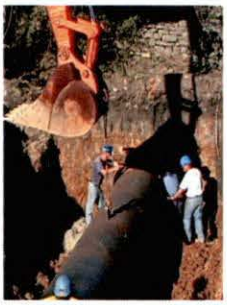
PRELIMINARY ENGINEERING REPORT

TODD COUNTY WATER DISTRICT
HIGHWAY 181 LINE UPGRADE PROJECT

April 2014





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Preliminary Engineering Report

prepared for the

Todd County Water District

Highway 181 Line Upgrade Project

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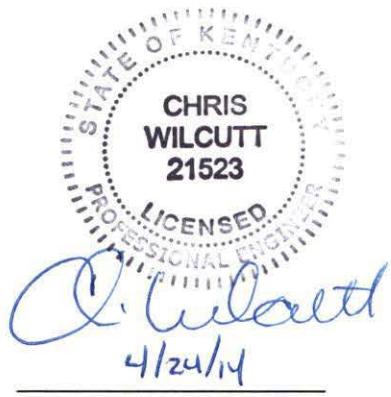

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1.0 INTRODUCTION

The Todd County Water District (TCWD) was chartered in 1971 to supply potable water to rural residents of Todd County, Kentucky. The District is governed by five board members, and is regulated by the Kentucky Public Service Commission. The Board includes three members from Todd County and two from Logan County because of the significant number of customers served by the TCWD in the Lake Malone area of Logan County. Todd County has authority to plan, design, finance, construct, operate, replace and maintain the distribution facilities within its service area.

The Todd County water system is comprised of nearly 450 miles of water distribution lines and four water storage tanks with an approximate total capacity of 1,378,000 gallons, all of which serves approximately 3,335 customers in rural Todd County and a small portion of northwestern Logan County and southeastern Christian County. As of Spring 2003, the Todd County Water District began to purchase all of its treated water from the Logan Todd Regional Water Commission (LTRWC). The Commission's water treatment facility is rated at 10 million gallons per day, and its distribution system consists of nearly 85 miles of pipeline and three storage tanks totaling 3,500,000 gallons in capacity. Per the Commission's 2013 records, the average daily wholesale water demand within the Todd County system was 530,000 gallons per day. Todd County has four meter stations with the Commission, two located in the southern parts of the county, one north of Elkton, and an inactive station at Allensville.

The TCWD is a relatively large water system covering approximately 90% of the Todd County area. With the exception of a few isolated locations in the west and southwest parts of the county, most of the roads within the county have water service, with only short extensions needed from time to time to accommodate new development.

The main problems that have plagued the District were 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 recent USDA extension projects have resolved the majority of these problems. However, there are many original areas that are now strained due to the dramatic growth of the District. To initiate a solution to alleviating these "growing pains", the Todd County Water District has requested funding assistance to undertake their Highway 181 Waterline Upgrade Project.

The proposed project involves construction of over 11 miles of water line upgrade and replacement along KY Highway 181. This corridor is the primary transmission line for the northern half of Todd County, and it links their feed from the Logan Todd Regional Water Commission at Allender's Hill north to the Clifty community. The total cost of the proposed project is estimated to be $4,200,000.

2.0 PROJECT PLANNING AREA

2.1 *Location*

The waterline construction of the Todd County Water District's project will be contained to one highway corridor. Over 11 miles of new waterline upgrade and replacement are proposed along KY Highway 181, between Elkton and the Clifty community. The KY Highway 181 section between Allender's Hill and the Highland Lick Road intersection will consist of 12" piping, and the remaining section to Clifty will consist of 10" piping. Both PVC and ductile iron piping will be considered for the upgrades.

The proposed project is illustrated with a profile and aerial background on Exhibit E-1, and it's illustrated on the county highway map which is labeled as Exhibit E-2.

2.2 *Land Use and Environmental Resources Present*

As stated earlier, the line portion of the project is contained entirely to a section of KY Highway 181, just over 11 miles of roadway in the northern rural area of Todd County. The line work is proposed to be constructed within utility easements previously acquired or to be acquired by the Todd County Water District. The project will affect four main resources during construction: residential, agriculture, grazing and transportation. The general construction effect to the resources is the disturbances associated with building the facilities. No long-term impact is expected to any environmental resource.

An archeological investigation is not anticipated for the affected line routes due to the fact these areas have been previously disturbed. However, if such an investigation is warranted, Dr. Jack Schock of Arrow Enterprises 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:

- An aerial map (with pipe profile) and a highway map of the proposed water lines, indicating the areas to be affected and the surrounding area, are attached as Exhibits 1 and 2, respectively.
- Soil survey data from the Soil Conservation Service is shown in Exhibit 3.
- Waterlines that are near or traverse through defined FEMA floodplain zones are illustrated in Exhibits 4 thru 7.

2.3 *Growth Areas and Population Trends*

The population history of Todd County is an important element in determining the growth patterns over the last 70 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, Todd County's population has averaged around 12,000 persons for the past eight census collections. Table 1 provides the population history and projections of the county based on data obtained from the U.S. Bureau of the Census.

Table 1
Population History and Projections

		Historical								Projections				
	YEAR	1940	1950	1960	1970	1980	1990	2000	2010	2015	2020	2025	2030	2035
TODD	Elkton	1,214	1,312	1,448	1,612	1,815	1,789	1,984	2,062	2,107	2,144	2,175	2,200	2,215
	Guthrie	1,272	1,253	1,211	1,200	1,361	1,504	1,469	1,419	1,450	1,476	1,497	1,514	1,525
	Trenton	572	577	542	496	465	378	419	384	392	399	405	410	413
	Rural Areas	11,176	9,748	8,163	7,515	8,233	7,269	8,099	8,595	8,781	8,939	9,067	9,168	9,234
	Todd County	14,234	12,890	11,364	10,823	11,874	10,940	11,971	12,460	12,730	12,958	13,144	13,292	13,387
	% Change		-9.4%	-11.8%	-4.8%	9.7%	-7.9%	9.4%	4.1%	2.2%	1.8%	1.4%	1.1%	0.7%
	Notes to Table 1:	1. Shaded areas have been calculated based on census and projection data.												
	Sources to Table 1:	1. Historical & Projections provided by the KY State Data Center and Census Bureau University of Louisville, State Data Center (http://cbpa.louisville.edu/ksdc/)												

Analyzing Table 2 from 1940 to 2010 shows that Elkton and Guthrie have grown overall with some fluctuations, but Trenton and the rural areas have declined in population since 1940. The rural areas of Todd County show a growing trend, evident by the greater customer base of the Todd County Water District. The past two censuses reveal growth in the county overall, and projections call for modest growth over the next 25 years.

Several factors influence the growth of a community, some of which include accessibility, technology, education, water infrastructure, sewer facilities, and jobs. In recent years, the community has experienced the benefit of the US Highway 68 four-lane project among others, which has increased the areas 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 becoming more readily available to the communities, creating greater and easier contact to the rest of the world. The local school system is strong and provides a quality education. Over the past decade, the District and other communities within the county have worked together to secure a reliable source of potable water for the foreseeable future as the county went online with the Logan Todd Regional Water Commission in 2003.

Further analysis of these projections indicates Todd County's population is projected to grow modestly every five years, adding about 927 persons by 2035. It should be noted that population would be impacted by the availability or unavailability of water supply. An ample and readily available 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 Todd County Water District (TCWD) was formed by Todd County Court order in 1971 to supply potable water to rural residents of Todd County, Kentucky. There are four public water systems in Todd County, those being Elkton, Guthrie, Trenton and the TCWD. The Elkton and Guthrie systems serve the incorporated areas of those communities and only limited areas adjacent to town. The Trenton system serves the town's incorporated area, and a portion of the rural area south of town along Highway 104.

