City of Pataskala
Utility Department
2019 Annual Report
"Clean Water In, Clean Water Out!"

"If there is magic on this planet, it is contained in water."

Loren Eiseley

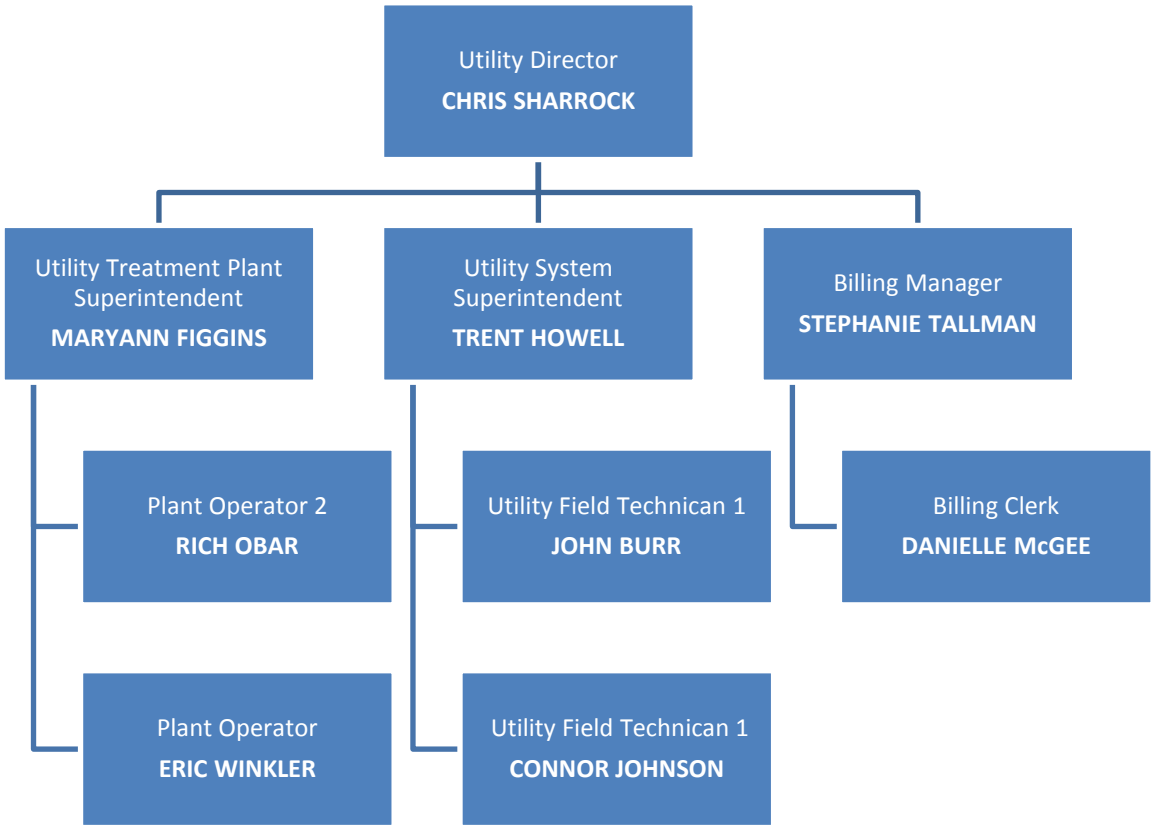
Chris Sharrock
Utility Director

Dear Mayor, Council, Administrator, and Directors,

I am pleased to share with you the 2019 Annual Report for the City of Pataskala's Utility Department. The goal of this report is to condense all of our progress, projects, challenges, and accomplishments during the 2019 calendar year. 2019 was a very successful year in the overall mission of the Utility Department in our pursuit of, *"Clean Water In, Clean Water Out!"*

I would like to introduce you to all employees that contribute daily to the success of the Utility Department. Our staff is on the environmental front line, to ensure public health, and to protect and conserve our water resources.

Utility Department Staff



Billing Team 2019 Highlights

- **3442** Customer utility accounts.
- **47494** Bills sent out during 2019.
- **92** new customers in 2019.
- **4880** Customer related phone calls in 2019.
- **5107** Visits to the Billing Window in 2019 by customers and residents.
- **702** Services orders in 2019, water and sewer related service duties for customers.
- **67** Customer service disconnects due to non-payment. This represents 0.02% of our customer base. This serves as an indicator that the staff is diligent in collections and communications with our customers. The Billing Manager exercises reasonable flexibility to receive all moneys due while avoiding service disconnection whenever possible.
- The Billing Team works to frequently send out notices to our customers via bills and post cards. This information ranges from helpful information on the department, City events, and annual reports to the customers.
- The Billing Team is involved in the annual audit process to ensure our operation meets expected financial methods.

