

Water-Resource Development: A Strategic Plan

Summary of Water Systems *Kentucky River Area Development* *District*

Water Resources Development Commission

October, 1999

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Kentucky River Area Development District

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REGIONAL OVERVIEW

(Kentucky River ADD Existing & Proposed Water Lines Map)

- Estimated 1999 population of 125,000--41% on public water
- Estimated 2020 population of 127,000--74% on public water
- 780 miles of water lines, with plans for 1,400 additional miles
- Estimated funding needs for public water 2000-2005--\$68,500,000
- Estimated funding needs for public water 2006-2020--\$124,000,000

The Kentucky River Area Development District region had an estimated population of 124,770 (47,819 households) in 1999 with a projected population of 127,000 (54,000 households) in 2020. There are 780 miles of water lines in the region serving about 51,600 people, or about 40% of the region's population. 1,400 miles of proposed water line extensions for the period 2000-2020 would provide service to an additional 17,500 households. About 73,000 people in the region rely on private domestic water systems: 66,000 on wells, and 7,000 on other sources.

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

County	1999 Pop	On Public	2020 Pop	On Public
Breathitt	15,600	5,100 (33%)	16,800	11,900 (71%)
Knott	17,500	2,400 (14%)	17,300	9,900 (57%)
Lee	7,900	5,900 (75%)	8,200	6,900 (84%)
Leslie	13,400	5,400 (40%)	12,800	9,100 (71%)
Letcher	26,500	8,000 (30%)	25,800	19,900 (77%)
Owsley	5,300	3,700 (70%)	5,600	4,500 (81%)
Perry	31,100	18,700 (60%)	32,100	27,600 (86%)
Wolfe	7,500	2,500 (33%)	8,750	4,600 (52%)
Region	125,000	51,700 (41%)	127,000	94,000 (74%)

85 public and semi-public water systems serve the region: 25 community systems--13

municipal, 3 water districts, 8 private, 1 water association; and 60 non-community systems.



EXISTING & PROPOSED WATER LINES KRADD Kentucky

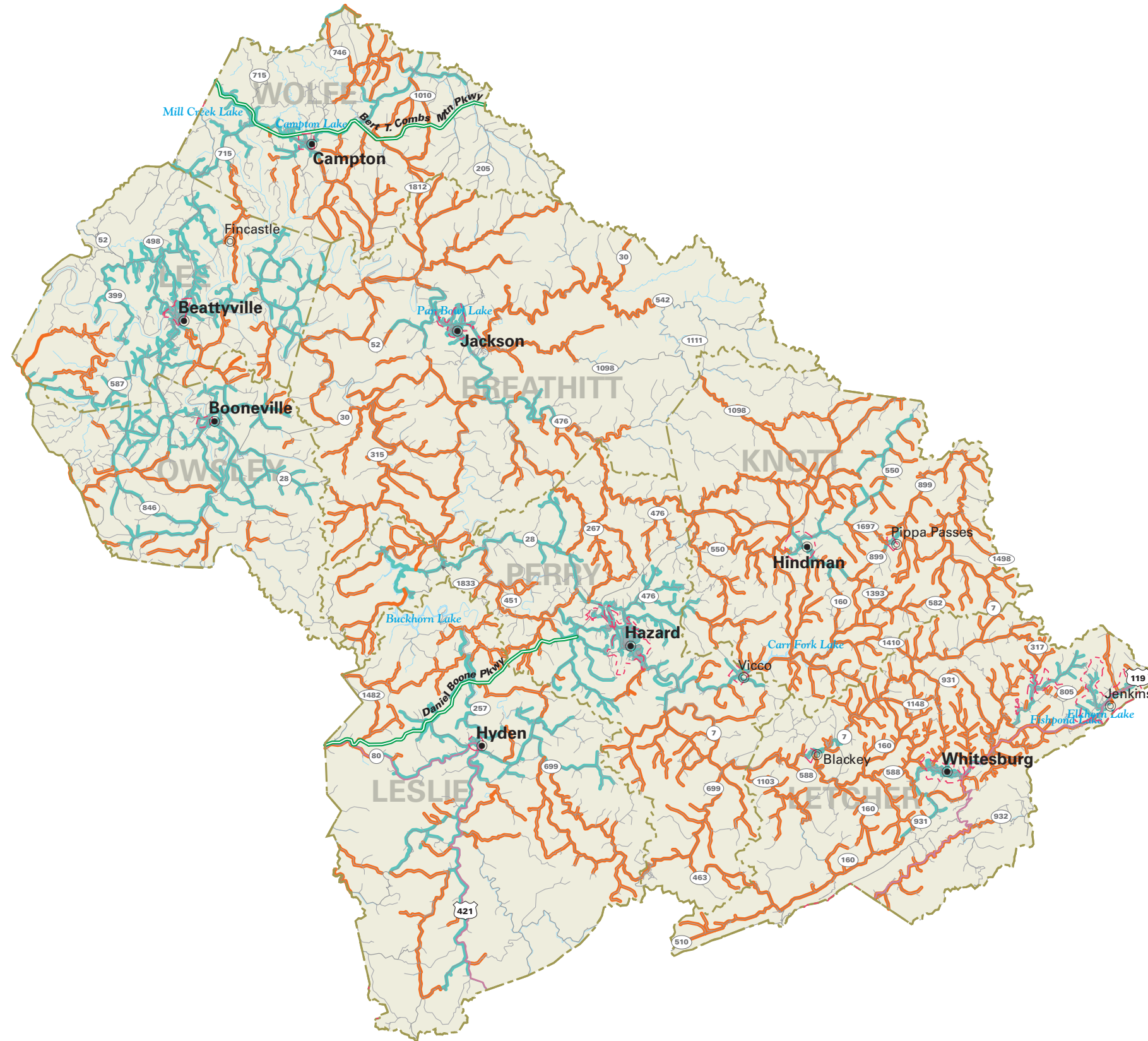
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WATER LINES

- Existing Water Lines
- Proposed Water Lines

There are 8 small (501 to 3,300 people served) community systems and 8 very small (500 or fewer people served) community systems.

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

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
BREATHITT								-
Jackson Municipal Water	52.1	793	2,900	500		5,700	900	10,000
Total	52.1	793	2,900	500		5,700	900	10,000
								-
KNOTT								-
Hindman	2.8	50	88				500	588
Knott County W D	121.3	1585	8,000		3,000	6,000	900	17,900
Total	124.1	1635	8,088		3,000	6,000	1,400	18,488
								-
LEE								-
Beattyville	47.0	270	1,841				600	2,441
Total	47.0	270	1,841				600	2,441
								-
LESLIE								-
Hyden-Leslie Water District	86.2	1176	4,600	250		1,000	500	6,350
Total	86.2	1176	4,600	250		1,000	500	6,350
								-
LETCHER								-
Letcher County Water & Sewer District	79.9	1708	6,425		2,000	5,000	1,200	14,625
Fleming-Neon or LCWSD	10.3	477	2,000				1,200	3,200
Jenkins	6.6	52	350				300	650
Blackey or LCWSD	1.6	70	100					100
Total	98.4	2307	8,875		2,000	5,000	2,700	18,575
								-
OWSLEY								-
Booneville	43.0	267	1,500				1,000	2,500
Total	43.0	267	1,500				1,000	2,500
								-
PERRY								-
Hazard Water Company	57.4	695	3,150		3,000			6,150
Vicco	19.7	525	1,000					1,000
Buckhorn	No short range projects due to source limitations							-
Total	77.1	1220	4,150		3,000		0	7,150
								-
WOLFE								-
	No short range projects due							-

	to source limitations							
KENTUCKY RIVER	528	7,668	31,954	750	8,000	17,700	10,070	68,474

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
BREATHITT								-
Jackson Municipal Water	191.8	1927	9,855		5,000	6,000	1,800	22,655
Total	191.8	1927	9,855		5,000	6,000	1,800	22,655
KNOTT								-
Hindman								-
Knott Co.	170.0	1520	9,500			5,000	1,800	16,300
Total	170.0	1520	9,500			5,000	1,800	16,300
LEE								-
Beattyville	4.7	50	250		7,000	2,000		9,250
Total	4.7	50	250		7,000	2,000		9,250
LESLIE								-
Hyden-Leslie Water District	61.0	518	2,400		3,000	4,000	600	10,000
Total	61.0	518	2,400		3,000	4,000	600	10,000
LETCHER								-
Letcher County Water & Sewer Dist.	203.2	2949	13,000		6,000	10,000	1,800	30,800
Total	203.2	2949	13,000		6,000	10,000	1,800	30,800
OWSLEY								-
Booneville					2,000	2,000		4,000
Total					2,000	2,000		4,000
PERRY								-
Hazard Water Company	31.0	368	1,600					1,600
Vicco	72.0	1539	4,000					4,000
Buckhorn	35.5	302	1,800			4,000	300	6,100
Total	138.5	2,209	7,400			4,000	300	11,700
WOLFE								-
Campton	95.0	700	5,000		8,000	5,000	1,500	19,500
Total	95.0	700	5,000		8,000	5,000	1,500	19,500
KENTUCKY RIVER	864	9,873	47,405	0	31,000	38,000	7,800	124,205

BREATHITT COUNTY

(Breathitt County Water Service Area Map)

- Estimated 1999 population of 15,600--33% on public water
- Estimated 2020 population of 16,800--71% on public water
- 57 miles of water lines, with plans for 245 additional miles
- Estimated funding needs for public water 2000-2005--\$10,000,000
- Estimated funding needs for public water 2006-2020--\$22,655,000

Breathitt County had an estimated population of 15,563 (5,938 households) in 1999 with a projected population of 16,800 (7,200 households) in 2020. Public water is provided to 4,800 people, or about 1/3 of the county's residents. In areas of the county not served by public water, about 95 percent of the households rely on private domestic wells and the remaining households rely on other sources. About 2,720 households will be added to public water service through new line extensions in 2000-2020.

Before a significant number of rural Breathitt Countians can have access to potable water, several issues must be addressed. Problems with the existing plant prevent it from treating the design capacity of 1.5 million gpd. An upgrade to this plant, or possibly a new plant on the Middle Fork of the Kentucky River around the intersection of Hwy 315 and Hwy 30 would be an almost immediate need. Breathitt County could also be well served by a regional water plant located on Buckhorn Lake. There have also been a couple of high velocity wells located within the county. One well is near Van Cleve and one along Hwy 52 in the eastern section of the county. Regardless of the method, Breathitt County will need both increased plant capacity and another source of water in addition to the North Fork in order to serve the needs of the entire county.

Breathitt County is in the process of forming a county water and sewer district. The owners in the project listing in this report will be listed as the Jackson Municipal Water Works. However, should the new county district be established, they will be the owners of the majority of the projects. Also, the City of Buckhorn would better serve about 50 customers in the southwestern portion of the county.

