



March 30, 2018

Mr. W. Allen Hardy  
Engineering Supervisor  
Public Water Supply Section  
Raleigh Regional Office, NCDEQ  
1628 Mail Service Center  
Raleigh, NC 27699-1628

Re Notice of Deficiency – Quarterly Update  
Iron and Manganese Concentration

Dear Mr. Hardy:

Attached you will find Aqua's Q1- 2018 responses and updates for the current notice of deficiency water systems. We have developed this cover letter to supply you with a short summary of our current and ongoing efforts.

There are 4 wells that we are requesting to be removed from the quarterly reporting based on consistent water samples proving water quality under sMCL levels and reduction in customer complaints.

- Saddleridge well #20- P20
- Swans Mill well #1- P16
- Woodvalley well #11- P93
- Ethans Glen well #19 & #20 – P97

There are 4 wells that have public staff approval for greensand filtration and in different stages of implementation.

- Brayton Park
- Ridgebrook Bluffs/Westbury
- Galloway
- Hampton Park

There are 18 wells included in this report for which we believe require greensand filtration based on the consistent sample results and customer complaints. Aqua is in process of completing the executive summary to garner Commission support with the installation of greensand filtration at these sites.

- Avocet well #1
- Branston well #2
- Forest Glen well #1
- Forest Glen well #2
- Belle Ridge well #2
- Duncan Ridge well #5
- River Oaks well #3
- Olde South Trace well #1
- Barony well #5
- Enclave at BB well #18
- Woodvalley #9
- Carlisle Manor well #4

- Chari Heights well #1
- Wakefield well #6
- Hickory Creek well #1
- Georges Grant well #1
- Seville well #1
- Cotesworth Downs well #2

There are 12 systems that continue to require additional In-depth investigation to determine appropriate measures to prudently address heightened iron and/or manganese levels at these well sites due to inconsistent sample results and/or the possibility of taking the well offline based on limited current capacity. Therefore, Aqua has created a special investigation team, that will over course of the next 6 months, be in charge of visiting these sites and will be tasked with identifying the root cause of the inconsistent samples, create an action plan based on those root causes, implement the needed changes and monitor results before making a final decision to install greensand filtration. Our engineering department will be investigating the possibility of taking certain wells that have a current NOD offline if capacity is not a concern within the applicable system. Aqua believes that this is a necessary step before making a recommendation to add a very expensive filtration system that results in little added benefit for the customers.

- Fairview Wooded Acres well #2
- Briarwood/Kildaire well #1
- Eagle Creek well #3
- Glendale well #1
- High Grove well #1
- Hawthorne well #1 and #2
- High Meadows well #2
- Stanstead well #2
- Southwood well #1
- Trappers Creek well #2
- Tyndrum well #1
- Barton Creek Bluffs well #10

The investigation team will consist of the following;

- Area Manager – Robert Krueger
- Manager of Environmental Compliance – Amanda Owens
- Manager of Engineering – Michael Melton
- Regional Supervisor for the specific area
- ORC for the system

The investigation efforts will revolve around the following;

- Current sampling techniques being performed by the ORC
- Current chemical feed locations/operation
- Current chemical dosages being used
- Capacity study

Additional water quality improvement efforts:

**Water storage tank cleaning** – Aqua kicked-off a vigorous tank cleaning program in 4<sup>th</sup> quarter of 2017 for all sites initially identified as a Group 1 well sites intended to remove any excess residual build up inside our storage, hydro and elevated tanks. Over 30 hydro tanks have been cleaned since this effort began along with one elevated storage tank. Aqua is on track to finish cleaning all hydro tanks on the NOD report reporting list during Q2-2018. Once we have completed all the NOD systems, Aqua will continue these efforts in remaining systems on a reoccurring schedule. Two elevated storage tanks in the Bayleaf system will also be cleaned and painted in 2018.

**Distribution sampling** – The distribution sample results were added to these reports as part of a holistic approach to better understand the current condition inside our distribution system and begin a secondary investigation and action plan outside of these reports to also help further improve water quality and aesthetics for our customers. The locations are not being tracked at this time but will be in the near future as that project becomes more streamlined.

**Distribution flushing** - Aqua is currently changing our water main flushing techniques. The volume of water and velocity needed to effectively scour the water mains in most of these smaller systems isn't possible with the current storage availability. Aqua has recently partnered with Southern Corrosion, Inc, to help rectify this issue. Southern Corrosion will be assisting Aqua by utilizing temporary tankage to increase available water volume during flushing events to help produce a more effective scour during flushing.



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Re Notice of Deficiency – Quarterly Update  
Iron and Manganese Concentration  
Avocet Subdivision, Wake County  
WDF ID No.: Well #1, PO1  
Water System No: NC4092107

Dear Mr. Hardy:

Aqua North Carolina, Inc. (Aqua) received the above-referenced letter dated July 12, 2016, regarding elevated concentrations of Iron (Fe) and Manganese (Mn) at Avocet Well #1, PO1. The Avocet water system is comprised of four active wells and three points of entry (POE). The current number of customers served is 155 and the system is approved to serve 155 connections.

Aqua has compiled the requested information in a table format as follows:

- Table 1 provides a summarization of well information, completed activities and planned activities.
- Table 2 (Attachment 2) provides a summary of raw, POE and distribution iron and manganese samples collected as part of the ongoing Inorganic Chemical Analyses (IOC).
- Table 3 (Attachment 3) provides a summary of customer complaint information.

Mr. W. Allen Hardy  
 March 30, 2018  
 Avocet Subdivision Quarterly Update

**UPDATED QUARTERLY STATUS REPORT**

**Table 1 – Well Information, Completed Activities and Planned Activities**

<u>Well Name and No.</u>	<u>Completed Activities</u>	<u>Planned Activities</u>
Avocet, Well #1 (POI)	<ul style="list-style-type: none"> <li>• September 2015 – Started using SeaQuest</li> <li>• April 2017 – Flushed system</li> <li>• September 2017 – Started distribution and POE total and soluble sampling</li> <li>• December 2017 – Started raw sampling</li> <li>• December 2017 – Cleaned hydropneumatic storage tank</li> </ul>	<ul style="list-style-type: none"> <li>• Q2- 2018 - Submit executive summary for greensand filtration.</li> <li>• Continue to minimize usage of this well until greensand filtration is approved</li> <li>• Continue water main flushing efforts</li> </ul>
Approved GPM (32)		
Avg. Quarterly Runtime (0.0)		

**Comments:**

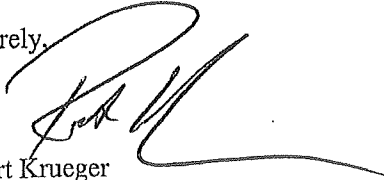
Currently, Aqua is running well #1 only as needed and will rely on production from wells #2, #3, and #4. A new well, well #12, will be interconnected with well #2 (pre-filter) to benefit from the upgraded greensand filtration that was completed in 2017. The construction of well #12 is 85% complete. The developer informed Aqua they are anticipating start up sometime in the third quarter of 2018. Aqua will also be submitting the executive summary for greensand filtration at well #1 in Q2-2018 as part of the Aqua water quality plan.

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Sep 19 2018

Mr. W. Allen Hardy  
March 30, 2018  
Avocet Subdivision Quarterly Update

Aqua is committed to providing water to its customers that meets their expectations at a reasonable cost. If you have any questions or comments, please contact me at (919) 653-6982.

Sincerely,

A handwritten signature in black ink, appearing to read 'Rob Krueger', with a long horizontal flourish extending to the right.

Robert Krueger  
Area Manager  
Aqua North Carolina, Inc.

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Sep 19 2018

Table 2 - Avocet Well #1 Sample Data

Date	Avg. Sample Week Run Time	FE Raw Total	FE Raw Sol.	MN Raw Total	MN Raw Sol.	Total Fe POE	Sol. Fe POE	Total Fe Dist.	Sol Fe Dist.	Total Mn POE	Sol Mn POE	Total Mn Dist.	Sol Mn Dist.	Raw NTU	POE NTU
4/26/2016	5.5	-		-		1.6				0.112				-	-
11/7/2016	0	35	16	35	16	-				-				35	16
4/4/2017	0	9.2	2	9.2	2	-				-				9.2	2
7/18/2017	0	7.6	4.6	7.6	4.6	-				-				7.6	4.6
9/13/2017	0.23					1.54	0.187	0.302	0.0831	0.103	0.0937	0.119	0.113		
10/3/2017	0					0.359	0.142	0.401	0.129	0.1	0.0891	0.101	0.105		
10/18/2017	0					0.299	0.14	0.398	0.151	0.107	0.0987	0.102	0.0981		
11/1/2017	0					9.21	0.156	0.561	0.172	0.175	0.174	0.13	0.143		
11/15/2017	0					0.286	0.134	0.31	0.131	0.0915	0.091	0.0999	0.0973		
12/19/2017	0	8.14	1.07	0.283	0.278	3.49	0.334	0.296	0.116	0.343	0.338	0.1	0.0948		
1/11/2018	0	3.78	0.0581	0.356	0.335	0.778	0.413	0.263	0.118	0.104	0.0972	0.0981	0.0904		
2/7/2018	0	8.56	<0.0220	0.193	0.228	5.04	0.0822	0.283	0.124	0.459	0.48	0.0963	0.0936		
3/6/2018	0	7.94	0.148	0.186	0.293	4.23	0.0389	0.285	0.113	0.629	0.596	0.0902	0.0854		

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Table 3 - Avocet Well #1 Customer Complaints

SO	SO Type	CSR Notes	Date of SO	Completion Date	Premise	Address	City State Zip	Subdivision	FSR Notes
10320739	LABD-S	CUST REPORTS RED MUDDY WATER STILL 706-577-2189	1/4/2018	1/4/2018	1325990	6433 CARDINAUX LN	HOLLY SPRINGS, NC 27540	AVOCET WATER	CL .6 PO4 .8 pH 7.1 Fe .11 MN .039 water was clear FSR:johnsos, EVT:Lab
10322959	LABD-S	MUDDY WTR REPORTED YESTERDAY HAS NOT CLEARED*****CUSTOMER COMPLAINT*SPK WITH CUSTOMER CUST STATES MAGNESIUM IS 5 TIMES THE NORM CAUSED DAMAGE TO APPLIANCES	1/5/2018	1/5/2018	1325990	6433 CARDINAUX LN	HOLLY SPRINGS, NC 27540	AVOCET WATER	CL .5 po4 .8 pH 7.2 Fe .09 MN .043 water was clear FSR:johnsos, EVT:Lab





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Re: Notice of Deficiency  
Iron and Manganese Concentration  
Bayleaf Master System  
Wake County  
WSF ID Nos. P12, P16, P19, P28, P39, P63, P67, P75, P76, P92, P93, P97, P3B, P4B, P7B  
Water System No: NC0392373

Dear Mr. Hardy:

Aqua North Carolina, Inc. (Aqua) received the above-referenced letter dated July 12, 2016, regarding elevated concentrations of Iron (Fe) and Manganese (Mn) at Bayleaf Master System P12, P16, P19, P28, P39, P63, P75, P76, P92, P3B, P4B, P7B. The Bayleaf Master water system is comprised of 122 active wells and 117 points of entry (POE). The current number of customers served is 6,112 and the system is approved to serve 6,356 connections.

Due to the number of wells associated with our Bayleaf Master System Notice of Deficiencies, Aqua has compiled the requested information in a table format as follows:

- Table 1 provides a summarization of well information, completed activities and planned activities.
- Table 2 (Attachment 2) provides a summary of raw, POE and distribution iron and manganese samples collected at WSF ID Nos. P12, P16, P19, P28, P39, P63, P75, P76, P92, P3B, P4B, P7B as part of the ongoing Inorganic Chemical Analyses (IOC).
- Table 3 (Attachment 3) provides a summary of customer complaint information.

Mr. W. Allen Hardy  
 March 30, 2018  
 Bayleaf Master Subdivision Quarterly Update  
 P12, P16, P19, P28, P39, P63, P67, P75, P76, P92, P93, P97, P3B, P4B, P7B

**UPDATED QUARTERLY STATUS REPORT**

**Table 1 - Well Information, Completed Activities and Planned Activities**

<u>Well Name and No.</u>	<u>Completed Activities</u>	<u>Planned Activities</u>
Swans Mill Well #1 (P16)	<ul style="list-style-type: none"> <li>September 2015 - Started using SeaQuest</li> <li>Jan - Apr 2016 - Flushed system</li> <li>Sep - Nov 2017 - Flushed system</li> <li>September 2017 - Started Distribution and POE total and soluble sampling</li> <li>December 2017 - added raw sample data</li> <li>March 2018 - Annual flushing complete</li> </ul>	<ul style="list-style-type: none"> <li>Continue water main flushing efforts</li> </ul>
Approved GPM (80)		
Avg. Quarterly Runtime (6.3)		
<p><b><u>Comments:</u></b></p> <p>Based on the data supplied and steps Aqua has taken; we respectfully request that this system be removed from the required quarterly updates.</p>		

Barony Well #5 (P63)	<ul style="list-style-type: none"> <li>September 2015 - Started using SeaQuest</li> <li>Jan - Apr 2016 - Flushed system</li> <li>Sept - Nov 2017 - Flushed system</li> <li>September 2017 - Cartridge filter installed</li> <li>September 2017 - Started Distribution and POE total and soluble sampling</li> <li>March 2018 - Annual flushing complete</li> <li>December 2017 - Added raw sample data</li> </ul>	<ul style="list-style-type: none"> <li>Complete executive summary for greensand filtration</li> <li>Continue water main flushing efforts</li> </ul>
Approved GPM (77)		
Avg. Quarterly Runtime (6.10)		
<p><b><u>Comments:</u></b></p> <p>Aqua will be submitting the executive summary for greensand filtration at well #1 in Q2-2018 as part of the Aqua water quality plan.</p>		

Mr. W. Allen Hardy  
 March 30, 2018  
 Bayleaf Master Subdivision Quarterly Update  
 P12, P16, P19, P28, P39, P63, P67, P75, P76, P92, P93, P97, P3B, P4B, P7B

Enclave at Barton Creek Bluffs Well #18 (P75)	<ul style="list-style-type: none"> <li>October 2015 - Started using SeaQuest</li> <li>Jan - Apr 2016 - Flushed system</li> <li>February 2017 - Flushed system</li> <li>June 2017 - Installed cartridge filter</li> <li>September 2017 - Started Distribution and POE total and soluble sampling</li> <li>December 2017- Added raw sample data</li> </ul>	<ul style="list-style-type: none"> <li>Determine effectiveness of cartridge filter with ongoing monitoring based on a monthly total and soluble sampling</li> <li>Executive summary has been completed, will submit to public staff in Q3-2018</li> </ul>
Approved GPM (75)		
Avg. Quarterly Runtime (10.7)		
<p><b>Comments:</b></p> <p>Aqua will be submitting the executive summary for greensand filtration at well #18 in Q3-2018 as part of the Aqua water quality plan.</p>		

Hawthorne Well #1 & #2 (P76)	<ul style="list-style-type: none"> <li>February 2016 -Started Using SeaQuest</li> <li>Jan - Apr 2016 - Flushed system</li> <li>February 2017 - Flushed system</li> <li>June 2017 - Installed cartridge filter</li> <li>September 2017 - Started Distribution and POE total and soluble sampling</li> <li>December 2017 - Added raw sample data</li> <li>March 2018 - Storage tank was cleaned</li> </ul>	<ul style="list-style-type: none"> <li>Continue investigation efforts</li> <li>Continue flushing efforts</li> </ul>
Approved GPM (73)		
Avg. Quarterly Runtime (11.21)		
<p><b>Comments:</b></p> <p>Aqua will complete a more in depth investigation before making a determination on the best course of action with this well.</p>		

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Woodvalley #9 (P92)	<ul style="list-style-type: none"> <li>February 2016 - Started using SeaQuest</li> <li>Jan - Apr 2016 - Flushed system</li> </ul>	<ul style="list-style-type: none"> <li>Q1/Q2 2018 – Perform annual flushing</li> <li>Executive summary has been completed, will submit to public staff in Q2-2018</li> </ul>
Approved GPM (38)	<ul style="list-style-type: none"> <li>February 2017 - Flushed system</li> <li>June 2017 - Well was treated via Aqua free</li> </ul>	
Avg. Quarterly Runtime (6.10)	<ul style="list-style-type: none"> <li>June 2017 - Installed cartridge filter</li> <li>September 2017 - Started Distribution and POE total and soluble sampling</li> <li>December 2017 – Added raw sample data</li> </ul>	
<p><b><u>Comments:</u></b></p> <p>Aqua will be submitting the executive summary for greensand filtration at well #1 in Q2-2018 as part of the Aqua water quality plan.</p>		

Carlyle Manor Well #4 (P3B)	<ul style="list-style-type: none"> <li>September 2015 - Started using SeaQuest</li> <li>Jan - Apr 2016 - Flushed system</li> </ul>	<ul style="list-style-type: none"> <li>Executive summary has been completed, will submit to public staff in Q2-2018</li> <li>Continue flushing efforts</li> </ul>
Approved GPM (73)	<ul style="list-style-type: none"> <li>June 2017 - Installed cartridge filter</li> <li>September - Nov 2017 - Flushed system</li> </ul>	
Avg. Quarterly Runtime (5.9)	<ul style="list-style-type: none"> <li>September 2017 - Started Distribution and POE total and soluble sampling</li> <li>December 2017 – Added raw sample data</li> </ul>	
<p><b><u>Comments:</u></b></p> <p>Aqua will be submitting the executive summary for greensand filtration at well #1 in Q2-2018 as part of the Aqua water quality plan.</p>		

Mr. W. Allen Hardy  
 March 30, 2018  
 Bayleaf Master Subdivision Quarterly Update  
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Seville Well #1 (P4B)	<ul style="list-style-type: none"> <li>• August 2015 - Started using SeaQuest</li> <li>• Jan - Apr 2016 - Flushed system</li> <li>• Sep - Nov 2017 - Flushed system</li> <li>• September 2017 - Started Distribution and POE total and soluble sampling</li> <li>• Dec 2017 - Added raw sample data</li> <li>• Feb. 2018 Flushing Complete</li> </ul>	<ul style="list-style-type: none"> <li>• Executive summary has been completed, will submit to public staff in Q2 2018</li> <li>• Continue water main flushing efforts</li> </ul>
Approved GPM (44)		
Avg. Quarterly Runtime (6.10)		
<b>Comments:</b>		
Aqua will be submitting the executive summary for greensand filtration at well #1 in Q2-2018 as part of the Aqua water quality plan.		

George's Grant Well #1 (P7B)	<ul style="list-style-type: none"> <li>• Oct 2015 - Started Using SeaQuest</li> <li>• Jan - Apr 2016 - Flushed system</li> <li>• Jun 2017 - Installed cartridge filter</li> <li>• Sep - Nov 2017 - Flushed system</li> <li>• Sep 2017 - Started Distribution and POE total and soluble sampling</li> <li>• Feb. 2018 Flushing complete</li> <li>• Dec 2017 Started Raw, Entry Point and Distribution Soluble and Insoluble Iron</li> </ul>	<ul style="list-style-type: none"> <li>• Executive summary has been completed, will submit to public staff in Q2 2018</li> <li>• Continue water main flushing efforts</li> </ul>
Approved GPM (66)		
Avg. Quarterly Runtime (5.80)		
<b>Comments:</b>		
Aqua will be submitting the executive summary for greensand filtration at well #1 in Q2-2018 as part of the Aqua water quality plan.		

Woodvalley Well #11 (P93)	<ul style="list-style-type: none"> <li>• December 2016 - Started using SeaQuest</li> <li>• February 2017 - Flushed system</li> <li>• September 2017 - Started distribution and POE total and soluble sampling</li> <li>• Decemeber 2017 - Added raw sample data</li> </ul>	<ul style="list-style-type: none"> <li>• Continue water main flushing efforts</li> </ul>
Approved GPM (29)		
Avg. Quarterly Runtime (7.28)		
<b>Comments:</b>		
Based on the data supplied and steps Aqua has taken; we respectfully request that this system be removed from the		

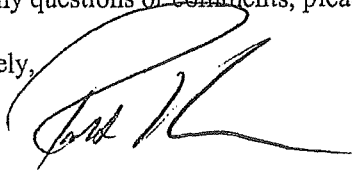
Mr. W. Allen Hardy  
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 Bayleaf Master Subdivision Quarterly Update  
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required quarterly updates.		
Barton Creek Bluffs Well #10	<ul style="list-style-type: none"> <li>• March 2016 – Started using SeaQuest</li> <li>• February 2017 – Flushed system</li> </ul>	<ul style="list-style-type: none"> <li>• Continue water main flushing efforts</li> <li>• Continue investigation efforts</li> </ul>
Approved GPM (15)	<ul style="list-style-type: none"> <li>• September 2017 - Took soluble insoluble well head and distribution samples</li> </ul>	
Avg. Quarterly Runtime (8.50)	<ul style="list-style-type: none"> <li>• Dec 2017 –Added raw sample data Distribution Soluble and Insoluble Iron</li> </ul>	
<p><b>Comments:</b></p> <p>Based on the current inconsistent sample results, Aqua will complete a more in depth investigation before making a determination on the best course of action with this well.</p>		

Ethan's Glen Well #19 and #20 (P97)	<ul style="list-style-type: none"> <li>• Dec 2016 - Started feeding SeaQuest</li> <li>• Sep - Nov 2017 - Flushed system</li> <li>• Sep 2017 - Took soluble insoluble well head and distribution samples</li> </ul>	<ul style="list-style-type: none"> <li>• Continue water main flushing efforts</li> </ul>
Approved GPM (18/11)	<ul style="list-style-type: none"> <li>• Dec 2017 Started Raw, Entry Point and Distribution Soluble and Insoluble Iron</li> </ul>	
Avg. Quarterly Runtime (5.0)	<ul style="list-style-type: none"> <li>• Feb 2018 Annual Flushing Complete</li> <li>• Seaquest has been optimized for these wells.</li> </ul>	
<p><b>Comments:</b></p> <p>Based on the data supplied and steps Aqua has taken; we respectfully request that this system be removed from the required quarterly updates.</p>		

Aqua is committed to providing water to its customers that meets their expectations at a reasonable cost. If you have any questions or comments, please contact me at (919) 653-6982.

Sincerely,



Robert Krueger  
 Area Manager  
 Aqua North Carolina, Inc.

