

**FEASIBILITY STUDY**  
**FOR**  
**MUNICIPAL DRINKING WATER FOR UNSERVED**  
**AREAS OF TROUSDALE COUNTY**

**PROJECT NO. 854105**

**OWNER:**



**HARTSVILLE/TROUSDALE WATER & SEWER UTILITY DISTRICT**  
**328 BROADWAY**  
**HARTSVILLE, TENNESSEE 37074**

**NOVEMBER 2021**

**ENGINEER:**



**MID-TENN ENGINEERING COMPANY**  
**648 HIGHWAY 52 BYPASS W.**  
**LAFAYETTE, TN 37083**  
**615-666-2385**



## 1) Executive Summary

### a) Unserved Areas:

Currently, areas along a total of 56 separate Trousdale County roads do not have access to municipal water service.

### b) Water Treatment Plant Impact :

Extending public water to those unserved residences would require a volume increase of approximately 23,000 gallons per day to serve 232 persons in 93 homes. A review of Water Treatment Plant (WTP) and raw water source capacities indicates that the anticipated customer additions would cause no significant impact.

### c) Economic Feasibility:

A cost analysis revealed that none of the 56 studied areas currently contain enough potential water customers to consider them economically feasible for the HTWSUD to extend water distribution lines to serve them. Sparse customer availability would not generate enough water sales to permit development cost recovery within a reasonable time period.

### d) Improving Economic Feasibility:

In evaluating the ten most economical roads to serve, HTWSUD would need to consider a rate increase to some or all water customers in order to offset development and installations costs. For the purpose of this study, an across-the-board capital recovery rate increase is considered, including wholesale rates charged to other Utility Districts.

### e) Study Results:

In considering the addition of municipal water service along the ten most profitable roads, a 10% increase to current water rates would raise \$234,780 of additional funds for construction, which would then provide service to the top two ranking roads within a year. Within six years, the remaining eight roads could be served at a total construction cost of \$1,463,250. Economic inflation aside, it would take 49 years at a flat 10% rate increase to install a public water distribution system along all 56 roads mentioned, at a current construction cost of approximately \$11.5 million.

The 21 most uneconomical roads on which to install public water lines currently serve no residences, and adding water lines along them would cost a total of

\$3,726,500. Water service along these 21 roads would prove no benefit to the HTWSUD at this time; however the potential for residential development and tax revenue increases would be greatly improved.

Of the 56 unserved roads previously mentioned, twelve of them have only one residence and, without further housing development, would be of little financial benefit to the Utility District.

## 2) Introduction

### a) Authorization:

Mid-Tenn Engineering Company (MTE) was authorized by the HTWSUD Board of Directors to study the feasibility of furnishing municipal water to all remaining areas of Trousdale County that are not currently served.

### b) Cost Development:

MTE developed anticipated construction costs based upon current unit bid prices for similar work type and conditions. Due to the state of worldwide economic volatility and its affect on material costs, the reliability of construction cost estimates is short-lived. Costs have recently increased dramatically for polyvinyl chloride (PVC) pipe, metals, concrete, and other construction materials necessary for water line installations.

### c) Operation and Maintenance:

No allowances have been made for increases in cost of operation and maintenance associated with the addition of water service lines, or for municipal water production and distribution cost increases.

## 3) Scope of Study

### a) Areas Not Currently Served:

Determined from customer information obtained from the HTWSUD, and from the current Water Services System Map, a total of 56 separate areas along Trousdale County roads remain without access to a public water distribution system, provided either through HTWSUD or one of the neighboring Water Utility Service Systems. The roads are tabulated below in alphabetical order:

# Trousdale County Water Service Feasibility Report

Trousdale County, Tennessee

Allen Lane	J.D. Harper Lane
Bennett Lane	J. Gregory Lane
Browning Branch Road	Jackson Lane
Celsor Road	Jett Williams Road
Cemetery Lane	Lock Six Road / Starlite Road
Chambers Lane	Lt. Carman Lane
Claiborne Lane	Marshall Lane
Crenshaw Road / Highway 25 West	Massey Hollow Lane
Darrell Lane	McClanahan Road
Dillehay Lane	Middle Fork Road
Dog Branch Road / Pumpkin Branch Road	Moss Lane
Duncan Road	New Halltown Road
Durham Hollow Lane	Oglesby Road
Ellis Hollow Lane	Providence Road
Elmer Dalton Road	Puryears Bend Road
Fort Blount Road	Riadon Road
Friendship Hollow Road	Russell Lane
Gene Lane	Sam Beasley Road
Golden Hollow Road	Shephard Hollow Lane
Greenwood Hollow Lane	Short Hollow Road
Griffs Hollow Lane	Snake Hollow Road
Gross Lane	Sneed Lane / Foley Lane
Halltown Road / Industrial Park Drive	Stone Hollow Lane
Harris Branch Road	Storytown Road
Herod Lane	Stubblefield Road
Honey Prong Road	Vaden Hill Lane
Honey Prong Road / Woodmore Hollow Lane	Ward Hill Road
Honeysuckle Road	Woodard Lane

b) Location:

- i) The 56 roads listed above are scattered across Trousdale County and are not connected. A location map is included in Appendix "A".

