

**City of Pataskala  
Utility Department  
2021 Annual Report  
*"Clean Water In, Clean Water Out"***



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

**Loren Eiseley**

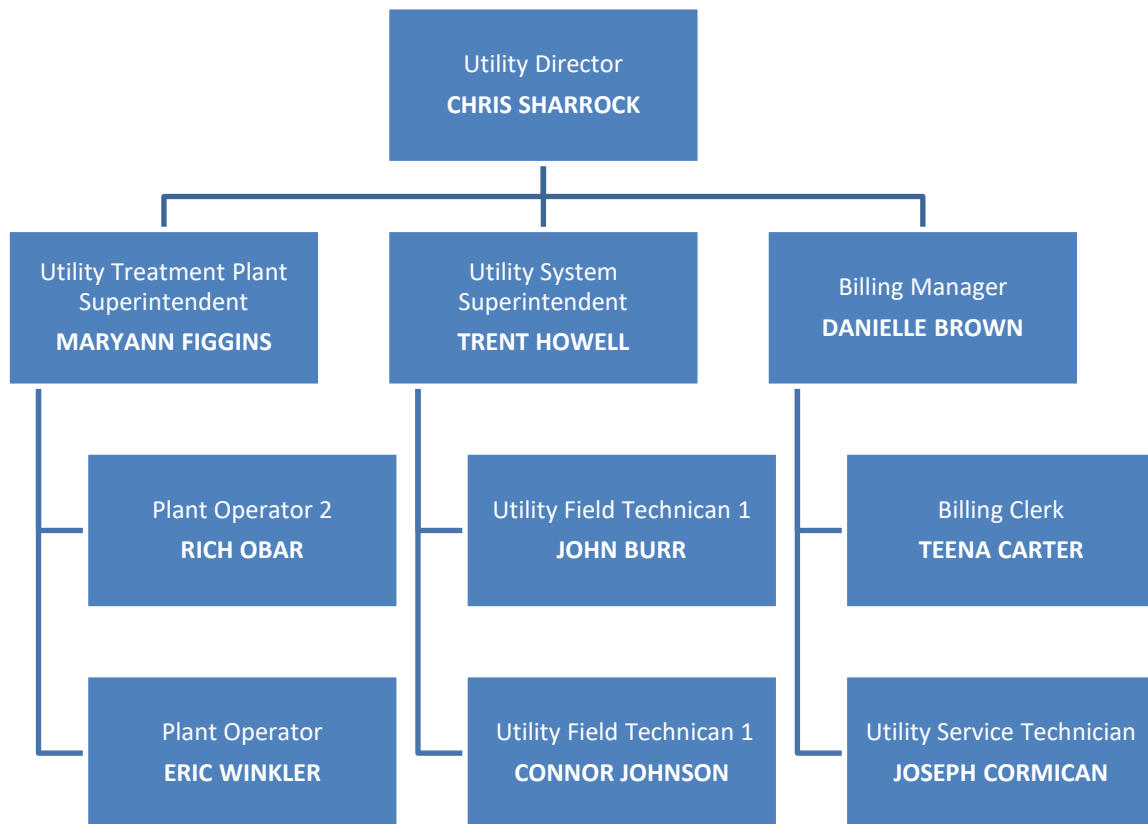
**Chris Sharrock  
Utility Director**

Dear Mayor, Council, Administrator, and Directors,

I am pleased to share with you the 2021 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 2021 calendar year. 2021 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 2021 Highlights**

- **3571** Customer utility accounts.
- **44,451** Bills sent out during 2021.
- **56** new customers in 2021.
- **3047** Visits to the Billing Window in 2020 by customers.
- **708** Services orders in 2021, water and sewer related service duties for customers.
- **169** Customer service disconnects due to non-payment. This represents 4.7% 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 letters. 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 2021 processed **\$4,167,573.06** in the form of service charges which includes **\$739,588.00** 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 2021 Highlights**

