

Strategic Water Resource Development Plan

Summary of Wastewater Treatment Systems Purchase Area Development District

Water Resource Development Commission

March, 2000

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Purchase Area Development District

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ADD WASTEWATER SUMMARY

ADD Sewer Service (map)

- Estimated 1999 population of 186,000--51% on public sewer
- Estimated 2020 population of 188,000--71% on public sewer
- Proposed projects would connect about 16,900 new households to public sewer during 2000-2020
- Estimated funding needs for public sewer 2000-2005--\$94,600,000
- Estimated funding needs for public sewer 2006-2020--\$106,400,000

The Purchase Area Development District region had an estimated population of 185,600 (80,164 households) in 1999 with a projected population of 187,500 (85,200 households) in 2020. Public sewer systems serve 95,000 area residents, or 51 percent of the population. Proposed sewer line extensions for the period 2000-2020 would provide service to an additional 16,900 households. About 91,000 people in the region currently rely on on-site treatment systems.

Estimated populations and public sewer service for the eight counties in the region are given below (36 public sewer systems serve the region):

County	1999 Pop	On Public	2020 Pop	On Public
Ballard	8,400	3,400 (40%)	9,100	4,100 (45%)
Calloway	29,400	14,700 (50%)	28,100	18,300 (65%)
Carlisle	5,400	1,600 (30%)	5,300	2,650 (50%)
Fulton	7,500	5,250 (70%)	7,200	6,100 (85%)
Graves	35,700	14,300 (40%)	38,400	21,100 (55%)
Hickman	4,900	1,500 (30%)	3,700	1,500 (40%)
McCracken	64,200	44,900 (70%)	63,800	51,000 (80%)
Marshall	30,000	9,000 (30%)	32,000	28,800 (90%)
<i>Region</i>	186,000	95,000 (51%)	188,000	134,000 (71%)

EXISTING & PROPOSED SEWER SERVICE

**PUADD
Kentucky**

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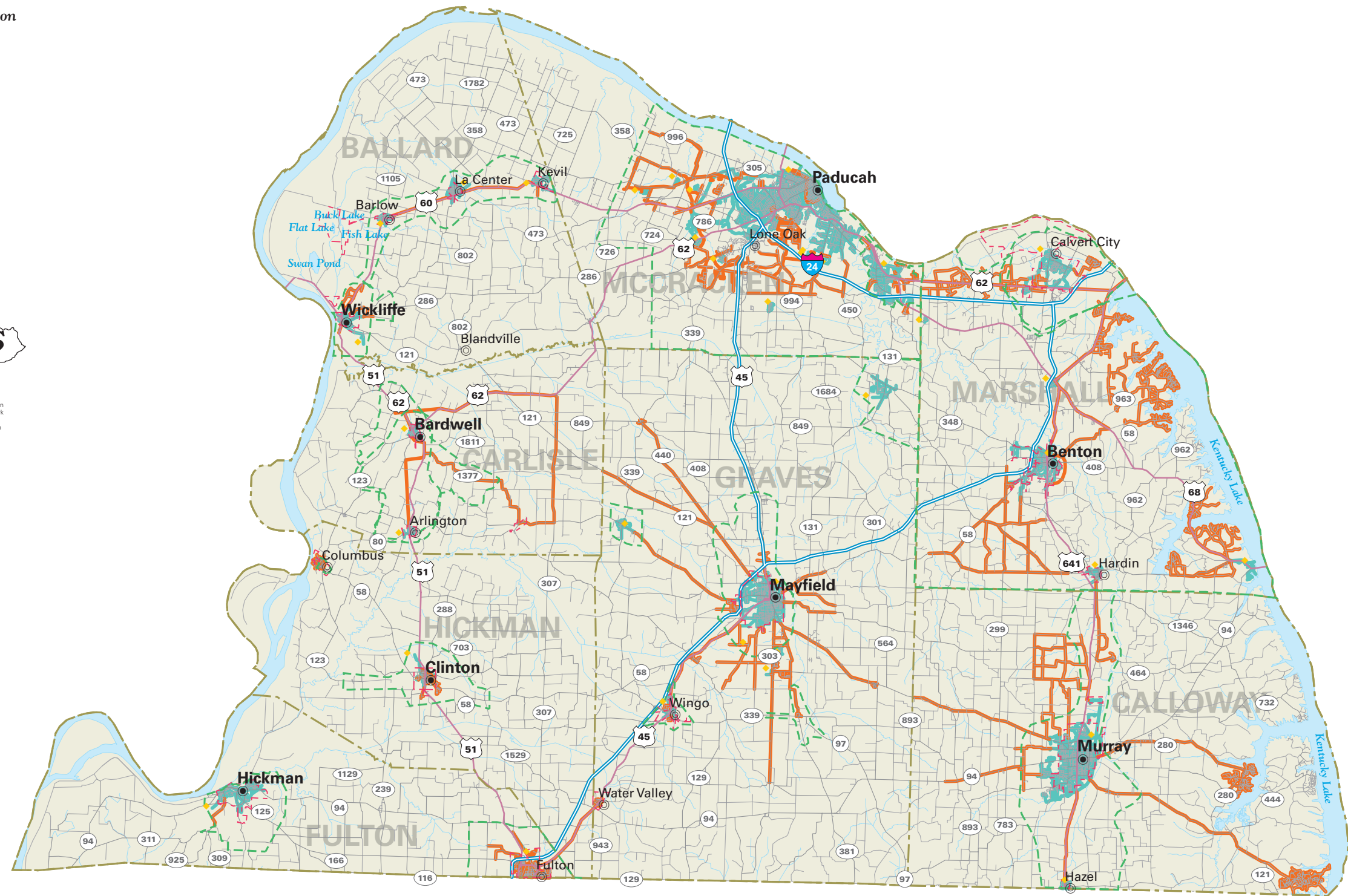
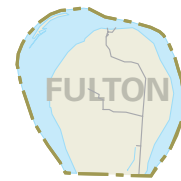
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- - - 201k Facility Planning Area
- - - Incorporated City Boundary
- ♦ Sewage Treatment Plant



SEWER SERVICE
— Existing Sewer Service
— Proposed Sewer Service



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

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)
BALLARD COUNTY							
Ballard County Regional system	78	1,150					1,150
Wickliffe	113	1,130					1,130
County Total	191	2,280					2,280
							-
CALLOWAY							
Murray Water System							-
Murray	1,011	10,000	-	-	-		10,000
							-
CARLISLE							
Carlisle County regional System	403	4,000	-	-	-		4,000
							-
FULTON							
Hickman	270	2,700	2,000	1,000	-		5,700
Fulton	-	-	8,000	2,000	-		10,000
County Total	270	2,700	10,000	3,000			15,700
							-
GRAVES							
Wingo	47	500					500
Mayfield	2,463	26,600					26,600
County Total	2,510	27,100					27,100
							-
HICKMAN							
Clinton Sewer System	-	-	3,000	-	-		3,000
Columbus Sewer System	120	2,000	-	-	2,000		4,000
County Total	120	2,000	3,000	-	2,000		7,000
							-
MCCRACKEN							
Joint Sewer Agency	1,741	18,000					18,000
							-
MARSHALL							
Benton	150	2,000	500	-	-		2,500
Hardin Sewer District	623	8,000	-	-	-		8,000
County Total	773	10,000	500				10,500
							-
Purchase ADD Total	7,019	76,080	13,500	3,000	2,000		94,580

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)
BALLARD COUNTY							
Ballard County Regional System	-	-	-	3,000			3,000
CALLOWAY							
MURRAY	1,110	12,300	-	-	-	-	12,300
CARLISLE COUNTY							
Carlisle County Regional System	119	1,500	-	-	4,000	-	5,500
FULTON							
Fulton	150	1,500	-	-	-	-	1,500
GRAVES							
HICKMAN							
Clinton	55	600					600
MCCRACKEN							
Joint Sewer Agency	1,473	15,000	-	-	-	500	15,500
MARSHALL							
Benton	706	7,000	-	-	-	-	7,000
Marshall County San Dist #1	1,800	10,000	-	5,000	-	-	15,000
Marshall County Fiscal Court	3,922	36,000	-	-	5,000	-	41,000
Calvert City	509	5,000	-	-	-	-	5,000
County Total	6,937	58,000	-	5,000	5,000		68,000
Purchase ADD Total	9,844	88,900		8,000	9,000	500	106,400

BALLARD COUNTY

Ballard County Sewer Service (map)

- Estimated 1999 population of 8,400--40% on public sewer
- Estimated 2020 population of 9,100--45% on public sewer
- Proposed projects would connect about 200 new households to public sewer during 2000-2020
- Estimated funding needs for public sewer 2000-2005--\$2,280,000
- Estimated funding needs for public sewer 2006-2020--\$3,000,000

Ballard County had an estimated population of 8,428 (3,667 households) in 1999, with a projected population of 9,116 (4,169 households) in the year 2020. Public sewer is provided to about 40 percent of the county's residents. About 2,200 households in the county use on-site wastewater treatment. About 200 customers could be added to public sewer service through new line extensions in 2000-2020.

