KENTON COUNTY

WATER SUPPLY PLAN

1999

Prepared By:

Campbell-Kenton Water Supply Planning Council
and the
Northern Kentucky Area Development District

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DESCRIPTION OF THE PLANNING UNIT

I. INTRODUCTION

The joint planning unit, composed of Campbell and Kenton Counties, is located in the northernmost portion of Kentucky and is a part of the Greater Cincinnati metropolitan area. The county seats of Campbell and Kenton Counties are Newport and Covington.

Since 1990, Campbell and Kenton Counties have experienced relatively slow population growth compared to neighboring counties with increases during the period (1990-1996) of 4.0 percent and 2.5 percent respectively. However, there are areas of rapid growth within the planning unit including: Alexandria, Cold Spring, Highland Heights, Wilder, Crescent Springs, Taylor Mill, and Independence. Figure 1.1 shows projected growth in the planning unit through 2020. Approximately, 72,000 people were employed in the planning unit in 1996.

Map 1 shows the location of the planning unit in the state. Map 2 shows the Kenton County portion of the planning unit.

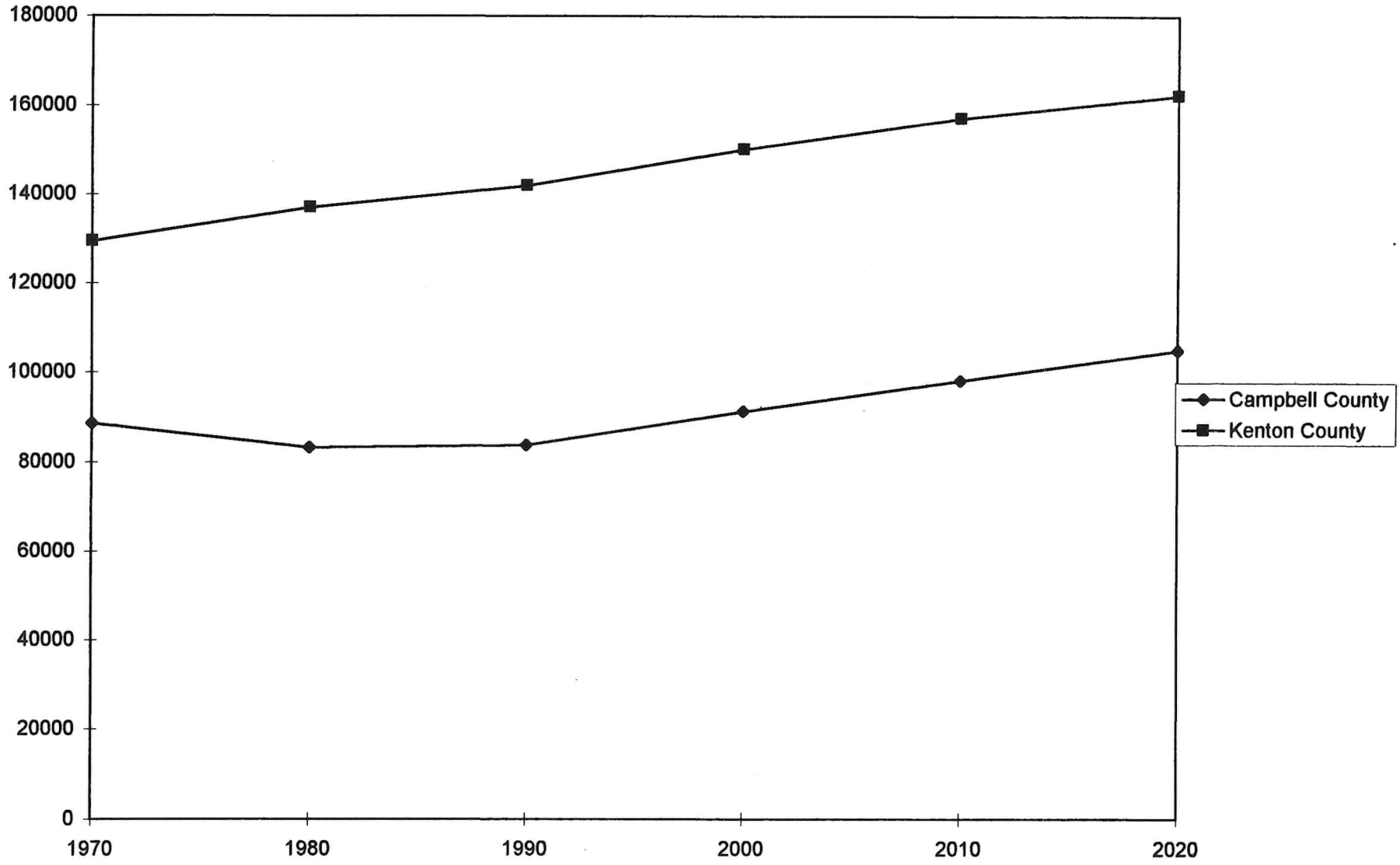
II. PHYSIOGRAPHY

The Northern Kentucky area is characterized by ridges and steep narrow valleys. Elevations in the planning unit range from 200 to 900 Mean Sea Level (MSL). Landforms in Campbell and Kenton Counties consist of four basic groups: glacial outwash terraces, alluviated valleys, limestone plateaus, and shale uplands. Glacial terraces can be found in those areas closest to the Ohio River. The Ohio and Licking Rivers flow through the alluviated valleys which are filled with silt, sand, and gravel. The northern part of the planning unit is characterized by limestone plateaus with flat tops and steep sides. Finally, shale uplands are found in the southern portions of Campbell and Kenton Counties.

Depth to bedrock is generally greater in Kenton County than in Campbell County with the greatest depths to bedrock in the extreme northwest portion of Kenton County, along the Licking River, and in the Alexandria area. Other small localized areas with large depths to bedrock can be found in Campbell County (Northern Kentucky Area Planning Commission, 1981, p. 3-3).