Table 2 -Bayleaf Sample Data

Well Name	Date	Avg. Sample Week Run Time	Fe Raw Total	Fe Raw Sol	Mn Raw Total	Mn Raw Sol	Total Fe POE	Sol. Fe POE	Total Fe Dist.	Sol Fe Dist.	Total Mn POE	Sol Mn POE	Total Mn Dist.	Sol Mn Dist.	Raw NTU	POE NTU
Swans Mill #1	3/24/2015						7.8				0.02					
	12/20/2016	13.5													0.18	0.13
	3/23/2017	5.7													<0.10	0.1
	6/8/2017	10.2													0.15	0.26
	9/15/2017	10.21					0.0409	<0.022	<0.022	<0.022	<0.001	<0.001	<0.001	0.0016		
	9/27/2017	15.47					<0.0220	<0.022	<0.022	<0.022	<0.001	<0.001	0.0458	0.00807		
	10/2/2017	19.5					<0.0220	<0.022	<0.022	<0.022	<0.001	<0.001	0.0497	<0.00110		
	10/24/2017	12.08					<0.0220	<0.022	<0.022	<0.022	<0.001	<0.001	0.103	0.0066		
	11/6/2017	10.27					<0.0220	<0.022	<0.022	<0.022	<0.001	<0.001	0.11	0.0116		
	12/8/2017						<0.0220	<0.022	<0.022	<0.022	0.00127	<0.001	0.00117	<0.001		
	12/18/2017	5.5	<0.0220	<0.022	<0.0011	<0.0011	<0.0220	<0.022	<0.022	<0.022	<0.001	<0.001	0.0458	<0.001		
	1/15/2018	7.2	<0.0220	<0.022	<0.0011	<0.0011	<0.0220	<0.022	<0.022	<0.022	0.00622	<0.001	<0.001	<0.001		
	2/12/2018	6.3	<0.0220	<0.022	0.00156	<0.0011	0.0517	<0.022	<0.022	<0.022	<0.001	<0.001	<0.001	<0.001		
	3/9/2018	6.4	<0.0220	<0.022	<0.0011	<0.0011	<0.022	<0.022	<0.022	<0.022	<0.001	<0.001	<0.001	<0.001		
Barony Well #5	1/6/2014	11					1				0.47					
	9/20/2016	14.9													4.4	1.6
	1/16/2017	7.43					1.35				0.61					
	3/23/2017	5.5													14	1.4
	6/8/2017	8.5													6.2	2
	4/19/2017	6.2					1.53				0.62					
	4/16/2017	6.2													22	6.7
	9/15/2017	9.93					1.71	<0.022	0.0322	0.254	0.55	0.424	0.0156	0.0044		
	10/2/2017	20.86					1.57	0.728	0.766	0.142	0.503	0.475	0.309	0.0165		
	10/16/2017	11.99					1.69	<0.0220			0.577	0.57				
	10/23/2017	12.74					1.71	0.0829	0.0709	<0.022	0.545	0.463	0.00385	0.0262		
	11/6/2017	8.69					1.5	0.0304	0.813	0.693	0.506	0.485	0.455	0.452		
	11/17/2017	6.46					1.48	0.571	1.45	<0.022	0.486	0.424	0.404	0.269		
	12/11/2017	5.61	1.79	0.0411	0.609	0.599	1.69	0.596	0.577	0.563	2.25	0.703	0.562	0.425		
1/5/2018	5.94	1.71	<0.0220	0.601	0.72	1.65	<0.0220	1.6	<0.022	0.733	0.549	0.724	0.361			
2/2/2018	5.9	1.48	<0.0220	0.538	0.529	1.42	0.182	1.42	0.156	0.538	0.484	0.535	0.462			
3/2/2018	6.8	2.07	0.105	0.536	0.516	1.76	0.201	1.45	0.0259	0.541	0.504	0.527	0.506			
Enclave at Barton Creek Bluffs #18	10/9/2013	8.1					1				0.29					
	10/12/2019	10.46					1.49				0.348					
	12/20/2016	12.8													3.2	1.5
	3/23/2017	6.9													2.6	2.4
	4/26/2017	6.4													13	3.1
	6/8/2017	7.6													6	5.1
	9/13/2017	7.6					1.03	0.151	<0.022	<0.022	0.256	0.241	0.0304	0.027		
	9/27/2017	8.64					0.475	0.222	0.0229	<0.0220	0.377	0.404	0.0147	0.0104		
	10/5/2017	18.67					0.753	0.165	0.0545	<0.220	0.393	0.375	0.0296	0.00747		
	10/16/2017	12.66					2.94	0.173			0.625	0.584				
	10/23/2017	12.96					1.76	0.201	0.0643	0.0778	0.385	0.319	0.0449	0.00168		
	11/8/2017	11.26					0.566	0.31	0.0437	<0.220	0.372	0.363	0.0493	0.0428		
	12/12/2018	11.4	1.63	<0.0220	0.295	0.264	0.515	0.085	0.261	<0.220	0.328	0.282	0.118	<0.0011		
	1/22/2018	11.3	1.25	<0.0220	0.325	0.314	4.01	0.115	0.433	<0.220	0.601	0.308	0.0673	0.0284		

	2/26/2018	9	0.872	0.0275	0.268	0.271	0.53	0.317	<0.220	0.0378	0.288	0.279	0.0053	0.0395		
Hawthorne #1 & 2	5/19/2016	10.7					1.01				0.53					
	9/20/2016	14.2													22	1.7
	3/23/2017	10.3													14	3.9
	6/8/2017	15.51													12	11
	9/15/2017	16.9														
	9/28/2017	21.72					0.833	0.164	0.0585	<0.0220	0.531	0.184	0.0108	0.00122		
	10/6/2017	23.6					0.882	0.309	<0.220	<0.220	0.417	0.343	0.00236	0.00161		
	10/23/2017	18.38					0.892	0.0559	0.139	<0.0220	0.32	0.225	0.0308	0.00597		
	11/7/2017	11.86					0.634	0.0331	0.0234	<0.0220	0.202	0.134	0.0029	0.00128		
	11/16/2017	8.38					0.814	<0.0220	0.736	<0.0220	0.233	0.104	0.269	0.141		
	12/14/2018	9.8	13.9	0.0298	0.391	0.362	2.38	0.171	<0.220	<0.220	0.423	0.181	0.00136	0.0011		
	1/22/2018	10.1	6.96	<0.022	0.54	0.5	1.42	0.102	0.116	0.0572	0.478	0.102	0.0196	0.00319		
	2/26/2018	12.2	1.24	0.15	0.693	0.489	1.07	0.0817	0.0482	<0.0220	0.693	0.276	0.144	0.304		
		4.13														
Woodvalley #9	10/7/2015	8.39					0.8				0.5					
	12/19/2016	12.9													4	0.91
	3/23/2017	7.3													11	2.9
	6/16/2017	0.13													0.01	0.01
	9/14/2017	9.54					0.221	<0.022	0.091	<0.022	0.344	0.264	0.013	<0.0011		
	9/28/2017	10.51					0.124	0.0316	0.0465	<0.0220	0.33	0.332	0.0567	0.0112		
	10/5/2017	15.89					0.226	<0.0220	0.0255	<0.0220	0.259	0.205	0.00573	0.00393		
	10/16/2017	9.99					0.0856	<0.0220			0.324	0.393				
	10/24/2017	14.55					0.126	<0.0220	0.0549	<0.0220	0.226	0.185	0.0142	0.00168		
	11/10/2017	6.38					0.391	0.0744	0.0417	<0.0220	0.371	0.137	0.00892	<0.0011		
	12/14/2017		1.03	<0.0220	0.549	0.399	0.273	<0.0220	<0.0220	<0.0220	0.397	0.0658	0.0306	0.00176		
	1/25/2018	10.1	0.146	<0.0220	0.352	0.353	0.164	<0.0220	0.0367	<0.0220	0.369	0.326	0.0386	0.00417		
	2/22/2018	2	0.703	<0.0220	0.465	0.442	0.22	0.33	<0.0220	<0.0220	0.342	0.303	0.00247	<0.0011		
		6.3														
Carlyle Manor #4	10/7/2015	8.5					2				0.67					
	9/20/2016	11.7													18	1.3
	10/3/2016	10.5					1.21				0.68					
	3/23/2017	5.6													5.6	2.6
	6/9/2017	8.6													2.4	2.3
	9/15/2017	6.04														
	10/2/2017	20.86					1.22	0.928	0.283	0.0341	0.681	0.658	0.223	0.00785		
	10/23/2017	12.79					0.949	0.36	0.169	<0.0220	0.623	0.51	0.0835	0.0778		
	11/6/2017	10.01					0.736	<0.0220	0.538	<0.0220	0.567	0.461	0.0658	0.036		
	11/17/2017	6.51					0.731	0.264	0.104	<0.0220	0.593	0.502	0.019	0.0168		
	12/11/2017	5.52	0.802	0.17	0.662	0.625	0.813	0.228	0.672	0.569	0.293	0.0993	0.0432	0.0164		
	1/5/2018	5.7	0.806	<0.0220	0.622	0.616	0.766	<0.0220	0.828	0.114	0.584	0.543	0.644	0.601		
	2/2/2018	6.1	0.931	<0.0220	0.624	0.618	0.647	<0.0220	0.804	<0.0220	0.531	0.437	0.612	0.492		
	3/2/2018	6	0.0821	0.0485	0.578	0.532	0.57	0.0511	0.579	0.0667	0.582	0.484	0.561	0.518		
Seville #1	1/9/2016	7.25					1				0.5					
	9/20/2016	14.1													3.8	0.84
	1/19/2017	7.43					1.02				0.557					



	3/23/2017	5.8													2.3	0.85
	6/8/2017	8.5													2.5	3.6
	9/15/2017	9.81					0.947	0.0915	0.495	0.246	0.467	0.421	0.054	0.0599		
	9/28/2017	15.41					1.05	0.307	0.0676	<0.0220	0.385	0.332	0.0317	0.0147		
	10/5/2017	20.09					1.23	0.33	1.09	0.308	0.507	0.417	0.271	0.208		
	10/23/2017	11.3					0.413	0.0973	0.732	0.648	0.141	0.125	0.0334	0.013		
	11/10/2017	9.11					0.595	0.105	0.541	0.112	0.166	0.15	0.165	0.163		
	11/16/2017	7.7					1.82	0.19	2.17	0.241	0.218	0.203	0.278	0.254		
	12/15/2017	0	1.48	0.397	0.556	0.529	1.96	0.271	0.234	0.21	0.579	0.508	0.0157	0.00573		
	2/2/2018	0	8.94	<0.0220	1.1	0.914	13.3	<0.0220	13.4	<0.0220	0.99	0.958	1.05	1.01		
		6.1														
George's Grant #1	7/16/2015	6.16					1.3				0.63					
	12/12/2016	15													15	2.4
	3/1/1932	5.5													6.4	2.7
	6/8/2017	8.5													9.6	7.2
	10/2/2017	20.84					1.48	0.0512	1.08	0.588	0.636	0.511	0.295	0.22		
	10/23/2017	12.77					1.72	0.192	0.283	0.301	0.662	0.527	0.0209	0.015		
	11/6/2017	10.03					1.32	0.121	1.4	0.493	0.608	0.506	0.624	0.542		
	11/17/2017	6.67					1.65	0.0304	1.4	0.0489	0.655	0.503	0.35	0.271		
	12/11/2017	5.54	1.51	0.296	0.665	0.681	1.95	0.0337	0.706	0.585	1.24	0.462	0.585	0.424		
	1/8/2018	5.7	1.43	0.92	0.596	0.558	1.63	0.0441	1.29	0.15	0.628	0.549	0.636	0.601		
	2/2/2018	6.1	1.47	0.0429	0.644	0.65	1.53	0.18	1.42	0.0259	0.65	0.519	0.669	0.526		
	3/2/2018	5.9	1.94	0.0327	0.672	0.638	1.69	0.289	1.45	0.181	0.686	0.535	0.672	0.637		
Woodvalley #11	9/15/2015	9.46					1.32	0.0328	1.15	0.0275	0.582	0.484	0.266	0.127		
	12/10/2015	7.3					0.18				0.285					
	9/22/2016	9.7													ND	0.151
	3/6/2017	7.91													10	0.61
	4/26/2017	10.13													8	0.41
	5/24/2017	10.4													8.4	0.22
	6/9/2017	11.8													7.6	0.36
	9/15/2017	9.74					<0.0220	<0.022	0.72	0.042	0.0325	0.0248	0.0361	0.011		
	9/28/2017	10.53					<0.0220	<0.0220	0.114	<0.0220	0.0396	0.036	0.0337	0.00216		
	10/6/2017	20.93					<0.0220	<0.0220	0.0259	<0.0220	0.0373	<0.0110	0.00637	0.00111		
	11/10/2017	9.64					<0.0220	<0.0220	0.0567	<0.0220	0.0187	<0.0110	0.0102	0.001		
	12/14/2017		<0.0220	<0.0220	0.0265	0.00645	0.0479	<0.0220	0.0855	<0.0220	0.0436	0.0053	0.0616	0.00173		
	Off Line	0														
	2/22/2018	6.2	0.0334	<0.0220	0.13	0.12	0.042	<0.0220	<0.0220	<0.0220	0.135	0.111	0.00273	<0.0110		
		7.3														
Barton Creek Bluffs #10	6/1/2013	9.4									0.2					
	5/31/2016	9.8									0.232					
	4/26/2017	7.82													5.7	3.5
	5/17/2017	10.8													5.7	0.25
	6/8/2017	12.6													10.5	0.15
	9/15/2017	9.56					0.039	<0.022	<0.022	<0.022	0.0981	0.0959	<0.00110	<0.001		
	9/27/2017	10.38					0.0483	<0.0220	0.0274	<0.0220	0.0972	0.123	0.00439	0.00146		
	10/5/2017	17.59					0.0643	<0.0220	0.105	0.0434	0.176	0.0357	0.0339	0.0105		
	10/23/2017	1.33					0.146	0.0371	0.518	0.0284	0.0451	0.36	0.543	0.015		
	12/12/2018		0.13	<0.0220	0.217	0.216	0.128	<0.0220	0.511	<0.0220	0.214	0.201	1.17	0.00311		
	1/22/2018	9.7	0.0969	<0.0220	0.23	0.224	0.198	<0.0220	0.0553	<0.0220	0.263	0.234	0.0293	0.00255		

	2/8/2018	7.3	0.107	<0.0220	0.163	0.156	0.152	<0.0220	0.134	<0.0220	0.184	0.164	0.0489	0.0228		
Ethan's Glen #19	9/17/2014	7.22					1.87				0.0179					
	9/22/2016	10.6					0.08				0.078					
	3/8/2017	7.5														
	4/26/2017	7.8													0.13	0.31
	9/14/2017	6.8					<0.022	<0.022	<0.022	<0.022	0.0028	<0.001	<0.0011	<0.001		
	9/27/2017	9.29					<0.022	<0.022	<0.022	<0.022	0.00289	<0.001	0.00236	<0.001		
	10/5/2017	19.38					<0.022	<0.022	0.784	<0.220	0.00395	0.00139	0.00619	<0.001		
	10/23/2017	12.65					0.197	<0.022	<0.022	<0.022	0.0045	<0.001	<0.0011	<0.001		
	11/8/2017	10.07					0.542	0.165	0.0525	<0.022	0.00385	0.00116	0.00268	0.00152		
	11/17/2017	7.71					0.0326	<0.0220	0.723	<0.220	0.0037	<0.001	0.00724	<0.001		
	12/13/2018	7.2	0.0698	<0.022	0.00274	0.00517	0.121	<0.0220	0.0293	<0.220	0.00261	<0.001	0.00227	<0.001		
	1/8/2018	7.5	<0.022	<0.022	0.00295	0.00322	0.0868	<0.0220	<0.220	<0.220	0.00303	<0.001	0.00118	<0.001		
	2/2/2018	6	0.0283	<0.022	0.0023	0.0021	0.0635	<0.0220	<0.220	<0.220	0.00182	<0.001	0.00135	<0.001		
	3/2/2018	6.55	0.0476	<0.022	0.0431	<0.022	0.0431	<0.0220	0.0351	<0.0220	0.00241	0.00118	0.00231	0.0011		
Ethan's Glen #20	9/17/2014	9.6					1.87				0.0179					
	9/22/2017	10.6					0.38				0.035					
	3/8/2017	7.5														
	4/26/2017	7.8													0.51	0.31
	9/14/2017	6.3														
	9/14/2017	6.8					<0.022	<0.022	<0.022	<0.022	0.00275	<0.0011	<0.0011	<0.0011		
	9/27/2017	9.29					<0.022	<0.022	<0.022	<0.022	0.00289	<0.001	0.00236	<0.001		
	10/5/2017	19.38					<0.022	<0.022	0.784	<0.220	0.00395	0.00139	0.00619	<0.001		
	10/23/2017	12.65					0.197	<0.022	<0.022	<0.022	0.0045	<0.001	<0.0011	<0.001		
	11/8/2017	10.07					0.542	0.165	0.0525	<0.022	0.00385	0.00116	0.00268	0.00152		
	11/17/2017	7.71					0.0326	<0.0220	0.723	<0.220	0.0037	<0.001	0.00724	<0.001		
	12/13/2018	7.2	0.0739	<0.022	0.00246	0.00161	0.121	<0.0220	0.0293	<0.220	0.00261	<0.001	0.00227	<0.001		
	1/8/2018	7.5	<0.0220	<0.0220	0.00163	0.00152	0.121	<0.0220	0.0293	<0.220	0.00261	<0.001	0.00227	<0.001		
	2/2/2018	6	0.217	0.022	0.00202	0.00133	0.0635	<0.0220	<0.220	<0.220	0.00182	<0.001	0.00135	<0.001		

SO	SO Type	CSR Notes	Date of SO	Completion Date	Premise	Address	City State Zip	Subdivision	FSR Notes
10383390	LABD-S	EMAIL FROM TOM REPORTING BROWN WATER AND BLACK RESIDUE LEFT IN HIS TUBS CUSTOMER STATES THIS HAS BEEN GOING ON FOR A WHILE NOW.	2/13/2018	2/13/2018	578988	4312 WOOD VALLEY DR	RALEIGH, NC 27613-6320	WOODVALLEY/GRALYN	Large home only noticing problem upstairs in bathtubs Cl2-1.4 ph-7.1 po4-2.1 fe-.04 mn-.018 all residuals good no issues found
10336516	LABD-S	CUST CLD TO REPORT BROWN WATER.	1/15/2018	1/15/2018	579060	4317 BLOSSOM HILL CT	RALEIGH, NC 27613-6322	WOODVALLEY/GRALYN	Flush hose bibb for 15 mins water cleared up Cl2 1.21 po4 1.03 mn .02 fe .41 FSR: customer EVT- Lab
10373582	LABD-S	CUST STATES WATER IS DIRTY DISCOLORED	2/14/2018	2/14/2018	585499	516 THARPS LN	RALEIGH, NC 27614-9466	SWAN~SMILL (135)	COLD PULL CL2 .90 PH 7.2 PO4 0.51 FE 0.10 MN 0.017 HARD 9 GPG2ND PULL CL2 1.25 PH 7.2 PO4 0.86 FE 0.03 MN 0.008 HARD 9 GPGRANG DOOR. NO ANSWER
10339413	LABD-S	CUSTOMER IS EXPERIENCING COMPLETELY BLACK WATER NEED SERVICE	1/16/2018	1/16/2018	1081918	124 DARTMOR LN	RALEIGH, NC 27614	GEORGE~S GRANT	Cl2 0.33 pH 7.3 Po4 1.59 Fe 0.47 MN 0.006 Customer has filter system FSR: hand ext. EVT- Lab
10392438	LABD-S	EMAIL FROM JAMI REPORTS SEDIMENTS IN WATER OF HOME	2/14/2018	2/14/2018	585203	5124 BARTONS ENCLAVE LN	RALEIGH, NC 27613-6164	ENCLAVE OF BARTON CRK BLF	Cl2-.82 ph-7.1 po4-1.5 fe-.02 mn-.037 No signs of sediment or discolored water pre flushing residual FSR: customer EVT- Lab
10420371	LABD-S	CUSTOMER CALLED TO REPORT DISCOLORED WATER NEED SERVICE	3/2/2018	3/2/2018	531361	1113 FALLS BRIDGE DR	RALEIGH, NC 27614-8941	CARLYLE MANOR	



March 30, 2018

Mr. W. Allen Hardy  
Engineering Supervisor  
Public Water Supply Section  
Raleigh Regional Office, NCDEQ  
1628 Mail Service Center  
Raleigh, NC 27699-1628

Re: Notice of Deficiency  
Iron and Manganese Concentration  
Belle Ridge Subdivision, Wake County  
WSF ID No.: Well #2, P02  
Water System No: NC0392358

Dear Mr. Hardy:

Aqua North Carolina, Inc. (Aqua) received the above-referenced letter dated July 12, 2016, regarding elevated concentrations of Iron (Fe) and Manganese (Mn) at Belle Ridge Well #2, P02. The Belle Ridge water system is comprised of two active wells and two points of entry (POE). The current number of customers served is 57 and the system is approved to serve 55 connections.

Aqua has compiled the requested information in a table format as follows:

- Table 1 provides a summarization of well information, completed activities and planned activities.
- Table 2 (Attachment 2) provides a summary of raw, POE and distribution iron and manganese samples collected as part of the ongoing Inorganic Chemical Analyses (IOC).
- Table 3 (Attachment 3) provides a summary of customer complaint information.

Mr. W. Allen Hardy  
 March 30, 2018  
 Bell Ridge Subdivision Quarterly Update

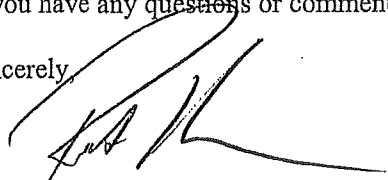
**UPDATED QUARTERLY STATUS REPORT**

**Table 1 – Well Information, Completed Activities and Planned Activities**

<u>Well Name and No.</u>	<u>Completed Activities</u>	<u>Planned Activities</u>
Belle Ridge, Well #2 (P02)	<ul style="list-style-type: none"> <li>• August 2015 – Started using SeaQuest</li> <li>• June 2017 – Flushed System</li> <li>• September 2017 – Installed cartridge filter.</li> <li>• September 2017 – Started distribution and POE total and soluble sampling</li> <li>• December 2017 – Added raw sample data</li> <li>• February 2018 - Hydropneumatic storage tank cleaned</li> </ul>	<ul style="list-style-type: none"> <li>• 2018 - Submit executive summary for greensand filtration</li> <li>• Continue the limited use of this well until greensand filtration is approved</li> <li>• Continue water main flushing efforts</li> </ul>
Approved GPM (30)		
Avg. Quarterly Runtime (1.75hrs)		
<p><b><u>Comments:</u></b></p> <p>Aqua currently limits the use of this well due to water quality and relies on well #1 for meeting system demand. Aqua will be submitting an executive summary to the public staff for greensand filtration approval in 2018 as part of the Aqua water quality plan.</p>		

Aqua is committed to providing water to its customers that meets their expectations at a reasonable cost. If you have any questions or comments, please contact me at (919) 653-6982.

Sincerely,



Robert Krueger  
 Area Manager  
 Aqua North Carolina, Inc.

Table 2 - Belle Ridge Sample Data

Date	Avg. Sample Week Run Time	Fe Raw Total	Fe Raw Sol.	Mn Raw Total	Mn Raw Sol.	Total Fe POE	Sol. Fe POE	Total Fe Dist.	Sol Fe Dist.	Total Mn POE	Sol Mn POE	Total Mn Dist.	Sol Mn Dist.	Raw NTU	POE NTU
10/23/2013	1.5					1				0.22					
7/27/2016	1.14					0.48				0.21					
12/22/2016	2.55													1.1	0.71
4/20/2017	1.73													2	0.4
7/13/2017	1.8													1.9	0.82
9/15/2017	4.23														
10/13/2017	2					0.588	0.357	0.403	0.181	0.197	0.171	0.0999	0.06555	0	
10/18/2017	1.15					0.574	0.0275	0.381	0.179	0.207	0.13	0.177	0.141	0	
11/2/2017	0.5					0.931	0.151	0.876	0.0303	0.173	0.108	0.022	0.0134	0	
11/15/2017	2.9					0.467	0.022	0.159	0.0237	0.194	0.108	0.0573	0.0305	0	
12/14/2017	0.5	1.82	1.21	0.253	0.248	0.869	0.0793	0.578	0.205	0.246	0.166	0.0478	0.0197		
1/5/2018	0.625	0.337	0.0361	0.375	0.367	0.348	0.0634	0.368	0.0813	0.37	0.33	0.38	0.332		
2/2/2018	1.15	1.83	1.17	0.268	0.271	1.01	0.227	0.971	0.0583	0.316	0.148	0.3	0.221		
3/8/2018	0.5	1.68	1.09	0.285	0.284	1.01	0.125	0.976	0.0613	0.319	0.228	0.315	0.229		

**Table 3 - Belle Ridge Customer Complaints**

SO	SO Type	CSR Notes	Date of SO	Completion Date	Premise	Address	City State Zip	Subdivision	FSR Notes
<b>Aqua received zero complaints for this system in the first quarter of 2018</b>									



March 30, 2018

Mr. W. Allen Hardy  
Engineering Supervisor  
Public Water Supply Section  
Raleigh Regional Office, NCDEQ  
1628 Mail Service Center  
Raleigh, NC 27699-1628

Re: Notice of Deficiency – Quarterly Update  
Iron and Manganese Concentration  
Branston Subdivision, Wake County  
WSF ID No.: Well #2, TP1  
Water System No: NC4092076

Dear Mr. Hardy:

Aqua North Carolina, Inc. (Aqua) received the above-referenced letter dated July 12, 2016, regarding elevated concentrations of Iron (Fe) and Manganese (Mn) at Branston Well #2, TP1. The Branston water system is comprised of one active well and one point of entry (POE). The current number of customers served is 44 and the system is approved to serve 44 connections.

