

Strategic Water Resource Development Plan

Summary of Wastewater Treatment Systems

FIVCO Area Development District

Water Resource Development Commission

March, 2000

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FIVCO AREA DEVELOPMENT DISTRICT

**P.O. Box 636
 3000 Louisa Street
 Catlettsburg, Ky 41129
 (606) 739-5191**

• ADD SEWER SUMMARY

ADD Sewer Service (map)

- Estimated 1999 population of 134,000--42% on public sewer
- Estimated 2020 population of 133,000--60% on public sewer
- Proposed projects would connect about 11,000 new households to public sewer during 2000-2020
- Estimated funding needs for public sewer 2000-2005--\$44,700,000
- Estimated funding needs for public sewer 2006-2020--\$55,400,000

The FIVCO Area Development District region had an estimated population of 133,731 (53,885 households) in 1999 with a projected population of 133,011 (58,213 households) in 2020. Public sewer systems serve 56,000 area residents, or 42 percent of the population. Proposed sewer line extensions for the period 2000-2020 would provide service to an additional 11,000 households. About 78,000 people in the region currently rely on onsite treatment systems.

Estimated populations and public sewer service for the five counties in the region is given below (18 public sewer systems serve the region):

County	1999 Pop	On Public	2020 Pop	On Public
Boyd	48,000	26,400 (55%)	43,400	42,900 (99%)
Carter	26,700	5,600 (21%)	30,000	6,900 (23%)
Elliott	6,500	845 (13%)	6,300	760 (12%)
Greenup	36,800	20,200 (55%)	35,500	24,800 (70%)
Lawrence	15,700	3,300 (21%)	17,800	4,100 (23%)
<i>Region</i>	<i>134,000</i>	<i>56,300 (42%)</i>	<i>133,000</i>	<i>79,500 (60%)</i>

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

EXISTING & PROPOSED SEWER SERVICE

FIVCO
Kentucky

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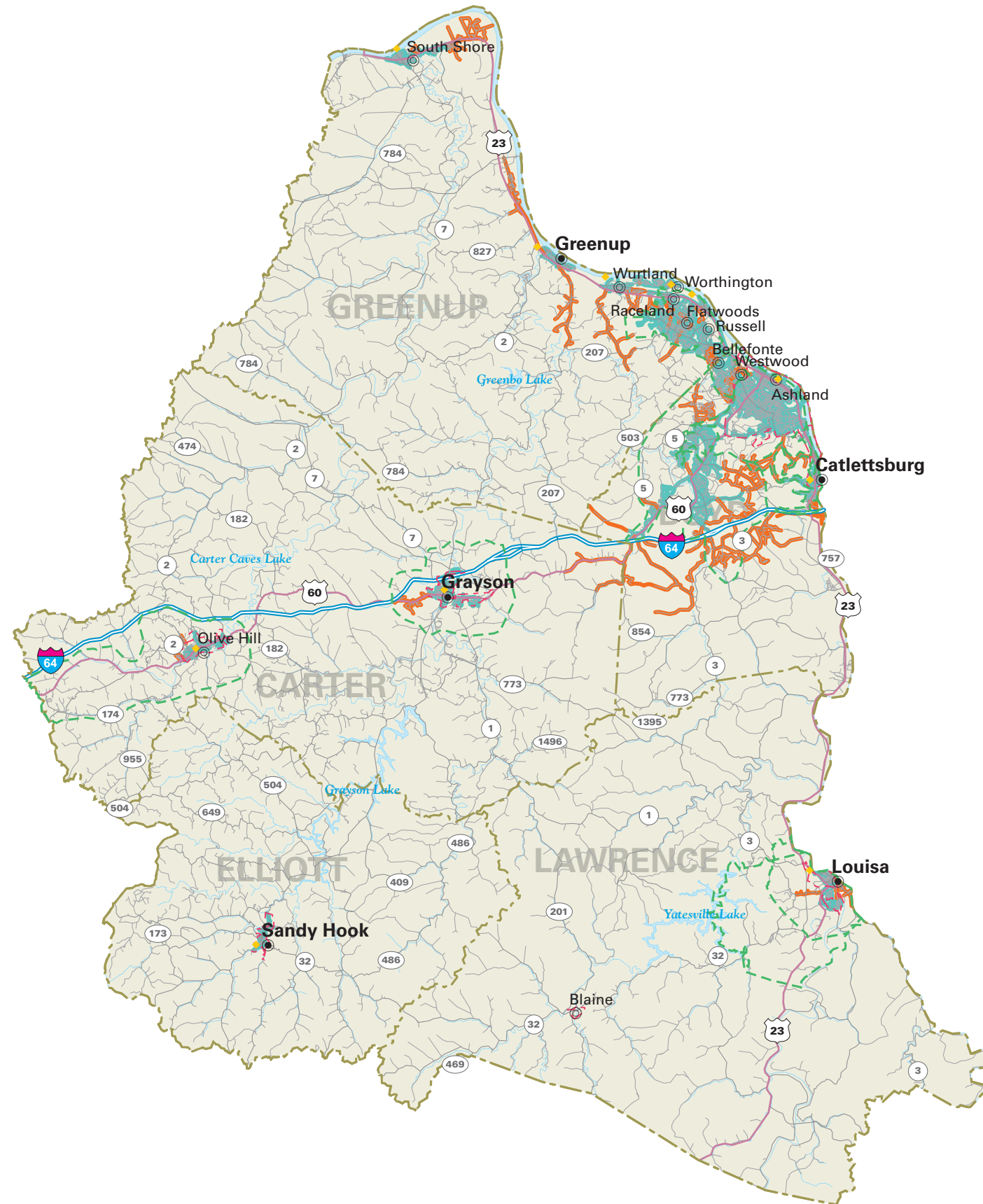
Final GIS & Cartographic Operations By:
Kent Anness & Kim Anness

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.

- - - 201k Facility Planning Area
- - - Incorporated City Boundary
- ◆ Sewage Treatment Plant



SEWER SERVICE
— Existing Sewer Service
— Proposed Sewer Service

Proposed Projects 2000-2005

System	New Customers Served	Cost (\$1000)	Line Upgrade (\$1000)	Treatment Expansion (\$1000)	New Treatment (\$1000)	Lift Stations, and other (\$1000)	Total Costs (\$1000)
BOYD							-
Ashland	100	1,200					1,200
Boyd County Fiscal Court	2,000	9,000			5,000		14,000
Catlettsburg	250	2,000		1,000			3,000
Sanitation District #2	150	600					600
Sanitation District #4	2,000	10,000					10,000
County Total	4,500	22,800		1,000	5,000		28,800
							-
CARTER							-
Grayson		2,000					2,000
Olive Hill		800	-	611	-	-	1,411
Total	220+ind	2,800	-	611			3,411
							-
ELLIOTT							none
							-
GREENUP							-
Flatwood SX21008909	20	-	1,400	-			1,400
Raceland SX21008906	70	200	-	-			200
Wurtland	500	5,500	1,300	-			6,800
Worthington SX21008902	-	-	-	500			500
Greenup County Environmental Commission SX21008911	---	---	-	-			-
County Total	590	5,700	2,700	500			8,900
							-
LAWRENCE							-
Lawrence County Fiscal Court SX21012701	80	1,000	-	-	-	600	1,600
SX21012702	---	1,500	-	500	-	-	2,000
County Total	120	2,500		500		600	3,600
							-
FIVCO ADD Total	5,430	33,800	2,700	2,611	5,000	600	44,711

