

# Water-Resource Development: A Strategic Plan

## *Summary of Water Systems Big Sandy Area Development District*

*Water Resources Development Commission*

*October, 1999*

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## BIG SANDY AREA DEVELOPMENT DISTRICT

Municipal Building - 2<sup>nd</sup> Floor

North Lake Drive

Prestonsburg, KY 41653

(606) 886-2374

### REGIONAL OVERVIEW

#### (Big Sandy ADD Existing & Proposed Water Lines Map)

Estimated 1999 population of 165,000--57% on public water

Estimated 2020 population of 163,000--82% on public water

1,600 miles of water lines, with plans for 1,050 additional miles

Estimated funding needs for public water 2000-2005--\$61,600,000

Estimated funding needs for public water 2006-2020--\$58,100,000

The Big Sandy Area Development District had an estimated population of 164,775 (63,446 households) in 1999 with a projected population of 163,000 (69,600 households) in 2020. There are 1,600 miles of water lines in the region serving 93,000 people. 1,060 miles of proposed water line extensions for the period 2000-2020 would provide service to an additional 17,400 households, an increase in public water service of almost 50 percent. About 70,600 people in the region rely on private domestic water systems: 66,900 on wells and 3,700 on hauled water and other sources.

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

County	1999 Pop	On Public	2020 Pop	On Public
Floyd	42,800	29,100 (68%)	42,000	36,500 (87%)
Johnson	24,200	14,300 (59%)	24,500	21,600 (88%)
Magoffin	13,900	9,000 (65%)	15,200	12,200 (80%)
Martin	11,900	8,000 (67%)	10,600	8,600 (81%)
Pike	72,000	33,800 (47%)	70,400	54,200 (77%)
Region	165,000	94,200 (57%)	163,000	133,000 (82%)

36 public water systems serve the region: 23 community systems--6 municipal, 7 water districts, 9 private, and 13 non-community systems. There are fifteen small (less than 3,300 people served) and 8 very small (less than 500 served) systems.

## EXISTING & PROPOSED WATER LINES

BSADD  
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/>

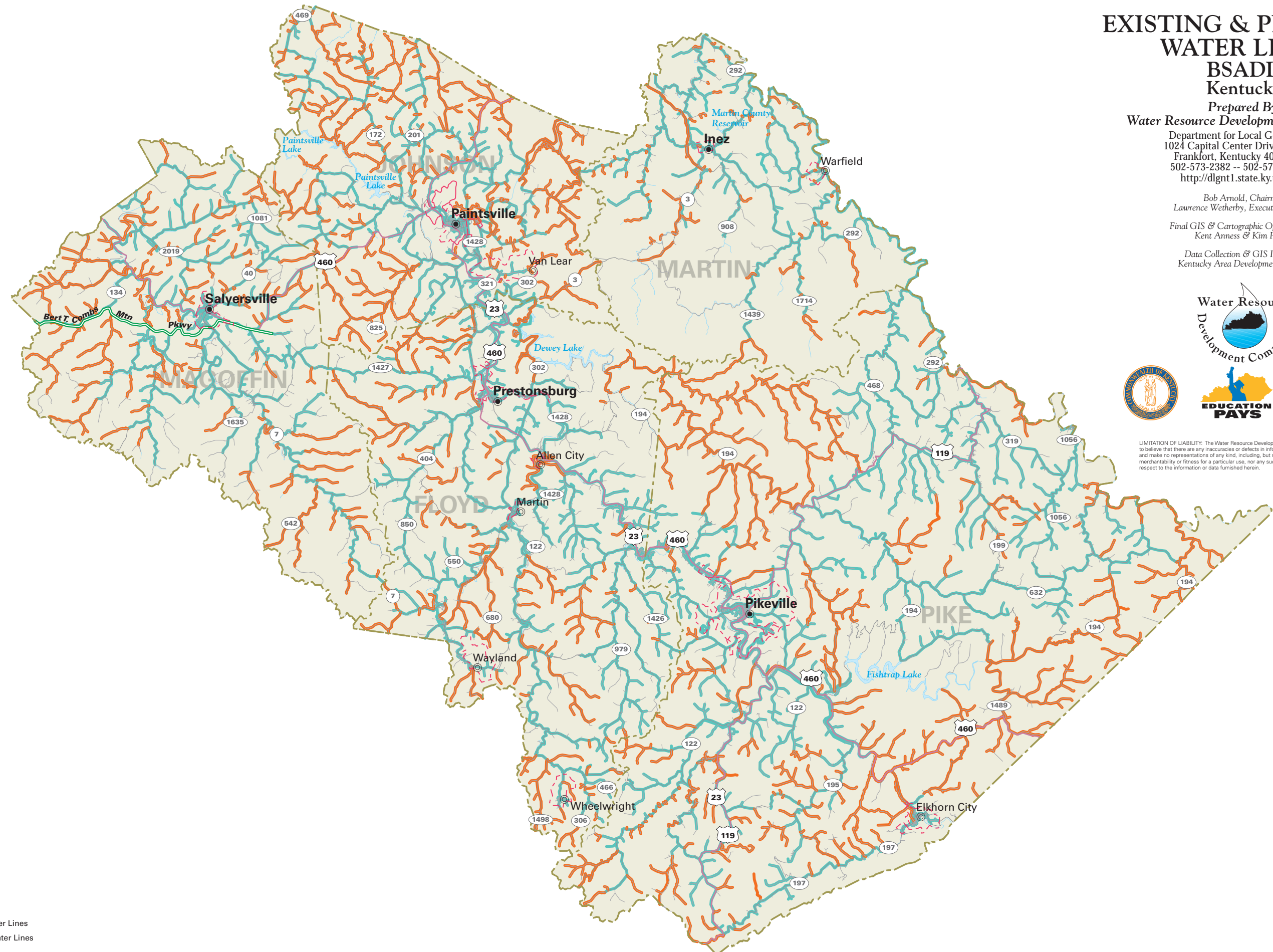
Bob Arnold, Chairman  
Lawrence Wetherby, Executive Director

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

Data Collection & GIS Input By:  
Kentucky Area Development Districts



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## WATER LINES

Existing Water Lines

 Proposed Water Lines

Major sources of water are the Licking River, Big Sandy River, Tug Fork, Levisa Fork, Russell Fork, a reservoir, and Dewey Lake. Two systems rely on water from mines. Smaller systems use water wells.

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
<b>FLOYD</b>								-
Auxier (private)	4.2	37	210				150	360
Beaver Elkhorn	24	744	1,200	3,000				4,200
Martin							300	300
Mudcreek W/D				1,000				1,000
Prestonsburg	26	945	1,300		1,000		500	2,800
Sandy Valley W/D	12	2	600	500			300	1,400
Wheelwright	2	65	100					100
<b>Total</b>	<b>68.2</b>	<b>1793</b>	<b>3,410</b>	<b>4,500</b>	<b>1,000</b>		<b>1,250</b>	<b>10,160</b>
								-
<b>JOHNSON</b>								-
Paintsville	41	1200	2,000	1,625	2,000	4,000		9,625
<b>Total</b>	<b>41</b>	<b>1200</b>	<b>2,000</b>	<b>1,625</b>	<b>2,000</b>	<b>4,000</b>		<b>9,625</b>
								-
<b>MAGOFFIN</b>								-
Salyersville				1,000	5,000			6,000
Magoffin Co. W/D	44	378	2,200				500	2,700
<b>Total</b>	<b>44</b>	<b>378</b>	<b>2,200</b>	<b>1,000</b>	<b>5,000</b>		<b>500</b>	<b>8,700</b>
								-
<b>MARTIN</b>								-
Martin Co. W/D	6	200	300	1,000	2,000	2,000	5,506	10,806
<b>Total</b>	<b>6</b>	<b>200</b>	<b>300</b>	<b>1,000</b>	<b>2,000</b>	<b>2,000</b>	<b>5,506</b>	<b>10,806</b>
								-
<b>PIKE</b>								-
Mountain W/D	117	2616	7,000			8,000	3,000	18,000
Pikeville				1,000				1,000
<b>Total</b>	<b>117</b>	<b>2616</b>	<b>7,000</b>	<b>1,000</b>		<b>8,000</b>	<b>3,000</b>	<b>19,000</b>
								-
<b>Total Big Sandy</b>	<b>276</b>	<b>6187</b>	<b>14,910</b>	<b>9,125</b>	<b>10,000</b>	<b>14,000</b>	<b>10,256</b>	<b>58,291</b>

**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
FLOYD								-
Auxier (private)								-
Beaver Elkhorn	40	630	2,000		500		500	3,000
Martin								-
Mudcreek W/D	14	246	700					700
Prestonsburg	57	820	3,000	200			1,000	4,200
Sandy Valley W/D						2,000		2,000
Wheelwright					100			100
Total	111	1696	5,700	200	600	2,000	1,500	10,000
								-
JOHNSON								-
Paintsville	182	1920	9,100					9,100
Total	182	1920	9,100					9,100
								-
MAGOFFIN								-
Salyersville				1,000		3,000		4,000
Magoffin Co. W/D	123	563	6,200				1,500	7,700
Total	123	563	6,200	1,000		3,000	1,500	11,700
								-
MARTIN								-
Martin Co. W/D	36	402	1,800					1,800
Total	36	402	1,800					1,800
								-
PIKE								-
Mountain W/D	320	6590	16,000			8,000	4,000	28,000
Pikeville				1,000				1,000
Total	320	6590	16,000	1,000		8,000	4,000	29,000
								-
Total Big Sandy	772	11171	38,800	2,200	600	13,000	7,000	61,600

## FLOYD COUNTY

### (Floyd County Water Service Area Map)

- Estimated 1999 population of 42,800--68% on public water
- Estimated 2020 population of 42,000--87% on public water
- 385 miles of water lines, with plans for 180 additional miles
- Estimated funding needs for public water 2000-2005--\$10,200,000
- Estimated funding needs for public water 2006-2020--\$10,000,000

Floyd County had an estimated population of 42,790 (16,683 households) in 1999.

Approximately 68% of the residents are served by public water systems. The remainder rely primarily on wells. It is projected that the population of Floyd County will be 41,920 (18,015 households) in the year 2020. Proposed water line extensions in the period 2000-2020 will serve another 3,490 residents.