WATER SERVICE AREAS BREATHITT COUNTY Kentucky

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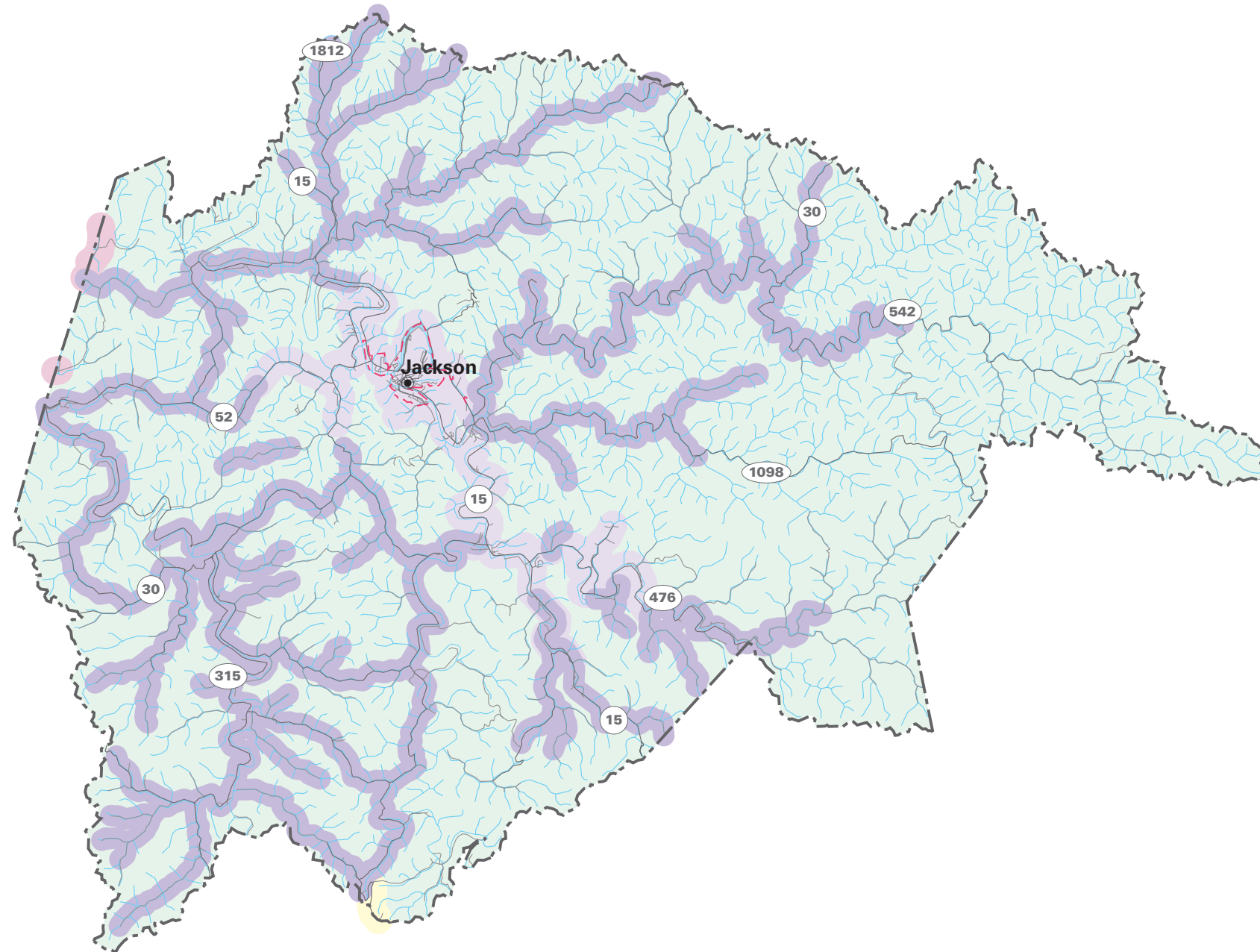
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WATER SERVICE STATUS BY OWNER

EXISTING SERVICE AREA	PROPOSED SERVICE AREA	OWNER
		JACKSON MUNICIPAL WATER WORKS
		HAZARD WATER DEPARTMENT
		CAMPTON WATER PLANT
		BEATTYVILLE 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
BREATHITT								-
Jackson Municipal Water	52.1	793	2,900	500		5,700	900	10,000
Total	52.1	793	2,900	500		5,700	900	10,000

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
BREATHITT								-
Jackson Municipal Water	191.8	1,927	9,855		5,000	6,000	1,800	22,655
Total	191.8	1,927	9,855		5,000	6,000	1,800	22,655

PUBLIC WATER SYSTEMS

Breathitt County is served by 8 public or semi-public water systems: 1 municipal water system--Jackson Municipal Water--2 private community systems, and 5 non-community systems.

JACKSON MUNICIPAL WATER WORKS

PWSID: 0130208
 System Type:..... COMMUNITY
 Owner Type:..... MUNICIPAL
 Surface Source:..... NORTH FORK OF KENTUCKY RIVER
 Purchase Source:
 Well Source:
 Sells Water to:
 Treatment Plant Capacity (MGD):..... 1.50
 Percent Daily Average Production:..... 41.00
 Total Tank Storage Capacity (gallons):..... 850,000.00
 Total Service Connections: 2,037.00
 Number of Employees:..... 14.00
 Treatment Operator Class:2D
 Distribution Operator Class:.....3A
 Customer Rate for 1,000 Gallons:..... 7.66
 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 Jackson Municipal Water Works draws its water from the North Fork of the Kentucky River. The system currently serves 1,751 households. Plant capacity is 1.5 million gpd, with a daily production of 800,000 gallons. Current storage capacity is 850,000 gallons. Rates are

\$14.32 for the first 2000 gallons within the city, and outside the city \$16.32 for the first 2000 gallon. The Water Works employs 14 full time people.

OTHER SYSTEMS

SHOUSE'S MOBILE HOME PARK #2

Shouse's Mobile Home Park #2 is located in Breathitt County. The system serves a population of 35 and has 10 service connections. The private, community system water source is wells.

MT. CARMEL HIGH/BOARDING SCHOOL

Mt. Carmel High/Boarding School is located in Breathitt County. The system serves a population of 150 and has 1 service connection. The private, community system has treatment capacity of 10,000 gallons per day and the water source is wells.

OAKDALE CHRISTIAN HIGH SCHOOL

Oakdale Christian High School is located in Breathitt County. The system serves a population of 60 and has 13 service connections. The local, non-transient, non-community system has treatment capacity of 250 gallons per day and the water source is wells.

ROUSSEAU ELEMENTARY SCHOOL

Rousseau Elementary School is located in Breathitt County. The system serves a population of 200 and has 1 service connection. The local, non-transient, non-community system has treatment capacity of 15,000 gallons per day and the water source is wells.

CAMP LEWIS

Camp Lewis is located in Breathitt County. The system serves a population of 40 and has 1 service connection. The private, transient, non-community system has treatment capacity of 1,500 gallons per day and the water source is wells.

KENTUCKY MOUNTAIN BIBLE COLLEGE

Kentucky Mountain Bible College is located in Breathitt County. The system serves a population of 86 and has 14 service connections. The private, non-transient, non-

community system has treatment capacity of 12,000 gallons per day. The water source is surface water from Middle Fork of the Kentucky River.

HIGHLAND TURNER ELEMENTARY SCHOOL

Highland Turner Elementary School is located in Breathitt County. The system serves a population of 347 and has 1 service connection. The local, non-transient, non-community system has treatment capacity of 25,000 gallons per day and the water source is wells.

PRIVATE DOMESTIC SYSTEMS

About 10,250 people in Breathitt County rely on private domestic water supplies: nearly all on water wells.

Most wells drilled in valley bottoms are adequate for a domestic water supply. Fewer than half the wells drilled on hillsides are adequate for a modern supply and wells on hilltops yield smaller quantities of water. In the eastern quarter of the county ground water is slightly more plentiful with the possibility of large enough yields in wells 200 feet or deeper for small municipal or industrial supplies.

Most of the water obtained from drilled wells is extremely hard and contains noticeable amounts of iron. Salty water may be found from 50 to several hundred feet below the level of the principal valley bottoms.

A few springs supply sufficient quantities of water for domestic use. Almost all springs yield less than 5 gallons per minute.

KNOTT COUNTY

(Knott County Water Service Area Map)

- Estimated 1999 population of 17,500--14% on public water
- Estimated 2020 population of 17,300--57% on public water
- 54 miles of water lines, with plans for 300 additional miles
- Estimated funding needs for public water 2000-2005--\$18,488,000
- Estimated funding needs for public water 2006-2020--\$16,300,000

Knott County had an estimated population of 17,471 (6,587 households) in 1999 with a projected population of 17,300 (7,300 households) in 2020. Public water is provided to 890 customers, or about 14 percent of the county's residents. In areas of the county not served by public water, about 93 percent of the households rely on private domestic wells and 7 percent of the households rely on other sources. About 3,160 customers will be added to public water service through new line extensions in 2000-2020.

Along with several planned expansions into residential areas, the county also contains a site for a proposed prison that could eventually need 500,000 gpd of potable water. Current sources of water and plant capacities are unable to meet this demand. Both the City of Hindman and the Caney Creek Water District have passed resolutions of intent to form the Carr Creek Water Commission. The City of Vicco and The Letcher County Water and Sewer District has also passed the same resolutions. The commission would have the authority to wholesale treated water from a proposed treatment plant at the Carr Creek Lake in Knott County. Early estimates from the Corps of Engineers indicate that approximately two million gallons per day could be withdrawn for each of the participating counties of Knott, Letcher, and Perry. This plant, along with existing sources, could supply Knott County's needs well into the foreseeable future.

It is also the intention of Knott County to expand the Caney Creek Water District into a countywide district. Therefore, future water needs of rural Knott County would be met by this entity. Also, the projects listing following this summary may or may not have the accurate project owner. Since the expansion of the district is not complete, this report assumes the City of Hindman to be the owner of the most current projects listed.

WATER SERVICE AREAS KNOTT COUNTY Kentucky



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Water Resource Development Commission**

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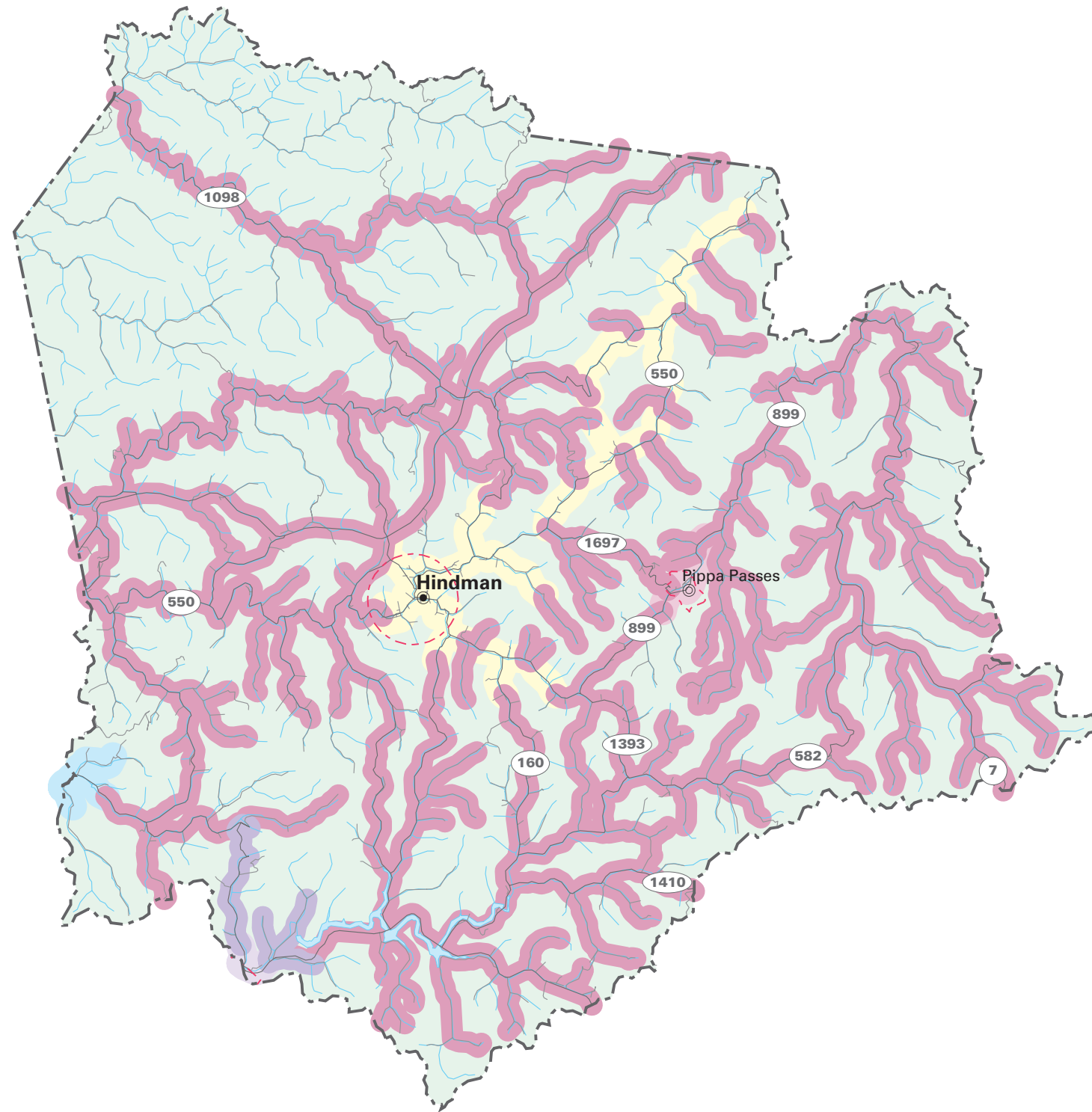
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WATER SERVICE STATUS BY OWNER

EXISTING SERVICE AREA	PROPOSED SERVICE AREA	OWNER
		VICCO WATER SUPPLY
		HINDMAN WATER DEPARTMENT
		HAZARD WATER DEPARTMENT
		CANEY CREEK 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
KNOTT								-
Hindman	2.8	50	88				500	588
Knott County W D	121.3	1,585	8,000		3,000	6,000	900	17,900
Total	124.1	1,635	8,088		3,000	6,000	1,400	18,488

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
KNOTT								-
Hindman								-
Knott Co.	170.0	1,520	9,500			5,000	1,800	16,300
Total	170.0	1,520	9,500			5,000	1,800	16,300

PUBLIC WATER SYSTEMS

The residents of Knott county are served by 35 public and semi-public water systems: 2 municipal systems, the Hindman Water System and the City of Vicco; 1 water district, Caney Creek Water District; 3 private community systems; and 19 non-community systems.

