



SISLER-MAGGARD ENGINEERING, PLLC

220 EAST REYNOLDS ROAD, SUITE A3

LEXINGTON, KY 40517

(859) 271-2978

Fax (859) 271-5670

Email: smeng@alltel.net

October 4, 2006

Commonwealth of Kentucky
Public Service Commission
211 Sower Blvd
Frankfort, KY 40602

RECEIVED

OCT 05 2006

PUBLIC SERVICE
COMMISSION

ATTN: George W. Wakim, P.E.
Water & Sewer, Branch Manager

RE: Nicholas County Water District
Waterworks Revenue Bonds
PSC Case #2006-00432
SME #03013

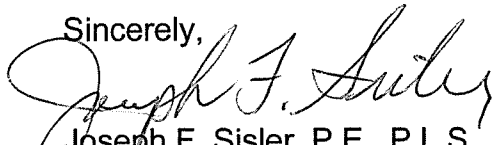
Dear Sir:

At the direction of W. Randall Jones we have enclosed herewith for the subject project find the following:

- 1) Preliminary Engineering Report – 2 copies
- 2.) Final Engineering Report – 2 copies

If we can provide any further information, please do not hesitate to call.

Sincerely,


Joseph F. Sisler, P.E., P.L.S.
JFS/gw

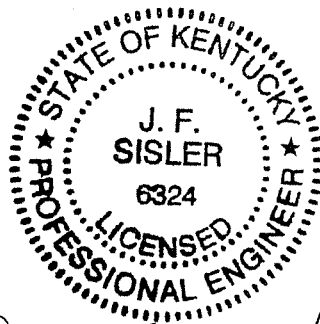
enclosures

cc/ W. Randall Jones w/ encl

FINAL ENGINEERING REPORT
FOR
PHASE VIII
WATER LINE EXTENSIONS

NICHOLAS COUNTY WATER DISTRICT

NICHOLAS COUNTY, KENTUCKY



Joseph F. Sisler

SEPTEMBER 2006
SME PROJECT CODE: 03013

SISLER-MAGGARD ENGINEERING, PLLC
ENGINEERING • SURVEYING
220 EAST REYNOLDS ROAD, SUITE A3
LEXINGTON, KENTUCKY 40517
(859) 271-2978 FAX (859) 271-5670

NICHOLAS COUNTY WATER DISTRICT MEMBERS

Sue Kirby	Commissioner
Chuck Smith	Commissioner
Samuel Reynolds	Commissioner
Gary Hollar	Commissioner
Mary Jo McCord	Chairperson
Georgia Livingood	Office Manager
Grant Paynter	Operator

**Final Engineering Report
Nicholas County Water District**

Table of Contents

<u>Section Number</u>	<u>Description</u>	<u>Page Number</u>
	<i>Executive Summary</i>	<i>i</i>
1	General	1-1
2	Planning Areas	2-1
3	Existing Facilities	3-1
4	Need for Project	4-1
5	Proposals Considered	5-1
6	Conclusions and Recommendations	6-1
Appendix A	Estimated Construction/Project Costs	A-1
Appendix B	Proposal Area Maps	B-1
Appendix C	Financial Section	C-1

Executive Summary

Phase VIII
Final Engineering Report
Nicholas County Water District

Executive Summary

FINDINGS

The Nicholas County Water District (NCWD) was first organized in July of 1964. In 1966 a Farmer's Home Administration loan was obtained to begin providing service to nearly 200 customers. Over the years several extensions have been added to the system. After the Phase III project was completed, the total number of customers was approximately 750.

The Phase IV project extended service to outlying areas of Northern Nicholas County. The project provided first time water service to as many as 119 new customers along 26 miles of rural roads.

The Phase V project extended service to outlying areas of Southern Nicholas County. The project provided first time water service to as many as 183 new customers along 47 miles of rural roads.

The proposed Phase VIII project will provide much needed water service to as many as 60 potential new customers along approximately 8 miles of rural roads.

The Phase VIII project will help alleviate much needed operation and maintenance problems caused by a lack of potable water storage and telemetry system. The water problems in Nicholas County have been generally well-known for a number of years, and have continuously been brought to the attention of the Nicholas County Water District and Nicholas County Fiscal Court.

With approximately 1291 customers at the end of Phase V, at 160 gallons per customer per day, the NCWD average usage is over the City of Carlisle contracted maximum allowable amount of water agreed to sell NCWD 800,000 gallons per month to meet the demands of the prior projects, thus relieving some of the demand from the City of Carlisle. In addition, the City of Millersburg has

agreed to sell NCWD a maximum of 1.5 million gallons per month, thus enabling the district the capacity to serve the potential customers of Phase VIII and further decrease need to purchase water from the City of Carlisle.

With NCWD current water purchase contracts with the City of Carlisle, Buffalo Trail Water Association (BTWA), the Western Fleming County Water District and the City of Millersburg, an ample supply of water is available to supply Water District's needs for Phase VIII and any additional future growth. These contracts meet all requirements of Rural Development (RD) (formerly FmHA) and the Public Service Commission (PSC). Based upon the information available at this time, it appears that no rate increase will be required within the near future. However, the District should continue its annual audits to assure that the District will experience no unexpected shortfalls.

A decrease in operation and maintenance costs due to the Phase VIII project will have a net positive effect that will allow the District to increase revenues using the already developed distribution system and based on the existing supply contracts with the City of Carlisle, Buffalo Trail Water Association, the City of Millersburg and the Western Fleming County Water District.

Recommendations

Based on studies, findings and conclusions and in accordance with other pertinent information contained in this report, it is recommended that the Nicholas County Water District take the following steps:

1. Review this report, then direct the Engineer, upon notification of Rural Development, to immediately complete necessary documentation to RD for further processing of the loan and grant application to construct the extensions and improvements outlined in this report.
2. Begin the process of collecting all tap fees to complete the project funding.
3. Direct the Engineer to complete all necessary plans, specifications and contract documents to receive approvals from regulatory and funding agencies.
4. Upon completion of the above and receipt of approvals, initiate actions to acquire required permits and right of way easements for construction areas.
5. Upon favorable review and funding commitments of RD, advertise for bids.
6. Upon favorable review of RD, make necessary petitions and applications, through local and bond counsel, to the Kentucky Public Service Commission for a "Certificate of Need and Necessity".

Section 1

General

**Phase VIII
Final Engineering Report
Nicholas County Water District**

Section 1 - General

Purpose

The purpose of this Phase VIII project is to develop a plan that will evaluate the potential and feasible methods by which potable water storage tank and complete telemetry system will be designed and constructed to benefit the entire service area of the Nicholas County Water District.

Scope

The original system service area consisted of 4" lines extending north of Carlisle to Stoney Creek at the Ellisville Community along US 68, northwest of Carlisle along Headquarters Road, along KY 32 to Stoney Creek Road and also including the Lake Carnico area.

Numerous extensions have been made since the original service area including but not limited to 4" lines south of Carlisle on Concord Road and East Union Road, also west of Carlisle on US 36 and US 68 and some smaller extensions northeast of Carlisle on Stoney Creek Road, Persimmon Ridge Road and Calcutta Road.