Proposed Projects 2006-2020

System	New Customers Served	Cost (\$1000)	Line Upgrade (\$1000)	Treatment Expansion (\$1000)	New Treatment (\$1000)	Lift Stations, and other (\$1000)	Total Costs (\$1000)
BOYD							-
Ashland	50	1,800	-	-	?		1,800
Boyd County Fiscal Court	3,000	14,000	-	8,000			22,000
Sanitation District #2	135	800	-	-			800
Sanitation District #4	1,000	10,000	-	-			10,000
County Total	4,185	26,600		8,000			34,600
							-
							-
GREENUP							-
Flatwood	-	-	660	-			660
Raceland	70	500	-	-			500
Russell	40	330	-	-			330
Greenup County Environmental Commission	-	-	-	3,000			3,000
South Shore	300	5,000	-	-			5,000
Sanitation District #1	-	-	1,300	-			1,300
Wurtland	1,000	10,000	-	-			10,000
Total	1,410	15,830	1,960	3,000			20,790
							-
LAWRENCE							none
BIG SANDY ADD Total	5,595	42,430	1,960	11,000			55,390

BOYD COUNTY

Boyd County Sewer Service (map)

- Estimated 1999 population of 48,000--55% on public sewer
- Estimated 2020 population of 43,400--99% on public sewer
- Proposed projects would connect about 8,700 new households to public sewer during 2000-2020
- Estimated funding needs for public sewer 2000-2005--\$28,800,000
- Estimated funding needs for public sewer 2006-2020--\$34,600,000

Boyd County had an estimated population of 48,022 (20,200 households) in 1999 with a projected population of 43,412 (19,721 households) in 2020. Public sewer is provided to about 55 percent of the county's residents. About 9,000 households in the county use on-site wastewater treatment. About 8,700 customers could be added to public sewer service through new line extensions in 2000-2020.

BOYD COUNTY SEWER PLAN

Proposed Projects 2000-2005

System	New Customers Served	Cost (\$1000)	Line Upgrade (\$1000)	Treatment Expansion (\$1000)	New Treatment (\$1000)	Lift Stations, and other (\$1000)	Total Costs (\$1000)
BOYD							-
Ashland SX21001904	100	1,200					1,200
Boyd County Fiscal Court SX21001902	2000	9,000			5,000		14,000
Catlettsburg	250	2,000		1,000			3,000
Sanitation District #2 SX21001925	150	600					600
Sanitation District #4 SX21001907	2000	10,000					10,000
Boyd County Total	4,500	22,800		1,000	5,000		28,800

Proposed Projects 2006-2020

System	New Customers Served	Cost (\$1000)	Line Upgrade (\$1000)	Treatment Expansion (\$1000)	New Treatment (\$1000)	Lift Stations, and other (\$1000)	Total Costs (\$1000)
BOYD							-
Ashland SX21001905	50	1,800			?		1,800
Boyd County Fiscal Court SX21001903	3,000	14,000		8,000			22,000
Sanitation District #2 SX21001901	135	800					800
Sanitation District #4 SX21001906	1,000	10,000					10,000
Boyd County Total	4,185	26,600		8,000			34,600

Five sewer districts operate within the boundaries of Boyd County, Kentucky. The five districts are the City of Ashland Department of Utilities, the Boyd County Sewer District,

SEWER SERVICE AREAS

BOYD COUNTY

Kentucky

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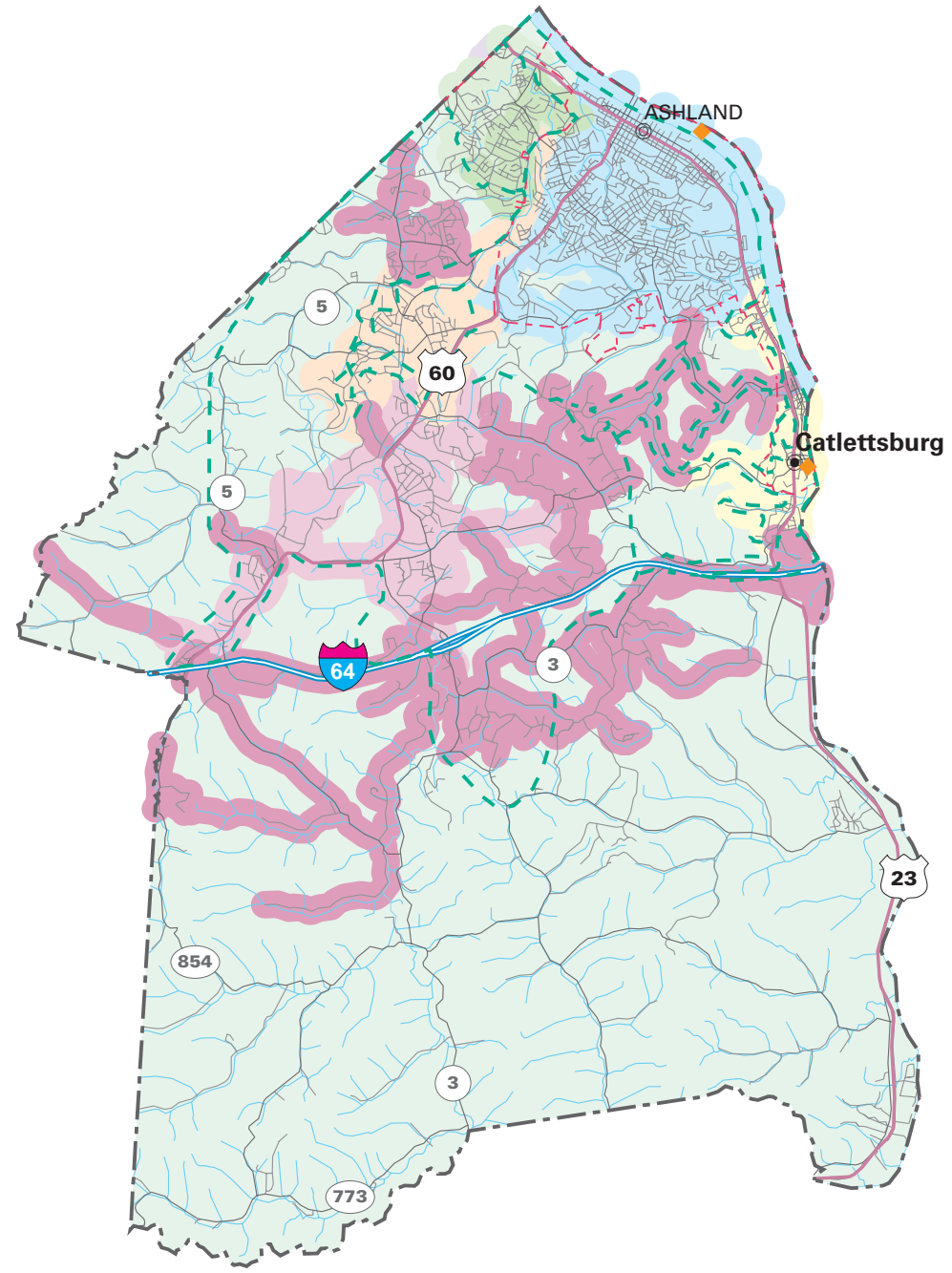
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- 201k Facility Planning Area
- Incorporated City Boundary
- Sewage Treatment Plant



SEWER SERVICE STATUS BY OWNER

EXISTING SERVICE AREA	PROPOSED SERVICE AREA	OWNER
		SANITATION DISTRICT #4
		SANITATION DISTRICT #2
		SANITATION DISTRICT #1
		CITY OF CATLETTSBURG
		CITY OF ASHLAND
		BOYD COUNTY SEWER SYSTEM



the City of Catlettsburg Wastewater System, Sanitation District Number 2, and Sanitation District Number 4.

CITY OF ASHLAND DEPARTMENT OF UTILITIES

Ashland's Department of Utilities is owned by the City of Ashland, Kentucky and is located in Boyd County. Ashland's sewer system was unable to determine the population and the number of households serviced and the number of service connections.

