



EXISTING WATER /
WASTE WATER /
GAS DISTRIBUTION

City Council Meeting
December 7, 2020

UNDERSTANDING THE EXISTING INFRASTRUCTURE – CUSTOMER BASE

- The number of customers using city supplied water is 8,912.
- The number of customers using city supplied gas is 2,319.
- The number of customers using the city's sewage system is 5,891.

UNDERSTANDING THE EXISTING INFRASTRUCTURE – CUSTOMER BASE (CONT.)

- Currently the City of Lake City supplies water, waste water and gas services to ~7300 - 8500 customers in the Lake City and Columbia County, dependent upon billing cycle.
- The number of customers inside the city limits is as follows:
 - Gas – 2,319 “total for inside and outside city limits, gas rates are the same for both”*
 - Water – 5,356*
 - Sewage – 5,221*
- The number of customers outside the city limits is as follows:
 - Water – 3,566*
 - Sewage – 670*
- The number of residential customers is as follows:
 - Gas – 1,924*
 - Water – 7,538*
 - Sewage – 4,804*
- The number of commercial customers is as follows:
 - Gas – 395*
 - Water – 1,374*
 - Sewage – 1,087*

UNDERSTANDING THE EXISTING INFRASTRUCTURE – EXISTING SYSTEM



UNDERSTANDING THE EXISTING INFRASTRUCTURE – EXISTING SYSTEM (CONT.)

- Water
 - *Currently the city water system is supplied solely from the Price Creek Water Treatment facility.*
 - *The City of Lake City assumed responsibility for water distribution in 1846. Water was temporarily supplied from the Lake City Water Works Plant in 1935. The Putnam Street Water Treatment plant came on line in 1947.*
 - *There are 278.9 miles of mapped water piping in the Water System.*
 - *Currently the yearly running daily average production is 3,347,342 gallons.*
 - *Currently only 75% of all water lines in the city's system have been mapped and are verified in the Geographic Information System (GIS) mapping.*
 - *Currently the Water Department, Distribution and Collections and the GIS group are working to pull information into GIS.*

UNDERSTANDING THE EXISTING INFRASTRUCTURE – EXISTING SYSTEM (CONT.)



Photo by Florida Aerial Services, Inc

092407-7198

Price Creek Water Treatment Plant

UNDERSTANDING THE EXISTING INFRASTRUCTURE – EXISTING SYSTEM (CONT.)

- Price Creek Water Treatment Plant
 - *The Price Creek Water Treatment Plant went into operation in 2007.*
 - *Currently the plant is operating at 80% of the water use permit (WUP), which regulates the plant to 4.1906 mgd on average.*
 - *The plant currently operates at 3.347 mgd average.*
 - *The plant is permitted by Florida Department of Environmental Protection (FDEP) to produce 9.0 mgd and is capable of meeting this production.*
 - *If the plant were permitted and expansion were completed, the plant is capable of producing 18.0 mgd.*

UNDERSTANDING THE EXISTING INFRASTRUCTURE – EXISTING SYSTEM (CONT.)

- Waste Water
 - *The City of Lake City assumed responsibility for sanitary sewage in 1928 with the Margaret Road Wastewater Treatment Plant.*
 - *There are 44.83 miles of sanitary sewage forced main piping and 57.80 miles of gravity sewage mapped in the waste water system at this time.*
 - *Currently the city waste water system is operated using the St. Margarets Street and the Kicklighter facilities for waste treatment and the Spray Field and Wetlands for waste water reintroduction into the aquifer.*
 - *Currently there are 66 City maintained lift stations in use at this time, with two more for the I-75 / SR 47 interchange to be added.*
 - *Currently only ~50% of all sewage lines in the city's system have been mapped and are verified in the Geographic Information System (GIS) mapping.*
 - *Currently the Waste Water Department, Distribution and Collections and the GIS group are working to pull information into GIS.*

UNDERSTANDING THE EXISTING INFRASTRUCTURE – EXISTING SYSTEM (CONT.)



