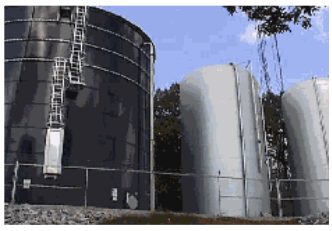
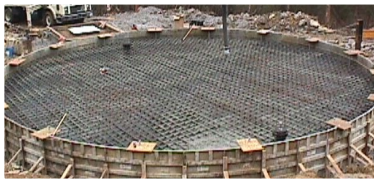
Final Engineering Report

South Logan Water Association
Water Office & Russellville Southern Bypass Extension

March 2022





McGhee Engineering, Inc.
202 South Ewing Street
Guthrie, Kentucky 42234
(270) 483-9985
www.mcgheeengineering.com

FINAL ENGINEERING REPORT
Water Office & Russellville Southern Bypass Extension

prepared for the

South Logan Water Association

Jeff Campbell
Board Member

Bob Allen
Board Member

George Fugate
Board Member

Joel Armistead
Board Member

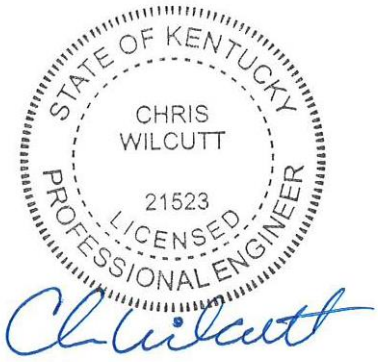
Jim Wilkerson
Board Member

Tamara Ramsey
Board Member

John Mason Barnes
Board Member

prepared by

McGhee Engineering, Inc.
202 Ewing Street, P. O. Box 267
Guthrie, Kentucky 42234
(270) 483-9985



3/14/22

Final Engineering Report
Table of Contents
South Logan Water Association's Water Office & Russellville Southern Bypass Extension Project

Tables

Final Engineering Report
Table of Contents (cont-)
South Logan Water Association's Water Office & Russellville Southern Bypass Extension Project

Exhibits

Appendix

1.0 INTRODUCTION

The South Logan Water Association (SLWA) was chartered in 1971 to supply potable water to residents of southern Logan County, Kentucky. The Association consists of six board members, and it is regulated by the Kentucky Public Service Commission. South Logan has authority to plan, design, finance, construct, operate, replace and maintain the distribution facilities within its service area.

The South Logan water system is comprised of over 210 miles of water distribution lines and three water storage tanks with a total capacity of 736,000 gallons, all of which serves approximately 1,763 customers in southern Logan County. As of the end of March 2003, the South Logan Water Association began to purchase all of their treated water from the recently completed water system of the Logan Todd Regional Water Commission (LTRWC). The Commission's water treatment facility is rated at 10 million gallons per day, and their distribution system consists of nearly 85 miles of pipeline and three storage tanks totaling 3,500,000 gallons in capacity. The 2018 average daily LTRWC usage within the South Logan system was approximately 390,000 gallons per day. South Logan has two meter stations with the Commission, one located in Russellville and the other near the Mortimer community.

The Association is a relatively large water system covering nearly a third of the Logan County area. Almost all roads within the Association boundary have water service, with only short extensions needed from time to time to accommodate new development.

Over the past 25+ years, the main problems that plagued the Association were associated with its long-term supply of treated water, low pressure in certain areas of the system, extending water service to unserved areas, and installing lines for improved hydraulic performance. Going online with the Logan Todd Regional system and multiple USDA funded upgrade projects have resolved the majority of these problems. However, the growth of the community and water system have created two new critical needs for the Association.

First, the Russellville Southern Bypass opened for traffic in late 2017. This new southern bypass section runs from US Highway 79 to KY Highway 100, crossing KY Highway 96 along the way. It is 4.5 miles long, featuring a two lane roadway with turning lanes at intersections and a truck climbing lane. Cost for the project was $12,824,639. The proximity of this new roadway to Russellville, with a majority resting in the Association's service territory, created a major unserved corridor. Second, the Association has experienced a customer growth of nearly 50% in the past 25 years (1,160 total customers in 1993). This dramatic growth has created an expanding need in both customer service and system operations. South Logan has outgrown their current office footprint for fulfilling these services, and their present facility has been labeled by USDA as being non-compliant with ADA requirements. To initiate a solution to alleviating these needs, the South Logan Water Association requested funding assistance to undertake their Water Office & Southern Bypass Extension Project.

Due to Construction Bids coming in over budget for each Contract, the proposed project has been modified to only include construction of over 11,000 LF of new waterline along and off the Russellville Bypass to provide water service to the unserved area plus a new SCADA metering point. The Association has elected to pursue a renovation of the current water office, in lieu of new construction, to insure their work space is a fully ADA compliant space. Although undetermined at this point, South Logan will use project funds to finance the bid documents and construction. The total cost of the proposed project is estimated to be $1,065,000.

2.0 PROJECT PLANNING AREA

2.1 *Location*

The waterline construction (Contract 1) of South Logan Water's project will basically be contained to one highway corridor plus a short extension off the bypass to connect with an existing water main. Over 11,000 LF of new waterline extension is proposed along the Russellville Southern Bypass, between the intersections of US Highway 431 South and US Highway 79 South on the fringe of the City of Russellville. The Bypass extension will include mostly of 8" PVC piping.

Contract 2 would have consisted of constructing a new water office in the City of Adairville with over 3,000 SF of new space. The Association identified and purchased a site in the city limits of Adairville and developed building plans that would a secure lobby area that offers protection to the customer service reps accepting payments, include sufficient meeting space for Board meetings and public participation, storage space for both records and water parts/materials, plus public restroom facilities; all sized and designed in full ADA compliance. Unfortunately, bid results are cost prohibitive to pursue new construction with this contract at this time.

The proposed project location is illustrated in Exhibit E-1 with a county road map background. The areas of waterline work, including alternates, are listed below.

Table 1

Waterline Information

Exhibit	Map I.D.	PRIMARY ROUTES ROAD NAME	Length (miles)	Line Size (inches)
1	A	Russellville Southern Bypass w/ Connector	3.0	8" & 6"
		SUBTOTAL	3.0	
		ALTERNATE ROUTES		
2	E	KY Highway 96	3.2	6
2	F	Smith Grove Road	2.9	4
2	G	Bores Road	1.8	4
2	H	Conn Road	2.7	6
2	I	Tillett Lane	0.6	4
2	J	Kenny Stratton Road	0.8	4
2	K	Beauchamp Road	1.0	4
2	L	Clay Dockins Road	1.4	4
2	M	Lawrence Road	0.7	4
		SUBTOTAL	15.1	
		TOTAL	18.1	

2.2 *Land Use and Environmental Resources Present*

As stated earlier, the line portion of the project is spread out over two miles of roadway, mostly within agriculture areas of southern Logan County. The line work is proposed to be constructed within state road rights-of-way plus utility easements acquired by the South Logan Water Association. The overall project could affect four main resources during construction: flood plains, residential, agriculture, and transportation. The general construction effect to the resources is the disturbance associated with building the facilities. No long-term impact is expected to any environmental resource.

An archeological investigation on the proposed project was not required as much of the affected line route had been previously disturbed by prior water or road projects. However, if further investigation is warranted, Lee Foster, MA/RPA of Pennyrile Archaeological Services LLC will conduct any necessary reviews with a report submitted to the State Historical Preservation Officer. Regardless, it is expected that no historical resource will be affected by the proposed project.

The following exhibits indicate the environmental resources present within the project planning area:

- A topographic map of the proposed water line (excluding alternates) indicating the areas to be affected and the surrounding area. This is attached as Exhibit 3. The base map is USGS 7.5' quadrangles images.
- The proposed waterline that is near or traverses through defined FEMA floodplain zones is illustrated in Exhibits 4.
- Soil survey data from the Soil Conservation Service is shown as Exhibit 5.

2.3 *Growth Areas and Population Trends*

The population history of Logan County is an important element in determining the growth patterns over the last 60 years. Analysis of the population history will assist in forming a reliable estimate of the future water needs of the project area.

According to historical records, Logan County's population was 20,896 in 1960, which represents its lowest census year during the last 60 years. Steady growth has been the trend in Logan County since the 1960's. Table 2 provides the population history and projections of the county based on data obtained from the U.S. Bureau of the Census.