The water sources for the City of Hindman and the Caney Creek Water District are wells.

HINDMAN WATER DEPARTMENT

PWSID: 0600198
 System Type:..... COMMUNITY
 Owner Type:..... MUNICIPAL
 Surface Source:
 Purchase Source: BEAVER ELKHORN MASTER METER
 Well Source: Yes
 Sells Water to:
 Treatment Plant Capacity (MGD):..... 0.32
 Percent Daily Average Production:..... 59.00
 Total Tank Storage Capacity (gallons): 205,000.00
 Total Service Connections: 550.00
 Number of Employees:..... 3.00
 Treatment Operator Class:..... 1D
 Distribution Operator Class:..... 2A
 Customer Rate for 1,000 Gallons:..... 5.20
 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 Hindman Water System gets its water from 2 underground wells. The system currently serves about 550 customers. Permitted withdrawal from the wells is 323,000 gpd and the average daily withdrawal is 106,000 gallons. In addition, the city purchases 1,100,000 gallons a month from Beaver Elkhorn Water in Floyd County to serve customers on Hwy 550 east of Hindman to the Floyd County line. The Hindman Water System operates a treatment plant with a capacity of 323,000 gpd. Current storage capacity for the system is 205,000 gallons. Current rates are \$26.00 per 5,000 gallons. The Hindman Water System employs 3 people.

CANEY CREEK WATER DISTRICT

PWSID: 0600062
 System Type:..... COMMUNITY
 Owner Type:..... WATER DISTRICT
 Surface Source:
 Purchase Source:
 Well Source: Yes
 Sells Water to:
 Treatment Plant Capacity (MGD):..... 0.10
 Percent Daily Average Production:..... 60.00
 Total Tank Storage Capacity (gallons): 208,000.00
 Total Service Connections: 108.00
 Number of Employees:..... 1.00
 Treatment Operator Class: 1D
 Distribution Operator Class:..... 2A
 Customer Rate for 1,000 Gallons:..... 3.42
 O/M costs 1997:..... 57,338.00
 O/M costs per Service Connection: 473.87
 Net Revenue 1997: 50,314.00
 Total Water Produced 1997 (gallons):..... 18,683,200.00
 Water Sold 1997 (gallons):..... 15,747,000.00
 Unaccounted-for Water 1997 (%): 0.76

The Caney Creek Water District gets its water from 8 underground wells. The system currently serves 108 customers, including Alice Lloyd College. They have a plant capacity of 100,000 gpd with an average daily production of 80,000 gallons. Current storage capacity is 208,000. Rates are a \$12.38 minimum for the first 2,000 gallons. They have one full time employee.

CITY OF VICCO

The City of Vicco, in Perry County, serves about 30 households in the extreme southwestern section of Knott County.

OTHER SYSTEMS

JAMESTOWN VILLAGE MOBILE HOME PARK

Jamestown Village Mobile Home Park is located in Knott County. The system serves a population of 327 and has 99 service connections. The private, community system has treatment capacity of 57,600 gallons per day and the water source is wells.

BEAVER CREEK ELEMENTARY SCHOOL

Beaver Creek Elementary School is located in Knott County. The system serves a population of 475 and has 1 service connection. The local, non-transient, non-community system has treatment capacity of 4,0000 gallons per day and the water source is wells.

HOLLY HILLS SHOPPING CENTER

Holly Hills Shopping Center is located in Knott County. The system serves a population of 300 and has 12 service connections. The private, transient, non-community system has treatment capacity of 15,000 gallons per day and the water source is wells.

EMMALENA ELEMENTARY SCHOOL

Emmalena Elementary School is located in Knott County. The system serves a population of 341 and has 1 service connection. The local, non-transient, non-community system has treatment capacity of 30,000 gallons per day and the water source is wells

HINDMAN ELEMENTARY SCHOOL

Hindman Elementary School is located in Knott County. The system serves a population of 650 and has 1 service connection. The local, non-transient, non-community system has treatment capacity of 48,000 gallons per day and the water source is wells.

KNOTT COUNTY BOARD OF EDUCATION BUILDING

Knott County Board of Education Building is located in Knott County. The system serves a population of 100 and has 1 service connection. The local, non-transient, non-community system has treatment capacity of 8000 gallons per day and the water source is wells.

JONES FORK ELEMENTARY SCHOOL

Jones Fork Elementary School is located in Knott County. The system serves a population of 240 and has 1 service connection. The local, non-transient, non-community system has treatment capacity of 15,000 gallons per day and the water source is wells.

CARR CREEK ELEMENTARY SCHOOL

Carr Creek Elementary School is located in Knott County. The system serves a population of 720 and has 2 service connections. The local, non-transient, non-community system has treatment capacity of 49,000 gallons per day and the water source is wells.

BECKHAM COMBS ELEMENTARY SCHOOL

Beckham Combs Elementary School is located in Knott County. The system serves a population of 250 and has 1 service connection. The local, non-transient, non-community system has treatment capacity of 32,000 gallons per day and the water source is wells.

CAMP NATHANIEL

Camp Nathaniel is located in Knott County. The system serves a population of 200 and has 21 service connections. The private, transient, non-community system has treatment capacity of 32,000 gallons per day and the water source is wells.

CARR CREEK STATE RESORT PARK

Carr Creek State Resort Park is located in Knott County. The system serves a population of 300 and has 3 service connections. The federal, transient, non-community system has treatment capacity of 24,000 gallons per day. The water source is surface water from a surface impoundment.

CORPS OF ENGRS/DAM SITE

Corps Of Engrs/Dam Site is located in Knott County. The system serves a population of 692 and has 5 service connections. The federal, transient, non-community system has treatment capacity of 40,000 gallons per day and the water source is wells.

CORPS OF ENGRS/LITTCARR

Corps Of Engrs/Littcarr is located in Knott County. The system serves a population of 100 and has 5 service connections. The federal, transient, non-community system has treatment capacity of 24,000 gallons per day and the water source is wells.

CANEY CREEK ELEM SCHOOL

Caney Creek Elem School is located in Knott County. The system serves a population of 200 and has 1 service connection. The local, non-transient, non-community system has treatment capacity of 15,000 gallons per day and the water source is wells.

MOUNTAIN DENTAL SERVICES

Mountain Dental Services is located in Knott County. The system serves a population of 15 and has 15 service connections. The private, transient, non-community system water source is wells.

HINDMAN KWIK MART

Hindman Kwik Mart is located in Knott County. The system serves a population of 100 and has 1 service connection. The private, transient, non-community system has treatment capacity of 5,000 gallons per day. The water source is rain water from a cistern.

LAKEVIEW HEADSTART

Lakeview Headstart is located in Knott County. The system serves a population of 75 and has 1 service connection. The local, non-transient, non-community system has treatment capacity of 7,500 gallons per day and the water source is wells.

BEARVILLE MARKET

Bearville Market is located in Knott County. The system serves a population of 100 and has 1 service connection. The private, transient, non-community system has treatment capacity of 12,000 gallons per day and the water source is wells.

HINDMAN DAIRY CHEER

Hindman Dairy Cheer is located in Knott County. The system serves a population of 25 and has 1 service connection. The private, transient, non-community system has treatment capacity of 6,000 gallons per day and the water source is wells.

HWY 80 MOTEL

Hwy 80 Motel is located in Knott County. The system serves a population of 25 and has 15 service connections. The private, transient, non-community system has treatment capacity of 6,000 gallons per day and the water source is wells.

RED FOX MINI MART & RESTAURANT

Red Fox Mini Mart & Restaurant is located in Knott County. The system serves a population of 25 and has 2 service connections. The private, transient, non-community system water source is wells.

MOUSIE MARKET

Mousie Market is located in Knott County. The system serves a population of 75 and has 2 service connections. The private, transient, non-community system water source is wells.

PRIVATE DOMESTIC SYSTEMS

About 15,000 people, or 6 of 7 households, in Knott county rely on private domestic water systems: 14,000 on wells and 1,000 on other sources.

Of those, about 84 percent rely on drilled wells, 9 percent on dug wells, and 7 percent on cisterns and other sources. The primary problem with private wells in Knott County is high levels of sulfur or iron.

Most wells drilled in valley bottoms and on hillsides are adequate for modern domestic supply; however, on ridge tops, only some wells are adequate for modern domestic use in terms of water quantity. Wells drilled in valleys to depths greater than 200 feet may yield enough water for small municipal or industrial supplies.

Ground water from most wells is considered moderately hard and contains noticeable amounts of iron. In the drainage basin of the Right Fork of Beaver Creek, of southeastern Knott County, salty water may be found at depths less than 100 feet below the level of the valley bottom. In the rest of Knott County salty water in wells probably will not be found less than 200 feet below the level of the principal valley bottoms.

A few springs supply sufficient quantities of water for domestic use, usually less than 5 gpm.

LEE COUNTY

(Lee County Water Service Area Map)

- Estimated 1999 population of 7,900--75% on public water
- Estimated 2020 population of 8,200--84% on public water
- 165 miles of water lines, with plans for 50 additional miles
- Estimated funding needs for public water 2000-2005--\$2,441,000
- Estimated funding needs for public water 2006-2020--\$9,250,000

Lee County had an estimated population of 7,935 (3,306 households) in 1999 with a projected population of 8,200 (3,600 households) in 2020. About 3/4 of the residents of Lee County are provided with public water. In areas of the county not served by public water, about 2/3 of the households rely on private domestic wells and 1/3 of the households rely on other sources. About 320 households will be added to public water service through new line extensions in 2000-2020.

The City of Beattyville operates the only treatment plant in the county and they also sell water to the Southside Water Association in the southern portion of the county. A large percentage of Lee Countians have access to potable water and getting water to everyone feasible by the year 2020 should not be a problem. Water source and plant capacity should be sufficient to reach this goal. Current water expansion plans will also tie this system in with the Jackson County system in the southwestern part of the county.

