



December 29, 2017

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
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
 December 29, 2017
 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 (P01)	<ul style="list-style-type: none"> • September 2015 – Started using SeaQuest • April 2017 – Flushed system • September 2017 – Started distribution and POE total and soluble sampling • December 2017 – Cleaned hydropneumatic storage tank 	<ul style="list-style-type: none"> • Q2- 2018 – Perform annual flushing • Continue to minimize usage of this well. • Continue to optimize SeaQuest based on monthly total and soluble sampling
Approved GPM (32)		
Avg. Quarterly Runtime (0.0)		
<p><u>Comments:</u></p> <p>Aqua has determined, based on the current sample results, that running well #1 at short intervals can produce water quality below the sMCL. However, sample results also show that the longer the well runs, the mineral levels increase. Aqua will continue to monitor water quality on this well and report findings on the next quarterly report.</p> <p>Currently, Aqua is running well #1 as only 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 which will allow Aqua to further minimize the use of well #1. The construction of well #12 is 85% complete. The developer informed Aqua they are anticipating start up sometime in the first quarter of 2018.</p>		

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Sep 19 2018

Mr. W. Allen Hardy
December 29, 2017
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) 653-6964.

Sincerely,



Moses A. Thompson
Director of Operations
Aqua North Carolina, Inc.

MAT/rl

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Sep 19 2018

Table 2 - Avocet Sample Data

Date	Avg. Sample Week Run Time	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
4/4/2017	0	-				-				9.2	2
7/18/2017	0	-				-				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		

Table 3 - Avocet Customer Complaints

SO	SO Type	CSR Notes	Date of SO	Completion Date	Premise	Address	City State Zip	Subdivision	FSR Notes
10277370	LABD-S	RUSTY AND MUDDY WATER FOR 2 WEEKS	12/6/2017	12/7/2017	1325990	6433 CARDINAUX LN	HOLLY SPRINGS, NC 27540	AVOCET WATER	CL - 0.7 PO4 - 1.2 PH - 7.2 Fe - 0.11 MN - 0.052



December 29, 2017

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
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
 December 29, 2017
 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"> • Sep 2015 - Started using SeaQuest • Jan - Apr 2016 - Flushed system • Sep - Nov 2017 - Flushed system • Sep 2017 - Started Distribution and POE total and soluble sampling 	<ul style="list-style-type: none"> • Q1/Q2 2018 – Perform annual flushing • Continue to optimize SeaQuest based on a monthly total and soluble sampling • Beginning Q1 2018 Aqua will be adding raw sample data to the report
Approved GPM (80)		
Avg. Quarterly Runtime (7.22)		
<u>Comments:</u>		
The POE sampling results show this well is producing clear water. Aqua request Swans Mill Well #1 P16 to be removed from the quarterly NOD list.		
Barony Well #5 (P63)	<ul style="list-style-type: none"> • Sep 2015 Started using SeaQuest • Jan - Apr 2016 - Flushed system • Sep - Nov 2017 - Flushed system • Sep 2017 – Cartridge filter installed • Sep 2017 – Started Distribution and POE total and soluble sampling 	<ul style="list-style-type: none"> • Q1/Q2 2018 – Perform annual flushing • Continue to optimize SeaQuest based on a monthly total and soluble sampling • Beginning Q1 2018 Aqua will be adding raw sample data to the report
Approved GPM (77)		
Avg. Quarterly Runtime (6.46)		
<u>Comments:</u>		
Based on the historic and current sample results, Aqua plans to request addition of greensand filtration as part of the new Aqua proposed water quality plan.		

Mr. W. Allen Hardy
 December 29, 2017
 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"> Oct 2015 - Started using SeaQuest Jan - Apr 2016 - Flushed system Feb 2017 - Flushed system Jun 2017 - Installed cartridge filter Sep 2017 - Started Distribution and POE total and soluble sampling 	<ul style="list-style-type: none"> Q1/Q2 2018 - Perform annual flushing Determine effectiveness of cartridge filter with ongoing monitoring Continue to optimize SeaQuest based on a monthly total and soluble sampling Beginning Q1 2018 Aqua will be adding raw sample data to the report
Approved GPM (75)		
Avg. Quarterly Runtime (8.75)		
<p>Comments:</p> <p>Based on the historic and current sample results, Aqua plans to request addition of greensand filtration as part of the new Aqua proposed water quality plan.</p>		
Hawthorne Well #1 & #2 (P76)	<ul style="list-style-type: none"> Feb 2016 -Started Using SeaQuest Jan - Apr 2016 - Flushed system Feb 2017 - Flushed system Jun 2017 - Installed cartridge filter Sep 2017 - Started Distribution and POE total and soluble sampling 	<ul style="list-style-type: none"> Q1/Q2 2018 - Perform annual flushing Determine effectiveness of cartridge filter with ongoing monitoring Continue to optimize SeaQuest based on a monthly total and soluble sampling Beginning Q1 2018 Aqua will be adding raw sample data to the report
Approved GPM (73)		
Avg. Quarterly Runtime (11.68)		
<p>Comments:</p> <p>Based on the historic and current sample results, Aqua plans to request addition of greensand filtration as part of the new Aqua proposed water quality plan.</p>		

Mr. W. Allen Hardy
 December 29, 2017
 Bayleaf Master Subdivision Quarterly Update
 P12, P16, P19, P28, P39, P63, P67, P75, P76, P92, P93, P97, P3B, P4B, P7B

Woodvalley #9 (P92)	<ul style="list-style-type: none"> Feb 2016 - Started using SeaQuest Jan - Apr 2016 - Flushed system Feb 2017 - Flushed system Jun 2017 - Well was treated via Aqua free Jun 2017 - Installed cartridge filter Sep 2017 - Started Distribution and POE total and soluble sampling 	<ul style="list-style-type: none"> Q1/Q2 2018 – Perform annual flushing Determine effectiveness of cartridge filter with ongoing monitoring Continue to optimize SeaQuest based on a monthly total and soluble sampling Beginning Q1 2018 Aqua will be adding raw sample data to the report
Approved GPM (38)		
Avg. Quarterly Runtime (7.07)		

Comments:

Based on the historic and current sample results, Aqua plans to request addition of greensand filtration as part of the new Aqua proposed water quality plan.

Carlyle Manor Well #4 (P3B)	<ul style="list-style-type: none"> Sep 2015 - Started using SeaQuest Jan - Apr 2016 - Flushed system Jun 2017 - Installed cartridge filter Sep - Nov 2017 - Flushed system Sep 2017 - Started Distribution and POE total and soluble sampling 	<ul style="list-style-type: none"> Q1 2018 – Perform annual flushing Determine effectiveness of cartridge filter with ongoing monitoring Continue to optimize SeaQuest based on a monthly total and soluble sampling
Approved GPM (73)		
Avg. Quarterly Runtime (7.28)		

Comments:

Based on the historic and current sample results, Aqua plans to request addition of greensand filtration as part of the new Aqua proposed water quality plan.

Seville Well #1 (P4B)	<ul style="list-style-type: none"> Aug 2015 - Started using SeaQuest Jan - Apr 2016 - Flushed system Sep - Nov 2017 - Flushed system Sep 2017 - Started Distribution and POE total and soluble sampling 	<ul style="list-style-type: none"> Q1 2018 – Perform annual flushing Continue to optimize SeaQuest based on a monthly total and soluble sampling Beginning Q1 2018 Aqua will be adding raw sample data to the report
Approved GPM (44)		
Avg. Quarterly Runtime (7.18)		

Comments:

Based on the historic and current sample results, Aqua plans to request addition of greensand filtration as part of the new Aqua proposed water quality plan.

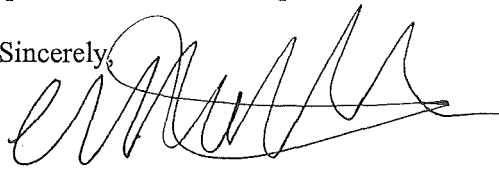
Mr. W. Allen Hardy
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 P12, P16, P19, P28, P39, P63, P67, P75, P76, P92, P93, P97, P3B, P4B, P7B

George's Grant Well #1 (P7B)	<ul style="list-style-type: none"> Oct 2015 - Started Using SeaQuest Jan - Apr 2016 - Flushed system Jun 2017 - Installed cartridge filter Sep - Nov 2017 - Flushed system Sep 2017 – Started Distribution and POE total and soluble sampling 	<ul style="list-style-type: none"> Q1 2018 – Perform annual flushing Continue to optimize SeaQuest based on a monthly total and soluble sampling Beginning Q1 2018 Aqua will be adding raw sample data to the report
Approved GPM (66)		
Avg. Quarterly Runtime (6.67)		
<u>Comments:</u>		
Based on the historic and current sample results, Aqua plans to request addition of greensand filtration as part of the new Aqua proposed water quality plan.		
Woodvalley Well #11 (P93)	<ul style="list-style-type: none"> Dec 2016 – Started using SeaQuest Feb 2017 – Flushed system Sep 2017 – Started distribution and POE total and soluble sampling 	<ul style="list-style-type: none"> Q1 2018 – Perform annual flushing Continue to optimize SeaQuest based on a monthly total and soluble sampling Beginning Q1 2018 Aqua will be adding raw sample data to the report
Approved GPM (29)		
Avg. Quarterly Runtime (7.17)		
<u>Comments:</u>		
The POE sampling results show this well is producing clear water. Aqua request Woodvalley Well #11 P93 be removed from the quarterly NOD list.		
Barton Creek Bluffs Well #10	<ul style="list-style-type: none"> Mar 2016 – Started using SeaQuest Feb 2017 – Flushed system Sep 2017 - Took soluble insoluble well head and distribution samples 	<ul style="list-style-type: none"> Q1 2018 – Perform annual flushing Continue to optimize SeaQuest based on monthly total and soluble sampling Beginning Q1 2018 Aqua will be adding raw sample data to the report
Approved GPM (15)		
Avg. Quarterly Runtime (6.74)		