## 4) Alternatives Considered

a) Description:

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Trousdale County, Tennessee

The following means of capital cost recovery for potential water line installations were considered:

- i) Customer Service Area Water Usage Revenue: The most conservative business practice would include extending municipal water services only to areas that are profitable. Profitability for utility companies is achieved from revenue generated by the customers served. Profits may also eventually be gained from future residential developments occurring along roads where water lines have been extended, but not without the risk of initial capital outlay in the hope of gaining new customers.
- ii) Water Rate Increase: Income revenues may be restructured to offset expenditures incurred by constructing service area expansions. Current HTWSUD tap fees and monthly water rates are shown in the two tables below:

### **Inside City Limits:**

Up to 2,000 Gallons Used	\$ 16.63 Minimum
Over 2,000 Gallons Used	\$ 5.42 per 1,000 Gallons

### **Tap Fee (inside City Limits):**

3/4" Residential Tap	\$ 2,250
1" Residential Tap	\$ 2,600
2" Commercial Tap	\$ 5,500

### **Outside City Limits:**

Up to 2,000 Gallons Used	\$ 27.94 Minimum
Over 2,000 Gallons Used	\$ 8.73 per 1,000 Gallons

### **Tap Fee (outside City Limits):**

3/4" Residential Tap	\$ 2,250
1" Residential Tap	\$ 2,600
2" Commercial Tap	\$ 5,500

HTWSUD also charges separate rates for Wholesale Water Customers where bulk water is sold to adjoining Water Utility Districts. Total annual revenue from water sales is approximately \$2,347,790.

Rate structure changes for only the customers located outside the Hartsville City Limits were considered in order to absorb the greater expense for distribution system maintenance and expansions there; however that scenario was eliminated in favor of spreading new installation costs over a greater number of water customers.

Another consideration would be to raise water rates both inside, and outside city limits, yet maintain current Wholesale Customer rates, or perhaps raise them only slightly. Some of the adjoining Utility Districts also purchase water from other suppliers, so too much of an increase on those customers could result in less water being purchased from HTWSUD. The idea was also discarded however, in favor of an across-the-board flat rate increase.

The studied results of varying rate increases as a funding alternative are tabulated in Appendix “B”.

b) Design Criteria:

Any public water system improvements associated with this study would be designed in accordance with the “Community Public Water Systems Design Criteria” as published by the Tennessee Department of Environment and Conservation (TDEC), and with the International Plumbing Code. A preliminary design of new water lines in the aforementioned areas indicates that all of the areas could be served with public drinking water, however some areas would require booster pumps to meet minimum pressure requirements and thus be more expensive to serve.

## 5) Alternatives Not Considered

a) Description:

The following are viable funding alternatives that were not considered in this study:

- i) Outside funding sources such as State or Federal low interest loans or grants. Under the current guidelines of most government-based funding agencies, areas that are not economically feasible to serve generally do not qualify for those types of programs.
- ii) Funding provided by Hartsville-Trousdale County government.

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Trousdale County, Tennessee

- iii) Funding from Special Federal Programs. The U.S. is currently providing funds to eligible local governments, through the *American Rescue Plan*, to make necessary investments to improve access to clean drinking water.
- iv) Funding from HTWSUD reserve funds.

## 6) Economic Feasibility

### a) Basis:

The economic feasibility of providing municipal water service to all 56 currently unserved areas is herein examined based upon distributing the cost of new water line construction per potential resident served. A complete table showing the number of residences, required lengths of water lines, and estimated total construction cost per road is included in Appendix “C”.

### b) Area Ranking:

Each potentially served roadway area listed in the table below is ranked in order of most-to-least feasible, based on the current total cost per potential person served, and using a 2.5 person per residence average (U.S. Census Bureau):

TROUSDALE COUNTY ROAD RANKING BY COST PER PERSON SERVED			
1	Darrell Lane	29	Woodard Lane
2	Gross Lane	30	Moss Lane
3	Storytown Road	31	Allen Lane
4	Claiborne Lane	32	New Halltown Road
5	Stone Hollow Lane	33	Stubblefield Road
6	Harris Branch Road	34	Durham Hollow Lane
7	Friendship Hollow Road	35	Herod Lane
8	Honeysuckle Road	36	Gene Lane
9	Short Hollow Road	37	Sneed Lane @ Foley Lane
10	Dillehay Lane	38	Jackson Lane
11	Griffs Hollow Lane	39	Vaden Hill Lane
12	Browning Branch Road	40	Oglesby Road
13	J.D. Harper Lane	41	Russell Lane
14	Duncan Road	42	Massey Hollow Lane
15	Golden Hollow Road	43	Chambers Lane
16	Celsor Road	44	Greenwood Hollow Lane
17	Elmer Dalton Road	45	Halltown Road @ Industrial Park Drive