Table 2

Population History and Projections

	YEAR	1950	1960	1970	1980	1990	2000	2010	Projections 2015	2020	2025	2030	2035	2040
LOGAN	Adairville	800	848	973	1,105	906	920	852	854	854	850	841	828	813
	Auburn	994	1,013	1,160	1,467	1,273	1,444	1,340	1,344	1,343	1,337	1,323	1,302	1,279
	Lewisburg	496	512	651	972	772	903	810	812	812	808	800	787	773
	Russellville	4,529	5,861	6,456	7,520	7,454	7,149	6,960	6,979	6,974	6,943	6,872	6,764	6,644
	Rural Areas	15,516	12,662	12,553	13,074	14,011	16,157	16,873	16,921	16,907	16,832	16,658	16,397	16,109
	Logan County	22,335	20,896	21,793	24,138	24,416	26,573	26,835	26,910	26,890	26,770	26,494	26,078	25,618
	% Change		-6.4%	4.3%	10.8%	1.2%	8.8%	1.0%	0.3%	-0.1%	-0.4%	-1.0%	-1.6%	-1.8%

Notes to Table 1
1. Shaded areas have been calculated based on census and projection data.

Source to Table 1
1. Historical & Projections provided by the KY State Data Center and Census Bureau University of Louisville, State Data Center.

Analyzing Table 2 from 1950 to 2010 shows that the cities in Logan County have grown overall with some fluctuations. Most of the cities' gains came at the expense of the rural populations in Logan County, however the rural area population began to increase dramatically in 2000. Therefore, the population of the South Logan Water Association should experience similar growth based upon these projections.

Several factors influence the growth of a community, some of which include accessibility, technology, education, water infrastructure, sewer facilities, and job availability. Over the past twenty years, the community has experienced the benefit of a new four-lane highway, which has increased the area's access to larger Kentucky cities such as Hopkinsville and Bowling Green plus improved access to Interstates 24 and 65. High speed internet and wireless technology is prevalent in Logan County compared to other counties in Kentucky of Logan's size, which has created greater and easier contact to the rest of the world. The local school systems are strong and provide a quality education. Over the last twenty years, the Association and other communities within the county worked together to secure a reliable source of potable water for the foreseeable future years as the county went online with the completed Logan Todd Regional Water Commission.

Further analysis of these projections indicates Logan County's population is projected to plateau over the next thirty years with a slight decline. However, it should be noted that population would be impacted by the availability or unavailability of water supply. An ample and steady supply of water will promote growth while the lack thereof will limit growth. These factors must be considered when reviewing this report since many assumptions are dependent on these projections.

3.0 EXISTING FACILITIES

3.1 *History and Assets*

The South Logan Water Association (SLWA) was formed by Logan County Court order in the early 1970's to supply potable water to residents within the southern portions of Logan County, Kentucky, between the cities of Adairville and Russellville. The water system is comprised of approximately 260 miles of water line and a total water storage capacity of 736,000 gallons. The existing distribution system consists of 8", 6", 4", 3" and 2" PVC lines. The general service area is depicted in Exhibit 1, which illustrates the general distribution layout. The existing transmission and distribution lines generally radiate from Adairville, its former water supplier, and from the Association's water storage tanks south of Russellville. The system is well laid out with many loops. However, there are some dead end and low-flow lines within the system that require frequent flushing.

SLWA has three water storage structures to serve the water system. The primary storage structure is a ground level tank, located just south of Russellville, and the tank has a total capacity of 436,000 gallons and an overflow elevation of 842 feet. The other tanks are elevated storage tanks, located in the Mortimer and Schochoh communities. The Mortimer tank is a leg-style water storage tank, and it has a capacity of 100,000 gallons and an overflow elevation of 746 feet. The Schochoh tank is also a leg-style water storage tank, and it has a capacity of 200,000 gallons and an overflow elevation of 800 feet.

The Logan Todd Regional system initially supplies water to the SLWA system in two locations. The larger feed point is located at the base of the Association's ground level tank in Russellville, and the other is located north of Adairville near the Red River along US Highway 431 to serve the Mortimer tank. A small pump station is utilized within the system to serve and fill the Schochoh tank. Flow through each of these metering points is controlled by the LTRWC SCADA system, and pressure is regulated as flow enters to match the existing tank overflows. System pressures are normally maintained by the level in the respective storage tanks.

The Association's current Water Office and Maintenance Headquarters is located on the public square in Adairville at 114 South Main Street. South Logan purchased the property in 2003. The property has limited parking, mostly in gravel with the exception of a single handicap space paved with asphalt. The building, built in 1950 per Logan County PVA records, has a single bathroom that is elevated above the ground floor and obviously added later. This feature prevents wheelchair access and limits use for those with mobile disabilities.

3.2 *Regulatory Compliance*

According to the recent Public Service Commission inspections plus Division of Water's remarks within the Clearinghouse Comments, the South Logan water system is currently in compliance with appropriate regulatory agencies. No other remarks were given to suggest that the water system was in or near a

noncompliance status. The comments of the Division of Water and other agencies are included in Appendix A.

3.3 *Existing Financial Charges and Status*

3.3.1 *Existing Rate Schedule (Effective September 1, 2020)*

Meter Size 5/8x3/4 Inch :

First	2,000	Gallons @	$ 22.39	Minimum
Next	8,000	Gallons @	$ 7.77	per 1,000 Gallons
Next	40,000	Gallons @	$ 7.50	per 1,000 Gallons
Next	50,000	Gallons @	$ 7.22	per 1,000 Gallons
All Over	100,000	Gallons @	$ 6.95	per 1,000 Gallons

Meter Size 1-Inch :

First	2,000	Gallons @	$ 42.40	Minimum
Next	8,000	Gallons @	$ 7.77	per 1,000 Gallons
Next	40,000	Gallons @	$ 7.50	per 1,000 Gallons
Next	50,000	Gallons @	$ 7.22	per 1,000 Gallons
All Over	100,000	Gallons @	$ 6.95	per 1,000 Gallons

Meter Size 1 1/2-Inch :

First	2,000	Gallons @	$ 60.38	Minimum
Next	8,000	Gallons @	$ 7.77	per 1,000 Gallons
Next	40,000	Gallons @	$ 7.50	per 1,000 Gallons
Next	50,000	Gallons @	$ 7.22	per 1,000 Gallons
All Over	100,000	Gallons @	$ 6.95	per 1,000 Gallons

Meter Size 2-Inch :

First	2,000	Gallons @	$ 92.91	Minimum
Next	8,000	Gallons @	$ 7.77	per 1,000 Gallons
Next	40,000	Gallons @	$ 7.50	per 1,000 Gallons
Next	50,000	Gallons @	$ 7.22	per 1,000 Gallons
All Over	100,000	Gallons @	$ 6.95	per 1,000 Gallons

Meter Size 3-Inch :

First	2,000	Gallons @	$ 125.01	Minimum
Next	8,000	Gallons @	$ 7.77	per 1,000 Gallons
Next	40,000	Gallons @	$ 7.50	per 1,000 Gallons
Next	50,000	Gallons @	$ 7.22	per 1,000 Gallons
All Over	100,000	Gallons @	$ 6.95	per 1,000 Gallons

Meter Size 4-Inch :

First	2,000	Gallons @	$ 161.71	Minimum
Next	8,000	Gallons @	$ 7.77	per 1,000 Gallons
Next	40,000	Gallons @	$ 7.50	per 1,000 Gallons
Next	50,000	Gallons @	$ 7.22	per 1,000 Gallons
All Over	100,000	Gallons @	$ 6.95	per 1,000 Gallons

3.3.2 *O&M Costs (FYE 12/31/20)*

Item No.	Expense Item	Amount
1	Purchased Water	$ 531,512.00
2	Salaries and wages	$ 179,412.00
3	Directors Fees	$ 2,650.00
4	Transmission & Distribution	$ 37,409.00
5	Repairs & maintenance	$ 38,439.00
6	Contractural Services	$ -
7	Utilities & Telephone	$ 15,114.00
8	Professional Fees	$ 9,595.00
9	Insurance	$ 30,685.00
10	Taxes & licenses	$ 2,532.00
11	Office Supplies	$ 38,588.00
12	Water Tests	$ 4,975.00
13	Travel	$ 14,092.00
14	Miscellaneous Expense	$ 1,889.00
	Total Utility Expense	**$ 906,892.00**

3.3.3 *Long Term Debts (as of 12/31/20)*

Date of Issue	Bond/Note Holder	Principal Balance	Payment Date	Bond Type	Amount on Deposit in Reserve *
1993 Issue	FmHA	$ 193,475.00	2033	Water	$ 160,001.00
1998 Issue	FmHA	$ 394,705.00	2038	Water	
2005 Issue	USDA-RD	$ 630,627.00	2045	Water	
2005 Issue	USDA-RD	$1,103,327.00	2053	Water	
		$2,322,134.00			

3.3.4 *Short Term Debts (as of 12/31/20)*

Lender or Lessor	Date of Issue (Mo. & Year)	Principal Balance	Purpose	Payment Date	Principal & Interest Payment (P&I)	Date to Be Paid In Full
Not Applicable						

4.0 NEED FOR PROJECT

4.1 *Health and Safety*

Portions of the South Logan Water Association are currently strained due to growth and recent expansion projects to serve unserved areas. The strain limits the Association's ability to deliver drinking water to all its customers at proper pressure and quantity as set forth by the Kentucky Division of Water (KDOW). The Ten State Standards require a minimum working pressure of 35 psi. However, during peak times, some isolated fringe areas, which also contain large number of users, experience pressures dipping to 30 psi.

