

**SANFORD LAW OFFICE, PLLC**  
Jo Anne Sanford, Attorney at Law

March 18, 2019

Via Electronic Filing

Ms. M. Lynn Jarvis, Chief Clerk  
North Carolina Utilities Commission  
4325 Mail Service Center  
Raleigh, North Carolina 27699-4325

Re: Aqua North Carolina, Inc.  
Docket Nos. W-218, Subs 497 and 497A  
Response to Ordering Paragraph Nos. 15 and 16 in the North  
Carolina Utilities Commission's General Rate Case Order of  
December 18, 2018

Dear Ms. Jarvis:

Attached please find for filing the affidavit of Amanda A. Berger, Environmental Compliance Manager for Aqua North Carolina, Inc., responding to the directives contained in Ordering Paragraph Nos. 15 and 16 of the Commission's *Order Approving Partial Settlement Agreement and Stipulation, Granting Partial Rate Increase, and Requiring Customer Notice* entered in Docket No. W-218, Sub 497 on December 18, 2018.

I hereby certify that a copy of this filing has been served on all parties of record.

As always, thank you and your staff for your assistance; please feel free to contact me if there are any questions or suggestions.

Sincerely,

**Electronically Submitted**  
**/s/Jo Anne Sanford**  
Sanford Law Office, PLLC  
State Bar No. 6831

Attorney for Aqua North Carolina, Inc.

c: Parties of Record

STATE OF NORTH CAROLINA  
UTILITIES COMMISSION  
RALEIGH

DOCKET NO. W-218, SUB 497  
DOCKET NO. W-218, SUB 497A

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

In the Matter of	)	
Application by Aqua North Carolina,	)	<b>AFFIDAVIT OF AMANDA A.</b>
Inc., 202 MacKenan Court, Cary North	)	<b>BERGER, ENVIRONMENTAL</b>
Carolina 27511 for Authority to Adjust	)	<b>COMPLIANCE MANAGER,</b>
And Increase Rates for Water and	)	<b>AQUA NORTH CAROLINA,</b>
Sewer Utility Service for all Areas	)	<b>INC. IN RESPONSE TO</b>
in North Carolina	)	<b>COMMISSION'S DIRECTIVE</b>
	)	<b>FOR REPORTS ON AQUA'S</b>
	)	<b>WATER QUALITY AND</b>
	)	<b>COMMUNICATION PLANS</b>

**NOW COMES** Amanda A. Berger, Environmental Compliance Manager, Aqua North Carolina, Inc. ("Aqua" or "Company"), being duly sworn, who hereby executes this Affidavit on behalf of Aqua in Docket Nos. W-218, Sub 497 (a general rate case) and Sub 497A (a reporting docket), in response to an Order of the North Carolina Utilities Commission ("Commission" or "NCUC").

On December 18, 2018, the Commission entered an Order in Docket No. W-218, Sub 497, captioned *Order Approving Partial Settlement Agreement and Stipulation, Granting Partial Rate Increase, and Requiring Customer Notice* ("Sub 497 Rate Case Order"). Ordering Paragraph Nos. 15 and 16, at pages 184-185, provide as follows:

- 15. That Aqua NC shall file copies of its North Carolina Water Quality Plan and Customer Communication Plan, including, without limitation in its Water Quality plan, Aqua NC's methods to identify and address the presence of iron and manganese at levels reasonably known by Aqua to damage pipes and appliances and to be

objectionable to customers for drinking and to identify and address other potential contaminants in the Company's water systems; and detailing in its Customer Communication plan (a) the Company's plans to provide timely and accurate notice to its customers of any water quality problems requiring health alerts and to communicate the steps the Company plans to address the problems; (b) the Company's plans to provide better targeted and timely notice of flushing events to customers most likely to be impacted; (c) the Company's plan to establish a dedicated contact or a special call routing protocol for customers encountering sudden or worsening water quality issues; and (d) the Company's plan to invite customers, at least as it pertains to Bayleaf customers, to participate in focus groups to improve customer understanding of issues affecting water quality. See Tr. Vol. 5, pp. 151-55. Such information shall be filed with the Commission within 90 days after issuance of this Order.

16. That as part of its Communication Plan, Aqua NC shall recommend the appropriate and most effective type of individual filtration systems for those customers served by systems affected by iron and manganese.

