

**Figure 8.03-3b**  
**Herrington Lake Service Area Alternative C-**  
**Septic Tank Effluent Small Diameter Force Main with Grinder Pump Stations**  
 Mercer County Regional Wastewater Facilities Plan  
 Mercer County Sanitation District

Individual septic tank systems would no longer be required and would be disconnected. Once these tanks are properly removed from service, individual property lateral lines would be reconnected to the new public gravity sewer system through pre-manufactured tee fittings at service connections. Given the topography of the area, Stringtown does not appear to require the use of a submersible pumping station to convey wastewater to Harrodsburg for Treatment. Section 9 will discuss treatment alternatives available to this area. Of all public collection systems the conventional gravity sewer requires the least amount of continued maintenance.

#### Advantages

- System would be uniform to other areas of the County
- Eliminates the need for individual septic tank installations
- Eliminates septic tank maintenance
- Provides access to sewer for routine maintenance
- Conventional municipal wastewater collection system

#### Disadvantages

- Higher susceptibility to Infiltration/Inflow (I/I)
- Greater number of manholes and larger diameter pipe
- Potential back flooding into basements or overflow from manholes due to blockages in sewer lines

Figure 8.03-4 shows the proposed conventional gravity system network for Stringtown. Other alternative collection systems were not considered for this Service Area.

### E. Salvisa Service Area (Salvisa & Bondville)

#### 1. Alternative A – Do Nothing

This first alternative consists of doing nothing to the existing package treatment plant, associated collection system and private septic tank systems. This would not address public health and environmental concerns with failing private septic tank systems as noted in a letter from MCHD, see Appendix A. Future commercial, industrial and residential growth to this area will remain limited under current conditions. Those residents with current failing septic tank systems should be required at a minimum to make improvements at the discretion of the MCHD.

#### 2. Alternative B – Conventional Gravity Sewer and Conveyance System

This Service Area consists of both Salvisa and Bondville. The most common and consistent form of collection found throughout the state of Kentucky including Harrodsburg is the Conventional Gravity Sewer System. This system would utilize PVC SDR 35 gravity sewer lines (8-inch diameter minimum, minimum slope 0.004) to convey wastewater to a manhole located approximately every 300 feet. Individual septic tanks systems would be disconnected and removed or broken down to eliminate potential health hazards. Lateral lines from each

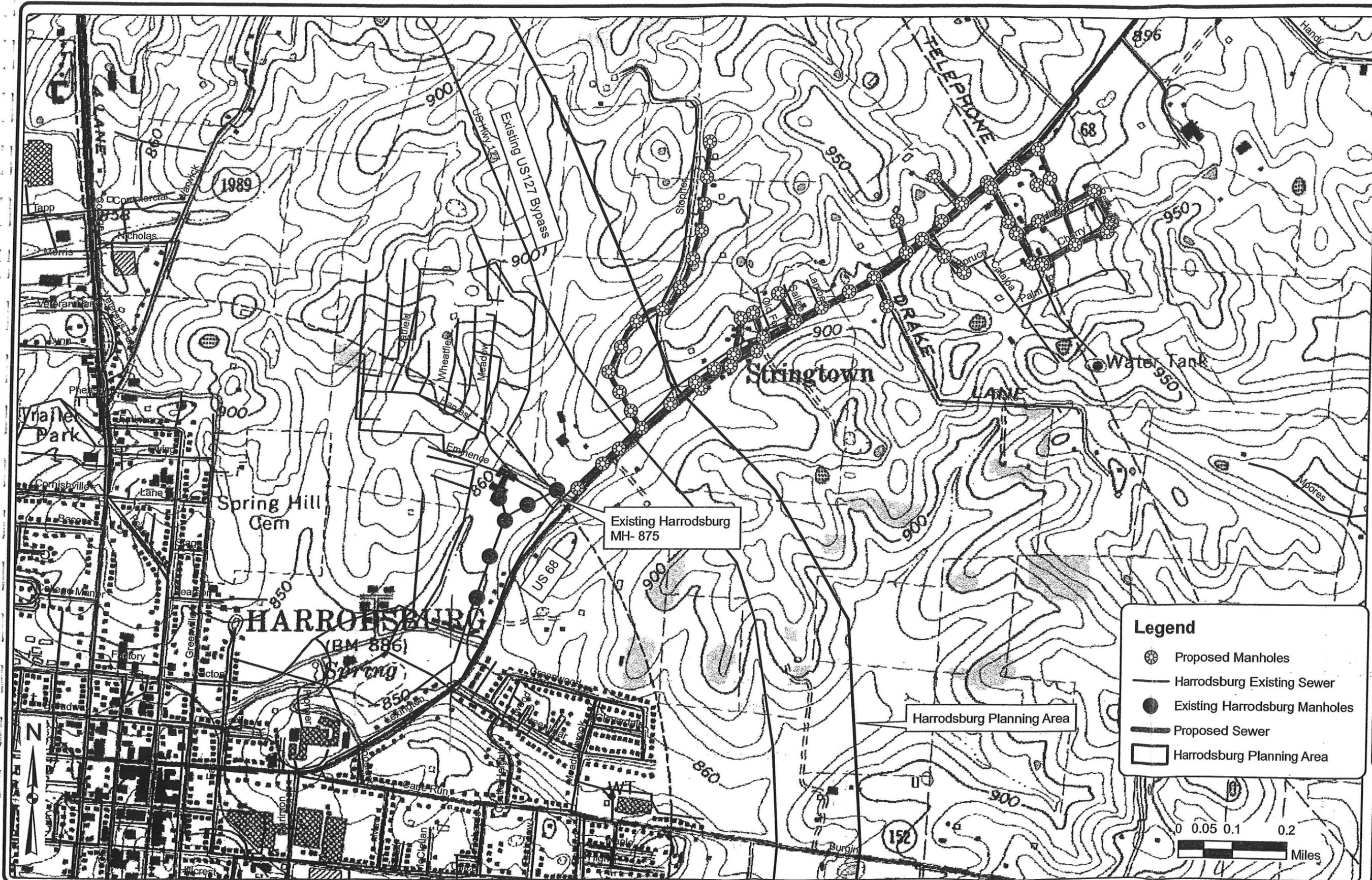


Figure 8.03-4  
 Stringtown Alternative B-  
 Conventional Gravity and Conveyance Sewer System  
 Mercer County Regional Wastewater Facilities Plan  
 Mercer County Sanitation District



FIGURE 8.03-4  
 2.992-002

individual residence would be reconnected to this public gravity sewer system through pre-manufactured tee fittings at service connections. Given the topography of the area, only a limited number of duplex submersible pumping stations with force mains would be required. Table 8.03-2 provides some insight into these proposed pumping stations. Further review of conveyance needs to treatment facilities will be discussed in Section 9. Of all public collection systems the conventional gravity sewer requires the least amount of continued maintenance.

**Advantages**

- System would be uniform to other areas of the County
- Eliminates the need for individual septic tank installations
- Eliminates septic tank maintenance
- Provides access to sewer for routine maintenance
- Conventional municipal wastewater collection system

**Disadvantages**

- Higher susceptibility to Infiltration/Inflow (I/I)
- Greater number of manholes and larger diameter pipe
- Potential back flooding into basements or overflow from manholes due to blockages in sewer lines

See Figure 8.03-5a for proposed conventional gravity system network.

Pump Station Name	Type	Flow (gpm)	TDH (feet)	No. of Pumps	Wet Well Diameter (feet)	Force Main Size (inches)
1. Alternative No.1	Submersible	<sup>1</sup> .*180	140	2	6	4
2. Salvisa	Submersible	<sup>1</sup> 500	140	2	10	10
		<sup>1</sup> .*570	150			

<sup>1</sup>. Lift Station & flow to be used if pumping to Harrodsburg WWTP.  
\*Indicates replacement pump characteristics between 10-20 years