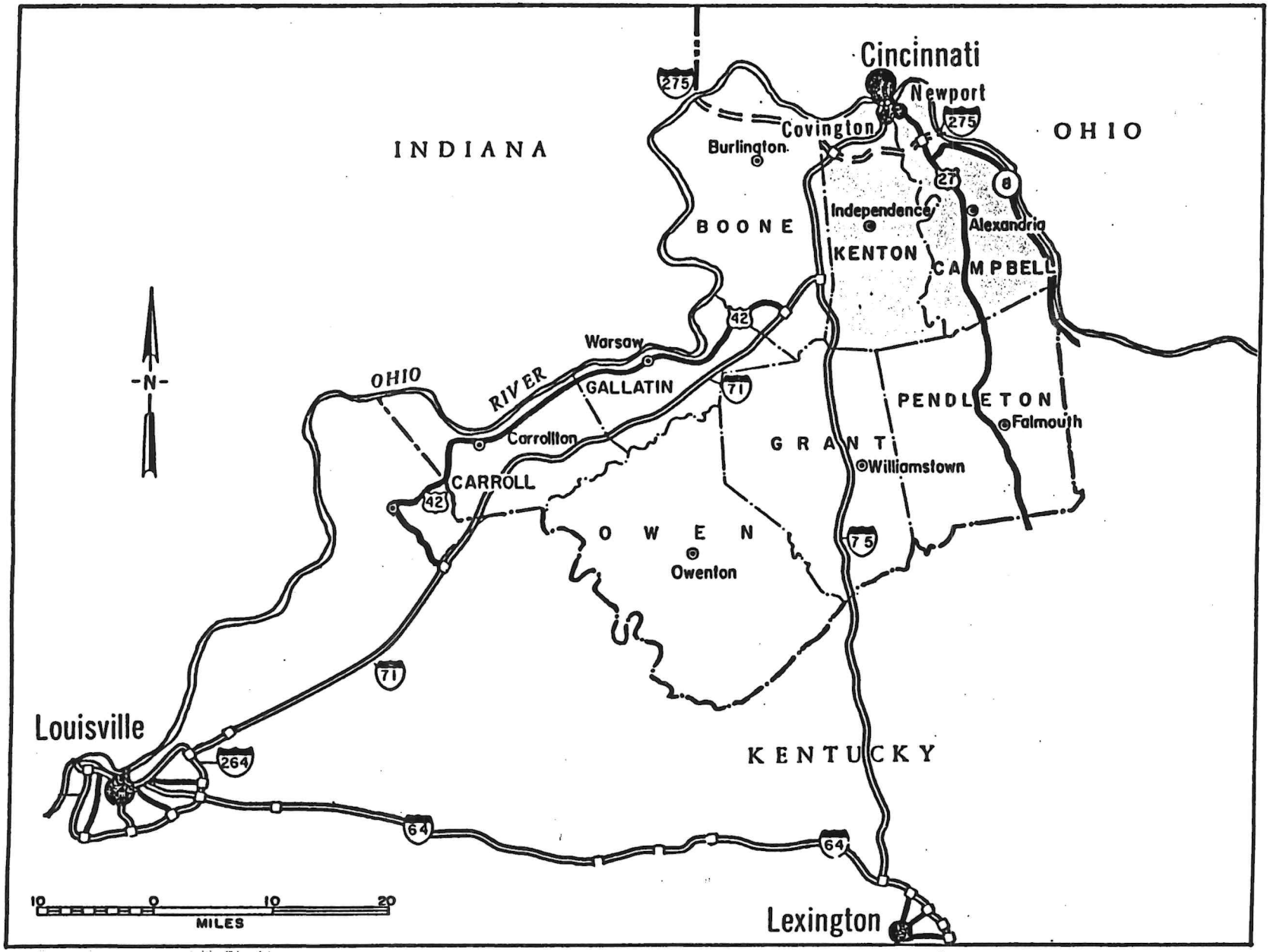
Figure 1.1

Planning Unit Population Growth: 1970-2020



MAP 1

PLANNING UNIT LOCATION



*Shaded Area = Planning Unit

MAP 2

705 710 715 720 725

4330 4325 4320 4315 4310 4305 4300 4295

LUDLOW
COVINGTON
PARK HILLS
Pleasant Run Creek
VILLA HILLS
FORT WRIGHT
FORT MITCHELL
Dry Creek
ERLANGER
TAYLOR MILL
EDGEWOOD
ELSMERE
Doe Run Creek
Banklick Creek
Decoursey Creek
INDEPENDENCE
Steep Creek
Bowman Creek
Cruises Creek
Mud lick Creek
Licking River Drainage
Bullock Pen Creek
North Fork Grassy Creek

KENTON COUNTY, KENTUCKY

PLANNING UNITS MAP

★ County Seat

Watersheds represented by separate colors

0.5 0 0.5 1 Miles

N

source: USDA Natural Resources Conservation Service

PLANNET GIS A NORTHERN KENTUCKY Geographic Information System
NORTHERN KENTUCKY AREA PLANNING COMMISSION
2332 Royal Drive
Fort Mitchell, Kentucky 41017
TEL (606)331-8980 FAX (606)331-8977

CHAPTER 2
PLANNING COUNCIL

I. FORMATION OF THE PLANNING UNIT

Dennis Willaman, of the Northern Kentucky Water Service District, initiated the water supply planning process. On March 13, 1997, representatives of Campbell and Kenton Counties, as outlined by water supply planning regulations, met to vote on the proposed joint planning unit. The letter notifying participants of the meeting stated that lack of attendance would be regarded as support of a joint Campbell-Kenton planning unit.

The following representatives from each county voted unanimously to form a joint planning unit:

Campbell County
Naguanda Deaton - Campbell County Fiscal Court
David Dezeeuw - Newport Water Works
Dennis Willaman - Northern Kentucky Water Service District
Steve Trauth - Louis Trauth Dairy
Sister Marilene Cullen - St. Anne Convent
Reverend Joseph Boschert - St. Peter & Paul Elementary
Kirtley Fillhardt - Green Valley Trailer Park

Kenton County
Ralph Bailey - Kenton County Fiscal Court
Dennis Willaman - Northern Kentucky Water Service District

Also in attendance were Heidi Van Keuren, NKADD, and Mark Pfefferman, St. Peter & Paul Elementary School.

II. PLANNING COUNCIL AND PLANNING COUNCIL REPRESENTATIVE

The following is a list of members of the Campbell-Kenton Water Supply Planning Council and their affiliations:

Ralph Bailey - Kenton County Fiscal Court
Sister Marilene Cullen - St. Anne Convent
Naguanda Deaton - Campbell County Fiscal Court
David Dezeeuw - Newport Water Works
Jeff Earlywine - City of Ft. Thomas
Kirtley Fillhardt - Green Valley Trailer Park
Phil Kloenne - Northern Kentucky District Health Department
Clark Millard - City of Wilder

Mark Pfefferman - St. Peter & Paul Elementary
Bob Reis - St. Peter & Paul Elementary
Steve Trauth, Louis Trauth Dairy
Dennis Willaman, Council Chair - Northern Kentucky Water Service District

Mike Robke of the Taylor Mill Water Commission elected not to serve; however, he will receive minutes of the meetings. Judge Middleton also declined the appointment of representatives of 4th and 5th class cities because they are all served by the Northern Kentucky Water Service District. The Winston Park Water Commission decided not to serve because they are going to be taken over by the Northern Kentucky Water Service District.

Several potential council members did not respond to invitations to participate including: Lally Pipe & Tube, City of Covington, Bromley Water Works, Bullock Pen Water District, Ludlow Water Works, Ross Resorts, Pendleton County Water District, East Pendleton County Water District, and Visalia Elementary School.

