

**January 23, 2019**

The Martin County Board of Commissioners met in a Special Called Meeting with the Town of Williamston and the Martin County Regional Water and Sewer Authority on Wednesday, January 23, 2019 at 5:30 p.m. in the NC TeleCenter, 415 East Blvd, Williamston, NC.

## **ASSEMBLY**

Martin County Commissioners and Staff in attendance: Chair Tommy Bowen, Vice Chair Dempsey Bond, Jr., Commissioner Ronnie Smith, Commissioner Elmo “Butch” Lilley, County Manager David Bone, and Clerk to the Board Jessica Godard. Also in attendance was Water District Manager Ed Warren.

Town of Williamston Commissioners and Staff in attendance: Mayor Joyce Whichard-Brown, Mayor Pro-Tem Al R. Chesson, Commissioner William Coffield, Commissioner Jerry Knox, and Commissioner Alton Moore, Town Clerk Christina Craft, and Town Administrator John O’Daniel. Also in attendance were Garry Barmer with the Town of Williamston Water Department, and Town of Williamston Public Works Director Kerry Spivey. Commissioner Ronell Rodgers was absent.

Martin County Regional Water and Sewer Authority Board of Directors and Staff in attendance: Chairman David Bone, Vice Chairman Al R. Chesson, Director Julius Patrick, Director-Alt. Tommy Bowen, Director Stacy Stalls, and Director-Alt. William Coffield. Also in attendance was Suez Project Manager Joe Thaxton.

Martin County Commissioner/Chairman Tommy Bowen, Williamston Mayor Whichard-Brown, and Martin County Regional Water and Sewer Authority Chairman Bone called the meeting to order at 5:30 p.m. Williamston Commissioner Coffield led the Pledge of Allegiance. Williamston Commissioner Knox provided the invocation.

## **AGENDA APPROVAL**

For Martin County, Commissioner Lilley made a MOTION to approve the agenda as presented, with a SECOND from Commissioner Smith. The Board APPROVED the motion unanimously.

For the Town of Williamston, Commissioner Chesson made a MOTION to approve the agenda as presented, with a SECOND from Commissioner Knox. The Board APPROVED the motion unanimously.

For the Martin County Regional Water and Sewer Authority, Director Stalls made a MOTION to approve the agenda as presented, with a SECOND from Director Patrick. The Board APPROVED the motion unanimously.

## **MCGILL ASSOCIATES PRESENTATION OF WATER QUALITY STUDY**

Project Manager RJ Mozeley, PE and Ms. Julia Byrd, EI with McGill Associates were in attendance to present the results of the water quality study done on the Martin County and Town of Williamston water system.

County Manager Bone provided background information regarding the study. County Manager Bone recalled after the start of water treatment plant, the Suez, County and Town staffs had to learn about the new system, therefore having to tweak and make adjustments at the water treatment plant and throughout the distribution system. County Manager Bone further stated the existence of changes when switching from well water to a surface water source. Any minor changes in the water could create taste, odor, or appearance concerns in the public. There had been a number of citizens and customers with concerns regarding taste and odor of the water. Over the past year or so, the situation has improved since the adjustments were made, and the number of complaints had gone down.

The water quality study began in 2017, as a joint Town and County project. The study was performed by McGill Associates, and an additional firm was utilized to collect water samples. Water samples were collected throughout different times of the year (to detect any seasonal differences) with the last round of testing being performed in July 2018. The three Boards were asked to receive the report. No action was requested, but the Boards were encouraged to ask questions. The presentation was more for informational purposes.

McGill staff met with town and county staffs to begin to understand issues that had been experienced since the water treatment plant came on line. Discussion centered on where complaints arose from shortly after the change over from well water to surface water. McGill documented mapped those cases/locations to provide visual representation of where the complaints were originating.

Fifteen (15) sites were chosen as collection site. The testing sites included one (1) collection site at the raw water source, three (3) sites within the water treatment plant, six (6) sites within the Town of Williamston distribution system, and five (5) sites within the County water distribution system. Sites were chosen based on locations where customers reported bad smells prior to when the water treatment plant began operating.

Project Manager Mozeley reported all of the drinking water samples collected, after treatment through water treatment plant, did meet all state and federal requirements. There were no issues related to public health with the drinking water- it is, in fact, safe.

Three (3) rounds of testing were performed: November 2017, June 2018, and July 2018. Areas analyzed in the water samples include:

- Color
- Turbidity \*
- Total Organic Carbon (TOC)
- Dissolved Organic Carbon (DOC)
- Taste and Odor Compounds (T&O)
- Orthophosphate
- Alkalinity
- Dissolved Metals (Lead & Copper) \*
- Hardness
- Heterotrophic Plate Count (HPC) \*

➤ Iron Reducing Bacteria (IRB)

\*Contaminants regulated under National Primary Drinking Water Regulation

Times during higher temperature and summer months were when taste and odor issues were more prevalent. Second and third round of testing was delayed until June and July 2018 to test in the warmer months.