Aqua has compiled the requested information in a table format as follows:

- Table 1 provides a summarization of well information, completed activities and planned activities.
- Table 2 (Attachment 2) provides a summary of raw, POE and distribution iron and manganese samples collected as part of the ongoing Inorganic Chemical Analyses (IOC).
- Table 3 (Attachment 3) provides a summary of customer complaint information.



Mr. W. Allen Hardy  
 March 30, 2018  
 Branston Subdivision Quarterly Update

**UPDATED QUARTERLY STATUS REPORT**

**Table 1 – Well Information, Completed Activities and Planned Activities**

<u>Well Name and No.</u>	<u>Completed Activities</u>	<u>Planned Activities</u>
Branston, Well #2 (TP1)	<ul style="list-style-type: none"> <li>• July 2013 – Started using SeaQuest</li> <li>• September 2016 – Flushed system</li> <li>• March 2017 – Flushed system</li> <li>• July 2017 – Flushed system</li> <li>• September 2017 – Started distribution and POE total and soluble sampling</li> <li>• Continue distribution and POE soluble and insoluble sampling</li> <li>• December 2017 – Added raw sample data</li> <li>• December 2017 – Cleaned hydropneumatic storage tank</li> </ul>	<ul style="list-style-type: none"> <li>• Q3 2018 – Submit executive summary for greensand filtration</li> <li>• Continue water main flushing efforts</li> </ul>
Approved GPM (49)		
Avg. Quarterly Runtime (7.2)		
<b><u>Comments:</u></b>		
Aqua will be submitting the executive summary for greensand filtration at well #2 in Q3-2018 as part of the Aqua water quality plan.		

Aqua is committed to providing water to its customers that meets their expectations at a reasonable cost. If you have any questions or comments, please contact me at (919) 653-6982.

Sincerely,



Robert Krueger  
 Area Manager  
 Aqua North Carolina, Inc.

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Sep 19 2018

Table 2 - Branston Well #2 Sample Data

Date	Avg. Sample Week Run Time	Fe Raw Total	Fe Raw Sol.	Mn Raw Total	Mn Raw Sol.	Total Fe POE	Sol. Fe POE	Total Fe Dist.	Sol Fe Dist.	Total Mn POE	Sol Mn POE	Total Mn Dist	Sol Mn Dist.	Raw NTU	POE NTU
1/5/2016	6.5					0.7				0.3					
11/4/2016	3													0.73	
3/12/2017	5.2													<0.5	
4/20/2017	4.5													<0.79	0.382
7/18/2017	5.8													3.3	1.1
9/15/2017	8.19														
10/4/2017	12.34					0.298	0.39	0.297	0.198	0.586	0.39	0.387	0.359		
10/17/2017	8.41					3.2	0.44	0.351	0.204	0.623	0.44	0.413	0.371		
11/1/2017	6.9					0.387	0.16	0.289	0.144	0.388	0.34	0.359	0.328		
11/15/2017	4.71					0.383	0.0718	0.245	0.0234	0.198	0.158	0.269	0.214		
12/14/2017	4.5	0.371	0.0292	0.328	0.312	0.321	0.0815	2.2	0.0771	0.314	0.279	1.21	0.233		
1/5/2018	5.4	1.82	1.33	0.256	0.254	0.877	0.0794	0.534	0.0239	0.25	0.172	0.0839	0.0271		
2/2/2018	4.39	5.48	<0.0220	0.324	0.268	0.234	<0.0220	0.247	<0.0220	0.234	0.213	0.25	0.2		
3/8/2018	3.5	0.436	<0.0220	0.326	0.317	0.421	0.0382	0.435	0.0371	0.341	0.238	0.288	0.246		

**Table 3 - Branston Well #2 Customer Complaints**

SO Type	CSR Notes	Date of SO	Completion Date	Premise	Address	City State Zip	Subdivision	FSR Notes
LABD-S	CUST REPORTS BROWN WATER SINCE SEPT 2017 REQUEST TEST	2/2/2018	2/2/2018	705854	2641 BRANSTON WAY	APEX, NC 27539	BRANSTON	Cl2 0.2 ph 7.3 po4 1.0 MN 0.009 fe 0.11 hard 17 Cust has filterRelated info to cust about Flushing hot water heater which had not been addressed since past homeowners, cust is satisfied.
LABD-S	CUST SAYS WATER IS BROWN HAS BEEN BROWN SINCE SEPT 2017	2/1/2018	2/1/2018	705854	2641 BRANSTON WAY	APEX, NC 27539	BRANSTON	



March 30, 2018

Mr. W. Allen Hardy  
Engineering Supervisor  
Public Water Supply Section  
Raleigh Regional Office, NCDEQ  
1628 Mail Service Center  
Raleigh, NC 27699-1628

Re Notice of Deficiency – Quarterly Update  
Iron and Manganese Concentration  
Brayton Park Subdivision, Wake County  
WSF ID No.: PO1  
Water System No: NC4393164

Dear Mr. Hardy:

Aqua North Carolina, Inc. (Aqua) received the above-referenced letter dated June 26, 2017 regarding elevated concentrations of Iron (Fe) and Manganese (Mn) at Brayton Park Well #2, P01. The Brayton Park water system is comprised of one active well and one point of entry (POE). The current number of customers served is 22 and the system is approved to serve 65 connections. The table below outlines the run time and the latest iron and manganese concentrations collected as part of the ongoing Inorganic Chemical Analyses (IOC) samples collected at Well #2, PO1.

Aqua has compiled the requested information in a table format on the following pages:

- Table 1 provides a summarization of well information, completed activities and planned activities.
- Table 2 (attachment 2) provides a summary of raw, POE and distribution iron and manganese samples.
- Table 3 (attachment 3) provides a summary of customer complaint information.

Mr. W. Allen Hardy  
 March 30, 2018  
 Brayton Park Subdivision Quarterly Update

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Sep 19 2018

**UPDATED QUARTERLY STATUS REPORT**

**Table 1 – Well Information, Completed Activities and Planned Activities**

Well Name and No.	Completed Activities	Planned Activities
Brayton Park, Well #2 (P01)	<ul style="list-style-type: none"> <li>• Q3 2016 cartridge filter installed</li> <li>• April 2017 the 5,400 hydro pneumatic tank for the system was cleaned</li> <li>• Q4 2016 -This well was abandoned via an NCDOT TIP project</li> <li>• An secondary interconnect with the Town of Holly Springs was completed 11/23/2017</li> </ul>	<ul style="list-style-type: none"> <li>• Installation of greensand filters upon approval from NCUC for well #1.</li> <li>• Continue water main flushing efforts</li> </ul>
Approved GPM (85)		
Avg. Quarterly Runtime (0.0)		
<p><b><u>Comments:</u></b></p> <p>Aqua requests that Brayton Park well #2 (PO1) be removed from the NOD list as it is no longer in existence. Brayton Park is now single well systems with a secondary interconnect to the Town of Holly Springs. The current well in production is awaiting NCUC approval for greensand filtration.</p>		

Aqua is committed to providing water to its customers that meets their expectations at a reasonable cost. If you have any questions or comments, please contact me at (919) 653-6982.

Sincerely,



Robert Krueger  
 Area Manager  
 Aqua North Carolina, Inc.

**Table 2 - Brayton Park Well #2 Sample Data**

Date	Avg. Sample Week Run Time	Fe Raw Total	Fe Raw Sol	Mn Raw Total	Mn Raw Sol	Total Fe POE	Sol. Fe POE	Total Fe Dist.	Sol Fe Dist.	Total Mn POE	Sol Mn POE	Total Mn Dist.	Sol Mn Dist.	Raw NTU	POE NTU
No samples were pulled at this well as it was abandoned in 2016.															

Table 3 - Brayton Park Well #2 Customer Complaints

SO Type	CSR Notes	Date of SO	Completion Date	Premise	Address	City State Zip	Subdivision	FSR Notes
LABD-S	DISCOLORED WATER	1/22/2018	1/22/2018	589744	5709 BRAYTON PARK PL	HOLLY SPRINGS, NC 27540-8462	BRAYTON PARK	CL .6 po4 .8 pH 7.4 Fe .6 MN .122 water had a light tint flushedOutside tap FSR:johnsos, EVT:Lab
LABD-S	EMAIL FROM TINA REPORTING BROWN WATER COMING INTO HOME THAT LOOKSLIKE ICE TEA AFTER GOING THROUGH THEIR MULTI STEP FILTRATION SYSTEM	2/23/2018	2/23/2018	586747	5309 WHITESBORO CT	HOLLY SPRINGS, NC 27540-8457	BRAYTON PARK	CL .6 po4 1.0 pH 7.3 Fe .48 MN .154 water had a brown tint flushedAnd it started to clear upFSR:johnsos, EVT:Lab



March 30, 2018

Mr. W. Allen Hardy  
Engineering Supervisor  
Public Water Supply Section  
Raleigh Regional Office, NCDEQ  
1628 Mail Service Center  
Raleigh, NC 27699-1628

Re: Notice of Deficiency – Quarterly Update  
Iron and Manganese Concentration  
Briarwood/Kildaire Subdivision, Wake County  
WSF ID No.: Well #1, P04  
Water System No: NC0392383

Dear Mr. Hardy:

Aqua North Carolina, Inc. (Aqua) received the above-referenced letter dated July 12, 2016, regarding elevated concentrations of Iron (Fe) and Manganese (Mn) at Briarwood/Kildaire Well #1, P04. The Briarwood/Kildaire water system is comprised of five active wells and five points of entry (POE). The current number of customers served is 161 and the system is approved to serve 168 connections.

Aqua has compiled the requested information in a table format as follows:

- Table 1 provides a summarization of well information, completed activities and planned activities.
- Table 2 (Attachment 2) provides a summary of raw, POE and distribution iron and manganese samples collected as part of the ongoing Inorganic Chemical Analyses (IOC).
- Table 3 (Attachment 3) provides a summary of customer complaint information.



Mr. W. Allen Hardy  
 March 30, 2018  
 Briarwood/Kildaire Subdivision Quarterly Update

**UPDATED QUARTERLY STATUS REPORT**

**Table 1 – Well Information, Completed Activities and Planned Activities**

<u>Well Name and No.</u>	<u>Completed Activities</u>	<u>Planned Activities</u>
Briarwood/Kildaire Well #1 (P04)	<ul style="list-style-type: none"> <li>• June 2015 – Started using SeaQuest</li> <li>• June 2017 – Flushed system</li> <li>• August 2017 – Installed blow-off</li> <li>• September 2017 – Started distribution and POE total and soluble sampling</li> <li>• Continuation of the soluble/insoluble Fe/Mn sampling</li> <li>• December 2017 – Added raw sample data</li> <li>• December 2017 – Cleaned hydropneumatic storage tank</li> <li>• December 2017 installed cartridge filters at Well #1 and #2.</li> </ul>	<ul style="list-style-type: none"> <li>• Continue water main flushing efforts</li> <li>• Continue investigation efforts</li> </ul>
Approved GPM (30)		
Avg. Quarterly Runtime (7.6 hrs. per day)		
<p><b><u>Comments:</u></b></p> <p>The Mn total and POE samples are consistently higher than the raw. Soluble drops to near non-detection, but totals increase. Based on the current sample results, Aqua will complete a more in depth investigation before making a determination on the best course of action with this well.</p>		

Aqua is committed to providing water to its customers that meets their expectations at a reasonable cost. If you have any questions or comments, please contact me at (919) 653-6982.

Sincerely,  


Robert Krueger  
 Area Manager  
 Aqua North Carolina, Inc.

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 Sep 19 2018

Table 2 - Briarwood Kildaire Well #1 Sample Data

Date	Avg. Sample Week Run Time	Fe Raw Total	Fe Raw Sol	Mn Raw Total	Mn Raw Sol	Total Fe POE	Sol. Fe POE	Total Fe Dist.	Soi Fe Dist.	Total Mn POE	Sol Mn POE	Total Mn Dist.	Sol Mn Dist.	Raw NTU	POE NTU
1/6/2016	5.8					0.95				0.17					
11/8/2016	7.5													<0.50	<0.50
4/18/2017	6.9													2.3	1.6
7/18/2017	7.5													4.3	2.9
9/13/2017	6.26					0.558	0.157	0.43	0.0269	0.151	0.128	0.118	0.0885		
10/2/2017	8					0.32	0.0911	0.195	0.075	0.0931	0.102	0.102	0.069		
10/17/2017	6					0.198	0.022	0.186	<0.0220	0.084	0.0322	0.0756	0.0278		
11/1/2017	6.5					0.183	0.0705	0.182	0.0815	0.0828	0.0612	0.0814	0.0665		
11/15/2017	6					0.797	0.0575	0.317	0.0247	0.197	0.203	0.133	0.0312		
12/19/2017	0	0.431	0.0415	0.114	0.118					0.255	0.0547	0.254	0.065		
1/11/2018	0	1.66	0.0374	0.733	0.737					0.691	0.0371	0.678	0.0399		
2/7/2018	0	4.05	0.0225	0.348	0.33					2.16	0.0352	2.1	0.0269		
3/6/2018	0	1.47	<0.02220	0.22	0.217					1.09	0.0417	1.37	0.0647		

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Table 3 - Briarwood Kildaire Well #1 Customer Complaints

SO	SO Type	CSR Notes	Date of SO	Completion Date	Premise	Address	City State Zip	Subdivision	FSR Notes
10403130	LABD-S	CAROLYN-WIFE BROWN WATERS HAD FLUSH HOOKED UP BROWNESS WENT AWAY CLOSED IT BACK UP TODAY AND WATER IS BROWNER THAN BEFORE	2/21/2018	2/21/2018	581989	4801 DAYSPRINGS CT	APEX, NC 27539 8113	KILDAIRE ESTATES	CL 1.1 po4 .9 pH 7.1 Fe .02 MN .021 hardness 51.3 jumper was in took it out Earlier and when I put the meter back in it dirty up and cleared right backUp
10392444	LABD-S	WATER IS BROWN	2/14/2018	2/14/2018	581989	4801 DAYSPRINGS CT	APEX, NC 27539 8113	KILDAIRE ESTATES	CL 1.4 po4 1.0 Fe .29 MN .044 hardness 51.3 water was clear upon arrivalTalked to customer and discolored water is normally in the morningPut jumper so customer can flush her lines



March 30, 2018

Mr. W. Allen Hardy  
Engineering Supervisor  
Public Water Supply Section  
Raleigh Regional Office, NCDEQ  
1628 Mail Service Center  
Raleigh, NC 27699-1628

Re: Notice of Deficiency - Quarterly Status Report  
Iron and Manganese Concentration  
Cotesworth Down/Kensington Manor Well# 2 P05  
Wake County  
Water System No: NC0392125

Dear Mr. Hardy:

Aqua North Carolina, Inc. (Aqua) received the above-referenced letter dated February 8, 2016, regarding elevated concentrations of iron (Fe) and manganese (Mn) at Cotesworth Down/Kensington Manor Well #2, P05. The Cotesworth Down/Kensington Manor master system is comprised of four wells and four points of entry (POE). The current number of customers served is 192 and the system is approved to serve 192 connections.

Aqua has compiled the requested information in a table format as follows:

- Table 1 provides a summarization of well information, completed activities and planned activities.
- Table 2 (Attachment 2) provides a summary of raw, POE and distribution iron and manganese samples collected as part of the ongoing Inorganic Chemical Analyses (IOC).
- Table 3 (Attachment 3) provides a summary of customer complaint information.

Mr. W. Allen Hardy  
 March 30, 2018  
 Cotesworth Down/Kensington Manor Subdivision Quarterly Update

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 Sep 19 2018

<b><u>Table 1 – Well Information, Completed Activities and Planned Activities</u></b>		
<b><u>Well Name and No.</u></b>	<b><u>Completed Activities</u></b>	<b><u>Planned Activities</u></b>
Cotesworth Down Well #2 (P05)	<ul style="list-style-type: none"> <li>• February 2014 – Started using SeaQuest</li> <li>• February 2015 – Installed cartridge filter</li> <li>• April 2017 – Flushed system</li> <li>• September 2017 – Started distribution and POE total and soluble sampling</li> <li>• December 2017 – Added raw sample data</li> <li>• February 2018 – Cleaned hydro pneumatic tank</li> </ul>	<ul style="list-style-type: none"> <li>• Complete further investigation</li> <li>• Continue water main flushing efforts</li> </ul>
Approved GPM (33)		
Avg. Quarterly Runtime (6.38 hrs. per day)		
<p><b><u>Comments:</u></b></p> <p>The iron POE samples are consistently higher, and in one case two times higher than our raw samples. Similar circumstance with our manganese samples. Aqua will complete a more in depth investigation before making a determination on the best course of action with this well.</p>		

Aqua is committed to providing water to its customers that meets their expectations at a reasonable cost. If you have any questions or comments, please contact me at (919) 653-6982.

Sincerely,



Robert Krueger  
 Area Manager  
 Aqua North Carolina, Inc.

Table 2 - Cotesworth Well #2 Sample Data

Date	Avg. Sample Week Run Time	Fe Raw Total	Fe Raw Sol	Mn Raw Total	Mn Raw Sol	Total Fe POE	Sol Fe POE	Total Fe Dist.	Sol Fe Dist.	Total Mn POE	Sol Mn POE	Total Mn Dist.	Sol Mn Dist.	Raw NTU	POE NTU
2/14/2017	4.2					0.8				0.2					
1/16/2017	3.9													5.7	0.047
2/6/2017	4.1					1.17				0.232					
5/10/2017	3.8													6.5	0.46
9/13/2017	7.52					1.82	0.0257	0.0625	0.0258	0.263	0.16	0.0125	0.00414		
9/28/2017	8.36					0.924	0.13	0.589	0.215	0.199	0.11	0.134	0.0954		
10/5/2017	10.52					0.733	0.32	0.573	0.0766	0.233	0.203	0.17	0.135		
10/23/2017	8.46					3.59	0.116	0.515	0.258	0.377	0.151	0.124	0.106		
12/6/2017	4.34					0.897	0.0464	0.806	0.388	0.262	0.206	0.172	0.149		
12/14/2017	4.12	0.58	0.322	0.22	0.261	0.758	0.0251	1.96	0.157	0.233	0.193	0.392	0.121		
1/25/2018	4.45	0.979	0.304	0.242	0.234	2.91	0.068	0.54	0.148	0.859	0.206	0.0384	0.0149		
2/15/2018	5.1	0.997	0.145	0.245	0.243	0.952	0.0614	0.582	0.0738	0.243	0.195	0.0427	0.0227		

Table 3 - Cotesworth Well #2 Sample Data

SO	SO Type	CSR Notes	Date of SO	Completion Date	Premise	Address	City State Zip	Subdivision	FSR Notes
10318424	LABD-S	EMAIL FROM MATT WITH PHOTO OF BLACK SLUDGE IN TOILET TANK THAT SEEPS INTO THE TOILET BOWLS	1/3/2018	1/3/2018	562276	2520 COTESWORTH DR	WAKE FOREST, NC 27587-5408	KIMMON PLACE	Cust reported only seeing in toilet tank. explained manganese appearing when in a tank for an extended period of time due to coming out of suspension from aqua pretreatment.
10368565	LABD-S	WATER IS EXTREMELY BROWN	2/1/2018	2/2/2018	615464	8609 SUNFLOWER MEADOWS LN	WAKE FOREST, NC 27587-5475	KIMMON PLACE	Brown water. d2 .62, ph 7.0, p04 1.87, fe 2.31, mn .200. running slow at end of street for the weekend. FSR: thompss, EVT: Lab
10420035	LABD-S	TIM CALLED TO REPORT WATER IS BROWN W/ SEDIMENT. HE ADV THAT IT IS STAINING HIS TUB,	3/2/2018	3/2/2018	615464	8609 SUNFLOWER MEADOWS LN	WAKE FOREST, NC 27587-5475	KIMMON PLACE	Brown water. d2 .77, ph 7.2, p04 1.27, fe 2.23, mn .213 flushed house for 5 min fe .082, mn .108. cust is 3 houses from end of street, cracked B/o for the weekend. gave customer results and iron out
10379864	LABD-S	TIM REPORTS WATER IS STILL YELLOW AND BROWN	2/9/2018	2/9/2018	615464	8609 SUNFLOWER MEADOWS LN	WAKE FOREST, NC 27587-5475	KIMMON PLACE	Customer water cleared before i arrived said no need to test neighbors have the same issues will crack blow off at end of street. FSR: carterm, EVT: Lab
10325087	LABD-S	BLACK SEDIMENT IN WATER	1/8/2018	1/9/2018	616354	8825 BUD SMITH RD	WAKE FOREST, NC 27587-8051	CAROLINA OAKS	Cust said whole house filter dirty and said not to come out. FSR: thompss, EVT: Lab



March 30, 2018

Mr. W. Allen Hardy  
Engineering Supervisor  
Public Water Supply Section  
Raleigh Regional Office, NCDEQ  
1628 Mail Service Center  
Raleigh, NC 27699-1628

Re: Notice of Deficiency – Quarterly Update  
Iron and Manganese Concentration  
Duncan Ridge Subdivision, Wake County  
WSF ID No.: Well #5, P05  
Water System No: NC4092063

Dear Mr. Hardy:

Aqua North Carolina, Inc. (Aqua) received the above-referenced letter dated July 12, 2016, regarding elevated concentrations of Iron (Fe) and Manganese (Mn) at Duncan Ridge Well #5, P05. The Duncan Ridge water system is comprised of three active wells and two points of entry (POE). The current number of customers served is 88 and the system is approved to serve 90 connections.

Aqua has compiled the requested information in a table format as follows:

- Table 1 provides a summarization of well information, completed activities and planned activities.
- Table 2 (Attachment 2) provides a summary of raw, POE and distribution iron and manganese samples collected as part of the ongoing Inorganic Chemical Analyses (IOC).
- Table 3 (Attachment 3) provides a summary of customer complaint information.



Mr. W. Allen Hardy  
 March 30, 2018  
 Duncan Ridge Subdivision Quarterly Update

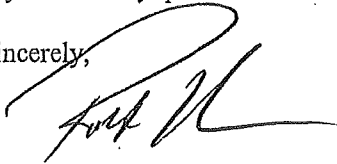
**UPDATED QUARTERLY STATUS REPORT**

**Table 1 – Well Information, Completed Activities and Planned Activities**

<u>Well Name and No.</u>	<u>Completed Activities</u>	<u>Planned Activities</u>
Duncan Ridge, Well #5 (P05)	<ul style="list-style-type: none"> <li>• August 2014 – Started using SeaQuest</li> <li>• March 2017 – Installed auto blow-off</li> <li>• April 2017 – Flushed system</li> <li>• September 2017 – Started Distribution and POE total and soluble sampling</li> <li>• December 2017 – Added raw sample data</li> <li>• January 2018 – Cleaned hydropneumatic storage tank</li> </ul>	<ul style="list-style-type: none"> <li>• Q2 2018 – Submit executive summary for greensand filtration</li> <li>• Continue water main flushing efforts</li> </ul>
Approved GPM (33)		
Avg. Quarterly Runtime (4.5 hrs. per day)		
<p><b><u>Comments:</u></b></p> <p>Aqua will be submitting the executive summary for greensand filtration at well #5 in Q2 2018 as part of the Aqua water quality plan.</p>		

Aqua is committed to providing water to its customers that meets their expectations at a reasonable cost. If you have any questions or comments, please contact me at (919) 653-6982.