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 P12, P16, P19, P28, P39, P63, P67, P75, P76, P92, P93, P97, P3B, P4B, P7B

Comments:		
Aqua will continue to optimize SeaQuest and perform sampling to better analyze the characteristics of this well.		
Ethan's Glen Well #19 and #20 (P97)	<ul style="list-style-type: none"> • Dec 2016 - Started feeding SeaQuest • Sep - Nov 2017 - Flushed system • Sep 2017 - Took soluble insoluble well head and distribution samples 	<ul style="list-style-type: none"> • Q1 2018 – Perform annual flushing • Continue to optimize SeaQuest based on monthly total and soluble sampling • Beginning Q1 2018 Aqua will be adding raw sample data to the report
Approved GPM (18/11)		
Avg. Quarterly Runtime (5.50)		
Comments:		
The use of SeaQuest along with consistent Fe and Mn sampling show that this well is producing clear water. Aqua request Ethan's Glen Well #19 and #20 (P97) to be removed from the quarterly NOD list.		

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) 653-6964.

Sincerely,


Moses A. Thompson
 Director of Operations
 Aqua North Carolina, Inc.

MAT/rl

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	2.99					<0.0220	<0.022	<0.022	<0.022	<0.001	0.00127	0.0117	<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	5.23	1.79	0.0411	0.609	0.599	1.69	0.569	2.25	0.703	0.577	0.563	0.562	0.425			
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			
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		

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				
Cartlyle 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	5.23	0.802	0.17	0.662	0.625	0.813	0.228	0.293	0.0993	0.672	0.569	0.0432	0.0164					
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					
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	5.17	1.51	0.296	0.665	0.681	1.95	0.0337	1.24	0.462	0.706	0.585	0.532	0.424				

Woodvalley #11	9/15/2017	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			
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		
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			
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			

Table 3 - Bayleaf Master System Customer Complaints

SO	SO Type	CSR Notes	Date of SO	Completion Date	Premise Address	City State Zip	Subdivision	FSR Notes
10161233	LABD-S	CUST REPORT DISCOLORED WATER	10/9/2017	10/9/2017	591942 6005 CRESCENT KNOLL DR	RALEIGH, NC 27614-8953	CARLYLE MANOR	CL2 0.04 PH 7.2 PO4 1.58 FE 0.24 MN 0.228 FSR:hawlevt, EVT:Lab
10158635	LABD-S	CUSTOMER STATES WATER IS BROWN	10/6/2017	10/6/2017	564420 2737 SUNNYSTONE WAY	RALEIGH, NC 27613-6179	BARTON CREEK BLUFFS	Cus says wtr clear. discussed wtr restrictions FSR:caseyp, EVT:Lab
10158632	LABD-S	CUST STATES WTR IS YELLOW PLEASE CHECK	10/6/2017	10/6/2017	585048 5116 BIG CREEK RD	RALEIGH, NC 27613-6162	BARTON CREEK BLUFFS	Wtr clear per cus, discussed wtr restrictions FSR:caseyp, EVT:Lab
10169511	LABD-S	CUST STATES WATER IS AN ORANGE-REDDISH COLOR PLEASE INVESTIGATE	10/12/2017	10/12/2017	538898 12733 AMORETTO WAY	RALEIGH, NC 27613-6236	BARTON CREEK BLUFFS	
10172436	LABD-S	CUST IS REPORTING DIRTY WATER THE COLORS CHANGES BROWN AND DIRTY LOOKING THIS IS AN ONGOING ISSUE	10/13/2017	10/13/2017	591895 6001 CRESCENT KNOLL DR	RALEIGH, NC 27614-8953	CARLYLE MANOR	CL2 0.26 PH 7.2 PO4 1.80 FE 0.25 MN 0.142 Water clear from spigot and has a
10179544	LABD-S	VERY CLOUDY WATER	10/18/2017	10/18/2017	580311 4516 WOOD VALLEY DR	RALEIGH, NC 27613-6328	WOODVALLEY/G RALYN	Explained dissolved oxygen to cust FSR:rhinerb, EVT:Lab
10213300	LABD-S	WATER IS YELLOW AND BROWN FOR A COUPLE OF MONTH HE STATE HE'S NOTHE SAID NOT HE'S NOT SATIFIED WITH THE SVC BECAUSE NOTHING IS EVER DONE	10/31/2017	10/31/2017	537315 12301 LOCKHART LN	RALEIGH, NC 27614-9408	SWAN~S MILL (135)	CL2 .74 PH 7.6 PO4 .64 FE 0.05 MN 0.027 HARD 9 GPG TAG LEFT WITH BUST OILTESR:rhinerb, EVT:Lab
10152733	LABD-S	ADV DISCOLORED WATER THAT STAINED TOILETS , LOW PRESS AS WELL PLS CALL CUST 9919-264-4799 AND BAD SMELL OF WATER	10/3/2017	10/4/2017	584899 5109 BIG CREEK RD	RALEIGH, NC 27613-6163	BARTON CREEK BLUFFS	Explained well runtimes and iron oxidation. He said dont bother sampling FSR:caseyp, EVT:Lab
10164865	LABD-S	CUSTOMER STATES THE TANKS THAT WERE ORIGINALLY THE ISSUE AREN'T THERE ANYMOREAND SHE'S STILL EXPERIENCING DISCOLORATION PLEASE INVESTIGATE ALSO REQ DIFF TECH DOESN'T WANT GARY TO GO OUT.	10/10/2017	10/10/2017	620821	RALEIGH, NC 27614	CARLYLE MANOR	
10167272	LABD-S	DIRTY WATER	10/11/2017	10/11/2017	537448 12320 LOCKHART LN	RALEIGH, NC 27614-9407	SWAN~S MILL (135)	CL2 .81 PH 7.5 PO4 .72 FE 0.07 MN 0.004 HARD 9 GPG RANG DOORBELL. NO ANS. TAG LEFT.FSR:rhinerb,
10169912	LABD-S	CUSTOMER STATES SHE'S STILL EXPERIENCING DISCOLORATION AND TANKS WERE ALREADYREMOVED SO THAT IS NO LONGER THE ISSUE PLEASE INVESTIGATE SHE REQ BEFORE 2PM AND REQ FOR GARY PREV TECH TO NOT GO OUT WISHES DIFF TECH	10/12/2017	10/13/2017	620821	RALEIGH, NC 27614	CARLYLE MANOR	CL2 0.57 PH 7.4 PO4 1.83 FE 1.03 MN 0.413 Pressure at house was 90psi. Water was little

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Table 3 - Bayleaf Master System Customer Complaints

