City of Pataskala
Utility Department
2020 Annual Report
"Clean Water In, Clean Water Out"

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

Loren Eiseley

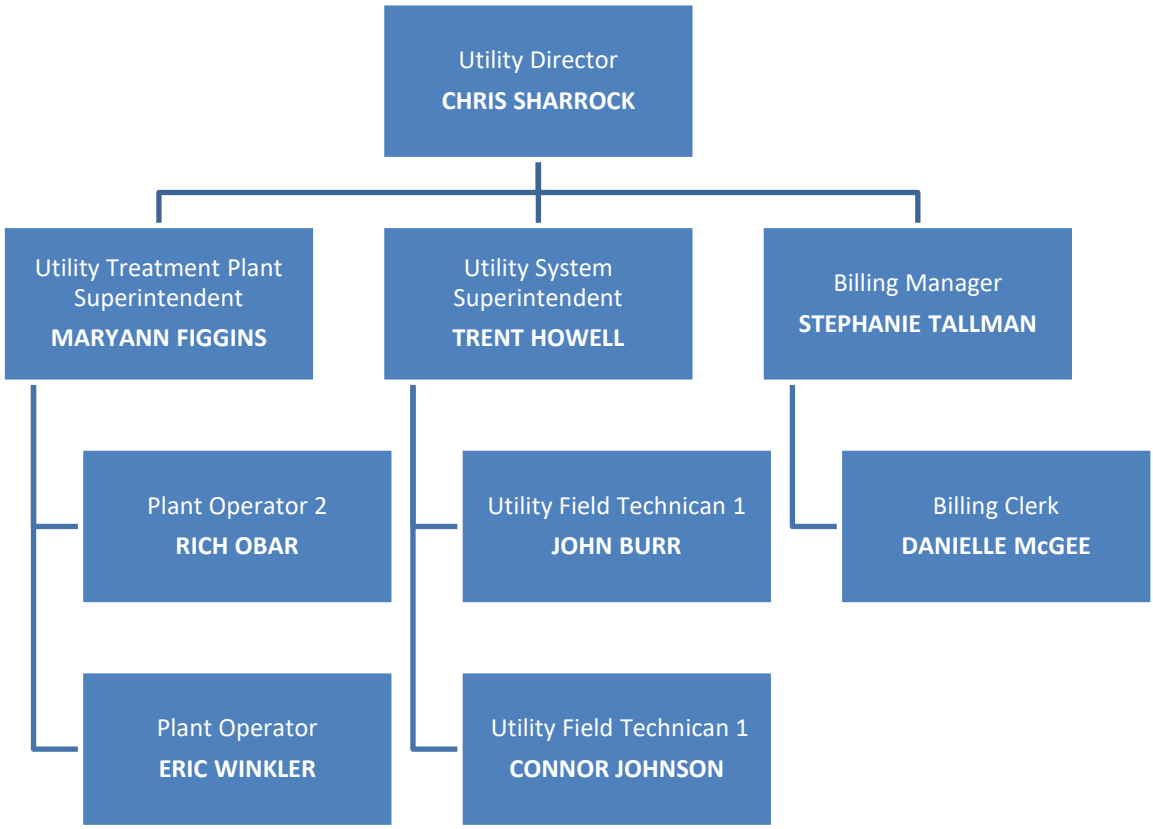
Chris Sharrock
Utility Director

Dear Mayor, Council, Administrator, and Directors,

I am pleased to share with you the 2020 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 2020 calendar year. 2020 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 2020 Highlights

- **3517** Customer utility accounts.
- **49,252** Bills sent out during 2020.
- **62** new customers in 2020.
- **2198** Customer related correspondences in 2020.
- **2811** Visits to the Billing Window in 2020 by customers and residents.
- **841** Services orders in 2020, water and sewer related service duties for customers.
- **128** Customer service disconnects due to non-payment. This represents 0.04% 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 2020 processed **$4,152,515.58** in the form of service charges which includes **$746,154.00** 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 2020 Highlights

The Water Distribution System consists of more than 561 fire hydrants, 978 main 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 63.3 miles of water main pipeline. The 2020 calendar year for the Utility Department was a productive and successful one in our daily mission of "Clean Water In, Clean Water Out". Equipment replacement and equipment revitalization was accomplished through proactive maintenance efforts. Those efforts included numerous hours in plant operation responsibilities, preventative maintenance duties at our facilities as well as in the distribution system.

