

GEORGETOWN MUNICIPAL WATER & SEWER SERVICE

201 FACILITIES PLAN UPDATE

GEORGETOWN, KENTUCKY

APRIL 1997
REVISED JULY 1997
REVISED APRIL 1998
APPROVED MAY 4, 1999

Prepared by:

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Table 9-1
Wastewater 201 Facilities Plan
Summary of GMWSS Sewer System CIP

Project # Locator	Project Name	ESTIMATED COST			TYPE PROJECT		FUNDING SOURCE
		Phase I (0-2 Years)	Phase II (3-10 Years)	Phase III (11-20 Years)	Local	System Wide	
Wastewater Treatment Plant #1 Improvements							
1	Install Ditch Aerators/Eliminate RBC's	\$276,900				X	Local
2	Force Main Discharge Chamber	35,000				X	Local
3	Belt Filter Press and Feed Pumps	401,250				X	Local
4	Upgrade Mechanical Screen & Provide Compactor		\$87,500			X	Local
5	Concrete Pad for Sludge Roll-Off Container	6,250				X	Local
6	Drain Line from Sludge Dewatering Building	15,000				X	Local
7	Additional Belt Filter Press		277,500			X	Local
8	Chlorine Contact Modifications		6,900			X	Local
9	Anaerobic Digester Conversion to Aerobic		292,500			X	Local
10	New Plant Drainage Pump Station		93,750			X	Local
Wastewater Treatment Plant #2 Improvements							
11	Redirect Pump Station No. 9	977,600				X	Local/TMM*
12	Screening, Acid System, TE Pumps, Mixer, DPS Disch.	322,000				X	Local/TMM*
13	Oxidation Ditch Aerator Improvements	101,300				X	Local/TMM
14	Modify Pump Station No. 9		113,800			X	Local/TMM
15	Maintenance Storage Building	323,800				X	Local/TMM
Collection and Conveyance System Improvements							
16	Pump Station No. 2 Upgrade/Relocate Hambrick P.S.	1,614,250				X	Private*
17	Mt. Vernon Gravity Sewer Replacement	559,200	150,900			X	Local
18	Robinson Area Sewer Replacement	100,000	400,000	\$500,000		X	CDBG/Local
19	Sanitary Sewer Rehabilitation Program		499,375			X	Local
20	Lemons Mill Road Pump Station		278,900			X	Private*
21	Whitaker Gravity Line to Pump Station No. 9		1,605,625			X	Private*
22	Stadium Complex Pump Station & Interceptor Sewer		1,751,500			X	Private*
23	Ford Bradley Farm Pump Station & Gravity Sewer		40,200			X	Local
24	Conversion of Dry Pit Pump Station to Submersible			711,125		X	Private*
25	McCracken Creek Pump Station & Gravity Line			1,156,250		X	Private*
26	Lower Cane Run Pump Station					X	Private*

*Project Contingent Upon Degree of Private or Industrial Funding.

NOTE: Blue indicates projects that are already complete.

NOTE: Green indicates projects that are starting.

Bruce sent to newspaper
Friday, 8/29.

JS

NOTICE OF PUBLIC HEARING

(PURSUANT TO 401KAR5:006 SECTION 4 & 5; KRS 424, AND 40CFR25.5 & 6)

The Georgetown Municipal Water and Sewer Service, 125 West Clinton Street, Georgetown, Kentucky 40324, will hold a public hearing at its offices at such address at 6:00 p.m. on Thursday, September 18, 1997, for the purpose of receiving oral and written comments from members of the public regarding the City of Georgetown, Kentucky, 201 Wastewater Facilities Plan Update (the Plan), which proposes certain wastewater collection and treatment improvements. All interested members of the public are invited to submit oral and written comments on the Plan. Oral comments will be accepted at the public hearing. Written comments on the Plan will be accepted until 5:00 p.m. on October 10, 1997, at the Georgetown Municipal Water and Sewer Service offices at 125 West Clinton Street, Georgetown, Kentucky 40324. A copy of the Plan is on file at Georgetown Municipal Water and Sewer Service offices for review during normal business hours from 8:00 a.m. until 5:00 p.m. Monday through Friday. Any member of the public who is unable to submit comments as described herein should call the Georgetown Municipal Water and Sewer Service offices at (502) 863-7816 during normal business hours from 8:00 a.m. through 5:00 p.m. Monday through Friday so that arrangements can be made to receive such comments.

ROBERT L. RIDDLE
General Manager
Georgetown Municipal Water
and Sewer Service
125 West Clinton Street
P. O. Box 653
Georgetown, KY 40324
Phone: (502) 863-7816

Publication Dates: September 3, 1997 and September 10, 1997

JAMES E. BICKFORD
SECRETARY



PAUL E. PATTON
GOVERNOR

COMMONWEALTH OF KENTUCKY
NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION
FRANKFORT OFFICE PARK
14 REILLY RD
FRANKFORT KY 40601

May 4, 1999

Mr. Bob Riddle, General Manager
Georgetown Water & Sewer Services
P.O. Box 640
Georgetown, Kentucky 40324

Re: Georgetown Water & Sewer Services
State Planning and Environmental
Assessment Report and Regional
Facilities Plan
Georgetown, Kentucky

Dear Mr. Riddle:

The facilities plan and environmental documents entitled Georgetown Municipal Water and Sewer Services of April 22, 1997, and February 24, 1999 for Regional Wastewater Facilities Plan, Kentucky have been reviewed by this Division and found to conform with the requirements set forth in 40 CFR 35.2030 and 401 KAR 5:006. Approval is hereby given based on the State Planning and Environmental Assessment Report (SPEAR) issued on March 2, 1999, by this Department.

If you have any questions, please contact Jerry Hurst of this office at (502) 564-2225, extension 460.

Sincerely,

A handwritten signature in black ink, appearing to read "W. B. Gatewood".

William B. Gatewood, P.E., Manager
Facilities Construction Branch
Division of Water

WBG/DSN/sjm

Attachment

cc: PDR Engineers
Bluegrass ADD
Frankfort Regional Office
Kay Hines, Administration Section



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April 13, 1998

Mr. D. S. Nagda
Facilities Construction Branch
Division of Water
14 Reilly Road
Frankfort, Kentucky 40601

RE: Georgetown 201 Plan Update

Dear Mr. Nagda:

The following is our response to your comments of February 10, 1998:

1. Figures 2-3 and 2-5 have been revised to show the information you have requested.
2. This plan is an update of an original 201 Plan dated 1976 which is on file with the DOW. That document contains the information requested on soils, topography and geology of the planning area.
3. A floodplain map of Georgetown has been added as Figure 6-10. This map was taken from a 1980 Flood Insurance Study by FEMA. Note that the study determined that the southern part of town had minimal flood hazards.
4. Refer to Appendix I for Georgetown's current sewer user charges. No rate increases are anticipated to implement the selected plan.
5. Refer to the individual 11" x 17" Figures in Chapters 5 and 6 for each collection system improvement. All the improvements cannot be depicted on a single 11" x 17" map, ie. would not be legible (see attached).
6. The schematic of the existing WWTP No. 1 in Figure 3-1 has been corrected. A new schematic Figure 5-2 has been added showing proposed improvements.
7. Table 7-12 has been revised.
8. Once the 201 Plan is approvable by the DOW. GMWSS will obtain resolutions from the City and County.

D.S. Nagda
April 13, 1998
Page 2

9. Concerning the water quality of significant streams in the area, the Water Quality Branch of the DOW is currently updating the 305B report. See foot note on Page 8 of Appendix H.

We have incorporated the above revisions into your copy of the 201 Update which is enclosed.

Sincerely,

PDR ENGINEERS, INC.

By 
Morey L. Lampson, P.E.

MLL:dmc

cc: Robert Riddle

G:\GROUP\WP\96066\LTRS\NAGDA-2.LTR



VLR - ALL

JAMES E. BICKFORD
SECRETARY



PAUL E. PATTON
GOVERNOR

RECEIVED

COMMONWEALTH OF KENTUCKY
NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION
FRANKFORT OFFICE PARK
14 REILLY RD
FRANKFORT KY 40601

RDR ENGINEERS, INC.

February 10, 1998

Mr. Robert Riddle, General Manager
Georgetown Water/Sewer Services
P.O. Box 653
Georgetown, Kentucky 40324

Re: Georgetown-Scott County
Facilities Plan

Dear Mr. Riddle:

I have reviewed the fax, and all other information received to date and have the following comments:

1. **Revise the planning area map to show the stated phases of projected service areas, city limits, location of WWTPs in and at least 5000' around the planning area. Show the new bypass.**
2. **Include soil, topography, geology and its effect on the sewer line improvements.**
3. **Provide a 100 year floodplain map with locations of the proposed improvements in the collection system and treatment plants.**
4. **Include in the document current user charges and a statement in the text that there will be no increase as indicated in an earlier fax.**
5. **Provide a comprehensive map of all collection system improvements. This map should be 11" x 17".**
6. **In Figure 3- 1, show the existing facilities and repairs proposed in this plan. Also clarify flow circuits for WAS. Why is sludge not going from final clarifier to WAS**



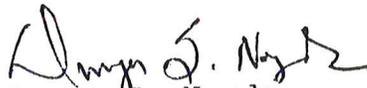
Mr. Robert Riddle
Page Two
February 10, 1998

drainage pump station? Similarly why is chlorine added before sand tank instead of adding in chlorine contact tank as stated on page 3-5? Please clarify/correct. Also show the bypass flow around sand filter for RBC final clarifier effluent similar to that shown for O. D. clarifier in Figure 3-1. This figure is **required** for inclusion in the SPEAR.

7. On page 7-9, the construction cost of concrete channel is given as \$7900 in Table 7-10 which includes the iron reinforcement (metal) and its life is 50 years as stated on the same page, but its salvage value is given in Table 7-12 as \$8100. Please correct/clarify.
8. A **resolution** of adoption of the selected plan is required in Appendix E before we can finalize the review of this plan. Please refer to checklist item IV-B.

If you have any questions or need clarification, please feel free to call me at 502-564-2225, extension 488.

Sincerely



Durga S. Nagda
Facilities Construction Branch
Division of Water

DSN/sjm

cc: Mr. Morey L. Lampson, PDR Engineers
Frankfort Regional Office

**GEORGETOWN MUNICIPAL WATER AND SEWER SERVICE
201 FACILITIES PLAN UPDATE
GEORGETOWN, KENTUCKY**

APRIL 1997
REVISED JULY 1997
REVISED APRIL 1998

May 4, 1999

Approved DAW.

Prepared By:

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CHAPTER 1

EXECUTIVE SUMMARY

A. PURPOSE

The purpose of this study is to update the Georgetown, Kentucky 1990 201 Facilities Plan to reflect changes that have occurred since that Plan was prepared. In addition, a 201 planning document is required to support an application for State Revolving Fund (SRF) funding. Changes that have occurred include recent population growth, commercial and industrial development and modifications to the City's wastewater system. This 201 Update will review the changes and develop the most cost-effective, environmentally sound and politically implementable wastewater system improvements consistent with the applicable sections of the Federal Water Pollution Control Act Amendment of 1972 (PL92-500) and Clean Water Act Amendments of 1989 (PL96-483). The 201 Facilities Plan study process involves the evaluation of wastewater treatment and collection and conveyance system improvements to reliably and consistently meet the water quality standards established by the Kentucky Natural Resources and Environmental Protection Cabinet for the receiving waters of the Georgetown Planning Area. This 201 Plan Update is intended to update the information and data published in the 1990 201 Facilities Plan. As such, this document should be used as the primary Facilities Plan document, with the 1990 201 Facilities Plan documents providing supporting background data.

B. PROJECT NEED DOCUMENTATION

The 1990 201 Facilities Plan was developed using the period from 1990 to 2010 as the 20-year planning period. The 1990 201 Facilities Plan was prepared in accordance with applicable rules and regulations of the United States Environmental Protection Agency and the Kentucky Natural Resources and Environmental Protection Cabinet. The 1990 201 Facilities Plan selected a plan for expansion of the Georgetown municipal wastewater treatment plant (WWTP No. 1), as well as improvements to the wastewater conveyance system. Based on the recommendation in the 1990 201 Facilities Plan, WWTP No. 1 was expanded by the addition of an oxidation ditch treatment system. Improvements were also made to the wastewater conveyance

system in the form of a new North East Interceptor and Pump Station (No. 9) in order to eliminate three old pump stations.

As a result of the recent population growth and the need to improve certain deficiencies of the sewage collection and conveyance system, the Georgetown Municipal Water and Sewer Service (GMWSS) authorized PDR Engineers, Inc. (PDR) to prepare the 201 Plan Update for the 1996-2016 planning period. With the help of City Officials, PDR has prepared the 1996 201 Plan Update that addresses the future projected wastewater needs of the City.

C. POPULATION PROJECTIONS FOR THE GEORGETOWN PLANNING AREA

The population and land use data utilized for this 201 Update were provided by the Georgetown-Scott County Planning Commission through the publication of the 1996 Georgetown-Scott County Comprehensive Plan. Population projections for the 20-year planning period covered in this report are as shown in Table 1-1.

TABLE 1-1 POPULATION PROJECTIONS				
YEAR	GEORGETOWN	URBAN SERVICE AREA	PLANNING AREA	SCOTT COUNTY
1996	13,864	15,867	21,766	27,728
2000	14,802	16,785	23,247	29,603
2010	17,505	19,869	27,519	35,009
2016	19,368	22,003	30,449	38,735

The population projections show a 20-year projected growth of almost 40% for the Georgetown Planning Area.

The estimated distribution of the 20 year projected population is as shown in Table 1-2.

TABLE 1-2 DISTRIBUTION OF PROJECTED POPULATION				
DRAINAGE BASIN	URBAN SERVICE AREA		ENTIRE PLANNING AREA	
	WWTP NO. 1	WWTP NO. 2	WWTP NO. 1	WWTP NO. 2
Cane Run	5,636	0	9,824	0
Dry Run	660	0	1,997	0
Lanes Run	0	0	0	1,555
McCracken Creek	308	0	497	0
North Elkhorn Creek	13,826	1,573	15,003	1,573
Total	20,430	1,573	27,321	3,128

D. PROJECTED WASTEWATER FLOWS AND LOADINGS

The projected year 2016 average residential wastewater flow from the Georgetown Planning Area is shown in Table 1-3.

TABLE 1-3 PROJECTED RESIDENTIAL WASTEWATER FLOW				
DRAINAGE BASIN	URBAN SERVICE AREA		ENTIRE PLANNING AREA	
	WWTP NO. 1 MGD	WWTP NO. 2 MGD	WWTP NO. 1 MGD	WWTP NO. 2 MGD
Cane Run	.68	0	1.18	0
Dry Run	.08	0	.24	0
Lanes Run	0	0	0	.19
McCracken Creek	.04	0	.06	0
North Elkhorn Creek	1.66	.68	1.80	.87
Total	2.46	.68	3.28	1.06

The projected 20-year total wastewater flow to WWTP No. 1 is as follows:

SOURCE	URBAN SERVICE AREA		TOTAL PLANNING AREA	
	AVERAGE DAILY FLOW MGD	PEAK DAILY FLOW MGD	AVERAGE DAILY FLOW MGD	PEAK DAILY FLOW MGD
Industrial	.38	.76	.38	.76
Institutional	.10	.20	.10	.20
WTP	.55	.55	.55	.55
Small Commercial / Residential	2.46	8.61	3.28	11.48
Total	3.49	10.12	4.31	12.99

The projected 20-year loadings to WWTP No. 1 are as follows:

PARAMETER	CONCENTRATION	URBAN SERVICE AREA LOADING	TOTAL PLANNING AREA LOADING
BOD ₅	200 mg/l	5,821 lbs/d	7,189 lbs/d
TSS	225 mg/l	6,549 lbs/d	8,088 lbs/d
NH ₃ -N	30 mg/l	873 lbs/d	1,078 lbs/d

The projected 20-year total wastewater flow to WWTP No. 2 is as follows:

SOURCE	URBAN SERVICE AREA		TOTAL PLANNING AREA	
	AVERAGE DAILY FLOW MGD	PEAK DAILY FLOW MGD	AVERAGE DAILY FLOW MGD	PEAK DAILY FLOW MGD
Toyota Motor Manufacturing	1.68	1.68	1.68	1.68
Small Commercial/ Residential	.68	2.38	1.06	3.71
Total	2.36	4.06	2.74	5.39

The projected 20-year sanitary loadings (residential/commercial) to WWTP No. 2 are as follows:

PARAMETER	CONCENTRATION	URBAN SERVICE AREA LOADING	TOTAL PLANNING AREA LOADING
BOD ₅	200 mg/l	1,134 lbs/d	1,768 lbs/d
TSS	225 mg/l	1,276 lbs/d	1,989 lbs/d
NH ₃ -N	30 mg/l	170 lbs/d	265 lbs/d

The projected 20-year loadings from TMM are as follows:

PARAMETER	CONCENTRATION	LOADING
BOD ₅	130 mg/l	1,821 lbs/d
TSS	35 mg/l	490 lbs/d
NH ₃ -N	1.0 mg/l	14 lbs/d

The projected 20-year loadings from all sources to WWTP #2 are as follows:

PARAMETER	LOADING	CONCENTRATION (Predicted)
BOD ₅	3,589 lbs/d	157 mg/l
TSS	2,479 lbs/d	108 mg/l
NH ₃ -N	279 lbs/d	12.2 mg/l

Flow = 2.74 MGD

E. EXISTING WASTEWATER TREATMENT FACILITIES

The two Georgetown Wastewater Treatment Plants (WWTP No. 1 and WWTP No. 2) were evaluated for the availability of treatment capacity required to meet the projected 20-year wastewater requirements.

Table 1-4 presents a comparison of the 20-year projected flow and loadings with the available capacity of the two wastewater treatment plants.

TABLE 1-4

TREATMENT CAPACITY VERSUS PROJECTED 20-YEAR FLOW AND LOADINGS

PARAMETER	WWTP NO. 1		WWTP NO. 2					
	FUTURE CAPACITY REQUIRED	EXISTING CAPACITY	FUTURE CAPACITY REQUIRED			EXISTING CAPACITY		
			TMM	SANITARY	TOTAL	TMM	SANITARY	TOTAL
Average Daily Flow MGD	4.31	3.2	1.68	1.06	2.74	2.0	.20	2.2
Peak Daily Flow MGD	12.99	9.6	1.68	3.71	5.39	2.0	.20	2.2
BOD ₅ lbs/d	7,189	6,005	1,821	1,768	3,589	2,418	334	2,752
TSS lbs/d	8,088	8,444	490	1,989	2,479	1,331	375	1,706
NH ₃ -N lbs/d	1,078	801	14	265	279	500	50	550

As shown above, in their current state, neither plant has adequate capacity to meet the future treatment capacity requirements of the 201 Planning Area.

F. EXISTING WASTEWATER COLLECTION AND CONVEYANCE FACILITIES

The GMWSS wastewater collection system currently serves the City of Georgetown and several isolated areas outside the City limits. The service area includes portions of the following five major drainage basins: Cane Run, Dry Run, Lanes Run, McCracken Creek and North Elkhorn Creek. The collection and conveyance system consists of over one hundred miles of gravity sewers and force mains and 22 pump stations. Gravity lines range from 4" to 30" in diameter, force mains range from 1-1/2" to 14" in diameter and the pump stations have pumps that range in capacity from 80 gallons per minute up to 1,200 gallons per minute. The gravity lines are a combination of vitrified clay pipe, concrete pipe and polyvinyl chloride (PVC) pipe. There are also some private sewers and pump stations tied into the GMWSS collection system to serve areas where sewer service was not available initially. Older portions of the collection system suffer from excessive inflow that occasionally results in bypasses during high intensity rainfall events. GMWSS has an ongoing program to identify and correct excessive I/I in the collection system.

G. EVALUATION OF TREATMENT IMPROVEMENTS

Upon the conclusion that additional treatment capacity is required and, because improvements are necessary to enhance the operation, maintenance and reliability of the two WWTP's, a number of capital improvements were evaluated in detail.

1. WWTP NO. 1

a. Phase I (0-2 Years)

- Install Ditch Aerators/Eliminate RBCs -- Expand capacity of oxidation ditch system and abandon RBC system.
- New Force Main Discharge Chamber -- Construct a chamber designed to accommodate all the pump station force mains discharging to WWTP No. 1.

- New Belt Filter Press -- Add a third BFP and replace two plunger (BFP feed) pumps with new feed pumps.
- New Concrete Pad for Sludge Roll-Off Container -- Provide additional concrete surfacing with drain for storage of second sludge cake disposal container (roll-off box).
- Provide Additional Sewer Line from Sludge Dewatering Building -- Provide a parallel sewer line from the Sludge Dewatering Building to correct a bottleneck in the existing drainage system.

b. Phase II (3-10 Years)

- Upgrade Mechanical Screen and Provide Compactor -- Replace existing mechanical screen elements (15 mm opening) with new elements (6mm opening) and provide compactor system.
- New Belt Filter Press -- Add a BFP to supplement unit installed in Phase I.
- New Chlorine Contact -- Convert existing RBC clarifier to new chlorine contact basin.
- New Aerobic Digesters -- Convert two existing anaerobic digesters to aerobic units and replace an existing plunger pump with a new transfer pump.
- New Plant Drainage Pump Station -- Provide a new submersible type pump station to replace the existing "dry pit type" pump station.

2. WWTP NO. 2

a. Phase I (0-2 Years)

- New Disinfection -- Three alternatives were evaluated; new UV system, new chlorination/dechlorination system, and maintaining existing ozonation system. Installation of a new UV disinfection system was determined to be the most cost-effective and viable alternative.

- Redirect Pump Station No. 9 Discharge -- To improve the operation and performance of WWTP No. 2, improvements would be made to Pump Station No. 9 to allow wastewater entering the station to be pumped to WWTP No. 2 for treatment.
- New Influent Screening -- Install a new mechanical screen to provide increased sanitary flow capacity.
- Acid Feed System Improvements -- Improvements would include an access road to the acid tank, a new acid tank and new effluent aerators (for mixing).
- Replace Thickener Effluent Pumps -- The two existing pumps would be replaced with larger units to provide greater pumping capacity.
- New Ditch Influent Mixer -- a slow speed mechanical mixer would be installed in the oxidation ditch influent distribution box to provide better blending of flow streams into the ditches.
- New Drain Pump Station Discharge -- an alternate pump station discharge connection would be constructed to allow the majority of the clarifier contents to be returned to the oxidation ditches during dewatering.
- Modify Oxidation Ditch Aerators -- New variable frequency drives would be installed to the existing aerators to allow turndown capability and conserve power.
- New Maintenance Building -- Construct a building to provide maintenance and storage space for equipment and to house the new UV system.

b. Phase II (3-10 Years)

- Modifications to Pump Station No. 9 -- Modify pumps to increase the amount of wastewater pumped to WWTP No. 2.

- Put Second Oxidation Ditch in Service -- To provide additional treatment capacity, the standby oxidation ditch system would be put in service.

H. EVALUATION OF COLLECTION AND CONVEYANCE IMPROVEMENTS

The existing collection and conveyance system was evaluated to determine improvements needed to accommodate projected growth and development in the service area in the next twenty years. Many capital improvements were evaluated in detail. The following is a summary of the recommended improvements:

1. Phase I (0-2 Years)

- Pump Station No. 2 Upgrade, Relocation of Hambrick Place Pump Station and Manifold Force Main System -- Install more efficient, submersible, pumps in Pump Station No. 2. Relocate Hambrick Place Pump Station south to new bypass and provide new manifold force main with Pump Station No. 2.
- Robinson Area Sewer Replacement -- Install 4,200 linear feet of new gravity sewer mains and 6,000 linear feet of laterals to replace the existing inadequate private sewer system.
- Sanitary Sewer Rehabilitation -- Continue to implement the Sanitary Sewer Rehabilitation Program (SSRP) involving cleaning, TV inspection and repairs to problem areas.

2. Phase II (3-10 Years)

- Mt. Vernon Gravity Sewer Replacement -- Replace approximately 2,550 linear feet of deteriorated and overloaded sewer main from Scroggin Drive to Lemons Mill Road.
- Lemons Mill Road Pump Station -- Install pump station and force main to serve drainage area on Lemons Mill Road between the bypass and I-75.
- Whitaker Property Gravity Line to Pump Station No. 9 -- Install gravity interceptor sewer from Pump Station No. 9 along North Elkhorn Creek and north to serve drainage area proposed for development.

- Elimination of Private Sewer Systems Within Georgetown -- Miscellaneous improvements to take over or remove private sewers and pump stations from service.
- Interceptor Sewer and Pump Station on New Stadium Complex and Lemons Mill Road Development -- Install interceptor sewer and pump station on the south side of North Elkhorn Creek to serve the new stadium complex and drainage area to the north.
- Interceptor Sewer and Pump Station on Ford Bradley Farm -- Install pump station and gravity interceptor sewers to serve future development of area west of US 25 between new bypass and Hambrick Place subdivision (existing Pump Station No. 3 and No. 5 would be removed from service).
- Conversion of Dry Pit Pump Stations to Submersible -- Convert Pump Station No. 8 to a submersible station. Conversion of Pump Station No.2 is proposed in phase I.
- Sanitary Sewer Rehabilitation -- Continued implementation of the SSRP.

3. Phase III (11-20 Years)

- Derby Estates Gravity Line and McCracken Creek Pump Station -- Construct pump station at McCracken Creek and North Elkhorn Creek and gravity interceptors to serve the Colony and Derby Estates subdivisions as well as remaining drainage area bound by the proposed bypass.
- Lower Cane Run Pump Station -- Construct pump station near the new bypass and US 460 and gravity interceptors to serve the Canewood subdivision, Western Elementary School and future development of the drainage basin.
- Sanitary Sewer Rehabilitation -- Continued implementation of the SSRP.

I. COST OF TREATMENT IMPROVEMENTS

The estimated construction and project cost for each of the proposed improvements to WWTP No. 1 and WWTP No. 2 are summarized in Tables 1-5 and 1-6.

**TABLE 1-5
ESTIMATED PROJECT COSTS
WWTP NO. 1 IMPROVEMENTS**

ITEM	CONSTRUCTION COST	PROJECT COST
Phase I (0-2 Years)		
Install Ditch Aerators/Eliminate RBCs	\$ 221,500	\$ 276,900
FM Discharge Chamber	28,000	35,000
Belt Filter Press	321,000	401,250
Pad for Roll-Off Container	5,000	6,250
Drain Line from Sludge Dewatering Building	12,000	15,000
Total	\$ 587,500	\$ 734,400
Phase II (3-10 Years)		
Upgrade Mechanical Screen and Provide Compactor	70,000	87,500
Belt Filter Press	\$ 222,000	\$ 277,500
Chlorine Contact	5,500	6,900
Aerobic Digesters	234,000	292,500
New Plant Drainage Pump Station	75,000	93,750
Total	\$ 606,500	\$ 758,150
Total Cost	\$1,194,000	\$1,492,550

**TABLE 1-6
ESTIMATED PROJECT COSTS
WWTP NO. 2 IMPROVEMENTS**

ITEM	CONSTRUCTION COST	PROJECT COST
Phase I (0-2 Years)		
Disinfection	\$ 206,200	\$ 257,800
Redirect P.S. No. 9 Discharge	782,300	977,600
Screening, Acid System, TE Pumps, Mixer, DPS Discharge	257,600	322,000
Oxidation Ditch Aerators	81,000	101,300
Maintenance Building	259,000	323,800
Total	\$1,586,100	\$1,982,500
Phase II (3-10 Years)		
Modify P.S. No. 9	\$ 91,000	\$ 113,800
Total Cost	\$1,677,100	\$2,096,300

J. COST OF COLLECTION AND CONVEYANCE IMPROVEMENTS

The estimated construction and project cost for each of the proposed improvements to the collection and conveyance system are summarized in Table 1-7.

**TABLE 1-7
ESTIMATED PROJECT COSTS
COLLECTION AND CONVEYANCE SYSTEM**

ITEM	CONSTRUCTION COST	PROJECT COST
Phase I (0-2 Years)		
Pump Station No. 2 Upgrade, Relocation of Hambrick Place Pump Station and Manifold Force Main System	\$1,291,400	\$1,614,250
Robinson Area Sewer Replacement	473,900	559,200
Sanitary Sewer Rehabilitation Program	100,000	100,000
Total	\$1,865,300	\$2,273,450
Phase II (3-10 Years)		
Mt. Vernon Gravity Sewer Replacement	120,700	150,900
Whitaker Gravity Line to Pump Station No. 9	223,100	278,900
Interceptor Sewer and Pump Station on New Stadium Complex and Lemons Mill Road Development	1,284,500	1,605,625
Interceptor Sewer and Pump Station on Ford Bradley Farm	1,401,200	1,751,500
Conversion of Dry Pit Pump Stations to Submersible	32,200	40,200
Sanitary Sewer Rehabilitation Program	400,000	400,000
Total	\$3,861,200	\$4,726,500
Phase III (11-20 Years)		
Derby Estates Gravity Line and McCracken Creek Pump Station	\$568,900	\$711,125
Lower Cane Run Pump Station	925,000	1,156,250
Sanitary Sewer Rehabilitation Program	500,000	500,000
Total	\$1,993,900	\$2,367,375
Grand Total	\$7,720,400	\$9,367,325

Table 1-8
Wastewater 201 Facilities Plan
Summary of GMWSS Sewer System CIP

Project No. (Locator)	Project Name	Estimated Cost			Type Project		Funding Source (Likely)	Page Reference
		Phase I (0-2 Years)	Phase II (3-10 Years)	Phase III (11-20 Years)	Local	System Wide		
Wastewater Treatment Plant No. 1 Improvements								
1	Install Ditch Aerators/Eliminate RBCs	\$276,900				X	Local	5-1/7-1
2	Force Main Discharge Chamber	\$35,000				X	Local	5-2/7-2
3	Belt Filter Press and Feed Pumps	\$401,250	\$87,500			X	Local	5-2/7-2
4	Upgrade Mechanical Screen and Provide Compactor					X	Local	5-3/7-3
5	Concrete Pad for Sludge Roll-Off Container	\$6,250				X	Local	5-2/7-3
6	Drain Line from Sludge Dewatering Building	\$15,000				X	Local	5-2/7-3
7	Additional Belt Filter Press		\$277,500			X	Local	5-3/7-4
8	Chlorine Contact Modifications		\$6,900			X	Local	5-3/7-4
9	Anaerobic Digester Conversion to Aerobic		\$292,500			X	Local	5-3/7-5
10	New Plant Drainage Pump Station		\$93,750			X	Local	5-3/7-7
Wastewater Treatment Plant No. 2 Improvements								
11	Ultraviolet Disinfection	\$257,800				X	Local/TMM *	5-4/7-8
12	Redirect Pump Station No. 9	\$977,600				X	Local/TMM *	5-6/7-15
13	Screening, Acid System, TE Pumps, Mixer, DPS Disch.	\$322,000				X	Local/TMM *	5-6/7-15
14	Oxidation Ditch Aerator Improvements	\$101,300				X	Local/TMM	5-7/7-17
15	Modify Pump Station No. 9		\$113,800			X	Local/TMM	5-8/7-18
16	Maintenance Storage Building	\$323,800				X	Local/TMM	5-7/7-17
Collection and Conveyance System Improvements								
17	Pump Station No. 2 Upgrade/Relocate Hambrick P.S.	\$1,614,250	\$150,900			X	Private *	6-1/7-19
18	Mt. Vernon Gravity Sewer Replacement					X	Local	6-2/7-20
19	Robinson Area Sewer Replacement	\$559,200				X	CBDG/Local	6-2/7-20
20	Sanitary Sewer Rehabilitation Program	\$100,000	\$400,000	\$500,000		X	Local	4-7
21	Lemons Mill Road Pump Station		\$499,375			X	Private *	6-3/7-21
22	Whitaker Gravity Line to Pump Station No. 9		\$278,900			X	Private *	6-3/7-22
23	Stadium Complex Pump Station & Interceptor Sewer		\$1,605,625			X	Private *	6-4/7-22
24	Ford Bradley Farm Pump Station & Gravity Sewer		\$1,751,500			X	Private *	6-5/7-23
25	Conversion of Dry Pit Pump Station to Submersible		\$40,200			X	Local	6-6/7-24
26	McCracken Creek Pump Station & Gravity Line			\$711,125		X	Private *	6-6/7-25
27	Lower Cane Run Pump Station			\$1,156,250		X	Private *	6-7/7-25

* Project Contingent Upon Degree of Private or Industrial Funding

CHAPTER 2

POPULATION AND WASTEWATER FLOW PROJECTIONS

A. PLANNING AREA

The GMWSS wastewater facilities currently serve only the City of Georgetown and the service area is very nearly defined by the City limits. The GMWSS proposes to extend its service area north to the proposed bypass, east to include the Lanes Run drainage basin, south beyond the proposed bypass to the Greenbelt Reserve and west to the proposed bypass. For purposes of this update, the proposed Planning Area corresponds to the planning area contained in the 1990 201 Facilities Update, except the Miller Run drainage basin has been deleted. The proposed service area corresponds to the 1991 Georgetown-Scott County Comprehensive Plan (hereafter referred to as the "1991 Comprehensive Plan") Urban Service Boundary (USB) and is illustrated in Figure 2-1.

The proposed service area includes the following five major drainage basins:

- (1) Cane Run
- (2) Dry Run
- (3) Lanes Run
- (4) McCracken Creek
- (5) North Elkhorn Creek

Each of these five major drainage basins are divided into subdrainage basins or sub-areas. The sub-areas provide a more detailed method of estimating future populations. The sub-area boundaries are shown in Figure 2-2.

NOTE: It is the intention of this Plan that all wastewater infrastructure in the Planning Area be held to the same restrictions and specifications of the GMWSS Service Area.

B. LAND USE

Information on the land use in the planning area is based on the Georgetown-Scott County Joint Planning Commission's 1991 Georgetown Urban Area Land Use Plan (hereafter referred to as the "1991 Land Use Plan"), which was published in March 1991. A portion of the service area includes land that is not developable such as floodplains and major roadways and railroad

rights-of-way. Areas that currently have an agricultural designation (A-1) are assumed to have a potential residential designation of R-4. This information was used to estimate the population growth in the five drainage areas based on the zoning for the areas and estimated population density. The 1991 Land Use Plan map shows existing zoning and proposed land use within the Urban Service Boundary (USB). The land uses, both existing and proposed, were divided into two major categories -- residential and commercial. The commercial category includes the following sub-categories:

- Neighborhood
- Community/Highway
- Office
- Downtown
- Light Industry
- Environmentally Sensitive Light Industry
- Public/Institutional

Area schools and Georgetown College are categorized as institutional and Marshall Field is categorized as commercial, while areas designated as parks or cemeteries were considered to have no contribution to the sanitary sewers.

C. POPULATION PROJECTIONS

1. General

Refer to Table 2-1 for a presentation of historical growth trends for Scott County. A number of previously published sources of population projections are contained in the Appendix to the 1991 Comprehensive Plan. Many organizations, most notably the University of Louisville, have studied Scott County growth trends, including the impact of Toyota Motor Manufacturing Co. (hereafter referred to as "TMM"). The 1991 Comprehensive Plan evaluated these sources within the context of actual development trends, building permit figures and expectations for regional growth.

**TABLE 2-1
PAST POPULATION GROWTH TRENDS
SCOTT COUNTY, KENTUCKY**

YEAR	POPULATION ^(a)	10-YEAR PERCENT INCREASE
1960	15,376	--
1970	17,948	16.7%
1980	21,813	21.5%
1990	23,867	9.4%
1985-90 ^(b)	--	15.7%

(a) Source: U.S. Census Bureau

(b) According to census records, no real population increase occurred during 1980 to 1985. If the 10-year growth (9.4%) occurred in six years, the equivalent 10-year rate is approximately 15.7%.

The Georgetown-Scott County Planning Commission is currently developing a 1996 update to the 1991 Comprehensive Plan. Both the 1991 Comprehensive Plan and the 1996 Update evaluated a range of growth possibilities:

- Low Growth Rate (1.2% average annual increase)
- Medium Growth Rate (1.7% annual increase)
- High Rate of Growth (2.2% annual increase)

The low growth rate assumes a slower growth rate than the recent trend. The medium growth rate assumes that the growth rate of the late 1980s will continue. This rate reflects the impact of TMM and related growth that has occurred in Scott County. The high growth rate assumes a more rapid rate of growth.

The University of Louisville Population Research has also projected the future growth in Scott County, assuming a moderate growth rate and a high growth rate. Table 2-2 shows a comparison of published population projections.

**TABLE 2-2
COMPARISON OF POPULATION PROJECTIONS
SCOTT COUNTY, KENTUCKY**

YEAR	1991 COMPREHENSIVE PLAN UPDATE MEDIUM GROWTH	1996 COMPREHENSIVE PLAN UPDATE MEDIUM GROWTH	STATE DATA CENTER UNIVERSITY OF LOUISVILLE POPULATION RESEARCH	
			MODERATE GROWTH	HIGH GROWTH
1990	23,867 ^(a)	23,867 ^(a)	23,867 ^(a)	23,867 ^(a)
1994	--	26,790	--	--
1995	26,150	--	26,208	27,274
1996	--	27,728 ^(b)	--	--
2000	28,200	29,603	26,460	29,558
2005	30,590	32,193	--	--
2010	--	35,009	28,405	33,016
2016	--	38,735 ^(c)	29,159 ^(d)	34,720 ^(d)
2020	--	41,437 ^(c)	29,662	35,856

- (a) U.S. Census Bureau
- (b) Extrapolated between values for 1994 and 2000
- (c) Projected based on 1.7% increase per year.
- (d) Extrapolated between values for 2010 and 2020.

The Comprehensive Plan was prepared by local people most familiar with the Scott County area. Therefore, this Facilities Plan Update will use the 1996 Comprehensive Plan Update medium growth population projections for Scott County as the basis for the Georgetown Planning Area population projections.

The recent population studies mentioned above were for Scott County and did not project the population growth of the City of Georgetown. However, the City of Georgetown has historically accounted for approximately 50% of the population in Scott County (47.8% based on 1990 census data). The 1996 Comprehensive Plan Update projects that 47% of Scott County residential growth between 1994 and 2010 will occur within the Georgetown urban area. This report will assume that 50% of the population growth in Scott County over the next 20 years will

occur in the City of Georgetown. Table 2-3 shows the 2016 estimated population for Scott County and the City of Georgetown.

TABLE 2-3 DESIGN POPULATION VALUES		
YEAR	SCOTT COUNTY ^(a)	GEORGETOWN ^(c)
1990	23,867 ^(b)	11,414 ^(a)
1996	27,728	13,864
2000	29,603	14,802
2010	35,009	17,505
2016	38,735	19,368

- (a) Source: 1996 Georgetown-Scott County Comprehensive Plan medium growth scenario.
 (b) 1990 U.S. Census.
 (c) Georgetown population growth estimated at 50% of Scott County growth.

2. Planning Area Projections

The 1990 201 Facilities Plan Update determined the population of the Georgetown Planning Area from 1986 aerial photographs of the area. A house count and the industrial and multi-residential customers were tallied in each sub-area. The equivalent population was calculated based on 3.5 persons per dwelling unit and the number of apartments or employees at each location. For the purposes of this plan update, the 1986 Planning Area population was updated using the same annual percent growth rate (1.7%) as the Scott County projections.

Saturation population is the point at which the population of an area is completely developed. It is not known when or if an area will reach saturation. The saturation population of the Georgetown Planning Area can be estimated using the land's zoning designation and the appropriate population densities for each, as listed in Table 2-4.

TABLE 2-4 POPULATION DENSITY	
ZONING DESIGNATION	POPULATION DENSITY
R-1	4 Persons Per Acre
R-2	8 Persons Per Acre
R-3	14 Persons Per Acre
R-4	15 Persons Per Acre
C (Commercial)	20 Persons Per Acre
I (Industrial)	36 Persons Per Acre

The Planning Area population projections for year 2016 are listed by major drainage basins in Table 2-5.

TABLE 2-5 PLANNING AREA POPULATION PROJECTIONS MAJOR DRAINAGE BASINS				
DRAINAGE BASIN	2000 POPULATION ESTIMATE	2010 POPULATION ESTIMATE	2016 POPULATION ESTIMATE	SATURATION POPULATION ESTIMATE
Cane Run	7,499	8,879	9,824	141,510
Dry Run	1,525	1,806	1,997	114,755
Lanes Run	1,185	1,402	1,555	60,773
McCracken Creek	380	450	497	29,415
North Elkhorn Creek	12,658	14,982	16,576	87,929
TOTAL	23,247	27,519	30,449	434,382

3. Urban Service Area Projections

The population projections of specific drainage basins for the Georgetown Urban Service Area, as well as the remainder of the Planning Area, are listed in Table 2-6.

**TABLE 2-6
URBAN SERVICE AREA POPULATION PROJECTIONS
MAJOR DRAINAGE BASINS**

DRAINAGE BASIN	GMWSS SERVICE AREA			2016 POPULATION REMAINDER OF PLANNING AREA
	2000 POPULATION ESTIMATE	2010 POPULATION ESTIMATE	2016 POPULATION ESTIMATE	
Cane Run	4,274	5,061	5,636	4,188
Dry Run	503	596	660	1,337
Lanes Run*	0	0	0	1,555
McCracken Creek	236	279	308	189
North Elkhorn Creek	11,772	13,933	15,399	1,177
TOTAL	16,785	19,869	22,003	8,446

*Even though portions of the drainage areas are within the USB, because they are zoned industrial, assume all future population will be outside the USB.

D. WASTEWATER FLOW PROJECTIONS

1. General

According to GMWSS records, the sewered population for September 1995 through August 1996 varied between 15,673 and 16,174, with the average being 15,867. The average daily wastewater flow to WWTP No. 1 for the same period was 2.543 MGD.

The five (5) industrial users that discharged to WWTP No. 1 in 1995 are Superior Coatings, Inc., Johnson Controls, Columbia Hospital (Scott General Hospital), International Crankshaft and Electro-Shield Plating, Incorporated. Superior Coatings, Inc., Johnson Controls and Electro-Shield Plating, Incorporated are classified as categorical users. Columbia Hospital (Scott General Hospital) and International Crankshaft are non-categorical users. Toyota Motor Manufacturing is a categorical industrial user and discharges to WWTP No. 2. A categorical user is an industry that must meet all Federal Pretreatment Regulations, as well as the Georgetown Pretreatment Regulations. A non-categorical user is required to meet the Georgetown regulations only. Refer to Table 2-7 for information on these major industries.

**TABLE 2-7
INDUSTRIAL USERS
GEORGETOWN, KENTUCKY**

COMPANY	SIC CODE	DISCHARGE POINT	TYPE	DISCHARGE GPD
Johnson Controls	3499	1 Quality Drive	Fabricate Metal Prod. NEC	35,000
Superior Coatings	3471	Lemons Mill Road	Electro Plating Polishing, Anodizing	50,000
International Crankshaft	339		Fabricated Carbon Steel Crankshafts	75,000
Columbia Hospital (Scott General Hospital)	--	Lexington Road	N/A	10,000
Electro-Shield Plating, Inc.	3471	230 Chambers Avenue	Zinc, Electro Plating, Job Shop	15,000
Toyota Motor Manufacturing	3711	WWTP No. 2	Automobile Manufacturing	1,230,000

There are a number of schools that contribute wastewater flow to the GMWSS sewer system and is treated at WWTP No. 1. The total volume of water sold to the area schools from September 1995 through August 1996 was 26,348,715 gallons. Assuming 100% of water used is returned to the sewers results in an average daily wastewater flow of 72,200 GPD. Refer to Table 2-8 for a listing of water consumption for each school in the Georgetown service area.

**TABLE 2-86
WATER USAGE
GEORGETOWN SCHOOLS**

SCHOOL	NUMBER OF STUDENTS	NUMBER OF EMPLOYEES	WATER CONSUMPTION
Scott County Middle	1,725	76	766,000
Scott County High	1,358	138	2,209,200
Georgetown Middle	542	54	819,400
Garth Elementary	531	39	856,755
Western Elementary	359	50	1,352,900
Southern Elementary	450	39	442,500
Georgetown College	3,052	368	19,901,960
TOTAL	8,017	764	26,348,715

The Georgetown Water Treatment Plant discharges flow to WWTP No. 1 in the form of filter backwash and clarifier underflow from a lagoon and pump station. The quantity of flow is .39 MGD based on a continuous pumping rate of 270 GPM.

Based on the above information, it is concluded that the existing daily flow to WWTP No. 1 is a composite of the following flow contributors:

<u>Type of Customer</u>	<u>Average Daily Flow MGD</u>	<u>Peak Daily Flow MGD</u>
Industrial	.185	.370
Institutional (Schools)	.073	.146
WTP	.390	.390
Domestic	<u>1.895</u>	<u>6.564</u>
Total	2.543	7.470

Based on an average daily domestic flow of 1.895 MGD, which includes average infiltration/inflow, and an average sewered population of 15,867, the current per capita average wastewater flow is 119.4 gallons per capita per day (gpcd). It is recommended that future design be based on an average per capita wastewater flow of 120 gpcd for projected population growth.

Using the population projections for the proposed service area presented in Table 2-6, along with a per capita wastewater flow of 120 gpcd, yields the estimated future average residential wastewater flow for the next 20 years. Refer to Table 2-9.

TABLE 2-9 RESIDENTIAL AVERAGE WASTEWATER FLOW PROJECTIONS DRAINAGE BASIN SUB AREAS					
DRAINAGE BASIN SUB AREAS	GMWSS SERVICE AREA			2016 REMAINDER OF PLAN AREA MGD	2016 TOTAL PLANNING AREA
	2000 WASTEWATER ESTIMATE MGD	2010 WASTEWATER ESTIMATE MGD	2016 WASTEWATER ESTIMATE MGD		
Cane Run	.51	.61	.68	.50	1.18
Dry Run	.06	.07	.08	.16	.24
Lanes Run	0	0	0	.19	.19
McCracken Creek	.03	.03	.04	.02	.06
North Elkhorn Creek	1.41	1.67	2.34	.33	2.67
TOTAL	2.01	2.38	3.14	1.2	4.34

Next, an evaluation was done to determine what portion of the projected flows would be treated at WWTP No. 1 and what portion would be treated at WWTP No. 2. Table 2-10 presents a breakdown by sub-areas of the projected 20-year population estimated to be served by each WWTP.

Figure 2-4 shows the respective drainage area for each plant. A portion of the Dry Run subarea is physically located in the WWTP No. 1 drainage basin, but because of its proximity and the fact it is zoned industrial in the 1991 Land Use Plan, it will be served by WWTP No. 2.

**TABLE 2-10
DISTRIBUTION OF PROJECTED POPULATION**

DRAINAGE BASIN	GMWSS SERVICE AREA		ENTIRE PLANNING AREA	
	WWTP NO. 1	WWTP NO. 2	WWTP NO. 1	WWTP NO. 2
Cane Run	5,636	0	9,824	0
Dry Run	660	0	1,997	0
Lanes Run	0	0	0	1,555
McCracken Creek	308	0	497	0
North Elkhorn Creek	13,826	1,573	15,003	1,573
Total	20,430	1,573	27,321	3,128

Note: See Figure 2-4 for WWTP's 1 and 2 Drainage Basins.

A portion of the Lanes Run drainage basin is actually within the Urban Service Area. However, because this portion is zoned industrial, it is assumed that all future residential growth in the Lanes Run basin will occur outside the USB. This residential development would be served by WWTP No. 2.

A part of the North Elkhorn drainage basin would be served by WWTP No. 2, because in the future the discharge from Pump Station No. 9 will be redirected to WWTP No. 2.

Based on the projections shown in Table 2-10, the estimated average residential flow to be treated at WWTP No. 1 and WWTP No. 2 is illustrated in Table 2-11.

DRAINAGE BASIN	GMWSS SERVICE AREA		ENTIRE PLANNING AREA	
	WWTP NO. 1 MGD	WWTP NO. 2 MGD	WWTP NO. 1 MGD	WWTP NO. 2 MGD
Cane Run	.68	0	1.18	0
Dry Run	.08	0	.24	0
Lanes Run	0	0	0	.19
McCracken Creek	.04	0	.06	0
North Elkhorn Creek	1.66	.68	1.80	.87
Total	2.46	.68	3.28	1.06

2. WWTP No. 1 Future Flows

Based on the estimated future wastewater flow projections in Table 2-11, the year 2016 wastewater flow to be treated at WWTP No. 1 is estimated as follows:

Source	<u>Urban Service Area</u>		<u>Total Planning Area</u>	
	Average Daily Flow MGD	Peak Daily Flow MGD	Average Daily Flow MGD	Peak Daily Flow MGD
	Industrial*		.76	.38
Institutional**	.10	.20	.10	.20
WTP**	.55	.55	.55	.55
Small Commercial/Residential	<u>2.46</u>	<u>8.61</u>	<u>3.28</u>	<u>11.48</u>
Total	3.49	10.12	4.31	12.99

*Assumes a 100% increase over 20 years.

**Based on a 40% increase over 20 years (same as projected population increase).

WWTP No. 1 was expanded in 1993 and currently has an average hydraulic design capacity of 4.5 MGD with a design peak capacity of 13.5 MGD. However, the plant's effective biological capacity is only slightly greater than 3.0 MGD, as discussed later in Chapter 3. Therefore, WWTP

No. 1 does not have adequate flow capacity to meet the service needs for the next 20 years unless improvements are made to increase its biological treatment capacity.

3. WWTP No. 2 Future Flows

WWTP No. 2 was designed with a rated capacity of 2.2 MGD, with 2.0 MGD reserved for TMM's industrial discharge and .2 MGD for sanitary flows. Currently, TMM's industrial discharge averages 1.2 MGD. With 2.0 MGD of capacity available, it is unlikely that the plant's TMM industrial capacity will be exceeded within the next 20 years.

As Table 2-11 shows, an estimated residential flow of 1.06 MGD will be discharged to WWTP No. 2 from the Planning Area.

The total 20-year estimated wastewater flow to be treated at WWTP No. 2 is as follows:

<u>Source</u>	<u>Urban Service Area</u>		<u>Total Planning Area</u>	
	<u>Average Daily Flow MGD</u>	<u>Peak Daily Flow MGD</u>	<u>Average Daily Flow MGD</u>	<u>Peak Daily Flow MGD</u>
Toyota Motor Manufacturing*	1.68	1.68	1.68	1.68
Small Commercial/Residential	<u>.68</u>	<u>2.38</u>	<u>1.06</u>	<u>3.71</u>
Total	2.36	4.06	2.74	5.39

*Based on 3.5% increase per year over 20 years.

As shown above, the projected future flows will exceed the rated capacity of WWTP No. 2.

E. WASTEWATER LOADING PROJECTIONS

1. WWTP No. 1 Future Loadings

The projected future wastewater loadings are based on historical documentation of the influent wastewater characteristics monitored at WWTP No. 1. The estimated year 2016 loadings to WWTP No. 1 are as follows:

<u>Parameter</u>	<u>Concentration</u>	<u>Urban Service Area Loading*</u>	<u>Total Planning Area Loading**</u>	<u>WWTP No. 1 Capacity***</u>
BOD ₅	200 mg/l	5,821 lbs/d	7,189 lbs/d	6,005 lbs/d
TSS	225 mg/l	6,549 lbs/d	8,088 lbs/d	8,444 lbs/d
NH ₃ -N	30 mg/l	873 lbs/d	1,078 lbs/d	801 lbs/d

*Based on 3.49 MGD.

**Based on 4.31 MGD.

***Based on 3.2 MGD effective capacity.

As shown above, WWTP No. 1 does not have adequate capacity from an organic loading standpoint to meet the next 20-year treatment needs for the Planning Area unless the biological treatment capacity is increased.

2. WWTP No. 2 Future Loadings

The estimated year 2016 sanitary loadings (residential/commercial) to WWTP No. 2 are as follows:

<u>Parameter</u>	<u>Concentration</u>	<u>Urban Service Area Loading</u>	<u>Total Planning Area Loading</u>	<u>EXISTING WWTP No. 2 Sanitary Capacity*</u>
BOD ₅	200 mg/l	1,134 lbs/d	1,768 lbs/d	334 lbs/d
TSS	225 mg/l	1,276 lbs/d	1,989 lbs/d	375 lbs/d
NH ₃ -N	30 mg/l	170 lbs/d	265 lbs/d	50 lbs/d

*Based on design capacity of .2 MGD.

Based on recent monitoring of TMM's influent wastewater characteristics, the estimated year 2016 loadings from TMM are as follows:

<u>Parameter</u>	<u>Concentration</u>	<u>Loading*</u>
BOD ₅	130 mg/l	1,821 lbs/d
TSS	35 mg/l	490 lbs/d
NH ₃ -N	1.0 mg/l	14 lbs/d

*Based on an estimated future flow of 1.68 MGD.

The projected 20-year loadings to WWTP #2 from all sources in the planning area are as follows:

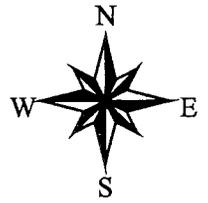
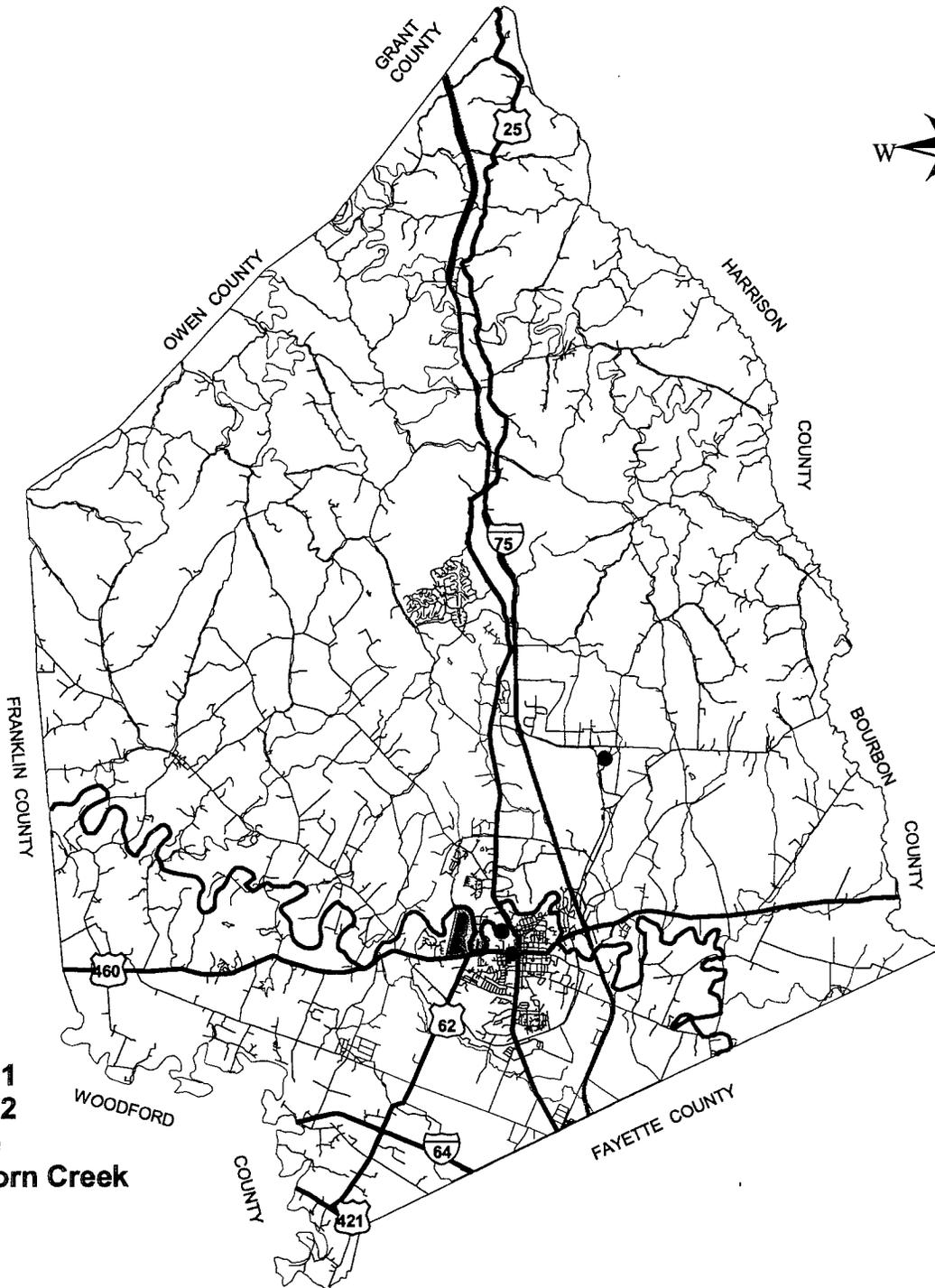
PARAMETER	PROJECTED LOADING	EXISTING CAPACITY*
BOD5	3,589 lbs/d	2,752 lbs/d
TSS	2,479 lbs/d	1,706 lbs/d
NH ₃ -N	279 lbs/d	366 lbs/d**
Flow (Average)	2.74 MGD	2.2 MGD

*See Table 3-6

**NH₃-N estimated @ 50% of design TKN

As shown above, additional capacity is required to treat the projected WWTP#2 loadings.

URBAN SERVICE BOUNDARY/PLANNING AREA



- WWTP No. 1
- WWTP No. 2
- WTP Intake
- ~ North Elkhorn Creek
- ~ Roadways
- ~ US 421
- ~ US 25
- ~ US 62
- ~ US 460
- ~ I-75
- ~ I-64
- ~ Minor Creek-Streams
- Area Not Annexed
- ▭ Urban Service Boundary
- ▭ Planning Area
- ▭ Scott County

FIGURE 2-1

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DRAINAGE BASINS/SUB-AREAS

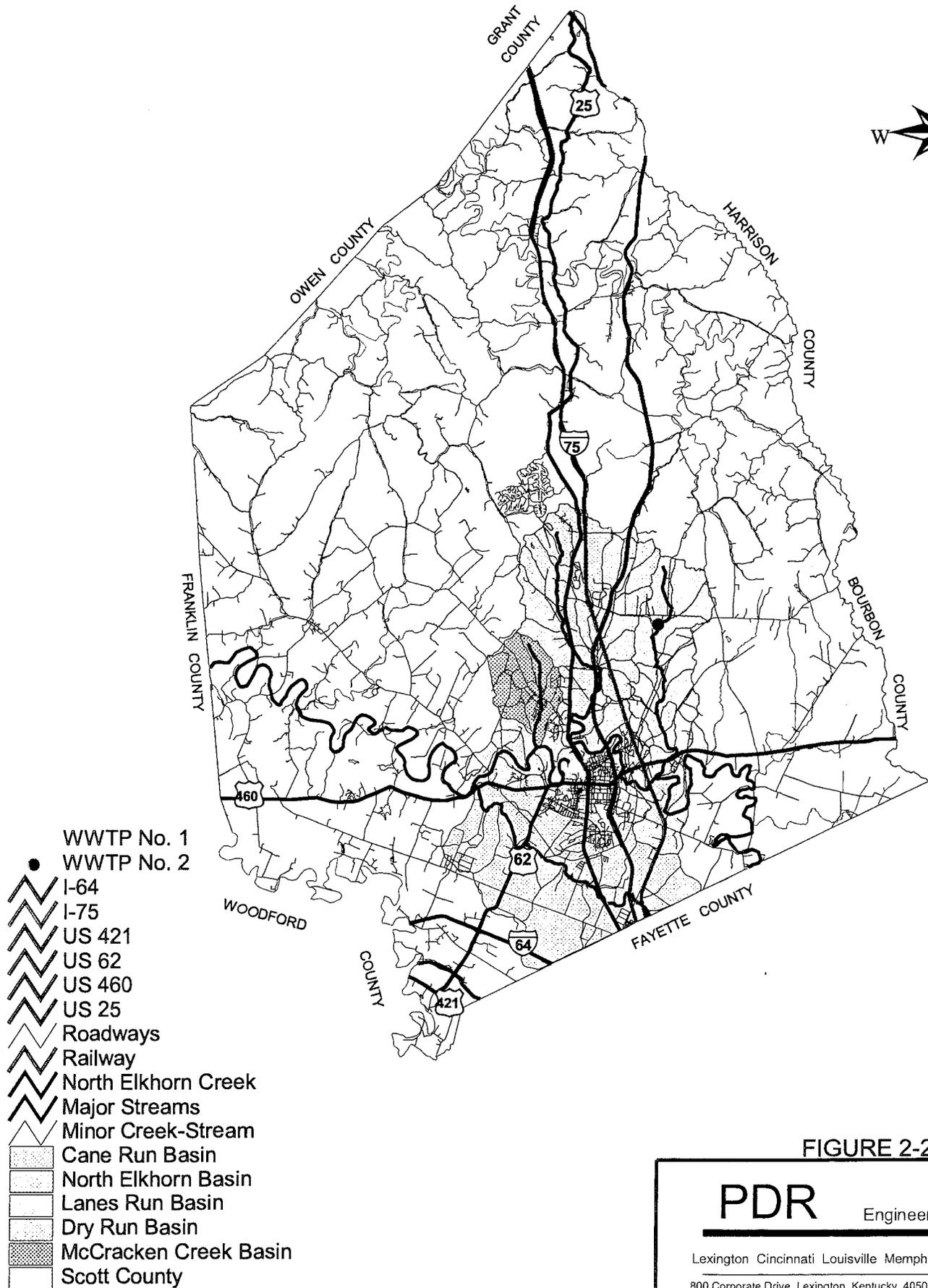


FIGURE 2-2

PDR

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Lexington Cincinnati Louisville Memphis Huntsville

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WASTEWATER 201 FACILITIES PLAN

- Spindletop WWTP
- Hafley WWTP
- Delaplain WWTP
- WWTP No. 1 (1-10)
- WWTP No. 2 (11-16)
- # Upgrade Pump Station No. 2 (17A)
- Relocate Hambrick P.S. (17B)
- Mt Vernon Sewer Replacement (18)
- Robinson Area Sewer Replacement (19)
- Lemons Mill Road Pump Station (21)
- Whitaker Sewer Line (22)
- Stadium Pump Station (23)
- Inncity.shp
- Ford Farm Pump Station (24)
- Convert Dry Pit P.S (25)
- McCracken Creek P.S. (26)
- Cane Run P.S. (27)
- WTP Intake
- ~ Force Mains
- ~ Streams
- ~ Roads
- Pump Station 9
- City Limits
- Urban Service Boundary
- Planning Area

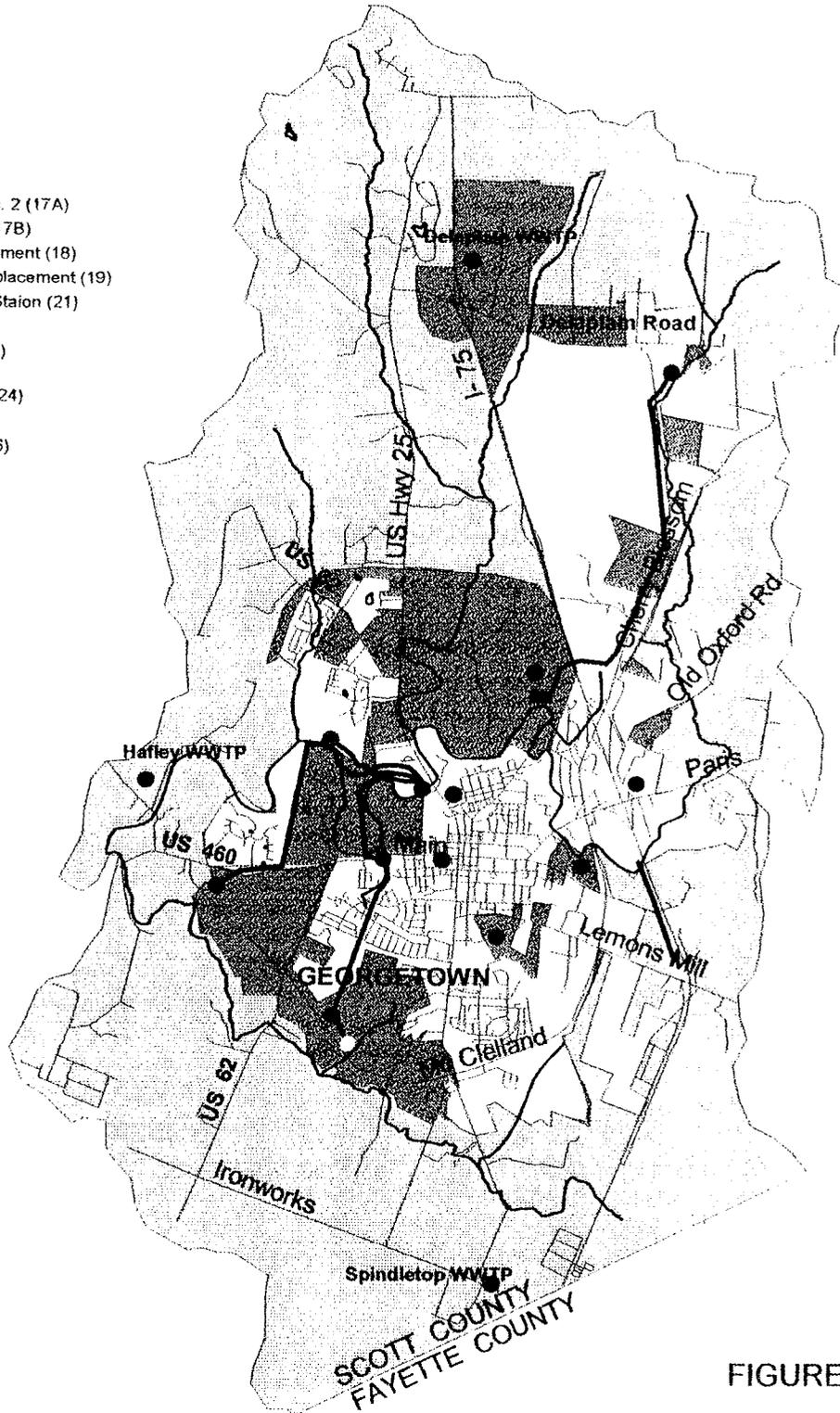


FIGURE 2-3

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WWTP'S No. 1 AND 2 DRAINAGE BASINS

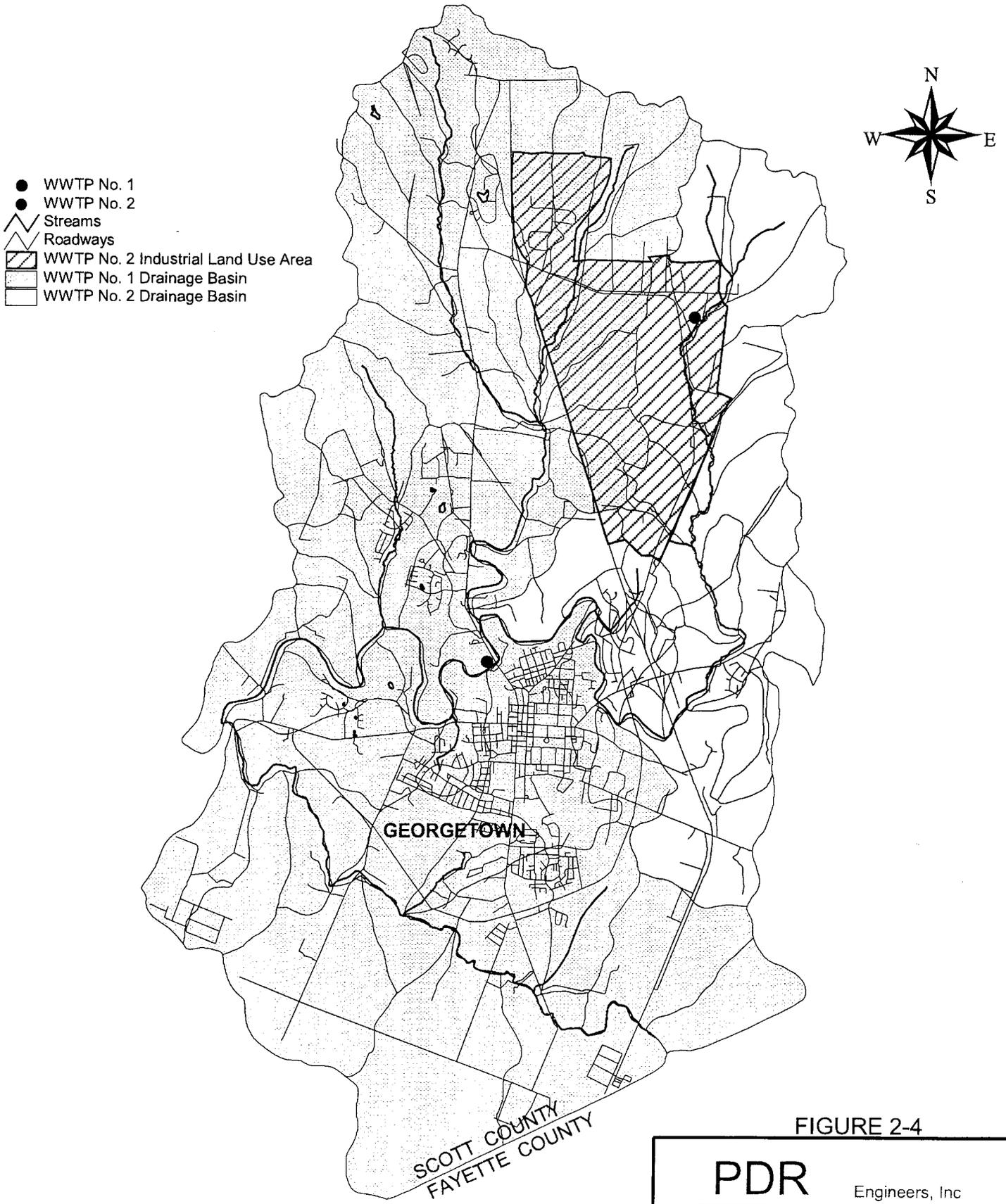


FIGURE 2-4

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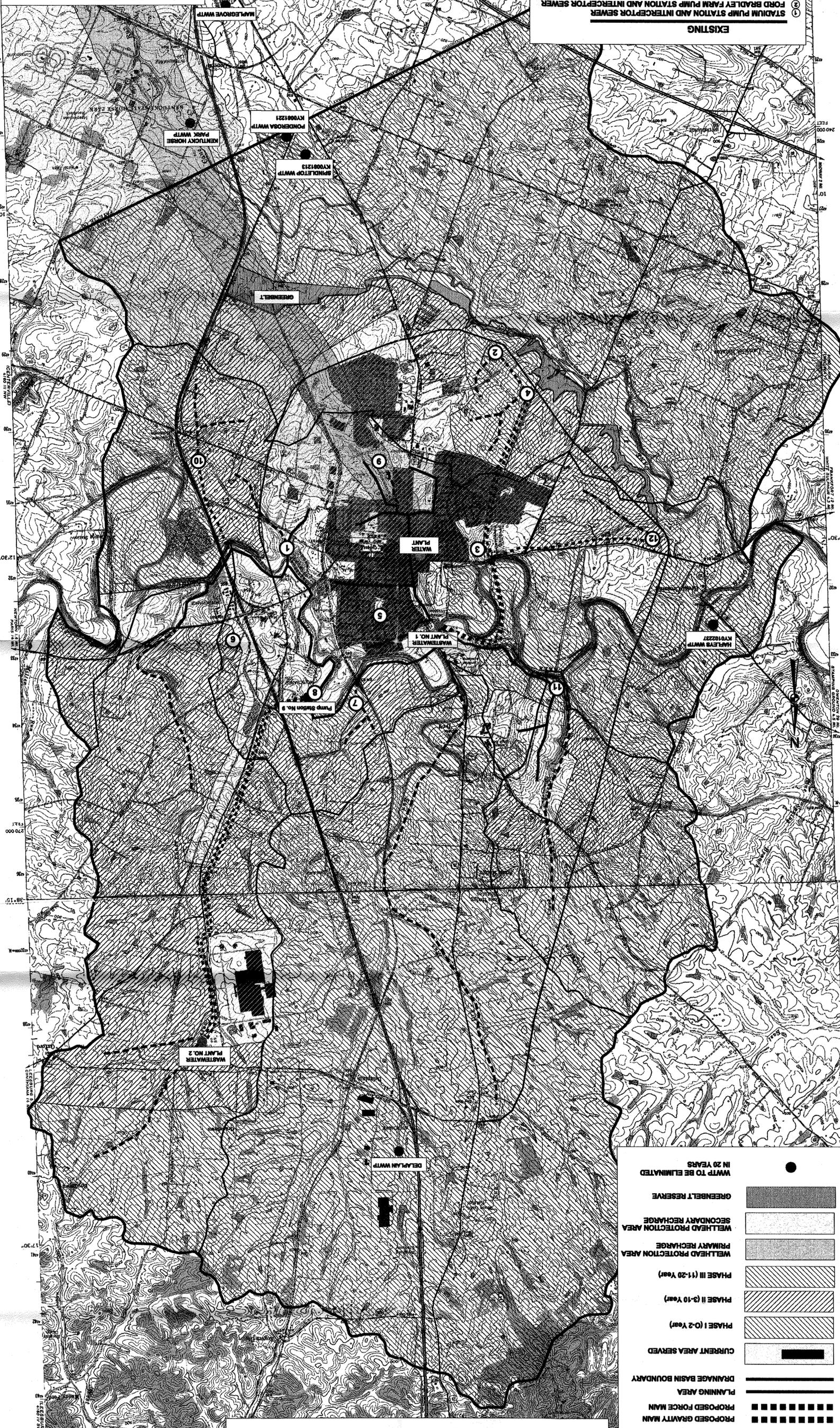
CITY OF GEORGETOWN REGIONAL WASTEWATER FACILITIES PLAN

LEGEND

EXISTING GRAVITY MAIN	—————
PROPOSED GRAVITY MAIN	—————
PROPOSED FORCE MAIN	—————
PLANNING AREA	—————
DRAINAGE BASIN BOUNDARY	—————
CURRENT AREA SERVED	—————
PHASE I (0-2 Year)	—————
PHASE II (3-10 Year)	—————
PHASE III (11-20 Year)	—————
PRIMARY RECHARGE	—————
WELLHEAD PROTECTION AREA	—————
SECONDARY RECHARGE	—————
GREENBELT RESERVE	—————
WWTPL TO BE ELIMINATED IN 20 YEARS	●

- EXISTING**
- ① STADIUM PUMP STATION AND INTERCEPT SEWER
 - ② FORD BRADLEY FARM PUMP STATION AND INTERCEPT SEWER
 - ③ RAIN STATION NO. 2 (UPGRADE)
 - ④ RELOCATE HAMBROCK PLACE PUMP STATION AND FORCE MAIN
 - ⑤ ROBINSON AREA GRAVITY SEWER REPLACEMENT
 - ⑥ CONVERSION OF DRY PIT PUMP STATION TO SUBMERSIBLE
 - ⑦ WHITTAKER PROPERTY GRAVITY LINE
 - ⑧ REDIRECT PUMP STATION NO. 9 DISCHARGE
 - ⑨ PHASE II (3-10 YEARS)
 - ⑩ MT. VERNON GRAVITY SEWER REPLACEMENT
 - ⑪ LEMONS MILL RD. PUMP STATION
 - ⑫ PHASE III (11-20 YEARS)
 - ⑬ CANE RUN PUMP STATION
 - ⑭ MACCRACKEN CREEK PUMP STATION

FIGURE - 2
PLANNING AREA MAP
1999
GEORGETOWN MUNICIPAL WATER AND SEWER SERVICE
125 W. CLINTON STREET
GEORGETOWN, KY 40324



Produced by the United States Geological Survey
 Topography by photogrammetric methods from aerial photographs
 Team 1992. Field checked 1994. Map revised 1995
 Projection and 10,000-foot grid ticks. Kentucky coordinate
 system, north zone. Transverse Mercator grid ticks, zone 16, shown in blue
 1927 North American Datum (NAD 27) and NAD 83 for 7.5-minute
 quadrangles are given in USGS Bulletin 1575
 The values of the 1983 datum (NAD 83) are shown by dashed corner ticks
 Intersections are given in USGS Bulletin 1575
 There may be private holdings within the boundaries of
 the National State restrictions shown on this map
 UTM and 1983 datum northings
 DIMENSIONS IN CENTIMETERS OR METERS
 SCALE 1:24,000
 NATIONAL GEODETIC DATUM OF 1929
 CONTOUR INTERVAL 10 FEET
 THIS MAP COMPARES WITH NATIONAL MAP ACCURACY STANDARDS
 FOR SALE BY U.S. GEOLOGICAL SURVEY, DENVER, COLORADO 80225 OR RESTON, VIRGINIA 20192.
 References shown in purple and woodblock compiled in cooperation with
 State of Kentucky agencies from aerial photographs taken 1988
 and other sources. Contours not shown. This information
 not held checked. Map dated 1993
 A folder describing TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST
 AND KENTUCKY DEPARTMENT OF COMMERCE FRANKFORT, KENTUCKY 40601
 1999
 DMA 4000 II MET-88REVISED 1993
 30084-83-TT-02A
 NEAR GEORGETOWN, KY 40324
 GEORGETOWN, KY

CHAPTER 3

EVALUATION OF EXISTING WASTEWATER TREATMENT FACILITIES

A. GENERAL

The Georgetown Municipal Water and Sewer Service owns and operates two (2) wastewater treatment plants. Georgetown WWTP No. 1 is located west of U.S. 25 along North Elkhorn Creek and provides wastewater treatment service to a service area covering the city of Georgetown.

Georgetown WWTP No. 2 is located on Cherry Blossom Way north of downtown Georgetown. Approximately 95 percent of the capacity of WWTP No. 2 is dedicated for treating the industrial waste from the Toyota industrial plant. The location of WWTP Nos. 1 and 2 are shown on Figure 2-1.

B. GEORGETOWN WASTEWATER TREATMENT PLANT NO. 1

1. General

The Georgetown WWTP No. 1 originally consisted of primary clarification, trickling filtration, secondary clarification, chlorination and anaerobic sludge digestion. The original plant was expanded and upgraded in May of 1975. Fixed film RBCs were incorporated into the treatment process to provide secondary treatment and meet the effluent limitations of 30 mg/L BOD₅ and total suspended solids as specified in the NPDES permit at that time.

The *1976 201 Facilities Plan* recommended an upgrade of WWTP No. 1 to ensure compliance with more stringent wastewater effluent permit limits. The 1982 WWTP No. 1 upgrade included the construction of preliminary treatment unit processes, expansion of the influent pump station, 12 standard rotating biological contractors (RBCs), 12 high density RBCs, a secondary clarifier, a chlorine contact tank, a tertiary filter, a sludge dewatering building with two belt filter presses and a post-aeration ladder. The 1982 upgrade was designed to process an average daily flow of 2.34 MGD and a peak daily flow of 7.89 MGD and based on a year 2000 design year.

By 1990, it was apparent that the plant would reach its capacity much sooner than year 2000. Georgetown was experiencing a significant increase in residential and commercial

development as a result of the new Toyota Motor Manufacturing plant. The RBC treatment system, the secondary clarifier and the tertiary filter were being hydraulically overloaded during peak flow periods. In addition, the chlorination system could not meet the new KPDES permit requirements for fecal coliform limits and maintain the less than 0.01 mg/l total chlorine residual requirement without modification. Consequently, a 201 Facilities Plan Update was prepared in 1990.

A number of alternatives were evaluated to expand WWTP No. 1 to meet future capacity needs for the planning year 2010. The selected alternative provided for the existing 2.34 MGD RBC plant to be downrated in hydraulic and organic capacity to 1.5 MGD (primarily due to the high soluble BOD₅ loading which restricted its treatment capability) and supplemented by a 3.0 MGD oxidation ditch treatment system located on the Cardome property on the north side of Elkhorn Creek adjacent to the existing plant.

The 20-year plan is based on a phased project. Phase I is based on the 3.0 MGD oxidation ditch system operating in parallel with the existing RBC system. Phase 2 would consist of abandoning the RBC system and expanding the capacity of the oxidation ditch to 4.5 MGD by the addition of two (2) 50 HP aerators. Also, the existing RBC secondary clarifier would be converted to a chlorine contact basin. Construction of the Phase I improvements were completed in 1993.

2. Description of Facility

The 1993 improvements were based on the design flow and loadings in Table 3-1.

TABLE 3-1 DESIGN FLOW AND LOADINGS WWTP NO. 1	
PARAMETER	VALUE
Design Year	2010
Sewered Population	12,425
Average Design Flow	4.5 MGD
Peak Design Flow	13.5 MGD
Biochemical Oxygen Demand (BOD ₅)	225 mg/L
Total Suspended Solids (TSS)	225 mg/L
Ammonia Nitrogen (NH ₃ -N)	30 mg/L

The WWTP operates under authority of a National Pollutant Discharge Elimination System permit issued by the Commonwealth of Kentucky. The current Kentucky Pollutant Discharge Elimination System (KPDES) permit limitations are presented in Table 3-2 and a copy of the complete KPDES Permit is presented in Appendix B of this Report.

**TABLE 3-2
KPDES PERMIT
WWTP NO. 1**

DISCHARGE LIMITATION		
PARAMETER	MONTHLY AVG.	WEEKLY AVG.
Flow	4.5 MGD	--
Dissolved Oxygen (min)	7 mg/L	--
Biochemical Oxygen Demand Carbonaceous (CBOD ₅)	10 mg/L	15 mg/L
Total Suspended Solids	30 mg/L	45 mg/L
Fecal Coliform Bacteria	200/100 ml	400/100 ml
Ammonia-N	2 mg/L ¹ 5 mg/L ²	3 mg/L ¹ 7 mg/L ²
Total Residual Chlorine (maximum)	.012 mg/L	.019 mg/L
pH	6.0-9.0 s.u.	--
Biomonitoring	Shall not exceed 1.19 TU _c	

¹Summer Limits
²Winter Limits

Refer to Table 3-3 for the design flow and loadings for the two treatment systems.

**TABLE 3-3
DESIGN WASTEWATER FLOW AND LOADING SUMMARY
WWTP NO. 1**

PARAMETER	OXIDATION DITCH SYSTEM	RBC SYSTEM	TOTAL
Average Daily flow (MGD)	3.0	1.5	4.5
Peak Flow (MGD)	9.0	4.5	13.5
Influent BOD ₅ Loadings (Lbs. Per Day)	5,630 (225 mg/l)	2,815	8,445
Influent Total Suspended Solids Loadings (Lbs. Per Day)	5,630 (225 mg/l)	2,815	8,445
Influent Ammonia Loadings (Lbs. Per Day)	751 (30 mg/l)	375	1,126

The influent wastewater that enters the RBC plant side is first screened via a mechanical bar screen and is then discharged to the influent pump station wet well. The wastewater is then pumped and split between the RBC system and the newer oxidation ditch system.

The flow processed through the RBC treatment system first receives primary treatment using static screens. The wastewater flow exits the static screens and splits into four parallel trains of RBC units for treatment and reduction of BOD₅. The wastewater flow exits the first stage RBC units, passes through an aerated channel and splits into three parallel trains of RBC units for nitrification of ammonia. The flow passes from the RBC units to a single secondary clarifier, where liquid-solids separation occurs. The clarifier effluent is then combined with treated flow from the oxidation ditch system and is processed through the tertiary filter for removal of fine solids. Chlorine is added to the tertiary filter effluent for disinfection. After the flow has been detained in the chlorine contact tank, it is dechlorinated and discharged over a post-aeration ladder to increase the dissolved oxygen concentration prior to discharge to the receiving stream.

Sludge settled in the secondary clarifier and the chlorine contact tank is collected and pumped to the gravity thickener. Thickened sludge from the gravity thickener is stabilized in the primary and secondary anaerobic digesters. Gas generated in the digesters is used as fuel for the boiler that heats the sludge to increase the sludge stabilization rate. The digested sludge

is then combined with aerobically digested waste activated sludge produced by the oxidation ditch system and mechanically dewatered by two belt filter presses. The dewatered sludge is transported by truck to the Benson Valley Frankfort Landfill for final disposal.

The screened wastewater stream that is pumped over to the oxidation ditch system is combined with mechanically screened wastewater that is collected and transported to the plant from the northern and northeastern service area. The combined flows then pass through a vortex grit removal system. Degrittied flow is then discharged to a multi-channel oxidation ditch for BOD₅ and ammonia reduction. The ditch effluent is clarified in two circular clarifiers and then flows by gravity over to the RBC plant side for chlorination, dechlorination and post aeration.

Activated sludge that is settled out in the clarifiers is returned to the ditch by a RAS pump station. Excess sludge is wasted and pumped to the RBC plant side to receive further stabilization in two, rectangular aerobic digesters and then mechanically dewatered.

The oxidation ditch was designed and built to be easily expanded in the long-term future to treat 6.0 MGD by the addition of a fourth aeration basin channel. In addition, the oxidation ditch has a built-in storm flow control feature to maintain treatment performance during wet weather events. High flows to the ditch are automatically diverted to the smaller third channel (33% of the total volume) and, therefore, do not impact the entire mass of biological solids in the ditch. As a result, the solids loading to the clarifiers is controlled allowing them to maintain their solids removal efficiency. Refer to Table 3-4 for a summary of the unit processes utilized at WWTP No. 1. Refer to Figure 3-1 which illustrates a process flow diagram. Figures 3-2 and 3-3 illustrate a plant site layout from the 1993 construction drawings.

**TABLE 3-4
SUMMARY OF UNIT PROCESSES
WWTP NO. 1**

INFLUENT PUMP STATION	
No. of Units	4
Capacity	(2) 2400 GPM @ 34 Ft. TDH (2) 2100 GPM @ 32 Ft. TDH
Type	Dry Pit Centrifugal
Speed (RPM)	(2) 1150 (2) Variable
Motor HP	(2) 50 (2) 40
SCREENING EQUIPMENT	
No. of Units	2
Size (Ft.)	2 (width)
Type	Continuous Self-Cleaning
Opening (mm)	15 mm RBC Plant 6 mm Oxidation Ditch Plant
Motor HP	3/4
GRIT REMOVAL SYSTEM	
No. of Units	1
Type	Vortex
Capacity (MGD)	20
Chamber Diameter (Ft.)	16
Drive Motor (HP)	2
No. of Grit Pumps per Unit	1
Grit Pump Capacity	250 GPM @ 33 Ft. TDH

TABLE 3-4
SUMMARY OF UNIT PROCESSES
WWTP NO. 1
(Cont'd.)