**Table 8.03-2 Salvisa Alternative B- Recommended Characteristics of Pump Stations**

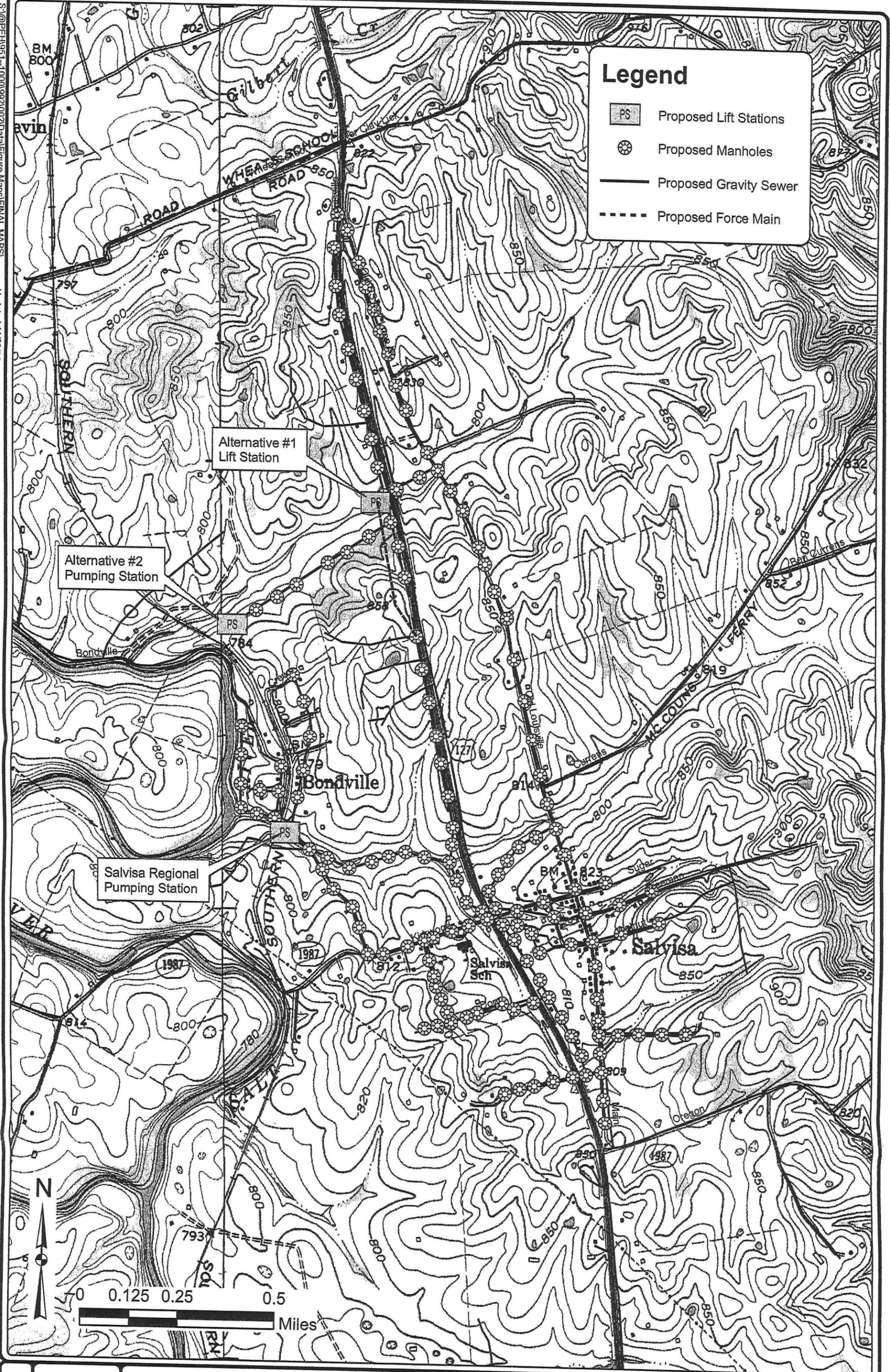
3. Alternative C – Low Pressure, Small Diameter Force Main with Grinder Pump Stations

This scenario looks at the replacement of the individual septic tank system with small individual grinder pumping stations at each residence that feeds into a low pressure, small diameter, force main system within the Combined Service Areas of Salvisa and Bondville. The decommissioning of all existing septic tank systems would reduce the likelihood of I/I. The small diameter force mains would be PVC SDR 26 (2-inch minimum). The biggest advantage of this

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**Legend**

- PS Proposed Lift Stations
- ⊗ Proposed Manholes
- Proposed Gravity Sewer
- - - Proposed Force Main



**Figure 8.03-5a**  
**Salvisa Service Area Alternative B-**  
**Conventional Gravity Collection and Conveyance System**  
 Mercer County Regional Wastewater Facilities Plan  
 Mercer County Sanitation District

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FIGURE 8.03-5  
 2.992-002

system is topography does not limit the location of the force mains and, as such, the lines are able to be located around existing structures more readily. This system would also network to a large regional pumping station for conveyance to a treatment system.

#### Advantages

- Less susceptibility to Infiltration/Inflow
- Limited number of manholes required
- Does not require extra depth for excavation
- Eliminates the need for individual septic tank installations
- Eliminates septic tank maintenance

#### Disadvantages

- Operability of individual grinder pump stations and check valves critical to successful operation of collection and conveyance system
- Limited access to sewer for routine maintenance
- Greater maintenance required to maintain grinder pump stations
- Not a Conventional municipal wastewater collection system -may require specific operator experience
- System would not be uniform to other areas of the County

Figure 8.03-5b provides a general system layout of this alternative for the Combined Service Areas of Salvisa and Bondville.

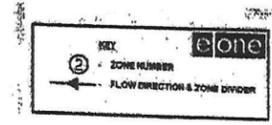
#### F. McAfee Service Area (Providence, Cottonwood, McAfee & Ky. Agricultural Heritage Center

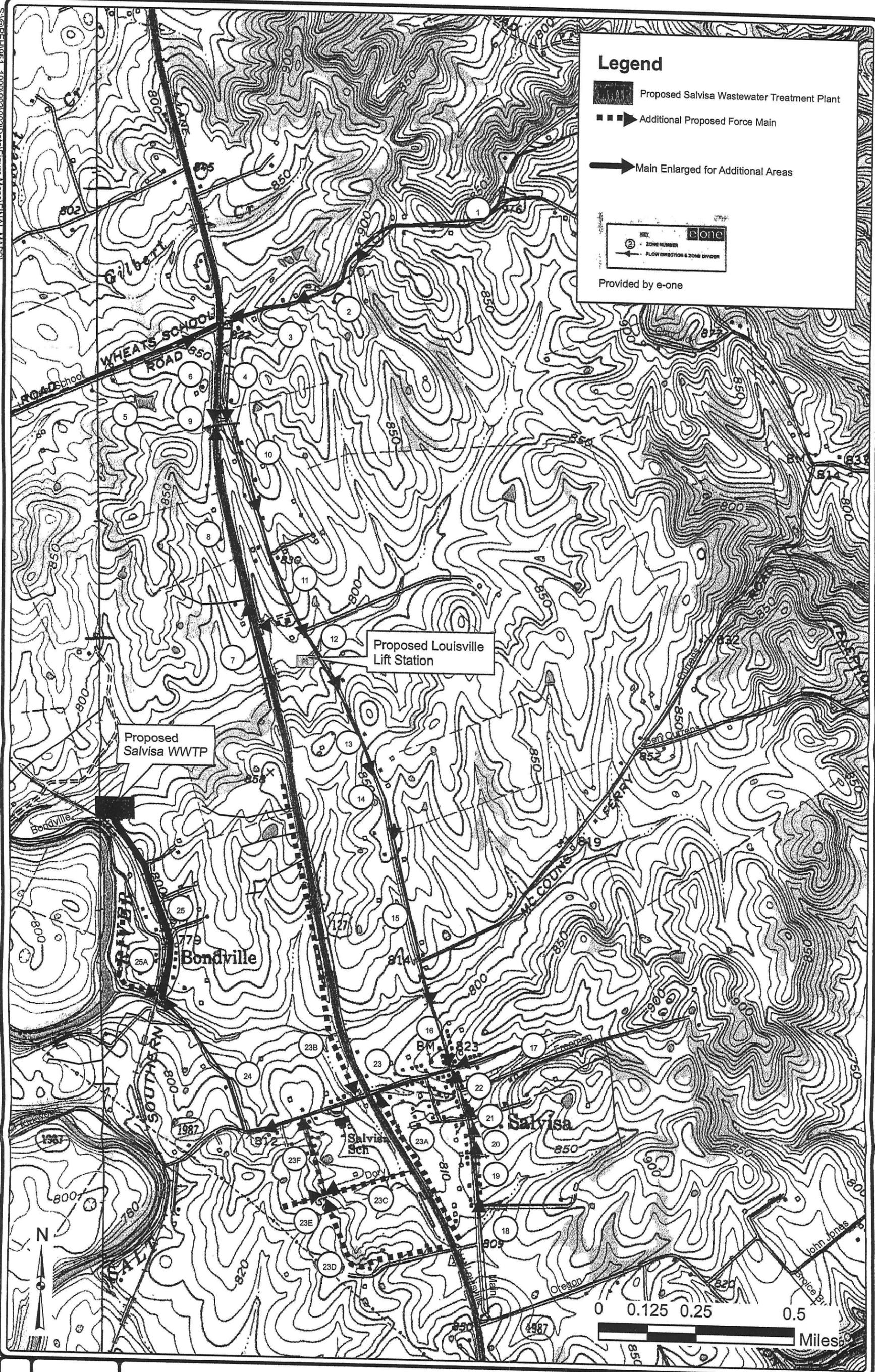
##### 1. Alternative A – Do Nothing

Providence, Cottonwood, McAfee, and future site for the Kentucky Agricultural Heritage Center are all located along US 127 and together form the McAfee Service Area. This service area currently consists of individual private septic tank systems and associated leach fields as the current form of wastewater treatment. There is a diversification in age of developments within this area with a few new developments being constructed within the last five years. There are still several outdated septic systems with and poor soil conditions in the area that limit the effectiveness of treatment and that require additional leachfield area. Proper planning for development would allow this area to continue to grow. The “Do Nothing” approach would have the least capital cost but not address the concern with older failing septic tank systems and could limit future growth from commercial and industrial establishments. This option is not practical for the future heritage center given the proposed \$25 million dollar facility has an estimated visitor base of 500 to 1,000 people daily over the next 20 years.