The Phase III service area completed during 1995 includes 6" and 4" mains along the following roads: Old Paris Road, Saltwell-Headquarters Road, Saltwell-Barterville Road, Pleasant Spring Road, Buffalo Trace Road, KY 13, KY 386, Ball Hill Road, Hooktown (KY 36), Barterville Road, KY 32, Arthur Road and Walnut Grove Road.

The Phase IV service area completed during 1998 includes 6" and 4" mains along the following roads: Stoney Creek Road, Short Stoney Creek Road, Holler Road, Persimmon Ridge Road, Suggs Road (KY 606), Crooked Creek Road (KY 1244), Sugar Creek Road (KY 1244), Rose Hill Road (KY 3314), US 68, Needmore Road, Goose Creek Pike, Hudnall Lane, Crayton Creek Road.

The Phase V service area included 4" and 3" mains along the following roads: Scrubgrass Creek Road, Concord Road, Mint Ridge Road, Ox Bow Road, Taylors Creek Road, Hog Jaw/Taylor Store Road, Ishmael Chapel Road, US 57 (Off Burns Pike), Burris Pike, Smith Lane, Saltwell – Brunker Road, Upper Jackstown Road, SR 1298 (Hick Hardy), Persimmon Road (KY 1244), Collier Road, SR 648 – Walnut Grove Road, East Union Road, Lower Jackstown Road, Carpenter Pike (SR 386).

The scope of the Phase VIII project is to develop a safe and adequate amount of storage of potable drinking water and to provide service to new customers throughout Nicholas County. It will supply service to the following roads: Saltwell – Brunker Road, Dog Walk Road, Ritchie Road, Snake Ridge, Myers Road, Miller Station Road, and Garnett Road

Section 2

Planning Areas

Phase VIII
Final Engineering Report
Nicholas County Water District

Section 2 – Planning Areas

General Information

Nicholas County is located in the Bluegrass Area of Kentucky just 35 miles northeast of Lexington. It is bordered to the north by Robertson County, Fleming County to the northeast, Bath County to the southeast, Bourbon County to the southwest and Harrison County to the northwest. Carlisle is the county seat of Nicholas County.

Nicholas County is separated by U.S. 68 which follows a northeast-to-southwest direction through the county and by Kentucky Route 36 which runs east-to-west through downtown Carlisle.

The area to be served by this Phase VIII will include the following roads: Saltwell – Bruncker, Dog Walk, Ritchie Road, Snake Ridge, Myers Road, Miller Station Road, and Garnett Road. This project will also include a 100,000 gallon water storage tank and water booster station rehabilitation.

POPULATION & HOUSEHOLD INCOME

Future population predictions for Nicholas County are based upon the 2000 U.S. Census of Population and Housing.

This publication shows the population of Nicholas County projected to the year 2020 based on data from the Center for Urban and Economic Research/Kentucky State Data Center's 2000 Census information located at the University of Louisville. Nicholas County shows a gradual decrease in population over this time period. The results of that study are presented in the following table:

*Population Projections

<u>Year</u>	<u>Projected Population</u>	<u>% Change</u>
2000	6,813	-
2005	6,828	+0.2
2010	6,817	-0.1
2020	6,684	-1.9
2030	6,468	-3.3

*Based on middle growth series

This represents an approximate 5.3% decrease in population over the next 30 years for Nicholas County. The 2000 Census indicates there are approximately 2.48 persons per household in this area.

The absence of water and sewer facilities are generally the limiting factor in determining how a particular area may develop and the rate of development. One could expect to see a 10% to 20% increase in population per decade in areas that obtain at least one of these services, with water being the most important to growth.

Household Income

The median household income based on the 2000 census is \$ 29,886 but the median household income for the Headquarters division is \$24,278 which is less than the \$28,585 required by RD for 45% grant eligibility. This should allow the District to qualify for at least a 45% RD grant for this project.

EXISTING AND FUTURE LAND USE

General

The service areas within the Nicholas County Water District are almost exclusively residential in nature. Single family homes dominate the service area. Studies conducted by the U.S. Census Bureau in 2000 indicate 2.48 persons occupy each household unit in this project area.

Other land uses include small industries, horse farms and agricultural purposes.

The development of the public water system for the Nicholas County Water District has encouraged some economic development in the present service areas, especially in the area around Lake Carnico. This is not expected, however, to significantly alter the predominately rural, residential nature of this proposed service area.

Future development and growth is anticipated on the outskirts of Carlisle's City Limits and along all major Kentucky and U.S. highways.

Description of Existing Service Area Boundary

The existing Nicholas County Water District (N.C.W.D.) service area boundary covers approximately 80% of Nicholas County. The service areas border Robertson County and the Licking River to the north, Fleming County and the Sharpsburg Water District to the east,

Bourbon County and Hinkston Creek to the south, and Bourbon County and the Harrison County Water District to the west. (See Appendix A.)

Proposed Project areas

Saltwell – Bruner Road – West on Saltwell – Bruner – 1.68 miles.

Dog Walk Beginning near its intersection with SR 32/36 continuing north – 3.18 miles.

Ritchie Road Beginning at its intersection with Bald Hill Road continuing west – 0.70 miles.

Snake Ridge Beginning at its intersection with SR 57 continuing south – 1.17 miles.

Myers Road East on Myers Road – 0.25 miles.

Miller Station Road South on Miller Station Road – 0.25 miles.

Garnett Road Beginning near its intersection with SR 1244 continuing west – 1.0 miles.

Section 3
EXISTING FACILITIES

Phase VIII
Final Engineering Report
Nicholas County Water District

Section – 3 Existing Facilities

The existing sources of water for non-served residents of the Nicholas County Water District include individually dug or drilled wells, cisterns, or pond water, usually with no type of treatment provided.

Bacteriological samples were collected from 44 homes in the north central area of Nicholas County in 1995 and 1996 in the areas proposed to receive water service from this project. The results indicated that 36 of the 44 homes (82%) sampled, showed the presence of E. Coli bacterium. E. Coli organisms are an indication of fecal coliform contamination, which is known to be an unhealthy and potentially dangerous contaminant for any water source.

City of Carlisle Water Treatment Plant

The City of Carlisle water treatment plant (WTP) is currently designed to provide 1.3 million gallons per day (MGD) of potable water. The City recently expanded and upgraded their WTP and constructed a 12 inch raw water main from the Licking River to the plant. This plant is located southwest of Carlisle just off of KY 36. The Licking River is regulated by releases at Cave Run Reservoir which should provide a minimum flow in the River to adequately supply water to the intake facility located off of Flemingsburg Road.

City of Carlisle Water Purchase Agreement

The City of Carlisle has committed 4 million gallons of water per month by Water Purchase Contract (for 40 years) beginning in 1993, to the District. This contract is not sufficient for all of the demand needed for the existing and or potential customers within the service area but will continue to be the major source of supply for the NCWD.

City of Millersburg Water Treatment Plant

The City of Millersburg's water treatment plant is currently designed for .5 million gallons per day (MGD). But with it's current pump capacity it can only produce .36 million gallons per day (MGD). The plant is located in the City of Millersburg and draws its raw water from Hinkston Creek which flows into the Licking River.

City of Millersburg Water Purchase Agreement

The City of Millersburg has committed 1.5 million gallons of water per month by Water Purchase Contract (for 40 years) beginning in 1999, to the District. This contract will allow the district to supply water to the proposed customers of Phase V and future customers, as well as decreasing the need of supply of water from the City of Carlisle.