### ESTIMATED COSTS - PROPOSED PROJECTS, 2000-2005

COUNTY/System		New Customers	Cost	Rehab	Source	Treatment	Tanks/ Pumps	Total
	Miles	Number	in \$1000	in \$1000	in \$1000	in \$1000	in \$1000	in \$1000
FLOYD								-
Auxier (private)	4.2	37	210				150	360
Beaver Elkhorn	24	744	1,200	3,000				4,200
Martin							300	300
Mudcreek W/D				1,000				1,000
Prestonsburg	26	945	1,300		1,000		500	2,800
Sandy Valley W/D	12	2	600	500			300	1,400
Wheelwright	2	65	100					100
Total	68.2	1793	3,410	4,500	1,000		1,250	10,160

### ESTIMATED COSTS - PROPOSED PROJECTS, 2006-2020

COUNTY/System		New Customers	Cost	Rehab	Source	Treatment	Tanks/ Pumps	Total
	Miles	Number	in \$1000	in \$1000	in \$1000	in \$1000	in \$1000	in \$1000
FLOYD								-
Auxier (private)								-
Beaver Elkhorn	40	630	2,000		500		500	3,000
Martin								-
Mudcreek W/D	14	246	700					700
Prestonsburg	57	820	3,000	200			1,000	4,200
Sandy Valley W/D						2,000		2,000
Wheelwright					100			100
Total	111	1696	5,700	200	600	2,000	1,500	10,000



# WATER SERVICE AREAS

## FLOYD 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/>

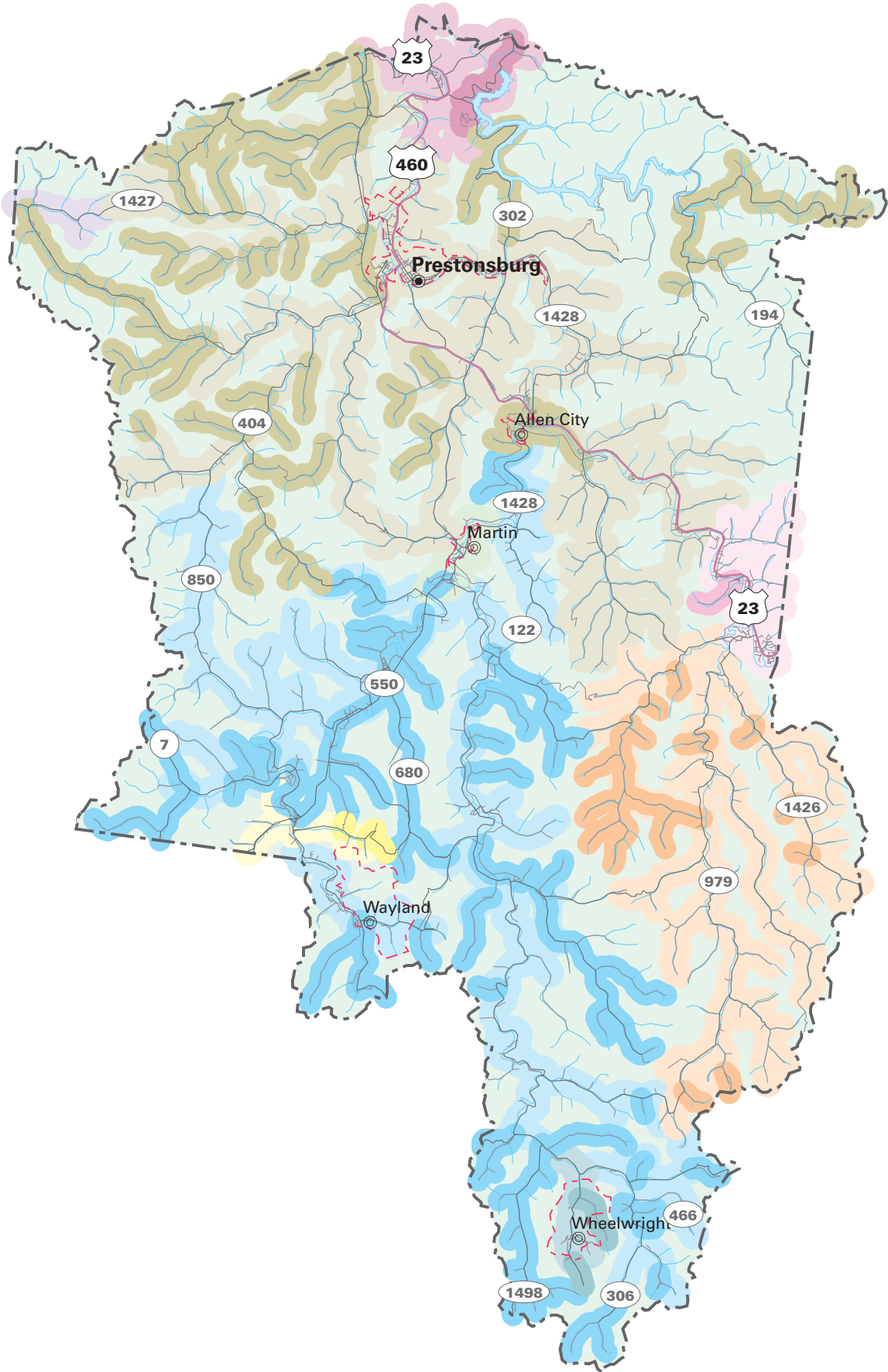
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WATER SERVICE STATUS BY OWNER		
EXISTING SERVICE AREA	PROPOSED SERVICE AREA	
		WHEELWRIGHT UTILITIES
		SANDY VALLEY WATER DISTRICT
		PRESTONSBURG CITY UTILITIES COMMISSION
		MUD CREEK WATER DISTRICT
		MARTIN WATER WORKS
		MAGOFFIN COUNTY WATER DISTRICT
		FRANCIS WATER COMPANY
		BEAVER ELKHORN WATER DISTRICT
		AUXIER WATER COMPANY, INC

## PUBLIC WATER SYSTEMS

In 1985 there were 16 public water systems in Floyd County. Today there are 9 community water systems--including four water districts, three municipal systems, and two private companies--and 2 non-community systems. Four systems have water treatment plants, one of which relies on ground water as its sole source. Three of the systems purchase water from systems located in neighboring Pike and Johnson Counties. One water district is based in and predominantly serves Magoffin County, having only some fifty customers in Floyd County. One of the water districts is a two-county system, with a five member commission, based in Floyd County.

### **AUXIER WATER COMPANY**

PWSID: .....	0360014
System Type:.....	COMMUNITY
Owner Type:.....	PRIVATE
Surface Source:	
Purchase Source: .....	PRESTONSBURG CITY UTILITIES
Well Source:	
Sells Water to:	
Treatment Plant Capacity (MGD):.....	0.00
Percent Daily Average Production:.....	0.00
Total Tank Storage Capacity (gallons): .....	50,000.00
Total Service Connections: .....	940.00
Number of Employees:.....	1.00
Treatment Operator Class: .....	2D
Distribution Operator Class:	
Customer Rate for 1,000 Gallons:.....	7.96
O/M costs 1997: .....	354,530.00
O/M costs per Service Connection: .....	421.56
Net Revenue 1997: .....	9,062.00
Total Water Produced 1997 (gallons):.....	0.00
Water Sold 1997 (gallons):.....	67,056,000.00
Unaccounted-for Water 1997 (%): .....	6.61

The Auxier Water Company is a private water distribution system serving the northern most area in Floyd County and several communities in Johnson County. Potable water is purchased from the Prestonsburg City's Utilities Commission at two locations, each at a different pressure. The system has 940 service connections, with 763 residential customers in Floyd County, 68 commercial customers, and 470 customers in Johnson County. The system purchased 73,220,000 gallons and sold 67,056,000 gallons in 1997 - 12/01/97. The system has a storage capacity of 50,000 gallons. There is one full time operator, and additional contract labor is employed as required. While the system has grown from its early days as a

coal camp utility, constructed of an array of pipe materials, overall operational integrity is demonstrated by a less than 5% water loss. The consumer rate for 5,000 gallons of water is \$39.80. There is significant growth potential for the system in the Johnson County portion of its service area, principally along KY Route 3.

### **BEAVER ELKHORN WATER DISTRICT**

PWSID:..... 0360026  
 System Type:..... COMMUNITY  
 Owner Type:..... WATER DISTRICT  
 Surface Source:..... LEVISA FORK OF BIG SANDY  
 Purchase Source:  
 Well Source:  
 Sells Water to:  
 Treatment Plant Capacity (MGD):..... 2.00  
 Percent Daily Average Production:..... 54.00  
 Total Tank Storage Capacity (gallons):..... 1,626,000.00  
 Total Service Connections: ..... 2428.00  
 Number of Employees:..... 0.00  
 Treatment Operator Class:..... 2D  
 Distribution Operator Class:..... 3A  
 Customer Rate for 1,000 Gallons:..... 4.56  
 O/M costs 1997:..... 607,196.00  
 O/M costs per Service Connection: ..... 247.84  
 Net Revenue 1997:..... 53,378.00  
 Total Water Produced 1997 (gallons):..... 343,602,000.00  
 Water Sold 1997 (gallons):..... 223,995,000.00  
 Unaccounted-for Water 1997 (%): ..... 13.95

The District has a recently expanded (1998) the treatment plant at Allen, Kentucky and serves the extremities of the Right and Left Beaver Creek areas which jointly comprise approximately 40% of the land mass of Floyd County. The special district has a treatment capacity of 2,000,000 gallons per day and a storage capacity of 1,626,000 gallons. The water source is Levisa Fork of Big Sandy River. An attenuated service main provides partial service to the City of Hindman in neighboring Knott County. Presently the system has 2,428 service connections: 2289 residential and 139 commercial. The community water district had operating and management costs of \$607,196 and net revenue of \$53,378 in 1997. The system produced 343,602,000 gallons and sold 223,995,000 gallons in 1997.

During its most recent line extension project the District assumed the water service area of the Floyd County Water and Gas System, generally including the community of Weeksbury. The majority of the distribution system is constructed of “transite” (concrete asbestos) pipe.

The use of this material, when coupled with lack of proper construction practice and inspection during the original installation, results in high, on-going management cost. A personnel complement of 12 individuals includes 4 distribution operators, 2 treatment plant operators, and support staff. There is very strong growth potential for the system in the Bill Hall Branch, the Jacks Creek area, as well as up Abner Mountain, on Left Beaver Creek and in many areas of Right Beaver, including Turkey Creek, and others. A normal growth percentage of some 15-18% is realistic for the next ten years just to meet demands along existing lines.