10204775	LABD-S	BROWN WATER	10/27/2017	10/27/2017	523306	1001 CLARK RIDGE CT	RALEIGH, NC 27613-6243	BARTON CREEK BLUFFS	Fish line. CL2 .51 PO4 1.4 PH 7.4 FE .3 MN .003
10217745	LABD-S	CUST STILL HAS BROWN WATER HAD FLUSHING DONE SEVERALTIMES AND WATER IS STILL BROWN/DISCOLORED	11/2/2017	11/2/2017	523306	1001 CLARK RIDGE CT	RALEIGH, NC 27613-6243	BARTON CREEK BLUFFS	Customer experiencing discolored water believed to be caused by filterSystem flushed water through hose bib one side will clear upOther side will not
10210130	LABD-S	BROWN WATER THIS IS AFTER FLUSHING WAS DONE FOR PROPERTY	10/30/2017	10/30/2017	523306	1001 CLARK RIDGE CT	RALEIGH, NC 27613-6243	BARTON CREEK BLUFFS	Fish line. CL2 .59 po4 1.89 PH 7.2 FE .4, MN .00
10165047	LABD-S	CUST REPORTS VERY RUSTY WATER PLS CHECK. PLS CALL CUST IF POSSIBLE	10/10/2017	10/10/2017	592096	6013 CRESCENT KNOLL DR	RALEIGH, NC 27614-8953	CARLYLE MANOR	CHL 0.48 PH 7.6 PO4 .87 FE 1.13 MN 0.670 Flushing back through well at end of road
10157359	LABD-S	CLOUDY WATER	10/5/2017	10/5/2017	527459	10524 NEW ARDEN WAY	RALEIGH, NC 27613-6102	WOODVALLEY/G RALYN	Spoke to cust about dissolved oxygen FSR:rhinerb, EVT:Lab
10157217	LABD-S	DAN CLD TO REPORT WHITE BUBBLES IN WATER.	10/5/2017	10/5/2017	527388	10509 NEW ARDEN WAY	RALEIGH, NC 27613-6102	WOODVALLEY/G RALYN	Spoke to cust about dissolved oxygen FSR:rhinerb, EVT:Lab
10155999	LABD-S	DISCOLORED WATER COMING FROM TANK UNDER HOUSE PLUMBER ADVISE IS COMING FROM AQUA LINE// STATES ODOR IS COMING FROM FAUCETS STATES NEED SAMPLE FROM METER LINE TO HOUSE. REQ TO BE PRESENT ADVS CANNOT GAURANTEE	10/4/2017	10/9/2017	620821		RALEIGH, NC 27614	CARLYLE MANOR	Customer has 2 old water tanks under home from he private well home was Hooked up too this was causing her issue plumber just unhook today. Has a Softner also. Pressure at street over 120 psi . She saying low pressure ins
10161097	LABD-S	CUST RPTS ORANGE PALE YELLOW COLOR	10/9/2017	10/9/2017	591972	6008 CRESCENT KNOLL DR	RALEIGH, NC 27614-8952	CARLYLE MANOR	CL2 0.03 PH 7.3 PO4 1.75 FE 2.03 MN 0.249 Has filter system FSR:hawleyt, EVT:Lab
10161153	LABD-S	CUSTOMER IS REPORTING BROWNISH RED WATER SINCE SATURDAY	10/9/2017	10/9/2017	591984	6009 CRESCENT KNOLL DR	RALEIGH, NC 27614-8953	CARLYLE MANOR	CL2 .60 PH 7.2 PO4 1.45 Fe 0.22 MN 0.232
10166596	LABD-S	CUST REPORT DISCOLORED WATER STATES TOILET WATER IS ALL BLACK	10/11/2017	10/11/2017	538884	12728 AMORETTO WAY	RALEIGH, NC 27613-6235	BARTON CREEK BLUFFS	CL2 0.64 PH 7.5 PO4 0.94 Fe 0.01 MN 0.013 Water clear from spigot. Meter was replaced today
10221184	LABD-S	REPORT BROWN WATER COMING OUT ALL SPIGOTS	11/3/2017	11/3/2017	585342	5136 BARTONS ENCLAVE LN	RALEIGH, NC 27613-6164	ENCLAVE OF BARTON CRK BLF	Fish line. CL2 .49 PO4 1.7 PH 7.1 FE .41

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December 29, 2017

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
 December 29, 2017
 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"> • August 2015 – Started using SeaQuest • June 2017 – Flushed System • September 2017 – Installed cartridge filter. • September 2017 – Started distribution and POE total and soluble sampling 	<ul style="list-style-type: none"> • Q2-2018 – Perform annual flushing • Continue to optimize SeaQuest based on monthly total and soluble sampling • Beginning Q1 2018 Aqua will be adding raw sample data to the report • Hydropneumatic storage tank scheduled to be cleaned Q1 2018
Approved GPM (30)		
Avg. Quarterly Runtime (1.75hrs)		
<p><u>Comments:</u></p> <p>Aqua currently limits the use of this well due to water quality and relies on well #1 for meeting system demand.</p> <p>Based on the historic and current sample results, Aqua will continue to assess the sample results, its usage, and impact of operational improvements to determine the appropriate level of treatment necessary to address the negative impacts of Fe and Mn in this system as part of the Aqua proposed 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) 653-6964.

Sincerely,



Moses A. Thompson
 Director of Operations
 Aqua North Carolina, Inc.

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Table 2 - Belle Ridge Sample Data

Date	Avg. Sample Week Run Time	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	0.026	
10/18/2017	1.15	0.574	0.0275	0.381	0.179	0.207	0.13	0.177	0.141	0.077	
11/2/2017	0.5	0.931	0.151	0.876	0.0303	0.173	0.108	0.022	0.0134	0.065	
11/15/2017	2.9	0.467	0.022	0.159	0.0237	0.194	0.108	0.0573	0.0305	0.086	

Table 3 - Belle Ridge Customer Complaints

SO	SO Type	CSR Notes	Date of SO	Completion Date	Premise	Address	City State Zip	Subdivision	FSR Notes
Aqua received zero complaints for this system in fourth quarter of 2017									



December 29, 2017

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
 December 29, 2017
 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"> • July 2013 – Started using SeaQuest • September 2016 – Flushed system • March 2017 – Flushed system • July 2017 – Flushed system • September 2017 – Started distribution and POE total and soluble sampling • Continue distribution and POE soluble and insoluble sampling • December 2017 – Cleaned hydropneumatic storage tank 	<ul style="list-style-type: none"> • Q3 2018 – Perform annual flushing • Continue to optimize SeaQuest based on a monthly total and soluble sampling • Beginning Q1 2018 Aqua will be adding raw sample data to the report
Approved GPM (49)		
Avg. Quarterly Runtime (7.2)		

Comments:

Aqua will continue to pull the monthly Fe/Mn samples and evaluate our method of feeding SeaQuest. If Aqua cannot achieve consistent sample results below the sMCL for insoluble Mn, then this well will be added to the new proposed Aqua water quality plan for consideration to request approval of a greensand filtration system.

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) 653-6964.

Sincerely,



Moses A. Thompson
 Director of Operations
 Aqua North Carolina, Inc.

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Sep 19 2018

Table 2 - Branston Sample Data

Date	Avg. Sample Week Run Time	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		

Table 3 - Branston Customer Complaints

SO Type	CSR Notes	Date of SO	Completion Date	Premise	Address	City State Zip	Subdivision	FSR Notes	FSR Comments
There are zero customer complaints for the 4th quarter of 2017.									



December 29, 2017

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
 December 29, 2017
 Brayton Park Subdivision Quarterly Update

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"> • Q3 2016 cartridge filter installed • April 2017 the 5,400 hydropneumatic tank for the system was cleaned – lining was inspected and found to be in good condition • This well was abandoned via an NCDOT TIP project in 4th quarter 2016 • An emergency interconnect with the Town of Holly Springs was completed 11/23/2017 	<ul style="list-style-type: none"> • No planned activities,
Approved GPM (85)		
Avg. Quarterly Runtime (0.0)		
<p><u>Comments:</u></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 an emergency interconnect to the Town of Holly Springs.</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) 653-6964.

Sincerely,



Moses A. Thompson
 Director of Operations
 Aqua North Carolina,
 Inc.
 MAT/rl

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Table 2 - Brayton Park 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 Customer Complaints

SO Type	CSR Notes	Date of SO	Completion Date	Premise	Address	City State Zip	Subdivision	FSR Notes	FSR Comments
10164526	LABD-S	CUSTOMER IS REPORTING BROWN WATER	10/10/2017	10/10/2017	589744	5709 BRAYTON PARK PL	HOLLY SPRINGS, NC 27540-8462	BRAYTON PARK	CL .4 po4 .8 pH 7.4 Fe .32 MN .062 water cleared FSR:johnsos, EVT:Lab
10168158	LABD-S	EMAIL FROM SHAY HUSB REPORTING TEA COLORED WATER WITH BLACK PARTICLES	10/12/2017	10/12/2017	586750	5309 YORKVILLE CT	HOLLY SPRINGS, NC 27540-8458	BRAYTON PARK	CL .4 po4 .8 pH 7.3 Fe .6 MN .102 water was brownish openedUp blow offFSR:johnsos, EVT:Lab



December 29, 2017

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
 December 29, 2017
 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"> • June 2015 – Started using SeaQuest • June 2017 – Flushed system • August 2017 – Installed blow-off • September 2017 – Started distribution and POE total and soluble sampling • Continuation of the soluble/insoluble Fe/Mn sampling • December 2017 – Cleaned hydropneumatic storage tank • December 2017 installed cartridge filters at Well #1 and #2. 	<ul style="list-style-type: none"> • Q2-2018 – Perform annual flushing • Continue to optimize SeaQuest based on a monthly total and soluble sampling • Beginning Q1 2018 Aqua will be adding raw sample data to the report
Approved GPM (30)		
Avg. Quarterly Runtime (7.6 hrs. per day)		

Comments:

Aqua completed its RF meter exchange project for this system in October, 2017, which appears to have contributed to some of the discolored water calls experienced.

Aqua will continue to sample and monitor the water quality to determine the effectiveness of the new cartridge filters.

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) 653-6964.

Sincerely,



Moses A. Thompson
 Director of Operations
 Aqua North Carolina, Inc.

