

Water-Resource Development: A Strategic Plan

Summary of Water Systems Barren River Area Development District

Water Resource Development Commission

October, 1999

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Barren River Area Development District

177 Graham Avenue
P.O. Box 90005
Bowling Green, KY 42102-9005
(502) 781-2381

REGIONAL OVERVIEW

(Barren River ADD Existing & Proposed Water Lines Map)

- Estimated 1999 population of 240,000--91% on public water
- Estimated 2020 population of 269,000--93% on public water
- 3,250 miles of water lines, with plans for 475 additional miles
- Estimated funding needs for public water 2000-2005--\$147,000,000
- Estimated funding needs for public water 2006-2020--\$91,800,000

The Barren River Area Development District region had an estimated population of 240,370 (99,457 households) in 1999 with a projected population of 269,200 (118,700 households) in 2020. There are 4,600 miles of water lines in the region serving 218,000 people, or 89% of the region's population. 575 miles of proposed water line extensions for the period 2000-2020 would provide service to an additional 2,150 residents. About 22,000 people in the region rely on private domestic water systems: 16,200 on wells and 5,800 on hauled water and other sources.

Estimated populations and public water service for the ten counties in the region is given below:

County	1999 Pop	On Public	2020 Pop	On Public
Allen	16,600	13,400 (81%)	20,000	16,400 (82%)
Barren	37,200	32,700 (88%)	42,200	37,600 (89%)
Butler	11,800	10,000 (85%)	12,700	11,600 (91%)
Edmonson	11,500	10,900 (95%)	13,600	13,100 (96%)
Hart	16,900	15,700 (93%)	19,400	18,800 (97%)
Logan	26,400	21,100 (80%)	29,000	25,200 (87%)
Metcalfe	9,500	6,600 (70%)	10,200	7,800 (76%)
Monroe	10,900	10,400 (95%)	9,700	9,700 (100%)
Simpson	16,300	15,500 (95%)	17,700	17,200 (97%)
Warren	83,200	81,500 (98%)	94,700	93,800 (99%)
<i>Region</i>	240,000	218,000 (91%)	269,000	251,000 (93%)

EXISTING & PROPOSED
WATER LINES
BRADD
Kentucky

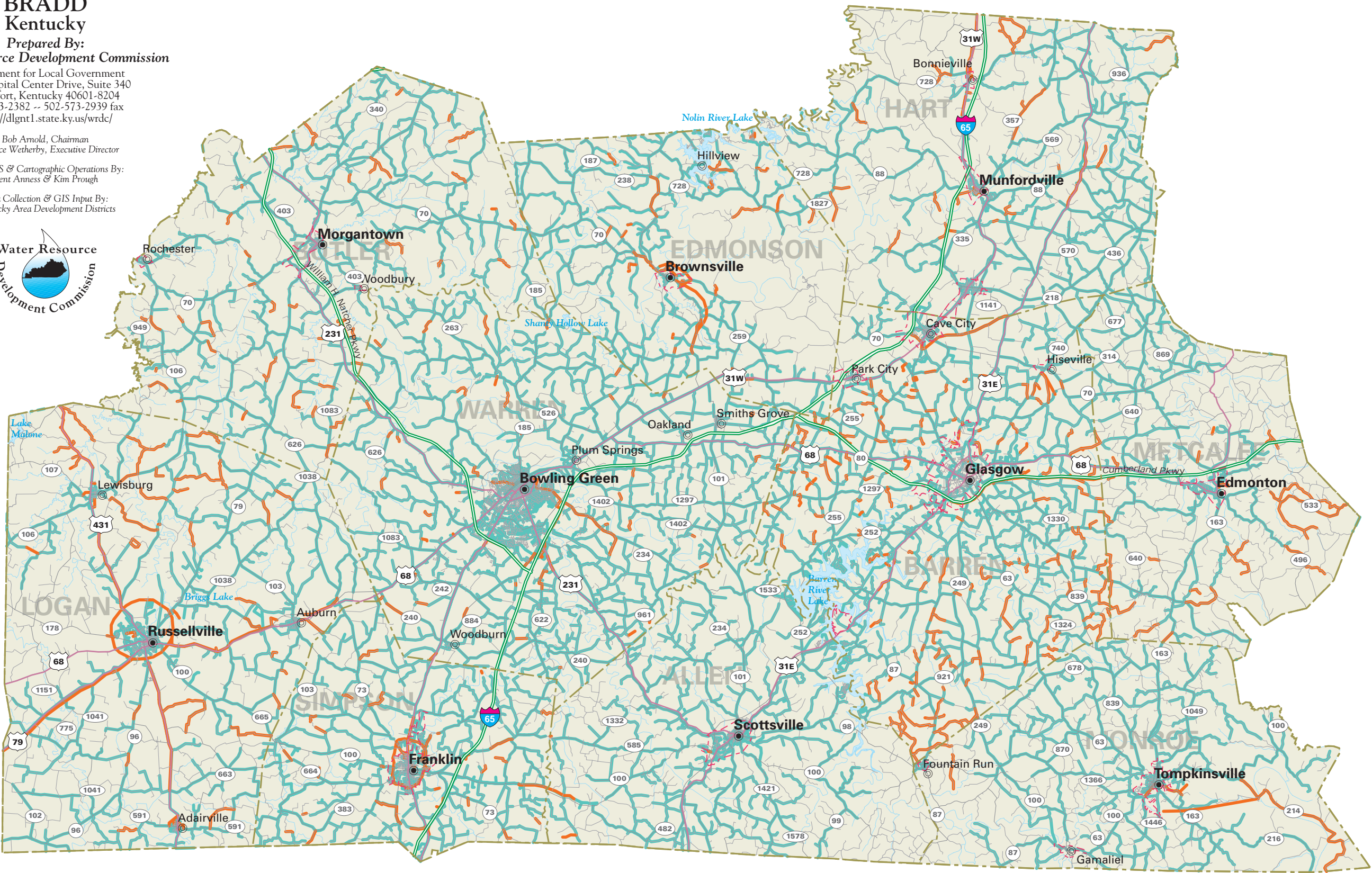
Prepared By:
Water Resource Development Commission

Department for Local Government
1024 Capital Center Drive, Suite 340
Frankfort, Kentucky 40601-8204
502-573-2382 -- 502-573-2939 fax
<http://dlgnt1.state.ky.us/wrdc/>

Bob Arnold, Chairman
Lawrence Wetherby, Executive Director

Final GIS & Cartographic Operations By:
Kent Amness & Kim Prough

Data Collection & GIS Input By:
Kentucky Area Development Districts



WATER LINES

- Existing Water Lines
- Proposed Water Lines

LIMITATION OF LIABILITY: The Water Resource Development Commission has no reason to believe that there are any inaccuracies or defects in information incorporated in this work and make no representations of any kind, including, but not limited to, the warranties of merchantability or fitness for a particular use, nor any such warranties to be implied, with respect to the information or data furnished herein.

Thirty-three public water systems serve the region: 29 community systems--17 municipal, 10 water districts, 1 water association, 1 federal, and 16 non-community systems. There are 12 small (501 to 3,300 people served) and 3 very small (less than 500 served) systems.

Estimated costs for public water expansions and associated system upgrades are:

Estimated Costs - Proposed Projects, 2000-2005

County/System	New Line	New Customers	New Line In \$1000	Rehab Line In \$1000	Source In \$1000	Treatment In \$1000	Tanks/ Pumps In \$1000	Total Costs In \$1000
ALLEN								
SCOTTSVILLE WATER DEPT.	0.2	100	10					10
ALLEN COUNTY TOTAL	0.2	100	10					10
BARREN								
GLASGOW WATER COMPANY	138.0	368	4,254					4,254
PARK CITY	6.1		966					966
BARREN COUNTY TOTAL	144.1	368	5,220					5,220
BUTLER								
BUTLER COUNTY WATER SYS.	23.6	50	850					850
BUTLER COUNTY TOTAL	23.6	50	850					850
EDMONSON								
BROWNSVILLE WATER SYSTEM	.			110				110
EDMONSON COUNTY W/D	10.0	37	88	3,000				3,000
EDMONSON COUNTY TOTAL	10.0	37	88	3,110				3,198
HART								
GREEN RIVER VALLEY W/D	46.4	286	1,600					1,600
MUNFORDVILLE MUN. WATER	.		.	305		585	865	1,755
HART COUNTY TOTAL	46.4	286	1,600	305		585	865	3,355
LOGAN								
ADAIRVILLE WATER WORKS	.		.	30			30	60
CITY OF RUSSELLVILLE	3.0	230	121			3,500		3,621
EAST LOGAN W/D	48.3		1,329					1,329
LEWISBURG WATER WORKS	16.1	353	600					600
LOGAN TODD REGIONAL WATER COMMISSION	.			22,000			1,200	23,200
NORTH LOGAN W/D	.		.	1,500			1,500	3,000
SOUTH LOGAN W/A	12.0	50	400	300			300	1,000
LOGAN COUNTY TOTAL	79.4	633	2,450	23,830		3,500	3,030	32,810
METCALFE								
CITY OF EDMONTON	40.8	228	1,500					1,500
METCALFE COUNTY TOTAL	40.8	228	1,500					1,500
MONROE								
CITY OF TOMPKINSVILLE	.			375			375	750
FOUNTAIN RUN W/D	0.5	65	24					24
MONROE COUNTY W/D	12.7	34	434					434
MONROE COUNTY TOTAL	13.2	99	458	375			375	1,208

SIMPSON								
CITY OF FRANKLIN				1,025	6,000		10,975	18,000
SIMPSON COUNTY W/D	13.5	16	472					472
SIMPSON COUNTY TOTAL	13.5	16	472	1,025	6,000		10,975	18,472
WARREN								
BOWLING GREEN MUN. UTIL.				40,000		17,000	6,000	63,000
WARREN COUNTY W/D	20.9	39	735	7,000			7,000	14,735
WARREN COUNTY TOTAL	20.9	39	735	47,000		17,000	13,000	77,735
BARREN RIVER ADD TOTAL	392	1,856	13,393	75,645	6,000	21,085	31,355	147,478

Estimated Costs - Proposed Projects, 2006-2020

County/System	New Line	New Customers	New Line	Rehab Line	Source	Treatment	Tanks & Pumps	Total Costs
	miles		In \$1000	In \$1000	In \$1000	In \$1000	In \$1000	In \$1000
BUTLER								
BUTLER COUNTY WATER SYS.	.		.	395				395
MORGANTOWN				800		2,000		2,800
BUTLER COUNTY TOTAL	.		-	1,195		2,000		3,195
								-
EDMONSON								
BROWNSVILLE WATER				500				500
EDMONSON WATER DIST						4,000	800	4,800
EDMONSON COUNTY TOTAL				500		4,000	800	5,300
HART								
GREEN RIVER VALLEY W/D	3.0	47	100			.		100
HART COUNTY TOTAL	3.0		100					100
LOGAN								
ADAIRVILLE WATER WORKS	1.6		62	100			53	215
CITY OF RUSSELLVILLE	20.0	200	800	100		3,500	500	4,900
LEWISBURG WATER WORKS	2.7	50	100	100	3,000	1,647		4,847
LOGAN TODD REGIONAL WATER COMMISSION	.			3,974				3,974
NORTH LOGAN W/D	1.7		300					300
SOUTH LOGAN W/A	4.0		137					137
LOGAN COUNTY TOTAL	30.0	250	1,399	4,274	3,000	5,147	553	14,373
METCALFE								
CITY OF EDMONTON	5.4		253					253
METCALFE COUNTY TOTAL	5.4		253					253
MONROE								
FOUNTAIN RUN W/D				38				38
MONROE COUNTY W/D					1,000			1,000
MONROE COUNTY TOTAL				38	1,000			1,038
SIMPSON								
CITY OF FRANKLIN	9.1			7,150		550	2,000	9,700
SIMPSON COUNTY W/D	12.6		365				257	622
SIMPSON COUNTY TOTAL	21.7		365	7,150		550	2,257	10,322
WARREN								
BOWLING GREEN MUNICIPAL				30,000		13,000	3,400	46,400
WARREN COUNTY W/D	22.2		100	7,881			2,846	10,826
WARREN COUNTY TOTAL	22.2		100	37,881		13,000	6,246	57,227
BARREN RIVER ADD TOTAL	82	297	2,217	51,083	4,000	24,697	9,855	91,807

ALLEN COUNTY

(Allen County Water Service Area Map)

- Estimated 1999 population of 16,600--81% on public water
- Estimated 2020 population of 20,000--82% on public water
- 400 miles of water lines, with plans for 0.2 additional miles
- Estimated funding needs for public water 2000-2005--\$10,000
- Estimated funding needs for public water 2006-2020--\$0

Allen County had an estimated population of 16,650 (6,844 households) in 1999, with a projected population of 19,976 (8,753 households) in the year 2020. Some 5,250 households (approximately 81%) were served by public water systems. With the exception of an area in the southeastern part of the county, nearly all households in the county currently have access to public water. Those not on public water rely on private wells. An additional 100 households will be added to public water by the year 2020.

Maintaining the high level of public water service in the face of a 33 percent population growth will require a significant upgrade of treatment facilities.

Estimated Costs - Proposed Projects, 2000-2005

COUNTY/System		New Customers		Rehab	Source	Treatment	Tanks/ Pumps	Total
	Miles	Number	Cost in \$1000	In \$1000	in \$1000	in \$1000	in \$1000	in \$1000
ALLEN								
SCOTTSVILLE WATER DEPARTMENT	0.2	100	10					10
ALLEN COUNTY TOTAL	0.2	100	10					10

PUBLIC WATER SYSTEMS

The majority of the residents of Allen County are presently provided water by two systems: the Scottsville Water Department and the Allen County Water District. A small portion of western Allen County is served by White House, Tennessee and a small section in the east is served by Glasgow Water District and Fountain Run Water District.

WATER SERVICE AREAS

ALLEN COUNTY

Kentucky

Prepared By:
Water Resource Development Commission

Department for Local Government
1024 Capital Center Drive, Suite 340
Frankfort, Kentucky 40601-8204
502-573-2382 -- 502-573-2939 fax
<http://dlgnt1.state.ky.us/wrdc/>

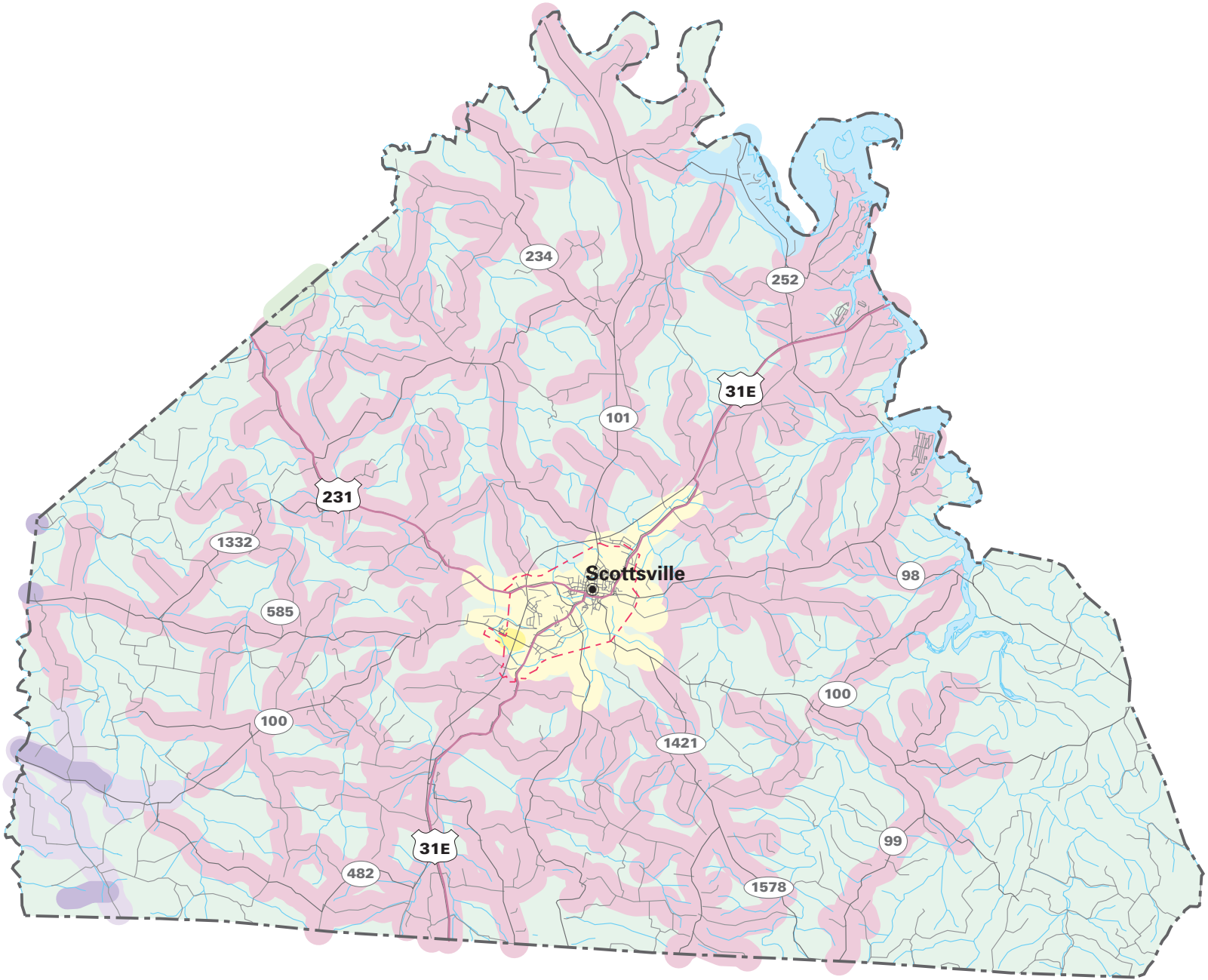
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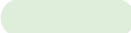
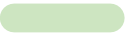


