shall obtain the title insurance for each of the well lots. RDU shall pay the attorney's fees incurred with Heater paying the title insurance premiums.

G. Water Service to Each Lot

RDU shall provide at RDU's expense, a water service to each lot in Neuse Colony II and Bennett Place Subdivisions. This water service shall consist of a 3/4" service line, a meter box, and meter yoke at the property or street right of way line.

H. Operation of Existing Water Facilities

Heater agrees at all times to operate and maintain the water production and distribution system conveyed to it in accordance with the terms of the Commission Certificate and all governmental statues, rules, and regulations.

I. Provision of Necessary Documentation for Commission Approval of Transfer of the Certificate

RDU will furnish to Heater an itemized statement of the entire cost of the Existing Water Facilities with substantiating invoices or statements of cost in such cases where invoices are not available and further will furnish to Heater sufficient copies of all surveys, maps, and engineering drawings and specifications required by the Commission in filing an application for a transfer of the Certificate.

J. Approval of Transfer of the Certificate Prerequisite of Sale

It is mutually understood and agreed that the sale and conveyance of said Existing Water Facilities shall become effective only upon the issuance by the Commission of an order approving the transfer of the Certificate and then the conveyance by general warranty deed, bill of sale and the necessary easements of the complete Existing Water Facilities.

K. Cooperation of All Necessary Government Approvals

RDU and Heater mutually agree to cooperate in obtaining any necessary permits and issuance of the Commission order approving the transfer of the Certificate to Heater. Heater will be responsible at Heater's cost to request all the necessary regulatory approvals.

L. Meter Installation Fee - Bennett Place

Heater shall apply to the Commission for approval of Heater's \$70 water meter installation fee for the 44 lots in Bennett Place. The meter installation fee shall include the meter and meter installation.

M. Closing

Heater shall provide water utility service from the date of Closing, which shall occur within ten business days of the Commission's order Approving Transfer becomes final, when all the following events shall have occurred.

Prior to Closing:

- i. RDU delivers to Heater a written certification of RDU's cost in the Existing Water Facilities pursuant to paragraph 4.I.
- ii. The Commission has issued the order approving the transfer of the Certificate to Heater
- iii. RDU's attorneys have obtained the title insurance for the well lots pursuant to paragraph 4.F.
- iv. RDU has provided to Heater the well lot surveys pursuant to paragraph 4.F.

At Closing:

- i. RDU delivers to Heater a bill of sale for the Existing Water Facilities.
- ii. RDU delivers to Heater a general warranty deed for the well lots pursuant to paragraph 4.C.i.
- iii. RDU delivers to Heater perpetual easements for all mains, pursuant to paragraph 4.B.

5. EXISTING WASTEWATER FACILITIES PROVISIONS (NEUSE COLONY II AND BENNETT PLACE)

A. System to be Conveyed

RDU agrees to convey to Heater, by warranty deed, easements and bill of sale, all the "Existing Wastewater Facilities," including, but not limited to, the 50,000 WWTP, pumps, motors, controls, electrical equipment, services, collection mains, force mains, lift stations and all other equipment necessary to provide wastewater utility service to Neuse Colony II and Bennett Place Subdivisions.

B. Easements for Collection Mains and Force Mains

If any collection mains or force mains are not within publicly dedicated rights of way, the RDU shall convey to Heater a perpetual easement, with a total width of 20 feet centered on the main, for ingress, egress, regress, and access to operate, maintain, repair and replace the main and appurtenant equipment.

C. Conveyance of WWTP and Lift Station Lots

- i. The WWTP and Bennett Place Lift Station lots shall be conveyed by Rebecca Flowers Finch to Heater by general warranty deed conveying fee simple marketable title. The WWTP lot shall contain 12.55 acres and shall contain sufficient area for construction and operation of a 750,000 gpd WWTP. River Dell and/or Rebecca Flowers Finch shall have six months from the date of execution of this Agreement to remove any loads of topsoil stockpiled on the 12.55 acre WWTP lot.
- ii. The Neuse Colony II Lift Station lot shall be conveyed by easement to Heater. RDU or River Dell will later convey this Lift Station lot to Heater by general warranty deed once fee simple title is obtained by RDU or River Dell.
- iii. The WWTP and Lift Station lots shall front upon publicly dedicated streets to provide free and reasonable access to the WWTP and Lift Station respectively. In the event the WWTP or a Lift Station lot do not front upon a publicly dedicated completed street, RDU will convey a ten foot wide gravel access road with a 20 foot perpetual easement for ingress, egress, regress, and access to the WWTP and Lift Station.

D. Transfer of Certificate

Heater shall apply to the Commission, as soon as reasonably practical after execution of this Agreement, for a transfer of the Certificate to provide wastewater utility service to the residents of Neuse Colony II Subdivision and for a Certificate for Bennett Place, which has not previously had a Certificate issued by the Commission.

E. Purchase Price

There shall not be a purchase price for Existing Wastewater Facilities as Heater shall be responsible to construct all WWTP expansions and the existing 50,000 gpd WWTP shall be transferred to River Dell, at River Dell's sole option, without any purchase payment to Heater, once Heater has constructed the first expansion to the WWTP which will probably be 250,000 gpd.

F. Connection Charge

Heater, after closing, shall continue to charge for connections to the Existing Wastewater Facilities, the Commission approved connection fee of \$1,000 per residential connection for Neuse Colony II. Heater shall apply to the Commission for approval of a \$1,000 wastewater connection fee for Bennett Place.

G. Title Insurance and Surveys for WWTP and Lift Station

RDU agrees at RDU's expense, in addition to conveying all of the Existing Wastewater Treatment Facilities, easements, and land, to also furnish to Heater title insurance insuring the WWTP and Lift Station lots to be marketable fee simple title free and clear of any and all liens and encumbrances along with a current plot plan showing improvements on each lot surveyed and sealed by a registered surveyor. RDU's attorneys shall obtain the title insurance for each of these lots. RDU shall pay the attorney's fees incurred with Heater paying the title insurance premiums. The title insurance for the Lift Station Lot in Neuse Colony II shall be obtained after River Dell or RDU acquires fee simple title.

H. Wastewater Service to Each Lot

RDU shall provide a wastewater service to each lot. This service shall consist of a 4" service line, and a sewer clean out at the property or street right of way line.

I. Operation of Existing Wastewater Facilities

Heater agrees to operate and maintain the wastewater collection and treatment system conveyed to it in accordance with the terms of the Commission Certificate and all governmental statutes, rules, and regulations. After Closing neither RDU or River Dell shall have any responsibility as to the operation of the wastewater facilities or compliance with permits.

J. Provision of Necessary Documentation for Commission Approval of Transfer of the Certificate

RDU shall furnish to Heater an itemized statement of the entire cost of the Existing Wastewater Facilities with substantiating invoices or statements of cost in such cases where invoices are not available and further will furnish to Heater sufficient copies of all surveys, maps, and engineering drawings and specifications required by the Commission in filing an application for a transfer of the Certificate.

K. Approval of Transfer of the Certificate Prerequisite of Sale

It is mutually understood and agreed that the sale and conveyance of said Existing Wastewater Facilities shall become effective only upon the issuance by the Commission of an order approving the transfer of the Certificate for Neuse Colony II and then the conveyance by general warranty deed, bill of sale and the necessary easements of the complete Existing Wastewater Facilities.

L. Cooperation of All Necessary Government Approvals

RDU and Heater mutually agree to cooperate in obtaining any necessary permits and/or permit transfers, the issuance of the Commission order approving the transfer of the Neuse Colony II Certificate to Heater, and the issuance of the Bennett Place Certificate to Heater. Heater will be responsible at Heater's cost to request all the necessary regulatory approvals, permits and permit transfers.

M. Closing

Heater shall provide wastewater utility service from the date of Closing when all the following events shall have occurred.

Prior to Closing:

- i. RDU delivers to Heater a written certification of RDU's cost in the Existing Wastewater Facilities pursuant to paragraph 5.J.**
- ii. The Commission has issued the order approving the transfer of the Neuse Colony II Certificate to Heater.**
- iii. RDU's attorneys have obtained the title insurance for the WWTP and Bennett Place Lift Station lots pursuant to paragraph 5.G.**
- iv. RDU has delivered to Heater current surveys of the WWTP and Lift Station lots pursuant to paragraph 5.G.**

At Closing:

- i. RDU delivers to Heater a Bill of Sale for the Existing Wastewater Treatment Facilities.**
- ii. Rebecca Flowers Finch delivers to Heater general warranty deeds for the WWTP and Bennett Place Lift Station lots pursuant to paragraph 5.C.**
- iii. RDU delivers to Heater perpetual easements for all mains pursuant to paragraph 5.B and the Neuse Colony II Lift Station Lot.**
- iv. RDU and Heater shall execute and send to DWQ the necessary documentation for the transfer of the 750,000 gpd NPDES permit.**

After Closing:

- i. RDU or River Dell delivers to Heater a general warranty deed for the Neuse Colony II Lift Station lot.**

6. **PROVISIONS FOR BOTH EXISTING WATER FACILITIES AND EXISTING WASTEWATER FACILITIES**

A. **Condition of Existing Water Facilities and Existing Wastewater Facilities at Closing**

RDU shall deliver the Existing Water Facilities and Existing Wastewater Facilities in the same working condition as each system is the date of the execution of this Agreement at which time Heater shall reinspect both the Existing Water Facilities and Existing Wastewater Facilities. Heater has previously inspected each of these facilities and is currently the contract operator for RDU. The Existing Water Facilities and Existing Wastewater Facilities shall be operated, maintained and repaired in the reasonable, normal and ordinary course of business up to the time of Closing.

7. **FUTURE WASTEWATER FACILITIES - NEUSE COLONY II**

A. **Installation of Future Wastewater Facilities in Neuse Colony II**

- i. Should River Dell, at River Dell's sole option, choose to extend the wastewater collection system at Neuse Colony II, then River Dell, at River Dell's or the developer of that phase expense, shall cause to be installed in Neuse Colony II Subdivision, a wastewater collection system to serve the remainder of these lots in Neuse Colony II Subdivision for which there are not already installed Existing Wastewater Facilities as described in Section 5 of this Agreement. These wastewater system facilities to be installed in the future are hereinafter referred to as Future Wastewater Facilities - Neuse Colony II.
- ii. The Future Wastewater Facilities - Neuse Colony II shall be built in accordance with plans and specifications to be approved by Heater, DWQ, and County, if County approval is required. The collection system shall be constructed in such a manner as to restrict the entry of groundwater and surface water into the wastewater facilities to at

least the minimum standards established by DWQ regulations for infiltration inflow.

- iii. River Dell's engineer shall prepare and process through DWQ and County (if required), all wastewater system permit applications for approval. Heater shall execute these applications and cooperate fully with River Dell's engineer to expedite the DWQ and County (if required), construction approval process. River Dell agrees to pay all permit fees required for these permits and all engineering fees during the permitting process.

B. System Requirements

River Dell or the developer of that phase, shall pay for the complete installation of all the necessary wastewater collection system including the interconnection to the existing collection system and lift stations, if needed, to provide wastewater service to all lots in that phase of the Neuse Colony II Subdivision.

C. System to be Conveyed

- i. River Dell agrees to convey to Heater, upon completion of each phase of the Future Wastewater Facilities - Neuse Colony II, by warranty deed and bill of sale, the entire wastewater collection system for that phase installed in accordance with the plans approved by DWQ, County (if required), and Heater including collection lines, services, lift stations and force mains, if any, and all other collection system equipment necessary and proper to serve all connections in that phase of the Neuse Colony II Subdivision.
- ii. If additional lift stations are required, the lift station lots shall be conveyed to Heater by River Dell as part of the system by general warranty deed conveying fee simple marketable title.
- iii. Said lift station lot(s) to be conveyed shall front upon a publicly dedicated street or road or have a proper twenty foot wide perpetual easement with ten foot wide gravel road to provide free and

reasonable access for vehicles and utilities to the lift station situated thereon. The lift station lots shall meet DWQ and County (if required) requirements.

- iv. If any wastewater collection lines or force mains are not within the publicly dedicated rights of way, then River Dell shall convey to Heater a perpetual easement with the total width of 20 feet centered on the main, which easement shall be for ingress, egress, regress and access to operate, maintain, repair, and replace the wastewater main and appurtenant equipment.

D. Title Insurance and Surveys for Lift Station Lots

River Dell agrees at River Dell's cost, in addition to conveying all of the said Future Wastewater Facilities - Neuse Colony II, easements and land, to also furnish to Heater title insurance insuring each lift station lot to be marketable fee simple title free and clear of any and all liens and encumbrances along with a current plot plan for each lift station lot showing improvements surveyed and sealed by a registered surveyor. RDU's attorneys shall obtain the title insurance for each of the lift station lots. RDU shall pay the attorney's fees incurred with Heater paying the title insurance premiums.

E. Tap-On Fee (Connection Fee)

The connection fee for each residential service shall be \$1,000, which is the Commission approved wastewater connection fee for Neuse Colony II which tap fee shall be collected and retained by Heater.

F. Approval of Contractors and Construction Guarantee

- i. Heater must approve, in writing, prior to the commencement of the work, all contractors and subcontractors who will perform work on the installation of all Future Wastewater Facilities - Neuse Colony II including the collection mains, services, lift stations and force mains, if any, and all other wastewater construction in extensions of Neuse Colony II Subdivision. Attached as Exhibit G is a list of all water

distribution system and all wastewater collection system contractors currently approved by Heater for water or wastewater installations at Neuse Colony II and/or Flowers Plantation. Heater shall update this list whenever requested by River Dell and/or a Secondary Developer, with the list always having a minimum of three approved water distribution system contractors and three approved wastewater collection system contractors. River Dell and/or a Secondary Developer may submit to Heater additional names of licensed utility contractors (including references) for investigation and evaluation for approval by Heater, which approval by Heater shall not be unreasonably withheld.

- ii. River Dell's contractors shall provide to Heater a one-year warranty on all wastewater system components. This warranty shall begin from the date of issuance of the final engineering certification.
- iii. Heater will also periodically inspect the construction and may require corrections to portions of the construction that are not consistent with the DWQ, County (if required), and Heater approved plans.

G. Construction of WWTP Expansions

Heater, as Heater's investment, shall be responsible for the construction of all the necessary expansions of the WWTP up to the DWQ permitted discharge capacity of 750,000 gpd.

H. Purchase Price

There shall not be a purchase price paid by Heater to River Dell or RDU for future extensions to the Future Wastewater Facilities - Neuse Colony II.

I. Wastewater Service to Each Lot

River Dell shall provide a wastewater service pipe to each lot. The service shall consist of a wastewater service tap, 4" home service and clean out at the property or street right of way line.

At Closing:

- i. **River Dell delivers to Heater a Bill of Sale for the Future Wastewater Facilities - Neuse Colony II to serve that phase.**
- ii. **River Dell delivers to Heater a general warranty deed and title insurance for the lift station lots pursuant to para. 7.C.ii. and 7.D.**
- iii. **River Dell delivers to Heater perpetual easements for all mains, pursuant to paragraph 7.C.iv.**

8. FUTURE WATER FACILITIES - NEUSE COLONY II

A. Well(s) and Production Facilities

- i. **If there is future expansion of the water system at Neuse Colony II beyond the Existing Water Facilities at Neuse Colony II and the 44 lots at Bennett Place, then if Heater is unable to obtain at the 12.55 acre WWTP tract a well producing at least one gallon per minute for each service connection in the expansion, which well also satisfies all DEH requirements for community water system wells, then River Dell shall provide to Heater a well lot(s) with a well(s) producing at least one gpm for each service connection in the expansion. The well lot(s) and well(s) shall satisfy all DEH requirements for community water system wells. The well lot(s) shall be conveyed to Heater with no purchase price paid for the well lot(s).**
- ii. **Whether the well be located on the 12.55 acre WWTP site or on land conveyed by River Dell for a well lot, Heater shall drill the well as Heater's investment, and Heater shall install as Heater's investment, all the well production and storage facilities.**

B. Conveyance of Well Lots

- i. **The well lot(s) shall be conveyed by River Dell to Heater by general warranty deed conveying fee simple marketable title subject to condition subsequent. The well lot(s) shall meet all DEH requirements and shall contain an area of a minimum size of 200 feet**

square containing a minimum of 100 feet in all directions from the well head. The well lot(s) conveyed to Heater shall be reconveyed to River Dell, by special warranty deed, free and clear of all encumbrances, at such time as the water production facilities on the well lots are no longer in service providing water utility service to Neuse Colony II and Bennett Place Subdivisions.

- ii. Each well lot shall front upon a publicly dedicated street to provide free and reasonable access to the well house. In the event the well lots do not front upon a publicly dedicated completed street, River Dell shall convey to Heater a 20 foot wide perpetual easements for ingress, egress, regress and access, which shall contain a ten foot wide gravel access road to the well house.

C. Installation of Future Water Facilities - Neuse Colony II

- i. River Dell shall cause to be installed in areas of Future Water Facilities - Neuse Colony II, at River Dell's expense, the water distribution system including services and meter boxes, to serve all lots in any tract being developed by River Dell. The distribution system shall include the interconnection to the existing water distribution system plus any necessary upgrades to the existing water distribution system to provide adequate flows and pressures for the customers in the tract being developed.
- ii. The Future Water Facilities - Neuse Colony II including all phases, shall be designed and installed pursuant to plans and specifications to be approved by the County, Heater, and DEH. The Future Water Facilities - Neuse Colony II, including all phases, shall be designed and installed pursuant to Heater's Specifications dated October 7, 1988, as amended February 2, 1998, a copy of which has been delivered to River Dell and River Dell acknowledges receipt thereof.
- iii. River Dell's engineer shall prepare and process through Johnston County and DEH all water system permit applications for approval.

Heater shall execute these applications and cooperate fully with River Dell's engineer to expedite the DEH construction approval process. River Dell shall pay all permit fees required for these permits and all engineering fees during the permitting and construction process.

D. System to be Conveyed

- i. River Dell shall convey to Heater, upon completion of each phase of the Future Water Facilities - Neuse Colony II, by warranty deed and bill of sale, the entire water distribution system for that phase installed in accordance with the plans approved by the County, DEH, and Heater, including all mains, interconnections, services, meter boxes and all other equipment necessary and proper to serve all connections in that phase of Neuse Colony II.
- ii. If any water mains are not within publicly dedicated rights of way, then River Dell shall convey to Heater a perpetual easement with a total width of 20 feet centered on the main, which easement shall be for ingress, egress, regress and access to operate, maintain, repair, and replace the water main and appurtenant equipment.

E. Meter Installation Fee

The meter installation fee for each residential service shall be \$70 and shall include the meter and meter installation. The meter installation fee may be increased in future years dollar for dollar for any increases in Heater's cost to install a meter. The meter installation fee shall be paid by the first person requesting service at each residential service.

F. Contractor Approval and Construction Guarantee

- i. Heater must approve, in writing, prior to the commencement of work, all contractors and subcontractors who will perform work on the installation of all Future Water Facilities - Neuse Colony II including the water mains, services, and all other water system construction. Attached as Exhibit G is a list of all water distribution system and all wastewater collection system contractors currently approved by

J. Operation of Future Wastewater Facilities - Neuse Colony II

Heater agrees at all times to operate and maintain the wastewater system in the Future Wastewater Facilities - Neuse Colony II conveyed to Heater in accordance with the terms of the Commission Certificate and all governmental statutes, rules and regulations.

K. Provision of Necessary Documentation for Contiguous Extensions and/or Commission Approval of Certificates

River Dell will furnish to Heater an itemized statement of the entire cost of the Future Wastewater Facilities - Neuse Colony II with substantiating invoices or statements of cost in such cases where invoices are not available and further will furnish to Heater sufficient copies of all surveys, maps, and engineering drawings and specifications required by the Commission in filing applications for Certificates or contiguous extensions.

L. Closing

Heater shall provide wastewater utility service for each future phase of Neuse Colony II Subdivision from the date of Closing, which shall occur within ten business days of the Commission's order Approving Transfer becomes final, when all the following events have occurred.

Prior to Closing:

- i. River Dell has installed the Future Wastewater Facilities - Neuse Colony II pursuant to the DWQ, County (if required), and Heater approved plans.
- ii. River Dell delivers to Heater a written certification of River Dell's installation cost in that phase of the Future Wastewater Facilities - Neuse Colony II pursuant to paragraph 7.K.
- iii. River Dell's attorneys have provided to Heater the title insurance for the lift station lots, if any, pursuant to paragraph 7.D.
- iv. River Dell delivers to Heater the survey for the lift station lot, if any, pursuant to paragraph 7.D.

Heater for water or wastewater installations at Neuse Colony II.

Heater shall update this list whenever requested by River Dell, with the list always having a minimum of three approved water distribution system and three wastewater collection system contractors. River Dell may submit to Heater additional names of licensed utility contractors (including references) for investigation and evaluation for approval by Heater, which approval by Heater shall not be unreasonably withheld.

- ii. River Dell's contractor shall provide to Heater a one-year warranty on all water system components. This warranty shall begin from the date of issuance of the final engineering certification.
- iii. Heater shall assume responsibility for each phase of the water utility system at the time of completion of the following: (a) construction of each phase of the water utility system by the approved water system installation contractor, (b) the engineering certification that the phase has been constructed in accordance with the County, DEH and Heater approved plans.
- iv. Heater will also periodically inspect the construction and may require corrections to portions of the construction that are not consistent with the County, DEH and Heater approved plans.

G. No Purchase Price

There shall be no purchase price as Heater is installing as Heater's investment the well and well production facilities.

H. No Connection Fees

There will be no connection fees for any of the residential water services.

I. Water Service to Each Lot

River Dell shall provide a water service to each service connection. The water service shall consist of a 3/4" service line, a meter box and meter yoke at the property or street right of way line.

J. Operation of Future Water Facilities - Neuse Colony II

Heater agrees at all time to operate and maintain the water production and distribution systems in the Future Water Facilities - Neuse Colony II conveyed to Heater in accordance with the terms of the Commission Certificate and all governmental statutes, rules and regulations.

K. Provision of Necessary Documentation for Contiguous Extensions and Commission Approval of Certificates

River Dell shall furnish to Heater an itemized statement of the entire cost of each phase of the Future Water Facilities - Neuse Colony II with substantiating invoices or statements of cost in such cases where invoices are not available and further will furnish to Heater sufficient copies of all surveys, maps, and engineering drawings and specifications required by the Commission in filing applications for Certificates or contiguous extensions.

L. Closing

Heater shall provide water utility service for each future phase of Neuse Colony II from the date of Closing when all the following events occurred.

Prior to Closing:

- i. River Dell has installed the distribution system including interconnection and services pursuant to County, DEH and Heater approved plans.
- ii. River Dell delivers to Heater a written certification of River Dell's installation cost in that phase of the Future Water Facilities - Neuse Colony II.
- iii. The Commission has approved the Certificate or contiguous extension to Heater.
- iv. If well lot(s) are required, River Dell has delivered well lot deeds to Heater.

At Closing:

- i. River Dell delivers to Heater a Bill of Sale for the Future Water Facilities - Neuse Colony II to serve that phase.

- ii. River Dell delivers to Heater perpetual easements for all mains pursuant to paragraph 8.D.ii.

9. **FUTURE WATER FACILITIES - FLOWERS PLANTATION**

A. **Bulk Water Purchase Agreement**

RDU has entered into a contract with County to purchase bulk water for resale to the residents of Flowers Plantation, hereinafter referred to as "Bulk Water Agreement." RDU made the decision to purchase bulk water from the County instead of installing well facilities as the water source. As a provision of the Bulk Water Agreement, RDU must "reserve" water capacity from the County through the payment of a Capital Cost Recovery Charge, hereinafter referred to as "CCRC," which currently is \$2.00/gallon. At Closing, RDU shall by written assignment agreement assign to Heater all RDU's rights and obligations under this Bulk Water Agreement.

B. **Payment of CCRC**

Heater will be responsible for all CCRC payments to the County with reimbursements by the Secondary Developers as described in paragraph 8.H. At Closing, Heater shall pay to RDU as a portion of the purchase price, the dollar amount of CCRC payments that RDU has made to County prior to Closing for water supply to Flowers' Plantation.

C. **River Dell to Sell tracts to Secondary Developer**

River Dell shall have the right at River Dell's sole option to develop the various tracts of land in Flowers Plantation or sell the various tracts to other developers, hereinafter referred to as "Secondary Developers." If a tract of land is sold by River Dell to a Secondary Developer, then that Secondary Developer shall assume all of River Dell's rights and obligations under this Agreement with respect to the installation of the water utility system to serve that tract of land. If River Dell develops a tract of Flowers Plantation, then River Dell for the purposes of Sections 9 and 10 of this Agreement, shall be considered a Secondary Developer.

D. Installation of Future Water Facilities - Flowers Plantation

- i. Secondary Developer shall cause to be installed in Flowers' Plantation, at Secondary Developer's expense, the water distribution system including services and meter boxes, to serve all lots in the tract being developed by Secondary Developer in Flowers Plantation. The distribution system shall include the interconnection to the existing water distribution system plus any necessary upgrades to the existing water distribution system to provide adequate flows and pressures for the customers in the tract being developed.**
- ii. The Future Water Facilities - Flowers Plantation, including all phases, shall be designed and installed pursuant to plans and specifications to be approved by the County, Heater, and DEH. The Future Water Facilities - Flowers Plantation, including all phases, shall be designed and installed pursuant to Heater's Specifications dated October 7, 1988, as amended February 2, 1998, a copy of which has been delivered to River Dell and River Dell acknowledges receipt thereof.**
- iii. Secondary Developer's engineer shall prepare and process through Johnston County and DEH all water system permit applications for approval. Heater shall execute these applications and cooperate fully with Secondary Developer's engineer to expedite the DEH construction approval process. Secondary Developer shall pay all permit fees required for these permits and all engineering fees during the permitting and construction process.**

E. System to be Conveyed

- i. Secondary Developer shall convey to Heater, upon completion of each phase of the Future Water Facilities - Flowers Plantation, by warranty deed and bill of sale, the entire water distribution system for that phase installed in accordance with the plans approved by the County, DEH, and Heater, including all mains, interconnections,**

services, meter boxes and all other equipment necessary and proper to serve all connections in that phase of Flowers Plantation.

- ii. If any water mains are not within publicly dedicated rights of way, then Secondary Developer shall convey to Heater a perpetual easement with a total width of 20 feet centered on the main, which easement shall be for ingress, egress, regress and access to operate, maintain, repair, and replace the water main and appurtenant equipment.

F. Meter Installation Fee

The meter installation fee for each residential service shall be \$70 and shall include the meter and meter installation. The meter installation fee may be increased in future years dollar for dollar for any increases in Heater's cost to install a meter.

G. Contractor Approval and Construction Guarantee

- i. Heater must approve, in writing, prior to the commencement of work, all contractors and subcontractors who will perform work on the installation of all Future Water Facilities - Flowers Plantation including the water mains, services, and all other water system construction in Flowers Plantation. Attached as Exhibit G is a list of all water distribution system and all wastewater collection system contractors currently approved by Heater for water or wastewater installations at Flowers Plantation. Heater shall update this list whenever requested by River Dell and/or a Secondary Developer, with the list always having a minimum of three approved water distribution system contractors and three approved wastewater collection system contractors. River Dell and/or a Secondary Developer may submit to Heater additional names of licensed utility contractors (including references) for investigation and evaluation for approval by Heater, which approval by Heater shall not be unreasonably withheld.

- ii. Secondary Developer's contractor shall provide to Heater a one-year warranty on all water system components. This warranty shall begin from the date of issuance of the final engineering certification.
- iii. Heater shall assume responsibility for each phase of the water utility system at the time of completion of the following: (a) construction of each phase of the water utility system by the approved water system installation contractor; (b) the engineering certification that the phase has been constructed in accordance with the County, DEH and Heater approved plans.
- iv. Heater will also periodically inspect the construction and may require corrections to portions of the construction that are not consistent with the County, DEH and Heater approved plans.

H. Cash Contribution in Aid of Construction Paid by Secondary Developer

Secondary Developer shall pay to Heater a cash contribution in aid of construction the same dollar amount per single family residential unit or commercial unit, which Heater must pay Johnston County as CCRC under the Bulk Water Agreement for each planned connection of Secondary Developer in that phase. This payment shall be made by Secondary Developer to Heater at the time Heater executes the application to DEH for approval of the plans and specifications for that phase of the water system.

I. Purchase Price

The purchase price paid by Heater to Secondary Developer for the first five years from the date of the Commission order approving the transfer, shall be \$300 for each lot in that phase of Flowers Plantation where Secondary Developer has installed the Future Water Facilities - Flowers Plantation pursuant to this Agreement. After five years, the purchase price shall increase to \$400 for each lot. The purchase price shall be paid at the Closing of each phase of the Future Water Facilities - Flowers Plantation for the number of lots in Flowers Plantation closed for that particular phase.

J. Water Service to Each Lot

Secondary Developer shall provide a water service to each lot. The water service shall consist of a 3/4" service line, a meter box and meter yoke at the property or street right of way line.

K. Operation of Future Water Facilities - Flowers Plantation

Heater agrees at all time to operate and maintain the water production and distribution systems in the Future Water Facilities - Flowers Plantation conveyed to Heater in accordance with the terms of the Commission Certificate and all governmental statutes, rules and regulations.

L. Provision of Necessary Documentation for Contiguous Extensions and Commission Approval of Certificates

Secondary Developer shall furnish to Heater an itemized statement of the entire cost of each phase of the Future Water Facilities - Flowers Plantation with substantiating invoices or statements of cost in such cases where invoices are not available and further will furnish to Heater sufficient copies of all surveys, maps, and engineering drawings and specifications required by the Commission in filing applications for Certificates or contiguous extensions.

M. Closing

Heater shall provide water utility service for each phase of Flowers' Plantation from the date of Closing when all the following events occurred.

Prior to Closing:

- i. Secondary Developer has installed the distribution system including interconnection and services pursuant to Johnston County, DEH and Heater approved plans.**
- ii. Secondary Developer delivers to Heater a written certification of Secondary Developer installation cost in that phase of the Future Water Facilities - Flowers Plantation pursuant to paragraph 9.L.**
- iii. Secondary Developer has paid to Heater the cash contribution in aid of construction for the CRCC pursuant to paragraph 9.H.**

- iv. The Commission has issued the Certificate or Certificate of Contiguous Extension to Heater.

At Closing:

- i. Secondary Developer delivers to Heater a Bill of Sale for the Future Water Facilities - Flowers Plantation to serve that phase.
- ii. Secondary Developer delivers to Heater perpetual easements for all mains, pursuant to paragraph 9.E.ii.
- iii. Heater delivers to Secondary Developer a check for the purchase price in the amount of \$300 per lot during the first five years and \$400 thereafter, pursuant to paragraph 9.I.

10. FUTURE WASTEWATER FACILITIES - FLOWERS PLANTATION

A. Property to be Served and Sale of Tracts to Secondary Developers

River Dell plans to install wastewater treatment and collection facilities to provide wastewater service to all the property and land being Flowers Plantation as shown on the attached Exhibit A. Prior to the execution of this Agreement, River Dell and RDU's plans are to install a 750,000 gpd WWTP and the wastewater collection mains and pump stations to serve the entire Flowers Plantation, which is proposed to be approximately 2400 lots when development is completed, and also to serve all of Neuse Colony II Subdivision. HEATER, RDU AND RIVER DELL AGREE THAT THE ENTIRE CAPACITY OF THE NPDES DISCHARGE PERMIT NC0064564, HEREINAFTER "NPDES DISCHARGE PERMIT," AND ALL SUCCESSOR RENEWAL DISCHARGE PERMITS, AND THE WWTP TO BE CONSTRUCTED PURSUANT TO THIS NPDES DISCHARGE PERMIT, HAVE THE CAPACITY TO SERVE AT A MAXIMUM THE LAND OWNED BY RIVER DELL KNOWN AS FLOWERS PLANTATION AS SET FORTH ON EXHIBIT A. RIVER DELL, RDU AND HEATER AGREE THAT THE 750,000 GPD NPDES DISCHARGE PERMIT AND 750,000 GPD WWTP MAY ACTUALLY NOT HAVE

ENOUGH CAPACITY TO SERVE ALL THE LAND IN EXHIBIT A. THEREFORE, THE ENTIRE CAPACITY OF THIS NPDES DISCHARGE PERMIT AND WWTP ARE ABSOLUTELY RESERVED TO BE USED ONLY FOR THE LAND IN EXHIBIT A. River Dell, in selling tracts of land in Exhibit A to Secondary Developers, may assign in writing to that Secondary Developer the rights for that specific tract of land to be served by a portion of the capacity in the NPDES Discharge Permit and WWTP, with the Secondary Developer of that parcel assuming all the rights and obligations of River Dell as set forth in this Agreement to install at that Secondary Developer's cost, all the wastewater collection system and pay Heater the cash contribution in aid of construction for the WWTP capacity as specified in paragraph 10.I. for that specific tract of land being a portion of Exhibit A. If River Dell develops a tract of Flowers Plantation, then River Dell for purposes of Section 10 of this Agreement, shall be considered a Secondary Developer.

Once sufficient flow data has been obtained by Heater and if needed to facilitate expansion, Heater shall apply to DWQ for appropriate flow reductions for the WWTP.

B. WWTP to be Installed by Heater in Phases

This WWTP shall be installed in phases. The existing 50,000 gpd WWTP was installed to serve approximately 150 lots in Neuse Colony II Subdivision and Phase I of Flowers' Plantation. Additions to the WWTP, shall be made by Heater as Heater's investment. The WWTP additions will probably be in 250,000 gpd increments and shall be constructed by Heater as needed to serve Neuse Colony II and Flowers Plantation. Upon completion of the first 250,000 gpd WWTP expansion, the existing 50,000 gpd WWTP at River Dell's sole option, shall be removed and ownership transferred to River Dell with no payment from River Dell to Heater for this 50,000 gpd WWTP. The removal of the 50,000 gpd WWTP shall be at River Dell's expense, if River Dell, at River Dell's sole option, elects to remove this 50,000 gpd WWTP. If

River Dell elects not to remove this 50,000 gpd WWTP, then this WWTP shall be owned by Heater and used at Heater's discretion.

C. Installation of Wastewater Collection Mains and Facilities

Upon development, Secondary Developer shall cause to be installed in each future phase of Flowers Plantation, at Secondary Developer's expense, a complete wastewater collection system, including collection lines, services, manholes, mains, any required lift stations, and the interconnection to the existing collection system including necessary upgrades to the existing collection system to serve all lots in that phase of Flowers Plantation. This collection system shall be installed in accordance with plans and specifications to be approved by the County (if required), Heater and DWQ, and engineered by Secondary Developer's engineer. Secondary Developer's engineer shall prepare and process through DWQ the collection system, force mains, lift stations (if required), interconnection to existing collection system and permit applications for approval. Heater shall execute these applications and cooperate fully with Secondary Developer's engineer to expedite the DWQ, and County (if required), construction approval process. Upon development, Secondary Developer shall pay all permit fees required for these permits and all engineering during the permitting and construction processes.

D. Construction of Wastewater Collection Facilities

Secondary Developer shall pay for the complete engineering, DWQ and County (if required) approval and installation costs of all the necessary wastewater collection system to provide wastewater service to all the lots in future phases of Flowers Plantation. The collection system shall be constructed in such a manner as to restrict entry of groundwater and surface waters into the wastewater facilities to at least the minimum standards established by the DWQ regulations for infiltration/inflow.

E. System To Be Conveyed

Secondary Developer shall convey to Heater, by warranty deed, easements, and bill of sale, the entire wastewater collection facilities including, but not limited to, the collection lines, force mains, pumps, controls, electrical equipment, services, and all connections required to provide wastewater service to each future phase of Flowers Plantation. The entire collection system to serve the future phases of Flowers Plantation shall be installed and paid for by Secondary Developer, and shall be conveyed to Heater pursuant to the terms of this Agreement.

F. Easements for Force Mains and Collection Mains

If any wastewater collection mains or force mains are not within publicly dedicated rights of way, then Secondary Developer shall convey to Heater a perpetual easement, with a total width of 20 feet centered on the main, for ingress, egress, regress, and access to operate, maintain, repair and replace the main and appurtenant equipment.

G. Conveyance of Lift Stations

- i. The lift station lot(s), if any, shall be conveyed by Secondary Developer to Heater by general warranty deed conveying fee simple marketable title.
- ii. The lift station lot(s), if any, shall front upon a publicly dedicated street to provide free and reasonable access to the lift station. In the event the lift station lot(s) does not front upon a publicly dedicated completed street, then Secondary Developer shall convey a gravel access road with a perpetual 20 foot easement for ingress, regress, and access to the lift station.

H. Connection Fee - (None)

Heater shall not collect any connection fees from the customers.

I. Cash Contribution in Aid of Construction for WWTP Capacity

Secondary Developer shall pay to Heater a cash contribution in aid of construction the same dollar amount per gallon that Heater paid for the cost

of design, engineering and construction of the last WWTP expansion including regulatory mandated upgrades to the wastewater treatment process. This payment shall be made by Secondary Developer to Heater at the time Heater executes the application to DWQ for approval of the plans and specifications for that phase of the wastewater collection system.

J. Title Insurance and Surveys for Lift Station Lots

Secondary Developer shall, at Secondary Developer's cost, in addition to conveying all of the wastewater collection facilities, easements, and land, to also provide to Heater title insurance insuring the lift station lots (if any), to be marketable fee simple title free and clear of any and all liens and encumbrances along with a current plot plan showing improvements surveyed and sealed by a registered surveyor. Secondary Developer's attorneys shall obtain the title insurance for the lift station lots. Secondary Developer shall pay the attorney's fees incurred with Heater paying the title insurance premiums.

K. Title Insurance for Easements

Secondary Developer shall also provide Heater title insurance for all perpetual easements for wastewater collection lines and force mains not within publicly dedicated rights of way. The title insurance shall insure the perpetual easements to be fee simple marketable title free and clear of all liens and encumbrances. Secondary Developers' attorneys shall obtain the title insurance for these easements with Secondary Developer paying the attorney's fees and Heater paying the title insurance premium.

L. Wastewater Service to Each Lot

Secondary Developer shall provide a wastewater service to each lot. This service shall consist of a wastewater service tap, 4" home service pipe and clean out at the easement or right of way line. Secondary Developer shall use its best efforts to ensure that its employees, contractors and subcontractors under its control do not break, damage or bury these cleanouts.

M. Responsibilities of Customer for Service Lines

It shall be the responsibility of the owner of each dwelling unit and commercial customer to maintain the wastewater collection line from their residence or commercial operation to the sewer main. The customer shall be responsible not only for that portion of the collection line on their property but also that portion of the collection line that crosses any common ownership property prior to entering the sewer main.

N. Operation of Wastewater Facilities

Heater agrees at all times to operate and maintain the Future Wastewater Facilities - Flowers Plantation conveyed to Heater in accordance with the terms of the Commission Certificate and all governmental statutes, rules, and regulations. After Closing, neither RDU nor River Dell shall have any responsibility as to the operation of the wastewater facilities or compliance with the permits.

O. Provision of Necessary Documentation for Commission Approval of Certificate

Secondary Developer shall furnish to Heater an itemized statement of the entire cost of Secondary Developer's installed wastewater facilities with substantiating invoices, or statement of cost in such cases where invoices are not available, and further will furnish to Heater sufficient copies of all surveys, maps, and engineering drawings and specifications required by the Commission in filing an application for the Certificate or Certificate extension.

P. Approval of Contractors and Construction Guarantee

- i. Heater must approve, in writing, prior to the commencement of any work, all contractors and subcontractors who will perform work on the installation of the wastewater system in Flowers Plantation. Attached as Exhibit G is a list of all water distribution system and all wastewater collection system contractors currently approved by Heater for water or wastewater installations at Flowers Plantation.

Heater shall update this list whenever requested by River Dell and/or a Secondary Developer, with the list always having a minimum of three approved water distribution system contractors and three approved wastewater collection system contractors. River Dell and/or a Secondary Developer may submit to Heater additional names of licensed utility contractors (including references) for investigation and evaluation for approval by Heater, which approval by Heater shall not be unreasonably withheld.

- ii. Secondary Developer's contractors shall provide to Heater a one-year warranty on all wastewater system components. This warranty shall begin from the date of issuance of the final engineering certification.
- iii. Heater shall assume responsibility for each phase of the wastewater utility system at the time of completion of the following: (a) construction of that phase by the approved wastewater system installation contractor, (b) the interconnection to the existing wastewater collection system including necessary upgrades, and (c) the engineering certification that the phase and interconnection have been constructed in accordance with the DWQ, County (if required), and Heater approved plans.
- iv. Heater will also periodically inspect the construction and may require correction to portions of the construction that are not consistent with the DWQ, County (if required), and Heater approved plans and specifications.

Q. Cooperation of All Necessary Government Approvals

River Dell and Heater agree to cooperate in obtaining any necessary permits such as approvals to reissue the DWQ permits and issuance of transfers of the Certificate and/or Certificate extensions by the Commission to Heater. Heater at Heater's cost shall file for all Commission Certificate's and Certificate extensions.

R. Provision of Necessary Documentation for Commission Approval of the Certificate or Certificate Extensions

Secondary Developer shall furnish to Heater an itemized statement of the entire cost of the wastewater facilities in each phase with substantiating invoices or statement of cost in such case where invoices are not available. Secondary Developer shall also furnish to Heater sufficient copies of all surveys, maps, and engineering drawings and specifications required by the Commission in filing an application for the Certificate or Certificate extension.

S. Closing

Heater shall provide wastewater utility service to each phase from the date of Closing when all the following events shall have occurred.

Prior to Closing:

- i. Secondary Developer has installed the wastewater facilities pursuant to the DWQ, County (if required), and Heater approved plans including the interconnection and necessary upgrades to the existing collection system.**
- ii. Secondary Developer has delivered to Heater a written certification of Secondary Developer's installation cost in that phase of the wastewater facilities pursuant to paragraph 10.O.**
- iii. The Commission has issued the Order approving the Certificate or Certificate extension to Heater.**
- iv. Secondary Developer's attorneys have obtained the title insurance for the lift station lots, if any, and perpetual easements for the collection mains and force mains pursuant to paragraph 10.J. and 10.K.**
- v. Secondary Developer shall have delivered to Heater the surveys for the lift station lots pursuant to paragraph 10.J.**
- vi. Secondary Developer has delivered to Heater the cash contribution in aid of construction for the WWTP capacity pursuant to paragraph 10.I.**

At Closing:

- i. Secondary Developer delivers to Heater a bill of sale for the collection lines, force mains, and all other personal property.
- ii. Secondary Developer delivers to Heater a general warranty deed for the lift station lots, if any, pursuant to paragraph 10.G.
- iii. Secondary Developer delivers to Heater perpetual easements for all collection lines and force mains, pursuant to paragraph 10.F.

11. OBLIGATIONS TO HONOR THE RIVER DELL/RDU/NEUSE PARK DEVELOPMENT COMPANY, LLC CONTRACT

In November of 1997, River Dell and The Neuse Park Development Company, LLC (NPD) entered into a Contract in which NPD agreed to purchase approximately 300 acres of land from River Dell. NPD plans to develop this land into a maximum of 600 single family residential units.

On November 10, 1997, RDU, River Dell and NPD executed an agreement which has previously been provided to Heater for review and approval, which is attached hereto as Exhibit B, hereinafter referred to as "NPD Water/Wastewater Agreement," which provided for the installation of the water and wastewater utility systems to serve this 300 acre tract and also specified that the wastewater system connection fee would be \$1,000 and the water system connection fee would be \$1,000 per single family equivalent (a total of \$2,000 per single family residential unit). Based on that agreement, RDU is not required to pay NPD a purchase price for the water distribution system or wastewater collection system serving 300 acre tract NPD purchased from River Dell.

Heater agrees to honor this NPD Water/Wastewater Agreement and assume all rights and obligations of RDU including charging after Commission approval the connection fees specified. At Closing, RDU and Heater shall execute a written assignment to Heater of this NPD Water/Wastewater Agreement.

12. **GENERAL PROVISION - ALL OF AGREEMENT**

A. **Furnishing of Documents Prior to Closing**

River Dell and RDU within ten business days of the execution of this Agreement, shall deliver to Heater the following exhibits.

- i. **A schedule referred to as Exhibit C, with copies attached of all the agreements, hereinafter referred to as "Developer Agreements," entered into between RDU, and any owners and/or developers of property regarding water utility service or wastewater utility service to be provided to the properties of such parties. If there are no such Developer Agreements, then Exhibit C shall state "None."**
- ii. **Exhibit D, being a schedule with copies attached of all other agreements entered into between RDU and/or River Dell with other parties which would or might be considered to be an encumbrance upon the Existing Water Facilities, Existing Wastewater Facilities, Future Wastewater Facilities - Neuse Colony II, Future Water Facilities - Flowers Plantation, Future Wastewater Facilities - Flowers Plantation, or would obligate RDU to provide water or wastewater utility service to any parties in the future. If there are no such agreements, then Exhibit D shall state "None."**
- iii. **Exhibit E, which lists all connection fees, or tap fees received by RDU for water or wastewater service.**
- iv. **Exhibit F shall list all prepaid connection fees or prepaid cash contribution in aid of construction for which the water or wastewater utility system or a portion thereof has not been installed or for which the customer has not yet received the connection to the water and/or wastewater system. If there are none, then Exhibit F shall state "None."**

B. **Payment of Unbilled Water and Wastewater Receivables**

RDU and Heater acknowledge that at the date of Closing, there may be a number of days of water and wastewater utility service rendered that have

not been billed. Heater agrees to pay RDU within 15 days of the date Heater first bills these customers the prorated amount of any unbilled water or wastewater utility service rendered by RDU to customers since the last meter reading date by RDU. These payments for prorated water and wastewater customer receivables are in addition to the purchase price described in this agreement.

C. Transfer of Accounts Receivable

Heater agrees to purchase RDU's utility customer accounts receivable associated with the water and wastewater utility systems that have been billed and not collected prior to closing for 100% of the face amount of each. These payments shall be paid within 15 days of the date of Closing and shall be in addition to the purchase price.

D. Customer Service Deposits

RDU represents and warrants to Heater that RDU has not collected any customer service deposits.

E. Proration of Property Taxes

The property taxes for the Existing Water Facilities and Existing Wastewater Facilities shall be prorated as to the date of Closing.

F. Representations and Warranties by Closing

All representations and warranties of RDU, River Dell and Heater shall survive the closing.

G. Federal Taxpayer I.D. Numbers

The federal taxpayer I.D. number of the parties are as follows:

RDU:

Rebecca Flowers Finch - d/b/a River Dell Company _____

Heater: _____

H. Binding upon Successors and Assigns

This Agreement shall be binding upon and shall inure to the benefit of RDU, River Dell and Heater, and the successors and assigns of each.

I. Entire Agreement

This writing embodies the entire agreement and understanding between parties hereto and there are no other agreements or understandings, oral or written, with reference to the subject matter hereof that are not merged herein and superseded hereby.

J. Modifications in Writing

This Agreement shall not be modified, amended, or changed in any respect except in writing, duly signed by the parties hereto, and each party hereby waives any right to amend this Agreement in any other way.

K. Bonding

Heater agrees that at the time the Commission issues its Order approving the transfer from RDU to Heater of the Certificate(s) to provide water and wastewater utility service in Neuse Colony II Subdivision and/or Flowers Plantation that Heater will replace any bond with the Commission that RDU has posted and will assist RDU in providing the documentation needed for the Commission to release any bond that RDU has posted (presently the bonds posted are \$140,000).

L. Purchase Price

The purchase price paid to RDU, or River Dell, or Rebecca Flowers Finch by Heater for Existing Water Facilities, Existing Wastewater Facilities and Future Wastewater Facilities -Neuse Colony II, and for the Future Water Facilities - Flowers Plantation and Future Wastewater Facilities Flowers Plantation is as follows:

- i. A pass through from Heater to RDU of the Commission approved water connection fees of \$2,000 per residential connection (this is in accordance with Paragraph 4.E. of this Agreement) for all connections made to the existing Neuse Colony II Subdivision Water System.
- ii. The replacement by Heater of all bonds, existing at the time of transfer, which RDU has made to the Commission which

presently total \$140,000 (this is in accordance with paragraph 12.K. of this Agreement).

- iii. Heater shall reimburse RDU for its cost of design, engineering and construction in installing the bulk water master meter connection to the Johnston County Water System. It is anticipated that RDU's cost in the master meter facility is \$77,137.
- iv. The purchase price for the 12.55-acre site where the existing 50,000 WWTP is located is \$75,000 and shall be paid to Rebecca Flowers Finch; as she individually owns this property. This 12.55-acre tract is the site where the 750,000 WWTP will be located.
- v. Heater shall reimburse RDU for all CCRC payments that RDU has made to the County. Presently RDU has made CCRC payments of \$29,000 to the County (this is in accordance with Paragraph 9.B. of this Agreement).
- vi. Heater shall be responsible for all upgrades and expansions of the WWTP to the approved limit of 750,000 gpd WWTP. At Closing, Heater shall reimburse RDU and/or River Dell for any design, engineering and construction costs incurred until the date of closing for the first 250,000 gpd WWTP expansion.

M. Conveyances at Closing of All Water and Wastewater Utility Systems

Including All Easements

At Closing, RDU and River Dell shall convey to Heater by Deed, Easement and/or Bill of Sale, all the then existing water and wastewater utility systems whether located at Neuse Colony II, Bennett Place, Flowers Plantation, or installed pursuant to the NPD Water/Wastewater Agreement. These conveyances will include but not be limited to the following:

- a. The 20 foot wide wastewater easement with 40 foot wide construction easement along the Johnston County school property.

- b. The water transmission main from the Johnston County bulk water master meter vault located at the intersection of N.C. Hwy. 42 and Neuse River Parkway, which water transmission main runs in a northeasterly direction up the Neuse River Parkway.
- c. The wastewater manhole on the north side of N.C. Hwy. 42 and collection line from this manhole which runs under N.C. Hwy. 42 to the Lift Station located in Neuse Colony II.
- d. All water and/or wastewater utility easements including but not limited to easements for water mains, water services, wastewater collection lines, wastewater services, wastewater manholes, wastewater force mains, wastewater lift stations, wastewater treatment equipment, water wells, storage and treatment equipment, and ingress, egress and access to all water and/or wastewater utility equipment.
- e. Twenty foot wide perpetual water and wastewater utility easements along the southwestern property line of Flowers Plantation Phase One Subdivision from Neuse River Parkway to N.C. Hwy. 42 and also the entire property line of Flowers Plantation Phase One along N.C. Hwy. 42 as set forth in paragraph 30 of the NPD Water/Wastewater Agreement.
- f. All easements for water mains, water utility system equipment, wastewater lines and wastewater utility system equipment located within the roads or other property owned by the homeowners association at Neuse Colony II.

N. Highway Encroachment Agreements and Related Bonds

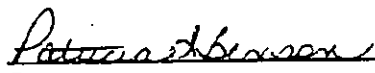
At Closing all North Carolina Highway Encroachment Agreements for water and/or wastewater utility facilities obtained by RDU or River Dell, shall be transferred by written assignment to Heater. From the date of Closing and thereafter, Heater shall be responsible for all highway encroachment bonds

assuming all liability including the payment of all bond premiums. The premiums for prepaid bonds shall be prorated at Closing.

O. River Dell and Heater Shall Consult on the Planning and Coordination of Future Water and Wastewater Installations - Flowers Plantation

River Dell and Heater shall consult on each wastewater collection system or water distribution system expansion as to the planning and coordination of the installation of future water distribution and wastewater collection systems at Flowers Plantation, in order to plan for the expansions to be sized to accommodate future developments upstream for wastewater and downstream for water

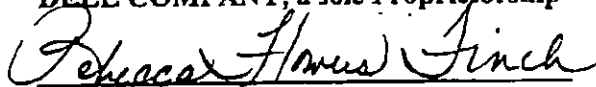
IN TESTIMONY WHEREOF, RDU has executed this Agreement in its corporate name by signature of officers authorized by its Board of Directors, Rebecca Flowers Finch d/b/a River Dell Company, has executed this Agreement by sole proprietor Rebecca Flowers Finch, and Heater has executed this agreement in its corporate name by signature of officers authorized by its Board of Directors, the day and year first above written.

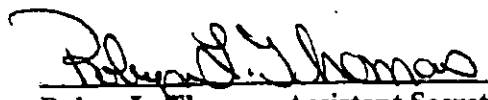

Secretary
(Corporate Seal)

RIVER DELL UTILITIES, INC.

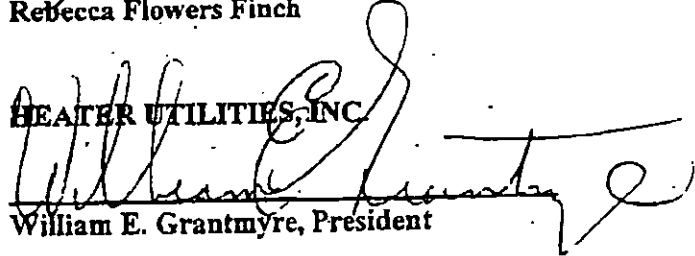

Rebecca Flowers Finch, President

REBECCA FLOWERS FINCH d/b/a RIVER
DELL COMPANY, a sole Proprietorship


Rebecca Flowers Finch


Robyn L. Thomas, Assistant Secretary
(Corporate Seal)

HEATER UTILITIES, INC.


William E. Grantmyre, President

STATE OF NORTH CAROLINA
COUNTY OF JOHNSTON

WATER AND WASTEWATER UTILITY AGREEMENT

(RFF) (HJ)
NOVEMBER
THIS AGREEMENT made ~~August~~ 10, 1997, by and between THE NEUSE PARK

DEVELOPMENT CO., L.L.C., hereinafter referred to as "Developer," whose mailing address is 1029 Kingswood Drive, Apex, NC 27502, and RIVER DELL COMPANY, a sole proprietorship owned by Rebecca Flowers Finch, hereinafter referred to as "River Dell," whose mailing address is 4880 NC 42 East, Clayton, NC 27520, and RIVER DELL UTILITIES, INC., a North Carolina corporation, hereinafter referred to as "Utility," whose mailing address is 4880 NC 42 East, Clayton, North Carolina 27520;

W I T N E S S E T H:

THAT WHEREAS, River Dell owns a large tract of land in Johnston County and has contracted by contract executed June 2, 1997, to sell to Developer a total of 300 acres situated on the north side of Hwy. 42 in Johnston County, North Carolina, which property is referred to as "Flowers Plantation, Phase One," as set forth on that certain map by Dennis Ray Blackman, RLS, entitled "Master Land Use Plan for Flowers Plantation - Phase One," Drawing No. 97-25, Sheet 3 of 7, which property shall hereinafter be referred to as "Subdivision:"

WHEREAS, Developer in purchasing the Subdivision desires that adequate water and wastewater utility service shall be available for the entire Subdivision; and

WHEREAS, Utility owns and operates the water and wastewater utility systems known as Neuse Colony on the south side of N.C. Hwy. 42 pursuant to Certificates of Public Convenience and Necessity, hereinafter referred to as "Certificate(s)," issued by the North Carolina Utilities Commission, hereinafter referred to as "Commission." Neuse Colony is contiguous to Subdivision; and

WHEREAS, Utility has NPDES Permit No. 0064564 which provides for the discharge of 750,000 gallons per day of treated wastewater effluent; and

WHEREAS, Utility has constructed and placed in operation pursuant to N.C. Division of Water Quality, hereinafter referred to as "DWQ" approvals, a 50,000 gallon wastewater treatment plant, hereinafter referred to as "WWTP." Utility has the authority under the NPDES Permit No. 0064564, after approval of DWQ to expand the WWTP to an eventual 750,000 gallons per day;

WHEREAS, Developer, River Dell and Utility desire to provide water and wastewater utility service to all the property in Subdivision being purchased and developed by the Developer; and

WHEREAS, Developer may choose at Developer's sole option to have larger residential lots on a tract of land approximately 92.87 acres in size, located at the northeastern end of Subdivision, which lots would not be served by public utility water and wastewater systems, but instead be served by individual wells and septic tanks; and

WHEREAS, Developer, River Dell and Utility have agreed that Utility shall own and operate the water utility and wastewater utility systems serving all lots in Subdivision which are served by public utility water and wastewater systems; and

WHEREAS, Developer, River Dell and Utility desire to cooperate with each other for the installation of the water and wastewater utility systems to serve Subdivision;

NOW, THEREFORE, for and in consideration of the premises and rights, powers and duties hereinafter set forth to be performed by each, the sufficiency of which

are acknowledged by the parties. Developer, River Dell and Utility mutually do agree as follows:

WASTEWATER UTILITY SYSTEM PROVISIONS

1. Wastewater Treatment Capacity - Utility has wastewater treatment capacity under its NPDES Permit No. 0064564 to serve all the land in Subdivision. At such time as it is necessary for Utility to expand Utility's WWTP beyond the existing 50,000 gallon per day capacity, Utility shall expand the WWTP as Utility's investment. Developer shall have the right to obtain wastewater utility service for up to a maximum of 600 single family residential units located in Subdivision. If Subdivision at buildout has less than 600 single family residential units, then Developer cannot assign, transfer or convey any wastewater treatment capacity for use outside of Subdivision. Developer shall have no right to wastewater utility service outside of Subdivision and Developer has no right under any circumstance to transfer any wastewater treatment capacity to lands outside of Subdivision.

2.a. Wastewater Collection System - Developer shall install at Developer's cost, the entire wastewater collection system within the boundaries of Subdivision including wastewater services to each lot property line. The wastewater collection system shall be installed in accordance with Johnston County and Utility's standards, and plans and specifications to be approved by Utility and DWQ, and engineered by Developer's engineers, who shall prepare and process through DWQ all wastewater collection system permit applications for approval. The minimum main size shall be eight inches. Utility shall execute these applications and cooperate with Developer's engineers to expedite the DWQ construction approval process.

Developer shall pay all permit fees required for these permits and all engineering fees during the permitting and construction process.

b. Conveyance of Collection System - Developer shall convey to Utility, upon completion of the wastewater collection system or a phase of the wastewater collection system, if the system is constructed in phases, by warranty deed and bill of sale, the wastewater collection system installed in accordance with the plans approved by DWQ and Utility.

c. Collection Line Easements -

(i) If any wastewater lines are not within publicly dedicated rights of way, then Developer shall convey to Utility a perpetual easement with a width of 20 feet centered on the collection line, which easement shall be for ingress, egress, regress and access to operate, maintain, repair, inspect and replace the wastewater collection lines and appurtenant equipment.

(ii) The Developer shall provide the necessary perpetual utility easement, beyond the road right-of-way, if any portion of the installed wastewater mains are located within 10 feet of the right-of-way boundary. This additional perpetual utility easement shall provide a clear 10 foot working area on the property side of the wastewater main for the installation, maintenance, repair, operation and replacement of the wastewater main and appurtenant equipment.

d. Requirements for Conveyance of Collection System - It is mutually understood and agreed that the conveyance of each phase the wastewater collection system shall become effective only upon the approval of the wastewater collection system plans and specifications by DWQ, the issuance of the final engineering certification by a professional engineer that the construction of the wastewater

collection system is in accordance with the approved plans and specifications, the approval of the construction of the system by Utility, and the approval by the Commission to Utility of an extension of Utility's Certificate to provide wastewater utility service to Subdivision.

e. Wastewater Service to Each Lot - Developer shall provide, at Developer's cost, a wastewater service to each lot. This service shall consist of a wastewater service tap, 4" home service and clean out at the easement or right of way line. Developer shall use its best efforts to ensure that its employees, contractors, and subcontractors under its control do not break, damage or bury these cleanouts. For the period of one year after the installation of each cleanout, Developer shall ensure that all wastewater service cleanouts are repaired immediately, if damaged, at no cost to Utility.

f. Responsibilities of Homeowners for Service Lines - It shall be the responsibility of the owner of each dwelling unit to maintain the wastewater collection line from their residence to the wastewater main. The homeowner shall be responsible not only for that portion of the collection line on their property, but also that portion of the collection line that crosses any common ownership property prior to entering the Utility's wastewater main.

3. Interconnection to Utility's Wastewater Collection System and WWTP - Developer shall install, at Developer's cost, the interconnection including all engineering, permits, all necessary collection lines, and if required, lift stations and force mains, to carry all the wastewater from Subdivision, to Utility's wastewater system at a manhole to be constructed by River Dell, at River Dell's expense, on the north side of N.C. Hwy. 42, immediately across from Utility's

existing wastewater lift station, which is located on the south side of N.C.Hwy. 42. Developer's engineer shall provide River Dell a written certification of all the wastewater flows to this manhole from Subdivision, prior to River Dell's engineer designing the manhole. Developer shall convey to Utility, at no cost to Utility, a perpetual easement fifteen feet wide in all directions from the center of this manhole to install, inspect, operate, maintain, repair and replace the manhole and any related equipment. The interconnection installed by Developer to this manhole, shall be in accordance with Johnston County and Utility's standards, and the plans and specifications shall be approved by Utility and DWQ, and engineered by Developer's engineer. After completion of construction of this manhole, River Dell shall convey ownership to Utility.

4. Restriction of Groundwater and Surface Water - All wastewater lift stations, (if any), collection lines, services, manholes, and all other wastewater construction by Developer, shall be constructed in such a manner as to restrict entry of ground water and surface waters to at least the minimum standards established by DWQ regulations for infiltration/inflow.

5. Easements and/or Highway Encroachment Agreements - Developer shall provide to Utility, at no cost to Utility, a 20 foot wide centered on the main perpetual easement for all collection lines and force mains. Utility shall obtain all necessary highway encroachment agreements from the North Carolina Department of Transportation for the point where the collection line shall cross N.C. Hwy. 42 to the manhole described in paragraph 3.

6. Lift Station Lot (In Any) - All lift station lots, if any, with sufficient land for the reasonable operation of the lift station, shall be conveyed

to Utility by Developer at no cost to Utility. The deed shall be a general warranty deed conveying fee simple marketable title.

7. Lift Station Access - The lift station lots (if any) to be conveyed to Utility shall front upon a publicly dedicated street or road or have a proper 20 foot wide perpetual easement with ten foot wide gravel all weather road constructed by Developer at Developer's expense, to provide free and reasonable access for vehicles and utilities to the lift station situated thereon.

8. Requirements for Conveyance of Force Main/Lift Station (If Any) - The conveyance of all lift stations and force mains shall become effective only upon the approval of the construction plans by Utility and DWQ, the issuance of the final engineering certification by a professional engineer that the construction was consistent with the DWQ and Utility approved plans and specifications, and the approval of the construction by Utility.

9. Lift Station Lot - Title Insurance and Current Survey - Developer agrees, in addition to conveying the wastewater lift station property, to also furnish to Utility at the expense of the Developer, title insurance insuring the lift station lot to be marketable fee simple title, free and clear of any and all liens and encumbrances along with a current survey showing improvements for the lift station, surveyed and sealed by a registered surveyor. Developer's attorney shall obtain the title insurance for the lift station lot. Developer shall pay the attorneys fees incurred with Utility paying the title insurance premium.

10. Title Insurance for Collection Line and Force Main Easements - Developer, at Developer's expense, shall provide Utility title insurance for all perpetual easements for the wastewater collection lines and force mains not within a

publicly dedicated right of way. If a highway encroachment agreement is obtained from the North Carolina Department of Transportation, the title insurance will not be required for this highway encroachment area. The attorney's fees for this title insurance shall be paid by Developer with Utility paying the title insurance premiums.

11. Approval of Contractors - Utility must approve in writing prior to commencement of any work, all contractors and subcontractors who will perform work on the installation of the wastewater collection lines and all of the wastewater system construction to serve Subdivision.

12. Construction Warranty - All the wastewater utility system contractors shall provide to Utility a one year warranty on all wastewater system components. This warranty shall begin from the date of issuance of the final engineering certification for the construction of that phase. During the one year warranty period, the Developer shall, at Developer's expense, maintain all easements by mowing the grass and filling settling trenches.

13. Utility Commencing Operations - Utility shall assume responsibility for the wastewater utility system in each respective phase of Subdivision at the time of the completion of the construction by the approved wastewater system installation contractor, pursuant to the DWQ and Utility approved plans and specifications, the final engineering certification, and the required transfers as outlined in this Agreement. Also, Utility shall assume responsibility for all operating costs for the wastewater utility system once transfer occurs with these expenditures treated appropriately in Utility's next general rate case.

14. Wastewater System Connection Fee - A connection fee of One Thousand Dollars (\$1,000) per single family residential unit shall be paid to Utility by the first person or builder requesting wastewater service at a particular location. This connection fee shall be paid in conjunction with the water system connection fee addressed in paragraph No. 25. This connection fee will be a maximum of \$1,000 for each of the 600 residential units in Subdivision.

WATER UTILITY SYSTEM PROVISIONS

15. Installation of Water Transmission Line to Bring Water to Development

a. River Dell, at River Dell's expense, shall install the water transmission main from Johnston County's existing water main on N.C. Hwy. 42 to the intersection of N.C. Hwy. 42 and Neuse River Parkway (now called Motorcycle Road), at which point Utility, as Utility's investment, shall install a master meter, meter vault, and appurtenant equipment for Utility to purchase bulk water from Johnston County. This transmission main, master meter, meter vault and appurtenant equipment shall be installed after approval of the plans and specifications by Johnston County and the North Carolina Division of Environmental Health, hereinafter referred to as "DEH." After completion and acceptance by Johnston County, the above described water transmission main, master meter, meter vault and appurtenant equipment shall be conveyed to Johnston County, along with the necessary perpetual easements required by Johnston County.

b. River Dell shall install, at River Dell's expense, the water transmission main from the master meter vault described in paragraph 15.a., along Neuse River Parkway in a northeasterly direction to the last street entrance into Subdivision from Neuse River Parkway, that will be served by the public water

utility system. After completion, this water transmission main shall be conveyed to Utility.

c. The portion of the water transmission main after the master meter vault described in paragraph 15.a., that shall be owned by Utility shall be installed in accordance with plans and specifications which have been approved by the Utility and DEH, and engineered by River Dell's engineer, who shall prepare and process through DEH all the water transmission main permit applications for approval. Utility shall execute these applications and cooperate with River Dell's engineers to expedite the DEH construction approval process. River Dell shall pay all permit fees required for these permits and all engineering fees during the permitting and constructing process.

d. Water Transmission Main Easements - If any water transmission mains are not within publicly dedicated rights of way, then River Dell and/or Developer, depending upon where the water transmission main is located, shall convey to Utility a perpetual easement 20 feet wide centered on main, which easement shall be for ingress, egress, regress and access to operate, maintain, repair, inspect and replace the water transmission main and appurtenant equipment.

e. Requirements for Conveyance of Water Transmission Main - If is mutually understood and agreed that the conveyance of any portion of the water transmission main to Utility shall become effective only upon the approval of the water transmission main by DEH, the issuance of the final engineering certification by Developer's engineer that the construction of the water transmission main was consistent with the approved plans and specifications, and the approval of the construction of the system by Utility.

f. Approval of Contractors - Utility and Johnston County, for the respective portions of the water transmission main which each will respectively own, shall approve in writing prior to commencement of any work, all contractors and subcontractors who will perform work on the installation of the water transmission main and/or master meter, meter vault and appurtenant equipment.

g. Construction Warranty - The water transmission main and master meter vault contractors, shall provide Utility and Johnston County a one year warranty on all water transmission main and master meter vault components for the portion each owns. This warranty shall begin from the date of the issuance of the final engineering certification for construction of that phase.

h. Utility Commencing Operation of Water Transmission Main - Utility, for the portion it will own after the master meter vault, shall assume responsibility for the water transmission main at the time of the completion of the construction by the approved water system installation contractor, the final engineering certification, and the required transfers as outlined in this Agreement. Also Utility shall assume responsibility for all operating costs of the portion of the water transmission main Utility will own, once transfer occurs with these expenditures treated appropriately in Utility's next general rate case.

16. Purchase of Bulk Water from Johnston County - Developer, River Dell and Utility agree that it would be in the best interest of all three parties for Utility to acquire, through a long-term bulk water contract with Johnston County, bulk water to be resold by Utility to all Utility's water customers in Subdivision. River Dell and Utility acknowledge that they have conducted extensive negotiations with Johnston County for a bulk water purchase agreement for the past several

months, and have reached a verbal agreement with Johnston County. River Dell and Utility both believe they will soon execute a written agreement with Johnston County for the purchase of bulk water to enable Utility to provide water utility service for the complete build out of Subdivision.

17. Payment to Johnston County of Bulk Water Capacity Charge - It shall be the responsibility of Utility, as Utility's investment, to pay Johnston County the capacity charge for the bulk water purchase. The capacity charge is a one time fee paid up front to Johnston County for each gallon of bulk water capacity purchased by Utility. Utility shall pay to Johnston County the capacity charge, each time Utility submits to DEH, an application for approval of another phase of the water distribution system in Subdivision.

18. Provision of Production and Well Supply if Negotiations for a Bulk Water Contract with Johnston County Do Not Result in Bulk Water Agreement - Should for any reason Utility not be successful in completing a bulk water purchase written contract from Johnston County, then it shall be Utility's responsibility to provide all the necessary water production facilities for Subdivision as Utility's investment. However, River Dell shall convey to Utility, at no cost to Utility, all the necessary well lots, all of which shall be located outside Subdivision but within reasonable distance to Subdivision, to provide at least one gallon per minute for each residential unit in Subdivision, based upon the 24 hour DEH required well drawdown test. Utility shall as its investment pay all other water production and storage installation costs. River Dell shall also convey to Utility, at no cost to Utility, perpetual water main easements for the installation of water mains to bring

the water from the wells to Subdivision. River Dell shall also convey to Utility, at no cost to Utility, land for an elevated water storage tank.

19. Installation of Water Distribution System within Subdivision -

a. Developer, at Developer's cost, shall install within Subdivision all the necessary water distribution system in accordance with the Johnston County and Utility's standards, and the plans and specifications shall be approved by Utility and DEH, and engineered by Developer's engineer. Developer's engineer shall prepare and process through DEH all water distribution system permit applications for approval. Developer shall install and also pay for all hydrants at a distance of no greater than 1,000 feet apart on the distribution system, as required by Utility or Johnston County, and shall obtain, at Developer's expense, all necessary DEH and other regulatory approvals for the water distribution system. The minimum water main size shall be six inches.

b. Developer shall install and pay for the interconnections of the water distribution system installed by the Developer to the water transmission main installed by River Dell along Neuse River Parkway as described above in paragraph 15.b. and 15.c.

c. Utility shall execute all applications and cooperate fully with Developer's engineer to expedite all approval processes. Developer shall pay for all permit fees required for all water distribution system and interconnection permits and pay all engineering fees during the permitting and construction process.

d. The water distribution system installed by Developer shall include a water service and meter box for each residential unit.

20. Conveyance of Distribution System - Developer agrees to convey to Utility, upon completion of the water distribution system by bill of sale, the entire distribution system installed in accordance with the plans approved by DEH and Utility, including the water distribution mains, hydrants, services, meter boxes and all appurtenant equipment.

21. Easements for Water Mains - a. If any water distribution mains are not located within publicly dedicated rights of ways, then Developer shall convey to Utility a perpetual easement with a total width of 20 feet centered on the main, which easement shall be for ingress, egress, regress and access to operate, inspect, maintain, repair and replace the water main and all appurtenant equipment.

b. The Developer shall provide the necessary perpetual utility easement, beyond the road right-of-way, if any portion of the installed water mains are located within 10 feet of the right-of-way boundary. This additional perpetual utility easement shall provide a clear 10 foot working area on the property side of the water main for the installation, maintenance, repair, operation and replacement of the water main and appurtenant equipment.

22. Approval of Contractors - Utility must approve in writing, prior to commencement of any work, all contractors and subcontractors who will perform work on the installation of all of the water distribution system components.

23. Construction Warranty - All the water utility system contractors shall provide to Utility a one year warranty on all water system components. This warranty shall begin from the date of issuance of the final engineering certification for the construction of that phase.

24. Utility Commencing Operations of Distribution System - Utility shall assume responsibility for each completed phase of the water utility distribution system at the time of completion of the construction by the approved water system contractor, the final engineering certification, the approval of construction by Utility, and the required transfers outlined in this agreement. Utility shall assume responsibility for all operating costs for the water distribution system once transfer of each phase occurs, with the expenditures treated appropriately in Utility's next general rate case.

25. Water System Connection Fee - A connection fee of One Thousand Dollars (\$1,000) per single family residential unit shall be paid to Utility by the first person or builder requesting water service at a particular location. This connection fee shall be paid prior to the installation of a water meter. This connection fee will be a maximum of \$1,000 for each of the 600 residential units in Subdivision.

26. Requirement for Low Water Use Fixtures in All Residential Units - Where possible and practical, Developer shall require in all restrictive covenants, subdivision approval plans and contracts, that all water use fixtures in each residential unit shall be a water saving low water use fixtures.

PROVISIONS FOR BOTH WASTEWATER UTILITY SYSTEM AND WATER UTILITY SYSTEM

27. Utility's Compliance with Laws and Regulations - Upon conveyance of the water and wastewater utility systems in phases to Utility, including the respective deeds, easements, surveys, title insurance, bills of sale and the water and wastewater utility systems completed in phases pursuant to the DEH and DEM approvals, Utility shall supply water and wastewater utility service to the

customers in Subdivision under the terms of the Commission Certificate as the same may be amended from time to time and in full compliance with the laws of the state of North Carolina, the regulations of the Commission, DEH, DWQ and other applicable governmental regulatory bodies.

28. Construction in Phases - The water distribution system and/or wastewater collection system may, at Developer's option, be installed in phases, and at the completion of each phase, that phase shall be conveyed to Utility. Developer shall give Utility at least ^{120 (RFF) (AA)} ~~30~~ days written notice prior to any request by Developer for Utility to execute an application to DEH for water distribution system plans or DWQ for wastewater collection system plans.

29. Construction Water - All water usage shall be metered and Developer shall be required to pay for all water used during construction of all water and wastewater systems. This usage includes pressure testing and flushing of water mains and the flushing of wastewater mains. None of this testing water will be permitted to be placed in an active wastewater collection system.

30. Water and Wastewater Utility Easement - Developer shall convey to Utility at no cost to Utility, a perpetual 20 foot wide water and wastewater utility easement along the southwestern property line of Subdivision from Neuse River Parkway to N.C. Hwy. 42 and also the entire property line of Subdivision along N.C. Hwy. 42. This perpetual easement shall be for the installation, maintenance, operation, inspection, repair and replacement of water mains, and wastewater collection lines and force mains, and appurtenant equipment.

31. Construction Inspections and Certifications - Developer's engineer at Developer's expense must be present on site for all construction verification and

for the tests for his/her engineering certification processing. Developer's engineer, at Developer's expense, shall be responsible for all engineering certifications. Utility's engineer, as Utility's investment, shall have the right, but not the obligation, to make periodic construction site inspections. Utility's engineer shall receive written notice (with facsimile transmission acceptable) at least 48 hours prior to all testing of the wastewater and/or water mains so Utility's engineer can be present on site to observe the tests. If Utility's engineer discovers construction problems during Utility engineer's periodic construction site inspections or testing, the Developer shall be notified and corrections shall be made by Developer, at Developer's expense.

32. No Purchase Price - Utility is not paying any purchase price to Developer for the wastewater collection system or the water distribution system.

33. Developer's Written Certifications of Cost - Developer, at the closing of each phase of the water distribution system and wastewater collection system, shall deliver to Utility separate written certifications of the Developer's cost in that phase, showing the cost of the distribution system and engineering fees and the entire wastewater collection system including services, lift stations, force mains, and engineering fees, which shall have a breakdown between the various components showing the vendors and appropriate amounts. This written certification shall be delivered to Utility at the closing date as set forth in paragraphs 34 and 36.

34. Closing Dates - There shall be a closing date upon completion of each phase of the water distribution and/or wastewater collection system. Utility shall not provide water and/or wastewater utility service to any phase of water system and/or wastewater system, until there has been a completed closing on that phase of

the water and/or wastewater system. The closing date shall be the date of: the delivery of easements, title insurance policies, bill of sale, lift station lot deeds and surveys, and delivery of possession of the completed phase of the water and/or wastewater system to Utility. The delivery of all the above described instruments and delivery of the possession of the water and/or wastewater system to Utility, shall take place prior to Utility providing water and/or wastewater service to any customers in that phase.

35. Certificates and Notification of Certificate Extensions - Utility as Utility's investment, shall file with the Commission all the required Notifications of Contiguous Extension, or obtain Certificates as required for non-contiguous areas, and post all bonds required by the Commission to provide water and wastewater utility service to Subdivision.

36. Closing Deliverables - Utility shall not provide water and wastewater service to a phase of Subdivision until the date of closing for that phase, when all the following events shall have occurred:

a. Water Utility System - Prior to Closing:

i. DEH and Utility have approved the water distribution system plans.

ii. Developer has installed the water distribution system pursuant to DEH and Utility approved plans, the required engineering certification has been issued for the completion of construction of the water system and Developer delivers to Utility at Developer's cost, as built drawings of the installed water distribution system.

iii. The Commission has issued to Utility the water Certificate extension, or Certificate, whichever is being required.

b. Water Utility System - At Closing:

i. Developer has conveyed to Utility by bill of sale and perpetual easements, the necessary portions of the water distribution system, as set forth in paragraphs 20, 21 and 30.

ii. Developer delivers to Utility a written certification of Developer's cost for the construction of that phase of the water distribution system.

c. Wastewater Utility System - Prior to Closing:

i. DWQ and Utility have approved the wastewater collection system plans.

ii. Developer delivers to Utility a general warranty deed for the lift station lots, if any, to be recorded by Utility.

iii. Developer has installed the necessary portion of the wastewater collection system pursuant to the DWQ and Utility approved plans, including the interconnection to Utility's wastewater system at the manhole as described in paragraph 3, the required engineering certifications have been issued for the completion of construction of the wastewater system and Developer delivers to Utility, at Developer's cost, as-built drawings of the installed wastewater collection system.

iv. The Commission has issued to Utility a wastewater Certificate extension or Certificate, whichever is being required.

d. Wastewater Utility System - At Closing:

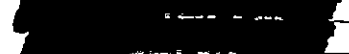

i. Developer has conveyed to Utility by bill of sale and perpetual easements the necessary portions of the wastewater collection system as set forth in paragraphs 2, 3, 5, 6 and 7.

ii. Developer has provided to Utility title insurance for collection line easements and title insurance and current surveys for the lift station lots as set forth in paragraphs 9 and 10.

iii. Developer has conveyed to Utility by bill of sale and perpetual easements the necessary portions of the wastewater system, as set forth in paragraph 2.

iv. Developer delivers to Utility a written certification of Developer's cost for the construction of that phase of the wastewater collection system.

37. Federal Tax I.D. Numbers - The federal taxpayer I.D. numbers of the parties are as follows:

Developer	
River Dell	
Utility	

38. Binding Upon Successors and Assigns - a. This Agreement shall be binding upon and shall inure to the benefit of Developer, River Dell and Utility and the successors and assigns of each.

b. Utility may transfer the water and/or wastewater system to another public utility after approval by the Commission as required by N.C.G.S. 62-111(a). The successor public utility shall assume all the obligations of Utility and be entitled to all benefits of Utility under this Agreement. This requirement shall be included in any transfer agreement executed by Utility.

c. Should Developer transfer any of the land in Subdivision to a secondary developer who will develop a tract of land with more than one single family residential unit, then this secondary developer shall assume all the obligations of

Developer and be entitled to all benefits of Developer under this Agreement. This requirement shall be included in any transfer agreement executed by Developer.

39. Entire Agreement - This writing embodies the entire agreement and understanding between Developer, River Dell and Utility with respect to the water and wastewater utility systems, and there are no other agreements or understandings, oral or written, with reference to the subject matter hereof that are not merged herein and superseded hereby.