The TCWD water system is comprised of approximately 447 miles of water line and a total water storage capacity of 1,378,000 gallons. The existing distribution system consists of 10", 8", 6", 4", and 3" PVC lines. The general service area is depicted in Exhibit 2, which illustrates the general distribution layout. The existing transmission and distribution lines generally radiate from their decommissioned (2003) water treatment plant located near the Allegre community in northern Todd County. 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.

TCWD has four water storage structures to serve the water system and one primary pumping station that boosts water into the higher-pressure north zone. Only three of the four existing water storage tanks provide useful storage for the TCWD system. The newly constructed Coal Bank elevated water tank and the Clifty tank provide 500,000 and 250,000 gallons of storage respectively to the northern pressure zone. The Hammacksville elevated tank has a storage capacity of 250,000 gallons and provides pressure to a small area in the southwestern part of the County. The fourth tank located on Allenders Hill acts as a pump tank for the Logan Todd Regional Water Commission's booster pump station at that location. Currently, the southern part of the county is served directly from an existing 1,500,000 gallon elevated tank owned by the LTRWC.

The Logan Todd Regional system supplies water to the TCWD system in three locations. The southern feed point is located at the base of the LTRWC tank described above, while the others are located at the Allender's Hill tank in northern Todd County and at Trenton for the Hammacksville tank area. Flow through each of these metering points is controlled by the LTRWC SCADA system. The northern pressure zone is controlled by water levels in the Clifty and Coal Bank Road tanks. The southern pressure zone is fed directly from the LTRWC tank, and the Trenton feed is controlled by the water level in the Hammacksville tank.

3.2 *Regulatory Compliance*

According to the Division of Water's remarks within the Clearinghouse Comments, the Todd County 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 *Rate Schedules*

All Meter Sizes *(Current Rates effective 3-1-14)*

First	2,000	Gallons @	$ 21.60	Minimum
Next	8,000	Gallons @	$ 11.30	per 1,000 Gallons
Next	10,000	Gallons @	$ 10.09	per 1,000 Gallons
Next	20,000	Gallons @	$ 8.87	per 1,000 Gallons
All Over	40,000	Gallons @	$ 7.39	per 1,000 Gallons

All Meter Sizes *(Previous Rates reflective in the 2013 Financial Statement)*

First	2,000	Gallons @	$ 21.40	Minimum
Next	8,000	Gallons @	$ 11.20	per 1,000 Gallons
Next	10,000	Gallons @	$ 9.99	per 1,000 Gallons
Next	20,000	Gallons @	$ 8.77	per 1,000 Gallons
All Over	40,000	Gallons @	$ 7.29	per 1,000 Gallons

3.3.2 *O&M Costs (FYE 12/31/13)*

Item No.	Expense Item	Amount
1	Payroll Expense	$ 334,276.00
2	Purchased Water	$ 738,591.00
3	Distribution Expense	$ 53,975.00
4	Contract & Professional Services	$ 62,099.00
5	Utilities	$ 39,097.00
6	Administrative Expense	$ 24,737.00
7	Office Expenses	$ 37,298.00
8	Depreciation	$ 484,161.00
9	Insurance	$ 43,783.00
10	Travel	$ 29,593.00
11	Bad Debts	$ 23,297.00
12	Miscellaneous	$ 7,519.00
	Total Utility Expense	**$ 1,878,426.00**

3.3.3 *Long Term Debts (as of 12/31/13)*

Date of Issue	Bond/Note Holder	Principal Balance	Maturity Date	Bond Type	Interest Rate
2005	Rural Dev	$ 1,021,000	2045	Revenue	4.125%
2008	Rural Dev	$ 1,736,500	2048	Revenue	4.125%
2011	Rural Dev	$ 994,000	2051	Revenue	3.000%
2012	KY Rural Water	$ 2,110,000	2033	Revenue	2.875%
Total		$ 5,861,500			

4.0 NEED FOR PROJECT

4.1 *Health and Safety*

Portions of the Todd County Water District are currently strained due to growth and recent expansion projects to serve unserved areas. For many utilities, this type of strain limits the utility'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. Similarly, the District constantly battles line breaks of older pipelines as well as water loss within the system. Due to the vast area served, the Todd County Water District 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 District constantly has to balance its effort to minimize water loss with its requirement to deliver proper pressure and flow.

4.2 *System O&M*

There is one primary reason for the District's proposed project, which is to reduce interruptions of service from older line breaks and improve its ability to supply stable pressures above the Ten States Standard threshold. The water system has experienced the majority of its growth in some of the original constructed areas of the water system. During pipeline breaks on the primary distribution lines, the secondary feeder lines are incapable of providing adequate flows resulting in unacceptable pressures. Also, this problem has shown not only to be a nuisance to the maintenance crews in non-ideal conditions but also very costly to the District's finances due to material needs, overtime pay, and equipment costs.

4.3 *Growth*

As mentioned earlier, the population of Todd County should grow by nearly 7.5% over the next 25 years based upon reliable census records and expected growth. The proposed project is necessary to provide continued and reliable water service to all its nearly 3,335 customers. The new infrastructure will insure the District'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 Todd County Water District is a relatively simple project with two alternatives.

5.1 *Alternative 1*

The first obvious alternative is to do nothing or a smaller variation of the project. However, the District would 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 one that offers several advantages and alleviates the growing pains to its primary transmission line in north Todd. The alternative replaces system-plaguing pipeline sections known for leaks, and the project upgrades this transmission line with larger diameter piping to better deliver sufficient quantity to the northern reaches of the county. The project adheres with the Commonwealth's drive to provide a reliable and potable water source to all families by the year 2020.

5.2.1 *Description*

The project involves construction of over 11 miles of new waterline upgrade and replacement along KY Highway 181, between Elkton and the Clifty community. The KY Highway 181 section between Allender's Hill and the Highland Lick Road intersection will consist of 12" piping, and the remaining section to Clifty will consist of 10" piping. Both PVC and ductile iron piping will be considered for the upgrades. These lines are being built to improve the hydraulic performance of the existing distribution system. Some of the lower pressure areas will be improved by the up-sizing and reconnection of branching lines.

The alternative is illustrated in Exhibit 1 and 2.

5.2.2 *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 along existing easements and highways. The line replacement and upgrade is proposed for construction in existing pipeline easements where possible or in county/state right-of-way and new easements, as needed. As mentioned earlier, the project will affect four main resources during construction: residential, agriculture, grazing 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 facilities is complete.

5.2.3 *Construction Problems*

There are no severe construction problems foreseen for the project. The Todd County service 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, but none of which should be unmanageable or exceptionally costly.

5.2.4 *Cost Estimates*

The Todd County Water District's Highway 181 Line Upgrade Project is estimated to have a total cost of $4,200,000. The project cost consists of construction, non-construction and contingency costs, which are $3,400,000, $460,000 and $340,000 respectively. The project is anticipated to be funded in part by a $1,250,000 grant and $2,950,000 loan, all 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. Based upon 2013 figures from LTRWC, the water treatment plant is producing approximately 3,600,000 gallons per day, which is approximately 36% of the design capacity. Therefore, sufficient capacity exists to serve the Todd County project since no new customers are expected.

6.1.2 *Storage*

The proposed project will not include any additions to or modifications of the District's water storage facilities. Adequate storage volume exists at their Coal Bank and Clifty tank sites, which both presently serve the affected line route area.

6.1.3 *Distribution Layout*

The waterline construction of the Todd County Water District's system upgrade project will be contained solely to a 60,000 LF section of KY Highway 181 in northern Todd County. The line portion of the project involves upgrading with approximately 27,000 LF of 12" treated water line and 33,000 LF of 10" treated water line. Both PVC and ductile iron piping will be considered for the upgrades.