Kicklighter Water Reclamation Facility

UNDERSTANDING THE EXISTING INFRASTRUCTURE – EXISTING SYSTEM (CONT.)

- Saint Margarets Waste Water Treatment Plant Summary
 - **1988**
 - installed the headworks screening area
 - influent pumping station
 - process piping
 - Generator replacement.
 - **1995**
 - installed a belt filter press for sludge dewatering
 - installed a 3rd clarifier
 - **2013**
 - upgraded the 2 original Clarifiers with modern equipment
 - **2017**
 - upgraded the original digester equipment from mechanical aeration to jet aspiration
 - replaced the original influent pumps with dry pit submersible Flygt pumps
 - **2018-2020**
 - replaced the belt filter press with a Centrifuge for better sludge dewatering,
 - replaced the original Return Activated Sludge pumps with Flygt dry pit submersible pumps
 - replaced the two standby generators with one 1500kw generator that will run the entire plant when there is a power outage
 - **2021-2023**
 - the City plans to upgrade the Aeration Systems 6 mechanical aerators that have been in operation since the 1970
 - Upgrade Clarifier 3 to match the other two clarifiers for more consistent operations
 - Upgrade Headworks screening and grit removal
 - Replace effluent pumps
 - Replace various in plant piping and valves

UNDERSTANDING THE EXISTING INFRASTRUCTURE – EXISTING SYSTEM (CONT.)

- The Saint Margarets Waste Water Treatment Plant Annual Average Daily Flow (AADF) is currently at 1.75 mgd, thereby leaving 1.25 mgd of available capacity.
- The Kicklighter Water Reclamation Facility AADF is currently at 0.43 mgd, thereby leaving 2.57 mgd of available capacity.
- Effluent Disposal sites AADF is currently at 2.31 mgd, thereby leaving 0.69 mgd of available capacity.

UNDERSTANDING THE EXISTING INFRASTRUCTURE – EXISTING SYSTEM (CONT.)

- Public Access Reuse (PAR)
 - *Currently the PAR system is not in use.*
 - *The PAR was designed with a chlorine contact chamber (CCC) as part of the 1.5 million-gallon reclaimed water (RCW) tank. This arrangement requires that the unit is operated 24 hours per day, thereby requiring waste water technicians on site during this time.*
 - *Since operation is only for 8 hours each day, the chlorine residuals drop below the acceptable standards and the unit must recirculated to ensure re-chlorination.*
 - *It has been proposed to move the CCC from within the storage tank and operating it as a free-standing unit. This will allow for quicker re-chlorination and recirculation*
 - *This project will allow for the utility to maintain the required levels of chlorine residuals and consistently produce RCW meeting PAR requirements. Production rates will increase up to 1.5 mgd of RCW.*
 - *At this time there is a contract with a local farmer to receive .5 mgd of RCW when it is available.*

UNDERSTANDING THE EXISTING INFRASTRUCTURE – EXISTING SYSTEM (CONT.)

- Natural Gas
 - *Currently the city gas system is supplied by Florida Gas Transmission, with a back feed from People's Gas should the need arise and only in emergencies.*
 - *The City of Lake City assumed responsibility for gas distribution in 1958.*
 - *There are ~350 miles of gas piping in the Natural Gas System, with 228 miles as main supply. It must be understood that these numbers are fluid though, due to the fact that laterals are not included as part of the annual report and due to addition and retirement of lines.*
 - *In October 2020 the gas department reported a usage of 39,495 Mcf.*
 - *Currently only 95% of all gas lines in the city's system have been mapped and are verified in the Geographic Information System (GIS) mapping.*
 - *Currently the Gas Department, Distribution and Collections and the GIS group are working to pull information into GIS.*

HOW DID WE GET IN THIS POSITION?