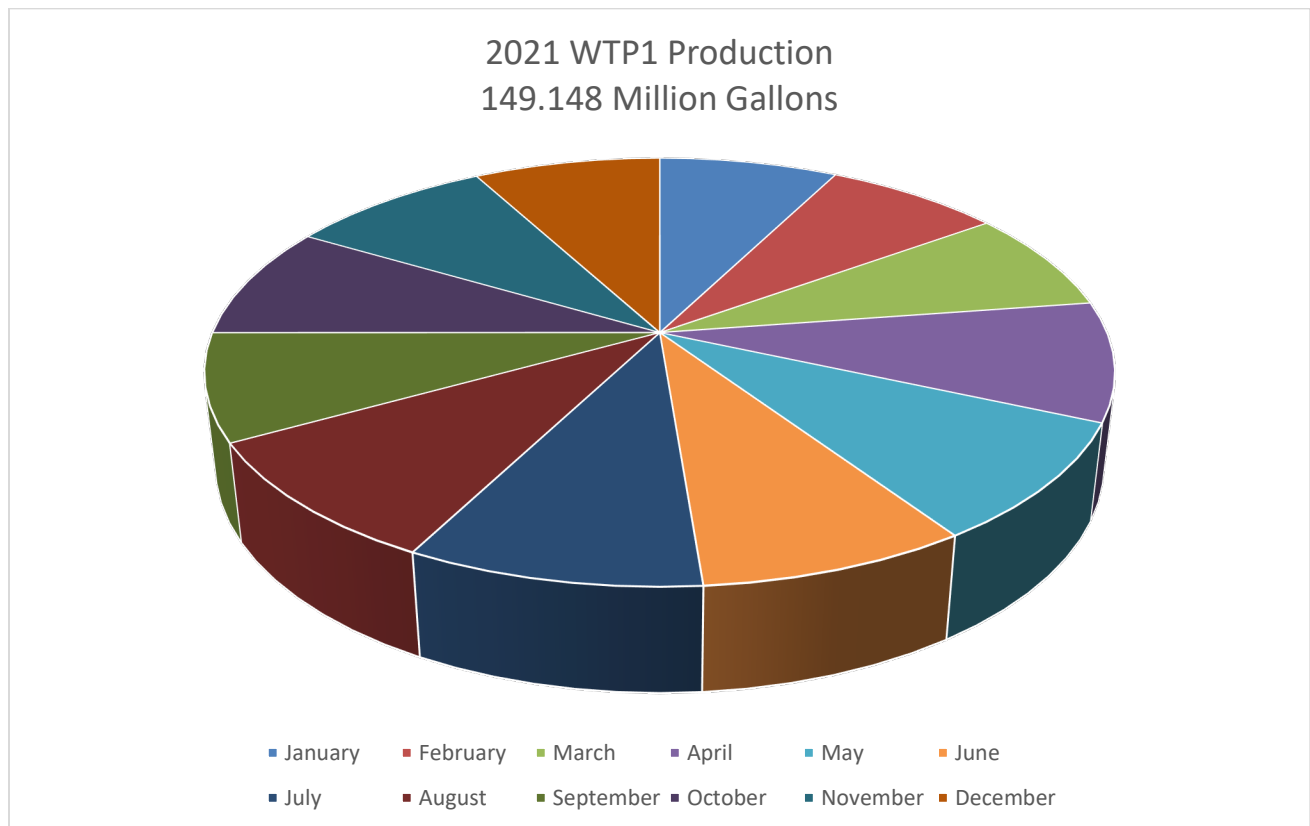
The Water Distribution System consists of more than 651 fire hydrants, 1,231 main line valves, 4 elevated water storage tanks, 4 clear well storage tanks, 6 active water treatment wells, 1 water booster pump station, 2 treatment plants, and 65.8 miles of water main pipeline. The 2021 calendar year for 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.

- **2021 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. This program resulted in the necessary quality inspections for the water towers in 2021.
- **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.
- **Other notable accomplishments**
  - 2 Water main repair jobs.
  - 23 Service line repair jobs.
  - 1 Hydrants replaced.
  - 7 Hydrants repaired.
  - All hydrants flushed annually during the unilateral flushing program.
  - Over 4,000 laboratory tests to ensure OEPA compliance.