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### Legend

-  Proposed Salvisa Wastewater Treatment Plant
  -  Additional Proposed Force Main
  -  Main Enlarged for Additional Areas
- 
- Provided by e-one



**Figure 8.03-5b**  
**Salvisa Service Area Alternative B-**  
**Conventional Gravity Collection and Conveyance System**  
 Mercer County Regional Wastewater Facilities Plan  
 Mercer County Sanitation District

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FIGURE 8.03-5b  
 2.992-002

2. Alternative B – Conventional Gravity Sewer and Conveyance System

Much like the Burgin Service Area, the McAfee Service Area currently does not have any existing public collection system in place. This allows for a review of different public collection systems for this combined community. The Conventional Gravity Sewer System is the most common and consistent form of collection found throughout Kentucky including the City of Harrodsburg. This system would utilize PVC SDR 35 gravity sewer lines (8-inch diameter minimum, minimum slope 0.004) to convey wastewater to manholes. Through the use of this system, the existing septic tank systems would be disconnected from service. Premanufactured tee fittings would be used at service connections for reconnecting private lateral lines to the public gravity sewer system. Due to US 127 and topographic constraints, general lift stations would be located throughout the area. Table 8.03-3 provides some parameters for each of these proposed stations.

Pump Station Name	Type	Flow (gpm)	TDH (feet)	No. of Pumps	Wet Well Diameter (feet)	Force Main Size (inches)
1. New Providence	Grinder	<sup>1</sup> .50	95	2	6	3
2. Providence	Submersible	<sup>2</sup> .500	171	2	6	10
		<sup>2*</sup> 680	200			
3. McAfee	Submersible	<sup>3</sup> .180	190	2	6	6 & **10
4. Cottonwood	Grinder	20	80	2	4	2
5. Mundys	Submersible	<sup>4</sup> .80	160	2	6	4 & **10
6. Heritage Center	Submersible	<sup>5</sup> .85	190	2	6	4 & **10

<sup>1</sup>. Lift Station & flow from New Providence only to be pumped to Providence Lift Station.  
<sup>2</sup>. Lift Station & flow from New Providence PS, Providence & (Salvisa - Vanarsdell PS) to common 10-inch FM to new Park Lift Station.  
<sup>3</sup>. Lift Station & flow from McAfee only to be pumped into common 10-inch FM to the new Park Lift Station.  
<sup>4</sup>. Lift Station & flow from all of Cottonwood only to be pumped into common 10-inch FM to new Park L.S.  
<sup>5</sup>. Lift Station & flow from Heritage Center only to be pumped into common 10-inch FM to new Park L.S.  
\*Indicates replacement pump characteristics between 10-20 years.  
\*\*Indicates tying into the Providence PS 10-inch FM to the new Park L.S.  
See Figure 8.03-6 for orientation.

**Table 8.03-3 McAfee Service Area Alternative B- Recommended Characteristics of Pump Stations**

Given the proximity of this Service Area to Harrodsburg, wastewater from the Salvisa Service Area may also utilize this system for conveyance to Harrodsburg for treatment, if found most advantageous. Review of conveyance needs to treatment facilities will be discussed further in Section 9.

#### Advantages

- System would be uniform to other areas of the County
- Eliminates the need for individual septic tank installations
- Eliminates septic tank maintenance
- Provides access to sewer for routine maintenance
- Conventional municipal wastewater collection system

#### Disadvantages

- Higher susceptibility to Infiltration/Inflow (I/I)
- Greater number of manholes and larger diameter pipe
- Potential back flooding into basements or overflow from manholes due to blockages in sewer lines

Figure 8.03-6 provides the proposed layout for conventional gravity sewer system around the McAfee Service Area.

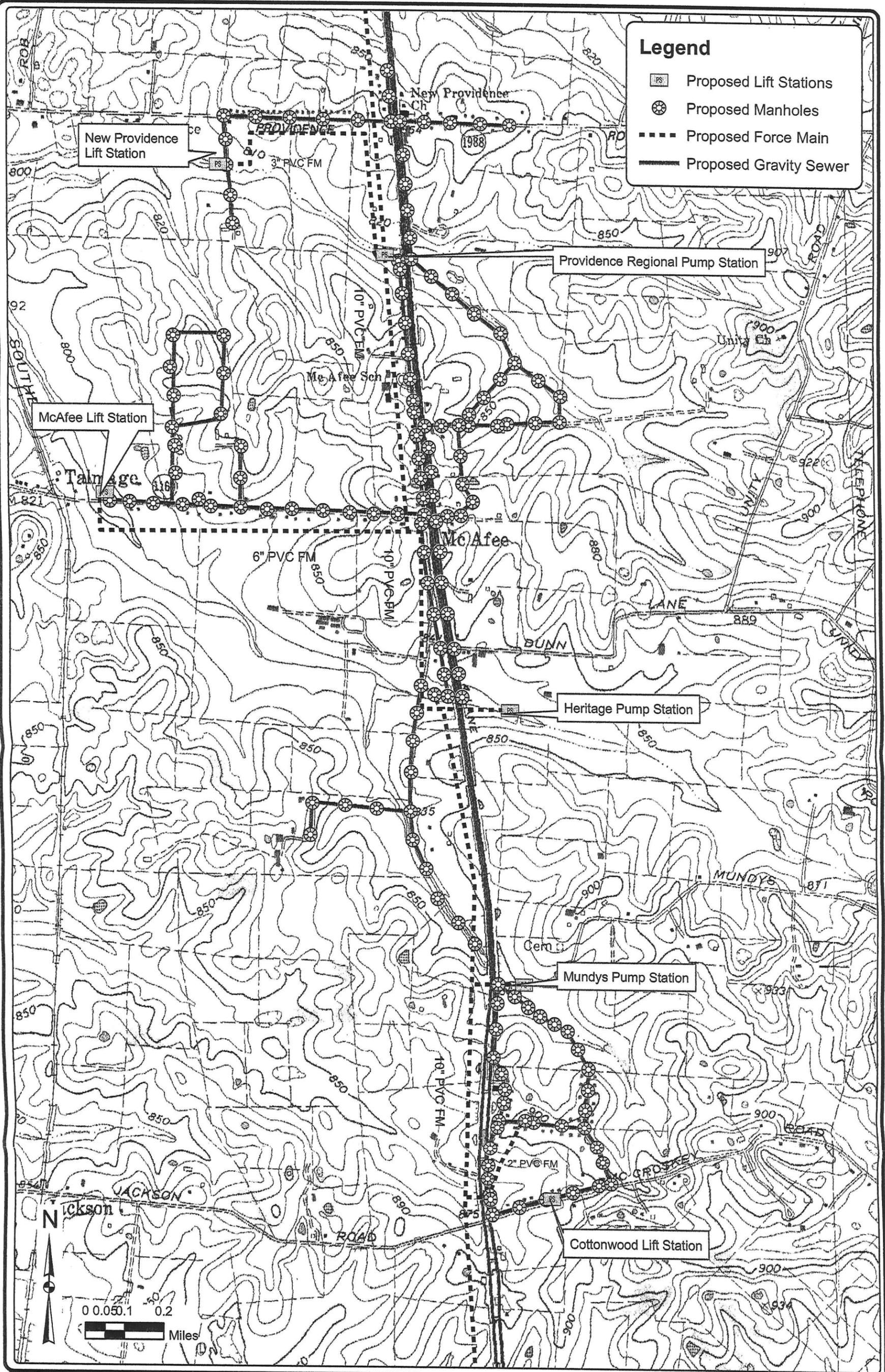
### 8.04 PROJECTED COSTS

Table 8.04-1 provides the capital cost opinion for Brightleaf Service Area Alternative B as it was the only collection and conveyance alternative considered viable with regard to for current and future demands given its proximity to the Harrodsburg Collection System.

Table 8.04-2a shows the capital cost opinion through 2026 for the Burgin Service Area collection system Alternative B-Conventional Collection and Conveyance, while Table 8.04-2b lists the capital cost opinion over the same time frame for Alternative C-Low Pressure Small Diameter Force Main with Grinder Stations. The capital cost for Alternative B (gravity sewers) appears higher than the capital cost for the Alternative C (low pressure system).

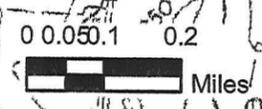
Table 8.04-3a provides the Herrington Lake Service Area Collection System capital cost opinion for Alternative B - Low Pressure, Small Diameter Force Main with Grinder Pump Stations, while Table 8.04-3b shows the capital cost opinion for this Service Area utilizing Alternative C – Septic Tank Effluent/Small Diameter Force Main with Individual Home Grinder Pumps stations. These tables show that by continuing to use the individual septic tank system approach (Alternative C), the cost is higher than Alternative B-Low Pressure, Small Diameter Force Main with Individual Grinder Stations.

Table 8.04-4 lists the capital cost opinion for Stringtown Alternative B as it is the most logical approach for conveyance due to its vicinity to the existing Harrodsburg Conventional Gravity Collection System.