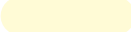

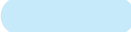



Data Collection & GIS Input By:
Kentucky Area Development Districts



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WATER SERVICE STATUS BY OWNER

EXISTING SERVICE AREA	PROPOSED SERVICE AREA	
		WARREN COUNTY WATER DISTRICT
		SIMPSON COUNTY WATER DISTRICT
		SCOTTVILLE WATER DEPARTMENT
		GLASGOW WATER COMPANY
		ALLEN COUNTY WATER DISTRICT

ALLEN COUNTY WATER DISTRICT

PWSID: 0020956
 System Type:..... COMMUNITY
 Owner Type:..... WATER DISTRICT
 Surface Source:
 Purchase Source: SCOTTSVILLE PLANT
 Well Source:
 Sells Water to:
 Treatment Plant Capacity (MGD):..... 0.00
 Percent Daily Average Production:..... 0.00
 Total Tank Storage Capacity (gallons):..... 1,053,000.00
 Total Service Connections: 3,000.00
 Number of Employees:..... 9.00
 Treatment Operator Class:2D
 Distribution Operator Class:
 Customer Rate for 1,000 Gallons:..... 5.00
 O/M costs 1997:..... 734,309.00
 O/M costs per Service Connection: 256.30
 Net Revenue 1997:..... 188,017.00
 Total Water Produced 1997 (gallons):..... 0.00
 Water Sold 1997 (gallons):..... 162,184,000.00
 Unaccounted-for Water 1997 (%): 7.95

Allen County Water District purchases its water from the Scottsville Water Department, described in the Allen County Water Supply Plan as an adequate supply of water for future needs. The District currently serves 3,000 households in rural Allen County. The District currently has a contract to purchase a maximum of 1,500,000 gallons of water per month from the Scottsville Water Department and has an average daily usage of 700,000 gallons. The storage system for the District consists of five tanks, which have a combined storage capacity of 1,053,000 gallons. The calculated charge for 5,000 gallons of treated water (residential usage) is \$25.00. Overall system losses average 8%. Allen County Water District has nine employees, of whom, three are certified to operate the distribution system.

The need for water service expansion in rural Allen County is not as great as in other counties. Approximately 95% of the households in the Allen County Water District have treated water available to them. The only areas that are lacking service are those located on the outer edge of the county where there are not enough residents per square mile to justify the cost of expansion to these areas. Another problem cited with distributing water to these areas is the high volume and pressure needed to provide water for all the residents in the

Allen County Water District. The areas with the most growth, however, are in the rural areas of the county and eventually treated water will be needed in these areas.

SCOTTSVILLE WATER DEPARTMENT

PWSID: 0020386
 System Type: COMMUNITY
 Owner Type: MUNICIPAL
 Surface Source: CALVERT SPRINGS
 Purchase Source:
 Well Source:
 Sells Water to: ALLEN COUNTY WATER DISTRICT
 Treatment Plant Capacity (MGD): 1.50
 Percent Daily Average Production: 85.00
 Total Tank Storage Capacity (gallons): 1,850,000.00
 Total Service Connections: 2,238.00
 Number of Employees: 5.00
 Treatment Operator Class: 2D
 Distribution Operator Class: 3A
 Customer Rate for 1,000 Gallons: 3.15
 O/M costs 1997: Not available
 O/M costs per Service Connection: Not available
 Net Revenue 1997: Not available
 Total Water Produced 1997 (gallons): Not available
 Water Sold 1997 (gallons): Not available
 Unaccounted-for Water 1997 (%): Not available

The Scottsville Water Department gets its water from the nearby Barren River Reservoir, described in the Allen County Water Supply Plan, as an adequate supply of raw water for future needs. The Water Department currently serves 2,238 households in and around Scottsville, as well as 230 commercial and 12 industrial customers. Additionally, the Water Department sells treated water to Allen County Water District. The Water Department operates a water treatment plant, which can produce 1,500,000 gallons per day. On an average day the plant produces approximately 732,000 gallons per day. The average amount sold to the Allen County Water District is 625,000 gallons per day. Approximately 90% of the plant capacity is being utilized and will probably need upgrading within the next 20 years. The Departments water storage consists of three tanks. The total storage capacity of the Department is 1,850,000 total gallons. The calculated charge for 5,000 gallons of treated water is \$15.75. The Scottsville Water Department employs five persons, three of whom are licensed water treatment plant operators.

Scottsville Water Department currently serves 85% of the total households in its service area. The other 15% are either on wells or do not wish to buy water. Only a small percentage does not have access to the system. As a whole, the system does not need to expand. Instead, it needs to upgrade the treatment plant and replace some of the older lines. Currently the water treatment plant in Scottsville is operating at 90% of its maximum capacity and many feel that this will be inadequate by the year 2020. Scottsville will continue a steady growth rate and eventually the system will no longer serve the population adequately.

PRIVATE DOMESTIC SYSTEMS

About 3,000 people in Allen County rely on private domestic water supplies: about 1,700 on wells, and 1,300 on other sources.

In the uplands of northwestern Allen County and in the lowlands of the southern reaches of Trammel Creek and the Barren River and its major tributaries, more than three-quarters of the drilled wells are adequate for a domestic supply. Yields as high as 50 gpm have been reported from wells penetrating large solution channels which are a common feature in limestone rich areas such as are found in Allen County. In approximately 80% of the county most wells are inadequate for domestic use except a few wells in lowlands areas bordering streams which yield enough water for a domestic supply.

Numerous springs with flows ranging from a few gallons per minute too as high as 20,000 gpm are found in the county but are prominent in the limestone beds along the Barren River and its tributaries.

BARREN COUNTY

(Barren County Water Service Area Map)

- Estimated 1999 population of 37,200-- 88% on public water
- Estimated 2020 population of 42,200-- 89% on public water
- 740 miles of water lines, with plans for 145 additional miles
- Estimated funding needs for public water 2000-2005--\$5,220,000
- Estimated funding needs for public water 2006-2020--\$0

Barren County had an estimated population of 37,163 (15,459 households) in 1999, with a projected population of 42,155 (18,541 households) in the year 2020. 88% were served by public water systems. 5 of 6 households not on public water relied on private wells. There are some households that are not currently served by either water system. About 200 new households will be placed on public water through line extensions in 2000-2020.

To meet current and future needs of the county, projects have been selected and ranked by the Glasgow Water Company representatives, elected officials and the Barren River ADD's Board of Directors as being crucial to the future growth and development of Barren County.

Because of the potential increase in the amount of demanded water due to population growth and associated commercial and industrial activity, the Glasgow Water Company may need to increase their plant capacity to 7.0 or 8.0 mgd in the near future.

Any major residential and commercial growth in Barren County is expected to occur along Kentucky State Highway 90 between Glasgow and Cave City or along US 31-E. The Glasgow Water Company is well prepared for this potential growth, already having a well-established infrastructure network in these areas. Barren County may need to take steps to improve the infrastructure network in the western portion of the county if the proposed Southern Kentucky Industrial Air Park is constructed near the I-65/Cumberland Parkway interchange. This could result in a major increase in the amount of water needed in this portion of the county.

WATER SERVICE AREAS

BARREN COUNTY

Kentucky

Prepared By:
Water Resource Development Commission

Department for Local Government
1024 Capital Center Drive, Suite 340
Frankfort, Kentucky 40601-8204
502-573-2382 -- 502-573-2939 fax
<http://dlgnt1.state.ky.us/wrdc/>

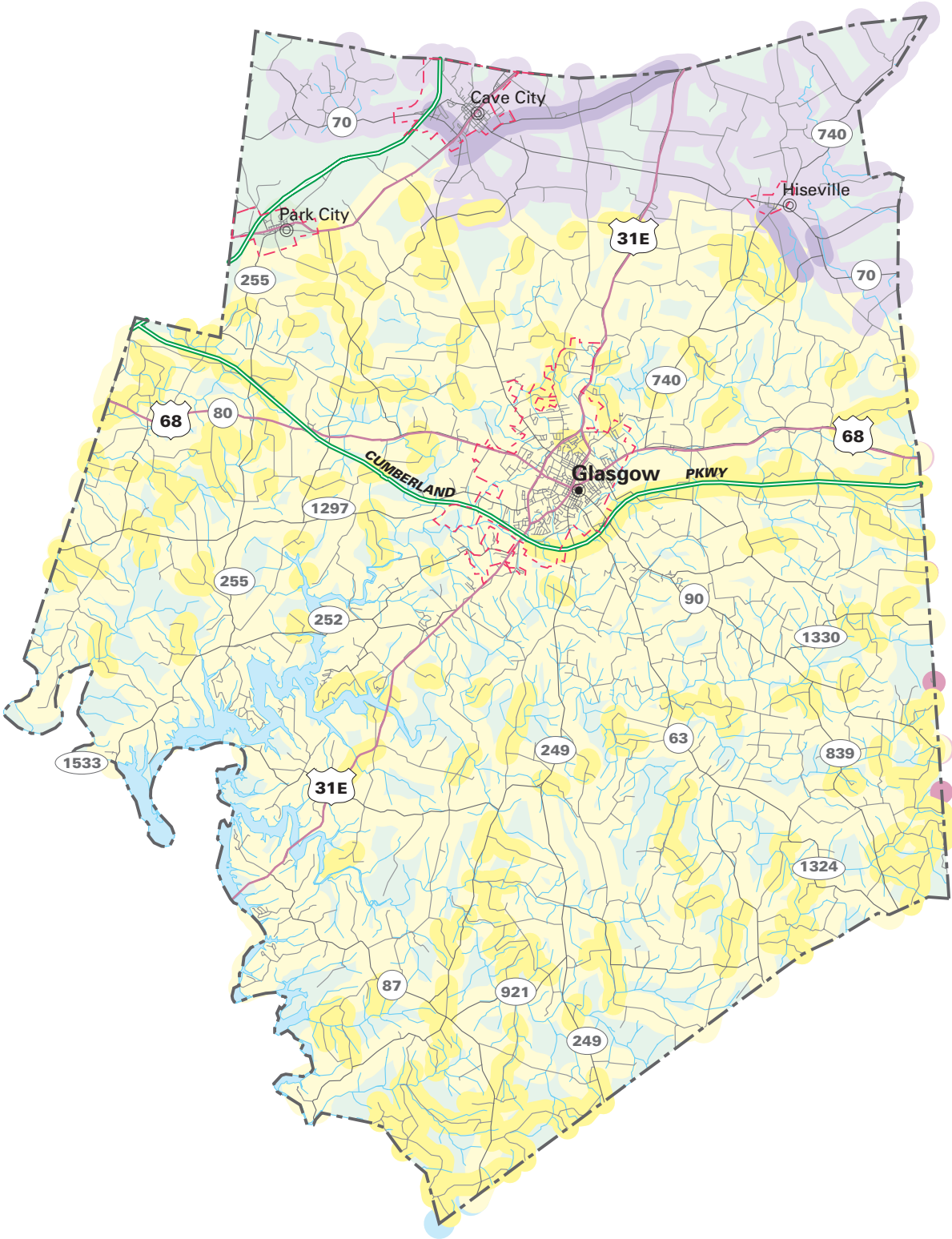
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WATER SERVICE STATUS BY OWNER		
EXISTING SERVICE AREA	PROPOSED SERVICE AREA	
		PARK CITY WATER WORKS
		GREEN RIVER VALLEY WATER DISTRICT
		GLASGOW WATER COMPANY
		FOUNTAIN RUN WATER DISTRICT
		EDMONTON WATER WORKS



Estimated Costs - Proposed Projects, 2000-2005

COUNTY/System		New Customers		Rehab	Source	Treatment	Tanks/ Pumps	Total
	Miles	Number	Cost in \$1000	In \$1000	in \$1000	in \$1000	in \$1000	in \$1000
BARREN								
GLASGOW WATER COMPANY	138.0	368	4,254					4,254
PARK CITY	6.1		966					966
BARREN COUNTY TOTAL	144.1	368	5,220					5,220

PUBLIC WATER SYSTEMS

Residents of Barren County are served by the Glasgow Water Company, the Green River Valley Water District, Park City Water Works, and the Cave City Water System. The Green River Valley Water District serves the northern portions of the county and the Glasgow Water Company serves the city of Glasgow and the remainder of the county.

GLASGOW WATER COMPANY

PWSID: 0050929
 System Type:..... COMMUNITY
 Owner Type: MUNICIPAL
 Surface Source:..... BARREN RIVER RESERVOIR
 Purchase Source: GLASGOW WATER COMPANY
 Well Source:
 Sells Water to: GLASGOW WATER COMPANY
 Treatment Plant Capacity (MGD):..... 6.00
 Percent Daily Average Production:..... 47.00
 Total Tank Storage Capacity (gallons): 593,000.00
 Total Service Connections: 13,140.00
 Number of Employees:..... 42.00
 Treatment Operator Class:3D
 Distribution Operator Class:.....4A
 Customer Rate for 1,000 Gallons:..... 2.26
 O/M costs 1997:Not available
 O/M costs per Service Connection:Not available
 Net Revenue 1997:Not available
 Total Water Produced 1997 (gallons):.....Not available
 Water Sold 1997 (gallons):.....Not available
 Unaccounted-for Water 1997 (%):Not available

The Glasgow Water Company withdraws water from the Barren River Reservoir, which is considered an adequate supply of raw water through 2015. They currently serve 12,270 residential customers, 1,004 commercial customers, and nine industrial customers. The water treatment plant can produce 6.0 million gallons per day. On an average day the system produces about 4.0 million gallons. The base rate for water is \$11.30 for 5,000 gallons within

the city limits and \$17.42 for 5,000 gallons outside the city limits. The Glasgow Water Company has 42 employees, six certified water treatment plant operators and one distribution system operator.

GREEN RIVER VALLEY WATER DISTRICT

The Green River Valley Water District gets its water from two primary sources, Rio Verde Spring and the Green River. Also, the Glasgow Water Company serves as a secondary source for the district. These sources are described as adequate supplies of raw water for future needs. The District currently serves 5,202 households. Services are provided in five counties: Hart, Barren, Larue, Green, and Metcalfe; and also provides water to the Mammoth Cave area. Additionally, the District sells treated water to Munfordville Water Works, Bonnieville Water Company, Larue County Water District, Green-Taylor Water District, Horse Cave and Cave City. The District operates a water treatment plant that can produce four million gallons per day. On an average day the plant produces approximately 2,692,589 gallons of water, less than 67% of its designed capacity. The District's storage system consists of 16 tanks (4,475,000 gallons of storage). The calculated charge for 5,000 gallons of treated water (residential usage) is currently \$18.80. The Green River Valley Water District has a total of 18 employees: one certified water treatment plant operator and five certified to operate the distribution system. The other employees provide billing and financial oversight.

PARK CITY WATER WORKS

PWSID: 0050344
 System Type: COMMUNITY
 Owner Type: MUNICIPAL
 Surface Source:
 Purchase Source: GLASGOW WATER WORKS
 Well Source:
 Sells Water to:
 Treatment Plant Capacity (MGD): 0.00
 Percent Daily Average Production: 0.00
 Total Tank Storage Capacity (gallons): 0.00
 Total Service Connections: 257.00
 Number of Employees: 1.00
 Treatment Operator Class: 1D
 Distribution Operator Class:
 Customer Rate for 1,000 Gallons: Not available
 O/M costs 1997: Not available
 O/M costs per Service Connection: Not available

Net Revenue 1997:	Not available
Total Water Produced 1997 (gallons):	Not available
Water Sold 1997 (gallons):	Not available
Unaccounted-for Water 1997 (%):	Not available

CAVE CITY WATER SYSTEM

Cave City Water System serves a population of 3,435 and has 1,041 service connections. The water district treats water from the Green River.

OTHER SYSTEMS

DIAMOND CAVERNS RESORT & GOLF CLUB

Diamond Caverns Resort & Golf Club serves a population of 171 and has 52 service connections. The system treats ground water from wells.

DIAMOND CAVERNS

Diamond Caverns serves a population of 393 and has 89 service connections. The system has treatment capacity of 100,000 gal per day. The water source is ground water from wells.

PRIVATE DOMESTIC SYSTEMS

About 4,500 people in Barren County rely on private domestic water supplies: 3,800 on wells, and 700 on other sources.

In the northern half of Barren County except in the lowlands of Beaver Creek, more than three-quarters of the drilled wells are adequate for a domestic supply. Yields as high as 50 gpm have been reported from wells penetrating large solution channels, which are a common feature in limestone rich areas such as Barren County. In the southern half of the county and along the low-lying areas along Beaver Creek, most wells are inadequate for domestic use except a few wells in lowland areas bordering streams that yield enough water for a domestic supply.