- **2020 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.

- **Water Tower Maintenance Program** The Utility Department entered into an all-inclusive water tower maintenance program for 3 of its 4 water towers. This program includes painting, emergency and routine repairs, washout services and EPA required asset management reporting. The first benefit realized as a result of this program was the repainting of Beechwood Tower 1 in the summer of 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.

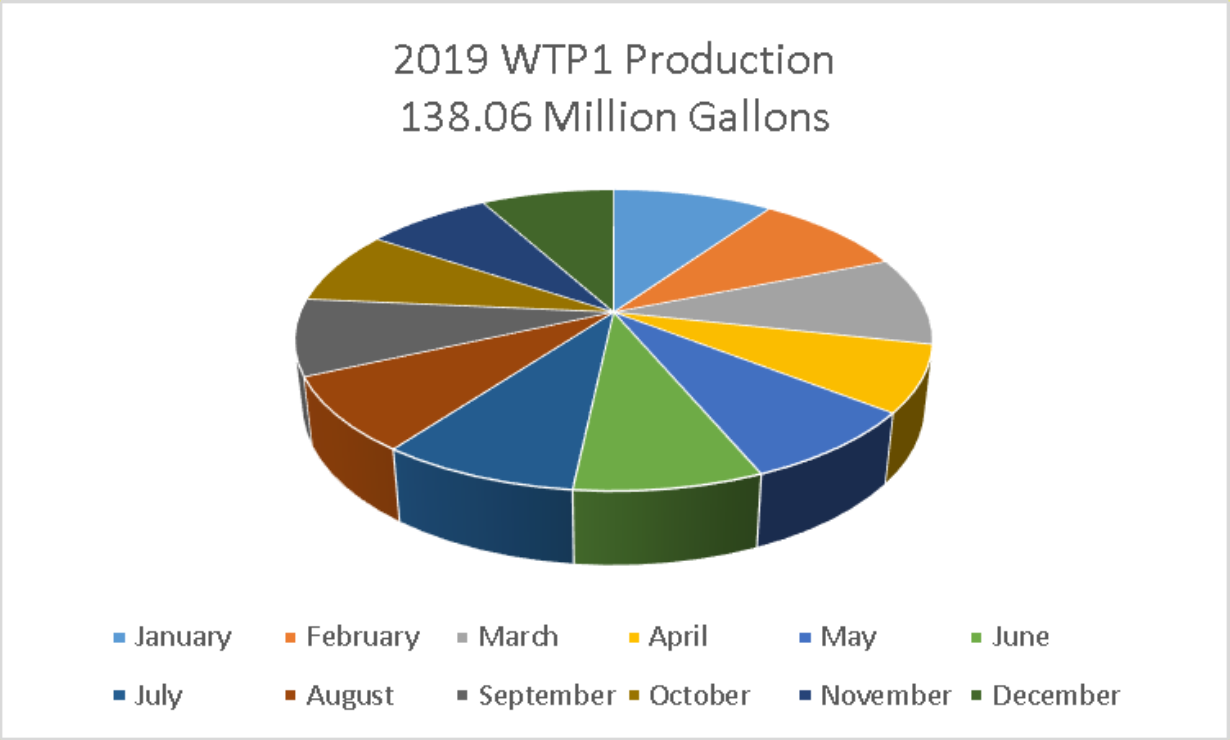
- **Jefferson Street Waterline** In 2020, the Utility Department contracted with Hull Inc. do complete the design of a project to replace and upsize the water main on Jefferson Street. This project was submitted to OPWC for some grant funding assistance. The waterline project will also include resurfacing the roadway and will be constructed in 2021