EMERGENCY GENERATORS	
No. of Units	3
Type	Diesel Engine
Capacity	1 @ 600 KW, 1 @ 275 KW, 1 @ 175 KW
PRIMARY SCREENS	
No. of Units	4
Size (in.)	54 x 72
Type	Static
Opening (in.)	.06
RBCs	
No. of Units	(12) Standard (4) Trains with 3 Stages (12) High Density (3) Trains with 4 Stages
Type	Air Assisted
Surface Area Each (SF)	100,000 Std. 150,000 High Density
Total Surface Area (SF)	1,200,000 Std. 1,800,000 High Density
Hydraulic Loading (GPD/SF)	
Maximum	1.5
Average	.5
OXIDATION DITCHES	
No. of Units	1
Type	Multichannel
Inner Channel Volume (MG)	.843
Middle Channel Volume (MG)	1.113

TABLE 3-4
SUMMARY OF UNIT PROCESSES
WWTP NO. 1
(Cont'd.)

Outer Channel Volume (MG)	1.417
Total Volume (MG)	3.37
Volume (C.F.)	450,535
No. of Aerators	6
Type of Aerator	Horizontal Disk
Motor HP	2 @ 20 HP 4 @ 50 HP
Loading Rate (Lbs. BOD/1000 C.F.) @ 3.0 MGD	12.5
Hydraulic Detention Time (Hr.)	27 @ 3.0 MGD 18 @ 4.5 MGD
Solids Retention Time (Days)	25
MLSS (mg/L)	3200 @ 3 MGD 4800 @ 4.5 MGD
RBC FINAL CLARIFIER	
No. of Units	1
Diameter (Ft.)	100
Surface Area, each (SF)	7,854
Total Surface Area (SF)	7,854
Side Water Depth (Ft.)	7
Surface Overflow Rate (GPD/SF)	
Peak Flow	580
Average Flow	196
OXIDATION DITCH FINAL CLARIFIERS	
No. of Units	2
Diameter (Ft.)	100

**TABLE 3-4
SUMMARY OF UNIT PROCESSES
WWTP NO. 1
(Cont'd.)**

Surface Area, each (SF)	7,850
Total Surface Area (SF)	15,700
Side Water Depth (Ft.)	14
Surface Overflow Rate (GPD/SF)	
Peak Flow	573 GPD/SF
Average Flow	191 GPD/SF
OXIDATION DITCH RAS PUMP STATION	
No. of Units	3
Size (GPM)	2200 GPM @ 43 Ft. TDH
Type	Constant Speed Submersible
Speed (RPM)	Variable
Motor HP	35
TERTIARY FILTER	
Type	Traveling Bridge Automatic Backwash
Surface Area	700 SF
Surface Loading Rates	4.5 GPM/SF @ 4.5 MGD
CHLORINE CONTACT BASIN	
No. of Units	1
Diameter (Ft.)	40
Side Water Depth (Ft.)	13
Volume (Gal.)	122,193
Hydraulic Retention (min.)	
Average Flow	39
Peak Flow	13

TABLE 3-4
SUMMARY OF UNIT PROCESSES
WWTP NO. 1
(Cont'd.)

AEROBIC DIGESTERS	
No. of Units	2
Size Each (Ft.)	32 x 32
Side Water Depth (Ft.)	11.5
Volume, Each (Gal.)	88,084
Total Volume	176,169
No. of Aerators	2
Type of Aerators	Submersible
Motor HP	25
Solids Retention Time (Days)	12.3
GRAVITY THICKENER	
No. of Units	1
Diameter (Ft.)	40
Side Water Depth (Ft.)	9.3
Surface Area (SF)	1,257
Surface Overflow Rate (GPD/SF)	18
Solids Loading (Lbs./Day/SF)	1.5
ANAEROBIC DIGESTERS	
No. of Units	(1) Primary (1) Secondary
Diameter (Ft.)	40 Primary 28 Secondary
Side Water Depth (Ft.)	23 Primary 19 Secondary

**TABLE 3-4
SUMMARY OF UNIT PROCESSES
WWTP NO. 1
(Cont'd.)**

Volume (Gal.)	216,192 Primary 87,511 Secondary
Total Volume (Gal.)	303,703
Type of Mixing	Gas
Solids Retention Time (Days)	49 @ 3%
Solids Loading (Lbs. VSS/Day/Cu. Ft.)	.032
BELT FILTER PRESSES	
No. of Units	2
Size (m)	1

3. Performance Evaluation of Facility

The plant's performance for the period January-December 1995 is summarized as follows:

<u>Parameter</u>	<u>Value</u>	
	<u>Influent</u>	<u>Effluent</u>
Flow	--	2.35 MGD
BOD ₅	158.25 mg/l	1.64 mg/l
TSS	221.58 mg/l	1.66 mg/l
NH ₃ -N	--	.36 mg/l
DO	--	8.28 mg/l
Fecal Coliform	--	34 colonies/100 ml
Total Residual Chlorine	--	.008 mg/l

Refer to Table 3-5 for WWTP No. 1 1995 performance data compiled from the monthly operating reports.

**TABLE 3-5
WWTP NO. 1 PERFORMANCE DATA
JANUARY 1995-DECEMBER 1995**

PARAMETER	UNITS	PERMIT	JAN.	FEB.	MAR.	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
Flow	MGD (AVG) 30 day	4.5	2.43	2.17	2.41	2.04	3.11	2.41	2.12	2.29	1.99	2.24	2.38	2.6
	MGD (MAX) Daily		3.88	3.76	7.62	2.94	8.14	2.85	3.71	3.50	3.39	4.99	3.12	6.18
Dissolved Oxygen	mg/L (MIN)	7	9.2	10.3	9.9	9.6	8.1	7.2	7.3	7.6	7.9	8.1	7.7	8.5
pH	S.U. (MIN)	>6	7.2	7.1	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.1	7.0	7.2
	S.U. (MAX)	<9	7.4	7.2	7.4	7.4	7.5	7.4	7.4	7.5	7.4	7.6	7.6	7.6
Biochemical Oxygen Demand (5 Day), Carbonaceous	mg/L (30 day)	10	1.4	2	1.7	2.3	1.3	1.6	1.5	1.7	1.85	1.3	1.55	1.5
	mg/L (7 day)	15	1.5	2.4	1.9	3.7	1.7	1.9	2	3	2.50	1.4	2	2.3
Total Suspended Solids	mg/L (30 day)	30	2	1	1.3	1.5	1	1.3	1	1.6	1.3	3.4	2.4	2.1
	mg/L (7 day)	45	5	1	2	3	2	2	1	4	2	9	3.3	3
Ammonia-Nitrogen	mg/L (30 day)	2/5	.05	.03	.03	2.7	.11	.03	.03	.39	.37	.4	.12	.07
	mg/L (7 days)	3/7	.07	.04	.04	5.4	.20	.03	.03	1.57	1.38	.67	.21	.17
Total Chlorine Residual	mg/L (AVG) 30 day	.012	.01	.01	.01	.01	.01	.01	.01	.01	.01	.002	.002	.0019
	mg/L (MAX) Daily	.019										.01	.01	.01
Fecal Coliform	N/100 (30 day)	200	38	42	70	26	77	21	11	12	18	5.5	22	61
	N/100 (7 day)	400	170	264	170	36	770	52	46	26	44	71	27	117
Biomonitoring	TU _c	1.19	1.0	1.0	*	*	1.0	*	1.0	*	*	*	1.0	*

*Reporting quarterly.

As Table 3-5 indicates, the plant is performing exceptionally well at current flows and loadings. Due to deterioration of a number of the original RBC units, the effective biological capacity of the plant is less than its design rating of 4.5 MGD. The actual capacity is only slightly greater than the design capacity of the oxidation ditch system, or approximately 3.2 MGD. In effect, the plant is currently operating at 80% of its effective capacity. Therefore, improvements need to be made in the near future to increase the biological treatment capability of the plant.

C. GEORGETOWN WASTEWATER TREATMENT PLANT NO. 2

1. General

The Georgetown WWTP No. 2 was constructed in 1987 and provides advanced tertiary treatment of the wastewater discharged from the Toyota Motor Manufacturing Company's plant. The wastewater from Toyota includes sanitary waste and industrial waste discharged from the pretreatment plant.

2. Description of Facility

WWTP No. 2 was designed based on the design flow and loadings in Table 3-6.

TABLE 3-6 DESIGN FLOW AND LOADINGS WWTP NO. 2	
PARAMETER	VALUE
Design Year	NA
Sewered Population	NA
Average Design Flow	2.2 MGD
Peak Design Flow	2.2 MGD
Biochemical Oxygen Demand (BOD ₅)	150 mg/L
Total Suspended Solids (TSS)	93 mg/L
TKN Nitrogen	40 mg/L

WWTP No. 2 was designed to meet strict Kentucky Pollutant Discharge Elimination System KPDES permit limits. The Kentucky Pollutant Discharge Elimination System

(KPDES) permit limits for WWTP No. 2 are shown on Table 3-7 and a copy of the complete KPDES Permit is contained in Appendix B of this report.

TABLE 3-7 KPDES PERMIT WWTP NO. 2		
DISCHARGE LIMITATION		
PARAMETER	MONTHLY AVG.	WEEKLY AVG.
Flow	2.2 MGD	--
Dissolved Oxygen (min)	7 mg/L	--
Biochemical Oxygen Demand Carbonaceous (CBOD ₅)	5 mg/L	7.5 mg/L
Total Suspended Solids	30 mg/L	45 mg/L
Fecal Coliform Bacteria	200/100 ml	400/100 ml
Ammonia-N	1 mg/L ¹ 4 mg/L ²	1.5 mg/L ¹ 6 mg/L ²
pH	6.0-9.0 s.u.	--
Biomonitoring	Shall not exceed 1.0 TU _c	

¹Summer Limits

²Winter Limits

Separate domestic and industrial waste streams enter into the preliminary treatment system of WWTP No. 2. The design industrial flow capacity is 2.0 MGD and the design domestic or sanitary flow is .2 MGD. Preliminary treatment at the facility consists of screening through bar racks (mechanical screen on domestic side) to remove any coarse solids, flow measurement through Parshall Flumes, and automatic sampling of each waste stream. Depending on treatment strategy being implemented, the waste streams can be blended or kept separate.

When the streams are kept separate, the industrial stream receives chemical treatment through a flash mixer, flocculation tank and clarification for chemical sludge removal. If the industrial waste is determined to be toxic or non compatible with the treatment system, it can be isolated and stored if required to protect the operability of the biological treatment system.

Normally, the chemical clarifier overflow is discharged to the oxidation ditch. The influent of the oxidation ditch combines the treated industrial wastewater and the sanitary wastewater. The combined wastewater streams are biologically treated in the oxidation ditch and discharged to the secondary clarifiers. There are two parallel trains consisting of an oxidation and a secondary clarifier each with a 2.2 MGD capacity. This arrangement provides 100% redundancy. The biological sludge separates in the secondary clarifiers. Secondary clarifier effluent enters sand filters for removal of fine suspended solids. The wastewater is disinfected by the application of ozone. The wastewater stream can be passed through up-flow carbon adsorption columns to remove any organic compounds that may be present. Prior to discharge, the plant effluent is mechanically aerated and piped 4.5 miles for discharge into the Lanes Run receiving stream.

WWTP No. 2 has an advanced treatment process for treating a wide range of wastewater flow characteristics associated with industrial manufacturing plants. The plant has several operating modes and treatment regimes that can be used to respond to specific treatment requirements. While this capability provides excellent industrial waste treatment results, it is not cost effective for treating stable domestic waste. It is not always necessary to use the sand filters and/or the carbon absorption columns of the WWTP.

The biological and chemical sludges produced by the treatment process are collected from the clarifiers and pumped to separate gravity thickeners. The thickened biological and chemical sludges are dewatered on one of the belt filter presses and transported to the Benson Valley Frankfort Landfill for final disposal.

Refer to Table 3-8 for a summary of the plant processes. Refer to Figure 3-4 for a process flow diagram and Figure 3-5 for a plant layout diagram.

**TABLE 3-8
SUMMARY UNIT PROCESS
WWTP NO. 2**

PRELIMINARY TREATMENT	
Type of Screening	Mechanical and Manual
Influent Flow Measurement	Parshall Flume Immersed Sensing Element Electronic Flow Transmitter Microprocessor Based Electronic Flow Recorder
Polymer Feed System	
Number of Feeders	2
Number of Metering Pumps	2
Sodium Hydroxide System	
Number of Storage Tanks	2 - 3,000 gallon capacity each
Number of Metering Pumps	2
Sodium Sulfide System	
Number of Solution Tanks	2 - 210 gallon capacity each
Number of Metering Pumps	2
Sulfuric Acid System	
Number of Storage Tanks	1 - 5,000 gallon capacity
Number of Metering Pumps	2
Emergency Generator	
Number of Units	1
Kilowatts	1,200
HP	1,586
FLASH MIX BASINS	
Number of Basins	2
Number of Mixers	2
Operating Depth (Ft.)	5.33
Dimensions (Ft.)	5 x 5

**TABLE 3-8
SUMMARY UNIT PROCESS
WWTP NO. 2
(Cont'd.)**

Volume, Each (Gals.)	997
Total Volume (Gals.)	1,994
Detention Time at Design Flow (Minutes)	.65 (1) Basin 1.31 (2) Basins
FLOCCULATION BASINS	
Number of Basins	2
Number of Flocculators per Basin	1
Dimensions of Each Basin (Ft.)	15 x 15
Basin Depth (Ft.)	18.3
Volume of Each Basin (Gals.)	30,799
Total Volume (Gals.)	61,598
Detention Time at Design Flow (Minutes)	20 (1) Basin 40 (2) Basins
OXIDATION DITCHES	
Number of Units	2
Type	Continuous Loop
Volume	1.65 MG Each
Number of Aerators	2 per ditch
Type of Aerator	Vertical
Motor HP	60
Capacity	2.2 MGD Each
Hydraulic Detention Time (Hr.)	18
Solids Retention Time (Days)	20-35
CLARIFIERS	
Number of Units	2

**TABLE 3-8
SUMMARY UNIT PROCESS
WWTP NO. 2
(Cont'd.)**

Diameter (Ft.)	72
Surface Area, Each (SF)	4,069
Total Surface Area (SF)	8,138
Side Water Depth	14 ft.
Surface Overflow Rate (GPD/SF)	541 Each Clarifier @ Design Flow
AUTOMATIC BACKWASH SAND FILTRATION	
Number of Filters	3
Filter Area, Each (SF)	400
Total Filter Area (SF)	1,200
Recommended Hydraulic Loading	2-3 GPM/SF
Number of Filters Required at Design Flow	2
Hydraulic Loading at Design Flow (Two Filters) (GPD/SF)	2
FLUIDIZED BED CARBON ADSORPTION FILTERS	
Number of Absorption Columns	4
Number of New Carbon Tanks	1
Number of Spent Carbon Tanks	1
Adsorption Column size (Ft.)	9.25 Diameter x 31.83 Height
New Carbon Tank Size (Ft.)	12.5 Diameter
Spent Carbon Tank Size (Ft.)	12.5 Diameter
Weight of Carbon/Column (Lbs.)	23,520
Number of Carbon Booster Pumps	4
Carbon Booster Pump Capacity, GPM	575
Carbon Booster Pump, HP	20

TABLE 3-8
SUMMARY UNIT PROCESS
WWTP NO. 2
(Cont'd.)

Carbon Booster Pump, RPM	1,750
Measuring Vessel Volume	9.08 cu. ft. 67.93 gal. 255 lb. of carbon
OZONATION	
Number of Ozone Generators	3
Number of Air Compressors	3
Number of Air Dryers	3
Ozone Generator Production at Full Power at an Ambient Temperature of 100°F (Lbs./Day)	77
Ozone Generator Dimensions (Inches)	125 x 38 x 47
Voltage Needed for Ozone Production	17,000
Number of Ozone Diffusers	50
Type of Ozone Diffusers	Porous Ceramic
Maximum Diffuser Flow Rate, SCFM	3.93
Minimum Diffuser Flow Rate, SCFM	1.96
Number of Ozone Destruct Units	2
Number of Cooling Water Pumps	2
Number of Ozone Contact Basins	2
Dimensions, Each (Ft.)	31.83 x 4
Contact Time at Design Flow (Minutes)	10.6 (1) Basin 21 (2) Basins
Operating Depth (Ft.)	17
Volume, Each (Cu. Ft.)	2,164
Total Volume (Cu. Ft.)	4,328

**TABLE 3-8
SUMMARY UNIT PROCESS
WWTP NO. 2
(Cont'd.)**

Volume, Each (Gals.)	16,187
Total Volume (Gals.)	32,374
GRAVITY THICKENERS	
Number of Units	2
Diameter (Ft.)	25
Sidewater Depth (Ft.)	12
Surface Area, Each (SF)	491
Volume, Each (Gals.)	44,072
Total Volume (Gals.)	88,144
POST AERATION	
Number of Basins	2
Dimensions, Each (Ft.)	22 x 22
Operating Level (Ft.)	6
Operating Volume, Each (Gals.)	21,722
Total Operating Volume (Gals.)	43,444
Detention Time at Design Flow (Minutes)	14 (1) Basin 28 (2) Basins
Number of Aerators	2
Aerator HP	2
SOLIDS PROCESSING	
Number of Belt Filter Presses	2
Size (m)	1
Solids Loading rate	571 lbs/hr/press
Dewatered Sludge Dry Solids Concentration (%)	18-20

**TABLE 3-8
SUMMARY UNIT PROCESS
WWTP NO. 2
(Cont'd.)**

Minimum Filtrate Solids Capture, %	90
Number of Polymer Feeders	4
Number of Polymer Metering Pumps	4
RETURN SLUDGE PUMPS	
Number of Pumps	4
Type	Dry Pit Centrifugal
Capacity, Each (GPM)	2,200
TDH (Ft.)	22
Motor Speed (RPM)	695
Motor HP	20

3. Performance Evaluation of Facility

Georgetown WWTP No. 2 received the initial wastewater flow from the TMM pretreatment facility in 1987. WWTP No. 2 produces an exceptional effluent water quality. Because of the flexibility in operating modes and strategies, it can adequately treat its current industrial and sanitary waste loadings.

The plant's performance for the period January-December 1995 is summarized as follows:

<u>Parameter</u>	<u>Value</u>	
	<u>Influent</u>	<u>Effluent</u>
Flow	--	.84 MGD
BOD ₅	121.85 mg/l	2.90 mg/l
TSS	34.95 mg/l	1.86 mg/l
NH ₃ -N	2.56 mg/l	.28 mg/l
DO	--	7.89 mg/l
Fecal Coliform	--	69 colonies/100 ml

Refer to Table 3-9 for WWTP No. 2 1995 performance data compiled from the monthly operating reports.

**TABLE 3-9
WWTP NO. 2 PERFORMANCE DATA
JANUARY 1995-DECEMBER 1995**

PARAMETER	UNITS	PERMIT	JAN.	FEB.	MAR.	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
Flow	MGD (AVG) 30 day	2.2	.76	.82	.88	.86	.84	.90	.74	1.06	.86	.92	.78	.63
	MGD (MAX) Daily		1.00	1.23	1.20	1.37	1.46	1.23	1.59	1.37	1.21	1.38	1.36	1.10
Dissolved Oxygen	mg/L (MIN)	7	8.9	9	8.4	8.5	7.9	7.3	6.5	7	7.1	7.1	7.9	8.5
pH	S.U. (MIN)	>6	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.9	6.6	6.5	6.2	6.3
	S.U. (MAX)	<9	7.3	7.5	7	7.1	7.2	8	7.4	7.8	7.6	7.5	7.4	7.6
Biochemical Oxygen Demand (5 Day), Carbonaceous	mg/L (30 day)	5	3.5	2.7	3.3	3.1	2.3	2.5	2.5	5.8	1.9	1.9	2.9	3.3
	mg/L (7 day)	7.5	4.0	2.9	4.0	4.1	2.6	2.9	2.8	14.7	2.3	2.1	3.1	3.6
Total Suspended Solids	mg/L (30 day)	30	2.2	2.4	2.2	2.4	1.6	1.8	1.3	2.5	1.5	1.4	1.7	1.5
	mg/L (7 day)	45	3	3.6	2.6	5.9	1.9	2	1.4	4	1.9	1.9	2.1	2
Ammonia-Nitrogen	mg/L (30 day)	1/1.5	2.37	.07	.06	.10	.07	.06	.29	.03	.03	.03	.04	.09
	mg/L (7 days)	4/6	6.81	1.1	.15	.29	.10	.07	.82	.04	.05	.04	.07	.24
Fecal Coliform	N/100 (30 day)	200	72	24	61	57	100	148	66	36	60	96	22	77
	N/100 (7 day)	400	318	92	321	237	200	303	264	67	107	258	353	585
Biomonitoring	TU _c	1.0												

The plant has not been able to consistently pass chronic biomonitoring requirements and as a result was required to enter into what is called a Toxicity Reduction Evaluation (TRE) Plan in December 1988. This plan requires that the permittee investigate the cause of their effluent toxicity and take steps to reduce the toxicant to levels that are not detrimental to test organism (*Ceriodaphnia dubia*) survival and reproduction. GMWSS has expended a tremendous amount of money and effort in their TRE Plan attempting to solve this issue. The conclusion at this point is that trace amounts of nickel (in the 0.1 mg/l range) are causing the toxicity. This value is thirty times lower than the plant discharge permit limit of 3.08 mg/l daily maximum for nickel.

GMWSS was issued its discharge permit for WWTP #2 effective April 1, 1992. This permit contained extremely low limits for cadmium, lead and the controversial 1.0 TU_c chronic biomonitoring limit. On March 19, 1992, GMWSS filed a Petition for Formal Administrative Hearing with the Natural Resources and Environmental Protection Cabinet challenging the April 1, 1992 permit conditions relating to effluent limits for lead, cadmium and chronic biomonitoring. At this time the Cabinet and GMWSS agreed to a Stay of Enforcement of the challenged permit conditions. On September 19, 1994 the Cabinet issued an Agreed Order which stipulated that:

- (1) Monthly average limits for cadmium and lead are stayed. Daily maximum limits for lead and cadmium continue in effect. Georgetown will submit a study plan to evaluate appropriate monthly average permit limits for lead and cadmium no later than January 1, 1995 (Note: This plan has been submitted).
- (2) Georgetown and the Cabinet agree that the 1992 permit limit for chronic toxicity of 1.0 TU_c shall become effective, with monitoring to be conducted quarterly, subject to the following testing mechanism to be utilized, pursuant to condition 3.B. of Part IV on Page IV-2 of Georgetown's 1992 permit, in determining compliance with the limit of 1.0 TU_c. The permit limitation of 1.0 TU_c for whole effluent toxicity shall be deemed to be satisfied by a showing that the whole effluent exhibits no lethality during a 48-hour test period. In conjunction with the above test, Georgetown shall continue to conduct the 7-day chronic test and report the IC₂₅ results to the Cabinet for informational purposes.

- (3) Georgetown agrees to continue the TRE currently being conducted until Georgetown makes the following demonstration:

The TRE shall be considered completed when, for six consecutive monthly tests, a demonstration is made of (1) no lethality in any effluent concentration in a 48-hour test period, when compared to a control, and (2) one of the following conditions: (a) no more than one (1) chronic endpoint ($100/IC_{25}$) greater than or equal to $1.2 TU_c$ with all other tests passing; or (b) no more than three (3) chronic endpoints ($100/IC_{25}$) greater than $1.0 TU_c$ but less than $1.20 TU_c$.

- (4) In the event that Georgetown exceeds $1.0 TU_c$ in a 48-hour test, a second test will be conducted within 10 days of the first failure. If toxicity is demonstrated in this test, Georgetown shall conduct a TRE in accordance with the 1992 permit. Any TRE shall continue until Georgetown demonstrates compliance with the conditions set forth in paragraph 3 of the Agreed Order.

Note: Wastewater Treatment Plant No. 2 recently received notice from DOW that the facility was officially out of the TRE/TIE program due to compliance with the chronic biomonitoring test. New KPDES limits are pending as a result of the 201 Plan approval.

D. DELAPLAIN WASTEWATER TREATMENT PLANT

The Delaplain Disposal Company operates a sewer system in an area of Scott County that is northwest of the Toyota Motor Manufacturing facility. The service area consists of approximately 500 acres that is zoned for "light industry" and 150 acres that is zoned for "community/highway". Both areas are inside the Urban Service Boundary and, consequently, are in the 201 Facilities Planning Area. There are six industrial sewer users (consisting primarily of metal machining facilities) and 12 commercial sewer users (consisting of storage, motel, gas station and similar facilities). In addition, approximately 90% of Moon Lake Estates subdivision (182 homes), which is outside the Urban Services Boundary, is served by Delaplain Disposal Company. The sewer system consists of 8-inch diameter and smaller gravity sewers, five pump stations, force mains and a package treatment plant.

The Delaplain Disposal Company WWTP (KPDES No. KY0079049) was built in 1989 with a design flow capacity of 240,000 gallons per day. Treated effluent from the plant is

discharged to an unnamed tributary at mile point 2.50 to Dry Run at mile point 3.08. This facility currently is operating at less than 70% of its average design capacity. The plant is subject to pretreatment requirements, has an approved pretreatment program and consistently meets the requirements of its discharge permit. Treatment consists of a comminutor, activated sludge aeration, aerated waste sludge holding tank, final clarification, tertiary sand filtration, disinfection with chlorine and dechlorination with sulphur dioxide. Ample room is available at the site for expansion of the treatment plant.

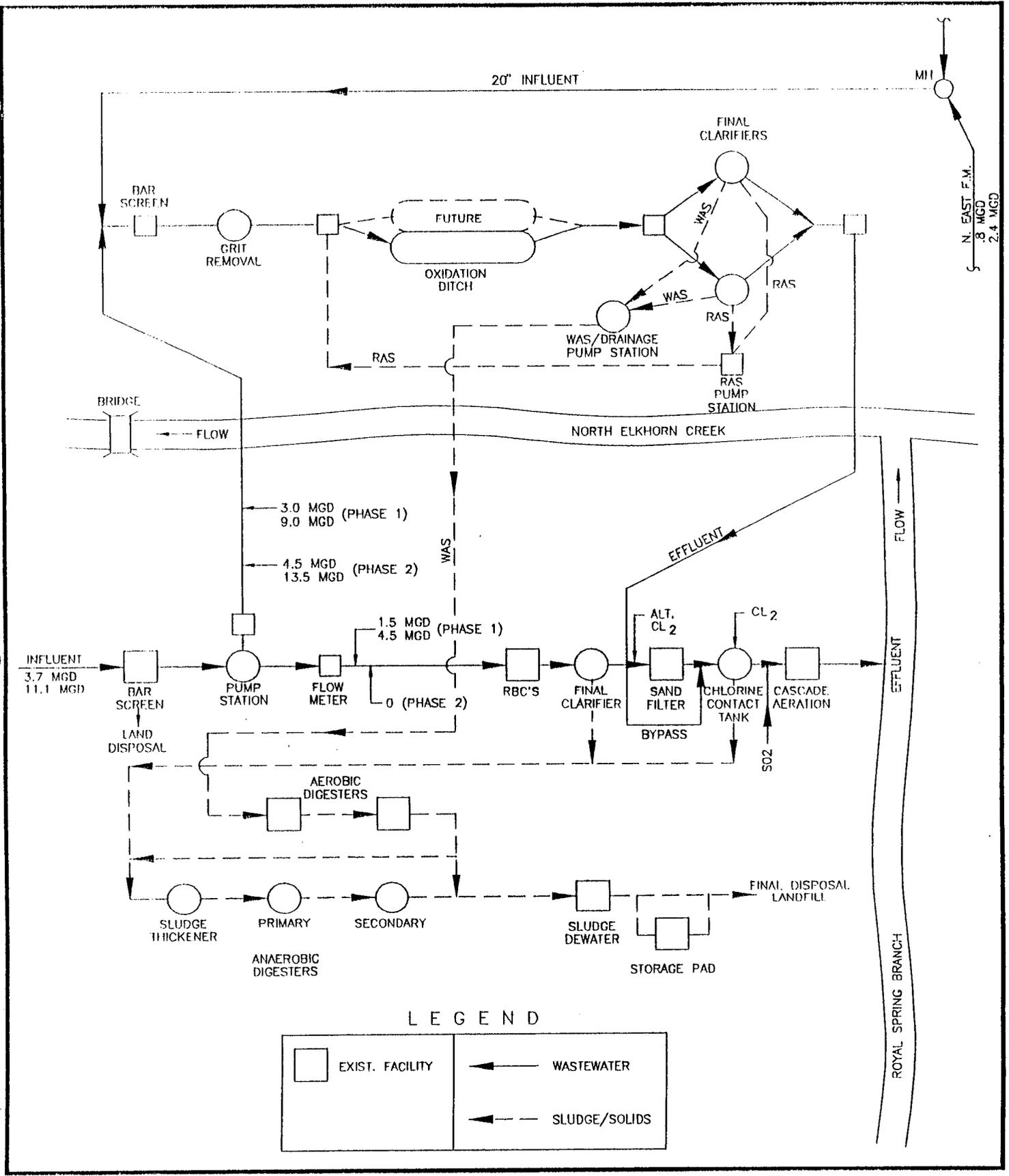
The Delaplain Disposal Company WWTP is in excellent condition and we anticipate that the facility will remain in service for the next 20 years and beyond. The plant is not expected to reach average daily flows exceeding 90% of design capacity in the next 20 years.

E. KENTUCKY HORSE PARK WASTEWATER TREATMENT PLANT

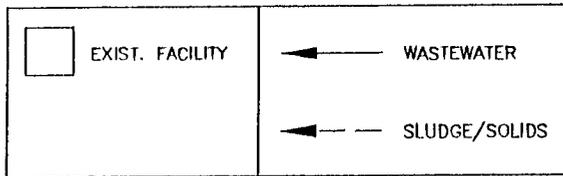
The Kentucky Horse Park ("Horse Park") is located in northern Fayette County on Iron Works Road. There is a package sewage treatment plant (permitted design flow = 80,000 gallons per day) located in the park to treat wastewater from the park's facilities.

F. SPINDLETOP WASTEWATER TREATMENT PLANT

The Spindletop Wastewater Treatment Plant (Package Plant) is located in southern Scott County off Lisle Road near US 25 (Georgetown Road). This plant services the Ponderosa Park and Spindletop Trailer parks. Plant discharge is to an unnamed tributary of Cane Run Creek.



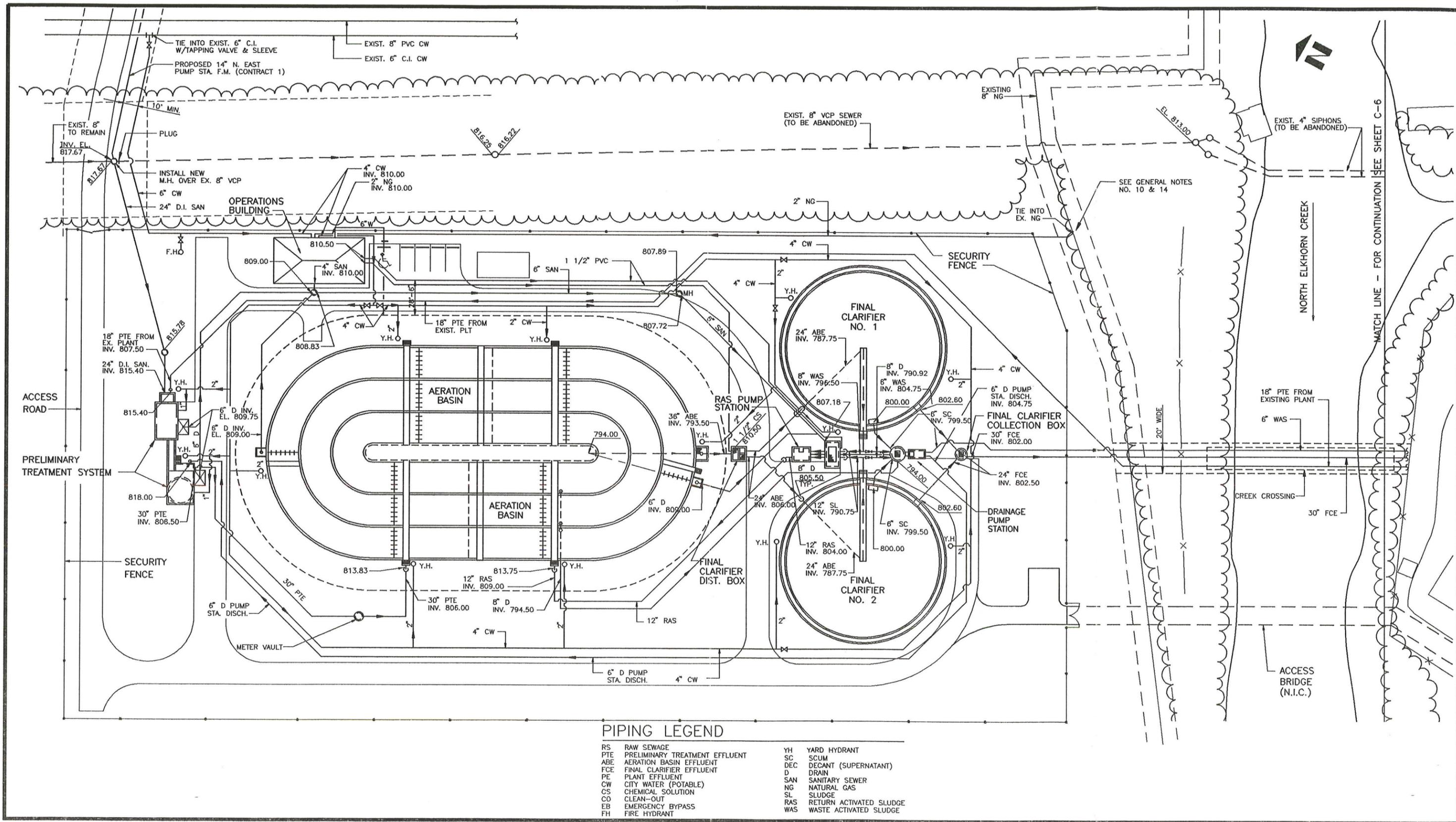
LEGEND



96066\FIG3-1

	201 FACILITIES PLAN UPDATE GEORGETOWN, KENTUCKY		WWT NO. 1 EXISTING FLOW SCHEMATIC			FIGURE 3-1
	PDR ENGINEERS, INC. LEXINGTON, KENTUCKY		DRAWN JLR	DATE JAN, 1997	SCALE NONE	

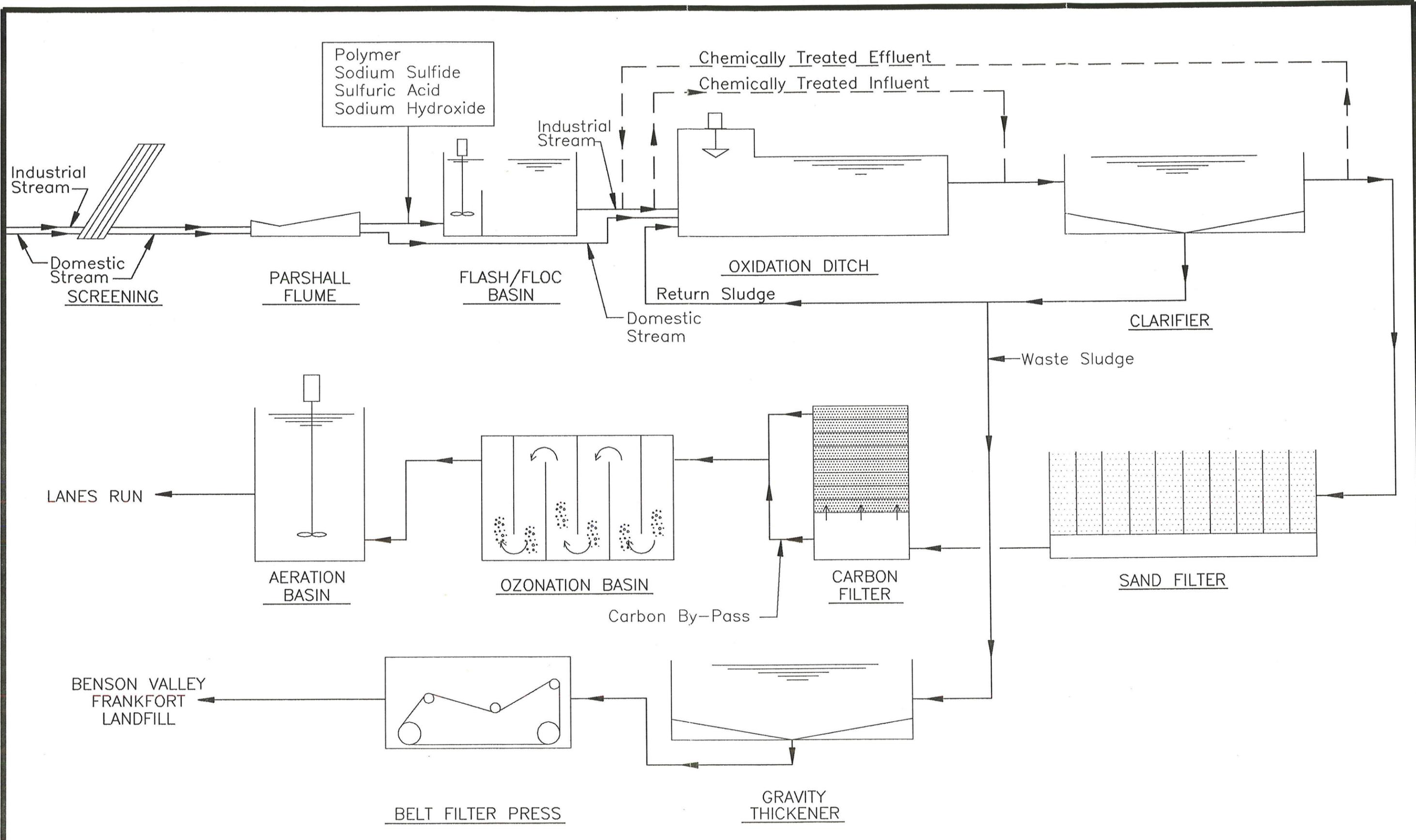
96066/FIG3-34.DWG



PIPING LEGEND

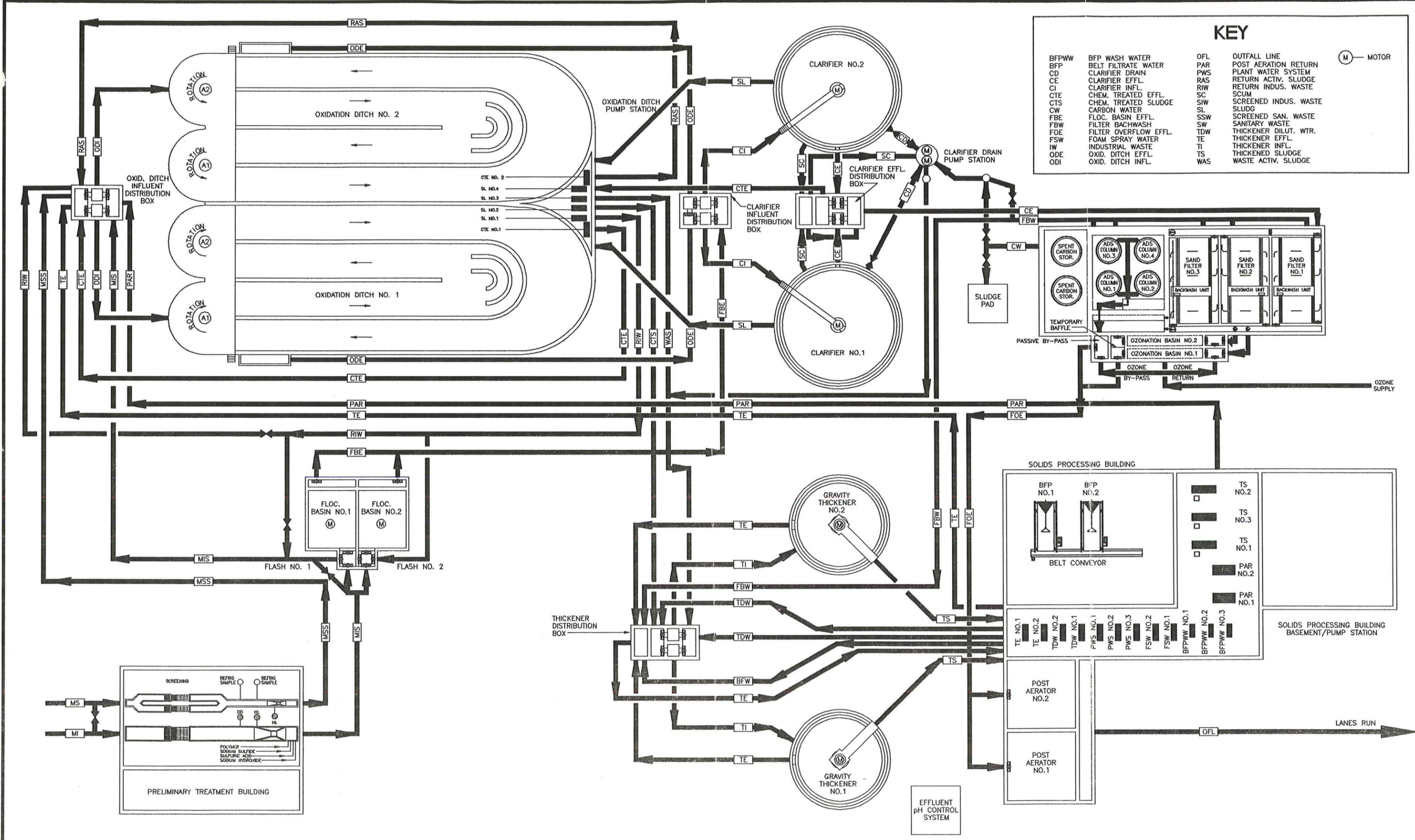
RS	RAW SEWAGE	YH	YARD HYDRANT
PTE	PRELIMINARY TREATMENT EFFLUENT	SC	SCUM
ABE	AERATION BASIN EFFLUENT	DEC	DECANT (SUPERNATANT)
FCE	FINAL CLARIFIER EFFLUENT	D	DRAIN
PE	PLANT EFFLUENT	SAN	SANITARY SEWER
CW	CITY WATER (POTABLE)	NG	NATURAL GAS
CS	CHEMICAL SOLUTION	SL	SLUDGE
CO	CLEAN-OUT	RAS	RETURN ACTIVATED SLUDGE
EB	EMERGENCY BYPASS	WAS	WASTE ACTIVATED SLUDGE
FH	FIRE HYDRANT		

 Lexington • Cincinnati • Louisville • Memphis • Huntsville 800 Corporate Dr. • Lexington, Kentucky 40503 • (606) 223-8000	201 FACILITIES PLAN UPDATE GEORGETOWN, KENTUCKY		WWT NO. 1 SITE LAYOUT		FIGURE 3-3
	PDR ENGINEERS, INC. LEXINGTON, KENTUCKY		DRAWN JLR	DATE JAN, 1997	SCALE NONE



96066/FIG3-4.DWG

 PDR Engineers, Inc. Lexington ■ Cincinnati ■ Louisville ■ Memphis ■ Huntsville 800 Corporate Dr. ■ Lexington, Kentucky 40503 ■ (606) 223-8000	201 FACILITIES PLAN UPDATE GEORGETOWN, KENTUCKY		WWTP NO. 2 PROCESS FLOW DIAGRAM		FIGURE 3-4
	PDR ENGINEERS, INC. LEXINGTON, KENTUCKY		DRAWN JLR	DATE JAN, 1997	



96066A FIG3-5.DWG

PDR Engineers, Inc. Lexington • Cincinnati • Louisville • Memphis • Huntsville 800 Corporate Dr. • Lexington, Kentucky 40503 • (606) 223-8000	201 FACILITIES PLAN UPDATE GEORGETOWN, KENTUCKY	WWT NO. 2 PLANT LAYOUT		FIGURE 3-5
	PDR ENGINEERS, INC. LEXINGTON, KENTUCKY	DRAWN JLR	DATE JAN, 1997	

CHAPTER 4
EVALUATION OF EXISTING WASTEWATER COLLECTION
AND CONVEYANCE SYSTEMS

A. EXISTING COLLECTION SYSTEM

1. General

The GMWSS wastewater collection system currently serves the City of Georgetown and a limited number of isolated areas outside the City limits. The service area includes portions of five major drainage basins as follows:

- (1) Cane Run
- (2) Dry Run
- (3) Lanes Run
- (4) McCracken Creek
- (5) North Elkhorn Creek

Each of these five major drainage basins are divided into subdrainage basins or sub-areas. The sub-areas provide a more detailed method of estimating flows. The sub-area boundaries are shown on Figure 2-2 and Table 4-1 summarizes the wastewater collection sub-areas, their drainage basin and Urban Service Area.

TABLE 4-1		
WASTEWATER COLLECTION SYSTEM SERVICE AREA DESCRIPTION		
SUB-AREAS	DRAINAGE BASIN	URBAN SERVICE SUB-AREAS
CR 1-16	Cane Run	CR-2,5,7,9,10,13,15
DR 1-19	Dry Run	DR-1,2,3,4,5,11
LR 1-13	Lanes Run	-
MC 1-6	McCracken Creek	MC-1,3,5
NE 20-41	North Elkhorn Creek	NE-21,22,26-37

Some of the sub-areas in Table 4-1 are wholly inside the Urban Service Area, while others are partially inside. Each of these wastewater collection sub-areas is serviced by a

gravity sewer collection system within the sub-area. However, because the sub-areas are distributed over the five (5) different drainage basins, several of the sub-areas require a pump station/force main to transfer wastewater to the existing wastewater treatment plant located in the North Elkhorn Creek Drainage Basin northwest of the downtown area of Georgetown.

The 22 pump stations are interconnected with each other and eventually transfer all collected wastewater to the existing wastewater treatment plant. The location of each pump station is shown in Figure 4-1. A flow schematic of the pump station/force main network is shown in Figure 4-2.

2. Description

The GMWSS wastewater collection facilities serve the City of Georgetown Urban Service Area with gravity lines ranging in diameter from 4" to 30" and force mains with 1-1/2", 4", 6", 8", 10" and 14" diameters. A map showing the GMWSS wastewater collection system is in Figure 4-3.

The gravity lines are a combination of vitrified clay pipe, concrete pipe and polyvinyl chloride (PVC) pipe with diameters ranging from 4" to 30". The first sanitary sewers were installed in Georgetown in the early 1900's. Over the years, the system has grown to include gravity lines, pumping stations and force mains.

The GMWSS Hydra Sewer Computer Model Study completed in 1993 evaluated the operating condition of the existing sanitary sewer system for the current needs, as well as its ability to handle future growth and development. The results of modelling the present system under 1990 average flow conditions identified some potential bottlenecks in the existing collection system. One such area that was identified is the 12" diameter gravity line that runs from Pocahontas Trail to the intersection of Clayton Avenue and U.S. 25. One section of this line was estimated to be flowing at just above its full pipe capacity. This is a relatively small diameter line considering the large area from which it receives flow. Another bottleneck occurs in the 27" diameter line that runs down Water Street near the intersection of Main Street. This line had a section flowing at almost double its full pipe capacity. Another capacity problem occurred in the 8" diameter line that runs down Scroggin Drive which receives flow from the new Walmart pump station.

All pumping stations in the system are duplex pump stations. The basis for design of duplex pump stations is each pump should be capable of pumping 100% of the flows entering the pump station. Under this design guideline, the second "lag" pump is a backup unit which operates only in the event the lead pump fails to operate. When designing pump stations under this criteria, the force main is traditionally sized to match the pumping conditions expected with one pump operating. Therefore, little if any incremental pumping capacity will be realized if both pumps are operated since the size of the force main will be the limiting factor which determines the pumping rate.

GMWSS currently operates and maintains 22 major pumping stations. Available information on each pump station is shown in Table 4-2. The horsepower, discharge rate and head conditions shown in Table 4-2 are for each pump in each station and do not reflect the total for each station. In addition to the 22 pump stations listed in Table 4-2, there are a number of private pumping stations which are tied to the collection system in areas where sewer service was not available initially. Construction of the Northeast Interceptor, pump station and force main in 1993 eliminated Pump Station Nos. 7, 9 (old No. 9) and 15. Pump Station No. 1 was recently eliminated (converted to gravity) by the construction of the Peninsula pump station. Pump Station No. 14 will also be eliminated in the near future (plans are in Frankfort awaiting approval by the Division of Water) via a gravity sewer to the Peninsula pump station. Many of the pump stations in the Georgetown system are over 20 years old and need to be upgraded or replaced. GMWSS has recently upgraded the controls on the older pump stations (for example, converting bubbler systems to float systems and installing new control panels). Four (4) of the pump stations in the GMWSS collection system (Nos. 2, 4, 5 and 8) are dry pit type pump stations -- meaning the pumps are located deep underground in a "confined space" adjacent to the pump station wetwell. Performing maintenance on these pumps can be dangerous due to the potential for toxic gases to accumulate in the confined space. New safety regulations make it very difficult and expensive for maintenance personnel to enter a confined space. It is recommended that GMWSS replace these older dry pit stations with submerged type pump stations that do not require maintenance personnel to enter the confined space for pump maintenance because the pumps are mounted on rails and can be raised out of the wet well for repairs. Pump Station No. 5 probably could be converted to a submerged pump station using the existing wet well. Three (3) of these

dry pit stations could be taken out of service with the construction of the proposed Cane Run interceptor and force main. Most of the pump stations have adequate capacity to meet current service needs, However, Pump Station No. 2, which is almost 25 years old, is operating at or above design capacity. Pump Station No. 12 was recently upgraded with all new controls, pumps and new valve vault at a cost of \$38,000.

**TABLE 4-2
GMWSS PUMP STATION DATA**

P.S. NO.	P.S. NAME	NO. OF PUMPS	PUMP H.P.	WETWELL OVERFLOW	WETWELL CAPACITY	GPM AT TDH	F.M. DIAMETER	F.M. LENGTH	DISCHARGE POINT	TYPE STATION
2	US 460	#1 #2	25 25	8'	5,175 Gal	370 @ 118' 370 @ 118'	6"	1250'	100 Block of Montgomery Ave.	Dry Pit
3	Parkside	#1 #2	3 3	N/A	6,000 Gal	80 @ 62.5' 80 @ 62.5'	4"	2500'	US 25 at Dr. Sutton's	Submersible
4	310 Pocahontas Tr.	#1 #2	7.5 7.5	7'	1,030 Gal	100 @ 39' 100 @ 39'	4"	300'	Pocahontas Trail and Seneca Trail	Dry Pit
5	US 25 & Showalter	#1 #2	30 30		5,900 Gal	540 @ 112' 540 @ 112'	6"	1,700'	Pocahontas Trail at Indian Acres Shop Ctr.	Dry Pit
6	McDonald's at Connector Road	#1 #2	15 15		3,165 Gal	150 @ 81' 150 @ 81'	4"	4,500'	Connector Road at Shell One Stop	
8	Connector Road at Shell One Stop	#1 #2	5 5	7'	1,900 Gal	175 @ 34' 175 @ 34'	4"	2,125'	Old Jerry's Restaurant	Dry Pit
9	NE Interceptor	#1 #2 #3	39 39 39		16,500 Gal	1200 @ 62' 1200 @ 62' 1200 @ 62'	14" PE	8,075'	WWTP No. 1	Submersible
10	1357 Whig Ct.	#1 #2	5 5		2,100 Gal	125 GPM 125 GPM	4"	750'	Mt. Vernon Drive	Submersible
11	1321 Dorchester Dr.	#1 #2	16 9.4		2,100 Gal	125 GPM 125 GPM	4"	2,125'	Mt. Vernon Drive at Valley Forge Ct.	Submersible
12	Brown & Young St.	#1 #2	7.5 7.5	5'	1,057 Gal	100 GPM 100 GPM	4"	Approx. 1500'	Poplar & Wright Alley	Submersible
14	Elm St. Apartments	#1 #2	2 2		1,650 Gal	90 GPM 90 GPM	1.5"	Approx. 300'	202 Elm Street	Submersible
15	Peninsula	#1 #2	7.5 7.5			240 @ 43' 240 @ 43'	6"	1550'	Manhole A3 in Phase 1 at Payne Avenue	Submersible
16	U.S. 62	#1 #2							Pocahontas at Choctaw	Submersible

**TABLE 4-2
GMWSS PUMP STATION DATA**

P.S. NO.	P.S. NAME	NO. OF PUMPS	PUMP H.P.	WETWELL OVERFLOW	WETWELL CAPACITY	GPM AT TDH	F.M. DIAMETER	F.M. LENGTH	DISCHARGE POINT	TYPE STATION
17	Canewood	#1 #2	30 30	14'	5,264 Gal	443 @ 115' 443 @ 115'	8"	11,800'	WWTP #1	Submersible
18	Western Elementary	#1 #2	5 5	12'	2,538 Gal	90 @ 45' 90 @ 45'	4"	1985'	Canewood Pump Station	Submersible
19	Wal-Mart (A)	#1 #2	7.5 7.5			90 @ 56' 90 @ 56'	4"	1,800'	To Wal-Mart Pump Station "B"	Submersible
20	Wal-Mart (B)	#1 #2	20 20			180 @ 80' 180 @ 80'	6"	4,800'	Mount Vernon and Potomac	Submersible
21	Billy Perkins	#1 #2	5 5			102 @ 37' 102 @ 37'	4"	400'	Payne and Elm St.	Submersible
22	Lancaster Heights	#1 #2	7.5 7.5	10'	1,480 Gal	175 @ 60' 175 @ 60'	6"	1,700'	Redding Road at Lancaster Place	Submersible
23	Hambrick Place	#1 #2	20 20		2,390 Gal	190 @ 50' 190 @ 50'	6"			Submersible
24	Colonial Heights	#1 #2	20 20		3,159 Gal	565 @ 85.7' 565 @ 85.7'	8"	5,183'	Colony 6 Pump Station	Submersible
25	Derby Estates	#1 #2	30 30		5,876 Gal	500 @ 96' 500 @ 96'	10"	10,105'	Derby Estates Pump Station end of Bold Forbes	Submersible

The pumping stations are designed to handle peak wet weather flows from the gravity sewer system. Consequently, during low diurnal flow periods, the pump stations operate infrequently. Long detention times in the pump stations' wet wells and force mains allow the wastewater to become septic and generate odors. Based on these conditions, it is believed that odor problems at certain pump stations and a part of odor problems at the wastewater treatment plant may be associated with the septic condition of the wastewater in the pump stations.

During high intensity rainfall events, two areas of the collection system are unable to handle the entire wastewater flow. Pump Station No. 2 has a tendency to overflow during rainfall periods, as well as a manhole on Water Street. Records and on-site observations indicate that the peak flow experienced at these pump stations is primarily due to excessive I/I. Because flow in the collection system reacts rapidly to rainfall events, inflow rather than infiltration appears to present the most serious contribution to wet weather flows.

B. INFILTRATION AND INFLOW

As determined in Chapter 2, the existing average per capita wastewater flow from the Georgetown system is 119.4 gpcd, based on a yearly average domestic flow of 1.895 MGD and a sewerred population of 15,867. This rate is less than 120 gpcd, which indicates that infiltration is non-excessive on a system-wide basis.

The maximum daily flow recorded at WWTP No. 1 during the same 12-month period was 7.47 MGD, with an estimated domestic contribution of 6.57 MGD. This equates to a per capita rate of 414.0 gpcd, which is greater than the non-excessive allowance of 275 gpcd. However, now and for the next 20 years, the existing WWTP has adequate flow capacity. There are, however, the two areas previously mentioned that overflow during heavy rainfall conditions due to inadequate hydraulic capacity. A program to correct the existing I/I problems has been implemented by GMWSS to avoid overloading the collection system.

C. SANITARY SEWER REHABILITATION PROGRAM (SSRP)

GMWSS is taking a proactive approach with respect to elimination of I/I by developing a program designed to identify and correct excessive I/I in the collection system.

1. Manhole Inspection and Repair Program

GMWSS staff are currently locating and numbering every manhole in the entire collection system to aid in future inspections and repairs. Every manhole in the sanitary sewer collection system will be inspected for I/I and structural damage. During the on-site inspection, the manhole will be evaluated for excessive I/I, as well as sewer surcharging. As a result of this inspection program, a manhole repair program will be implemented to repair manhole deficiencies identified during the inspection program.

Some manhole rehabilitation can be performed by GMWSS staff and there may be manhole repairs that should be performed by contract due to construction complexity, time requirements or other factors. These repairs would be added to the Sewer Main and Lateral Point Repair program.

It is recommended that all sanitary sewer manholes be inspected once every four (4) years as an on-going preventative maintenance routine. The inspection should be followed up with a repair activity, thereby completing the cycle. This single activity will provide a significant amount of information, reduce sewer blockages, reduce I/I and provide the greatest benefit for the cost.

2. Sewer Cleaning

Each year, designated portions of the collection system are cleaned with a jet/vac truck to restore sewer line capacity and prepare the lines for subsequent TV inspection.

3. TV Inspection

For the past three years, portions of the collection system have been televised and videotaped to help locate excessive I/I and identify where repairs need to be made.

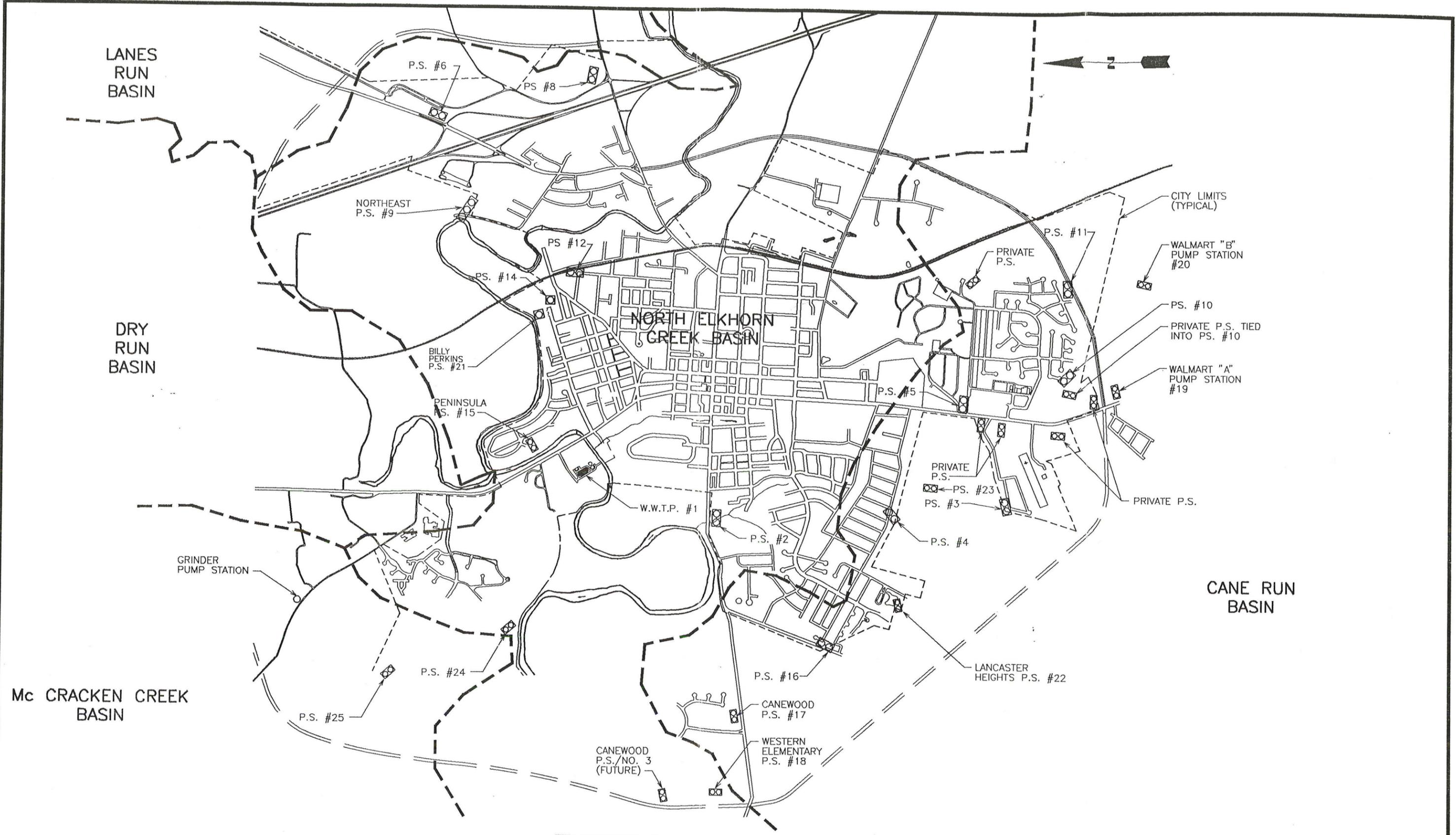
4. Sewer Main and Lateral Point Repairs

The Sewer Main and Lateral Point Repair program is a construction program which will repair specific points on the sewer mains and laterals which require excavation and construction for removing or repairing the I/I identified.

Certain areas of the collection system are known to have excessive I/I. One such area that has excessive infiltration due to deterioration of the sewer line and manholes is the trunk line from Mt. Vernon and Bunker Hill Court to Lemons Mill road. Other areas that are known to have excessive I/I include: Arapaho Trail from Cherokee Trail to Highland Court, Mohave

Trail from Cherokee Trail to the intersection with the Pueblo Trail sewer, Pueblo Trail from Shoshoni Trail past Iroquois Trail and Clinton Street from Montgomery Avenue to Lexington Avenue. GMWSS is establishing a replacement program for these deteriorated segments of the collection system. Because of the cost and complexity, it is anticipated that construction contracts would be issued to perform the major construction repairs identified in the SSRP's other phases.

GMWSS has an operating budget of \$50,000 per year to finance the SSRP.



— LOCATIONS OF FACILITIES ARE APPROXIMATE AND ARE FOR ILLUSTRATIVE PURPOSES ONLY —

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201 FACILITIES PLAN UPDATE GEORGETOWN, KENTUCKY		PUMP STATION LOCATIONS		FIGURE 4-1
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96066/FIC.dwg



96066/FIG4-2.DWG

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201 FACILITIES PLAN
 UPDATE
 GEORGETOWN, KENTUCKY

PDR ENGINEERS, INC.
 LEXINGTON, KENTUCKY

FLOW SCHEMATIC OF PUMP STATION/FORCE MAIN NETWORK		
DRAWN	DATE	SCALE
JLR	JAN, 1997	NONE

FIGURE
 4-2

CHAPTER 5

EVALUATION OF TREATMENT IMPROVEMENTS

A. GENERAL

The purpose of this chapter is to evaluate the treatment needs during the 20-year planning period and determine required improvements to meet these needs. Detailed cost estimates for each improvement are presented in Chapter 7.

B. WWTP NO. 1

As illustrated in Table 3-5, the treatment plant is providing an exceptional level of treatment.

As indicated in Chapter 2, the WWTP does not have adequate biological capacity to meet the projected Planning Area requirements for the next 20 years. In addition, there are improvements needed to enhance the plant's operation, maintenance and reliability. The improvements should be undertaken in two phases, with Phase I taking place within the next two years and Phase II within three to ten years.

1. Phase I Improvements (0-2 Years)

a. Install Ditch Aerators/Eliminate RBCs

As discussed in Chapters 2 and 3, the effective treatment capacity of the plant is limited and would not be capable of treating the 20-year projected wastewater flow and loadings.

The existing RBCs are nearing their 20-year design life and the plant operations staff are having difficulty maintaining the units in acceptable operating condition. GMWSS is continually spending money to keep the units in operation. Without the RBCs in service, the plant is near 80% of design capacity. Therefore, it is recommended that Phase 2 of the 1990 201 Recommended Plan be initiated, which consists of increasing the capacity of the oxidation ditch treatment system to allow abandonment of the rapidly deteriorating RBC system. The design of the existing oxidation ditch is such that its capacity can easily be increased to 4.5 MGD through the addition of two (2) 50 HP aerators. Appendix F contains a listing of future developments that have already been approved by the GMWSS. As shown, the flow to WWTP No. 1 will exceed 3.0 MGD in the near future.

b. New Force Main Discharge Chamber

There are a total of three 8" force mains and one 10" pump station force main that discharge to the oxidation ditch side of WWTP No. 1. Currently, the force mains discharge to a 5 feet diameter manhole just upstream of the preliminary treatment facility.

At least one force main is proposed to be added in the near future. Therefore, it is recommended that a new structure be constructed to accept the discharge of these force mains. The structure would be designed to dissipate the energy and velocity of the force main discharge and provide space for future connections.

c. New Belt Filter Press and Feed Pumps

The plant has two (2) BFPs to provide mechanical dewatering of waste sludge. The presses have been in operation for 14 years. Belt press technology has improved in recent years so that today's machines perform better producing a drier cake with less polymer. Consequently, it is recommended that GMWSS purchase a new 2-meter BFP and retain the existing units as backup. Two new BFP feed pumps would also be provided to replace two of the existing plunger pumps.

d. Provide Concrete Pad for Sludge Roll-Off Container

Currently there is inadequate concrete pavement for storage of the sludge cake disposal container (roll-off box). It is recommended that an additional concrete pad with drain be constructed to accommodate the second sludge cake disposal container.

e. Provide Additional Sewer Line From Sludge Dewatering Building

The existing 4-inch diameter sewer line serving the Sludge Dewatering Building does not have adequate capacity to handle current flow rates. Temporary measures have been taken to route a portion of the flow to the plant drainage pump station. It is proposed that an 8-inch diameter parallel gravity sewer be installed from the Sludge Dewatering Building (truck bay) to the wetwell of the Plant Pumping Station to correct the flow restriction and thereby off load the excess flow now going to the Drainage Pump Station.

2. Phase II Improvements (3-10 Years)

a. Upgrade Mechanical Screen and Provide Compactor

It is recommended that the existing mechanical screen elements (15 mm opening) at the old Preliminary Treatment Building be replaced with fine mechanical screen elements (6 mm opening) and a compactor system installed.

b. New Belt Filter Press

A second BFP would be added to supplement the new unit scheduled to be installed in Phase I. The old units would be abandoned.

c. Convert Clarifier to New Chlorine Contact

The existing chlorine contact basin was put into service in 1982 by converting an existing circular clarifier. Theoretically, the existing basin has a peak flow capacity of 11.7 MGD; however, from a performance standpoint, the capacity is believed to be somewhat less. The basin does not contain any baffling so the entire volume is not utilized. It is anticipated that its effective capacity will be reached within the next 10 years.

By eliminating the RBC system in Phase I, the RBC final clarifier can be modified and converted to a new chlorine contact basin. The volume of the RBC clarifier is approximately three times that of the existing chlorine basin.

d. Convert Anaerobic Digesters to Aerobic

Currently, waste sludge from the RBC process is stabilized in two anaerobic digesters. After the RBC process is eliminated in Phase I, the existing anaerobic digesters should be converted to aerobic type units to supplement the two existing aerobic digesters that currently treat waste activated sludge from the oxidation ditch process.

The conversion would involve decommissioning the existing sludge heating and mixing systems and removal of the steel digester covers and interior piping. Aeration equipment consisting of air compressors and diffusers would be added to each digester tank. In addition, a new sludge transfer pump would be installed to replace one of the existing plunger pumps.

e. New Plant Drainage Pump Station

The existing Plant Drainage Pump Station which is approximately 20 years old is a "dry pit type" pump station. This type of construction makes performing maintenance on the pump station dangerous due to the potential for toxic gases to accumulate in the dry well, which

is classified as a "confined space." Confined space safety regulations also make maintenance of this station difficult and expensive. It is recommended that a new "submersible type" pump station be constructed to replace the existing pump station.

Refer to Figure 5-2 for a process flow diagram showing the proposed plant improvements.

C. WWTP NO. 2

Recommended improvements to WWTP No. 2 should be constructed in two phases -- with Phase I occurring within the next two years and Phase II within three to ten years.

1. Phase I Improvements (0-2 Years)

a. New Disinfection System

The existing disinfection system is expensive to operate and maintain. In addition, the equipment is outdated and the operations staff is having difficulty procuring replacement parts. As a result, the conversion of WWTP No. 2 to another method of disinfection was considered in the report. An evaluation was made comparing ultraviolet (UV) disinfection, chlorination/dechlorination and the continued use of the ozonation system.

A UV system would require 264 lamps arranged in three banks mounted in a new concrete channel. The concrete channel (along with a second channel for future expansion) would be constructed between the tertiary filters and the post-aeration basin. Design peak flow is 6.0 MGD.

A new chlorination/dechlorination system would require construction of a new concrete, dual chamber contact basin. The basin would be sized based on a minimum 15 minutes detention at 6.0 MGD for the chlorine contact portion and 30 seconds for the dechlorination portion. The existing ozone feed rooms could be modified to house separate storage rooms for the chlorine and sulfur dioxide ton containers, as well as separate chemical feed rooms.

With the ozonation alternative, the existing ozone generation and feed system would remain in service.

Table 5-1 lists characteristics and features of the three competing processes.

A cost-effective analysis is provided in Chapter 7.

**TABLE 5-1
EFFLUENT DISINFECTION ALTERNATIVES
WWTP NO. 2**

ALTERNATIVE	CHARACTERISTICS/FEATURES
Ultraviolet Disinfection	<ul style="list-style-type: none"> • Requires uninterrupted electrical service • Does not use oxidizing agents (chemicals) for disinfection • Improved worker safety (no use of dangerous chemicals) • Very short retention time required (less than 10 seconds) • UV lamps must be periodically cleaned • Only effective for effluent disinfection • Eliminates possibility of chlorine residual
Chlorination/Dechlorination	<ul style="list-style-type: none"> • Requires storage and handling of potentially dangerous chemicals (chlorine and sulfur dioxide) • Large chlorine contact basin must be provided • Contact basin must be periodically cleaned • Special equipment is required for storage and handling of chemicals (i.e., hoist/monorail, ventilation equipment, gas detectors, personnel safety equipment, etc.) • Requires special construction materials to minimize corrosion • Can be used to disinfect elsewhere in WWTP
Ozonation	<ul style="list-style-type: none"> • More sophisticated equipment to maintain • Requires uninterrupted electrical service • Removes organic material • Requires special construction materials to minimize corrosion • Use of existing system will continue to cause problems with service, repair and maintenance • Potential for leakage of ozone is a safety concern requiring the use of respirators and confined space entry procedures

b. Redirect Pump Station No. 9 Discharge

To improve the performance of WWTP No. 2, the raw wastewater discharged to Pump Station No. 9 should be redirected to WWTP No. 2. Transferring domestic sewage from WWTP No. 1 to WWTP No. 2 would provide additional nutrients or "food" needed by the biological treatment system treating the Toyota Motor Manufacturing plant industrial waste. Currently, it is necessary for the operating staff to continually add dog food to the biological process to provide the necessary nutrients absent from Toyota's industrial waste. Having a steady flow of domestic wastewater entering WWTP No. 2 would decrease the operational problems associated with Toyota's holiday shutdowns or other flow interruptions. The higher hardness of the domestic wastewater will also aid the plant's discharge in complying with biomonitoring requirements. This project would support future "regionalization" of WWTP No. 2.

Two of the three existing 1200 gpm pumps should be replaced by two 700 gpm units. The new pumps would discharge through a new 8" FM installed from Pump Station No. 9 to WWTP No. 2. A parallel 14" FM would be installed at the same time for use in the future when flows to Pump Station No. 9 increase. The remaining 1200 gpm unit would remain in service as an emergency standby capable of pumping to WWTP No. 1. Figure 5-1 shows the proposed location of the new force mains.

c. New Influent Screening

To provide increased sanitary flow capacity, the existing 12" wide influent channel needs to be expanded and the existing screen replaced with a new 3 ft. wide unit. This would allow the system to handle an average flow of 4.0 MGD and peak flow of 6.0 MGD. In addition, the 3-inch Parshall flume downstream of the screen area would be replaced with a new 9" flume. The 8" pipe line that transfers the screened sanitary waste to the oxidation ditch influent distribution box would be replaced with a 24" line.

d. Acid Feed Improvements

The facility now feeds acid to control the effluent pH to within .5 pH units of the receiving stream pH. Improvements to this system are needed to include an access road to the acid tanks, a new acid tank and new effluent aerators (for mixing).

e. Replace Thickener Effluent Pumps

The two existing thickener effluent (TE) pumps do not have sufficient capacity to pump the combined peak thickener overflow and BFP filtrate. The pumps need to be replaced with two larger units.

f. New Ditch Influent Mixer

To provide better mixing or blending of the sanitary, RAS and thickener effluent flows prior to distribution to the oxidation ditches, a mixing unit is recommended for installation in the ditch influent distribution box. This unit would be a small horsepower, slow speed mixer mounted vertically in the box upstream of the two 30-inch sluice gates.

g. New Drain Pump Station Discharge

Currently, the clarifier drain pump station (DPS) discharges to the 8-inch WAS line which in turn discharges to the gravity thickeners. It is recommended that an alternate discharge connection be constructed to the existing 12-inch post-aeration return line. This would allow the majority of the clarifier contents, which is water, to be returned to the oxidation ditches rather than the thickeners. The initial 15-20% of the clarifier contents, which is sludge, would be pumped to the thickeners.

h. Modify Oxidation Ditch Aerators

To provide more control and flexibility, it is recommended that the four existing 60 HP aerator drives be replaced with new variable frequency drives. This would allow the operators to vary the aerator speed to control the degree of aeration and mixing to match influent flow and loading conditions.

i. New Maintenance Building

In conjunction with the installation of the UV system, a UV housing complex/maintenance-storage building is recommended. Visitations to UV systems have shown that the system is easier to maintain if housed. Also, a lack of maintenance/storage area is evident at WWTP #2. We have included an 80' x 60' x 20' high building complex with this project. The building would house the UV system and include three bays for equipment storage and maintenance.

Also, we are recommending that the Ozone system be maintained as a back-up to the new UV disinfection process. We have included the cost on one new compressor sized to

deliver the equivalent of two existing compressor units. Two of the three existing units would be retained for back-up to the new compressor.

2. Phase II Improvements (3-10 Years)

a. Modifications to Pump Station No. 9

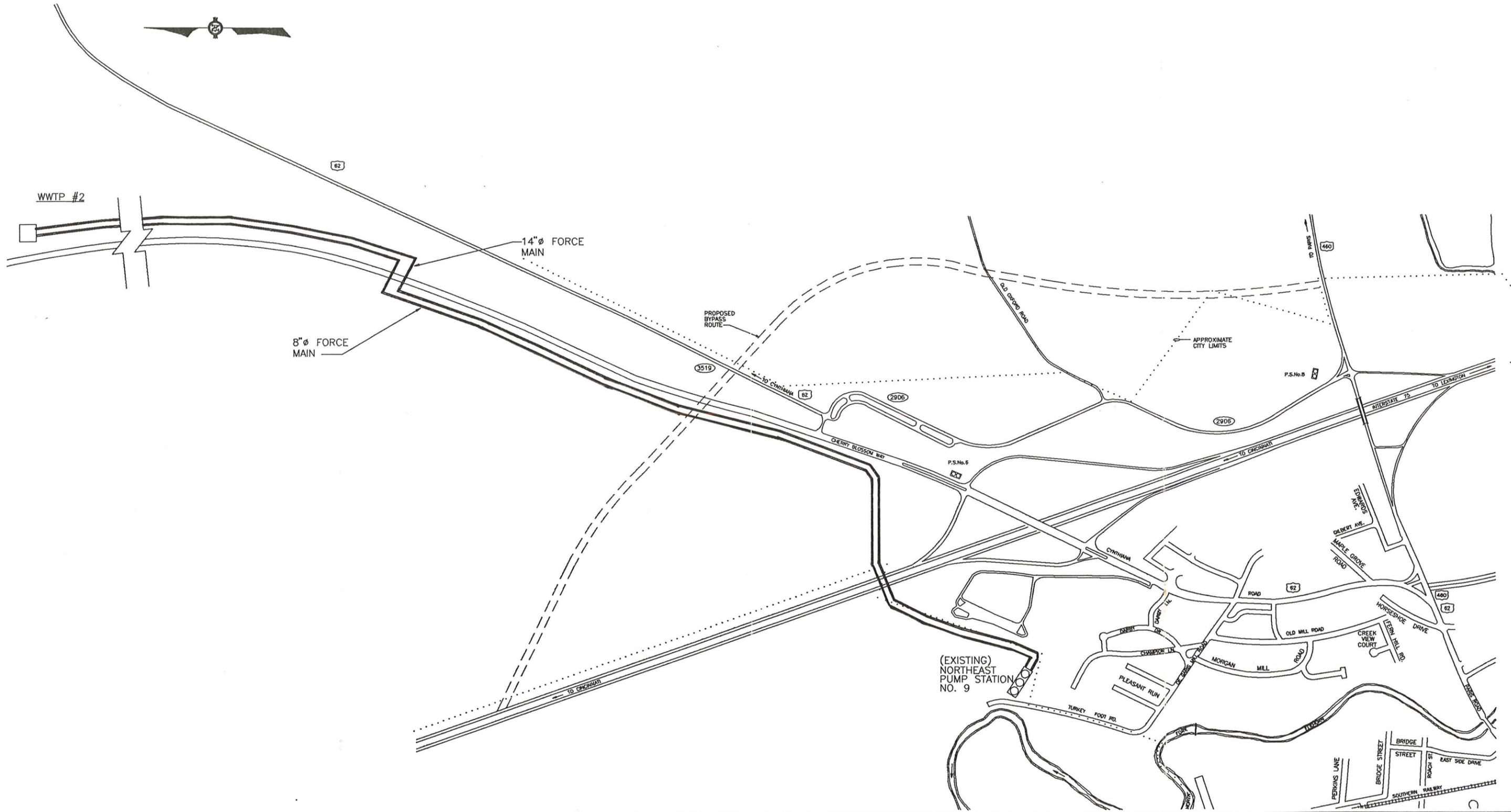
In Phase II, one of the 700 gpm pumps installed in Phase I, as well as the remaining 1200 gpm pump, would be replaced by two 1200 gpm units with a higher head capacity necessary to discharge to WWTP No. 2. The remaining 700 gpm pump installed in Phase I would continue as the lead pump. When influent flow exceeded 700 gpm, the lead pump would shut down and one of the new 1200 gpm units would run as the lag pump. The pumps would discharge through the 14" FM installed in Phase I. The second 1200 gpm pump would be a standby and would act as the second lag pump during high flow conditions. This pump would be exercised on a regular basis.

b. Put Second Oxidation Ditch In Service

As determined in Chapter 2, under its current mode of operation, the plant does not have adequate capacity to treat the projected future flows and loadings. As future development occurs and the sanitary discharge to the plant increases significantly, the redundant oxidation ditch and final clarifier would be put in service to provide additional capacity. This would provide a total capacity of:

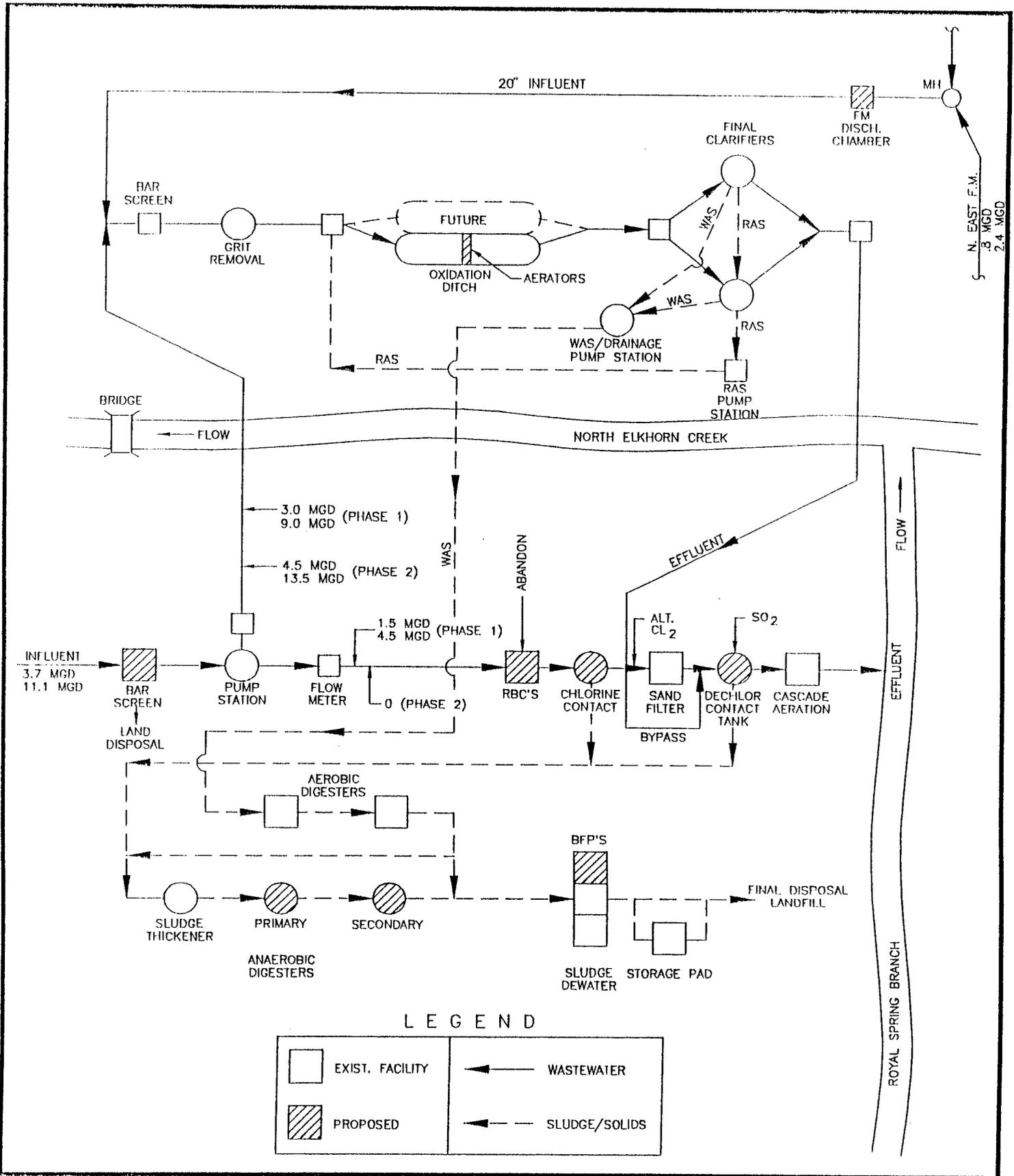
<u>Parameter</u>	<u>Capacity</u>
Average Flow	4.0 MGD
Peak Flow	6.0 MGD
BOD ₅	5,004 lbs/d
TSS	6,672 lbs/d
NH ₃ -N	1,000 lbs/d

With both oxidation ditch systems in service, the plant will have more than enough capacity for the next 20-year needs.



96066/FIGS-1 3 PLOT STF

 PDR Engineers, Inc. Lexington ■ Cincinnati ■ Louisville ■ Memphis ■ Huntsville 800 Corporate Dr. ■ Lexington, Kentucky 40503 ■ (606) 223-8000	201 FACILITIES PLAN UPDATE GEORGETOWN, KENTUCKY		PROPOSED LOCATION OF NEW FORCE MAINS FOR PUMP STA. NO. 9		FIGURE 5-1
	PDR ENGINEERS, INC. LEXINGTON, KENTUCKY		DRAWN JLR	DATE MAR, 1997	



96066\FIGS-2

	201 FACILITIES PLAN UPDATE GEORGETOWN, KENTUCKY	WWTW NO. 1 PROPOSED FLOW SCHEMATIC			FIGURE 5-2
	PDR ENGINEERS, INC. LEXINGTON, KENTUCKY	DRAWN JLR	DATE JAN, 1997	SCALE NONF	

CHAPTER 6

EVALUATION OF COLLECTION SYSTEM IMPROVEMENTS

A. GENERAL

The purpose of this chapter is to evaluate the collection system needs for the Urban Service Area during the 20-year planning period and determine required improvements to meet these needs. Cost estimates for each improvement are presented in Chapter 7.

B. PHASE I IMPROVEMENTS (0-2 YEARS)

1. Pump Station No. 2 Upgrade; Relocation of Hambrick Place Pump Station and Manifold Force Main System

This improvement proposes to replace the existing pumps at pump station no. 2 with new and more efficient pumps, relocate the existing Hambrick Place pump station south to the proposed southwest bypass, and construct a dual force main system to WWTP No. 1.

The relocated Hambrick Place pump station would allow for the elimination of two existing pump stations (pump station no. 4 and no. 22). The proposed facilities would be sized to handle development of the drainage area to R-2 density (8 people per acre). The drainage area would serve the existing Hambrick Place Subdivision (Phase I and II), a portion of Indian Acres subdivision and Lancaster Heights subdivision. The total drainage area and potential contributing areas is estimated at 428 acres with a potential population of approximately 3,425 persons. This pump station would have a peak capacity of 1.3 MGD and include 14,700 feet of 12-inch diameter force main. In addition, a 12-inch diameter gravity interceptor sewer would be built to connect the area with the existing sewer systems.

A new dual force main system (manifold system) is proposed for this improvement to be constructed from the relocated Hambrick Place pump station along the existing electrical transmission lines' easement to the group of existing force mains north of North Elkhorn Creek located on the Cardome property. This force main system will consist of two force mains ranging in size from parallel 8-inch pipe to parallel 12- and 18-inch pipes. The capacity of the force main system will be in the range of 2,500 gpm to 3,500 gpm. Total estimated cost for

these improvements is \$1,614,250 (refer to Table 7-25). The proposed improvements are shown in Figure 6-1.

2. Robinson Area Sewer Replacement

This improvement proposes to construct approximately 4,200 linear feet of new gravity sewer mains and approximately 6,000 linear feet of PVC service laterals in the Robinson Avenue Area. This new construction will replace the present private sewer system and troubled sewers that have plagued the area for a number of years with a reliable sanitary sewer system.

The existing system is plagued with undersized mains (4-inch), shallow pipes that are subject to constant damage from any surface activity, considerable amounts of infiltration and inflow problems, and with the undersized mains problems have occurred with line blockage that causes the sewage to flow back into the residents' homes.

Total estimated cost for these improvements is \$559,200 (refer to Table 7-26). This project has been designed with plans and specifications prepared in February 1989; however, these drawings should be reviewed and corrections made to the listed property owners (as required) and the necessary easements obtained. The proposed improvements are shown in Figure 6-3.