Buffalo Trail Water Association Water Purchase Agreement (BTWA)

Buffalo Trail Water Association has committed 800,000 gallons per month by Water Purchase Contract (for 40 years) beginning in 1997, to the District. This contract allowed the District to supply water needed for the customers of Phase IV.

Distribution System

The existing distribution system at completion of Phase V includes approximately 150 miles of 6", 4", and 3" water mains.

Storage Tanks and Pumping Stations

A 50,000 gallon elevated steel storage tank is located off of Hickory Ridge Road in the Lake Carnico area. It was originally built from a Farmers Home Administration loan that was obtained in 1966 to serve the first customers in the Water District. This elevated storage tank was originally supplied from two vertical turbine "can-type" pumps, rated at 50 gpm each. After the completion of Phase III, the new duplex 100 gpm pumps located at the intersection of Old Paris Road and KY 32 and Highway 68 controls the storage tank by the use of a new telemetry system.

A second 139,000 gallon standpipe located in Barterville off of Buffalo Trace Road was constructed in Phase III to meet the required storage. The tank level is controlled by an altitude valve located at the base of the tank.

A third 100,000 gallon standpipe located off Concord road was constructed in Phase VI. This tank is controlled by telemetry from the Millersburg pump station.

These (3) three storage tanks provide for a total storage capacity of about 289,000 gallons (50,000 gallon elevated, a (Phase III) 139,000 gallon standpipe and a 100,000 gallon standpipe on Concord Road Phase VI). Based on the average customer daily water usage and the current approximate 1290 customers, there exists approximately 1.25 days of storage, which does meet Division of Water, PSC and RD requirements. But most rural systems need at least two days of storage. Therefore, a 100,000 gallon potable water storage tank is needed to bring the district closer to this number.

Two small bladder (hydropneumatic) booster pumps on mains from the City of Carlisle are located on Concord Road and East Union Road (SR 1285) to boost pressure on those dead end lines.

Metering Facilities

Six separate master metering facilities meter the supply of water to the District from the City of Carlisle. The main master meter, which supplies the majority of the water to the distribution system, is located on the west side of Old Paris Road (KY 32) supplied by a 10" line from the City.

The second master meter is located on the west side of Dorsey Road, serving the Concord Road area. This area is supplied by a new 8" line constructed by the City (1996).

The third master meter is located at the end of High Street, serving the East Union Road (SR 1285) area from a 4" supply line.

The fourth master meter is located on Concrete Road (KY 36), west of the City of Carlisle, serving approximately 30 customers along KY 36 up to U.S. 68 and the Miller Station Road.

The fifth master meter is located near the intersection of KY 32 and KY 1455 in Henryville.

The sixth master meter is used to serve approximately 7 customers along Lower Jackstown Road.

Chlorination

No additional chlorinating facilities are provided by the Nicholas County Water District. Sufficient residuals are provided by the City of Carlisle and Buffalo Trail Water Association.

Section 4
Need for Project

Phase VIII
Final Engineering Report
Nicholas County Water District

Section 4 – Need for Project

Design Criteria and Approvals

All water tank and telemetry will be designed in accordance with Kentucky Natural Resources and Environmental Protection Cabinet, Division of Water, USDA, Rural Utilities Service and Kentucky Public Service Commission guidelines.

Design drawings will be submitted for approval to the Division of Water and RD. The Preliminary and Final Engineering Reports will be filed with the application for a Certificate of Convenience and Necessity from the Kentucky Public Service Commission. The minimum pressure at all customer meter connections will be 30 psi. Individual pressure reducing valves will be provided at all meter settings where main line pressure is to exceed 90 psi.

Land and Rights-of-Way

For all lines constructed on private rights-of-way, a construction and permanent easement will be obtained from the private property owner prior to constructing the lines. If lines and or structures are to be constructed on Kentucky state or county highways, all necessary encroachment permits will be obtained before proceeding with waterline construction.

There will be requirements for fee simple land acquisition of the pump station and water tank for this project.

The water tank site proposed for this project will require less than 0.25 acre of fee simple property acquisition for each site. The proposed location of the 100 gallon per minute pump station will be near the intersection SR 1244 and old US 68.

Source of Water Supply

The main source of water supply to the District will continue to be the City of Carlisle's 1.3 million gallons per day (MGD) treatment plant located west of the city on Lake Drive off of KY 36.

Buffalo Trail Water Association (BTWA) has agreed to sell the district 800,000 gallons per month to supply water to the Phase IV project. This will help alleviate the District's problem with exceeding their water purchase agreement with the City of Carlisle.

The City of Millersburg has agreed to sell the water district 1.5 million gallons per month to supply water for the Phase V project as well as alleviate some of the demand from the City of Carlisle. This will allow the district to drastically reduce the water purchased from the City of Carlisle.

Total Water Storage

The District currently has 289,000 gallons of storage to serve 1250 customers with the completion of the Phase V project in 2000.

The RD and Kentucky Division of Water requires one (1) day storage based on average daily consumption. The average daily consumption in the Nicholas County Water District is 160 gallons per customer per day (gpcd). Therefore 1250 total customers at 160 gpcd usage would require a one day storage of approximately 200,000 gallons, which is more than the minimum requirement but most rural systems need at least two days of storage. Therefore, a 100,000 gallon ground storage tank will be required to help meet those recommended requirements.

Distribution System Extensions and Improvements

The proposed Phase VIII project will include approximately 8 miles of new water line and serve a potential of 60 new customers. The project will also include a pump station relocation from the intersection of Carpenter Pike and US 68 to Concord Road. In addition, the pump station along US 68 will be moved to near the intersection of Old US 68 and SR 1244.

Section 5
Proposals Considered

Phase VIII
Final Engineering Report
Nicholas County Water District

Section 5 – Proposals considered

General

Phase VIII water line extension project was considered in Phase V, but due to budget constraints, it was left out of the project. Due to additional water supply sources and additional customers, the water storage tank is needed. Please see Appendix A for breakdown of the proposed service areas.

Saltwell – Brunker Road – Connecting to an existing 4” line and continuing west on Saltwell – Brunker with a 4” water line until near the Harrison County line for approximately 1.68 miles while serving 7 potential customers.

Dog Walk Road – Connecting to an existing 4” water line and continuing with a 4” water line north until near the Harrison County line for approximately 3.18 miles while serving approximately 25 potential customers.

Ritchie Road – Connecting to a 4” water line and continuing with a 3” water line west until near its intersection with SR 3314 for approximately 0.70 miles while serving approximately 12 potential customers.

Snake Ridge Road – Connecting to a 4” water line on SR 57 and continuing south with a 3” water line until near its end for approximately 1.17 miles while serving approximately 7 potential customers.

Myers Road – Connecting to an existing 3” water line and continuing east with a 3” water line while serving one customer in 0.25 miles.

Miller Station Road – Connecting to an existing 4” water line and continuing south with a 3” water line for approximately 0.25 miles while serving a potential of 2 customers.

Garnett Road – Connecting to an existing 4” water line on SR 1244 and continuing west with a 3” water line for approximately 1 mile while serving a potential of 6 houses.

CONSTRUCTION PROBLEMS

The proposed project as presented in this report does not anticipate any significant problems. There will be a minimal amount of interruptions to existing customers during tie-ins to the existing system.