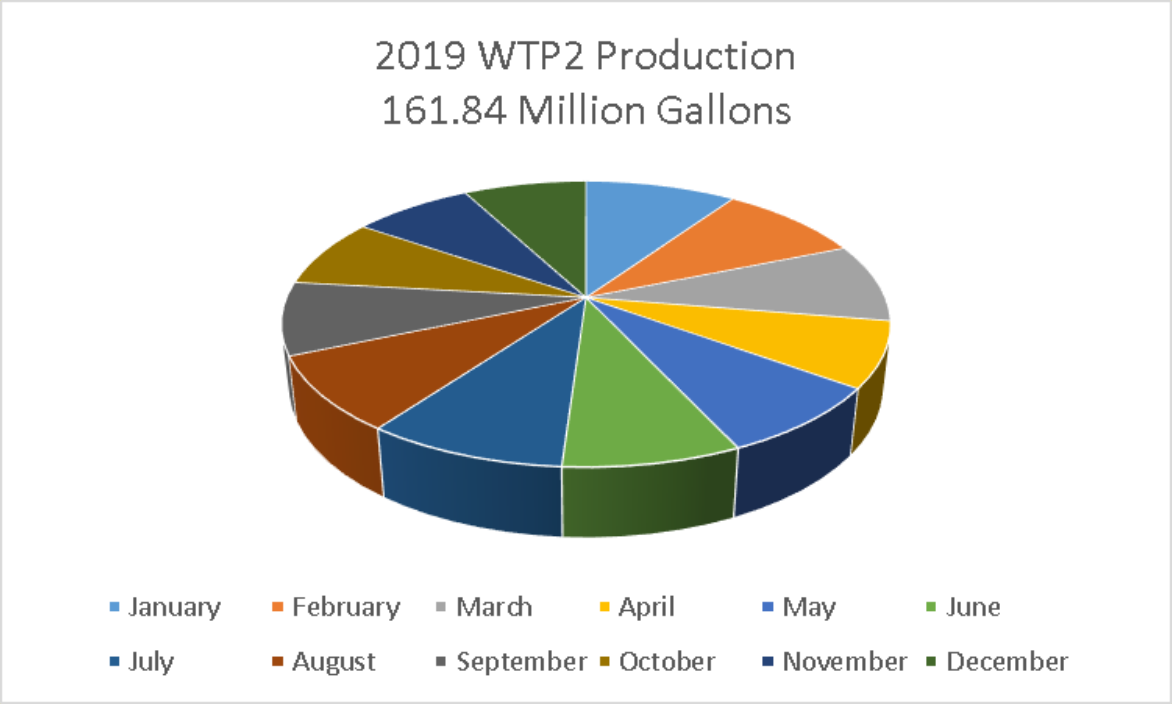
- **Other notable accomplishments**
  - 5 Water main repair jobs.
  - 28 Service line repair jobs.
  - 5 Hydrants replaced.
  - 6 Hydrants repaired.
  - All hydrants flushed annually during the unilateral flushing program.
  - Over 4,000 laboratory tests to ensure OEPA compliance.