C. PHASE II IMPROVEMENTS (3-10 YEARS)

1. Mt. Vernon Gravity Sewer Replacement

The south side of Georgetown has experienced significant growth with the construction of the bypass between U.S. 25 and U.S. 460. Sewer service for this growth has been provided through the existing sewer system. Pump Station No. 20 (Walmart B) discharges up to 180 gpm to the Mt. Vernon collection system. Based on previous evaluations by PDR, we determined that the existing interceptor sewers are reaching their maximum capacity. Consequently, any additional development will necessitate upgrading the Mt. Vernon interceptors to provide additional capacity. The limiting section or "bottleneck" of the existing interceptor starts in the 8-inch sewer at Scroggin Drive (refer to Figure 6-2), the line changes to a 10-inch diameter sewer and continues to Lemons Mill Road. This bottleneck could be eliminated with the installation of parallel 8-inch and 10-inch sewers to provide the additional capacity required. The existing 8-inch and 10-inch interceptor sewers are old, suffer from significant I/I and are in need

of extensive repairs. Based on PDR's evaluation, the most cost-effective alternative would be to replace these lines with 12-inch and 15-inch sewer lines, respectively. The estimated project cost to construct these improvements is \$150,900 (refer to Table 7-27).

2. Lemons Mill Road Pump Station

It is anticipated that in the next three to ten years the Lemons Mill Road area between the bypass and I-75 will be developed. Ball Homes, Inc. has proposed to build 500 to 600 single-family homes on the north side of Lemons Mill Road west of I-75. Development on the south side of Lemons Mill Road is also proposed. Due to the topography of this area, one or more sewage lift stations would be necessary to transport wastewater to WWTP No. 1 or No. 2.

This proposed improvement would provide a pump station in the Clabber Bottoms area to serve approximately 325 acres on both sides of Lemons Mill road (see Figure 6-4). The pump station would have a peak capacity of 0.93 MGD and include 5,200 feet of 8-inch diameter polyethylene force main. The force main would be constructed parallel to I-75, cross North Elkhorn Creek and connect with the existing 21-inch interceptor sewer adjacent to North Elkhorn Creek. This 21-inch gravity sewer flows to pump station No. 9 (Northeast Pump Station). The proposed facilities are sized to handle development of the drainage area to R-2 density. The estimated project cost to construct the Lemons Mill road pump station and force main is \$499,375 (refer to Table 7-28).

3. Whitaker Property Gravity Line to Pump Station No. 9

According to the 1991 Georgetown-Scott County Comprehensive Plan, the area on the north side of Georgetown between I-75, US 25, the proposed bypass and North Elkhorn Creek is proposed for residential development. The southeast corner of this area is already being developed (Whitaker Property). In the next ten years, it is anticipated that a collector street will be built through the Whitaker Property and ultimately link with US 25. This alternative proposes to serve approximately 400 acres in this area with an interceptor sewer ranging from 10 inches in diameter up to 15 inches in diameter. This interceptor sewer would be located along a major drainage ditch in the area and then along North Elkhorn Creek to Pump Station No. 9. The proposed improvements would accommodate full development to R-2 density. Refer to Figure 6-5 for the interceptor sewer location. The estimated project cost to construct the Whitaker property gravity line is \$278,900 (refer to Table 7-29).

4. Elimination of Private Sewer Systems Within Georgetown

There are a number of private gravity sewer collection systems, pump stations and force mains scattered within the current and/or defined expanded service area. GMWSS should seriously consider taking over the management of these systems. Such management is necessary to prevent pollution of the ground and surface waters in the area. Elimination of private systems would allow GMWSS to control connections to the existing system, allow GMWSS to monitor individual sewer customers to prevent the introduction of substances that cannot be treated by the existing facilities, would provide reliable operation and maintenance of the facilities and permits orderly growth of the system. If there is a line blockage or pump failure and subsequent sewage overflow of one of these private systems, the Kentucky Division of Water would most likely hold GMWSS responsible and serve GMWSS with a Notice of Violation.

GMWSS charges the same rate for sewer service whether the customers are on private systems connected to the City of Georgetown or directly on the City's system. The rates charged should cover operation and maintenance of the collection system. If customers on the private systems continue to be responsible for operation and maintenance of a portion of the collection system, they might be entitled to a reduced sewer user charge.

In many cases there would be no capital cost to GMWSS to assume management of these private sewer systems. Elimination of such facilities could be by dedication to and for perpetual operation and maintenance by GMWSS. In other cases, private pump stations and/or gravity sewers could be taken over by construction of laterals or larger pump stations downstream of the private areas. At least three private pump stations and force mains along US 25 near the Marshall Field Airport could be replaced by the proposed gravity interceptor and pump station on the Ford/Bradley Farm. Another private pump station near pump station No. 19 (Walmart "A") could be removed from service by constructing a gravity sewer from this private station to the nearest gravity line (approximately 250 L.F.) serving pump station No. 19.

5. Interceptor Sewer and Pump Station for New Stadium Complex and Lemons Mill Road Development

There is a large portion of undeveloped property located south of North Elkhorn Creek and along McClellan Circle (Southeast Bypass).

This alternative would provide an interceptor sewer running from McClellan Circle to the new pump station on the south side of North Elkhorn Creek and a branch line running from the New Stadium Complex just north of East Main Street (extended). The development of the drainage basin area that would be served by the proposed interceptor sewer and pump station would be R-2 density. The gravity interceptor sewers would be installed from the stadium complex removing the pump station from service and allow the force main from the Lemons Mill development to discharge into the upper end of the interceptor sewer. The new pump station would discharge into the existing 21-inch gravity sewer on the north side of the creek. A new force main would have to be constructed across the creek because the elevation of the existing gravity sewer will not allow for an aerial sewer crossing.

The proposed improvements include 1,500 LF of 12-inch gravity interceptor sewer, 1,000 LF of 10-inch gravity interceptor sewer, 14-inch force main and a pump station (2.88 MGD peak capacity). The total estimated cost for this alternative is \$1,605,625 (refer to Table 7-30). Figure 6-6 shows the location of the proposed improvements.

6. Interceptor Sewer and Pump Station on Ford Bradley Farm

There is a large portion of undeveloped property located west of and along U.S. 25 and is bounded north by the Hambrick Place Subdivision and on the south by the new Southwest By-pass.

This alternative would provide an interceptor sewer running from Pump Station #5 to the new pump station on the north side of the new by-pass. The development of the drainage basin area that would be contained by the proposed bypass (R-2 density) would be served by the interceptor sewer and pump station. The gravity interceptor sewers would be installed from both pump stations no. 3 and no. 5 (to remove them from service) to the new pump station. A new force main from the pump station would be constructed along the by-pass to the pump station and force main discussed in Alternative No. 1 of the Phase I Improvements.

The proposed improvements include 1,000 LF of 15-inch gravity interceptor sewer, 2,100 LF of dual force mains and a pump station (3.17 MGD peak capacity). The total estimated cost for this alternative is \$1,751,500 (refer to Table 7-31). Figure 6-7 shows the location of the proposed improvements.

7. Conversion of Dry Pit Pump Stations to Submersible

There are four pump stations in the GMWSS collection system (No. 2, No. 4, No. 5, and No. 8) that are dry pit type pump stations. The pumps are located underground in a dry well adjacent to the pump station wet well. Performing maintenance on these pumps can be dangerous due to the potential for toxic gases to accumulate in the dry well, which is a "confined space." Safety regulations make it difficult and expensive for maintenance personnel to enter a confined space. GMWSS should consider replacing any older dry pit pump stations with a submerged type which does not require maintenance personnel to enter a confined space.

Upgrading pump station No. 4 is not recommended at this time because it will be taken out of service in the next two years by the construction of the new Hambrick Place pump station. Pump station No. 5 probably could be converted to a submerged pump station using the existing wet well. The cost of converting this pump station would be difficult to justify due to the likelihood of it being taken out of service by the construction of the proposed pump station on the Ford/Bradley Farm in the next three to ten years. Recommended improvements to pump station No. 2 were discussed previously.

PDR Engineers, Inc. recommends that pump station No. 8, located at Shell One Stop and Connector Road, be converted to a submersible pump station. This pump station consists of a five (5) HP pump rated for 175 GPM with an identical pump for standby. The pump station pumps under I-75 using a 6-inch force main to a manhole near the intersection of Gilbert Avenue and Edwards Avenue. The estimated cost to convert pump station No. 8 to a submersible type pump station is \$40,200 (refer to Table 7-32).

D. PHASE III IMPROVEMENTS (11-20 YEARS)

1. Derby Estates Gravity Line and McCracken Creek Pump Station

Two large subdivisions -- Colony and Derby Estates -- are under development in the northwest part of Georgetown along Longlick Road. The Colony subdivision is currently served by pump station No. 24 (Colonial Heights pump station) and an 8-inch diameter force main to WWTP No. 1. The Derby Estates subdivision is served by pump station No. 25 with a separate 10-inch diameter force main to WWTP No. 1.

This project would provide a pump station next to North Elkhorn Creek to serve all of the Colony and Derby Estates subdivisions, as well as additional development of the drainage basin area that would be contained by the proposed bypass (to R-2 density). Gravity interceptor sewers would be installed from both pump stations No. 24 and No. 25 (to remove them from service) to the new pump station. Most of the existing 10-inch force main from pump station No. 25 to WWTP No. 1 could be reused for the new pump station force main, which would save construction of approximately 4,600 L.F. of force main. Approximately 1,800 L.F. of new 10-inch force main would need to be constructed. The proposed improvements include 1,900 L.F. of 10-inch gravity interceptor sewer, 1,800 L.F. of 12-inch gravity interceptor sewer, 1,800 L.F. of 10-inch force main and a pump station (1.44 MGD peak capacity). Refer to Figure 6-8 for the location of the proposed improvements. The estimated project cost to construct these improvements is \$711,125 (refer to Table 7-33).

2. Lower Cane Run Pump Station

The proposed Lower Cane Run Pump Station would be constructed approximately 1,000 feet south of US 460 on the east side of the new bypass. This pump station would serve the existing Canewood subdivision, Western Elementary School and the drainage area bound by the bypass, US 460 and US 62. Two existing pump stations (Canewood No. 17 and Western Elementary No. 18) and one future pump station for Canewood subdivision would be taken out of service by these proposed improvements. This project would include construction of approximately one mile of 8-inch gravity sewer, 1,500 L.F. of 10-inch gravity sewer, 14,500 L.F. of 10-inch force main and a pump station with peak capacity of 1.26 MGD. Refer to Figure 6-9 for the location of pump station, force main and interceptor sewers. The estimated project cost to construct these improvements is \$1,156,250 (refer to Table 7-34).

E. FUTURE ALTERNATIVES

1. Eliminate Kentucky Horse Park WWTP

This treatment plant is located approximately two miles beyond Georgetown's Urban Services Boundary and is also outside the 201 Facilities Planning Area. We do not anticipate that Georgetown's Urban Services Boundary will expand to include the Horse Park. Alternatives to continued operation of this sewage plant would include building a pump station

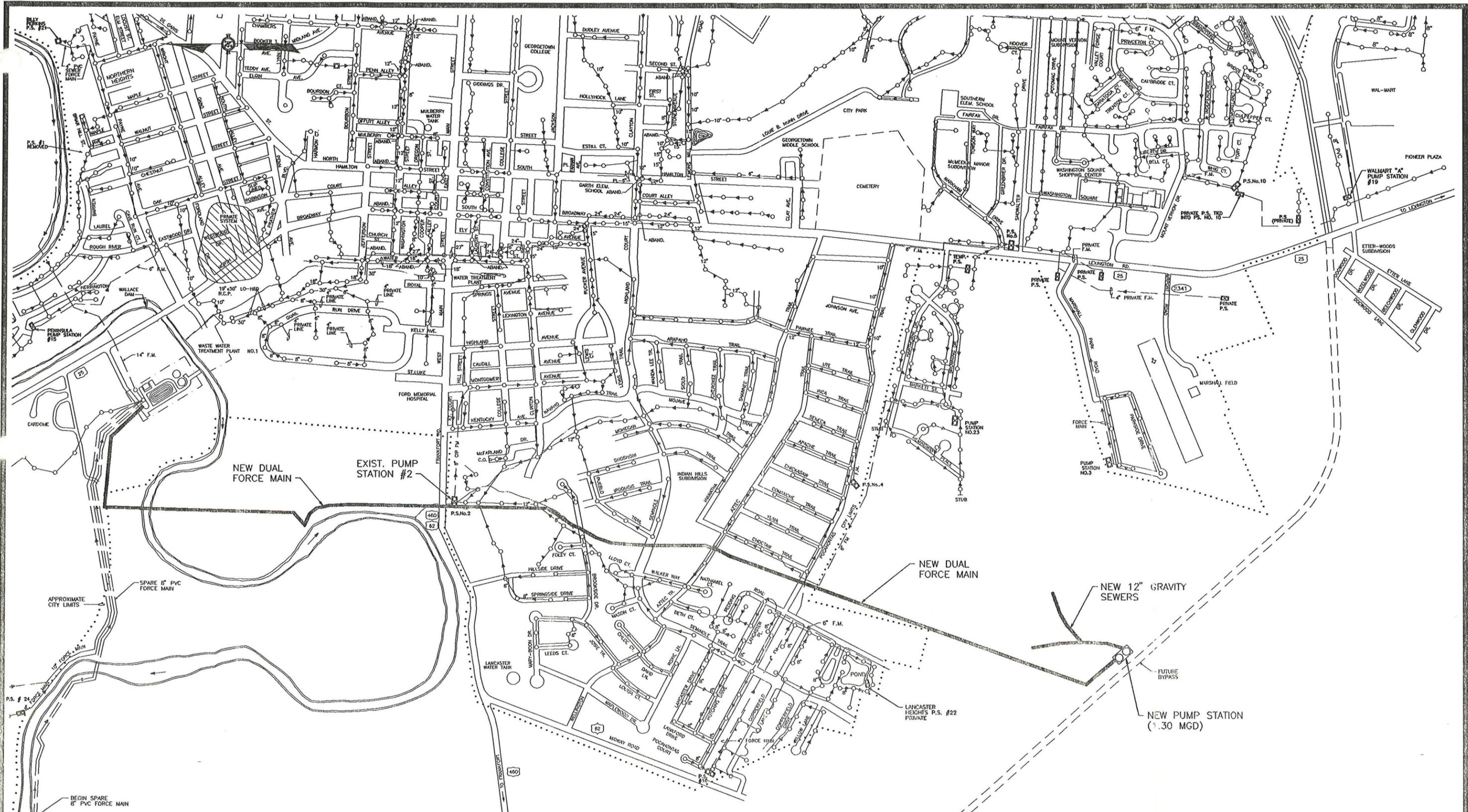
and force main to transport the wastewater to GMWSS WWTP No. 1 (almost six miles), WWTP No. 2 (over 8 miles) or to the Lexington-Fayette Urban County Government's (LFUCG) Lower Cane Run Pump Station (approximately 3½ miles). Pumping the Horse Park's wastewater to the LFUCG's system appears to be the most logical alternative. Further evaluation of the Horse Park's sewage collection and treatment alternatives is beyond the scope of this 201 Facilities Plan.

2. Direct Delaplain Wastewater to WWTP No. 2

The Delaplain Disposal Company WWTP is in excellent condition and we anticipate that the facility will remain in service for the next 20 years and beyond. The plant is not expected to reach average daily flows exceeding 90% of design capacity in the next 20 years. When the average plant flow does reach 90% of design capacity, it will be necessary to evaluate alternatives for plant expansion or wastewater transportation to WWTP No. 2. If GMWSS should want to take over sewer service for this area at some point in the future, it could operate the system as it is now or construct a pump station and force main to transport the wastewater to WWTP No. 2, which is approximately two miles to the southeast.

3. Spindletop WWTP

The Spindletop WWTP (Package Plant) is located off of Lisle Road in southern Scott County just inside the 201 Facilities Planning Area. The plant serves Spindletop and Ponderosa Park trailer parks. The plant is located directly over the main stem of the Royal Springs Aquifer. Plant discharge is to an unnamed tributary of Cane Run Creek. If flow to this plant reaches 90% of design capacity or the plant fails to meet its discharge permit, we recommend that a pump station and force main be constructed to transport the wastewater treated by this plant to GMWSS WWTP #1.



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201 FACILITIES PLAN
 UPDATE
 GEORGETOWN, KENTUCKY
 PDR ENGINEERS, INC.
 LEXINGTON, KENTUCKY

RELOCATION OF HAMBRICK PLACE PUMP STATION AND MANIFOLD FORCE MAIN		
DRAWN	DATE	SCALE
JLR	JAN, 1997	1" = 1000'

FIGURE
 6-1

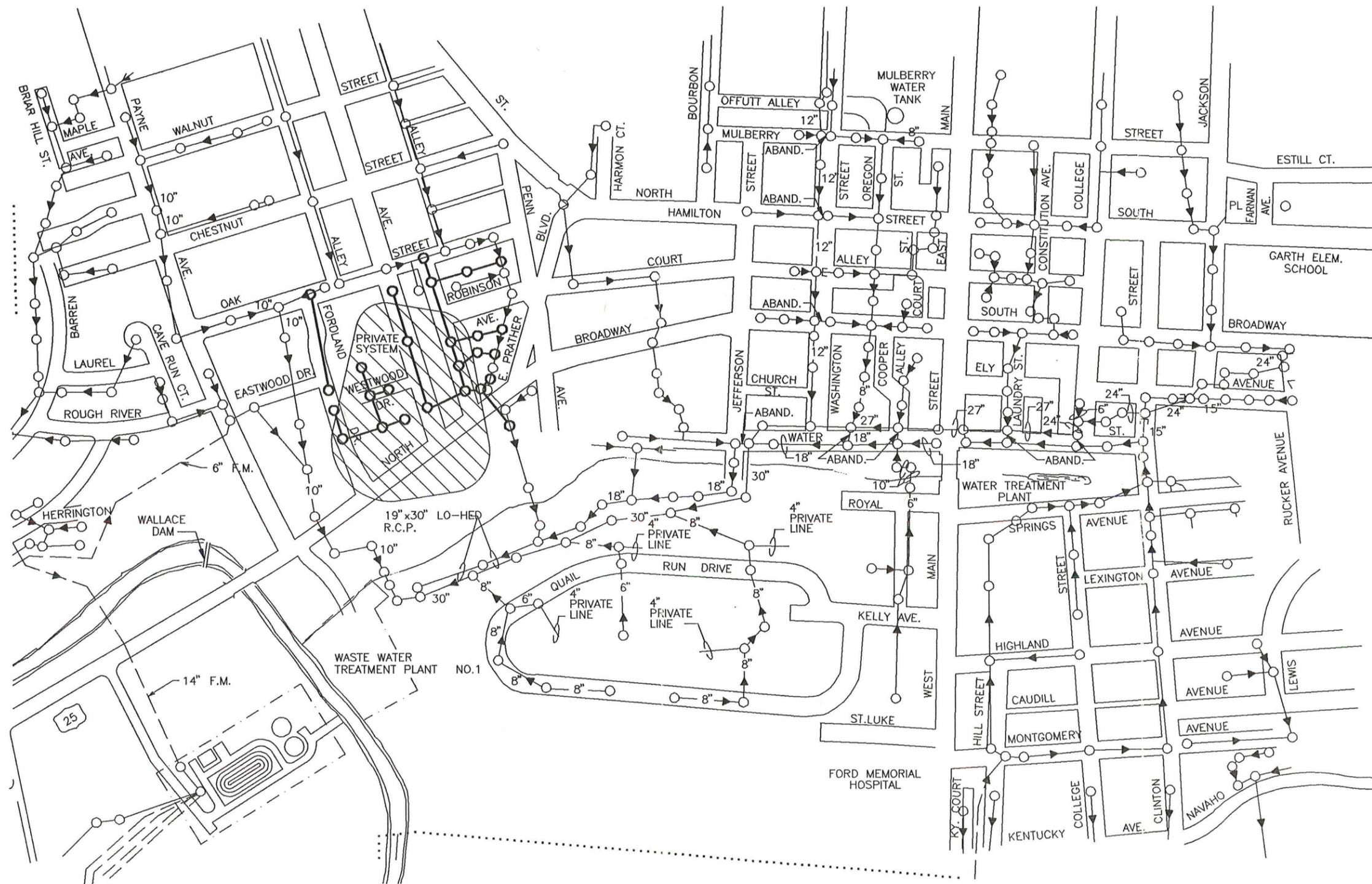


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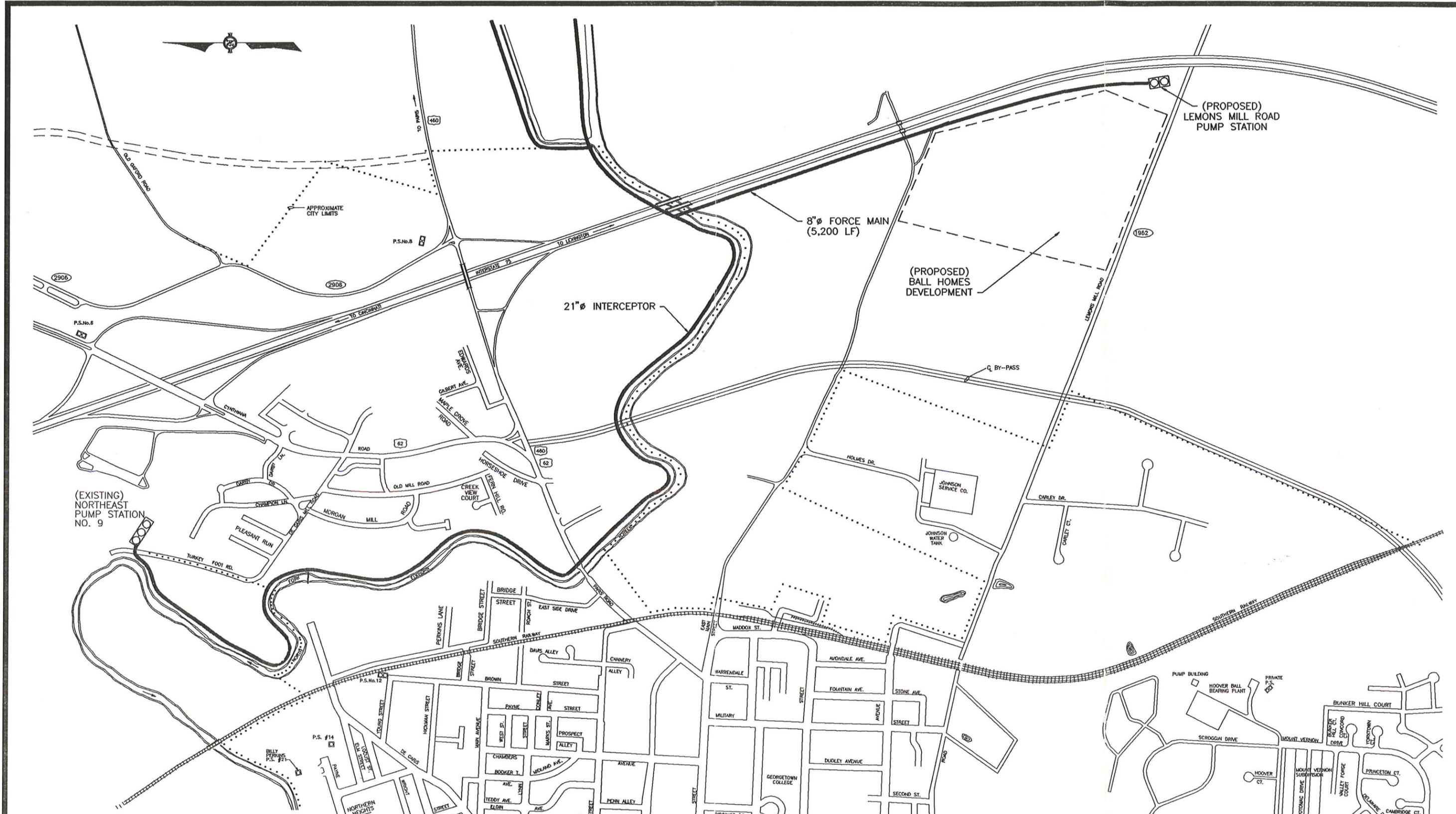
201 FACILITIES PLAN
 UPDATE
 GEORGETOWN, KENTUCKY
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MT. VERNON GRAVITY SEWER REPLACEMENT		
DRAWN JLR	DATE JAN, 1997	SCALE 1"=1000'

FIGURE
6-2



 Lexington • Cincinnati • Louisville • Memphis • Huntsville 800 Corporate Dr. • Lexington, Kentucky 40503 • (606) 223-8000	201 FACILITIES PLAN UPDATE GEORGETOWN, KENTUCKY		ROBINSON AREA GRAVITY SEWER REPLACEMENT		FIGURE 6-3
	PDR ENGINEERS, INC. LEXINGTON, KENTUCKY		DRAWN JLR	DATE JAN, 1997	

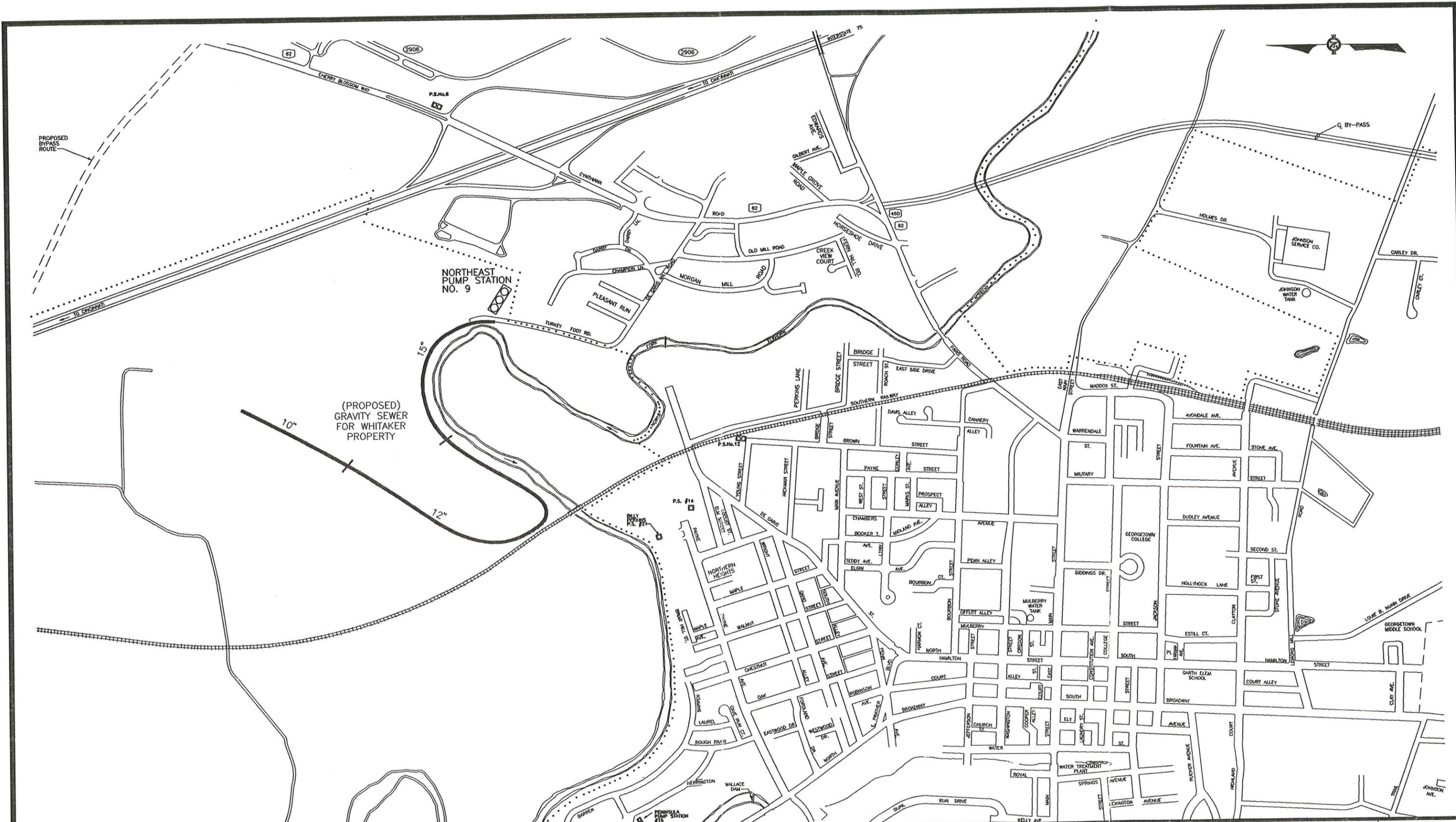


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201 FACILITIES PLAN
 UPDATE
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LEMONS MILL ROAD
 PUMP STATION
 DRAWN: JLR
 DATE: JAN, 1997
 SCALE: 1" = 1000'

FIGURE
 6-4



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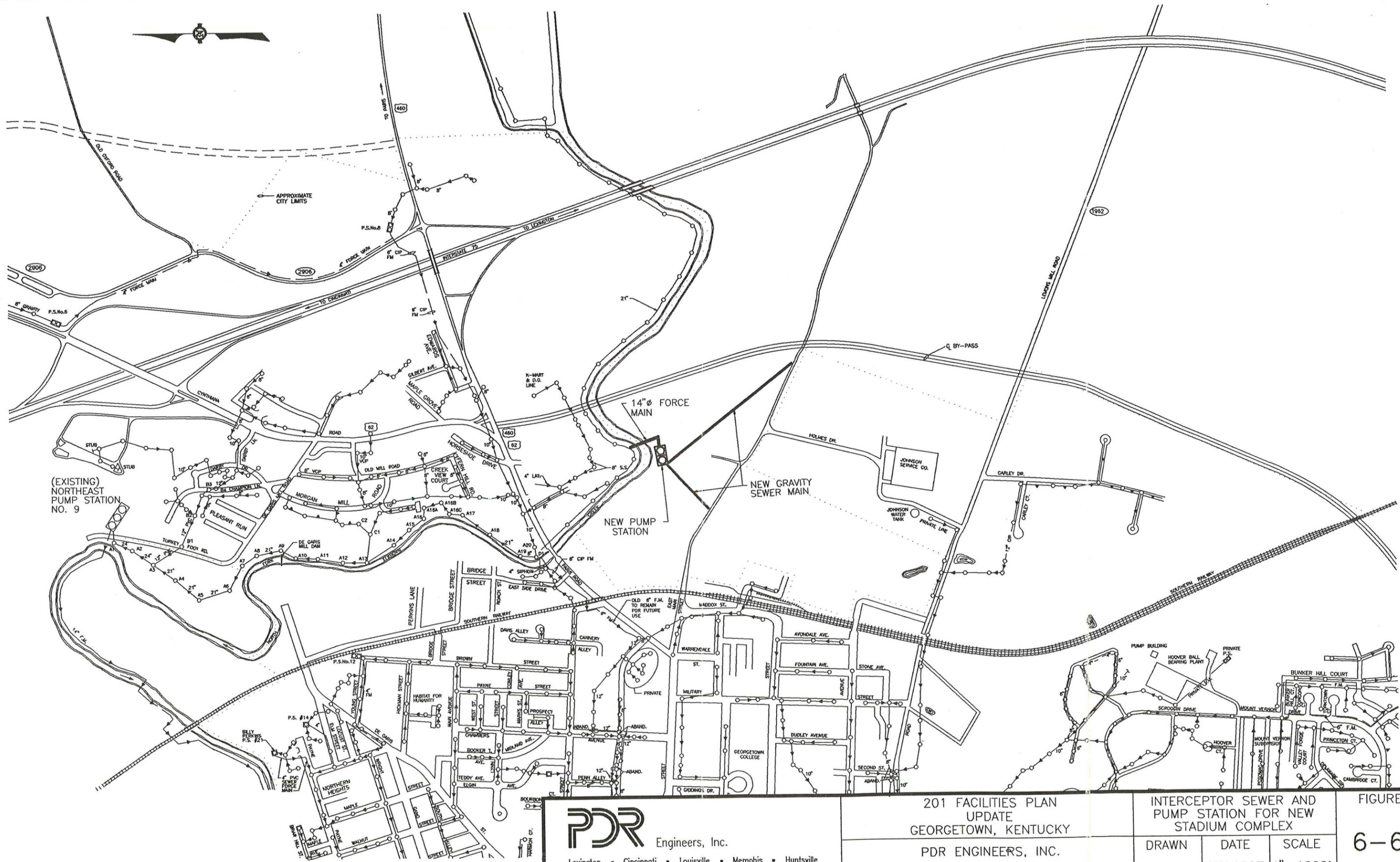
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 UPDATE
 GEORGETOWN, KENTUCKY

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 LEXINGTON, KENTUCKY

WHITAKER PROPERTY
 GRAVITY LINE TO
 PUMP STATION NO. 9

DRAWN	DATE	SCALE
JLR	JAN, 1997	1" = 1000'

FIGURE
 6-5



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201 FACILITIES PLAN
 UPDATE
 GEORGETOWN, KENTUCKY
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 LEXINGTON, KENTUCKY

INTERCEPTOR SEWER AND PUMP STATION FOR NEW STADIUM COMPLEX		
DRAWN	DATE	SCALE
JLR	JAN, 1997	1" = 1000'

FIGURE
6-6

96066/1166-4.DWG



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201 FACILITIES PLAN
 UPDATE
 GEORGETOWN, KENTUCKY

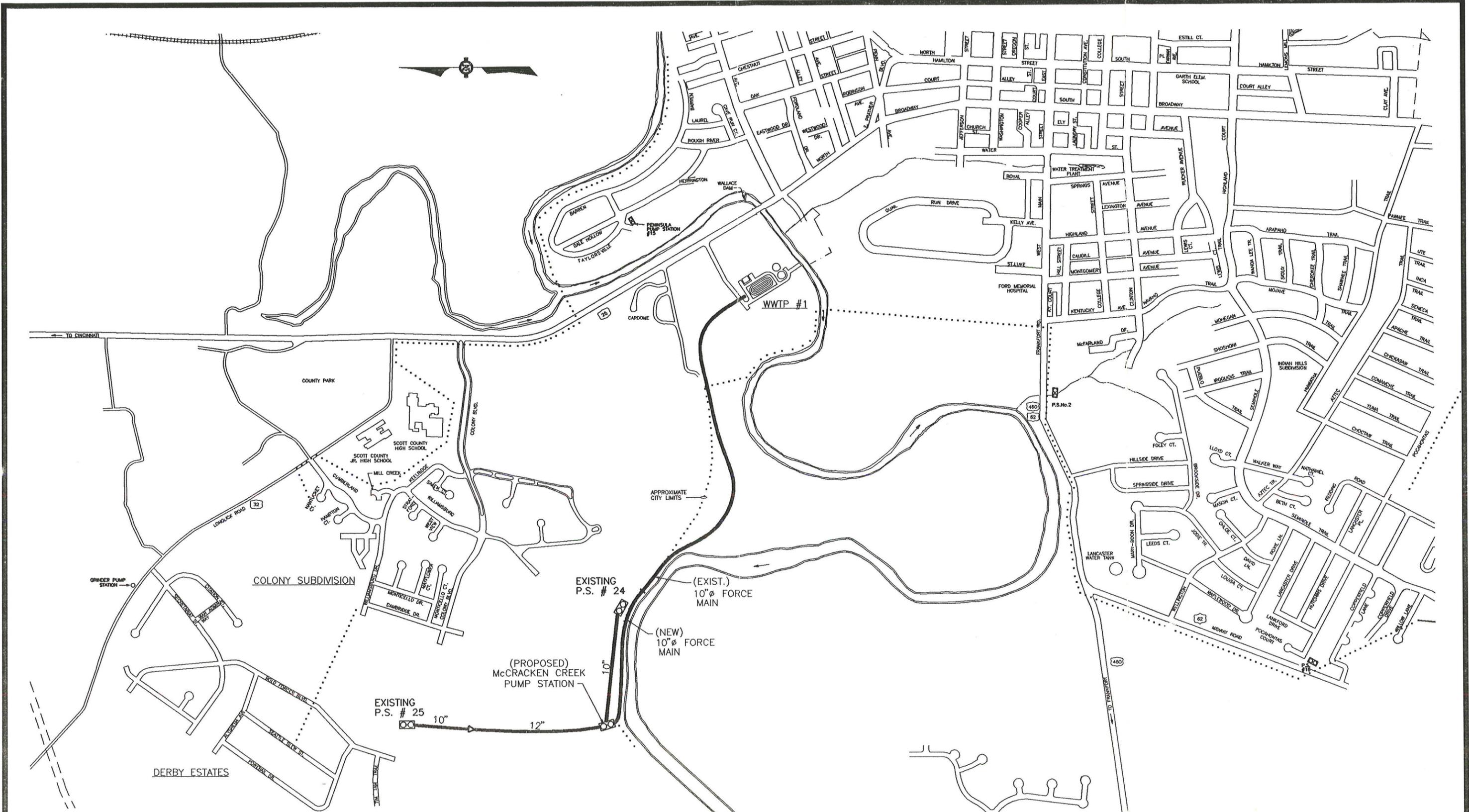
PDR ENGINEERS, INC.
 LEXINGTON, KENTUCKY

INTERCEPTOR SEWER AND
 PUMP STATION ON FORD
 BRADLEY FARM

DRAWN	DATE	SCALE
JLR	JAN, 1997	1" = 1000'

FIGURE

6-7

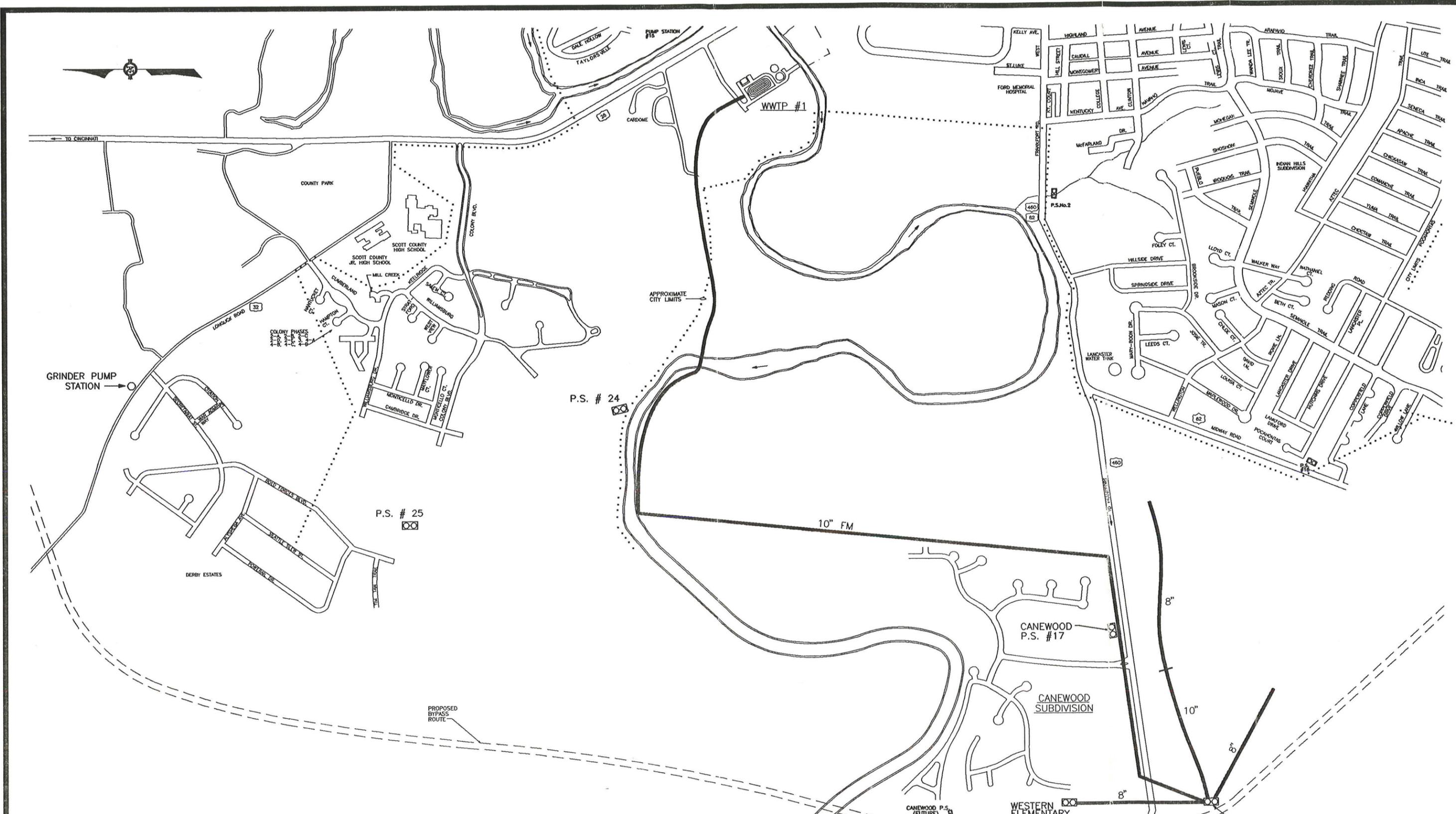


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201 FACILITIES PLAN
 UPDATE
 GEORGETOWN, KENTUCKY
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DERBY ESTATES GRAVITY LINE
 &
 McCRACKEN CRK. PUMP STA.
 DRAWN: JLR
 DATE: JAN, 1997
 SCALE: 1" = 1000'

FIGURE
 6-8



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201 FACILITIES PLAN UPDATE GEORGETOWN, KENTUCKY		LOWER CANE RUN PUMP STATION		FIGURE 6-9
PDR ENGINEERS, INC. LEXINGTON, KENTUCKY		DRAWN JLR	DATE JAN, 1997	

(PROPOSED)
LOWER CANE RUN
PUMP STATION

CHAPTER 7
COST ANALYSIS

A. GENERAL

Various improvements to the two wastewater treatment plants and the collection and conveyance system were developed in Chapters 5 and 6. In this chapter, detailed estimates of construction and project costs are presented. In addition, a cost-effective analysis was performed on the disinfection alternatives at WWTP No. 2.

B. WASTEWATER TREATMENT

1. WWTP No. 1 Improvements - Phase I

a. Install Ditch Aerators/Eliminate RBCs

To eliminate the existing RBC's from the treatment system, the oxidation ditch system treatment capacity must be increased from an average design flow of 3.0 MGD to 4.5 MGD and a peak flow capacity from 9.0 MGD to 13.5 MGD. This only requires the installation of two new 50 HP aerators to provide the necessary increase in oxygen supply. The size of the oxidation ditch and final clarifiers is sufficient to allow this capacity increase.

A preliminary estimated construction and project cost is shown in Table 7-1.

TABLE 7-1 ESTIMATED PROJECT COST ELIMINATE RBCs	
ITEM	CONSTRUCTION COST
New Aerators	\$200,000
Electrical	<u>21,500</u>
Total	221,500
Project Development (25%)*	<u>55,400</u>
Total Project Cost	\$276,900

*Includes construction cost contingency, engineering services, legal and administrative services.

b. New Force Main Discharge Chamber

As discussed in Chapter 5, a new concrete chamber would be constructed to accept all the pump station force mains that discharge to WWTP No. 1. The four existing force mains would be rerouted from the existing manhole to the new chamber. The chamber would be large enough to accommodate any future force mains and would contain an inlet baffle wall to dampen the inlet discharge velocities. The chamber would discharge by gravity to the 24" influent sewer through an 18" pipe connection.

Refer to Table 7-2 for the estimated cost for this work.

TABLE 7-2 ESTIMATED PROJECT COST NEW FM DISCHARGE CHAMBER	
ITEM	CONSTRUCTION COST
Concrete Chamber	\$7,000
Piping	15,000
Miscellaneous Metals	4,000
Site Work	<u>2,000</u>
Total	\$28,000
Project Development (25%)	<u>7,000</u>
Total Project Cost	\$35,000

c. New Belt Filter Press and Feed Pumps

As discussed in Chapter 5, installation of a new Belt Filter Press (BFP) is recommended in order to provide a more efficient and more reliable sludge dewatering operation. The new BFP would be installed in the existing Sludge Dewatering Building in the area reserved for a third BFP. In addition, a new polymer preparation and feed system would be provided. The two existing BFP's would be retained as a backup. Two new BFP feed pumps would also be provided.

Refer to Table 7-3 for the estimated cost to install the new BFP.

**TABLE 7-3
ESTIMATED PROJECT COST
BELT FILTER PRESS AND FEED PUMPS**

ITEM	CONSTRUCTION COST
Belt Filter Press (2 meter)	\$210,000
Feed Pumps	50,000
Polymer Equipment	31,000
Concrete Curb	1,000
Piping	4,000
Electrical	<u>25,000</u>
Total	\$321,000
Project Development (25%)	<u>80,250</u>
Total Project Cost	\$401,250

d. New Concrete Pad for Sludge Roll-Off Container

A new concrete pad with drain would be provided for storage of the second sludge cake roll-off container. Total estimated project cost for this item is \$6,250.

e. Provide Additional Sewer Line from Sludge Dewatering Building

A new 8-inch diameter gravity sewer would be installed from the truck loading bay floor drain to the wetwell of the Plant Pump Station. Total estimated project cost for this sewer line is \$15,000.

2. WWTP No. 1 Improvements - Phase II

a. Upgrade Mechanical Screen and Provide Compactor

As discussed in Chapter 5, once the RBCs and static screens are removed from service, it is recommended that the existing mechanical screen elements with 15 mm opening be replaced with fine mechanical screen elements with 6 mm opening and a screening compactor system be provided.

Refer to Table 7-4 for the estimated cost for these improvements.

TABLE 7-4 ESTIMATED PROJECT COST UPGRADE MECHANICAL SCREEN AND PROVIDE COMPACTOR	
ITEM	CONSTRUCTION COST
Upgrade Mechanical Screen	\$ 40,000
Compactor System	<u>30,000</u>
Total	\$ 70,000
Project Development (25%)	<u>17,500</u>
Total Project Cost	\$ 87,500

b. New Belt Filter Press

A new BFP would be installed to supplement the unit installed in Phase I. To provide room, the old original units would be removed. Refer to Table 7-5 for the estimated cost to install the new BFP.

TABLE 7-5 ESTIMATED PROJECT COST NEW BELT FILTER PRESS	
ITEM	CONSTRUCTION COST
Belt Filter Press (2 meter)	\$210,000
Polymer Equipment Improvements	10,000
Piping Modifications	1,000
Electrical	<u>1,000</u>
Total	\$222,000
Project Development (25%)	<u>55,500</u>
Total Project Cost	\$277,500

c. Convert Clarifier to New Chlorine Contact

Once the RBCs are taken out of service in Phase I, the existing 100 feet diameter final clarifier can be connected to a chlorine contact basin. The existing chlorine basin would be

converted to a dechlorination contact basin. The effluent weir trough would be removed to lower the operating level in the basin to prevent surcharging of the existing clarifier weir trough at the peak flow of 13.5 MGD. The existing overflow weir in the tertiary filter bypass box would need to be replaced with a stop plate.

See Table 7-6 for the estimated project cost.

TABLE 7-6 ESTIMATED PROJECT COST CONVERT CLARIFIER TO CHLORINE CONTACT	
ITEM	CONSTRUCTION COST
Remove Effluent Weir Trough (Existing Chlorine Basin)	\$5,000
Replace Weir with Stop Plate	<u>500</u>
Total	\$5,500
Project Development (25%)	<u>1,400</u>
Total Project Cost	\$6,900

d. Convert Anaerobic Digesters to Aerobic

The conversion of Digester No. 1 and No. 2 to aerobic digesters would involve removal of the existing steel covers and sludge recirculation piping inside the tanks. In addition, the sludge heating boilers, sludge recirculation pumps and associated piping and controls would be removed from the Digester Control Building.

The new aeration/mixing system for Digester No. 1 would consist of one 50 HP air compressor and four removable coarse bubble diffuser assemblies. The air compressor would be located in the existing boiler room.

The aeration/mixing system for Digester No. 2 would include a new 20 HP air compressor and three diffuser assemblies. A new sludge transfer pump would be provided to replace one of the existing plunger pumps.

Currently, hot water produced by the sludge heating boilers is used to heat the Sludge Dewatering Building, the Digester Control Building and the Laboratory Building. When

the digester heating system is decommissioned, a residential type boiler would be installed to maintain the hot water heating system for the buildings.

Refer to Tables 7-7 and 7-8 for the estimated cost to convert the existing digesters to aerobic units.

TABLE 7-7 ESTIMATED PROJECT COST CONVERT DIGESTER NO. 1 TO AEROBIC	
ITEM	CONSTRUCTION COST
Remove Existing Digester Equipment	\$ 30,000
Aeration Compressor	15,000
Diffuser Assemblies	15,000
Residential Boiler	11,000
Piping, Including Decanter	25,000
Electrical	<u>26,000</u>
Total	\$122,000
Project Development (25%)	<u>30,500</u>
Total	\$152,500

**TABLE 7-8
ESTIMATED PROJECT COST
CONVERT DIGESTER NO. 2 TO AEROBIC**

ITEM	CONSTRUCTION COST
Remove Existing Digester Equipment	\$ 20,000
Aeration Compressor	8,000
Diffuser Assemblies	10,000
Transfer Pump	25,000
Piping, Including Decanter	23,000
Electrical	<u>26,000</u>
Total	\$ 112,000
Project Development (25%)	<u>28,000</u>
Total	\$ 140,000

e. New Plant Drainage Pump Station

As discussed in Chapter 5, due to the age of the existing pump station equipment and for safety reasons, it is recommended that a new submersible type drainage pump station be provided. See Table 7-9 for the estimated project cost.

**TABLE 7-9
ESTIMATED PROJECT COST
NEW PLANT DRAINAGE PUMP STATION**

ITEM	CONSTRUCTION COST
Site Work	\$ 10,000
Wetwell and Valve Vault	20,000
Pumps	25,000
Electrical and Controls	10,000
Piping	<u>10,000</u>
Total	\$ 75,000
Project Development (25%)	<u>18,750</u>
Total	\$ 93,750

3. WWTP No. 2 Improvements - Phase I

a. New Disinfection System

A present worth analysis was performed on alternatives based on a 20-year period with an interest rate of 8%. Present worth cost is derived by converting to present day dollars all the costs incurred over the planning period. These costs include capital or project cost (i.e., construction cost, legal and administrative costs, engineering fees and contingency costs), annual operating, maintenance and replacement costs and salvage value of facilities at the end of the planning period. A present worth analysis allows selection of the most economical treatment system.

The capital cost and project cost were developed for the alternatives. The construction cost was developed based on pricing from manufacturers for major equipment items, preliminary estimates of quantities and unit pricing used on recent projects. The estimated construction and project costs for the UV and chlorination/dechlorination alternatives are presented in Tables 7-10 and 7-11. The ozonation alternative consists of maintaining the system currently in use. Consequently, there are no capital improvements required with this alternative.

A salvage value cost was estimated for each alternative based on a 20-year life for equipment and 50-year life for structures and piping. A breakdown of the estimated salvage value for the three alternatives is presented in Tables 7-12, 7-13 and 7-14.

Operation and maintenance costs were prepared for the alternatives. These costs include manpower, utilities, maintenance and repairs for each of the processes.

The estimated O&M costs for the three disinfection alternatives are shown in Tables 7-15, 7-16 and 7-17.

The total present worth cost for the three alternatives are summarized in Table 7-18. The UV disinfection alternative has the lowest present worth cost.

TABLE 7-10 ESTIMATED PROJECT COST UV DISINFECTION	
ITEM	CONSTRUCTION COST
UV Equipment	\$156,600
Concrete Channel	7,900
Site Piping/Site work	21,100
Miscellaneous Metals	5,600
Electrical	<u>15,000</u>
Subtotal Construction	\$206,200
Project Development (25%)	<u>51,600</u>
Total Project Cost (UV System Only)	\$257,800

**TABLE 7-11
ESTIMATED PROJECT COST
CHLORINATION/DECHLORINATION DISINFECTION**

ITEM	CONSTRUCTION COST
Chemical Equipment	\$ 75,000
Contact Basin	187,000
Building Modifications	50,000
Site Piping/Site Work	25,000
Miscellaneous Metals	10,000
Electrical	<u>5,000</u>
Subtotal Construction	\$352,000
Project Development (25%)	<u>88,000</u>
Total Project Cost	\$440,000

**TABLE 7-12
ESTIMATED SALVAGE VALUE
UV DISINFECTION**

ITEM	SALVAGE VALUE
UV Equipment	\$ 0
Channel	4,700
Piping	<u>8,000</u>
Total	\$12,700
Present Worth (PWF = .2145 @ 8%)	\$ 2,700

TABLE 7-13 ESTIMATED SALVAGE VALUE CHLORINATION/DECHLORINATION DISINFECTION	
ITEM	SALVAGE VALUE
Chemical Equipment	\$ 0
Contact Basin	112,000
Building Modifications	30,000
Piping	<u>9,000</u>
Total	\$151,100
Present Worth	\$ 32,400

TABLE 7-14 ESTIMATED SALVAGE VALUE OZONE DISINFECTION	
ITEM	SALVAGE VALUE
Ozone Equipment	\$ 0
Contact Basin	19,900
Building	29,000
Piping	<u>6,000</u>
Total	\$54,100
Present Worth	\$11,800

TABLE 7-15 ESTIMATED ANNUAL O, M & R COST UV DISINFECTION	
ITEM	O, M & R COST
Power*	\$5,400
Maintenance Labor	2,400
Lamp Replacement	<u>5,300</u>
Total	\$13,100
Present Worth (PWF = 9.8181 @ 8%)	\$128,600

*Based on \$.04/kwh.

TABLE 7-16 ESTIMATED ANNUAL O, M & R COST CHLORINATION/DECHLORINATION DISINFECTION	
ITEM	O, M & R COST
Chemicals	\$ 23,000
Maintenance Labor	<u>3,000</u>
Total	\$ 26,000
Present Worth	\$255,300

TABLE 7-17 ESTIMATED ANNUAL O, M & R COST OZONE DISINFECTION	
ITEM	O, M & R COST
Power	\$34,600
Replacement Parts	7,400
Maintenance Labor	1,400
Chemicals	<u>1,200</u>
Total	\$44,600
Present Worth	\$437,900

TABLE 7-18 SUMMARY OF PRESENT WORTH COST				
ALTERNATIVE	PROJECT COST	SALVAGE VALUE	O, M & R	TOTAL PRESENT WORTH
UV	\$257,800	(\$2,700)	\$128,600	\$383,700
Chlorination/Dechlorination	440,000	(32,400)	\$255,300	662,900
Ozone	0	(11,800)	437,900	426,100

Selection of the most viable alternative is done by comparing or ranking the alternatives in accordance with their relative impact with respect to monetary cost and pertinent non-monetary factors. Evaluation criteria, both economic and non-economic, used to rank the alternatives are as follows:

- Environmental Impact -- short- and long-term impacts on the environment
- Flexibility -- ability to adapt to changing conditions
- Reliability -- a measure of performance dependability
- Operability -- ease of operation
- Energy Use -- energy conservation
- Present Worth -- capital, annual O&M and salvage value are included

- Constructability -- ease with which the alternatives can be constructed and phased into operation.

These seven evaluation criteria were used to provide a quantitative score for each of the alternatives. The anticipated performance of a particular alternative and the relative importance of specific evaluation criteria is considered by assigning a numerical value to each alternative. The alternative that achieves the highest ranking is deemed to be the most viable.

A value of 1 to 3 was used on anticipated success of the alternative relative to the specific evaluation criteria -- 1 represents the least favorable and 3 represents the most favorable. The seven evaluation criteria were assigned a weight factor based on relative importance. A total of 100 points was distributed among the seven criteria. A score for each alternative was calculated by multiplying the weight factor by the numerical value. Table 7-19 presents the selection analysis for the alternatives.

TABLE 7-19 DISINFECTION SELECTION ANALYSIS							
EVALUATION CRITERIA	WEIGHT FACTOR	UV		CHLORINATION/ DECHLORINATION		OZONE	
		VALUE	SCORE	VALUE	SCORE	VALUE	SCORE
Environmental Impact	13	3	39	1	13	2	26
Flexibility	14	1	14	3	42	2	28
Operability	12	3	36	2	24	1	12
Energy Use	11	2	22	3	33	1	11
Present Worth Cost	22	3	66	1	22	2	44
Constructability	9	2	18	1	9	3	27
Reliability	19	2	38	3	57	1	38
Total Score	100		233		200		186
Rank			1		2		3

In addition to being the most cost-effective option, the UV alternative received the highest score and, thus, the number one ranking. Therefore, UV disinfection is the recommended choice.

b. Redirect Pump Station No. 9 Discharge

To redirect flow from Pump Station No. 9 to WWTP No. 2 would involve replacing two of the existing pumps with two new 700 gpm units with the greater discharge head capacity necessary to pump to WWTP No. 2. Approximately 15,500 feet of 8" and 14" force main would be required, along with some piping modifications inside the valve vault. Table 7-20 presents the estimated cost to implement this work.

TABLE 7-20 ESTIMATED PROJECT COST REDIRECT PUMP STATION NO. 9	
ITEM	CONSTRUCTION COST
Pump	\$ 60,000
Valve Vault Modifications	5,300
8" Force Main	294,000
14" Force Main	363,000
Electrical	<u>60,000</u>
Total	\$782,300
Project Development (25%)	<u>195,600</u>
Total Project Cost	\$977,900

c. New Influent Screening

A new three feet wide automatic self-cleaning mechanical screen would be installed in the existing Preliminary Treatment Building. This would allow the plant to screen up to 6 MGD peak flow. The existing concrete channel would be modified to accept the new screen. The existing Parshall flume would be removed and replaced with a new 9" flume with greater flow capacity. The existing 8" pipe from the Preliminary Treatment Building to the oxidation ditch influent distribution box would be replaced with approximately 400 feet of 24" diameter pipe. During construction, the influent sanitary waste would be diverted through the industrial waste screen channel.

Refer to Table 7-21 for the estimated project cost.

**TABLE 7-21
ESTIMATED PROJECT COST
INFLUENT SCREENING, ACID FEED, TE PUMPS,
MIXER, DPS DISCHARGE**

ITEM	CONSTRUCTION COST
Influent Screening:	
New Screen	\$ 66,000
Remove Existing Screen, Flume, Modify Channel	12,000
New Parshall Flume	4,000
Piping	39,000
Miscellaneous Metals	1,600
Upgrade to Acid Feed System	30,000
Replace TE Pumps	40,000
New Ditch Influent Mixer	20,000
DPS Discharge Connection	15,000
Electrical	<u>30,000</u>
Total	\$257,600
Project Development (25%)	<u>64,400</u>
Total Project Cost	\$322,000

d. Acid Feed Improvements

The acid feed system would be upgraded to include a new acid tank, an access road to the acid tank and new effluent aerators (for mixing). The estimated cost for these improvements is included in Table 7-21.

e. Replace Thickener Effluent Pumps

The two TE pumps would be replaced with larger capacity units. The estimated cost is included in Table 7-21.

f. New Ditch Effluent Mixer

A new mixing unit would be installed in the oxidation ditch influent distribution box. The estimated cost is included in Table 7-21.

g. Drain Pump Station Discharge

An alternate pump discharge pipe connection would be made to the existing 12" post-aeration return line. The estimated cost is included in Table 7-21

h. Modify Oxidation Ditch Aerators

The motor controls for the four existing 60 HP aerators would be upgraded by installing new VFDs. The new VFDs would be mounted in a new floor mounted enclosure located in the existing Operations Building.

Table 7-22 shows the estimated cost to install the new VFDs.

TABLE 7-22 ESTIMATED PROJECT COST MODIFY OXIDATION DITCH AERATORS	
ITEM	CONSTRUCTION COST
New VFDs	\$ 63,000
Electrical	<u>18,000</u>
Total	\$ 81,000
Project Development (25%)	<u>20,300</u>
Total Project Cost	\$101,300

i. Maintenance Building

A new, metal type building would be constructed to provide room for equipment maintenance and storage and to house the proposed UV disinfection system. In addition, a new compressor would be provided to allow the existing ozone disinfection system to be used as an emergency backup to the UV system. The estimated cost of these improvements is shown in Table 7-23.

TABLE 7-23 ESTIMATED PROJECT COST MAINTENANCE BUILDING	
ITEM	CONSTRUCTION COST
Metal Building, Complete	\$144,000
Concrete	15,000
Electrical	20,000
Site Work	20,000
Compressor (Standby Ozone System)	<u>60,000</u>
Total	\$259,000
Project Development (25%)	<u>64,800</u>
Total Project Cost	\$323,800

4. WWTP No. 2 Improvements - Phase II: Modification to Pump Station No. 9

One of the 700 gpm pumps installed in Phase I, as well as the old 1200 gpm unit, would be replaced with new 1200 gpm units capable of pumping to WWTP No. 2.

The estimated cost for replacing the existing pump is shown on Table 7-24.

TABLE 7-24 ESTIMATED PROJECT COST MODIFICATIONS TO PUMP STATION NO. 9	
ITEM	CONSTRUCTION COST
Pump	\$66,000
Electrical	<u>25,000</u>
Total	\$91,000
Project Development (25%)	<u>22,800</u>
Total Project Cost	\$113,800

C. COLLECTION AND CONVEYANCE SYSTEM

1. Phase I Improvements (0-2 Years)

a. Pump Station No. 2 Upgrade - Relocation of Hambrick Place Pump Station and Manifold Force Main System

This improvement proposes to replace the existing pumps at Pump Station No. 2 with new and more efficient pumps, relocate the existing Hambrick Place pump station south to the proposed southwest bypass and construct a dual force main system to WWTP No. 1

The relocated Hambrick Place pump station would allow for the elimination of two existing pump stations (Pump Station No. 4 and No. 22). The proposed pump station would have a peak capacity of 1.3 MGD and include 14,700 feet of 12-inch diameter force main. In addition, a 12-inch diameter gravity interceptor sewer would be built to connect the area with the existing sewer systems.

A new dual force main system (manifold system) is recommended to be constructed from the relocated Hambrick Place pump station along the existing electrical transmission line's easement to the group of existing force mains north of North Elkhorn Creek located on the Cardome property. This force main system will consist of two force mains ranging in size from parallel 8-inch pipe to parallel 12- and 18-inch pipes.

TABLE 7-25 ESTIMATED PROJECT COST PUMP STATION NO. 2 UPGRADE - RELOCATION OF HAMBRICK PLACE PUMP STATION	
ITEM	CONSTRUCTION COST
2,600 LF of 12-inch Gravity Sewer Main	\$ 130,000
14,700 LF of Dual Force Main	588,000
Upgrade Pump Station No. 2	55,000
New Pump Station (1.30 MGD)	<u>518,400</u>
Construction Cost	1,291,400
Project Development (25%)	<u>322,850</u>
Total Estimated Project Cost	\$1,614,250

b. Robinson Area Sewer Replacement

This improvement is recommended to replace the present private sewer system, which has problems due to shallow sewers that are too small and suffer from significant I/I. The project would provide 4,200 linear feet of new gravity mains and approximately 6,000 linear feet of PVC service laterals. Design is complete for this project (plans and specifications were prepared in February 1989). Refer to Table 7-26 for the estimated cost to replace the Robinson Area Sewers.

TABLE 7-26 ESTIMATED PROJECT COST ROBINSON AREA SEWER REPLACEMENT	
ITEM	ESTIMATED COST
6,000 LF of 4" Service Lateral	\$ 66,000
80 Lateral Connections to Existing House Service	28,000
4,200 LF of 8" Gravity Sewer Main	100,700
Manhole Repair and Construction	70,800
Sidewalk, Driveway and Pavement Replacement	151,000
Miscellaneous Items	<u>57,400</u>
Construction Cost	\$473,900
Project Development (18%)*	<u>85,300</u>
Total Estimated Project Cost	\$559,200

*Includes construction cost contingency, legal and administrative services.

2. Phase II Improvements (3-10 Years)

a. Mt. Vernon Gravity Sewer Replacement

As discussed in Chapter 6, growth in south Georgetown has loaded the Mt. Vernon Gravity Sewer to capacity. To alleviate the flow limitation in this part of the collection system, larger gravity sewers would be installed to replace old, deteriorated sections of interceptors. This project would involve installation of 350 linear feet of 12" gravity sewer and 2,200 linear feet

of 15" gravity sewer from Scroggin Drive to Lemons Mill Road. Refer to Table 7-27 for the estimated cost for this work.

TABLE 7-27 ESTIMATED PROJECT COST MT. VERNON GRAVITY SEWER REPLACEMENT	
ITEM	ESTIMATED COST
350 LF of 12" Gravity Sewer Main	\$ 15,000
2,200 LF of 15" Gravity Sewer Main	<u>105,700</u>
Construction Cost	\$120,700
Project Development (25%)	<u>30,200</u>
Total Estimated Project Cost	\$150,900

b. Lemons Mill Road Pump Station

As discussed in Chapter 6, this project would provide sewer service to 325 acres on the north and south side of Lemons Mill road west of I-75. 5,200 linear feet of 8" force main and a pump station with peak capacity of 0.93 MGD would be constructed. Refer to Table 7-28 for the estimated cost for these improvements.

TABLE 7-28 ESTIMATED PROJECT COST LEMONS MILL ROAD PUMP STATION	
ITEM	ESTIMATED COST
0.93 MGD Pump Station	\$275,000
5,200 LF of 8" Force Main	<u>124,500</u>
Construction Cost	\$399,500
Project Development (25%)	<u>99,875</u>
Total Estimated Project Cost	\$499,375

c. Whitaker Property Gravity Line to Pump Station No. 9

This project would provide sewer service to an area on the north side of Georgetown between I-75, US 25, the proposed bypass and North Elkhorn Creek that has a proposed zoning for residential development. Approximately 400 acres in this area would be served by an interceptor sewer ranging from 10" to 15" in diameter. Sewage would be collected and transported to Pump Station No. 9. Refer to Table 7-29 for the estimated cost to construct this gravity sewer.

TABLE 7-29 ESTIMATED PROJECT COST WHITAKER PROPERTY GRAVITY LINE	
ITEM	ESTIMATED COST
1,500 LF of 10" Gravity Sewer Main	\$ 46,300
2,400 LF of 12" Gravity Sewer Main	87,200
1,900 LF of 15" Gravity Sewer Main	<u>89,600</u>
Construction Cost	\$223,100
Project Development (25%)	<u>55,800</u>
Total Estimated Project Cost	\$278,900

d. Interceptor Sewer and Pump Station for New Stadium Complex and Lemons Mill Road Development

As discussed in Chapter 6, this project would provide an interceptor sewer running from McClellan Circle to a new pump station on the south side of North Elkhorn Creek and a branch line running from the New Stadium Complex just north of East Main Street (extended). Refer to Table 7-30 for the estimated cost for this project.

TABLE 7-30 ESTIMATED PROJECT COST INTERCEPTOR SEWER AND PUMP STATION FOR NEW STADIUM COMPLEX AND LEMONS MILL ROAD DEVELOPMENT	
ITEM	ESTIMATED COST
1,000 LF of 10-inch Gravity Sewer Main	\$ 50,000
1,500 LF of 15-inch Gravity Sewer Main	75,000
New 2.88 MGD Pump Station	1,152,000
300 LF of 14" Force Main	<u>7,500</u>
Construction Cost	1,284,500
Project Development	<u>321,125</u>
Total Estimated Project Cost	\$1,605,625

e. Interceptor Sewer and Pump Station on Ford Bradley Farm

This pump station and force main would serve a large portion of undeveloped property located west of and along U.S. 25 and is bound on the north by Hambrick Place Subdivision and on the south by the new Southwest Bypass. Interceptor sewers running from Pump Station No. 3 and No. 5 would be installed to the new pump station (to remove them from service). A force main would be constructed from this new pump station to the proposed manifold force main from Pump Station No. 2. Refer to Table 7-31 for the estimated cost to construct these improvements.

TABLE 7-31	
ESTIMATED PROJECT COST	
INTERCEPTOR SEWER AND PUMP STATION ON FORD BRADLEY FARM	
ITEM	ESTIMATED COST
1,000 LF of 15-inch Gravity Sewer Main	\$ 50,000
2,100 LF of Dual Force Main	84,000
New Pump Station (3.17 MGD)	<u>1,267,200</u>
Construction Cost	1,401,200
Project Development (25%)	<u>350,300</u>
Total Estimated Project Cost	\$1,751,500

f. Conversion of Dry Pit Pump Stations to Submersible

This recommendation is to convert Pump Station No. 8 (located at Shell One Stop and Connector Road) to a submersible type pump station. Refer to Table 7-32 for the estimated cost for this project.

TABLE 7-32	
ESTIMATED PROJECT COST	
CONVERSION OF PUMP STATION NO. 8 TO SUBMERSIBLE	
ITEM	ESTIMATED COST
Demolition	\$ 1,300
Civil/Site Work	12,800
Mechanical	16,300
Electrical	<u>1,800</u>
Construction Cost	\$32,200
Project Development (25%)	<u>8,000</u>
Total Estimated Project Cost	\$40,200

3. Phase III Improvements (11-20 Years)

a. Derby Estates Gravity Line and McCracken Creek Pump Station

As discussed in Chapter 6, this project would provide a pump station with 1.44 MGD peak capacity and 10" force main to provide sewer service to all of the Colony and Derby Estates subdivisions, as well as additional development of the drainage basin area that would be contained by the proposed bypass. This would allow decommissioning of Pump Station No 24 and No. 25. The total estimated cost for these improvements is shown in Table 7-33.

TABLE 7-33 ESTIMATED PROJECT COST DERBY ESTATES GRAVITY LINE AND McCRACKEN CREEK PUMP STATION	
ITEM	ESTIMATED COST
1,900 LF of 10" Gravity Sewer Main	\$ 60,300
1,800 LF of 12" Gravity Sewer Main	66,400
1,800 LF of 10" Force Main	42,200
1.44 MGD Pump Station	<u>400,000</u>
Construction Cost	\$568,900
Project Development (25%)	<u>142,225</u>
Total Estimated Project Cost	\$711,125

b. Lower Cane Run Pump Station

This proposed pump station would serve a large undeveloped area, proposed for residential development, that is bound by the Southwest Bypass, U.S. 460 and U.S. 62. This pump station would allow Pump Station No. 17 (Canewood), Pump Station No. 18 (Western Elementary) and a proposed future pump station for the Canewood subdivision to be removed from service. Refer to Table 7-34 for the estimated cost of these improvements.

**TABLE 7-34
ESTIMATED PROJECT COST
LOWER CANE RUN PUMP STATION**

ITEM	ESTIMATED COST
5,200 LF of 8" Gravity Sewer Main	\$ 132,600
1,500 LF of 10" Gravity Sewer Main	68,200
14,500 LF of 10" Force Main	349,200
1.26 MGD Pump Station	<u>375,000</u>
Construction Cost	\$925,000
Project Development (25%)	<u>231,250</u>
Total Estimated Project Cost	\$1,156,250

CHAPTER 8 THE SELECTED PLAN

A. GENERAL

The purpose of 201 Facilities Planning is to review the 20-year planning needs for wastewater collection and treatment for the planning area to select the most cost-effective, environmentally sound and implementable wastewater improvements that meet all applicable requirements. Proposed improvements have been grouped into three phases as follows:

- Phase I improvements are proposed for the next two years;
- Phase II improvements are proposed for three to ten years from now; and
- Phase III improvements are anticipated to be required 11 to 20 years from now.

After evaluating all of the factors considered in the preceding chapters of this plan, the selected wastewater management plan for the Georgetown 201 Planning Area through year 2016 consists of providing improvements to both wastewater treatment plants, replacement of deteriorated sections of the collection system, repair of two pump stations, the installation of major gravity interceptor sewers and pump station/force mains to serve new development.

Most of the anticipated growth in Georgetown over the next 20 years will be contained by or next to the existing and proposed bypass. The existing Urban Service Boundary includes thousands of acres of undeveloped property that is either zoned for development or proposed for development. While the 201 planning area extends well beyond the USB, this boundary is not anticipated to expand much in the next 20 years. Expansion of the collection and conveyance system will require construction of major gravity interceptors for the service area drainage basins and pump stations and force mains to transport the wastewater to WWTP No. 1 or WWTP No. 2. Deficiencies in the existing collection and conveyance system were evaluated for needed repairs. Improvements to Pump Station No. 2 and No. 8 are recommended. Replacement of inadequate private sewers in the Robinson Drive area is recommended. Replacement of a section of the old and overloaded interceptor in the Mt. Vernon area is also proposed. The following sections provide more detailed summaries of the selected plan.

B. TREATMENT

1. WWTP No. 1

As determined in Chapter 2, the existing plant does not have adequate biological capacity to treat the projected 20-year flow and loadings. This is because the RBC system, which provides 1.5 MGD of the total plant capacity of 4.5 MGD, has deteriorated to the point that the plant's actual effective capacity is much less (approximately 3.2 MGD). Consequently, one of the initial recommended improvements is to expand the capacity of the existing oxidation ditch system from 3.0 MGD to 4.5 MGD by the installation of two new mechanical aerators. This would allow the old, deficient RBC system to be taken out of service.

Also included in Phase I of the selected plan is construction of a new structure or chamber to accommodate several force mains that will be discharging to WWTP No. 1.

Another recommended improvement consists of installation of a new belt filter press to replace the two existing units which are old and inefficient. Replacement of two of the belt filter press feed pumps is also recommended at this time.

Phase I improvements include construction of a concrete pad with drain for storage of the second roll-off container used for disposal of sludge cake.

Construction of improvements to the Sludge Dewatering Building drainage system are needed as soon as possible. An 8-inch sewer line will be provided from the truck loading bay to the Plant Pumping Station wetwell.

Upgrading of the mechanical screen in the old Preliminary Treatment Building to provide a smaller opening (15mm to 6mm) would be included in Phase II. Installation of a screening compactor system would be provided during the upgrade of the screen.

During Phase II of the selected plan, a second new BFP would be installed to supplement the press provided previously. The existing chlorine contact basin at WWTP No. 1 does not have adequate volume to provide the necessary detention at the 20-year projected peak flow. By eliminating the RBC system in Phase I, the RBC final clarifier can be converted to a new chlorine contact basin.

In the future, additional aerobic digestion capacity will be required to treat the increased waste activated sludge generated by the expanded oxidation ditch process. The two existing anaerobic digesters can be converted to aerobic units to supplement the existing aerobic

digesters. A new transfer pump to replace one of the existing plunger pumps would be provided. Replacement of the "dry pit" Drainage Pump Station with a submersible type pump station will be necessary within the next ten years.

2. WWTP No. 2

The improvements recommended for WWTP No. 2 are designed to increase the plant capacity, performance and operational reliability. In Phase I, to provide increased sanitary flow capacity, the existing influent bar screen and channel would be replaced with a larger screen and channel. Also, part of this work is additional piping to transfer the increased sanitary flows to the oxidation ditches. Improvements to the acid feed system (used for effluent pH control) is also recommended. Another Phase I improvement involves replacement of the existing constant speed aerator drives with new variable speed drives to provide greater operational flexibility and control of the oxidation ditches. Other Phase I improvements include replacing the two thickener effluent pumps with larger capacity units, installation of a mechanical mixer in the oxidation ditch distribution box, installation of an alternate drain pump station discharge and construction of a new maintenance building. Three alternatives for plant effluent disinfection were evaluated. A present worth analysis was performed on the alternatives of UV, ozonation and chlorination/dechlorination. The most cost-effective alternative -- ultraviolet disinfection -- is the recommended choice.

Pump Station No. 9 (Northeast Pump Station) should undergo modifications to divert wastewater from WWTP No. 1 to WWTP No. 2. This project would occur in two phases over the next 10 years. Two parallel force mains (8" and 14") and three pumps would be installed.

At some time in the future, the sanitary flows to WWTP No. 2 will increase to the point that one oxidation ditch will not be enough to treat the combined sanitary and TMM industrial discharges. When this occurs, the second oxidation system can be brought on-line to increase the plant's flow capacity to 4.0 MGD average and 6.0 MGD peak.

C. COLLECTION AND CONVEYANCE SYSTEM

Collection and conveyance system improvements recommended for the short-term are primarily designed to correct deficiencies in the existing collection system. The selected plan

includes continued implementation of the Sanitary Sewer Rehabilitation Program (SSRP). This GMWSS program, which has an annual budget of \$50,000 per year, identifies and corrects excessive infiltration and inflow in the collection system. Manholes should be inspected at least once every four years. Manholes with excessive I/I or structural damage should be repaired and sealed. Sewer line cleaning using the City's jet/vac truck should continue to the maximum extent possible, as well as the ongoing TV inspection program. As deficiencies are identified, they should be scheduled for corrective action on a prioritized basis.

One such area that should be given a high priority for repair is the deteriorated Mt. Vernon interceptor sewer between Scroggin Drive and Lemons Mill Road. This line is approaching capacity and will continue to receive additional flow as property is developed south of this area. Phase II of the selected plan calls for installation of 2,550 linear feet of 12-inch and 15-inch gravity main to replace the existing old and deteriorated 8-inch and 10-inch gravity mains.

Another section of town that is plagued with inadequate sewers is in the Robinson Avenue area. The private sewer system serving this area should be replaced with larger and deeper sewers. This project has already been designed and is scheduled to be completed in 1998.

Included in Phase I of the selected plan is a project to upgrade Pump Station No. 2 with more efficient pumps, relocate the existing Hambrick Place Pump Station (Pump Station No. 23) and install a dual force main system. This project would provide sewer service to Hambrick Place subdivision, Lancaster Heights subdivision and a portion of Indian Acres subdivision. Completion of this project would allow elimination of Pump Station No. 4 and No. 22.

Phase II of the selected plan includes installation of major gravity interceptor sewers, pump stations and force mains to serve areas of the Urban Service Area that are anticipated to develop within the next ten years. A pump station is proposed for the Clabber Bottoms area (Lemons Mill Road Pump Station) to serve approximately 325 acres on both sides of Lemons Mill Road between I-75 and the bypass. A force main from this pump station would connect with the 21-inch gravity interceptor next to Elkhorn Creek. The pump station would have a peak capacity of 0.93 MGD.

To serve the area beginning to be developed north of the Northeast Pump Station (Pump Station No. 9), a gravity interceptor (Whitaker Property Gravity Line to Pump Station No. 9)

connected to Pump Station No. 9 is proposed. An area of approximately 400 acres would be served by this interceptor which would range from 10 inches to 15 inches in diameter.

The selected plan includes installation of interceptor sewers running from Pump Station No. 3 and No. 5 to a new pump station (Pump Station on Ford Bradley Farm) located on the north side of the bypass on the Ford Bradley Farm. This pump station would serve a large undeveloped area west of U.S. 25 between the bypass and Hambrick Place subdivision, as well as the areas currently served by Pump Station No. 3 and No. 5. The proposed force main would run along the bypass to the proposed relocated Hambrick Place Pump Station. A manifold force main would be constructed along the existing electrical transmission line easement to WWTP No. 1.

Another large parcel of undeveloped property that is anticipated to undergo development within the next ten years is located south of North Elkhorn Creek and along McClellan Circle (Southeast Bypass). The selected plan calls for a new pump station (New Stadium Complex Gravity Sewer and Pump Station) to be constructed on the south side of Elkhorn Creek and interceptor sewers from this pump station along McClellan Circle and to the proposed Stadium Complex Pump Station, which could be taken out of service. The pump station force main would discharge into the existing 21" gravity interceptor next to Elkhorn Creek. This project would allow development of the drainage area to R-2 density. Construction of this pump station would allow the proposed force main from the Lemons Mill Road Pump Station to discharge into the upper end of the interceptor sewer. This project and the proposed Lemon Mill Road development pump station project would be coordinated as development occurs in this area.

The selected plan includes the recommendation to convert Pump Station No. 8 from a dry pit pump station to a submersible pump station. This could be scheduled in the next few years as funds are available.

Phase III (11-20 years from now) of the selected plan includes construction of two major pump stations/force mains and associated gravity interceptors. The first pump station would be located on the north side of Elkhorn Creek near McCracken Creek. The Derby Estates Gravity Line and Pump Station would serve all of the Colony and Derby Estates subdivisions and future development of the drainage basin. The existing pump stations for Colony and Derby Estates could be removed from service. The pump station would have a peak capacity of 1.44 MGD.

The other pump station included in Phase III of the selected plan is the proposed Lower Cane Run Pump Station. This pump station would be built near the intersection of the bypass and U.S. 460. The pump station would serve Canewood subdivision, Western Elementary School and the drainage area contained by the bypass, U.S. 460 and U.S. 62. This project would include 6,700 linear feet of gravity sewer mains and 14,500 linear feet of 10-inch force main. The pump station would be sized for a peak flow of 1.26 MGD.

D. COST

1. Treatment

The estimated construction and project cost for each of the proposed improvements to WWTP No. 1 and WWTP No. 2 are summarized in Tables 8-1 and 8-2.

**TABLE 8-1
ESTIMATED PROJECT COSTS
WWTP NO. 1 IMPROVEMENTS**

ITEM	CONSTRUCTION COST	PROJECT COST
Phase I (0-2 Years)		
Install Ditch Aerators/Eliminate RBCs	\$ 221,500	\$ 276,900
FM Discharge Chamber	28,000	35,000
Belt Filter Press	321,000	401,250
Pad for Roll-Off Container	5,000	6,250
Drain Line for Sludge Dewatering Building	12,000	15,000
Total	\$ 587,500	\$ 734,400
Phase II (3-10 Years)		
Upgrade Mechanical Screen and Provide Compactor	\$ 70,000	\$ 87,500
Belt Filter Press	222,000	277,500
Chlorine Contact	5,500	6,900
Aerobic Digesters	234,000	292,500
New Plant Drainage Pump Station	75,000	93,750
Total	\$ 606,500	\$ 758,150
Total Cost	\$1,194,000	\$1,492,550

**TABLE 8-2
ESTIMATED PROJECT COSTS
WWTP NO. 2 IMPROVEMENTS**

ITEM	CONSTRUCTION COST	PROJECT COST
Phase I (0-2 Years)		
Disinfection	\$ 206,200	\$ 257,800
Redirect Pump Station No. 9 Discharge	782,300	977,600
Screening, Acid System, TE Pumps, Mixer, DPS Discharge	257,600	322,000
Oxidation Ditch Aerators	81,000	101,300
Maintenance Building	259,000	323,800
Total	\$1,586,100	\$1,982,500
Phase II (3-10 Years)		
Modify Pump Station No. 9	\$ 91,000	\$ 113,800
Total Cost	\$1,677,100	\$2,096,300

2. Collection and Conveyance

The estimated construction and project costs for each of the proposed improvements to the wastewater collection and conveyance system are summarized in Table 8-3.

**TABLE 8-3
ESTIMATED PROJECT COSTS
COLLECTION AND CONVEYANCE IMPROVEMENTS**

ITEM	CONSTRUCTION COST	PROJECT COST
Phase I (0-2 Years)		
Pump Station No. 2 Upgrade, Relocation of Hambrick Place Pump Station and Manifold Force Main System	\$1,291,400	\$1,614,250
Robinson Area Sewer Replacement	473,900	559,200
Sanitary Sewer Rehabilitation Program	100,000	100,000
Total	\$1,865,300	\$2,273,450
Phase II (3-10 Years)		
Mt. Vernon Gravity Sewer Replacement	\$ 120,700	\$ 150,900
Lemons Mill Road Pump Station	399,500	499,375
Whitaker Gravity Line to Pump Station No. 9	223,100	278,900
Interceptor Sewer and Pump Station on New Stadium Complex and Lemons Mill Road Development	1,284,500	1,605,625
Interceptor Sewer and Pump Station on Ford Bradley Farm	1,401,200	1,751,500
Conversion of Dry Pit Pump Stations to Submersible	32,200	40,200
Sanitary Sewer Rehabilitation Program	400,000	400,000
Total	\$3,861,200	\$4,726,500
Phase III (11-20 Years)		
Derby Estates Gravity Line and McCracken Creek Pump Station	\$ 568,900	\$ 711,125
Lower Cane Run Pump Station	925,000	1,156,250
Sanitary Sewer Rehabilitation Program	500,000	500,000
Total	\$1,993,900	\$2,367,375
Grand Total	\$7,720,400	\$9,367,325

E. IMPLEMENTATION

The implementation of the Selected Plan will initially involve the approval of this 201 Facilities Plan Update by the City of Georgetown and the Natural Resources and Environmental Protection Cabinet, Division of Water. Upon approval of the 201 Facilities Plan Update, the City of Georgetown can begin to carry out the Selected Plan, or portions thereof, as local funding becomes available.

The City must formally adopt this 201 Facilities Plan Update and the Selected Plan by resolution once it has been finalized. A public hearing is to be held on the plan and documentation of public participation is to be included in Appendix A of this report.

CHAPTER 9
CAPITAL IMPROVEMENTS PLAN

As illustrated in Table 9-1, the intent of the Capital Improvements Plan is to provide the City of Georgetown with a concise planning document that will assist in the decision-making process and, thus, budgeting for the future wastewater collection and treatment needs of the City. Recommendations have been presented in terms of short-term (0-2 years), mid-term (3-10 years) and long-term (11-20 years) improvements. All project cost estimates are shown in 1996 dollars.