Ashland's twenty-four hour permitted design capacity is eleven million gallons per day. Its percent nominal capacity in use on an average day is forty percent with an average daily flow in last twelve months of 4.18 million gallons per day. The peak daily flow in the last twelve months was 10.05 million gallons per day. AK Steel Corporation, Cintas Corporation, and Marathon-Ashland Petroleum perform their own pretreatment. Fifteen pump stations and ten pumps are located at the treatment sites which, are used for effluent.

The majority of lines located downtown Ashland are ductile iron and are 40 plus years old. All new projects will be PVC. The system is not under any bans or restrictions.

Required operator certification for Ashland's plant is rated at a class "IV". There are 11 wastewater treatment system operators with the following classifications: 3 with an "I"; 1 with an "II"; 4 with an "III"; and 3 with an "IV".

Proposed Projects 2000-2005

SX21001904

Immediate Projects requiring 6 Phases

- Phase 1: Skyline Drive
Sewer line extension that will service approximately 13 households on Foothills Court, Woodhaven Court, and Woodhaven Drive. Total estimated cost: \$157,000.
- Phase 2: Skyline Drive
Sewer line extension will not add any households. This extension will bore under US-60 (13th Street). *Note: Phase 2 must be completed prior to construction of Phase 3, 4, and 5.* Total estimated cost: \$78,100
- Phase 3: Skyline Drive
Sewer line extension will service approximately 9 households and 4 businesses on Skyline Drive between Woodhaven and Elwood Drive, the eastside of Elwood Drive, and a portion of the west side of Woodhaven Drive. Total estimated cost: \$348,480.

- Phase 4: Skyline Drive
Sewer line extension will service approximately 2 households along US-60 (13th Street). Total estimated cost: \$64,900
- Phase 5: Skyline Drive
Sewer line extension will service Skyline Drive (between Elwood and Gloria), a portion of Shannon Drive, eastside of Elwood Drive, Wanda Court, and McKnipp Drive. Approximately 31 households will benefit from this extension. Total estimated cost: \$414,150.
- Phase 6: Skyline Drive
Sewer line extension will service approximately 9 households along Raybourne Road. Total estimated cost: \$154,352

Proposed Projects 2006-2020
SX21001905

Long-term projects requiring 7 Phases

- Phase 7: Boy Scout Road
Sewer line extension along Boy Scout Road (SR 1012). This project will not directly service any households or businesses. A 1,000' 3" force main will be included in the project. Total estimated cost: \$172,458
- Phase 8: Boy Scout Road
Sewer line extension along Boy Scout Road (SR-1012) and will service approximately 7 households. Total estimated cost: \$87,285
- Phase 9: Boy Scout Road
Sewer line extension along 1,375' road frontage on Boy Scout Road (SR-1012) and will not directly service any households. Total estimated cost: \$145,530.
- Phase 10: Boy Scout Road
Sewer line extension will service approximately 4 households and approximately 6,000' of road frontage on Boy Scout Road (SR-1012). A 1,100' 3" force main will be included in this phase. Total estimated cost: \$453,750.
- Phase 11: Rogers Drive
Sewer line extension will service approximately 10 households plus the Elks Building on Rogers Drive. A 1,100' 3" force main will be included. Total estimated cost: \$608,685.
- Phase 12: Wildwood Drive
Sewer line extension will service approximately 4 households on Wildwood Drive and 3,750' of road frontage. Total estimated cost: \$634,590.
- Phase 13: Boy Scout Road

Sewer line extension on Boy Scout Road (SR-1012) will not service any households but will provide 4,500' of road frontage. Total estimated cost: \$273,075.

BOYD COUNTY SEWER DISTRICT

Boyd County Sewer District is owned by Boyd County Fiscal Court and is located in Boyd County. Boyd County Sewer District serves a population of 3,900 with 1,544 service connections. The 1,544 service connections are made possible by the use of 27 pump stations which pump through lines of which only one percent is twenty years old or older. The majority of the lines Boyd County Sewer District owns are made of PVC. The Ashland Department of Utilities performs sewer treatment. Therefore, the 2 employees are not required to maintain any certification or classification rating.

Approximately 5,000 persons do not have access to sewage service in Boyd County. Most residents not on sewer lines have septic tank systems. Therefore, the septic system owners assume the responsibility of disposing of their own sewage. Future Boyd County Sewer District projects attempt to include as many of the residents living in the unserved areas as possible.

Future projects being undertaken by the Boyd County Sewer District, within the next zero to five (0-5) years, include the areas in or around Lakewood Estates, Ponderosa Subdivision, Marsh Hill, Graydon Heights, State Route 538, and Route 23. The majority of the lines being installed will be 8 inch PVC. Also, included in the zero to five year time frame is service to part of the EastPark Industrial Center. The total cost for these projects are estimated to be nine million dollars (\$9 million).

In the six to twenty-year timeframe (6 to 20), the Boyd County Sewer District hopes to provide sewage treatment to locations in Rush, Kilgore and around Johnson's Nursery. No cost estimates for these projects have been provided.

Proposed Projects 2000-2005

SX21001902

Approximately 2,000 households will be served with the immediate projects in the Boyd County Fiscal Court Sewer District. Total estimated cost: \$9 million

- Areas in or around Lakewood Estates, Ponderosa Subdivision, Marsh Hill, Graydon Heights, SR-538, and US-23.

- Service to part of the EastPark Industrial Center which borders Boyd, Carter and Greenup Counties.

Proposed Projects 2006-2020

SX21001903

Approximately 3,000 households in the Rush, Kilgore and Johnson Nursery area will be affected by the long-term project schedule by Boyd County Fiscal Court Sewer District. Total estimated cost: \$14 million

CITY OF CATLETTSBURG WASTEWATER SYSTEM

The City of Catlettsburg Wastewater System is owned by the City of Catlettsburg, Kentucky and is located in Boyd County. They have 1,300 customers with 338 connections.

Approximately 1,000 of those customers are residential customers while nearly 300 are commercial customers. Six customers are institutional and two are industrial. The total population served is approximately 3,000 people. Eight of these customers have master meters.

The Catlettsburg system employs six full-time employees. Three are wastewater treatment operators. The required operator classification for the facility is a "III". One operator has the "III" classification while two assistants have no classification.

The twenty-four hour permitted design capacity of the facility is .5 mgd (million gallons per day) with a nominal capacity in use on a single day of seventy-five percent. The average daily flow over the last twelve months was .375 mgd while the peak flow over the same period was 1 mgd.

The City of Catlettsburg Wastewater System has thirteen pump stations and one pump at the treatment site. Pump capacity is 200 gpm. The level of treatment the system provides is "secondary". The treatment facility is an extended aeration type with the Big Sandy River being the destination of the effluent. The last major renovation of the facility was in 1997.

Unincorporated sections of Eastern Boyd County such as Shopes Creek, Catletts Creek, and Twin Fork are service gap areas. Other areas in need of service also include Bayless Hill, Eades Road, and Lake Bonita Road. Potential customers in these unserved areas total (plus or minus) 250. The district believes the most reasonable way to provide service to these areas would be through grants or low interest loans. Estimated cost to finance these projects would

be approximately \$2 1/2 to 3 million. This would cover approximately 8 1/2 to 10 miles of pipe, 2-3 pump stations, and an undetermined number of manholes.

The City of Catlettsburg is unable to finance any upgrades or extensions at this time.

Projects would have to be funded through grants, bonds, or the customer.

If the Catlettsburg Wastewater System does upgrade or run extensions it would create a problem of processing the waste. Meaning, a new plant or extensive upgrade of the existing plant would be necessary.