# Trousdale County Water Service Feasibility Report

Trousdale County, Tennessee

## TROUSDALE COUNTY ROAD RANKING BY COST PER PERSON SERVED (continued)

18	Ellis Hollow Lane	46	Bennett Lane
19	Lt. Carman Lane	47	J. Gregory Lane
20	McClanahan Road	48	Cemetery Lane
21	Fort Blount Road	49	Riaddon Road
22	Honey Prong Road	50	Sam Beasley Road
23	Middle Fork Road	51	Marshall Lane
24	Shepard Hollow Lane	52	Dog Branch Road @ Pumpkin Branch Road
25	Honey Prong Road @ Woodmore Hollow Lane	53	Providence Road
26	Jett Williams Road	54	Snake Hollow Road
27	Ward Hill Road	55	Crenshaw Road @ Highway 25 West
28	Puryears Bend Road	56	Lock Six Road @ Starlite Road

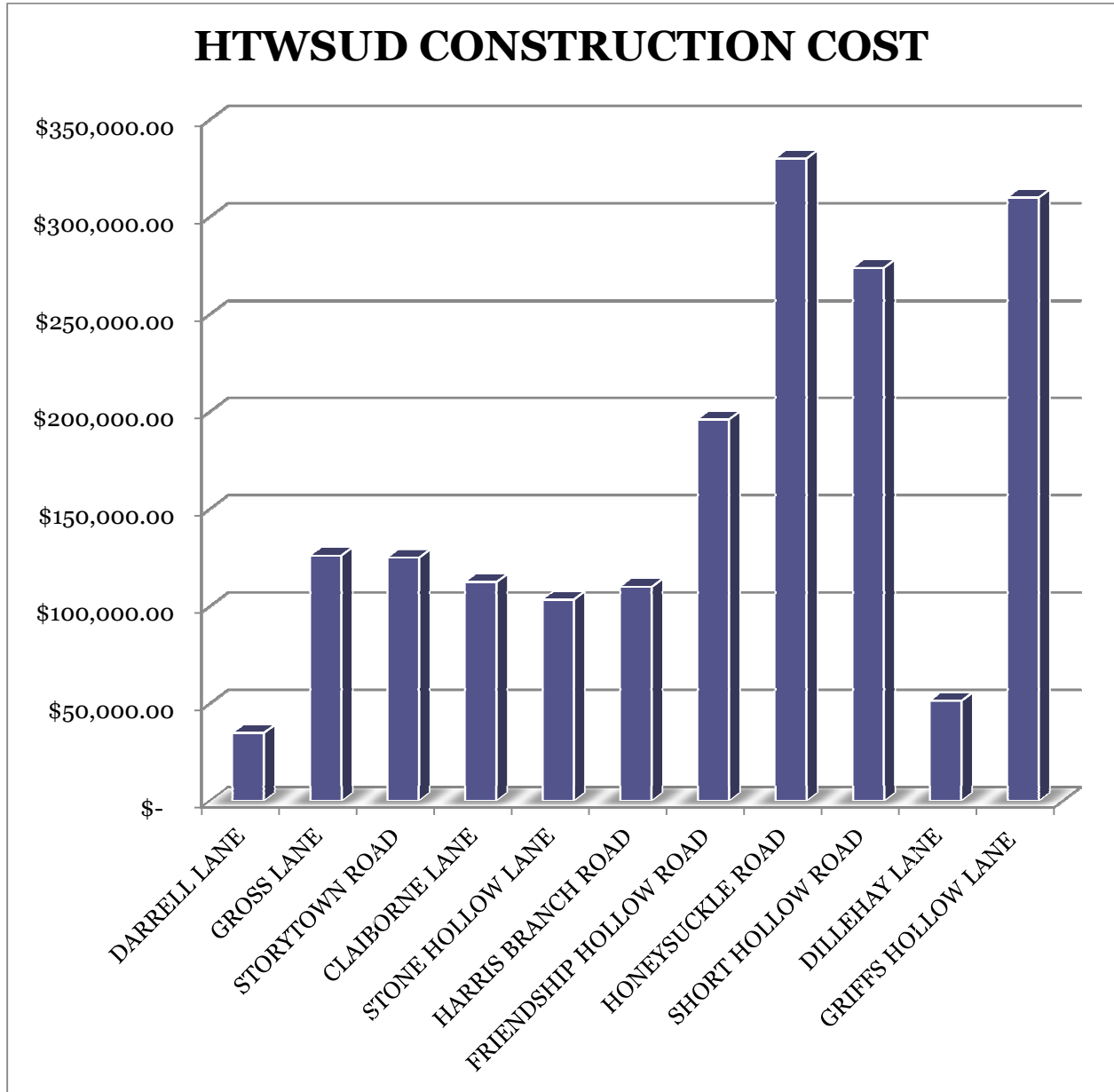
- c) Most Economical Areas: As mentioned earlier, none of the studied areas are cost effective for water line extensions when considering the potential revenues generated for the HTWSUD under existing conditions. For example, the current HTWSUD residential customer averages 3,380 gallons of water use each month, and if that customer were paying the “Outside City Limits” rate, that would then generate \$39.99 per month excluding sales tax. At that rate, the most profitable line extension determined by this study, along Darrell Lane, would take 14.6 years to retire the debt on line installation at \$7,000 per person. Of course payback on the rest of the lines studied would take longer.