MAT/rl

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Table 2 - Briarwood Kildaire Sample Data

Date	Avg. Sample Week Run Time	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
1/6/2016	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		

Table 3 - Briarwood Kildaire Customer Complaints

SO	SO Type	CSR Notes	Date of SO	Completion Date	Premise Address	City State Zip	Subdivision	FSR Notes
10177785	LABD-S	PUC CASE - CUST STATES DISCOLORED WATER (BRN) AND REPORTS LOW PRESSUREPLS INVESTIGATE.	10/17/2017	10/17/2017	578360 4232 BROOK CROSS DR	APEX, NC 27539-8112	KILDAIRE ESTATES	CL - 1.2 PO4 - 1.3 PH - 7.5 Fe - 0.33 MN - 0.06 Water was clear customer has just installed a water softener think that is the cause of the PSI issue
10217575	LABD-S	CUST REPORTED BROWN WATER	11/2/2017	11/2/2017	582065 4805 MORNING MIST CT	APEX, NC 27539-8114	KILDAIRE ESTATES	CL - 1.5 PO - 4.7 PH - 7.6 Fe - 0.4 MN - 0.054 Water was clear Left door tag
10220138	LABD-S	LUCY CLD TO REPORT BROWN WTR	11/3/2017	11/3/2017	577358 4121 BROOK CROSS DR	APEX, NC 27539-8110	KILDAIRE ESTATES	CL2 - 1.2 PH - 7.0 PO4 - 1.1 MN - 0.020 FE - 0.11 Hard - 102 Water was clear upon arrival. Pulled meter and cleared our side because of all the issues in Subdivision to eliminate future complaints
10204651	LABD-S	BROWN WATER	10/27/2017	10/27/2017	577926 4205 BROOK CROSS DR	APEX, NC 27539-8111	KILDAIRE ESTATES	CL - .9 PO4 - 1.0 PH - 7.6 Fe - 0.3 MN - 0.078 Water was clear contractor replaced meter yesterday and probably disrupted the service line
10252657	LABD-S	CUST SYAS WATER IS MUDDY & DISCOLORED	11/21/2017	11/21/2017	577926 4205 BROOK CROSS DR	APEX, NC 27539-8111	KILDAIRE ESTATES	CL - 1.4 PO - 4.8 PH - 7.6 Fe - 0.79 MN - 0.122 Water never cleared left jumper in
10253086	LABD-S	WATER IS DARK BROWN CALL CUSTOMER AT 919-225-0448	11/22/2017	11/22/2017	577231 4112 SUMMER RIDGE CT	APEX, NC 27539-8800	KILDAIRE ESTATES	CL - 1.3 PO - 4.8 PH - 7.7 Fe - 0.45 MN - 0.049 Opened blow off on summer ridge ct to flush the main
10217789	LABD-S	SEDIMENT IN WATER	11/2/2017	11/2/2017	578238 4220 BROOK CROSS DR	APEX, NC 27539-0000	KILDAIRE ESTATES	CL - 1.4 PO - 4.8 PH - 7.5 Fe - 0.33 MN - 0.043 Water was clear upon arrival, advised customer to flush water heater



December 29, 2017

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
 December 29, 2017
 Cotesworth Down/Kensington Manor Subdivision Quarterly Update

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Table 1 – Well Information, Completed Activities and Planned Activities

<u>Well Name and No.</u>	<u>Completed Activities</u>	<u>Planned Activities</u>
Cotesworth Down Well #2 (P05)	<ul style="list-style-type: none"> February 2014 – Started using SeaQuest February 2015 – Installed cartridge filter April 2017 – Flushed system September 2017 – Started distribution and POE total and soluble sampling 	<ul style="list-style-type: none"> Q2-2018 – Perform annual flushing Continue to evaluate cleaning/inspection of the hydro-tank Continue to optimize SeaQuest based on a monthly total and Soluble Sampling Hydro tanks at both Kimmon Place and Kensington Manor will be cleaned by the end of the fourth quarter 2017 Beginning Q1 2018 Aqua will be adding raw sample data to the report
Approved GPM (33)		
Avg. Quarterly Runtime (6.38 hrs. per day)		
<p><u>Comments:</u></p> <p>Based on the historic and current sample results, Aqua will continue to assess the sample results and impact of operational improvements to determine the appropriate level of treatment necessary to address the negative impacts of Fe and Mn in this system as part of the Aqua proposed 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) 653-6964.

Sincerely,



Moses A. Thompson
 Director of Operations
 Aqua North Carolina, Inc.

MAT/rl

Table 2 - Cotesworth Sample Data

Date	Avg. Sample Week Run Time	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		

Table 3 - Notesworth
Customer Complaints

SO	SO Type	CSR Notes	Date of SO	Completion Date	Premise	Address	City State Zip	Subdivision	FSR Notes
There are zero customer complaints in the 4th quarter of 2017.									



December 29, 2017

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
 December 29, 2017
 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"> • August 2014 – Started using SeaQuest • March 2017 – Installed auto blow-off • April 2017 – Flushed system • September 2017 – Started Distribution and POE total and soluble sampling 	<ul style="list-style-type: none"> • Q2-2018 – Perform annual flushing • Continue to optimize SeaQuest based on a monthly total and soluble sampling • Beginning Q1 2018 Aqua will be adding raw sample data to the report • Hydropneumatic storage tank scheduled to be cleaned Q1 2018
Approved GPM (33)		
Avg. Quarterly Runtime (4.5 hrs. per day)		

Comments:

Based on the historic and current sample results, Aqua will continue to assess the sample results and impact of operational improvements to determine the appropriate level of treatment necessary to address the negative impacts of Fe and Mn in this system as part of the Aqua proposed 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) 653-6964.

Sincerely,



Moses A. Thompson
 Director of Operations
 Aqua North Carolina, Inc.

MAT/rl

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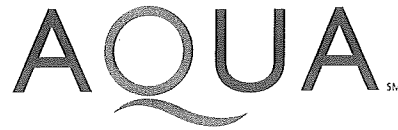
Sep 19 2018

Table 2 - Duncan Ridge Well Sample Data

Date	Avg. Sample Week Run Time	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		

Table 3 - Duncan Ridge 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 complaint in the 4th quarter of 2017.									



December 29, 2017

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
 December 29, 2017
 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"> • September 2015 – Started using SeaQuest • April 2017 – Flushed system • June 2017 – Installed automatic blow-off at the well. • September 2017 – Started distribution and POE total and soluble sampling • December 2017 – Cleaned hydropneumatic storage tank 	<ul style="list-style-type: none"> • Q2-2018 – Perform annual flushing • Continue to optimize SeaQuest based on a monthly total and soluble sampling • Install cartridge filter Q2-2018 • Beginning Q1 2018 Aqua will be adding raw sample data to the report
Approved GPM (29)		
Avg. Quarterly Runtime (4.5 hrs. per day)		
<p><u>Comments:</u></p> <p>Based on the historic and current sample results, Aqua will continue to assess the sample results and impact of operational improvements to determine the appropriate level of treatment necessary to address the negative impacts of Fe and Mn in this system as part of the Aqua proposed water quality plan. A cartridge filter may help with the elevated Fe levels.</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) 653-6964.

Sincerely,



Moses A. Thompson
 Director of Operations
 Aqua North Carolina, Inc.

MAT/rl

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Sep 19 2018

Table 2 - Eagle Creek Well Sample Data

Date	Avg. Sample Week Run Time	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		

Table 3 - Eagle Creek Customer Complaints

SO	SO Type	CSR Notes	Date of SO	Completion Date	Premise	Address	City State Zip	Subdivision	FSR Notes
10167007	LABD-S	BROWN WATER FOR COUPLE MONTHS CUST HAS A WELL	10/11/2017	10/11/2017	589224	5625 PINE DR	RALEIGH, NC 27606-8945	EAGLE CREEK	Cl2 - 0.87 PH - 7.2 PO4 - 1.98 FE - 0.06 MN - 0.020 Hard - 68 Water was clear upon arrival. Customer had dirty water changing house filter. All of the process numbers are below the MCL



December 29, 2017

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
 December 29, 2017
 Fairview Wooded Acres Subdivision Quarterly Update

UPDATED QUARTERLY STATUS REPORT

Table 1 – Well Information, Completed Activities and Planned Activities

Well Name and No.	Completed Activities	Planned Activities
Fairview Well #2 (P02)	<ul style="list-style-type: none"> • June 2016 – Flushed system • September 2017 – Started distribution and POE total and soluble sampling • December 2017 – Cleaned hydropneumatic storage tank 	<ul style="list-style-type: none"> • Q3-2018 – Perform annual flushing • Taking current and consistent samples
Approved GPM (16)		
Avg. Quarterly Runtime (0.0 hrs. per day)		

Comments:

This well has not contributed to the capacity in four years and we do not anticipate its use. Recent sampling results are under the sMCL for both Fe and Mn and there have been no customer complaints in this past quarter. Aqua requests Fairview Wooded Acres Well #2, P02 be removed from the quarterly NOD list.

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) 653-6964.

Sincerely,



Moses A. Thompson
 Director of Operations
 Aqua North Carolina, Inc.

MAT/rl

Table 2 - Fairview Wooded Acres Well Sample Data

Date	Avg. Sample Week Run Time	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		

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
There have been zero customer complaints for the fourth quarter of 2017.									



December 29, 2017

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
 December 29, 2017
 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"> • June 2014 - Started using SeaQuest • Feb 2015 - Hydropneumatic tank cleaned • Feb 2015 - Installed 5 micron filter (collapsed due to high concentrations of iron) 	<ul style="list-style-type: none"> • Continue to optimize SeaQuest based on a monthly total and soluble sampling • Beginning Q1 2018 Aqua will be adding raw sample data to the report
Approved GPM (33)	<ul style="list-style-type: none"> • Feb 2015 - Installed 20 micron filter • July 2106 - Sent greensand filtration request to Public Staff, NCUC • Denied approval by Public Staff, NCUC, for greensand filtration. 	
Avg. Quarterly Runtime (1.1 hrs.)	<ul style="list-style-type: none"> • March 2017- Flushed system • March 2017 - Installed auto flush valve • June 2017 - Removed auto flush valve (caused flooding issues) • July 2017- Flushed system • September 2017 –Started distribution and POE total and soluble sampling • October 2017 – Flushed system 	

Comments:

Aqua prepared a request to the Public Staff of the North Carolina Utilities Commission for a greensand filtration system at well #2, which has the larger capacity of the two wells. This information was provided by Aqua on July 18, 2016 and additional filtration is still being considered but Aqua and the Public Staff have not yet reached agreement to proceed.