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
LEE								-
Beattyville	47.0	270	1,841				600	2,441
Total	47.0	270	1,841				600	2,441

WATER SERVICE AREAS

LEE COUNTY

Kentucky

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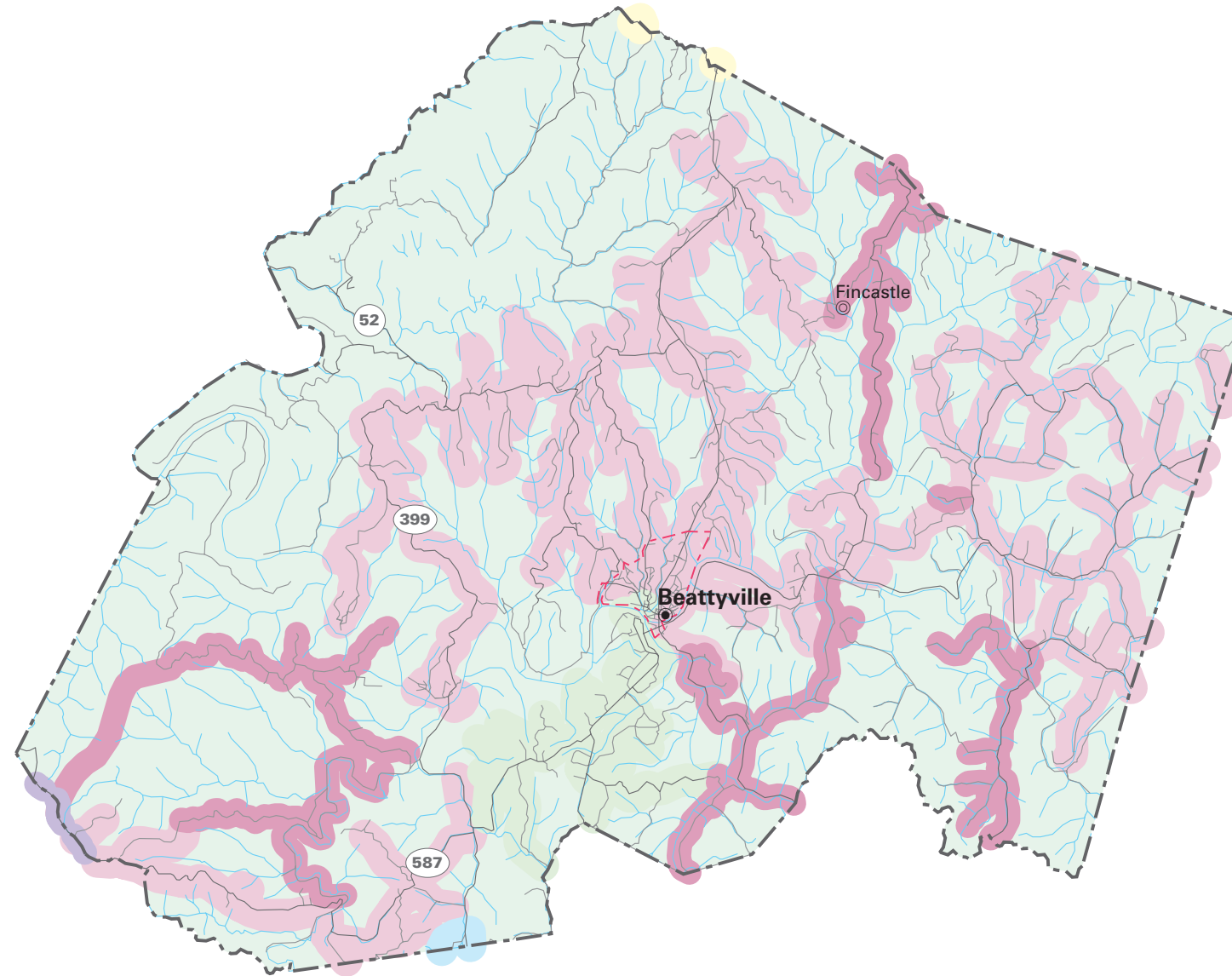
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WATER SERVICE STATUS BY OWNER

EXISTING SERVICE AREA	PROPOSED SERVICE AREA	OWNER
		SOUTHSIDE WATER ASSOCIATION
		JACKSON COUNTY WATER ASSOCIATION
		CAMPTON WATER PLANT
		BOONEVILLE WATER AND SEWER
		BEATTYVILLE WATER WORKS

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
LEE								-
Beattyville	4.7	50	250		7,000	2,000		9,250
Total	4.7	50	250		7,000	2,000		9,250

PUBLIC WATER SYSTEMS

Lee County is served by 4 public and semi-public water systems: 1 municipal system, Beattyville Water Plant; 1 water association, Southside Water Association; 1 private community system; and 1 non-community system.

BEATTYVILLE WATER WORKS

PWSID: 0650024
 System Type:..... COMMUNITY
 Owner Type:..... MUNICIPAL
 Surface Source:.....NORTH FORK KENTUCKY RIVER
 Purchase Source:
 Well Source:
 Sells Water to: SOUTHSIDE WATER ASSOCIATION
 Treatment Plant Capacity (MGD):..... 1.00
 Percent Daily Average Production:..... 52.00
 Total Tank Storage Capacity (gallons): 900,000.00
 Total Service Connections: 2,200.00
 Number of Employees:..... 10.00
 Treatment Operator Class:2D
 Distribution Operator Class:.....3A
 Customer Rate for 1,000 Gallons:..... 5.25
 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 Beattyville Water Plant gets its water from the North Fork of the Kentucky River. The system serves 1,730 households and also sells water to the Southside Water Association. In addition, Beattyville Water purchases 10,000 gpd from Jackson County. Plant capacity is 1 million gpd, with a daily average production of 600,000. Current storage capacity is 900,000 gallons. Rates are \$10.50 for the first 2000 gallons inside the city and \$14.00 outside. The System employs 10 full time people.

SOUTHSIDE WATER ASSOCIATION

PWSID: 0650412
 System Type:..... COMMUNITY
 Owner Type:..... WATER ASSOCIATION
 Surface Source:
 Purchase Source: BEATTYVILLE MASTER METER
 Well Source:
 Sells Water to:
 Treatment Plant Capacity (MGD):..... 0.00
 Percent Daily Average Production:..... 0.00
 Total Tank Storage Capacity (gallons): 120,000.00
 Total Service Connections: 533.00
 Number of Employees:..... 2.00
 Treatment Operator Class: 1D
 Distribution Operator Class:
 Customer Rate for 1,000 Gallons:..... 7.99
 O/M costs 1997:..... 136,079.00
 O/M costs per Service Connection: 257.24
 Net Revenue 1997: 21,762.00
 Total Water Produced 1997 (gallons):..... 0.00
 Water Sold 1997 (gallons): 23,309.00
 Unaccounted-for Water 1997 (%): 6.87

The Southside Water Association purchases about 73,000 gpd from the Beattyville Water Plant and they serve 525 households. They have a storage capacity of 100,000 gallons. There are currently no plans for expansion.

OTHER SYSTEMS

FARMERS RIDGE WATER DISTRICT

Farmers Ridge Water District is located in Lee County. The system serves a population of 200 and has 60 service connections. The district purchases water from Jackson County Water Co.

CATHEDRAL DOMAINE CAMP

Cathedral Domaine Camp is located in Lee County. The system serves a population of 300 and has 1 service connection. The private, transient, non-community system has treatment capacity of 6,500 gallons per day. The water source is springs.

PRIVATE DOMESTIC SYSTEMS

Almost 2,000 people in Lee County rely on private domestic water supplies: 1,300 on wells and 700 on other sources.

Throughout most of Lee county wells drilled in valley bottoms are adequate for domestic use. Yields to wells become progressively less on hillsides and ridges. Some wells drilled on ridges produce enough water for domestic use. Generally wells on broad ridges produce more water than wells on narrow ridges or hilltops.

Most wells drilled in the valley bottoms are completed in limestone, produce hard water often with noticeable amounts of iron. On hillsides and ridges wells are often completed in sandstone, contain soft to moderately hard water with noticeable amounts of iron. Salty water may be found at depths greater than 100 feet below the level of the Kentucky River.

A few springs supply sufficient quantities of water for domestic use. Most springs yield less than 5gpm except limestone springs that occur near stream level often produce 100 gpm or greater.

LESLIE COUNTY

(Leslie County Water Service Area Map)

- Estimated 1999 population of 13,400--40% on public water
- Estimated 2020 population of 12,800--71% on public water
- 103 miles of water lines, with plans for 150 additional miles
- Estimated funding needs for public water 2000-2005--\$6,350,000
- Estimated funding needs for public water 2006-2020--\$10,000,000

Leslie County had an estimated population of 13,390 (4,900 households) in 1999 with a projected population of 12,800 (5,500 households) in 2020. Public water is provided to about 40 percent of the county's residents. In areas of the county not served by public water, about 91 percent of the households rely on private domestic wells and the remaining households rely on other sources. About 1,700 customers will be added to public water service through new line extensions in 2000-2020.

In order to serve the entire county, an additional source of water is needed. There are no known large sources of underground water in the county, so the best potential source would be Buckhorn Lake. A treatment plant located on the lake could also serve several surrounding counties as either a primary or secondary source.

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
LESLIE								-
Hyden-Leslie Water District	86.2	1,176	4,600	250		1,000	500	6,350
Total	86.2	1,176	4,600	250		1,000	500	6,350

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
LESLIE								-
Hyden-Leslie Water District	61.0	518	2,400		3,000	4,000	600	10,000
Total	61.0	518	2,400		3,000	4,000	600	10,000

PUBLIC WATER SYSTEMS

The Hyden-Leslie Water District is the only community service provider in the county: there are also 3 non-community water systems in the county

WATER SERVICE AREAS LESLIE COUNTY Kentucky

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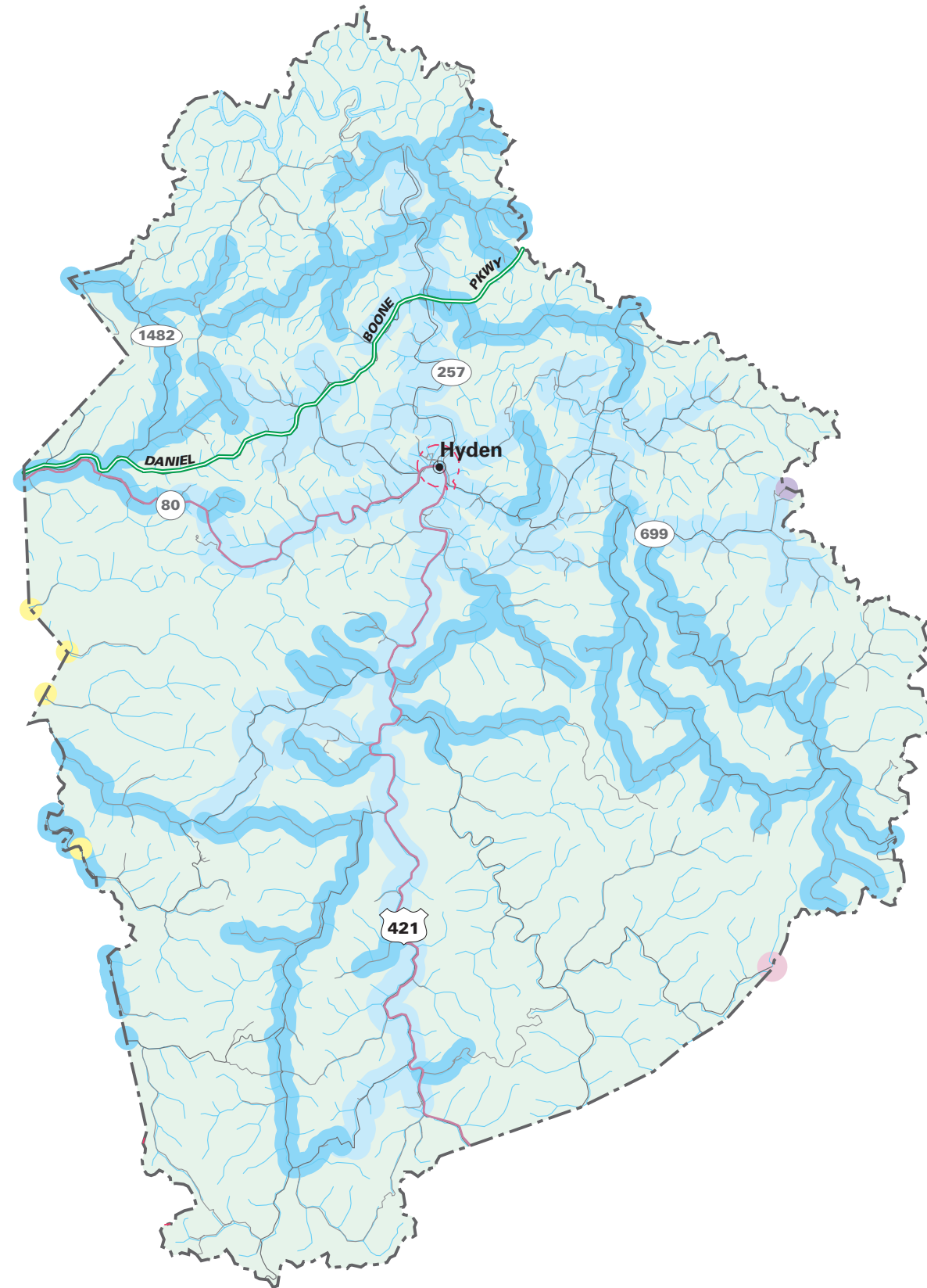
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Kentucky Area Development Districts



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WATER SERVICE STATUS BY OWNER

EXISTING SERVICE AREA	PROPOSED SERVICE AREA	OWNER
		VICCO WATER SUPPLY
		MANCHESTER WATER WORKS
		HYDEN LESLIE COUNTY WATER DISTRICT
		GREEN HILLS WATER DISTRICT

HYDEN LESLIE COUNTY WATER DISTRICT

PWSID:.....	0660204
System Type:.....	COMMUNITY
Owner Type:.....	WATER DISTRICT
Surface Source:.....	MIDDLE FORK KENTUCKY RIVER
Purchase Source:	
Well Source:	
Sells Water to:	
Treatment Plant Capacity (MGD):.....	0.79
Percent Daily Average Production:.....	91.00
Total Tank Storage Capacity (gallons):.....	930,000.00
Total Service Connections:.....	2,053.00
Number of Employees:.....	8.00
Treatment Operator Class:.....	2D
Distribution Operator Class:.....	3A
Customer Rate for 1,000 Gallons:.....	9.65
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

Hyden-Leslie draws its water from the Middle Fork of the Kentucky River. Current plant capacity is 790,000 gallons per day and average daily average production is about 700,000 gallons. Storage capacity is 934,000 gallons. Proposed line extensions also include plant and existing line upgrades along with increased storage capacities. Current water rates are \$17.30 for the first 2,000 gallons. There are 8 full time employees.