The proposed line upgrade is illustrated in Exhibit 1 and 2.

6.1.4 *Regulatory Compliance*

The proposed project has been submitted to the Kentucky State Clearinghouse for their comments. The clearinghouse comments are included in Appendix A. 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 Todd County Water District 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 that the waterlines may be constructed as proposed. Detailed model results are available upon request.

6.2 *Cost Estimate*

The proposed itemized cost estimate of the Todd County Water District's Highway 181 Line Upgrade Project is shown in Table 2.

Table 2
Project Cost Estimate

CONSTRUCTION COSTS				
Item	**Quantity**	**Units**	**Unit Price**	**Total**
12" DIP Water Line (AH Tank to NTPS)	27,000	LF	$ 40.00	$ 1,080,000
10" DIP Water Line (NTPS to Clifty Tank)	33,000	LF	$ 35.00	$ 1,155,000
12" Gate Valve & Box	27	EA	$ 2,500.00	$ 67,500
10" Gate Valve & Box	33	EA	$ 2,000.00	$ 66,000
8" Gate Valve & Box	4	EA	$ 1,525.00	$ 6,100
6" Gate Valve & Box	12	EA	$ 1,250.00	$ 15,000
4" Gate Valve & Box	20	EA	$ 1,000.00	$ 20,000
3" Gate Valve & Box	12	EA	$ 1,000.00	$ 12,000
Reconnect to Existing 8" Line	4	EA	$ 800.00	$ 3,200
Reconnect to Existing 6" Line	12	EA	$ 600.00	$ 7,200
Reconnect to Existing 4" Line	20	EA	$ 500.00	$ 10,000
Reconnect to Existing 3" Line	12	EA	$ 400.00	$ 4,800
Cap & Abandon Existing Line	48	EA	$ 125.00	$ 6,000
Fire Hydrants	50	EA	$ 3,000.00	$ 150,000
Steel Cased Road Bore	3,500	LF	$ 150.00	$ 525,000
Service Reconnections	300	EA	$ 250.00	$ 75,000
Pavement Restoration	1,600	SY	$ 42.00	$ 67,200
Yard Restoration	65,000	SY	$ 2.00	$ 130,000
SUBTOTAL - Construction				**$ 3,400,000**
NON-CONSTRUCTION COSTS				
Administrative Costs				$ 20,000
Legal Costs				$ 25,000
Preliminary Engineering & Environmental Services				$ 25,000
Surveys & Hydraulic Model				$ 17,000
Design Engineering				$ 169,000
Construction Phase Engineering Services				$ 72,000
Construction Inspection				$ 132,000
SUBTOTAL - Non-Construction				**$ 460,000**
Contingency				$ 340,000
TOTAL ESTIMATED PROJECT COST				**$ 4,200,000**

6.3 *Annual Operating Budget*

The proposed annual operating budget for the Todd County Water District's Highway 181 Line Upgrade Project is shown in Table 3.

Table 3
Proposed Operating Budget

Operating Income	Existing [1]	Extension Only		Future	
Water Sales	$1,834,599.00	$0.00	[3]	$2,109,788.85	[9]
Late Charges	$34,734.00	$0.00		$34,734.00	
Other Charges	$78,775.00	$0.00		$78,775.00	
Total Operating Income	$1,948,108.00	$0.00		$2,223,297.85	
Operating and Maintenance Expense					
Purchased Water	$738,591.00	$0.00	[3]	$756,280.00	[5]
Payroll Expense	$334,276.00	$10,030.00	[4]	$344,306.00	
Distribution Expense	$53,975.00	$1,620.00	[4]	$55,595.00	
Contract Services	$62,099.00	$1,860.00	[4]	$63,959.00	
Utilities & Telephone	$39,097.00	$1,170.00	[4]	$40,267.00	
Administrative Expense	$24,737.00	$740.00	[4]	$25,477.00	
Office Expenses	$37,298.00	$1,120.00	[4]	$38,418.00	
Insurance	$43,783.00	$1,310.00	[4]	$45,093.00	
Travel	$29,593.00	$890.00	[4]	$30,483.00	
Bad Debts	$23,297.00	$700.00	[4]	$23,997.00	
Miscellaneous	$7,519.00	$230.00	[4]	$7,749.00	
Total Operating Expenses	$1,394,265.00	$19,670.00		$1,431,624.00	
Net Operating Income	$553,843.00	($19,670.00)		$791,673.85	
Non-Operating Income (Expense)					
Interest Income	$9,604.00	$0.00		$9,604.00	
RUS Interest (Bonds pre-2014)	($203,981.00)	$0.00		($197,674.00)	[7]
RUS Principal (Bonds pre-2014)	($92,000.00)	$0.00		($154,000.00)	[7]
RUS Interest (2015 Issue)	$0.00	($103,250.00)	[6]	($103,250.00)	[6]
RUS Principal (2015 Issue)	$0.00	($38,300.00)	[6]	($38,300.00)	[6]
Non-RUS Interest	$0.00	$0.00		$0.00	
Non-RUS Principal	$0.00	$0.00		$0.00	
Total Non-Operating Income & Debt	($286,377.00)	($141,550.00)		($483,620.00)	
Net for Coverage & Depreciation	$267,466.00	($161,220.00)		$308,053.85	
10% Debt Service Coverage	($29,598.00)	($14,155.00)		($49,322.00)	
Subtotal	$237,868.00	($175,375.00)		$258,731.85	
Short Lived Assets [2]	($33,840.00)	$0.00		($48,000.00)	
Net for Depreciation	$204,028.00	[8] ($175,375.00)		$210,731.85	

Notes:

1. Based on the December 31, 2013 Audit & PSC Report
2. The Short Lived Asset fund currently requires a contribution of $2,820/month. Proposed raise to $4,000/month.
3. Based on 0 new customers.
4. Based on 3% nominal increase due to anticipated annual cost increases.
5. Reflects 2013 total usage (193,423,000 gallons) @ current 2014 rate ($3.91/1,000 gallons)
6. Estimated Project Debt Service: Based on a **$2,950,000 RUS loan** at 3.5% and 38 payments
7. Debt Service per Amortization Schedules. 2015 Figures used for Future.
8. The 2013 Depreciation Expense was **$484,161** per the 2013 Audit
9. Approximate 15.0% rate increase (to the 2013 rates) required to maintain current Net for Depreciation

Based on the projections and assumptions outlined above, the commitment of a $1,250,000 Rural Development Grant and added revenues from the increased water rates is expected to produce an equivalent Net for Depreciation as depicted in the most recent audit. Without securing the referenced Rural Development grant, it is estimated that an additional 3.5% increase to the proposed water rates would be required to offset the increase in debt service and maintain the equivalent Net for Depreciation.

Table 4 illustrates the project's rate schedule with the requested RUS Grant, and Table 5 shows the necessary rate schedule if the project is undertaken without any grant funds and funded entirely with the RUS loan.

Table 4
Project Rate Schedule with RUS Grant

First	2,000	Gallons @	$ 24.61	Minimum
Next	8,000	Gallons @	$ 12.88	per 1,000 Gallons
Next	10,000	Gallons @	$ 11.49	per 1,000 Gallons
Next	20,000	Gallons @	$ 10.09	per 1,000 Gallons
All Over	40,000	Gallons @	$ 8.38	per 1,000 Gallons

Table 5
Project Rate Schedule without RUS Grant

First	2,000	Gallons @	$ 25.36	Minimum
Next	8,000	Gallons @	$ 13.27	per 1,000 Gallons
Next	10,000	Gallons @	$ 11.84	per 1,000 Gallons
Next	20,000	Gallons @	$ 10.39	per 1,000 Gallons
All Over	40,000	Gallons @	$ 8.64	per 1,000 Gallons

7.0 RECOMMENDED SOLUTION

In order to address the problems and needs of the water system, the Todd County Water District should do the following:

- Construct approximately 11.5 miles of upgraded waterline to better serve the north Todd customer base improve the system's hydraulics and water quality.
- Continue the application process for $1,250,000 in grant and $2,950,000 in loan from Rural Development.
- Initiate discussion among the District's Board of Directors concerning public awareness and implementation of raising water rates to fund the project if grant funds are unavailable.
- Continue pursuing different means of financing through other available agencies and methods.