HYDRAULIC COMPUTATIONS

A hydraulic analysis was performed to determine the overflow elevation of the proposed water tank and the overall effect this project will have on the system. The hydraulic analysis has shown that no negative effects will be experienced by the existing system by the proposed tank.

Section 6

Conclusions and Recommendations

Phase VIII
Final Engineering Report
Nicholas County Water District

Section 6 – Conclusions and recommendations

Recommendations

Based on studies, findings and conclusions and in accordance with other pertinent information contained in this report, it is recommended that the Nicholas County Water District take the following steps:

1. Review this report, then direct the Engineer, upon notification of Rural Development, to immediately complete necessary documentation to RD for further processing of the loan and grant application to construct the improvements outlined in this report.
2. Begin the process of collecting all tap fees to complete the project funding.
4. Direct the Engineer to complete all necessary plans, specifications and contract documents to receive approvals from regulatory and funding agencies.
5. Upon completion of the above and receipt of approvals, initiate actions to acquire required permits and right of way easements for construction areas.
6. Upon favorable review and funding commitments of RD, advertise for bids.
7. Upon favorable review of RD, make necessary petitions and applications, through local and bond counsel, to the Kentucky Public Service Commission for a "Certificate of Need and Necessity".

APPENDIX A
AS – BID CONSTRUCTION/PROJECT COSTS

Nicholas County Water District Phase VIII Water Line Extensions Final Cost Estimate

Line #	# House	Description	Length of Line (miles)	Length of Line (FT)	House per Mile (calculated)	Line size (inches)	Line class	Cost/mile	Total Cost
1	7	SALT WELL-BRUNKER	1.68	8900	4.17	4	200	\$40,000.00	\$67,200.00
2	25	DOG WALK	3.18	16800	7.86	4	250	\$40,000.00	\$127,200.00
3	12	RITCHIE ROAD	0.70	3700	17.14	3	200	\$40,000.00	\$28,000.00
4	7	SNAKE RIDGE	1.17	6200	5.98	3	250	\$40,000.00	\$46,800.00
5	1	MYERS ROAD	0.25	1300	4.00	3	250	\$40,000.00	\$10,000.00
6	2	MILLER STATION ROAD	0.25	1300	8.00	3	250	\$40,000.00	\$10,000.00
7	6	GARNETT ROAD	1.00	5300	6.00	3	250	\$40,000.00	\$40,000.00
8	2	SCOTT ROAD	0.30	1600	6.67	3	250	\$40,000.00	\$12,000.00
TOTALS	62		8.53		7.27				\$341,200

OTHER COSTS

TOTAL ESTIMATED WATERLINE CONSTRUCTION COSTS	\$341,200
Upgrades to existing undersized waterlines and underserved customers	\$108,800
TOTAL ESTIMATED CONSTRUCTION COSTS	\$450,000
CONTINGENCY @ +/- 10%	\$68,000
ENGINEER RELATED COSTS (DESIGN,INSPECTION,EASEMENTS,ETC..)	
PRELIMINARY ENGINEERING REPORT	\$5,000
DESIGN	\$45,000
INSPECTION	\$32,000
OTHER ENGINEERING (Easements, Surveying, etc.)	\$20,000
RD RELATED PROJECT COSTS	
RD LEGAL & ADMINISTRATIVE	\$20,000
LAND ACQUISITION	\$10,000
INTEREST DURING CONSTRUCTION	\$10,000
TOTAL ESTIMATED OTHER PROJECT COSTS	\$142,000
TOTAL ESTIMATED PROJECT COSTS	\$660,000
PROPOSED PROJECT FUNDING	
RD GRANT	\$170,000
RD LOAN	\$173,000
TOBACCO SETTLEMENT GRANT	\$300,000
LOCAL TAP FEES	\$17,000
TOTAL PROJECT FUNDING	\$660,000

AS – BID PROJECT COST ESTIMATE

**NICHOLAS COUNTY WATER DISTRICT
PHASE VIII WATERLINE EXTENSIONS**

Item	Description	Cost
1	Estimated Construction Cost	\$ 453,100
2	Acquisition	\$ 10,000
3	Engineering Design	\$ 45,000
4	Engineering Inspection	\$ 32,000
5	Additional Engineering Services	\$ 25,000
	a. Permits	
	b. PSC Assistance	
	c. Site Surveys	
	d. Easement Assistance	
6	RD Legal and RD Administration	\$ 20,000
7	Interest during Construction	\$ 10,000
8	Contingencies	\$ 64,900
Total Project Cost		\$ 660,000

PROJECT FUNDING

PROJECT FUNDING

**NICHOLAS COUNTY WATER DISTRICT
PHASE VIII WATERLINE EXTENSIONS**

RD Grant	\$ 170,000
RD Loan	\$ 173,000
Tobacco Development Grant	\$ 300,000
Nicholas County Water District	\$ <u>17,000</u>
Total Project Cost	\$660,000

APPENDIX B
PROPOSAL AREA MAPS

APPENDIX C
FINANCIAL SECTION

EXISTING RATE SCHEDULE

NICHOLAS COUNTY WATER DISTRICT Phase VIII Waterline Extensions EXISTING RATE SCHEDULE

GALLONAGE BLOCK FOR
EACH METER SIZE
5/8 inch x 3/4 inch Meter

GALLONAGE BLOCK FOR EACH METER SIZE		MONTHLY RATE FOR EACH GALLONAGE BLOCK
First	1,000 gallons	\$ 13.13 (Minimum Bill)
Next	2,000 gallons	\$ 6.17 per 1,000 gallons
Next	2,000 gallons	\$ 5.38 per 1,000 gallons
Next	5,000 gallons	\$ 4.19 per 1,000 gallons
Next	15,000 gallons	\$ 3.80 per 1,000 gallons
Over	25,000 gallons	\$ 3.40 per 1,000 gallons

1 inch Meter

First	3,000 gallons	\$ 25.47 (Minimum Bill)
Next	2,000 gallons	\$ 5.38 per 1,000 gallons
Next	5,000 gallons	\$ 4.19 per 1,000 gallons
Next	15,000 gallons	\$ 3.80 per 1,000 gallons
Over	25,000 gallons	\$ 3.40 per 1,000 gallons

1-1/2 inch Meter

First	8,400 gallons	\$ 48.80 (Minimum Bill)
Next	1,600 gallons	\$ 4.19 per 1,000 gallons
Next	15,000 gallons	\$ 3.80 per 1,000 gallons
Over	25,000 gallons	\$ 3.40 per 1,000 gallons

2 inch Meter

First	12,667 gallons	\$ 68.58 (Minimum Bill)
Next	12,333 gallons	\$ 3.80 per 1,000 gallons
Over	25,000 gallons	\$ 3.40 per 1,000 gallons

3 inch Meter

First	41,125 gallons	\$ 165.18 (Minimum Bill)
Over	41,125 gallons	\$ 3.40 per 1,000 gallons

4 inch Meter

First	66,125 gallons	\$ 250.18 (Minimum Bill)
Over	66,125 gallons	\$ 3.40 per 1,000 gallons