Table 9-1

Wastewater 201 Facilities Plan
Summary of GMWSS Sewer System CIP

Project No. (Locator)	Project Name	Estimated Cost			Type Project		Funding Source (Likely)	Page Reference
		Phase I (0-2 Years)	Phase II (3-10 Years)	Phase III (11-20 Years)	Local	System Wide		
Wastewater Treatment Plant No. 1 Improvements:								
1	Install Ditch Aerators/Eliminate RBCs	\$276,900					Local	5-1/7-1
2	Force Main Discharge Chamber	\$35,000					Local	5-2/7-2
3	Belt Filter Press and Feed Pumps	\$401,250					Local	5-2/7-2
4	Upgrade Mechanical Screen and Provide Compactor		\$87,500				Local	5-3/7-3
5	Concrete Pad for Sludge Roll-Off Container	\$6,250					Local	5-2/7-3
6	Drain Line from Sludge Dewatering Building	\$15,000					Local	5-2/7-3
7	Additional Belt Filter Press		\$277,500				Local	5-2/7-3
8	Chlorine Contact Modifications		\$6,900				Local	5-3/7-4
9	Anaerobic Digester Conversion to Aerobic		\$292,500				Local	5-3/7-4
10	New Plant Drainage Pump Station		\$93,750				Local	5-3/7-5
Wastewater Treatment Plant No. 2 Improvements:								
11	Ultraviolet Disinfection	\$257,800					Local/TMM *	5-4/7-8
12	Redirect Pump Station No. 9	\$977,600					Local/TMM *	5-6/7-15
13	Screening, Acid System, TE Pumps, Mixer, DPS Disch.	\$322,000					Local/TMM *	5-6/7-15
14	Oxidation Ditch Aerator Improvements	\$101,300					Local/TMM	5-7/7-17
15	Modify Pump Station No. 9		\$113,800				Local/TMM	5-8/7-18
16	Maintenance Storage Building	\$323,800					Local/TMM	5-7/7-17
Collection and Conveyance System Improvements								
17	Pump Station No. 2 Upgrade/Relocate Hambrick P.S.	\$1,614,250					Private *	6-1/7-19
18	Mt. Vernon Gravity Sewer Replacement						Local	6-2/7-20
19	Robinson Area Sewer Replacement	\$559,200					CBDG/Local	6-2/7-20
20	Sanitary Sewer Rehabilitation Program	\$100,000		\$500,000			Local	4-7
21	Lemons Mill Road Pump Station						Private *	6-3/7-21
22	Whitaker Gravity Line to Pump Station No. 9		\$278,900				Private *	6-3/7-22
23	Stadium Complex Pump Station & Interceptor Sewer		\$1,605,625				Private *	6-4/7-22
24	Ford Bradley Farm Pump Station & Gravity Sewer		\$1,751,500				Private *	6-5/7-23
25	Conversion of Dry Pit Pump Station to Submersible		\$40,200				Local	6-6/7-24
26	McCracken Creek Pump Station & Gravity Line			\$711,125			Private *	6-6/7-25
27	Lower Cane Run Pump Station			\$1,156,250			Private *	6-7/7-25

* Project Contingent Upon Degree of Private or Industrial Funding

GEORGETOWN MUNICIPAL WATER AND SEWER SERVICE
201 FACILITIES PLAN UPDATE
PUBLIC HEARING

A public hearing on the 201 facilities plan update of the Georgetown Municipal Water and Sewer Service was held before MARYBETH C. SOWARDS, Reporter and Notary Public in and for the State of Kentucky at Large, at the offices of the Georgetown Municipal Water and Sewer Service located at 125 West Clinton Street in Georgetown, Kentucky, on Thursday, September 18, 1997, commencing at the approximate hour of 6:00 p.m.

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APPEARANCES

Mr. Bob Riddle
Mr. Douglas Ralston
Mr. Morey Lampson
Mr. Bryan Lovan
Mr. Rick Mulberry
Mr. John Blackburn
Mr. Reggie Greenup
Mr. Lewis Wolfe
Mr. Bruce Lankford
Mr. Les Jarvis

* * * *

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(Copy of Notice of Public Hearing advertisement)

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1 MR. RIDDLE: We'd certainly like to welcome
2 everyone here tonight. I'm Bob Riddle, General Manager of
3 the Georgetown Municipal Water and Sewer Service. I would
4 like to ask that all those present here tonight please sign
5 in on the sign-up sheet that we're passing around. The
6 purpose of the meeting here tonight is to hear any public
7 comment on the draft copy of the Wastewater 201 Facilities
8 Plan that currently has been reviewed by the Division of
9 Water. We're taking this time to either take oral or
10 written comments. I believe you can either comment tonight
11 orally or you can submit written comments until 5:00 p.m.
12 on October 10, 1997, at the Georgetown Municipal Water and
13 Sewer Service offices, 125 West Clinton Street, Georgetown,
14 Kentucky. A copy of the plan is on public display here in
15 the board room of GMWSS.

16 I wanted to say just a little bit about the
17 reason that we are doing an update to the wastewater
18 facilities plan. The last plan was adopted by the board in
19 October of 1990. That's been about seven years ago. Due
20 to the rapid growth and development that has transpired in
21 the last seven years in Georgetown and the surrounding
22 area, it became necessary to update our wastewater
23 facilities plan in order to accommodate the increased
24 demands for wastewater service both around town and to
25 better maximize the hydraulics of our system by better

1 utilization of our two wastewater treatment plants.

2 Wastewater treatment plant number two,
3 sometimes referred to as the Toyota plant, was not in the
4 original 201 facilities plan, but it has been included in
5 this update to the facilities plan. A plan to better
6 utilize wastewater treatment plant number two hydraulically
7 and biologically was looked at by our engineers, and there
8 is a plan to incorporate it into the overall system with
9 the new proposed plan.

10 That being said, I would ask that--I believe
11 the next thing on the agenda would be a presentation of the
12 201 facilities plan. I know our engineers are here
13 tonight, and they have a lot of very good displays and
14 graphics that hopefully they'll leave with us when they
15 leave. So I'll introduce Mr. Doug Ralston with PDR
16 Engineers for his presentation.

17 MR. RALSTON: Thank you, Bob. Tonight PDR
18 Engineers is going to introduce the 201 facility plan
19 update to the public. I'll be making a short description
20 of the project justification. Mr. Morey Lampson, on my
21 direct left, will be presenting the wastewater treatment
22 plant plan, and Mr. Bryan Lovan, directly in front of me,
23 will be presenting the collection system plan.

24 This update of the GMWSS 201 plan is in
25 response to the rapid growth in the planning area and the

1 desire to utilize existing capacity at wastewater treatment
2 plant number two to accommodate some of the future capacity
3 needs. Due to unusual circumstances, wastewater treatment
4 plant number two was not previously considered for use to
5 treat other than TMM's flow and a small amount of dedicated
6 sanitary flow that never materialized. The plant was
7 constructed with redundant units; thus the capacity can be
8 expanded from a nominal 2.2 MGD to 4.0 MGD without major
9 construction. Pump station number nine would eventually
10 pump all of its wastewater to wastewater treatment plant
11 number two, relieving wastewater treatment plant number one
12 of approximately one MGD over a 20-year planning period.
13 Also, the increased organic loading to wastewater treatment
14 plant number two will benefit the treatment process which
15 now experiences low food ratios. The improvements to the
16 collection system are to provide the anticipated capacity
17 for future growth and for correcting current problem areas.

18 As we proceed tonight, if you do have
19 questions we would ask that you hold those questions until
20 the appropriate time at the end, and then we will entertain
21 those questions and either try to come up with a
22 satisfactory answer tonight, or we will answer your
23 questions subsequently.

24 Mr. Lampson?

25 MR. LAMPSON: I'd like to take this

1 opportunity to present the selected improvements at the two
2 Georgetown wastewater treatment plants. Our first task
3 involved doing population projections through the year 2016
4 to try and determine what the actual future wastewater flow
5 will be to the two treatment plants. These population
6 projections relied on some information contained in the
7 latest Georgetown and Scott County comprehensive plan.
8 Basically the population projections were based on a two
9 percent increase per year, which equates to a 40 percent
10 increase in population over the 20-year planning period.

11 Once we had these future populations, we
12 looked at some water use records and came up with a
13 contribution of wastewater flow per person, multiplied this
14 by the future population, provided some future industrial,
15 large commercial, and institutional flows, and came up with
16 these 20-year projected wastewater flows to the two
17 treatment plants here at Georgetown. If you look at this
18 table right here, here's where we're showing the future
19 capacity of plant number one; it's estimated to be 4.31
20 million gallons a day average flow capacity, with a peak
21 projected flow capacity of 13 million gallons a day. Now
22 we compare that with the current capacity of plant number
23 one, which we're showing here as slightly over three MGD,
24 and you can see that some improvements need to be made at
25 plant number one to get some additional treatment capacity.

1 Plant number one is rated for 4.5 MGD, and it consists of
2 two parallel treatment systems, one being an oxidation
3 ditch system that was constructed in 1990, which has the
4 capacity of three million gallons a day. The other flow
5 scheme is made up of the old RBC system, which is rated at
6 one and a half MGD, to give a total rated capacity of 4.5.
7 However, due to some deficiencies in the old RBC system,
8 the actual plant effective capacity is less than four and a
9 half MGD. The old RBC system is reaching its design life.
10 The board is continually having to spend money to try and
11 maintain the system, parts are hard to find and expensive,
12 and so due to these deficiencies in the RBC system, we
13 really need to make some improvements to get the plant
14 capacity up to four and a half MGD. So these recommended
15 improvements are going to address the shortcomings in
16 capacity. We also did an evaluation of the two plants.
17 With input from operations staff we also came up with some
18 improvements to improve the performance and operability of
19 the two plants.

20 I'd like to go over the proposed 20-year
21 improvements to plant number one first. I'd like to direct
22 you to this board here. Basically all the improvements to
23 the two treatment plants as well as the collection system
24 are broken up into three phases, phase one being projects
25 or improvements that will be made in the next two to three

1 years. Phase two is work that will be done three to ten
2 years, and then phase three 11 to 20 years. All the
3 proposed improvements to the two treatment plants will
4 occur in phases one and two.

5 Number one on our list is install ditch
6 aerators, eliminate RBCs. As we just discussed here, we
7 need to make improvements to increase organic capacities.
8 What we're proposing is to decommission the RBC system and
9 install some aerators in the existing oxidation ditch to
10 get the ditch capacity up to four and a half MGD average,
11 13 and a half MGD peak, and that will be more than enough
12 to handle our projected 20-year flows. To upgrade the
13 oxidation ditch will just be a matter of adding two 50-
14 horsepower mechanical aerators. When that plant was
15 designed and built in 1990, we knew down the road that the
16 old RBC system would be eliminated, so all the tankage on
17 the oxidation ditch system was sized around four and a half
18 MGD average and 13 and a half MGD peak, so everything is
19 there. It's just a matter of installing two more aerators
20 to get the capacity we need, and our estimated project cost
21 is \$276,900. Now these are all project costs which include
22 administrative costs, engineering costs, and construction
23 costs.

24 The second improvement is a force main
25 discharge chamber. Currently at the oxidation ditch side

1 of the plant, there's a number of flow streams that
2 converge. Upstream of the plant there's four force mains
3 and a gravity sewer. What we're proposing to do is to
4 construct a chamber or junction box to blend these flows
5 together, dissipate the energies, so we can convert to a
6 gravity flow into our preliminary treatment system. We
7 also anticipate some future force mains coming into plant
8 number one. Our estimated project cost is \$35,000 for that
9 improvement.

10 Third item is belt filter press and feed
11 pumps. Currently at plant number one there's two belt
12 filter presses which dewater the sludge prior to landfill
13 disposal. These two presses are approximately 15 years
14 old. They're reaching their effective design life.
15 They're older technology. We propose to put in a new belt
16 filter press, which would perform better and use less
17 polymer. We would keep the two existing presses as
18 standby. And we also propose to install a new polymer feed
19 system, again a state-of-the-art, more efficient system.
20 We'd maintain the old polymer system as a backup. And
21 we're also proposing two new sludge feed pumps to replace
22 the existing plunger pumps. Estimated project cost,
23 \$401,250.

24 Item number four, upgrade mechanical screen
25 and provide compactor. This is addressing the existing

1 mechanical screen on the RBC side of the plant. What we're
2 proposing to do here is change out the filter elements to
3 provide a finer screening, and we would add a compactor
4 that would take the screenings removed from the wastewater,
5 compact it to dewater it prior to disposal to the landfill.
6 That's actually phase two, at \$87,500.

7 Next item in phase one, concrete pad for
8 sludge roll-off container. After the sludge is dewatered
9 at plant number one, it's placed in a large dumpster where
10 it's stored. Once the dumpster is full, then it's taken to
11 the landfill for disposal. Right now there's not a good
12 area or place for the roll-off container. What we're
13 proposing is construction of a new concrete pad with drain
14 to house that roll-off container. Estimated project cost,
15 \$6,250.

16 Item number six, drain line from sludge
17 dewatering building. We're proposing a new eight-inch
18 sewer or drain line from the existing sludge dewatering
19 building. Currently they have a four-inch sewer, which is
20 too small, not enough capacity for the filtrate from the
21 belt presses. We're proposing to add an eight-inch line to
22 parallel the existing four-inch. Estimated cost, \$15,000.

23 That takes care of phase one improvements.
24 Under phase two, I've already mentioned the upgrade of the
25 mechanical screen. The next item is an additional belt

1 filter press. This would be a new press to supplement the
2 press that was added under phase one. At that time the two
3 old presses would be decommissioned. Estimated project
4 cost, \$277,500.

5 The next item under phase two, chlorine
6 contact modifications. What that entails, currently the
7 chlorine contact basin at plant number one only has an
8 effective capacity of around 11 million gallons a day. As
9 we see over here, at some point we're going to be
10 approaching 13 million gallons a day, so what we're
11 proposing is to take the clarifier that was associated with
12 the old RBC system, which was decommissioned in phase one,
13 we would take that clarifier, convert it into a chlorine
14 contact tank with enough volume to meet our projected
15 flows. The existing chlorine contact tank would be
16 converted to a dechlorination contact tank. Estimated
17 project cost, \$6,900.

18 Next item, anaerobic digester conversion to
19 aerobic. As I mentioned before, we've got two treatment
20 systems at plant number one. The oxidation ditch system
21 and the waste-activated sludge from that system is treated
22 in two aerobic digesters. The sludge from the RBC system
23 is treated in two anaerobic digesters. Well, when we
24 decommission the RBC system, upgrade the oxidation ditches,
25 all the sludge will be waste-activated sludge, so we're

1 proposing to convert the anaerobic digesters to aerobic to
2 supplement the two existing aerobic tanks. Now that work
3 would involve removing the existing steel covers, removing
4 the existing sludge heating and mixing system, and adding a
5 diffused aeration system to each tank. Estimated project
6 cost, \$292,500.

7 And the last recommended improvement to plant
8 number one is new plant drainage pump station. This would
9 replace an existing pump station. The existing station
10 consists of a wet well with a pump room below ground next
11 to it. This pump room is categorized as a confined space.
12 It's hard to maintain; it's getting old. What we propose
13 is to replace it with a new submersible pump station with
14 an estimated project cost, \$93,750.

15 Next I'd like to talk about plant number two
16 improvements. Again we've projected the future 20-year
17 flows to that facility, which are right here, and compared
18 to the existing capacity, we could see that we're going to
19 have to make some improvements to plant number two to
20 increase its capacity as well as make other improvements to
21 improve the performance and operability of the plant.

22 Under phase one, plant number two
23 improvements consist of a new ultraviolet disinfection
24 system to replace the existing ozone disinfection system.
25 The existing ozone system is getting old; it's antiquated

1 equipment, it's hard to get parts, and it's expensive to
2 operate. A better system would be a new UV disinfection
3 system. We would keep the old ozone system as an emergency
4 backup. Estimated project cost, \$257,800.

5 The second item under phase one, redirect
6 pump station number nine. Pump station number nine was
7 constructed in 1990, originally identified as northeast
8 pump station. It currently pumps to plant number one.
9 What we're proposing to do is to install new force mains to
10 allow this pump station to be pumped to plant number two.
11 The reason being currently at plant number two, essentially
12 all the flow is pretreated Toyota industrial waste. It's
13 low in nutrient content, so consequently the operating
14 staff have to feed nutrients in order to maintain the
15 biological treatment system. By redirecting this municipal
16 type waste from pump station number nine to plant number
17 two, it will improve the performance of that plant and
18 should preclude the need for any nutrient addition.

19 The third item under plant number two
20 improvements, we've actually included a couple of items
21 here under one heading here, the first identified as
22 screening. Because we will be directing sanitary waste to
23 plant number two, we need to provide a mechanical screen
24 with a larger capacity and would replace the existing small
25 screen. The new screen would be installed in a new

1 three-foot-wide concrete channel. The existing flow
2 measuring device downstream would also have to be replaced
3 with a larger capacity unit as well as a new pipeline to
4 take the sanitary waste from the screening facility to the
5 oxidation ditch. In addition, we're proposing some
6 improvements to the acid feed system. The plant feeds acid
7 in order to adjust the pH prior to discharge. The
8 improvements to the acid feed system would consist of an
9 access road to the storage tanks, a new acid storage tank,
10 as well as some new aerators in the post aeration basin to
11 improve the mixing and aeration prior to disposal because
12 we are upgrading the capacity of the plant. The next item,
13 TE pumps, which stand for thickener effluent pumps, the two
14 pumps right now are too small. We'd just be replacing them
15 with two larger units. The mixer pertains to the addition
16 of a new mechanical mixer in the flow junction box upstream
17 of the oxidation ditch system. Currently there's a number
18 of flow streams, sanitary waste, the Toyota waste, the
19 return activated sludge, and a thickener effluent
20 discharged to this box prior to going through the oxidation
21 system. We're proposing to put in a mixer to better blend
22 these flows. And then the last improvement under this item
23 is drainage pump station discharge. Essentially we'd be
24 constructing a new force main to allow this pump station to
25 discharge to the oxidation ditch. Currently it discharges

1 to the two sludge thickeners. This pump station dewateres
2 the clarifiers and handles some other waste streams. Most
3 of the time it just consists of water, so rather than send
4 that water to the sludge thickener we want to have the
5 option of just sending it back to treatment. Total project
6 cost for item 13, \$322,000.

7 The next item under phase one, oxidation
8 ditch aerator improvements. What we're proposing there is
9 to add VFD speed control to the four 60-horsepower
10 aerators. This would give the operation staff some
11 additional flexibility and turn-down capability so that
12 during certain times of the year, when they don't need all
13 that aeration capacity, they can reduce the RPM and save
14 some energy cost. Project cost for that, \$101,300.

15 And the last item under phase one,
16 maintenance storage building. What we're envisioning here
17 is a new metal storage building which would contain garage
18 bays to allow the operating staff to work on equipment or
19 store equipment and could also contain a new UV system.
20 This UV system has ultraviolet lamps that have to be
21 cleaned periodically by hand. By providing those inside
22 this maintenance storage building improves the operation
23 and maintenance on that item. Total project cost,
24 \$323,800.

25 Under phase two improvements at plant number

1 two, modify pump station number nine. Here we'd go back
2 into pump station number nine and change out some of the
3 pumps to get more capacity to pump to plant number two.
4 Estimated cost, \$113,800.

5 And the last phase two item, which we don't
6 show here because there's no cost associated with it, would
7 be to put the standby oxidation ditch and clarifier in
8 service to bring plant number two from a capacity of 2.2 up
9 to four million gallons a day average and a peak flow rate
10 of six million gallons a day.

11 That concludes the improvements to the two
12 treatment plants. Bryan Lovan will now go over the
13 proposed improvements to the collection system.

14 MR. LOVAN: Thank you, Morey. What I would
15 like to do now is to go over our determination on the
16 improvements for the collection and conveyance system. We
17 evaluated different alternatives, and looking at the growth
18 in the area we have identified several improvements over
19 the 20-year period, and the different types, we have a
20 project type whether it's a local improvement or if it
21 serves the system systemwide. We also have identified
22 likely funding sources, and some of these improvements it's
23 kind of contingent upon developers funding, contributing to
24 the project.

25 The first item that we've identified as an

1 improvement would be pump station number two upgrade and
2 relocate the Hambrick pump station. If I could direct your
3 attention to this vicinity map, on some of these items I'll
4 try to locate those for your assistance. The upgrade of
5 pump station number two is this green dot here, and the
6 Hambrick pump station relocated would be this kind of
7 purplish dot. With those pump station upgrades we would
8 have to install a dual force main from the pump station up
9 to the new treatment plant number one, and that is
10 identified in phase one at a cost of \$1,614,250.

11 The second item in phase one would be the
12 Robinson area sewer replacement. This is installing new
13 gravity sewer lines and laterals to replace an existing
14 inadequate private system, and that location is in this
15 vicinity where this purple dot indicates. That one we
16 anticipate on receiving a CBDG block grant to help fund
17 that project.

18 The third item in phase one would be the
19 sanitary sewer rehabilitation program, and that is a
20 program the GMWSS has on a continuous basis. I believe
21 they have budgeted approximately \$50,000 a year for that,
22 and that involves continuous cleaning, manhole inspections,
23 TV-ing the lines, and doing spot repairs. And that item
24 basically is done annually for the entire 20-year period.

25 Then we go to phase three, and the first item

1 on phase three is the Mount Vernon gravity sewer
2 replacement, and that's to replace approximately 2500 feet
3 of gravity sewer that has deteriorated and is overloaded
4 due to the pumping and development that has occurred to the
5 southeast of town, and the Mount Vernon gravity sewer is in
6 this vicinity here. Development has occurred on the south
7 side of town, and it's being pumped through what is called
8 the Mount Vernon subdivision, and it has overloaded that
9 gravity sewer.

10 The next item is the Lemons Mill Road pump
11 station. This is proposed to install a pump station and
12 force main to serve proposed development out along the
13 Lemons Mill Road area between the bypass and Interstate 75,
14 and that location is in this vicinity here. There is a 21-
15 inch gravity sewer that has been installed by a private
16 developer a few years ago, and so we would construct a pump
17 station and a force main to tie into that gravity system.
18 And that would be at a cost of \$499,375.

19 The next item would be the Whitaker gravity
20 line to pump station number nine, and that's to install a
21 gravity interceptor to serve private development on the
22 north side of town, and it is in this vicinity here. That
23 cost item has been identified to be approximately \$278,900.

24 The next item in phase two would be the
25 stadium complex pump station and interceptor sewer. Part

1 of that project has been constructed now due to the new
2 Bengals training camp, which came after we had started
3 working on this 201 plan, so the cost item of that
4 \$1,605,625 would be slightly less due to part of this
5 project already in place. And that location I believe is
6 in this vicinity here with the black dot down on Elkhorn
7 Creek.

8 The next item, then, would be the Ford
9 Bradley Farm pump station and gravity sewer, and that is to
10 also serve future development and to run a force main, a
11 parallel force main, to treatment plant number one, and
12 that location is in this area, and with this new pump
13 station would allow GMWSS to eliminate two existing pump
14 stations that are about right now almost overloaded, and
15 what we're trying to do is to eliminate as many pump
16 stations and combine these pump stations into one large,
17 more efficient, reliable station. And that cost is
18 \$1,751,500.

19 The next item, then, would be conversion of
20 dry pit pump station to submersible. Dry pit pump stations
21 consist of a wet well where the sewage comes in and a pump
22 station that is in a separate containment that the
23 operators, if they have to get in to do any maintenance or
24 anything, must enter in a confined space, which you've got
25 the hazards of gas that can affect the operator, it's very

1 dangerous to enter into a confined space, and we're trying
2 to convert those to the submersibles so any maintenance
3 that needs to be done can be done from aboveground. They
4 just pull the pumps out and put in a new one. And to
5 convert those stations, that's at a cost of \$40,200.

6 Then we go into phase three. The two items
7 that we have identified in phase three would be the
8 McCracken Creek pump station and gravity line, and that is
9 in the northwest portion of the city. There is some
10 development that has occurred along Long Lick Pike up near
11 the county high school called Derby Estates, the Colony,
12 quite a bit of development going on up there. I believe
13 there's anywhere from two to three pump stations in that
14 development. We propose to construct one larger capacity
15 pump station down at the lower end of that watershed and
16 redirect all that flow in a new force main tying into some
17 existing force mains that are there, redirect all that to
18 treatment plant number one. And the project cost for that
19 item has been identified at \$711,125.

20 The last item that we have identified in
21 phase three would be the Lower Cane Run pump station, and
22 that would be in this vicinity here, which is near the
23 intersection of the--I guess that would be the southwest
24 bypass and 460 out near Western Elementary School, to serve
25 development that would occur in this triangular shape

1 created by the bypass, 62, and 460. And that project cost
2 has been identified at \$1,156,250.

3 And then also going back to the one item I
4 said earlier was the sanitary rehabilitation program at
5 \$50,000 per year for the ten years, in phase three that's
6 the \$500,000. So that concludes my presentation of the
7 update, and I'd like to turn it back over to Doug Ralston.

8 MR. RALSTON: The floor is open for questions
9 and discussion. Mr. John Blackburn, would you please
10 stand?

11 MR. BLACKBURN: Morey, on that conversion
12 from anaerobic to aerobic, do RBCs put out a different
13 nature sludge that would require that conversion, or is
14 that conversion just something that needs to be done
15 regardless of the sludge you're putting in it?

16 MR. LAMPSON: Well, the sludge is a little
17 bit different. The RBC is an attached growth system, but
18 really there's not enough sludge being generated by the RBC
19 system to maintain--

20 MR. BLACKBURN: Yeah, I didn't think it was
21 generating any right now at all.

22 MR. LAMPSON: --maintain the heating
23 requirements.

24 MR. RALSTON: There's not enough sludge
25 generated that the system functions at all.

1 MR. BLACKBURN: Well, why--what I'm saying
2 is, what's driving the conversion from anaerobic to
3 aerobic?

4 MR. RALSTON: We'll need additional capacity
5 for the aerobic system, so we're going to use existing
6 tankage for that capacity. It saves a lot of money.
7 Consequently, we're just going to take the lids off those
8 anaerobic digesters and convert them to an aerobic system,
9 which is more compatible with oxidation ditch waste-
10 activated sludge. The waste-activated sludge from an
11 oxidation ditch is low in volatiles, which is not conducive
12 to an anaerobic situation.

13 MR. BLACKBURN: You're not anticipating any
14 kind of problem with odor in that area when we take the
15 tops off?

16 MR. RALSTON: What do you mean, on an interim
17 basis?

18 MR. BLACKBURN: No, the aerobic.

19 MR. RALSTON: The anaerobic contents will be
20 emptied.

21 MR. BLACKBURN: Yeah, I knew that. I'm just
22 saying--

23 MR. RALSTON: No.

24 MR. BLACKBURN: --the procedure--

25 MR. RALSTON: No.

1 MR. BLACKBURN: --will not generate--

2 MR. RALSTON: The procedure is being used
3 now.

4 MR. BLACKBURN: In those tanks?

5 MR. RALSTON: Not in those tanks, but in two
6 tanks that were just sludge holding areas. They were
7 converted to aerobic sludge digesters. This is done all
8 the time. We've done it many times, and we know how to do
9 it.

10 MR. BLACKBURN: Well, I know that. I'm just
11 wondering about the--

12 MR. RALSTON: So we're not anticipating any
13 odors.

14 MR. BLACKBURN: Yeah. Because you're in a
15 pretty high risk area there as far as creating any problems
16 or concerns.

17 MR. RALSTON: There's little risk for odors
18 generated from an aerobic digester if they're the proper
19 size.

20 MR. BLACKBURN: Okay.

21 MR. RIDDLE: Mr. Blackburn, second question?

22 MR. BLACKBURN: Again, Morey, number 16 on
23 your maintenance storage building there, what I don't see
24 up there, anything on this improvements to number two or
25 any discussion of, is the situation on the current carbon

1 towers. Do we have any intent down the road for reusing
2 those at all? My anticipation would be that's pretty much
3 a dead issue at this point. Do we even look at that as a
4 dead issue, or are we still keeping them as a viable
5 alternative to treatment?

6 MR. LAMPSON: Toyota probably would like to
7 maintain those to be used if necessary.

8 MR. BLACKBURN: Because I'm just wondering
9 about, you know, when you talk about construction of a new
10 storage building, there's a whole lot of room in that area
11 where the carbon towers are now. Isn't that right, Rick?

12 MR. MULBERRY: Yes, there is. The problem is
13 that it's underground mostly, you know, from two to three--

14 MR. BLACKBURN: Well, you can have a big
15 ramp.

16 MR. MULBERRY: --a couple of stories even.
17 One reason we'd like to have a storage building out there
18 is to park our vac truck in. Of course, that is a little
19 out of the way, but we really don't have a place at number
20 one to put it, and it's in the way over here. After what
21 Doug told us the other night about the UV, the Trojan 4,000
22 system, I'm not so sure that the maintenance storage
23 building for housing the UV system now is going to be an
24 issue, depending upon what we decide on that. So there are
25 lots of alternatives there, I think, that can be

1 considered.

2 MR. RALSTON: Getting back to your original
3 question regarding the carbon filtration system that exists
4 there today, I think we'd be remiss in taking it out of
5 service because of the potential for stricter water quality
6 regs in the future, and the carbon would certainly enable
7 you to do a grade of treatment superior to what you're
8 doing now, if needed, in terms of organic removals.

9 MR. BLACKBURN: Okay.

10 MR. RIDDLE: Mr. Blackburn, third question?

11 MR. BLACKBURN: On that pump station number
12 two upgrade, I was under the impression at the last--not
13 the most recent meeting, but the one before that, there was
14 something said about we've changed the plans there and that
15 the force mains down here on Ford Bradley, of course the
16 pump station would take it all the way, bypass number two.
17 Is that not correct?

18 MR. RIDDLE: That's the current plan.

19 MR. BLACKBURN: So are we still going to
20 upgrade number two, then, like we show here on the 201
21 plan?

22 MR. RIDDLE: We can still upgrade number two,
23 but we will not have to run the force main like we were
24 once planning to do. We can tie directly to the new force
25 main.

1 MR. BLACKBURN: Is that reflected in this?

2 MR. MULBERRY: I don't think so.

3 MR. BLACKBURN: I don't either. I mean, if
4 we've changed our planning, then our 201 plan needs to
5 reflect what our current plan is, doesn't it?

6 MR. RIDDLE: Well, it's basically the same
7 thing, only it's a matter of timing at this point. The
8 Ford Bradley and the project south is going to go through
9 there before we are going to go through there. We won't
10 have to build--if we upgrade pump station number two before
11 the projects come south of town, we would have to build--
12 that cost would be exactly what we'd have. We'd have to
13 build it all the way to the treatment facility.

14 MR. BLACKBURN: Right, but my understanding
15 was, when we were first talking about the upgrade of number
16 two and the first time the 201 plan was presented to us, to
17 the board, was that it was presented as an upgrade to
18 handle the Ford Bradley flow. And then more recently the
19 idea that the Ford Bradley flow was going to bypass that
20 pump station was what I understood was the talk about a
21 month ago.

22 MR. RIDDLE: That is the way that it's
23 hydraulically going to--

24 MR. BLACKBURN: Is that what you've got here?

25 MR. RALSTON: That's what's reflected here

1 because Ford Bradley is down in number 24.

2 MR. BLACKBURN: Right. Yeah, but I thought
3 here it was still showing Ford Bradley going through number
4 two.

5 MR. LOVAN: It doesn't go through number two
6 pump station.

7 MR. BLACKBURN: But it goes parallel.

8 MR. LOVAN: It's just beside it, and number
9 two will pump into that portion of it.

10 MR. BLACKBURN: Okay.

11 MR. RIDDLE: When we get ready to do that.

12 MR. LOVAN: Yes.

13 MR. BLACKBURN: On the Mount Vernon, this
14 Mount Vernon station there, over the replacement of the
15 sewer, how much is currently going through that particular
16 thing, or do we anticipate off-loading any of that to the
17 Ford Bradley pump station?

18 MR. LOVAN: Under this 201 facility plan we
19 have not anticipated off-loading any of that into the Ford
20 Bradley pump station.

21 MR. BLACKBURN: Is that a possibility?

22 MR. LOVAN: It is a possibility. However, it
23 would be an expensive possibility because, I mean, we would
24 have to increase the size of the Ford Bradley pump station;
25 we would have to go by gravity underneath US 25 and down

1 around the bypass. At this point in time I believe it
2 would be a very expensive possibility.

3 MR. BLACKBURN: I was under the impression
4 from earlier discussions that some of that was going to be
5 done as a natural consequence of this new development, and
6 it would give a little more capacity in that area, but
7 that's not the case.

8 MR. LOVAN: No.

9 MR. BLACKBURN: Bob, on that--you spoke about
10 submitting a grant proposal to Bluegrass Ad?

11 MR. RIDDLE: Yes, sir.

12 MR. BLACKBURN: And you mentioned at the time
13 that it addressed some of the issues of the 201.

14 MR. RIDDLE: Uh-huh. (Affirmative)

15 MR. BLACKBURN: Which of those issues does it
16 address?

17 MR. LOVAN: It's number 19, the Robinson area
18 sewer replacement.

19 MR. BLACKBURN: No, that's a different grant,
20 wasn't it?

21 MR. RIDDLE: Yeah. The one that
22 Dr. Blackburn is speaking of is a grant for the federally
23 declared--

24 MR. BLACKBURN: Yes.

25 MR. RIDDLE: --disaster areas--

1 MR. BLACKBURN: Right.

2 MR. RIDDLE: --due to flood, and that is
3 basically phase one and phase two for wastewater treatment
4 plant number one. It's both of those columns.

5 MR. BLACKBURN: Okay. A number of the
6 different issues there, a number of the things up there?

7 MR. RIDDLE: All of them.

8 MR. BLACKBURN: All of them? Okay. Good.

9 MR. RIDDLE: All of them. Now I'm not sure
10 where we'll come out--

11 MR. BLACKBURN: Right.

12 MR. RIDDLE: --with that, but the grant
13 application is in, and we have a copy of it.

14 MR. BLACKBURN: Is that a matching, or is
15 that just money we'll get? Do you know?

16 MR. RIDDLE: It's not a full--it's not a full
17 grant.

18 MR. BLACKBURN: Yeah. Okay.

19 MR. RIDDLE: I'm not exactly sure, but it's a
20 high percentage.

21 MR. BLACKBURN: Okay. Now on this plan,
22 Bryan, we show the Ford Bradley pump station and gravity
23 sewer as a part of phase two, which is three to ten years
24 down the road, and my understanding was we were going to
25 try to get that finished within the year. Isn't that

1 right?

2 MR. LOVAN: Well, this was done before--the
3 plan was worked up before the developers came before this
4 board and Bob with their plan on doing their development,
5 you know, within the year.

6 MR. BLACKBURN: I understand that, but I'm
7 just saying if we have not adopted this yet and it's not
8 being officially adopted until after public hearings and
9 all of that, it still seems time, if we are fairly
10 confident that that time frame is going to change, that we
11 need to be putting in a three- to ten-year--

12 MR. RALSTON: Let me address that whole
13 issue. This piece of literature in front of us called
14 Summary of GMWSS Sewer System CIP, CIP stands for capital
15 improvement plan. That's a plan that was generated from
16 the 201 plan, and is not typical of a 201 plan. It was
17 generated to assist the sewer system in keeping track of
18 all the projects that are to be done in the next 20 years,
19 and it is a working tool for GMWSS. And indeed, if there
20 are changes in the plan, in the CIP plan, they can be made
21 at any time as long as they're brought to the board, E.G.,
22 our plan has changed, we're going to move this into the
23 phase one arena because development is proceeding quicker.
24 That's the reason it's on a spreadsheet format. It can be
25 changed at your convenience. It does not really change the

1 overall plan and what's happening in the next 20 years,
2 which is the function of the 201 facility, in that you may
3 move it up quicker in the time span, but it's still to be
4 done in the 20-year plan, which is the purpose of the 201
5 plan, to look at a 20-year picture.

6 MR. BLACKBURN: I'm done.

7 MR. RIDDLE: Mr. Lewis Wolfe?

8 MR. WOLFE: Morey, I understood that the
9 treatment capacity was based on a two percent increase in
10 the population per year times 20 years.

11 MR. LAMPSON: It's actually 1.7 percent.

12 MR. WOLFE: Well, is that enough, given our
13 growth over the past few years? Given that our current
14 plant used up its useful life in ten to 12 years, are we
15 looking at a 20-year plan that's going to use up its useful
16 life much quicker?

17 MR. LAMPSON: Well, currently, I think the
18 last couple years you're seeing about four percent growth
19 in customers. We don't feel like you're going to sustain
20 that throughout the next 20 years and will average more
21 like two percent or 1.7 percent. It's really just a
22 judgment call.

23 MR. WOLFE: And that's for both plants?

24 (Mr. Lampson nods head affirmatively.)

25 MR. WOLFE: So you're taking the existing

1 flow to number two, adding pump station number nine, and
2 then increasing the existing flow that is coming into
3 number two from Toyota two percent each year; is that
4 right? The flow, because you can't do it populationwise.

5 MR. LAMPSON: That's correct.

6 MR. RALSTON: You'll have to recognize that
7 both facilities at the end of this 20-year plan or at the
8 end of the improvements to both plants, at number one
9 you're going to have 4.5 million gallons per day capacity,
10 and that plant was designed to easily expand another
11 million and a half by the addition of an outer ring at very
12 little dollars compared to what it would cost to build
13 another full ditch. So you have four and a half; you
14 projected 4.3 average daily flow over 20 years at number
15 one. If something occurs that you need six, you can easily
16 get six out of it.

17 Likewise in number two, you're looking at a
18 plant that's going to be quite capable of handling four at
19 the end of the 20-year period. You're projecting 2.74
20 total, so you do have a lot of flexibility at number two
21 and a lot of improvements for growth there. So if the
22 development occurs so that it can go into number two,
23 that's another factor that could help you prevent number
24 one from being expanded so quickly.

25 Mr. Wolfe, do you have anything else?

1 MR. WOLFE: No.

2 MR. RALSTON: Does anyone else have a
3 question?

4 (No response.)

5 MR. RALSTON: Mr. Riddle, the floor is yours
6 for your closing remarks.

7 MR. RIDDLE: I would like to thank everybody
8 for coming out tonight, and I want to also mention for the
9 public record that the public advertisement of this public
10 hearing was advertised in the local newspaper twice, on
11 September 3rd and again on September 10, 1997. We'll
12 attach a copy of that to the transcript.

13 (Said document is filed with this
14 transcript and marked as Exhibit No. 1 for
15 purposes of identification.)

16 MR. RIDDLE: I don't have anything else.

17 -----
18 (HEARING CONCLUDED)
19 _____
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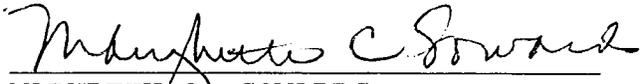
STATE OF KENTUCKY)

COUNTY OF FAYETTE)

I, MARYBETH C. SOWARDS, the undersigned Reporter and Notary Public, State of Kentucky at Large, certify that the facts stated in the caption hereto are true; that at the time and place stated in said caption the foregoing hearing took place; that said record was taken down in shorthand and later reduced to typewriting by me; and that the foregoing is a true and complete record.

My commission expires: January 11, 1999.

In testimony whereof, I have hereunto set my hand and seal of office on this, the 5th day of December, 1997.



MARYBETH C. SOWARDS
Reporter
Notary Public, State-at-Large

PHILLIP J. SHEPHERD
SECRETARY



BRERETON C. JONES
GOVERNOR

COMMONWEALTH OF KENTUCKY
NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION

FRANKFORT OFFICE PARK
14 REILLY ROAD
FRANKFORT, KENTUCKY 40601

AUG 23 1995

James R. Mulberry, Superintendent
Georgetown Municipal Water & Sewer Service
P. O. Box 653
Georgetown, Kentucky 40324

Re: NPDES No.: KY0020150
Scott County, Kentucky

Dear Mr. Mulberry:

Enclosed is the Kentucky Pollutant Discharge Elimination System (KPDES) permit for Georgetown #1 Wastewater Treatment Plant. This action constitutes a final permit issuance under 401 KAR 5:075 pursuant to KRS 224.16-050.

This permit will become effective on the date indicated in the attached permit provided that no request for adjudication is granted. All provisions of the permit will be effective and enforceable in accordance with 401 KAR 5:075 unless stayed by the Hearing Officer under Sections 11 and 13.

Please note permit requirement for monthly reporting rather than quarterly reporting.

Any demand for a hearing on the permit shall be filed in accordance with the procedures specified in KRS 224.10-420, 224.10-440, 224.10-470 and any regulations promulgated thereto. Any person aggrieved by the issuance of a permit final decision may demand a hearing pursuant to KRS 224.10-420(2) within thirty (30) days from the date of the issuance of this letter. Two copies of request for hearing should be submitted in writing to the Natural Resources and Environmental Protection Cabinet, Office of Administrative Hearings, 35-36 Fountain Place, Frankfort, Kentucky 40601 and the Commonwealth of Kentucky, Natural Resources and Environmental Protection Cabinet, Division of Water, 14 Reilly Road, Frankfort, Kentucky 40601. For your record keeping purposes, it is recommended that these requests be sent by certified mail. The written request must conform to the appropriate statutes referenced above.

If you have any questions regarding the KPDES decision, please contact Ms. Judy Zeigler, Inventory and Data Management Section, KPDES Branch, at (502) 564-2225, extension 465.

Further information on procedures and legal matters pertaining to the hearing request may be obtained by contacting the Hon. Barbara Foster, Division of Hearings, at (502) 564-7312.

Sincerely,

A handwritten signature in cursive script, appearing to read "Jack A. Wilson".

Jack A. Wilson, Director
Division of Water

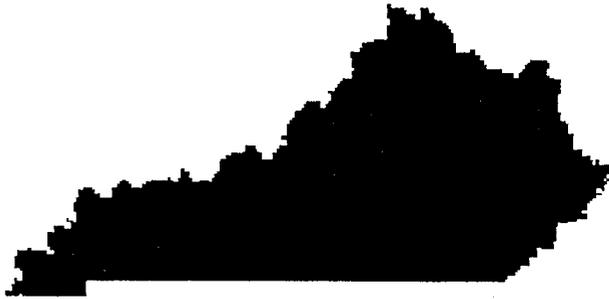
JAW:BT
Enclosure

c: Frankfort Regional Office
James Scarbrough, U.S. EPA, Region IV



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KPDES



KENTUCKY POLLUTANT DISCHARGE ELIMINATION SYSTEM

PERMIT

PERMIT NO. KY0020150

AUTHORIZATION TO DISCHARGE UNDER THE KENTUCKY POLLUTANT DISCHARGE ELIMINATION SYSTEM

Pursuant to Authority in KRS 224,

Georgetown Municipal Water & Sewer Service
125 W. Clinton Street, P.O. Box 653
Georgetown, Kentucky 40324

is authorized to discharge from a facility located at

Georgetown #1 WWTP
North Broadway
Georgetown, Scott County, Kentucky

to receiving waters named

Royal Springs Branch - mile point 0.05

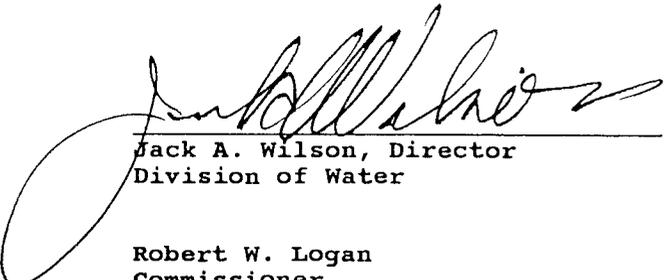
in accordance with effluent limitations, monitoring requirements and other conditions set forth in Parts I, II, III, and IV hereof. The permit consists of this cover sheet, and Part I 2 page(s), Part II 4 page(s), Part III 1 page(s) and Part IV 2 page(s).

This permit shall become effective on **OCT - 1 1995**

This permit and the authorization to discharge shall expire at midnight **SEP 30 2000**

AUG 23 1995

Date Signed



Jack A. Wilson, Director
Division of Water

Robert W. Logan
Commissioner

DEPARTMENT FOR ENVIRONMENTAL PROTECTION
Division of Water, Frankfort Office Park, 14 Reilly Road, Frankfort, Kentucky 40601

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the term of this permit, the permittee is authorized to discharge from outfall(s) serial number(s): 001, Municipal Discharge.

Such discharges shall be limited and monitored by the permittee as specified below:

	<u>DISCHARGE LIMITATIONS</u>			<u>MONITORING REQUIREMENTS</u>		
	lbs/day	Other Units (Specify)	Measurement Frequency	Sample Type	Sampling Location	
Flow, Design (4.5 mgd)	N/A	Report	Report	N/A	Influent or Effluent	
Biochemical Oxygen Demand (5 day), Carbonaceous	375	10 mg/l	15 mg/l	Composite	Influent & Effluent	
Total Suspended Solids	1126	30 mg/l	45 mg/l	Composite	Influent & Effluent	
Fecal Coliform Bacteria, N/100	N/A	200	400	Grab	Effluent	
Ammonia (as N)	75 188	2 mg/l* 5 mg/l**	3 mg/l* 7 mg/l**	Composite	Influent & Effluent	
Total Residual Chlorine (TRC)	N/A	0.012 mg/l	0.019 mg/l***	Grab	Effluent	
Dissolved Oxygen shall not be less than 7 mg/l				Grab	Effluent	
Biomonitoring shall not exceed 1.19 chronic toxicity unit(s)				See PART IV, Pages IV-1 and IV-2	Effluent	
Additional Parameters				Composite	Effluent	

In addition to the specified limits, the monthly average effluent CBOD₅ and suspended solids concentration shall not exceed 15 percent of the respective monthly average influent concentration (85% removal).

The pH of the effluent shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored three (3) times per week by grab sample.

There shall be no discharge of floating solids or visible foam in other than trace amounts. The effluent shall not cause a visible sheen on the receiving water.

Permit conditions are based on a maintained minimum stream flow of 1.33 cfs from Royal Springs.

* Effective May 1 - October 31
 ** Effective November 1 - April 30
 *** Daily maximum limitation

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (CONTINUATION)

The effluent shall be monitored for the following parameters by composite sample in both the total recoverable form and the dissolved form:

lead, copper, zinc, and cadmium.

The effluent shall be monitored for hardness as calcium carbonate (CaCO_3) by composite sample.

Monitoring shall be done at the same frequency as biomonitoring, but no more than once per week.

Testing for these parameters shall be conducted according to 40 CFR Part 136.

B. SCHEDULE OF COMPLIANCE

The permittee shall achieve compliance with the effluent limitations on the effective date of this permit.

C. SPECIAL CONDITION

In-stream dissolved oxygen shall be measured once per week at mile point 46.3 of North Elkhorn Creek. The monitoring shall be performed at mid-channel, mid-depth during the morning hours (before 9:00 a.m.).

STANDARD CONDITIONS FOR KPDES PERMIT

The permittee is also advised that all KPDES permit conditions in KPDES Regulation 401 KAR 5:065, Section 1 will apply to all discharges authorized by this permit.

This permit has been issued under the provisions of KRS Chapter 224 and regulations promulgated pursuant thereto. Issuance of this permit does not relieve the permittee from the responsibility of obtaining any other permits or licenses required by this Cabinet and other state, federal and local agencies.

It is the responsibility of the permittee to demonstrate compliance with permit parameter limitations by utilization of sufficiently sensitive analytical methods.

SPECIAL POTW REQUIREMENTS

NOTE: The following requirements apply only to Publicly-Owned Treatment Works.

SLUDGE DISPOSAL

Requirements will be imposed, as applicable, governing the disposal of sewage sludge in accordance with 401 KAR Chapters 30, 47, and 48.

PRETREATMENT

A. Program Requirements

1. The permittee shall be responsible for the performance of all pretreatment requirements contained in 401 KAR 5:057, Section 6 and pursuant to 40 CFR, Part 403, and shall be subject to enforcement actions, penalties, fines, and other remedies by the state, as provided in the Clean Water Act (hereafter the "Act"). The permittee shall implement and enforce its approved POTW pretreatment program. The permittee's approved POTW pretreatment program is hereby made an enforceable condition of this permit. The state may initiate enforcement action against a POTW and against an industrial user for noncompliance with applicable standards and requirements as provided in KRS 224.16-050(1), 224.70-110, and 224.73-120, and pursuant to the Act.
2. The permittee shall enforce the requirements promulgated under sections 307(b), 307(c), 307(d), and 402(b) of the Act. The permittee shall cause industrial users subject to federal categorical standards to achieve compliance no later than the date specified in those requirements or, in the case of a new industrial user, upon commencement of the discharge.
3. The permittee shall perform the pretreatment functions as required in 401 KAR 5:057, Section 6 and 40 CFR, Part 403 including, but not limited to:
 - a. Implement the necessary legal authorities as provided in 401 KAR 5:057, Section 6(4)(a). This includes, among other things, the authority to:
 - (1) Deny or condition new or increased contributions of pollutants or changes in the nature of pollutants (401 KAR 5:057, Section 6(4)(a)(1));
 - (2) Require compliance with applicable pretreatment standards (401 KAR 5:057, Section 6(4)(a)(2));

- (3) Control through permit to ensure compliance (401 KAR 5:057, Section 6(4)(a)(3));
 - (4) Require the development of compliance schedules and submission of reports (401 KAR 5:057, Section 6(4)(a)(4));
 - (5) Carry out inspection, surveillance, and monitoring procedures (401 KAR 5:057, Section 6(4)(a)(5));
 - (6) Obtain remedies for noncompliance by industrial users (401 KAR 5:057, Section 6(4)(a)(6)).
- b. Implement the programmatic functions as provided in 401 KAR 5:057, Section 6(4)(b). This includes:
- (1) An industrial waste survey (401 KAR 5:057, Section 6(4)(b)(1 and 2));
 - (2) Notification of appropriate federal, state and/or local standards or limitations (401 KAR 5:057, Section 6(4)(b)(3));
 - (3) Receipt and analysis of self-monitoring reports and other notices, (401 KAR 5:057, Section 6(4)(b)(4));
 - (4) POTW compliance sampling and analysis (401 KAR 5:057, Section 6(4)(b)(5));
 - (5) Noncompliance investigations and enforcement (401 KAR 5:057, Section 6(4)(b)(6));
 - (6) Public participation (401 KAR 5:057, Section 6(4)(b)(7)).
- c. Provide the required funding, equipment and personnel to implement the pretreatment program as provided in 40 CFR 403.8(f)(3) and 403.9(b)(4).
4. The permittee shall adopt and enforce local limits that will protect the treatment works against interference, pass-through, and sludge contamination. Local limits shall be revised as necessary by the permittee as provided in 40 CFR 122.21 and CFR 403.5.

B. Semi-Annual Reporting

1. The permittee shall submit semi-annually a report to the state describing the permittee's pretreatment program activities over the previous six months. In the event that the permittee is not in compliance with any conditions or requirements of this permit, then the permittee shall also include the reasons for noncompliance and state how and when the permittee shall comply with such conditions and requirements. This semi-annual report is due on March 1 and September 1 of each year and shall contain, but not be limited to, the following information:
 - a. A summary of analytical results of the POTW's influent, effluent, and sludge for those pollutants identified under Section 307(a) of the Act which are known or suspected to be discharged by industrial users, and for any nonpriority pollutants which the permittee believes may be causing or contributing to interference, pass-through, or adversely impacting sludge quality. The frequency of analysis shall not exceed twelve months.
 - b. A discussion of upset, interference, or pass-through incidents, if any, at the POTW treatment plant which the permittee knows or suspects were caused by industrial users of the POTW system. The discussion shall include the reasons why the incidents occurred, the corrective actions taken and, if known, the name and address of the industrial user(s) responsible.

- c. The cumulative number of industrial users that the permittee has notified regarding baseline monitoring reports and the cumulative number of industrial user responses.
- d. An updated list of the permittee's industrial users including their names and addresses, or a list of deletions and additions keyed to a previously submitted list. The permittee shall provide a brief explanation for each deletion. The list shall identify the industrial users subject to federal categorical standards and which set(s) of standards are applicable. The permittee shall characterize the compliance status of each industrial user by employing the following descriptions:
 - (1) In compliance with baseline monitoring report requirements (where applicable);
 - (2) Consistently achieving compliance;
 - (3) Inconsistently achieving compliance;
 - (4) Significantly violated applicable pretreatment requirements as defined by 40 CFR 403.8(f)(2)(vii);
 - (5) On a compliance schedule to achieve compliance (include the date final compliance is required);
 - (6) Not achieving compliance and not on a compliance schedule;
 - (7) The permittee does not know the industrial user's compliance status (with explanation).
- e. A summary of the inspection and sampling activities conducted by the permittee during the past six months to gather information and data regarding industrial users. The summary shall include:
 - (1) The names of industrial users subject to surveillance by the permittee and an indication of whether they were inspected, sampled, or both and the frequency of these activities at each user; and
 - (2) The conclusions or results from the inspection or sampling of each industrial user.
- f. A summary of the compliance and enforcement activities during the past six months, the summary shall include the names of the industrial users affected by the following actions:
 - (1) Warning letter or notices of violation;
 - (2) Administrative orders;
 - (3) Civil actions;
 - (4) Criminal actions;
 - (5) Assessment of monetary penalties. For each industrial user identify the amount of the penalties;
 - (6) Restriction of flow to the POTW; or
 - (7) Disconnection from discharge to the POTW.
- g. A description of any significant changes in operating the pretreatment program which differ from the information in the permittee's approved pretreatment program including, but not limited to changes concerning: the program's administrative structure; local industrial discharge limitations; monitoring program or monitoring frequencies; legal authority or enforcement policy; funding mechanisms; resource requirements; or staffing levels.

- h. A summary of the semi-annual pretreatment budget, including the cost of pretreatment program functions and equipment purchases.
 - i. A summary of public participation activities to involve and inform the public. This shall include a copy of the annual publication of significant violations, if such publication was needed to comply with 40 CFR 403.8(f)(2)(vii).
 - j. A description of any changes in sludge disposal methods and a discussion of any concerns not described elsewhere in the report.
 - k. Any other information deemed as pertinent by the state in effectively administering an approved pretreatment program.
2. A signed copy of this report shall be submitted within thirty days of the due dates to the state at the address shown below:

Kentucky Department of Environmental Protection
Division of Water
14 Reilly Road, Frankfort Office Park
Frankfort, Kentucky 40601

PART III

OTHER REQUIREMENTS

A. Reporting of Monitoring Results

Monitoring results obtained during each month must be reported on a preprinted Discharge Monitoring Report (DMR) Form which will be mailed to you. Each month's completed DMR must be sent to the Division of Water at the address listed below (with a copy to the appropriate Regional Office) postmarked no later than the 28th day of the month following the month for which monitoring results were obtained.

Division of Water
Frankfort Regional Office
1047 U.S. 127 South Annex Bldg.
Frankfort, Kentucky 40601
ATTN: Mr. Fred Claus

Kentucky Natural Resources and
Environmental Protection Cabinet
Dept. for Environmental Protection
Division of Water
Inventory & Data Management
14 Reilly Road, Frankfort Office Park
Frankfort, Kentucky 40601

B. Reopener Clause

This permit shall be modified, or alternatively revoked and reissued, to comply with any applicable effluent standard or limitation issued or approved under 401 KAR 5:050 thru 5:080 and KRS 224, if the effluent standard or limitation so issued or approved:

1. Contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or
2. Controls any pollutant not limited in the permit.

The permit as modified or reissued under this paragraph shall also contain any other requirements of KRS Chapter 224 when applicable.

**PART IV
CHRONIC CONCERNS
Biomonitoring**

In accordance with Part I of this permit, the permittee shall initiate the series of tests described below within 30 days of the effective date of this permit to evaluate wastewater toxicity of the discharge from outfall(s) 001. If the permittee is using a most sensitive species, the initial four (4) tests shall be conducted using both test species as indicated below to provide confirmation of previously identified most sensitive test organism.

1. Test Requirements

- A. The permittee shall perform one (1) short-term fathead minnow (Pimephales promelas) growth test and one (1) short-term daphnid (Ceriodaphnia sp.) life-cycle test. Tests shall be conducted with appropriate replicates of 84% effluent, a control and a minimum of four (4) evenly spaced serial dilutions of 84% effluent. If the permit limit is greater than 77% ($TU_c < 1.3$), then one (1) dilution must be 100%. For all other conditions, two (2) dilutions must be above the permit concentration and two (2) below. Controls shall be tested concurrently with effluent testing using a synthetic water. The analysis will be deemed reasonable and good only if the minimum control requirements are met (i.e. $\geq 80\%$ survival; 60% adults with 3 broods and 15 young/female for the Ceriodaphnia test; an average 0.25 mg weight for the minnow growth test). Any test that does not meet the control acceptability criteria shall be repeated as soon as practicable within the monitoring period (i.e. monthly or quarterly). Noncompliance with the toxicity limit will be demonstrated if the IC_{25} (inhibition concentration) for reproduction or growth is less than 84% effluent. The average reproduction for Ceriodaphnia shall be calculated by dividing the total number of live Ceriodaphnia young in each concentration by the total number of organisms used to initiate that concentration; the average growth for the fathead minnows shall be calculated by dividing the total weight of surviving minnow larvae in each replicate by the total number of organisms used to initiate that replicate.
- B. Tests shall be conducted quarterly or at a frequency to be determined by the permitting authority.

A minimum of three (3) twenty-four hour composite samples will be collected at a frequency of one (1) sample every other day, or at a frequency to be determined by the permitting authority. For example, the first sample would be used for test initiation, day 1, and for test solution renewal on day 2. The second sample would be used for test solution renewal on days 3 and 4. The third sample would be used for test solution renewal on days 5, 6, and 7. The lapsed time from collection of the last aliquot of the composite and its first use for test initiation, or for test solution renewal shall not exceed 36 hours. Composite samples shall be chilled during collection and maintained at 4°C until used.

After the first four (4) tests with both species, the Division will determine whether one (1) or both organisms will be used for subsequent routine monitoring tests.

2. Reporting Requirements

Results of all tests conducted with any organism shall be reported according to the most recent format provided by the Division of Water. Test results shall be submitted to the Division of Water with the next regularly scheduled discharge monitoring report.

3. Chronic Toxicity

- A. If noncompliance with the toxicity limit occurs (IC_{25} for reproduction or growth is less than 84% effluent), the permittee must conduct a second test within 15 days of the first failure. This test will be used in evaluating the persistence of the toxic event and the possible need for a toxicity reduction evaluation (TRE).

If the second test demonstrates noncompliance with the toxicity limit, the permittee will be required to perform either of the options listed below. The Division must be notified of the option selected within five (5) days of the failure of this second test.

1) Accelerated Testing

Complete four (4) tests within 90 days of selection of this option to evaluate the frequency and degree of toxicity. The results of the two tests specified in Section 3.A and of the four additional tests will be used for purposes of this evaluation.

If results from 2 of any 6 tests show a significant non-compliance with the chronic limit (≥ 1.2 times the TU_0), or results from 4 of any 6 tests show chronic toxicity (as defined in 1.A), a Toxicity Reduction Evaluation (TRE) will be required. The Division reserves the right to require a TRE in situations of recurring toxicity.

2) Toxicity Reduction Evaluation (TRE)

If it is determined that a TRE is required, a plan and implementation schedule must be submitted to the Division within 30 days of notification. The TRE shall include appropriate measures such as in-plant controls, additional wastewater treatment, or changes in the operation of the wastewater discharge to meet permit conditions. The TRE protocol shall follow that outlined in the most recent edition of EPA's guidance for conducting TRE's.

- B. If a violation of the toxicity limit occurs, different or more stringent monitoring requirements may be imposed in lieu of the normal requirements of this permit for whatever period of time is specified by the Division of Water. The Division reserves the right to require additional testing or a TRE in situations of recurring toxicity.

4. Test Methods

All test organisms, procedures and quality assurance criteria used shall be in accordance with Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms (Second Edition), EPA-600/4-89/001, An Interpolation Estimate for Chronic Toxicity, the IC Approach, National Effluent Toxicity: Assessment Center, U.S. EPA, Technical Report O5-88, or the most recent edition of these publications.



COMMONWEALTH OF KENTUCKY
NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION
FRANKFORT OFFICE PARK
14 REILLY ROAD
FRANKFORT, KENTUCKY 40601

FACT SHEET

**KENTUCKY POLLUTANT DISCHARGE ELIMINATION SYSTEM
PERMIT TO DISCHARGE TREATED WASTEWATER
INTO WATERS OF THE COMMONWEALTH**

Permit No.: KY0020150

Date: June 15, 1995

Permit Writer: Herb Ray

1. **SYNOPSIS OF APPLICATION**

a. Name and Address of Applicant

Georgetown Municipal Water & Sewer Service
125 W. Clinton Street, P.O. Box 653
Georgetown, Kentucky 40324

b. Description of Applicant's Operation

Engaged in collection, treatment, and disposal of wastewater.

c. Production Capacity of Facility

4.5 MGD Georgetown #1 WWTP
North Broadway
Georgetown, Scott County, Kentucky

d. Description of Existing Pollution Abatement Facilities

Treatment process consists of screening and grit removal, oxidation ditch and rotating biological contactors, clarification, sand filtration, chlorine disinfection, dechlorination, and post aeration. Solids are processed by thickening, digestion, belt filter press, and landfill.

2. **RECEIVING WATER**

a. Name/Mile Point - Royal Springs Branch - mile point 0.05

b. Stream Segment Use Classification - Warmwater Aquatic Habitat and Primary/Secondary Contact Recreation

c. Stream Low Flow Condition - 1.33 cfs

3. **REPORTED DISCHARGE & PROPOSED LIMITS**

See Attachment



4. METHODOLOGY USED IN DETERMINING LIMITATIONS

Biochemical Oxygen Demand (5 day), Total Suspended Solids, Fecal Coliform and pH
The effluent limitations for the above permit parameters are consistent with 401 KAR 5:045, pursuant to KRS 224.70-100, 224.70-110.

Ammonia Nitrogen, Dissolved Oxygen, Total Residual Chlorine (TRC) and Biomonitoring
The effluent limitations for the above permit parameters are consistent with 401 KAR 5:031, pursuant to KRS 224.70-100, 224.70-110.

Sludge Management

Requirements will be imposed, as applicable, governing the disposal of sewage sludge in accordance with 401 KAR Chapters 30, 47, and 48.

The conditions of 401 KAR 5:029, Section 2(1) and (3) have been satisfied by this permit action. A review under Section 2(2) and (4) is not applicable.

5. PROPOSED COMPLIANCE SCHEDULE FOR ATTAINING EFFLUENT LIMITATIONS

Permittee will comply with effluent limitations by the effective date of the permit.

6. PROPOSED SPECIAL CONDITIONS WHICH WILL HAVE A SIGNIFICANT IMPACT ON THE DISCHARGE

In-stream dissolved oxygen shall be monitored once per week at mile point 46.3 of North Elkhorn Creek. The monitoring shall be performed at mid-channel, mid-depth during the morning hours (before 9:00 a.m.).

7. PERMIT DURATION

Five (5) years

8. THE ADMINISTRATIVE RECORD

The Administrative Record, including application, draft permit, fact sheet, public notice, comments received, and additional information is available by writing the Division of Water at 14 Reilly Road, Frankfort Office Park, Frankfort, Kentucky 40601.

9. CONTACT

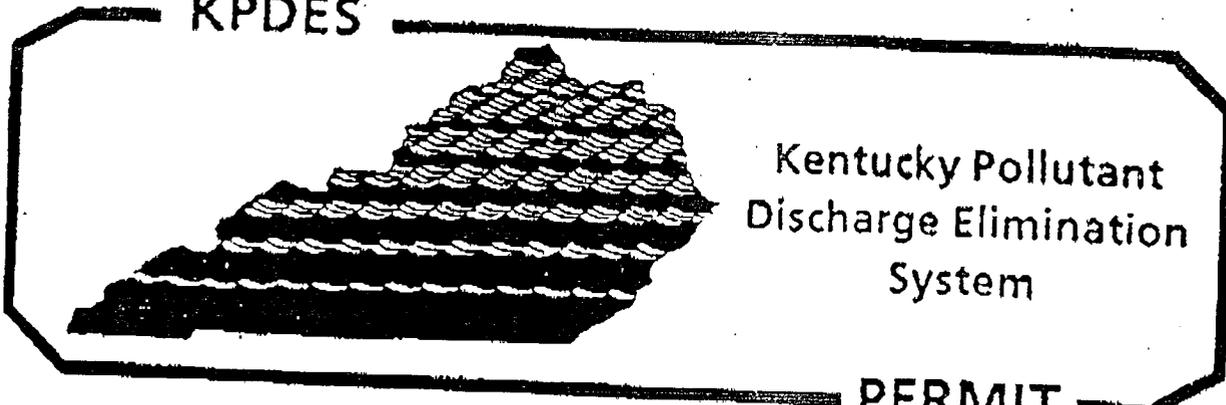
Herb Ray
KPDES Permit Writer
(502) 564-3410

REPORTED DISCHARGE AND PROPOSED LIMITS - Municipal

Serial Number 001

Effluent Characteristics	Reported Discharge		Proposed Limits		COMMENTS
	Average Annual Value	Lowest Monthly Value	Monthly Average	Weekly Average	
Flow, MGD	2.4	1.82	Design Flow = 4.5 mgd		NR - Not Reported
CBOD ₅ , mg/l	2.4	1.4	10	15	
TSS, mg/l	2.7	1.0	30	45	
Fecal Coliform, N/100 ml	NR	NR	200	400	
Ammonia (as N) mg/l	1.05	0.04	2	3	
			5	7	
Dissolved Oxygen, mg/l	8.06	7.40	7.0 minimum		
pH, standard units	NR	6.8	6.0 - 9.0		
Total Residual Chlorine, mg/l	0.2	0	0.012 Monthly Average		
			0.019 Daily Maximum		
Biomonitoring, chronic toxicity units (TU _c)		Range 38% - >100%	1.19 (84% effluent)		
		See PART IV, Pages IV-1 and IV-2			

KPDES



Kentucky Pollutant Discharge Elimination System

PERMIT

PERMIT NO. KY0082007

AUTHORIZATION TO DISCHARGE UNDER THE KENTUCKY POLLUTANT DISCHARGE ELIMINATION SYSTEM

Pursuant to Authority in KRS 224,

Georgetown Municipal Water and Sewer Service
125 West Clinton Street
Georgetown, Kentucky 40324

is authorized to discharge from a facility located at

Georgetown Wastewater Treatment Facility #2
900 Cherry Blossom Way
Georgetown, Kentucky 40324
Scott County

to receiving waters named

Lanes Run (mile point 0.55)

in accordance with effluent limitations, monitoring requirements and other conditions set forth in Parts I, II, III, and Part IV hereof. The permit consists of this cover sheet, and Part I 3 page(s), Part II 4 page(s), Part III 1 page(s) and Part IV 2 page(s).

This permit shall become effective on APR - 1 1992

This permit and the authorization to discharge shall expire at midnight, MAR 31 1997.

FEB 18 1992

Date Signed

Jack A. Wilson

Jack A. Wilson, Director
Division of Water

William C. Eddins

William C. Eddins
Commissioner

DEPARTMENT FOR ENVIRONMENTAL PROTECTION
Division of Water, Frankfort Office Park, 18 Reilly Road, Frankfort, Kentucky 40601

02/24/1992 10:19 Georgetown Wa. & Sw. Ser.

502 863 3575 P.02

PHILLIP J. SHEPHERD
SECRETARY



BRERETON C. JONES
GOVERNOR

COMMONWEALTH OF KENTUCKY
NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION
FRANKFORT OFFICE PARK
18 REILLY ROAD
FRANKFORT, KENTUCKY 40601
FEB 18 1992

*Recd
2/21/92*

Joyce A. Gee, General Manager
Georgetown Municipal Water & Sewer Service
P.O. Box 653
Georgetown, Kentucky 40324

Re: NPDES No.: KY0082007
Scott County, Kentucky

Dear Ms. Gee:

Enclosed is the Kentucky Pollutant Discharge Elimination System (KPDES) permit for Georgetown Wastewater Treatment Plant No. 2. This action constitutes a final permit issuance under 401 KAR 5:075 pursuant to KRS 224.16-050.

This permit will become effective on the date indicated in the attached permit provided that no request for adjudication is granted by the Division of Water. All provisions of the permit will be effective and enforceable in accordance with 401 KAR 5:075 unless stayed by the Hearing Officer under Sections 11 and 13.

Please note permit requirement for monthly reporting rather than quarterly reporting.

If you wish to request an adjudicatory hearing, you must submit the request in writing (an original and two (2) copies) to the Department of Law within thirty (30) days from the date of this letter. For your record keeping purposes, it is recommended that this request be sent by certified mail. The hearing request must conform to the requirements of KRS 224.10-420.

If you have any questions regarding this permit issuance, please contact Judy Zeigler of the Inventory and Data Management Section, KPDES Branch at (502) 564-3410, extension 465.

Further information on procedures and legal matters pertaining to the adjudicatory hearing may be obtained by contacting Ms. Kathy Hargraves, Department of Law at (502) 564-5576.

Sincerely,

Jack A. Wilson, Director
Division of Water

JAW:BT:mnn
Enclosure

Frankfort Regional Office
James Scarbrough, U.S EPA, Region IV



02/24/1992 10:21

Georgetown Wa. & Sw. Ser.

502 863 3575

P. 04

PART I
Page I-1
Permit No: KY0082007

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the term of this permit, the permittee is authorized to discharge from outfall(s) serial number(s): 001, Municipal Discharge.

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS		MONITORING REQUIREMENTS		Sampling Location		
	lbs/day Monthly Avg.	Weekly Avg.	Other Units (Specify) Monthly Avg.	Weekly Avg.		Measurement Frequency	Sample Type
Flow, Design (2.2 MGD)	-	-	-	-	Continuous	--	Influent or Effluent
Biochemical Oxygen Demand (5 day), Carbonaceous	91.7	138	5 mg/l	7.5 mg/l	1/Weekday	Composite	Influent & Effluent
Total Suspended Solids	550	826	30 mg/l	45 mg/l	1/Weekday	Composite	Influent & Effluent
Fecal Coliform Bacteria, N/100	-	-	200	400	1/Weekday	Grab	Effluent
Ammonia (as N)	18.3 73.4	27.5 110	1 mg/l* 4 mg/l**	1.5 mg/l* 6 mg/l**	1/Weekday	Composite	Effluent
Dissolved Oxygen shall not be less than 7 mg/l					1/Weekday	Grab	Effluent
Biomonitoring shall not exceed 1.0 chronic toxicity unit(s)							Effluent

See PART IV, Pages IV-1 and IV-2.

In addition to the specific limits, the monthly average effluent CBOD₅ and suspended solids concentration shall not exceed 15 percent of the respective monthly average influent concentration (85% removal). The pH of the effluent shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored once per weekday by grab sample.

There shall be no discharge of floating solids or visible foam in other than trace amounts. The effluent shall not cause a visible sheen on the receiving water.

All effluent parameters shall be monitored after treatment prior to leaving the plant site via the outfall.

* Effective May 1 - October 31

** Effective November 1 - April 30

02/24/1992

10:22 Georgetown Wa. & Sw. Ser.

502 863 3575 P.05

PART I
Page 1-2
Permit No: KY0092007

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (CONTINUATION)

During the period beginning on the effective date of this permit and lasting through the term of this permit, the permittee is authorized to discharge from outfall(s) serial number(s): 001, Municipal Discharge.

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS

	<u>DISCHARGE LIMITATIONS</u>		<u>Other Units (Specify)</u>		<u>MONITORING REQUIREMENTS</u>		
	lbs/day Monthly Avg.	Daily Max.	Monthly Avg.	Daily Max.	Measurement Frequency	Sample Type	Sampling Location
Chloride	11,009	22,018	600 mg/l	1200 mg/l	1/Week	Composite	Effluent
Cadmium, Total Recoverable	0.037	0.202	0.002 mg/l	0.011 mg/l	1/Week	Composite	Effluent
Nickel, Total Recoverable	6.27	56.5	0.342 mg/l	3.08 mg/l	1/Week	Composite	Effluent
Lead, Total Recoverable	0.183	4.81	0.010 mg/l	0.262 mg/l	1/Week	Composite	Effluent
Zinc, Total Recoverable	4.22	4.66	0.230 mg/l	0.254 mg/l	1/Week	Composite	Effluent
Hardness (as CaCO ₃)		Monitor Only			1/Week	Composite	Effluent

TABLE III
GMSS WWTP #2 EFFLUENT LIMITS ¹
WATER QUALITY CRITERIA

SUBSTANCE	ACUTE CRITERIA ² ug/l	CHRONIC CRITERIA ³ ug/l	RECOMMENDED LIMIT ug/l
Arsenic	--	50.0	50.0
Beryllium ⁴	--	.013	.010
Cadmium	6.19	1.56	1.50
Chromium III	2,420	288	280
Chromium VI	16.0	11.0	11.0
Copper	25.9	16.7	16.0
Iron	4,000	3,500	3,500
Lead	136	5.33	5.30
Mercury	2.4	.012	.012
Nickel	1,998	222	220
Selenium	20.0	5.0	5.0
Silver	8.15	N/A	8.0
Zinc	165	149	140
Pentachlorophenol ⁵	9.0	5.73	5.70
Cyanide, Free	22.0	5.0	5.0
Chloride	1200 mg/l	600 mg/l	600 mg/l
Hydrogen Sulfide	--	2.0	2.0

(478 using
250 mg/l H₂O
Intake / Dilution
BASED ON
HARMONIC MEAN)

1 Based on 401 KAR 5:031, Surface Water Standards, Table 2
 2 Assumes hardness of 150 mg/l minimum
 3 Based upon WWTP Q = 3.395 cfs/hardness = 150 mg/l;
 7Q10 = 0 cfs (zero dilution)
 4 Based on 401 KAR 5:031, Table 1, Harmonic Mean = 3.395 cfs at WWTP No. 2,
 6.5 cfs at intake (Georgetown)
 5 pH = 7

TABLE-3/90210/80991

02/24/1992 10:23 Georgetown Wa. & Sw. Ser.

502 863 3575 P.06

PART I

Page I-3

Permit No.: KY0082007

B. Schedule of Compliance

1. The permittee shall achieve compliance with the effluent limitations specified for discharges in accordance with the following schedule:
 - a. Attain compliance with effluent limitations on the effective date of this permit.
2. No later than 14 calendar days following a date identified in the above schedule of compliance, the permittee shall submit either a report of progress or, in the case of specific actions being required by identified dates, a written notice to the permit issuing authority of compliance or noncompliance. In the latter case, the notice shall include the cause of noncompliance, any remedial actions taken, and the probability of meeting the next scheduled requirement.

02/24/1992 10:23 Georgetown Wa. & Sw. Ser.

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PART II

Page II-1

Permit No.: KY0082007

STANDARD CONDITIONS FOR KPDES PERMIT

The permittee is also advised that all KPDES permit conditions in KPDES Regulation 401 KAR 5:065, Section 1 will apply to all discharges authorized by this permit.

This permit has been issued under the provisions of KRS Chapter 224 and regulations promulgated pursuant thereto. Issuance of this permit does not relieve the permittee from the responsibility of obtaining any other permits or licenses required by this Cabinet and other state, federal and local agencies.

SPECIAL POTW REQUIREMENTS

NOTE: The following requirements apply only to Publicly-Owned Treatment Works.

SLUDGE DISPOSAL

Requirements will be imposed, as applicable, governing the disposal of sewage sludge in accordance with 401 KAR Chapters 30, 47, and 48.

PRETREATMENTA. Program Requirements

1. The permittee shall be responsible for the performance of all pretreatment requirements contained in 401 KAR 5:055, Section 9 and pursuant to 40 CFR, Part 403, and shall be subject to enforcement actions, penalties, fines, and other remedies by the state, as provided in the Clean Water Act (hereafter the "Act"). The permittee shall implement and enforce its approved POTW pretreatment program. The permittee's approved POTW pretreatment program is hereby made an enforceable condition of this permit. The state may initiate enforcement action against a POTW and against an industrial user for noncompliance with applicable standards and requirements as provided in KRS 224.16-050(1), 224.70.110, and 224.73-120, and pursuant to the Act.
2. The permittee shall enforce the requirements promulgated under sections 307(b), 307(c), 307(d), and 402(b) of the Act. The permittee shall cause industrial users subject to federal categorical standards to achieve compliance no later than the date specified in those requirements or, in the case of a new industrial user, upon commencement of the discharge.
3. The permittee shall perform the pretreatment functions as required in 401 KAR 5:055, Section 9 and 40 CFR, Part 403 including, but not limited to:
 - a. Implement the necessary legal authorities as provided in 401 KAR 5:055, Section 9(7)(f)(1). This includes, among other things, the authority to:
 - (1) Deny or condition new or increased contributions of pollutants or changes in the nature of pollutants (401 KAR 5:055, Section 9(7)(f)(1.a));
 - (2) Require compliance with applicable standards.

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PART II

Page II-2

Permit No.: KY0082007

- (3) Control through permit to ensure compliance (401 KAR 5:055, Section 9(7)(f)(1.c));
 - (4) Require the development of compliance schedules and submission of reports (401 KAR 5:055, Section 9(7)(f)(1.d, 1.e));
 - (5) Carry out inspection, surveillance, and monitoring procedures (401 KAR 5:055, Section 9(7)(f)(1.f));
 - (6) Obtain remedies for noncompliance by industrial users (401 KAR 5:055, Section 9(7)(f)(1.g)).
- b. Implement the programmatic functions as provided in 401 KAR 5:055, Section 9(7)(F)(2.). This includes:
- (1) An industrial waste survey (401 KAR 5:055, Section 9(7)(f)(2.a, 2.b));
 - (2) Notification of appropriate federal, state and/or local standards or limitations (401 KAR 5:055, Section 9(7)(f)(2.c));
 - (3) Receipt and analysis of self-monitoring reports and other notices, (401 KAR 5:055, Section 9(7)(f)(2.d));
 - (4) POTW compliance sampling and analysis (401 KAR 5:055, Section 9(7)(f)(2.e));
 - (5) Noncompliance investigations and enforcement (401 KAR 5:055, Section 9(7)(2.f));
 - (6) Public participation (401 KAR 5:055, Section 9(7)(f)(2.g)).
4. The permittee shall adopt and enforce local limits that will protect the treatment works against interference, pass-through, and sludge contamination. Local limits shall be revised as necessary by the permittee as provided in 40 CFR 122.21 and CFR 403.5.

B. Semi-Annual Reporting

1. The permittee shall submit semi-annually a report to the state describing the permittee's pretreatment program activities over the previous six months. In the event that the permittee is not in compliance with any conditions or requirements of this permit, then the permittee shall also include the reasons for noncompliance and state how and when the permittee shall comply with such conditions and requirements. This semi-annual report is due on March 1 and September 1 of each year and shall contain, but not be limited to, the following information:
 - a. A summary of analytical results of the POTW's influent, effluent, and sludge for those pollutants identified under Section 307(a) of the Act which are known or suspected to be discharged by industrial users, and for any nonpriority pollutants which the permittee believes may be causing or contributing to interference, pass-through, or adversely impacting sludge quality. The frequency of analysis shall not exceed twelve months.

02/24/1992 10:25 Georgetown Wa. & Sw. Ser.

502 863 3575 P.09

PART II

Page II-3

Permit No.: KY0082007

- b. A discussion of upset, interference, or pass-through incidents, if any, at the POTW treatment plant which the permittee knows or suspects were caused by industrial users of the POTW system. The discussion shall include the reasons why the incidents occurred, the corrective actions taken and, if known, the name and address of the industrial user(s) responsible.
- c. The cumulative number of industrial users that the permittee has notified regarding baseline monitoring reports and the cumulative number of industrial user responses.
- d. An updated list of the permittee's industrial users including their names and addresses, or a list of deletions and additions keyed to a previously submitted list. The permittee shall provide a brief explanation for each deletion. The list shall identify the industrial users subject to federal categorical standards and which set(s) of standards are applicable. The permittee shall characterize the compliance status of each industrial user by employing the following descriptions:
- (1) In compliance with baseline monitoring report requirements (where applicable);
 - (2) Consistently achieving compliance;
 - (3) Inconsistently achieving compliance;
 - (4) Significantly violated applicable pretreatment requirements as defined by 40 CFR 403.8(f)(2)(vii);
 - (5) On a compliance schedule to achieve compliance (include the date final compliance is required);
 - (6) Not achieving compliance and not on a compliance schedule;
 - (7) The permittee does not know the industrial user's compliance status (with explanation).
- e. A summary of the inspection and sampling activities conducted by the permittee during the past six months to gather information and data regarding industrial users. The summary shall include:
- (1) The names of industrial users subject to surveillance by the permittee and an indication of whether they were inspected, sampled, or both and the frequency of these activities at each user; and
 - (2) The conclusions or results from the inspection or sampling of each industrial user.
- f. A summary of the compliance and enforcement activities during the past six months, the summary shall include the names of the industrial users affected by the following actions:
- (1) Warning letter or notices of violation;
 - (2) Administrative orders;
 - (3) Civil actions;
 - (4) Criminal actions;
 - (5) Assessment of monetary penalties. For each industrial user identify the amount of the penalties;
 - (6) Restriction of flow to the POTW; or
 - (7) Disconnection from discharge to the POTW.

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PART II
Page II-4
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- g. A description of any significant changes in operating the pretreatment program which differ from the information in the permittee's approved pretreatment program including, but not limited to changes concerning: the program's administrative structure; local industrial discharge limitations; monitoring program or monitoring frequencies; legal authority or enforcement policy; funding mechanisms; resource requirements; or staffing levels.
 - h. A summary of the semi-annual pretreatment budget, including the cost of pretreatment program functions and equipment purchases.
 - i. A summary of public participation activities to involve and inform the public. This shall include a copy of the annual publication of significant violations, if such publication was needed to comply with 40 CFR 403.8(f)(2)(vii).
 - j. A description of any changes in sludge disposal methods and a discussion of any concerns not described elsewhere in the report.
 - k. Any other information deemed as pertinent by the state in effectively administering an approved pretreatment program.
2. A signed copy of this report shall be submitted within thirty days of the due dates to the state at the address shown below:

Kentucky Department of Environmental Protection
Division of Water
18 Reilly Road, Frankfort Office Park
Frankfort, Kentucky 40601

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502 863 3575 P.11

PART III
Page III-1
Permit No.: KY0082007

PART III

OTHER REQUIREMENTSA. Reporting of Monitoring Results

Monitoring results obtained during each month must be reported on a preprinted Discharge Monitoring Report (DMR) Form which will be mailed to you. Each month's completed DMR must be sent to the Division of Water at the address listed below (with a copy to the appropriate Regional Office) postmarked no later than the 28th day of the month following the month for which monitoring results were obtained.

Division of Water
Frankfort Regional Office
U.S. 127 South Annex, Suite 2
1049 U.S. Highway 127 South
Frankfort, Kentucky 40601
ATTN: Mr. Fred Claus

Kentucky Natural Resources and
Environmental Protection Cabinet
Dept. for Environmental Protection
Division of Water
Inventory & Data Management
18 Reilly Road, Frankfort Office Park
Frankfort, Kentucky 40601

B. Reopener Clause

This permit shall be modified, or alternatively revoked and reissued, to comply with any applicable effluent standard of limitation issued or approved under 401 KAR 5:050 thru 5:085, if the effluent standard or limitation so issued or approved:

1. Contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or
2. Controls any pollutant not limited in the permit.

The permit as modified or reissued under this paragraph shall also contain any other requirements of KRS Chapter 224 when applicable.

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PART IV

Page IV-1

Permit No.: KY0082007

PART IV

CHRONIC CONCERNS

Biomonitoring

In accordance with Part IV of this permit, the permittee shall monitor quarterly the series of tests described below beginning the effective date of this permit to evaluate wastewater toxicity of this discharge from outfall(s) 001.

1. Test Requirements

- A. Screening Test - The permittee shall perform one fathead minnow (Pimephales promelas) and one daphnid (Ceriodaphnia sp.) test on 24 hour composite samples of 100% effluent. The permittee shall conduct one daphnid and one fathead minnow short-term chronic test from the following list: a 7-day Ceriodaphnia sp. life-cycle test, a 9-day fathead minnow embryo-larval test, and a 7-day fathead minnow growth test. Renewals of the solution will be made daily. Testing of the effluent shall be initiated within 36-hours of the last sample collected. Concurrently with effluent testing, controls shall be tested in replicate to establish a baseline for comparison. Controls will consist of a synthetic water. The experiment will be deemed reasonable and good only if control survival is 80% or greater in test organisms held in synthetic water. If any test is repeated to assure an acceptable test (i.e., control survival is less than 80%) such testing shall be initiated within 96 hours of test failure or the provisions of Section 3 shall apply. Non-compliance toxicity will be demonstrated if there is a statistically significant difference at the 95% confidence level in survival, reproduction or in growth between test organisms exposed to 100% effluent and the controls.
- B. Definitive Test - If toxicity is found in any of the above tests (as defined in Section 1.A.), then a definitive test shall be conducted. Definitive tests shall be initiated within 96 hours of the end of the initial toxicity test in order to determine the extent of toxicity and to assess the persistence of the toxic discharge. Definitive tests shall be conducted with appropriate replicates on 100% effluent, a control, and a minimum of four serial dilutions of 100% effluent. All requirements related to controls and test success will be the same as in paragraph A. Non-compliance toxicity will be demonstrated if there is a statistically significant difference at the 95% confidence level in survival, reproduction or in growth between test organisms exposed to 100% effluent and the controls.

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PART IV
Page IV-2
Permit No.: KY0082007

2. Reporting Requirements

Results of all tests conducted with any organism shall be reported according to the most recent format provided by the Division of Water. Test results shall be submitted to the permitting authority along with the periodic discharge monitoring reports.

3. Enforcement

A. If toxicity is found in any two consecutive screening tests or if any test repeated to assure an acceptable test (as defined in Section 1.A.) is not initiated within 96 hours, then the permittee shall submit to the Division of Water a toxicity reduction evaluation (TRE) plan and accompanying implementation schedule within 30 days of the finalization of the toxicity test. The TRE shall include appropriate measures such as in-plant controls (process, raw material, or product changes), additional wastewater treatment, or changes in the operation of the facility to reduce the toxicity of the wastewater discharge to acceptable levels. The Division reserves the right to require a TRE plan and implementation in situations of recurring toxicity.

B. If violation of toxicity limits results in a TRE or enforcement action, any different or more stringent monitoring requirements imposed in that enforcement action shall apply in lieu of the requirements of this permit condition for whatever period of time is specified by Division of Water. Monitoring requirements may include effluent chronic toxicity, toxic persistence, bioaccumulative potential and instream impacts on aquatic life.

4. Chemical Specific Sampling

During periods of biomonitoring, representative samples shall be properly collected, preserved and stored (held at 4°C) for later analysis of specific pollutants to aid in determination of cause of failure, should the effluent fail the biomonitoring test. Samples shall be considered representative if procedures conform to 40 CFR 136 and are in accordance with 401 KAR 5:065, Section 2(8)(b). Analysis of specific pollutants, conventional and nonconventional, shall include those toxic pollutants suspected or previously identified through industrial user surveys, in general, and pretreatment program implementation, where applicable.

5. Test Methods

All test organisms, procedures and quality assurance criteria used shall be in accordance with Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, (Second Edition), EPA-600/4-89/001 and Methods for Culturing and Conducting Toxicity Tests with Pimephales promelas, Daphnia pulex and Ceriodaphnia sp. (Second Edition), Kentucky Division of Water or the most recent editions of those publications. Statistics will be conducted according to statistical analysis addendum.