Todd County Water District

Highway 181 Line Upgrade
Water Supply Line Profile

McGhee Engineering, Inc.
Guthrie, Kentucky

Date	Approximate Plan Scale	Page
September 18, 2013	1 IN =5,630 FT	E-1

Existing Allenders Hill Ground Storage Tank—378,000 Gal Capacity, O/F Elev 796, Existing LTRWC Booster Pump Station—474 GPM @ 290 FT, 50 HP

Existing North Todd Pump Station—320 GPM @ 250 FT, 40 HP

Existing Coal Bank Road Elevated Storage Tank—500,000 Gal, Capacity Overflow Elevation 924

Connect to Existing Clifty Elevated Storage Tank—250,000 Gal, Capacity Overflow Elevation 921

Elkton
Todd
Clifty
Grove
S Main St
Russellville Rd
Allegre Rd
Greenville Rd
Cliffy-Kirkmans
Rabbit Ridge Rd
8D
102
68
171
507
181
107
890
1118

3.38 mi

Imagery Date: 4/9/2013
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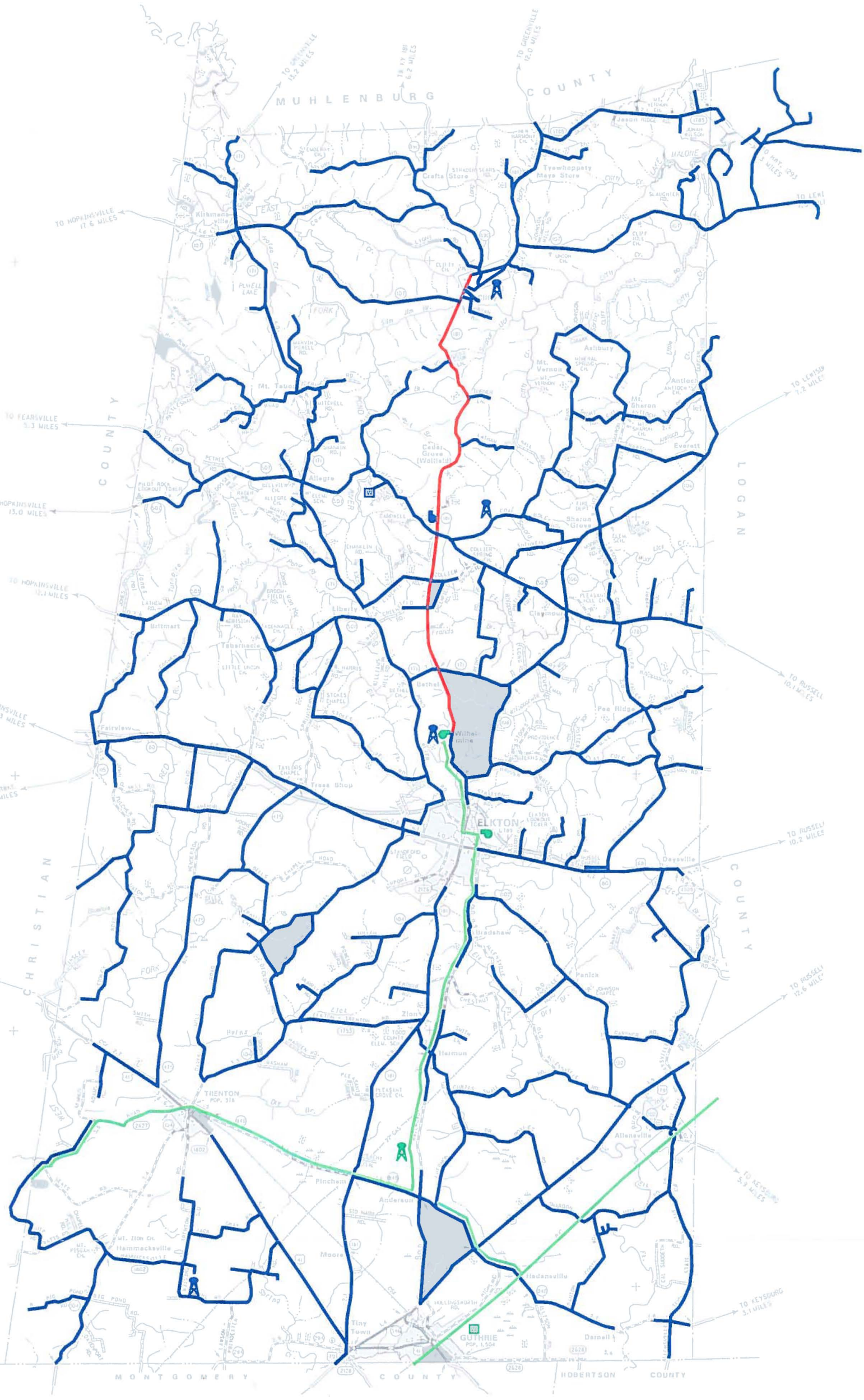
Image © 2013 DigitalGlobe
Image USDA Farm Service Agency
36°54'14.05" N 87°09'10.99" W elev 731 ft

LEGEND

- Existing Elevated Water Storage Tank
- Existing Ground Storage Tank
- Existing Booster Pump Station
- Proposed Water Line

Graph: Min, Avg, Max Elevation: 706, 763, 841 ft
Range Totals: Distance: 11.3 mi Elev Gain/Loss: 776 ft, -699 ft Max Slope: 18.1%, -16.8% Avg Slope: 2.4%, -2.3%



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0 1 2 3 4

Scale in Miles

Background Map KyDOT Todd County General Highway Map—1998

LEGEND

- Existing Water Line—TCWD
- Proposed Water Line Upgrade —TCWD
- Existing Water Line—LTRWC
- Existing Water Storage Tank
- Existing Pump Station