#### **MARTIN WATER DEPARTMENT**

PWSID: ..... 0360272  
System Type:..... COMMUNITY  
Owner Type:..... MUNICIPAL  
Surface Source:  
Purchase Source: ..... PRESTONSBURG CITY UTILITIES  
Well Source:  
Sells Water to:  
Treatment Plant Capacity (MGD):..... 0.00  
Percent Daily Average Production:..... 0.00  
Total Tank Storage Capacity (gallons): ..... 210,000.00  
Total Service Connections: ..... 424.00  
Number of Employees:..... 2.00  
Treatment Operator Class: ..... 1D  
Distribution Operator Class:  
Customer Rate for 1,000 Gallons:..... 5.16  
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 Martin water system purchases treated water from the Prestonsburg Utilities Commission near the mouth of Buck's Branch on KY Route 80. The City's 423 service connections--403 residential and 20 commercial customers--are served by a renovated distribution system. However, one of two ground storage tanks is out of service, requiring total reliance on the newer tank and thereby a higher service pressure throughout the system. The municipality has a storage capacity of 210,000 gallons. The cost to the consumer for 5,000 gallons of water is \$25.80. Personnel consist of a field operator and a part time clerk. The utility is operated directly by the City Council, as a department of government,

rather than via a utility commission.. Growth potential is extremely limited, in that the entire service area is surrounded by facilities of the Beaver Elkhorn Water District. Additionally, a proposed flood protection project to be developed several years in the future may allow for a modest increase and/or a decrease in the number of residential users in Martin. Either scenario has significant and serious implications for the system.

#### **FRANCIS WATER COMPANY**

PWSID:.....	0360152
System Type:.....	COMMUNITY
Owner Type:.....	PRIVATE
Surface Source:.....	ABANDONED MINE
Purchase Source:	
Well Source:	
Sells Water to:	
Treatment Plant Capacity (MGD):.....	0.08
Percent Daily Average Production:.....	0.00
Total Tank Storage Capacity (gallons):.....	0.00
Total Service Connections: .....	230.00
Number of Employees:.....	1.00
Treatment Operator Class:.....	1D
Distribution Operator Class:.....	2A
Customer Rate for 1,000 Gallons:.....	5.69
O/M costs 1997:.....	45,523.00
O/M costs per Service Connection: .....	197.93
Net Revenue 1997:.....	9,226.00
Total Water Produced 1997 (gallons):.....	15,000,000.00
Water Sold 1997 (gallons):.....	9,900,000.00
Unaccounted-for Water 1997 (%): .....	32.00

This private system includes a water treatment and distribution system for some 230 service connections--213 residential and 17 commercial customers. The system obtains its water from ground water and has a treatment capacity of 81,400 gallons per day. There is one full time employee of the system. The private water company had operating and management costs of \$45,532 and net income of \$9,226 in 1997. The system produced 15,000,000 gallons and sold 9,900,000 gallons for the period. Overall system losses were about 32%. Constructed to serve the community of Garrett and neighboring communities some fifty years ago, the growth potential of the system is significantly limited as its service area is completely surrounded by service facilities of the Beaver Elkhorn Water District.

**MAGOFFIN COUNTY WATER DISTRICT**

The District serves a small Floyd County community at the Floyd-Magoffin County line on KY Route 114 and continuing along State Road Fork toward Bonanza, KY. While the District is an extensive service provider in Magoffin County, having some 2,342 total service connections, the service it provides to this small community of 46 in Floyd County is vital, in that no other area utility has service in the vicinity. Consumer cost for 5,000 gallons of water is \$29.10. Growth potential is limited in that planned extensions of the Prestonsburg system during 2000-2005 will serve those presently unserved along KY Route 114 in Floyd.

**MUD CREEK WATER DISTRICT**

PWSID:..... 0360301  
 System Type:..... COMMUNITY  
 Owner Type:..... WATER DISTRICT  
 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):..... 1,100.00  
 Total Service Connections: ..... 1,004.00  
 Number of Employees:..... 4.00  
 Treatment Operator Class: ..... 2D  
 Distribution Operator Class:  
 Customer Rate for 1,000 Gallons:..... 4.93  
 O/M costs 1997:..... 269,757.00  
 O/M costs per Service Connection: ..... 275.26  
 Net Revenue 1997:..... 25,000.00  
 Total Water Produced 1997 (gallons):..... 0.00  
 Water Sold 1997 (gallons):..... 60,953,000.00  
 Unaccounted-for Water 1997 (%): ..... 45.41

The District's original system consists of over 80 miles of variously sized CA (concrete-asbestos) distribution lines, which were constructed in the early 1970's. Lying almost totally in the watershed of Mud Creek and its various tributaries, the major portion of the district's facilities run parallel with KY Route 979. Too-exacting design tolerances, poor construction, and lax construction inspection compromised the integrity of the system from the outset. Potable water is purchased from the City of Pikeville, via a 200,000 gallon tank sited at the head of Island Creek / Toler (Creek) Gap. Approximately one half of the system is supplied by gravity from Pikeville's Toler tank. The balance of the system is served by way of high service pumps and a series of ground storage tanks. The water district has a storage capacity

of 7,700 gallons. A revision in the system's original hydraulic plan has resulted in several tanks being taken out of service. The system has four full time personnel, including a certified distribution system operator, a clerk, and two field operators. There are presently 1,004 service connections on the system--986 residential, 18 commercial. Overall system losses were 45%. The internal growth potential of the system is significant, taking into consideration the demand to restore service to existing mains in several communities, as well as the demand for development of service to higher elevation residents using single customer, in-ground pressure tanks, conventional small, skid-mounted tanks with pumps and other similar delivery systems.

#### **PRESTONSBURG WATER COMPANY**

PWSID:.....	0360358
System Type:.....	COMMUNITY
Owner Type:.....	MUNICIPAL
Surface Source:.....	LEFT FORK BIG SANDY
Purchase Source:	
Well Source:	
Sells Water to: .....	MARTIN WATER DEPARTMENT
Treatment Plant Capacity (MGD):.....	5.04
Percent Daily Average Production:.....	51.00
Total Tank Storage Capacity (gallons):.....	3,055,000.00
Total Service Connections: .....	5,610.00
Number of Employees:.....	16.00
Treatment Operator Class:.....	2D
Distribution Operator Class:.....	4A
Customer Rate for 1,000 Gallons:.....	2.09
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 Prestonsburg develops, operates and maintains an extensive municipal water service utility. A treatment plant with design capacity of some 5mgd presently operates at 60% of that capacity. The community has storage capacity of 3,054,800 gallons. Over the last several years the city has acquired the Bull Creek-Water Gap Water District, the Abbott-Little Paint Creek Water District, the Middle Creek Water Association, the Prater Creek Water District, the Allen Water System, and the David Water District. Additionally, the system sells water to the Auxier Water System, the Sandy Valley Water District, and the

City of Martin. The city has recently extended service into the Cow Creek and Buffalo communities northeast of the city. Collectively, the city provides service to some 5,627 connections, including 4, 977 residential and 650 commercial customers. The Commission has 16 employees dedicated to the operation and maintenance of its water system, including 5 certified distribution system operators, and 7 certified treatment plant operators. The in-city customer cost for 5,000 gallons is \$10.45. The rate for 5,000 gallons of water for customers living outside of Prestonsburg is \$16.03.

The growth potential of the system is significant, due both to increased housing and commercial development along existing service mains as well as for new development as extensions to these areas. The City participates in an inter-local cooperation agreement relating to utility services, specifically water service, to the new federal prison. Joining the Martin County Water District and the City of Paintsville, water and wastewater services will be made available for the Honey Branch Industrial Park, located in Martin County, Kentucky. The first tenant will be the Federal Bureau of Prisons. Additionally, the Commission is now developing service to an extensive housing, recreational, and industrial development complex on a mountain top site lying parallel and adjacent to Dewey Lake, near Jenny Wiley State Resort Park.

The Prestonsburg City's Utilities Commission has commissioned plans for the development of a 5mgd raw water intake, pumping station and transmission main from Dewey Lake at Brandy Keg extending to its existing water treatment plant at Lancer. The City has applied for emergency water withdrawal from the U.S. Army Corps of Engineers.

Preliminary engineering studies anticipate a construction cost of \$765,000 for the complete Intake Facility. Estimates for a raw water transmission system from the Lake supply to the water treatment plant call for 14,200 LF of 20-inch PVC and 1,200 LF of 20-inch ductile iron pipe and other appurtenances for a construction estimate of \$576,200. Total Cost for intake and transmission main is \$1,341,200

**SANDY VALLEY WATER DISTRICT**

PWSID: ..... 0360384  
System Type: ..... COMMUNITY  
Owner Type: ..... WATER DISTRICT



Surface Source:  
 Purchase Source: ..... PRESTONSBURG CITY UTILITIES  
 Well Source:  
 Sells Water to:  
 Treatment Plant Capacity (MGD):..... 0.00  
 Percent Daily Average Production:..... 0.00  
 Total Tank Storage Capacity (gallons):..... 700,000.00  
 Total Service Connections: ..... 2,281.00  
 Number of Employees:..... 7.00  
 Treatment Operator Class: .....2D  
 Distribution Operator Class:  
 Customer Rate for 1,000 Gallons:..... 3.86  
 O/M costs 1997:..... 568,332.87  
 O/M costs per Service Connection: ..... 276.97  
 Net Revenue 1997:..... 21,791.06  
 Total Water Produced 1997 (gallons):..... 0.00  
 Water Sold 1997 (gallons):..... 174,317,300.00  
 Unaccounted-for Water 1997 (%): ..... 20.59

The District consists of some 48 miles of service mains extending along US 23 from Mare Creek in Floyd County to the Thompson Road area in Pikeville, including many of the communities located on tributaries of the Levisa Fork of the Big Sandy River in this area. Constructed in the late 1960's and early 1970's, using AC (asbestos-concrete) pipe, the system serves a major commercial shopping area in both Floyd and Pike Counties. The bi-county district purchases treated water from both the City of Pikeville and the City of Prestonsburg to service its 2,281 connections (2,005 residential and 276 commercial). The Special District has a storage capacity of 300,000 gallons. There are seven employees of the District, one certified distribution system operator, two office staff, and four field staff. There is significant potential for system growth, both along the existing service corridor and through development of service mains to serve the communities located along the tributaries of the Levisa Fork.

