



City of Bartlesville Capital Needs October 3, 2016

Bartlesville is a city of 35,000+ citizens located in Northeast Oklahoma that boasts a thriving business community, internationally recognized tourists attractions and world-class amenities aimed at enriching the lives of its residents and many visitors.

The City of Bartlesville strives to help meet the needs of the community and ensure its continued success and future accomplishments through strategic capital and infrastructure planning and implementation with the utmost care given to the expenditure of citizen-driven funds, whether through sales (or other) tax revenues or enterprise/utility rates and fees.

To aid in this planning process, this report was compiled and reflects the current and ongoing capital needs, requirements and challenges facing the City of Bartlesville in 2016 and beyond.

Sanitary Sewer System Improvements

Storm water issues violate environmental laws

Bartlesville's sewer system consists of more than 264 miles of sanitary sewer lines, ranging from six to 42 inches in size, and 20 lift/pump stations. The City is currently under a consent order from the Oklahoma Department of Environmental Quality to eliminate "bypass events," which occur when, during heavy rainfall, rainwater enters the sewer system through cracks or broken pipes, causing the system to exceed capacity and become overloaded. Because of this, the backed up sewage "daylights" wherever it can.

This problem was first identified in the mid-1980s and resulted in a consent decree in August 1989 from the EPA to comply with the National Pollutant Discharge Elimination System (NPDES) laws created in 1972 by the Federal Clean Water Act. The decree required the City to make improvements to the waste-water plant and collection system to remove the inflow/infiltration of storm water from entering the City's sanitary sewer system.

It is important to note the City of Bartlesville was not alone in this. Cities across the state, from Ada to Wister — as well as the nation — received similar orders from the EPA and continue to do so now through the Oklahoma Department of Environmental Quality.

A public/private problem

A study of the City's sanitary sewer system revealed that storm water was entering the system from both public and private sides. Many private properties had been developed to allow the

discharges of storm water into the sanitary sewer system at the point of direct connection, such as footing/foundation drains, roof drains, downspouts, drains from window wells, drains from driveways and from ground water or basement sump pumps. Through the 1990s, the City worked with private property owners to disconnect these points of entry. The study also revealed several locations where storm water was entering the City's sanitary sewer collection system, primarily through manhole and pipeline defects.

Consent order: Treatment plant improvements required

The City remained under intermittent consent orders and decrees throughout the 1990s, which eventually required operations at the waste-water treatment plant to be contracted to a third party. In 2003, the City and the Oklahoma Department of Environmental Quality (ODEQ) agreed to a consent order for improvements to the collection system to eliminate the bypass events. The ODEQ amended this consent order in 2006 — and again in 2008 — to include additional tasks to improve the collection system.

When this order was complete, in 2013, the ODEQ issued a new consent order, which is the most recent order, requiring additional improvements to the collection system. This order will be complete by July 1, 2019 and requires the City to submit a schedule for the engineering design and construction of treatment plant improvements. We anticipate this schedule will result in either an amendment to the current consent order or a new consent order to implement these improvements. Violation of a consent order carries a monetary fine; currently, these fines range from \$100 to \$300 per day, not to exceed \$75,000.

Knowing that ultimately significant investment in the waste-water treatment plant would be necessary, a study was started in 2002 looking at the scope of improvements to eliminate the remaining bypasses. While the study was essentially completed in 2004, it was put on hold due to the 2003 consent order. In 2009, once the consent order from 2003 and their subsequent amendments were nearing the end, the facility plan was restarted. The study, completed in 2010, recommended building a secondary waste-water treatment plant south of town and improving several of the lift stations along the Caney River. The estimated cost of these improvements was \$35 million (based on 2010 dollars).

Remaining costs: \$45 million - \$55 million

Over the past 25 years, the City has spent more than \$38.5 million making required improvements to the system and has significantly reduced storm water inflow and infiltration as well as improved the capacity of the collection system. However, additional improvements are required to remove the remaining bypasses. These improvements are quite significant and involve increasing the existing capacity of the sanitary sewer treatment plant and making improvements to the lines and lift stations along the Caney River pump corridor, which starts at Hillcrest Country Club through Shawnee at the Bartlesville High School, where the waste-water is lifted from the south end of the city north to the treatment plant, located on Tuxedo Boulevard. The cost of these remaining improvements is an estimated at \$45 - \$55 million.