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 feed the distribution. It is set up to flush to the ground. Aqua will continue to flush the system at least annually and optimize the sequestration at well #1 and #2 in Forest Glen.

Based on 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 will be revisited as part of Aqua's proposed water quality plan to determine the necessary level of treatment needed.


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Mr. W. Allen Hardy
December 29, 2017
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) 653-6964.

Sincerely,



Moses A. Thompson
Director of Operations
Aqua North Carolina, Inc.

MAT/rl

Table 2 - Forest Glen Well Sample Data

Date	Avg. Sample Week Run Time	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		

Table 3 - Forest Glen Customer Complaints

SO	SO Type	CSR Notes	Date of SO	Completion Date	Premise	Address	City State Zip	Subdivision	FSR Notes
10188011	LABD-S	CUST REPORTING VERY DARK BROWN/BLACK WATER AND LOTS OF AIR	10/20/2017	10/20/2017	530227	1101 FOREST GLEN DR	RALEIGH, NC 27603-7908	FOREST GLEN	Issue happened during annual flushing



December 29, 2017

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
 December 29, 2017
 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"> September 2015 – Started using SeaQuest February 2016 – Cleaned hydro tank Dec. 2016 – Installed cartridge filter June 2017 – Flushed system September 2017 – Started distribution and POE total and soluble sampling 	<ul style="list-style-type: none"> Q2-2018 – Perform annual flushing Continue to optimize SeaQuest based on a monthly total and soluble Sampling Q1-2018 - planned completion of greensand plus filtration and utilization of drip irrigation discharge Beginning Q1 2018 Aqua will be adding raw sample data to the report
Approved GPM (31)		
Avg. Quarterly Runtime (1.12 hrs per day)		

Comments:

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.

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 and we are currently waiting for final approval of the discharge permit. This greensand plus filter along with the drip irrigation discharge system is now anticipated to be completed in the first quarter of 2018.

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) 653-6964.

Sincerely,



Moses A. Thompson
 Director of Operations
 Aqua North Carolina, Inc.
 MAT/rl

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Sep 19 2018

Table 2 - Galloway Well Sample Data

Date	Avg. Sample Week Run Time	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		

Table 3 - Galloway 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 fourth quarter of 2017.									



December 29, 2017

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, TPI
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, TPI. 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
 December 29, 2017
 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"> • September 2015 - Started feeding SeaQuest • March 2017 – Flushed system • September 2017 – Started distribution and POE total and soluble sampling 	<ul style="list-style-type: none"> • Q1 2018 – Perform annual flushing • Continue to optimize SeaQuest based on a monthly total and soluble sampling • Beginning Q1 2018 Aqua will be adding raw sample data to the report
Approved GPM (45)		
Avg. Quarterly Runtime (6.9 hrs. per day)		
<p><u>Comments:</u></p> <p>Based on the historic and current sample results, Aqua will continue to assess the sample results and impact of operational improvements to determine the appropriate level of treatment necessary to address the negative impacts of Fe and Mn in this system as part of the Aqua proposed 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) 653-6964.

Sincerely,



Moses A. Thompson
 Director of Operations
 Aqua North Carolina, Inc.

MAT/rl

Table 2 - Glendale Master Hickory 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		

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 fourth quarter of 2017.									



December 29, 2017

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
 December 29, 2017
 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"> • September 2015 – Started using SeaQuest • March 2017 – Installed cartridge filter • March 2017 – Flushed system • December 2017 – Hydro tank cleaned 	<ul style="list-style-type: none"> • Continue to optimize SeaQuest based on a monthly total and soluble sampling • System flushing planned for Q1 • Beginning Q1 2018 Aqua will be adding raw sample data to the report
Approved GPM (40)		
Avg. Quarterly Runtime (7 hrs. per day)		

Comments:

Based on the historic and current sample results, Aqua will continue to assess the sample results on Chari Heights well #1 (PO2), its usage, and impact of operational improvements to determine the appropriate level of treatment necessary to address the negative impacts of Fe and Mn in this system as part of the Aqua proposed water quality plan.

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Mr. W. Allen Hardy
 December 29, 2017
 Glendale Master Subdivision Quarterly Update
 Well #1 (Glendale) P01 and Well #1 (Chari Heights) P02

<u>Table 1 – Well Information, Completed Activities and Planned Activities</u>		
<u>Well Name and No.</u>	<u>Completed Activities</u>	<u>Planned Activities</u>
Well #1 (Glendale) P01	<ul style="list-style-type: none"> • September 2015 – Started using SeaQuest 	<ul style="list-style-type: none"> • Continue to optimize SeaQuest based on a monthly total and soluble sampling • System flushing planned for Q1 • Beginning Q1 2018 Aqua will be adding raw, Fe, and Mn samples data to the report
Approved GPM (45)		
Avg. Quarterly Runtime (0.0)		
<p><u>Comments:</u></p> <p>Aqua will continue to collect consistent samples in order to verify the next steps 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) 653-6964.

Sincerely,



Moses A. Thompson
 Director of Operations
 Aqua North Carolina, Inc.

MAT/rl

Table 2 - Glendale Master Well Sample Data Glendale Well#1 P01

Date	Avg. Sample Week Run Time	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	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		

Table 3 - Glendale Master 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 fourth quarter of 2017.									



December 29, 2017

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 59 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
 December 29, 2017
 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"> • October 2014 – Started using SeaQuest • November 2016 – Flushed system • December 2016 – Submitted request for greensand filtration to NCUC • January 2017 – Approval received for greensand filtration • September 2017 – Started quarterly POE total and soluble sampling • October 2017 – Flushed system • December 2017 – Cleaned hydropneumatic storage tank 	<ul style="list-style-type: none"> • Q4-2018 - Perform annual flushing • Perform system flushing prior to installation of the greensand filter • Q1 – 2018 - Greensand filtration system installation completed • Continue to optimize SeaQuest based on a monthly total and soluble sampling
Approved GPM (88 gpm)		
Average Quarterly Runtime (3.5 hrs. per day)		
<p><u>Comments:</u></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 in the first quarter of 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) 653-6964.

Sincerely,



Moses A. Thompson
 Director of Operations
 Aqua North Carolina, Inc.

MAT/rl

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Table 2 - Hampton Park Well Sample Data

Date	Avg. Sample Week Run Time	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				

Table 3 - Hampton Park Customer Complaints

SO	SO Type	CSR Notes	Date of SO	Completion Date	Premise	Address	City State Zip	Subdivision	FSR Notes
10175941	LABD-S	CUSTOMER IS REPORTING PURE BLACK WATER	10/16/2017	10/19/2017	1061210	1020 JENSEN GROVE CT	FUQUAY-VARINA, NC 27526	HAMPTON PARK	Cl2 - 1.25 PO4 - 2.08 PH - 7.4 (natural- not feed) FE - 0.28 MN - 0.107 We are flushing system next week.Spoke with customer
10195524	LABD-S	CUSTOMER HERE CLD TO REPORT DISCOLORED BROWN WATER PLS INVESTIGATE DARKER THANNORMAL AND ACKNOWLEDGES WORK BEING DONE IN AREA	10/25/2017	10/25/2017	1038091	4140 HAMPTON PARK WAY	FUQUAY-VARINA, NC 27526	HAMPTON PARK	We are Flushing the Whole Subdivision ALL week , customers were notified I called customer by phone & explained to them , that we were flushing
10201765	LABD-S	BROWN WATER	10/26/2017	10/26/2017	1037500	7901 PARKER MILL TRL	FUQUAY-VARINA, NC 27526	HAMPTON PARK	We are Flushing the Whole Subdivision ALL week , customers were notified.
10279180	LABD-S	CUST REPORTED DARK BROWN WTR AFTER MTR CHNGE BEEN RUNNING WTR 30 MINS	12/7/2017	12/7/2017	1060816	7916 PARKER MILL TRL	FUQUAY-VARINA, NC 27526	HAMPTON PARK	Water meter was changed , customer said they had flushed for about 30 min.Still not clear , had customer to flush outside spigot & I checked residual Cl2 =1.0 PO4 =1.6 PH = 7.3(natural) FE=0.22 MN=0.073



December 29, 2017

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
 December 29, 2017
 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"> • September 2015 – Started using SeaQuest • May 2017 – Flushed system • September 2017 – Started distribution and POE total and soluble sampling • November 2017 – Hydro tank cleaned 	<ul style="list-style-type: none"> • Q2-2018 – Perform annual flushing • Continue to optimize SeaQuest based on a monthly total and soluble sampling • Beginning Q1 2018 Aqua will be adding raw sample data to the report
Approved GPM (48)		
Avg. Quarterly Runtime (.30 minutes per day)		
<p>Comments:</p> <p>Based on the historic and current sample results as noted in Table 2 (Attachment 2), Aqua requests Cotesworth Down/Kensington Manor Well #2, P05 be removed from the quarterly NOD list.</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) 653-6964.

Sincerely,



Moses A. Thompson
 Director of Operations
 Aqua North Carolina, Inc.