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PHILLIP J. SHEPHERD
SECRETARY



BREBETON C. JONES
GOVERNOR

COMMONWEALTH OF KENTUCKY
NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION
FRANKFORT OFFICE PARK
18 REILLY ROAD
FRANKFORT, KENTUCKY 40601
FEB 18 1992

Re: Georgetown No. 2 Wastewater Treatment Plant
NPDES No.: KY0082007
Scott County

Dear Commentors:

Your comments concerning the above-referenced draft permit have been reviewed and responses prepared in accordance with Kentucky Pollutant Discharge Elimination System (KPDES) regulation 401 KAR 5:075, Section 12. The comments have been briefly described below and our responses to those comments follow:

COMMENT 1:

The U.S. EPA published nickel value of 0.0134 mg/l for human health fish and water ingestion has been reevaluated and changed to 0.632 mg/l (See Federal Register, Volume 49, No. 4551, February, 1984 and Federal Register, Volume 50, No. 219, November 13, 1985). The nickel limitation appears to be based on a value that has been superseded.

RESPONSE 1:

The agency has not been able to confirm the revised human health fish and water ingestion value as stipulated in the comment. It is specified in the November 13, 1985 Federal Register that a "revised proposed" value of 0.632 mg/l was being considered and referenced the February, 1984 Federal Register. However, a review of the February, 1984 register does not indicate any reference to nickel. There are other parameters addressed, but no nickel. Therefore, such a change could not be verified.

However, during our investigation we reviewed the latest update criteria chart according to the Federal EPA which recommends a value of 0.610 mg/l for water and fish consumption and has been proposed for final rule in the November 19, 1991 Federal Register, Amendments to the Water Quality Standards Regulation, 40 CFR Part 131. The Division recognizes this value, instead of the 0.0134 mg/l, as the appropriate human health criteria for nickel.

Since the public notice and public hearing for the draft permit, the Georgetown Municipal Water and Sewer Service (GMWSS) has made the decision to remove from service the secondary domestic water supply intake on North Elkhorn Creek. Georgetown has recently completed connection to a finished drinking water source from Frankfort which eliminates the need for the back-up intake at Elkhorn Creek. This action effectively removes the domestic water supply criteria as a consideration for derivation

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of the discharge permit limitations. The warmwater aquatic criteria, rather than the domestic water supply criteria, now becomes the basis for all permit limitations subject to variation resulting from the wasteload allocation procedure, including nickel and chloride. The new monthly average values for these parameters are 0.342 mg/l and 600 mg/l, respectively. It must be noted that should GMWSS wish to reactivate the secondary intake as a water supply source due to emergency circumstances, eg. the main source at Royal Spring and/or the supplemental source from Frankfort becomes unusable, prior approval must be received from the Division of Water.

COMMENT 2:

Numeric values for metals proposed in the draft permit do not reflect consideration of site specific data. The Georgetown No. 2 facility has been in operation and discharging to the receiving stream for more than three (3) years, has been meeting monthly average concentration limits established in Agreed Order No. 4933-W-03 for copper, lead, iron, and nickel, and is not aware of any study which indicates stream degradation as a result of the discharge, or that concentration levels below those established in the Agreed Order would provide any additional environmental protection to the receiving stream. The actual impact of the facility effluent on the receiving stream should be considered so that meaningful values can be developed reflecting the local conditions.

RESPONSE 2:

Standard procedure for derivation of permit limitations was employed in the technical review of the Georgetown No. 2 treatment facility. The permit limitations resulted from comparison of the applicable stream use designations at the critical 7-day, 10-year low flow equal to zero. The previous Agreed Order had no bearing on the development of the permit. The final discharge permit must contain conditions to maintain compliance with appropriate criteria.

In order for the Cabinet to consider any granting of exceptions to criteria, the applicant must demonstrate appropriateness through proper documentation according to 401 KAR 5:031, Section 9.

COMMENT 3:

The draft permit establishes the receiving stream classification as "warmwater aquatic life, primary contact recreation, secondary contact recreation, and domestic water supply" which differs from the classification for the existing permit as "warmwater aquatic life." GMWSS was not advised or aware of this reclassification and raises questions as to the process and time such took place.

Also, GMWSS is aware of the other discharges with discharge points closer to the GMWSS secondary raw water intake which do not have the "domestic water supply" classification reference as part of their permit. In the past, GMWSS has expressed concern

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for these discharge points, which might have an impact on the secondary raw water intake. A study should be conducted to develop effluent limits for these other discharges, where appropriate, under the domestic water supply classification.

In addition, the draft permit establishes limits for chloride and nickel at the point of discharge which are equivalent to the domestic water supply criteria applicable "at the point of withdrawal." In the case of chloride, the limits established for the discharge do not reflect the existing data which demonstrates, under existing discharge and stream conditions, the in-stream chloride concentration is less than 30 mg/l downstream of Georgetown No. 2 discharge and more than three (3) miles upstream of the GMSS secondary raw water intake.

RESPONSE 3:

The receiving stream has not been reclassified since the original issuance of the discharge permit. However, the original permit issuance did not fully identify the use classifications. The majority of the streams in the Commonwealth are classified for warmwater aquatic and recreational use. Generally, the classification designation on the permit fact sheet or statement of basis references only warmwater life since this is the classification which dictates the variable effluent limitations generated by the wasteload allocation. The fecal coliform limitation is standard for the facilities with wastewater containing sanitary waste and is based on the primary and secondary contact recreation regulations independent of wasteload allocation. For this reason, the recreational classification reference has traditionally been omitted during the draft permit process. It has been the intent to reference those classifications pertinent to the specific limitations which have a potential for variation for a specific permit and not those that apply generally.

The lack of the domestic water supply classification for the original permit issuance was due to the fact that the permit limitations generated by the wasteload allocation were all governed by aquatic life criteria as the critical concern. For the proposed permit, chloride and nickel both were based on the wasteload allocation indicating the human health criteria to be the critical concern.

Had a limitation for chloride and nickel been proposed for the original permit, the domestic water supply classification would have been identified.

Basically, for the reasons explained above, other discharges within this immediate drainage area have been issued permits based on the warmwater aquatic life only classification. The recreational use classification is understood (all have fecal coliform limits) and none have parameters generated by the wasteload allocation resulting from the human health criteria as the critical concern, which would have warranted the domestic water supply use classification.

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Refer to Response #1 for an explanation of the domestic water supply classification applicability for the final permit.

COMMENT 4:

The draft permit does not identify the effluent sampling location.

RESPONSE 4:

The final permit indicates all effluent parameters shall be monitored after treatment prior to leaving the treatment plant site via the outfall line.

COMMENT 5:

The draft permit specifies for BOD, TSS, fecal coliform, ammonia, and dissolved oxygen a measurement frequency of "1/weekday." GMWSS believes the measurement frequency should be in terms of number per week and believes the measurement frequency should be "5/week."

RESPONSE 5:

The intent of the "1/weekday" measurement frequency designation is to have monitoring Monday - Friday, omitting weekends, which is equivalent to five (5) times per week. Inclusion of weekends would require "daily" frequency designation.

COMMENT 6:

The draft permit proposes that the facility "attain compliance with the effluent limitations on the effective date of the permit." GMWSS believes this to be unreasonable particularly for the parameters chloride, nickel, zinc, and lead since treatment for removal of these constitutes to the levels specified in the draft permit would require the design and construction of highly sophisticated treatment technology.

RESPONSE 6:

The final permit specifies higher limits for chloride and nickel due to the elimination of the water intake source on North Elkhorn Creek. Review of past discharge data indicates GMWSS should have no problem relative to compliance with these limits as well as the zinc limit. Review of the data with respect to lead indicates various degrees of exceedance of the permit limitation. Should GMWSS believe reduction of lead levels to ensure compliance would be difficult, a petition for relief along with a proposal to attain compliance will need to be submitted to the Division within thirty (30) days of the permit issuance.

COMMENT 7:

The biomonitoring procedure required in the permit is more restrictive than the procedure published by U.S. EPA. GMWSS believes that, outside of specific studies to justify a variation of the biomonitoring procedure, the procedure published by the U.S. EPA should be the procedure used in the permit.

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RESPONSE 7:

Test Protocols follow those outlined by U.S. EPA in the chronic toxicity test manual. An item that might be construed more restrictive is the permit requirement for daily sampling during the seven (7) day test while EPA suggests a minimum of three (3) samples.

The Division feels the daily sampling more accurately assesses the potential impacts by accounting for variations in effluent quality.

COMMENT 8:

Issuance of the permit as drafted violates the nondegradation requirement specified in 401 KAR 5:029. Water quality in Lanes Run will only be maintained if the permit limits correspond to background limits in the stream.

RESPONSE 8:

The permit limitations as presently drafted for the Georgetown No. 2 facility represents a situation where the 7-day, 10-year low flow is equal to zero. In other words, there is no available dilution, background concentrations are assumed to be zero, the effluent is the stream and the limits are the most stringent that can be applied. All criteria for parameters of concern become the effluent limitations at the end of the pipe. The most stringent of the criteria for each parameter for each designated use - aquatic life and human health - is chosen to ensure the designated uses are maintained.

COMMENT 9:

The Georgetown No. 2 treatment facility has consistently discharged a toxic effluent. The Cabinet has failed to enforce the prohibition of discharging pollutants in toxic amounts.

RESPONSE 9:

It is the contention of the Division of Water of the Natural Resources and Environmental Protection Cabinet that the toxicity reduction evaluation (TRE) is an appropriate enforcement action for facilities, such as Georgetown No. 2, trying to resolve the problem of whole effluent toxicity compliance. Whole effluent toxicity testing (biomonitoring), although a requirement for several years, is still a relatively new concept and, in most cases when noncompliance arises, a resolution can be very complicated and time consuming. It is not the desire of the Division or Cabinet to inappropriately apply monetary penalties or to cause facilities to cease discharging when noncompliance of a permit requirement is evident. It is the desire of the agency to resolve the problem for the long term, as well as the short term, and to ensure resources are being applied in a positive manner.

The permittee and the permittee consultants are continuing to work diligently to find the cause of the toxicity. The Division will maintain its close involvement in the process and based on periodic assessment alter enforcement action accordingly.

The TRE is recognized as the most effective procedure for resolution of whole effluent toxicity noncompliance.

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COMMENT 10:

Explain the addition of the chloride parameter to the permit and include an indication of the historical data used during the technical review process.

RESPONSE 10:

For the draft permit the wasteload allocation procedure generated a chloride limitation of 250 mg/l for the Georgetown No. 2 treatment facility which is equivalent to the domestic water supply criteria specified in state regulation 401 KAR 5:031. The domestic water supply criteria was the critical value for this facility due to the close proximity of the secondary or alternate water intake for the city of Georgetown located on Elkhorn Creek. The intake has since been taken out of service (See Response #2) therefore, allowing the warmwater aquatic criteria to be applied as an effluent limit rather than the domestic water supply criteria. The monthly average is now 600 mg/l and the daily maximum remains unchanged from the draft permit.

A review of historical data during the period April, 1990 through March, 1991 indicated an annual average chloride value of 429 mg/l, a low monthly of 387 mg/l and high monthly value of 560 mg/l.

It should be noted that in this case the criteria is applied as an effluent limitation due to the critical stream flow utilized for limitation derivation (7-day, 10-year low flow) equal to zero. Therefore, the permit is written to protect the uses when the stream flow is 100% treated effluent. During much of the time, North Elkhorn Creek has sufficient natural stream flow such that the chloride level is significantly below the level at the wastewater plant discharge site.

COMMENT 11:

The proposed limitations for chloride and nickel fail to consider the reality of the effects occurring during transport of these pollutants between the discharge point and the point of withdrawal for the water supply in the North Elkhorn Creek. It is inappropriate to neglect the adsorption, complexing, assimilation and other naturally occurring effects in the stream prior to withdrawal. For example, measured levels of chloride in North Elkhorn Creek have been correlated to discharge levels from the Georgetown No. 2 discharge to indicate that downstream levels seldom reach as high as 20% of the discharge level.

RESPONSE 11:

There is no question that much of the time levels of constituents at the withdrawal point downstream of the discharge point will be lower than the level at the discharge point. This is due to the varying natural stream flow available throughout the year. However, as stipulated in the fact sheet of the draft permit and in other specific responses to comments concerning the draft, the permit limitations were derived based on the 7-day, 10-year critical flow condition in order to adequately

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protect the receiving stream. Stream flow records at both the discharge site and withdrawal point indicate this value to be equal to zero, therefore, the criteria value must be applied as an effluent limitation at the point of discharge. Refer to Response #1 for an explanation of the domestic water supply classification applicability for the final permit.

COMMENT 12:

Georgetown Municipal Water and Sewer Service (GMWSS) was not provided ample opportunity to suggest exceptions to the criteria as applied in this specific case. TMM believes substantial doubt exists as to the proper application of the selected criteria or the appropriateness of the criteria as they exist and these doubts are sufficient to warrant deferral of the proposed limits pending the outcome of studies pursuant to 401 KAR 5:031, Section 9.

RESPONSE 12:

GMWSS may submit information supporting exceptions to criteria at any time. If after final action relative to this permit, GMWSS still feels an exception to criteria is warranted, the proper cause of action would be through the adjudicatory process.

COMMENT 13:

It is not the intent of U.S. EPA that water quality criteria be imposed as standards of compliance. The standard may differ from a criterion because of prevailing local conditions. TMM does not believe sufficient information exists to warrant imposition of criteria as enforceable permit limit and that deferral of the numerical limitations until an investigation is completed will not leave the stream unprotected. Such a study should include a correlation between the acid soluble and total recoverable metals concentration to confirm the most appropriate analysis to apply in this case.

RESPONSE 13:

It is true that water quality criteria is not intended to apply as a standard of compliance for every discharge. However, there are site specific cases, such as the case with Georgetown No. 2, where the criteria is appropriately applied for compliance purposes. The critical factor is the 7-day, 10-year stream flow value of zero cubic feet per second. Without natural stream flow at this regulated frequency and duration, the criteria becomes the standard of performance to be applied to the effluent.

Pertaining to the methods of metals analysis, the total recoverable method is based on sound measurement techniques acceptable by the U.S. EPA and shall be the method of analysis for the permit parameters unless it can be demonstrated to the satisfaction of the cabinet that a more appropriate analytical method would provide measurement of that portion of the metal present which causes toxicity to aquatic life.

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COMMENT 14:

It is requested that the comment period be extended to allow the necessary time for study of the technologies available to assure compliance with the proposed limitations.

RESPONSE 14:

The comment period cannot be extended since the comments received during the comment period have not provided substantive information to justify such an action. Should the final permit action still be unsatisfactory to the commentors, then the proper action would be through the adjudicatory process.

Any demand for a hearing on the response to comments shall be filed according to procedures specified in KRS 224.10-420, 224.10-440, 224.10-470 and any regulations promulgated thereto. Any person aggrieved by the issuance of a KPDES final permit may demand a hearing pursuant to KRS 224.10-420(2). Requests for hearings must be submitted in writing (an original and two (2) copies) to the Department of Law, Fifth Floor, Capital Plaza Tower, Frankfort, Kentucky 40601, within thirty (30) days of the date of this letter. For your record keeping purposes, it is recommended that this request be sent by certified mail. The hearing request must conform to the appropriate statutes referenced above.

If you have any questions regarding the KPDES permit issuance or wish to request a copy of the KPDES final permit, please contact Ms. Judy Zeigler, Inventory and Data Management Section, KPDES Branch, at (502) 564-3410, extension 465.

Further information on procedures and legal matters pertaining to a hearing request may be obtained by contacting Ms. Kathy Hargraves, Department of Law at (502) 564-5576.

Sincerely,



Jack A. Wilson, Director
Division of Water

JAW:HR:mm

PHILLIP J. SHEPHERD
SECRETARY



BREKTON C. JONES
GOVERNOR

COMMONWEALTH OF KENTUCKY
NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION

FRANKFORT OFFICE PARK
14 REILLY ROAD
FRANKFORT, KENTUCKY 40601

NOV 21 1995

Mr. Jamshid Baradaran
Division of Construction
Kentucky Horse Park
4089 Iron Works Pike
Lexington, Kentucky 40511

Re: NPDES No. KY0048101
Fayette County, Kentucky

Dear Mr. Baradaran:

Enclosed is the Kentucky Pollutant Discharge Elimination System (KPDES) permit for Kentucky Horse Park. This action constitutes a final permit issuance under 401 KAR 5:075 pursuant to KRS 224.16-050.

This permit will become effective on the date indicated in the attached permit provided that no request for adjudication is granted. All provisions of the permit will be effective and enforceable in accordance with 401 KAR 5:075 unless stayed by the Hearing Officer under Sections 11 and 13.

Any demand for a hearing on the permit shall be filed in accordance with the procedures specified in KRS 224.10-420, 224.10-440, 224.10-470 and any regulations promulgated thereto. Any person aggrieved by the issuance of a permit final decision may demand a hearing pursuant to KRS 224.10-420(2) within thirty (30) days from the date of the issuance of this letter. Two copies of request for hearing should be submitted in writing to the Natural Resources and Environmental Protection Cabinet, Office of Administrative Hearings, 35-36 Fountain Place, Frankfort, Kentucky 40601 and the Commonwealth of Kentucky, Natural Resources and Environmental Protection Cabinet, Division of Water, 14 Reilly Road, Frankfort, Kentucky 40601. For your record keeping purposes, it is recommended that these requests be sent by certified mail. The written request must conform to the appropriate statutes referenced above.

If you have any questions regarding the KPDES decision, please contact Ms. Judy Zeigler, Inventory and Data Management Section, KPDES Branch, at (502) 564-2225, extension 465.

Further information on procedures and legal matters pertaining to the hearing request may be obtained by contacting the Hon. Barbara Foster, Division of Hearings, at (502) 564-7312.

Sincerely,

A handwritten signature in cursive script, appearing to read "Jack A. Wilson".

Jack A. Wilson, Director
Division of Water

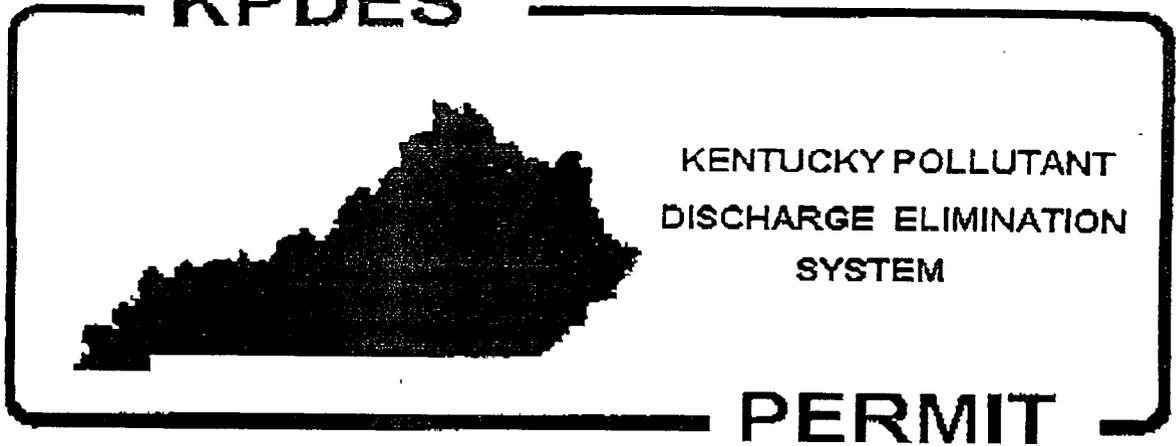
JAW:BT
Enclosure
c: Frankfort Regional Office



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KPDDES



PERMIT NO.: KY0048101

**AUTHORIZATION TO DISCHARGE UNDER THE
KENTUCKY POLLUTANT DISCHARGE ELIMINATION SYSTEM**

Pursuant to Authority in KRS 224,

Kentucky Horse Park
4089 Iron Works Pike
Lexington, Kentucky 40511

is authorized to discharge from a facility located at

Kentucky Horse Park
4089 Iron Works Pike
Lexington, Fayette County, Kentucky

to receiving waters named

Unnamed tributary at mile point 1.3 to Cane Run at mile point 6.05

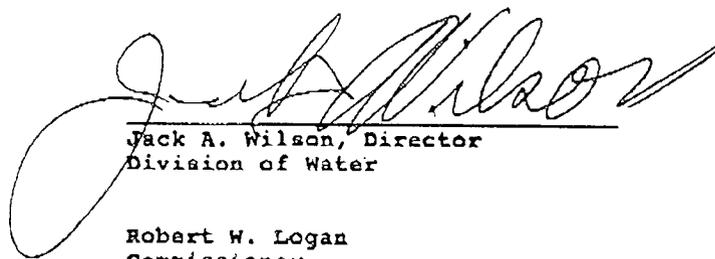
in accordance with effluent limitations, monitoring requirements and other conditions set forth in Parts I, II, and III hereof. The permit consists of this cover sheet, and Part I 2 page(s), Part II 1 page(s) and Part III 1 page(s).

This permit shall become effective on **JAN - 1 1996**

This permit and the authorization to discharge shall expire at midnight **DEC 31 2000**

NOV 21 1995

Date Signed



Jack A. Wilson, Director
Division of Water

Robert W. Logan
Commissioner

DEPARTMENT FOR ENVIRONMENTAL PROTECTION
Division of Water, Frankfort Office Park, 14 Reilly Road, Frankfort, Kentucky 40601

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the term of this permit, the permittee is authorized to discharge from outfall(s) serial number(s): 001, Sanitary Wastewater.

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS			MONITORING REQUIREMENTS		
	Monthly Avg.	Daily Max.	Other Units (Specify) Monthly Avg.	Measurement Frequency	Sample Type	Sampling Location
Flow, Design (0.150 mgd)	N/A	N/A	Report	Continuous	Instantaneous	Influent or Effluent
Biochemical Oxygen Demand (5 day), Carbonaceous	12.5	25.0	10 mg/l	1/Week	Composite	Effluent
Total Suspended Solids	37.5	75.0	30 mg/l	1/Week	Composite	Effluent
Fecal Coliform Bacteria, N/100	N/A	N/A	200	1/Week	Grab	Effluent
Ammonia (as N)	2.50 6.26	5.00 12.5	2 mg/l* 5 mg/l**	1/Week	Composite	Effluent
Dissolved Oxygen shall not be less than 7 mg/l				1/Week	Grab	Effluent

The pH of the effluent shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored once per week by grab sample.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

The effluent shall not cause a visible sheen on the receiving water.

* Effective May 1 - October 31
 ** Effective November 1 - April 30

B. Schedule of Compliance

1. The permittee shall achieve compliance with the effluent limitations on the effective date of this permit.
2. The permittee will eliminate the discharge and will connect to a comprehensive sewer system provided such system can adequately treat the wastes.

PART II
Page II-1
Permit No.: KY0048101

STANDARD CONDITIONS FOR KPDES PERMIT

The permittee is also advised that all KPDES permit conditions in KPDES Regulation 401 KAR 5:065, Section 1 will apply to all discharges authorized by this permit.

This permit has been issued under the provisions of KRS Chapter 224 and regulations promulgated pursuant thereto. Issuance of this permit does not relieve the permittee from the responsibility of obtaining any other permits or licenses required by this Cabinet and other state, federal and local agencies.

It is the responsibility of the permittee to demonstrate compliance with permit parameter limitations by utilization of sufficiently sensitive analytical methods.

PART III

OTHER REQUIREMENTS

A. Reporting of Monitoring Results

Total discharge volume (in million gallons) shall be summarized for each month and reported as to the volume spray irrigated and the volume discharged to the surface stream. Monitoring results must be obtained for each month and reported on a preprinted Discharge Monitoring Report (DMR) Form which will be mailed to you each quarter for the upcoming quarter. The completed DMRs for each month must be sent to the Division of Water at the address listed below (with a copy to the appropriate Regional Office) postmarked no later than the 28th day of the month following the completed quarter.

Division of Water
Frankfort Regional Office
643 Teton Trail, Suite B
Frankfort, Kentucky 40601
ATTN: Mr. Fred Claus

Kentucky Natural Resources and
Environmental Protection Cabinet
Dept. for Environmental Protection
Division of Water
Inventory & Data Management
14 Reilly Road, Frankfort Office Park
Frankfort, Kentucky 40601

B. Reopener Clause

This permit shall be modified, or alternatively revoked and reissued, to comply with any applicable effluent standard or limitation issued or approved under 401 KAR 5:050 thru 5:080 and KRS 224, if the effluent standard or limitation so issued or approved:

1. Contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or
2. Controls any pollutant not limited in the permit.

The permit as modified or reissued under this paragraph shall also contain any other requirements of KRS Chapter 224 when applicable.

PHILLIP J. SHEPHERD
SECRETARY



BRERETON C. JONES
GOVERNOR

COMMONWEALTH OF KENTUCKY
NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION
FRANKFORT OFFICE PARK
14 REILLY ROAD
FRANKFORT, KENTUCKY 40601

STATEMENT OF BASIS

XPDES No.: KY0048101 Permit Writer: David Martin Date: September 29, 1995

Facility Name: Kentucky Horse Park

Facility Location: 4089 Iron Works Pike
Lexington, Fayette County, Kentucky

Permitting Action: This is a reissuance of a permit for a park and recreation facility.

Permit Duration: Five (5) years

Receiving Stream: Unnamed tributary at mile point 1.3 to Cane Run
at mile point 6.05

Stream Segment Use Classification: Warmwater Aquatic Habitat and Primary/Secondary Contact Recreation

Stream Low Flow Condition: 0.0 cfs

Justification of Permit Conditions:

The following regulations are pursuant to KRS 224.70-100 and KRS 224.70-110.

Biochemical Oxygen Demand (5 day), Total Suspended Solids, Fecal Coliform, and pH
The effluent limitations for the above permit parameters are consistent with 401 KAR 5:045.

Ammonia Nitrogen and Dissolved Oxygen

The effluent limitations for the above permit parameters are consistent with 401 KAR 5:031.

The conditions of 401 KAR 5:029, Section 2(1) and (3) have been satisfied by this permit action. A review under Section 2(2) and (4) is not applicable.

(Disk #2/vb)



James E. Bickford
Secretary



Paul E. Patton
Governor

COMMONWEALTH OF KENTUCKY
NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION

FRANKFORT OFFICE PARK
14 REILLY ROAD
FRANKFORT, KENTUCKY 40601

JAN 24 1996

Mr. Daniel Sexton
101 Dale Drive
Georgetown, Kentucky 40324

Re: NPDES No. KY0081213
Scott County, Kentucky

Dear Mr. Sexton:

Enclosed is the Kentucky Pollutant Discharge Elimination System (KPDES) permit for Spindletop Mobile Home Park. This action constitutes a final permit issuance under 401 KAR 5:075 pursuant to KRS 224.16-050.

This permit will become effective on the date indicated in the attached permit provided that no request for adjudication is granted. All provisions of the permit will be effective and enforceable in accordance with 401 KAR 5:075 unless stayed by the Hearing Officer under Sections 11 and 13.

Any demand for a hearing on the permit shall be filed in accordance with the procedures specified in KRS 224.10-420, 224.10-440, 224.10-470 and any regulations promulgated thereto. Any person aggrieved by the issuance of a permit final decision may demand a hearing pursuant to KRS 224.10-420(2) within thirty (30) days from the date of the issuance of this letter. Two copies of request for hearing should be submitted in writing to the Natural Resources and Environmental Protection Cabinet, Office of Administrative Hearings, 35-36 Fountain Place, Frankfort, Kentucky 40601 and the Commonwealth of Kentucky, Natural Resources and Environmental Protection Cabinet, Division of Water, 14 Reilly Road, Frankfort, Kentucky 40601. For your record keeping purposes, it is recommended that these requests be sent by certified mail. The written request must conform to the appropriate statutes referenced above.

If you have any questions regarding the KPDES decision, please contact Ms. Judy Zeigler, Inventory and Data Management Section, KPDES Branch, at (502) 564-2225, extension 465.

Further information on procedures and legal matters pertaining to the hearing request may be obtained by contacting the Hon. Barbara Foster, Division of Hearings, at (502) 564-7312.

Sincerely,

Handwritten signature of Jack A. Wilson in black ink.

Jack A. Wilson, Director
Division of Water

JAW:BT
Enclosure
c: Frankfort Regional Office



KPDES



KENTUCKY POLLUTANT
DISCHARGE ELIMINATION
SYSTEM

PERMIT

PERMIT NO.: KY0081213

AUTHORIZATION TO DISCHARGE UNDER THE
KENTUCKY POLLUTANT DISCHARGE ELIMINATION SYSTEM

Pursuant to Authority in KRS 224,

Mr. Daniel Sexton
Little Joe's Mobile Home Sales, Inc.
101 Dale Drive
Georgetown, Kentucky 40324

is authorized to discharge from a facility located at

Spindletop Mobile Home Park
101 Dale Drive
Georgetown, Scott County, Kentucky

to receiving waters named

Unnamed tributary at mile point 0.6 to Cane Run at mile point 6.05

in accordance with effluent limitations, monitoring requirements and other conditions set forth in Parts I, II, and III hereof. The permit consists of this cover sheet, and Part I 2 page(s), Part II 1 page(s) and Part III 1 page(s).

This permit shall become effective on **MAR - 1 1996**

This permit and the authorization to discharge shall expire at midnight, **FEB 28 200**.

JAN 24 1996

Date Signed

R. Bruce Scott

Jack A. Wilson, Director
Division of Water

Robert W. Logan
Commissioner

DEPARTMENT FOR ENVIRONMENTAL PROTECTION
Division of Water, Frankfort Office Park, 14 Reilly Road, Frankfort, Kentucky 40601

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the term of this permit, the permittee is authorized to discharge from outfall(B) serial number(s): 001, Sanitary Wastewater.

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS			MONITORING REQUIREMENTS			
	lbs/day Monthly ---AVG.---	Daily ---Max.---	Other Units(Specify) Monthly ---AVG.---	Report	Measurement Frequency	Sample Type	Sampling Location
Flow, Design (0.038 mgd)	N/A	N/A	Report	Report	5/Week	Instantaneous	Influent or Effluent
Biochemical Oxygen Demand (5 day), Carbonaceous	6.34	12.6	20 mg/l	40 mg/l	1/Month	Composite	Effluent
Total Suspended Solids	9.51	19.0	30 mg/l	60 mg/l	1/Month	Composite	Effluent
Fecal Coliform Bacteria, N/100	N/A	N/A	200	400	1/Month	Grab	Effluent
Ammonia (as N)	1.27 3.17	2.54 6.34	4 mg/l* 10 mg/l**	8 mg/l* 20 mg/l**	1/Month	Composite	Effluent
Dissolved Oxygen shall not be less than 7 mg/l					1/Month	Grab	Effluent

The pH of the effluent shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored once per month by grab sample.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

The effluent shall not cause a visible sheen on the receiving water.

* Effective May 1 - October 31
 ** Effective November 1 - April 30

PART I
Page I-2
Permit No.: KY0081213

B. Schedule of Compliance

1. The permittee shall achieve compliance with the effluent limitations on the effective date of this permit.
2. The permittee will eliminate the discharge and will connect to a comprehensive sewer system provided such system can adequately treat the wastes.

PART II
Page II-1
Permit No.: KY0081213

STANDARD CONDITIONS FOR KPDES PERMIT

The permittee is also advised that all KPDES permit conditions in KPDES Regulation 401 KAR 5:065, Section 1 will apply to all discharges authorized by this permit.

This permit has been issued under the provisions of KRS Chapter 224 and regulations promulgated pursuant thereto. Issuance of this permit does not relieve the permittee from the responsibility of obtaining any other permits or licenses required by this Cabinet and other state, federal and local agencies.

It is the responsibility of the permittee to demonstrate compliance with permit parameter limitations by utilization of sufficiently sensitive analytical methods.

PART III

OTHER REQUIREMENTS

A. Reporting of Monitoring Results

Monitoring results must be obtained for each month and reported on a preprinted Discharge Monitoring Report (DMR) Form which will be mailed to you each quarter for the upcoming quarter. The completed DMRs for each month must be sent to the Division of Water at the address listed below (with a copy to the appropriate Regional Office) postmarked no later than the 28th day of the month following the completed quarter.

Division of Water
Frankfort Regional Office
643 Teton Trail, Suite B
Frankfort, Kentucky 40601
ATTN: Mr. Fred Claus

Kentucky Natural Resources and
Environmental Protection Cabinet
Dept. for Environmental Protection
Division of Water
Inventory & Data Management
14 Reilly Road, Frankfort Office Park
Frankfort, Kentucky 40601

B. Reopener Clause

This permit shall be modified, or alternatively revoked and reissued, to comply with any applicable effluent standard or limitation issued or approved under 401 KAR 5:050 thru 5:080 and KRS 224, if the effluent standard or limitation so issued or approved:

1. Contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or
2. Controls any pollutant not limited in the permit.

The permit as modified or reissued under this paragraph shall also contain any other requirements of KRS Chapter 224 when applicable.

PERMIT NO. KYL020150
POTW

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IV

AUTHORIZATION FOR THE USE OR DISPOSAL
OF SEWAGE SLUDGE UNDER THE
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Section 405(d) and
(e) of the Clean Water Act, as amended (33 U.S.C. § et seq;
the "Act"),

City of Georgetown/Georgetown WWTP #1
P.O. Box 653
Scott County
Georgetown, KY 40324

is authorized to dispose of sludge at the following
municipal landfill:

Benson Valley Area Landfill
2157 Highway 151
Franklin County
Frankfort, KY 40601

in accordance with pollutant limitations, monitoring
requirements, and other conditions set forth herein. The
permit consists of this cover sheet, Part I 2 pages,
Part II 7 pages and Part III 3 pages.

This permit shall become effective on December 1, 1996.

This permit and the authorization to dispose of
sludge shall expire at midnight October 31, 2001.

OCT 21 1996

Date Issued


Robert F. McGhee, Director
Water Management Division

Part I

- A. SLUDGE REQUIREMENTS AND PRACTICES - Surface Disposal/Municipal Landfill
1. Upon request by EPA, the permittee shall provide sludge inventory data to the State and EPA, as part of EPA's inventory updates. The permittee shall be notified accordingly regarding the type of data needed.
 2. Reopener. If an applicable "acceptable management practice" or numerical limitation for pollutants in sewage sludge promulgated under Section 405(d)(2) of the Clean Water Act, as amended by the Water Quality Act of 1987, is more stringent than the sludge pollutant limit or acceptable management practice in this permit, or controls a pollutant not limited in this permit, this permit shall be promptly modified or revoked and reissued to conform to the requirements promulgated under Section 405(d)(2). The permittee shall comply with the limitations by no later than the compliance deadline specified in the applicable regulations as required by Section 405(d)(2)(D) of the Clean Water Act.
 3. Notice of change in sludge use and/or disposal practice. The permittee shall give prior notice to the Regional Administrator of any change planned in the permittee's sludge use and/or disposal practice (i.e., change from landfilling to incineration). Additionally, the permittee shall give prior notice to the Regional Administrator regarding any changes in landfilling sites.
 4. Cause for modification. 40 CFR 122.62(a)(1) provides that the following is a cause for modification but not revocation and reissuance of permits except when the permittee requests or agrees.
(a) Alterations. There are material and substantial changes or additions to the permitted facility or activity which occurred after permit issuance which justify the application of permit conditions that are different or absent in the existing permit.
 5. Upon review of information provided by the permittee as required by the above items, or results from an on-site inspection, the permit shall be subject to modification to incorporate appropriate requirements.

6. The permittee shall perform a Toxicity Characteristic Leaching Procedure test (TCLP) in accordance with 40 CFR 261, as published on March 29, 1990, Volume 55, Number 61 Federal Register, 11798, if the permittee knows or has reason to believe that its sewage sludge may fail the TCLP test. The permittee shall submit to EPA a separate report which shows the date of the test and the test results. Should a sewage sludge fail the TCLP test, the permittee shall immediately halt all sludge use or disposal activities. In addition, the permittee shall submit written notification to EPA within ten (10) calendar days of test failure.
7. Should the permittee dispose of sewage sludge in a municipal solid waste landfill, the material shall not exhibit free liquids. The permittee shall conduct a Paint Filter Liquids Test as described in "test Methods for Evaluating Solid Wastes, Physical/Chemical Methods" (EPA Publication No. SW-846), in accordance with the monitoring schedule for pollutants, and pathogen and vector attraction reduction, as outlined in Table I of 40 CFR 503.16. Should the permittee know or have reason to believe the material may not pass the Paint Filter Test, based on knowledge of the material characteristics, a Paint Filter Test shall be conducted for configuration prior to delivery to the landfill. Any testing which is conducted during the reporting year shall be maintained by the facility and made available for inspection upon request.
8. This permit does not apply to sewage sludge treated or stored on the land, nor does it apply to the land on which sewage sludge is treated or stored.
9. The permittee is not authorized to place domestic septage on the active sewage sludge unit.
10. In accordance with 40 CFR § 503.4, the permittee shall ensure that the sewage sludge to be placed in the municipal solid waste landfill meets the requirements of 40 CFR Part 258 concerning the quality of materials disposed in a municipal solid waste landfill unit.

PART II
STANDARD CONDITIONS FOR SLUDGE USE OR DISPOSAL PERMITS

SECTION A. GENERAL CONDITIONS

1. Duty to Comply

The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Clean Water Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.

2. Penalties for violations of Permit Conditions

Any person who violates any permit condition is subject to a civil penalty not to exceed \$25,000 per day for each violation. Any person who willfully violates permit conditions is subject to a fine of not less than \$5,000 nor more than \$50,000 per day of violation, or by imprisonment for not more than 3 years, or both. Any person who negligently violates permit conditions is subject to a fine of not less than \$2,500 nor more than \$25,000 per day of violation, or by imprisonment for not more than 1 year, or both.

3. Duty to Mitigate

The permittee shall take all reasonable steps to minimize or prevent any violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

4. Permit Modification

After notice and opportunity for a hearing, this permit may be modified, terminated, or revoked for cause including, but not limited to, the following:

- a. Violation of any terms or conditions of this permit;
- b. Obtaining this permit by misrepresentation or failure to disclose fully all relevant facts;
- c. Information newly acquired by the Agency indicating that the permitted activity poses a threat to human health or the environment.

If the permittee believes that any past or planned activity would be cause for modification or revocation and reissuance under 40 CFR § 122.62, the permittee must report such information to the Permit Issuing Authority. The submittal of a new application may be required of the permittee.

The filing of a request by the permittee for a permit modification, revocation and issuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

5. Civil and Criminal Liability

Nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance.

6. Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under Section 311 or the Act.

7. State Laws

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State law or regulation under authority preserved by Section 510 of the Act.

8. Property Rights

The issuance of this permit does not convey any property rights of any sort, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Federal, State, or local laws or regulations.

9. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

10. Duty to Provide Information

The permittee shall furnish to the Permit Issuing Authority, within a reasonable time, any information which the Permit Issuing Authority, within a reasonable time, any information which the Permit Issuing Authority may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. The permittee shall also furnish to the Permit Issuing Authority upon request, copies of records required to be kept by this permit.

SECTION B. OPERATION AND MAINTENANCE OF POLLUTION CONTROLS

1. Proper Operation and Maintenance

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

2. Need to Halt or Reduce not a Defense

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

3. Removed Substances

This permit does not authorize discharge of solids, sludge, filter backwash, or other pollutants removed in the course of wastewater treatment.

SECTION C. Inspection and Entry

The permittee shall allow the Permit Issuing Authority, or an authorized representative, upon the presentation or credentials and other documents as may be required by law, to:

- a. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;
- b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit; and
- c. Inspect at reasonable time any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
- d. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Clean Water Act, any substances or parameters at any location.

SECTION D. REPORTING REQUIREMENTS

1. Change in Sludge Management Practice

The permittee shall notify EPA of any change in sludge use and/or disposal practice if alteration or addition results in a significant change in the permittee's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit. This includes notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan.

2. Anticipated Noncompliance

The permittee shall give advance notice to the Permit Issuing Authority of any planned change in the permitted facility or activity which may result in noncompliance with permit requirements.

3. Transfer of Ownership or Control

The permittee may be automatically transferred to another if:

- a. The permittee notifies the Permit Issuing Authority of the proposed transfer at least 30 days in advance of the proposed transfer date;
- b. The notice includes a written agreement between the existing and new permittees containing a specific date for transfer or permit responsibility, coverage, and liability between them; and
- c. The Permit Issuing Authority does not notify the existing permittee of his or her intent to modify or revoke and reissue the permit. If this notice is not received, the transfer is effective on the date specified in the agreement mentioned in Paragraph b.

4. Twenty-Four Hour Reporting

The permittee shall orally report to EPA any noncompliance which may endanger health or the environment, within 24 hours from the time the permittee becomes aware of the circumstances. A written submission shall also be provided to EPA within 5 days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause, the period of noncompliance, including the exact dates and times; and if the noncompliance has not been corrected, the anticipated time it is expected to continue, and steps taken or planned to reduce, eliminate,

and prevent reoccurrence of the noncompliance. The Permit Issuing Authority may verbally waive the written report, on a case-by-case basis, when the oral report is made.

5. Other Noncompliance

The permittee shall report in narrative form, all instances of noncompliance not previously reported under Section D, Paragraphs D-2 and D-4. The reports shall contain the information listed in Paragraph D-4.

6. Duty to Reapply

If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit. The application shall be submitted at least 180 days before the expiration date of this permit. The Permit Issuing Authority may grant permission to submit an application less than 180 days in advance but not later than the permit expiration date.

Where EPA is the Permit Issuing Authority, the terms and conditions of this permit are automatically continued in accordance with 40 CFR § 122.6, only where the permittee has submitted a timely and complete application for a renewal permit and the Permit Issuing Authority is unable, through no fault of the permittee, to issue a new permit before the expiration date.

7. Signatory Requirements

All applications, reports, or information submitted to the Permit Issuing Authority shall be signed and certified.

a. All permit applications shall be signed as follows:

- (1) For a corporation: by a responsible corporate officer. For the purpose of this Section, a responsible corporate officer means: (1) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision making functions for the corporation, or (2) the manager of one or more manufacturing, production or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding \$25 million (in second-quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

- (2) For a partnership or sole proprietorship: by a general partner or the proprietor, respectively; or
 - (3) For a municipality, State, Federal, or other public agency: by either a principal executive officer or ranking elected official.
- b. All reports required by the permit and other information requested by the Permit Issuing Authority shall be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:
- (1) The authorization is made in writing by a person described above;
 - (2) The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, position or equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.) and;
 - (3) The written authorization is submitted to the Permit Issuing Authority.
- c. Certification. Any person signing a document under Paragraphs a. or b. of this Section shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

8. Availability of Reports

Except for data determined to be confidential under 40 CFR Part 2, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the Permit Issuing Authority. As required by the Act, permit applications, permits and effluent data shall not be considered confidential.

9. Penalties for Falsification of Reports

The Clean Water Act provides that any person who knowingly makes any false material statements, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance, or who knowingly falsifies, tampers with, or renders inaccurate any monitoring device or method required to be maintained under the Clean Water Act, shall, upon conviction, be punished by a fine of not more than \$10,000 or by imprisonment for not more than 2 years, or by both.

SECTION E. DEFINITIONS

1. Permit Issuing Authority

The Regional Administrator of EPA Region IV or his/her designee, unless at some time in the future the State receives authority to administer 40 CFR Sections 405 and 503 and assumes jurisdiction over the permit; at which time, the Director of the State program receiving the authorization becomes the issuing authority.

2. Act

“Act” means the Clean Water Act (formerly referred to as the Federal Water Pollution Control Act) Public Law 92-500, as amended by Public Law 95-217 and Public Law 95-576, 33 U.S.C. 1251 et seq.

3. Calendar Day

A “calendar day” is defined as the period from midnight of one day until midnight of the next day. However, for purposes of this permit, any consecutive 24-hour period that reasonably represents the calendar day may be used for sampling.

Part III

Other Requirements

A. Reporting of Test Results

Test results (Part I, page I-2) for the year shall be summarized and postmarked no later than the 19th day of the month of February of the following calendar month. Signed copies of these, and all other reports required by Part I, shall be submitted to the Permit Issuing Authority at the following address:

Environmental Protection Agency
Region IV
Water Programs and Enforcement Branch
Water Management Division
Atlanta Federal Center
100 Alabama Street
Atlanta, GA 30303-3104

B. Reopener Clause

1. This permit shall be modified, or alternatively, revoked and reissued, to comply with any applicable standard or limitation issued or approved under Section 405(d)(2)(D) of the Clean Water Act, as amended, if the standard, limitation, or sludge disposal requirement so issued or approved:
 - a. Contains different conditions or is otherwise more stringent than any condition in the permit; or
 - b. Controls any pollutant or sludge disposal method not addressed in the permit.

The permit as modified or reissued under this paragraph shall also contain any other requirements of the Act then applicable.

C. Special Definitions

1. **Active sewage sludge unit** is a sewage sludge unit that has not closed.
2. **Aquifer** is a geologic formation, group of geologic formations, or a portion of a geologic formation capable of yielding ground water to wells or springs.
3. **Base flood** is a flood that has a one percent chance of occurring in any given year (i.e., a flood with a magnitude equalled once in 100 years).
4. **"Contaminate an aquifer"** means to introduce a substance that caused the maximum contaminant level for nitrate in 40 CFR 141.11 to be exceeded in ground water or that causes the existing concentration of nitrate in ground water to increase when the existing concentration of nitrate in the ground water exceed the maximum contaminant level for nitrate in 40 CFR 141.11.
5. **Domestic sewage** is waste and wastewater from humans or household operations that is discharged to or otherwise enters a treatment works.
6. **Dry weight basis** means calculated on the basis of having been dried at 105°C until reaching a constant mass (i.e., essentially 100 percent solids content).
7. **Ground water** is water below the land surface in the saturated zone.
8. **Holocene time** is the most recent epoch of the Quaternary period, extending from the end of the Pleistocene epoch to the present.
9. **Leachate collection system** is a system or device installed immediately above a liner that is designed, constructed, maintained, and operated to collect and remove leachate from a sewage sludge unit.
10. **Liner** is soil or synthetic material that has a hydraulic conductivity of 1×10^{-7} centimeters per second or less.
11. **Lower explosive limit** for methane gas is the lowest percentage of methane gas in air, by volume, that propagates a flame at 25 °C and atmospheric pressure.
12. **Municipal Solid Waste Landfill (MSWLF) unit** means a discrete area of land or an excavation that receives household waste, and that is not a land application unit, surface impoundment, injection well, or waste pile, as those terms are defined in 40 CFR § 257.2. A MSWLF unit also may receive other types of RCRA subtitle D waste, such as commercial solid waste, nonhazardous sludge, conditionally exempt small quantity generator waste and

industrial solid waste. Such a landfill may be publicly or privately owned.

13. **Qualified ground-water scientist** is an individual with a baccalaureate or post-graduate degree in the natural sciences or engineering who has sufficient training and experience in ground-water hydrology and related fields, as may be demonstrated by State registration, professional certification, or completion of accredited university programs, to make sound professional judgements regarding ground-water monitoring, pollutant fate and transport, and corrective action.
14. **Sewage sludge** is solid, semi-solid, or liquid residue generated during the treatment of domestic sewage in a treatment works. Sewage sludge includes, but is not limited to domestic septage; scum of solids removed in primary, secondary, or advanced wastewater treatment processes; and a material derived from sewage sludge. Sewage sludge does not include ash generated during the firing of sewage sludge in a sewage sludge incinerator or grit and screenings generated during preliminary treatment of domestic sewage in a treatment works.
15. **Sewage sludge unit** is land on which only sewage sludge is placed for final disposal. This does not include land on which sewage sludge is either stored or treated. Land does not include waters of the United States, as defined in 40 CFR § 122.2.
16. **Treat or treatment of sewage sludge** is the preparation of sewage sludge for final use or disposal. This includes, but is not limited to, thickening, stabilization, and dewatering of sewage sludge. This does not include storage of sewage sludge.

D. Special Conditions

1. The permittee is prohibited from disposing any sewage sludge to land that is determined to be hazardous in accordance with 40 CFR Part 261.
2. The permittee shall ensure that any sewage sludge that has a concentration of polychlorinated biphenyls (PCBs) equal to or greater than 50 milligrams per kilogram of total solids (dry weight basis) is disposed in accordance with 40 CFR Part 761.
3. The permittee shall ensure that any grit or screenings generated during preliminary treatment of domestic sewage in a treatment works is disposed in accordance with 40 CFR Part 257.

PERMIT NO. KYL082007
POTW

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IV

AUTHORIZATION FOR THE USE OR DISPOSAL
OF SEWAGE SLUDGE UNDER THE
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Section 405(d) and
(e) of the Clean Water Act, as amended (33 U.S.C. § et seq;
the "Act"),

City of Georgetown/Georgetown WWTP #2
P.O. Box 653
Scott County
Georgetown, KY 40324

is authorized to dispose of sludge at the following
municipal landfill:

Benson Valley Area Landfill
2157 Highway 151
Franklin County
Frankfort, KY 40601

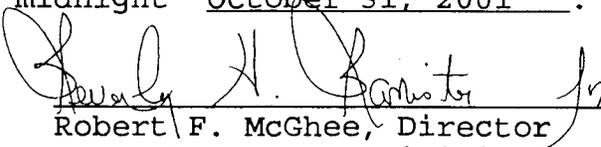
in accordance with pollutant limitations, monitoring
requirements, and other conditions set forth herein. The
permit consists of this cover sheet, Part I 2 pages,
Part II 7 pages and Part III 3 pages.

This permit shall become effective on December 1, 1996.

This permit and the authorization to dispose of
sludge shall expire at midnight October 31, 2001.

OCT 21 1998

Date Issued


Robert F. McGhee, Director
Water Management Division

Part I

A. SLUDGE REQUIREMENTS AND PRACTICES - Surface Disposal/Municipal Landfill

1. Upon request by EPA, the permittee shall provide sludge inventory data to the State and EPA, as part of EPA's inventory updates. The permittee shall be notified accordingly regarding the type of data needed.
2. Reopener. If an applicable "acceptable management practice" or numerical limitation for pollutants in sewage sludge promulgated under Section 405(d)(2) of the Clean Water Act, as amended by the Water Quality Act of 1987, is more stringent than the sludge pollutant limit or acceptable management practice in this permit, or controls a pollutant not limited in this permit, this permit shall be promptly modified or revoked and reissued to conform to the requirements promulgated under Section 405(d)(2). The permittee shall comply with the limitations by no later than the compliance deadline specified in the applicable regulations as required by Section 405(d)(2)(D) of the Clean Water Act.
3. Notice of change in sludge use and/or disposal practice. The permittee shall give prior notice to the Regional Administrator of any change planned in the permittee's sludge use and/or disposal practice. Additionally, the permittee shall give prior notice to the Regional Administrator regarding any changes in landfilling sites.
4. Cause for modification. 40 CFR 122.62(a)(1) provides that the following is a cause for modification but not revocation and reissuance of permits except when the permittee requests or agrees.
(a) Alterations. There are material and substantial changes or additions to the permitted facility or activity which occurred after permit issuance which justify the application of permit conditions that are different or absent in the existing permit.
5. Upon review of information provided by the permittee as required by the above items, or results from an on-site inspection, the permit shall be subject to modification to incorporate appropriate requirements.

6. The permittee shall perform a Toxicity Characteristic Leaching Procedure test (TCLP) in accordance with 40 CFR 261, as published on March 29, 1990, Volume 55, Number 61 Federal Register, 11798, if the permittee knows or has reason to believe that its sewage sludge may fail the TCLP test. The permittee shall submit to EPA a separate report which shows the date of the test and the test results. Should a sewage sludge fail the TCLP test, the permittee shall immediately halt all sludge use or disposal activities. In addition, the permittee shall submit written notification to EPA within ten (10) calendar days of test failure.
7. Should the permittee dispose of sewage sludge in a municipal solid waste landfill, the material shall not exhibit free liquids. The permittee shall conduct a Paint Filter Liquids Test as described in "test Methods for Evaluating Solid Wastes, Physical/Chemical Methods" (EPA Publication No. SW-846), in accordance with the monitoring schedule for pollutants, and pathogen and vector attraction reduction, as outlined in Table I of 40 CFR 503.16. Should the permittee know or have reason to believe the material may not pass the Paint Filter Test, based on knowledge of the material characteristics, a Paint Filter Test shall be conducted for configuration prior to delivery to the landfill. Any testing which is conducted during the reporting year shall be maintained by the facility and made available for inspection upon request.
8. This permit does not apply to sewage sludge treated or stored on the land, nor does it apply to the land on which sewage sludge is treated or stored.
9. The permittee is not authorized to place domestic septage on the active sewage sludge unit.
10. In accordance with 40 CFR § 503.4, the permittee shall ensure that the sewage sludge to be placed in the municipal solid waste landfill meets the requirements of 40 CFR Part 258 concerning the quality of materials disposed in a municipal solid waste landfill unit.

PART II
STANDARD CONDITIONS FOR SLUDGE USE OR DISPOSAL PERMITS

SECTION A. GENERAL CONDITIONS

1. Duty to Comply

The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Clean Water Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.

2. Penalties for violations of Permit Conditions

Any person who violates any permit condition is subject to a civil penalty not to exceed \$25,000 per day for each violation. Any person who willfully violates permit conditions is subject to a fine of not less than \$5,000 nor more than \$50,000 per day of violation, or by imprisonment for not more than 3 years, or both. Any person who negligently violates permit conditions is subject to a fine of not less than \$2,500 nor more than \$25,000 per day of violation, or by imprisonment for not more than 1 year, or both.

3. Duty to Mitigate

The permittee shall take all reasonable steps to minimize or prevent any violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

4. Permit Modification

After notice and opportunity for a hearing, this permit may be modified, terminated, or revoked for cause including, but not limited to, the following:

- a. Violation of any terms or conditions of this permit;
- b. Obtaining this permit by misrepresentation or failure to disclose fully all relevant facts;
- c. Information newly acquired by the Agency indicating that the permitted activity poses a threat to human health or the environment.

If the permittee believes that any past or planned activity would be cause for modification or revocation and reissuance under 40 CFR § 122.62, the permittee must report such information to the Permit Issuing Authority. The submittal of a new application may be required of the permittee.

The filing of a request by the permittee for a permit modification, revocation and issuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

5. Civil and Criminal Liability

Nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance.

6. Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under Section 311 or the Act.

7. State Laws

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State law or regulation under authority preserved by Section 510 of the Act.

8. Property Rights

The issuance of this permit does not convey any property rights of any sort, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Federal, State, or local laws or regulations.

9. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

10. Duty to Provide Information

The permittee shall furnish to the Permit Issuing Authority, within a reasonable time, any information which the Permit Issuing Authority, within a reasonable time, any information which the Permit Issuing Authority may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. The permittee shall also furnish to the Permit Issuing Authority upon request, copies of records required to be kept by this permit.

SECTION B. OPERATION AND MAINTENANCE OF POLLUTION CONTROLS

1. Proper Operation and Maintenance

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

2. Need to Halt or Reduce not a Defense

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

3. Removed Substances

This permit does not authorize discharge of solids, sludge, filter backwash, or other pollutants removed in the course of wastewater treatment.

SECTION C. Inspection and Entry

The permittee shall allow the Permit Issuing Authority, or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to:

- a. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;
- b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit; and
- c. Inspect at reasonable time any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
- d. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Clean Water Act, any substances or parameters at any location.

SECTION D. REPORTING REQUIREMENTS

1. Change in Sludge Management Practice

The permittee shall notify EPA of any change in sludge use and/or disposal practice if alteration or addition results in a significant change in the permittee's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit. This includes notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan.

2. Anticipated Noncompliance

The permittee shall give advance notice to the Permit Issuing Authority of any planned change in the permitted facility or activity which may result in noncompliance with permit requirements.

3. Transfer of Ownership or Control

The permittee may be automatically transferred to another if:

- a. The permittee notifies the Permit Issuing Authority of the proposed transfer at least 30 days in advance of the proposed transfer date;
- b. The notice includes a written agreement between the existing and new permittees containing a specific date for transfer or permit responsibility, coverage, and liability between them; and
- c. The Permit Issuing Authority does not notify the existing permittee of his or her intent to modify or revoke and reissue the permit. If this notice is not received, the transfer is effective on the date specified in the agreement mentioned in Paragraph b.

4. Twenty-Four Hour Reporting

The permittee shall orally report to EPA any noncompliance which may endanger health or the environment, within 24 hours from the time the permittee becomes aware of the circumstances. A written submission shall also be provided to EPA within 5 days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause, the period of noncompliance, including the exact dates and times; and if the noncompliance has not been corrected, the anticipated time it is expected to continue, and steps taken or planned to reduce, eliminate,

and prevent reoccurrence of the noncompliance. The Permit Issuing Authority may verbally waive the written report, on a case-by-case basis, when the oral report is made.

5. Other Noncompliance

The permittee shall report in narrative form, all instances of noncompliance not previously reported under Section D, Paragraphs D-2 and D-4. The reports shall contain the information listed in Paragraph D-4.

6. Duty to Reapply

If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit. The application shall be submitted at least 180 days before the expiration date of this permit. The Permit Issuing Authority may grant permission to submit an application less than 180 days in advance but not later than the permit expiration date.

Where EPA is the Permit Issuing Authority, the terms and conditions of this permit are automatically continued in accordance with 40 CFR § 122.6, only where the permittee has submitted a timely and complete application for a renewal permit and the Permit Issuing Authority is unable, through no fault of the permittee, to issue a new permit before the expiration date.

7. Signatory Requirements

All applications, reports, or information submitted to the Permit Issuing Authority shall be signed and certified.

a. All permit applications shall be signed as follows:

- (1) For a corporation: by a responsible corporate officer. For the purpose of this Section, a responsible corporate officer means: (1) a president, secretary, treasurer, or vice-president of the of the corporation in charge of a principal business function, or any other person who performs similar policy or decision making functions for the corporation, or (2) the manager of one or more manufacturing, production or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding \$25 million (in second-quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

- (2) For a partnership or sole proprietorship: by a general partner or the proprietor, respectively; or
 - (3) For a municipality, State, Federal, or other public agency: by either a principal executive officer or ranking elected official.
- b. All reports required by the permit and other information requested by the Permit Issuing Authority shall be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:
- (1) The authorization is made in writing by a person described above;
 - (2) The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, position or equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.) and;
 - (3) The written authorization is submitted to the Permit Issuing Authority.
- c. Certification. Any person signing a document under Paragraphs a. or b. of this Section shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

8. Availability of Reports

Except for data determined to be confidential under 40 CFR Part 2, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the Permit Issuing Authority. As required by the Act, permit applications, permits and effluent data shall not be considered confidential.

9. Penalties for Falsification of Reports

The Clean Water Act provides that any person who knowingly makes any false material statements, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance, or who knowingly falsifies, tampers with, or renders inaccurate any monitoring device or method required to be maintained under the Clean Water Act, shall, upon conviction, be punished by a fine of not more than \$10,000 or by imprisonment for not more than 2 years, or by both.

SECTION E. DEFINITIONS

1. Permit Issuing Authority

The Regional Administrator of EPA Region IV or his/her designee, unless at some time in the future the State receives authority to administer 40 CFR Sections 405 and 503 and assumes jurisdiction over the permit; at which time, the Director of the State program receiving the authorization becomes the issuing authority.

2. Act

“Act” means the Clean Water Act (formerly referred to as the Federal Water Pollution Control Act) Public Law 92-500, as amended by Public Law 95-217 and Public Law 95-576, 33 U.S.C. 1251 et seq.

3. Calendar Day

A “calendar day” is defined as the period from midnight of one day until midnight of the next day. However, for purposes of this permit, any consecutive 24-hour period that reasonably represents the calendar day may be used for sampling.

Part III

Other Requirements

A. Reporting of Test Results

Test results (Part I, page I-2) for the year shall be summarized and postmarked no later than the 19th day of the month of February of the following calendar month. Signed copies of these, and all other reports required by Part I, shall be submitted to the Permit Issuing Authority at the following address:

Environmental Protection Agency
Region IV
Water Programs Enforcement Branch
Water Management Division
Atlanta Federal Center
100 Alabama Street
Atlanta, GA 30303-3104

B. Reopener Clause

1. This permit shall be modified, or alternatively, revoked and reissued, to comply with any applicable standard or limitation issued or approved under Section 405(d)(2)(D) of the Clean Water Act, as amended, if the standard, limitation, or sludge disposal requirement so issued or approved:
 - a. Contains different conditions or is otherwise more stringent than any condition in the permit; or
 - b. Controls any pollutant or sludge disposal method not addressed in the permit.

The permit as modified or reissued under this paragraph shall also contain any other requirements of the Act then applicable.

C. Special Definitions

1. **Active sewage sludge unit** is a sewage sludge unit that has not closed.
2. **Aquifer** is a geologic formation, group of geologic formations, or a portion of a geologic formation capable of yielding ground water to wells or springs.
3. **Base flood** is a flood that has a one percent chance of occurring in any given year (i.e., a flood with a magnitude equalled once in 100 years).
4. **"Contaminate an aquifer"** means to introduce a substance that caused the maximum contaminant level for nitrate in 40 CFR 141.11 to be exceeded in ground water or that causes the existing concentration of nitrate in ground water to increase when the existing concentration of nitrate in the ground water exceed the maximum contaminant level for nitrate in 40 CFR 141.11.
5. **Domestic sewage** is waste and wastewater from humans or household operations that is discharged to or otherwise enters a treatment works.
6. **Dry weight basis** means calculated on the basis of having been dried at 105°C until reaching a constant mass (i.e., essentially 100 percent solids content).
7. **Ground water** is water below the land surface in the saturated zone.
8. **Holocene time** is the most recent epoch of the Quaternary period, extending from the end of the Pleistocene epoch to the present.
9. **Leachate collection system** is a system or device installed immediately above a liner that is designed, constructed, maintained, and operated to collect and remove leachate from a sewage sludge unit.
10. **Liner** is soil or synthetic material that has a hydraulic conductivity of 1×10^{-7} centimeters per second or less.
11. **Lower explosive limit** for methane gas is the lowest percentage of methane gas in air, by volume, that propagates a flame at 25 °C and atmospheric pressure.
12. **Municipal Solid Waste Landfill (MSWLF) unit** means a discrete area of land or an excavation that receives household waste, and that is not a land application unit, surface impoundment, injection well, or waste pile, as those terms are defined in 40 CFR § 257.2. A MSWLF unit also may receive other types of RCRA subtitle D waste, such as commercial solid waste, nonhazardous sludge, conditionally exempt small quantity generator waste and

industrial solid waste. Such a landfill may be publicly or privately owned.

13. **Qualified ground-water scientist** is an individual with a baccalaureate or post-graduate degree in the natural sciences or engineering who has sufficient training and experience in ground-water hydrology and related fields, as may be demonstrated by State registration, professional certification, or completion of accredited university programs, to make sound professional judgements regarding ground-water monitoring, pollutant fate and transport, and corrective action.
14. **Sewage sludge** is solid, semi-solid, or liquid residue generated during the treatment of domestic sewage in a treatment works. Sewage sludge includes, but is not limited to domestic septage; scum of solids removed in primary, secondary, or advanced wastewater treatment processes; and a material derived from sewage sludge. Sewage sludge does not include ash generated during the firing of sewage sludge in a sewage sludge incinerator or grit and screenings generated during preliminary treatment of domestic sewage in a treatment works.
15. **Sewage sludge unit** is land on which only sewage sludge is placed for final disposal. This does not include land on which sewage sludge is either stored or treated. Land does not include waters of the United States, as defined in 40 CFR § 122.2.
16. **Treat or treatment of sewage sludge** is the preparation of sewage sludge for final use or disposal. This includes, but is not limited to, thickening, stabilization, and dewatering of sewage sludge. This does not include storage of sewage sludge.

D. Special Conditions

1. The permittee is prohibited from disposing any sewage sludge to land that is determined to be hazardous in accordance with 40 CFR Part 261.
2. The permittee shall ensure that any sewage sludge that has a concentration of polychlorinated biphenyls (PCBs) equal to or greater than 50 milligrams per kilogram of total solids (dry weight basis) is disposed in accordance with 40 CFR Part 761.
3. The permittee shall ensure that any grit or screenings generated during preliminary treatment of domestic sewage in a treatment works is disposed in accordance with 40 CFR Part 257.

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**NOTICE OF PUBLIC HEARING
(PURSUANT TO 401 KARS: SECTION 4&5; KRS
424, AND 40CFS 25.5&6)**

The Georgetown Municipal Water and Sewer Service, 125 West Clinton Street, Georgetown, Kentucky 40324, will hold a public hearing at its offices at such address at 6:00 p.m. on Thursday September 18, 1997, for the purpose of receiving oral and written comments from members of the public regarding the City of Georgetown, Kentucky, 201 Wastewater Facilities Plan Update (the Plan), which proposes certain wastewater collection and treatment improvements. All interested members of the public are invited to submit oral and written comments on the Plan. Oral comments will be accepted at the public hearing. Written comments on the Plan will be accepted until 5:00 p.m. on October 10, 1997, at the Georgetown Municipal Water and Sewer Service offices at 125 West Clinton Street, Georgetown, Kentucky 40324. A copy of the Plan is on file at Georgetown Municipal Water and Sewer Service offices for review during normal business hours from 8:00 a.m. until 5:00 p.m. Monday through Friday. Any member of the public who is unable to submit comments as described herein should call the Georgetown Municipal Water and Sewer offices at (502) 863-7816 during normal business hours from 8:00 a.m. through 5:00 p.m. Monday through Friday so that arrangements can be made to receive such comments.

ROBERT L. RIDDLE
General Manager
Georgetown Municipal Water and
Sewer Service
125 West Clinton Street
P.O. Box 653
Georgetown, KY 40324
Phone: (502) 863-7816

LEGAL NOTICE

The Scott County Board of Education has adopted a General Fund rate of 40.9 cents. Of this rate, 2.6 cents is subject to recall.

Ms. Donna Perry, County Court Clerk, 101 E. Main St., Georgetown, Kentucky 40324, telephone 863-7875, can provide necessary information about the petition required to initiate recall of the tax rate.

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Legal

NOTICE IS HEREBY GIVEN TO PARTIES THAT THE FOLLOWING SETTLEMENTS OF FIDUCIARIES HAVE BEEN FILED IN MY OFFICE AND HEARING ON THE CONFIRMATION AND APPROVAL WILL BE HELD ON OCTOBER 9, 1997. AT 1:30 P.M.

First and final settlement of Sue Frances Bruin as executrix in the estate of Howard Lee Bruin, deceased.

First and final settlement of Doris Clark as executrix in the estate of Lydia Dell Risk, deceased.

First and final settlement of Mattie Lou Brown and Marian Faye Simon as joint executrixes in the estate of Harry L. Simon, deceased.

EXCEPTIONS TO THE APPROVAL OR THE CONFIRMATION OF ANY OF SAID SETTLEMENTS OF FIDUCIARIES MUST BE FILED WITH THE SCOTT CO. CIRCUIT CLERK BEFORE OCTOBER 9, 1997.

Martha Mitchell, Circuit Clerk
Nancy Reid, Deputy Clerk

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THE FOLLOWING FIDUCIARIES WERE APPOINTED BY THE SCOTT CO. DISTRICT COURT DURING

**GEORGETOWN-SCOTT COUNTY PLANNING
COMMISSION AGENDA**

September 11, 1997

Sept. 3, 1997
Sept. 10, 1997

EXHIBIT

No. 1

**RESOLUTION ADOPTING THE SELECTED PLAN OF
201 FACILITIES PLAN UPDATE**

WHEREAS, on the 15th day of July, 1996, the Georgetown Municipal Water and Sewer Service of Georgetown, Kentucky, executed an engineering agreement with PDR, Inc., Consulting Engineers, for the preparation of a 201 Facilities Plan to provide wastewater treatment facilities for the Georgetown Planning Area; and

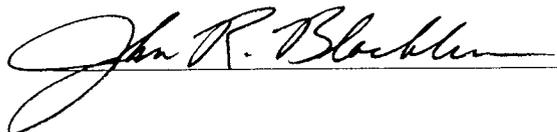
WHEREAS, a 201 Facilities Plan Update has been completed for the Georgetown Planning Area in conformity with the State of Kentucky regulations governing such facilities planning,

NOW, THEREFORE, BE IT RESOLVED:

(1) That the Georgetown Municipal Water and Sewer Service Board of Commissioners does hereby adopt the Selected Plan of the 201 Facilities Plan Update for the Georgetown Planning Area,

(2) Georgetown Municipal Water and Sewer Service hereby agrees to execute all resolutions, agreements, or other documents and to enforce all rules, regulations and ordinances to effect expeditious implementation of the Plan as adopted.

Dated this 26th day of January, 1998.



Resolution No. 98-001

**RESOLUTION ADOPTING THE SELECTED PLAN OF
201 FACILITIES PLAN UPDATE**

WHEREAS, Scott Fiscal Court, Scott County, Kentucky, has been advised that, on the 15th day of July, 1996, the Georgetown Municipal Water and Sewer Service of Georgetown, Kentucky, executed an engineering agreement with PDR, Inc., Consulting Engineers, for the preparation of a 201 Facilities Plan to provide wastewater treatment facilities for the Georgetown Planning Area; and

WHEREAS, Scott Fiscal Court has been advised that a 201 Facilities Plan Update has been completed for the Georgetown Planning Area in conformity with the State of Kentucky regulations governing such facilities planning,

NOW, THEREFORE, BE IT RESOLVED:

(1) That Scott Fiscal Court, Scott County, Kentucky does hereby voice approval of the adoption of the Selected Plan of the 201 Facilities Plan Update for the Georgetown Planning Area by the Georgetown Municipal Water and Sewer Service Board of Commissioners.

(2) Scott Fiscal Court, Scott County, Kentucky hereby voices approval of the execution by Georgetown Municipal Water and Sewer Service of all resolutions, agreements, or other documents and to enforce all rules, regulations and ordinances to effect expeditious implementation of the Plan as adopted.

Dated this 1 day of JUNE, 1998.



Resolution No. 98-06

**RESOLUTION ADOPTING THE SELECTED PLAN OF
201 FACILITIES PLAN UPDATE**

WHEREAS, on the 15th day of July, 1996, the Georgetown Municipal Water and Sewer Service of Georgetown, Kentucky, executed an engineering agreement with PDR, Inc., Consulting Engineers, for the preparation of a 201 Facilities Plan to provide wastewater treatment facilities for the Georgetown Planning Area; and

WHEREAS, a 201 Facilities Plan Update has been completed for the Georgetown Planning Area in conformity with the State of Kentucky regulations governing such facilities planning,

NOW, THEREFORE, BE IT RESOLVED:

(1) That the City Council, Georgetown, Kentucky does hereby authorize the adoption of the Selected Plan of the 201 Facilities Plan Update for the Georgetown Planning Area by the Georgetown Municipal Water and Sewer Service Board of Commissioners.

(2) The City Council, Georgetown, Kentucky hereby authorizes Georgetown Municipal Water and Sewer Service to execute all resolutions, agreements, or other documents and to enforce all rules, regulations and ordinances to effect expeditious implementation of the Plan as adopted.

Dated this 18th day of June, 1998.

Warren Powers

Resolution No. 98-008

SEWER AVAILABILITY APPROVED
BY GMWSS BOARD AS OF
18-Mar-97

PROJECT NAME	UNITS	APPROVAL DATE	COMPLETED UNITS		UNITS REMAINING	PER UNIT FLOW (GPD)	TOTAL FLOW GPD
			PHASES	UNITS			
BELT BRASHEAR	8	21-Mar-95			8		
BRINGARDNER	19	18-May-93			19	400	3,200
CANEWOOD	500	18-May-93	1A	94	406	400	7,600
COLONIAL GARDENS	48	16-Jul-96			48	400	162,400
COLONY 5	134	21-Feb-95			134	400	19,200
COLONY 6	104	20-Aug-96			104	400	53,600
COLONY 8	55	16-Jul-96			55	400	41,600
DERBY ESTATES	300	15-Dec-93	1A	41	259	400	22,000
FORD FARM 1	16 AC	20-Aug-96			16 AC	2000	103,600
FORD FARM 2	120	18-Feb-97			120	400	32,000
H. HAMBRICK	114	16-Aug-94	1A	54	60	400	48,000
HIDDEN VALLEY	9	21-Mar-95			9	400	24,000
LANCASTER HGTS.	10	16-Nov-93			10	400	3,600
PIONEER PLAZA	18	12-Feb-95			18	400	4,000
SOUTHGATE SUB	129	16-Aug-94	Sec. 1&2	45	84	400	7,200
SPRING HILL TERRACE	32	18-Feb-97			32	400	33,600
TRACT #3 (R&J MANU)	6	17-Dec-96			6	400	12,800
VANHOOSE SUB.	8	16-Jul-96			8	400	2,400
SUB-TOTAL							584,000

POSSIBLE FUTURE SEWER FLOW TO PUMP STATION NUMBER 9

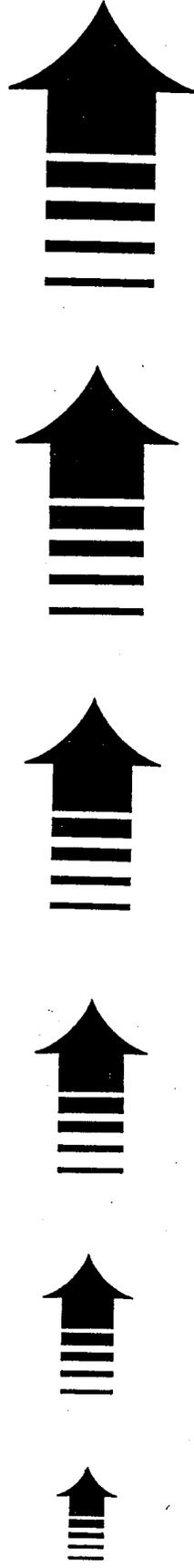
		21-May-96	21-May-97			
AMERICAN MINI-STORAGE	20 gpm				1 year	28,800
COMFORT SUITE	67	19-Jul-94			67	400
ELKHORN GREEN	670	20-Jun-95			670	400
ELKHORN MEADOWS	80	16-Jul-96			80	400
ERNIE HANNA	103	26-Oct-95			103	400
FINLEY PROPERTY US 460	20 AC	16-Jul-96			20 AC	2000
FINLEY CONNECTOR RD	5.5 AC	18-Feb-97			5.5 AC	2000
GTOWN ATHLETIC COM	52 AC	17-Dec-96			52 AC	2000
HAMPTON INN	75	19-Jul-94			75	400
MURPHY'S DEVELOPMENT	37 gpm	18-Feb-97	14-Feb-98		1 year	30,000
THOROUGHbred AC (R-3)	588	20-Aug-96			588	400
THOROUGHbred AC (B-2)	15	20-Aug-96			15	400
THOROUGHbred AC (C-1)	9 AC	20-Aug-96			9 AC.	2000
WHITAKER LAND	39 AC	19-Jul-94			19 AC.	2000
SUB-TOTAL						866,280

TOTAL UNITS	3212		234	2978
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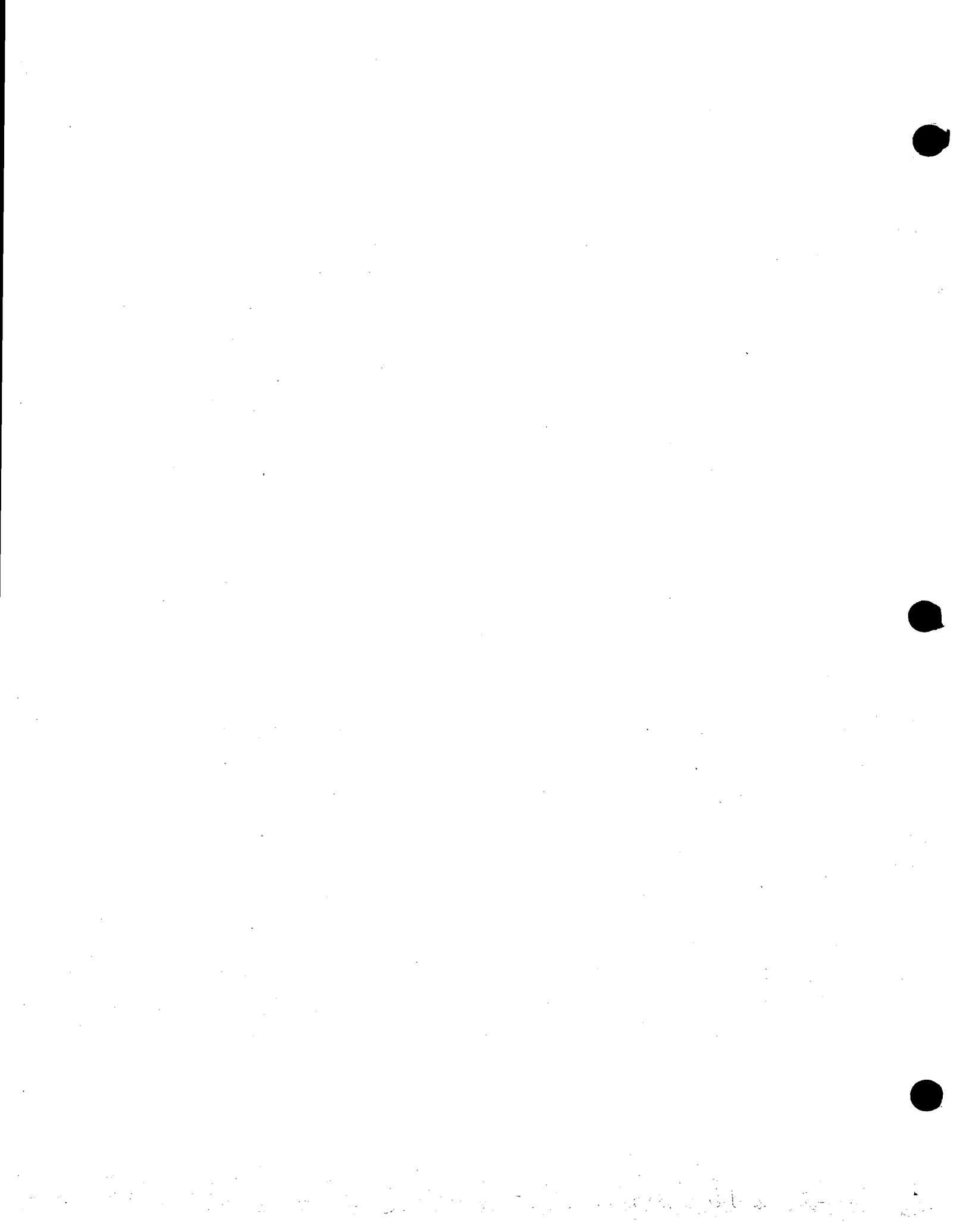
Sewer Flow Not Going To PS # 9	584,000	FUTURE TOTAL FLOW (GPD)	1,450,280
EXISTING WWTP #1 FLOW (GPD)	2,850,000	EXISTING WWTP #1 FLOW (GPD)	2,850,000
TOTAL COMMITTED TO WWTP #1	3,434,000	TOTAL COMMITTED TO WWTP #1	4,300,280
		TOTAL CAPACITY AT WWTP #1	4,500,000
		AVAILABLE CAPACITY AT WWTP #1	199,720

1991 COMPREHENSIVE PLAN
for Georgetown, Sadieville, Stamping Ground,
and Scott County, Kentucky

Adopted by the
Georgetown-Scott County Planning Commission
March 28, 1991



GROWTH AND LAND USE ELEMENT



Highlights of the new programs include the following. Cluster development allows up to 1 acre minimum lots, with appropriate sewage treatment and preservation of the remainder of the farm to maintain an overall 1 unit per 5 acre density. Transfer of development rights allows rural landowners to sell the residential development rights (the right to subdivide their land into five-acre tracts) from their property and still preserve the land. The rights can be purchased to increase density for urban and rural PUD development, or they can be received as an incentive to provide parklands in urban areas. Rural PUD's will be allowed in the northern half of the County, with clearer standards concerning their location and services. New policies for existing crossroads communities, such as Newtown, will allow infill on 1 acre lots in keeping with the character of each community and appropriate sewage treatment. Greater flexibility in the Zoning Ordinance is also recommended to allow small businesses in the rural area.

URBAN AND RURAL SERVICE AREA AND LAND USE RECOMMENDATIONS:

Section IV of the Plan recommends objectives to help guide decisions concerning the most appropriate locations for urban service boundaries and their relationship to annexation policies. Detailed recommendations are given concerning the proposed Urban Service Boundary for Georgetown. Policies concerning the zoned projects in the Longview and Mallard Point areas are also discussed. Section V describes the proposed future land use plan for Georgetown.

B. GOALS FOR GROWTH

In planning for Scott County's future, it is important to consider the desires of its residents about the kind of community in which they wish to live and raise their children. Equally

important is their vision of what Scott County should become in the future. The Citizen Advisory Committee gathered much information on community attitudes about growth, which is summarized in Appendix C.

The following goals address the major challenges facing Scott County and reflect the citizens' desires about growth and future vision of their community, as expressed in the surveys, Citizen Advisory Committee meetings, and public hearings.

1. **Growth should be managed to have a positive impact on the County. The management of growth in the interest of all Scott Countians must be balanced between property rights of individuals and the rights and needs of the public.**
2. **Growth should promote a balanced cross-section of cultures and income levels, for a vibrant and interesting community.**
3. **Community identity and integrity should be maintained as we grow, and opportunities for community social life should be increased.**
4. **Scott County cities should maintain their small town character, and the vitality of downtown Georgetown, Sadieville, and Stamping Ground should be enhanced.**
5. **Growth opportunities should be supported in urban areas throughout the County; Georgetown should not be the sole focus of growth.**
6. **Residential growth should continue to occur in the rural area. However, rural growth should be located and**

clustered so that it is more compatible with the traditional Scott County countryside, and to minimize impacts to farmland, the environment (especially water quality), and public services.

7. Agriculture should remain a vital part of life in Scott County. Growth benefitting the agricultural economy should be strongly encouraged.
8. Economic development efforts should be broad-based, to create more business and job opportunities for all Scott Countians.
9. All growth affects the environment. However, the kind of growth that would degrade environmental quality is not desired. Instead, growth should capitalize upon and highlight Scott

County's special environmental qualities. Locations and types of growth should be guided by principles of protecting groundwater, surface water, air quality, floodplains, and prime farmland, in balance with other community goals for development.

10. Growth should be carefully coordinated with necessary public expenditures to provide adequate public facilities and services, advanced capital budget planning, and prudent and efficient use of public investments.
11. To fully accomplish our goals for growth, County and City leaders should continue and intensify their cooperative planning efforts with other communities in the region.

II. SCOTT COUNTY GROWTH PROJECTIONS

A. PROJECTED POPULATION GROWTH

An assessment of the new jobs and housing that are likely to come to Scott County is important for guiding decisions on the amount of land that will be needed for future development and the phasing of public improvements to match the pace of development.

This Comprehensive Plan is based upon an extensive evaluation of all currently available information on Scott County's growth patterns, both historic and projected (Appendix A, Tables 6-13). Any growth rate estimate will be affected by the occurrence of subsequent events, and the planning process has gone to great lengths to reasonably foresee and assess the probable

impacts of such events over the next 1-15 years (Appendix B), in the hope that this will aid future comprehensive planning.

For future population projections through 2005, a range of growth possibilities was considered (Table 2):

- Low growth rate assumes slower growth (1.2% average annual rate) than the recent trend. Table 3 translates these into 10-year total growth rates (12%). This is the same as the current 1990-2000 projections for Scott County by the University of Louisville Urban Studies Center (Appendix A, Table 9).

TABLE 2
SCOTT COUNTY POPULATION GROWTH PROJECTIONS

	<u>10-YEAR GROWTH RATE</u>		
	Low 12%	Medium 17% (a)	High 22%
1990	24,100	24,100	24,100
1995	25,550	26,150	26,750
2000	26,990	28,200	29,400
2005	28,610	30,590	32,630
15-Year Population Increase	4,510	6,490	8,530

a. This assumes that recent (1985-1990) population increase trends continue.

- Medium growth rate assumes that the estimated 1.75% annual rate of the past six years continues, for a 17% 10-year growth rate. This reflects the impacts of Toyota and related growth that have occurred in Scott County thus far. (See Appendix A for summary of Toyota growth impacts. Initial Census counts indicate that the annual rate for the past six years has been 1.5%.)
- High growth rate (22%, or 2.2% average annual) assumes a more rapid rate of growth resulting from higher absorption of new workers, delayed Toyota-related demand (if any), and growth-inducing factors such as those listed in Appendix B. (This is a higher growth rate than the University of Louisville Urban Studies Center projects for any county in Kentucky.)

B. FUTURE NEEDS FOR HOUSING AND RESIDENTIAL LAND

15-Year Growth Needs: In order to show whether these growth needs will be met by the proposed Comprehensive Plan, projected needs for dwelling units and residential land must be compared against the development potential of the Plan. The "medium" and "high" growth scenarios for projected population increases were translated into needed new dwelling units (Table 3). About 2,750 (medium growth rate) to 3,620 (high growth rate) new housing units will be needed for all of Scott County under these scenarios over the next 15 years.

The share of these future dwelling units that are likely to be located in Georgetown, Sadieville, Stamping Ground, and the rural area is projected in Table 11, Appendix A. For instance, if the medium growth rate continues in Georgetown, about 1300 housing units will be needed over 15 years; the high growth rate would create the need for about 1700 units.

These dwelling unit projections were compared

to residential land potentially available for development as the first step in evaluating whether there is enough vacant land for future growth. Table 12 (Appendix A) summarizes the dwelling unit potential of two types of land: properties that are already zoned for housing but have not been developed or have not been fully built out; and lands designated residential in the 1985 Comprehensive Plan that have not yet been rezoned from A-1. Table 12 indicates that there is twice as much land currently zoned residential (6799 units) as may be required to meet our 15-year growth needs. The total potential units in the County under build-out of the 1985 Comprehensive Plan is over 17,000.

Much of this unzoned property, however, may be unlikely to develop, especially in the short-term planning period (5 years). These properties may remain in farming or may face barriers to development, some of which are discussed below.

