

2005-00316

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## MEMORANDUM

TO: James Rice – Kentucky Public Service Commission

FROM: Chris Wilcutt

DATE: August 4, 2005

SUBJECT: PSC Application for the Todd County Water District  
**Requested Information**

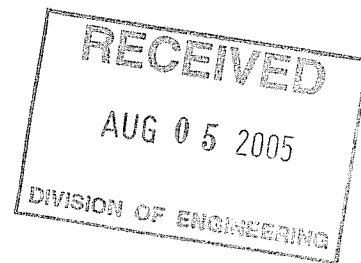
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AUG 5 2005

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COMMISSION

Per Randy Jones' (Rubin & Hayes) request, please find enclosed two copies of the preliminary engineering report for the referenced project.

If you have any questions or need additional information, please do not hesitate to give me a call or email at [chriswilcutt@mchsi.com](mailto:chriswilcutt@mchsi.com).



REPORT

AUG 5 2005

PUBLIC SERVICE  
COMMISSION

**PRELIMINARY ENGINEERING REPORT  
TODD COUNTY WATER DISTRICT  
CLIFTY TANK & WATER SYSTEM EXTENSION PROJECT**

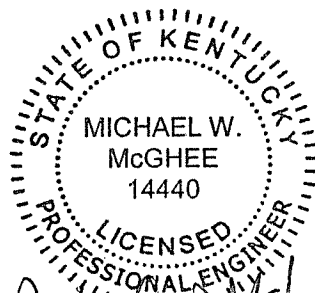
Todd County, Kentucky

prepared for the:

**Todd County Water District**  
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*Michael W. McGhee*  
September 19, 2003

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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 over 362 miles of water distribution lines and four water storage tanks with a total capacity of 530,800 gallons, all of which serves approximately 2,787 customers in rural Todd County. As of Spring 2003, the Todd County Water District began to purchase all of its 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 its distribution system consists of nearly 85 miles of pipeline and three storage tanks totaling 3,500,000 gallons in capacity. Since going online with the Commission, the average daily wholesale water demand within the Todd County system has averaged 545,000 gallons per day, which is considerably above the 406,000 gpd projected by LTRWC on the basis of historical data. Todd County has three meter stations with the Commission, one located in the southern part of the county, one in the north and one at Allensville.

The TCWD is a relatively large water system covering approximately 80% of the Todd County area. With the exception of the southwestern part 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 faced the TCWD are 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. The water supply issue has been resolved with their transition to the Logan Todd Regional system. The remaining problems will be alleviated by the intended system extension project.

The proposed project involves construction of nearly 26 miles of water line on 11 rural roadways. Most of these lines are being planned primarily to serve new customers in need of a safe supply of drinking water, while others are being built to improve hydraulic performance of the existing distribution system.

The higher elevations in the northern part of Todd County experience low pressure during high demand periods. This problem is most acute during the summer when high demand from the Lake Malone area, which is relatively low in elevation, strains the distribution system. This problem will be corrected by the construction of a new 250,000-gallon elevated water tank at Clifty and a new, higher capacity pumping station to feed the northern part of the county. Other low-pressure areas will be assisted by building interconnecting lines to complete hydraulic circuits or "loops". The loops will also improve the water quality by cutting down on the

stagnant water in dead-end lines. Also included in the project is an up-to-date telemetry system to allow for the monitoring and control of the system in greater detail. The total estimated cost of the proposed project is \$1,800,000.

## 2.0 PROJECT PLANNING AREA

### 2.1 Location

The waterline construction of the Todd County Water District's project will be spread out along various rural roadways. Nearly 26 miles of new waterline construction or upgrade are proposed for 11 different roadways. The affected roadways are listed in Table 1.

Table 1  
**Waterline Information**  
 (See Exhibit E-1 for Locations)

Map I.D.	PRIMARY ROUTES ROAD NAME	Length (miles)	Line Size (inches)
①	Highway 189 - Hwy 507 to Co. Line	2.1	4
②	Highway 507 - Highway 189 to Pilot Rock	1.9	4
③	Stratton Road	0.9	4
④	Davis Mill Road - End of Existing Line to Creek	2.5	4
⑤	Murrey Road	0.5	3
⑥	Dr. Boyles Road - End of Existing Line to US 79	0.7	4
⑦	US 41 - Tiny Town to Trenton	5.7	6
⑧	Chester Stahl and Hammackville Roads	6.1	6
⑨	Highway 104 - Mt. Zion to State Line	2.8	6
⑩	Riverchase Subdivision	0.9	6 & 4
⑪	Highway 475 & Smith Road	1.7	4
	<b>TOTAL</b>	<b>25.8</b>	

The tank portion of the project involves the construction of a 250,000-gallon elevated water storage tank. The tank's proposed location is within the small north Todd County community of Clifty. Todd County currently has a small standpipe at this location, which will be replaced by the larger elevated tank. The proposed overflow of the tank will be 920', which matches the similar Coal Bank Road tank within the northern part of the Todd County system. A telemetry system and booster pumping station will be used to fill the new tank, and its operation and system pressure will be maintained by the tank's water level.

The proposed project is illustrated on the county highway map labeled as Exhibit E-1.

## 2.2 Land Use and Environmental Resources Present

As stated earlier, the line portion of the project is spread out along nearly 26 miles of roadway, all within rural areas of Todd County. The line work is proposed to be constructed within utility easements that will 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. Industrial, commercial, residential and agriculture resources in the entire District will be affected upon completion of the project by providing improved pressure and abundant storage capacity.

The project has been reviewed by the Kentucky State Clearinghouse. No effect on historical properties was identified, and no archeological investigation of the tank or pump sites was recommended. The Clearinghouse review identified no conflicts with state or local planning, and recommended approval of the project. The Clearinghouse review letter is included in Appendix A.

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

- A topographic map of each proposed water line and proposed tank site, indicating the areas to be affected and the surrounding area, are attached as Exhibits E-2 through E-13. The base maps are USGS 7.5' quadrangles.
- A soil map of Todd County is included as Exhibit E-14.

## 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 50 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 hovered around 11,000 persons for the past 40 years. 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	Historical							Projections						
	1	1	1	1	1	1	2	2	2	2	2	2	2	
	9	9	9	9	9	9	0	0	0	0	0	0	0	
	4	5	6	7	8	9	0	0	1	1	2	2	3	
	0	0	0	0	0	0	0	5	0	5	0	5	0	
TODD	Elkton	1,214	1,312	1,448	1,612	1,815	1,789	1,984	2,074	2,159	2,247	2,340	2,424	2,503
	Guthrie	1,272	1,253	1,211	1,200	1,361	1,504	1,469	1,536	1,598	1,664	1,732	1,795	1,853
	Trenton	572	577	542	496	465	378	419	438	456	475	494	513	528
	Rural Areas	11,176	9,748	8,163	7,515	8,233	7,269	8,099	8,468	8,812	9,175	9,553	9,900	10,218
	Todd County	14,234	12,890	11,364	10,823	11,874	10,940	11,971	12,516	13,025	13,561	14,119	14,632	15,102
	<b>% Change</b>		-9.4%	-11.8%	-4.8%	9.7%	-7.9%	9.4%	4.6%	4.1%	4.1%	4.1%	3.6%	3.2%
<b>Notes to Table 1:</b>		1. Shaded areas have been calculated based on census and projection data.												
<b>Sources to Table 1:</b>		1. Historical & Projections provided by the KY State Data Center and Census Bureau University of Louisville, State Data Center ( <a href="http://cbpa.louisville.edu/ksdc/">http://cbpa.louisville.edu/ksdc/</a> )												

Analyzing Table 2 from 1940 to 2000 shows that Elkton and Guthrie have grown overall with some fluctuations, while Trenton and the rural areas have declined in population. Recent years have seen growth in all areas, and projections call for modest growth over the next 30 years.

Several factors influence the growth of a community, some of which include accessibility, technology, education, water infrastructure, sewer facilities, and jobs. The community is just beginning to experience the benefit of a new four-lane highway, 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 gradually entering 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 last five years, the TCWD and other communities within the county have worked together to secure a reliable source of potable water for the next thirty years as the county goes online with the recently completed Logan Todd Regional Water Commission.

Further analysis of these projections indicates Todd County's population is projected to grow about 4% every five years, which adds about 3,000 persons by 2030. While this growth rate is higher than historical, the projections, when compared with estimates by area development districts, universities, etc., are sound. It should be noted that population would be impacted by the availability or unavailability of water supply. An ample 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 362 miles of water line and a total water storage capacity of 530,800 gallons. The existing distribution system consists of 10", 8", 6", 4", and 3" 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 the recently decommissioned 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 existing Clifty standpipe, and the Coal Bank Road tank provide 63,000 and 150,000 gallons of storage respectively to the northern pressure zone. The Allensville standpipe has a storage capacity of 67,800 gallons and provides pressure to the southeastern 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. 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 Allensville. Flow through each of these metering points is controlled by the LTRWC SCADA system. The northern pressure zone is controlled by level in the Coal Bank Road tank, the southern pressure zone is fed directly from the LTRWC tank and the Allensville system is controlled by the level in the Allensville 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 Table 3 - Existing Rate Schedule (Rates effective 8-1-03)  
All Meter Sizes

First	2,000	Gallons @	\$ 17.90	Minimum
Next	8,000	Gallons @	\$ 9.38	per 1,000 Gallons
Next	10,000	Gallons @	\$ 8.35	per 1,000 Gallons
Next	20,000	Gallons @	\$ 7.33	per 1,000 Gallons
All Over	40,000	Gallons @	\$ 5.89	per 1,000 Gallons

This rate schedule went into effect as a result of the conversion to the Logan Todd Regional Water Commission as TCWD's treated water supply source.

3.3.2 Table 4 - O&M Costs (FYE 12/31/02)

Item No.	Expense Item	Amount
1	Payroll Expense	\$ 284,316.00
2	Purchased Water	\$ 37,618.00
3	Distribution Expense	\$ 78,037.00
4	Contract Services	\$ 48,446.00
5	Chemicals	\$ 127,304.00
6	Utilities	\$ 75,947.00
7	Administrative Expense	\$ 41,581.00
8	Plant Expenses	\$ 11,107.00
9	Office Expenses	\$ 23,442.00
10	Depreciation	\$ 286,068.00
11	Insurance	\$ 10,712.00
12	Travel	\$ 16,603.00
13	Bad Debts	\$ 8,094.00
14	Miscellaneous	\$ 8,748.00
<b>Total Utility Expense</b>		<b>\$ 1,058,023.00</b>

The cost data shown above reflects operating conditions prior to initiation of service from the Logan Todd Regional Water Commission. 2003 will be a year of transition. The first part of the year will be similar to 2002, the middle of the year will show a substantial loss with the TCWD purchasing water, but without rates being raised to reflect the increased water cost until August, and the latter part of the year will reflect more typical future conditions. The Summary & Addendum attached to this report shows projected future costs and income.

3.3.3 Table 5 - Long Term Debts (as of 12/31/02)

Date of Issue	Bond/Note Holder	Principal Balance	Maturity Date	Bond Type	Interest Rate
1979	Rural Dev	\$ 1,341,000	2019	Revenue	5.000%
1987	Rural Dev	\$ 541,000	2027	Revenue	5.000%
1990	Rural Dev	\$ 570,000	2030	Revenue	5.000%
1992	Rural Dev	\$ 190,500	2032	Revenue	5.000%
1996	Rural Dev	\$ 508,000	2036	Revenue	4.875%
2000	Rural Dev	\$ 800,000	2040	Revenue	4.750%
Total		\$ 3,950,500			

### 3.3.4 Short Term Debts (as of 12/31/02)

None

## 4.0 NEED FOR PROJECT

### 4.1 Health and Safety

The majority of the water lines are proposed to bring water service to 88 potential customers that currently rely on groundwater sources or hauled water. Providing water to these potential residences is consistent with Todd County's approved Water Supply Plan as well as Governor Paul Patton's initiative to provide adequate and potable water to all homes by the year 2020.

The proposed elevated water storage tank and booster pumping station will relieve the low pressure concerns experienced in the higher elevations of the northern pressure zone. During the especially high demand events, residential pressures in this area drop to and below 30 psi, which is a minimum requirement according to the Ten State Standards. A new tank will place an ample amount of water storage within the area of these high demands, thus reducing the large head loss values which are currently creating the inadequate pressures.

### 4.2 System O&M

There are two primary reasons for the District's proposed project. The first is to provide a reliable and potable water source to approximately 88 total residences as described in the preceding section. The second reason is to improve the operation and maintenance of the system by expanding the storage capacity and hydraulic capacity of the northern portion of the system. As previously stated, the water system includes several dead end or low flow lines. Some of the proposed line extensions will connect dead end lines to loop water flow, which reduces the need for frequent flushing to rid the line of stagnant water.

### 4.3 Growth

As mentioned earlier, the population of Todd County and the rural areas should grow by an average of 4% every five years over the next 30 years based upon census records and expected growth. The proposed project is necessary to provide water service to 88 new customers. Overall, the proposed project is being designed to ultimately improve water service to all 2,787 customers. The new infrastructure will ensure 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 pressure problems plus approximately 88 residences would remain unserved. Therefore, the 'do nothing' alternative is not a viable option as it would only prolong the problems.

## 5.2 Alternative 2

The second alternative is one that offers several advantages and resolves the three critical deficiencies in the water system. This alternative provides water service to unserved residences; eliminates some dead end lines that suffer with water quality problems and require frequent flushing; and provides a water storage structure in a high demand community, which will stabilize pressure conditions. The project adheres with the Commonwealth's drive to provide a reliable and potable water source to all families by the year 2020. Also, the project provides a solution to Todd County's inability to provide at least 30-psi pressure during all demand times.

### 5.2.1 *Description*

The project involves construction of 25.8 miles of water line on eleven rural roads in various parts of Todd County. Some of these lines are being built primarily to serve new customers in need of a safe supply of drinking water, while others are being built to improve the hydraulic performance of the existing distribution system. The higher elevations around the Clifty community in northern Todd County experience low pressure during high demand periods. This is worst in the summer months when high demand from the Lake Malone area pushes the distribution system to capacity. This will be corrected by the construction of a 250,000-gallon water storage tank (O.F. = ~920') and a booster pumping station. Other low-pressure areas can be corrected by building interconnecting lines to complete hydraulic circuits or "loops". These loops will also improve the water quality by cutting down on the stagnant water in dead-end lines.