BALLARD 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)
BALLARD COUNTY							
Ballard County Regional system							
SX21007001	78	1,150					1,150
Wickliffe Sewer System							
SX21007002	113	1,130					1,130
County Total	191	2,280					2,280

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)
BALLARD COUNTY							
Ballard County Regional System							0
SX21007001				3,000			3,000

BARLOW WATER & SEWER

The City of Barlow operates the Barlow treatment plant. The system that was established in 1956 is a municipality. The city employees 2 full-time employees that run the sewer system. The system has 350 service connections that serve a population of 700. The plant has an operating capacity of 100000 gallons per 24 hrs. The system spends about 58% of Gross

SEWER SERVICE AREAS BALLARD COUNTY Kentucky

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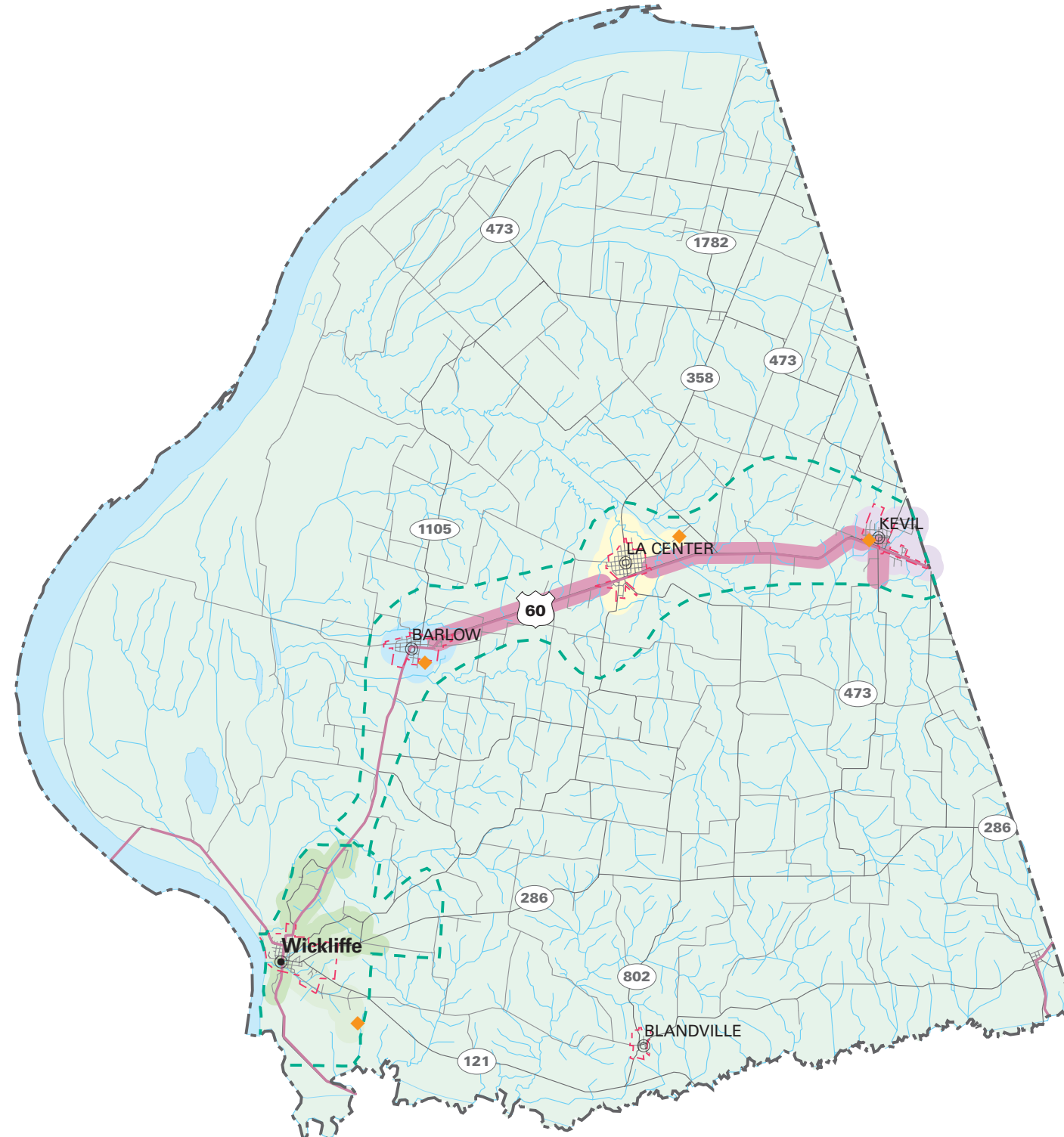
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- - - 201k Facility Planning Area
- - - Incorporated City Boundary
- ◆ Sewage Treatment Plant



SEWER SERVICE STATUS BY OWNER

EXISTING SERVICE AREA	PROPOSED SERVICE AREA	OWNER
■	■	WICKLIFFE SEWER SYSTEM
■	■	KEVIL SEWER SYSTEM
■	■	CITY OF LACENTER
■	■	BARLOW SEWER
■	■	BALLARD COUNTY REGIONAL SEWER



revenue on Operations and Maintenance. The system has failures often due to line breakage and inflow and infiltration (I and I). It is a Class II system and 98% of the lines are older than 20 years. The system will be one of three systems that will form Ballard County Regional Sewer System.

KEVIL SEWER SYSTEM

The City of Kevil operates the system with 2 full-time employees. The system has 194 connections and services a population of 640. The system was established in 1965 and is a municipality. The peak daily flow is approximately 80,000 gallons a day. The system uses an extended aeration facility to handle the wastewater. The system will be one of three systems that will form Ballard County Regional Sewer System.

LACENTER WATER SYSTEM

The City of LaCenter operates a sewer system for 480 customers in and around the city of LaCenter. The system was established in 1920 and is a municipality. The plant has a 0.019 million gallon per day operating capacity and uses a Lagoon system. The system will be one of three systems that will form Ballard County Regional Sewer System.

BALLARD COUNTY REGIONAL SYSTEM

Ballard County Regional System will connect the existing systems in Barlow, LaCenter, and Kevil forming a larger more efficient sewer system. The systems will be joined along US 60 and will also include the county high school, elementary school, and vocational school. This will also affect the system's 1,030 existing customers. This new system should provide the public with better service at a reasonable rate to the customer. Plans are currently being discussed to begin this joint effort.

Proposed Projects

SX21007001

<u>Priority</u>	<u>Project Owner</u>	<u>Cost Estimates</u>	<u>Customers</u>
I	Ballard County Regional System		78

WICKLIFFE WATER SYSTEM

The City of Wickliffe operates the Class II sewer system, which was established in 1962. Over 50% of the lines are older than 20 years. The system serves a population of 854 with

425 service connections. The system has a 24-hour design capacity of .280 million gallons per day. Wickliffe uses a lagoon type system to treat the wastewater. The plant is currently operating at about 50%. System failures that do occur are primarily the low-lying areas, causing I and I.

Proposed Projects

The City of Wickliffe needs to expand the current system north on US 60 and loop County Farm Road extending to the Crystal Lake area. This extension will provide service to a large number of customers. Extensions should be made out Dowdy Road and also south on US 51 to the giant cross that overlooks the Ohio River. This extension will provide 14 customers service and also take in the city park that was formed with the construction of the cross. The park will need sewer service due to the large amount of tourism expected as a result of the cross. The city should also expand on KY 286 about 2 miles to take in a large area that expects future development. Rehab of the main lift station is needed due to being located in a flood plain, as well as new lift stations for the expansion areas.

SX21007002

<u>Priority</u>	<u>Project Owner</u>	<u>Cost Estimates</u>	<u>Customers</u>
I	Wickliffe Sewer System		113

CALLOWAY COUNTY

Calloway County Sewer Service (map)

- Estimated 1999 population of 29,400--50% on public sewer
- Estimated 2020 population of 28,100--65% on public sewer
- Proposed projects would connect about 2,100 new households to public sewer during 2000-2020
- Estimated funding needs for public sewer 2000-2005--\$10,000,000
- Estimated funding needs for public sewer 2006-2020--\$12,300,000

Calloway County had an estimated population of 29,427 (13,214 households) in 1999 with a projected population of 28,100 (13,600 households) in 2020. Public sewer is provided to about 50 percent of the households. About 6,600 households use on-site systems. About 2,100 customers could be added to public sewer service through new line extensions in 2000-2020.

CALLOWAY 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)
CALLOWAY							
MURRAY WATER SYSTEM							0
SX21035002	100	400					400
SX21035004	363	3,600					3,600
SX21035005	548	6,000					6,000
Total	1,011	10,000					10,000

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)
CALLOWAY							
MURRAY WATER SYSTEM							0
SX21035001	700	8,200					8,200
SX21035003	271	2,700					2,700
SX21035006	139	1,400					1,400
Total	1,110	12,300					12,300

SOUTH 641 WATER DISTRICT

The South 641 Water District owned by the City of Hazel has one full-time employee and provides service to 230 customers, serving a population of 759. The plant has a 24-hour