Numerous springs with flows ranging from a few gallons per minute too 2,000 gpm are found in the county. Minimum flow generally occurs in early fall, maximum flows in late winter

BUTLER COUNTY

(Butler County Water Service Area Map)

- Estimated 1999 population of 11,800-- 90% on public water¹
- Estimated 2020 population of 12,700-- 91% on public water
- 383 miles of water lines, with plans for 24 additional miles
- Estimated funding needs for public water 2000-2005--\$850,000
- Estimated funding needs for public water 2006-2020--\$3,195,000

Butler County had an estimated population of 11,761 (4,766 households) in 1999 with a projected population of 12,700 (5,500 households) in 2020. About 90 percent of Butler County residents have access to public water. Those not on public water relied on private wells. About 50 new households will be placed on public water through line extensions in 2000-2020.

The need for water service expansion in the Butler County water system, Inc. results from growth in Butler County and aging infrastructure. Studies indicate that Butler County will continue to increase in population at a steady rate in the coming years. Currently, many households in Butler County are not served by the water system. To serve these households, the Butler County Water System, Inc. distribution system will require upgrades to increase and maintain an adequate flow and pressure. The approximate costs are outlined in the following project listings. Butler County has 4,966 service connections and 504,000 gallons per day treatment capacity. The costs for the first 5,000 gallons are \$27.76 for the system that reported.

Estimated Costs - Proposed Projects, 2000-2005

COUNTY/System		New Customers		Rehab	Source	Treatment	Tanks/ Pumps	Total
	Miles	Number	Cost in \$1000	In \$1000	in \$1000	in \$1000	in \$1000	in \$1000
BUTLER								
BUTLER COUNTY WATER SYSTEM, INC	23.6	50	850					850
BUTLER COUNTY TOTAL	23.6	50	850					850

WATER SERVICE AREAS

BUTLER COUNTY

Kentucky

Prepared By:
Water Resource Development Commission

Department for Local Government
1024 Capital Center Drive, Suite 340
Frankfort, Kentucky 40601-8204
502-573-2382 -- 502-573-2939 fax
<http://dlgnt1.state.ky.us/wrdc/>

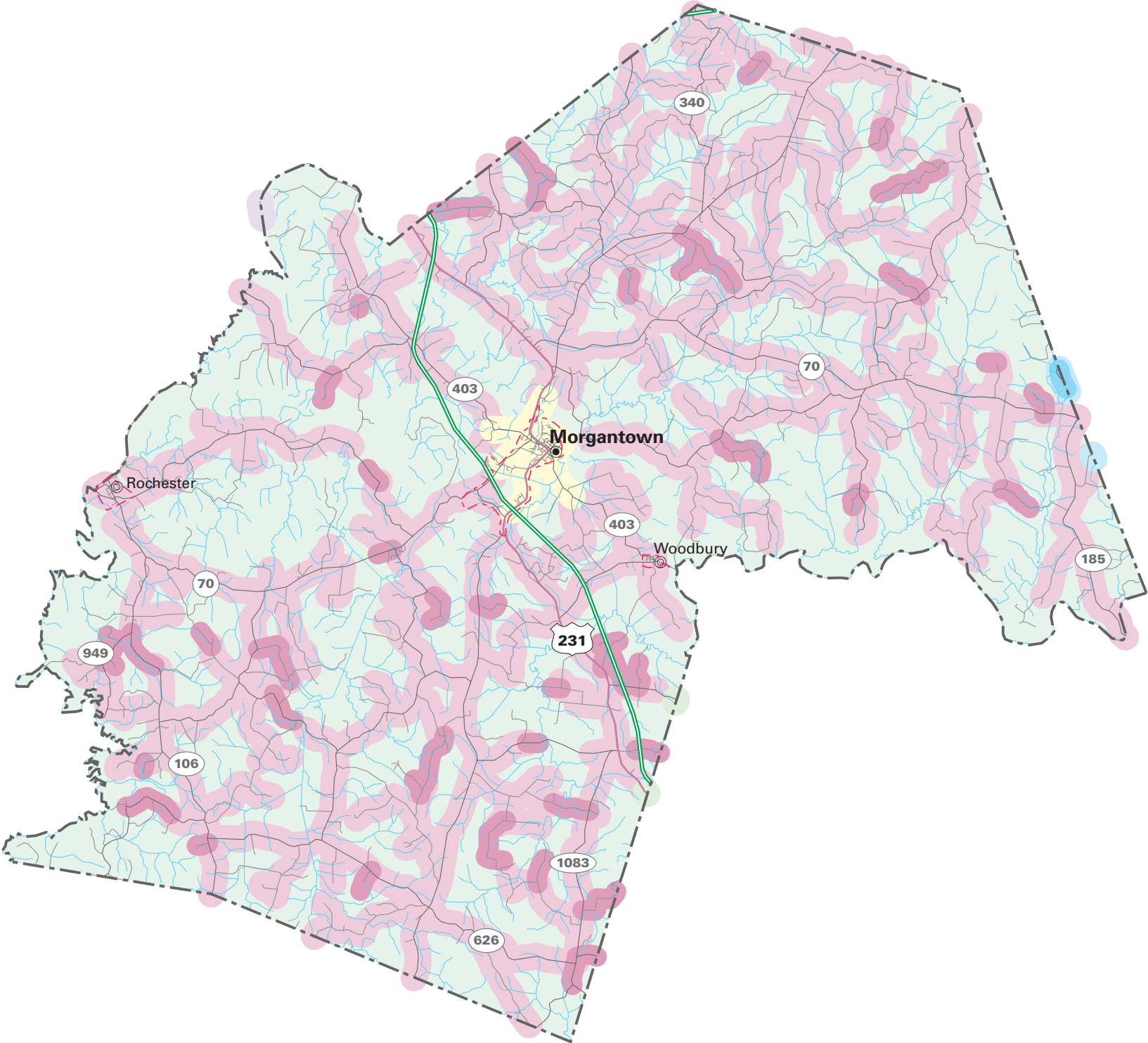
Bob Arnold, Chairman
Lawrence Wetherby, Executive Director

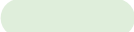



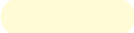
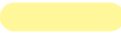
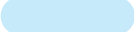



Final GIS & Cartographic Operations By:
Kent Anness & Kim Prough

Data Collection & GIS Input By:
Kentucky Area Development Districts



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WATER SERVICE STATUS BY OWNER		
EXISTING SERVICE AREA	PROPOSED SERVICE AREA	
		WARREN COUNTY WATER DISTRICT
		OHIO COUNTY WATER DISTRICT
		MORGANTOWN WATER SYSTEM
		EDMONSON COUNTY WATER DISTRICT
		BUTLER COUNTY WATER SYSTEM INCORPORATED

Estimated Costs - Proposed Projects, 2006-2020

COUNTY/System		New Customers		Rehab	Source	Treatment	Tanks/ Pumps	Total
	Miles	Number	Cost in \$1000	in \$1000	in \$1000	in \$1000	in \$1000	in \$1000
BUTLER								
BUTLER COUNTY WATER SYSTEM, INC	.		.	395				395
MORGANTOWN				800		2,000		2,800
BUTLER COUNTY TOTAL	.		-	1,195		2,000		3,195

¹Some uncertainty, due to conflicting data, in the estimated percentage of the county served by public water.

PUBLIC WATER SYSTEMS

The residents of Butler County are presently provided water by two systems: the Butler County Water System, Inc. and Morgantown Utilities.

BUTLER COUNTY WATER SYSTEM INCORPORATED

PWSID: 0160052
 System Type: COMMUNITY
 Owner Type: WATER DISTRICT
 Surface Source: GREEN RIVER
 Purchase Source: DUNBAR
 Well Source:
 Sells Water to:
 Treatment Plant Capacity (MGD): 0.50
 Percent Daily Average Production: 43.00
 Total Tank Storage Capacity (gallons): 1,276,000.00
 Total Service Connections: 4,022.00
 Number of Employees: 5.00
 Treatment Operator Class: 2D
 Distribution Operator Class: 3A
 Customer Rate for 1,000 Gallons: 5.82
 O/M costs 1997: 681,928.15
 O/M costs per Service Connection: 170.23
 Net Revenue 1997: 96,367.69
 Total Water Produced 1997 (gallons): 209,269,030.00
 Water Sold 1997 (gallons): 221,420,132.00
 Unaccounted-for Water 1997 (%): 11.64

According to the Butler County Water Supply Plan the Green River will supply enough raw water to meet future needs. The Butler County Water System, Inc. currently serves 3,776 households in Butler County. The system purchases water from the Morgantown water treatment plant, which can produce 972,000 gallons per day. On an average day the Butler County Water System purchases approximately 338,000 gallons of water. Butler County Water System, Inc. storage system has 11 tanks in its territory. The total storage capacity of

the district is 1,276,000 gallons. The calculated charge for 5,000 gallons of treated water (residential use) is currently \$29.11. Butler County Water System, Inc. has five employees: two certified water treatment plant operators, two certified to operate the distribution system, and one for billing and financial concerns.

The Butler County Water System, Inc. is planning for 24 miles of water line extensions during the period 2000-2005 at an estimated cost of \$650,000 and an additional 15 miles of water line extensions in the period 2005-2020 at an estimated cost of \$400,000.

MORGANTOWN WATER SYSTEM

PWSID: 0160294
 System Type: COMMUNITY
 Owner Type: MUNICIPAL
 Surface Source: GREEN RIVER
 Purchase Source:
 Well Source:
 Sells Water to:.....
 Treatment Plant Capacity (MGD): 0. 972
 Percent Daily Average Production: 65.0
 Total Tank Storage Capacity (G):..... 1,000,000
 Total Service Connections: 944.00
 Number of Employees: 17
 Treatment Operator Class:.....2D
 Distribution Operator Class:3A
 Customer Rate for 1,000 Gallons: 3.50
 O/M costs 1997: Not available
 O/M costs per Service Connection: Not available
 Net Revenue 1997:..... Not available
 Total Water Produced 1997: Not available
 Water Sold 1997: Not available
 Unaccounted-for Water 1997:..... Not available

Morgantown Utilities gets its water from the Green River, described in the Butler County Water Supply Plan as an adequate supply of raw water for future needs. Morgantown Utilities currently services 801 households in Morgantown. Morgantown Utilities operates the Butler County water treatment plant, which can produce 972,000 gallons per day. On an average day the plant produces approximately 580,000 gallons of water. The utilities' storage system consists of two tanks. The total storage capacity of the district is 1,000,000 gallons. The calculated charge for 5,000 gallons of treated water (residential use) is currently \$17.51. With a 33.5% increase to become effective July 1, 1999. Morgantown Utilities has 17 employees, of whom four are certified to operate the water treatment plant and two are certified to operate the distribution system.

Morgantown Utilities, Inc. has an aging infrastructure. Studies indicate Morgantown will continue to increase in population at a steady rate in the coming years. In order to serve customers, adequately the utilities' distribution system will require upgrades to increase and maintain an adequate flow and pressure. The approximate costs are outlined in the following project listings.

PRIVATE DOMESTIC SYSTEMS

About 1,200 people in Butler County rely on private domestic water supplies: 800 on wells and 400 on other sources.

In the northern two-thirds of Butler County most wells from depths of less than 300 feet are adequate for a domestic supply. Wells located in the Green River flood plain can produce as much as 100 gallons of hard water per minute. Most wells obtain their water from thick sandstone layers and will yield as much as 60 gpm. In the southern third of the county only a few well yield enough water for a domestic supply. In the central section of the county moderately mineralized water may be obtained locally from deep sandstone formations at depths of 1200 feet.

Generally, ground water is hard to very hard and iron and salt may be present in objectionable amounts. Often ground water becomes saltier with depth.

EDMONSON COUNTY

(Edmonson County Water Service Area Map)

- Estimated 1999 population of 11,500 -- 95% on public water
- Estimated 2020 population of 13,600-- 96% on public water
- 310 miles of water lines, with plans for 10 additional miles
- Estimated funding needs for public water 2000-2005--\$3,198,000
- Estimated funding needs for public water 2006-2020--\$5,300,000

Edmondson County had an estimated population of 11,494 (4,635 households) in 1999, with a projected population of 13,574 (5,913 households) by the year 2020. The need for water service expansion in rural Edmonson County is not as great as in other counties because in the service area of the Edmonson County Water District approximately 95% of the households have treated water available to them. Those not on public water relied on private wells. About 40 new households will be placed on public water through line extensions in 2000-2020.

The only areas lacking adequate water service are those areas located on the outer edge of the county where there are too few residents per square mile to justify the cost of expansion to these areas. Some of the things that are being done or are being planned include upgrading the Brownsville treatment plant, which is currently operating at about 70% of its rated capacity. Although it would probably be sufficient until the year 2020, the District does not want to take a chance on having problems in the future. Other things the District is doing to improve service include putting in new water lines where the new highway is being built in Brownsville and also extending lines to the site of the new school that is to be completed in the next two years. The Edmonson County Water District plans to add three tanks to the Edmonson County area, one tank to Grayson County, and one to Hart County. These combined efforts should easily carry them into the next twenty years.

Edmonson County has 8,342 service connections and 1,150,000 gallons per day treatment capacity. Total storage capacity is 3,950,000 gallons. The costs for the first 5,000 gallons are \$22.05, operating and management costs per service connection range are \$145 and average system losses are 11.5% for the system that reported.

WATER SERVICE AREAS

EDMONSON COUNTY

Kentucky

Prepared By:
Water Resource Development Commission

Department for Local Government
1024 Capital Center Drive, Suite 340
Frankfort, Kentucky 40601-8204
502-573-2382 -- 502-573-2939 fax
<http://dlgnt1.state.ky.us/wrdc/>

Bob Arnold, Chairman
Lawrence Wetherby, Executive Director

Final GIS & Cartographic Operations By:
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Data Collection & GIS Input By:
Kentucky Area Development Districts



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WATER SERVICE STATUS BY OWNER

EXISTING SERVICE AREA	PROPOSED SERVICE AREA	
		GLASGOW WATER COMPANY
		EDMONSON COUNTY WATER DISTRICT
		BUTLER COUNTY WATER SYSTEM INCORPORATED
		BROWNSVILLE MUNICIPAL WATER SYSTEM

Estimated Costs - Proposed Projects, 2000-2005

COUNTY/System		New Customers		Rehab	Source	Treatment	Tanks/ Pumps	Total
	Miles	Number	Cost in \$1000	In \$1000	in \$1000	in \$1000	in \$1000	in \$1000
EDMONSON								
BROWNSVILLE WATER SYSTEM				110				110
EDMONSON COUNTY WATER DISTRICT	10.0	37	88	3,000				3,000
EDMONSON COUNTY TOTAL	10.0	37	88	3,110				3,198

Estimated Costs - Proposed Projects, 2006-2020

COUNTY/System		New Customers		Rehab	Source	Treatment	Tanks/ Pumps	Total
	Miles	Number	Cost in \$1000	in \$1000	in \$1000	in \$1000	in \$1000	in \$1000
EDMONSON								-
BROWNSVILLE WATER				500				500
EDMONSON WATER DIST						4,000	800	4,800
EDMONSON COUNTY TOTAL				500		4,000	800	5,300

PUBLIC WATER SYSTEMS

The residents of Edmonson County are presently provided water by two systems: the Brownsville Municipal Water System and the Edmonson County Water District. In addition to serving rural Edmonson County, the Edmonson County Water District also supplies water to a small portion of Grayson, Hart, Warren and Butler counties.

EDMONSON COUNTY WATER DISTRICT

PWSID: 0310114
 System Type: COMMUNITY
 Owner Type: WATER DISTRICT
 Surface Source: GREEN RIVER
 Purchase Source:
 Well Source:
 Sells Water to: BROWNSVILLE MUNICIPAL WATER SYSTEM
 Treatment Plant Capacity (MGD): 2.15
 Percent Daily Average Production: 70.00
 Total Tank Storage Capacity (gallons): 2,070,000.00
 Total Service Connections: 7,757.00
 Number of Employees: 16.00
 Treatment Operator Class: 2D
 Distribution Operator Class: 3A
 Customer Rate for 1,000 Gallons: 4.54
 O/M costs 1997: 752,437.83
 O/M costs per Service Connection: 100.07
 Net Revenue 1997: 74,294.32
 Total Water Produced 1997 (gallons): 423,481,000.00
 Water Sold 1997 (gallons): 360,036,900.00
 Unaccounted-for Water 1997 (%): 11.47

Edmonson County Water District obtains its water from the Green River and the Nolin Lake Reservoir, described in the Edmonson County Water Supply Plan has an adequate supply of raw water for future needs. The District currently serves 4,791 households in rural Allen County, 1,000 households in Hart County, 1,934 households in Grayson County, and 31 households in Warren County. The District currently has one treatment plant in Brownsville, which can produce 1,152,000 gallons per day and another plant located in Wax, Grayson County, which can produce 1,000,000 gallons per day. On an average day the Brownsville plant produces about 774,433 gallons and the Wax plant produces about 275,000 gallons per day. The storage system for the District consists of 13 tanks. The total storage capacity of the District is 2,070,000 gallons. The calculated charge for 5,000 gallons of treated water (residential usage) is \$22.71. The Edmonson County Water District has 16 employees, of whom, four are certified to operate the water treatment plant and one is certified to operate the distribution system.