OTHER SYSTEMS

HAYES LEWIS ELEMENTARY SCHOOL

Hayes Lewis Elementary School is located in Leslie County. The system serves a population of 425 and has 1 service connection. The local, non-transient, non-community system has treatment capacity of 40,000 gallons per day and the water source is wells.

BIG CREEK ELEMENTARY SCHOOL

Big Creek Elementary School is located in Leslie County. The system serves a population of 212 and has 1 service connection. The local, non-transient, non-community system has treatment capacity of 16,000 gallons per day and the water source is wells.

SHAMROCK COAL CO/MIDDLE FORK

Shamrock Coal Co/Middle Fork is located in Leslie County. The system serves a population of 200 and has 1 service connection. The federal, non-transient, non-community system has treatment capacity of 18,000 gallons per day and the water source is wells

PRIVATE DOMESTIC SYSTEMS

About 8,100 people in Leslie County rely on private domestic water supplies: 7,400 on wells, and 700 on other sources.

Problems with existing private wells in Leslie County are various and scattered throughout the county. In certain areas there is a quantity problem while in other areas there is poor quality due to high concentrations of salt and various other minerals and metals.

Most wells drilled in valley bottoms are adequate for a domestic supply. In the northwestern half of the county fewer than half of the wells on hillsides and only some of the wells on hilltops are adequate for a domestic supply. In the southeastern half of the county about three-quarters of the wells drilled on hillsides are adequate for a domestic supply and some wells on hilltops or ridges meet the needs of a domestic supply. Also in the southeastern half of the county wells deeper than 200 feet in valleys may yield enough water for small municipal or industrial supply.

A few springs supply sufficient quantities of water for domestic use. Almost all ground water obtained from drilled wells in this area is moderately to extremely hard and contains noticeable amounts of iron. Salty water may be found in wells drilled less than 100 feet below the level of the principal valley bottoms, except in the south-eastern half of the county where salty water probably will not be found less than 200 feet. Springs yield less than 5 gpm.

LETCHER COUNTY

(Letcher County Water Service Area Map)

- Estimated 1999 population of 26,500--30% on public water
- Estimated 2020 population of 25,800--77% on public water
- 72 miles of water lines, with plans for additional 300 miles
- Estimated funding needs for public water 2000-2005--\$18,575,000
- Estimated funding needs for public water 2006-2020--\$30,800,000

Letcher County had an estimated population of 26,479 (10,240 households) in 1999 with a projected population of 25,800 (11,300 households) in 2020. Public water is provided to about 30 percent of the county's residents. In areas of the county not served by public water, more than 90 percent of the households rely on private domestic wells and the remaining households rely on other sources. About 5,260 customers will be added to public water service through new line extensions in 2000-2020.

In 1998 Letcher County formed the Letcher County Water and Sewer District. They are not yet providing water to residents, but they do have an agreement with the Blackey Water Treatment Plant to purchase wholesale water so they can serve nearly 800 households in the Isom/Jeremiah area. The district also passed a resolution of intent to join the Carr Creek Water Commission.

The biggest problem facing Letcher County is a reliable source of water. There is insufficient surface water to serve the entire county's future needs. There are a couple of deep mine wells that may provide a source, but the most likely source would be Carr Creek Lake. The proposed Carr Creek Water Treatment Plant, to be owned by the Carr Creek Water Commission, of which Letcher County is a part, could provide up to 2 million gallons of water per day to the county. Most of the county's long range projects in this report have no source of water currently available. However, if a treatment plant is placed on Carr Creek Lake, this plant, along with existing water supplies such as deep wells should be adequate to serve Letcher County for many years.

WATER SERVICE AREAS LETCHER COUNTY Kentucky

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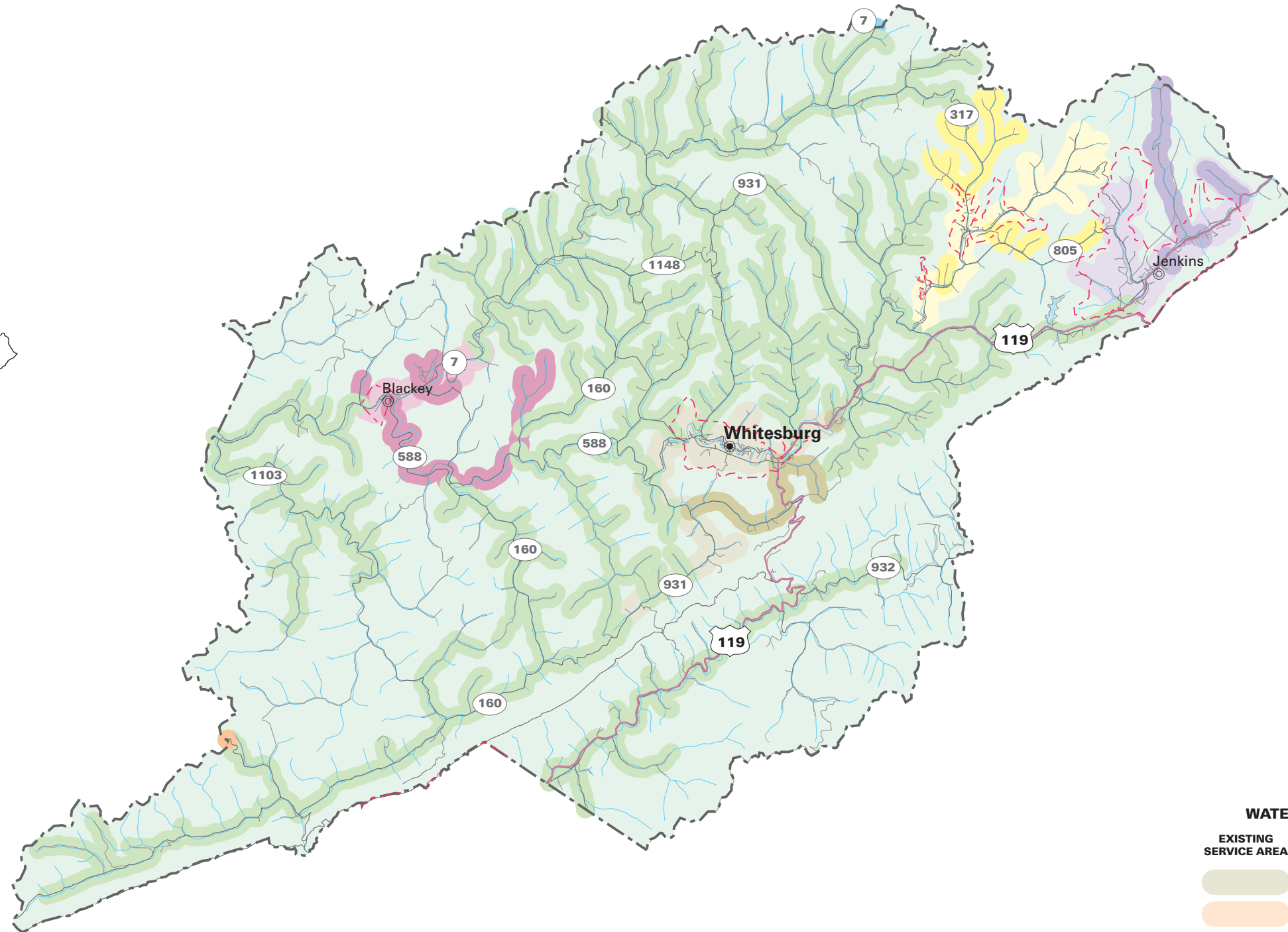
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WATER SERVICE STATUS BY OWNER

EXISTING SERVICE AREA	PROPOSED SERVICE AREA	OWNER
		WHITESBURG MUNICIPAL WATER WORKS
		VICCO WATER SUPPLY
		LETCHER COUNTY WATER DISTRICT
		JENKINS WATER SYSTEM
		FLEMING-NEON WATER COMPANY
		CANEY CREEK WATER DISTRICT
		BLACKEY 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
LETCHER								-
Letcher County Water & Sewer District	79.9	1,708	6,425		2,000	5,000	1,200	14,625
Fleming-Neon or LCWSD	10.3	477	2,000				1,200	3,200
Jenkins	6.6	52	350				300	650
Blackey or LCWSD	1.6	70	100					100
Total	98.4	2,307	8,875		2,000	5,000	2,700	18,575

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
LETCHER								-
Letcher County Water & Sewer Dist.	203.2	2,949	13,000		6,000	10,000	1,800	30,800
Total	203.2	2,949	13,000		6,000	10,000	1,800	30,800

PUBLIC WATER SYSTEMS

There are currently 21 public and semi-public water service providers in the county: 5 municipal systems--the Jenkins Municipal System, the Fleming-Neon Water Company, the Blackey Water Treatment Plant, the Whitesburg Municipal Water System, and Jackhorn Water Supply; and 16 non-community systems.

WHITESBURG MUNICIPAL WATER WORKS

PWSID: 0670466
 System Type:..... COMMUNITY
 Owner Type:..... MUNICIPAL
 Surface Source:..... KENTUCKY RIVER
 Purchase Source:
 Well Source:
 Sells Water to:
 Treatment Plant Capacity (MGD):..... 0.86
 Percent Daily Average Production:..... 44.00
 Total Tank Storage Capacity (gallons): 1,100,000.00
 Total Service Connections: 680.00
 Number of Employees:..... 8.00
 Treatment Operator Class:2D
 Distribution Operator Class:.....3A
 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

The Whitesburg Water Plant gets its water from the North Fork of the Kentucky River. The system currently serves 680 households. Plant capacity is 864,000 gpd, with an average daily production of 280,000 gallons. Storage capacity is 1,100,000 gallons. They employ 8 full time people.

Several problems exist within the Whitesburg facility. There have been many problems with the recently expanded plant. The system has a very large amount of debt, and there is an old ordinance in place that effectively doubles the rate structure for customers outside the city limits. There is also a very limited source of water.

BLACKEY WATER SYSTEM

PWSID: 0670462
System Type:..... COMMUNITY
Owner Type:..... MUNICIPAL
Surface Source:.....NORTH FORK KENTUCKY RIVER
Purchase Source:
Well Source:
Sells Water to:
Treatment Plant Capacity (MGD):..... 0.15
Percent Daily Average Production:..... 36.00
Total Tank Storage Capacity (gallons): 150,000.00
Total Service Connections: 286.00
Number of Employees:..... 1.00
Treatment Operator Class: 1D
Distribution Operator Class:.....2A
Customer Rate for 1,000 Gallons:..... 10.27
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 Blackey Water Treatment Plant draws its water from the North Fork of the Kentucky River. The system has been on line less than a year, and serves 270 households. The plant has a capacity of 150,000 gpd (easily expandable), and has an average daily withdrawal of 18,000 gallons. Storage capacity is 150,000 gallons. The current rates are \$20.54 for the first 2,000 gallons. They have one full time employee.