**Legend**

- PS Proposed Lift Stations
- ⊗ Proposed Manholes
- - - Proposed Force Main
- Proposed Gravity Sewer



**Figure 8.03-6**  
**McAfee Conventional Gravity Collection**  
**and Conveyance Sewer System**  
 Mercer County Regional Wastewater Facilities Plan  
 Mercer County Sanitation District

Table 8.04-5a provides the cost projection for Salvisa Service Area Alternative B-Conventional Collection and Conveyance as it is most conducive with potential connecting systems. Table 8.04-5b shows the capital cost opinion for the Salvisa Combined Community Collection System Alternative C-Low Pressure Small Diameter Force Main with Grinder Stations. Table 8.04-6 itemizes the capital cost opinion relative to McAfee Combined Alternative B as it was also the most feasible alternative for conveyance to allow for future interconnection of other adjacent communities beyond the current 20-year planning study.

The cost opinions shown in these tables account for those identified new sewer Service Areas and projected peak flows as discussed in Section 6. However, this cost analysis does not account for rehabilitation work required to achieve the reduction of I/I flow that existing within any PTPs collection systems. In order to get a more complete cost associated with the necessary improvement these scattered private collections systems, sewer evaluation studies must first be performed on all collection systems that are proposed to become part of a public sewer system to effectively determine individual sources of I/I for elimination. The unit costs shown in this table are based on recently completed projects of a similar size and scope.

Item	Components	Unit	Unit Cost	0-10 Year		10-20 Year	
				Units	Cost	Units	Cost
1	8" diameter sewer	LF	\$50	1400	\$70,000		\$0
2	10" diameter sewer	LF	\$60	1500	\$90,000		\$0
3	4-ft diameter manholes*	EA	\$3,000	10	\$30,000		\$0
4	2.5" force main (Greenview PS)	LF	\$11	1300	\$14,000		\$0
5	4" force main (Brightleaf Resort & Greenview PS)	LF	\$15	1600	\$24,000		\$0
6	Air Release Valves w/Manholes	EA	\$5,000	1	\$5,000		\$0
7	Brightleaf Resort Replacement Pumps (80 gpm @ 90 ft TDH)	LS	\$10,000	1	\$10,000	1	\$10,000
8	Greenview Pump Station (grinder) (30 gpm @ 80 ft TDH) with all associated appurtenances, wet well and valve vault	LS	\$55,000	1	\$55,000	0	\$10,000
9	Air Release Valves w/Manholes	EA	\$5,000	1	\$5,000		\$0
10	Air Release Valves w/Manholes (Brightleaf Resort & Greenview PS – Shared FM)	EA	\$5,000	2	\$10,000		\$0
11	Stream Crossings	LF	\$100	25	\$3,000		\$0
12	Easements-Force Mains	LF	\$1.75	2900	\$5,000		\$0
13	Boring & Jack w/ Casing 4-inch Force Main (outside H-burg Planning Area) (1 Bore)	LF	\$100	50	\$5,000		\$0
14	Rehabilitation Estimate	LS	\$185,000	1	\$185,000		\$0
	<b>Sub Total</b>				<b>\$511,000</b>		<b>\$20,000</b>
	Total footage of gravity sewer			2900		0	
	Total footage of force main			2900		0	
	Restoration-pavement and driveways (5%)				\$26,000		
	Erosion and Sediment Control (2%)				\$10,000		\$1,000
	General conditions (5%)				\$26,000		\$2,000
	Subtotal construction costs				\$573,000		\$23,000
	Construction contingencies and engineering (35%)				\$202,000		\$8,000
	<b>Total capital costs</b>				<b>\$775,000</b>		<b>\$31,000</b>

\* Manholes placed every 300 ft in new sewer service area.

**Table 8.04-1 Brightleaf Service Area Alternative B- Projected Cost for Conventional Gravity System Collection & Conveyance Demands Through 2026**

Item	Components	Unit	Unit Cost	0-10 Year		10-20 Year	
				Units	Cost	Units	Cost
1	Water Street Pump Station	EA	\$140,000	1	\$140,000		\$0
2	Brown Street Pump Station	EA	\$125,000	1	\$125,000		\$0
3	4" PVC Force Main	LF	\$22	1600	\$36,000		\$0
4	3" PVC Force Main	LF	\$18	2000	\$36,000		\$0
5	8" PVC Sewer	LF	\$41	55000	\$2,255,000		\$0
6	12" PVC Sewer	LF	\$60	1600	\$96,000		\$0
7	4" Lateral	LF	\$40	8000	\$320,000		\$0
8	4' Manhole	EA	\$2,500	200	\$500,000		\$0
9	Highway Crossing 12" Casing Pipe, Including Bore/Jack	LF	\$250	975	\$244,000		\$0
10	Railroad Crossing 12" Casing Pipe, Including Bore/Jack	LF	\$250	320	\$80,000		\$0
11	Stream Crossing	LF	\$150	350	\$53,000		\$0
12	Stone Backfill Under Pavement	LF	\$25	17275	\$432,000		\$0
13	Karst Feature Remediation	EA	\$5,000	10	\$50,000		\$0
14	Concrete Encasement	LS	\$25,000	1	\$25,000		\$0
15	Service Connections	EA	\$2,000	620	\$1,240,000	130	\$260,000
16	Land P.S. Site	Acre	\$10,000	2	\$20,000		\$0
	Sub Total				\$5,652,000		\$260,000
	Total footage of gravity sewer			56600		0	
	Total footage of force main			3600		0	
	Restoration-pavement and driveways (10%)				\$566,000		\$26,000
	Erosion and Sediment Control (2%)				\$114,000		\$6,000
	General conditions (5%)				\$283,000		\$13,000
	Subtotal construction costs				\$6,615,000		\$305,000
	Construction contingencies and engineering (35%)				\$2,316,000		\$107,000
	Total capital costs**				\$8,931,000		\$412,000

\* Manholes placed every 300 ft in new sewer service area.

**Table 8.04-2a Burgin Service Area Alternative B - Projected Cost for Conventional Gravity System Collection & Conveyance Demands Through 2026**

Item	Components	Unit	Unit Cost	0-10 Year		10-20 Year	
				Units	Cost	Units	Cost
1	Individual Grinder Stations & line to Main Force Main	EA	\$5,500	620	\$3,410,000	130	\$715,000
2	Service Connections	EA	\$1,000	620	\$620,000	130	\$130,000
3	1.5" force main*-lateral	EA	\$12.50	39000	\$488,000		
4	2" force main*	LF	\$15	18800	\$282,000		\$0
5	3" force main*	LF	\$17	12200	\$208,000		\$0
6	4" force main*	LF	\$19	4935	\$94,000		\$0
7	6" force main*	LF	\$21	1800	\$38,000		\$0
8	Stream Crossings (2)	LF	\$50	200	\$10,000		\$0
9	Boring & Jack w/ Casing 2-inch, 3-inch Force Mains (6 Road Bores)	LF	\$80	600	\$48,000		\$0
10	Boring & Jack w/ Casing 4-inch Force Mains (3 Road Bores)	LF	\$100	300	\$30,000		\$0
	Sub Total				\$5,228,000		\$845,000
	Total footage of force main			37735		0	
	Restoration-pavement and driveways (5%)				\$262,000		\$85,000
	Erosion and Sediment Control (2%)				\$105,000		\$17,000
	General conditions (5%)				\$262,000		\$43,000
	Subtotal construction costs				\$5,857,000		\$990,000
	Construction contingencies and engineering (35%)				\$2,050,000		\$347,000
	Total capital costs				\$7,907,000		\$1,337,000

\*Assuming SDR 26 PVC per E-one.

**Table 8.04-2b Burgin Service Area Alternative C- Projected Cost for Low Pressure, Small Diameter Force Mains with Individual Grinder Station Collection & Conveyance System Demands Through 2026**