Minutes of Planning Council meetings can be found in Appendix A.

PLANNING REPRESENTATIVE

The Northern Kentucky Area Development District (NKADD) was selected as the planning representative because of NKADD's past and present work on water supply plans for other counties including: Boone, Carroll, Grant, Pendleton, and Owen. Primary responsible NKADD staff members include Richard Bragg and Heidi Van Keuren.

The Northern Kentucky Water Service District is funding the planning process through a contractual agreement with NKADD since no grant funds were available. No other potential candidates for planning representative were considered.

III. NOTIFICATIONS

401 KAR 4:220 subsection 5.3(a) requires extensive notifications regarding the water supply planning process including mayors, county judge-executives, water suppliers in both planning unit counties and adjacent counties as well as water watch groups and the public. Samples of public notices, notification letters, and a list of recipients can be found in Appendix B.

CHAPTER 3
PLANNING OBJECTIVES AND PLANNING CONFLICTS

I. Planning Objectives

Description of Process
A public hearing was held Thursday, May 15, 1997 to consider the planning objectives and to obtain the input of citizens. The meeting was advertised in the Kentucky Post. No members of the public attended. The objectives were adopted by the council at the meeting immediately following the hearing.

Planning Objectives
Planning objectives are as follows:

1. Encourage conservation to the maximum extent practical;

2. Provide a continuous level of supply under all conditions;

3. Compatibility with existing plans or offer recommendations to alter those plans;

4. Preservation and use of natural water storage and retention systems, whenever cost and data constraints permit;

5. Protection and enhancement of the overall quality of the environment;

6. Cost effectiveness;

7. Social and political acceptability, and community cohesion; and

8. Encourage expansion where feasible.

A copy of the work plan can be found in Appendix C.

Water Supply Planning Conflicts
No conflicts have been identified.

II. Review of Existing Plans

Northern Kentucky's Future: A Comprehensive Plan for Development (1995 Update)
This plan is the five year update of the comprehensive plan for Kenton County; however, the plan does provide some information regarding Campbell County as well. There is a chapter devoted specifically to water supply and waste management which has a great deal of useful information,

particularly regarding infrastructure and planned improvements. There is also information about potential pollutants to the water supply in a section on combined sewer overflows in the area.

In addition, the plan makes recommendations regarding the extension of waterlines. Summarily, infrastructure should precede development to ensure orderly growth and development. Areas recommended for development should have the ability to be provided with economical and adequate water system facilities. Finally, concerns about the extension of water to non-urban service areas are noted. These rural areas rely on on-site waste disposal facilities which may be overloaded by provision of centralized water systems. Therefore, this situation should be monitored closely and it may be necessary to adopt and enforce more stringent subdivision regulations.

Licking River Basin Study Summary

The Licking River Basin Study was a reconnaissance level investigation of water resource problems existing in the Licking River Basin of Kentucky conducted the U.S. Army Corps of Engineers. This study was conducted subsequent to a resolution adopted by the Committee on Environment and Public Works of the U.S. Senate in January of 1987. The study was carried out to predict and help facilitate the resolution of water resource problems in the Licking River Basin area.

This investigation was performed in accordance with various regulations governing environmental and water resource policy. These regulatory documents dictated a two phase project, the first of which, the reconnaissance phase, was federally funded. In this portion of the study, several plans were examined resulting in the selection of a minimal number with which to work. The second phase, the feasibility phase, was equally funded by the federal government and local sponsors. This portion of the project, as opposed to the reconnaissance study, was aimed at the identification of a single recommended plan.

Data were collected from several sources for this study to evaluate current and projected water demand in order to assess the efficiency of current and projected water supplies. If demands on water sources were found to exceed that of their supplies, the time, location, and degree of these deficits would have to be calculated to adequately prepare for such shortages.

The methodology for the Licking River Basin Study involved two components, the first of which was related to predictions of water demand and the second to water supplies. This methodology was applied to two specific flow scenarios, the 7Q10 low flow period, which is the minimum average discharge of seven days for a ten year frequency events, and the 1930 drought of record. Due to the size and nature of the basin, it was divided into fifteen water service areas, defined by certain commonalities regarding water supply. Fourteen of these water service areas were evaluated during this study.

Licking River Basin Study - Projected Demands Analysis

For the projected water demand, estimates were made using the IWR-MAIN computer model which is maintained by the U.S. Army Corps of Engineers' Institute for Water Resources. This program makes predictions based on various socioeconomic characteristics of a given study area including: 1) population; 2) number, market value, and type of housing units; 3) employment in commercial and manufacturing industries; 4) water and wastewater rates; 5) residential lawn and garden watering; 6) weather conditions; and various other demographic variables.

Data for this portion of the study were collected from various sources such as the U.S. Bureaus of the Census and Economic Analysis, the Kentucky Directory of Manufacturers, County Business Patterns, the Urban Studies Center of the University of Louisville, and materials published by OBERS Bureau of Economic Analysis. After this information was gathered, projections were made for water demands of the fourteen studied segments of the Licking River Basin.

Licking River Basin - Projected Supplies Analysis

In assessing current and future water supply conditions, flow rates were calculated at each point of withdrawal for various flow conditions. As with the water demand estimation, the two scenarios that were evaluated for supply projections were the ten year drought using the 7Q10 flow rates and the 1930 drought. The primary points of interest for this portion of the study were those from which water is withdrawn for treatment and subsequent sale or distribution. These points were determined in the demand analysis survey. Data for these areas were collected primarily from reports of the U.S.Geological Survey which has gaging stations across the state of Kentucky. Thus, stream flows were developed for the two conditions at each of the intake facilities.

Once flow rates had been determined for each of the intake facilities, the estimated supplies were compared to the projected demands for the corresponding withdrawal points to calculate the magnitude of potential surpluses and/or deficits.