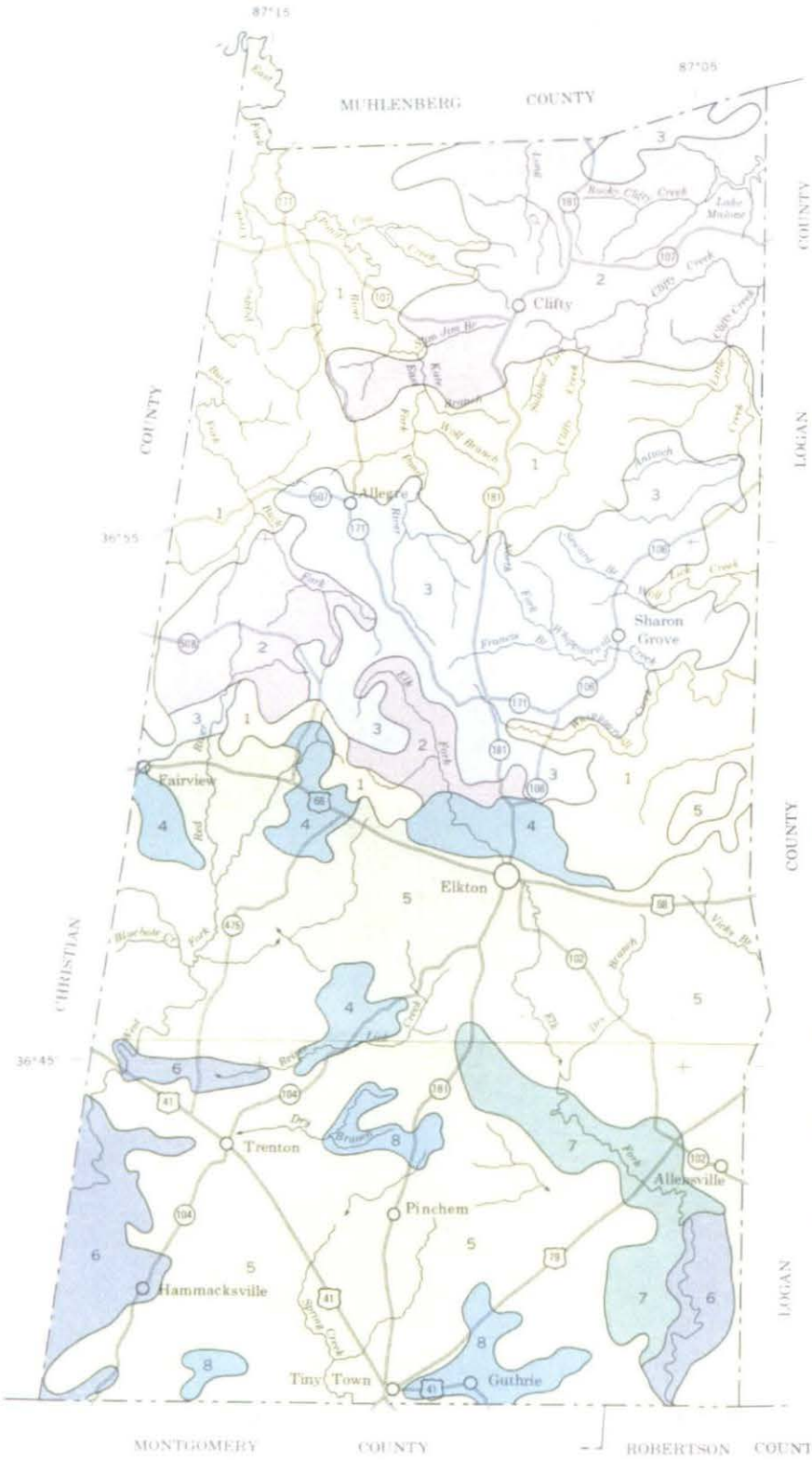
McGhee Engineering, Inc.
Guthrie, Kentucky

Todd County Water District

Highway 181 Line Upgrade Project

OVERALL PROJECT LAYOUT

By:	Scale:	Date:	Page:
Wilcutt	As Noted	March 2014	E-2



LEGEND

WELL DRAINED AND MODERATELY WELL DRAINED, VERY STEEP TO NEARLY LEVEL SOILS, UNDERLAIN BY SANDSTONE, SILTSTONE, SHALE, OR LIMESTONE

1 — Caneyville-Frondorf-Wellston. Well drained, steep to sloping, moderately deep and deep soils that are loamy and have a clayey or loamy subsoil, formed in residuum or in loess and residuum from limestone, sandstone, siltstone, or shale, on side slopes and ridges.

2 — Frondorf-Weikert-Zanesville. Well drained and moderately well drained, very steep to gently sloping, deep to shallow soils that are loamy and have a loamy subsoil, formed in loess and residuum or in residuum from sandstone, siltstone, or shale, on ridges and side slopes.

3 — Sadler-Zanesville. Moderately well drained and well drained, nearly level to sloping, deep soils that are loamy and have a loamy subsoil, formed in loess and residuum from sandstone, siltstone, or shale, on ridges.

WELL DRAINED TO POORLY DRAINED, NEARLY LEVEL TO MODERATELY STEEP SOILS, UNDERLAIN BY LIMESTONE

4 — Fredonia-Pembroke-Caneyville. Well drained, gently sloping and sloping, moderately deep and deep soils that are loamy and have a loamy or clayey subsoil, formed in residuum or in loess and residuum from limestone, on broad karst upland plains.

5 — Pembroke-Nicholson-Crider. Well drained and moderately well drained, nearly level to sloping, deep soils that are loamy and have dominantly a loamy subsoil, formed in loess and residuum from limestone, on broad upland plains.

6 — Hammack-Baxter-Crider. Well drained, gently sloping to moderately steep, deep soils that are loamy and have a loamy or clayey subsoil, formed in loess and residuum or in residuum from cherty limestone, on karst upland plains.

7 — Pembroke-Vertrees. Well drained, nearly level to sloping, deep soils that are loamy and have a loamy or clayey subsoil, formed in loess and residuum or in residuum from limestone, on karst upland plains.

8 — Robertsville-Lawrence. Poorly drained and somewhat poorly drained, nearly level, deep soils that are loamy and have a loamy subsoil, formed in alluvium or colluvium, on concave upland basins or stream terraces.

COMPILED 1986

Source: US Department of Agriculture, Soil Conservation Service, GENERAL SOIL MAP—Todd County, Kentucky—1986

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McGhee Engineering, Inc.