40. Amendment - This agreement shall not be modified, amended or changed in any respect except in writing, duly signed by the parties hereto, and each party hereby waives any right to amend this Agreement in any other way.

IN TESTIMONY WHEREOF, the Developer has caused this Agreement to be executed by GEORGE SCHWARTZ, the MANAGER authorized to execute this Agreement on behalf of Developer. River Dell Company has executed this Agreement by its owner, and Utility has caused this Agreement to be executed by its president authorized to execute this Agreement on behalf of the corporation by authority of its Board of Directors.

THE NEUSE PARK DEVELOPMENT CO., L.L.C.

By: [Signature]
Title: MANAGER

RIVER DELL COMPANY, a sole proprietorship

[Signature]
By: Rebecca Flowers Finch - Owner

RIVER DELL UTILITIES, INC.

[Signature]
By: Rebecca Flowers Finch
Title: President

NORTH CAROLINA)
JOHNSTON COUNTY) BULK WATER
) PURCHASE AGREEMENT

THIS AGREEMENT, dated October 6, 1997, between JOHNSTON COUNTY, hereinafter referred to as "County," and RIVER DELL UTILITIES, INC., hereinafter referred to as "River Dell."

WITNESSETH:

WHEREAS, County desires to sell bulk potable water to River Dell, and River Dell desires to purchase bulk potable water from County; and

WHEREAS, River Dell Company, a sole proprietorship, whose owner is Rebecca Flowers Finch, hereinafter referred to as "RDC," owns lands (approximately 3,500 acres) in Johnston County, Wilders Township, located on both the north and south sides of North Carolina Highway 42 near the Neuse River, and also located on the east and west sides of State Road 1003; and

WHEREAS, Rebecca Flowers Finch owns 100 percent of the common stock of River Dell, and River Dell desires to enter into a Bulk Water Purchase Contract with County to purchase potable bulk water for RDC's property located on the west side of State Road 1003, which River Dell would then resell as a public utility under the jurisdiction of the North Carolina Utilities Commission, to customers who are located with the lands now owned by RDC.

NOW, THEREFORE, for and in consideration of the premises and rights, powers and duties hereinafter set forth to be performed by each, the sufficiency of which are acknowledged by the parties, County and River Dell mutually do agree as follows:

I. COUNTY AGREES AS FOLLOWS:

1. The County agrees to supply water to River Dell at a point of delivery in an average amount of _____ gpd. The point of delivery will be North Carolina Highway 42 to the intersection of Neuse ~~Colony~~ ^{RIVER (RFF) (H)} Parkway and North Carolina Highway 42 ^{EAST} West. The peak rate of delivery shall not exceed 700 gpm, which does not include fire flow. The average daily usage is defined as the total water used over a one year period divided by 365. This will be recalculated each January 1 for the fiscal year July 1 through June 30, and adjustments for increased usage shall be made.

2. Upon written request by River Dell, the County agrees to provide additional bulk water supplies to River Dell, subject to availability and further subject to the County's applicable policies in effect at that time.

3. The County will endeavor to provide water to River Dell meeting the requirements of the U.S. Environmental Protection Agency and will strive to sustain delivery without interruption. However, neither the delivery rate, continuity of supply or water quality can be guaranteed due to circumstances which can be beyond the control of the County, including force majeure, emergencies, mechanical breakdowns, power outages, etc. The County assumes no liability for interruptions in service or excursions in quality.

4. All bulk water users connected to the County's water system, including all cities, towns, water districts, regulated utilities, etc., shall be subject to the same terms and

conditions of the County's Bulk Water Sales Agreement as established by the Board of County Commissioners.

5. No area serviced by River Dell is exclusive, and the County has the authority to provide service to retail customers on lines owned by the County.

II. RIVER DELL AGREES AS FOLLOWS:

1. River Dell agrees to pay a capacity charge in the amount of \$2.00 per average gpd of water supplied. Initial capacity fee shall be due when County gives written commitment of capacity at the request of River Dell. It is understood that the capacity charge is subject to adjustment from time to time by the Board of Commissioners after the date of this Agreement.

2. River Dell agrees to install a water transmission main, consisting of approximately 1,450 feet of 12 inch ductile iron pipe, one fire hydrant, valves tees, appurtenant equipment, and a master water meter, meter vault and appurtenant equipment, along North Carolina Highway 42 East from the relocated Castleberry Road to the Neuse-Colony Parkway. The point of delivery shall be the master meter. All the above-referenced equipment and any necessary easements shall be deeded to the County at no charge. All construction shall be subject to the County's utility design standards and shall meet or exceed the County's minimum size design.

3. River Dell agrees to exercise all fire hydrants at least twice every twelve (12) months to ensure proper working conditions in the event of a fire. All water used for fire purposes shall be the responsibility of River Dell.

4. For any facilities to be deeded to the County which lie outside public rights of way, River Dell shall obtain and transfer to the County a permanent utility easement; that the County shall, in writing, approve the form and substance of any and all easements.

5. River Dell shall pay a monthly commodity charge to the County within fifteen (15) days from the date of invoice for water. It is understood that the commodity charge is subject to adjustment from time to time by the Board of Commissioners. As of the date of this Agreement, the commodity charge is \$1.35 per 1,000 gallons.

6. River Dell shall pay a fixed charge to County, which is a pro rata cost based on the fixed cost of providing service to bulk user. This will be charged in the same proportion as other bulk purchasers.

7. River Dell shall construct all water facilities within River Dell's system which shall be supplied by the County to the County's utility design standards.

III. ADDITIONAL COVENANTS AND AGREEMENTS:

1. Emergency Operator. River Dell is a utility company regulated by the North Carolina Utilities Commission (Commission). If the Commission declares an emergency in the service area served by River Dell and ultimately appoints an emergency operator, pursuant to G.S. 62-118(b), then River Dell shall deed the water lines, services and appurtenant equipment and easements to the County at no charge. However, inadequate water quality or quantity from the County, as the bulk water supplier, shall not constitute conditions under which River Dell would be required to deed ownership of the water system to the County without compensation, pursuant to the conditions specified in this paragraph.

2. Terms. Terms of this Agreement shall be ten (10) years, with four (4) automatic renewals for ten (10) years each, unless a one (1) year written notification for cause (cause

being a material breach of this Agreement which remains uncured after notice by the other party) is provided by either party to the other.

3. Service Area. The area served by River Dell and subject to this Agreement shall be that property shown on Exhibit "A" attached hereto and incorporated herein.

4. Site for Storage Tank. River Dell Company agrees to provide a mutually agreeable site to the County at no charge for construction of a 300,000 gallon elevated water storage tank. The County will be responsible for construction of all easements and access roads to the tank site. If River Dell desires a water tank of design other than County standards, then River Dell agrees to pay the difference in cost of the elevated water storage tank. River Dell shall secure all ingress and egress to storage tank site at River Dell expense.

5. Initial Average Daily Usage. River Dell agrees for the first period on this Agreement through June 30, 1999, unless an average daily usage history can be established, that the average daily usage shall be estimated at 250 gallons per day for each single family residential unit. At any time the usage is 95 percent of the purchased amount divided by 365 for a period of 60 days, excepting water line breaks, River Dell shall purchase additional capacity.

6. Resale of Purchased Water. River Dell may not resell purchased water to another utility without the written authorization from the County.

7. Subject to Contracts. This Agreement is subject to the signing of contracts between River Dell Company and the Neuse Parkway Development Company (NPDC) for the purchase by NPDC of approximately 300 acres of land located in Flower's Plantation.

8. Inspections. River Dell shall permit periodic inspections of the installed system by County to ensure compliance with State Plumbing Codes.

9. Notices. Any notices required to be given by this Agreement shall be deemed to have been sufficiently given if mailed by certified mail, postage prepaid, addressed as follows:

Johnston County
Attention: County Manager
Johnston County Courthouse
212 Market Street
P. O. Box 1049
Smithfield, NC 27577

River Dell Utilities, Inc.
Attention: President
4880 N.C. 42 East
Clayton, NC 27520

10. Entire Agreement. This writing embodies the entire agreement and understanding between the County and River Dell, and there are no other agreements or understandings, oral or written, with reference to the subject matter hereof that are not merged herein and superseded hereby.


11. Binding Upon Successors and Assigns. This Agreement shall be binding upon and shall inure to the benefit of the County and River Dell and the successors and assigns of each.

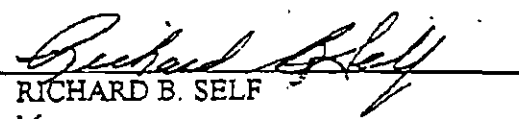
12. Amendment. This Agreement shall not be modified, amended or changed in any respect except in writing, duly signed by the parties hereto, and each party hereby waives any right to amend this Agreement in any other way.

IN WITNESS WHEREOF, Johnston County has caused this Agreement to be executed by its Chairman and Secretary, acting under authority of the Commissioners of Johnston County, and River Dell has caused this Agreement to be executed by its President and Secretary, acting under authority of River Dell's Board of Directors.

Attest:

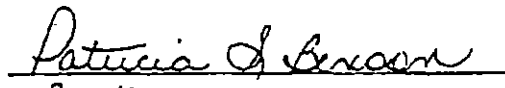
JOHNSTON COUNTY


JOYCE H. ENNIS
Clerk to the Board

By: 
RICHARD B. SELF
Manager

Attest:

RIVER DELL UTILITIES, INC.

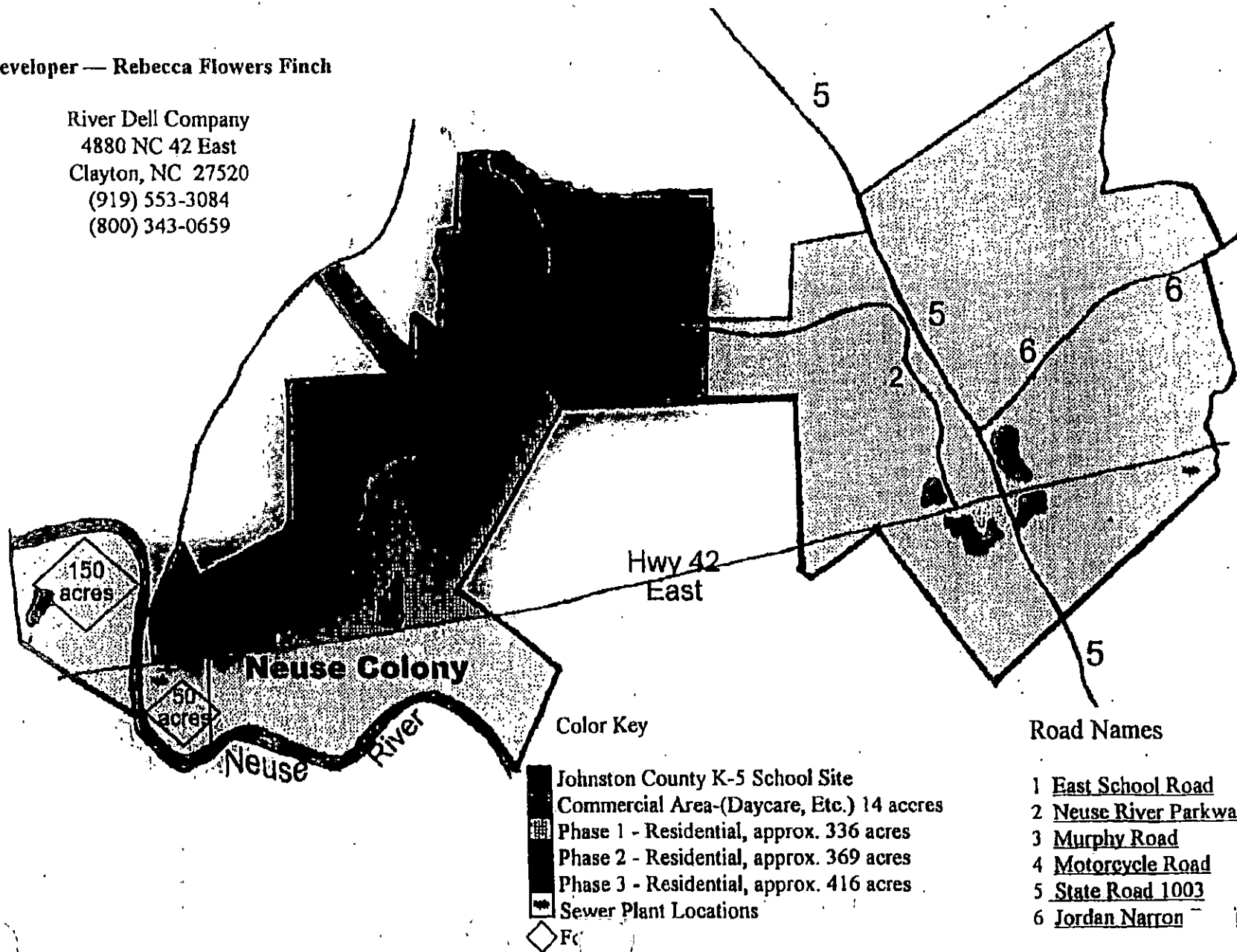

Patricia J. Benson
Secretary

By: 
Rebecca Flowers Finch, President

FLOWERS' PLANTATION

Developer — Rebecca Flowers Finch

River Dell Company
 4880 NC 42 East
 Clayton, NC 27520
 (919) 553-3084
 (800) 343-0659



Color Key

- Johnston County K-5 School Site
- Commercial Area-(Daycare, Etc.) 14 acres
- Phase 1 - Residential, approx. 336 acres
- Phase 2 - Residential, approx. 369 acres
- Phase 3 - Residential, approx. 416 acres
- Sewer Plant Locations
- Fc

Road Names

- 1 East School Road
- 2 Neuse River Parkway
- 3 Murphy Road
- 4 Motorcycle Road
- 5 State Road 1003
- 6 Jordan Narron

Amendment

The second sentence under paragraph 1. Emergency Operator of Section III. Additional Covenants and Agreements on page 4 of the Bulk Water Purchase Agreement dated October 6, 1997, between Johnston County and River Dell Utilities, Inc. is changed and amended as follows:

If the Commission declares an emergency in the service area served by River Dell and ultimately appoints an emergency operator, pursuant to G.S. 62-118(b), then River Dell, upon Commission approval, shall deed the water lines, services and appurtenant equipment and easements to the County at no charge.

FOR JOHNSTON COUNTY:

James H. Langdon Jr.
J.H. Langdon, Chairman
Johnston County Board of Commission

2-8-99
Date

FOR RIVER DELL UTILITIES, INC.

Rebecca Flower Finch, President
Rebecca Flower Finch, President
River Dell Utilities, Inc.

1-28-99
Date

5-14-02

Public Staff
Junis Exhibit 13

I/A

AMENDED PURCHASE AGREEMENT
between
RIVER DELL UTILITIES, INC
and
REBECCA D. FLOWERS d/b/a RIVER DELL COMPANY
and
HEATER UTILITIES, INC.
for the Purchase of the
WATER AND WASTEWATER UTILITY SYSTEMS SERVING
FLOWERS PLANTATION, SECTIONS I, II, AND IIIB
Johnston County, North Carolina

May 14, 2002

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AMENDED PURCHASE AGREEMENT

**STATE OF NORTH CAROLINA
COUNTY OF JOHNSTON**

THIS AMENDED PURCHASE AGREEMENT, hereinafter referred to as "Amended Agreement", made this the 14th day of May 2002, by and between RIVER DELL UTILITIES, INC., hereinafter "RDU", a North Carolina corporation, whose mailing address is 4880 NC Hwy. 42 East, Clayton, North Carolina 27520, RIVER DELL COMPANY, a sole proprietorship whose owner is Rebecca D. Flowers, hereinafter "River Dell," whose mailing address is 4880 NC Hwy. 42 East, Clayton, North Carolina 27520, and HEATER UTILITIES, INC., hereinafter "Heater," a corporation, whose mailing address is P.O. Box 4889, Cary, North Carolina 27519;

WITNESSETH

THAT WHEREAS, River Dell is the owner of certain lands (shown on Exhibit A, attached hereto as Flowers Plantation, Section I, II and IIIB) in Johnston County, Wilders Township, located on the north side of N.C. Hwy. 42 near the Neuse River, hereinafter referred to as "Flowers Plantation;" and

WHEREAS, RDU has applied for and has been issued a NPDES Discharge Permit from the North Carolina Division of Environmental Management, now known as Division of Water Quality, hereinafter referred to as "DWQ," said permit being Permit No. NC0064556 expiring April 30, 2003; and

WHEREAS, River Dell and/or other developers, have plans to install a water distribution system hereinafter referred to as "Future Water Facilities - Flowers Plantation" for the distribution of water to serve the phases of Flowers Plantation, which consists of approximately 1500 acres; said Future Water Facilities are to be installed in phases; and

WHEREAS, River Dell and/or other developers, have plans to install wastewater collection and disposal facilities, which shall be installed in phases, to provide wastewater utility service to Flowers Plantation, which consists of approximately 1500 acres, hereinafter referred to as "Future Wastewater Facilities - Flowers Plantation;" and

WHEREAS, River Dell has requested, and Heater has agreed, that Heater purchase, own, and operate said Future Water Facilities - Flowers Plantation, and Future Wastewater Facilities - Flowers Plantation; and

WHEREAS, River Dell and the County of Johnston, hereinafter referred to as "County," have entered into a Bulk Water Agreement dated May 7, 2002, hereinafter referred to as "Bulk Water Agreement," a copy of which is attached hereto as Exhibit E, and a Bulk Wastewater Agreement, dated May 7, 2002, hereinafter referred to as "Bulk Wastewater Agreement," a copy of which is attached hereto as Exhibit F, for the provision of bulk water from the County to Heater and bulk wastewater treatment by County to Heater to serve the areas shown on Exhibit A being Flowers Plantation, Sections I, II and IIIB.

WHEREAS, the Bulk Water Agreement eliminates the need for the installation of any production wells and elevated water storage. The Bulk Wastewater Agreement eliminates the need for construction of the 500,000 gpd wastewater treatment plant (WWTP) on Buffalo Creek and instead provides for Heater to treat the wastewater from the land at Flowers Plantation Sections I, II and IIIB on an interim basis at Heater's WWTP at the Neuse River, and then in the future have the County provide bulk wastewater treatment for Heater for the wastewater from Flowers Plantation Sections I, II and IIIB.

WHEREAS, River Dell, RDU and Heater desire to amend the Purchase Agreement between RDU, River Dell and Heater dated May 19, 1999, hereinafter referred to as "Original Purchase Agreement," so that the terms of this Amended Agreement will be consistent with the Bulk Water Agreement and the Bulk Wastewater Agreement described above.

NOW, Therefore, for and in consideration of the premises and of the rights, powers, and duties hereinafter set forth to be performed by each party, RDU, River Dell and Heater do mutually agree in this Amended Agreement as follows:

1. **REPRESENTATIONS AND WARRANTIES OF RDU**

RDU hereby represents and warrants as follows:

A. **Organization in Good Standing**

RDU is a North Carolina corporation, duly organized, validly existing and in good standing under the laws of the state of North Carolina, has a current certificate of authority to do business in North Carolina and has all the requisite power and authority to own, lease and operate its properties, to carry on its business as now being conducted and to enter into this Amended Agreement and perform its obligations hereunder.

B. **Authority Relative to Amended Agreement**

The execution, delivery and performance of this Amended Agreement by RDU has been duly and effectively authorized by all necessary corporate actions. This Amended Agreement has been duly executed by RDU and is a valid, legally binding and enforceable obligation of RDU in accordance with its terms.

C. **Effective Amended Agreement**

The execution, delivery and performance of this Amended Agreement by RDU and the consummation of the transactions contemplated hereby will not (a) require the consent, approval or authorization of any person, corporation, partnership, joint venture or other business association or public authority other than the North Carolina Utilities Commission, hereinafter referred to as "Commission,"; (b) violate with or without the giving of notice or the passage of time or both, any provisions of law now applicable to RDU; or (c) result in a violation of RDU's charter or bylaws.

D. **Amended Agreement Does Not Violate Judicial Orders**

The execution and consummation of this Amended Agreement by RDU and the conveyance of all the assets being transferred herein will not violate any

judicial, governmental or administrative order, award, judgment, or decree applicable to RDU, or the assets being transferred to Heater.

E. No Other Contracts

There are no existing contracts or commitments of whatsoever type or nature in effect with respect to the assets being transferred to Heater except for those set forth in the exhibits provided herein. RDU is not aware of any default by any party to any such agreement.

F. No Liens or Encumbrances

There are no liens, claims, or encumbrances of whatsoever type or nature upon or against any of the assets being purchased by Heater, included but not limited to deeds of trust, financing statements or security agreements filed under the uniform commercial code either in Johnston County, hereinafter referred to as "County," or with the North Carolina Secretary of State.

G. Execution of Future Agreements

After the execution of this Amended Agreement and prior to closing, all new developer agreements entered into by RDU and/or River Dell, shall be consistent with the terms of this Amended Agreement or the assets being transferred to Heater.

2. REPRESENTATIONS AND WARRANTIES OF RIVER DELL

A. Contracts

River Dell represents and warrants that there are no existing contracts or commitments of any type whatsoever or nature in effect with respect to water or wastewater utility service to any portion of Flowers Plantation except as set forth in Exhibits C and D attached hereto. River Dell is not aware of any default by any party to any such agreement.

3. REPRESENTATIONS AND WARRANTIES OF HEATER

Heater hereby represents and warrants as follows:

A. Organization; Good Standing; and Power

Heater is a corporation duly organized, validly existing and in good standing under the laws of the state of South Carolina and has a current certificate of

authority to do business in North Carolina, and has all requisite corporate power and authority to own, lease, and operate its properties, to carry on its business as now being conducted and to enter into this Amended Agreement and perform its obligations hereunder.

B. Authority Relative to Amended Agreement

The execution, delivery and performance of this Amended Agreement by Heater has been duly and effectively authorized by all necessary corporate actions. This Amended Agreement has been duly executed by Heater and is a valid, legally binding, and enforceable obligation of Heater in accordance with its terms.

C. Effect of Amended Agreement

The execution, delivery and performance of this Amended Agreement by Heater and the consummation of the transactions contemplated hereby will not (a) require the consent, approval or authorization of any person, corporation, partnership, joint venture or any other business association or public authority other than the Commission; (b) violate with or without the giving of notice or passage of time or both any provisions of law now applicable to Heater; or (c) result in a violation of Heater's charter or bylaws.

4. RIVER DELL'S OPTION TO DEVELOP TRACTS AND/OR SELL TRACTS TO SECONDARY DEVELOPERS

A. River Dell to Sell Tracts to Secondary Developers

River Dell shall have the right at River Dell's sole option to develop the various tracts of land in Flowers Plantation or sell the various tracts to other developers, hereinafter referred to as "Secondary Developers." If a tract of land is sold by River Dell to a Secondary Developer, then that Secondary Developer shall assume all of River Dell's rights and obligations under this Amended Agreement with respect to the installation of the water and wastewater utility systems to serve that tract of land. If River Dell develops a tract of Flowers Plantation, then River Dell for the purposes of Sections 5, 6 and 7 of this Amended Agreement, shall be considered a Secondary Developer.

5. **FUTURE WATER FACILITIES – FLOWERS PLANTATION**

A. **Installation of Future Water Facilities - Flowers Plantation**

- i. Upon development, Secondary Developer shall cause to be installed in Flowers Plantation, at Secondary Developer's expense, a water distribution system including services and meter boxes, to serve all lots in the tract being developed by Secondary Developer in Flowers Plantation. The distribution system shall include the interconnection to the existing water distribution system, or interconnection to a master meter to be installed by Heater to receive the County bulk water, plus any necessary upgrades to the existing water distribution system to provide adequate flows and pressures for the customers in the tract being developed.
- ii. The Future Water Facilities - Flowers Plantation, including all phases, shall be designed and installed pursuant to plans and specifications to be approved by the County, Heater, and DEH. The Future Water Facilities - Flowers Plantation, including all phases, shall be designed and installed pursuant to County's Utility Design Standards and Heater's Specifications dated October 7, 1988, as amended December 6, 1999, a copy of which has been delivered to River Dell and River Dell acknowledges receipt thereof.
- iii. As required by North Carolina General Statute Section 130 A-317 and Rules Governing Public Water Supply Systems, North Carolina Administrative Code 15A NCAC 18 C. 0305(a), neither Secondary Developer nor Heater shall construct or begin construction of any portion of the water utility system prior to approval of the water system plans and specification by DEH.
- iv. Secondary Developer shall pay for the complete installation of all the necessary water distribution system to provide water service to all lots being developed in that phase of Flowers Plantation.
- v. Secondary Developer's engineer shall prepare and process through DEH and County, if required, all water system permit applications for approval. Heater shall execute these applications and cooperate fully

with Secondary Developer's engineer to expedite the DEH and County construction approval process. Secondary Developer shall pay all permit fees required for these permits and all engineering fees during the permitting and construction process. Secondary Developer's engineer shall inspect the water distribution system during construction.

Secondary Developer's engineer shall supply Utility and River Dell with a disk copy of Auto CAD program or other drafting program used in preparing the water system plans for that phase of the Future Water Facilities Flowers Plantation. Secondary Developer's engineer shall provide River Dell with a copy of the plans and specifications approved by County, Heater and DEH.

- vi. The water bulk master meters shall be installed by Heater as Heater's investment.

B. System to be Conveyed

- i. Secondary Developer agrees to convey to Heater, upon completion of the water system, by warranty deed and bill of sale, the entire water distribution system installed in accordance with the plans approved by County, DEH and Heater, including mains, interconnection to the County bulk meter, inter-connection to the existing distribution system, valves, distribution mains, services, and all other equipment necessary and proper to serve all connections in that phase of Flowers Plantation.
- ii. At the time of completion of the sale of each phase of the water distribution system to Heater, Secondary Developer shall convey to Utility a perpetual easement within the rights of way of all publicly dedicated streets and roads within that phase of Flowers Plantation for ingress, egress, regress, and access for the installation, maintenance and repair of the water mains, valves, and other equipment appurtenant to the water distribution system.

- iii. If any water mains are not within publicly dedicated rights of way, then Secondary Developer shall convey to Heater a perpetual easement 10 feet on each side of the water main, which easement shall be for ingress, egress, regress, and access to operate, maintain, repair, and replace the water main and appurtenant equipment.

C. Provision of Necessary Documentation for Commission Certificate and Contiguous Extension Approval

- i. Upon signing of the contract for the installation and purchase of each new phase of the water system and upon DEH approval of the water system plans and specifications as heretofore stated, Utility will apply to the Commission as soon as may be practicable for a Certificate of Public Convenience and Necessity (hereinafter referred to as "Certificate") to provide water service to that phase of Flowers Plantation. Upon the granting of such Certificate, and the conveyance of the completed water system to Heater including the delivery from Secondary Developer to Heater of Secondary Developer's written certification of Secondary Developer's cost for the water system, Heater will supply water service to the residents of that phase of Flowers Plantation under the terms of such Certificate as the same may be amended from time to time and in full compliance with the laws of the State of North Carolina and with the regulations of the County, Commission, DEH and other applicable governmental regulatory bodies.
- ii. It is mutually understood and agreed that the sale and conveyance of said water system shall become effective only upon the granting of the Certificate by Commission and approval of the water system by DEH.

D. Meter Installation Fee

The meter installation fee for each 5/8" x 3/4" residential service shall be \$70 and shall include the meter and meter installation. The meter installation fee may be increased in future years dollar for dollar for any increases in Heater's cost to install a meter.

E. No Connection Fees

There will be no connection fees for any water services.

F. Contractor Approval and Construction Guarantee

- i. Heater must approve, in writing, prior to the commencement of work, all contractors and subcontractors who will perform work on the installation of all Future Water Facilities - Flowers Plantation including the water mains, services, and all other water system construction in Flowers Plantation. Attached as Exhibit B is a list of all water distribution system and all wastewater collection system contractors currently approved by Heater for water or wastewater installations at Flowers Plantation. Heater shall update this list whenever requested by River Dell and/or a Secondary Developer, with the list always having a minimum of three water distribution system contractors, and three approved wastewater collection system contractors. River Dell and/or a Secondary Developer may submit to Heater additional names of licensed utility contractors (including references) for investigation and evaluation for approval by Heater, which approval by Heater shall not be unreasonably withheld.**
- ii. Secondary Developer's contractor shall provide to Heater a one-year warranty on all water system components. This warranty shall begin from the date of issuance of the final engineering certification.**
- iii. Heater shall assume responsibility for each phase of the water utility system at the time of completion of the following: (a) construction of each phase of the water utility system by the approved water system installation contractor, (b) the engineering certification that the phase has been constructed in accordance with the County, DEH and Heater approved plans.**
- iv. Heater will also periodically inspect the construction and may require corrections to portions of the construction that are not consistent with the County, DEH and Heater approved plans.**

G. Purchase Price

The purchase price paid by Heater to Secondary Developer for the first five years from the date of the execution of this Amended Agreement shall be \$300 for each lot in that phase of Flowers Plantation where Secondary

Developer has installed the Future Water Facilities - Flowers Plantation pursuant to this Amended Agreement. After five years, the purchase price shall increase to \$400 for each lot. The purchase price shall be paid at the Closing of each phase of the Future Water Facilities - Flowers Plantation for the number of lots in Flowers Plantation closed for that particular phase.

H. Water Service to Each Lot

Secondary Developer shall provide a water service to each service connection. The water service shall consist of a 3/4" service line, a meter box and meter yoke at the property or street right of way line.

I. Operation of Future Water Facilities - Flowers Plantation

Heater agrees at all time to operate and maintain the water distribution system in the Future Water Facilities - Flowers Plantation conveyed to Heater in accordance with the terms of the Commission Certificate and all governmental statutes, rules and regulations.

J. County Water Transmission Mains.

River Dell has installed at River Dell's expense, water transmission mains the entire length of Flowers Plantation Sections I, II and IIIB, along NC Hwy. 42, along Buffalo Road (SR 1003) from the point at which the County's water main ended near the northern edge of Flowers Plantation Sections I, II and IIIB, and also along old NC Hwy. 42. These water transmission mains have been installed pursuant to engineering plans and specifications approved by County. All of the above-referenced equipment and any necessary easements either have been or shall be deeded to County at no charge. All construction was subject to County's utility design standards.

K. Conveyance to County of Bulk Water Meter Sites.

For each bulk water meter location where Heater installs a bulk meter to be conveyed to County, River Dell or Secondary Developer shall convey to County, at no cost to Heater or County, either by fee simple ownership deed or by perpetual easements in form acceptable to County, sites for each bulk meter which shall be installed along Buffalo Road (SR 1003), NC Hwy. 42 and Old NC Hwy. 42.

L. Closing

Heater shall provide water utility service for each phase of Flowers Plantation from the date of Closing when all the following events occurred.

Prior to Closing:

- i. Secondary Developer has installed the water distribution system including services pursuant to County, DEH and Heater approved plans.
- ii. Secondary Developer delivers either a general warranty deed or a perpetual easement to County for the water master bulk meter location, in form satisfactory to County to be recorded at the Johnston County Register of Deeds.
- iii. Secondary Developer delivers to Heater a written certification of Secondary Developer installation cost in that phase of the Future Water Facilities - Flowers Plantation pursuant to paragraph 5.E.
- iv. The Commission has issued the Certificate or Certificate extension to Heater.

At Closing:

- i. Secondary Developer delivers to Heater a Bill of Sale for the Future Water Facilities - Flowers Plantation to serve that phase.
- ii. Secondary Developer delivers to Heater perpetual easements for all mains, pursuant to paragraph 5.B. ii. and iii.
- iii. Heater delivers to Secondary Developer a check for the purchase price in the amount of \$300 per lot during the first five years and \$400 thereafter, pursuant to paragraph 5.G.

6. FUTURE WATER FACILITIES - FLOWERS PLANTATION - BULK WATER PURCHASE

A. Execution of Bulk Water Purchase Agreement with County

- i. Heater and River Dell have executed the Bulk Water Agreement and Heater and River Dell agree that all future phases of Flowers Plantation, Sections I, II and IIIB shall be served through the bulk water purchased from County and none of the sections shall be served by well water.

B. Payment to Heater of Capacity Cost Recovery Charge Paid to County

Heater will be required to pay a capacity cost recovery charge to County, hereinafter referred to as "CCRC" which currently is \$2.00 per gallon. For each future phase served by bulk water, Secondary Developer shall pay as reimbursement to Heater a cash contribution in aid of construction the same dollar amount per single family residential unit or commercial unit which Heater must pay County as CCRC under the Bulk Water Agreement for each planned connection of Secondary Developer in that phase. This payment shall be made by Secondary Developer to Heater, at the time Heater executes the application to DEH for the approval of plans and specifications for that phase of the water system.

7. FUTURE WASTEWATER FACILITIES - FLOWERS PLANTATION

A. i. Property to be Served and Sale of Tracts to Secondary Developers

River Dell plans to install wastewater collection facilities to provide wastewater service to all the property and land being Flowers Plantation as shown on the attached Exhibit A. Prior to the execution of this Amended Agreement, the Original Purchase Agreement provided that River Dell and Heater plans were to install a 500,000 gpd WWTP and the wastewater collection mains and pump stations to serve the entire Flowers Plantation, which is proposed to be approximately 5,000 units when development is completed. IN THE BULK WASTEWATER AGREEMENT EXECUTED BY RIVER DELL, HEATER AND COUNTY, THE COUNTY HAS GUARANTEED A MINIMUM WASTEWATER CAPACITY OF 500,000 GPD FOR FLOWERS PLANTATION, SECTIONS I, II AND IIB, WHICH 500,000 GPD HAS THE CAPACITY TO SERVE AT A MAXIMUM THE LAND OWNED BY RIVER DELL KNOWN AS FLOWERS PLANTATION AS SET FORTH ON EXHIBIT A. RIVER DELL, RDU AND HEATER AGREE THAT THE 500,000 GPD GUARANTEED CAPACITY IN THE BULK WASTEWATER AGREEMENT MAY ACTUALLY NOT HAVE ENOUGH

CAPACITY TO SERVE ALL THE LAND IN EXHIBIT A.
THEREFORE, THE ENTIRE CAPACITY OF THIS 500,000 GPD
GUARANTEED CAPACITY IN THE BULK WASTEWATER
AGREEMENT IS ABSOLUTELY RESERVED TO BE USED ONLY
FOR THE LAND IN EXHIBIT A. River Dell, in selling tracts of land
in Exhibit A to Secondary Developers, may assign in writing to that
Secondary Developer the rights for that specific tract of land to be
served by a portion of the capacity in the 500,000 gpd bulk
guaranteed capacity in the Bulk Wastewater Agreement, with the
Secondary Developer of that parcel assuming all the rights and
obligations of River Dell as set forth in this Amended Agreement to
install at that Secondary Developer's cost, all the wastewater
collection system, interconnection to and necessary upgrades to the
existing collection system, and pay Heater the cash contribution in aid
of construction for the County's Capacity Fees as specified in
paragraph 7.I. and Pump Station and Force Main as specified in
paragraph 7.G. for that specific tract of land developed by the
Secondary Developer being a portion of Exhibit A. If River Dell
develops a tract of Flowers Plantation, then River Dell for purposes of
Section 7 of this Agreement, shall be considered a Secondary
Developer.

B. Installation of Wastewater Collection Mains & Facilities

- i. Upon development, Secondary Developer shall cause to be installed in each future phase of Flowers Plantation, at Secondary Developer's expense, a complete wastewater collection system, including collection lines, services, manholes, mains, any required lift stations, and the interconnection to the existing wastewater collection system including necessary upgrades to the existing collection system to serve all lots in that phase of Flowers Plantation.
- ii. This collection system shall be installed in accordance with plans and specifications pursuant to County's Utility Design Standards and to

be approved by the County (if required), Heater and DWQ, and engineered by Secondary Developer's engineer.

- iii. Secondary Developer's engineer shall prepare and process through DWQ the collection system, force mains and lift stations (if required), interconnection to existing collection system including necessary upgrades to the existing collection system, and permit applications for approval. Heater shall execute these applications and cooperate fully with Secondary Developer's engineer to expedite the DWQ, and County (if required), construction approval process.
- iv. Secondary Developer's engineer shall inspect the wastewater system during construction.
- v. Upon development, Secondary Developer shall pay all permit fees required for these permits and all engineering during the permitting and construction processes.
- vi. Secondary Developer's engineer shall supply Utility and River Dell with a disk copy of Auto CAD program or other drafting program used in preparing the wastewater system plans for that phase of the Future Wastewater Facilities Flowers Plantation, plus Secondary Developer's engineer shall provide River Dell with a copy of the plans and specifications approved by County, Utility and DWQ.

C. Construction of Wastewater Collection Facilities

Secondary Developer shall install and pay for the complete engineering, DWQ and County (if required) approval and installation costs of all the necessary wastewater collection system including lift stations, if required, force mains, if required, interconnection to the existing collection system, and necessary upgrades to the existing collection system, to provide wastewater service to all the lots in that future phase of Flowers Plantation. The collection system shall be constructed in such a manner as to restrict entry of groundwater and surface waters into the wastewater facilities to at least the minimum standards established by the DWQ regulations for infiltration/inflow.

D. System To Be Conveyed

Secondary Developer shall convey to Heater, by warranty deed, easements, and bill of sale, the entire wastewater collection facilities including, but not limited to, the collection lines, force mains, pumps, controls, electrical equipment, services, and all connections required to provide wastewater service to each future phase of Flowers Plantation.

E. Easements for Force Mains and Collection Mains

If any wastewater collection mains or force mains are not within publicly dedicated rights of way, then Secondary Developer shall convey to Heater a perpetual easement, with a total width of 20 feet centered on the main, for ingress, egress, regress, and access to operate, maintain, repair and replace the main and appurtenant equipment.

F. Lift Station Locations and Conveyance of Lift Stations

i. The location of all lift stations to be installed by Secondary Developer shall be approved by River Dell, its successors and assigns, prior to the submittal by Secondary Developer's engineer to County or Heater of any lift station plans or specifications.

ii. The lift station lot(s), if any, shall be conveyed by Secondary Developer to Heater by general warranty deed conveying fee simple marketable title.

iii. The lift station lot(s), if any, shall front upon a publicly dedicated street to provide free and reasonable access to the lift station. In the event the lift station lot(s) does not front upon a publicly dedicated completed street, then Secondary Developer shall convey a gravel access road with a perpetual 20 foot easement for ingress, regress, and access to the lift station.

G. Pump Station and Force Main

i. Heater shall construct a 700-gallon per minute wastewater pump station located on the south side of NC Hwy. 42 and in a westerly direction from Buffalo Creek, hereinafter referred to as "Pump Station," and a 12" ductile iron wastewater force main from the Pump Station to connect on an interim basis to Heater's existing WWTP on

the east side of the Neuse River and on the south side of NC Hwy. 42, hereinafter referred to as "Force Main." The Force Main shall extend from the Pump Station to the unused 10" Force Main on NC Hwy. 42, which is a tributary to Heater's WWTP on the Neuse River, or to the WWTP if DWQ doesn't permit the connection to this ten-inch force main. Heater shall own, operate and maintain the Pump Station and Force Main.

- ii. RIVER DELL AND HEATER AGREE THAT THE PUMP STATION AND TWELVE INCH DUCTILE IRON FORCE MAIN MAY ACTUALLY NOT HAVE ENOUGH CAPACITY TO SERVE ALL THE LAND IN EXHIBIT A. THEREFORE, THE ENTIRE CAPACITY OF THIS PUMP STATION AND TWELVE INCH FORCE MAIN IS ABSOLUTELY RESERVED TO BE USED ONLY FOR THE LAND IN EXHIBIT A.
- iii. Heater shall pay \$75,000 plus 50% of the balance of the cost of the construction of the Pump Station and Force Main. The \$75,000 shall be spread prorata over the total cost of the Pump Station and Force Main. Heater shall be reimbursed for this 50% balance of the construction cost through prorata payments by the Secondary Developers in the Flowers Plantation Sections I, II and IIIB. Heater's 50% payment of the balance shall be recovered equally from the first 2,000 single-family equivalents. The \$75,000 shall be Heater's investment and shall be included in Heater's utility plant in service and shall not be reimbursed to Heater by developers.
- iv. Heater agrees that Heater will make as Heater's investment, later Pump Station upgrades, as necessary, and later Force Main upgrades as necessary, which shall be recovered on a prorata basis from Secondary Developers in the Flowers Plantation Tract.
- v. Heater shall collect from each Secondary Developer as a contribution in aid of construction at the time Heater executes the DWQ application for the collection system for that Secondary Developer's tract, reimbursement for Heater's cost in the Pump Station and Force

Main, plus any necessary expansions and modifications. The costs to be recovered by Heater shall be divided based upon the first 2,000 customers.

- vi. Where there is an individual customer with only one lot connecting to Heater's wastewater system, then reimbursement to Heater for the Pump Station and Force Main as set forth in paragraphs 7.G. ii., iii. and iv. and the County capacity fees pursuant to paragraph 7.I., shall be paid prior to the time the connection is made to the wastewater collection system.
- vii. River Dell agrees to pay as a contribution in aid of construction 50% of the balance (with Heater paying \$75,000 as Heater's investment and then 50% of the balance) of the total cost for the planning, permitting, and construction of the Pump Station and Force Main. Payments shall be made as the engineering, permitting and construction progresses.
- viii. River Dell and Heater agree that the wastewater from Flowers Plantation Sections I, II and IIIB on an interim basis will be treated by Heater's WWTP on the Neuse River which eventually will be expanded to 750,000 gpd. Thereafter, at a later date, Heater will send this wastewater from Flowers Plantation Sections I, II and IIIB to County for bulk treatment which will be delivered to County at a point on the east side of the Neuse River near NC Hwy. 42.

H. Connection Fee - (None)

Heater shall not collect any connection fees from the customers.

I. Cash Contribution in Aid of Construction for County Bulk Wastewater Capacity

Secondary Developer shall pay to Heater a cash contribution in aid of construction the same dollar amount per gallon as the County's then current bulk wastewater capacity fee, which at the time of the execution of this Amended Agreement is \$5.50 per gallon. This payment shall be made by Secondary Developer to Heater at the time Heater executes the application to

DWQ for approval of the plans and specifications for that phase of the wastewater collection system.

J. Title Insurance and Surveys for Lift Station Lots

Secondary Developer shall, at Secondary Developer's cost, in addition to conveying all of the wastewater collection facilities, easements, and land, to also provide to Heater title insurance insuring the lift station lots (if any), to be marketable fee simple title free and clear of any and all liens and encumbrances along with a current plot plan showing improvements surveyed and sealed by a registered surveyor. Secondary Developer's attorneys shall obtain the title insurance for the lift station lots. Secondary Developer shall pay the attorney's fees incurred with Heater paying the title insurance premiums.

K. Title Insurance for Easements

Secondary Developer shall also provide Heater title insurance for all perpetual easements for wastewater collection lines and force mains not within publicly dedicated rights of way. The title insurance shall insure the perpetual easements to be fee simple marketable title free and clear of all liens and encumbrances. Secondary Developer's attorneys shall obtain the title insurance for these easements with Secondary Developer paying the attorney's fees and Heater paying the title insurance premium.

L. Wastewater Service to Each Lot

Secondary Developer shall provide a wastewater service to each lot. This service shall consist of a wastewater service tap, 4" home service pipe and clean out at the easement or right of way line. Secondary Developer shall use its best efforts to ensure that its employees, contractors and subcontractors under its control do not break, damage or bury these cleanouts.

M. Responsibilities of Customer for Service Lines

It shall be the responsibility of the owner of each dwelling unit and commercial customer to maintain the wastewater collection line from their residence or commercial operation to the sewer main. The customer shall be responsible not only for that portion of the collection line on their property

but also that portion of the collection line that crosses any common ownership property prior to entering the sewer main.

N. Operation of Wastewater Facilities

Heater agrees at all times to operate and maintain the Future Wastewater Facilities - Flowers Plantation conveyed to Heater in accordance with the terms of the Commission Certificate and all governmental statutes, rules, and regulations. Heater shall correct and eliminate any excessive storm water and ground water inflow into the system within 120 days of detection. After Closing, neither RDU nor River Dell shall have any responsibility as to the operation of the wastewater facilities or compliance with the permits.

O. Provision of Necessary Documentation for Commission Approval of Certificate or Certificate Extensions

Secondary Developer shall furnish to Heater an itemized statement of the entire cost of Secondary Developer's installed wastewater facilities with substantiating invoices, or statement of cost in such cases where invoices are not available, and further will furnish to Heater sufficient copies of all surveys, maps, and engineering drawings and specifications required by the Commission in filing an application for the Certificate or Certificate extension.

P. Approval of Contractors and Construction Guarantee

- i. Heater must approve, in writing, prior to the commencement of any work, all contractors and subcontractors who will perform work on the installation of the wastewater system in Flowers Plantation. Attached as Exhibit A is a list of all wastewater collection system contractors currently approved by Heater for wastewater installations at Flowers Plantation. Heater shall update this list whenever requested by River Dell and/or a Secondary Developer, with the list always having a minimum of three approved wastewater collection system contractors. River Dell and/or a Secondary Developer may submit to Heater additional names of licensed utility contractors (including references) for investigation and evaluation for approval

by Heater, which approval by Heater shall not be unreasonably withheld.

- ii. Secondary Developer's contractors shall provide to Heater a one-year warranty on all wastewater system components. This warranty shall begin from the date of issuance of the final engineering certification.
- iii. Heater shall assume responsibility for each phase of the wastewater utility collection system at the time of completion of the following: (a) construction of that phase by the approved wastewater system installation contractor, (b) the interconnection to the existing wastewater collection system including necessary upgrades, and (c) the engineering certification that the phase and interconnection have been constructed in accordance with the DWQ, County (if required), and Heater approved plans.
- iv. Heater will also periodically inspect the construction and may require correction to portions of the construction that are not consistent with the DWQ, County (if required), and Heater approved plans and specifications.

Q. No Purchase Price for Pump Station Site

There will be no purchase price for the four (4) acre site where the Pump Station will be located. This site shall be conveyed to Heater by River Dell prior to commencement of construction of the Pump Station, by general warranty deed conveying fee simple marketable title. The deed to Heater shall provide that, if in the future, the Pump Station and other wastewater equipment on the Pump Station site are no longer used to provide wastewater utility service, then after retaining any necessary wastewater utility line easements, Heater, its successors and assigns shall reconvey the Pump Station site to River Dell at no cost to River Dell.

R. Pump and Haul Costs for K-5 School

With regard to the County's K-5 school which will be constructed at Flowers Plantation, River Dell and Heater agree that each shall pay 50% of all pump and haul costs that may be necessary after April 1, 2003, to provide

wastewater utility service, should this school need wastewater utility service prior to the completion of the Pump Station and Force Main.

S. Transfer of NPDES Permit to County

- i. RDU shall transfer to County the NPDES Permit No. NC0064556. The transfer document shall be executed within 20 days after the date of the execution of this Agreement. County has agreed to hold the executed NPDES transfer documentation and not submit it to DWQ until such time as DWQ has approved the Pump Station and Force Main, and the Pump Station and Force Main have been constructed with final engineering certification.
- ii. Heater agrees to execute a release for all contract rights that Heater has in NPDES Permit No. NC0064556 within 20 days after the execution of this Amended Agreement, so that the permit can be transferred to County upon the completion of the Pump Station, Force Main and the final engineering certification.

T. Closing

Heater shall provide wastewater utility service to each phase from the date of Closing when all the following events shall have occurred.

Prior to Closing:

- i. Secondary Developer has installed the wastewater facilities pursuant to the DWQ, County (if required), and Heater approved plans including the interconnection and necessary upgrades to the existing collection system.
- ii. Secondary Developer has delivered to Heater a written certification of Secondary Developer's installation cost in that phase of the wastewater facilities pursuant to paragraph 7.O.
- iii. The Commission has issued the Order approving the Certificate or Certificate extension to Heater.
- iv. Secondary Developer's attorneys have obtained the title insurance for the lift station lots, if any, and perpetual easements for the collection mains and force mains pursuant to paragraph 7.J. and 7.K.

- v. Secondary Developer shall have delivered to Heater the surveys for the lift station lots pursuant to paragraph 7.J.
- vi. Secondary Developer has delivered to Heater the cash contribution in aid of construction for the WWTP capacity pursuant to paragraph 7.I. and the Pump Station and Force Main pursuant to paragraph 7.G.ii., iii. and iv.

At Closing:

- i. Secondary Developer delivers to Heater a bill of sale for the collection lines, force mains, and all other personal property.
- ii. Secondary Developer delivers to Heater a general warranty deed for the lift station lots, if any, pursuant to paragraph 7.F.
- iii. Secondary Developer delivers to Heater perpetual easements for all collection lines and force mains, pursuant to paragraph 7.F.

8. GENERAL PROVISION

A. Furnishing of Documents Prior to Closing

River Dell and RDU within ten business days of the execution of this Amended Agreement, shall deliver to Heater the following exhibits.

- i. A schedule referred to as Exhibit C, with copies attached of all the agreements, hereinafter referred to as "Developer Agreements," entered into between RDU, and/or River Dell, and any owners and/or developers of property regarding water utility service or wastewater utility service to be provided to the properties of such parties. If there are no such Developer Agreements, then Exhibit C shall state "None."
- ii. Exhibit D, being a schedule with copies attached of all other agreements entered into between RDU and/or River Dell with other parties which would or might be considered to be an encumbrance upon the Future Water Facilities - Flowers Plantation, Future Wastewater Facilities - Flowers Plantation, or would obligate RDU and/or River Dell to provide water or wastewater utility service to any parties in the future. If there are no such agreements, then Exhibit D shall state "None."

B. Cooperation for All Necessary Government Approvals

River Dell and Heater agree to cooperate in obtaining all necessary permits including all DEH and DWQ permits and issuance of the Certificate and/or Certificate extensions by the Commission to Heater. Heater at Heater's cost shall file for all Commission Certificate's and Certificate extensions.

C. Representations and Warranties Survive Closing

All representations and warranties of RDU, River Dell and Heater shall survive the closing.

D. Federal Taxpayer I.D. Numbers

The federal taxpayer I.D. number of the parties are as follows:

RDU: 56-1620248

Rebecca D. Flowers - d/b/a River Dell Company 56-1497251

Heater: 57-0481597

E. Binding upon Successors and Assigns

This Amended Agreement shall be binding upon and shall inure to the benefit of RDU, River Dell and Heater, and the successors and assigns of each.

F. Entire Amended Agreement

This writing embodies the entire agreement and understanding between parties hereto and there are no other agreements or understandings, oral or written, with reference to the subject matter hereof that are not merged herein and superseded hereby. This Amended Agreement supercedes and replaces the Purchase Agreement dated May 19, 1999.

G. Modifications in Writing

This Amended Agreement shall not be modified, amended, or changed in any respect except in writing, duly signed by the parties hereto, and each party hereby waives any right to amend this Amended Agreement in any other way.

H. Heater Provide Commission Required Bonds

Heater shall provide all bonds required by the Commission for each Certificate or Certificate extension.

I. River Dell and Heater Shall Consult on the Planning and Coordination of Future Water and Wastewater Installations - Flowers Plantation

River Dell and Heater shall consult on each wastewater collection system or water distribution system expansion as to the planning and coordination of the installation of future water distribution and wastewater collection systems at Flowers Plantation, in order to plan for the expansions to be sized to accommodate future developments upstream for wastewater and downstream for water.

J. Secondary Developers Shall Comply With Provisions Of Amended Agreement.

River Dell shall insert in all sales contracts of land to Secondary Developers the provision that the Secondary Developer shall comply with and fulfill all obligations and responsibilities of Secondary Developers as described in this Amended Agreement.

K. Exclusion of Tracts with Land Application Wastewater Systems.


Should River Dell sell a tract of land to a Secondary Developer and this Secondary Developer desires, at Secondary Developer's sole option, to install a separate wastewater utility collection and treatment system with a one hundred percent (100%) land application system including but not limited to a golf course for the wastewater effluent, then Heater agrees that such a wastewater system is permissible and would not in any way be a breach of any of the wastewater provisions of this Amended Agreement. However, all the water utility provisions in this Amended Agreement shall remain fully effective and Heater shall be the water utility provider for that tract of land. This land application wastewater system would not be owned or operated by Heater unless Heater and Secondary Developer execute to a mutually satisfactory written agreement.

L. Amended Agreement Supercedes Original Purchase Agreement.

This Amended Agreement completely supercedes and replaces in its entirety the Original Purchase Agreement. However, for any reason, should the County, River Dell or Heater not execute either the Bulk Water Agreement or the Bulk Wastewater Agreement, then all provisions in the Original

Purchase Agreement shall be reinstated and fully effective and this Amended Agreement is null and void.


IN TESTIMONY WHEREOF, RDU has executed this Amended Agreement in its corporate name by signature of officers authorized by its Board of Directors, Rebecca D. Flowers d/b/a River Dell Company, has executed this Amended Agreement by sole proprietor Rebecca D. Flowers, and Heater has executed this Amended Agreement in its corporate name by signature of officers authorized by its Board of Directors, the day and year first above written.

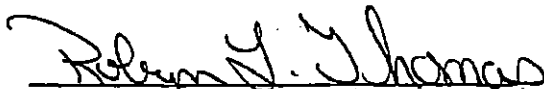

Secretary
(Corporate Seal)

RIVER DELL UTILITIES, INC.

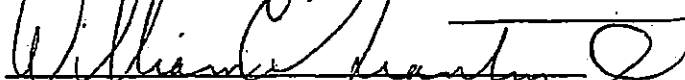

Rebecca D. Flowers, President

REBECCA D. FLOWERS d/b/a RIVER DELL
COMPANY, a sole Proprietorship


Rebecca D. Flowers


Robyn L. Thomas, Assist. Secretary
(Corporate Seal)

HEATER UTILITIES, INC.


William E. Grantmyre, President

INDEX TO EXHIBITS

Exhibit A - Map Flowers Plantation – Sections I, II and IIIB

Exhibit B - Approved Water and Wastewater Contractor List

Exhibit C - Developer Agreements

Exhibit D - Agreements which Might be an Encumbrance

Exhibit E - Bulk Water Agreement with Johnston County dated May 14, 2002

Exhibit F - Bulk Wastewater Agreement with Johnston County dated May 14, 2002

HEATER UTILITIES, INC.
PREFERRED CONTRACTOR LIST

Arnold Utility Construction
P.O. Box 236
Fuquay Varina, NC 27526
Office: (919)872-9450

Contact: Melvin Arnold
Mobile: (919)740-6387
Brian Arnold

Bunn Construction Company, Inc.
2051 Crooked Creek Road
Clayton, NC 27520
Office: (919)553-3891

Contact: Vick Bunn

CSSI
6040-A Six Forks Road, Suite 246
Raleigh, NC 27609
Office: (919)779-3212
Mobile: (919)422-2562
Fax: (919)662-2168

Contact: Robert Spivey
Richard Smith

Dennis Corbett Construction
102 Bluegrass Road
Selma, NC 27576
Office: (919)965-6008

Contact: Dennis Corbett
Mobile: (919)422-1710

Harrco Construction
8601 Barefoot Industrial Road
Raleigh, NC 27613
Office: (919)782-3440
Fax: (919)782-3441

Contact: Lex Harrison
Mobile: (919)740-0360
Pager: (919)510-2045

Hasty Utilities (Water Only)
P.O. Box 219
Knightdale, NC 27545
Office: (919)266-4161
Home: (919)496-6273
Fax: (919)266-4162

Contact: Wayne Timberlake
Pager: 713-3622

Pipeline Utilities
8015 Fayetteville Road
Raleigh, NC 27603
Office: (919)772-4310

Contact: Johnny Blankenship
Mobile: (919)218-8004
Pager: (919)871-6504
Contact: Kenny Wrenn
Mobile: (919)218-8003

Selco Construction
P.O. Box 1142
Smithfield, NC 27577
Office: (919)965-5509
Mobile: (919)691-0798

Contact: Wade Eason
Rick Lundquist
Pager: 989-2501
Shop: 965-4438

NORTH CAROLINA)
JOHNSTON COUNTY)

BULK WATER PURCHASE AGREEMENT
HEATER UTILITIES - FLOWERS
PLANTATION, SECTIONS I, II, IIIB

THIS AGREEMENT, dated May 14th, 2002, between JOHNSTON COUNTY, hereinafter referred to as "County," HEATER UTILITIES, INC., hereinafter referred to as "Heater," and REBECCA FLOWERS d/b/a RIVER DELL COMPANY, hereinafter referred to as "River Dell."

W I T N E S S E T H:

WHEREAS, County desires to sell bulk potable water to Heater, and Heater desires to purchase bulk potable water from County; and

WHEREAS, River Dell is the owner of a certain tract of land known as Flowers Plantation, Section I, II and IIIB in Wilders Township, Johnston County, as shown on the attached map being Exhibit A.

WHEREAS, Heater desires to supply potable water purchased from County to Flowers Plantation Sections, I, II, IIIB.

NOW THEREFORE, for and in consideration of the premises and rights, powers and duties hereinafter set forth to be performed by each, the sufficiency of which are acknowledged by the parties, County, Heater and River Dell do agree as follows:

I. COUNTY AGREES AS FOLLOWS:

1. The County agrees to supply water to Heater at each bulk water meter point of delivery, an average amount of 180 gallons per day (gpd) per single family residential equivalent. The average daily usage is defined as the total water used over a one-year period divided by 365. This will be recalculated each January 1st for the

fiscal year July 1st through June 30th, and adjustments for increased usage shall be made.

2. The capacity charge payments specified in paragraph III.1. shall be paid as connections are approved by the North Carolina Department of Environment and Natural Resources; Division of Environmental Health (DEH). For example, if the initial DEH approval for Flowers Plantation, Phase I is 100 lots, the first payment of the capacity charge shall be \$36,000 calculated as follows: 100 lots x 180 gallons per lot x \$2.00 per gallon. As DEH approvals are issued for new sections of Heater's water distribution system, Heater shall pay to the County the additional capacity fees required under this Agreement.
3. The County agrees to provide additional bulk water supplies to Heater for the full build out of Flowers Plantation, Sections I, II and IIIB, subject to availability and further subject to the County's applicable policies in effect at that time.
4. County, River Dell and Heater agree that the property in Flowers Plantation Sections I, II, and IIIB shall be provided water service by Heater through a number of bulk water meters installed near the transmission mains located along Buffalo Road (SR 1003), NC Hwy. 42 and Old NC Hwy. 42. These bulk meters with the bulk water purchased by Heater from County, will serve different phases of Flowers Plantation, Sections I, II and IIIB, as the various phases are developed along these transmission mains.

5. The County will endeavor to provide water to Heater, which meets the requirements of the U.S. Environmental Protection Agency and will strive to sustain delivery without interruption. However, neither the delivery rate, continuity of supply or water quality can be guaranteed due to circumstances which can be beyond the control of the County, including force majeure, emergencies, mechanical breakdowns, power outages, etc. The County assumes no liability for interruptions in service or excursions in quality.
6. All bulk water users connected to the County's water system, including all cities, towns, water districts, regulated utilities, etc., shall be subject to the same terms and conditions of the County's Bulk Water Sales Agreement as established by the Board of County Commissioners.
7. Heater will have the exclusive right to serve all connections to be located in Flowers Plantation Sections I, II, and IIB shown on Exhibit A; however, this exclusive right shall terminate for those land areas for which development does not occur within twenty years of the date of this agreement. Development in this Paragraph 7 is defined as Johnston County final approval of a subdivision plat for recordation.
8. If Heater, its successors or assigns, no longer supplies potable water to all or part of that certain tract of land identified on Exhibit A attached to this Agreement for any reason, Heater, its successors or assigns, and River Dell, or its assigns, agree that Johnston County or its designated special services district, after

approval by the North Carolina Utilities Commission, shall supply water to that certain tract of land consistent with the County's then current rates and policies, including its policies regarding mandatory connection to the County's system.

II. RIVER DELL AGREES AS FOLLOWS:

1. River Dell has installed at River Dell's expense, water transmission mains the entire length of Flowers Plantation Sections I, II and IIIB, along NC Hwy. 42, along Buffalo Road (SR 1003) from the point at which the County's water main ended near the northern edge of Flowers Plantation Sections I, II and IIIB, and also along old NC Hwy. 42. These water transmission mains have been installed pursuant to engineering plans and specifications approved by County. These water transmission mains are now owned by County. All of the above referenced equipment and any necessary easements either have been or shall be deeded to County at no charge. All construction was subject to County's utility design standards.
2. For each bulk water meter location where Heater installs a bulk meter to be conveyed to County, River Dell shall convey to County, at no cost to Heater or County, either by fee simple ownership deed or by perpetual easements in form acceptable to County, sites for each bulk meter which shall be installed along Buffalo Road (SR 1003), NC Hwy. 42 and Old NC Hwy. 42.

3. For all water transmission mains along Buffalo Road (SR 1003), NC Hwy. 42 and Old NC Hwy. 42 conveyed to the County, which lie outside public rights of way, River Dell shall obtain and transfer to the County a permanent utility easement, and the County shall, in writing, approve the form and substance of any and all these easements.

III. HEATER AGREES AS FOLLOWS:

1. Heater agrees to pay a one time capacity charge in the amount of \$2.00 per average gpd of water supplied. Initial capacity fee shall be due on or before Heater makes connection to the County water main for each bulk water meter. It is understood that the capacity charge is subject to adjustment from time to time by the Board of Commissioners after the date of this Agreement.
2. Heater agrees to install as Heater's investment, a 6" or larger connecting water main from the County's transmission main to each bulk meter and each of the necessary bulk meters and reduced pressure zone backflow preventors in suitable enclosures(s) in accordance with the County's specifications and design standards. All the above-referenced equipment shall be deeded to the County at no charge. All construction shall be subject to the County's approval.
3. Heater agrees to exercise all fire hydrants on Heater's distribution system, at least twice every twelve (12) months to ensure proper working conditions in the event of a fire. All

water used for fire purposes shall be the responsibility of Heater.

4. Heater shall pay a monthly commodity charge to the County within fifteen (15) days from the date of invoice for water. It is understood that the commodity charge is subject to adjustment from time to time by the Board of Commissioners. As of the date of this Agreement, the commodity charge is \$1.55 per 1,000 gallons.
5. Heater shall pay a fixed monthly charge to County, which is a pro rata cost based on the fixed cost of providing service to a bulk user. This will be charged in the same proportion as other bulk purchasers. As of the date of this Agreement, the fixed monthly charge is \$100.00 for each bulk water meter installed by Heater.
6. All new water distribution facilities within Heater's system, which shall be supplied bulk water by the County, shall be constructed to the County's utility design standards.
7. Heater and County agree that Heater will purchase bulk water from County, for the existing Bennett Place subdivision on the south side of NC Hwy. 42 near the Neuse River. The bulk water shall be provided through County's existing bulk water meter located at the intersection of NC Hwy. 42 and Neuse River Parkway, which already provides bulk water to Heater. Heater, as Heater's investment, after DEH and County approval of the plans and specifications, shall install an 8-inch water main to interconnect the existing Bennett Place water distribution system to Heater's existing water main on East School Street. Heater shall own this interconnecting

water main. Heater shall pay County for Bennett Place the capacity charge and the monthly commodity charge payments as specified in this Agreement. All the provisions of this Agreement are applicable to Bennett Place except paragraphs I.3, I.4, I.7, II.1, II.2, II.3, and III.2. and III.5. (Heater is already paying this fixed monthly bulk water meter charge).

IV. ADDITIONAL COVENANTS AND AGREEMENTS:

1. Emergency Operator. Heater is a utility company regulated by the North Carolina Utilities Commission (Commission). If the Commission declares an emergency in Flowers Plantation Sections I, II, and IIIB service area served by Heater and ultimately appoints an emergency operator, pursuant to G.S. 62-118(b), then Heater, upon Commission approval, shall deed the water lines, services, and appurtenant equipment and easements to the County at no charge. However, inadequate water quality or quantity from the County, as the bulk water supplier, shall not constitute conditions under which Heater would be required to deed ownership of the water system to the County without compensation, pursuant to the conditions specified in this paragraph.
2. Terms. The terms of this Agreement shall be twenty (20) years, with five (5) automatic renewals for ten (10) years each, unless a one (1) year written notification for cause (cause being a material breach of this Agreement which remains uncured after

notice by the other party) is provided by either party to the other.

3. Service Area. The area served by Heater and subject to this Agreement shall be that property shown on Exhibit "A" attached hereto and incorporated herein.
4. Initial Average Daily Usage. Heater agrees for the first period under this Agreement through January 1, 2003, that the average daily usage shall be estimated at 180 gpd for each single-family residential unit. At the time the usage is 95 percent of the annual (or six months annualized) purchased amount divided by 365 for a period of 60 days, excepting water line breaks or significant fire demand, Heater shall purchase additional capacity.
5. Resale of Purchased Water. Heater may not resell purchased water to another utility without the written authorization from the County.
6. Inspections. Heater shall permit periodic inspections of the installed system by County to ensure compliance with State Plumbing Codes and County Utility standards and specifications.
7. Notices. Any notices required to be given by this Agreement shall be deemed to have been sufficiently given if mailed by certified mail, postage prepaid, addressed as follows:

Johnston County
Attention: County Manager
Johnston County Courthouse
212 Market Street
P.O. Box 1049
Smithfield, N.C. 27577

Heater Utilities, Inc.
Attention: President
202 MacKenan Court
Cary, NC 27511

Rebecca Flowers
d/b/a River Dell Company
4880 NC 42 East
Clayton, NC 27520

8. Entire Agreement. This writing embodies the entire agreement and understanding between the County, Heater, and River Dell, and there are not other agreements or understandings, oral or written with reference to the subject matter hereof that are not merged herein and superseded hereby.
9. Binding Upon Successors and Assigns. This Agreement shall be binding upon and shall inure to the benefit of the County, Heater and River Dell, and the successors and assigns of each.
10. Amendment. This Agreement shall not be modified, amended or changed in any respect except in writing, duly signed by the parties hereto, and each party hereby waives any right to amend this Agreement in any other way.

IN WITNESS WHEREOF, Johnston County has caused this Agreement to be executed by its Manager and Clerk, acting under authority of the Commissioners of Johnston County, and Heater Utilities, Inc. has caused this Agreement to be executed by its President and Assistant Secretary, and Rebecca Flowers, the

sole proprietor of River Dell Company, has executed on behalf of River Dell Company.

Attest:

Joyce H. Ennis
Clerk to the Board

JOHNSTON COUNTY

[Signature]
County Manager

Attest:

Robert H. Thomas
Asst. Secretary

HEATER UTILITIES, INC.

William E. [Signature]
President

REBECCA FLOWER d/b/a RIVER DELL COMPANY,
a sole proprietorship

Rebecca Flowers
Rebecca Flowers

NORTH CAROLINA
COUNTY OF JOHNSTON

I, Loraine H. Coley a Notary Public of said State and County, certify that Joyce H. Ennis, Clerk of the Johnston County Board of Commissioners, a corporate body, came before me and acknowledged that by authority given, the foregoing instrument was signed in its name by its Manager, sealed with its corporate seal and attested by her as its Clerk.

Witness my hand and official seal, this the 14 day of May, 2002.

Loraine H. Coley
Notary Public

My Commission Expires:

4-9-05
Date

SEAL

STATE OF NORTH CAROLINA
COUNTY OF Wake

I, a Notary Public for said county and state, do hereby certify that Robyn L. Thomas, personally appeared before me this day and acknowledged that she is Assistant Secretary of Heater Utilities, Inc., a corporation, and that by authority duly given and as the act of the corporation the foregoing instrument was signed in its name by its President, sealed with its corporate seal and attested by herself as its Assistant Secretary.

Witness my hand and official seal this 14th day of May 2002.

Donna F. Pien Had
Notary Public

My Commission expires:

April 29, 2005 ^{CALL}
Date

SEAL

NORTH CAROLINA
COUNTY OF Johnston

I, a Notary Public for the county and state aforesaid, do hereby certify that Rebecca Flowers, d/b/a River Dell Company, a sole proprietorship, personally appeared before me this day and acknowledged the due execution of the foregoing instrument.

Witness my hand and official stamp or seal, this 14 day of May 2002.

Lorain H. Colby
Notary Public

My Commission Expires:

4-9-05
DATE

SEAL

Exhibit A

REBECCA FLOWERS FINCH
Sketch #20853

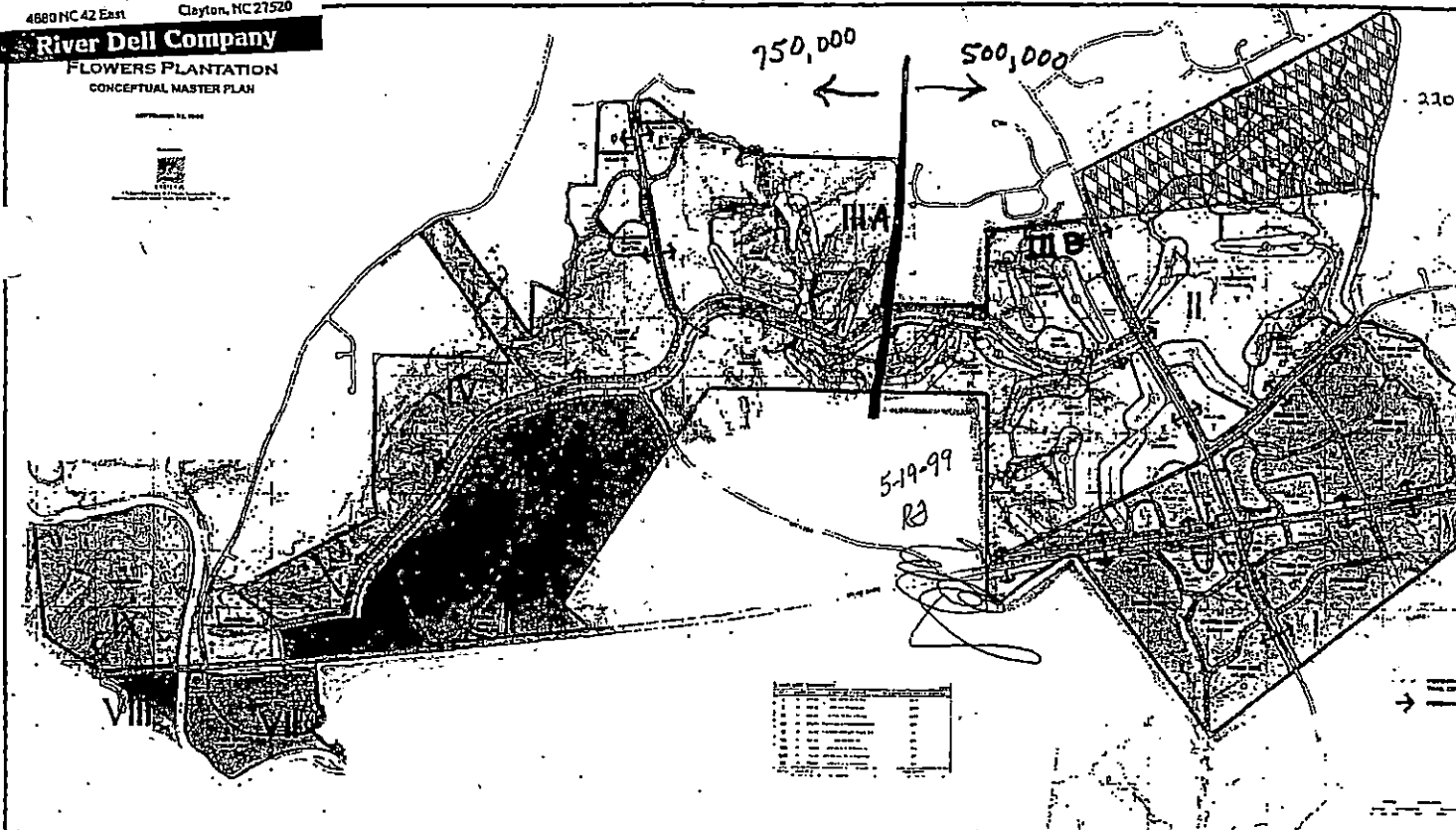
(919) 553-3084
Toll Free 1-800-343-0659
Fax (919) 553-3888

4880 NC42 East Clayton, NC 27520

River Dell Company

FLOWERS PLANTATION
CONCEPTUAL MASTER PLAN

SEPTEMBER 15, 1999



Symbol	Description
□	Zone III-A
□	Zone III-B
□	Zone III-C
□	Zone III-D
□	Zone III-E
□	Zone III-F
□	Zone III-G
□	Zone III-H
□	Zone III-I
□	Zone III-J
□	Zone III-K
□	Zone III-L
□	Zone III-M
□	Zone III-N
□	Zone III-O
□	Zone III-P
□	Zone III-Q
□	Zone III-R
□	Zone III-S
□	Zone III-T
□	Zone III-U
□	Zone III-V
□	Zone III-W
□	Zone III-X
□	Zone III-Y
□	Zone III-Z

BULK WASTEWATER SERVICE AGREEMENT
FOR FLOWERS PLANTATION
SECTIONS I, II AND IIIB

NORTH CAROLINA
COUNTY OF JOHNSTON

THIS AGREEMENT dated May 14th, 2002, by and between JOHNSTON COUNTY, hereinafter referred to as "County," and REBECCA FLOWERS, d/b/a RIVER DELL COMPANY, hereinafter referred to as "River Dell," and HEATER UTILITIES, INC., hereinafter referred to as "Heater;"

W I T N E S S E T H:

WHEREAS, County desires to provide bulk wastewater transmission and treatment service for Heater for development on lands owned by River Dell and Heater desires to purchase bulk wastewater transmission and treatment service from County; and

WHEREAS, the service to be provided shall be applicable for Sections I, II and IIIB of Flowers Plantation, owned by River Dell as shown and described on Attachment A and referred to hereinafter as "Flowers Plantation Tract;" and

WHEREAS, River Dell desires to relinquish its existing 500,000 gallon per day (gpd) NPDES discharge permit into Buffalo Creek (NPDES Permit No. NC0064556), and Heater desires to relinquish to County all of Heater's contract rights to this 500,000 gpd NPDES permit.

WHEREAS, River Dell and Heater desire to construct a wastewater Pump Station, hereinafter referred to as "Pump Station," and twelve inch (12") ductile iron wastewater force main, hereinafter referred to as "Force Main," which shall extend from the Pump Station to the unused ten inch force main on

NC Hwy. 42, which is a tributary to Heater's wastewater treatment plant hereinafter "WWTP," on the Neuse River and the south side of NC. Hwy. 42, or the WWTP if the NCDENR, Division of Water Quality, hereinafter "DWQ," doesn't permit the connection to this ten inch force main.

NOW, THEREFORE, for and in consideration of the premises, rights, powers and duties hereinafter set forth to be performed by each, the sufficiency of which are acknowledged by the parties, County, River Dell and Heater do mutually agree as follows:

I. COUNTY AGREES AS FOLLOWS

1. County agrees to receive untreated domestic and commercial wastewater from existing and future development in the Flowers Plantation Tract at the point of delivery being the County's manhole on the north side of Hwy. 42 at the Neuse River bridge, hereinafter "Point of Delivery." After receiving the wastewater at the Point of Delivery, the County shall transmit the wastewater to County's wastewater treatment plant, treat the wastewater and dispose of the treated wastewater in an environmentally sound manner in accordance with regulatory requirements. As an interim measure, Heater will treat all wastewater from the Flowers Plantation Tract in its Neuse River wastewater treatment plant until such time that Heater chooses to divert wastewater to the County as addressed in Paragraph I.20.

2. County shall guarantee to accept and treat wastewater from Heater from the Flowers Plantation Tract a minimum of 500,000 gpd, subject to DWQ amending NPDES Permit No. NC0030716 to increase the hydraulic limit by 500,000 gpd and the total nitrogen limit by 5,632 lbs. per year.

3. Upon written request from Heater, the County agrees to provide additional bulk wastewater service to Heater under the same availability as bulk wastewater is provided to other County bulk wastewater customers. The availability of additional capacity is subject to DWQ's approval of the expansion of County's wastewater treatment plant.

4. County agrees that the wastewater capacity from the K-5 elementary school to be located at the Flowers Plantation Tract shall not be counted against the 500,000 gpd guaranteed bulk wastewater capacity of Heater. In addition, in the future, should there be an additional County middle school or high school flowing into Heater's wastewater collection system and transported to the Point of Delivery for County bulk wastewater treatment, then the wastewater capacities from this middle school and high school shall also not count against Heater's 500,000 gpd minimum guaranteed bulk capacity.

5. County acknowledges that the Flowers Plantation Tract may need as much as 1.4 million gallons per day wastewater treatment at buildout. However, County does not guarantee that capacity but only agrees to provide additional bulk wastewater treatment capacity based upon the County's availability of County for bulk wastewater treatment to the same extent as other bulk wastewater providers in Johnston County.

6. The County will own, operate and maintain a wastewater metering facility at the Point of Delivery, which metering facility and the interconnection to County's manhole shall be constructed by Heater, at Heater's cost, and then transferred to County.

7. County will invoice Heater monthly for bulk wastewater transmission and treatment service. Invoices will be based on monthly wastewater meter readings.

8. County agrees that Heater shall be charged the same bulk wastewater rate as the other bulk wastewater customers of County who also paid County wastewater capacity fees.

9. County will construct at its own cost an eight inch (8") gravity wastewater line from the K-5 school site to connect to the pump station to be constructed on the south side of Hwy. NC 42 adjacent to NC 42 near Buffalo Creek, hereinafter referred to as "Pump Station." Heater shall, as Heater's investment, pay up to \$75,000 of the cost to upsize this gravity wastewater line from eight inch (8") to twelve inch (12").

10. County agrees to provide engineering and technical advice on the design, permitting and construction of the Pump Station and Force Main, and design documents shall be reviewed and approved by the County.

11. County and Heater agree that the K-5 school, the middle school and high school, if built, shall be retail wastewater customers of County. County shall then be a customer of Heater for the wastewater produced by the schools, paying Heater's uniform commercial rates as approved by the North Carolina Utilities Commission, hereinafter referred to as "Commission."

12. County agrees to deliver the wastewater to a point five feet outside the school building at which point Heater shall be responsible to own, operate and maintain the gravity collection line to the Pump Station.

13. County agrees to install and operate any necessary grease traps prior to the point five foot outside the school building, which is the point Heater becomes responsible.

14. County agrees that at a later time, the K-5 school, the middle school and high school will become completely customers of the County with Heater no longer treating this wastewater at Heater's Neuse River WWTP. County agrees at that time Heater's collection line from the school, Pump Station and Force Main shall carry the wastewater from the K-5 grammar school, middle school and high school to the Point of Delivery at the County's manhole on Neuse River, and Heater shall no longer charge County Heater's uniform commercial rates as approved by the Commission.

15. County and Heater agree when the wastewater from the schools is no longer treated by Heater as described in Paragraph 14, that County and Heater will negotiate a pass through transportation tariff to be approved by the Commission, whereby County will pay its prorata share of transportation, operation and maintenance cost, based on the percentage of flows through the Pump Station and Force Main, of the cost to operate the Pump Station and Force Main including the electrical, chemicals, labor and other costs directly related to operating the Pump Station and Force Main.

16. County and Heater agree that the K-5 grammar school and the middle school, both of which are contemplated to be built on the Flowers Plantation Tract shall be retail water customers of the Archer's Lodge Water District and not retail water customers of Heater. Heater shall be allowed to read the school water meter for purposes of wastewater billing.

17. County agrees that Heater shall have a total of 20 years in order to take down the bulk wastewater capacity under this agreement.

18. County agrees that the first 500,000 gpd shall be paid for by Heater as Heater takes down the capacity. Heater agrees to purchase bulk wastewater capacity in 25,000 gpd blocks.