FLEMING-NEON WATER COMPANY

PWSID: 0670279
 System Type:..... COMMUNITY
 Owner Type:..... MUNICIPAL
 Surface Source:..... PRIMARY
 Purchase Source:
 Well Source:
 Sells Water to:
 Treatment Plant Capacity (MGD):..... 0.43
 Percent Daily Average Production:..... 57.00
 Total Tank Storage Capacity (gallons): 50,000.00
 Total Service Connections: 979.00
 Number of Employees:..... 5.00
 Treatment Operator Class:2D
 Distribution Operator Class:.....2A
 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

The Fleming-Neon Water Company gets its water from 2 abandoned deep mines. The system serves 905 households. Plant capacity is 430,000 gpd, with an average daily production of 210,000 gallons. Current storage capacity is 200,000 gallons. Rates are \$9.25 minimum for the first 2,000 gallons. The water company employs 5 full time people.

JENKINS WATER SYSTEM

PWSID: 0670213
 System Type:..... COMMUNITY
 Owner Type:..... MUNICIPAL
 Surface Source:..... ELKHORN LAKE
 Purchase Source:
 Well Source:
 Sells Water to:
 Treatment Plant Capacity (MGD):..... 1.00
 Percent Daily Average Production:..... 45.00
 Total Tank Storage Capacity (gallons): 415,000.00
 Total Service Connections: 0.00
 Number of Employees:..... 10.00
 Treatment Operator Class:2D
 Distribution Operator Class:.....3A
 Customer Rate for 1,000 Gallons:..... 5.66
 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 Jenkins Municipal System draws its water from Elkhorn Lake Reservoir. The system serves 953 customers. Plant capacity is 1 million gpd, with an average daily production of 400,000 gallons. Current storage capacity is 415,000 gallons. The water and sewer rate schedule is somewhat complex, but the average customer with water only would pay \$22.66 for 4,000 gallons of water. The City of Jenkins was selected to be a participant in the Governor's Community Development Initiative. This, along with the completion of new Hwy 23 is expected to create significant growth in the area. They will need to find an additional source of water and possibly upgrade their plant in order to meet this increased demand. The city also has an immediate need to replace and relocate about 5 miles of line running to the Marshall Branch area..

OTHER SYSTEMS

JACKHORN WATER SUPPLY

Jackhorn Water Supply is located in Letcher County. The system serves a population of 200 and has 60 service connections. The community system has treatment capacity of 15,000 gallons per day. The water source is ground water from an abandoned mine.

BECKHAM BATES ELEMENTARY

Beckham Bates Elementary is located in Letcher County. The system serves a population of 310 and has 1 service connection. The local, non-transient, non-community system has treatment capacity of 30,000 gallons per day and the water source is wells.

ARLIE BOGG ELEMENTARY SCHOOL

Arlie Bogg Elementary School is located in Letcher County. The system serves a population of 320 and has 32 service connections. The local, non-transient, non-community system has treatment capacity of 35,000 gallons per day and the water source is wells.

DOUBLE QUICK MART

Double Quick Mart is located in Letcher County. The system serves a population of 400 and has 1 service connection. The private, non-transient, non-community system has treatment capacity of 14,000 gallons per day and the water source is wells.

JOE'S DRIVE IN

Joe's Drive In is located in Letcher County. The system serves a population of 100 and has 1 service connection. The private, transient, non-community system has treatment capacity of 12,000 gallons per day and the water source is wells.

HOLCOMB CUSTARD STAND

Holcomb Custard Stand is located in Letcher County. The system serves a population of 50 and has 1 service connection. The private, transient, non-community system has treatment capacity of 12,000 gallons per day and the water source is wells.

MAYKING HEADSTART CENTER

Mayking Headstart Center is located in Letcher County. The system serves a population of 50 and has 1 service connection. The local, non-transient, non-community system has treatment capacity of 100 gallons per day and the water source is wells.

CONSOL OF KY

Consol Of Ky. is located in Letcher County. The system serves a population of 20 and has 15 service connections. The private, transient, non-community system has treatment capacity of gallons per day and the water source is wells.

KINGDOM COME SETTLEMENT

Kingdom Come Settlement is located in Letcher County. The system serves a population of 225 and has 1 service connection. The private, non-transient, non-community system has treatment capacity of 30,000 gallons per day and the water source is wells.

MARTIN HOLBROOK REST & MOBILE HOME PARK

Martin Holbrook Rest & Mobile Home Park is located in Letcher County. The system serves a population of 75 and has 10 service connections. The private, transient, non-community system has treatment capacity of 12,000 gallons per day and the water source is wells.

OVEN FORK SENIOR CITIZEN CENTER

Oven Fork Senior Citizen Center is located in Letcher County. The system serves a population of 35 and has 1 service connection. The local, non-transient, non-community system has treatment capacity of 7,000 gallons per day and the water source is wells.

COWEN HEADSTART

Cowen Headstart is located in Letcher County. The system serves a population of 30 and has 1 service connection. The local, non-transient, non-community system has treatment capacity of 7,000 gallons per day and the water source is wells.

PARKWAY MOTEL RESTAURANT

Parkway Motel Restaurant is located in Letcher County. The system serves a population of 100 and has 1 service connection. The private, non-transient, non-community system has treatment capacity of 2,000 gallons per day and the water source is wells.

DEANE QUICK STOP

Deane Quick Stop is located in Letcher County. The system serves a population of 100 and has 1 service connections. The private, transient, non-community system has treatment capacity of 10,000 gallons per day and the water source is wells.

KINGS CREEK SENIOR CITIZENS CENTER

Kings Creek Senior Citizens Center is located in Letcher County. The system serves a population of 50 and has 15 service connections. The private, non-transient, non-community system has treatment capacity of 10,000 gallons per day and the water source is wells.

ISOM IGA

Isom IGA is located in Letcher County. The system serves a population of 100 and has 15 service connections. The private, transient, non-community system has treatment capacity of 10,000 gallons per day and the water source is wells.

GOLF CONCEPTS, INC

Golf Concepts, Inc is located in Letcher County. The system serves a population of 50 and has 1 service connection. The private, transient, non-community system has treatment capacity of 3,750 gallons per day and the water source is wells.

PRIVATE DOMESTIC SYSTEMS

About 18,500 Letcher countians depend on private domestic water supplies: about 17,000 on wells, and 1,500 on other sources. The Sandlick area of Letcher County currently has problems with a lack of water in private wells. Most other areas of the county have high levels of iron or sulfur.

More than three-quarters of the wells drilled in valley bottoms and on mountainsides are adequate for a domestic supply. Some wells on ridges and mountaintops are adequate for domestic supply. Drilled wells more than 200 feet deep in valleys may yield enough water for small municipal or industrial supplies. In the area north of Pine Mountain, ground water from most drilled wells is moderately hard and contains noticeable amounts of iron. Salty water in drilled wells probably will not be found less than 200 feet above the principal valley bottoms.

In the area along Pine Mountain and south of the mountain, the water quality is slightly better with few wells less than 300 feet below the principal valley bottoms will yield salty water. The ground water is soft but contains noticeable amounts of iron. This area also contains limestone beds that when faulted and below drainage may yield several hundred gallons per minute. Springs in this area will yield 50 gpm, but generally yield less than 10gpm.

OWSLEY COUNTY

(Owsley County Water Service Area Map)

- Estimated 1999 population of 5,300--70% on public water
- Estimated 2020 population of 5,550--81% on public water
- 116 miles of water lines, with plans for 43 additional miles
- Estimated funding needs for public water 2000-2005--\$2,500,000
- Estimated funding needs for public water 2006-2020--\$4,000,000

Owsley County had an estimated population of 5,327 (2,170 households) in 1999 with a projected population of 5,550 (2,450 households) in 2020. About 2/3 of the county's residents are served by public water. In areas of the county not served by public water, about 90 percent of the households rely on private domestic wells and 10 percent rely on other sources. About 270 customers will be added to public water service through new line extensions in 2000-2020.

Owsley County has both an adequate source and plant capacity to supply potable water to all Owsley Countians (excluding those areas that are impractical) within the next 5 years. Local officials and system employees estimate it would cost about \$2,000,000 to complete their system. This figure includes existing line upgrades, increased storage capacity, pump stations, and additional fire hydrants. This would also provide a 250,000-gallon storage tank to serve not only some residents, but an industrial park as well.

Although Owsley County currently has an adequate source of water, they could benefit from a treatment plant on Buckhorn Lake. Not only could this be a supplemental source in the future, it could immediately serve residents in the extreme southern portion of the county that is impractical for the Booneville Water and Sewer District to supply.

WATER SERVICE AREAS OWSLEY COUNTY Kentucky

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Water Resource Development Commission

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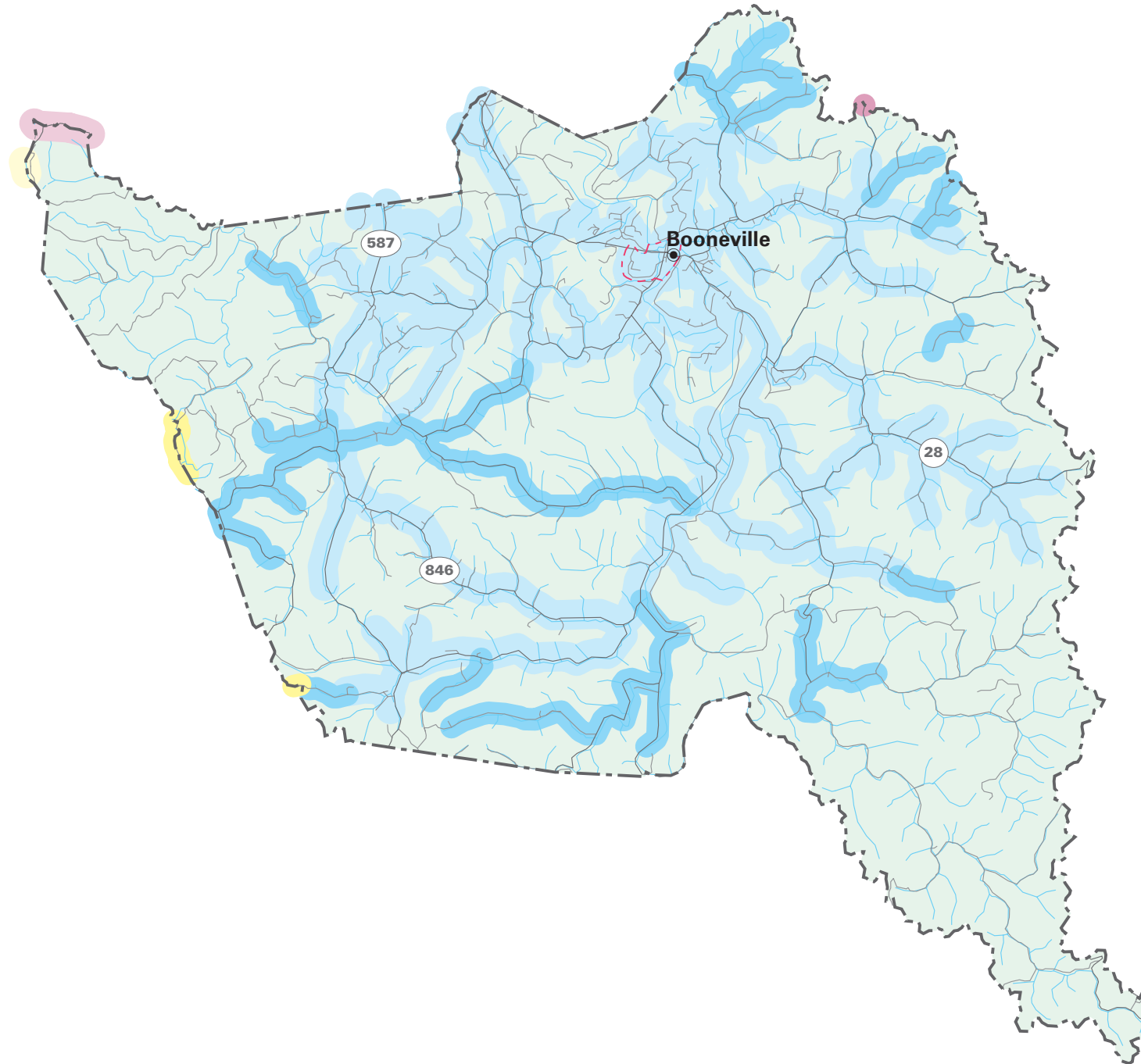
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Data Collection & GIS Input By:
Kentucky Area Development Districts



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WATER SERVICE STATUS BY OWNER

EXISTING SERVICE AREA	PROPOSED SERVICE AREA	OWNER
		JACKSON COUNTY WATER ASSOCIATION
		BOONEVILLE WATER AND SEWER
		BEATTYVILLE 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
OWSLEY								-
Booneville	43.0	267	1,500				1,000	2,500
Total	43.0	267	1,500				1,000	2,500

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
OWSLEY								-
Booneville					2,000	2,000		4,000
Total					2,000	2,000		4,000

PUBLIC WATER SYSTEMS

The Booneville Water and Sewer District is the only community water system in Owsley County: The is also one non-community system.