Ms. Byrd discussed the Taste & Odor compounds that were tested. Those compounds included:

<b>Compound</b>	<b>OTC (ng/L)</b>	<b>Descriptor</b>	<b>Known Sources</b>
Geosmin	1-10	Earthy, musty	Microbial metabolite (cyanobacteria, fungi)
2-Methylisoborneol	1-10	Earthy, musty	Microbial metabolite (cyanobacteria, fungi)
2,4,6-Trichloroanisole	0.03-10	Musty, moldy	Biomethylation of chlorophenol
Isobutyl methoxypyrazine	1-16	Vegetable, pepper	Microbial metabolite
Isopropyl methoxypyrazine	2-16	Earthy, potato-bin	Microbial metabolite
Dimethyl sulfide	8.3 (air)	Rotting vegetation	Organic decomposition
Dimethyl disulfide	200-330	Septic, putrid, garlic	Organic decomposition
Dimethyl trisulfide	10	Swampy, putrid	Organic decomposition

The first five compounds (Geosmin, 2-Methylisoborneol, 2,4,6-Trichloroanisole, Isobutyl methoxypyrazine, and Isopropyl methoxypyrazine) were tested in all three rounds of sampling. The last three compounds (Dimethyl sulfide, Dimethyl disulfide, and Dimethyl trisulfide) were tested only in the last round in July 2018.

Ms. Byrd explained each taste and odor compound in detail. None of these compounds are known to have negative health impacts and are not regulated contaminants. There are guidelines to follow for more of an aesthetic quality. However, customers often perceive that water with a bad taste or smell is not safe to drink and lose confidence in the quality of their tap water.

Results

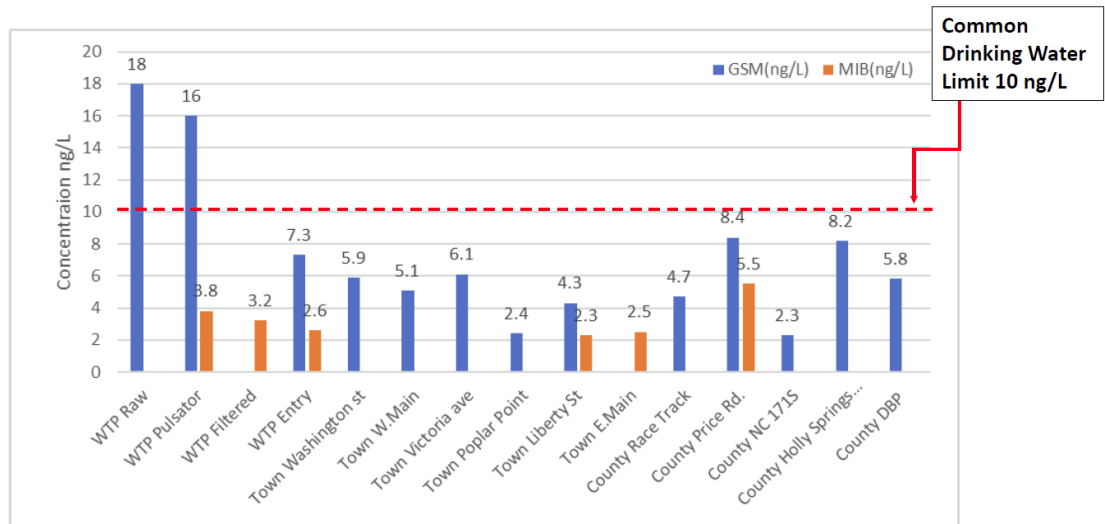
Earthy/Musty Odor Compounds:

Geosmin (GSM) and 2-Methylisoborneol (2MIB) were only detected in water samples in June 2018, which was the second round of testing.

Geosmin was first present in the raw water source, and reduced during water treatment to a level below the human odor threshold (the human odor perception threshold was set at 10 mg/L). 2-Methylisoborneol was detected below odor threshold level in untreated and drinking water samples. The odor threshold concentration marker (10ng/L) represents that approximately 50% of the population would detect an odor and 50% of the population would not, noting there are some people who are more sensitive to odors than others.

The diagram presented indicated the current treatment process is working, evidenced by an undetectable level of the compounds at the water treatment plant filter.

