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through Council approval and State agency approval. The City anticipates issuing the Notice to Proceed shortly after the beginning of 2014. The construction of the water and wastewater plant improvements is planned to take approximately 22 months. The project should be complete, therefore, in late 2015. Public Works is developing a web page link on the project to keep everyone informed of the progress.

<u>Water & Sewer Line Rehabilitation</u>

The City has a rehabilitation program in place for our water and sewer lines. Council has agreed to fund it at $1 million dollars per year. Approximately $600,000 will be dedicated to the sewer system with the remainder towards the water system.

The City's sewer system is a collection of underground pipes that transport wastewater from the City's many users to the wastewater treatment plant using pipes ranging in size from 6" to 16". This collection system contains about 94 miles of pipe and serves 5,814 customers. Among the components are the pipes, manholes and pump stations.

Hydrostructures, Inc. is currently completing a digital survey of the collection system so that we will have accurate maps going forward. This will help us evaluate and repair the system more efficiently.

The City's water distribution system is constructed of various pipes ranging in size from 2" to 24" over 125 miles which serves about 6,600 customers. The first step in Reidsville's water rehabilitation program is working with the engineering firm, Stimmel Associates, to develop an updated set of standard construction details and specs for water rehabilitation in general. The goal is to have that work done by the end of this year and conduct an actual demonstration water line rehabilitation project in the spring of 2014.

What about the monies from the sale of water to the City of Greensboro?

The monies received from the City of Greensboro since 1999 have been very beneficial to Reidsville residents. These monies go directly to our Water Fund. While many believe all of these monies are available for spending, there are costs associated with treating and sending the water to Greensboro. Only when Greensboro buys more than the half million gallons per day in its contract with us are there excess dollars for other purposes. However, these monies contributed to the City being able to maintain its water rates for some 12 years even with the costs of operating our water and sewer systems increasing as well as helping keep our tax rate steady during tough economic times. Even with the 2010 increase, our water rates are in the bottom 10% of what is being charged by local governments across the State of North Carolina. They have also helped fund large projects like North Scales Street and Market Square and better prepared us to financially handle problems like the spillway repair project at Lake Reidsville.

Project Reidsville

Where We Live Simply but Think Big!

There's a lot of good things happening in the City of Reidsville right now, but you may not know about them. The Reidsville City Council has been very busy working to improve the lives of our citizens but we realize you can't always make it to a City Council meeting. Plans are under way for a new Senior Center, improvements to the City's water and wastewater infrastructure and the takeover of the City's Water and Wastewater Treatment Plants from an independent contractor. To keep you better informed, this series of newsletter, called Project Reidsville, will give you accurate information about these projects and what they mean to you.

Public Works Department

Water & Wastewater Plant Improvements

Like other municipalities across the State and nation, the City of Reidsville has been facing the need to update its water and sewer infrastructure throughout the City. Some of the City's water and sewer lines are as old as 100 years. The City has been setting aside monies in recent years to systematically upgrade these lines, which should help with water quality.

In addition, the City is planning a major update to our Water & Wastewater Treatment Plants. A rate increase in 2010 was done to help pay for these improvements, but future rate increases are expected to be done only to keep up with inflation, not to pay for infrastructure. One highlight of the project is that the City applied for a construction loan through the State's Revolving Fund program for the wastewater plant portion of the work. The City was very pleased to obtain a credit line from the State of up to $15 million dollars at 0% interest rate. Over the life of the loan, the difference between having a loan of 0% interest and the best rate we believed we could get otherwise, represents a cost savings of about $7 million dollars, nearly half

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the cost of the project.

Current Status

On Monday, Sept. 30, the City received bids for the proposed Wastewater Plant and Water Plant Improvements Project. These bids wrapped up the design phases of the project and is the last step in the design portion of the project before the construction phase begins. Council approved $24 million in such loans at its October 9th meeting. Ulliman Schutte was awarded the contract for the Water and Wastewater Treatment Plant improvements.

Project Challenges

The City of Reidsville owns and operates a water treatment plant adjacent to Lake Reidsville that is capable of producing 9 million gallons of drinking water daily as well as a wastewater treatment facility on Broad Street that is rated to process up to 7.5 million gallons of wastewater daily.

The water treatment facility is the newer of the two, completed in 1978. The plant was upgraded in 1999 to add additional capacity in order to enable Reidsville to sell water to Greensboro. An improvements project to convert the method of water disinfection from chlorine to chloramine was completed in 2009.

The City's wastewater treatment plant was first established around 1956 and has undergone at least two significant upgrades since then in 1979 and in 1992.

The main project challenge at the wastewater plant is improving the ability of the plant to dispose of its residuals or sludge. Sludge is the final form of the solids part of wastewater disposal. It is basically organic matter that has been depleted of most nutrients and has been stabilized to kill off any pathogenic bacteria in it. The City's preferred method of disposal is land disposal. Farmers apply the residuals to their non-food crop fields due to its fertilizer benefits, especially nitrogen. The City pays for the disposal based on a price per gallon that is hauled from the plant. Current processes only allow the sludge to be thickened to about 1.5% solids, which is quite thin. By thickening the sludge concentration to 3-4%, twice as much sludge will be able to be contained within each gallon hauled; thereby, reducing the City's hauling costs by about half as well.

The City contracted with the engineering firm of CDM Smith in 2009 to undertake a study of the plant operations. That study indicated the following improvements were needed in order for the City to realize a cost savings in sludge disposal: a new sludge thickener to better dewater the sludge; additional digesters to improve the plant's ability to "burn" sludge and convert it to harmless atmospheric gas; and the addition of a screw press to enable the City to process sludge during wet weather so that it can be placed into a landfill. The improvements include several pieces of additional process equipment. Since much of the plant's electrical system was original, it required upgrades as well.

As part of the Department's ongoing Capital Improvement Plan, the City commissioned CDM to assess the possibility of switching the chlorine source at the water treatment plant from gaseous chlorine to liquid bleach. In 2010 the City experienced episodes of discolored water in the distribution system. The City asked CDM to recommend improvements, and a study suggested some items for improvement at the water plant. Among them were a premix tank to allow the chemicals more time to react, the addition of pump speed controls to allow water to be produced continuously rather than in a start/stop mode and improvements in the operator's ability to control chemical dosages in the process.

The project will also include a new lake aeration system. The lake aeration system consists of approximately 10,000' of air lines installed at the lower end of the lake along the bottom of the lake. The system will allow diffused air to be percolated up through the lake water. This addition of air will do two things. One, it will help prevent the lake from settling into layers which should help reduce the detrimental effect of lake "turnover", which happens in late fall when the surface water cools and settles to the bottom of the lake and has led to discolored water. The second benefit is that the air will oxidize the iron and manganese in the water into an insoluble form that can more easily treated. Both benefits will result in better water quality for the customer at the tap. The water plant improvements aren't as extensive as the wastewater plant improvements but will likely directly benefit our customers more.

Much of 2010-2012 was spent on the actual design process with the Engineer and City. Since the industry is highly regulated by State and Federal governmental environmental agencies, the permitting process prior to construction is complex and time consuming. The permitting process took approximately one year to complete.

After bids are received, then the award process takes about three months to work its way

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