In a further attempt to improve service to customers, Todd County is also proposing to install an up-to-date telemetry system to allow the operators to monitor the performance of the system in greater detail, and to identify problems earlier. The layout of the proposed lines is illustrated in Exhibit 1.

### 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 extensions and upgrades are proposed for construction in existing pipeline easements where possible or in county/state right-of-way and easements as necessary. Todd County has secured a land option in the Clifty community that can be purchased for the proposed elevated water tank. This site is immediately adjacent to the existing Clifty standpipe, that will be taken out of service and dismantled upon

completion of the new tank. As mentioned earlier, the project will affect four main land 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. All of the pipeline routes and the proposed tank site are very accessible, and there is little evidence of a high water table. However, mobilization will be significant during the project since all of the proposed water lines are spread out throughout the service area. Also, several of the waterline extensions will require creek crossings, but none of which should be unmanageable or exceptionally costly.

### 5.2.4 *Cost Estimates*

The Todd County Water District's 2003 System Extension Project is estimated to have a total cost of \$1,800,000. The project cost consists of construction, non-construction and contingency costs, which are \$1,420,000, \$238,000 and \$142,000 respectively. The project is anticipated to be funded in part by a \$900,000 grant and \$900,000 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. Based upon figures from LTRWC, the newly completed plant is producing approximately 4,300,000 gallons per day, which is approximately 43% of the design capacity. Therefore, sufficient capacity exists to serve the Todd County project since the estimated 88 new customers should, based on average usage, only add an additional 15,000 gallon per day total demand.

#### 6.1.2 *Storage*

The proposed project will involve the construction of a new 250,000-gallon elevated storage tank (OF = ~920'). This new tank will be constructed in the Clifty community, which experiences periods of unacceptable low pressure during seasonal high demands. The new tank will place a sufficient water storage supply at the primary problem point producing a steady pressure environment of at least 40 psi in the higher elevations of the community. Overall, the water system's total

storage capacity will increase to 717,800 gallons or approximately 1.3 times the current daily demand. The proposed tank site is illustrated in Exhibit E-1 and E-13.

### 6.1.3 *Distribution Layout*

The waterline construction of the Todd County Water District's system extension project will be spread out along nearly 26 miles of rural roadways. The affected roadways are not clustered together as typical in most system upgrades, but they are rather "fill-in" lines to serve new customers and hydraulic improvements for water quality and flow. The line portion of the project involves the new construction of approximately 2,500 LF of 3" PVC treated water line, 54,000 LF of 4" PVC treated water line, and 79,500 LF of 6" PVC treated water line. In addition to the waterlines, a booster pumping station will be constructed to control the filling of the proposed water tank. Also, in an attempt to improve service to customers, Todd County is proposing to install an up-to-date telemetry system to allow the operators to monitor the performance of the new system components in greater detail, and to identify problems earlier.

The proposed line extensions, tank, and proposed booster pump station locations are illustrated in Exhibits E-1 through E-13.

### 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, was used to construct a system wide model to determine the hydraulic characteristics of the Todd County Water District, as it currently exists. The proposed line additions, tank and pump station were then added and a 48-hour extended period simulation of the distribution system was run to analyze the diurnal pressure and flow variations.

The "existing conditions" model verified the existence of low pressure areas during high demand periods, and identified the Clifty tank and the north Todd booster pump station as being undersized to serve the area.

The "future conditions" model verified that the larger tank and pump station will correct the current problems, and that the new areas can be successfully served with adequate pressure and flow. The requirement to provide a line flushing velocity of at least 2.5 feet per second has also been considered. Serving the area south of Trenton will require a new feed point from the LTRWC near Trenton as shown on Exhibit 8. The model results are included in Appendix B.

## 6.2 Cost Estimate

The proposed itemized cost estimate of the Todd County Water District's 2003 System Extension Project is shown in Table 3.

Table 6  
Project Cost Estimate

<b>CONSTRUCTION</b>	
Highway 189 - Highway 507 to County Line	\$ 73,175
Highway 507 - Highway 189 to Pilot Rock	\$ 86,775
Stratton Road	\$ 36,575
Davis Mill Road - End of Existing Line to Creek	\$ 95,175
Murrey Road	\$ 15,225
Dr. Boyles Road - End of Existing Line to US 79	\$ 31,825
US 41 - Tiny Town to Trenton	\$ 205,900
Chester Stahl and Hammacksville Roads	\$ 176,200
Highway 104 - Mt. Zion to State Line	\$ 105,550
Riverchase Subdivision	\$ 45,000
Highway 475 & Smith Road	\$ 43,775
250,000 Gallon Elevated Tank	\$ 385,000
Booster Pumping Station	\$ 65,000
Telemetry Improvements	\$ 54,825
<b>Subtotal - Construction</b>	<b>\$ 1,420,000</b>
<b>NON-CONSTRUCTION</b>	
Land & Right-of-Way	\$ 5,000
Legal Costs	\$ 25,000
Preliminary Engineering & Environmental Services	\$ 13,400
Geotechnical Engineering	\$ 6,000
Design Engineering	\$ 76,500
Construction Phase Engineering Services	\$ 32,800
Construction Inspection	\$ 59,300
Financing Costs	\$ 20,000
<b>Subtotal - Non-Construction</b>	<b>\$ 238,000</b>
Contingency	\$ 142,000
<b>TOTAL ESTIMATED PROJECT COST</b>	<b>\$ 1,800,000</b>

### 6.3 Annual Operating Budget

The proposed annual operating budget for the Todd County Water District's Clifty Tank and System Extension Project is shown in Table 4.

Table 7  
*Proposed Operating Budget*

Operating Income	Pre-LTRWC <sup>(1)</sup>	Post-LTRWC <sup>(2)</sup>	Extension	
			Only	Future
Water Sales	\$1,113,263	\$1,350,161 <sup>(3)</sup>	\$33,149 <sup>(6)</sup>	\$1,383,310 <sup>(9)</sup>
Late Charges & Reconnection Fees	\$19,222	\$19,222	\$0	\$19,222
Other Income	\$30,561	\$30,561	\$0	\$30,561
<b>Total Operating Income</b>	<b>\$1,163,046</b>	<b>\$1,399,944</b>	<b>\$33,149</b>	<b>\$1,433,093</b>
<b>Operating and Maintenance Expense</b>				
Payroll Expense	\$284,316	\$284,316	\$0	\$284,316
Purchased Water	\$37,618	\$451,414 <sup>(4)</sup>	\$10,476 <sup>(7)</sup>	\$461,890
Distribution Expense	\$78,037	\$78,037	\$1,000 <sup>(8)</sup>	\$79,037
Contract Services	\$48,446	\$48,446	\$0	\$48,446
Chemicals	\$127,304	\$10,000	\$0	\$10,000
Utilities	\$75,947	\$20,000	\$5,000 <sup>(8)</sup>	\$25,000
Administrative Expense	\$41,581	\$41,581	\$0	\$41,581
Plant Expenses	\$11,107	\$1,000	\$0	\$1,000
Office Expenses	\$23,442	\$23,442	\$500 <sup>(8)</sup>	\$23,942
Insurance	\$10,712	\$12,000	\$1,000 <sup>(8)</sup>	\$13,000
Travel	\$16,603	\$16,603	\$0	\$16,603
Bad Debts	\$8,094	\$8,094	\$0	\$8,094
Miscellaneous	\$8,748	\$8,748	\$0	\$8,748
<b>Total Operating Expenses</b>	<b>\$771,955</b>	<b>\$1,003,681</b>	<b>\$17,976</b>	<b>\$1,021,657</b>
<b>Net Operating Income</b>	<b>\$391,091</b>	<b>\$396,263</b>	<b>\$15,173</b>	<b>\$411,436</b>
<b>Non-Operating Income (Expense)</b>				
Interest Income	\$15,424	\$15,424	\$0	\$15,424
RUS Interest	(\$187,107)	(\$187,107)	(\$42,750) <sup>(5)</sup>	(\$229,857)
RUS Principal	(\$78,200)	(\$78,200)	(\$7,920) <sup>(5)</sup>	(\$86,120)
Non-RUS Debt Service	(\$7,794)	(\$7,794)	\$0	(\$7,794)
Debt Service Reserves	(\$32,722)	(\$32,722)	(\$5,070) <sup>(5)</sup>	(\$37,792)
Debt Service - City of Elkton	\$57,640	\$57,640	\$0	\$57,640
<b>Total Non-Operating Income</b>	<b>(\$232,759)</b>	<b>(\$232,759)</b>	<b>(\$55,740)</b>	<b>(\$288,499)</b>
<b>Net for Coverage &amp; Depreciation</b>	<b>\$158,332</b>	<b>\$163,504</b>	<b>(\$40,567)</b>	<b>\$122,937</b>

**Notes:**

1. Based on the FY2002 financial statement, prior to purchasing water from Logan Todd Regional Water Commission.
2. Projected 2004 figures with LTRWC fully implemented and rates adjusted accordingly, but excluding Project.
3. Based on 7/02-6/03 water sales at retail rates adopted August 2003.
4. Based on a 425,000 gallons per day average water demand at \$2.91/1000 gal wholesale rate.
5. Based on a \$900,000 RUS Loan at 4.75% & 40 year term with 10% coverage.
6. Based on 60 of the 88 potential new customers connecting and using 5,000 gallons per month.
7. Based on an increased water demand of 3,600,000 gallons per year at \$2.91 wholesale rate.
8. Nominal increases to account for additional line, tank & pump station O&M.
9. Future water sales are calculated without an additional rate increase over the August 2003 30% increase.



Making an accurate prediction of future revenues and expenses is difficult because of the many changes that have taken place over the past year. Table 4 illustrates multiple changes for Todd County's future financial statements. First, TCWD ceased operation of their water treatment plant and began purchasing water from the Logan Todd Regional Water Commission in 2003. This affects several cost categories; primarily purchased water, but also, payroll, chemicals, utilities, and other treatment related costs. The change to the LTRWC supply resulted in a 30% rate increase that went into effect in August of 2003. This is reflected in the water sales revenue estimates for future years. The last major change is perhaps the least understood, and therefore the most difficult to assess. In recent years, the TCWD had averaged about 440,000 gallons of water demand per day over the course of a year, and sold about 406,000 gallons per day to its retail customers. Since initiation of service from LTRWC, the demand has averaged 545,000 gallons per day, and the sales are up accordingly. The reasons for the jump in demand and sales are unclear. One large customer, Cal-Maine Foods, is using an inordinately high amount of water, but it is not certain that this will continue long-term. It may also be that some of the increase is simply due to higher summer demands, although this particular year has been unusually rainy, which typically lessens demand. Considering all of these factors, we have used a sales figure of 425,000 gallons per day in our projections. Because of the many changes that have taken place over the past year, figures for future expenses and revenues are estimates without a long test period for analysis.

Based on these projections and assumptions, the commitment of a \$900,000 Rural Development Grant along with the added revenues from recently increased rates, and higher water sales are expected to produce an adequate fund for coverage and depreciation. Without securing the referenced grant, we estimate that an additional 4.5% increase to the retail rates would be required to offset the increase in debt service and maintain the equivalent fund for coverage and depreciation.

Table 5 illustrates the project's rate schedule with the requested RUS Grant, and Table 6 shows the necessary rate schedule if the project is undertaken without the requested RUS Grant and funded entirely with RUS loan money.

Table 8  
*Project Rate Schedule with RUS Grant*

First	2,000	Gallons @	\$ 17.90	Minimum
Next	8,000	Gallons @	\$ 9.38	per 1,000 Gallons
Next	10,000	Gallons @	\$ 8.35	per 1,000 Gallons
Next	20,000	Gallons @	\$ 7.33	per 1,000 Gallons
All Over	40,000	Gallons @	\$ 5.89	per 1,000 Gallons

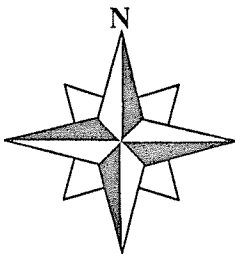
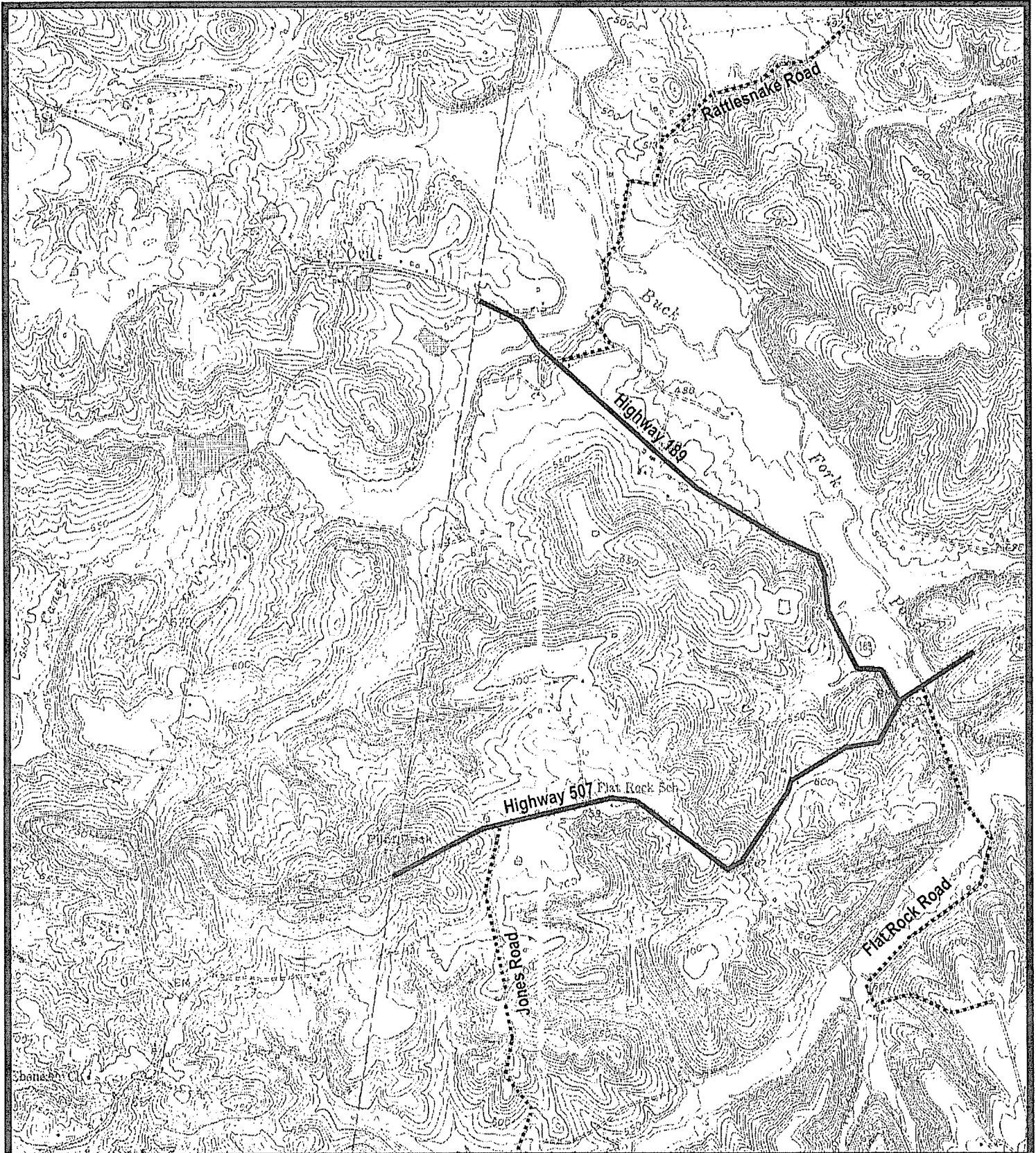
Table 9  
Project Rate Schedule without RUS Grant