The Billing Team ensures timely delivery of service to our customers. The Billing Team is diligent in providing top notch customer service every day of the year. This includes keeping the meter reading on a schedule month to month, to ensure the bills go out on time, and attentiveness to customer service order requests. The Billing Team processes every payment on a monthly basis and accounts for every penny through diligent accounting practices. The Billing Team in 2019 processed **$3,751,945.47** in the form of service charges which includes **$881,603** of water and sewer capacity charges for new customers / new builds.

The Billing Team is small in size but mighty in deed. Their duties are vital to the operation of the department and their efforts cannot be overstated. These individuals serve on the front line of customer service and ensure customer satisfaction.

Water 2019 Highlights

The Water Distribution System consists of more than 550 fire hydrants, nearly 4,000 main line and service line valves, 4 elevated water storage tanks, 4 clear well storage tanks, 6 active water treatment wells, 1 water booster pump station, 2 treatment plants, and 61.54 miles of water main pipe line. The 2019 calendar year for the Utility Department was productive and successful in our daily mission of "Clean water in, clean water out". We made efforts in equipment replacement, and equipment revitalization was accomplished through maintenance efforts. Maintenance efforts include numerous hours in plant operation duties, preventative maintenance duties at our facilities, and duties in the distribution system.

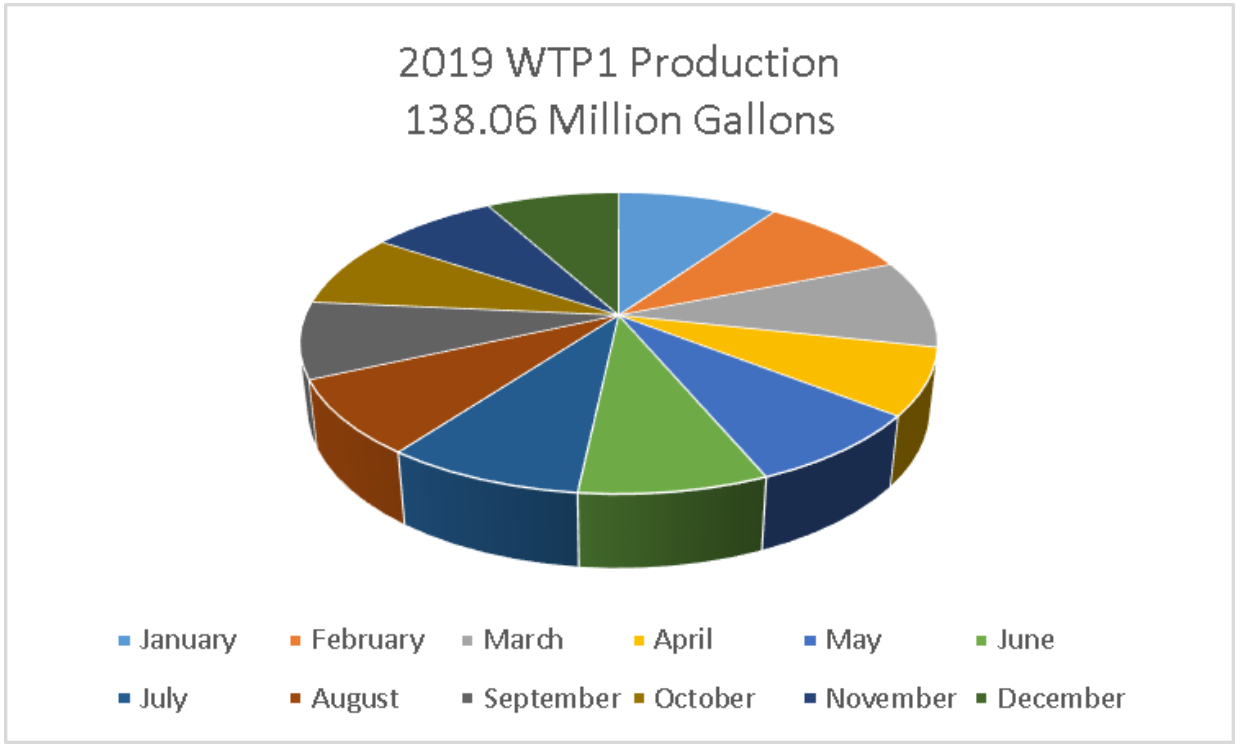
- **2019 GIS System Project** The Utility Department took great strides in developing our GIS system for our underground infrastructure. We worked with our consultant to build and update our systems to stream line our department efforts in infrastructure management. We also purchased an antenna that will allow us to more accurately build the GIS system.
- **Southeast Tower Touch Up Work** The Utility Department coordinated with National Wash Authority in 2019 to clean the exterior of the Southeast Water Tower. They also did some touch up paint repairs while they were here. This work extended the useful life of the exterior coating on the tower by an estimated 5-7 years.
- **Water Tower Maintenance Program** The Utility Department is looking into using an all-inclusive water tower maintenance program for 3 of its 4 water towers. This program would include, but not be limited to, painting, emergency and routine repairs, washout services and EPA required asset management reporting. We anticipate starting this program in 2020.
- **Hydrant Flushing Program** The Utility Department completed its annual hydrant flushing program in October. This is done to ensure that all of our hydrants are in good operational condition, and also to flush out any sediment that may have settled out of solution into our distribution system.
- **Valve Exercise Program** The Utility Department continues to work on its annual valve exercising program, ensuring the proper operation of the main and hydrant control valves in the system.
- **Public Education Efforts** We provided educational information to the customers regarding the Consumer Confidence Report (CCR) every year. The Utility Department is also continuing a monthly Social Media Informational Outreach program covering a different aspect of the department each month. We hope to create updated virtual plant tours and make them available on the City's Website.
- **Main and Mill Street Waterlines** We found a significant water leak in the area of Main and Mill Street that was not surfacing. While repairing the leak, we were able to tie the water main on Mill Street heading west to the water main on Main Street. This allows for a second feed point to the west side of old town and creates another water loop, eliminating a "dead end" point.