19. County agrees that after the first 500,000 gpd plus the capacity for the K-5 grammar school, middle school and high school have been taken, then Heater shall take down and pay for the capacity in 25,000 gallon blocks. Heater shall pay for the capacity and give notice to the County, two years in advance of Heater's need for the capacity.

20. County and Heater agree that the bulk wastewater connection to County's Point of Delivery shall be made as Heater's investment at the time Heater desires to divert bulk wastewater to the County for treatment. Heater and County acknowledge that Heater may choose to fully buildout Heater's WWTP on the Neuse River to the total capacity of 750,000 gpd, prior to the time Heater diverts any wastewater to County for bulk treatment.

II. RIVER DELL AGREES AS FOLLOWS

1. River Dell shall transfer to County the NPDES Permit No. NC0064556. The transfer document shall be executed within 20 days after the date of the execution of this Agreement. County agrees it will hold the executed NPDES transfer documentation and not submit it to DWQ until such time as DWQ has approved the Pump Station and Force Main, and the Pump Station and Force Main have been constructed with final engineering certification.

2. River Dell and/or its successors and assigns, agree to install or contract to have installed at its own costs all required wastewater collection infrastructure to serve the Flowers Plantation Tract. All construction shall be subject to the County's review and approval.

3. River Dell agrees to pay as a contribution in aid of construction (CIAC) 50% of the balance (with Heater paying \$75,000 and 50% of the balance), of the total cost for the planning, permitting and construction of the Pump Station and Force Main. Payments shall be made as the engineering, permitting and construction progresses.

4. River Dell and Heater agree that each shall pay 50% of all pump and haul costs that may be necessary to provide wastewater utility service to the K-5 school after April 1, 2003, should this school need wastewater utility service prior to the completion of the Pump Station and Force Main.

5. River Dell shall transfer to Heater in fee simple, at no cost to Heater, a four-acre site for the Pump Station.

6. River Dell shall convey to Heater, at no cost to Heater, 20-foot wide perpetual wastewater utility easements, 10-foot centered on the main, for the installation, maintenance, operation, repair, replacement and inspection of the wastewater gravity collection line from the K-5 school site to the Pump Station, and also for the Force Main from the Pump Station to Heater's Neuse River WWTP. River Dell shall only be responsible to convey the above-described Force Main easement where the Force Main cross lands owned by River Dell.

III. HEATER AGREES AS FOLLOWS:

1. Heater agrees to construct the Pump Station and Force Main from the Pump Station to the unused 10 inch force main on NC Hwy. 42, or in the alternative Heater's WWTP on the Neuse River near Hwy. NC 42, if DWQ doesn't approve the interconnection to the 10-inch unused force main. The construction shall include all necessary engineering and permitting. The Pump Station and Force Main shall be in accordance with County's specifications and design standards. Heater shall own, operate and maintain the Pump Station and Force Main.

2. Heater agrees to pay \$75,000 plus 50% of the balance of the cost of the construction of the Pump Station and Force Main. The \$75,000 shall be spread prorata over the total cost of the Pump Station and Force Main. Heater shall be reimbursed for this 50% balance of the construction cost through prorata payments by the developers in the Flowers Plantation Tract. Heater's 50% payment of the balance shall be recovered equally from the first 2,000 single-family equivalents. The \$75,000 shall be Heater's investment and shall be included in Heater's utility plant in service and shall not be reimbursed to Heater by developers.

3. Heater agrees that Heater will make as Heater's investment, later Pump Station upgrades, as necessary, and later Force Main upgrades as necessary, which shall be recovered on a prorata basis from developers in the Flowers Plantation Tract.

4. The prorata amount reimbursement for the Pump Station, Force Main and later upgrades, shall be paid by the developer to Heater prior to the time

Heater executes the DWQ application for that tract of land being developed by the developer. Where there is an individual customer with only one lot connecting to Heater's system, then reimbursement shall be paid prior to the time the connection is made to the wastewater collection system.

5. Heater agrees to execute a release for all contract rights that Heater has in NPDES Permit No. NC0064556 within 20 days after the execution of this Agreement, so that the permit can be transferred to County upon the completion of the pump station, force main and the final engineering certification as specified in Paragraph II.1.

6. Heater agrees to own, operate and maintain the wastewater collection system serving the Flowers Plantation Tract and to correct and eliminate any excessive storm water and ground water inflow into the system within 120 days of detection.

7. Heater agrees to provide wastewater utility service to the Flowers Plantation Tract, with the exception that the K-5 grammar school and the future middle school, both of which will be retail wastewater customers of County.

8. Heater agrees to pay to County within 20 days of receipt, monthly invoices for bulk wastewater transmission and treatment service. The bulk wastewater charges will be the same unit rates as the County charges other bulk wastewater customers. The bulk wastewater and transmission charges are subject to adjustments annually with 90 days written notice and any adjustments shall be equal to or shall be in proportion to adjustments in charges to all bulk customers of the County's wastewater system.

9. Heater shall pay to the County, the County's then prevailing capacity fee for bulk wastewater treatment. The County's current fee is \$5.50 per gallon per day, which shall be adjusted by the County in the future, based on County's cost of construction of County's wastewater treatment plant.

10. County and Heater agree that the County shall not pay Heater any capacity fees for any of the schools being connected to Heater's system, nor shall Heater at a later date be charged by the County any capacity fees for the schools, when the schools are transferred to the County system (with the wastewater passing through Heater's collection line from the school to the Pump Station, and then the Force Main to the Point of Delivery).

11. River Dell and Heater agree Heater shall collect from the developer of each tract a WWTP capacity fee in the same amount then currently being charged by Johnston County for bulk wastewater treatment. Heater shall collect this capacity fee from the developer prior to the time Heater executes the DWQ application for that developer's tract. The current Johnston County capacity fee is \$5.50 per gallon per day and the capacity fee paid by the developer to Heater shall be adjusted in the future based upon the County's changes in its capacity fee.

12. River Dell and Heater agree to execute an amendment to the executed Agreement between River Dell and Heater for the Flowers Plantation Tract dated May 19, 1999, so that the amendment shall be consistent with the terms of this bulk wastewater agreement. This amended agreement shall be executed contemporaneously with this bulk wastewater agreement.

IV. ADDITIONAL COVENANTS AND AGREEMENTS

1. Term. The term of this Agreement shall be twenty (20) years, with five (5) automatic renewals for ten (10) years each, unless a one (1) year written notification for cause (cause being a material breach of this Agreement which remains uncured after notice by the other party) is provided by either party to the other.

2. Service Area. The area to be served, referred to as the Flowers Plantation Tract and subject to this Agreement shall be that property shown on Attachment "A" attached hereto and incorporated herein.

3. Inspections. River Dell and Heater shall permit periodic inspections by County of the collection line from the school, the Pump Station, the Force Main, and the infrastructure collection system during construction and operation by Heater, to ensure compliance with State Plumbing Codes and County Utility Standards and Specifications.

4. Notices. Any notices required to be given by this Agreement shall be deemed to have been sufficiently given if mailed by certified mail, postage prepaid, addressed as follows:

Johnston County
Attention: County Manager
Johnston County Courthouse
212 Market Street
P.O. Box 1049
Smithfield, NC 27577

Rebecca Flowers
d/b/a River Dell Company, Inc.
4880 NC 42 East
Clayton, NC 27520

Heater Utilities, Inc.
Attn: President
202 MacKenan Court
Cary, NC 27511

5. Entire Agreement. This writing embodies the entire agreement and understanding between the County, River Dell, and Heater and there are no other agreements or understandings, oral or written, with reference to the subject matter hereof that are not merged herein and superseded hereby.

6. Binding Upon Successors and Assigns. This Agreement shall be binding upon and shall inure to the benefit of the County, River Dell and Heater and the successors and assigns of each.

7. Amendment. This Agreement shall not be modified, amended or changed in any respect except in writing, fully signed by the parties hereto, and each party hereby waives any right to amend this Agreement in any other way.

8. Bulk Water Agreement. River Dell, County, and Heater shall at the time of execution of this Agreement, also execute the Bulk Water Agreement for the Flowers Plantation Tract, attached hereto as Attachment B.

9. Subjunctive Approval. The transfer of the NDPEs Permit No. NC0064556 is subject to the approval of DWQ. In the event such transfer cannot be accomplished, this Agreement shall be null and void in its entirety.

10. Heater will have the exclusive right to serve all connections to be located in Flowers Plantation Tract. However, this exclusive right shall terminate for those land areas for which development does not occur within twenty years of the date of this Agreement. Development in this Paragraph IV.

10 is defined as Johnston County final approval of a subdivision plat for recordation.

IN WITNESS WHEREOF, Johnston County has caused this Agreement to be executed by its Manager and Clerk, acting under authority of the Board of Commissioners of Johnston County, Rebecca Flowers, d/b/a River Dell Company has executed this Agreement individually, and Heater Utilities, Inc. has caused this Agreement to be executed by its President and Secretary.

ATTEST:
Joyce H. Ennis
Joyce H. Ennis
Clerk of the Board

JOHNSTON COUNTY
Rick J. Hester (SEAL)
Rick J. Hester
County Manager

REBECCA FLOWERS, d/b/a RIVER DELL
COMPANY, a sole proprietorship
Rebecca Flowers
Rebecca Flowers

ATTEST:
Robyn L. Thomas
Robyn L. Thomas
Assistant Secretary

HEATER UTILITIES, INC.
William E. Grantmyre
William E. Grantmyre, President

NORTH CAROLINA
COUNTY OF JOHNSTON

I, Lorraine H. Coley, a Notary Public of said State and County, certify that Joyce H. Ennis, Clerk of the Johnston County Board of Commissioners, a corporate body, came before me and acknowledged that by authority given, the foregoing instrument was signed in its name by its Manager, sealed with its corporate seal and attested by her as its Clerk.

Witness my hand and official seal, this the 14 day of May, 2002.

Lorraine H. Colby
Notary Public

My Commission Expires:
4-9-05
Date

SEAL

NORTH CAROLINA
COUNTY OF Johnston

I, a Notary Public for the county and state aforesaid, do hereby certify that Rebecca Flowers, d/b/a River Dell Company, a sole proprietorship, personally appeared before me this day and acknowledged the due execution of the foregoing instrument.

Witness my hand and official stamp or seal, this 14 day of May 2002.

Lorraine H. Colby
Notary Public

My Commission Expires:
4-9-05
Date

SEAL

STATE OF NORTH CAROLINA
COUNTY OF Wake

I, a Notary Public for said county and state, do hereby certify that Robyn L. Thomas, personally appeared before me this day and acknowledged that she is Assistant Secretary of Heater Utilities, Inc., a corporation, and that by authority duly given and as the act of the corporation the foregoing instrument was signed in its name by its President, sealed with its corporate seal and attested by herself as its Assistant Secretary.

Witness my hand and official seal this 14th day of May 2002.

Denise J. Pium Hod
Notary Public

My Commission expires:
April 29, 2005
Date

SEAL

I/A

Public Staff
Junis Exhibit 14

Aqua North Carolina, Inc.
Docket No. W-218, Sub 497

System Name	Location	Type of EMAC	Date/Deposit date	Amount	\$ Rate	GPD	# Lots	REU	Notes	Capacity
Barnett Place	Aqua Side	Connection Fee	11/12/1999	62,500.00		360.00	45.00	45.00		15,700
Eastlake at Flowers	Aqua Side	Connection Fee	11/12/1999	72,000.00		360.00	72.00	72.00		25,970
Nexus Colony	Aqua Side	Connection Fee	11/12/1999	31,000.00		360.00	42.00	42.00		15,120
Mayhoola	Aqua Side	Connection Fee	11/12/1999	81,000.00		360.00	84.00	84.00		30,240
Mayhoola Village	Aqua Side	Connection Fee	11/12/1999	94,000.00		360.00	94.00	94.00		33,840
The Gardens at Flowers	Aqua Side	Connection Fee	11/12/1999	125,900.00		360.00	116.00	116.00		41,760
FLOWERS PLANTATION SHOPPING CENTER	Aqua Side	Capacity	11/12/1999	119,520.00	4.00	360.00	83.00	83.00		79,880
PLANTATION POINT	Aqua Side	Capacity	5/9/2000	83,260.00	4.13	360.00	56.00	56.00		20,160
PLANTATION POINT	Aqua Side	Capacity	11/12/2000	56,498.40	4.13	360.00	38.00	38.00		13,680
FLOWERS PLANTATION SWIMMING POOL	Aqua Side	Capacity	2/1/2001	8,260.00	4.13	2,000.00	1.00	5.56		2,000
WATSONS MILL (Ba Summerset Place)	Aqua Side	Capacity	4/11/2001	23,307.00	4.13	360.00	15.00	15.00		5,400
COTTON FIELD VILLAGE	Aqua Side	Capacity	5/24/2001	49,560.00	4.13	240.00	50.00	33.33		12,000
PLANTATION PARK	Aqua Side	Capacity	5/12/2002	2,520.00	4.38	600.00	1.00	1.67		600
WATSONS MILL (Ba Summerset Place)	Aqua Side	Capacity	4/11/2002	11,037.60	4.38	360.00	7.00	7.00		2,570
PARKWAY VILLAGE COMMERCIAL	Aqua Side	Capacity	4/13/2002	7,577.00	4.38	1,730.00	1.00	4.81		1,730
PLANTATION POINT	Aqua Side	Capacity	3/12/2003	47,304.00	4.38	360.00	30.00	30.00		10,800
COTTON FIELD VILLAGE	Aqua Side	Capacity	5/1/2003	39,945.60	4.38	240.00	38.00	25.33		9,120
NORTH FARMS/PODS III	Aqua Side	Capacity	10/5/2003	24,109.60	4.38	360.00	47.00	47.00		15,970
WALKER WOODS	Aqua Side	Capacity	12/15/2003	56,764.80	4.38	360.00	36.00	36.00		12,960
WALKER WOODS	Aqua Side	Capacity	12/23/2003	1,576.80	4.38	360.00	1.00	1.00		360
WALKER WOODS	Aqua Side	Capacity	2/23/2004	9,000.00	4.38	360.00	6.00	6.00		2,160
WALKER WOODS	Aqua Side	Capacity	2/24/2004	460.83						
PLANTATION POINT	Aqua Side	Capacity	3/11/2004	96,184.80	4.38	360.00	61.00	61.00		21,960
MILL CREEK WEST	Aqua Side	Capacity	4/22/2004	25,228.80	4.38	360.00	16.00	16.00	ck 7676	5,760
NORTH FARMS/PODS II	Aqua Side	Capacity	4/22/2004	7,884.00	4.38	360.00	5.00	5.00	ck 7676	1,800
COTTON FIELD VILLAGE	Aqua Side	Capacity	1/17/2005	38,894.40	4.38	240.00	37.00	24.67		8,880
PLANTATION POINT	Aqua Side	Capacity	1/17/2005	173,648.00	4.38	360.00	110.00	110.00		39,600
NORTH FARM COTTAGES	Aqua Side	Capacity	2/7/2005	18,921.60	4.38	240.00	18.00	12.00	ck 4173	4,320
NORTH FARM COTTAGES	Aqua Side	Capacity	2/7/2005	26,808.00	4.38	360.00	17.00	17.00	ck 4173	6,120
WATSONS MILL (Ba Summerset Place)	Aqua Side	Capacity	3/12/2005	28,387.20	4.38	360.00	18.00	18.00		6,480
NORTH FARM COTTAGES	Aqua Side	Capacity	4/8/2005	68,379.20	4.38	360.00	44.00	44.00		15,840
MILL CREEK WEST	Aqua Side	Capacity	7/28/2005	80,418.80	4.38	360.00	51.00	51.00		18,560
PARKWAY VILLAGE COMMERCIAL	Aqua Side	Capacity	7/12/2006	1,576.80	4.38	360.00	1.00	1.00		360
NORTH FARMS/PODS III	Aqua Side	Capacity	4/12/2006	71,308.60	4.38	360.00	47.00	47.00		16,920
PLANTATION POINT	Aqua Side	Capacity	12/5/2006	42,751.60	4.38	360.00	61.00	61.00		22,320
PLANTATION POINT	Aqua Side	Capacity	12/5/2006	55,000.00						
PARKWAY VILLAGE COMMERCIAL	Aqua Side	Capacity	12/14/2006	1,576.80	4.38	360.00	1.00	1.00		360
MILL CREEK WEST	Aqua Side	Capacity	12/12/2006	70,956.00	4.38	360.00	45.00	45.00		16,200
NORTH FARM COTTAGES	Aqua Side	Capacity	12/21/2006	40,996.80	4.38	360.00	26.00	26.00		9,360
NORTH FARMS/PODS III	Aqua Side	Capacity	12/21/2006	80,418.80	4.38	360.00	51.00	51.00		18,360
MILL CREEK WEST	Aqua Side	Capacity	4/23/2007	49,406.40	4.38	240.00	47.00	31.33		11,280
NORTH FARMS/PODS III	Aqua Side	Capacity	7/11/2007	45,201.60	4.38	240.00	43.00	28.67		10,370
PARKWAY VILLAGE COMMERCIAL	Aqua Side	Capacity	12/31/2008	9,420.00	4.38	360.00	5.07	5.07	no copys available	2,151
THE GARDENS @ FLOWERS PL	Aqua Side	Capacity - INVOK	2/23/2016	1,051.20	4.38	240.00	1.00	1.00		240
PLANTATION PARK	Aqua Side	Capacity	8/31/2016	2,272.80	9.47	240.00	1.00	1.00		240
PLANTATION POINT	Aqua Side	Capacity	8/31/2016	2,272.80	9.47	240.00	1.00	1.00		240
WHITFIELD @ SMITH VILLAGE	Aqua Side	Capacity	9/8/2016	45,456.00	9.47	240.00	20.00	20.00		4,800
WHITFIELD @ SMITH VILLAGE	Aqua Side	Capacity	11/71/2016	45,456.00	9.47	240.00	20.00	20.00		4,800
WHITFIELD @ SMITH VILLAGE	Aqua Side	Capacity	7/24/2017	100,000.00	9.47	240.00	44.00	44.00		10,560
PLANTATION PARK	Aqua Side	Capacity - ADDITIONAL		483.55					Journal entry	
				\$ 2,294,168.15			1655.97	1587.34		561,001

Aqua acquires Heater

Letter from County

Expansion Eng.

Cert. ADR 28 Q2

J/A

Aqua North Carolina, Inc.
Docket No. W-218 Sub 497
Accounting Data Request No. 28

Requested By:	<u>Windley E. Henry</u>	Email:	<u>windley.henry@psncuc.nc.gov</u>
Date Requested:	<u>June 15, 2018</u>	Phone:	<u>919-733-0949</u>
Date Due:	<u>June 29, 2018</u>	Fax:	<u>919-715-9710</u>

Purchase Wastewater Treatment Capacity from Johnston County and Flowers Plantation WWTP CIAC:

3. Please provide a detailed written explanation and any supporting documentation for how Aqua determined each different capacity fee rate charged to developers, including the \$4.00, \$4.13, \$4.38, and \$9.47 per gpd for the Aqua owned WWTP and expansions and the \$5.50, \$6.00, and \$6.68 per gpd for capacity to be purchased from Johnston County.

RESPONSE:

Aqua provides the following information as supporting documentation for the various wastewater capacity fee rates charged to developers

During the timeframe of 1999-2018, Aqua has charged various wastewater rates for capacity in the Neuse Colony Wastewater Treatment Facility.

- At \$4.00 for Flowers Plantation Shopping Center in 1999;
- At \$4.13 for five (5) systems during 2000-2001;
- At \$4.38 for twenty-nine (29) systems from 2002- February 23, 2016;
- At \$9.47 for five (5) systems from August 31, 2016-present.

Below are excerpts from the first contract of each of the different capacity fees charged to developers:

W-274, Sub 285: Flowers Planation Shopping Center (\$4.00):

Pursuant to the Agreement, dated August 13, 1999, between Clayton 99, LLC and Heater Utilities, Inc. for Flowers Plantation Shopping Center, Section II, Subsection G, entitled Cash Contribution in Aid of Construction for Wastewater Treatment Plant (WWTP) Capacity:

“Developer shall pay Heater a cash contribution in aid of construction (CIAC) the same dollar amount per gallon that Utility paid for cost of design, engineering, and construction of the 250,000 gpd WWTP. This payment shall be made by Developer to Utility at the time Utility executes the application to DWQ for approval of the plans and specifications for the Wastewater System in that phase of Shopping Center. It is anticipated that the total cost of the 250,000 gpd WWTP will be approximately \$1,000,000 making the total cost of the WWTP \$4.00/gallon. The Developer has estimated that the Shopping Center when complete, will utilize 29,880 gpd of the 250,000 gpd design capacity. Therefore, the estimated total cost of the CIAC to the Developer will be \$119,250 (\$4.00/gallon x 29,880 gallons).

Aqua North Carolina, Inc.
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Heater agrees that it will not charge Developer more than \$4.00 per gallon for this CIAC fee."

W-274, Sub 428: Plantation Point (\$4.13):

Pursuant to the Agreement, dated December 1, 1999, between Royal Flush Development, LLC and Heater Utilities, Inc. for the development of subdivision known as Plantation Point, Section II, Subsection G, entitled Cash Contribution in Aid of Construction for Wastewater Treatment Plant (WWTP) Capacity:

"Developer shall pay Heater a cash contribution in aid of construction (CIAC) the same dollar amount per gallon that Utility paid for cost of design, engineering, and construction of the 250,000 gpd WWTP. This payment shall be made by Developer to Utility at the time Utility executes the application to DWQ for approval of the plans and specifications for the Wastewater System in that phase of subdivision. It is anticipated that the CIAC shall be approximately \$4.00 per gallon."

It should be noted, there is no cap on the CIAC charges in this contract agreement and the language states "approximately." So, the costs must have been re-calculated. However, at this point, we have not been able to locate supporting documentation demonstrating the final cost of the 250,000 gallon WWTP and adjustment from \$4.00 gpd to \$4.13 gpd. At this time, Aqua has been unable to locate specific line items of information recorded in AS400, before conversion to Lawson, or a related calculation supporting this cost.

W-274, Sub 384: Plantation Park (\$4.38):

Pursuant to the Agreement, dated March 11, 2002, between Rebecca D. Flowers and Heater Utilities, Inc. for the development of subdivision known as Plantation Park, Section II, Subsection G, entitled "Cash Contribution in Aid of Construction for Wastewater Treatment Plant (WWTP) Capacity: "Developer shall pay Heater a cash contribution in aid of construction (CIAC) the same dollar amount per gallon that Utility paid for cost of design, engineering, and construction of the 250,000 gpd WWTP. It is anticipated the CIAC shall be approximately \$4.38 per gallon per day. The minimum design daily wastewater flow for various types of establishments is provided in DWQ rules (T15A:02H.0219). Dennis R. Blackmon, Developer's Engineer, in preparing the DWQ application for approval for lot No. 1 at Plantation Park Commercial Park, estimated the daily flow in the Subdivision to be 600 gpd (120gpd/1,000 s.f. x 5,000 s.f.) pursuant to the DWQ rule.

Subsection II reads:

"It is therefore agreed that the CIAC fee for Lot No. 1 Plantation Park Commercial Park will be \$2,628 (\$4.38/gpd x 600 gpd) This payment shall be made by

Aqua North Carolina, Inc.
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Accounting Data Request No. 28

Requested By:	<u>Windley E. Henry</u>	Email:	<u>windley.henry@psncuc.nc.gov</u>
Date Requested:	<u>June 15, 2018</u>	Phone:	<u>919-733-0949</u>
Date Due:	<u>June 29, 2018</u>	Fax:	<u>919-715-9710</u>

Developer to Utility at the time Utility executes the application to DWQ for approval of the wastewater system.”

Other than the supporting Orders for each of the developer closings, Aqua has been unable to locate any supporting documentation to demonstrate how the following capacity fee rates were determined: \$4.00 in 1999 for Flowers Plantation Shopping Center; paragraph \$4.13 for five (5) systems during 2000-2001; \$4.38 for twenty-nine (29) systems from 2002- February 23, 2016.

For the capacity fee of \$9.47 per gallon: Aqua constructed an additional 100,000 gallons of wastewater capacity in the Neuse Colony Wastewater Treatment Facility at a cost of \$947,503.03. So, the capacity fee was calculated with the formula of \$947,503 (project cost: designing, engineering and construction) divided by 100,000 (capacity gallons constructed) for a total of \$9.47 per gallon. Therefore, the capacity fee increased from \$4.38 per gallon to \$9.47 per gallon.

The calculation formula is set pursuant to the River Dell Agreement a Secondary Developer in Flowers Plantation (Neuse Colony side) is required to pay a cash contribution in aid of construction (CIAC) in the same dollar amount per gallon that the utility paid for the cost of designing, engineering and constructing the last WWTP expansion including regulatory mandated upgrades to the WWTP process.

Aqua provides the following information as supporting documentation for the various wastewater capacity fee rates charged to developers for projects located in Flowers Plantation Sections I, II, and IIIB.

During the timeframe of 2006-2018, Aqua has collected three different wastewater capacity fee rates for developments located in Flowers Plantation Sections I, II, and IIIB.

- At \$5.50 one (1) system Pineville East on January 11, 2006;
- At \$6.00 sixty-eight (68) systems from January 10, 2007- present with one exception noted below
- At \$6.68 one system Longleaf @ Flowers a.k.a Dogwood on February 10, 2012;

Below are excerpts from contracts of each of the different capacity fees charged to developers in Flowers Plantation Sections I, II, and IIIB.:

\$5.50 wastewater capacity fee:

\$5.50 charge was set per the Bulk Wastewater Service Agreement for Flowers Plantation Sections I, II, and IIIB. Section III, Paragraph Nine (9) states, “The County’s current fee is \$5.50 per gallon per day...”

Aqua North Carolina, Inc.
Docket No. W-218 Sub 497
Accounting Data Request No. 28

Requested By:	<u>Windley E. Henry</u>	Email:	<u>windley.henry@psncuc.nc.gov</u>
Date Requested:	<u>June 15, 2018</u>	Phone:	<u>919-733-0949</u>
Date Due:	<u>June 29, 2018</u>	Fax:	<u>919-715-9710</u>

\$6.00 wastewater capacity fee:

Pursuant to the Agreement, dated August 25, 2006 between DWF Development, Inc. and Heater Utilities, Inc. for the development of subdivision known as Pineville East Cottages, Section II, Subsection F reads, "Heater shall collect, from the Developer, a WWTP capacity fee in the amount of \$86,400 (40 residential units x \$6.00/gal x 360 gal). Heater shall collect this capacity fee from the Developer at the time the Developer pays water capacity fees to County for the number of lots approved by County at that time. Developer shall only have to pay capacity charge payments for the number of lots for which it has paid water tap fees."

Other than the contracts for each of the applicable developer closings, we have been unable to locate documentation supporting the increase in capacity from \$5.50 gpd to \$6.00 gpd.

\$6.68 wastewater capacity fee:

We have been unable to provide documentation for the charge of \$6.68 gpd for Longleaf @ Flowers AKA Dogwood. It should be noted- this is the only subdivision with this rate charge. It is an anomaly.

Other than the contract for the applicable developer closing, we have been unable to locate documentation supporting the increase in capacity from \$6.00 gpd to \$6.68 gpd.

Prepared by:
C. Ruffin Poole
Director, Corporate Development
Aqua North Carolina, Inc.
202 MacKenan Court
Cary, NC 27511

I/A

Public Staff
Junis Exhibit 16

Aqua North Carolina, Inc.
Docket No. W-218, Sub 497

System Name	Location	Type of CIAC Cash	Date/Deposit date	Amount	\$ Rate	GPD	# Lots	BEU	Notes	Capacity
PINEVILLE EAST	Buffalo Creek s/c Capacity		1/11/2006	\$ 39,600.00	5.50	360.00	20.00	20.00		7,200
PINEVILLE EAST	Buffalo Creek s/c Capacity		1/10/2007	\$ 58,320.00	6.00	360.00	27.00	27.00	ck 8	9,720
PINEVILLE EAST COTTAGES/7 Palmerto Plac	Buffalo Creek s/c Capacity		1/10/2007	\$ 21,600.00	6.00	360.00	10.00	10.00	ck 8	3,600
PINEVILLE WEST	Buffalo Creek s/c Capacity		1/10/2007	\$ 144,720.00	6.00	360.00	67.00	67.00	ck 8	24,120
PEACHTREE	Buffalo Creek s/c Capacity		1/23/2007	\$ 49,680.00	6.00	360.00	23.00	23.00	no copy available	8,280
RIVER DELL TOWNES	Buffalo Creek s/c Capacity		1/23/2007	\$ 45,360.00	6.00	360.00	24.00	24.00		7,560
PINEVILLE EAST COTTAGES/Palmerto Plac	Buffalo Creek s/c Capacity		8/23/2010	\$ 4,127.20	6.00	240.00	0.99	0.99	no copy available	238
PEACHTREE	Buffalo Creek s/c Capacity		7/19/2011	\$ 25,920.00	6.00	240.00	18.00	18.00	no copy available	4,320
PEACHTREE	Buffalo Creek s/c Capacity - Invoiced		11/23/2011	\$ 1,500.00	Water capacity posted incorrectly by Power Plan					
LONGLEAF @ FLOWERS AKA DOGWOOD	Buffalo Creek s/c C5 44310		12/30/2011	\$ 17,950.00	6.00	240.00	9.00	9.00	not an original lot	2,160
PINEVILLE EAST COTTAGES/Palmerto Plac	Buffalo Creek s/c Ck 1931		12/30/2011	\$ 6,932.40	6.00	180.00	6.42	6.42	not an original lot	1,155
LONGLEAF @ FLOWERS AKA DOGWOOD	Buffalo Creek s/c Capacity		2/10/2012	\$ 24,043.00	6.26	240.00	18.00	16.08	changed # of lots 6/5	3,640
LONGLEAF @ FLOWERS AKA DOGWOOD	Buffalo Creek s/c Capacity		7/3/2012	\$ 56,160.00	6.00	240.00	39.00	39.00		9,360
FLOWERS FARMERS MARKET	Buffalo Creek s/c Capacity		8/15/2012	\$ 1,440.00	6.00	240.00	1.00	1.00	no copy available	240
FLOWERS PLANTATION VILLAGE	Buffalo Creek s/c Capacity		10/29/2012	\$ 31,800.00	6.00	5,300.00	1.00	22.08		5,300
WILDERS WOODS	Buffalo Creek s/c Capacity		10/29/2012	\$ 40,320.00	6.00	240.00	28.00	28.00		6,720
PEACHTREE	Buffalo Creek s/c Capacity		11/6/2012	\$ 20,160.00	6.00	240.00	14.00	14.00		3,360
PINEVILLE WEST	Buffalo Creek s/c Capacity - INVOICE		1/15/2013	\$ 12,885.00	6.00	2,147.50	1.00	8.95		2,148
PEACHTREE	Buffalo Creek s/c Capacity		3/5/2013	\$ 51,840.00	6.00	240.00	36.00	36.00		8,640
PINEVILLE EAST COTTAGES/Palmerto Plac	Buffalo Creek s/c Capacity		3/20/2013	\$ 1,440.00	6.00	240.00	1.00	1.00		240
FLOWERS PLANTATION VILLAGE	Buffalo Creek s/c Capacity		5/31/2013	\$ 8,400.00	6.00	1,400.00	1.00	5.83		1,400
FLOWERS CREST	Buffalo Creek s/c Capacity		6/10/2013	\$ 31,680.00	6.00	240.00	22.00	22.00		5,280
TRILLIUM	Buffalo Creek s/c Capacity		8/5/2013	\$ 48,960.00	6.00	240.00	34.00	34.00		8,160
CHATHAM - FLOWERS	Buffalo Creek s/c Capacity		9/18/2013	\$ 14,400.00	6.00	240.00	10.00	10.00		2,400
THE NICES (FLOWERS PLANTATION)	Buffalo Creek s/c Capacity		11/21/2013	\$ 14,400.00	6.00	240.00	10.00	10.00		2,400
FLOWERS CREST	Buffalo Creek s/c Capacity		6/4/2014	\$ 36,000.00	6.00	240.00	25.00	25.00		6,000
POPULAR WOODS (aka Wilder Woods Ph 2)	Buffalo Creek s/c Capacity		7/15/2014	\$ 64,800.00	6.00	240.00	45.00	45.00		10,800
FLOWERS PLANTATION VILLAGE	Buffalo Creek s/c Capacity - INVOICE		8/31/2014	\$ 2,700.00	6.00	1,200.00	1.00	5.00		1,200
CHATHAM - FLOWERS	Buffalo Creek s/c Capacity		10/30/2014	\$ 14,400.00	6.00	240.00	10.00	10.00		2,400
TRILLIUM	Buffalo Creek s/c Capacity		11/6/2014	\$ 18,720.00	6.00	240.00	13.00	13.00		3,120
SWEETGRASS	Buffalo Creek s/c Capacity		12/17/2014	\$ 2,880.00	6.00	240.00	2.00	2.00		480
SWEETGRASS	Buffalo Creek s/c Capacity		3/17/2015	\$ 24,840.00	6.00	240.00	17.00	17.00		4,080
SOUTH QUARTERS	Buffalo Creek s/c Capacity		4/1/2015	\$ 14,400.00	6.00	240.00	10.00	10.00		2,400
TRILLIUM	Buffalo Creek s/c Capacity		4/24/2015	\$ 15,840.00	6.00	240.00	13.00	13.00		2,640
TRILLIUM	Buffalo Creek s/c Capacity		4/24/2015	\$ 14,400.00	6.00	240.00	10.00	10.00		2,400
RIVER DELL TOWNES	Buffalo Creek s/c Capacity		4/30/2015	\$ 7,200.00	6.00	240.00	5.00	5.00		1,200
FLOWERS CREST	Buffalo Creek s/c Capacity		7/9/2015	\$ 34,560.00	6.00	240.00	24.00	24.00		5,760
CHATHAM - FLOWERS	Buffalo Creek s/c Capacity		8/27/2015	\$ 4,320.00	6.00	240.00	3.00	3.00		720
EVERGREEN	Buffalo Creek s/c Capacity		10/15/2015	\$ 38,880.00	6.00	240.00	20.00	20.00		4,800
FLOWERS PLANTATION VILLAGE	Buffalo Creek s/c Capacity		2/17/2016	\$ 7,740.00	6.00	1,290.00	1.00	5.38		1,290
NORTH VILLAGE	Buffalo Creek s/c Capacity - INVOICE		3/18/2016	\$ 48,960.00	6.00	240.00	34.00	34.00		8,160
RIVER DELL EAST	Buffalo Creek s/c Capacity		4/7/2016	\$ 25,920.00	6.00	240.00	18.00	18.00		4,320
TRILLIUM	Buffalo Creek s/c Capacity		7/13/2016	\$ 36,000.00	6.00	240.00	25.00	25.00		6,000
CHATHAM - FLOWERS	Buffalo Creek s/c Capacity		7/15/2016	\$ 7,200.00	6.00	240.00	5.00	5.00	ck 1430	1,200
SOUTH QUARTERS	Buffalo Creek s/c Capacity		7/15/2016	\$ 14,400.00	6.00	240.00	10.00	10.00	ck 1430	2,400
FLOWERS CREST	Buffalo Creek s/c Capacity		7/28/2016	\$ 41,200.00	6.00	240.00	30.00	30.00		7,200
RIVER DELL EAST	Buffalo Creek s/c Capacity		7/28/2016	\$ 8,640.00	6.00	240.00	6.00	6.00		1,440
EVERGREEN	Buffalo Creek s/c Capacity		9/6/2016	\$ 8,640.00	6.00	240.00	6.00	6.00		1,440
RIVER DELL EAST	Buffalo Creek s/c Capacity		10/28/2016	\$ 14,400.00	6.00	240.00	10.00	10.00		2,400
EVERGREEN	Buffalo Creek s/c Capacity		1/11/2017	\$ 2,880.00	6.00	240.00	2.00	2.00		480
RIVER DELL EAST	Buffalo Creek s/c Capacity		1/20/2017	\$ 12,960.00	6.00	240.00	9.00	9.00		2,160
RIVER DELL EAST	Buffalo Creek s/c Capacity		4/24/2017	\$ 12,960.00	6.00	240.00	9.00	9.00		2,160

Letter from County

Update Period Sub 363

Expansion Eng. Cert. ADR 28 Q2

IAA

Johnston County

DEPARTMENT OF PUBLIC UTILITIES

POST OFFICE BOX 2263
SMITHFIELD, N.C. 27577
(919) 989-5075

August 17, 2009

Mr. Tom Roberts, President
Aqua North Carolina
202 McKenan Court
Cary, NC 27511

RE: Purchase of Wastewater Capacity in the Central Johnston County Regional WWTP

Dear Mr. Roberts:

We wish to follow-up to a comment you made during our August 4th conference with Becky Flowers concerning the possibility of Aqua purchasing wastewater transmission and treatment capacity in the County system. Our understanding of your position is that Aqua America may be interested in purchasing capacity in the County's system, if payment terms can be arranged consistent with the County's 20-year, low interest state revolving fund loan. Accordingly, we have completed preliminary cost analyses and enclosed is a summary of the cost information. Please understand that construction of improvements is not yet 100% complete, and unforeseen cost contingencies could arise, which would alter the cost share calculations.

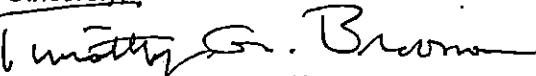
unit capital cost of transmission facilities for an upgraded wwps and the new force mains between Aqua's wwtp and the County interceptor on the Neuse River in Smithfield is \$1.46 per gpd of average daily flow with flow equalization and \$3.65 per gpd without flow equalization. The unit capital cost of wastewater treatment facilities expansion is \$4.83 per gpd of average daily flow. Thus, the total capital value of an allocation would be \$6.29 per gpd with flow equalization and \$8.48 without flow equalization. We are providing the cost option for flow equalization since Aqua could possibly accomplish this using its existing plant infrastructure.

The terms of the SRF loans are 20 years at 2.1% a.p.r. with equal annual payments. Thus, the annual cost with flow equalization for a 0.50 mgd allocation would be \$194,200. Without flow equalization, the annual cost would be \$261,800.

Our current bulk wastewater transmission and treatment commodity charge is \$2.45 per 1,000 gallons.

Please let us know if you wish to explore the possibility of a wastewater capacity allocation purchase in more detail.

Sincerely,



Timothy G. Broome, P.E.
Director of Utilities and Engineering

cc: Rick J. Hester
Chandra C. Coats, P.E.
Rebecca Flowers

Wastewater Transmission & Treatment Capacity Cost Analysis

<u>Item</u>	<u>Description</u>	<u>Total</u>
1.	Unit Cost of 16" Force Main (FM) from NC 42 East to US 70 (Bus.) at North Tech Park and 42 East WWPS Upgrade	
	Construction	1,433,000
	Technical Service	113,000
	Easements	25,000
	SRF Loan Closing	28,000
	Total	1,599,000
	Future WWPS Upgrade	801,000
	Total Project Cost	2,400,000

Capacity = 3.0 mgd (peak flow)

Unit cost based on peak capacity = \$0.80 per gpd

If peak to average flow ratio is 2.5:1, then unit cost based on avg. flow = \$2.00 per gpd

2 Unit Cost of 16" FM from US70 (Bus) at North Tech Park to Swift Creek Road

Construction	\$1,111,000
Technical Services	122,000
Easements	27,000
SRF Loan Closing	29,000
Total	\$1,289,000

Capacity = 3.5 mgd (peak flow)

Unit cost based on peak capacity = \$0.37 per gpd

If peak to avg. flow ratio is 2.5:1, then unit cost based on avg. flow = \$0.92 per gpd

3 Unit Cost of 20" FM from Swift Creek Road to Neuse River Parallel FM

Construction	\$1,251,000
Technical Services	121,000
Easements	27,000
SRF Loan Closing	29,000
Total	\$1,428,000

Capacity = 4.9 mgd (peak flow)

Unit cost based on peak capacity = \$0.29 per gpd

If peak to avg. flow ratio is 2.5:1, then unit cost based on avg. flow = \$.73 per gpd

8/17/2009

<u>Item</u>	<u>Description</u>	<u>Total</u>
4	2.5 mgd Wastewater Treatment Plant Expansion:	
	Construction	\$10,790,000
	Technical Services	
	a. Hazen and Sawyer	840,000
	b. Dewberry Engineers	106,000
	c. Keen Management	111,360
	Subtotal - Technical Services	\$11,847,360
	SRF Loan Closing	\$237,640
	Total Project Cost	\$12,085,000

Expanded Capacity = 2.5 mgd
Unit cost based on capacity = \$4.83 per gpd

5 Aqua America Cost Share:

Transmission With Flow Equalization $(\$0.80 + \$0.37 + \$0.29)$ per gpd = \$1.46 per gpd
Transmission Without Flow Equalization $(\$2.00 + \$0.92 + \$0.73)$ per gpd = \$3.65 per gpd
Treatment = \$4.83 per gpd
Total Cost With Flow Equalization = \$6.29 per gpd
Total Cost Without Flow Equalization = \$8.48 per gpd

Aqua Wastewater Capacity Purchase
 Projected Costs
 January 10, 2018

Public Staff
 Junis Exhibit 18

EIA

WWTP Capacity (Based on 2006 Expansion) \$ 5.34 /gpd

Option No. 1

Transmission with County Providing Pumping and Flow Eq:

42 East WWPS and Flow Eq Facility	\$ 1.84 /gpd *
NC 42 East to North Tech Park	\$ 0.42 /gpd
North Tech Park to Swift Creek Rd	\$ 0.37 /gpd
Swift Creek Road to Neuse River Parallel FM	\$ 0.29 /gpd
12" Parallel Force Main Under US 70 <i>Interchange</i>	<u>\$ 2.06 /gpd *</u>
Total Transmission	\$ 4.98 /gpd
WWTP Capacity	<u>\$ 5.34 /gpd</u>
TOTAL OPTION NO. 1	\$ 10.32 /gpd

Option No. 2

Transmission with Aqua Providing Pumping and Flow Eq:

NC 42 East to North Tech Park	\$ 0.42 /gpd
North Tech Park to Swift Creek Rd	\$ 0.37 /gpd
Swift Creek Road to Neuse River Parallel FM	\$ 0.29 /gpd
12" Parallel Force Main Under US 70 <i>Interchange</i>	<u>\$ 2.06 /gpd *</u>
Total Transmission	\$ 3.14 /gpd
WWTP Capacity	<u>\$ 5.34 /gpd</u>
TOTAL OPTION NO. 2	\$ 8.48 /gpd

*Estimated Costs. Project not constructed.

** Peak flow not exceed 1.5 times average flow*

I/A

Johnston County

DEPARTMENT OF PUBLIC UTILITIES

POST OFFICE BOX 2263
SMITHFIELD, N.C. 27577
(919) 989-5075

July 11, 2018

Shannon V. Becker, President
Aqua North Carolina, Inc.
202 McKenan Court
Cary, NC 27511

Re: Purchase of Wastewater Capacity in the Central Johnston County Regional WWTP

Dear Mr. Becker:

It is our understanding that Aqua may be interested in purchasing capacity in the County's wastewater system in accordance with the "Bulk Wastewater Service Agreement for Flowers Plantation Sections I, II and III B" dated May 14, 2022. The fee for bulk wastewater capacity is currently \$8.48/gpd for Aqua to discharge into the County's wastewater collection, transmission and treatment system. This capacity fee assumes Aqua will provide flow equalization (peak flow not to exceed 1.5 times average flow) and pumping into the County's transmission system.

The proposed capacity fee is based on the following:

WWTP Capacity (Based on 2006 Expansion)	\$5.34/gpd
Transmission:	
NC 42 East to North Tech Park	\$0.42/gpd
North Tech Park to Swift Creek Rd	\$0.37/gpd
Swift Creek Road to Neuse River Parallel FM	\$0.29/gpd
12" Parallel Force Main Under US 70 Interchange	<u>\$2.06/gpd*</u>
	\$3.14/gpd
Total Capacity Fee	\$8.48/gpd

← Transmission

(*Estimated Cost. Project not constructed.)

The bulk transmission and treatment commodity charge will be \$3.18 per 1,000 gallons beginning July 1, 2018. Please let me know if you have any questions or need additional information.

Sincerely,

Chandra C. Farmer, PE
Director of Utilities

cc: Rick J. Hester

I/A

Aqua North Carolina, Inc.

Docket No. W-218, Sub-497

Aqua North Carolina, Inc.

Public Staff Engineering Data Request No. 28

Requested by: Charles Junis Email: charles.junis@psncuc.nc.gov
Date requested: July 11, 2018 Phone: 919-733-0891
Due date: July 25, 2018

Subject of Data Request: Contractual Services – Other Follow-up

For responses in Excel format, please include all working formulas.

Other – NC 811

Question 4

- Q. Has Aqua quantified the expense savings associated with having a contractor conduct NC 811 locates? If so, please provide those quantifications and work papers used to calculate them. If not, please provide a detailed narrative explaining why there wouldn't be an associated savings.
- A. Aqua has not quantified expense savings associated with having a contractor conduct NC 811 locates. Aqua was not fulfilling all requirements for locates prior to contracting with USIC, and with the contract will be fulfilling the minimum requirements. The expense cost for the fully implementing the locate requirements will be greater, but may reduce the expenses associated with replacing damaged capital assets. As USIC has only recently begun this work, Aqua NC cannot yet determine their efficacy at locating our underground assets and does not have sufficient data to estimate a savings associated with their work.

Prepared by: Joe Pearce PE
NC Director of Operations

Aqua North Carolina, Inc.
Docket No. W-218, Sub 497
Aqua North Carolina, Inc.
Public Staff Engineering Data Request No. 33

Requested by: Charles Junis Email: charles.junis@psncuc.nc.gov
Date requested: July 18, 2018 Phone: 919-733-0891
Due date: August 1, 2018

Subject of Data Request: Contractual Services – Other Follow-up

For responses in Excel format, please include all working formulas.

Other – NC 811

Question 2

Q. Pertaining to EDR 19 Q6 and EDR 28 Q1, please provide the decision criteria used to initiate the switch from Aqua NC field personnel and to select USIC. Please quantify the expense avoided by switching.

A. The decision criteria used to initiate the switch from Aqua NC field personnel to a contract provider was that the completion of locates does not require an equivalent skill set to the skill set of our water and wastewater professionals, that using our water and wastewater professionals to complete locates was not the best use of their skilled time, that this work is episodic and includes emergency locate requirements. Using a firm with statewide coverage, locate expertise, and are already on-site locating other utilities was chosen to be the most appropriate option and USIC was found to meet these criteria.

Quantifying the expense avoided by switching is difficult and imprecise. If one assumes one staff person can complete 30 locates per day, that approximately 60,000 locates are necessary per year, and that a staff person works 200 days per year, then 10 field staff are needed. These ten field staff would have 1 supervisor. The annual wages for these eleven individuals would be approximately \$360,000 per year, and close to \$540,000 with benefits. Each staff person would need a vehicle and tools of the trade (metal detector, personal protective equipment, etc.), and a computer for entering responses in the NC811 system. The cost of this capital could be approximated at \$35,000 per staff person with a three-year expected life. This equates to another \$116,667 per year cost. There would also be significant expenses for gasoline, marking flags and paint. If the field staff person travels on average 150 miles per day and their vehicle consumes 23 miles per gallon, then in one year the field staff would consume 13,043 gallons of gasoline. At \$2.60 per gallon of gasoline, this is equal to about \$34,000 per year. Lastly, the cost of paint and flags would be expected to be at least \$3000 per year. This simple calculation totals \$693,667, and significantly exceeds the contract price. It must be noted that this

calculation method fails to consider the value of the damage warranty provided by the vendor.

Prepared by:
Joe Pearce
Director of Operations
Aqua North Carolina, Inc.

Aqua North Carolina, Inc.
Docket No. W-218, Sub 497
Aqua North Carolina, Inc.
Public Staff Engineering Data Request No. 45

Requested by: Charles Junis Email: charles.junis@psncuc.nc.gov
Date requested: July 27, 2018 Phone: 919-733-0891
Due date: August 3, 2018

Subject of Data Request: NC 811 Follow-up

Please provide any available responses electronically. If in Excel format, be sure to include all working formulas. In addition, please include (1) the name and title of the individual who has the responsibility for the subject matter addressed therein, and (2) the identity of the person making the response by name, occupation, and job title.

Question 1

- Q. Please provide a copy of the cost-benefit analyses along with all calculations and inputs performed by Aqua NC or Aqua Services for Aqua NC, prior to executing the Underground Facilities Locations and Marking Service Agreement with USIC Locating Services, LLC (USIC) dated February 26, 2018 (USIC Agreement).
- A. Aqua's previous Director of Operations, Moses Thompson, led the effort to review the internal cost versus outsourcing line locate review to include outsourcing the work to a 3rd party vendor. Mr. Thompson provided the following analysis to Management in 2017, using available information:

NOTE: 811 Outsource Pilot:

In lieu of ANC's original request for 6 additional FTE's, ANC has determined it best to outsource this need in the immediate future.

Work orders related to the 811 process are not currently being provided necessary attention. Approximately 10% of 811 work orders are currently being worked by the field due to resource constraint, prioritization of water quality work orders and environmental sensitivity, while the remaining 90% are not being addressed timely. This delinquency has exposed ANC to fines/penalties, lawsuits, and significant repair costs necessary to fix damaged unmarked lines.

- ANC receives approximately 63,800 locate tickets annually.
- 40% of these tickets (25,500) are in our service territory and require mobilization

- Equates to 98 locates per day
- Historically we have only responded to approximately 10% (2,550) of the workable tickets.
- ANC estimates 49 man-hours per day to handle 98 tickets across three regions = six full time positions (UT laborer grade 103 @ \$29,000/yr) (excludes positive response time required to vet initial 811 tickets and assign applicable WO's)
- Fully burdened cost of approximately \$289,000/yr
- ANC obtained a bid from USIC to perform 811 services for the statewide footprint (\$497,000).

ANC has decided to pilot the outsourcing of these required activities in 2018. The added supervisor time and related employee costs (WC, FMLA, OT, turnover) associated with managing these personnel along with the opportunity cost of minimized supervisory time otherwise spent maintaining our assets and core maintenance responsibilities outweigh the reduced cost of performing these services in-house. This decision to outsource will be re-evaluated upon completion of the pilot and for the 2019 budget year.

Prepared by:
Shannon V. Becker
President
Aqua North Carolina

Aqua North Carolina, Inc.
Docket No. W-218, Sub 497
Aqua North Carolina, Inc.
Public Staff Engineering Data Request No. 13

Requested by: Charles Junis Email: charles.junis@psncuc.nc.gov
Date requested: June 12, 2018 Phone: 919-733-0891
Due date: June 26, 2018

Subject of Data Request: Purchased Water

Question 1

For responses in Excel-format, please include all working formulas.

Q. Please provide a detailed explanation for and reconcile the unaccounted for purchased water supplied by the City of Asheville, City of Concord, City of Mount Airy, Davidson Water, Harnett County, Iredell Water, Town of Pittsboro, and Town of Spruce Pines during the test year ending September 30, 2017. Please see the calculated water loss columns on tab Ex Hw, col 1-4 of the embedded worksheet.

A. Overall, Aqua NC has a purchased water loss percentage of 13%. Below are comments about the specific outliers:

City of Asheville – this is Twin Creeks in the Denver area. This is a system that has a history of water loss right up until November of 2017. During 2017, the water mains were replaced AND in the last seven months, the water loss percent is down to just 15%.

City of Concord – Addressed in Q3 of this EDR. This was a leak detected in Q4 2016 which has been corrected and showing a much lower water loss percentage beginning March 2017.

City of Mount Airy - Greenfield. This is an older system that historically is prone to leaks. Five service line leaks have been found and fixed here during 2018.

Davidson Water – This system was discussed/analyzed earlier in 2018 when the vendor increased its rates. This is a system that has had loss issues historically. Although still higher than 20%, the numbers have improved since 2013/2014 when the percentage was over 45%.

Harnett County - Woodlake. This is one of Aqua's larger purchased water systems and has had a history of leaks.

2015-30%

2016-32%

2017-23%

There is still work to be done/leaks to be detected, but the trend is going in the right direction.

Iredell Water- This is for River Hill Heights. During the first six months of the test year there was an issue that cause this system to lose over 40% of their water. SINCE April 2017, however, the loss percentage has been less than 10%. Based on this analysis, this system will have an Item 18 adjustment submitted to normalize the test year volume.

Town of Pittsboro – This system has had issues with leaks in the past and more recently Aqua NC has been required to flush fairly large quantities due to TTHM issues with the Town's water. The company is trying to work out a credit from the town related to this flushed water.

Town of Spruce Pine - Swiss Pine Lake. This a smaller purchased water system (200K gallons purchased / 150K gallons billed). The company found out that we have an issue of the overhead storage tank overflowing and have taken steps to address this.

Prepared by:
Dean Gearhart
Manager, Rates and Planning
Aqua North Carolina, Inc.

I/A

W-218 Sub 497

Exhibit B3-b-3 UPDATE

Row Labels	UPDATE			ORIGINAL		Aqua Adjustment	PS Staff Calc		
	Sum of Gallons	Sum of TY Charge	Sum of Calc New Price Charge	Sum of Calc New Price Charge	Charge		Exp	PS Adjustment	Difference
ANC Water	387,585,398	\$1,477,088.07	\$1,605,364.37	\$1,611,634.91					
Charlotte-Mecklenburg Unit	35,978,961	\$97,537.41	\$98,111.89	\$98,111.89					
PARK SOUTH	28,105,735	\$66,102.62	\$66,487.35	\$66,487.35					
PARKWAY CROSSING	7,873,226	\$31,434.79	\$31,624.54	\$31,624.54					
Chatham Co Utilities	21,031,000	\$167,810.50	\$167,810.50	\$167,810.50					
BEECHWOOD COVE	8,683,000	\$61,095.50	\$61,095.50	\$61,095.50					
CHATHAM	5,579,000	\$39,233.00	\$39,233.00	\$39,233.00					
COLE PARK PLAZA	6,759,000	\$67,482.00	\$67,482.00	\$67,482.00					
City of Asheville	1,359,955		\$7,377.90	\$20,335.27		(12,957.37)	\$ 7,284.92	\$ (13,050.35)	\$ (92.98)
Twin Creeks	1,359,955		\$7,377.90	\$20,335.27					
City of Concord	2,737,500		\$14,985.80	\$30,351.55		(15,365.75)	\$ 12,913.61	\$ (17,437.94)	\$ (2,072.19)
SPRINGHILL/SPRINGDALE	2,737,500		\$14,985.80	\$30,351.55					
City of Gastonia	5,341,600	\$36,624.63	\$36,822.92	\$36,822.92					
Providence Acres	2,506,300	\$16,483.83	\$16,568.21	\$16,568.21					
Southgate - Gaston	2,835,300	\$20,140.80	\$20,254.71	\$20,254.71					
City of Hickory	4,833,052	\$26,650.04	\$27,835.87	\$27,835.87					
BROOKWOOD	716,958	\$4,223.65	\$4,271.91	\$4,271.91					
Cedarwood Estates	2,291,199	\$12,525.01	\$13,215.05	\$13,215.05					
HERITAGE FARMS	1,644,328	\$8,620.86	\$9,054.01	\$9,054.01					
LUTZ ACRES	180,567	\$1,280.52	\$1,294.90	\$1,294.90					
City of Lincoln	4,301,310		\$39,924.85	\$35,790.37		4,134.48	\$ 39,924.85	\$ 4,134.48	\$ (0.00)
HILL-N-DALE/LINCOLN	4,301,310		\$39,924.85	\$35,790.37					
City of Morganton	6,702,260	\$16,563.64	\$16,563.63	\$16,563.63					
EAST SHORES	6,702,260	\$16,563.64	\$16,563.63	\$16,563.63					
City of Mount Airy	5,665,000	\$43,377.90	\$43,377.90	\$46,549.80		(3,171.90)	\$ 39,094.97	\$ (7,454.83)	\$ (4,282.93)
GREENFIELD	5,665,000	\$43,377.90	\$43,377.90	\$46,549.80					
CITY OF NEWTON	917,800	\$2,954.37	\$3,006.59	\$3,006.59					
BETTS BROOK	917,800	\$2,954.37	\$3,006.59	\$3,006.59					
Davidson Water	8,713,990	\$47,175.08	\$48,443.55	\$48,443.55			44,002.39	\$ (4,441.16)	\$ (4,441.16)
BEARD ACRES	3,627,030	\$18,911.81	\$19,405.94	\$19,405.94					
CRESTWOOD	3,540,700	\$19,497.72	\$20,029.42	\$20,029.42					
LANCER ACRES	1,546,260	\$8,765.55	\$9,008.20	\$9,008.20					
Harnett County Utilities	46,515,190	\$122,268.63	\$128,847.08	\$128,847.08			111,848.51	\$ (17,398.57)	\$ (17,398.57)
WOODLAKE	46,515,190	\$122,268.63	\$128,847.08	\$128,847.08					
Hendersonville Water & Sew	10,830,100	\$35,933.21	\$36,351.02	\$36,351.02			34,689.99	\$ (1,661.03)	\$ (1,661.03)
HOOPERS VALLEY	3,887,700	\$13,177.48	\$13,333.81	\$13,333.81					
Rambling Ridge/Crystal C	6,942,400	\$22,755.73	\$23,017.21	\$23,017.21					
Iredell Water Corp	1,398,900	\$4,808.04	\$4,728.48	\$4,913.76		(185.28)	\$ 4,243.72	\$ (670.04)	\$ (684.76)
CHEPLEY PARK	0	\$123.50	\$126.00	\$126.00					
RIVER HILL HEIGHTS	1,398,900	\$4,684.54	\$4,602.48	\$4,787.76					
Johnston County Water	182,543,650	\$403,201.27	\$444,104.76	\$422,199.52		21,905.24	\$ 444,104.76	\$ 21,905.24	\$
CREEKSIDE PLACE	7,302,000	\$17,060.50	\$18,724.80	\$17,848.56					
SOUTH PLANTATION	6,195,000	\$14,667.06	\$16,068.00	\$15,324.60					
SOUTHGATE	4,135,650	\$10,185.26	\$11,125.56	\$10,629.28					
SUNRIDGE FARMS	4,663,000	\$11,331.79	\$12,391.20	\$11,831.64					
THE GARDENS @ FLOWE	160,248,000	\$349,956.66	\$385,795.20	\$366,565.44					
Lincoln Co. Dept of Public W	651,510	\$3,795.05	\$3,795.04	\$3,795.04					
LONG SHOALS	651,510	\$3,795.05	\$3,795.04	\$3,795.04					
Town of Forest City	2,497,200	\$14,794.30	\$14,794.29	\$14,794.29					
BRIDGES COMMUNITY	548,300	\$3,571.98	\$3,571.97	\$3,571.97					
HOLLY HILLS - RUTHERFC	1,948,900	\$11,222.32	\$11,222.32	\$11,222.32					
Town of Fuquay Varina	3,644,700	\$17,460.17	\$18,119.04	\$18,119.04					
Pear Meadow/Creekview	3,644,700	\$17,460.17	\$18,119.04	\$18,119.04					
Town of Harrisburg	501,100	\$4,195.06	\$4,195.05	\$4,195.05					
Weatherstone	501,100	\$4,195.06	\$4,195.05	\$4,195.05					
Town of Mooresville	6,965,000	\$3,905.71	\$3,955.35	\$3,955.35					
Regency Village	6,965,000	\$3,905.71	\$3,955.35	\$3,955.35					
Town of Pittsboro	30,880,620	\$422,138.06	\$422,138.08	\$422,138.08			385,965.22	\$ (36,172.86)	\$ (36,172.86)
CHAPEL RIDGE AKA BUCI	30,880,620	\$422,138.06	\$422,138.08	\$422,138.08					
Town of Spruce Pine	2,516,000		\$14,179.80	\$14,809.75		(629.95)	\$ 13,937.47	\$ (1,472.28)	\$ (842.33)
SWISS PINE LAKE	2,516,000		\$14,179.80	\$14,809.75					
Warren County	1,059,000	\$5,895.00	\$5,895.00	\$5,895.00					
Stone House	1,059,000	\$5,895.00	\$5,895.00	\$5,895.00					
Brookwood	91,339,625	\$251,792.12	\$273,245.49	\$273,245.49					
PWC	89,247,825	\$241,736.38	\$262,849.24	\$262,849.24					
BRETTON WOOD HILLS	4,154,710	\$11,127.56	\$12,099.76	\$12,099.76					
COLONY VILLAGE	0	\$1,730.40	\$1,876.80	\$1,876.80					
KELLY HILL	3,565,040	\$9,548.26	\$10,382.47	\$10,382.47					
PORTER PLACE/WINDSO	74,245,975	\$198,853.01	\$216,226.55	\$216,226.55					
RAINTREE II	7,282,100	\$19,503.65	\$21,207.66	\$21,207.66					
STONEY POINT	0	\$973.50	\$1,056.00	\$1,056.00					
Town of Uiden	2,091,800	\$10,055.74	\$10,396.25	\$10,396.25					
WOODLAND RUN	2,091,800	\$10,055.74	\$10,396.25	\$10,396.25					
Grand Total	478,925,023	\$1,728,880.19	\$1,878,609.86	\$1,884,860.40	\$ (6,270.54)			\$ (73,719.33)	\$ (67,448.80)
		PS Adjustment	(\$67,448.80)	\$ (73,719.33)					
		Belmont	\$63,061.20	\$63,061.20					
		Total	\$1,874,222.26	\$1,874,222.27					

Aqua North Carolina, Inc
 Test Water Volume at Latest Known Vendor Price

W-218 Sub 497

Exhibit B3-b-3-a UPDATE
 PS Adjustment

GL Month	Reading	Read Date	Service	Bill Date	Reading	Usage	Gallons	TY Charge	Calc New Price
133	Region	District	Co #	Sys #	Vendor #	Vendor Name	Sys Name	Service Address	GL
134	Region	District	Co #	Sys #	Vendor #	Vendor Name	Sys Name	Service Address	GL
135	Kennewire	N398	07	32	18029	Darwinson Water	CRESTWOOD	Tobacco Rd	610100
136	Kennewire	N398	07	32	18029	Darwinson Water	CRESTWOOD	Holly Ridge Rd	610100

GL Month	Reading	Read Date	Service	Bill Date	Reading	Usage	Gallons	TY Charge	Calc New Price
137	Nov-16	8991200	10/21/16	28	10/21/16	253,100	282,378	1,384.25	1,518.79
138	Dec-16	10244300	11/22/16	32	12/21/16	373,700	282,378	1,920.92	1,518.79
139	Jan-17	618000	1/20/17	29	1/24/17	286,500	282,378	1,471.25	1,518.79
140	Feb-17	876500	1/20/17	29	2/21/17	278,200	282,378	1,559.90	1,518.79
141	Mar-17	1164700	2/23/17	34	3/21/17	282,100	282,378	1,577.45	1,518.79
142	Apr-17	1436800	3/22/17	27	4/24/17	284,300	282,378	1,587.35	1,518.79
143	May-17	1721100	4/24/17	33	5/21/17	283,200	282,378	1,582.40	1,518.79
144	Jun-17	2004300	5/24/17	30	6/21/17	257,600	282,378	1,458.10	1,518.79
145	Jul-17	2262100	6/23/17	30	7/31/17	308,600	282,378	1,696.70	1,518.79
146	Aug-17	2570700	7/24/17	31	8/21/17	293,400	282,378	1,517.50	1,518.79
147	Sep-17	2861700	8/25/17	32	9/11/17	293,400	282,378	1,628.30	1,518.79
148	Oct-17	3155100	9/22/17	28	10/21/17	376,500	282,378	2,003.60	1,518.79
149				353		3,540,700	3,178,338	19,497.72	18,225.48

Region	District	Co #	Sys #	Vendor #	Vendor Name	Sys Name	Service Address	Usage	Gallons	TY Charge	Calc New Price
151	Kennewire	N044	01	44	18029	Darwinson Water	LANCER ACRES	111,599	114,580	627.23	684.93
152	Nov-16	5809660	10/21/16	28	12/21/16	608,860	608,860	187,410	114,580	875.62	684.93
153	Dec-16	5921250	11/22/16	32	1/24/17	619,750	619,750	103,790	114,580	645.56	684.93
154	Jan-17	6088660	1/20/17	29	2/21/17	632,950	632,950	132,100	114,580	750.45	684.93
155	Feb-17	6197450	1/20/17	29	2/21/17	644,540	644,540	115,690	114,580	676.61	684.93
156	Mar-17	6329550	2/23/17	34	3/21/17	654,720	654,720	101,970	114,580	614.87	684.93
157	Apr-17	6445240	3/22/17	27	4/24/17	657,370	657,370	126,860	114,580	724.62	684.93
158	May-17	6735170	4/24/17	33	5/21/17	678,530	678,530	111,750	114,580	658.92	684.93
159	Jun-17	6873570	5/24/17	30	6/21/17	692,750	692,750	141,820	114,580	794.19	684.93
160	Jul-17	6927150	6/23/17	31	7/31/17	705,900	705,900	129,750	114,580	739.88	684.93
161	Aug-17	7056900	7/24/17	32	8/21/17	722,980	722,980	172,790	114,580	933.56	684.93
162	Sep-17	7229690	8/25/17	28	10/21/17	735,920	735,920	126,230	114,580	724.04	684.93
163	Oct-17			353		17,7424	15,66260	1,546,260	1,374,723	8,765.55	8,218.13

Region	District	Co #	Sys #	Vendor #	Vendor Name	Sys Name	Service Address	Usage	Gallons	TY Charge	Calc New Price
170	Kennewire	N398	02	901	18029	Darwinson Water	BEARD ACRES	225,730	238,771	1,192.10	1,463.15
171	Nov-16	1636890	10/21/16	28	12/21/16	186,620	186,620	275,430	238,771	1,413.26	1,463.15
172	Dec-16	1862620	11/22/16	32	1/24/17	213,950	213,950	259,190	238,771	1,390.39	1,463.15
173	Jan-17	2138050	1/20/17	29	2/21/17	239,740	239,740	299,790	238,771	1,573.05	1,463.15
174	Feb-17	2397240	1/20/17	29	2/21/17	259,700	259,700				

Aqua North Carolina, Inc
 Test Year Water Volume at Latest Known Vendor Price

W-216 Sub 497

Exhibit B3-b-3-a UPDATE
 PS Adjustment

Line	GL Month	Reading	Read Date	Service	Bill Date	Reading	Usage	Gallons	TY Charge	Calc New Price
Region	District	Co #	Sys #	Vendor #	Vendor Name	Sys Name	Service Address	AU	Charge	GL
176	Mar-17	2697030	2/23/17	34	3/2/17	3000010	302,980	268,771	\$ 1,587.41	\$ 1,463.15
177	Apr-17	3000010	3/22/17	27	4/3/17	3296240	295,230	268,771	\$ 1,557.04	\$ 1,463.15
178	May-17	3296240	4/24/17	33	5/2/17	3646890	350,650	268,771	\$ 1,801.93	\$ 1,463.15
179	Jun-17	3646890	5/24/17	30	6/2/17	3953550	306,660	268,771	\$ 1,603.97	\$ 1,463.15
180	Jul-17	3953550	6/23/17	30	7/3/17	4284120	330,570	268,771	\$ 1,711.57	\$ 1,463.15
181	Aug-17	4284120	7/24/17	31	8/2/17	4603970	319,850	268,771	\$ 1,663.33	\$ 1,463.15
182	Sep-17	4603970	8/25/17	32	9/1/17	4964990	381,020	268,771	\$ 1,848.59	\$ 1,463.15
183	Oct-17	4964990	9/22/17	28	10/2/17	5263920	298,930	268,771	\$ 1,569.19	\$ 1,463.15
184				363			3,627,030	2,235,291	\$ 18,911.81	\$ 17,557.78

Line	Region	District	Co #	Sys #	Vendor #	Vendor Name	Sys Name	Service Address	AU	GL
185	Denver	N737	02	615	22595	City of Concord	SPRINGHILLS/SPRINGD ALE	Wendover and Montfor	8010	610100
188	GL Mth	Reading	Read Date	DOS	Bill Date	Reading	Usage	Gallons	TY Charge	Charge
198	Mar-17	13640	3/13/17	27	3/20/17	13919	209,250		\$	1,076.13
199	Apr-17	13919	4/10/17	28	4/20/17	14196	207,750		\$	1,076.13
200	May-17	14196	5/15/17	35	5/20/17	14508	234,000		\$	1,076.13
192	Jun-17	14508	6/14/17	30	6/20/17	14765	192,750		\$	1,076.13
193	Jul-17	14765	7/16/17	32	7/20/17	15052	215,250		\$	1,076.13
194	Aug-17	15052	8/14/17	29	8/20/17	15305	189,750		\$	1,076.13
195	Sep-17	15305	9/13/17	30	9/20/17	15607	226,500		\$	1,076.13
196	Oct-17	15607	10/9/17	26	10/20/17	15886	209,250		\$	1,076.13
197	Nov-17	15886	11/9/18			16198	234,000		\$	1,076.13
198	Dec-17	16198	12/6/17	29	12/20/17	16551	264,750		\$	1,076.13
199	Jan-18	16551	1/11/18	34	1/20/18	16911	270,000		\$	1,076.13
200	Feb-18	16911	2/13/18	33	2/20/18	17200	284,250		\$	1,076.13
201				333			2,737,500		\$	12,913.61

UPDATED TO 12 MONTHS BEGINNING 3/1/2017

Line	Region	District	Co #	Sys #	Vendor #	Vendor Name	Sys Name	Service Address	AU	GL
202	Denver	N847	02	734	31210	City of Lincolnnton	HILL-N DALE/LINCOLNVIEW		8010	610100
205	GL Mth	Reading	Read Date	DOS	Bill Date	Reading	Usage	Gallons	TY Charge	Charge
206	Jul-17	2893310	7/14/17	32	8/1/17	3273760	410,450	410,450	\$	3,790.84
207	Jul-17	3679000	7/14/17	32	8/1/17	3694000	15,000	15,000	\$	152.70
208	Aug-17	3273760	8/11/17	29	9/1/17	3538650	264,890	264,890	\$	2,451.69
209	Aug-17	3694000	8/11/17	28	9/1/17	3700000	6,000	6,000	\$	69.90
210	Sep-17	3538650	9/19/17	38	10/1/17	3922310	393,600	393,600	\$	3,544.37
211	Sep-17	3700000	9/19/17	38	10/1/17	3720000	20,000	20,000	\$	198.70
212	Oct-17	3922310	10/12/17	25	11/1/17	4062000	139,690	139,690	\$	1,299.85
213	Oct-17	3720000	10/13/17	25	11/1/17	3722000	2,000	2,000	\$	33.10
214	Nov-17	4062000	11/15/17	33	12/1/17	4390460	328,460	328,460	\$	3,036.53
215	Nov-17	3722000	11/15/17	33	12/1/17	3724000	2,000	2,000	\$	33.10

Aqua North Carolina, Inc
 Test Year Water Volume at Latest Known Vendor Price

W-218 Sub 497

Exhibit B3-b-3-a UPDATE
 PS Adjustment

Line	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)
	GL Month	Reading	Read Date	Service	Bill Date	Reading	Usage	Gallons	TY Charge	Calc New Price
	Region	District	Co #	Sys #	Vendor #	Vendor Name	Sys Name	Service Address	AU	GL
216	Dec-17	4390460	12/13/17	31	4/1/17	4658110	267,650	267,650	\$	2,477.08
217	Dec-17	3724000	12/13/17	31	4/1/17	3731000	7,000	7,000	\$	79.10
218	Jan-18	4658110	1/16/18	34	2/1/18	4885680	227,570	227,570	\$	2,108.34
219	Jan-18	3731000	1/16/18	34	2/1/18	4426000	695,000	695,000	\$	6,408.70
220	Feb-18	4885680	2/14/18	29	3/1/18	5039150	153,470	153,470	\$	1,426.62
221	Feb-18	4426000	2/14/18	29	3/1/18	4449000	23,000	23,000	\$	226.30
222	Mar-18	5039150	3/16/18	30	4/1/18	5,462,870	423,720	423,720	\$	3,912.82
223	Mar-18	4449000	3/16/18	30	4/1/18	4,457,000	8,000	8,000	\$	88.30
224	Apr-18	5462870	4/12/18	27	5/1/18	5814320	351,450	351,450	\$	3,248.04
225	Apr-18	4457000	4/12/18	27	5/1/18	4485000	8,000	8,000	\$	88.30
226	May-18	5814320	5/11/18	29	6/1/18	6209590	395,270	395,270	\$	3,651.18
227	May-18	4457000	5/11/18	29	6/1/18	4487000	22,000	22,000	\$	217.10
228	Jun-18	6209590	6/13/18	7/1/18	7/1/18	5345620	136,030	136,030	\$	1,258.18
228	Jun-18	4487000	6/13/18	7/1/18	7/1/18	4488000	11,000	11,000	\$	115.90
230				336			4,301,310	4,301,310	\$	39,924.85

UPDATED TO 12 MONTHS ENDED 6/30/18

Aqua North Carolina, Inc
 Test Year Water Volume at Latest Known Vendor Price

W-218 Sub 497

Exhibit B3-b-3-a UPDATE
 PS Adjustment

Line	GL Month	Reading	Read Date	Service Co #	Sys #	Bill Date	Reading	Usage	Gallons	TY Charge	Calc New Price
351	Region	District	Co #	Sys #	Vendor #	Vendor Name	Sys Name	Service Address	AU	GL	
352	Region	District	Co #	Sys #	Vendor #	Vendor Name	Sys Name	Service Address	AU	GL	
353	Cary	N528	02	370	31266	Water	Johnston County	CREEKSIDE PLACE	8000	610100	
354	GL Mth	Reading	Read Date	DOS	Bill Date	Reading	Usage	Gallons	TY Charge	Charge	
355	Nov-16	54265	10/31/16		11/1/16	54800	535	535,000 \$	1,250.25 \$	1,384.00	
356	Dec-16	54800	11/28/16		12/1/16	55354	554	554,000 \$	1,291.10 \$	1,429.60	
357	Jan-17	55354	12/31/16		1/1/17	55997	643	643,000 \$	1,482.45 \$	1,643.20	
358	Feb-17	55997	1/30/17		2/1/17	56454	457	457,000 \$	1,082.55 \$	1,186.80	
359	Mar-17	56454	2/27/17		3/1/17	56908	454	454,000 \$	1,076.10 \$	1,189.60	
360	Apr-17	56908	4/3/17		4/5/17	57533	625	625,000 \$	1,443.75 \$	1,600.00	
361	May-17	57533	5/1/17		5/3/17	58164	631	631,000 \$	1,456.85 \$	1,614.40	
362	Jun-17	58164	5/30/17		6/1/17	58871	707	707,000 \$	1,620.05 \$	1,796.80	
363	Jul-17	58871	7/3/17		7/3/17	59705	834	834,000 \$	1,893.10 \$	2,101.60	
364	Aug-17	59705	7/31/17		7/31/17	60327	622	622,000 \$	1,437.30 \$	1,592.80	
365	Sep-17	60327	9/1/17		9/1/17	60992	665	665,000 \$	1,616.20 \$	1,696.00	
366	Oct-17	60992	10/2/17		10/2/17	61567	575	575,000 \$	1,411.00 \$	1,480.00	
367							7,302	7,302,000 \$	-17,060.50 \$	18,724.80	

UPDATED PRICE EFFECTIVE 7/1/2018

Line	Region	District	Co #	Sys #	Vendor #	Vendor Name	Sys Name	Service Address	AU	GL
370	Cary	N520	02	362	31266	Water	Johnston County	SOUTH PLANTATION	8000	610100
371	GL Mth	Reading	Read Date	DOS	Bill Date	Reading	Usage	Gallons	TY Charge	Charge
372	Nov-16	45488	10/31/2016		11/1/2016	45935	447	448,000 \$	1,063.20 \$	1,175.20
373	Nov-16	262	10/31/2016		11/1/2016	263	1			
374	Dec-16	45935	11/28/2016		12/1/2016	46358	423	423,000 \$	1,009.45 \$	1,115.20
375	Dec-16	263	11/29/2016		12/1/2016	263				
376	Jan-17	46358	12/31/2016		1/1/2017	46871	513	513,000 \$	1,202.95 \$	1,331.20
377	Jan-17	263	12/31/2016		1/1/2017	263				
378	Feb-17	46871	1/30/17		2/1/17	47398	527	527,000 \$	1,233.05 \$	1,364.80
379	Feb-17	263	1/30/17		2/1/17	263				
380	Mar-17	47398	2/27/2017		3/1/2017	47888	490	490,000 \$	1,153.50 \$	1,276.00
381	Mar-17	263	2/27/2017		3/1/2017	263				
382	Apr-17	47888	4/3/17		4/5/17	48432	544	546,000 \$	1,273.90 \$	1,410.40
383	Apr-17	263	4/3/17		4/5/17	265	2			
384	May-17	48432	5/1/2017		5/3/2017	48891	459	459,000 \$	1,086.85 \$	1,201.60
385	May-17	265	5/1/2017		5/3/2017	265				

Aqua North Carolina, Inc
 Test Year Water Volume at Latest Known Vendor Price

W-218 Sub 497

Exhibit B3-b-3-a UPDATE
 PS Adjustment

Line	GL Month	Reading	Read Date	Service Co #	Bill Date	Reading	Usage	Gallons	TY Charge	Calc New Price
Region	District			Sys #	Vendor #	Vendor Name	Sys Name	Service Address	AU	GL
386	Jun-17	48891	5/30/2017		6/1/2017	49410	519	519,000	\$ 1,215.85	\$ 1,345.60
387	Jun-17	285	5/30/2017		6/1/2017	265				
388	Jul-17	49410	7/3/17		7/3/17	50021	611	611,000	\$ 1,413.65	\$ 1,566.40
389	Jul-17	285	7/3/17		7/3/17	265				
390	Aug-17	50021	7/31/2017		7/31/2017	50543	522	522,000	\$ 1,222.30	\$ 1,352.80
391	Aug-17	285	7/31/2017		7/31/2017	265				
392	Sep-17	50543	9/1/2017		9/1/2017	51121	578	578,000	\$ 1,417.84	\$ 1,487.20
393	Sep-17	285	9/1/2017		9/1/2017	265				
394	Oct-17	51121	10/2/2017		10/2/2017	51680	559	559,000	\$ 1,374.52	\$ 1,441.60
395	Oct-17	285	10/2/2017		10/2/2017	265				
396							6,185	6,185,000	14,667	16,068

UPDATED PRICE EFFECTIVE 7/1/2018

Line	Region	District	Co #	Sys #	Vendor #	Vendor Name	Sys Name	Service Address	AU	GL
397										
398										
399	Cary	N467	02	308	31256	Water	SOUTHGATE	Rymal Rd	8000	-610100
						Johnston County				Calc New Price
										Charge
GL Mth	Reading	Read Date	DOS	Bill Date	Reading	Usage	Gallons	TY Charge	Calc New Price	
401	Nov-16	870160	10/31/2016	11/1/2016	899535	29375	294,100	\$ 732.32	\$ 805.84	
402	Nov-16	16955	10/31/2016	11/1/2016	16990	35				
403	Dec-16	899535	11/28/2016	12/1/2016	928565	29030	293,800	\$ 731.67	\$ 805.12	
404	Dec-16	16990	11/28/2016	12/1/2016	17025	350				
405	Jan-17	828565	12/31/2016	1/1/2017	967145	38,580	389,300	\$ 937.00	\$ 1,034.32	
406	Jan-17	17025	12/31/2016	1/1/2017	17090	350				
407	Feb-17	967145	1/30/17	2/1/17	997165	30,020	308,200	\$ 762.63	\$ 839.68	
408	Feb-17	17060	1/30/17	2/1/17	17140	800				
409	Mar-17	997165	2/27/2017	3/1/2017	1029390	32,225	331,650	\$ 813.05	\$ 895.96	
410	Mar-17	17140	2/27/2017	3/1/2017	17234	940				
411	Apr-17	1029390	4/3/17	4/5/17	1066826	37,436	378,960	\$ 914.76	\$ 1,009.50	
412	Apr-17	17234	4/3/17	4/5/17	17280	460				
413	May-17	1066826	5/1/2017	5/3/2017	1098314	31,488	320,880	\$ 789.89	\$ 870.11	
414	May-17	17280	5/1/2017	5/3/2017	17340	600				
415	Jun-17	1098314	5/30/2017	6/1/2017	132871	34,557	358,570	\$ 870.93	\$ 960.57	
416	Jun-17	17340	5/30/2017	6/1/2017	17470	1,300				
417	Jul-17	132871	7/3/17	7/3/17	174553	41,682	424,020	\$ 1,011.64	\$ 1,117.65	
418	Jul-17	17470	7/3/17	7/3/17	17542	720				
419	Aug-17	174553	7/31/2017	7/31/2017	205635	31,082	316,120	\$ 779.66	\$ 858.69	
420	Aug-17	17542	7/31/2017	7/31/2017	17595	530				
421	Sep-17	205635	9/1/2017	9/1/2017	241437	35,802	364,120	\$ 930.19	\$ 973.89	
422	Sep-17	17595	9/1/2017	9/1/2017	17656	610				

Aqua North Carolina, Inc
 Test Year Water Volume at Latest Known Vendor Price

W-218 Sub 497

Exhibit B3-b-3-a UPDATE
 PS Adjustment

Line	GL Month	Reading	Read Date	Service Co #	Sys #	Bill Date	Reading	Usage	Gallons	TY Charge	Calc New Price
Region	District					Vendor #	Vendor Name	Sys Name	Service Address	AU	Charge
423	Oct-17	241437	10/2/2017			10/2/2017	276470	35,033	355,930	\$ 911.52	\$ 954.23
424	Oct-17	17656	10/2/2017			10/2/2017	17712	560			
425								413,565	4,135,650	10,185	11,126

UPDATED PRICE EFFECTIVE 7/1/2018

Line	Region	District	Co #	Sys #	Vendor #	Vendor Name	Sys Name	Service Address	AU	GL
426						Johnston County Water	THE GARDENS @ FLOWERS PL		8000	610100
428	Cary	N397	02	338	31266					
Line	GL Mth	Reading	Read Date	DOS	Bill Date	Reading	Usage	Gallons	TY Charge	Charge
430	Nov-16		10/31/16	28	11/1/16		12,723,000	12,723,000	\$ 27,454.45	\$ 30,635.20
431	Dec-16		11/28/2016	28	12/1/2016		13,214,000	13,214,000	\$ 28,510.10	\$ 31,813.60
432	Jan-17		12/31/16	33	1/1/17		11,809,000	11,809,000	\$ 25,489.35	\$ 28,441.60
433	Feb-17		1/30/17	30	2/1/17		8,837,500	8,837,500	\$ 19,100.63	\$ 21,310.00
434	Mar-17		2/27/2017	28	3/1/2017		9,254,000	9,254,000	\$ 19,996.10	\$ 22,309.60
435	Apr-17		4/3/17	35	4/5/17		12,169,000	12,169,000	\$ 26,263.35	\$ 29,305.60
436	May-17		5/1/17	28	5/3/17		11,811,500	11,811,500	\$ 25,494.73	\$ 28,447.60
437	Jun-17		5/30/17	29	6/1/17		13,786,500	13,786,500	\$ 29,740.98	\$ 33,187.60
438	Jul-17		7/3/17	34	7/3/17		18,435,500	18,435,500	\$ 39,738.33	\$ 44,345.20
439	Aug-17		7/31/2017	28	7/31/2017		15,720,000	15,720,000	\$ 33,898.00	\$ 37,828.00
440	Sep-17		9/1/17	32	9/1/17		17,051,000	17,051,000	\$ 38,976.28	\$ 41,022.40
441	Oct-17		10/2/17	31	10/2/17		15,437,000	15,437,000	\$ 35,296.36	\$ 37,148.80
442				364			160,248,000	160,248,000	\$ 349,956.68	\$ 385,795.20

UPDATED PRICE EFFECTIVE 7/1/2018

Line	Region	District	Co #	Sys #	Vendor #	Vendor Name	Sys Name	Service Address	AU	GL
443						Johnston County Water	SUNRIDGE FARMS		8000	610100
445	Cary	N529	02	371	31266					
Line	GL Mth	Reading	Read Date	DOS	Bill Date	Reading	Usage	Gallons	TY Charge	Charge
447	Nov-16	29480	10/31/16		11/1/16		390	390,000	\$ 938.50	\$ 1,036.00
448	Dec-16	79870	11/28/2016		12/1/2016		352	352,000	\$ 856.80	\$ 944.80
449	Jan-17	30222	12/31/16		1/1/17		30633	411,000	\$ 983.65	\$ 1,086.40
450	Feb-17	30633	1/30/17		2/1/17		30941	308,000	\$ 762.20	\$ 839.20
451	Mar-17	30941	2/27/2017		3/1/2017		31270	329,000	\$ 807.35	\$ 889.60
452	Apr-17	31270	4/3/17		4/5/17		31690	420,000	\$ 1,003.00	\$ 1,108.00
453	May-17	31690	5/1/17		5/3/17		32063	373,000	\$ 901.95	\$ 995.20
454	Jun-17	32063	5/30/17		6/1/17		32443	380,000	\$ 917.00	\$ 1,012.00
455	Jul-17	32443	7/3/17		7/3/17		32993.00	550,000	\$ 1,282.50	\$ 1,420.00
456	Aug-17	32993	7/31/2017		7/31/2017		33325.00	332,000	\$ 813.80	\$ 896.80

Aqua North Carolina, Inc
 Test Year Water Volume at Latest Known Vendor Price

W-218 Sub 497

Exhibit B3-b-3-a UPDATE
 PS Adjustment

Line	(a) Region	(b) District	(c) Co #	(d) Service Sys #	(e) Bill Date Vendor #	(f) Reading Vendor Name	(g) Usage Sys Name	(h) Gallons Service Address	(i) TY Charge AU	(j) Calc New Price Charge GL
457	Sep-17		33325	9/1/17	9/1/17	33743	418	416,000 \$	1,053.04 \$	1,103.20
458	Oct-17		33743	10/2/17	10/2/17	34143	400	400,000 \$	1,012.00 \$	1,060.00
459							4,663	4,663,000 \$	11,331.79 \$	12,391.20
UPDATED PRICE EFFECTIVE 7/1/2018										

Aqua North Carolina, Inc
 Test Year Water Volume at Latest Known Vendor Price.