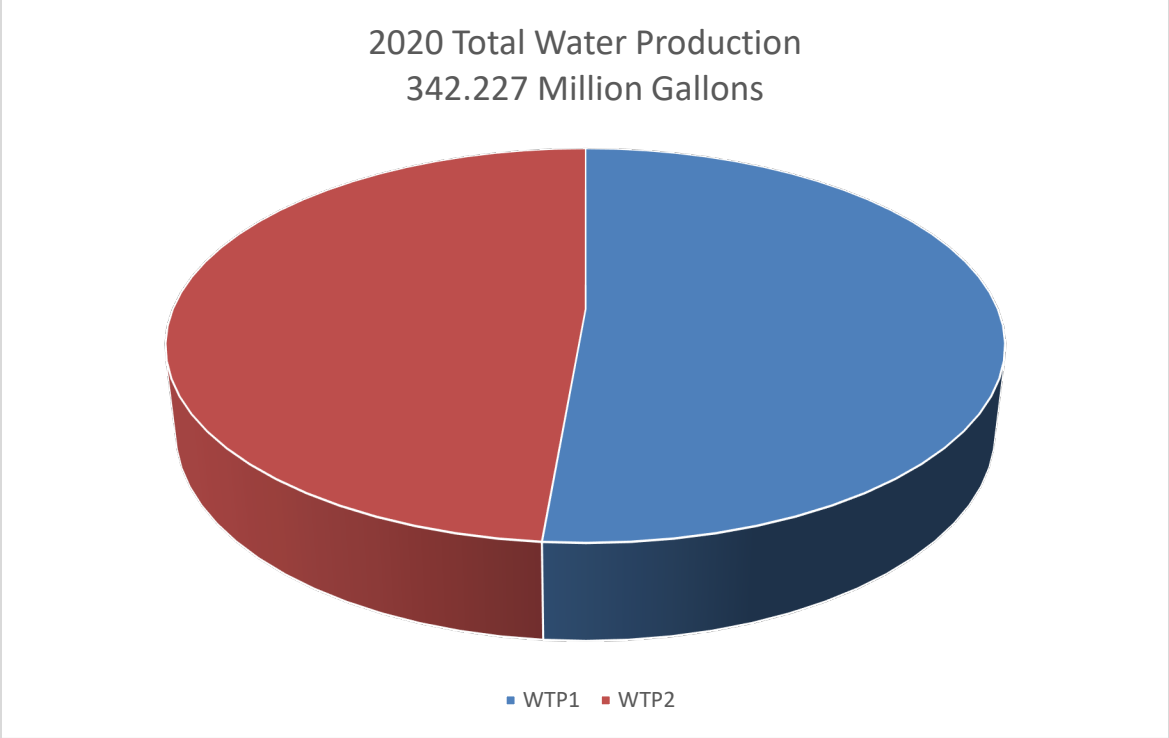
- **Treatment Process Information**

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 63 miles of main line pipe.

In 2019, Water Treatment Plant #1 produced a total of **168.399** Million Gallons (MG) and Water Treatment Plant #2 produced **173.828** MG; the total combined production for the year was **342.227** 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


2020 Total Water Production
342.227 Million Gallons
WTP1
WTP2

- **Production vs. Water Sales**

In 2020, our yearly non-revenue water percentage (production versus water usage billed) was 9.8%. 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, system flushing operations and unmetered water services. Unfortunately, this also includes potential leaks that have not surfaced.

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 9.8% in 2020.

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 2021 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 9 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
2020	342.23	233.37	62
Total	2,739.86	1,920.14	493
Average	304.43	213.35	54.78

Water Reclamation 2020 Highlights

The Wastewater Collection System consists of 7 Lift Stations, 875 manholes, and 36.3 miles of sewer main pipeline. The 2020 calendar year for the Utility Department was a productive and successful one in our daily mission of "Clean Water In, Clean Water Out". Equipment replacement and equipment revitalization was accomplished through proactive maintenance efforts. Those efforts included numerous hours in plant operation responsibilities, preventative maintenance duties at our facilities as well as in the collection system.

- **WRF Upgrade Project** The Utility Department contracted with Kirk Brothers Inc. to begin construction on an upgrade project at the Water Reclamation Facility (WRF). This project will upgrade the equipment controlling the pumps at the lift stations feeding the WRF, the installation of a jet aeration system to better control the dissolved oxygen levels, various piping improvements, and the installation of a chemical feed system. This upgrade is being conducted in anticipation of a phosphorous limit being added to our next discharge permit. The upgrade project is anticipated to be completed in the Spring of 2021. This project is funded by a .15% loan through the Ohio Water Development Authority.