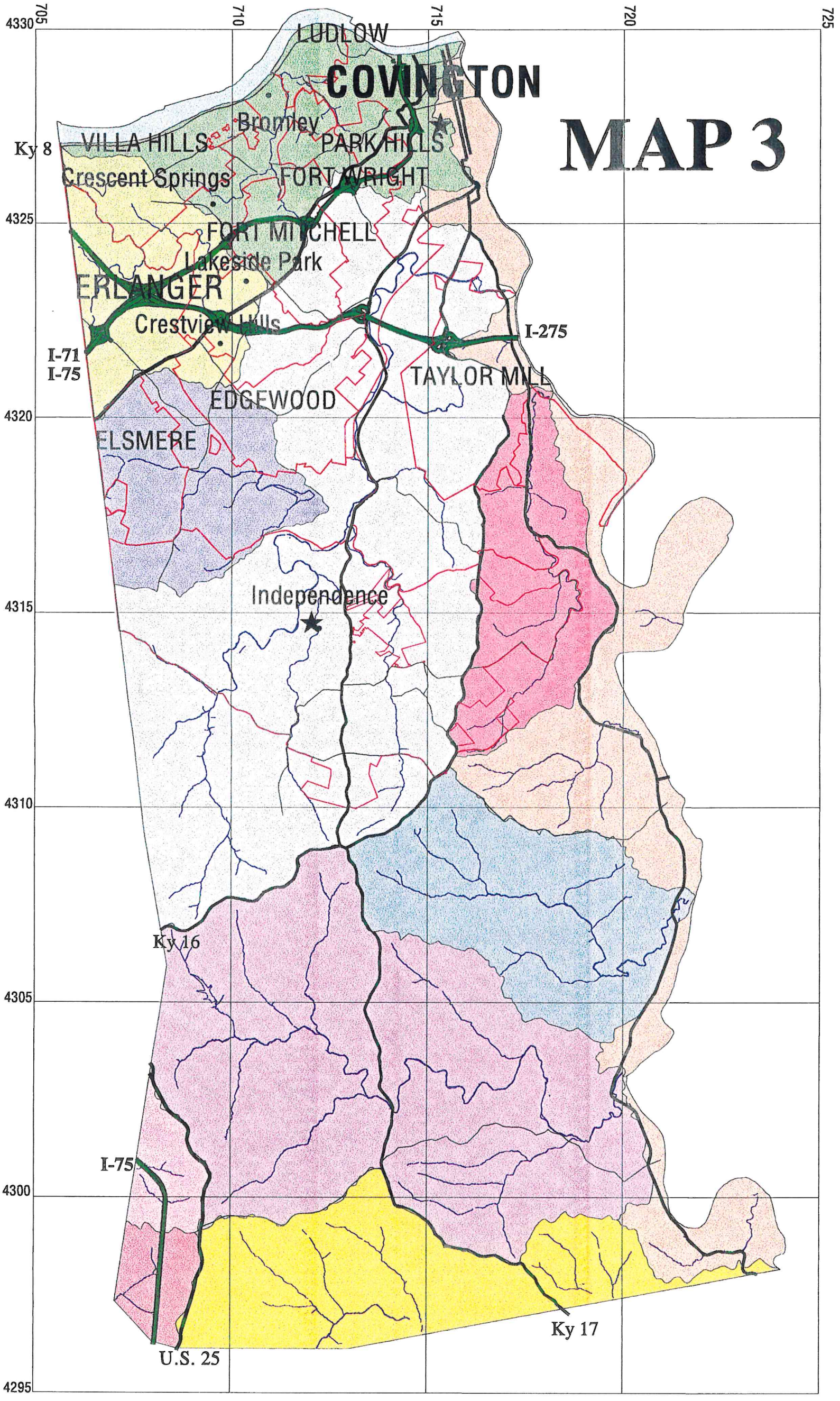
Boone-Kenton Water Service Area

The study combined these two counties into one service area because the majority of the water-served population was supplied by the Kenton County Water District No. 1 either directly or through wholesale sales to distributors. The study concluded that the water supply source was more than adequate and that any future water supply problems were more likely to be related to treatment capacity or transmission/distribution problems.

Campbell Water Service Area

This service area was denoted as the most difficult to forecast future demand accurately in the northern Kentucky region. The primary reason cited was significant gaps in available data from water suppliers and distributors. The study concluded that since the majority of water used in this service area was from the Ohio River, the water supply was adequate for the planning period (1990-2020).

MAP 3



KENTON COUNTY, KENTUCKY
COUNTY BASE MAP

County Seat

Major cities

Watersheds represented by separate colors

0.5 0 0.5 1 Miles

N

source: USDA Natural Resources Conservation Service

CHAPTER 5
WATER USE AND WATER USE ASSESSMENT

A. Water Use Assessment

The following pages contain an informational profile for Kenton County water suppliers and distributors that completed a water use survey. A copy of the survey can be found in Appendix D.

Water Supplier

NORTHERN KENTUCKY WATER SERVICE DISTRICT

Address: P.O. Box 17010
Covington, KY 41017

Phone: 578-9898

Raw Water Sources: Ohio River and Licking River

Treated Water Source: Newport Water Works (1 mgd)

Treatment Plants:

Location:	Ft. Thomas	Taylor Mill
Capacity (mgd):	44	10
Date Built:	1936	1954
Condition:	Good	Good
Type Treatment:	Coagulation Sedimentation Filtration Cl2 Disinfection	Coagulation Sedimentation Filtration Cl2 Disinfection

Treated Water Storage:

Location	**Type**	**Capacity (mg)**
Ft. Thomas Plant	Clearwell	3
Ft. Thomas Plant	Clearwell	3.5
Bromley	Ground Storage	3
Devou Park	Standpipe	.475
Ida Spence	Elevated Tank	.500
Taylor Mill Plant	Clearwell	1
Dudley Pike	Ground Storage	5
Dudley Pike	Ground Storage	5
Kenton Lands Rd.	Elevated Tank	.500
Industrial Park	Hydropillar	.500
Independence	Hydropillar	.500
Barrington Rd.	Hydropillar	1
Devon	Hydropillar	2
Dayton	Ground Storage	.500
Harrison Rd.	Ground Storage	.600

Rossford	Elevated Tank	.300
Lumley	Elevated Tank	.275
Johns Hill Rd.	Elevated Tank	.500
Aqua Drive	Hydropillar	2
Main Street	Elevated Tank	.300
Old. St. Rd #4	Elevated Tank	1
Taylor Mill	Standpipe	.329
Oblique St.	Elevated Tank	.5
Florence Mall	Hydropillar	1
Hebron	Elevated Tank	.5
Frogtown Rd.	Elevated Tank	.5

Major Users (1996 Average GPD):

Industrial
Newport Steel (538,500)
Kahn's/Consolidated Foods (363,096)
A.O. Smith (207,200)
SSE Manufacturing (199,700)

Commercial
Boone County Water (3,487,400)
Florence Water & Sewer Commission (3,128,400)
Taylor Mill Water Commission (903,600)
Pendleton County Water District (147,860)

Institutional
St. Elizabeth Hospitals North + South (409,900)
Northern Kentucky University (121,379)
Allied Health (58,805)
St. Luke Hospital (49,054)

Residential
Fath Management (70,800)
A & K (63,600)
SSK Co. (44,900)
Highland Meadows (42,242)

Other
Northern Kentucky/Greater Cincinnati Intl. Airport (478,200)
Kenton County Golf (131,700)
Covington Parks, Pools, etc (56,400)

Leak Detection Measures: Walk cross-country lines during dry weather. Investigate all reports of possible main breaks.

Current Conservation Measures: Pamphlets in lobby. Phone messages while "on hold" and outdoor sign. In the future, it is possible that revised rates will be instituted to discourage

excessive use.