Item	Components	Unit	Unit Cost	0-10 Year		0-20 Year	
				Units	Cost	Units	Cost
1	Individual Grinder Stations & line to F. M.	EA	\$3,000	494	\$1,482,000	1080	\$3,240,000
2	service connections	EA	\$1,000	494	\$494,000	1080	\$1,080,000
3	2" force main*	LF	\$9	4985	\$45,000	20465	\$184,000
4	3" force main*	LF	\$10	10790	\$108,000	23405	\$234,000
5	4" force main*	LF	\$11	14400	\$158,000	43165	\$474,000
6	6" force main*	LF	\$13	4325	\$56,000	10360	\$134,000
7	10" force main*	LF	\$20	2390	\$48,000		\$0
8	Herrington Lake #1 (at Chimney Rock) Grinder Booster Lift Station (150gpm) with all assoc. appurtenances, wet well & valve vault	LS	\$55,000	1	\$55,000	0	\$10,000
9	Herrington Lake #2 (at Herrington Woods) Grinder Booster Lift Station (140gpm) with all assoc. appurtenances, wet well & valve vault	LS	\$55,000	1	\$55,000	0	\$10,000
10	Herrington Lake #3 (at Ashley's Camp) Grinder Booster Lift Station (150gpm) with all assoc. appurtenances, wet well & valve vault	LS	\$55,000	0	\$0	1	\$55,000
11	Herrington Lake #5 (at Paradise Camp-Low) Grinder Booster Lift Station (150gpm) with all assoc. appurtenances, wet well & valve vault	LS	\$55,000	0	\$0	1	\$55,000
12	Herrington Lake #6 (at Lakeview Point) Grinder Booster Lift Station (150gpm) with all assoc. appurtenances, wet well & valve vault	LS	\$55,000	1	\$55,000	0	\$10,000
13	Herrington Lake #8 (at Dix Dam) Grinder Booster Lift Station (67gpm) with all assoc. appurtenances, wet well & valve vault	LS	\$45,000	0	\$0	1	\$45,000
14	Herrington Lake #9 (at Hardin Heights) Grinder Booster Lift Station (70gpm) with all assoc. appurtenances, wet well & valve vault	LS	\$45,000	0	\$0	1	\$45,000
15	Herrington Lake #10 (at Mallard Cove) Grinder Booster Lift Station (80gpm) with all assoc. appurtenances, wet well & valve vault	LS	\$45,000	0	\$0	1	\$45,000
16	Land – Pump Station Site (0.25 Acres)	Acre	\$3,000	3	\$9,000	5	\$15,000
17	Easements-force main	LF	\$1.75	6715	\$12,000	10360	\$18,000
18	Stream Crossings (2)	LF	\$50	400	\$20,000	0	\$0
19	Portable Generator	LS	\$35,000	1	\$35,000	0	\$0
20	Boring & Jack w/ Casing 2"&3"FM(23 -10yrs & 3 -20yrs)	LF	\$80	1150	\$92,000	150	\$12,000
21	Boring & Jack w/ Casing 4", 6"&10"FM(3 -10yrs & 2 -20yrs)	LF	\$100	150	\$15,000	100	\$10,000
	Sub Total				\$2,739,000		\$5,678,000
	Total footage of force main			36890		97395	
	Restoration-pavement and driveways (5%)				\$137,000		
	Erosion and Sediment Control (2%)				\$55,000		\$114,000
	General conditions (5%)				\$137,000		\$284,000
	Subtotal construction costs				\$3,068,000		\$6,076,000
	Construction contingencies and engineering (35%)				\$1,074,000		\$2,127,000
	Total capital costs				\$4,140,000		\$8,200,000

\*Assuming SDR 26 PVC per E-one.

**Table 8.04-3a Herrington Lake Service Area Alternative B-Projected Cost for Low Pressure, Small Diameter Force Main with Individual Grinder Stations Collection & Conveyance Demands Through 2026**

Item	Components	Unit	Unit Cost	0-10 Year		0-20 Year	
				Units	Cost	Units	Cost
1	New Impermeable Individual Septic Tank with Individual Grinder Stations & line to F.M.	EA	\$6,000	494	\$2,964,000	1080	\$6,480,000
2	2" force main*	LF	\$9	4985	\$45,000	20465	\$184,000
3	3" force main*	LF	\$10	10790	\$108,000	23405	\$234,000
4	4" force main*	LF	\$11	14400	\$158,000	43165	\$475,000
5	6" force main*	LF	\$13	4325	\$56,000	10360	\$135,000
6	10" force main*	LF	\$20	2390	\$48,000		\$0
7	Herrington Lake #1 (at Chimney Rock) Grinder Booster Lift Station (150gpm) with all assoc. appurtenances, wet well & valve vault	LS	\$55,000	1	\$55,000	0	\$10,000
8	Herrington Lake #2 (at Herrington Woods) Grinder Booster Lift Station (140gpm) with all assoc. appurtenances, wet well & valve vault	LS	\$55,000	1	\$55,000	0	\$10,000
9	Herrington Lake #3 (at Ashley's Camp) Grinder Booster Lift Station (150gpm) with all assoc. appurtenances, wet well & valve vault	LS	\$55,000	0	\$0	1	\$55,000
00	Herrington Lake #5 (at Paradise Camp-Low) Grinder Booster Lift Station (150gpm) with all assoc. appurtenances, wet well & valve vault	LS	\$55,000	0	\$0	1	\$55,000
11	Herrington Lake #6 (at Lakeview Point) Grinder Booster Lift Station (150gpm) with all assoc. appurtenances, wet well & valve vault	LS	\$55,000	1	\$55,000	0	\$10,000
12	Herrington Lake #8 (at Dix Dam) Grinder Booster Lift Station (70gpm) with all assoc. appurtenances, wet well & valve vault	LS	\$45,000	0	\$0	1	\$45,000
13	Herrington Lake #9 (at Hardin Heights) Grinder Booster Lift Station (70gpm) with all assoc. appurtenances, wet well & valve vault	LS	\$45,000	0	\$0	1	\$45,000
14	Herrington Lake #10 (at Mallard Cove) Grinder Booster Lift Station (80gpm) with all assoc. appurtenances, wet well & valve vault	LS	\$45,000	0	\$0	1	\$45,000
15	Land –Pump Station Site (0.25 Acres)	Acre	\$3,000	3	\$9,000	5	\$15,000
16	Easements-force main	LF	\$1.75	6715	\$12,000	10360	\$18,000
17	Stream Crossings (2)	LF	\$50	400	\$20,000	0	\$0
18	Portable Generator	LS	\$35,000	1	\$35,000	0	\$0
19	Boring & Jack w/ Casing 2"&3"FM(23 -10yrs & 3 -20yrs)	LF	\$80	1150	\$92,000	150	\$12,000
20	Boring & Jack w/ Casing 4", 6"&10"FM(3 -10yrs & 2 -20yrs)	LF	\$100	150	\$15,000	100	\$10,000
	<b>Total</b>				<b>\$3,727,000</b>		<b>\$7,838,000</b>
	Total footage of force main			36890		97395	
	Restoration-pavement and driveways (5%)				\$186,000		
	Erosion and Sediment Control (2%)				\$75,000		\$157,000
	General conditions (5%)				\$186,000		\$392,000
	Subtotal construction costs				\$4,174,000		\$8,387,000
	Construction contingencies and engineering (35%)				\$1,461,000		\$2,935,000
	Total capital costs				\$5,640,000		\$11,320,000

\*Assuming SDR 26 PVC.

**Table 8.04-3b Herrington Lake Service Area Alternative C- Projected Cost for Septic Tank Effluent, Small Diameter, Force Mains with Individual Grinder Station Collection & Conveyance Demands Through 2026**

Item	Components	Unit	Unit Cost	0-10 Year		0-20 Year	
				Units	Cost	Units	Cost
1	8" diameter sewer	LF	\$50	11600	\$580,000		\$0
2	10" diameter sewer	LF	\$60	1675	\$101,000		\$0
3	4-ft diameter manholes*	EA	\$3,000	50	\$150,000		\$0
4	service connections	EA	\$2,000	90	\$180,000	48	\$96,000
5	Easements-Interceptor	LF	\$1.75	1700	\$3,000		\$0
6	Boring & Jack w/ Casing 8-inch Gravity Sewer (4 Road Bores)	LF	\$200	600	\$120,000		\$0
	Sub Total				\$1,134,000		\$96,000
	Total footage of gravity sewer			13275		0	
	Total footage of force main			0		0	
	Restoration-pavement and driveways (5%)				\$57,000		
	Erosion and Sediment Control (2%)				\$23,000		\$2,000
	General conditions (5%)				\$57,000		\$5,000
	Subtotal construction costs				\$1,271,000		\$103,000
	Construction contingencies and engineering (35%)				\$445,000		\$36,000
	Total capital costs				\$1,720,000		\$140,000

\* Manholes placed every 300 ft in new sewer service area.

**Table 8.04-4 Stringtown Service Area Alternative B- Projected Cost for Conventional Gravity Sewer Collection & Conveyance Demands Through 2026**

Item	Components	Unit	Unit Cost	0–10 Year		10–20 Year	
				Units	Cost	Units	Cost
1	8" diameter sewer	LF	\$50	50400	\$2,520,000		\$0
2	10" diameter sewer	LF	\$60	1200	\$72,000		\$0
3	12" diameter sewer	LF	\$70	400	\$28,000		\$0
4	18" diameter sewer	LF	\$90	3600	\$324,000		\$0
5	4-ft diameter manholes*	EA	\$3,000	210	\$630,000		\$0
6	service connections	EA	\$2,000	589	\$1,178,000	283	\$566,000
7	4" force main** (Alternative#1 PS)	LF	\$13	1350	\$18,000		\$0
8	Alternative #1 Pump Station to Salvisa Coll. System & HWWTP (180 gpm @ 140ft TDH) with all associated appurtenances, wet well and valve vault	LS	\$150,000	1	\$150,000	0	\$30,000
9	Portable Generator	LS	\$35,000	1	\$35,000	0	\$0
10	Stream Crossings (12)	LF	\$100	480	\$48,000	0	\$0
11	Land –Pump Station Site (0.25 Acres)	Acre	\$3,000	1	\$3,000	0	\$0
12	Easements-Interceptor Sewer	LF	\$1.75	3600	\$6,000	0	\$0
13	Easements- 4"Force Main	LF	\$1.75	1350	\$2,000	0	\$0
14	Boring & Jack w/ Casing (3- 8& 1 -18-inch Gravity Sewer Bores)	LF	\$500	600	\$300,000		\$0
	Sub Total				\$5,314,000		\$596,000
	Total footage of gravity sewer			55600		0	
	Total footage of force main			1350		0	
	Restoration-pavement and driveways (5%)				\$266,000		
	Erosion and Sediment Control (2%)				\$106,000		\$21,000
	General conditions (5%)				\$266,000		\$60,000
	Subtotal construction costs				\$5,952,000		\$677,000
	Construction contingencies and engineering (35%)				\$2,083,000		\$237,000
	Total capital costs				\$8,035,000		\$914,000

\*Manholes placed approximately every 300 ft.