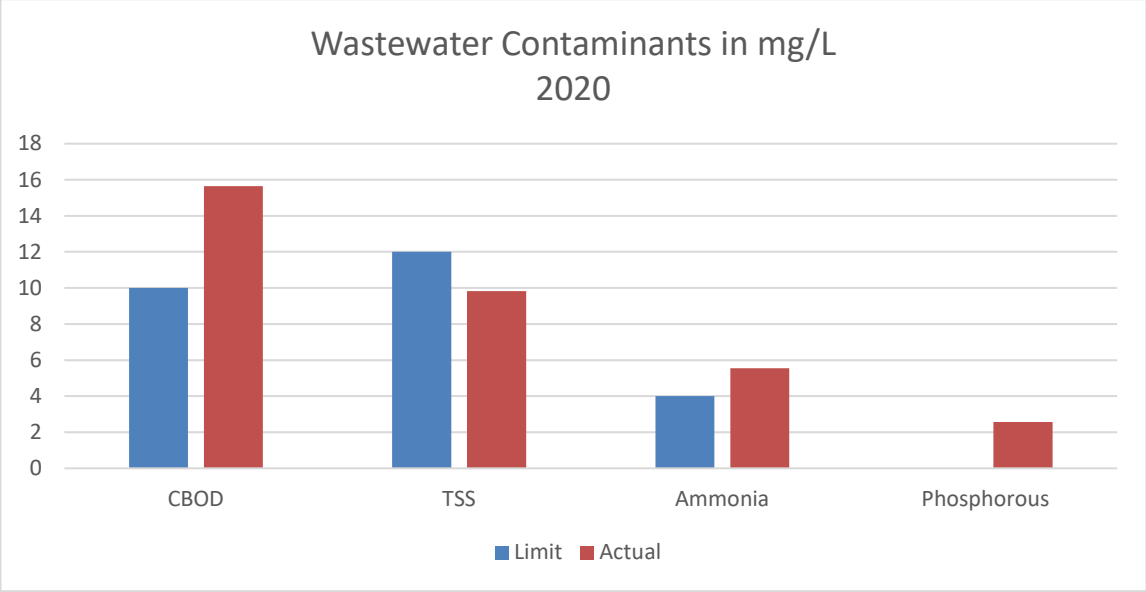
- **2020 Biosolids Program** The Biosolids Management Program resulted in 64.79 dry tons of nutrient rich product for agricultural beneficial reuse. The program is on the frontline of reuse and recovery through the beneficial application of biosolids. The department is currently utilizing the services of a contractor (Agri-sludge) to conduct our land application program in accordance with good farming practices and OEPA regulations.

- **2020 GIS System Project** The Utility Department took great strides in improving 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. The GIS project is an ongoing effort as we add new developments and continue to upgrade the accuracy of the existing infrastructure.