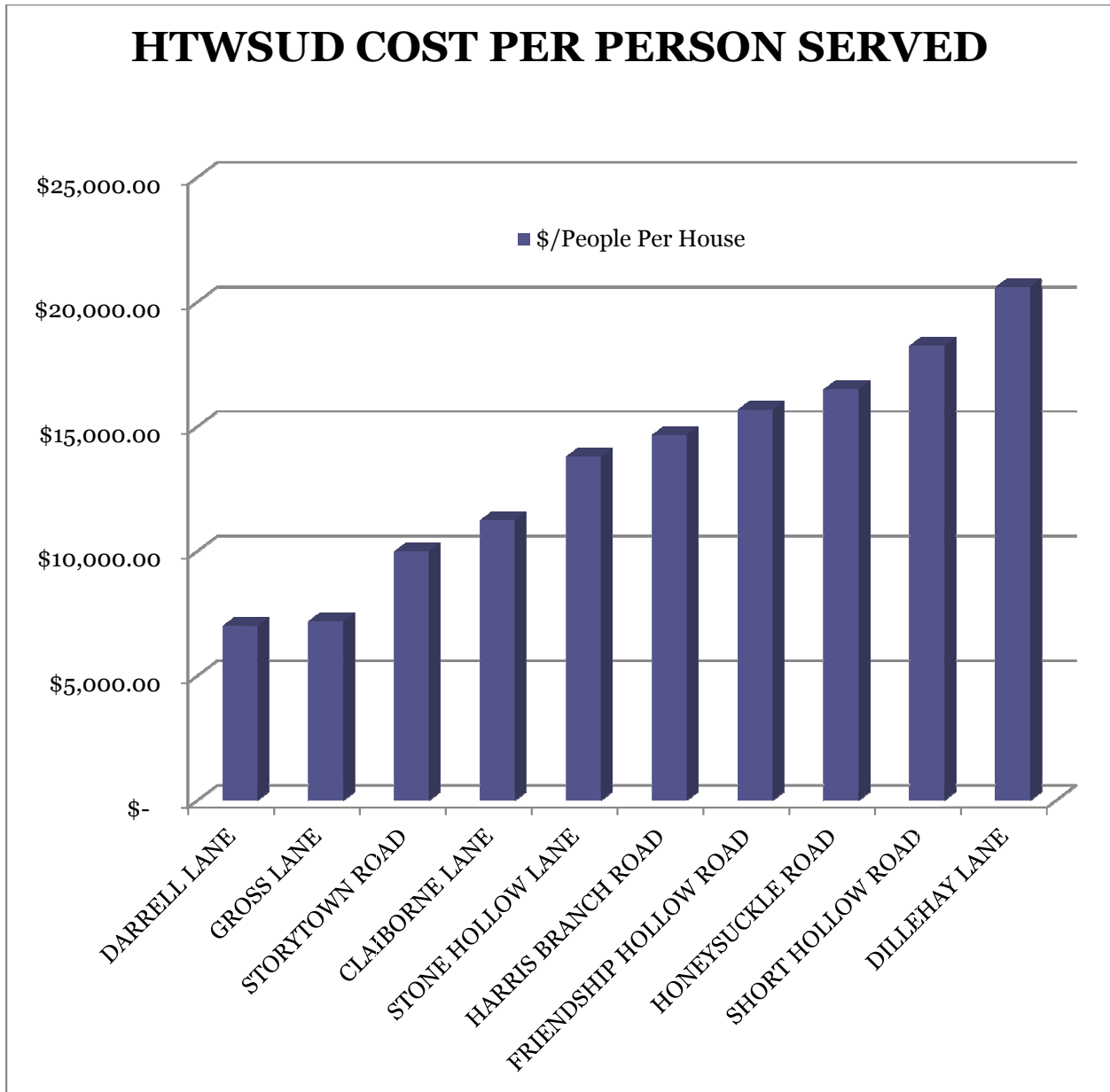
Areas that rank from 36 and lower currently have no residents for potential customers, but some may provide significant hydraulic benefits to system operation by connecting dead-end lines.