W-218 Sub 497

Exhibit B3-b-3-a UPDATE
 PS Adjustment

Line	GL Month	Reading	Read Date	Service	Bill Date	Reading	Usage	Gallons	TY Charge	Calc New Price
Region	District	Co #	Sys #	Vendor #	Vendor Name	Sys Name	Service Address	AU	GL	Charge
489										
490	Region	District	Co #	Sys #	Vendor #	Vendor Name	Sys Name	Service Address	AU	GL
491	Denver	N848	02	735	31298	Redeli Water Corp	RIVER HILL HEIGHTS	River Hill * Indp Loop	8010	610100
492	GL Mth	Reading	Read Date	DOS	Bill Date	Reading	Usage	Gallons	TY Charge	Charge
493	Apr-17	11025300	4/14/17		4/14/17	11106600	81,300		\$ 270.66	\$ 343.14
494	May-17	11106600	5/11/17		5/11/17	11193200	86,600		\$ 287.62	\$ 343.14
495	Jun-17	11193200	6/14/17		6/14/17	11300300	107,100		\$ 353.22	\$ 343.14
496	Jul-17	11300300	7/13/17		7/20/17	11376200	76,900		\$ 253.38	\$ 343.14
497	Aug-17	11376200	8/14/17		8/20/17	11488600	112,400		\$ 370.18	\$ 343.14
498	Sep-17	11488600	9/14/17		9/20/17	11600300	111,700		\$ 367.94	\$ 343.14
499	Oct-17	11600300	10/13/17		10/22/17	11762000	161,700		\$ 527.94	\$ 343.14
500	Nov-17	11762000	11/14/17			11934900	172,900		\$ 563.78	\$ 343.14
501	Dec-17	11934900	12/14/17		12/22/17	12021400	86,500		\$ 287.30	\$ 343.14
502	Jan-18	12021400			1/15/18	12133200	111,800		\$ 291.12	\$ 343.14
503	Feb-18	12133200	2/14/2018		2/22/2018	12341100	207,900		\$ 717.66	\$ 343.14
504	Mar-18	12341100	3/14/18		3/19/18	12424200	83,100		\$ 293.54	\$ 343.14
							1,398,900		\$ 4,684.54	\$ 4,117.72

UPDATED TO 12 MONTHS BEGINNING 4/1/2017

Aqua North Carolina, Inc
 Test Year Water Volume at Latest Known Vendor Price

W-218 Sub 497

Exhibit B3-3-3-4 UPDATE
 PS Adjustment

Ln	Ql Month	Reading	Read Date	Service	Bill Date	Reading	Usage	Gallons	TY Charge	Rate New Price
Region	District	Co #	Sys #	Vendor #	Vendor Name	Sys Name	Service Address	TY Charge	GL	GL
523	Denver	N744	02	622	31299	Town of Spruce Pine	SWISS PINE LAKE	McHone Rd	AU	610100
524	Region	District	Co #	Sys #	Vendor #	Vendor Name	Sys Name	Service Address	TY Charge	GL
525	Denver	N744	02	622	31299	Town of Spruce Pine	SWISS PINE LAKE	McHone Rd	AU	610100
526	Region	District	Co #	Sys #	Vendor #	Vendor Name	Sys Name	Service Address	TY Charge	GL

Ql Mth	Reading	Read Date	DOS	Bill Date	Reading	Usage	Gallons	TY Charge	Change
Jul-17	7615	7/27/17	30	7/31/17	7712	57	118	\$	335.45
Aug-17	7712	8/29/17	33	8/29/17	7830	118	92	\$	335.45
Sep-17	7830	9/26/17	28	9/28/17	7922	92	85	\$	335.45
Oct-17	7922	10/27/17	31	10/31/17	8007	85	83	\$	335.45
Nov-17	8007	11/28/17	32	11/30/17	8090	83	80	\$	335.45
Dec-17	8090	12/20/17	22	12/28/17	8090	80	72	\$	335.45
Jan-18	8090	1/24/18	35	1/26/18	8105	15	73	\$	335.45
Feb-18	8090	2/21/18	28	2/23/18	8178	73	61	\$	335.45
Mar-18	8105	3/21/18	33	3/23/18	8239	61	60	\$	335.45
Apr-18	8178	4/23/18	30	4/27/18	8239	60	77	\$	335.45
May-18	8239	5/23/18	34	5/25/18	8376	77	77	\$	335.45
Jun-18	8239	6/25/18	34	6/26/18	8376	77	77	\$	335.45
UPDATED TO 12 MONTHS ENDED 6/30/18 Total: 384 302836 761 4021327									

Ql Mth	Reading	Read Date	DOS	Bill Date	Reading	Usage	Gallons	TY Charge	Change
Jul-17	2779	7/27/17	30	7/31/17	2946	167	243	\$	776.30
Aug-17	2946	8/29/17	33	8/31/17	3189	243	123	\$	776.30
Sep-17	3189	9/26/17	27	9/28/17	3315	123	65	\$	776.30
Oct-17	3315	10/26/17	22	10/31/17	3438	123	126	\$	776.30
Nov-17	3438	11/28/17	33	11/30/17	3567	126	155	\$	776.30
Dec-17	3567	12/20/17	22	12/28/17	3693	155	163	\$	776.30
Jan-18	3693	1/24/18	35	1/25/18	3808	163	189	\$	776.30
Feb-18	3808	2/21/18	28	2/23/18	3971	189	125	\$	776.30
Mar-18	3971	3/21/18	33	3/23/18	4170	125	110	\$	776.30
Apr-18	4170	4/23/18	29	4/27/18	4295	110	129	\$	776.30
May-18	4295	5/22/18	34	5/25/18	4405	129	129	\$	776.30
Jun-18	4405	6/25/18	33	6/29/18	4534	129	129	\$	776.30
UPDATED TO 12 MONTHS ENDED 6/30/18 Total: 332 637534 1795 931585									

Region	District	Co #	Sys #	Vendor #	Vendor Name	Sys Name	Service Address	TY Charge	GL	
560	Denver	N777M06Y	02	605	31300	Hendersonville Water	Rambling Ridge/Crystal	Chattooga Run	8010	610100

Aqua North Carolina, Inc
Test Year Water Volume at Latest Known Vendor Price

W218 Sub 497

Exhibit B3-B-3-a-UPDATE
PS Adjustment

GL Month	Reading	Read Date	Service	Bill Date	Reading	Usage	Gallons	TV Charge	Calc New Price	
626	Region	District	Co #	Sys #	Vendor #	Vendor Name	Sys Name	Service Address	GL	
627	Region	District	Co #	Sys #	Vendor #	Vendor Name	Sys Name	Service Address	GL	
628	Region	District	Co #	Sys #	Vendor #	Vendor Name	Sys Name	Service Address	GL	
629	GL Month	Reading	Read Date	Service	Bill Date	Reading	Usage	Gallons	TV Charge	Calc New Price
630	Jul-17	112050	7/17/17	27	7/31/17	112490	440,000	3,405.00	3,257.91	
631	Aug-17	112490	8/18/17	32	8/31/17	112925	435,000	3,372.30	3,257.91	
632	Sep-17	112925	9/18/17	28	9/30/17	113310	385,000	3,045.30	3,257.91	
633	Oct-17	113310	10/18/17	31	10/31/17	113795	485,000	3,699.30	3,257.91	
634	Nov-17	113795	11/18/17	31	11/30/17	114185	390,000	3,078.00	3,257.91	
635	Dec-17	114185	12/18/17	29	12/29/17	114595	410,000	3,208.80	3,257.91	
636	Jan-18	114595	1/22/18	38	1/31/18	115205	395,000	3,116.70	3,257.91	
637	Feb-18	115205	2/28/18	25	2/28/18	116000	450,000	3,535.80	3,257.91	
638	Mar-18	116000	3/18/18	28	3/30/18	116570	480,000	3,852.80	3,257.91	
639	Apr-18	116570	4/18/18	33	4/30/18	117075	510,000	4,173.00	3,257.91	
640	May-18	117075	5/18/18	28	5/31/18	117715	640,000	4,712.00	3,257.91	
641	Jun-18	117715	6/18/18	363	6/29/18	5,685,000	5,010,116	43,377.80	39,054.97	

UPDATED TO 12 MONTHS ENDED 6/30/18

Aqua North Carolina, Inc
 Test Year Water Volume at Latest Known Vendor Price

W-218 Sub 497

Exhibit B3-b-3-a UPDATE
 PS Adjustment

Line	GL Month	Reading	Read Date	Service	Bill Date	Reading	Usage	Gallons	TY Charge	Calc New Price
Region	District	Co #	Sys #	Vendor #	Vendor Name	Sys Name	Service Address	AU	GL	
812										
813										
814	Cary	N593 / N06K / N07G	02	435	34136	Town of Pittsboro	CHAPEL RIDGE AKA BUCK MTN	Russell Chapel Rd	6000	610100
815	GL Mth	Reading	Read Date	DOS	Bill Date	Reading	Usage	Gallons	TY Charge	Calc New Price
816	Nov-16	29530630	10/18/16	28	11/1/16	32321950	2,791,320	2,362,873	\$ 38,157.34	\$ 32,163.77
817	Dec-16	32321950	11/18/16	31	12/1/16	34780590	2,458,640	2,362,873	\$ 33,609.61	\$ 32,163.77
818	Jan-17	34780590	12/18/16	31	1/4/17	35241850	1,461,260	2,352,873	\$ 19,975.42	\$ 32,163.77
819	Feb-17	35241850	1/18/17	31	2/1/17	37,779,750	1,537,900	2,362,873	\$ 21,023.09	\$ 32,163.77
820	Mar-17	37779750	2/16/17	28	3/1/17	39811430	2,031,680	2,352,873	\$ 27,773.07	\$ 32,163.77
821	Apr-17	39811430	3/1/17	13	4/3/17	41238150	1,426,720	2,352,873	\$ 19,503.26	\$ 32,163.77
822	May-17	41238150	4/17/17	47	5/2/17	43429490	2,191,340	2,352,873	\$ 29,955.62	\$ 32,163.77
823	Jun-17	43429490	5/18/17	32	6/1/17	46513270	3,083,760	2,362,873	\$ 42,155.27	\$ 32,163.77
824	Jul-17	46513270	6/18/17	31	7/3/17	50136580	3,623,310	2,362,873	\$ 49,530.85	\$ 32,163.77
825	Aug-17	50136580	7/18/17	29	8/1/17	54000570	3,863,990	2,352,873	\$ 52,820.74	\$ 32,163.77
826	Sep-17	54000570	8/17/17	30	8/1/17	57313110	3,312,540	2,362,873	\$ 45,282.42	\$ 32,163.77
827	Oct-17	57313110	9/19/17	33	10/3/17	60411250	3,098,140	2,362,873	\$ 42,351.57	\$ 32,163.77
828				364			30,880,620	28,254,711	\$ 422,138.06	\$ 385,965.22

Aqua North Carolina, Inc
 Test Year Water Volume at Latest Known Vendor Price

W-218 Sub 497

Exhibit B3-b-3-a UPDATE
 PS Adjustment

Line	GL Month	Reading	Read Date	Service	Bill Date	Reading	Usage	Galons	TY Change	Calc New Price
Region	District	Co #	Sys #	Vendor #	Vendor Name	Sys Name	Service Address	AU	GL	
858										
859	Region	District	Co #	Sys #	Vendor #	Vendor Name	Sys Name	Service Address	AU	GL
860	Denver	N10D	02	996	41573	City of Asheville	Twin Creeks	867 Charlotte Hwy A / 2 Edwards Rd	8010	610100
861	GL Mth	Reading	Read Date	DOS	Bill Date	Reading	Usage	Galons	TY Change	Calc New Price
862	Jul-17									
863	Aug-17	18020						289		\$ 1,183.16
864	Sep-17									
865	Oct-17	18853						289		\$ 1,183.16
866	Nov-17									
867	Dec-17	19733	12/5/17	57	12/8/17	19979		246		\$ 1,034.71
868	Jan-18									
869	Feb-18	19979	2/8/18	65	2/15/18	20381		402		\$ 1,568.23
870	Mar-18									
871	Apr-18	20381	4/9/18	60	4/18/18	20676		294		\$ 1,198.87
872	May-18									
873	Jun-18	20675	6/6/18	58	6/8/18	20845		270		\$ 1,116.79
874				240				1,791		\$ 7,284.92

Usage is actual since the read date of 12/5/17
 The average amount since then was applied to the previous 12 months to get a full year

Aqua North Carolina, Inc
 Test Year Water Volume at Latest Known Vendor Price

W-218 Sub 497

Exhibit B3-b-3-3 UPDATE
 PS Adjustment

Ln	GL Month	Reading	Read Date	Service Svc #	Bill Date	Reading	Usage	Gallons	TY Charge	Calc New Price
912	Region	District	Co #	Svc #	Vendor #	Vendor Name	Svc Name	Service Address	AU	GL
913	Region	District	Co #	Svc #	Vendor #	Vendor Name	Svc Name	Service Address	AU	GL
914	Fayetteville	N399	02	240	31428-1	Harrell County	WOODLANE		1003	610100
915	Nov-16	104279000	10/31/16	31	11/5/16	8712300	4,433.300	3,562.843	12,086.97	9,287.38
916	Nov-16	6742770	10/31/16	31	11/5/16	7012570	269.800	3,562.843	8,766.42	9,287.38
917	Dec-16	8712300	12/1/16	31	12/1/16	1938900	3,226.600	3,562.843	7,694.66	9,287.38
918	Dec-16	7012570	12/1/16	31	12/1/16	7208700	196.130	3,562.843	9,467.78	9,287.38
919	Jan-17	1938900	12/30/16	29	1/21/17	4769800	2,811.900	3,562.843	9,467.78	9,287.38
920	Jan-17	7208700	12/30/16	29	1/21/17	7396830	182.130	3,562.843	7,576.80	9,287.38
921	Feb-17	4769800	2/1/17	33	2/1/17	8,274,400	3,523.600	3,562.843	7,921.02	9,287.38
922	Feb-17	7396830	2/1/17	33	2/1/17	7,551,160	160.360	3,562.843	8,769.66	9,287.38
923	Mar-17	8274400	3/1/17	28	3/1/17	2,113,200	2,856.800	3,562.843	7,921.02	9,287.38
924	Mar-17	7396830	3/1/17	28	3/1/17	7692250	131.060	3,562.843	8,769.66	9,287.38
925	Mar-17	7551190	3/1/17	31	4/1/17	2,942,800	2,942.800	3,562.843	8,769.66	9,287.38
926	Apr-17	2131200	4/1/17	27	5/1/17	2,467,400	139.310	3,562.843	7,921.02	9,287.38
927	Apr-17	7682250	4/1/17	27	5/1/17	7821560	138.690	3,562.843	8,769.66	9,287.38
928	May-17	7821560	4/28/17	27	5/1/17	2752300	3,278.300	3,562.843	11,707.97	9,287.38
929	May-17	2752300	6/1/17	34	6/1/17	317,320	4,384.900	3,562.843	13,010.50	9,287.38
930	Jun-17	7860250	6/1/17	29	6/30/17	813,990	170.730	3,562.843	10,396.94	9,287.38
931	Jun-17	3173700	6/30/17	29	7/1/17	356,310	3,893.600	3,562.843	13,010.50	9,287.38
932	Jul-17	813,990	6/30/17	29	7/1/17	828,680	151.700	3,562.843	13,010.50	9,287.38
933	Aug-17	356,310	7/31/17	31	8/1/17	401,330	4,502.300	3,562.843	13,031.94	9,287.38
934	Aug-17	828,680	7/31/17	32	8/1/17	847,730	194.660	3,562.843	14,529.700	9,287.38
935	Sep-17	401,330	8/1/17	32	8/1/17	446,630	174.970	3,562.843	14,529.700	9,287.38
936	Sep-17	847,730	10/2/17	31	10/4/17	852,310	4,046.700	3,562.843	14,529.700	9,287.38
937	Oct-17	446,630	10/2/17	31	10/4/17	497,070	174.950	3,562.843	14,529.700	9,287.38
938	Oct-17	852,310	10/2/17	31	10/4/17	882,280	46,515.180	40,234.118	122,269	117,449
940				387						

I/A

Aqua North Carolina, Inc. - W-218, Sub 497 - Water Billing Analysis

Junis Exhibit 25
(page 1 of 10)

Test Year Revenue at Present Rates

Pro Forma Revenue at Present Rates

Metered Bills

Meter Size	Test Year Bills	Current Base Rate	Base Revenue	Adjustment
< 1 inch	712,389	\$17.92	\$12,766,002	(1) 22,349
1 inch	4,201	\$44.80	\$188,209	(1) -205
1.5 inch	301	\$89.60	\$26,970	(1) -121
2 inch	600	\$143.37	\$86,051	(1) -53
3 inch	28	\$268.81	\$7,634	(1) -4
4 inch	72	\$448.02	\$32,437	(1) -12
6 inch	12	\$896.04	\$10,932	
Clear Meadow	741	\$15.71	\$11,644	(1) 3
Timberlake & Thornt	1,331	\$12.96	\$17,254	(1) 11
Wimbleton, Glennb	1,007	\$21.07	\$21,209	(1) 23
Total Base Revenue			\$13,168,341	

Metered Bills

Meter Size	Pro Forma Bills	Base Rate	Base Revenue
< 1 inch	734,738	\$17.92	\$13,166,496
1 inch	3,996	\$44.80	\$179,025
1.5 inch	180	\$89.60	\$16,128
2 inch	547	\$143.37	\$78,452
3 inch	24	\$268.81	\$6,559
4 inch	60	\$448.02	\$27,060
6 inch	12	\$896.04	\$10,932
Clear Meadow	744	\$15.71	\$11,691
Timberlake & Thornt	1,342	\$12.96	\$17,396
Wimbleton, Glennb	1,030	\$21.07	\$21,694
Total Base Revenue			\$13,635,434

Produced Commodity Gallons (kgal)	3,270,945	(2) 105,476
Produced Commodity Rate per 1,000 gallons	\$5.43	(3) 0.9953
Subtotal Produced Consumption Revenue	\$17,761,231	

Commodity Gallons (thousands)	3,360,552
Commodity Rate per 1,000 gallons	\$5.43
Subtotal Produced Consumption Revenue	\$18,247,796

System	Annual Gallons	Test Year Rate (1,000 gal)	Annual Revenue
Clear Meadow	2,929,000	\$3.22	\$9,431
Timberlake & Thornt	4,708,100	\$4.41	\$20,763
Wimbleton, Glennb	4,078,600	\$7.18	\$29,284
Total Produced Consumption Revenue			\$17,820,710

System	Annual Gallons	Test Year Rate (1,000 gal)	Annual Revenue
Clear Meadow	2,915,234	\$3.22	\$9,387
Timberlake & Thornt	4,685,972	\$4.41	\$20,665
Wimbleton, Glennb	4,059,431	\$7.18	\$29,147
Total Produced Consumption Revenue			\$18,306,995

Provider	Annual Gallons	Test Year Rate (1,000 gal)	Annual Revenue
Chatham Cnty	10,287,700	\$7.04	\$72,425
Chatham Cnty NCV	9,117,000	\$10.01	\$91,261
City Asheville	1,104,100	\$4.26	\$4,703
City Belmont	0	\$14.40	\$0
City Charlotte	33,951,200	\$1.81	\$61,452
City Concord	2,001,300	\$5.11	\$10,227
City Hendersonville	8,760,300	\$3.06	\$26,807
City Hickory (IN)	3,433,000	\$2.83	\$9,715
City Hickory (OUT)	716,800	\$5.04	\$3,613
City Lincolnton	5,677,300	\$7.70	\$43,715
City Morganton	5,874,900	\$2.52	\$14,805
City Mount Airy	4,258,600	\$7.15	\$30,449
City Newton	762,900	\$2.85	\$2,174
Davidson Water	6,587,000	\$5.30	\$34,911
Harnett County	34,199,000	\$2.77	\$94,731
Iredell Water	1,060,300	\$2.72	\$2,884
Johnston County	169,749,400	\$2.45	\$415,886
Twn Forest City	2,175,400	\$5.95	\$12,944
Twn Fuquay-Varina	3,364,700	\$4.35	\$14,636
Twn Pittsboro	23,999,400	\$13.69	\$328,552
Twn Spruce Pine	2,018,200	\$4.93	\$9,950
	329,098,500		\$1,285,840
Total Metered Revenue			\$32,274,891

Provider	Annual Gallons	Test Year Rate (1,000 gal)	Annual Revenue
Chatham Cnty	10,239,348	\$7.04	\$72,085
Chatham Cnty NCV	9,074,150	\$10.01	\$90,832
City Asheville	1,098,911	\$4.26	\$4,681
City Belmont	4,348,267	\$14.40	\$62,615
City Charlotte	33,791,629	\$1.81	\$61,163
City Concord	1,991,894	\$5.11	\$10,179
City Hendersonville	8,719,127	\$3.06	\$26,681
City Hickory (IN)	3,416,865	\$2.83	\$9,670
City Hickory (OUT)	713,431	\$5.04	\$3,596
City Lincolnton	5,650,617	\$7.70	\$43,510
City Morganton	5,847,288	\$2.52	\$14,735
City Mount Airy	4,238,585	\$7.15	\$30,306
City Newton	759,314	\$2.85	\$2,164
Davidson Water	6,558,041	\$5.30	\$34,747
Harnett County	34,038,265	\$2.77	\$94,286
Iredell Water	1,055,317	\$2.72	\$2,870
Johnston County	168,951,578	\$2.45	\$413,931
Twn Forest City	2,165,176	\$5.95	\$12,883
Twn Fuquay-Varina	3,348,886	\$4.35	\$14,568
Twn Pittsboro	23,886,603	\$13.69	\$327,008
Twn Spruce Pine	2,008,714	\$4.93	\$9,903
	331,900,004		\$1,342,412
Total Metered Revenue			\$33,184,841

Flat Rate Bills

	Test Year Bills	Current Flat Rate	Flat Revenue
Residential	2,508	\$37.83	\$94,874
Commercial	48	\$63.36	\$3,041
Total Test Year Revenue at Present Rates			\$32,372,806
Test Year WSIC (4.75%) Revenue			\$1,632,603
Total Test Year Revenue at Present Rates			\$33,905,309

Flat Rate Bills

	Test Year Bills	Flat Rate	Flat Revenue
Residential	2,543	\$37.83	\$96,198
Commercial	48	\$63.36	\$3,041
Pro Forma Revenue at Present Rates			\$33,284,080
Pro Forma WSIC (4.75%) Revenue			\$1,575,770
Total Pro Forma Revenue at Present Rates			\$34,859,850

Test Year Revenue at Present Rates	\$32,372,806
Test Year WSIC (4.75%) Revenue	\$1,632,603
Total Test Year Revenue at Present Rates	\$33,905,309

Pro Forma Revenue at Present Rates	\$33,284,080
Pro Forma WSIC (4.75%) Revenue	\$1,575,770
Total Pro Forma Revenue at Present Rates	\$34,859,850

- (1) End of period (EOP) update through June 2018. EOP customers multiplied by 12 months to annualize.
- (2) Increase usage by 105,476 kgal to reflect EOP customers (21,991 bills times ave. monthly usage 4,995 gal.) and reassigning Belmont systems (see note (4)).
- (3) Decrease all consumption by 0.47% (0.9953 factor) to reflect updated 3 year average monthly consumption of 4,971 gal. through June 2018.
- (4) Customers in the Heather Glen, Highland on the Point, and Southpoint Landing Subdivisions in Gaston County were converted from water supplied from Aqua's wells to purchased water from the City of Belmont. The test year usage totaled 4,368,800 gal. for the three systems.

Pro Forma Revenue at Company Proposed Rates

Metered Bills	Pro Forma Bills	Base Rate	Base Revenue
Meter Size			
< 1 inch ¹	737,854	\$22.34	\$16,483,649
1 inch	3,996	\$55.85	\$223,182
1.5 inch	180	\$111.70	\$20,105
2 inch	547	\$178.72	\$97,798
3 inch	24	\$335.10	\$8,176
4 inch	60	\$558.50	\$33,733
6 inch	12	\$1,117.00	\$13,627
Total Base Revenue			\$16,880,270
Commodity Gallons (thousands) ¹			3,372,212
Commodity Rate per 1,000 gallons			\$5.74
Total Produced Consumption Revenue			\$19,366,500

Provider	Annual Gallons	Current Rate (1,000 gal)	Annual Revenue
Chatham Cnty	10,239,348	\$7.04	\$72,085
Chatham Cnty NCV	9,074,150	\$10.01	\$90,832
City Asheville	1,098,911	\$4.26	\$4,681
City Belmont	4,348,267	\$14.40	\$62,615
City Charlotte	33,791,629	\$1.81	\$61,163
City Concord	1,991,894	\$5.11	\$10,179
City Hendersonville	8,719,127	\$3.06	\$26,681
City Hickory (IN)	3,416,865	\$2.83	\$9,670
City Hickory (OUT)	713,431	\$5.04	\$3,596
City Lincolnton	5,650,617	\$7.70	\$43,510
City Morganton	5,847,288	\$2.52	\$14,735
City Mount Airy	4,238,585	\$7.15	\$30,306
City Newton	759,314	\$2.85	\$2,164
Davidson Water	6,556,041	\$5.30	\$34,747
Harnett County	34,038,265	\$2.77	\$94,286
Iredell Water	1,055,317	\$2.72	\$2,870
Johnston County	168,951,578	\$2.45	\$413,931
Twn Forest City	2,165,176	\$5.95	\$12,883
Twn Fuquay-Varina	3,348,886	\$4.35	\$14,568
Twn Pittsboro	23,886,603	\$13.69	\$327,008
Twn Spruce Pine	2,008,714	\$4.93	\$9,903
	331,900,004		\$1,342,412
Total Purchased Consumption Revenue			\$1,342,412
Total Metered Revenue			\$37,679,182

Flat Rate Bills	Pro Forma Bills	Flat Rate	Flat Revenue
Residential	2,543	\$50.98	\$129,637
Commercial	48	\$74.99	\$3,600
Pro Forma Revenue at Company Proposed Rates			\$37,712,418

Pro Forma Revenue at Public Staff Proposed Rates

Metered Bills	Pro Forma Bills	Base Rate	Base Revenue
Meter Size			
< 1 inch	737,854	\$17.71	\$13,067,387
1 inch	3,996	\$44.28	\$176,947
1.5 inch	180	\$88.55	\$15,939
2 inch	547	\$141.68	\$77,527
3 inch	24	\$265.65	\$6,482
4 inch	60	\$442.75	\$26,742
6 inch	12	\$885.50	\$10,803
Total Base Revenue			\$13,381,828
Commodity Gallons (thousands)			3,372,212
Commodity Rate per 1,000 gallons			\$5.40
Total Produced Consumption Revenue			\$18,209,947

Provider	Annual Gallons	Public Staff Rate (1,000 gal)	Annual Revenue
Chatham Cnty	10,239,348	\$7.04	\$72,085
Chatham Cnty NCV	9,074,150	\$10.01	\$90,832
City Asheville	1,098,911	\$4.26	\$4,681
City Belmont	4,348,267	\$14.40	\$62,615
City Charlotte	33,791,629	\$1.81	\$61,163
City Concord	1,991,894	\$5.11	\$10,179
City Hendersonville	8,719,127	\$3.06	\$26,681
City Hickory (IN)	3,416,865	\$2.83	\$9,670
City Hickory (OUT)	713,431	\$5.04	\$3,596
City Lincolnton	5,650,617	\$7.70	\$43,510
City Morganton	5,847,288	\$2.52	\$14,735
City Mount Airy	4,238,585	\$7.15	\$30,306
City Newton	759,314	\$2.85	\$2,164
Davidson Water	6,556,041	\$5.30	\$34,747
Harnett County	34,038,265	\$2.77	\$94,286
Iredell Water	1,055,317	\$2.72	\$2,870
Johnston County	168,951,578	\$2.45	\$413,931
Twn Forest City	2,165,176	\$5.95	\$12,883
Twn Fuquay-Varina	3,348,886	\$4.35	\$14,568
Twn Pittsboro	23,886,603	\$13.69	\$327,008
Twn Spruce Pine	2,008,714	\$4.93	\$9,903
	331,900,004		\$1,342,412
Total Purchased Consumption Revenue			\$1,342,412
Total Metered Revenue			\$32,934,187

Flat Rate Bills	Pro Forma Bills	Flat Rate	Flat Revenue
Residential	2,543	\$36.61	\$93,096
Commercial	48	\$62.24	\$2,988
Pro Forma Revenue at Public Staff Rates			\$33,030,270

¹ Aqua proposes to incorporate The Clear Meadow, Timberlake & Thornton Ridge, and Wimbeldon, Glennburn, & Knotwood customers into uniform rates.

**Sewer Test Year Revenue at Present Rates
Uniform Rate Metered Bills - Commercial**

Meter Size	Test Year Bills	Base Rate	Base Revenue	Adjustment
< 1 inch	1,518	\$23.13	\$35,111	(1) 25
1 inch	542	\$57.82	\$31,338	(1) -2
1.5 inch	325	\$115.64	\$37,583	(1) 11
2 inch	438	\$185.02	\$81,039	(1) 19
3 inch	60	\$346.92	\$20,815	
4 inch	36	\$578.20	\$20,815	
6 inch (incl. CM)	24	\$1,156.40	\$27,754	
Base Revenue			\$254,456	

**Pro Forma Revenue at Present Rates
Uniform Rate Metered Bills - Commercial**

Meter Size	Pro Forma Bills	Base Rate	Base Revenue
< 1 inch	1,543	\$23.13	\$35,690
1 inch	540	\$57.82	\$31,223
1.5 inch	336	\$115.64	\$38,855
2 inch	457	\$185.02	\$84,554
3 inch	60	\$346.92	\$20,815
4 inch	36	\$578.20	\$20,815
6 inch	24	\$1,156.40	\$27,754
Base Revenue			\$259,706

Commodity Gallons (kgal)	84,373	(2)	486
Commodity Rate per 1,000 gallons	\$8.02	(3)	0.9815 xgal
Consumption Revenue	\$676,672		

Commodity Gallons (thousands)	83,289
Commodity Rate per 1,000 gallons	\$8.02
Consumption Revenue	\$667,979

Purchased Sewer	Test Year Bills	Base Rate	Base Revenue	Adjustment
Purchased Swr <1"	10,764	\$ 23.13	\$248,971	(1) 1,434
Purchased Swr 2"	84	\$ 185.02	\$11,841	(1) 20
Purchased Swr 4"	12	\$ 578.20	\$6,938	
Base Purchased Sewer Revenue			\$267,761	
Purchased Commodity Gallons (Kgal)			31,873	(4) 13,340
Commodity Rate per 1,000 gallons			\$6.45	(3) 0.9815 xgal
Purchased Sewer Consumption Revenue			\$205,578	

Purchased Sewer	Test Year Bills	Base Rate	Base Revenue
Purchased Swr <1"	10,764	\$ 23.13	\$248,971
Purchased Swr 2"	84	\$ 185.02	\$15,542
Purchased Swr 4"	12	\$ 578.20	\$6,938
Base Purchased Sewer Revenue			\$271,451
Purchased Commodity Gallons (Kgal)			44,376
Commodity Rate per 1,000 gallons			\$6.45
Purchased Sewer Consumption Revenue			\$286,226

Hawthorne at the Green and Beaver Farms

Test Year Bills (REUs)	Base Rate	Base Revenue	
Base Revenue	2,084	\$40.40	\$84,203
Commodity Gallons (kgal)			10,458
Commodity Rate per 1,000 gallons			\$5.11
Consumption Revenue			\$53,442

Hawthorne at the Green and Beaver Farms

Test Year Bills	Base Rate	Base Revenue	
Base Revenue	2,084	\$40.40	\$84,203
Commodity Gallons (kgal)			10,265
Commodity Rate per 1,000 gallons			\$5.11
Consumption Revenue			\$52,454

Total Metered Revenue \$1,542,103

Total Metered Revenue \$1,622,020

Flat Rate Bills

Test Year Bills	Flat Rate	Flat Revenue	
Residential	165,148	\$64.98	\$10,734,285
Commercial	1,287	\$90.97	\$117,033
S.T.E.P Surcharge	1,416	\$32.00	\$45,312
Total Flat Rate Revenue			\$10,896,629

Flat Rate Bills

Pro Forma Bills	Flat Rate	Flat Revenue	
Residential	181,390	\$64.98	\$11,786,690
Commercial	1,284	\$90.97	\$116,760
S.T.E.P Surcharge	1,416	\$32.00	\$45,312
Total Flat Rate Revenue			\$11,948,762

Test Year Revenue at Present Rates \$12,435,732
Test Year SSIC (3.99%) Revenue \$496,186
Total Test Year Revenue at Present Rates \$12,931,918

Pro Forma Revenue at Present Rates \$13,570,781
Pro Forma SSIC (3.99%) Revenue \$541,474
Total Pro Forma Revenue at Present Rates \$14,112,255

(1) End of period (EOP) update through June 2018. EOP customers multiplied by 12 months to annualize.
 (2) Increase usage by 486 kgal. to reflect EOP customers (53 bills times ave. monthly usage 9,175 gal.).
 (3) Decrease all consumption by 1.85% (0.9815 factor) to reflect updated 3 year average monthly usage of 9,006 gal. through June 2018.
 (4) Increase usage by 13,340 kgal. to reflect EOP customers (1,454 bills times ave. monthly usage 9,175 gal.).

**Aqua North Carolina, Inc. - W-218, Sub 497 - Sewer Billing Analysis
Pro Forma Revenue at Company Proposed Rates**

Uniform Rate Metered Bills - Commercial			
<u>Meter Size</u>	<u>Pro Forma Bills</u>	<u>Base Rate</u>	<u>Base Revenue</u>
< 1 inch	1,543	\$28.00	\$43,204
1 inch	540	\$70.00	\$37,800
1.5 inch	336	\$140.00	\$47,040
2 inch	457	\$224.00	\$102,368
3 inch	60	\$420.00	\$25,200
4 inch	36	\$700.00	\$25,200
6 inch	24	\$1,400.00	\$33,600
Base Revenue			\$314,412
Commercial Usage			
Commodity Gallons (thousands)			83,289
Commodity Rate per 1,000 gallons		\$	8.46
Consumption Revenue		\$	704,627
Purchased Sewer			
Purchased Swr <1"	10,764	\$ 28.00	\$301,392
Purchased Swr 2"	84	\$ 224.00	\$18,816
Purchased Swr 4"	12	\$ 700.00	\$8,400
Base Purchased Sewer Revenue			\$328,608
Purchased Commodity Gallons (Kgal)			44,376
Commodity Rate per 1,000 gallons			\$6.45
Purchased Sewer Consumption Revenue			\$286,226
Hawthorne at the Green and Beaver Farms			
	<u>Pro Forma Bills</u>	<u>Base Rate</u>	<u>Base Revenue</u>
Base Revenue	2,084	\$40.40	\$84,203
Commodity Gallons (thousands)			10,265
Commodity Rate per 1,000 gallons			\$6.11
Consumption Revenue			\$62,719
Total Metered Revenue			\$1,780,795
Flat Rate Bills			
	<u>Pro Forma Bills</u>	<u>Flat Rate</u>	<u>Flat Revenue</u>
Residential	181,390	\$70.22	\$12,737,171
Commercial	1,284	\$119.92	\$153,917
S.T.E.P Surcharge	1,416	\$32.00	\$45,312
Total Flat Rate Revenue			\$12,936,400
Pro Forma Revenue at Company Proposed Rates			\$14,717,195

Pro Forma Revenue at Public Staff Proposed Rates

Uniform Rate Metered Bills - Commercial			
<u>Meter Size</u>	<u>Pro Forma Bills</u>	<u>Base Rate</u>	<u>Base Revenue</u>
< 1 inch	1,543	\$23.72	\$36,600
1 inch	540	\$59.30	\$32,022
1.5 inch	336	\$118.60	\$39,850
2 inch	457	\$189.76	\$86,720
3 inch	60	\$355.80	\$21,348
4 inch	36	\$593.00	\$21,348
6 inch	24	\$1,186.00	\$28,464
Base Revenue			\$266,352
Commercial Usage			
Commodity Gallons (thousands)			83,289
Commodity Rate per 1,000 gallons			\$8.07
Consumption Revenue			\$672,144
Purchased Sewer			
Purchased Swr <1"	10,764	\$23.72	\$255,322
Purchased Swr 2"	84	\$189.76	\$15,940
Purchased Swr 4"	12	\$593.00	\$7,116
Base Purchsed Sewer Revenue			\$278,378
Purchased Commodity Gallons (Kgal)			44,376
Commodity Rate per 1,000 gallons			\$6.45
Purchased Sewer Consumption Revenue			\$286,226
Hawthorne at the Green and Beaver Farms			
	<u>Pro Forma Bills</u>	<u>Base Rate</u>	<u>Base Revenue</u>
Base Revenue	2,084	\$40.40	\$84,203
Commodity Gallons (thousands)			10,265
Commodity Rate per 1,000 gallons			\$6.11
Consumption Revenue			\$62,719
Total Metered Revenue			\$1,650,022
Flat Rate Bills			
	<u>Pro Forma Bills</u>	<u>Flat Rate</u>	<u>Flat Revenue</u>
Residential	181,390	\$65.27	\$11,839,293
Commercial	1,284	\$91.38	\$117,284
S.T.E.P Surcharge	1,416	\$32.00	\$45,312
Total Flat Rate Revenue			\$12,001,888
Pro Forma Revenue at Staff Rates			\$13,651,910

Aqua North Carolina, Inc. - W-218, Sub 497 - Brookwood Water Billing Analysis

Test Year Revenue at Present Rates

Metered Bills					
Meter Size	Test Year Bills	Base Rate	Base Revenue	Adjustment	
< 1 inch	162,053	\$13.11	\$2,124,515	(1)	3,877
1 inch	704	\$32.77	\$23,070	(1)	-34
1.5 inch	24	\$65.55	\$1,554		
2 inch	372	\$104.87	\$39,054	(1)	4
3 inch	59	\$196.64	\$11,602	(1)	6
4 inch	12	\$327.73	\$3,966		
6 inch	0	\$655.47	\$0		
Total Base Revenue			\$2,203,769		
Produced Commodity Gallons (thousands)			758,313	(2)	20,197
Produced Commodity Rate per 1,000 gallons			\$2.96	(3)	1.0121 xgal
Total Produced Consumption Revenue			\$2,244,607		
Provider	Annual Gallons	Test Year Rate (1,000 gal)	Annual Revenue		
Fayetteville PWC ¹	95,285,300	\$2.92	\$278,233	(3)	1.0121 xgal
Town of Linden	2,090,200	\$4.98	\$10,409	(3)	1.0121 xgal
	97,375,500		\$288,642		
Total Purchased Consumption Revenue			\$288,642		
			\$2,533,249		
Total Metered Revenue			\$4,737,008		

Pro Forma Revenue at Present Rates

Metered Bills			
Meter Size	Pro Forma Bills	Base Rate	Base Revenue
< 1 inch	165,930	\$13.11	\$2,175,342
1 inch	670	\$32.77	\$21,956
1.5 inch	24	\$65.55	\$1,554
2 inch	376	\$104.87	\$39,473
3 inch	65	\$196.64	\$12,782
4 inch	12	\$327.73	\$3,966
6 inch	0	\$655.47	\$0
Total Base Revenue			\$2,255,072
Commodity Gallons (thousands)			787,930
Commodity Rate per 1,000 gallons			\$2.96
Total Consumption Revenue			\$2,332,273
Provider	Annual Gallons	Test Year Rate (1,000 gal)	Annual Revenue
Fayetteville PWC	96,438,252	\$2.92	\$281,600
Town of Linden	2,115,491	\$4.98	\$10,535
	98,553,744		\$292,135
Total Purchased Consumption Revenue			\$292,135
			\$4,879,480
Total Metered Revenue			\$4,879,480

Flat Rate Bills				
	Test Year Bills	Flat Rate	Flat Revenue	
Residential	0	\$31.15	\$0	(4)
Commercial	0	\$31.15	\$0	
Test Year Revenue at Present Rates			\$4,737,008	
Test Year WSIC (4.71%) Revenue			\$223,113	
Total Test Year Revenue at Present Rates			\$4,960,121	

Flat Rate Bills			
	Pro Forma Bills	Flat Rate	Flat Revenue
Residential	0	\$31.15	\$0
Commercial	0	\$31.15	\$0
Pro Forma Revenue at Present Rates			\$4,879,480
Pro Forma WSIC (4.71%) Revenue			\$229,823
Total Pro Forma Revenue at Present Rates			\$5,109,303

¹The commodity rate was approved by the Commission in Docket No. W-218, Sub 505, to reflect the increase in the cost of purchasing water service from FPWC.

(1) End of period (EOP) update through June 2018. EOP customers multiplied by 12 months to annualize.

(2) Increase usage by 20,197 kgal. to reflect EOP customers (3,853 bills times ave. monthly usage 5,242 gal.).

(3) Increase all consumption by 1.21% (1.0121 factor) to reflect updated 3 year average monthly consumption of 5,306 through June 2018.

Aqua North Carolina, Inc. - W-218, Sub 497 - Brookwood Water Billing Analysis
Pro Forma Revenue at Company Proposed Rates

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Pro Forma Revenue at Public Staff Proposed Rates

Metered Bills			
<u>Meter Size</u>	<u>Pro Forma Bills</u>	<u>Base Rate</u>	<u>Base Revenue</u>
< 1 inch	165,930	\$15.57	\$2,583,530
1 inch	670	\$38.93	\$26,083
1.5 inch	24	\$77.85	\$1,845
2 inch	376	\$124.56	\$46,884
3 inch	65	\$233.55	\$15,181
4 inch	12	\$389.25	\$4,710
6 inch	0	\$778.50	\$0
Total Base Revenue			\$2,678,233
Commodity Gallons (thousands)			787,930
Commodity Rate per 1,000 gallons			\$3.25
Total Consumption Revenue			\$2,660,773
<u>Provider</u>	<u>Annual Gallons</u>	<u>Requested Rate (1,000 gal)</u>	<u>Annual Revenue</u>
Fayetteville PWC	96,438,252	\$2.92	\$281,600
Town of Linden	2,115,491	\$4.98	\$10,535
	98,553,744		\$292,135
Total Purchased Consumption Revenue			\$292,135
Total Metered Revenue			\$5,531,141
Flat Rate Bills			
	<u>Pro Forma Bills</u>	<u>Flat Rate</u>	<u>Flat Revenue</u>
Residential	0	\$34.99	\$0
Commercial	0	\$48.03	\$0
Pro Forma Revenue at Company Rates			\$5,531,141

Metered Bills			
<u>Meter Size</u>	<u>Pro Forma Bills</u>	<u>Base Rate</u>	<u>Base Revenue</u>
< 1 inch	165,930	\$11.78	\$1,954,655
1 inch	670	\$29.45	\$19,732
1.5 inch	24	\$58.90	\$1,396
2 inch	376	\$94.24	\$35,472
3 inch	65	\$176.70	\$11,486
4 inch	12	\$294.50	\$3,563
6 inch	0	\$589.00	\$0
Total Base Revenue			\$2,026,304
Commodity Gallons (thousands)			787,930
Commodity Rate per 1,000 gallons			\$3.27
Total Consumption Revenue			\$2,576,531
<u>Provider</u>	<u>Annual Gallons</u>	<u>Public Staff Rate (1,000 gal)</u>	<u>Annual Revenue</u>
Fayetteville PWC	96,438,252	\$2.92	\$281,600
Town of Linden	2,115,491	\$4.98	\$10,535
	98,553,744		\$292,135
Total Purchased Consumption Revenue			\$292,135
Total Metered Revenue			\$4,894,970
Flat Rate Bills			
	<u>Pro Forma Bills</u>	<u>Flat Rate</u>	<u>Flat Revenue</u>
Residential	0	\$28.42	\$0
Commercial	0	\$48.31	\$0
Pro Forma Revenue at Public Staff Rates			\$4,894,970

Aqua North Carolina, Inc. - W-218, Sub 497 - Fairways Water Billing Analysis

Test Year Revenue at Present Rates

Metered Bills

Meter Size	Test Year Bills	Base Rate	Base Revenue	Adjustment
< 1 inch	50,068	\$8.44	\$422,574	(1) 4,609
1 inch	198	\$21.09	\$4,174	(1) 91
1.5 inch	40	\$42.18	\$1,696	(1) -4
2 inch	185	\$67.48	\$12,484	(1) 45
3 inch	12	\$126.53	\$1,518	
4 inch	0	\$210.89	\$0	
6 inch	0	\$421.78	\$0	
Total Base Revenue			\$442,445	

Commodity Gallons (thousands)	345,464	(2)	32,424	kgal
Commodity Rate per 1,000 gallons	\$1.42	(3)	1.0297	xgal
Total Consumption Revenue	\$490,559			

Total Revenue at Present Rates

Test Year WSIC (4.43%) Revenue

Total Test Year Revenue at Present Rates

\$933,005

\$41,332

\$974,337

(1) End of period (EOP) update through June 2018. EOP customers multiplied by 12 months to annualize.

(2) Increase usage by 32,424 kgal. to reflect EOP customers (4,741 bills times ave. monthly usage 6,839 gal.).

(3) Increase all consumption by 2.97% (1.0297 factor) to reflect updated 3 year average monthly consumption of 7,042 gal. through June 2018.

Pro Forma Revenue at Present Rates

Metered Bills

Meter Size	Pro Forma Bills	Base Rate	Base Revenue
< 1 inch	54,677	\$8.44	\$461,474
1 inch	289	\$21.09	\$6,093
1.5 inch	36	\$42.18	\$1,527
2 inch	230	\$67.48	\$15,520
3 inch	12	\$126.53	\$1,518
4 inch	0	\$210.89	\$0
6 inch	0	\$421.78	\$0
Total Base Revenue			\$486,132

Commodity Gallons (thousands)	389,112
Commodity Rate per 1,000 gallons	\$1.42
Total Consumption Revenue	\$552,538

Pro Forma Revenue at Present Rates

Pro Forma WSIC (4.43%) Revenue

Total Pro Forma Revenue at Present Rates

\$1,038,671

\$46,013

\$1,084,684

Aqua North Carolina, Inc. - W-218, Sub 497 - Fairways Water Billing Analysis

Pro Forma Revenue at Company Proposed Rates

Metered Bills

Meter Size	Pro Forma Bills	Base Rate	Base Revenue
< 1 inch	54,677	\$10.03	\$548,410
1 inch	289	\$25.10	\$7,251
1.5 inch	36	\$50.20	\$1,817
2 inch	230	\$80.32	\$18,474
3 inch	12	\$150.60	\$1,807
4 inch	0	\$251.00	\$0
6 inch	0	\$502.00	\$0
Total Base Revenue			\$677,760

Commodity Gallons (thousands)	389,112
Commodity Rate per 1,000 gallons	\$1.56
Total Consumption Revenue	\$607,014

Pro Forma Revenue at Company Rates

\$1,184,774

Pro Forma Revenue at Public Staff Proposed Rates

Metered Bills

Meter Size	Pro Forma Bills	Base Rate	Base Revenue
< 1 inch	54,677	\$8.96	\$489,906
1 inch	289	\$22.40	\$6,471
1.5 inch	36	\$44.80	\$1,622
2 inch	230	\$71.68	\$16,486
3 inch	12	\$134.40	\$1,613
4 inch	0	\$224.00	\$0
6 inch	0	\$448.00	\$0
Total Base Revenue			\$516,098

Commodity Gallons (thousands)	389,112
Commodity Rate per 1,000 gallons	\$1.99
Total Consumption Revenue	\$774,332

Pro Forma Revenue at Public Staff Rates

\$1,290,430

Aqua North Carolina, Inc. - W-218, Sub 497 - Fairways Sewer Billing Analysis

Test Year Revenue at Present Rates

Metered Bills

Meter Size	Test Year Bills	Base Rate	Base Revenue
< 1 inch	231	\$11.45	\$2,647 (1)
1 inch	60	\$28.62	\$1,717 (1)
1.5 inch	24	\$57.25	\$1,374 (1)
2 inch	48	\$91.60	\$4,397 (1)
3 inch	0	\$171.75	\$0 (1)
4 inch	0	\$286.24	\$0 (1)
6 inch	0	\$572.49	\$0 (1)
Total Base Revenue			\$10,136

Commodity Gallons (thousands)	4,528 (2)	112
Commodity Rate per 1,000 gallons	\$7.22 (3)	0.9909 xgal
Total Consumption Revenue	\$32,694	

Total Metered Revenue \$42,830

Flat Rate Bills

	Test Year Bills	Flat Rate	Flat Revenue
Residential	32,165	\$36.44	\$1,172,075 (1)
Commercial	0	\$36.44	\$0

Test Year Revenue at Present Rates **\$1,214,905**
 Test Year SSIC (4.53%) Revenue **\$55,036**
Total Test Year Revenue at Present Rates \$1,269,940

- (1) End of period (EOP) update through June 2018. EOP customers multiplied by 12 months to annualize.
- (2) Increase usage by 112 kgal. to reflect EOP customers (9 bills times ave. monthly usage 12,467 gal.).
- (3) Decrease all consumption by 0.91% (0.9909 factor) to reflect updated 3 year average monthly usage of 12,353 gal. through June 2018.

Pro Forma Revenue at Present Rates

Metered Bills

Meter Size	Pro Forma Bills	Base Rate	Base Revenue
< 1 inch	240	\$11.45	\$2,750
1 inch	60	\$28.62	\$1,717
1.5 inch	24	\$57.25	\$1,374
2 inch	48	\$91.60	\$4,397
3 inch	0	\$171.75	\$0
4 inch	0	\$286.24	\$0
6 inch	0	\$572.49	\$0
Total Base Revenue			\$10,238

Commodity Gallons (thousands)	4,598
Commodity Rate per 1,000 gallons	\$7.22
Total Consumption Revenue	\$33,198

Total Metered Revenue \$43,436

Flat Rate Bills

	Pro Forma Bills	Flat Rate	Flat Revenue
Residential	34,537	\$36.44	\$1,258,511
Commercial	0	\$36.44	\$0

Pro Forma Revenue at Present Rates **\$1,301,947**
 Pro Forma SSIC (4.53%) Revenue **\$58,978**
Total Pro Forma Revenue at Present Rates \$1,360,925

Aqua North Carolina, Inc. - W-218, Sub 497 - Fairways Sewer Billing Analysis

Pro Forma Revenue at Company Proposed Rates

Metered Bills

Meter Size	Pro Forma Bills	Base Rate	Base Revenue
< 1 inch	240	\$17.65	\$4,240
1 inch	60	\$44.13	\$2,648
1.5 inch	24	\$88.25	\$2,118
2 inch	48	\$141.20	\$6,778
3 inch	0	\$264.75	\$0
4 inch	0	\$441.25	\$0
6 inch	0	\$882.50	\$0
Total Base Revenue			\$15,783

Commodity Gallons (thousands)	4,598
Commodity Rate per 1,000 gallons	\$7.50
Total Consumption Revenue	\$34,486

Total Metered Revenue \$50,268

Flat Rate Bills

	Pro Forma Bills	Flat Rate	Flat Revenue
Residential	34,537	\$58.90	\$2,034,201
Commercial	0	\$86.70	\$0

Pro Forma Revenue at Company Rates \$2,084,470

Pro Forma Revenue at Public Staff Proposed Rates

Metered Bills

Meter Size	Pro Forma Bills	Base Rate	Base Revenue
< 1 inch	240	\$17.65	\$4,240
1 inch	60	\$44.13	\$2,648
1.5 inch	24	\$88.25	\$2,118
2 inch	48	\$141.20	\$6,778
3 inch	0	\$264.75	\$0
4 inch	0	\$441.25	\$0
6 inch	0	\$882.50	\$0
Total Base Revenue			\$15,783

Commodity Gallons (thousands)	4,598
Commodity Rate per 1,000 gallons	\$7.50
Total Consumption Revenue	\$34,486

Total Metered Revenue \$50,268

Flat Rate Bills

	Pro Forma Bills	Flat Rate	Flat Revenue
Residential	34,537	\$54.91	\$1,896,400
Commercial	0	\$76.87	\$0

Pro Forma Revenue at Public Staff Rates \$1,946,669

Aqua North Carolina, Inc. - W-218, Sub 497 - Fairways Water Billing Analysis

Month	Total Metered							Total Metered Usage	Metered REUS		
	< 1 inch Bills	1 inch Bills	1.5 inch Bills	2 inch Bills	3 inch Bills	4 inch Bills	6 inch Bills				
Oct-16	4,064	16	3	17	1			4,101	30,060,100	4,270	
Nov-16	4,070	16	3	17	1			4,107	25,544,700	4,276	
Dec-16	4,111	16	3	16	1			4,147	21,510,500	4,309	
Jan-17	4,122	16	6	15	1			4,160	17,412,400	4,327	
Feb-17	4,138	15	4	15	1			4,174	15,705,500	4,332	
Mar-17	4,154	17	3	18	1			4,193	16,117,100	4,370	
Apr-17	4,165	17	3	16	1			4,202	24,232,900	4,365	
May-17	4,182	16	3	16	1			4,218	34,287,500	4,380	
Jun-17	4,252	15	3	16	1			4,287	43,597,600	4,448	
Jul-17	4,226	20	3	16	1			4,266	42,607,600	4,434	
Aug-17	4,268	17	3	16	1			4,305	38,976,500	4,469	
Sep-17	4,315	17	3	16	1			4,352	35,411,900	4,516	
Totals	50,068	198	40	194	12			50,512	345,464,300	52,495	
Average Usage per REU				6,581							

Aqua North Carolina, Inc. - W-218, Sub 497 - Fairways Sewer Billing Analysis

Month	Total Metered							Total Metered Usage	Flat Rate Bills	Flat Rate No Usage	Total Bills	Metered REUS	Total REUS	
	< 1 inch Bills	1 inch Bills	1.5 inch Bills	2 inch Bills	3 inch Bills	4 inch Bills	6 inch Bills							
Oct-16	18	5	2	4	0	0	0	29	358,700	2,618	101	2,748	73	2,690
Nov-16	18	5	2	4	0	0	0	29	355,800	2,635	101	2,765	73	2,707
Dec-16	19	5	2	4	0	0	0	30	328,800	2,654	101	2,786	74	2,728
Jan-17	19	5	2	4	0	0	0	30	275,700	2,681	101	2,812	74	2,755
Feb-17	19	5	2	4	0	0	0	30	273,700	2,689	101	2,820	74	2,762
Mar-17	19	5	2	4	0	0	0	30	272,500	2,660	101	2,791	74	2,733
Apr-17	19	5	2	4	0	0	0	30	450,300	2,678	101	2,809	74	2,751
May-17	20	5	2	4	0	0	0	31	392,600	2,701	101	2,833	75	2,776
Jun-17	20	5	2	4	0	0	0	31	384,700	2,703	101	2,835	74	2,777
Jul-17	20	5	2	4	0	0	0	31	585,900	2,690	101	2,822	75	2,765
Aug-17	20	5	2	4	0	0	0	31	474,800	2,712	101	2,844	75	2,786
Sep-17	20	5	2	4	0	0	0	31	374,800	2,745	101	2,877	75	2,819
Totals	231	60	24	48	0	0	0	363	4,528,300	32,165	1,212	33,740	885	33,050

1EOP 101 flat rate customers that do not receive water service from Aqua. EDR 13 Q4

I/A

AQUA North Carolina AMR Cost Benefit Analysis

INCREMENTAL COST CALCULATION:

5/8" x 3/4" METERED SERVICE	STANDARD METER	AMR (RF) METER	DIFFERENCE
METER COST STANDARD	\$ 47.75	\$ 57.48	\$ 9.73
EST. ITRON N.C INSTALLATION PRICE ⁽¹⁾	61.39	71.86	\$ 10.47
ERT (RF) DEVICE	-	57.00	57.00
INCREMENTAL COST CALCULATION:	\$ 109.14	\$ 186.34	\$ 77.20

(1) INSTALLATION PRICE INCLUDES PROJECT MANAGEMENT, QUALITY CONTROL AND ADMINISTRATIVE

ANNUAL DEPRECIATION:	COST	\$ 77.20
	USEFUL LIFE	31.25
	ANNUAL	\$ 2.47
	MONTHLY	\$ 0.21

RATE OF RETURN:

RETURN ON RATE BASE			COST RATE ⁽²⁾	RETENTION FACTOR ⁽³⁾	REVENUE REQUIREMENT (PER CUSTOMER)
LT Debt	0.5	37.98	0.0529	0.9986	\$ 2.01
Equity	0.5	37.98	0.0975	0.6296	5.88
				ANNUALLY	\$ 7.89
				MONTHLY	\$ 0.66

SUMMARY:	DEPRECIATION	\$ 0.21
	RETURN	0.66
	REVENUE REQUIREMENT	0.86

*One half convention used for first year: 1.08 half year of depreciation at \$.18/month for 6 months)
 Cost rates Aqua's most general rate case order dated May 2, 2014, Docket No. W-218, Sub 363
 Retention Factors- Public Service of North Carolina's pending general rate case, Docket No. G-5, Sub 565*

MONTHLY O&M EXPENSE REDUCTIONS

METER READING:

METER READING COST ANALYSIS - MONTHLY			
LINE ITEM	MANUAL* (CURRENT STATE)	MOBILE AMR (RF) (FUTURE STATE)	DIFFERENCE
MONTHLY READS	69,388	69,388	-
AVERAGE READS / HOUR	37.50	264.39	227
REQUIRED HOURS READING (PER MONTH)	1,850	262	1,588
COST PER HOUR	\$ 28.09	\$ 28.09	\$ 28.09
MONTHLY METER READING COST	\$ 51,976	\$ 7,372	\$ 44,604

* Estimated manual meter read rate of 300 per 8 HR day supported by various industry publications.

METER READER EXPENSE REDUCTION:	\$ 44,604
AQUA NC MANUAL METERED CUSTOMERS	69,388
O&M REDUCTION PER CUSTOMER	\$ 0.64

SERVICE ORDERS:

FIELD SERVICES ORDER ANALYSIS			
SERVICE ORDER TYPE	N.C. CURRENT STATE	N.C. FUTURE STATE	DIFFERENCE
CHECK READ	2,002	1,743	259
HIGH CONS	811	786	25
MOVE IN	13,069	9,621	3,448
MOVE OUT	3,949	3,653	296
TOTAL	19,831	15,803	4,028
MONTHLY FIELD SERVICE ORDERS	1,653	1,317	336
AVERAGE HOURS / SVC ORDER	1,054	1,054	1,054
SERVICE ORDER HOURS	1,741	1,388	354
COST PER HOUR	\$ 41.71	\$ 41.71	\$ 41.71
MONTHLY SPEND (\$/Os)	72,628	57,878	14,750

SERVICE ORDER DIFFERENCE (REDUCTION)	\$ 14,750
AQUA NC MANUAL METERED CUSTOMER	69,388
O&M REDUCTION PER CUSTOMER:	\$ 0.21

FINANCIAL COST / BENEFIT (PER CUSTOMER)

INCREMENTAL COST vs. CUSTOMER BENEFIT		
LINE ITEM	MONTHLY PER CUSTOMER	TOTAL
REVENUE REQUIREMENT		
DEPRECIATION	0.21	
RETURN	0.66	\$ 0.86
O&M EXPENSE REDUCTION		
METER READING	\$ 0.64	
FIELD OPERATIONS (SVC ORDERS)	0.21	0.86
NET FAVORABLE IMPACT		\$ (0.01)

I/A

Public Staff
 Junis Supplemental Exhibit 2
 Revised Junis Exhibit 8

Aqua Response to EDR 56 Q2 provided on 8/29/2018
 Calculation of Average Labor Cost per Aqua Meter Exchange

		Notes	Public Staff Adjusted
Average Labor Rate (\$ / hr)	\$ 21.21	Meter Reads, Utility Technicians, and Facility Operators can all exchange meters. This represents the average hourly labor rate for these positions. See backup sheet for more information	\$ 15.23
Average Duration Meter Exchange (hr)	1.5	50% of meters are replace in kind, average 1 hr including drive time. 50% meters require additional plumbing work in the pit / curb stop, 2 hr including drive time.	0.54
Average Labor Costs for Meter Installation (\$ / meter)	\$ 31.81		\$ 8.22
Allocation of Overhead	93%	Average overhead allocated to labor, see EDR 29 and EDR 54 response.	93%
Average Labor + OH per Meter Exchange	\$ 61.39		\$ 15.87

* If Aqua were to perform a large scale meter replacement project in-house, additional staff would be required on a temporary basis. The company would incur additional costs for the temporary employees for hiring, training, vehicles, tools, etc.

Hours/workday	8 hours
Drive time (to and from site)	1 hour
Paperwork/administrative tasks (e.i. timesheets, quantities, data)	0.5 hour
Hours dedicated to meter replacements	6.5 hours
Meter replacements/dedicated hour	2.29 (1)
Meter replacements per day (2.29 repl./hour x 6.5 hours)	14.89
Meter replacements/ workday hour (14.89 repl. / 8 hours)	1.86
Hours/meter replacement	0.54 hour
Minutes/meter replacement	32 minutes

(1) Based on information from industry professional and my personal experience, 75% of the meter replacements are in-kind (standard-standard) averaging 15 minutes while 25% require additional work averaging 1 hour.

I/A

AQUA North Carolina AMR Cost Benefit Analysis

INCREMENTAL COST CALCULATION:

5/8" x 3/4" METERED SERVICE	STANDARD METER	AMR (RF) METER	DIFFERENCE
METER COST STANDARD	\$ 3843	\$ 57.56	\$ 19.13
EST. ITRON N.C INSTALLATION PRICE ⁽¹⁾	1587	69.84	\$ 53.97
ERT (RF) DEVICE	-	61.14	61.14
INCREMENTAL COST CALCULATION:	\$ 54.30	\$ 188.54	\$ 134.24

(1) INSTALLATION PRICE INCLUDES PROJECT MANAGEMENT, QUALITY CONTROL AND ADMINISTRATIVE

ANNUAL DEPRECIATION:

COST	\$ 134.24
USEFUL LIFE	31.25
ANNUAL	\$ 4.30
MONTHLY	\$ 0.36

RATE OF RETURN:

RETURN ON RATE BASE			COST RATE ⁽²⁾	RETENTION FACTOR ⁽³⁾	REVENUE REQUIREMENT ^(PER CUSTOMER)
LT Debt	0.5	66.05	0.0529	0.9986	\$ 3.50
Equity	0.5	66.05	0.0975	0.6296	10.23
				ANNUALLY	\$ 13.73
				MONTHLY	\$ 1.14

SUMMARY:

DEPRECIATION	\$ 0.36
RETURN	1.14
REVENUE REQUIREMENT	1.50

One half convention used for first year: 1.08 half year of depreciation at \$.18/month for 6 months)
 Cost rates Aqua's most general rate case order dated May 2, 2014, Docket No. W-218, Sub 363
 Retention Factors- Public Service of North Carolina's pending general rate case, Docket No. G-5, Sub 565

MONTHLY O&M EXPENSE REDUCTIONS

METER READING:

METER READING COST ANALYSIS - MONTHLY			
LINE ITEM	MANUAL* (CURRENT STATE)	MOBILE AMR (RF) (FUTURE STATE)	DIFFERENCE
MONTHLY READS	69,388	69,388	-
AVERAGE READS / HOUR	37.50	264.39	227
REQUIRED HOURS READING (PER MONTH)	1,850	262	1,588
COST PER HOUR	\$ 28.09	\$ 28.09	\$ 28.09
MONTHLY METER READING COST	\$ 51,976	\$ 7,372	\$ 44,604

* Estimated manual meter read rate of 300 per 8 HR day supported by various industry publications.

METER READER EXPENSE REDUCTION:	\$ 44,604
AQUA NC-MANUAL METERED CUSTOMERS	69,388
O&M REDUCTION PER CUSTOMER	\$ 0.64

SERVICE ORDERS:

FIELD SERVICES ORDER ANALYSIS			
SERVICE ORDER TYPE	N.C. CURRENT STATE	N.C. FUTURE STATE	DIFFERENCE
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MOVE IN	13,069	9,621	3,448
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MONTHLY SPEND (\$/Os)	72,628	57,878	14,750

SERVICE ORDER DIFFERENCE (REDUCTION)	\$ 14,750
AQUA NC MANUAL METERED CUSTOMER	69,388
O&M REDUCTION PER CUSTOMER:	\$ 0.21

FINANCIAL COST / BENEFIT (PER CUSTOMER)

INCREMENTAL COST vs. CUSTOMER BENEFIT		
LINE ITEM	MONTHLY PER CUSTOMER	TOTAL
REVENUE REQUIREMENT		
DEPRECIATION	0.36	
RETURN	1.14	\$ 1.50
O&M EXPENSE REDUCTION		
METER READING	\$ 0.64	
FIELD OPERATIONS (SVC ORDERS)	0.21	0.86
NET FAVORABLE IMPACT		\$ (0.65)

Discount Rate **5.000%**

Estimated Revenue Requirement

Annual Costs

Manual	AMR	Year	
\$ 7.68	\$ 10.30	12/31/2017	Year 1
\$ 7.91	\$ 10.00	12/31/2018	Year 2
\$ 8.15	\$ 9.69	12/31/2019	Year 3
\$ 8.39	\$ 9.39	12/31/2020	Year 4
\$ 8.64	\$ 9.09	12/31/2021	Year 5
\$ 8.90	\$ 8.79	12/31/2022	Year 6
\$ 9.17	\$ 8.48	12/31/2023	Year 7
\$ 9.45	\$ 8.18	12/31/2024	Year 8
\$ 9.73	\$ 7.88	12/31/2025	Year 9
\$ 10.02	\$ 7.58	12/31/2026	Year 10
\$ 10.32	\$ 7.27	12/31/2027	Year 11
\$ 10.63	\$ 6.97	12/31/2028	Year 12
\$ 10.95	\$ 6.67	12/31/2029	Year 13
\$ 11.28	\$ 6.37	12/31/2030	Year 14
\$ 11.62	\$ 6.06	12/31/2031	Year 15
\$ 11.97	\$ 5.76	12/31/2032	Year 16
\$ 12.32	\$ 5.46	12/31/2033	Year 17
\$ 12.69	\$ 5.16	12/31/2034	Year 18
\$ 13.07	\$ 4.85	12/31/2035	Year 19
\$ 13.47	\$ 4.55	12/31/2036	Year 20
\$ 128.70	\$ 103.45		

L/A

Docket No. W-218, Sub 497
Meter Replacement Program

Public Staff
Junis Supplemental Exhibit 5
Revised Junis Exhibit 10

ANC Water- Total

Part	Quantity (1)	Aqua Unit Cost (2)	Adjustment	Pro Forma Unit Cost	Original Rate Base	Adjustment	Depreciation Expense Δ (3.30%)
ERT	19,768	\$ 61.14	\$ (61.14)	\$ -	\$ 1,208,615.52	(1,208,616)	\$ (39,884.31)
Meter	17,441	\$ 57.56	\$ (19.13)	\$ 38.43	\$ 1,003,903.96	(333,646)	\$ (11,010.33)
Installation	17,441	\$ 69.84	\$ (53.97)	\$ 15.87	\$ 1,218,079.44	(941,291)	\$ (31,062.60)
Alloc. Costs	19,768	\$ 17.76	\$ (17.76)	\$ -	\$ 351,079.68	(351,080)	\$ (11,585.63)
		\$ 206.30	\$ (152.00)	\$ 54.30	\$ 3,781,678.60	\$ (2,834,632.30)	\$ (93,542.87)

ANC Water- 2017

Part	Quantity (3)	Aqua Unit Cost (2)	Adjustment	Pro Forma Unit Cost	Original Rate Base	Adjustment
ERT	16,162	\$ 61.14	\$ (61.14)	\$ -	\$ 988,144.68	(988,145)
Meter	14,908	\$ 57.56	\$ (19.13)	\$ 38.43	\$ 858,104.48	(285,190)
Installation	14,908	\$ 69.84	\$ (53.97)	\$ 15.87	\$ 1,041,174.72	(804,585)
Alloc. Costs	16,162	\$ 17.76	\$ (17.76)	\$ -	\$ 287,037.12	(287,037)
					\$ 3,174,461.00	\$ (2,364,956.60)

ANC Water- 2018

Part	Quantity (3)	Aqua Unit Cost (2)	Adjustment	Pro Forma Unit Cost	Original Rate Base	Adjustment
ERT	3,606	\$ 61.14	\$ (61.14)	\$ -	\$ 220,470.84	(220,471)
Meter	2,533	\$ 57.56	\$ (19.13)	\$ 38.43	\$ 145,799.48	(48,456)
Installation	2,533	\$ 69.84	\$ (53.97)	\$ 15.87	\$ 176,904.72	(136,706)
Alloc. Costs	3,606	\$ 17.76	\$ (17.76)	\$ -	\$ 64,042.56	(64,043)
					\$ 607,217.60	\$ (469,675.70)

Total \$ (2,834,632.30)

(1) Quantity is the number of parts reported by the Company in response to EDR 46 Q3.

(2) Aqua Unit Cost is the average cost reported by the Company in response to EDR 29 Q4.

(3) Provided as a supplemental response to EDR 29 by Tammy Bernard.

Brookwood Water- Total

Part	Quantity (4)	Aqua Unit Cost (5)	Adjustment	Pro Forma Unit Cost	Original Rate Base	Adjustment	Depreciation Expense Δ (3.30%)
ERT	9,045	\$ 67.25	\$ (67.25)	\$ -	\$ 608,276.25	(608,276)	\$ (20,073.12)
Meter	8,950	\$ 70.46	\$ (32.03)	\$ 38.43	\$ 630,617.00	(286,669)	\$ (9,460.06)
Installation	8,950	\$ 43.94	\$ (28.07)	\$ 15.87	\$ 393,263.00	(251,227)	\$ (8,290.47)
Alloc. Costs	9,045	\$ 28.01	\$ (28.01)	\$ -	\$ 253,350.45	(253,350)	\$ (8,360.56)
		\$ 209.66	\$ (155.36)	\$ 54.30	\$ 1,885,506.70	\$ (1,399,521.70)	\$ (46,184.22)

Brookwood Water- 2012

Part	Quantity (6)	Aqua Unit Cost (5)	Adjustment	Pro Forma Unit Cost	Original Rate Base	Adjustment
ERT	1,773	\$ 67.25	\$ (67.25)	\$ -	\$ 119,234.25	(119,234)
Meter	1,754	\$ 70.46	\$ (32.03)	\$ 38.43	\$ 123,586.84	(56,181)
Installation	1,754	\$ 43.94	\$ (28.07)	\$ 15.87	\$ 77,070.76	(49,235)
Alloc. Costs	1,773	\$ 28.01	\$ (28.01)	\$ -	\$ 49,661.73	(49,662)
					\$ 369,553.58	\$ (274,311.38)

Brookwood Water- 2013

Part	Quantity (6)	Aqua Unit Cost (5)	Adjustment	Pro Forma Unit Cost	Original Rate Base	Adjustment
ERT	7,272	\$ 67.25	\$ (67.25)	\$ -	\$ 489,042.00	(489,042)
Meter	7,196	\$ 70.46	\$ (32.03)	\$ 38.43	\$ 507,030.16	(230,488)
Installation	7,196	\$ 43.94	\$ (28.07)	\$ 15.87	\$ 316,192.24	(201,992)
Alloc. Costs	7,272	\$ 28.01	\$ (28.01)	\$ -	\$ 203,688.72	(203,689)
					\$ 1,515,953.12	\$ (1,125,210.32)

Total \$ (1,399,521.70)

(4) Quantity is the number of parts reported by the Company in response to EDR 54 Q2.

(5) Aqua Unit Cost is the average cost reported by the Company in response to EDR 54 Q2 and EDR 56 Q1.

(6) Calculated based on ratio of all Brookwood meters replaced in 2012 and 2013 (Sub 363 EDR 24 Q4).