\*\*Assuming SDR 21 PVC.

**Table 8.04-5a Salvisa Service Area Alternative B- Projected Cost for Conventional Gravity System Collection & Conveyance Demands Through 2026**

Item	Components	Unit	Unit Cost	0 – 10 year		10 -20 year	
				Units	Cost	Units	Cost
1	Individual Grinder Stations & line to Main Force Main	EA	\$3,000	589	\$1,767,000	283	\$849,000
2	service connections	EA	\$1,000	589	\$589,000	283	\$283,000
3	2" force main*	LF	\$9	16335	\$147,000		\$0
4	3" force main*	LF	\$10	10455	\$105,000		\$0
5	4" force main*	LF	\$11	8265	\$91,000		\$0
6	6" force main*	LF	\$13	11985	\$156,000		\$0
7	8" force main*	LF	\$15	2980	\$45,000		\$0
8	Stream Crossings (6)	LF	\$50	600	\$30,000		\$0
9	Salvisa Combined #1 (at Louisville Rd) Grinder Booster Lift Station (120gpm) with all associated appurtenances, wet well & valve vault	LS	\$55,000	1	\$55,000	0	\$10,000
10	Portable Generator	LS	\$35,000	1	\$35,000	0	\$0
11	Boring & Jack w/casing 3-inch Force Mains (1-Bores)	LF	\$80	150	\$12,000		\$0
12	Boring & Jack w/casing 6-inch Force Mains (1-Bore)	LF	\$100	150	\$15,000		\$0
	Sub Total				\$3,047,000		\$1,142,000
	Total footage of force main			47040		0	
	Restoration-pavement and driveways (5%)				\$152,000		
	Erosion and Sediment Control (2%)				\$61,000		\$23,000
	General conditions (5%)				\$152,000		\$57,000
	Subtotal construction costs				\$3,412,000		\$1,222,000
	Construction contingencies and engineering (35%)				\$1,194,000		\$428,000
	Total capital costs				\$4,610,000		\$1,650,000

\*Assuming SDR 26 PVC.

**Table 8.04-5b Salvisa Service Area Alternative C- Projected Cost for Low Pressure, Small Diameter, Force Mains with Individual Grinder Station Collection & Conveyance Demands Through 2026**

Item	Components	Unit	Unit Cost	0-10 Year		10-20 Year	
				Units	Cost	Units	Cost
1	8" diameter sewer	LF	\$50	50500	\$2,525,000		\$0
2	10" diameter sewer	LF	\$60	200	\$12,000		\$0
3	4-ft diameter manholes*	EA	\$3,000	181	\$543,000		\$0
4	service connections	EA	\$2,000	338	\$676,000	74	\$148,000
5	2" force main** (Cottonwood PS)	LF	\$11	1150	\$13,000		\$0
6	3" force main** (New Providence PS)	LF	\$12	4400	\$53,000		\$0
7	4" force main** (Heritage Center PS)	LF	\$13	500	\$7,000		\$0
8	4" force main** (Mundys PS)	LF	\$13	800	\$10,000		\$0
9	6" force main** (McAfee PS)	LF	\$15	4400	\$66,000		\$0
10	New Providence Pump Station (Grinder) (50 gpm @ 95ft TDH) with all associated appurtenances, wet well and valve vault	LS	\$55,000	1	\$55,000	0	\$10,000
11	Air Release Valves w/Manholes	EA	\$5,000	1	\$5,000	0	\$0
12	McAfee Pump Station (180 gpm @ 190ft TDH-20yrs) with all associated appurtenances, wet well and valve vault	LS	\$150,000	1	\$150,000	0	\$50,000
13	Air Release Valves w/Manholes	EA	\$5,000	1	\$5,000	0	\$0
14	Heritage Center Pump Station (85 gpm @ 190ft TDH-20yrs) with all associated appurtenances, wet well and valve vault	LS	\$121,000	1	\$121,000	0	\$50,000
15	Cottonwood Pump Station (Grinder) (20 gpm @ 80ft TDH) with all associated appurtenances, wet well and valve vault	LS	\$30,000	1	\$30,000	0	\$10,000
16	Mundys Pump Station (80 gpm @ 160ft TDH-20yrs) with all associated appurtenances, wet well and valve vault	LS	\$121,000	1	\$121,000	0	\$50,000
17	Portable Generator	LS	\$35,000	1	\$35,000	0	\$0
18	Stream Crossings (5)	LF	\$100	125	\$13,000	0	\$0
19	Easements- Force Mains	LF	\$1.75	4400	\$8,000	0	\$0
20	Land – Pump Station Site (0.25 Acres)	Acre	\$3,000	3	\$9,000	0	\$0
21	Boring & Jack w/ Casing for 8 & 10-inch Gravity Sewer (9 Bores)	LF	\$500	1350	\$675,000		\$0
22	Boring & Jack w/ Casing for 3",4" & 6" Force Main (4 Bores)	LF	\$300	600	\$180,000		\$0
	Sub Total				\$5,312,000		\$318,000
	Total footage of gravity sewer			50700		0	
	Total footage of force main			11250		0	
	Restoration-pavement and driveways (5%)				\$266,000		
	Erosion and Sediment Control (2%)				\$106,000		\$6,000
	General conditions (5%)				\$266,000		\$16,000
	Subtotal construction costs				\$5,950,000		\$340,000
	Construction contingencies and engineering (35%)				\$2,082,000		\$119,000
	Total capital costs**				\$8,032,000		\$459,000

\*Manholes placed approximately every 300 ft.  
\*\*Assuming SDR 21 PVC.

**Table 8.04-6 McAfee Combined Alternative B- Projected Cost for Conventional Gravity Sewer Collection & Conveyance Demands Through 2026**

**8.05 RECOMMENDATIONS**

Each Service Area Collection Alternative was evaluated based on advantages/disadvantages and assumed capital cost.

Table 8.05-1 presents a summary of the evaluation and contains the recommended approach for collection of wastewater.

Service Area	Alternative	Favorability	20-year Capital Cost	Recommended
Brightleaf	A. Do Nothing	Low	N/A	
	B. Conventional Gravity Sewers	High	\$806,000	X
Burgin	A. Do Nothing	Low	N/A	
	B. Conventional Gravity	High	\$9,343,000	X
	C. Low Pressure	Medium	\$9,244,000	
Herrington Lake	A. Do Nothing		N/A	
	B. Low Pressure	High	\$12,340,000	X
	C. STEP	Low	\$16,960,000	
Stringtown	A. Do Nothing	Low	N/A	
	B. Conventional Gravity	High	\$1,860,000	X
Salvisa	A. Do Nothing	Low	N/A	
	B. Conventional Gravity	High	\$8,949,000	
	C. Low Pressure	Medium	\$6,260,000	X
McAfee	A. Do Nothing	Low	N/A	
	B. Conventional Gravity	High	\$8,491,000	X

**Table 8.05-1 Summary of Service Areas Collection System Alternatives**

**SECTION 9**  
**WASTEWATER TREATMENT ALTERNATIVES**

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## 9.01 GENERAL

This section will present wastewater treatment alternatives for the next 20 years available to those service areas within the recently established MCSD Planning Area. Generally, three treatment options were considered:

1. Wastewater treatment at a new wastewater plant located in the service area.
2. Convey wastewater to Harrodsburg for treatment at the Harrodsburg wastewater treatment plant.
3. Convey wastewater to Danville for treatment at the Danville wastewater treatment plant (considered for the Burgin and Herrington Lake service areas.)

The treatment alternative deemed most appropriate will be evaluated on a cost-effective basis including an evaluation of capital, operation and maintenance costs. Finally, non-monetary features will be compared between the alternatives.

## 9.02 SCREENING OF ALTERNATIVES

In order to assess alternatives for each area, they were grouped geographically and topographically in certain incidences to become service areas in order to help facilitate cost effective collection and conveyance systems. The grouping of areas into service areas correlated directly with viable treatment alternative options as certain forms of treatment are more cost effective and result in better treatment performance within certain ranges of wastewater flow. A broad example of this is the use of subsurface disposal systems for lower flow rates versus a surface discharge treatment plant for higher flows. This section will screen the different options for the service areas and the balance of the section will evaluate what treatment options appear best suited for the service areas. Section 8 discussed the consolidation of areas into geographical service areas.

The Stringtown and Brightleaf Service Areas only considered wastewater treatment by Harrodsburg given their proximity to Harrodsburg. Treatment Alternatives including operating package treatment plants and regional treatment with subsurface disposal were not considered in the best interest of MCSD. Projected flow from these two Service Areas will remain consistent with that provided in Section 6.

The McAfee Service Area (McAfee, Providence, Cottonwood, Agricultural Heritage Center) was initially evaluated for two alternative solutions:

- Pumped to Salvisa Service Area for treatment at potential new Salvisa WWTP.
- Pumped to Harrodsburg for treatment.