Presented below for comparison, the top ten most economical areas, or Trousdale County roads on which to extend municipal water lines, are shown in two graphs that depict current construction cost to complete each line, and current construction cost per person served respectively.

# Trousdale County Water Service Feasibility Report

Trousdale County, Tennessee





## 7) Other Considerations

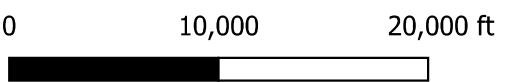
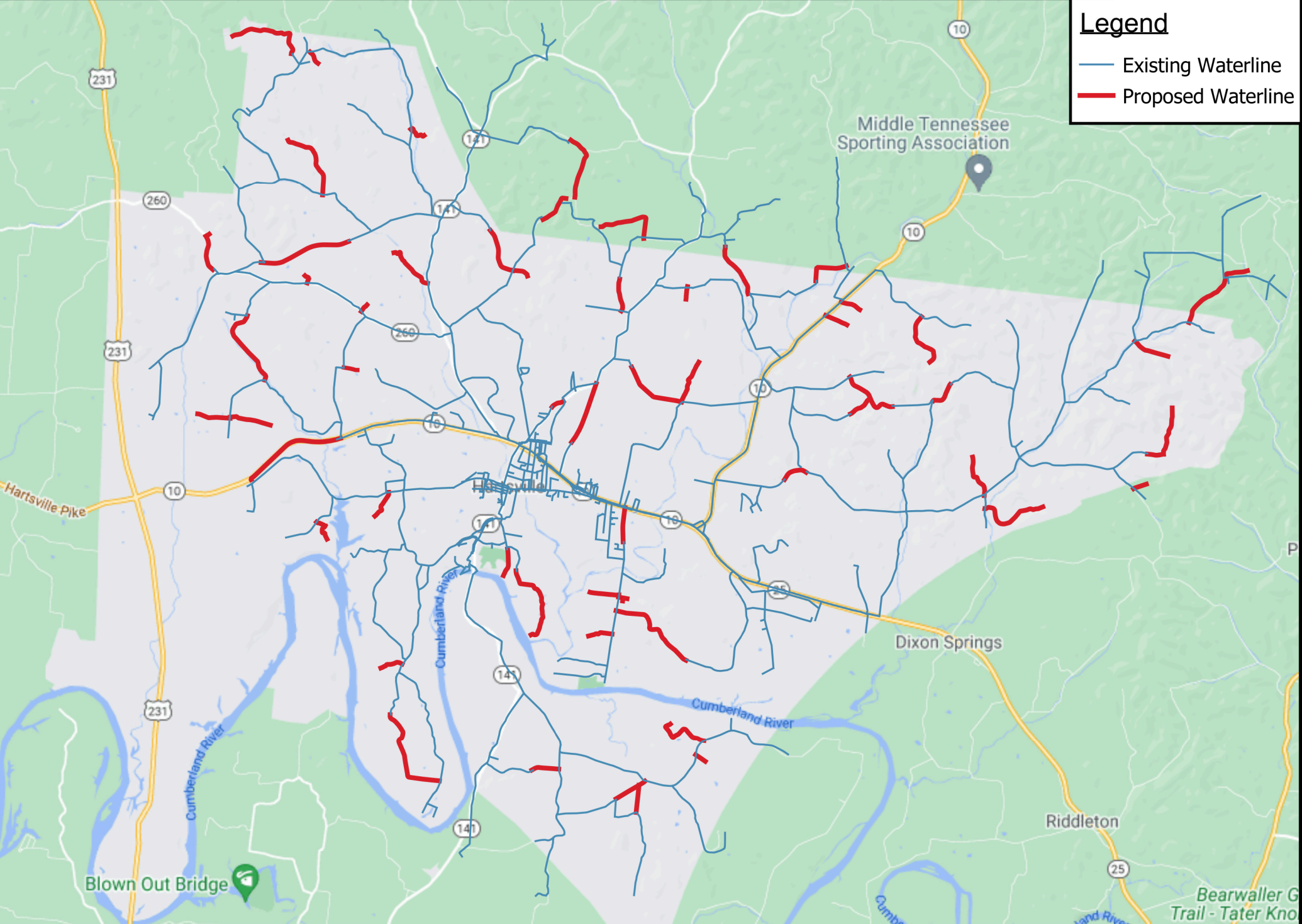
System Improvements: As mentioned briefly before, some of the studied areas have few or no current residents along the roads being considered. Water line extensions on a few of them however, would improve hydraulic conditions by increasing flow volume and pressure in the existing distribution system. The importance of such overall benefits cannot be evaluated and ranked by the same criteria used to obtain the rankings presented here, but rather must be determined by a complete hydraulic model analysis.