- Antiquated methods for information gathering and documentation in the past.
- Lack of foresight into preventative maintenance and permanent repairs in the past.
- Poor engineering in the past.
- Survey providers are backed up 6 to 8 weeks due to COVID and growth in the area.
- Lack of resources to conduct comprehensive piping survey (i.e. staffing).

ANTIQUATED METHOD INFORMATION GATHERING

- Before the advent of widespread computer use, information gathered on the City's piping system arrangement was hand written, word of mouth or stored in the head of an operator or engineer.
- Drawings are incorrect and have not been verified or validated. In some instances, locations are given not by GPS, but by local landmarks (i.e. 15 feet from big oak tree).
- Prior to 2007 GIS was not used for information gathering and even after implementation it was not until 2012 that the information input into the system was being verified for accuracy and began to be completed.

MAINTENANCE

- Currently the piping arrangement in the City of Lake City consists of piping of varying construction. Some of the piping is well over 50 years-old in some areas and up to 100 years-old or more in others.
 - *Terra Cotta (oldest)*
 - *Plastic*
 - *PVC*
 - *Cast iron*
 - *HDPE*
 - *Steel*
 - *Polyethylene*

MAINTENANCE (CONT.)

- Currently there is not a Computerized Maintenance Management System (CMMS) in use for corrective, preventative or predictive maintenance.
- The majority of work prior recently has been corrective, or reactive, in nature based on budget restraints.

POOR ENGINEERING

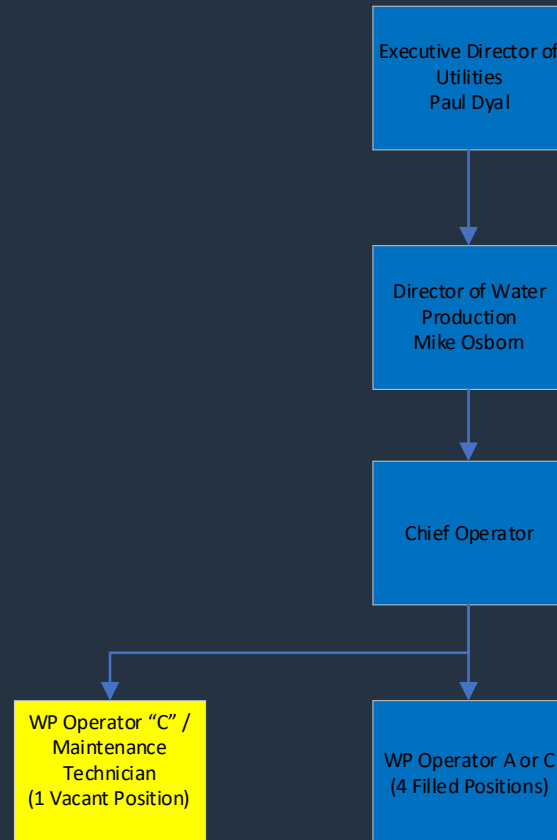
- Engineering in the past was done with an emphasis on budget and not good engineering principles.
- Installing undersized piping at road crossings and along force mains have caused bottle necks, requiring repairs and / or replacement.
- During project design, in the past, little thought was given to the growth of Lake City or Columbia County. Stub outs (JIC's) were not installed for additional lines to be added.

SURVEYS

- Currently survey crews are requiring 6 to 8 weeks notice before work may be performed due to COVID and growth.
- Growth in the Lake City / Columbia County areas have inundated surveyors causing these delays.