When the Agricultural Heritage Center was announced, the need to provide service for this facility eliminated the option of the Salvisa WWTP since it could not be constructed in time for the Agricultural Heritage Center to open. The only alternative to be considered further will be pumping to Harrodsburg for treatment.

The Salvisa Service area (Salvisa, Bondville) has several viable treatment options:

- Construct new Salvisa WWTP with discharge to the Salt River (0.25 mgd 20-year need)
- Pump wastewater to Harrodsburg for treatment
- Pump wastewater to Lawrenceburg for treatment

These alternatives will be explored further in this section

Another Service Area with various flow alternatives is Herrington Lake Service Area. Total future flows are listed in Table 9.02-1. These areas are scattered throughout the Herrington Lake Service Area. Due to the proximity to the Burgin #1 Lift Station and higher flows, Lakeview Point, Paradise Camp (High) & Paradise Camp (Low) areas only considered conveyance to Burgin en route to Harrodsburg or Danville. Two options considered for the remaining areas near Herrington Lake are:

- Alternative A includes a wastewater treatment system with subsurface disposal of effluent.
- Alternative B conveys collected flow from each Lake area to the Burgin #1 Lift Station for further conveyance to the Harrodsburg or Danville Collection System and ultimate treatment at the Harrodsburg or Danville WWTP. Each area listed in Table 9.02-1 is grouped with respect to the anticipated time frame for inclusion into a centralized public collection system and flows provided in 5 year increments starting in 2011 even though some areas are not anticipated to contribute to public wastewater flows until after 2016 (10-20 years). Construction of package treatment plants or a new regional wastewater treatment plant were not considered viable options based on discussions with the Kentucky Division of Water and the MCSD.

The Burgin Service Area considered only the alternatives of pumping wastewater to Harrodsburg or Danville for treatment. Constructing a new package plant in the area was discouraged in conversations with KDOW. The 20-year average daily flow of 180,000 gpd was considered too high for subsurface disposal to be a viable option. The flow rates for these areas are summarized in Table 9.02-2.

Sub-Areas	2011		2016		2021		2026		
	ADF	PHF	ADF	PHF	ADF	PHF	ADF	PHF	
<b>ALTERNATIVE A –Pumping to Herrington WWTP (Subsurface Disposal)</b>									
<b>(5-10yrs)</b>									
Bradshaw's Camp	0.030	0.123	0.032	0.132	0.035	0.142	0.038	0.153	
Chimney Rock	0.024	0.097	0.025	0.105	0.027	0.113	0.029	0.121	
Herrington Woods	0.023	0.094	0.024	0.101	0.026	0.109	0.028	0.117	
<b>(10-20yrs)</b>									
Ashley's Camp			0.014	0.060	0.015	0.065	0.017	0.070	
Hager's Camp			0.005	0.000	0.006	0.025	0.006	0.027	
Cane Run Camp			0.011	0.048	0.012	0.052	0.013	0.056	
Mallard Cove			0.011	0.046	0.012	0.050	0.013	0.054	
Hardin Heights			0.010	0.044	0.011	0.048	0.012	0.051	
Dix Dam (E.W. Brown)			0.006	0.023	0.006	0.024	0.006	0.025	
<b>Total Flow</b>	<b>0.076</b>	<b>0.314</b>	<b>0.140</b>	<b>0.561</b>	<b>0.151</b>	<b>0.628</b>	<b>0.162</b>	<b>0.675</b>	
<b>ALTERNATIVE B – Pumping to Harrodsburg or Danville WWTP</b>									
<b>(5-10yrs)</b>									
Bradshaw's Camp	0.030	0.123	0.032	0.132	0.035	0.142	0.038	0.153	
Chimney Rock	0.024	0.097	0.025	0.105	0.027	0.113	0.029	0.121	
Herrington Woods	0.023	0.094	0.024	0.101	0.026	0.109	0.028	0.117	
Paradise Camp (High)*	0.009	0.038	0.010	0.041	0.010	0.044	0.011	0.047	
Lakeview Point *	0.027	0.112	0.029	0.120	0.032	0.130	0.034	0.139	
<b>(10-20yrs)</b>									
Paradise Camp (Low)*			0.060	0.245	0.063	0.257	0.066	0.269	
Ashley's Camp			0.014	0.060	0.015	0.065	0.017	0.070	
Hager's Camp			0.005	0.000	0.006	0.025	0.006	0.027	
Cane Run Camp			0.011	0.048	0.012	0.052	0.013	0.056	
Mallard Cove			0.011	0.046	0.012	0.050	0.013	0.054	
Hardin Heights			0.010	0.044	0.011	0.048	0.012	0.051	
Dix Dam (E.W. Brown)			0.006	0.023	0.006	0.024	0.006	0.025	
<b>Total Flow</b>	<b>0.112</b>	<b>0.464</b>	<b>0.239</b>	<b>0.967</b>	<b>0.256</b>	<b>1.058</b>	<b>0.274</b>	<b>1.130</b>	

ADF- Average Daily Flow, PHF- Peak Hourly Flow

\* Only considered pumping to Burgin Pump Station for conveyance to Harrodsburg or Danville.

**Table 9.02-1 Herrington Lake Service Area Treatment Alternatives-Total Influent Wastewater Flow Projections**

Sub-Areas	2006		2011		2016		2021		2026	
	ADF	PHF								
<b>ALTERNATIVE A – Burgin and Paradise Camp Service Areas to Harrodsburg or Danville WWTP</b>										
<b>(0-5 yrs)</b>										
Burgin (w/i City Limits)	0.109	0.415	0.111	0.420	0.122	0.463	0.135	0.509	0.149	0.560
Burgin (o/s City Limits)	0.021	0.087	0.023	0.096	0.026	0.106	0.028	0.116	0.031	0.128
<b>(5-10yrs)</b>										
Paradise Camp (High)			0.009	0.038	0.010	0.041	0.010	0.044	0.011	0.047
Lakeview Point			0.027	0.112	0.029	0.120	0.032	0.130	0.034	0.139
<b>(10-20yrs)</b>										
Paradise Camp (Low)					0.060	0.245	0.063	0.257	0.066	0.269
<b>Total Flow</b>	<b>0.130</b>	<b>0.502</b>	<b>0.170</b>	<b>0.665</b>	<b>0.247</b>	<b>0.975</b>	<b>0.268</b>	<b>1.056</b>	<b>0.292</b>	<b>1.144</b>
<b>ALTERNATIVE B – Burgin and All Herrington Lake Service Areas to Harrodsburg or Danville WWTP</b>										
<b>(0-5 yrs)</b>										
Burgin (w/i City Limits)	0.109	0.415	0.111	0.420	0.122	0.463	0.135	0.509	0.149	0.560
Burgin (o/s City Limits)	0.021	0.087	0.023	0.096	0.026	0.106	0.028	0.116	0.031	0.128
<b>(5-10yrs)</b>										
Bradshaw's Camp			0.030	0.123	0.032	0.132	0.035	0.142	0.038	0.153
Chimney Rock			0.024	0.097	0.025	0.105	0.027	0.113	0.029	0.121
Herrington Woods			0.023	0.094	0.024	0.101	0.026	0.109	0.028	0.117
Paradise Camp (High)			0.009	0.038	0.010	0.041	0.010	0.044	0.011	0.047
Lakeview Point			0.027	0.112	0.029	0.120	0.032	0.130	0.034	0.139
<b>(10-20yrs)</b>										
Paradise Camp (Low)					0.060	0.245	0.063	0.257	0.066	0.269
Ashley's Camp					0.014	0.060	0.015	0.065	0.017	0.070
Hager's Camp					0.005	0.000	0.006	0.025	0.006	0.027
Cane Run Camp					0.011	0.048	0.012	0.052	0.013	0.056
Mallard Cove					0.011	0.046	0.012	0.050	0.013	0.054
Hardin Heights					0.010	0.044	0.011	0.048	0.012	0.051
Dix Dam (E.W. Brown)					0.006	0.023	0.006	0.024	0.006	0.025
<b>Total Flow</b>	<b>0.130</b>	<b>0.502</b>	<b>0.246</b>	<b>0.979</b>	<b>0.387</b>	<b>1.536</b>	<b>0.419</b>	<b>1.684</b>	<b>0.454</b>	<b>1.818</b>

ADF- Average Daily Flow; PHF- Peak Hourly Flow

**Table 9.02-2 Burgin Service Area Treatment Alternatives-Total Influent Wastewater Flow Projections Considering Herrington Lake Areas**

### 9.03 ALTERNATIVES

In order to simplify the alternatives reviewed for the areas within this facilities plan, several areas were grouped together to become a “Service Area” as previously discussed. Those areas were clustered based on their location and topography. One example is the Burgin Service Area, which includes not only the City of Burgin (within the City Limits) but the surrounding existing and proposed homes located just outside the Burgin City Limits. Should a collection system be provided to the City of Burgin, enough available capacity would be designed into the infrastructure to account for additional flows from future projected growth within and around the City of Burgin.

Table 9.03-1 lists the alternatives for the Service Areas projected to receive sewer service within the next 20 years. The potential alternatives for each Service Area were screened based on previous experience to determine the most effective approach for ultimate treatment. The Mercer County Sanitation District was consulted in refining the alternatives considered. Each Service Area will be discussed separately.