Catlettsburg's Wastewater System does not consider any of the areas within its boundaries as impractical, unless you consider cost an impracticability. With the cost of upgrades, repairs, and extensions it does make it impractical for the City of Catlettsburg.

Proposed Projects 2000-2020

- Maps and information on planned updates or extensions were not provided.
- Gap areas: Shopes Creek, Catletts Creek, and Twin Fork.
- Other areas in need of service: Bayless Hill, Eades Road, and Lake Bonita Road.
- Approximately 250 households would be affected if the above projects/lines were established.
- If the extensions were run a new plant or an extensive upgrade would be required.
- Total estimated cost: \$2 1/2 to \$3 million.

SANITATION DISTRICT #2

Sanitation District Number 2 has 976 service connections. 937 of these connections are residential and 39 commercial. The collection system was constructed in 1991. The last major expansion to the system was also in 1991. Greenup County Environmental Commission treats their sewage. Therefore, the employees are not required to maintain any classification rating. Sanitation District Number 2 employees 1 part-time employee and 3 commissioners and is considered a special district.

The district's main wastewater service gap/need area is Westwood. If provided access to the district's system, Westwood would bring around 500 residential users to District 2.

Sanitation District Number 2's problems center upon improper sewage disposal by those not currently on sewer lines. Many of the residents who have private sewage tanks are not getting their tanks properly and timely emptied – and in some cases leading to total system

tank failure. This has resulted in effluent overflow problems, especially in low-lying areas and in some cases, causing effluent to flow into ditch lines.

Sanitation District Number 2 has a four-phase plan for the future development of its system. Phase I and II will begin within the next two years. Phases III and IV are slated to begin and be completed within the next six to twenty years. A brief description of each phase follows below.

Sanitation District # 2 has a four-phase plan for the future development. Phase I & II are scheduled to begin within the next 2 years. Phase III and IV are slated to begin and be completed within the next 6-20 years.

Proposed Projects 2000-2005

SX21001925

- Phase I
Reconnaissance estimates are to add approximately 90 households to the system.
Total estimated cost: \$475,000
- Phase II
Lee Street, Phoenix Street, Hosley Street, Prichard Street, and Virginia Street will service approximately 60 households. Total estimated cost: \$149,511.

Proposed Projects 2006-2020

SX21001901

- Phase III
Streets involved are Johnson, McKnight, Cherry Lane, Ashby Spur, Ashby Drive, Woodmont, New Buckley, and Hardemann. Approximately 50 additional households would be served. Total estimated cost: \$206,459.
- Phase IV
Phase IV will add approximately 85 households and will include High Street, Dalton Avenue, Berry Lane, Houston Street, Bellefonte Road, Woodlawn, Laurel Avenue, Stephen's Avenue, Evan's Avenue, Central Avenue, River Hill, and Ellington Court. Total estimated cost: \$395,958.

SANITATION DISTRICT #4

Sanitation District Number 4, located in Boyd County, services Summit, Green Hills, and Hall Ridge. There are 850 service connections and 820 customers of which 753 are residential, 55 commercial, and 4 industrial. The total population served by the district is 2,400 persons. Sanitation District Number 4 is considered a special district.

The district performs no pretreatment or treatment. The City of Ashland's Department of Utilities performs these functions. Therefore, no classification ratings are required.

Sanitation District 4 employs two full-time employees. There are sixteen pump stations. 12.5% of the system's lines are twenty years old or older. Only one customer has a master meter. Additionally, Sanitation District Number 4 is not under any sewer extension or hook-up bans.

Future projects being undertaken within the next 0-20 years include the area of Ironville extending down Route 5.

Proposed Projects 2000-2005

SX21001907

- Within the 0-5 year timeframe, plans are to concentrate on the immediate area surrounding the existing system. Approximately 2,000 households will be affected with this extension. Total estimated cost: \$1 million.

Proposed Projects 2006-2020

SX21001906

- In 6-20 year timeframe plans will include extensions on both sides of the 0-5 year extensions. Approximately 1,000 households will be served. Total estimated cost:
- \$1 million.

CARTER COUNTY

Carter County Sewer Service (map)

- Estimated 1999 population of 26,700--21% on public sewer
- Estimated 2020 population of 30,000--23% on public sewer
- Proposed projects would connect over 220 new households to public sewer during 2000-2020
- Estimated funding needs for public sewer 2000-2005--\$3,411,000
- Estimated funding needs for public sewer 2006-2020--\$0

Carter County had an estimated population of 26,687 (10,610 households) in 1999 with a projected population of 30,000 (12,900 households) in 2020. Public sewer is provided to about 21 percent of the county's residents. About 8,400 households in the county use on-site wastewater treatment. Over 220 customers could be added to public sewer service through new line extensions in 2000-2020.

CARTER COUNTY SEWER PLAN

Proposed Projects 2000-2005

System	New Customers Served	Cost (\$1000)	Line Upgrade (\$1000)	Treatment Expansion (\$1000)	New Treatment (\$1000)	Lift Stations, and other (\$1000)	Total Costs (\$1000)
CARTER							-
Grayson SX21004303	150+	2,000					2,000
Olive Hill							-
SX21004301	50	700		611			1,311
SX21004302	20	100					100
Total	70+	800		611			1,411
Carter County Total	220+	2,800	-	611			3,411

Proposed Projects 2006-2020

System	New Customers Served	Cost (\$1000)	Line Upgrade (\$1000)	Treatment Expansion (\$1000)	New Treatment (\$1000)	Lift Stations, and other (\$1000)	Total Costs (\$1000)
CARTER							-
Grayson SX21004304	?	?					none

Carter County has two sewer districts, the City of Grayson and the City of Olive Hill.

CITY OF GRAYSON UTILITIES

Serving a population of 3,100, Grayson Utilities has 1,280 service connections and 1,252 customers. Of these customers, 969 are residential and 283 commercial. Seven customers

SEWER SERVICE AREAS CARTER COUNTY Kentucky



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- 201k Facility Planning Area
- Incorporated City Boundary
- Sewage Treatment Plant



SEWER SERVICE STATUS BY OWNER

EXISTING SERVICE AREA	PROPOSED SERVICE AREA	OWNER
		CITY OF OLIVE HILL
		CITY OF GRAYSON UTILITIES
		BOYD COUNTY SEWER SYSTEM

have master meters. The City of Grayson Utilities is owned and operated by the City of Grayson, Kentucky.

Ninety percent of Grayson's lines are now twenty years old or older. Grayson's plant and collection system were built in 1963 with its last major expansion in 1998. The system's twenty-four hour rated capacity is .966 mgd. The nominal capacity in use on an average day is .350 mgd. with 400 mgd as the average daily flow for the last twelve months. The daily peak flow for the last twelve months was 3.0 mgd.

Grayson's system has ten pump stations and seven sewage pumps at the treatment site. The treatment site uses influent as well as sludge return. The Little Sandy River is the destination of the effluent.

The required operator classification at this plant is a "II". Of the five full-time employees and six wastewater treatment operators, two have a "II" classification. One employee has a "I" classification while the remaining three have no classification.

Future growth is expected along the EastPark Industrial Parkway, the AA Highway, and US 60.

Proposed Projects 2000-2005

SX21004303

Future projects for the next 0-5 years will service approximately 150 households. The immediate projects listed below are according to KIA Phase I to Phase III.

- KIA Phase I project at Eastwood Addition and old US-60
- KIA Phase II project at Town Branch and Sunset Hill
- KIA Phase III project on Damron Mayo
- A project at Johnson Goebel Industrial Park (0-1 year)

Proposed Projects 2006-2020

SX21004303

Number of households to be serviced is unknown. The projects listed below are according to KIA Phase IV and KIA Phase V.