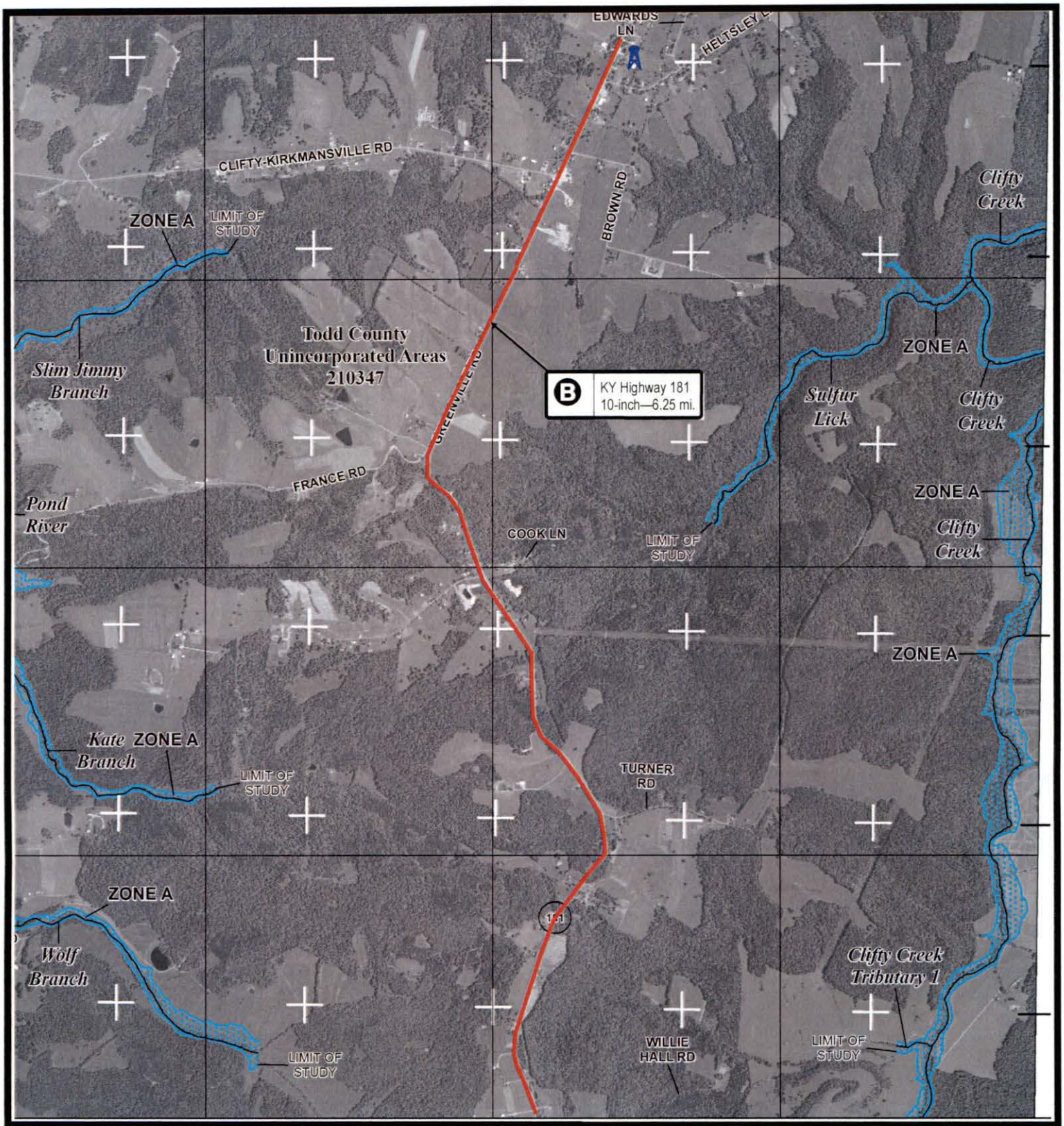
Guthrie, Kentucky

Todd County Water District

Highway 181 Line Upgrade Project

SOIL MAP

By:	Scale:	Date:	Page:
Wilcutt	As Noted	March 2014	E-3



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Source: FEMA-Flood Insurance Rate Map #21219C0125C
Todd County—July 22, 2010

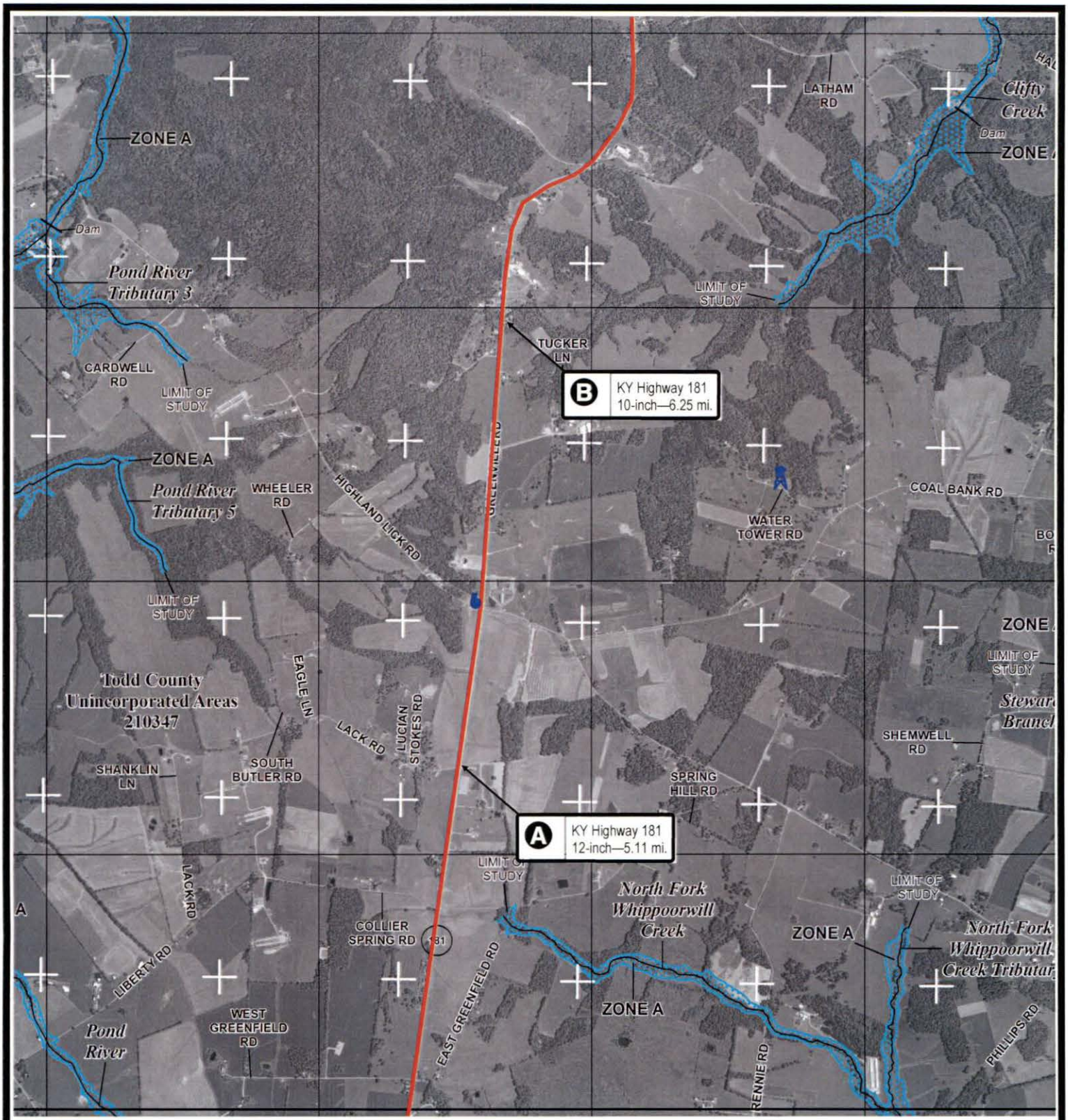
LEGEND

- Existing Water Storage Tank
- Existing Pump Station
- Proposed Water Line Upgrade —TCWD

McGHEE ENGINEERING, INC.
Guthrie, Kentucky

Todd County Water District
Highway 181 Line Upgrade Project
FLOOD MAP (1/4)

By:	Scale:	Date:	Page:
Wilcutt	None	March 2014	E-4



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Source: FEMA-Flood Insurance Rate Map #21219C0125C
Todd County—July 22, 2010