The Association constantly battles line breaks of older pipelines as well as water loss within the system. Due to the vast area served, South Logan has

methodically broken its system into mini zones to better monitor and locate leaks as they arise. Unfortunately, the attempts to solve the water loss problems also creates pressure problems as more flow is forced into fewer pipelines rather than multiple loops. Thus, the Association constantly has to balance its effort to minimize water loss with its requirement to deliver proper pressure. The Association constantly seeks opportunities to make line improvements in their system in order to provide operational advantages and alternatives to minimize disruptions.

In the area of safety, USDA has periodically performed inspections of the Association's facilities and, in particular, identified deficiencies with ADA compliance. These deficiencies include improper mobility, parking, and bathroom accessibility for the disabled or wheelchair confined patrons. For many years, USDA has impressed upon the Board that failure to address these issues could hinder their ability to fund infrastructure projects in the future. The Board took into consideration a complete remodeling of the current building plus the option of building a completely new works space..

4.2 *System O&M*

When developing this project, the primary purpose was to extend water service along a major new thoroughfare. However, aside from the potential of serving expected new customers along the corridor, the project can reduce interruptions of service to others in the area from older line breaks by providing operational alternative feed methods. The Association has done a remarkable job over the last 24-36 months in reducing their water loss system wide, but there are portions of their system that are over 50 years old. The roots of South Logan Water's formation is the evolution and acquisition of the old Russellville Water District No. 1 that was constructed in the 1960's. This older portion of the system rests within the proposed waterline loop connecting two major SLWA distribution arteries; US Highway 431 and US Highway 79. With an interconnection of these two arteries, the Association will have unlimited options to minimize areas disrupted by breaks in the older areas of the water system. Its worth noting that the older areas of the system referenced include the county hospital, an assisted living facility for the elderly, and 100+ bed nursing/rehab center.

4.3 *Growth*

As mentioned earlier, the rural population of Logan County should hold steady over the next ten to fifteen years based upon reliable census records and expected growth. The proposed project is necessary to continue the Association's ability to serve the recent growth plus new developments that are likely in the future. Overall, the proposed project is ultimately being designed to offer improvements and benefits to their existing 1,763 customers. The new infrastructure will insure the Association's ability to properly serve the existing customer base plus future growth in the area.

5.0 ALTERNATIVES CONSIDERED

A resolution to the problems faced by the South Logan Water Association is a relatively simple project with three alternatives.

5.1 *Alternative 1*

The first obvious alternative is to do nothing or a smaller variation of the project. However, the Association would be unable to continue their current endurance of operation, maintenance and water flow problems. Therefore, the 'do nothing' alternative is not a viable option as it would only prolong the inevitable.

5.2 *Alternative 2*

The second alternative is to do an all encompassing project to address both needs, as identified. However, current 2022 market prices and economic climate make the overall project cost unfeasible with the present available financing. Therefore, the 'all encompassing' alternative is not a viable option at this time.

5.3 Alternative 3

The third alternative is one that provides water service along a new major thoroughfare in Russellville. To address the water office headquarters issue, the Association will pursue developing bid documents and procuring a contractor to make the necessary renovations to bring the office space into ADA compliance and provide a secure teller interaction space for transactions. This portion of the project adheres with the Commonwealth's drive to provide a reliable and potable water source to all serviceable customers.

5.3.1 Description

The project involves construction of over 2 miles of water line along an unserved roadway in the Russellville area. The line is being built to provide water service to a prime area for residential and commercial development as well as connecting sections of the water system that will improve the hydraulic performance of the existing distribution system. The loop will offer alternate feed options and backdoor supply during interruptions in the older, original portions of the South Logan System in southern Russellville. The work will also include adding a new SCADA meter for an additional monitoring point.

The alternative is illustrated in Exhibit 1.

5.3.2 Environmental Impacts and Land Requirements

The alternative has little to no impact upon the environment and land resources because the proposed construction will be done mostly along existing easements and roadways. The line extension is proposed for construction in existing pipeline easements where possible or in state right-of-way and new easements, as needed. As mentioned earlier, the project will affect four main resources during construction: residential, agriculture,

floodplains, and transportation. The general construction effect to the resources is the disturbances associated with building the facilities. No other effect to the resources is expected after construction of the improvements is complete.

5.3.3 *Construction Problems*

There are no severe construction problems foreseen for the project. The Logan County area has varying soil conditions ranging from near ideal in some of the southern parts of the county, to sporadic instances of rock outcrops in the north. The entire pipeline route is very accessible, and there is little evidence of a high water table. Mobilization issues should be minimal since the work is contained along the same corridor throughout. However, portions of the waterline will require stream crossings and road bores, none of which should be unmanageable or exceptionally costly.

5.3.4 Cost Estimates

The South Logan Water Association's Water Office & Southern Bypass Extension Project is estimated to have a total cost of $1,065,000. The project cost consists of construction, non-construction and contingency costs, which are $878,165, $138,500 and $48,335 respectively. The project is anticipated to be funded in part by a $267,000 grant and $798,000 loan from Rural Development

6.0 PROPOSED PROJECT

6.1 *Project Design*

6.1.1 *Water Supply*

The Logan Todd Regional Water Commission's plant will serve the proposed project, and no immediate new demand will be added to their system as a result of the project. Based upon 2021 figures from LTRWC, the water treatment plant is producing nearly 6,500,000 gallons per day, which is approximately 65% of the design capacity. Therefore, sufficient capacity exists to continue service to their original customers plus the City of Springfield, which came online in 2020 with an added minimum demand of 2,300,000 gallons per day

6.1.2 *Storage*

The proposed project will not include any additions to or modifications of the Association's water storage facilities. Adequate storage volume exists at their Russellville, Mortimer and Schochoh sites to serve the project.

6.1.3 *Distribution Layout*

The waterline construction of the South Logan Water Association extension project will be contained to a nearly three mile section generally following the Russellville Southern Bypass in central Logan County. The line portion of the project involves extension of water service with approximately 13,300 LF of 8” & 6” treated water lines (PVC piping).

The proposed line extension and preliminary office locations are illustrated in Exhibit 1.

6.1.4 *Regulatory Compliance*

The proposed project has been submitted to the Kentucky State Clearinghouse for their comments. The clearinghouse review of the proposal indicates there are no identifiable conflicts with any state or local plan, goal, or objective. Furthermore, no notices have been received and none are expected to suggest that the water system is in or near a noncompliance status.

6.1.5 *Hydraulic Calculations*

For preliminary planning purposes, the computer hydraulic simulator, KYPIPE 2000, has been used to construct a system wide model to determine the hydraulic characteristics of the South Logan water system as it currently exists. The model includes all of the existing lines from the water supply connection with Logan Todd, plus the proposed line upgrades and other features of the project. The modeling indicates all four of the waterlines may be constructed as proposed.

6.2 *Cost Estimate*

The as-bid itemized cost estimate of the South Logan Water Association's Water Office & Russellville Southern Bypass Extension Project is shown in Table 3.

Table 3
As-Bid Project Cost Estimate

CONSTRUCTION COSTS		
Item	**Preliminary**	**As-Bid**
Contract No. 1 - Waterline Extension along Rville Southern Bypass - *Abbico*	$ 301,600	$ 675,165
Contract No. 1C - Waterline Extension + SCADA site - *Add Alt. Bid Item*	$ -	$ 78,000
Contract No. 2 - Water Office - *Bid Rejected*	$ 495,000	$ -
Contract No. 3 - Water Office Renovation (inc. Design) - *Future TBD*	$ -	*$ 125,000*
SUBTOTAL - Construction	**$ 796,600**	**$ 878,165**
NON-CONSTRUCTION COSTS		
Administrative Costs	$ 1,000	$ 1,000
Land Right-of-Way	$ 20,000	$ -
Legal Costs	$ 15,000	$ 15,000
Preliminary Engineering	$ 10,000	$ 10,000
Environmental, Surveys, Studies & Permitting	$ 20,000	$ 20,000
Architectural, etc - Water Office Phase	$ 35,000	$ -
Design Engineering - Waterline Phase	$ 23,800	$ 23,800
Construction Phase Engineering Services - Waterline	$ 10,200	$ 10,200
Construction Inspection - Waterline Phase	$ 26,500	$ 26,500
Construction Phase Financing Cost	$ 25,000	$ 32,000
SUBTOTAL - Non-Construction	**$ 186,500**	**$ 138,500**
Contingency *(10+%)*	$ 81,900	$ 48,335
TOTAL ESTIMATED PROJECT COST	**$ 1,065,000**	**$ 1,065,000**
FUNDING SOURCES		
Rural Development Loan	$ 798,000	$ 798,000
Rural Development Grant	$ 267,000	$ 267,000
TOTAL	**$ 1,065,000**	**$ 1,065,000**

Additionally, an 'updated' detailed cost estimate of the alternative work items are shown in Table 4. These work items are included for review in the event extra funds, including contingency, are available after bidding the primary scope of work.