SEWER SERVICE AREAS CALLOWAY COUNTY Kentucky

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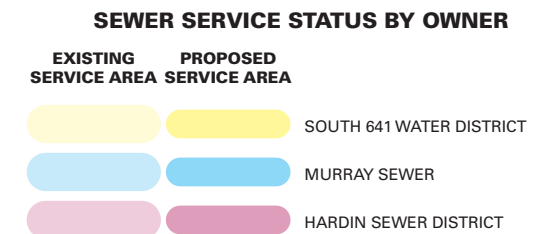
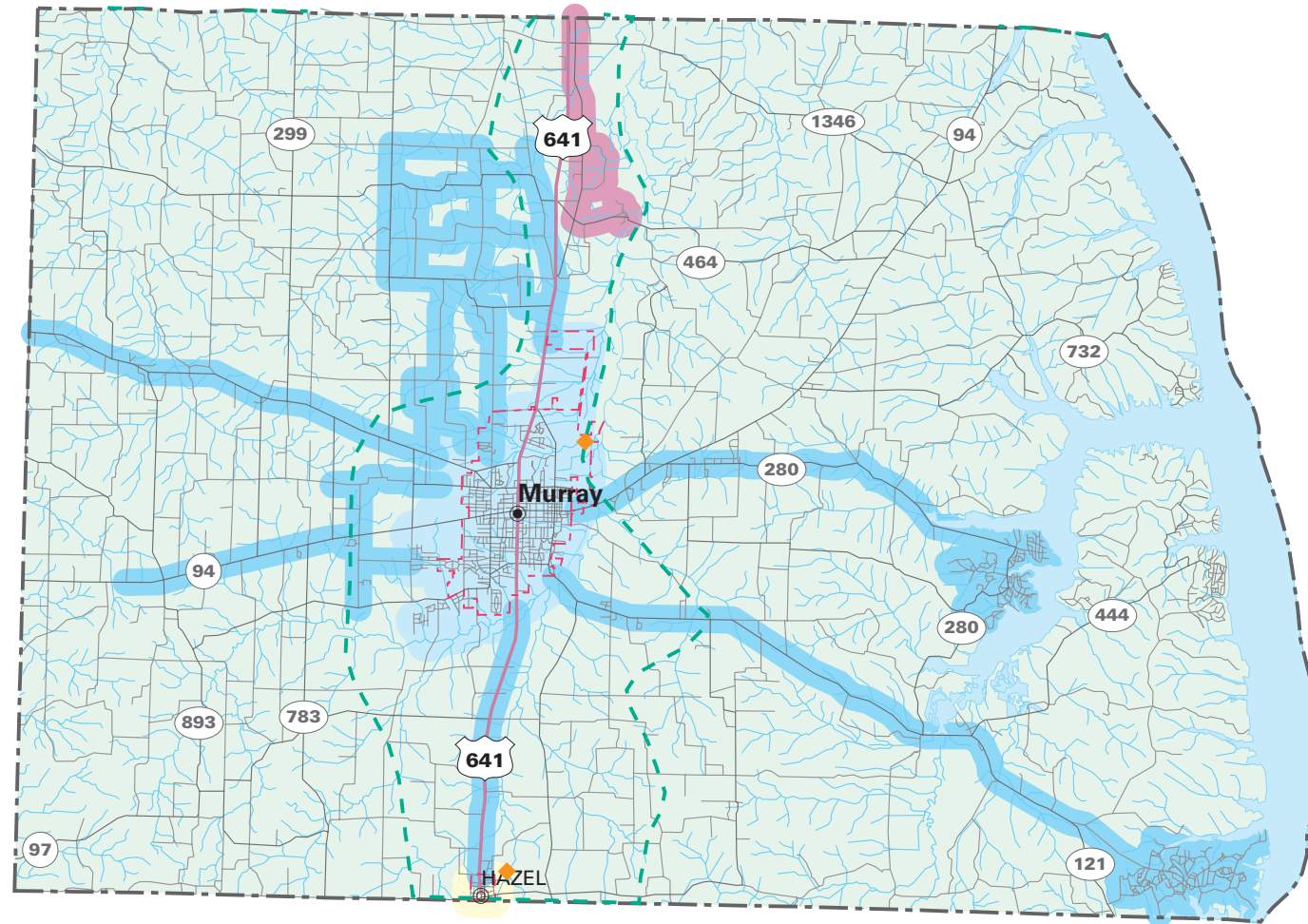
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-  201k Facility Planning Area
-  Incorporated City Boundary
-  Sewage Treatment Plant



design capacity of 30000 gallons per day and is operating at 85%. Over 90% of the lines are older than 20 years and feed into a lagoon system that processes the wastewater. The system is a Class I system.

MURRAY SEWER TREATMENT PLANT

The City of Murray operates a Class III system that has a 24-hour design capacity of 5.25 million gallons. The system uses an oxidation ditch facility to process the wastewater. The system has four different pre-treatment sites around the service area. The system presently serves a customer base of 6,311 service connections. Approximately 20% of the lines are over 20 years in age.

Proposed Projects

SX21035001

Priority	Project Owner	Cost Estimates	Customers
LT	Murray Sewer Treatment		658

The extension is to follow KY 121 and go to the community of Cypress Springs, picking up a large number of customers and businesses along the highway. The Cypress Springs community is a fast growing community with a large recreational draw of seasonal customers. The sewage is to be pumped to the City of Murray to process the wastewater.

SX21035002

Priority	Project Owner	Cost Estimates	Customers
I	Murray Sewer Treatment		309

The sewer line will connect the Cities of Hazel and Murray along US 641. The line will enable the City of Hazel to lift its tap on ban and acquire more customers. The line will provide the City of Hazel the ability to grow and attract more businesses to the area. The line will also pick up customers along US 641.

SX21035003

Priority	Project Owner	Cost Estimates	Customers
LT	Murray Sewer Treatment		271

The extension will provide sewer to the area along KY 94 west. This is a developed area and is experiencing some growth that could be facilitated further by the addition of sewer. There are some subdivisions being built just off of KY 94 west.

SX21035004

Priority	Project Owner	Cost Estimates	Customers
I	Murray Sewer Treatment		363

The extension gets a large area of people north of the City of Murray. The area has failing septic tanks and the soils are not the best for drainage fields. The area is a rapid developing area that with the extension of sewer would see a greater boom in growth. The City of Murray is currently growing out in this direction and sewer would attract more businesses to the area as well as residents.

SX21035005

Priority	Project Owner	Cost Estimates	Customers
I	Murray Sewer Treatment		548

The extension picks up several lake communities and other Calloway county residents along the proposed line. The communities that are picked up are growing communities with a large number of seasonal as well as full-time residents. The soils in the area do not facilitate good drainage and with the potential for a large seasonal population the area could experience problems.

SX21035006

Priority	Project Owner	Cost Estimates	Customers
LT	Murray Sewer Treatment		139

The line will follow KY 121 North picking up several residents and businesses as well as several small communities along the route. With the addition of sewer the area can develop further and see further growth. The soils out the route are okay, but are at the head of a major aquifer that provides water to a large portion of the area and others outside the state.

CARLISLE COUNTY

Carlisle County Sewer Service (map)

- Estimated 1999 population of 5,400--30% on public sewer
- Estimated 2020 population of 5,300--50% on public sewer
- Proposed projects would connect about 520 new households to public sewer during 2000-2020
- Estimated funding needs for public sewer 2000-2005--\$4,000,000
- Estimated funding needs for public sewer 2006-2020--\$5,500,000

Carlisle County had an estimated population of 5,409 (2,334 households) in 1999 with a projected population of 5,266 (2,409 households) in 2020. Public sewer is provided to about 30 percent of the county's residents. About 1,600 households in the county use on-site treatment systems. About 520 customers could be added to public sewer service through new line extensions in 2000-2020.

CARLISLE 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)
CARLISLE							
Carlisle County regional System							
SX21039001	151	1,500					1,500
SX21039002	252	2,500					2,500
Total	403	4,000					4,000

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)
CARLISLE COUNTY							
Carlisle County Regional System							
SX21039003	45	500			4,000		4,500
SX21039004	74	1,000					1,000
Total	119	1,500			4,000		5,500

CARLISLE COUNTY REGIONAL STP

The Carlisle County Regional STP is presently under construction. A new 250,000-gallon per day wastewater treatment plant will handle the waste from Bardwell, Arlington and the Carlisle County School District. The treatment plant will utilize an aerated lagoon system to

SEWER SERVICE AREAS CARLISLE COUNTY Kentucky

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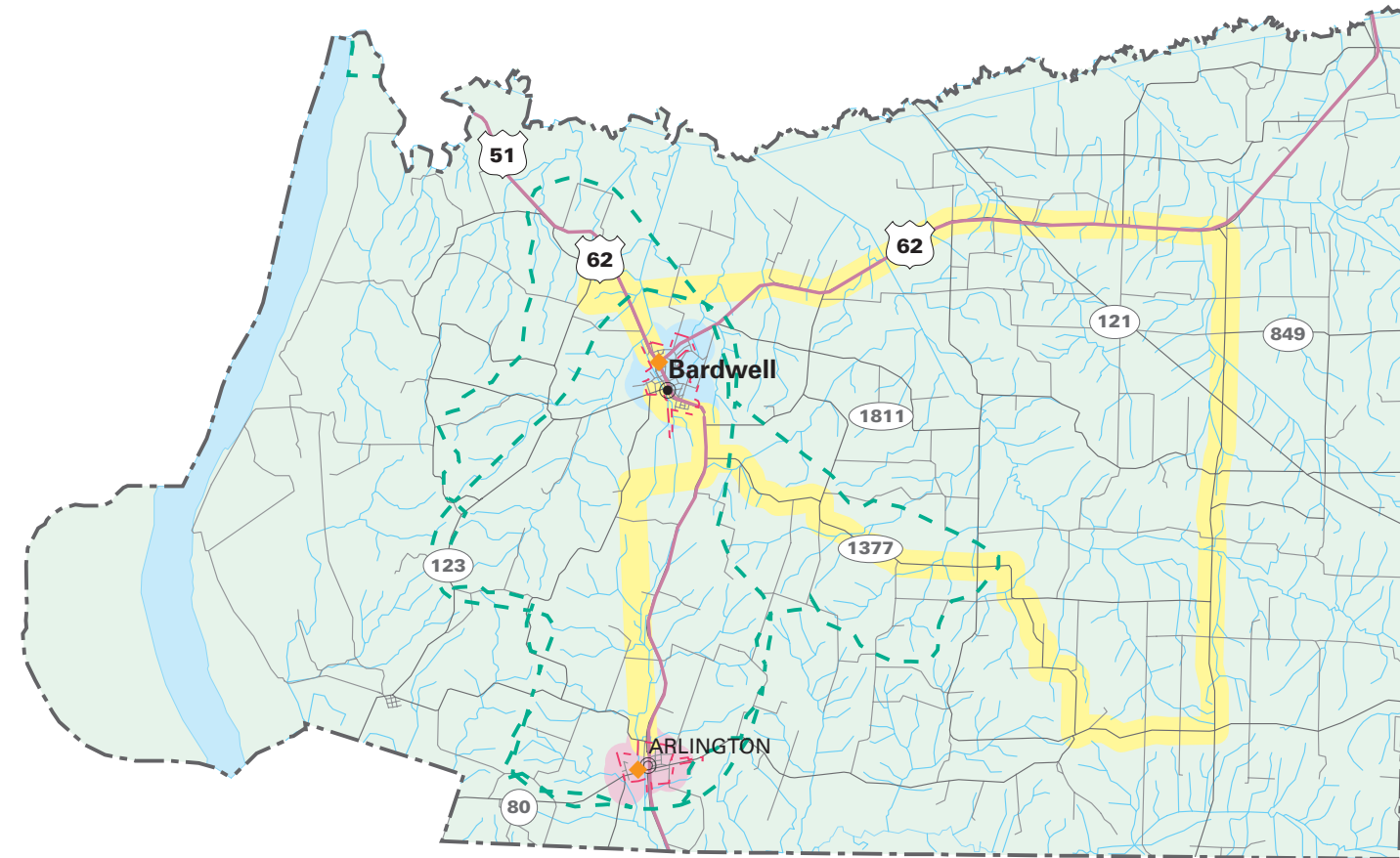
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- - - 201k Facility Planning Area
- - - Incorporated City Boundary
- ◆ Sewage Treatment Plant