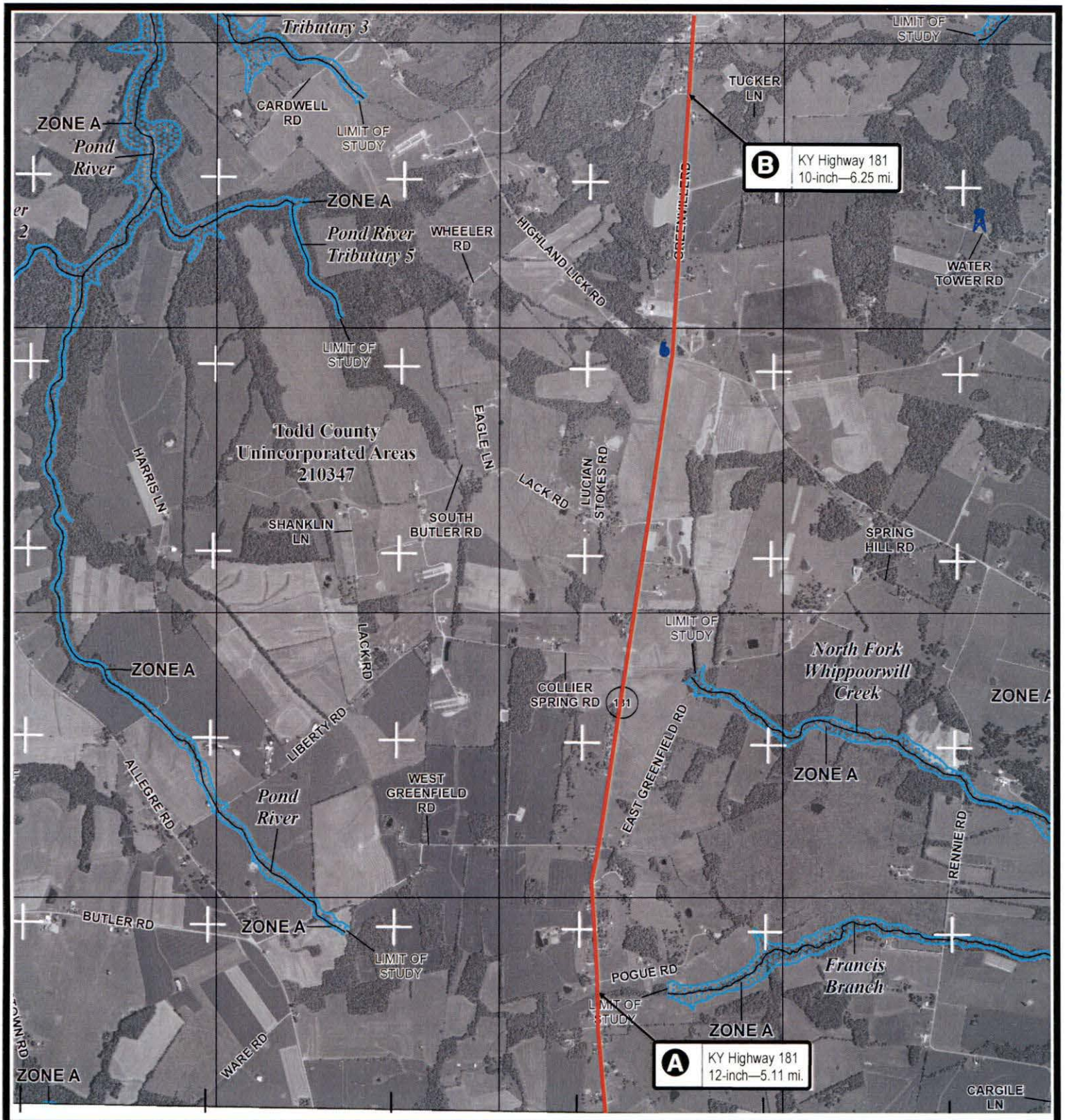
LEGEND

- Existing Water Storage Tank
- Existing Pump Station
- Proposed Water Line Upgrade —TCWD

McGHEE ENGINEERING, INC.
Guthrie, Kentucky

Todd County Water District
Highway 181 Line Upgrade Project
FLOOD MAP (2/4)

By:	Scale:	Date:	Page:
Wilcutt	None	March 2014	E-5



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Source: FEMA-Flood Insurance Rate Map #21219C0125C
Todd County—July 22, 2010

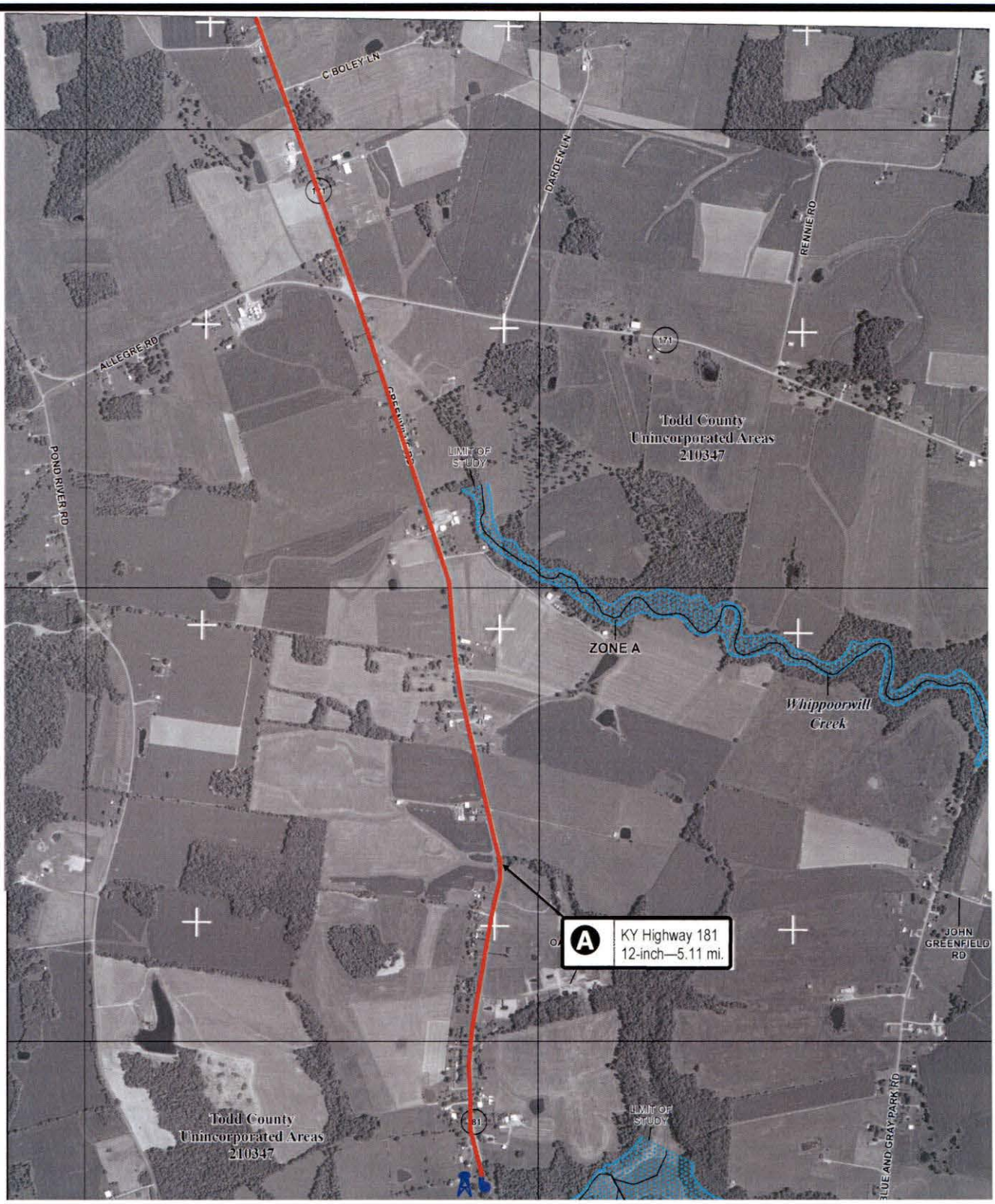
LEGEND

- Existing Water Storage Tank
- Existing Pump Station
- Proposed Water Line Upgrade —TCWD

McGHEE ENGINEERING, INC.
Guthrie, Kentucky

Todd County Water District
Highway 181 Line Upgrade Project
FLOOD MAP (3/4)

By:	Scale:	Date:	Page:
Wilcutt	None	March 2014	E-6



N

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Source: FEMA-Flood Insurance Rate Map #21219C0185C
Todd County—July 22, 2010

LEGEND

- Existing Water Storage Tank
- Existing Pump Station
- Proposed Water Line Upgrade —TCWD

McGHEE ENGINEERING, INC.

Guthrie, Kentucky

Todd County Water District

Highway 181 Line Upgrade Project

FLOOD MAP (4/4)

By:	Scale:	Date:	Page:
Wilcutt	None	March 2014	E-7

Appendix A

Kentucky State Clearinghouse Comments

STEVEN L. BESHEAR
GOVERNOR

DEPARTMENT FOR LOCAL GOVERNMENT
OFFICE OF THE GOVERNOR
1024 CAPITAL CENTER DRIVE, SUITE 340
FRANKFORT, KENTUCKY 40601-8204
PHONE (502) 573-2382 FAX (502) 573-2939
TOLL FREE (800) 346-5606
WWW.DLG.KY.GOV

TONY WILDER
COMMISSIONER

February 12, 2014

Mr. John-Michael Herring
Pennyrile Area Development District
300 Hammond Drive
Hopkinsville, KY 42240

RE: Todd County Water District - KY Hwy 181 Upgrade
WX21219018
SAI# KY20140121-0073
CFDA# 10-760

Dear Mr. Herring:

The Kentucky State Clearinghouse, which has been officially designated as the Commonwealth's Single Point of Contact (SPOC) pursuant to Presidential Executive Order 12372, has completed its evaluation of your proposal. The clearinghouse review of this proposal indicates there are no identifiable conflicts with any state or local plan, goal, or objective. Therefore, the State Clearinghouse recommends this project be approved for assistance by the cognizant federal agency.