#### **AQUA'S RESPONSE TO ORDERING PARAGRAPH NO. 15**

1. Aqua provides copies of its North Carolina Customer Communications Plan ("Communications Plan") and Water Quality Plan as Exhibits 1 and 2, attached.

2. The Water Quality Plan references the sources of the criteria which drive the development of both the prioritization of treatment, and of the choices of method of treatment. The science and regulation behind a determination of the levels of iron and manganese, per milliliter, that trigger a certain priority of treatment and indicate a specific treatment method---or combination of methods---are found in sources that include the American Water Works Association, Water Research Foundation, National Science Foundation, World Health Organization, United States Environmental Protection Agency, Health Canada, Ten State

Standards, New Jersey and California limits, as well as the NC Department of Environmental Quality. *(See slide/page 3 of NC Water Quality Plan, and page 2, footnote 1 of the Communications Plan).*

These and other sources---both advisory and prescriptive---are utilized by a team of highly-trained Aqua engineers, operations staff, consultants and other professionals whose jobs focus on determining the best, most reliable and efficient methods of providing high quality, reliable service at the most reasonable possible costs.

3. The Communications Plan includes the Company's plans to provide timely and accurate notice to the customers of water quality problems stemming from regulated contaminants requiring public notification and to communicate the steps the Company plans to address the problems in accordance with regulation. *(See page 1, paragraphs 1-3 of the Communications Plan).*

4. The Company's plans to provide better targeted and timely notice of flushing events to customers most likely to be impacted are addressed at page 7 of the Communications Plan, paragraph 2(f).

5. The Company's plan to establish a dedicated contact or a special call routing protocol for customers encountering sudden or worsening water quality issues is discussed at page 7 of the Communications Plan, paragraph 2(g).

6. The Company's plan to invite customers, at least as it pertains to Bayleaf customers, to participate in focus groups to improve customer understanding of issues affecting water quality is addressed on page 6 of the Communications Plan, paragraph 2(a).

**AQUA'S RESPONSE TO ORDERING PARAGRAPH NO. 16**

In the attached Communications Plan at page 4, bullet 12, Aqua discusses the issue of some customers' preference for individual home filtration devices to address their personal water quality objectives. Aqua is not equipped to recommend the appropriate and most effective type of individual filtration systems for those customers served by systems affected by iron and manganese. However, manufacturers and distributors of such systems do provide that expertise, as well as water testing service for individual residents. As required by Ordering Paragraph No. 17 of the Sub 497 Rate Case Order, Aqua is evaluating commercial vendors of home filtration for the purpose of determining whether the Company can responsibly suggest and negotiate a discount arrangement for customers from a suitable vendor and will report its final conclusions to the Commission.

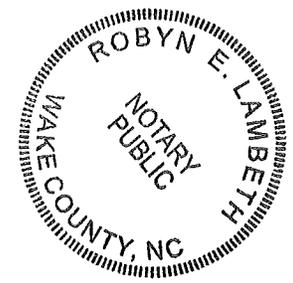
Amanda A. Berger  
Amanda A. Berger

Sworn to and subscribed before me this

The 18<sup>th</sup> day of March 2019.

Robyn E. Lambert  
Notary Public

My Commission Expires: May 13 2021





## Aqua North Carolina Secondary Water Quality Customer Communications Plan

(Revised March 18, 2019)

Aqua's secondary water quality plan was developed to address water quality concerns driven by heightened levels of iron or manganese. Aqua North Carolina has instituted a water quality monitoring program that meets or exceeds industry standards---both primary and secondary.

Aqua adheres to the notification requirements established by the Primary Drinking Water Standards of the Safe Drinking Water Act. The Environmental Protection Agency (EPA) and North Carolina Department of Environmental Quality (NCDEQ) public notices for primary Maximum Contaminant Levels (MCLs) are mandated regulatory requirements and dictate the language provided for each. Failure to submit proper notice is a violation of the Public Water Supply Rules and Regulations.

In the event that Aqua detects a regulated contaminant that requires a public notice, the Company will notify customers in accordance with regulatory requirements or written guidance from the NCDEQ.