Local Housing Market Response to Growth: For Scott County, availability of raw land for residential development has not been the most important issue in the ability of the local housing industry to respond to growth, as discussed in the Housing Element. The experience of the last five years has shown that local developers, builders, and governmental bodies could not fully respond to housing demand, for several fundamental reasons:

- Infrastructure - Properties can only develop if roads, water, and sewer are either available to the site, or if needed off-site improvements are feasible. There are many properties designated for development in the Comprehensive Plan that are unlikely to receive final approval to build in the short term because of infrastructure constraints.
- Housing prices - The local housing market can only respond to growth demands if available housing prices match the needs of families wishing to move here. Analysis of

TABLE 3

SCOTT COUNTY
PROJECTED
DWELLING UNIT NEEDS

	(a)	
	<u>10 YEAR GROWTH RATE</u>	
	17%	22%
Total 15 Year Population Increase	6,490	8,530
Total 15 Year (b) Dwelling Unit Increase	2,750	3,620
5 Year Average Population Increase	2,390	2,843
5 Year Average Dwelling Unit Increase	917	1,207

- a. Average annual growth rate = 1.7% & 2.2% respectively. 15-year growth rate = 27% and 35% respectively.
- b. Assumes: Population increase = 2.5 persons per household X 1.06, to allow for 6% vacancy rate.

Scott County incomes and surveys of new industrial employees show that the housing price affordable to those making the median income is \$60,000 (see Housing Element, Appendix A). This indicates that at least half of the families in the housing market are seeking a home in the range of \$60,000 to \$75,000. It is roughly estimated that 70% of local demand is for housing at \$85,000 and under. Yet much of the approved development in Scott County has been for housing priced at \$100,000 and up. Although some of these \$100,000+ developments have drawn from region-wide demand, bringing new residents to Scott County, some potential residents in the \$85,000 and under range may have been lost to more affordable housing in other counties.

- Structure of the housing industry - Scott County is a rural community in transition, which historically has had few community resources for large scale projects and moderate-income housing.

These underlying issues are also addressed by the policies and actions recommended in the Housing and Community Facilities Elements in order to fully realize the potential for growth in the Land Use Plan.

Short-Term (5-Year) Growth Needs: In order to determine whether there is sufficient land to serve the community's expected growth needs within the short-term planning period (the next five years), many factors of development and the real estate market were carefully considered, including those listed above. Table 4 and Map 1 show the short-term (5-year) realistic development potential of properties in Georgetown and the rural area. (See Table 13,

Appendix A, for a full project listing and dwelling unit count.) These are properties that are currently zoned residential and have preliminary approvals. Roads, water, and sewer are either available, or off-site improvements are feasible. These are projects that are either underway, or the owner/developer has clearly shown intent to develop in the short-term. The developers were consulted concerning the number of houses that could be built in various price ranges. Table 5 compares this short-term development potential to the 5-year dwelling unit needs under the medium and high growth scenarios.

In Georgetown, about 430 to 570 dwelling units will be needed under the medium (1.7% annual) to high (2.2% annual) growth rates, compared to 2,971 approved units, of which about 1,279 could be constructed for \$85,000 or less. An additional 1922 apartments and townhomes are authorized, and many of these are likely to be affordable to moderate-income households. For Scott County overall, a need of about 920 (medium growth) to 1210 (high growth) units is projected, compared to 5,104 zoned units, of which 3,203 would be houses for less than \$85,000 or apartments/ townhomes.

The evaluation of the short-term, feasible development potential shows that there is sufficient residential land within the proposed Georgetown Urban Service Boundary to meet the 5-year growth needs projected for the Georgetown urban area. The issue of market dominance was fully discussed, and it was concluded that considering the large number of approved units compared to projected needs, there currently is not undue dominance in the market by few developments that would restrict growth potential. No major expansion of the Georgetown USB is needed at this time.

TABLE 4

**SHORT-TERM RESIDENTIAL DEVELOPMENT POTENTIAL
GEORGETOWN AND RURAL AREA**

(This table summarizes Table 13, Group A, Background Report)

	Total Units (a)	Less Than \$65 K (b)	\$65 - \$85 K	\$85 K and above	Apt./ Townhomes (price unknown)
Georgetown Approved Dwelling Units	2,971	202	620	827	1,322
Rural Area Approved Dwelling Units (does not include minor agricultural tracts)	2,133	0	257	1,276	600
Scott County Total	5,104	202	877	2,103	1,922

- a. Actual number of unbuilt units that have zoning approval, no infrastructure constraints, and a willing developer.
- b. Price ranges determined according to developers and units currently on the market.

TABLE 5

**PROJECTED 5-YEAR DWELLING UNIT NEED
GEORGETOWN AND SCOTT COUNTY**

	GROWTH RATE	
	Medium (1.7% Annual)	High (2.2% Annual)
GEORGETOWN	431	567
SCOTT COUNTY outside of Georgetown	486	640
TOTAL	917	1,207

C. FACTORS THAT COULD AFFECT GROWTH RATE AND LAND NEEDS

The Comprehensive Plan has the flexibility to respond to changing factors that could effect growth pressures in Scott County. Many factors were considered in the planning process and growth projections, including but not limited to those listed in Appendix B. Some of these could have an impact on growth within the short term (5-year) planning period, and others may have an impact over the long-term. Considering current growth trends and the potential impact of the factors that could influence future growth (in Appendix B), it is expected that the proposed Comprehensive Plan and Georgetown Urban Service Boundary will remain valid for the 5-year planning period.

Future Reconsideration of Urban Service Boundary: With the following two exceptions, the occurrence of these future factors is unlikely to spur growth beyond the "high" growth projection. However, if the following occurs during the 5-year planning period, the Planning Commission should reevaluate whether to expand the Georgetown Urban Service Boundary to the east:

- (1a) Influx of jobs: If there is a major influx of additional jobs in Scott County; and

- (1b) Sewer: If there is adequate sewage treatment capacity and extension of sewer service to properties currently within the Urban Service Boundary on the east side of Georgetown.

OR

- (2a) Increased Growth: If building permit data show that actual housing construction rates are higher than projected in this Plan; and
- (2b) Sewer: If there is adequate sewage treatment capacity and extension of sewer service to properties currently within the Urban Service Boundary on the east side of Georgetown.

In any reevaluation of the eastern USB, the Commission should consider all relevant data available at that time, to determine whether the housing demand within the Georgetown USB has been underestimated, or whether land available for residential development within the planning period has been overestimated; all within the context of the entire Growth and Land Use Element.

III. RURAL DEVELOPMENT AND PRESERVATION

A. SUMMARY

1. Why are New Policies Needed for Rural Preservation and Development?

Scott County farmers and rural property owners have two desires that are sometimes at odds. They strongly wish for agriculture to continue as an important part of life and the economy in Scott County, and realize that preservation of

our agricultural heritage means protection of prime farmland and water resources (see Appendix C, Tables 21, 22, and 26). Yet many farmers, uncertain about the future of tobacco and farming in general, must have options available if they need to sell some of their farm or if they wish to retire.

The 1979 and 1985 Comprehensive Plans recommended policies for preserving prime

farmland that have not been fully successful. The main policy is the 5 acre minimum lot size for A-1 land. The benefits are that it has kept the overall density low in the County and has given farm families the flexibility to sell small portions or all of their land when needed. Scott Countians are divided on what the minimum size should be (Appendix C, Table 24), but many believe that the 5 acre size is not working for farmland preservation, for several reasons:

- It is a waste of agricultural land, too large for a lot and too small for a farm.
- 5 acres is hard for a homeowner to manage, leading to potential problems ranging from thistle invasion to soil erosion.
- The typical pattern of development has been "piano-key" tracts lined along existing rural roads, which can result in many hazardous driveway entrances.

Five-acre tracts are eating up rural land at a fast rate. After the announcement of Toyota, the average number approved per year jumped from 30 to 60 (for tracts of 5 to 20 acres), and over 120 were subdivided in 1989. If the post-Toyota rate were to continue, 6,000 acres could be converted in the next 15 years (Table 15, Appendix A), although slow sales of 5-acre tracts, especially in the southern half of the County, may reduce the rate of subdivision.

According to the Scott County Soil Conservation Service office, about 20% of the 66,790 acres of federally-designated prime farmland in Scott County has already been converted or zoned for urban and rural residential development.

2. A New Approach Based on Fairness, Choices, and Incentives

With this Comprehensive Plan, a package of strategies is recommended that link together and balance rural preservation and development needs. These strategies have been based on

three main ideas:

- **FAIRNESS:** All of the development rights that property owners have under current policies should remain. New policies should provide at least the same level of financial benefits as current policies.
- **CHOICES:** There need to be more options for development or preservation available to rural property owners, to fit their economic situation and the particular characteristics of their land.
- **INCENTIVES:** Farmers should be able choose a particular option because it is more attractive to them. There should be incentives for choosing preservation-oriented uses or development patterns rather than 5-acre tracts. There should also be a commitment for the public to help create financial incentives for preservation, since the public will share in the benefits.

B. OBJECTIVES FOR RURAL PRESERVATION AND DEVELOPMENT

General Objectives: The following general objectives should guide the land use policies, zoning, and subdivision regulations that will accomplish rural development and preservation:

1. To encourage preservation of prime farmland.
2. To encourage the economic well-being of all rural property owners by providing options for financial gain from their property.
3. To protect water quality by ensuring adequate sewage treatment and waste management.

4. To provide for the appropriate location of rural development to ensure public safety.
5. To protect environmentally sensitive areas and resources.
6. To encourage preservation of the visual beauty and historic character of the traditional rural landscape.
7. To minimize adverse impacts between farming and urban development.

Objectives for Rural Development and Preservation Programs: The following specific objectives give the purpose and definition of recommended strategies for managing rural growth and land use. The policies and standards describing these techniques follow in Section III.C.

8. Continue to allow 5-acre minimum agricultural (A-1) tracts with standards unchanged.
9. Allow cluster development as an alternative to 5-acre tract development. This would allow smaller lots on septic systems to be clustered on a property, which in most instances should minimize impacts to prime farmland and environmental resources, in addition to saving 80% of the overall acreage from subdivision. One acre minimum lots would be clustered in one area, with Health Department approval, and four acres per each dwelling unit would be preserved for agriculture. Maximum size of clusters would be 15 units; any property could have up to 3 cluster areas for a total of 45 cluster lots.
10. Create a program for purchase and transfer of development rights throughout the rural area to encourage preservation of prime farmland, with greater weight given

to targeted "protection areas" (prime farmland areas surrounding and adjacent to the southern USB of Georgetown, rural historic districts, and selected environmentally sensitive areas), for transfer to non-prime areas (rural PUD's in northern half of County and urban development within urban service areas and the northern private urban service area).

This program would give property owners who choose to preserve sensitive lands in the rural area an opportunity to benefit economically from that decision. It would also provide incentives for developers to preserve open space and to create a park and trail system within Georgetown and other urban areas.

11. Allow new rural planned unit developments in the northern half of the County (Map 2), with the following additional conditions: must purchase development rights for any density greater than 1 unit per 5 acres; must utilize a major feature that preserves the natural characteristics of the land and provides open space and recreation as the focal point of the development; must provide sewage treatment plant with potential for future public sewer service; must have direct access to a road of adequate standard; all services except police and fire protection must be privately provided; location cannot be within drainage shed of future Scott County Reservoir (development rights can be purchased from this area instead); and the visual impact of the development must not dominate the rural landscape. Any property proposing more than 45 cluster units can only be developed as a rural PUD.

This program provides development options for landowners in the northern half of the County, with a linkage to the transfer of development rights program. The standards and locational criteria ensure that adequate services will be available without placing

undue demands upon rural public services.

12. Allow infill within existing boundaries of specific **crossroads communities**, such as Newtown, on 1 acre minimum lots where septic systems will not have a detrimental effect on water quality. This would allow incremental growth that is compatible with the availability of services, the objectives for preserving prime farmland, and the character of each community.
13. Adopt a policy that **agricultural districts** should be strongly supported outside of urban service areas, but are not appropriate within urban service areas. This would help ensure that urban service boundaries will not encompass areas that do not have development potential.
14. Encourage voluntary **donation or purchase of scenic, historic and natural easements** in targeted "protection" areas. This would accomplish aims for preservation of targeted sensitive lands and would allow property owners to benefit from tax reductions and other incentives.
15. Amend the Zoning Ordinance to allow greater flexibility to **locate small businesses in the rural area** if they are compatible with agricultural land uses and the character of the area. This would allow a greater range of economic opportunities for farm families in small businesses related to agriculture, tourism, and other rural activities, in keeping with all goals and objectives for rural development and preservation.

C. TECHNIQUES FOR RURAL PRESERVATION AND DEVELOPMENT

1. Cluster Rural Residential Subdivisions

a. Cluster Subdivision Design Standards

- Total number of lots determined by density of 1 unit per 5 acres of the entire property.
- 1-acre minimum lot size. Lots must be clustered together in one or more areas, with a maximum number of 15 lots per cluster area. Actual lot size may be greater, based on capabilities of land for septic, lagoon, or other treatment systems, as may be required by the Health Department.
- The remaining 4 acres for each unit (hereinafter referred to as the "protected area") must be combined in one or more areas and preserved with open space easements or other appropriate techniques which will effectively guarantee no additional division or development, unless the property is incorporated within an urban service boundary by express provision of a future Comprehensive Plan.
- The protected area can continue to be farmed. It can be retained by the original owner or sold separately from the residential lots to a new farm owner.
- The lot width at the building line should be narrow enough to allow lot clustering and lower road construction costs.
- Clusters should be located off of existing roads, requiring new private road construction. Reduced road standards should be available as an incentive to cluster. A homeowners association should be

required for road maintenance.

b. Properties Suitable for Cluster Subdivisions

- Clusters of up to 15 lots can occur on any A-1 property, anywhere in the County, subject to approval of the Health Department.
- Clusters that allow mobile homes must additionally be located within 5 miles or 5 minute response time of a fire station and must have municipal water and fire hydrants.

c. Sewage Treatment Alternatives for Clusters

- Individual septic, lagoon, or other approved systems on each 1+ acre lot; or
- Combined leach field or lagoon system for all homes, commonly owned and located in protected area.
- Package treatment plants are not an option for clusters. This includes both package plants for the entire cluster and individual home systems.

d. Process and Choices for Locating Lots on the Site

- A preliminary subdivision plat should be required to identify suitable locations for the lots, based on consultation with the ASCS Office and Health Department, which would also determine if the site is suitable for 1-acre or larger lots.
- Cluster lots should be located so as to minimize the impact to farming for the remainder of the property (protected

area), based on soils, slope, water access, existing farm improvements, etc.

- Lots must be located in area suitable for septic, lagoon, or other permitted systems. Common septic field or other treatment system cannot be located within sinkholes.
- Take advantage of natural screening from the road where feasible.
- Where there is more than one cluster on the same property or adjacent properties, they should be located to minimize risk of groundwater contamination, visual impacts, and entrances to the main road, while allowing maximum use of remaining farmland.
- Final plat approval would be guaranteed if lot locations are as determined at Preliminary and design standards are met. Final plat approval should be a staff action, vs. Commission action, to simplify the process.
- As an incentive to cluster, the Zoning Ordinance should be amended so that cluster residences are a permitted use in A-1, and buyers do not have to prove agricultural use at a Planning Commission hearing. Notice should be given to neighboring properties at preliminary plat stage, however, to allow public comment when the project goes before the Commission.

2. Program for Purchase and Transfer of Development Rights

- a. Purpose and Summary of Program:**
The purpose of this program is to encourage preservation of prime farmland and targeted "protection areas"

(selected environmentally sensitive areas, prime farmland adjacent to the southern urban service boundary of Georgetown, and historic districts), with compensation to the property owner. This program would allow the property owners to choose to preserve their farm and still receive financial benefits similar to selling land for 5-acre tracts.

The 5-acre subdivision development potential of A-1 land, called "development rights," could be purchased from the property owner. Each house that could be built on A-1 property is equal to one "development right." To give priority to preservation of targeted protection areas, development rights for properties in those areas would be multiplied to make them more attractive for purchase. These rights could then be "transferred" to other property in areas more appropriate for higher density development: rural planned unit developments (PUD's) in the northern half of the County, and lands within urban service areas.

For new rural PUD's, TDR's would be needed for a greater density than one unit per five acres. Each development right from lands in the southern half of the County would be multiplied when transferred to the north (see Appendix E).

For development within urban service boundaries, if a developer dedicates open space that is accepted by the municipal government, an equivalent value in TDR's would be awarded to permit an increase in the density of the development up to 15% above the zoned density. Urban developers could also purchase TDR's to increase their density up to that same limit. This will

encourage creation of a public greenspace system within the cities.

b. Definition of "Development Rights"

- **"Development Rights:"** The development potential of rural land for 5-acre tracts would be called "development rights." The amount of rights for each property would be calculated the same way as the number of 5-acre tracts the property could have: the total acreage of the farm divided by 5 (1 house per 5 acres).
- **Purchase of All Development Rights:** All or some of these rights could be purchased from the rural property owner. If all of the rights for the property were bought, there would be no development potential left for subdivision and construction of additional houses. The land could then remain in farming. There should be an open space easement or other protective device recorded for the property, similar to the "cluster" provisions. (The property owner may wish to retain a few development rights, for additional farm dwellings or subdivision of tracts for family in the future.)
- **Purchase of Some Development Rights:** If only a portion of the development rights were purchased, the remaining rights could be utilized in 5-acre or larger tracts, until the number of remaining development rights is exhausted. This program would allow owners to increase the minimum lot size at their choice, and they would be compensated for it.
- **Example:** A 100 acre farm has 20 development rights, which is the same as 20 houses if it were divided in 5 acre

tracts. If all 20 rights were purchased, the land would be preserved as a farm, and could not be subdivided for housing in the future. However, the property owner would receive financial benefits as if the farm had been developed.

If only 10 development rights were purchased from the same farm, 10 would remain. This farm could be subdivided in the future in any configuration, as long as the size of each lot is not less than 5 acres (or 1 acre for a "cluster" subdivision), and the number of tracts does not exceed the remaining number of development rights. For example, this could be: ten 5-acre tracts and one 50 acre farm under easement; or 10 tracts with minimum lot size of 10 acres.

c. **Eligible Properties and Targeted "Protection Areas"**

- **Eligible Properties:** In general, rural lands throughout the County that are zoned A-1 and are outside of urban service areas would be eligible for purchase of development rights. (An exception would be properties with a non-conforming use, such as a junkyard, unless the use were abated.) Development rights can be purchased privately from any eligible property. However, public sector purchase of development rights should be only within targeted protection areas (see below).
- **Targeted Protection Areas:** The main reason for the program is to preserve targeted protection areas, including prime farmland outside and adjacent to the southern Georgetown urban service boundary, certain environmentally sensitive areas, and historic districts (see Figure 1). These areas would be

mapped, and purchase of development rights would be encouraged for properties within these areas through a weighting system. The development rights for targeted properties would be multiplied (e.g., with a multiplier of two, each development right would be worth two houses). Where a property lies within overlapping protection areas, such as a historic district within the aquifer recharge area, the effects of the multipliers would be added.

- **Multiplier from South to North:** To help ensure that purchase of more expensive development rights in the south would not make additional rural PUD development in the north economically infeasible, and to reflect the desire to preserve higher quality farmland in the south, any development rights transferred from southern to northern land should have an additional multiplier, based upon the typical difference in property values in the south and north (see Appendix E).
- **Proposed Weighting System:** A recommended system for multiplying development rights to establish priorities for purchase is shown in Appendix E, which also includes examples of how the system would work. This system could be refined as necessary to accomplish the purposes of the TDR program.
- **Deciding When to Buy All Rights or Only Partial Rights:** Some priority properties may be appropriate for full preservation and a total buyout of rights. In other areas, funds for purchase of development rights could be stretched by purchasing only partial rights, to allow limited future development, with agreement of the owner.

FIGURE 1

**TARGETED PROTECTION AREAS
FOR PURCHASE OF DEVELOPMENT RIGHTS**

Selected Environmentally Sensitive Areas: (a)

Royal Spring Aquifer Recharge Area
Other Aquifer Recharge Areas
Creek Conservation Corridors (b)

Prime farmland outside and adjacent to the southern Georgetown USB

Historic Districts (c)

NOTES:

While all rural lands would be generally eligible for development rights purchase, these areas would be targeted for purchase of development rights through a weighting system. Public purchase of development rights should only be within these areas.

- a. See Environmental Quality Element, Section III, for further definition of the selected Environmentally Sensitive Areas listed above, which are to be included in this program.
- b. Floodplain management policies will protect most creek conservation lands. However, a few critical properties outside the floodplain with special scenic and natural qualities may need to be targeted for involvement in the TDR program.
- c. See Historic Resource Management Element for definition of historic districts.

- **Long-Term Effect of TDR and Future Development Potential:** After development rights have been purchased from a property, the open space easement or other protective device would remain in force unless rights are returned to the property. If the property is designated for additional development potential by express provision of this or a future Comprehensive Plan, additional development rights could accrue to the property. The property owner could develop at the newly-designated density in the future Comprehensive Plan less the number of development rights that were purchased. An owner could also buy back development rights.

d. **Transfer of Development Rights to "Transfer Areas"**

- **"Transfer Areas:"** To help recoup the public sector costs of the program, rights could be transferred from the targeted protection areas to "transfer areas," which are areas that are more appropriate for greater density development. Development rights, whether publically or privately purchased, can be transferred only to properties within rural planned unit developments, designated urban service areas, or within the northern private urban service area, and cannot be transferred from properties in the northern half of the County to development in the southern half, either for rural or urban projects.
- **Use of Development Rights for Rural PUD's:** In the 1985 Plan there were no policies concerning the amount of density allowed in a rural PUD. This Comprehensive Plan recommends that the base density for all land within rural service areas should be uniform 1 unit

per 5 acres. If a developer wishes a higher density for a rural PUD, the additional density must be purchased from other rural lands in the form of development rights. Locational requirements for rural PUD's are listed below under "Rural Planned Unit Developments," Section 3.

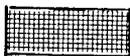
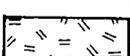
- **Transfer of Development Rights Into Urban Service Boundaries:** Development rights may also be transferred to residential developments within designated urban service boundaries. Development rights may be purchased by developers, or may be awarded from the Development Rights Bank in exchange for special concessions by the project to meet goals for open space and affordable housing. A combination of cluster development and TDR will be a strong incentive for preserving open space in urban areas.

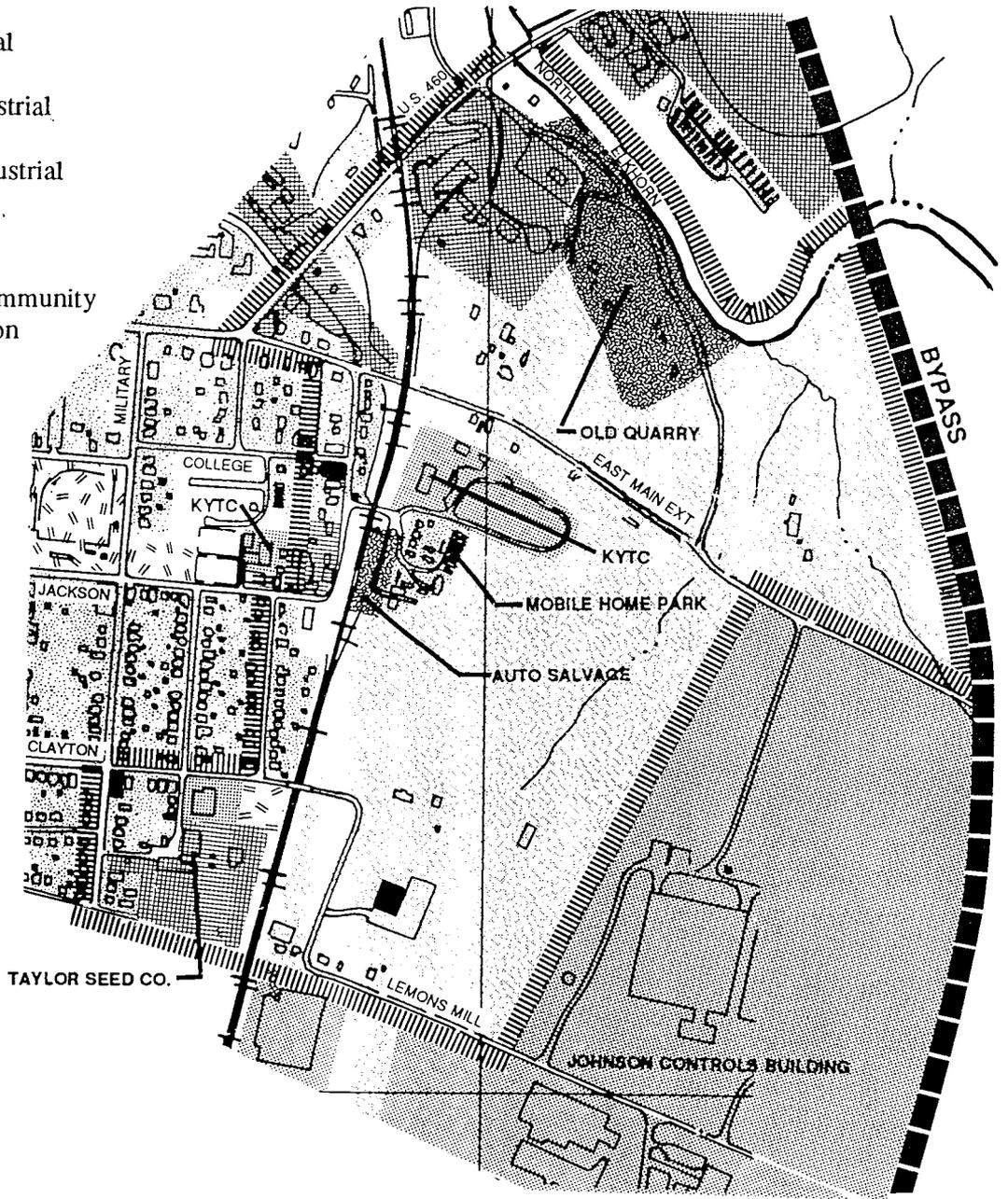
The benefits of cluster development should be available to urban as well as rural development. Developers should be encouraged to set aside more open space than is required by local ordinance through clustering. (This would be over and above any mandatory park land dedication requirement that applies to all urban residential development, should this ever be adopted.) The number of units that could have been located on the excess park land, according to the zoning, can be clustered on the remainder of the property through a density shift, so that the number of units allowed by the zoning on the total acreage remains the same.

Further, as an incentive to the developers to engage in this type of development, a density bonus should be offered through TDR. The value of the

EXISTING LAND USES EAST MAIN EXTENDED AREA PLAN

EXISTING LAND USES:

-  Agriculture
-  Residential
-  Commercial
-  Light Industrial
-  Heavy Industrial
-  Recreation
-  Church/Community Organization





land set aside for parks, in excess of any requirements, would be determined by certified appraisal; and upon acceptance of dedication of the land by government, that developer would be entitled to receive development rights equivalent to the value of the donated land (over and above any required open space). The developer could use those development rights to increase the density on the site up to 15% more than the permitted maximum density that would be otherwise allowed by the zoning classification. This would be in addition to the density shift of units from the park land. The developer could also sell the rights to another developer or transfer them to another property, for development within transfer areas only.

This would have the effect of increasing the green spaces and park areas within each city, as well as lowering development costs, infrastructure costs, and the maintenance costs of urban roadways. It would also provide a type of lot and residential environment which could not be easily duplicated in other communities, and will thus provide an advantage in marketability both from a cost and quality perspective. In effect, funds for purchase of rural development rights would not only accomplish that purpose, but will result in a dollar for dollar acquisition of new urban park land as well.

- e. **Mechanisms for Purchase and Transfer of Development Rights**
- **Development Rights Bank:** Public participation through local government is needed to assist in establishing the program and to help achieve the land preservation goals. One method for assisting transfer of the rights should be to establish a TDR bank, initially funded

by governmental bodies, that can purchase rights from property owners and sell them to those who wish to increase the density of urban development. This will aid in setting the price and will build up a supply of the rights. The suggested structure and funding sources for the bank are in Appendix E.

The development rights bank would focus upon critical properties within targeted protection areas that would be a priority for development rights purchase, to ensure that these are preserved. Figure 1 shows the priorities for development rights purchase.

- **Private development rights market:** To give both the public and private sector the broadest opportunity to participate in the program, private sale and purchase of development rights should also be possible. The two approaches of the free market and development rights bank will provide checks and balances to ensure that the rights are realistically valued, while also allowing priority properties to be targeted for purchase.

3. Policies and Standards for Rural Planned Unit Developments

a. Summary and Purpose

This Comprehensive Plan incorporates rural PUD's as an integral land use technique that furthers the goals and objectives for rural development and preservation. Rural PUD's give an opportunity for residential development with open space and recreational features that typically cannot be provided within urban projects. Combining rural PUD's with the Transfer of Development Rights program is a way to link development potential for lands in the

northern half of the County with policies that encourage preservation of other rural land (including prime farmlands in the south, selected environmentally sensitive areas, and historic districts).

The standards and locational criteria for rural PUD's ensure that adequate services will be available to protect public health, safety, and welfare, without placing undue demands upon public services provided by the County. The sewage treatment policies given below and in the Community Facilities Element are essential to protect water quality. The locational criteria will also prevent urbanization of the reservoir watershed, which would otherwise be very attractive for development, in order to protect the pristine water quality of the future reservoir.

b. Requirements and Standards for Rural PUD's

This type of urban development may be permitted in the rural area if all of the following conditions are met:

1. The development is of a basic residential nature planned and developed as a unit.
2. The development utilizes a major feature that preserves and enhances the natural characteristics of the land and provides open space and recreation as the focal point of the development.
3. The development acquires development rights through the TDR program (public and/or private) for any increase in gross density above one unit per five acres. With TDR's, the total gross density of the rural PUD cannot exceed 2.2 dwelling units per gross acre of the entire property. (See Section 2.C, above, and Appendix E for TDR program.)

4. The development, through an acceptable homeowners' association, provides its own urban services such as sewage treatment, road maintenance, recreation, trash collection, security, fire hydrants, street lighting and all other services and utilities, with the exception of police and fire protection. Public water service must be available, with sufficient pressure for adequate fire protection.
5. The development provides a sufficient package sewage treatment plant that meets the objectives, standards, and policies listed in the Community Facilities Element, Appendix, Section II.
6. The following locational requirements are met:
 - a. The site shall be located north of the east-west line from Rogers Gap, as shown on Map 2, which has been established by the Soil Conservation Service office to designate the northern area of the County where prime agricultural soils or additional farmlands of state importance are not prevalent. No rural PUD's shall be allowed south of this line.
 - b. The development shall have direct access to a rural road that is sufficient to accommodate projected traffic, with due regard for public safety.
 - c. The development shall not be located within the drainage shed of the future Scott County Reservoir (Map 2).
 - d. The development of the site shall be located and screened such that urban development does not dominate the rural landscape.

IV. URBAN AND RURAL SERVICE AREA RECOMMENDATIONS

A. SUMMARY

This section of the Plan sets policies and makes recommendations for the urban service boundary of Georgetown. An "Urban Service Boundary" (USB) is a line that indicates the extent of future urban development that will receive city services (sewer, water, police, fire, etc.). The Georgetown, Sadieville, and Stamping Ground Urban Service Areas include those properties that can be developed to urban uses and densities and annexed to those cities within the current planning period. This section of the Plan covers the Georgetown USB; for recommendations on the other two cities, see the Sadieville and Stamping Ground Plans.

There are two additional areas in Scott County where development at urban densities has been approved: the Mallard Point area in north central Scott County, which also includes the Bluegrass Hills and Harbor Village subdivisions; and the Longview area in western Scott County, which also includes the T.S.S.I. and Homes by Heritage (Lake Elkhorn) subdivisions. Zoning was approved for some of these areas under the "Mallard Point-type Planned Unit Development" category of the 1985 Comprehensive Plan, which allowed urban development in the rural area if located on non-prime agricultural soils, and if all services were provided privately, among other criteria. Sufficient zoning has been approved in the Longview area (1397 units) and Mallard Point area (1540 units) for these to one day become cities, if they develop as planned. This section of the Comprehensive Plan also deals with the urban and rural service policies for these areas. In general, no expansion is recommended.

B. GOALS AND OBJECTIVES CONCERNING URBAN SERVICE BOUNDARIES

The Goals for Growth listed in Section I.B help guide decisions about urban service boundaries. Those goals have suggested objectives for evaluating and selecting the most appropriate locations for the boundaries. These objectives can continue to guide the Planning Commission as amendments to Urban Service Areas are proposed in the future.

- 1. Maintain an adequate supply of developable land to accommodate anticipated growth and allow sufficient market flexibility.**

As discussed in Section II.B and II.C, there is a sufficient supply of residential, commercial and industrial land within the current Comprehensive Plan urban service area for Georgetown and approved development in rural areas to accommodate projected growth for the 5-year planning period (Table 1).

- 2. The Urban Service Boundary for each city should be located so as to allow for the most cost-efficient provision of public facilities and services.**

Major upgrades to water, sewer, roads, fire stations, etc. will be necessary to support new development. Impact fees and other similar strategies are being considered as ways for new development to bear a fair share of the cost to upgrade public facilities and services.

- 3. The location of the Urban Service Boundary for Georgetown should not be extended further into the Royal**

Spring aquifer recharge area for urban development in order to protect the aquifer, and should encourage preservation of prime farmland, the separate identity and small town character of Georgetown, and the rural character of the surrounding area.

The Environmental Quality Management Element recommends that the Urban Service Boundary not be extended any further into the Royal Spring Aquifer Recharge Area for urban development. Throughout this planning process, the strong desire of the community for better protection of prime farmland from urban development has been apparent (see Community Attitude Surveys, Appendix C). There is also a strong concern to maintain the separate identity of Georgetown and not allow growth pressures from Fayette County to dictate urban conversion of farmland to the south or further strip development south along U.S. 25.

4. Annexation policies should reinforce the Urban Service Boundary. Development within urban service boundaries that requires public services should be annexed.

Public services include, among other things, water, sewage treatment, transportation facilities, and police and fire protection, which are provided by city government. City government can pay for these services only through user fees or taxation. For successful urban development within urban service boundaries, no such development should be approved except upon the condition of annexation. Annexation is necessary to provide the revenue streams required to cover the cost of urban services over the long term. This should include all new urban development except Rural Planned Unit Developments, the Northern Private Urban Service Area, and the Western Rural Residential

Area, which primarily provide their own services privately.

Policies should also encourage annexation of existing industrial and commercial development. Industrial and commercial development requires a level of services, especially for sewer, roads, and fire and police protection, that can best be provided by city government. For these reasons, each city's incorporated boundary should eventually be co-extensive with all developed lands within the Urban Service Boundary.

C. RECOMMENDED GEORGETOWN URBAN SERVICE BOUNDARY

After evaluating many alternatives for the Georgetown USB (including two outside professional studies summarized in Appendix D), the following was chosen as the proposal that best meets the goals and objectives for growth and the needs and desires of the Georgetown community. The Urban Service Boundary is shown on the Georgetown Land Use Plan.

1. SOUTHERN GREENBELT

Concept:

- a. Create a long-term urban service boundary on the south side of Georgetown, reinforced with a greenbelt. **The greenbelt is absolutely essential to the Southern U.S.B. recommendation;** if the implementing mechanisms for the greenbelt are not approved, the boundary should remain unchanged and should follow the bypass.
- b. Balance the desires to get full use of the bypass with concerns to minimize encroachment of urban development

upon the prime farmlands to the south.

- c. Include the part of the Royal Springs Aquifer Recharge Area that is outside the bypass and 1985 Urban Service Boundary as the Aquifer Recharge Protection Area.
- d. The policies for urban development along the bypass should create a transition to southern farmlands that will be compatible with continued agricultural activities and will be sensitive to the character of the area.
- e. The GMWSS Sewer Master Plan recommends a major interceptor along Cane Run Creek and a third treatment plant at the confluence of Cane Run and Elkhorn, all outside of the current urban service boundary. This runs counter to agricultural preservation goals and the concept of the southern greenbelt. Provision of sewer service through the Cane Run Interceptor is inconsistent with the objectives of the southern greenbelt.
- f. For the southeast, maintain the bypass as the USB between Elkhorn Creek and the railroad.
- g. If, during the 5-year planning period, it is determined that the southwest leg of the bypass will not be built in the foreseeable future, the Planning Commission should consider adjusting the boundary inward, toward Georgetown.

There has been a strong consensus by Georgetownians through the past 10 years that we should not grow to the south and merge with Lexington. The area south of Georgetown is prime farmland and a significant scenic area, with several successful horse farms that have signaled their intent to remain in agriculture by

entering into agricultural districts.

The bypass was the 1985 urban service boundary. This was a "hard and fast" line which could be a permanent physical boundary. However, many argue that a road should not be single-loaded, that it creates substantial development potential on the outer edge as well. Many property owners whose farms will be bisected by the bypass have strongly requested urban development to address the impacts of the bypass. It is important to find a long-term solution that takes advantage of the development pressures along the bypass to create a southern greenbelt.

The floodplain of Cane Run Creek and the upper property lines of the farms in agricultural districts will be the general limit of the USB. Sufficient area between this line and the bypass would be designated as a greenbelt. The presence of a greenbelt will allow development at urban intensity on the area that is nearer to the bypass. In order to develop the property nearer to the bypass, it would be necessary to formally establish the greenbelt area to ensure long-term protection of this land. The greenbelt properties would have the same use and subdivision rights of A-1 lands.

This proposal fairly balances the development requests of the property owners with the need to create the greenbelt.

For the southeastern area, the bypass should remain the USB. (See exception for Johnson Controls property, Section V.D.10.) There may be a possibility of future expansion to I-75 if a Lemons Mill interchange is constructed. For the present, no industrial expansion is needed, and the bypass creates an effective boundary between rural and largely industrial urban uses.

2. WEST GEORGETOWN

Concept:

- a. Respect wishes of farm owners within agricultural districts to remain in farming. Remove agricultural districts from the USB, unless owners have expressed a desire to develop (Ward Hall and farm).
- b. The western urban area needs special treatment because of significant historic resources and prime agricultural lands.

Agricultural districts cannot be annexed, by State law. Since one of the overall USB policies recommends that all development within the USB should be annexed, agricultural districts should not be considered part of the USB. The current urban service boundary follows the proposed bypass, and should continue this route except for the agricultural districts.

A major limitation on future urban development on the west side of town is U.S. 460 (Frankfort Pike), which is a two-lane rural road through this area and into Georgetown. Its ability to safely handle a large increase in traffic is questionable, and the potential for widening is limited through the West Main Historic District. Construction of the southwest leg of the bypass could alleviate potential traffic congestion.

3. EAST GEORGETOWN

Concept:

- a. Expansion of the USB to the east is not needed at this time. On the south side of U.S. 460 E., maintain the line at its current location (Lanes Run, N. Elkhorn Creek).
- b. On the north side of U.S. 460, the USB

should generally follow the ridgeline that divides the Elkhorn/Lanes Run drainage area.

- c. The Planning Commission should reevaluate the need to expand the eastern USB during the 5-year planning period if the factors set forth in Section II.C. should occur.

An alternative proposal for eastern expansion of the USB was examined (summarized in the Background Report, Appendix D). There are two major reasons why eastward expansion of the USB is not warranted at this time. First, land to the east is not needed to accommodate the expected growth potential within the planning period, as sufficient land exists within the current USB to meet Georgetown's needs. Secondly, there were questions of the inadequacy of infrastructure, particularly sewer and roads, and the costs of required upgrades, that would make urban development to the east problematic. There would be infrastructure constraints for expansion at any perimeter of the USB, but costs to extend infrastructure could make it difficult to provide affordable housing in the eastern area.

However, if the situation as to growth trends and infrastructure were to change within the planning period (as specifically described in Section II.C) the Planning Commission should reevaluate the eastern expansion.

This recommendation is based upon a full discussion of many issues affecting development to the east, and a careful review of the properties within the current USB that are zoned, have available infrastructure, and are likely to develop in the short-term. The potential for sufficient flexibility in the real estate market and possible dominance by few property owners was thoroughly discussed. The conclusion was that lands currently within the USB can accommodate projected growth in the next five years (see discussion, Section II.B).

The alternative that was considered for eastern expansion into the lower Lanes Run basin would have added about 1,000 acres to the urban area, increasing it by about one-third in size (see Table 14, Appendix A).

The second major issue was the cost-efficiency of infrastructure upgrades that would be needed to open up the lower Lanes Run area for development. The discussion included alternatives for sewer service, the impact on the existing sewerage system in Georgetown, and future growth pressures on the upper Lanes Run basin in the Oxford area if the lower Lanes Run basin is sewered. The additional road widenings and new road construction that would be necessary to serve the eastern expansion were also analyzed. The cost-efficiency for public investment of adding a large new area to the USB was also evaluated.

Many other issues, such as the impact on prime farmland and the rural character of the area, were discussed. Through many well-attended public hearings, the opinions of property owners both within and around the eastern expansion area were heard and fully considered. In the overall weighing of all of these issues, it was determined that no expansion of the boundary is needed at this time, with the potential for reconsideration as described in Section II.C.

4. NORTH GEORGETOWN AND TOYOTA AREA

Concept:

- a. Retain the northern bypass as the USB from I-75 to the west.
- b. In the long-term future, as the northern part of the City develops and this section of the bypass becomes a reality (e.g., when it is included in KYTC 6-year plan), consider extending the USB further north along U.S. 25 toward

Delaplain.

- c. The 1985 "rural service area" around the Delaplain interchange and Cherry Blossom Way should become the Georgetown Urban Service Boundary, and all new development and existing commercial and industrial development should be annexed as opportunities arise.

Although expansion of the urban service area is not needed within the planning period, the long range plan for Georgetown should consider expansion northward toward Delaplain. This area can be served by gravity sewer to Wastewater Treatment Plant #1, if capacity is available, and there is generally a lower proportion of prime farmland northward beyond the current USB than east, west, or south of Georgetown.

The industrial and commercial uses near Toyota and Delaplain area need city services (police, fire, road maintenance, etc.). The sewage treatment policies recommend that private plants, such as the one in Triport Industrial Park, eventually come under public management or ownership (see Community Facilities Plan, Appendix Section II). If Clark Equipment is reoccupied and expansion of the sewer plant is necessary, GMWSS would be the appropriate agency to be responsible for it. Annexation of these areas by Georgetown is appropriate.

Existing residential developments of Moonlake and Stonehedge are currently receiving County services. Annexation could be warranted if the sewage treatment problem or other serious deficiencies require City assistance to resolve.

At this time there is sufficient vacant land at the Delaplain interchange for future commercial needs. Land at the interchange and toward U.S. 25 could be added to the USB in the future if major industrial expansions and locations increase the need for trucking and related

highway service facilities beyond the capacity of available land.

5. MINOR DEVIATIONS FROM USB RECOMMENDATION

In certain unique and very limited situations, the Planning Commission may consider and allow minor deviations from the recommended USB location to avoid a substantially unjust outcome for particular properties. These limited situations could include properties where pre-existing zoning for urban development extends outside the proposed USB; or properties that would be divided by the boundary to create parcels that would be otherwise unuseable for any reasonable purpose. However, in making these minor adjustments, the concept and integrity of the USB must be maintained.

D. RECOMMENDED POLICIES FOR EXISTING PLANNED UNIT DEVELOPMENTS IN THE RURAL AREA

This section describes the policies for urban and rural services for existing approved subdivisions in the Mallard Point area (Northern Private Urban Service Area) and Longview area (Western Rural Residential Area). The following clarifies policies concerning expansion, incorporation, and service provision.

1. Public and Private Services

Zoning in both areas was approved under the assumption that services would be privately provided by the developers and/or homeowners, and would not become a burden on County revenues. Police and fire services are the County's responsibility. However, all other financially feasible improvements and services should continue to be privately provided, until incorporation occurs.

2. Incorporation -- Northern Private Urban Service Area

The Mallard Point area is different from the Longview area because the former has been approved as a more complete community, with both neighborhood and downtown commercial zoning and a range of housing densities. The subdivision already has sufficient population to incorporate, which has been considered by homeowners. It is possible incorporation may occur within the next fifteen years, at which time an urban service boundary should be designated.

3. Western Rural Residential Area

The Longview/TSSI/Lake Elkhorn projects are considered to be rural residential subdivisions in an inappropriate location within a prime farmland area with inadequate services and infrastructure. This area is less likely to grow as a balanced community and incorporate. The County and Planning Commission should not take actions to actively encourage growth in these subdivisions, because of the impacts to roads and surrounding prime farmland.

4. Expansion

None of the existing rural PUD's are generally recommended for expansion, as both areas have more than enough units approved for the planning period, with the following specific exceptions.

No further expansion is possible for the Longview/TSSI/Lake Elkhorn subdivisions under rural development policies, and urban development in these areas should be strictly limited to properties currently zoned. However, the 100-acre tract now surrounded on three sides by the existing TSSI and Longview developments (Soards) may be included in this already approved development, and such inclusion should be

ACKNOWLEDGEMENTS

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The Citizens Advisory Committee wishes to thank the following people who contributed to this document:

Urban Service Boundary Policies: KYDAT (Kentucky Design Assistance Team) members Horst Schach, team leader and Landscape Architecture Program Chair, University of Kentucky, Russell Casey, LFUCG Planning Department, and Morgan McIlwaine, ASLA, with assistance from Ed Holmes, Bluegrass ADD, and David Ripple, Schimpeler Corradino Associates; and Alan Mallach, consultant.

Rural Policies: Mark Reese, County Extension Agent; John Jones, Scott County Conservation District; Scott County Health Department and WEDCO staff; Jim Riggle, American Farmland Trust; Terry Regan, T.M. Regan, Inc.; Jack Wilson and staff of the Kentucky Division of Water; Dennis Jones, Public Service Commission; Harry Marsh; Dr. James Dinger, University of Kentucky; and Don Short, GMWSS.

Community Attitude Surveys: Dave McCreary and Sam McIntosh, MC2 Consulting, and Rita Jones of the Scott County A.S.C.S. office, for the Rural Property Owner Survey; James Hougland, Jr., U.K. Survey Research Center, for the Toyota Impact Surveys; and Tom Wilkerson, Wilkerson Associates, for the Community Attitude Survey.

Growth Trends: Regional and County growth trends were explored in a forum with experts Ted Keobel, University of Louisville Urban Studies Center; Bob Joice, LFUCG Planning Department; Brenda Landy, Landy & Associates; and Tom Collier, Realty Research Corporation.

Special thanks goes to Patrick Nesselrode, Sally Purcell, and Brad Stone, Research Assistants; Mike Flinn and Lee Ann Eades, Georgetown-Scott County Building Inspection Department; the staff of the Bluegrass ADD for extensive assistance on demographic trends and options for rural and urban land use policies; Steve Mooney, the Planning Centre; and the many citizens and landowners who gave countless hours to attend public meetings and discuss their needs and community vision with the Committee.

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Georgetown Land Use Map
(located in pocket, back cover)

NOTES

REVISIONS: An editing committee of Planning Commissioners and Citizen Advisory Committee members reviewed the final version of this Element. Minor editing by the Committee for clarification of wording is listed in detail in the Background Report. Revisions adopted with the Southern Greenbelt Development Area Plan are also listed in the Background Report.

BACKGROUND REPORT: There is a Background Report (Appendices A through F) that includes more detailed information and analysis used in the planning process. This report is not a part of the adopted Comprehensive Plan, but is available from the Planning Office. References to the appendices found throughout the Growth and Land Use Plan are for the reader's convenience, and should not be construed as incorporating the appendices in the Plan by reference.

MAPS: The adopted location of the Greenbelt is shown only on Map 6, the Southern Greenbelt Land Use Map. Other maps in this and other Comprehensive Plan Elements show only a conceptual location of the Greenbelt.

GROWTH AND LAND USE ELEMENT

I. SUMMARY AND GOALS FOR GROWTH

A. SUMMARY

This element of the Comprehensive Plan sets the goals and policies to guide future growth and land use in urban and rural areas of Scott County. This section of the Plan encompasses goals for growth, future land needs, rural development and preservation programs, and the proposed Georgetown Urban Service Boundary.

Scott County is in a time of change and great potential. The Growth and Land Use Element is a plan for guiding growth in a direction that will help accomplish future goals for Scott County, which have been determined by Scott County citizens through the Citizens Advisory Committee meetings, extensive attitude surveys, and public hearings. These "Goals for Growth" (below) incorporate and balance the many issues facing Scott County, which are detailed in this and other elements of the Comprehensive Plan.

The Growth and Land Use Plan will encourage growth opportunities that can help achieve goals for improving aspects of the community such as the economy, social diversity, and public services, and will also manage growth to conserve and enhance our fiscal, environmental, and historic resources. A summary of the major sections of the Plan is as follows:

SCOTT COUNTY GROWTH PROJECTIONS AND LAND NEEDS:

Section II of the report gives the projections for population growth and land needs that are the foundation for the Growth and Land Use Plan and the conclusions concerning the extent of the Georgetown Urban Service Boundary.

This section summarizes the many factors evaluated in the planning process, such as growth trends; characteristics of the Scott County real estate market; capabilities to provide public infrastructure and services; foreseeable future events that could affect growth; and the desires and attitudes of Scott Countians about growth. A wide range of future growth projections was used to determine housing and land needs, representing continuation of the current trend or the potential for more rapid growth or slower growth. There was a careful study of the short-term (5-year) realistic development potential of lands already zoned for residential development, with no infrastructure constraints and a property owner willing to develop. These figures are summarized in Table 1.

RURAL DEVELOPMENT AND PRESERVATION:

Section III of the Plan recommends policies and programs that will balance rural development and preservation needs. There is a strong community consensus that preservation of our agricultural heritage means protection of prime farmland and water resources, yet rural Scott Countians also feel the need to preserve the financial options provided by development. This Plan recommends an innovative package of new rural policies that greatly increase the options available to landowners. While subdivision of agriculturally zoned land into five-acre tracts will continue to be allowed, the new programs will provide incentives for a property owner to choose more preservation-oriented uses or development patterns for their land.

TABLE 1

**SCOTT COUNTY AND GEORGETOWN GROWTH PROJECTIONS
SUMMARY OF LAND AVAILABILITY AND NEEDS**

	Georgetown	Total Countywide
Projected Year 2005 Population		28,610 to 32,630(a)
Projected Increase in Dwelling Units, 1990-2005	1295 to 1705 units(b)	2,750 to 3,620 units
Build-out Dwelling Unit Potential of Current Comprehensive Plan and Zoned Land (c)	14,150 units	17,890 units
Short-term, Feasible Development Potential of Proposed Comprehensive Plan (d)	2,971 (2,386) (e)	5,104 (3,203) (e)
Industrial Land Potential in Current Comprehensive Plan and Zoned Land (f)	1,230 acres	
Commercial Land Potential in Current Comprehensive Plan and Zoned Land (f)	1,030 acres	

NOTES:

- a. Range of growth assumptions: Average annual increase of 1.7% (medium growth -- trend of past 6 years) to 2.2% (high growth), for a 15-year growth of 27% to 35%.
- b. Assumes 47% of County growth will occur within Georgetown urban area.
- c. Assumes full build-out of all zoned and planned residential land.
- d. Short-term realistic development potential: properties have zoning and preliminary approvals; infrastructure is available or feasible; owner is willing to develop. Represents 5-year potential residential construction under proposed Comprehensive Plan. Rezoning of new property would add to total units.
- e. Approved single-family homes that could be built for \$85,000 or less and approved multi-family units.
- f. Includes all undeveloped land or vacant lots that are currently zoned or are designated for development in the 1985 Comprehensive Plan.

on the same terms and conditions that were imposed on those developments originally.

If the following occurs during the 5-year planning period, the Planning Commission could reevaluate whether to expand the boundaries of the Northern Private Urban Service Area:

- (1) If there is a major influx of additional jobs in Scott County;

OR

- (2) If building permit data show that actual housing construction rates are higher than projected in this Plan;

OR

- (3) If an I-75 interchange is constructed in the Mallard Point vicinity.

In any reevaluation, the Commission should consider all relevant data to determine whether housing demand in this area has been underestimated, or whether land available for residential development within the planning period has been overestimated.

It is recommended that there should be an evaluation at every 5-year Comprehensive Plan update of all existing rural PUD's. If no significant action has been taken to initiate development of a subdivision, the Commission should consider rezoning the property to A-1.

V. LAND USE PLAN

A. SUMMARY

This chapter of the Plan details proposed land uses for lands within the Georgetown Urban Service Boundary, as shown on the Georgetown Land Use Plan. Section B explains each land use category. These categories apply to all of Scott County. Section C describes special planning issues and areas for Georgetown, with cross-references to land use proposals in other elements of the Comprehensive Plan. Section D discusses special land use issues for two locations in the rural area, the proposed airport and the existing development area at U.S. 25 S near the Fayette border.

B. LAND USE PLAN CATEGORIES

1. **Agricultural:** This category is the general designation of rural lands -- those outside of the urban service boundaries, rural planned unit developments, the Western Rural Residential Area, and the Northern Private Urban Service Area. This category allows use of land for production of agricultural or horticultural crops, and for dwellings for persons engaged in the agricultural use on the tract, at a maximum density of one dwelling unit per five acres. This also allows rural residential use (dwellings for sale or lease to the public) in "cluster subdivisions" only, the sale and transfer of development rights, the development of

rural PUD's in the northern half of the county (see Section III.C.3), and agriculture-related businesses, as defined and described in Section III.

All types of urban development listed below shall be confined to lands within urban service boundaries, designated rural planned unit developments, the Western Rural Residential Area, and the Northern Private Urban Service Area, in keeping with policies listed in Section IV.

2. **Residential:** This category allows residential uses and those home occupations, small-scale businesses, and institutions that will not detract from the basic residential integrity of the neighborhood. See the Housing Element of the Comprehensive Plan for specific policies on residential densities and uses. A future effort should create "small area plans" for areas with potential for new development or infill, to identify appropriate locations for housing of low, medium, and high density and for schools, parks, neighborhood commercial areas, etc.
3. **Commercial:** This Comprehensive Plan recognizes the importance of encouraging commercial growth in Scott County to diversify the economy and provide for a more self-sufficient community. The hierarchy of commercial uses and standards proposed below will give flexibility for new commercial development while providing for appropriate locations in relation to roads

and other land uses. Figure 2 lists the various commercial locations in Scott County and notes the types of commercial uses that are appropriate for each area. Where possible, new commercial growth should be concentrated and planned as a unit, rather than "strip"-type development.

Several commercial categories are given below, for different types of retail and service uses with a range of market (service) areas. For each category below, standards are given for number of units (stores), maximum gross leasable area (GLA), maximum size of the site, and the service area. These standards are guidelines that can be adjusted based on commercial needs and design of development.

Two types of neighborhood commercial areas are defined. Both should be only for the purpose of serving the neighborhood or surrounding rural area and not the entire community, and should only provide neighborhood residential or employee convenience needs, such as groceries, drugs, cleaning, barber and beauty shops, and similar uses that will not bring non-neighborhood traffic into the area, but will minimize resident or employee trips out of the area for their most frequent purchases. The area should be designed to ensure safe traffic and pedestrian access and to prevent negative impacts on the neighborhood from commercial parking. Additional standards are given under "a" and "b" below.

a. Neighborhood Convenience Commercial Area (urban or rural)

Units	1-3
GLA	up to 10,000 sq. ft.
Site Acreage	up to 1 net acre
Service Area	Immediate neighborhood or rural area
Anchor	Convenience store, restaurant

FIGURE 2

COMMERCIAL LOCATIONS AND USES

COMMERCIAL LOCATIONS	TYPES OF COMMERCIAL USES					
	Interstate Service	Industry/ Trucking Service	Regional Attractions	Tourism-Related	Community (County & City-wide)	Neighborhood (Urban & Rural)
Interchange Area (I-75/460/62/Bypass)	•		•	○	•	○
I-75/Delaplain	•	•			○	
Downtown Georgetown			○	•	•	•
U.S. 25 South (Georgetown)					•	•
U.S. 25 North (Georgetown)				○	•	•
I-75/KY 32	•	○				•
Downtown Sadieville				○		•
Downtown Stamping Ground				○		•
Mallard Point						○
T.S.S.I.						○
Rural towns and crossroads				○		•

• EXISTING USES

○ PLANNED USES

Location Located on collector streets, and should not be located within one-half mile of any other shopping area as shown on the Comprehensive Plan (either proposed or existing). Exact locations not designated on Land Use Plan. These can occur in areas designated on the Land Use Plan as residential, industrial, or agricultural, if need is demonstrated and the use will be compatible with the basic residential, industrial, or rural integrity of the area.

Notes As this type of shopping area is within an overwhelmingly residential or rural neighborhood, the compatibility of architectural design and the proper use of landscaping and signage are very important.

Zoning B-1

b. Neighborhood Commercial Center (urban)

Units 1-10
GLA 10,000 to 50,000 sq. ft.
Site Acreage approximately 5 acres
Service Area 1000-1500 households
Anchor Grocery store (large center), convenience store (small center)

Location Located on a collector road near an arterial.

Notes Usually developed to function and operate as a unit and developed on one parcel. Mix may include several types of neighborhood service stores and low-intensity offices. Site design, signage, and landscaping should be compatible with surrounding neighborhood.

Zoning B-1

Future neighborhood commercial centers will be needed in three areas of Georgetown: the western sector (U.S. 460 W, between N. Elkhorn Creek and U.S. 62); northern sector (north of Main Street and west of I-75); and the southwest sector (west of U.S. 25 S. and east of U.S. 62). Actual locations will be designated as each area develops or through a small area plan.

For the **western sector**, a 5-acre center has been designated in the First Lexington development, with land for expansion if needed. Any expansion should have access from U.S. 460 and the bypass.

For the **northern sector**, neighborhood commercial uses should be expanded in the existing North Broadway commercial corridor, to serve infill residential development and encourage revitalization. See also the Downtown Plan, which recommends that for North Georgetown growth, emphasis should be placed on commercial development in the existing North Broadway area and the Delaplain interchange, to encourage redevelopment of the former and to maintain the residential, rural, and open space character of U.S. 25 from Cardome to Delaplain. A neighborhood convenience commercial area may be needed in the vicinity of the High School. Preferably, it should have access

to U.S. 25 via the proposed collector road between Long Lick Pike and DeGaris Mill/U.S. 62. Neighborhood convenience commercial has also been approved within the Colony.

For the **southwest sector**, neighborhood commercial should be centrally located as an alternative that will reduce auto trips to U.S 25. For instance, the area could be located on the Seminole extension, near the bypass or future park. However, the location should be oriented to the neighborhood, not as strip development on the bypass.

Neighborhood commercial uses in industrial areas: Both "Neighborhood Convenience Commercial Areas: (1 acre max.) and "Neighborhood Commercial Centers" (5 acres max.) may occur in planned industrial areas as required to serve the daily needs of employees. Neighborhood commercial may only be approved where the uses and impacts of the development will be compatible with the primary industrial nature of the area, and will not create conflicts that would hinder existing industrial activities or future industrial development and expansion. Trucking-related activities are not allowed in these neighborhood commercial areas. Gasoline service stations for automobiles may be allowed (see limitations on locations of underground storage tanks, Environmental Quality Management Element, Objective 11.5).

c. Community Commercial Area

Units	10 and up
GLA	over 50,000 sq. ft. (no maximum)
Site Acreage	over approximately 5 acres (no maximum)
Service Area	City- or county-wide customers are primary target, although some specialty stores with regional draw may occur.
Anchor	Large supermarket, discount store, or department store
Location	Located on an arterial usually close to another arterial or expressway.
Notes	New development should be planned as a single project although usually further subdivided for free-standing stores. Large variety of retail and office uses.
Zoning	B-2 or new district

d. Regional Attractions/Interstate Service

Units	varies
GLA	varies
Site Acreage	More than 30 acres gross
Service Area	Regional residents and interstate travelers
Anchor	Major shopping center or large specialty stores that draw customers from outside Scott County. Interstate services.

Location Located on an arterial near an expressway.
 Zoning B-2 or new district

e. Industry/Trucking Service Area

Units varies
 GLA varies
 Site Acreage More than 20 acres gross
 Service Area Industrial area and interstate trucking
 Anchor/Uses Truck stops, truck and trailer storage yards and repair, related services (motels, restaurants).
 Location Delaplain I-75 interchange and Sadieville I-75/KY 32 interchange only.
 Zoning B-2 or new district

f. Downtown Commercial

Units, GLA, and site acreage varies according to size of the community.
 Service Area Surrounding city and unincorporated area. Specialty stores may have regional/tourism draw.
 Anchors Governmental offices, banks, post office, related office and retail services.
 Location Downtown Commercial areas have been designated for Georgetown, Sadieville, Stamping Ground, and the Northern Private Urban Service Area (Mallard Point).
 Notes See the Downtown Plan for land uses and relationship of Downtown Georgetown to other commercial areas.

4. **Professional Office:** This category includes services which are provided within the confines of an office, such as the following major uses: financial and credit institutions, security and commodity brokers, holding and investment companies, architectural and engineering firms, legal and medical

services, insurance and real estate agents and other related professional services.

Office uses are allowed in all commercial areas (B-1 through B-3), in keeping with the intent and service areas of those districts. The Professional Office designation is for

areas that are planned and appropriate for office uses only, not other commercial uses. Office districts have a lower intensity of use and traffic than commercial areas, and are more compatible with residential areas.

According to the policies of the Downtown Plan, Downtown Georgetown should continue to be a focus for offices, especially those related to governmental uses. New office development for regional services should also be encouraged at the I-75/U.S. 460 interchange and U.S. 25/bypass intersection, in balance with policies to protect the vitality of Downtown.

5. **Industrial:** Industrial uses involve the processing of products or raw materials and associated use such as warehousing or heavy construction. Three categories of industries are defined according to performance and environmental standards. Although examples of uses are given for each category, the performance and environmental standards are the overriding test for allowed uses.

a. **Heavy Industry:** Those industries whose processing operations result in the outdoor storage or processing of materials or products, the emissions of any atmospheric pollution, visible light flashes or glare, odors, or noise or vibration which may be heard or felt off the premises or those industries which constitute a fire, explosion, or other hazard detrimental to the health and welfare of the community or adjacent property owners. Examples of these activities in this category could include heavy manufacturing, fuel and power production, waste disposal, meat packing and slaughter houses, lumber milling, chemical and petroleum storage and bulk sales, material salvage yards (junkyards), industrial laundries, automotive and heavy equipment repair shops, mining, and all uses allowed in

the light industry zone.

b. **Light Industrial:** This land use category includes those establishments in the assembly of finished or semi-finished materials, warehousing, and related uses which do not have the negative impacts listed above. Examples of activities included in this category could include: light manufacturing and research and development facilities; depots and terminals; communications; food preparation; publishing; bulk storage, wholesale, shipment or related activities; retailers of goods which are extremely large or inappropriate to business zones, such as truck, airplane, or boat dealers; etc. Outdoor storage for uses such as trucking, containerized storage, or construction materials and equipment yards may only be allowed if outdoor storage areas are screened to prevent negative visual impacts to surrounding properties or the public.

c. **Environmentally-Sensitive Light Industry:** This is a new category which recognizes that some locations have sensitive environmental characteristics that require special limitations on industrial uses. The same performance standards apply to uses in this designation as for Light Industrial. In addition, there are two categories with further requirements. These could be handled as conditional uses, to allow regular review of the development to ensure that the environmental standards are being met.

c.1 **Water Quality Protection Areas:** This applies to new industrial zoning within the Royal Spring Aquifer Recharge Area and properties that drain direct to Elkhorn Creek within five miles of the GMWSS water intake. Uses in

these zones should be those that do not present an unacceptable level of risk for potential contamination of water quality. In particular, uses shall only be those that do not use, generate, or store hazardous materials, as defined by State and federal regulations. Local regulations may determine that some minor use of hazardous materials may be allowed if the small quantity or characteristics of the materials are such that they would not constitute a potential threat to water quality. (See also the Environmental Quality Management Element of the Plan.) In addition, stormwater runoff in these areas should be directed away from sinkholes.

c.2 Areas with Limited Sewage Treatment Capacity: This category allows flexibility for limited light industrial uses on septic systems, in areas where sewage treatment is not available or feasible for individual developers to provide. This category may only be approved within the Toyota Impact Area and the Sadieville U.S. 32/I-75 interchange area. The purpose is to encourage economic development in Sadieville and economic diversification in Georgetown, in balance with infrastructure limitations.

Allowed uses should only be those that generate small quantities of domestic-type sewage, such as warehousing, construction equipment, or production processes that do not generate wastewater. Septic systems may only be approved where they would not have potential to contaminate

ground or surface waters. Limitations may be established on number of employees and size of septic tanks. Where sewer extensions are planned for the future, the developer should be required to contribute a fair share toward the cost of extension, with financial guarantees that the industry will be connected to the system once it is available.

6. **Public/Institutional:** This land use category includes prominent facilities that benefit the public and do not fit well into other categories. Such land uses are character-istically large and distinctive facilities that are service oriented. These facilities contribute to the general welfare of the entire community. Public/ Institutional uses include public facilities such as schools, fire stations, and government offices; cemeteries; private educational institutions; and private recreation facilities. Churches and similar institutions may be included here if they are large; otherwise, they are included with the surrounding or adjacent uses.
7. **Park/Open Space**
 - a. **Public Park:** This category applies to existing and proposed public parks and recreation facilities. Locations for proposed parks are general and based upon the standards in the Parks and Recreation section of the Community Facilities Element.
 - b. **Conservation:** This is a designation applied to Creek Conservation Corridors and other environmentally sensitive areas that may be included in the C (Conservation) zoning designation. See the Environmental Quality Management Plan for the definition of and land use policies for Creek Conservation

Corridors.

- c. **Southern Greenbelt:** This open space land will be established at the time the overall property is zoned for development, as discussed in Section IV.C.1 and Section VII of the Growth and Land Use Element. Uses shall be those of the Agricultural category.

C. SPECIAL PLANNING ISSUES, GEORGETOWN

1. **Neighborhood or Small Area Plans:** The Commission should follow up this Comprehensive Plan with more detailed neighborhood or small area plans, especially for major undeveloped sectors of Georgetown with potential for short-term development, such as the southwest, the eastern expansion area, and the Whittaker property to the north. See also the Housing Element concerning neighborhood plans (Objective 3.1).

The Commission may require the preparation of neighborhood or small area plans, where large scale development is proposed. This should apply to all proposed urban land uses. Vehicular circulation, land use, open space, utilities, buffer areas, storm water drainage facilities, recreation and community facilities, among other elements, should be included in the neighborhood or small area plans.

2. **Highway Buffering Standards:** The following policies should be included as standards in the zoning ordinance and subdivision regulations.
 - a. Residential development along the bypass and I-75 should be screened for both visual and acoustic purposes. Screening should substantially soften

visual and noise impacts upon adjacent uses, especially residential. It is recognized that buffer screening cannot completely eliminate visual and noise impacts.

- b. Setback requirements should be established based upon the use but no less than 100 feet along the bypass and I-75. Intensive uses will require greater setbacks due to potential noise impacts. Similar setback requirements (100 ft.) should also apply to ramps along the interchanges and major intersections.

3. **Planned Unit Developments:** The use of planned unit developments and cluster housing development types are to be encouraged within the urban service areas to preserve and protect significant natural features, open space, recreation areas and to provide improved living environments.

D. SPECIAL PLANNING AREAS, GEORGETOWN

1. **Designated Agricultural Districts:** These properties are not within the Urban Services Boundary and are planned for Agricultural uses only.
2. **Ward Hall and Farm:** The Ward Hall property is a historic resource of local, state, and national significance. The property is currently in an Agricultural District, and was included within the USB with recognition that non-agricultural development can occur only if the property is removed from the Agricultural District. The property is designated on the land use plan as residential. This recognizes, however, the policy of the Historic Resource Management Element to encourage preservation of Ward Hall, the other historic buildings on the farm, and

some surrounding open space and to maintain public use or access. It is unlikely to be financially feasible to maintain Ward Hall through tour revenues alone, and planned land uses should have the flexibility to allow public and/or private development that would accomplish the purpose of preservation of Ward Hall and would be compatible with the residential character of the surrounding area. Examples could include conference or office space and tourism/ entertainment facilities such as a hotel, museum, or restaurant. These could be in combination with residential uses. Residential density shifts within the property and awarding of a Transfer of Development Rights bonus could encourage preservation of open space around Ward Hall (see Section III.C.2).

3. **Old Hospital:** The old hospital on West Main also has historic and community significance and needs similar flexibility. The current land use designation is "Professional Office," the extent of which is limited to the area currently zoned. There is potential to expand the area designated for office use, or to allow other uses such as those listed for Ward Hall, if this would help accomplish preservation and reuse of the old hospital building. Residential uses, elderly housing, or congregate (nursing) care are also possibilities. However, these uses should be consistent with policies concerning maintaining the overall residential and historic character of the West Main Historic District (see Downtown Plan) and with the ability of West Main Street to accommodate the traffic.
4. **Bypass Route:** To the extent possible, the route of the future bypass right-of-way should be reserved and protected from development that could interfere with placement of the road or unnecessarily add to ROW costs. This is necessary to ensure that an arterial of such importance to the

community can be constructed in the future. The KYTC should be consulted to determine an approximate location and width of ROW in development areas, and no permanent new development should occur within the ROW.

5. **Commercial Infill, U.S. 25 S.:** Expansion of highway commercial designations along U.S. 25 South could be considered for the U.S. 25 frontage of the Hambrick and Bradley-Ford farms (west side of U.S. 25, south of Indian Acres shopping center). This should only be considered if: additional residential growth in the southwest sector creates a demand for additional community-serving commercial development; and roads are improved in the area sufficient to handle the projected additional traffic (e.g., improvements could include funding and imminent construction of southwest bypass and/or widening of U.S. 25 S.).
6. **Southern Greenbelt Development Area:** The proposed land uses for this area are discussed in an Area Plan (Section VII). See also Section IV concerning expansion of the southern USB and creation of the southern greenbelt.
7. **Downtown Georgetown and Surrounding Corridors:** See the Downtown Plan element of the Comprehensive Plan for land use and zoning proposals for the B-3 zoned area and surrounding corridors on North and South Broadway and East and West Main.
8. **Washington/Bourbon Neighborhood:** The neighborhood generally north of Washington Street and along Bourbon and Chambers Streets in the vicinity of the old railroad ROW needs a small-scale neighborhood planning effort. Much of the area is currently zoned I-2, Heavy Industrial. It has traditionally been a low-cost incubator

area for small industries, and there are also scattered auto repair, neighborhood commercial, and office uses. Much of the housing stock is in poor condition, and some of the industrial and auto commercial uses have been a deterrent to the redevelopment of the area. The planned use in the 1985 Comprehensive Plan was Highway Commercial, which is inappropriate due to inadequate access, the residential nature of the surrounding neighborhoods, and competition with Downtown Georgetown.

The Downtown Plan recommends a mix of low-scale office, neighborhood commercial, and multi-family residential uses for the area. A focused planning effort should determine whether the area could play a role as low-cost incubator space for the start-up of light industries, but this should only be for industries without impacts that would make them incompatible with residences or a deterrent to redevelopment. Instead, all new or expanded uses should positively contribute to improved property appearance and maintenance. Existing industries with impacts that are incompatible with residences should not expand in this area and should be encouraged and assisted in relocating to more suitable sites.

9. **Georgetown College:** The Downtown Plan calls for a joint planning study between the College, City of Georgetown, and the Planning Commission to generally identify expansion areas for the College.
10. **Johnson Controls:** The Johnson Controls property is the only location along the SE bypass between the Elkhorn and railroad where development and the USB will extend east of the bypass. This is solely because the land was previously zoned industrial and incorporated, and the property was included in the revenue bond issue. Proposed land uses are light industrial. In general, strip

commercial is not desired along the bypass and would not be compatible with rural lands to the east or policies concerning protection of the vitality of Downtown Georgetown.

11. **The North Georgetown Employment Center** consists of Toyota, approved industrial sites at Clark Equipment, and Delaplain, Brueck, and Kentucky-Barkley Industrial Parks, and the Toyota Impact Area. The North Georgetown employment center is intended to provide industrial and related uses in such a manner that they are compatible with the surrounding rural area, through use of buffer areas, landscaping, and increased building and use setbacks. The Toyota setbacks and landscaping can serve as an example for buffering along Cherry Blossom Way, with recognition of the unusually large size of this site and capability to provide large setbacks.

Proposed land uses in the North Georgetown Employment Center are light industry, environmentally-sensitive light industry as necessary to allow septic systems, and heavy industry. There should also be potential for support uses such as offices or truck storage and repair, where these are related to industrial uses.

The Toyota Impact Area includes those properties so designated in 1987 and shown on the land use plan. These generally are properties north and east of Cherry Blossom Way. I-2 uses are appropriate in the Impact Zone only where they would not cause impacts to properties outside the urban service boundary that would substantially interfere with farming activities or create substantial justification for further urban conversion beyond the USB. The following must be demonstrated prior to approvals of any zone changes in the Impact Area:

- a. Demonstrate the availability of sewer service and sewage treatment plant capacity for the proposed project, with the exception that properties zoned environmentally-sensitive light industry and receiving a conditional use permit for use of septic systems need not make this showing.
- b. Provide a plan for location and buffering of land uses which would contain substantial urban impacts within the property and protect properties planned agricultural from substantial urban impacts.

12. Maddox/East Main Extended Neighborhood Plan: The area currently zoned I-2 in the vicinity of East Main Extended, Maddox Street, and Lemons Mill Road was the subject of a neighborhood plan adopted in 1988. The plan studied existing land uses and proposed future land uses in keeping with the transitional (residential to light industry) nature of the area and the constraints on access. The neighborhood plan is incorporated in this Comprehensive Plan in Chapter VI. Minor revisions have been made to bring the neighborhood plan into agreement with the land use proposals of the 1990 Comprehensive Plan.

13. Commercial Area, Northwest I-75/U.S. 62 Intersection: Because of its proximity to the interstate interchange at U.S. 62, the Whitaker property between the collector road and I-75 can be considered for a regional commercial center or other land uses, with the exact boundary and acreage to be determined through a small area plan or planned unit development, with consideration for benefits to the community and coordination between the land use plan and the master transportation plan.

E. SPECIAL PLANNING AREAS, RURAL AREA

- 1. **Airport:** The Scott County airport is being relocated to a site on U.S. 460 East, near the Bourbon County line. The relocation will allow room for expansion and reduce conflicts with the urban land uses planned for the area around the current airport.

A primary concern for the new airport is that only compatible agricultural land uses should be permitted within the 65 ldn noise contours beyond the ends of the runways. Compatible agricultural land uses would include 5-acre tracts, but residential subdivisions at greater density would not be compatible.

Additionally, the airport should not become an impetus for surrounding commercial or industrial development. The level and type of aviation use for the new airport is not expected to promote or support commercial or industrial activity on the surrounding area. The airport property is large enough to accommodate necessary commercial and service needs, at least within the next five years. The airport development will not provide the infrastructure, such as sewer or road improvements, that would be needed to support surrounding commercial, industrial, or residential development. Both industrial and commercial land is amply provided for within the Georgetown Urban Service Boundary.

In general, urban growth around the new airport would be inconsistent with rural development and preservation policies. Only compatible agricultural land uses should be permitted within the sensitive noise contours of the airport. All services incidental to or necessary to support the new airport shall be limited to the airport property.

2. **U.S. 25 S./Fayette Border:** There is a concentrated area of existing development near the Scott/Fayette boundary, including Sam's Restaurant, International Transformer Corporation, several other small businesses, and the Sexton mobile home parks. The mobile home park has recently installed a new sewage treatment package plant with substantial excess capacity.

Expansion of urban uses in this area would be inconsistent with the rural development and preservation policies. According to the Sextons, the subdivision and development of an additional 150 mobile home lots and 127

single family lots is grandfathered by prior subdivision approvals. However, any expansion must be limited to residential development that is legally grandfathered from current policies, and such expansion should not set precedent for further urban development that is inconsistent with this Comprehensive Plan. Limited infill of agricultural-related businesses may be allowed, consistent with Objective 15, Section III and the policies for neighborhood commercial use in rural areas. All uses should be encouraged to connect to the mobile home package plant if feasible.

VI. EAST MAIN EXTENDED AREA PLAN

A. BACKGROUND

This small area plan was a Commission-initiated action to revise the Comprehensive Plan to reflect more appropriate land use policies for the East Main Extended area (boundaries shown in Map 3). The East Main Extended area was previously designated Industrial in the Comprehensive Plan. The Commission was concerned that this designation was outdated and could allow new uses that are incompatible with existing uses, and initiated a revision of the land use plan. A public hearing was held on May 12, 1988 to discuss the matter, and a revised land use plan for the area was adopted on July 28, 1988. During the 1990 Comprehensive Plan Update process, the small area plan was revised based upon public hearings held on February 14 and 28 and March 14, 1991. The revision reflected changes in the area since 1988, such as the bypass construction, and brought the plan into consistency with the goals and objectives and land uses of the new Comprehensive Plan.

B. EXISTING USES AND DEVELOPMENT POTENTIAL

Map 3 divides the area into five study areas, based on uses, access, and development potential. Map 4 generally describes existing land uses.

Area 1: Existing uses are mainly commercial, including Hamilton Oil and a new mini-market at the corner of East Main and 460. The East Main/460 intersection is inadequate for present traffic, much less for additional traffic. Construction of the mini-market has limited options for realignment of the intersection, but it could be signalized for greater safety.

Area 2: Uses are a mix of residential and commercial. The area along Maddox Street and the railroad is transitional and dilapidated, but along adjacent streets the housing improves and becomes a solid residential neighborhood. There are several old brick buildings in and next to the area that seem worthy of preservation -- the tool repair shop, plumbing supply building, and tobacco warehouse. These are suitable for

commercial or community uses. The Kentucky Transportation Commission has an equipment storage shed at the southern end of Maddox and an open storage area of highway paint cans.

Poor access will impede redevelopment of this area. Maddox Street should be upgraded and connections to Clayton Avenue and across the railroad to the east should be improved.

The area is not suitable for development that would generate substantial traffic, noise, or other impacts that would degrade adjacent residential neighborhoods. Although existing zoning is industrial, at the 1988 public hearing residents stated that industrial uses would not be compatible with nearby homes, and expressed interest in neighborhood commercial development instead.

Area 3: This area is a mix of residential, commercial, and light industrial uses, including Taylor Seed Company, Carbide Products, and a church. A vacant lot owned by Carbide is managed by Parks and Recreation as a ballfield.

Inadequate access and the need to protect residential neighborhoods are major planning issues for this area. Before additional non-residential growth could occur, street improvements are needed to direct traffic away from residences and toward the proposed bypass. Preservation of the Taylor Seed buildings should also be supported.

Area 4: The development potential of the large agricultural tract in this area has been constrained by poor access, which the bypass will substantially improve. Presently, East Main Street is inadequate and traffic must funnel through the unsafe Main Street/460 intersection or cut through the quarry road to 460.

Area 5: This area is mainly agricultural, with the same access problems as Area 4. Uses near the railroad include a large Kentucky Transportation Commission building and yard for storing

construction equipment and materials, a mobile home park, and an auto repair and salvage yard. All are accessed by a dangerous at-grade railroad crossing from Maddox street. The auto salvage yard is unsightly and would discourage new development in Area 2. Other uses include a church between Clayton and Lemons Mill Road. Uses adjacent to the area are light industrial (Johnson Controls and Georgetown Industrial Park). These are generally low-impact industries (except for traffic) with open space buffers around them.

C. LAND USE POLICIES

Map 5 shows proposed land uses for the five study areas.

1. Area 1 Policies:

a. **Land Uses.** Area 1 is most suited to highway commercial use, with the understanding that existing uses would be considered consistent with this designation. However, uses accessed from East Main Street, rather than U.S. 460, should be neighborhood commercial to be compatible with Area 2 and adjacent residences.

b. **Infrastructure.** The East Main/460 intersection should be improved to support development in other areas (although this improvement may not be necessary for additional development in Area 1).

2. Area 2 Policies:

a. **Land Uses.** This corridor is a good location for commercial uses that could serve the existing residential neighborhood and employees of nearby industries. Such uses should be compatible with the railroad, should not be traffic-intensive, and should support,

rather than degrade, residential areas.

Redevelopment should be encouraged by phasing out the auto salvage operation (auto repairs could remain if well screened and operated to minimize conflicts with surrounding uses, but should not expand) and improving the appearance of the KYTC shed or finding a more suitable location. Redevelopment proposals should preserve the brick commercial buildings on Maddox if feasible.

The portion of the study area fronting on Avondale Avenue should remain medium-density residential, unless an area-wide study indicates that the entire neighborhood should have a lower density designation in keeping with existing densities.

- b. **Infrastructure.** Area 2 will need both public and private investment to encourage redevelopment. Maddox Street and its connections across the railroad should be improved. The street could be extended south to Clayton Street, and the grade-separated crossing there could be upgraded to increase capacity, visibility, and pedestrian safety (Map 5). One drawback is that existing homes would have to be removed to extend the street. Another alternative would be to create a grade-separated crossing at Jackson Street and continue the street through to a major new street in Area 5. East Main Street should be improved with a grade-separated crossing as well. Screening and safety measures should be installed along the railroad.

New development that would significantly increase traffic in Area 2 should not occur until Maddox Street and the East Main/460 intersection are

improved. Upgrading of the railroad crossings could await development of areas east of the railroad.

3. Area 3 Policies:

The portion of the area west of Fountain Avenue, and extending south to Lemons Mill Road, should remain residential. If access is improved from Area 3 east to the proposed bypass, the portion of the area east of Fountain Avenue could be developed with new light industrial uses. If access remains as it is, the designation of this portion of the area should be residential as well, and existing commercial/industrial uses could expand only if this would not generate significant additional traffic. Proposals for redevelopment should preserve the Taylor Seed buildings if feasible.

4. Area 4 Policies:

- a. **Land Uses.** There are many possibilities for this area. The old quarry property, because of its proximity to Elkhorn Creek and in keeping with policies in the Environmental Quality Management Element, should be redesignated "Environmentally Sensitive Light Industry." Continued heavy industrial activities are grandfathered as non-conforming uses. The Southern States property fronting on U.S. 460 should continue the highway commercial designation of Area 1. Other properties north of East Main Extended should also be Environmentally Sensitive Light Industry due to proximity to the creek.

- b. **Recreation Facilities.** Thought should also be given to locating a neighborhood recreational facility at the site between the quarry and East Main Street, which could offer passive (picnicking, etc.) and

sports activities for eastern Georgetown residents and employees of nearby businesses. The site would be central to its users, yet separate enough that noise and nighttime activity would not bother residents. The parks and recreation master plan will help define the need for such a facility and the best location.

- c. **Infrastructure.** Major road improvements are needed before this area could sustain new development: widening and improvement of East Main, with a grade-separated railroad crossing and improvement of the East Main/460 intersection; or as an alternative to full East Main improvements, upgrading of the quarry road to a standard public road with a signalized intersection at U.S. 460. New or significantly expanded businesses that would use the U.S. 460/Eastside Drive/Quarry Road intersection should participate in the funding to upgrade the intersection, with the same participation requirements that have accompanied development approvals on the north side of U.S. 460 using this intersection.

5. Area 5 Policies:

- a. **Land Uses.** There are two potential land uses. First, Environmentally Sensitive Light Industrial uses would be compatible with the aquifer recharge area and with nearby residential uses, with proper buffering. Secondly, this area is suitable for expansion of Georgetown College.
- b. **Infrastructure.** Road improvements are also required to support new development in Area 5. In addition to the East Main improvements listed under Area 4 and the alternative Clayton

Avenue or Jackson Avenue improvements described under Area 2, a collector road connecting East Main and Lemons Mill would likely be needed. Road improvements should be designed to ensure that increased traffic would not be funneled primarily through Clayton Avenue and surrounding residential neighborhoods, but would be directed toward the bypass.

6. General Policies

- a. **Infrastructure Improvements.** Once the southeast bypass is completed, and as development begins to occur in the area, more detailed study should be given to the infrastructure needed to support development: traffic improvements, water and sewer lines, street lighting, storm drainage, park and recreation facilities, etc. The study should create an overall development plan for the area and strategies to fund needed land acquisition and infrastructure.

Even without the detailed study, it is evident that in some areas major street improvements will be needed for new development that would generate substantial traffic.

- b. **Special Commercial Land Use and Design Policies.** Another issue that should be studied is the relationship between proposed highway commercial development along U.S. 460, from the East Main turnoff through the I-75 interchange, and redevelopment/historic preservation efforts in downtown Georgetown. New highway commercial development along 460 should enhance downtown efforts rather than draw energy away from them. This could be accomplished by carefully distinguishing

the types of uses suitable to the two commercial locations and adopting special design criteria, such as for signs, architecture, and landscaping, along U.S. 460. A study of this issue could

lead to special policies that would overlay the land use policies recommended below. (See also the Downtown Plan, Section VII.)

VII. SOUTHERN GREENBELT DEVELOPMENT AREA PLAN

A. INTRODUCTION

This plan is a part of the Georgetown-Scott County Comprehensive Plan. It is intended to further implement the goals, objectives, and policies of the Comprehensive Plan and the Greenbelt Ordinance, including but not limited to those concerning expansion of the urban service boundary (USB) to the south, establishment of a greenbelt to reinforce the long-term integrity of the USB, and protection of the Royal Spring Aquifer Recharge Area. This plan amendment assumes the subsequent adoption of a Greenbelt Ordinance. Until such ordinance is adopted, there shall be no development south of the bypass.

The Southern Greenbelt Land Use Map adopted with this small area plan (Map 6) covers those properties intended for urban expansion south of the first phase of the bypass, between U.S. 25 S. on the west and the railroad on the east. When the southwest phase of the bypass becomes a reality, an area plan will be adopted to include a land use map for that area.

B. PURPOSES

The implementation of this section of the Comprehensive Plan shall only be through the adoption of a Greenbelt Ordinance which must contain the following purposes:

To implement Comprehensive Plan policies concerning expansion of the Georgetown Urban Services area beyond the bypass right-of-way;

To reinforce the long-term integrity of the USB by establishing a greenbelt as the boundary between urban and rural land uses;

To promote the efficient use of the southern bypass as an urban collector by providing for urban uses on both sides of the highway;

To enable those owners of properties on which the bypass and related road improvements have a direct impact to participate in its potential economic benefit;

To provide a reasonable transition from urban to rural land uses south of Georgetown;

To protect the prime agricultural properties south of the bypass from detrimental effects of abutting urban uses; and

To substantially eliminate the impacts of such urban development that would encourage further extension of the USB and loss of prime farmlands to the south.

C. LAND USES

1. Greenbelt

The location of the greenbelt incorporates the screening provided by natural topography and tree rows and sufficient setback and fencing to contain the potential detrimental effects of urban development, as described in the Greenbelt Ordinance objectives, above. Land uses shall be those of the agricultural category. Existing tree rows should be preserved and supplemented where necessary to provide year-round screening from the visual impact of urban development on properties outside the USB. Through a Planned Unit Development, there can be minor variations in the greenbelt location if the objectives of the Comprehensive Plan and Greenbelt Ordinance are substantially met.