MAT /rl

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Sep 19 2018

Table 2 - High Grove Well Sample Data

Date	Avg. Sample Week Run Time	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		

Table 3 - High Grove Customer Complaints

SO	SO Type	CSR Notes	Date of SO	Completion Date	Premise	Address	City State Zip	Subdivision	FSR Notes
10237933	LABD-S	BROWN AND SEDIMENT IN WATER	11/14/2017	11/14/2017	1204157	3121 LEBRUN PATH	FUQUAY-VARINA, NC 27526	High Grove	Cl2 - .70 PH - 7.0 PO4 - .80 FE - .13 MN - 0.000
10156914	LABD-S	WATER IS BROWN LIKE CHOCOLATE / CALL CUSTOMER AT 919-285-0661	10/5/2017	10/5/2017	1357256	5201 SHIRLAND RD	FUQUAY-VARINA, NC 27526	High Grove	MN - 0.047 FE - 0.08 PH - 7.3 CL2 - 0.70



December 29, 2017

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
 December 29, 2017
 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"> • October 2013 – Started using SeaQuest • September 2014 – Installed cartridge filter • April 2017 – Flushed system • September 2017 – Started distribution and POE total and soluble sampling 	<ul style="list-style-type: none"> • Q2-2018 - Perform annual flushing • Continue to optimize SeaQuest based on monthly total and soluble sampling • Q1 2018 - Aqua will be adding raw sample data to the report • Q1 2018 - Hydropneumatic storage tank scheduled to be cleaned
Approved GPM (64)		
Avg. Quarterly Runtime (4.41 hrs. per day)		

Comments:

Based on the historic and current sample results, Aqua will continue to assess the sample results and impact of operational improvements to determine the appropriate level of treatment necessary to address the negative impacts of Fe and Mn in this system as part of the Aqua proposed 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) 653-6964.

Sincerely,



Moses A. Thompson
 Director of Operations
 Aqua North Carolina, Inc.

MAT/rl

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Sep 19 2018

Table 2 - High Meadows Well Sample Data

Date	Avg. Sample Week Run Time	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		

Table 3 - High Meadows Customer Complaints

SO	SO Type	CSR Notes	Date of SO	Completion Date	Premise	Address	City State Zip	Subdivision	FSR Notes
10178132	LABD-S	CUST REPORTING YELLOW	10/17/2017	10/17/2017	572093	3504 CASINE CT	WAKE FOREST, NC 27587	HIGH MEADOWS	Yellow water. CL2 .99 PH 7.1 PO4 1.38 FE .13 MN .054. Water clear after flush.



December 29, 2017

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.

Mr. W. Allen Hardy
 December 29, 2017
 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"> • September 2015 – Started using SeaQuest • October 2016 – Flushed system • October 2016 - Installed auto blow-off at well head • March 2017 – Installed cartridge filter • August 2017 – Flushed system • September 2017 – Started distribution and POE total and soluble sampling 	<ul style="list-style-type: none"> • Q4-2018 – Perform annual flushing • Continue to optimize SeaQuest based on monthly insoluble and soluble sampling • Continue to test the effectiveness of the flushing valve and adjusting the time to optimize the water quality • Continue to test the effectiveness of the cartridge filter • Hydro tank cleaning will be completed in Q1 2018 • Beginning Q1 2018 Aqua will be adding raw sample data to the report
Approved GPM (Not specified – currently 15)		
Avg. Quarterly Runtime (1.5 hours per day)		

Comments:

One sample out of eight entry point samples taken since the installation of the Harmsco filter exceeded the sMCL for total iron. All entry point samples demonstrate some amount of soluble iron and are under the sMCL for insoluble iron. There have been zero customer complaints received in 2017.

Based on the data supplied and steps Aqua has taken; we respectfully request that this system be removed from the required quarterly updates.

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) 653-6964.

Sincerely,



Moses A. Thompson
 Director of Operations
 Aqua North Carolina, Inc.

Table 2 - Middle 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
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		

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Table 3 - Middle Creek 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 for the 4th quarter of 2017.									



December 29, 2017

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
 December 29, 2017
 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"> • September 2015 – Started using SeaQuest • September 2016 – Flushed system • December 2016 – Filed for approval of greensand filtration 	<ul style="list-style-type: none"> • Q4-2018 – Perform annual flushing • Continue to optimize SeaQuest based on monthly total and soluble sampling • System flushing scheduled for Q2 and Q4 2018
Approved GPM (not specified)	<ul style="list-style-type: none"> • January 2017 – Approval received for greensand filtration • January 2017 – Greensand filtration project put on hold 	
Avg. Quarterly Runtime (1.1 hour per day)	<ul style="list-style-type: none"> • March 2017 – Installed cartridge filter • June 2017 – Flushed system • September 2017 – Started distribution and POE total and soluble sampling 	

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.

Fourth Quarter 2017 Update – Discussion to sell and close Aqua's Northgate well are active; timing of sale is unknown at this time. Fuquay-Varina is expected to provide water service to customers in Northgate upon its sale. The installation of a greensand filter in this system is not considered prudent given this information and the project continues to be on hold at this time.

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Sep 19 2018

Mr. W. Allen Hardy
December 29, 2017
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) 653-6964.

Sincerely,

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

Moses A. Thompson
Director of Operations
Aqua North Carolina, Inc.

MAT/rl

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Sep 19 2018

Table 2 - Northgate Well Sample Data

Date	Avg. Sample Week Run Time	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	0.137	
10/3/2017	1	0.667	0.989	0.322	1.02	0.675	0.399	0.412	0.512	0.41	-0.013	
10/17/2017	1	0.472	0.649	0.177	0.596	0.0287	0.434	0.359	0.437	0.338	0.075	
11/1/2017	1	0.845	1.11	0.265	1.04	0.747	0.389	0.351	0.399	0.38	0.038	
11/15/2017	1	1.008	1.29	0.282	1.31	0.223	0.414	0.406	0.412	0.393	0.008	

Table 3 - Northgate Customer Complaints

SO	SO Type	CSR Notes	Date of SO	Completion Date	Premise	Address	City State Zip	Subdivision	FSR Notes
10157057	LABD-S	BROWN WATER PLS CHECK	10/5/2017	10/5/2017	525066	102 OAK LAKE CT	FUQUAY VARINA, NC 27526	NORTHGATE	CL2 - .8 PO4 - .9 PH - 7.4 FE - .88 MN - .122 Opened blow off at the end of Oak lake CT to flush the main.
10179781	LABD-S	WATER LOOKS LIKE TEA AND THERE IS BLACK SEDIMENT	10/18/2017	10/18/2017	534642	118 RIDING RIDGE RD	FUQUAY VARINA, NC 27526-6643	NORTHGATE	No Notes Found



December 29, 2017

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
 December 29, 2017
 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"> • July 2014 – Started using SeaQuest • December 2016 – Flushed system • March 2017 – Installed cartridge filter • September 2017 – Started distribution and POE total and soluble sampling • Continuation of soluble and insoluble sampling • December 2017 hydropneumatic storage tank cleaned 	<ul style="list-style-type: none"> • Q1 2018 – Perform annual flushing • Continue to optimize SeaQuest based on monthly total and soluble sampling • Beginning Q1 2018 Aqua will be adding raw sample data to the report
Approved GPM (34)		
Avg. Quarterly Runtime (2.4 hrs. per day)		

Comments:

Based on the historic and current sample results, Aqua will continue to assess the sample results and impact of operational improvements to determine the appropriate level of treatment necessary to address the negative impacts of Fe and Mn in this system as part of the Aqua proposed 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) 653-6964.

Sincerely,



Moses A. Thompson
 Director of Operations
 Aqua North Carolina, Inc.

MAT/rl

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Sep 19 2018

Table 2 - Olde South Trace Well Sample Data

Date	Avg. Sample Week Run Time	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		

Table 3 - Olde South Trace Customer Complaints

SO	SO Type	CSR Notes	Date of SO	Completion Date	Premise	Address	City State Zip	Subdivision	FSR Notes
There are zero customer complaints in the fourth quarter of 2017.									



December 29, 2017

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
 December 29, 2017
 Ridgebrook/Westbury Subdivision Quarterly Update

UPDATED QUARTERLY STATUS REPORT

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Sep 19 2018

Table 1 – Well Information, Completed Activities and Planned Activities

Well Name and No.	Completed Activities	Planned Activities
Ridgebrook/Westbury, Well #1 (P03)	<ul style="list-style-type: none"> • June 2017 - cleaned the hydro-pneumatic tank • June 2017 - cartridge filter installed • June 2017 - service lines were replaced at 3824 and 3828 Westbury Lake Dr. • June 2017 - distribution system flushed • July 2017 - service lines replaced at 3732, 3736, 3740m 3744 Westbury Lake Dr. • September 2017 - distribution system flushed 	<ul style="list-style-type: none"> • June-2018 – Perform annual flushing • Continue to optimize SeaQuest based on a monthly total and soluble sampling • Beginning Q1 2018 Aqua will be adding raw sample data to the report
Approved GPM (33)		
Avg. Quarterly Runtime (7.5 hrs. per day)		
<p>Comments:</p> <p>On 11/29/2017 the NC Public Staff 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 by the end of 2018.</p> <p>Aqua will continue to monitor water quality on 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) 653-6964.

Sincerely,



Moses A. Thompson
 Director of Operations
 Aqua North Carolina, Inc.