## Results: Earthy/Musty Compounds

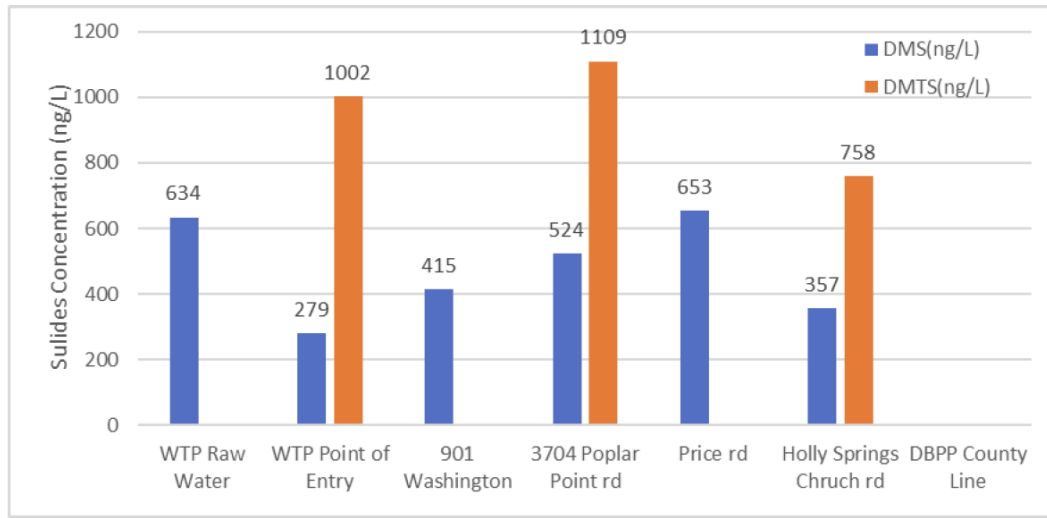


### Sulfide Odor Compounds:

Dimethyl Polysulfides were only tested in six water samples in July 2018, which was round three of testing. The raw untreated and drinking water samples were collected from inside the water treatment plant and locations in the Town and County distribution systems.

Dimethyl sulfide was first detected in source water and reduced levels were detected during treatment. In certain collection sites, the DMTS was tested for, but not detected.

## Results: Swampy/ Septic Sulfide Compounds



Dimethyl Polysulfides were only tested in six raw and treated water samples in July 2018 (Round 3)

### Bacteriological Testing:

The bacteriological testing included Heterotrophic Plate Count (HPC), and Iron (IRB) and Sulfur (SRB) Reducing Bacteria. Bacteria were present in raw source water, largely removed to below detectable levels during treatment. The levels of bacteria did increase throughout the distribution system. The T&O compounds detected in water samples are known to be by-products of microbial metabolism. Higher levels of bacterial indicate that T&O production is likely occurring in the distribution system.

The HPC, IRB and SRB do not have any adverse human health effects, but can have negative aesthetic effects such as smell (IRB and SRB).

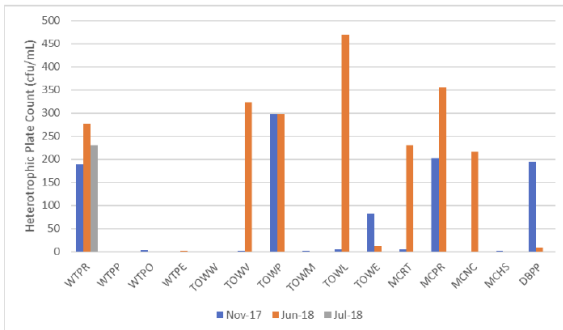
There was some regrowth of the HRP and SRB later in the distribution system, as shown in the chart, especially in the warmer months.

Vice Chairman Bond questioned the “shelf-life” and safety of the water after an extended period of storage time, and Project Engineer Mozeley stated there was not an exact time period, but stressed the standards for regular water testing and other methods to ensure water safety. Keeping tanks mixed and water age as low as possible ensures the delivery of fresh water.

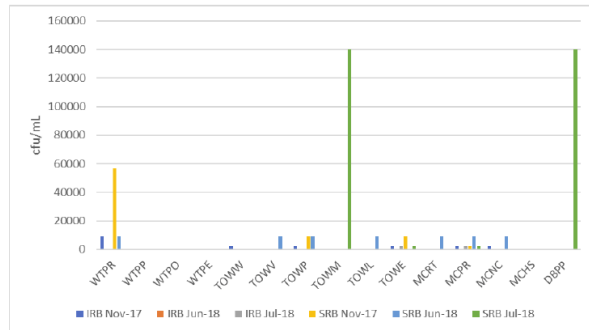
County Manager Bone explained there is not as much organic material in well water, but flushing was still performed when well water was used. The Town and County have increased flushing substantially because of more issues with surface water and organic material, and water aging issues.