#### **WHEELWRIGHT UTILITY COMMISSION**

PWSID: ..... 0360463  
 System Type:..... COMMUNITY  
 Owner Type: ..... WATER DISTRICT  
 Surface Source:..... UNDERGROUND MINE  
 Purchase Source:  
 Well Source:  
 Sells Water to:  
 Treatment Plant Capacity (MGD):..... 0.35  
 Percent Daily Average Production:..... 31.00  
 Total Tank Storage Capacity (gallons):..... 200,000.00  
 Total Service Connections: ..... 358.00

Number of Employees:.....	5.00
Treatment Operator Class:.....	1D
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 City of Wheelwright, a sixth class municipality in the southern tip of Floyd County owns and operates a water treatment and distribution system to serve its 324 connections: 309 residential and 15 commercial. The Utility Commission has a treatment capacity of 350,000 gallons per day and a storage capacity of 200,000 gallons. The system has two employees, one of which is a certified water treatment plant operator and a distribution system operator. The system was first constructed to serve the model "coal camp town" in the late 1930's, was renovated in the mid 1950's, and then once again in the early 1980's. In this latest refurbishing, PVC pipe was installed and an individual meter setting was installed at each service connection. The water source is Wheelwright Mine. Because the water source is an underground reservoir (part of the old mine works) raw water turbidity is extremely good. However, spikes in sodium levels and volume fluctuations in the reservoir, consequent upon periodic drought conditions, have prompted the construction of a permanent tie-in with the Beaver Elkhorn Water District, now in-place

Potential for system expansion is extremely limited, and will include Branham Hollow and Golf Course Hollow. All communities around Wheelwright are either presently served by the Beaver Elkhorn Water District or will be served by that system.

## OTHER SYSTEMS

### **CORPS OF ENGRS/DEWEY LAKE**

Corps Of Engrs/Dewey Lake facility is located in Floyd county and serves a population of 80 with 44 service connections. The federal facility has a treatment capacity of 40,000 gallons per day. The water source is Dewey Lake. The system had an operating and management cost of \$141,000 and net revenue of -\$3,900 for the period 07/01/97 - 06/30/98.

### **CAMP SHAWNEE**

Camp Shawnee is located in Floyd County and serves a population of 25 with 2 service connections. The non-community system has a treatment capacity of 34,560 gallons per day. The water source is Dewey Lake.

### **PRIVATE DOMESTIC SYSTEMS**

About 14,000 people in Floyd county rely on private domestic water supplies: 12,900 on wells and 1,100 on hauled water, cisterns and other sources.

Some wells in the relatively thick sandy alluvium that is present along much of the Levisa Fork produce 20 to 25 gpm, which is more than adequate for domestic supplies. More than three-quarters of the wells drilled in valley bottoms and almost three-quarters of the wells drilled on hillsides are adequate for domestic supply needs. Only some wells on hilltops and ridges are adequate for domestic needs. Drilled wells more than 200 feet deep in valleys may yield enough water for small municipal or industrial supplies.

Ground water obtained from most wells is moderately hard and contains noticeable amounts of iron. In the northwestern two-thirds of the county, salty water may be found in wells 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.

## JOHNSON COUNTY

### (Johnson County Water Service Area Map)

- Estimated 1999 population of 24,200--59% on public water
- Estimated 2020 population of 24,500--88% on public water
- 220 miles of water lines, with plans for additional 225 miles
- Estimated funding needs for public water 2000-2005--\$9,620,000
- Estimated funding needs for public water 2006-2020--\$9,100,000

Johnson County had an estimated population of 24,193 (9,543 households) in 1999. Some 5,501 households (approximately 59%) were served by public water. The remainder relied primarily on wells. It is projected that the population of Johnson County will be 24,500 (10,672 households) in the year 2020. Proposed water line extensions in the period 2000-2020 will serve another 3,120 households, so that public water will be provided to about 88% of the county's population.

#### *Estimated Costs - Proposed Projects, 2000-2005*

COUNTY/System		New Customers	Cost	Rehab	Source	Treatment	Tanks/ Pumps	Total
	Miles	Number	in \$1000	in \$1000	in \$1000	in \$1000	in \$1000	in \$1000
JOHNSON								-
Paintsville	41	1200	2,000	1,625	2,000	4,000		9,625
Total	41	1200	2,000	1,625	2,000	4,000		9,625

#### *Estimated Costs - Proposed Projects, 2006-2020*

COUNTY/System		New Customers	Cost	Rehab	Source	Treatment	Tanks/ Pumps	Total
	Miles	Number	in \$1000	in \$1000	in \$1000	in \$1000	in \$1000	in \$1000
JOHNSON								-
Paintsville	182	1920	9,100					9,100
Total	182	1920	9,100					9,100

### PUBLIC WATER SYSTEMS

One public and one private water system serve Johnson County. Traditionally relying on the Levisa Fork for source, the City of Paintsville has constructed, operated, and maintained a municipal water system since the early part of this century, undergoing several major renovations and consistently maintaining a high quality service. The Paintsville system acquired the Johnson County Water District in the early 1980's and since that time has

# WATER SERVICE AREAS

## JOHNSON 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/>

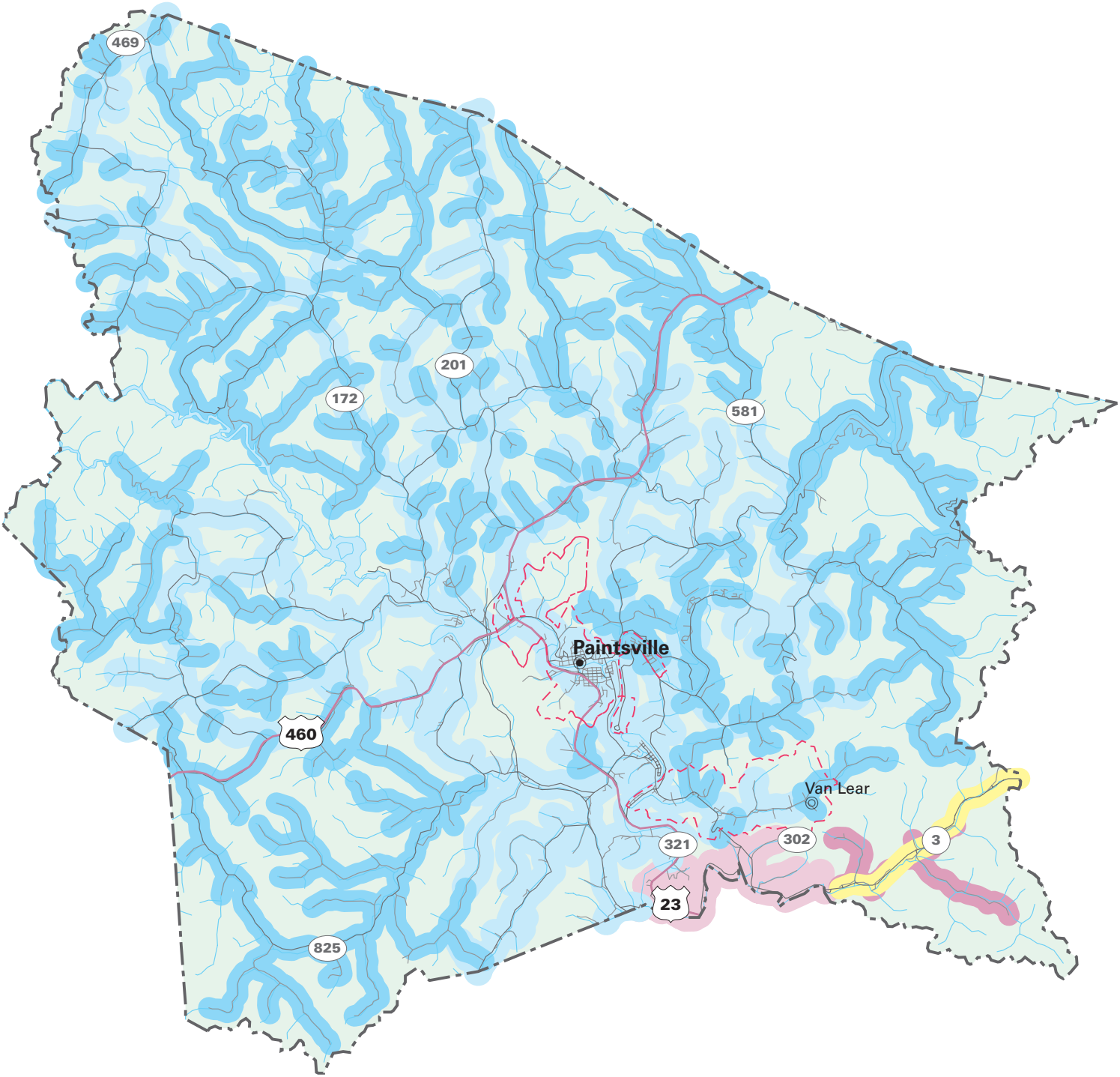
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Final GIS & Cartographic Operations By:  
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Kentucky Area Development Districts



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WATER SERVICE STATUS BY OWNER		
EXISTING SERVICE AREA	PROPOSED SERVICE AREA	
		PRESTONSBURG CITY UTILITIES COMMISSION
		PAINTSVILLE UTILITY COMMISSION
		AUXIER WATER COMPANY, INC

served as the sole public water utility in the County. Increasing demands for service in Johnson County and in neighboring counties prompts the system to expand and improve its region-serving infrastructure and broaden its management capacities. The City participates in an interlocal cooperation agreement with the Martin County Water District and the City of Prestonsburg, Johnson, Floyd, Pike, and Martin Counties, the Honey Branch Industrial Development Authority, and the Big Sandy Area Development District in a collaborative approach to providing water and wastewater infrastructure to the Honey Branch Industrial Park in Martin County.

The Auxier Water Company is a private water distribution system serving the easternmost portions of Johnson County, in the Johns Creek, KY Route 320, and KY Route 3 areas of the county. By agreement with its water supplier (Prestonsburg), the company will soon extend water service to several hundred households in Johnson County as a consequence of the infrastructure development to accommodate the new industrial park in Martin County.

#### **PAINTSVILLE MUNICIPAL WATER WORKS**

PWSID: .....	0580340
System Type:.....	COMMUNITY
Owner Type:.....	MUNICIPAL
Surface Source:.....	LEFT FORK BIG SANDY
Purchase Source:	
Well Source:	
Sells Water to:	
Treatment Plant Capacity (MGD):.....	3.00
Percent Daily Average Production:.....	60.00
Total Tank Storage Capacity (gallons):.....	2,833,000.00
Total Service Connections: .....	5,900.00
Number of Employees:.....	27.00
Treatment Operator Class:.....	3D
Distribution Operator Class:.....	4A
Customer Rate for 1,000 Gallons:.....	4.07
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 majority of Johnson County residents on "city water" are provided service by Paintsville City Utilities. The system draws its raw water from the Levisa Fork of the Big Sandy River. The quantity and quality of this source is subject to question, considering long-term supply needs and the growing regulatory requirements in regard to water quality. The City currently

services 5,101 residential and 428 commercial customers in Johnson County and 225 customers in Lawrence County. The City operates a water treatment plant that has a production capacity of 3.0 million gallons per day. On the average day, the plant produces approximately 1.8 million gallons of potable drinking water that is 60% of its designed capacity. The City's storage system (2,833,000 gallons) consists of eleven (11) water storage tanks located at various points within the City and Johnson County and a clear well located at its treatment facility. The calculated charge for 5,000 gallons of treated water (residential usage) in the city limits is \$20.36. Paintsville City Utilities has a total of 27 employees; five are certified water treatment plant operators, and ten are certified distribution operators. The other employees provide billing and financial oversight.