MAT/rl

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		

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
10224782	LABD-S	*****EMAIL****FROM STRAT DONNELL****REPORTING TERRIBLE AMOUNTS OF SEDIMENT, BLACK WWATER WITH CHUNKS OF BLACK MUD LIKE GOO***PIC ATTACHED TO EMAIL.. PLEASE INVESTIGATE AND CALL TO DISCUSS	11/7/2017	11/7/2017	557890	2200 HEDGE MAPLE DR	RALEIGH, NC 27603	WESTBUR Y	Fe .03 Mn .788 ph 7.0 Cl2 .80



December 29, 2017

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
 December 29, 2017
 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"> September 2015 – Started using SeaQuest May – June 2017 – Flushed system September 2017 – Started distribution and POE total and soluble sampling 	<ul style="list-style-type: none"> Q2-2018 – Perform annual flushing Hydro tank scheduled to be cleaned in Q1 2018 Continue to optimize SeaQuest based on monthly total and soluble sampling Beginning Q1 2018 Aqua will be adding raw sample data to the report
Approved GPM (50)		
Avg. Quarterly Runtime (.73hrs. per day)		
<p><u>Comments:</u></p> <p>Well #3 will operate in the lag mode and will only be used during heavy peak demand. Aqua will continue to assess the sample results and impact of operational improvements to determine the appropriate level of treatment necessary to address the negative impacts of Fe and Mn in this system as part of the Aqua proposed 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) 653-6964.

Sincerely,



Moses A. Thompson
 Director of Operations
 Aqua North Carolina, Inc.

MAT/rl

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Sep 19 2018

Table 2 -River Oaks Well Sample Data

Date	Avg. Sample Week Run Time	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		

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
10285484	LABD-S	BROWN WATER AND LEFT OVER SEDIMENT	12/12/2017	12/12/2017	530850	1109 SILVER OAKS CT	RALEIGH, NC 27614-9359	RIVER OAKS	Results on arrival CL2 - 1.41 PH - 7.4 PO4 - 0.73 FE - 0.01 MN - 0.011 HARD - 6 gpg	Results after Flush CL2 - 1.5 PH- 7.4 PO4 - 0.73 FE - 0.06 MN - 0.002 HARD - 6 gpg
10165322	LABD-S	CUST ADV BROWN WATER	10/10/2017	10/10/2017	537806	1241 KINGS GRANT DR	RALEIGH, NC 27614-9355	RIVER OAKS	Cust reported brown only on hot side and has not flushed hwh In a year. said he would flush and monitor. Will call back if still discolored.	



December 29, 2017

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
 December 29, 2017
 Saddle Run 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
Stanstead, Well #2 (P05)	<ul style="list-style-type: none"> • April 2017 - System flushed • 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. • November 2017 - Aqua completed repairs of fencing around the sand bed. and lean-up the site. 	<ul style="list-style-type: none"> • System flushing Q2 2018 • Q2-Q3 2018 – Anticipated completion of the filter storage tankage. ATC is pending.
Approved GPM (90)		
Avg. Quarterly Runtime (6.9)		
<p>Comments:</p> <p>Stanstead Well #2 PO5 has physical media filter designed to remove iron and manganese. Two additional tanks are in process of being installed to improve the effectiveness of the backwash process that has been instigating water quality issues in this system. One tank will be to settle out iron and manganese prior to discharge to the sandbed and the 2nd tank will be used to store the settled minerals until we can remove them from the site. This treatment improvement will allow the rinse water to drain through the sandbed faster and allow Aqua to increase the rinsing frequency in order to keep the existing filters running at optimal levels. Aqua is currently awaiting the ATC for this improvement, which is anticipated to be complete by Q3 2018.</p> <p>Note that Aqua will begin reporting monthly soluble/insoluble sampling for this site with the next quarterly report.</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) 653-6964.

Sincerely,



Moses A. Thompson
Director of Operations
Aqua North Carolina,
Inc.

MAT/rl

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											

Table 3 -Saddleridge Well Sample Data

SO	SO Type	CSR Notes	Date of SO	Completion Date	Premise	Address	City State Zip	Subdivision	FSR Notes
10289966	LABD-S	CUST HAS SEVERALLY DISCOLORED WTR	12/14/2017	12/14/2017	585771	5201 RED WING CT	FUQUAY VARINA, NC 27526-9058	SADDLE RUN	Cl2 0.62 ph 6.8 po4 2.38 fe 0.19 mn 0.034
10157692	LABD-S	EMAIL FROM DEBRA REPORTING TEA COLORED WATER	10/5/2017	10/5/2017	623840	4916 OAKWEA LTH CT	FUQUAY-VARINA, NC 27526	SUNSET LAKE	CL .4 po4 .77 pH 7.7 Fe .01 MN .007 water was clear apon arrival



December 29, 2017

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
 December 29, 2017
 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"> • February 2016 – Started using SeaQuest • December 2016 – Cartridge filter installed • June 2017 – Flushed system • September 2017 – Started distribution and POE total and soluble sampling 	<ul style="list-style-type: none"> • Q2-2018 – Perform annual flushing • Continue to optimize SeaQuest based on monthly total and soluble sampling • Hydro tank at well #1 scheduled to be cleaned Q1 2018 • Beginning Q1 2018 Aqua will be adding raw sample data to the report
Approved GPM (5)		
Avg. Quarterly Runtime (4.55 hrs. per day)		

Comments:

The pressure settings at well #20 have been changed to allow the well to operate in lag mode. The use of SeaQuest as well as the installation of a cartridge filter has shown the results to be under the sMCL.

Based on the data supplied and steps Aqua has taken; we respectfully request that this system be removed from the required quarterly updates.

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) 653-6964.

Sincerely,



Moses A. Thompson
 Director of Operations
 Aqua North Carolina, Inc.

MAT/rl

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Sep 19 2018

Table 2 -Saddleridge Well Sample Data

Date	Avg. Sample Week Run Time	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			

Table 3 -Saddleridge Customer Complaints

SO	SO Type	CSR Notes	Date of SO	Completion Date	Premise	Address	City State Zip	Subdivision	FSR Notes
10177847	LABD-S	CUSTOMER STATES WATER IS BLACK, FORCED BOOKED APPT WITH JOSE	10/17/2017	10/17/2017	594178	6205 BATTLEVIEW DR	RALEIGH, NC 27613-7147	SADDLERIDGE	Meter replaced today causing issue. Flushed line for approximately 10min. Water cleared. Advised customer to flush house down stairs then upstairs.



December 29, 2017

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
 December 29, 2017
 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"> • August 2013 – Started using SeaQuest • September 2015- Installed cartridge filter on Southwood well #1 • June 2016 – Flushed system • June 2017 – Flushed system • September 2017 – Started distribution and POE total and soluble sampling • December 2017 – Fixed pressure switch • December 2017 – Installed Greensand Filtration • December 2017 – Hydro Tank cleaned • December 2017 – Flushed system 	<ul style="list-style-type: none"> • Q2-2018 – Perform annual flushing • Continue to optimize SeaQuest based on monthly total and soluble sampling • System flushing scheduled for May 2018
Approved GPM (27)		
Average Quarterly Runtime (19 hrs. per day)		
<p><u>Comments:</u></p> <p>The high runtime hours for this well were due to a faulty pressure switch. Runtime hours have dramatically dropped since the repair in December. Aqua will continue to take more consistent samples to make a determination of the next steps.</p>		

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Sep 19 2018

Mr. W. Allen Hardy
 December 29, 2017
 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"> • August 2013 – Started using SeaQuest • June 2016 – Flushed system • June 2017 – Flushed system • September 2017 – Started distribution and POE total and soluble sampling 	<ul style="list-style-type: none"> • Q2-2018 – Perform annual flushing • Continue to optimize SeaQuest based on monthly total and soluble sampling • System flushing scheduled for May 2018 • Install HARMSCO cartridge filter by second quarter of 2018.
Approved GPM (40)		
Average Quarterly Runtime (6.5 hrs. per day)		
<p><u>Comments:</u> Aqua will continue to take more consistent samples to make a determination of the next steps.</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) 653-6964.

Sincerely,



Moses A. Thompson
 Director of Operations
 Aqua North Carolina, Inc.