BROWNSVILLE MUNICIPAL WATER SYSTEM

PWSID:	0310706
System Type:	COMMUNITY
Owner Type:	MUNICIPAL
Surface Source:	
Purchase Source:	GREEN RIVER
Well Source:	
Sells Water to:	
Treatment Plant Capacity (MGD):	0.00
Percent Daily Average Production:	0.00
Total Tank Storage Capacity (gallons):	200,000.00
Total Service Connections:	447.00
Number of Employees:	2.00
Treatment Operator Class:	2D
Distribution Operator Class:	
Customer Rate for 1,000 Gallons:	3.70
O/M costs 1997:	Not available
O/M costs per Service Connection:	Not available
Net Revenue 1997:	Not available
Total Water Produced 1997 (gallons):	Not available
Water Sold 1997 (gallons):	Not available
Unaccounted-for Water 1997 (%):	Not available

Brownsville Municipal Water System purchases its water from the Edmonson County Water District, described in the Edmonson County Water Supply Plan as an adequate supply of raw water for future needs. The water system currently serves 447 households in and around

Brownsville. The water system currently has a contract to purchase a maximum of 85,000 gallons per day. The average daily amount of water purchased by the water system is 83,000 gallons. This accounts for less than 10 percent of the total available capacity of the source. The water system consists of one tank. The total storage capacity of the system is 200,000 gallons. The calculated charge for 5,000 gallons of treated water is \$18.50. The Brownsville Municipal Water System employs two persons, both of whom are certified water distribution system operators.

Brownsville Municipal Water System currently serves 99% of the total households in its service area. As a whole, the system does not need to expand but instead needs to upgrade and replace some of the older lines, which it currently plans to do. The water treatment plant in Brownsville is operating at 70% of its maximum capacity and many feel that this will be inadequate by the year 2020. Since the water system does not own this plant they do not pay for any upgrades directly, but they do so through the resulting water costs. Current plans are to replace the existing water tank with a 300,000-gallon tank or to refurbish the existing tank to like new. By increasing the size of the tank they can increase volume and pressure to help existing customers and to entice new customers into the area. By completing this step and by replacing some of the older lines, the water system will have an adequate supply of water and a more efficient system.

OTHER SYSTEMS

MAMMOTH CAVE

PWSID: 0310940
System Type: COMMUNITY
Owner Type: FEDERAL
Surface Source:
Purchase Source: GREEN RIVER VALLEY WATER DISTRICT
Well Source:
Sells Water to:
Treatment Plant Capacity (MGD): 0. 00
Percent Daily Average Production: 0.00
Total Tank Storage Capacity (G): Not available
Total Service Connections: 45.00
Number of Employees: Not available
Treatment Operator Class: 2D
Distribution Operator Class:
Customer Rate for 1,000 Gallons: Not available
O/M costs 1997: Not available

O/M costs per Service Connection:Not available
Net Revenue 1997:Not available
Total Water Produced 1997:Not available
Water Sold 1997:Not available
Unaccounted-for Water 1997:Not available

KENTUCKY DIAMOND CAVERNS: CEDAR HILL

Kentucky Diamond Caverns: Cedar Hill is located in Edmonson County. The system serves a population of 330 and has 100 service connections. The municipal system has treatment capacity of 11,000 gallons per day. The water source is ground water from wells.

PRIVATE DOMESTIC SYSTEMS

About 550 people in Butler County rely on private domestic water supplies: 350 on wells and 200 on other sources.

In this highly karstic, limestone rich county, most of the drilled wells in the southern half of Edmonson County are adequate for a domestic supply. Yields as high as 50 gpm have been reported from wells penetrating large solution channels with adequate wells producing as deep as 500 feet. In the uplands of the northern half of the county less than half the drilled wells yield enough water for a domestic supply. In low-lying areas of the Nolin River, Bear Creek, and Dog Creek and their main tributaries, most wells are inadequate for domestic use with the exception of a few wells that yield enough for a domestic supply from depths of 150 feet or more.

Springs with flows ranging from a few gallons per minute to 50,000 gpm are found in the county. Minimum flow generally occurs in early fall, maximum flows in late winter.

HART COUNTY

(Hart County Water Service Area Map)

- Estimated 1999 population of 16,900-- 93% on public water¹
- Estimated 2020 population of 19,400-- 97% on public water
- 410 miles of water lines, with plans for 50 additional miles
- Estimated funding needs for public water 2000-2005--\$3,355,000
- Estimated funding needs for public water 2006-2020--\$100,000

Hart County had a population of 16,940 (6,947 households) in 1999 with a projected population of 19,431 (8,518 households) in 2020. About 335 new households will be placed on public water through line extensions in 2000-2020.

The need for water service expansion in the Green River Valley Authority's territory of Hart County results primarily from the rapid subdivision development in many of its rural areas as well as other areas. According to a study conducted by the Kentucky State Data Center in Louisville in spring 1999, Hart County will experience population growth in excess of 15% from the year 1990 through 2000 and 31% from the year 1990 through 2020. That same study also indicates Hart County is one of four counties in the BRADD that are projected to experience population growth of more than 30% from the year 1990 through the year 2020. At present, within the territory of Hart County there are approximately 7,000 households, of which, approximately 460 households aren't currently being served or need upgrades in their system. In order to serve these households, the District's distribution system will require new water extension lines as well as many upgrades to increase and maintain an adequate flow and pressure. The approximate costs of which are outlined in the following list of projects. To meet current as well as the future needs of the county the following projects have been selected and ranked by the Infrastructure, Development and Water Supply Council, which includes Hart County system representatives, elected officials, and other members of the community. The Barren River Area Development District's Board of Directors endorses these projects as being crucial to the future growth and development of the region.

WATER SERVICE AREAS

HART COUNTY

Kentucky

Prepared By:
Water Resource Development Commission

Department for Local Government
1024 Capital Center Drive, Suite 340
Frankfort, Kentucky 40601-8204
502-573-2382 -- 502-573-2939 fax
<http://dlgnt1.state.ky.us/wrdc/>

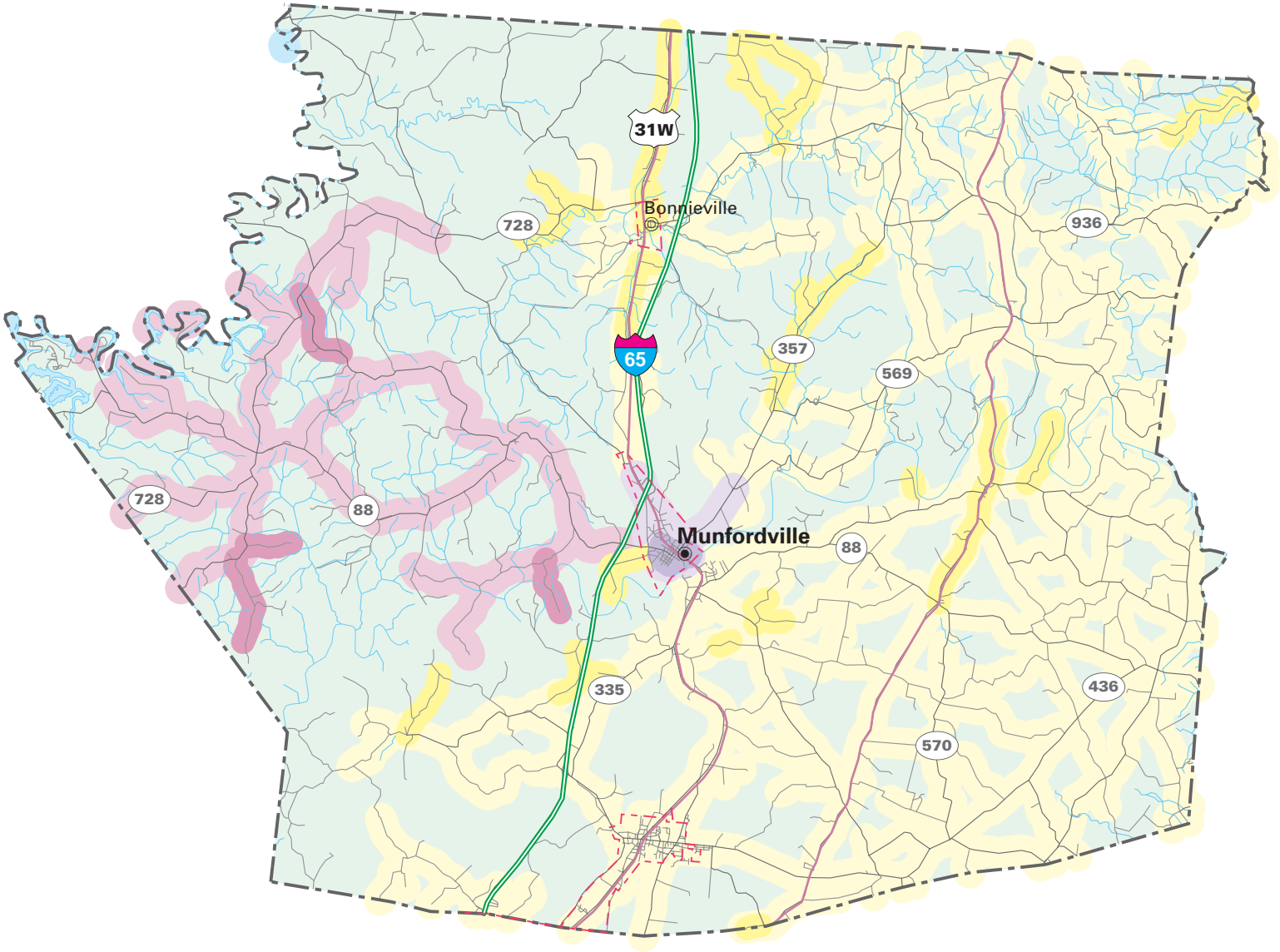
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WATER SERVICE STATUS BY OWNER

EXISTING SERVICE AREA	PROPOSED SERVICE AREA	
		MUNFORDVILLE WATER WORKS
		GREEN RIVER VALLEY WATER DISTRICT
		GRAYSON COUNTY WATER DISTRICT
		EDMONSON COUNTY WATER DISTRICT

Estimated Costs - Proposed Projects, 2000-2005

COUNTY/System		New Customers		Rehab	Source	Treatment	Tanks/ Pumps	Total
	Miles	Number	Cost in \$1000	In \$1000	in \$1000	in \$1000	in \$1000	in \$1000
HART								
GREEN RIVER VALLEY WATER DISTRICT	46.4	286	1,600					1,600
MUNFORDVILLE MUNICIPAL WATER COMPANY	.		.	305		585	865	1,755
HART COUNTY TOTAL	46.4	286	1,600	305		585	865	3,355

Estimated Costs - Proposed Projects, 2006-2020

COUNTY/System		New Customers		Rehab	Source	Treatment	Tanks/ Pumps	Total
	Miles	Number	Cost in \$1000	in \$1000	in \$1000	in \$1000	in \$1000	in \$1000
HART								
GREEN RIVER VALLEY WATER DISTRICT	3.0	47	100			.		100
HART COUNTY TOTAL	3.0	47	100					100

PUBLIC WATER SYSTEMS

The residents of Hart County are presently provided water by the Green River Valley Water District, Munfordville Water Works, Bonnieville Water Company, Edmonson County Water District, and Horse Cave Water System.

GREEN RIVER VALLEY WATER DISTRICT

PWSID: 0500166
 System Type:..... COMMUNITY
 Owner Type:..... WATER DISTRICT
 Surface Source:..... GREEN RIVER
 Purchase Source: GLASGOW WATER COMPANY
 Well Source:
 Sells Water to: MUNFORDVILLE WATER WORKS
 Treatment Plant Capacity (MGD):..... 4.00
 Percent Daily Average Production:..... 67.00
 Total Tank Storage Capacity (gallons): 4,475,000.00
 Total Service Connections: 7,241.00
 Number of Employees:..... 18.00
 Treatment Operator Class:.....3D
 Distribution Operator Class:.....4A
 Customer Rate for 1,000 Gallons:..... 3.76
 O/M costs 1997:..... 1,146,193.00
 O/M costs per Service Connection: 217.87
 Net Revenue 1997: 33,082.00
 Total Water Produced 1997 (gallons):..... 982,817,000.00
 Water Sold 1997 (gallons):..... 80,809,400.00
 Unaccounted-for Water 1997 (%): 10.03

The Green River Valley Water District gets its water from two primary sources, Rio Verde Spring and the Green River. Also, the Glasgow Water Company serves as a secondary source for the district. These sources are described in the Hart County Water Supply Plan as an adequate supply of raw water for future needs. Services are provided in five counties: Hart, Barren, Larue, Green, and Metcalfe; and also provides water to the Mammoth Cave area. Additionally, the District sells treated water to Munfordville Water Works, Bonnieville Water Company, Larue County Water District, Green-Taylor Water District, Horse Cave and Cave City. The District operates a water treatment plant that can produce four million gallons per day. On an average day the plant produces approximately 2,692,589 gallons of water, less than 67% of its' designed capacity. The District's storage system consists of 16 tanks. The total storage capacity of the district is 4,475,000 gallons. The calculated charge for 5,000 gallons of treated water (residential usage) is currently \$18.80. The Green River Valley Water District has a total of 18 employees: one certified water treatment plant operator and five certified to operate the distribution system. The other employees provide billing and financial oversight.

MUNFORDVILLE WATER WORKS

PWSID: 0500305
 System Type: COMMUNITY
 Owner Type: MUNICIPAL
 Surface Source:
 Purchase Source: GREEN RIVER VALLEY WATER DISTRICT
 Well Source:
 Sells Water to:
 Treatment Plant Capacity (MGD): 0.00
 Percent Daily Average Production: 0.00
 Total Tank Storage Capacity (gallons): 210,000.0
 Total Service Connections: 719.00
 Number of Employees: 3.00
 Treatment Operator Class: 2D
 Distribution Operator Class:
 Customer Rate for 1,000 Gallons: 4.00
 O/M costs 1997: Not available
 O/M costs per Service Connection: Not available
 Net Revenue 1997: Not available
 Total Water Produced 1997 (gallons): Not available
 Water Sold 1997 (gallons): Not available
 Unaccounted-for Water 1997 (%): Not available

The Munfordville Water Works gets its water from the Green River Valley Water District, described in the Hart County Water Supply Plan, as an adequate supply of raw water for future needs. The Munfordville Water Works currently serves 708 customers. The storage system consists of 1 tank. The total storage capacity is 210,000 gallons. The calculated charge for 5,000 gallons of treated water (residential usage) is currently \$19.99. Munfordville Water Works has a total of three employees: two certified to operate the distribution system. The other employee provides billing and financial oversight.

The need for water line expansions in the Munfordville Water Works territory is to improve the volume and pressure of flow. At present, within the territory of Mundfordville Water Works all households are currently being served; however, the system needs some upgrades to increase and maintain an adequate flow and pressure. The approximate costs of which are outlined in the following list of projects. To meet current as well as the future needs of the county the following projects have been selected and ranked by the Infrastructure, Development and Water Supply Council, which includes Hart County system representatives, elected officials, and other members of the community. The Barren River Area Development District's Board of Directors endorses these projects as being crucial to the future growth and development of the region.

BONNIEVILLE WATER DISTRICT

PWSID: 0500032
System Type: COMMUNITY
Owner Type: WATER DISTRICT
Surface Source:
Purchase Source: GREEN RIVER VALLEY WATER DISTRICT
Well Source:
Sells Water to:
Treatment Plant Capacity (MGD): 0. 00
Percent Daily Average Production: 0.00
Total Tank Storage Capacity (G): 25,000
Total Service Connections: 245.00
Number of Employees: 1
Treatment Operator Class: 1D
Distribution Operator Class:
Customer Rate for 1,000 Gallons: 3.60
O/M costs 1997: Not available
O/M costs per Service Connection: Not available
Net Revenue 1997: Not available
Total Water Produced 1997: Not available
Water Sold 1997: Not available
Unaccounted-for Water 1997: Not available

The Bonnieville Water Company gets its water from the Green River Valley Water District, described in the Hart County Water Supply Plan, as an adequate supply of raw water for future needs. The Water Company currently serves 235 households. Storage consists of one 25,000 gallon tank. The calculated charge for 5,000 gallons of treated water (residential usage) is currently \$18.00. Bonnieville Water Company has one employee certified to operate the distribution system.

The need for water line expansions in the Bonnieville Water Company territory is to improve the volume and pressure of flow, as well as service for 33 new houses. Future growth could happen north and south of Bonnieville. At present, within the territory of Bonnieville Water Company all households are currently being served; however, the system needs some upgrades to increase and maintain an adequate flow and pressure. Currently there are not enough valves to control the pressure, so they are requesting six-inch valves for pressure and maintenance purposes. The current system was built in the 1930's with cement-asbestos pipes and need to be replaced. The approximate costs of which are outlined in the following list of projects. To meet current as well as the future needs of the county the following projects have been selected and ranked by the Infrastructure, Development and Water Supply Council, which includes Hart County system representatives, elected officials, and other members of the community. The Barren River Area Development District's Board of Directors endorses these projects for being crucial to the future growth and development of the region.

EDMONSON COUNTY WATER DISTRICT

The Edmonson County Water District serves some customers at West of Hart County. This Water district is planning to extend some water lines to serve new residents in this part of Hart County. Additional information about Edmonson water expansion can be found at Edmonson County section.