## **Appendix A**

# **Hartsville-Trousdale Water & Sewer Utility District Feasibility Study Area Location Map**

**Legend**

- Existing Waterline
- Proposed Waterline



## **Appendix B**

# **Hartsville-Trousdale Water & Sewer Utility District User Rate Increase Study Results**

	Current Rates	Rate Increase										
		1.00%	5.00%	10.00%	15.00%	20.00%	25.00%	30.00%	35.00%	40.00%	45.00%	50.00%
FY 2021 Water Revenue	\$2,347,791.31	\$23,477.91	\$117,389.57	\$234,779.13	\$352,168.70	\$469,558.26	\$586,947.83	\$704,337.39	\$821,726.96	\$939,116.52	\$1,056,506.09	\$1,173,895.66

	Current Rates	Rate Increase										
		1.00%	5.00%	10.00%	15.00%	20.00%	25.00%	30.00%	35.00%	40.00%	45.00%	50.00%
Inside City Limits												
2000 Gallon (Min.)	\$16.63	\$16.80	\$17.46	\$18.29	\$19.12	\$19.96	\$20.79	\$21.62	\$22.45	\$23.28	\$24.11	\$24.95
Over 2,000 Gallons (per 1,000 Gallon)	\$5.42	\$5.47	\$5.69	\$5.96	\$6.23	\$6.50	\$6.78	\$7.05	\$7.32	\$7.59	\$7.86	\$8.13
Outside City Limits												
2000 Gallon (Min.)	\$27.94	\$28.22	\$29.34	\$30.73	\$32.13	\$33.53	\$34.93	\$36.32	\$37.72	\$39.12	\$40.51	\$41.91
Over 2,000 Gallons (per 1,000 Gallon)	\$8.73	\$8.82	\$9.17	\$9.60	\$10.04	\$10.48	\$10.91	\$11.35	\$11.79	\$12.22	\$12.66	\$13.10

	Current Rates	Rate Increase										
		1.00%	5.00%	10.00%	15.00%	20.00%	25.00%	30.00%	35.00%	40.00%	45.00%	50.00%
Wholesale Rates												
per 1,000 Gallon	\$3.63	\$3.67	\$3.81	\$3.99	\$4.17	\$4.36	\$4.54	\$4.72	\$4.90	\$5.08	\$5.26	\$5.45