SEWER SERVICE STATUS BY OWNER

EXISTING SERVICE AREA	PROPOSED SERVICE AREA	OWNER
		CARLISLE COUNTY REGIONAL SEWER
		BARDWELL CITY UTILITIES
		ARLINGTON WATER AND SEWER DEPARTMENT

handle the wastewater. The three existing collection systems will not be changed. In 2000 the City of Cunningham will be added to the system, once funding is secured.

Proposed Projects

SX21039001

Priority	Project Owner	Cost Estimates	Customers
I	Carlisle County Regional System		151

This regional system will connect Bardwell, Arlington, Milburn and the Carlisle County Board of Education. Development of this system has already begun within the county. This system will affect the current 570 customers. The regional plant is needed to replace the current systems, which are more than 30 years old and plagued with many problems. There will be a need for a new treatment plant as well as lift stations, pumps, and replacement of some existing lines.

SX21039002

Priority	Project Owner	Cost Estimates	Customers
I	Carlisle County Regional System		252

This project will add the Cunningham community to the regional system. The line will extend from Bardwell east on US 62 to the eastern most portion of Cunningham. This connection will provide much needed service to a large number of residence plus several small businesses, Dogwood Hills Country Club, Veterans Park and a large area that is currently being subdivided for new homes. Some pump stations will be needed due to the length between communities.

SX21039003

Priority	Project Owner	Cost Estimates	Customers
LT	Carlisle County Regional System		45

Extend the existing line from the Carlisle County High School to the community of Milburn. There are several residents along this route and with the addition of sewer will provide growth potential for the area.

SX21039004

Priority	Project Owner	Cost Estimates	Customers
LT	Carlisle County Regional System		74

The line extension will follow US 62 from Cunningham to KY 307 then KY 307 to KY 80 to Milburn. The line will provide service to several households and provide for growth potential.

BARDWELL CITY UTILITIES

The City of Bardwell operates a treatment plant with a 24-hour design capacity of 130,000. The plant presently is operating at 52%. The city has 421 customers serving a population of 1,568. Over 90% of the lines are older than 20 years. The City is one of three systems that will make up the Carlisle County Regional STP.

ARLINGTON SEWER

The City of Arlington contracts with the Purchase Public Service Cooperation (PPSC) for the daily operations and maintenance of the Class II system. The plant has a 24-hour design capacity of 70,000 gallons. The system is one of three that will make up the Carlisle County Regional STP.

FULTON COUNTY

Fulton County Sewer Service (map)

- Estimated 1999 population of 7,500--70% on public sewer
- Estimated 2020 population of 7,200--85% on public sewer
- Proposed projects would connect about 420 new households to public sewer during 2000-2020
- Estimated funding needs for public sewer 2000-2005--\$15,700,000
- Estimated funding needs for public sewer 2006-2020--\$1,500,000

Fulton County had an estimated population of 7,514 (3,152 households) in 1999 with a projected population of 7,155 (3,104 households) in 2020. Public sewer is provided to about 70 percent of the county's residents. About 950 households treat wastewater on site. About 420 customers could be added to public sewer service through new line extensions in 2000-2020.

FULTON 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)
FULTON							
Hickman Water Department							
SX21075003	270	2,700	2,000	1,000			5,700
Fulton Municipal Water System							
SX21075001			8,000	2,000			10,000
County Total	270	2,700	10,000	3,000			15,700

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)
FULTON							
Fulton Municipal Water System							
sx21075002	150	1,500					1,500

FULTON STP

The City of Fulton runs the Class III system. It employs 3 full-time employees and has 1,160 customers, serving a population of 3,800. The system has a permitted design capacity of 720,000 gallons. The system currently operates at 85%. The city has 5 pretreatment points

SEWER SERVICE AREAS

FULTON COUNTY

Kentucky



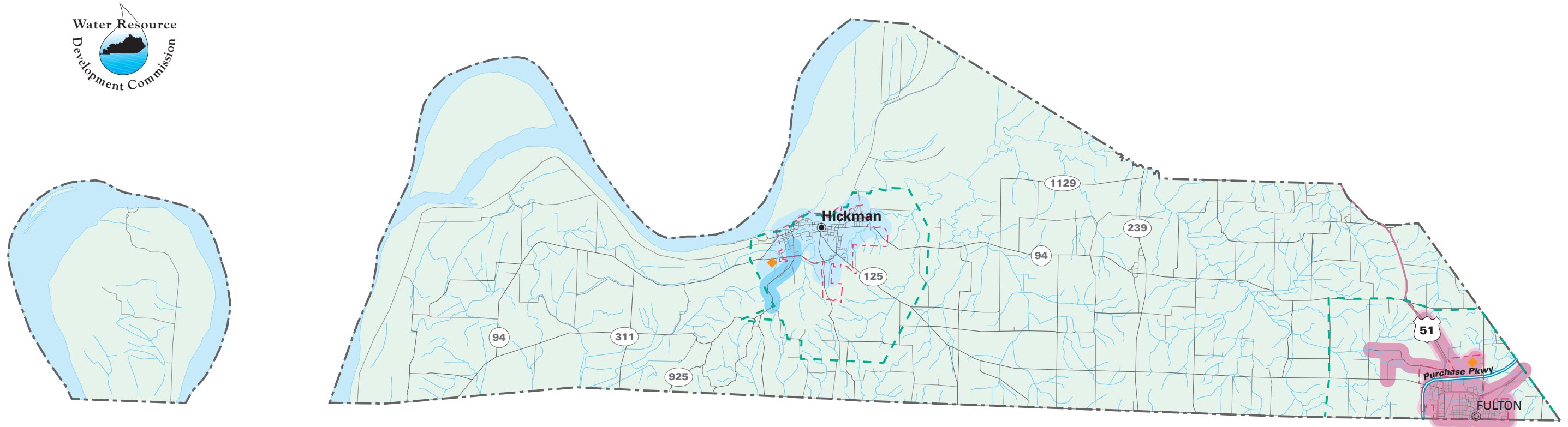
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Bob Arnold, Chairman
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Final GIS & Cartographic Operations By:
 Kent Anness & Kim Anness

Data Collection & GIS Input By:
 Kentucky Area Development Districts



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SEWER SERVICE STATUS BY OWNER

EXISTING SERVICE AREA	PROPOSED SERVICE AREA	
		CITY OF HICKMAN
		CITY OF FULTON

throughout the city. The City of Fulton experiences I and I and it causes problems for the system.

Proposed Projects

SX21075001

Priority	Project Owner	Cost Estimates	Customers
I	Fulton Municipality Sewer System		1200

Before any expansion can be considered the current system will need total rehab. The system is very old and needs many repairs. The treatment plant is at capacity and will need an upgrade. Lift stations will need to be replaced and new pumps are needed. The lines will need to be replaced or slipped lined.

SX21075002

Priority	Project Owner	Cost Estimates	Customers
LT	Fulton Municipality Sewer System		150

With upgrades the city will be able to extend lines out KY 2149 to the airport and also extend out KY 1461 and KY 166. The city should consider extending lines out US 45 north through the southern most portion of Hickman County into Graves County to provide needed sewer service to the city of Water Valley.

HICKMAN EAST STP

The City of Hickman operates the Class II system and employs 1 full-time employee. The plant has a rated capacity of 600,000 gallons per day, and operates at 97%. The system uses an extended aeration system to process the wastewater.

SX21075003

Priority	Project Owner	Cost Estimates	Customers
I	Hickman Municipality Sewer System		270

Hickman should expand services south to the Brownsville community. This will take in a large number of customers. The city already provides water to this area and sewer should be added. This project will need pump stations and require an upgrade of the treatment plant. I & I is a current problem and SSES surveys are being conducted.