Table 4

Alternative Work Items: Cost Estimate

Construction			
Road	**Quantity**	**Units**	**Estimated Cost**
KY Highway 96 Replacement/Upgrade	1	LS	$ 280,000
Smith Grove Road Replacement/Upgrade	1	LS	$ 200,000
Bores Road Waterline Extension	1	LS	$ 120,000
Conn Road Replacement/Upgrade	1	LS	$ 240,000
Tillett Lane Waterline Extension	1	LS	$ 45,000
Kenny Stratton Road Waterline Extension	1	LS	$ 60,000
Beauchamp Road Waterline Extension	1	LS	$ 70,000
Clay Dockins Road Waterline Extension	1	LS	$ 100,000
Lawrence Road Waterline Extension	1	LS	$ 50,000
TOTAL - Construction (All Alternate Roads)			**$ 1,165,000**

6.3 *Annual Operating Budget*

The proposed annual operating budget for the South Logan Water Association's Water Office & Russellville Southern Bypass Extension Project is shown in Table 5.

Table 5
Proposed Operating Budget

	Existing [1]	Extension Only	Future
Operating Income			
Water Sales	$1,190,257.00	$0.00 [2]	**$1,262,403.00** [8]
Late Charges	$13,342.00	$0.00 [2]	$13,342.00
Other Charges	$17,436.00	$0.00 [2]	$17,436.00
Total Operating Income	$1,221,035.00	$0.00	$1,293,181.00
Operating and Maintenance Expense			
Purchased Water	$531,512.00	$0.00 [2]	$503,386.00 [2]
Management	$182,062.00	$5,460.00 [3]	$187,522.00
Transmission & O&M Expense	$94,915.00	$2,850.00 [3]	$97,765.00
Insurance	$30,685.00	$920.00 [3]	$31,605.00
Utilities	$15,114.00	$450.00 [3]	$15,564.00
Professional & Contracted Fees	$9,595.00	$290.00 [3]	$9,885.00
Office Supplies & Collection Expense	$41,416.00	$1,240.00 [3]	$42,656.00
Miscellaneous Expense	$1,593.00	$50.00 [3]	$1,643.00
Total Operating Expenses	$906,892.00	$11,260.00	$890,026.00
Net Operating Income	$314,143.00	($11,260.00)	$403,155.00
Non-Operating Income (Expense)			
Interest Income	$1,573.00	$0.00	$1,573.00
Other	($2,510.00)	$0.00	($2,510.00)
RD/FmHA Interest (Bonds pre-2019)	($86,476.00)	$0.00	($87,309.00) [5]
RD/FmHA Principal (Bonds pre-2019)	($62,749.00)	$0.00	($63,311.00) [5]
RUS Interest (2022 Project)	$0.00 [4]	($11,970.00)	($11,970.00) [4]
RUS Principal (2022 Project)	$0.00 [4]	($15,735.00)	($15,735.00) [4]
Total Non-Operating Income	($150,162.00)	($27,705.00)	($179,262.00)
Net for Coverage & Depreciation	$163,981.00	($38,965.00)	$223,893.00
10% Debt Service Coverage	($14,922.50) [6]	($2,770.50)	($17,832.50)
Subtotal	$149,058.50	($41,735.50)	$206,060.50
Short-Lived Assets	($6,050.00)	$0.00	($6,050.00)
Net for Depreciation [6]	$143,008.50	($41,735.50)	$200,010.50

Notes:

1. Based on the December 31, 2020 Audit
2. No new customers or added demand from project. Adjusted to 2021 purchase water value; full year @ $3.33 (151,167,000 gal)
3. Based on 3% nominal increase due to anticipated annual cost increases.
4. Estimated Project Debt Service: Based on a **$798,000 RUS loan** at 1.5% and 38 payments
5. Debt Service per Amortization Schedules. 2021 Figures used for Future.
6. The Depreciation Expense was **$158,163** per the 2020 Audit.
7. New Depreciation Expense estimated at $21,300 based on $1.065M project & 50 year straight line depreciation.
8. Water Sales @ Letter of Condition Rates & 2021 Customer Consumption

Based on the projections and assumptions outlined above, the commitment of a $267,000 Rural Development Grant and added revenues from the increased water rates are expected to produce an adequate fund for coverage and depreciation. Table 6 illustrates the project's rate schedule with the requested RUS Grant