First	<u>2,000</u>	Gallons @	<u>\$ 18.71</u>	Minimum
Next	<u>8,000</u>	Gallons @	<u>\$ 9.80</u>	per 1,000 Gallons
Next	<u>10,000</u>	Gallons @	<u>\$ 8.73</u>	per 1,000 Gallons
Next	<u>20,000</u>	Gallons @	<u>\$ 7.66</u>	per 1,000 Gallons
All Over	<u>40,000</u>	Gallons @	<u>\$ 6.16</u>	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 a 250,000-gallon elevated water storage tank (OF = ~920') at Clifty to serve the northern part of Todd County.
- Construct approximately 26 miles of new waterline to serve an estimated 88 residences plus improve the system's hydraulics and water quality.
- Construct a booster pumping station to control the flow and filling of the proposed Clifty tank.
- Continue the application process for \$900,000 in grant and \$900,000 in loan from Rural Development.
- Conduct any required geotechnical investigations to insure the proposed tank site is suitable for an elevated tank foundation.
- 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.



**LEGEND**

- Proposed Water Line
- Alternate Water Line
- Proposed Water Tank
- Proposed Pump Station

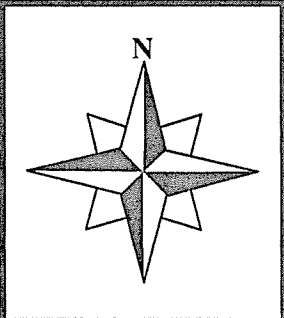
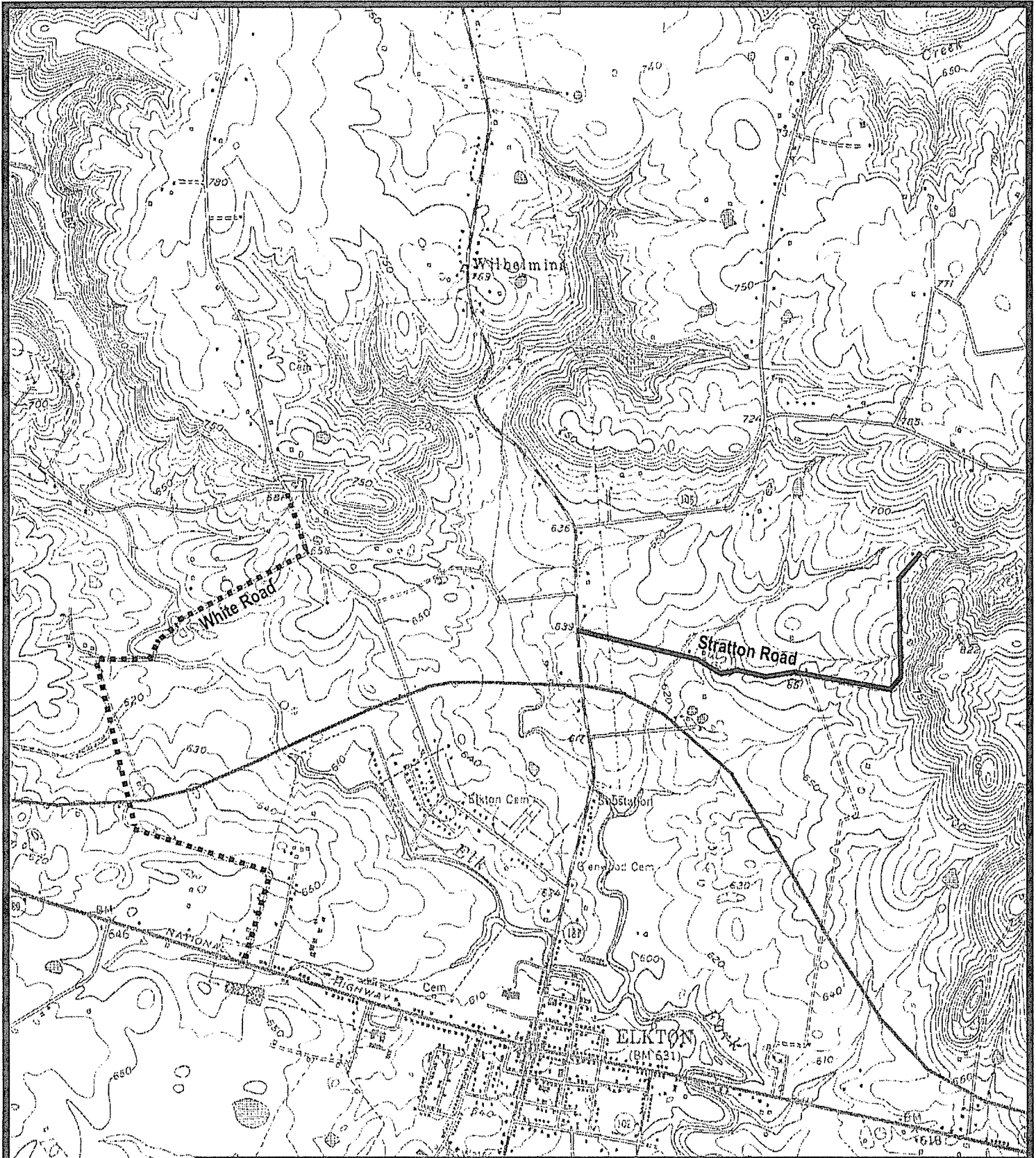
Source: USGS "Honey Grove KY-1982" 7 1/2' Topographic Quadrangle

**TODD COUNTY WATER DISTRICT**

**Clifty Tank & System Extension Project  
Highway 109 & Highway 507**

**MCGHEE ENGINEERING, INC.**  
Guthrie, Kentucky


Scale 1"=2000'	Drawn By M. McGhee	Date 8-29-03	Page E-2
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**LEGEND**

Proposed Water Line —————

Alternate Water Line - - - - -

Proposed Water Tank 

Proposed Pump Station 

Source: USGS "Elktion KY-1982" 7 1/2' Topographic Quadrangle

**TODD COUNTY WATER DISTRICT**

**Clifty Tank & System Extension Project**  
**Stratton Road**

**MCGHEE ENGINEERING, INC.**  
Guthrie, Kentucky

Scale 1"=2000'	Drawn By M. McGhee	Date 8-29-03	Page E-3
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## **Appendix A**

*Kentucky State Clearinghouse Comments*



PAUL E. PATTON  
GOVERNOR

COMMONWEALTH OF KENTUCKY  
OFFICE OF THE GOVERNOR  
DEPARTMENT FOR LOCAL GOVERNMENT  
1024 CAPITAL CENTER DRIVE, SUITE 340  
FRANKFORT, KENTUCKY 40601-8204  
(502) 573-2382



JODY A. LASSITER  
COMMISSIONER

June 4, 2003

Mr. Michael McGhee  
McGhee Engineering, Inc.  
202 Ewing Street, PO Box 267  
Guthrie, Kentucky 42234

**RE: Todd County Water District Clifty Tank and System Extension Project**  
CFDA#10.418  
SAI#KY20030319-0354

Dear Mr. McGhee:

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 the above referenced 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.

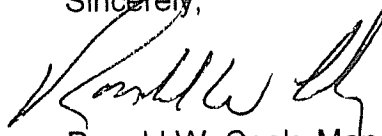
This letter signifies only that the project has been processed through the State Single Point of Contact. It is neither a commitment of funds from this agency or any other state or federal agency.



**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,

A handwritten signature in black ink, appearing to read "Ronald W. Cook". The signature is fluid and cursive, with a large initial "R" and "W".

Ronald W. Cook, Manager  
Kentucky State Clearinghouse

Attachments

cc: Pennyrile ADD  
Vernon Brown

The Labor Cabinet has made the following advisory comment pertaining to State Application Identifier Number **KY20030319-0354**

Prevailing Wage Rates May Apply - Contact the Kentucky Labor Cabinet at 502-564-2784.

May impact Kentucky OSH regulations and standards.



The Kentucky Heritage Council and State Historic Preservation Officer has made the following comments pertaining to State Application Identifier Number SAI# **KY20030319-0354**


No effect on Historic Properties.

The Kentucky Transportation Cabinet, Department of Highways, has made the following advisory comments pertaining to State Application Identifier Number **KY030319-0354**  
**Todd County, Water Line Extensions and Storage Tank**

The Kentucky Department of Highways is responsible for controlling both public and private usage of right-of-way of the State road system. **Any firm, individual, or governmental agency desiring access to a State road or desiring to perform any type of work on State right-of-way (including signage) must obtain a permit from the Department.**

Any proposed access or encroachment of a State maintained road should be coordinated at the earliest possible stage with:

Jeff Moore, Planning Branch Manager  
Kentucky Department of Highways  
900 Morgantown Road  
P. O. Box 599  
Bowling Green, Kentucky 42102  
Telephone (270) 746-7898  
Fax (270) 746-7643

  
Julie Sexton  
4/7/03

**DIVISION OF WATER RESPONSE: ENDORSE (COMMENTS)****Advisory Comments:**  YES  NO

Todd County: Water Distribution Lines, Storage Tank, Pump Station

**PRIOR APPROVAL**

The proposed project is subject to Division of Water jurisdiction because the following are involved:

- Water distribution lines and appurtenances.

Prior approval must be obtained from the Division of Water before construction can begin on the above matters. The applicant must cite this State Application Identifier (SAI) when submitting plans and specifications to the Division. It is beneficial if applicants make prior contact with the Division before submitting plans and specifications.

Division of Water forms can be downloaded from <http://water.nr.state.ky.us/dow>.

**WATER SUPPLY  
In General**

This application is by and for the benefit of the water distribution system of the Todd County Water District (TCWD). The TCWD is served by the water treatment and distribution system of the Logan Todd Regional Water Commission (LTRWC). The Division of Water records show the LTRWC water treatment plant to have a design capacity of 10,000,000. The LTRWC plant has been on line for approximately two months.

The TCWD must share, if it has not already done so, this application with its potable water source (LTRWC). This is necessary so the source can adequately plan finished water demand.

Regarding the extended service, a hydraulic analysis needs to be done for the proposed new water distribution lines.

The Division of Water requests regarding the storage tanks that any grounding well be sealed from the bottom to the top to prevent downward migration of surface contaminants and interconnection of underground aquifers.

The Division of Water suggests that the application budget include funds for the sealing of wells abandoned when connections are made to the proposed new water distribution lines.

The Division of Water suggests regarding rural service in Kentucky that the TCWD make having a wastewater system approved by the Todd County Health Department a condition for tapping on the proposed water distribution lines.

**Water Resources**

Todd County received funding under KRS 151.118 to develop a long range water supply plan pursuant to KRS 151.114. Phases I and II of the Todd County Water Supply Plan (TCWSP) have been approved. The proposed water distribution lines, storage tank, and pump station are consistent with the TCWSP.

