

WITH TIME COMES CHANGE

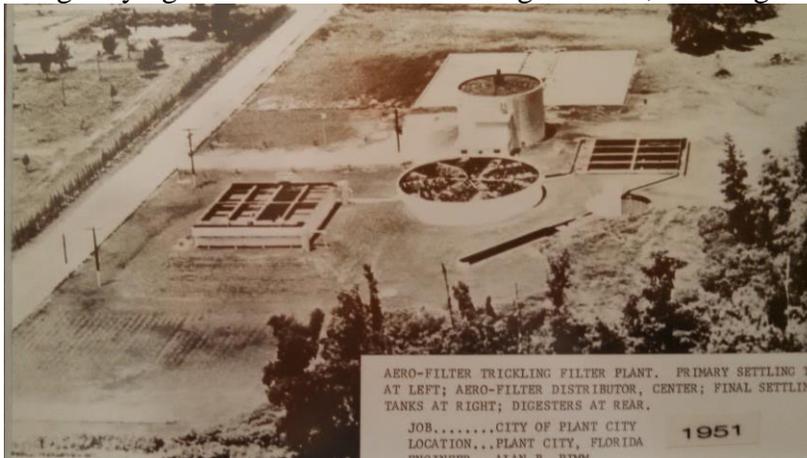
This is true with everything, Yes even in the wonderful world of wastewater treatment. In the 1920's we were known as the 'Sanitary Sewage Department', in 1951 'Plant City Sewage Treatment Plant', in 1968 'Plant City Water Pollution Control', in 1995 'Plant City Water Reclamation Facility'. In 2020, *Who Knows?* Not only has the name changed over the years, but so has the technology associated with the treatment of wastewater.

SOME HISTORY OF WASTEWATER TREATMENT IN PLANT CITY

The earliest recorded participation by the City in sanitary sewage facilities was in 1913. At that time the construction of approximately 7 miles of clay pipe sewers was authorized, together with the construction of two septic tanks.

By 1929 the collection system consisted of over 14 miles of sewer lines, and the sewage treatment facilities consisted of four separate settling tanks, two Imhoff tanks and two simple septic tanks.

In 1951 the Imhoff tanks and septic tanks were replaced with a 1.5 million gallon per day (MGD) trickling filter process. Plant processes included a sewage pumping station, primary settling tanks, trickling filter, secondary settling tanks, an anaerobic digester, 2 sludge drying beds and disinfection using chlorine, discharge to the Westside canal.



In 1961 a new Lift Station was constructed, the trickling filter was repaired and some minor modifications were made to the treatment plant.

In the late 1960's the United States Environmental Protection Agency (EPA) developed the Clean Water Act. This rule called for the cleaning up of water ways in the United States. With this rule federal funds became available for use in construction of wastewater collection systems and advanced wastewater treatment plants.

In 1968 the city began design to extend the collection system to collect more of the residential, commercial and industrial wastewater, and design of a 4.0 MGD Activated Sludge Plant wastewater treatment plant using the extended aeration design process. This included increasing the Master Lift Station flow capacity, a grinder for cutting up of

materials that could damage the pumps, a grit removal system, 2 aeration basins with a total capacity of 5.0 million gallons (mg), 2 secondary clarifiers, a 10 acre polishing pond, a return sludge pumping station, a new digester, conversion of the anaerobic digester to aerobic, and 3 additional sludge drying beds. Final discharge was from the polishing pond to the Westside canal after chlorine disinfection. The plant and system was put into operation in 1970.



In 1973 due to the increase in loading and flows, design was started to expand the treatment facility to 8.0 MGD. This included increasing the lift station's pumping capacity, an additional grit removal system, 2 additional aeration basins with an additional capacity of 5.0 mg, 2 additional secondary clarifiers, an increase in pond capacity from 10 to 20 acres, a new return sludge pumping station, 2 additional digestors, and 22 additional sludge drying beds. Final discharge was still to the Westside Canal after chlorine disinfection. This plant was placed into service in late 1975.

In 1994 to meet the new sludge regulations the Belt Filter Press was constructed. This reduced the number of tanker loads of sludge leaving the facility from 6 – 8 loads per day of liquid material to 2 – 3 loads of dry cake.

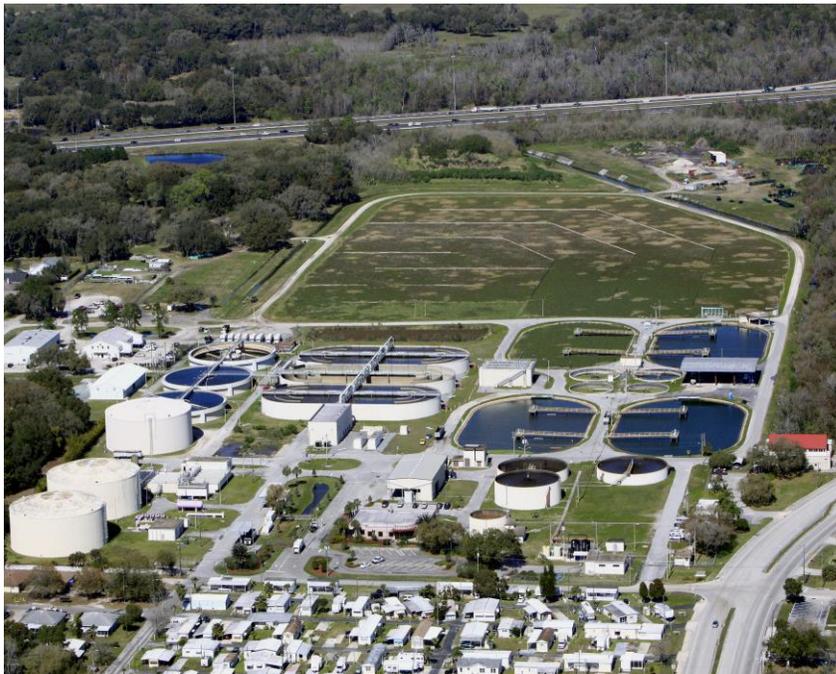
In 1995, to eliminate the discharge to the receiving stream (Westside Canal) and to meet the requirement of reusing treated wastewater to reduce the demand on our drinking water supplies, design began on the Reclaimed Water Production Facility. This facility was placed into service March 1, 1997. This upgrade retained the previous treatment systems, and provided additional treatment processes to meet higher standards. The water from the pond is pumped through a screen, into sand filters, a high level disinfection system, and into one of the two 4.0 mg storage tanks (for a total of 8.0 MGD storage capacity). A High Service Pump Station transfers the water into the reclaimed water distribution system. The distribution system for the reclaimed water system feeds north 11 miles to Mosaic (formally CF Industries) our largest reclaimed water user,