Table 6

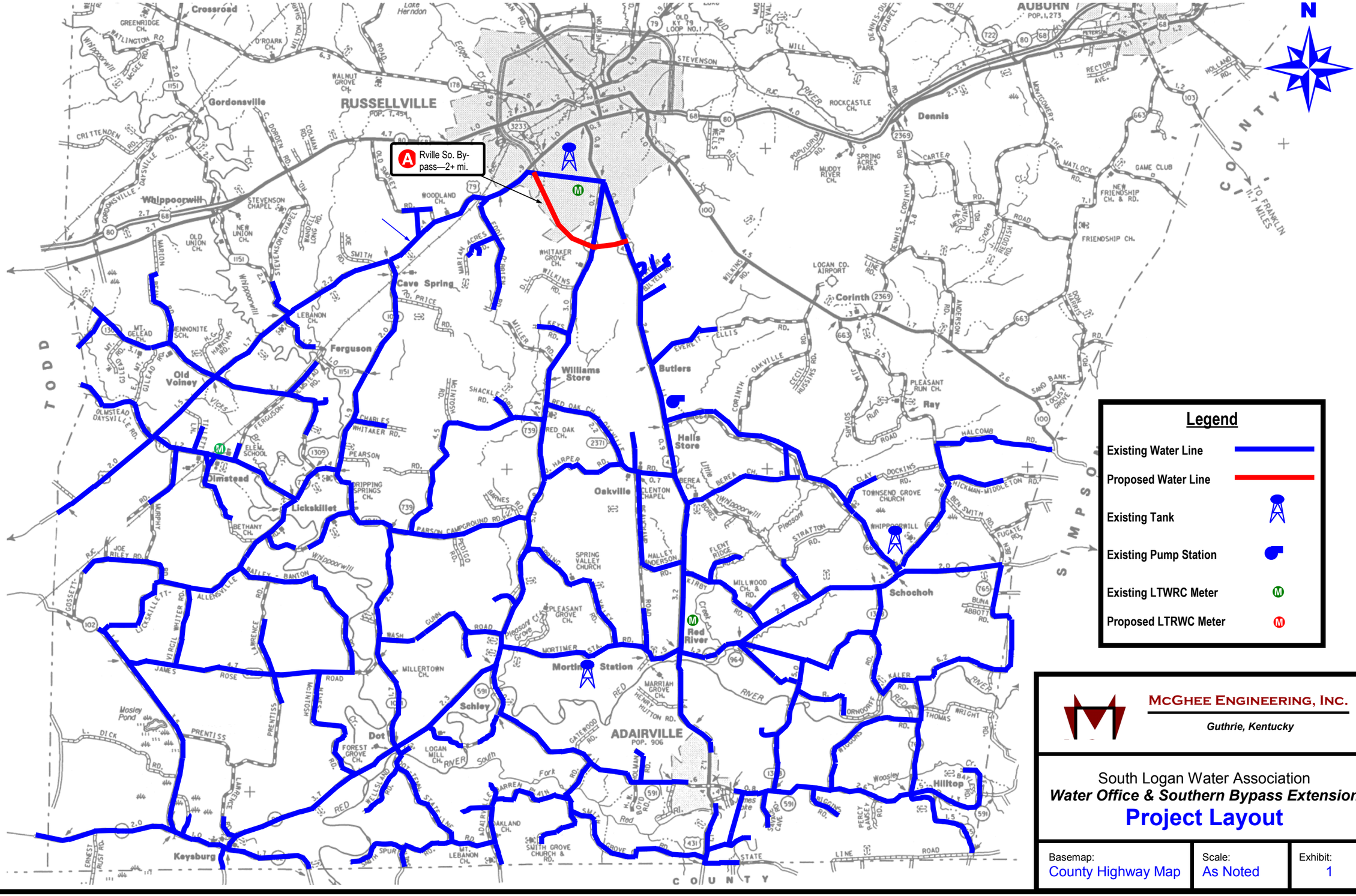
Project Rate Schedule with RUS Grant

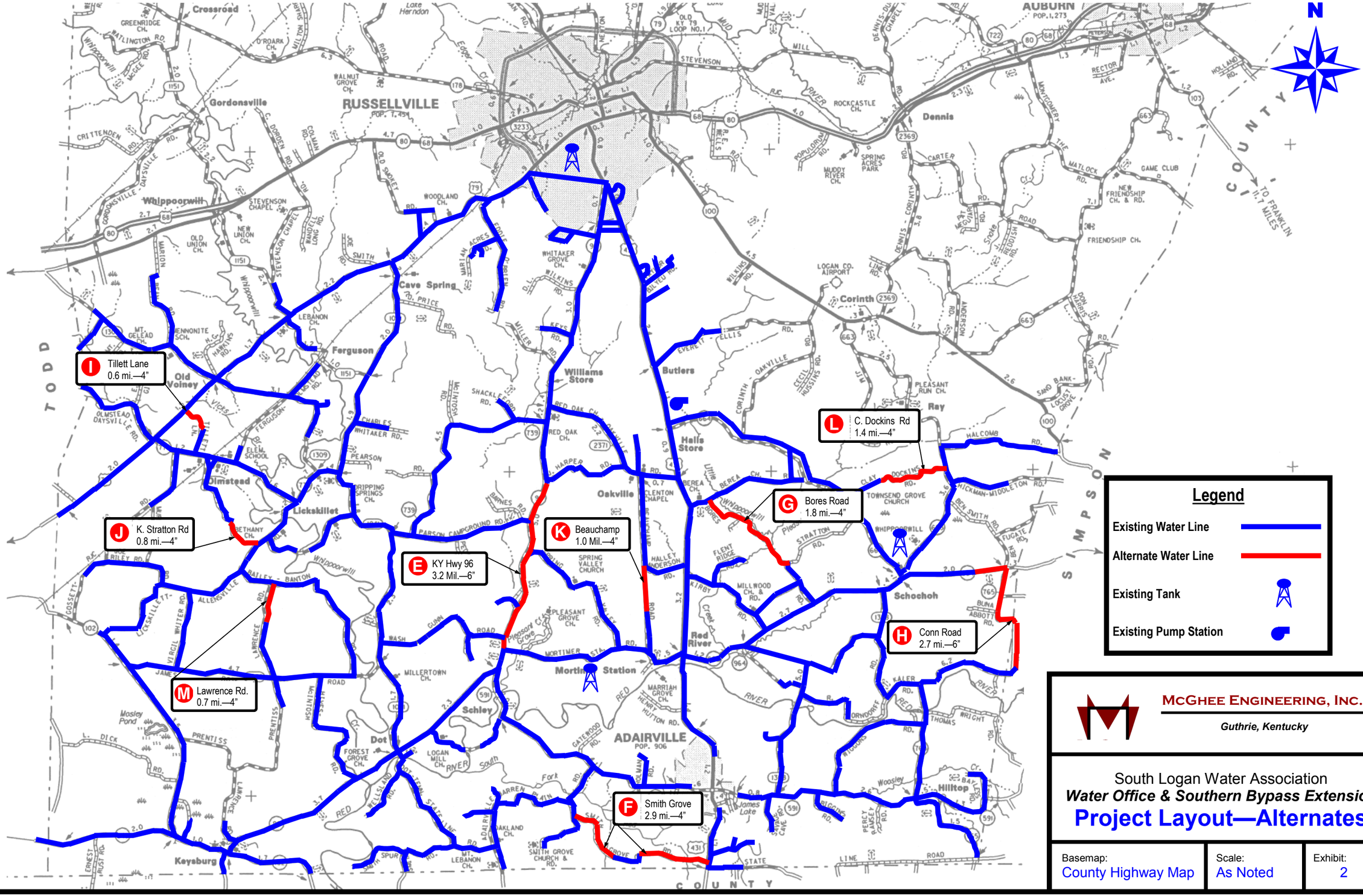
	Meter Size	5/8x3/4 Inch	:	
First	2,000	Gallons @	$ 24.02	Minimum
Next	8,000	Gallons @	$ 8.35	per 1,000 Gallons
Next	40,000	Gallons @	$ 8.06	per 1,000 Gallons
Next	50,000	Gallons @	$ 7.76	per 1,000 Gallons
All Over	100,000	Gallons @	$ 7.47	per 1,000 Gallons
	Meter Size	1-Inch	:	
First	2,000	Gallons @	$ 45.43	Minimum
Next	8,000	Gallons @	$ 8.35	per 1,000 Gallons
Next	40,000	Gallons @	$ 8.06	per 1,000 Gallons
Next	50,000	Gallons @	$ 7.76	per 1,000 Gallons
All Over	100,000	Gallons @	$ 7.47	per 1,000 Gallons
	Meter Size	1 1/2-Inch	:	
First	2,000	Gallons @	$ 64.67	Minimum
Next	8,000	Gallons @	$ 8.35	per 1,000 Gallons
Next	40,000	Gallons @	$ 8.06	per 1,000 Gallons
Next	50,000	Gallons @	$ 7.76	per 1,000 Gallons
All Over	100,000	Gallons @	$ 7.47	per 1,000 Gallons
	Meter Size	2-Inch	:	
First	2,000	Gallons @	$ 99.48	Minimum
Next	8,000	Gallons @	$ 8.35	per 1,000 Gallons
Next	40,000	Gallons @	$ 8.06	per 1,000 Gallons
Next	50,000	Gallons @	$ 7.76	per 1,000 Gallons
All Over	100,000	Gallons @	$ 7.47	per 1,000 Gallons
	Meter Size	3-Inch	:	
First	2,000	Gallons @	$ 133.82	Minimum
Next	8,000	Gallons @	$ 8.35	per 1,000 Gallons
Next	40,000	Gallons @	$ 8.06	per 1,000 Gallons
Next	50,000	Gallons @	$ 7.76	per 1,000 Gallons
All Over	100,000	Gallons @	$ 7.47	per 1,000 Gallons
	Meter Size	4-Inch	:	
First	2,000	Gallons @	$ 173.09	Minimum
Next	8,000	Gallons @	$ 8.35	per 1,000 Gallons
Next	40,000	Gallons @	$ 8.06	per 1,000 Gallons
Next	50,000	Gallons @	$ 7.76	per 1,000 Gallons
All Over	100,000	Gallons @	$ 7.47	per 1,000 Gallons