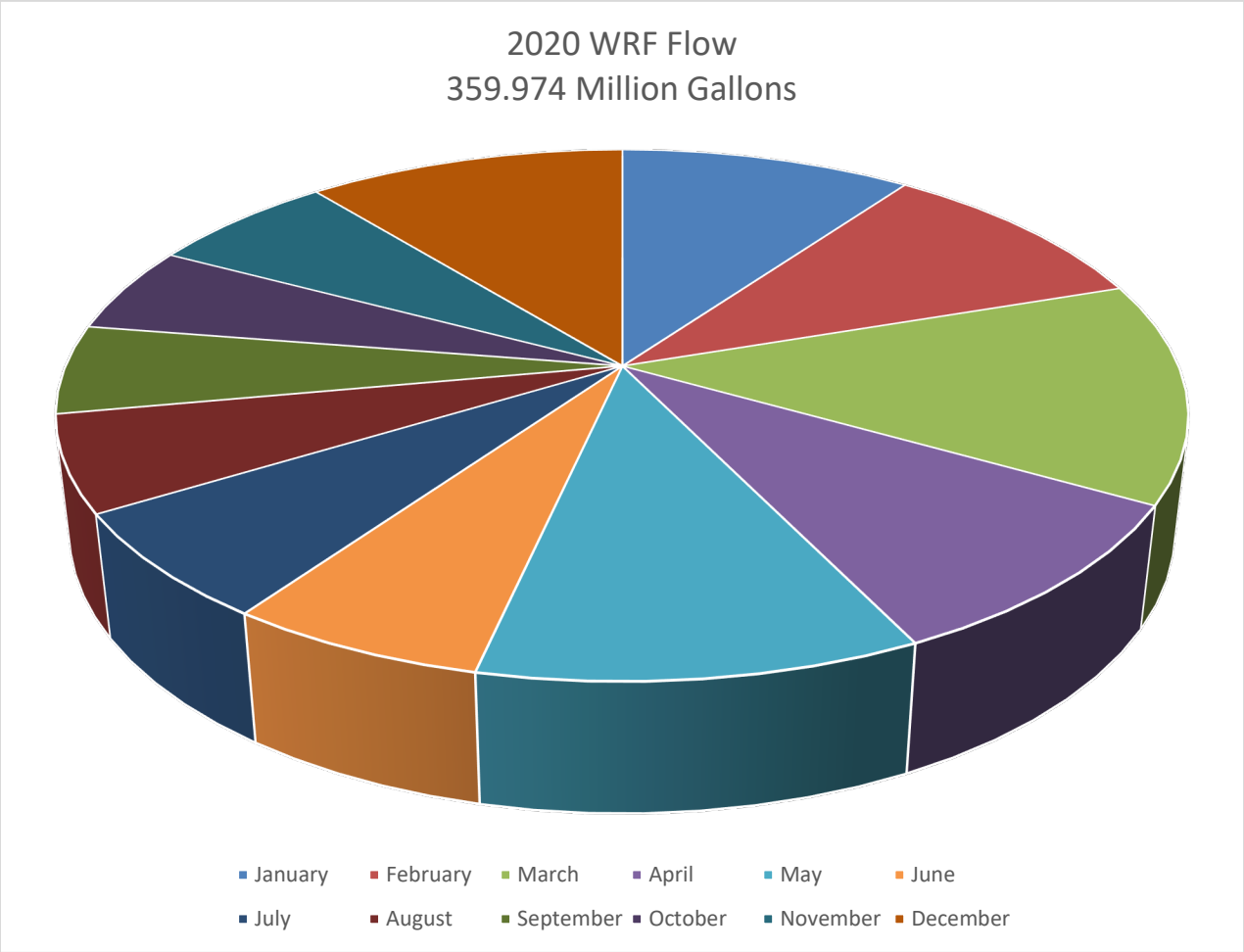
- **Other notable accomplishments**
  - Nearly 5,000 laboratory tests to ensure OEPA compliance.
  - 64.79 dry tons of produced and beneficially reused biosolids.
  - There was one Sanitary Sewer Overflows in 2020 as a result of heavy flooding
  - Conducted an I&I study on the collection system to identify ways to keep I&I water out of the system
  - Received safety awards from OWEA for both the wastewater collection system and the WRF

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 **92.55%** and TSS is **93.46%.** 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 averaged CBOD at **15.64 mg/L**, TSS at **9.82 mg/L** and Ammonia at **5.55 mg/L**. Future limitations for effluent phosphorus will be **1 mg/L**. Our 2020 average was **2.57 mg/L** with a removal rate of **61.88%**. Our higher than desired sample results are tied directly to the use of the lagoon treatment system during the WRF upgrade project. Before the project began, we met or exceeded all EPA requirements, and will return to that practice once the upgrade project is complete.