The scope of the work for the most recent consent order (2013) targeted improvements around Jane Phillips Elementary School, Bartlesville High School and areas throughout downtown. This

work has been mostly completed, with the exception of two phases in the downtown area. The last task on this consent order is to submit a design and construction schedule for improvements to the waste-water treatment plant and pumping corridor, which covers three lift stations starting at Hillcrest Country Club through the high school.

The engineering design and permitting will take approximately 18 months to complete, and construction will likely take approximately two to three years. These improvements will be financed and repaid through utility fees over a period of years.

Long-term Water Supply

Hulah, Hudson and the Caney River

The City of Bartlesville currently relies on three sources of water: Hulah Lake, Hudson Lake and the Caney River.

Hulah Lake is owned by the U.S. Army Corps of Engineers and is the City's primary source of water, with approximately 7.35 billion gallons of water stored. The City currently has "rights" to 12.3 million gallons per day (mgd). Water from Hulah is pumped to the City-owned Hudson Lake, which has approximately 900 million of gallons of water stored. The City currently has rights to 5.4 mgd from the lake. Water gravity feeds water from Hudson to the Ted D. Lockin Water Treatment Plant, located northwest of Bartlesville, on Hudson Lake Road.

The Caney River — the original water supply for the City of Bartlesville, until the late 1940s — provides water for the city through a low-water dam under the State Highway 123 bridge that creates a pool of water from which the City draws at Johnstone Park. The City currently has rights to 5.4 mgd. Water is pumped from the river to the water plant.

The drought of 2001-2002

The severe drought of 2001-2002 was a wake-up call regarding the long-term viability and dependability of Hulah Lake as the area's primary source of water. The drought prompted several actions to be taken in an effort to secure more reliable sources of water in the future, including the creation of the Water Resources Committee in late 2002 — a 15-member committee ranging from City Council members, City staff, business and service leaders as well as federal legislative liaisons. The committee was tasked with identifying a water source for the City into the next 50+ years.

In 2003, the City Council commissioned a study through the U.S. Army Corps of Engineers Planning Assistance to States Program (PAS) to evaluate alternates for future water supply through the year 2055.

The PAS investigated existing lakes in northeast and central Oklahoma as well as constructing Sand Lake for potential water supply. The study was completed in 2007 with the following recommendations:

- Water demand is projected to be 11.6 mgd by 2035, and 12.8 mgd by 2055, based on a projected 2055 Washington County population of 63,000.

- The dependable yield from Hulah Lake, factoring historical data for the 50-year drought of record and sedimentation rates (based on a 2002 survey) is projected to be 6.4 mgd by 2035 and 4.35 mgd by 2055.

PAS recommendations costly

In light of these findings, the PAS recommended the City purchase new water supply agreements through the U.S. Army Corps of Engineers Hulah Lake and Copan Lake. Specifically, the study recommended:

- 3 new agreements at Copan Lake, including the remaining water supply originally authorized with the lake's construction, new storage reallocated from water quality, and new storage reallocated from flood control. This scenario reallocated 5 percent of the flood control, which will raise the lake's water surface 1.99 feet.
- 2 new agreements at Hulah Lake, including new storage reallocated from water quality and new storage reallocated from flood control. This scenario reallocated 5 percent of the flood control, which will raise the lake's surface 3.67 feet.

The total yield from these recommendations in 2055 is 16.76 mgd, well over the projected 2055 demand of 12.8 mgd. The estimated cost of the recommendations is \$71.7 million. This includes \$44.2 million in new water supply agreements with the U.S. Army Corps of Engineers and \$27.5 million in pipeline, environmental mitigation and downstream mitigation.

Congressional help needed to modify pricing structure

The \$54.4 million in water storage agreements equates to a rate of approximately \$1,600 per acre-foot of water storage. To put this in perspective, it may be helpful to note that in 1982, the City paid \$68 per acre-foot for water storage at Hulah Lake. This exponential increase resulted from a formula modification approved by Congress in 1986, through a Water Resources Development Act (WRDA) Bill. The new formula added an interest component into the calculation that requires interest to be paid by the user from the date the lake was put in service until the date the water storage is purchased. (Each year the price goes up based on the interest component).