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Public Staff
Junis Supplemental Exhibit 6

AMR meter vs Manual read meter

	Annual											
Equipment Cost (difference in meter costs)	\$ 152											
Depreciation Rate	5.00% 20 years											
Capital Structure	50-50 (debt to equity)											
Debt Rate	4.63%											
Equity	9.70%											
Pre Tax rate of Return	8.64%											
Reduced Disposal Costs	\$ -											
Property Tax rate	2%											
	Revenue Requirement						Wage and benefit increase per year					
	0%						3%					
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12
<u>Cost to read meter (Annual reduced cost to read meter)</u>	\$ 7.68	\$ 7.91	\$ 8.15	\$ 8.39	\$ 8.64	\$ 8.90	\$ 9.17	\$ 9.45	\$ 9.73	\$ 10.02		
\$.64 X 12 = \$ 7.68												
<u>Purchase Equipment</u>												
Pre tax rate of return	\$ 12.48	\$ 11.83	\$ 11.17	\$ 10.51	\$ 9.85	\$ 9.20	\$ 8.54	\$ 7.88	\$ 7.23	\$ 6.57		
Depreciation	\$ 7.60	\$ 7.60	\$ 7.60	\$ 7.60	\$ 7.60	\$ 7.60	\$ 7.60	\$ 7.60	\$ 7.60	\$ 7.60		
Property Tax	\$ 2.28	\$ 2.28	\$ 2.28	\$ 2.28	\$ 2.28	\$ 2.28	\$ 2.28	\$ 2.28	\$ 2.28	\$ 2.28		
Total Purchase Costs	\$ 22.36	\$ 21.71	\$ 21.05	\$ 20.39	\$ 19.73	\$ 19.08	\$ 18.42	\$ 17.76	\$ 17.11	\$ 16.45		
	0%						3%					
	Year 11	Year 12	Year 13	Year 14	Year 15	Year 16	Year 17	Year 18	Year 19	Year 20		
<u>Cost to read meter</u>	\$ 10.32	\$ 10.63	\$ 10.95	\$ 11.28	\$ 11.62	\$ 11.97	\$ 12.32	\$ 12.69	\$ 13.07	\$ 13.47		
<u>Purchase Equipment</u>												
Pre tax rate of return	\$ 5.91	\$ 5.26	\$ 4.60	\$ 3.94	\$ 3.28	\$ 2.63	\$ 1.97	\$ 1.31	\$ 0.66	\$ 0.00		
Depreciation	\$ 7.60	\$ 7.60	\$ 7.60	\$ 7.60	\$ 7.60	\$ 7.60	\$ 7.60	\$ 7.60	\$ 7.60	\$ 7.60		
Property Tax	\$ 2.28	\$ 2.28	\$ 2.28	\$ 2.28	\$ 2.28	\$ 2.28	\$ 2.28	\$ 2.28	\$ 2.28	\$ 2.28		
Total Purchase Costs	\$ 15.79	\$ 15.14	\$ 14.48	\$ 13.82	\$ 13.16	\$ 12.51	\$ 11.85	\$ 11.19	\$ 10.54	\$ 9.88		

Discount Rate **5.000%**

Estimated Revenue Requirement

Annual Costs

Manual	AMR	Year	
\$ 7.68	\$ 22.36	12/31/2017	Year 1
\$ 7.91	\$ 21.71	12/31/2018	Year 2
\$ 8.15	\$ 21.05	12/31/2019	Year 3
\$ 8.39	\$ 20.39	12/31/2020	Year 4
\$ 8.64	\$ 19.73	12/31/2021	Year 5
\$ 8.90	\$ 19.08	12/31/2022	Year 6
\$ 9.17	\$ 18.42	12/31/2023	Year 7
\$ 9.45	\$ 17.76	12/31/2024	Year 8
\$ 9.73	\$ 17.11	12/31/2025	Year 9
\$ 10.02	\$ 16.45	12/31/2026	Year 10
\$ 10.32	\$ 15.79	12/31/2027	Year 11
\$ 10.63	\$ 15.14	12/31/2028	Year 12
\$ 10.95	\$ 14.48	12/31/2029	Year 13
\$ 11.28	\$ 13.82	12/31/2030	Year 14
\$ 11.62	\$ 13.16	12/31/2031	Year 15
\$ 11.97	\$ 12.51	12/31/2032	Year 16
\$ 12.32	\$ 11.85	12/31/2033	Year 17
\$ 12.69	\$ 11.19	12/31/2034	Year 18
\$ 13.07	\$ 10.54	12/31/2035	Year 19
\$ 13.47	\$ 9.88	12/31/2036	Year 20
\$ 128.70	\$ 224.63		

I/A

Public Staff
Junis Supplemental Exhibit 7

Aqua North Carolina, Inc. - W-218, Sub 497 - Water Billing Analysis

Revised Junis Exhibit 25
(page 1 of 10)

Test Year Revenue at Present Rates

Metered Bills	Test Year Bills	Current Base Rate	Base Revenue	Adjustment
Meter Size				
< 1 inch	712,389	\$17.92	\$12,766,002	(1) 15,052
1 inch	4,201	\$44.80	\$188,209	(1) 59
1.5 inch	301	\$89.60	\$26,970	(1) -1
2 inch	600	\$143.37	\$85,051	
3 inch	28	\$268.81	\$7,634	(1) -4
4 inch	72	\$448.02	\$32,437	
6 inch	12	\$896.04	\$10,932	
Clear Meadow	741	\$15.71	\$11,644	(1) 3
Timberlake & Thomt	1,331	\$12.96	\$17,254	(1) 13
Wimbleton, Glennbu	1,007	\$21.07	\$21,209	(1) 1
Total Base Revenue			\$13,168,341	
Produced Commodity Gallons (kgal)			3,270,945	(2) 71,166
Produced Commodity Rate per 1,000 gallons			\$5.43	(3) 0.9953
Subtotal Produced Consumption Revenue			\$17,761,231	

Pro Forma Revenue at Present Rates

Metered Bills	Pro Forma Bills	Base Rate	Base Revenue
Meter Size			
< 1 inch	727,440	\$17.92	\$13,035,725
1 inch	4,260	\$44.80	\$190,848
1.5 inch	300	\$89.60	\$26,880
2 inch	600	\$143.37	\$86,051
3 inch	24	\$268.81	\$6,451
4 inch	72	\$448.02	\$32,437
6 inch	12	\$896.04	\$10,932
Clear Meadow	744	\$15.71	\$11,688
Timberlake & Thomt	1,344	\$12.96	\$17,418
Wimbleton, Glennbu	1,008	\$21.07	\$21,239
Total Base Revenue			\$13,439,668
Commodity Gallons (thousands)			3,326,403
Commodity Rate per 1,000 gallons			\$5.43
Subtotal Produced Consumption Revenue			\$18,062,369

System	Annual Gallons	Test Year Rate (1,000 gal)	Annual Revenue
Clear Meadow	2,929,000	\$3.22	\$9,431
Timberlake & Thomt	4,709,100	\$4.41	\$20,763
Wimbleton, Glennbu	4,078,600	\$7.18	\$29,284
Total Produced Consumption Revenue			\$17,820,710

System	Annual Gallons	Test Year Rate (1,000 gal)	Annual Revenue
Clear Meadow	2,915,234	\$3.22	\$9,387
Timberlake & Thomt	4,685,972	\$4.41	\$20,665
Wimbleton, Glennbu	4,059,431	\$7.18	\$29,147
Total Produced Consumption Revenue			\$18,121,568

Provider	Annual Gallons	Test Year Rate (1,000 gal)	Annual Revenue
Chatham Cnty	10,287,700	\$7.04	\$72,425
Chatham Cnty NCV	9,117,000	\$10.01	\$91,261
Cty Asheville	1,104,100	\$4.26	\$4,703
Cty Belmont	0	\$14.40	\$0
Cty Charlotte	33,951,200	\$1.81	\$61,452
Cty Concord	2,001,300	\$5.11	\$10,227
Cty Hendersonville	8,760,300	\$3.06	\$26,807
Cty Hickory (IN)	3,433,000	\$2.83	\$9,715
Cty Hickory (OUT)	716,800	\$5.04	\$3,613
Cty Lincolnton	5,677,300	\$7.70	\$43,715
Cty Morganton	5,874,900	\$2.52	\$14,805
Cty Mount Airy	4,258,600	\$7.15	\$30,449
Cty Newton	762,900	\$2.85	\$2,174
Davidson Water	6,587,000	\$5.30	\$34,911
Harnett County	34,199,000	\$2.77	\$94,731
Iredell Water	1,060,300	\$2.72	\$2,884
Johnston County	169,749,400	\$2.45	\$415,886
Twn Forest City	2,175,400	\$5.95	\$12,944
Twn Fuquay-Varina	3,364,700	\$4.35	\$14,636
Twn Pittsboro	23,999,400	\$13.69	\$328,552
Twn Spruce Pine	2,018,200	\$4.93	\$9,950
	329,098,500		\$1,285,840
Total Metered Revenue			\$32,274,891

Provider	Annual Gallons	Test Year Rate (1,000 gal)	Annual Revenue
Chatham Cnty	10,239,348	\$7.04	\$72,085
Chatham Cnty NCV	9,074,150	\$10.01	\$90,832
Cty Asheville	1,088,911	\$4.26	\$4,681
Cty Belmont	4,348,267	\$14.40	\$62,615
Cty Charlotte	33,791,629	\$1.81	\$61,163
Cty Concord	1,991,894	\$5.11	\$10,179
Cty Hendersonville	8,719,127	\$3.06	\$26,681
Cty Hickory (IN)	3,416,885	\$2.83	\$9,670
Cty Hickory (OUT)	713,431	\$5.04	\$3,596
Cty Lincolnton	5,650,617	\$7.70	\$43,510
Cty Morganton	5,847,288	\$2.52	\$14,735
Cty Mount Airy	4,238,585	\$7.15	\$30,306
Cty Newton	759,314	\$2.85	\$2,164
Davidson Water	6,556,041	\$5.30	\$34,747
Harnett County	34,038,265	\$2.77	\$94,286
Iredell Water	1,055,317	\$2.72	\$2,870
Johnston County	168,951,578	\$2.45	\$413,931
Twn Forest City	2,165,176	\$5.95	\$12,883
Twn Fuquay-Varina	3,348,886	\$4.35	\$14,568
Twn Pittsboro	23,886,603	\$13.69	\$327,008
Twn Spruce Pine	2,008,714	\$4.93	\$9,903
	331,900,004		\$1,342,412
Total Metered Revenue			\$32,903,648

Flat Rate Bills	Test Year Bills	Current Flat Rate	Flat Revenue
Residential	2,508	\$37.83	\$94,874
Commercial	48	\$63.36	\$3,041
Total Test Year Revenue at Present Rates			\$32,372,806
Test Year WSIC (4.75%) Revenue			\$1,532,503
Total Test Year Revenue at Present Rates			\$33,905,309

Flat Rate Bills	Test Year Bills	Flat Rate	Flat Revenue
Residential	2,424	\$37.83	\$91,700
Commercial	132	\$63.36	\$8,364
Pro Forma Revenue at Present Rates			\$33,003,711
Pro Forma WSIC (4.75%) Revenue			\$1,562,473
Total Pro Forma Revenue at Present Rates			\$34,566,184

(1) End of period (EOP) update through June 2018. EOP customers multiplied by 12 months to annualize.
 (2) Increase usage by 71,166 kgal. to reflect EOP customers (15,122 bills times ave. monthly usage 4,995 gal.) and reassigning Belmont systems (see note (4)).
 (3) Decrease all consumption by 0.47% (0.9953 factor) to reflect updated 3 year average monthly consumption of 4,971 gal. through June 2018.
 (4) Customers in the Heather Glen, Highland on the Point, and Southpoint Landing Subdivisions in Gaston County were converted from water supplied from Aqua's wells to purchased water from the City of Belmont. The test year usage totaled 4,368,800 gal. for the three systems.

Aqua North Carolina, Inc. - W-218, Sub 497 - Water Billing Analysis

Pro Forma Revenue at Company Proposed Rates

Metered Bills			
Meter Size	Pro Forma Bills	Base Rate	Base Revenue
< 1 inch ¹	730,536	\$22.34	\$16,320,174
1 inch	4,260	\$55.85	\$237,921
1.5 inch	300	\$111.70	\$33,510
2 inch	600	\$178.72	\$107,268
3 inch	24	\$335.10	\$8,042
4 inch	72	\$558.50	\$40,435
6 inch	12	\$1,117.00	\$13,827
Total Base Revenue			\$16,760,978
Commodity Gallons (thousands) ¹			3,338,064
Commodity Rate per 1,000 gallons			\$5.74
Total Produced Consumption Revenue			\$19,160,486

Provider	Annual Gallons	Current Rate (1,000 gal)	Annual Revenue
Chatham Cnty	10,239,348	\$7.04	\$72,085
Chatham Cnty NCV	9,074,150	\$10.01	\$90,832
Cty Asheville	1,098,911	\$4.26	\$4,681
Cty Belmont	4,348,267	\$14.40	\$62,615
Cty Charlotte	33,791,629	\$1.81	\$61,163
Cty Concord	1,991,894	\$5.11	\$10,179
Cty Hendersonville	8,719,127	\$3.06	\$26,681
Cty Hickory (IN)	3,416,865	\$2.83	\$9,670
Cty Hickory (OUT)	713,431	\$5.04	\$3,596
Cty Lincolnton	5,650,617	\$7.70	\$43,510
Cty Morganton	5,847,288	\$2.52	\$14,735
Cty Mount Airy	4,238,585	\$7.15	\$30,306
Cty Newton	759,314	\$2.85	\$2,164
Davidson Water	6,556,041	\$5.30	\$34,747
Harnett County	34,038,265	\$2.77	\$94,286
Iredell Water	1,055,317	\$2.72	\$2,870
Johnston County	168,951,578	\$2.45	\$413,931
Twn Forest City	2,165,176	\$5.95	\$12,883
Twn Fuquay-Varina	3,348,886	\$4.35	\$14,568
Twn Pittsboro	23,886,603	\$13.69	\$327,008
Twn Spruce Pine	2,008,714	\$4.93	\$9,903
	331,900,004		\$1,342,412
Total Purchased Consumption Revenue			\$1,342,412

Total Metered Revenue \$37,263,876

Flat Rate Bills

	Pro Forma Bills	Flat Rate	Flat Revenue
Residential	2,424	\$50.98	\$123,576
Commercial	132	\$74.99	\$9,899

Pro Forma Revenue at Company Proposed Rates \$37,397,350

Pro Forma Revenue at Public Staff Proposed Rates

Metered Bills			
Meter Size	Pro Forma Bills	Base Rate	Base Revenue
< 1 inch	730,536	\$18.14	\$13,251,923
1 inch	4,260	\$45.35	\$193,191
1.5 inch	300	\$90.70	\$27,210
2 inch	600	\$145.12	\$87,101
3 inch	24	\$272.10	\$6,530
4 inch	72	\$453.50	\$32,833
6 inch	12	\$907.00	\$11,065
Total Base Revenue			\$13,609,854
Commodity Gallons (thousands)			3,338,064
Commodity Rate per 1,000 gallons			\$5.50
Total Produced Consumption Revenue			\$18,359,350

Provider	Annual Gallons	Public Staff Rate (1,000 gal)	Annual Revenue
Chatham Cnty	10,239,348	\$7.04	\$72,085
Chatham Cnty NCV	9,074,150	\$10.01	\$90,832
Cty Asheville	1,098,911	\$4.26	\$4,681
Cty Belmont	4,348,267	\$14.40	\$62,615
Cty Charlotte	33,791,629	\$1.81	\$61,163
Cty Concord	1,991,894	\$5.11	\$10,179
Cty Hendersonville	8,719,127	\$3.06	\$26,681
Cty Hickory (IN)	3,416,865	\$2.83	\$9,670
Cty Hickory (OUT)	713,431	\$5.04	\$3,596
Cty Lincolnton	5,650,617	\$7.70	\$43,510
Cty Morganton	5,847,288	\$2.52	\$14,735
Cty Mount Airy	4,238,585	\$7.15	\$30,306
Cty Newton	759,314	\$2.85	\$2,164
Davidson Water	6,556,041	\$5.30	\$34,747
Harnett County	34,038,265	\$2.77	\$94,286
Iredell Water	1,055,317	\$2.72	\$2,870
Johnston County	168,951,578	\$2.45	\$413,931
Twn Forest City	2,165,176	\$5.95	\$12,883
Twn Fuquay-Varina	3,348,886	\$4.35	\$14,568
Twn Pittsboro	23,886,603	\$13.69	\$327,008
Twn Spruce Pine	2,008,714	\$4.93	\$9,903
	331,900,004		\$1,342,412
Total Purchased Consumption Revenue			\$1,342,412

Total Metered Revenue \$33,311,616

Flat Rate Bills

	Pro Forma Bills	Flat Rate	Flat Revenue
Residential	2,424	\$37.39	\$90,633
Commercial	132	\$63.56	\$8,390

Pro Forma Revenue at Public Staff Rates \$33,410,640

¹ Aqua proposes to incorporate The Clear Meadow, Timberlake & Thornton Ridge, and Wimbeldon, Glennburn, & Knobwood customers into uniform rates.

**Sewer Test Year Revenue at Present Rates
 Uniform Rate Metered Bills - Commercial**

Meter Size	Test Year Bills	Base Rate	Base Revenue	Adjustment
< 1 inch	1,518	\$23.13	\$35,111	(1) -6
1 inch	542	\$57.82	\$31,338	(1) -14
1.5 inch	325	\$115.64	\$37,583	(1) -1
2 inch	438	\$185.02	\$81,039	(1) 6
3 inch	60	\$346.92	\$20,815	
4 inch	36	\$578.20	\$20,815	
6 inch (incl. CM)	24	\$1,156.40	<u>\$27,754</u>	
Base Revenue			\$254,456	

**Pro Forma Revenue at Present Rates
 Uniform Rate Metered Bills - Commercial**

Meter Size	Pro Forma Bills	Base Rate	Base Revenue
< 1 inch	1,512	\$23.13	\$34,973
1 inch	528	\$57.82	\$30,529
1.5 inch	324	\$115.64	\$37,467
2 inch	444	\$185.02	\$82,149
3 inch	60	\$346.92	\$20,815
4 inch	36	\$578.20	\$20,815
6 inch	24	\$1,156.40	<u>\$27,754</u>
Base Revenue			\$254,502

Commodity Gallons (kgal) 84,373 (2) -352
 Commodity Rate per 1,000 gallons \$8.02 (3) 0.9815 xgal
 Consumption Revenue \$676,672

Commodity Gallons (thousands) 82,467
 Commodity Rate per 1,000 gallons \$8.02
 Consumption Revenue \$661,383

Purchased Sewer
 Purchased Swr <1" 10,764 \$ 23.13 \$248,971 (1) 1,056
 Purchased Swr 2" 64 \$ 185.02 \$11,841 (1) 20
 Purchased Swr 4" 12 \$ 578.20 \$6,938
Base Purchsed Sewer Revenue \$267,751
 Purchased Commodity Gallons (Kgal) 31,873 (4) 3,247
 Commodity Rate per 1,000 gallons \$6.45 (3) 0.9815 xgal
Purchased Sewer Consumption Revenue \$205,578

Purchased Sewer
 Purchased Swr <1" 11,820 \$ 23.13 \$273,397
 Purchased Swr 2" 84 \$ 185.02 \$15,542
 Purchased Swr 4" 12 \$ 578.20 \$6,938
Base Purchsed Sewer Revenue \$295,877
 Purchased Commodity Gallons (Kgal) 34,470
 Commodity Rate per 1,000 gallons \$6.45
Purchased Sewer Consumption Revenue \$222,331

Hawthorne at the Green and Beaver Farms

	Test Year Bills (REUs)	Base Rate	Base Revenue	Adjustment
Base Revenue	2,084	\$40.40	\$84,203	
Commodity Gallons (kgal)			10,458	(3) 0.9815 xgal
Commodity Rate per 1,000 gallons			\$5.11	
Consumption Revenue			\$53,442	

Hawthorne at the Green and Beaver Farms

	Test Year Bills	Base Rate	Base Revenue
Base Revenue	2,084	\$40.40	\$84,203
Commodity Gallons (kgal)			10,265
Commodity Rate per 1,000 gallons			\$5.11
Consumption Revenue			\$52,454

Total Metered Revenue \$1,542,103

Total Metered Revenue \$1,570,749

Flat Rate Bills

	Test Year Bills	Flat Rate	Flat Revenue	Adjustment
Residential	165,148	\$64.98	\$10,731,285	(1) 7,460
Commercial	1,287	\$90.97	\$117,033	(1) -43
S.T.E.P Surcharge	1,404	\$32.00	\$44,928	
Total Flat Rate Revenue			\$10,893,245	

Flat Rate Bills

	Pro Forma Bills	Flat Rate	Flat Revenue
Residential	172,607	\$64.98	\$11,216,014
Commercial	1,244	\$90.97	\$113,161
S.T.E.P Surcharge	1,404	\$32.00	\$44,928
Total Flat Rate Revenue			\$11,374,103

Test Year Revenue at Present Rates \$12,435,348
Test Year SSIC (3.99%) Revenue \$494,378
Total Test Year Revenue at Present Rates \$12,929,726

Pro Forma Revenue at Present Rates \$12,944,852
Pro Forma SSIC (3.99%) Revenue \$514,707
Total Pro Forma Revenue at Present Rates \$13,459,559

(1) End of period (EOP) update through June 2018. EOP customers multiplied by 12 months to annualize.
 (2) Decrease usage by 138 kgal. to reflect EOP customers (15 bills times ave. monthly usage 23,472 gal.).
 (3) Decrease all consumption by 1.85% (0.9815 factor) to reflect updated 3 year average monthly usage of 9,006 gal. through June 2018.
 (4) Increase usage by 3,247 kgal. to reflect EOP customers (1,076 bills times ave. monthly usage 3,018 gal.).

**Aqua North Carolina, Inc. - W-218, Sub 497 - Sewer Billing Analysis
 Pro Forma Revenue at Company Proposed Rates**

Uniform Rate Metered Bills - Commercial			
<u>Meter Size</u>	<u>Pro Forma Bills</u>	<u>Base Rate</u>	<u>Base Revenue</u>
< 1 inch	1,512	\$28.00	\$42,336
1 inch	528	\$70.00	\$36,960
1.5 inch	324	\$140.00	\$45,360
2 inch	444	\$224.00	\$99,456
3 inch	60	\$420.00	\$25,200
4 inch	36	\$700.00	\$25,200
6 inch	24	\$1,400.00	\$33,600
Base Revenue			\$308,112
Commercial Usage			
Commodity Gallons (thousands)			82,467
Commodity Rate per 1,000 gallons		\$	8.48
Consumption Revenue		\$	697,668
Purchased Sewer			
Purchased Swr <1"	11,820	\$ 28.00	\$330,960
Purchased Swr 2"	84	\$ 224.00	\$18,816
Purchased Swr 4"	12	\$ 700.00	\$8,400
Base Purchased Sewer Revenue			\$358,176
Purchased Commodity Gallons (Kgal)			
Commodity Gallons (thousands)			34,470
Commodity Rate per 1,000 gallons			\$6.45
Purchased Sewer Consumption Revenue			\$222,331
Hawthorne at the Green and Beaver Farms			
<u>Pro Forma Bills</u>	<u>Base Rate</u>	<u>Base Revenue</u>	<u>Base Revenue</u>
Base Revenue	2,084	\$40.40	\$84,203
Commodity Gallons (thousands)			10,265
Commodity Rate per 1,000 gallons			\$6.11
Consumption Revenue			\$62,719
Total Metered Revenue			\$1,733,209
Flat Rate Bills			
<u>Pro Forma Bills</u>	<u>Flat Rate</u>	<u>Flat Revenue</u>	<u>Flat Revenue</u>
Residential	172,607	\$70.22	\$12,120,476
Commercial	1,244	\$119.92	\$149,173
S.T.E.P Surcharge	1,404	\$32.00	\$44,928
Total Flat Rate Revenue			\$12,314,576
Pro Forma Revenue at Company Proposed Rates			\$14,047,785

Pro Forma Revenue at Public Staff Proposed Rates

Uniform Rate Metered Bills - Commercial			
<u>Meter Size</u>	<u>Pro Forma Bills</u>	<u>Base Rate</u>	<u>Base Revenue</u>
< 1 inch	1,512	\$25.48	\$38,526
1 inch	528	\$63.70	\$33,634
1.5 inch	324	\$127.40	\$41,278
2 inch	444	\$203.84	\$90,505
3 inch	60	\$382.20	\$22,932
4 inch	36	\$637.00	\$22,932
6 inch	24	\$1,274.00	\$30,576
Base Revenue			\$280,382
Commercial Usage			
Commodity Gallons (thousands)			82,467
Commodity Rate per 1,000 gallons			\$8.38
Consumption Revenue			\$681,071
Purchased Sewer			
Purchased Swr <1"	11,820	\$25.48	\$301,174
Purchased Swr 2"	84	\$203.84	\$17,123
Purchased Swr 4"	12	\$637.00	\$7,644
Base Purchased Sewer Revenue			\$325,940
Purchased Commodity Gallons (Kgal)			
Commodity Gallons (thousands)			34,470
Commodity Rate per 1,000 gallons			\$6.45
Purchased Sewer Consumption Revenue			\$222,331
Hawthorne at the Green and Beaver Farms			
<u>Pro Forma Bills</u>	<u>Base Rate</u>	<u>Base Revenue</u>	<u>Base Revenue</u>
Base Revenue	2,084	\$40.40	\$84,203
Commodity Gallons (thousands)			10,265
Commodity Rate per 1,000 gallons			\$6.11
Consumption Revenue			\$62,719
Total Metered Revenue			\$1,666,646
Flat Rate Bills			
<u>Pro Forma Bills</u>	<u>Flat Rate</u>	<u>Flat Revenue</u>	<u>Flat Revenue</u>
Residential	172,607	\$68.63	\$11,846,030
Commercial	1,244	\$96.08	\$119,520
S.T.E.P Surcharge	1,404	\$32.00	\$44,928
Total Flat Rate Revenue			\$12,010,478
Pro Forma Revenue at Staff Rates			\$13,677,124

Aqua North Carolina, Inc. - W-218, Sub 497 - Brookwood Water Billing Analysis

Test Year Revenue at Present Rates

Metered Bills		Test Year	Base	Base	Adjustment
Meter Size	Bills	Rate	Revenue		
< 1 inch	162,053	\$13.11	\$2,124,515	(1) 1,255	
1 inch	704	\$32.77	\$23,070	(1) -32	
1.5 inch	24	\$65.55	\$1,554		
2 inch	372	\$104.87	\$39,054	(1) -24	
3 inch	59	\$196.64	\$11,602	(1) 1	
4 inch	12	\$327.73	\$3,966		
6 inch	0	\$655.47	\$0		
Total Base Revenue			\$2,203,759		

Produced Commodity Gallons (thousands)	758,313	(2)	6,290
Produced Commodity Rate per 1,000 gallons	\$2.96	(3)	1.0121 xgal
Total Produced Consumption Revenue	\$2,244,607		

Provider	Annual Gallons	Test Year Rate (1,000 gal)	Annual Revenue		
Fayetteville PWC ¹	85,285,300	\$2.92	\$278,233	(3)	1.0121 xgal
Town of Linden	2,090,200	\$4.98	\$10,409	(3)	1.0121 xgal
	97,375,500		\$288,642		
Total Purchased Consumption Revenue			\$288,642		
			\$2,533,249		
Total Metered Revenue			\$4,737,008		

Flat Rate Bills		Test Year	Flat	Flat
	Bills	Rate	Revenue	
Residential	0	\$31.15	\$0	
Commercial	0	\$31.15	\$0	

Test Year Revenue at Present Rates	\$4,737,008
Test Year WSIC (4.71%) Revenue	\$223,113
Total Test Year Revenue at Present Rates	\$4,960,121

Pro Forma Revenue at Present Rates

Metered Bills		Pro Forma	Base	Base
Meter Size	Bills	Rate	Revenue	
< 1 inch	163,308	\$13.11	\$2,140,968	
1 inch	672	\$32.77	\$22,021	
1.5 inch	24	\$65.55	\$1,554	
2 inch	348	\$104.87	\$36,495	
3 inch	60	\$196.64	\$11,798	
4 inch	12	\$327.73	\$3,966	
6 inch	0	\$655.47	\$0	
Total Base Revenue			\$2,216,802	

Commodity Gallons (thousands)	773,855
Commodity Rate per 1,000 gallons	\$2.96
Total Consumption Revenue	\$2,290,610

Provider	Annual Gallons	Test Year Rate (1,000 gal)	Annual Revenue
Fayetteville PWC	96,438,252	\$2.92	\$281,600
Town of Linden	2,115,491	\$4.98	\$10,535
	98,553,744		\$292,135
Total Purchased Consumption Revenue			\$292,135
Total Metered Revenue			\$4,789,547

Flat Rate Bills		Pro Forma	Flat	Flat
	Bills	Rate	Revenue	
Residential	0	\$31.15	\$0	
Commercial	0	\$31.15	\$0	

Pro Forma Revenue at Present Rates	\$4,799,547
Pro Forma WSIC (4.71%) Revenue	\$226,059
Total Pro Forma Revenue at Present Rates	\$5,025,605

¹The commodity rate was approved by the Commission in Docket No. W-218, Sub 505, to reflect the increase in the cost of purchasing water service from FPWC.
 (1) End of period (EOP) update through June 2018. EOP customers multiplied by 12 months to annualize.
 (2) Increase usage by 6,290 kgal. to reflect EOP customers (1,200 bills times ave. monthly usage 5,242 gal.).
 (3) Increase all consumption by 1.21% (1.0121 factor) to reflect updated 3 year average monthly consumption of 5,306 through June 2018.

Public Staff
Junis Supplemental Exhibit 7

Revised Junis Exhibit 25
(page 6 of 10)

Aqua North Carolina, Inc. - W-218, Sub 497 - Brookwood Water Billing Analysis
Pro Forma Revenue at Company Proposed Rates

Metered Bills			
Meter Size	Pro Forma Bills	Base Rate	Base Revenue
< 1 inch	163,308	\$15.57	\$2,542,708
1 inch	672	\$38.93	\$26,161
1.5 inch	24	\$77.85	\$1,845
2 inch	348	\$124.56	\$43,347
3 inch	60	\$233.55	\$14,013
4 inch	12	\$389.25	\$4,710
6 inch	0	\$778.50	\$0
Total Base Revenue			\$2,632,781
Commodity Gallons (thousands)			773,855
Commodity Rate per 1,000 gallons			\$3.25
Total Consumption Revenue			\$2,615,028
Provider	Annual Gallons	Requested Rate (1,000 gal)	Annual Revenue
Fayetteville PWC	96,438,252	\$2.92	\$281,600
Town of Linden	2,115,491	\$4.98	\$10,535
	98,553,744		\$292,135
Total Purchased Consumption Revenue			\$292,135
Total Metered Revenue			\$5,439,944
Flat Rate Bills			
	Pro Forma Bills	Flat Rate	Flat Revenue
Residential	0	\$34.99	\$0
Commercial	0	\$48.03	\$0
Pro Forma Revenue at Company Rates			\$5,439,944

Pro Forma Revenue at Public Staff Proposed Rates

Metered Bills			
Meter Size	Pro Forma Bills	Base Rate	Base Revenue
< 1 inch	163,308	\$13.13	\$2,144,234
1 inch	672	\$32.83	\$22,062
1.5 inch	24	\$65.65	\$1,556
2 inch	348	\$105.04	\$36,554
3 inch	60	\$196.95	\$11,817
4 inch	12	\$328.25	\$3,972
6 inch	0	\$656.50	\$0
Total Base Revenue			\$2,220,194
Commodity Gallons (thousands)			773,855
Commodity Rate per 1,000 gallons			\$3.46
Total Consumption Revenue			\$2,677,538
Provider	Annual Gallons	Public Staff Rate (1,000 gal)	Annual Revenue
Fayetteville PWC	96,438,252	\$2.92	\$281,600
Town of Linden	2,115,491	\$4.98	\$10,535
	98,553,744		\$292,135
Total Purchased Consumption Revenue			\$292,135
Total Metered Revenue			\$5,189,867
Flat Rate Bills			
	Pro Forma Bills	Flat Rate	Flat Revenue
Residential	0	\$30.74	\$0
Commercial	0	\$52.26	\$0
Pro Forma Revenue at Public Staff Rates			\$5,189,867

Aqua North Carolina, Inc. - W-218, Sub 497 - Fairways Water Billing Analysis

Test Year Revenue at Present Rates

Metered Bills		Test Year	Base	Base	Adjustment
Meter Size	Bills	Rate	Revenue		
< 1 inch	50,068	\$8.44	\$422,574	(1)	4,609
1 inch	198	\$21.09	\$4,174	(1)	91
1.5 inch	40	\$42.18	\$1,696	(1)	-4
2 inch	185	\$67.48	\$12,484	(1)	45
3 inch	12	\$126.53	\$1,518		
4 inch	0	\$210.89	\$0		
6 inch	0	\$421.78	\$0		
Total Base Revenue			\$442,445		
Commodity Gallons (thousands)			345,464	(2)	32,424 kgal
Commodity Rate per 1,000 gallons			\$1.42	(3)	1.0297 xgal
Total Consumption Revenue			\$490,559		
Total Revenue at Present Rates			\$933,005		
Test Year WSIC (4.43%) Revenue			\$41,332		
Total Test Year Revenue at Present Rates			\$974,337		

Pro Forma Revenue at Present Rates

Metered Bills		Pro Forma	Base	Base
Meter Size	Bills	Rate	Revenue	
< 1 inch	54,677	\$8.44	\$461,474	
1 inch	289	\$21.09	\$6,093	
1.5 inch	36	\$42.18	\$1,527	
2 inch	230	\$67.48	\$15,520	
3 inch	12	\$126.53	\$1,518	
4 inch	0	\$210.89	\$0	
6 inch	0	\$421.78	\$0	
Total Base Revenue			\$486,132	
Commodity Gallons (thousands)			389,112	
Commodity Rate per 1,000 gallons			\$1.42	
Total Consumption Revenue			\$552,538	
Pro Forma Revenue at Present Rates			\$1,038,671	
Pro Forma WSIC (4.43%) Revenue			\$46,013	
Total Pro Forma Revenue at Present Rates			\$1,084,684	

(1) End of period (EOP) update through June 2018. EOP customers multiplied by 12 months to annualize.
 (2) Increase usage by 32,424 kgal. to reflect EOP customers (4,741 bills times ave. monthly usage 6,839 gal.).
 (3) Increase all consumption by 2.97% (1.0297 factor) to reflect updated 3 year average monthly consumption of 7,042 gal. through June 2018.

Aqua North Carolina, Inc. - W-218, Sub 497 - Fairways Water Billing Analysis

Pro Forma Revenue at Company Proposed Rates

Metered Bills		Pro Forma	Base	Base
Meter Size	Bills	Rate	Revenue	
< 1 inch	54,677	\$10.03	\$548,410	
1 inch	289	\$25.10	\$7,251	
1.5 inch	36	\$50.20	\$1,817	
2 inch	230	\$80.32	\$18,474	
3 inch	12	\$150.60	\$1,807	
4 inch	0	\$251.00	\$0	
6 inch	0	\$502.00	\$0	
Total Base Revenue			\$577,760	
Commodity Gallons (thousands)			389,112	
Commodity Rate per 1,000 gallons			\$1.56	
Total Consumption Revenue			\$607,014	
Pro Forma Revenue at Company Rates			\$1,184,774	

Pro Forma Revenue at Public Staff Proposed Rates

Metered Bills		Pro Forma	Base	Base
Meter Size	Bills	Rate	Revenue	
< 1 inch	54,677	\$8.35	\$456,553	
1 inch	289	\$20.88	\$6,032	
1.5 inch	36	\$41.75	\$1,511	
2 inch	230	\$66.80	\$15,364	
3 inch	12	\$125.25	\$1,503	
4 inch	0	\$208.75	\$0	
6 inch	0	\$417.50	\$0	
Total Base Revenue			\$480,964	
Commodity Gallons (thousands)			389,112	
Commodity Rate per 1,000 gallons			\$1.42	
Total Consumption Revenue			\$552,538	
Pro Forma Revenue at Public Staff Rates			\$1,033,502	

Aqua North Carolina, Inc. - W-218, Sub 497 - Fairways Sewer Billing Analysis

Test Year Revenue at Present Rates

Metered Bills		Test Year	Base	Base	
Meter Size	Bills		Rate	Revenue	
< 1 inch	231		\$11.45	\$2,647	(1)
1 inch	60		\$28.62	\$1,717	(1)
1.5 inch	24		\$57.25	\$1,374	(1)
2 inch	48		\$91.60	\$4,397	(1)
3 inch	0		\$171.75	\$0	(1)
4 inch	0		\$286.24	\$0	(1)
6 inch	0		\$572.49	\$0	(1)
Total Base Revenue				\$10,135	
Commodity Gallons (thousands)				4,528	(2)
Commodity Rate per 1,000 gallons				\$7.22	(3)
Total Consumption Revenue				\$32,694	
Total Metered Revenue				\$42,830	

Flat Rate Bills		Test Year	Flat	Flat	
	Bills		Rate	Revenue	
Residential	32,165		\$36.44	\$1,172,075	(1)
Commercial	0		\$36.44	\$0	
Test Year Revenue at Present Rates				\$1,214,905	
Test Year SSIC (4.53%) Revenue				\$55,035	
Total Test Year Revenue at Present Rates				\$1,269,940	

(1) End of period (EOP) update through June 2018. EOP customers multiplied by 12 months to annualize.
 (2) Increase usage by 112 kgal, to reflect EOP customers (9 bills times ave. monthly usage 12,467 gal.).
 (3) Decrease in consumption by 0.91% (0.9909 factor) to reflect updated 3 year average monthly usage of 12,353 gal. through June 2018.

Pro Forma Revenue at Present Rates

Metered Bills		Pro Forma	Base	Base	
Meter Size	Bills		Rate	Revenue	
< 1 inch	240		\$11.45	\$2,750	
1 inch	60		\$28.62	\$1,717	
1.5 inch	24		\$57.25	\$1,374	
2 inch	48		\$91.60	\$4,397	
3 inch	0		\$171.75	\$0	
4 inch	0		\$286.24	\$0	
6 inch	0		\$572.49	\$0	
Total Base Revenue				\$10,238	
Commodity Gallons (thousands)				4,598	
Commodity Rate per 1,000 gallons				\$7.22	
Total Consumption Revenue				\$33,198	
Total Metered Revenue				\$43,436	

Flat Rate Bills		Pro Forma	Flat	Flat	
	Bills		Rate	Revenue	
Residential	34,537		\$36.44	\$1,258,511	
Commercial	0		\$36.44	\$0	
Pro Forma Revenue at Present Rates				\$1,301,947	
Pro Forma SSIC (4.53%) Revenue				\$58,978	
Total Pro Forma Revenue at Present Rates				\$1,360,925	

Aqua North Carolina, Inc. - W-218, Sub 497 - Fairways Sewer Billing Analysis

Pro Forma Revenue at Company Proposed Rates

Metered Bills		Pro Forma	Base	Base	
Meter Size	Bills		Rate	Revenue	
< 1 inch	240		\$17.65	\$4,240	
1 inch	60		\$44.13	\$2,648	
1.5 inch	24		\$88.25	\$2,118	
2 inch	48		\$141.20	\$6,778	
3 inch	0		\$264.75	\$0	
4 inch	0		\$441.25	\$0	
6 inch	0		\$892.50	\$0	
Total Base Revenue				\$15,783	
Commodity Gallons (thousands)				4,598	
Commodity Rate per 1,000 gallons				\$7.50	
Total Consumption Revenue				\$34,486	
Total Metered Revenue				\$50,268	

Flat Rate Bills		Pro Forma	Flat	Flat	
	Bills		Rate	Revenue	
Residential	34,537		\$58.90	\$2,034,201	
Commercial	0		\$86.70	\$0	
Pro Forma Revenue at Company Rates				\$2,084,470	

Pro Forma Revenue at Public Staff Proposed Rates

Metered Bills		Pro Forma	Base	Base	
Meter Size	Bills		Rate	Revenue	
< 1 inch	240		\$20.58	\$4,943	
1 inch	60		\$51.45	\$3,087	
1.5 inch	24		\$102.90	\$2,470	
2 inch	48		\$164.64	\$7,903	
3 inch	0		\$308.70	\$0	
4 inch	0		\$514.50	\$0	
6 inch	0		\$1,029.00	\$0	
Total Base Revenue				\$18,403	
Commodity Gallons (thousands)				4,598	
Commodity Rate per 1,000 gallons				\$8.88	
Total Consumption Revenue				\$40,831	
Total Metered Revenue				\$59,234	

Flat Rate Bills		Pro Forma	Flat	Flat	
	Bills		Rate	Revenue	
Residential	34,537		\$56.10	\$1,937,499	
Commercial	0		\$78.54	\$0	
Pro Forma Revenue at Public Staff Rates				\$1,996,732	

Aqua North Carolina, Inc. - W-218, Sub 497 - Fairways Water Billing Analysis

Month	< 1 inch Bills	1 inch Bills	1.5 inch Bills	2 inch Bills	3 inch Bills	4 inch Bills	6 inch Bills	Total Metered Bills	Total Metered Usage	Metered REUS
									Usage	REUS
Oct-16	4,064	16	3	17	1			4,101	30,060,100	4,270
Nov-16	4,070	16	3	17	1			4,107	25,544,700	4,276
Dec-16	4,111	16	3	18	1			4,147	21,510,500	4,309
Jan-17	4,122	16	6	15	1			4,160	17,412,400	4,327
Feb-17	4,138	15	4	15	1			4,174	15,705,500	4,332
Mar-17	4,154	17	3	18	1			4,193	16,117,100	4,370
Apr-17	4,165	17	3	16	1			4,202	24,232,900	4,365
May-17	4,182	16	3	16	1			4,218	34,287,500	4,380
Jun-17	4,252	15	3	16	1			4,287	43,597,600	4,448
Jul-17	4,226	20	3	16	1			4,266	42,607,600	4,434
Aug-17	4,268	17	3	16	1			4,305	38,976,500	4,469
Sep-17	4,315	17	3	16	1			4,352	35,411,900	4,516
Totals	50,068	198	40	194	12			50,512	345,464,300	52,495
Average Usage per REU			6,581							

Aqua North Carolina, Inc. - W-218, Sub 497 - Fairways Sewer Billing Analysis

Month	< 1 inch Bills	1 inch Bills	1.5 inch Bills	2 inch Bills	3 inch Bills	4 inch Bills	6 inch Bills	Total Metered Bills	Total Metered Usage	Flat Rate Bills	Flat Rate No Usage ¹	Total Bills	Metered REUS	Total REUS
									Usage	Bills	No Usage ¹	Bills	REUS	REUS
Oct-16	18	5	2	4	0	0	0	29	358,700	2,618	101	2,748	73	2,690
Nov-16	18	5	2	4	0	0	0	29	355,800	2,635	101	2,765	73	2,707
Dec-16	19	5	2	4	0	0	0	30	328,800	2,654	101	2,786	74	2,728
Jan-17	19	5	2	4	0	0	0	30	275,700	2,681	101	2,812	74	2,755
Feb-17	19	5	2	4	0	0	0	30	273,700	2,689	101	2,820	74	2,762
Mar-17	19	5	2	4	0	0	0	30	272,500	2,660	101	2,791	74	2,733
Apr-17	19	5	2	4	0	0	0	30	450,300	2,678	101	2,809	74	2,751
May-17	20	5	2	4	0	0	0	31	392,600	2,701	101	2,833	75	2,776
Jun-17	20	5	2	4	0	0	0	31	384,700	2,703	101	2,835	74	2,777
Jul-17	20	5	2	4	0	0	0	31	585,900	2,690	101	2,822	75	2,765
Aug-17	20	5	2	4	0	0	0	31	474,800	2,712	101	2,844	75	2,786
Sep-17	20	5	2	4	0	0	0	31	374,800	2,745	101	2,877	75	2,819
Totals	231	60	24	48	0	0	0	363	4,528,300	32,165	1,212	33,740	885	33,050

¹EOP 101 flat rate customers that do not receive water service from Aqua. EDR 13 Q4

I/A

PUBLIC STAFF

Juni's Redirect

EXHIBIT 1

00:00
hi I'm mark cloud over the next 18
00:03
months Riverside public utilities will be
00:04
replacing thousands of water meters
00:06
throughout the city when it's time for
00:08
your neighborhood to be scheduled rpu
00:10
will be sending you a letter to let you
00:12
know once you receive the letter the
00:14
water meter at your premise will be
00:15
replaced within the next 30 days here's
00:18
what you can expect from your utility
00:19
when the work is about to begin
00:24
a Riverside public utilities
00:26

representative will arrive at your house

00:28

on the day of your meter replacement to

00:30

let you know the work is about to begin

00:39

he will gladly explain the replacement

00:42

process to you if you have any questions

00:44

or he will leave a door hanger if you

00:47

are unavailable

00:56

during the process it will be necessary

00:59

to interrupt your water service for

01:01

about 20 to 30 minutes

01:03

the rpu representative will turn off the

01:06

water at the curb and then also at the

01:08

house

01:17

you

01:19

a water meter is a mechanical device

01:22

that overtime commonly deteriorates with

01:25

age

01:25

this fatigue could cause inaccuracy and

01:29

under read water consumption especially

01:32

when there is a low flow of water moving

01:34

through the meter examples of low

01:37

flowing water that may not be read by an

01:39

aging meter include small leaks running

01:42

toilets and drip irrigation it's

01:45

important to check your water system to

01:47

make sure you're using your water

01:48

efficiently check everything from your

01:51

faucets to your irrigation system this

01:54

will ensure the water bill you receive

01:56

following your meter replacement does

01:58

not seem inordinately high as there may

02:00

have been some water use on your

02:02

property not previously accounted for

02:05

once the new water meter is securely

02:07

installed the rpu representative will

02:10

turn the water on at the house and then

02:12

at the curb he will log in the number of

02:16

the new water meter to correspond with

02:18

the premise then log in the reading from

02:21

the old meter and the water meter change

02:24

out is complete

02:29

if you have any questions or need more

02:32

information about your water meter

02:34

change-out please call riverside public

02:37

utilities at nine five one eight two six

02:40

five three one one

Aqua Internal Labor Meter Replacement Program

If Aqua intended to replace every ANC Water meter in an "organized and efficient manner" over a 5-year deployment period.

735,804 pro forma bills according to Public Staff witness Junis' Supplemental Exhibit 7, Revised Junis Exhibit 25.

$$735,804 \text{ bills} \div 12 \text{ months} = 61,317 \text{ meters}$$

Annual number of meter replacements during the 5-year deployment period.

$$61,317 \text{ meters} \div 5 \text{ years} = 12,264 \text{ meters}$$

The number of working days necessary to replacement 12,264 meters.

$$12,264 \text{ meters} \div 14.89 \frac{\text{meters}}{\text{day}} = 824 \text{ working days}$$

Determination of working days in a year.

$$260 \text{ weekdays} - 13 \text{ holidays} - 10 \text{ vac.} - 5 \text{ sick} - 5 \text{ personal} = 227 \text{ working days}$$

Number of employees necessary to perform work.

$$824 \text{ working days} \div 227 \frac{\text{working days}}{\text{employee}} = 3.63 \text{ employees rounded up to 4 FTEs}$$

Public Staff Junis
Redirect Exhibit 3

I/A

Junis, Charles M

From: Junis, Charles M
Sent: Friday, June 15, 2018 8:08 AM
To: 'beckyhdaniel@gmail.com'
Cc: Grantmyre, William; Darden, Lindsay Q
Subject: Aqua Rate Case Testimony
Attachments: 2018_06_25 Becky Daniel Oral Testimony.docx; 2018_06_25 Becky Daniel Oral Testimony_Tracked.docx; 2018_06_25 Becky Daniel Written Testimony Summary of Issues 2017_06 thru 2017_11.xlsx; 2018_06_25 Becky Daniel Written Testimony.docx; 2018_06_25 Becky Daniel Written Testimony_Tracked.docx

Becky,

Thank you for your time and effort you have put into these documents. Please find the attached clean copies and tracked changes copies with the Public Staff's suggested modifications. I apologize for the delay.

Charles M. Junis, PE
Engineer
Public Staff - North Carolina Utilities Commission
430 N. Salisbury Street, Suite 2074
4326 Mail Service Center
Raleigh, NC 27699-4300
919.733.5610 (Main Office)
919.733.0891 (Direct)
919.715.6704 (Fax)
charles.junis@psncuc.nc.gov

E-mail correspondence to and from this address is subject to the North Carolina Public Records Law and may be disclosed to third parties.

Aqua Rate Case (W-218 Sub 497)

Oral Testimony

- My name is Becky Daniel, and I am a resident of Coachman's Trill neighborhood in Raleigh, which is on the Bayleaf Water System.
- I have lived in this neighborhood for 12 years, and while we have had occasional issues with brown water in that time, we had a string of repeated and unacceptable reliability issues during the second half of 2017.
- In the course of navigating these reliability issues, we have experienced not only poor customer service, but also wasted water.
- During the period June 20, 2017 – November 6, 2017, my family was impacted by brown water 8 times.
 - 7 times at our home
 - 1 time at Brassfield Elementary, our son's school
- As a result of the brown water:
 - My son had to drink bottled water at school
 - I ruined a load of white laundry
 - We gave our son a bath in brown water
 - We had to alter cooking plans and bathing plans
 - We drew dirty water into our drinking water lines, washing machine lines, sinks and bathtubs before we knew we had an issue
 - We flushed from outdoor spigots for approximately 200 minutes during this period with no bill credits.
- During this same period, we experienced a leak at our meter, which was not repaired for more than 3 weeks.
 - We followed up two times and Aqua was not able to provide a timetable for repair either time
 - Aqua provided an estimate of the rate of the leak in response to an August 14, 2017 Data Request from the Public Staff. Using this estimate, I calculate that more than 15,800 gallons of water were wasted.
- Over the course of these issues, we had numerous interactions with the website and customer service line, and noticed:
 - The customer service line seems designed to discourage call completion.
 - Automated message indicates "known issues in the area" before any address information is provided and before you speak to a rep
 - In the response to the August 14th data request, Aqua admitted that they had no record of at least one of our calls. This indicates there may be others like this, from our house and others, and that the Commission might not be aware of the extent of operational issues.
 - We erroneously received an emergency outage and boil water advisory meant for another neighborhood
 - The website rarely, if ever, includes outage information
 - During all of the brown water issues, the only one I saw on the website was the November 3, 2017 notice of flushing.
 - Information provided is sometimes confusing:
 - When we received the erroneous outage warning I mentioned before, it did not name the impacted neighborhoods. I had to call and wait on hold for ~15 minutes to find out that it had been an error.

- Flushing notification gave specific hours, but then brown water started before the hours given
- Flushing period is usually an entire week, as are boil water advisories
- One flushing notification we received came a full day into the flushing period

• I understand the need of utilities to both invest in their systems and also make a profit for their shareholders.

• **However, I believe that safe and reliable service to customers should be the top priority. And in the occasions where issues arise, customer service needs to be accessible and transparent.**

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• I would like to request that, in conjunction with this rate request, the Commission:

o Require Aqua to investigate and report back to the Commission on the true root cause of the issues on the Bayleaf system, and receive Commission approval on the steps will be taken to preclude these repeated issues again in the future. I believe both the investigation and system remediation should be executed within our current rate structure.

o Require Aqua to file bi-monthly water quality reports on the Bayleaf system.

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o Require more transparent and thorough reporting to the Commission about service interruptions, understanding that Aqua's current call center metrics may be based on a system that discourages call completion and does not accurately track customer calls.

o Require Aqua to be able to provide improved customer service. Specifically, I believe Aqua should be able to:

- Provide timely outage information to customers both on the phone and on their website. This should include unexpected instances of "brown water."
- Provide information about outstanding repairs, including a reasonable timetable for completion.
- Provide more narrow windows of time for flushing, and then adhere to the time windows communicated.
- Provide billing credits to customers that must flush the customers' lines to eliminate brown or black water.

• Thank you so much for your time and consideration of my testimony.

Aqua Rate Case (W-218 Sub 497)

Becky Daniel

Written Testimony

- Below please find additional details about each of the eleven issues my family experienced with Aqua during the four-and-a-half-month span from June 20, 2017 – November 6, 2017. The detail corresponds to my Excel log of issues.
- As a result of these issues, my key concerns are:
 - Reliability – the lack of reliability from Aqua has been unacceptable. How will they be held accountable for providing better reliability in the future?
 - Customer Service – In dealing with Aqua during these issues, it has become clear that they do not provide transparent customer service, and customer complaints may not be getting reported accurately to the Commission. I would like to see improvements to their customer service model going forward.
 - Wasted Water – their reliability issues caused us to flush from an outdoor spigot for approximately 3 – 4 hours during the period in question. We had to pay for all of that water, because in one of our conversations with customer service, Aqua indicated that a billing credit could only be issued if Aqua came out and read the meter before and after the flush. This is obviously so onerous that it would never be effectuated. In addition, approximately 15,800 gallons of water was wasted due to a leak at our meter in July.

DETAILED DESCRIPTION OF ISSUES (Item numbers correspond to Excel log of issues)

- **Item #1 – June 20th at 7:30 pm**
 - Extremely dark brown water, approximately the color of iced tea, at our house.
 - No proactive notice was given about an outage or maintenance being performed. Due to the lack of notice, we continued using water in house and ruined a load of laundry.
 - We also drew the dirty water into various water lines in the house including our drinking water line in the fridge, the line into the kitchen sink in which dishes are washed, the line into the tub in which we bathe our son, and the line into our son's sink in which he washes his hands and brushes his teeth.
 - Because this was the first issue, we did not contact Aqua ourselves, but merely flushed for 15 – 20 minutes from an outdoor spigot.
 - When asked about this issue in a Public Staff data request dated August 14th, Aqua indicated:
 - It was discovered that the discolored water was coming from Coachman's Trail Well #4.
 - In an effort to limit the impact to the distribution system, Aqua technicians shut down Coachman's Trail Well #4. A blow-off and a fire hydrant located in the area were opened in an effort to help flush the water lines and clear up the water. The blow-off and hydrant continued to flush the water lines until June 26, 2017 (a total of six days), at which point the distribution system had cleared.
 - Reliability Issue – Not only did we pull dirty water into drinking lines in our home, we also ruined several articles of white clothing in the laundry at the time.

• **Item #2 – July 9th at approximately 8:00 am**

- We received an automated, pre-recorded call from Aqua about an immediate outage. The call indicated that after the outage, we should boil our water due to safety concerns. No information was given in the call about the timing, and no timely information about the outage was posted on the Aqua website.
- Because of the lack of information, I called Aqua while my husband had hurried to fill as many vessels as possible with water so that our family and dog had water to perform basic tasks.
- After sitting on hold for 15-20 minutes, the customer service representative told me that the outage was only for the Hunters Landing neighborhood specifically. She said that their system “sends the call out to all Raleigh customers, and it is up to (us) to call Aqua to find out if (our) neighborhood is impacted.”
- When asked about this issue in the August 14th data request, Aqua indicated:
 - There was a system emergency due to a water main break in the Hunter’s Landing subdivision. Aqua had to temporarily shut off the water supply to make an emergency repair. Aqua’s emergency telephone system, Swift Reach, was utilized to issue an SPA (Special Pressure Advisory) and contact all customers that reside in the Bayleaf Master System. It was realized that the SPA should not have gone out to the entire Bayleaf master system and within approximately three hours of the first notice, an SPL (System Pressure Lift) notice was issued to these customers.
- **Customer Service** - This created confusion and a needless emergency in our house and throughout our neighborhood. This confusion could have been avoided by calling only those customers impacted and/or posting timely, specific information on the Aqua website. In this day and age, the lack of transparency is unacceptable.
- **Reliability** – While we were not directly impacted by a reliability issue, it was the second one on the Bayleaf system.

• **Item #3 – July 9th at 7:30 pm**

- A neighbor informed us of flooding in our yard around the water meter. Because it was after hours and not impacting our water supply, we called Aqua the next morning, on July 10, and a service technician came out that day. He indicated that a ball-and-socket joint where the line connects to the meter had broken, and that he did not have the correct part on hand to fix it. He indicated that he would create a ticket and someone would be back “in a few days” to fix the issue, and that we would not be billed for the leaking water because it was leaking before the meter.
- We waited a full week with no follow-up from Aqua, and then began calling Aqua to understand when the issue would be resolved. According to AT&T call records for my husband’s cell phone, he placed follow-up calls on July 17th and July 31st.
- Each time, he was told that the work was being performed by a sub-contractor, and that Aqua “did not have any way to know if the ticket was in the sub-contractor’s system, or when we might be on the schedule.”
- On August 1, a team finally came out to the house and fixed the issue.
- By this time we had standing water in our yard. In the August 14th data request, Aqua estimated that the rate of the leak was ½ gallon / minute. Using this estimate, I calculate that the leak wasted approximately 15,800 gallons of water. ($\frac{1}{2}$ gallon / minute * 1,440 minutes / day * 22 days = 15,840 gallons)
- While we were indeed not billed for the leak, I find the waste of water deplorable.
- When asked about this issue in the August 14th data request, Aqua indicated:
 - An Aqua technician visited the customer’s residence to investigate the leak on July 10, 2017. The technician contacted the contractor on July 10, 2017 requesting they make the necessary

repairs. Due to the high volume workload, the leak repair was unfortunately not completed until August 1, 2017.

- **At the time of the visit, the technician did not have the parts needed for this repair and it was deemed inefficient for the technician to drive back to Aqua's storeroom to obtain the parts based on the low severity of the leak. This repair was then given to a contractor for scheduling and the technician continued completing his assigned work orders. The repair was completed on August 1, 2017.**

- Reliability – I understand that equipment ages and eventually requires repair. However, taking more than three weeks to repair an issue is not providing timely service.
- Customer Service - In this day and age, it is unacceptable that Aqua could not give information about the timing of the repair.

- **Item #4 – August 7th at 10:00 pm**

- Dark brown water, approximately the color of iced tea, at our house
- Again, no proactive notice was given about an outage or maintenance being performed, and no information was posted on the Aqua website.
- Luckily we noticed it before using water throughout the house, so we flushed from an outdoor spigot for approximately 20 minutes, wasting yet more water.
- There was no improvement after the flush, so my husband called Aqua. Without providing any information about our location, he was told that "there were disruptions in the area." When he asked if someone was being sent out, the rep then asked him for our location. All the rep could say was that complaints were being directed to a technician.
- We did not notice improvement before going to bed, so we flushed again on the morning of August 8, wasting even more water. This appeared to resolve the issue.
- When asked about this issue in the August 14th data request, Aqua indicated:
 - Aqua's records do not indicate any discolored water calls were received from Ms. Daniels on August 7, 2017.
- Reliability – another dirty water issue
- Customer Service – I have AT&T call records for my husband's cell phone showing the call was placed at 10:10 pm on August 7th. Something is not recording accurately on Aqua's side.
- Customer Service – How did the rep know that there were disruptions in the area without having our address?

- **Item #5 – September 1st at 7:30 am**

- Brown water at our house when we woke up, so I cannot pinpoint the time the issue began.
- I called Aqua around 7:30 am, and spoke to a rep - she took my information and indicated that she would send it along to a technician.
- In the meantime, we flushed from an outdoor spigot for 20 minutes (more wasted water) and that seemed to clear up the issue.
- A very helpful technician named Brandon came to our house at 10:45 am and indicated the following:
 - The discoloration this morning might have been caused by an area meter-replacement project. Brandon noted that we indeed had a new meter at our house. He was not sure why we were not notified via door hanger, but speculated it might have been because of the rain.
 - I asked him about the systemic issues we've been having recently, and he acknowledged them in our area. He indicated that we have been having a lot of issues with "flow reversal," which dislodges the calcium, manganese and iron build up on the pipes and causes the discolored water. He further indicated that Aqua used to perform system flushes on an annual basis,

which reduced the build-up in the pipes. However, he said that Aqua was trying a biennial schedule, and trying to treat the water with extra chemicals (I believe he said phosphate) instead.

Commented [CMJT]: Or you can just substitute "every other year" for "biennial"

- Brandon said that they were going to be performing a system flush, beginning on September 5th, which should help with the discoloration issues in the area. He indicated the flush would last for 3-4 days and we should expect intermittent discoloration throughout.
- He ran a water test, and said everything looked good after we flushed ourselves from the outdoor spigot this morning.
- Reliability - I am concerned about the change in flushing schedule and what it has meant for our water quality. It is hard not to wonder if the change to a biennial schedule was meant to be a cost-cutting (profit-maximizing) move in between rate cases. In other words, their cost of service in their last rate case included costs for annual flushing, and after rates were set, they reduced the schedule to drive up profit.

Item #6 – September 12th at 7:30 am

- Brown water at our house
- We were notified on my husband's cell phone on September 8th at 6:32 pm that Aqua would be performing their system flush September 11 – 15. They indicated that we might experience brown water during the hours of 8:30 – 4:30 due to the flush.
- We did indeed have brown water, but it occurred at ~7:30 am, before the hours they had indicated in their notification. This created water usage issues getting ready for school / work.
- Because we knew it was related to the system flush, we did not call Aqua. Instead, we flushed from an outdoor spigot for 15-20 minutes, and it cleared up after that.
- Customer Service – I appreciated the notification this time, but then Aqua did not adhere to the time of day schedule that was provided in the notification, which created issues for us and likely others.

Item #7 – October 1st at 8:30 am

- Light brown water at our house
- We flushed from a spigot three times for a total of 47 minutes, and the water cleared up at 11:45 am after the third flush.
- We also called Aqua at 8:40 am, and they said they would report it to a technician.
- Reliability – Even though we had just had a system flush, we were having our 5th instance of brown water in a three-and-a-half month span.
- Customer Service – As occurred on other instances, the customer service number provided an automated message before speaking to a rep or providing my location that "there is a known service disruption in the area." This discourages call completion.

Item #8 – October 8th at 8:15 am

- Light brown water at our house
- We flushed from a spigot for 30 minutes, and the water cleared up.
- We also called Aqua at 8:20 am, and they said they would report it to a technician.
- Reliability – This represented our 6th instance of brown water in a three-and-a-half month span.

- Customer Service – Again, the customer service number provided an automated message before speaking to a rep or providing my location that “there is a known service disruption in the area.” This discourages call completion.

Item #9 – October 10th

- **Brown water at Brassfield Elementary School**
- As a parent of a Brassfield student, I received a call from the school that they had had a brown water issue at school. They further indicated that they were already working with Aqua.
- Reliability – This represented our 7th instance of brown water in a ~ three-and-a-half month span. This one impacted an entire school of small children.

Item #10 – November 3rd evening

- My husband received an automated, pre-recorded voicemail on his cell phone indicating another system flush from November 3 – 10 between the hours of 8:00 am – 4:30 pm.
- Customer Service – It was confusing to receive this message since we had supposedly just had a system flush September 11 – 15.
- Customer Service – It would have been helpful to receive this notification before the day the flush had already started.

Item #11 – November 6th at 6:30 pm

- Brown water at our house
- Because we knew it was related to the system flush, we did not call Aqua. Instead, we flushed from an outdoor spigot twice for a total of 42 minutes, and it cleared up after that.
- Customer Service – Again, Aqua did not adhere to the time of day schedule that was provided in the notification, which created issues for us and likely others.

Commented [CMJ2]: I assume everyone was gone during the day and then returned home at 6:30pm to find discolored water or was that when the water turned brown?

SUMMARY OF ISSUES

- Our family was impacted by brown water 8 times between June 20, 2017 – November 6, 2017.
- We had repeated issues with not getting timely information from the Aqua website and customer service line, and also instances of receiving confusing information.
- The customer service line seems designed to discourage call completion.
- Aqua admitted that they had no record of at least one of our calls. This indicates there may be others like this, from our house and others, and that the Commission might not be aware of the extent of operational issues.
- Approximately 15,800 gallons of water were wasted while we waited for Aqua to repair a leak.
- We had to flush from outdoor spigots for approximately 200 minutes during this same time period, with no bill credits, also wasting water.

REQUESTS IN THIS RATE CASE

- I would like to request that, in conjunction with this rate request, the Commission:
 - Require Aqua to investigate and report back to the Commission on the true root cause of the issues on the Bayleaf system, and receive Commission approval on the steps that will be taken to preclude these repeated issues again in the future. I believe both the investigation and system remediation should be executed within our current rate structure.
 - Require more transparent and thorough reporting to the Commission about service interruptions, understanding that Aqua's current call center metrics may be based on a system that discourages call completion and does not accurately track customer calls.
 - Require Aqua to be able to provide improved customer service. Specifically, I believe Aqua should be able to:
 - Provide timely outage information to customers both on the phone and on their website. This should include unexpected instances of "brown water."
 - Provide information about outstanding repairs, including a reasonable timetable for completion.
 - Provide more narrow windows of time for flushing, and then adhere to the time windows communicated.

I/A

Public Staff Junis
Redirect Exhibit 4

Answer Response EDR 52

Parameters & Limits (mg/L, unless otherwise specified)							
WWTP Name NPDES Permit Name	Area	Permit Number	Permitted Flow (MGD)	Design Flow/REU (gal/day)	12 Months Avg Flow (gal./day) May 2017 - May 2018	REUs, September 2017	REUs June 2018
Avocat WWTP	Cary	NC0053051	0.09	360	19,533	150	163
Barclay Downs WWTP	Cary	NC0040605	0.035	360	10,966	93	93
Beachwood WWTP	Cary	NC0060577	0.1	360	11,979	125	123
Booth Mountain/Westfall WWTP	Cary	WQ0028798	0.066	360	0	134	145
Briarwood Farms WWTP	Cary	NC0062740	0.04	360	12,064	107	110
Chapel Ridge WWTP	Cary	WQ0022870	0.5	250	43,606	339	356
Chatham (Carolina Meadows)WRF	Cary	NC0056413	0.35	360	134,603	454	448
Cole Park Plaza Shopping Center WWTP	Cary	NC0051314	0.05	360	15,121	88	88
Colvard Farms WWTP	Cary	WQ0019569	0.033	190 Commercial	17,548	161	168
Crooked Creek WWTP	Cary	NC0062715	0.15	360	55,492	428	430
Cross Creek Mobile Estates WWTP	Cary	NC0056391	0.05	360	20,139	144	146
Governor's Club (Reclaimed) WWTP	Cary	WQ0000088	0.300	360	90,704	920	924
Hasentree (Reclaimed) WWTP	Cary	WQ0021934	0.194	360	46,186	361	399
Hawthorne WWTP	Cary	NC0049682	0.25	360	110,748	812	819
Lake Ridge AeroPark WWTP	Cary	NC0059099	0.016	360	5,796	48	49
Mallards Crossing WWTP	Cary	NC0058505	0.1	360	53,953	381	381
Neuse Colony WWTP	Cary	NC0064564	0.25	180	263,772	2,210	302
				240			988
				320			61
				360			1,047
						Total =	2,393
Neuse River Village WWTP	Cary	NC0038784	0.035	360	14,699	124	124
The Legacy WWTP	Cary	WQ0024844	0	360	0	168	184
The Preserve WWTP	Cary	WQ0018146	0.194	360	51,758	444	449
Tradewinds WWTP	Cary	NC0065714	0.05	360	24,452	173	174
Wildwood Green WWTP	Cary	NC0063614	0.1	360	49,311	323	323
Alexander Island WWTP	Denver	NC0075205	0.015	360	5,691	32	32
Bridgeport/ Castaways WWTP	Denver	NC0056154	0.034	360	35,472	293	303
Bright's Creek Golf Club WWTP	Denver	WQ0024694	0.24	360	2,849	33	33
Country Valley WWTP	Denver	NC0058742	0.0265	360	8,676	89	88
Country Woods WWTP	Denver	NC0065684	0.48	360	307,144	1,591	1,519
Diamondhead WWTP	Denver	NC0074772	0.0791	360	25,076	142	135
Harbor Estates WWTP	Denver	NC0063860	0.0416	360	18,888	103	103
Highway 150 (River Park) WWTP	Denver	NC0074900	0.1	360	29,391	227	227
Killians Crossroad WWTP	Denver	NC0063355	0.05	360	23,838	35	35
Mallard Head WWTP	Denver	NC0061481	0.01	360	2,802	40	40
Pine Valley WWTP	Denver	NC0028941	0.025	360	4,336	47	47
Spinnaker Bay WWTP	Denver	NC0060593	0.0125	360	2,823	1	1
Willowbrook WWTP	Denver	NC0073539	0.048	360	10,478	86	86
Windemere WWTP	Denver	NC0080691	0.09	360	14,130	135	135
Woodlake WWTP	Fayetteville	NC0061719	0.5	360	97,362	579	575
Briarwood WWTP	Kernersville	NC0028746	0.05	360	9,148	127	126
Forest Ridge WWTP	Kernersville	NC0063720	0.033	360	4,206	57	57
Frye Bridge Estates WWTP	Kernersville	NC0065587	0.027	360	7,891	78	78
Greystone Forest WWTP	Kernersville	NC0078115	0.032	360	13,531	83	83
Melville Height WWTP	Kernersville	NC0050792	0.0315	360	3,920	35	34
Mikkola Downs WWTP	Kernersville	NC0067091	0.072	360	8,763	45	45
Old Beau Golf Club WWTP	Kernersville	NC0078158	0.02	360	6,059	80	81
Penman Heights WWTP	Kernersville	NC0055191	0.025	360	4,669	29	29
Salem Glen WWTP	Kernersville	NC0083925	0.1	360	58,783	401	408
Salem Quarters WWTP	Kernersville	NC008393	0.06	360	27,894	175	176
Spring Creek WWTP	Kernersville	NC0083941	0.08	360	26,296	138	139
Wellesley Place WWTP	Kernersville	NC0084409	0.06	360	36,593	210	213
Willow Creek WWTP	Kernersville	NC0034452	0.08	360	42,260	155	157
Avendale WWTP	Wilmington	WQ0030775	0.072	360	11,687	143	153
Beau Rivage WWTP	Wilmington	NC0065480	0.2	360	95,881	900	997
Cannonsgate WWTP	Wilmington	WQ0028666	0.2	360	18,717	27	26
Castle Bay WWTP	Wilmington	WQ0018755	0.1	94	29,700	283	286
Emerald Plantation WWTP	Wilmington	OP VI-25-10	0.055	360	21,276	61	61
Grand Villas WWTP	Wilmington	OP VI-30-14	0.028	360	4,092	0	0
Sterling Farms WWTP	Wilmington	WQ0029475	0.135	360	68,529	370	382
The Cape WWTP	Wilmington	NC0057703	0.26	360	206,449	1,828	1,883

Note: The following information is requested by the Public Staff for water systems where there are consistent and ongoing secondary water quality concerns.

I/A

Review of Potential Filtration Systems and Semi-Annual Reports to Commission –
Secondary Water Quality Concerns
Public Staff Required
Review Documents & Information

1. Total number of current customers on system
2. Estimated total number of customers at buildout
3.
 - a. List of DEH/PWSS approved wells on system
 - b. List of active wells on system
4. Simple map of system showing the location of each well, with wells identified
5. DEH/PWSS approval letter for each well
6. Original inorganic analysis for each well submitted to DEH for well approval
7. All inorganic analyses from each well at the wellhead for the last 9 years
8.
 - a. Description of water treatment at each well the past 3 years including specific names of chemicals and dates of changes
 - b. Planned changes (if any) on chemical treatment within the next 6 months

9. Copies of all iron and/or manganese analyses for soluble and insoluble the past 3 years – baseline (without treatment), well head (after treatment), distribution system (after treatment)
10. Copies of the Pump Status Report for each well for the last 2 years
11. Original 24 hour pump test for each well
12.
 - a. List of system flushing the past 10 years (include the month, dates and year)
 - b. Planned system flushings the next 12 months
13.
 - a. Total number and a list of all customer water quality complaints the past 6 months and past 12 months
 - b. Copies of each completed water quality complaint work order the past 12 months.
 - c. For the past 6 months do the customer secondary water quality complaints exceed 10% of active customers?
14. Copies within the last 6 months of all Aqua NC emails to and from PWSS, letters to and from PWSS, and reports to and from PWSS, and the recommendations of PWSS regarding water quality concerns on Aqua NC's water systems
15. Planned filter system if any, and briefly describe Aqua's past history with this type filter including effectiveness of treatment

16. Estimated cost of filtration system including backwash
17. Estimated annual operating expense of backwash disposal
18. Size and location of each hydropneumatic water storage tank
19. Year the interior of hydropneumatic storage tank was cleaned through physical access to the interior

Note (1): Once Aqua NC provides to the Public Staff's items 1 through 8, 11, 12a, 15, and 16, then for subsequent 6 month secondary water quality reports to the Commission, Aqua NC need only provide any changes within the past 6 months

Note (2): For large systems such as the Bayleaf Master system with more than 100 wells, where the current water quality complaints are from Sutton Estates, Aqua should only provide information on the wells within Sutton Estates plus any nearby wells that primarily supply Sutton Estates

I/A

OFFICIAL COPY

STATE OF NORTH CAROLINA
UTILITIES COMMISSION
RALEIGH

DOCKET NO. W-218, SUB 363A

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

In the Matter of
Reporting Requirements from Docket No.)
W-218, Sub 363 – Application by Aqua)
North Carolina, Inc., 202 MacKenan Court,)
Cary, North Carolina 27511, for Approval)
to Implement Secondary Water Quality)
System Improvement Projects Pursuant to)
G.S. 62-133.12)

PUBLIC STAFF SECONDARY
WATER QUALITY REPORT
AND RECOMMENDATIONS

Mar 26 2018

NOW COMES THE PUBLIC STAFF – North Carolina Utilities Commission
by and through its Acting Executive Director, David T. Drooz,¹ and respectfully
submits its Report and Recommendations as to Aqua North Carolina, Inc.'s
(Aqua), January 23, 2018, Application for Approval to Implement Secondary
Water Quality System Improvement Projects Pursuant to G.S. 62-133.12, which
is scheduled for Commission consideration at the Commission's April 2, 2018,
Regular Staff Conference.

A. Executive Summary

The Public Staff has thoroughly reviewed each of the 2 filter projects
proposed by Aqua in its January 23, 2018, filing. The Public Staff's review
included Aqua's responses to an extensive list of information requested by the

¹ Prior to assuming the position of the Executive Director of the Public Staff, Christopher J. Ayers represented Carolina Water Service, Inc. of North Carolina, Pluris, LLC, and a number of other water and sewer utilities in various proceedings before the Commission. In order to avoid any conflict of interest or the appearance of a conflict of interest, Mr. Ayers has recused himself from participation in this matter and has designated the Public Staff Chief Counsel to serve as Acting Executive Director of the Public Staff for purposes of this docket.

Public Staff in a document titled Review of Potential Filtration Systems and Semi-Annual Reports to Commission – Secondary Water Quality Concerns Public Staff Required Review Documents and Information and attached as Exhibit 1. Aqua provided the requested information for each of the 2 manganese greensand or similar type filter projects. The Public Staff also met with Aqua engineers and operations managers on several occasions to discuss all the secondary water quality issues in these wells, and discussed secondary water quality issues with customers.

Based upon its review of the documents, site visits, and discussions with customers and Aqua's engineers and operations managers, the Public Staff recommends that the Commission approve each of the 2 proposed projects which address secondary standard water quality.

Summary of Filtration Projects

<u>System</u>	<u>County</u>	<u>Well Gallons Per Minute</u>	<u>Aqua Estimated Cost 000's</u>
Brayton Park Well 1	Wake	80	\$315-\$330
Westbury Well 3	Wake	26	\$250-\$265
		Total	\$0.565-\$0.595 Million

B. Additional Measures to Improve Secondary Water Quality

In its Application at paragraph 9, Aqua discusses a four-step protocol for selecting measures to improve secondary water quality, moving from least cost options to more expensive options. The third option, installation of a disposable Harmsco particulate filter on the well, is an Aqua initiated treatment process for its water wells. The Public Staff has growing experience with these types of filters on community water system wells and agrees that they are far less expensive than manganese greensand type filters. The Public Staff, along with Aqua, will continue to monitor both the treatment effectiveness and cost effectiveness of these particulate cartridge filters.

Aqua installed particulate cartridge filters at the Brayton Park Well 1 and Westbury Well 3 in April 2017 and June 2017, respectively. The disposable cartridge filters did not effectively and efficiently remove the iron and manganese particles to acceptable concentration levels. Based on the individual system conditions, including but not limited to customer demand, well production, water quality, and customer feedback, the next step of Aqua's protocol has become necessary.

In general, the Public Staff strongly supports the implementation of two additional secondary water quality processes: a comprehensive water main flushing program and a comprehensive customer education program. Each of these processes have been discussed by the Public Staff in previous reports and the Public Staff's position is summarized below:

1. Comprehensive water main flushing program.

During the approximate period of 2006 to 2012, Aqua performed little to no regularly scheduled flushing of many of Aqua's water systems. The lack of flushing for approximately seven years may be a factor in the increased number of discolored water complaints by Aqua's customers. In systems where iron and manganese are present in the source water, the particles settle and build-up on the interior of the water mains and appurtenances, which would gradually worsen over time. The iron and manganese can be dislodged by products like SeaQuest, reverse of flow, or scouring from increased pressure subsequent to an outage, and then distributed throughout the system by normal customer usage.

Aqua has substantially increased its water main flushing program by hiring additional dedicated flushing crew members and determining flushing frequency based on water quality, customer feedback, and system infrastructure. The Public Staff encourages Aqua to continue to evaluate its flushing program and to fine tune the frequency and methodology of flushing.

A manganese greensand filter only reduces the amount of iron and manganese entering the water distribution system, and does NOT reduce the amounts of accumulated iron and manganese sediment in the water mains. Therefore, customers will continue to experience significantly discolored resulting from outages and changes in flow directions until the water mains are flushed clear of accumulated sediment.

2. Comprehensive customer education program.

A previous Public Staff Report filed on August 5, 2015, included the recommendation that Aqua enhance its website and new customer information packets with educational materials regarding ways to lessen the effects of iron and manganese discoloration. Aqua with Public Staff input has prepared and posted a fact sheet titled "Flushing Water Mains" and a best practices document titled "Iron and Manganese in Drinking Water" to the Aqua North Carolina website (<https://www.aquaamerica.com/our-states/north-carolina.aspx>). According to Aqua, these documents have been made available to its employees to distribute to customers they may visit who experience a discolored water issue. The Public Staff considers the documents to be useful resources to help customers better understand flushing and minimize the negative effects of discolored water caused by the presence of iron and manganese. The Public Staff recommends that Aqua continue to enhance its customer education program increasing the availability of this information to Aqua's customers.

C. Public Staff Filtration Recommendations

The Public Staff recommends that the Commission approve each of Aqua's proposed secondary standard water quality projects. For each of these 2 projects where Aqua plans to use a filter system such as manganese greensand or magnesium oxide, the Public Staff believes the filters are necessary to provide adequate secondary standard water quality.

The Public Staff has observed that the sequestration treatment of iron and manganese with polyphosphates and orthophosphates on water from North Carolina water wells has been successful since the late 1970s for both Heater Utilities, Inc. and Carolina Water Service, Inc. of North Carolina. Sequestration coupled with comprehensive water main flushing programs has largely provided on many water systems adequate secondary standard water quality at a very reasonable cost. The installation of filters such as manganese greensand is many times more costly than sequestration coupled with adequate flushing, considering the filters' depreciation, return on rate base, debt cost, and backwash disposal.

~~Aqua has estimated the 2 applied for manganese greensand type filter projects will cost a total of \$565,000 to \$595,000. The annual revenue requirement increase for the minimum capital expenditure of \$565,000 for these 2 filtration systems is approximately \$73,004 compared to the annual revenue requirement for the chemical cost for sequestration of approximately \$494. As there is such a significant revenue requirement impact, the decisions to install manganese greensand type filters should be made judiciously.~~

The Public Staff believes that the continued use of polyphosphates and/or orthophosphates, and/or SeaQuest as sequestrants, is a very economical treatment process for iron and manganese secondary water issues and also hardness, which does not have a secondary water quality standard. The process of testing whether the iron and manganese is soluble (clear liquid) or insoluble (solid particles and visible) in raw untreated water at the well head, after

treatment with polyphosphate/orthophosphate or SeaQuest at the entry point, and in the distribution system, has been continuously used since the late 1970's by the North Carolina Department of Environmental Quality, Public Water Supply Section, and Commission regulated water utilities. The Public Staff believes the soluble and insoluble testing provides extremely valuable information to assist in evaluations of whether filtration is necessary.

The Public Staff strongly believes that the most cost effective way to treat iron and manganese in drinking water is a comprehensive distribution system, flushing program, periodic cleaning of the hydropneumatic tanks, use of the appropriate sequestrant, and a reasonable customer education program to advise customers to avoid chlorine bleaches, flush water heaters periodically to the manufacturers recommendations, and maintain lower temperatures on water heaters. These treatment processes are exponentially less expensive than an iron and manganese filtration system. The Public Staff recognizes that for secondary water quality issues of considerable magnitude and consistency, sequestration treatment and flushing may not be effective and may necessitate filtration.