**Timothy Kuryla**

**FAR Coordinator, Division of Water**

## **Appendix B**

### *Hydraulic Model Results*

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* * * * * K Y P I P E 4 * * * * *
*
* University of Kentucky Network Modeling Software *
*
* Copyrighted by KPFS 1998 *
* Version 1.200 - 01/26/2000 *
*
* * * * *

```

Date & Time: Wed Sep 17 16:32:49 2003

```

INPUT DATA FILENAME ----- C:\CHRIS'\2\00HYDR\1\TCWD\SOUTH\1\South_To.DT2
TABULATED OUTPUT FILENAME ----- C:\CHRIS'\2\00HYDR\1\TCWD\SOUTH\1\South_To.OT2
POSTPROCESSOR RESULTS FILENAME --- C:\CHRIS'\2\00HYDR\1\TCWD\SOUTH\1\South_To.RS2

```

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*****
SUMMARY OF ORIGINAL DATA
*****

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U N I T S   S P E C I F I E D

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FLOWRATE ..... = gallons/minute
HEAD (HGL) ..... = feet
PRESSURE ..... = psig

```

R E G U L A T I N G   V A L V E   D A T A

VALVE LABEL	VALVE TYPE	VALVE SETTING (ft or gpm)
RV-1	PRV-1	811.54

P I P E L I N E   D A T A

STATUS CODE:    XX -CLOSED PIPE    CV -CHECK VALVE

PIPE NAME	NODE #1	NODE #2	LENGTH (ft)	DIAMETER (in)	ROUGHNESS COEFF.	MINOR LOSS COEFF.
100	LTRWC	Pump-100	100.00	20.00	140.0000	0.00
101	@~Pump-100	100	900.00	20.00	140.0000	0.00
102	100	101	11100.00	20.00	140.0000	0.00
103	101	102	9400.00	20.00	140.0000	0.00
106	102	103	3700.00	20.00	140.0000	0.00
107	103LT-TC	Tank	400.00	20.00	140.0000	0.00
P-01	LT-TC	Tank @~RV-1	50.00	8.00	140.0000	0.00
P-02	RV-1	J-01	4100.00	6.00	140.0000	0.00
P-03	J-01	J-02	100.00	6.00	140.0000	0.00
P-04	J-02	J-04	2200.00	6.00	140.0000	0.00
P-05	J-02	J-03	2000.00	4.00	140.0000	0.00
P-06	J-04	J-05	7100.00	6.00	140.0000	0.00
P-07	J-05	J-06	9000.00	6.00	140.0000	0.00
P-08	J-06	J-01	12000.00	6.00	140.0000	0.00
P-09	J-05	J-07	9800.00	4.00	140.0000	0.00
P-10	J-07	J-08	9500.00	4.00	140.0000	0.00
P-100-XX	J-48	J-100	12500.00	6.00	140.0000	0.00
P-101	J-100	J-101	1800.00	6.00	140.0000	0.00
P-102	J-101	J-102	3900.00	6.00	140.0000	0.00
P-103	J-102	J-103	8300.00	6.00	140.0000	0.00
P-104	J-103	J-104	5000.00	6.00	140.0000	0.00

P-105	J-101	J-105	3200.00	6.00	140.0000	0.00
P-106	J-105	J-106	2000.00	6.00	140.0000	0.00
P-107	J-106	J-107	4000.00	6.00	140.0000	0.00
P-108	J-107	J-108	2500.00	6.00	140.0000	0.00
P-109	J-108	J-109	6000.00	6.00	140.0000	0.00
P-11	J-05	J-09	10200.00	6.00	140.0000	0.00
P-110	J-109	J-110	3600.00	6.00	140.0000	0.00
P-111	J-110	J-111	9000.00	6.00	140.0000	0.00
P-112	J-111	J-112	5300.00	6.00	140.0000	0.00
P-113	J-112	J-113	8800.00	6.00	140.0000	0.00
P-12	J-09	J-10	7500.00	6.00	140.0000	0.00
P-13	J-10	J-10a	2300.00	6.00	140.0000	0.00
P-13a	J-10a	J-11	2700.00	6.00	140.0000	0.00
P-13b	J-10a	J-10b	1500.00	6.00	140.0000	0.00
P-13c	J-10b	J-10c	1500.00	6.00	140.0000	0.00
P-13d	J-10b	J-10d	1000.00	4.00	140.0000	0.00
P-13e	J-10c	J-10e	1000.00	4.00	140.0000	0.00
P-14	J-10	J-12	3000.00	6.00	140.0000	0.00
P-15	J-12	J-13	2500.00	4.00	140.0000	0.00
P-16	J-09	J-14	1800.00	6.00	140.0000	0.00
P-16a	J-14	J-14a	7200.00	6.00	140.0000	0.00
P-17	J-14a	J-15	6000.00	6.00	140.0000	0.00
P-18	J-15	J-16	2800.00	4.00	140.0000	0.00
P-19	J-16	J-17	7500.00	4.00	140.0000	0.00
P-20	J-16	J-18	8000.00	4.00	140.0000	0.00
P-21	J-18	J-19	9800.00	4.00	140.0000	0.00
P-22	J-19	J-20	6000.00	3.00	140.0000	0.00
P-23	J-20	J-21	1500.00	3.00	140.0000	0.00
P-24	J-20	J-22	9000.00	3.00	140.0000	0.00
P-25	J-19	J-23	1000.00	4.00	140.0000	0.00
P-26	J-23	J-24	4000.00	3.00	140.0000	0.00
P-27	J-23	J-25	4500.00	4.00	140.0000	0.00
P-28	J-18	J-26	3000.00	6.00	140.0000	0.00
P-29	J-26	J-27	3000.00	3.00	140.0000	0.00
P-30	J-26	J-28	5300.00	6.00	140.0000	0.00
P-31	J-48	J-48a	1300.00	6.00	140.0000	0.00
P-32	J-28	J-30	12000.00	6.00	140.0000	0.00
P-33	J-30	J-31	4500.00	4.00	140.0000	0.00
P-34	J-30	J-32	3500.00	6.00	140.0000	0.00
P-35	J-32	J-33	2500.00	3.00	140.0000	0.00
P-35a	J-33	J-33a	1500.00	3.00	140.0000	0.00
P-36	J-32	J-32a	4800.00	6.00	140.0000	0.00
P-36a	J-32a	J-34	4700.00	6.00	140.0000	0.00
P-37	J-34	J-35	1700.00	3.00	140.0000	0.00
P-37a	J-35	J-35a	800.00	3.00	140.0000	0.00
P-38	J-34	J-36	6500.00	6.00	140.0000	0.00
P-39	J-04	J-37	10500.00	4.00	140.0000	0.00
P-40	J-37	J-38	12000.00	4.00	140.0000	0.00
P-40a	J-38	J-14	3500.00	4.00	140.0000	0.00
P-41	J-37	J-39	4500.00	4.00	140.0000	0.00
P-42	J-39	J-40	9700.00	3.00	140.0000	0.00
P-43	J-39	J-41	5300.00	4.00	140.0000	0.00
P-44	J-41	J-42	2200.00	4.00	140.0000	0.00
P-45	J-42	J-43	2800.00	3.00	140.0000	0.00
P-46	J-42	J-44	1000.00	4.00	140.0000	0.00
P-46a	J-44	J-44a	5600.00	4.00	140.0000	0.00
P-46b	J-44a	J-44b	2700.00	4.00	140.0000	0.00
P-46c	J-44b	J-44c	2500.00	4.00	140.0000	0.00
P-46d	J-44c	J-44d	5000.00	4.00	140.0000	0.00
P-46e	J-44d	J-44e	2200.00	4.00	140.0000	0.00
P-46f	J-44d	J-44f	2700.00	4.00	140.0000	0.00
P-47	J-41	J-45	4300.00	4.00	140.0000	0.00
P-48	J-45	J-46	20300.00	6.00	140.0000	0.00
P-49	J-01	J-46	8500.00	6.00	140.0000	0.00
P-50	J-46	J-47	9500.00	6.00	140.0000	0.00
P-51	J-47	J-48	10600.00	6.00	140.0000	0.00
P-52	J-45	J-49	1000.00	6.00	140.0000	0.00
P-53	J-49	J-50	4000.00	6.00	140.0000	0.00
P-54	J-50	J-51	5300.00	3.00	140.0000	0.00
P-55	J-50	J-52	9800.00	6.00	140.0000	0.00
P-56	J-52	J-53	3600.00	6.00	140.0000	0.00

P-57	J-52	J-54	7500.00	4.00	140.0000	0.00
P-58	J-54	J-55	3500.00	3.00	140.0000	0.00
P-59	J-54	J-54a	12000.00	4.00	140.0000	0.00
P-59a	J-54a	J-56	3000.00	4.00	140.0000	0.00
P-59b	J-54a	J-54b	2500.00	3.00	140.0000	0.00
P-60	J-56	J-49	15000.00	6.00	140.0000	0.00
P-61	J-56	J-57	1500.00	6.00	140.0000	0.00
P-62	J-57	J-58	10500.00	6.00	140.0000	0.00
P-63	J-58	J-59	2200.00	4.00	140.0000	0.00
P-63a	J-59	J-59a	3000.00	4.00	140.0000	0.00
P-63b	J-59a	J-59b	11500.00	4.00	140.0000	0.00
P-64	J-58	J-60	1500.00	3.00	140.0000	0.00
P-65	J-58	J-61	1800.00	4.00	140.0000	0.00
P-66	J-62	J-61	12000.00	4.00	140.0000	0.00
P-67	J-63	J-62	9000.00	4.00	140.0000	0.00
P-68	J-63	J-64	2000.00	6.00	140.0000	0.00
P-69	J-65	J-63	6000.00	6.00	140.0000	0.00
P-70	J-65	J-66	1500.00	6.00	140.0000	0.00
P-71	J-29	J-65	1700.00	6.00	140.0000	0.00
P-71a-XX	J-67	J-29	6300.00	6.00	140.0000	0.00
P-72	J-68	J-67	1000.00	4.00	140.0000	0.00
P-73	J-69	J-68	12000.00	6.00	140.0000	0.00
P-74	J-70	J-69	9800.00	6.00	140.0000	0.00
P-75	J-70	J-71	3000.00	3.00	140.0000	0.00
P-76	J-61	J-70	1500.00	6.00	140.0000	0.00
P-77	J-69	J-72	6000.00	4.00	140.0000	0.00
P-78	J-72	J-73	1300.00	4.00	140.0000	0.00
P-79	J-73	J-74	1500.00	3.00	140.0000	0.00
P-80	J-73	J-75	12000.00	4.00	140.0000	0.00
P-80a	J-75	J-75a	4800.00	4.00	140.0000	0.00
P-80b	J-75a	J-75b	4000.00	3.00	140.0000	0.00
P-81	J-67	J-76a	3500.00	6.00	140.0000	0.00
P-81a	J-76a	J-76	2500.00	4.00	140.0000	0.00
P-82	J-76	J-77	9000.00	3.00	140.0000	0.00
P-83	J-76	J-78	18000.00	4.00	140.0000	0.00
P-84	J-78	J-79	7500.00	3.00	140.0000	0.00
P-85	J-78	J-80	1000.00	4.00	140.0000	0.00
P-86	J-48a	J-48b	1300.00	6.00	140.0000	0.00
P-87	102	J-104	28700.00	16.00	140.0000	0.00

P U M P / L O S S   E L E M E N T   D A T A

THERE IS A DEVICE AT NODE      Pump-100 DESCRIBED BY THE FOLLOWING DATA: (ID= 2)

HEAD (ft)	FLOWRATE (gpm)	EFFICIENCY (%)
444.00	0.00	75.00 (Default)
414.00	500.00	75.00 (Default)
378.00	1000.00	75.00 (Default)
348.00	1500.00	75.00 (Default)
318.00	2000.00	75.00 (Default)
300.00	2500.00	75.00 (Default)
282.00	3000.00	75.00 (Default)
258.00	3500.00	75.00 (Default)
228.00	4000.00	75.00 (Default)
189.00	4500.00	75.00 (Default)

E N D   N O D E   D A T A

NODE NAME	NODE TITLE	EXTERNAL DEMAND (gpm)	JUNCTION ELEVATION (ft)	EXTERNAL GRADE (ft)
100	LT: Guthrie	0.00	578.00	
101	LT:US79&KY84	0.00	593.00	
102	LT:848@RR Be	0.00	630.00	



103	LT:Tk Tap@RR	0.00	637.00
J-01	KY848&RR Bed	0.99	631.00
J-02	KY848&RR Bed	0.21	631.00
J-03	End:RRLn Con	0.10	655.00
J-04	848&HerndonR	0.95	625.00
J-05	KY848&US79	1.73	586.00
J-06	US79&RR Bed	1.01	550.00
J-07	Hadensville@	0.93	559.00
J-08	End:KY848Eas	0.46	555.00
J-09	79&SnardonMi	1.28	568.00
J-10	SnarMill&B-C	0.74	581.00
J-100	High:US41	0.00	605.00
J-101	US41&ChStahl	0.00	567.00
J-102	US41&JackGra	0.00	591.00
J-103	High:US Hwy4	0.00	615.00
J-104	Trenton:US41	0.00	600.00
J-105	Stahl&L.Chap	0.00	536.00
J-106	Stahl&Sander	0.00	571.00
J-107	Ch.Stahl cur	0.00	575.00
J-108	Stahl&Poinde	0.00	591.00
J-109	Stahl&Suiter	0.00	582.00
J-10a	Start:Riverc	0.00	560.00
J-10b	Riverchase6x	0.00	550.00
J-10c	End:Rivercha	0.00	530.00
J-10d	End:Rivercha	0.00	560.00
J-10e	End:Rivercha	0.00	550.00
J-11	End:Banton-C	0.24	591.00
J-110	Stahl&Campbe	0.00	595.00
J-111	KY104:Hamksv	0.00	559.00
J-112	KY104&BigPon	0.00	557.00
J-113	End:KY104@TN	0.00	540.00
J-12	SnarMill:6"t	0.26	538.00
J-13	End:SnardonM	0.12	535.00
J-14	US79&Dr.Boyl	0.00	573.00
J-14a	US79@ElkFork	0.72	525.00
J-15	US79&KY102	0.42	565.00
J-16	KY102&OldAll	0.88	603.00
J-17	OldAllen&C.S	0.36	588.00
J-18	KY102&Gardne	1.00	582.00
J-19	102&Traughbe	0.81	601.00
J-20	Traughber&Ol	0.79	597.00
J-21	Old Allensvi	0.07	570.00
J-22	Old Allensvi	0.43	600.00
J-23	102&Sawyer	0.46	610.00
J-24	End:Sawyer	0.19	625.00
J-25	End:KY102 No	0.22	620.00
J-26	Gardner&Side	0.54	604.00
J-27	End:GardnerS	0.14	600.00
J-28	Day-Allen&Ga	1.02	597.00
J-29	High:US68 We	0.38	700.00
J-30	Day-Allen&Do	0.96	597.00
J-31	End:Hardison	0.22	635.00
J-32	Start:P.Whee	0.82	605.00
J-32a	Sunaker Road	0.00	624.00
J-33	Curve:P.Whee	0.00	635.00
J-33a	End:P.WheeLe	0.19	615.00
J-34	Daysville	0.89	618.00
J-35	Daysville@Li	0.00	645.00
J-35a	End:Volney R	0.12	630.00
J-36	US68&MillerV	0.31	650.00
J-37	Herndon&DrBo	1.30	581.00
J-38	End:Dr.Boyle	0.58	570.00
J-39	Herndon&Curt	0.94	610.00
J-40	End:Curtis S	0.47	560.00
J-41	Herndon&RRBe	0.57	612.00
J-42	RR Bed & Smi	0.29	620.00
J-43	End:Smith	0.13	635.00
J-44	Start:RR Tie	0.05	630.00
J-44a	High:RR@Ches	0.00	639.00
J-44b	End:RR tie-i	0.00	585.00
J-44c	Bradshaw	0.00	585.00