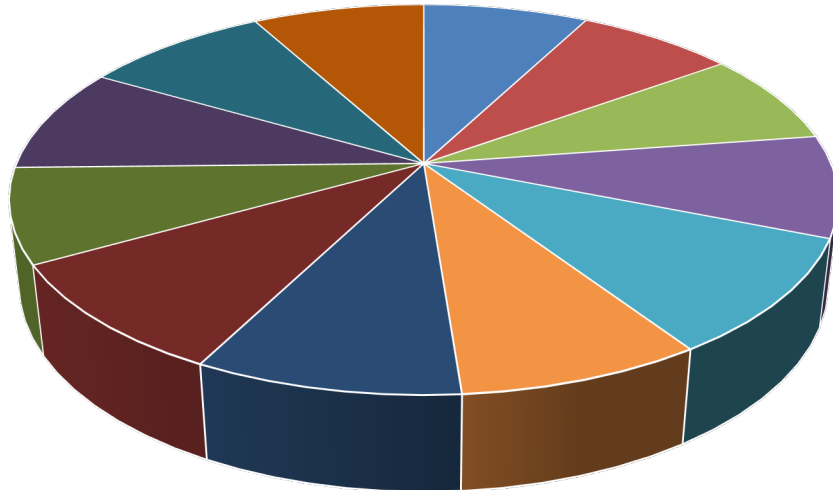
- **Treatment Process Information**

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 65 miles of main line pipe.

In 2021, Water Treatment Plant #1 produced a total of **149.148** Million Gallons (MG) and Water Treatment Plant #2 produced **179.864** MG; the total combined production for the year was **329.012** MG with an average daily production of .914 Million Gallons.

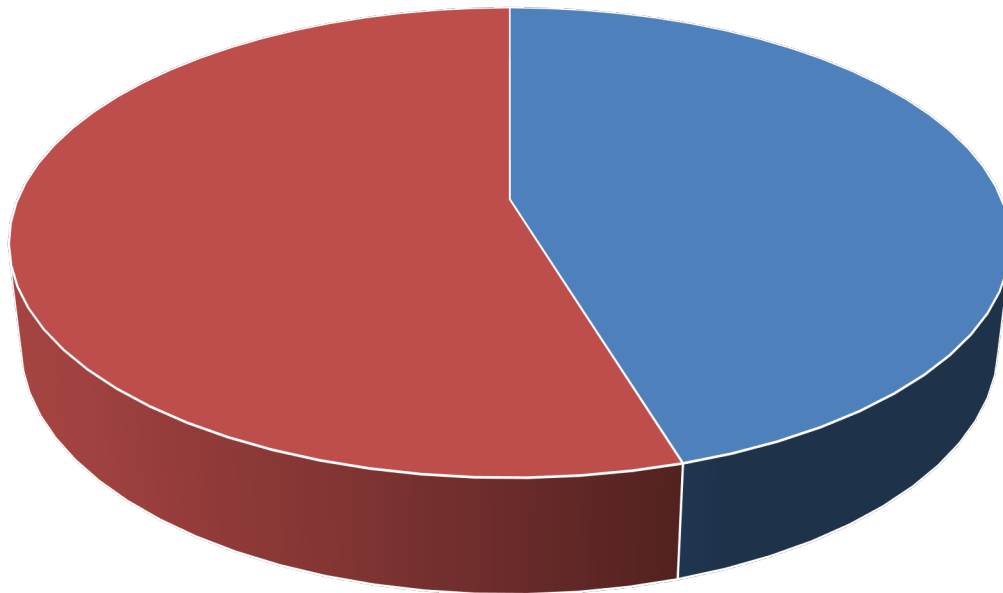


2021 WTP2 Production  
179.864 Million Gallons



■ January ■ February ■ March ■ April ■ May ■ June  
■ July ■ August ■ September ■ October ■ November ■ December

2021 Total Water Production  
329.012 Million Gallons



■ WTP1 ■ WTP2

- **Production vs. Water Sales**

In 2021, our yearly non-revenue water percentage (production versus water usage billed) was 9.5%. 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 20% represents our daily water production that is used to pressurize the grid. The 20% 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 9.5% in 2021.