- KIA Phase IV project over the next 5-8 years at Rolling Hill and SR-1 South.
- KIA Phase V project over the next 6-10 years on SR-1 North and SR-7.
- KIA Phase V project over the next 10-12 years at Damron Branch.

OLIVE HILL WASTEWATER TREATMENT

Owned by the City of Olive Hill, Kentucky, Olive Hill Wastewater Treatment System has 836 service connections with customers totaling 806. Of those total customers, 695 are

residential, 108 commercial, and 3 classified as industrial. The population served by this system is 2,100. Olive Hill is located in Carter County, Kentucky.

Over 75% of Olive Hill's sewer lines are 20 years old or older and in great need of replacement/repair. These lines are made of clay tile. The 24-hour design capacity of the treatment plant is .350 mgd with the facility being identified as oxidation ditch. The average daily flow over the last twelve months was .273 mgd while the peak daily flow over the same period came in at 1.19 mgd. The collection system is a lift and gravity system. There are three pump stations and three sewage pumps at the treatment site. The plant use is influent while the level of treatment is tertiary. The effluent destination is Tygarts Creek.

Olive Hill's required operator classification for this plant is a "II". Of the four full-time employees, three have the classification of "II" with the remaining employee at level "I".

Water service gaps occur within and without the system. Impractical areas, due to financial constraints and geographical factors, are to the south and southwest of the town. Service gaps occurring within the system's boundaries are the result of the treatment plant being at maximum capacity and the system lines being in such poor quality that soil infiltration strains the capacity of the system to process the sewage properly.

Proposed Projects 2000-2005

Upgrade of the plant at a cost of \$611,000 is scheduled within the next 0-5 years but no money is available. The projects listed below are those that the district feels are badly needed.

SX21004302

- Henderson Branch adding 20 households. Total estimated cost: \$100,000.

SX21004301

- Clark Hill adding 50 households. Total estimated cost: \$700,000.

ELLIOTT COUNTY

Elliott County Sewer Service (map)

- Estimated 1999 population of 6,500--13% on public sewer
- Estimated 2020 population of 6,340--12% on public sewer
- No sewer projects were proposed for the period 2000-2020
- Estimated funding needs for public sewer 2000-2005--\$0
- Estimated funding needs for public sewer 2006-2020--\$0

Elliott County had an estimated population of 6,506 (2,534 households) in 1999 with a projected population of 6,340 (2,680 households) in 2020. Public sewer is provided to about 13 percent of the households. About 2,200 households use on-site systems. No sewer projects were proposed for the period 2000-2020.

ELLIOTT COUNTY SEWER PLAN

Proposed Projects 2000-2005

System	New Customers Served	Cost (\$1000)	Line Upgrade (\$1000)	Treatment Expansion (\$1000)	New Treatment (\$1000)	Lift Stations, and other (\$1000)	Total Costs (\$1000)
ELLIOTT							none

Proposed Projects 2006-2020

System	New Customers Served	Cost (\$1000)	Line Upgrade (\$1000)	Treatment Expansion (\$1000)	New Treatment (\$1000)	Lift Stations, and other (\$1000)	Total Costs (\$1000)
ELLIOTT							none

Elliott County has only one sewer district, Sandy Hook Wastewater Treatment.

SANDY HOOK WASTEWATER TREATMENT

The City of Sandy Hook, which is located in Elliott County, Kentucky, owns and operates Sandy Hook Wastewater Treatment System. Last expanded in November 1996, the wastewater treatment plant at Sandy Hook serves a population of 1,100 people by providing 260 customers with connections. The system employs seven full-time employees with one of them being a class "II" (class "II" being the required classification) wastewater treatment operator. The level of treatment the Sandy Hook plant provides is primary and secondary

SEWER SERVICE AREAS

ELLIOTT COUNTY

Kentucky



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Bob Arnold, Chairman
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 Kent Anness & Kim Anness

Data Collection & GIS Input By:
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- - - - - 201k Facility Planning Area
- - - - - Incorporated City Boundary
- ◆ Sewage Treatment Plant



SEWER SERVICE STATUS BY OWNER

 EXISTING SERVICE AREA	 PROPOSED SERVICE AREA
 CITY OF SANDY HOOK	

with the effluent being routed to the Little Sandy River. The facility is an extended aeration and oxidation ditch design.

Even though all of the sewer lines are twenty years old or older, the peak daily flow over the last twelve months was .350 mgd while the average daily flow was .09 mgd. The percent nominal capacity in use on an average day is sixty percent. In addition, the twenty-four hour permitted design capacity is 1.5 mgd.

A bar screen at the treatment site handles pretreatment, and the collection system uses a gravity main. There is one sewage pump at the treatment site and it is of the submersible type.

The City of Sandy Hook noted no future upgrades and/or extensions plans for the system.

GREENUP COUNTY

Greenup County Sewer Service (map)

- Estimated 1999 population of 36,800--55% on public sewer
- Estimated 2020 population of 35,500--70% on public sewer
- Proposed projects would connect about 2,000 new households to public sewer during 2000-2020
- Estimated funding needs for public sewer 2000-2005--\$8,900,000
- Estimated funding needs for public sewer 2006-2020--\$20,800,000

Greenup County had an estimated population of 36,816 (14,364 households) in 1999 with a projected population of 35,500 (15,200 households) in 2020. Public sewer is provided to about 55 percent of the county's residents. About 6,500 households in the county use on-site treatment systems. About 2,000 customers could be added to public sewer service through new line extensions in 2000-2020.

GREENUP COUNTY SEWER PLAN

Proposed Projects 2000-2005

System	New Customers Served	Cost (\$1000)	Line Upgrade (\$1000)	Treatment Expansion (\$1000)	New Treatment (\$1000)	Lift Stations, and other (\$1000)	Total Costs (\$1000)
GREENUP							-
Flatwood SX21008909	20		1,400				1,400
Raceland SX21008906	70	200					200
Wurtland	500	5,500	1,300				6,800
Worthington SX21008902				500			500
Greenup County Environmental Commission SX21008911	???	???					-
Greenup County Total	590	5,700	2,700	500			8,900