Planned Improvements: A 20 mgd treatment plant is planned in the next five years.

Anticipated Growth: Growth is anticipated because area is growing.

Water Distributor

TAYLOR MILL WATER DEPARTMENT

Address: 5229 Taylor Mill Road
Taylor Mill, KY 41015

Phone: 581-2635

Contact: Mike Robke

Treated Water Source: Northern Kentucky Water Service District

Treated Water Storage:

Location	Type	Capacity (mg)
Taylor Mill Rd.	Standpipe	.325
Independence	Elevated Tank	1

Major Users (Recent month gpd):

Commercial
Remke's (8,707)
BP Market (10,554)
In & Out Market (831)
McDonald's (1,430)

Institutional
Scott High School (6,967)
Calvary Christian High School (1,943)
Woodland Middle School (3,263)
Taylor Mill Elementary (3,350)

Residential
The Farm #1 (17,034)
The Farm #2 (13,467)
Blair Properties (851)
Lakeview (14,898)
Taylor Ridge (10,343)

Other
Taylor Mill Swim Club (4,657--based on July 1996 use)

Leak Detection Methods: Visual inspection, customer reports, and geophone-stethoscope.

Current Conservation Measures: Article in city newsletter.

Planned Improvements: Increase storage capacity. Extend 16" main from Eggers Lane to Remke's. Upgrade existing 2" mains. Improve overall circulation of system.

Anticipated Growth: Growth is anticipated because there are currently 12 subdivisions under construction and land is available for further development.

Water Distributor

BROMLEY WATER WORKS

Address: 226 Boone Street
Bromley, KY 41016

Contact: Gerald Smith or Janet Gardiner

Source of Treated Water: Northern Kentucky Water Service District

Treated Water Storage: None

Leak Detection Methods: Visual Inspection

Current Conservation Measures: None

Planned Improvements: None. Maintenance only.

Anticipated Growth: None

Water Distributor

LUDLOW WATER WORKS

Address: 227 Elm Street
P.O. Box 16188
Ludlow, KY 41016

Phone: 261-2188

Contact: Jeff Moore, Sr.

Source of Treated Water: Northern Kentucky Water Service District

Treated Water Storage: None.

Anticipated Growth: None because there is no land available for development.

Water Supplier

BULLOCK PEN WATER DISTRICT

Address: P.O. Box 188
Crittenden, KY 41030

Phone: (606)428-2112

Contact: William Catlett

Permitted Withdrawal Limits:

January - April - 550,000 gpd
May - 650,000 gpd
June - August - 800,000 gpd
September - November - 600,000 gpd
December - 550,000 gpd

Treated Water Sources:

Source Utility	Maximum Delivery
City of Walton	100,000 gpd
City of Williamstown	None stated but there is a 150,000 gpd minimum

Treated Water Storage:

Location	Type	Capacity (Gal)
Dry Ridge	Standpipe	140,000
Verona	Elevated Tank	100,000
Crittenden	Elevated Tank	200,000
Sherman	Elevated Tank	150,000
Stewartsville	Elevated Tank	200,000
Plant	Standpipe	135,000

Leak Detection Methods: Driving lines, check valves, and charts on telemetry systems.

Conservation Methods: None.

Planned Improvements: Upgrading the size of lines.

Water Distributor

WALTON WATER WORKS

Address: P.O. Box 95
Main & Church Streets
Walton, KY 41094

Phone: (606)485-4383

Source of Treated Water: Northern Kentucky Water Service District

Treated Water Storage:

Location	Type	Capacity (gallons)
Walton Nicholson Rd.	Elevated Tank	200,000
Richland Court	Elevated Tank	100,000
Beaver Road	Elevated Tank	300,000

Other Public Water Systems

There are several other public water systems in the county; however, they did not return water surveys, so little information is available.

Visalia Market (Semi-Public)
11524 DeCoursey Pike
Covington, KY 41015
Population Served: 24

Visalia Elementary
20 Kenton Lands Road
Covington, KY 41018
Population Served: 224
Water Sources: Cistern and Water Haulers

Lally Pipe & Tube
P.O. Box 15430
Covington, KY 41015
Population Served: 50

Kenton Marina
1028 River Rd.
Villa Hills, KY 41017
Population Served: 40

Permitted Withdrawals

In addition to public water suppliers, a water withdrawal permit is required for any user who withdraws more than 10,000 gallons per day. In Kenton County, the only permitted user is Ryland Lakes Country Club. The Country Club withdraws water from a pond to water the golf course. Withdrawals are permitted from March through October with limits ranging from 40,000 gpd in March to 80,000 gpd during the summer months. Map 4 shows water withdrawal sites in Kenton County.

Agricultural Water Use

Agricultural users who withdraw water are exempt from the permit requirement. However, it is very difficult to quantify their water use. According to the 1992 Census of Agriculture, Kenton County has 507 farms with a total of 44,188 acres of farm land. Approximately, .1 percent, or 47 acres, of the farm land is irrigated.

MAP 4

705 710 715 720 725

4330 4325 4320 4315 4310 4305 4300 4295

LUDLOW
Bromley
COVINGTON
Ky 8
VILLA HILLS
PARK HILLS
Crescent Springs
FORT WRIGHT
FORT MITCHELL
Lakeside Park
ERLANGER
Crestview Hills
I-71
I-75
EDGEWOOD
TAYLOR MILL
ELSMERE
Independence
Ky 16
I-75
U.S. 25
Ky 17
I-275

Northern Kentucky Water Service District
Licking River Intake

Lally Pipe & Tube

Ryland Lakes Country Club

KENTON COUNTY, KENTUCKY
WATER USE MAP

County Seat
Ground Water
Surface Water
Major Cities

Watersheds represnted by separate colors

0.5 0 0.5 1 Miles

N

source: USDA Natural Resources Conservation Service

Northern Kentucky Water Service District

B. Water Use Forecast

The water supply forecasting model, IWR-MAIN, discussed previously in the review of existing plans, was used to forecast future demand for the two major water suppliers in Kenton County: the Northern Kentucky Water Service District and Bullock Pen Water District. Projections are intended to serve as a planning tool, not as an absolute measure of future demand.

NORTHERN KENTUCKY WATER SERVICE DISTRICT

The Northern Kentucky Water Service District supplies almost all of the water-served areas in Boone, Campbell, and Kenton Counties (with the exception of the Cities of Newport, Ft. Thomas, Southgate, Woodlawn, and part of Wilder), either directly or through wholesale sales. Raw water sources include the Ohio and Licking Rivers.

Assumptions Used in the Modeling Process

1. The demand projections prepared by the Water District's consulting engineering firm were given considerable weight in the verification and calibration of the model.

2. Wholesale demand will continue to increase throughout the planning period.

Data Sources

1. 1990 Census of Population and Housing.