The need for water service expansion in Johnson County results primarily from the degradation of ground water as a long-term consequence of mining activity and oil and gas drilling. Additionally, residents of neighboring counties including Lawrence and Morgan Counties are requesting that the City extend water service into their areas because there is no other system that can feasibly serve them. The City of Paintsville and the City of Salyersville (Magoffin County) have an interconnection to provide emergency back up, however there is no formal written agreement regarding its usage. Requests for such regional supply are expected to continue for the foreseeable future, especially if an adequate source of raw water can be secured. In order to keep pace with growth demands along existing service mains throughout Johnson County neighboring counties and new, the system must secure an adequate, permanent water source, construct a new treatment plant, and upgrade transmission and distribution system facilities.

Paintsville City Utilities has initiated plans for the development of a raw water intake structure and a new 4 mgd treatment plant to be located on Paintsville Lake, near the dam, to be designed for future upgrading to 10 mgd. This, together with a 4 million-gallon reservoir to serve as both clear well and potable water storage, and transmission mains to the existing system will provide for all long-term water needs through the 20-year planning period. By this action the City would no longer rely on the Levisa Fork for water supply.

Construction expenses for the raw water intake structure are estimated at \$2,300,000; construction of a 4 mgd water treatment plant at estimated to be \$3,900,000; and construction of a 4.0 million gallon potable water storage tank at \$650,000. Total estimated project cost is \$6,850,000

#### **AUXIER WATER COMPANY**

The Auxier Water Company is a private water distribution system based in and serving the northernmost area of Floyd County and several communities in Johnson County. The Auxier Water Company is located in Floyd County and is described in detail in the Floyd county section

There is significant growth potential for the system in the Johnson County portion of its service area, principally along KY Route 3.

#### **PRIVATE DOMESTIC SYSTEMS**

About 9,800 people in Johnson county rely on private domestic water supplies: 9,500 on wells and 300 on hauled water, cisterns and other sources.

Most drilled wells in valley bottoms are adequate for a domestic supply. Fewer than half of the wells drilled on hillsides are adequate for a domestic supply except in areas south of Paintsville where about three-quarters of the wells on hillsides are adequate for domestic water supply. Some wells on ridges or hilltops are adequate for a domestic water supply. In the southern part of the county in the Van Lear area, drilled wells more than 200 feet deep in valleys yield enough water for small municipal or industrial supplies.

Most of the water from drilled wells is moderately to extremely hard and contains noticeable amounts of iron. In the eastern and southeastern half of the county salty water can be found in bedrock wells less than 100 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 gpm.



## MAGOFFIN COUNTY

### (Magoffin County Water Service Area Map)

- Estimated 1999 population of 13,900--65% on public water
- Estimated 2020 population of 15,200--80% on public water
- 230 miles of water line, with plans for additional 170 miles
- Estimated funding needs for public water 2000-2005--\$8,700,000
- Estimated funding needs for public water 2006-2020--\$11,700,000

Magoffin County had an estimated population of 13,853 (5,074 households) in 1999. Some 3,220 households (approximately 65%) were served by public water. The remainder relied primarily on wells. It is projected that the population of Magoffin County will be 15,200 (6,222 households) in the year 2020. Proposed water line extensions in the period 2000-2020 will serve another 940 households.

#### *Estimated Costs - Proposed Projects, 2000-2020*

COUNTY/System		New Customers	Cost	Rehab	Source	Treatment	Tanks/ Pumps	Total
	Miles	Number	in \$1000	in \$1000	in \$1000	in \$1000	in \$1000	in \$1000
MAGOFFIN								-
Salyersville				1,000	5,000			6,000
Magoffin Co. W/D	44	378	2,200				500	2,700
Total	44	378	2,200	1,000	5,000		500	8,700

#### *Estimated Costs - Proposed Projects, 2006-2020*

COUNTY/System		New Customers	Cost	Rehab	Source	Treatment	Tanks/ Pumps	Total
	Miles	Number	in \$1000	in \$1000	in \$1000	in \$1000	in \$1000	in \$1000
MAGOFFIN								-
Salyersville				1,000		3,000		4,000
Magoffin Co. W/D	123	563	6,200				1,500	7,700
Total	123	563	6,200	1,000		3,000	1,500	11,700

### PUBLIC WATER SYSTEMS

Two public water systems serve Magoffin County, a municipal system and a water district. The municipal system is managed by a utility commission and serves the City of Salyersville, the county seat. The system's service area extends outside the city limits in several directions for relatively short distances, with the exception of a service main along KY Route 40 which terminates at the Magoffin / Johnson County line. This system owns and operates a water

# WATER SERVICE AREAS

## MAGOFFIN 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/>

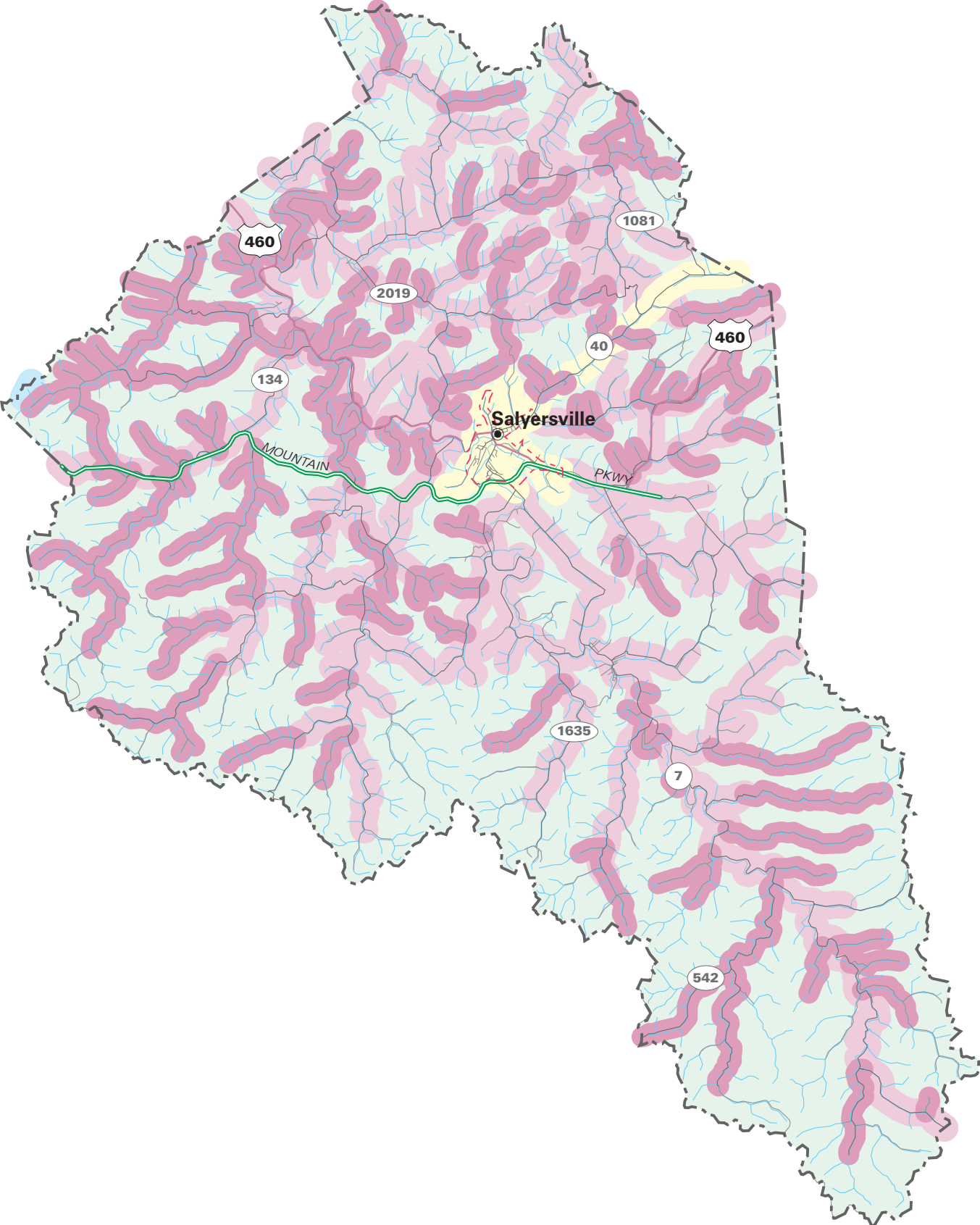
Bob Arnold, Chairman  
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Final GIS & Cartographic Operations By:  
Kent Anness & Kim Prough

Data Collection & GIS Input By:  
Kentucky Area Development Districts



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**WATER SERVICE STATUS BY OWNER**

EXISTING SERVICE AREA	PROPOSED SERVICE AREA	OWNER
		SALYERSVILLE WATER WORKS
		MORGAN COUNTY WATER DISTRICT
		MAGOFFIN COUNTY WATER DISTRICT



treatment plant and sells water to the water district. The current water source is the Licking River. Major issues relating to the flow characteristics of the Licking River, requires development of an alternative source(s) in the short-term (0-5 years) to meet projected demands for normal growth along existing service mains of both systems, as well as to accommodate any significant new water users of both systems. The water district has developed an impressive customer base in a relatively short period of time using conventional funding methods and assistance programs. Its success is credited largely to the dedication and sheer dogged determination and persistence of the board of commissioners and the system manager. At present the system has encountered some organizational issues which must be resolved so as not to jeopardize its development momentum.

#### **SALYERSVILLE MUNICIPAL WATER**

PWSID: ..... 0770566  
 System Type:..... COMMUNITY  
 Owner Type: ..... MUNICIPAL  
 Surface Source:..... LICKING RIVER  
 Purchase Source: ..... PAINTSVILLE CITY UTILITIES  
 Well Source: ..... Yes  
 Sells Water to: ..... MAGOFFIN COUNTY WATER DISTRICT  
 Treatment Plant Capacity (MGD):..... 2.00  
 Percent Daily Average Production:..... 62.00  
 Total Tank Storage Capacity (gallons): ..... 500,000.00  
 Total Service Connections: ..... 1,073.00  
 Number of Employees:..... 12.00  
 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 City of Salyersville, through its Utilities Commission, owns and operates a 2.0mgd water treatment plant. Raw water for this plant is withdrawn from the main stem of the Licking River, upstream from the Salyersville cut-through, near the Magoffin County High School. Storage capacity of the system is 500,000 gallons. The City distributes water to some 1,072 service connections--960 residential and 112 commercial. The system has 12

employees, including certified treatment plant operators, certified distribution system operators, and support staff.