HORSE CAVE WATER SYSTEM

PWSID: 0500476
System Type: COMMUNITY
Owner Type: WATER DISTRICT
Surface Source:
Purchase Source: GREEN RIVER VALLEY WATER DISTRICT
Well Source:
Sells Water to:
Treatment Plant Capacity (MGD): 0. 00
Percent Daily Average Production: 0.00
Total Tank Storage Capacity (G): Not available
Total Service Connections: 936.00
Number of Employees: Not available
Treatment Operator Class: 2D
Distribution Operator Class:
Customer Rate for 1,000 Gallons: Not available
O/M costs 1997: Not available
O/M costs per Service Connection: Not available
Net Revenue 1997: Not available
Total Water Produced 1997: Not available
Water Sold 1997: Not available
Unaccounted-for Water 1997: Not available

PRIVATE DOMESTIC SYSTEMS

About 1,150 people in Hart County rely on private domestic water supplies: 750 on wells and 400 on other sources.

In the limestone rich area of southwestern Hart County most drilled wells are adequate for a domestic supply. Yields as high as 50 gpm have been reported from wells penetrating large solution channels. Depths of adequate wells range up to 500 feet. In the southern half and parts of north central Hart County, about three-fourth of the wells drilled yield enough water for a domestic supply. In the remaining areas of the county only a few wells yield enough water for a domestic supply except in the lowland areas bordering streams where yields are sometimes sufficient for some wells to meet the supply needs for domestic use.

Springs with flows ranging from a few gallons per minute to 35,000 gpm are found in the county. Minimum flow generally occurs in early fall, maximum flows in late winter. The larger springs in the county have sufficient flows to be utilized for public or industrial water supplies.

LOGAN COUNTY

(Logan County Water Service Area Map)

- Estimated 1999 population of 26,400-- 80% on public water
- Estimated 2020 population of 29,000-- 87% on public water
- 520 miles of water lines, with plans for 110 additional miles
- Estimated funding needs for public water 2000-2005--\$32,810,000
- Estimated funding needs for public water 2006-2020--\$14,373,000

According to a study conducted by the Kentucky State Data Center in Louisville in spring 1999, Logan County as a whole will experience population growth in excess of 10% from the year 1990 through 2000 and almost 20% from the year 1990 through 2020. Logan County had a population of 26,405 (10,824 households) in 1999 with a projected population of 29,004 (12,489 households) in 2020. According to the collected information it does not have an adequate supply of raw water to support any future needs. About 80% of the residents are served by public water. 5 of 6 of those not on public water rely on private wells. About 885 new households will be placed on public water through line extensions in 2000-2020.

Because of the water problem similarities in Logan and Todd counties a Regional Water Commission was formed in 1995. The main focus of this commission was to solve water source, treatment, and conveyance problems in both Logan and Todd Counties. Results of this effort concluded that these counties needs are a new source of water and a new treatment plant facility to assure safe drinking water for the future.

According to the information provided by the Logan Todd Regional Water Commission, "the plan selected by the Commission involves constructing a new raw water intake on the Cumberland River in Clarksville, Tennessee. The water will then be pumped through a pipeline following the R.J. Corman Railroad right-of-way to Guthrie, Kentucky. A new, state-of-the-art water treatment plant will be built at Guthrie to serve all of the two-county area. Treated water will be pumped from the plant to a new storage reservoirs in Todd and Logan Counties, and distributed to all eleven water systems through new distribution

WATER SERVICE AREAS

LOGAN COUNTY

Kentucky

Prepared By:
Water Resource Development Commission

Department for Local Government
1024 Capital Center Drive, Suite 340
Frankfort, Kentucky 40601-8204
502-573-2382 -- 502-573-2939 fax
<http://dlgnt1.state.ky.us/wrdc/>

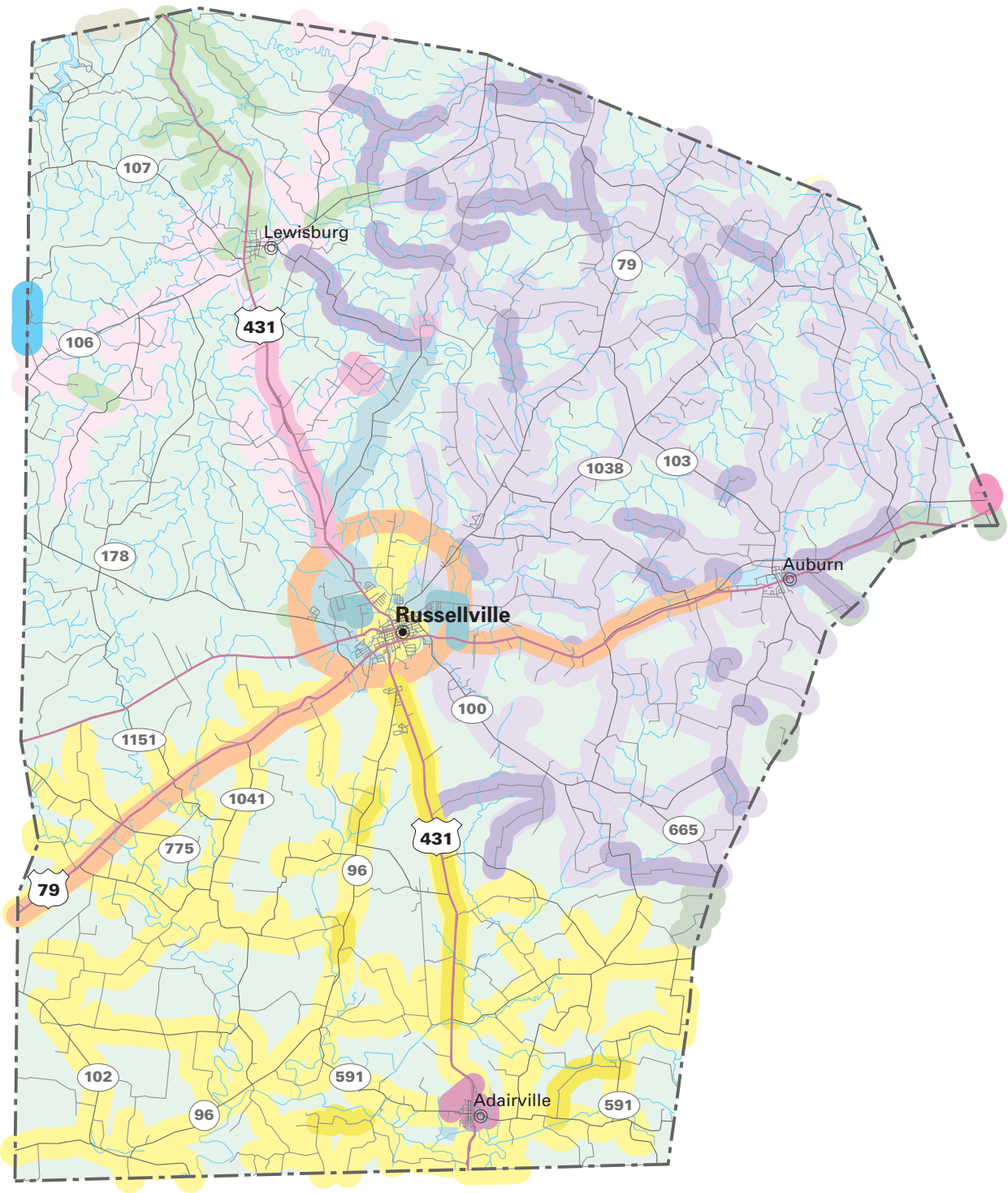
Bob Arnold, Chairman
Lawrence Wetherby, Executive Director

Final GIS & Cartographic Operations By:
Kent Anness & Kim Prough

Data Collection & GIS Input By:
Kentucky Area Development Districts



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WATER SERVICE STATUS BY OWNER

EXISTING SERVICE AREA	PROPOSED SERVICE AREA	
		WARREN COUNTY WATER DISTRICT
		TODD COUNTY WATER DISTRICT
		SOUTH LOGAN WATER ASSOCIATION
		SIMPSON COUNTY WATER DISTRICT
		RUSSELLVILLE MUNICIPAL WATER SYSTEM
		NORTH LOGAN WATER DISTRICT
		MUHENBERG COUNTY WATER DISTRICT
		LOGAN TODD REGIONAL WATER COMMISSION
		LEWISBURG WATER WORKS
		EAST LOGAN WATER DISTRICT
		BUTLER COUNTY WATER SYSTEM INCORPORATED
		AUBURN WATER DEPARTMENT
		ADAIRVILLE WATER WORKS

pipelines." Additional Information on project cost estimate, financing, wholesale cost of water, cost to consumer, project schedule, and progress report are attached.

The director of Logan Co. Economic Development Commission provided input on future development in Logan County. It is important to secure enough supply to the existing industrial sites/parks in Lewisburg, to the north of Red Kap and Nelson Company, the industrial site at Adairville, on the north side of town between US 431 and KY 591, and in Russellville, at the older park on Shelton Lane, and at the newer park on the west side of town, west of the new four-line US 68/KY80, north of US 79, and south of the fairgrounds. Additional industrial-zoned sections of Russellville are located on the West Side of town and might be developed as well.

In all, many believe that the development will occur all along the four-lane US 68/KY 80 and will probably develop along the new four-lane US 431 North upon its completion

Another development to watch is the proposed South Central Kentucky Intermodal Industrial Park, on whichever site is selected. One of the sites being considered is South Union in the vicinity of the R.J. Corman Distribution Center. Development along US 431 South is likely, as the new I-840 comes closer to reality.

Logan County has 8,760 service connections and 4,616,000 gallons per day treatment capacity. Total storage capacity is 4,350,000 gallons. The Countywide average costs for the first 5,000 gallons. range from \$37.31 to \$20.65, and average \$27.22. Average operating and management costs per service connection range from \$406 to \$914, and average \$717. Average system losses are 23% and range from 13% to 39%.

Estimated Costs - Proposed Projects, 2000-2005

COUNTY/System		New Customers		Rehab	Source	Treatment	Tanks/ Pumps	Total
	Miles	Number	Cost in \$1000	In \$1000	in \$1000	in \$1000	in \$1000	in \$1000
LOGAN								
ADAIRVILLE WATER WORKS	.		.	30			30	60
CITY OF RUSSELLVILLE	3.0	230	121			3,500		3,621
EAST LOGAN WATER DISTRICT	48.3		1,329					1,329
LEWISBURG WATER WORKS	16.1	353	600					600
LOGAN TODD REGIONAL WATER COMMISSION	.			22,000			1,200	23,200
NORTH LOGAN WATER DISTRICT	.		.	1,500			1,500	3,000
SOUTH LOGAN WATER ASSOCIATION	12.0	50	400	300			300	1,000
LOGAN COUNTY TOTAL	79.4	633	2,450	23,830		3,500	3,030	32,810

Estimated Costs - Proposed Projects, 2006-2020

COUNTY/System		New Customers		Rehab	Source	Treatment	Tanks/ Pumps	Total
	Miles	Number	Cost in \$1000	in \$1000	in \$1000	in \$1000	in \$1000	in \$1000
LOGAN								
ADAIRVILLE WATER WORKS	1.6		62	100			53	215
CITY OF RUSSELLVILLE	20.0	200	800	100		3,500	500	4,900
LEWISBURG WATER WORKS	2.7	50	100	100	3,000	1,647		4,847
LOGAN TODD REGIONAL WATER COMMISSION	.			3,974				3,974
NORTH LOGAN WATER DISTRICT	1.7		300					300
SOUTH LOGAN WATER ASSOCIATION	4.0		137					137
LOGAN COUNTY TOTAL	30.0	250	1,399	4,274	3,000	5,147	553	14,373

PUBLIC WATER SYSTEMS

The residents of Logan County are presently provided water by seven systems:

- Russellville Water Department
- Adairville Water Department
- Auburn Water Department
- Lewisburg Water Department
- North Logan Water District
- East Logan Water District
- South Logan Water Association

RUSSELLVILLE MUNICIPAL WATER SYSTEM

PWSID: 0710378
 System Type: COMMUNITY
 Owner Type: MUNICIPAL
 Surface Source: LAKE HERNDON
 Purchase Source:
 Well Source:
 Sells Water to: SOUTH LOGAN WATER ASSOCIATION
 Treatment Plant Capacity (MGD): 2.50
 Percent Daily Average Production: 67.00
 Total Tank Storage Capacity (gallons): 2,680,000.00
 Total Service Connections: 2,914.00
 Number of Employees: 8.00
 Treatment Operator Class: 2D
 Distribution Operator Class: 3A
 Customer Rate for 1,000 Gallons: 3.25
 O/M costs 1997: Not available
 O/M costs per Service Connection: Not available
 Net Revenue 1997: Not available
 Total Water Produced 1997 (gallons): Not available
 Water Sold 1997 (gallons): Not available
 Unaccounted-for Water 1997 (%): Not available

The Russellville Water Department gets its water from Lake Herndon and Spa Lake described in the Logan County Water Supply Plan does not have an adequate supply of raw water for future needs. The District currently serves 2,505 customers within its territory. Additionally, the District serves other customers outside its boundaries. The Districts operates a Water Treatment Plant that can produce 2.5 million gallons per day. On an average day the plant produces approximately 1,600,000 gallons of water. The Districts storage system consists of four tanks. The total storage capacity of the district is 2.68 million gallons. The calculated charge for 5,000 gallons of treated water (residential usage) is currently \$ 16.27. There will be an increase in water rates, becoming effective July 1, 1999, in the amount of fifty-five cents per 1000 gallons. The Russellville water Department has a total of eight employees: five certified water treatment plant operators and one certified to operate the distribution system. The other employees provide billing and financial oversight. The need for water service expansion in the Russellville Water Department territory results primarily from the rapid subdivision development in many of its rural areas as well as other areas. Currently in the territory of the Russellville Water Department every household is being served, although the quantity is not the desired. The District's distribution system will require new water extension lines as well as many upgrades to increase and maintain an

adequate flow and pressure. To meet current as well as the future needs of the county, projects have been selected and ranked by the Infrastructure, Development and Water Supply Council, which includes Logan County system representatives, elected officials, and other members of the community. The Barren River Area Development District's Board of Directors endorses these projects for being crucial to the future growth and development of the region.

ADAIRVILLE WATER WORKS

PWSID: 0710001
 System Type: COMMUNITY
 Owner Type: MUNICIPAL
 Surface Source: SOUTH FORK RED RIVER
 Purchase Source:
 Well Source:
 Sells Water to: SOUTH LOGAN WATER ASSOCIATION
 Treatment Plant Capacity (MGD): 1.05
 Percent Daily Average Production: 55.00
 Total Tank Storage Capacity (gallons): 1,500,000.00
 Total Service Connections: 406.00
 Number of Employees: 5.00
 Treatment Operator Class: 1D
 Distribution Operator Class: 3A
 Customer Rate for 1,000 Gallons: 3.36
 O/M costs 1997: Not available
 O/M costs per Service Connection: Not available
 Net Revenue 1997: Not available
 Total Water Produced 1997 (gallons): Not available
 Water Sold 1997 (gallons): Not available
 Unaccounted-for Water 1997 (%): Not available

The Adairville Water Department gets its water from South Fork of Red River, and, as described in the Logan County Water Supply Plan, it does not have an adequate supply of raw water for future needs. The District currently serves 400 customers within its territory. Additionally, the District sells treated water to the South Logan Water District. The District operates a Water Treatment Plant that can produce 1.05 million gallons per day. On an average day the plant produces approximately 500,000 gallons of water, less than 50% of its designed capacity. The District storage system consists of two tanks with a total storage capacity of 1,500,000 gallons. The calculated charge for 5,000 gallons of treated water (residential usage) is currently \$16.80. The Adairville Water Department has a total of four

employees: two certified water treatment plant operators and two certified to operate the distribution system. The other employees provide billing and financial oversight.

The need for water service expansion in the Adairville Water Department territory results primarily from the rapid subdivision development in many of its rural areas as well as other areas.

AUBURN WATER DEPARTMENT

PWSID: 0710012
 System Type: COMMUNITY
 Owner Type: MUNICIPAL
 Surface Source: SPRING STREET
 Purchase Source:
 Well Source:
 Sells Water to:
 Treatment Plant Capacity (MGD): 0.40
 Percent Daily Average Production: 57.00
 Total Tank Storage Capacity (gallons): 500,000.00
 Total Service Connections: 450.00
 Number of Employees: 2.00
 Treatment Operator Class: 2D
 Distribution Operator Class: 2A
 Customer Rate for 1,000 Gallons: 3.81
 O/M costs 1997: Not available
 O/M costs per Service Connection: Not available
 Net Revenue 1997: Not available
 Total Water Produced 1997 (gallons): Not available
 Water Sold 1997 (gallons): Not available
 Unaccounted-for Water 1997 (%): Not available

The Auburn Water Department gets its water from Auburn Spring (Blue Hole & East Logan Water District), and, as described in the Logan County Water Supply Plan, does not have an adequate supply of water for future needs. The District currently serves 440 customers within its territory. The Districts operates a water treatment plant that can produce 400,000 gallons per day. On an average day the plant produces approximately 240,000 gallons of water, less than 40% of its designed capacity. The District's storage system consists of one tank with a capacity of 500,000 gallons. The calculated charge for 5,000 gallons of treated water (residential usage) is currently \$ 19.05. The Auburn Water Department has a total of two employees: one certified water treatment plant operator and one certified to operate the distribution system. The other employees provide billing and financial oversight.