The Public Staff will continue to carefully and thoroughly review secondary water quality information and documentation presented by Aqua, including meetings with Aqua engineers and operations managers, conduct selected site visits, discuss secondary water quality issues with customers, and recommend when appropriate Commission approval of equipment and infrastructure installations.

Respectfully submitted this the 26th day of March, 2018.

PUBLIC STAFF
David T. Drooz
Acting Executive Director

Electronically submitted
/s/ William E. Grantmyre
Staff Attorney

4326 Mail Service Center
Raleigh, North Carolina 27699-4326
Telephone: (919) 733-0977
william.grantmyre@psncuc.nc.gov

CERTIFICATE OF SERVICE

I, William E. Grantmyre, hereby certifies that I served the foregoing Public Staff Secondary Water Quality Report and Recommendations on the attorneys for Aqua North Carolina, Inc., Jo Anne Sanford and Robert H. Bennink, Jr., by electronic delivery upon agreement of the parties.

This the 26th day of March, 2018.

Electronically submitted
/s/ William E. Grantmyre

Review of Potential Filtration Systems and Semi-Annual Reports to Commission
– Secondary Water Quality Concerns
Public Staff Required
Review Documents & Information

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2. Estimated total number of customers at buildout
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 - b. Copies of each completed water quality complaint work order the past 12 months.
 - c. For the past 6 months do the customer secondary water quality complaints exceed 10% of active customers?
14. Copies within the last 6 months of all Aqua NC emails to and from PWSS, letters to and from PWSS, and reports to and from PWSS, and the recommendations of PWSS regarding water quality concerns on Aqua NC's water systems
15. Planned filter system if any, and briefly describe Aqua's past history with this type filter including effectiveness of treatment
16. Estimated cost of filtration system including backwash
17. Estimated annual operating expense of backwash disposal

18. Size and location of each hydropneumatic water storage tank
19. Year the interior of hydropneumatic storage tank was cleaned through physical access to the interior

Note (1): Once Aqua NC provides to the Public Staff's items 1 through 8, 11, 12a, 15, and 16, then for subsequent 6 month secondary water quality reports to the Commission, Aqua NC need only provide any changes within the past 6 months

Note (2): For large systems such as the Bayleaf Master system with more than 100 wells, where the current water quality complaints are from Sutton Estates, Aqua should only provide information on the wells within Sutton Estates plus any nearby wells that primarily supply Sutton

Grantmyre, William

From: Grantmyre, William
Sent: Thursday, June 14, 2018 5:02 PM
To: 'Becky Daniel'
Subject: FW: [External] Aqua Rate Case W-218 Sub 497 - Becky Daniel testimony

Becky

Chuck and I will get the testimony to you Friday morning.

Bill Grantmyre

From: Grantmyre, William
Sent: Wednesday, June 13, 2018 5:59 PM
To: 'Becky Daniel' <beckyhaniel@gmail.com>
Cc: Jost, Megan <megan.jost@psncuc.nc.gov>; Junis, Charles M <Charles.Junis@psncuc.nc.gov>; Darden, Lindsay Q <Lindsay.Darden@psncuc.nc.gov>
Subject: RE: [External] Aqua Rate Case W-218 Sub 497 - Becky Daniel testimony

Becky

It will be tomorrow before we send the suggested "tweaks" to your draft testimony.

Chuck, Lindsay, Megan and I have been engaged all day in a contentious Aqua sewer issue.

Chuck is also helping on the suggested tweaks to your draft testimony.

Thanks.
Bill Grantmyre

From: Becky Daniel [mailto:beckyhaniel@gmail.com]
Sent: Tuesday, June 12, 2018 8:50 PM
To: Grantmyre, William <william.grantmyre@psncuc.nc.gov>
Cc: Jost, Megan <megan.jost@psncuc.nc.gov>; Junis, Charles M <Charles.Junis@psncuc.nc.gov>; Darden, Lindsay Q <Lindsay.Darden@psncuc.nc.gov>
Subject: Re: [External] Aqua Rate Case W-218 Sub 497 - Becky Daniel testimony

CAUTION: External email. Do not click links or open attachments unless verified. Send all suspicious emails as an attachment to [redacted]

No problem at all, I appreciate your help and input.

This approach makes sense to me, let me know if I should incorporate more incident-specific details into the summary for my oral testimony. I'm comfortable either way.

Thank you again,
Becky

**Proposal for
CONTRACT MR-8
RESIDENTIAL METER REPLACEMENT
PHASE III**

Bid Submitted by Vanguard Utility Service, Inc.

Contractor License Number 70106

The unit price for the Bid Items shown below are for complete furnishing and installation of items, in accordance with City of Durham Standards and Specifications, and this Contract Document.

Item	Description	Quantity	Unit	Unit Cost	Total Cost
1	Mobilization (not to exceed 1% of the total cost)	1	lump sum	\$51,889.00	\$51,889.00
2	Clean meter box, remove existing meter, furnish & install new 5/8" residential meter, per specifications	20,000	each	\$227.37	\$4,547,400.00
3	Clean meter box, remove existing meter, furnish & install new 1" residential meter, per specifications	1,000	Each	\$378.40	\$378,400.00
4	GPS location of residential meter, per specifications,	21,000	each	\$4.25	\$89,250.00
5	Provide records for residential, per specifications	21,000	each	\$1.00	\$21,000.00
6	New Neptune Trimble Nomad 900LE Mobile Data Collector with Accessories	12	each	\$7,920.63	\$95,047.56
7	Meter Box Height Adjustment	100	each	\$30.00	\$3,000.00
8	Replace Meter Box Lids	2000	each	\$2.00	\$4,000.00
Total Base Bid:					\$5,189,986.56

Acknowledgement of Receipt of Addenda:

Addendum No , N/A

Addendum No , N/A

BULK WASTEWATER SERVICE AGREEMENT
FOR FLOWERS PLANTATION
SECTIONS I, II AND IIIB

NORTH CAROLINA
COUNTY OF JOHNSTON

THIS AGREEMENT dated May 14th, 2002, by and between JOHNSTON COUNTY, hereinafter referred to as "County," and REBECCA FLOWERS, d/b/a RIVER DELL COMPANY, hereinafter referred to as "River Dell," and HEATER UTILITIES, INC., hereinafter referred to as "Heater;"

W I T N E S S E T H:

WHEREAS, County desires to provide bulk wastewater transmission and treatment service for Heater for development on lands owned by River Dell and Heater desires to purchase bulk wastewater transmission and treatment service from County; and

WHEREAS, the service to be provided shall be applicable for Sections I, II and IIIB of Flowers Plantation, owned by River Dell as shown and described on Attachment A and referred to hereinafter as "Flowers Plantation Tract;" and

WHEREAS, River Dell desires to relinquish its existing 500,000 gallon per day (gpd) NPDES discharge permit into Buffalo Creek (NPDES Permit No. NC0064556), and Heater desires to relinquish to County all of Heater's contract rights to this 500,000 gpd NPDES permit.

WHEREAS, River Dell and Heater desire to construct a wastewater Pump Station, hereinafter referred to as "Pump Station," and twelve inch (12") ductile iron wastewater force main, hereinafter referred to as "Force Main," which shall extend from the Pump Station to the unused ten inch force main on

NC Hwy. 42, which is a tributary to Heater's wastewater treatment plant hereinafter "WWTP," on the Neuse River and the south side of NC. Hwy. 42, or the WWTP if the NCDENR, Division of Water Quality, hereinafter "DWQ," doesn't permit the connection to this ten inch force main.

NOW, THEREFORE, for and in consideration of the premises, rights, powers and duties hereinafter set forth to be performed by each, the sufficiency of which are acknowledged by the parties, County, River Dell and Heater do mutually agree as follows:

I. COUNTY AGREES AS FOLLOWS

1. County agrees to receive untreated domestic and commercial wastewater from existing and future development in the Flowers Plantation Tract at the point of delivery being the County's manhole on the north side of Hwy. 42 at the Neuse River bridge, hereinafter "Point of Delivery." After receiving the wastewater at the Point of Delivery, the County shall transmit the wastewater to County's wastewater treatment plant, treat the wastewater and dispose of the treated wastewater in an environmentally sound manner in accordance with regulatory requirements. As an interim measure, Heater will treat all wastewater from the Flowers Plantation Tract in its Neuse River wastewater treatment plant until such time that Heater chooses to divert wastewater to the County as addressed in Paragraph I.20.

2. County shall guarantee to accept and treat wastewater from Heater from the Flowers Plantation Tract a minimum of 500,000 gpd, subject to DWQ amending NPDES Permit No. NC0030716 to increase the hydraulic limit by 500,000 gpd and the total nitrogen limit by 5,632 lbs. per year.

3. Upon written request from Heater, the County agrees to provide additional bulk wastewater service to Heater under the same availability as bulk wastewater is provided to other County bulk wastewater customers. The availability of additional capacity is subject to DWQ's approval of the expansion of County's wastewater treatment plant.

4. County agrees that the wastewater capacity from the K-5 elementary school to be located at the Flowers Plantation Tract shall not be counted against the 500,000 gpd guaranteed bulk wastewater capacity of Heater. In addition, in the future, should there be an additional County middle school or high school flowing into Heater's wastewater collection system and transported to the Point of Delivery for County bulk wastewater treatment, then the wastewater capacities from this middle school and high school shall also not count against Heater's 500,000 gpd minimum guaranteed bulk capacity.

5. County acknowledges that the Flowers Plantation Tract may need as much as 1.4 million gallons per day wastewater treatment at buildout. However, County does not guarantee that capacity but only agrees to provide additional bulk wastewater treatment capacity based upon the County's availability of County for bulk wastewater treatment to the same extent as other bulk wastewater providers in Johnston County.

6. The County will own, operate and maintain a wastewater metering facility at the Point of Delivery, which metering facility and the interconnection to County's manhole shall be constructed by Heater, at Heater's cost, and then transferred to County.

7. County will invoice Heater monthly for bulk wastewater transmission and treatment service. Invoices will be based on monthly wastewater meter readings.

8. County agrees that Heater shall be charged the same bulk wastewater rate as the other bulk wastewater customers of County who also paid County wastewater capacity fees.

9. County will construct at its own cost an eight inch (8") gravity wastewater line from the K-5 school site to connect to the pump station to be constructed on the south side of Hwy. NC 42 adjacent to NC 42 near Buffalo Creek, hereinafter referred to as "Pump Station." Heater shall, as Heater's investment, pay up to \$75,000 of the cost to upsize this gravity wastewater line from eight inch (8") to twelve inch (12").

10. County agrees to provide engineering and technical advice on the design, permitting and construction of the Pump Station and Force Main, and design documents shall be reviewed and approved by the County.

11. County and Heater agree that the K-5 school, the middle school and high school, if built, shall be retail wastewater customers of County. County shall then be a customer of Heater for the wastewater produced by the schools, paying Heater's uniform commercial rates as approved by the North Carolina Utilities Commission, hereinafter referred to as "Commission."

12. County agrees to deliver the wastewater to a point five feet outside the school building at which point Heater shall be responsible to own, operate and maintain the gravity collection line to the Pump Station.

13. County agrees to install and operate any necessary grease traps prior to the point five foot outside the school building, which is the point Heater becomes responsible.

14. County agrees that at a later time, the K-5 school, the middle school and high school will become completely customers of the County with Heater no longer treating this wastewater at Heater's Neuse River WWTP. County agrees at that time Heater's collection line from the school, Pump Station and Force Main shall carry the wastewater from the K-5 grammar school, middle school and high school to the Point of Delivery at the County's manhole on Neuse River, and Heater shall no longer charge County Heater's uniform commercial rates as approved by the Commission.

15. County and Heater agree when the wastewater from the schools is no longer treated by Heater as described in Paragraph 14, that County and Heater will negotiate a pass through transportation tariff to be approved by the Commission, whereby County will pay its prorata share of transportation, operation and maintenance cost, based on the percentage of flows through the Pump Station and Force Main, of the cost to operate the Pump Station and Force Main including the electrical, chemicals, labor and other costs directly related to operating the Pump Station and Force Main.

16. County and Heater agree that the K-5 grammar school and the middle school, both of which are contemplated to be built on the Flowers Plantation Tract shall be retail water customers of the Archer's Lodge Water District and not retail water customers of Heater. Heater shall be allowed to read the school water meter for purposes of wastewater billing.

17. County agrees that Heater shall have a total of 20 years in order to take down the bulk wastewater capacity under this agreement.

18. County agrees that the first 500,000 gpd shall be paid for by Heater as Heater takes down the capacity. Heater agrees to purchase bulk wastewater capacity in 25,000 gpd blocks.

19. County agrees that after the first 500,000 gpd plus the capacity for the K-5 grammar school, middle school and high school have been taken, then Heater shall take down and pay for the capacity in 25,000 gallon blocks. Heater shall pay for the capacity and give notice to the County, two years in advance of Heater's need for the capacity.

20. County and Heater agree that the bulk wastewater connection to County's Point of Delivery shall be made as Heater's investment at the time Heater desires to divert bulk wastewater to the County for treatment. Heater and County acknowledge that Heater may choose to fully buildout Heater's WWTP on the Neuse River to the total capacity of 750,000 gpd, prior to the time Heater diverts any wastewater to County for bulk treatment.

II. RIVER DELL AGREES AS FOLLOWS

1. River Dell shall transfer to County the NPDES Permit No. NC0064556. The transfer document shall be executed within 20 days after the date of the execution of this Agreement. County agrees it will hold the executed NPDES transfer documentation and not submit it to DWQ until such time as DWQ has approved the Pump Station and Force Main, and the Pump Station and Force Main have been constructed with final engineering certification.

2. River Dell and/or its successors and assigns, agree to install or contract to have installed at its own costs all required wastewater collection infrastructure to serve the Flowers Plantation Tract. All construction shall be subject to the County's review and approval.

3. River Dell agrees to pay as a contribution in aid of construction (CIAC) 50% of the balance (with Heater paying \$75,000 and 50% of the balance), of the total cost for the planning, permitting and construction of the Pump Station and Force Main. Payments shall be made as the engineering, permitting and construction progresses.

4. River Dell and Heater agree that each shall pay 50% of all pump and haul costs that may be necessary to provide wastewater utility service to the K-5 school after April 1, 2003, should this school need wastewater utility service prior to the completion of the Pump Station and Force Main.

5. River Dell shall transfer to Heater in fee simple, at no cost to Heater, a four-acre site for the Pump Station.

6. River Dell shall convey to Heater, at no cost to Heater, 20-foot wide perpetual wastewater utility easements, 10-foot centered on the main, for the installation, maintenance, operation, repair, replacement and inspection of the wastewater gravity collection line from the K-5 school site to the Pump Station, and also for the Force Main from the Pump Station to Heater's Neuse River WWTP. River Dell shall only be responsible to convey the above-described Force Main easement where the Force Main cross lands owned by River Dell.

III. HEATER AGREES AS FOLLOWS:

1. Heater agrees to construct the Pump Station and Force Main from the Pump Station to the unused 10 inch force main on NC Hwy. 42, or in the alternative Heater's WWTP on the Neuse River near Hwy. NC 42, if DWQ doesn't approve the interconnection to the 10-inch unused force main. The construction shall include all necessary engineering and permitting. The Pump Station and Force Main shall be in accordance with County's specifications and design standards. Heater shall own, operate and maintain the Pump Station and Force Main.

2. Heater agrees to pay \$75,000 plus 50% of the balance of the cost of the construction of the Pump Station and Force Main. The \$75,000 shall be spread prorata over the total cost of the Pump Station and Force Main. Heater shall be reimbursed for this 50% balance of the construction cost through prorata payments by the developers in the Flowers Plantation Tract. Heater's 50% payment of the balance shall be recovered equally from the first 2,000 single-family equivalents. The \$75,000 shall be Heater's investment and shall be included in Heater's utility plant in service and shall not be reimbursed to Heater by developers.

3. Heater agrees that Heater will make as Heater's investment, later Pump Station upgrades, as necessary, and later Force Main upgrades as necessary, which shall be recovered on a prorata basis from developers in the Flowers Plantation Tract.

4. The prorata amount reimbursement for the Pump Station, Force Main and later upgrades, shall be paid by the developer to Heater prior to the time

Heater executes the DWQ application for that tract of land being developed by the developer. Where there is an individual customer with only one lot connecting to Heater's system, then reimbursement shall be paid prior to the time the connection is made to the wastewater collection system.

5. Heater agrees to execute a release for all contract rights that Heater has in NPDES Permit No. NC0064556 within 20 days after the execution of this Agreement, so that the permit can be transferred to County upon the completion of the pump station, force main and the final engineering certification as specified in Paragraph II.1.

6. Heater agrees to own, operate and maintain the wastewater collection system serving the Flowers Plantation Tract and to correct and eliminate any excessive storm water and ground water inflow into the system within 120 days of detection.

7. Heater agrees to provide wastewater utility service to the Flowers Plantation Tract, with the exception that the K-5 grammar school and the future middle school, both of which will be retail wastewater customers of County.

8. Heater agrees to pay to County within 20 days of receipt, monthly invoices for bulk wastewater transmission and treatment service. The bulk wastewater charges will be the same unit rates as the County charges other bulk wastewater customers. The bulk wastewater and transmission charges are subject to adjustments annually with 90 days written notice and any adjustments shall be equal to or shall be in proportion to adjustments in charges to all bulk customers of the County's wastewater system.

9. Heater shall pay to the County, the County's then prevailing capacity fee for bulk wastewater treatment. The County's current fee is \$5.50 per gallon per day, which shall be adjusted by the County in the future, based on County's cost of construction of County's wastewater treatment plant.

10. County and Heater agree that the County shall not pay Heater any capacity fees for any of the schools being connected to Heater's system, nor shall Heater at a later date be charged by the County any capacity fees for the schools, when the schools are transferred to the County system (with the wastewater passing through Heater's collection line from the school to the Pump Station, and then the Force Main to the Point of Delivery).

11. River Dell and Heater agree Heater shall collect from the developer of each tract a WWTP capacity fee in the same amount then currently being charged by Johnston County for bulk wastewater treatment. Heater shall collect this capacity fee from the developer prior to the time Heater executes the DWQ application for that developer's tract. The current Johnston County capacity fee is \$5.50 per gallon per day and the capacity fee paid by the developer to Heater shall be adjusted in the future based upon the County's changes in its capacity fee.

12. River Dell and Heater agree to execute an amendment to the executed Agreement between River Dell and Heater for the Flowers Plantation Tract dated May 19, 1999, so that the amendment shall be consistent with the terms of this bulk wastewater agreement. This amended agreement shall be executed contemporaneously with this bulk wastewater agreement.

IV. ADDITIONAL COVENANTS AND AGREEMENTS

1. Term. The term of this Agreement shall be twenty (20) years, with five (5) automatic renewals for ten (10) years each, unless a one (1) year written notification for cause (cause being a material breach of this Agreement which remains uncured after notice by the other party) is provided by either party to the other.

2. Service Area. The area to be served, referred to as the Flowers Plantation Tract and subject to this Agreement shall be that property shown on Attachment "A" attached hereto and incorporated herein.

3. Inspections. River Dell and Heater shall permit periodic inspections by County of the collection line from the school, the Pump Station, the Force Main, and the infrastructure collection system during construction and operation by Heater, to ensure compliance with State Plumbing Codes and County Utility Standards and Specifications.

4. Notices. Any notices required to be given by this Agreement shall be deemed to have been sufficiently given if mailed by certified mail, postage prepaid, addressed as follows:

Johnston County
Attention: County Manager
Johnston County Courthouse
212 Market Street
P.O. Box 1049
Smithfield, NC 27577

Rebecca Flowers
d/b/a River Dell Company, Inc.
4880 NC 42 East
Clayton, NC 27520

Heater Utilities, Inc.
Attn: President
202 MacKenan Court
Cary, NC 27511

5. Entire Agreement. This writing embodies the entire agreement and understanding between the County, River Dell, and Heater and there are no other agreements or understandings, oral or written, with reference to the subject matter hereof that are not merged herein and superseded hereby.

6. Binding Upon Successors and Assigns. This Agreement shall be binding upon and shall inure to the benefit of the County, River Dell and Heater and the successors and assigns of each.

7. Amendment. This Agreement shall not be modified, amended or changed in any respect except in writing, fully signed by the parties hereto, and each party hereby waives any right to amend this Agreement in any other way.

8. Bulk Water Agreement. River Dell, County, and Heater shall at the time of execution of this Agreement, also execute the Bulk Water Agreement for the Flowers Plantation Tract, attached hereto as Attachment B.

9. Subjunctive Approval. The transfer of the NDPES Permit No. NC0064556 is subject to the approval of DWQ. In the event such transfer cannot be accomplished, this Agreement shall be null and void in its entirety.

10. Heater will have the exclusive right to serve all connections to be located in Flowers Plantation Tract. However, this exclusive right shall terminate for those land areas for which development does not occur within twenty years of the date of this Agreement. Development in this Paragraph IV.

10 is defined as Johnston County final approval of a subdivision plat for recordation.

IN WITNESS WHEREOF, Johnston County has caused this Agreement to be executed by its Manager and Clerk, acting under authority of the Board of Commissioners of Johnston County, Rebecca Flowers, d/b/a River Dell Company has executed this Agreement individually, and Heater Utilities, Inc. has caused this Agreement to be executed by its President and Secretary.

ATTEST:
Joyce H. Ennis
Joyce H. Ennis
Clerk of the Board

JOHNSTON COUNTY
Rick J. Hester (SEAL)
Rick J. Hester
County Manager

REBECCA FLOWERS, d/b/a RIVER DELL
COMPANY, a sole proprietorship
Rebecca Flowers
Rebecca Flowers

ATTEST:
Robyn L. Thomas
Robyn L. Thomas
Assistant Secretary

HEATER UTILITIES, INC.
William E. Grantmyre
William E. Grantmyre, President

NORTH CAROLINA
COUNTY OF JOHNSTON

I, Lecaine H. Coley, a Notary Public of said State and County, certify that Joyce H. Ennis, Clerk of the Johnston County Board of Commissioners, a corporate body, came before me and acknowledged that by authority given, the foregoing instrument was signed in its name by its Manager, sealed with its corporate seal and attested by her as its Clerk.

Witness my hand and official seal, this the 14 day of May, 2002.

Loraine H. Colby
Notary Public

My Commission Expires:

4-9-05
Date

SEAL

NORTH CAROLINA
COUNTY OF Johnston

I, a Notary Public for the county and state aforesaid, do hereby certify that Rebecca Flowers, d/b/a River Dell Company, a sole proprietorship, personally appeared before me this day and acknowledged the due execution of the foregoing instrument.

Witness my hand and official stamp or seal, this 14 day of May 2002.

Loraine H. Colby
Notary Public

My Commission Expires:

4-9-05
Date

SEAL

STATE OF NORTH CAROLINA
COUNTY OF Wake

I, a Notary Public for said county and state, do hereby certify that Robyn L. Thomas, personally appeared before me this day and acknowledged that she is Assistant Secretary of Heater Utilities, Inc., a corporation, and that by authority duly given and as the act of the corporation the foregoing instrument was signed in its name by its President, sealed with its corporate seal and attested by herself as its Assistant Secretary.

Witness my hand and official seal this 14th day of May 2002.

Denise J. Pien-Hod
Notary Public

My Commission expires:

April 29, 2005
Date

SEAL

REBECCA FLOWERS FINCH
 Broker #50855
 (919) 553-3084
 Toll Free 1-800-343-0659
 Fax (919) 553-3888

4880 NC 42 East Clayton, NC 27520

River Dell Company

FLOWERS PLANTATION
 CONCEPTUAL MASTER PLAN

SEPTEMBER 22, 1999



750,000 ←
 → 500,000

5-19-99
 RJ

Legend	
---	Proposed Roadway
---	Proposed Utility
---	Proposed Structure
---	Proposed Landmark
---	Proposed Boundary
---	Proposed Easement
---	Proposed Right-of-Way
---	Proposed Access
---	Proposed Drainage
---	Proposed Fencing
---	Proposed Signage
---	Proposed Lighting
---	Proposed Security
---	Proposed Other

POTENTIAL
 PMA, CO.
 → POTENTIAL

H + 19.17 x 7
 E x 1.6 + A
 OFFICIAL COPY

23
 AUG 22 2018

Johnston County

DEPARTMENT OF PUBLIC UTILITIES

POST OFFICE BOX 2263
SMITHFIELD, N.C. 27577
(919) 989-5075

August 17, 2009

Mr. Tom Roberts, President
Aqua North Carolina
202 McKenan Court
Cary, NC 27511

RE: **Purchase of Wastewater Capacity in the Central Johnston County Regional WWTP**

Dear Mr. Roberts:

We wish to follow-up to a comment you made during our August 4th conference with Becky Flowers concerning the possibility of Aqua purchasing wastewater transmission and treatment capacity in the County system. Our understanding of your position is that Aqua America may be interested in purchasing capacity in the County's system, if payment terms can be arranged consistent with the County's 20-year, low interest state revolving fund loan. Accordingly, we have completed preliminary cost analyses and enclosed is a summary of the cost information. Please understand that construction of improvements is not yet 100% complete, and unforeseen cost contingencies could arise, which would alter the cost share calculations.

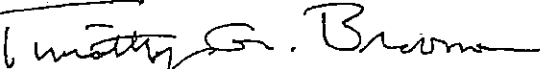
The unit capital cost of transmission facilities for an upgraded wwps and the new force mains between Aqua's wwtp and the County interceptor on the Neuse River in Smithfield is \$1.46 per gpd of average daily flow with flow equalization and \$3.65 per gpd without flow equalization. The unit capital cost of wastewater treatment facilities expansion is \$4.83 per gpd of average daily flow. Thus, the total capital value of an allocation would be \$6.29 per gpd with flow equalization and \$8.48 without flow equalization. We are providing the cost option for flow equalization since Aqua could possibly accomplish this using its existing plant infrastructure.

The terms of the SRF loans are 20 years at 2.1% a.p.r. with equal annual payments. Thus, the annual cost with flow equalization for a 0.50 mgd allocation would be \$194,200. Without flow equalization, the annual cost would be \$261,800.

Our current bulk wastewater transmission and treatment commodity charge is \$2.45 per 1,000 gallons.

Please let us know if you wish to explore the possibility of a wastewater capacity allocation purchase in more detail.

Sincerely,



Timothy G. Broome, P.E.
Director of Utilities and Engineering

cc: Rick J. Hester
Chandra C. Coats, P.E.
Rebecca Flowers

**Wastewater Transmission & Treatment
Capacity Cost Analysis**

<u>Item</u>	<u>Description</u>	<u>Total</u>
1	Unit Cost of 16" Force Main (FM) from NC 42 East to US 70 (Bus.) at North Tech Park and 42 East WWPS Upgrade	
	Construction	1,433,000
	Technical Service	113,000
	Easements	25,000
	SRF Loan Closing	28,000
	Total	1,599,000
	Future WWPS Upgrade	801,000
	Total Project Cost	2,400,000

Capacity = 3.0 mgd (peak flow)

Unit cost based on peak capacity = \$0.80 per gpd

If peak to average flow ratio is 2.5:1, then unit cost based on avg. flow = \$2.00 per gpd

2 Unit Cost of 16" FM from US70 (Bus) at North Tech Park to Swift Creek Road

Construction	\$1,111,000
Technical Services	122,000
Easements	27,000
SRF Loan Closing	29,000
Total	\$1,289,000

Capacity = 3.5 mgd (peak flow)

Unit cost based on peak capacity = \$0.37 per gpd

If peak to avg. flow ratio is 2.5:1, then unit cost based on avg. flow = \$0.92 per gpd

3 Unit Cost of 20" FM from Swift Creek Road to Neuse River Parallel FM

Construction	\$1,251,000
Technical Services	121,000
Easements	27,000
SRF Loan Closing	29,000
Total	\$1,428,000

Capacity = 4.9 mgd (peak flow)

Unit cost based on peak capacity = \$0.29 per gpd

If peak to avg. flow ratio is 2.5:1, then unit cost based on avg. flow = \$.73 per gpd

8/17/2009

<u>Item</u>	<u>Description</u>	<u>Total</u>
4	2.5 mgd Wastewater Treatment Plant Expansion:	
	Construction	\$10,790,000
	Technical Services	
	a. Hazen and Sawyer	840,000
	b. Dewberry Engineers	106,000
	c. Keen Management	111,360
	Subtotal - Technical Services	<u>\$11,847,360</u>
	SRF Loan Closing	\$237,640
	Total Project Cost	<u>\$12,085,000</u>

Expanded Capacity = 2.5 mgd
Unit cost based on capacity = \$4.83 per gpd

5 **Aqua America Cost Share:**

Transmission With Flow Equalization ($\$0.80 + \$0.37 + \$0.29$) per gpd = \$1.46 per gpd
Transmission Without Flow Equalization ($\$2.00 + \$0.92 + \$0.73$) per gpd = \$3.65 per gpd
Treatment = \$4.83 per gpd
Total Cost With Flow Equalization = \$6.29 per gpd
Total Cost Without Flow Equalization = \$8.48 per gpd

Aqua Junis Cross
Examination Exhibit 5

HA

Johnston County

DEPARTMENT OF PUBLIC UTILITIES

POST OFFICE BOX 2263
SMITHFIELD, N.C. 27577
(919) 989-5075

RECEIVED JUL 16 2018

July 11, 2018

Shannon V. Becker, President
Aqua North Carolina, Inc.
202 McKenan Court
Cary, NC 27511

Re: Purchase of Wastewater Capacity in the Central Johnston County Regional WWTP

Dear Mr. Becker:

It is our understanding that Aqua may be interested in purchasing capacity in the County's wastewater system in accordance with the "Bulk Wastewater Service Agreement for Flowers Plantation Sections I, II and IIIB" dated May 14, 2022. The fee for bulk wastewater capacity is currently \$8.48/gpd for Aqua to discharge into the County's wastewater collection, transmission and treatment system. This capacity fee assumes Aqua will provide flow equalization (peak flow not to exceed 1.5 times average flow) and pumping into the County's transmission system.

The proposed capacity fee is based on the following:

WWTP Capacity (Based on 2006 Expansion)	\$5.34/gpd
Transmission:	
NC 42 East to North Tech Park	\$0.42/gpd
North Tech Park to Swift Creek Rd	\$0.37/gpd
Swift Creek Road to Neuse River Parallel FM	\$0.29/gpd
12" Parallel Force Main Under US 70 Interchange	<u>\$2.06/gpd*</u>
	\$3.14/gpd
Total Capacity Fee	\$8.48/gpd

(*Estimated Cost. Project not constructed.)

The bulk transmission and treatment commodity charge will be \$3.18 per 1,000 gallons beginning July 1, 2018. Please let me know if you have any questions or need additional information.

Sincerely,

Chandra C. Farmer, PE
Director of Utilities

cc: Rick J. Hester

Aqua Junis Cross
Examination Exhibit b

HA

From: Chandra Farmer [mailto:chandra.farmer@johnstonnc.com]
Sent: Thursday, August 23, 2018 3:52 PM
To: Poole, Ruffin <CRPoole@aguaamerica.com>
Cc: Tim Broome <tim.broome@johnstonnc.com>
Subject: RE: JoCo WWTP Capacity Charges

Hi Ruffin,

This email is to answer the questions you ask in your email of August 20, 2018. I think that all your questions should be answered by the following explanation:

As stated in the letter to Tom Roberts in 2009, the initial treatment plant rate (unit capital cost of wastewater treatment facilities expansion) was \$4.83/gpd of average daily flow. In April, 2012 an updated rate of \$5.34/gpd was provided to Becky Flowers in response to her request for a rate. The rate given Becky Flowers included an adjustment for inflation at 3.5 % per year for cost contingencies related to plant efficiency and rehabilitation. For the three years between 2009 and 2012 the inflation adjustment increased the treatment plant rate to \$5.34/gpd ($\$12,108,000 * 1.105 = \$13,354,000 / 2.5 \text{ MGD} = \$5.34/\text{gpd}$). The County has not added this inflation factor to the rate from 2012 to 2018.

I trust this answers your questions. Please let me know if you need additional information.

Thanks,
Chandra

Chandra Cox Farmer, PE
Director
Johnston County Department of Public Utilities
PO Box 2263
309 E. Market St.
Smithfield, NC 27577
(919) 209-8333
(919) 934-7174 (fax)

From: Poole, Ruffin [mailto:CRPoole@aguaamerica.com]
Sent: Monday, August 20, 2018 8:03 PM
To: Chandra Farmer <chandra.farmer@johnstonnc.com>; Tim Broome (tim.broome@johnstonnc.com) <tim.broome@johnstonnc.com>
Subject: JoCo WWTP Capacity Charges
Importance: High

Chandra:

We continue having discussions with the North Carolina Utilities Commission (NCUC) Public Staff about the Flowers Plantation contract between River Dell Utilities, Heater/Aqua and Johnston County. Some of the questions are of historical nature which we (current corporate development team) have limited or no knowledge. In preparation for our impending meeting with the NCUC Public Staff, we would like to

ask some detailed questions to gain a better understanding of historical capacity calculations in order to answer anticipated questions by the NCUC Public Staff.

Here are questions to be asked:

In the current rate schedule provided to us on January 10, 2018, the wastewater treatment capacity is based on the 2006 WWTP expansion.

Please answer/explain the following questions:

- On the January 10, 2018 Projected Costs worksheet, the JoCo WWTP Capacity fee of \$5.34 was based on the County's 2006 WWTP expansion.
 - Can you tell me if JoCo had another wastewater expansion or capital improvements to the WWTP since 2006 that might have changed the capacity fee from \$5.34 per gallon based on the County's 2006 WWTP expansion?
- The 2009 letter from JoCo to Tom Roberts indicates that the capacity component of the capacity fee was \$4.83.
 - My question is why is the 2009 WWTP capacity rate \$4.83 and not \$5.34?
- Please explain why the capacity rate in 2009 is not the same \$5.34 per gallon rate based on the 2006 expansion.
- JoCo is currently selling capacity at \$5.34 based on the 2006 wastewater capacity expansion.
 - Why is it a different rate?
- Alternatively, if the WWTP Capacity rate was actually \$4.83 in 2009, as indicated in the letter; was there an expansion of WWTP capacity since 2006 that would support an increase in the WWTP Capacity rate to \$5.34 from \$4.83?

Thanks for your assistance and insight, I have copied Tim as he might have some historical knowledge on these questions.

If you should have any questions about my inquiries above, please contact me 919-625-2526.

VTY,

C. Ruffin Poole
Director, Business Development
Aqua North Carolina
202 MacKenan Drive
Cary, NC 27511
O: 919.653.6967 M:919.625.2526
Introduction to Aqua - Our Core Values

IA ✓

~~AQUA AMERICA, INC.~~
~~Board of Directors~~
~~Corporate Governance Guidelines~~

~~The following corporate governance guidelines will provide the principles by which the Board of Directors (the "Board") of Aqua America, Inc. (the "Corporation") will organize and execute its responsibilities along with the requirements of the Corporation's Articles of Incorporation, Bylaws and the laws and regulations governing the Corporation and the Board. These Guidelines have been developed by the Corporation's Corporate Governance Committee, which will annually review these Guidelines and recommend to the full Board any changes that are deemed necessary or appropriate.~~

I. COMPOSITION OF THE BOARD

1. A majority of the Board shall be comprised of independent directors as determined under the guidelines established by the New York Stock Exchange.
2. No director will be deemed independent unless the Board affirmatively determines that the director has no material relationship with the Corporation (directly or as a partner, stockholder, or officer of an organization that has a relationship with the Corporation).
3. The Board has established the following standards to assist in determining director independence:
 - a. *Categorical Standards.* A director will not be deemed independent if:
 - i. the director is, or has been within the last three years, an employee of the Corporation, or an immediate family member is, or has been within the last three years, an executive officer of the Corporation;
 - ii. (A) the director or an immediate family member is a current partner of a firm that is the Corporation's internal or external auditor; (B) the director is a current employee of such a firm; (C) the director has an immediate family member who is a current employee of such a firm and personally works on the Corporation's audit; or (D) the director or an immediate family member was within the last three years (but is no longer) a partner or employee of such a firm and personally worked on the Corporation's audit within that time;
 - iii. the director or an immediate family member is, or has been within the last three years, employed as an executive officer of another company where any of the Corporation's present executive officers at the same time serves or served on that company's compensation committee; or

- iv. the director has received or has an immediate family member who has received during any twelve-month period within the last three years, more than \$120,000 in direct compensation from the Corporation, other than director and committee fees and pension or other forms of deferred compensation for prior service (provided such compensation is not contingent in any way on continued service) and, in the case of an immediate family member, other than compensation for service as an employee of the Corporation (other than an executive officer). (Members of the Audit Committee and of the Compensation Committee are subject to additional requirements as set forth in the Audit Committee Charter).
- b. In addition, a director will not be deemed independent if:
- i. the director is an executive officer or employee, or someone in her/his immediate family is an executive officer of, another company that, during any of the other company's past three fiscal years made payments to, or received payments from, the Corporation for property or services in an amount which, in any single fiscal year of the other company, exceeds \$1 million or two percent, whichever is greater, of the other company's consolidated gross revenues or
 - ii. The director serves as an executive officer of a charitable organization and, during any of the charitable organization's past three fiscal years, the Corporation made charitable contributions to the charitable organization in any single fiscal year of the charitable organization that exceeded \$1 million or two percent, whichever is greater, of the charitable organization's consolidated gross revenues.
 - iii. For the purposes of these categorical standards, the terms "immediate family member" and "executive officer" have the meanings set forth in the New York Stock Exchange's corporate governance rules.
- c. For relationships not prohibited by the guidelines in subsection a or b above, the determination of whether the director would be independent or not shall be made by the Board, unless an independence determination is otherwise precluded by a listing or regulatory requirement.
- d. Audit Committee members will be evaluated under the following additional standards:
- i. No Audit Committee member shall accept, directly or indirectly, any consulting, advisory, or other compensatory fees from the Corporation or any of its subsidiaries, except for fees for services as a director and a member of the Audit Committee and any other Board of Directors' committee.

- ii. All members of the Audit Committee must be financially literate (as such qualification is interpreted by the Board of Directors in its business judgment) or become financially literate within a reasonable time after appointment to the Committee. The Chairperson of the Audit Committee must have accounting or financial management experience.
 - iii. If a member serves on the audit committees of more than three companies, the Board of Directors must determine that this does not impair his or her effectiveness to serve on the Audit Committee, and disclose such determination in the Corporation's annual proxy statement or other applicable filing filed with the Securities and Exchange Commission.
 - iv. At least one member of the Audit Committee shall be an "audit committee financial expert," as that term is defined in Item 407(d)(5)(ii) of Regulation S-K promulgated by the Securities and Exchange Commission.
- e. Compensation Committee members will be evaluated under the following additional standards:
- i. No Compensation Committee member shall accept, directly or indirectly, any consulting, advisory, or other compensatory fees from the Corporation or any of its subsidiaries, except for fees for services as a director and a member of the Compensation Committee and any other Board of Directors' committee.
 - ii. In addition, in affirmatively determining the independence of any director who will serve on the Compensation Committee, the Board of Directors must consider all factors specifically relevant to determining whether a director has a relationship to the Corporation which is material to that director's ability to be independent from management in connection with the duties of a Compensation Committee member, including, but not limited to whether such director is affiliated with the Corporation, a subsidiary of the Corporation or an affiliate of the Corporation or a subsidiary of the Corporation. When considering any relationship a director has with the Corporation, a subsidiary of the Corporation, or an affiliate of the Corporation or a subsidiary of the Corporation, in determining his or her independence for purposes of Compensation Committee service, the Board of Directors should consider whether the affiliate relationship places the director under the direct or indirect control of the Corporation or its senior management, or creates a direct relationship between the director and members of senior management, in each case of a nature that would impair his or her ability to make independent judgments about the Corporation's executive compensation.

4. In accordance with the Corporation's Articles and Bylaws, the size of the Board is determined by the Board. Although the size of the Board may change as the Corporation changes, based on the present circumstances, the Board believes that a Board of 8 to 12 members is the most conducive to the development of close working relationships among the directors, while providing sufficient directors for the Board Committees. The optimal size of the Board may need to be re-evaluated as a result of significant growth or acquisitions by the Corporation.
5. The nomination of candidates for election to the Board is the responsibility of the Board. The identification, evaluation and recommendation of candidates for nomination for election is the responsibility of the Corporate Governance Committee, taking into consideration input from other members of the Board, input from management and candidates recommended by shareholders. Recommendations of candidates by shareholders should be submitted to the Chairman of the Corporate Governance Committee at least 120 days before the date on which the Corporation first mailed its proxy materials for the prior year's Annual Meeting of Shareholders.
6. Candidates for nomination to the Board will be considered based on their personal abilities, qualifications, independence, knowledge, judgment, character, leadership skills, education, background and their expertise and experience in fields and disciplines relevant to the Corporation, including financial expertise or financial literacy. When assessing a candidate, consideration will be given to the effect such candidate will have on the diversity of the Board. Diversity of the Board is evaluated by considering a broad range of attributes, such as background, both geographic and demographic (including, without limitation race, gender and national origin), expertise and experience. Due consideration will also be given to the position the candidate holds at the time of their nomination and their capabilities to advance the Corporation's interests with its various constituencies.
7. Within three months prior to the expiration of a director's term, the Chair of the Corporate Governance Committee and the Chairman of the Board will meet with the director to discuss the appropriateness of nominating the director for re-election to another term. In determining whether to recommend a director for re-election, consideration will be given to, among other things, the director's past attendance at meetings and participation in and contributions to the activities of the Board. The Chair of the Corporate Governance Committee will then make a recommendation to the Corporate Governance Committee regarding the director's re-nomination.
8. The Board believes that term limits are an important element of good governance. However, it also believes that it must strike the appropriate balance between the contribution of directors who have developed, over a period of time, meaningful insight into the Corporation and its operations, and therefore can provide an increasing contribution to the Board as a whole. Accordingly, the Board has established that upon the fifteenth anniversary of a director accepting appointment to the Board of Directors, the director shall tender his resignation to the Board (the "Term Limit Policy"). The Term Limit Policy shall not apply to existing Directors as of December 1, 2015.

9. The Board believes that a policy of retirement for directors at age 75 is in the best interests of the Corporation. All directors are required to submit their resignation from the Board effective as of their 75th birthday.
10. It is not the Board of Director's policy that a director must immediately resign from the Board in the event of retirement or other change in the position he/she held when joining the Board. However, it is the belief of the Board that if such an event were to occur, the director should meet with the Chairman of the Board and the Chair of the Corporate Governance Committee to discuss the situation. The Corporate Governance Committee, in consultation with the Chairman of the Board, will then determine if the director's continued service is appropriate and make a recommendation with respect thereto to the Board.
11. The Board believes that, based on the current facts and circumstances, the positions of Chairman and Chief Executive Officer should be held by the same person. This belief is based on the principle that unified leadership and direction of the Board and the leadership team serves the Corporation's shareholders by, among other things, providing accountability in decision-making, providing uniformity in leadership, and has worked well for the Corporation for several decades. The Board has delegated to the Corporate Governance Committee the responsibility to review the efficacy of this practice on an annual basis and periodically as circumstances change, such as in connection with a transition in leadership. As long as the positions of Chairman and Chief Executive Officer are held by the same person, it is the policy of the Board to maintain the position of lead independent director.
12. The Board has established the position of lead independent director. The lead independent director shall be appointed annually by the full Board of Directors. The lead independent director shall have the following duties and powers:
 - a. Presiding at all meetings of the Board at which the Chairman of the Board is not present, including executive sessions of the independent directors;
 - b. Serving as liaison between the independent directors and the Chairman of the Board;
 - c. Reviewing and approving meeting agendas and information provided to the Board for meetings, including the authority to add items to the agendas for any such meeting;
 - d. Reviewing and approving meeting schedules to assure that there is sufficient time for discussion of all agenda items;
 - e. Having the authority to call executive sessions of the independent directors and prepare the agendas for such executive sessions;
 - f. If requested by major shareholders, ensures that he or she is available for consultation and direct communications;
 - g. Serving as a member of the Executive Committee;
 - h. In the event of the death or incapacity of the Chairman, becoming the acting Chairman of the Board until a new Chairman is selected; and

- i. Having the authority, with the approval of the majority of the directors, to engage such legal, financial or other advisors as the independent directors shall deem appropriate at the expense of the Company and without consultation or the need to obtain approval of any officer of the Company.
13. In an uncontested director election (i.e. an election where the only nominees are those recommended by the Board), any incumbent director nominated for re-election as a director who receives a greater number of votes "withheld" for his or her election than votes "for" such election shall promptly tender his or her resignation after such election. The independent directors of the Board, through a process managed by the lead independent director (unless he or she is the director submitting his or her resignation), shall evaluate the relevant facts and circumstances in connection with such director's resignation, giving due consideration to the best interests of the Corporation and its shareholders. Within 90 days after the election, the independent directors shall make a decision on whether to accept or reject the tendered resignation, or whether other action should be taken. Any director who tenders a resignation pursuant to this provision shall not participate in the Board's decision, but will otherwise serve as a director during the period of the independent directors' deliberations. The Board will promptly disclose publicly its decision and the reasons for its decision. The Board believes that this process enhances accountability to shareholders and responsiveness to shareholder votes, while allowing the Board appropriate discretion in considering whether a particular director's resignation would be in the best interests of the Corporation and its shareholders.

II. RESPONSIBILITIES OF THE BOARD

1. ~~It is the responsibility of the Board to provide guidance and direction on the Corporation's general business goals and strategy, and to provide general oversight of, and direction to, management so that the affairs of the Corporation are conducted in the long-term interests of all its shareholders.~~
2. It is the responsibility of the Board to hire the Chief Executive Officer ("CEO") for the Corporation, assess the overall performance of the CEO and terminate the CEO should such action become necessary.
3. The Board, directly and through its Committees, is responsible for: (a) oversight of the preparation of the Corporation's financial statements; (b) oversight of the Corporation's compliance with legal and regulatory requirements; (c) the selection and oversight of the Corporation's independent auditors; (d) the establishment of an internally consistent and externally competitive executive compensation program designed to attract, retain and incent qualified executives and approval of the annual and long-term compensation of the Corporation's CEO and executive officers; (e) the identification and selection of qualified individuals to become Board members; (f) the development and review of appropriate corporate governance guidelines; (g) the development and periodic review of a management succession plan for the CEO and other executives as appropriate; (h) the review, approval and monitoring of

fundamental financial and business strategies and major corporate actions; (i) the development of an educational program for new Board members that includes meetings with key management; (j) the development of continuing education programs for existing directors designed to improve their ability to perform their duties; and (k) the oversight of management's risk management policies.

4. The Board will review and, if it deems appropriate, approve changes to these Corporate Governance Guidelines that have been recommended to the Board by the Corporate Governance Committee.
5. The Board believes that the Corporation should maintain an appropriate code of ethical business conduct covering: (i) conflicts of interest, (ii) corporate opportunities, (iii) confidentiality, (iv) fair dealing, (v) protection and proper use of company assets, (vi) compliance with laws, rules, and regulations, (vii) encouraging the reporting of any illegal or unethical behavior and (viii) such other matters as the Board deems appropriate. Such code also will include standards of conduct reasonably applicable to designated persons, including the CEO and the senior financial officers, designed to promote: (i) honest and ethical conduct, (ii) full, fair, accurate, timely, and understandable disclosure in the periodic reports, proxy statements, and other filings under the Securities Exchange Act, that are required to be filed by the Corporation, (iii) compliance with applicable governmental rules and regulations, (iv) the prompt internal reporting of violations of the codes and (v) the accountability for adherence to the codes.

III. OPERATION OF THE BOARD

1. The Board and each Committee holds a minimum of five regularly scheduled meetings each year. Directors are expected to attend all regularly scheduled meetings and to have, prior to the meetings, reviewed the written materials distributed to them in advance.
2. The Board believes that maintaining confidentiality of information and deliberations is an imperative.
3. The Board believes that its responsibilities can be fulfilled most effectively through the operation of committees. Each of these committees will be designated by the Board and will have a written charter meeting all legal and, if appropriate, stock exchange requirements that will be reviewed annually by the full Board. Under the Corporation's present circumstances, the Board believes that five committees are appropriate: Executive, Audit, Corporate Governance, Risk Mitigation and Investment Policy, and Executive Compensation. The Board will review and, if it deems appropriate, approve changes to the committee charters that have been recommended to the Board by such committees.
4. Each year the Corporate Governance Committee, in consultation with the Chairman of the Board, will propose the members and chairs of the committees to the Board for

the Board's review and approval. Rotation of committee chairpersons is encouraged and may occur at any time by a vote of the Board of Directors.

5. The Chairman of the Board, in consultation with the Chief Executive Officer, will establish the agenda for each Board meeting. Each Board member is encouraged to submit items for consideration for inclusion.
6. At the meetings of the Board and its Committees, the directors will review and discuss reports by management on the performance of the Corporation, its strategic and operating plans and any significant issues facing the Corporation. It is management's responsibility to submit important information and data to the Board and its Committees in writing in advance of each meeting.
7. The Board shall have such access to management as it deems necessary or desirable for the accomplishment of its responsibilities. The Board has the authority, in its discretion and at the Corporation's expense, to retain independent advisors.
8. The non-management members of the Board will meet as a group in executive session (i.e. with no executive officer or director who is not independent present) at least twice a year to review the overall state of the Corporation, the Corporation's strategy and management's performance, including an evaluation of the CEO. These sessions will be led by the lead independent director for general purposes and the Chair of the Executive Compensation Committee will lead the discussion on management's performance. In addition, every Board meeting may provide time for an executive session if any member of the Board so desires to discuss any matter.
9. The Board will establish performance criteria for itself and annually review the Board's performance against those criteria. These criteria should include guidelines as to the ownership of stock in the Corporation and attendance at Board and Committee meetings. Annually, the Chair of the Corporate Governance Committee will conduct a board evaluation in which directors evaluate individual members as well as the collective Board performance. The Chair of the Corporate Governance Committee will coordinate the development of these criteria and lead the Board's discussions thereof.
10. The Executive Compensation Committee will periodically review the compensation package for directors and make recommendations to the Board for any changes. Such reviews shall take place annually. The Board should make changes in its director compensation only upon recommendation by the Executive Compensation Committee and after discussion and approval by the Board. Both the Executive Compensation Committee and the Board should be guided by the following principles: compensation should fairly pay directors for the work required; compensation should align directors' interests with the long-term interests of shareholders, while not calling into question their objectivity; and the structure of the compensation should be simple, transparent and easy for shareholders to understand.

Adopted: December 13, 2017

Public Staff Kopas
Rebuttal Cross Exam
Exhibit 2

I/A

**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION**
Washington, D.C. 20549

SCHEDULE 14A
(Rule 14a-101)

INFORMATION REQUIRED IN PROXY STATEMENT

SCHEDULE 14A INFORMATION

~~Proxy Statement Pursuant to Section 14(a) of the
Securities Exchange Act of 1934
(Amendment No.)~~

Filed by the Registrant Filed by a Party other than the Registrant

Check the appropriate box:

- Preliminary Proxy Statement
- Confidential, For Use of the Commission Only (as permitted by Rule 14a-6(e)(2))
- Definitive Proxy Statement
- Definitive Additional Materials
- Soliciting Material Under Rule 14a-12

Aqua America, Inc.

(Name of Registrant as Specified In Its Charter)

(Name of Person(s) Filing Proxy Statement, if Other Than the Registrant)

Payment of Filing Fee (Check the appropriate box):

- No fee required.
- Fee computed on table below per Exchange Act Rules 14a-6(i)(4) and 0-11.

1) Title of each class of securities to which transaction applies:

2) Aggregate number of securities to which transaction applies:

3) Per unit price or other underlying value of transaction computed pursuant to Exchange Act Rule 0-11 (set forth the amount on which the filing fee is calculated and state how it was determined):

4) Proposed maximum aggregate value of transaction:

5) Total fee paid:

Fee paid previously with preliminary materials:

Check box if any part of the fee is offset as provided by Exchange Act Rule 0-11(a)(2) and identify the filing for which the offsetting fee was paid previously. Identify the previous filing by registration statement number, or the form or schedule and the date of its filing.

1) Amount previously paid:

2) Form, Schedule or Registration Statement No.:

3) Filing Party:

4) Date Filed:



AQUA

AQUA AMERICA, INC.

2018 ANNUAL MEETING OF SHAREHOLDERS



AQUA.

AQUA

LETTER TO OUR SHAREHOLDERS



Christopher H. Franklin
Chairman, President, and
Chief Executive Officer

Dear Fellow Shareholder,

We look forward to seeing you at our 2018 Annual Meeting of Shareholders which will be held on Tuesday, May 8, 2018 at the Drexelbrook Banquet Facility & Corporate Events Center, 4700 Drexelbrook Drive, Drexel Hill, PA 19026 at 8:30 a.m. local time.

In connection with the Annual Meeting, we have prepared a Notice of Annual Meeting of Shareholders, a Proxy Statement, and our 2017 Annual Report. On or about March 29, 2018, we began mailing to our shareholders these materials or a Notice of Availability of Proxy Materials containing instructions on how to access these materials online.

Whether you plan on attending the Annual Meeting in person or not, we encourage you to read the Proxy Statement and all other materials and vote your shares. You may vote over the Internet, by telephone, or, if you received or requested to receive printed proxy materials, by signing, dating, and returning the proxy card enclosed with the proxy materials in the postage-paid envelope that is provided.

I am honored to serve as the Chairman, President, and Chief Executive Officer of what I believe is the best water and wastewater company in the nation, and I look forward to seeing you at our Annual Meeting in May.

Sincerely,
Christopher H. Franklin

AQUA.

AQUA AMERICA, INC.
762 W. Lancaster Avenue
Bryn Mawr, Pennsylvania 19010

NOTICE OF ANNUAL MEETING OF SHAREHOLDERS

Tuesday, May 8, 2018 at 8:30 A.M. local time

The Annual Meeting of Shareholders of AQUA AMERICA, INC. (the "Company") will be held at the Drexelbrook Banquet Facility & Corporate Events Center, 4700 Drexelbrook Drive, Drexel Hill, PA 19026 on Tuesday, May 8, 2018, at 8:30 A.M., local time, for the following purposes:

1. To consider and take action on the election of seven nominees for directors;
2. To consider and take action on the ratification of the appointment of PricewaterhouseCoopers LLP as the independent registered public accounting firm for the Company for the 2018 fiscal year;
3. To approve an advisory vote on the compensation paid to the Company's named executive officers for 2017, as disclosed in the Proxy Statement; and
4. To transact such other business as may properly come before the meeting or any adjournments or postponements thereof.

Only shareholders of record at the close of business on March 9, 2018 will be entitled to notice of, and to vote at, the meeting and at any adjournments or postponements thereof.

By Order of the Board of Directors,

CHRISTOPHER P. LUNING
Secretary
March 29, 2018

We urge each shareholder to promptly sign and return the enclosed proxy card or to use telephone or internet voting. See our questions and answers about the meeting and the voting section of the proxy statement for information about voting by telephone or internet, how to revoke a proxy and how to vote your shares in person.

AQUA.

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AQUA.

FORWARD-LOOKING INFORMATION

This document includes forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended (the "Securities Act") and Section 21E of the Securities Exchange Act of 1934, as amended (the "Exchange Act"). Forward-looking statements are based on management's beliefs and assumptions. Various factors may cause actual results to be materially different than the suggested outcomes within forward-looking statements. Accordingly, there is no assurance that such results will be realized. For details on the uncertainties that may cause the Company's actual future results to be materially different than those expressed in our forward-looking statements, see our Annual Report on Form 10-K and Quarterly Reports on Form 10-Q filed with the Securities and Exchange Commission ("SEC") and available on the SEC's website at www.sec.gov. In light of these risks, uncertainties, and assumptions, the events described in the forward-looking statements might not occur or might occur to a different extent or at a different time than described. Forward-looking statements speak only as of the date they are made. Aqua America, Inc. expressly disclaims an obligation to publicly update or revise any forward-looking statements, whether as a result of new information, future events, or otherwise.

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PROXY STATEMENT SUMMARY

This summary highlights information contained elsewhere in this proxy statement. This summary does not contain all of the information that you should consider, and you should read the entire proxy statement before voting. For more complete information regarding the Company's 2017 performance, please review the Company's Annual Report on Form 10-K for the year ended December 31, 2017.

ANNUAL MEETING INFORMATION

DATE & TIME	LOCATION	RECORD DATE
Tuesday, May 8, 2018 8:30 a.m., local time	Drexelbrook Banquet Facility & Corporate Events Center 4700 Drexelbrook Drive Drexel Hill, PA 19026	Record holders as of March 9, 2018 are entitled to notice of, and to vote at, the Annual Meeting

SUMMARY OF MATTERS TO BE VOTED UPON AT THE ANNUAL MEETING

The following table summarizes the items that shareholders are being asked to vote on at the 2018 Annual Meeting:

PROPOSAL 1. ELECTION OF DIRECTORS (PAGE 2)	BOARD RECOMMENDATION
The Board of Directors of the Company (the "Board") and the Corporate Governance Committee believe that the seven director nominees possess the necessary qualifications, attributes, skills, and experience to provide advice and counsel to the Company's management and effectively oversee the business and the long-term interests of our shareholders.	FOR each director nominee
PROPOSAL 2. RATIFICATION OF THE APPOINTMENT OF PRICEWATERHOUSECOOPERS LLP AS THE INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM FOR THE 2018 FISCAL YEAR (PAGE 19)	BOARD RECOMMENDATION
The Board believes that the retention of PricewaterhouseCoopers LLP as the Company's independent registered public accounting firm for the 2018 fiscal year is in the best interests of the Company and its shareholders. As a matter of good corporate governance, shareholders are being asked to ratify the Audit Committee's selection of PricewaterhouseCoopers LLP.	FOR Proposal 2
PROPOSAL 3. APPROVAL, ON AN ADVISORY BASIS, OF THE COMPENSATION PAID TO THE COMPANY'S NAMED EXECUTIVE OFFICERS FOR 2017 (PAGE 22)	BOARD RECOMMENDATION
The Company seeks a non-binding advisory vote to approve the compensation of its named executive officers as described in the Compensation Discussion and Analysis ("CD&A") and the compensation tables and narrative discussion. The Board values shareholders' opinions, and the Compensation Committee will take into account the outcome of the advisory vote when considering future executive compensation decisions.	FOR Proposal 3

CORPORATE GOVERNANCE HIGHLIGHTS

We are committed to maintaining strong standards of corporate governance, which promote the long-term interests of our shareholders, strengthen Board and management accountability, and help build public trust in the Company. The “Corporate Governance” section beginning on page 8 describes our corporate governance framework, which includes the following highlights:

- Annual election of directors
- Majority voting resignation policy in uncontested election of directors
- Mandatory retirement age of 75 for directors
- Risk oversight by full Board and all committees
- Annual self-evaluations of the Board, its committees and individual directors
- Commenced active shareholder engagement program in 2017
- Lead Independent Director with clearly defined and robust responsibilities
- Independent audit, compensation, and governance committees
- Robust oversight of cybersecurity measures by full Board and identified committee
- Anti-hedging and anti-pledging policy
- Robust director and management stock ownership guidelines
- Diversity—approximately 30% of the Board is gender diverse

DIRECTOR NOMINEES

The following table provides summary information about each of the Company’s seven director nominees. Each director shall serve a one year term if elected.

Name & Primary Occupation	Age	Director Since	Independent	Other Public Company Boards	Committee Memberships				
					A	C	CG	E	R
Carolyn J. Burke <i>Executive Vice President, Strategy, Dynegy, Inc.</i>	50	2016	YES	0	✓	✓			
Nicholas DeBenedictis <i>Chairman Emeritus and Former Chief Executive Officer, Aqua America, Inc.</i>	72	1992	NO	3					✓
Christopher H. Franklin <i>Chairman, President and Chief Executive Officer, Aqua America, Inc.</i>	52	2015	NO	0				★	✓
William P. Hankowsky <i>Chairman, President and Chief Executive Officer, Liberty Property Trust</i>	67	2004	YES	2	★		✓	✓	
Daniel J. Hilferty ¹ <i>President and Chief Executive Officer, Independence Health Group</i>	61	2017	YES	0		✓	★	✓	
Wendell F. Holland <i>Partner, CFSD Group, LLC</i>	66	2011	YES	0			✓		✓
Ellen T. Ruff <i>Partner, McGuireWoods, LLP</i>	69	2006	YES	0		★	✓	✓	

¹ Lead Independent Director

★ Chair / Member

A = Audit Committee; C = Executive Compensation Committee; CG = Corporate Governance Committee;

E = Executive Committee; R = Risk Mitigation & Investment Policy Committee

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COMPENSATION HIGHLIGHTS

- Compensation program highly correlated to total shareholder return, earnings per share, and other financial metrics
- Performance-based
- Significant portion of compensation is variable and at risk
- Modest perquisites and other personal benefits
- All change-in control agreements are double-trigger
- Clawback policies in place
- Shareholder say on pay results in excess of 93% for six years
- Shareholding requirement ensure that executives are aligned with shareholders
- Reasonable change in control agreements in place
- Reasonable severance arrangements
- No tax gross ups
- Compensation committee conducted request for proposal process to determine its independent compensation consultant

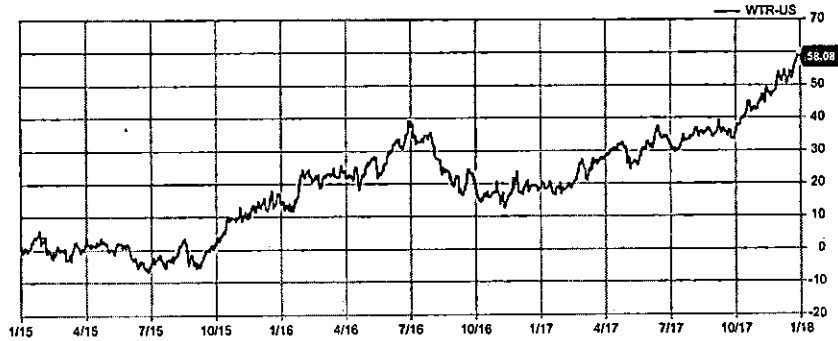
2017 FINANCIAL HIGHLIGHTS

During 2017, our leadership team remained focused on growing our customer base through acquisitions, prudently investing capital to renew our aging infrastructure, and creating efficiencies across the organization. Our efforts help to ensure quality water and wastewater for our customers as well as shareholder value. We see great opportunities ahead and remain focused on investing in infrastructure and delivering sustainable growth for our investors. We do this while building on our core values of respect, integrity, and excellence.

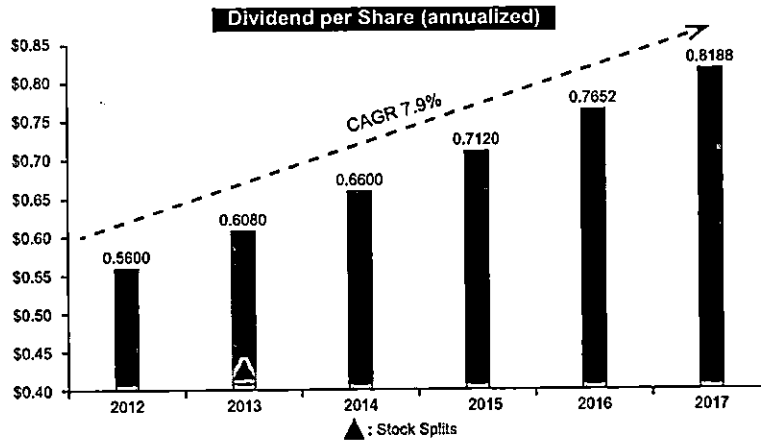
- We are making significant investments to build and improve our communities' infrastructure. Over the past five years, we have invested more than \$1.5 billion in infrastructure improvements, including hundreds of miles of pipe replacement and plant upgrades to enhance water quality. In 2017, we invested more than \$450 million on infrastructure projects, helping to ensure safe and reliable water for all customers.
- Regulated segment revenues were \$804.9 million in 2017.
- Earnings per share increased to \$1.35 in 2017, an increase over the earnings per share of \$1.32 in 2016.
- Operations and maintenance expenses decreased 5.8% to \$287.2 million in 2017 from \$304.9 million in 2016.
- We added more than 10,000 customer connections in 2017.
- We increased our total customer connection count by more than 1%, which includes additional customers from organic and acquisition growth.

- From January 1, 2015 to December 31, 2017, the total return to our shareholders, including share price appreciation and dividends paid, shows 58.08% growth. Below is a chart showing the return to our shareholders over the past three years:

WTR: Total Return 2015 - 2017



- In 2017, the Board of Directors approved a 7% increase in the quarterly dividend to an annualized rate of \$0.82 per share.



IMPORTANT NOTICE REGARDING THE AVAILABILITY OF PROXY MATERIALS FOR THE ANNUAL MEETING OF SHAREHOLDERS TO BE HELD ON MAY 8, 2018

The Notice of Annual Meeting, Proxy Statement and 2017 Annual Report to Shareholders are available at: <http://ir.aquaamerica.com/>

AQUA AMERICA, INC.
762 W. Lancaster Avenue, Bryn Mawr, Pennsylvania 19010

PROXY STATEMENT

This proxy statement (the "Proxy Statement") is furnished in connection with the solicitation of proxies by the Board of Directors (the "Board of Directors" or the "Board") of Aqua America, Inc. ("Aqua America", "Aqua" or the "Company") to be used at the Annual Meeting of Shareholders to be held on Tuesday, May 8, 2018 at 8:30 a.m., local time, and at any adjournments or postponements thereof ("2018 Annual Meeting" or the "Annual Meeting").

The cost of soliciting proxies will be paid by the Company, which has arranged for reimbursement at the rate suggested by the New York Stock Exchange (the "NYSE") of brokerage houses, nominees, custodians and fiduciaries for the forwarding of proxy materials to the beneficial owners of shares held of record. In addition, the Company has retained Alliance Advisors LLC to assist in the solicitation of proxies from (i) brokers, bank nominees and other institutional holders, and (ii) individual holders of record. The fee paid to Alliance Advisors LLC for normal proxy solicitation does not exceed \$7,500 plus expenses, which will be paid by the Company. Directors, officers and regular employees of the Company may solicit proxies, although no compensation will be paid by the Company for such efforts.

Under rules adopted by the SEC, the Company is now furnishing proxy materials to many of its shareholders on the Internet, rather than mailing printed copies of those materials to each shareholder. If you received a notice of availability over the Internet of the proxy materials ("Notice") by mail, you will not receive a printed copy of the proxy materials unless you request one. Instead, the Notice will instruct you as to how you may access and review the proxy materials on the Internet. If you received a Notice by mail and would like to receive a printed copy of our proxy materials, please follow the instructions included in the Notice. The Notice is being sent to shareholders of record as of March 9, 2018 on or about March 29, 2018. Proxy materials, which include the Notice of Annual Meeting of Shareholders, this Proxy Statement and the Annual Report to Shareholders for the year ended December 31, 2017, including financial statements and other information with respect to the Company and its subsidiaries (the "Annual Report"), are first being made available to shareholders of record as of March 9, 2018, on or about March 29, 2018. Additional copies of the Annual Report may be obtained by writing to the Company at the address and in the manner set forth under "Additional Information" on page 71.

PURPOSE OF THE MEETING

As the meeting is the Annual Meeting of Shareholders, the shareholders of the Company will be requested to:

- Consider and take action on the election of seven nominees for directors;
- Consider and take action on the ratification of the appointment of PricewaterhouseCoopers LLP as the independent registered public accounting firm for the Company for the 2018 fiscal year;
- Approve a non-binding advisory vote on the compensation paid to the Company's named executive officers for 2017 as disclosed in this Proxy Statement; and
- Transact such other business as may properly come before the meeting or any adjournments or postponements thereof.

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PROPOSAL NO. 1

ELECTION OF DIRECTORS

All of the director nominees who are elected, will be elected for a one-year term expiring at the 2019 Annual Meeting of Shareholders, and until their successors are duly elected and qualified. In accordance with the Company's Corporate Governance Guidelines, the Chairperson of the Corporate Governance Committee reported to the Corporate Governance Committee that Carolyn J. Burke, Nicholas DeBenedictis, Christopher H. Franklin, William P. Hankowsky, Daniel J. Hilferty, Wendell F. Holland, and Ellen T. Ruff would be willing to serve on the Board of Directors, if elected. The Corporate Governance Committee reviewed the qualifications of the directors in relation to the criteria for candidates for nomination for election to the Board of Directors under the Company's Corporate Governance Guidelines. The Corporate Governance Committee voted to recommend to the Board of Directors, and the Board of Directors approved, the nomination of Ms. Burke, Mr. DeBenedictis, Mr. Franklin, Mr. Hankowsky, Mr. Hilferty, Mr. Holland, and Ms. Ruff for election as directors at the 2018 Annual Meeting, with each nominee abstaining from the vote with respect to his or her nomination.

Therefore, seven directors will stand for election by a plurality of the votes cast at the 2018 Annual Meeting. At the 2018 Annual Meeting, proxies in the accompanying form, properly executed, will be voted for the election of the nominees listed below, unless authority to do so has been withheld in the manner specified in the instructions on the proxy card or the record holder does not have discretionary voting power under the NYSE rules (see "What is the proxy?" on page 65 and "Information About Proposals Under Consideration at This Meeting" on page 68). Discretionary authority is reserved to cast votes for the election of a substitute should any nominee be unable or become unwilling to serve as a director. Each nominee has stated his or her willingness to serve and the Company believes that the nominees will be available to serve.

INFORMATION REGARDING NOMINEES

For each of the seven nominees for election as directors at the 2018 Annual Meeting, set forth below is information as to the positions and offices with the Company held by each, the principal occupation of each during at least the past five years, the directorships of public companies and other organizations held by each and the experience, qualifications, attributes or skills that, in the opinion of the Corporate Governance Committee and the Board of Directors, make the individual qualified to serve as a director of the Company. The chart below summarizes the experience, qualifications, attributes, and skills of each of the nominees:

Experience, Qualifications, Attributes and Skills	Utility Industry	Regulatory	Financial	Legal/ Government	Leadership	Mergers & Acquisitions	Geographic Diversity	"C-Suite" Experience
BURKE	X	X	X		X	X	X	X
DEBENEDICTIS	X	X	X	X	X	X		X
FRANKLIN	X	X	X	X	X	X		X
HANKOWSKY			X		X	X		X
HILFERTY		X	X		X	X		X
HOLLAND	X	X		X	X	X		
RUFF	X	X		X	X	X	X	X

NOMINEES FOR ELECTION AT THE 2018 ANNUAL MEETING



CAROLYN J. BURKE

EXECUTIVE VP, STRATEGY, DYNEGY, INC.

AGE: 50
DIRECTOR SINCE 2016

MEMBER, AUDIT COMMITTEE
MEMBER, EXECUTIVE COMPENSATION COMMITTEE

Biography: Ms. Burke has served as Executive Vice President, Strategy at Dynegy, Inc. ("Dynegy") since October 2016. In this role, she leads Dynegy's strategic planning activities and is responsible for its clean technology strategy. Since October 2014, she has also served as Chief Integration Officer with overall responsibility for integration management, most recently integrating Dynegy's acquisition of ENGIE's US fossil portfolio. From July 2015 through October 2016, Ms. Burke served as Executive Vice President, Business Operations and Systems at Dynegy with overall responsibility for Procurement, Safety, Environmental, Information Technology, Construction & Engineering, Outage Services and PRIDE-Dynegy's signature continuous margin and process improvement program. From August 2011 to October 2014, Ms. Burke served as Dynegy's Chief Administrative Officer over corporate functions including Communications, Human Resources, Information Technology, Investor Relations and Regulatory Affairs. Prior to joining Dynegy, Ms. Burke served as Global Controller for JP Morgan's Global Commodities business. She was also NRG Energy, Inc.'s Vice President & Corporate Controller from 2006 to 2008 and Executive Director of Planning and Analysis from 2004 to 2006. Early in her career, she held various key financial roles at Yale University, the University of Pennsylvania and at Atlantic Richfield Company. Ms. Burke graduated from Wellesley College with a BA in Economics and Political Science and earned her MBA at The University Chicago Booth School of Business.

Qualifications: Ms. Burke has over 20 years of experience in various roles within the energy and infrastructure industry with responsibilities ranging from accounting and finance, to information technology and human resources to operations and environmental compliance. The Board of Directors views Ms. Burke's independence, her broad experience in finance and operations, and her leadership roles within the industry as important qualifications, skills and experience that support the Board of Directors' conclusion that Ms. Burke should serve as a director of the Company.



NICHOLAS DEBENEDICTIS

CHAIRMAN EMERITUS, AQUA AMERICA, INC.

AGE: 72
DIRECTOR SINCE 1992

MEMBER, RISK MITIGATION AND INVESTMENT POLICY COMMITTEE

Biography: Mr. DeBenedictis is Chairman Emeritus, of the Board, having retired as Chief Executive Officer of the Company in 2015 and as non-executive Chairman of the Board in 2017. Mr. DeBenedictis was Chief Executive Officer from 1992 until 2015 and Chairman of the Board from 1993 until 2017. Between April 1989 and June 1992, he served as Senior Vice President for Corporate Affairs of PECO Energy Company (an Exelon

Corporation). From December 1986 to April 1989, he served as President of the Greater Philadelphia Chamber of Commerce and from 1983 to 1986 he served as the Secretary of the Pennsylvania Department of Environmental Resources. Mr. DeBenedictis is a director of Exelon Corporation, P.H. Glatfelter Company and Mistras Group. He also serves on the Boards of Pennsylvania area non-profit, civic, and business organizations, including Independence Health Group.

Qualifications: In addition to his knowledge and experience as the Company's previous Chairman of the Board from 1993 to 2017 and Chief Executive Officer from 1992 to 2015, and his prior experience as a senior executive of a major electric utility, Mr. DeBenedictis has experience as the head of Pennsylvania's environmental regulatory agency. He serves as a director of three other public companies, including, from time to time, as a member of the corporate governance, audit, finance and compensation committees of those companies. Mr. DeBenedictis has also held leadership positions with various, educational, business, civic and charitable institutions. The Board of Directors views Mr. DeBenedictis' experience with various aspects of the utility industry and his demonstrated leadership roles in business and community activities as important qualifications, skills and experience supporting the Board of Directors' conclusion that Mr. DeBenedictis should serve as a director of the Company.



CHRISTOPHER H. FRANKLIN

CHAIRMAN, PRESIDENT, AND CHIEF EXECUTIVE OFFICER, AQUA AMERICA, INC.

AGE: 52
DIRECTOR SINCE 2015

CHAIR, EXECUTIVE COMMITTEE
MEMBER, RISK MITIGATION AND INVESTMENT POLICY COMMITTEE

Biography: Christopher H. Franklin is Chairman, President, and Chief Executive Officer of the Company. Previously, Mr. Franklin served as President and Chief Executive Officer from July 2015 to December 2017; as Executive Vice President, and President and Chief Operating Officer, Regulated Operations (January 2012 to July 2015); Regional President—Midwest and Southern Operations and Senior Vice President, Public Affairs (January 2010 to January 2012); Regional President—Southern Operations and Senior Vice President, Public Affairs and Customer Relations (February 2007 to January 2010); Vice President, Public Affairs and Customer Operations (May 2005 to February 2007); Vice President, Corporate and Public Affairs (February 1997 to May 2005); and Manager Corporate & Public Affairs (December 1992 to February 1997).

Qualifications: Since joining the Company in December 1992 as manager, corporate and public affairs, Mr. Franklin headed several successful projects, including advocacy for the passage of legislation designed to provide customers of state-regulated water and wastewater utilities with improved water quality and better water and wastewater systems while allowing a fair and reasonable return for shareholders. Before joining the Company, Mr. Franklin worked at PECO Energy Company (an Exelon company) where he was regional, civic and economic development officer, responsible for the review, recommendation and promotion of economic development initiatives in the Philadelphia region. Mr. Franklin earned his B.S. from West Chester University and his M.B.A. from Villanova University. Mr. Franklin is active in the community and serves on the following nonprofit boards: University of Pennsylvania Board of Trustees, Philadelphia, PA and West Chester University's Council of Trustees, West Chester, PA, and previously served on the Board of Directors of ITC Holdings, Inc. The Board of Directors views Mr. Franklin's experience, capabilities, and his demonstrated leadership roles with the Company and in business and community activities as important qualifications, skills and experience supporting the Board of Directors' conclusion that Mr. Franklin should serve as a director of the Company.

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WILLIAM P. HANKOWSKY

PRESIDENT, CHIEF EXECUTIVE OFFICER, AND CHAIRMAN, LIBERTY PROPERTY TRUST

AGE: 67

DIRECTOR SINCE 2004

CHAIR, AUDIT COMMITTEE

MEMBER, EXECUTIVE COMMITTEE

MEMBER, CORPORATE GOVERNANCE COMMITTEE

Biography: Mr. Hankowsky has been President, Chief Executive Officer, and Chairman of Liberty Property Trust, a fully integrated real estate firm, since 2003. Mr. Hankowsky joined Liberty in 2001 as Executive Vice President and Chief Investment Officer. Prior to joining Liberty, he served for 11 years as President of the Philadelphia Industrial Development Corporation. Prior to that, he was Commerce Director for the City of Philadelphia. Mr. Hankowsky serves on the Board of Directors of Citizens Financial Group and on various charitable and civic boards, including the Greater Philadelphia Chamber of Commerce and the Pennsylvania Academy of Fine Arts.

Qualifications: Mr. Hankowsky has over 35 years of experience managing public, private and non-profit organizations, including eleven years as Chairman and Chief Executive Officer of Liberty Property Trust, a publicly traded Real Estate Investment Trust which owns 100 million square feet of office and industrial space in over 24 markets throughout the United States and the United Kingdom. He has experience in financing, acquisitions and real estate matters across the United States. Mr. Hankowsky has also held leadership positions with various cultural and civic institutions in the greater Philadelphia region. Mr. Hankowsky has served as Chairman of the Company's Executive Compensation Committee from 2005 through 2015, and presently serves as Chairman of the Company's Audit Committee. The Board of Directors has determined that Mr. Hankowsky is an independent director, financially literate and an audit committee financial expert within the meaning of applicable SEC rules. The Board of Directors views Mr. Hankowsky's independence, his experience with real estate, financing and acquisitions and his demonstrated leadership roles in business and community activities as important qualifications, skills and experience supporting the Board of Directors' conclusion that Mr. Hankowsky should serve as a director of the Company.



DANIEL J. HILFERTY

LEAD INDEPENDENT DIRECTOR, AQUA AMERICA, INC.

PRESIDENT AND CEO, INDEPENDENCE HEALTH GROUP

AGE: 61

DIRECTOR SINCE 2017

CHAIR, CORPORATE GOVERNANCE COMMITTEE

MEMBER, EXECUTIVE COMMITTEE

MEMBER, EXECUTIVE COMPENSATION COMMITTEE

Biography: Mr. Hilferty has served as the President and Chief Executive Officer of Independence Health Group ("IHG"), one of the nation's leading health insurers serving 9 million customers in 25 states and Washington D.C., since 2010. Mr. Hilferty is past Chairman of the Board of Directors for the Blue Cross and Blue Shield Association, serves on the Executive Committee of the Board of Directors of America's Health Insurance Plans, and on the Board of Directors of BCS Financial, where he serves as Chairman of the BCS Audit Committee. In 2015, he served as co-chair on the Executive Leadership Cabinet of the World Meeting of Families. Prior to 2010, Mr. Hilferty was President and Chief Executive Officer of the AmeriHealth Mercy Family of Companies, Executive Director of PennPORTS in the administration of Pennsylvania Governor Robert P. Casey, and

AQUA.

Assistant Vice President overseeing community and media relations for Saint Joseph's University. Mr. Hilferty also serves on the Board of Directors for Fund III of Franklin Square Investments.