Water treatment plant facilities are well maintained and are in excellent repair. Distribution system facilities are equally well maintained. Cleaning and restoration of storage facilities are underway presently. Future development potential for the system in the City is limited. Continued growth along State Road Fork (KY Route 40) is expected to continue at a rate of 10% each year. The Magoffin County Water District serves areas outside the City's current service area.

Timely resolution of the water source issue is critically important to the system. All local leadership is aware and focused on the problem. Members and the Superintendent of the Salyersville Utilities Commission, managers of the Magoffin County Water District, together with the Mayor, the County Judge-Executive, and citizens-at-large have actively participated in a community based water supply planning process, tasked to identify and prioritize alternative water sources for the County. To date, construction of one or more reservoirs, tapping a flooded former stone quarry, development of a well field into the Lee Formation, drawing water from Paintsville Lake, and modifying the Salyersville cut-through to increase storage have been advanced as those options considered to be most viable. Once the final steps of the preliminary analysis of the alternative water source are complete, the most cost-effective option must be selected.

Salyersville Utilities Commission and Magoffin County Water District have initiated plans for the development of an alternative raw water source. Projected demands for normal growth will require development of an alternative source of water within the next five years. Various alternatives have already been discussed and advanced as those options considered being most viable. The various alternative discussed are construction of one or more reservoirs, tapping a flooded stone quarry, development of a well field into the Lee Formation, drawing water from Paintsville Lake, and modifying the Salyersville cut-through to increase storage.

Preliminary costs on either the reservoir option, the use of the quarry, or the use of Paintsville Lake are estimated to be \$4,000,000. The well-field option appears the most cost

effective but remains the least acceptable from the perspective of most reliable in the long term.

**MAGOFFIN COUNTY WATER DISTRICT**

PWSID: ..... 0770525  
System Type: ..... COMMUNITY  
Owner Type: ..... WATER DISTRICT  
Surface Source:  
Purchase Source: .....SALYERSVILLE WATER WORKS  
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: ..... 2,342.00  
Number of Employees: ..... 8.00  
Treatment Operator Class: .....2D  
Distribution Operator Class:  
Customer Rate for 1,000 Gallons: ..... 5.74  
O/M costs 1997: ..... 499,880.00  
O/M costs per Service Connection: ..... 215.65  
Net Revenue 1997: ..... 23,571.00  
Total Water Produced 1997 (gallons): ..... 0.00  
Water Sold 1997 (gallons): ..... 116,391.00  
Unaccounted-for Water 1997 (%): ..... 8.26

The District's facilities consist in an extensive water distribution system constructed principally of PVC water lines, generally of 6" and 8" diameters, radiating from metered delivery points around Salyersville. The system has ten pumping stations and an equal number of water storage tanks, and a storage capacity of 495,000 gallons. There are 2, 296 service connections-- 2,260 residential and 36 commercial services. The system serves some 46 customers in Floyd County, along KY Route 114 and State Road Fork at the Magoffin / Floyd County line.

The future development potential for the District is excellent, in that significant growth can occur along existing service mains at both the low and high pressure sections of the system. Consequent upon the fact that existing service lines extend adjacent to large, developable tracts throughout Magoffin County, housing and industrial development is better able to occur than in those areas not yet served by water infrastructure. However, as indicated above, regarding the City of Salyersville, the District has a major stake in the issue of an alternative water source for the County. The fact that the two systems have worked so

closely together in providing extensive service throughout the County to date portends well for a mutually beneficial resolution to the source problem.

Projected demands for normal growth will require development of an alternative source of water within the next five years. Various alternatives have already been discussed, including construction of one or more reservoirs, tapping a flooded stone quarry, development of a well field into the Lee Formation, drawing water from Paintsville Lake and modifying the Salyersville cut-through to increase storage.

Preliminary costs on either the reservoir option, the use of the quarry, or the use of Paintsville Lake are estimated to be \$4,000,000. The well-field option appears the most cost effective but remains the least acceptable from the perspective of most reliable in the long term.

#### PRIVATE DOMESTIC SYSTEMS

About 4,800 people in Magoffin county rely on private domestic water supplies: 4,650 on wells and 150 on hauled water, cisterns and other sources.

Most wells drilled in valley bottoms are adequate for domestic use. Fewer than half of the wells drilled on hillsides are adequate for domestic supply and even less of the wells on hilltops and ridges produce enough water for a domestic supply. Wells in the southern third of the county generally produce slightly more water with the potential to produce yields great enough to supply small municipal or industrial supplies in wells below 200 feet.

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. Ground-water quality is slightly better in the southern third of the county with moderately hard water and salty water found occasionally in the 100-feet and deeper range.

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

## MARTIN COUNTY

### (Martin County Water Service Area Map)

- Estimated 1999 population of 11,900--67% on public water
- Estimated 2020 population of 10,600--81% on public water
- 170 miles of water line, with plans for additional 42 miles
- Estimated funding needs for public water 2000-2005--\$10,800,000
- Estimated funding needs for public water 2006-2020--\$1,800,000

Martin County had an estimated population of 11,939 (4,319 households) in 1999. Some 2,920 households (approximately 67%) were served by public water. The remainder relied primarily on wells. It is projected that the population of Martin County will be 10,600 (4,302 households) in the year 2020. Proposed water line extensions in the period 2000-2020 will serve another 600 households, so that public water will be provided to about 81% of the county's population.

#### *Estimated Costs - Proposed Projects, 2000-2005*

COUNTY/System		New Customers	Cost	Rehab	Source	Treatment	Tanks/ Pumps	Total
	Miles	Number	in \$1000	in \$1000	in \$1000	in \$1000	in \$1000	in \$1000
MARTIN								-
Martin Co. W/D	6	200	300	1,000	2,000	2,000	5,506	10,806
Total	6	200	300	1,000	2,000	2,000	5,506	10,806

#### *Estimated Costs - Proposed Projects, 2006-2020*

COUNTY/System		New Customers	Cost	Rehab	Source	Treatment	Tanks/ Pumps	Total
	Miles	Number	in \$1000	in \$1000	in \$1000	in \$1000	in \$1000	in \$1000
MARTIN								-
Martin Co. W/D	36	402	1,800					1,800
Total	36	402	1,800					1,800

### PUBLIC WATER SYSTEMS

The Martin County Water District is the only community water system in Martin County and, by jurisdiction, is co-terminus with the county boundaries. There are 2 non-community systems in Martin County. Consequent upon the recent merger (1997) of Martin County Water District 1 and Martin County Water District 2, the new county-wide District has achieved some economies of scale and has been able to retain a much needed full time

# WATER SERVICE AREAS

## MARTIN 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	
		MARTIN COUNTY WATER DISTRICT
		BIG SANDY WATER DISTRICT/LAWRENCE COUNTY WATER DISTRICT



manager. The District relies upon the Crum Reservoir and an intake in the Tug Fork of the Big Sandy River at Turkey for raw water. The river intake requires a complete replacement to assure full benefit of the source during low flow conditions. Additionally, extensive renovation is needed at the water treatment plant to meet system demands and comply with mandated drinking water standards.

### **MARTIN COUNTY WATER DISTRICT**

PWSID: ..... 0800443  
 System Type:  
 Owner Type: ..... WATER DISTRICT  
 Surface Source: ..... LAKE  
 Purchase Source: ..... MOUNTAIN WATER  
 Well Source:  
 Sells Water to:  
 Treatment Plant Capacity (MGD): ..... 2.00  
 Percent Daily Average Production: ..... 0.00  
 Total Tank Storage Capacity (gallons): ..... 3,100,000.00  
 Total Service Connections: ..... 3,105.00  
 Number of Employees: ..... 9.00  
 Treatment Operator Class:  
 Distribution Operator Class:  
 Customer Rate for 1,000 Gallons: ..... 4.04  
 O/M costs 1997: ..... 368,109.00  
 O/M costs per Service Connection: ..... 272.27  
 Net Revenue 1997: ..... 107,396.00  
 Total Water Produced 1997 (gallons): ..... 0.00  
 Water Sold 1997 (gallons): ..... 91,570,000.00  
 Unaccounted-for Water 1997 (%): ..... 50.19

The District was organized in the late 1960's and constructed a small reservoir as a source together with a treatment plant, service mains and ground storage tanks to serve Inez and surrounding communities in the western portion of the County. Several years later a distribution system was developed to begin serving the eastern portion of the county, relying on the same reservoir and treatment plant for source. Through several major line extension projects many customers were brought onto the system, requiring the development of an intake and raw water transmission main from the Tug Fork, and subsequently a plant modification to increase treatment capacity. The system is again at this same place: the treatment plant must be increased and the existing raw water intake requires relocation. While the District has water purchase agreements with the City of Kermit, WV, and

Mountain Water District in Pike County, unpredictability as to available volumes and water prices dictate that the District expand its own facilities.

Treatment capacity is 2mgd. The water source is Curtis Crum Reservoir. Storage capacity is 3,100,000 gallons. Of the District's 3,105 current service connections, 2,921 are residential and 184 are commercial. Consequent upon the recent merger there is still two distinct service rates in place. The current consumer cost for 5,000 gallons of water in Section A is \$26.20 and in Section B is \$15.65.

Historically, first as two distinct systems (Martin County WD 1 & 2), and now the merged, the District has been confronted with high water loss, stemming from a variety of causes, including improper construction inspection, failure of service tubing over time, and lack of consistent management. The issue is now uppermost among the District's priorities. Relying on assistance provided via the Kentucky Rural Water Association and others, the District is focusing on a systemic approach to loss control. The District has advanced an aggressive meter management program together with a line-break identification and repair program. These are consuming staff and monetary resources, but with significant return on this investment.

Taking into consideration the reduction of water loss to the 12-15% level, there is still need for additional capacity to meet system demand. The proposed re-development of the intake on the Tug Fork is critical. At present low flows during periodic drought conditions leave the system vulnerable to insufficient supply. The new intake project will correct this situation by locating the structure downstream into a deeper pooling area with a solid bottom. Similarly, the proposed renovation of the treatment plant will correct an array of deficiencies and allow the system to meet all current service demand with sufficient design capacity to meet the demand of the expected growth in the County.