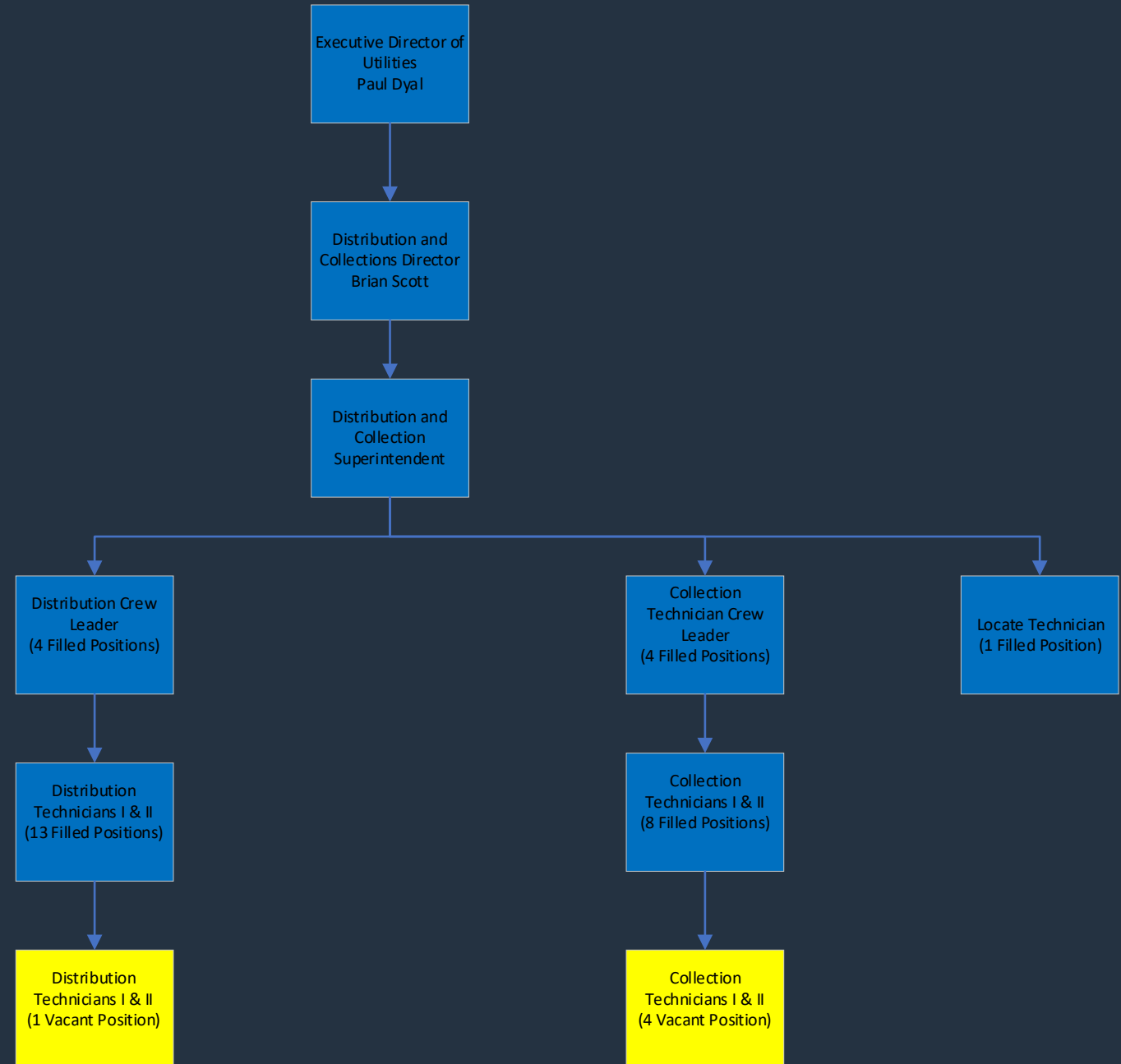
STAFFING

- Water