PROPOSED RATE SCHEDULE

NICHOLAS COUNTY WATER DISTRICT

Phase VIII Waterline Extensions

GALLONAGE BLOCK FOR EACH METER SIZE	MONTHLY RATE FOR EACH GALLONAGE BLOCK
<u>5/8 inch x 3/4 inch Meter</u>	
First 1,000 gallons	\$ 13.13 (Minimum Bill)
Next 2,000 gallons	\$ 6.17 per 1,000 gallons
Next 2,000 gallons	\$ 5.38 per 1,000 gallons
Next 5,000 gallons	\$ 4.19 per 1,000 gallons
Next 15,000 gallons	\$ 3.80 per 1,000 gallons
Over 25,000 gallons	\$ 3.40 per 1,000 gallons
 <u>1 inch Meter</u>	
First 3,000 gallons	\$ 25.47 (Minimum Bill)
Next 2,000 gallons	\$ 5.38 per 1,000 gallons
Next 5,000 gallons	\$ 4.19 per 1,000 gallons
Next 15,000 gallons	\$ 3.80 per 1,000 gallons
Over 25,000 gallons	\$ 3.40 per 1,000 gallons
 <u>1-1/2 inch Meter</u>	
First 8,400 gallons	\$ 48.80 (Minimum Bill)
Next 1,600 gallons	\$ 4.19 per 1,000 gallons
Next 15,000 gallons	\$ 3.80 per 1,000 gallons
Over 25,000 gallons	\$ 3.40 per 1,000 gallons
 <u>2 inch Meter</u>	
First 12,667 gallons	\$ 68.58 (Minimum Bill)
Next 12,333 gallons	\$ 3.80 per 1,000 gallons
Over 25,000 gallons	\$ 3.40 per 1,000 gallons
 <u>3 inch Meter</u>	
First 41,125 gallons	\$ 165.18 (Minimum Bill)
Over 41,125 gallons	\$ 3.40 per 1,000 gallons
 <u>4 inch Meter</u>	
First 66,125 gallons	\$ 250.18 (Minimum Bill)
Over 66,125 gallons	\$ 3.40 per 1,000 gallons

A \$ 5.00 surcharge will be applied to all new customers of this project.

03013
preliminary
eng.
file

PRELIMINARY ENGINEERING REPORT
FOR
PHASE VIII
WATER LINE EXTENSIONS

NICHOLAS COUNTY WATER DISTRICT

NICHOLAS COUNTY, KENTUCKY



Joseph F. Sisler

NOVEMBER 2003
SME PROJECT CODE: 03013

SISLER-MAGGARD ENGINEERING, PLLC
ENGINEERING • SURVEYING
220 EAST REYNOLDS ROAD, SUITE A3
LEXINGTON, KENTUCKY 40517
(859) 271-2978 FAX (859) 271-5670

NICHOLAS COUNTY WATER DISTRICT MEMBERS

Sue Kirby

Chairperson

Chuck Smith

Commissioner

Samuel Reynolds

Commissioner

Gary Hamilton

Commissioner

Mary Jo McCord

Commissioner

Georgia Livingood

Office Manager

Grant Paynter

Operator

**Preliminary Engineering Report
Nicholas County Water District**

Table of Contents

<u>Section Number</u>	<u>Description Page Number</u>	<u>Page Number</u>
	<i>Executive Summary</i>	<i>i</i>
1	General	1-1
2	Planning Areas	2-1
3	Existing Facilities	3-1
4	Need for Project	4-1
5	Proposals Considered	5-1
6	Conclusions and Recommendations	6-1
Appendix A	Estimated Construction/Project Costs	A-1
Appendix B	Proposal Area Maps	B-1
Appendix C	Financial Section	C-1

Executive Summary

Phase VIII
Preliminary Engineering Report
Nicholas County Water District

Executive Summary

FINDINGS

The Nicholas County Water District (NCWD) was first organized in July of 1964. In 1966 a Farmer's Home Administration loan was obtained to begin providing service to nearly 200 customers. Over the years several extensions have been added to the system. After the Phase III project was completed, the total number of customers was approximately 750.

The Phase IV project extended service to outlying areas of Northern Nicholas County. The project provided first time water service to as many as 119 new customers along 26 miles of rural roads.

The Phase V project extended service to outlying areas of Southern Nicholas County. The project provided first time water service to as many as 183 new customers along 47 miles of rural roads.

The proposed Phase VIII project will provide much needed water service to as many as 60 potential new customers along approximately 8 miles of rural roads.

The Phase VIII project will help alleviate much needed operation and maintenance problems caused by a lack of potable water storage and telemetry system. The water problems in Nicholas County have been generally well-known for a number of years, and have continuously been brought to the attention of the Nicholas County Water District and Nicholas County Fiscal Court.

With approximately 1291 customers at the end of Phase V, at 160 gallons per customer per day, the NCWD average usage is over the City of Carlisle contracted maximum allowable amount of water agreed to sell NCWD 800,000 gallons per month to meet the demands of the prior projects, thus relieving some of the demand from the City of Carlisle. In addition, the City of Millersburg has

agreed to sell NCWD a maximum of 1.5 million gallons per month, thus enabling the district the capacity to serve the potential customers of Phase VIII and further decrease need to purchase water from the City of Carlisle.

With NCWD current water purchase contracts with the City of Carlisle, Buffalo Trail Water Association (BTWA), the Western Fleming County Water District and the City of Millersburg, an ample supply of water is available to supply Water District's needs for Phase VIII and any additional future growth. These contracts meet all requirements of Rural Development (RD) (formerly FmHA) and the Public Service Commission (PSC). Based upon the information available at this time, it appears that no rate increase will be required within the near future. However, the District should continue its annual audits to assure that the District will experience no unexpected shortfalls.

A decrease in operation and maintenance costs due to the Phase VIII project will have a net positive effect that will allow the District to increase revenues using the already developed distribution system and based on the existing supply contracts with the City of Carlisle, Buffalo Trail Water Association, the City of Millersburg and the Western Fleming County Water District.

Recommendations

Based on studies, findings and conclusions and in accordance with other pertinent information contained in this report, it is recommended that the Nicholas County Water District take the following steps:

1. Review this report, then direct the Engineer, upon notification of Rural Development, to immediately complete necessary documentation to RD for further processing of the loan and grant application to construct the extensions and improvements outlined in this report.
2. Begin the process of collecting all tap fees to complete the project funding.
3. Direct the Engineer to complete all necessary plans, specifications and contract documents to receive approvals from regulatory and funding agencies.
4. Upon completion of the above and receipt of approvals, initiate actions to acquire required permits and right of way easements for construction areas.
5. Upon favorable review and funding commitments of RD, advertise for bids.
6. Upon favorable review of RD, make necessary petitions and applications, through local and bond counsel, to the Kentucky Public Service Commission for a "Certificate of Need and Necessity".

Section 1

General

**Phase VIII
Preliminary Engineering Report
Nicholas County Water District**

Section 1 - General

Purpose

The purpose of this Phase VIII project is to develop a plan that will evaluate the potential and feasible methods by which potable water storage tank and complete telemetry system will be designed and constructed to benefit the entire service area of the Nicholas County Water District.

Scope

The original system service area consisted of 4" lines extending north of Carlisle to Stoney Creek at the Ellisville Community along US 68, northwest of Carlisle along Headquarters Road, along KY 32 to Stoney Creek Road and also including the Lake Carnico area.