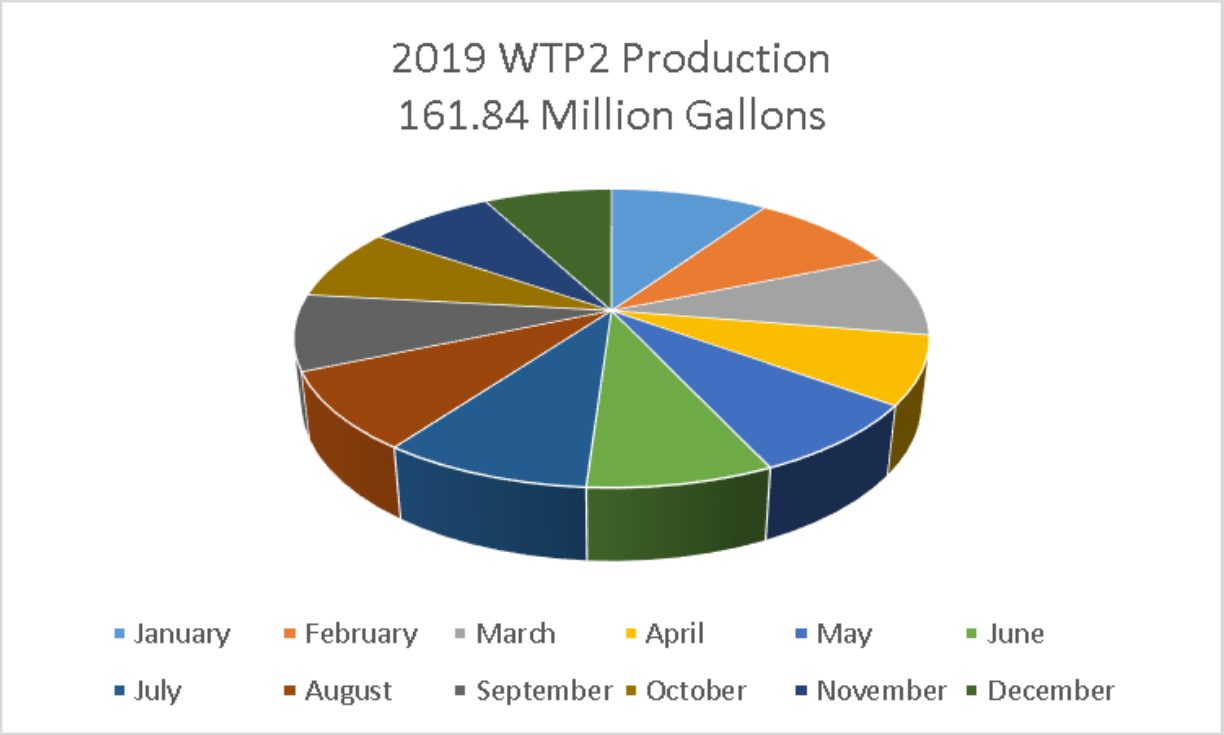
- **Other notable accomplishments**
  - 3 Water main repair jobs.
  - 2 Main Valve repair jobs
  - 34 Service line repair jobs. (2018 had 17)
  - 4 Hydrants replaced.
  - 7 Hydrants repaired.
  - All hydrants flushed annually during the unilateral flushing program.
  - Over 4,000 laboratory tests to ensure OEPA compliance.