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 10 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 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
2021	329.01	242.57	56
Total	3,068.87	2,162.71	549
Average	306.89	216.27	54.9

## **Water Reclamation 2021 Highlights**

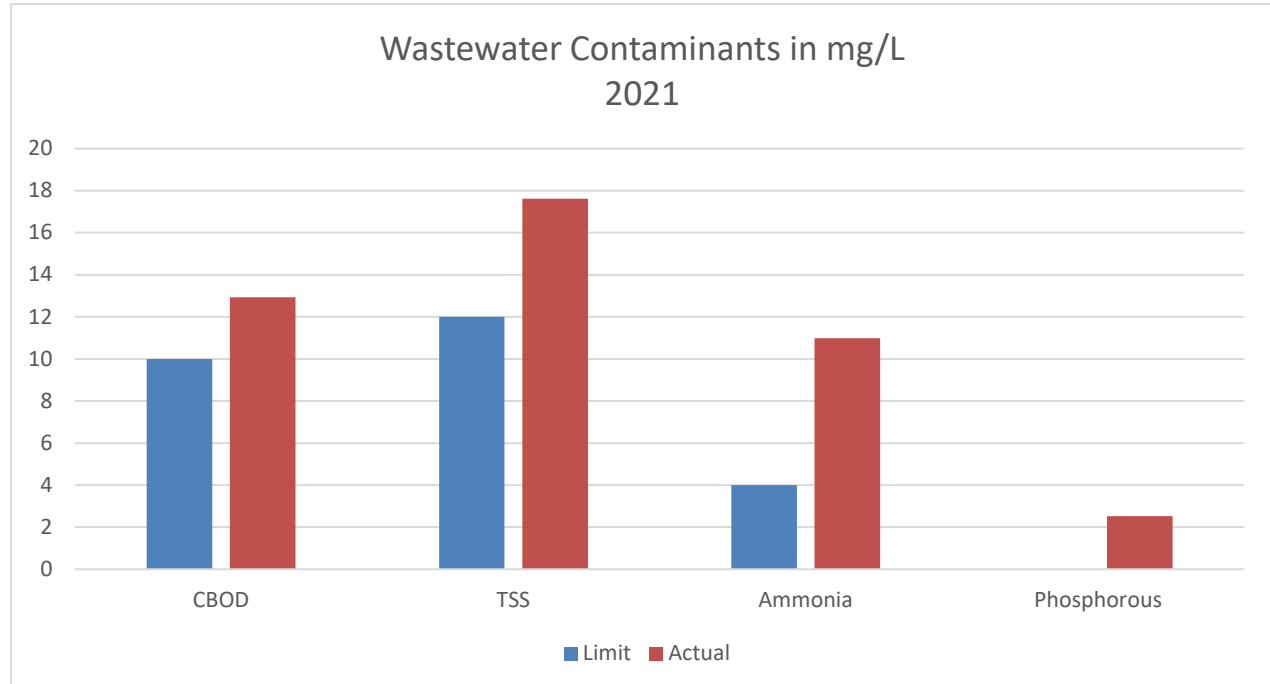
The Wastewater Collection System consists of 7 Lift Stations, 893 manholes, and 40.29 miles of sewer main pipeline. The 2021 calendar year for the Utility Department was a productive and successful one in our daily mission of "Clean Water In, Clean Water Out". Equipment replacement and equipment revitalization 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 complete an upgrade project at the Water Reclamation Facility (WRF). This project upgraded 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 was substantially completed in the Winter of 2021. This project was funded by a .15% loan through the Ohio Water Development Authority.
- **2021 Biosolids Program** The Biosolids Management Program resulted in 77.97 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.
- **2021 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.
  - 77.97 dry tons of produced and beneficially reused biosolids.
  - There were no Sanitary Sewer Overflows in 2021
  - Secured grant funding of \$500,000 to line sanitary sewer pipes with in an effort to reduce the I&I water entering our collection system
  - Received safety awards from OWEA for both the wastewater collection system and the WRF