Sincerely,



Robert Krueger  
 Area Manager  
 Aqua North Carolina, Inc.

Table 2 - Duncan Ridge Well Sample Data

Date	Avg. Sample Week Run Time	Fe Raw Total	Fe Raw Sol	Mn Raw Total	Mn Raw Sol	Total Fe POE	Sol. Fe POE	Total Fe Dist.	Sol Fe Dist.	Total Mn POE	Sol Mn POE	Total Mn Dist.	Sol Mn Dist.	Raw NTU	POE NTU
4/29/2015	2.8					1.08				0.3					
11/8/2019	0.97													6.3	
3/8/2017	0.97														1.8
5/16/2017	1.66													9.1	0.83
9/13/2017	2.37					1.59	0.114	<0.0220	<0.220	0.407	0.299	0.115	0.0683		
10/3/2017	2					1.61	0.022	<0.0220	<0.0220	0.302	0.197	0.21	0.0832		
10/17/2017	1					1.67	0.022	1.66	0.359	0.419	0.334	0.451	0.359		
11/1/2017	0					1.63	0.139	<0.0220	<0.0220	0.404	0.309	0.139	0.138		
11/15/2017	0					1.37	0.491	1.11	0.274	0.352	0.302	0.374	0.281		
12/19/2017	0.5	1.12	0.0435	0.358	0.387	1.59	<0.0220	1.13	0.213	0.372	0.269	0.361	0.249		
1/11/2018	0.77	1.2	0.104	0.35	0.368	1.05	0.0909	1.04	0.128	0.331	0.112	0.327	0.121		
2/7/2018	0.96	1.29	0.039	0.381	0.385	1.45	0.168	1.25	0.154	0.403	0.189	0.383	0.209		
3/6/2018	0.96	1.43	0.0659	0.382	0.372	1.29	<0.0220	1.22	0.0587	0.365	0.176	0.344	0.181		

**Table 3 - Duncan Ridge Customer Complaints**

SO	SO Type	CSR Notes	Date of SO	Completion Date	Premise	Address	City State Zip	Subdivision	FSR Notes
<b>There have been zero customer complaints in the first quarter of 2018.</b>									



March 30, 2018

Mr. W. Allen Hardy  
Engineering Supervisor  
Public Water Supply Section  
Raleigh Regional Office, NCDEQ  
1628 Mail Service Center  
Raleigh, NC 27699-1628

Re: Notice of Deficiency – Quarterly Update  
Iron and Manganese Concentration  
Eagle Creek Subdivision, Wake County  
WSF ID No.: Well #3, P03  
Water System No: NC4392128

Dear Mr. Hardy:

Aqua North Carolina, Inc. (Aqua) received the above-referenced letter dated July 12, 2016, regarding elevated concentrations of Iron (Fe) and Manganese (Mn) at Eagle Creek Well #3, P03. The Eagle Creek water system is comprised of three active wells and three points of entry (POE). The current number of customers served is 89 and the system is approved to serve 89 connections.

Aqua has compiled the requested information in a table format as follows:

- Table 1 provides a summarization of well information, completed activities and planned activities.
- Table 2 (Attachment 2) provides a summary of raw, POE and distribution iron and manganese samples collected as part of the ongoing Inorganic Chemical Analyses (IOC).
- Table 3 (Attachment 3) provides a summary of customer complaint information.

Mr. W. Allen Hardy  
 March 30, 2018  
 Eagle Creek Subdivision Quarterly Update

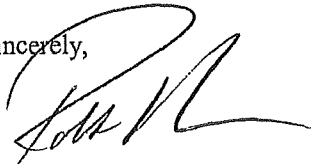
**UPDATED QUARTERLY STATUS REPORT**

**Table 1 – Well Information, Completed Activities and Planned Activities**

<u>Well Name and No.</u>	<u>Completed Activities</u>	<u>Planned Activities</u>
Eagle Creek Well #3 ( P03)	<ul style="list-style-type: none"> <li>• September 2015 – Started using SeaQuest</li> <li>• April 2017 – Flushed system</li> <li>• June 2017 – Installed automatic blow-off at the well.</li> <li>• September 2017 – Started distribution and POE total and soluble sampling</li> <li>• December 2017 – Cleaned hydropneumatic storage tank</li> <li>• December 2017 – Added raw sample data</li> </ul>	<ul style="list-style-type: none"> <li>• Install cartridge filter Q2-2018</li> <li>• Continue investigation efforts</li> <li>• Continue water main flushing efforts</li> </ul>
Approved GPM (29)		
Avg. Quarterly Runtime (4.5 hrs. per day)		
<p><b><u>Comments:</u></b></p> <p>Aqua will investigate as to why sequestration is not working at this well. Sample results show iron and manganese close to being completely soluble. Aqua will complete a more in depth investigation before making a determination on the best course of action with this well.</p>		

Aqua is committed to providing water to its customers that meets their expectations at a reasonable cost. If you have any questions or comments, please contact me at (919) 653-6982.

Sincerely,



Robert Krueger  
 Area Manager  
 Aqua North Carolina, Inc.

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Sep 19 2018

Table 2 - Eagle Creek Well Sample Data

Date	Avg. Sample Week Run Time	Fe Raw Total	Fe Raw Sol	Mn Raw Total	Mn Raw Sol	Total Fe POE	Sol. Fe POE	Total Fe Dist.	Sol Fe Dist.	Total Mn POE	Sol Mn POE	Total Mn Dist.	Sol Mn Dist.	Raw NTU	POE NTU
2/19/2014	9.7					0.9				0.13					
11/11/2016	6.75													<0.50	
11/11/2016	4.5													1.4	1.5
9/15/2017	4.93														
10/4/2017	7					0.651	0.311	0.522	0.212	0.132	0.0872	0.1	0.0122		
10/16/2017	2.3					0.773	0.382	1.07	0.171	0.145	0.101	0.101	0.0305		
11/3/2017	6					0.219	0.486	0.75	0.654	0.112	0.0931	0.151	0.128		
11/16/2017	4					0.823	0.774	0.395	0.335	0.157	0.151	0.0196	0.0157		
12/18/2017	4.5	0.82	0.704	0.153	0.158	0.785	0.71	0.334	0.525	0.139	0.141	0.0284	0.0442		
1/11/2018	3.6	0.909	0.559	0.146	0.142	0.789	0.0394	0.799	0.107	0.145	0.0253	0.0883	0.0172		
2/8/2018	4.1	0.84	0.648	0.158	0.148	0.832	0.136	1.55	0.0861	0.151	0.103	0.133	0.0135		
3/5/2018	2.97	0.896	0.809	0.143	0.145	0.751	0.532	0.642	0.129	0.112	0.0822	0.0521	0.0103		

Table 3 - Eagle Creek Customer Complaints									
SO	SO Type	CSR Notes	Date of SO	Completion Date	Premise	Address	City State Zip	Subdivision	FSR Notes
10392249	LABD-S	WATER BROWN/BLACK	2/14/2018	2/14/2018	588954	5608 PINE DR	RALEIGH, NC 27606-8944	EAGLE CREEK	Cl2 1.08 ph 7.0 po4 1.30 fe 0.30 mn 0.263 Well 1 went down and repaired 2/12.FSR:marcomt, EVT:Lab
10344460	LABD-S	WATER HAS LOTS OF SOLIDS AND LIVING ORGANISMS IN THE WATER HAS IT IN HIS BATHUB FOR US TO SEE	1/18/2018	1/19/2018	589820	5712 THISTLETON LN	RALEIGH, NC 27606-8967	EAGLE CREEK	Cl2 1.27 algae grew in dormant hot tub negative bacti on 1/15 FSR:marcomt, EVT:Lab



March 30, 2018

Mr. W. Allen Hardy  
Engineering Supervisor  
Public Water Supply Section  
1628 Mail Service Center  
Raleigh, NC 27699-1628

Re: Notice of Deficiency – Quarterly Status Report  
Iron and Manganese Concentration  
Fairview Wooded Acres Subdivision, Wake County  
WSF ID No.: Well #2, P02  
Water System No: NC0392129

Dear Mr. Hardy:

Aqua North Carolina, Inc. (Aqua) received the above-referenced letter dated February 24, 2016, regarding elevated concentrations of Iron (Fe) and Manganese (Mn) at Fairview Wooded Acres Well #2, P02. The Fairview Wooded Acres water system is comprised of four active wells and three points of entry (POE). The current number of customers served is 118 and the system is approved to serve 134 connections.

Aqua has compiled the requested information in a table format as follows:

- Table 1 provides a summarization of well information, completed activities and planned activities.
- Table 2 (Attachment 2) provides a summary of raw, POE and distribution iron and manganese samples collected as part of the ongoing Inorganic Chemical Analyses (IOC).
- Table 3 (Attachment 3) provides a summary of customer complaint information.



Mr. W. Allen Hardy  
 March 30, 2018  
 Fairview Wooded Acres Subdivision Quarterly Update

**UPDATED QUARTERLY STATUS REPORT**

<b>Table 1 – Well Information, Completed Activities and Planned Activities</b>		
<b>Well Name and No.</b>	<b>Completed Activities</b>	<b>Planned Activities</b>
Fairview Well #2 (P02)	<ul style="list-style-type: none"> <li>• June 2016 – Flushed system</li> <li>• September 2017 – Started distribution and POE total and soluble sampling</li> <li>• Flushed the distribution system August 2017</li> <li>• December 2017 – Cleaned hydropneumatic storage tank</li> </ul>	<ul style="list-style-type: none"> <li>• Continue water main flushing efforts</li> </ul>
Approved GPM (16)		
Avg. Quarterly Runtime (0.0 hrs. per day)		
<p><b><u>Comments:</u></b></p> <p>Based on the current sample results, Aqua will complete a more in depth investigation before making a determination on the best course of action with this well. Also, this well will be offline until we complete the installation of a new liner.</p>		

Aqua is committed to providing water to its customers that meets their expectations at a reasonable cost. If you have any questions or comments, please contact me at (919) 653-6982.

Sincerely,



Robert Krueger  
 Area Manager  
 Aqua North Carolina, Inc.

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Sep 19 2018

Table 2 - Fairview Wooded Acres Well Sample Data

Date	Avg. Sample Week Run Time	Fe Raw Total	Fe Raw Sol	Mn Raw Total	Mn Raw Sol	Total Fe POE	Sol. Fe POE	Total Fe Dist.	Sol Fe Dist.	Total Mn POE	Sol Mn POE	Total Mn Dist	Sol Mn Dist.	Raw NTU	POE NTU
1/20/2015	0					1.24				0.0642					
9/15/2017	0														
11/17/2017	0					0.29	0.022	0.113	<0.0220	0.0363	0.0277	0.00519	0.00131		
12/19/2017	0	1.1	0.0388	0.0185	0.0186	2.3	0.0719	<0.0220	<0.0220	0.0243	0.0292	0.00945	0.00661		
1/16/2018	0	1.54	0.0869	0.044	0.0462	1.22	0.038	0.0232	<0.0220	0.0363	0.0279	0.0108	0.00643		
2/8/2018	0	2.19	0.0542	<0.0220	0.0573	2.65	<0.0220	0.0233	<0.0220	0.0622	0.0993	0.0116	0.00513		
3/6/2018	0	0.44	0.15	0.022	0.022	0.354	0.11	0.0253	<0.0220	0.0186	0.0207	0.0125	0.0086		

**Table 3 - Fairview Wooded Acres Customer Complaints**

SO	SO Type	CSR Notes	Date of SO	Completion Date	Premise	Address	City State Zip	Subdivision	FSR Notes
10322909	LABD-S	BLACK WATER COMING OUT OF ALL FAUCETS AND TOILETS	1/5/2018	1/5/2018	576161	401 S CARROLL ST	APEX, NC 27539-5360	FAIRVIEW WOODED ACRES MHP	Cl2 1.2 PO4 0.3 ph 7.3 fe 0.09 MN 0.015 hard 102 Home flushed and clear in 30 seconds.



March 30, 2018

Mr. W. Allen Hardy  
Engineering Supervisor  
Public Water Supply Section  
Raleigh Regional Office, NCDEQ  
1628 Mail Service Center  
Raleigh, NC 27699-1628

Re: Notice of Deficiency – Quarterly Update  
Iron and Manganese Concentration  
Forest Glen Subdivision, Wake County  
WSF ID No.: Well #1, P01  
Water System No: NC4392142

Dear Mr. Hardy:

Aqua North Carolina, Inc. (Aqua) received the above-referenced letter dated July 12, 2016, regarding elevated concentrations of Iron (Fe) and Manganese (Mn) at Forest Glen Well #1, P01. The Forest Glen water system is comprised of two active wells and two points of entry (POE). The current number of customers served is 108 and the system is approved to serve 109 connections.

Aqua has compiled the requested information in a table format as follows:

- Table 1 provides a summarization of well information, completed activities and planned activities.
- Table 2 (Attachment 2) provides a summary of raw, POE and distribution iron and manganese samples collected as part of the ongoing Inorganic Chemical Analyses (IOC).
- Table 3 (Attachment 3) provides a summary of customer complaint information.

Mr. W. Allen Hardy  
 March 30, 2018  
 Forest Glen Subdivision Quarterly Update

**UPDATED QUARTERLY STATUS REPORT**

**Table 1 – Well Information, Completed Activities and Planned Activities**

<u>Well Name and No.</u>	<u>Completed Activities</u>	<u>Planned Activities</u>
Forest Glen Master Well #1 (P01)	<ul style="list-style-type: none"> <li>• June 2014 - Started using SeaQuest</li> <li>• Feb 2015 - Hydropneumatic tank cleaned</li> <li>• Feb 2015 - Installed 5 micron filter (collapsed due to high concentrations of iron)</li> </ul>	<ul style="list-style-type: none"> <li>• Pursue approval of greensand filtration at both well #1 and #2 in this system through the Public Staff and Utilities Commission.</li> <li>• Continue system flushing efforts</li> </ul>
Approved GPM (33)	<ul style="list-style-type: none"> <li>• Feb 2015 - Installed 20 micron filter</li> <li>• July 2106 - Sent greensand filtration request to Public Staff, NCUC</li> <li>• Denied approval by Public Staff, NCUC, for greensand filtration.</li> </ul>	
Avg. Quarterly Runtime (0.5 hrs.)	<ul style="list-style-type: none"> <li>• March 2017- Flushed system</li> <li>• March 2017 - Installed auto flush valve</li> <li>• June 2017 - Removed auto flush valve (caused flooding issues)</li> <li>• July 2017- Flushed system</li> <li>• September 2017 –Started distribution and POE total and soluble sampling</li> <li>• October 2017 – Flushed system</li> <li>• December 2017- Aqua began adding raw sample data to the report</li> <li>• March 2018 – Flushed system</li> </ul>	
<p><b><u>Comments:</u></b></p> <p>Aqua intends to limit the use of well #1, which will continue to be used as a backup well. Although the well does report run time, the well does not currently feed the distribution system. It is set up to flush to the ground. Based on our customer complaint history, and the current laboratory results, SeaQuest is not adequately removing Fe in this system. The sum of total iron and total manganese is consistently greater than one. Based on this information, this well has been included in Aqua's water quality plan. The executive summary for approval of a greensand filter will be re-submitted to the Public Staff and the North Carolina Utilities Commission in 2018.</p>		

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Sep 19 2018

Mr. W. Allen Hardy  
March 30, 2018  
Forest Glen Subdivision Quarterly Update

Aqua is committed to providing water to its customers that meets their expectations at a reasonable cost. If you have any questions or comments, please contact me at (919) 653-6982.

Sincerely,



Robert Krueger  
Area Manager  
Aqua North Carolina, Inc.

Table 2 - Forest Glen Well #1 Sample Data

Date	Avg. Sample Week Run Time	Fe Raw Total	Fe Raw Sol	Mn Raw Total	Mn Raw Sol	Total Fe POE	Sol. Fe POE	Total Fe Dist.	Sol Fe Dist.	Total Mn POE	Sol Mn POE	Total Mn Dist.	Sol Mn Dist.	Raw NTU	POE NTU
4/13/2015	1.39					1.38				0.155					
9/15/2015	0.84					2.84				0.167					
8/8/2017	0.3					1.3 (field)				0.2 (field)					
9/15/2017	0.4														
9/22/2017	1.21					1.3	0.0861	2.38	0.0482	0.171	0.0647	0.193	0.00229		
10/2/2017	0.67					1.06	0.454	1.08	0.184	0.151	0.137	0.114	0.00968		
10/20/2017	3.6					1.35	0.385	4.68	0.265	0.169	0.0998	1.04	0.0172		
11/7/2017	0.68					1.07	1.06	1.48	0.682	0.16	0.152	0.108	0.0318		
11/28/2017	0.79					1.18	0.843	1.23	0.783	0.163	0.138	0.06	0.0469		
12/13/2017	0.35	2.18	1.72	0.165	0.158	1.75	1.16	1.24	0.66	0.155	0.128	0.0989	0.0442		
1/31/2018	0.99	1.41	1.32	0.164	0.159	1.18	0.603	1.24	0.385	0.138	0.132	0.773	0.0326		
2/20/2018	0.32	2.8	2.94	0.194	0.19	1.87	1.76	1.44	0.402	0.177	0.176	0.0856	0.0309		

Table 3 - Forest Glen Well Sample Data									
SO	SO Type	CSR Notes	Date of SO	Completion Date	Premise	Address	City State Zip	Subdivision	FSR Notes
10381082	LABD-S	CUST REPORTED DIRTY WATER PLS CHECK	2/12/2018	2/12/2018	530559	1105 FOREST GLEN DR	RALEIGH, NC 27603-7908	FOREST GLEN	Cl2 1.1//ph 7.6//po4 2.0//fe .2//mn .1//no answer at door//left door Hanger and fe/mn handout//said we are scheduling a flush forThe sub.
10383069	LABD-S	BROWN WATER FOR 2 DAYS OFF AND HOLD FOR SINCE JUNE 2017-SPOKE WITH GORDON	2/13/2018	2/13/2018	531519	1116 FOREST GLEN DR	RALEIGH, NC 27603-7907	FOREST GLEN	Rang bell,no answer//cl2 .7//ph 7.6//po4 2.0//fe 2.0 first draw//.4 after Flushing spigot//mn .3// and .4 after flushing spigot//left door hanger andHandout//we will flush sub soon//im flushing b/o
10380835	LABD-S	CUSTOMER EXPERIENCING MUDDY WATER	2/12/2018	2/12/2018	533093	1141 FOREST GLEN DR	RALEIGH, NC 27603-7908	FOREST GLEN	Cl2 .9//ph 7.6//po4 2.0//fe .2//mn/.06//left iron out//told customer we Are scheduling a flush for the sub// she said the brown water happensMostly on the weekend//she showed me a bucket of brown water
10415437	LABD-S	CUST STATES HAS BROWN WATER STATED FLUSH LINES BUT NEVER CLEAR UP	2/28/2018	2/28/2018	533374	1149 FOREST GLEN DR	RALEIGH, NC 27603-7908	FOREST GLEN	Before flush fe .06//mn .04//after flush fe .3//mn .1//told her weAre flushing sub. monday 5 march//left door tag and handout/ph 7.4/cl2 1.2FSR:moodyc, EVT:Lab//po4 .6/raised it at well
10395950	LABD-S	DISCOLORED WATER AGAIN	2/16/2018	2/16/2018	530559	1105 FOREST GLEN DR	RALEIGH, NC 27603-7908	FOREST GLEN	Cl2 1.0//ph 7.5//fe .2//mn .06//po4 1.2//told customer we are installing a Flush off valve at their meter for the weekend//FSR:moodyc, EVT:Lab
10397683	LABD-S	VIRGINA CLD TO RPT THAT SHE HAS HAD MUDDY WTR ALL THROUGHOUT THE WEEKEND. STSSHE HAS TAKEN PICTURES.	2/19/2018	2/19/2018	533093	1141 FOREST GLEN DR	RALEIGH, NC 27603-7908	FOREST GLEN	Cl2 1.0//ph 7.6//fe .3//mn .07//po4 1.6//left door tag and iron out//told Her we have scheduled flushing for the subdivision in the next few weeksFSR:moodyc, EVT:Lab





March 30, 2018

Mr. W. Allen Hardy  
Engineering Supervisor  
Public Water Supply Section  
Raleigh Regional Office, NCDEQ  
1628 Mail Service Center  
Raleigh, NC 27699-1628

Re: Notice of Deficiency – Quarterly Update  
Iron and Manganese Concentration  
Galloway Subdivision, Wake County  
WSF ID No.: Well #2, P02  
Water System No: NC4092027

Dear Mr. Hardy:

Aqua North Carolina, Inc. (Aqua) received the above-referenced letter dated July 12, 2016, regarding elevated concentrations of Iron (Fe) and Manganese (Mn) at Galloway Well #2, P02. The Galloway water system is comprised of two active wells and two points of entry (POE). The current number of customers served is 91 and the system is approved to serve 91 connections.

Aqua has compiled the requested information in a table format as follows:

- Table 1 provides a summarization of well information, completed activities and planned activities.
- Table 2 (Attachment 2) provides a summary of raw, POE and distribution iron and manganese samples collected as part of the ongoing Inorganic Chemical Analyses (IOC).
- Table 3 (Attachment 3) provides a summary of customer complaint information.

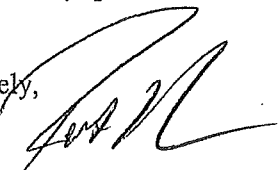
Mr. W. Allen Hardy  
 March 30, 2018  
 Galloway Subdivision Quarterly Update

**UPDATED QUARTERLY STATUS REPORT**

**Table 1 – Well Information, Completed Activities and Planned Activities**

<u>Well Name and No.</u>	<u>Completed Activities</u>	<u>Planned Activities</u>
Galloway, Well #2 (P02)	<ul style="list-style-type: none"> <li>• September 2015 – Started using SeaQuest</li> <li>• February 2016 – Cleaned hydro tank</li> <li>• Dec. 2016 – Installed cartridge filter</li> <li>• June 2017 – Flushed system</li> <li>• September 2017 – Started distribution and POE total and soluble sampling</li> <li>• Dec 2017 - Added raw sample data</li> </ul>	<ul style="list-style-type: none"> <li>• Q2-2018 - planned completion of greensand plus filtration and utilization of drip irrigation discharge</li> <li>• Continue water main flushing efforts</li> </ul>
Approved GPM (31)		
Avg. Quarterly Runtime (1.12 hrs per day)		
<p><b>Comments:</b></p> <p>Well #2 is currently limited to run only when there is very low pressure experienced within the Galloway water system. The cartridge filter was installed as a temporary solution in case well #2 was needed during high peak demands in the Galloway water system.</p> <p>Engineering plans and specifications were to be submitted to NCDEQ in the second quarter of 2017 for the addition of a greensand filter at well #2; however, Aqua delayed submission of the plans and specs as Aqua identified a more cost effective solution incorporating the use of a drip irrigation system for the backwash water that required a change to the permitting and its timing. Aqua has received an Authorization to Construct (ATC) for this filter system. This greensand plus filter along with the drip irrigation discharge system is now anticipated to be completed in Q2 2018.</p>		

Aqua is committed to providing water to its customers that meets their expectations at a reasonable cost. If you have any questions or comments, please contact me at (919) 653-6982.

Sincerely,  
  
 Robert Krueger  
 Area Manager  
 Aqua North Carolina, Inc.