GRAVES COUNTY

Graves County Sewer Service (map)

- Estimated 1999 population of 35,700--40% on public sewer
- Estimated 2020 population of 38,400--55% on public sewer
- Proposed projects would connect about 2,500 new households to public sewer during 2000-2020
- Estimated funding needs for public sewer 2000-2005--\$27,100,000
- Estimated funding needs for public sewer 2006-2020--\$0

Graves County had an estimated population of 35,718 (15,257 households) in 1999 with a projected population of 38,371 (16,787 households) in 2020. Public sewer is provided to about 40 percent of the county's residents. About 9,150 households treat wastewater on site. About 2,500 customers could be added to public sewer service through new line extensions in 2000-2020.

GRAVES 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)
GRAVES							
Wingo Water & Sewer Department							
SX21083005	47	500					500
Mayfield Electric & Water							
SX21083001	301	3,000					3,000
SX21083002	163	1,600					1,600
SX21083003	147	1,500					1,500
SX21083004 (hybrid systems?)	1143	12,000					12,000
SX21083006	229	2,500					2,500
SX21083007	229	3,000					3,000
SX21083008 (hybrid systems?)	251	3,000					3,000
Total	2463	26,600					26,600
County Total	2,510	27,100					27,100

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)
GRAVES							none

FANCY FARM SEWER DISTRICT

The Fancy Farm Sewer District, a commission, was established in 1981. It employs 3 full-time employees and has 230 service connections. The 24-hour rated design capacity is

SEWER SERVICE AREAS GRAVES COUNTY Kentucky

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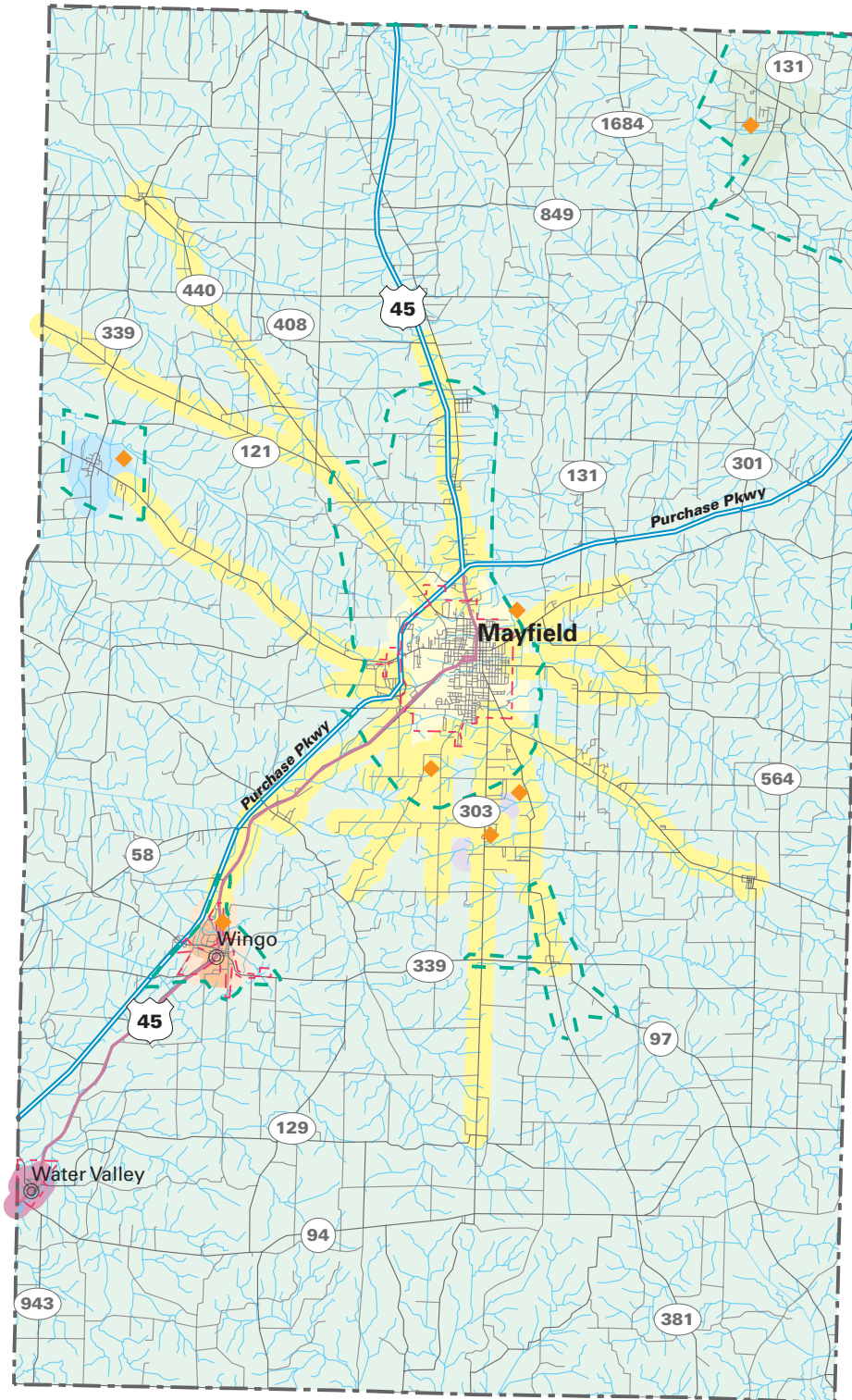
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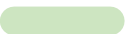



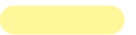
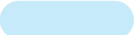
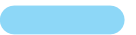




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-  201k Facility Planning Area
-  Incorporated City Boundary
-  Sewage Treatment Plant



SEWER SERVICE STATUS BY OWNER

EXISTING SERVICE AREA	PROPOSED SERVICE AREA	OWNER
		WINGO SEWER
		SYMSONIA SEWER
		PURCHASE PUBLIC SERVICE CORPORATION
		MAYFIELD WATER & ELECTRIC SYSTEM
		FANCY FARM SEWER DISTRICT
		CITY OF FULTON



100,000-gallons and is presently operating at 33%. The system currently spends 94% of revenue on operations and maintenance.

HIGHLAND CLUB ESTATES

Highland Club Estates is owned and operated by the Purchase Public Service Corporation (PPSC). The system has 22 customers and serves a population of 73. The plant has a 15,000-gallon per day design capacity, and uses an extended aeration system to process the wastewater. The system is a Class I system.

HOLIFIELD ESTATES SUBDIVISION

The PPSC owns and operates this Class I system. It has 11 service connections and serves a population of 36. The system has a 24-hour rated design capacity of 6,000 gallons. It uses an extended aeration system process the wastewater. The system currently spends more on operations and maintenance than it has revenue.

MAYFIELD ELECTRIC AND WATER SYSTEM

The City of Mayfield's sewer treatment plant is a municipality and serves a population of 11,500 with 4,800 service connections. The system established in 1942 has 90% of its lines in excess of 20 years in age. The plant has a 24-hour design capacity of 3.08 million gallons. The city has 5 pretreatment sites located throughout the system. The system spent 86% of revenue on operations and maintenance expense. The system is a class III and employees 6 full-time employees.

Proposed Projects

SX21083001

Priority	Project Owner	Cost estimates	Customers
I	Mayfield Electric & Water		301

This sewer extension runs out US 45 and picks up several industrial sites and the community of Hickory. The businesses and residents along the route will also benefit from the sewer service.

SX21083002

Priority	Project Owner	Cost estimates	Customers
I	Mayfield Electric & Water		163

The proposed line picks up the community of Hardeman and other residents of Graves County. This is an area that has growth potential both residential and industrial.

SX21083003

Priority	Project Owner	Cost estimates	Customers
I	Mayfield Electric & Water		147

This line runs along KY 121 to the community of Farmington. It picks up an elementary school and many residents along the way. This area has seen moderate growth. The soils out in the area of Farmington are not good soils for septic systems and some septic systems are failing.

SX21083004

Priority	Project Owner	Cost estimates	Customers
I	Mayfield Electric & Water		1,143

This project supplies sewer to an area that has seen explosive growth and is still growing. There are several small package plants that can be absorbed by the larger system of lines. The project supplies sewer to the community of Cuba and the many subdivisions in the project area.

SX21083006

Priority	Project Owner	Cost estimates	Customers
I	Mayfield Electric & Water		229

The project provides sewer to an area that has growth potential and will benefit the residents that already live there. It provides sewer to the community of Pryorsburg and the surrounding area. The project would also pick up several small businesses along US 45.

SX21083007

Priority	Project Owner	Cost estimates	Customers
I	Mayfield Electric & Water		229

This project connects the community of Fancy Farm with the city of Mayfield. It will also pick up several residents along KY 80 N. There are a few subdivisions in the area and has a huge growth potential.

SX21083008

Priority	Project Owner	Cost estimates	Customers
I	Mayfield Electric & Water		251

The project provides the community of Lowes with sewer and several other small communities. The routes of KY 121N and KY 440 have a well established base of residents. The area has a growth potential that will only be enhanced by existing sewers. The soils around the community of Lowes are not the best for septic systems. There are several smaller subdivisions along both routes that will benefit from the sewers and may encourage other subdivisions to be created.

SYMSONIA WATER AND SEWER DISTRICT

The Symsonia sewer district is a municipality and currently has 234 customers. It employs 1 full-time and 2 part-time employees. The system has a 100,000-gallon per 24-hour design rated capacity. It utilizes an aerated lagoon system to process the wastewater. The system currently spends 97% on operations and maintenance. The system is a Class II system.

THOMAS COUNTY ESTATES

The PPSC currently owns and operates the Class II system. The system has 113 customers and a population served of 373. The system has a 24-hour design rated capacity of 40,000 gallons. It utilizes an extended aeration system to process the wastewater. The system operates at about 90% capacity, and spends 72% of revenue on operations and maintenance.