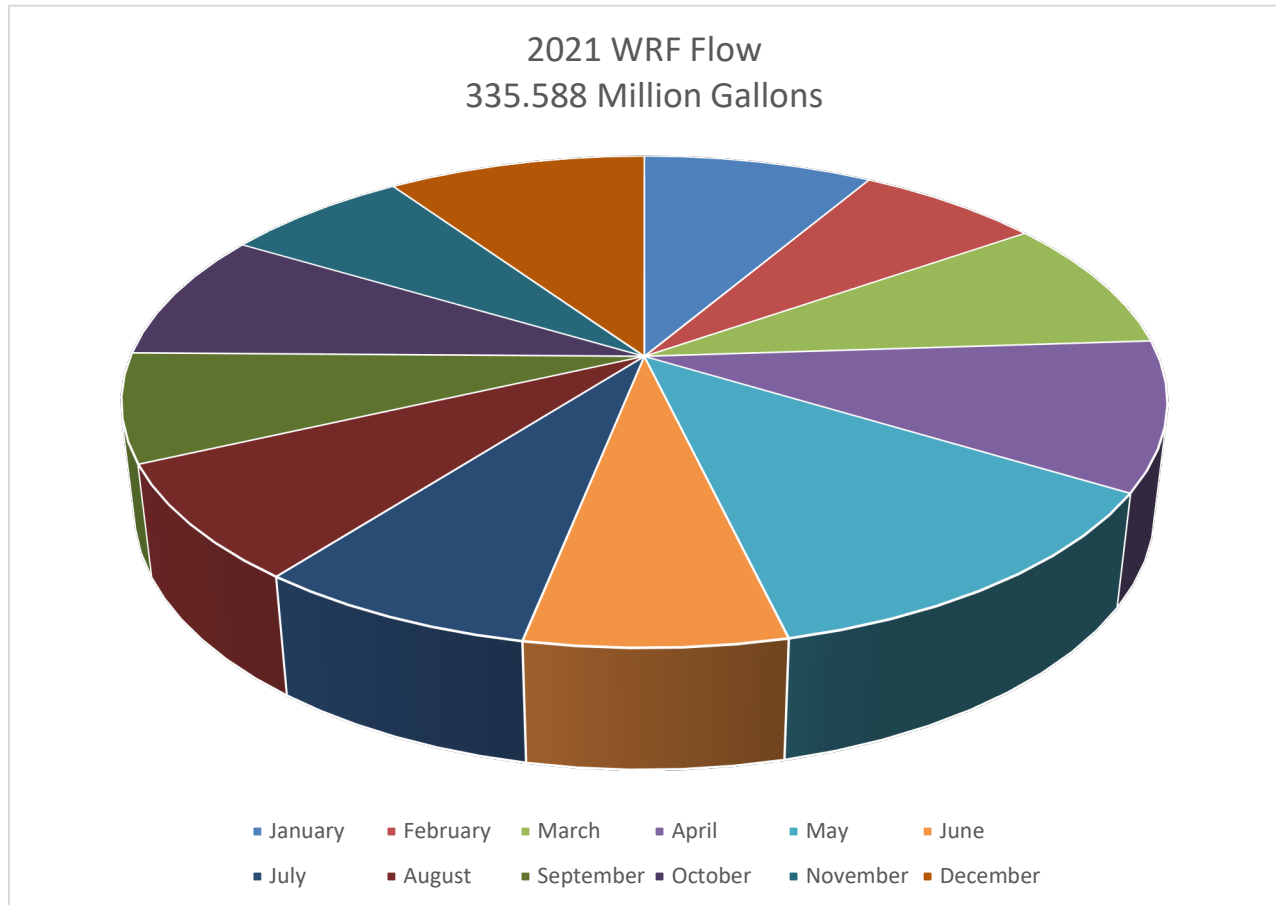


**The Water Reclamation Facility (WRF)** has the maximum treatment capacity of 1.1 million gallons per day (MGD). The WRF treats all of the wastewater generated by customers in Pataskala service area.

- 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 2021 removal average for CBOD was **92.90%** and TSS is **90.08%**. 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 **12.93 mg/L**, TSS at **17.62 mg/L** and Ammonia at **10.99 mg/L**. Future limitations for effluent phosphorus will be **1 mg/L**. Our 2021 average was **2.52 mg/L** with a removal rate of **43.13%**. Our higher than desired sample results are tied directly to the use of the lagoon treatment system during the WRF upgrade project. Following the upgrade project, we again saw desirable sample result numbers.