LEWISBURG WATER WORKS

PWSID: 0710247
 System Type: COMMUNITY
 Owner Type: MUNICIPAL
 Surface Source: SPA LAKE
 Purchase Source: NORTH LOGAN
 Well Source:
 Sells Water to:
 Treatment Plant Capacity (MGD): 0.50
 Percent Daily Average Production: 32.00
 Total Tank Storage Capacity (gallons): 2,000,000.00
 Total Service Connections: 962.00
 Number of Employees: 3.00
 Treatment Operator Class: 2D
 Distribution Operator Class: 3A
 Customer Rate for 1,000 Gallons: 4.15
 O/M costs 1997: Not available
 O/M costs per Service Connection: Not available
 Net Revenue 1997: Not available
 Total Water Produced 1997 (gallons): Not available
 Water Sold 1997 (gallons): Not available
 Unaccounted-for Water 1997 (%): Not available

The Lewisburg Water Department gets its water from Spa Lake and North Logan Water District, and, as described in the Logan County Water Supply Plan, does not have an adequate supply of raw water to support any future needs. The District currently serves 896 customers within its territory. The District operates a water treatment plant that can produce 500,000 gallons per day. The District's storage system consists of two tanks with total storage capacity of 2,000,000 gallons. The calculated charge for 5,000 gallons of treated water (residential usage) is currently \$ 20.75. The Lewisburg water Department has two employees: one certified water treatment plant operator and one certified to operate the distribution system. The other employee provides billing and financial oversight.

The need for water service expansion in the Lewisburg Water Department territory results primarily from the rapid subdivision development in many of its rural areas as well as other areas.

NORTH LOGAN WATER DISTRICT

PWSID: 0710318
 System Type: COMMUNITY
 Owner Type: WATER DISTRICT
 Surface Source:
 Purchase Source: RUSSELLVILLE
 Well Source:

Sells Water to: LEWISBURG WATER WORKS
 Treatment Plant Capacity (MGD): 0.00
 Percent Daily Average Production: 0.00
 Total Tank Storage Capacity (gallons): 100,000.00
 Total Service Connections: 541.00
 Number of Employees: 1.00
 Treatment Operator Class: 2D
 Distribution Operator Class:
 Customer Rate for 1,000 Gallons: 3.25
 O/M costs 1997: 168,891.00
 O/M costs per Service Connection: 319.87
 Net Revenue 1997: 38,453.00
 Total Water Produced 1997 (gallons): 0.00
 Water Sold 1997 (gallons): 40,289,000.00
 Unaccounted-for Water 1997 (%): 39.06

The North Logan Water District gets its water from Russellville Water Department, which, as described in the Logan County Water Supply Plan, does not have an adequate supply of water for future needs. The District currently serves 528 customers within its territory. The District's storage system consists of one 100,000 gallon tank. The calculated charge for 5,000 gallons of treated water (residential usage) is currently \$16.27, which will increase to \$25.80 on July 1, 1999. The North Logan Water District has one employee certified to operate the distribution system.

The need for water service expansion in the North Logan Water District Water Department territory results primarily from the rapid subdivision development in many of its rural areas as well as other areas.

EAST LOGAN WATER DISTRICT

PWSID: 0710951
 System Type: COMMUNITY
 Owner Type: WATER DISTRICT
 Surface Source:
 Purchase Source: RUSSELLVILLE
 Well Source:
 Sells Water to:
 Treatment Plant Capacity (MGD): 0.00
 Percent Daily Average Production: 0.00
 Total Tank Storage Capacity (gallons): 420,000.00
 Total Service Connections: 2,021.00
 Number of Employees: 9.00
 Treatment Operator Class: 2D
 Distribution Operator Class:
 Customer Rate for 1,000 Gallons: 7.46
 O/M costs 1997: 455,797.00
 O/M costs per Service Connection: 228.70

Net Revenue 1997:	206,220.00
Total Water Produced 1997 (gallons):	0.00
Water Sold 1997 (gallons):	118,268,200.00
Unaccounted-for Water 1997 (%):	13.01

The East Logan Water District gets its water from Russellville Water Department, described in the Logan County Water Supply Plan as not having adequate raw water for future needs. The District currently serves 2,021 customers within its territory. The district's storage system consists of two water tanks with storage capacity of 420,000 gallons. The calculated charge for 5,000 gallons of treated water (residential usage) is currently \$37.31. The East Logan Water District has a total of nine employees: two certified water treatment plant operators and the other employees provide billing and financial oversight.

The need for water service expansion in the East Logan Water District territory results primarily from the rapid subdivision development in many of its rural areas as well as other areas.

SOUTH LOGAN WATER ASSOCIATION

PWSID:	0710707
System Type:	COMMUNITY
Owner Type:	WATER ASSOCIATION
Surface Source:	
Purchase Source:	ADAIRVILLE
Well Source:	
Sells Water to:	
Treatment Plant Capacity (MGD):	0.00
Percent Daily Average Production:	0.00
Total Tank Storage Capacity (gallons):	300,000.00
Total Service Connections:	1,465.00
Number of Employees:	0.00
Treatment Operator Class:	2D
Distribution Operator Class:	
Customer Rate for 1,000 Gallons:	4.14
O/M costs 1997:	364,062.00
O/M costs per Service Connection:	256.02
Net Revenue 1997:	93,370.00
Total Water Produced 1997 (gallons):	0.00
Water Sold 1997 (gallons):	130,353,900.00
Unaccounted-for Water 1997 (%):	16.03

The South Logan Water Association gets its water from Adairville Water Department, described in the Logan County Water Supply Plan as not having an adequate supply of raw for future needs. The Association currently serves 1,414 customers within its territory.

Additionally, the association sells treated water to Todd County Water District. The association's storage system consists of three water tanks with total capacity of 300,000 gallons. The calculated charge for 5,000 gallons of treated water (residential usage) is currently \$ 23.70. The need for water service expansion in the South Logan Water Association territory results primarily from the rapid subdivision development in many of its rural areas as well as other areas.

OTHER SYSTEMS

LOGAN ALUMINUM INC

Logan Aluminum Inc. is located in Logan County. The system serves a population of 800 and has 1 service connection. The system has treatment capacity of 300,000 gal per day. The water source is surface water from Spa Lake.

PRIVATE DOMESTIC SYSTEMS

About 5,200 people in Logan County rely on private domestic water supplies: 4,300 on wells and 900 on other sources.

In the southern half of Logan County more than three-quarters of the drilled wells in the uplands are adequate for a domestic supply. Yields as high as 50 gpm have been reported from wells penetrating large solution channels. In the low-lying areas of the Red River and its main tributaries most wells are inadequate for domestic use unless the well intercepts a major solution opening in the limestone in which the yield could be very large. Groundwater in the northern half of the county is not as prevalent as in the southern half of the county. Only a few wells in the northern half of the county yield enough water for a domestic supply.

Springs with flows ranging from a few gallons per minute too 2636 gpm are found in the county. Minimum flow generally occurs in early fall, maximum flows in late winter.

METCALFE COUNTY

(Metcalf County Water Service Area Map)

- Estimated 1999 population of 9,500--70% on public water
- Estimated 2020 population of 10,200--76% on public water
- 260 miles of water lines, with plans for 47 additional miles
- Estimated funding needs for public water 2000-2005--\$1,500,000
- Estimated funding needs for public water 2006-2020--\$253,000

Metcalf County had a population of 9,501 (3,952 households) in 1999 with a projected population of 10,200 (4,410 households) in 2020. Approximately 70% of the households have treated water available to them. 80% of those not on public water rely on private wells. About 275 new households will be placed on public water through line extensions in 2000-2020.

The expansion of water lines in Metcalf County has been limited because of the county's rolling topography and lack of funds. According to Greg White of the Edmonton Water Works, they could serve additional 275 customers. To meet current and future needs, projects have been selected and ranked by Edmonton Water Works representatives, elected officials and the Barren River ADD's Board of Directors as being crucial to the future growth and development of Metcalf County.

There may be a need to expand the capacity of the water system in the future. According to the Kentucky State Data Center, Metcalf County's population is expected to rise from 9,360 to 10,200 in 2020. This means Edmonton Water Works could gain an additional 500 households. With residential growth comes an increase in commercial and industrial activity. Because of this potential increase in the amount of demanded water, Edmonton Water Works may need to consider increasing the amount of water purchased from the Glasgow Water Company, inquire about purchasing water from the Green River Valley Water District, or construct their own water treatment plant.

Any major residential and commercial growth in Metcalf County is expected to occur along Kentucky Highway 80 from downtown Edmonton to the Cumberland Parkway Interchange.

WATER SERVICE AREAS

METCALFE COUNTY

Kentucky

Prepared By:
Water Resource Development Commission

Department for Local Government
1024 Capital Center Drive, Suite 340
Frankfort, Kentucky 40601-8204
502-573-2382 -- 502-573-2939 fax
<http://dlgnt1.state.ky.us/wrdc/>

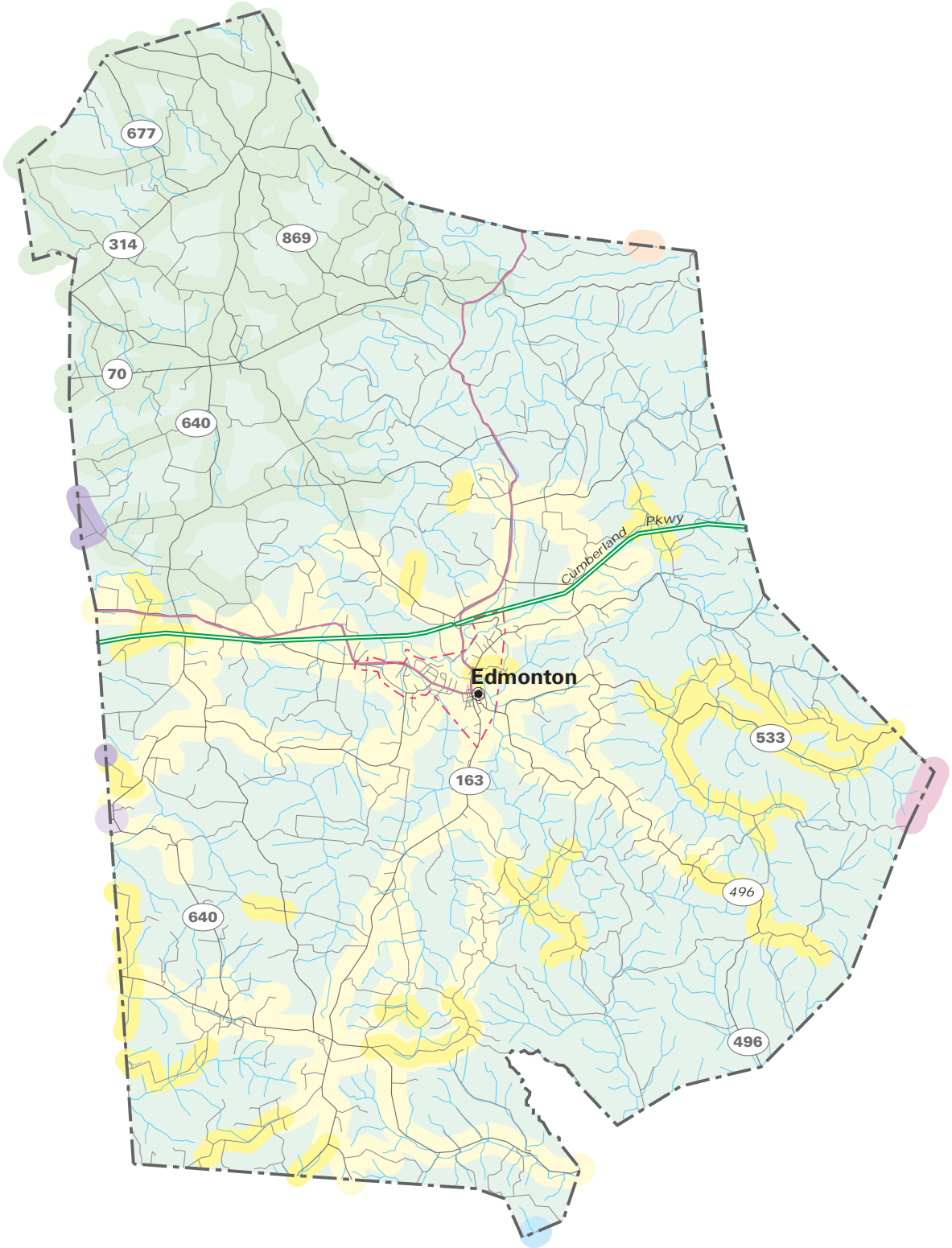
Bob Arnold, Chairman
Lawrence Wetherby, Executive Director

Final GIS & Cartographic Operations By:
Kent Anness & Kim Prough

Data Collection & GIS Input By:
Kentucky Area Development Districts



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WATER SERVICE STATUS BY OWNER

EXISTING SERVICE AREA	PROPOSED SERVICE AREA	
		GREEN TAYLOR WATER DISTRICT
		GREEN RIVER VALLEY WATER DISTRICT
		GLASGOW WATER COMPANY
		EDMONTON WATER WORKS
		CUMBERLAND COUNTY WATER DISTRICT
		ADAIR COUNTY WATER DISTRICT

Edmonton Water Works is well prepared for this potential growth, already having a well-established infrastructure network in these areas.

Estimated Costs - Proposed Projects, 2000-2005

COUNTY/System		New Customers		Rehab	Source	Treatment	Tanks/ Pumps	Total
	Miles	Number	Cost in \$1000	In \$1000	in \$1000	in \$1000	in \$1000	in \$1000
METCALFE								
CITY OF EDMONTON	40.8	228	1,500					1,500
METCALFE COUNTY TOTAL	40.8	228	1,500					1,500

Estimated Costs - Proposed Projects, 2006-2020

COUNTY/System		New Customers		Rehab	Source	Treatment	Tanks/ Pumps	Total
	Miles	Number	Cost in \$1000	in \$1000	in \$1000	in \$1000	in \$1000	in \$1000
METCALFE								
CITY OF EDMONTON	5.4	Est. 35	253					253
METCALFE COUNTY TOTAL	5.4	35	253					253

PUBLIC WATER SYSTEMS

Two water districts currently supply water to the residents of Metcalfe County. These two systems are the Green River Valley Water District, which serves the northern portion of the county, and Edmonton Water Works, which serves the city of Edmonton and the southern portion of the county

EDMONTON WATER WORKS

PWSID:..... 0850115
 System Type:..... COMMUNITY
 Owner Type:..... MUNICIPAL
 Surface Source:
 Purchase Source:
 Well Source:
 Sells Water to:
 Treatment Plant Capacity (MGD):..... 0.00
 Percent Daily Average Production:..... 0.00
 Total Tank Storage Capacity (gallons):..... 800,000.00
 Total Service Connections: 2,145.00
 Number of Employees:..... 11.00
 Treatment Operator Class:2D
 Distribution Operator Class:
 Customer Rate for 1,000 Gallons:..... 4.98
 O/M costs 1997:..... Not available
 O/M costs per Service Connection: Not available
 Net Revenue 1997:..... Not available
 Total Water Produced 1997 (gallons):..... Not available
 Water Sold 1997 (gallons):..... Not available
 Unaccounted-for Water 1997 (%): Not available

Edmonton Water Works purchases all its water from the Glasgow Water Company. The water comes from the Barren River Reservoir, which is considered an adequate supply of raw water through 2015. Edmonton Water Works currently serves 1,930 residential customers, 205 commercial customers, and ten industrial customers. Their estimated daily water use is about 500,000 gallons. The Districts storage system consists of five tanks with a combined capacity of 800,000 gallons. The base rate for water is \$24.91 for 5,000 gallons, in the City of Edmonton and \$28.39 for 5,000 gallons outside of the city limits. Edmonton Water Works has 11 employees, of whom, two are certified to operate the distribution system.

GREEN RIVER VALLEY WATER DISTRICT

The Green River Valley Water District gets its water from two primary sources, Rio Verde Spring and the Green River. Also, the Glasgow Water Company serves as a secondary source for the district. These sources are described in the Hart County Water Supply Plan as an adequate supply of raw water for future needs. The District currently serves 5,202 households in the District. Services are provided in five counties: Hart, Barren, Larue, Green, and Metcalfe; and also provides water to the Mammoth Cave area. Additionally, the District sells treated water to Munfordville Water Works, Bonnieville Water Company, Larue County Water District, Green-Taylor Water District, Horse Cave and Cave City. The Districts operates a water treatment plant that can produce four million gallons per day. On an average day the plant produces approximately 2,692,589 gallons of water, less than 67% of its' designed capacity. The Districts storage system consists of 16 tanks. The total storage capacity of the district is 4,475,000 gallons. The calculated charge for 5,000 gallons of treated water (residential usage) is currently \$18.80. The Green River Valley Water District has a total of 18 employees: one certified water treatment plant operator and five certified to operate the distribution system. The other employees provide billing and financial oversight.

PRIVATE DOMESTIC SYSTEMS

About 2,800 people in Metcalfe County rely on private domestic water supplies: 2,200 on wells and 600 on other sources.

In the northwest and north-central area of Metcalfe County more than three-quarters of the drilled wells in the uplands are adequate for a domestic supply. Yields as high as 50 gpm have

been reported from wells penetrating large solution channels. In the southern third of the county and along the low-lying areas in the East and South Fork of the Little Barren River, only a few wells yield enough water for a domestic supply.

Numerous springs with flows ranging from a few gallons per minute too 5,000 gpm are found in the county. Minimum flow generally occurs in early fall, maximum flows in late winter.