Aqua provides water and wastewater service to more than 250,000 people in 51 counties throughout North Carolina. Many of the water and wastewater systems Aqua acquired over the past two decades needed significant improvements and repairs. The Company has prioritized compliance with primary water quality standard problems, as it must. Although Aqua has also addressed secondary water quality issues---in particular, the presence of naturally occurring iron and manganese---through a range of measures including sequestration and flushing during this time, the Company is now accelerating the use of filter installations to deal with concerns about these minerals, which enter the water supply through groundwater. The EPA treats these minerals as secondary contaminants, as opposed to primary contaminants. A variety of treatments---including various kinds of filtration---can be used to improve the way the water looks and tastes. Aqua's approach to treatment seeks to utilize the least costly treatment measure that can effectively resolve the problems that are specific to each well. We know our customers are concerned about the presence of these contaminants and we are committed to resolving this issue. It is also our obligation to accomplish these goals at the least cost possible, for the benefit of customers.

In 2014, Aqua North Carolina requested and received approval from the North Carolina Utilities Commission to implement a "water system improvement charge"

Aqua North Carolina Secondary Water Quality Customer Communications Plan  
Revised March 18, 2019

to address iron and manganese. This enabled Aqua to accelerate distribution system and water treatment improvements to satisfy customers.

Since iron and manganese are pervasive throughout North Carolina, the ongoing challenge is to standardize an approach, so projects can be completed in a more systematic way in the years ahead. Throughout 2017, the Company examined various alternatives to facilitate and accelerate this process.

Working with the Department of Environmental Quality and the North Carolina Public Staff, in 2017 and through 2018, Aqua North Carolina developed a plan for carrying out its new water quality improvement program. The Company instituted specific criteria to analyze and prioritize the need for filtration based on the level of iron and manganese found in the water. These criteria were developed utilizing data and recommendations from water industry stakeholders and regulatory agencies.<sup>1</sup> Utilizing water quality sampling data, the Company will administer its approach based on the following criteria:

**Group 1** – These are sites where the combined total of iron and manganese is above 1 milligram per liter or there is greater than 0.3 milligrams per liter of manganese. These locations will be prioritized for further assessment, which includes analyzing a well's contributory production within its system, well capacity, and other potentially alternative available sources.

Aqua will submit a recommendation to the North Carolina Utilities Commission requesting approval to proceed with the installation of an iron and manganese filter for those sites determined to require enhanced filtration. Aqua's goal is to install filtration treatment within a reasonable timeline. The wells with the highest levels of iron and/or manganese will receive filters within the next three to five years. In the interim, an aggressive tank cleaning and system flushing program will be employed in communities served by these wells.

**Group 2** – These are sites where iron in the water measures at or greater than 0.6 milligrams per liter and manganese measures at or greater than 0.1 milligrams per liter. Group 2 locations will be evaluated closely to determine the best course of action based on water quality parameters and evaluation of the effectiveness of sequestration. Sequestration involves use of an NSF approved drinking water corrosion control sequestrant that will slow the oxidation process and keep the iron

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<sup>1</sup> American Water Works Association (AWWA), Water Research Foundation (WRF), National Science Foundation (NSF), World Health Organization (WHO), United States Environmental Protection Agency (USEPA), Health Canada, Ten State Standards, New Jersey and California sequestration limits.

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and manganese in its colorless state for an extended time, dependent upon several factors including water age, water temperature, and disinfectant concentration. Aqua will also employ an ongoing system flushing program and perform tank cleaning as needed.

**Group 3** – These are sites where iron in the water measures at or greater than 0.3 milligrams per liter or manganese measures at or greater than 0.05 milligrams per liter. Here, the Company will look toward mineral sequestration in most cases as sequestration is generally considered an effective treatment at these levels. Aqua will also employ flushing operations and perform tank cleaning as needed.

**Group 4** – these are sites where iron in the water measures at or less than 0.3 milligrams per liter or manganese measures at or less than 0.05 milligrams per liter. These locations will be part of a flushing program but should not require filtration.

Prior to beginning any filtration project, Aqua will reach out to communities where it will complete work to keep customers informed of its plans. See also the “Goals, Strategies and Tactics” section of this Plan starting on page 4.