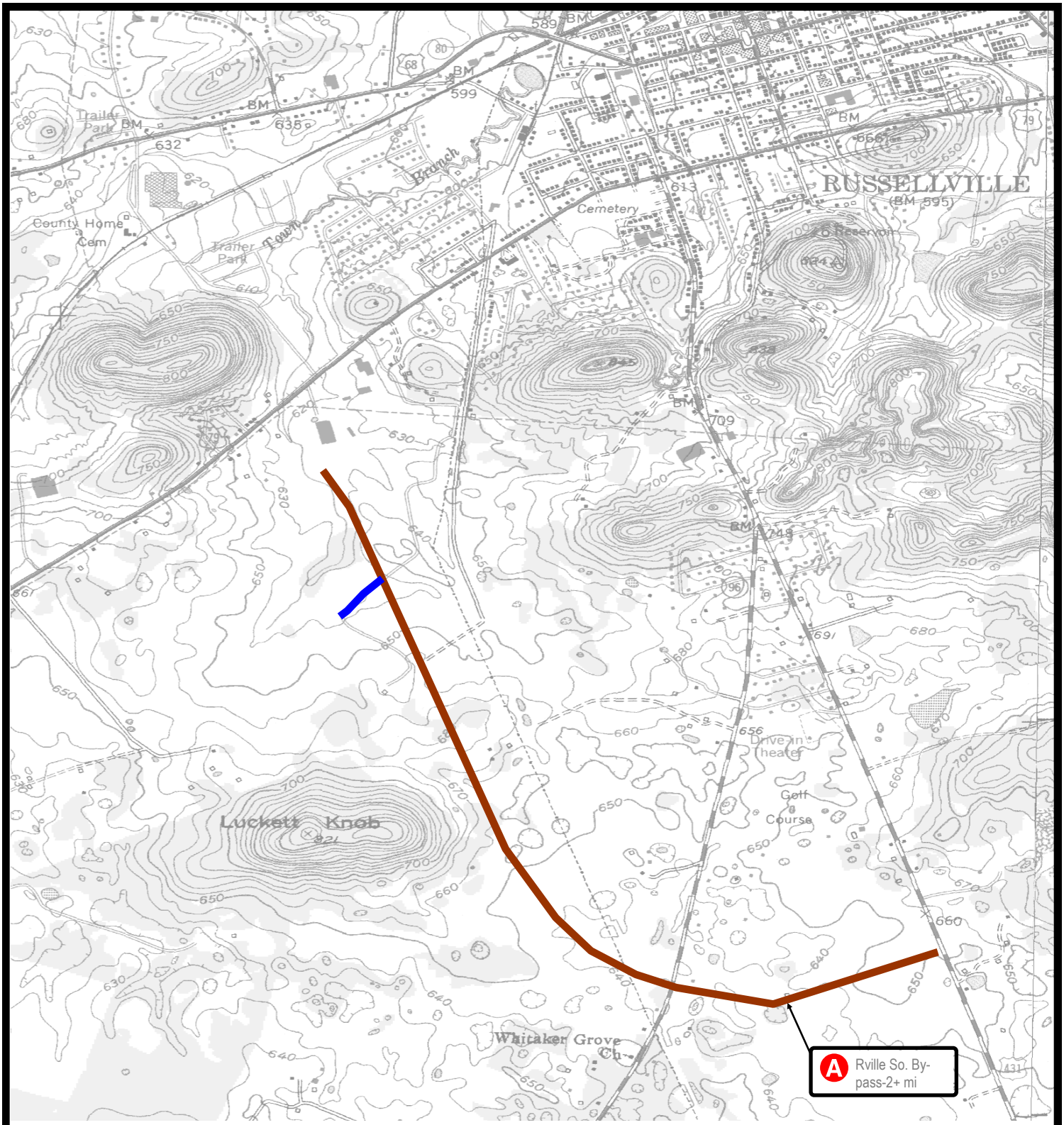
7.0 RECOMMENDED SOLUTION

In order to address the problems and needs of the water system, the South Logan Water Association should do the following:

- Proceed with Construction of Contract 1 for nearly three miles of waterline extension to provide full water service along the Russellville Southern Bypass corridor plus improve the Association's hydraulic capacity to serve future growth.
- Finalize the application process for $267,000 in grant and $798,000 in loan from Rural Development.
- Initiate discussion among the Association's Board of Directors concerning public awareness and implementation of raising water rates to fund the project if grant funds are unavailable or limited.
- Continue exploring alternatives for the their customer service center to renovate the location for ample work space parking, transaction security and full handicap accessibility, including entry and restrooms.


A Rville So. By-pass—2+ mi.
RUSSELLVILLE
POP. 7,454
AUBURN
POP. 1,273
Gordonsville
Crossroad
Whippoorwill
Cave Spring
Ferguson
Old Voiney
Olmstead
Lickskillet
Williams Store
Butlers
Oakville
Halls Store
Dennis
Corinth
Logan Co. Airport
Ray
Schochoh
Red River
Mortimer Station
Schley
Dot
ADAIRVILLE
POP. 906
Hilltop
Keysburg
Mosley Pond
Lake Herndon
TO FRANKLIN 11.7 MILES
SIMPSON COUNTY
TODD COUNTY
N
Legend
Existing Water Line
Proposed Water Line
Existing Tank
Existing Pump Station
Existing LTWRC Meter
Proposed LTRWC Meter
McGhee Engineering, Inc.
Guthrie, Kentucky
South Logan Water Association
Water Office & Southern Bypass Extension
Project Layout
Basemap: County Highway Map
Scale: As Noted
Exhibit: 1


Tillett Lane
0.6 mi.—4"
K. Stratton Rd
0.8 mi.—4"
KY Hwy 96
3.2 Mil.—6"
Beauchamp
1.0 Mil.—4"
Lawrence Rd.
0.7 mi.—4"
Smith Grove
2.9 mi.—4"
Bores Road
1.8 mi.—4"
C. Dockins Rd
1.4 mi.—4"
Conn Road
2.7 mi.—6"
Legend
Existing Water Line
Alternate Water Line
Existing Tank
Existing Pump Station
McGhee Engineering, Inc.
Guthrie, Kentucky
South Logan Water Association
Water Office & Southern Bypass Extension
Project Layout—Alternates
Basemap:
County Highway Map
Scale:
As Noted
Exhibit:
2



N

0 1 2 3 4

Scale in Miles

LEGEND

- Proposed 8" Waterline
- Proposed 6" Waterline
- Proposed 4" Waterline

McGHEE ENGINEERING, INC.

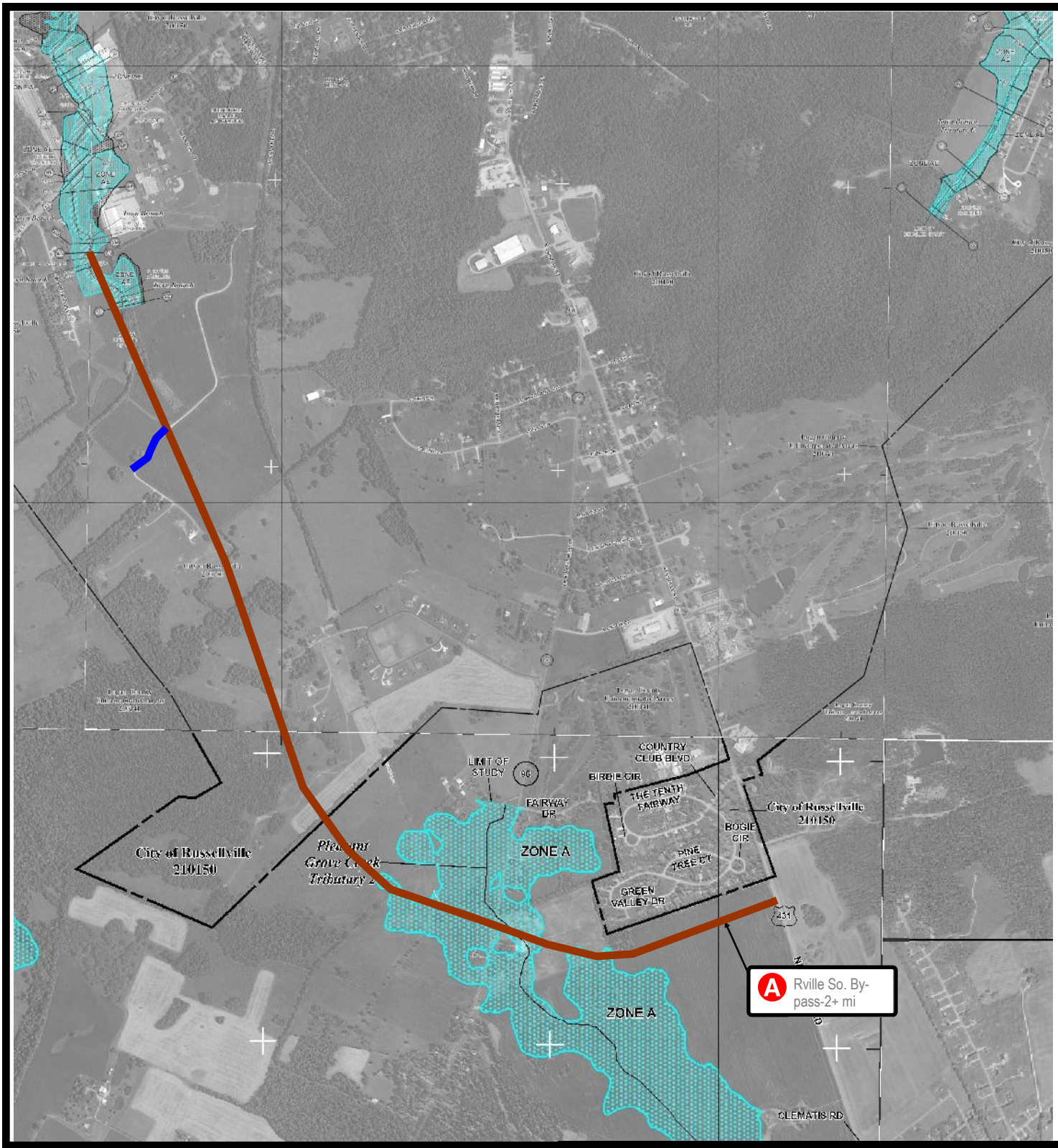
Guthrie, Kentucky

South Logan Water Association

Water Office & Southern Bypass Extension

Waterline & Office Site—Option 1

Basemap:	Scale:	Exhibit:
"Russellville" 7.5' Quad	1"=2,000'	3



N

0 1 2 3 4

Scale in Miles

LEGEND

- Proposed 8" Waterline
- Proposed 6" Waterline
- Proposed 4" Waterline

McGHEE ENGINEERING, INC.