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 Sep 19 2018

Table 2 - Galloway Well Sample Data

Date	Avg. Sample Week Run Time	Fe Raw Total	Fe Raw Sol	Mn Raw Total	Mn Raw Sol	Total Fe POE	Sol. Fe POE	Total Fe Dist.	Sol Fe Dist.	Total Mn POE	Sol Mn POE	Total Mn Dist.	Sol Mn Dist.	Raw NTU	POE NTU
4/23/2015	0.25					1.7				0.27					
12/21/2016						1.54				0.34					
2/1/2017														9	
4/27/2017	0.6													11	1.8
8/10/2017	0.5													16	<0.50
9/13/2017	0.5					1.6	0.321	0.0424	<0.022	0.411	0.341	0.0931	0.0454		
9/28/2017	1.23					1.84	0.908	0.121	0.0439	0.438	0.317	0.00768	0.00223		
10/5/2017	2.39					2.8	0.628	0.37	0.183	0.42	0.388	0.029	0.0113		
10/23/2017	0.37					2.06	0.433	0.762	0.0599	0.319	0.32	0.0626	0.00465		
12/6/2017	1.14					4.47	0.813	0.304	0.0942	0.353	0.336	0.0154	0.00413		
12/14/2018	0	7.6	2.79	0.455	0.442	7.46	0.358	0.885	0.169	0.439	0.386	0.0996	0.00927		
1/19/2018	0	2.05	0.868	0.341	0.306	0.668	0.0898	0.278	0.0228	0.0655	0.00468	0.00658	<0.0011		
2/14/2018	0	0.138	0.025	0.0109	0.00131	0.0839	<0.0220	0.0851	<0.0220	0.0035	<0.0011	0.00369	<0.0011		
3/9/2018	0	2.02	0.498	0.335	0.313	0.344	0.0516	0.561	0.0282	0.013	0.00176	0.0224	0.0011		

**Table 3 - Galloway Customer Complaints**

<b>SO</b>	<b>SO Type</b>	<b>CSR Notes</b>	<b>Date of SO</b>	<b>Completion Date</b>	<b>Premise</b>	<b>Address</b>	<b>City State Zip</b>	<b>Subdivision</b>	<b>FSR Notes</b>
<b>There have been zero customer complaints in the first quarter of 2018.</b>									



March 30, 2018

Mr. W. Allen Hardy  
Engineering Supervisor  
Public Water Supply Section  
1628 Mail Service Center  
Raleigh, NC 27699-1628

Re: Notice of Deficiency – Quarterly Update  
Iron and Manganese Concentration  
Glendale Master System Subdivision  
Wake County  
WSF ID No.: Well # 1, TP1  
Water System No: NC0392293

Dear Mr. Hardy:

Aqua North Carolina, Inc. (Aqua) received the above-referenced letter dated February 24, 2016, regarding elevated concentrations of Iron (Fe) and Manganese (Mn) at Glendale Master System Well #1, TP1. The Glendale Master System is comprised of six active wells and six points of entry (POE). The current number of customers served is 253 and the system is approved to serve 253 connections.

Aqua has compiled the requested information in a table format as follows:

- Table 1 provides a summarization of well information, completed activities and planned activities.
- Table 2 (Attachment 2) provides a summary of raw, POE and distribution iron and manganese samples collected as part of the ongoing Inorganic Chemical Analyses (IOC).
- Table 3 (Attachment 3) provides a summary of customer complaint information.

Mr. W. Allen Hardy  
 March 30, 2018  
 Glendale Master Subdivision Quarterly Update  
 Well # 1, TP1

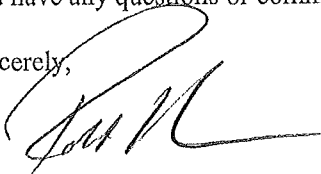
**UPDATED QUARTERLY STATUS REPORT**

**Table 1 – Well Information, Completed Activities and Planned Activities**

<u>Well Name and No.</u>	<u>Completed Activities</u>	<u>Planned Activities</u>
Glendale Master Hickory Creek Well # 1 (TP #1)	<ul style="list-style-type: none"> <li>• September 2015 - Started feeding SeaQuest</li> <li>• March 2017 – Flushed system</li> <li>• September 2017 – Started distribution and POE total and soluble sampling</li> <li>• Stated pulling raw, Fe, and Mn samples data to the report</li> <li>• Flushing scheduled for the week of 3/26/18</li> <li>• December 2018 – added raw sample data</li> <li>• December 2017 – cleaned hydropnuematic tank</li> </ul>	<ul style="list-style-type: none"> <li>• Q3 2018 - Submit executive summary for greensand filtration.</li> <li>• Continue water main flushing efforts</li> </ul>
Approved GPM (45)		
Avg. Quarterly Runtime (6.9 hrs. per day)		
<b><u>Comments:</u></b>		
Based on the current sample results, Aqua will be submitting an executive summary in Q3 2018 for greensand filtration as part of Aqua's water quality plan.		

Aqua is committed to providing water to its customers that meets their expectations at a reasonable cost. If you have any questions or comments, please contact me at (919) 653-6982.

Sincerely,



Robert Krueger  
 Area Manager  
 Aqua North Carolina, Inc.

Table 2 - Glendale Master Hickory Well #1 Creek Well Sample Data

Date	Avg. Sample Week Run Time	Fe Raw Total	Fe Raw Sol	Mn Raw Total	Mn Raw Sol	Total Fe POE	Sol Fe POE	Total Fe Dist.	Sol Fe Dist.	Total Mn POE	Sol Mn POE	Total Mn Dist.	Sol Mn Dist.	Raw NTU	POE NTU
10/1/2014						1.3				0.175					
10/6/2016	4.36					0.72				0.085					
11/4/2016	4.36													<0.50	
9/15/2017	6														
10/4/2017	7					1.29	0.0387	0.955	0.0393	0.12	0.0911	0.12	0.0512		
10/19/2017	7					1.21	0.0422	0.933	0.03	0.115	0.0795	0.112	0.0415		
11/8/2017	6.5					0.893	0.0363	0.842	0.0318	0.113	0.081	0.106	0.0318		
11/17/2017	6					1.12	0.0533	1.52	0.0476	0.113	0.0893	0.118	0.0897		
12/13/2018	5.5	1.35	0.935	0.0227	0.025	0.978	0.57	0.973	0.483	0.0219	0.014	0.0238	0.0122		
1/10/2018	6.9	1.1	0.437	0.127	0.12	1.04	0.299	0.938	0.0372	0.114	0.135	0.118	0.902		
2/8/2018	6.3	0.982	0.336	0.112	0.115	0.931	0.077	0.938	0.0293	0.131	0.0785	0.12	0.0768		
3/8/2018	6.5	1.14	0.148	0.125	0.114	1.05	0.169	2.56	0.0765	0.118	0.0922	0.125	0.087		

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 Sep 19 2018

Table 3 - Glendale Master Well Sample Data									
SO	SO Type	CSR Notes	Date of SO	Completion Date	Premise	Address	City State Zip	Subdivision	FSR Notes
There have been zero customer complaints in the first quarter of 2018.									





March 30, 2018

Mr. W. Allen Hardy  
Engineering Supervisor  
Public Water Supply Section  
1628 Mail Service Center  
Raleigh, NC 27699-1628

Re: Notice of Deficiency – Quarterly Update  
Iron and Manganese Concentration  
Glendale Master System Subdivision  
WSF ID No.: Well #1 (Glendale) P01 and Well #1 (Chari Heights) P02  
Water System No: NC0392293

Dear Mr. Hardy:

Aqua North Carolina, Inc. (Aqua) received the above-referenced letter dated July 12, 2016, regarding elevated concentrations of Iron (Fe) and Manganese (Mn) at Glendale Master System Well #1, (Glendale) P01 and Well #1 (Chari Heights) P02. The Glendale Master System is comprised of six active wells and six points of entry (POE). The current number of customers served is 253 and the system is approved to serve 253 connections.

Aqua has compiled the requested information in a table format as follows:

- Table 1 provides a summarization of well information, completed activities and planned activities.
- Table 2 (Attachment 2) provides a summary of raw, POE and distribution iron and manganese samples collected as part of the ongoing Inorganic Chemical Analyses (IOC).
- Table 3 (Attachment 3) provides a summary of customer complaint information.

Mr. W. Allen Hardy  
 March 30, 2018  
 Glendale Master Subdivision Quarterly Update  
 Well #1 (Glendale) P01 and Well #1 (Chari Heights) P02

**UPDATED QUARTERLY STATUS REPORT**

**Table 1 – Well Information, Completed Activities and Planned Activities**

<u>Well Name and No.</u>	<u>Completed Activities</u>	<u>Planned Activities</u>
Well #1 (Chari Heights) P02	<ul style="list-style-type: none"> <li>• September 2015 – Started using SeaQuest</li> <li>• March 2017 – Installed cartridge filter</li> <li>• March 2017 – Flushed system</li> <li>• December 2017 – Hydro tank cleaned</li> <li>• Stated pulling raw, Fe, and Mn samples data to the report</li> <li>• Flushing scheduled for the week of 3/26/18</li> <li>• December 2017 – Added raw sample data</li> <li>• December 2017 – Cleaned hydropneumatic tank</li> </ul>	<ul style="list-style-type: none"> <li>• Q3 2018 - submit executive summary for greensand filtration</li> <li>• Continue water main flushing efforts</li> </ul>
Approved GPM (40)		
Avg. Quarterly Runtime (7 hrs. per day)		
<p><b><u>Comments:</u></b></p> <p>Based on the current sample results, Aqua will be submitting an executive summary for greensand filtration as part of the Aqua water quality plan.</p>		

Mr. W. Allen Hardy  
 March 30, 2018  
 Glendale Master Subdivision Quarterly Update  
 Well #1 (Glendale) P01 and Well #1 (Chari Heights) P02

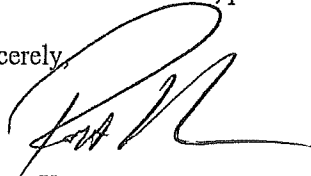
OFFICIAL COPY  
 Sep-19-2018

**Table 1 – Well Information, Completed Activities and Planned Activities**

<u>Well Name and No.</u>	<u>Completed Activities</u>	<u>Planned Activities</u>
Well #1 (Glendale) P01	<ul style="list-style-type: none"> <li>• September 2015 – Started using SeaQuest</li> <li>• Flushing scheduled for the week of 3/26/18</li> <li>• December 2017 – Cleaned hydro-pneumatic tank</li> </ul>	<ul style="list-style-type: none"> <li>• Hydro tank repair</li> <li>• Beginning Q1 2018 Aqua will be adding additional Fe and Mn sample data</li> <li>• Continue water main flushing efforts</li> </ul>
Approved GPM (45)		
Avg. Quarterly Runtime (0.0)		
<p><b><u>Comments:</u></b></p> <p>Aqua will collect more consistent samples in order to verify the next course of action with this well. This will require some repair work to the existing hydro tank before these samples can be taken. Aqua is also reviewing capacity availability in this system to where this well may be permanently taken out of service.</p>		

Aqua is committed to providing water to its customers that meets their expectations at a reasonable cost. If you have any questions or comments, please contact me at (919) 653-6982.

Sincerely,



Robert Krueger  
 Area Manager  
 Aqua North Carolina, Inc.

Table 2 - Glendale Master Well Sample Data Glendale Well#1 P01															
Date	Avg. Sample Week Run Time	Fe Raw Total	Fe Raw Sol	Mn Raw Total	Mn Raw Sol	Total Fe POE	Sol. Fe POE	Total Fe Dist.	Sol Fe Dist.	Total Mn POE	Sol Mn POE	Total Mn Dist.	Sol Mn Dist.	Raw NTU	POE NTU
10/1/2014	0					1.3				0.175					<0.50
10/6/2016	4					0.72				0.085					0.81
11/4/2016	4													<0.50	
Table 2 - Glendale Master Well Sample Data Chari Heights Well# 1 P02															
Date	Avg. Sample Week Run Time	Fe Raw Total	Fe Raw Sol	Mn Raw Total	Mn Raw Sol	Total Fe POE	Sol. Fe POE	Total Fe Dist.	Sol Fe Dist.	Total Mn POE	Sol Mn POE	Total Mn Dist.	Sol Mn Dist.	Raw NTU	POE NTU
10/1/2014	3.5					1.99				0.024					
11/4/2016	5													<0.5	
1/6/2017	5													1.4	
4/18/2017	5.7													1.6	
8/9/2017	5.9													0.88	
9/14/2017	5.5					0.758	0.135	2.28	0.572	0.0597	0.0422	0.204	0.0371		
9/27/2017	6					0.73	0.0652	2.35	0.36	0.0196	0.00481	0.842	0.0227		
10/3/2017	8					0.832	0.402	1.25	0.352	0.0621	0.0399	0.0375	0.0311		
10/19/2017	5					5.05	0.448	1.01	0.161	0.0285	0.0427	0.0321	0.0383		
11/8/2017	6					0.719	0.317	0.716	0.102	0.0355	0.0263	0.0352	0.0187		
11/17/2017	5					0.616	0.116	0.613	0.234	0.0394	0.0187	0.0322	0.0246		
12/13/2017	5.25	0.902	0.611	0.11	0.11	0.949	0.0486	1.23	0.391	0.107	0.0762	0.117	0.0894		
1/10/2018	7.61	3.24	0.647	0.0286	0.0305	1.09	0.242	1.12	0.0546	0.073	0.0492	0.0753	0.0456		
2/8/2018	5.3	0.644	<0.0220	0.0208	0.021	0.314	0.114	0.288	0.0617	0.0206	0.0082	0.0203	0.00461		
3/8/2018	5.33	0.708	0.0465	0.0212	0.0209	0.518	0.0533	0.702	0.0537	0.0273	0.00316	0.0345	0.00368		

<b>Table 3 - Glendale Master Customer Complaints</b>									
<b>SO</b>	<b>SO Type</b>	<b>CSR Notes</b>	<b>Date of SO</b>	<b>Completion Date</b>	<b>Premise</b>	<b>Address</b>	<b>City State Zip</b>	<b>Subdivision</b>	<b>FSR Notes</b>
<b>There have been zero customer complaints in the first quarter of 2018.</b>									



March 30, 2018

Mr. W. Allen Hardy  
Engineering Supervisor  
Public Water Supply Section  
Raleigh Regional Office, NCDEQ  
1628 Mail Service Center  
Raleigh, NC 27699-1628

Re: Notice of Deficiency  
Iron and Manganese Concentration  
Hampton Park Subdivision, Wake County  
WSF ID No.: Well #6, TP2  
Water System No: NC4092084

Dear Mr. Hardy:

Aqua North Carolina, Inc. (Aqua) received the above-referenced letter dated July 12, 2016, regarding elevated concentrations of Iron (Fe) and Manganese (Mn) at Hampton Park Well #6, TP2. The Hampton Park water system is comprised of two active wells and two points of entry (POE). The current number of customers served is 61 and the system is approved to serve 101 connections.

Aqua has compiled the requested information in a table format as follows:

- Table 1 provides a summarization of well information, completed activities and planned activities.
- Table 2 (Attachment 2) provides a summary of raw, POE and distribution iron and manganese samples collected as part of the ongoing Inorganic Chemical Analyses (IOC).
- Table 3 (Attachment 3) provides a summary of customer complaint information.

Mr. W. Allen Hardy  
 March 30, 2018  
 Hampton Park Subdivision Quarterly Update

**UPDATED QUARTERLY STATUS REPORT**

**Table 1 – Well Information, Completed Activities and Planned Activities**

<u>Well Name and No.</u>	<u>Completed Activities</u>	<u>Planned Activities</u>
Hampton Park Well #6 (TP2)	<ul style="list-style-type: none"> <li>• October 2014 – Started using SeaQuest</li> <li>• November 2016 – Flushed system</li> <li>• December 2016 – Submitted request for greensand filtration to NCUC</li> <li>• January 2017 – Approval received for greensand filtration</li> <li>• September 2017 – Started quarterly POE total and soluble sampling</li> <li>• October 2017 – Flushed system</li> <li>• December 2017 – Cleaned hydropneumatic storage tank</li> </ul>	<ul style="list-style-type: none"> <li>• Installation of greensand filter to be completed by Q2 - 2018</li> <li>• Continue system flushing and monitoring of the new greensand filter</li> </ul>
Approved GPM (88 gpm)		
Average Quarterly Runtime (1.4 hrs. per day)		
<p><b><u>Comments:</u></b></p> <p>The Public Staff of the NCUC has approved the installation of a greensand filtration system and this new filter is scheduled to be installed by Q2- 2018.</p>		

Aqua is committed to providing water to its customers that meets their expectations at a reasonable cost. If you have any questions or comments, please contact me at (919) 653-6982.

Sincerely,



Robert Krueger  
 Area Manager  
 Aqua North Carolina, Inc.

Table 2 - Hampton Park Well #6 Sample Data

Date	Avg. Sample Week Run Time	Fe Raw Total	Fe Raw Sol	Mn Raw Total	Mn Raw Sol	Total Fe POE	Sol. Fe POE	Total Fe Dist.	Sol Fe Dist.	Total Mn POE	Sol Mn POE	Total Mn Dist	Sol Mn Dist.	Raw NTU	POE NTU
1/12/2015	1.1					0.9				0.23					
5/26/2016	1.27					1.28				0.23					
4/27/2017	0.53					1.3				0.262					
9/21/2017	2.65					1.39	0.608			0.262	0.22				
10/10/2017	4.2					1.15	0.169			0.211	0.191				
12/18/2017	0.83	1.42	0.776	0.304	0.291	1.41	0.0972			0.25	0.209				
2/6/2018	0.04	1.43	0.633	0.298	0.309	1.48	0.763			0.282	0.214				



Table 3 - Hampton Park Well #6 Customer Complaints

SO	SO Type	CSR Notes	Date of SO	Completion Date	Premise	Address	City State Zip	Subdivision	FSR Notes
10332579	LABD-S	EMAIL FROM SUSSANNA REPORTING LARGE SEDIMENTS IN WATER	1/11/2018	1/12/2018	1037486	4132 HAMPTON PARK WAY	FUQUAY-VARINA, NC 27526	HAMPTON PARK	CL2= 1.1/PO4=2.5/PH=7.5(natural)FE=0.70/M N=0.092/hardness=85.5Turned po4 down @ both wells/ tank had air in it(flushing off @ spigot onTank )



March 30, 2018

Mr. W. Allen Hardy  
Engineering Supervisor  
Public Water Supply Section  
Raleigh Regional Office, NCDEQ  
1628 Mail Service Center  
Raleigh, NC 27699-1628

Re: Notice of Deficiency – Quarterly Update  
Iron and Manganese Concentration  
High Grove Subdivision, Wake County  
WSF ID No.: Well #1, P01  
Water System No: NC4092096

Dear Mr. Hardy:

Aqua North Carolina, Inc. (Aqua) received the above-referenced letter dated July 12, 2016, regarding elevated concentrations of Iron (Fe) and Manganese (Mn) at High Grove Well #1, P01. The High Grove water system is comprised of three active wells and three points of entry (POE). The current number of customers served is 149 and the system is approved to serve 155 connections.

Aqua has compiled the requested information in a table format as follows:

- Table 1 provides a summarization of well information, completed activities and planned activities.
- Table 2 (Attachment 2) provides a summary of raw, POE and distribution iron and manganese samples collected as part of the ongoing Inorganic Chemical Analyses (IOC).
- Table 3 (Attachment 3) provides a summary of customer complaint information.

Mr. W. Allen Hardy  
 March 30, 2018  
 High Grove Subdivision Quarterly Update

**UPDATED QUARTERLY STATUS REPORT**

**Table 1 – Well Information, Completed Activities and Planned Activities**

<u>Well Name and No.</u>	<u>Completed Activities</u>	<u>Planned Activities</u>
High Grove, Well #1 (P01)	<ul style="list-style-type: none"> <li>• September 2015 – Started using SeaQuest</li> <li>• May 2017 – Flushed system</li> <li>• September 2017 – Started distribution and POE total and soluble sampling</li> <li>• November 2017 – Hydro pneumatic tank cleaned</li> <li>• December 2017 – added raw sample data</li> </ul>	<ul style="list-style-type: none"> <li>• Continue water main flushing efforts</li> <li>• Continue investigation efforts</li> </ul>
Approved GPM (48)		
Avg. Quarterly Runtime (0.355 hours per day)		
<p><b>Comments:</b></p> <p>Based on the current sample results, Aqua will complete a more in depth investigation as part of its Water Quality Plan before making a determination on the best course of action with this well.</p>		

Aqua is committed to providing water to its customers that meets their expectations at a reasonable cost. If you have any questions or comments, please contact me at (919) 653-6982.

Sincerely,



Robert Krueger  
 Area Manager  
 Aqua North Carolina, Inc.

Table 2 - High Grove Well Sample Data

Date	Avg. Sample Week Run Time	Fe Raw Total	Fe Raw Sol	Mn Raw Total	Mn Raw Sol	Total Fe POE	Sol. Fe POE	Total Fe Dist.	Sol Fe Dist.	Total Mn POE	Sol Mn POE	Total Mn Dist.	Sol Mn Dist.	Raw NTU	POE NTU
5/4/2016	3.2					0.369				0.177					
10/13/2016														<0.50	0.72
3/8/2017														<0.50	<0.50
8/9/2017	0.5													<0.50	<0.50
9/14/2017	1.27					0.181	0.138	0.476	0.0904	0.0734	0.063	0.281	0.109		
10/6/2017	0.5					0.152	0.0798	0.151	0.0899	0.0483	0.0299	0.0376	0.0212		
10/19/2017	0.267					0.131	0.0378	1.73	0.0357	0.0515	0.0357	0.326	0.0352		
11/9/2017	0.54					0.138	0.0418	0.132	0.0973	0.0376	0.018	0.0383	0.0324		
11/17/2017	0.45					0.18	0.0892	0.179	0.0916	0.0261	0.0192	0.0259	0.0196		
12/12/2017	0.5	0.168	0.135	0.128	0.136	0.183	0.173	0.18	0.172	0.144	0.144	0.138	0.134		
1/8/2018	0.035	0.264	0.255	0.166	0.168	0.171	0.157	0.176	0.168	0.126	0.123	0.131	0.131		
2/5/2018	0.775	0.194	0.115	0.131	0.133	1.81	0.193	0.174	0.158	0.225	0.147	0.135	0.122		
3/5/2018	0.512	0.171	0.12	0.117	0.123	1.22	0.137	0.182	0.162	0.22	0.126	0.141	0.137		

Table 3 - High Grove Customer Complaints									
SO	SO Type	CSR Notes	Date of SO	Completion Date	Premise	Address	City State Zip	Subdivision	FSR Notes
There were zero customer complaints in the first quarter of 2018									



March 30, 2018

Mr. W. Allen Hardy  
Engineering Supervisor  
Public Water Supply Section  
Raleigh Regional Office, NCDEQ  
1628 Mail Service Center  
Raleigh, NC 27699-1628

Re: Notice of Deficiency – Quarterly Update  
Iron and Manganese Concentration  
High Meadows Subdivision, Wake County  
WSF ID No.: Well #2, TM1  
Water System No: NC0392334

Dear Mr. Hardy:

Aqua North Carolina, Inc. (Aqua) received the above-referenced letter dated July 12, 2016, regarding elevated concentrations of Iron (Fe) and Manganese (Mn) at High Meadows Well #2, TM1. The High Meadows water system is comprised of two active wells and one point of entry (POE). The current number of customers served is 133 and the system is approved to serve 149 connections.

Aqua has compiled the requested information in a table format as follows:

- Table 1 provides a summarization of well information, completed activities and planned activities.
- Table 2 (Attachment 2) provides a summary of raw, POE and distribution iron and manganese samples collected as part of the ongoing Inorganic Chemical Analyses (IOC).
- Table 3 (Attachment 3) provides a summary of customer complaint information.