WINGO WATER AND SEWER

The City of Wingo operates a Class II system. The system serves a population of 606 with 268 connections. The system employs 4 full-time employees. The system was established in 1968 and over 95% of the lines are older than 20 years. The system has a 24-hour rated design capacity of 70,000 gallons.

Proposed Projects

SX21083005

<u>Priority</u>	<u>Project Owner</u>	<u>Cost estimates</u>	<u>Customers</u>
I	Wingo Sewer Department		47

The project supplies sewer to area of the City of Wingo where sewer does not already exist. Both areas are subdivisions that are rapidly developing and would benefit greatly if sewer were to be installed.

HICKMAN COUNTY

Hickman County Sewer Service (map)

- Estimated 1999 population of 4,900--30% on public sewer
- Estimated 2020 population of 3,700--40% on public sewer
- Proposed projects would connect about 175 new households to public sewer during 2000-2020
- Estimated funding needs for public sewer 2000-2005--\$7,000,000
- Estimated funding needs for public sewer 2006-2020--\$600,000

Hickman County had an estimated population of 4,858 (2,114 households) in 1999 with a projected population of 3,739 (1,704 households) in 2020. Public sewer is provided to about 30 percent of the county's residents. About 1,500 households treat wastewater on site. About 175 customers could be added to public sewer service through new line extensions in 2000-2020.

HICKMAN 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)
HICKMAN COUNTY							
Clinton Sewer System							
SX21105001			3,000				3,000
Columbus Sewer System							
SX21105003	120	2,000			2,000		4,000
County Total	120	2,000	3,000	-	2,000		7,000

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)
HICKMAN							
Clinton Sewer SX21105002	55	600					600

Proposed Projects

SX21105001

Priority	Project Owner	Cost Estimates	Customers
I	Clinton Sewer System		25

The City of Clinton needs to upgrade its current system and extend lines within the city limits. Major rehab of the system will be necessary before expansion can be considered

SEWER SERVICE AREAS

HICKMAN COUNTY

Kentucky

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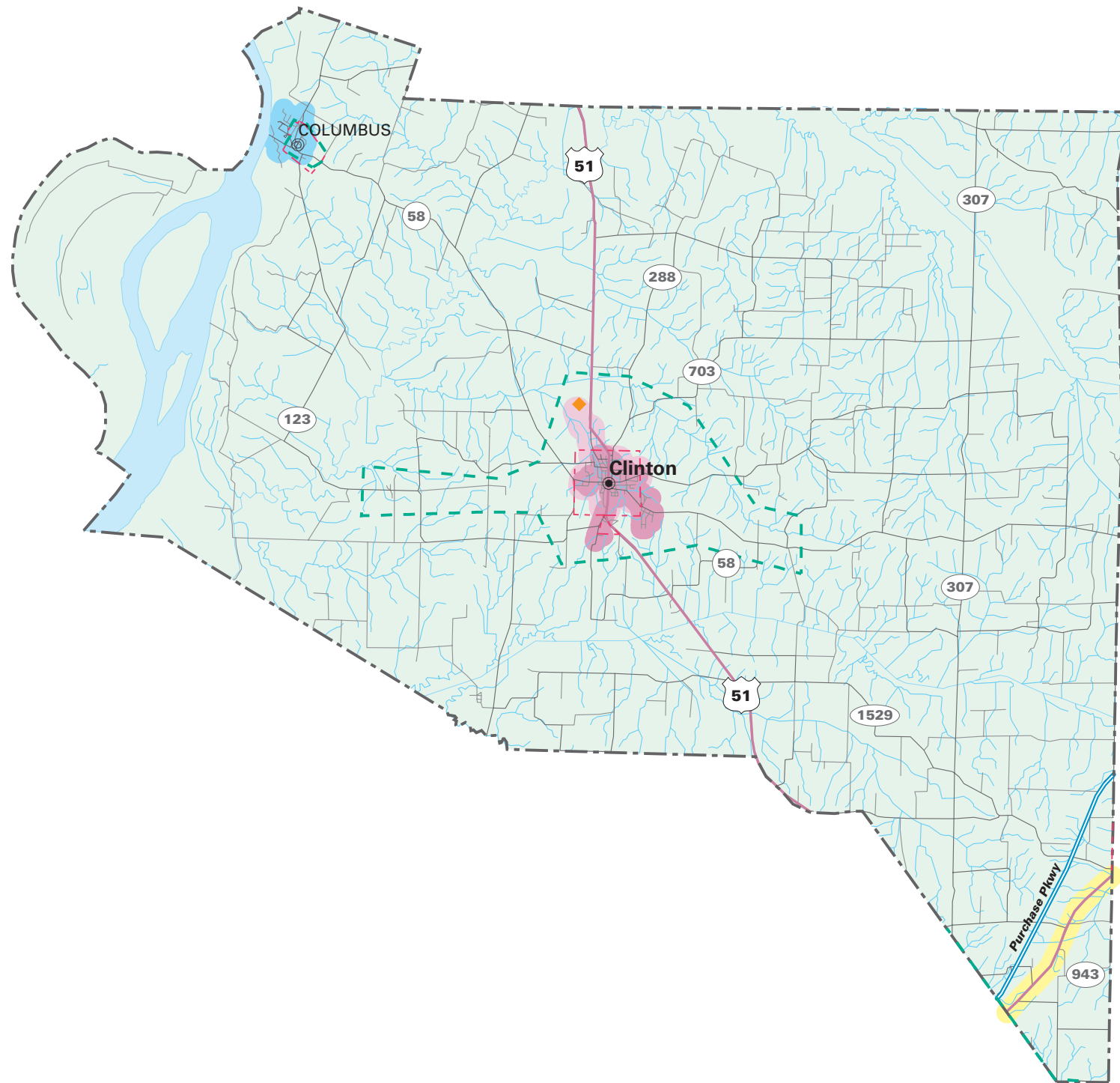
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- - - 201k Facility Planning Area
- - - Incorporated City Boundary
- ◆ Sewage Treatment Plant



SEWER SERVICE STATUS BY OWNER

EXISTING SERVICE AREA	PROPOSED SERVICE AREA	OWNER
		CITY OF FULTON
		CITY OF COLUMBUS
		CITY OF CLINTON

outside city limits. Upgrade of treatment plant, improved pumping stations and line replacements will be needed.

SX21105002

<u>Priority</u>	<u>Project Owner</u>	<u>Cost Estimates</u>	<u>Customers</u>
LT	Clinton Sewer System		55

With improvements made from project SX21105002 the city of Clinton will be able to extend lines to populated areas outside the city limits. East of the city on KY 58 is the Cunningham Subdivision. This extension will take in several homes in need of sewer services. Due to the hilly topography within the subdivision, several pump stations will be required to move waste. The city can also extend a line 2 miles south on US 51 and provide much needed service to several businesses and homes.

SX21105003

<u>Priority</u>	<u>Project Owner</u>	<u>Cost Estimates</u>	<u>Customers</u>
I	City of Columbus		120

The city of Columbus is in dire need of a sewer system. The system would provide service to highly populated areas within the city as well as the Columbus-Belmont State Park.

MCCRACKEN COUNTY

McCracken County Sewer Service (map)

- Estimated 1999 population of 64,200--70% on public sewer
- Estimated 2020 population of 63,800--80% on public sewer
- Proposed projects would connect about 3,200 new households to public sewer during 2000-2020
- Estimated funding needs for public sewer 2000-2005--\$18,000,000
- Estimated funding needs for public sewer 2006-2020--\$15,500,000

McCracken County had an estimated population of 64,200 (27,679 households) in 1999 with a projected population of 63,802 (28,890 households) in 2020. Public sewer is provided to about 70 percent of the county's residents. About 8,300 of the county's households treat wastewater on site. About 3,200 customers could be added to public sewer service through new line extensions in 2000-2020.

MCCRACKEN 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)
MCCRACKEN							
Joint Sewer Agency							
SX21145001	400	4,000					4,000
SX21145002	675	7,000					7,000
SX21145003	262	3,000					3,000
SX21145004	404	4,000					4,000
Total	1,741	18,000					18,000

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)
MCCRACKEN							
Joint Sewer Agency							
SX21145005	1079	11,000				500	11,500
SX21145006	394	4,000					4,000
Total	1,473	15,000				500	15,500

CONCORD ESTATES SUBDIVISION

Concord Estate Subdivision is administered by the PPSC. The PPSC employs 3 full-time employees.