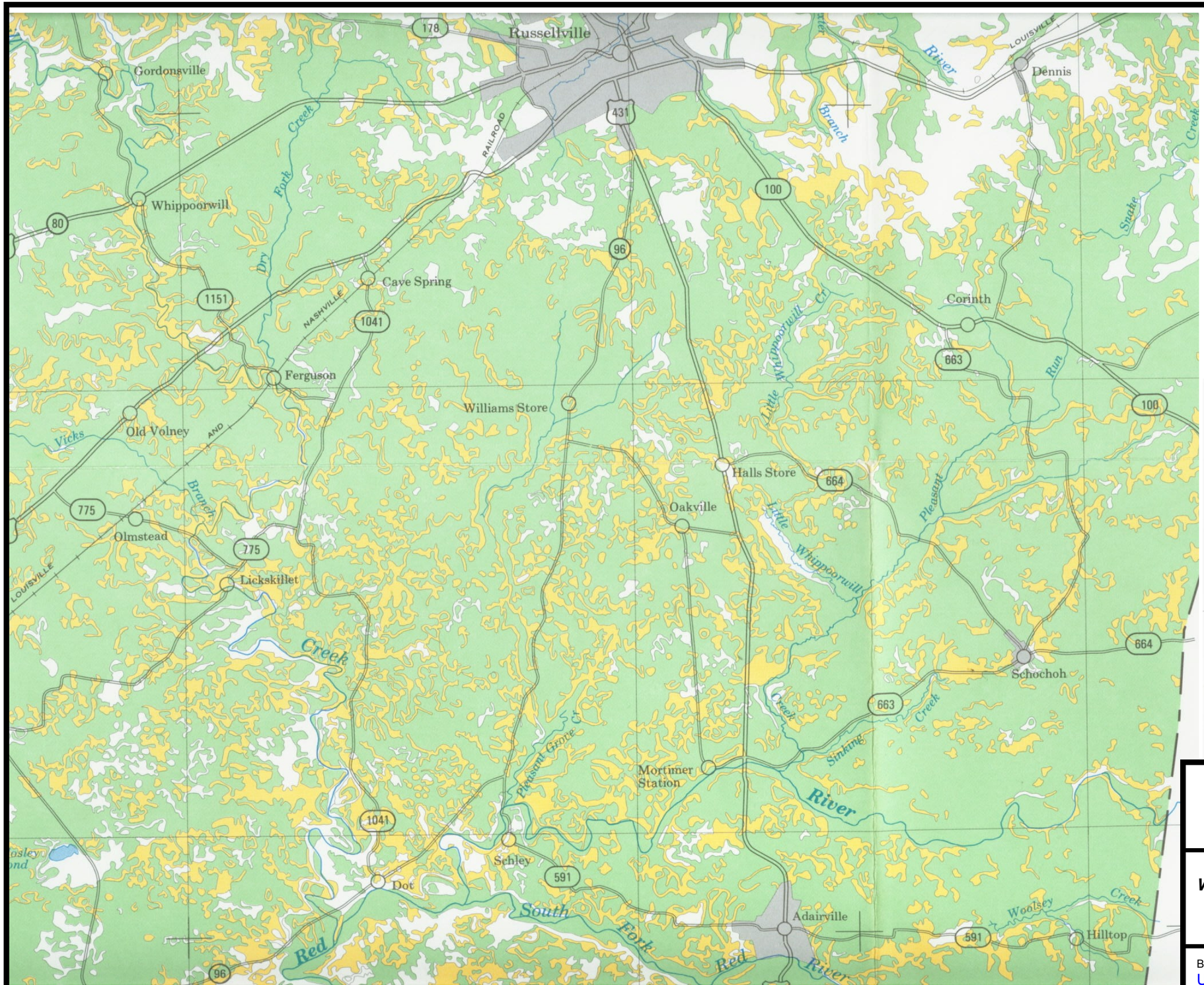
Guthrie, Kentucky

South Logan Water Association

Water Office & Southern Bypass Extension

Flood Zone Vicinity Map—Russellville

FEMA Flood Map:	Scale:	Exhibit:
Multi Panel 21141C	None	4



N

LEGEND

- Prime farmland
  Total acres - 194,000
- Unique farmland, other than prime
  Total acres - none reported
- Additional farmland of statewide importance
  Total acres - 53,000
- Additional farmland of local importance
  Total acres - none reported
- Other land
- Water areas
- Approximate limits of urban growth

McGHEE ENGINEERING, INC.

Guthrie, Kentucky

South Logan Water Association

Water Office & Southern Bypass Extension

Important Farmlands

South Logan Area

Basemap:	Scale:	Exhibit:
USDA: Logan County	As Noted	5

Appendix A

Bid Tabulation & Results

South Logan Water Association

Water Office & Southern Bypass Waterline Project - Contract 1 (Waterlines)

TABULATION OF BIDS

Bids Received: February 1, 2022 @ 2:00 p.m.

No.	BASE BID ITEMS (PART A)	QUANTITY		*Abbico Contracting LLC Harned, KY* UNIT $	*Abbico Contracting LLC Harned, KY* TOTAL	*United Pipeline, Inc. Tompkinsville, KY* UNIT $	*United Pipeline, Inc. Tompkinsville, KY* TOTAL	*Jones Contracting, Inc. Lackey, KY* UNIT $	*Jones Contracting, Inc. Lackey, KY* TOTAL	*Twin States Utilities & Excav. Inc. Mt. Hermon, KY* UNIT $	*Twin States Utilities & Excav. Inc. Mt. Hermon, KY* TOTAL	*Cumberland Pipeline, LLC Columbia, KY* UNIT $	*Cumberland Pipeline, LLC Columbia, KY* TOTAL
1	8-inch Class 200 PVC Waterline	11,820	LF	$ 32.00	$ 378,240.00	$ 36.00	$ 425,520.00	$ 35.00	$ 413,700.00	$ 39.00	$ 460,980.00	$ 39.00	$ 460,980.00
2	8-inch Class 250 PVC Yelomine Certa-Lok Waterline	420	LF	$ 45.00	$ 18,900.00	$ 50.00	$ 21,000.00	$ 47.50	$ 19,950.00	$ 47.00	$ 19,740.00	$ 55.00	$ 23,100.00
3	8-inch Class 350 DIP Waterline	400	LF	$ 100.00	$ 40,000.00	$ 55.00	$ 22,000.00	$ 53.00	$ 21,200.00	$ 65.00	$ 26,000.00	$ 69.00	$ 27,600.00
4	6-inch Class 200 PVC Waterline	675	LF	$ 20.00	$ 13,500.00	$ 26.00	$ 17,550.00	$ 30.00	$ 20,250.00	$ 31.00	$ 20,925.00	$ 28.00	$ 18,900.00
5	Final Cleanup of Affected Pipeline Route	12,875	LF	$ 3.00	$ 38,625.00	$ 3.00	$ 38,625.00	$ 3.50	$ 45,062.50	$ 3.00	$ 38,625.00	$ 3.00	$ 38,625.00
6	Steel Cased Road Bore (16-inch)	400	LF	$ 325.00	$ 130,000.00	$ 240.00	$ 96,000.00	$ 325.00	$ 130,000.00	$ 283.00	$ 113,200.00	$ 506.00	$ 202,400.00
7	Uncased Driveway Bore	40	LF	$ 120.00	$ 4,800.00	$ 65.00	$ 2,600.00	$ 125.00	$ 5,000.00	$ 75.00	$ 3,000.00	$ 90.00	$ 3,600.00
8	10"x8" Tapping Sleeve, Valve, & Box	1	EA	$ 5,700.00	$ 5,700.00	$ 4,200.00	$ 4,200.00	$ 5,550.00	$ 5,550.00	$ 5,750.00	$ 5,750.00	$ 5,875.00	$ 5,875.00
9	8"x8" Tapping Sleeve, Valve, & Box	1	EA	$ 5,400.00	$ 5,400.00	$ 3,900.00	$ 3,900.00	$ 5,200.00	$ 5,200.00	$ 5,229.00	$ 5,229.00	$ 5,711.00	$ 5,711.00
10	6"x6" Tapping Sleeve, Valve, & Box	1	EA	$ 4,600.00	$ 4,600.00	$ 2,900.00	$ 2,900.00	$ 4,350.00	$ 4,350.00	$ 4,404.00	$ 4,404.00	$ 4,362.00	$ 4,362.00
11	8" Gate Valve & Box	6	EA	$ 2,100.00	$ 12,600.00	$ 2,600.00	$ 15,600.00	$ 2,600.00	$ 15,600.00	$ 2,171.00	$ 13,026.00	$ 2,520.00	$ 15,120.00
12	6" Gate Valve & Box	1	EA	$ 1,600.00	$ 1,600.00	$ 2,000.00	$ 2,000.00	$ 2,000.00	$ 2,000.00	$ 1,500.00	$ 1,500.00	$ 1,981.00	$ 1,981.00
13	Large Flush Hydrant, including 6" Gate Valve	3	EA	$ 6,000.00	$ 18,000.00	$ 7,500.00	$ 22,500.00	$ 7,600.00	$ 22,800.00	$ 5,914.00	$ 17,742.00	$ 6,671.00	$ 20,013.00
14	Connect to Existing 2" Waterline	1	EA	$ 1,700.00	$ 1,700.00	$ 2,000.00	$ 2,000.00	$ 450.00	$ 450.00	$ 3,759.00	$ 3,759.00	$ 2,315.00	$ 2,315.00
15	Plug & Cap Existing 2-inch Line	1	EA	$ 1,500.00	$ 1,500.00	$ 2,000.00	$ 2,000.00	$ 550.00	$ 550.00	$ 2,371.00	$ 2,371.00	$ 1,820.00	$ 1,820.00
	Total Amount of Base Bid (Part A)				*$ 675,165.00*		*$ 678,395.00*		*$ 711,662.50*		*$ 736,251.00*		*$ 832,402.00*