2. Unemployment insurance data was used to estimate employment by sector for the planning unit.

3. Manufacturing data was compiled from the Kentucky Directory of Manufacturers.

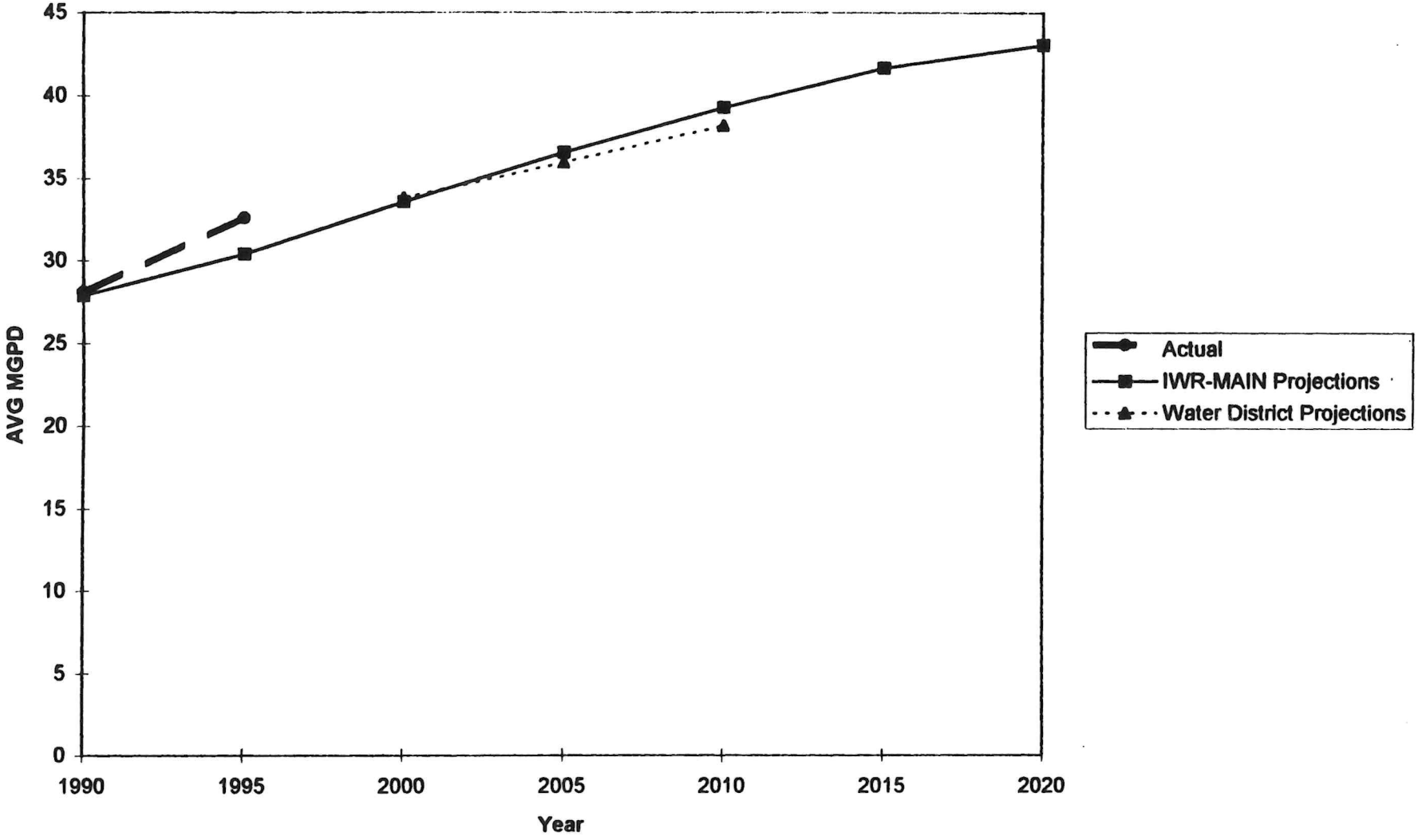
4. The high-growth series of population projections from How Many Kentuckians: 1995 Edition was utilized.

Verification of Estimates and Conclusions

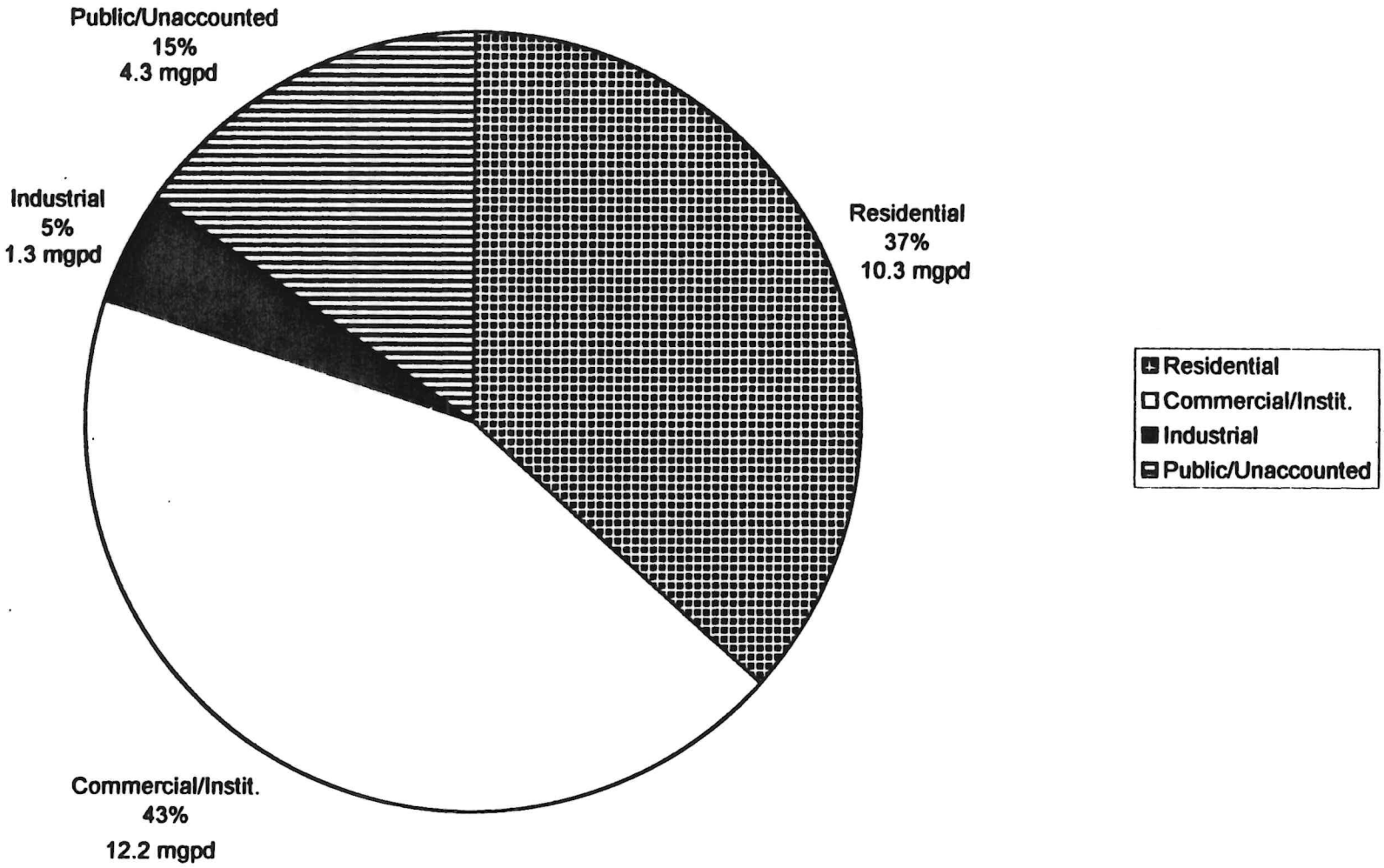
Figure 5.1 compares actual water use, IWR-MAIN projected water use, and water district projections. In 1990, IWR-MAIN projections and actual water use were quite close with actual use exceeding projected use by only .7 percent. In 1995, actual use was 7.2 percent higher than projected use. IWR-MAIN projected use and water district projections are quite close through 2010. Therefore, no further calibrations were made.