SEWER SERVICE AREAS GREENUP COUNTY Kentucky



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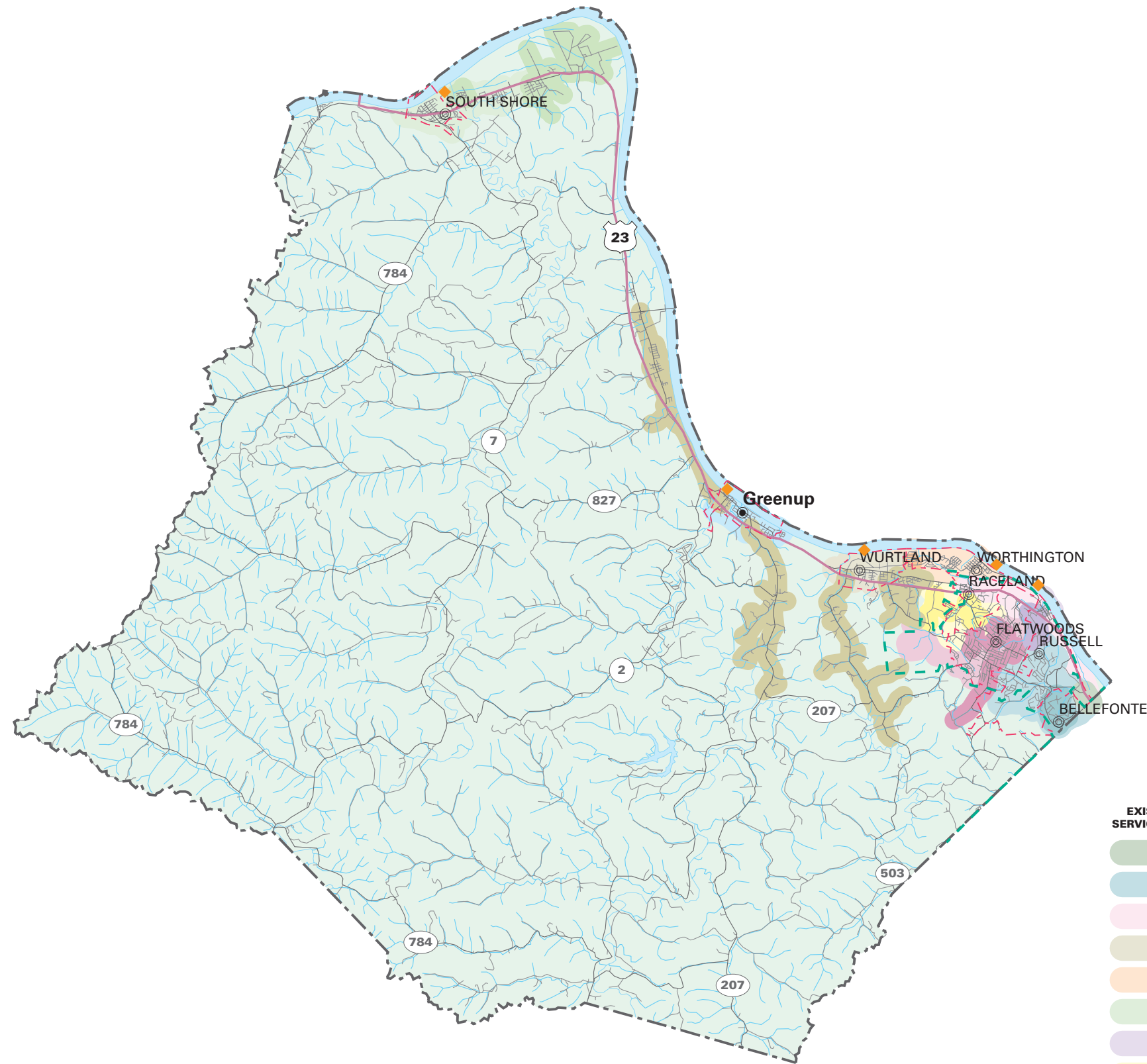
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- 201k Facility Planning Area
- Incorporated City Boundary
- Sewage Treatment Plant



SEWER SERVICE STATUS BY OWNER

EXISTING SERVICE AREA	PROPOSED SERVICE AREA	OWNER
		SANITATION DISTRICT #2
		SANITATION DISTRICT #1
		GREENUP COUNTY ENVIRONMENTAL COMMISSION
		CITY OF WURLAND
		CITY OF WORTHINGTON
		CITY OF SOUTH SHORE
		CITY OF RUSSELL
		CITY OF RACELAND
		CITY OF GREENUP
		CITY OF FLATWOODS

Proposed Projects 2006-2020

System	New Customers Served	Cost (\$1000)	Line Upgrade (\$1000)	Treatment Expansion (\$1000)	New Treatment (\$1000)	Lift Stations, and other (\$1000)	Total Costs (\$1000)
GREENUP							-
Flatwood SX21008908			660				660
Raceland SX21008905	70	500					500
Russell SX21008910	40	330					330
Greenup County Environmental Commission SX21008912				3,000			3,000
South Shore SX21008907	300	5,000					5,000
Sanitation District #1 SX21008901			1,300				1,300
Wurtland SX21008904	1,000	10,000					10,000
Greenup County Total	1,410	15,830	1,960	3,000			20,790

Greenup County has nine sewer districts. They are:

- City of Flatwoods*
- City of Greenup*
- Greenup County Environmental Commission*
- City of Raceland*
- City of Russell*
- Sanitation District Number 1*
- City of South Shore*
- City of Worthington*
- City of Wurtland.*

CITY OF FLATWOODS

Serving a population of 8,900, the Flatwoods' sewer district, located in Greenup County, Kentucky, has a total of 2,781 connections and 7,913 customers. Of those customers, 2,623 are residential customers while 158 are commercial customers. The collection system has 25 system mains: 15 gravity, 10 force. Sixty-five percent of the system lines are twenty years old or older. Greenup County Environmental Commission performs sewage treatment for the City of Flatwoods. Currently, Flatwoods' system is in significant non-compliance due to sewer system overflows. The City of Flatwoods owns and operates the system.

Gaps in wastewater service in the Flatwoods sewer district are located in the Grandview, Hilltop, and Lexington Avenue areas. The primary reason for this is that these areas are too low in elevation to meet gravity lines in a cost-effective manner. Areas outside the district, on the other hand, which could be serviced, are in or along KY 207, Hensley Hollow, and

KY 458. These outside areas could add around 300 users to the system. In order to add these areas however, new gravity collection system and pump stations would have to be added to the present system.

Future growth in Flatwoods necessitates system expansion/upgrade, and is expected to occur along KY 207 and KY 693 (in association with the Northeast Industrial Parkway). Also, southwest of Randall Street needs to be addressed.

Projects slated for the immediate future (0 to 5 years) and long run (6 to 20 years) are listed below.

Future growth necessitates system expansion/upgrade, and is expected to occur along KY-207 and KY-693 (in association with the Northeast Industrial Parkway). Also, southwest of Randal Street will need to be addressed.

Proposed Projects 2000-2005

SX21008909

- Sewer collection renovation (within the next year). Total estimated cost: \$1,250,000.
- Audubon Lift Station Renovation located on Brent Ann Drive will add approximately 150 households to the system. Total estimated cost: \$42,000.
- US-23 Lift Station Renovation located at the intersection of US-23 and KY-207 will add about 100 households to the system. Total estimated cost: \$42,000.
- Espy Lift Station Renovation located on KY-693 and Espy Lane will add approximately 250 households to the system. 65,000.

Proposed Projects 2006-2020

SX21008908

- Walnut Street Lift Station Renovation will add approximately 200 households to the system. Total estimated cost: \$56,000.
- Indian Run Collection and Force Main Project. Project proposed for the Indian Run (KY-1478) area. Approximately 170 households will be added to the system. Total estimated cost: \$600,000.

CITY OF GREENUP

Serving 493 connections and a population of 1,626, the City of Greenup, located in Greenup County, Kentucky, has 2,600 customers in its sewer district. 575 customers are residential and 110 are commercial customers. The Greenup facility was constructed in 1961 and last expanded in 1993. The City of Greenup owns and operates the wastewater system.

Ninety percent of the district's lines are twenty years old or older. In addition, the extended aeration facility has a twenty-four hour permitted capacity of 200,000 gallons per day. The

average daily flow over the last twelve months was 201,000 gallons per day. The district's one full-time employee has the required class "II" operator certification.

Future plans include a sanitary sewer overflow plan within the next year. Details on the project were not provided.

GREENUP COUNTY ENVIRONMENTAL COMMISSION

The Greenup County Environmental Commission performs sewage treatment services for five sewer districts that for various reasons cannot perform the sewage treatment for themselves. These service areas are Downtown Russell, Raceland, Flatwoods, Sanitation District Number 1 and Sanitation District Number 2. The system is able to provide pre-treatment, but presently no customers require it. GCEC has six service connections and six customers. One customer is an industrial customer and the other five are the districts listed above. The total population the GCEC serves is 20,445 persons.

Over the past twelve months the GCEC had an average daily flow of 2.257 mgd and a peak daily flow of 6.725 mgd. 64.5 percent was the percent nominal capacity in use on an average day. The twenty-four hour permitted design capacity is 3.5 mgd.