J-44d	RR Bed&KY102	0.00	636.00	
J-44e	KY102@Elkton	0.00	640.00	
J-44f	End:KY102 So	0.00	590.00	
J-45	KY181&Herndo	1.23	638.00	
J-46	Penchem	1.84	598.00	
J-47	KY181-Cal Ma	1.10	583.00	
J-48	KY181&US41	0.65	555.00	
J-48a	KY181&US79	0.00	535.00	
J-48b	End:US79@TN	0.00	520.00	
J-49	181&Elk-Tren	0.96	635.00	
J-50	KY181&Frogue	0.92	635.00	
J-51	End:Frogue	0.25	625.00	
J-52	KY181&KY104	1.00	643.00	
J-53	KY181@TCCHS	0.17	620.00	
J-54	KY104&Millen	1.25	620.00	
J-54a	KY104&Murrey	0.00	583.00	
J-54b	End:Murrey	0.00	580.00	
J-55	End:Millen	0.17	615.00	
J-56	KY104&Elk-Tr	1.51	575.00	
J-57	104&Dickinso	0.58	584.00	
J-58	DavMill&Dick	0.77	614.00	
J-59	Start:Davis	0.11	615.00	
J-59a	DavisMill Cu	0.00	605.00	
J-59b	End:Davis Mi	0.00	550.00	
J-60	End:GF Addis	0.07	615.00	
J-61	Phillipi&Dav	0.73	605.00	
J-62	DavisMill&Be	1.01	653.00	
J-63	US68&DavisMi	0.82	646.00	
J-64	End:US68 Elk	0.10	630.00	
J-65	US68@Ind.Par	0.44	683.00	
J-66	West Ind. Pa	0.07	720.00	
J-67	Tress Shop	0.52	681.00	
J-68	KY475@4"to6"	0.62	675.00	
J-69	KY475&BellCh	1.33	590.00	
J-70	Phillipi x-c	0.69	580.00	
J-71	End:Phillipi	0.14	575.00	
J-72	KY475&Hender	0.35	570.00	
J-73	KY475&Maton	0.71	560.00	
J-74	End:Maton	0.07	565.00	
J-75	Start:KY475	0.58	565.00	
J-75a	KY475&Smith	0.00	589.00	
J-75b	End:Smith Rd	0.00	555.00	
J-76	68&A.Henders	1.58	610.00	
J-76a	US68:6"to4"	0.19	625.00	
J-77	End:A.Hender	0.43	580.00	
J-78	US68&Roger M	1.27	610.00	
J-79	End:Roger O	0.36	600.00	
J-80	Fairview	0.05	615.00	
LTRWC	LTRWC WTP	----	580.00	600.00
LT-TC Tank	Todd County	----	651.00	801.00
Pump-100	LTR:Todd Pum	0.00	580.00	
RV-1	LT:So.Todd M	----	650.00	811.54

#### OUTPUT OPTION DATA

OUTPUT SELECTION: ALL RESULTS ARE INCLUDED IN THE TABULATED OUTPUT  
 MAXIMUM AND MINIMUM PRESSURES = 10

#### SYSTEM CONFIGURATION

NUMBER OF PIPES .....(p) = 131  
 NUMBER OF END NODES .....(j) = 124  
 NUMBER OF PRIMARY LOOPS .....(l) = 6  
 NUMBER OF SUPPLY NODES .....(f) = 2  
 NUMBER OF SUPPLY ZONES .....(z) = 1

Case: 0

RESULTS OBTAINED AFTER 8 TRIALS: ACCURACY = 0.00060

S I M U L A T I O N D E S C R I P T I O N ( L A B E L )

Static Hydraulic Simulation 1:  
All tanks full and all pumps off with maximum future demands.

P I P E L I N E R E S U L T S

STATUS CODE: XX -CLOSED PIPE CV -CHECK VALVE

P I P E N A M E	N O D E N U M B E R S #1 #2	F L O W R A T E (gpm)	H E A D L O S S (ft)	M I N O R L O S S (ft)	L I N E V E L O . (ft/s)	H L / 1000 (ft/ft)
100	LTRWC Pump-100	0.00	0.00	0.00	0.00	0.00
101	Pump-100 100	0.00	0.00	0.00	0.00	0.00
102	100 101	0.00	0.00	0.00	0.00	0.00
103	101 102	0.00	0.00	0.00	0.00	0.00
106	102 103	0.00	0.00	0.00	0.00	0.00
107	103LT-TC Tank	0.00	0.00	0.00	0.00	0.00
P-01	LT-TC Tank RV-1	49.88	0.00	0.00	0.32	0.06
P-02	RV-1 J-01	49.88	1.03	0.00	0.57	0.25
P-03	J-01 J-02	19.38	0.00	0.00	0.22	0.04
P-04	J-02 J-04	19.08	0.09	0.00	0.22	0.04
P-05	J-02 J-03	0.10	0.00	0.00	0.00	0.00
P-06	J-04 J-05	11.09	0.11	0.00	0.13	0.02
P-07	J-05 J-06	-8.11	0.08	0.00	0.09	0.01
P-08	J-06 J-01	-9.12	0.13	0.00	0.10	0.01
P-09	J-05 J-07	1.38	0.02	0.00	0.04	0.00
P-10	J-07 J-08	0.46	0.00	0.00	0.01	0.00
P-100-XX	J-48 J-100					
P-101	J-100 J-101	0.00	0.00	0.00	0.00	0.00
P-102	J-101 J-102	0.00	0.00	0.00	0.00	0.00
P-103	J-102 J-103	0.00	0.00	0.00	0.00	0.00
P-104	J-103 J-104	0.00	0.00	0.00	0.00	0.00
P-105	J-101 J-105	0.00	0.00	0.00	0.00	0.00
P-106	J-105 J-106	0.00	0.00	0.00	0.00	0.00
P-107	J-106 J-107	0.00	0.00	0.00	0.00	0.00
P-108	J-107 J-108	0.00	0.00	0.00	0.00	0.00
P-109	J-108 J-109	0.00	0.00	0.00	0.00	0.00
P-11	J-05 J-09	16.09	0.31	0.00	0.18	0.03
P-110	J-109 J-110	0.00	0.00	0.00	0.00	0.00
P-111	J-110 J-111	0.00	0.00	0.00	0.00	0.00
P-112	J-111 J-112	0.00	0.00	0.00	0.00	0.00
P-113	J-112 J-113	0.00	0.00	0.00	0.00	0.00
P-12	J-09 J-10	1.37	0.00	0.00	0.02	0.00
P-13	J-10 J-10a	0.24	0.00	0.00	0.00	0.00
P-13a	J-10a J-11	0.24	0.00	0.00	0.00	0.00
P-13b	J-10a J-10b	0.00	0.00	0.00	0.00	0.00
P-13c	J-10b J-10c	0.00	0.00	0.00	0.00	0.00
P-13d	J-10b J-10d	0.00	0.00	0.00	0.00	0.00
P-13e	J-10c J-10e	0.00	0.00	0.00	0.00	0.00
P-14	J-10 J-12	0.38	0.00	0.00	0.00	0.00
P-15	J-12 J-13	0.12	0.00	0.00	0.00	0.00
P-16	J-09 J-14	13.44	0.04	0.00	0.15	0.02
P-16a	J-14 J-14a	11.55	0.12	0.00	0.13	0.02
P-17	J-14a J-15	10.83	0.09	0.00	0.12	0.01
P-18	J-15 J-16	10.41	0.28	0.00	0.27	0.10
P-19	J-16 J-17	0.36	0.00	0.00	0.01	0.00
P-20	J-16 J-18	9.17	0.63	0.00	0.23	0.08
P-21	J-18 J-19	2.96	0.09	0.00	0.08	0.01

P-22	J-19	J-20	1.30	0.05	0.00	0.06	0.01
P-23	J-20	J-21	0.07	0.00	0.00	0.00	0.00
P-24	J-20	J-22	0.43	0.01	0.00	0.02	0.00
P-25	J-19	J-23	0.86	0.00	0.00	0.02	0.00
P-26	J-23	J-24	0.19	0.00	0.00	0.01	0.00
P-27	J-23	J-25	0.22	0.00	0.00	0.01	0.00
P-28	J-18	J-26	5.21	0.01	0.00	0.06	0.00
P-29	J-26	J-27	0.14	0.00	0.00	0.01	0.00
P-30	J-26	J-28	4.52	0.02	0.00	0.05	0.00
P-31	J-48	J-48a	0.00	0.00	0.00	0.00	0.00
P-32	J-28	J-30	3.50	0.02	0.00	0.04	0.00
P-33	J-30	J-31	0.22	0.00	0.00	0.01	0.00
P-34	J-30	J-32	2.33	0.00	0.00	0.03	0.00
P-35	J-32	J-33	0.19	0.00	0.00	0.01	0.00
P-35a	J-33	J-33a	0.19	0.00	0.00	0.01	0.00
P-36	J-32	J-32a	1.32	0.00	0.00	0.01	0.00
P-36a	J-32a	J-34	1.32	0.00	0.00	0.01	0.00
P-37	J-34	J-35	0.12	0.00	0.00	0.01	0.00
P-37a	J-35	J-35a	0.12	0.00	0.00	0.01	0.00
P-38	J-34	J-36	0.31	0.00	0.00	0.00	0.00
P-39	J-04	J-37	7.04	0.50	0.00	0.18	0.05
P-40	J-37	J-38	-1.32	0.03	0.00	0.03	0.00
P-40a	J-38	J-14	-1.89	0.01	0.00	0.05	0.00
P-41	J-37	J-39	7.06	0.22	0.00	0.18	0.05
P-42	J-39	J-40	0.47	0.01	0.00	0.02	0.00
P-43	J-39	J-41	5.66	0.17	0.00	0.14	0.03
P-44	J-41	J-42	0.47	0.00	0.00	0.01	0.00
P-45	J-42	J-43	0.13	0.00	0.00	0.01	0.00
P-46	J-42	J-44	0.05	0.00	0.00	0.00	0.00
P-46a	J-44	J-44a	0.00	0.00	0.00	0.00	0.00
P-46b	J-44a	J-44b	0.00	0.00	0.00	0.00	0.00
P-46c	J-44b	J-44c	0.00	0.00	0.00	0.00	0.00
P-46d	J-44c	J-44d	0.00	0.00	0.00	0.00	0.00
P-46e	J-44d	J-44e	0.00	0.00	0.00	0.00	0.00
P-46f	J-44d	J-44f	0.00	0.00	0.00	0.00	0.00
P-47	J-41	J-45	4.62	0.09	0.00	0.12	0.02
P-48	J-45	J-46	-16.80	0.68	0.00	0.19	0.03
P-49	J-01	J-46	20.39	0.41	0.00	0.23	0.05
P-50	J-46	J-47	1.75	0.00	0.00	0.02	0.00
P-51	J-47	J-48	0.65	0.00	0.00	0.01	0.00
P-52	J-45	J-49	20.20	0.05	0.00	0.23	0.05
P-53	J-49	J-50	6.39	0.02	0.00	0.07	0.01
P-54	J-50	J-51	0.25	0.00	0.00	0.01	0.00
P-55	J-50	J-52	5.22	0.04	0.00	0.06	0.00
P-56	J-52	J-53	0.17	0.00	0.00	0.00	0.00
P-57	J-52	J-54	4.04	0.13	0.00	0.10	0.02
P-58	J-54	J-55	0.17	0.00	0.00	0.01	0.00
P-59	J-54	J-54a	2.63	0.09	0.00	0.07	0.01
P-59a	J-54a	J-56	2.63	0.02	0.00	0.07	0.01
P-59b	J-54a	J-54b	0.00	0.00	0.00	0.00	0.00
P-60	J-56	J-49	-12.85	0.31	0.00	0.15	0.02
P-61	J-56	J-57	13.97	0.04	0.00	0.16	0.02
P-62	J-57	J-58	13.39	0.23	0.00	0.15	0.02
P-63	J-58	J-59	0.11	0.00	0.00	0.00	0.00
P-63a	J-59	J-59a	0.00	0.00	0.00	0.00	0.00
P-63b	J-59a	J-59b	0.00	0.00	0.00	0.00	0.00
P-64	J-58	J-60	0.07	0.00	0.00	0.00	0.00
P-65	J-58	J-61	12.45	0.25	0.00	0.32	0.14
P-66	J-62	J-61	-2.82	0.11	0.00	0.07	0.01
P-67	J-63	J-62	-1.81	0.03	0.00	0.05	0.00
P-68	J-63	J-64	0.10	0.00	0.00	0.00	0.00
P-69	J-65	J-63	-0.90	0.00	0.00	0.01	0.00
P-70	J-65	J-66	0.07	0.00	0.00	0.00	0.00
P-71	J-29	J-65	-0.38	0.00	0.00	0.00	0.00
P-71a-XX	J-67	J-29					
P-72	J-68	J-67	4.40	0.02	0.00	0.11	0.02
P-73	J-69	J-68	5.03	0.04	0.00	0.06	0.00
P-74	J-70	J-69	8.07	0.08	0.00	0.09	0.01
P-75	J-70	J-71	0.14	0.00	0.00	0.01	0.00
P-76	J-61	J-70	8.90	0.02	0.00	0.10	0.01
P-77	J-69	J-72	1.71	0.02	0.00	0.04	0.00