SEWER SERVICE AREAS MCCRACKEN COUNTY Kentucky



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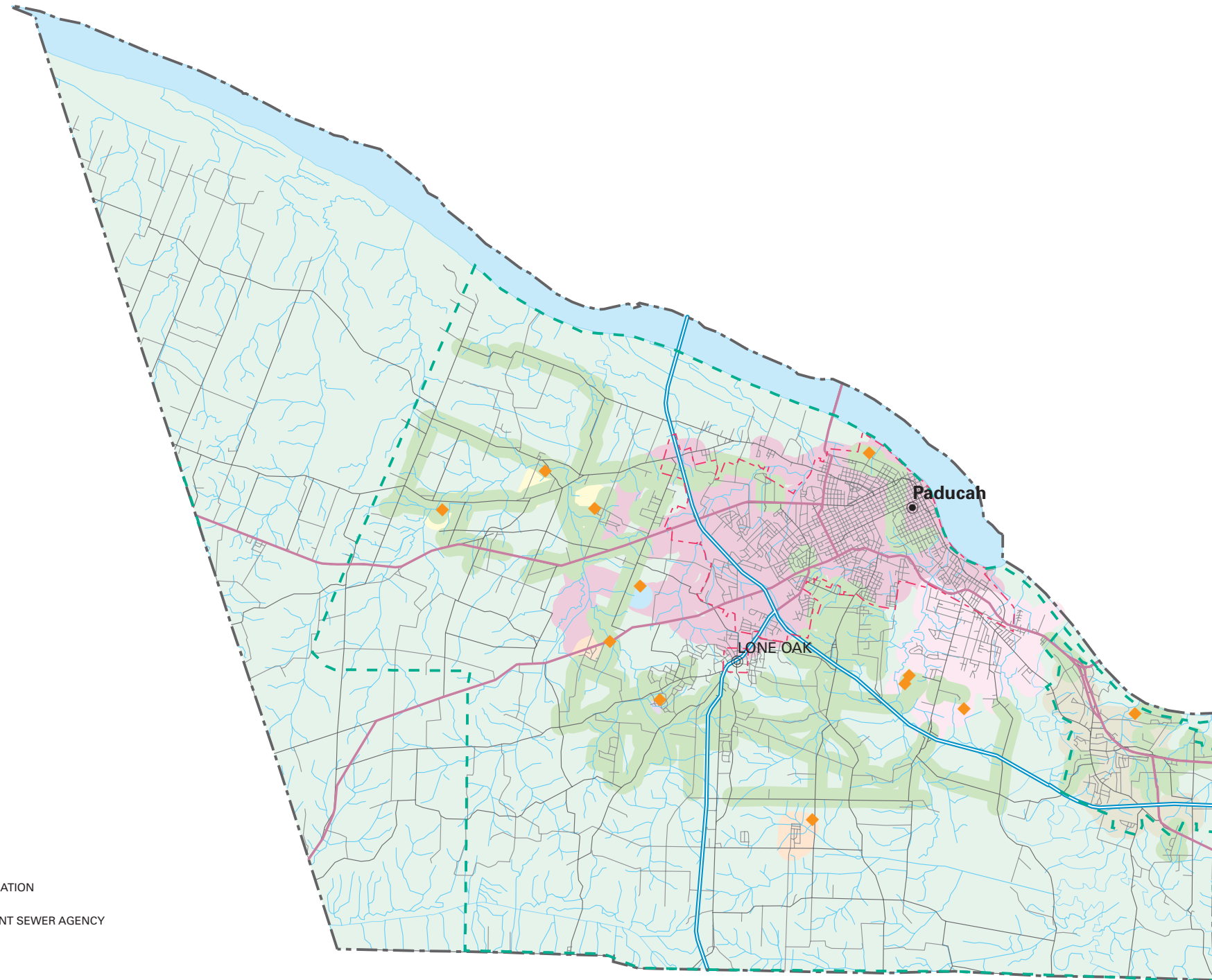


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- 201k Facility Planning Area
- Incorporated City Boundary
- Sewage Treatment Plant

SEWER SERVICE STATUS BY OWNER

EXISTING SERVICE AREA	PROPOSED SERVICE AREA	
		SANITATION DISTRICT #4
		REIDLAND SEWER DISTRICT #3
		PURCHASE PUBLIC SERVICE CORPORATION
		PADUCAH-MCCRACKEN COUNTY JOINT SEWER AGENCY
		KENNETH WISE
		JOANNE ESTATES UTILITIES INC
		CONCORD ESTATES
		CITY OF PADUCAH



BLANDVILLE WEST ESTATES SUBDIVISION

The Purchase Public Service Corporation owns and operates this Class I system. The system has a design capacity of 30,000 and operates at 75%. The system has 65 customers and serves a population of 215. The system spends 82% of its revenue on operations and maintenance.

GREAT OAKS SUBDIVISION

The Purchase Public Service Corporation owns and operates the Class I system. The system has 1,124 customers serving a population of 376. The plant has a design capacity of 70,000 and is operating at 50%. The system uses extended aeration to process the wastewater.

JOANNE ESTATES

Joanne Estates subdivision is a Class I system that has a customer base of 465 and serves a population of 5,000. Over 80% of the lines in the system are older than 20 years. The system has a design capacity of 25,000. The system uses a lagoon system to process the wastewater. This is a privately owned system.

PADUCAH MCCRACKEN COUNTY JOINT SEWER AGENCY

The Paducah McCracken JSA is composed the City of Paducah, Sanitation District #2, Woodlawn Sewer District, and Reidland Sewer District. The JSA has three plants presently the Woodlawn plant has a rated capacity of 910,000 gallons, Reidland has a capacity of 1,000,000, and the City of Paducah has a capacity of 9,000,000 gallons. The system operates at about 63% capacity. The JSA started operations on 1 July 1999, and serves a population base of 45,000. The JSA is a class IV system and employs 21 full-time employees. The JSA has 7 pretreatment sites located throughout the service area.

Proposed Projects

SX21145001

<u>Priority</u>	<u>Project Owner</u>	<u>Cost Estimates</u>	<u>Customers</u>
I	PADUCAH/MCCRACKEN CO. JSA		400

Provides sewer to a part of the county that is not already served. The continual growth and development of the area make this an area that needs sewer.

SX21145002

<u>Priority</u>	<u>Project Owner</u>	<u>Cost Estimates</u>	<u>Customers</u>
I	PADUCAH/MCCRACKEN CO. JSA		675

Provides sewer to an area of the county that does not have sewer but has a lot of existing growth. There are many subdivisions in the area that need sewer.

SX21145003

Priority	Project Owner	Cost Estimates	Customers
I	PADUCAH/MCCRACKEN CO. JSA		262

The project provides needed sewer the West McCracken area that is not yet received the benefits of sewer. The proximity of the airport makes this a high growth area that is already rapidly developing.

SX21145004

Priority	Project Owner	Cost Estimates	Customers
I	PADUCAH/MCCRACKEN CO. JSA		404

Sewer extensions in these parts of the county provide the area with the needed sewer lines that will handle the development that is occurring in these areas. There are several subdivisions as well as businesses in the area.

SX21145005

Priority	Project Owner	Cost Estimates	Customers
LT	PADUCAH/MCCRACKEN CO. JSA		1,079

The area has a high potential for growth. The area has several residents and businesses that are already established with the promise of future development occurring. The growth potential for this area can only be enhanced with the addition of sewer to the area.

SX21145006

Priority	Project Owner	Cost Estimates	Customers
LT	PADUCAH/MCCRACKEN CO. JSA		394

The project will enhance the sewer system that is put into place by project number SX21145003. The added lines will extend sewer to an area that has the ability to grow. The addition of project number SX21145003 will allow the area to start to develop thus making it necessary to carry the service out further when those conditions are met.

SX21145007

Priority	Project Owner	Cost Estimates	Customers
LT	PADUCAH/MCCRACKEN CO. JSA		736

This project will compliment project number SX21145002 and the existing sewer that is already in place. The extra lines that will be added when growth reaches a certain level will allow the system work at its peak ability without having to redo the entire area. The added lines will take pressure off of the existing lines and allow for more wastewater to be handled efficiently.

SX21145008

Priority	Project Owner	Cost Estimates	Customers
LT	PADUCAH/MCCRACKEN CO. JSA		155

Sewer lines extended to the area will aid the existing lines to handle the increase in wastewater due to the growth in the area. The area has potential for further growth, and has an already extensive sewer system that covers those areas already developed. The project provides sewer to those area that will develop in the upcoming years.

TERREVERTE ESTATES

Terreverte Estates is a Class I system that is a wastewater utility. The system was created in 1972 and 100% of its lines are older that 20 years. The system has a 40,000 gallon 24-hour design capacity and is operating at 75%. The system uses an extended aeration system to process the wastewater. The system spends more money on operations and maintenance than it has revenue. This is a privately owned system.

TIMBERLAND SUBDIVISION

Timberland Subdivision is a privately owned system. It has 54 service connections and serves a population of 178. The system has a 24-hour design capacity of 25,000 gallons and is operating at 85% of capacity. It uses a package treatment to lagoon to CL2 chamber system to handle the wastewater.

WILMINGTON CHILES

This is a privately owned system. It is a Class I system with 63 service connections and a customer base of 207. The system has a design capacity of 40,000 gallons and is operating at 28% of capacity. The system uses two package plants to treat the wastewater.

MARSHALL COUNTY

Marshall County Sewer Service (map)

- Estimated 1999 population of 30,000--30% on public sewer
- Estimated 2020 population of 32,000--90% on public sewer
- Proposed projects would connect about 7,700 new households to public sewer during 2000-2020
- Estimated funding needs for public sewer 2000-2005--\$10,500,000
- Estimated funding needs for public sewer 2006-2020--\$68,000,000

Marshall County had an estimated population of 30,045 (12,747 households) in 1999 with a projected population of 32,007 (14,568 households) in 2020. Public sewer is provided to about 30 percent of the county's residents. About 8,900 of the county's households treat wastewater on site. About 7,700 customers could be added to public sewer service through new line extensions in 2000-2020.