Potential development of the system is excellent. The District is soon to bid a major extension project, affecting among other communities the KY Route 3 area to the new Honey Branch Industrial Park. The District has assumed a pivotal role in the infrastructure development for this project that includes the construction of a 1,300-bed facility for the Federal Bureau of Prisons. The District is a major participant in an interlocal cooperation

agreement. The City of Paintsville, the City of Prestonsburg, the Fiscal Courts of Martin, Johnson, Floyd, and Pike Counties, the Honey Branch Industrial Development Authority, and the Big Sandy Area Development District have joined in a collaborative approach to providing water and wastewater infrastructure to the Honey Branch Industrial Park in Martin County. Consequent upon this project, the District and the City of Prestonsburg will each have water distribution facilities in place to provide mutual emergency back up to attenuated portions of their respective service mains as the need may arise in the future.

Normal growth potential along existing service mains is also excellent for the District and can be expected to continue through the short term (2000-2005) at a minimum of 10% each year. The District, like all other utilities, has traditionally expanded into those areas most feasibly (most cost effectively) served. Areas remaining to be served will require more costly facilities and the pace of this growth is reasonably expected to slow through the long term (2005-2020). However, it is also reasonable to expect that based on ground water quality and availability over 95% of households in Martin County will be served by the District by or before the end of the long term.

The Martin County Water District is planning the complete replacement of its existing raw water intake on the Tug Fork, complete with structure, transmission line, and pumps. Total estimated cost on this project is \$ 507,000.

Additionally, the water treatment plant at Inez will undergo major modifications to the extent of reconstruction of all major components, including clarification, filter gallery, disinfection, pumps, controls, and related appurtenances. The estimated cost for this project is \$4,200,000. Total estimated cost of the intake and the plant projects is \$ 4,707,000.

## OTHER SYSTEMS

### **MARTIN COUNTY COAL CORP.**

Martin County Coal Corp. is located in Martin County. The system serves a population of 32 with 1 service connections. The water source for the private, non-transient, non-community system is ground water from wells.

#### **FAST LANE IV**

Fast Lane IV is located in Martin County. The system serves a population of 100 with 1 service connections. The water source for the private, transient, non- community system is ground water from wells.

#### **PRIVATE DOMESTIC SYSTEMS**

About 4,000 people in Martin county rely on private domestic water supplies: 3,850 on wells and 150 on hauled water, cisterns and other sources.

Most wells drilled in valley bottoms are adequate for a modern domestic supply. Nearly three-quarters of the wells drilled on hillsides are adequate for a domestic supply except in the northern third of the county where only half of drilled wells on hillsides produce enough water for domestic use. Wells on hilltops and ridges yield smaller quantities of water. In the central and southern two-thirds of the county, drilled wells more than 200 feet deep in valleys may yield enough water for small municipal or industrial supplies.

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 in wells drilled less than 100 feet below the level of the principal valley bottoms, except in the northern third of the county where salty water can be found as shallow as 50 feet.

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

## PIKE COUNTY

### (Pike County Water Service Area Map)

- Estimated 1999 population of 72,000--47% on public water
- Estimated 2020 population of 70,400--77% on public water
- 600 miles of water lines, with plans for additional 440 miles
- Estimated funding needs for public water 2000-2005--\$19,000,000
- Estimated funding needs for public water 2006-2020--\$29,000,000

Pike County had an estimated population of 72,000 (27,827 households) in 1999. Some 13,000 households (approximately 47%) were served by public water. The remainder relied primarily on wells. It is projected that the population of Pike County will be 70,400 (30,300 households) in the year 2020. Proposed water line extensions in the period 2000-2020 will serve another 9,200 households.

#### *Estimated Costs - Proposed Projects, 2000-2005*

COUNTY/System		New Customers	Cost	Rehab	Source	Treatment	Tanks/ Pumps	Total
	Miles	Number	in \$1000	in \$1000	in \$1000	in \$1000	in \$1000	in \$1000
PIKE								-
Mountain W/D	117	2616	7,000			8,000	3,000	18,000
Pikeville				1,000				1,000
Total	117	2616	7,000	1,000		8,000	3,000	19,000

#### *Estimated Costs - Proposed Projects, 2006-2020*

COUNTY/System		New Customers	Cost	Rehab	Source	Treatment	Tanks/ Pumps	Total
	Miles	Number	in \$1000	in \$1000	in \$1000	in \$1000	in \$1000	in \$1000
PIKE								-
Mountain W/D	320	6590	16,000			8,000	4,000	28,000
Pikeville				1,000				1,000
Total	320	6590	16,000	1,000		8,000	4,000	29,000

## PUBLIC WATER SYSTEMS

There are three major public systems in Pike County, two municipal systems, one of which is very small, and a water district: there are also 4 small private community systems and 10 non-community systems. All three major systems have water treatment plants, however the water district supplies only a small percentage of its customers with water it produces. The water district purchases the majority of its water from two municipal systems, Pikeville and

# WATER SERVICE AREAS

## PIKE 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/>

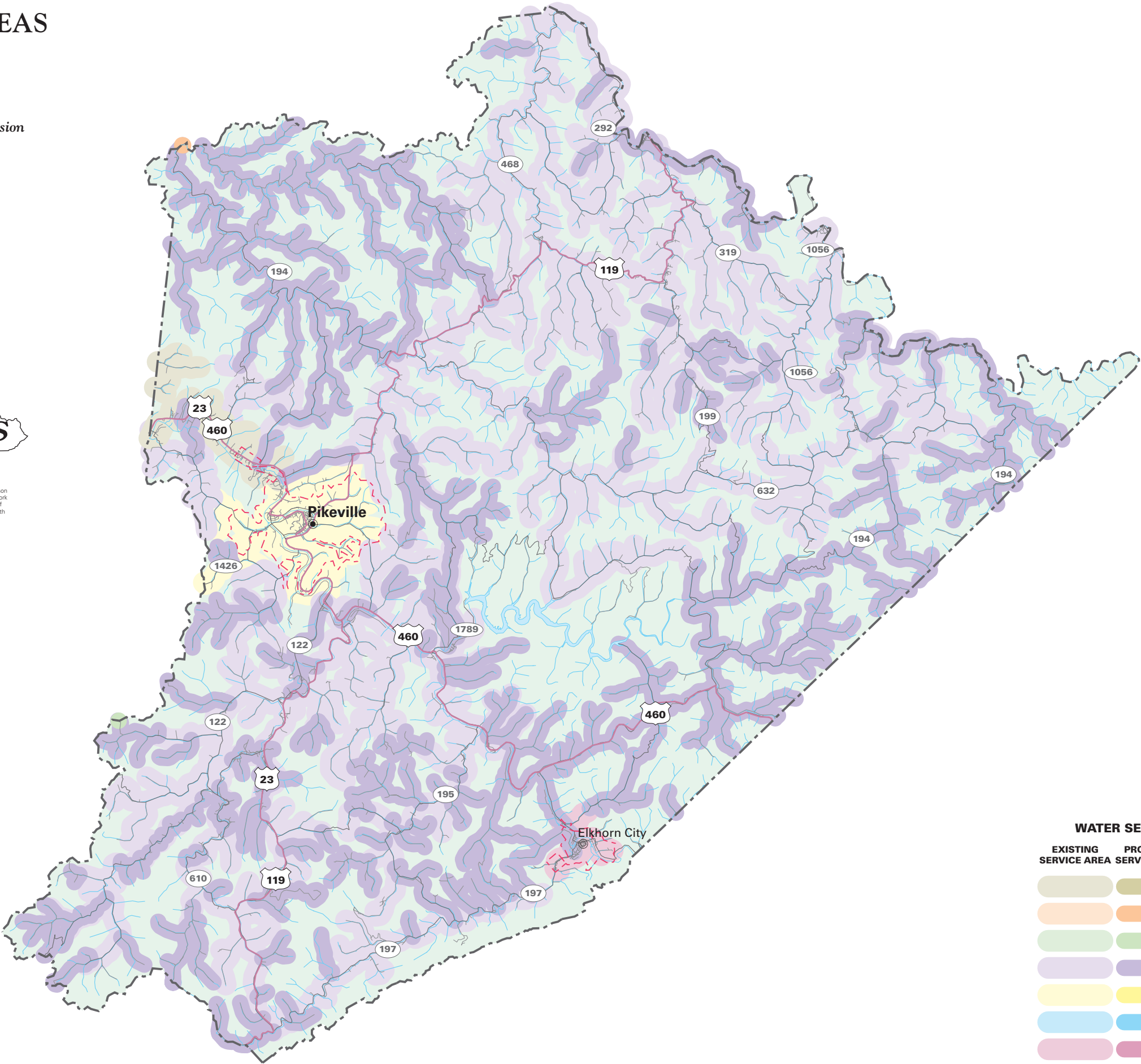
Bob Arnold, Chairman  
Lawrence Wetherby, Executive Director

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

Data Collection & GIS Input By:  
Kentucky Area Development Districts



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.



WATER SERVICE STATUS BY OWNER		
EXISTING SERVICE AREA	PROPOSED SERVICE AREA	
		SANDY VALLEY WATER DISTRICT
		PRESTONSBURG CITY UTILITIES COMMISSION
		MUD CREEK WATER DISTRICT
		MOUNTAIN WATER DISTRICT
		CITY OF PIKEVILLE
		CITY OF JENKINS
		CITY OF ELKHORN CITY

the City of Williamson, West Virginia. Generally, water source issues are not problematic in Pike County; the Russell Fork, the Levisa Fork, and the Tug Fork are reliable sources. Fishtrap Reservoir, upstream from Pikeville, can augment flows of the Levisa at Pikeville, assuring, by agreement, that a withdrawal of 6.0mgd will be possible at all times.

The small municipal system, Elkhorn City, provides service primarily to residents of the City. The Pikeville distribution system primarily serves its residential communities. However the City's water treatment plant was designed as a region-serving facility and sells water to three adjacent water districts. The plant and intake facility are undergoing renovation at present. The Pikeville system is managed pursuant to a contract with a private operations and maintenance company, since the mid 1980's.

Mountain Water District's development of facilities and expansion of service throughout Pike County can only be described as meteoric. With the exception of those relatively small areas served by several of the former water districts (Marrowbone Water District, Shelby Valley Water District, Pond Creek Water District, and Johns Creek Water District) virtually all water development in the County has occurred within the last 15 years via the Mountain Water District. A product of an extensive merger, the new district has encountered significant growth pains. However, the basic hydraulic plan for this incomparably large system within the Big Sandy Region is sound. Management achieves increasingly better control of routine operations as well as continued expansions over time.