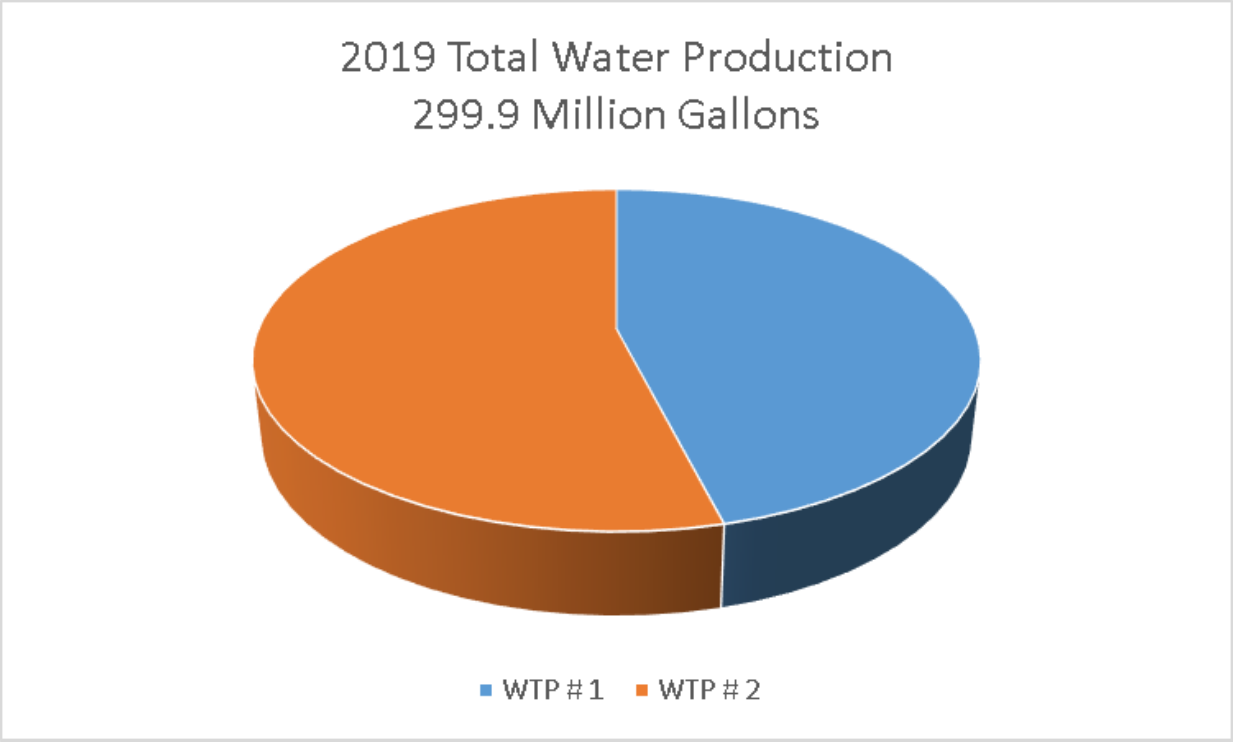
- **Treatment Process Information**

Water Treatment Plant #1 (WTP1) has the maximum treatment capacity of 1.3 million gallons per day (or 900 GPM) while Water Treatment Plant #2 (WTP2) has the treatment capacity of 864,000 gallons per day (or 600 GPM), with a combined production capacity of 2.164 MGD. The Water Distribution System consists of 4 Water Towers, 1 Booster Station, and over 61 miles of main line pipe work.

In 2019, Water Treatment Plant #1 produced a total of **138.06** Million Gallons (MG) and Water Treatment Plant #2 produced **161.84** MG; the total combined production for the year was **299.90** MG with an average daily production of .822 Million Gallons.




2019 WTP2 Production
161.84 Million Gallons
January
February
March
April
May
June
July
August
September
October
November
December



- **Production vs. Water Sales**

In 2019, our yearly non-revenue water percentage (production versus water usage billed) was 4.72%, which is significantly lower than the 14% seen in 2018. This difference is attributed to the more accurate water meters being used as well as the quick response to leaks in the system. A major leak was located at the intersection of Main and Mill Street in 2019 that had not surfaced and is believed to have been leaking for at least one year. The non-revenue water calculation is a method to determine system efficiency on a supply and demand basis. The percentage of unaccounted water use is a direct result of water loss in water main breaks, failed water meters, service leaks, system pressurization, and system flushing operations. Unfortunately, this also includes potential leaks that have not surfaced.

Future efforts can be made to better determine our actual non-revenue water calculation by the installation of direct metering points in the distribution grid on main lines. A conservatively calculated average of 22% represents our daily water production that is used to pressurize the grid. The 22% is specifically produced for grid pressurization and storage in the system via the Headleys Mill and Southeast Tower to provide a sufficient static pressure when the production is at rest. The data is confirmed in our hydraulic modeling study. The fact that we do not have a single transmission main to provide all produced water directly to the towers is a major factor in this issue. This concept is verified by the fact that our non-revenue water fluctuates with customer demand. If the non-revenue water was due mostly to leaks, the number would be more constant. Understanding this concept, the amount of non-revenue water was 4.72% in 2019.