Although the primary function of the State Single Point of Contact is to coordinate the state and local evaluation of your proposal, the Kentucky State Clearinghouse also utilizes this process to apprise the applicant of statutory and regulatory requirements or other types of information which could prove to be useful in the event the project is approved for assistance. Information of this nature, if any, concerning this particular proposal will be attached to this correspondence.

You should now continue with the application process prescribed by the appropriate funding agency. This process may include a detailed review by state agencies that have authority over specific types of projects.

This letter signifies only that the project has been processed through the State Single Point of Contact. It is neither a commitment of funds from this agency or any other state of federal agency.

The results of this review are valid for one year from the date of this letter. Continuation or renewal applications must be submitted to the State Clearinghouse annually. An application not submitted to the funding agency, or not approved within one year after completion of this review, must be re-submitted to receive a valid intergovernmental review.

If you have any questions regarding this letter, please feel free to contact my office at 502-573-2382.

Sincerely,

Lee Nalley

Lee Nalley
Kentucky State Clearinghouse

Attachments

The Heritage Council has made the following advisory comment pertaining to State Application Identifier Number KY201401210073

The applicant must ensure compliance with the Advisory Council on Historic Preservation's Rules and Regulations for the Protection of Historic and Cultural Properties (36CRF, Part 800) pursuant to the National Historic Preservation Act of 1966, the National Environmental Policy Act of 1969, and Executive Order 11593.

Thank you for submitting your project for our review. We currently do not have enough information to determine this project's potential to impact sites listed or eligible for listing on the National Register of Historic Places. Please refer to the following website http://www.heritage.ky.gov/siteprotect/ where you will find three separate documents to assist you in submitting additional information to our office for review. Those documents include a memo outlining the standardized Section 106 submission process, a Section 106 Cover sheet that must be included with all submissions to our office, and instructions for the proper completion of the required cover sheet and associated information.

If you have questions, please contact Yvonne Sherrick of the Kentucky Heritage Council at 502.564.7005, extension 113.

The Housing, Building, Construction has made the following advisory comment pertaining to State Application Identifier Number KY201401210073
no comments

The Kentucky Housing Corporation has made the following advisory comment pertaining to State Application Identifier Number KY201401210073
No comments.

The Labor Cabinet has made the following advisory comment pertaining to State Application Identifier Number KY201401210073

PW RATES MAY APPLY TO CONSTRUCTION PROJECTS EXCEEDING $250K. CONTACT KY LABOR CABINET AT 502 564 3534

The KY Dept. of Transportation has made the following advisory comment pertaining to State Application Identifier Number KY201401210073

Moore (D3), Jeff: This office has reviewed the project pertaining to our district. Concerning this project, if work is done for this project on the right of way of state maintained roads including any entrances, then a permit is to be secured from our Kentucky Transportation Cabinet District 3 Permits Engineer Office (phone: 270.746.7898).

The Kentucky Infrastructure Agency has made the following advisory comment pertaining to State Application Identifier Number KY201401210073
Project reviewed in the WRIS Project Profile by KIA staff.

The Natural Resources has made the following advisory comment pertaining to State Application Identifier Number KY201401210073

This review is based upon the information that was provided by the applicant through the Clearinghouse for this project. An endorsement of this project does not satisfy, or imply, the acceptance or issuance of any permits, certifications, or approvals that may be required from this agency under Kentucky Revised Statutes or Kentucky Administrative Regulations. Such endorsement means this agency has found no major concerns from the review of the proposed project as presented other than those stated as conditions or comments.

The proposed project is subject to Division of Water (DOW) jurisdiction because the following are or appear to be involved: water lines and appurtenances. Prior approval must be obtained from the DOW before construction can begin. The applicant must cite the State Application Identifier (SAI #KY201401210073) when submitting plans and specifications.

This project is consistent with the Todd County Water Management Plan. It is approved for water management planning. It is approved for water withdrawal by the Water Quantity Management Section of DOW. From the application data, DOW ascertains that the proposed project is not located in a floodplain area; therefore, a floodplain construction permit is not required for this project. Julia Harrod, Watershed Management Branch, (502) 564-3410, Julia.Harrod@ky.gov.

The proposed project includes replacement and upgrade of the District's primary distribution artery, in two phases, along the north-south corridor of KY Highway 181. The replacement will affect nearly 12 miles of roadway along the referenced highway. Completion of this project will provide improved water service to 51 commercial entities and 2 miscellaneous entities (schools, churches, etc.).

The Engineering Section of the Water Infrastructure Branch of the DOW does not oppose this project as it is presented. Plans, specifications, and hydraulic calculations (including, but not limited to peak demand flows and flushing velocities) shall be submitted for review to the Engineering Section. Construction shall not begin until written approval is received from the DOW. Mark Rasche, Water Infrastructure Branch, (502) 564-3410, Mark.Rasche@ky.gov.

No comment. Anne Powell, Water Infrastructure Branch, (502) 564-3410, Anne.Powell@ky.gov.

No comment. Daniel Fraley, Compliance and Technical Assistance Branch, (606) 783-8655, Daniel.Fraley@ky.gov.

Best management practices shall be utilized to reduce runoff from the project into adjacent surface waters. John Brumley, Water Quality Branch, (502) 564-3410, John.Brumley@ky.gov.

No comment. Phil O'dell, Watershed Management Branch, (502) 564-3410, Phillip.O'Dell@ky.gov.

The Division of Enforcement does not object to the project proposed by the applicant. Tim Harrod, Division of Enforcement, (502) 564-2150, Timothy.Harrod@ky.gov.

If the construction area disturbed is equal to or greater than 1 acre, the applicant will need to apply for a Kentucky Pollutant Discharge Elimination System (KPDES) storm water discharge permit.

Utility line projects that cross a stream will require a Section 404 permit from the US Army Corps of Engineers and a 401 Water Quality Certification from DOW.

The Kentucky Division of Water supports the goals of EPA's Sustainable Infrastructure Initiative. This Initiative seeks to promote sustainable practices that will help to reduce the potential gap between funding needs and spending at the local and national level. The Sustainable Infrastructure Initiative will guide our efforts in changing how Kentucky views, values, manages, and invests in its water infrastructure. This website, www.epa.gov/waterinfrastructure/, contains information that will help you ensure your facility and operations are consistent with and can benefit from the aims of the Sustainable Infrastructure Initiative.

The Pennyrile ADD has made the following advisory comment pertaining to State Application Identifier Number KY201401210073
no comments

The KY State Fish & Wildlife has made the following advisory comment pertaining to State Application Identifier Number KY201401210073

To minimize impacts to the aquatic environment the Kentucky Dept. of Fish & Wildlife Resources recommends that erosion control measures be developed and implemented prior to construction to reduce siltation into waterways located within the project area. Such erosion control measures may include, but are not limited to silt fences, staked straw bales, brush barriers, sediment basins, and diversion ditches. Erosion control measures will need to be installed prior to construction and should be inspected and repaired regularly as needed. Please contact Dan Stoelb @ 502-564-7109 ex. 4453 or Daniel.Stoelb@ky.gov if you have further questions or require additional information.