MONROE COUNTY

(Monroe County Water Service Area Map)

- Estimated 1999 population of 10,900--95% on public water
- Estimated 2020 population of 9,700-- 100% on public water
- 330 miles of water lines, with plans for 13 additional miles
- Estimated funding needs for public water 2000-2005--\$1,208,000
- Estimated funding needs for public water 2006-2020--\$1,038,000

Monroe County had an estimated population of 10,946 (4,580 households) in 1999 with a projected population of 9,675 (4,272 households) in 2020. Nearly 100 percent of Monroe County residents are served. Those who are not served either do not want to be served or say it is too expensive to extend pipes to their homes. There are only a few households that are not connected to any of the water systems. Based on population projections, there may not be a need to expand the capacity of the water system in the future. The three water districts may be supplying water to 1,500 fewer people than the current number, which they are supplying. In case this trend is not true, Monroe County has a plan to acquire additional water from the Cumberland River in the event of a major drought or an increase in demanded water. 70% of those not on public water rely on private wells. About 100 new households will be placed on public water through line extensions in 2000-2020.

Estimated Costs - Proposed Projects, 2000-2005

COUNTY/System		New Customers		Rehab	Source	Treatment	Tanks/ Pumps	Total
	Miles	Number	Cost in \$1000	In \$1000	in \$1000	in \$1000	in \$1000	in \$1000
MONROE	.							0
CITY OF TOMPKINSVILLE				375			375	750
FOUNTAIN RUN W/D	0.5	65	24					24
MONROE COUNTY W/D	12.7	34	434					434
MONROE COUNTY TOTAL	13.2	99	458	375			375	1,208

Estimated Costs - Proposed Projects, 2006-2020

COUNTY/System		New Customers		Rehab	Source	Treatment	Tanks/ Pumps	Total
	Miles	Number	Cost in \$1000	in \$1000	in \$1000	in \$1000	in \$1000	in \$1000
MONROE								
FOUNTAIN RUN W/D				38				38
MONROE COUNTY W/D					1,000			1,000
MONROE COUNTY TOTAL				38	1,000			1,038

WATER SERVICE AREAS

MONROE COUNTY

Kentucky

Prepared By:
Water Resource Development Commission

Department for Local Government
1024 Capital Center Drive, Suite 340
Frankfort, Kentucky 40601-8204
502-573-2382 -- 502-573-2939 fax
<http://dlgnt1.state.ky.us/wrdc/>

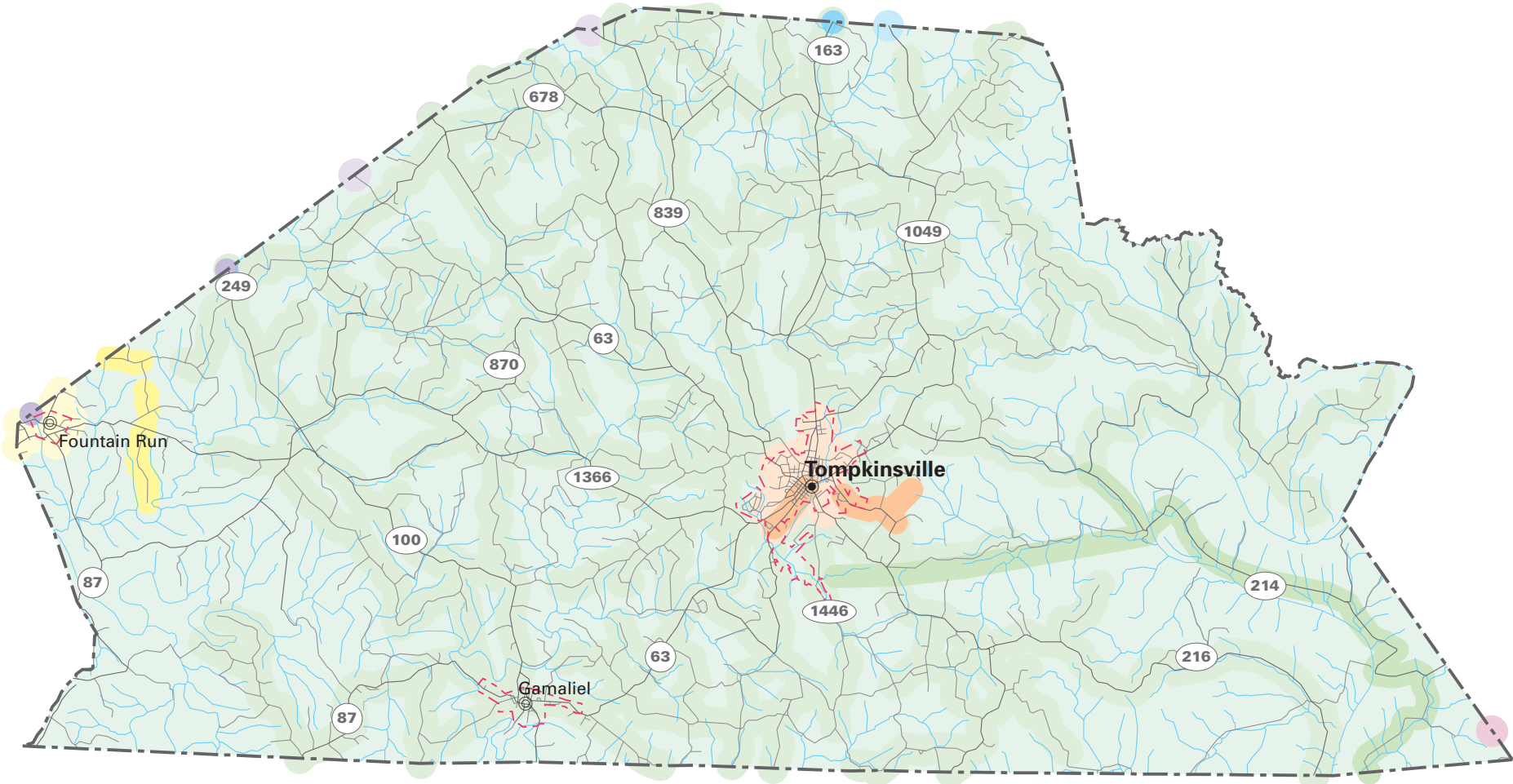
Bob Arnold, Chairman
Lawrence Wetherby, Executive Director

Final GIS & Cartographic Operations By:
Kent Anness & Kim Prough

Data Collection & GIS Input By:
Kentucky Area Development Districts



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WATER SERVICE STATUS BY OWNER

EXISTING SERVICE AREA	PROPOSED SERVICE AREA	
		TOMPKINSVILLE WATER WORKS
		MONROE COUNTY WATER DISTRICT
		GLASGOW WATER COMPANY
		FOUNTAIN RUN WATER DISTRICT #1
		EDMONTON WATER WORKS
		CUMBERLAND COUNTY WATER DISTRICT

PUBLIC WATER SYSTEMS

Three water districts currently supply water to the residents of Monroe County: Monroe County Water District, which serves a majority of the rural portions of the county; the Fountain Run Water District, which serves the Fountain Run community, and the southwestern portion of the county; and Tompkinsville Water Works, which serves the City of Tompkinsville.

MONROE COUNTY WATER DISTRICT

PWSID: 0860150
System Type: COMMUNITY
Owner Type: WATER DISTRICT
Surface Source:
Purchase Source: CITY OF TOMPKINSVILLE
Well Source:
Sells Water to:
Treatment Plant Capacity (MGD): 0.00
Percent Daily Average Production: 0.00
Total Tank Storage Capacity (gallons): 810,000.00
Total Service Connections: 2,405.00
Number of Employees: 8.00
Treatment Operator Class: 2D
Distribution Operator Class:
Customer Rate for 1,000 Gallons: 5.41
O/M costs 1997: 431,790.00
O/M costs per Service Connection: 184.53
Net Revenue 1997: 5,506.00
Total Water Produced 1997 (gallons): 0.00
Water Sold 1997 (gallons): 129,309,000.00
Unaccounted-for Water 1997 (%): 3.80

The Monroe County Water District purchases all of its water from Tompkinsville Water Works. This water comes from the Tompkinsville City Lake, which is considered an adequate supply of raw water through 2015. They currently serve 2,347 residential customers and 58 commercial customers. The district is currently purchasing approximately 350,000 gallons per day. The District's storage system consists of seven tanks. The total storage capacity is 810,000 gallons. The base rate for water is \$27.07 for 5,000 gallons. Monroe County Water District has eight employees, of whom, one is certified to operate the distribution system.

To meet current and future needs of the county, projects have been selected and ranked by Monroe County Water District representatives, elected officials and the Barren River ADD's Board of Directors as being crucial to the future growth and development of Monroe County.

FOUNTAIN RUN WATER DISTRICT #1

PWSID: 0860141
 System Type:..... COMMUNITY
 Owner Type: WATER DISTRICT
 Surface Source:
 Purchase Source: GLASGOW WATER COMPANY
 Well Source:
 Sells Water to:
 Treatment Plant Capacity (MGD):..... 0.00
 Percent Daily Average Production:..... 0.00
 Total Tank Storage Capacity (gallons): 100,000.00
 Total Service Connections: 450.00
 Number of Employees:..... 4.00
 Treatment Operator Class:.....2D
 Distribution Operator Class:
 Customer Rate for 1,000 Gallons:..... 4.12
 O/M costs 1997: 66,810.00
 O/M costs per Service Connection: 148.47
 Net Revenue 1997: 52.00
 Total Water Produced 1997 (gallons):..... 0.00
 Water Sold 1997 (gallons): 21,082,700.00
 Unaccounted-for Water 1997 (%): 12.14

The Fountain Run Water District purchases all of its water from the Glasgow Water Company. This water comes from the Barren River Reservoir, which is considered an adequate supply of raw water through 2015. They currently serve 423 residential customers, 25 commercial customers, and two industrial customers in western Monroe County and a limited number of customers in Allen and Barren County. The district currently purchases approximately 70,000 gallons per day. The District storage system consists of one tank with a storage capacity of 100,000 gallons. The base rate for water is \$20.60 for 5,000 gallons. Fountain Run Water District has four employees, of whom, one is certified to operate the distribution system.

The Fountain Run Water District is planning on expanding lines in all three counties. To meet current and future needs of the county, projects have been selected and ranked by Fountain Run Water District representatives, elected officials and the Barren River ADD's Board of Directors as being crucial to the future growth and development of Barren County.

TOMPKINSVILLE WATER WORKS

PWSID: 0860426
 System Type: COMMUNITY
 Owner Type: MUNICIPAL
 Surface Source: TOMPKINSVILLE WATER
 Purchase Source:
 Well Source:
 Sells Water to:
 Treatment Plant Capacity (MGD): 1.50
 Percent Daily Average Production: 70.00
 Total Tank Storage Capacity (gallons): 700,000.00
 Total Service Connections: 1,324.00
 Number of Employees: 7.00
 Treatment Operator Class: 2D
 Distribution Operator Class: 3A
 Customer Rate for 1,000 Gallons: 2.86
 O/M costs 1997: Not available
 O/M costs per Service Connection: Not available
 Net Revenue 1997: Not available
 Total Water Produced 1997 (gallons): Not available
 Water Sold 1997 (gallons): Not available
 Unaccounted-for Water 1997 (%): Not available

The Tompkinsville Water Works pumps its water from the Tompkinsville City Lake, which is considered an adequate supply of raw water through 2015. They currently serve 1,071 residential customers, 202 commercial customers, and 48 institutional customers. The water plant can produce 1.5 million gallons per day. On an average day the plant produces about 1.0 million gallons. The Water Works storage system consists of one tank and a clear well. The total storage capacity is 700,000 gallons. The base rate for water is \$14.28 for 5,000 gallons. Tompkinsville Water Works has seven employees, of whom, one is certified to operate the water treatment plant and two are currently receiving their certification. One employee is certified to operate the distribution system.

The Tompkinsville Water Works is only concerned with serving customers within the Tompkinsville city limits. There are only a few households that are not connected to the water system. The major concern is preparing for any residential or industrial growth that may occur in the future. To meet current and future needs of the county, projects have been selected and ranked by Edmonton Water Works representatives, elected officials and the Barren River ADD's Board of Directors as being crucial to the future growth and development of Barren County.

PRIVATE DOMESTIC SYSTEMS

About 550 people in Monroe County rely on private domestic water supplies: 400 on wells and 150 on other sources.

In the north-west and north-central area of Metcalfe County more than three-quarters of the drilled wells in the uplands are adequate for a domestic supply. Yields as high as 50 gpm have been reported from wells penetrating large solution channels. In the southern third of the county and along the low-lying areas in the East and South Fork of the Little Barren River, only a few wells yield enough water for a domestic supply.

Numerous springs with flows ranging from a few gallons per minute too 5,000 gpm are found in the county. Minimum flow generally occurs in early fall, maximum flows in late winter.

SIMPSON COUNTY

(Simpson County Water Service Area Map)

- Estimated 1999 population of 16,300--95% on public water
- Estimated 2020 population of 17,700--97% on public water
- 405 miles of water lines, with plans for 36 additional miles
- Estimated funding needs for public water 2000-2005--\$18,472,000
- Estimated funding needs for public water 2006-2020--\$10,322,000

Simpson County had an estimated population of 16,294 (6,532 households) in 1999 with a projected population of 17,734 (7,598 households) in 2020. The Simpson County Water District and Franklin Water Works provided service to 6,050 households or 95 percent of the county. 80% of those not on public water rely on private wells. About 130 new households will be placed on public water through line extensions in 2000-2020.

Simpson County has 6,706 service connections and 4,000,000 gallons per day treatment capacity. Total storage capacity is 6,650,000 gallons. The Countywide average costs for the first 5,000 gallons are \$24.81 for the system that reported and operating and management costs per service connection are \$130.

Estimated Costs - Proposed Projects, 2000-2005

COUNTY/System		New Customers		Rehab	Source	Treatment	Tanks/ Pumps	Total
	Miles	Number	Cost in \$1000	In \$1000	in \$1000	in \$1000	in \$1000	in \$1000
SIMPSON								
CITY OF FRANKLIN				1,025	6,000		10,975	18,000
SIMPSON COUNTY W/D	13.5	16	472					472
SIMPSON COUNTY TOTAL	13.5	16	472	1,025	6,000		10,975	18,472

Estimated Costs - Proposed Projects, 2006-2020

COUNTY/System		New Customers		Rehab	Source	Treatment	Tanks/ Pumps	Total
	Miles	Number	Cost in \$1000	in \$1000	in \$1000	in \$1000	in \$1000	in \$1000
SIMPSON								
CITY OF FRANKLIN	9.1			7,150		550	2,000	9,700
SIMPSON COUNTY W/D	12.6		365				257	622
SIMPSON COUNTY TOTAL	21.7		365	7,150		550	2,257	10,322

WATER SERVICE AREAS

SIMPSON COUNTY

Kentucky

Prepared By:
Water Resource Development Commission

Department for Local Government
1024 Capital Center Drive, Suite 340
Frankfort, Kentucky 40601-8204
502-573-2382 -- 502-573-2939 fax
<http://dlgnt1.state.ky.us/wrdc/>

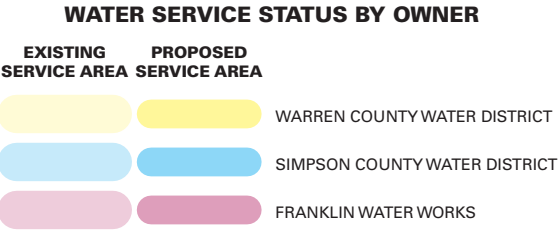
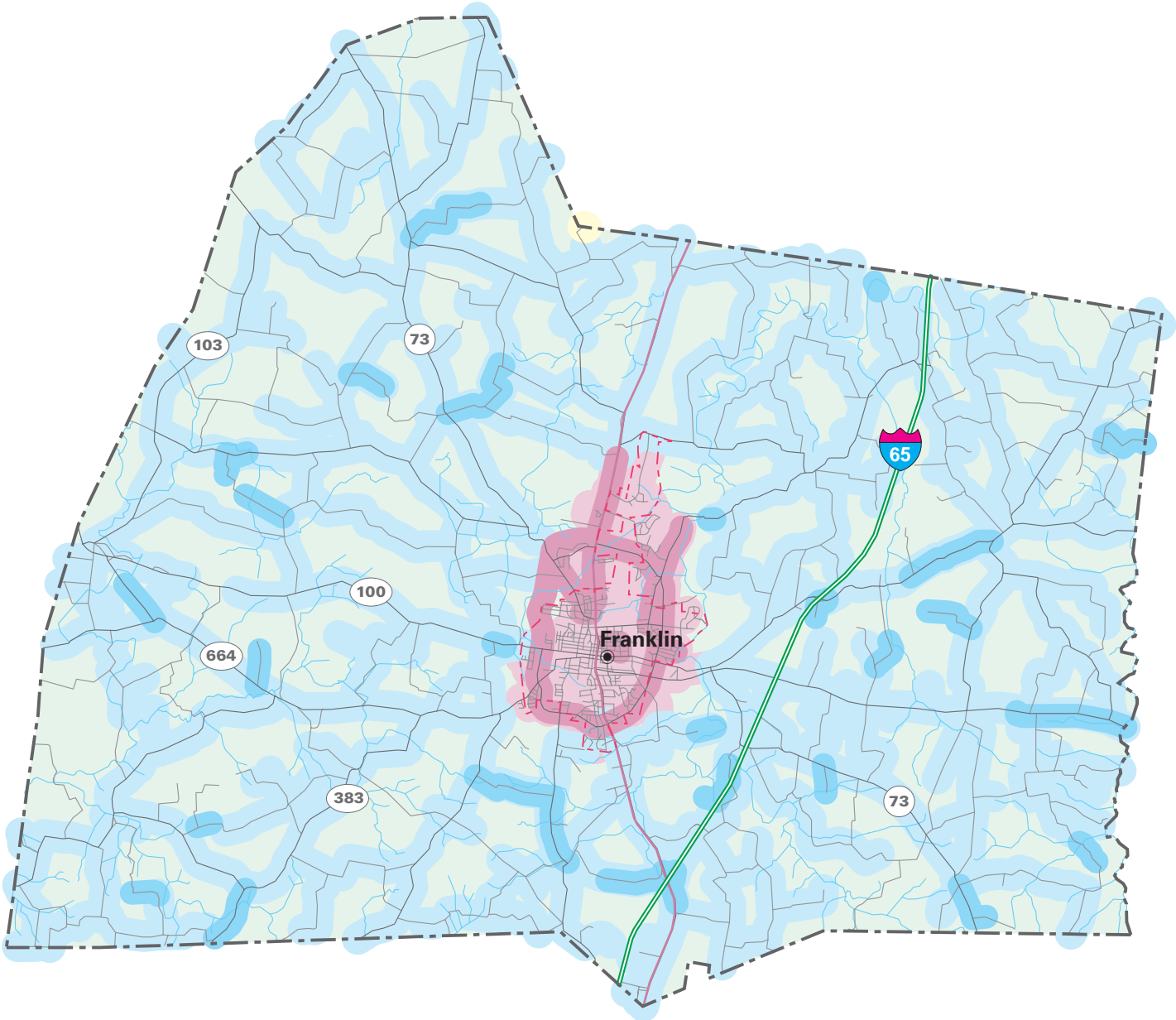
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PUBLIC WATER SYSTEMS

The residents of Simpson County are presently provided water by two systems: the Simpson County Water District and Franklin Water Works.