In efforts to ensure the best pressure possible in the historic village area (also the suction point for the booster station) we have to carry the Southeast Tower at a near over flow elevation with no more than a 4 feet operating level. Calculated, this provides a theoretical amount of unconsumed water in the tower near 380,000 gallons, which varies in the vessel based on production and demand. The ideal operating range or consumption span of the tower should be 20 feet. If we operated with that "fill and drain" principal using our system, we would receive daily calls for low or no water pressure.

I consider our non-revenue water percentage to be manageable understanding the age of the infrastructure in historic Pataskala Village areas and our system inefficiencies. We will continue in 2020 to reduce our non-revenue water percentage by locating non-surfacing water leaks, respond to water leaks quickly, and stay on a healthy schedule of replacing aged water meters.

Please see the below information regarding the past 5 years relative to the production and sale of water with our growth rate. This information provides a look at how much our non-revenue water percentage has gone down over the years. There will always be some non-revenue water due system inefficiencies, even in the ideal water systems. We will however, remain dedicated to taking that number as low as possible.

Year	MGD	MGD Billed	New Customers
2012	310.93	214.46	48
2013	279.39	208.57	51
2014	278.52	203.39	34
2015	286.79	205.29	48
2016	311.88	213.45	51
2017	306.94	208.22	46
2018	323.28	213.63	61
2019	299.90	219.76	92
Total	2,397.63	1,686.77	431
Average	299.70	210.85	53.88

Water Reclamation 2019 Highlights

The Wastewater Collection System consists of 7 Lift Stations, 915 manholes, and 42.7 miles of sewer main pipe line. The 2019 calendar year for the Utility Department was productive and successful in our daily mission of "Clean Water In, Clean Water Out". We made efforts in equipment replacement and equipment revitalization was accomplished through maintenance efforts. Maintenance efforts include numerous hours in plant operation duties, preventative maintenance duties at our facilities, and duties in the collection system.

- **2018 Biosolids Program** The Biosolids Management Program resulted in 112.83 dry tons of nutrient rich product for agricultural beneficial reuse. The program is on the frontline of reuse and recovery of the beneficial application of biosolids. The department is currently utilizing the services of a contractor (Agri-sludge) to conduct our land application program in accordance with good farming practices and OEPA regulations. The intent in 2020 is to bring this process back in house wherever practical in order to make this process as cost effective as possible for the department.

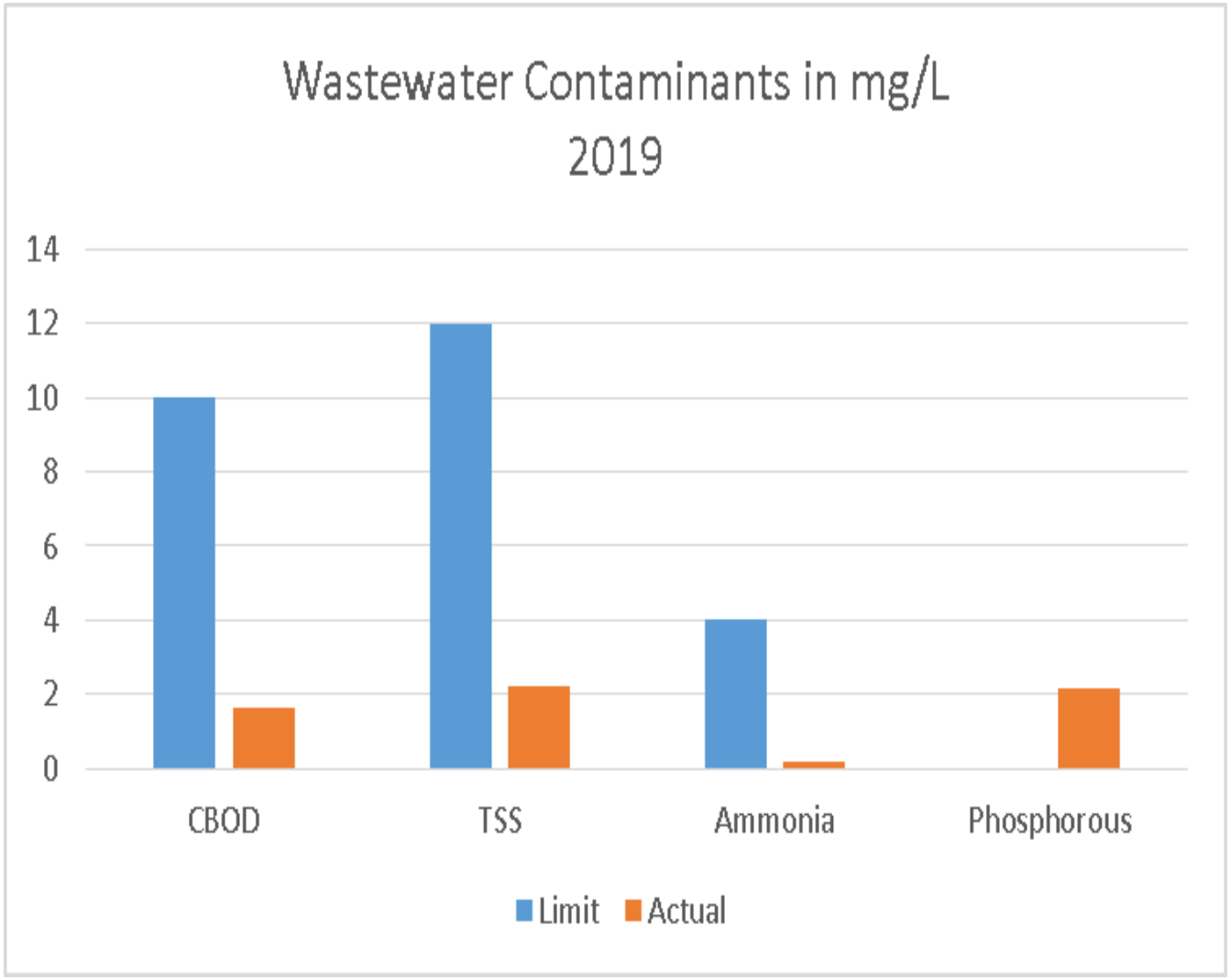
- **2019 GIS System Project** The Utility Department took great strides in developing our GIS system for our underground infrastructure. We worked with our consultant to build and update our systems to stream line our department efforts in infrastructure management. There is still work to do in the area of service lines being added to the system, but the bulk of the main lines are accurately depicted.