P-78	J-72	J-73	1.36	0.00	0.00	0.03	0.00
P-79	J-73	J-74	0.07	0.00	0.00	0.00	0.00
P-80	J-73	J-75	0.58	0.01	0.00	0.01	0.00
P-80a	J-75	J-75a	0.00	0.00	0.00	0.00	0.00
P-80b	J-75a	J-75b	0.00	0.00	0.00	0.00	0.00
P-81	J-67	J-76a	3.89	0.01	0.00	0.04	0.00
P-81a	J-76a	J-76	3.69	0.04	0.00	0.09	0.01
P-82	J-76	J-77	0.43	0.01	0.00	0.02	0.00
P-83	J-76	J-78	1.68	0.06	0.00	0.04	0.00
P-84	J-78	J-79	0.36	0.01	0.00	0.02	0.00
P-85	J-78	J-80	0.05	0.00	0.00	0.00	0.00
P-86	J-48a	J-48b	0.00	0.00	0.00	0.00	0.00
P-87	102	J-104	0.00	0.00	0.00	0.00	0.00

P U M P / L O S S   E L E M E N T   R E S U L T S

NAME	FLOWRATE (gpm)	INLET HEAD (ft)	OUTLET HEAD (ft)	HEAD CHANGE (ft)	EFFIC- ENCY (%)	USEFUL POWER (Hp)	INCREM TL COST (\$)	TOTAL COST (\$)
-----								
Device "Pump-100" is closed								

E N D   N O D E   R E S U L T S

NODE NAME	NODE TITLE	EXTERNAL DEMAND (gpm)	HYDRAULIC GRADE (ft)	NODE ELEVATION (ft)	PRESSURE HEAD (ft)	NODE PRESSURE (psi)
100	LT: Guthrie	0.00	801.00	578.00	223.00	96.63
101	LT:US79&KY84	0.00	801.00	593.00	208.00	90.13
102	LT:848@RR Be	0.00	801.00	630.00	171.00	74.10
103	LT:Tk Tap@RR	0.00	801.00	637.00	164.00	71.07
J-01	KY848&RR Bed	0.99	799.97	631.00	168.97	73.22
J-02	KY848&RR Bed	0.21	799.96	631.00	168.96	73.22
J-03	End:RRln Con	0.10	799.96	655.00	144.96	62.82
J-04	848&HerndonR	0.95	799.87	625.00	174.87	75.78
J-05	KY848&US79	1.73	799.76	586.00	213.76	92.63
J-06	US79&RR Bed	1.01	799.84	550.00	249.84	108.26
J-07	Hadensville@	0.93	799.74	559.00	240.74	104.32
J-08	End:KY848Eas	0.46	799.74	555.00	244.74	106.05
J-09	79&SnardonMi	1.28	799.45	568.00	231.45	100.29
J-10	SnarMill&B-C	0.74	799.44	581.00	218.44	94.66
J-100	High:US41	0.00	801.00	605.00	196.00	84.93
J-101	US41&ChStahl	0.00	801.00	567.00	234.00	101.40
J-102	US41&JackGra	0.00	801.00	591.00	210.00	91.00
J-103	High:US Hwy4	0.00	801.00	615.00	186.00	80.60
J-104	Trenton:US41	0.00	801.00	600.00	201.00	87.10
J-105	Stahl&L.Chap	0.00	801.00	536.00	265.00	114.83
J-106	Stahl&Sander	0.00	801.00	571.00	230.00	99.67
J-107	Ch.Stahl cur	0.00	801.00	575.00	226.00	97.93
J-108	Stahl&Poinde	0.00	801.00	591.00	210.00	91.00
J-109	Stahl&Suiter	0.00	801.00	582.00	219.00	94.90
J-10a	Start:Riverc	0.00	799.44	560.00	239.44	103.76
J-10b	Riverchase6x	0.00	799.44	550.00	249.44	108.09
J-10c	End:Rivercha	0.00	799.44	530.00	269.44	116.76
J-10d	End:Rivercha	0.00	799.44	560.00	239.44	103.76
J-10e	End:Rivercha	0.00	799.44	550.00	249.44	108.09
J-11	End:Banton-C	0.24	799.44	591.00	208.44	90.33
J-110	Stahl&Campbe	0.00	801.00	595.00	206.00	89.27
J-111	KY104:Hamksv	0.00	801.00	559.00	242.00	104.87
J-112	KY104&BigPon	0.00	801.00	557.00	244.00	105.73
J-113	End:KY104@TN	0.00	801.00	540.00	261.00	113.10
J-12	SnarMill:6"t	0.26	799.44	538.00	261.44	113.29
J-13	End:SnardonM	0.12	799.44	535.00	264.44	114.59
J-14	US79&Dr.Boyl	0.00	799.41	573.00	226.41	98.11

J-14a	US79@ElkFork	0.72	799.29	525.00	274.29	118.86
J-15	US79&KY102	0.42	799.20	565.00	234.20	101.49
J-16	KY102&OldAll	0.88	798.92	603.00	195.92	84.90
J-17	OldAllen&C.S	0.36	798.92	588.00	210.92	91.40
J-18	KY102&Gardne	1.00	798.29	582.00	216.29	93.73
J-19	102&Traughbe	0.81	798.20	601.00	197.20	85.45
J-20	Traughber&Ol	0.79	798.15	597.00	201.15	87.16
J-21	Old Allensvi	0.07	798.15	570.00	228.15	98.86
J-22	Old Allensvi	0.43	798.14	600.00	198.14	85.86
J-23	102&Sawyer	0.46	798.20	610.00	188.20	81.55
J-24	End:Sawyer	0.19	798.20	625.00	173.20	75.05
J-25	End:KY102 No	0.22	798.20	620.00	178.20	77.22
J-26	Gardner&Side	0.54	798.28	604.00	194.28	84.19
J-27	End:GardnerS	0.14	798.28	600.00	198.28	85.92
J-28	Day-Allen&Ga	1.02	798.27	597.00	201.27	87.22
J-29	High:US68 We	0.38	797.88	700.00	97.88	42.41
J-30	Day-Allen&Do	0.96	798.24	597.00	201.24	87.21
J-31	End:Hardison	0.22	798.24	635.00	163.24	70.74
J-32	Start:P.Whee	0.82	798.24	605.00	193.24	83.74
J-32a	Sunaker Road	0.00	798.24	624.00	174.24	75.50
J-33	Curve:P.Whee	0.00	798.24	635.00	163.24	70.74
J-33a	End:P.Wheele	0.19	798.24	615.00	183.24	79.40
J-34	Daysville	0.89	798.24	618.00	180.24	78.10
J-35	Daysville@Li	0.00	798.24	645.00	153.24	66.40
J-35a	End:Volney R	0.12	798.24	630.00	168.24	72.90
J-36	US68&MillerV	0.31	798.24	650.00	148.24	64.24
J-37	Herndon&DrBo	1.30	799.37	581.00	218.37	94.63
J-38	End:Dr.Boyle	0.58	799.39	570.00	229.39	99.40
J-39	Herndon&Curt	0.94	799.15	610.00	189.15	81.96
J-40	End:Curtis S	0.47	799.14	560.00	239.14	103.63
J-41	Herndon&RRBe	0.57	798.98	612.00	186.98	81.02
J-42	RR Bed & Smi	0.29	798.98	620.00	178.98	77.56
J-43	End:Smith	0.13	798.98	635.00	163.98	71.06
J-44	Start:RR Tie	0.05	798.98	630.00	168.98	73.22
J-44a	High:RR@Ches	0.00	798.98	639.00	159.98	69.32
J-44b	End:RR tie-i	0.00	798.98	585.00	213.98	92.72
J-44c	Bradshaw	0.00	798.98	585.00	213.98	92.72
J-44d	RR Bed&KY102	0.00	798.98	636.00	162.98	70.62
J-44e	KY102@Elkton	0.00	798.98	640.00	158.98	68.89
J-44f	End:KY102 So	0.00	798.98	590.00	208.98	90.56
J-45	KY181&Herndo	1.23	798.88	638.00	160.88	69.72
J-46	Penchem	1.84	799.56	598.00	201.56	87.34
J-47	KY181-Cal Ma	1.10	799.56	583.00	216.56	93.84
J-48	KY181&US41	0.65	799.56	555.00	244.56	105.97
J-48a	KY181&US79	0.00	799.56	535.00	264.56	114.64
J-48b	End:US79@TN	0.00	799.56	520.00	279.56	121.14
J-49	181&Elk-Tren	0.96	798.84	635.00	163.84	71.00
J-50	KY181&Frogue	0.92	798.82	635.00	163.82	70.99
J-51	End:Frogue	0.25	798.81	625.00	173.81	75.32
J-52	KY181&KY104	1.00	798.78	643.00	155.78	67.50
J-53	KY181@TCCHS	0.17	798.78	620.00	178.78	77.47
J-54	KY104&Millen	1.25	798.65	620.00	178.65	77.41
J-54a	KY104&Murrey	0.00	798.56	583.00	215.56	93.41
J-54b	End:Murrey	0.00	798.56	580.00	218.56	94.71
J-55	End:Millen	0.17	798.65	615.00	183.65	79.58
J-56	KY104&Elk-Tr	1.51	798.53	575.00	223.53	96.86
J-57	104&Dickinso	0.58	798.50	584.00	214.50	92.95
J-58	DavMill&Dick	0.77	798.27	614.00	184.27	79.85
J-59	Start:Davis	0.11	798.27	615.00	183.27	79.42
J-59a	DavisMill Cu	0.00	798.27	605.00	193.27	83.75
J-59b	End:Davis Mi	0.00	798.27	550.00	248.27	107.58
J-60	End:GF Addis	0.07	798.27	615.00	183.27	79.42
J-61	Phillipi&Dav	0.73	798.02	605.00	193.02	83.64
J-62	DavisMill&Be	1.01	797.91	653.00	144.91	62.80
J-63	US68&DavisMi	0.82	797.88	646.00	151.88	65.81
J-64	End:US68 Elk	0.10	797.88	630.00	167.88	72.75
J-65	US68@Ind.Par	0.44	797.88	683.00	114.88	49.78
J-66	West Ind. Pa	0.07	797.88	720.00	77.88	33.75
J-67	Tress Shop	0.52	797.86	681.00	116.86	50.64
J-68	KY475@4"to6"	0.62	797.88	675.00	122.88	53.25
J-69	KY475&BellCh	1.33	797.92	590.00	207.92	90.10

J-70	Phillipi x-c	0.69	798.00	580.00	218.00	94.47
J-71	End:Phillipi	0.14	798.00	575.00	223.00	96.63
J-72	KY475&Hender	0.35	797.90	570.00	227.90	98.76
J-73	KY475&Maton	0.71	797.89	560.00	237.89	103.09
J-74	End:Maton	0.07	797.89	565.00	232.89	100.92
J-75	Start:KY475	0.58	797.89	565.00	232.89	100.92
J-75a	KY475&Smith	0.00	797.89	589.00	208.89	90.52
J-75b	End:Smith Rd	0.00	797.89	555.00	242.89	105.25
J-76	68&A.Henders	1.58	797.81	610.00	187.81	81.38
J-76a	US68:6"to4"	0.19	797.85	625.00	172.85	74.90
J-77	End:A.Hender	0.43	797.80	580.00	217.80	94.38
J-78	US68&Roger M	1.27	797.75	610.00	187.75	81.36
J-79	End:Roger O	0.36	797.74	600.00	197.74	85.69
J-80	Fairview	0.05	797.75	615.00	182.75	79.19
LTRWC	LTRWC WTP	----	600.00	580.00	20.00	8.67
LT-TC Tank	Todd County	----	801.00	651.00	150.00	65.00
Pump-100	LTR:Todd Pum	0.00	600.00	580.00	20.00	8.67
RV-1	LT:So.Todd M	----	801.00	650.00	151.00	65.43
Pump-100		0.00	801.00	580.00	221.00	95.77
RV-1		0.00	801.00	650.00	151.00	65.43

M A X I M U M   A N D   M I N I M U M   V A L U E S

P R E S S U R E S

JUNCTION NUMBER	MAXIMUM PRESSURES (psi)	JUNCTION NUMBER	MINIMUM PRESSURES (psi)
J-48b	121.14	LTRWC	8.67
J-14a	118.86	Pump-100	8.67
J-10c	116.76	J-66	33.75
J-105	114.83	J-29	42.41
J-48a	114.64	J-65	49.78
J-13	114.59	J-67	50.64
J-12	113.29	J-68	53.25
J-113	113.10	J-62	62.80
J-06	108.26	J-03	62.82
J-10b	108.09	J-36	64.24

R E G U L A T I N G   V A L V E   R E P O R T

VALVE LABEL	VALVE TYPE	VALVE SETTING (psi or gpm)	VALVE STATUS	UPSTREAM PRESSURE (psi)	DOWNSTREAM PRESSURE (psi)	THROUGH FLOW (gpm)
RV-1	PRV-1	70.00	WIDE OPEN	65.43	65.43	49.88

S U M M A R Y   O F   I N F L O W S   A N D   O U T F L O W S

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES  
 (-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE (gpm)	NODE TITLE
LTRWC	0.00	LTRWC WTP
LT-TC Tank	49.88	Todd County

NET SYSTEM INFLOW = 49.88  
 NET SYSTEM OUTFLOW = 0.00  
 NET SYSTEM DEMAND = 49.88

## **Appendix C**

*Rural Development Summary/Addendum (KY Guide 7)*



SUMMARY ADDENDUM

TO

PRELIMINARY ENGINEERING REPORT

Dated September 19, 2003

FOR

Todd County Water District

Clifty Tank & System Extension Project

\_\_\_\_\_  
(Name of Water Facility Project)

Applicant Contact Person Mike McGhee, P.E.

Applicant Phone Number (270) 483-9985

In order to avoid unnecessary delays in application processing the applicant and its consulting engineer should prepare a summary of the preliminary engineering report in accordance with this Guide. Feasibility review and grant determinations may be processed more accurately and more rapidly if the Summary/Addendum is submitted simultaneously with the preliminary engineering report, or as soon thereafter as possible.