Numerous extensions have been made since the original service area including but not limited to 4" lines south of Carlisle on Concord Road and East Union Road, also west of Carlisle on US 36 and US 68 and some smaller extensions northeast of Carlisle on Stoney Creek Road, Persimmon Ridge Road and Calcutta Road.

The Phase III service area completed during 1995 includes 6" and 4" mains along the following roads: Old Paris Road, Saltwell-Headquarters Road, Saltwell-Barterville Road, Pleasant Spring Road, Buffalo Trace Road, KY 13, KY 386, Ball Hill Road, Hooktown (KY 36), Barterville Road, KY 32, Arthur Road and Walnut Grove Road.

The Phase IV service area completed during 1998 includes 6" and 4" mains along the following roads: Stoney Creek Road, Short Stoney Creek Road, Holler Road, Persimmon Ridge Road, Suggs

Road (KY 606), Crooked Creek Road (KY 1244), Sugar Creek Road (KY 1244), Rose Hill Road (KY 3314), US 68, Needmore Road, Goose Creek Pike, Hudnall Lane, Crayton Creek Road.

The Phase V service area included 4" and 3" mains along the following roads: Scrubgrass Creek Road, Concord Road, Mint Ridge Road, Ox Bow Road, Taylors Creek Road, Hog Jaw/Taylor Store Road, Ishmael Chapel Road, US 57 (Off Burns Pike), Burris Pike, Smith Lane, Saltwell – Bruncker Road, Upper Jackstown Road, SR 1298 (Hick Hardy), Persimmon Road (KY 1244), Collier Road, SR 648 – Walnut Grove Road, East Union Road, Lower Jackstown Road, Carpenter Pike (SR 386).

The scope of the Phase VIII project is to develop a safe and adequate amount of storage of potable drinking water and to provide service to new customers throughout Nicholas County. It will supply service to the following roads: Saltwell – Bruncker Road, Dog Walk Road, Ritchie Road, Snake Ridge, Myers Road, Miller Station Road, and Garnett Road

Section 2

Planning Areas

Phase VIII
Preliminary Engineering Report
Nicholas County Water District

Section 2 – Planning Areas

General Information

Nicholas County is located in the Bluegrass Area of Kentucky just 35 miles northeast of Lexington. It is bordered to the north by Robertson County, Fleming County to the northeast, Bath County to the southeast, Bourbon County to the southwest and Harrison County to the northwest. Carlisle is the county seat of Nicholas County.

Nicholas County is separated by U.S. 68 which follows a northeast-to-southwest direction through the county and by Kentucky Route 36 which runs east-to-west through downtown Carlisle.

The area to be served by this Phase VIII will include the following roads: Saltwell – Bruner, Dog Walk, Ritchie Road, Snake Ridge, Myers Road, Miller Station Road, and Garnett Road. This project will also include a 100,000 gallon water storage tank and water booster station rehabilitation.

POPULATION & HOUSEHOLD INCOME

Future population predictions for Nicholas County are based upon the 2000 U.S. Census of Population and Housing.

This publication shows the population of Nicholas County projected to the year 2020 based on data from the Center for Urban and Economic Research/Kentucky State Data Center's 2000 Census information located at the University of Louisville. Nicholas County shows a gradual decrease in population over this time period. The results of that study are presented in the following table:

***Population Projections**

<u>Year</u>	<u>Projected Population</u>	<u>% Change</u>
2000	6,813	-
2005	6,828	+0.2
2010	6,817	-0.1
2020	6,684	-1.9
2030	6,468	-3.3

*Based on middle growth series

This represents an approximate 5.3% decrease in population over the next 30 years for Nicholas County. The 2000 Census indicates there are approximately 2.48 persons per household in this area.

The absence of water and sewer facilities are generally the limiting factor in determining how a particular area may develop and the rate of development. One could expect to see a 10% to 20% increase in population per decade in areas that obtain at least one of these services, with water being the most important to growth.

Household Income

The median household income based on the 2000 census is \$ 29,886 but the median household income for the Headquarters division is \$24,278 which is less than the \$28,585 required by RD for 45% grant eligibility. This should allow the District to qualify for at least a 45% RD grant for this project.

EXISTING AND FUTURE LAND USE

General

The service areas within the Nicholas County Water District are almost exclusively residential in nature. Single family homes dominate the service area. Studies conducted by the U.S. Census Bureau in 2000 indicate 2.48 persons occupy each household unit in this project area.

Other land uses include small industries, horse farms and agricultural purposes.

The development of the public water system for the Nicholas County Water District has encouraged some economic development in the present service areas, especially in the area around Lake Carnico. This is not expected, however, to significantly alter the predominately rural, residential nature of this proposed service area.

Future development and growth is anticipated on the outskirts of Carlisle's City Limits and along all major Kentucky and U.S. highways.

Description of Existing Service Area Boundary

The existing Nicholas County Water District (N.C.W.D.) service area boundary covers approximately 80% of Nicholas County. The service areas border Robertson County and the Licking River to the north, Fleming County and the Sharpsburg Water District to the east,

Bourbon County and Hinkston Creek to the south, and Bourbon County and the Harrison County Water District to the west. (See Appendix A.)

Proposed Project areas

Saltwell – Bruner Road – West on Saltwell – Bruner – 1.68 miles.

Dog Walk Beginning near its intersection with SR 32/36 continuing north – 3.18 miles.

Ritchie Road Beginning at its intersection with Bald Hill Road continuing west – 0.70 miles.

Snake Ridge Beginning at its intersection with SR 57 continuing south – 1.17 miles.

Myers Road East on Myers Road – 0.25 miles.

Miller Station Road South on Miller Station Road – 0.25 miles.

Garnett Road Beginning near its intersection with SR 1244 continuing west – 1.0 miles.

Section 3
EXISTING FACILITIES

Phase VIII
Preliminary Engineering Report
Nicholas County Water District

Section – 3 Existing Facilities

The existing sources of water for non-served residents of the Nicholas County Water District include individually dug or drilled wells, cisterns, or pond water, usually with no type of treatment provided.

Bacteriological samples were collected from 44 homes in the north central area of Nicholas County in 1995 and 1996 in the areas proposed to receive water service from this project. The results indicated that 36 of the 44 homes (82%) sampled, showed the presence of E. Coli bacterium. E. Coli organisms are an indication of fecal coliform contamination, which is known to be an unhealthy and potentially dangerous contaminant for any water source.

City of Carlisle Water Treatment Plant

The City of Carlisle water treatment plant (WTP) is currently designed to provide 1.3 million gallons per day (MGD) of potable water. The City recently expanded and upgraded their WTP and constructed a 12 inch raw water main from the Licking River to the plant. This plant is located southwest of Carlisle just off of KY 36. The Licking River is regulated by releases at Cave Run Reservoir which should provide a minimum flow in the River to adequately supply water to the intake facility located off of Flemingsburg Road.

City of Carlisle Water Purchase Agreement

The City of Carlisle has committed 4 million gallons of water per month by Water Purchase Contract (for 40 years) beginning in 1993, to the District. This contract is not sufficient for all of the demand needed for the existing and or potential customers within the service area but will continue to be the major source of supply for the NCWD.