## **Appendix C**

### **Hartsville-Trousdale Water & Sewer Utility District Study Area Economic Feasibility Results**

**TROUSDALE COUNTY TENNESSEE - UNSERVED**

RANKING	COUNTY ROAD	LENGTH	HOUSES	PPH	\$/PPH	EST. COST	NOTES
1	DARRELL LANE	700	2	5	\$ 7,000.00	\$ 35,000.00	
2	GROSS LANE	2520	7	17.5	\$ 7,200.00	\$ 126,000.00	
3	STORYTOWN ROAD	2500	5	12.5	\$ 10,000.00	\$ 125,000.00	
4	CLAIBORNE LANE	2250	4	10	\$ 11,250.00	\$ 112,500.00	
5	STONE HOLLOW LN.	2070	3	7.5	\$ 13,800.00	\$ 103,500.00	
6	HARRIS BRANCH ROAD	1200	3	7.5	\$ 14,666.67	\$ 110,000.00	BOOSTER PUMP REQUIRED
7	FRIENDSHIP HOLLOW ROAD	3920	5	12.5	\$ 15,680.00	\$ 196,000.00	
8	HONEYSUCKLE ROAD (DEAD END)	6600	8	20	\$ 16,500.00	\$ 330,000.00	
9	SHORT HOLLOW ROAD	4475	6	15	\$ 18,250.00	\$ 273,750.00	BOOSTER PUMP REQUIRED
10	DILLEHAY LN	1030	1	2.5	\$ 20,600.00	\$ 51,500.00	
11	GRIFF HOLLOW ROAD (DEAD END)	6200	5	12.5	\$ 24,800.00	\$ 310,000.00	
12	BROWNING BRANCH ROAD	2761	3	7.5	\$ 25,073.33	\$ 188,050.00	BOOSTER PUMP REQUIRED
13	J D HARPER LANE	600	2	5	\$ 6,000.00	\$ 30,000.00	BROWNING BRANCH RD. TO SERVE
14	DUNCAN ROAD	5300	4	10	\$ 26,500.00	\$ 265,000.00	
15	GOLDEN HOLLOW ROAD	6515	4	10	\$ 32,575.00	\$ 325,750.00	
16	CELSOR ROAD	3300	2	5	\$ 33,000.00	\$ 165,000.00	
17	ELMER DALTON ROAD	5500	3	7.5	\$ 36,666.67	\$ 275,000.00	
18	ELLIS HOLLOW LANE	3670	2	5	\$ 36,700.00	\$ 183,500.00	MASSEY HOLLOW LN. TO SERVE
19	LT. CARMAN LANE	1850	1	2.5	\$ 37,000.00	\$ 92,500.00	
20	MCLANAHAN ROAD	1940	1	2.5	\$ 38,800.00	\$ 97,000.00	
21	FORT BLUNT ROAD	1960	1	2.5	\$ 39,200.00	\$ 98,000.00	
22	HONEY PRONG ROAD DEAD END	2025	1	2.5	\$ 40,500.00	\$ 101,250.00	
23	MIDDLEFORK ROAD	4166	2	5	\$ 41,660.00	\$ 208,300.00	
24	SHEPHARD HOLLOW LANE	5770	3	7.5	\$ 45,133.33	\$ 338,500.00	BOOSTER PUMP REQUIRED
25	HONEY PRONG ROAD DEAD END @ WOODMORE HOLLOW LANE	4550	2	5	\$ 45,500.00	\$ 227,500.00	
26	JETT WILLIAMS ROAD	5100	2	5	\$ 51,000.00	\$ 255,000.00	
27	WARD HILL ROAD	2550	1	2.5	\$ 51,000.00	\$ 127,500.00	
28	PURYEARS BEND (DEAD END)	7740	3	7.5	\$ 51,600.00	\$ 387,000.00	
29	WOODARD LANE	2850	1	2.5	\$ 57,000.00	\$ 142,500.00	
30	MOSS LANE	3380	1	2.5	\$ 67,600.00	\$ 169,000.00	
31	ALLEN LANE	4300	1	2.5	\$ 86,000.00	\$ 215,000.00	
32	NEW HALLTOWN ROAD	4820	1	2.5	\$ 96,400.00	\$ 241,000.00	
33	STUBBLEFIELD ROAD	5000	1	2.5	\$ 100,000.00	\$ 250,000.00	
34	DURHAM HOLLOW LANE	5700	1	2.5	\$ 114,000.00	\$ 285,000.00	
35	HEROD LANE (DEAD END)	6570	1	2.5	\$ 131,400.00	\$ 328,500.00	
36	GENE LANE	300	0	0	\$ 15,000.00	\$ 15,000.00	DARRELL LN. TO SERVE
37	SNEED LANE /FOLEY LANE	890	0	0	\$ 44,500.00	\$ 44,500.00	
38	JACKSON LANE	1015	0	0	\$ 50,750.00	\$ 50,750.00	
39	VADEN HILL LANE	1100	0	0	\$ 55,000.00	\$ 55,000.00	
40	OGLESBY ROAD	1100	0	0	\$ 55,000.00	\$ 55,000.00	
41	RUSSEL LANE	1170	0	0	\$ 58,500.00	\$ 58,500.00	
42	MASSEY HOLLOW LANE	1225	0	0	\$ 61,250.00	\$ 61,250.00	
43	CHAMBERS LANE	1420	0	0	\$ 71,000.00	\$ 71,000.00	
44	GREENWOODE HOLLOW LANE	1550	0	0	\$ 77,500.00	\$ 77,500.00	
45	HALLTOWN RD./ IND DRIVE	975	0	0	\$ 97,500.00	\$ 97,500.00	
46	BENNETT LANE	1960	0	0	\$ 98,000.00	\$ 98,000.00	
47	J GREGORY LANE	2000	0	0	\$ 100,000.00	\$ 100,000.00	
48	CEMETRY LANE	2150	0	0	\$ 107,500.00	\$ 107,500.00	
49	RIADON ROAD	2200	0	0	\$ 110,000.00	\$ 110,000.00	
50	SAM BEASLEY RD.	2620	0	0	\$ 131,000.00	\$ 131,000.00	
51	MARSHALL LANE	3450	0	0	\$ 172,500.00	\$ 172,500.00	
52	DOG BRANCH ROAD / PUMPKIN BRANCH RD.	5000	0	0	\$ 300,000.00	\$ 300,000.00	BOOSTER PUMP REQUIRED
53	PROVIDENCE ROAD	6000	0	0	\$ 300,000.00	\$ 300,000.00	
54	SNAKE HOLLOW ROAD	6430	0	0	\$ 321,500.00	\$ 321,500.00	TANK WILL PROVIDE PSI
55	CRENSHAW ROAD/HWY 25W	8000	0	0	\$ 600,000.00	\$ 600,000.00	REDUNENT PIPE TO CSUD
56	LOCK SIX ROAD/ STARLITE	17000	0	0	\$ 900,000.00	\$ 900,000.00	BOOSTER PUMP REQUIRED
<b>TOTAL</b>			<b>93</b>	<b>232.5</b>		<b>\$ 10,495,600.00</b>	
10% CONTINGENCY						\$ 1,049,560.00	
						\$ 11,545,160.00	
<b>PRIVATE ROAD</b>							
1	SECOND CREEK LANE	2000	4	10	\$ 10,000.00	\$ 100,000.00	
2	WALLER LANE	1760	1	2.5	\$ 35,200.00	\$ 88,000.00	
3	GORE LANE	3150	1	2.5	\$ 63,000.00	\$ 157,500.00	
4	WELCH LANE	8400	1	2.5	\$ 168,000.00	\$ 420,000.00	
5	GRIGG LANE	700	0	0	\$ 35,000.00	\$ 35,000.00	
6	WOODS LANE	750	0	0	\$ 37,500.00	\$ 37,500.00	
7	EDEN LANE	1000	0	0	\$ 50,000.00	\$ 50,000.00	
8	COKER LANE	1300	0	0	\$ 65,000.00	\$ 65,000.00	
9	HANKINS LANE	2200	0	0	\$ 110,000.00	\$ 110,000.00	
10	BURROW LANE	2210	0	0	\$ 110,500.00	\$ 110,500.00	
11	FREEMAN LANE	2325	0	0	\$ 116,250.00	\$ 116,250.00	
12	TILLMAN LANE	2400	0	0	\$ 120,000.00	\$ 120,000.00	
<b>TOTAL</b>			<b>124</b>			<b>\$ 1,409,750.00</b>	
10% CONTINGENCY						\$ 140,975.00	
						\$ 1,550,725.00	
<b>CSUD AREA</b>							
	BASS ROAD	5000	3	7.5	\$ 33,333.33	\$ 250,000.00	
	HANCOCK ROAD	5200	1	2.5	\$ 104,000.00	\$ 260,000.00	
	HOG HOLLOW ROAD	5589.5	0	0	\$ 279,475.00	\$ 279,475.00	