SIMPSON COUNTY WATER DISTRICT

PWSID: 1070398
System Type:..... COMMUNITY
Owner Type: WATER DISTRICT
Surface Source:
Purchase Source: STATE-LINE
Well Source:
Sells Water to:
Treatment Plant Capacity (MGD):..... 0.00
Percent Daily Average Production:..... 0.00
Total Tank Storage Capacity (gallons): 1,650,000.00
Total Service Connections: 2,506.00
Number of Employees:..... 2.00
Treatment Operator Class: 2D
Distribution Operator Class:
Customer Rate for 1,000 Gallons:..... 4.25
O/M costs 1997: 599,830.61
O/M costs per Service Connection: 232.31
Net Revenue 1997: 376,332.95
Total Water Produced 1997 (gallons):..... 0.00
Water Sold 1997 (gallons): 236,091,034.00
Unaccounted-for Water 1997 (%): 10.57

Simpson County Water District gets its water from White House Utility District, and as described in the Simpson County Water Supply Plan, is an adequate supply of raw water for future needs. The District currently serves 2,506 households in Simpson County. The District can purchase about 3,312,000 gallons of water per day. The District's storage system consists of 6 tanks with a combined capacity of 1,650,000 gallons. The calculated charge for 5,000 gallons of treated water (residential use) is currently \$21.25. Simpson County Water District has two employees: one certified to operate the distribution system and one for billing and financial concerns.

The need for water service expansion in the Simpson County Water District results from rapid growth in Simpson County and aging infrastructure. Population studies indicate that Simpson County will continue to grow at a steady rate in the coming years. Currently, there are some households in Simpson County not served by the District. In order to serve these

households, the district's distribution system will require upgrades to increase and maintain an adequate flow and pressure.

FRANKLIN WATER WORKS

PWSID: 1070144
 System Type: COMMUNITY
 Owner Type: MUNICIPAL
 Surface Source: DRAKE'S CREEK
 Purchase Source:
 Well Source:
 Sells Water to:
 Treatment Plant Capacity (MGD): 5.00
 Percent Daily Average Production: 37.00
 Total Tank Storage Capacity (gallons): 3,750,000.00
 Total Service Connections: 4,200.00
 Number of Employees: 11.00
 Treatment Operator Class: 2D
 Distribution Operator Class: 4A
 Customer Rate for 1,000 Gallons: 2.88
 O/M costs 1997: Not available
 O/M costs per Service Connection: Not available
 Net Revenue 1997: Not available
 Total Water Produced 1997 (gallons): Not available
 Water Sold 1997 (gallons): Not available
 Unaccounted-for Water 1997 (%): Not available

Franklin Water Works gets its water from Drake's Creek, which as the Simpson County Water Supply Plan notes, is adequate raw water for future needs. The District currently serves 3,540 households in Franklin. The Drakes Creek water treatment plant has a production capacity of 5 million gallons per day. On an average day the plant produces approximately 1.6 million gallons of potable water. Franklin Water Works storage system consists of three tanks and a clear-well. The total storage capacity of Franklin Water Works is 3,750,000 gallons. The calculated charge for 5,000 gallons of treated water (residential use) is currently \$14.40. Franklin Water Works has 11 employees: four certified as water treatment plant operators; two certified as distribution system operators; and two for billing and financial concerns.

The need for water service expansion in the Franklin Water Works results from an aging infrastructure and low pressure. Parts of the existing infrastructure are more than 60 years old. Population studies indicate that Franklin will continue to grow at a steady rate. Many households in Franklin are not adequately served because of leaking lines and low pressure.

To serve these households, the Water Works distribution system will require upgrades to increase and maintain an adequate flow and pressure.

PRIVATE DOMESTIC SYSTEMS

About 800 people in Simpson County rely on private domestic water supplies: 620 on wells and 180 on other sources.

In the limestone rich area of Simpson County more than three-quarters of the drilled wells in the uplands are adequate for a domestic supply. Yields as high as 50 gpm have been reported from wells penetrating large solution channels. In the low-lying areas in the Red River, Drakes Creek, Lick Creek, and Sulphur Fork valleys, most wells are inadequate for domestic use unless the well intercepts a major solution opening in the limestone in which the yield could be very large.

Springs with flows ranging from a few gallons per minute too 2930 gpm are found in the county. Minimum flow generally occurs in early fall, maximum flows in late winter.

WARREN COUNTY

(Warren County Water Service Area Map)

- Estimated 1999 population of 83,200--98% on public water
- Estimated 2020 population of 94,700--99% on public water
- 970 miles of water lines, with plans for 45 additional miles
- Estimated funding needs for public water 2000-2005--\$77,735,000
- Estimated funding needs for public water 2006-2020--\$57,227,000

Warren County had an estimated population of 83,215 (34,918 households) in 1999 with a projected population of 94,716 (42,741 households) in 2020. Population studies indicate growth in Warren County at a steady rate. Almost 98% of the county is currently served by public water systems. 65% of those not on public water rely on private wells. About 225 new households will be placed on public water through line extensions in 2000-2020.

Estimated Costs - Proposed Projects, 2000-2005

COUNTY/System		New Customers		Rehab	Source	Treatment	Tanks/ Pumps	Total
	Miles	Number	Cost in \$1000	In \$1000	in \$1000	in \$1000	in \$1000	in \$1000
WARREN								
BOWLING GREEN MUNICIPAL UTILITIES				40,000		17,000	6,000	63,000
WARREN COUNTY W/D	20.9	39	735	7,000			7,000	14,735
WARREN COUNTY TOTAL	20.9	39	735	47,000		17,000	13,000	77,735

Estimated Costs - Proposed Projects, 2006-2020

COUNTY/System		New Customers		Rehab	Source	Treatment	Tanks/ Pumps	Total
	Miles	Number	Cost in \$1000	in \$1000	in \$1000	in \$1000	in \$1000	in \$1000
WARREN								
BOWLING GREEN MUNICIPAL UTILITIES				30,000		13,000	3,400	46,400
WARREN COUNTY W/D	22.2		100	7,881			2,846	10,827
WARREN COUNTY TOTAL	22.2		100	37,881		13,000	6,246	57,227

WATER SERVICE AREAS

WARREN COUNTY

Kentucky

Prepared By:
Water Resource Development Commission

Department for Local Government
1024 Capital Center Drive, Suite 340
Frankfort, Kentucky 40601-8204
502-573-2382 -- 502-573-2939 fax
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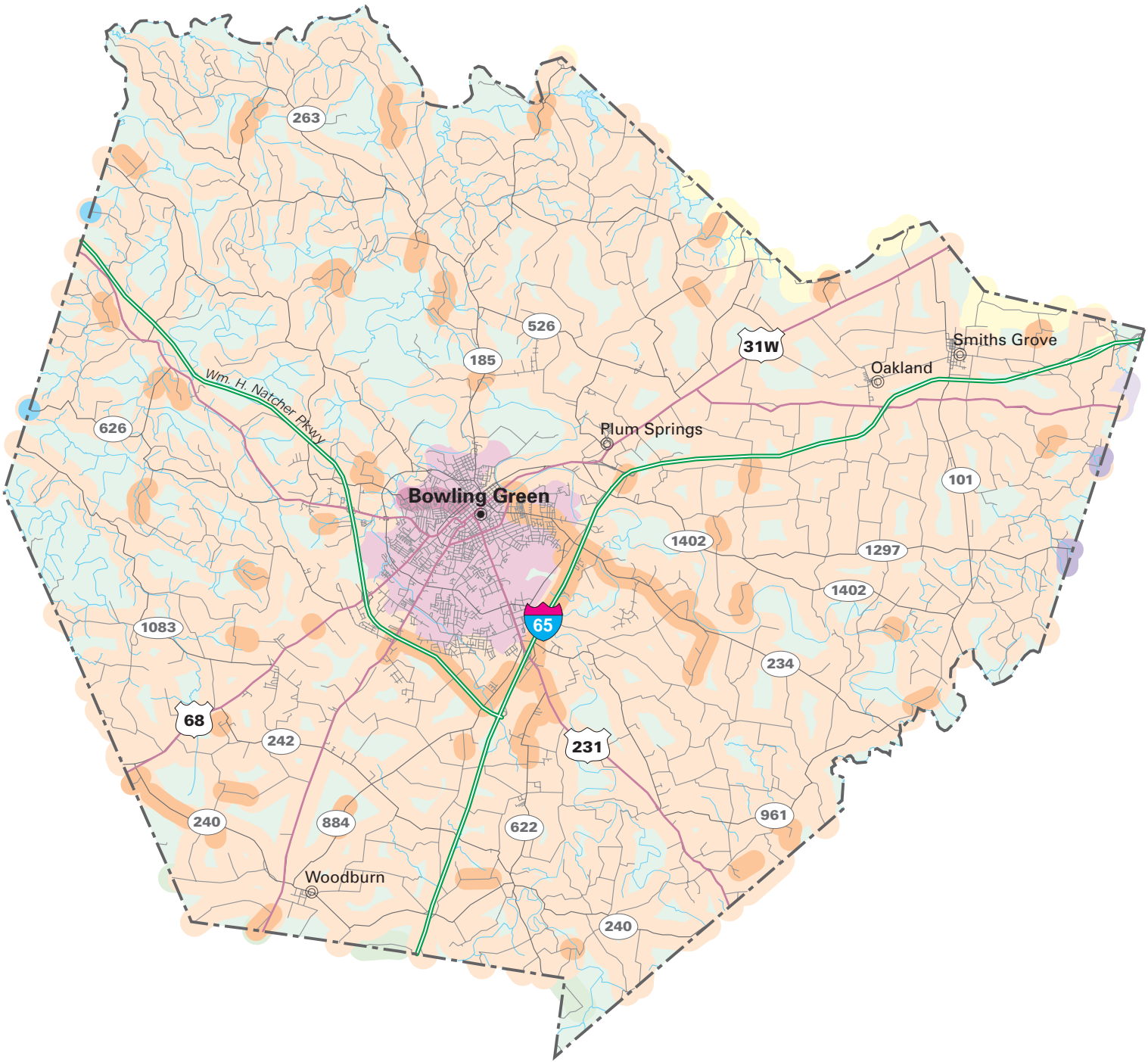
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WATER SERVICE STATUS BY OWNER		
EXISTING SERVICE AREA	PROPOSED SERVICE AREA	
		WARREN COUNTY WATER DISTRICT
		SIMPSON COUNTY WATER DISTRICT
		GLASGOW WATER COMPANY
		EDMONSON COUNTY WATER DISTRICT
		BUTLER COUNTY WATER SYSTEM INCORPORATED
		BOWLING GREEN MUNICIPAL UTILITIES



PUBLIC WATER SYSTEMS

Either the Warren County Water District or Bowling Green Municipal Utilities presently provide water for 31,555 households in Warren County.

WARREN COUNTY WATER DISTRICT

PWSID: 1140487
System Type:..... COMMUNITY
Owner Type: WATER DISTRICT
Surface Source:..... BARREN RIVER LAKE
Purchase Source: KELLY VANCE
Well Source:
Sells Water to:
Treatment Plant Capacity (MGD):..... 0.50
Percent Daily Average Production:..... 0.00
Total Tank Storage Capacity (gallons): 6,207,000.00
Total Service Connections: 17,135.00
Number of Employees:..... 31.00
Treatment Operator Class:.....4D
Distribution Operator Class:.....3A
Customer Rate for 1,000 Gallons:..... 3.24
O/M costs 1997:..... 2,927,494.62
O/M costs per Service Connection: 173.10
Net Revenue 1997: 830,406.26
Total Water Produced 1997 (gallons):..... 129,430,000.00
Water Sold 1997 (gallons): 1,837,792,265.00
Unaccounted-for Water 1997 (%): 7.31

Warren County Water District gets its water from the Barren River and Plum Springs, which, according to the Warren County Water Supply Plan is an adequate supply of raw water to meet future needs. The District currently serves 15,958 households in Warren County. The District operates a treatment plant, which can produce 500,000 gallons per day and also purchases water from Bowling Green Municipal Utilities water treatment plant, which can produce 22.5 million gallons per day. The District's treatment plant, on an average day, produces about 354,602 gallons, while the BGMU plant produces about 17 million gallons. There is no set limit on the amount of water that the District can purchase from BGMU. The District storage system consists of 24 tanks with a combined capacity of 6,207,000 gallons. The calculated charge for 5,000 gallons of treated water (residential use) is currently \$16.19. Warren County Water District has 31 employees with two certified as water treatment plant operators, three certified to operate a distribution system, and four for billing and financial concerns.

The need for water service expansion in the Warren County Water District results from rapid growth in Warren County and aging infrastructure. In order to serve these households, the District distribution system may require upgrades to increase and maintain an adequate flow and pressure.

BOWLING GREEN MUNICIPAL UTILITIES

PWSID:..... 1140038
 System Type:..... COMMUNITY
 Owner Type:..... MUNICIPAL
 Surface Source:..... BARREN RIVER LAKE
 Purchase Source:
 Well Source:
 Sells Water to: WARREN COUNTY WATER DISTRICT
 Treatment Plant Capacity (MGD):..... 22.50
 Percent Daily Average Production:..... 73.00
 Total Tank Storage Capacity (gallons):..... 8,000,000.00
 Total Service Connections: 15,377.00
 Number of Employees:..... 161.00
 Treatment Operator Class:3D
 Distribution Operator Class:.....4A
 Customer Rate for 1,000 Gallons:..... 1.87
 O/M costs 1997:.....Not available
 O/M costs per Service Connection:Not available
 Net Revenue 1997:.....Not available
 Total Water Produced 1997 (gallons):.....Not available
 Water Sold 1997 (gallons):.....Not available
 Unaccounted-for Water 1997 (%):Not available

The Barren River supplies Bowling Green Municipal Utilities (BGMU) raw water. BGMU has 15,597 water customers. BGMU is also the primary provider of water for the Warren County Water District. The BGMU water treatment facility is currently capable of producing 22.5 MGD. The utility is in the process of upgrading the plant to 30 MGD. The plant's daily average is 17 million gallons. The utility has three, one million-gallon tanks and one, five million-gallon tank, for a total storage capacity of eight million gallons. This does not include clear-well storage. The charge for 5,000 gallons of water (residential usage) is \$9.34. BGMU has 161 full-time employees, thirteen of whom are class four water treatment plant operators.

The need for upgrade is due to aging infrastructure. BGMU's intention is to replace all four and six inch water mains. The mains are cast iron and have years of calcium and magnesium build-up in them. Seasonal temperature changes frequently cause hubs to leak requiring

excavation and costly repair. The need for system expansion is caused by increased subdivision construction (residential and commercial) in Warren County. The estimated population served by BGMU in the year 2020 is 95,000, which includes Warren County Water District customers, since the district is largest BGMU customer.

PRIVATE DOMESTIC SYSTEMS

About 1,700 people in Warren County rely on private domestic water supplies: 1,100 on wells and 600 on other sources.

In most of the regions of Warren County more than three-quarters of the drilled wells in the uplands are adequate for a domestic supply. Yields as high as 50 gpm have been reported from wells penetrating large solution channels. In the northwest corner of the county and in low-lying areas of the Barren River and its main tributaries most wells are inadequate for domestic use unless the well intercepts a major solution opening in the limestone in which the yield could be very large.

Springs with flows ranging from a few gallons per minute too 2000 gpm are found in the county. Minimum flow generally occurs in early fall, maximum flows in late winter.