City of Millersburg Water Treatment Plant

The City of Millersburg's water treatment plant is currently designed for .5 million gallons per day (MGD). But with it's current pump capacity it can only produce .36 million gallons per day (MGD). The plant is located in the City of Millersburg and draws its raw water from Hinkston Creek which flows into the Licking River.

City of Millersburg Water Purchase Agreement

The City of Millersburg has committed 1.5 million gallons of water per month by Water Purchase Contract (for 40 years) beginning in 1999, to the District. This contract will allow the district to supply water to the proposed customers of Phase V and future customers, as well as decreasing the need of supply of water from the City of Carlisle.

Buffalo Trail Water Association Water Purchase Agreement (BTWA)

Buffalo Trail Water Association has committed 800,000 gallons per month by Water Purchase Contract (for 40 years) beginning in 1997, to the District. This contract allowed the District to supply water needed for the customers of Phase IV.

Distribution System

The existing distribution system at completion of Phase V includes approximately 150 miles of 6", 4", and 3" water mains.

Storage Tanks and Pumping Stations

A 50,000 gallon elevated steel storage tank is located off of Hickory Ridge Road in the Lake Carnico area. It was originally built from a Farmers Home Administration loan that was obtained in 1966 to serve the first customers in the Water District. This elevated storage tank was originally supplied from two vertical turbine "can-type" pumps, rated at 50 gpm each. After the completion of Phase III, the new duplex 100 gpm pumps located at the intersection of Old Paris Road and KY 32 and Highway 68 controls the storage tank by the use of a new telemetry system.

A second 139,000 gallon standpipe located in Barterville off of Buffalo Trace Road was constructed in Phase III to meet the required storage. The tank level is controlled by an altitude valve located at the base of the tank.

A third 100,000 gallon standpipe located off Concord road was constructed in Phase VI. This tank is controlled by telemetry from the Millersburg pump station.

These (3) three storage tanks provide for a total storage capacity of about 289,000 gallons (50,000 gallon elevated, a (Phase III) 139,000 gallon standpipe and a 100,000 gallon standpipe on Concord Road Phase VI). Based on the average customer daily water usage and the current approximate 1290 customers, there exists approximately 1.25 days of storage, which does meet Division of Water, PSC and RD requirements. But most rural systems need at least two days of storage. Therefore, a 100,000 gallon potable water storage tank is needed to bring the district closer to this number.

Two small bladder (hydropneumatic) booster pumps on mains from the City of Carlisle are located on Concord Road and East Union Road (SR 1285) to boost pressure on those dead end lines.

Metering Facilities

Six separate master metering facilities meter the supply of water to the District from the City of Carlisle. The main master meter, which supplies the majority of the water to the distribution system, is located on the west side of Old Paris Road (KY 32) supplied by a 10" line from the City.

The second master meter is located on the west side of Dorsey Road, serving the Concord Road area. This area is supplied by a new 8" line constructed by the City (1996).

The third master meter is located at the end of High Street, serving the East Union Road (SR 1285) area from a 4" supply line.

The fourth master meter is located on Concrete Road (KY 36), west of the City of Carlisle, serving approximately 30 customers along KY 36 up to U.S. 68 and the Miller Station Road.

The fifth master meter is located near the intersection of KY 32 and KY 1455 in Henryville.

The sixth master meter is used to serve approximately 7 customers along Lower Jackstown Road.

Chlorination

No additional chlorinating facilities are provided by the Nicholas County Water District. Sufficient residuals are provided by the City of Carlisle and Buffalo Trail Water Association.

Section 4
Need for Project

Phase VIII
Preliminary Engineering Report
Nicholas County Water District

Section 4 – Need for Project

Design Criteria and Approvals

All water tank and telemetry will be designed in accordance with Kentucky Natural Resources and Environmental Protection Cabinet, Division of Water, USDA, Rural Utilities Service and Kentucky Public Service Commission guidelines.

Design drawings will be submitted for approval to the Division of Water and RD. The Preliminary and Final Engineering Reports will be filed with the application for a Certificate of Convenience and Necessity from the Kentucky Public Service Commission. The minimum pressure at all customer meter connections will be 30 psi. Individual pressure reducing valves will be provided at all meter settings where main line pressure is to exceed 90 psi.

Land and Rights-of-Way

For all lines constructed on private rights-of-way, a construction and permanent easement will be obtained from the private property owner prior to constructing the lines. If lines and or structures are to be constructed on Kentucky state or county highways, all necessary encroachment permits will be obtained before proceeding with waterline construction.

There will be requirements for fee simple land acquisition of the pump station and water tank for this project.

The water tank site proposed for this project will require less than 0.25 acre of fee simple property acquisition for each site. The proposed location of the 100 gallon per minute pump station will be near the intersection SR 1244 and old US 68.

Source of Water Supply

The main source of water supply to the District will continue to be the City of Carlisle's 1.3 million gallons per day (MGD) treatment plant located west of the city on Lake Drive off of KY 36.

Buffalo Trail Water Association (BTWA) has agreed to sell the district 800,000 gallons per month to supply water to the Phase IV project. This will help alleviate the District's problem with exceeding their water purchase agreement with the City of Carlisle.

The City of Millersburg has agreed to sell the water district 1.5 million gallons per month to supply water for the Phase V project as well as alleviate some of the demand from the City of Carlisle. This will allow the district to drastically reduce the water purchased from the City of Carlisle.

Total Water Storage

The District currently has 289,000 gallons of storage to serve 1250 customers with the completion of the Phase V project in 2000.

The RD and Kentucky Division of Water requires one (1) day storage based on average daily consumption. The average daily consumption in the Nicholas County Water District is 160 gallons per customer per day (gpcd). Therefore 1250 total customers at 160 gpcd usage would require a one day storage of approximately 200,000 gallons, which is more than the minimum requirement but most rural systems need at least two days of storage. Therefore, a 100,000 gallon ground storage tank will be required to help meet those recommended requirements.

Distribution System Extensions and Improvements

The proposed Phase VIII project will include approximately 8 miles of new water line and serve a potential of 60 new customers. The project will also include a pump station relocation from the intersection of Carpenter Pike and US 68 to Concord Road. In addition, the pump station along US 68 will be moved to near the intersection of Old US 68 and SR 1244.

Section 5
Proposals Considered

Phase VIII
Preliminary Engineering Report
Nicholas County Water District

Section 5 – Proposals considered

General

Phase VIII water line extension project was considered in Phase V, but due to budget constraints, it was left out of the project. Due to additional water supply sources and additional customers, the water storage tank is needed. Please see Appendix A for breakdown of the proposed service areas.

Saltwell – Bruner Road – Connecting to an existing 4” line and continuing west on Saltwell – Bruner with a 4” water line until near the Harrison County line for approximately 1.68 miles while serving 7 potential customers.

Dog Walk Road – Connecting to an existing 4” water line and continuing with a 4” water line north until near the Harrison County line for approximately 3.18 miles while serving approximately 25 potential customers.

Ritchie Road – Connecting to a 4” water line and continuing with a 3” water line west until near its intersection with SR 3314 for approximately 0.70 miles while serving approximately 12 potential customers.

Snake Ridge Road – Connecting to a 4” water line on SR 57 and continuing south with a 3” water line until near its end for approximately 1.17 miles while serving approximately 7 potential customers.