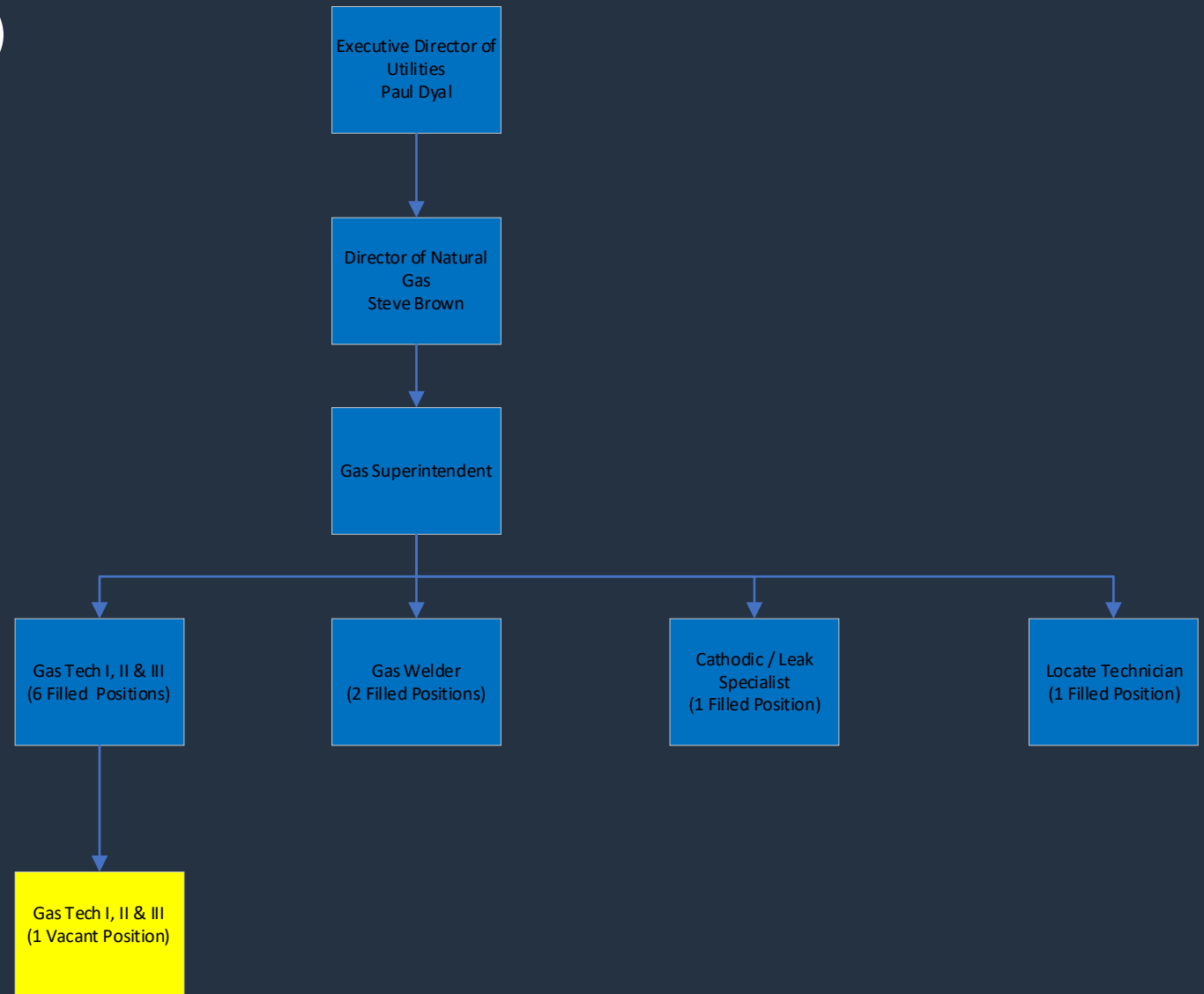
STAFFING (CONT.)