Qualifications: Mr. Hilferty has extensive knowledge and experience in the areas of mergers and acquisitions, the health care field, and government relations and regulation. Based on Mr. Hilferty's experience, qualifications, and knowledge, in 2017, the Board of Directors determined that Mr. Hilferty should serve as its Lead Independent Director. Prior to doing so, the Board reviewed; as part of its independence determination, information that IHG serves as the administrator for the Company's self-insured health plans for the employees of the Company and its subsidiaries. The Board then determined that Mr. Hilferty is independent in accordance with the Company's corporate governance guidelines and applicable NYSE and SEC requirements. The Board of Directors views Mr. Hilferty's independence, his experience with regulation, his reputation in the healthcare industry, and his leadership roles in business and community activities as important qualifications, skills and experience supporting the Board of Directors' conclusion that Mr. Hilferty should serve as a director of the Company.



WENDELL F. HOLLAND

PARTNER, CFSD GROUP, LLC

AGE: 66

DIRECTOR SINCE 2011

MEMBER, CORPORATE GOVERNANCE COMMITTEE

MEMBER, RISK MITIGATION AND INVESTMENT POLICY COMMITTEE

Biography: Mr. Holland has been a partner in CFSD Group, LLC, advisors for local and regional utility financing, since July 2009. Mr. Holland was partner in the law firm of Saul Ewing, LLP from October 2008 to September 2013. Mr. Holland served as Chairman of the Pennsylvania Public Utility Commission from 2004 to 2008 and as a Commissioner from 1990 to 1993, and 2003 to 2004. Mr. Holland was Of Counsel to the law firm of Obermayer Rebman from 1999 to 2003, Vice President of American Water Works Company from 1996 to 1999 and a partner at the law firm of LeBoeuf Lamb Greene and McRae from 1993 to 1995. He has served as Treasurer of the National Association of Utility Regulatory Commissioners (NARUC) and also served on NARUC's Executive Committee, Board of Directors, and as Chairman of its Audit and Investment Committees. He is a director of Bryn Mawr Trust Bank, Main Line Health, and was a member of the Allegheny Energy Board of Directors from 1994 to 2003.

Qualifications: Mr. Holland has extensive knowledge and experience in the regulation of public utilities, especially water utilities. His experience as chairman of the Public Utility Commission in Pennsylvania for four years and a Commissioner for an additional four years enables him to provide valuable insight into the regulatory process. His prior service as a member of the Board of Directors of a large, publicly traded energy company also enables him to play a meaningful role on the Company's Board of Directors. As outside counsel to, and an executive at other public utility companies, he has a valuable perspective on the various issues facing public utility companies. The Board of Directors has determined that Mr. Holland is an independent director. The Board of Directors views Mr. Holland's independence, his experience with utility regulation and utility operations, his reputation in the utility industry and his leadership roles in business and community activities as important qualifications, skills and experience supporting the Board of Directors' conclusion that Mr. Holland should serve as a director of the Company.



ELLEN T. RUFF

PARTNER, MCGUIREWOODS, LLP AND FORMER PRESIDENT, DUKE ENERGY

AGE: 69

DIRECTOR SINCE 2006

CHAIR, EXECUTIVE COMPENSATION COMMITTEE

MEMBER, EXECUTIVE COMMITTEE

MEMBER, CORPORATE GOVERNANCE COMMITTEE

Biography: Ms. Ruff is a partner in the law firm of McGuireWoods, LLP. She was President, Office of Nuclear Development, for Duke Energy Corporation, from December 2008 until her retirement in January 2011. From April 2006 through December 2008, Ms. Ruff was President of Duke Energy Carolinas, an electric utility that provides electricity and other services to customers in North Carolina and South Carolina. Ms. Ruff joined Duke Energy in 1978 and during her career held a number of key positions, including: Vice President and General Counsel of Corporate, Gas and Electric Operations; Senior Vice President and General Counsel for Duke Energy; Senior Vice President of Asset Management for Duke Power; Senior Vice President of Power Policy and Planning; and Group Vice President of Planning and External Affairs.

Qualifications: Ms. Ruff has over 30 years of experience with a major utility company in various management, operations, legal planning and public affairs positions. Ms. Ruff has lived and worked in North Carolina, an important area of the Company's operations, for many years. Ms. Ruff has served as a member of the Company's Executive Compensation Committee since 2006. The Board of Directors has determined that Ms. Ruff is an independent director. The Board of Directors views Ms. Ruff's independence, her experience with various aspects of the utility industry, her knowledge of North Carolina and her demonstrated leadership roles in business and community activities as important qualifications, skills and experience supporting the Board of Directors' conclusion that Ms. Ruff should serve as a director of the Company.

CORPORATE GOVERNANCE

The Board of Directors operates pursuant to a set of written Corporate Governance Guidelines. Copies of these Guidelines can be obtained free of charge from the Corporate Governance portion of the Investor Relations section of the Company's website: www.aquaamerica.com. Our website is not part of this Proxy Statement. References to our website address in this Proxy Statement are intended to be inactive textual references only.

DIRECTOR INDEPENDENCE

The Board of Directors is, among other things, responsible for determining whether each of the directors is independent in light of any relationship such director may have with the Company. The Board has adopted Corporate Governance Guidelines that contain categorical standards of director independence that are consistent with the listing standards of the NYSE. Under the Company's Corporate Governance Guidelines, a director will not be deemed independent if:

- The director is, or has been within the last three years, an employee of the Company, or an immediate family member is, or has been within the last three years, an executive officer of the Company;
- (A) the director or an immediate family member is a current partner of a firm that is the Company's internal or external auditor, (B) the director is a current employee of such a firm, (C) the director has an immediate family member who is a current employee of such a firm and personally works on the Company's audit, or (D) the director or an immediate family member was within the last three years (but is no longer) a partner or employee of such firm and personally worked on the Company's audit within that time;
- The director or an immediate family member is, or has been within the last three years, employed as an executive officer of another company where any of the Company's present executive officers at the same time serves or served on that company's compensation committee;
- The director has received, or has an immediate family member who has received, during any twelve-month period within the last three years, more than \$120,000 in direct compensation from the Company, other than director and committee fees and pension or other forms of deferred compensation for prior service (provided such compensation is not contingent in any way on continued service) and, in the case of an immediate family member who is not an executive officer, other than compensation for service as an employee of the Company;
- The director is an executive officer or employee, or someone in her/his immediate family is an executive officer, of another company that, during any of the other company's past three fiscal years made payments to, or received payments from, the Company for property or services in an amount which, in any single fiscal year of the other company, exceeded the greater of \$1 million or 2% of the other company's consolidated gross revenues; or
- The director serves as an executive officer of a charitable organization and, during any of the charitable organization's past three fiscal years, the Company made charitable contributions to the charitable organization in any single fiscal year of the charitable organization that exceeded the greater of \$1 million or two percent of the charitable organization's consolidated gross revenues.

For purposes of the categorical standards set forth above, (a) a person's immediate family includes a person's spouse, parents, children, siblings, mothers- and fathers-in-law, sons- and daughters-in-law, and brothers- and sisters-in-law and anyone (other than domestic employees) who shares such person's home, (b) the term "executive officer" has the same meaning specified for the term "officer" in Rule 16a-1(f) under the Exchange Act, and (c) the "Company" includes Aqua and its consolidated subsidiaries. In addition to these categorical standards, no director will be considered independent unless the Board of Directors affirmatively

determines that the director has no material relationship with the Company (either directly, or as a partner, shareholder, director or officer, of an organization that has a relationship with the Company). When making independence determinations, the Board of Directors broadly considers all relevant facts and circumstances surrounding any relationship between a director or nominee and the Company. Transactions, relationships and arrangements between directors or members of their immediate family and the Company that are not addressed by the categorical standards may be material depending on the relevant facts and circumstances of such transactions, relationships and arrangements. The Board of Directors considered the following transactions, relationships and arrangements in connection with making the independence determinations for the current Board of Directors:

1. The Company made contributions to charitable or civic organizations for which the following directors serve as directors, trustees or executive officers: Mr. DeBenedictis, Mr. Franklin, Mr. Hankowsky, and Mr. Hilferty. None of the Company's contributions exceeded the greater of \$1 million or 2% of the recipient organization's consolidated gross revenues.
2. The Company provides water service at normal tariff rates to Liberty Property Trust or its affiliates, Independence Health Group or its affiliates ("IHG"), and provides water service to Dynegy or its affiliates pursuant to a contractually negotiated rate that is filed with the Pennsylvania Public Utility Commission. It provides water service pursuant to normal tariff rates to Exelon Corporation ("Exelon") or its affiliates to Main Line Health Systems or its affiliates ("Main Line Health"), and to Bryn Mawr Bank Corp. or its affiliates ("Bryn Mawr Trust"). Mr. Hankowsky serves as an executive officer of Liberty Property Trust, Mr. Hilferty serves as President and Chief Financial Officer of IHG, Ms. Burke is Executive Vice President at Dynegy, Mr. DeBenedictis serves as a member of the Board of Directors of Exelon, and Mr. Holland is a Trustee of Main Line Health and serves as a member of the Board of Directors of Bryn Mawr Trust. Exelon or its affiliates provides electric service at tariff rates to the Company. The amounts paid to the Company by these other entities, and paid by the Company to Exelon are pursuant to tariff rates or a contract that is filed with the Pennsylvania Public Utility Commission, are not material to these other entities.
3. The Company has banking arrangements with Citizens Financial Group or its affiliates, and Mr. Hankowsky is a member of the Board of Directors of Citizens Financial Group. The amounts paid by the Company to Citizens Financial Group or its affiliates are not material to these entities or to the Company.
4. The Company has insurance arrangements with IHG or its affiliates. The Company contracts with IHG to serve as the administrator of the Company's self-insured medical plans for the Company's employees. As a benefit of employment, the Company offers its employees medical insurance benefits through plans established by IHG. The Company is self-insured for all of these plans, and has contracted with IHG to serve as the administrator of the Company's medical plans. As compensation for these administrative services, the Company paid fees to IHG. For each of the last three fiscal years, the fees paid to IHG, IHG's gross revenues, and the fees as a percentage of IHG's gross revenues were as follows:

Fiscal Year	Fees Paid to IHG	IHG Gross Revenues	Fees Paid as a Percentage of IHG Gross Revenues
2015	\$1,445,505	\$13,800,000,000	0.010%
2016	\$1,455,046	\$16,700,000,000	0.009%
2017	\$2,313,302	\$16,500,000,000	0.014%

5. Under the self-insured nature of the medical plans, the Company also submitted payments to IHG to maintain the necessary insurance reserves and to pay medical claims made for such years. As administrator, these payments were “pass through” payments and do not represent compensation to, or revenue of, IHG. The following “pass through” payments were made to IHG in the last three fiscal years:

Fiscal Year	Pass Through Payments
2015	\$13,853,922
2016	\$14,985,194
2017	\$12,763,289

The amounts paid by the Company to IHG are not material to IHG or to the Company.

6. Mr. DeBenedictis is a member of the Board of Directors of IHG.

Based on a review applying the standards set forth in the Company’s Corporate Governance Guidelines, including a review of the applicable NYSE, SEC, and Company standards, and considering the relevant facts and circumstances of the transactions, relationships, and arrangements between the Directors and the Company described above, the Board of Directors has affirmatively determined that each nominee for director, other than Mr. Franklin, the Company’s Chairman, President, and Chief Executive Officer, and Mr. DeBenedictis, the Company’s Chairman Emeritus and former Chief Executive Officer, is independent.

BOARD OF DIRECTORS LEADERSHIP STRUCTURE

In 2017, the Board of Directors determined to recombine the roles of Chairman and Chief Executive Officer. As such, Mr. Franklin serves as Chairman of the Board and Chief Executive Officer. The Board of Directors believes this structure provides continuity and efficiency for the Company, while providing clear accountability to the execution of the Company’s strategy and its results.

Under this present structure, the Board of Directors annually elects a lead independent director to coordinate the activities of the other independent directors and enhance the role of the independent directors in the overall corporate governance of the Company. At the same time that Mr. Franklin was appointed Chairman, Mr. Hilferty was elected the Lead Independent Director.

The duties and powers of the lead independent director include:

- Presiding at all meetings of the Board at which the Chairman of the Board is not present, including executive sessions of the independent directors;
- Serving as liaison between the independent directors and the Chairman of the Board;
- Consulting with the Chairman of the Board, reviewing and approving meeting agendas and information provided to the Board for meetings, including the authority to add items to the agendas for any such meeting;
- Reviewing and approving meeting schedules to assure that there is sufficient time for discussion of all agenda items;
- Having the authority to call executive sessions of the independent directors and to prepare the agendas for such executive sessions;
- If requested by major shareholders, ensuring that he is available for consultation and direct communications;
- Serving as a member of the Executive Committee;

- In the event of the death or incapacity of the Chairman, becoming the acting Chairman of the Board until a new Chairman is selected; and
- Having the authority (with the approval of at least the majority of the directors) to engage such legal, financial or other advisors as the independent directors shall deem appropriate at the expense of the Company and without consultation or the need to obtain approval of any officer of the Company.

AGE AND TERM LIMITS

The Board believes that term limits are an important element of good governance. However, it also believes that it must strike the appropriate balance between the contribution of directors who have developed, over a period of time, meaningful insight into the Company and its operations, and therefore can provide an increasing contribution to the Board as a whole. Accordingly, in 2015 the Board established that upon the fifteenth anniversary of a director accepting an initial appointment or election to the Board of Directors, the director shall tender his or her resignation to the Board (the "Term Limit Policy"). The Term Limit Policy does not apply to directors who were elected on or before December 1, 2015.

In 2017, the Board also re-evaluated its position on mandatory retirement based upon the age of a director. Following extensive research, including conducting an outreach program to the Company's largest shareholders in which the Company sought the opinion of those shareholders, the Board determined that increasing the age for a director to submit his or her resignation from the Board of Directors to 75 was appropriate. As such, all directors are required to submit their resignation from the Board effective as of their 75th birthday.

ANNUAL PEER, COMMITTEE, BOARD EVALUATION

Each year, Directors complete a targeted questionnaire to assess the performance of the Board, each of the standing Committees, and each of the Directors individually. The questionnaire elicits quantitative and qualitative ratings in key areas of Board operation and function. Each Committee member completes questions to evaluate how well the Committees on which he or she serves are functioning and to provide suggestions for improvement.

In 2017, the Board conducted a peer review process by which each Director was asked to provide feedback on a number of characteristics of each of the other Directors, including leadership, preparation, focus on shareholder interests, and participation. The peer review process was administered by an independent consulting group, The Center for Board Excellence. The results of these reviews were then provided to each Director and, in 2018, the Chairman and the Lead Independent Director will meet with each Director to review the results of the evaluations.

SHAREHOLDER ENGAGEMENT

In 2017, the Company conducted an outreach campaign to our top 15 shareholders and met with the holders of approximately 27% of the Company's outstanding shares. We engaged with every shareholder who accepted our offer to meet. We engaged with shareholders on numerous topics during the year, including executive compensation matters, merger and acquisition strategy, the impact of Pennsylvania's anti-takeover laws on such strategy, sustainability, and social and governance issues. We also discussed the combination of our Chairman and Chief Executive Officer roles, the strong role our Lead Independent Director plays in our Board structure, and increasing the mandatory age upon which a Director must submit his resignation.

DIRECTOR ONBOARDING

In 2017, the Company appointed Mr. Hilferty as a Director. In addition to informal meetings with the existing Directors, and in conjunction with his appointment, Mr. Hilferty participated in an onboarding process

that included day-long meetings with the named executive officers focused on items such as merger and acquisition strategy, regulatory matters, utility accounting and financing, water and wastewater operations, Board governance functions, and the Company's Articles of Incorporation, its Bylaws, and its Corporate Governance Guidelines.

OVERSIGHT OF RISK MANAGEMENT

The Board oversees management's risk management activities through a combination of processes:

- Pursuant to its charter, the Risk Mitigation and Investment Policy Committee's primary purpose is to assist the Board of Directors in fulfilling its oversight responsibilities with respect to the Company's risk management practices, the Company's compliance with legal and regulatory requirements, the Company's potential investments in acquisitions and growth vehicles, and to review and approve the Company's risk management framework.
- At least quarterly, the Risk Mitigation and Investment Policy Committee reviews the results of the Company's enterprise risk management process, and management presents to the Board a report on the status of the risks and the metrics used to monitor those risks. Each risk that is tracked as part of the enterprise risk management process has a member of the Company's management who serves as the owner and monitor for that risk. The risk owners and monitors report on the status of their respective risks at the quarterly meeting of management's Compliance Committee. The information discussed at the Compliance Committee meeting is then reviewed by the Disclosure Committee composed of the Company's Chief Executive Officer, Chief Financial Officer, General Counsel, Chief Accounting Officer and Director of Internal Audit. The results of the Disclosure Committee's meetings are presented to the Risk Mitigation and Investment Policy Committee or the Audit Committee each quarter, as appropriate.
- The Audit Committee, in consultation with management, the independent registered public accountants and the internal auditors, discusses the Company's policies and guidelines regarding risk assessment and risk management as well as the Company's significant financial risk exposures and the steps management has taken to monitor, control and report such exposures. The Audit Committee meets in executive session with the Director of Internal Audit and with the independent registered public accountants at the end of each Audit Committee meeting. The Company's General Counsel reports to the Audit Committee quarterly regarding any significant litigation involving the Company and his opinion of the adequacy of the Company's reserves for such litigation. At least annually, the Executive Compensation Committee considers the risks that may be presented by the structure of the Company's compensation programs and the metrics used to determine individual compensation under that program.
- The Company's Internal Audit department reports directly to the Chair of the Audit Committee.
- The Corporate Governance Committee leads an annual discussion by the Board of Directors regarding the Company's strategic plans and management's performance with respect to such plans.
- In administering the executive compensation program, the Executive Compensation Committee desires to strike an appropriate balance among the elements of our compensation program to achieve the program's objectives. Each of the elements of the program is discussed in greater detail in this Proxy Statement. As a result of its review of the Company's overall compensation program in the context of the risks identified in the Company's enterprise risk management processes, the Executive Compensation Committee does not believe that the risks the Company faces are materially increased by the Company's compensation programs and, therefore, the Executive Compensation Committee believes that the compensation program does not create the reasonable likelihood of a material adverse effect on the Company.

- In 2017, the Board of Directors implemented an oversight process of the Company's cybersecurity risk assessment and security measures. By receiving at least quarterly reports, the Board of Directors and the Risk Mitigation and Investment Policy Committee ensure that the Company is devoting the appropriate amount of resources to ensure that the risk of a cybersecurity breach is mitigated and that there is a clear response plan in the event of a breach.
- In 2017, management developed a Company-wide Enterprise Risk Management process intended to identify, prioritize and monitor key risks that may affect the Company. Management reports the progress and the results of the Enterprise Risk Management program to the Risk Mitigation and Investment Policy Committee at least quarterly.
- Management receives approval from the Risk Management and Investment Policy Committee on all potential acquisitions valued in excess of \$10 million, briefs the Board of Directors on acquisitions valued in excess of \$10 million, and the Board approves every acquisition valued in excess of \$25 million or which involves the issuance of the Company's common stock as part of the consideration.
- In addition to updates at each Board meeting by operating management regarding any significant operational, acquisition, or environmental matters, management provides the Board with an annual update on environmental matters by the Company's Chief Environmental Officer in connection with presentation by the Company's Senior Vice President of Engineering on the Company's proposed capital spending plans and by its Senior Vice President, General Counsel, and Secretary in connection with the Company's Enterprise Risk Management program.

The Board believes that the present leadership structure, along with the important risk oversight functions performed by management, the Audit Committee, the Risk Mitigation and Investment Policy Committee, the Executive Compensation Committee, and the full Board, permits the Board to effectively perform its role in the risk oversight of the Company.

CODE OF ETHICS

The Company maintains a Code of Ethical Business Conduct for its directors, officers and employees, including the Company's Chief Executive Officer, Chief Financial Officer and Chief Accounting Officer, as defined by the rules adopted by the SEC pursuant to Section 406(a) of the Sarbanes-Oxley Act of 2002. The Code of Ethical Business Conduct covers a number of important subjects, including: conflicts of interest; corporate opportunities; fair dealing; confidentiality; protection and proper use of Company assets; compliance with laws, rules and regulations (including insider trading laws); and encouraging the reporting of illegal or unethical behavior. Copies of the Company's Code of Ethical Business Conduct can be obtained free of charge from the Corporate Governance portion of the Investor Relations section of the Company's website: www.aquaamerica.com. The Company intends to post amendments to or waivers from the Code of Ethical Business Conduct (to the extent applicable to the Company's executive officers, senior financial officers or directors) on its website.

DIRECTOR SHARE OWNERSHIP GUIDELINES

In December 2015, the Board of Directors approved share ownership guidelines for each director to own shares of Company common stock having a value equal to five times the annual base cash retainer for directors. Directors have up to three years from December 2015 or upon appointment, whichever is later, to attain this new guideline share ownership level. In 2017, the Board of Directors approved a modification to these guidelines prohibiting a director from selling Company common stock until the director has attained the required share ownership. Once the required share ownership level is attained, the director must maintain the level of share ownership for the duration of the director's service. As of March 9, 2018, each director nominee owned sufficient shares to comply with these guidelines, except Ms. Burke, who has been a director since 2016, and Mr. Hilferty, who has been a director since 2017.

ANTI-HEDGING AND ANTI-PLEDGING POLICY

We believe that issuance of incentive and compensatory equity awards to our directors and named executive officers along with our stock ownership guidelines help to align the interests of such officers with our shareholders. As part of our insider trading policy, we prohibit all directors and officers from engaging in hedging or pledging activities with respect to any owned shares or outstanding equity awards. None of our named executive officers pledged any shares of Company stock during 2017. None of our directors nor any of our named executive officers engaged in any hedging or pledging activities with respect to the Company stock during 2017.

CYBERSECURITY MANAGEMENT

In 2017, the Board of Directors implemented an oversight process of the Company's cybersecurity risk assessment and security measures. By receiving at least quarterly reports, the Board of Directors and the Risk Mitigation and Investment Policy Committee ensure that the Company is devoting the appropriate amount of resources to ensure that the risk of a cybersecurity breach is mitigated and that there is a clear response plan in the event of a breach.

POLICIES AND PROCEDURES FOR APPROVAL OF RELATED PERSON TRANSACTIONS

The Board has a written policy with respect to related person transactions to document procedures pursuant to which such transactions are reviewed, approved or ratified. The policy applies to any transaction in which: (1) the Company is a participant, (2) any related person has a direct or indirect material interest, and the annual amount involved exceeds \$120,000, but excludes certain types of transactions in which the related person is deemed not to have a material interest.

Under this policy, a related person means: (a) any person who is, or at any time since the beginning of the Company's last fiscal year was, a director, an executive officer or a director nominee; (b) any person known to be the beneficial owner of more than 5% of any class of the Company's voting securities; (c) any immediate family member of a person identified in items (a) or (b) above, meaning such person's spouse, parent, stepparent, child, stepchild, sibling, mother- or father-in-law, son- or daughter-in-law, brother- or sister-in-law or any other individual (other than a tenant or employee) who shares the person's household; or (d) any entity that employs any person identified in (a), (b) or (c) or in which any person identified in (a), (b) or (c) directly or indirectly owns or otherwise has a material interest.

The Corporate Governance Committee, with assistance from the Company's General Counsel, is responsible for reviewing and approving any related person transaction. In its review and approval of related person transactions (including its determination as to whether the related person has a material interest in a transaction), the Corporate Governance Committee will consider, among other factors:

- The nature of the related person's interest in the transaction;
- The material terms of the transaction, including, without limitation the amount and type of transaction;
- The importance of the transaction to the related person;
- The importance of the transaction to the Company;
- Whether the transaction would impair the judgment of a director or executive officer to act in the best interests of the Company; and
- Any other matters the Corporate Governance Committee deems appropriate.

The Corporate Governance Committee intends to approve only those related person transactions that are in, or are not inconsistent with, the best interests of the Company and its shareholders.

BOARD AND BOARD COMMITTEES

The Company's Bylaws provide that the Board of Directors, by resolution adopted by a majority of the whole Board, may designate an Executive Committee and one or more other committees, with each such committee to consist of two or more directors except for the Audit Committee and Executive Compensation Committee, which must have at least three members. The Board of Directors annually elects from its members the Executive, Audit, Executive Compensation, Risk Mitigation and Investment Policy, and Corporate Governance Committees. The Board may also from time to time appoint ad hoc committees such as an Executive Search Committee to oversee the Company's succession planning activities. The Retirement and Employee Benefits Committee, which is comprised of senior management of the Company, reports periodically to the Board of Directors.

The Board of Directors held six (6) meetings in 2017. Each director attended at least 75% of the aggregate of all meetings of the Board and the Committees on which each such director served in 2017. The Board of Directors encourages all directors to attend the Company's Annual Meeting of Shareholders. All the directors were in attendance at the 2017 Annual Meeting of Shareholders.

Each of the standing Committees of the Board of Directors operates pursuant to a written Committee Charter. Copies of these Charters can be obtained free of charge from the Corporate Governance portion of the Investor Relations section of the Company's website: www.aquaamerica.com. The members of the standing Committees of the Board of Directors, as of the close of business on December 31, 2017, were as follows:

NAME	EXECUTIVE COMMITTEE	EXECUTIVE COMPENSATION COMMITTEE	AUDIT COMMITTEE	RISK MITIGATION & INVESTMENT POLICY COMMITTEE	CORPORATE GOVERNANCE COMMITTEE
BURKE		X	X		
DEBENEDICTIS	X			X	
FRANKLIN	CHAIR			X	
GLANTON ⁽¹⁾			X	CHAIR	
HANKOWSKY	X		CHAIR		X
HILFERTY	X	X			CHAIR
HOLLAND				X	X
RUFF	X	CHAIR			X

(1) Richard Glanton is not standing for re-election at this Annual Meeting.

EXECUTIVE COMMITTEE

Pursuant to its charter, the Executive Committee has and exercises all of the authority of the Board in the management of the business and affairs of the Company, with certain specified exceptions. The Executive Committee is intended to serve in the event that action by the Board of Directors is necessary or desirable between regular meetings of the Board, or at a time when convening a meeting of the entire Board is not practical, and to make recommendations to the entire Board with respect to various matters. The Executive Committee currently has five members, and the Chairman of the Board of Directors serves as Chairman of the Executive Committee. The Executive Committee did not meet in 2017.

AUDIT COMMITTEE

The Audit Committee is composed of three directors, whom the Board of Directors has affirmatively determined meet the standards of independence required of audit committee members by the NYSE listing requirements and applicable SEC rules. Based on a review of the background and experience of the members of the Audit Committee, the Board of Directors has determined that, currently, all members of the Committee are financially literate and two members of the Committee are financial experts within the meaning of applicable SEC rules. The Committee operates pursuant to a Board-approved charter which states its duties and responsibilities. The primary responsibilities of the Committee are to monitor the integrity of the Company's financial reporting process and systems of internal controls, including the review of the Company's annual audited financial statements, and to monitor the independence of the Company's independent registered public accounting firm. The Committee is required to meet at least four times during the year and met 9 times during 2017.

The Audit Committee has the exclusive authority to select, evaluate and, where appropriate, replace the Company's independent registered public accounting firm. The Committee has considered the extent and scope of non-audit services provided to the Company by its independent registered public accounting firm and has determined that such services are compatible with the independent registered public accounting firm maintaining its independence.

EXECUTIVE COMPENSATION COMMITTEE

The Executive Compensation Committee is composed of three directors, whom the Board of Directors has affirmatively determined are independent directors as defined by the NYSE listing requirements and applicable SEC rules. The Committee operates pursuant to a Board-approved charter which states its duties and responsibilities. The Executive Compensation Committee has the power to, among other things, administer and make awards under the Company's equity compensation plans. The Executive Compensation Committee reviews the recommendations of the Company's Chief Executive Officer as to appropriate compensation of the Company's executive officers (other than the Chief Executive Officer) and determines the compensation of such executive officers. The Executive Compensation Committee reviews and recommends to the Board of Directors the compensation for the Company's Chief Executive Officer, which is subject to final approval by the independent members of the Board of Directors. The Executive Compensation Committee has the power to delegate aspects of its work to subcommittees, with the approval of the Board of Directors. The Executive Compensation Committee met 8 times during 2017.

CORPORATE GOVERNANCE COMMITTEE

The Corporate Governance Committee is composed of four directors, whom the Board of Directors has affirmatively determined are independent directors as defined by the NYSE listing requirements. The Committee operates pursuant to a Board-approved charter which states its duties and responsibilities, which include

identifying and considering qualified nominees for directors, and developing and periodically reviewing the Corporate Governance Guidelines by which the Board of Directors is organized and executes its responsibilities. The Committee advises the Board of Directors on director nominees, executive selections and succession, including ensuring that there is a succession plan for the Chief Executive Officer and such other senior executives as determined by the Committee. In 2017, the Committee initiated and oversaw the implementation of a comprehensive Board, Committee, and peer review process. It also reviews and approves, ratifies or rejects related person transactions under the Company's written policy with respect to related person transactions. The Corporate Governance Committee met 7 times during 2017.

RISK MITIGATION AND INVESTMENT POLICY COMMITTEE

The Risk Mitigation and Investment Policy Committee is composed of four directors and the Company's Chief Financial Officer. The Committee operates pursuant to a Board approved charter, which states its duties and responsibilities. The Committee oversees the Company's risk management process, policies, and procedures for identifying, managing and monitoring critical risks, including cyber-related risks, and its compliance with legal and regulatory requirements. The Committee also oversees the Company's acquisition process in which it reviews all acquisitions valued in excess of \$10 million. The Committee communicates with other Board of Directors Committees to avoid overlap and potential gaps in overseeing the Company's risks. The Committee advises the Board of Directors in its performance of its oversight of enterprise risk management. The Risk Mitigation and Investment Policy Committee met 8 times during 2017.

DIRECTOR COMPENSATION

In 2017, the Executive Compensation Committee retained Pay Governance, LLC ("Pay Governance") to review and benchmark the Board of Directors' compensation. Pay Governance compared the directors' compensation to the Company's peers and made certain suggestions and recommendations to the Executive Compensation Committee and to the Company's Corporate Governance Committee. As a result, in December 2017, upon the recommendation of its Executive Compensation Committee and the Corporate Governance Committee, the Board of Directors approved a revised directors' compensation program effective January 1, 2018, the Board of Directors approved the following directors' compensation for 2018 for the non-employee directors of the Company:

DIRECTOR COMPENSATION		
Role	Annual Cash Compensation	Annual Equity Compensation
EACH INDEPENDENT DIRECTOR	\$80,000	Stock grant equal to \$80,000 in value
CHAIR, AUDIT COMMITTEE	\$12,500	—
CHAIR, EXECUTIVE COMPENSATION COMMITTEE	\$12,500	—
CHAIR, CORPORATE GOVERNANCE COMMITTEE	\$10,000	—
CHAIR, RISK MITIGATION COMMITTEE	\$10,000	—
LEAD INDEPENDENT DIRECTOR	\$25,000	—

All directors are reimbursed for reasonable expenses incurred in connection with attendance at Board or Committee meetings. The following table sets forth the compensation paid to the Board of Directors in 2017:

DIRECTOR COMPENSATION							
Name	Fees Earned or Paid in Cash (\$)(1)	Stock Awards (\$)(1)	Option Awards (\$)	Non-Equity Incentive Plan Compensation (\$)	Change in Pension Value and Nonqualified Deferred Compensation Earnings (\$)	All Other Compensation (\$)	Total (\$)
BURKE	75,000	56,241	—	—	—	—	131,241
DEBENEDICTIS (2)	175,000	56,241	—	—	—	4,094	235,335
FRANKLIN (3)	—	—	—	—	—	—	—
GLANTON (4)	110,000	56,241	—	—	—	—	166,241
GREENBERG (5)	87,500	56,241	—	—	—	—	143,741
HANKOWSKY	87,500	56,241	—	—	—	—	143,741
HILFERTY	18,750	18,766	—	—	—	—	37,516
HOLLAND	75,000	56,241	—	—	—	—	131,241
RUFF	85,000	56,241	—	—	—	—	141,241

- (1) The grant date fair value of stock awards is based on their fair market value on the date of grant as determined under the Financial Accounting Standards Board's ("FASB") accounting guidance for stock compensation. The assumptions used in calculating the fair market value are set forth in Note 14, "Employee Stock and Incentive Plan" contained in the Notes to the Consolidated Financial Statements in the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2017. The grant date fair value per share of the stock awards, which are paid quarterly, were; March 30, 2017 – \$32.145; June 30, 2017 – \$33.455; September 30, 2017 – \$33.155. The directors were paid for the fourth quarter of 2017 in January 2018.
- (2) All Other Compensation for Mr. DeBenedictis consisted of the use of a Company owned vehicle.
- (3) As an officer of the Company, Mr. Franklin does not receive any compensation for his service on the Board of Directors.
- (4) Richard Glanton is not standing for re-election at this Annual Meeting. The Board thanks Mr. Glanton for his years of service to the Board.
- (5) Lon Greenberg resigned from the Board of Directors effective December 31, 2017.

THE BOARD OF DIRECTORS UNANIMOUSLY RECOMMENDS THAT THE SHAREHOLDERS VOTE FOR THE ELECTION OF MS. BURKE, MR. DEBENEDICTIS, MR. FRANKLIN, MR. HANKOWSKY, MR. HILFERTY, MR. HOLLAND, AND MS. RUFF AS DIRECTORS.

PROPOSAL NO. 2

**RATIFICATION OF THE APPOINTMENT OF PRICEWATERHOUSECOOPERS LLP AS THE
INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM FOR THE COMPANY FOR THE 2018
FISCAL YEAR**

The Audit Committee of the Board of Directors appointed PricewaterhouseCoopers LLP ("PwC") as the independent registered public accounting firm for the Company for the 2018 fiscal year. PwC has been the Company's independent registered public accountants since 2000. The Board of Directors recommends that the shareholders ratify the appointment.

Although shareholder ratification of the appointment of PwC is not required by law or the Company's Bylaws, the Board of Directors believes that it is desirable to give our shareholders the opportunity to ratify the appointment. If the shareholders do not ratify the appointment of PwC, the Audit Committee will take this into consideration and may or may not consider the appointment of another independent registered public accounting firm for the Company for future years. Even if the appointment of PwC is ratified, the Audit Committee may, in its discretion, direct the appointment of a different independent registered public accounting firm during the year if the Audit Committee determines such a change would be in the best interests of the Company. Representatives of PwC are expected to be present at the 2018 Annual Meeting, will have the opportunity to make a statement at the meeting if they desire to do so, and will be available to respond to appropriate questions.

PwC has informed us that they are not aware of any independence-related relationships between their firm and the Company other than the professional services discussed in "Services and Fees" below. Under the Sarbanes-Oxley Act of 2002 ("Sarbanes-Oxley"), the Audit Committee is responsible for the appointment, compensation and oversight of the work of the independent registered public accounting firm. As a result, the Audit Committee is required to pre-approve the audit and non-audit services performed by the independent registered public accounting firm in order to assure that such services do not impair the auditor's independence from the Company. The Audit Committee has established a procedure to pre-approve all auditing and non-auditing fees proposed to be provided by the Company's independent registered public accounting firm prior to engaging the accountants for that purpose. Consideration and approval of such services occurs at the Audit Committee's regularly scheduled meetings, or by unanimous consent of all the Audit Committee members between meetings. All fees and services were pre-approved by the Audit Committee for the 2017 fiscal year.

SERVICES AND FEES

The following table presents the fees paid to PwC for professional services rendered with respect to the 2017 fiscal year and 2016 fiscal year:

	FISCAL YEAR	
	2017	2016
Audit Fees ⁽¹⁾	\$1,543,000	\$1,434,340
Audit-Related Fees	—	—
Tax Fees ⁽²⁾	\$ 33,694	\$ 32,500
All Other Fees ⁽³⁾	\$ 128,384	\$ 5,411
Total	\$1,705,078	\$1,472,251

- (1) Represents fees for any professional services provided in connection with the audit of the Company's annual financial statements (including the audit of internal control over financial reporting), reviews of the Company's interim financial statements included in Form 10-Qs, audits of the Company's subsidiaries and services in connection with the issuance of securities.

- (2) Represents fees for any professional services in connection with the review of the Company's federal and state tax returns and advisory services for other tax compliance, tax planning, and tax advice.
- (3) Represents fees for software licensing for accounting research, disclosure checklist, and for a utility and technical accounting seminar, and an accretion/dilution analysis.

THE BOARD OF DIRECTORS UNANIMOUSLY RECOMMENDS THAT YOU VOTE FOR THE RATIFICATION OF THE APPOINTMENT OF PRICEWATERHOUSECOOPERS LLP AS THE COMPANY'S INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM FOR THE 2018 FISCAL YEAR.

REPORT OF THE AUDIT COMMITTEE

The Audit Committee oversees the Company's financial reporting process on behalf of the Board of Directors. Management has the primary responsibility for the financial statements and the reporting process, including the system of internal control. In fulfilling its oversight responsibilities, the Audit Committee reviewed and discussed with management the audited financial statements in the Annual Report, including: the quality of the accounting principles, practices and judgments; the reasonableness of significant judgments; the clarity of disclosures in the financial statements; and the integrity of the Company's financial reporting processes and controls. The Committee also discussed the selection and evaluation of the independent registered public accounting firm, including the review of all relationships between the independent registered public accounting firm and the Company.

The Audit Committee reviewed with the independent registered public accounting firm, which is responsible for expressing an opinion on the conformity of those audited financial statements with generally accepted accounting principles in the United States of America, their judgments as to the quality of the Company's accounting principles and such other matters as required to be discussed by the Auditing Standard No. 1301, Communications with Audit Committees as adopted by the Public Company Accounting Oversight Board. In addition, the Audit Committee has discussed with the independent registered public accounting firm, the firm's independence from management and the Company, including the matters in the written disclosures required by the applicable requirements of the Public Company Accounting Oversight Board regarding the independent accountant's communications with the Audit Committee concerning independence, and considered the compatibility of non-audit services with the accountants' independence.

The Audit Committee discussed with the Company's internal auditors and independent registered public accounting firm, the overall scope and plans for their respective audits. The Audit Committee meets with the internal auditors and independent registered public accounting firm, with and without management present, to discuss the results of their examinations, their evaluations of the Company's internal controls, and the overall quality of the Company's financial reporting.

In reliance on the reviews and discussions referred to above, the Audit Committee recommended to the Board of Directors, and the Board of Directors approved, the inclusion of the Company's audited financial statements in the Company's Annual Report on Form 10-K for the year ended December 31, 2017 for filing with the SEC.

Respectfully submitted,

William P. Hankowsky, Chairman
Carolyn J. Burke
Richard Glanton

February 26, 2018

The foregoing Audit Committee report shall not be deemed incorporated by reference by any general statement incorporating by reference this Proxy Statement into any filing under the Securities Act or the Exchange Act, except to the extent that the Company specifically incorporates this information by reference, and shall not otherwise be deemed filed under such Acts.

PROPOSAL NO. 3

**ADVISORY VOTE ON THE COMPENSATION PAID
TO THE COMPANY'S NAMED EXECUTIVE OFFICERS FOR 2017**

Under Section 14A of the Exchange Act, shareholders are entitled to an advisory (non-binding) vote on the executive compensation as described in this Proxy Statement for our named executive officers (sometimes referred to as "Say on Pay"). Currently, this vote is conducted every year. Accordingly, the following resolution is being presented by the Board of Directors at the 2018 Annual Meeting:

"RESOLVED, that the compensation paid to the Company's named executive officers for 2017, as disclosed pursuant to Item 402 of Regulation S-K, including the Compensation Discussion and Analysis, compensation tables and narrative discussion, is hereby APPROVED."

This vote is non-binding. The Board of Directors and the Executive Compensation Committee, which is comprised of independent directors, expect to take into account the outcome of the vote when considering future executive compensation decisions to the extent they can determine the cause or causes of any significant negative voting results.

As described in detail under our Compensation Discussion and Analysis on pages 24 through 45 of this Proxy Statement, our executive compensation program is designed to motivate our executives to achieve our primary goals of providing our customers with quality, cost-effective and reliable water and wastewater services and providing our shareholders with a long-term, positive return on their investment. We believe that our executive compensation program, with its balance of short-term incentives and long-term incentives and share ownership guidelines, reward sustained performance that is aligned with the interests of our customers, employees and long-term shareholders. Shareholders are encouraged to read the Compensation Discussion and Analysis, the accompanying compensation tables and the related narrative disclosure.

THE BOARD OF DIRECTORS UNANIMOUSLY RECOMMENDS THAT YOU VOTE FOR THE APPROVAL, ON AN ADVISORY BASIS, OF THE COMPENSATION PAID TO OUR NAMED EXECUTIVE OFFICERS FOR 2017 AS DISCLOSED IN THE COMPENSATION DISCUSSION AND ANALYSIS, THE ACCOMPANYING COMPENSATION TABLES AND THE RELATED NARRATIVE DISCLOSURE IN THIS PROXY STATEMENT.

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COMPENSATION DISCUSSION AND ANALYSIS

INTRODUCTION

In this Compensation Discussion and Analysis (“CD&A”), we address our compensation philosophy and program, and compensation paid to or earned by the following executive officers:

- Christopher H. Franklin, Chairman, President, and Chief Executive Officer;
- David P. Smeltzer, Executive Vice President and Chief Financial Officer;
- Richard S. Fox, Executive Vice President and Chief Operating Officer;
- Daniel J. Schuller, Executive Vice President and Chief Strategy & Corporate Development Officer; and
- Christopher P. Luning, Senior Vice President, General Counsel, and Secretary.

We refer to these executive officers as our “named executive officers” or “NEOs”. As used in this CD&A, the total of base salary and annual cash incentive compensation is referred to as “total cash compensation,” and the total of base salary, annual cash incentive compensation and equity incentive compensation is referred to as “total direct compensation.” The purpose of the CD&A is to explain: the elements of compensation; why our Executive Compensation Committee (the “Compensation Committee”) selects these elements; and how the Compensation Committee determines the relative size of each element of compensation.

Compensation decisions for Messrs. Smeltzer, Schuller, Fox, and Luning were made by the Compensation Committee. Compensation decisions for Mr. Franklin were made by the independent members of our Board of Directors after receiving the approval and recommendation of the Compensation Committee.

Based on input from Pay Governance LLC (“Pay Governance” or the “consultant”), the independent compensation consultant retained by the Compensation Committee, we believe that the types of compensation vehicles we use and the relative proportion of the named executive officers’ total direct compensation represented by these vehicles is consistent with current competitive compensation practices in our industry. We believe our program’s performance measures align the interests of our stakeholders and our named executive officers by correlating pay to our short-term and long-term performance.

We measure the competitiveness of our program for our named executive officers against the median compensation for comparable positions at other companies in our benchmark group composed of other investor-owned utilities. Since compensation levels often vary based on the Company’s revenues, we adjust the Company’s revenues in the manner described below to align with the companies in the benchmark group. We then size adjust the market data using revenue-based regression analysis to determine the market rates for our named executive officer positions. Our goal is to provide total direct compensation that is competitive with the market rates for each named executive officer. Based on the information supplied by the consultant, the total target direct compensation for each of our named executive officers was within the competitive range of the benchmark market data for each of their positions during 2017.

EXECUTIVE SUMMARY

Our 2017 performance demonstrates continued execution of our strategic goals and plans. During 2017, by effectively managing costs, strategically growing when it was prudent, maintaining strong regulatory relationships, and focusing on our customers, employees and shareholders as we continue to create value for all of our stakeholders, we had the following results:

- We are making significant investments to build and improve our communities’ infrastructure. Over the past five years, we have invested more than \$1.5 billion in infrastructure improvements, including

hundreds of miles of pipe replacement and plant upgrades to enhance water quality. In 2017, we invested more than \$450 million on infrastructure projects, helping to ensure safe and reliable water for all customers.

- Regulated segment revenues were \$804.9 million in 2017.
- Earnings per share increased to \$1.35 in 2017, an increase over the 2016 earnings per share of \$1.32 in 2016.
- Operations and maintenance expenses decreased 5.8% to \$287.2 million in 2017 from \$304.9 million in 2016.
- We added more than 10,000 customer connections in 2017.
- We increased our total customer connection count by more than 1%, which includes additional customers from organic and acquisition growth.
- From January 1, 2015 to December 31, 2017, the total return to our shareholders, including share price appreciation and dividends paid, shows 58.08% growth.
- In 2017, the Board of Directors approved a 7% increase in the quarterly dividend to an annualized rate of \$0.82 per share.

OBJECTIVES OF OUR COMPENSATION PROGRAM

Our compensation program for named executive officers is designed to:

- Provide a competitive level of total compensation;
- Motivate and encourage our named executive officers to contribute to our financial success;
- Retain talented and experienced named executive officers; and
- Reward our named executive officers for leadership excellence and performance that implements our strategic goals and promotes sustainable growth in shareholder value.

ALIGN INTERESTS OF NAMED EXECUTIVE OFFICERS AND SHAREHOLDERS

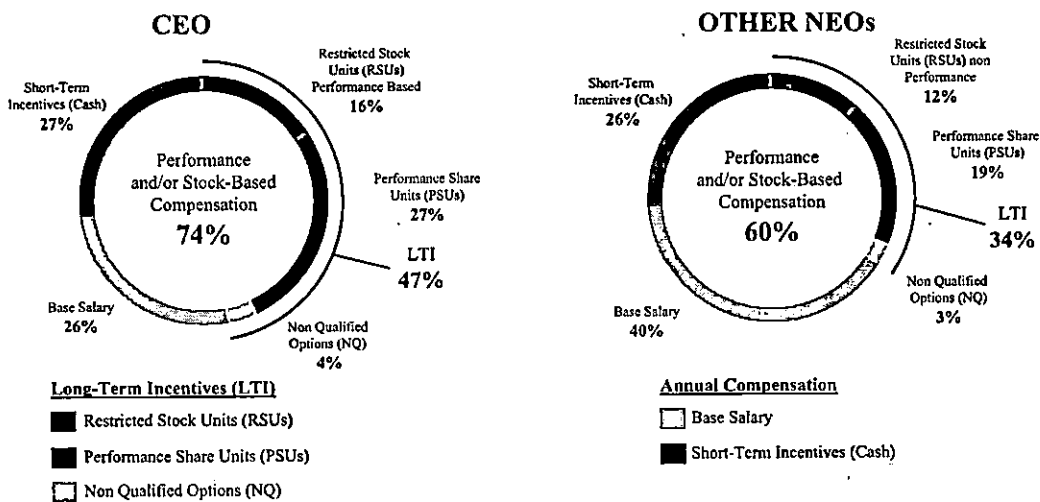
We supplement our pay-for-performance program with a number of compensation policies intended to align the interests of management and our shareholders. The following are several key features of our executive compensation program:

AT AQUA AMERICA, WE DO:	AT AQUA AMERICA, WE DO NOT:
✓ Tie a high ratio of our executives' pay to corporate and individual performance	✗ Provide golden parachute tax gross ups
✓ Require significant stock ownership	✗ Permit pledging or hedging of Company securities
✓ Tie incentive compensation to a clawback policy	✗ Provide a single trigger severance upon a change of control
✓ Require a significant amount of NEO pay to be based on performance	✗ Provide employment agreements to a broad group
✓ Use an independent compensation consultant	✗ Encourage excessive or inappropriate risk taking through our compensation programs

The table below shows the portion of each named executive officer's 2017 total direct compensation that is considered performance-based (i.e., annual cash incentives and performance-based equity incentives).

Name	2017 Salary	2017 Cash Incentive Paid in 2018	2017 Performance Share Units	2017 Restricted Stock Units	2017 Non Qualified Options	Total Percentage Performance-based Compensation
FRANKLIN	26%	27%	27%	16%	4%	74%
SMELTZER	39%	26%	20%	12%	3%	49%
FOX	38%	28%	19%	12%	3%	50%
SCHULLER	39%	27%	20%	11%	3%	50%
LUNING	43%	23%	20%	11%	3%	46%

With respect to the named executive officer's total direct compensation, at least 74% of the Chief Executive Officer's compensation is performance and/or stock-based and at least 60% of the average of the other named executive officer's compensation is performance and/or stock-based:



PAY FOR PERFORMANCE AND RESULTS OF THE 2017 ADVISORY VOTE TO APPROVE EXECUTIVE COMPENSATION

Our goal is to instill a “pay for performance” culture throughout the Company, and we target the 50th percentile of the Company’s peer group as the appropriate level of pay for our named executive officers.

At our 2017 Annual Meeting, we submitted a proposal to our shareholders for a non-binding advisory vote on our 2016 compensation awarded to our named executive officers. Our shareholders approved the proposal with over 94% of the votes cast in favor of the Company’s compensation programs for our named executive officers.

COMPONENTS OF 2017 COMPENSATION PROGRAM

Our executive compensation program is composed of the following seven elements, which we believe are important components of a well-designed, balanced and competitive compensation program:

- Base Salary;
- Annual Cash Incentive Awards (referred to as Non-Equity Incentive Plan Compensation in the Summary Compensation Table on page 46 and the Grants of Plan-Based Awards Table on page 48);
- Long-Term Equity Incentive Awards;
- Retirement Benefits;
- Non-Qualified Deferred Compensation Plans;
- Change-in-Control Agreements; and
- Stock Ownership Guidelines.

We utilize these elements to achieve the objectives of our compensation program as follows:

ELEMENT OF COMPENSATION	OBJECTIVES
Competitively benchmarked base salaries	Designed to attract and retain named executive officers consistent with their talent and experience; market-based salary increases are designed to recognize the executives' performance of their duties and responsibilities; and promotions and related salary increases are designed to encourage executives to assume increased job duties and responsibilities.
Short-term incentives or annual cash incentive awards	Intended to reward executives for (1) improving the quality of service to our customers, (2) controlling the cost of service to our customers by managing expenses and improving performance, (3) achieving economies of scale by the acquisition of additional water and wastewater systems that can benefit from our resources and expertise, (4) disposing of under-performing systems where appropriate, and (5) enhancing our financial viability and performance by the achievement of annual objectives.
Equity incentives	Designed to reward named executive officers for (1) enhancing our financial health, which also benefits our customers, (2) improving our long-term performance through both revenue increases and cost control, and (3) achieving increases in the Company's equity and in absolute shareholder value and shareholder value relative to peer companies, as well as helping to retain executives due to the longer term nature of these incentives.
Retirement benefits	Intended to assist named executive officers to provide income for their retirement.
Non-qualified deferred compensation plan	Designed to allow eligible executives to manage their financial and tax planning and defer current income until a later date, including following retirement or other separation from employment without an additional contribution from the Company.
Change-in-control agreements	Designed to promote stability and dedication to shareholder value in the event of a fundamental transaction affecting the ownership of the Company and to enable the named executive officers to evaluate such a transaction impartially.
Stock ownership guidelines	Designed to focus named executive officers on the long-term performance of the Company and align the interests of our executives with our shareholders by encouraging named executive officers to maintain a significant ownership interest in the Company.

The following chart provides a brief summary of the principal elements of our executive compensation program for 2017. We describe these elements, as well as retirement, severance and other benefits, in more detail in this CD&A.

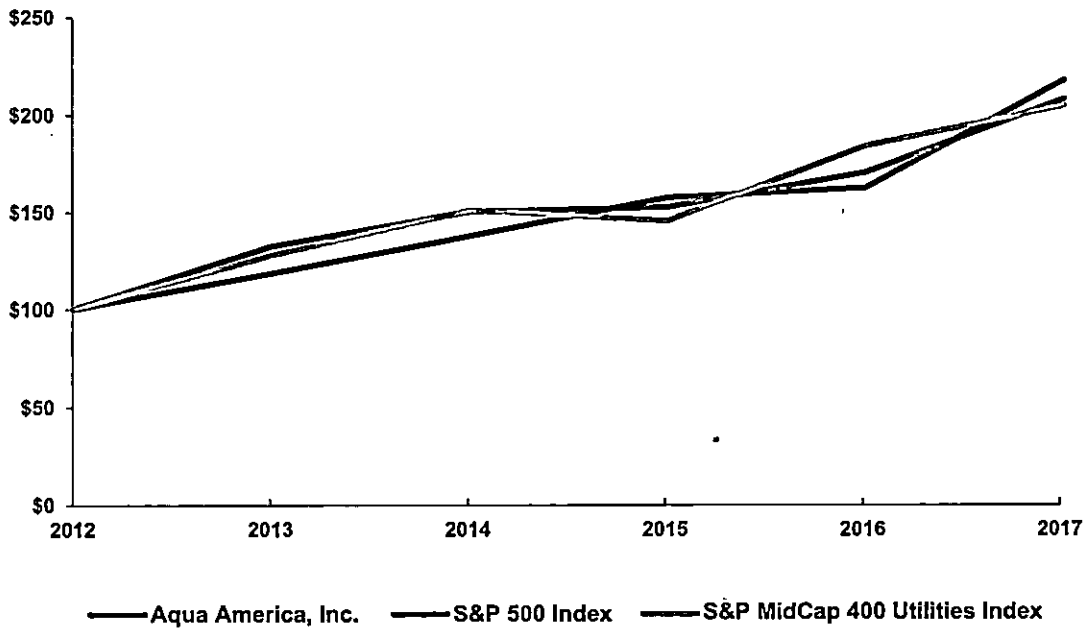
COMPONENTS OF COMPENSATION PAID TO NAMED EXECUTIVE OFFICERS IN 2017

COMPENSATION ELEMENT	FORM	COMPENSATION OBJECTIVE	RELATION TO OBJECTIVE
Base Salary	Fixed annual cash paid bi-weekly	Compensate executives for their level of responsibility and sustained individual performance based on market data.	Merit salary increases are based on subjective performance evaluations.
Annual Cash Incentive Awards	Variable cash paid on an annual basis based on achievement of pre-established goals	Motivate executives to focus on achievement of our annual business objectives.	The amount of the annual incentive award, if any, is entirely dependent on achievement of pre-established Company and individual goals.
Long-Term Equity Incentive Awards	Restricted Stock Units	Align executive interests with shareholder interests; retain key executives.	Provide equity that will have same value as shares owned by shareholders; subject to stock ownership guidelines.
	Performance Share Units	Align executive interests with shareholder interests; create a strong financial incentive for achieving or exceeding long-term performance goals.	The named executive officers receive equity only if the pre-established performance goals are achieved.
	Options	Aligns executive interests with shareholder interests; through performance based nature, provides strong incentives to achieve core company goals.	The named executive officers receive options only if the pre-established performance goals are achieved.

LINK BETWEEN OPERATING PERFORMANCE AND EXECUTIVE COMPENSATION

Our stock performance in 2017 reflected our success and contributed significantly to our total shareholder return for the year. The chart below summarizes our stock performance over the past five years compared to the S&P 500 Index and the S&P Mid-Cap 400 Utilities Index.

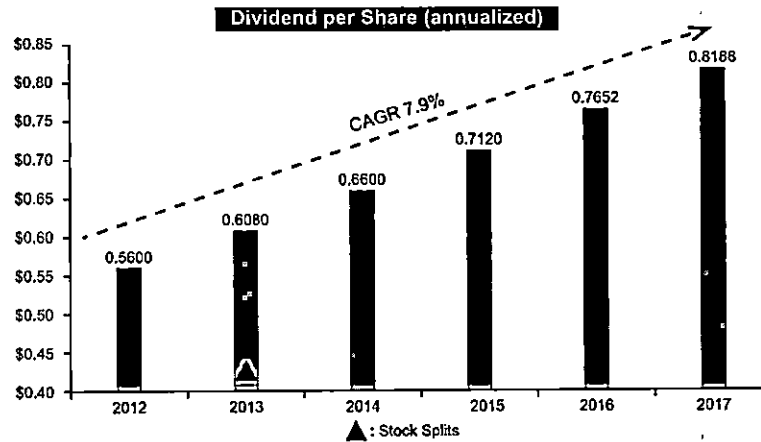
COMPARISON OF FIVE YEAR CUMULATIVE TOTAL RETURN*
Among Aqua America, Inc., the S&P 500 Index,
and S&P MidCap 400 Utilities Index



*\$100 invested on 12/31/12 in stock or index, including reinvestment of dividends.
Fiscal year ending December 31.

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We have been steadfast in delivering sustainable dividend growth. We increased our dividend 7% in 2017 and as a result, our annualized dividend rate is \$0.82 per share. Our dividend policy is premised on continuing to grow our dividend in a prudent manner. We anticipate this growth will allow our dividend to continue to be a meaningful element of our overall shareholder return proposition. The chart below summarizes our dividend growth over recent years:



BENCHMARKING COMPETITIVE COMPENSATION AND THE ROLE OF THE COMPENSATION COMMITTEE'S CONSULTANT

The Compensation Committee has retained Pay Governance, a nationally-recognized compensation consulting firm, as the Compensation Committee's consultant to assist it in designing and assessing the competitiveness of our executive compensation program. The Compensation Committee has concluded that Pay Governance is an independent consultant after considering the factors relevant to Pay Governance's independence from management, including the factors set forth in the NYSE and SEC rules regarding compensation consultant independence.

Annually, the Compensation Committee has the consultant develop a market rate for base salary, total cash compensation, and total direct compensation for each of the named executive officer positions, including the allocation between cash compensation and equity incentives. Each market rate represents the median compensation level that would be paid to a hypothetical, seasoned performer in a position having similar responsibilities and scope, in an organization of similar size and type as the Company.

In developing the market rates for the named executive officers, the Compensation Committee's consultant, Pay Governance, used compensation data from all 55 investor-owned utilities in the utility industry database used by the consultant and approved by the Compensation Committee to determine the market rates for similarly situated executives of utility companies. The Compensation Committee believes that utilizing the data from only utility companies and adjusting the Company's revenues as described below, to better align the Company's data with the data in the utility industry compensation database, provides an appropriate comparison for determining the market rates for the Company's named executive officers given that we are primarily a utility company. Also, due to the relatively limited number of investor-owned water utility companies of the Company's size, the Compensation Committee believes that using the broader utility market data provides reasonable and reliable data for determining competitive compensation levels. All 55 companies in the utility industry compensation database used by the consultant are listed in Appendix A to this Proxy Statement. The Company has no involvement in the selection of the companies that are included in the database used by the consultant. Each company in Appendix A was used in the development of the market rates, as described in this paragraph.

Management, the Compensation Committee, and Pay Governance are mindful that compensation levels for executives of companies are often correlated with a company's size as defined by revenues. In other words, executives in companies with higher revenues are generally paid more than executives with comparable positions in companies with lower revenues. The Compensation Committee and Pay Governance have concluded that the Company's revenues under-represent the complexity and scope of the Company's business given the Company's low cost of goods sold relative to energy-based utilities. The cost of goods sold as a percentage of revenues is significant for energy-based utilities due to their fuel, gas and other power costs. These commodity costs are subsequently recovered through the revenues of the energy-based utilities as they are ultimately passed through to the customer. The Company, like other water utilities, does not have comparable commodity costs. The purpose of the adjusted revenue analysis is to create a consistent comparison to the compensation data in the utility compensation database used by Pay Governance by estimating the revenue that the Company would earn if its cost of goods sold was in similar proportion to that of the energy-based utilities that constitute the majority of the companies in the database. In order to determine a factor by which to adjust the Company's annual revenues, the Compensation Committee recommended that the consultant analyze the income statements of a sample of delivery-focused (i.e., non-power generating) utilities, chosen by the consultant with no input from the Compensation Committee or management, to develop a typical cost of goods sold factor attributable to commodity costs.

Pay Governance's analysis for 2017 determined that the commodity portion of the cost of goods sold averaged 45% of revenues for these companies and calculated what the Company's adjusted revenues would be using this factor. Since there are certain complexities associated with procuring these commodities at the energy-based utilities, the consultant recommended, and the Compensation Committee agreed, that it would be appropriate to discount the market rates generated by the adjusted revenue methodology. Thus, it was agreed that the Company would use an average of the market data produced using the Company's adjusted revenue scope with market data generated using the Company's actual revenue scope in determining the market rates for the Company's named executive officers.

Because the companies listed in Appendix A vary widely in terms of revenues, Pay Governance used regression analysis to size-adjust the benchmark data for each named executive officer's revenue responsibility using the Company's actual and adjusted revenues, where possible, and then averaging the results to determine market rates for base salary, total cash compensation and total direct compensation for each named executive officer. Tabular data was used where regression data was unavailable due to insufficient correlation between officer positions in the Company and the companies in the database and/or limited sample size to ensure the accuracy of the regression analysis. Regression analysis is an objective calculation that identifies a relationship between one variable (in this case, compensation) and another variable that is correlated to it (in this case, total company revenues). Therefore, in developing the market rates for base salary, total cash compensation, and total direct compensation, Pay Governance used regression analysis to determine what the companies in Appendix A would pay at the median for positions comparable to those of the Company's named executive officers. The combination of salary, short-term incentives, and long-term incentives is intended to compensate executives at approximately the 50th percentile of the market when the Company performs at a target level.

Pay Governance reviews the Company's executive compensation program for the Compensation Committee and annually provides the data and analysis described above. The compensation consultant discusses the proposed actual compensation awards for the named executive officers and provides research and input to the Compensation Committee on changes to the compensation program.

In 2017, Pay Governance also analyzed the Company's executive compensation program to ensure that it remained competitive in the market place to show the market rate for base salary, total cash compensation and total direct compensation, including the allocation between cash compensation and equity incentives. Pay Governance provides no other services to the Company other than serving as the Compensation Committee's compensation consultant for executive and director compensation decisions.

OTHER CONSIDERATIONS

The Compensation Committee also takes into consideration the results of the advisory votes on the Company's executive compensation program for the few years prior to the year for which the executive compensation decisions are being made. For the years 2014 through 2017, the shareholders approved the advisory vote on the compensation of our named executive officers by 93% to 94% of the votes cast.

DETERMINATION OF ACTUAL COMPENSATION

We emphasize pay for performance, especially for our higher-level executives. Therefore, the named executive officers tend to receive a substantial portion of their total direct compensation from annual cash incentives and long-term equity incentives. In addition, the percentages of total direct compensation represented by base salary, annual cash incentive opportunities, and equity incentives, respectively, for the named executive officers are generally in line with the percentages represented by these elements of total direct compensation for the competitive market rate benchmarks.

The Compensation Committee determines the actual amount of each element of annual compensation to award to the Company's named executive officers with the goal of having the target total direct compensation opportunity for each named executive officer generally within a range of 15% above or below the market median rate for his position over time.

BASE SALARY

A competitive base salary is necessary to attract and retain a talented and experienced workforce. Actual salaries for the named executive officers, other than the Chief Executive Officer whose salary is determined by the Board of Directors using the same criteria, are determined by the Compensation Committee by considering both the market median rate for the position and internal equity with both the other named executive officers and other employees of the Company. The Compensation Committee's goal is to maintain base salaries generally within a range of 15% above or below the market median rate over time for each of the named executive officers, although deviations from this goal may occur due to promotions, and the time the executive has been in a particular salary grade. Base salaries are considered for adjustment annually and adjustments are based on general movement in external salary levels, changes in the market rate for the named executive officers' positions, individual performance, internal equity and changes in individual duties and responsibilities. For 2017, the annual increases to the salaries for the named executive officers reflected these assessments and averaged 4.9%. The base salaries approved by the Compensation Committee for 2017, effective April 1, 2017, were as follows: Mr. Franklin, \$720,090; Mr. Smeltzer, \$402,318; Mr. Fox, \$360,099; Mr. Schuller, \$372,030; and Mr. Luning, \$330,084.

~~SHORT-TERM INCENTIVE AWARDS~~

~~THE 2017 ANNUAL CASH INCENTIVE AWARDS~~

~~Annual cash incentive awards under the Annual Cash Incentive Compensation Plan (the "Annual Plan") are intended to motivate management to focus on the achievement of annual corporate and individual objectives that would, among other things, improve the level of service to our customers, control the cost of service, and enhance our financial performance.~~

During 2017, the Compensation Committee, Pay Governance, and management determined that it was appropriate to revise the design of the annual cash incentive portion of the total direct compensation paid to the named executive officers to place more emphasis on financial, safety, and compliance performance metrics and to reduce the weight allocated to individual goals. The Compensation Committee believes that these changes will focus the named executive officers' efforts on business metrics that are core to the Company's mission and reward the named executive officers' performance in achieving these metrics.

The Annual Plan aligns the Company's goals with payouts dependent upon achievement of certain performance objectives over a one year period. The tables and the narrative below detail the 2017 Annual Cash Incentive Award Metrics.

2017 ANNUAL CASH INCENTIVE AWARD METRICS					
Metric Weight	Metric	Metric Components & Weights	Target Achievement		
			50%	100%	150%
60%	Financial	Earnings Per Share	\$ 1.31	\$ 1.36	\$ 1.41
15%	Safety	36% - Lost Time Incidents 36% - Responsible Vehicle Accident Rate 14% - Safety Training Hours 14% - Incident Reporting	8 Points	14 Points	21 Points
15%	Compliance	50% - Drinking Water 50% - Wastewater	99.00% 90.00%	99.50% 93.00%	99.80% 95.00%
10%	Individual Goals		50%	100%	150%

Financial – 60%

The financial metric was based on the Company's earnings per share (EPS). The target achievement of the EPS goal was as follows:

TARGET	
EPS	Payout
\$1.41	150%
\$1.40	140%
\$1.39	130%
\$1.38	120%
\$1.37	110%
\$1.36	100%
\$1.35	90%
\$1.34	80%
\$1.33	70%
\$1.32	60%
\$1.31	50%

Safety – 15%

The safety metric was achieved through the accumulation of points focused on specific safety components including Lost Time Incidents, Safety Training Hours, Incident Reporting, and Responsible Vehicle Accident Rate. The table below illustrates the weighting and performance range of each safety goal and a corresponding point score.

SAFETY COMPONENT	INDIVIDUAL WEIGHT	THRESHOLD (50%)	TARGET (100%)	STRETCH (150%)
Lost Time Incidents	36%	≤ 25 Cases (3 Points)	≤ 22 Cases (5 Points)	≤ 19 Cases (7 Points)
Responsible Vehicle Accident Rates	36%	4.5 (3 Points)	4.1 (5 Points)	3.7 (7 Points)
Safety Training Hours	14%	87% (1 Point)	93% (2 Points)	97% (3 Points)
Incident Reporting	14%	70% (1 Point)	80% (2 Points)	90% (4 Points)
Safety Metric Goal Target	100%	8 Points	14 Points	21 Points

Compliance – 15%

The compliance metric had two components – drinking water and waste water. Similar to the safety metric, the compliance metric had a performance range of 50% to 150%. The tables below detail the components of the compliance metric.

DRINKING WATER COMPLIANCE COMPONENT		
Compliance Percentage	Number of Compliance Days / System / Year	Performance Range
99.00%	3.7	50
99.10%	3.3	60
99.20%	2.9	70
99.30%	2.6	80
99.40%	2.2	90
Target - 99.50%	1.8	100
99.58%	1.6	113
99.65%	1.3	125
99.73%	1.0	138
99.80%	0.7	150

Compliance continued...

WASTEWATER COMPLIANCE COMPONENT		
Compliance Percentage	Number of Compliance Days / System / Year	Performance Range
90.00%	36.5	50
91.00%	32.9	60
91.50%	31.0	70
92.00%	29.2	80
92.50%	27.4	90
Target - 93.00%	25.6	100
93.50%	23.7	113
94.00%	21.9	125
94.50%	20.1	138
95.0%	18.3	150

Individual Goals – 10%

At the beginning of 2017, two individual goals were identified for each named executive officer that aligned with the broader Company goals. Individual goals focus on the named executive officer's role with the Company. Each named executive officer was rated on the achievement of each goal and received a rating between 50%-150%.

Based on the above-described factors, the following table shows the 2017 performance of the Company compared to the targets set in the Annual Plan:

Metric	Metric Component	Report Date	Target - 50%	Target - 100%	Target - 150%	Adjusted Actual	Actual Attainment	Weight	Final Achievement
Financial	Aqua Earnings Per Share	12/31/2017	\$ 1.31	\$ 1.36	\$ 1.41	\$ 1.37	110.00%	60%	66%
Safety	Lost Time Incidents	12/31/2017	25	22	19	14			
	Responsible Vehicle Accident Rate	12/31/2017	4.5	4.1	3.7	3.8			
	Training Hours	12/31/2017	3	5	7	6.5	137.79%	146.43%	15.00%
	Incident Reporting	12/31/2017	87%	93%	97%	95.89%			21.96%
	Total Safety Points		1	2	3	3			
Compliance	Water	12/31/2017	90.00%	99.50%	99.80%	99.64%	123.33%	7.50%	9.25%
	Wastewater	12/31/2017	90.00%	93.00%	95.00%	94.99%	149.75%	7.50%	11.23%
Individual Goals							10.00%		

¹ This is a non-GAAP financial metric. See Appendix B for a reconciliation of this metric to the GAAP financial metric.

Applying this performance, the below table shows the target annual cash incentive awards and the actual annual cash incentive awards approved by the Compensation Committee for 2017 for the named executive officers.

Name	2017 Target Bonus %	2017 Target Cash Incentive	2017/Actual Cash Incentive
FRANKLIN	80%	\$576,072	\$711,103
SMELTZER	55%	\$221,275	\$270,929
FOX	60%	\$216,059	\$258,061
SCHULLER	55%	\$204,617	\$252,579
LUNING	45%	\$148,538	\$177,414

LONG-TERM EQUITY INCENTIVE AWARDS

Our use of equity incentive awards are intended to reward our named executive officers for: (1) enhancing the Company's financial health, which also benefits our customers; (2) improving our long-term performance through both revenue increases and cost control; and (3) achieving increases in the Company's equity and shareholder value, as well as helping to retain such executives due to the longer-term nature of these awards. We make these equity incentive awards under our 2009 Omnibus Equity Compensation Plan, as amended (the "Plan"). Under the Plan, the Compensation Committee and the Board of Directors may grant stock options, dividend equivalents, performance-based or service-based stock units and stock awards, stock appreciation rights and other stock-based awards to officers, directors, key employees, and key consultants of the Company and its subsidiaries who are in a position to contribute materially to the successful operation of our business. As part of its review of the total compensation package for our named executive officers, the Compensation Committee annually reviews our equity incentive compensation program. Starting in 2011, the Compensation Committee began using a combination of performance share units and restricted stock units to better link the named executive officer's long-term incentive compensation to performance results that led to increased shareholder value and enhanced our long-term financial stability, which also benefits our customers. In 2017, the Compensation Committee added performance-based stock options to the long-term incentive compensation program for the same reasons.

We aim to strike a balance between the incentive and retention goals of our equity grants:

- All of the equity grants to our Chief Executive Officer are subject to performance goals.
- For our other named executive officers, two-thirds of the equity grant value as of the grant date is in the form of performance share units, with the performance metrics described below, and one-third is in the form of service-based restricted stock units.

Using the market rates developed by Pay Governance, the Compensation Committee bases the annual equity incentive awards made to the named executive officers as part of the total compensation package designed to be competitive with the benchmarked group and our industry. The Compensation Committee does not consider any increase or decrease in the value of past equity incentive awards in making these annual decisions. In considering the number of equity incentive awards to be granted in total to all employees each year, the Compensation Committee considers the number of equity incentive awards outstanding and the number of equity incentive awards to be awarded as a percentage of Aqua America's total shares outstanding. The number of equity incentive awards granted annually to all employees has been less than 1% of Aqua America's total shares outstanding per year for the past several years.

Equity incentive awards are generally all made on the same grant date. It is our policy to make the grant date of equity compensation grants the date that the Compensation Committee approves the grants, which is

either the date of the Compensation Committee's meeting or the date of the Board meeting following the Compensation Committee's meeting. The dates for all Board and Compensation Committee meetings, including the dates for the Compensation Committee to approve the equity grants, are set in advance, subject to changes for scheduling conflicts, and are independent of the timing of our disclosure of any material non-public information other than our normal annual earnings release.

PERFORMANCE SHARE AWARDS

Performance share or performance share unit grants ("PSU") (together referred to as performance shares) provide the named executive officer with the opportunity to earn awards of shares based on Company performance against designated pre-determined, objective metrics. Participants are granted a target number of shares or units that, for the 2015 and 2016 grants, can increase to 200% of the target, and for the 2017 grants, can increase to 200% of the target or decrease to zero based on the Company's actual performance compared to the designated metrics. Dividends or dividend equivalents, as applicable, on the performance shares accrue and will be paid when the performance shares are earned and paid based on the number of shares actually earned, if any.

The performance goals to be achieved under the PSU awards have been based on the following performance goals, with the weighting of each goal assessed each year:

- The Company's total shareholder return ("TSR") at the end of the performance period as compared to the TSR of the other large investor-owned water companies (American Water Works Company, American States Water Company, Connecticut Water Service, Inc., California Water Service Group, Middlesex Water Company and SJW Corporation);
- The Company's TSR compared to the TSR for the companies in the S&P Midcap Utility Index (Appendix A);
- The achievement of maintaining Operating and Maintenance ("O&M") expenses within the Company's regulated operations over the performance period; and,
- The achievement of the three-year cumulative total earnings before taxes in non-Aqua Pennsylvania subsidiaries.

2015 PSU Awards Achievement

The three-year performance period for the PSU awards made by the Compensation Committee in 2015 ended on December 31, 2017. In February 2018, the Compensation Committee determined the achievement of performance goals for the 2015 PSUs, as follows:

Metric 1. The Company's TSR was ranked 7th among the other water companies:

ORDINAL RANKINGS (INCLUDING AQUA) VERSUS PEERS	PAYOUT AS A % OF TARGET (7 COMPANIES)
1st	200%
2nd	170%
3rd	130%
4th	100%
5th	50%
6th	0%
7th	0%

Metric 2. The Company's TSR was ranked 7th among the companies in the S&P Midcap 400 Utilities Index.

ORDINAL RANKING OF THE COMPANY (INCLUDING THE COMPANY) VERSUS PEER GROUP	PAYOUT AS A % OF TARGET AWARD (18 PEER CO'S)	PAYOUT AS A % OF TARGET AWARD (17 PEER CO'S)	PAYOUT AS A % OF TARGET AWARD (16 PEER CO'S)	PAYOUT AS A % OF TARGET AWARD (15 PEER CO'S)	PAYOUT AS A % OF TARGET AWARD (14 PEER CO'S)
Rank	Payout	Payout	Payout	Payout	Payout
1	200.00%	200.00%	200.00%	200.00%	200.00%
2	197.22%	195.59%	193.75%	191.67%	189.29%
3	183.33%	180.88%	178.13%	175.00%	171.43%
4	169.44%	166.18%	162.50%	158.33%	153.57%
5	155.56%	151.47%	146.88%	141.67%	135.71%
6	141.67%	136.76%	131.25%	125.00%	117.86%
7	127.78%	122.06%	115.63%	108.33%	100.00%
8	113.89%	107.35%	100.00%	91.67%	82.14%
9	100.00%	92.65%	84.38%	75.00%	64.29%
10	86.11%	77.94%	68.75%	58.33%	0.00%
11	72.22%	63.24%	53.13%	0.00%	0.00%
12	58.33%	0.00%	0.00%	0.00%	0.00%
13	0.00%	0.00%	0.00%	0.00%	0.00%
14	0.00%	0.00%	0.00%	0.00%	0.00%
15	0.00%	0.00%	0.00%	0.00%	0.00%
16	0.00%	0.00%	0.00%	0.00%	0.00%
17	0.00%	0.00%	0.00%	0.00%	0.00%
18	0.00%	0.00%	0.00%	0.00%	0.00%

AQUA.

Metric 3. The O&M expense to revenue ratio for Aqua Pennsylvania was 29.99%:

Aqua PA O&M Revenue		Linear Interpolation
2015 A	30.02%	
2016A	31.00%	
2017A	28.95%	
3 Year Average	29.99%	167.00%
O&M Ratio Metric		
Aqua PA O&M Ratio 3 Year Annual Average Attainment	Rating (% of 20%) PSUs Earned	
32.33	50	
32.13	60	
31.93	70	
31.73	80	
31.53	90	
31.33	100	
31.13	110	
30.93	120	
30.73	130	
30.53	140	
30.33	150	
30.13	160	
29.93	170	
29.73	180	
29.53	190	
29.33	200	

Metric 4. The three-year cumulative total earnings before taxes in non-Aqua Pennsylvania subsidiaries was \$2.8 million:

Non-Aqua PA 3 year EBT (in thousands)		Linear Interpolation
2015 A	\$85,759	
2016A	\$95,823	
2017A	\$100,444	
3 Year Average	\$282,026	187.30%
Non-PA Earnings Before Taxes		
Non-PA EBT 3 year Combined Attainment (in thousands)	Rating (% of 20%) PSUs Earned	
\$235,200	50	
\$240,200	60	
\$245,200	70	
\$250,200	80	
\$255,200	90	
\$260,200	100	
\$262,700	110	
\$265,200	120	
\$267,700	130	
\$270,200	140	
\$272,700	150	
\$275,200	160	
\$277,700	170	
\$280,200	180	
\$282,700	190	
\$285,200	200	

As a result, the Compensation Committee certified that a 109.19% payout of the 2015 PSU awards was earned in accordance with the following results and weightings:

2015 PSU METRICS			
	Payout	Weight	Extrapolated
METRIC 1	0.00%	30%	0.00%
METRIC 2	127.78%	30%	38.33%
METRIC 3	167.00%	20%	33.40%
METRIC 4	187.30%	20%	37.46%
			109.19%

Applying this performance, the below table shows the Target PSU award and the Actual PSU award approved by the Compensation Committee for the NEOs.

Name	2015 Target PSU	2015 Actual PSU
FRANKLIN	18,292	19,972
SMELTZER	10,000	10,919
FOX	4,950	5,404
SCHULLER	5,870	6,408
LUNING	7,000	7,643

AQUA.

Outstanding 2016 PSU Awards

The PSU awards granted in 2016 have similar performance goals to the 2015 PSU awards, with different percentile rankings and scales, and a performance period that began on January 1, 2016 and will end on December 31, 2018. Please see the disclosure under the heading "Outstanding Equity Awards at Fiscal Year-End" for a description of the status of such 2016 PSU awards.

Outstanding 2017 PSU Awards

The 2017 PSU awards have similar performance goals to the 2015 and 2016 PSU awards, and a performance period that began on January 1, 2017 and will end on December 31, 2019. Please see the disclosure under the heading "Outstanding Equity Awards at Fiscal Year-End" for a description of the status of such 2017 PSU awards.

STOCK OPTIONS

In 2017, the Compensation Committee added performance-based stock options to the grants to the named executive officers. The Compensation Committee believes that the award of stock options, when paired with the performance and service-based stock awards, completely aligns the interests of the named executive officers with those of the shareholders. Fifteen percent of the named executive officer's performance-based awards will vest ratably over a three-year period of time based upon the Company's achievement of at least an adjusted return on equity equal to 150 basis points below the return on equity granted by the Pennsylvania Public Utility Commission during the Company's Pennsylvania subsidiary's last rate proceeding. The Company's adjusted return on equity is calculated annually in accordance with the below descriptive formula and if the adjusted return on equity meets or exceeds 150 basis points below the return of equity of the most current Pennsylvania Public Utility Commission rate award, the awards will vest:

Return on Equity = net income (excluding net income or loss from acquisitions which have not yet been incorporated into a rate application as of the last year end) / equity (excluding equity applicable to acquisitions which are not yet incorporated in a rate application during the award period).

The Compensation Committee believes that by providing the named executive officers with the ability to earn stock options, the named executive officers' interests are aligned with the shareholders' interests as the value of the stock option is a function of the price of the Company's stock. In addition, stock options provide the use of an additional performance metric for the earning of long-term equity compensation.