The GCEC's treatment plant (constructed in 1997 and expanded in 1998) is an oxidation ditch facility providing secondary level treatment. Line materials are PE, PVC, steel, and clay. The plant's effluent destination is the Ohio River.

The collection system consists of five forced mains and one gravity main. There are three pump stations, and no sewage pumps at the treatment site. The treatment site uses the gravity flow method. The required operator classification is "III". Of the six full-time employees, three are wastewater treatment operators. One has the required "III" certification while one has an "II". The third treatment operator has a classification of "IV" which exceeds the requirements.

Proposed Projects 2000-2005

- Raceland Lift Station and Force Main (0-5 years) will add households from the City of Raceland. Total estimated cost: unknown.

Proposed Projects 2006-2020

- Clarifier Expansion (5-7 years) will primarily affect the City of Russell (downtown section). Total estimated cost: \$500,000.

- Faculative Lagoon Expansion (10-15 years) will primarily affect Russell. Total estimated cost: \$2,500,000.

CITY OF RACELAND

The City of Raceland, located in Greenup County, Kentucky, has 850 service connections providing sewer access to 1,250 customers with a population of 2,441. Of the total number of customers 1,202 are residential, 34 are industrial, and 14 are institutional. The system itself has two pump stations. Eighty percent of its sewer lines are twenty years old or older and are made of clay tile and deteriorating concrete.

Greenup County Environmental Commission provides sewage treatment to the City of Raceland. Therefore, Raceland's 5 employees are not required to maintain and rating since they do not pre-treatment or treat its own sewage. Currently, the system is in significant non-compliance. Periodic system failures occur to the age of the lines.

Proposed Projects 2000-2005

SX21008906

- An extension that will provide service to 70 households is planned. No additional information has been provided by the city.

Proposed Projects 2006-2020

SX21008905

- An extension that will provide service to 70 households is planned. No additional information has been provided by the city.

CITY OF RUSSELL

The City of Russell, located in Greenup County, Kentucky, has approximately 500 connections servicing a population of approximately 1,400. The City only services the downtown area. In addition, all of the city's sewer lines are twenty years old or older. The collection system was constructed in 1932 and the lines are made primarily out of clay. There is one force main. The Greenup County Environmental Commission performs all sewer treatment for the City of Russell. Thus, there are no requirements for the employees to maintain any classification rating.

Proposed Projects 2006-2020

SX21008910

- Project location will be in Russell Heights. The project will use 8" PVC and will add approximately 40 households. Total estimated cost: \$330,000.

SANITATION DISTRICT #1

Sanitation District Number 1 has 1,550 customers and is located in Greenup County, Kentucky. Eight customers are commercial, one industrial, and eight institutional. Ninety percent of the system's lines are twenty years old or older. There are three pump stations and four system mains. Currently, the district employs three full-time employees. At present there is a ban on sewer line extensions. The Greenup County Environmental Commission performs all wastewater treatment.

Proposed Projects 2006-2020

SX21008901

- Project located in the City of Bellefonte and will involve the repair and replacement of clay tile lines because of excessive infiltration. Approximately 200 households will benefit from this project.

CITY OF SOUTH SHORE

South Shore has a population of 1,318 with 815 service connections. 300 of these connections are located outside of the city limits and were added on a voluntary basis. Additionally, the City of South Shore's Wastewater District estimates that approximately 300 household are not being serviced through their system. These households are currently using septic tank system. The homeowners are responsible for the disposal and maintenance of their septic systems.

South Shore's sewer lines are made of AC, has one system main, six pump stations, and one sewage pump at the treatment site whose use is both influent and effluent. Its collection system was constructed in 1962. The destination of South Shore's effluent is the Ohio River. In addition, the plant has one wastewater treatment operator who holds the required classification of "II".

Proposed Projects 2006-2020

SX21008907

- Approximately 300 households will benefit from this project. Projects listed are:
 - Melroy Extension*
 - Kings Addition*
 - Forest Hill*
 - All of Sand Hill*
 - Saloman*

Cost estimates for these projects have been estimated at \$1,000,000 for which the city would require at least 90% project funding from another source besides the City of South Shore.

CITY OF WORTHINGTON

Serving a population of 1,751, the Worthington Sewer District, located in Greenup, County Kentucky, has 690 connections and a total of 690 customers. 677 of these customers are residential, 6 are commercial, and 5 are institutional. One customer has a master meter. The system, moreover, was constructed in the 1930's and recently (in 1997) underwent a major expansion. However, ninety-five percent of the sewer system lines are twenty years old or older.

The twenty-four hour permitted design capacity of the Worthington treatment plant is 200,000 gallons per day with the nominal capacity in use on an average day at 142,000 gallons. With six pump stations and six sewage pumps at the treatment site, the level of treatment is secondary and the destination of the effluent is the Ohio River.

The plant employs five full-time employees. Three of these are wastewater treatment operators. All three wastewater treatment operators have the required classification of "II".

Only one house in the district is not serviced, therefore, future projects focus on system upgrades. Within one year a \$500,000 treatment plant upgrade will involve the conversion of the existing plant to a contact stabilization process plant. Deficient, deteriorating clay tile lines (6,040 linear feet) will also be replaced in the Melrose Addition.

Only one house in the district is not serviced, therefore, future projects focus on system upgrades.

Proposed Projects 2000-2005
SX21008902

- Treatment plant upgrade will involve the conversion of the existing plant to a contact stabilization process plant. Deficient, deteriorating clay tiles will also be replaced in the Melrose Addition. Approximately 10 households will benefit from this project. Total estimated cost: \$500,000.

CITY OF WURLAND

A private corporation named Professional Services Group, Inc. performs the City of Wurland's sewage treatment. The City of Wurland is located in Greenup County, Kentucky. The plant employs seven full-time employees and two part-time employees. Two have a certification of "I", one has a certification of "II", three have a classification of "III",

two have a classification of "IV", and one is not certified. The required certification level for Professional Services Group, Inc. is a "II".

The collection system was constructed in 1963 with a major expansion occurring in 1991. There are five pump stations with seventy-three percent of the sewage lines being twenty years old or older. In addition, the twenty-four hour permitted design capacity is 1.1 mgd; the nominal capacity in percent used on an average day is 1.65 mgd. Over the last twelve months the average daily flow was at sixty-six percent while the peak daily flow was 1.573 mgd.

The level of treatment this facility performs is secondary with the effluent destination being the Ohio River.

Proposed Projects 2000-2005

SX21008903

- Reconnaissance project and an upgrade project are planned. This will service approximately 500 households. Total cost for reconnaissance project is estimated at \$5.5 million and the upgrade is estimated at \$1.3 million.
 - *Sewer Collection Renovation* -- \$1,250,000 (within the next year).
 - *Audubon Lift Station Renovation* -- \$42,000 (1 to 2 year start date). Located on Brent Ann Drive and will add approximately 150 households to the system.
 - *US 23 Lift Station Renovation* -- \$42,000 (3 to 5 years). Located at the intersection of US 23 and KY 207 and will add about 100 households to the system. The project will involve a 4" force main.
 - *ESPY Lift Station Renovation* -- \$65,000 (3 to 5 years). Approximately 250 households will be added to the system. It is located on KY 693 and ESPY Lane.

Proposed Projects 2006-2020

SX21008904

- Approximately 1,000 households will be serviced by this reconnaissance and upgrade project. Total cost for reconnaissance project is estimated at \$3.8 million and the upgrade is estimated at \$5.2 million.
 - *Walnut Street Lift Station Renovation* -- \$56,000 (4 to 7 years) Approximately 200 households will be added to the system.
 - *Indian Run Collection and Force main Project* -- \$600,000 (5 to 10 years). This project is proposed for the Indian Run (KY 1478) area. Approximately 170 households will be added to the system.