- **1 Meter BDP 3DP Belt Filter Press** The new belt press at the Water Reclamation Facility is one of the most valuable upgrades that the department has gone through. The new press has been utilized for a full year, and it has exceeded expectations. The filtrate from the press is cleaner, the product has a higher solids percentage, and the polymer usage is 1/3 of previous annual consumption totals. The savings in polymer costs alone nearly equal the additional costs of utilizing Agri-sludge for the land application process.

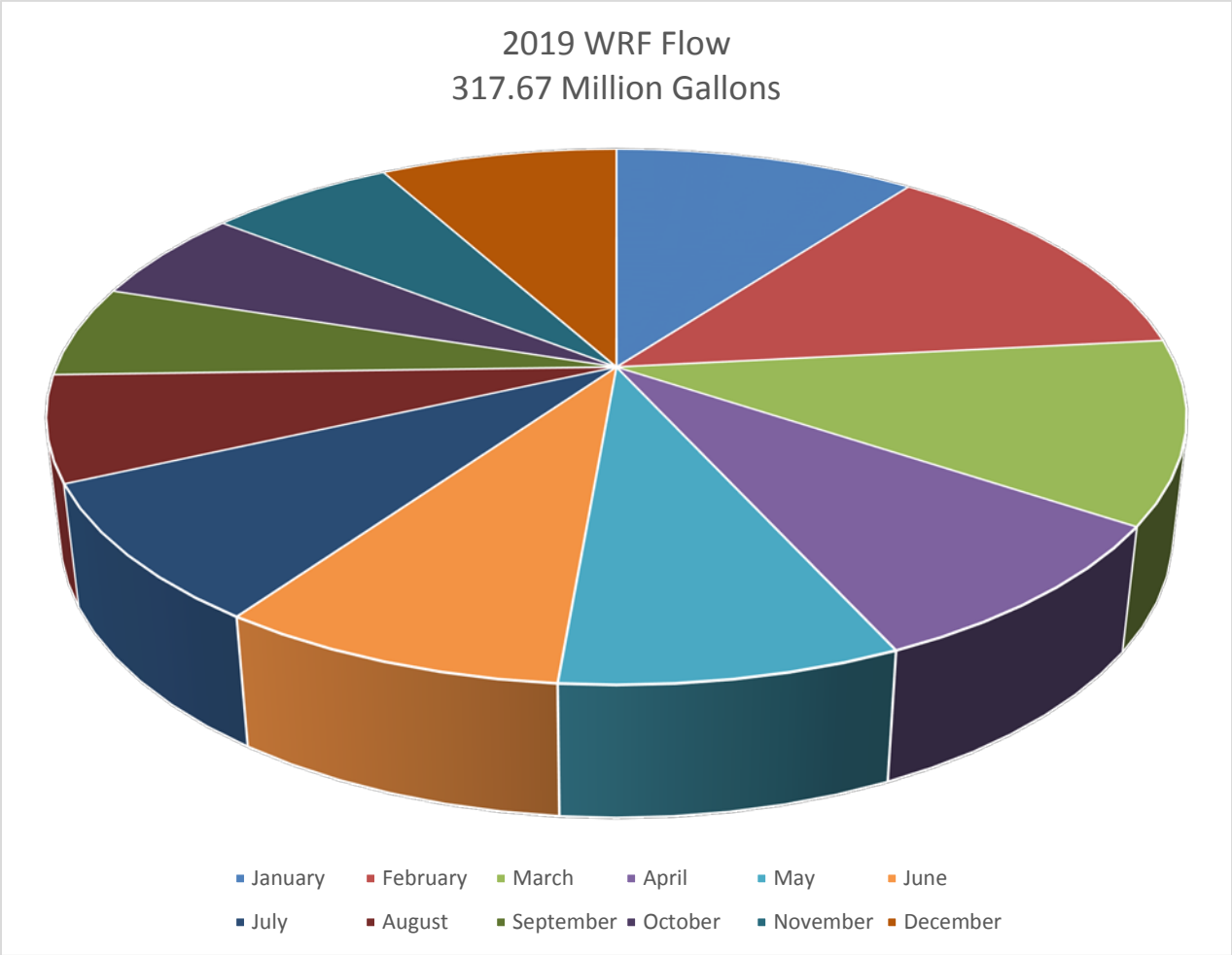
- **Other notable accomplishments**
  - A new system known as the SL-RAT was utilized in 2019. This system uses sound waves to identify areas that need cleaning and televising, preventing the department from cleaning pipes unnecessarily. It allows us to analyze a large area of the collection system for blockages much quicker and cheaper than our old practice of cleaning sanitary lines regardless of whether they had any blockages or not.
  - Nearly 3,000 laboratory tests to ensure OEPA compliance.
  - 112.83 dry tons of produced and beneficially reused biosolids.
  - There were zero Sanitary Sewer Overflows in 2019