MARSHALL 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)
MARSHALL							
City of Benton							
SX21157006			500				500
SX21157005	150	2,000					2,000
Total	150	2,000	500				2,500
Hardin Sewer District							
SX21157002 (Hybrid)	623	8,000					8,000
County Total	773	10,000	500				10,500

SEWER SERVICE AREAS MARSHALL COUNTY Kentucky

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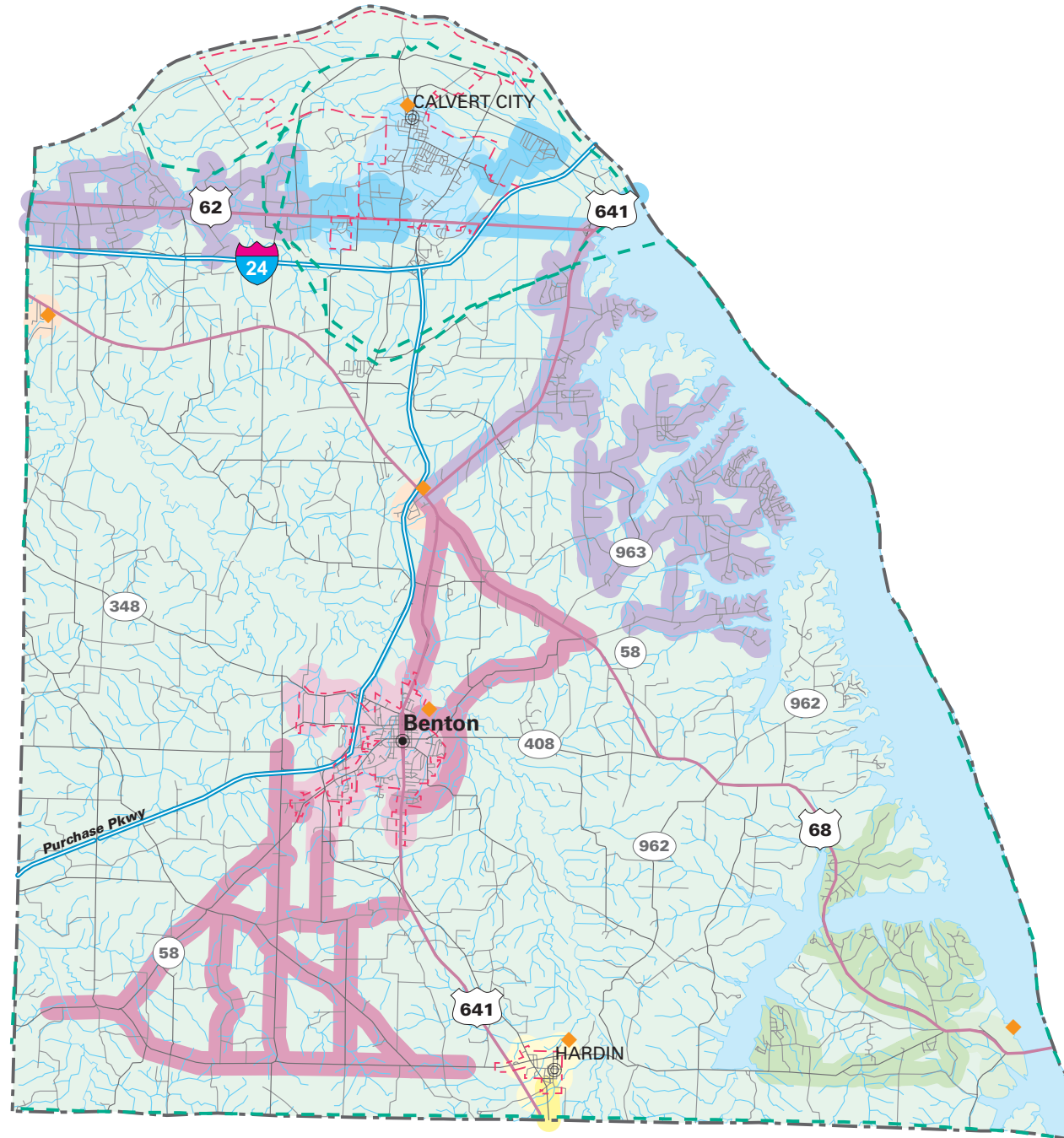
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- - - 201k Facility Planning Area
- - - Incorporated City Boundary
- ◆ Sewage Treatment Plant



SEWER SERVICE STATUS BY OWNER

EXISTING SERVICE AREA	PROPOSED SERVICE AREA	OWNER
■	■	PURCHASE PUBLIC SERVICE CORPORATION
■	■	MARSHALL COUNTY SANITATION DISTRICT #1
■	■	MARSHALL COUNTY FISCAL COURT
■	■	HARDIN SEWER DISTRICT
■	■	CALVERT CITY WATER AND SEWER
■	■	BENTON SEWER SYSTEM



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)
MARSHALL							
Benton							
SX21157001	706	7,000					7,000
Marshall County San Dist #1							
SX21157003	1800	10,000		5,000			15,000
Marshall County Fiscal Court							
SX21157004 (Hybrid system)	2874	25,000			5,000		30,000
SX21157008 (Hybrid system)	459	5,000					5,000
SX21157009 (Hybrid system)	589	6,000					6,000
Total	3922	36,000			5,000		41,000
Calvert City Water and Sewer							
SX21157007	509	5,000					5,000
County Total	6,937	58,000	-	5,000	5,000		68,000

BENTON WATER AND SEWER SYSTEM

The City of Benton employs 4 full-time employees to run the Class II system. The system has 1,906 service connections serving a population of 5,000. 75% of the lines within the system are older than 20 years. The plant has a rated 24-hour design capacity of 1,000,000 gallons. Presently the plant operates at 66%. The system uses treated wetlands to process the wastewater.

Proposed Projects

SX21157001

Priority	Project Owner	Cost estimates	Customers
LT	City of Benton		706

The sewer line extension will provide an area of growth with sewer. The soils in this area are not very good and some areas are experiencing failing septic tanks. The area is presently a well populated area and there are a few small communities that would benefit from the sewer line extension.

SX21157005

Priority	Project Owner	Cost estimates	Customers
I	City of Benton		351

The project will connect the existing system at the community of Draffenville. The community of Draffenville sees a lot of recreational population as well as the existing

population. The line will include the Marshall County High School as well as many businesses and homes along the proposed route.

SX21157006

Priority	Project Owner	Cost estimates	Customers
I	City of Benton		1906

The project is an interceptor line that runs along the eastern side of the city to the treatment plant. The line will benefit all residents of the area presently served by the city as well as any future customers.

CALVERT CITY WATER AND SEWER

Calvert City employs 4 full-time employees to operate its Class II system. The system has a 24-hour rated design capacity of 390,000 gallons; it operates at about 75%. The system utilizes an aerated lagoon to process the wastewater. The system spends 49% of revenue on operations and maintenance. The system was established in the 1950's and 80% of its lines are older than 20 years.

Proposed Projects

SX21157007

Priority	Project Owner	Cost estimates	Customers
LT	Calvert City Water and Sewer		509

The extension will provide service to the community of Gilbertsville. The area presently does not have a sewer system and has growth potential. The soils are not adequate for handling the large amounts of wastewater that will follow when the area's growth explodes.

DRAFFENVILLE COMMUNITY SUBDIVISION

PPSC operates the Class I with 3 full-time employees. There are 81 customers that utilize the 49,500 gallons 24-hour design capacity. The system operates at 75% and uses an extended aeration system to process the wastewater. 94% of revenue goes towards operations and maintenance.

GOLDEN ACRES SUBDIVISION

PPSC runs the system that has 42 customers and serves a population of 139. PPSC employs 3 full-time employees to operate the Class I system. The 24-hour capacity is 60,000 gallons

and the system operates at 60%. The system spends 98% of revenue on operations and maintenance.

CITY OF HARDIN

The City of Hardin established the Class II in 1963. The systems lines are all older than 20 years. The system has 227 customers and serves a population of 710. The plant has a design capacity of 70,000 and operates at 100%. 77% of the revenue goes towards operations and maintenance. The system employs 3 full-time employees to operate the system.

Proposed Projects

SX21157002

Priority	Project Owner	Cost estimates	Customers
I	Hardin Sewer District		623

The line would extend into Calloway County and pick up an area known as the Dexter-Almo. This area has failing septic tanks and the soils do not drain well for any type or size of septic system. This is a high growth area that is only hindered by the poor drainage the line would allow this area to really take off and explode.

MARSHALL COUNTY SANITATION DISTRICT #1

SD #1 has 40 connections and serves a population of 2,100, including a State Park. The system was established in 1981. The plant has a design capacity of 160,000 gallons per day, and uses an extended aeration to process the wastewater.

Proposed Projects

SX21157003

Priority	Project Owner	Cost estimates	Customers
LT	Marshall County Sanitation Dist #1		1815

The extension area will pick up an area that is presently well populated and experiencing explosive growth. The sewer would make the area that more attractive to build in. The area sees a lot of season recreational population as well as full-time. Kenlake State Park attracts a large volume of tourists and area population to visit the area adding to the need for sewer in the area.

MARSHALL COUNTY FISCAL COURT

Proposed Projects

SX21157004

<u>Priority</u>	<u>Project Owner</u>	<u>Cost estimates</u>	<u>Customers</u>
LT	Marshall County Fiscal Court		2872

The project would consist of creating a new sanitation district to serve the population in this area. This area is one of rapid growth that also sees a lot of seasonal population. The project calls for the addition of all needed facilities to accommodate the areas population.

SX21157008

<u>Priority</u>	<u>Project Owner</u>	<u>Cost estimates</u>	<u>Customers</u>
LT	Marshall County Fiscal Court		459

The project calls for connecting the systems of Draffenville and Calvert City and picking up a large area of explosive growth. It will also take a state park and an area of high traffic seen at the off ramp for the interstate. There are also many existing subdivisions in the area that will be picked up.

SX21157009

<u>Priority</u>	<u>Project Owner</u>	<u>Cost estimates</u>	<u>Customers</u>
LT	Marshall County Fiscal Court		589

The project calls for either the area to be made into a new sanitation district or to connect the new lines to Calvert City. If the Calvert City connection were made then the Calvert City Treatment Plant would require an upgrade to handle the wastewater. If the route of a new sanitation district is taken then a new plant will need to be located somewhere in the district. The area is one of high growth that has an already large established population.