- Distribution and Collections



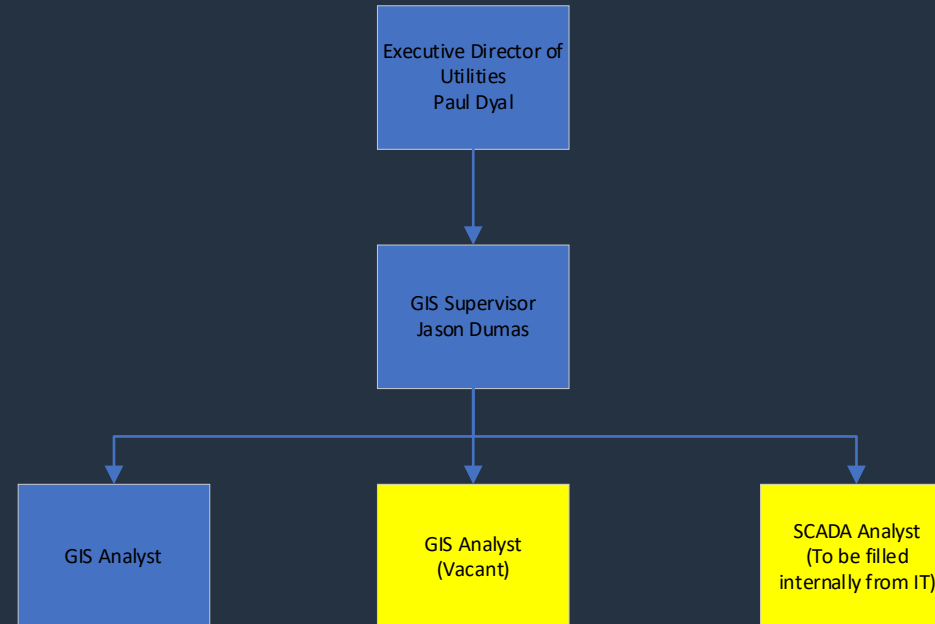
STAFFING (CONT.)

- Natural Gas



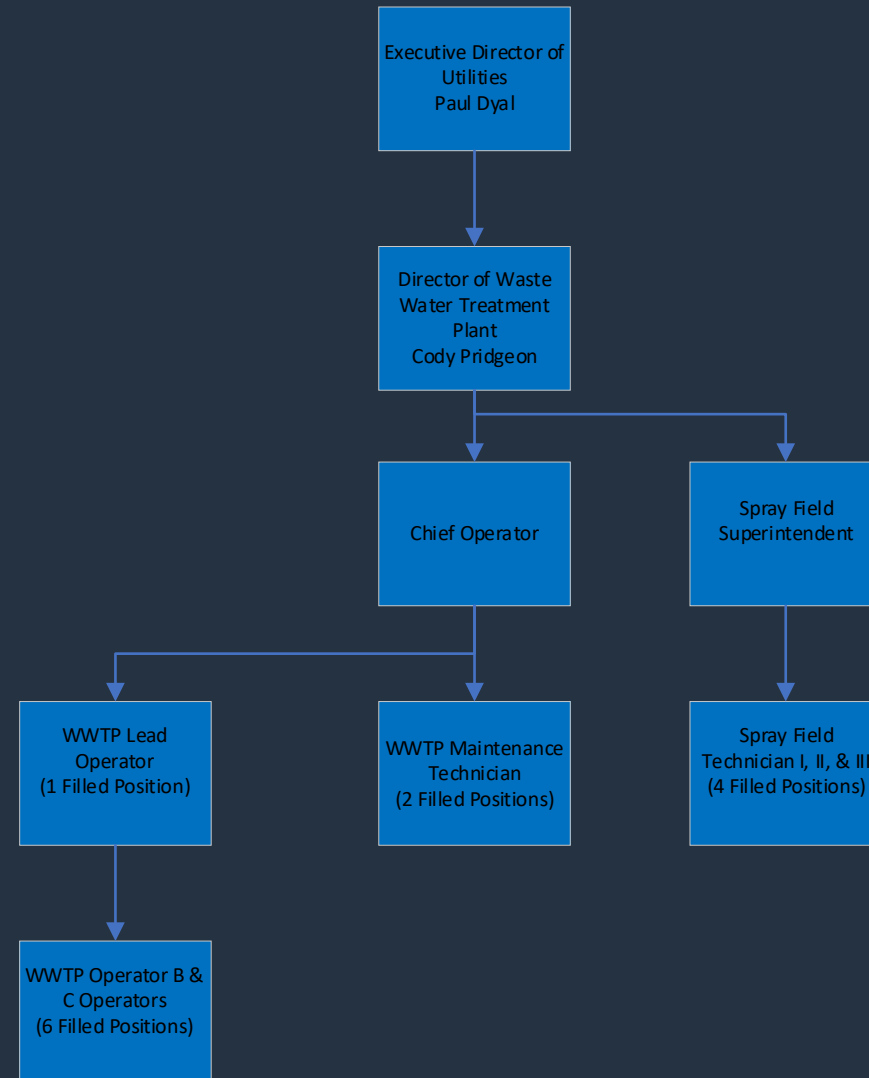
STAFFING (CONT.)