All systems will be monitored on an ongoing basis to help ensure regulatory compliance. Aqua will also employ an aggressive water quality operation plan to help provide water that is consistently clear. That will mean an increase in scheduled system flushing in many communities and a robust tank-cleaning program that spans our operations across the state. Flushing and tank cleaning can themselves lead to the dislocation of sediment within the Aqua system, which the Company attempts to flush out prior to it reaching customers’ lines. On some occasions and in some places, it will be necessary for Aqua customers to flush lines at their premises to remove any dislodged sedimentation resulting from these efforts.

### Key Stakeholder Groups

- Directly affected communities/residents (customers)
- Local elected officials
- Regulatory agencies (financial and environmental)
- Media
- Aqua NC employees

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## Key Messages

The key messages included below become the framework of our communications program and should be reflected consistently throughout our messaging campaign.

- Aqua North Carolina is committed to making ongoing system enhancements to improve both the quality of water and reliability of service for our customers.
- Iron and manganese are concerns for many of our customers. We want customers to know that we are committed to resolving these issues that can affect the appearance and taste of our water.
- While the EPA does not address iron and manganese as primary contaminants, we are installing various forms of treatment---including filters, depending on their effectiveness---based on varying mineral levels to improve the way our water looks and tastes.
- Aqua North Carolina is actively assessing all well sites as part of our water quality plan to determine which sites require filter installations necessary to remove naturally occurring iron and manganese in the groundwater.
- To ensure that these projects are completed as efficiently as possible, we have developed specific criteria for prioritizing and performing this work.
  - Refer to descriptions of Group 1 through Group 4 as referenced above.
- Permanent filters can range in cost from \$250,000 to \$1,200,000 per well; many systems are served by multiple wells.
- Aqua's process for installing the filters involves pre-approval by the North Carolina Utilities Commission and the North Carolina Department of Environmental Quality.
- We are employing an aggressive water quality operations program to assist in the reduction of the levels of iron and manganese in our water systems. That may mean an increase in scheduled tank cleaning and distribution system flushing in many impacted systems.
- Aqua plans to immediately initiate efforts to clean all tanks being used at Group 1 sites.
  - Aqua completed the cleaning of the majority of Group 1 sites with tanks in 2018 and the remaining few are scheduled to be cleaned in 2019.
- Aqua recognizes that the increased flushing frequency may potentially impact the water quality in these communities as sediment is dislodged or stirred up in the system. Aqua will work to minimize the frequency and service interruption.
- Aqua will provide timely flushing notification to affected customers via pre-flushing call notifications and community signage.
- Aqua is not equipped to make filter recommendations for customers. However, manufacturers and distributors of such systems do provide that expertise, as well as water testing service for individual residents. Aqua is evaluating commercial vendors of home filtration for the purpose of determining whether

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the Company can responsibly suggest and achieve discounts for customers from a suitable vendor.

- o Aqua customers contacting Aqua regarding their water quality and in-home filtration options are routed to an NC Environmental Compliance administrator for assistance.

## Goals, Strategies and Tactics

**Goal:** Help customers become informed and educated about Aqua North Carolina's efforts to improve water quality for its customers.

1. Strategy: Communicate directly with customers about Aqua's water quality plan and projects.

Tactics:

- a) Obtain a preliminary understanding of water quality concerns and preferred methods of communication among the Company's residential customers.
  - i. Survey of Aqua NC customers was initiated and completed in 2017.
- b) Announce Aqua North Carolina water quality effort to employees.
  - i. Email issued early-February 2018.
- c) Announce water quality effort through direct mail announcement to customers.
  - i. Mailed regionally specific letters to all customers throughout the state announcing the program and driving them to a project website – mid-February 2018.
- d) Create a project website to serve as an information repository for customers to learn and stay informed about Aqua's plans by signing up to receive updates.
  - i. [www.ncwaterquality.com](http://www.ncwaterquality.com)
- e) Email Aqua customers with important project updates specific to regions or communities and general updates related to Aqua's progress. (Water Quality Newsletters).
- f) Send letters to customers in communities with planned filter installations.
  - i. Pre-project letters discuss plans and completion timeline.
  - ii. Post-project letters provide background, explains the remedy, and provides update on levels of Fe/Mn in water before and after filtration. Also provides a feedback mechanism for customers.  
([AquaNCPresident@aquaaamerica.com](mailto:AquaNCPresident@aquaaamerica.com))
- g) Communicate with legislators, local officials and regulatory agencies about our progress and success by periodic project

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- update letters (emails or hard copy). Provide informational materials they can share with constituents.
- h) Institute proactive media relations (e.g., press releases) to discuss the Company's proactive plans in place.
2. Strategy: Identify opportunities to communicate with customers and advisory groups throughout the year on a routine basis.