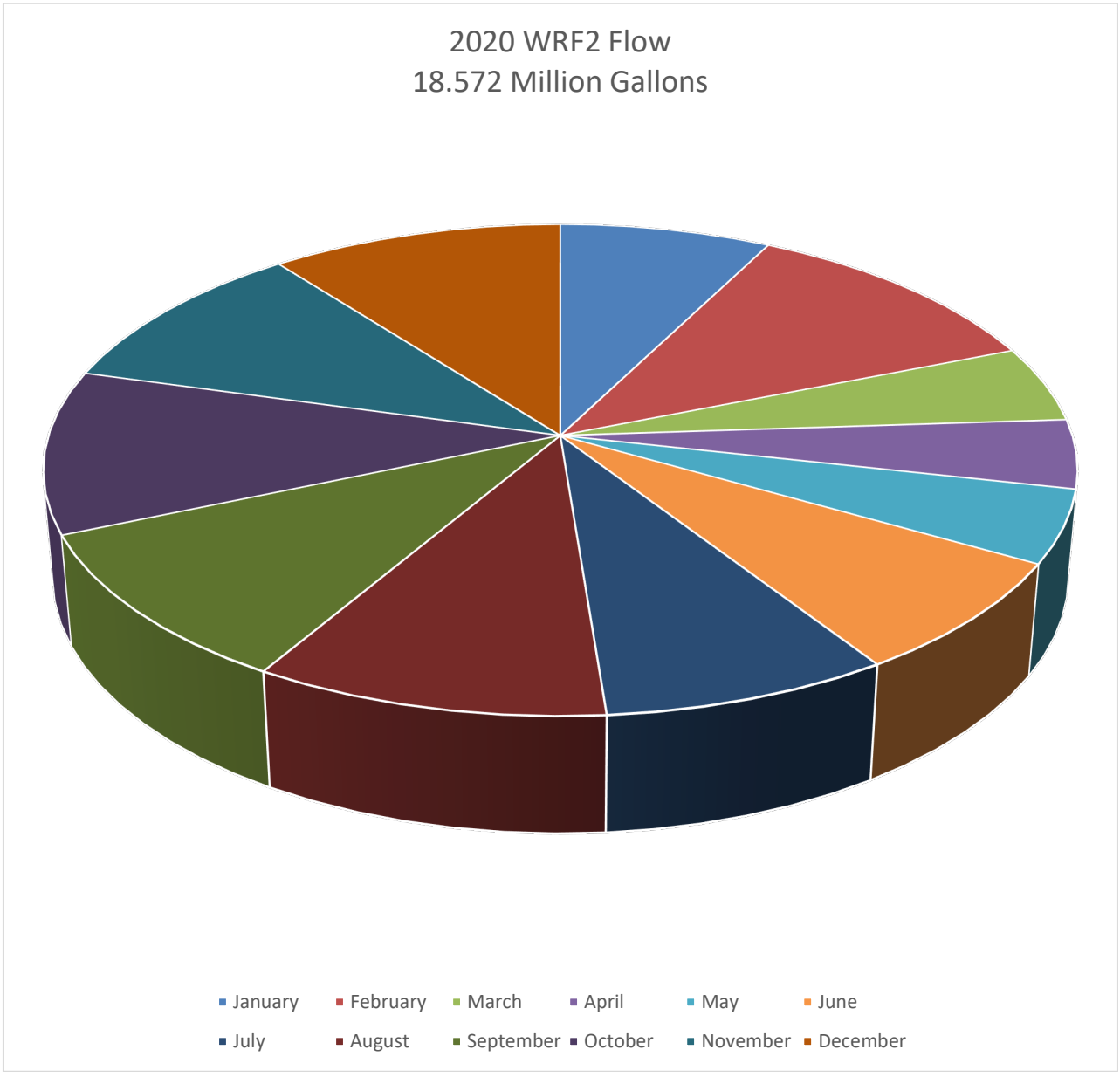


- The WRF treated a total of 359.974 million gallons during the course of 2020 with an average daily flow of .987 million gallons per day.



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 178.702 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 49.6% 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. 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. An I&I study was conducted in 2020 and the results have identified areas in the old town collection system that need addressed. That study will be used to develop the wastewater CIP program for years to come. Removal of I&I water from the collection system will allow for future growth without the need for a plant upgrade.

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 18.572 million gallons with an average daily flow of .051 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 usually allows us to meet our limits, it does result in an additional 30,000 to 40,000 gallons of treated drinking water added to the discharge per day. A long term solution may be to install a force main to run this waste stream into our existing collection system which will provide the necessary dilution water.



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 2021 is to continue to grow and progress in our mission of "Clean Water In, Clean Water Out". 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**