Because the water pricing structure is set by federal law, it requires Congressional action to modify it. The City has been working through Oklahoma's Congressional delegation since 2010 to provide relief from this price structure.

In 2014, Congress tasked the Government Accountability Office (GAO) to review and report on the current water storage pricing policies as implemented by the U.S. Army Corps of Engineers. The GAO was still conducting interviews in August 2016 and no timeframe has been communicated on when the report will be complete.

Changing everything: 'Water for 2060'

Historically, we have looked at improvements to the City's sanitary sewer system as separate from improvements to the City's water supply system. That was because an option to recycle waste-water as a source of water supply was not an option in Oklahoma until November 2012, when the law known as "Water for 2060" took effect.

The goal of this law is to consume no more fresh water in the year 2060 than is consumed statewide in the year 2012 while continuing to grow the population and economy of Oklahoma. The way to achieve this goal is through utilizing existing water supplies more efficiently and expanding the use of alternatives such as waste-water and other non-potable water supplies.

Cities such as El Paso, Las Vegas and Phoenix have proven the safety of water reuse. This law instructs the regulatory arm of the State — specifically, the ODEQ — to develop regulations and encourage water reuse, which now allows cities opportunities for wastewater to be recycled and retreated for its public water supply. It allows the two systems to work together in a more cost effective, efficient and sustainable way that wasn't possible before.

Other Oklahoma cities, including Norman, Lawton, Guymon and Clinton, are exploring this as well. For the City of Bartlesville, we are re-evaluating the needed improvements to the City's sanitary sewer system to explore the possibility of using waste-water as a source of public water supply.

Water re-use: How it's done

Currently, the City's waste-water, once it is treated at the treatment plant on Tuxedo Boulevard, is discharged into the Caney River and flows south. The City currently draws water from the Caney River at Johnstone Park for treatment at the water treatment plant and then distributes it to our customers.

The water reuse project would involve pumping treated waste-water north approximately three miles to discharge into the Caney River, approximately five stream miles upstream of the raw water intake located in Johnstone Park. This upstream discharge point would allow the treated wastewater to blend with the river water and serve as an environmental buffer before being drawn from the Caney River for treatment at the water treatment plant in the same manner as is currently done. Instead of two separate systems — a waste-water treatment system and a water treatment system — the City would have a combined water reclamation system.

Cost comparison

Cities across the nation struggle with identifying and funding long-term water supply, including many in Oklahoma. For instance, the City of Enid is building a 75 mile pipeline to Kaw Lake for long-term water supply at an estimated cost of *\$360 million* funded by a 1 percent sales tax increase, making it the largest municipal water project ever undertaken in Oklahoma.