#### 1. Brightleaf Combined

The Brightleaf Area was considered the highest priority due to current operation and maintenance concerns with their four existing package treatment plants as discussed previously in Section 6. The Brightleaf Area was also selected for initial sewer service given their proximity to the Revised Harrodsburg Planning Area and proposed extension of their Sewer System towards the Brightleaf Area. The majority of Brightleaf Estates residents agreed to decommission their package plant after dealing with the constant operation and maintenance concerns associated with their package treatment plant for numerous years. Other package plant owners will likely be equally receptive. These residents supported the option to directly connect to the Harrodsburg Collection System for ultimate treatment by the Harrodsburg Wastewater Treatment Plant. The *Brightleaf Area Sewer Report*, see Appendix B, also recommended this option as being best suited for the residents within the Brightleaf Service Area. The associated private collection systems would also be rehabilitated and a new trunk sewer provided to collect all wastewater within the area to one regional pump station. All collected wastewater would then be pumped via “Brightleaf Regional Pump Station” through a new force main to the proposed extension of the Harrodsburg Collection System. The Design Criteria for this Alternative B is shown in Table 9.03-2. These criteria were used to develop an estimated cost for implementation of this alternative and are provided in Table 9.03-3. Figure 9.03-1 shows the proposed location and layout of the new trunk sewer, Brightleaf Regional Pump Station and force main. Locations are preliminary until final design is completed.

The opinion of probable construction cost for the only viable alternative for the Brightleaf Service Area is estimated to be \$876,000 for the first 10 years.

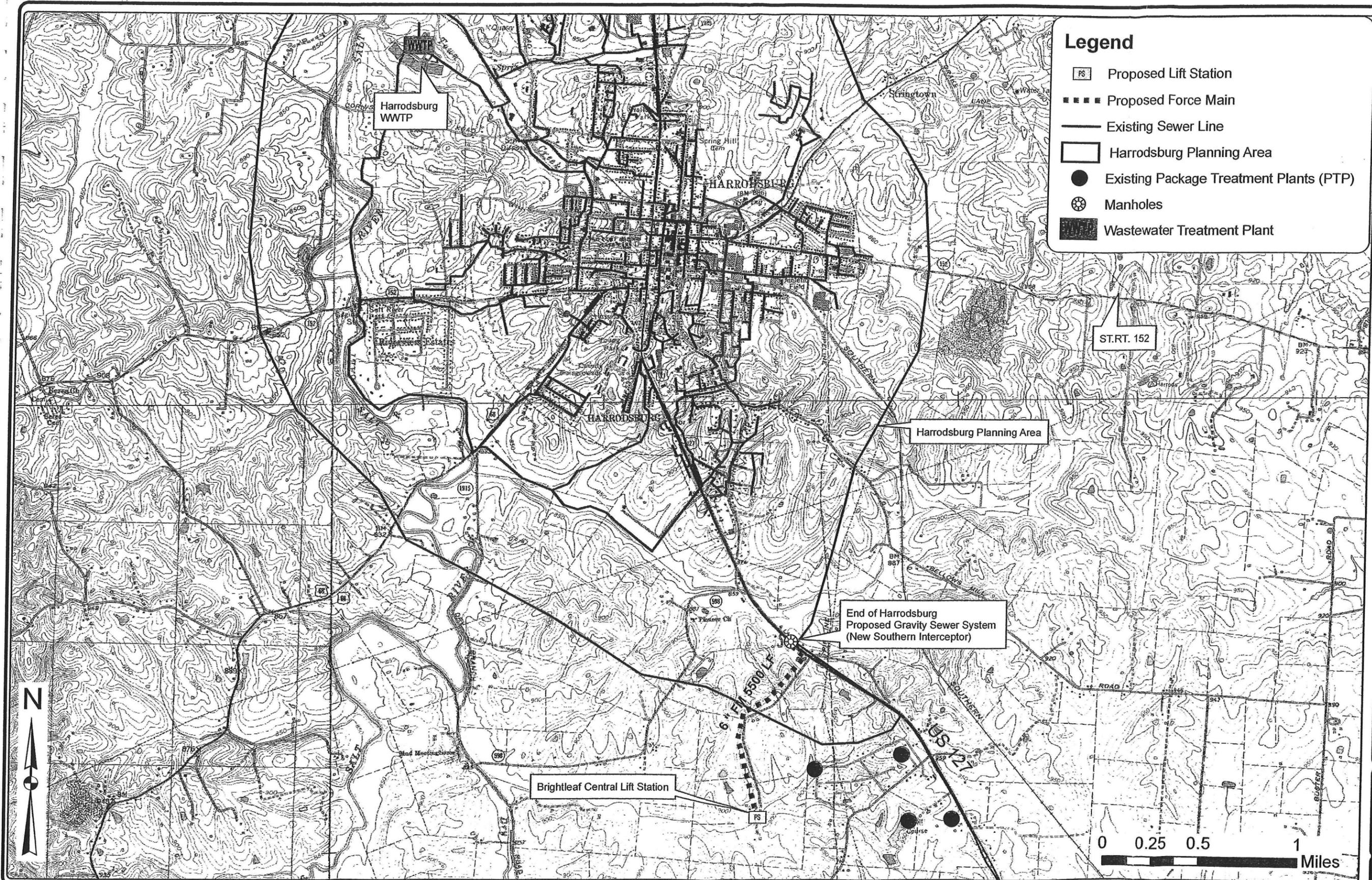


Figure 9.03-1  
 Brightleaf Service Area Alternative B-  
 Conveyance to Harrodsburg Collection System for Treatment at Harrodsburg WWTP  
 Mercer County Regional Wastewater Facilities Plan  
 Mercer County Sanitation District



Individual or Combined Communities	Alternative A	Alternative B
Brightleaf	No Change	Decommission Package Plants, Rehabilitate Collection System and Pump to Harrodsburg for Treatment.
Combined Burgin (Burgin within City Limits & Developments just outside City Limits)	Conventional Collection System with Pump Station and Force Main to Harrodsburg or Danville for Treatment.	Low pressure grinder stations and force main Collection System with Pump Station and Force Main to Harrodsburg or Danville for Treatment.
Combined Paradise Camp (Paradise Camp (High), Lakeview Point & Paradise Camp (Low))	Septic Tank Effluent Pump (STEP) Collection System to Burgin #1 PS to Pump to Harrodsburg or Danville for Treatment.	Low Pressure Grinder Station Collection System and Pump to Burgin #1 PS to Pump to Harrodsburg or Danville for Treatment.
Stringtown	No Change.	Conventional Gravity Collection System to Harrodsburg for Treatment.
Combined Chimney Rock (Bradshaw Camp, Chimney Rock, Herrington Woods, Ashley Camp, Hagar’s Camp & Cane Run Camp)	Septic Tank Effluent Pump (STEP) Collection System to Fixed Film Biological Reactor (FFBR)/Drip Irrigation Treatment System.	Low Pressure Grinder Station Collection System and Pump to Burgin to Pump to Harrodsburg or Danville for Treatment.
Combined Dix Dam (Mallard Cove, Hardin Heights & E. W. Brown Plant)	STEP Collection System to FFBR/Drip Irrigation Treatment System.	Low Pressure Grinder Station Collection System and Pump to Burgin to Pump to Harrodsburg or Danville for Treatment.
Combined Salvisa (Salvisa & Bondsville)	Conventional Collection System to Proposed Salvisa Wastewater Treatment Plant.	Conventional Collection System and Pump to Harrodsburg for Treatment.
Combined McAfee (Providence, McAfee, Cottonwood & Heritage Center)	No Change.	Conventional Collection System and Pump to Harrodsburg for Treatment.

**Table 9.03-1 Community Alternative Descriptions**

Process	Number of Units	Flow Unit/MGD	Design Criteria
Brightleaf Central Submersible Pumps (Non-Clog)	2	180 gpm - 10 yrs 360 gpm -20 yrs	Submersible 3-inch with backup pump at approx. 115 ft TDH for the first 10 yrs before 2 replacement pumps at approx. 145ft TDH to cover 10-20 yrs)
Brightleaf Central Lift Station Wet Well (Total Storage= 10,909 gallons) (4,994 gal wet well at 8.5 ft + 5,916 gal for emergency storage within 10-inch Interceptor sewer)	1	.515 mgd	> 2 hr. detention time-20yrs (10 ft diameter with 14 depth for pumps and HWL Alarm at 8.5 ft depth for emergency storage along with 1450 ft of 10-inch new interceptor sewer line)
Odor Control Chemical Feed System	1	.515 mgd	2-Positive Displacement Chemical Feed Pumps 1-Fiberglass Storage Tank
Force Main (6-inch SDR 21)	5500	.515 mgd	> 2 ft/sec 180 gpm = 2.0 fps (10yrs) & 360 gpm = 4.0 fps (20yrs) Frictional Headloss = 110 ft (10yrs) & 145 ft (20yrs), Static Headloss = (950-875)+14)=89 ft
Air Release Valves	2	N/A	At highpoints within the force mains

**Table 9.03-2 Design Criteria for Brightleaf Combined Alternative B- Conveyance to Harrodsburg Collection System for Treatment at HWWTP**