LAWRENCE COUNTY

Lawrence County Sewer Service (map)

- Estimated 1999 population of 15,700--21% on public sewer
- Estimated 2020 population of 17,800--23% on public sewer
- Proposed projects would connect over 120 new households to public sewer during 2000-2020
- Estimated funding needs for public sewer 2000-2005--\$3,600,000
- Estimated funding needs for public sewer 2006-2020--\$0

Lawrence County had an estimated population of 15,699 (6,177 households) in 1999 with a projected population of 17,800 (7,700 households) in 2020. Public sewer is provided to about 21 percent of the county's residents. About 4,900 households treat wastewater on-site. About 220 customers could be added to public sewer service through new line extensions in 2000-2020.

LAWRENCE COUNTY SEWER PLAN

Proposed Projects 2000-2005

System	New Customers Served	Cost (\$1000)	Line Upgrade (\$1000)	Treatment Expansion (\$1000)	New Treatment (\$1000)	Lift Stations, and other (\$1000)	Total Costs (\$1000)
LAWRENCE							
Lawrence County Fiscal Court SX21012701	80	1,000				600	1,600
SX21012702	40 +	1,500		500			2,000
Lawrence County Total	120+	2,500		500		600	3,600

Proposed Projects 2006-2020

System	New Customers Served	Cost (\$1000)	Line Upgrade (\$1000)	Treatment Expansion (\$1000)	New Treatment (\$1000)	Lift Stations, and other (\$1000)	Total Costs (\$1000)
LAWRENCE							none

Lawrence County has only one sewer district, the Louisa Water and Sewer Commission.

LOUISA WATER AND SEWER COMMISSION

Serving a population of 3,870, Louisa Sewer has 1,173 connections and 1,158 customers of whom 778 are residential, 330 are commercial, 2 are industrial, and 48 are institutional customers. The facility employs five full-time employees of which three are wastewater

SEWER SERVICE AREAS

LAWRENCE COUNTY

Kentucky

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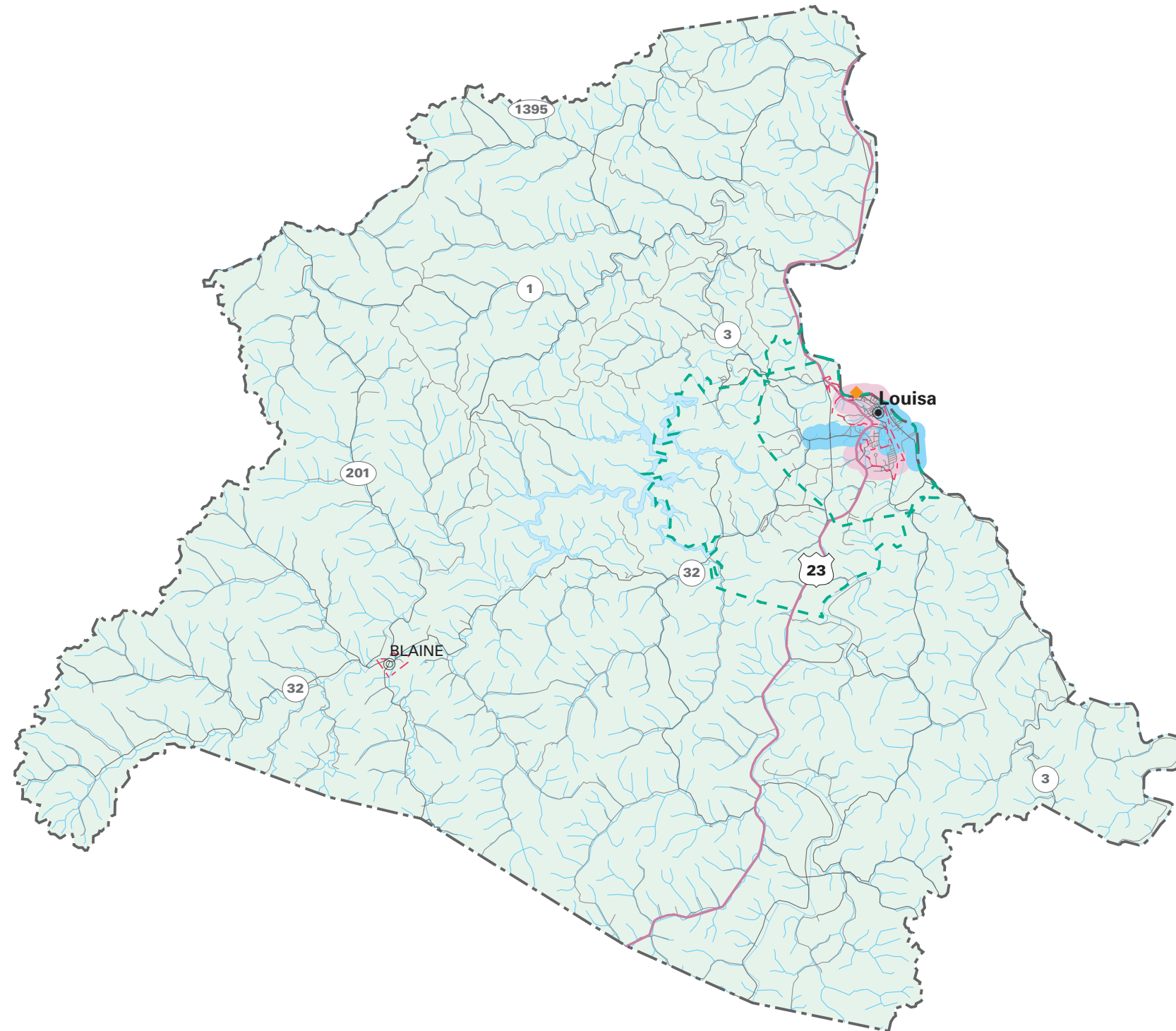
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- - - - 201k Facility Planning Area
- - - - Incorporated City Boundary
- ◆ Sewage Treatment Plant



SEWER SERVICE STATUS BY OWNER

EXISTING SERVICE AREA	PROPOSED SERVICE AREA	
■	■	LAWRENCE COUNTY FISCAL COURT
■	■	CITY OF LOUISA

treatment operators. The required operator classification is "II". Of the treatment operators one has a class "I" certification, one has a class "II", and one has a class "III".

The treatment plant at Louisa has a twenty-four hour permitted design capacity of 1.09 mgd. Its percent nominal capacity in use on an average day is fifty percent with its average daily flow over the last twelve months being .553 mgd. The peak flow over the same twelve-month period was 1.7 mgd. There is no pretreatment at the plant. In addition, the collection system is a force main type system.

The treatment site has one sewage treatment pump which is a submersible and whose use is influent. Overall, the treatment process is secondary using the Big Sandy River as its effluent destination.

The lines are made of PVC and clay tile. In all, fifty percent of the lines are twenty years old or older.

Future projects listed below are concerned primarily with providing service to areas currently without access to sewer lines. These projects are for the immediate future (0 to 5 years).

Proposed Projects 2000-2005

Future projects are concerned primarily with providing service to areas currently without access to sewer lines.

SX21012701

- *Eloise Street Sewer Project* -- \$200,000 – Project will provide sewer line service to 80 homes. The project will place 8” PVC pipe and add an additional pump station.

SX21012702

- *KY 32 sewer extension* -- \$1,500,000 -- \$500,000 of this will go to the upgrade of the existing plant. The Lawrence County Fiscal Court is the present owner of the project. The project will give 40 existing homes access to the system. In addition, the project hopes to service areas along US 23 associated with planned industrial park. The pipe used in the project will include 6”, 8”, 10”, and 12” PVC.