I. General

Proposed Project: Provide a brief description of the proposed project. In addition to this summary, the Applicant/Engineer should submit a project map of the service area showing the following:

The Todd County Water District (TCWD) is comprised of approximately 362 miles of water line and four water storage tanks, totaling 530,800 gallons, serving approximately 2,787 customers in all of Todd, and northwestern Logan Counties. As of the Spring of 2003, the Todd County Water District began to purchase all of their treated water from the recently completed water system of the Logan Todd Regional Water Commission (LTRWC). Since going online with the Commission, the average daily usage within the TCWD system been 565,000 gallons per day. The TCWD is a relatively large water system covering most of Todd County and the Lake Malone area of Logan County. The majority of roads within the TCWD boundary have water service. The southwestern part of Todd County is not well served, but in the remainder of the county, only short extensions are needed from time to time to accommodate new development. The main problems that have faced the TCWD are 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. The water supply issue has been resolved by their connection to the Logan Todd system. The remaining problems will be alleviated by a planned system extension project. The proposed project involves construction of nearly 26 miles of water line on eleven rural roadways. Most of these lines are being planned primarily to serve new customers in need of a safe supply of drinking water, while others are being built to improve hydraulic performance of the existing distribution system. The Clifty area of northern Todd County experiences low pressure during high demand periods. This problem will be corrected by the construction of a new 250,000-gallon elevated water tank. Other low-pressure areas will be assisted by building interconnecting lines to complete hydraulic circuits or "loops". The loops will also improve the water quality by cutting down on the stagnant water in dead-end lines. Also included in the project are the addition of pump station and an up-to-date telemetry system to allow for the monitoring and control of the system in greater detail. The total estimated cost of the proposed project is \$1,800,000.

II. FACILITY CHARACTERISTICS OF EXISTING WATER SYSTEM

A. Water Source: Describe adequacy of source (quality and quantity). Include an explanation of raw water source, raw water intake structure, treatment plant capacity, and current level of production (WTP). Also describe the adequacy of Water Purchase Contract if applicable.

As of the Spring of 2003, the Todd County Water District began to purchase all of their treated water under an agreement of \$2.91/1,000 gallons 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. TCWD has three meter stations with the Commission, one located at the base of the LTRWC Todd County elevated tank that serves the southern part of the county, one in the Allensville community that serves the southeastern part of the county, and one at Allender's Hill that supplies water to northern Todd County. The Commission's plant is rated at 10.0 MGD, and raw

water for the plant is obtained in Clarksville, Tennessee from the Cumberland River. The plant presently operates at approximately 43% of capacity.

If the applicant purchases water:

Sellers: Logan Todd Regional Water Commission

Price/1,000 gallons: \$2.91

Present Estimated Market Value of Existing System \*: \$7,082,047  
(Based on Depreciated Value in 2002 PSC Report)

B. Water Storage:

Type: Ground Storage Tank X, Elevated Tank X,  
Standpipe X, Other

Number of Storage Structures 1 ground, 1 elevated, 2 standpipe

Total Storage Volume Capacity 530,800 gallons

Date Storage Tank(s) Constructed 1980 & 1989

C. Water Distribution System:

Pipe Material PVC

Linear Feet of Pipe: 3" Diameter and smaller: 70 miles; 4": 191 miles; 6": 91 miles;  
8": 8 miles; 10" 3 miles

Date(s) of Major Water Lines Construction 1980, 1987, 1990, 1992 & 2000

Number, and Capacity of Pump Station(s): 1 - 250 gpm, (Note: one pump station was taken out of service in 2003 due to LTRWC feed)

D. Condition of Existing Water System:

Briefly describe the condition and suitability for continued use of facility now owned by the applicant.  
Include any major renovation that will be needed within five to ten years.

The water system is generally in good repair with only routine maintenance required. No major renovations, other than those proposed in this project are anticipated in the near future. However, as mentioned before, areas of the system suffer low pressure conditions and there are many dead end lines creating low water flow which affects the water quality. Adding an elevated tank in the Clifty community and looping various hydraulic circuits will improve these deficiencies considerably.

E. Percentage of Unaccounted Water Loss in the Existing System: 8.64% (per 2002 PSC Audit)

III. EXISTING LONG-TERM INDEBTEDNESS

A. List of Bonds and Notes: *per 2002 Financial Statement*

Date of Issue	Bond/Note Holder	Principal Balance	Maturity Date	Bond Type	Interest Rate
1979	Rural Dev	\$ 1,341,000	2019	Revenue	5.000%
1987	Rural Dev	\$ 541,000	2027	Revenue	5.000%
1990	Rural Dev	\$ 570,000	2030	Revenue	5.000%
1992	Rural Dev	\$ 190,500	2032	Revenue	5.000%
1996	Rural Dev	\$ 508,000	2036	Revenue	4.875%
2000	Rural Dev	\$ 800,000	2040	Revenue	4.750%
Total		\$ 3,950,500			

B. Principal and Interest Payments:

Date of Issue	Principal Balance	2003 Principal	2003 Interest	2004 Principal	2004 Interest
1979	\$ 1,341,000	\$ 52,000	\$ 67,050	\$ 55,000	\$ 64,450
1987	\$ 541,000	\$ 11,000	\$ 27,050	\$ 12,000	\$ 26,500
1990	\$ 570,000	\$ 10,000	\$ 28,500	\$ 10,000	\$ 28,000
1992	\$ 190,500	\$ 2,900	\$ 9,525	\$ 3,000	\$ 9,380
1996	\$ 508,000	\$ 5,500	\$ 25,400	\$ 6,000	\$ 25,125
2000	\$ 800,000	\$ 8,000	\$ 40,000	\$ 8,000	\$ 39,600
Total	\$ 3,950,500	\$ 89,400	\$ 197,525	\$ 94,000	\$ 193,055

IV. EXISTING SHORT-TERM INDEBTEDNESS

A. List of All Short Term Debts: *per 2002 Financial Statement*

None.

V. LAND AND RIGHTS - EXISTING SYSTEM:

Number of Treatment Plant Sites	1
Number of Storage Tank Sites	4
Number of Pump Stations	1
Total Acreage	~10 Ac.
Purchase Price*	\$51,542 *Land & ROW value per 2002 Audit

VI. NUMBER OF EXISTING USERS

A. Water Users:

Residential Size Meters (In Town)*	-
Residential Size Meters/Farmers (Out of Town)*	2,747
Commercial Users & Resellers (In Town)	-
Commercial Users & Resellers (Out of Town)	40
Total	2,787
Number of Total potential Users in the Service Area	4,000 (Est.)

\*NOTE: Residential/Farmers Users: Classify by type of user regardless of quantity of water used. This classification should include those meters serving individual rural residence size meters and farmers.

VII. CURRENT CONNECTION FEES FOR EACH SIZE METER CONNECTION

Meter Size	Connection Fee	Minimum Water Usage for Each Size Meter
5/8 x 3/4"	\$450.00	2,000 gallons
3/4 Inch & Up	At Cost	2,000 gallons

VIII. WATER RATES - EXISTING RATE SCHEDULE

Date this rate went into effect: August 1, 2003

Meter Size All :

First	<u>2,000</u>	Gallons @	<u>\$ 17.90</u>	Minimum
Next	<u>8,000</u>	Gallons @	<u>\$ 9.38</u>	per 1,000 Gallons
Next	<u>10,000</u>	Gallons @	<u>\$ 8.35</u>	per 1,000 Gallons
Next	<u>20,000</u>	Gallons @	<u>\$ 7.33</u>	per 1,000 Gallons
All Over	<u>40,000</u>	Gallons @	<u>\$ 5.89</u>	per 1,000 Gallons

IX. ANALYSIS OF ACTUAL WATER USAGE - EXISTING SYSTEM - 12 MONTH PERIOD

For Period July 1, 2002 to June 30, 2003.

Size	MONTHLY WATER USAGE	Average	Farmer		Commercial	
			No. of Users	Usage (1000)	No. of Users	Usage (1000)
All Sizes	0 - 1000 Gal.	500	6,549	2,125,800	38	12,500
	1,000 - 2,000 Gal.	1,500	5,608	9,473,100	18	27,000
	2,000 - 3,000 Gal.	2,500	4,631	11,850,300	44	124,500
	3,000 - 4,000 Gal.	3,500	4,263	15,153,800	79	276,000
	4,000 - 5,000 Gal.	4,500	3,165	14,393,500	104	432,900
	5,000 - 6,000 Gal.	5,500	2,082	11,507,400	33	188,700
	6,000 - 7,000 Gal.	6,500	1,446	9,434,800	18	115,100
	7,000 - 8,000 Gal.	7,500	832	6,272,900	6	43,500
	8,000 - 9,000 Gal.	8,500	546	4,652,800	4	34,600
	9,000 - 10,000 Gal.	9,500	395	3,774,400	4	38,300
	10,000 - 11,000 Gal.	10,500	246	2,598,400	2	20,900
	11,000 - 12,000 Gal.	11,500	204	2,353,900	0	0
	12,000 - 13,000 Gal.	12,500	120	1,506,200	0	0
	13,000 - 14,000 Gal.	13,500	116	1,568,800	0	0
	14,000 - 15,000 Gal.	14,500	102	1,481,400	2	29,100
	15,000 - 16,000 Gal.	15,500	75	1,169,000	0	0
	16,000 - 17,000 Gal.	16,500	30	516,400	6	97,900
	17,000 - 18,000 Gal.	17,500	48	844,600	0	0
	18,000 - 19,000 Gal.	18,500	35	649,100	2	38,000
	19,000 - 20,000 Gal.	19,500	35	686,000	1	19,300
	20,000 - 25,000 Gal.	22,500	106	2,388,900	6	137,600
	25,000 - 30,000 Gal.	27,500	62	1,729,200	9	246,300
	30,001 - 40,000 Gal.	35,000	103	3,574,600	8	281,100
	40,001 - 50,000 Gal.	45,000	73	3,237,900	5	222,900
	50,001 - 60,000 Gal.	55,000	32	1,743,000	12	658,800
60,001 - 70,000 Gal.	65,000	35	2,251,700	2	131,100	
70,001 - 80,000 Gal.	75,000	20	1,498,800	1	75,400	
80,001 - 90,000 Gal.	85,000	19	1,615,900	0	0	
90,001 - 100,000 Gal.	95,000	16	1,614,600	2	190,200	
over 100,000 Gal.	391,658	25	6,781,500	76	32,776,000	
	Sub-Total		31,019	128,448,700	482	36,217,700
	Average Usage (Gallons Per Month)			4,141		75,140
		Combined	31,501	164,666,400		
	Average Usage (Gallons Per Month)			5,227		

X. FACILITY CHARACTERISTICS OF PROPOSED WATER SYSTEM

A. Water Source: Describe adequacy of source (quality and quantity). Include an explanation of raw water source, raw water intake structure, treatment plant capacity, and current level of production (WTP). Also describe the adequacy of Water Purchase Contract if applicable.

The recommended project is one that offers several advantages and improves the three primary deficiencies in the water system: low pressure in certain areas of the system, extending water service to unserved areas, and installing lines for improved hydraulic performance. The project will include the

construction of an elevated water storage tank (OF = ~920') with a capacity of 250,000-gallons to improve pressure in the higher elevations surrounding the Clifty community. Also, nearly 26 mile of water line will be installed to bring water service to unserved customers, connect dead end lines, and upgrade the hydraulic performance of the system. The TCWD will purchase all of its water for the proposed project from the Logan Todd Regional Water Commission, which presently utilizes approximately 43% of its water plant's design capacity of 10.0 MGD.

B. Water Storage:

Type: Ground Storage Tank \_\_\_\_\_ Elevated Tank  X   
 Standpipe \_\_\_\_\_ Other \_\_\_\_\_  
 Number of Storage Structures  1   
 Total Storage Volume Capacity  250,000 gallons

C. Water Distribution System:

Pipe Material  PVC   
 Lineal Feet of Pipe: 3" Diameter:  2,500  ; 4":  54,000  ; 6":  79,500  ;  
 8":  0  ; 10":  0   
 Number, and Capacity of Pump Station(s):  1 – 150 gpm (Approximate)

XI. LAND AND RIGHTS - PROPOSED WATER SYSTEM(S)

Number of Treatment Plant Sites	<u> 0 </u>
Number of Pump Sites	<u> 1 (Approximate) </u>
Number of Other Sites (Storage Tank)	<u> 1 </u>
Total Acreage	<u> ~1 Ac. </u>
Purchase Price	<u> ~\$15,000 </u>

XII. NUMBER OF NEW USERS

A. Water Users:

Residential Size Meters (In Town)*	<u> - </u>
Residential Size Meters/Farmers (Out of Town)*	<u> 60 </u>
Commercial Users & Resellers (In Town)	<u> - </u>
Commercial Users & Resellers (Out of Town)	<u> - </u>
Total	<u> 60 </u>
Number of Total potential Users in the Service Area	<u> 88 (Est.) </u>

\*NOTE: Residential/Farmers Users: Classify by type of user regardless of quantity of water used. This classification should include those meters serving individual rural residence size meters and farmers.

XIII. PROPOSED CONNECTION FEES FOR EACH SIZE METER CONNECTION

\* NOTE: No connection fee increase is expected as a result of this project.

Meter Size	Connection Fee	Minimum Water Usage for Each Size Meter	
5/8 x 3/4"	\$450.00	0	gallons
3/4 Inch	At Cost	0	gallons
1 - Inch	At Cost	0	gallons
1-1/2" Inch	At Cost	0	gallons
2 - Inch	At Cost	0	gallons

XIV. WATER RATES - PROPOSED

A. Proposed Rates with RUS Grant: No increase over August 2003 rates

First	<u>2,000</u>	Gallons @	<u>\$ 17.90</u>	Minimum
Next	<u>8,000</u>	Gallons @	<u>\$ 9.38</u>	per 1,000 Gallons
Next	<u>10,000</u>	Gallons @	<u>\$ 8.35</u>	per 1,000 Gallons
Next	<u>20,000</u>	Gallons @	<u>\$ 7.33</u>	per 1,000 Gallons
All Over	<u>40,000</u>	Gallons @	<u>\$ 5.89</u>	per 1,000 Gallons

B. Proposed Rates without RUS Grant: August 2003 rates plus 4.5%

First	<u>2,000</u>	Gallons @	<u>\$ 18.71</u>	Minimum
Next	<u>8,000</u>	Gallons @	<u>\$ 9.80</u>	per 1,000 Gallons
Next	<u>10,000</u>	Gallons @	<u>\$ 8.73</u>	per 1,000 Gallons
Next	<u>20,000</u>	Gallons @	<u>\$ 7.66</u>	per 1,000 Gallons
All Over	<u>40,000</u>	Gallons @	<u>\$ 6.16</u>	per 1,000 Gallons



XV. FORECAST OF WATER USAGE - INCOME - EXISTING SYSTEM - EXISTING USERS -- EXISTING RATES

For Period July 1, 2002 to June 30, 2003.