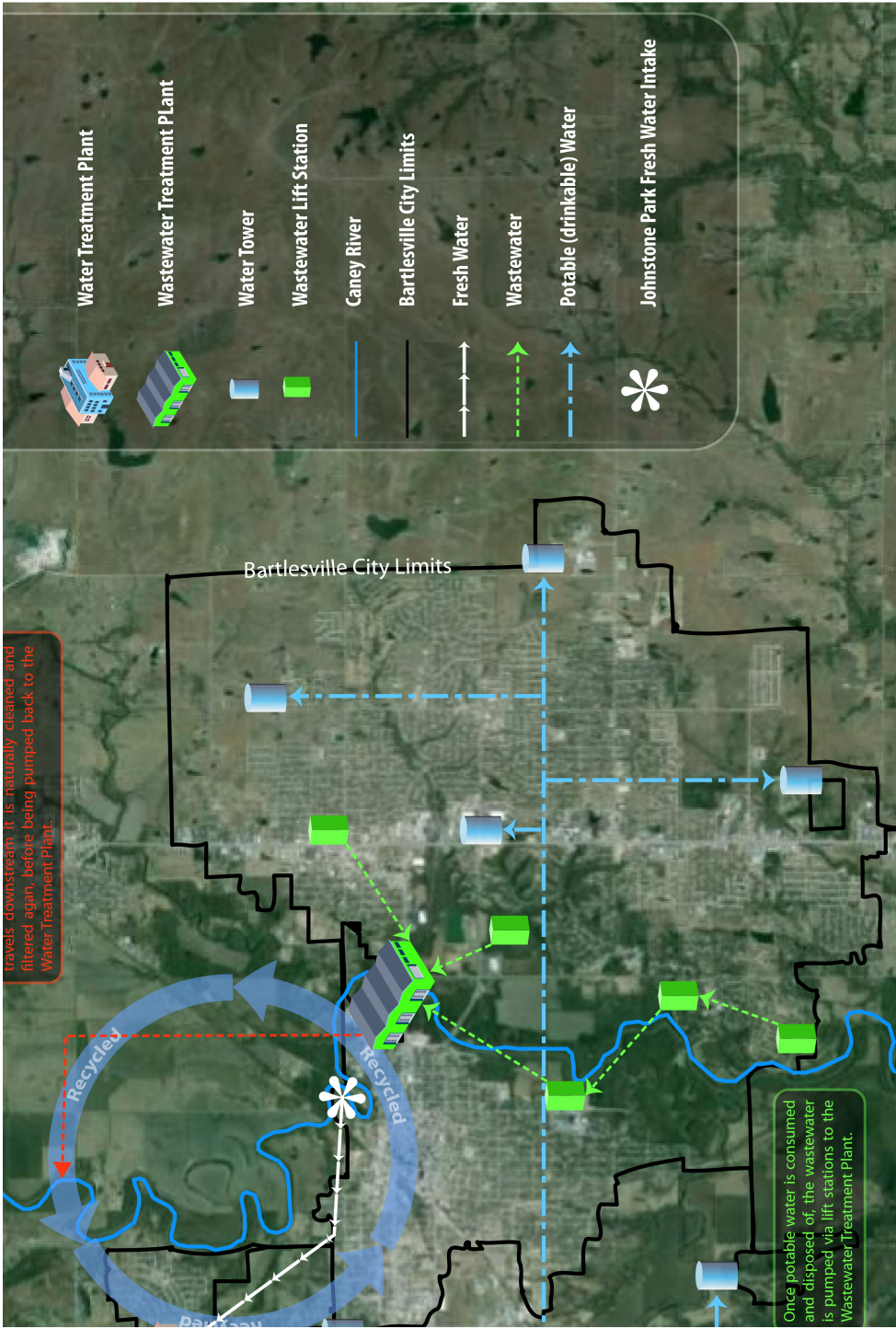
The cost of water reuse for Bartlesville is estimated between \$7 million to \$10 million. The costs are being quantified through a Facility Plan and Water Reuse study that is underway and scheduled for completion by April 2017.

As summarized earlier, the cost to purchase additional storage contracts from the U.S. Army Corp of Engineers is \$44.2 million for 16.76 mgd. However, this cost was based on 2006 storage rates. Since the formula prescribed by the current federal law includes an interest component, the estimated cost of these storage contracts, if purchased today, is \$57.4 million. Combined with a pipeline from Copan Lake, the estimated overall cost of PAS recommendations is \$92.4 million

and correlates to a unit price of \$5.5 million per mgd. The cost of water reuse is \$8.5 million for 3.5 mgd, which is the mid point of the estimate and yield, correlates to \$2.4 million per mgd.

Whichever direction is ultimately selected for long term water supply, storage contracts and/or water reuse, these improvements will be financed and repaid through utility fees over a period of time.

(A concept exhibit of the water reuse system is shown on the next page.)



Street Maintenance and Repair

Pavement Management

Bartlesville's roadway network has an overall value estimated at \$390 million, not including sidewalks and signs, etc. A road deteriorates slowly over the first 10-15 years of its life, then the deterioration accelerates very quickly over the remaining life of a pavement. Typically, we experience pavement life around 35 to 40 years before the pavement must be completely removed and replaced.

The Pavement Management Analysis of 2012, which identified ongoing annual maintenance as a priority for funding, gave the City an overall grade of 64.11, with 14 percent of the City streets rated "Excellent," 24 percent rated "Very Good," 23 percent rated "Good," 28 percent rated "fair to marginal" and 11 percent rated as "poor or very poor."

The analysis recommended an annual budget of \$1.25 million (based on 2012 dollars) to maintain the current condition of the roadway network. If that amount is not budgeted annually, the overall condition of the roads will deteriorate, causing more money in the long run to repair or replace. This cost did not include Americans with Disabilities Act (ADA) compliance and the addition of sidewalks.