Tactics:

- a) Explore the development of a community advisory panel (5-15 residents in addition to Aqua personnel) in communities that are primarily affected by secondary water quality issues. The goal of the advisory panel will be to establish an open dialogue between the Company and customers. The Company intends to gain valuable feedback on customer interactions, communications (e.g., flushing notifications and content), as well as to identify opportunities for Aqua to provide awareness/education.
- i. Initiated Bayleaf focus group late-2018.
  - ii. Communications on-going.
  - iii. First meeting is scheduled for Wednesday, March 27th in Raleigh with nine participants from various Bayleaf communities.
- b) Communicate with Homeowners Associations ("HOAs"), if an active HOA exists, in communities where filter projects are needed and continue growing our contact list.
- i. Aqua to attend upcoming meetings and provide updates on filter installation plans, where requested.
  - ii. Work with HOA leadership to offer presentations at HOA meetings in communities with high iron and manganese levels to update customers on ongoing maintenance efforts and installation plans based on upcoming work.
- c) Ongoing news releases detailing the completion of filtration projects.
- i. Since projects occur concurrently and may only support a smaller subdivision or community, we will target batching projects together and sending regional news releases announcing the completion of all projects within a certain time-period (i.e. annually, bi-annually, etc.).
- d) Explore opportunities for paid media in service area markets.
- i. Potential ad campaign (print, electronic, social) detailing the effort and driving customers/interested parties to [www.ncwaterquality.com](http://www.ncwaterquality.com).
- e) Explore opportunities for geo-targeted social media updates.
- i. Use social media updates to publicize the North Carolina filter projects that are beginning and concluding.