Mr. W. Allen Hardy  
 March 30, 2018  
 High Meadows Subdivision Quarterly Update

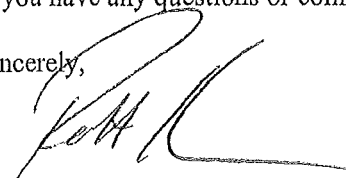
**UPDATED QUARTERLY STATUS REPORT**

**Table 1 – Well Information, Completed Activities and Planned Activities**

<u>Well Name and No.</u>	<u>Completed Activities</u>	<u>Planned Activities</u>
High Meadows, Well #2 (TM1)	<ul style="list-style-type: none"> <li>• October 2013 – Started using SeaQuest</li> <li>• September 2014 – Installed cartridge filter</li> <li>• April 2017 – Flushed system</li> <li>• September 2017 – Started distribution and POE total and soluble sampling</li> <li>• December 2017 – added raw sample data</li> <li>• February 2018 - Hydropneumatic tank cleaned</li> </ul>	<ul style="list-style-type: none"> <li>• Continue water main flushing efforts</li> <li>• Continue investigation efforts</li> <li>• Continue sampling efforts</li> </ul>
Approved GPM (64)		
Avg. Quarterly Runtime (3.72 hrs. per day)		
<p><b><u>Comments:</u></b></p> <p>Based on the current inconsistent sample results, Aqua will complete a more in depth investigation before making a determination on the best course of action with this well.</p>		

Aqua is committed to providing water to its customers that meets their expectations at a reasonable cost. If you have any questions or comments, please contact me at (919) 653-6982.

Sincerely,



Robert Krueger  
 Area Manager  
 Aqua North Carolina, Inc.

Table 2 - High Meadows Well #2 Sample Data

Date	Avg- Sample Week Run Time	Fe Raw Total	Fe Raw Sol	Mn Raw Total	Mn Raw Sol	Total Fe POE	Sol. Fe POE	Total Fe Dist.	Sol Fe Dist.	Total Mn POE	Sol Mn POE	Total Mn Dist	Sol Mn Dist.	Raw NTU	POE NTU
4/26/2015	4.7					0.95				0.13					
12/20/2016	5.5													8.7	0.95
3/7/2017	3.6													6	1.1
6/16/2017	4.2													16	0.6
9/15/2017	6.46					0.693	0.0314	0.755	<0.0220	0.139	0.0647	0.0957	0.017		
10/3/2017	5.87					0.696	0.253	0.189	0.0424	0.151	0.128	0.0187	0.0475		
10/17/2017	3.9					0.708	0.022	0.172	0.0647	0.163	0.0591	0.0189	0.00934		
11/2/2017	4.36					0.703	0.308	0.389	0.0992	0.153	0.113	0.0532	0.013		
11/14/2017	3.89					0.697	0.075	0.481	<0.0220	0.156	0.0994	0.0351	0.00124		
12/20/2017	3.48	<0.0220	<0.0220	0.0159	0.0159	0.591	0.261	0.426	0.026	0.14	0.134	0.0325	0.00952		
2/20/2018	3.58	<0.0220	<0.0220	0.0129	0.0132	0.986	0.0809	2.69	0.936	0.216	0.0895	0.205	0.0672		



Table 3 - High Meadows Customer Complaints

SO	SO Type	CSR Notes	Date of SO	Completion Date	Premise	Address	City State Zip	Subdivision	FSR Notes
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March 30, 2018

Mr. W. Allen Hardy  
Engineering Supervisor  
Public Water Supply Section  
Raleigh Regional Office, NCDEQ  
1628 Mail Service Center  
Raleigh, NC 27699-1628

Re: Notice of Deficiency – Quarterly Update  
Iron and Manganese Concentration  
Middle Creek Acres Subdivision, Wake County  
WSF ID No.: Well #1, P01  
Water System No: NC0392370

Dear Mr. Hardy:

Aqua North Carolina, Inc. (Aqua) received the above-referenced letter dated July 12, 2016, regarding elevated concentrations of Iron (Fe) and Manganese (Mn) at Middle Creek Acres Well #1, P01. The Middle Creek Acres water system is comprised of one active well and one point of entry (POE). The current number of customers served is 12 and the system is approved to serve 23 connections.

Aqua has compiled the requested information in a table format on the following tables:

- Table 1 provides a summarization of well information, completed activities and planned activities.
- Table 2 (Attachment 2) provides a summary of raw, POE and distribution iron and manganese samples collected as part of the ongoing Inorganic Chemical Analyses (IOC).
- Table 3 (Attachment 3) provides a summary of customer complaint information. – Zero customer complaints received during Q1-2018.

Mr. W. Allen Hardy  
 March 30, 2018  
 Middle Creek Acres Subdivision Quarterly Update

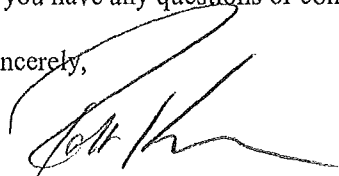
**UPDATED QUARTERLY STATUS REPORT**

**Table 1 – Well Information, Completed Activities and Planned Activities**

<u>Well Name and No.</u>	<u>Completed Activities</u>	<u>Planned Activities</u>
Middle Creek Acres, (Well #1, P01)	<ul style="list-style-type: none"> <li>• September 2015 – Started using SeaQuest</li> <li>• October 2016 – Flushed system</li> <li>• October 2016 - Installed auto blow-off at well head</li> </ul>	<ul style="list-style-type: none"> <li>• Continue to test the effectiveness of the flushing valve and adjusting the time to optimize the water quality</li> <li>• Continue to test the effectiveness of the cartridge filter</li> </ul>
Approved GPM (Not specified – currently 12)	<ul style="list-style-type: none"> <li>• March 2017 – Installed cartridge filter</li> <li>• August 2017 – Flushed system</li> <li>• September 2017 – Started distribution and POE total and soluble sampling</li> <li>• December 2017 – cleaned hydropneumatic storage tank</li> </ul>	<ul style="list-style-type: none"> <li>• Continue water main flushing efforts</li> </ul>
Avg. Quarterly Runtime (1.6 hours per day)	<ul style="list-style-type: none"> <li>• December 2017 - Aqua added raw sample data to the report.</li> </ul>	
<p><b><u>Comments:</u></b></p> <p>Since the installation of the Harmsco filter in March of 2017, all entry point samples demonstrate some amount of soluble iron and are under the sMCL for insoluble iron with the exception of the latest POE sample taken on 2/22/2018. There were zero customer complaints received in all of 2017, and zero complaints have been received in Q1-2018.</p> <p>Aqua will continue the planned activities to monitor the ongoing sample results due to the elevated iron shown in the latest POE sample.</p>		

Aqua is committed to providing water to its customers that meets their expectations at a reasonable cost. If you have any questions or comments, please contact me at (919) 653-6982.

Sincerely,

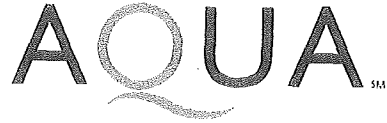


Robert Krueger  
 Area Manager  
 Aqua North Carolina, Inc.

Table 2 - Middle Creek Well#1 Sample Data

Date	Avg. Sample Week Run Time	Fe Raw Total	Fe Raw Sol	Mn Raw Total	Mn Raw Sol	Total Fe POE	Sol. Fe POE	Total Fe Dist.	Sol Fe Dist.	Total Mn POE	Sol Mn POE	Total Mn Dist.	Sol Mn Dist.	Raw NTU	POE NTU
11/12/2014	1.74					1.13									
7/29/2016	1.27													26	17
12/16/2016	1.47													1.5	1.7
3/9/2017	1.47													1.2	0.61
4/24/2017	1.68													1.1	<0.50
5/10/2017	1.6													5.5	1.3
6/5/2017	1.8													1.3	0.89
7/7/2017	2.46													2.7	1.5
8/4/2017	1.7	0.07 (well head before filter)		0.003 (well head before filter)										1	
8/4/2017	1.7					0.03 (well head after filter)				0.001 (well head after filter)					<0.50
8/30/2017	1.7	0.52 (well head before filter)		0.08 (well head before filter)											
8/30/2017	1.7					0.004 (well head after filter)				0.003 (well head after filter)					
9/18/2017	1.53					0.148	0.0547	0.0704	0.0355	0.00295	0.0547	0.00189	0.00124		
9/29/2017	1.33					0.159	0.122	0.681	0.237	0.00307	0.00278	0.00903	0.00309		
10/11/2017	1.41					0.378	0.104	1.47	0.441	0.00354	0.00213	0.0183	0.00603		
10/25/2017	1.29					0.0885	0.0386	0.53	0.0443	0.002	0.00171	0.00613	<0.00110		
11/8/2017	1.34					0.219	0.126	0.331	0.0589	0.00351	0.00318	0.00394	<0.00110		
11/22/2017	1.64					0.252	0.0483	0.085	0.0437	0.00239	0.00126	<0.00110	<0.00110		
12/19/2017	2.57	0.209	<0.0220	0.00404	0.00196	0.163	0.113	0.363	0.117	0.00229	0.00226	0.00539	0.00169		
1/10/2018	1.73	0.626	0.0586	0.00682	0.00326	0.206	0.0402	1.18	0.0685	0.00308	0.00148	0.016	0.00167		
2/22/2018	1.56	0.622	<0.0220	0.00447	0.00429	0.374	0.0867	0.27	0.0737	0.00439	0.0024	0.0026	0.00128		

<b>Table 3 - Middle Creek Well Sample Data</b>									
<b>SO</b>	<b>SO Type</b>	<b>CSR Notes</b>	<b>Date of SO</b>	<b>Completion Date</b>	<b>Premise</b>	<b>Address</b>	<b>City State Zip</b>	<b>Subdivision</b>	<b>FSR Notes</b>
<b>There were zero customer complaints for the 1st quarter of 2018.</b>									



March 30, 2018

Mr. W. Allen Hardy  
Engineering Supervisor  
Public Water Supply Section  
Raleigh Regional Office, NCDEQ  
1628 Mail Service Center  
Raleigh, NC 27699-1628

Re: Notice of Deficiency – Quarterly Update  
Iron and Manganese Concentration  
Northgate Subdivision, Wake County  
WSF ID No.: Well #1, P01  
Water System No: NC0392217

Dear Mr. Hardy:

Aqua North Carolina, Inc. (Aqua) received the above-referenced letter dated July 12, 2016, regarding elevated concentrations of Iron (Fe) and Manganese (Mn) at Northgate Well #1, P01. The Northgate water system is comprised of one active well and one point of entry (POE). The current number of customers served is 30 and the system is approved to serve 39 connections.

Aqua has compiled the requested information in a table format on the following tables:

- Table 1 provides a summarization of well information, completed activities and planned activities.
- Table 2 (Attachment 2) provides a summary of raw, POE and distribution iron and manganese samples collected as part of the ongoing Inorganic Chemical Analyses (IOC).
- Table 3 (Attachment 3) provides a summary of customer complaint information.

Mr. W. Allen Hardy  
 March 30, 2018  
 Northgate Subdivision Quarterly Update

**UPDATED QUARTERLY STATUS REPORT**

**Table 1 – Well Information, Completed Activities and Planned Activities**

<u>Well Name and No.</u>	<u>Completed Activities</u>	<u>Planned Activities</u>
Northgate, Well #1 (P01)	<ul style="list-style-type: none"> <li>• September 2015 – Started using SeaQuest</li> <li>• September 2016 – Flushed system</li> <li>• December 2016 – Filed for approval of greensand filtration</li> </ul>	<ul style="list-style-type: none"> <li>• Continue water main flushing efforts</li> </ul>
Approved GPM (not specified)	<ul style="list-style-type: none"> <li>• January 2017 – Approval received for greensand filtration</li> <li>• January 2017 – Greensand filtration project put on hold</li> </ul>	
Avg. Quarterly Runtime (0.88 hour per day)	<ul style="list-style-type: none"> <li>• March 2017 – Installed cartridge filter</li> <li>• June 2017 – Flushed system</li> <li>• September 2017 – Started distribution and POE total and soluble sampling</li> <li>• December 2017 – Added raw sample data</li> </ul>	

**Comments:**

Aqua filed for approval from the North Carolina Utilities Commission (NCUC) for the installation of a greensand filtration system at Northgate well #1 on December 30, 2016. This request was approved by the NCUC in the Order issued January 18, 2017; the project to install the greensand filtration has been placed on hold.

This well is located near the Guilford Fibers Facility, which is subject to a Remedial Action Plan being formulated by the owner of the Facility with the Division of Waste Management of the North Carolina Department of Environmental Quality. The Facility's owner contacted Aqua in 2017 to request the purchase and closing of Aqua's well so as to limit any impact it may have on the remedial activities. The Facility owner also claims to have arranged for alternative water service to Aqua's customers through the water system operated by the Town of Fuquay-Varina, which is within close proximity of Aqua's distribution system.

First Quarter 2018 Update – Discussion to sell the system and close Aqua's Northgate well are active. If the sale of the system is transacted, well #1 would be abandoned and the system interconnected to Fuquay Varina's distribution system to provide water service to customers in Northgate. Based on this, proceeding with the installation of a greensand filter in this system is not considered prudent given this information, and therefore, the project continues to be on hold at this time.

Mr. W. Allen Hardy  
March 30, 2018  
Northgate Subdivision Quarterly Update

Aqua is committed to providing water to its customers that meets their expectations at a reasonable cost. If you have any questions or comments, please contact me at (919) 653-6982.

Sincerely,



Robert Krueger  
Area Manager  
Aqua North Carolina, Inc.

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Sep 19 2018



Table 2 - Northgate Well Sample Data

Date	Avg. Sample Week Run Time	Fe Raw Total	Fe Raw Sol	Mn Raw Total	Mn Raw Sol	Total Fe POE	Sol. Fe POE	Total Fe Dist.	Sol Fe Dist.	Total Mn POE	Sol Mn POE	Total Mn Dist.	Sol Mn Dist.	Raw NTU	POE NTU
5/24/2016	1.1					1.43				0.393					
9/1/2016	0.8													0.7	
12/20/2016	0.85													4.2	0.82
3/8/2017	0.83													5.8	0.75
7/18/2017	1.1													3.8	0.95
9/13/2017	1.48				0.146	0.168	0.022	0.061	<0.0220	0.44	0.303	0.386	0.293		
10/3/2017	1				0.667	0.989	0.322	1.02	0.675	0.399	0.412	0.512	0.41		
10/17/2017	1				0.472	0.649	0.177	0.596	0.0287	0.434	0.359	0.437	0.338		
11/1/2017	1				0.845	1.11	0.265	1.04	0.747	0.389	0.351	0.399	0.38		
11/15/2017	1				1.008	1.29	0.282	1.31	0.223	0.414	0.406	0.412	0.393		
12/19/2017	0.768	1.26	0.389	0.384	1.31	0.0442	1.34	0.26	0.398	0.289	0.403	0.303	1.34		
1/11/2018	0.112	1.17	0.398	0.362	1.27	0.0765	1.29	0.302	0.378	0.296	0.387	0.314	1.29		
2/7/2018	0.805	1.99	0.428	0.42	1.58	0.329	1.52	0.721	0.432	0.304	0.381	0.292	1.58		
3/6/2018	0.868	1.28	0.4	0.413	1.36	0.0391	1.42	0.179	0.387	0.332	0.401	0.281	1.82		

Table 3 - Northgate Well #1 Customer Complaints									
SO	SO Type	CSR Notes	Date of SO	Completion Date	Premise	Address	City State Zip	Subdivision	FSR Notes
There were zero customer complaints in first quarter of 2018									



March 30, 2018

Mr. W. Allen Hardy  
Engineering Supervisor  
Public Water Supply Section  
Raleigh Regional Office, NCDEQ  
1628 Mail Service Center  
Raleigh, NC 27699-1628

Re: Notice of Deficiency – Quarterly Update  
Iron and Manganese Concentration  
Olde South Trace Subdivision, Wake County  
WSF ID No.: Well #1, P01  
Water System No: NC4392131

Dear Mr. Hardy:

Aqua North Carolina, Inc. (Aqua) received the above-referenced letter dated July 12, 2016, regarding elevated concentrations of Iron (Fe) and Manganese (Mn) at Olde South Trace Well #1, P01. The Olde South Trace water system is comprised of one active well and one point of entry (POE). The current number of customers served is 30 and the system is approved to serve 32 connections.

Aqua has compiled the requested information in a table format on the following tables:

- Table 1 provides a summarization of well information, completed activities and planned activities.
- Table 2 (Attachment 2) provides a summary of raw, POE and distribution iron and manganese samples collected as part of the ongoing Inorganic Chemical Analyses (IOC).
- Table 3 (Attachment 3) provides a summary of customer complaint information.


Mr. W. Allen Hardy  
 March 30, 2018  
 Olde South Trace Subdivision Quarterly Update

**UPDATED QUARTERLY STATUS REPORT**

**Table 1 – Well Information, Completed Activities and Planned Activities**

<u>Well Name and No.</u>	<u>Completed Activities</u>	<u>Planned Activities</u>
Olde South Trace Well #1 (P01)	<ul style="list-style-type: none"> <li>• July 2014 – Started using SeaQuest</li> <li>• December 2016 – Flushed system</li> <li>• March 2017 – Installed cartridge filter</li> <li>• September 2017 – Started distribution and POE total and soluble sampling</li> <li>• December 2017- hydropneumatic storage tank cleaned</li> <li>• December 2017 – added raw sample data</li> </ul>	<ul style="list-style-type: none"> <li>• Complete executive summary for greensand filtration</li> <li>• Continue water main flushing efforts</li> </ul>
Approved GPM (34)		
Avg. Quarterly Runtime (2.18 hrs. per day)		
<p><b><u>Comments:</u></b></p> <p>Based on the current sample results, Aqua will be submitting the executive summary for greensand filtration at well #1 in 2018 as part of Aqua's water quality plan.</p>		

Aqua is committed to providing water to its customers that meets their expectations at a reasonable cost. If you have any questions or comments, please contact me at (919) 653-6982.

Sincerely,  


Robert Krueger  
 Area Manager  
 Aqua North Carolina, Inc.

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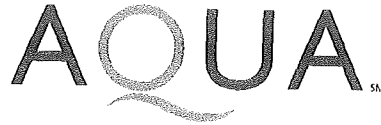
Sep 19 2018

Table 2 - Olde South Trace Well Sample Data

Date	Avg. Sample Week Run Time	Fe Raw Total	Fe Raw Sol	Mn Raw Total	Mn Raw Sol	Total Fe POE	Sol. Fe POE	Total Fe Dist.	Sol Fe Dist.	Total Mn POE	Sol Mn POE	Total Mn Dist	Sol Mn Dist.	Raw NTU	POE NTU
7/16/2016	1.9					1.33				0.3					
11/11/2016	2													7.6	
4/20/2017	2.2													14	0.81
6/18/2017	2.4													1.6	1.4
9/15/2017	2.2														
10/16/2017	2.5					0.947	0.527	0.468	0.311	0.273	0.252	0.103	0.0367		
10/30/2017	2					1.27	0.488	0.624	0.0855	0.268	0.247	0.058	0.0084		
11/2/2017	2.5					0.783	0.365	1.02	0.437	0.266	0.217	0.286	0.247		
11/16/2017	2					1.08	0.288	0.64	0.185	0.297	0.243	0.056	0.0236		
12/18/2017	2.012	2.12	0.285	0.282	0.287	0.912	0.627	0.623	0.159	0.285	0.249	0.0756	0.0143		
1/11/2018	2.14	1.92	0.463	0.248	0.267	0.963	0.309	0.686	0.256	0.281	0.195	0.0784	0.0353		
2/8/2018	2.23	2.45	0.0815	0.259	0.264	0.986	0.276	0.56	0.187	0.305	0.248	0.0563	0.0172		
3/5/2018	2.19	6.37	0.197	0.278	0.279	1.14	0.731	0.66	0.177	0.259	0.234	0.0554	0.0201		

**Table 3 - Olde South Trace Customer Complaints**

<b>SO</b>	<b>SO Type</b>	<b>CSR Notes</b>	<b>Date of SO</b>	<b>Completion Date</b>	<b>Premise</b>	<b>Address</b>	<b>City State Zip</b>	<b>Subdivision</b>	<b>FSR Notes</b>
<b>There are zero customer complaints in the first quarter of 2018.</b>									



March 30, 2018

Mr. W. Allen Hardy  
Engineering Supervisor  
Public Water Supply Section  
Raleigh Regional Office, NCDEQ  
1628 Mail Service Center  
Raleigh, NC 27699-1628

Re Notice of Deficiency – Quarterly Update  
Iron and Manganese Concentration  
Ridgebrook/Westbury Subdivision, Wake County  
WSF ID No.: P03  
Water System No: NC4392101

Dear Mr. Hardy:

Aqua North Carolina, Inc. (Aqua) received the above-referenced letter dated May 24, 2017 regarding elevated concentrations of Iron (Fe) and Manganese (Mn) at Westbury Well #1, P03 (also called Ridgebrook Well #3). The Ridgebrook/Westbury water system is comprised of three active wells and three points of entry (POE). The current number of customers served is 92 and the system is approved to serve 108 connections. The table below outlines the run time and the latest iron and manganese concentrations collected as part of the ongoing Inorganic Chemical Analyses (IOC) samples collected at Well #, P03.

Aqua has compiled the requested information in a table format as follows:

- Table 1 provides a summarization of well information, completed activities and planned activities.
- Table 2 (attachment 2) provides a summary of raw, POE and distribution iron and manganese samples.
- Table 3 (attachment 3) provides a summary of customer complaint information.

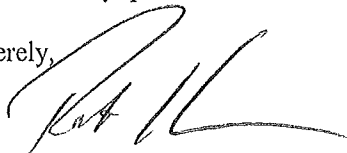
Mr. W. Allen Hardy  
 March 30, 2018  
 Ridgebrook/Westbury Subdivision Quarterly Update

**UPDATED QUARTERLY STATUS REPORT**

<b>Table 1 – Well Information, Completed Activities and Planned Activities</b>		
<b>Well Name and No.</b>	<b>Completed Activities</b>	<b>Planned Activities</b>
Ridgebrook/Westbury, Well #1  (P03)	<ul style="list-style-type: none"> <li>• June 2017 - cleaned the hydro-pneumatic tank</li> <li>• June 2017 - cartridge filter installed</li> <li>• June 2017 - service lines were replaced at 3824 and 3828 Westbury Lake Dr.</li> <li>• June 2017 - distribution system flushed</li> <li>• July 2017 - service lines replaced at 3732, 3736, 3740m 3744 Westbury Lake Dr.</li> <li>• September 2017 - distribution system flushed</li> </ul>	<ul style="list-style-type: none"> <li>• Continue water main flushing efforts</li> <li>• Install greensand filtration in 2019</li> </ul>
Approved GPM  (33)		
Avg. Quarterly Runtime  (6.0 hrs. per day)		
<p><b>Comments:</b></p> <p>Sequestering the Mn levels at this well has proven unsuccessful. Therefore, on 11/29/2017 the Public Staff of the North Carolina Utilities Commission (Commission) recommended approval before the Commission for the installation of greensand type (i.e. manganese oxide) filtration. Installation of this filter is expected to be complete in 2019.</p>		

Aqua is committed to providing water to its customers that meets their expectations at a reasonable cost. If you have any questions or comments, please contact me at (919) 653-6982.

Sincerely,



Robert Krueger  
 Area Manager  
 Aqua North Carolina, Inc.