# Results: Bacteriological Testing

### Heterotrophic Plate Count (HPC)



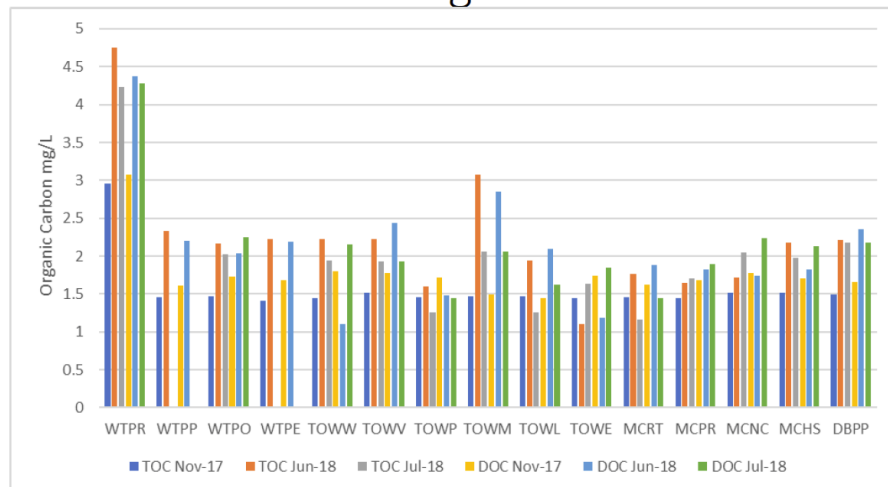
### Iron (IRB) & Sulfur (SRB) Reducing Bacteria



## Total & Dissolved Organic Carbon:

The goal of water treatment is to remove as much organic material and organic carbon as possible. Organic carbon present in surface water exists and can be food for bacteria. Potassium Permanganate removes most organic carbon from source water, and any remaining carbon can be digested after leaving the water treatment plant, causing taste and odor complaints. Low water age and good turnover of tanks in the distribution system can limit bacteriological regrowth.

## Results: Total & Dissolved Organic Carbon



## Summary of Water Testing Results:

Project Engineer Mozeley reviewed the following results:

- Drinking water samples met all state and federal requirements

- Geosmin and 2-MIB odor compounds were only detected in June 2018 (second round of testing). This is not unusual for the compounds to not show up in November 2017, as they are more prevalent in warmer months.
- Sulfide odor compounds only tested and detected in July 2018 (third round of testing)
- Bacterial regrowth is evident and may be producing taste and odor compounds in the distribution system

#### Evaluation of Water Treatment Plant:

Ms. Byrd stated that generally, conventional surface water treatment is not highly effective at removing taste and odor compounds. One additional option is to use a strong oxidant up from in the raw water source to remove carbon. Potassium permanganate and activated carbon are highly effective at removing carbon from water. In addition, the use of chlorine after filtering are effective at removing organic matter and bacteria.

The water treatment plant is doing an efficient job at removing taste and odor compounds and organic matter. There may be ways to optimize the processes, such as an increased dosage of potassium permanganate, and adjusting the dosage in warmer months. Regular jar testing can be useful in determining how much treatment could be used safely. This could help optimize current processes in the water treatment plant and distribution system.

Project Engineer Mozeley stated a comprehensive and holistic approach should be focused on getting more out of what is already taking place within the current distribution system. There is not one single fix for the issues occurring.

When questioned about the significance of water line age/material regarding the water quality, McGill staff stated their research was focused on the location of the water distribution rather than the material/age of the water lines. Some water line replacement would be warranted, but there are other options.

Options to improve water quality include:

- Hydrodynamics: Optimization aids prevention – to develop a flushing program, to monitor tank volumes, and evaluate how the entire system operates over time. Another option would install mechanical mixers in older to decrease stratification of the tank and to mix the water in the tank (reduce water age).
- Residual disinfectant: Crucial for disinfection, balance between disinfection byproducts and microbial regrowth.

County Manager Bone reiterated that no action was being requested tonight, but encouraged the group to take home the materials to study further, and discussed tweaking the Capital Improvement Plan with the town and the county. County Manager Bone thanked the McGill staff for the presentation and the information.

#### **ADJOURNMENT**

With no further business to discuss, Martin County Commissioner/Vice Chair Bond made the MOTION to adjourn the meeting at 6:55 p.m., with a SECOND by Martin County Commissioner Smith. The Board APPROVED the motion unanimously.

With no further business to discuss, Town of Williamston Mayor Whichard-Brown called the meeting adjourned at 6:55 p.m.

With no further business to discuss, MCRWASA Chairman Bone adjourned the meeting at 6:55 p.m.

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Tommy Bowen, Chairman

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Jessica Godard  
Clerk to the Board