Myers Road – Connecting to an existing 3” water line and continuing east with a 3” water line while serving one customer in 0.25 miles.

Miller Station Road – Connecting to an existing 4” water line and continuing south with a 3” water line for approximately 0.25 miles while serving a potential of 2 customers.

Garnett Road – Connecting to an existing 4” water line on SR 1244 and continuing west with a 3” water line for approximately 1 mile while serving a potential of 6 houses.

CONSTRUCTION PROBLEMS

The proposed project as presented in this report does not anticipate any significant problems. There will be a minimal amount of interruptions to existing customers during tie-ins to the existing system.

HYDRAULIC COMPUTATIONS

A hydraulic analysis was performed to determine the overflow elevation of the proposed water tank and the overall effect this project will have on the system. The hydraulic analysis has shown that no negative effects will be experienced by the existing system by the proposed tank.

Section 6

Conclusions and Recommendations

Phase VIII
Preliminary Engineering Report
Nicholas County Water District

Section 6 – Conclusions and recommendations

Recommendations

Based on studies, findings and conclusions and in accordance with other pertinent information contained in this report, it is recommended that the Nicholas County Water District take the following steps:

1. Review this report, then direct the Engineer, upon notification of Rural Development, to immediately complete necessary documentation to RD for further processing of the loan and grant application to construct the improvements outlined in this report.
2. Begin the process of collecting all tap fees to complete the project funding.
4. Direct the Engineer to complete all necessary plans, specifications and contract documents to receive approvals from regulatory and funding agencies.
5. Upon completion of the above and receipt of approvals, initiate actions to acquire required permits and right of way easements for construction areas.
6. Upon favorable review and funding commitments of RD, advertise for bids.
7. Upon favorable review of RD, make necessary petitions and applications, through local and bond counsel, to the Kentucky Public Service Commission for a "Certificate of Need and Necessity".

APPENDIX A
ESTIMATED CONSTRUCTION/PROJECT COSTS

PROJECT COST ESTIMATE

**NICHOLAS COUNTY WATER DISTRICT
PHASE VIII WATERLINE EXTENSIONS**

Item	Description	Cost
1	Estimated Construction Cost	\$ 479,120
2	Acquisition	\$ 10,000
3	Engineering Design	\$ 45,000
4	Engineering Inspection	\$ 32,000
5	Additional Engineering Services a. Permits b. PSC Assistance c. Site Surveys d. Easement Assistance	\$ 25,000
6	RD Legal and RD Administration	\$ 20,000
7	Interest during Construction	\$ 10,000
8	Contingencies	\$ 38,880
Total Project Cost		\$ 660,000

PROPOSED PROJECT FUNDING

PROPOSED PROJECT FUNDING

**NICHOLAS COUNTY WATER DISTRICT
PHASE VIII WATERLINE EXTENSIONS**

RD Grant	\$ 170,000
RD Loan	\$ 173,000
Tobacco Development Grant	\$ 300,000
Nicholas County Water District	\$ <u>17,000</u>
Total Project Cost	\$660,000

APPENDIX B
PROPOSAL AREA MAPS

APPENDIX C
FINANCIAL SECTION

EXISTING RATE SCHEDULE

NICHOLAS COUNTY WATER DISTRICT Phase VIII Waterline Extensions EXISTING RATE SCHEDULE

GALLONAGE BLOCK FOR EACH METER SIZE 5/8 inch x 3/4 inch Meter

MONTHLY RATE FOR EACH GALLONAGE BLOCK

First	1,000 gallons	\$ 13.13 (Minimum Bill)
Next	2,000 gallons	\$ 6.17 per 1,000 gallons
Next	2,000 gallons	\$ 5.38 per 1,000 gallons
Next	5,000 gallons	\$ 4.19 per 1,000 gallons
Next	15,000 gallons	\$ 3.80 per 1,000 gallons
Over	25,000 gallons	\$ 3.40 per 1,000 gallons

1 inch Meter

First	3,000 gallons	\$ 25.47 (Minimum Bill)
Next	2,000 gallons	\$ 5.38 per 1,000 gallons
Next	5,000 gallons	\$ 4.19 per 1,000 gallons
Next	15,000 gallons	\$ 3.80 per 1,000 gallons
Over	25,000 gallons	\$ 3.40 per 1,000 gallons

1-1/2 inch Meter

First	8,400 gallons	\$ 48.80 (Minimum Bill)
Next	1,600 gallons	\$ 4.19 per 1,000 gallons
Next	15,000 gallons	\$ 3.80 per 1,000 gallons
Over	25,000 gallons	\$ 3.40 per 1,000 gallons

2 inch Meter

First	12,667 gallons	\$ 68.58 (Minimum Bill)
Next	12,333 gallons	\$ 3.80 per 1,000 gallons
Over	25,000 gallons	\$ 3.40 per 1,000 gallons

3 inch Meter

First	41,125 gallons	\$ 165.18 (Minimum Bill)
Over	41,125 gallons	\$ 3.40 per 1,000 gallons

4 inch Meter

First	66,125 gallons	\$ 250.18 (Minimum Bill)
Over	66,125 gallons	\$ 3.40 per 1,000 gallons

PROPOSED RATE SCHEDULE

NICHOLAS COUNTY WATER DISTRICT

Phase VIII Waterline Extensions

GALLONAGE BLOCK FOR EACH METER SIZE	MONTHLY RATE FOR EACH GALLONAGE BLOCK
<u>5/8 inch x 3/4 inch Meter</u>	
First 1,000 gallons	\$ 13.13 (Minimum Bill)
Next 2,000 gallons	\$ 6.17 per 1,000 gallons
Next 2,000 gallons	\$ 5.38 per 1,000 gallons
Next 5,000 gallons	\$ 4.19 per 1,000 gallons
Next 15,000 gallons	\$ 3.80 per 1,000 gallons
Over 25,000 gallons	\$ 3.40 per 1,000 gallons
 <u>1 inch Meter</u>	
First 3,000 gallons	\$ 25.47 (Minimum Bill)
Next 2,000 gallons	\$ 5.38 per 1,000 gallons
Next 5,000 gallons	\$ 4.19 per 1,000 gallons
Next 15,000 gallons	\$ 3.80 per 1,000 gallons
Over 25,000 gallons	\$ 3.40 per 1,000 gallons
 <u>1-1/2 inch Meter</u>	
First 8,400 gallons	\$ 48.80 (Minimum Bill)
Next 1,600 gallons	\$ 4.19 per 1,000 gallons
Next 15,000 gallons	\$ 3.80 per 1,000 gallons
Over 25,000 gallons	\$ 3.40 per 1,000 gallons
 <u>2 inch Meter</u>	
First 12,667 gallons	\$ 68.58 (Minimum Bill)
Next 12,333 gallons	\$ 3.80 per 1,000 gallons
Over 25,000 gallons	\$ 3.40 per 1,000 gallons
 <u>3 inch Meter</u>	
First 41,125 gallons	\$ 165.18 (Minimum Bill)
Over 41,125 gallons	\$ 3.40 per 1,000 gallons
 <u>4 inch Meter</u>	
First 66,125 gallons	\$ 250.18 (Minimum Bill)
Over 66,125 gallons	\$ 3.40 per 1,000 gallons

A \$ 5.00 surcharge will be applied to all new customers of this project.