BOONEVILLE WATER AND SEWER

PWSID: 0950036
 System Type:..... COMMUNITY
 Owner Type:..... MUNICIPAL
 Surface Source:..... SOUTH FORK KENTUCKY RIVER
 Purchase Source:
 Well Source:
 Sells Water to:
 Treatment Plant Capacity (MGD):..... 0.86
 Percent Daily Average Production:..... 39.00
 Total Tank Storage Capacity (gallons):..... 484,000.00
 Total Service Connections: 1,452.00
 Number of Employees:..... 6.00
 Treatment Operator Class:2D
 Distribution Operator Class:.....3A
 Customer Rate for 1,000 Gallons:..... 7.00
 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 Booneville Water Treatment Plant has a capacity of 864,000, and a daily average production of 275,000 gallons. Rates inside the city are \$13.50 for the first 2,000 gallons and \$14.50 for the first 2,000 gallons outside the city limits. The system has a storage capacity of 484,000 gallons. The water source is surface water from South Fork/Kentucky River.

OTHER SYSTEMS:

CAMP BRENT LANEER

Camp Brent Laneer is located in Owsley County. The system serves a population of 75 and has 1 service connection. The local, transient, non-community system has treatment capacity of 8,000 gallons per day and the water source is wells.

PRIVATE DOMESTIC SYSTEMS

About 1,600 people in Owsley County rely on private domestic water supplies: 1,450 on wells, and 150 on other sources.

Most wells drilled in valley bottoms are adequate for a domestic supply. Fewer than half the wells drilled on hillsides are adequate for a domestic supply and wells on hilltops and ridges yield smaller quantities of water. In the western half of the county wells penetrating 500 feet or more of sandstone may yield enough water for small municipal or industrial supply.

Water obtained from most wells in this area is soft or moderately hard and contains noticeable amounts of iron. Salty water may be found in wells drilled less than 100 feet below the level of the principal valley bottoms.

A few springs supply sufficient quantities of water for domestic use, usually produces less than 5 gpm.

PERRY COUNTY

(Perry County Water Service Area Map)

- Estimated 1999 population of 31,100--60% on public water
- Estimated 2020 population of 32,100--86% on public water
- 155 miles of water lines, with plans for 215 additional miles
- Estimated funding needs for public water 2000-2005--\$7,150,000
- Estimated funding needs for public water 2006-2020--\$11,700,000

Perry County had an estimated population of 31,102 (11,673 households) in 1999 with a projected population of 32,100 (13,400 households) in 2020. Public water is provided to about 60 percent of the county's residents. In areas of the county not served by public water, about 5 of 6 households rely on private domestic wells and the remainder rely on other sources. About 3,430 customers will be added to public water service through new line extensions in 2000-2020.

The City of Hazard operates the only water treatment plant in Perry County. They currently sell wholesale water to the cities of Vicco and Buckhorn. The current source of water is not adequate to supply current needs under drought conditions, and could not supply the entire county under the best conditions. Perry County could benefit greatly from the proposed Carr Creek Water Plant, and could also be benefited by a plant on Buckhorn Lake. These two projects, along with the existing source should meet the entire county's future needs.

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
PERRY								-
Hazard Water Company	57.4	695	3,150		3,000			6,150
Vicco	19.7	525	1,000					1,000
Buckhorn	No	short range	projects	due to	source	Limitations		-
Total	77.1	1,220	4,150		3,000		0	7,150

WATER SERVICE AREAS

PERRY COUNTY

Kentucky

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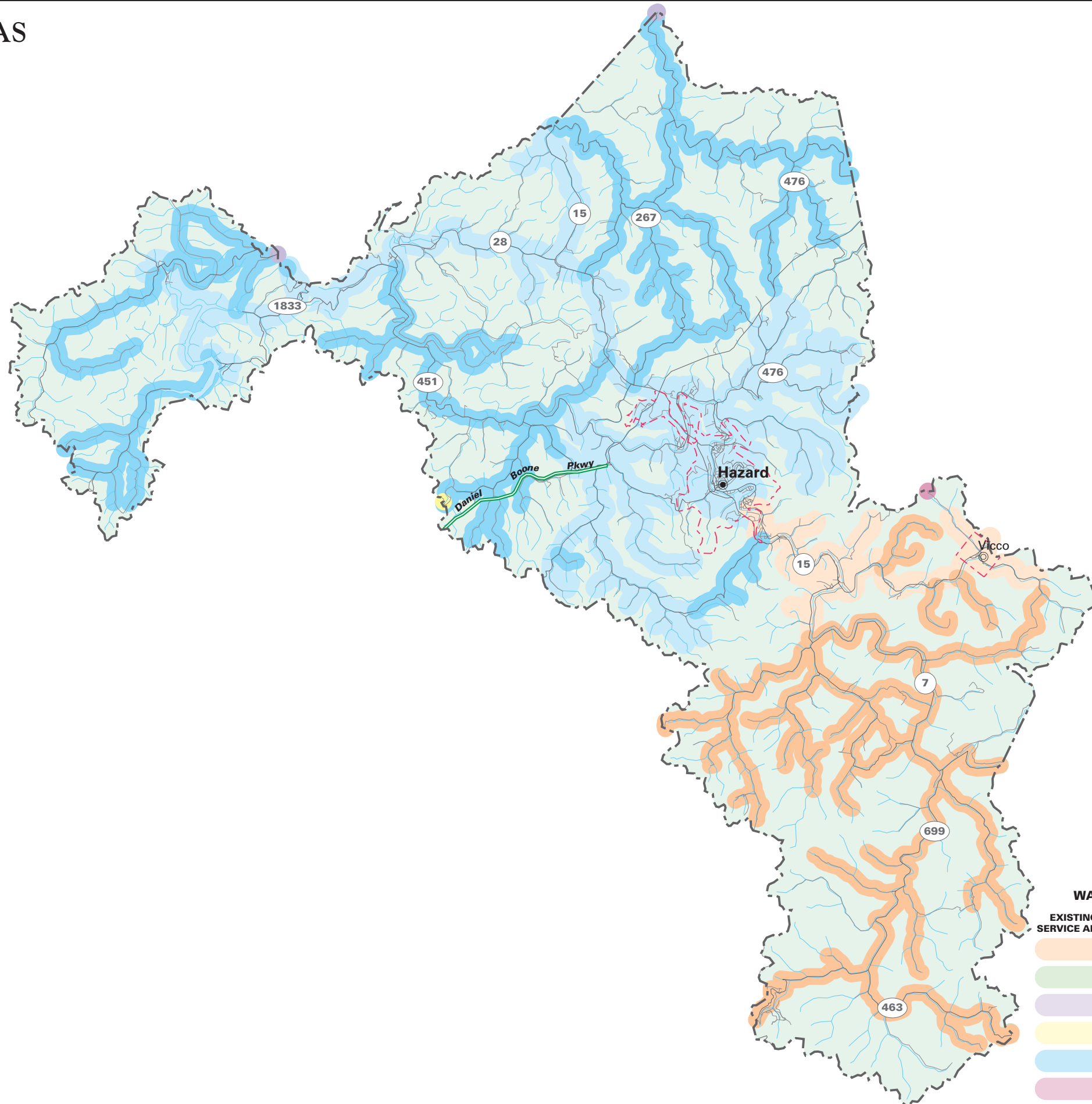
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WATER SERVICE STATUS BY OWNER

EXISTING SERVICE AREA	PROPOSED SERVICE AREA	OWNER
		VICCO WATER SUPPLY
		LETCHER COUNTY WATER DISTRICT
		JACKSON MUNICIPAL WATER WORKS
		HYDEN LESLIE COUNTY WATER DISTRICT
		HAZARD WATER DEPARTMENT
		CANEY CREEK WATER DISTRICT

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
PERRY								-
Hazard Water Company	31.0	368	1,600					1,600
Vicco	72.0	1539	4,000					4,000
Buckhorn	35.5	302	1,800			4,000	300	6,100
Total	138.5	2,209	7,400			4,000	300	11,700

PUBLIC WATER SYSTEMS

Perry County is served by 18 public and semi-public water systems: 3 municipal--Hazard Water Department, Vicco Water Supply, and the City of Buckhorn; 1 private community system; and 14 non-community systems.

HAZARD WATER DEPARTMENT

PWSID: 0970184
 System Type:..... COMMUNITY
 Owner Type:..... MUNICIPAL
 Surface Source:.....NORTH FORK KENTUCKY RIVER
 Purchase Source:
 Well Source:
 Sells Water to: VICCO WATER SUPPLY
 Treatment Plant Capacity (MGD):..... 4.00
 Percent Daily Average Production:..... 66.00
 Total Tank Storage Capacity (gallons): 8,700,000.00
 Total Service Connections: 5,800.00
 Number of Employees:..... 6.00
 Treatment Operator Class:3D
 Distribution Operator Class:.....4A
 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

The City of Hazard draws its water from the North Fork of the Kentucky River. The system currently serves about 5,800 households. Additionally, they provide treated water to the Buckhorn and Vicco systems. Permitted withdrawal from the North Fork is 3.15 mgd. Plant capacity is 4 million gpd, with an average daily production of 2.7 million gallons. Storage capacity is 8.7 million gallons. Rates inside the city are \$11.74 for the first 2,000 gallons and \$17.58 outside the city. They have 6 full time employees.

The current planned expansions will just about deplete the permitted water withdrawal from the North Fork. The Hazard Water Plant does not have adequate source or capacity to serve both the northwestern and southern portions of the county.

VICCO WATER SUPPLY

PWSID: 0970484
System Type:..... COMMUNITY
Owner Type: MUNICIPAL
Surface Source:
Purchase Source:HAZARD MASTER METER
Well Source:
Sells Water to:
Treatment Plant Capacity (MGD):..... 0.00
Percent Daily Average Production:..... 0.00
Total Tank Storage Capacity (gallons): 500,000.00
Total Service Connections: 740.00
Number of Employees:..... 6.00
Treatment Operator Class:2D
Distribution Operator Class:
Customer Rate for 1,000 Gallons:..... 8.78
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 City of Vicco purchases its water from the Hazard Water Plant. They currently purchase 150,000 gpd and provide water to about 700 households. Storage capacity is 500,000 gallons. Rates for the first 2,000 gallons are \$16.50 inside the city and \$18.63 outside the city limits. They employ 6 people.

The City of Vicco has passed a resolution of intent to form the Carr Creek Water Commission. This will provide them with the opportunity to serve the southern portion of Perry County. However, they are in need of immediate infrastructure repairs and upgrades. They have a current water loss rate of around 40%.

CITY OF BUCKHORN

The City of Buckhorn purchases its water from the City of Hazard. The city provides water to about 120 customers along with the Buckhorn School and the Buckhorn Children’s Home. They are very interested in expanding services, and could even serve about 50 customers in southern Breathitt County if they had a source of water. The city has expressed

an interest in the location of a treatment plant on Buckhorn Lake, which could serve several surrounding counties.

OTHER SYSTEMS

NEW TRIBES MISSION

New Tribes Mission is located in Perry County. The system serves a population of 60 and has 5 service connections. The private, community system has treatment capacity of 6,400 gallons per day and the water source is wells.