<b>Return on Investment Waterlines (Gross Ln.) (Current Rates)</b>		
Construction Cost	\$126,000.00	
Engineering Cost	\$3,780.00	
Inspection Cost	\$3,780.00	
<b>Total Project Cost</b>	<b>\$133,560.00</b>	
Number of Taps	7	
Tap Fees (\$2,325)	\$16,275.00	
Grant		
Total Amount to Repay	\$117,285.00	
Minimum Bill for No. of taps per year	\$2,346.96	
3000 gallons per month per year per No. of Taps	\$3,080.28	
4000 gallons per month per year per No. of Taps	\$3,813.60	
5000 gallons per month per year per No. of Taps	\$4,546.92	
3380 gallons per month per year per No. of Taps	\$3,359.16	
ROI for Minimum bill per Tap	49.97315676	Years
ROI for 3000 gallons per month per Tap	38.07608399	Years
ROI for 4000 gallons per month per Tap	30.75440529	Years
ROI for 5000 gallons per month per Tap	25.79438389	Years
ROI for 3380 gallons per month per Tap (HTWSUD Average)	34.91497874	Years

<b>Return on Investment Waterlines (Gross Ln.) (10% Rate Increase)</b>		
Construction Cost	\$126,000.00	
Engineering Cost	\$3,780.00	
Inspection Cost	\$3,780.00	
<b>Total Project Cost</b>	<b>\$133,560.00</b>	
Number of Taps	7	
Tap Fees (\$2,325)	\$16,275.00	
Grant		
Total Amount to Repay	\$117,285.00	
Minimum Bill for No. of taps per year	\$2,581.66	
3000 gallons per month per year per No. of Taps	\$3,388.31	
4000 gallons per month per year per No. of Taps	\$4,194.96	
5000 gallons per month per year per No. of Taps	\$5,001.61	
3380 gallons per month per year per No. of Taps	\$3,695.08	
ROI for Minimum bill per Tap	45.43014251	Years
ROI for 3000 gallons per month per Tap	34.61462181	Years
ROI for 4000 gallons per month per Tap	27.95855026	Years
ROI for 5000 gallons per month per Tap	23.4494399	Years
ROI for 3380 gallons per month per Tap (HTWSUD Average)	31.74088977	Years

<b>Return on Investment Waterlines (Gross Ln.) (50% Rate Increase)</b>		
Construction Cost	\$126,000.00	
Engineering Cost	\$3,780.00	
Inspection Cost	\$3,780.00	
<b>Total Project Cost</b>	<b>\$133,560.00</b>	
Number of Taps	7	
Tap Fees (\$2,325)	\$16,275.00	
Grant		
Total Amount to Repay	\$117,285.00	
Minimum Bill for No. of taps per year	\$3,520.44	
3000 gallons per month per year per No. of Taps	\$4,620.42	
4000 gallons per month per year per No. of Taps	\$5,720.40	
5000 gallons per month per year per No. of Taps	\$6,820.38	
3380 gallons per month per year per No. of Taps	\$5,038.74	
ROI for Minimum bill per Tap	33.31543784	Years
ROI for 3000 gallons per month per Tap	25.38405599	Years
ROI for 4000 gallons per month per Tap	20.50293686	Years
ROI for 5000 gallons per month per Tap	17.19625593	Years
ROI for 3380 gallons per month per Tap (HTWSUD Average)	23.2766525	Years