Figures 5.2 through 5.10 show actual and projected demand by sector. In 1990, projected industrial use was considerably lower than actual use; however, since 1995 projected industrial use was fairly accurate, no calibrations were made. Overall, the projections are considered to be fairly accurate, particularly for total demand.

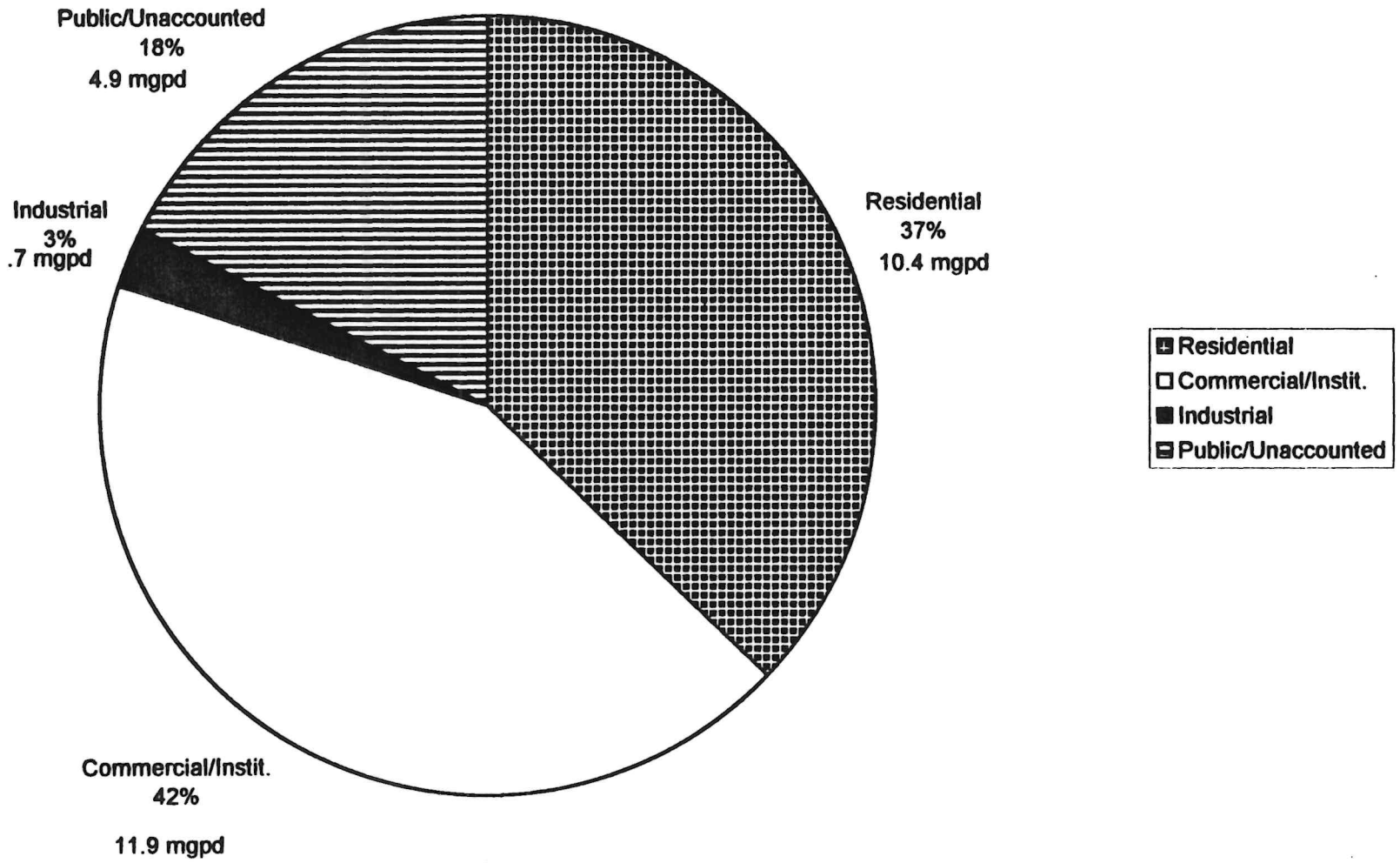
Northern Kentucky Water Service District: Actual Vs. Projected Use