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

Date	Avg. Sample Week Run Time	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		

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

Date	Avg. Sample Week Run Time	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		

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
10179717	LABD-S	BLACK RESIDUE IN WATER.	10/26/2017	10/26/2017	579697	4409 SURRY RIDGE CIR	APEX, NC 27539-7681	SOUTHWOOD	Mn - 0.065 Fe - 0.50 Cl2 - 1.0
10267249	LABD-S	EMAIL FROM MARIA REPORTING CONSTANT BROWN WATER	11/30/2017	11/30/2017	615063	8512 PIERCE OLIVE RD	APEX, NC 27502	SURRY POINT	Cl2 - .90 Mn 0 .079 Fe - 1.0
10179532	LABD-S	STATES ALOT OF SEDIMENT AND AIR IN THE LINE STARTING FRIDAY 10/13/17	10/18/2017	10/18/2017	578015	4209 HOLLY STREAM CT	APEX, NC 27539-7682	CARY OAKS	Fe - .55 Mn - .449 Cl2 - .80 Ph - 7.5 hardness - .171
10179585	LABD-S	CUSTOMER CLD TO REPORT BROWN WATER AND SPUTTERING OF THE WATER IN FAUCETS ANDSO FORTH..INQUIRED ABOUT WELL FILTRATION PLS ADV	10/18/2017	10/18/2017	577936	4205 HOLLY STREAM CT	APEX, NC 27539-7682	CARY OAKS	Fe - .60 Mn - .500 Cl2 - .80 Ph - 7.3 hardness - .171
10249329	LABD-S	CUST STATES WATER IS VERY BROWN PLEASE INVESTIGATE	11/20/2017	11/20/2017	577407	4128 CARY OAKS DR	APEX, NC 27539-7602	CARY OAKS	Cl2 - .80 ph - 7.0 Fe - 0.08 Mn - 0.720
10254352	LABD-S	PLS INVESTIGATE. CUST STATES HER RESIDENCE ALONG WITH NEIGHBORS EXPERIENCINGDISCOLORED WATER AND LOW PRESSURE.	11/22/2017	11/22/2017	576444	4033 SAINT EDMUNDS LN	APEX, NC 27502	SURRY POINT	Cl2 - 1.1 Ph - 7.3 Fe - 2.2 Mn - .156
10225063	LABD-S	DICOLORED WATER; WIHTE AND BROWN AT TIMES; BOTH HOT AND COLD SINCE YESTERDAY...STS HAS CHECKED WATER HEATER AND THAT IS NOT THE ISSUE...	11/7/2017	11/8/2017	577089	4105 CARY OAKS DR	APEX, NC 27539-7603	CARY OAKS	Cl2 - 1.2 Ph - 7.3 Po4 - 1.1 Fe - 3.3 Mn - .800
10267106	LABD-S	STILL HAS DISCOLORED WATER/CUSTOMER HAS ALREADY TRIED RUNNING OUTSIDE SPIGOT/PLEASE INVESTIGATE	11/30/2017	11/30/2017	577518	4140 CARY OAKS DR	APEX, NC 27539-7602	CARY OAKS	Cl2 - .80 Fe - .80 Mn - .140 Po4 - .95



December 29, 2017

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
 December 29, 2017
 Trapper's Creek Subdivision Quarterly Update

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Sep 19 2018

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"> • February 2016 – Started using SeaQuest • May 2017 – Flushed system • September 2017 – Started distribution and POE total and soluble sampling • Continuation of soluble and insoluble sampling 	<ul style="list-style-type: none"> • Q2-2018 – Perform annual flushing • Continue to optimize SeaQuest based on monthly total and soluble sampling • Beginning Q1 2018 Aqua will be adding raw sample data to the report • Hydropneumatic storage tank scheduled to be cleaned in Q1 2018
Approved GPM (75)		
Avg. Quarterly Runtime (3.3 hrs. per day)		
<u>Comments:</u>		
<p>Based on the historic and current sample results, Aqua will continue to assess the sample results and impact of operational improvements to determine the appropriate level of treatment necessary to address the negative impacts of Fe and Mn in this system as part of the Aqua proposed 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) 653-6964.

Sincerely,



Moses A. Thompson
 Director of Operations
 Aqua North Carolina, Inc.

MAT/rl

Table 2 -Trappers Creek Well Sample Data

Date	Avg. Sample Week Run Time	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		

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 fourth quarter of 2017.									



December 29, 2017

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
 December 29, 2017
 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"> • February 2016 – Started using SeaQuest • May 2017 – Flushed system • September 2017 – Started distribution and POE total and soluble sampling 	<ul style="list-style-type: none"> • Continue to optimize SeaQuest based on bi-weekly total and soluble sampling • System flushing scheduled for Q2 2018 • Beginning Q1 2018 Aqua will be adding raw sample data to the report • Hydropneumatic storage tank scheduled to be cleaned in Q1 2018 • Aqua will install a HARMSCO cartridge filter in this well by second quarter of 2018
Approved GPM (17)		
Avg. Quarterly Runtime (0 hrs. per day)		
<u>Comments:</u>		
Aqua will continue to collect consistent samples in order to verify the next steps 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) 653-6964.

Sincerely,



Moses A. Thompson
 Director of Operations
 Aqua North Carolina, Inc.

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Sep 19 2018

Table 2 - Tyndrum Well Sample Data

Date	Avg. Sample Week Run Time	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		

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 fourth quarter of 2017.									



December 29, 2017

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.

Mr. W. Allen Hardy
 December 29, 2017
 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"> • March 2014 – Started using SeaQuest • November 2015 – Cleaned hydro tank • February 2017 – Flushed system • July 2017 – Flushed system • September 2017 – Flushed system • November 2017 – Installed cartridge filter 	<ul style="list-style-type: none"> • Q3-2018 – Perform annual flushing • Continue to optimize SeaQuest based on a monthly total and soluble sampling • Beginning Q1 2018 Aqua will be adding raw sample data to the report
Approved GPM Well #1 – 62 gpm Well #4 – 27 gpm		
Avg. Quarterly Runtime Well #1 – 2.22 hrs per day Well #4 – Zero hrs per day		

Comments:

Well #1, which has the lesser levels of iron and manganese concentrations, is supplying all the water to the system at this time. Aqua limits the run time at well #4 to facilitate compliance sampling as needed. Aqua will continue to flush the system on at least an annual basis and optimize the current treatment.

Two smart pumps have been installed to better regulate sequestration dosing. Based on the laboratory results, 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. Aqua and the Public Staff continue to work together to determine the appropriate treatment for this system.

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Mr. W. Allen Hardy
December 29, 2017
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) 653-6964.

Sincerely,



Moses A. Thompson
Director of Operations
Aqua North Carolina, Inc.

MAT/rl

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		

Table 3 - Upchurch Customer Complaints									
SO	SO Type	CSR Notes	Date of SO	Completion Date	Premise	Address	City State Zip	Subdivision	FSR Notes
10190424	LABD-S	DISCOLORED WATER, FLUSHING IN THE AREA BUT CUST HAD DISCOLORED WATER BEFORE. CONSTANT ISSUE	10/23/2017	10/23/2017	821693	1404 UPCHURCH WOODS DR	RALEIGH, NC 27603	UPCHURCH PLACE	New customer to sub. House is at the end of cul de sac. Told them a Cannister filter has been approved. Gave them fe/mn handout. Told them To flush faucets. CL2 - .6 PO4 - 1.5 FE - .4 MN - .09
10229930	LABD-S	CUST HAVING RUSTY COLORED WATER. AND LEAVES DIRT AT THE BOTTOM OF THE SINK AND TUB. NOT CLEARING UP WHEN FLUSHING	11/9/2017	11/9/2017	821693	1404 UPCHURCH WOODS DR	RALEIGH, NC 27603	UPCHURCH PLACE	Gave him iron out for stained fixtures. Flushed b/o beside house. Its at The end of cul de sac. Informed him filter was installed wed. He just Moved into house.
10178353	LABD-S	CUST STATES WHITE PARTICLES IN WATER, WANTS WATER TESTED, ALSO NEEDS MORE RUSTOUT	10/17/2017	10/17/2017	1375372	1512 UPCHURCH WOODS DR	RALEIGH, NC 27603	UPCHURCH PLACE	Left iron out. 51.3 mg/l of hardness. Told customer its a small amount of hardness. Can't make it go awa. Not harmful



December 29, 2017

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
 December 29, 2017
 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"> • March 2013 – Cleaned hydro tank • October 2014 – Started using SeaQuest • March 2016 – Received approval for greensand filtration • March 2017 – Flushed system • September 2017 – Started distribution and POE total and soluble sampling 	<ul style="list-style-type: none"> • Q1-2018 - Perform annual flushing • Q1- 2019 – expected completion of Greensand filtration system • Continue to optimize SeaQuest based on monthly total and soluble sampling • Beginning Q1 2018 Aqua will be adding raw sample data to the report
Approved GPM (88)		
Avg. Quarterly Runtime (2.93 hrs. per day)		
<p><u>Comments:</u></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. Because of this easement issue, installation of the greensand filtration system has been delayed until 1st quarter of 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) 653-6964.

Sincerely,



Moses A. Thompson
 Director of Operations
 Aqua North Carolina, Inc.

MAT/rl

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Sep 19 2018

Table 2 - Wakefield 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
4/25/2016	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	<0.220	1.29	<0.220	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		

Table 3 - Wakefield Customer Complaints

SO	SO Type	CSR Notes	Date of SO	Completion Date	Premise Address	City State Zip	Subdivision	FSR Notes
10245139	LABD-S	CUSTOMER STATING THAT WATER HAS A YELLOW/ORANGE COLOR WITH A MILDEW SMELL/ PLEASE INVESTIGATE	11/17/2017	11/17/2017	1436177 2220 HOLLY BEND LN	WAKE FOREST, NC 27587	WAKEFIELD ESTATES	Odor. Adjusted flow switch and requested replacement at well house. Left d/tag Cl2=.48 pH=6.8 PO4=.72 Fe=.37 Mn=.064 CaCO3=119.7
10256457	LABD-S	CUST ADV WATER IS VERY YELLOW	11/27/2017	11/27/2017	1436177 2220 HOLLY BEND LN	WAKE FOREST, NC 27587	WAKEFIELD ESTATES	Met cust. Flushed 15min. Water still discolored. Cl2=.69 pH=6.8 PO4=1.31 Fe=1.97 Mn=.098 CaCO3=119.7