2. Aquifer Recharge Protection Area

See the Goals, Objectives, and Policies of the Growth and Land Use and Environmental Quality Elements concerning the Royal Spring Aquifer Recharge Area.

3. Commercial Node

Commercial land use designation: The Southern Greenbelt Land Use Map designates those properties in the U.S. 25/bypass/Fairfax intersection area that are proposed for community and highway commercial uses. This designation amends the Comprehensive Plan Land Use Map adopted in March of 1991. The proximity of farmland to the urban development proposed for this area makes commercial and light industrial uses more appropriate than residential uses, which create greater potential for detrimental impact on the neighboring agricultural area. The

detrimental impact of commercial and industrial use on neighboring farmland can be adequately buffered by a greenbelt, screening of the extent described above for this area, and storm drainage control.

No additional area of commercial land is proposed, in keeping with Comprehensive Plan findings concerning growth needs for commercial land and the policy that commercialization of the bypass should not be generally encouraged except at the major intersections of U.S. 25 and U.S. 460. (Properties along the bypass designated residential or industrial have the potential for consideration of neighborhood commercial. See Growth and Land Use Element, V.B.3.)

Transitional Landscaping Setback: To help contain urban impacts and provide a transition from rural to urban uses, landscaped setbacks are proposed for new commercial development fronting on U.S. 25, south of the currently developed church and mini-warehouse properties. The landscaped buffer area should help ensure that the impact of areas designated for expanded commercial development, as viewed from public roads, is compatible with the character of neighboring rural properties to the south. This will also create an attractive southern "entrance" to Georgetown, in keeping with community identity.

4. Residential/Light Industrial

To allow flexibility to meet community needs, all non-commercial urban areas may be developed either as residential or light industrial. The Environmentally Sensitive Light Industry category is appropriate for properties where unrestricted light industry would have potential detrimental impacts to the aquifer recharge area or prime

farmlands to the south. At the time of zone change, the land use determination for each property should be in agreement with the greenbelt objectives, above. Compatibility with approved or planned urban uses on adjacent properties should also be considered.

5. Cluster A-1 Subdivision/Light Industrial, Risk Property

The Risk property is a unique situation. Because of natural topography and the location of tree rows and screening, the greenbelt will be most effective if located primarily on the Risk property. The portion of the property fronting on U.S. 25 was designated for urban development in the Comprehensive Plan, and is a part of the U.S. 25/bypass intersection commercial area proposed by this area plan.

The back portion of the Risk property was not contemplated for urban development in the Comprehensive Plan, as it is prime farmland, has adequate size and support facilities for farming, and is not impacted by the bypass or U.S. 25 improvements. Approximately 115 acres of the Risk property were shown as greenbelt or agriculture in the Comprehensive Plan. This property has the right to develop 23 5-acre tracts under the current zoning ordinance or, through the cluster concept, 23 one-acre tracts.

The cluster concept would strengthen the long-term nature of the greenbelt, because those subdivision and development rights would be clustered next to areas designated for urban development on adjacent properties, and the remaining Risk land separating farms outside the USB from urban development would be preserved with open space easements or other protective techniques guaranteeing no further

subdivision or development, as long as the property remains in the greenbelt.

The equivalent developable area (the 20 acres designated for potential cluster development) could also be developed as light industry or environmentally sensitive light industry, as is proposed for the property adjacent to the north. This is the only appropriate urban use, as light industrial use would have fewer potential detrimental impacts on nearby farming uses than 1-acre residential tracts or any greater residential density. This would leave the subdivision and development rights for three units for the remainder of the farm.

6. Parks and Recreation

Because of the presence of greenbelt open space, properties in the Southern Greenbelt Development Area should not be subject to the park and recreation standards in the Community Facilities Element or any requirements to provide public or private park lands.

D. PUBLIC IMPROVEMENTS

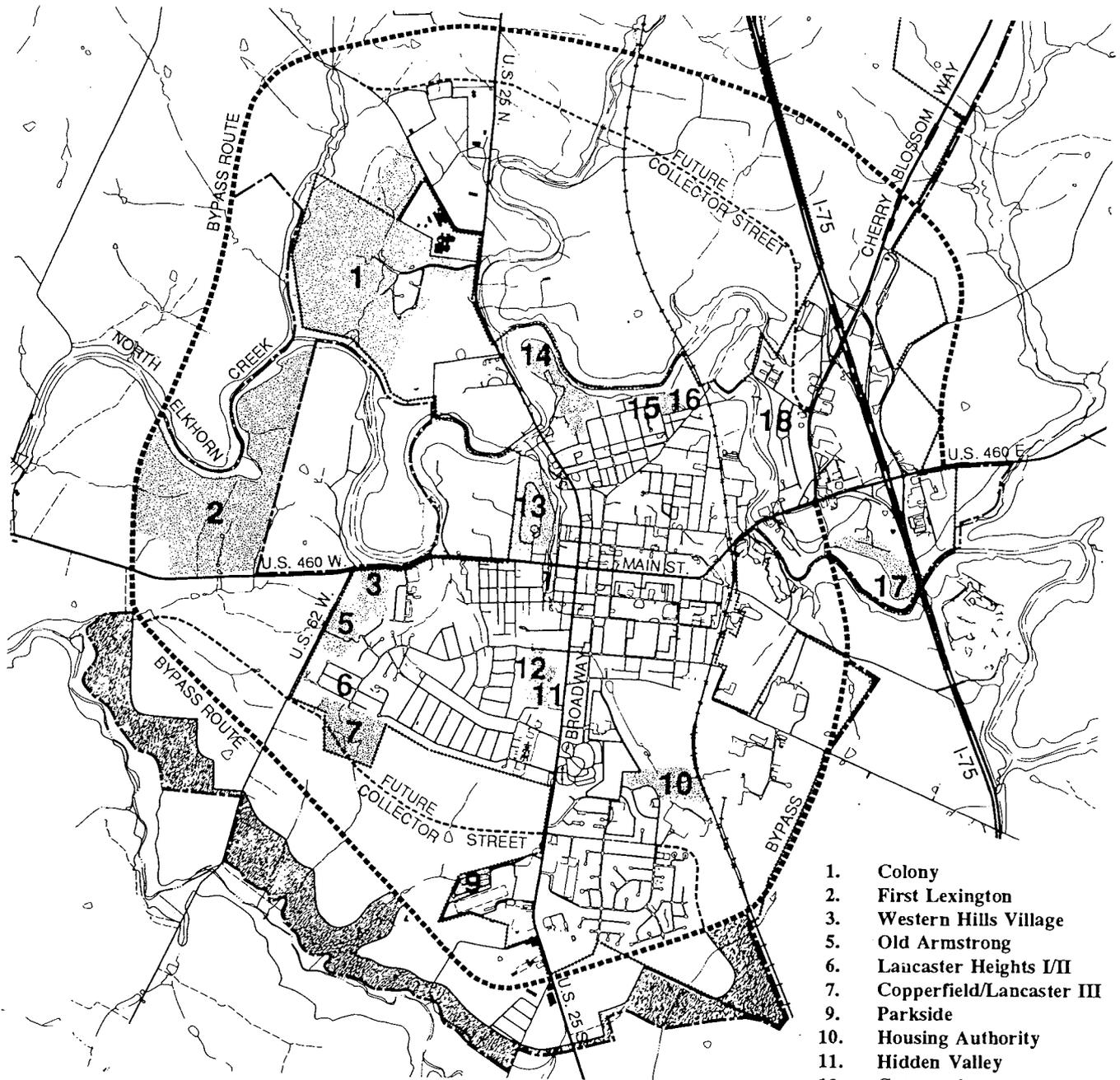
In order to reinforce the long-term nature of the greenbelt, urban services (with the exception of water service) should be available only to areas designated for urban use. Infrastructure in those areas should not be designed or located for future extension into the greenbelt area, except solely for cluster subdivisions.

The Southern Greenbelt Land Use Plan generally indicates a network of through streets. This plan is not intended to fix the location of such streets, but to indicate a public street system that will interconnect properties designated for urban uses with U.S. 25 and the bypass, to allow adequate,

safe circulation according to the policies of the Transportation Master Plan and applicable local regulations. Streets shall not be located or stubbed to provide for future access to the greenbelt area or

properties outside the USB. Access for new commercial development should be carefully controlled to prevent traffic conflicts near the U.S. 25/bypass intersection.

SHORT-TERM DEVELOPMENT POTENTIAL, GEORGETOWN



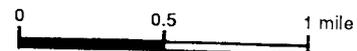
- 1. Colony
- 2. First Lexington
- 3. Western Hills Village
- 5. Old Armstrong
- 6. Lancaster Heights I/II
- 7. Copperfield/Lancaster III
- 9. Parkside
- 10. Housing Authority
- 11. Hidden Valley
- 12. Gatewood
- 13. Desha
- 14. Peninsula
- 15. Perkins Townhouses
- 16. Elm Street Townhouses
- 17. R-3 Zoning
- 18. Morgan Mill



PROPERTIES WITH RESIDENTIAL
DEVELOPMENT APPROVAL
(No Infrastructure Constraints)

NOTE: Numbers refer to Table 13, Background Report

BASE MAP SOURCE: PHOTOSCIENCE, INC./PROCTOR DAVIS RAY ENGINEERS

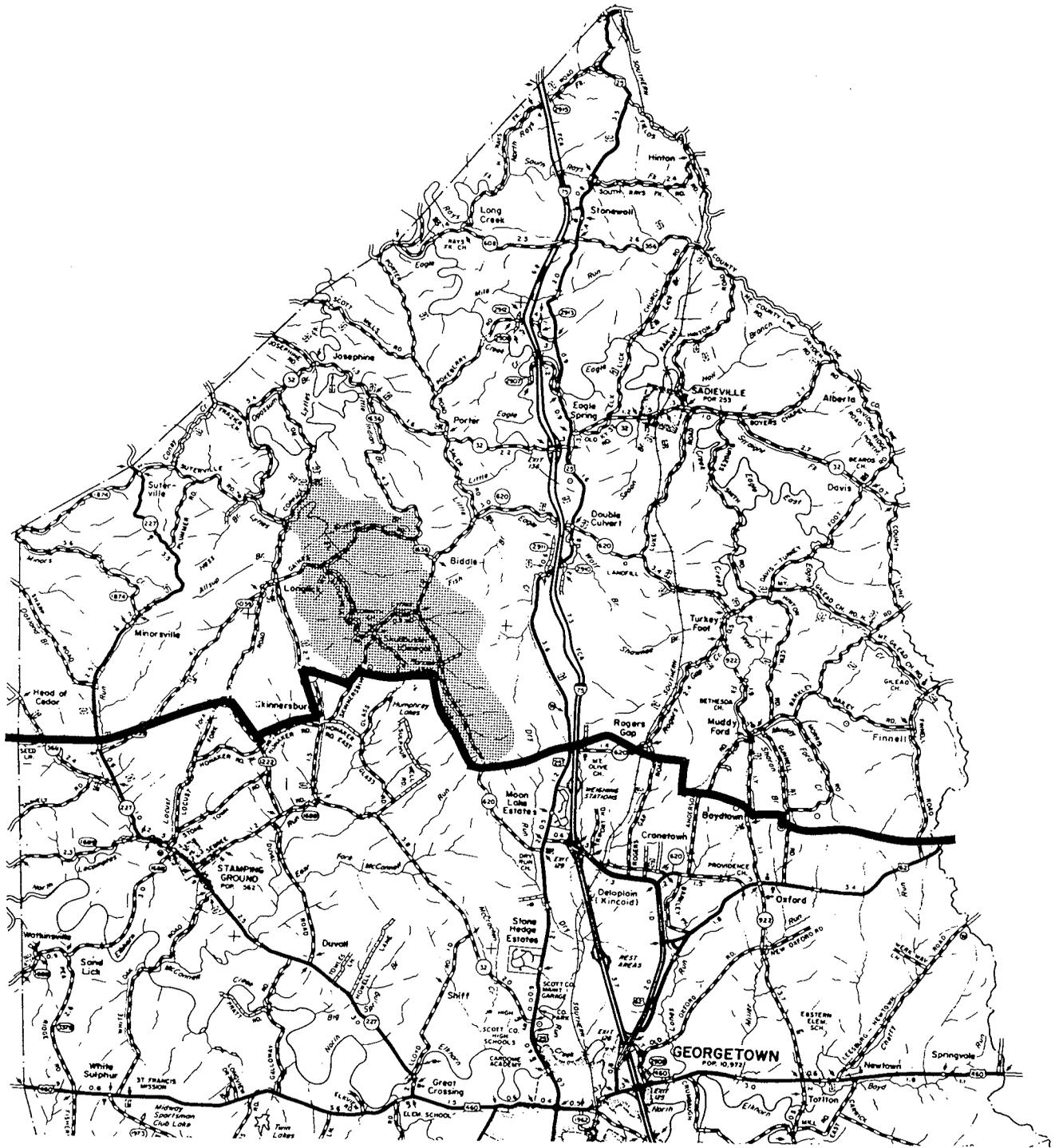




GROWTH AND LAND USE ⇒ MAP 2
 NORTH/SOUTH DIVIDING LINE
 FOR RURAL LAND USE POLICIES

GEORGETOWN-SCOTT COUNTY COMPREHENSIVE PLAN

MARCH 1991



NORTH-SOUTH DIVIDING LINE

FUTURE RESERVOIR WATERSHED



0 1 2 miles



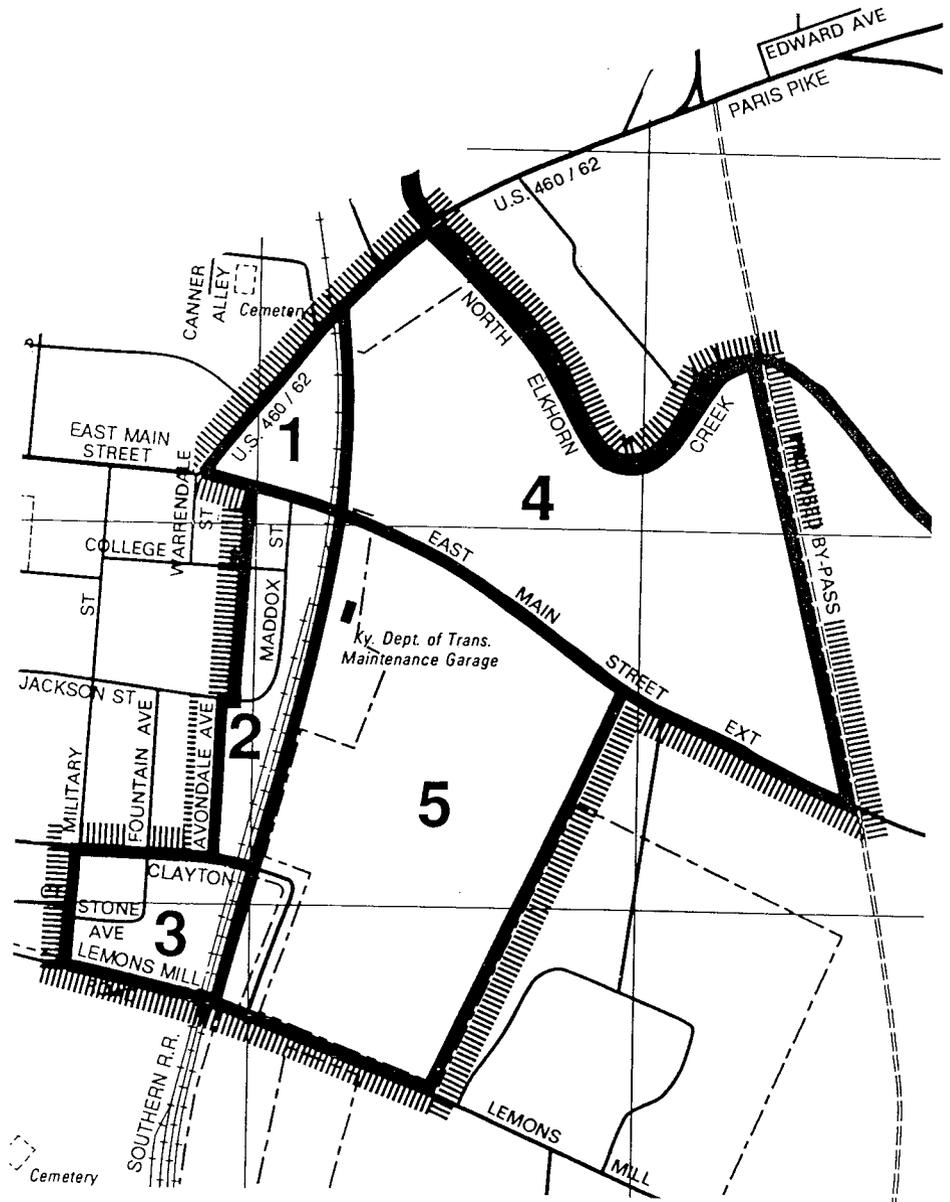
BASE MAP SOURCE: KENTUCKY TRANSPORTATION CABINET



STUDY AREAS

EAST MAIN EXTENDED AREA PLAN

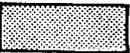
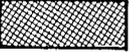
- ▬▬▬▬▬▬▬▬▬▬ EAST MAIN EXTENDED AREA PLAN BOUNDARY
- 1 - 5 STUDY AREAS





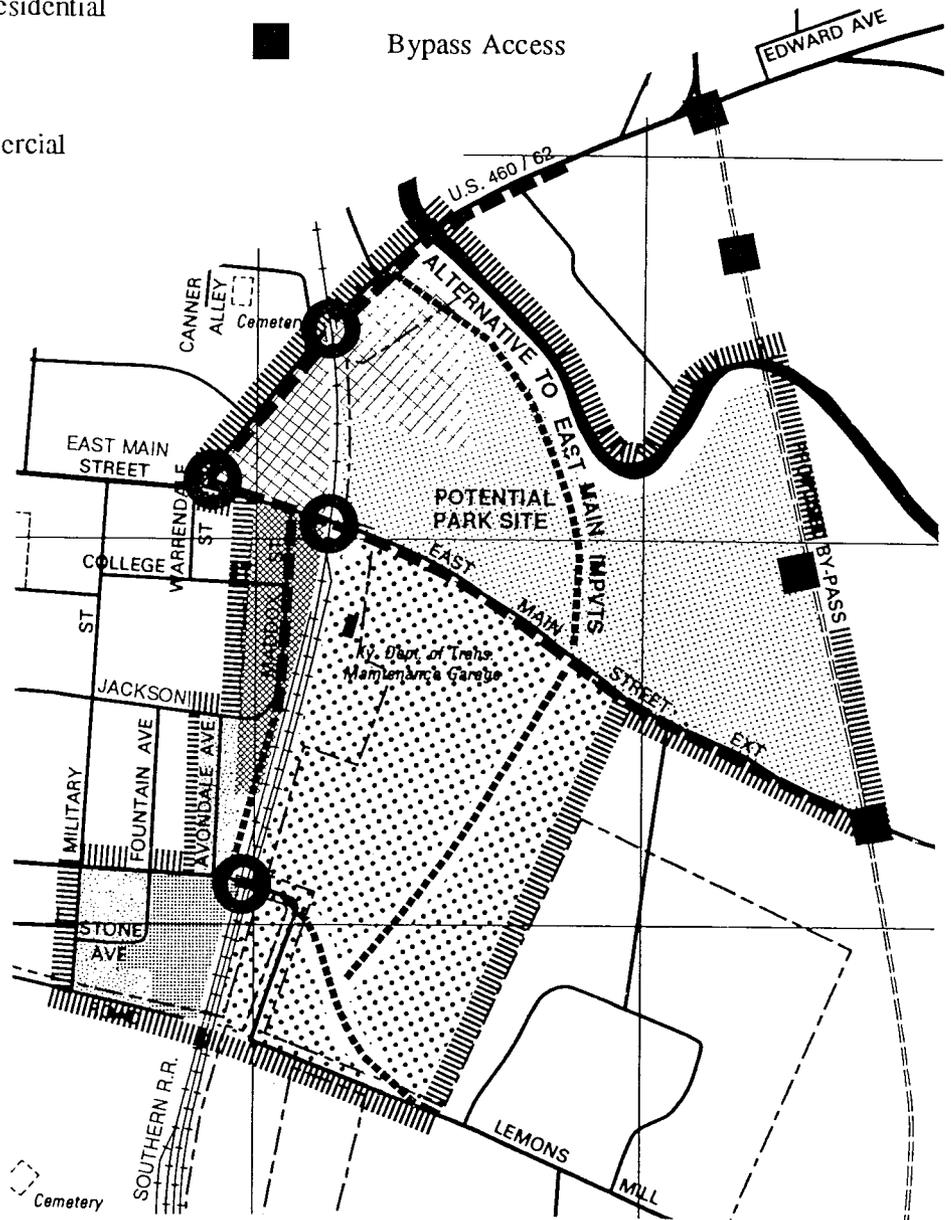
**FUTURE LAND USE PLAN
EAST MAIN EXTENDED AREA PLAN**

FUTURE LAND USES:

-  Medium Density Residential
-  Environmentally-Sensitive Light Industry (ESLI)
-  ESLI or Med/High Density Residential
-  Light Industrial
-  Neighborhood Commercial
-  Highway/Community Commercial

STREET IMPROVEMENTS:

-  Street Upgrade
-  Proposed New Street
-  Grade Separation or Intersection Improvement
-  Bypass Access



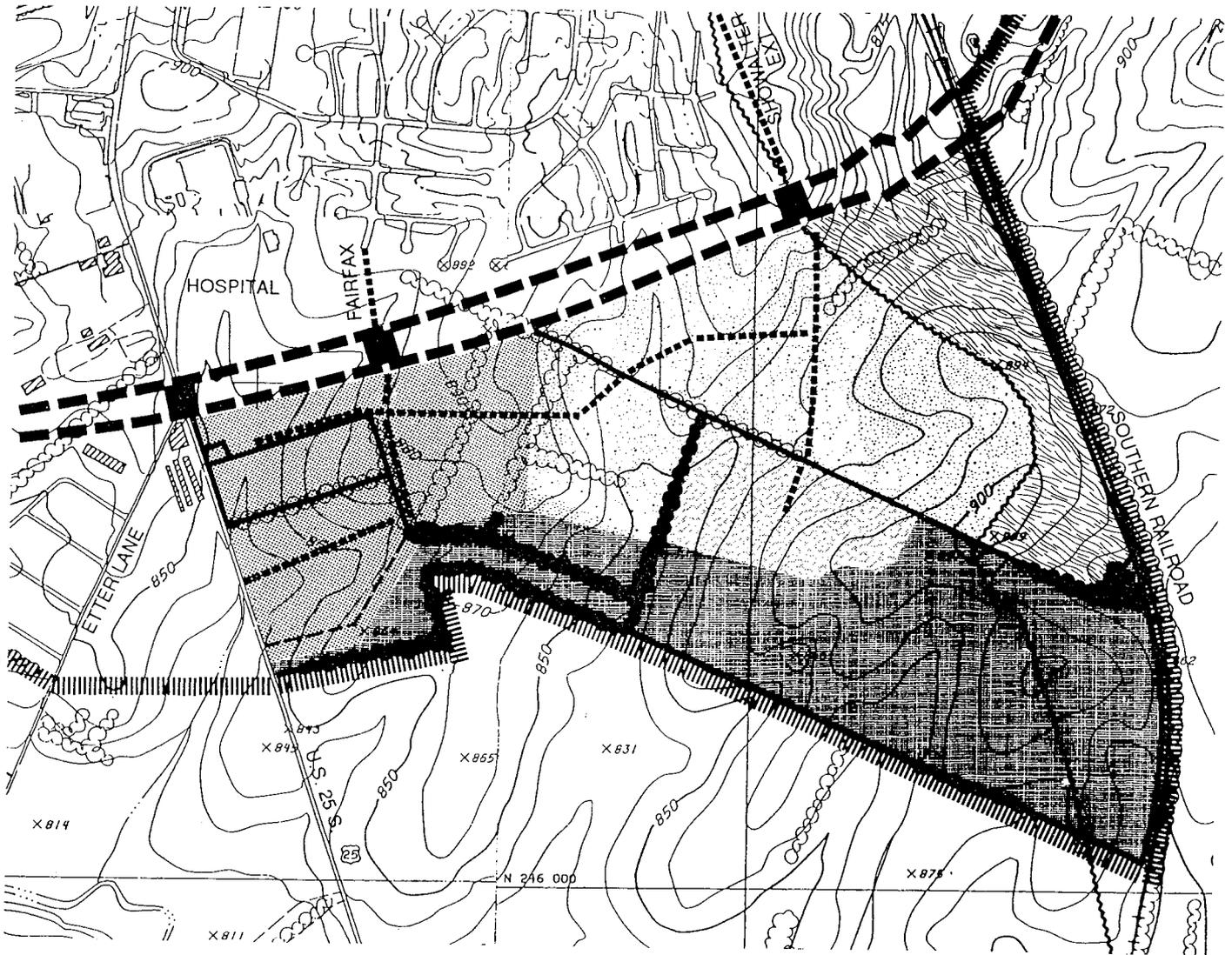
NOTE: ALSO REFER TO TEXT FOR FUTURE LAND USE POLICIES.
BASE MAP SOURCE: PHOTOSCIENCE, INC./PROCTOR DAVIS RAY ENGINEERS

0 500 1000 feet

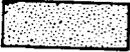
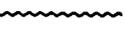
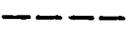




SOUTHERN GREENBELT LAND USE MAP



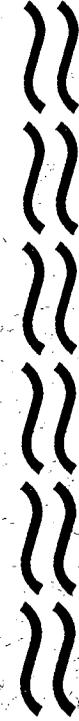
LAND USES

- | | | | |
|---|--|---|--------------------------------|
|  | Greenbelt Reserve |  | Urban Service Boundary |
|  | Tree Protection Areas |  | Bypass Right-of-Way |
|  | Aquifer Recharge Protection Area |  | Approved Bypass Intersection |
|  | Cluster A-1 Subdivision/Light Industrial |  | Future Collector Streets |
|  | Residential/Light Industrial |  | Aquifer Recharge Area Boundary |
|  | Community/Highway Commercial |  | Property Lines |
|  | Commercial-Greenbelt Building Line | | |





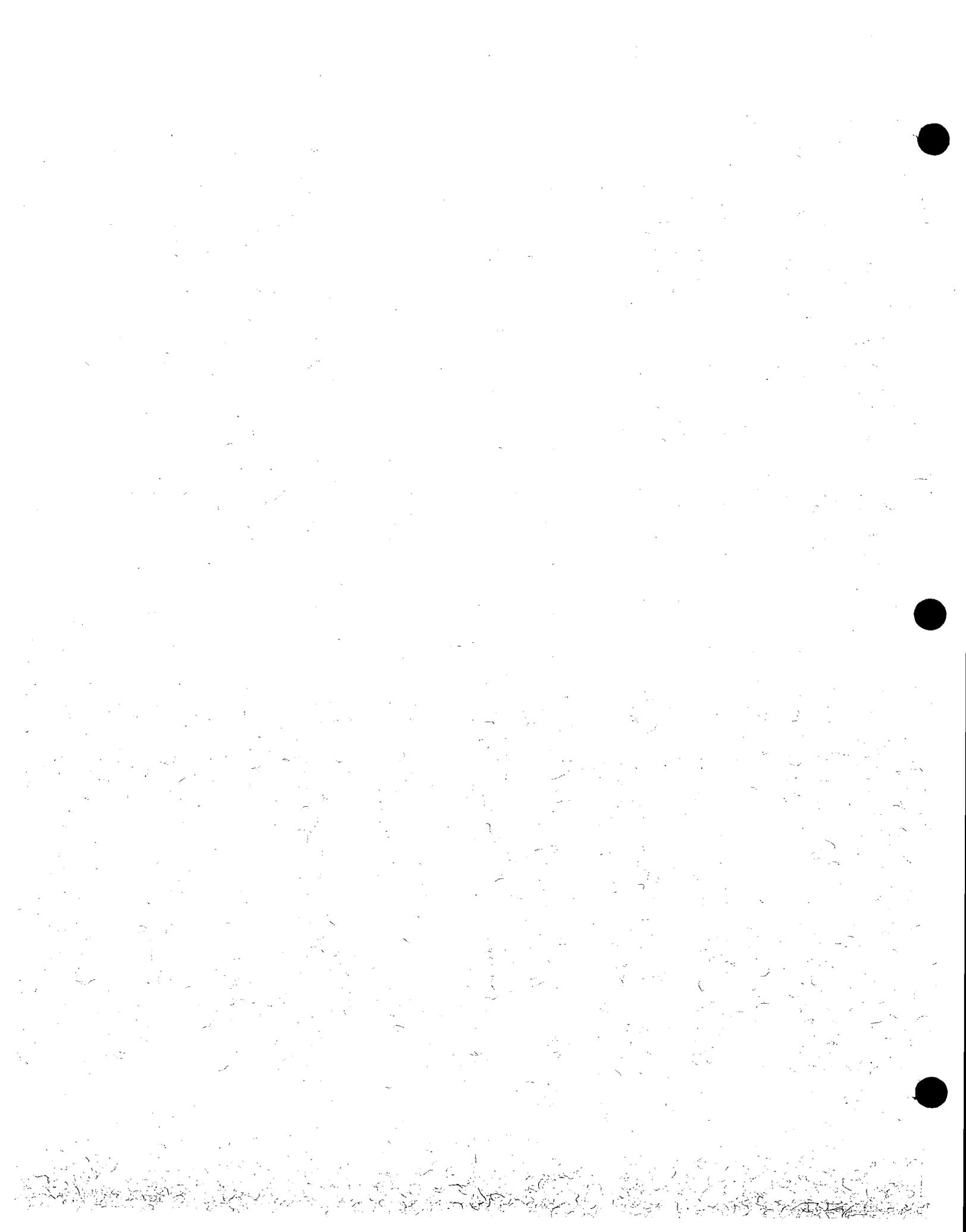
1991 COMPREHENSIVE PLAN
for Georgetown, Sadieville, Stamping Ground,
and Scott County, Kentucky



Adopted by the
Georgetown-Scott County Planning Commission
March 14, 1991



ENVIRONMENTAL QUALITY
MANAGEMENT PLAN



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ENVIRONMENTAL QUALITY MANAGEMENT PLAN

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ACKNOWLEDGEMENTS

COMPREHENSIVE PLAN CITIZEN ADVISORY COMMITTEE ENVIRONMENTAL QUALITY SUBCOMMITTEE

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Danny P. Woods

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The Subcommittee wishes to thank the following people for devoting substantial time and expertise to this effort: Paul E. Patton, Pike County Judge Executive; Don Olver, Administrative Assistant to the County Judge; J.R. Williamson, Scott County Solid Waste Management Coordinator; John Jones, Scott County Conservation District; Don Hassall, Bluegrass ADD; Jack Wilson and staff of the Division of Water; Lisa Detherage and Pat Haight, Division of Waste Management; Sid Hisel, DES; Jim Buscher, Nesbitt Engineering, Inc.; Dr. John Thrailkill, Dr. Lyle Sendlein, and Karen Fitzmaurice, University of Kentucky Department of Geology; and Brad Stone, Research Assistant.



ENVIRONMENTAL QUALITY MANAGEMENT PLAN

I. SUMMARY

A. IMPORTANCE OF ENVIRONMENTAL QUALITY TO SCOTT COUNTY'S FUTURE

Scott Countians have strong environmental values, perhaps built on the traditional dependence of farmers on good soil and water and the harmonious combination of nature and human activities that has created one of the most beautiful rural landscapes in America. Protection of the environment is not only maintenance of the status quo, it is also an important element of Scott County's future: the continuation of viable agriculture; the attractiveness of this community as a place for new residents to live and work; and the potential to diversify the economy through tourism and recreation.

Through several citizen attitude surveys, Scott Countians have shown that environmental issues are a high priority to them (Figure 1). The majority of Scott Countians believe that it is possible to accomplish both our environmental and economic goals, and strongly feel that growth is acceptable only if it is managed so that the environment is protected. State law governing comprehensive plans (KRS 100) allows the Planning Commission to include a conservation and natural resources element in the Plan. This chapter represents an integrated plan to protect water quality, manage solid and hazardous wastes, and protect environmentally sensitive resources, in balance with other goals for growth in the Comprehensive Plan.

B. KEY ENVIRONMENTAL ISSUES

WATER QUALITY is the key environmental issue of the 1990's, and the top environmental concern of Scott Countians (Figure 1). Water

resources are interconnected with all other aspects of the environment, such as geology, soils and air quality, and are especially sensitive in Kentucky due to karst topography. Water quality is potentially affected by all land use and development activities. Because of this, the quality of water resources is the best indicator of the overall health of the environment and the success of our community's environmental protection policies. This Environmental Management Plan is organized around the theme of Scott County's water resources, the threats to water quality, and the strategies to protect water quality and interrelated environmental resources. Water quality also touches on many issues found throughout the Comprehensive Plan, such as rural development and preservation, industrial recruitment, sewage treatment and septic system policies, solid and hazardous wastes, and recreation.

ENVIRONMENTALLY SENSITIVE

RESOURCES: Environmentally sensitive resources are natural or cultural characteristics of the land that have value to Scott Countians and need special treatment to protect that value. Many of these relate to water or other natural resources that are important to human health, the economy, recreation, and the Scott County way of life. They include qualities of the distinctive Bluegrass landscape that Scott Countians and visitors enjoy. Others represent land or geologic features that are hazardous to develop and maintain. Environmentally sensitive resources are designated to be aquifer recharge areas, creek conservation corridors and minor waterways, the Scott County reservoir drainage area, prime farmlands, significant natural habitats for plants and animals, scenic and historic rural resources, remaining tree stands and fencerows

**FIGURE 1
ENVIRONMENTAL QUALITY
SUMMARY OF COMMUNITY ATTITUDE SURVEYS**

IMPORTANCE OF ENVIRONMENTAL QUALITY TO SCOTT COUNTIANS

- When Scott Countians listed the values that they feel should be important in their community, environmental concerns ranked first and fourth among 16 factors (see below). However, Scott County was rated lower as far as providing for this. For instance, while 89% of the respondents felt that "a concern for protecting the environment" should be "extremely or very important" in their community, only 41% consider Scott County to be "excellent" or "very good" in this. (W.)

<u>Community Value</u>	<u>Extremely/ Very Important (Percent/Rank)</u>	<u>Excellent/ Good (Percent/Rank)</u>
A clean place without junk or roadside dumps	94% - 1st	44% - 9th
A concern for protecting the environment	89% - 4th	41% - 10th

BALANCING THE ENVIRONMENT AND ECONOMIC GROWTH

- When asked to weigh economic opportunities and environmental quality, Scott Countians made it clear that the environment must be protected. (U.K.)
- Only 4% agreed that "we must relax environmental standards in order to achieve economic growth."
- 53% believed "we can achieve our current goals of environmental protection and economic growth at the same time."
- 39% felt that "we must accept a slower rate of economic growth in order to protect the environment."

This question was asked in 1986, shortly after Toyota announced but before the impacts of the plant and related growth were known. Since public acceptance of Toyota has been so positive, this question may have generated a different response if asked more recently. However, it still shows the importance of environmental quality to Scott Countians.

FIGURE 1, CONTINUED
 ENVIRONMENTAL QUALITY
 SUMMARY OF COMMUNITY ATTITUDE SURVEYS

PRIORITY ENVIRONMENTAL ISSUES

- When Scott Countians were asked which issues should be priorities for government action, the number 1 priority was "improve the quality of the local drinking water." 94% of respondents called this "extremely" or "very important." (W.)
- "More public programs to encourage recycling" was considered to be "extremely" or "very important" for government action by 76% of Scott Countians. (W.)
- Rural property owners are very environmentally conscious, and rated the following topics on a scale of 5 (major) to 1 (minor) as a problem in Scott County (R.P.). Their answers emphasize the importance of water quality and solid waste management:

Rank	Topic	Number rating as major	Average Score
1	Water Quality	214	4.3
2	Illegal Dumps	146	3.9
3	Weed and Thistle Control	129	3.7
4	Solid Waste Management	85	3.6
5	Hazardous Materials Storage & Transportation	79	3.3
6	Septic Systems	68	3.2
7	Package Sewage Treatment Plants	63	3.2
8	Soil Erosion	62	3.3
9	Pesticides & Herbicides	57	3.2
10	Air Quality	44	2.6
11	Storm Drainage	38	2.7
12	Urban Runoff	32	2.9

(W.) = Wilkerson Community Attitude Survey, 1990
 (R.P.) = Scott County Rural Property Owners Survey, 1990.
 (U.K.) = Univ. of Kentucky Toyota Impact Survey, 1986.

in the southern half of the County, and steep slopes and soils with special development considerations.

The protection plan for these resources recommends that some should remain as open space, through a combination of public purchase, stronger floodplain regulation, cluster development, and transfer of development rights. Others should be respected and incorporated within development projects, which can create a special image for Scott County and enhance their own chances of success by highlighting natural features. The network of water resources through Scott County presents an opportunity to create a series of "ribbon parks" and greenbelts that will leave ample room for growth, while keeping the beauty of the countryside closely accessible to the City.

SOLID WASTE MANAGEMENT: The challenge of reducing the stream of waste we produce and the high cost of safely disposing of what remains is a critical growth issue for Scott County. The City of Georgetown, through its landfill planning, and the Scott Fiscal Court, through the Solid Waste Management Plan and Ordinance, have supported responsible planning on this issue. Yet Scott Countians are signalling that a stronger program is needed. They rated "a clean place without junk or roadside dumps" as the single most important attribute of a quality community (Wilkerson Survey), and one they feel that Scott County could better provide. They have also shown solid support for mandatory trash collection, and have shown that recycling deserves priority attention (Figure 5).

City and County government must work closely together and with other counties in the region if we are to establish a financially-feasible landfill, control illegal dumping, and coordinate waste collection, recycling, and educational efforts. Solid waste management will require a full-time planning effort and strong local governmental commitment within the next five years. This is also an issue that requires awareness and commitment from individual Scott Countians. Old habits, such as sinkhole dumping, need to be broken and new habits for recycling and proper

waste disposal need to be formed.

HAZARDOUS MATERIALS MANAGEMENT: The use of hazardous materials is increasing in businesses and industries, on farms, and in the home. This brings increasing risk of accidents or improper storage or disposal that could lead to contamination of the environment. The sensitivity of our water resources is such that we should not wait for a major spill with serious consequences to convince us that local government should take a stronger role. A preventative approach would be to establish a local monitoring and enforcement program, strengthen accident response capabilities, redesignate truck routes to safer roads, establish a collection station for household and farm chemicals, and control the location and development of firms using hazardous materials to protect sensitive environmental resources.

C. SUMMARY OF ENVIRONMENTAL GOALS

1. All growth affects the environment. However, the kind of growth that would degrade environmental quality is not desired. Instead, growth should capitalize upon and highlight Scott County's special environmental qualities.
2. Locations and types of growth should be guided by principles of protecting groundwater, surface water, air quality, floodplains, and prime farmland, in balance with other community goals for development.
3. Residential growth should continue to occur in the rural area. However, rural growth should be located and clustered so that it is more compatible with the traditional Scott County countryside, and to minimize impacts to farmland, the environment (especially water quality), and public services.

4. Water quality shall be protected through management of sewage treatment, hazardous and solid wastes, agricultural practices, urban development, governmental services, and other potential sources of pollution.
5. The scenic, recreational, and environmental quality of Creek Conservation Corridors should be protected with policies that ensure responsible floodplain management, encourage special sensitivity in public and private development projects, and support acquisition of land or easements for public use and enjoyment.

Management of development and land use along minor waterways should minimize potential for erosion and negative impacts from increased runoff and should encourage maintaining natural qualities of the waterways.
6. Land use, agricultural, and recreational activities within the Reservoir Watershed Protection Area should be carefully managed to ensure the pristine water quality of the reservoir once it is constructed.
7. Land uses and development within Aquifer Recharge Protection Areas shall be carefully controlled to protect surface and underground water quality.
8. Preservation of Scenic Resources should be encouraged, and development should be sensitive to maintaining the landscape, natural, cultural, and historic qualities that make scenic resources and areas special.
9. Development should be designed with sensitivity for the shape and characteristics of the land, natural vegetation, and habitats of significant animal and plant species.
10. Solid wastes should be managed and disposed so that the amount of waste produced in Scott County is minimized with an emphasis on recycling, the cost and capacity for disposal are not a deterrent to growth, and the quality of the environment is protected.
11. The use, location, and disposal of hazardous materials should be controlled so that human health, water quality, air quality, and environmentally sensitive resources are protected.

II. WATER RESOURCE PROTECTION

A. SCOTT COUNTY WATER RESOURCES

Scott County's water resources are far more than geographical features or lines on a map. Our major springs and creeks were central to our history and city development, they provide essential sources of drinking and irrigation water

today, and they represent future economic opportunities for recreation and tourism.

Water resources include groundwater (aquifers), which mainly exist in the southern half of the County; springs that occur where groundwater surfaces; drainageways that include creeks with year-round flow and waterways that flow part of

the year or only after rains; lakes and ponds; and the proposed Scott County reservoir. The main water features are described below.

It is important to understand the interconnected nature of our water resources, particularly in areas with karst topography, where the underlying rock is channeled by the dissolving of limestone to create a "pipeline" system of underground waterways. Karst is not only dominant in the southern half of the county, but also occurs in the north, where erosion has cut through to limestone base rock in swales and valleys.

Through sinkholes, rainwater washing over the surface of the land can directly enter aquifers, bringing with it any pollutants picked up from the ground. Springs and seepage from aquifers deliver subsurface water to creeks. Through sinkholes in stream beds, or "sinking streams," creeks can also directly flow into underground aquifers. There has been some evidence, for instance, that contaminants in Cane Run Creek have entered the Royal Springs aquifer. Because all our water resources are interconnected, it is important to have a comprehensive strategy to protect them.

1. Royal Spring

Currently, Royal Spring is the chief water source for the municipal water supply of the City of Georgetown and western areas of Scott County served by the Georgetown Municipal Water and Sewer Service. The Royal Spring aquifer underlies farmland and urbanized areas of Georgetown and Lexington, and is very vulnerable to pollutants, as shown by the benzene contamination which interrupted use of the Spring during much of 1990.

The Spring also has historic value to the community, as the water source that led to the founding of the City of Georgetown on this site and the pure water base used in the invention of bourbon by Reverend Elijah Craig. The site of

the Spring itself and Royal Spring Branch, which carries the overflow spring water north to Elkhorn Creek, has important park and open space potential as the centerpiece for Downtown redevelopment and a pathway between Downtown and Cardome.

Continued use of the Spring as a water source is discussed in the Community Facilities Section, and its park potential is covered in the Downtown Plan, Section VII. As long as the Spring remains in use, the quality of its water must be protected. Even if the Spring is one day abandoned as a water source, ensuring its protection is still important because of its symbolic value to the community and its outstanding recreational potential.

Location of the Aquifer Recharge Area: The Royal Spring basin has been closely studied, and was the subject of a recent "Wellhead Protection Study" sponsored by the U.S. Environmental Protection Agency and accomplished by the University of Kentucky. The study mapped the aquifer recharge area of the Spring (Map 1), which extends southeast through the developed area of Georgetown including Scroggin Park, the Hoover property and Georgetown Industrial Park, and along I-75 into Lexington where it encompasses the Nandino Drive industrial area, Coldstream Farm, the Horse Park, and residential development.

The aquifer recharge area is the sensitive area where pollutants in surface runoff or subsurface storage may reach the Royal Spring aquifer and potentially contaminate it. The recharge area has been identified in two ways: by surface drainage divides, and by dye tracing through wells and sinkholes.

2. Buffalo Spring

Buffalo Spring issues from the Lexington Limestone formation within the City of Stamping Ground. The Spring features in the history of this area, as a steady source of water along a

migratory route of the buffalo and the center of their "stamping ground." Historically it was a source of pure drinking water. Although it is no longer used as a municipal supply, the City wishes to make the Spring the centerpiece of a public park. Ensuring that this water source remains clean is important to the success of the park as well as the City's historic image.

The exact outlines of the aquifer recharge area for the spring are not known, but have been estimated from drainage basins (Map 2). Much of the City may be in the recharge area.

3. Other Aquifers and Springs

Several other known springs and their estimated groundwater basins have been mapped (Map 2). Many of these springs issue at or close to the banks of the South and North Elkhorn, which emphasizes the interrelation between ground and surface water quality. It is probable that there are many other aquifers and springs that have not been mapped. Groundwater and springs are important sources of water for agricultural operations, including domestic well water, stock watering, and some irrigation.

4. Elkhorn Creek and Tributaries

The southern half of Scott County is drained by the North Fork of the Elkhorn Creek, its tributaries (Dry Run, Cane Run, McConnell Run, Royal Spring Branch, Lanes Run, Millers Run, Cherry Run, Boyd Run, and Goose Creek) and the South Elkhorn. The northern half of the County is drained by Eagle Creek, and both systems drain to the Kentucky River.

The North Elkhorn is a vital community resource for many reasons. It has shaped the land and historic development of this area, and for Scott Countians the creek is inseparable from the image of the rural countryside and Georgetown. It is an alternate municipal water source for the city in times of drought or

contamination of Royal Spring, and the creek is receiving growing community attention for its recreation, scenic, and tourism value. The North Elkhorn is also becoming an attractive location for residential and commercial development, a special amenity Scott County can offer that other communities cannot match.

The North Elkhorn Creek begins in Fayette County and flows northwest through Scott County. Including the mainstem of Elkhorn Creek in Franklin County, the entire waterway is about 92 miles long. The average flow near Georgetown is 98 million gallons per day. The soft Ordovician limestone that underlies the Bluegrass region contributes to an alkaline base stream quality, which is productive of algae and invertebrates and supports an excellent sport fishery. The stream is canoeable for much of the year, and boating activities are increasing. There are several canoe concessions along the creek, and the Scott County Parks and Recreation Department sponsors races, canoe training, and fun float programs.

The creek holds great potential for hiking trails and greenspace. Most of the shoreline still exists in a thickly-wooded natural state, even through Georgetown. Most cities have channeled and culverted their creeks, and have forever lost the special qualities of a natural waterway. The North Elkhorn provides wild areas within the heart of the city that are completely screened from urban development.

The creek flows through many horse farms, receiving waters from the Kentucky Horse Park, in particular. A rich historic heritage of homes, mills, old bridges, churches, and the like follows the flow of the creek, because it was an early location for settlements and industry. All of these qualities combine to give the Elkhorn Creek corridor great potential for tourism, which is projected to be Kentucky's biggest growth industry in coming years and is an important element for diversifying Scott County's economy.

Growing community interest in protecting the Elkhorn for all of these needs has led to establishment of the Elkhorn Land and Historic Trust, a citizen group devoted to creating a public trail along the creek, from the Horse Park through Scott County to the Kentucky River. The Trust will have the ability to accept dedications of land and easements for preservation and public access.

Growth in Scott County has intensified conflicting demands on the creek: as a water source, receiving stream for treated sewage, and repository for a growing amount of agricultural chemicals; as a prime location for private development that can conflict with floodplain protection and public access. The common needs to protect the natural qualities of the creek and its tributaries and preserve them for future generations must be recognized with a comprehensive set of policies to guide public and private action.

Eagle Creek and its tributaries also are a resource for agricultural water supplies, recreation, and scenic values, and need similar protection.

5. Scott County Reservoir

The Scott Fiscal Court has embarked on a long-range plan to build a reservoir in northern Scott County (Map 5). The lake would provide a long-range, pristine source of drinking water, and the entire area purchased for the reservoir could be a regional park. The reservoir would hold 1.5 to 2.9 billion gallons of water, depending on the height of the pool. The Court is purchasing lands both within the future pool of the reservoir and within the drainage area. Eventually, 1320 acres are targeted for purchase. This includes normal and maximum pool surface areas of 297 to 464 acres; which will leave about 800 to 1000 acres potentially for park purposes.

However, this will not include 4740 acres of

land that also drain to the future reservoir. Use of these lands could cause four potential sources of contaminants to the reservoir: agriculture, rural residential development, recreation, and solid waste. Siltation caused by erosion from urban development would be a major concern, as this could significantly reduce the holding capacity of the reservoir. Contamination from sewage treatment systems, urban runoff, illegal dumping, etc. must also be prevented. Farming should be encouraged to use "best management practices" and to minimize erosion and runoff from chemicals (see Objective 6.1).

In the unlikely event of a dam failure, the County would be liable for any downstream damage, according to the Water Resources Branch of the Kentucky Department for Environmental Protection. It would be wise to designate a "flood inundation area" below the dam, with special policies to control development in that area or make potential builders aware of the situation.

B. THREATS TO WATER QUALITY

There are many threats to future water quality of aquifers, creeks, and the reservoir, which calls for a broad-based approach to protection. The on-going and potential sources of pollution are discussed below and summarized in Figure 2. Because water quality is interrelated with so many issues, strategies to protect and improve water quality are found throughout this Comprehensive Plan, and as each problem is related below, there is a reference to the section where it is discussed and solutions are proposed. For issues that are not dealt with more fully elsewhere, water quality protection strategies are summarized in the "Environmentally Sensitive Areas" section of the report.

1. Is There a Problem?

Just how serious a problem is water pollution in Scott County? Episodes like the benzene con-

FIGURE 2
COMMON SOURCES OF WATER POLLUTION

Sewage Treatment

- Untreated sewage discharge
- Failing septic and lagoon systems
- Failing package plants
- Municipal plants - inadequate treatment
- Leaking sewer pipes and malfunctioning pump stations

Business, Industry, and Utilities

- Gasoline storage tank leakage
- Hazardous materials storage/leakage
- Hazardous materials transportation accidents
- Inadequately treated industrial discharge
- Quarries, concrete and asphalt plants - surface runoff
- Power substations and storage areas - leakage of PCB's

City and County Services

- Runoff from storage of road construction material
- Road salts
- Sanitation truck parking and washing areas

Solid Waste

- Landfill leachate
- Private and illegal dumps
 - in sinkholes
 - on creekbanks
- Junkyards - surface runoff of gas, oil, fluids

Agricultural Activities

- Erosion
 - Poor land management
 - Clearing and environmentally insensitive rechannelizing of creek banks
- Agricultural pesticides, herbicides, fertilizers
 - improper application and surface runoff
 - storage/dumping of containers
- Concentrated animal waste

Urban Development

- Household pesticides, fertilizers, etc.
 - improper application and surface runoff
 - storage/dumping of containers
 - improper disposal of waste oil
- Development projects
 - site erosion
 - storage/dumping of paint, tar, and chemicals
- Urban runoff
 - grease, oil, trash from paved areas
 - service station pavement cleaners

contamination of Royal Spring, reported livestock illnesses from contaminated creeks and springs, and encounters with raw sewage by Elkhorn canoers and fishermen have led Scott Countians to feel that this is the most serious environmental and community issue facing us. However, there has been no study or inventory that clearly tells us the current quality of water in our streams, wells, and springs, or the magnitude of the pollution problem. Many separate studies have been done:

- Elkhorn and other stream monitoring by the Division of Water, Natural Resources and Environmental Protection Cabinet.
- Royal Spring testing by GMWSS.
- Well testing by the Scott County Health Board.

However, this data is either not generally available or has not been combined and reported in a form understandable to laymen.

The Elkhorn Land and Historic Trust is collecting data on the Elkhorn to create a baseline understanding of conditions in the creek. This needs to be a County-wide effort on all major water resources. Until we understand the components of the pollution problem more clearly and can demonstrate that it is a problem with hard facts, it may be difficult to gain political consensus to support solutions or to decide which parts of the problem are most serious and should be tackled first.

Although the Division of Water is¹ charged with monitoring water quality at the State level, there is no local agency with clear responsibility for this. GMWSS has an obvious interest in water quality of the Elkhorn and Royal Spring, and could take the lead in coordinating a baseline study, with involvement by the Elkhorn Trust. The Health Department or Soil Conservation Service could direct information-gathering for other water resources. Substantial assistance from the Division of Water will be necessary.

There are many known or potential sources of

pollutants. Some of these result from everyday activities of citizens, businesses, and even local government. Some of the most important sources are summarized in Figure 2 and listed below.

2. Junk and Garbage:

The Solid Waste Management Section of this report (Section IV) recommends a comprehensive program to control the following:

- Garbage dumps, especially in sinkholes, are a prime source of pollutants. Scott County farmers are beginning to realize that this traditional method of disposing of household and agricultural waste leads to direct contamination of aquifers, and is akin to dumping garbage in a reservoir.
- Creek bank dumping: Creekbanks are commonly used for dumping of pesticide bins and other waste.
- Junkyards cause pollution from gasoline, oil, brake fluids, battery acids, etc., especially if crushing operations are located where stormwater carries these contaminants into a creek or sinkhole.

3. Inadequate Sewage Treatment:

- Failing septic systems: In karst geology and soils such as Maury, that percolate very well, leachate from the septic field finds or creates pathways through the soil and rock, and eventually will percolate into the aquifer so quickly that purification does not take place. According to testimony at a Citizen Committee-sponsored forum on septic systems, it is hard to detect failure of these systems because they fail straight down into the aquifer without the telltale odor and surfacing of leachate that warn us of septic failures in clay soils. Contaminants include not only human waste, but also heavy

¹The Water Quality Branch of the KY DOW is currently updating the 305B report for the area. Based on their recent monitoring data, the N. Elkhorn Creek is classified as meeting uses for its whole length, Lanes Run is unassessed, Dry Run is classified as threatened, and Cave Run is classified as non-supportive (only the first 10 miles in Fayette County has been studied).

metals and organics from household detergents and chemicals, which are not filtered as well by the soil.

Uncontrolled rural development can result in too great a concentration of septic systems in one location and septic loading of the groundwater table. However, no studies have been done in this region to give guidance on the acceptable number or density of septic systems in karst areas. The "cluster development" proposal in the Rural Development and Preservation Section should be monitored carefully for potential ground-water impacts. Based upon such a study, the Commission may consider amendment of the cluster development standards (number, density, and location of units).

- Failing package plants: Private sewage treatment plants, commonly called "package plants," are often inadequately maintained, staffed, and funded. Regulation by the State is ineffective, and chronic discharges of raw or incompletely treated sewage affect ground and surface water. The Community Facilities Plan recommends policies to prevent proliferation of these plants and to better regulate and maintain the existing plants (Appendix, Section B.5).
- Inadequate municipal sewage treatment: Incomplete sewage treatment by municipal plants also impacts local streams and groundwater. During heavy rains, storm-water infiltrates old sewers in Georgetown, and the sheer volume of water (often 5 million gallons per day or more) is far above the treatment capacity of Plant #1 (2.8 mgd).

Uncertainty about the functioning of the Sadieville treatment plant should also be examined, as the plant is adjacent to Eagle Creek. Recommendations concerning municipal plants are found in the Community Facilities Plan, Appendix,

Sections B.2 and B.3.

- Untreated sewage discharges: There are still locations on the Elkhorn and other creeks where untreated sewage is piped direct to the creek. Although this is illegal (except for Homestead Exemptions), there has been no effective State or local program to shut down these pollution sources.

Because of the "Homestead Exemption" passed at the 1988 legislative session, owners of farms of 10 acres or more are exempt from regulation of septic systems by the Health Department. This exemption is reportedly being abused by homeowners that are directly discharging sewage into drainages to avoid the cost of installing septic systems. Many counties are experiencing this problem, and a Statewide effort is needed to appeal or amend the Homestead Exemption to ensure that all residences must have a septic system (see Community Facilities, Appendix, Section B.4).

- Sewage Pumping Stations: When pumps fail or the capacity is exceeded, raw sewage is piped directly to a waterway. Two of these pumping stations are located on the banks of Elkhorn Creek near the Oser Landing and Cardome recreation areas and upstream from the Elkhorn water intake. Failure of both stations has occurred on several occasions.

4. Business, Industry, and Utilities

- Underground storage tanks are located throughout Scott County, especially in Georgetown. Many of these are abandoned sites. A quick survey for the Wellhead Protection Study listed 18 known locations of tanks in or near to the Royal Spring aquifer recharge area. The benzene contamination of Royal Spring is assumed to be from an underground tank.

This is considered to be such a serious threat to water quality that the Commonwealth has adopted stricter regulation about removal and clean-up of abandoned tanks than federal law requires. The UST (Underground Storage Tanks) program maintains a database of the 12,000 tanks statewide. Property owners must pay a \$30 yearly fee, to create a fund to assist in removal and clean-up. Owners of property with abandoned tanks are required by law to remove them. Recommended policies concerning this are under Hazardous Materials, Section V.

- Hazardous materials storage and transportation is a serious threat to water quality, which is discussed within Section V of this report.
- Quarry, concrete, asphalt plants: Surface runoff from quarries and associated plants can carry silt and possibly contaminants to creeks and sinkholes. For example, the quarry located near Elkhorn Creek stores gravel next to the banks, which is washing into the creek and altering the channel.
- Utilities: Power substations and storage areas are a potential source of PCB's, a contaminant that is particularly dangerous to human health. KU, for instance, has a major substation and equipment storage area located just above the mouth of Royal Spring.
- 5. **City and County Services**: Many activities of City and County government affect water quality.
- Heavy use of road salts, while necessary for traffic safety, loads brine water into creeks. Other de-icing alternatives could be explored.
- Road construction materials are stored on the Elkhorn banks near U.S. 460 West,

where gravel and silt can wash into the creek.

- Parking areas for heavy trucks and sanitation vehicles concentrate drippings from fuel, lubricants, and garbage, and storm-water runoff can convey these to creeks and sinkholes. Vehicle washing areas, especially for sanitation vehicles, should be connected to sanitary sewers to prevent dirty wash water from reaching waterways.
- 6. **Agricultural Activities**: Poor agricultural practices can produce stormwater runoff laden with silt, pesticides, fertilizer, manure, etc. Overuse of pesticides and fertilizers or dumping of excess chemicals into creeks and sinkholes are serious pollution sources. Runoff from feed lots and dumping of stall muck can also contaminate water resources.
- 7. **Urban Development**:

Urban uses result in many sources of pollution. Although each source may seem minor, the combined effect of all urban activities can lead to significant impacts to water quality. Government regulations can only go so far to prevent this. Common, everyday actions of people -- disposing of leftover pesticides down a storm drain, changing a car's oil and letting it run out on the ground -- can only be changed through educating them about the end result of their actions. The Solid Waste Management part of this report (Section V) addresses this.
- Household chemicals: City dwellers, as well as farmers, misuse pesticides, fertilizers, etc. A fish kill has been caused in Mallard Point Lake by inappropriate use of yard chemicals. Disposal of leftover chemicals and empty containers is also a problem -- they often go down the drain or out with the trash. Whether through landfill leachate

or incomplete removal at the sewage treatment plant, some of these chemicals will reach water resources.

- Urban runoff refers to stormwater runoff from streets and parking lots, which carries trash, oil, and gasoline to creeks and sinkholes. Another source is de-greasing pavement cleaners used by service stations. This is not the minor issue it may seem, as it takes only a small amount of gasoline or oil to pollute a large amount of water. For instance, a study of development around San Francisco Bay has shown that runoff from paved areas has caused significant contamination of the bay and its shellfish. Because of growing national attention to this problem, water quality monitoring and treatment of stormwater discharge will be required in 1992 of cities with 100,000 population or more. In cities the size of Georgetown, new federal regulations will require industries to receive permits for storm runoff and to monitor their discharge. Regulations requiring small cities to periodically monitor discharge are under consideration.
 - Construction sites can be a concentrated source of silt, due to grading, and pollutants, due to improper storage or intentional dumping of paint, tar, and other chemicals.
8. **Recreational use** of the land around the reservoir or creeks could lead to water contamination if sewage treatment systems are poorly sited or function inadequately, or if storm runoff carries contaminants from parking areas. These can be kept to a minimum and adequately controlled. However, recreational use of the water should be carefully monitored.

C. FLOODPLAINS AND STORM DRAINAGE

Scott County is lucky to have a tradition of protecting floodplains from encroachment and development. This was confirmed by the experience of only a few Georgetown homes being flooded in the recent winter of 1988 high water, compared to the extensive damage in Frankfort and other communities. Prudent floodplain policy has two aspects: limiting development within the floodplain, to keep threats to human safety and property damage to a minimum; and limiting filling of the floodplain, so that flood elevations on other properties are not increased. These policies should apply to "creek conservation corridors" which are major streams defined in Section III, A.2.

State floodplain regulations provide insufficient protection, and past actions of the Planning Commission have allowed fill of the floodplain in commercial areas, although 1985 Comprehensive Plan policies discourage this. It is important to establish a strong floodplain management policy based on concerns for human health and safety, protection of property values, and preservation of the natural creek qualities that have evolved over hundreds of years for the safe control of floods. It is also important that these policies be fairly applied to all property owners along the creeks.

Defining the Floodplain: The floodplain is defined as the 100-year floodplain, or the level that water will reach in a storm event of a magnitude that is likely to occur in a 100-year period. This does not mean that a storm of this magnitude will occur once every 100 years; it could occur next week, and it could reoccur next year. The 100-year time frame is a measure of probability.

The 100-year floodplain is defined for major streams by the U.S. Army Corps of Engineers and is mapped on Flood Insurance Rate Maps supplied by FEMA (Federal Emergency Man-

agement Agency) for the National Flood Insurance Program. In Scott County, the 100-year floodplain has been determined by detailed study for the parts of Elkhorn Creek, Cane Run Creek, Dry Run, Locust Fork, and Eagle Creek that are in or near cities, and has been more generally determined for the lower reaches of major streams such as Millers Run, Lanes Run, McConnell, LeComptes, Goose Creek, and Boyd Run. (The recent computer-generated maps of some parts of the County have allowed more accurate mapping based on actual topography.) For creek conservation corridors outside the limits of the Corps of Engineers study, assumed floodplain limits should be designated by the Planning Commission, based on factors such as the size and runoff rate of the drainage area and topography of the floodplain.

Shortcomings of Current Floodplain Regulations: Both State and local governments regulate use of floodplains. A permit is required from the Division of Water to place fill in a floodplain. Permits are granted if it can be shown that overall fill and development in an area will not raise the floodplain elevation by more than one foot. The Scott Joint Planning Commission has independent authority under Section 4.24 of the Zoning Ordinance to review and permit floodplain fill. The Commission has previously permitted fill for commercial developments if it can be shown on a case-by-case basis that the fill will not raise the level of the floodplain. These policies are not strong enough to ensure long-term protection from floods, for several reasons.

- **Cumulative impacts:** Current policies of the Planning Commission treat each property in isolation. While studies such as the HEC Program may show that fill on one property does not noticeably raise flood levels, if all properties are treated equally and many are allowed to fill in their floodplains the combined effect is likely to significantly increase flood levels. The water that no longer is accommodated in the filled area must be accommodated elsewhere. In

recent years large properties next to the Elkhorn have been developed, such as VanHoose, First Lexington, and the U.S. 460 East commercial area. If all had equally been allowed to fill, this would have affected about 1/12th of the linear distance of the floodplain through Georgetown. Future years will see increasing pressures toward floodplain development and fill.

- **Fairness:** Current policies favor some property owners to the detriment of others. Commercial properties have been allowed to fill and residential properties have not. When cumulative effects are considered, those developers that fill in the floodplain and get greater value from their properties are simply transferring their floodwaters and problems onto other properties, which will reduce the use and value of those lands.
- **Hidden effects:** Fill and storm management projects that alter creekbanks often have unanticipated effects. Because flood velocity is increased and currents are changed, erosion patterns are changed. Previously stable banks can become unstable. These impacts often occur on other properties, and are difficult to model and predict.
- **Natural creek qualities:** Floodplain fill and development can degrade the natural creek qualities that are valued for recreation and scenic enjoyment. Trees can be damaged or killed by changing drainage patterns or loading fill over their roots. Control of urban runoff and creek bank erosion is more difficult when development encroaches close to creek banks. The floodplain also creates a setback that reduces and screens the visual impact of development.

The natural topography, banks, and vegetation of creeks have evolved and adjusted over a long period of time to safely handle floodwaters. The stability of these natural flood management systems should be respected and preserved.

Strengthened Floodplain Management Policies: A more prudent approach to floodplain management would take a more comprehensive view of the value of the floodplain for protecting public safety and the environment. The general aim of floodplain management should be no net decrease of the floodplain on each individual property, so that all property owners share equal responsibility. In general, this means no filling within the 100-year floodplain, except as provided elsewhere in this Plan (Policy 5.3). The policy should be flexible, however, to allow innovative site design that is sensitive to the creek's natural and recreational qualities. For instance, within a property, one area could be filled if another was graded out so that the overall volume of water handled by that section of the floodplain remained the same. The fill and grading must be carefully handled so that it does not damage creekbank vegetation or affect the flow characteristics of the stream or stability of the banks. A major regrading that changes the natural flood channel could have unanticipated erosion or siltation effects and should be avoided.

On-site stormwater runoff should be handled differently for properties adjacent to the floodplain. Rather than retaining stormwaters in on-site retention basins, runoff could be allowed to flow direct to the stream. This would allow these stormwaters to move down the stream in advance of the stormwater peak from land situated further from the creek. The property should compensate for the lack of retention by increasing the natural floodplain by the same volume of water that would have been retained. This ensures that, over time, the floodplain will handle increased runoff from development. On-site runoff must still be carefully controlled to slow the velocity, protect against erosion, and filter out trash.

Urban development should not encroach within the floodplain, except for minor uses that would not impede floodwaters, such as parking lots or landscaping. Again, urban uses should not be incompatible with natural qualities of the creek.

There could be opportunities for commercial development within the floodplain if it is related to the creek, such as restaurants on pilings overlooking the water, or recreation equipment rental, as long as the floodplain management policies are respected.

Impacts to the Floodplain from Public

Projects: Publicly-funded projects also have potential to reduce the floodplain and damage natural creek qualities, and local governments should set an example of sensitive development. Flood control, storm drainage, and bridge improvement projects should aim to minimize floodplain encroachment and disturbance of creek banks and trees. Rechannelizing of streams should be avoided unless necessary to reduce an existing threat to public safety, health, and property. When streams must be rechannelized, the project should aim to recreate a natural appearance, to stabilize the bank with vegetation where possible, and to allow no overall reduction in the flood storage volume. If the floodplain protection strategies outlined in this Plan are not followed, it is likely that it will one day be necessary to embark on the type of rechannelization projects that have destroyed many urban creeks by routing them underground or through concrete channels.

Applying Floodplain Management Policies: The C-1 (Conservation) zone and subdivision regulations should be amended as quickly as possible to encompass this comprehensive floodplain management program. Properties lying within the 100-year floodplain of designated creek conservation corridors (see Section III.-A.2) should be rezoned C-1, either at the time each property is rezoned for development, or by the Planning Commission in a county-wide action. For minor waterways (all blue-line U.S.G.S. streams), drainage practices should minimize erosion and negative downstream impacts from runoff.

It is recommended that the C-1 zone within Creek Conservation Corridors should also include steep creek bluffs with severe

development limitations and major stands of riparian (creek-related) vegetation where these occur beyond the 100-year floodplain, unless these can be developed in a sensitive way that is compatible with preserving the natural qualities of the stream.

Maps 3-4 generally indicate the area designated Conservation. The exact location of the zone would need to be determined as development occurs and site surveys are available for each property.

Location of the 100-year Floodplain: The actual location (or elevation) of the 100-year floodplain needs to be verified. Floods in recent years that were not of the 100-year magnitude have reached levels that are thought to be the 100-year flood elevation. A simple study could compare the known elevation of the 1988 Elkhorn flood at several locations with the Corps of Engineers 100-year flood elevation. This would help determine if a more detailed

hydraulic study is needed to reassess the floodplain location. Assistance should be requested from the Cabinet for Natural Resources and Environmental Protection, Division of Water.

Floodplain Maintenance: Along many Scott County creeks there are piles of logs and debris. These can impede floodwaters and raise flood levels upstream. They also are barriers to boating and canoeing. The Kentucky Transportation Cabinet is responsible to clean out debris at State bridges, but it is not unusual for log jams to go without attention for years or for cleaned-out debris to be left on the creekbank, where the next flood catches it. Private property owners do not have the equipment or financial capability to remove large obstructions elsewhere on the creeks. A publicly-funded cleanout program with yearly inspections and evaluation of the priority areas needing work would help reduce this problem. KYTC should be encouraged to do the same.

III. ENVIRONMENTALLY SENSITIVE AREA PLANS

A. DESIGNATION OF ENVIRONMENTALLY SENSITIVE AREAS AND RESOURCES

Environmentally Sensitive Areas, in general, can include natural characteristics of the land that have value to Scott Countians and need special treatment to protect that value, such as:

- Major water resources or land features that are related to water quality;
- Land or geologic features that have special development considerations or present possible hazards to health and safety;
- Natural resources that are significant to the

Scott county economy and way of life;

- Natural land qualities that are special or create the distinctive bluegrass landscape that Scott Countians and visitors value and enjoy;
- Significant natural habitats for plants and animals.

Environmental qualities are often intertwined with cultural and historic features, and this section of the report also includes scenic rural routes.

Today's large-scale development techniques can completely transform the surface of the land and

the environmental, visual and cultural attributes that local residents value. Inappropriate development can remove these attributes, while sensitive location, density, and design of development can protect and highlight them in a way that will enhance the project. Environmentally Sensitive Areas and Resources, which are specifically designated as follows, must be given special respect and attention in the development process, as outlined in the Goals and Objectives. The following definitions were specifically adopted as a part of the Goals and Objectives:

ENVIRONMENTALLY SENSITIVE AREAS AND RESOURCES:

1. **Aquifer recharge areas:** An aquifer recharge area is the land surface from which surface water, either in streams or falling as rain, will percolate down through rock and soil to feed underground water resources. The recharge area may be defined by topography, geology, die tracing, and other accepted means. Aquifer recharge areas designated environmentally sensitive are generally shown in Maps 1 and 2, and include the following:
 - a. The Royal Spring aquifer is the most sensitive, because of its use for domestic drinking water.
 - b. Buffalo Spring aquifer.
 - c. Sinkholes and caves, especially those that are known to direct waters to Royal Spring or those that are within a known aquifer recharge area. However, because of the special soil, geologic, and hydrologic characteristics of sinkholes and caves that present difficulties for development, all sinkholes are environmentally sensitive. Sinkholes are generally defined as the area within the closed topographic contour, although conditions can merit a larger area being designated

as a sinkhole.

- d. Other known springs and aquifer recharge areas that supply well or spring water to rural areas.

2. **Creek Conservation Corridors and Minor Waterways:** Through C-1 (Conservation) zoning, there is a well-established program for protecting the unique environmental qualities of major creeks such as the Elkhorn. There is growing community consensus that the program should be strengthened and expanded. Two levels of protection are appropriate for above-ground waterways. "Creek Conservation Corridors" (shown on Map 3 and 4) would receive the strongest protection, which would build upon the existing C-1 zoning.

Creek conservation corridors were first defined based upon all streams designated C-1 on the 1977 zoning map, and were expanded to include: streams with a 100-year floodplain drawn by the U.S. Army Corps of Engineers; creeks that supply municipal water systems, or the main tributaries that discharge into such streams above the water intake; or creeks that are a recreational or scenic resource. For example, this includes North and South Elkhorn Creek, Royal Spring Branch, Cane Run, Eagle Creek, and the lower reaches of Lanes, McConnell, and Millers Run. Those serving as a municipal water source or discharging into such a stream should have the highest priority for protection. The protected area should include not only the stream itself, but also:

- a. 100-year floodplains, as designated by the U.S. Army Corps of Engineers or a local hydraulic study designed to identify the floodplain.
- b. Riparian habitat: Vegetation and wild-life habitat closely associated with the waterway.

- c. Steep creek bluffs and banks that cannot be developed without causing erosion or destruction of the habitat and visual character of the stream.
- d. Land uses and development adjacent to or near the creek that could affect its natural qualities should also be included in the Creek Conservation Corridor for planning purposes, although these would not be zoned C-1.

The second level of protection would be for "minor waterways," defined as all U.S.G.S. blue-line streams. These would not be rezoned C-1. The main objective in these areas would be to manage land uses and development to protect water quality and minimize potential for erosion or negative impacts from increased runoff downstream.

Maintaining the scenic, habitat, and open space value of these waterways would be encouraged but not required, through clustering, transfer of development rights, etc.

- 3. **Prime farmlands:** (Farmlands designated "prime" by the Federal government.) There were originally 66,790 acres of prime farmland in Scott County, out of 181,010 total acres in the County. Prime soils are listed in Table 1. The City of Georgetown is located in an area of predominantly prime soils, and development in Georgetown and the rural area has taken about 13,500 acres of prime soil, or 20% of this resource. The Rural Preservation and Development Section of the Growth and Land Use Plan (Section III) contains a complete farmland protection strategy.

TABLE 1
PRIME FARMLAND SOILS IN SCOTT COUNTY

Soils	Slope	Acres	%	Yield Tobacco	Yield Corn
Ashton silt loam	0- 4%	925	0.3	3,200 lbs.	140 bu.
Dunning	0- 2%	470	0.3		120 bu.
Huntington silt loam	0- 2%	9,055	5.0	3,200 lbs.	130 bu.
Lowell silt loam	2- 6%	15,205	8.4	2,900 lbs.	110 bu.
Lowell-Nolin silt loam	2-10%	6,945	3.8	3,000 lbs.	90 bu.
Maury silt loam	2- 6%	24,780	13.6	3,200 lbs.	125 bu.
Newark silt loam	2- 6%	595	0.3	2,500 lbs.	110 bu.
Nicholson silt loam	2- 6%	3,640	2.0	3,000 lbs.	130 bu.
Nolin silt loam	0- 4%	<u>5,175</u>	<u>2.8</u>	2,700 lbs.	115 bu.
		66,790	36.7		

4. **Significant natural habitats for plants and animals:** Environmental resources include habitats of significant plant and animal species, but there is no information about the presence of significant plants and animals in Scott County, what kinds of habitats support them, and where these are located. There needs to be an inventory, which could identify and locate rare or endangered species habitats (Federal designation), species that are distinctive to or characteristic of this region, and species that are valued for hunting, fishing, or recreation. Future development in or near the habitats of significant species should be sensitive to maintaining habitat for any such species that should be discovered and identified in the County. (See Objective 9.3 and policies.)

Wetlands are considered to be significant natural habitats. The U.S. Fish and Wildlife definition and federal protection policies for wetlands should be incorporated in local policies. Wetlands are defined as areas with a predominance of hydric soils that are saturated by surface or ground water at a frequency and duration sufficient to support hydrophytic vegetation. The few wetlands in Scott County have been mapped by the Soil Conservation Service. Other wetlands are likely occur along creeks or springs, and will be included within those environmentally sensitive areas.

5. **Steep slopes and clay soils** (e.g., Eden Clay Shales) with special development considerations. Steep slopes present special difficulties in development: special grading methods and negative visual impacts of extreme grading; and quicker storm runoff and more frequent springs, requiring special attention to retention, erosion control, and prevention of seepage and flooding of foundations. Eden clay shale soils present special development considerations for grading and foundations such as the potential for shrink/swell and creep or slope

failure. Hilly topography and clay shale soils generally occur in the northern half of the County. For the purposes of these policies, the percent grade of steep slopes/hillsides will be defined through the subdivision regulations process.

6. **Remaining tree stands and fencerows** in southern Scott County, especially in farming areas that have been denuded of trees over the years. In much of southern Scott County, the only remaining tree stands are in fencerows, along waterways and roads, or in major stands of older trees within fields and homesites. It is important not only to save what is left, but also to relandscape rural and urban areas (See Objective 9.2).
7. **Scenic and historic resources – rural routes and views, rural historic districts, and areas of outstanding beauty.** The Historic Resource Management Section of the Plan recommends areas that should be designated as rural historic districts, for preservation. In order to adopt protection policies, there must be a study to create an inventory and protection plan for the rural roads and scenic views that are important to Scott Countians and to building a tourism economy. This should become an element of the Comprehensive Plan, in balance with other elements of the Plan. The study must include objective criteria for selecting special places and scenic vistas, which could include: important scenes that define the natural, historic, or cultural character of Scott County; rural routes that combine many natural and historic features; places or features that are unique to Scott County or the Bluegrass region. Some features are so valued that they can be readily identified, such as stone fences or views of the Elkhorn from major roads.
8. **Scott County Reservoir Drainage Area:** The entire land area that drains to the future reservoir can effect the water quality in the

lake (Map 5). Land uses should be carefully managed, both on the lands that will be owned by the County and those that will remain in private hands. The area below the dam that would be subject to inundation in the unlikely event of a dam failure should also be included as environmentally sensitive.

Interpretive Guidelines for "Scenic" and "Recreational" Considerations: "Scenic" and "recreational" considerations mentioned throughout this Element of the Plan are not intended to prevent or unreasonably restrict growth or development, and shall not be so interpreted. Unless otherwise provided by a scenic protection plan and ordinance adopted by the legislative bodies, all references to "scenic" considerations regarding land use and/or development in this Element of the Plan shall be interpreted as to encourage, but not require or regulate, the protection of these resources, through public purchase, transfer of development rights, cluster development, purchase or voluntary dedication of scenic easements and other strategies that are voluntary or compensate the property owner. The same interpretation should be given to references to preservation or provision of recreational opportunities on private lands or developments for public use. It is recognized that public recreation cannot be required on private lands unless the site has been acquired for public use through purchase, dedication, easements, etc.

B. PLANNING APPROACH -- COMBINING ENVIRONMENTAL PROTECTION AND GREENSPACE SYSTEM

Protection of sensitive environmental resources goes hand in hand with open space and recreation planning. In limited situations, the best way to protect the resource is to keep it in a natural, undeveloped state. One way to prevent flood damage, for instance, is to keep the floodplain area undeveloped. For many

environmental resources, however, sensitive development can be compatible with protection of the resource, and can even enhance it. Development can be clustered on parts of the property that are less sensitive, leaving sensitive areas open for private recreation and pathways through the project.

Everyone will benefit if protection of environmentally sensitive resources is a collaborative effort between government, developers, and the citizens. Efforts of groups such as the Elkhorn Land and Historic Trust, an association of citizens from Scott, Fayette, and Franklin Counties dedicated to protecting the Elkhorn and establishing recreational access to it, can be a focal point for these efforts.

One example is the Boston Square office complex on the banks of the Elkhorn at U.S. 460 East. The creekbanks had been stripped of trees by earlier uses of the property. The office buildings have been designed to overlook the creek, and the developers are dedicating space for a public trail, helping organize volunteer labor to build it, and will relandscape the banks. Residential projects such as the Colony and First Lexington have been designed using creek floodplains as linear parks and trails. By taking advantage of a beautiful and unique natural feature, these development projects create a special image for Scott County and enhance their own chances of success.

Policies to protect environmentally sensitive areas can result in a system of permanently protected greenways in rural and urban areas. Since water quality is the theme of our environmental program and Scott County is blessed with a network of water resources, this presents the opportunity to create a series of "ribbon parks" throughout the County. Some of these open spaces may be appropriate for public purchase; others can be protected by easement that grants public access; and many will remain entirely private in use.

These environmental quality concepts also

support the proposal of the Growth and Land Use Plan to limit urban sprawl and identify a "greenbelt" around southern Georgetown. According to community surveys, the "small town quality" of Georgetown and rural beauty of surrounding areas is highly valued by Scott Countians. The vision of greenbelts and ribbon parks through and around Georgetown will leave ample area for growth, while keeping the beauty of the countryside closely accessible to the City.

Greenway Preservation Methods: Federal, state and local policies have traditionally recognized the public necessity of limiting use of floodplains, but for other resources such as aquifer recharge areas, rights of development that have already been established must be respected. In these areas, there are a variety of ways to develop with sensitivity to the resource or to fairly compensate a landowner if the land remains undeveloped. The Growth and Land Use and Historic Resource Management Elements of the Plan describe these methods, which include:

- **Cluster development** in rural and urban areas is a way to concentrate that development potential of a property on the part of the land that is most suitable, while leaving the sensitive area undeveloped.
- **Purchase or transfer of development rights (PDR or TDR)** is a fair way to determine how much value a landowner would have received from developing, and to compensate them for deciding not to develop. The development rights can either

be purchased by the public or transferred to allow higher density development on another, more suitable property. In either case the landowner is compensated.

The Growth and Land Use Plan contains a thorough discussion of the proposed TDR program. The Plan recommends a weighting system to encourage PDR and TDR from the areas most in need of preservation. Selected environmentally sensitive areas should have priority. Figure 3 ranks these resources and recommends which ones should be weighted most heavily.

- **Easements** allow the owner to continue to use the land, such as for farming or a home, while protecting it from change or allowing controlled public access. If the easement is dedicated to the public, the owner may receive tax benefits based on the value of development forgone. An easement can also record that development rights have been purchased from a property.

The LESA System: To more fully integrate environmental considerations in the planning and zoning process, the Planning Commission should investigate ways that the Land Evaluation System Analysis (LESA) could be followed. This method determines the development capability of land by assigning points for environmental and infrastructure factors. The process has been very successful and has replaced traditional zoning in Hardin County. This could also be helpful in deciding TDR priorities.

FIGURE 3

**TARGETED PROTECTION AREAS
FOR PURCHASE OF DEVELOPMENT RIGHTS**

Selected Environmentally Sensitive Areas: (a)

Royal Spring Aquifer Recharge Area
Other Aquifer Recharge Areas
Creek Conservation Corridors (b)

Prime farmland outside and adjacent to the southern Georgetown USB

Historic Districts (c)

NOTES:

While all rural lands would be generally eligible for development rights purchase, these areas would be targeted for purchase of development rights through a weighting system. Public purchase of development rights should only be within these areas.

- a. See Environmental Quality Element, Section III, for further definition of the selected Environmentally Sensitive Areas listed above, which are to be included in this program.
- b. Floodplain management policies will protect most creek conservation lands. However, a few critical properties outside the floodplain with special scenic and natural qualities may need to be targeted for involvement in the TDR program.
- c. See Historic Resource Management Element for definition of historic districts.

C. GOALS, OBJECTIVES, AND POLICIES FOR PROTECTION OF ENVIRONMENTALLY SENSITIVE AREAS AND RESOURCES

These include general goals, objectives, and policies for protecting environmental resources, especially water quality (Goals 1 through 4). Some of these environmental goals are also found in the Growth and Land Use Element of the Plan. Policies for particular areas, such as Creek Conservation Corridors, are also outlined (Goals 5 through 9).

1. All growth affects the environment. However, the kind of growth that would degrade environmental quality is not desired. Instead, growth should capitalize upon and highlight Scott County's special environmental qualities.
2. Locations and types of growth should be guided by principles of protecting groundwater, surface water, air quality, floodplains, and prime farmland, in balance with other community goals for development.
 - 2.1 Areas with a concentration of sensitive resources or areas prone to hazards to human health and safety should require extensive analysis prior to development, or should be left undisturbed as permanent open space. Examples include concentrations of sinkholes, floodplains, and extremely steep slopes.
 - 2.2 Development should be sensitive to the natural characteristics of the land where feasible. Where development is compatible with protection of environmentally sensitive areas and resources, lower density or clustered development is desirable so that mass grading and alteration of the land is not necessary.
3. Residential growth should continue to occur in the rural area. However, rural growth should be located and clustered so that it is more compatible with the traditional Scott County countryside, and to minimize impacts to farmland, the environment (especially water quality), and public services.
4. Water quality shall be protected through management of sewage treatment, hazardous and solid wastes, agricultural practices, urban development, governmental services, and other potential sources of pollution.
 - 4.1 Create a monitoring system to guide efforts to protect water quality.
 - Combine all known water quality data and interpret it for decision-makers and the public, to demonstrate clearly what problems exist and to help prioritize action.
 - What pollutants exist, and which ones are the most serious? What are the likely causes?
 - Which water sources are most affected?
 - Publicize the report widely, to educate Scott Countians about their role in protecting water quality.
 - Work with the Division of Water, GMWSS, the Health Board, and other appropriate agencies to set up an ongoing monitoring program for key water resources, to answer these questions.
 - Which water resources and pollutants need to be added to the testing program?

- Which pollutants get worse and which ones improve?
- Are water quality protection programs working? What changes are needed?
- What are the water quality impacts of rural development policies (septic systems)? Should these policies be amended?

Other water quality protection policies are integrated throughout the Plan.

5. CREEK CONSERVATION CORRIDORS AND MINOR WATERWAYS

The scenic, recreational, and environmental quality of Creek Conservation Corridors should be protected with policies that ensure responsible floodplain management, encourage special sensitivity in public and private development projects, and support acquisition of land or easements for public use and enjoyment.

Management of development and land use along minor waterways should minimize potential for erosion and negative impacts from increased runoff and should encourage maintaining natural qualities of the waterways.

5.1 Implement the C-1 (Conservation) Zone as a comprehensive floodplain management, water quality, and scenic protection program.

- The Planning Commission should amend the C-1 zone and subdivision regulations to incorporate policies of this Plan, and should initiate rezoning of designated Creek Conservation Corridors (Maps 3 & 4) to C-1. Those within urban ser-

vice boundaries should be first priority.

Currently, there are some properties in Georgetown and smaller communities where zoning for residential, commercial, and industrial development goes to the center line of a creek, following property boundaries. This leads to misunderstanding on the part of the property owner as to the development potential of the floodplain. To institute these policies concerning floodplain management, the Commission should act to rezone the floodplain to C-1. This could also include steep creek bluffs and sensitive riparian habitats and tree stands within creek conservation corridors, where it is feasible to identify them. The boundaries must be estimated for the area-wide rezoning based on the Army Corps of Engineers designated elevation, or that designated by a special hydraulic study of the floodplain, as shown on the computer-generated topo map. The exact boundaries of the C-1 must be determined on a case-by-case basis as development is proposed for a property and it is surveyed. At that time there could be further study of slopes and riparian habitats that may need to be included in C-1.

5.2 Protect water quality of creek conservation corridors and minor waterways, for public and private domestic use, irrigation, and recreation.

- Perform a water quality assessment and plan with priorities for action, especially for creeks that supply municipal drinking water.
- Require erosion control of areas in development projects draining to creeks and minor waterways, and require adequate replanting of ground cover. Encourage this in agricultural operations. While grading is necessary for most development, sensitivity to erosion control includes minimizing grading and disturbance to natural

ground for development projects adjacent to Creek Conservation Corridors.