CHRISTY'S DAIRY BAR/RESTAURANT

Christy's Dairy Bar/Restaurant is located in Perry County. The system serves a population of 25 and has 1 service connection. The private, transient, non-community system has treatment capacity of 80 gallons per day and the water source is wells.

ROBINSON ELEMENTARY SCHOOL

Robinson Elementary School is located in Perry County. The system serves a population of 351 and has 2 service connections. The local, non-transient, non-community system has treatment capacity of 30,000 gallons per day and the water source is wells.

VIPER ELEMENTARY SCHOOL

Viper Elementary School is located in Perry County. The system serves a population of 559 and has 1 service connection. The local, non-transient, non-community system has treatment capacity of 42,000 gallons per day and the water source is wells.

WILLARD ELEMENTARY SCHOOL

Willard Elementary School is located in Perry County. The system serves a population of 400 and has 1 service connection. The local, non-transient, non-community system has treatment capacity of 6500 gallons per day and the water source is wells.

CHANNEY'S RESTAURANT

Chaney's Restaurant is located in Perry County. The system serves a population of 50 and has 15 service connections. The private, transient, non-community system has treatment capacity of 5,000 gallons per day and the water source is wells.

LEATHERWOOD ELEMENTARY SCHOOL

Leatherwood Elementary School is located in Perry County. The system serves a population of 336 and has 1 service connection. The local, non-transient, non-community system has treatment capacity of 35,000 gallons per day and the water source is wells.

MOUNTAIN COMPREHENSIVE CARE CORP

Mountain Comprehensive Care Corp. is located in Perry County. The system serves a population of 90 and has 1 service connection. The private, non-transient, non-community system has treatment capacity of 8,000 gallons per day and the water source is wells.

HOMEPLACE CLINIC

Homeplace Clinic is located in Perry County. The system serves a population of 75 and has 3 service connections. The private, transient, non-community system has treatment capacity of 6,000 gallons per day and the water source is wells.

LOST CREEK SCHOOL

Lost Creek School is located in Perry County. The system serves a population of 200 and has 1 service connection. The local, non-transient, non-community system has treatment capacity of 10,000 gallons per day and the water source is wells.

LITTLE FOLKS SHOP HEADSTART

Little Folks Shop Headstart is located in Perry County. The system serves a population of 100 and has 5 service connections. The local, non-transient, non-community system has treatment capacity of 10,080 gallons per day and the water source is wells.

CAMPBELLS BP SERVICE

Campbells BP Service is located in Perry County. The system serves a population of 100 and has 1 service connection. The private, transient, non-community system has treatment capacity of gallons per day and the water source is wells

PENNY'S COUNTRY KITCHEN

Penny's Country Kitchen is located in Perry County. The system serves a population of 30 and has 15 service connections. The private, transient, non-community system has treatment capacity of 5,000 gallons per day and the water source is wells

ROARK'S BP FOOD MART

Roark's BP Food Mart is located in Perry County. The system serves a population of 100 and has 1 service connection. The private, transient, non-community system has treatment capacity of 10,000 gallons per day and the water source is wells.

TWIN ROCKS BIBLE CAMP

Twin Rocks Bible Camp is located in Perry County. The system serves a population of 25 and has 8 service connections. The private, transient, non-community system has treatment capacity of gallons per day and the water source is wells.

PRIVATE DOMESTIC SYSTEMS

About 12,400 residents of Perry County rely on private domestic water supplies: 10,300 on wells, and 2,100 on other sources.

Most rural Perry Countians have drilled wells. As is the case throughout the district, iron and sulfur are common problems. In the eastern half of Perry County more than three-quarters of the wells drilled in valley bottoms and on mountainsides are adequate for a domestic supply. Some wells on ridges and mountaintops are adequate for domestic supply. Drilled wells more than 200 feet deep in valleys may yield enough water for small municipal or industrial supplies. In the western half of the county most wells drilled in valley bottoms are adequate for domestic supply. Fewer than half the wells on hillsides are adequate to meet the needs for a modern domestic supply. Wells on mountaintops and ridges yield smaller quantities of water.

Almost all ground water obtained from most drilled wells in this area is moderately to extremely hard and contains noticeable amounts of iron. Salty water may be found from 50 to several hundred feet below the level of the principal valley bottoms, except in the eastern half of the county where salty water probably will not be found less than 200 feet.

A few springs supply sufficient quantities of water for domestic use, usually produces less than 5 gpm.

WOLFE COUNTY

(Wolfe County Water Service Area Map)

- Estimated 1999 population of 7,500--33% on public water
- Estimated 2020 population of 8,750--52% on public water
- 60 miles of water lines, with plans for 95 additional miles
- Estimated funding needs for public water 2000-2005--\$0
- Estimated funding needs for public water 2006-2020--\$19,500,000

County had an estimated population of 7,503 (2,960 households) in 1999 with a projected population of 8,750 (3,650 households) in 2020. Public water is provided to about 1/3 of the county's residents. In areas of the county not served by public water, about 90 percent of the households rely on private domestic wells and 10 percent rely on other sources. About 700 customers will be added to public water service through new line extensions in 2000-2020.

When a currently proposed project is complete, both the source and plant capacity will be inadequate to serve all of the remaining population. A plant upgrade could solve the problem under normal conditions, but under drought conditions the water source would likely be inadequate. Other potential sources of water include water or service provided from Lee County, or possibly from a plant located on Cave Run Lake.

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
WOLFE	No	short range	projects due	to	source	limitations		-

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
WOLFE								-
Campton	95.0	700	5,000		8,000	5,000	1,500	19,500
Total	95.0	700	5,000		8,000	5,000	1,500	19,500

PUBLIC WATER SYSTEMS

Wolfe County is served by 3 public and semi-public water systems: 1 municipal system, the Campton Water Plant; 1 private community system; and 1 non-community system.

WATER SERVICE AREAS WOLFE COUNTY Kentucky



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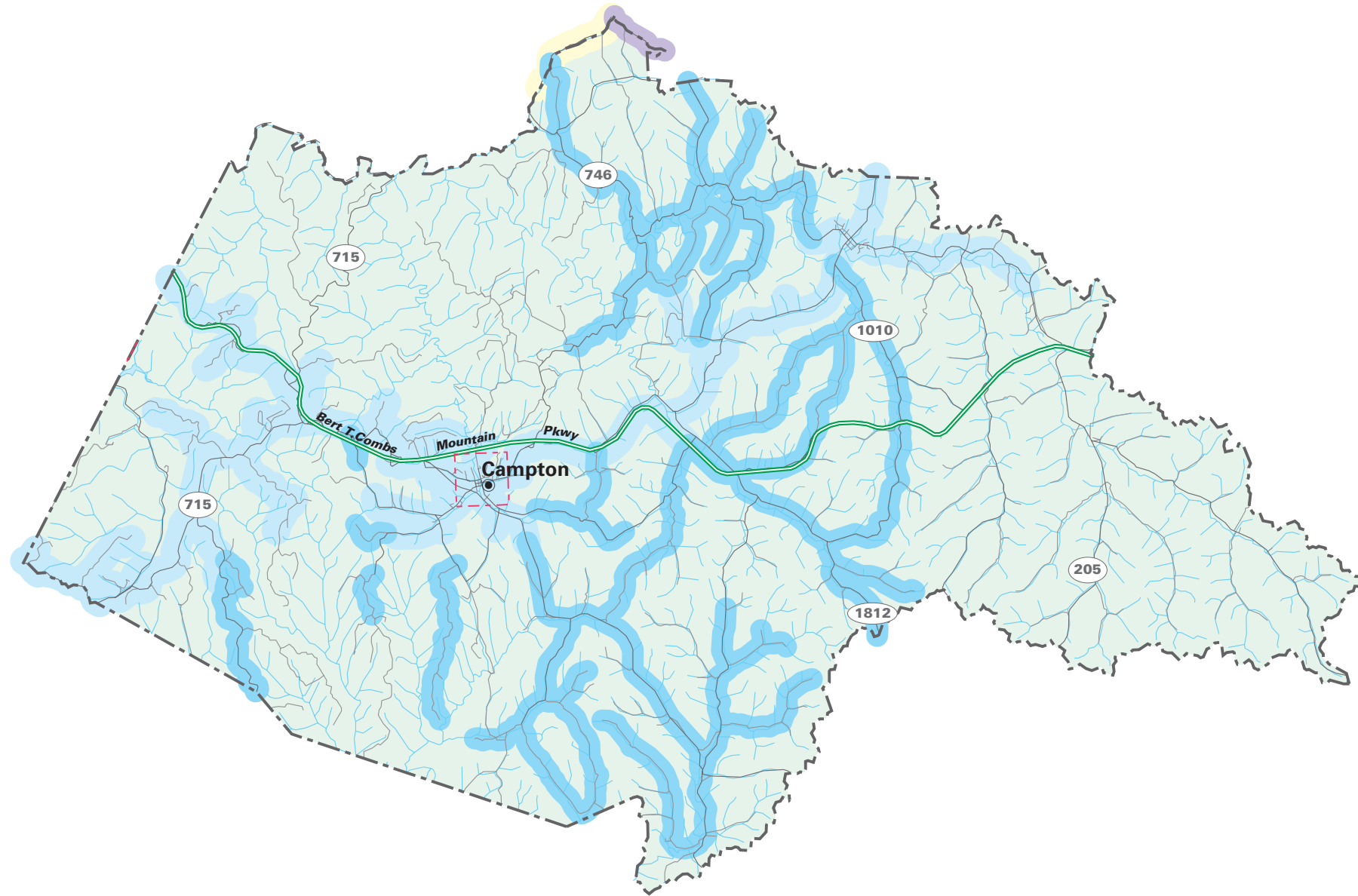
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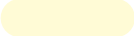

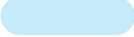



Data Collection & GIS Input By:
Kentucky Area Development Districts



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WATER SERVICE STATUS BY OWNER

EXISTING SERVICE AREA	PROPOSED SERVICE AREA	
		MORGAN COUNTY WATER DISTRICT
		FRENCHBURG WATER COMPANY
		CAMPTON WATER PLANT
		BEATTYVILLE WATER WORKS

CAMPTON MUNICIPAL WATER

PWSID:.....	1190061
System Type:.....	COMMUNITY
Owner Type:.....	MUNICIPAL
Surface Source:.....	CAMPTON LAKE
Purchase Source:	
Well Source:	
Sells Water to:	
Treatment Plant Capacity (MGD):.....	0.43
Percent Daily Average Production:.....	78.00
Total Tank Storage Capacity (gallons):.....	300,000.00
Total Service Connections:.....	983.00
Number of Employees:.....	5.00
Treatment Operator Class:.....	2D
Distribution Operator Class:.....	2A
Customer Rate for 1,000 Gallons:.....	8.50
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 Campton Water Plant has 983 service connections. It has a treatment capacity of 430,000 gpd, and is expected to be at just about its peak when the current line extensions are completed. The water source is surface water from Campton Lake. The system currently has about a 25% loss rate, so some infrastructure repair or upgrades may allow more line extensions before a capacity increase or finding an additional source of water. Current storage capacity is 300,000 gallons and rates are \$17.00 for the first 2,000 gallons. They employ 5 people.

OTHER SYSTEMS

CAMPTON DOUBLE KWIK

Campton Double Kwik is located in Wolfe County. The system serves a population of 25 and has 1 service connection. The private, transient, non-community system has treatment capacity of 1,875 gallons per day and the water source is wells.

BETHANY CHRISTIAN MISSION CENTER

Bethany Christian Mission Center is located in Wolfe County. The system serves a population of 65 and has 1 service connection. The private, community system has treatment capacity of 8,000 gallons per day and the water source is wells.

PRIVATE DOMESTIC SYSTEMS

About 4,900 people in Wolfe County rely on private domestic water supplies: 4,400 on wells, and 500 on other sources.

Most wells in valley bottoms are adequate for domestic supply. Yields to wells become progressively less on hillsides and ridges. Deep wells penetrating over 500 feet of sandstone may yield enough water for small municipal or industrial supplies.

Water from drilled wells range from moderately to extremely hard and contains noticeable amounts of iron. In valley bottoms salty water may be encountered at depths of 100 feet.

A few springs supply sufficient quantities of water for domestic use. Most springs have large seasonal variations in flow commonly issue from the base of sandstone and limestone formations in valley bottoms.