Funding sources

To raise our street grade, more than \$1.25 million per year needs to be spent on our City streets. Since the analysis was presented, the City has allocated annual funding of approximately \$1.75 million through the Capital Improvement Sales Tax Fund and the General Obligation Bond Fund, both of which must be approved by citizens by election.

Funding for street improvements primarily comes from the ½-cent Capital Improvement Projects (CIP) sales tax fund and the general obligation (GO) bond fund. The City currently uses the CIP sales tax fund for preventative maintenance-type projects and the GO Bond fund for full replacement — typically, roads classified in the "poor to very poor" category — or road extensions and widenings.

GO Bond funds are a critical funding source in maintaining and improving the City's street system, and in past bond elections voters have approved between \$5 million and \$10 million for street improvement projects. The CIP sales tax is committed through 2021 and includes \$5.25 million for preventive street maintenance. The last GO Bond, approved by the voters in 2012, committed \$5.35 million for street improvements.

The next opportunity for a bond election is 2017. The recommended minimum level of funding from GO Bonds to continue making progress on the overall street condition is \$1 million per year.

Parks and Recreation

Investing in the community

Since 2004, the City has invested approximately \$7.4 million in park and recreation improvements:

- ✓ Robinwood Park Improvements — \$732,000
- ✓ Soccer Fields at Lee Lake — \$700,000
- ✓ Price Field Improvements Phase I — \$1.1 million
- ✓ Artunoff Softball Fields — \$50,000
- ✓ Lee Lake Improvements — \$800,000
- ✓ Cooper Dog Park — \$40,000
- ✓ Renovation and repairs to Pathfinder Parkway — \$758,000
- ✓ Frontier Pool Reconstruction — \$2 million
- ✓ Sooner Pool Renovations and Splash Pad — \$440,000
- ✓ Johnstone Park Pavilion — \$500,000
- ✓ Miscellaneous park improvements: Oak Park Playground, renovation of Sooner Park Play Tower, Sooner Pool shelters, rest rooms and water fountains — \$300,000

Funding in the amount of \$6.6 million has already been approved for additional park and recreation improvements for the current CIP budget. Those projects include:

- Price Fields Phase 2 — \$1.75 million
- Additional improvements to Pathfinder Parkway — \$425,000
- Sooner Pool coating and filtration equipment — \$100,000
- Sooner Pool recreational expansion \$3.75 million (*see attached illustration on last page*)
- Playground replacement at Sooner, Johnstone, Robinwood and Douglas parks — \$430,000
- Shelters at Sooner and Civitan parks — \$80,000
- Miscellaneous Improvements — \$65,000

In the recent 2016-2017 City of Bartlesville Budget, the City Council increased the budget for the Park and Recreation Department by 60.6 percent to fund additional maintenance employees and equipment needed to better maintain the City's parks and recreational fields and facilities.

Downtown Revitalization

Bartlesville Downtown Revitalization District

The City Council has approved more than \$3.1 million in funding for street, lighting and streetscape improvements (\$2.2 million in 2003 CIP election and \$900,000 in 2008 CIP election), and an additional \$3.5 million in property tax revenues to undertake redevelopment activities and to incentivize private investment in the Bartlesville Downtown Revitalization District.

Property tax revenues will continue to be generated for improvements to Downtown Bartlesville for another 10 years, generating an estimated \$6 million to be used exclusively for redevelopment activities within this district.

Storm water: Priority projects

Master Drainage Plan

In 2004, the City completed a Citywide Master Drainage Plan. This plan analyzed all storm water systems serving 20 acres or more to identify capacity deficiencies in the existing system as well as regional detention facilities to accommodate new development.

The plan identified \$23 million in capital improvements for systems not meeting current design criteria. Of that \$23 million, \$11.5 million were classified as “High Priority” to improve areas that consistently flood and develop regional detention to accommodate future growth. Of this, \$11.5 million (calculated based on 2004 dollars) in projects, \$5.3 million has been completed. Thus, more than \$6 million in High Priority projects remain from this original High Priority list. Those projects include (based on 2004 dollars):

- Price Road Detention — \$2.5 million
- System improvements in the Rolling Hills Subdivision — \$500,000
- System improvements in the Fox Hollow Subdivision — \$400,000
- System improvements in the Interurban area, north of Tuxedo — \$750,000
- System improvements in the Woodland Park Subdivision — \$750,000
- System improvements in the Downtown and Oak Park areas — \$1.5 million