#### **ELKHORN WATER DEPARTMENT**

PWSID: ..... 0980120  
 System Type:..... COMMUNITY  
 Owner Type:..... MUNICIPAL  
 Surface Source:..... RUSSEL FORK  
 Purchase Source:  
 Well Source:  
 Sells Water to:  
 Treatment Plant Capacity (MGD):..... 0.40  
 Percent Daily Average Production:..... 60.00  
 Total Tank Storage Capacity (gallons): ..... 200,000.00  
 Total Service Connections: ..... 655.00  
 Number of Employees:..... 4.00  
 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

Elkhorn City Water Department is located in Pike County. This municipal system is located on the Russell Fork and consists in a 0.4mgd water treatment plant and two storage tanks (207,000 gallons) supplying its distribution system. The water source is Russell Fork/Levisa Fork of the Big Sandy River. The system is currently operating at approximately 50% of capacity. Generally, the extent of the system is co-terminus with the City's corporate boundaries. There are 655 customer connections of which 585 are residential and 70 are commercial. The system is operated by a certified water treatment plant operator who is also a Class II distribution system operator. Two additional staff assists him. There is one support staff/clerk providing financial management for the system.

#### **PIKEVILLE WATER DEPARTMENT**

PWSID: ..... 0980350  
 System Type: ..... COMMUNITY  
 Owner Type: ..... MUNICIPAL  
 Surface Source: ..... LEVISA FORK OF BIG SANDY  
 Purchase Source:  
 Well Source:  
 Sells Water to: ..... SANDY VALLEY WATER DISTRICT  
 Treatment Plant Capacity (MGD): ..... 6.00  
 Percent Daily Average Production: ..... 58.00  
 Total Tank Storage Capacity (gallons): ..... 2,660,000.00  
 Total Service Connections: ..... 2,950.00  
 Number of Employees: ..... 10.00  
 Treatment Operator Class: ..... 2D  
 Distribution Operator Class: ..... 4A  
 Customer Rate for 1,000 Gallons: ..... 4.32  
 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 Pikeville operates the water utility as a department of city government. The City contracts with Professional Service Group, a private contractor, for provision of all services related to operation and management of this system. The contractor employs 5 certified water treatment plant operators and 5 certified distribution system operators to



manage the system. The City has a 4.5mgd water treatment plant, designed for upgrading to 6.0mgd, which is currently in planning. The water source is Levisa Fork of the Big Sandy river. New filter beds and new high service pumps at the intake, together with a 5<sup>th</sup> filter gallery at the treatment plant, will allow the increase treatment to 6.0mgd. Financing for the renovation of the intake system and plant modifications is in place. Principal construction material of transmission and service mains is ductile iron and PVC. Storage capacity is 2,660,000 gallons. Storage is provide by the system's 1.1mg clear well and an additional 15 ground storage tanks ranging in capacity from 30,000 gallons to 1.0mg located throughout the system. Of the 2,950 customer connections, 2,395 are residential and 555 are commercial. Included in the commercial sales totals as one discrete customer each are those water purchase contracts with Mountain Water District, Mud Creek Water District, and Sandy Valley Water District. The in-city customer pays \$17.25 for 5,000 gallons of water, while the out-of-city customer on the City's system pays \$25.95. The rate charged the respective water districts varies according to point of sale.

The development potential for the City of Pikeville is generally good based on the expected continuing growth along existing service mains. Unincorporated areas outside the radius of the City are presently served by either Mountain Water or the Sandy Valley Water District, and the respective growth of these systems will obviously impact the Pikeville system's future consequent upon their reliance on the City for treated water.

#### **MOUNTAIN WATER DISTRICT**

PWSID: ..... 0980575  
 System Type:..... COMMUNITY  
 Owner Type:..... WATER DISTRICT  
 Surface Source:..... RUSSELL FORK/LEVISA FORK  
 Purchase Source:  
 Well Source:  
 Sells Water to:  
 Treatment Plant Capacity (MGD):..... 0.60  
 Percent Daily Average Production:..... 74.00  
 Total Tank Storage Capacity (gallons): ..... 7,700,000.00  
 Total Service Connections: ..... 10,300.00  
 Number of Employees:..... 51.00  
 Treatment Operator Class: .....3D  
 Distribution Operator Class:.....3A  
 Customer Rate for 1,000 Gallons:..... 6.44  
 O/M costs 1997:..... 3,548,047.00  
 O/M costs per Service Connection: ..... 357.95

Net Revenue 1997: .....	893,262.00
Total Water Produced 1997 (gallons):.....	184,768,000.00
Water Sold 1997 (gallons):.....	693,061,000.00
Unaccounted-for Water 1997 (%): .....	26.74

Created by the merger of the Johns Creek, Pond Creek, Marrowbone Creek, and Shelby Valley water districts, the countywide District has grown in the last twelve years to be the largest water distributor in eastern Kentucky. The system has 10,452 service connections, of which 9,315 are residential and 1,137 are commercial/other. There are 50 water storage tanks in the system ranging from 1,000g to 1.0mg. The majority of tanks range from 100,000 to 300,000 gallons with a total, system wide storage capacity of 7.7mg. Managed by a five-member commission, the superintendent and 51 employees operate a 0.6 mgd water treatment plant, and maintain the massive distribution system of 479 miles of line.

The small, antiquated Marrowbone water plant is costly to operate and will be taken out of service once the proposed 2.0mgd, expandable to 4.0mgd plant is constructed. To be located at Road Fork on US 460, in the southeastern portion of the county, the new plant will provide service capacity to the District in two directions via 12" mains, back towards existing lines now served by the Marrowbone plant and toward Grapevine via Ferrel's Creek. Additionally, the plant will provide a cost-effective alternative to the City of Elkhorn City as it considers replacement of its treatment plant.

The District has encountered significant growth pains consequent upon its accelerated construction and its desire to respond to ever continuing demand for expanded service in the last several years, sometimes at the expense of routine operation and maintenance. However, an aggressive water loss control program focused on main line breaks has yielded major loss reductions. An equally aggressive program focused on service lines and meter settings is now underway and is expected to achieve similar results.

The District's potential for development is limited only by its capacity to serve, i.e., the design limits of its existing infrastructure. The system's basic hydraulic plan is structurally sound and capable of meeting the demands of future growth and development. Supported by a consumer willingness to pay more than has been the norm in other communities, needed expansions are presently held to small, incremental projects as a consequence of limited fiscal assistance at the state and federal levels.

Mountain Water District has current plans calling for construction of a new 2.0 mgd water treatment plant with the capability of expanding to a 4.0 mgd. The new plant is to be located at Road Fork on US 460, in the southeastern portion of the county and will provide service capacity to the District in two directions via 12" mains, back towards existing lines now served by the Marrowbone plant and toward Grapevine via Ferrel's Creek.

Total project costs on the proposed plant project are: \$ 4,970,994.90

## OTHER SYSTEMS

### **WHITE ACRES MOBILE HOME PARK**

White Acres Mobile Home Park is located in Pike County and serves a population of 26 with 8 service connections. The private, community system has a treatment capacity of 5000 gallons per day. The water source is ground water from wells.

### **LIN-CORB MOBILE HOME PARK**

Lin-Corb Mobile Home Park is located in Pike County and serves a population of 23 with 23 service connections. The private, community system has a treatment capacity of gallons per day and a storage capacity of gallons. The water source is ground water from wells..

### **ROADFORK DEV/CALLOWAY MINE**

Roadfork Dev/Calloway Mine is located in Pike County and serves a population of 42 with 1 service connection. The private, non-transient non-community system has a treatment capacity of 7,000 gallons per day. The water source is ground water from wells.

### **GRIFFEY TRAILER PARK**

Griffey Trailer Park serves a population of 28 with 8 service connections. The private, community system has a treatment capacity of 5,000 gallons per day. The water source is ground water from wells.

### **JOHNSON MOBILE HOME PARK**

Johnson Mobile Home Park serves a population of 15 with 20 service connections. The private, transient non-community system has a treatment capacity of 1,100 gallons per day. The water source is ground water from wells.

**SLONES TRAILER PARK**

Slones Trailer Park serves a population of 52 with 13 service connections. The private, community system has a treatment capacity of 8,000 gallons per day. The water source is ground water from wells.

**UPPER LEVISA HEALTH CLINIC**

Upper Levisa Health Clinic is located in Pike County and serves a population of 75 with 1 service connection. The private, non-transient non-community system has a treatment capacity of 7,200 gallons per day. The water source is ground water from wells.

**FEDS CREEK HIGH SCHOOL**

Feds Creek High School serves a population of 425 with 1 service connection. The local, non-transient non-community system has a treatment capacity of 30,000 gallons per day. The water source is ground water from wells.

**JACKSON ROWE ELEMENTARY SCHOOL**

Jackson Rowe Elementary School serves a population of 275 with 1 service connection. The local, non-transient non-community system has a treatment capacity of 30,000 gallons per day. The water source is ground water from wells.

**PIKEVILLE COAL CO-CHISHOLM MINE**

Pikeville Coal Co-Chisholm Mine serves a population of 240 with 1 service connection. The private, non-transient non-community system has a treatment capacity of 40,000 gallons per day. The water source is ground water from wells.

**LODESTAR ENERGY**

Lodestar Energy serves a population of 33 with 2 service connections. The private, non-transient non-community system has a treatment capacity of 6,000 gallons per day. The water source is ground water from wells.

**L & J COAL MART**

L & J Coal Mart serves a population of 30 with 1 service connection. The private, transient non-community system has a treatment capacity of 7,000 gallons per day. The water source is ground water from wells.

**FAMILY FUN BOWLING INC**

Family Fun Bowling Inc serves a population of 25 with 2 service connections. The private, transient non-community system has a treatment capacity of 5,000 gallons per day. The water source is ground water from wells.

**COSTAIN COAL INC**

Costain Coal Inc serves a population of 40 with 1 service connection. The private, transient non-community system has a treatment capacity of 8000 gallons per day. The water source is ground water from wells.

**ROADFORK DEV/BURNWELLS**

Roadfork Dev/Burnwells Energy serves a population of 31 with 1 service connection. It is a private, non-transient non-community system. The water source is ground water from wells. There are people employed.

**PRIVATE DOMESTIC SYSTEMS**

About 38,000 people in Pike county rely on private domestic water supplies: 36,000 on wells and 2,000 on hauled water, cisterns and other sources.

More than three-quarters of the wells drilled in valley bottoms and almost three-quarters of the wells drilled on hillsides are adequate for domestic supply needs. Only some wells on hilltops and ridges are adequate for domestic needs. Drilled wells more than 200 feet deep in valleys may yield enough water for small municipal or industrial supplies.

Ground water obtained from most wells is moderately hard and contains noticeable amounts of iron. In the northwestern quarter of the county, salty water may be found in wells less than 100 feet below the level of the principal valley bottoms. In the rest of the 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 produces less than 5 gpm.