Table 2 - Ridgebrook-Westbury Sample Data

Date	Avg. Sample Week Run Time	Fe Raw Total	Fe Raw Sol	Mn Raw Total	Mn Raw Sol	Total Fe POE	Sol. Fe POE	Total Fe Dist.	Sol Fe Dist.	Total Mn POE	Sol Mn POE	Total Mn Dist	Sol Mn Dist.	Raw NTU	POE NTU
9/14/2016	9					0.0647				0.0105					
10/2/2017	7.5					<0.0220	<0.0220	<0.0220	<0.0220	0.913	0.905	0.00305	<0.00110		
10/19/2017	4					<0.0220	<0.0220	<0.0220	<0.0220	0.954	0.963	0.0115	0.00269		
11/7/2017	3.5					<0.0220	<0.0220	<0.0220	<0.0220	0.852	0.833	0.0434	0.04		
11/17/2017	8					0.0274	<0.0220	<0.0220	<0.0220	0.786	0.799	0.787	0.734		
12/13/2017	6.5	<0.0220	<0.0220	0.964	0.958	<0.0220	<0.0220	<0.0220	<0.0220	1.07	1.06	1.08	1.09		
1/10/2018	13.4	<0.0220	<0.0220	1.2	1.17	0.0462	<0.0220	<0.0220	<0.0220	0.886	0.912	1.12	1.21		
2/7/2018	2.05	<0.0220	<0.0220	1.36	1.33	<0.0220	<0.0220	<0.0220	<0.0220	1.21	1.24	1.18	1.2		
3/6/2018	1.21	<0.0220	<0.0220	1.28	1.25	<0.0220	<0.0220	0.0296	<0.0220	0.085	0.0833	0.0834	0.08		

Table 3 - Ridgebrook-Westbury Customer Complaints									
SO Type	CSR Notes	Date of SO	Completion Date	Premise	Address	City State Zip	Subdivision	FSR Notes	FSR Comments
There were zero customer complaints in the first quarter of 2018									



March 30, 2018

Mr. W. Allen Hardy  
Engineering Supervisor  
Public Water Supply Section  
Raleigh Regional Office, NCDEQ  
1628 Mail Service Center  
Raleigh, NC 27699-1628

Re: Notice of Deficiency – Quarterly Update  
Iron and Manganese Concentration  
River Oaks Subdivision, Wake County  
WSF ID No.: Well #3, P02  
Water System No: NC0392096

Dear Mr. Hardy:

Aqua North Carolina, Inc. (Aqua) received the above-referenced letter dated July 12, 2016, regarding elevated concentrations of Iron (Fe) and Manganese (Mn) at River Oaks Well #3, P02. The River Oaks water system is comprised of two active wells and two points of entry (POE). The current number of customers served is 47 and the system is approved to serve 47 connections.

Aqua has compiled the requested information in a table format as follows:

- Table 1 provides a summarization of well information, completed activities and planned activities.
- Table 2 (Attachment 2) provides a summary of raw, POE and distribution iron and manganese samples collected as part of the ongoing Inorganic Chemical analyses (IOC).
- Table 3 (Attachment 3) provides a summary of customer complaint information.

Mr. W. Allen Hardy  
 March 30, 2018  
 River Oaks Subdivision Quarterly Update

**UPDATED QUARTERLY REPORT**

**Table 1 – Well Information, Completed Activities and Planned Activities**

<u>Well Name and No.</u>	<u>Completed Activities</u>	<u>Planned Activities</u>
River Oaks, Well #3 (P02)	<ul style="list-style-type: none"> <li>• September 2015 – Started using SeaQuest</li> <li>• May – June 2017 – Flushed system</li> <li>• September 2017 – Started distribution and POE total and soluble sampling</li> <li>• December 2017 – Added raw sample data</li> <li>• February 2018- Hydropneumatic tank cleaned</li> </ul>	<ul style="list-style-type: none"> <li>• Complete executive summary for greensand filtration</li> <li>• Continue water main flushing efforts</li> </ul>
Approved GPM (50)		
Avg. Quarterly Runtime (1.13 hrs. per day)		
<p><b><u>Comments:</u></b></p> <p>Well #3 will operate in the lag mode and will only be used during heavy peak demand. Aqua will be submitting the executive summary for greensand filtration at well #1 in 2018 as part of the Aqua water quality plan.</p>		

Aqua is committed to providing water to its customers that meets their expectations at a reasonable cost. If you have any questions or comments, please contact me at (919) 653-6982.

Sincerely,



Robert Krueger  
 Area Manager  
 Aqua North Carolina, Inc.

OFFICIAL COPY  
 Sep 19 2018

Table 2 -River Oaks Well Sample Data															
Date	Avg. Sample Week Run Time	Fe Raw Total	Fe Raw Sol	Mn Raw Total	Mn Raw Sol	Total Fe POE	Sol. Fe POE	Total Fe Dist.	Sol Fe Dist.	Total Mn POE	Sol Mn POE	Total Mn Dist.	Sol Mn Dist.	Raw NTU	POE NTU
5/31/2016						1				0.077					
12/5/2016	0.2													13	13
3/7/2017														21	36
5/26/2017														<0.50	0.51
9/15/2017	0.77														
9/27/2017	1					0.651	0.144	1.02	0.186	0.0939	0.0301	0.104	0.0163		
10/3/2017	2.1					0.676	0.663	0.664	<0.0220	0.144	0.15	0.183	0.132		
10/23/2017	1.05					0.922	0.86	0.197	<0.0220	0.137	0.133	0.196	0.199		
11/8/2017	0.6					1.02	0.925	0.432	<0.0220	0.0994	0.0941	0.0252	0.015		
12/8/2017	0					3.1	3.04	2.06	2	0.173	0.172	0.157	0.154		
12/18/2017	0	2.48	1.85	0.158	0.174	2.62	1.92	<0.0220	<0.0220	0.167	0.169	0.0247	<0.0110		
1/16/2018	0	4.91	1.03	0.216	0.219	4.96	0.757	4.13	1.11	0.213	0.212	0.187	0.211		
2/13/2018	0	2.21	1.89	0.173	0.172	2.08	1.95	<0.0220	<0.0220	0.168	0.174	0.00128	0.00188		
3/9/2018	0	12	1.92	0.247	0.225	4.37	1.43	0.0983	<0.0220	0.183	0.176	0.186	0.00794		

Table 3 -River Oaks Customer Complaints										
SO	SO Type	CSR Notes	Date of SO	Completion Date	Premise	Address	City State Zip	Subdivision	FSR Notes	FSR Notes
There were zero customer complaints for first quarter of 2018										



March 30, 2018

Mr. W. Allen Hardy  
Engineering Supervisor  
Public Water Supply Section  
Raleigh Regional Office, NCDEQ  
1628 Mail Service Center  
Raleigh, NC 27699-1628

Re Notice of Deficiency – Quarterly Update  
Iron and Manganese Concentration  
Saddle Run, Wake County  
WSF ID No. P05  
Water System No: NC0392080

Dear Mr. Hardy:

Aqua North Carolina, Inc. (Aqua) received the above-referenced letter dated August 3, 2017, regarding elevated concentrations of Iron (Fe) and Manganese (Mn) at Stanstead Well #2 P05. The Saddle Run water system is comprised of five active wells and four points of entry (POE). The current number of customers served is 229 and the system is approved to serve 230 connections. The table below outlines the run time and the latest iron and manganese concentrations collected as part of the ongoing Inorganic Chemical Analyses (IOC) samples collected at Well #2, P05.

Aqua has compiled the requested information in a table format as follows:

- Table 1 provides a summarization of well information, completed activities and planned activities.
- Table 2 (attachment 2) provides a summary of raw, POE and distribution iron and manganese samples.
- Table 3 (attachment 3) provides a summary of customer complaint information.

Mr. W. Allen Hardy  
 March 30, 2018  
 Saddle Run Subdivision Quarterly Update

**UPDATED QUARTERLY STATUS REPORT**

**Table 1 – Well Information, Completed Activities and Planned Activities**

Well Name and No.	Completed Activities	Planned Activities
Stanstead, Well #2 (P05)	<ul style="list-style-type: none"> <li>• April 2017 - System flushed</li> <li>• November 2017 - Aqua completed repairs of fencing around the sand bed and lean-up the site</li> <li>• December 2017 - the sand beds were cleaned and a roofing structure was placed over the entire sand bed to minimize leaf litter in the filter bed that was causing blinding issues</li> <li>• Filter storage tankage was completed and is currently in service</li> </ul>	<ul style="list-style-type: none"> <li>• Continue water main flushing efforts</li> <li>• Continue investigation efforts</li> </ul>
Approved GPM ( 90)		
Avg. Quarterly Runtime ( 5.15)		
<p><b>Comments:</b></p> <p>With the addition of the sludge storage tanks and the roof over the sand filter this system has been putting out consistently clear water. We are not experiencing the short wash cycles that we were previously experiencing.</p> <p>Based on the current sample results and recent capital upgrades, Aqua will complete a more in depth investigation before making a determination on the best course of action with this well.</p>		

Aqua is committed to providing water to its customers that meets their expectations at a reasonable cost. If you have any questions or comments, please contact me at (919) 653-6982.

Sincerely,



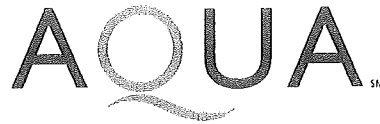
Robert Krueger  
 Area Manager  
 Aqua North Carolina, Inc.



Table 2 -Saddle Run Well (Stanstead Well #2 (PO5) Sample Data

Date	Avg- Sample Week Run Time	Fe Raw Total	Fe Raw Sol	Mn Raw Total	Mn Raw Sol	Total Fe POE	Sol. Fe POE	Total Fe Dist.	Sol Fe Dist.	Total Mn POE	Sol Mn POE	Total Mn Dist	Sol Mn Dist.	Raw NTU	POE NTU
9/14/2016 (IOC)						0.064				0.0105					
7/21/2017 (Special)		7.7		2.12											
12/19/2017 (Special)	5.1	10.4		2.25											

Table 3 -Saddleridge Well #2 Sample Data									
SO	SO Type	CSR Notes	Date of SO	Completion Date	Premise	Address	City State Zip	Subdivision	FSR Notes
10336819	LABD-S	DEBBIE SAID THEY ARE HAVING DISCOLORED WATER KIND OF BROWN AND YELLOW	1/15/2018	1/15/2018	579007	4313 STANSTED DR	FUQUAY VARINA, NC 27526-6838	STANSTED	C2 1.24 ph 7.0 po4 0.27 fe 0.204 mn 0.562Broke loose in line and hit service lineFSR:marcomt, EVT:Lab
10329187	LABD-S	CUST REPORTING BROWN WTR SINCE SATURDAY PLEASE INVESTIGATE	1/10/2018	1/10/2018	585000	5112 NORTHGREEN DR	FUQUAY VARINA, NC 27526-9044	SADDLE RUN	CI2 0.86 ph 7.0 po4 1.59 fe 0.61 mn0.037



March 30, 2018

Mr. W. Allen Hardy  
Engineering Supervisor  
Public Water Supply Section  
Raleigh Regional Office, NCDEQ  
1628 Mail Service Center  
Raleigh, NC 27699-1628

Re: Notice of Deficiency – Quarterly Update  
Iron and Manganese Concentration  
Saddleridge Subdivision, Wake County  
WSF ID No.: Well #20, P20  
Water System No: NC4392103

Dear Mr. Hardy:

Aqua North Carolina, Inc. (Aqua) received the above-referenced letter dated July 12, 2016, regarding elevated concentrations of Iron (Fe) and Manganese (Mn) at Saddleridge Well #20, P20. The Saddleridge water system is comprised of six active wells and five points of entry (POE). The current number of customers served is 169 and the system is approved to serve 194 connections.

Aqua has compiled the requested information in a table format as follows:

- Table 1 provides a summarization of well information, completed activities and planned activities.
- Table 2 (Attachment 2) provides a summary of raw, POE and distribution iron and manganese samples collected as part of the ongoing Inorganic Chemical Analyses (IOC).
- Table 3 (Attachment 3) provides a summary of customer complaint information.

Mr. W. Allen Hardy  
 March 30, 2018  
 Saddleridge Subdivision Quarterly Update

**UPDATED QUARTERLY STATUS REPORT**

**Table 1 – Well Information, Completed Activities and Planned Activities**

<u>Well Name and No.</u>	<u>Completed Activities</u>	<u>Planned Activities</u>
Saddleridge Well #20 (P20)	<ul style="list-style-type: none"> <li>• February 2016 – Started using SeaQuest</li> <li>• December 2016 – Cartridge filter installed</li> <li>• June 2017 – Flushed system</li> <li>• September 2017 – Started distribution and POE total and soluble sampling</li> <li>• December 2017 – Added raw sample data</li> </ul>	<ul style="list-style-type: none"> <li>• Hydro tank at well #1 scheduled to be cleaned Q2 2018</li> <li>• Continue flushing efforts</li> </ul>
Approved GPM (5)		
Avg. Quarterly Runtime (4.55 hrs. per day)		
<p><b><u>Comments:</u></b></p> <p>The use of SeaQuest as well as the installation of a cartridge filter has shown the POE results to be consistently under the sMCL.</p> <p>Based on the data supplied and steps Aqua has taken; we respectfully request that this system be removed from the required quarterly updates.</p>		

Aqua is committed to providing water to its customers that meets their expectations at a reasonable cost. If you have any questions or comments, please contact me at (919) 653-6982.

Sincerely,



Robert Krueger  
 Area Manager  
 Aqua North Carolina, Inc.

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 Sep-19-2018

Table 2 -Saddleridge Well Sample Data															
Date	Avg- Sample Week Run Time	Fe Raw Total	Fe Raw Sol	Mn Raw Total	Mn Raw Sol	Total Fe POE	Sol. Fe POE	Total Fe Dist.	Sol Fe Dist.	Total Mn POE	Sol Mn POE	Total Mn Dist	Sol Mn Dist.	Raw NTU	POE NTU
4/14/2015	8.14					4.5				0.032					
11/11/2016	5.5													38	25
3/6/2017	3.1													0.5	1.5
4/26/2017	4.7														
9/14/2017	5.83					0.722	0.022	<0.022	<0.022	0.00232	0.00122	<0.011			
9/25/2017	11.27					0.022	0.22	0.0514	<0.022	0.0014	0.00131	0.0155			
10/3/2017	13.68					0.022	0.22	<0.022	<0.022	<0.011	<0.0110	0.00256			
10/23/2017	11.07					0.429	0.0662	0.0624	0.045	0.0361	0.0245	<0.00110			
11/7/2017	4.24					0.022	0.22	<0.022	<0.022	0.00653	0.00817	0.00656			
11/16/2017	3.07					0.022	0.22	0.0244	<0.022	0.0067	0.00601	0.00808			
12/20/2017	3.12	0.0531	0.0374	0.0282	0.028	0.0544	0.036	0.0454	0.0371	0.0289	0.0238	0.0265	0.0243		
1/8/2018	2.46	0.132	0.0931	0.0102	0.00754	0.0334	<0.022	0.0275	<0.022	0.00763	0.00735	0.00706	0.00745		
2/5/2018	3.8	0.0428	0.0255	0.00505	0.00498	0.0257	<0.022	0.632	0.0256	0.00614	0.0046	0.0049	0.0127		
3/2/2018	2.87	0.109	<0.022	0.00527	0.00669	0.0352	<0.022	0.0369	<0.022	0.00599	0.00596	0.00628	0.00471		

Table 3 -Saddleridge Customer Complaints									
SO	SO Type	CSR Notes	Date of SO	Completion Date	Premise	Address	City State Zip	Subdivision	FSR Notes
THERE HAVE BEEN ZERO CUSTOMER COMPLAINTS FOR THE FIRST QUARTER 2018									



March 30, 2018

Mr. W. Allen Hardy  
Engineering Supervisor  
Public Water Supply Section  
Raleigh Regional Office, NCDEQ  
1628 Mail Service Center  
Raleigh, NC 27699-1628

Re: Notice of Deficiency – Quarterly Update  
Iron and Manganese Concentration  
Southwood-Surry Ridge Subdivision, Wake County  
WSF ID No.: Well #1 (Southwood) P01 and Well #3 (Cary Oaks) P03  
Water System No: NC0392338

Dear Mr. Hardy:

Aqua North Carolina, Inc. (Aqua) received the above-referenced letter dated July 12, 2016, regarding elevated concentrations of Iron (Fe) and Manganese (Mn) at Well #1 (Southwood) P01 and Well #3 (Cary Oaks) P03. The Southwood-Surry Ridge water system is comprised of these two active wells and two points of entry (POE); a new Surry Point Well #3 was just re-drilled to serve this system. The current number of customers served is 121 and the system is approved to serve 154 connections.

Aqua has compiled the requested information in a table format as follows:

- Table 1 provides a summarization of well information, completed activities and planned activities.
- Table 2 (Attachment 2) provides a summary of raw, POE and distribution iron and manganese samples collected as part of the ongoing Inorganic Chemical analyses (IOC).
- Table 3 (Attachment 3) provides a summary of customer complaint information.

Mr. W. Allen Hardy  
 March 30, 2018  
 Southwood-Surry Ridge Subdivision Quarterly Update

UPDATED QUARTERLY STATUS REPORT

Table 1 - Completed Activities, Customer Complaints, and Planned Activities

<u>Well Name and No.</u>	<u>Completed Activities</u>	<u>Planned Activities</u>
Southwood Well #1 (P01)	<ul style="list-style-type: none"> <li>• August 2013 – Started using SeaQuest</li> <li>• September 2015- Installed cartridge filter on Southwood well #1</li> </ul>	<ul style="list-style-type: none"> <li>• Continue water main flushing efforts</li> <li>• Continue investigation efforts</li> </ul>
Approved GPM (27)	<ul style="list-style-type: none"> <li>• June 2016 – Flushed system</li> <li>• June 2017 – Flushed system</li> <li>• September 2017 – Started distribution and POE total and soluble sampling</li> </ul>	
Average Quarterly Runtime (0 hrs. per day)	<ul style="list-style-type: none"> <li>• December 2017 – Fixed pressure switch</li> <li>• December 2017 – Hydro pneumatic tank cleaned</li> <li>• December 2017 – Flushed system</li> </ul>	
<p><b><u>Comments:</u></b>            A greensand filter was installed at Surry Point well #1 in December 2017. With the addition of the greensand filter at Surry Point Aqua is not currently using the production from Southwood Well #1. Based on the inconsistent sample results and the possibility of not needing this well for system demand, Aqua will complete a more in depth investigation before making a final determination on the best course of action with this well.</p>		

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Mr. W. Allen Hardy  
 March 30, 2018  
 Southwood-Surry Ridge Subdivision Quarterly Update

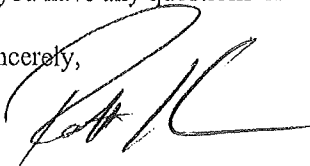
**UPDATED QUARTERLY STATUS REPORT**

**Table 1 - Completed Activities, Customer Complaints, and Planned Activities**

<u>Well Name and No.</u>	<u>Completed Activities</u>	<u>Planned Activities</u>
Cary Oaks Well #3 (P03)	<ul style="list-style-type: none"> <li>• August 2013 – Started using SeaQuest</li> <li>• June 2016 – Flushed system</li> <li>• June 2017 – Flushed system</li> <li>• September 2017 – Started distribution and POE total and soluble sampling</li> <li>• December 2017 – Added raw sample data</li> <li>• December 2017 – Cleaned hydro pneumatic tank</li> </ul>	<ul style="list-style-type: none"> <li>• Continue water main flushing efforts</li> </ul>
Approved GPM (40)		
Average Quarterly Runtime (0.26 hrs. per day)		
<p><b><u>Comments:</u></b></p> <p>With the addition of the Greensand filter at Surry Point well #1, Aqua is limiting the production from this well. Based on the inconsistent sample results, Aqua will complete a more in depth investigation before making a final determination on the best course of action with this well.</p>		

Aqua is committed to providing water to its customers that meets their expectations at a reasonable cost. If you have any questions or comments, please contact me at (919) 653-6982.

Sincerely,



Robert Krueger  
 Area Manager  
 Aqua North Carolina, Inc.

Table 2 -Southwood-Surry Ridge Well Sample Data Southwood Well #1

Date	Avg. Sample Week Run Time	Fe Raw Total	Fe Raw Sol	Mn Raw Total	Mn Raw Sol	Total Fe POE	Sol. Fe POE	Total Fe Dist.	Sol Fe Dist.	Total Mn POE	Sol Mn POE	Total Mn Dist	Sol Mn Dist.	Raw NTU	POE NTU
4/1/2014	16.2					1.1				0.5					
9/1/2016	18													1.1	
3/22/2017	14													4.8	1.8
4/20/2017	15.5													6.7	0.71
8/9/2017	16.7													27	0.5
9/14/2017	16.88					0.553	0.114	1.12	0.0592	0.606	0.554	0.293	0.0903		
10/19/2017	22					0.0429	0.0842	<0.0220	<0.0220	0.561	0.548	0.0764	0.0689		
11/6/2017	21					0.677	0.11	0.671	0.094	0.588	0.542	0.587	0.548		
11/17/2017	24					0.933	0.276	0.92	0.421	0.653	0.642	0.64	0.621		
12/12/2017	0.61	1.99	0.0312	0.223	0.127	0.507	0.0393	2.39	0.039	0.0701	0.0261	0.283	0.0192		
1/8/2018	0.41	0.213	<0.0220	0.316	0.455	0.0391	<0.0220	0.223	0.0861	0.00667	0.00263	0.0853	0.0929		
2/8/2018	0.682	0.899	<0.0220	0.258	0.299	0.477	<0.0220	0.159	<0.0220	0.266	0.282	0.464	0.0486		
3/5/2018	0.02	0.449	<0.0220	0.753	0.979	0.107	<0.0220	0.0775	<0.0220	0.0164	0.0148	0.0225	0.0187		

Table 2 -Southwood-Surry Ridge Well Sample Data Cary Oaks Well # 3

Date	Avg. Sample Week Run Time	Fe Raw Total	Fe Raw Sol	Mn Raw Total	Mn Raw Sol	Total Fe POE	Sol. Fe POE	Total Fe Dist.	Sol Fe Dist.	Total Mn POE	Sol Mn POE	Total Mn Dist	Sol Mn Dist.	Raw NTU	POE NTU
4/1/2014	2.5					1.39				0.1					
11/3/2016	8.5													13	
3/23/2017	0.27													4.1	2.2
4/20/2017	0.5													0.92	0.69
8/9/2017	3.2													1.1	0.85
9/14/2017	0.63					0.325	0.0713	0.0788	<0.0220	0.148	0.128	0.0601	0.0523		
10/19/2017	8.3					0.382	0.164	0.0478	0.0492	0.182	0.168	0.0834	0.0895		
11/6/2017	0					0.33	0.166	0.336	0.153	0.18	0.172	0.184	0.166		
11/17/2017	14					0.337	0.168	0.342	0.162	0.212	0.192	0.214	0.195		
12/20/2018	1.02	0.688	<0.0220	0.0413	0.0245	0.324	0.0811	0.313	0.069	0.124	0.062	0.1	0.0652		
1/8/2018	0.98	0.337	<0.0220	0.332	0.392	0.0403	<0.0220	0.145	0.107	0.00647	0.00236	0.0485	0.0741		
2/5/2018	0.52	0.271	<0.0220	0.324	0.333	0.627	<0.0220	0.117	<0.0220	0.277	0.255	0.129	0.0296		
3/5/2018	0.692	0.449	<0.0220	0.753	0.979	0.107	<0.0220	0.0775	<0.0220	0.0164	0.0148	0.0225	0.0187		

Table 3 -Southwood-Surry Ridge Customer Complaints									
SO	SO Type	CSR Notes	Date of SO	Completion Date	Premise	Address	City State Zip	Subdivision	FSR Notes
10371615	LABD-S	EMAIL FROM JAMES WITH PICTURE OF GALLON JUG OF RUNNING BROWN WATER	2/5/2018	2/5/2018	578091	4212 HOLLY STREAM CT	APEX, NC 27539-7682	CARY OAKS	Water cleared up by customer running water Cl2 1.0 Fe .05 Mn .005 po4 1.1FSR:taberj, EVT:Lab
10407826	LABD-S	WATER IS BROWN	2/23/2018	2/23/2018	579672	4408 SURRY RIDGE CIR	APEX, NC 27539-8906	SOUTHWOOD	Southwoods well 1 starts up when surry ridge backwashes .Surry ridge pulls water from system when backwashingPh 7.0 Cl2 .88 hardness 102.6 Fe .09 Mn 0.010 Before flush cl2 .80 nh 7.2 mn .112 fe 1.5
10429575	LABD-S	ROBERT REPORTING YELLOW/BROWN WATER IN BATHROOM TOILET;STS IS ALSO IN BATHROOMSINK AND IN KITCHEN SINK ALSO...PLZ CHECK	3/9/2018	3/9/2018	576378	4029 BAMBURGH LN	APEX, NC 27539	SURRY POINT	After flush cl2 .82 ph 7.2 mn 0.009 fe .10FSR:taberj, EVT:Lab
10402881	LABD-S	CUSTSTATED HAS YELLOW WATER	2/21/2018	2/21/2018	576378	4029 BAMBURGH LN	APEX, NC 27539	SURRY POINT	Hardness 102.6 Fe 0.09 Mn 0.019 Ph 6.6 Cl2 0.60Water gets discolored when well filter backwashes .. pulls water from systFSR:taberj, EVT:Lab
10368280	LABD-S	CUST REPROTED YELLOW-BROWN WATER PLS CHECK	2/1/2018	2/1/2018	577902	4204 HOLLY STREAM CT	APEX, NC 27539-7682	CARY OAKS	Po4 .97 Cl2 1.0 Ph 7.0 Fe .08 Mn .035 FSR:taberj, EVT:Lab
10392191	LABD-S	CUST REPORT YELLOW WTR SINCE 8:30AM PLEASE INVESTIGATE	2/14/2018	2/14/2018	576378	4029 BAMBURGH LN	APEX, NC 27539	SURRY POINT	Cl2 1.0 Ph 7.0 Fe .09 Mn .007 hardness 122.5Water cleared up before i arrived . FSR:taberj, EVT:Lab
10428701	LABD-S	CUSTOMER CALLED TO REPORT BLACK STUFF COMING OUT OF EVERY FACUET	3/9/2018	3/9/2018	579571	4400 SURRY RIDGE CIR	APEX, NC 27539-8906	SOUTHWOOD	Customer had small black particles in water after settling Cl2 .65 ph 6.8 fe .08 mn .011FSR:taberj, EVT:Lab



March 30, 2018

Mr. W. Allen Hardy  
Engineering Supervisor  
Public Water Supply Section  
Raleigh Regional Office, NCDEQ  
1628 Mail Service Center  
Raleigh, NC 27699-1628

Re: Notice of Deficiency  
Iron and Manganese Concentration  
Trapper's Creek Subdivision, Durham County  
WSF ID No.: Well #2, P02  
Water System No: NC0332132

Dear Mr. Hardy:

Aqua North Carolina, Inc. (Aqua) received the above-referenced letter dated July 12, 2016, regarding elevated concentrations of Iron (Fe) and Manganese (Mn) at Trapper's Creek Well #2, P02. The Trapper's Creek water system is comprised of two active wells and two points of entry (POE). The current number of customers served is 63 and the system is approved to serve 84 connections.