Note: Residential and Commercial users are combined since they pay the same retail rates

Monthly Usage			Bill for Avg. Usage	Number of Users	Usage (1000 gal)	Estimated Income
low	high	average				
-	1,000	500	\$ 17.90	6,587	2,138,300	\$ 117,907
1,001	2,000	1,500	\$ 17.90	5,626	9,500,100	\$ 100,705
2,001	3,000	2,500	\$ 22.59	4,675	11,974,800	\$ 105,608
3,001	4,000	3,500	\$ 31.97	4,342	15,429,800	\$ 138,814
4,001	5,000	4,500	\$ 41.35	3,269	14,826,400	\$ 135,173
5,001	6,000	5,500	\$ 50.73	2,115	11,696,100	\$ 107,294
6,001	7,000	6,500	\$ 60.11	1,464	9,549,900	\$ 88,001
7,001	8,000	7,500	\$ 69.49	838	6,316,400	\$ 58,233
8,001	9,000	8,500	\$ 78.87	550	4,687,400	\$ 43,379
9,001	10,000	9,500	\$ 88.25	399	3,812,700	\$ 35,212
10,001	11,000	10,500	\$ 97.12	248	2,619,300	\$ 24,085
11,001	12,000	11,500	\$ 105.47	204	2,353,900	\$ 21,515
12,001	13,000	12,500	\$ 113.82	120	1,506,200	\$ 13,658
13,001	14,000	13,500	\$ 122.17	116	1,568,800	\$ 14,171
14,001	15,000	14,500	\$ 130.52	104	1,510,500	\$ 13,574
15,001	16,000	15,500	\$ 138.87	75	1,169,000	\$ 10,415
16,001	17,000	16,500	\$ 147.22	36	614,300	\$ 5,300
17,001	18,000	17,500	\$ 155.57	48	844,600	\$ 7,467
18,001	19,000	18,500	\$ 163.92	37	687,100	\$ 6,065
19,001	20,000	19,500	\$ 172.27	36	705,300	\$ 6,202
20,001	25,000	22,500	\$ 194.77	112	2,526,500	\$ 21,814
25,001	30,000	27,500	\$ 231.42	71	1,975,500	\$ 16,430
30,001	40,000	35,000	\$ 286.39	111	3,855,700	\$ 31,789
40,001	50,000	45,000	\$ 338.59	78	3,460,800	\$ 26,410
50,001	60,000	55,000	\$ 369.69	44	2,401,800	\$ 16,266
60,001	70,000	65,000	\$ 400.79	37	2,382,800	\$ 14,829
70,001	80,000	75,000	\$ 431.89	21	1,574,200	\$ 9,070
80,001	90,000	85,000	\$ 462.99	19	1,615,900	\$ 8,797
90,001	100,000	95,000	\$ 494.09	18	1,804,800	\$ 8,894
100,001	and up	391,658	\$ 1,416.70	101	39,557,500	\$ 143,086
TOTAL				31,501	164,666,400	\$ 1,350,161

XVI. FORECAST OF WATER USAGE - INCOME - NEW USERS - EXTENSION ONLY – CURRENT RATES

Note: Approximately 60 new customers are expected to be served, that are typical 5,000 gallon users (5/8”).

Monthly Usage			Bill for Avg. Usage	Number of Users	Usage (1000 gal)	Estimated Income
low	high	average				
-	1,000	-	\$ -	-	-	\$ -
1,001	2,000	-	\$ -	-	-	\$ -
2,001	3,000	-	\$ -	-	-	\$ -
3,001	4,000	-	\$ -	-	-	\$ -
4,001	5,000	5,000	\$ 46.04	720	3,600	\$ 33,149
5,001	6,000	-	\$ -	-	-	\$ -
6,001	7,000	-	\$ -	-	-	\$ -
7,001	8,000	-	\$ -	-	-	\$ -
8,001	9,000	-	\$ -	-	-	\$ -
9,001	10,000	-	\$ -	-	-	\$ -
10,001	11,000	-	\$ -	-	-	\$ -
11,001	12,000	-	\$ -	-	-	\$ -
12,001	13,000	-	\$ -	-	-	\$ -
13,001	14,000	-	\$ -	-	-	\$ -
14,001	15,000	-	\$ -	-	-	\$ -
15,001	16,000	-	\$ -	-	-	\$ -
16,001	17,000	-	\$ -	-	-	\$ -
17,001	18,000	-	\$ -	-	-	\$ -
18,001	19,000	-	\$ -	-	-	\$ -
19,001	20,000	-	\$ -	-	-	\$ -
20,001	25,000	-	\$ -	-	-	\$ -
25,001	30,000	-	\$ -	-	-	\$ -
30,001	40,000	-	\$ -	-	-	\$ -
40,001	50,000	-	\$ -	-	-	\$ -
50,001	60,000	-	\$ -	-	-	\$ -
60,001	70,000	-	\$ -	-	-	\$ -
70,001	80,000	-	\$ -	-	-	\$ -
80,001	90,000	-	\$ -	-	-	\$ -
90,001	100,000	-	\$ -	-	-	\$ -
100,001	and up	-	\$ -	-	-	\$ -
TOTAL				720	3,600	\$ 33,149

XVII. FORECAST OF WATER USAGE - INCOME - EXISTING & FUTURE USERS – CURRENT RATES

Note: Residential and Commercial users are combined since they pay the same retail rates

Monthly Usage			Bill for Avg. Usage	Number of Users	Usage (1000 gal)	Estimated Income
low	high	average				
-	1,000	500	\$ 17.90	6,587	2,138,300	\$ 117,907
1,001	2,000	1,500	\$ 17.90	5,626	9,500,100	\$ 100,705
2,001	3,000	2,500	\$ 22.59	4,675	11,974,800	\$ 105,608
3,001	4,000	3,500	\$ 31.97	4,342	15,429,800	\$ 138,814
4,001	5,000	4,500	\$ 41.35	3,269	14,826,400	\$ 135,173
5,001	6,000	5,500	\$ 50.73	2,835	11,699,700	\$ 140,443
6,001	7,000	6,500	\$ 60.11	1,464	9,549,900	\$ 88,001
7,001	8,000	7,500	\$ 69.49	838	6,316,400	\$ 58,233
8,001	9,000	8,500	\$ 78.87	550	4,687,400	\$ 43,379
9,001	10,000	9,500	\$ 88.25	399	3,812,700	\$ 35,212
10,001	11,000	10,500	\$ 97.12	248	2,619,300	\$ 24,085
11,001	12,000	11,500	\$ 105.47	204	2,353,900	\$ 21,515
12,001	13,000	12,500	\$ 113.82	120	1,506,200	\$ 13,658
13,001	14,000	13,500	\$ 122.17	116	1,568,800	\$ 14,171
14,001	15,000	14,500	\$ 130.52	104	1,510,500	\$ 13,574
15,001	16,000	15,500	\$ 138.87	75	1,169,000	\$ 10,415
16,001	17,000	16,500	\$ 147.22	36	614,300	\$ 5,300
17,001	18,000	17,500	\$ 155.57	48	844,600	\$ 7,467
18,001	19,000	18,500	\$ 163.92	37	687,100	\$ 6,065
19,001	20,000	19,500	\$ 172.27	36	705,300	\$ 6,202
20,001	25,000	22,500	\$ 194.77	112	2,526,500	\$ 21,814
25,001	30,000	27,500	\$ 231.42	71	1,975,500	\$ 16,430
30,001	40,000	35,000	\$ 286.39	111	3,855,700	\$ 31,789
40,001	50,000	45,000	\$ 338.59	78	3,460,800	\$ 26,410
50,001	60,000	55,000	\$ 369.69	44	2,401,800	\$ 16,266
60,001	70,000	65,000	\$ 400.79	37	2,382,800	\$ 14,829
70,001	80,000	75,000	\$ 431.89	21	1,574,200	\$ 9,070
80,001	90,000	85,000	\$ 462.99	19	1,615,900	\$ 8,797
90,001	100,000	95,000	\$ 494.09	18	1,804,800	\$ 8,894
100,001	and up	391,658	\$ 1,416.70	101	39,557,500	\$ 143,086
TOTAL				32,221	164,670,000	\$ 1,383,310

XVIII. CURRENT OPERATING BUDGET - (Data from 2002 audit modified to current water rates)

A.	Operating Income	
	Water Sales	\$ 1,350,161
	Reconnect/Late Charge Fees	<u>\$ 19,222</u>
	Other (Describe)	<u>\$ 30,561</u>
	Total Operating Income	<u>\$ 1,399,944</u>
B.	Operation and Maintenance Expenses:	
	Payroll Expense	\$284,316
	Purchased Water	<u>\$451,414</u>
	Distribution Expense	<u>\$78,037</u>
	Contract Services	<u>\$48,446</u>
	Chemicals	<u>\$10,000</u>
	Utilities	<u>\$20,000</u>
	Administrative Expense	<u>\$41,581</u>
	Plant Expenses	<u>\$1,000</u>
	Office Expenses	<u>\$23,442</u>
	Insurance	<u>\$12,000</u>
	Travel	<u>\$16,603</u>
	Bad Debts	<u>\$8,094</u>
	Miscellaneous	<u>\$8,748</u>
	Total Operating Expenses	<u>\$ 1,003,681</u>
	Net Operating Income	<u>\$ 396,263</u>
C.	Non-Operating Income:	
	Interests on Deposits	\$ 15,424
	Debt Service - City of Elkton	<u>\$ 57,640</u>
	Total Non-Operating Income	<u>\$ 73,064</u>
D.	Net Income	<u>\$ 469,327</u>
E.	Debt Repayment	
	RUS Interest	\$ 187,107.00
	RUS Principal	<u>\$ 78,200.00</u>
	Non-RUS Debt Service	<u>\$ 7,794.00</u>
	Debt Service Reserves	<u>\$ 32,722.00</u>
	Total Debt Repayment	<u>\$ 305,823.00</u>
F.	Balance Available for Coverage and Depreciation	<u>\$ 163,504.00</u>

XIX. PROPOSED OPERATING BUDGET - NEW USERS - EXTENSION ONLY

(1<sup>st</sup> Full Year of Operation) Year Ending 2004 .

A.	Operating Income		
	Water Sales	\$	33,149 (1)
	Reconnect/Late Charge Fees	\$	-
	Other (Describe)	\$	-
	Total Operating Income	\$	33,149
B.	Operation and Maintenance Expenses:		
	Payroll Expense	\$	-
	Purchased Water	\$	10,476 (2)
	Distribution Expense	\$	1,000
	Contract Services	\$	-
	Chemicals	\$	-
	Utilities	\$	5,000
	Administrative Expense	\$	-
	Plant Expenses	\$	-
	Office Expenses	\$	500
	Insurance	\$	1,000
	Travel	\$	-
	Bad Debts	\$	-
	Miscellaneous	\$	-
	Total Operating Expenses	\$	17,976
	Net Operating Income	\$	15,173
C.	Non-Operating Income:		
	Interests on Deposits	\$	-
	Debt Service - City of Elkton	\$	-
	Total Non-Operating Income	\$	-
D.	Net Income	\$	15,173
E.	Debt Repayment		
	RUS Interest	\$	42,750 (3)
	RUS Principal	\$	7,920 (3)
	Non-RUS Debt Service	\$	-
	Debt Service Reserves	\$	5,070 (3)
	Total Debt Repayment	\$	55,740
F.	Balance Available for Coverage and Depreciation	\$	(40,567)

Notes:

1. Based on 60 Customers; 5,000 gallons per month usage and current rates.
2. Based on 60 Customers; 5,000 gallons per month usage and \$2.91 per thousand (LTRWC rate)
3. Based on a \$900,000 RUS grant and \$900,000 RUS loan at 4.75% & 40 years with 10% reserve.

XX. PROPOSED OPERATING BUDGET – EXISTING + NEW USERS

(1<sup>st</sup> Full Year of Operation) Year Ending 2004.

A.	Operating Income	
	Water Sales	\$ 1,383,310
	Reconnect/Late Charge Fees	<u>\$ 19,222</u>
	Other (Describe)	<u>\$ 30,561</u>
	Total Operating Income	<u>\$ 1,433,093</u>
B.	Operation and Maintenance Expenses:	
	Payroll Expense	\$284,316
	Purchased Water	<u>\$461,890</u>
	Distribution Expense	<u>\$79,037</u>
	Contract Services	<u>\$48,446</u>
	Chemicals	<u>\$10,000</u>
	Utilities	<u>\$25,000</u>
	Administrative Expense	<u>\$41,581</u>
	Plant Expenses	<u>\$1,000</u>
	Office Expenses	<u>\$23,942</u>
	Insurance	<u>\$13,000</u>
	Travel	<u>\$16,603</u>
	Bad Debts	<u>\$8,094</u>
	Miscellaneous	<u>\$8,748</u>
	Total Operating Expenses	<u>\$ 1,021,657</u>
	Net Operating Income	<u>\$ 411,436</u>
C.	Non-Operating Income:	
	Interests on Deposits	\$ 15,424
	Debt Service - City of Elkton	<u>\$ 57,640</u>
	Total Non-Operating Income	<u>\$ 73,064</u>
D.	Net Income	<u>\$ 484,500</u>
E.	Debt Repayment	
	RUS Interest	\$ 229,857.00
	RUS Principal	<u>\$ 86,120.00</u>
	Non-RUS Debt Service	<u>\$ 7,794.00</u>
	Debt Service Reserves	<u>\$ 37,792.00</u>
	Total Debt Repayment	<u>\$ 361,563.00</u>
F.	Balance Available for Coverage and Depreciation	<u>\$ 122,937.00</u>