- GIS



STAFFING (CONT.)

- Waste Water



STAFFING (CONT.)

- Issues Surrounding Trying to Hire New Staffing
 - *Lack of qualified candidates*
 - *Lack of skill sets required to perform the work; specifically GIS*
 - *Pay*
 - Applicants are offered more in surrounding areas or not versed in the benefit packages available from the City of Lake City
 - *Job duties*
 - Specifically in the area of collections, many applicants are confused by the job title and do not wish to go forward in the process

OVERCOMING OBSTACLES

- In light of all the aforementioned obstacles we are still able to move forward with solutions. Some of the methods are listed below:
 - *Information gathering*
 - GIS Department are actively working with the Distribution and Collections Department and the Natural Gas Department to identify piping arrangements, fire hydrant locations, manhole locations, etc. as they are in the field.
 - It is recommended that a written change management process be established with a single point of contact being identified to make changes to existing drawings and records.

OVERCOMING OBSTACLES (CONT.)

- Maintenance
 - *Utility personnel in the last few years have begun the process to become more proactive with maintenance.*
 - *A CMMS will be required as we move forward to begin tracking and scheduling preventative and predictive maintenance.*
 - *Utility personnel have begun to identify piping in the field and are actively working for funding to replace old outdated piping.*
 - *Distribution and Collections has begun a program to repair / replace fire hydrants and manholes as part of a corrective and preventative maintenance program.*

OVERCOMING OBSTACLES (CONT.)

- Poor Engineering
 - *Currently the City of Lake City has contracted with a number of outside engineering firms to ensure projects are not only correct, but meet the need for expansion and growth.*
 - *It is highly recommended that a Utility Engineer be hired to assist with the number of engineered projects that the City is doing, or are planning on performing in the future.*
 - This will add a level of oversight for contracted engineered work, lessen the need for contracted engineering thereby lowering costs, and will allow for utility personnel assistance sooner.

OVERCOMING OBSTACLES (CONT.)

- Surveys
 - *The GIS Department is working with a number of survey companies to expedite this process though.*
 - *Better planning by both City and County personnel to facilitate and plan for survey work is essential to improve this function.*

OVERCOMING OBSTACLES (CONT.)

- Staffing
 - *Ensuring applicants understand the minimum requirements.*
 - *Cast a wider net to draw a more qualified and diverse applicant pool.*
 - *Change the way we post openings for clarity.*
 - *Work with local high schools, colleges, churches, and youth groups to find qualified applicants.*
 - *Ensure that the City of Lake City uses opportunities with potential applicants to help them understand that, although the pay may not be as competitive with other industries in the area, the benefit package and retirement more than makes up for this shortcoming.*

OBSTACLES TO OPPORTUNITIES

- Although we have identified obstacles at this present time, this does not mean they cannot be viewed as opportunities for the City of Lake City.
- Staffing issues have been identified and Human Resources, along with Utilities, is making an effort towards educating applicants and casting a wider net.
- Engineering deficiencies have led senior management to understand the importance of an in-house engineer who is dedicated to the City of Lake City.
- Maintenance issues are being identified and repairs are in whole and not piece milled.
- Failure to record information in the past has signaled utility personnel to understand the importance of gathering correct information and ensuring it is recorded correctly.