Aqua has compiled the requested information in a table format as follows:

- Table 1 provides a summarization of well information, completed activities and planned activities.
- Table 2 (Attachment 2) provides a summary of raw, POE and distribution iron and manganese samples collected as part of the ongoing Inorganic Chemical Analyses (IOC).
- Table 3 (Attachment 3) provides a summary of customer complaint information.

Mr. W. Allen Hardy  
 March 30, 2018  
 Trapper's Creek Subdivision Quarterly Update

**UPDATED QUARTERLY STATUS REPORT**

**Table 3 – Well Information, Completed Activities and Planned Activities**

<u>Well Name and No.</u>	<u>Completed Activities</u>	<u>Planned Activities</u>
Trappers Creek, Well #2 (P03)	<ul style="list-style-type: none"> <li>• February 2016 – Started using SeaQuest</li> <li>• May 2017 – Flushed system</li> <li>• September 2017 – Started distribution and POE total and soluble sampling</li> <li>• December 2017 – Added raw sample data</li> <li>• Installed a new well pump at well #2</li> <li>• March 2018 – Cleaned hydro-pneumatic tank</li> <li>• March 2018 – Flushed system</li> </ul>	<ul style="list-style-type: none"> <li>• Continue water main flushing efforts</li> <li>• Continue investigation efforts</li> </ul>
Approved GPM (75)		
Avg. Quarterly Runtime (4.92 hrs. per day)		
<b><u>Comments:</u></b>		
Based on the current sample results, Aqua will complete a more in depth investigation as part of its Water Quality Plan before making a determination on the best course of action with this well.		

Aqua is committed to providing water to its customers that meets their expectations at a reasonable cost. If you have any questions or comments, please contact me at (919) 653-6982.

Sincerely,



Robert Krueger  
 Area Manager  
 Aqua North Carolina, Inc.

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Sep 19 2018

Table 2 -Trappers Creek Well Sample Data

Date	Avg. Sample Week Run Time	Fe Raw Total	Fe Raw Sol	Mn Raw Total	Mn Raw Sol	Total Fe POE	Sol. Fe POE	Total Fe Dist.	Sol Fe Dist.	Total Mn POE	Sol Mn POE	Total Mn Dist.	Sol Mn Dist.	Raw NTU	POE NTU
4/15/2014	2.4					0.8				0.29					
12/21/2016	1.5					0.0392				0.0023					
3/24/2017	2														<0.5
5/31/2017	2.16													11	9.3
7/21/2017	1.3													2.7	3.2
9/15/2017	1.75														
10/13/2017	1					0.388	0.11	0.389	0.104	0.291	0.299	0.303	0.301		
11/3/2017	1					0.431	0.022	0.362	0.0724	0.287	0.302	0.303	0.303		
11/17/2017	9					0.815	0.0626	1.1	<0.0220	0.332	0.295	0.333	0.315		
12/20/2018	7.1	0.302	<0.0220	0.318	0.328	0.316	<0.0220	0.3	<0.0220	0.34	0.343	0.334	0.335		
1/29/2018	6.82	0.371	<0.0220	0.324	0.325	0.341	<0.0220	0.362	<0.0220	0.331	0.324	0.332	0.327		
2/8/2018	4.86	2.52	<0.0220	0.324	0.323	0.562	<0.0220	0.599	<0.0220	0.314	0.303	0.319	0.307		
3/8/2018	1.73	0.751	<0.0220	0.306	0.31	0.35	<0.0220	0.33	<0.0220	0.292	0.279	0.289	0.289		

Table 3 -Trappers Creek Customer Complaints									
SO	SO Type	CSR Notes	Date of SO	Completion Date	Premise	Address	City State Zip	Subdivision	FSR Notes
There have been zero customer complaints in the first quarter of 2018.									



March 30, 2018

Mr. W. Allen Hardy  
Engineering Supervisor  
Public Water Supply Section  
Raleigh Regional Office, NCDEQ  
1628 Mail Service Center  
Raleigh, NC 27699-1628

Re: Notice of Deficiency  
Iron and Manganese Concentration  
Tyndrum Subdivision, Durham County  
WSF ID No.: Well #1, P01  
Water System No: NC0332138

Dear Mr. Hardy:

Aqua North Carolina, Inc. (Aqua) received the above-referenced letter dated July 12, 2016, regarding elevated concentrations of Iron (Fe) and Manganese (Mn) at Tyndrum Well #1, P01. The Tyndrum water system is comprised of two active wells and two points of entry (POE). The current number of customers served is 37 and the system is approved to serve 49 connections.

Aqua has compiled the requested information in a table format as follows:

- Table 1 provides a summarization of well information, completed activities and planned activities.
- Table 2 (Attachment 2) provides a summary of raw, POE and distribution iron and manganese samples collected as part of the ongoing Inorganic chemical Analyses (IOC).
- Table 3 (Attachment 3) provides a summary of customer complaint information.



Mr. W. Allen Hardy  
 March 30, 2018  
 Tyndrum Subdivision Quarterly Update

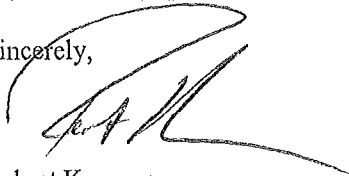
**UPDATED QUARTERLY STATUS REPORT**

**Table 1 – Well Information, Completed Activities and Planned Activities**

<u>Well Name and No.</u>	<u>Completed Activities</u>	<u>Planned Activities</u>
Tyndrum, Well #1 (P01)	<ul style="list-style-type: none"> <li>• February 2016 – Started using SeaQuest</li> <li>• May 2017 – Flushed system</li> <li>• September 2017 – Started distribution and POE total and soluble sampling</li> <li>• December 2017 – Added raw sample data</li> </ul>	<ul style="list-style-type: none"> <li>• Aqua will install a HARMSCO cartridge filter in this well by second quarter of 2018</li> <li>• Q2 2018 - Clean the hydroprnuematic tank</li> <li>• Continue water main flushing efforts</li> <li>• Continue investigation efforts</li> </ul>
Approved GPM (17)		
Avg. Quarterly Runtime (1.85 hrs. per day)		
<p><b><u>Comments:</u></b></p> <p>Based on the current sample results, Aqua will complete a more in depth investigation as part of its Water Quality Plan before making a determination on the best course of action with this well.</p>		

Aqua is committed to providing water to its customers that meets their expectations at a reasonable cost. If you have any questions or comments, please contact me at (919) 653-6982.

Sincerely,



Robert Krueger  
 Area Manager  
 Aqua North Carolina, Inc.

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 Sep-19-2018

Table 2 - Tyndrum Well Sample Data

Date	Avg. Sample Week Run Time	Fe Raw Total	Fe Raw Sol	Mn Raw Total	Mn Raw Sol	Total Fe POE	Sol. Fe POE	Total Fe Dist.	Sol Fe Dist.	Total Mn POE	Sol Mn POE	Total Mn Dist.	Sol Mn Dist.	Raw NTU	POE NTU
4/10/2014	1.4					1.4				0.4					
3/21/2017	1													5.6	
8/28/2017	0													4.5	20
9/14/2017	0					0.437	0.049	0.0474	<0.0220	0.0752	0.052	0.0307	0.00184		
10/19/2017	0					0.0923	0.0248	0.0899	0.0271	0.022	0.014	0.0214	0.0137		
11/3/2017	0					0.868	0.0741	0.476	<0.0220	0.0644	0.0225	0.197	0.128		
11/20/2017	0					0.695	0.251	0.0554	0.0482	0.0573	0.0282	0.0125	0.00595		
12/22/2017	0	1.65	<0.0220	0.382	0.386	1.55	0.137	0.0571	<0.0220	0.347	0.269	0.0584	0.029		
1/26/2018	0	1.02	<0.0220	0.124	0.121	0.52	0.0364	0.153	0.104	0.0853	0.0402	0.0306	0.0159		
2/20/2018	0	0.48	0.269	0.0809	0.0792	0.773	<0.0220	0.162	<0.0220	0.0897	0.0449	0.137	0.101		

Table 3 -Tyndrum Customer Complaints									
SO	SO Type	CSR Notes	Date of SO	Completion Date	Premise	Address	City State Zip	Subdivision	FSR Notes
There have been zero complaints in the first quarter of 2018.									



March 30, 2018

Mr. W. Allen Hardy  
Engineering Supervisor  
Public Water Supply Section  
Raleigh Regional Office, NCDEQ  
1628 Mail Service Center  
Raleigh, NC 27699-1628

Re: Notice of Deficiency – Quarterly Update  
Iron and Manganese Concentration  
Upchurch Place Subdivision, Wake County  
WSF ID No.: Wells #1 and Well #4, P01  
Water System No: NC4092038

Dear Mr. Hardy:

Aqua North Carolina, Inc. (Aqua) received the above-referenced letter dated July 12, 2016, regarding elevated concentrations of Iron (Fe) and Manganese (Mn) at Upchurch Place Wells #1 and Well #4, P01. The Upchurch Place water system is comprised of two active wells and one point of entry (POE). The current number of customers served is 62 and the system is approved to serve 64 connections.

Aqua has compiled the requested information in a table format as follows:

- Table 1 provides a summarization of well information, completed activities and planned activities.
- Table 2 (Attachment 2) provides a summary of raw, POE and distribution iron and manganese samples collected as part of the ongoing Inorganic Chemical Analyses (IOC).
- Table 3 (Attachment 3) provides a summary of customer complaint information. – There were zero customer complaints received during Q1-2018.

Mr. W. Allen Hardy  
 March 30, 2018  
 Upchurch Subdivision Quarterly Update

**UPDATED QUARTERLY STATUS REPORT**

**Table 1 – Well Information, Completed Activities, and Planned Activities**

<u>Well Name and No.</u>	<u>Completed Activities</u>	<u>Planned Activities</u>
Upchurch Place Well #1 and Well #4 (P01)	<ul style="list-style-type: none"> <li>• March 2014 – Started using SeaQuest</li> <li>• November 2015 – Cleaned hydro tank</li> <li>• February 2017 – Flushed system</li> <li>• July 2017 – Flushed system</li> <li>• September 2017 – Flushed system</li> <li>• November 2017 – Installed cartridge filters at both wells</li> <li>• December 2017- Aqua added raw sample data to the report</li> </ul>	<ul style="list-style-type: none"> <li>• Continue to work with the Public Staff in an effort to receive approval of a greensand filtration system.</li> <li>• Continue water main flushing efforts</li> </ul>
Approved GPM Well #1 – 62 gpm Well #4 – 27 gpm		
Avg. Quarterly Runtime Well #1 – 2.2 hrs per day Well #4 – Zero hrs per day		
<p><b><u>Comments:</u></b></p> <p>Well #1, which has the lesser levels of iron and manganese concentrations, is currently supplying all the water to the system at this time. Aqua limits the run time at well #4 to limit the amount of mineral concentrations entering the distribution system. Two smart pumps have been installed to better regulate sequestration dosing, however, laboratory results show that SeaQuest still does not adequately solve the problems of iron and manganese in this system. The sum of total iron and total manganese is consistently greater than one. Although public staff originally denied the installation of greensand filtration, Aqua has requested that the Public Staff of the North Carolina Utilities Commission re-evaluate their decision. Aqua is currently awaiting the final decision and will update NCDEQ as soon as we are notified.</p>		

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Mr. W. Allen Hardy  
March 30, 2018  
Upchurch Subdivision Quarterly Update

Aqua is committed to providing water to its customers that meets their expectations at a reasonable cost.  
If you have any questions or comments, please contact me at (919) 653-6982.

Sincerely,



Robert Krueger  
Area Manager  
Aqua North Carolina, Inc.

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Sep 19 2018

Table 2 - Upchurch Well Sample Data

Well Number	Date	Avg-Sample Week Run Time	Fe Raw Total	Fe Raw Sol	Mn Raw Total	Mn Raw Sol	Total Fe POE	Sol Fe POE	Total Fe Dist.	Sol Fe Dist.	Total Mn POE	Sol Mn POE	Total Mn Dist.	Sol Mn Dist.	Raw NTU	POE NTU
1	3/13/2013	1.04					1				0.177					
4	3/13/2013	1.04					1				0.177					
1&4	3/10/2017	1.73/0					1.04	0.0448			0.195	0.17				
1	3/10/2017	1.73	0.272	0.0752	0.134	0.116									3	0.66
4	3/10/2017	0	0.929	0.934	0.191	0.186									0.52	0.66
1&4	4/21/2017	2.63/0					1.01	<0.0220			0.202	0.199				0.67
1	4/21/2017	2.63	0.462	1.02	0.153	0.202									1.9	
4	4/21/2017	0	1.02	0.239	0.196	0.149									1.9	
1&4	5/11/2017	1.93/0					0.963	0.192			0.193	0.194				
1	5/11/2017	1.93	0.622	0.328	0.156	0.158									2.7	<0.50
4	5/11/2017	0	1.14	1.16	0.199	0.204									1.7	<0.50
1&4	6/12/2017	4.6/0					0.3	0.094			0.13	0.104				0.82
1	6/12/2017	4.6	0.317	0.23	0.133	0.133									1	
4	6/12/2017	0	1.02	0.914	0.206	0.198									3.4	
1&4	7/12/2017	1.67/0.17					0.578	0.137			0.185	0.139				1.2
1	7/12/2017	1.67	0.663	0.0658	0.179	0.154									4	
4	7/12/2017	0.17	1.09	0.377	0.219	0.191									2.3	
1&4	8/10/2017	2.63/0					0.374	0.114			0.132	0.117				1.2
1	8/10/2017	2.63	0.43	0.141	0.139	0.144									2.4	
4	8/10/2017	0	1.21	0.55	0.211	0.195									4.3	
1&4	9/13/2017	2.10/0					1.19	0.129	0.607	0.102	0.225	0.224	0.281	0.037		
1&4	9/25/2017	2.75/0					1.1	0.465	0.288	0.0288	0.238	0.238	0.0406	0.00727		
1&4	10/2/2017	2.73/0					1.09	0.379	0.328	0.108	0.193	0.199	0.0713	0.0373		
1&4	10/17/2017	2.53/0					1.08	0.547	0.409	0.151	0.213	0.208	0.0815	0.0457		
1&4	11/7/2017	2.3/0					1.09	0.742	0.496	0.183	0.217	0.216	0.0739	0.0362		
1&4	11/28/2017	2.24/0					1.23	<0.0220	0.281	0.0878	0.208	0.131	0.0602	0.0351		
1&4	12/12/2017	2.43/0					0.911	0.191	0.365	<0.0220	0.196	0.139	0.12	0.0142		
1	12/12/2017	2.43	0.275	0.171	0.139	0.142										
4	12/12/2017	0	0.92	0.493	0.199	0.197										
1&4	1/31/2018	1.08/0					0.861	0.0633	0.135	0.0961	0.177	0.14	0.0514	0.0468		
1	1/31/2018	1.08	0.809	0.383	0.158	0.173										
4	1/31/2018	0	1.28	1.11	0.22	0.202										
1&4	2/20/2018	2.18/0.03					0.624	0.0344	0.237	<0.0220	0.176	0.133	0.076	0.0213		
1	2/20/2018	2.18	0.616	0.521	0.186	0.189										
4	2/20/2018	0.03	1.43	1.37	0.224	0.228										

Table 3 - Upchurch Well Sample Data

SO	SO Type	CSR Notes	Date of SO	Completion Date	Premise	Address	City State Zip	Subdivision	FSR Notes
Zero Customer Complaints Received in 1st Quarter of 2018									





March 30, 2018

Mr. W. Allen Hardy  
Engineering Supervisor  
Public Water Supply Section  
Raleigh Regional Office, NCDEQ  
1628 Mail Service Center  
Raleigh, NC 27699-1628

Re: Notice of Deficiency – Quarterly Update  
Iron and Manganese Concentration  
Wakefield Plantation Subdivision, Wake County  
WSF ID No.: Well #6, P06  
Water System No: NC0392155

Dear Mr. Hardy:

Aqua North Carolina, Inc. (Aqua) received the above-referenced letter dated July 12, 2016, regarding elevated concentrations of Iron (Fe) and Manganese (Mn) at Wakefield Well #6, P06. The Wakefield water system is comprised of four active wells and four points of entry (POE). The current number of customers served is 160 and the system is approved to serve 174 connections.

Aqua has compiled the requested information in a table format as follows:

- Table 1 provides a summarization of well information, completed activities and planned activities.
- Table 2 (Attachment 2) provides a summary of raw, POE and distribution iron and manganese samples collected as part of the ongoing Inorganic Chemical analyses (IOC).
- Table 3 (Attachment 3) provides a summary of customer complaint information.

Mr. W. Allen Hardy  
 March 30, 2018  
 Wakefield Plantation Subdivision Quarterly Update

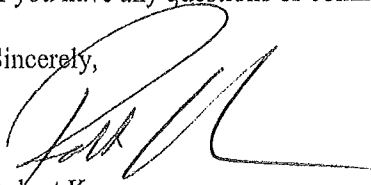
**UPDATED QUARTERLY STATUS REPORT**

**Table 1 – Well Information, Completed Activities and Planned Activities**

<u>Well Name and No.</u>	<u>Completed Activities</u>	<u>Planned Activities</u>
Wakefield Well #6, (P06)	<ul style="list-style-type: none"> <li>• March 2013 – Cleaned hydro tank</li> <li>• October 2014 – Started using SeaQuest</li> <li>• March 2016 – Received approval for greensand filtration</li> <li>• March 2017 – Flushed system</li> <li>• September 2017 – Started distribution and POE total and soluble sampling</li> <li>• December 2017 – added raw sample data</li> </ul>	<ul style="list-style-type: none"> <li>• Continue water main flushing efforts</li> <li>• Continue sampling efforts</li> <li>• Complete executive summaries</li> </ul>
Approved GPM (88)		
Avg. Quarterly Runtime (2.93 hrs. per day)		
<p><b><u>Comments:</u></b></p> <p>The original plan to improve the water quality on both well #6 and well #8 was to interconnect these two wells and install greensand filtration at well #6 to filter both wells at one location. This project was dependent on Aqua acquiring an easement from an outside party. Aqua has not been able to secure this easement so the next step is to install greensand filtration at both well #6 and well #8. Executive summaries for approval of greensand filtration will be completed in 2018. Aqua will continue ongoing sampling to get a more consistent set of data.</p>		

Aqua is committed to providing water to its customers that meets their expectations at a reasonable cost. If you have any questions or comments, please contact me at (919) 653-6982.

Sincerely,



Robert Krueger  
 Area Manager  
 Aqua North Carolina, Inc.

Table 2 -Wakefield Well #6 Sample Data

Date	Avg. Sample Week Run Time	Fe Raw Total	Fe Raw Sol	Mn Raw Total	Mn Raw Sol	Total Fe POE	Sol. Fe POE	Total Fe Dist.	Sol Fe Dist.	Total Mn POE	Sol Mn POE	Total Mn Dist	Sol Mn Dist.	Raw NTU	POE NTU
4/25/2016	6.8					1.53				0.23					
12/21/2016	3.9					1.72				0.27					
4/27/2017	5.7													2.1	
8/10/2017	3.39													4.8	0.75
9/13/2017	3.39					1.84	0.137	1.4	0.317	0.2	0.252	0.126	0.0989		
9/28/2017	4.08					0.841	<0.0220	1.29	<0.0220	0.157	0.124	0.165	0.127		
10/5/2017	4.4					1.94	0.297	1.6	0.519	0.258	0.231	0.235	0.192		
10/23/2017	3.18					2.88	0.634	1.36	0.224	0.254	0.163	0.186	0.149		
12/6/2017	2.01					0.904	0.168	1.77	0.193	0.168	0.143	0.189	0.107		
12/14/2017		1.31	0.235	0.197	0.275	1.87	0.65	1.65	0.0486	0.263	0.229	0.198	0.161		
2/1/2018		1.72	0.5	0.239	0.247	1.19	0.0825	1.2	0.0536	0.184	0.134	0.151	0.0669		

Table 3 -Wakefield Customer Complaints

SO	SO Type	CSR Notes	Date of SO	Completion Date	Premise	Address	City State Zip	Subdivision	FSR Notes
10325124	LABD-S	CUST CLD TO REPORT BROWN WATER COMING FROM ALL TAPS	1/8/2018	1/17/2018	1436177	2220 HOLLY BEND LN	WAKE FOREST, NC 27587	WAKEFIELD ESTATES	Discoloration is a continuous issue do o proximity to well # 6.First check CHL .75, pH , 6.9 , po4 .82 , iron 0.32 , mang 0.085 , hardne102.6, after flushing CHL .98 , pH 6.9 , po4 1.11 , iron 0.078 , mang 0.078