- Prevent and clean-up agricultural/domestic chemical dumping (see Solid Waste Management). Educate developers/builders about the importance of proper storage and disposal of paint, tar, chemicals, etc.
- Identify and abate all untreated waste discharges, including surface and industrial runoff that contains contaminants.
- Ensure adequate treatment capacity at municipal treatment plants and reduction of stormwater infiltration and pass-through (see Community Facilities section). Install improved back-up and monitoring systems for pump stations to eliminate as much as possible raw sewage spills to creeks.
- Approval of new or expanded quarrying operations should be subject to a materials storage and erosion control plan that will protect water resources. Existing quarries should also be encouraged to implement such a plan.
- Relocate and properly store road construction materials to prevent runoff to creeks.
- Actively seek effective alternatives to road salts on roads near major creeks.
- Septic systems shall not be located within designated 100-year floodplains.

Since all urban storm drainage eventually reaches creeks, the following should apply to all land uses, not only within the creek protection corridors:

- Commercial and governmental auto and truck wash water should be discharged

to the sanitary, not storm, sewer system.

- Reduce trash and contaminants in urban runoff to creeks. Large parking areas should not discharge direct to creeks where feasible. Trash should be screened from runoff, and retention areas should be used to filter oil and grease, etc. The Commission should consider whether federal laws concerning stormwater monitoring should be applied to Scott County prior to the 1992 deadline.

5.3 Protect floodplains from encroachment, filling, debris obstructions, and development that would reduce available floodplain area or increase property damage due to flooding.

- Require C-1 zoning of creek conservation corridors, including the floodplain, whenever property adjacent to creek is rezoned. The C-1 Zone should be amended for a complete floodplain management program.
- No fill or obstruction of floodplain in creek conservation corridors should be allowed except under one or more of the following conditions:
 - If compensated by additions to the floodplain storage volume. However, this should be only a minor change to topography, should not be accomplished at the expense of natural creekbank vegetation, and should not alter the natural flood channel or stream hydrology sufficient to cause bank instability, siltation, or erosion.
 - If a project will provide a significant public benefit so that negative impacts of the fill and development are balanced and the policies and objectives of the conservation corridor are substantially met. This should be for unique situa-

tion, such as pre-existing commercial zoning within the conservation corridor.

- If a study shows that some degree of fill and development will not raise the floodplain and is consistent with the policies and objectives for creek conservation corridors. This study must fully consider impacts of projected cumulative development and fill for the entire corridor, and must fairly allocate fill and development potential among properties.
- Development should not occur within creek conservation corridors, except where it is compatible with the recreation, scenic, and natural qualities of the creek and ensures protection of life and property from floods, as outlined in these policies and objectives. This should apply to both public and private actions, except public projects such as bridges or sewage treatment facilities that cannot occur without floodplain fill and development. See Figure 4 for examples of compatible land uses.
- For minor waterways, land use and development review should encourage sound drainage practices and should minimize potential for erosion and negative impacts downstream due to increase in runoff.
- Flood control, storm drainage, and bridge improvements should be designed for minimum disturbance of natural creek banks and vegetation where feasible. Explore bio-engineering techniques (use of natural vegetation) to stabilize creekbanks, rather than rechannelization, concrete, rip rap, etc.
- A storm drainage study should verify the actual location of the Elkhorn 100-year floodplain. Assumed floodplain limits should also be designated for waterways outside the limit of the Corps

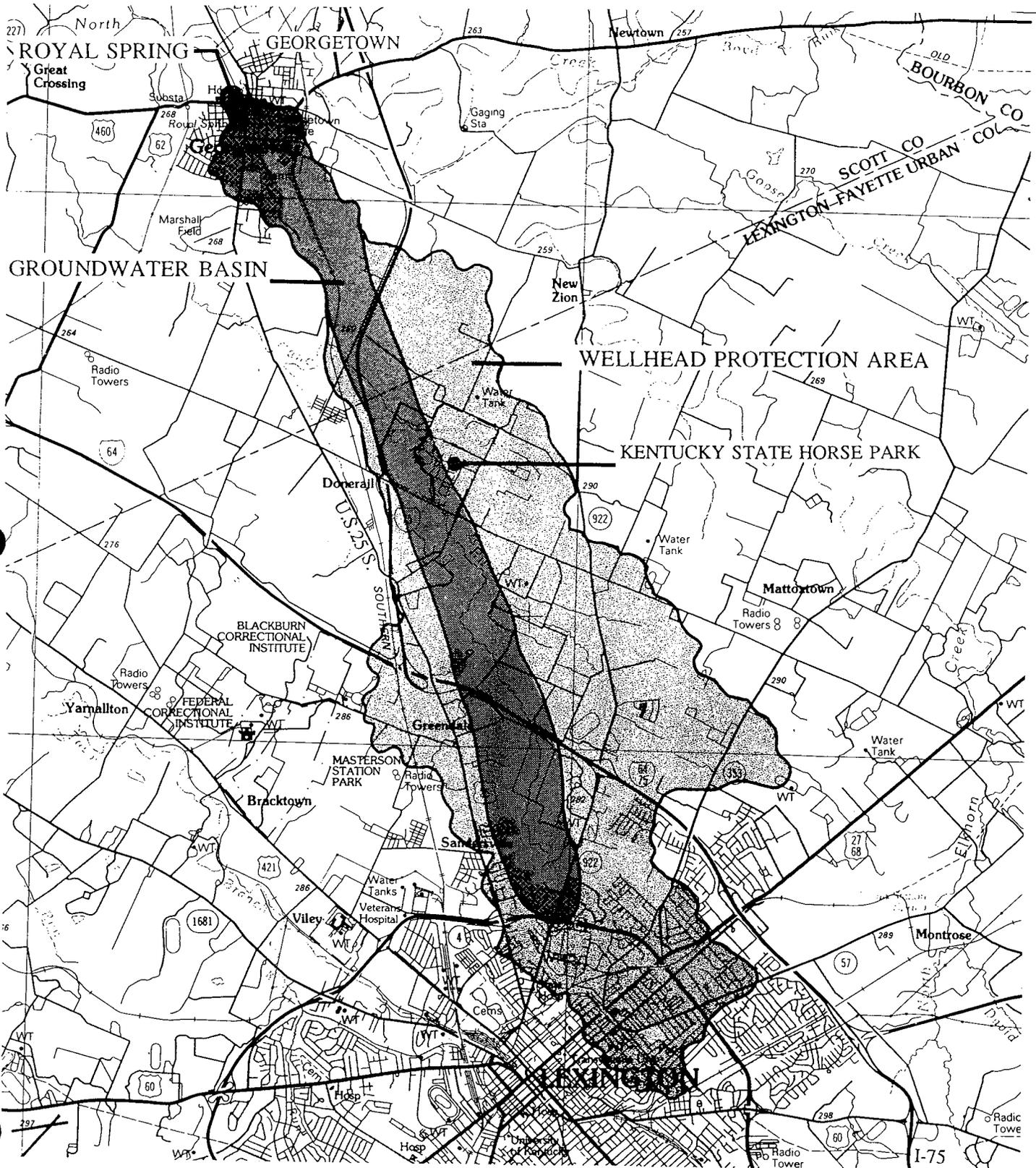
of Engineers study. Assistance should be requested from the State Division of Water, Environmental Protection.

- Establish a publically-funded creek clean-out program to remove major creek obstructions that increase flooding or impede recreational uses. Work with the Kentucky Transportation Cabinet for regular clean-out of debris at State bridges. Perform an annual evaluation of debris locations to prioritize those needing cleanout.
- 5.4 Protect the scenic quality of the creeks as elements that define the rural and urban character of Scott County and Georgetown and enhance the attractiveness of residential and commercial areas.
- Encourage viewshed protection at special scenic locations near creek conservation corridors, especially at entrances to Georgetown, through clustering, development rights transfer, and easements.
 - Creek bank and vegetation protection within creek conservation corridors - Avoid disturbance to natural creek vegetation in new development where feasible. Where a development project alters creekbanks and disturbs vegetation, bank stabilization and relandscaping must be required. This should apply to both public and private projects.
 - For minor waterways, work with property owners during development review to encourage preservation of natural creekbanks and vegetation, through clustering, transfer of development rights, etc.
 - Landscape enhancement - Encourage developers and landowners to undertake bank clean-up and relandscaping where creek banks have been damaged in the

ENVIRONMENTAL QUALITY ~ MAP 1
 ROYAL SPRING AQUIFER RECHARGE AREA

GEORGETOWN-SCOTT COUNTY COMPREHENSIVE PLAN

MARCH 1991



INFORMATION SOURCE: FITZMAURICE AND SENDLEIN: THE ROYAL SPRING WELLHEAD PROTECTION AREA STUDY, UNIVERSITY OF KENTUCKY, DEPARTMENT OF GEOLOGY, 1990. BASE MAP SOURCE: U.S.G.S.



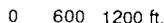
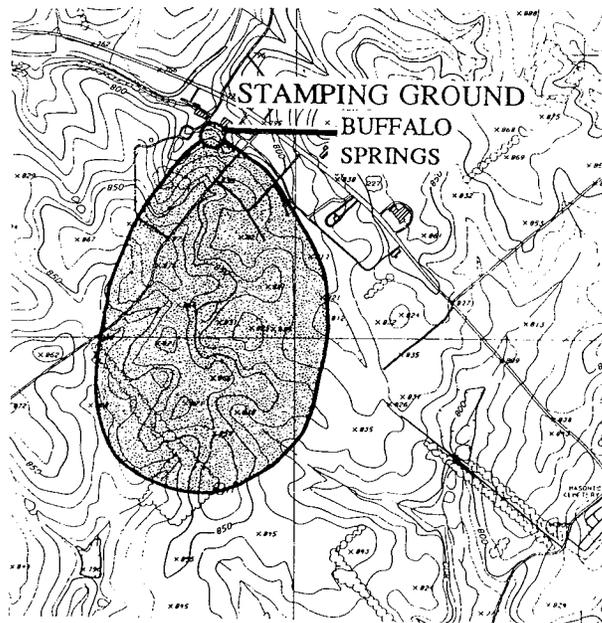


ENVIRONMENTAL QUALITY ~ MAP 2

SPRINGS AND AQUIFER RECHARGE AREAS, SCOTT COUNTY

GEORGETOWN-SCOTT COUNTY COMPREHENSIVE PLAN

MARCH 1991



INFORMATION SOURCE: THRAILKILL: WATER RESOURCES RESEARCH REPORT #136:
GROUND WATER RESOURCES IN THE INNER BLUEGRASS KARST REGION

BASE MAP SOURCES: STAMPING GROUND: PHOTOSCIENCE, INC./PROCTOR DAVIS RAY ENGINEERS, AND U.S.G.S.





CREEK CONSERVATION CORRIDORS AND MINOR WATERWAYS IN GEORGETOWN

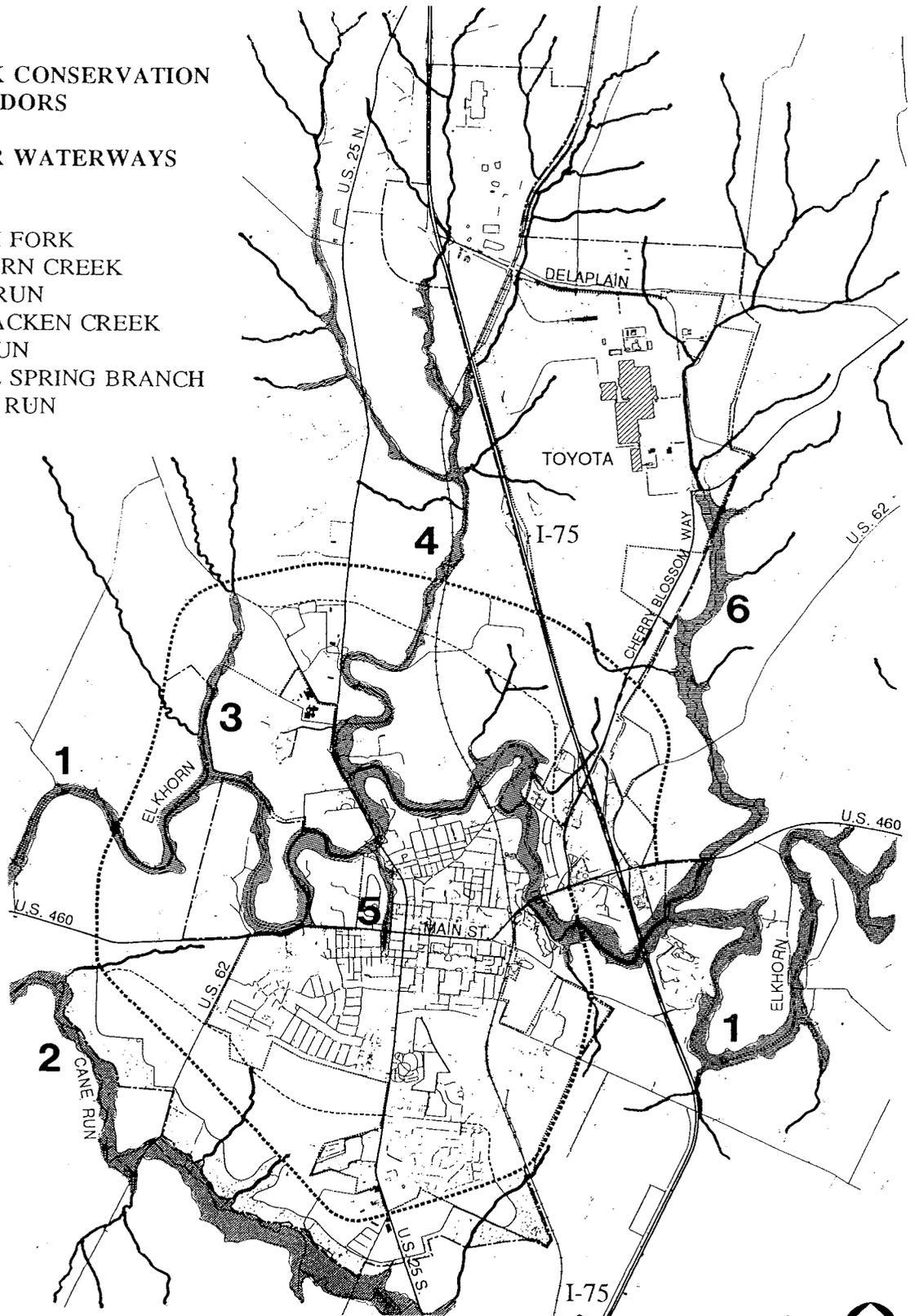


CREEK CONSERVATION CORRIDORS



MINOR WATERWAYS

1. NORTH FORK ELKHORN CREEK
2. CANE RUN
3. MCCrackEN CREEK
4. DRY RUN
5. ROYAL SPRING BRANCH
6. LANES RUN



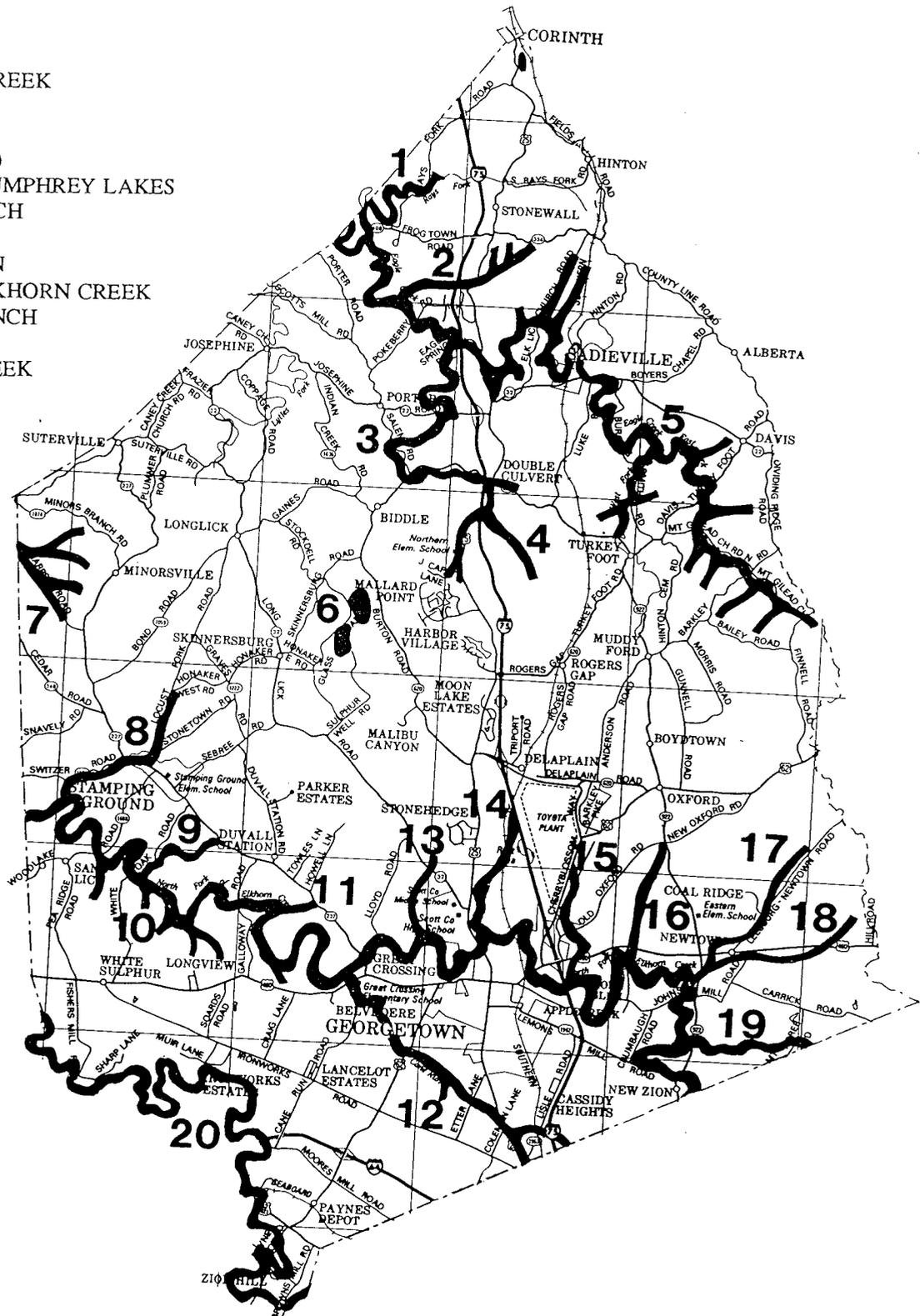


CREEK CONSERVATION CORRIDORS IN RURAL AREAS

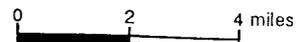
GEORGETOWN-SCOTT COUNTY COMPREHENSIVE PLAN

MARCH 1991

1. RAYS FORK
2. MILE RUN
3. LITTLE EAGLE CREEK
4. WOLF BRANCH
5. EAGLE CREEK
(West & East Forks)
6. PARRISH AND HUMPHREY LAKES
7. OAKLAND BRANCH
8. LOCUST FORK
9. MCCONNELL RUN
10. NORTH FORK ELKHORN CREEK
11. BIG SPRING BRANCH
12. CANE RUN
13. MCCRACKEN CREEK
14. DRY RUN
15. LANES RUN
16. MILLERS RUN
17. CHERRY RUN
18. BOYD RUN
19. GOOSE CREEK
20. SOUTH FORK ELKHORN CREEK

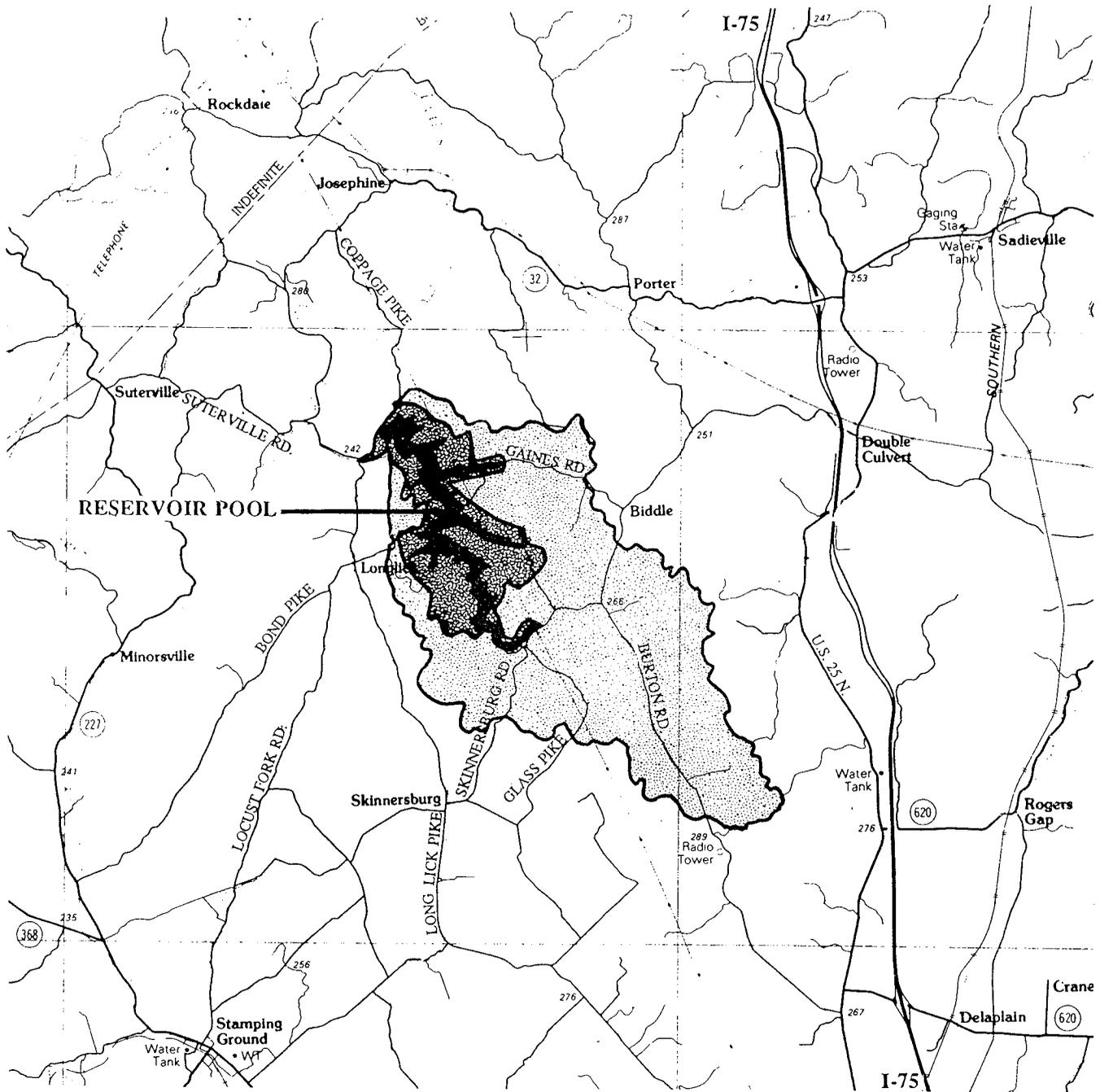


BASE MAP SOURCE: BLUEGRASS DRAFTING CORP.

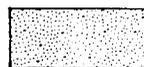




SCOTT COUNTY RESERVOIR PROTECTION AREA



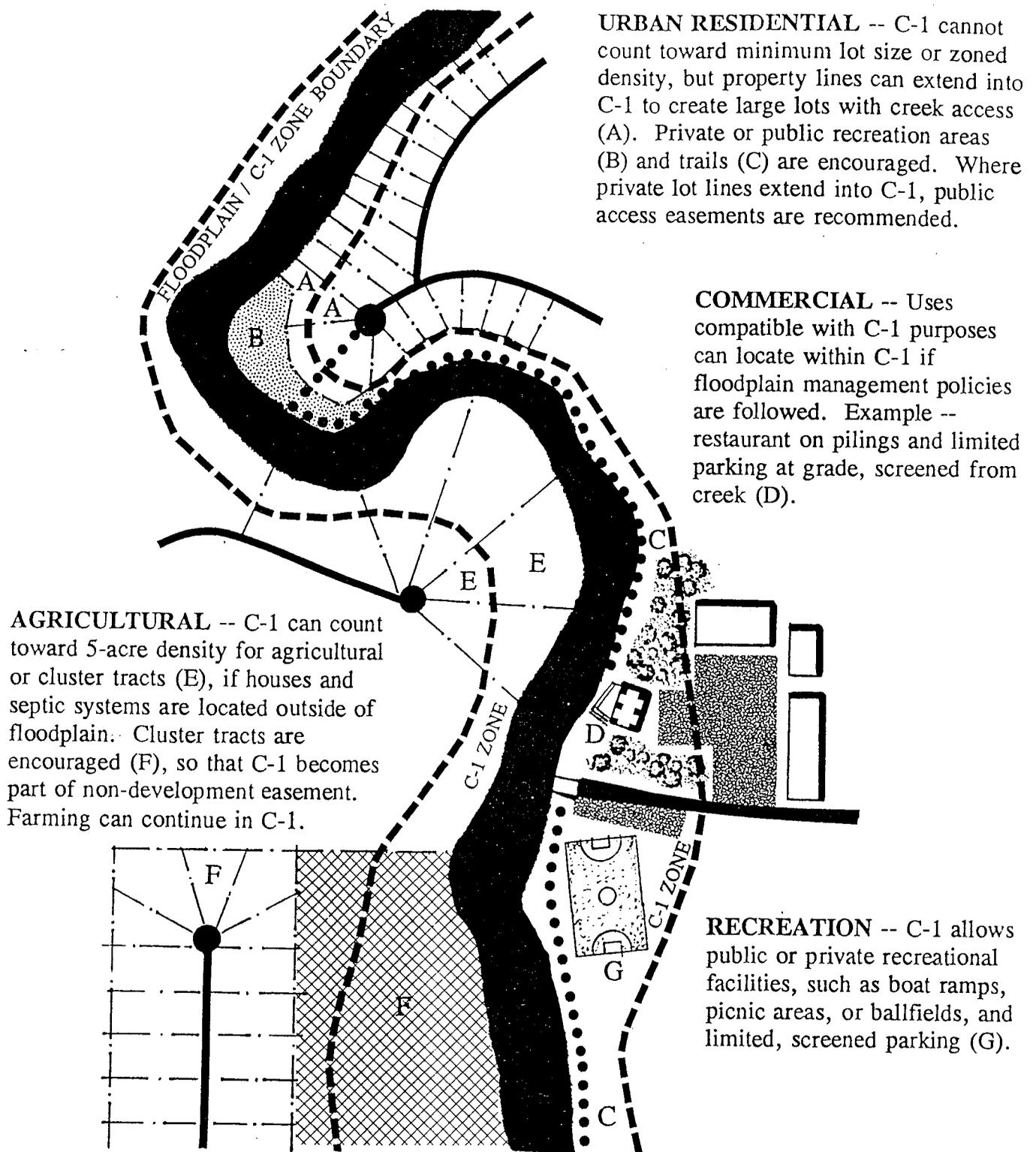
PUBLIC OWNERSHIP OR EASEMENT AREA



WATERSHED PROTECTION AREA







URBAN RESIDENTIAL -- C-1 cannot count toward minimum lot size or zoned density, but property lines can extend into C-1 to create large lots with creek access (A). Private or public recreation areas (B) and trails (C) are encouraged. Where private lot lines extend into C-1, public access easements are recommended.

COMMERCIAL -- Uses compatible with C-1 purposes can locate within C-1 if floodplain management policies are followed. Example -- restaurant on pilings and limited parking at grade, screened from creek (D).

AGRICULTURAL -- C-1 can count toward 5-acre density for agricultural or cluster tracts (E), if houses and septic systems are located outside of floodplain. Cluster tracts are encouraged (F), so that C-1 becomes part of non-development easement. Farming can continue in C-1.

RECREATION -- C-1 allows public or private recreational facilities, such as boat ramps, picnic areas, or ballfields, and limited, screened parking (G).

**FIGURE 4
CREEK CONSERVATION CORRIDORS
EXAMPLES OF COMPATIBLE LAND USES**

Note: Not to scale. This does not represent an actual section of the creek or actual zoning.

past. Seek public (such as federal Urban Forestry grants) or private funds to support these efforts.

- Public utilities and infrastructure may be located within creek conservation corridors only when they cannot be located elsewhere, and should be located outside of creek vegetation areas whenever feasible. The proposal for a gravity-flow sewage collection system paralleling creeks should be re-examined to ensure that this would not necessitate major impacts to creek vegetation and scenic qualities.
- Lakes may be developed within creek conservation corridors if the recreation, scenic, water resource, and habitat value of the lake would be greater. Flood control may be a consideration, if other values are not diminished. (There are no local limitations on lakes and agricultural ponds on minor waterways.)
- C-1 zone - include steep creek bluffs with severe development limitations and major stands of vegetation associated with the creek in C-1 zones.

5.5 Enhance use of Elkhorn Creek as a resource for recreation and tourism and a unique attraction for development within the urban service boundary.

- Support efforts to secure public access to creek and to create a trail system along its banks.
- Encourage appropriate residential and commercial development to locate near to creek conservation corridors, to take advantage of the special scenic and recreational features.
- Encourage design of development that allows public or private recreational or view access to the creek.

- Development should be sensitively designed and buffered for an attractive appearance from creek recreation areas.

5.6 Protect natural environmental qualities of the creeks as special habitats for plants and animals, and make them accessible for educational purposes. (Differences in treatment of creek conservation corridors and minor waterways are set forth under Objectives 5.3 and 5.4.)

- Policies to protect water quality and prevent damage to creekbanks will accomplish this.
- Establish an interpretive creekside park on the Elkhorn in Scott County with nature trails and educational exhibits.

5.7 Protect and showcase historic resources located along and within creek conservation corridors.

- Identify creek-related historic resources and encourage public access to them.
- Seek protection through local historic district and National Register designation (see Historic Resource Management Plan, Section II.B & C).

5.8 Encourage regional protection of creek conservation corridors:

- Encourage surrounding counties that share use of and access to Scott County creeks to establish similar protection policies. Water quality is most crucial for the North Elkhorn, South Elkhorn, and Cane Run creeks and tributaries (Fayette and Woodford Counties).
- Work with surrounding counties to protect and enhance creeks as regional recreation resources.

6. RESERVOIR WATERSHED PROTECTION AREA

To ensure that the reservoir water will remain pristine, it is essential to adopt special development and use policies for the entire drainage area, which is shown on Map 5.

Land use, agricultural, and recreational activities within the reservoir watershed protection area should be carefully managed to ensure the pristine water quality of the reservoir once it is constructed.

6.1 Agricultural Uses: Generalized farming shall and will be permitted with no restrictions. Once the reservoir is built, the Soil Conservation District should give special attention and assistance to farmers within the protection area to encourage "best management practices" that will minimize agricultural runoff such as pesticides, fertilizer, silt, animal waste, etc.; however, nothing herein contained should be interpreted to inhibit or discourage normal agricultural practices.

6.2 A-1 Rural Residential development within the protection area shall be located and designed to minimize urban runoff or impacts from inadequate sewage treatment.

- If a property is partially located outside of the reservoir protection area, development shall be clustered on that part of the property if feasible.
- On-site sewage treatment systems (septic, lagoon, etc.) shall be located and designed to minimize risk of failure and contamination to the reservoir.
- Rural residential development should be kept to a minimum within the reservoir protection area. The Transfer of Development Rights program should target

this area for purchase of development rights, by weighing these rights more heavily than other development rights in the northern half of the county.

- Erosion and siltation of the reservoir shall be strictly controlled and prevented.
 - Additional package sewage treatment plants and pump stations shall not be located within the protection area and shall not discharge to any land or waterway within the protection area. New sewage treatment plants and collector system pump stations already authorized by zoning approvals must have protection measures to prevent spills from reaching the reservoir, such as alarms, back-up generators, on-site replacement equipment, and overflow storage.
 - Additional rural PUD's (not currently zoned) shall not be allowed within the reservoir watershed protection area.
- 6.3 Recreational use of the protection area shall not degrade reservoir water quality.
- Parking lots and camping areas shall be located and designed to minimize harmful runoff to the reservoir.
 - Sewage treatment systems must follow the same guidelines as for rural residential development above.
 - Recreational use of the water should be carefully controlled to limit potential contaminants.
- 6.4 Solid Wastes will be managed and properly disposed outside of the protection area to prevent any leachate or contaminated runoff from reaching the reservoir.
- No junkyards or landfills will be allowed within the protection area.

- The Fiscal Court should strictly enforce prevention and clean-up of illegal dumps within the protection area.

6.5 Flood Inundation Area: Development should be controlled in the area that would be flooded if the dam fails; new construction should be minimized and property owners should be fully notified of the situation.

7. AQUIFER RECHARGE PROTECTION AREAS

Land uses and development within aquifer recharge protection areas shall be carefully controlled to protect surface and underground water quality.

7.1 Land uses that store, transport, or generate hazardous materials should be carefully controlled within aquifer recharge areas.

- Strategies concerning this are outlined in the Hazardous Materials section of the report.

7.2 There should be no further expansion of the urban service boundary for urban development into the Royal Spring Aquifer Recharge Area. Planned land uses for lands within the urban service boundary that are currently zoned A-1 should only be those that do not present potential for contamination of the aquifer.

- Aquifer recharge areas should be a high priority for purchase of development rights, with the Royal Spring recharge area as the highest priority.
- The Georgetown Urban Service Boundary should not be extended to include new lands within the Royal Spring aquifer recharge area for urban development.

- See Hazardous Materials Objective 11.4 and policies concerning land uses for the aquifer recharge area within the Urban Service Boundary.

- If a property is partially located outside aquifer recharge areas, development should be clustered on that part of the property, if feasible.

- Aquifer water quality should be monitored to identify potential sources of contamination, such as concentrations of septic systems, and to track the impact of rural development.

- The Lexington-Fayette Urban County Government should be strongly encouraged to adopt similar urban service boundary, land use, and rural clustering policies to protect the Royal Spring aquifer. The current land use plan for Lexington/Fayette includes industrial uses within the recharge area. The LFUCG is requested to not allow an increase of industrial designations allowing use of hazardous materials within the recharge area and to carefully control the industries permitted on currently-designated land, as outlined in the Hazardous Materials policies (Section V.C).

7.3 Sinkholes should be treated sensitively in development projects to avoid geologic hazards, storm drainage problems, and contamination of aquifers.

- The Planning Commission should institute a permit process to carefully control fill and development within sinkholes. Regulations should be adopted to allow the Commission to establish non-buildable areas within sinkholes according to soils, geology, hydrology, or other related factors that limit development capability.

- Drainage from developed areas into sinkholes should be carefully controlled. Urban runoff and storm drainage should be directed away from sinkholes within aquifer recharge areas.
- Development should not increase the level of ponding or cause flooding in a sinkhole or closed drainage area unless approval is secured from property owners affected by the ponding or flooding.
- Septic systems within the drainage area of sinkholes should be located to prevent contamination of aquifers or contamination of ponded water within the drain field. No septic systems should be located within a sinkhole or should discharge into a sinkhole.
- The Planning Commission should maintain an inventory and map of known sinkholes and should establish a process for identifying new sinkholes during development review.

7.4 The County should give priority to an educational and regulatory program to stop use of sinkholes for dumping and garbage disposal.

8. SCENIC AND HISTORIC RESOURCES

Preservation of scenic resources should be encouraged, and development should be sensitive to maintaining the landscape, natural, cultural, and historic qualities that make scenic resources and areas special. (See page 23 concerning interpretation of scenic policies.)

8.1 Conduct an inventory based on objective criteria to identify Scott County's significant scenic resources, such as certain rural roads, important scenic views, historic areas, and places with outstanding natural

beauty. Scenic resources are those that are visible and highly important to the public overall, not just to individual property owners.

8.2 Identify scenic areas with special significance that should be protected from change by public purchase, transfer of development rights, scenic easements, and other strategies that compensate the property owners.

8.3 For other areas, adopt scenic protection plans with standards that will help new development be compatible with scenic qualities, while maintaining the development rights of property owners.

8.4 Identify rural routes that should be preserved from major changes by road improvement projects, except where current safety problems exist. When road improvements are necessary, pursue alternative designs that will preserve scenic features where possible. Protected scenic rural roads should not be used as traffic access to major new development, if the traffic increase would create the need for major road improvements. (See also Transportation Plan policy on "constrained roadways.")

- Rural clusters would not be considered "major development."

8.5 Stone walls and natural views of Elkhorn Creek and other major waterways from public roads are scenic resources that should be protected in the development review process.

- Preserve stone walls, especially those along roads, in new development and road improvement projects where feasible.
- Perform an inventory of Scott County's stone walls to create a record and way to monitor their condition and preservation.

- Encourage protection of significant views of the Elkhorn Creek and other major waterways through clustering of development on other parts of the property, transfer or purchase of development rights, easements, etc.

9. RURAL AND URBAN LANDSCAPES AND NATURAL HABITATS

Development should be designed with sensitivity for the shape and characteristics of the land, natural vegetation, and habitats of significant animal and plant species.

9.1 Development should consider the capabilities and special design requirements of hillsides and clay shale soils.

- For the purposes of these policies, the percent grade of steep slopes/hillsides will be defined through the subdivision regulations process.
- In general, locate roads and development that require mass grading, such as higher intensity urban uses, on the more level areas of a site, such as ridgetops and/or lower slopes, and keep drainage swales open and natural.
- Step development with the topography to reduce cut and fill.
- Determine need for special building and grading regulations to address hillside soil and drainage conditions.

9.2 Encourage the "greening" of Scott County by preserving trees and establishing new landscaping in urban areas.

- Encourage preservation of hedgerows, major tree stands, trees lining roads, and

large trees, particularly in the southern half of the County. This should be weighed as a factor in determining the location of rural cluster subdivisions, along with the primary factor of preserving prime farmland. This shall not limit in any way the clearing of trees necessary for agricultural or tree farming operations. Through educational programs, farmers should be encouraged to replace trees that are removed.

- Pursue tree planting programs for city streets, downtown areas, parks, etc. Target major entrances to Georgetown for attractive landscaping.

- Use new landscaping to buffer incompatible land uses and to soften the visual impact, heat, and other environmental impacts of paved areas. Existing hedgerows and major trees should be preserved and incorporated in landscape plans for new development where feasible.

9.3 Development within or near habitats of significant plant and animal species that may be discovered or identified in the County should be sensitive to maintaining habitat for their survival.

- Conduct an inventory to identify and locate habitats for species that are threatened, rare or endangered in Scott County, and species that are valued for hunting, fishing, or recreation.
- Land use and development policies should encourage preservation of habitats important to the survival of only threatened, rare, or endangered species and wildlife corridors generally.

IV. SOLID WASTE MANAGEMENT

A. SUMMARY

Solid waste has become the key environmental issue of the 1990's. In recent years Scott County and Kentucky as a whole have seen an increase in awareness about the challenge of reducing the stream of waste we produce through recycling and safely disposing of what remains. "A clean place without junk or roadside dumps" was rated by Scott Countians as the most important community quality in the Wilker-

son Survey (Figure 5). Scott Countians are also concerned about the link between properly controlling the disposal of solid and hazardous wastes and protecting the quality of underground and surface water resources. Of the highest ranked environmental issues on the Rural Property Owner's Survey, water quality ranked #1, and illegal dumps, solid waste management, hazardous materials, and pesticides/herbicides ranked #2, 4, 5, & 9 respectively.

FIGURE 5 SOLID WASTE MANAGEMENT SUMMARY OF COMMUNITY ATTITUDE SURVEYS

IMPORTANCE OF SOLID WASTE ISSUES

- Solid waste management issues received an overwhelming response from the majority of Scott Countians when asked to rate factors of importance to the community.
- "A clean place without junk or roadside dumps" was rated as the single most important attribute of a quality community. This was rated as "extremely" or "very" important by 94% of Scott County residents surveyed, yet only 44% felt that the community did an "excellent" or "very good" job of providing for this environmentally sensitive issue. (W)
- Scott County rural property owners were asked to rate a series of topics as seen as a problem in Scott County and in addition to rate them as being perceived as minor or major. "Illegal Dumps" and "Solid Waste Management" were ranked at number 2 and number 4 respectively and as major problems (R.P.).

SUPPORT FOR MANDATORY TRASH COLLECTION AND RECYCLING

- 67.4% of rural property owners replied that they would use a trash collection service if made available to them, while 58.8% of residents felt the need for county-wide mandatory trash collection.(R.P.)
- 82.6% of rural property owners responded that they would participate in a recycling program if made available to them.(R.P.)

(W) = Wilkerson Survey

(R.P.) = Scott County Rural Property Owners Survey

Both the County and City governments have taken a role in solid waste management. Scott County has adopted a solid waste management plan as required by State law, and the new Solid Waste Management Director has initiated planning, educational, and dump clean-up activities. The City of Georgetown has developed a landfill to meet current State requirements and best management practices, and is planning for two new facilities to meet future needs and toughened regulations.

No single government agency, however, can meet these challenges alone. A comprehensive solid waste management strategy is needed, especially if universal collection is instituted. The City and County will need to work closely together to coordinate waste collection, landfill planning, recycling, control of dumping, and educational efforts. City and County officials must also continue and strengthen their involvement in planning at the regional level. New regulations for landfills may make solid waste disposal our most costly utility bill in the future, and regional landfills may be a more cost-effective solution. Recycling also will be most effective at a regional level. Solid waste management will require a full-time planning effort and a strong local governmental commitment within the next five years.

B. BACKGROUND AND ISSUES

1. Solid Waste Management Plan and Ordinance

The County has adopted a Solid Waste Management Plan (SWMP) and ordinance in accordance with State law (Figure 6). A newly-hired Solid Waste Management Director has begun to implement the strategies of the plan and ordinance, with a focus on education, recycling, and clean up of illegal dumps.

The State Division of Waste Management has notified Scott County that the policies of the Solid Waste Management plan are a good frame-

work, but that the specific strategies for carrying out these policies must be stated in more detail when the Plan is updated. An updated Plan is required by December of 1990.

Relationship of Solid Waste Management Plan to Comprehensive Plan: Proper management of solid wastes is an important issue for the future growth of Scott County and for the Comprehensive Plan because of the implications for protection of the environment, controlling the costs of growth, and ensuring adequate landfill capacity to accommodate growth. Accordingly, the SWMP is considered to be a background study to the Comprehensive Plan, which hereby incorporates its goals and policies. In addition, the Comprehensive Plan recommends more detailed actions for accomplishing the policies of the SWMP, and encourages the County to consider these for incorporation in the 1990 Update to the SWMP and ordinance. The cities of Georgetown, Sadieville, and Stamping Ground are also encouraged to participate with the County in solid waste planning.

2. County-wide Waste Collection

The current SWMP recommends an optional, not required, County-wide waste collection service. The Solid Waste Management Director is working on a system for making county-wide collection available. Service areas are being drawn for the whole County, and private collectors will be required to cover an entire service area, rather than choosing their own boundaries. Private collectors cannot reject a customer due to inaccessibility.

However, there is support for a stronger waste collection program. Illegal dumping is likely to continue unless waste collection is required. The Rural Property Owner Survey found substantial support for county-wide mandatory trash collection: 59% of the 391 respondents agreed that it is needed, and 67% would use a trash collection service if it were available.

In the 1992 Legislative Session, the State may

require mandatory collection of solid waste, State-wide. However, if Scott County institutes mandatory collection within the next two years, grant funds are available from the State to help accomplish it. Public sentiment appears to be in favor of this action.

3. Landfills

City of Georgetown Landfill and Future Improvements: Scott Countians are fortunate to have a well-managed and controlled landfill, owned by the City of Georgetown. However, the life of the landfill is limited, and new State regulations are likely to greatly add to the cost of future waste disposal. The City-owned landfill will reach full capacity in 2-3 years. A 100-acre area adjacent to the landfill has been designated for future expansion. (Georgetown Landfill Study) New regulations will take effect in 1992, and tipping fees are expected to increase greatly for landfills constructed to the new standards.

The City is proposing two new landfill facilities to meet future capacity needs and the new, more stringent State regulations. One facility is a "contained" landfill which will accept municipal solid waste. It will have elaborate liners, cap, leachate collection, and groundwater monitoring. It will be very costly to construct.

The second facility is a "construction/demolition debris" landfill. It will accept bricks, cement blocks, wood, brush, etc. Because its wastes do not generate leachate, the design requirements are less stringent and construction costs are lower. This facility will save valuable air space in the contained landfill, thus minimizing overall disposal costs.

Location of Landfills: Future landfills must meet locational criteria for adequate traffic and heavy truck access, suitable geology, remoteness from areas with an existing or planned concentration of population, and visual screening. The landfill siting study for the City of Georgetown is an example of the type of criteria that should

be met.

Some developers have requested several more convenient locations for disposal of demolition debris. According to Nesbitt Engineering, however, the limestone geology in the southern half of the County would not be suitable. Although the liner requirements are less stringent (2' clay liners), there will still be costs associated with construction of the landfill. Most importantly, it is crucial that a demo landfill is staffed at all times to ensure that only proper materials go into it. However, Scott County does not generate enough debris to financially support construction costs or staff at more than one site. These factors support a single demolition landfill, centrally located and managed at the existing City site. Use of this demo landfill must be strictly enforced.

Extending the Life of the landfill: Most landfills, including the Georgetown Landfill, must meet the design standards of the new State regulations by July 1, 1992. The City has applied for a vertical expansion which will allow the landfill to remain in operation for two years. Other strategies such as recycling and composting of yard waste could help extend the life of the existing landfill. Toyota's waste alone accounts for over 40% of the matter going into the landfill, and other options for recycling or disposal of their waste should be examined. The need for other options will become urgent if there is a major expansion at Toyota and increase in their waste stream.

Need for Regional Planning: Because of the increased cost of future landfilling, a regional landfill may be the only cost-effective alternative. It is essential to have a study made of the projected cost of future tipping fees and the service base needed to keep these costs reasonable. A regional landfill would spread the cost of solid waste management over several counties. It is important to note that operating costs for a regional landfill could continue many years after the landfill is closed, due to monitoring requirements.

There are two options: participation by Scott County waste haulers in a major regional facility that combines landfilling, separation and recycling, and possibly incineration; or acceptance of out-of-county waste at the City landfill. Currently, the landfill does not accept out-of-county waste except Midway sewer sludge and waste brought from private haulers whose routes straddle the county lines. This amount is negligible. According to Nesbitt Engineering, solid waste consultants to the City, the City and County should be able to fund the new landfills initially without accepting out-of-county wastes.

Scott County is in a good location for a major regional facility due to its geology and transportation access. However, there is very little support for accepting out-of-county wastes. If the new facility were planned as a regional facility, the resulting protests would likely delay permit approval and increase application costs. Additional waste streams or participation in a regional facility elsewhere may need to be considered after Scott County residents begin to experience the increased disposal costs necessary to support the new facilities.

Privately-owned landfills should be discouraged. To be financially successful, a private landfill must compete with the City landfill and must accept out-of-County and possibly out-of-state wastes. The decision to have a major landfill of this type in Scott County must be made with full participation by local governments and citizens. Also, with a private landfill, it would be more difficult to ensure day-to-day that regulations concerning acceptable materials that can be placed in a landfill are being met.

Management of Closed Landfills: There are several closed landfills in the Sims Road area, including the previous City landfill and several privately-owned dumps. Landfill practices that were common and accepted at that time have left a legacy of leachate and surfacing garbage. The City has complied with State requirements for monitoring and collection of leachate from the Sims Road landfill, which will require on-going

attention, and is preparing plans for final closure of the site. The location and condition of private dumps should also be identified. The need for clean-up should be determined, and policies are needed to guide future development of these properties.

4. Recycling

The best way to extend the life of landfills and reduce future costs of waste disposal is to reduce the amount of waste we generate. There is both regional and local interest in recycling, as well as potential Bluegrass Add funding assistance. According to the Rural Property Owners Survey, a sizeable 83% of the respondents would participate in a Scott County recycling program. There needs to be a definite plan developed for a local program that is fully coordinated with regional efforts. The City of Georgetown and the County should take a leadership role to institute recycling for business and industry, and should study options for a residential recycling program.

5. Illegal Dumps and Enforcement

Scott Countians believe that illegal dumping is a serious problem. Illegal dumps were ranked as the second highest environmental concern on the Rural Property Owners Survey and a top concern of the Wilkerson Survey. The traditional use of sinkholes, creek banks, and road sides for dumping have polluted groundwater and created serious visual blight. Clean up of existing dumps and enforcement of the new Solid Waste Management Ordinance should be a priority of government officials and the courts. Violators should be made clearly aware of the penalties of non-compliance.

6. Education

Education is one of the strongest goals being pursued by the County's solid waste management program. Irresponsible acts such as littering and polluting can be attributed to a broader behavioral problem. Many people do not under-

stand the environmental hazards they cause. With this in mind, it is clear that the public must be educated in the area of solid waste management. The emphasis on education in the schools and through farming-related organizations should be continued. There also needs to be a stronger effort to inform people of the current local and State regulations and the intention to enforce them.

C. GOALS AND OBJECTIVES FOR SOLID WASTE MANAGEMENT

10. Solid wastes should be managed and disposed so that the amount of waste produced in Scott County is minimized, the cost and capacity for disposal are not a deterrent to growth, and the quality of the environment is protected.

10.1 Solid Waste Management Planning

- Scott County and the three cities should work together cooperatively to plan for and incorporate more specific strategies in the SWMP, in preparation for the required updated plan in 1990.
- The position of Solid Waste Management Director should be full-time to carry out the policies of the SWMP, prepare the updated plan, and enforce the Solid Waste Ordinance.

10.2 County-wide Waste Collection

- Franchising, through the use of private haulers, should make waste collection available to all residents of Scott County. County government should encourage 100% participation in the voluntary program.
- Scott County should seriously consider

instituting mandatory waste collection, which is supported by many Scott Countians. Institution of the program now would qualify the County for state grants. Officials should monitor participation in the voluntary program, and should pursue mandatory collection if lack of participation leads to problems such as water pollution, health impacts, or visual blight.

- If State regulations require mandatory collection county-wide, County officials should diligently pursue full compliance with the law, with an emphasis on educating Scott Countians about the need for collection and creating a cost-effective collection program.

10.3 Landfills

- Develop strategies to lengthen the life of the landfill:
 - Develop a requirement at the new landfill site which will facilitate "on-site" compaction of debris.
 - Implement separate landfill for construction/demolition debris and wood waste, such as from Toyota.
 - Work with Toyota and other industries that produce a large amount of wood waste to find options for waste -- recycling, incineration to produce heat, etc., especially as part of expansion plans.
 - Pursue creation of a composting farm for yard waste.
- City officials are encouraged to consider the financial implications of becoming a regional landfill with a multi-county agreement, or participating in a regional landfill located elsewhere.
- Privately-owned landfills should be

discouraged as long as governmentally-owned landfills meet Scott County's needs.

- Road access and improvements are key issues to address for the new landfill. Landfill capital budgeting should include funds for improvements and on-going maintenance to accommodate heavy truck traffic. Residents near busy roads leading to the landfill need to be protected from the increase in traffic.
- New construction or uses should not be allowed on land underlain by old landfills or dumps, if there is risk to the health of the proposed users or residents.

10.4 Recycling

- Develop a comprehensive local recycling strategy, and participate actively in regional planning efforts related to recycling.
- Government offices should institute paper, glass, aluminum can, and plastic recycling as soon as possible, to show commitment and lead by example.
- Pursue a Scott County collection center as a priority for local funding, with potential funding support from Bluegrass Add. Support the efforts of Georgetown College and private businesses to provide recycling centers.
- State and regional cooperation is needed to create a market for recycled materials. Study the need for regional industries that use or process recycled materials, and support local or regional recruitment efforts. Lobby for State incentives to draw these industries.
- Encourage local leaders to support State legislation to require recycling of bottles.

10.5 Education

- The public should be notified through the press, schools, and farming organizations, that a local Solid Waste Ordinance exists and what it requires.
- Farming organizations (FFA, Soil Conservation Service, ASCS, Farm Bureau) should help educate the farming community about waste management and environmental concerns in rural Scott County.
- Schools should offer educational programs pertaining to waste management and environmental concerns, especially recycling.
- Students should make field trips to the landfill to learn how garbage is disposed and to understand the importance of minimizing the waste stream through recycling and composting.

10.6 Illegal Dumps and Enforcement

- The updated SWMP should include an inventory of former landfills and illegal dumps and junkyards, and should establish a priority system for identifying those dumps for clean up. Possible criteria include: dumps in sinkholes; leakage of hazardous materials; water contamination; health risk; visibility from roads.
- Local regulations should be adopted and enforced to prohibit dumping in sinkholes. A strong education program is needed.
- Enforcement of the Solid Waste Management Ordinance should be given priority by government officials.

V. HAZARDOUS MATERIALS MANAGEMENT

A. SUMMARY

The use of hazardous materials is increasing in our society, in businesses and industries, on farms, and in the home, and this brings increasing risk of accidents or improper disposal that could contaminate the environment. In Scott County there have been a few incidents in recent years -- the benzene contamination of Royal Spring, the illegal dumping of hazardous materials on a Scott County farm, the gasoline truck accident and spill on U.S 421, and the gasoline station spill on South Broadway -- that have aroused the concern of the community. As new industries locate here, the potential for a problem increases.

The sensitivity of our water resources are such that we should not wait for a major spill or dumping with serious consequences before local government takes a stronger role in controlling hazardous materials. It would be better to take a preventative approach, by establishing a local monitoring and enforcement program, strengthening accident response capabilities, and controlling the location and design of industries with hazardous materials to protect sensitive environmental resources.

B. BACKGROUND AND ISSUES

1. The Need for Local Inspections and Regulation

Communities with a growing industrial base often are not aware of the increasing amount of hazardous materials that are used by the companies and are accumulating in storage yards, warehouses, and possibly illegal dump sites. Although the majority of industries and businesses that handle hazardous material do their best to do so responsibly, the experience of many communities has shown that there are

likely to be a few businesses that, through lack of knowledge, carelessness, or intent, improperly store or dispose of hazardous material.

Although there has only been one known instance of illegal hazardous material dumping in recent years within Scott County, the potential that this could become a problem should not be ignored. There have been unofficial reports in Scott County of hazardous materials stored in improper containers and of materials stored together that would be dangerous if combined, according to the Director of Disaster and Emergency Services. The best way to ensure that hazardous materials are used safely is to monitor each business, maintain a list of the typical quantities and kinds of materials, and regularly inspect each site for proper storage, handling, and disposal.

Although federal and state agencies are responsible for regulating hazardous materials, monitoring of whether local businesses comply with the regulations is beyond their means. The State requires reporting of hazardous materials storage and disposal, but this information is not made available at the local level. To improve local monitoring, many communities have instituted their own program. Santa Clara County in California instituted such a program when it was found that improper storage of hazardous materials from Silicon Valley light industries had seriously contaminated aquifers and many municipal water supplies. The Lexington-Fayette Urban County Government has a strong local inspection and regulation program, which is summarized in Figure 7.

Scott County needs this level of protection also. A local hazardous materials control ordinance establishing such a program would require: specially trained personnel; an in-house computer data base system to keep track of

businesses, their hazardous materials inventories, and results of inspection and enforcement actions; and legal assistance. If these are beyond the means of City government, the possibility of contracting with LFUCG's program for skilled services could be considered. The program could be funded by fees from the regulated businesses. A third option would be to educate businesses and citizens about proper handling, and develop the capacity to respond to citizen complaints.

2. Hazardous Materials Accident Response

Accident Response Plans: Another important benefit of a local hazardous materials control ordinance is in the area of accident response. The ordinance could require each business using hazardous materials to develop response plans to deal effectively with spills, leaks, and fires. The State requires these emergency contingency plans only for large users of materials classified as extremely hazardous. Response plans are needed for smaller users as well, such as gasoline service stations or dry cleaners. The response plan would educate the business about the proper actions to take and who to notify, and would help the accident response team quickly identify types of materials involved and the safest containment strategy. Situations such as the gasoline spill on U.S. 25, where the company hosed down the site before notifying the authorities, must be avoided.

Accident Response Team: Local response to accidents involving hazardous materials is coordinated by the Director of Disaster and Emergency Services and the Fire Chief. According to the Director, Scott County and the region is not prepared to deal with a major chemical accident. The cost is too great for local government to have the specialized training or equipment to fully handle major accidents, and assistance from the Lexington and State accident response teams must be relied upon. The State assesses the problem and brings in a company

trained to handle the spill.

However, Emergency Services recommends that Scott County should build the capability to handle smaller spills, such as gasoline stations. The local role would be to more quickly contain the spill and protect the public; clean up and disposal would remain the responsibility of the business owner and EPA. Spade Pipeline is a local resource; the company is certified to clean up problems such as gasoline spills.

Transportation and Truck Routes: The high incidence of transportation of hazardous materials through Scott County on state and federal highways and the potential for accidents cannot be controlled locally. The best strategies to minimize the risk are to lobby for needed roadway improvements, build a skilled and well equipped accident response effort, and ensure that adequate roadways are designated as truck routes. Currently, the use of Main Street through Downtown Georgetown and Military Street, Clayton, and Lemons Mill as truck routes presents too great a risk that a major accident would have devastating consequences. With construction of the southeast bypass, the City and County should strongly push for redesignation of truck routes to more appropriate roads.

3. Controlling Hazardous Materials through Land Use Policies

Protecting Environmentally Sensitive Resources: Because of the sensitivity of Scott County's water resources, it is not desirable to encourage industries that are major generators or users of hazardous materials to locate in the County. As noted above, the potential for accidents while hazardous materials are in transport is something that local government cannot control, and the potential for accidents is increased when local streets are used. Even the best monitoring and regulation program, which may be beyond the financial means of the community, cannot ensure that improper handling, leading to on-site spills

or leakage, will not occur. If it comes down to a choice between economic growth and protecting the environment, Scott Countians have clearly indicated that the environment should not be sacrificed (Figure 1), and water quality is the top concern.

In the past, industrial recruitment and the location of industrial parks have not strongly considered the possible impacts of hazardous materials. The Lemons Mill industrial area, for instance, is located within the Royal Spring aquifer recharge area. There are several land use policies that would allow better control of hazardous materials. In general, there should be a demonstration that water quality is not at risk before Planning Commission approval of a new or expanded industry anywhere in the County that is a major user or generator of hazardous materials, and these industries should not be encouraged to locate here. Environmentally sensitive areas (with the exception of prime farmland) should be given special protection from development of new or expanded hazardous materials users. Aquifer recharge areas, creek corridors, and sinkholes should receive the strongest protection.

To implement these policies, there needs to be a determination of what types of businesses and hazardous materials are of concern. Some small-scale businesses may use such small quantities of less hazardous materials that on-site containment and storage policies would be sufficient, and no special locational policies are necessary.

Underground Storage Tanks: Underground storage tanks for hazardous materials (such as gasoline storage tanks at service stations) must be controlled even more carefully than other storage of hazardous materials, because the tanks are prone to leaking as they age, and it is extremely difficult to monitor them. The benzene contamination of Royal Spring was suspected to be from a leaking tank, which could not be identified and cleaned up. An inventory of current and defunct gas station sites indicated

that there are as many as 18 sites with tanks in or near the aquifer recharge area. New uses requiring these tanks should not be located near to surface and underground water resources, and existing businesses with tanks should not expand their use of underground storage, but should be abated over time.

There are many sites with abandoned tanks in Scott County, which could still be leaking gasoline or could be surrounded by contaminated soil. This is a serious statewide problem, and the Commonwealth has adopted laws requiring an inventory of all sites with tanks that are abandoned or in use. Current property owners are required to remove abandoned tanks, and there are state funds to assist in the high cost of this. Scott County and city officials should help the State fully inventory locations of abandoned tanks, and should assist the state in requiring removal.

Standards for Site and Building Design: Those businesses and industries using hazardous materials that do locate within the County should institute measures to keep the potential of leaks or accidents to a minimum, and to safely contain and dispose of any spills that occur. Building design and development plans should be reviewed to make sure that storage areas are secure and protected from the elements. In areas where materials are used or handled and the possibility of accidents exists, there should be a method for containment and safe disposal that will not send chemicals into the storm or sanitary sewer system.

The Need for Regional Cooperation: Since much of the Royal Spring aquifer recharge area extends into north Lexington, some of which is designated for industrial land use, the Lexington Fayette Urban County Government should be encouraged to follow similar policies concerning location of hazardous materials users and on-site storage and spill containment. Under federal regulations concerning aquifers that supply municipal water, adjacent local governments are

FIGURE 6
SUMMARY OF SCOTT COUNTY
ADOPTED SOLID WASTE MANAGEMENT ORDINANCE

1. The ordinance creates a County position of Director of Solid Waste Management, who has the power to make, amend, revoke, and enforce rules and regulations regarding solid waste management.
2. Containers are required for all solid waste storage that are waterproof, leakproof, and have a fitted lid. The container must be larger than 10 gallons and smaller than 35 gallons in volume.
3. Waste must be stored in acceptable containers and placed at the curb or mailbox for collection. The Director sets policy for the collection of bulky rubbish. Waste will be collected once a week; however, the Director may increase the frequency of collection. Hazardous waste disposal must comply with State regulations.
4. An annual permit is required for any company engaging in the business of solid waste collection, transportation, or processing. Liability insurance is required.
5. It is the duty of the Director to give notice to individuals in violation of the ordinance and demand abatement within 15 days. After 15 days, the County can proceed to abate the nuisance and charge expenses to the violator. If payment is not received in 20 days, a statement of lien claim may be filed against the violator's property. For other ordinance violations, the matter is enforced in Court, with potential fines of \$25 to \$500 per day.

FIGURE 7
LEXINGTON-FAYETTE HAZARDOUS MATERIALS
ORDINANCE SUMMARY

1. Those responsible for the discharge are also responsible for its clean-up.
2. Those who handle hazardous materials are required to file an inventory of information on the type, quantity, and location of these materials with the Urban-County Government.
3. A multi-disciplinary hazardous materials team (HMT) is responsible for enforcement, inspection, and supervision of clean-ups as conducted by the violators.
4. The HMT conducts a public education program.
5. Inventoried industries must submit a "Spill Prevention and Control Plan."
6. HMT is comprised of 8 or more members from Division of Fire, Division of Streets and Roads, Division of Sanitary Sewers, Division of Police, and the County Health Department (appointed by Mayor).
7. A 21-member technical advisory committee, comprised of government officials, acts in a "Review" capacity to oversee the program and the inventory.
8. Primary responsibility for enforcement falls to the hazardous materials coordinator. Penalties are provided which include fines ranging from \$100 to \$10,000 per day, or even prison terms, depending on the severity of the offense and environmental damage.

liable if their land use policies lead to contamination of the water source. The development of the Cold Stream Farm area is of special concern, and LFUCG has invited a GMWSS Board Member to sit on the advisory committee for the Cold Stream Area Plan.

4. Hazardous Waste Disposal Facilities

Scott County could be an attractive site for a hazardous waste disposal or incineration facility because of its interstate highway access. However, the County is not a suitable location for such a facility due to geology, the potential for ground and surface water contamination through leakage at the site or transportation accidents, and the high value that Scott Countians place on water and air quality. Scott County business and industry does not generate enough hazardous waste to create local need for such a facility, and it is not desirable for the County to be burdened with waste brought from other counties or states. The policy of the County is to discourage new industries that are major generators of hazardous waste, thus a need will not be created for such a facility within the time frame of the Comprehensive Plan. For the same reasons, Scott County is not a suitable location for companies specializing in hazardous materials transportation or storage.

5. Household and Farm Use of Hazardous Chemicals

The average Scott County citizen also uses hazardous materials, in pesticides, fertilizers, herbicides, cleaning fluids, gasoline and motor oils. These chemicals enter the environment in many ways. They are poured on the ground when the oil is changed; run off in storm water after being overused on lawns and fields; and enter aquifers from septic system drain fields, because soil does not filter these chemicals from the effluent. Leftover chemicals leak from half-used bottles in storage sheds, are poured down the drain, are dumped in sinkholes or on creek banks, or are sent out with the trash to eventual-

ly seep from landfills.

Public education is needed through the Farm Bureau, Soil Conservation Service, and schools to make people more aware of proper handling and disposal. Most of the problems arise, however, because people have no safe and fairly easy way to dispose of the chemicals. The Rural Property Owner Survey found that 76% of the respondents would support creation of a collection station in Scott County for household and farm chemicals, where they could be contained for safe transportation and disposal at a licensed facility outside of the County.

C. GOALS, OBJECTIVES, AND POLICIES FOR HAZARDOUS MATERIALS MANAGEMENT

11. The use, location, and disposal of hazardous materials should be controlled so that human health, water quality, air quality, and environmentally sensitive resources are protected.

11.1 Local Monitoring: Adopt a hazardous materials management program that allows local monitoring and enforcement of proper handling, storage, and disposal. The program should be based upon State and federal regulatory standards, where they are appropriate and feasible to apply locally. The program should include:

- Determination of what types of businesses and hazardous materials are of concern. Many businesses may use such small quantities of materials or those of such low hazard that monitoring and reporting is not needed or cost-efficient.
- Reporting by businesses of an inventory of the types, locations, and quantities of hazardous materials they use or generate.

- Preparation by each business of a spill prevention program and emergency contingency plan for handling accidents.
- Creation of a computer data base to adequately track inspections and inventories. Regular inspections to ensure that rules are being followed and inventories are accurate.
- Enforcement ability, including fines and legal action.
- Fees levied on hazardous materials users to help fund the program.
- A public education program.
- The feasibility of either a locally-staffed program or a contractual relationship with the LFUCG program should be examined.

11.2 Accident Response Team: Develop a skilled and well equipped team for local response to hazardous materials accidents.

- Continue to improve the cooperative inter-governmental efforts of the local office of Disaster and Emergency Services, the Fire Chiefs, local industries, LFUCG, and the State to establish a response team for major fires and accidents.
- Develop local capacity for quick response to minor accidents, for spill containment and protection of the public.
- Investigate feasibility of connection to the enhanced 911 program, so that inventories of hazardous materials located at each site are quickly available to accident response teams.

11.3 Transportation: Designate safe transportation routes for hazardous materials.

- Work with State government to transfer official truck routes to safer roads, such as the new bypass, and to avoid heavily populated areas and accident-prone streets.
- Lobby for needed safety improvements to roads designated as truck routes.

11.4 Location and Land Use Policies:

Through land use policies and ordinances, carefully control the location of firms using hazardous materials to ensure protection of water and air quality and environmentally sensitive areas.

- Firms that use, transport, generate or store hazardous materials of such quantity and characteristics that could represent a significant threat to water or air quality shall not be permitted in Scott County, unless they can demonstrate a management plan for the materials based upon accepted "best practices" that will reduce the risk to a level acceptable to the community. In making the decision, factors such as State environmental regulations, the type and quantity of the material, track record of the company, containment and transportation methods and routes, etc. may be considered.

- In making a determination, the Commission should consult State environmental agencies and other available expertise, such as the Environmental Quality Commission, and should be guided by State and federal regulatory standards, where they are appropriate and feasible to apply locally.

In general, there should be a demonstration of a very low level of risk before Planning Commission approval of a new

or expanded industry anywhere in the County that is a major user or generator of hazardous materials, and these industries should not be encouraged to locate here.

- Where environmentally sensitive resources such as aquifer recharge areas, sinkhole areas, or creek corridors are already zoned industrial and commercial, new hazardous materials users should be prohibited within those areas. Existing firms within those areas would be grandfathered, but must demonstrate that their operation would not present an unacceptable risk to environmental quality before being allowed to expand, including bringing their older facilities up to current protection standards.
- Determine what types of businesses and hazardous materials are of concern, based upon state and federal standards as stated above. Some businesses may use small quantities of materials or those of low hazard, so that on-site containment and storage policies would be sufficient.
- The only type of new industrial zoning allowed within environmentally sensitive areas (with the exception of prime farmland) shall be Environmentally Sensitive Light Industry, which only allows businesses that will not present an unacceptable level of risk for potential contamination of water quality (see Growth and Land Use Element, Section V.B.5). Those environmentally sensitive areas designated industrial in the previous comprehensive plan should be redesignated to other, more compatible land use categories or to Environmentally Sensitive Light Industry.

11.5 Underground storage tanks for hazardous materials should be carefully controlled to

protect water quality.

- New underground storage tanks should not be located within aquifer recharge areas, sinkhole areas, or creek corridors. Existing uses in these areas are grandfathered, but in general should not be allowed to increase underground tank capacity or install additional tanks, and should be abated over time.
- Local governments should work with the State to aid in a complete inventory of existing tanks.
- Use development, building, and occupancy permit review to ensure that State regulations concerning certification of all tanks and removal of abandoned tanks are followed.
- Assist eligible property owners where possible to receive available State financial assistance to remove tanks.

11.6 Site design and building standards for firms that use, transport, generate, or store hazardous materials should ensure safe storage and spill containment.

- All storage must be on a durable paved surface. Storage areas must not be exposed to the elements (e.g. rainfall, temperature extremes, etc.) that could weaken containers or effect volatile components.
- Areas where hazardous materials storage, parking, loading, or use occurs must be designed so that spills can be contained and disposed of without discharge to sanitary sewer or storm drainage systems.

11.7 LFUCG: Encourage the Lexington Fayette Urban County Government to adopt similar land use and development policies to protect

the Royal Spring aquifer recharge area and the Elkhorn and Cane Run Creeks from contamination by hazardous materials.

11.7 **Hazardous waste disposal or incineration** facilities shall not be permitted in Scott County, except solely for wastes generated within the County.

11.8 **Household and Farm Use:** Improve the awareness and control of hazardous chemicals used in households and on farms.

- Examine the feasibility of establishing a station for collection of Scott County agricultural and household hazardous materials, such as pesticides, herbicides, used motor oil, and other toxics, to allow environmentally acceptable disposal.
- Create a program through the schools and farm organizations to educate the public about safe use and disposal of toxics.

VI. AIR QUALITY

This section of the plan discusses the status of the most serious air quality issue facing Scott County -- ozone. This section is not intended to be a thorough examination of air quality.

Scott and Fayette counties are within the same air quality region. Under the federal Clean Air Act, air quality is monitored by region to ensure that it meets federal standards for various types of pollutants. The measured ozone levels in the Fayette region have been above standard, and this region may be declared a "non-attainment area" for ozone, according to the Division of Air Quality in the Kentucky Department for Environmental Protection.

The fact that the recent amendments to the Clean Air Act have not yet been approved has delayed

action on this. However, if the Act is approved, the region may be declared non-attainment for ozone. If this occurs, it will lead to greater federal and State control of industrial emissions. In such event, it is probable that new industries that would increase ozone levels cannot locate within the region unless their increase is "offset" by an equal reduction of emissions from existing industries. Emissions standards will be greater for new industries. Industrial recruitment efforts must be aware of these potential controls.

Obviously this is not a situation that Scott County alone can impact. A regional effort is needed with federal and State assistance to reduce industrial and auto emissions enough to have a measurable effect on ozone levels.

USER CHARGE SYSTEM

All the improvements outlined in the preceding chapters will be funded locally, either through GMWSS capital reserve funds, by Toyota, or private developers. As a result, no user charge rate increases are anticipated to implement the selected plan. The current Georgetown Sewer rates are shown on the next page.

GEORGETOWN URBAN AREA LAND USE PLAN

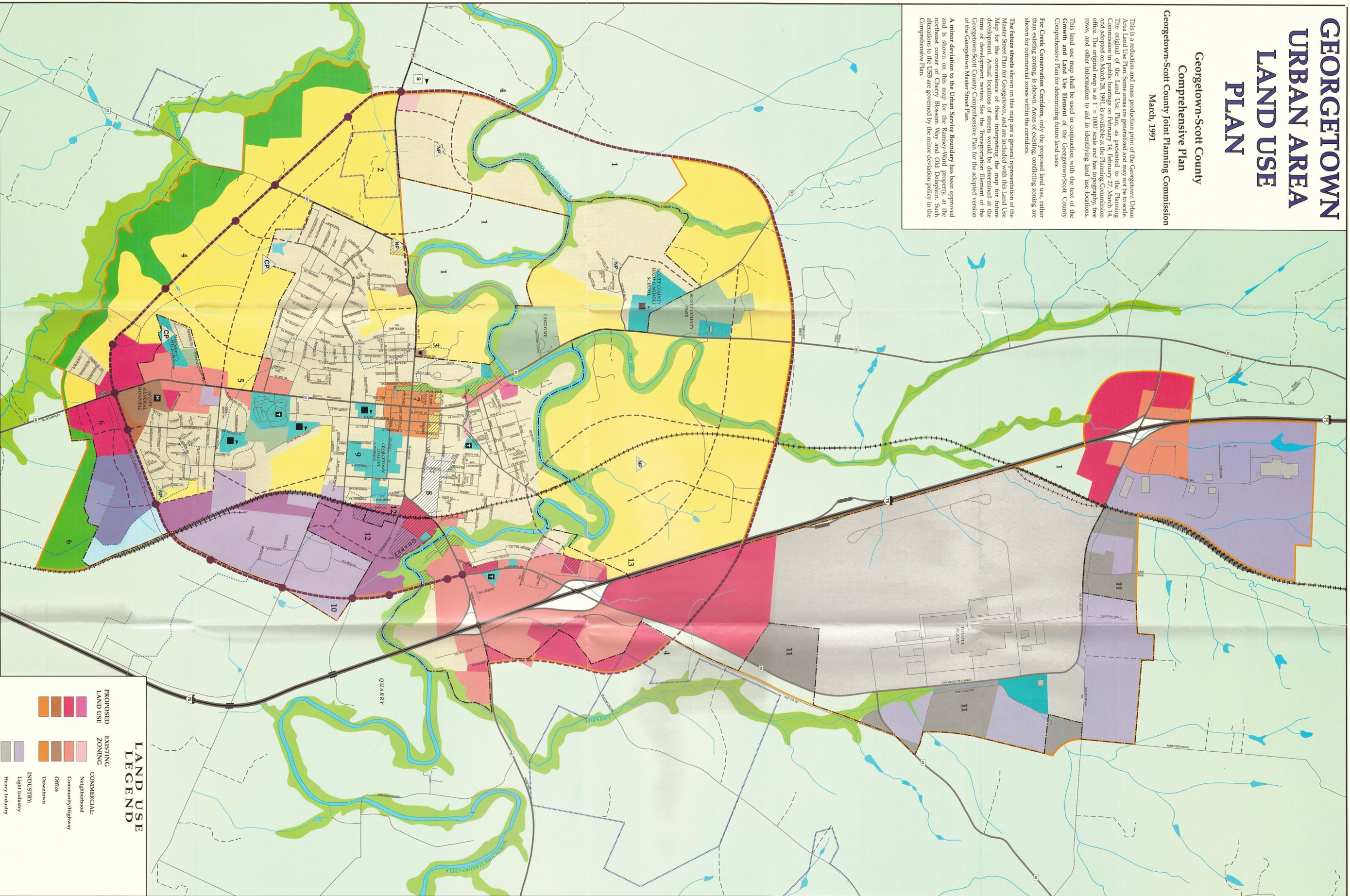
Georgetown-Scott County
Comprehensive Plan
Georgetown-Scott County Joint Planning Commission
March, 1991

This is a reduction and mass production print of the Georgetown Urban Area Land Use Plan. Some areas are generalized and may not be to scale. The original of the Land Use Plan, as presented to the Planning Commission in public hearings on February 14, February 27, March 14, and adopted on March 28, 1991, is available at the Planning Commission office. The original map is at 1" = 1000' scale and has topography, tree rows, and other information to aid in identifying land use locations. This land use map shall be used in conjunction with the text of the Growth and Land Use Element of the Georgetown-Scott County Comprehensive Plan for determining future land uses.

For Creek Conservation Corridors, only the proposed land use, rather than existing zoning, is shown. Areas of existing, conflicting zoning are shown for commercial zones within the corridors.

The future streets shown on this map are a general representation of the Master Street Plan for Georgetown, and are included with this Land Use Map for the convenience of those interpreting the map for future development. Actual locations of streets would be determined at the time of development review. See the Transportation Element of the Georgetown-Scott County Comprehensive Plan for the adopted version of the Georgetown Master Street Plan.

A minor deviation to the Urban Service Boundary has been approved and is shown on this map for the Ramsey-Ward property, at the northeast corner of Cherry Blossom Way and Old Delahain. Such alterations to the USB are governed by the minor deviation policy in the Comprehensive Plan.



Base Map Source: Photocolor Inc./Proctor Davis Ray Engineers
Map Prepared By: Bluegrass Area Development District (3-92)
Cartography By: Kent Anness

SCALE
One inch equals 1500 feet

0 1500 3000 4500

N

CITY LIMITS

- URBAN SERVICE BOUNDARY
- ROYAL SPRING ACQUHER RECHARGE AREA BOUNDARY
- HISTORIC DISTRICT BOUNDARY
- RAILROAD
- UNIMPROVED ROAD
- INTERSTATE
- LOCAL STREET
- MINOR ARTERIAL COLLECTOR
- PROPOSED LOCAL STREET
- PROPOSED COLLECTOR
- PROPOSED MINOR ARTERIAL
- BYPASS ROUTE
- BYPASS ENTRANCES

PROPOSED NEIGHBORHOOD PARK

PROPOSED COMMUNITY PARK

SCHOOL

PROPOSED SCHOOL

STRUCTURE

HOSPITAL

CEMETERY

SPECIAL PLANNING AREAS

- Designated Agricultural Districts
- Ward Hill and Farm
- Old Hospital
- Bypass Route
- Commercial Infill, U.S. 28 S
- Southern Greenbelt Development Area
- Downtown Georgetown & Surrounding Corridors
- Washington/Joubert Neighborhood
- Georgetown College
- Johnson Cantons
- The North Georgetown Employment Center
- Middle/Pan Main Extended Neighborhood Plan
- Commercial Area, Northwest I-76/U.S. 62 Intersection

LAND USE LEGEND

	PROPOSED LAND USE		EXISTING ZONING
	COMMERCIAL		Neighborhood
	COMMUNITY/HIGHWAY		Office
	DOWNTOWN		INDUSTRY
	RESIDENTIAL		Light Industry
	GREENBELT RESERVE		Heavy Industry
	CREEK CONSERVATION CORRIDORS		Light or Heavy Industry/Impact Area
	ACQUHER RECHARGE PROTECTION AREA		Environmentally Sensitive Light Industry
	PUBLIC/INSTITUTIONAL		Light Industry/Residential
	PARK		Light Industry/Cluster A-1 Subdivision
	EXISTING ZONING DOES NOT AGREE WITH PROPOSED LAND USE		RESIDENTIAL
			GREENBELT RESERVE
			CREEK CONSERVATION CORRIDORS
			ACQUHER RECHARGE PROTECTION AREA
			AGRICULTURAL
			PUBLIC/INSTITUTIONAL
			PARK
			EXISTING ZONING DOES NOT AGREE WITH PROPOSED LAND USE

REFERENCE MARK	ELEVATION (FT. MEVD)	DESCRIPTION OF LOCATION
RM 20	79.88	10' x 10' maple tree on the southeast corner of N. Elk Creek and Highway 460.
RM 21	79.88	10' x 10' maple tree on the southeast corner of N. Elk Creek and Highway 460.
RM 22	80.84	10' x 10' maple tree on the southeast corner of N. Elk Creek and Highway 460.
RM 23	79.83	10' x 10' maple tree on the southeast corner of N. Elk Creek and Highway 460.
RM 24	80.82	10' x 10' maple tree on the southeast corner of N. Elk Creek and Highway 460.
RM 25	80.82	10' x 10' maple tree on the southeast corner of N. Elk Creek and Highway 460.
RM 26	79.39	10' x 10' maple tree on the southeast corner of N. Elk Creek and Highway 460.
RM 27	80.82	10' x 10' maple tree on the southeast corner of N. Elk Creek and Highway 460.
RM 28	80.82	10' x 10' maple tree on the southeast corner of N. Elk Creek and Highway 460.
RM 29	80.82	10' x 10' maple tree on the southeast corner of N. Elk Creek and Highway 460.
RM 30	80.82	10' x 10' maple tree on the southeast corner of N. Elk Creek and Highway 460.
RM 31	80.82	10' x 10' maple tree on the southeast corner of N. Elk Creek and Highway 460.
RM 32	80.82	10' x 10' maple tree on the southeast corner of N. Elk Creek and Highway 460.
RM 33	80.82	10' x 10' maple tree on the southeast corner of N. Elk Creek and Highway 460.
RM 34	80.82	10' x 10' maple tree on the southeast corner of N. Elk Creek and Highway 460.
RM 35	80.82	10' x 10' maple tree on the southeast corner of N. Elk Creek and Highway 460.
RM 36	80.82	10' x 10' maple tree on the southeast corner of N. Elk Creek and Highway 460.
RM 37	80.82	10' x 10' maple tree on the southeast corner of N. Elk Creek and Highway 460.
RM 38	80.82	10' x 10' maple tree on the southeast corner of N. Elk Creek and Highway 460.
RM 39	80.82	10' x 10' maple tree on the southeast corner of N. Elk Creek and Highway 460.
RM 40	80.82	10' x 10' maple tree on the southeast corner of N. Elk Creek and Highway 460.
RM 41	80.82	10' x 10' maple tree on the southeast corner of N. Elk Creek and Highway 460.
RM 42	80.82	10' x 10' maple tree on the southeast corner of N. Elk Creek and Highway 460.
RM 43	80.82	10' x 10' maple tree on the southeast corner of N. Elk Creek and Highway 460.
RM 44	80.82	10' x 10' maple tree on the southeast corner of N. Elk Creek and Highway 460.
RM 45	80.82	10' x 10' maple tree on the southeast corner of N. Elk Creek and Highway 460.
RM 46	80.82	10' x 10' maple tree on the southeast corner of N. Elk Creek and Highway 460.
RM 47	80.82	10' x 10' maple tree on the southeast corner of N. Elk Creek and Highway 460.
RM 48	80.82	10' x 10' maple tree on the southeast corner of N. Elk Creek and Highway 460.
RM 49	80.82	10' x 10' maple tree on the southeast corner of N. Elk Creek and Highway 460.
RM 50	80.82	10' x 10' maple tree on the southeast corner of N. Elk Creek and Highway 460.

REFERENCE MARK	ELEVATION (FT. MEVD)	DESCRIPTION OF LOCATION
RM 37	809.09	Checked elevation on top of the southeast corner of the Park Road US Highway 460 bridge on the northeast bank of N. Elk Creek.
RM 38	802.52	604' x 10" x 10" tree on the north bank of N. Elk Creek on the northeast bank of Highway 460 bridge.
RM 39	803.11	604' x 10" x 10" tree on the north bank of N. Elk Creek, 2.850' downstream from the Interstate Highway 75 Southbound bridge over N. Elk Creek.
RM 40	803.11	Checked elevation on top of the southeast corner of the Interstate Highway 75 Southbound bridge over N. Elk Creek.
RM 41	803.83	Checked elevation on top of the southeast corner of the Interstate Highway 75 Southbound bridge over N. Elk Creek.
RM 42	803.59	604' x 10" x 10" tree on the north bank of N. Elk Creek, 1.702' upstream from the Interstate Highway 75 Southbound bridge over N. Elk Creek.
RM 43	803.02	604' x 10" x 10" tree on the north bank of N. Elk Creek, 1.702' upstream from the Interstate Highway 75 Southbound bridge over N. Elk Creek.

REFERENCE MARK	ELEVATION (FT. MEVD)	DESCRIPTION OF LOCATION
RM 40	801.11	Checked elevation on top of the southeast corner of the Interstate Highway 75 Southbound bridge over N. Elk Creek.
RM 41	801.83	Checked elevation on top of the southeast corner of the Interstate Highway 75 Southbound bridge over N. Elk Creek.
RM 42	803.59	604' x 10" x 10" tree on the north bank of N. Elk Creek, 1.702' upstream from the Interstate Highway 75 Southbound bridge over N. Elk Creek.
RM 43	803.02	604' x 10" x 10" tree on the north bank of N. Elk Creek, 1.702' upstream from the Interstate Highway 75 Southbound bridge over N. Elk Creek.

KEY TO MAP

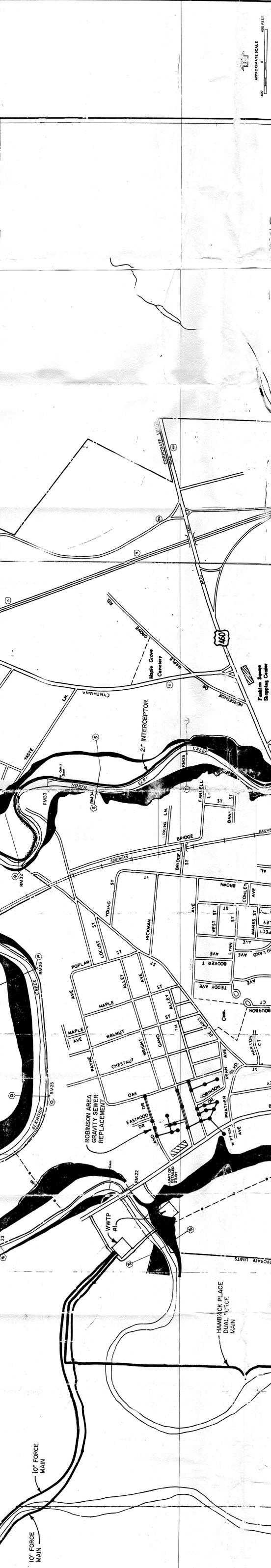
- 100-Year Flood Boundary
- 500-Year Flood Boundary
- FLOODWAY FENCE
- 100-Year Flood Boundary
- 500-Year Flood Boundary
- Approximate 100-Year Flood Boundary
- Com. Elevation Line
- Station Reference Mark
- RM 1.5

NOTES TO USER

Standards of the Floodway were computed at cross sections and interpolated to each cross section. The Floodway was computed by the Floodway Engineering Department of the Federal Insurance Administration.

This map was prepared to facilitate Floodway management activities only. It may not show all possible flood hazard areas. Refer to the latest official Flood Insurance Rate Map for an additional area of special flood hazard.

For additional map sheets, see separately printed Index To Map.



NATIONAL FLOOD INSURANCE PROGRAM

FLOODWAY FLOOD BOUNDARY AND FLOODWAY MAP

CITY OF GEORGETOWN, KENTUCKY
SCOTT COUNTY

COMMUNITY-PANEL NUMBER
210208 0002 B

EFFECTIVE DATE:
FEBRUARY 4, 1981

Federal emergency management agency
Federal Insurance Administration

FIGURE 6-10