where an average of 2.0 MGD is used in the cooling towers. Mosaic's use of reclaimed water reduces their need to pump ground water, a valuable drinking water supply. Other customers include the I-4 interchanges, and irrigation of various orange groves, plant nurseries, and lawns along the way.

Also constructed from 1995 -1997 was a new headworks and influent pumping station which included new screening equipment, grit removal system, flow measurement, odor control and pumps. This system was placed into operation in September 1997.

Gas chlorine had been used for disinfection of final effluent since 1951. In 1998 to meet the new federal requirements concerning the use of gas chlorine, the City began using sodium hypochlorite (a commercial grade of bleach) to meet the disinfection requirement.

CURRENT WATER RECLAMATION FACILITY



With all the upgrades to the facility over the years, the biological treatment section of the wastewater treatment system did not have any significant improvements made to upgrade the treatment levels since it was built. The system was not designed to meet some of the strict regulatory requirements of today 100% of the time. To prepare for future growth and to meet current regulations, and to replace old failing facilities, in 2004 design began on a new wastewater treatment system. This new facility was placed in service in February of 2008.

The current facility includes new influent pumps, replacement of the old biological treatment system with an anoxic basin, 3 new aeration basins, 3 new clarifiers, and expansion of the Reclaimed Water Production Facility constructed in 1997 with

additional sand filters, additional disinfection, an one additional 4.0 mg storage tank and additional High Service Pumps. This system is designed to treat 10 MGD with a peak flow treatment of 27 MGD.

The system uses state of the art computerized controls to adjust air flow in the aeration basins in real time. The automated system is designed to measure and control the dissolved oxygen, ammonia, nitrate, nitrite and phosphorous levels in the aeration system. These controls are monitored by licensed operations personnel in the operations center to ensure set points are maintained.

The new system was designed with future expansion in mind. Within the next 10 – 15 years we project that an additional expansion will include a new headworks facility, one additional aeration basin and one additional secondary clarifier. The piping and structures for future aeration system and secondary clarifiers have been sized for a capacity of 12 MGD.

The City maintains and is preparing for a major expansion to the reclaimed water distribution system. The reclaimed water is distributed to the east side of Plant City and provides irrigation of Mike Sansone Park, Ellis Methvin Park, Park Road landscaping, and other reclaimed water uses, including residential irrigation. A south reclaimed water line supplies water to the Walden Lake Golf Course and other customers along the way. A current project is under way to provide reclaimed water along Park Road to the Randy L. Larson Softball and Four-Plex fields and along South Frontage Road to County Line Road to be looped to the current line just south of US 92 and County Line Road. Other projects are planned to provide reclaimed water service where feasible for irrigation of residential and commercial developments.

The Plant City Water Reclamation Facility operates under Florida Department of Environmental Protection (FDEP) Permit #FL0026557. The facility is staffed 24 hours per day, 7 days per week by personnel certified in the fields of both water and wastewater treatment. Operational staff is responsible for collecting and analyzing routine samples throughout the system to ensure compliance with permit conditions. Reports are prepared and mailed to the regulatory agencies.

The plant's operational personnel are prepared to give plant tours or presentations of the facility to schools and civic groups. If you are interested please contact us at 813-757-9191 for available dates and scheduling.

The City has received the following awards for the Water Reclamation Facility:

- 2015 Earle B. Phelps, Advanced WWTF First Place By the Florida Water Environment Association
- 2015 Collection System Award, 20,000 – 75,000 Population By The Florida Water Environment Association
- 2015 David B. Lee By The Florida Water & Pollution Control Operators Association
- 2014 Outstanding Facility, WRF By The Florida Water & Pollution Control Operators Association, Region 12

- 2014 Earle B. Phelps Advanced WWTF Runner Up By the Florida Water Environment Association
- 2014 Wastewater Operator Of The Year By The Florida Rural Water Association
- 2013 Earle B. Phelps Advanced WWTF Runner Up By the Florida Water Environment Association
- 2013 Wastewater Operator Of The Year By The Florida Rural Water Association
- 2012 Earle B. Phelps, Advanced WWTF First Place By the Florida Water Environment Association
- 2012 Wastewater Operator Of The Year By The Florida Rural Water Association
- 2012 Outstanding Member Of The Year By The Florida Water & Pollution Control Operators Association, Region 12
- 2009 – 2010 Water Resource Project Of The Year By The American Public Works Association