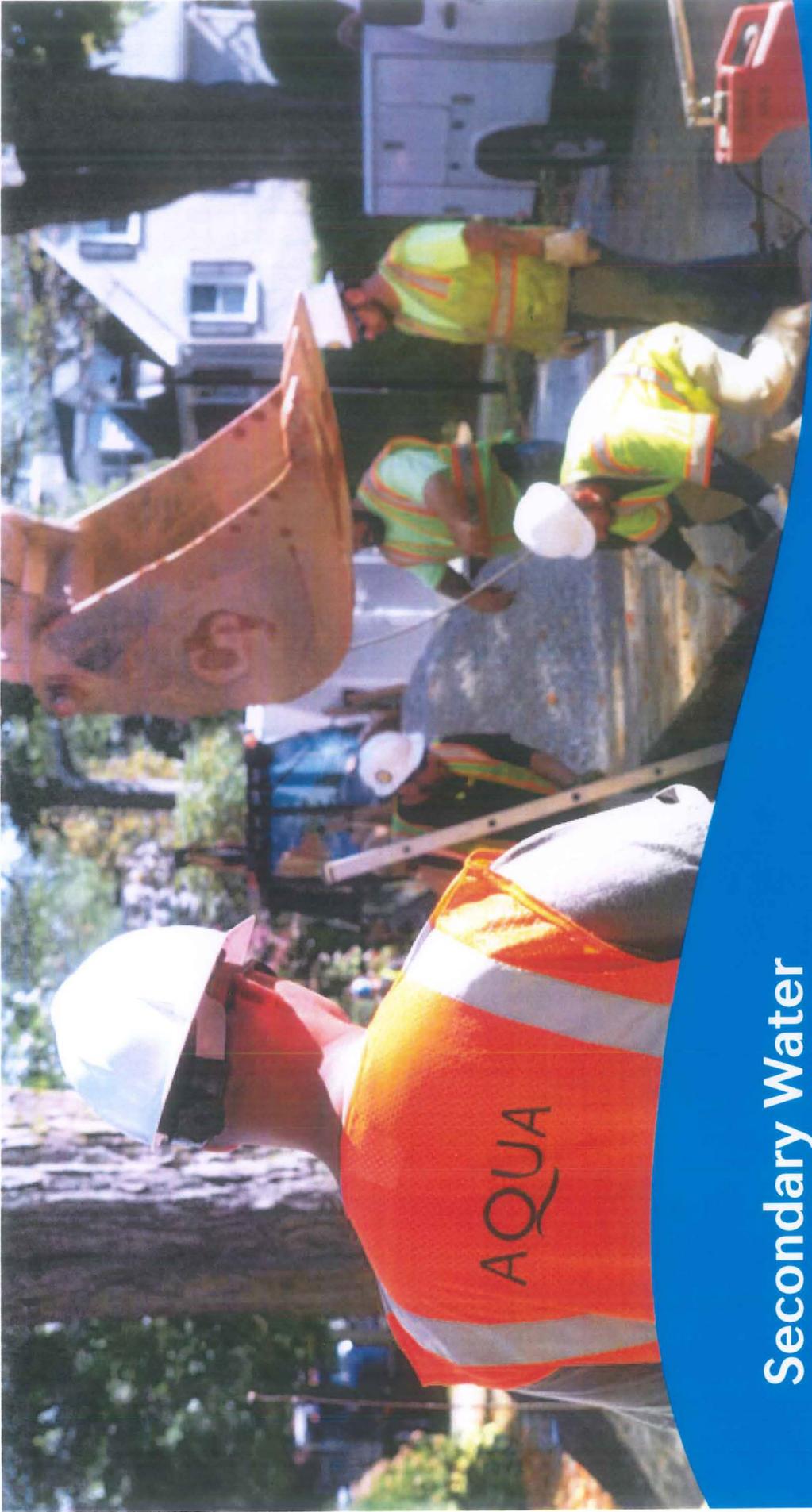
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- f) Improve notifications for flushing events.
  - i. Weekly flushing notifications for Bayleaf Master System posted to NCWaterQuality.com
    - On-going pilot project, exploring options for additional configurations and options.
    - Signs are utilized in areas where flushing activities are on-going.
- g) Develop pilot program using a dedicated technical group for discolored water calls (“Lab-D”).
  - i. September 2018 effective date.
  - ii. Lab-D calls are routed to the Technical Services Division (TSD) during business hours prior to dispatch to operations.
    - Allows TSD to determine appropriate routing and address specific customer issues.
  - iii. After hour calls are dispatched to on-call Operator.
    - TSD contacts the customer the following work day to verify that the customer’s issues have been addressed.
- h) New position, Technical Services Specialist, created to concentrate on system water quality and handle customer water quality issues (Q1 2019 start date).
  - Pilot program noted in g) above is to be implemented through the hiring of this role.

### Timeline

Communications will be ongoing throughout the duration of the program.

**NOTE:** This Plan is a dynamic document, intended to be updated and revised as conditions change and as experience allows Aqua to achieve continued improvement in water quality as well as communications.



# Secondary Water Quality Plan

# AQUA<sup>SM</sup>

# Water Quality Plan

Prioritize specific sites and address aesthetic water quality issues based on:

1. Scientific, engineering, and health data
2. Notice of deficiencies
3. Customer complaints

## Plan Considerations:

- Capital - Treatment/Filtration Plan
- Process Improvement
  - Tank Cleaning
  - Flushing

## Collaborative Approach:

- Develop a common framework to address and prioritize secondary water quality issues
- Regulatory support



# Groups Based on Mineral Levels

## GROUP : Iron and Manganese Condition

## Assess For:

- **Group 1 Sites: Fe + Mn > 1 or Mn > 0.3 mg/L**  **Filtration, Flushing, & Tank Cleaning**
- **Group 2 Sites: Fe > 0.6 or Mn > 0.1 mg/L**  **Sequestration or Filtration & Flushing**
- **Group 3 Sites: Fe > 0.3 or Mn > 0.05 mg/L**  **Sequestration & Flushing**
- **Group 4: Under sMCL**  **Flushing as needed**

Groupings were developed through a collaborative process with Public Staff and NC DEQ utilizing information provided by AWWA, USEPA, the State of NJ and CA, and Ten State Standards, Health Canada, and WHO.