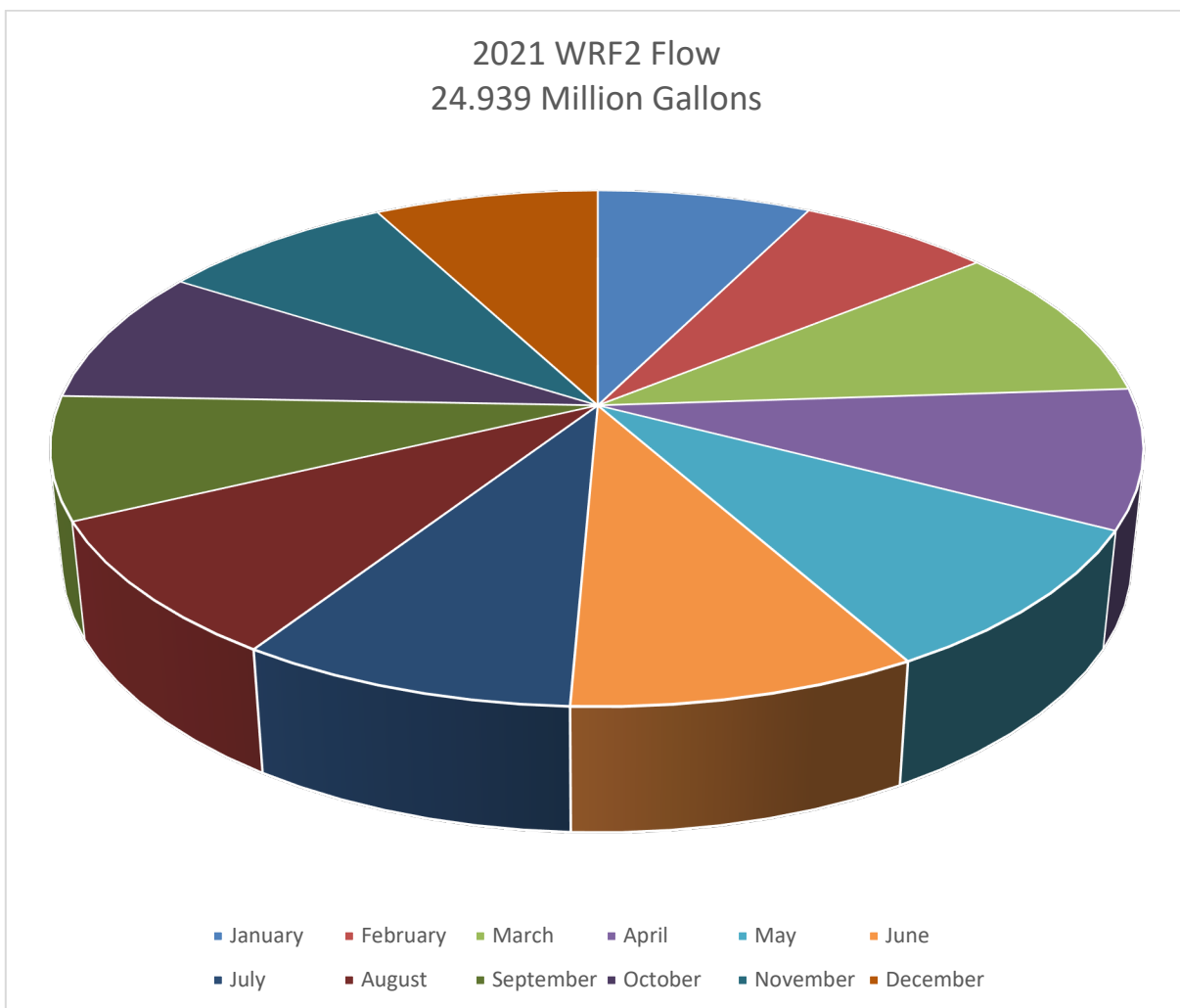


- The WRF treated a total of 335.588 million gallons during the course of 2021 with an average daily flow of .917 million gallons per day.



**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 196.594 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 58% of our annual treatment flow is directly related to surface / ground water infiltration. To say that again, over 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 process will begin with a slip lining project set to commence in 2022. The I&I 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 24.939 million gallons with an average daily flow of .068 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. We are currently in negotiations with the OEPA to use modern sample results to reduce or remove the strontium limits on this discharge point.



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 2022 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**