RESTRICTED SHARE AWARDS

Annual restricted share or restricted stock unit grants (together referred to as "restricted shares") entitle the named executive officer to receive the number of shares granted at the end of a given period of time, or in increments over a period of years on the anniversaries of the grant date, provided the named executive officer remains an employee of the Company, unless separation is due to death, disability, retirement or termination following a Change in Control, in which cases acceleration of the lapse of forfeiture restrictions occurs as set forth in the Plan. Dividends or dividend equivalents, as applicable, are accumulated and paid when the restricted shares are paid. The restricted shares to the other named executive officers (other than the Chief Executive Officer) vest 100% after three years, with vesting subject solely to continued service with the Company.

The restricted shares to the Chief Executive Officer vest 100% after three years, with vesting subject to continued service with the Company and the Company's achievement of at least an adjusted return on equity equal to 150 basis points below return on equity granted by the Pennsylvania Public Utility Commission during

~~the Company's Pennsylvania subsidiary's last rate proceeding. The return on equity shall be calculated in the same manner as it is calculated for the purposes of determining the return on equity required for the vesting of stock options.~~

RETIREMENT PLANS

Our retirement plans are intended to provide competitive retirement benefits to help attract and retain employees. Some of our named executive officers are participants in our qualified pension plan (benefits frozen as of December 31, 2014) (the "Retirement Plan"), and in our non-qualified pension benefit plan (the "Non-Qualified Pension Benefit Plan"). Our non-qualified retirement plan is intended to provide executive officers with a retirement benefit that is comparable on a percentage of salary basis to that of our other employees participating in the Retirement Plan by providing the benefits that are limited under current Internal Revenue Service regulations. Benefits continue to accrue for some of our named executive officers in the Non-Qualified Pension Benefit Plan. Starting in 2009, the Company began to fund the trust for the benefits under the Non-Qualified Pension Benefit Plan using trust-owned life insurance. A named executive officer's retirement benefits under our qualified and non-qualified retirement plan are not taken into account in determining the executive's current compensation. Effective December 31, 2014, the named executive officers ceased accruing a benefit under the Retirement Plan. Specifically, their plan compensation and credited service for purposes of determining their benefits was frozen in the Retirement Plan as of December 31, 2014. Vesting service will continue to accrue in the Retirement Plan as long as the named executive officer remains employed by the Company.

NON-QUALIFIED DEFERRED COMPENSATION PLAN

We maintain a non-qualified Executive Deferred Compensation Plan (the "Executive Deferral Plan") that allows eligible members of management to defer all or a portion of their salary and annual cash incentives, which enables participants to save for retirement and other life events in a tax-effective manner. Deferred amounts are deemed invested in one or more mutual funds selected by the participant under trust-owned life insurance policies on the lives of eligible executives. In addition, in order to provide named executive officers with the full Company matching contribution available to other employees under our qualified plans, executives who choose to defer up to six percent of their salary under one of Aqua America's 401(k) plans, but do not receive the full Company matching contribution under such qualified plans due to the Internal Revenue Service regulations limiting the total dollar amount that can be deferred under a 401(k) plan (\$18,000 for 2015; 2016, and \$18,500 for 2017), receive the portion of the Company matching contribution that would otherwise be forfeited by the executive as an Aqua America contribution into the Executive Deferral Plan. Effective January 1, 2009, the Company began to fund the trust holding amounts deferred by the participants in the Executive Deferral Plan using trust-owned life insurance. A named executive officer's deferrals and any earnings on deferrals under our non-qualified deferred compensation plan are not taken into account in determining the named executive officer's compensation.

SEVERANCE PLANS

All of the named executive officers are covered by a severance policy. The policy provides the named executive officers with a severance benefit of one full year salary and one full year projected bonus and a minimum of one month of continued medical benefits and a maximum of six months of continued medical benefits following termination, provided that the named executive officer is terminated for any reason other than for cause.

Additionally, Mr. Franklin and the Company entered into an Employment Agreement when he became Chief Executive Officer ("Mr. Franklin's Employment Agreement"). Pursuant to Mr. Franklin's Employment Agreement, if the Company terminates Mr. Franklin's employment without cause or does not renew the term of

the Employment Agreement, or Mr. Franklin terminates his employment for good reason (as defined in the agreement), Mr. Franklin will receive any accrued but unpaid salary and accrued vacation as well as a lump sum equal to (i) 24 months of base salary and (ii) two times the target annual bonus. If the Company terminates Mr. Franklin's employment for cause or if he terminates his employment without good reason, or for death or disability, Mr. Franklin (or his estate) will receive any accrued but unpaid salary and accrued vacation. Mr. Franklin's Employment Agreement expires June 30, 2018, and may be extended for successive one-year terms upon mutual agreement of the Company and Mr. Franklin. Mr. Franklin's Employment Agreement is filed with our SEC filings.

CHANGE-IN-CONTROL AGREEMENTS

We maintain change-in-control agreements with the named executive officers. These change-in-control agreements are intended to minimize the distraction and uncertainty that could affect key management in the event we become involved in a transaction that could result in a change in control of Aqua America, enable the executives to impartially evaluate such a transaction, provide a retention incentive to our named executive officers and encourage their attention and dedication to their duties and responsibilities in the event of a possible change-in-control. Under the terms of these agreements, the covered named executive officer is entitled to certain severance payments and a payment in lieu of the continuation of benefits if he experiences a termination of employment other than for cause, or in the event the executive resigns for good reason, as defined in the agreements, within two years following a change-in-control of Aqua America. (See the description of "Potential Payments Upon Termination or Change-in-Control" on pages 60 through 62.)

These change-in-control agreements are referred to as "double trigger" agreements because they only provide a benefit to executives whose employment is terminated, or who have good reason to resign, following a change-in-control. These change-in-control agreements do not provide any payments or benefits to the covered executives merely as a result of a change-in-control. The normal annual restricted share, stock option and performance share grants to the named executive officers also contain double trigger provisions. Each of the change-in-control agreements limits the amount of the payments under the agreements to the Internal Revenue Service's limitation on the deductibility of these payments under Section 280G of the Internal Revenue Code (the "Code").

The Company has determined that there will be no tax gross-ups in any change-in-control agreements with executives and that all such agreements will be subject to the limitations under Section 280G of the Code. We believe that the multiples of compensation and other benefits provided under the change-in-control agreements, as described on pages 60 through 62, are consistent with the multiples in the market. Named executive officers who receive payments under their change-in-control agreements in connection with their separation from employment following a change-in-control will not be entitled to any payments under our normal severance policy.

PERQUISITES

We offer a limited number of perquisites for our named executive officers. The Board has authorized executive benefits consisting of executive financial planning and annual executive physical exams. The Board regularly reviews the benefits provided to our executives and makes appropriate modifications based on the value of these benefits.

THE ROLE OF MANAGEMENT IN THE EXECUTIVE COMPENSATION PROCESS

Our Senior Vice President, General Counsel, and Secretary and our Interim Vice President, Human Resources assist the Compensation Committee by preparing schedules showing the present compensation of executives and compiling the recommended salary grade midpoints, market rates, target annual cash incentives

and target range of equity compensation awards from the information provided by the Compensation Committee's consultant. Our Chief Executive Officer compiles and presents the supporting information for the individual executives' performance against their objectives and his recommendations for any discretionary points for the evaluation of the extent of achievement of individual goals (the "Individual Factor") under the Annual Plan. He also provides the Compensation Committee with his recommendations for annual salary increases, any changes in target annual cash incentive percentages and equity incentive awards for the other executive officers. Our Chief Financial Officer provides the Compensation Committee with certifications as to our financial performance for purposes of the Compensation Committee's determination of the achievement of the Company-specific goals (the "Company Factor") for the Annual Plan, our performance against the criteria established by the Compensation Committee for the vesting of restricted share grants and the earning of performance shares. These financial measures are also certified by our Director of Internal Audit. Our Chief Executive Officer makes recommendations to the Compensation Committee with respect to the compensation awards for the named executive officers other than himself, but the ultimate decisions regarding compensation for these officers are made by the Compensation Committee.

STOCK OWNERSHIP GUIDELINES

In 2005, the Board of Directors established stock ownership guidelines for the named executive officers to encourage these executives to maintain a significant ownership interest in the Company and to help align the interests of these executive officers with the long-term performance of the Company. In 2017, these guidelines were modified to recognize the different levels of executives who may be among the named executive officers and to state the guidelines in terms of the number of shares to be held rather than a dollar value, in order to avoid fluctuations in the number of shares to be held based on variations in the Company's stock price. In establishing the number of shares to be held, the Compensation Committee uses a round number of shares, the value of which approximates the following multiples of the midpoint of the base salary grade for the executives:

Position	Approximate Multiple of Salary	Shares, PSUs, and RSUs To Be Held
CHIEF EXECUTIVE OFFICER	5	108,000
EXECUTIVE VICE PRESIDENT	3	33,000
SENIOR VICE PRESIDENT	2	19,000

Each named executive officer is expected to have shareholdings consistent with these guidelines within five years after becoming a named executive officer or after receiving a significant promotion. Messrs. Franklin and Fox each received a significant promotion in 2015 and Mr. Schuller was initially hired in 2015, starting a new five-year period for each.

Shareholdings, as defined for ownership requirement purposes, include shares held directly or beneficially, including shares acquired under our Employee Stock Purchase Plan or 401(k) plans and restricted shares units and performance share units. An executive who has not achieved the guideline within this five-year period is expected to retain one-half of any equity awards, after any required tax withholding, in Company stock and to use 10% of any annual cash incentive awards after tax to purchase shares of Company stock until the guideline is met. The below chart shows the shareholdings of the named executive officers as of March 9, 2018:

OFFICER SHAREHOLDINGS		
Name	Position	Shareholdings
FRANKLIN	Chief Executive Officer	196,626
SMELTZER	Executive Vice President	74,188
FOX	Executive Vice President	38,600
SCHULLER	Executive Vice President	36,796
LUNING	Senior Vice President	61,001

AQUA.

ANTI-HEDGING AND ANTI-PLEDGING POLICY

It is the Company's policy not to permit hedging or pledging or short-selling of the Company's stock by its named executive officers. None of our named executive officers pledged any shares of Company stock during 2017. None of our named executive officers engaged in any hedging activities with respect to the Company stock during 2017.

CLAWBACK OF INCENTIVE COMPENSATION

In the event of a significant restatement of our financial results caused by executive fraud or willful misconduct, the Compensation Committee reserves the right to review the cash incentive compensation received by the named executive officers with respect to the period to which the restatement relates, recalculate Aqua America's results for the period to which the restatement relates and seek reimbursement of that portion of the cash incentive compensation that was based on the misstated financial results from the executive or executives whose fraud or willful misconduct was the cause of the restatement. In addition, starting with the performance share unit grants and restricted stock unit grants in 2014, all shares issued pursuant to those grants are subject to any applicable recoupment or clawback policies and other policies implemented by the Board, as in effect from time to time.

REPORT OF THE EXECUTIVE COMPENSATION COMMITTEE

The purpose of the Compensation Committee is to assist the Board of Directors in its general oversight of the Company's compensation programs and the compensation of the Company's executives. The Compensation Committee Charter describes in greater detail the full responsibilities of the committee and is available on our website: www.aquaamerica.com.

The Executive Compensation Committee has reviewed and discussed the Compensation Discussion and Analysis on pages 24 through 45 with management. Based on this review and discussion, the Executive Compensation Committee recommended to the Company's Board of Directors, and the Board of Directors approved, the inclusion of the Compensation Discussion and Analysis in the Company's Proxy Statement for the 2017 Annual Meeting of Shareholders.

Respectfully submitted,

Ellen T. Ruff, Chairman
Carolyn J. Burke
Daniel J. Hilferty

The foregoing Executive Compensation Committee report shall not be deemed incorporated by reference by any general statement incorporating by reference this Proxy Statement into any filing under the Securities Act or the Exchange Act, except to the extent that the Company specifically incorporates this information by reference, and shall not otherwise be deemed filed under such Acts.

2017 EXECUTIVE COMPENSATION

SUMMARY COMPENSATION TABLE

The following Summary Compensation Table shows compensation paid to or earned by the named executive officers.

SUMMARY COMPENSATION TABLE									
Principal Position	Year	Salary (\$)(1)	Bonus (\$)	Grant Date Fair Value of PSU and RSU's (\$)(2)	Grant Date Fair Value of Option Awards (\$)(2)	Non-Equity Incentive Plan Compensation (\$)(1)(3)	Change in Pension Value and Non-qualified Deferred Compensation Earnings (\$)(4)	All Other Compensation (\$)(5)	Total (\$)(6)
Christopher H. Frankl President and Chief Executive Officer	2017	705,730	—	1,139,644	110,106	711,103	1,632,770	14,150	4,313,503
	2016	658,324	—	1,271,034	—	862,858	1,017,238	14,645	3,824,099
	2015	483,801	—	710,830	—	524,511	405,995	15,043	2,140,180
David P. Smetzer EVP, Chief Financial Officer and Principal Financial Officer	2017	399,163	—	327,477	31,640	270,929	604,934	19,471	1,653,614
	2016	385,663	—	388,786	—	275,197	565,493	18,778	1,633,917
	2015	369,037	—	396,700	—	265,980	393,970	11,755	1,437,442
Richard S. Fox EVP and Chief Operating Officer	2017	354,871	—	293,136	28,319	258,061	372,738	20,312	1,327,437
	2016	338,907	—	334,954	—	245,928	237,445	16,863	1,174,097
	2015	255,714	—	191,295	—	145,246	93,579	11,003	696,837
Daniel J. Schuller EVP, Strategy & Corporate Development	2017	367,984	—	285,998	27,631	252,579	—	22,399	956,591
	2016	355,143	—	515,590	—	268,018	—	24,544	1,163,295
	2015	141,346	—	160,440	—	104,271	—	41,697	447,754
Christopher P. Luning SVP, General Counsel and Secretary	2017	326,831	—	238,853	23,077	177,414	276,991	10,680	1,053,846
	2016	313,224	—	305,048	—	180,306	205,336	14,934	1,018,848
	2015	293,558	—	277,690	—	175,500	111,083	14,048	871,879

- (1) Salary and Non-Equity Incentive Plan Compensation amounts include amounts deferred by the named executive officer pursuant to the Executive Deferral Plan described on page 55.
- (2) The grant date fair value of stock-based compensation is based on the fair market value on the date of grant as determined in accordance with the Financial Accounting Standards Board's (FASB) accounting guidance for stock compensation. The assumptions used in calculating the fair market value are set forth in Note 14, "Employee Stock and Incentive Plan" contained in the Notes to the Consolidated Financial Statements in the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2017. For the RSUs and Options, the Grant Date Fair Value shown is based on the actual number of shares underlying the award. For the PSUs, the Grant Date Fair Value shown is based on the target number of shares underlying the award. For all NEOs, the Grant Date Fair Value if the maximum payout occurred would be \$2,705,979 for the PSU awards; \$841,796 for the RSU awards; and, \$220,773 for the Option awards.

- (3) Non-Equity Incentive Plan Compensation is shown for the year in which the compensation is earned, and is generally paid in the following calendar year. See the description of these annual cash incentive awards above under the CD&A section of this Proxy Statement.
- (4) The change in pension value is based on the aggregate change in the actuarial present value of the named executive officer's accumulated benefit under all defined benefit pension plans (including non-qualified pension plans) from the pension plan measurement date used for financial statement reporting purposes in the Company's audited statements for the prior completed fiscal year to the pension plan measurement date used for financial statement reporting purposes in the Company's audited financial statements for the covered fiscal year. All amounts deferred by participants in the Executive Deferral Plan and all prior deferrals under the Executive Deferral Plan are invested in a variety of mutual funds selected by each participant under trust-owned life insurance used by the Company to fund the Executive Deferral Plan; there are no preferential or above-market earnings on this deferred compensation. Mr. Schuller is not eligible to participate in the Retirement Plan since he was hired by the Company after the Retirement Plan was closed to new entrants.
- (5) "All Other Compensation" includes the following components:

OTHER COMPENSATION							
		Group Life (\$)(a)	401(k) Company Match and Company Contribution (\$)(b)	Relocation (\$)(c)	Car Allowance (\$)(d)	Other (\$)	Total (\$)
FRANKLIN	2017	3,450	8,100	—	2,600	—	14,150
	2016	3,450	7,950	—	3,245	—	14,645
	2015	3,367	7,950	—	3,726	—	15,043
SMELTZER	2017	3,896	7,938	—	7,637	—	19,471
	2016	3,777	7,950	—	7,051	—	18,778
	2015	3,581	7,950	—	224	—	11,755
FOX	2016	3,462	8,100	—	8,750	—	20,312
	2016	3,261	7,950	—	5,652	—	16,863
	2015	1,706	5,514	—	3,783	—	11,003
SCHULLER	2017	270	15,888	—	6,241	—	22,399
	2016	248	16,249	—	8,047	—	24,544
	2015	—	4,106	35,883	1,708	—	41,697
LUNING	2017	1,100	7,620	—	1,960	—	10,680
	2016	1,055	7,929	—	5,950	—	14,934
	2015	990	7,768	—	5,290	—	14,048

- (a) Represents the taxable value of group life insurance benefit for the named executive officer.
- (b) Includes Company match and year end contributions to the 401(K) and Nonqualified Plan.
- (c) Represents reimbursement provided under the Company's policy.
- (d) The Company provides the use of Company owned or leased vehicles for all named executive officers.
- (6) Total compensation is calculated in accordance with the SEC requirements under Item 402(c) of Regulation S-K, but does not reflect the compensation paid for the year. Specifically, the Total compensation includes the change in pension value in the qualified and non-qualified defined benefit pension plans in which the named executive officers participate. Such pension benefits will not be paid to the named executive officers until they retire from service to the Company. The total direct compensation, without such change in pension value for 2017 was as follows: Mr. Franklin, \$2,680,733; Mr. Smeltzer, \$1,048,680; Mr. Fox, \$954,699; and Mr. Luning, \$776,855. Mr. Schuller does not participate in the pension plan.

GRANTS OF PLAN-BASED AWARDS

The following table sets forth information regarding equity and non-equity awards granted to the named executive officers in 2017:

GRANTS OF PLAN-BASED AWARDS											
Name	Grant	Estimated Future Payouts Under Non-Equity Incentive Plan Awards(1)			Estimated Future Payouts Under Equity Incentive Plan Awards (5)			All Other Stock Awards: Number of Shares of Stock or Units (#)(6)	All Other Option Awards: Number of Securities Underlying Options (#)	Exercise or Base Price of Option Awards (\$/Sh)	Grant Date Fair Value of Stock and Option Awards (\$)(7)
		Threshold	Target	Maximum	Threshold	Target	Maximum				
		\$(2)	\$(3)	\$(4)	(#)	(#)	(#)				
FRANKLIN	2/22/17	288,036	576,072	864,108	11,689	37,202	46,756	—	27,053	\$30.47	1,249,749
SMELTZER	2/22/17	110,637	221,275	331,912	3,359	6,718	13,436	3,972	7,774	\$30.47	359,117
FOX	2/22/17	108,030	216,059	324,089	3,007	6,013	12,026	3,556	6,958	\$30.47	321,455
SCHULLER	2/22/17	102,308	204,617	306,925	2,934	5,867	11,734	3,469	6,789	\$30.47	313,630
LUNING	2/22/17	74,269	148,538	222,807	2,450	4,900	9,800	2,897	5,670	\$30.47	261,930

- (1) The named executive officers' Non-Equity Incentive Plan Awards are calculated based on the named executive officers' current annual salary multiplied by the executive's target incentive compensation percentage times an Individual Factor times a Company Factor.
- (2) The Threshold Non-Equity Incentive Plan Award is based on the minimum Individual Factor achievement of 75% and a maximum Individual Factor achievement of 150%.
- (3) The Target Non-Equity Incentive Plan Award is based on the minimum Individual Factor of 100% and a Company Factor of 100%.
- (4) The Maximum Non-Equity Incentive Plan Award is based on the maximum Individual Factor of 150% and the maximum Company Factor of 125%. 110% or more of the Company's financial target must be achieved to earn the maximum non-equity incentive plan award.
- (5) The February 22, 2017 Equity Incentive Plan Awards in these columns are composed of performance share units and restricted stock units for the CEO, Mr. Franklin, and performance share units for the other named executive officers. The performance share units for all named executive officers vest on the third anniversary of the grant date, subject to the degree of achievement of the applicable performance goals.
- (6) Represents service-based restricted stock unit grants to the named executive officers other than Mr. Franklin, which vest on the third anniversary of the grant date as long as the named executive officer is providing service to the Company.
- (7) The grant date fair value of restricted stock unit awards is based on their fair market value on the date of grant as determined under FASB accounting standards for stock compensation. The assumptions used in calculating the fair market value under FASB's accounting standard for stock compensation are set forth in Note 14, "Employee Stock and Incentive Plan" contained in the Notes to Consolidated Financial Statements as incorporated by reference in the Company's Annual Report on Form 10-K for the year ended December 31, 2017.

Equity awards in 2017 consisted of RSUs, PSUs, and Stock Options. The RSU grants to the named executive officers vest at the end of three years from the grant date. The PSU grants to the named executive officers vest at the end of three years from the grant date, but the amount of the payout can range from 0% to 200% of the target grant depending on the Company's performance against the performance goals described on pages 37 to 41. The threshold level of PSUs that a grantee can earn is 50% of the target grant and the maximum level a grantee can earn is 200% of the target grant. The threshold, target and maximum payout for each of the named executive officers is shown in the Grants of Plan-Based Awards Table above. Stock Options grants to the named executive officers vest 33 1/3% in 2018, 33 1/3% in 2019, and 33 1/3% in 2020.

If the Company does not achieve the required financial performance to meet the designated performance criteria, the performance shares and stock options that are subject to such performance criteria that would otherwise vest are forfeited.

OUTSTANDING EQUITY AWARDS AT FISCAL YEAR-END

The following table sets forth information on outstanding stock option and stock awards held by the named executive officers at the end of 2017.

Name	Option Awards			Stock Awards			
	Number of Securities Underlying Unexercised Options (#) Unexercisable	Option Exercise Price (\$)	Option Expiration Date	Number of Shares or Units of Stock That Have Not Vested (#)(1)(2)	Market Value of Shares or Units of Stock That Have Not Vested (\$)(1)(2)	Equity Incentive Plan Awards: Number of Unearned Shares, Units or Other Rights That Have Not Vested (#)(3)(4)	Equity Incentive Plan Awards: Market or Payout Value of Unearned Shares, Units or Other Rights That Have Not Vested (\$)(3)(4)
FRANKLIN	27,053	\$30.47	2/22/2027	19,972	\$820,378	88,837	\$3,543,535
SMELTZER	7,774	\$30.47	2/22/2027	10,919	\$449,509	28,690	\$1,147,788
FOX	6,958	\$30.47	2/22/2027	5,404	\$221,836	17,231	\$ 691,392
SCHULLER	6,789	\$30.47	2/22/2027	6,408	\$261,758	23,511	\$ 938,008
LUNING	5,670	\$30.47	2/22/2027	7,643	\$314,657	21,497	\$ 857,481

(1) The performance goals for the PSUs granted for 2015 for the three-year performance period ended December 31, 2017 were as follows: (a) up to 30 percent of the performance shares will be earned based on attainment of Aqua's ordinal ranking (e.g. 1st, 2nd, 3rd, etc.) for TSR compared to a specified peer group of investor-owned water companies; (b) up to 30 percent of the performance shares will be earned based on Aqua's percentile ranking for TSR within the S&P MidCap Utilities Index; (c) up to 20 percent of the performance shares will be earned based on attainment of a three-year combined ratio of operations and maintenance expense compared to revenue for Aqua Pennsylvania; and, (d) up to 20 percent of the performance shares will be earned based on attainment of the three-year cumulative total earnings before taxes ("EBT") for the Company's operations other than Aqua Pennsylvania. In February 2018, the Compensation Committee determined the achievement of the performance goals for the 2015 PSUs. The Company's TSR through December 31, 2017 was seventh out of seven peer water utilities (Metric (a)), the Company's TSR through December 31, 2017 was ranked eighth among the nineteen companies in the S&P MidCap Utilities Index (Metric (b)), the combined ratio of O&M expense to revenue for Aqua Pennsylvania was 29.99% (Metric (c)); and, combined EBT for operations other than Aqua Pennsylvania was \$282,026 (Metric (d)). The performance goals attainment resulted in overall achievement of 109.19%.

(2) The PSUs in this column that are vested and earned for the named executive officers are:

Named Executive Officer	Date Earned	Date Vested and Paid	Number of Shares Issued
FRANKLIN	12/31/2017	2/23/2018	19,972
SMELTZER	12/31/2017	2/23/2018	10,919
FOX	12/31/2017	2/23/2018	5,404
SCHULLER	12/31/2017	2/23/2018	6,408
LUNING	12/31/2017	2/23/2018	7,643

The value of the awards includes accrued and unpaid dividend equivalents. The dividend equivalents were accrued based upon the assumption that the PSUs would be issued based upon the target award.

- (3) For the PSUs granted in 2016, the Company's interim performance through December 31, 2017 is 70.03%. For the PSUs granted in 2017, the Company's interim performance through December 31, 2017 is 122.91%. Based on such interim performance PSUs are presented at target.

Named Executive Officer	Performance Share Units			Restricted Stock Units		
	Date To Be Earned If Applicable	Date To Be Vested And Paid If Earned	Number Of Units Issued At Target	Date To Be Earned If Applicable	Date To Be Vested And Paid If Earned	Number Of Units Issued At Target
FRANKLIN	—	—	—	2/23/2018	2/23/2018	9,135
	12/31/2018	2/21/2019	28,333	2/21/2019	2/21/2019	14,167
	12/31/2019	2/22/2020	23,378	2/22/2020	2/22/2020	13,824
SMELTZER	—	—	—	2/23/2018	2/23/2018	5,000
	12/31/2018	2/21/2019	8,667	2/21/2019	2/21/2019	4,333
	12/31/2019	2/22/2020	6,718	2/22/2020	2/22/2020	3,972
FOX	—	—	—	2/23/2018	2/23/2018	2,475
	12/31/2018	2/21/2019	7,467	2/21/2019	2/21/2019	3,733
	12/31/2019	2/22/2020	6,013	2/22/2020	2/22/2020	3,556
SCHULLER	—	—	—	2/23/2018	2/23/2018	2,975
	12/31/2018	2/21/2019	7,467	2/21/2019	2/21/2019	3,733
	12/31/2019	2/22/2020	5,867	2/22/2020	2/22/2020	3,469
LUNING	—	—	—	2/23/2018	2/27/2017	3,500
	12/31/2018	2/21/2019	6,800	2/21/2019	2/21/2019	3,400
	12/31/2019	2/22/2020	4,900	2/22/2020	2/22/2020	2,897

- (4) All such PSUs are subject to the achievement of the applicable performance criteria for the designated performance period, and continued service with the Company on the vesting date; actual results could vary materially at the end of the performance period. All RSUs are subject to the achievement of applicable performance criteria, and the individual's continued service with the Company on the vesting date.

OPTIONS EXERCISED AND STOCK VESTED

The following table sets forth (1) the number of shares of stock options, restricted shares, PSUs or RSUs previously granted to the named executive officers that were exercised, vested or were earned for 2017, and (2) the value realized by those officers upon the exercise, vesting, or payment of such shares based on the closing market price for our shares of Common Stock on the exercise or vesting date.

OPTIONS EXERCISED AND STOCK VESTED				
Name	Option Awards		Stock Awards	
	Number of Shares Acquired on Exercise (#)	Value Realized on Exercise (\$)	Number of Shares Acquired on Vesting (#)(1)	Value Realized on Vesting (\$)(2)
FRANKLIN	—	—	12,373	411,514
SMELTZER	—	—	14,730	489,897
FOX	5,750	110,228	2,210	73,484
SCHULLER	—	—	2,895	92,377
LUNING	—	—	10,311	342,928

- (1) The "Number of Shares Acquired on Vesting" column represents the number of shares of common stock issued upon the earning and vesting of the 2015 PSUs and RSUs.
- (2) The "Value Realized on Vesting" column includes the fair value of the shares paid on the vesting plus dividend equivalents paid for PSUs and RSUs vesting in the amount of \$25,959 for Mr. Franklin, \$30,903 for Mr. Smeltzer, \$4,635 for Mr. Fox, \$2,177 for Mr. Schuller, and \$21,632 for Mr. Luning.

CEO TO MEDIAN EMPLOYEE PAY RATIO

As required by Section 953(b) of the Dodd-Frank Wall Street Reform and Consumer Protection Act, and Item 402(u) of Regulation S-K, we are providing the following information about the relationship of the annual total compensation of our employees and the annual total compensation of Mr. Franklin:

For 2017, as is permitted under the rules of the SEC, to determine our median employee, we chose "base salary" as our consistently-applied compensation measure. We annualized this measure of compensation for those who commenced employment during 2017. Using a determination date of December 31, 2017, we calculated the median base salary for all required employees. Using a valid statistical sampling methodology, we then produced a sample of employees who were paid within a 5% range of that median and selected an employee from within that group as our median employee. The annual total compensation of the employee identified as the median employee of the Company (other than Mr. Franklin), was \$97,977 and, the annual total compensation of Mr. Franklin was \$4,313,503.

Accordingly, the ratio of the annual total compensation of Mr. Franklin to the median of the annual total compensation of all employees of the Company was estimated to be 44 to 1.

The annual total compensation for the median employee and Mr. Franklin were calculated under Item 402(c) of Regulation S-K. The median employee does participate in the Company's defined benefit pension plan. Without the inclusion of the change in pension and non-qualified plan values, Mr. Franklin's annual total compensation was \$2,680,733 and the median employee's annual total compensation was \$73,753 with a ratio of 36 to 1.

This pay ratio is a reasonable estimate calculated in a manner consistent with SEC rules based on our payroll and employment records and the methodology described above. The SEC rules for identifying the median compensated employee and calculating the pay ratio based on that employee's annual total compensation allow companies to adopt a variety of methodologies, to apply certain exclusions, and to make reasonable estimates and assumptions that reflect their compensation practices. As such, pay ratios reported by other companies may not be comparable to the pay ratio reported above.

RETIREMENT PLANS AND OTHER POST-EMPLOYMENT BENEFITS

PENSION BENEFITS

The following table sets forth: (1) the number of years of credited service for the named executive officers under our various retirement plans as of December 31, 2017; (2) the actuarial present value of accumulated benefits under those plans as of December 31, 2017; and, (3) any payments made to the named executive officers in 2017 under those plans.

PENSION BENEFITS				
Name	Plan Name	Number of Years of Credited Service* (#)	Present Value of Accumulated Benefit (\$)	Payments During Last Fiscal Year (\$)
FRANKLIN	Retirement Income Plan for Aqua America, Inc. and Subsidiaries Non Qualified Retirement Plan	22	1,003,608	—
		25	3,611,782	—
SMELTZER	Retirement Income Plan for Aqua America, Inc. and Subsidiaries Non Qualified Retirement Plan	29	1,509,463	—
		32	2,867,191	—
FOX	Retirement Income Plan for Aqua America, Inc. and Subsidiaries Non Qualified Retirement Plan	13	523,423	—
		16	601,909	—
SCHULLER	Retirement Income Plan for Aqua America, Inc. and Subsidiaries Non Qualified Retirement Plan	—	—	—
LUNING	Retirement Income Plan for Aqua America, Inc. and Subsidiaries Non Qualified Retirement Plan	12	406,162	—
		15	591,993	—

* For benefit accrual purposes, credited service in the Retirement Plan is frozen as of 12/31/14. For early retirement eligibility purposes, service continues to accrue after 12/31/14 and will equal that shown for the Non-Qualified Retirement Plan.

RETIREMENT INCOME PLAN FOR AQUA AMERICA, INC. AND SUBSIDIARIES (THE "RETIREMENT PLAN")

The Company sponsors a qualified defined benefit Retirement Plan to provide retirement income to the company's employees hired prior to certain dates starting in 2003. Effective December 31, 2014, the named executive officers (other than Mr. Schuller, who is not a participant in the plan) ceased accruing a benefit under the Retirement Plan. Specifically, their plan compensation and credited service for purposes of determining their benefits were frozen in the Retirement Plan as of December 31, 2014.

For the portion of the Retirement Plan covering certain of the named executive officers, plan compensation is defined as total compensation paid, but excludes contributions made by the Company to a plan of deferred compensation, distributions from a deferred compensation plan, amounts realized from the exercise of stock options or when restricted shares underlying restricted stock units or performance shares become freely transferable, fringe benefits, welfare benefits, reimbursements or other expense allowances, moving expenses and commissions. The Employee Retirement Income Security Act of 1974, as amended ("ERISA"), imposes maximum limitations on the annual amount of pension benefits that may be paid, and the amount of compensation that may be taken into account in calculating benefits, under a qualified, funded, defined benefit pension plan such as the Retirement Plan. The Retirement Plan complies with these ERISA limitations.

Benefits earned under the final pay formula for the retirement plan are equal to 1.35% of average plan compensation plus 0.45% of average plan compensation above "Covered Compensation" for each year of credited service up to 25 years, and 0.5% of average plan compensation for each year of credited service above 25 years. The annual benefit is further subject to a minimum benefit schedule. Average plan compensation is defined as the average of plan compensation over the highest five consecutive years out of the last ten years. Covered Compensation is defined as the average of the Social Security Wage Bases (as defined in the Retirement Plan) in effect for each calendar year during the 35-year period ending with the last day of the calendar year of the benefit determination. Effective December 31, 2014, years of credited service and plan compensation in the Retirement Plan was frozen for the named executive officers (other than Mr. Schuller).

AQUA.

Under the terms of the Retirement Plan, a Company participant becomes fully vested in his or her accrued pension benefit after five years of credited service. All named executive officers (with the exception of Mr. Schuller) are vested in the Retirement Plan. Participants may retire as early as age 55 with 10 years of service. Unreduced benefits are available when a participant attains the earlier of age 65 with 5 years of vesting service or age 62 with 30 years of vesting service. Otherwise, benefits are reduced 3% for each year by which retirement precedes the attainment of age 65 or are reduced actuarially in accordance with the terms of the Retirement Plan and federal law if payment occurs before age 55. Pension benefits earned are payable in the form of a lifetime annuity or can be collected as a lump sum benefit after retirement. Married individuals may receive a reduced benefit paid in the form of a qualified joint and survivor annuity. Messrs. Smeltzer and Fox are currently eligible to retire under the Retirement Plan.

NON-QUALIFIED RETIREMENT PLAN

Effective December 1, 1989, the Board of Directors adopted a supplemental benefits plan for salaried employees of the Company. On December 1, 2014, the Board of Directors adopted an amended benefits plan for salaried employees of the Company (the "Non-Qualified Pension Benefit Plan"). The Non-Qualified Pension Benefit Plan is a plan that is intended to provide an additional pension benefit to Company participants in the Retirement Plan and their beneficiaries whose benefits under the Retirement Plan are adversely affected by the ERISA limitations described above. Effective December 31, 2014, the Non-Qualified Pension Benefit Plan was amended to include credited service and plan compensation that the named executive officers would have otherwise accrued under the Retirement Plan if their benefit had not been frozen in the Retirement Plan. In addition, deferred compensation is excluded from the Retirement Plan "plan compensation" definition, but is included in the calculation of benefits under the Non-Qualified Pension Benefit Plan. The benefit under the Non-Qualified Pension Benefit Plan is equal to the difference between (i) the amount of the benefit the Company participant would have been entitled to under the Retirement Plan absent such ERISA limitations, absent the freezing of plan compensation and credited service, and including deferred compensation in the final average earnings calculation, and (ii) the amount of the benefit actually payable under the Retirement Plan.

Participants may retire as early as age 55 with 10 years of service under the Non-Qualified Pension Benefit Plan. Unreduced benefits are available when a participant attains the earlier of age 65 with 5 years of service or age 62 with 30 years of service. Otherwise, benefits are reduced 3% for each year by which retirement precedes the attainment of age 65. Pension benefits earned under the Non-Qualified Pension Benefits Plan are payable in the form of a lump sum, unless an alternative election is made. An alternative election may be made such that benefits are paid as an annuity for life (and the life of the participant's spouse upon death), in a series of installments or under certain circumstances transferred at separation from employment to up to five separate distribution accounts under the Company's Executive Deferral Plan.

Messrs. Franklin, Fox, Smeltzer and Luning are earning benefits under the Non-Qualified Pension Benefit Plan, and are fully vested in those benefits. Messrs. Fox and Smeltzer are currently eligible to retire under the Non-Qualified Pension Benefit Plan. Mr. Schuller does not earn any benefits under the Non-Qualified Pension Benefit Plan. In 2009, the Company began to fund the Non-Qualified Pension Benefit Plan through the use of trust-owned life insurance.

ACTUARIAL ASSUMPTIONS USED TO DETERMINE VALUES IN THE PENSION BENEFITS TABLE

The amounts shown in the Pension Benefits Table above are actuarial present values of the benefits accumulated through the date shown. An actuarial present value is calculated by estimating expected future payments starting at an assumed retirement age, weighting the estimated payments by the estimated probability of surviving to each post-retirement age, and discounting the weighted payments at an assumed discount rate to reflect the time value of money. The actuarial present value represents an estimate of the amount, which, if invested today at the discount rate, would be sufficient on an average basis to provide estimated future payments based on the current accumulated benefit. Assumptions used to determine the values are the same as those disclosed on the Company's financial statements as of those dates with the exception of the assumed retirement age and the assumed probabilities of leaving employment prior to retirement. Retirement was assumed to occur at the earliest possible unreduced retirement age (or current age, if later) for each plan in which the executive participates. For purposes of determining the earliest unreduced retirement age, service was assumed to be granted until the actual date of retirement. Actual benefit present values will vary from these estimates depending on many factors, including an executive's actual retirement age. The key assumptions included in the calculations are as follows:

	RETIREMENT AGES	
	December 31, 2017	December 31, 2016
Discount Rate	3.66%	4.13%
FRANKLIN	62	62
SMELTZER	62	62
LUNING	65	65
FOX	65	65
Termination, pre-retirement mortality and disability rates	None	None
Post-Retirement Mortality	50% of the present value for the Retirement Plan is calculated using the RP-2014 gender specific annuitant mortality tables (with MP-2014 mortality improvements removed from 2006 to 2014) projected generationally from 2006 with Scale MP-2017 improvements. 50% of the present value of the Retirement Plan and 100% of the present value for the Non-Qualified Pension Plan is calculated using a 50% male and a 50% female blended RP-2014 annuitant mortality table (with MP-2014 mortality improvements removed from 2006 to 2014) projected generationally from 2006 with Scale MP-2017 improvements.	50% of the present value for the Retirement Plan is calculated using the RP-2014 gender specific annuitant mortality tables (with MP-2014 mortality improvements removed from 2006 to 2014) projected generationally from 2006 with Scale BB 2-Dimensional improvements. 50% of the present value of the Retirement Plan and 100% of the present value for the Non-Qualified Pension Plan is calculated using a 50% male and a 50% female blended RP-2014 annuitant mortality table (with MP-2014 mortality improvements removed from 2006 to 2014) projected generationally from 2006 with Scale BB 2-Dimensional improvements.

NON-QUALIFIED DEFERRED COMPENSATION

The following table sets forth information regarding contributions to, earnings on, withdrawals from and balances as of the end of 2017 for our non-qualified Executive Deferral Plan.

NON-QUALIFIED DEFERRED COMPENSATION				
Name	Registrant Contributions in Last FY (\$)(1)	Aggregate Earnings in Last FY (\$)(2)	Aggregate Withdrawals/ Distributions (\$)	Aggregate Balance at Last FYE (\$)(1)
FRANKLIN	—	9,709	—	81,797
SMELTZER	74,997	60,975	—	592,693
FOX	75,925	15,423	—	154,232
SCHULLER	—	—	—	—
LUNING	—	—	—	—

- (1) The Company's and the named executive officers' contributions to this plan are included in the Summary Compensation Table.
- (2) In 2017, the deferred amounts were invested in mutual funds chosen by the participant under a trust-owned life insurance policy maintained by the Company to fund the Executive Deferral Plan. The earnings shown in this column include the earnings on those mutual funds.

Employees with total projected W-2 compensation for 2017 in excess of \$141,000 were eligible to participate in the Company's Executive Deferral Plan for 2017. Participants may defer up to 100% of their salary and 100% of their non-equity incentive compensation under the Company's Annual Cash Incentive Compensation Plan. At the time the participant elects to make a deferral under the Executive Deferral Plan, the participant is also required to elect the form of payment with respect to the amounts deferred for the upcoming calendar year. If a separation distribution account is elected, the participant may choose to receive his or her distribution in either a lump sum payment or, subject to certain requirements, in annual installments over 2 to 15 years. If a flexible distribution account is elected, the participant will receive his or her distribution in a lump sum payment. The executive officers, including the named executive officers, may not commence the receipt of their account balances and the earnings on these deferrals sooner than the first day of the seventh month following the date of the executive's separation from employment.

POTENTIAL PAYMENTS UPON TERMINATION OR CHANGE-IN-CONTROL

CHANGE-IN-CONTROL

The Company maintains change-in-control agreements with its named executive officers. Payments under these agreements are triggered if the named executive officer's employment is terminated other than for cause or the executive resigns for good reason, as defined in the agreements, within two years after consummation of a change-in-control transaction involving the Company.

The following table provides a summary of the benefits to which each named executive officer would be entitled under the change-in-control agreements.

NAME	MULTIPLE OF BASE COMPENSATION	PAYMENT IN LIEU OF HEALTH BENEFIT CONTINUATION PERIOD	OUTPLACEMENT SERVICES
FRANKLIN	2	2	6 Months
SMELTZER	2	2	6 Months
FOX	2	2	6 Months
SCHULLER	2	2	6 Months
LUNING	2	2	6 Months

For purposes of the change-in-control agreements, "Base Compensation" is defined as current base annual salary, plus the greater of the named executive officer's target bonus for the year in which the executive incurs a termination of employment, or the last actual bonus paid to the named executive officer under the Annual Cash Incentive Compensation Plan (or any successor plan maintained by Aqua America), in all capacities with Aqua America and its subsidiaries or affiliates. The executive's Base Compensation would be determined prior to reduction for salary deferred by the named executive officer under any deferred compensation plan of Aqua America and its subsidiaries or affiliates, or otherwise. The named executive officer is entitled to receive a pro-rata share of the named executive officer's target annual cash incentive compensation based on the portion of the calendar year that has elapsed at the time of the named executive officer's termination. The named executive officer is also entitled to receive a lump sum payment in lieu of the continuation of certain health benefits for a period of 2 years and outplacement services.

The payment of the multiple of Base Compensation would be made in a lump sum within 60 days after the executive's termination as defined under the agreement, although pursuant to the requirements of Section 409A of the Code, part or all of such payment may need to be deferred until the first day of the seventh month following the date of the named executive officer's separation from employment. Each executive is required to execute a standard release of the Company as a condition to receiving the payment under the agreement.

For equity incentive awards made under the Plan: (i) for restricted stock units without performance goals, if a change-in-control occurs prior to the vesting date, the restricted stock units would remain outstanding and vest on the vesting date or, if earlier, vest upon a qualified termination event following a change-in-control; (ii) for Options, if a change-in-control occurs prior to any vesting date, the Options would remain outstanding and vest in accordance with the vesting schedule, or, if earlier, accelerate and vest upon a qualified termination event following a change-in-control; and (iii) for performance shares, if a change-in-control occurs, performance would be measured at the date of the change-in-control, and the number of performance shares earned would be determined as of the date of the change-in-control as follows:

- If a change-in-control occurs more than one year after the grant date, the number of performance shares earned as of the change-in-control date would be the greater of (i) the amount earned based on actual performance, or (ii) the target number of performance shares.
- If a change-in-control occurs within one year after the grant date, the number of performance shares earned as of the change-in-control date would be a pro rata portion (based on the number of whole months in the applicable performance period worked from the date of grant to the change-in-control) of the greater of (i) the amount earned based on actual performance, or (ii) the target number of performance shares.

Any performance shares that are not earned at the change-in-control date would be forfeited. The vesting of these equity incentives is applicable to all grantees under the Plan.

For purposes of the change-in-control agreements and the vesting of unvested equity incentives as described above, a change-in-control, subject to certain exceptions, means:

- (1) any person (including any individual, firm, corporation, partnership or other entity except Aqua America, any subsidiary of Aqua America, any employee benefit plan of Aqua America or of any subsidiary, or any person or entity organized, appointed or established by Aqua America for or pursuant to the terms of any such employee benefit plan), together with all affiliates and associates of such person, shall become the beneficial owner in the aggregate of 20% or more of the common stock of Aqua America then outstanding; or
- (2) during any 24-month period, individuals who at the beginning of such period constitute the Board of Directors of Aqua America cease for any reason to constitute a majority thereof, unless the election, or the nomination for election by Aqua America's shareholders, of at least seventy-five percent of the directors who were not directors at the beginning of such period was approved by a vote of at least seventy-five percent of the directors in office at the time of such election or nomination who were directors at the beginning of such period; or
- (3) there occurs a sale of 50% or more of the aggregate assets or earning power of Aqua America and its subsidiaries, or its liquidation is approved by a majority of its shareholders or Aqua America is merged into or is merged with an unrelated entity such that following the merger the shareholders of Aqua America no longer own more than 50% of the resultant entity.

The change-in-control agreement for Mr. Franklin and the form of change-in-control agreement for the other named executive officers have been filed with the SEC as exhibits to the Company's periodic report filings.

RETIREMENT AND OTHER BENEFITS

Under the terms of our qualified and non-qualified defined benefit retirement plans, eligible salaried employees, including the certain named executive officers, are entitled to certain pension benefits upon their termination, retirement, death or disability. In general, the terms under which benefits are payable upon these triggering events are the same for all participants under the qualified and non-qualified plans. The present value of accumulated pension benefits, assumed payable at the earliest unreduced age (or current age, if later), for the named executive officers is set forth in the Pension Benefits Table on page 52. The pension benefit values included in the tables on pages 60 through 62 reflect the incremental value above the amounts shown in the Pension Benefits Table for benefits payable upon each triggering event from all pension plans in the aggregate.

The Company sponsors postretirement medical plans to subsidize retiree medical benefits for employees hired prior to certain dates starting in 2003. Under the postretirement medical plans, employees are generally eligible to retire upon attainment of age 55 and completion of 15 years of service. Upon retirement, eligible participants are entitled to receive subsidized medical benefits prior to attainment of age 65 where the subsidy provided is based upon age and years of service upon retirement. Upon attainment of age 65, eligible participants are entitled to receive employer contributions into a premium reimbursement account which may be used by the retiree in paying medical and prescription drug benefit premiums. Mr. Smeltzer and Mr. Fox are eligible for these benefits. The postretirement medical benefits shown in the tables on pages 60 through 62 are those which are payable from the Company under each of the triggering events.

Assumptions used to determine the values are the same as those disclosed on the Company's financial statements. In addition, the Company assumes immediate termination, retirement, death or disability have occurred at December 31, 2017 for purposes of the tables on pages 60 through 62. Participants not eligible to receive benefits if leaving under a triggering event as of December 31, 2017 are shown with zero value in the tables.

Upon termination for any reason, the named executive officer in our Executive Deferral Plan, would be entitled to a distribution of their account balances as set forth in the Nonqualified Deferred Compensation table on page 55, subject to the restrictions under the Executive Deferral Plan described on page 42. The values of these account balances are not included in the tables on pages 60 through 62. The named executive officers are also eligible for the same death and disability benefits of other eligible salaried employees. These common benefits are not included in the tables on pages 60 through 62.

Under the terms of the 2009 Omnibus Equity Compensation Plan, as amended (the "Plan"):

- if the employment of the named executive officer terminates, any vested Options will remain exercisable for 90 days following the date of termination, or if shorter, the remaining term of the stock option;
- if the named executive officer retires, other than in a change-in-control context, a prorated portion of the unvested Options will vest if the applicable performance goal is met for the year in which retirement occurs, and the vested Options will remain exercisable for the full term of the Options;
- if the named executive officer dies or becomes disabled any unvested portion of any outstanding Options will become immediately vested, and will remain exercisable for one year following the termination date; and,
- if, in connection with a change-in-control, the named executive officer's employment is terminated by retirement, termination without cause or disability or death, all unvested stock options will accelerate and vest on the termination date. The vested Options shall be exercisable for the applicable period.

Under the terms of the restricted stock unit grants under the Plan, grantees of restricted stock units will (i) vest in a pro-rata portion of unvested grants upon the grantee's termination of employment as a result of retirement, or (ii) vest immediately in unvested grants following the grantee's termination of employment as a result of death or disability. Shares of Company stock equal to the applicable portion of the restricted stock units shall be issued to the grantee within 60 days following the grantee's retirement, death or disability, subject to applicable tax withholding and the values of these restricted stock units as of December 31, 2017 are included in the tables on pages 60 through 62.

Under the terms of the performance share unit grants under the Plan, grantees of performance share units will (i) earn a pro-rata portion of unvested grants upon the grantee's termination of employment as a result of retirement or earn immediately any unvested grants following the grantee's termination of employment as a result of death or disability. Shares of Company stock equal to the applicable portion of the performance share units shall be issued to the grantee on the vesting date for such performance share units and the estimated values of these performance share units based on interim performance through December 31, 2017 are included in the tables on pages 60 through 62. For purposes of the performance share units tied to the performance goal of cumulative earnings before taxes, the Company's actual performance is measured against a pro rata portion of the performance goal as of year-end. Actual performance results for the full performance period may be substantially different from the amounts presented in the tables on pages 60 through 62.

TERMINATION

With respect to a termination event other than in connection with a change-in-control, the severance plan applicable to the named executive officers other than Mr. Franklin, and Mr. Franklin's Employment Agreement as described on pages 42 through 43, provides the named executive officers with a severance benefit of one full year salary and one full year projected bonus or a minimum of one month of continued medical benefits of the named executive officer is terminated for any reason other than for cause.

In addition, once vested, participants are eligible to receive qualified benefits under the Retirement Plan and nonqualified benefits from the Non-Qualified Pension Benefit Plan. Benefits vest upon attaining five years of

service. Pension benefits for Messrs. Franklin, Smeltzer, Fox, and Luning are vested and payable from the Retirement Plan as well as the Non-Qualified Pension Benefit Plan.

The full value of the benefits payable due to termination is determined based on the assumed timing and form of the benefits payable as follows: the benefits for Messrs. Franklin, Fox and Luning are payable as an immediate lump sum payment or life annuity from the Retirement Plan and an immediate lump sum payment at age 55 from the non-qualified plans. Benefits have been reduced for early commencement by 3% per year of commencement prior to age 65.

RETIREMENT

In the case of retirement, the present value of benefits is determined in the same manner as termination. Mr. Smeltzer is eligible for early retirement benefits from the qualified Retirement Plan and Non-Qualified Pension Benefit Plan. Messrs. Franklin, Fox, Schuller and Luning are not currently eligible for retirement benefits.

DEATH

Vested benefits under the Retirement Plan are payable to the participant's surviving spouse as a single life annuity upon the death of the participant. The benefit will be paid to the spouse as early as the deceased participant's earliest retirement age (age 55 with ten years of service or age 65). The benefit will be equal to 75% of the benefit calculated as if the participant had separated from service on the date of death (assumed to be December 31, 2017 in the tables on pages 60 through 62), survived to the earliest retirement age and retired with a qualified contingent annuity. Vested benefits under the Non-Qualified Pension Benefit Plan are payable to the participant's surviving spouse as a lump sum (or in certain cases transferred to the Company's Executive Deferral Plan) upon the death of the participant. The benefit will be equal to 75% of the benefit calculated as if the participant had separated from service on the date of death (assumed to be December 31, 2017 in the tables on pages 60 through 62), survived to the earliest retirement age and retired with a qualified contingent annuity. For each of the participants, the total present value of pension benefits payable upon death is less than the amount shown in the Pension Benefits Table. For purposes of the benefit calculations shown, spouses are assumed to be three years younger than the participant.

DISABILITY

If an individual is terminated as a result of a disability with less than ten years of service, the benefits are payable in the same amount and form as an individual who is terminated. Individuals who terminate employment as a result of a disability with at least ten years of service are entitled to future accruals until age 65 (or earlier date if elected by the participant) assuming level future earnings and continued service. The benefits are not payable until age 65, unless elected by the participant for an earlier age. Upon the attainment of age 65, the individual would be entitled to the same options as an individual who retired from the Retirement Plan.

Messrs. Franklin, Smeltzer, Fox, and Luning have each completed ten years of service. Therefore, for purposes of this present value calculation, these participants are assumed to accrue additional service and earnings until age 65, at which time pension payments are assumed to commence. Mr. Schuller has not completed ten years of service.

TERMINATION EVENTS COMPENSATION

The total estimated value of the payments that would be triggered by a termination following a change-in-control, a termination other than for cause without a change-in-control, retirement, death or disability for the

named executive officers calculated assuming that the triggering event for the payments occurred on December 31, 2017 and assuming a value for our Common Stock as of December 31, 2017 for purposes of valuing the vesting of the equity incentives are set forth below:

CHRISTOPHER H. FRANKLIN					
Payments and Benefits Upon Separation	Change-in-Control \$	Termination \$	Retirement \$	Death \$	Disability \$
Triggered Payments and Benefits					
Severance Payment	3,165,896	1,296,162	—	—	—
Prorated current year bonus	576,072	711,103	711,103	711,103	711,103
Payment of accrued dividend equivalents	140,170	—	95,335	140,170	140,170
Vesting of restricted stock	—	—	—	—	—
Vesting of restricted share units	1,456,453	—	821,218	1,456,453	1,456,453
Vesting of performance share units	3,022,277	—	1,717,091	3,022,277	3,022,277
Vesting of stock options	1,061,289	—	294,803	1,061,289	1,061,289
Continuation of welfare benefits	87,828	21,421	—	—	—
Outplacement services	45,000	—	—	—	—
Vested Retirement Benefits					
Incremental pension value above that included in the Pension Benefits Table	113,891	113,891	—	—	2,691,893
Present value of retiree medical benefits	—	—	—	—	—
Total	9,668,876	2,142,577	3,639,550	6,391,292	9,083,185

DAVID P. SMELTZER					
Payments and Benefits Upon Separation	Change-in-Control \$	Termination \$	Retirement \$	Death \$	Disability \$
Triggered Payments and Benefits					
Severance Payment	1,355,030	402,318	—	—	—
Prorated current year bonus	221,275	270,929	270,929	270,929	270,929
Payment of accrued dividend equivalents	57,589	—	43,436	57,589	57,589
Vesting of restricted stock	—	—	—	—	—
Vesting of restricted share units	521,955	—	330,527	521,955	521,955
Vesting of performance share units	1,092,285	—	698,538	1,092,285	1,092,285
Vesting of stock options	304,974	—	84,715	304,974	304,974
Continuation of welfare benefits	66,173	16,140	—	—	—
Outplacement services	22,500	—	—	—	—
Vested Retirement Benefits					
Incremental pension value above that included in the Pension Benefits Table	—	—	—	—	—
Present value of retiree medical benefits	313,585	313,585	313,585	—	313,585
Total	3,955,366	1,002,972	1,741,730	2,247,732	2,561,317

RICHARD S. FOX					
Payments and Benefits Upon Separation	Change-in-Control \$	Termination \$	Retirement \$	Death \$	Disability \$
Triggered Payments and Benefits					
Severance Payment	1,212,054	360,099	—	—	—
Prorated current year bonus	216,059	258,061	258,061	258,061	258,061
Payment of accrued dividend equivalents	36,985	—	25,257	36,985	36,985
Vesting of restricted stock	—	—	—	—	—
Vesting of restricted share units	383,042	—	217,848	383,042	383,042
Vesting of performance share units	794,897	—	455,523	794,897	794,897
Vesting of stock options	272,962	—	75,823	272,962	272,962
Continuation of welfare benefits	68,489	16,705	—	—	—
Outplacement services	22,500	—	—	—	—
Vested Retirement Benefits					
Incremental pension value above that included in the Pension Benefits Table	—	—	236,931	—	1,468,270
Present value of retiree medical benefits	220,798	220,798	220,798	—	220,798
Total	3,227,786	855,663	1,490,241	1,745,947	3,435,015

DANIEL J. SCHULLER					
Payments and Benefits Upon Separation	Change-in-Control \$	Termination \$	Retirement \$	Death \$	Disability \$
Triggered Payments and Benefits					
Severance Payment	1,280,096	372,030	—	—	—
Prorated current year bonus	204,617	252,579	252,579	252,579	252,579
Payment of accrued dividend equivalents	37,829	—	26,043	37,829	37,829
Vesting of restricted stock	—	—	—	—	—
Vesting of restricted share units	399,244	—	234,370	399,244	399,244
Vesting of performance share units	827,266	—	488,577	827,266	827,266
Vesting of stock options	266,332	—	73,981	266,332	266,332
Continuation of welfare benefits	89,380	7,267	—	—	—
Outplacement services	22,500	—	—	—	—
Vested Retirement Benefits					
Incremental pension value above that included in the Pension Benefits Table	—	—	—	—	—
Present value of retiree medical benefits	—	—	—	—	—
Total	3,127,264	631,876	1,075,550	1,783,250	1,783,250

CHRISTOPHER P. LUNING					
Payments and Benefits Upon Separation	Change-in-Control \$	Termination \$	Retirement \$	Death \$	Disability \$
Triggered Payments and Benefits					
Severance Payment	1,020,780	330,084	—	—	—
Prorated current year bonus	148,538	177,414	177,414	177,414	177,414
Payment of accrued dividend equivalents	42,017	—	28,964	42,017	42,017
Vesting of restricted stock	—	—	—	—	—
Vesting of restricted share units	384,336	—	241,275	384,336	384,336
Vesting of performance share units	802,877	—	508,876	802,877	802,877
Vesting of stock options	222,434	—	61,787	222,434	222,434
Continuation of welfare benefits	89,380	21,800	—	—	—
Outplacement services	22,500	—	—	—	—
Vested Retirement Benefits					
Incremental pension value above that included in the Pension Benefits Table	137,447	137,447	—	—	936,873
Present value of retiree medical benefits	—	—	—	—	—
Total	2,870,309	666,745	1,018,316	1,629,078	2,565,951

The amounts shown in the tables above reflect the excess of the value of pension benefits under each of the triggering events over the value included in the Pension Benefits table on page 52.

OWNERSHIP OF COMMON STOCK

The following table sets forth certain information as of March 9, 2018 with respect to shares of Common Stock of the Company beneficially owned by: (1) each person known to the Company to be the beneficial owner of more than 5% of the Common Stock of the Company; (2) each director, nominee for director and executive officer named in the Summary Compensation Table; and (3) all directors, nominees and executive officers of the Company as a group. This information has been provided by each of the directors, executive officers and nominees at the request of the Company or derived from statements filed with the SEC pursuant to Section 13(d) or 13(g) of the Exchange Act. Beneficial ownership of securities as shown below has been determined in accordance with applicable guidelines issued by the SEC. Beneficial ownership includes the possession, directly or indirectly, through any formal or informal arrangement, either individually or in a group, of voting power (which includes the power to vote, or to direct the voting of, such security) and/or investment power (which includes the power to dispose of, or to direct the disposition of, such security). Unless otherwise indicated, the address of the beneficial owners is Aqua America, Inc., 762 W. Lancaster Avenue, Bryn Mawr, Pennsylvania 19010.

Certain Beneficial Owners	Sole Voting and/or Sole Investment Power ⁽¹⁾	Shared Voting and/or Investment Power	Amount and Nature of Beneficial Ownership	Percentage of Class Outstanding ⁽²⁾
The Vanguard Group ⁽³⁾ 100 Vanguard Blvd. Malvern, PA 19355	17,699,865	139,785	17,839,650	10.03%
BlackRock, Inc. ⁽⁴⁾ 40 East 52 nd Street New York, NY 10022	15,709,669	—	15,709,669	8.83%
State Street Corporation ⁽⁵⁾ One Lincoln Street Boston, MA 02111	—	8,907,428	8,907,428	5.01%
Directors, Nominees and Named Executive Officers				
Carolyn J. Burke	3,951	—	3,951	*
Nicholas DeBenedictis	43,441	—	43,441	*
Richard S. Fox	9,721	—	9,721	*
Christopher H. Franklin	85,226	—	85,226	*
Richard H. Glanton	3,833	—	3,833	*
William P. Hankowsky	29,663	—	29,663	*
Daniel J. Hilferty	1,043	—	1,043	*
Wendell F. Holland	13,588	—	13,588	*
Christopher P. Luning	36,459	—	36,459	*
Ellen T. Ruff	24,838	—	24,838	*
Daniel J. Schuller	8,348	—	8,348	*
David P. Smeltzer	41,524	57,813 ⁽⁶⁾	99,337	*
All Directors, Nominees and Executive Officers as a Group (13 persons)				
	358,209	85,523 ⁽⁷⁾	443,732	*

* Less than one percent (1%)

(1) Includes any shares held under the Company 401(k) plan.

(2) Percentage of ownership for each person or group is based on 177,893,483 shares of Common Stock outstanding as of March 9, 2018 and all shares issuable to such person or group upon exercise of outstanding stock options exercisable within 60 days of that date.

(3) The information from The Vanguard Group was obtained from the amended Schedule 13G/A filed by the Vanguard Group with the SEC on March 12, 2018.

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- (4) The information from BlackRock, Inc. was obtained from the Schedule 13G/A filed by BlackRock, Inc. with the SEC on January 29, 2018.
- (5) The information for State Street Corporation was obtained from the Schedule 13G filed by State Street Corporation with the SEC on February 13, 2018.
- (6) The shareholdings indicated are owned jointly with Mr. Smeltzer's wife.
- (7) The shareholdings indicated include 99,023 shares (i) held in joint ownership with spouses, (ii) held as custodian for minor children, (iii) owned by family members, or (iv) in trusts for adult children.

QUESTIONS AND ANSWERS ABOUT THE 2018 ANNUAL MEETING

Who is entitled to vote?

Holders of shares of the Company's common stock (the "Common Stock") of record at the close of business on March 9, 2018 are entitled to vote at the meeting. Each shareholder entitled to vote shall

have the right to one vote on each matter presented at the meeting for each share of Common Stock outstanding in such shareholder's name.

How many shares can vote?

As of March 9, 2018, there were 177,893,483 shares of Common Stock outstanding and entitled to be voted at the meeting. Shares can be voted in the following four ways:

- In person at the meeting;
 - By proxy at the meeting;
 - Electronically via the Internet, according to the instructions set out on the proxy card; or
 - By telephone, according to the instructions set out on the proxy card.
-

What is the proxy?

The proxy card or electronic proxy that you are being asked to give is a means by which a shareholder may authorize the voting of his or her shares at the meeting if he or she is unable to attend in person. The individuals to whom you are giving a proxy to vote your shares are Christopher P. Luning, our Senior Vice President, General Counsel and Secretary, and David P. Smeltzer, our Executive Vice President and Chief Financial Officer.

The shares of Common Stock represented by each properly executed proxy card or electronic proxy will be voted at the meeting in accordance with

each shareholder's direction. Shareholders are urged to specify their choices by marking the appropriate boxes on the proxy card or electronic proxy, or voting via telephone. If the proxy card or electronic proxy is signed, but no choice has been specified, the shares will be voted as recommended by the Board of Directors. If any other matters are properly presented at the meeting or any adjournment or postponement thereof for action, the proxy holders will vote the proxies (which confer discretionary authority to vote on such matters) in accordance with their judgment.

If a proxy is executed, can a shareholder still attend the meeting in person?

Yes, execution of the accompanying proxy or voting through an electronic proxy or voting by telephone will not affect a shareholder's right to

attend the meeting and, if desired, vote in person. You can submit a proxy and still attend the meeting without voting in person.

Can a shareholder revoke or change his or her vote?

Yes. Any shareholder giving a proxy card or voting by electronic proxy or voting by telephone has the right to revoke the proxy or the electronic or telephonic vote by giving written notice of revocation to the Secretary of the Company at any time before the proxy is voted, by executing a

proxy bearing a later date, by making a later-dated vote electronically or by telephone, or by attending the meeting and voting in person. Attendance at the meeting will not, by itself, revoke a previously granted proxy.

What is "Householding"?

We have adopted a procedure approved by the SEC called "householding." Under this procedure, multiple shareholders who share the same last name and address and do not participate in electronic delivery will receive only one copy of the Proxy Materials or the Notice. We have undertaken householding to reduce our printing costs and postage fees. Shareholders may elect to receive individual copies of the Proxy Materials or Notice at the same address by contacting Broadridge Financial Solutions, Inc. By telephone at 1-800-540-7095, or by mail at 51 Mercedes Way,

Edgewood, New York 11717. Shareholders who are receiving individual copies of such materials, and who would like to receive single copies at a shared address, may contact Broadridge Financial Solutions, Inc. with this request by using the contact information provided above. Shareholders who are receiving individual copies of such materials, and who would like to receive single copies at a shared address, may contact Broadridge Financial Solutions, Inc. with this request by using the contact information provided above.

What are the voting requirements to approve each proposal? What is the impact of abstentions and broker non-votes on each proposal?

The following table summarizes the vote required for the approval of each proposal and the impact, if any, of abstentions and broker-non votes.

	Proposal	Vote Required for Approval	Impact of Abstentions	Impact of Broker Non-Votes
1.	Election of directors	Plurality of the votes cast*	No effect on this proposal	No effect on this proposal
2.	Ratification of the appointment of PricewaterhouseCoopers LLP	Affirmative vote of a majority of the votes cast by those shareholders present in person or represented by proxy at the meeting	No effect on this proposal	Not applicable as brokers have discretionary authority to vote on this proposal
3.	Advisory vote on executive compensation	Affirmative vote of a majority of the votes cast by those shareholders present in person or represented by proxy at the meeting	No effect on this proposal	No effect on this proposal

* In accordance with the Company's majority voting resignation policy, in an election where the only nominees are those recommended by the Board of Directors, any incumbent director who is nominated for re-election and who receives a greater number of WITHHOLD votes than FOR votes for the director's election shall promptly tender his or her resignation to the Board of Directors.

The Company's Articles of Incorporation also provide that the affirmative vote of a majority of the votes cast by those shareholders present in person or represented by proxy at the meeting is required to take action with respect to any matter properly brought before the meeting, other than the election of directors, on the recommendation of a vote of a majority of the entire Board of Directors.

The Company's Articles of Incorporation also provide that the affirmative vote of at least three quarters of the votes which all voting shareholders, voting as a single class, are entitled to cast is required to take action with respect to any other matter properly brought before the meeting, other than the election of directors, without the recommendation of a vote of a majority of the entire Board of Directors.

What is a quorum?

A quorum of shareholders is necessary to hold a valid meeting of shareholders for the transaction of business. The holders of a majority of the shares entitled to vote, present in person or

represented by proxy at the meeting, constitute a quorum. Abstentions and "broker non-votes" are counted as present and entitled to vote for purposes of determining a quorum.

What is a broker non-vote?

A "broker non-vote" occurs when a bank, broker or other holder of record holding shares for a beneficial owner does not vote on a particular proposal because that holder does not have

discretionary voting power under NYSE rules for that particular item and has not received instructions from the beneficial owner.

If you are a beneficial owner, your bank, broker or other holder of record is permitted under NYSE rules to vote your shares on the ratification of PricewaterhouseCoopers LLP as our independent registered public accounting firm for the 2017 fiscal year, even if the record holder does not receive voting instructions from

you. The record holder may not vote on the election of directors and the advisory vote on the compensation paid to the Company's named executive officers for 2017 without instructions from you. Without your voting instructions on these matters, a broker non-vote will occur.

YOUR PROXY VOTE IS IMPORTANT. ACCORDINGLY, YOU ARE ASKED TO COMPLETE, SIGN AND RETURN THE PROXY CARD OR SUBMIT AN ELECTRONIC PROXY, VOTE TELEPHONICALLY OR PROVIDE YOUR BROKER WITH INSTRUCTIONS ON HOW TO VOTE YOUR SHARES, REGARDLESS OF WHETHER OR NOT YOU PLAN TO ATTEND THE MEETING.

INFORMATION ABOUT PROPOSALS UNDER CONSIDERATION AT THIS MEETING

How are directors elected?

Under the Company's Articles of Incorporation and Bylaws, directors are elected by a plurality of the votes cast at the meeting. A description of the Company's majority voting resignation policy is set forth in the answer to the question below. Votes may be cast FOR or WITHHOLD for each nominee. The director nominees who receive the

highest number of votes up to the number of directors to be elected will be elected at the meeting. All of the directors elected at the 2018 Annual Meeting will be elected for one year terms expiring at the 2019 Annual Meeting of Shareholders and until their successors are duly elected and qualified.

What if an incumbent director receives more WITHHOLD votes than FOR votes in an uncontested election?

The Board of Directors adheres to a majority voting resignation policy for the election of directors in uncontested elections. Under this policy, in an election where the only nominees are those recommended by the Board of Directors, any incumbent director who is nominated for re-election and who receives a greater number of WITHHOLD votes than FOR votes for the director's election must promptly tender his or her resignation to the Board of Directors. The Board will evaluate the relevant facts and circumstances in connection with such director's resignation, giving due consideration to the best interests of the Company and its shareholders. Within 90 days after the election, the independent directors must make a decision on whether to accept or reject the tendered resignation, or whether other action should be taken. The Board of Directors will

promptly disclose publicly its decision and the reasons for its decision.

The Board of Directors believes that this process enhances accountability to shareholders and responsiveness to shareholder votes, while allowing the Board of Directors appropriate discretion in considering whether a particular director's resignation would be in the best interests of the Company and its shareholders. The Company's majority voting resignation policy is set forth in the Company's Corporate Governance Guidelines. Copies of the Corporate Governance Guidelines can be obtained free of charge from the Corporate Governance portion of the Investor Relations section of the Company's website: www.aquaamerica.com.

Why are the shareholders asked to vote on the ratification of the selection of the independent registered public accounting firm?

The Audit Committee of our Board of Directors carefully considers the qualifications of the independent auditors before engaging them to conduct an audit, and has the oversight authority with respect to the performance of the independent

auditors. The Board of Directors thinks it is important to provide an opportunity for the shareholders to voice any concern with respect to the independent auditors selected, which is the reason for this ratification vote.

What is the impact of the advisory vote on the compensation paid to the Company's named executive officers, referred to as "Say on Pay" vote?

The Board of Directors and the Executive Compensation Committee, which is comprised of independent directors, value the opinions of the Company's shareholders and expect to take into account the outcome of the non-binding advisory

vote when considering future executive compensation decisions to the extent they can determine the cause or causes of any significant negative voting results.

PROCESS FOR SUBMITTING SHAREHOLDER PROPOSALS FOR THE NEXT ANNUAL MEETING

Who can submit a shareholder proposal at an Annual Meeting of Shareholders?

Shareholders may submit proposals, which are proper subjects for inclusion in the Company's Proxy Materials, which are this Proxy Statement and the form of proxy attached, for consideration

at an Annual Meeting of Shareholders, by following the procedures prescribed by Rule 14a-8(e) of the Securities Exchange Act of 1934, as amended.

What is the deadline for submitting shareholder proposals for inclusion in the Company's Proxy Materials for the next Annual Meeting?

To be eligible for inclusion in the Company's Proxy Materials relating to the 2019 Annual Meeting of Shareholders, proposals must be

submitted in writing and received by the Company at the address below no later than November 29, 2018.

What is the deadline for proposing business to be considered at the next Annual Meeting, but not to have the proposed business included in the Company's Proxy Materials?

A shareholder of the Company may wish to propose business to be considered at an Annual Meeting of Shareholders, but not to have the proposed business included in the Company's Proxy Materials relating to that meeting. Section 3.17 of the Company's Bylaws requires that the Company receive written notice of business that a shareholder wishes to present for consideration at the 2019 Annual Meeting of Shareholders (other than matters included in the Company's Proxy Materials) not earlier than January 8, 2019 or later than February 7, 2019. The notice must meet certain other requirements

set forth in the Company's Bylaws. Copies of the Company's Bylaws can be obtained by submitting a written request to the Secretary of the Company.

Proposals, notices and requests for a copy of our Bylaws should be addressed as follows:

CORPORATE SECRETARY
AQUA AMERICA, INC.
762 W. LANCASTER AVENUE
BRYN MAWR, PA 19010

NOMINATING CANDIDATES FOR DIRECTOR

How does a shareholder nominate a director for election to the Board of Directors at the 2018 Annual Meeting?

A shareholder entitled to vote for the election of directors may make a nomination for director provided that written notice (the "Nomination Notice") of the shareholder's intent to nominate a director at the meeting is filed with the Secretary of the Company prior to the 2018 Annual Meeting in accordance with provisions of the Company's Articles of Incorporation and Bylaws.

Section 4.14 of the Company's Bylaws requires the Nomination Notice to be received by the Secretary of the Company not less than 14 days nor more than 50 days prior to any meeting of the shareholders called for the election of directors, with certain exceptions. These notice requirements do not apply to nominations for which proxies are solicited under applicable regulations of the SEC. The Nomination Notice must contain or be accompanied by the following information:

1. Residence of the shareholder who intends to make the nomination;
2. A representation that the shareholder is a holder of record of voting stock and intends to appear in person or by proxy at the meeting to nominate the person or persons specified in the Nomination Notice;
3. Such information regarding each nominee as would have been required to be included in a proxy statement filed pursuant to the SEC's proxy rules had each nominee been nominated, or intended to be nominated, by the management or the Board of Directors of the Company;
4. A description of all arrangements or understandings among the shareholder and each nominee and any other person or persons (naming such person or persons) pursuant to which the nomination or nominations are to be made by the shareholder; and
5. The consent of each nominee to serve as a director of the Company if so elected.

What is the deadline for submitting a Nomination Notice for the 2018 Annual Meeting?

Pursuant to the above requirements, a Nomination Notice for the 2018 Annual Meeting must be

received by the Secretary of the Company no later than April 24, 2018.

CONSIDERATION OF DIRECTOR CANDIDATES

Who chooses the director candidates?

The Corporate Governance Committee identifies, evaluates and recommends director candidates to our Board of Directors for nomination. The process followed by our Corporate Governance Committee to identify and evaluate director

candidates includes requests to current directors and others for recommendations, consideration of candidates proposed by shareholders, meetings from time to time to evaluate potential candidates and interviews of potential candidates.

How are director candidates evaluated?

In considering candidates for director, the Corporate Governance Committee will consider the candidate's personal abilities, qualifications, independence, knowledge, judgment, character, leadership skills, education, background and their expertise and experience in fields and disciplines relevant to the Company, including financial expertise or financial

literacy. When assessing a candidate, consideration will be given to the effect such candidate will have on the diversity of the Board. Diversity of the Board is evaluated by considering a broad range of attributes, including, without limitation, race, gender and national origin, background, demographics, expertise and experience.

Due consideration will also be given to the position the candidate holds at the time of his or her nomination and his or her capabilities to advance the Company's interests with its various constituencies. The Corporate Governance Committee considers all of these qualities when selecting, subject to ratification by our Board of Directors, candidates for director.

The Corporate Governance Committee will evaluate shareholder-recommended candidates in the same manner as it evaluates candidates recommended by others.

What is the deadline for submitting a shareholder recommendation for a director candidate at the 2019 Annual Meeting of Shareholders?

If you would like a director candidate considered by the Corporate Governance Committee for selection as a nominee at the 2019 Annual Meeting of Shareholders, such recommendation should be submitted to the Chairperson of the Corporate Governance Committee at least 120 days before

the date on which the Company first mailed its proxy materials for the prior year's Annual Meeting of Shareholders—that is, with respect to the 2019 Annual Meeting, no later than November 29, 2018.

COMMUNICATIONS WITH THE COMPANY OR INDEPENDENT DIRECTORS

The Company receives shareholder suggestions which are not in the form of proposals. All are given careful consideration. We welcome and encourage your comments and suggestions. Your correspondence should be addressed as follows:

CORPORATE SECRETARY
AQUA AMERICA, INC.
762 W. LANCASTER AVENUE
BRYN MAWR, PA 19010

In addition, shareholders or other interested parties may communicate directly with the independent directors or the lead independent director by

writing to the address set forth below. The Company will review all such correspondence and provide any comments along with the full text of the shareholder's or other interested party's communication to the independent directors or the lead independent director.

THE INDEPENDENT DIRECTORS OR
LEAD INDEPENDENT DIRECTOR
AQUA AMERICA, INC.
C/O CORPORATE SECRETARY
762 W. LANCASTER AVENUE
BRYN MAWR, PA 19010

ADDITIONAL INFORMATION

The Company will provide without charge, upon written request, a copy of the Company's Annual Report on Form 10-K for 2017 and 2017 Annual Report to Shareholders. Please direct your request to Investor Relations Department, Aqua America, Inc., 762 W. Lancaster Ave., Bryn Mawr, PA 19010. Copies of our Corporate Governance Guidelines, Committee Charters and Code of Ethical Business Conduct can be obtained free of charge from the Corporate Governance portion of the Investor Relations section of the Company's website: www.aquaamerica.com.

SECTION 16(a) BENEFICIAL OWNERSHIP REPORTING COMPLIANCE

Section 16(a) of the Exchange Act requires the Company's officers and directors, and persons who own more than 10% of a registered class of the Company's equity securities (a "10% Shareholder"), to file reports of ownership and changes in ownership with the SEC. Officers, directors and 10% Shareholders are required by the SEC regulations to furnish the Company with copies of all Section 16(a) forms they file.

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Based solely on the Company's review of the copies of such forms received by it during 2016 and 2017, the Company believes that all filings required to be made by the reporting persons were made on a timely basis.

OTHER MATTERS

The Board of Directors is not aware of any other matters which may come before the meeting. However, if any further business should properly come before the meeting, the persons named in the enclosed proxy will vote upon such business in accordance with their judgment.

By Order of the Board of Directors,

CHRISTOPHER P. LUNING

Secretary

March 29, 2018

APPENDIX A

UTILITY COMPANIES INCLUDED IN THE UTILITY INDUSTRY DATABASE
 USED BY THE EXECUTIVE COMPENSATION COMMITTEE'S COMPENSATION CONSULTANT PAY GOVERNANCE

INVESTOR-OWNED UTILITIES

1. AES	28. NW Natural
2. AGL Resources	29. OGE Energy
3. Allete	30. Oncor Electric Delivery
4. Alliant Energy	31. ONE Gas
5. Ameren	32. Otter Tail
6. American Electric Power	33. Pacific Gas & Electric
7. Atmos Energy	34. Peoples Natural Gas
8. Avista	35. Pinnacle West Capital
9. Black Hills	36. PNM Resources
10. CenterPoint Energy	37. Portland General Electric
11. Chesapeake Utilities	38. PPL
12. Cleco	39. Public Service Enterprise Group
13. CMS Energy	40. Puget Sound Energy
14. Consolidated Edison	41. Questar
15. Dominion Resources	42. SCANA
16. DTE Energy	43. Sempra Energy
17. Duke Energy	44. South Jersey Industries
18. El Paso Electric Co.	45. Southern Company Services
19. Entergy	46. Southwest Gas
20. Eversource Energy	47. Spire Inc.
21. Exelon	48. TECO Energy
22. FirstEnergy	49. Tennessee Valley Authority
23. Idaho Power	50. UGI
24. MDU Resources	51. Unitil
25. NextEra Energy	52. Vectren
26. NiSource	53. Westar Energy
27. NorthWestern Energy	54. Wisconsin Energy
	55. Xcel Energy

APPENDIX B

RECONCILIATION OF NON-GAAP FINANCIAL METRIC

The EPS financial Metric actual result represents an adjusted income per share (non-GAAP financial measure) that is derived from the following GAAP financial measure:

Net income per share - diluted basis (GAAP financial measure)	\$ 1.35
Per share net impact of Tax Cuts and Jobs Act resulting from revaluation of deferred tax assets/liabilities	0.018
Per share impact of additional adjustments not considered relevant in measuring results compared to the target results	0.015
Income tax effect	(0.005)
Adjusted income per share (Non-GAAP financial measure)	\$ 1.37

Adjusted income per share is a key measure of our financial and operational results.