# Actions for Addressing Fe/Mn in Water Sources

Actions chosen at each level include an assessment of:

- Water Quality Data
- Complaints
- Regulatory Requirements.
- Policies
- Rate Impact
- System loading evaluation by source
  - Ex. High producing well and Fe/Mn concentrations

Parameter (mg/L)	Action*
<b>Manganese</b>	
Mn > 0.3	[Filtration] and/or [Source Blending] <sup>B1, B2</sup> and/or [New Source]
0.1 < Mn < 0.3	[Sequestration] and/or [Filtration] and/or [Source Blending] <sup>B2</sup> and/or [New Source]
0.05 < Mn < 0.1	[Sequestration] and/or [Source Blending] <sup>B2</sup> and/or [New Source]
Mn < 0.05	No Action
<b>Iron</b>	
Fe > 1, Fe + Mn > 1	[Filtration] and/or [Source Blending] <sup>B1, B2, B3, B4</sup> and/or [New Source]
0.6 < Fe < 1	[Sequestration] and/or [Filtration] and/or [Source Blending] <sup>B4</sup> and/or [New Source]
0.3 < Fe < 0.6	[Sequestration] and/or [Source Blending] <sup>B4</sup> and/or [New Source]
Fe < 0.3	No Action

Flushing and/or tank cleaning may be essential components to any of these actions

<sup>B1</sup>Mn at the entry point should be below 0.3 mg/L if using sequestration

<sup>B2</sup>Mn at the entry point should be below 0.05 mg/L if not using sequestration

<sup>B3</sup>Fe at the entry point should be below 1.0 mg/L if using sequestration

<sup>B4</sup>Fe at the entry point should be below 0.3 mg/L if not using sequestration

# Secondary Water Quality in NC

NCDEQ began issuing Notice of Deficiencies for exceeding sMCLs on Fe and Mn in the Raleigh Region in February 2016.

- Tier 1 NODs: Fe + Mn > 1 mg/L, no treatment
- Tier 2 NODs: Fe or Mn > sMCL, no treatment
- Tier 3 NODs: Fe + Mn >1 mg/L and sequestration

\*\* Treatment is defined as media filtration and/or sequestration.

\*\* Cartridge filters are not considered treatment per NCDEQ

\*\*\*Aqua has not established a baseline level for iron and manganese degradation of appliances and internal plumbing due to variability in structure age, materials, water use, personal preferences, and other factors that impact this evaluation. AWWA Manual 58 states, “baseline water quality data should be established for the source water, treatment plant, entry point, and distribution system. ... there is too much variability among individual homes to establish a meaningful baseline for household plumbing conditions.”

# Water Quality Prioritization Summary

## 179 Sites > sMCL

	Criteria	Capital Timing	Sites	Subtotal
Yrs 1-2*	<b>Group 1</b> (NOD &/or Mn > .3)	2019-2020	25	25
Yrs 2-3	<b>Group 1</b> (Non-NOD & >10 Lab D)	2020-2021	14	14 / 39
Yrs 4-7	<b>Group 1</b> (Non-NOD & <10 Lab D)	2022-2025	53	53 / 92
On-Going	<b>Group 2</b> Fe>.6 Or Mn >.1	On-Going	76	76 / 168
On-Going	<b>Group 3</b> Fe>.3 Or Mn >.05	On-Going	11	11 / 179
	<b>Subtotal</b>		<b>179</b>	<b>179</b>

\* Pending approval from Public Staff

**NOTE:** Above counts are approximate and subject to change upon initiation of project and subsequent detailed review of site parameters.

# Water Quality Plan Summary

## Filtration Implementation Plan

2019 – 2021 (Approx. \$12M)

- 39 Filtration Projects 
- Group 1, NOD sites &/or Mn >.3
- Group 1 Non-NOD sites >10 Lab D (discolored water) work orders

2022 – 2025 (Approx. \$16M)

- 53 Filtration Projects 
- Group 1, Non-NOD sites <10 Lab D (discolored water) work orders

### On-Going

- 87 sites  
- Group 2 + Group 3 Continued site analysis necessary to determine necessary treatment
  - Sequestration, cartridge filter

## Flushing and Tank Cleaning Programs



**NOTE:** Aqua's evaluation of wells and Entry Points (EPs) across the state is on-going and changes based on sampling efforts and subsequent WQ data. The filter implementation plan is dependent upon NCUC approval.

# WQ Plan Requires Parallel Paths



All Group 1 and Group 2 sites will receive Operational Flushing while capital work is evaluated and scheduled