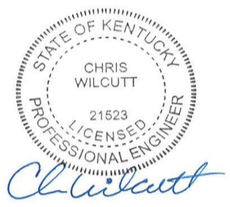
No.	ADD ALTERNATE BID ITEMS (PART B)	QUANTITY		UNIT $	TOTAL	UNIT $	TOTAL	UNIT $	TOTAL	UNIT $	TOTAL	UNIT $	TOTAL
1	8-inch Class 200 PVC Waterline	3,920	LF	$ 50.00	$ 196,000.00	$ 50.00	$ 196,000.00	$ 35.00	$ 137,200.00	$ 39.00	$ 152,880.00	$ 39.00	$ 152,880.00
2	8-inch Class 250 PVC Yelomine Certa-Lok Waterline	60	LF	$ 80.00	$ 4,800.00	$ 60.00	$ 3,600.00	$ 47.50	$ 2,850.00	$ 47.00	$ 2,820.00	$ 55.00	$ 3,300.00
3	Final Cleanup of Affected Pipeline Route	3,910	LF	$ 5.00	$ 19,550.00	$ 3.00	$ 11,730.00	$ 3.50	$ 13,685.00	$ 3.00	$ 11,730.00	$ 3.00	$ 11,730.00
4	Steel Cased Road Bore (16-inch)	30	LF	$ 425.00	$ 12,750.00	$ 280.00	$ 8,400.00	$ 325.00	$ 9,750.00	$ 283.00	$ 8,490.00	$ 523.00	$ 15,690.00
5	Cased, Open Cut Road Crossing (16-inch)	40	LF	$ 250.00	$ 10,000.00	$ 140.00	$ 5,600.00	$ 175.00	$ 7,000.00	$ 185.00	$ 7,400.00	$ 184.00	$ 7,360.00
6	8"x8" Tapping Sleeve, Valve, & Box	1	EA	$ 5,400.00	$ 5,400.00	$ 3,900.00	$ 3,900.00	$ 5,200.00	$ 5,200.00	$ 5,229.00	$ 5,229.00	$ 5,711.00	$ 5,711.00
7	8" Gate Valve & Box	2	EA	$ 2,100.00	$ 4,200.00	$ 2,600.00	$ 5,200.00	$ 2,600.00	$ 5,200.00	$ 2,171.00	$ 4,342.00	$ 2,520.00	$ 5,040.00
8	Large Flush Hydrant, including 6" Gate Valve	1	EA	$ 6,000.00	$ 6,000.00	$ 7,500.00	$ 7,500.00	$ 7,600.00	$ 7,600.00	$ 5,914.00	$ 5,914.00	$ 6,671.00	$ 6,671.00
10	Plug & Cap Existing 8-inch Line	1	EA	$ 3,000.00	$ 3,000.00	$ 3,000.00	$ 3,000.00	$ 800.00	$ 800.00	$ 2,400.00	$ 2,400.00	$ 2,009.00	$ 2,009.00
	Total Amount of Add Alternate Bid (Part B)				*$ 261,700.00*		*$ 244,930.00*		*$ 189,285.00*		*$ 201,205.00*		*$ 210,391.00*

No.	ADD ALTERNATE BID ITEMS (PART C)	QUANTITY		UNIT $	TOTAL	UNIT $	TOTAL	UNIT $	TOTAL	UNIT $	TOTAL	UNIT $	TOTAL
1	Remote Master Meter for SCADA	1	LS	$ 78,000.00	$ 78,000.00	$ 81,000.00	$ 81,000.00	$ 48,865.00	$ 48,865.00	$ 57,000.00	$ 57,000.00	$ 80,500.00	$ 80,500.00
	Total Amount of Add Alternate Bid (Part C)				*$ 78,000.00*		*$ 81,000.00*		*$ 48,865.00*		*$ 57,000.00*		*$ 80,500.00*

No.	SUPPLEMENTAL BID ITEMS	QUANTITY		UNIT $	TOTAL	UNIT $	TOTAL	UNIT $	TOTAL	UNIT $	TOTAL	UNIT $	TOTAL
1	Unclassified Undercut	1	CY	$ 100.00	$ 100.00	$ 50.00	$ 50.00	$ 75.00	$ 75.00	$ 100.00	$ 100.00	$ 150.00	$ 150.00
2	No. 57 Aggregate Refill	1	Ton	$ 50.00	$ 50.00	$ 40.00	$ 40.00	$ 32.00	$ 32.00	$ 60.00	$ 60.00	$ 25.00	$ 25.00
3	Class 'B' Concrete Refill	1	CY	$ 400.00	$ 400.00	$ 300.00	$ 300.00	$ 300.00	$ 300.00	$ 300.00	$ 300.00	$ 200.00	$ 200.00
4	Miscellaneous Waterline Marker	1	EA	$ 100.00	$ 100.00	$ 50.00	$ 50.00	$ 125.00	$ 125.00	$ 100.00	$ 100.00	$ 155.00	$ 155.00
5	EZ Valve Insertion on 8" Waterline	1	EA	$ 12,000.00	$ 12,000.00	$ 15,000.00	$ 15,000.00	$ 10,150.00	$ 10,150.00	$ 12,393.00	$ 12,393.00	$ 7,667.00	$ 7,667.00
6	Gate Valve Addition on 8" Waterline via 'cut-in' method	1	EA	$ 8,000.00	$ 8,000.00	$ 2,500.00	$ 2,500.00	$ 3,200.00	$ 3,200.00	$ 3,971.00	$ 3,971.00	$ 5,300.00	$ 5,300.00
7	EZ Valve Insertion on 6" Waterline	1	EA	$ 10,000.00	$ 10,000.00	$ 13,000.00	$ 13,000.00	$ 9,875.00	$ 9,875.00	$ 11,628.00	$ 11,628.00	$ 7,221.00	$ 7,221.00
8	Gate Valve Addition on 6" Waterline via 'cut-in' method	1	EA	$ 6,000.00	$ 6,000.00	$ 2,000.00	$ 2,000.00	$ 2,025.00	$ 2,025.00	$ 3,504.00	$ 3,504.00	$ 4,653.00	$ 4,653.00
9	Pavement Replacement (Asphalt) & Stone Backfill	1	LF	$ 120.00	$ 120.00	$ 60.00	$ 60.00	$ 42.00	$ 42.00	$ 200.00	$ 200.00	$ 150.00	$ 150.00
10	Air Release Valve & Box	1	EA	$ 4,600.00	$ 4,600.00	$ 2,500.00	$ 2,500.00	$ 2,400.00	$ 2,400.00	$ 5,936.00	$ 5,936.00	$ 3,965.00	$ 3,965.00
11	Polyethylene Wrap of Ductile Iron Pipe	1	LF	$ 6.00	$ 6.00	$ 15.00	$ 15.00	$ 3.50	$ 3.50	$ 5.00	$ 5.00	$ 4.00	$ 4.00

Engineer:
McGhee Engineering, Inc.
P. O. Box 267
Guthrie, Kentucky 42234
(270) 483-9985

Owner:
South Logan Water Association
114 South Main Street
Adairville, Kentucky 42202
(270) 539-6730



PLANHOLDERS LIST

Owner: ***South Logan Water Association*** Engineer: **McGhee Engineering, Inc.**
Project: Water Office & Southern Bypass - Contract 2 Bid Date: Tuesday, February 1, 2022 (2:30 pm)

SET NO.	COMPANY	ADDRESS	BID PRICE	CONTACT INFO	
1	Scott, Murphy & Daniel LLC *General Contractor*	2335 Barren River Road Bowling Green, KY 42101	No Response	Phone: Fax: Contact:	
2	C&C Contracting LLC *General Contractor*	816 Meadow Lane Russellville, KY 42276	$1,158,051	Phone: Fax: Contact:	
3	PTL Fabricators *General Contractor*	681 International Blvd Clarksville, TN 37040	No Response	Phone: Fax: Contact:	
4	Westerfield Builders, Inc. *General Contractor*	1012 S. Liberty Street Hopkinsville, KY 42240	$1,202,229	Phone: Fax: Contact: