

FAYETTEVILLE PUBLIC UTILITIES WATER AND SEWER DEPARTMENT

SANITARY SEWER OVERFLOW CORRECTIVE ACTION PLAN

ENGINEERING REPORT



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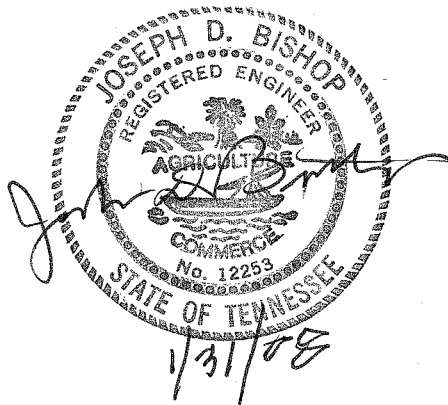
CONSOLIDATED TECHNOLOGIES, INC.
Engineers in Water and Earth Sciences
Nashville, Tennessee

SANITARY SEWER OVERFLOW - CORRECTIVE ACTION PLAN ENGINEERING REPORT

City of Fayetteville, Tennessee

Prepared for:

**FAYETTEVILLE PUBLIC UTILITIES
408 COLLEGE STREET, WEST
FAYETTEVILLE, TN 37334**



Prepared by:

**CONSOLIDATED TECHNOLOGIES, INC.
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Nashville, Tennessee
CTI Project No. N07002**

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CHAPTER 1

INTRODUCTION

BACKGROUND AND PURPOSE

On January 25, 2006, the City of Fayetteville, Tennessee, through Fayetteville Public Utilities (FPU), entered into an Agreed Order with the Tennessee Department of Environment and Conservation (TDEC) regarding operation and maintenance of the wastewater collection and treatment system. A copy of the Agreed Order is contained in Appendix A.

The Agreed Order acknowledged existing problems within the Fayetteville wastewater collection and treatment system, including sanitary sewer overflows (SSO's) in the wastewater collection system. The Agreed Order required the City of Fayetteville through FPU to submit various reports, studies, and plans to TDEC on a compliance schedule set out in the order. Those reports, studies and plans included the following:

- Sewer System Overflow Response Plan (SORP)
- Sanitary Sewer Overflow Evaluation Report (SSOER)
- Capacity, Management, Operations, and Maintenance (CMOM) Program
- Sanitary Sewer Overflow - Corrective Action Plan / Engineering Report (SSO-CAP/ER)
- Capacity, Collection, and Treatment Evaluation Protocols

Each of the above reports, studies and plans, with the exception of the SSO-CAP/ER, has been submitted to TDEC in compliance with the schedule in the Agreed Order.

The purpose of this report is to present the "Sanitary Sewer Overflow-Corrective Action Plan/ Engineering Report" which is the subject of this document. It is being developed in compliance with the schedule in the Agreed Order.

In accordance with requirements in the Agreed Order, FPU shall make the SSO-CAP/ER available to the public for review and comment prior to submitting same to TDEC.

The document shall be maintained as a public document and FPU shall invite public review and comment by advertising in the local newspaper and posting on the internet. FPU shall receive and compile public comments over a 60-day period. These comments shall be incorporated into the SSO-CAP/ER as FPU deems appropriate and all public comments received by FPU shall be kept in a permanent file and made available to TDEC upon request.

SCOPE

The SSO-CAP/ER shall recommend a course of action to be taken by FPU for elimination of recurring SSO's at all locations identified in the SSOER and shall develop an infiltration/inflow (I/I) reduction plan.

The report will describe the existing wastewater collection and treatment system and present pertinent flow measurement data utilized to determine the presence of SSO's and/or excessive I/I. Specific projects, either currently under construction or projects planned for construction will be identified and a project schedule for beginning and completing all activities will be presented. All scheduled activities shall be complete by January 1, 2010.

CHAPTER 2
EXISTING SEWER SYSTEM

EXISTING SEWER SYSTEM

Fayetteville is located in Lincoln County, along the southern border of Tennessee, approximately 12 miles north of the Alabama state line. Fayetteville is bisected in a north-south direction by U.S. Highway 231 and in an east-west direction by U.S. Highway 64. The Elk River is the major surface water resource in Fayetteville, running generally in an east to west direction through the city before it turns in a southwesterly direction toward its confluence with the Tennessee River in northern Alabama.

GRAVITY SEWERS

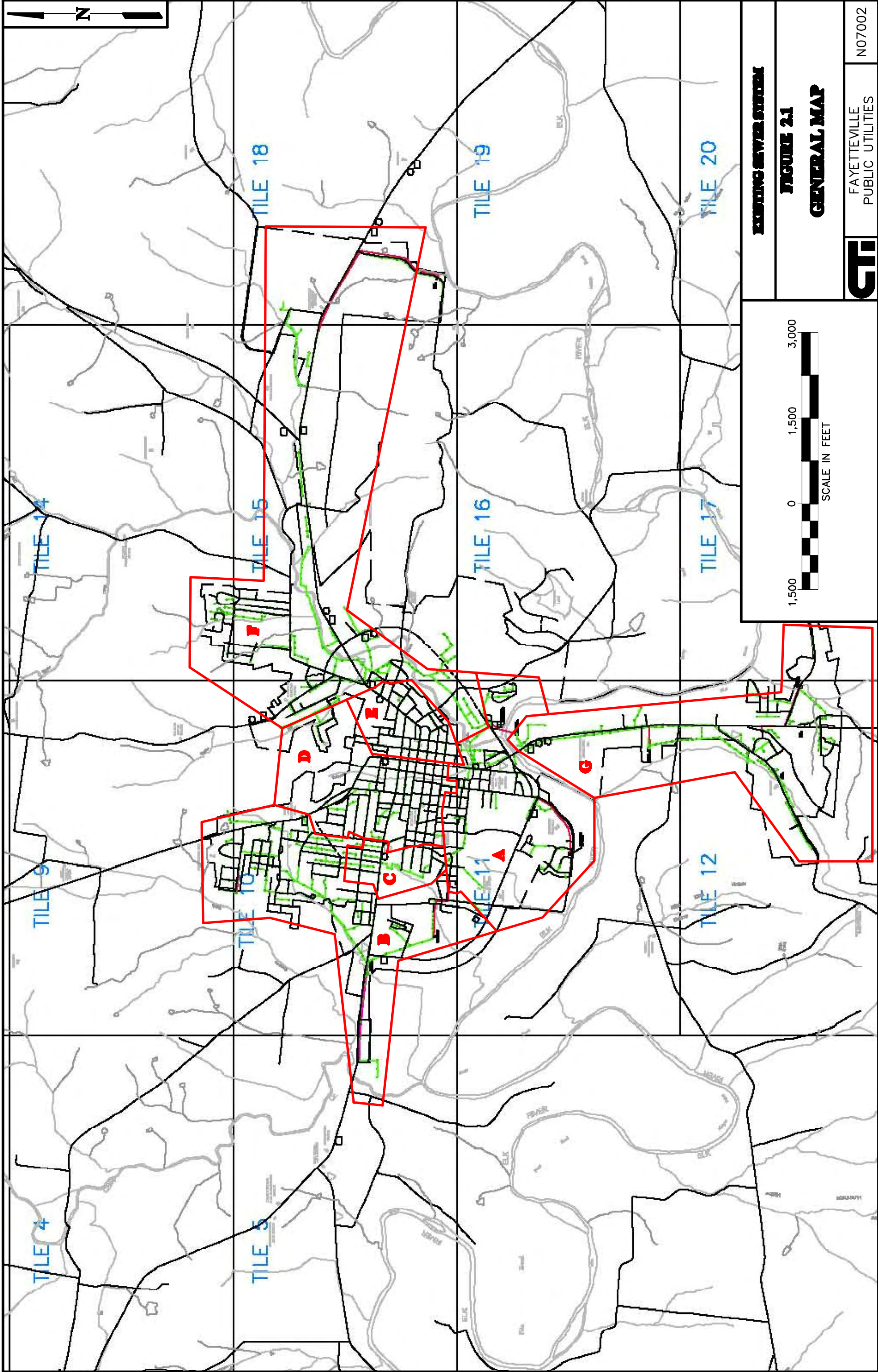
The oldest portion of the sanitary sewer collection system was constructed as early as 1916. These early sewers were made of vitrified clay pipe (VCP) with brick manholes. These sewers were constructed in the more densely populated areas of the city surrounding the central business district and the town square. Sewer line extensions over the years were made further and further from the center of the city. Pipe materials ranged from VCP, concrete and more recently to polyvinyl chloride (PVC). Most newer manholes were constructed of precast concrete.

Most of the collection system consists of 8-inch gravity sewers. An accurate inventory of the system is not available, but it is thought that the system contains approximately 40 miles of gravity sewer lines ranging in size from 6-inch to 18-inch. FPU has “sewer atlas maps” where most of the manholes are numbered. For operation, maintenance and study purposes, the sewer collection system is divided into seven different “mini-systems”, which represent different drainage basins.

A general map of the existing sewer system and different drainage basins is presented as Figure 2.1.

PUMPING STATIONS

There are ten (10) wastewater pumping stations throughout the FPU sewer system. Table 2.1 lists general information about each pumping station.



EXISTING SEWER SYSTEM

FIGURE 21

GENERAL MAP



FAYETTEVILLE
PUBLIC UTILITIES

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Table 2.1 FAYETTEVILLE PUBLIC UTILITIES				
Pump Station Information				
Station Name	Number of Pumps	Pump Manufacturer	Station Capacity (GPM)	Drainage Basin
Harpeth Heights	2	Gorman-Rupp	90	A
Amana	2	Smith and Loveless	175	A
Laten Bottom	2	Fairbanks-Morse	625	B
Hwy 64	2	Gorman-Rupp	100	B
Country Club	2	Gorman-Rupp	80	B
Industrial Park	2	Fairbanks-Morse	350	F
Liberty Road	2	Allis Chalmers	180	G
Mullins	2	Hydromatic	80	G
Pitts	2	Allis Chalmers	300	G
Hardees	2	Allis Chalmers	400	G

The Laten Bottom, Liberty Road, Pitts and Hardees sewage lift stations are planned for replacement through a previous bond issue. Replacement of the Industrial Park sewage lift station for mechanical reliability is included in a list of projects that FPU has developed and submitted to Rural Development for grant/loan purposes. The remaining sewage lift stations are believed to be adequate for the immediate future.

WASTEWATER TREATMENT PLANT

FPU operates a wastewater treatment plant located off Thornton Taylor Parkway adjacent to the Elk River near its confluence with Norris Creek. The original plant was constructed in 1961 and was upgraded in 1968. A modern upgrade and expansion occurred in 1988. The wastewater treatment plant is of the "oxidation ditch" type of process, with a design capacity of 3.35 MGD. Discharge is to the Elk River at mile 90.0.

The current National Pollution Discharge Elimination System (NPDES) permit is contained in Appendix B.

CHAPTER 3
EXISTING WASTEWATER TREATMENT PLANT

EXISTING WASTEWATER TREATMENT PLANT

A site plan of Fayetteville's WWTP is shown on Figure 3.1. Located on the southeast side of the city, the plant treats wastewater from approximately 3,400 customers to secondary treatment levels prior to discharge into the adjacent Elk River at river mile 90.

PLANT DESIGN DATA

Pertinent WWTP design data follows:

- Extended aeration treatment process.
- Rated design capacity of 3.35 million gallons per day (mgd).
- Unit treatment processes designed to handle a waste strength of 215 mg/l BOD and 151 mg/l SS.

Principal plant components are described in the following paragraphs.

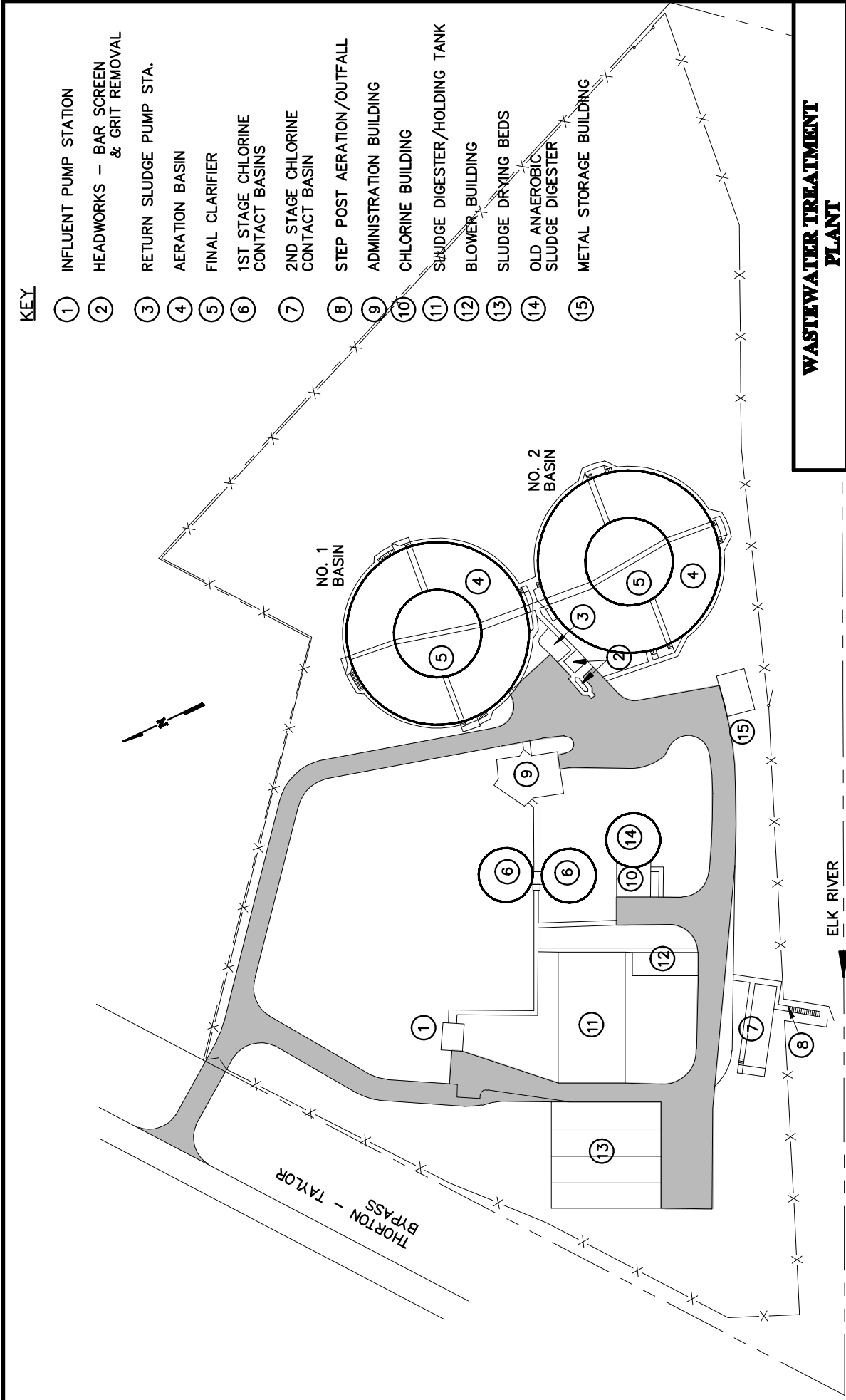
INFLUENT PUMP STATION

The influent pump station is a four-pump wetwell/drywell type that lifts flow to the headworks of the plant. Currently only three pumps, each rated 1,530 gallons per minute (gpm) at 85 feet total dynamic head (TDH), are installed in the drywell.

The pumps are protected by a manual bar screen in the wetwell with 3-inch spacing. Each pump has a 56-horsepower (hp) motor and a variable frequency drive that allows the motor speed to vary based on the flow coming into the pump station. With three pumps operating, the station has a rated peak pumping capacity of 6.6 mgd.

HEADWORKS

The influent force main discharges into the headworks structure, which has two shallow, 3-foot-deep approach channels and two bar screens - - a mechanically cleaned climber-type bar screen with 3/8-inch wide openings in one channel and a manually cleaned stainless steel bar screen with 3/4-inch clear openings in an adjoining channel. Stop plates at the head of the approach channels



WASTEWATER TREATMENT PLANT

FIGURE 3.1

SITE PLAN

GF

FAYETTEVILLE PUBLIC UTILITIES

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are used to direct flow to either the mechanically cleaned screen or the manually cleaned screen. The manual screen must be used when the mechanical screen is out of operation. Flow through both screens concurrently can easily be accomplished by removal of both stop plates in the approach channels. Often, this is allowed because of:

- Problems with the mechanical screen.
- Staff concerns that the shallow channels will overflow if both are not used.

After the bar screen, the flow is discharged into a 16- by 16- by 12-foot-deep aerated grit basin. An air lift pump removes settled grit to a classifier where the grit is washed before being discharged into a dumpster along with screenings from the bar screens.

AERATION BASINS

The existing Orbal-type extended aeration plant consists of two circular basins (“inner track and outer track”) surrounding an inner clarifier. Two separate trains are provided, each with a basin volume of approximately 1.44 million gallons. A hydraulic residence time of 20 hours is provided when both trains are in service operating at the plant design flow of 3.35 mgd. Air is supplied to each basin by two 50-hp and two 25-hp rotary disc aerators.

SECONDARY CLARIFIERS

Flow from the aeration basins is discharged into the peripheral feed clarifiers, each of which is 80 feet in diameter with a 13-foot side water depth (SWD). At the design flow of 3.35 mgd, detention time through the clarifiers is approximately 7.0 hours. Settled solids are removed from the clarifiers utilizing a suction type withdrawal tube and discharged to the base of the return sludge screw pump station.

RETURN SLUDGE PUMP STATION

This station contains three constant-speed screw pumps. Each pump is rated at 1,230 gpm at 51 rpm, and each screw is driven by a 7.4-hp motor. Underflow from the secondary clarifiers is discharged into the base of this station. Screw pumps lift the sludge approximately 13.5 feet to a discharge box at the top of the return sludge screw pump structure. Ten-inch pipes from the discharge box convey the return sludge to both aeration basins. Valving on the discharge pipes allows the flow to be diverted to the inner and/or outer tracks of the aeration basins. The two screw pumps are capable of returning 100 percent of the design flow of 3.35 mgd to the aeration basins.

DISINFECTION FACILITIES

Prior to the 1988 plant upgrade, the first-stage chlorine contact basins served as secondary clarifiers. Settled effluent from the existing secondary clarifiers discharges by gravity to these basins. Chlorine is injected into the basin influent pipe. From the first-stage basins, flow is conveyed to the second-stage chlorine contact basin before cascading down a step aerator into the Elk River. A total contact time of 140 minutes is provided at the plant design flow of 3.35 mgd. At the peak design flow of 6.6 mgd, the contact time is 71 minutes.

SLUDGE DIGESTION AND HOLDING FACILITIES

A portion of the sludge flow from the discharge box of the return sludge pump station is diverted to an adjoining channel. Here a portion of the flow is measured through an 8-inch Palmer-Bowlus flume before gravity discharge to the aerobic digester basins.

The existing basins are 30 feet wide, 118 feet long, and 15 feet deep with a common center wall and a storage volume of 400,000 gallons per basin. Each is equipped with 56 coarse bubble diffusers on a fixed header located 2 feet off the bottom. Two 125-hp, 2,250-cfm centrifugal blowers located in an adjoining blower building provide the necessary oxygen for sludge stabilization prior to disposal. Sludge wasted to the aerobic digesters is thickened to 2 to 3 percent by periodically shutting off the blowers and allowing the solids to settle. The decant flows by gravity to the manhole just upstream of the influent pump station wetwell. Digested sludge is pumped into trucks for land application.

SLUDGE DISPOSAL SITE

Stabilized sludge is hauled to a 120-acre land application site leased from the City of Fayetteville and located approximately 2 miles west of the WWTP. Two diesel-fueled trucks can be utilized to apply liquid sludge to the disposal field:

- 1991 model "blue nurse truck," with a 4,400-gallon tank capacity and standard tires.
- 1989 Ag-Gator truck equipped with a 2,200-gallon capacity tank and flotation tires.

Drying Beds

On the plant site are four open sludge drying beds that were built with the original primary plant construction in 1961. Due to problems with plugging of the sand layer, the beds have not been utilized for quite some time. A substantial portion of the sand layer has been removed, and the beds cannot be used for sludge drying without an extensive rebuild. Four open beds, each 24 feet wide by 98 feet long, could provide 9,400 square feet of drying bed area.

STAFF

Staffing includes five full-time employees including the plant supervisor, Judy Crabtree. This staff is responsible for the operation of the City's wastewater pumping stations as well as the treatment plant.

OPERATING REVIEW

A summary of the discharge monitoring reports for the wastewater treatment plant in 2006 and 2007 is presented in Table 3.1 below.

Table 3.1								
FAYETTEVILLE PUBLIC UTILITIES								
Discharge Monitoring Reports Summary								
Month	Flow		Monthly Rainfall	BOD		TSS		CL2 Residual
	Mo. Avg	Mo. Peak		Raw	Eff	Raw	Eff	
Jan-06	1.76	3.41	8.69	152	10	219	10	0.26
Feb-06	1.76	3.66	2.86	224	11	268	10	0.17
Mar-06	1.61	3.99	3.46	201	17	187	15	0.22
Apr-06	1.46	2.43	5.85	235	14	186	10	0.22
May-06	1.66	2.34	5.60	169	15	241	10	0.26
Jun-06	1.30	3.67	1.29	266	20	291	13	0.13
Jul-06	1.07	1.99	2.94	324	15	361	10	0.13
Aug-06	0.90	1.97	3.83	188	4	123	7	0.15
Sep-06	1.12	1.58	2.58	245	12	302	10	0.20
Oct-06	1.24	2.01	3.52	333	11	612	12	0.18
Nov-06	1.48	2.65	4.09	153	13	85	11	0.26
Dec-06	1.36	2.06	3.52	270	14	290	11	0.23

Table 3.1 (Continued)								
FAYETTEVILLE PUBLIC UTILITIES								
Month	Flow		Monthly Rainfall	BOD		TSS		CL2 Residual
	Mo. Avg	Mo. Peak		Raw	Eff	Raw	Eff	
Jan-07	1.83	2.63	3.98	204	13	154	10	0.18
Feb-07	1.53	2.41	2.41	189	9	121	10	0.24
Mar-07	1.70	3.47	1.56	277	19	255	15	0.15
Apr-07	1.69	2.78	3.91	323	18	324	14	0.19
May-07	1.37	2.48	1.46	283	12	147	10	0.12
Jun-07	1.10	1.31	1.33	341	17	304	9	0.05
Jul-07	1.25	1.64	4.19	427	9	460	6	0.08
Aug-07	1.20	1.54	1.84	426	9	463	6	0.04
Sep-07	1.22	1.60	1.97	389	12	273	6	0.05
Oct-07	1.23	1.81	2.43	435	10	276	8	0.07
Nov-07	1.56	2.41	3.78	314	8	197	9	0.20
Dec-07	1.32	2.68	2.56	297	15	212	9	0.14
Two Yr Average	1.40	2.44	3.32	278	13	264	10	0.16

The above table indicates that the WWTP currently experiences average and peak flows significantly below the design capacity of the WWTP. Raw BOD and TSS concentrations are somewhat higher than design levels, but present no overall problem because actual flows are less than design. And, removal performance is excellent (average 95% removal of BOD and 96% removal of TSS).

The plant is operating well and there is no reason to believe that it would not continue to do so.

CHAPTER 4

PREVIOUS SEWER SYSTEM OVERFLOWS (SSO's)

PREVIOUS SEWER SYSTEM OVERFLOWS

EXISTING PROBLEMS

The wastewater collection, pumping, and treatment facilities in Fayetteville are subject to significant increases in flow during rainfall events. The resultant infiltration and inflow (I/I) into the existing infrastructure periodically causes sanitary sewer overflows (SSO's), pumping station bypasses, or treatment plant bypasses. Table 4.1 presents the number of monthly overflows/bypasses recorded in Fayetteville from 2003 to 2007.

Table 4.1						
FAYETTEVILLE PUBLIC UTILITIES						
Overflows/Bypasses						
Month	Rainfall (in.)	Location/Number				Maximum Rain
		Latton Bottom P.S.	Liberty Road P.S.	Pitts P.S.	WWTP	
9/07	1.17	2				0.60
8/07	1.84					1.65
7/07	4.19		1			1.06
6/07	1.33					0.86
5/07	1.46					0.43
4/07	3.53					1.13
3/07	1.55	1				1.32
2/07	0.78	1		1		0.54
1/07	2.70	8		1		1.68
12/06	3.52					1.33
11/06	3.79	1				1.19
10/06	3.52			1		1.11
09/06	3.83					1.00
08/06	3.83		2	1		1.00
07/06	2.94		1	1		0.88
06/06	1.29	1				0.44
05/06	5.1	4				1.23
04/06	5.85	3				1.88
03/06	3.46	3	1			0.87

Table 4.1 (Continued)						
FAYETTEVILLE PUBLIC UTILITIES						
Overflows/Bypasses						
Month	Total Rainfall (in.)	Location/Number				Maximum Rain
		Latton Bottom P.S.	Liberty Road P.S.	Pitts P.S.	WWTP	
02/06	2.86	2				1.06
01/06	8.69	11	1	1		2.24
12/05	4.07	3				1.96
11/05	4.51	1				1.13
10/05	0.12					0.09
09/05	3.56					1.79
08/05	2.98	1				1.75
07/05	0.38	1				1.60
06/05	2.73					1.07
05/05	1.94					1.23
04/05	6.92	5				1.94
03/05	3.29			1		1.44
02/05	4.83	5		1		1.30
01/05	2.95	3				1.00
12/04	7.11	5		2		2.48
11/04	8.73	4	2	1	4	2.81
10/04	5.88	3	1	1	3	3.30
09/04	3.02					2.65
08/04	9.11	1		1	2	2.51
07/04	4.25	1				1.30
06/04	9.43	6		2	6	1.47
05/04	4.81					1.15
04/04	4.10	1			2	1.50
03/04	5.43	5		1	5	3.00
02/04	9.00	2	2	3	4	5.25
01/04	1.84					1.25
12/03	2.30	2			2	1.00
11/03	5.95				3	1.20
10/03	1.30				1	0.50
09/03	4.85	2			2	3.55
08/03	1.91					1.00
07/03	4.09					1.50
06/03	5.47	1			1	1.85
05/03	9.36	4	1	1		3.05

Table 4.1 (Continued)						
FAYETTEVILLE PUBLIC UTILITIES						
Overflows/Bypasses						
Month	Total Rainfall (in.)	Location/Number				Maximum Rain
		Latton Bottom P.S.	Liberty Road P.S.	Pitts P.S.	WWTP	
04/03	3.02		1		1	0.82
03/03	1.42	1			1	0.70
02/03	8.43	11				2.00
01/03	1.77		1	1	2	0.90

The problems noted in Table 4.1 are of three general types, namely: pumping station bypasses due to significant amounts of I/I; pumping station bypasses due to mechanical malfunction or loss of electrical power; and wastewater treatment plant bypasses due to significant amounts of I/I. The Latton Bottom Pumping Station shows the greatest number of bypass/overflow events. The station consists of two 625 gpm horizontal centrifugal pumps in a dry pit/wet pit type of arrangement. This pump station handles a significant portion of the Fayetteville collection system. Because of this it will be upgraded to eliminate this problem.

The Liberty Road and Pitts pumping stations are smaller stations that have exhibited more mechanical malfunction types of problems instead of I/I related problems. Nevertheless, these stations will be addressed to preclude, as much as practical, any mechanical problems.

Bypassing at the wastewater treatment plant is due to the significant increase in wastewater flows in all parts of the Fayetteville collection system because of rainfall induced I/I. There are several instances where the wastewater transmission system (interceptor sewers, pumping stations, and force mains) are not large enough to handle peak flows. The peak flow to average flow ratio (peak factor) at the wastewater treatment plant is 1.74, yet the plant has a design capability of 2.0 times average daily flow. If the transmission facilities were large enough to get the peak flow to the plant, the plant could handle them. Sewer system investigation and rehabilitation, including increasing transmission capacity, is the likely solution to eliminating WWTP bypassing and SSO's during significant rainfall events.

The corrective action proposed for elimination of SSO's will be presented in later chapters of this report.

CHAPTER 5

EXISTING AND FUTURE SEWER FLOWS

EXISTING AND FUTURE SEWER FLOWS

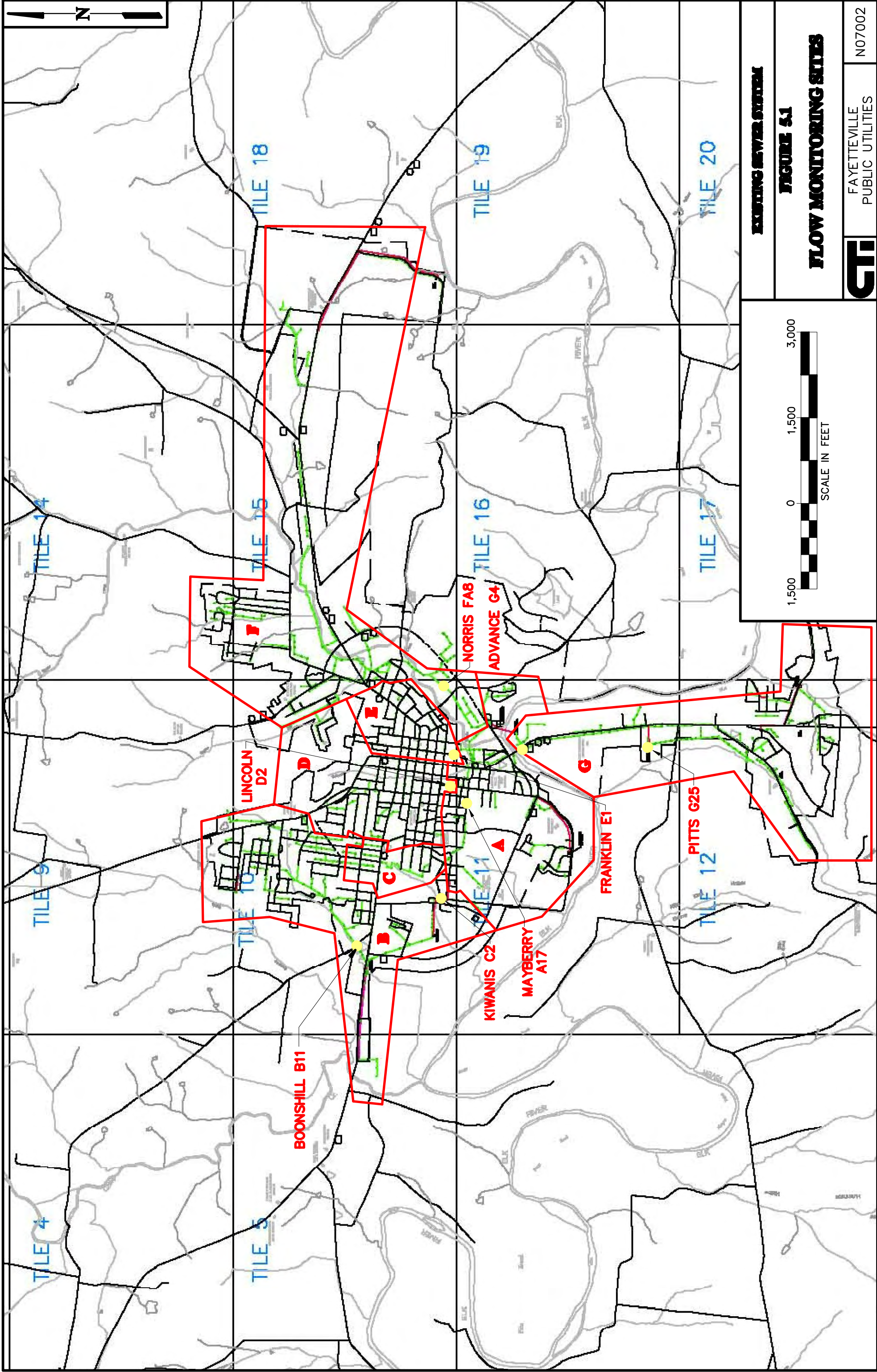
FLOW MEASUREMENT DATA

In the early 1980's Fayetteville undertook a limited Sewer System Evaluation Survey (SSES). Results and data from that effort are questionable and only minor sewer rehabilitation efforts were pursued. One of the enduring efforts of the SSES was a system of sewer maps that produces a numbering system for manhole and an alphabetic labeling system for each of seven drainage basins. That mapping resource is still being used by FPU today.

In order to get an overall “picture” of the existing sewer flows in the FPU system, a period of base flow measurement was carried out during an eight week period in March, April, and May 2006. “Area-velocity” type flow meters were installed at eight locations in the seven FPU drainage basins.

The eight flow monitoring sites are listed below in Table No. 5.1 and shown on a map of the existing sewer system on Figure 5.1.

Table 5.1		
FAYETTEVILLE PUBLIC UTILITIES		
Flow Monitoring Sites		
Drainage Basin	Manhole Number	Location Designation
A	A17	Mayberry
B	B11	Laten Bottom
C	C2	Kiwanis
D	D2	Lincoln
E	E1	Franklin
F	FA8	Norris
G	G4	Advance
G	G25	Pitts



Flow hydrographs of the eight monitoring sites follow. Each hydrograph includes plots of flow in gallons per day, rainfall in inches, and a calculation of antecedent rainfall in inches. Comments on each monitoring location follow:

A17 Mayberry

Measured base flows range from 100,000 to 200,000 GPD, with a peak flow of approximately 600,000 GPD. Peak to average ratio is approximately 4:1, therefore this area is not expected to be a problem area. See flow hydrograph Figure 5.2.

B11 Laten Bottom

The meter data from this area is questionable and is believed to be indicative of a location with poor hydraulic characteristics for an area-velocity meter. Nevertheless, the Laten Bottom drainage basin has previously been determined to contain excessive I/I and will be addressed further in this Corrective Action Plan. See flow hydrograph Figure 5.3.

C2 Kiwanis

Measured base flow is approximately 40,000 GPD, with peak flow of approximately 160,00 GPD. Peak to average ratio is 4:1, therefore this area is not expected to be a problem area. See flow hydrograph Figure 5.4

D2 Lincoln

Measured base flow is approximately 100,000 GPD with peak flow of approximately 930,000 GPD. Peak to average ratio of 9.3:1 indicates significant I/I in this area. This area is part of the Tanyard Branch drainage basin in Fayetteville which will be addressed further in this Corrective Action Plan. See flow hydrograph Figure 5.5.

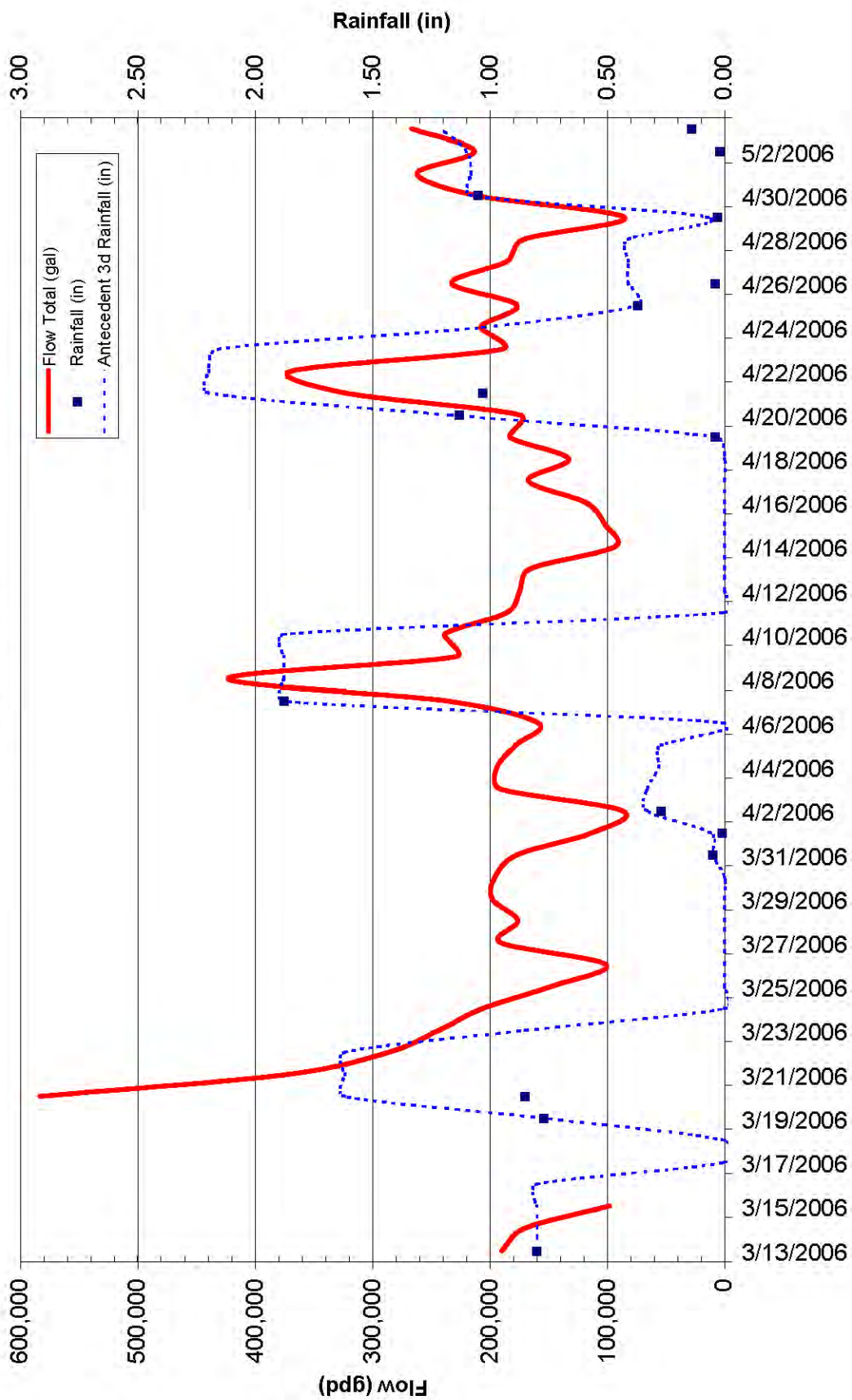
E1 Franklin

Measured base flows range from 20,000 to 40,000 GPD, with a peak flow of approximately 90,000 GPD. Peak to average ratio is approximately 3:1, therefore this area is not expected to be a problem area. See flow hydrograph Figure 5.6.

FA8 Norris

Measured base flow is approximately 200,000 GPD, with peak flow of approximately 950,000 GPD. Peak to average ratio of 4.75:1 indicates some concern for excessive I/I in this area. See flow hydrograph Figure 5.7.

FPU A17 Mayberry



Date

EXISTING SEWER SYSTEM

FIGURE 5.2

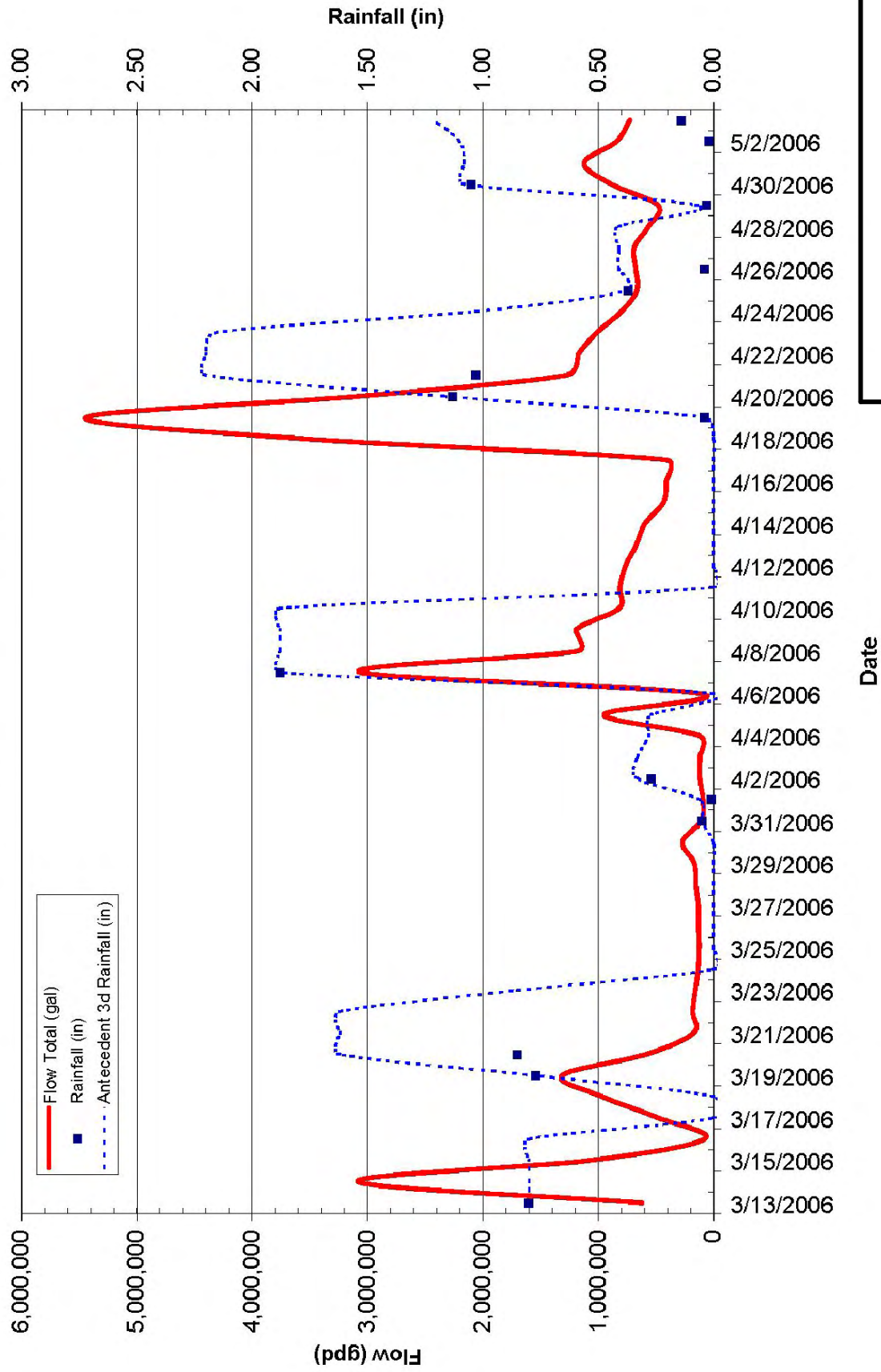
**A17 MAYBERRY FLOW
HYDROGRAPH**



FAYETTEVILLE
PUBLIC UTILITIES

N07002

FPU B11 Laten Bottom (Boonshill)



EXISTING SEWER SYSTEM

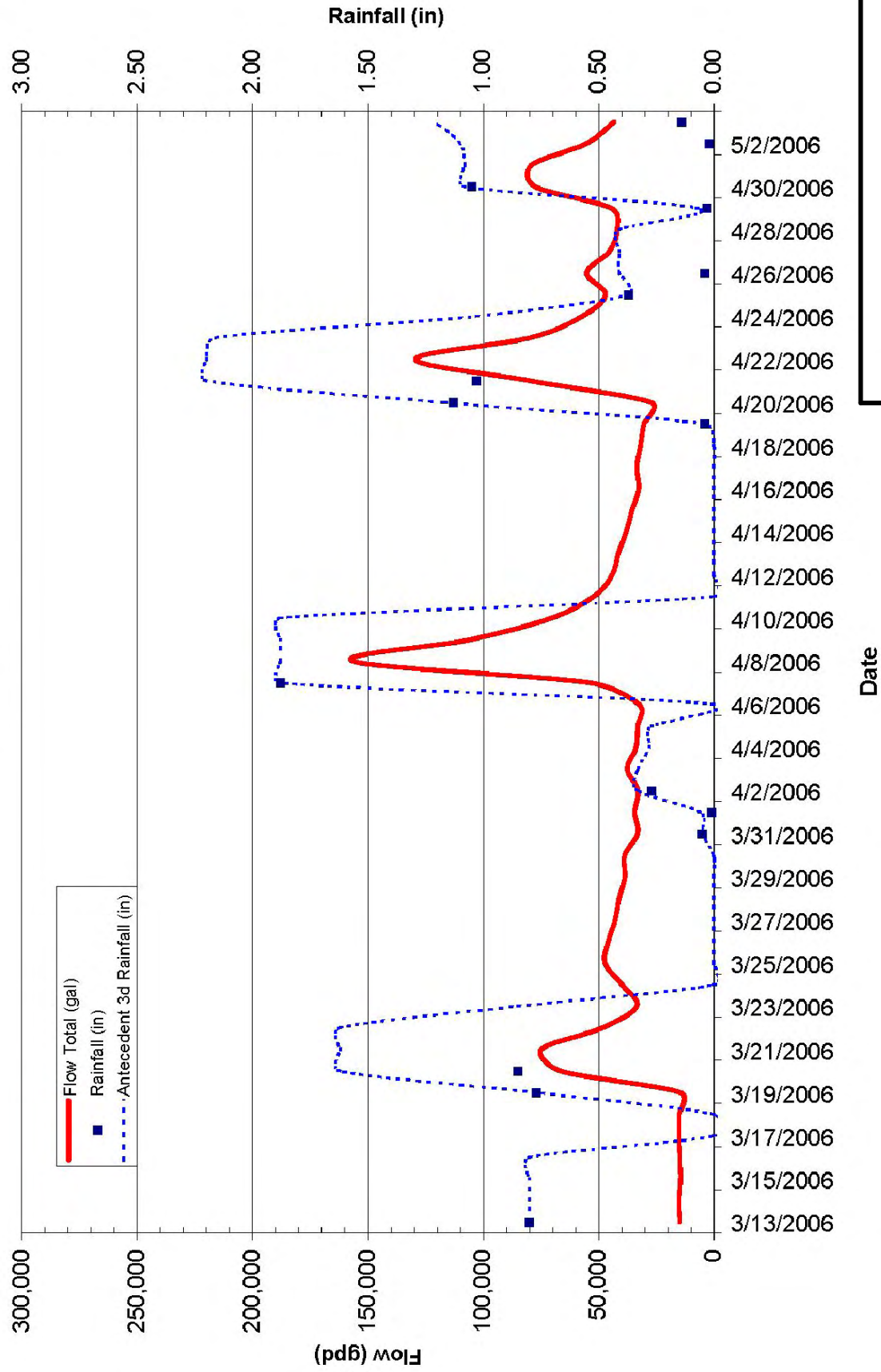
FIGURE 5.3
B11 LATEN BOTTOM
FLOW HYDROGRAPH

FAYETTEVILLE
PUBLIC UTILITIES

N07002



FPU C2 Kiwanis



EXISTING SEWER SYSTEM

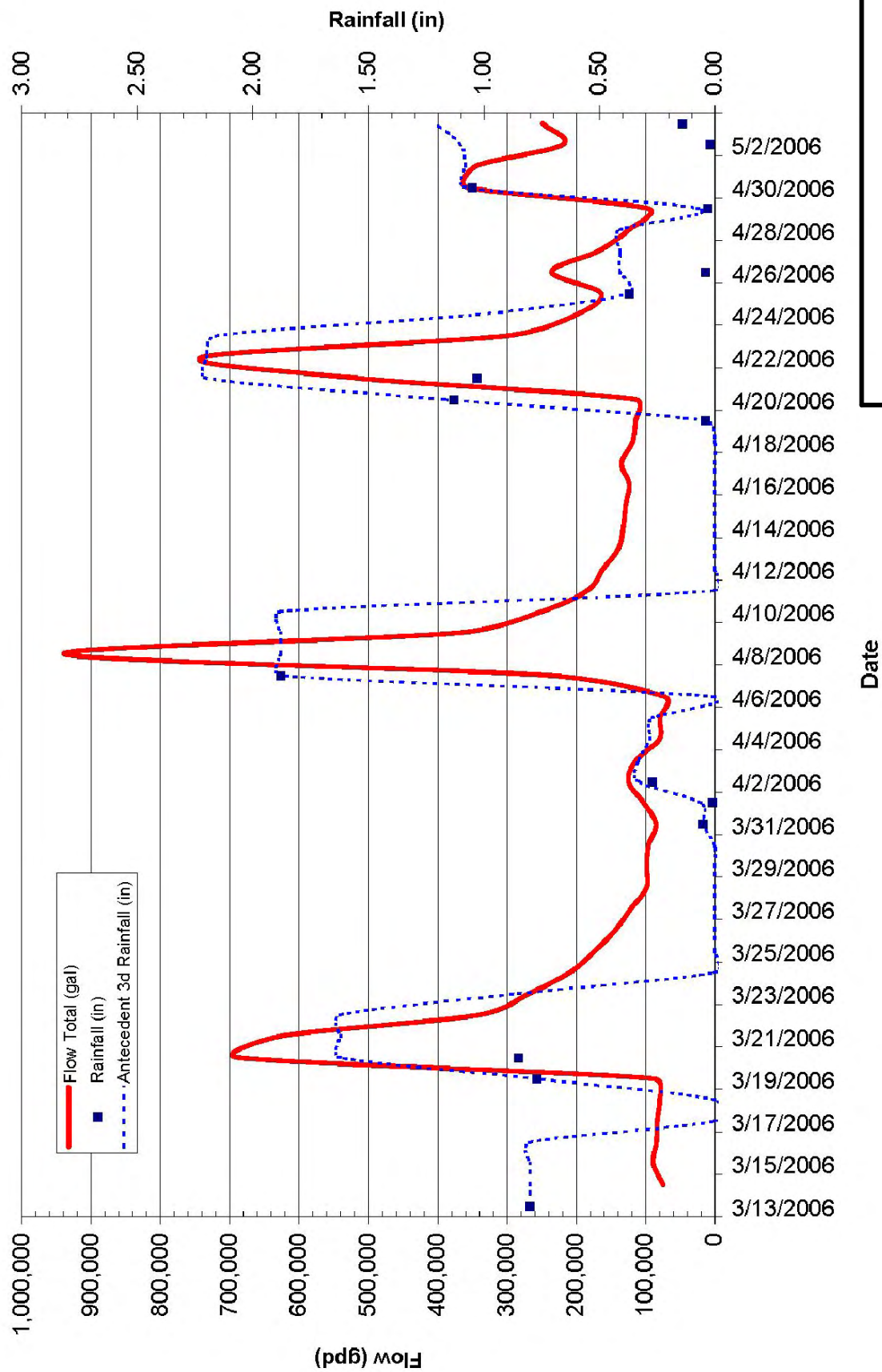
**FIGURE 3.4
C2 KIWANIS FLOW
HYDROGRAPH**



FAYETTEVILLE
PUBLIC UTILITIES

N07002

FPU D2 Lincoln



EXISTING SEWER SYSTEM

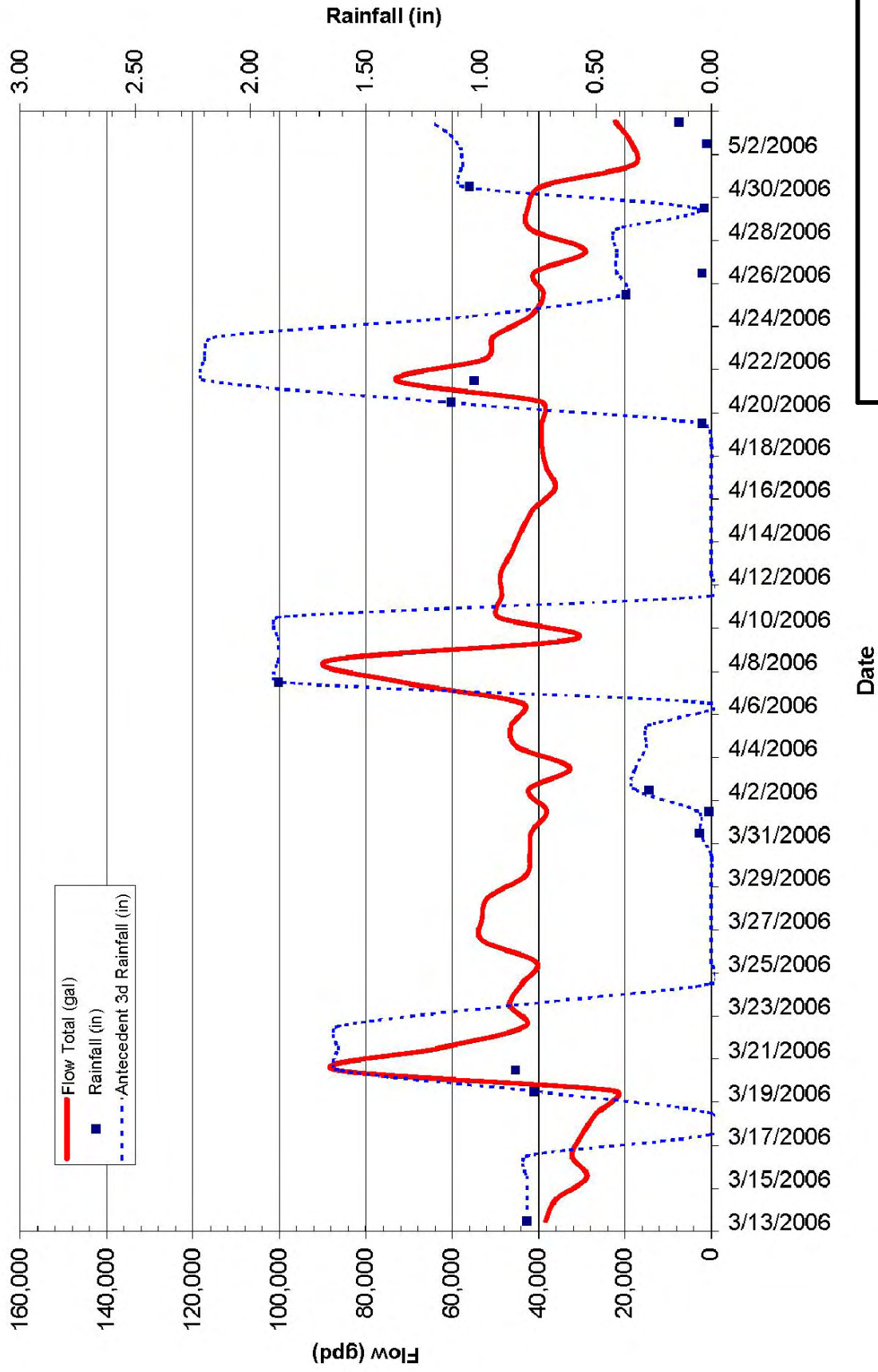
FIGURE 5.5 D2 LINCOLN FLOW HYDROGRAPH

FAYETTEVILLE
PUBLIC UTILITIES

N07002



FPU E1 Franklin



EXISTING SEWER SYSTEM

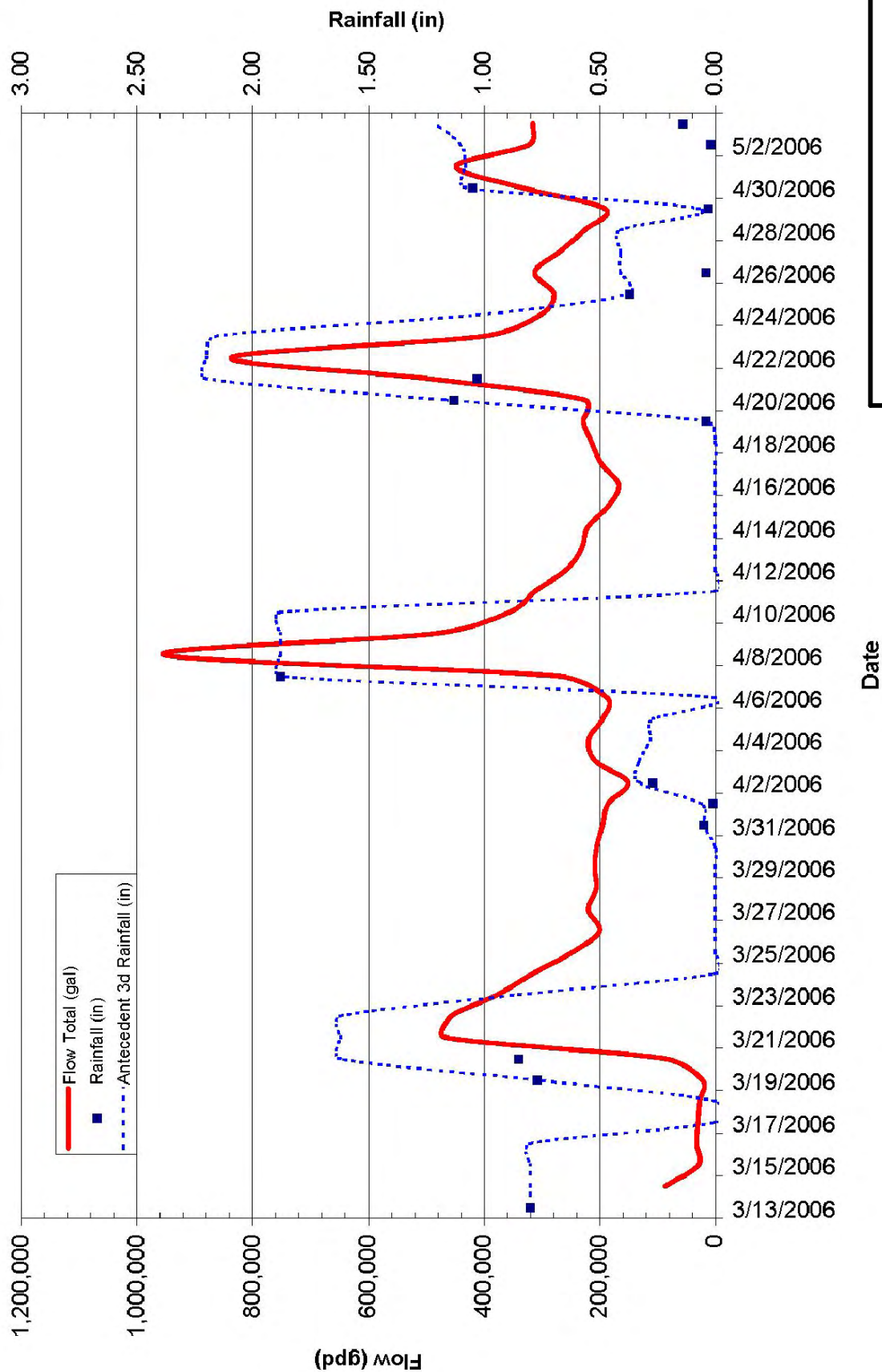
FIGURE 5.6 E1 FRANKLIN FLOW HYDROGRAPH

FAYETTEVILLE
PUBLIC UTILITIES

N07002



FPU FA8 Norris



EXISTING SEWER SYSTEM

FIGURE 5.7
FA8 NORRIS FLOW
HYDROGRAPH

FAYETTEVILLE
PUBLIC UTILITIES



N07002

G4 Advance

Measured base flow is approximately 140,000 GPD, with peak flow of approximately 300,000 GPD. Peak to average ratio is 4.2:1, therefore this area is not expected to be a problem area. See flow hydrograph Figure 5.8.

G25 Pitts

Measured base flow is approximately 100,000 GPD, with peak flow of approximately 400,000 GPD. Peak to average ratio is 4:1, therefore this area would not be expected to be a problem area. However, this monitoring location is just upstream of the existing Pitts pump station which has experienced numerous mechanical/electrical problems. Therefore, the Pitts pump station will be addressed further in this Corrective Action Plan. See flow hydrograph Figure 5.9.

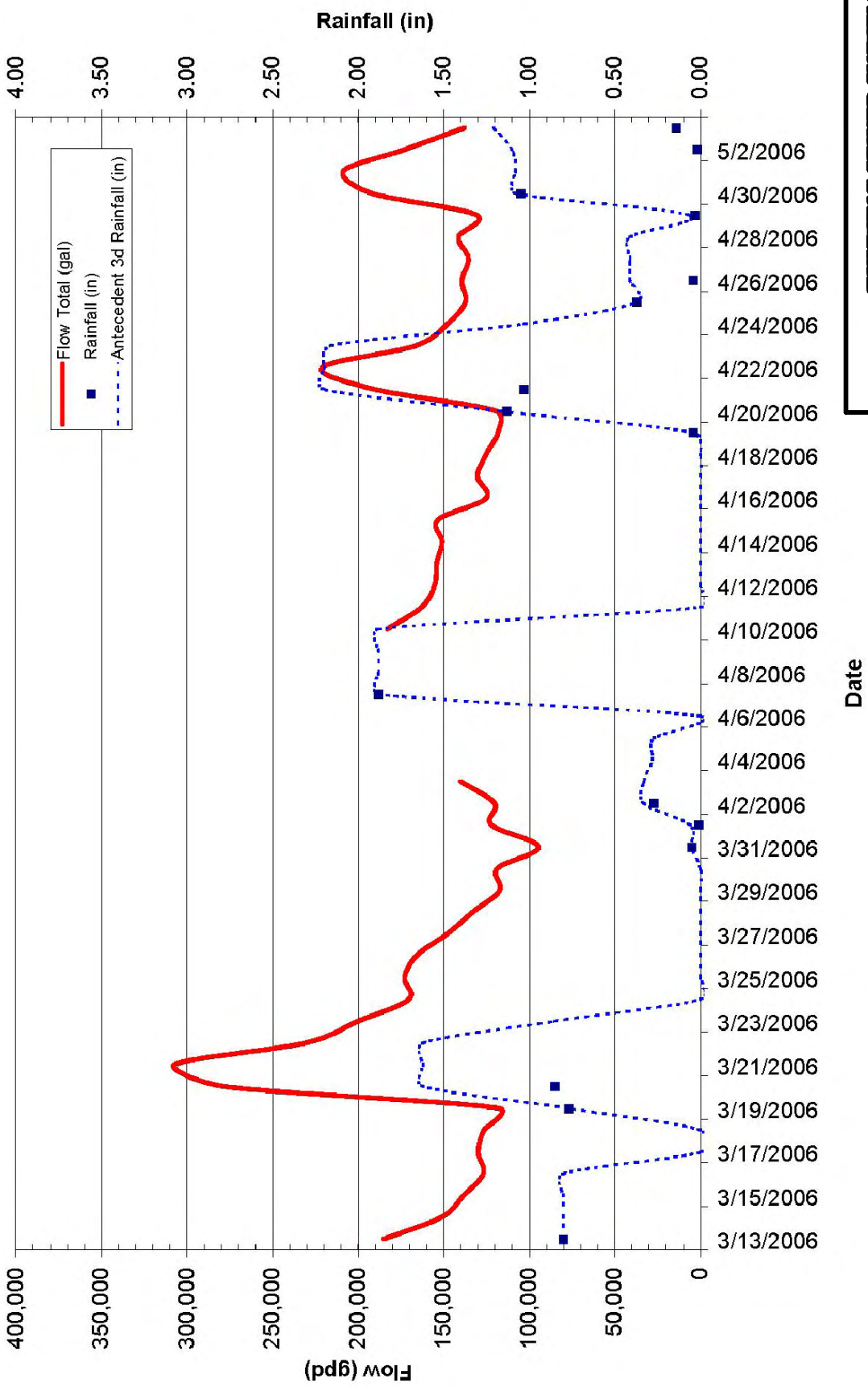
PROJECTION OF FUTURE FLOWS

Table 5.2 shows the FPU sewer and water customer base for the past 11 fiscal years. Although some years indicate a decline in customer growth, the overall growth rate on an annual basis has been 1.04% for sewer customers and 1.35% for water customers. Although this report is concerned with future growth in the FPU sewer system, it is felt that the annual rate of growth in the water system as indicated below will be more indicative of future growth in the sewer system because the City of Fayetteville has established an aggressive annexation policy that will include both existing and future residents in the Lincoln County areas surrounding Fayetteville.

Therefore, projected sewer customer growth over a twenty-year planning period at an annual growth rate of 1.35% would indicate a total customer base of 4,527 representing a population of 9,280 by the year 2028.

Table 5.2		
FAYETTEVILLE PUBLIC UTILITIES		
Historical Sewer and Water Customers		
FY Ending	Sewer Customers	Water Customers
30 Jun 96	3,089	3,842
30 Jun 97	3,094	3,859
30 Jun 98	3,115	3,928
30 Jun 99	3,093	3,919

FPU Advance G4



EXISTING SEWER SYSTEM

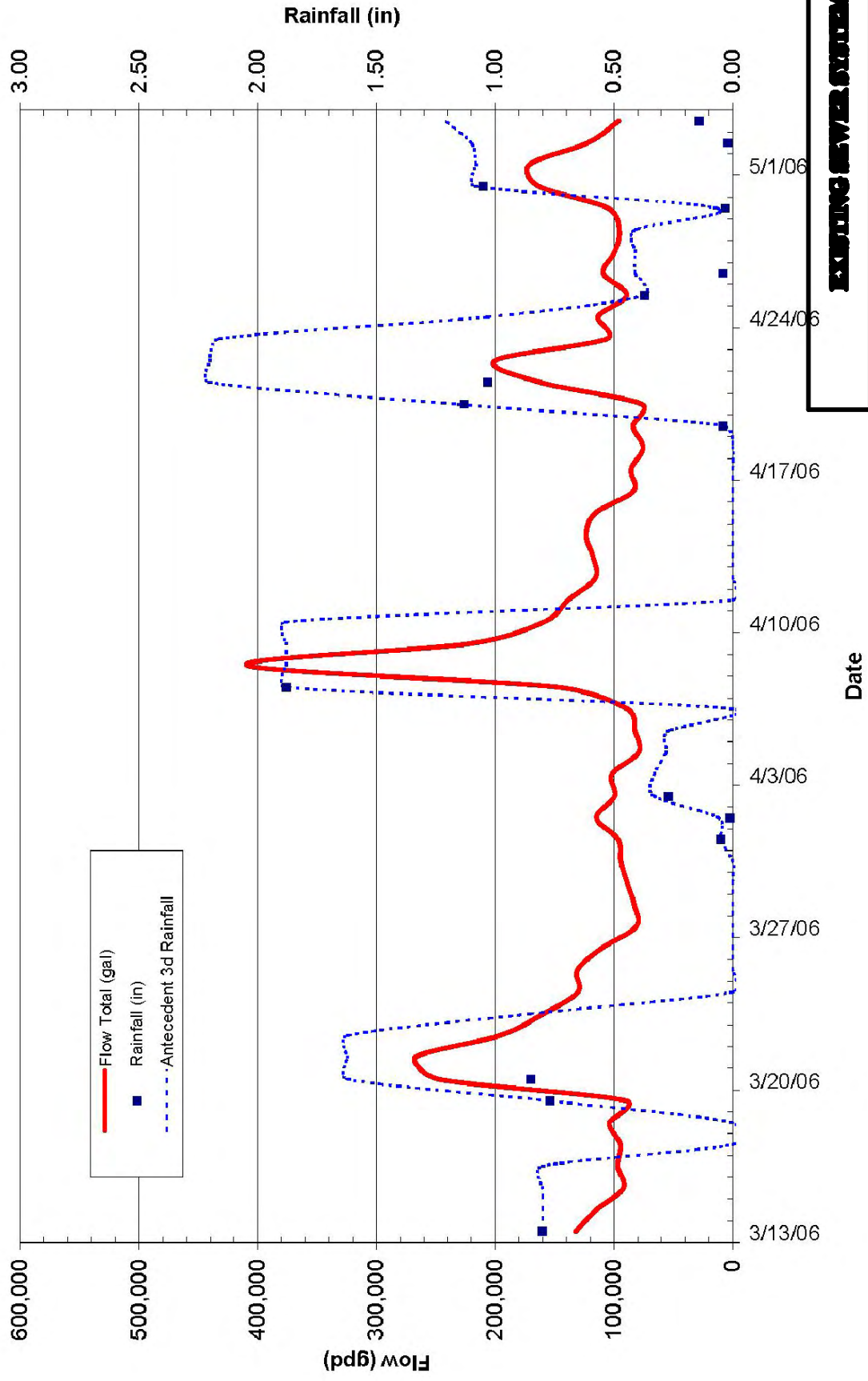
FIGURE 5.9
G4 ADVANCE FLOW
HYDROGRAPH



FAYETTEVILLE
PUBLIC UTILITIES

N07002

FPU Pitts G25



EXISTING SEWER SYSTEM

FIGURE 4.9 G25 PITTS FLOW HYDROGRAPH



FAYETTEVILLE
PUBLIC UTILITIES

N07002

Table 5.2 (Continued)		
FAYETTEVILLE PUBLIC UTILITIES		
FY Ending	Sewer Customers	Water Customers
30 Jun 00	3,089	3,933
30 Jun 01	3,076	3,946
30 Jun 02	3,096	4,000
30 Jun 03	3,102	4,036
30 Jun 04	3,181	4,119
30 Jun 05	3,446	4,377
30 Jun 06	3,463	4,403
30 Jun 07	3,462	4,451

Of the drainage areas that apparently contain excessive I/I and/or SSO's, facilities and improvements planned for those areas should be designed to not only reduce excessive I/I but also to be sized for existing and future base flows. The three major areas where these problems currently exist are: Laten Bottoms (B), Tanyard Branch (D), and the Huntsville Highway (G-also called Hardees, Pitts, and Liberty pump stations). The (B) and (G) drainage basins are anticipated to be two of the highest growth areas in Fayetteville because of location. On the other hand, the Tanyard Branch (D) area is expected to be one of the lowest growth areas because it is almost totally built out.

Table 5.3 below contains a projection of future population growth (20 year) in the three drainage basins.

Table 5.3			
FAYETTEVILLE PUBLIC UTILITIES			
Future Flow Projections			
Drainage Basin	Projected Population Growth	Additional Sewer Base Flow ¹	Additional Sewer Peak Flow ²
Laten Bottom (B)	820	114,800	287,000
Tanyard Branch (D)	100	14,000	35,000
Huntsville Highway (G)	656	91,840	229,600
Notes:			
¹ Residential base flow of 100 GPD per capita and commercial flow of 40% of residential flow.			
² Peak factor of 2.5 times base flow.			

CHAPTER 6

PLAN FOR I/I REDUCTION AND ELIMINATION OF SSO's

PLAN FOR I/I REDUCTION AND ELIMINATION OF SSO's

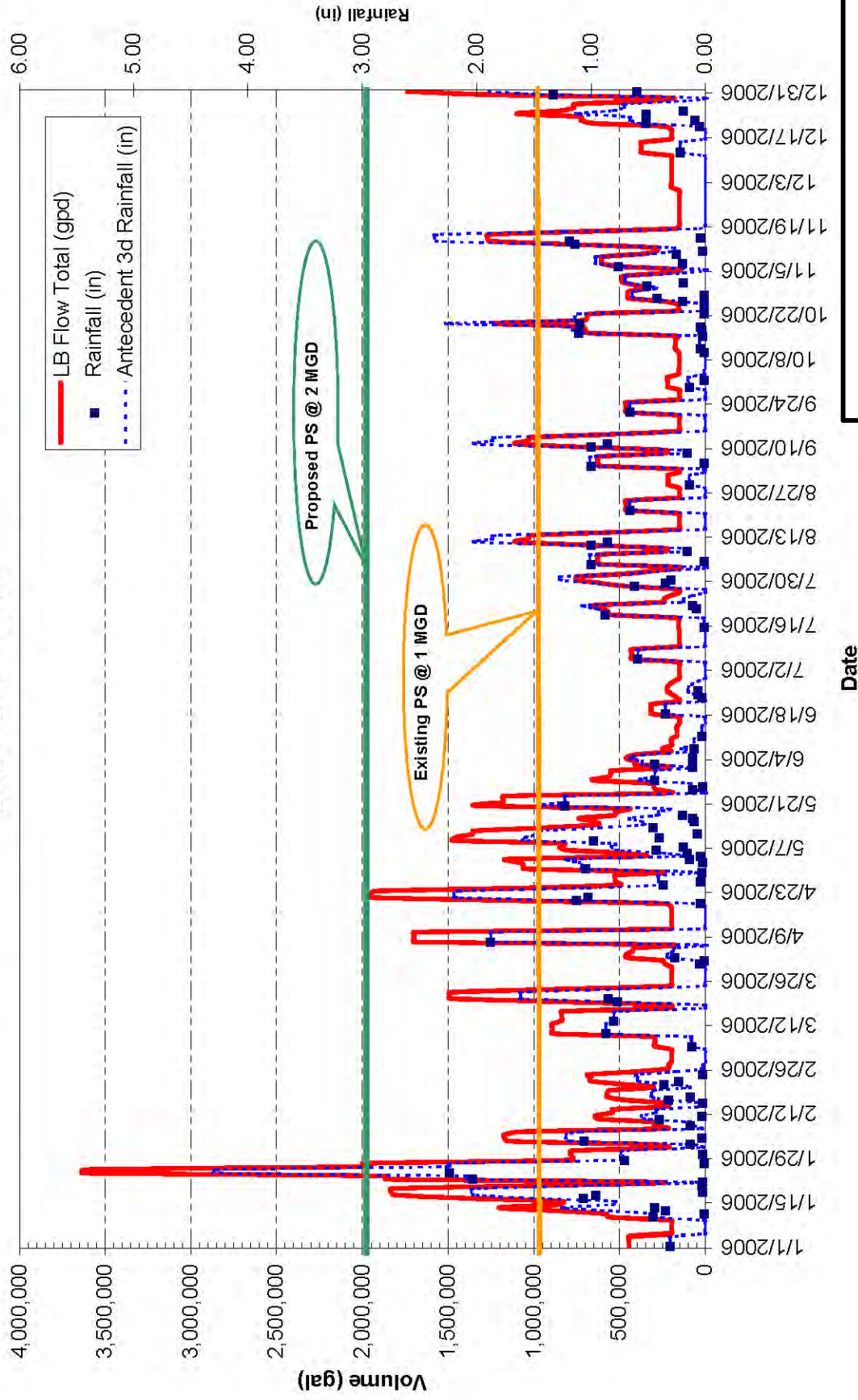
There are three major drainage basins that experience excessive I/I and/or SSO's in the Fayetteville sewer system, namely Laten Bottoms (B), Tanyard Branch (D) and Huntsville Highway (G). Each of these is slated for improvements as part of this Corrective Action Plan. Some of the improvement will be accomplished by new construction and some by sewer system rehabilitation.

NEW CONSTRUCTION

A significant portion of excessive I/I in the Laten Bottom (B) area will be handled by new construction. The proposed Laten Bottom Pump Station and Force Main project calls for replacement of the existing 1 MGD pump station with a new 2 MGD submersible-type wastewater pumping station and a new 14-inch DIP force main directed all the way to the influent channel of the WWTP. This project will serve to deliver all but the largest flows generated in the Laten Bottom area directly to the WWTP, thus eliminating 96% of the SSO's and 87% of the overflow volume. In addition, this project will remove flows from the most downstream reaches of the Tanyard Branch (D) area, thus provided extra carrying capacity to those sewers. Figure 6.1 indicates the impact of the proposed Laten Bottom Pump Station and Force Main.

In the Huntsville Highway (G) area, the SSO problem has occurred primarily at the existing Pitts pumping station. Most of the problems have been traced to mechanical or electrical reliability of the existing pump station, that is about 40 years old. The proposed Liberty, Pitts, and Hardees pump station replacement project calls for replacement of each station with new submersible-type wastewater pumping stations to ensure mechanical and electrical reliability. And, because the Huntsville Highway drainage basin is a growth area, each of the new pump stations is designed to deliver 50 percent more capacity than the existing pump stations. This additional pumping capacity should be sufficient to both eliminate any problems with excessive I/I as well as to provide for future growth. Figure 6.2 indicates the impact of the proposed Pitts Pump Station.

Fayetteville Public Utilities Laten Bottom Basin Flow Monitoring Summary 2006 MODEL YEAR



Date

FLOW MONITORING SUMMARY

FIGURE 6.1

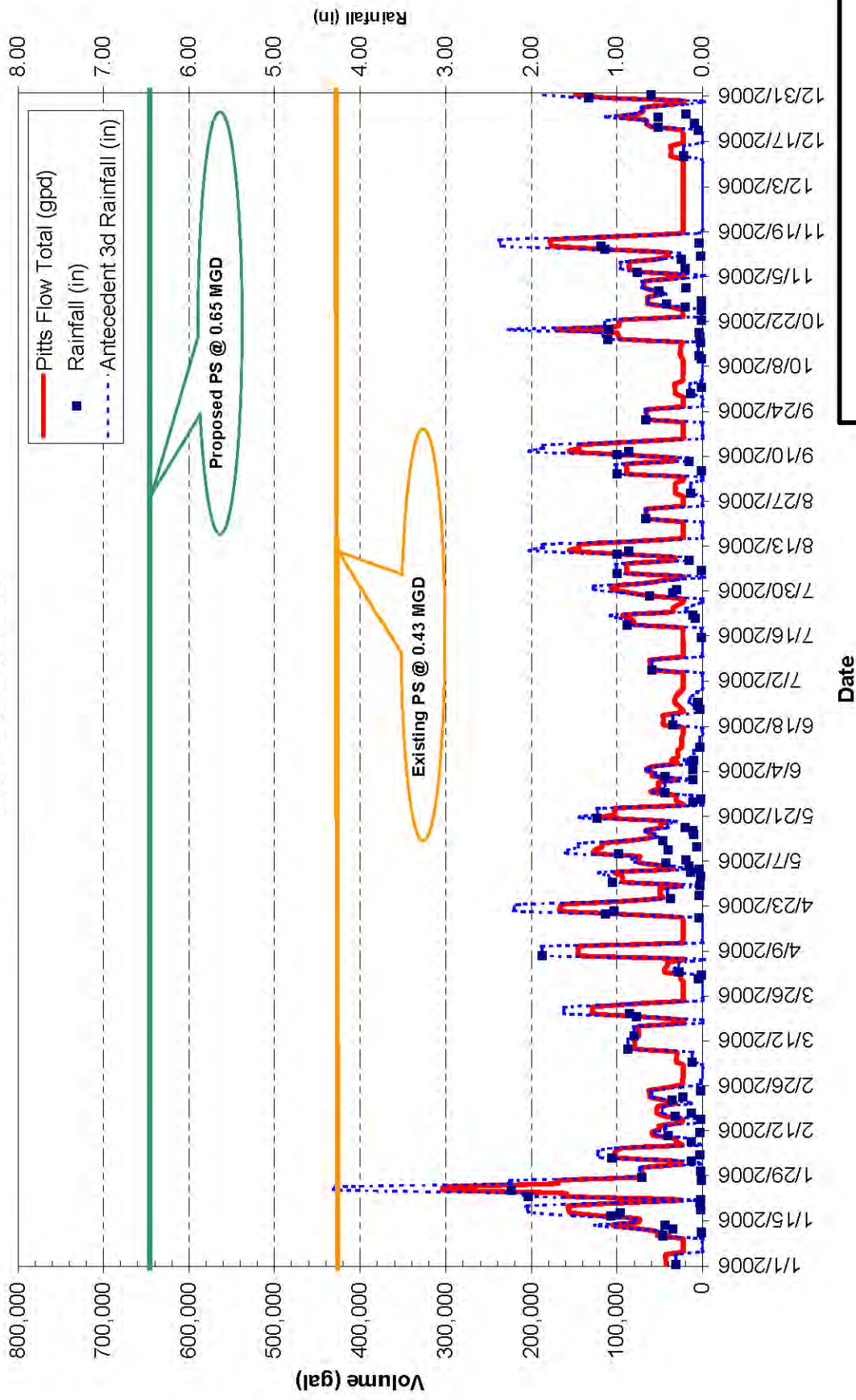
IMPACT OF LATEN BOTTOM
PUMP STATION



FAYETTEVILLE
PUBLIC UTILITIES

N07002

Fayetteville Public Utilities
Pitts G25 Basin Flow Monitoring Summary
2006 MODEL YEAR



FLOW MONITORING SUMMARY

FIGURE 62
IMPACT OF PITTS
PUMP STATION



FAYETTEVILLE
PUBLIC UTILITIES

N07002

SEWER SYSTEM REHABILITATION

As indicated previously, the proposed new construction in the Laten Bottom (B) area is anticipated to reduce SSO occurrences by 96% and SSO volume by 87%. In order to completely eliminate the occurrence of chronic SSO's in the Laten Bottom (B) area, additional sewer system rehabilitation will be undertaken. This rehabilitation will take a phased approach. Additional study including limited cleaning/internal television inspection of known trouble areas, physical inspection to confirm the need/locations for replacement of leaking vented covers on manholes, and physical inspection of potential storm drain "cross connections" will be undertaken to determine rehabilitation needs. Rehabilitation efforts will likely include repair/replacement of leaking lines, manhole sidewall repair and repair or sealing of leaking covers, as well as removing "cross connections". Confirmation flow monitoring will be undertaken to provide accountability to the rehabilitation efforts.

FPU is committing \$500,000 to the sewer rehabilitation effort in the Laten Bottom (B) area.

The other drainage basin where the majority of sewer rehabilitation efforts will be focused is the Tanyard Branch (D) area. Again, a phased approach will be taken as described above.

FPU has received a Community Development Block Grant (CDBG) to assist with the sewer rehabilitation project in this area. Additional details are provided in Chapter 7.

FPU is committing \$523,300 to the sewer rehabilitation effort in the Tanyard Branch (D) area.

CHAPTER 7
RECOMMENDED CAPITAL IMPROVEMENTS

RECOMMENDED CAPITAL IMPROVEMENTS

The projects recommended below are those specifically recommended for reduction of I/I and eventual elimination of SSO's. These projects are listed as those currently under design/construction or those planned for construction.

A proposed schedule for completion of all recommended projects as well as location maps of each project are also presented below.

PROJECTS CURRENTLY UNDER DESIGN/CONSTRUCTION:

Laten Bottoms Pump Station and Force Main

Description: this project calls for replacement of the existing 1 MGD Laten Bottoms Pump Station that has experienced numerous SSO's. The new pump station will consist of a 2 MGD submersible-type pumping station and approximately 11,000 LF of 14-inch force main. The estimated construction cost is \$1,300,000.

Status: Design is complete and plans and specifications have been approved by TDEC. Construction start date is February 4, 2008. Construction contract time is 270 days. It is anticipated that the new facilities will be in operation by October 2008.

Impact: The new facilities are projected to eliminate 96 percent of the number of SSO's in the drainage basin as well as 87 percent of the annual volume of SSO's in the drainage basin.

Project Map: See Figure 7.1

Hardees, Pitts, Liberty Pump Station Replacements

Description: This project calls for replacement of three existing pump stations in the Huntsville Highway drainage basin. The Pitts pump station in particular has experienced some mechanical malfunction with associated SSO's. The three existing pump stations: Hardees (400 gpm), Pitts (300 gpm), and Liberty (180 gpm) are each about 40 years old and in need of replacement. In

consideration of existing and projected flows in the drainage basin, the new pump stations will be sized to handle flows for a minimum twenty-year design horizon. Each pump station will be of the duplex, submersible design with capacities as follows: Hardees (600 gpm), Pitts (450 gpm) and Liberty (300 gpm). The Pitts pump station will also require replacement of the existing force main with approximately 1,100 LF of 8-inch force main.

Status: Design is currently underway and is expected to be complete in March 2008. Construction is scheduled to begin in July 2008 with the new facilities in operation by April 2009.

Impact: The new facilities are projected to eliminate 100 percent of SSO's in the drainage basin.

Project Map: See Figure 7.2.

PROJECTS PLANNED FOR CONSTRUCTION

Tanyard Branch Sewer System Rehabilitation

Description: This project calls for area-wide sewer system rehabilitation in the Tanyard Branch drainage basin in Fayetteville. The project will include a study phase with limited cleaning/internal television inspection of known trouble areas, physical inspection to confirm the needs/locations for replacement of leaking vented manhole covers, and physical inspection of potential storm drain "cross connections". A construction phase will follow including the following:

- Replacement of leaking vented covers on manholes throughout the system;
- Replacement of the sewer line and service lines on Forrest Street between manholes D11 and D73 to eliminate sewer back-up problems or replacement with individual grinder pumps;
- Increasing the capacity of the Lincoln Avenue interceptor sewer through repair/replacement from manhole A81 to D4 using "no dig" technology of either pipe bursting or CIPP (cured in place pipe) methods;
- Increasing the capacity of the Norris creek interceptor sewer through repair/replacement from manholes A81 to A5;
- Replacement/repair of sewer near intersection of Lincoln Avenue and Bright Avenue to eliminate the problem with a wet weather spring; and
- Disconnect storm drains that are connected to the sewer system.

The estimated project cost is \$523,300.

Status: FPU has recently received a Community Development Block Grant (CDBG) from the Tennessee Department of Economic and Community Development to help fund the project. Project implementation will commence in early 2008. Project completion is anticipated by July 2009.

Impact: This project is expected to reduce I/I and subsequent SSO's in the Tanyard Branch drainage basin (Basin "D"). This project is part of the overall sewer system rehabilitation ongoing in the Fayetteville sewer collection and transmission system.

Project Map: See Figure 7.3.

Sewer System Flow Modeling

Description: This project calls for development of computer hydraulic model of the existing trunk and interceptor sewers with diameter greater than 8-inches, pump stations and force mains. This model will be developed as part of FPU's Capacity, Collection, and Treatment Evaluation Protocols. The estimated cost of model development, including limited surveying for manhole invert elevations is \$50,000.

Status: A proposal for development of the hydraulic model has been obtained and implementation is anticipated in May 2008. It is estimated that model development will be completed by December 2008.

Impact: The hydraulic model will provide for the determination of available capacity in the different drainage basins, will provide a listing of transmission system deficiencies and associated recommended improvements, and will form the basis for FPU's capacity assurance and management system. Improvements made during various I/I reduction programs will be tracked in an information management system utilizing information from the hydraulic model.

Laten Bottoms Sewer System Rehabilitation

Description: This project calls for area-wide sewer system rehabilitation in the Laten Bottoms drainage basin in Fayetteville. The project is anticipated to include replacement of vented manhole covers, point repairs of various structural problems, pipeline replacement or cured-in-place pipe lining, and other physical improvements to the existing sewer systems in the Laten Bottoms drainage basin.

The estimated project cost is \$500,000.

Status: FPU has submitted a grant/loan application to Rural Development (RD) to help fund the project. It is anticipated that announcement on the grant/loan application will be made in February 2008. Whether or not RD funding is obtained, FPU is committed to implementing the project by summer 2008. Project completion is anticipated by October 2009.

Impact: This project is expected to reduce I/I and eliminate SSO's in the Laten Bottoms drainage basin. In conjunction with the aforementioned Laten Bottoms Pump Station and Force Main project, this project will strive to eliminate all SSO's so that the drainage basin can be taken off moratorium.

Project Map: See Figure 7.3.

Wastewater Treatment Plant Improvements

Description: Although the existing WWTP is consistently meeting effluent limitations, several mechanical, pumping, and instrumentation systems require improvement to ensure proper plant operation. Paramount among items for improvement is replacement of the mechanically cleaned bar screen, raw wastewater pumping improvements and repair/replacement of meters and controls. The estimated cost of proposed improvements is \$345,000.

Status: FPU has submitted a grant/loan application to RD help fund the project. It is anticipated that announcement on the grant/loan application will be made in February 2008. Whether or not RD funding is obtained, FPU is committed to implementing the project by summer 2008. Project completion is anticipated by December 2009.

Impact: Although this project will not reduce I/I or directly eliminate SSO's, it will serve to enhance the operational capabilities and reliability of the existing WWTP.

Project Map: See Figure 7.1.

Industrial Park Pump Station Replacement

Description: This project calls for replacement of the existing Industrial Park Pump Station because of the age of the station and history of mechanical/electrical malfunctions. The new pump station will be sized to handle flows for a minimum twenty-year design horizon. The pump station will be of the duplex, submersible design.

The estimated project cost is \$115,000.

Status: FPU has submitted a grant/loan application to RD to help fund the project. It is anticipated that announcement on the grant/loan application will be made in February 2008. Whether or not RD funding is obtained, FPU is committed to implementing the project by summer 2008. Project completion is anticipated by June 2009.

Impact: This project does not directly impact I/I reduction or elimination of SSO's except that the pump station will be more reliable and less susceptible to mechanical/electrical failure.

Project Map: See Figure 7.4.

PROJECT SCHEDULE

The Agreed Order requires that all proposed activities for I/I reduction and elimination of SSO's be complete by January 1, 2010. FPU is committed to meeting the deadline contained in the Agreed Order.

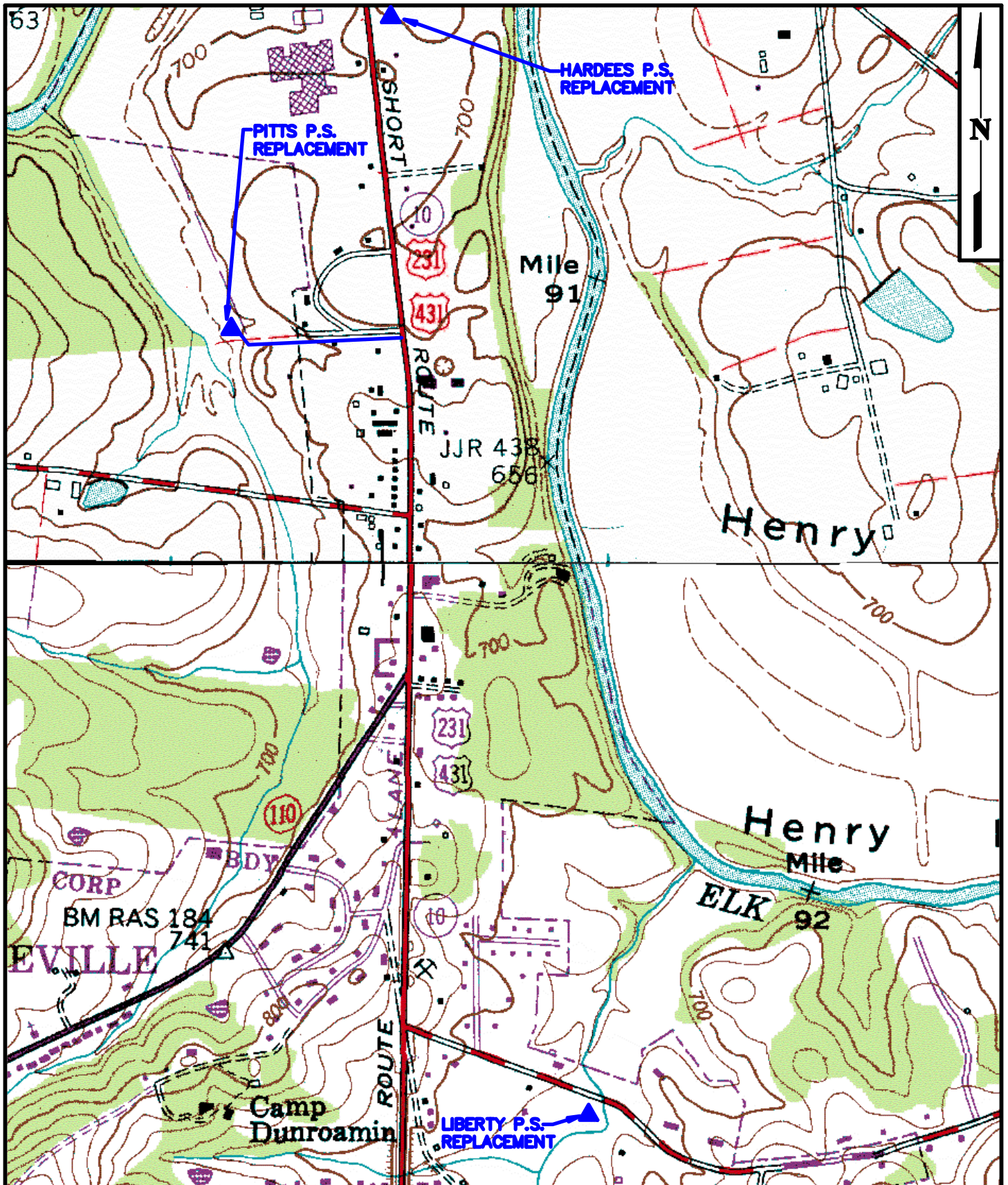
Although several projects are included in grant/loan funding applications, FPU understands that the projects must be implemented whether or not such funding applications are successful. Sewer rates were raised in October 1, 2007 in anticipation of additional financial burdens for rehabilitation of the FPU sewer system. If funding applications are not successful, FPU will produce appropriate financing for each of the projects utilizing existing retained earnings and/or new bond financing.

The Project Schedule is listed below in Table 7.1. Completion of all projects is projected well in advance of the January 2010 deadline included in the Agreed Order.

Table 7.1 FAYETTEVILLE PUBLIC UTILITIES			
Project Schedule			
Project Name	Estimated Cost	Start Date	Completion Date
Laten Bottoms Pump Station and Force Main	\$1,400,000	02/08	10/08
Hardees, Pitts, Liberty Pump Station Replacement	\$870,000	07/08	04/09
Tanyard Branch Sewer System Rehabilitation	\$523,300	01/08	07/09
Sewer System Flow Modeling	\$50,000	05/08	12/08
Laten Bottoms Sewer System Rehabilitation	\$500,000	07/08	10/09
WWTP Improvements	\$345,000	07/08	12/09
Industrial Park Pump Station Replacement	\$ 115,000	07/08	06/09

PROJECT MAPS

Figures 7.1, 7.2, 7.3, and 7.4 identify the project locations of the corrective actions described in this chapter.



LEGEND

PROPOSED SEWER 
 EXISTING SEWER 

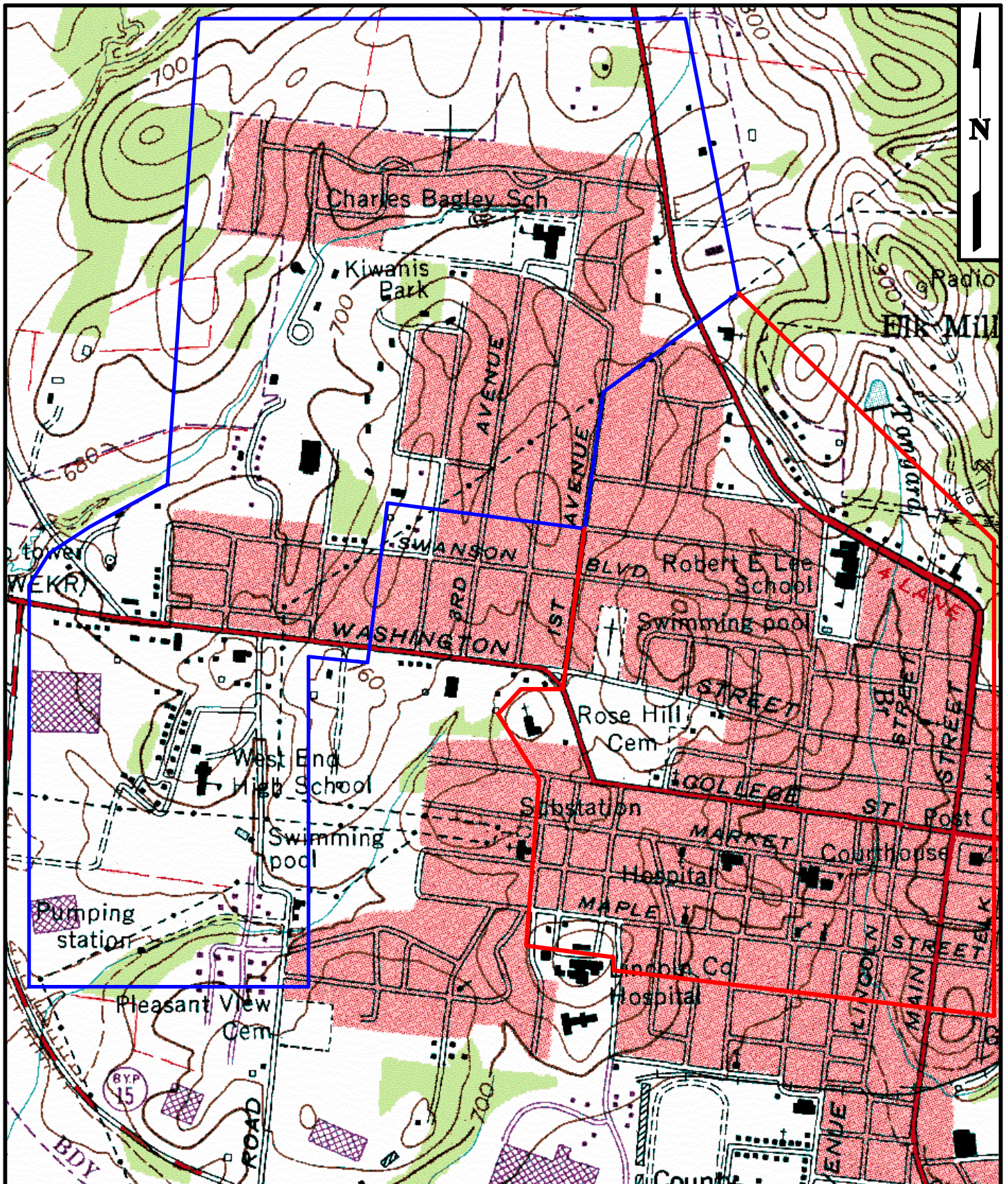
PROJECT MAP

FIGURE 7.2 LIBERTY, PITTS, & HARDEES PUMP STATION REPLACEMENT



FAYETTEVILLE
PUBLIC UTILITIES

N07002



LEGEND

LATEN BOTTOMS REHAB AREA —
TANYARD BRANCH REHAB AREA —

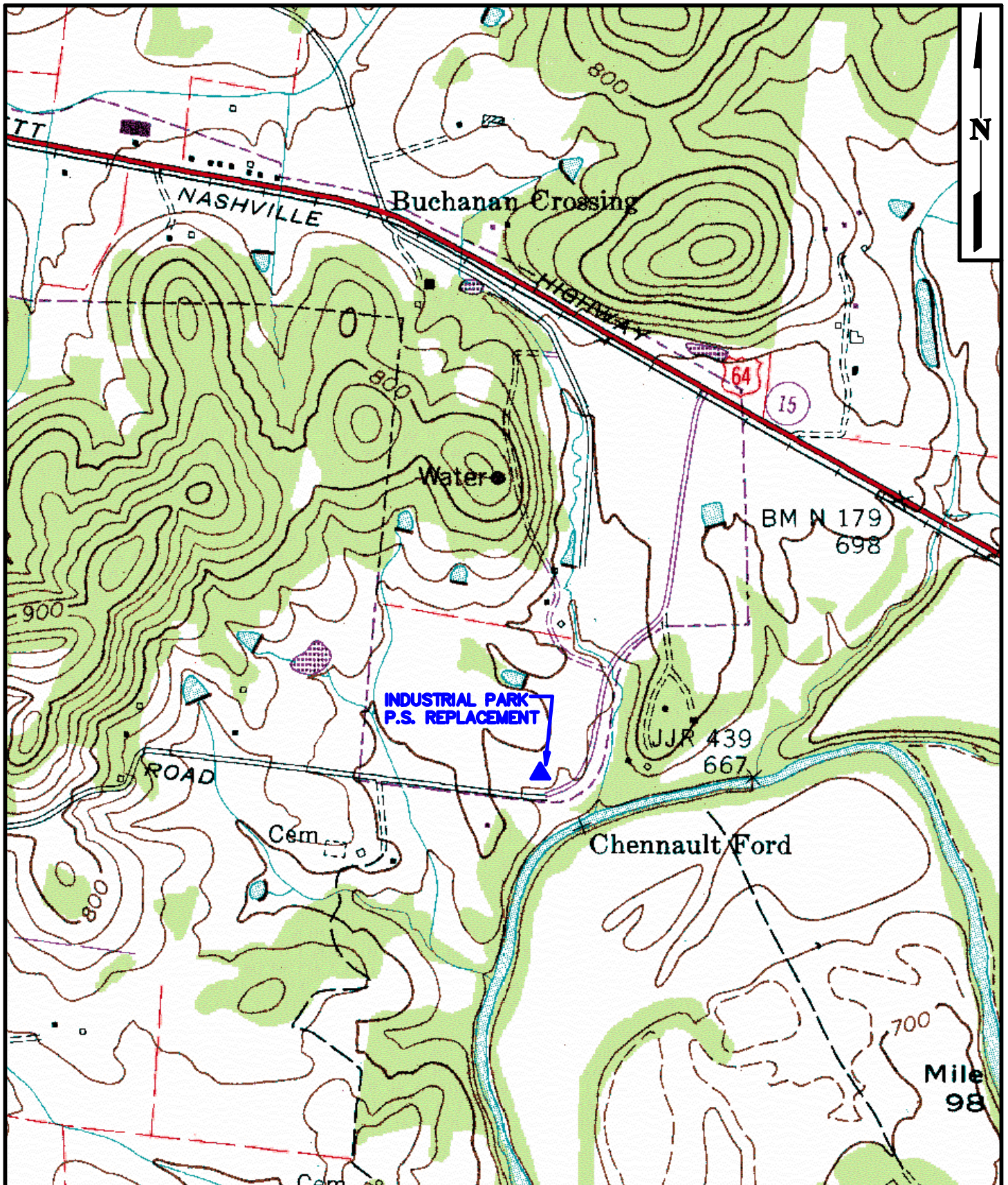
PROJECT MAP

FIGURE 73 TANYARD BRANCH & LATEN BOTTOM SEWER REHABILITATION



FAYETTEVILLE
PUBLIC UTILITIES

N07002



LEGEND

PROPOSED SEWER 
EXISTING SEWER 

PROJECT MAP

FIGURE 74 INDUSTRIAL PARK PUMP STATION REPLACEMENT



FAYETTEVILLE
PUBLIC UTILITIES

N07002

APPENDIX A

Agreed Order



STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION

Office of General Counsel
20th Floor, L&C Tower
401 Church Street
Nashville, Tennessee 37243-1548
Telephone: (615) 532-0131

January 25, 2006

Mr. Jack Atchley
Manager, Water and Sewer Department
P.O. Box 120
408 College Street, W.
Fayetteville, TN 37334

CERTIFIED MAIL #7005 1820 0001 5863 8930

RE: Case No. 05-0628

Dear Mr. Atchley,

Enclosed is an executed copy of the Agreed Order. Thank you very much for your cooperation in this case.

Sincerely,

A handwritten signature in cursive script, appearing to read "Sam Wallace", is written over a horizontal line.

Sam Wallace
Assistant General Counsel

RECEIVED
2005 JAN 25 AM 10: 5
SECRETARY OF STATE

STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION

IN THE MATTER OF:

CITY OF FAYETTEVILLE

RESPONDENT

)
)
) DIVISION OF WATER
) POLLUTION CONTROL
)
) DOCKET NO. 04.09085102A
) CASE NUMBER 05-0628
)

AGREED ORDER

This matter came to be heard before the Tennessee Water Quality Control Board upon the Directors Order and Assessment 05-051D and the Respondent's Petition to Appeal and the representation of counsel that an agreement and settlement had been reached. The Respondent enters into this Agreed Order solely for reasons of compromise of the pending claim, to avoid costly litigation, and in order to fully cooperate with the State of Tennessee in this matter. The Board therefore adopts the following findings of fact and conclusions of law and order of corrective action to which the parties have agreed, as is shown by signature of counsel in settlement of Case No. 05-0628

I.

Paul E. Davis is the duly appointed Director of the Tennessee Division of Water Pollution Control (hereinafter the "Division") by the Commissioner of the Tennessee Department of Environment and Conservation (hereinafter the "Department").

II.

The City of Fayetteville (hereinafter the "Respondent") owns and operates the Fayetteville Wastewater Treatment Plant (WWTP) and its associated wastewater collection

system in Lincoln County, Tennessee. Service of process may be made on the Respondent through The Honorable John Underwood, Mayor, at P.O. Box 13, Fayetteville, Tennessee 37334.

JURISDICTION

III.

Whenever the Commissioner has reason to believe that a violation of Tennessee Code Annotated (T.C.A.) §69-3-101 *et seq.*, the Water Quality Control Act, (the "Act") has occurred, or is about to occur, the Commissioner may issue a complaint to the violator and the Commissioner may order corrective action be taken pursuant to T.C.A. §69-3-109(a) of the Act. Further, the Commissioner has authority to assess civil penalties against any violator of the Act, pursuant to T.C.A. §69-3-115 of the Act; and has authority to assess damages incurred by the state resulting from the violation, pursuant to T.C.A. §69-3-116 of the Act. Department Rules governing general water quality criteria and use classifications for surface waters have been promulgated pursuant to T.C.A. §69-3-105 and are effective as the *Official Compilation Rules and Regulations of the State of Tennessee*, Chapters 1200-4-3 and 1200-4-4 ("Rule"). Pursuant to T.C.A. §69-3-107(13), the Commissioner may delegate to the Director of the Division of Water Pollution Control (hereinafter the "Director") any of the powers, duties, and responsibilities of the commissioner under the Act.

IV.

The Respondent is a "person" as defined at T.C.A. §69-3-103(20) and as herein described, has violated the Act.

V.

T.C.A. § 69-3-108 requires that a person obtain a permit from the department prior to discharges into waters of the state. Rule 1200-4-5-.08 states in part that a set of effluent

limitations will be required in each permit that will indicate adequate operation or performance of treatment units used, and that appropriately limit those harmful parameters present in the wastewater. Furthermore, it is unlawful for any person to increase the volume or strength of any wastes in excess of the permissive discharges specified under any existing permit.

VI.

On January 31, 2002, the Division issued National Pollutant Discharge Elimination System (NPDES) Permit TN0021814 (hereinafter the "permit") to the Respondent. The permit became effective on March 1, 2002, and will expire on January 31, 2007. The permit authorizes the Respondent to discharge treated municipal and industrial wastewater to the Elk River at mile 90.0, in accordance with effluent limitations, monitoring requirements and other conditions established in the permit.

Further, the permit states that the collection system shall be operated in a manner so as to avoid overflows. The addition of new or increased flows is not permitted upstream of any point in the collection system, which experiences chronic overflows (greater than 5 events per year) or would otherwise overload any portion of the system.

VII.

The Elk River is "waters of the state," as defined by T.C.A. § 69-3-103(33). Pursuant to T.C.A. §69-3-105(a)(1), all waters of the state have been classified by the Tennessee Water Quality Control Board for suitable uses. Department Rule 1200-4-4, Use Classifications for Surface Waters, is contained in the Rules of Tennessee Department of Environment and

Conservation Division of Water Pollution Control Amendments. Accordingly, the Elk River is classified for the following uses: fish and aquatic life, recreation, irrigation, livestock watering and wildlife, domestic water supply, and industrial water supply.

VIII.

On September 11, 2003, Division personnel conducted a Compliance Evaluation Inspection (CEI) of the Respondent's WWTP. The examination of the Monthly Operation Reports (MORs) revealed the following types of permit violations: biochemical oxygen demand, total suspended solids, biochemical oxygen demand average percent removal, and total suspended solids average percent removal. These violations were attributed to the effects of high influent flow due to heavy rainfall entering the WWTP through the wastewater collection system.

In addition to the main pump station at the WWTP, there are ten wastewater collection system pumps. Division personnel reviewed the bypass/overflow reports and noted 50 overflows from a total of 4 pump stations during the previous 18 months. Of these, 16 were due to various kinds of mechanical or electrical failure, and 34 were caused by high flows beyond the capacity of the pumps during rain events.

Division personnel determined that despite the violations that the process units of the WWTP were operating properly and appeared to have been well maintained.

IX.

The Respondent reported to the division the following NPDES permit parameter violations for the reporting period July 2003 through July 2005: 4 violations of the biochemical

oxygen demand limit, 1 violation of the total suspended solids limit, 1 violation of the settleable solid limit, 1 violation of the fecal coliform limit, 2 violations of the E. coli limit, and 72 overflows of the wastewater collection system, each of which constitutes an unpermitted discharge.

X.

The Division issued NOVs for self-reported permit violations to the Respondent on the following dates: August 15, 2003, September 9, 2003, and October 8, 2003.

XI.

By discharging wastewater effluent in violation of the terms and conditions of its NPDES permit, and by discharging wastewater from a location other than a permitted outfall, as stated above, the Respondent has violated T.C.A. §§69-3-108(b)(1), (3), and (6) and 69-3-114(b), which state in-part:

T.C.A. §69-3-108

(b) It shall be unlawful for any person, other than a person who discharges into a publicly owned treatment works or a person who is a domestic discharger into a privately owned treatment works, to carry out any of the following activities, except in accordance with the conditions of a valid permit:

(3) The increase in volume or strength of any wastes in excess of the permissive discharges specified under any existing permit;

T.C.A. §69-3-114

(b) It shall be unlawful for any person to act in a manner or degree, which violates any provision of this part or of any rule, regulation, or standard of water quality promulgated by the board or of any permits or orders issued pursuant to the provisions of this part.

ORDER

XII.

WHEREFORE, PREMISES CONSIDERED, it is ORDERED by the Board that:

1. Within 90 days of receipt of this Order, the Respondent shall submit to the Division, a sewer overflow response plan (SORP). The SORP shall include procedures for minimizing health impacts and shall include measures to be taken when overflows discharge on local streets or other public spaces. The SORP shall also include appropriate measures for notification of affected property owners and stream users, and shall include notification of the news media when necessary to protect public health. The SORP shall state specific procedures for notifying known downstream users in the event that untreated wastewater is discharged to waters of the state by sanitary sewer overflows (SSOs). These procedures shall include, but shall not be limited to, provisions for posting warning signs at places where the general public could gain access to the polluted waters. Further, those posted signs shall remain in place until in-stream monitoring conducted by the Respondent reveals that the body of water has returned to normal background conditions when compared to data upstream of the SSOs. In the event that the division requires the Respondent to modify the SORP then the Respondent shall have 30 days from notification that the SORP must be modified to resubmit the revised SORP to the Division. The Respondent shall submit the SORP to the division's Enforcement and Compliance (E & C) Section at 6th Floor L&C Annex, 401 Church Street, Nashville, Tennessee 37243-1534 for review and approval and the Respondent shall submit a copy

of the SORP to the division's Nashville Environmental Field Office (N-EFO) at 711 R. S. Gass Boulevard, Nashville, Tennessee 37243-1550.

2. Within 90 days of written approval of the SORP by the Division, the Respondent shall fully implement the SORP. The Respondent shall send written notification to the division when the SORP has been fully implemented. The notification shall be submitted to the E & C Section and copied to the N-EFO, at the respective addresses shown above.
3. On or before August 1, 2006 the Respondent shall prepare a Sanitary Sewer Overflow Evaluation Report (hereinafter "SSOER") evaluating each overflow that occurred during the timeframe of January 1, 2005, through December 31, 2005.
 - (a) The Respondent shall make the SSOER available to the public for review and comment prior to submitting the SSOER to the Division. The Respondent shall maintain the SSOER as a public document and invite public review and comment by advertising in the local newspapers and posting on the internet. The Respondent shall receive and compile public comments over a 60-day period. These comments shall be incorporated into the SSOER as the Respondent deems appropriate and all public comments received by the Respondent shall be kept in a permanent file and made available to the division upon request.
 - (b) Within 30 days of the close of the public comment period, the SSOER shall be submitted to the E & C Section for review, comment, and approval. The Respondent shall submit a copy of the SSOER to the Columbia-EFO.

- (c) If the Division determines the language of SSOER must be altered, the Respondent shall incorporate the division's written comments into the SSOER within 30 days of receipt and resubmit the SSOER for the division's approval.
- (d) The Respondent shall maintain the approved SSOER as a public document no later than 60 days after the Respondent receive written approval from the Division of the SSOER. The approved SSOER shall be maintained by the Respondent until such time that is replaced by the annual update to the SSOER as described in item 7, below.
- (e) The SSOER shall analyze the specific cause(s) of each sanitary sewer overflow and shall categorize the cure for each overflow into short-term controls, long-term planning and remediation, or both if necessary. The SSOER shall include a listing of all sanitary sewer overflow locations, including addresses, manhole and line unit identification numbers, basin, sub-basin, mini-system, date(s) of each overflow, specific cause(s) of each overflow, and estimated volumes for each event. Overflow locations which have been placed on the short-term controls list and which have demonstrated occurrences of two or more overflow events during the evaluation cycle of January 1, 2005, through December 31, 2005, must be identified on the long-term planning and remediation list and may also be placed on the short-term controls list. This would be appropriate if short-term actions are underway or planned to occur within the next 24 months from the date of submittal of the SSOER. Items which are placed only on the short-term list, and which are not on the long-term list, must be accompanied by a description of the measure(s) and associated time frames or

schedules for conducting activities necessary to prevent further overflows at each particular location.

4. Within 12 months from receipt of the Division's written approval of the SSOER, the Respondent shall submit to the division for approval, a Sanitary Sewer Overflow-Corrective Action Plan/Engineering Report (hereinafter "SSO-CAP/ER"), for the elimination of recurring overflows at all overflow locations identified in the long-term planning and remediation list of the SSOER and an infiltration/inflow (I&I) reduction plan. In the event the Division requires changes to the SSO-CAP/ER, the Respondent shall make the required modifications to the SSO-CAP/ER and resubmit for approval by the Division within 60 days of such notice. The SSO-CAP/ER shall identify the chosen actions that will be implemented to eliminate the SSO(s) and any other alternatives considered as a part of the Respondent's analysis. A project schedule shall be included with the SSO-CAP/ER and shall include timetables for beginning and completing all activities. All scheduled activities shall be complete by January 1, 2010. The Respondent shall submit the original SSO-CAP/ER to the E & C Section and a copy to N-EFO. Prior to submittal to the division, the Respondent shall make a copy of the SSO-CAP/ER available to the public for inspection and comment in the same manner as the SSOER as described in this ORDER in item 3, above. The SSO-CAP/ER shall include, at minimum, projects currently under construction, projects planned for construction currently identified in capital improvement plans which are consistent with the SSO-CAP/ER, pertinent flow measurement data, and a map clearly identifying the project locations. The Respondent shall make available to the division for

review/inspection/copying at Respondent's offices any additional information in its possession that may be of use to the division in assessing or evaluating the SSO-CAP/ER.

5. On or before November 1, 2006, the Respondent shall develop a written summary of the elements of its capacity, management, operations, and maintenance (CMOM) program. The Respondent shall document existing activities that are a part of the program or, if necessary, shall develop and implement new activities that are to be a part of the program. The CMOM program will address the following elements:
 - (a) Identification of major goals of the CMOM program.
 - (b) Identification of the person or position responsible for implementing each of the elements of the CMOM program.
 - (c) Procedures for training of appropriate personnel on a regular basis regarding elements of the CMOM program.
 - (d) Identification of the means by which the mapping of the collection and transmission system is accomplished and maintained.
 - (e) Physical inspection and testing procedures.
 - (f) Preventive and routine maintenance procedures.
 - (g) Procedures for the maintenance of right-of-ways and easements for the sanitary sewer lines.
 - (h) Inventory management system.
 - (i) Program and procedures to identify and prioritize structural deficiencies and implementation of short term and long-term rehabilitation actions to address identified deficiencies.

- (j) Requirements and standards for the installation of new sewers, pumps and other appurtenances and rehabilitation and repair projects.
 - (k) Procedures and specifications for inspecting and testing the installation of new sewers, pumps, and other appurtenances and for rehabilitation and repair projects.
 - (l) Implementation of an identification system for all potential overflow points (POPs) in the collection system. The system should identify the specific line that the POPs are on and should reflect the proximity of the POPs to other POPs on that line.
 - (m) Procedures to update CMOM program elements as appropriate.
 - (n) Procedures to modify the written summary of the CMOM program as appropriate.
6. The Respondent shall submit an Annual CMOM Program Status Report to the E & C Section and submit a copy to the N-EFO on or before June 1 each year, beginning June 1, 2008, and ending June 1, 2012. The Annual CMOM Program Status Report shall describe the Respondent's activities regarding the CMOM implementation during the preceding calendar year. The initial Annual CMOM Program Status Report, due June 1, 2008, will cover activities from January 1, 2007, through December 31, 2007. The Annual CMOM Program Status Report shall include, at a minimum, the following elements.
- (a) Overview of the Respondent's one-year and five-year capital planning process.
 - (b) Overview and summary of the implementation and effectiveness of the CMOM program.
 - (c) Summary of CMOM related capital improvement projects undertaken for the preceding fiscal year.

(d) Summary of CMOM related capital improvement projects identified, but not yet undertaken.

(e) Description of completed, ongoing and planned pump station projects.

(f) Description of the Respondent's community outreach efforts related to the CMOM program.

(g) Description of planned changes to the CMOM program and the system capacity assurance program, with rationalization for the changes.

7. Beginning June 1, 2008, the Annual CMOM Program Status Report shall also include an updated SSOER for the preceding calendar year (January 1 through December 31). This SSOER and subsequent SSOERs shall be maintained as a public document and include all components described in item 3, above.

8. On or before November 1, 2006, the Respondent shall develop and maintain capacity, collection, and treatment evaluation protocols. These protocols shall include, but not be limited to, standard design flow rate assumptions (regarding pipe roughness, manhole head losses, "as-built" drawing accuracy [distance and slope], and water use [gallons per capita per day]), and projected flow impact modeling/calculation techniques. The program shall provide for certification of adequate capacity by a registered professional engineer. The program shall include an information management system for tracking the cumulative studies and relating studies to the I & I reduction program.

9. Within 30 days of receipt of this Order, the Respondent shall develop and implement a procedure whereby any new construction to be connected to the collection system is reviewed and approved by a registered professional engineer. When the capacity, collection, and treatment evaluation protocols required under item 8, above, are developed and maintained, the requirements of this paragraph are void.
10. Effective immediately, the Respondent shall make no further connections, line extensions, or allow increased flows to its wastewater collection system at the Latton Bottom pump station nor the Pitts pump station, except for those connections and line extensions currently under construction or to which the Respondent is legally committed, and those necessitated by subsurface sewage disposal systems which, because of failure, pose a health hazard. It shall be the Respondent's responsibility to enforce the terms of this moratorium and maintain records of all connections or extensions to allow for audits by the department. This moratorium shall remain in effect until modified or rescinded in writing by the Director. At any time, the Respondent may present to the director a written request, with supporting data and a list of commitments, for partial or total relaxation of the moratorium for good cause shown.
11. The Respondent shall pay a CIVIL PENALTY of TWENTY THREE THOUSAND DOLLARS (\$23,000.00) to the division, hereby ASSESSED to be paid as follows:
- (a) The Respondent shall, within 30 days of entry of this ORDER, pay a CIVIL PENALTY in the amount of FIVE THOUSAND DOLLARS (\$5,000.00).
- In lieu of the payment of FIVE THOUSAND DOLLARS (\$5,000.00) of the assessed CIVIL PENALTY, the Respondent may propose Supplemental

Environmental Projects (hereinafter "SEP(s)") with at least a value of TEN THOUSAND DOLLARS (\$10,000.00). Any such proposed SEP(s) must be submitted, in writing, to the director within 30 days of receipt of this ORDER.

The written proposal must include an estimate of the anticipated cost of the project(s). Before implementing any proposed SEP(s), the SEP(s) must be approved, in writing, by the director. In the event that one or more of the proposed SEP(s) are not approved, the director may extend the time in which to submit an alternative SEP(s) proposal. If no extension of time is requested or granted, Respondent shall pay the above assessed CIVIL PENALTY within sixty 60 days of receipt of the director's letter denying the SEP(s).

To receive credit against the CIVIL PENALTY for any approved SEP(s), the Respondent must provide documentation to the director of the actual costs expended on each SEP(s). The value credited against the CIVIL PENALTY for any approved SEP(s) will be determined by the director. In the event that the Respondent fail to propose SEP(s) within sixty 60 days of the issuance of this ORDER, the assessed FIVE THOUSAND DOLLAR (\$5,000.00) CIVIL PENALTY will become due and payable immediately.

- (b) If, and only if, the Respondent fails to comply with item 1 above in a timely manner, the Respondent shall pay a CIVIL PENALTY in the amount of TWO THOUSAND DOLLARS (\$2,000.00), payable within 30 days of default.
- (c) If, and only if, the Respondent fails to comply with item 2 above in a timely manner, the Respondent shall pay a CIVIL PENALTY in the amount of ONE THOUSAND DOLLARS (\$1,000.00), payable within 30 days of default.
- (d) If, and only if, the Respondent fails to comply with item 3 above in a timely manner, the Respondent shall pay a CIVIL PENALTY in the amount of TWO THOUSAND DOLLARS (\$2,000.00), payable within 30 days of default.
- (e) If, and only if, the Respondent fails to comply with item 4 above in a timely manner, the Respondent shall pay a CIVIL PENALTY in the amount of TWO THOUSAND DOLLARS (\$2,000.00), payable within 30 days of default.
- (f) If, and only if, the Respondent fails to comply with item 5 above in a timely manner, the Respondent shall pay a CIVIL PENALTY in the amount of TWO THOUSAND DOLLARS (\$2,000.00), payable within 30 days of default.
- (g) If, and only if, the Respondent fails to comply with item 6 above in a timely manner, the Respondent shall pay a CIVIL PENALTY in the amount of ONE THOUSAND DOLLARS (\$1,000.00) for each Annual MOM Program Status Report not submitted in a timely manner, not to exceed a total of FIVE THOUSAND DOLLARS (\$5,000.00), for all five reports. Payment is due within 30 days of default for each report.

- (h) If, and only if, the Respondent fails to comply with item 7 above in a timely manner, the Respondent shall pay a CIVIL PENALTY in the amount of FIVE HUNDRED DOLLARS (\$500.00) for each Annual MOM Program Status Report that does not contain the updated SSOER as described in item 7 above, not to exceed a total of TWO THOUSAND FIVE HUNDREDDOLLARS (\$2,500.00), for all five reports. Payment is due within 30 days of default for each report.
- (i) If, and only if, the Respondent fails to comply with item 8 or item 9 above in a timely manner, the Respondent shall pay a CIVIL PENALTY in the amount of ONE THOUSAND FIVE HUNDRED DOLLARS (\$1,500.00), payable within 30 days of default.

Further, the Respondent is advised that the foregoing Order is in no way to be construed as a waiver, expressed or implied, of any provision of the law or regulations. However, compliance with the Order will be one factor considered in any decision whether to take enforcement action against the Respondent in the future. The Director may, for good cause shown by the Respondent, extend for a fixed time period, the compliance dates contained within this Order. To be eligible for this time extension, the Respondent shall submit a written request to be received in advance of the compliance date. The written request must include sufficient detail to justify such an extension and include at a minimum the anticipated length of the delay, the precise cause or causes of the delay, and all preventive measures taken to minimize the delay. The Director will reply to the Respondent's request in writing. Should the Respondent fail to meet the requirement by the extended date, any associated Civil Penalty shall become due 30 days thereafter.

Further, the Respondents are advised that the foregoing Order is in no way to be construed as a waiver, expressed or implied, of any provision of law or regulations. However, compliance with the Order will be one factor considered in any decision whether to take enforcement action against the Respondents in the future.

WAIVER OF APPEAL AND RESERVATION OF RIGHTS

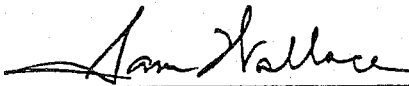
The Respondent knowingly and voluntarily waives its Rights of Appeal and judicial review of this AGREED ORDER, which is a FINAL DECISION AND ORDER of the Board.

REASONS FOR DECISION

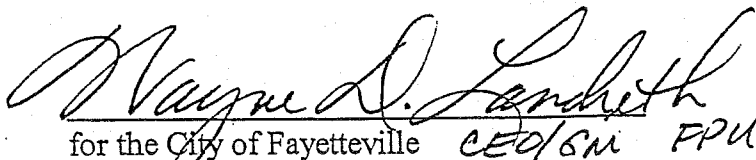
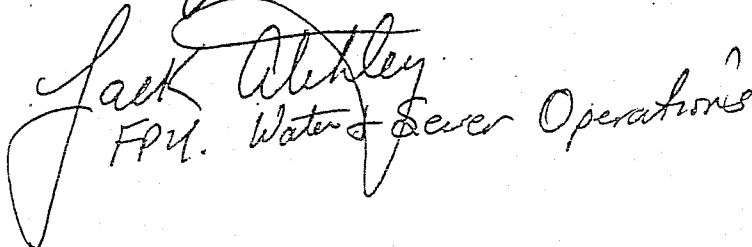
The Board approves this AGREED ORDER because it is a fair and reasonable settlement of the matter. The Board also approves of settlements in that they conserve the resources of the Department and the Board.

A copy of this FINAL DECISION AND ORDER shall be served upon the Respondent by certified mail, return receipt requested. This FINAL DECISION AND ORDER shall become effective upon entry.

APPROVED FOR ENTRY:



Sam Wallace BPR#5207
Assistant General Counsel
Tennessee Department of Environment and Conservation


for the City of Fayetteville CEO/CM FPU
FPU. Water & Sewer Operations

FOR THE TENNESSEE WATER QUALITY CONTROL BOARD:

This 24th day of January, 2006.

John McCluskey
Chairperson

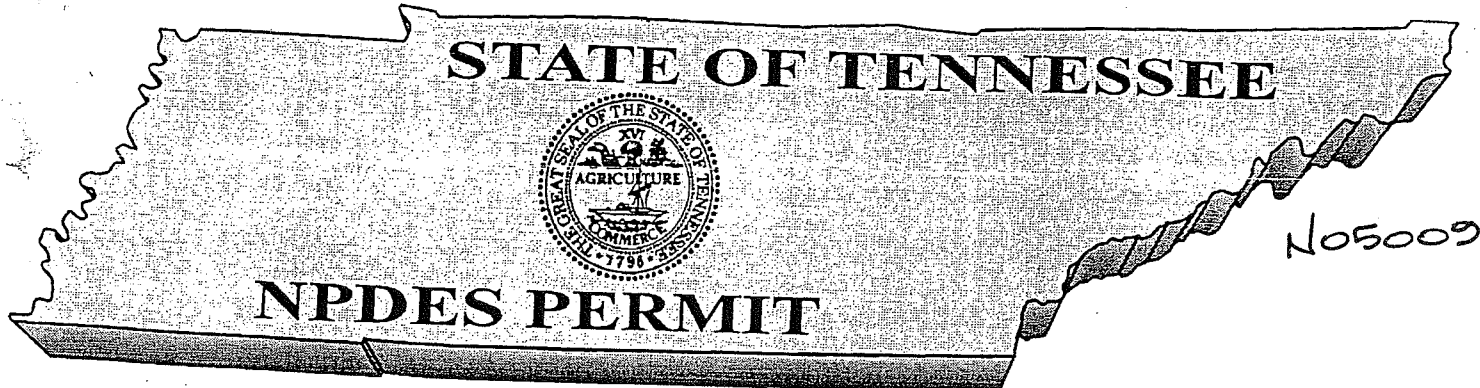
Entered in the Office of the Secretary of State, Administrative Procedures Division, this

25th day of January, 2006.

Charles C. Sullivan II #1281
Charles C. Sullivan, II, Director
Administrative Procedures Division

APPENDIX B

NPDES PERMIT



No. TN0021814

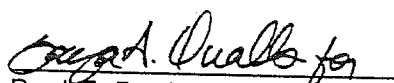
Authorization to discharge under the
National Pollutant Discharge Elimination System (NPDES)

Issued By

Tennessee Department of Environment and Conservation
Division of Water Pollution Control
401 Church Street
6th Floor, L & C Annex
Nashville, Tennessee 37243-1534

Under authority of the Tennessee Water Quality Control Act of 1977 (T.C.A. 69-3-101 et seq.) and the delegation of authority from the United States Environmental Protection Agency under the Federal Water Pollution Control Act, as amended by the Clean Water Act of 1977 (33 U.S.C. 1251, et seq.)

Discharger: **Fayetteville STP**
is authorized to discharge: **Treated municipal and industrial wastewater**
from a facility located: **in Fayetteville, Lincoln County, Tennessee**
to receiving waters named: **Elk River Mile 90.0**
in accordance with effluent limitations, monitoring requirements and other conditions set forth herein.
This permit shall become effective on: **March 1, 2002**
This permit shall expire on: **January 31, 2007**
Issuance date: **January 31, 2002**


Paul E. Davis, Director
Division of Water Pollution Control

CIN-0759

RDAs 2352 and 2366



STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
401 CHURCH STREET
L & C ANNEX 6TH FLOOR
NASHVILLE TN 37243-1534

January 31, 2002

Mr. Jack Atchley
Assistant Manager
Fayetteville STP
P.O. Box 584
Fayetteville, TN 37334

Subject: **NPDES Permit No. TN0021814**
Fayetteville STP
Fayetteville, Lincoln County, Tennessee

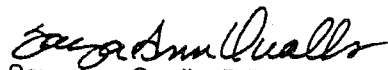
Dear Mr. Atchley:

In accordance with the provisions of the Tennessee Water Quality Control Act, Tennessee Code Annotated, Sections 69-3-101 through 69-3-120, the enclosed NPDES Permit is hereby issued by the Division of Water Pollution Control. The continuance and/or reissuance of this NPDES Permit is contingent upon your meeting the conditions and requirements as stated therein.

Please be advised that you have the right to appeal any of the provisions established in this NPDES Permit, in accordance with Tennessee Code Annotated, Section 69-3-110, and the General Regulations of the Tennessee Water Quality Control Board. If you elect to appeal, you should file a petition within thirty (30) days of the receipt of this permit.

If you have questions concerning this correspondence or if we may be of assistance to you in any way, please contact Mrs. Maybelle T. Sparks at (615) 532-0651 or by E-mail at msparks2@mail.state.tn.us.

Sincerely,


Saya Ann Qualls, P.E.
Manager, Permit Section
Division of Water Pollution Control

SAQ/MTS
P/WAT-5

Final Permit Cover Letter TN0021814.DOC
Enclosure

cc: EPA Region IV, Water Mgmt. Division, NPDES & Biosolids Permits Section- Connie Kagey
Division of Water Pollution Control, Permit Section Files
Division of Water Pollution Control, Environmental Assistance Center- Columbia

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MTS
TN0021814PMT.DOC

PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

The City of Fayetteville is authorized to discharge treated municipal and industrial wastewater to the Elk River at mile 90.0. Discharge 001 consists of municipal wastewater from a treatment facility with a design capacity of 3.35 MGD. Discharge 001 shall be limited and monitored by the permittee as specified below:

Effluent Characteristics	Effluent Limitations						Monitoring Requirements			
	Monthly Average Conc. (mg/l)	Monthly Average Amount (lb/day)	Weekly Average Conc. (mg/l)	Weekly Average Amount (lb/day)	Daily Maximum Conc. (mg/l)	Daily Minimum Percent Removal	Measurement Frequency	Sample Type	Sampling Point	
BOD ₅	30 Report	838	40	1118	45 Report	40	3/week	composite	effluent	
Suspended Solids	30 Report	838	40	1118	45 Report	40	3/week	composite	effluent	
							3/week	composite	effluent	
							3/week	composite	influent	

Note: The permittee shall achieve 85% removal of BOD₅ and TSS on a monthly average basis. The permittee shall report all instances of overflow and/or bypasses. See Part 1.D.5a for reporting requirements.

Effluent Characteristics	Effluent Limitations				Monitoring Requirements		
	Monthly Average	Daily Minimum	Daily Maximum	Measurement Frequency	Sample Type	Sampling Point	
Fecal Coliform	200/100 ml (see the following paragraphs)		1000/100 ml	3/week	grab	effluent	
E. coli	126/100 ml (see the following paragraphs)			3/week	grab	effluent	
Chlorine residual (Total)			0.4 mg/l instantaneous	5/week	grab	effluent	
Settleable solids			1.0 ml/l	3/week	composite	effluent	
Dissolved oxygen		1.0 mg/l instantaneous		5/week	grab	effluent	
pH (Standard Units)		6.0	9.0	5/week	grab	effluent	
Flow (MGD)	Report Report		Report Report	7/week 7/week	continuous continuous	influent effluent	
IC ₂₅	Survival, reproduction and growth in 5.4% effluent			1/quarter	composite	effluent	

Note: See Part III (D) for biomonitoring test and reporting requirements. See next page for percent removal calculations.

The wastewater discharge must be disinfected to the extent that viable coliform organisms are effectively eliminated. The concentration of the fecal coliform group after disinfection shall not exceed 200 per 100 ml, nor shall the *E. coli* concentration exceed 126 per 100 ml as the geometric mean based on a minimum of 10 samples, collected from a given sampling site over a period of not more than 30 consecutive days with individual samples being collected at intervals of not less than 12 hours. For the purpose of determining the geometric mean, individual samples having a fecal coliform or *E. coli* group concentration of less than one (1) per 100 ml shall be considered as having a concentration of one (1) per 100 ml. In addition, the concentration of the fecal coliform group in any individual sample shall not exceed 1,000 per 100 ml.

There shall be no distinctly visible floating scum, oil or other matter contained in the wastewater discharge. The wastewater discharge must not cause an objectionable color contrast in the receiving stream.

The wastewater discharge shall not contain pollutants in quantities that will be hazardous or otherwise detrimental to humans, livestock, wildlife, plant life, or fish and aquatic life in the receiving stream.

Sludge or any other material removed by any treatment works must be disposed of in a manner that prevents its entrance into or pollution of any surface or subsurface waters. Additionally, the disposal of such sludge or other material must be in compliance with the Tennessee Solid Waste Disposal Act, TCA 68-31-101 et seq. and the Tennessee Hazardous Waste Management Act, TCA 68-46-101 et seq.

For the purpose of evaluating compliance with the permit limits established herein, where certain limits are below the State of Tennessee published required detection levels (RDLs) for any given effluent characteristics, the results of analyses below the RDL shall be reported as Below Detection Level (BDL), unless in specific cases other detection limits are demonstrated to be the best achievable because of the particular nature of the wastewater being analyzed.

For BOD₅ and TSS, the treatment facility shall demonstrate a minimum of 85% removal efficiency on a monthly average basis. This is calculated by determining an average of all daily influent concentrations and comparing this to an average of all daily effluent concentrations. The formula for this calculation is as follows:

$$\left[1 - \frac{\text{average of daily effluent concentration}}{\text{average of daily influent concentration}} \right] \times 100\% = \% \text{ removal}$$

The treatment facility will also demonstrate 40% minimum removal of the BOD₅ and TSS based upon each daily composite sample. The formula for this calculation is as follows:

$$\left[1 - \frac{\text{daily effluent concentration}}{\text{daily influent concentration}} \right] \times 100\% = \% \text{ removal}$$

B. MONITORING PROCEDURES

1. Representative Sampling

Appropriate flow measurement devices and methods consistent with accepted scientific practices shall be selected and used to insure the accuracy and reliability of measurements of the volume of monitored discharges. The devices shall be installed, calibrated and maintained to insure that the accuracy of the measurements is consistent with accepted capability of that type of device. Devices selected shall be capable of measuring flows with a maximum deviation of less than plus or minus 10% from the true discharge rates throughout the range of expected discharge volumes.

Samples and measurements taken in compliance with the monitoring requirements specified above shall be representative of the volume and nature of the monitored discharge, and shall be taken at the following location(s):

Influent samples must be collected prior to mixing with any other wastewater being returned to the head of the plant, such as sludge return. Those systems with more than one influent line must collect samples from each and proportion the results by the flow from each line.

Effluent samples must be representative of the wastewater being discharged and collected prior to mixing with any other discharge or the receiving stream. This can be a different point for different parameters, but must be after all treatment for that parameter or all expected change:

- a. BOD₅ samples can be collected before chlorination to avoid having to dechlorinate and seed the samples.
- b. The chlorine residual must be measured after the chlorine contact chamber and any dechlorination. It may be to the advantage of the permittee to measure at the end of any long outfall lines.
- c. Samples for fecal coliform can be collected at any point between disinfection and the actual discharge.
- d. The dissolved oxygen can drop in the outfall line; therefore, D.O. measurements are required at the discharge end of outfall lines greater than one mile long. Systems with outfall lines less than one mile may measure dissolved oxygen as the wastewater leaves the treatment facility. For systems with dechlorination, dissolved oxygen must be measured after this step and as close to the end of the outfall line as possible.
- e. Total suspended solids and settleable solids can be collected at any point after the final clarifier.
- f. Biomonitoring tests (if required) shall be conducted on final effluent.

2. Sampling Frequency

Where the permit requires sampling and monitoring of a particular effluent characteristic(s) at a frequency of less than once per day or daily, the permittee is precluded from marking the "No Discharge" block on the Discharge Monitoring Report if there has been any discharge from that particular outfall during the period which coincides with the required monitoring frequency; i.e. if the required monitoring frequency is once per month or 1/month, the monitoring period is one month, and if the discharge occurs during only one day in that period then the permittee must sample on that day and report the results of analyses accordingly.

3. Test Procedures

- a. Test procedures for the analysis of pollutants shall conform to regulations published pursuant to Section 304 (h) of the Clean Water Act (the "Act"), as amended, under which such procedures may be required.
- b. Unless otherwise noted in the permit, all pollutant parameters shall be determined according to methods prescribed in Title 40, CFR, Part 136, as amended, promulgated pursuant to Section 304 (h) of the Act.
- c. Composite samples must be proportioned by flow at time of sampling. Aliquots may be collected manually or automatically. The sample aliquots must be maintained at 4 degrees Celsius during the compositing period.

4. Recording of Results

For each measurement or sample taken pursuant to the requirements of this permit, the permittee shall record the following information:

- a. The exact place, date and time of sampling;
- b. The exact person(s) collecting samples;
- c. The dates and times the analyses were performed;
- d. The person(s) or laboratory who performed the analyses;
- e. The analytical techniques or methods used, and;
- f. The results of all required analyses.

5. Records Retention

All records and information resulting from the monitoring activities required by this permit including all records of analyses performed and calibration and maintenance of instrumentation shall be retained for a minimum of three (3) years, or longer, if requested by the Division of Water Pollution Control.

C. DEFINITIONS

The "**instantaneous minimum concentration**" is the minimum allowable concentration, in milligrams per liter, of a pollutant parameter contained in the wastewater discharge determined from a grab sample taken from the discharge at any point in time.

The "**instantaneous maximum concentration**" is a limitation on the concentration, in milligrams per liter, of any pollutant contained in the wastewater discharge determined from a grab sample taken from the discharge at any point in time.

The "**daily maximum concentration**" is a limitation on the average concentration in milligrams per liter, of the discharge during any calendar day. When a proportional-to-flow composite sampling device is used, the daily concentration is the concentration of that 24-hour composite; when other sampling means are used, the daily concentration is the arithmetic mean of the concentrations of equal volume samples collected during any calendar day or sampling period.

A "**one week period**" (or "**calendar-week**") is defined as the period from Sunday through Saturday. For reporting purposes, a calendar week that contains a change of month shall be considered part of the latter month.

The "**weekly average concentration**", is the arithmetic mean of all the composite samples collected in a one-week period. The permittee must report the highest weekly average in the one-month period.

The "**weekly average amount**", shall be determined by the summation of all the measured daily discharges by weight divided by the number of days during the calendar week when the measurements were made.

The "**monthly average concentration**", other than for fecal coliform bacteria, is the arithmetic mean of all the composite or grab samples collected in a one-calendar month period.

The "**monthly average amount**", shall be determined by the summation of all the measured daily discharges by weight divided by the number of days during the calendar month when the measurements were made.

A "**composite sample**" is a combination of not less than 8 influent or effluent portions, of at least 100 ml, collected over a 24-hour period. Under certain circumstances a lesser time period may be allowed, but in no case, less than 8 hours.

A "**grab sample**" is a single influent or effluent sample collected at a particular time.

The "**geometric mean**" of any set of values is the n^{th} root of the product of the individual values where N is equal to the number of individual values. The geometric mean is equivalent to the antilog of the arithmetic mean of the logarithms of the individual values. For the purposes of calculating the geometric mean, values of zero (0) shall be considered to be one (1).

A "**calendar day**" is defined as any 24-hour period.

A "**quarter**" is defined as any one of the following three-month periods: January 1 through March 31, April 1 through June 30, July 1 through September 30, and/or October 1 through December 31.

A "**bypass**" is defined as the intentional diversion of waste streams from any portion of a treatment facility.

A "**dry weather overflow event**" is defined as one day or any portion of a day in which discharge of wastewater from the collection or treatment system other than through the permitted outfall occurs and is not directly related to a rainfall event. Discharge from more than one point within a 24-hour period shall be counted as separate events.

A "**rainfall event**" is defined as any occurrence of rain, preceded by 10 hours without precipitation that results in an accumulation of 0.01 inches or more. Instances of rainfall occurring within 10 hours of each other will be considered a single rainfall event.

A "**sanitary sewer overflow event**" is defined as an unpermitted discharge of wastewater from the collection or treatment system other than through the permitted outfall that is directly related to a specific rainfall event. Multiple discharge occurrences within a single rainfall event are considered a single sanitary sewer overflow event.

D. REPORTING

1. Monitoring Results

Monitoring results shall be recorded monthly and submitted monthly using Discharge Monitoring Report (DMR) forms supplied by the Division of Water Pollution Control. Submittals shall be postmarked no later than 15 days after the completion of the reporting period. The top two copies of each report are to be submitted. A copy should be retained for the permittee's files. DMRs and any communication regarding compliance with the conditions of this permit must be sent to:

**TENNESSEE DEPT. OF ENVIRONMENT & CONSERVATION
DIVISION OF WATER POLLUTION CONTROL
COMPLIANCE REVIEW SECTION
401 CHURCH STREET
L & C ANNEX 6TH FLOOR
NASHVILLE TN 37243-1534**

The first DMR is due on the 15th of the month following permit effectiveness.

DMRs and any other report or information submitted to the Division must be signed and certified by a responsible corporate officer as defined in 40 CFR 122.22, a general partner or

proprietor, or a principal municipal executive officer or ranking elected official, or his duly authorized representative. Such authorization must be submitted in writing and must explain the duties and responsibilities of the authorized representative.

2. Additional Monitoring by Permittee

If the permittee monitors any pollutant specifically limited by this permit more frequently than required at the location(s) designated, using approved analytical methods as specified herein, the results of such monitoring shall be included in the calculation and reporting of the values required in the DMR form. Such increased frequency shall also be indicated on the form.

3. Falsifying Results and/or Reports

Knowingly making any false statement on any report required by this permit or falsifying any result may result in the imposition of criminal penalties as provided for in Section 309 of the Federal Water Pollution Control Act, as amended, and in Section 69-3-115 of the Tennessee Water Quality Control Act.

4. Monthly Report of Operation

Monthly operational reports shall be submitted on standard forms to the appropriate Division of Water Pollution Control Environmental Assistance Center in Jackson, Nashville, Chattanooga, Columbia, Cookeville, Memphis, Johnson City, or Knoxville. Reports shall be submitted by the 15th day of the month following data collection.

5. Bypass and Overflow Reporting

a. Report Requirements

A summary report of known or suspected instances of overflows in the collection system or bypass of wastewater treatment facilities shall accompany the Discharge Monitoring Report. The report must contain the date and duration of the instances of overflow and/or bypassing and the estimated quantity of wastewater discharged and/or bypassed.

The report must also detail activities undertaken during the reporting period to (1) determine if overflow is occurring in the collection system, (2) correct those known or suspected overflow points and (3) prevent future or possible overflows and any resulting bypassing at the treatment facility.

On the DMR, the permittee must report the number of sanitary sewer overflows, dry-weather overflows and in-plant bypasses separately. Three lines must be used on the DMR form, one for sanitary sewer overflows, one for dry-weather overflows and one for in-plant bypasses.

b. Anticipated Bypass Notification

If, because of unavoidable maintenance or construction, the permittee has need to create an in-plant bypass which would cause an effluent violation, the

permittee must notify the Division as soon as possible, but in any case, no later than 10 days prior to the date of the bypass.

6. Reporting Less Than Detection

A permit limit may be less than the accepted detection level. If the samples are below the detection level, then report "BDL" or "NODI =B" on the DMRs. The permittee must use the correct detection levels in all analytical testing required in the permit. The required detection levels are listed in the Rules of the Department of Environment and Conservation, Division of Water Pollution Control, Chapter 1200-4-3-.05(8).

For example, if the limit is 0.02 mg/l with a detection level of 0.05 mg/l and detection is shown; 0.05 mg/l must be reported. In contrast, if nothing is detected reporting "BDL" or "NODI =B" is acceptable.

E. COMPLIANCE WITH SECTION 208

The limits and conditions in this permit shall require compliance with an area-wide waste treatment plan (208 Water Quality Management Plan) where such approved plan is applicable.

F. 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 Sections 301(b)(2)(C) and (D), 307(a)(2) and 405(d)(2)(D) of the Clean Water Act, as amended, if the effluent standard, limitation or sludge disposal requirement so issued or approved:

1. Contains different conditions or is otherwise more stringent than any condition in the permit; or
2. Controls any pollutant or 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.

The permit may be reopened or revoked and reissued based on any new analytical data obtained.

PART II

A. GENERAL PROVISIONS

1. Duty to Reapply

Permittee is not authorized to discharge after the expiration date of this permit. In order to receive authorization to discharge beyond the expiration date, the permittee shall submit such information and forms as are required to the Director of Water Pollution Control (the "Director") no later than 180 days prior to the expiration date. Such forms shall be properly signed and certified.

2. Right of Entry

The permittee shall allow the Director, the Regional Administrator of the U.S. Environmental Protection Agency, or their authorized representatives, upon the presentation of credentials:

- a. To enter upon the permittee's premises where an effluent source is located or where records are required to be kept under the terms and conditions of this permit, and at reasonable times to copy these records;
- b. To inspect at reasonable times any monitoring equipment or method or any collection, treatment, pollution management, or discharge facilities required under this permit; and
- c. To sample at reasonable times any discharge of pollutants.

3. Availability of Reports

Except for data determined to be confidential under Section 308 of the Federal Water Pollution Control Act, as amended, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the Division of Water Pollution Control. As required by the Federal Act, effluent data shall not be considered confidential.

4. Proper Operation and Maintenance

- a. The permittee shall at all times properly operate and maintain all facilities and systems (and related appurtenances) for collection and treatment which are installed or used by the permittee to achieve compliance with the terms and conditions of this permit. Proper operation and maintenance also includes adequate laboratory and process controls and appropriate quality assurance procedures. This provision requires the operation of backup 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. Backup continuous pH and flow monitoring equipment are not required.
- b. Dilution water shall not be added to comply with effluent requirements to achieve BCT, BPT, BAT and or other technology based effluent limitations such as those in State of Tennessee Rule 1200-4-5-.03.

5. Treatment Facility Failure (Industrial Sources)

The permittee, in order to maintain compliance with this permit, shall control production, all discharges, or both, upon reduction, loss, or failure of the treatment facility, until the facility is restored or an alternative method of treatment is provided. This requirement applies in such situations as the reduction, loss, or failure of the primary source of power.

6. Property Rights

The issuance of this permit does not convey any property rights in either real or personal property, 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.

7. Severability

The provisions of this permit are severable. If any provision of this permit due to any circumstance, is held invalid, then the application of such provision to other circumstances and to the remainder of this permit shall not be affected thereby.

8. Other Information

If the permittee becomes aware that he failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Director, then he shall promptly submit such facts or information.

B. CHANGES AFFECTING THE PERMIT

1. Planned Changes

The permittee shall give notice to the Director as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required only when:

- a. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 CFR 122.29(b); or
- b. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants, which are subject neither to effluent limitations in the permit, nor to notification requirements under 40 CFR 122.42(a)(1).

2. Permit Modification, Revocation, or Termination

- a. This permit may be modified, revoked and reissued, or terminated for cause as described in 40 CFR 122.62 and 122.64, Federal Register, Volume 49, No. 188 (Wednesday, September 26, 1984), as amended.
- b. The permittee shall furnish to the Director, within a reasonable time, any information which the Director 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 Director, upon request, copies of records required to be kept by this permit.
- c. If any applicable effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is established for any toxic pollutant under Section 307(a) of the Federal Water Pollution Control Act, as amended, the Director shall modify or revoke and reissue the permit to conform to the prohibition or to the effluent standard, providing that the effluent standard is more stringent than the limitation in the permit on the toxic pollutant. The permittee shall comply with these effluent standards or prohibitions within the time provided in the regulations that establish these standards or prohibitions, even if the permit has not yet been modified or revoked and reissued to incorporate the requirement.
- d. The filing of a request by the permittee for a modification, revocation, reissuance, termination, or notification of planned changes or anticipated noncompliance does not halt any permit condition.

3. Change of Ownership

This permit may be transferred to another party (provided there are neither modifications to the facility or its operations, nor any other changes which might affect the permit limits and conditions contained in the permit) by the permittee if:

- a. The permittee notifies the Director 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 specified date for transfer of permit responsibility, coverage, and liability between them; and
- c. The Director, within 30 days, does not notify the current permittee and the new permittee of his intent to modify, revoke or reissue, or terminate the permit and to require that a new application be filed rather than agreeing to the transfer of the permit.

Pursuant to the requirements of 40 CFR 122.61, concerning transfer of ownership, the permittee must provide the following information to the Division in their formal notice of intent to transfer ownership: 1) the NPDES permit number of the subject permit; 2) the effective date of the proposed transfer; 3) the name and address of the transferor; 4) the name and address of the transferee; 5) the names of the responsible parties for both the transferor and transferee; 6) a statement that the transferee assumes responsibility for the subject NPDES permit; 7) a statement that the transferor relinquishes responsibility for the subject NPDES permit; 8) the signatures of the responsible parties for both the transferor and transferee pursuant to the requirements of 40 CFR 122.22(a), "Signatories to permit applications"; and, 9) a statement regarding any proposed modifications to the facility, its operations, or any other changes which might affect the permit limits and conditions contained in the permit.

4. Change of Mailing Address

The permittee shall promptly provide to the Director written notice of any change of mailing address. In the absence of such notice the original address of the permittee will be assumed to be correct.

C. NONCOMPLIANCE

1. Effect of Noncompliance

All discharges shall be consistent with the terms and conditions of this permit. Any permit noncompliance constitutes a violation of applicable State and Federal laws and is grounds for enforcement action, permit termination, permit modification, or denial of permit reissuance.

2. Reporting of Noncompliance

a. 24-Hour Reporting

In the case of any noncompliance which could cause a threat to public drinking supplies, or any other discharge which could constitute a threat to human health or the environment, the required notice of non-compliance shall be provided to the Division of Water Pollution Control in the appropriate Environmental Assistance Center within 24-hours from the time the permittee becomes aware of the circumstances. (The

Environmental Assistance Center should be contacted for names and phone numbers of environmental response team).

A written submission must be provided within five days of the time the permittee becomes aware of the circumstances unless the Director on a case-by-case basis waives this requirement. The permittee shall provide the Director with the following information:

- i. A description of the discharge and cause of noncompliance;
- ii. The period of noncompliance, including exact dates and times or, if not corrected, the anticipated time the noncompliance is expected to continue; and
- iii. The steps being taken to reduce, eliminate, and prevent recurrence of the noncomplying discharge.

b. Scheduled Reporting

For instances of noncompliance which are not reported under subparagraph 2.a above, the permittee shall report the noncompliance on the Discharge Monitoring Report. The report shall contain all information concerning the steps taken, or planned, to reduce, eliminate, and prevent recurrence of the violation and the anticipated time the violation is expected to continue.

3. Overflow

- a. **"Overflow"** means the discharge of wastes from any portion of the collection, transmission, or treatment system other than through permitted outfalls. **"Severe property damage"** means substantial physical damage to property, damage to the treatment facilities which would cause them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of an overflow. Severe property damage does not mean economic loss caused by delays in production.
- b. Both sanitary sewer overflows and dry-weather overflows are prohibited unless all of the following three (3) conditions are met:
 - i. The overflow is unavoidable to prevent loss of life, personal injury, or severe property damage. Overflows caused by a lack of capacity or improper management, operation, or maintenance do not qualify as meeting this condition;
 - ii. There are no feasible alternatives to overflow, such as the construction and use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent an overflow which occurred during normal periods of equipment downtime or preventative maintenance;

- iii. The permittee submits notice of an unanticipated overflow to the Division of Water Pollution Control in the appropriate environmental assistance center within 24-hours of becoming aware of the overflow (if this information is provided orally, a written submission must be provided within five days). When the need for the overflow is foreseeable, prior notification shall be submitted to the Director, if possible, at least ten (10) days before the date of the overflow.
- c. The permittee shall operate the collection system so as to avoid overflows. No new or additional flows shall be added upstream of any point in the collection system, which experiences chronic overflows (greater than 5 events per year) or would otherwise overload any portion of the system. Unless there is specific enforcement action to the contrary, the permittee is relieved of this requirement after: 1) an authorized representative of the Commissioner of the Department of Environment and Conservation has approved an engineering report and construction plans and specifications prepared in accordance with accepted engineering practices for correction of the problem; 2) the correction work is underway; and 3) the cumulative, peak-design, flows potentially added from new connections and line extensions upstream of any chronic bypass point are less than or proportional to the amount of inflow and infiltration removal documented upstream of that point. The inflow and infiltration reduction must be measured by the permittee using practices that are customary in the flow measurement industry and reported in an attachment to a Monthly Operating Report submitted to the local TDEC Environmental Assistance Center. The data measurement period shall be sufficient to account for seasonal rainfall patterns and seasonal groundwater table elevations. In the event that more than five (5) overflows have occurred from a single point in the collection system for reasons that may not warrant the self-imposed moratorium or completion of the actions identified in this paragraph, the permittee may request a meeting with the Division of Water Pollution Control EAC staff to petition for a waiver based on mitigating evidence.

4. Upset

- a. "**Upset**" means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.
- b. An upset shall constitute an affirmative defense to an action brought for noncompliance with such technology-based permit effluent limitations if the permittee demonstrates, through properly signed, contemporaneous operating logs, or other relevant evidence that:
 - i. An upset occurred and that the permittee can identify the cause(s) of the upset;
 - ii. The permitted facility was at the time being operated in a prudent and workman-like manner and in compliance with proper operation and maintenance procedures;

- iii. The permittee submitted information required under "Reporting of Noncompliance" within 24-hours of becoming aware of the upset (if this information is provided orally, a written submission must be provided within five days); and
- iv. The permittee complied with any remedial measures required under "Adverse Impact."

5. Adverse Impact

The permittee shall take all reasonable steps to minimize any adverse impact to the waters of Tennessee resulting from noncompliance with this permit, including such accelerated or additional monitoring as necessary to determine the nature and impact of the noncomplying discharge. It shall not be a defense for the 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.

6. Bypass

- a. "**Bypass**" is the intentional diversion of wastewater away from any portion of a treatment facility.
- b. Bypasses are prohibited unless all of the following three (3) conditions are met:
 - i. The bypass is unavoidable to prevent loss of life, personal injury, or severe property damage;
 - ii. There are not feasible alternatives to bypass, such as the construction and use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventative maintenance;
 - iii. The permittee submits notice of an unanticipated bypass to the Division of Water Pollution Control in the appropriate environmental assistance center within 24-hours of becoming aware of the bypass (if this information is provided orally, a written submission must be provided within five days). When the need for the bypass is foreseeable, prior notification shall be submitted to the Director, if possible, at least ten (10) days before the date of the bypass.
- c. Bypasses not exceeding permit limitations are allowed **only** if the bypass is necessary for essential maintenance to assure efficient operation. All other bypasses are prohibited. Allowable bypasses not exceeding limitations are not subject to the reporting requirements of 6.b.iii, above.

7. Washout

- a. For domestic wastewater plants only, a "washout" shall be defined as loss of Mixed Liquor Suspended Solids (MLSS) of 30.00% or more. This refers to the MLSS in the aeration basin(s) only. This does not include MLSS decrease due to solids wasting to the sludge disposal system. A washout can be caused by improper operation or from peak flows due to infiltration and inflow.
- b. A washout is prohibited. If a washout occurs the permittee must report the incident to the Division of Water Pollution Control in the appropriate Environmental Assistance Center within 24-hours by telephone. A written submission must be provided within five days. The washout must be noted on the discharge monitoring report. Each day of a washout is a separate violation.

D. LIABILITIES

1. Civil and Criminal Liability

Except as provided in permit conditions for "*Bypassing*," "*Overflow*," "*Upset*," "*Diversion*," and "*Treatment Facility Failures*," nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance. Notwithstanding this permit, the permittee shall remain liable for any damages sustained by the State of Tennessee, including but not limited to fish kills and losses of aquatic life and/or wildlife, as a result of the discharge of wastewater to any surface or subsurface waters. Additionally, notwithstanding this Permit, it shall be the responsibility of the permittee to conduct its wastewater treatment and/or discharge activities in a manner such that public or private nuisances or health hazards will not be created.

2. Liability Under State Law

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 the Federal Water Pollution Control Act, as amended.

PART III

OTHER REQUIREMENTS

A. CERTIFIED OPERATOR

The waste treatment facilities shall be operated under the supervision of a Grade 3 certified wastewater treatment operator and the collection system operated under the

supervision of a Grade 1 Collection System certified operator in accordance with the Water Environmental Health Act of 1984.

B. POTW PRETREATMENT PROGRAM GENERAL PROVISIONS

As an update of information previously submitted to the Division, the permittee will undertake the following activity.

1. The permittee has been delegated the primary responsibility and therefore becomes the "control authority" for enforcing the 40 CFR 403 General Pretreatment Regulations. Where multiple plants are concerned the permittee is responsible for the Pretreatment Program for all plants within its jurisdiction. The permittee shall implement and enforce the Industrial Pretreatment Program in accordance with section 403(b)(8) of the Clean Water Act, the Federal Pretreatment Regulations 40 CFR 403, Tennessee Water Quality Control Act Part 63-3-123 through 63-3-128, and the legal authorities, policies, procedures, and financial provisions contained in its approved Pretreatment Program, except to the extent this permit imposed stricter requirements. Such implementation shall require but not limit the permittee to do the following:
 - a. Carry out inspection, surveillance, and monitoring procedures which will determine, independent of information supplied by the industrial user (IU), whether the IU is in compliance with the pretreatment standards;
 - b. Require development, as necessary, of compliance schedules for each IU for the installation of control technologies to meet applicable pretreatment standards;
 - c. Require all industrial users to comply with all applicable monitoring and reporting requirements outlined in the approved pretreatment program and IU permit;
 - d. Maintain and update, as necessary, records identifying the nature and character of industrial user discharges, and retain such records for a minimum of three (3) years;
 - e. Obtain appropriate remedies for noncompliance by an IU with any pretreatment standard and/or requirement;
 - f. Publish annually, pursuant to 40 CFR 403.8 (f)(2)(vii), a list of industrial users that have significantly violated pretreatment requirements and standards during the previous twelve-month period.
 - g. Maintain an adequate revenue structure for continued operation of the pretreatment program.
 - h. Update its Industrial Waste Survey at least once every five years. Results of this update shall be submitted to the Division of Water Pollution Control, Pretreatment Section within 120 days of the effective date of this permit.

2. The permittee shall enforce 40 CFR 403.5, "prohibited discharges". Pollutants introduced into the POTW by a non-domestic source shall not cause pass through or interference as defined in 40 CFR Part 403.3. These general prohibitions and the specific prohibitions in this section apply to all non-domestic sources introducing pollutants into the POTW whether the source is subject to other National Pretreatment Standards or any State or local Pretreatment Requirements.

Specific prohibitions. Under no circumstances shall the permittee allow introduction of the following wastes in the waste treatment system:

- a. Pollutants which create a fire or explosion hazard in the POTW;
 - b. Pollutants which will cause corrosive structural damage to the treatment works, but in no case discharges with pH less than 5.0 unless the system is specifically designed to accept such discharges.
 - c. Solid or viscous pollutants in amounts which will cause obstruction to the flow in the treatment system resulting in interference.
 - d. Any pollutant, including oxygen-demanding pollutants (BOD, etc.) released in a discharge at a flow rate and/or pollutant concentration which will cause interference with the treatment works.
 - e. Heat in amounts which will inhibit biological activity in the treatment works resulting in interference, but in no case heat in such quantities that the temperature at the treatment works exceeds 40°C (104°F) unless the works are designed to accommodate such heat.
 - f. Any priority pollutant in amounts that will contaminate the treatment works sludge.
 - g. Petroleum oil, nonbiodegradable cutting oil, or products of mineral oil origin in amounts that will cause interference or pass through;
 - h. Pollutants which result in the presence of toxic gases, vapors or fumes within the POTW in a quantity that may cause acute worker health and safety problems;
 - i. Any trucked or hauled pollutants except at discharge points designated by the POTW.
3. The permittee shall notify the Tennessee Division of Water Pollution Control of any of the following changes in user discharge to the system no later than 30 days prior to change of discharge:
 - a. New introductions into such works of pollutants from any source which would be a new source as defined in Section 306 of the Act if such source were discharging pollutants.

- b. New introductions of pollutants into such works from a source which would be subject to Section 301 of the "Federal Water Quality Act as Amended" if it were discharging such pollutants.
- c. A substantial change in volume or character of pollutants being introduced into such works by a source already discharging pollutants into such works at the time the permit is issued.

This notice will include information on the quantity and quality of the wastewater introduced by the new source into the publicly owned treatment works, and on any anticipated impact on the effluent discharged from such works. If this discharge necessitates a revision of the current NPDES permit or pass-through guidelines, discharge by this source is prohibited until the Tennessee Division of Water Pollution Control gives final authorization.

4. Reporting Requirements

The permittee shall provide a semiannual report briefly describing the permittee's pretreatment program activities over the previous six-month period. Reporting periods shall end on the last day of the months of March and September. The report shall be submitted to the Division of Water Pollution Control, Central Office and a copy to the appropriate Environmental Assistance Center no later than the 28th day of the month following each reporting period. For control authorities with multiple STPs, one report should be submitted with a separate Form 1 for each STP. Each report shall conform to the format set forth in the State POTW Pretreatment Semiannual Report Package which contains information regarding:

- a. An updated listing of the permittee's industrial users.
- b. Results of sampling of the influent and effluent of the wastewater treatment plant. At least once each reporting period, the permittee shall analyze the wastewater treatment plant influent and effluent for the following pollutants, using the prescribed sampling procedures:

Pollutant	Sample Type
chromium	24-hour composite
copper	24-hour composite
lead	24-hour composite
nickel	24-hour composite
zinc	24-hour composite
cadmium	24-hour composite
mercury	24-hour composite
total phenols	grab
cyanide	grab

If any particular pollutant is analyzed more frequently than is required, the permittee shall report the maximum and average values on the semiannual report. All upsets,

interferences, and pass-through violations must also be reported on the semiannual report, the actions that were taken to determine the causes of the incidents and the steps that have been taken to prevent the incidents from recurring.

At least once during the term of this permit, the permittee shall analyze the effluent from the STP (and report the results in the next regularly scheduled report) for the following pollutants:

chromium, total	silver	phthalates, sum of the following: bis (2-ethylhexyl) phthalate butyl benzylphthalate di-n-butylphthalate diethyl phthalate
copper	benzene	
lead	carbon tetrachloride	
nickel	chloroform	
zinc	ethylbenzene	
cadmium	methylene chloride	tetrachloroethylene
mercury	naphthalene	toluene
phenols, total	1,1,1 trichloroethane	trichloroethylene
cyanide	1,2 trans-dichloroethylene	

- c. Compliance with categorical and local standards, and review of industrial compliance, which includes a summary of the compliance status for all permitted industries. Also included is information on the number and type of major violations of pretreatment regulations, and the actions taken by the POTW to obtain compliance. The effluent from all significant industrial users must be analyzed for the appropriate pollutants at least once per reporting period.
- d. A list of industries in significant non-compliance as published in local newspapers in accordance with the requirements set forth in 40 CFR 403.8(f)(2)(vii).
- e. A description of all substantive changes made to the permittee's pretreatment program. Any such changes shall receive prior approval. Substantive changes include, but are not limited to, any change in any ordinance, major modification in the program's administrative structure, local limits, or a change in the method of funding the program.
- f. Summary of permittee's industrial user inspections, which includes information on the number and type of industry inspected. All significant industrial users must be inspected at least once per year.

C. SLUDGE MANAGEMENT PRACTICES

1. The permittee must comply with 40 CFR 503 et seq. Sludge shall be sampled and analyzed at a frequency dependant both on the amount of sludge generated annually and on the disposal practice utilized. Whenever sampling and analysis are required of 40 CFR 503, the permittee shall report to the Division the quantitative data for the following parameters:

1)	Arsenic	7)	Nickel
2)	Cadmium	8)	Selenium
3)	Copper	9)	Zinc
4)	Lead	10)	Nitrite plus Nitrate, NO ₂ , + NO ₃ as N
5)	Mercury	11)	Total Kjeldahl Nitrogen, as N
6)	Molybdenum	12)	Ammonia, NH ₃ , as N

This sludge analysis must be submitted by February 19th of each calendar year. This information shall be submitted to the Division of Water Pollution Control, Central Office, 401 Church Street, 6th Floor Annex, Nashville TN 37243-1534, Attention: Sludge Coordinator, Municipal Facilities Section.

2. Land application of sludge shall halt immediately if any of the following concentrations are exceeded:

POLLUTANT	CONCENTRATION (mg/kg ¹)
Arsenic	75
Cadmium	85
Zinc	7500
Copper	4300
Lead	840

POLLUTANT	CONCENTRATION (mg/kg ¹)
Mercury	57
Molybdenum	75
Nickel	420
Selenium	100

1 Dry Weight Basis

- a) Monthly average pollutant concentrations shall not exceed Table 3 of 40 CFR §503.13. If they are exceeded cumulative pollutant loading rates are to be calculated and recorded and shall not exceed Table 2 of 40 CFR §503.13 for the life of the land application site.
3. If land application is the final disposition of the wasted sludge, the permittee shall provide pathogen reduction, sludge stabilization and comply with land and crop usage controls as listed in 40 CFR Part 503, as authorized by the Clean Water Act. Records must be maintained by the permittee that indicates compliance or non-compliance with this rule. If the permittee is required to report to EPA, copies of all reports should be sent to the Division, at the address listed in paragraph 1 of this section.

4. Before land applying municipal sludge the permittee must obtain approvals for each site(s) in writing from the Division using the latest revision of Guidelines for Land Application or Surface Disposal of Biosolids, unless the sludge being land applied meets the pollutant concentrations of 40 CFR 503.13(b)(3), the Class A pathogen requirements in 40 CFR 503.32(a), and one of the vector attraction reduction requirements in 40 CFR 503.33 (b)(1) through (b)(8).
5. 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) of the Clean Water Act.
6. Notice of change in sludge disposal practice: The permittee shall give prior notice to the Director of any change planned in the permittee's sludge disposal practice. If land application activities are suspended permanently and sludge disposal moves to a municipal solid waste landfill, the permittee shall contact the local Division of Solid Waste Management office address for other permitting and approvals (see table below):

Division of Solid Waste Management			
Office	Location	Zip Code	Phone No.
Chattanooga	540 McCallie Avenue, Suite 550	37402-2013	(423) 634-5745
Jackson	362 Carriage House Drive	38305-2222	(731) 512-1300
Cookeville	1221 South Willow Avenue	38506	(931) 432-4015
Columbia	2484 Park Plus Drive	38401	(931) 380-3371
Johnson City	2305 Silverdale Road	37601	(423) 854-5400
Knoxville	2700 Middlebrook Pike, Suite 220	37921	(865) 594-6035
Memphis	2510 Mt. Moriah Road, Suite E-645	38115-1511	(901) 368-7939
Nashville	711 R.S. Gass Boulevard	37243-1550	(615) 687-7000

D. BIOMONITORING REQUIREMENTS, CHRONIC

The permittee shall conduct a 3-Brood *Ceriodaphnia dubia* Survival and Reproduction Test and a 7-Day Fathead Minnow (*Pimephales promelas*) Larval Survival and Growth Test on samples of final effluent from Outfall 001.

The measured endpoint for toxicity will be the inhibition concentration causing 25% reduction in survival, reproduction and growth (IC₂₅) of the test organisms. The IC₂₅ shall be determined based on a 25% reduction as compared to the controls, and as derived from linear interpolation. The average reproduction and growth responses will be determined based on the number of *Ceriodaphnia dubia* or *Pimephales promelas* larvae used to initiate the test.

Test shall be conducted and its results reported based on appropriate replicates of a total of five serial dilutions and a control, using the percent effluent dilutions as presented in the following table:

Serial Dilutions for Whole Effluent Toxicity (WET) Testing					
4 X PL	2 X PL	Permit Limit (PL)	0.50 X PL	0.25 X PL	Control *
% effluent					
21.6	10.8	5.4	2.7	1.35	0

The dilution/control water used will be moderately hard water as described in EPA/600/4-91/002 (or the most current edition). A chronic standard reference toxicant quality assurance test shall be conducted with each species used in the toxicity tests and the results submitted with the discharge monitoring report.

Toxicity will be demonstrated if the IC_{25} is less than or equal to the permit limit indicated for each outfall in the above table(s). Toxicity demonstrated by the tests specified herein constitutes a violation of this permit.

All tests will be conducted using a minimum of three 24-hour flow-proportionate composite samples of final effluent collected on days 1, 3 and 5. If, in any control more than 20% of the test organisms die in 7 days, the test (control and effluent) is considered invalid and the test shall be repeated within two (2) weeks. Furthermore, if the results do not meet the acceptability criteria of section 4.9.1, EPA/600/4-91/002 (or the most current edition), that test shall be repeated. Any test initiated but terminated before completion must also be reported along with a complete explanation for the termination.

The toxicity tests specified herein shall be conducted quarterly (1/Quarter) for Outfall 001 and begin no later than 90 days from the effective date of this permit.

In the event of a test failure, the permittee must start a follow-up test within 2 weeks and submit results from a follow-up test within 30 days from obtaining initial WET testing results. The follow-up test must be conducted using the same serial dilutions as presented in the corresponding table(s) above. **The follow-up test will not negate an initial failed test. In addition, the failure of a follow-up test will constitute a separate permit violation.**

In the event of 2 consecutive test failures or 3 test failures within a 12-month period for the same outfall, the permittee must initiate a Toxicity Identification Evaluation/Toxicity Reduction Evaluation (TIE/TRE) study within 30 days and so notify the Division by letter. This notification shall include a schedule of activities for the initial investigation of that outfall. **During the term of the TIE/TRE study, the frequency of biomonitoring shall be once every three months.** Additionally, the permittee shall submit progress reports once every three months throughout the term of the TIE/TRE study. The toxicity must be reduced to allowable limits for that outfall within 2 years of initiation of the TIE/TRE study. Subsequent to the results obtained from the TIE/TRE studies, the permittee may request an extension of the TIE/TRE study period if necessary to conduct further analyses. The final determination of any extension period will be made at the discretion of the Division.

The TIE/TRE study may be terminated at any time upon the completion and submission of 2 consecutive tests (for the same outfall) demonstrating compliance. Following the completion of TIE/TRE study, the frequency of monitoring will return to a regular schedule, as defined previously in this section as well in Part I of the permit. **During the course of the TIE/TRE study, the permittee will continue to conduct toxicity testing of the outfall being investigated at the frequency of once every three months but will not be required to perform follow-up tests for that outfall during the period of TIE/TRE study.**

Test procedures, quality assurance practices, determinations of effluent survival/reproduction and survival/growth values, and report formats will be made in accordance with Short-term Methods For Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, EPA/600/4-91/002 or the most current edition.

Results of all tests, reference toxicant information, copies of raw data sheets, statistical analysis and chemical analyses shall be compiled in a report. The report will be written in accordance with Short-term Methods For Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, EPA/600/4-91/002 or the most current edition.

Two copies of biomonitoring reports (including follow-up reports) shall be submitted to the Division. One copy of the report shall be submitted along with the discharge monitoring report (DMR). The second copy shall be submitted to the local Division of Water Pollution Control office address (see table below):

Division of Water Pollution Control			
Office	Location	Zip Code	Phone No.
Chattanooga	540 McCallie Avenue, Suite 550	37402-2013	(423) 634-5745
Jackson	362 Carriage House Drive	38305-2222	(731) 512-1300
Cookeville	1221 South Willow Avenue	38506	(931) 432-4015
Columbia	2484 Park Plus Drive	38401	(931) 380-3371
Johnson City	2305 Silverdale Road	37601	(423) 854-5400
Knoxville	2700 Middlebrook Pike, Suite 220	37921	(865) 594-6035
Memphis	2510 Mt. Moriah Road, Suite E-645	38115-1511	(901) 368-7939
Nashville	711 R.S. Gass Boulevard	37243-1550	(615) 687-7000

E. PLACEMENT OF SIGNS

Within sixty (60) days of the effective date of this permit, the permittee shall place and maintain a sign(s) at each outfall and any bypass/overflow point in the collection system. For the purposes of this requirement, any bypass/overflow point that has discharged five (5) or more times in the last year must be so posted. The sign(s) should be clearly visible to the public from the bank and the receiving stream. The minimum sign size should be two feet by two feet (2' x 2') with one-inch (1") letters. The sign should be made of durable material and have a white background with black letters.

The sign(s) are to provide notice to the public as to the nature of the discharge and, in the case of the permitted outfalls, that the discharge is regulated by the Tennessee Department of Environment and Conservation, Division of Water Pollution Control. The following is given as an example of the minimal amount of information that must be included on the sign:

Permitted CSO or unpermitted bypass/overflow point:

UNTREATED WASTEWATER DISCHARGE POINT
Fayetteville STP
(931) 433-3037
NPDES Permit NO. TN0021814
TENNESSEE DIVISION OF WATER POLLUTION CONTROL
1-888-891-8332 WPC ENVIRONMENTAL ASSISTANCE CENTER

NPDES Permitted Municipal/Sanitary Outfall:

TREATED MUNICIPAL/SANITARY WASTEWATER
Fayetteville STP
(931) 433-3037
NPDES Permit NO. TN0021814
TENNESSEE DIVISION OF WATER POLLUTION CONTROL
1-888-891-8332 WPC ENVIRONMENTAL ASSISTANCE CENTER

No later than sixty (60) days from the effective date of this permit, the permittee shall have the above sign(s) on display in the location specified.

F. ANTIDEGRADATION

Pursuant to the Rules of the Tennessee Department of Environment and Conservation, Chapter 1200-4-3-.06, titled "Tennessee Antidegradation Statement," and in consideration of the Department's directive in attaining the greatest degree of effluent reduction achievable in municipal, industrial, and other wastes, the permittee shall further be required, pursuant to the terms and conditions of this permit, to comply with the effluent limitations and schedules of compliance required to implement applicable water quality standards, to comply with a State Water Quality Plan or other State or Federal laws or regulations, or where practicable, to comply with a standard permitting no discharge of pollutants.

G. ADDITIONAL SAMPLING

In order to supplement data already submitted to the Division, the City of Fayetteville must submit the following information within one year of the effective date of this permit. According to the preamble description of the final rule 40 CFR 122.21 noticed in the Federal Register August 4, 1999, scan samples are to represent typical daily discharges occurring during a permit term and also be representative of seasonal variation in the discharge.

Part B.6 Effluent Testing Data

Parameter	Analysis within 1 year of permit effectiveness
AMMONIA (as N)	2
CHLORINE (TOTAL RESIDUAL, TRC)	0
DISSOLVED OXYGEN	0
TOTAL KJELDAHL NITROGEN (TKN)	2
NITRATE PLUS NITRITE NITROGEN	2
OIL AND GREASE	2
PHOSPHOROUS (TOTAL)	2
TOTAL DISSOLVED SOLIDS (TDS)	2

Part D. Expanded Effluent Testing Data

Metals

ANTIMONY	2
ARSENIC	2
BERYLLIUM	2
CADMIUM	0
CHROMIUM	0
COPPER	0
LEAD	0
MERCURY	0
NICKEL	0
SELENIUM	2
SILVER	2
THALLIUM	2
ZINC	0
CYANIDE	0
TOTAL PHENOLIC COMPOUNDS	0
HARDNESS	2

Volatile Organic Compounds

ACROLEIN	2
ACRYLONITRILE	2
BENZENE	2
BROMOFORM	2
CARBON TETRACHLORIDE	2
CHLOROBENZENE	2
CHLORODIBROMO-METHANE	2
CHLOROETHANE	2
2-CHLORO-ETHYL VINYL ETHER	2
CHLOROFORM	2
DICHLOROBROMO-METHANE	2
1,1-DICHLOROETHANE	2
1,2-DICHLOROETHANE	2
TRANS 1,2-DICHLORO-ETHYLENE	2
1,1-DICHLOROETHYLENE	2
1,2-DICHLOROPROPANE	2
1,3-DICHLORO-PROPYLENE	2
ETHYLBENZENE	2
METHYL BROMIDE	2
METHYL CHLORIDE	2
METHYLENE CHLORIDE	2
1,1,2,2-TETRACHLORO-ETHANE	2
TETRACHLORO-ETHYLENE	2
TOLUENE	2
1,1,1-TRICHLOROETHANE	2
1,1,2-TRICHLOROETHANE	2
TRICHLOROETHYLENE	2
VINYL CHLORIDE	2

Acid-Extractable Compounds

P-CHLORO-M-CRESOL	2
2-CHLOROPHENOL	2
2,4-DICHLOROPHENOL	2
2,4-DIMETHYLPHENOL	2
4,6-DINITRO-O-CRESOL	2
2,4-DINITROPHENOL	2
2-NITROPHENOL	2
4-NITROPHENOL	2
PENTACHLOROPHENOL	2
PHENOL	2
2,4,6-TRICHLOROPHENOL	2

Base-Neutral Compounds

ACENAPHTHENE	2
ACENAPHTHYLENE	2
ANTHRACENE	2
BENZIDINE	2
BENZO(A)ANTHRACENE	2
BENZO(A)PYRENE	2
3,4 BENZO-FLUORANTHENE	2
BENZO(GHI)PERYLENE	2
BENZO(K)FLUORANTHENE	2
BIS (2-CHLOROETHOXY) METHANE	2
BIS (2-CHLOROETHYL)-ETHER	2
BIS (2-CHLOROISO-PROPYL) ETHER	2
BIS (2-ETHYLHEXYL) PHTHALATE	2
4-BROMOPHENYL PHENYL ETHER	2
BUTYL BENZYL PHTHALATE	2
2-CHLORONAPHTHALENE	2
4-CHLORPHENYL PHENYL ETHER	2
CHRYSENE	2
DI-N-BUTYL PHTHALATE	2
DI-N-OCTYL PHTHALATE	2
DIBENZO(A,H) ANTHRACENE	2
1,2-DICHLOROBENZENE	2
1,3-DICHLOROBENZENE	2
1,4-DICHLOROBENZENE	2
3,3-DICHLOROBENZIDINE	2
DIETHYL PHTHALATE	2
DIMETHYL PHTHALATE	2
2,4-DINITROTOLUENE	2
2,6-DINITROTOLUENE	2
1,2 DIPHENYLHYDRAZINE	2
FLUORANTHENE	2
FLUORENE	2
HEXACHLOROBENZENE	2
HEXACHLOROBUTADIENE	2
HEXACHLOROCYCLO-PENTADIENE	2
HEXACHLOROETHANE	2
INDENO(1,2,3-CD)PYRENE	2
ISOPHORONE	2
NAPHTHALENE	2
NITROBENZENE	2
N-NITROSODI-N-PROPYLAMINE	2
N-NITROSODI- METHYLAMINE	2
N-NITROSODI-PHENYLAMINE	2
PHENANTHRENE	2
PYRENE	2
1,2,4-TRICHLOROBENZENE	2

RATIONALE

Fayetteville STP

NPDES PERMIT No. TN0021814

11/19/01

Permit Writer: Maybelle T. Sparks

I. DISCHARGER

NAME: Fayetteville STP
REPRESENTATIVE: Judy Crabtree
LOCATION: Fayetteville, Lincoln County, Tennessee
PHONE NUMBER: (931) 433-3037
WATERSHED: Elk-Upper HUC: 6030003
WASTEWATER: Treated municipal and industrial wastewater
Discharge number: 001
Average design flow: 3.35 MGD
Industrial flow: 5.5%
PRESENT TREATMENT: Activated sludge plant with chlorination and dechlorination.
STATUS: Reissuance

II. RECEIVING WATERS

STREAM: Elk River Mile 90.0
LOW FLOW: 1Q10 = 61.5 MGD (95.2 CFS)
ESTABLISHED FROM: USGS Water-Resources Investigation Report 95-4293
Station #03582000
CLASSIFICATION: Domestic water supply, industrial water supply, fish and aquatic life,
recreation, irrigation, livestock watering and wildlife.
WATER QUALITY STATUS: The Elk River at mile 90.0 is considered fully supportive of
its designated use classifications per the 303(d) List of
September 1998.
TIER DESIGNATION: Not evaluated at this time.

III. PREVIOUS PERMIT

Issued: 1/31/00
Expires: 1/31/02
Design flow: 3.35 MGD

PARAMETERS	MONTHLY AVERAGE CONCENTRATION (MG/L)	MAXIMUM CONCENTRATION (MG/L) *
BOD ₅	30	45
Total Suspended Solids	30	45
Dissolved Oxygen	1.0 (daily minimum)	
Total Chlorine Residual		0.4 (daily maximum)
Fecal Coliform (colonies/100ml)	200	1000
Settleable Solids (ml/l)		1.0 (daily maximum)
pH (standard units)	6.0-9.0	
Flow (MGD):		
Influent	Report	Report
Effluent	Report	Report
Whole Effluent Toxicity:		
IC ₂₅	5.2% per sample	

Note: Weekly limitations on BOD₅ and TSS concentrations were given as required per 40 CFR 133.102(a)(2) & (b)(2); daily BOD₅ and TSS limitations are authorized by T.C.A. 1200-4-5-.03; monthly and weekly mass loads were limited per 40 CFR 122.45(f) and based on the design flow as per 40 CFR 122.45(b); monthly average percent removal rates for BOD₅ and TSS are required per 40 CFR 133.102(a) and (b) respectively.

IV. DMR REVIEW

A DMR survey is attached.

V. PROPOSED EFFLUENT LIMITS & RATIONALE

PARAMETERS	MONTHLY AVERAGE CONCENTRATION, (MG/L)	RATIONALE
BOD ₅	30	T.C.A. 1200-4-5-.03
Total Suspended Solids	30	T.C.A. 1200-4-5-.03
Dissolved Oxygen	1.0 (daily minimum)	D.O. protection, Refer to A below
Total Chlorine Residual	0.4 (daily maximum)	Refer to B below
Fecal Coliform (colonies/100ml)	200	T.C.A. 1200-4-3-.03
<i>E. coli</i> (colonies/100ml)	126	T.C.A. 1200-4-3-.03
Settleable Solids (ml/l)	1.0 (daily maximum)	T.C.A. 1200-4-5-.03
pH (standard units)	6.0-9.0	T.C.A. 1200-4-3-.03
Flow (MGD):		
Influent	Report	Used to quantify pollutant load
Effluent	Report	Used to quantify pollutant load
Whole Effluent Toxicity:		
IC ₂₅	5.4% per sample	Refer to C below
Metals & Toxics:		Refer to D below

Note: Weekly limitations on BOD₅ and TSS concentrations are given as required per 40 CFR 133.102(a)(2) & (b)(2); daily BOD₅ and TSS limitations are authorized by T.C.A. 1200-4-5-.03; monthly and weekly mass loads are limited per 40 CFR 122.45(f) and based on the design flow as per 40 CFR 122.45(b); monthly average percent removal rates for BOD₅ and TSS are required per 40 CFR 133.102(a) and (b) respectively.

A. D.O.

Streeter-Phelps modeling was performed during a previous issuance of this permit at various conditions to determine allowable organic loadings. These limits still apply and are considered sufficient to result in an instream dissolved oxygen concentration that remains above the required minimum of 5.0 mg/l. Modeling results are located in the permit file administrative record.

B. CHLORINATION

The October 1999 revision to the Tennessee Water Quality Criteria, 1200-4-3-.05(4), require that criteria for fish and aquatic life be applied on the basis of flows in excess of the minimum critical flow occurring once in ten years for regulated streams and flows equal to or exceeding the 7-day minimum, 10-year recurrence interval on unregulated streams.

The residual chlorine limit is derived using the mass balance formula and the EPA instream protection value of 0.019 mg/l for fish and aquatic life. Applying this formula yields the following calculation:

$$\frac{0.019 (Q_d + Q_s)}{Q_d} = \text{Limit (mg/l)} = \frac{0.019 (3.35 + 61.5)}{3.35} = 0.368 \text{ mg/l} \approx 0.4 \text{ mg/l}$$

where:

0.019	=	instream protection value (acute)
3.35	=	Q _d , design flow of STP (MGD)
61.5	=	Q _s , 1Q ₁₀ flow of receiving stream (MGD)

C. BIOMONITORING

The Division evaluates all dischargers for reasonable potential to exceed the narrative water quality criterion, "no toxics in toxic amounts". The Division has determined that for POTWs with stream dilutions of less than 500 to 1, any of the following conditions demonstrates reasonable potential to exceed this criterion.

1. Toxicity is suspected or demonstrated.
2. A pretreatment program is required.
3. The design capacity of the facility is greater than 1.0 MGD.

EPA's **Technical Support Document for Water Quality Based Toxics Control (TSD)** recommends that the evaluation of both acute and chronic toxicity be based on the number of observations in the data set (a collection of either acute or chronic biomonitoring tests), the coefficient of variation (equal to 0.6 for less than 10 observations or the standard deviation÷mean for 10 or more observations) and an uncertainty factor (given in the TSD). The result of each biomonitoring test is converted to toxic units. A toxic unit acute (TU_a) is the reciprocal of the concentration causing 50% lethality (LC₅₀) of the test organisms. A toxic unit chronic (TU_c) is the reciprocal of either the No Observed Effect Concentration (NOEC) or the inhibition concentration causing 25% reduction in survival, reproduction and growth (IC₂₅) of the test organisms.

The highest numerical value of the acute data set (in TU_a) which corresponds to the minimum LC₅₀ of the data set, is multiplied by the uncertainty factor and the dilution factor (design flow ÷ 1Q₁₀). This number is compared to the criteria maximum concentration (CMC) for acute toxicity, 0.3 TU_a. The CMC is defined as the highest instream concentration of an effluent to which organisms can be exposed to for a brief period of time without causing an acute effect.

The highest numerical value of the chronic data set (in TU_c) which corresponds to the minimum IC₂₅ of the data set, is multiplied by the uncertainty factor and the dilution. This number is compared to the criteria continuous concentration (CCC) for chronic toxicity, 1.0 TU_c. The CCC is defined as the highest instream concentration of an effluent to which organisms can be exposed to indefinitely without causing an unacceptable effect. In the absence of chronic data, an acute to chronic ratio (ACR) of 4.4 is assumed (see appendix A.3 of the EPA's TSD).

In this case, 17 observations of acute and chronic are available.

17 = number of acute test samples
 17 = number of chronic test samples
 55.6 = maximum value, acute toxicity
 200 = maximum value, chronic toxicity
 0.0 = acute coefficient of variation (CVa)
 0.5 = chronic coefficient of variation (CVc)
 1.0 = acute uncertainty factor (UFa)
 1.4 = chronic uncertainty factor (UFc)
 0.0061 = effluent dilution at 1Q10 conditions

TUa = $55.6 \times 1.0 \times 0.0061 = 0.34$
 (Maximum value, acute toxicity x UFa x dilution)

TUc = $200 \times 1.0 \times 0.0061 = 1.22$
 (Maximum value, chronic toxicity x UFc x dilution)

The TUc derived value exceeds the CCC, therefore chronic whole effluent toxicity testing is required. Even though the TUa derived value exceeds the CMC, acute whole effluent toxicity testing is waived and replaced by a chronic test that is more stringent than the LC₅₀ acute test.

In the past, the Division used the NOEC as the measure of chronic toxicity and coupled it with the requirement to estimate the 96-hour LC₅₀ (acute toxicity) from the NOEC. However, LC₅₀s cannot be accurately calculated from the NOEC since the test requirements are different. Alternately, the IC₂₅ test for chronic toxicity is deemed equal to but statistically preferred to the NOEC because the IC₂₅ is not readily affected by variability in the test data and it incorporates both mortality and chronic effects. Therefore, the IC₂₅ chronic test is only required.

CHRONIC TOXICITY

$$IC_{25} \% = \frac{\text{Design Flow}}{\text{Low Flow}} * 100 \geq \frac{3.35}{61.5} * 100 \geq 5.4\%$$

where:

61.5 = Low Flow - 1Q10 (MGD)
 3.35 = Design Flow Capacity (MGD)
 IC₂₅ = Concentration causing 25% reduction in survival, reproduction and growth of test organisms

D. METALS AND TOXICS

Pass-through limitations for heavy metals and other toxic substances have been recalculated as part of the permit issuance process and/or due to changes in industrial waste contribution to the POTW. This POTW is required to implement/maintain a pretreatment program. More frequent monitoring will be required in the permit if (a) the reported

concentrations approach or exceed calculated allowable values, (b) significant amounts of particular pollutants are present which may impact the treatment process sludge character or the receiving stream, or (c) minimum information is lacking to accurately calculate water quality protection values, in which case additional stream monitoring may also be required.

For those parameters with an annual monitoring frequency: The annual monitoring frequency will remain throughout the term of this permit. If monitoring for a particular pollutant indicates that the pollutant is not present (i.e., consistently below detection level), then the Division may drop the monitoring requirements in the reissued permit.

The following procedure is used to calculate the allowable instream concentrations for pass-through guidelines and permit limitations.

1. The most recent background conditions of the receiving stream segment are compiled. This information includes:
 - * 1Q10 of receiving stream (61.5 MGD, USGS)
 - * Calcium hardness (129.2 mg/l, intern sampling)
 - * Total suspended solids (10 mg/l, default)
 - * Background metals concentrations (intern sampling, ½ water quality, and default)
 - * Other dischargers impacting this segment
 - * Downstream water supplies, if applicable
2. The chronic water quality criteria is converted from total recoverable metal at lab conditions to dissolved lab conditions for the following metals: cadmium, copper, lead, nickel and zinc. Then translators are used to convert the dissolved lab conditions to total recoverable metal at ambient conditions.
3. The acute water quality criteria is converted from total recoverable metal at lab conditions to dissolved lab conditions for the following metals: cadmium, copper, lead, nickel, zinc, silver and mercury. Then translators are used to convert the dissolved lab conditions to total recoverable metal at ambient conditions for the following metals: cadmium, copper, lead, nickel, silver and mercury.
4. The chronic criteria for Chromium (T) is given in the total recoverable form and is not converted to a dissolved lab condition or to the total recoverable ambient condition.
5. A standard mass balance equation determines the total allowable concentration (permit limit) for each pollutant. This equation also includes a percent stream allocation of no more than 90%.

The following formulas are used to evaluate water quality protection:

$$C_m = \frac{Q_s C_s + Q_w C_w}{Q_s + Q_w}$$

where:

Cm = resulting in-stream concentration after mixing
Cw = concentration of pollutant in wastewater
Cs = stream background concentration
Qw = wastewater flow
Qs = stream low flow

to protect water quality:

$$Cw \leq \frac{(S_A) [Cm (Qs + Qw) - QsCs]}{Qw}$$

where (S_A) is the percent "Stream Allocation".

Calculations for this permit have been done using a standardized worksheet, titled "Water Quality Based Effluent Calculations." Division policy dictates the following procedures in establishing these permit limits:

1. The critical low flow values are determined using USGS data:

Fish and Aquatic Life Protection

7Q10 - Low flow under natural conditions

1Q10 - Regulated low flow conditions

Other than Fish and Aquatic Life Protection

30Q2 - Low flow under natural conditions

2. Fish & Aquatic Life water quality criteria for certain Metals are developed through application of hardness dependent equations. These criteria are combined with dissolved fraction methodologies in order to formulate the final effluent concentrations.
3. For criteria that are hardness dependent, chronic and acute concentrations are based on a Hardness of 50 mg/L and Total Suspended Solids (TSS) of 10 mg/L unless STORET or Water Supply intake data substantiate a different value. Minimum and maximum limits on the hardness value used for water quality calculations are 25 mg/L and 400 mg/L respectively.
4. Background concentrations are determined from the Division database, results of sampling obtained from the permittee, and/or obtained from nearby stream sampling data. If this background data is not sufficient, one-half of the chronic "In-stream Allowable" water quality criteria for fish and aquatic life is used. If the measured background concentration is greater than the chronic "In-stream Allowable" water quality criteria, then the measured background concentration is used in lieu of the chronic "In-stream Allowable" water quality criteria for the purpose of calculating the appropriate effluent limitation (Cw). Under these circumstances, and in the event the "stream allocation" is less than 100%, the calculated chronic effluent limitation for fish and aquatic life should be equal to the chronic "In-stream Allowable" water quality criteria. These guidelines should be strictly followed where the industrial source water is not the receiving stream. Where the industrial source water is the receiving stream, and the measured background concentration is greater than the chronic "In-stream Allowable" water quality criteria, consideration may be given as to the degree to which the permittee should be required to meet the requirements of the water quality criteria in view of the nature and characteristics of the receiving stream.

The spreadsheet has fifteen (15) data columns, all of which may not be applicable to any particular characteristic constituent of the discharge. A description of each column is as follows:

Column 1: The "Stream Background" concentrations of the effluent characteristics.

Column 2: The "Chronic" Fish and Aquatic Life Water Quality criteria. For Cadmium, Copper, Lead, Nickel, and Zinc, this value represents the criteria for the dissolved form at laboratory conditions. The Criteria Continuous Concentration (CCC) is calculated using the equation:

$$CCC = (\exp \{ m_c [\ln (\text{stream hardness})] + b_c \}) (CCF)$$

CCF = Chronic Conversion Factor

This equation and the appropriate coefficients for each metal are from Tennessee Rule 1200-4-3-.03 and the EPA guidance contained in *The Metals Translator: Guidance For Calculating A Total Recoverable Permit Limit From a Dissolved Criterion* (EPA 823-B-96-007, June 1996). Values for other metals are in the total form and are not hardness dependent; no chronic criteria exists for silver. Published criteria are used for non-metal parameters.

Column 3: The "Acute" Fish and Aquatic Life Water Quality criteria. For Cadmium, Copper, Lead, Nickel, Silver, and Zinc, this value represents the criteria for the dissolved form at laboratory conditions. The Criteria Maximum Concentration (CMC) is calculated using the equation:

$$CMC = (\exp \{ m_a [\ln (\text{stream hardness})] + b_a \}) (ACF)$$

ACF = Acute Conversion Factor

This equation and the appropriate coefficients for each metal are from Tennessee Rule 1200-4-3-.03 and the EPA guidance contained in *The Metals Translator: Guidance For Calculating A Total Recoverable Permit Limit From a Dissolved Criterion* (EPA 823-B-96-007, June 1996). Values for other metals are in the total form and are not hardness dependent; no acute criteria exists for Total Chromium. Published criteria are used for non-metal parameters.

Column 4: The "Fraction Dissolved" converts the value for dissolved metal at laboratory conditions (columns 2 & 3) to total recoverable metal at in-stream ambient conditions (columns 5 & 6). This factor is calculated using the linear partition coefficients found in *The Metals Translator: Guidance For Calculating A Total Recoverable Permit Limit From a Dissolved Criterion* (EPA 823-B-96-007, June 1996) and the equation:

$$\frac{C_{\text{diss}}}{C_{\text{total}}} = \frac{1}{1 + \{ [K_{\text{po}}] [ss^{(1+a)}] [10^{-6}] \}}$$

ss = in-stream suspended solids concentration [mg/l]

Linear partition coefficients for streams are used for unregulated (7Q10) receiving waters, and linear partition coefficients for lakes are used for regulated (1Q10) receiving waters. For those parameters not in the dissolved form in columns 2 & 3 (and all non-metal parameters), a Translator of 1 is used.

- Column 5:** The "Chronic" Fish and Aquatic Life Water Quality criteria at in-stream ambient conditions. This criteria is calculated by dividing the value in column 2 by the value in column 4.
- Column 6:** The "Acute" Fish and Aquatic Life Water Quality criteria at in-stream ambient conditions. This criteria is calculated by dividing the value in column 3 by the value in column 4.
- Column 7:** The "Chronic" Calculated Effluent Concentration for the protection of fish and aquatic life. This is the chronic limit.
- Column 8:** The "Acute" Calculated Effluent Concentration for the protection of fish and aquatic life. This is the acute limit.
- Column 9:** The In-Stream Water Quality criteria for the protection of Human Health associated with the stream use classification of Organism Consumption (Recreation).
- Column 10:** The In-Stream Water Quality criteria for the protection of Human Health associated with the stream use classification of Water and Organism Consumption. These criteria are only to be applied when the stream use classification for the receiving stream includes both "Recreation" and "Domestic Water Supply."
- Column 11:** The In-Stream Water Quality criteria for the protection of Human Health associated with the stream use classification of Domestic Water Supply.
- Column 12:** The Calculated Effluent Concentration associated with Organism Consumption.
- Column 13:** The Calculated Effluent Concentration associated with Water and Organism Consumption.
- Column 14:** The Calculated Effluent Concentration associated with Domestic Water Supply.

Column 15: The Effluent Limited criteria. This upper level of allowable pollutant loading is established if (a) the calculated water quality value is greater than accepted removal efficiency values, (b) the treatment facility is properly operated, and (c) full compliance with the pretreatment program is demonstrated. This upper level limit is based upon EPA's 40 POTW Survey on levels of metals that should be discharged from a POTW with a properly enforced pretreatment program and considering normal coincidental removals.

The most stringent water quality effluent concentration from Columns 7, 8, 12, 13, 14, and 15 is applied if the receiving stream is designated for domestic water supply. Otherwise, the most stringent effluent concentration is chosen from columns 7, 8, 12, and 15 only. A summary of the semi-annual report data does not indicate that the potential exists for the water quality criteria for any parameter to be exceeded. See attached calculations spreadsheet and SAR summary.

VI. OTHER REQUIREMENTS & CONDITIONS

A. GRADE 3 CERTIFIED WASTEWATER TREATMENT OPERATOR

B. GRADE 1 COLLECTION SYSTEM CERTIFIED OPERATOR

C. PRETREATMENT PROGRAM

The Fayetteville STP has an approved pretreatment program. An updated Industrial Waste Survey must be completed within 120 days of permit reissuance.

At least once each reporting period, all permittees with approved pretreatment programs are required to analyze the STP influent and effluent for the following pollutant parameters: chromium, copper, lead, nickel, zinc, cadmium, mercury, total phenols, and cyanide. These pollutants were selected because, historically, they are the ones that tend to be predominant in industrial wastewaters. Other pollutants may be added to the list, as required.

During preparation of this permit, data from ten previous semiannual reports were analyzed. If any particular value of a pollutant equals or exceeds 85% of the pass-through limit, the pollutant was added to the list of those that are required to be sampled. Based on our review of the semiannual reports and other documents, sampling for additional pollutants is not required at this time.

D. MINIMUM PERCENT REMOVALS

The treatment facility is required to remove 85% of the BOD₅ and TSS that enter the facility on a monthly basis. This is part of the minimum requirement for all municipal treatment facilities contained in Code of Federal Regulations 40 Part 133.102. The reasons stated by the U.S.E.P.A. for these requirements are to achieve these two basic objectives:

- (1) To encourage municipalities to correct excessive inflow and infiltration (I/I) problems in their sanitary sewer systems, and

- (2) To help prevent intentional dilution of the influent wastewater as a means of meeting permit limits.

The treatment facility is required to remove 40% of the BOD₅ and TSS that enter the facility on a daily basis. This percent removal will be calculated three times per week and recorded on the Monthly Operation Report. The number of excursions less than 40% will be reported on the Discharge Monitoring Report.

E. PERMIT APPLICATION

EPA changed the application requirements of 40 CFR Part 122 effective August 18, 1999. Parts B and D of the new EPA Application Form 2A require effluent concentration data on approximately 100 pollutant parameters (basic effluent characterization, metals, volatile organic compounds, acid-extractable compounds, and base-neutral compounds) collected via a minimum of three (3) effluent scans conducted within the past four and one-half (4½) years of POTW operation. According to the preamble description of the final rule noticed in the Federal Register August 4, 1999, scan samples are to represent typical daily discharges occurring during a permit term and also be representative of seasonal variation in the discharge.

Since sampling will most likely have been collected only after receipt of the new application form at various times since August 1999, the Division is requiring that three scans be collected between the permittee's receipt of the permit application and one (1) year following permit issuance as necessary to reflect current characterization of and seasonal variation in the effluent. During this interim period, the Division is generally considering applications that contain at least one analysis for each of the parameters listed in Parts B.6 and D of the application form to be complete. The remaining balance of the required effluent characterization scans will be included as a permit requirement. The permit will have provisions for modification if changes are necessary based on evaluation of the effluent data submitted after permit issuance.

F. PERMIT TERM

This permit is being reissued for 5 years in order to coordinate its reissuance with other permits located within the Elk-Upper Watershed.

VII. COMPLIANCE SCHEDULE SUMMARY

<u>Section</u>	<u>Description</u>
I. D 1	Discharge Monitoring Reports, monthly
I. D 4	Operational reports, monthly
I. D 5	Bypass and Overflow Summary Report, monthly
III. B	Industrial Waste Survey, within 120 days of the effective permit date
III. C	Sludge analysis must be submitted by February 19 th of each calendar year
III. D	Biomonitoring Report, quarterly beginning within 90 days of the effective permit date
III. G	Additional sampling data, submitted within 1 year of the effective permit date

DMR Summary, Fayetteville STP

TN0021814, 3.35 MGD

November 2001

	Flow (MGD)			Biochemical Oxygen Demand				Suspended Solids				Effluent (mg/l)				By-passing				
				Influent (mg/l)	Effluent (mg/l)			% Removal	Influent (mg/l)	Effluent (mg/l)		% Removal	Settleable Solids (ml/l)	pH (std. units)	Cl ₂		Ammonia		D.O.	
	Monthly Average	Daily Max	Report		Monthly Average	Daily Max	Monthly Average			Daily Max	Monthly Average						Daily Max	Monthly Average		Daily Max
	Limits	Report	Max	Report	Report	Max	Report	Report	Max	Report	Max	Report	Max	Report	Max		Report	Max	Report	Max
Summer																				
Winter																				
Average	1.297	2.676	169						30	45										
Maximum	2.484	7.214	383						30	45										
Minimum	0.594	0.862	54.8						14	22										
+ = Exceedence									43	64										
									4	6										
									4	4										
									4	4										

Date

Sep/95	1.089	1.968	124	3	11	96	175	9	31	93	0.9	7.3	7.9	0.40																			
Oct/95	1.376	3.956	120	4	14	96	157	10	12	91	0.2	7.4	7.8	0.40																			
Nov/95	1.739	3.917	93	6	6	95	159	8	20	90	0.1	7.2	7.9	0.40																			
Dec/95	1.685	3.085	107	2	3	98	103	11	14	85	0.1	7.2	7.9	0.30																			
Jan/96	2.372	3.876	98	2	21	95	79	6	22	88	0.5	7.2	7.9	0.40																			
Feb/96	1.525	3.353	110	3	4	98	106	8	16	89	0.1	7.4	7.9	0.40																			
Mar/96	2.070	4.157	68	3	11	93	85	10	35	82	0.1	7.4	7.8	0.40																			
Apr/96	1.508	3.206	125	5	7	95	165	25	19	92	0.1	7.4	7.9	0.40																			
May/96	0.739	1.291	113	5	6	92	214	18	24	91	0.1	7.6	8.1	0.40																			
Jun/96	0.801	1.877	140	4	5	98	208	17	21	91	0.1	7.3	8.0	0.40																			
Jul/96	0.784	1.216	101.7	6	11	94	213	15	18	92	0.1	7.3	7.8	0.30																			
Aug/96	1.017	2.142	137	10	14	92	159	10	22	91	0.1	7.5	7.9	0.40																			
Sep/96	1.481	3.167	142	8	19	94	224	15	39	85	0.5	7.0		0.40																			
Oct/96	1.037	2.298	151.4	5	10	96	168	11	23	90	0.9	7.6	8.2	0.40																			
Nov/96	1.509	2.856	127	3	5	98	128	5	10	95	0.1	7.5	8.2	0.40																			
Dec/96	1.819	4.157	100	4	5	94	251	17	28	77	0.1	7.5	8.0	0.40																			
Jan/97	1.597	3.155	96.5	5	7	94	92	17	20	85	0.1	7.6	8.0	0.50																			
Feb/97	1.788	3.101	89.6	3	5	97	88	14	17	88	0.1	7.4	7.9	0.40																			
Mar/97	1.614	3.420	109.1	12	25	89	151	21	33	85	0.6	7.3	8.0	0.40																			
Apr/97	0.893	1.561	161	6	13	97	120	31	64	84	0.4	7.4	8.0	0.40																			
May/97	0.898	1.937	156	9	12	96	163	20	31	92	0.1	7.5	8.0	0.30																			
Jun/97	1.359	2.216	76.7	11	12	87	116	29	32	72	0.2	7.5	8.0	0.30																			
Jul/97	1.019	2.530	165	5	7	97	186	9	15	96	0.9	7.6	8.1	0.30																			
Aug/97	0.775	1.139	147	4	7	97	114	5	8	96	0.9	7.1	8.1	0.20																			
Sep/97	0.863	2.613	155	11	16	95	139	24	45	92	0.1	7.2	8.1	0.20																			
Oct/97	0.968	3.058	156	12	14	93	125	14	17	89	0.1	7.2	7.9	0.40																			
Nov/97	1.099	2.656	127.8	10	13	93	90	20	24	77	0.1	7.6	8.3	0.40																			
Dec/97	1.575	2.963	54.8	6	8	89	45	13	17	69	0.1	7.6	8.2	0.40																			
Jan/98	2.369	6.841	63.8	17	19	82	89	23	28	77	0.6	7.4	7.9	0.40																			
Feb/98	1.974	7.214	78.7	12	12	89	82	20	22	86	0.1	7.5	8.0	0.40																			
Mar/98	1.881	3.192	57.2	15	16	79	37	14	18	59	0.9	7.6	8.1	0.40																			
Apr/98	1.840	2.913	103	16	20	81	55	43	51	34	0.2	7.0	8.2	0.50																			
May/98	0.888	1.617	180	6	19	95	69	7	15	83	0.1	7.6	8.2	0.40																			
Jun/98	1.313	2.670	121	8	14	88	153	17	47	83	0.1	7.6	8.4	0.50																			
Jul/98	1.006	2.235	249	4	9	98	321	9	18	96	0.2	7.6	8.2	0.40																			
Aug/98	0.858	1.952	209	4	9	98	195	6	12	97	0.1	5.5	8.1	0.30																			

DMR Summary, Fayetteville STP
TN0021814, 3.35 MGD
November 2001

	Flow (MGD)		Biochemical Oxygen Demand				Influent (mg/l)	Suspended Solids			Settleable Solids (ml/l)	pH (std. units)		Cl ₂	Effluent (mg/l)		D.O.	Fecal Coliform		By-passing
			Influent (mg/l)	Effluent (mg/l)		% Removal		Monthly Average	Daily Max	% Removal		Monthly Average	Daily Max		Daily Min	Daily Max				
	Monthly Average	Daily Max		Monthly Average	Daily Max		Monthly Average				Daily Max			Monthly Average			Daily Max	Daily Min	Daily Max	
Sep/98	0.653	0.945	383	4	8	99	228	5	14	98	0.1	6.1	8.1	0.40			6.4	6	36	
Oct/98	0.624	1.187	312	4	9	99	195	5	9	97	0.1	6.7	7.5	0.30			7.1	9	48	1
Nov/98	0.642	1.143	275	4	12	98	205	5	9	97	0.1	6.6	7.8	0.40			8.5	6	190	
Dec/98	1.359	2.715	222	7	11	96	164	9	41	93	0.3	6.8	8.1	0.40			8.5	8	250	7
Jan/99	2.088	3.894	137	13	23	88	176	17	39	79 +	0.1	7.1	7.8	0.60 +			8.6	53	1000	1
Feb/99	1.702	2.627	156	13	27	91	160	15	19	85	0.1	7.0	7.7	0.40			7.2	16	300	1
Mar/99	1.753	2.885	155	14	20	89	110	11	26	88	0.1	6.3	7.7	0.40			8.5	21	860	1
Apr/99	1.100	2.313	214	12	21	94	166	8	28	95	0.1	7.0	7.7	0.40			8.1	25	800	
May/99	1.137	2.888	220	15	20	92	185	15	25	91	0.1	7.5	7.8	0.40			7.1	119	540	2
Jun/99	1.032	1.932	154	18	21	90	150	9	15	95	0.2	7.4	7.8	0.30			5.9	30	138	2
Jul/99	0.921	1.717	191	9	12	97	188	7	14	96	0.1	7.2	8.0	0.40			5.6	25	122	
Aug/99	0.674	0.960	224	8	9	97	182	4	6	99	0.1	6.2	7.7	0.40			5.9	34	270	
Sep/99	0.748	1.410	265	5	7	98	282	6	8	99	0.1	7.3	7.9	0.40			6.4	29	150	1
Oct/99	0.789	1.238	269	5	7	99	200	6	12	97	0.0	7.3	7.7	0.40			7.5	29	122	
Nov/99	0.950	1.964	228	5	6	98	203	5	9	98	0.1	7.3	8.0	0.40			7.6	19	130	
Dec/99	0.924	2.797	254	7	8	98	206	7	13	95	0.1	7.3	7.8	0.36			8.2	79	240	
Jan/00	0.674	0.960	249	14	20	96	250	8	18	88	0.1	7.1	7.8	0.40			8.5	94	214	2
Feb/00	1.341	3.034	195	29	30	90	116	37 +	21	94	0.1	7.2	7.8	0.40			8.5	57	160	0.5
Mar/00	1.308	3.189	232	19	25	94	248	18	23	81 +	0.1	7.4	8.0	0.40			8.4	40	280	2
Apr/00	1.532	3.156	229	25	29	92	118	17	25	93	0.1	7.3	7.9	0.43 +			9.1	41	154	
May/00	0.962	1.589	264	19	26	94	205	18	29	96	0.1	7.2	8.0	0.36			5.7	25	184	
Jun/00	0.858	2.082	233	12	24	94	232	7	14	98	0.1	7.4	7.8	0.40			6.2	26	134	
Jul/00	0.594	0.862	231	6	8	97	218	5	12	97	0.1	7.2	7.9	0.37			6.1	85	450	
Aug/00	0.875	1.421	255	8	24	96	184	4	10	96	0.1	7.2	7.8	0.40			6.0	30	138	
Sep/00	1.063	2.263	187	11	10	97	170	5	9	98	0.1	7.6	8.3	0.40			6.4	34	148	
Oct/00	0.907	1.226	229	7	11	98	172	6	13	98	0.1	7.3	8.3	0.40			7.1	26	134	
Nov/00	1.509	2.564	242	9	11	97	280	5	9	94	0.1	6.7	8.1	0.40			7.8	42	174	
Dec/00	1.765	3.893	159	12	13	93	160	11	15	95	0.1	7.1	7.9	0.40			8.3	14	360	
Jan/01	1.814	5.062	169	15	26	93	120	9	12	86	0.1	6.8	7.9	0.41 +			5.3	15	990	
Feb/01	2.484	3.524	128	15	27	90	111	19	27	86	0.1	6.5	8.5	0.40			8.5	50	520	
Mar/01	1.942	3.485	150	23	30	89	112	19	24	93	0.1	6.8	7.9	0.39			8.7	134	750	
Apr/01	1.453	2.920	235	23	29	92	221	15	24	84 +	0.1	7.1	8.0	0.40			7.6	75	780	
May/01	1.844	3.770	176	33 +	39	87	203	26	64 +	91	0.2	7.6	8.0	0.40			7.5	22	600	
Jun/01	1.669	4.216	228	34 +	58 +	88	258	33 +	41		0.1	7.5	7.9	0.40			5.8	55	610	
Jul/01																				
Aug/01																				
Sep/01																				
Oct/01																				
Nov/01																				
Dec/01																				

FACILITY: Fayetteville STP
 PERMIT #: TN0021814
 DATE: 1/16/02

[illegible]

WATER QUALITY BASED EFFLUENT CALCULATIONS

OUTFALL 001

FACILITY: Fayetteville
PERMIT #: TN0021814
DATE: 11/13/01

regulated stream worksheet (1Q10)

Stream	Stream (1Q10)	Waste Flow (MGD)	Ttl. Susp. Solids (mg/l)	Hardness (mg/l)	Margin of Safety (%)
61.500	231.900	3.350	10	129.2	90

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Stream Backgrnd. Conc.	Fish/Aqua. Life (F & AL) WQC lab conditions	F & AL instream allowable ambient conditions (Tot)	Fraction Dissolved [Fraction]	Chronic [ug/l]	Acute [ug/l]	Chronic [ug/l]	Acute [ug/l]	Organisms [ug/l]	In-Stream Criteria [Water/Organisms]	DWS [ug/l]	Organisms [ug/l]	Calc. Effluent Concentration **	DWS [ug/l]	effluent limited case
PARAMETER	Chronic [ug/l]	Acute [ug/l]												PARAMETER
Copper (a,b)	4.125	14.129	0.218	64.822	99.383	1061.20	1663.34	NA	NA	NA	NA	NA	NA	Copper (a,b)
Chromium (T) (d)	50.000	100.000	1.000	100.000	N/A	916.12	N/A	4600.0	610.0	100.0	290103.85	37929.90	3205.07	Chromium (T) (d)
Nickel (a,b)	10.000	195.236	0.206	948.854	8543.768	16366.08	148687.62	NA	NA	100.0	NA	NA	5697.13	Nickel (a,b)
Cadmium (a,b)	3.232	1.246	0.193	6.463	25.350	59.21	388.27	NA	NA	5.0	NA	NA	114.68	Cadmium (a,b)
Lead (a,b)	1.375	3.322	0.143	23.156	594.216	380.71	10329.94	0.051	NA	5.0	NA	NA	230.34	Lead (a,b)
Mercury (T) (c,e)	0.006	0.908	0.430	0.908	3.932	15.72	68.40	2.85	0.05	2.0	NA	2.79	126.03	Mercury (T) (c,e)
Silver (a,b,f)	2.680	NA	1.000	NA	5.360	N/A	49.11	NA	NA	NA	NA	NA	NA	Silver (a,b,f)
Zinc (a,b)	7.500	129.844	0.125	1038.434	1137.198	17968.08	19688.78	NA	NA	NA	NA	NA	NA	Zinc (a,b)
Cyanide (d)	2.600	5.200	1.000	5.200	22.000	47.64	340.33	220000.0	700.0	200.0	13904166.37	44079.06	12478.31	Cyanide (d)
Toluene								200000.0	6800.0	1000.0	12640298.51	429770.15	63201.49	Toluene
1,1,1 Trichloroethane								710.0	12.0	5.0	44873.06	758.42	316.01	1,1,1 Trichloroethane
Ethylbenzene								NA	NA	200.0	NA	NA	12640.30	Ethylbenzene
Carbon Tetrachloride								29000.0	3100.0	700.0	1832843.28	195924.63	44241.04	Carbon Tetrachloride
Chloroform								44.0	2.5	5.0	2780.87	158.00	316.01	Chloroform
Tetrachloroethylene								4700.0	57.0	NA	297047.01	3602.49	NA	Tetrachloroethylene
1,2 trans Dichloroethylene								88.5	8.0	5.0	5583.33	505.61	316.01	1,2 trans Dichloroethylene
Methylene Chloride								810.0	27.0	5.0	51193.21	1706.44	316.01	Methylene Chloride
Total Phenols								16000.0	700.0	100.0	101123.88	2970.47	316.01	Total Phenols
Naphthalene								NA	NA	NA	NA	NA	NA	Naphthalene
Total Phthalates								137259.0	NA	NA	8674973.66	1815020.46	NA	Total Phthalates
Chlorine (T. Res.)	5.500	11.000	1.000	11.000	19.000		266.84	NA	NA	NA	NA	NA	NA	Chlorine (T. Res.)

a Denotes metals for which Fish & Aquatic Life Criteria are expressed as a function of total hardness.

b The criteria for this metal is in the dissolved form at lab conditions. The calculated effluent concentration is in the total recoverable form.

c The chronic criteria for mercury is not converted to dissolved, since it is based on fish tissue data rather than toxicity.

d The criteria for this parameter is in the total form.

e 1.26.01: CGD & Larry Bunting indicated that 0.006 ug/L would be maximum background default if no sample data available or if all samples were <RDL (<0.2 ug/L), based on reference stream monitoring by DOE.

f Silver limit is daily max if column 8 is most stringent.

g When columns 7 or 8 result in a negative number, use results from columns 5 or 6, respectively.

h When columns 12, 13 or 14 result in a negative number, and domestic supply is included in river uses, use results from columns 9, 10 or 11, respectively.

* Domestic supply included in river use so pick from columns 7,8,12,13,14,15.

** Water Quality criteria for stream use classifications other than Fish & Aquatic Life are based on the 3002 flow.

Note: A copy of this spreadsheet can be found on h:\mfs\pretreat\Pass-through Limits\Spreadsheets\Fayetteville.xls

PTL < value shown		Basis of PTL is ELC unless otherwise noted as follows:								
Daily Max		Proposed 11/13/01	85% PTL	PTL 12/8/99	Oct-01	Apr-01	Oct-00	Apr-00	WQ HH	WQ F&AL
COPPER		0.08	0.068	0.08	0.005	0.005	0.005	0.005	0.005	0.005
CHROMIUM		0.06	0.051	0.06	0.001	0.001	0.0029	0.00105	0.00105	0.0022
NICKEL		0.18	0.153	0.18	0.037	0.033	0.038	0.029	0.029	0.018
CADMIUM		0.005	0.00425	0.005		0.001		0.001	0.001	0.001
LEAD		0.045	0.03825	0.045	0.0025	0.0025	0.044	0.0054	0.0054	0.0052
MERCURY		0.0004	0.00034	0.00013		0.0001		0.0001	0.0001	0.0001
SILVER		0.005	0.00425	0.005		0.001				
ZINC		0.2	0.17	0.2	0.033	0.033	0.06	0.15	0.15	0.035
CYANIDE		0.04764	0.040494	0.0546	0.0025	0.0025	0.0034	0.0035	0.0035	0.001
TOLUENE		0.015	0.01275	0.015		0.0005				
BENZENE		0.003	0.00255	0.003		0.0005				
1,1,1 TRICHLOROETHANE		0.03	0.0255	0.03		0.0005				
ETHYLBENZENE		0.004	0.0034	0.004		0.0005				
CARBON TETRACHLORIDE		0.015	0.01275	0.015		0.0005				
CHLOROFORM		0.085	0.07225	0.085		0.0025				
TETRACHLOROETHYLENE		0.025	0.02125	0.025		0.0005				
TRICHLOROETHYLENE		0.01	0.0085	0.01		0.0005				
1,2 TRANSDICHLOROETHYL		0.0015	0.001275	0.0015		0.0005				
METHYLENE CHLORIDE		0.05	0.0425	0.05		0.0025				
TOTAL PHENOLS		0.05	0.0425	0.05	0.04	0.02	0.02	0.02	0.02	0.02
NAPHTHALENE		0.001	0.00085	0.001		0.0005				
TOTAL PHTHALATES		0.0645	0.054825	0.0645		0.002				
Bolted in effluent data = potential to exceed 85% of proposed PTLs										
Shaded means 1/2 detection level										
To be added to/verified in Metals section of Permit										
None										
To be added to/verified in SAR table										
Lead, mercury, total phenols										

[illegible]

REQUIREMENTS FOR MAKING A PERMIT APPEAL

Permit Appeal (Tennessee Department of Conservation, Chapter 1200-4-1.05(6), and T.C.A. Section 69-3-110).

1. Petitions must be made within 30 days of the receipt of the final permit.
2. Petitions shall contain the following:
 - (a) The name, mailing address, and telephone number of the person mailing the request and the names and addresses of all persons he or she represents;
 - (b) A clear and concise statement of each legal or factual matter alleged to be issue; and
 - (c) Specific reference to each permit condition which the petitioner contests. The petitioner may suggest alternate permit terms which would meet the requirements of the Water Quality Control Act; if the petitioner challenges permit conditions which are justified in the fact sheet (or Rationale), the petitioner should indicate how the basis for the permit condition is in error or indicate why an alternate condition is necessary.
3. Petitions should be addressed to the Water Quality Control Board and filed in duplicate at the following address: Paul E. Davis, Director; Division of Water Pollution Control; Department of Environment and Conservation; 401 Church Street; L&C Annex, Sixth Floor; Nashville, Tennessee 37243-1534.
4. The appeal of a permit or a permit condition has the effect of staying the contested provisions. Therefore, if a permit is being reissued, the permittee will be considered to be authorized under the terms of the old permit and/or any unappealed terms of the reissued permit. If it is a new permit, the applicant will be considered to be without a permit for the activity until final agency action.

E8060092-D4WPC1