The Water Reclamation Facility (WRF) has the maximum treatment capacity of 1.1 million gallons per day (MGD). The WRF treats all of the wastewater generated by customers in Pataskala service area.

- The Ohio EPA requires that our WRF meet the following requirements under treatment standards: CBOD (Carbonaceous Biological Oxygen Demand) and TSS (Total Suspended Solids) must meet an **85%** removal from influent levels to final treatment levels. The 2019 removal average for CBOD was **99.09%** and TSS is **98.97%.** The maximum contaminant levels required by the Ohio EPA are as follows: CBOD at **10mg/L**, TSS at **12mg/L**, Ammonia at **4 mg/L** in the winter and **1.2 mg/L** in the summer. Our effluent levels average CBOD at **1.65 mg/L**, TSS at **2.22 mg/L** and Ammonia at **.196 mg/L**. We are currently exceeding the expectations of our treatment level under the OEPA's current standards. Future limitations for effluent phosphorus will be **1 mg/L**. Our 2019 average was **2.15 mg/L** with a removal rate of **50.14%**.

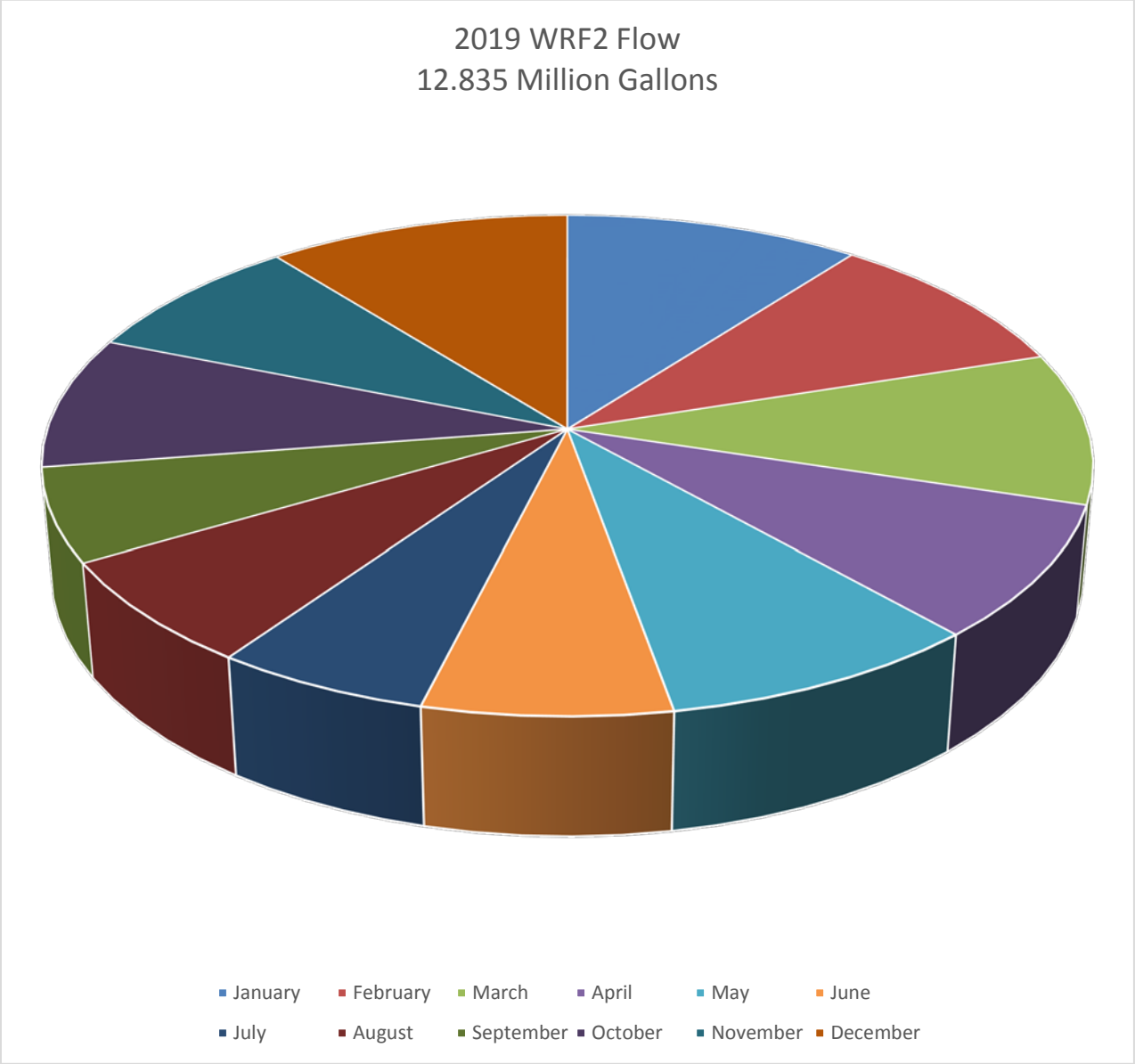


- The WRF treated a total of 317.67 million gallons during the course of 2019 with an average daily flow of .87 million gallons per day.



Inflow and Infiltration: Based on the available information, the Pataskala Water Reclamation Facility and Collection System is under considerable surface and/or ground water infiltration. The treatment facility sanitary collection system indicates an annual water meter usage of 165.44 million gallons. This number represents the water customers that receive sewer service from Pataskala. Based on annual treatment facility and flow data it can be calculated that nearly 48% of our annual treatment flow is directly related surface / ground water infiltration. To say that again, nearly half of the water treated at our wastewater plant is not wastewater, but ground/ rain water. Our treatment plant, for an annual average, treats .87 million gallons per day. Our in town water usage rates indicates a daily usage of .44 million gallons per day, based on annual averages. The Westside Tributary Area (historic village) represents the largest and oldest portion of the system with a total of 98,920 feet (18.8 miles) of main line infrastructure. The aged infrastructure is the source of our inflow and infiltration. System inflow and infiltration is currently being addressed by the I&I CAP currently underway by GPD group.

The Refugee Water Reclamation Facility (Wastewater Treatment Facility for WTP#2) (WRF2) has the daily design flow capacity of .084 MGD. The WRF2 treats the wastewater generated by the WTP#2 operational processes consisting of iron filter and softener back wash discharge. The Refugee WRF2 treated a total of 12.84 million gallons with an average daily flow of .036 million gallons per day. We have made multiple attempts to try and achieve the OEPA Strontium discharge requirements without adding the dilution water, but these attempts were unsuccessful. While dilution allows us to meet our limits, it does result in an additional 30 to 40,000 gallons of treated drinking water added to the discharge per day.



The pursuit of clean water is a mission that is only accomplished through the hard work, knowledge and dedication of the employees of the Utility Department. These individuals are able to work as one collective team to provide clean water on demand to our entire system and they do it with an excellent level of customer service. This report is intended to share some of our critical data points and the completion of our annual goals. Our goal in 2020 is to continue to grow and progress in our mission of "Clean Water In, Clean Water Out". We will continue to strive for continual growth and progress as we seek to do our very best in every task. We will continue to make strides to maintain our water and wastewater infrastructure in a responsible and respectable manner. We appreciate your support as we meet every challenge with a resolve for solution.

Highest Regards,

Chris Sharrock
City of Pataskala
Utility Director

"Water is the driving force of all nature." **- Leonardo da Vinci**