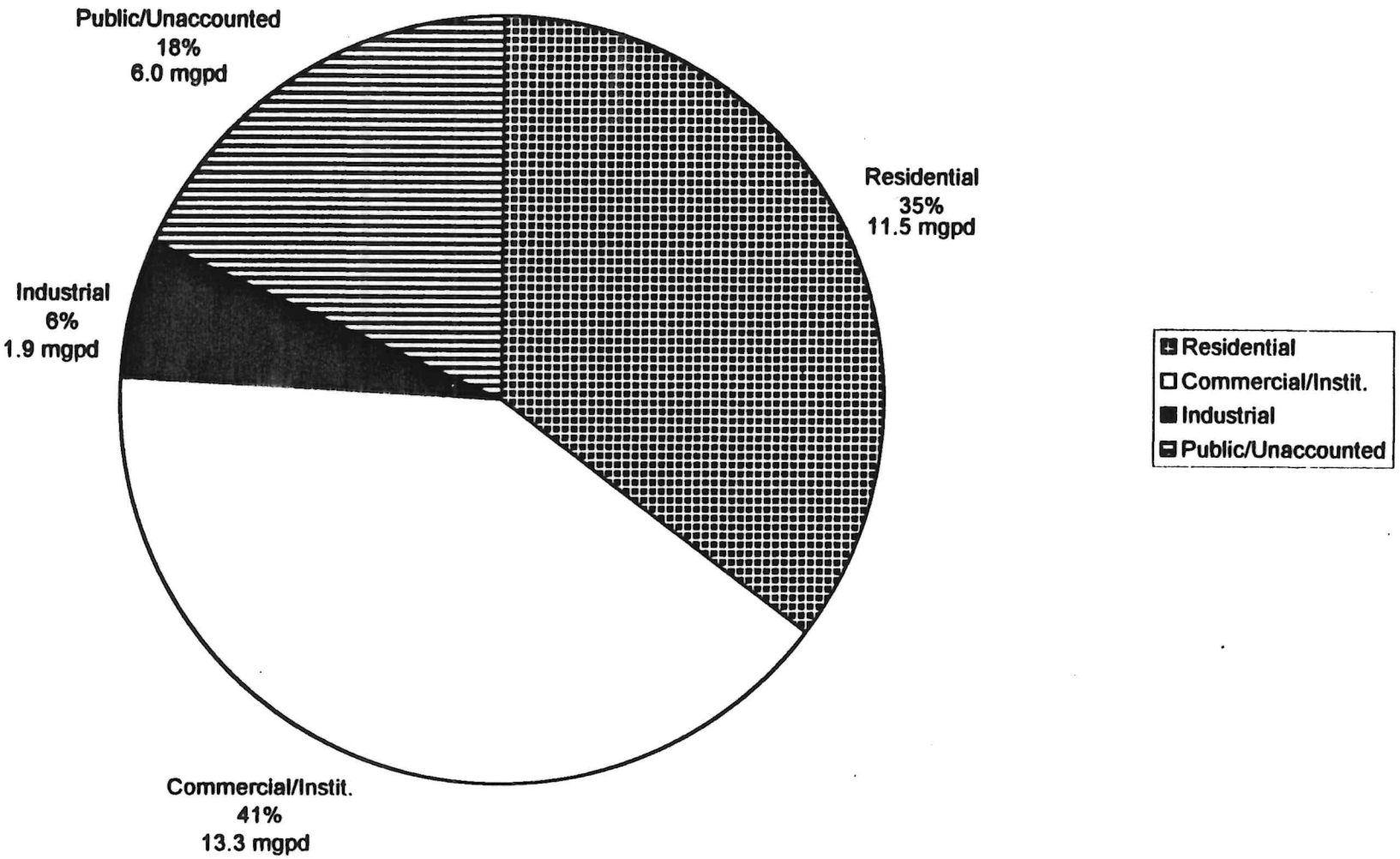
Northern Kentucky Water Service District: 1990 Actual Use (Avg Mgpd)



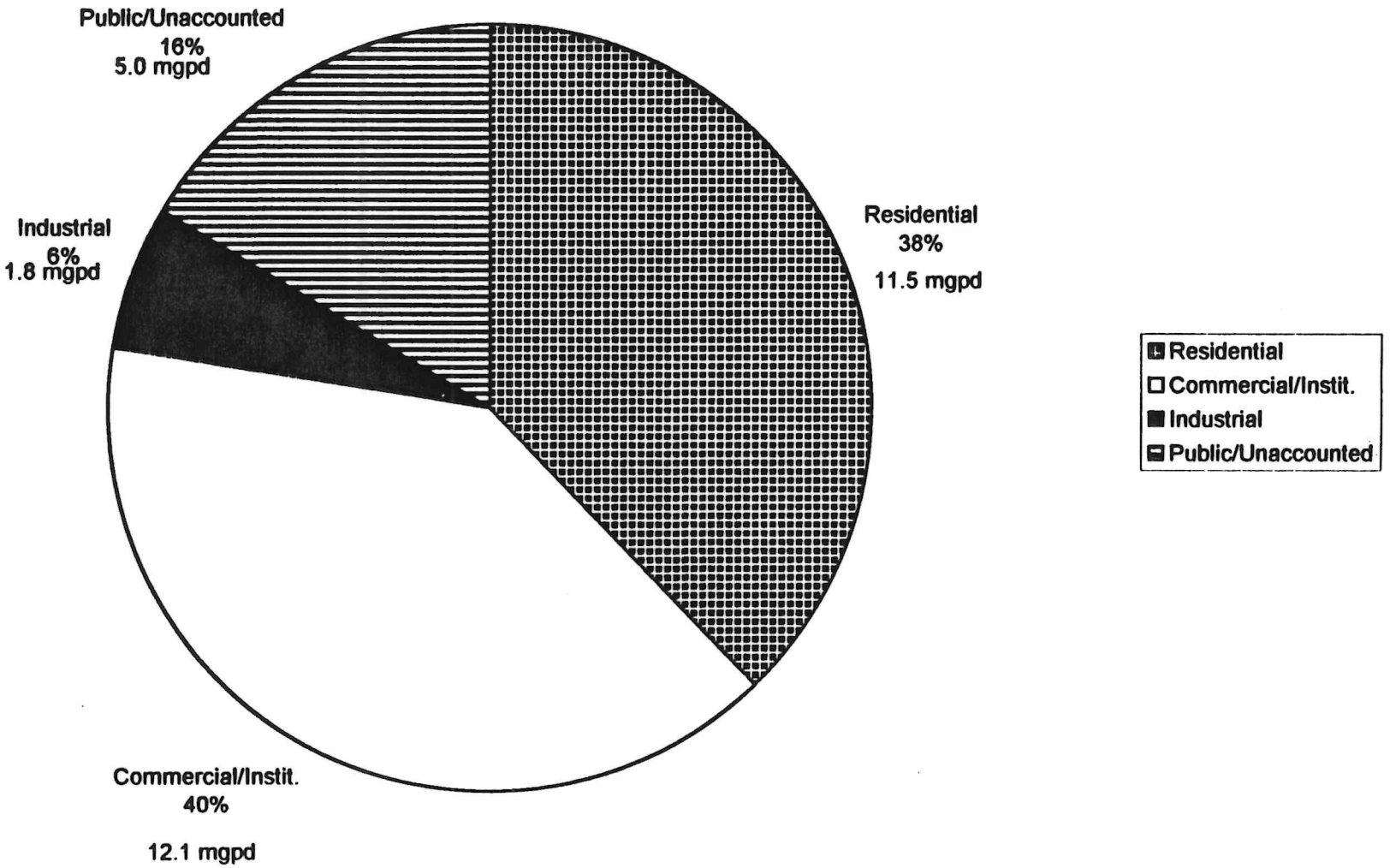
Northern Kentucky Water Service District: 1990 Projected Use (Avg Mgpd)



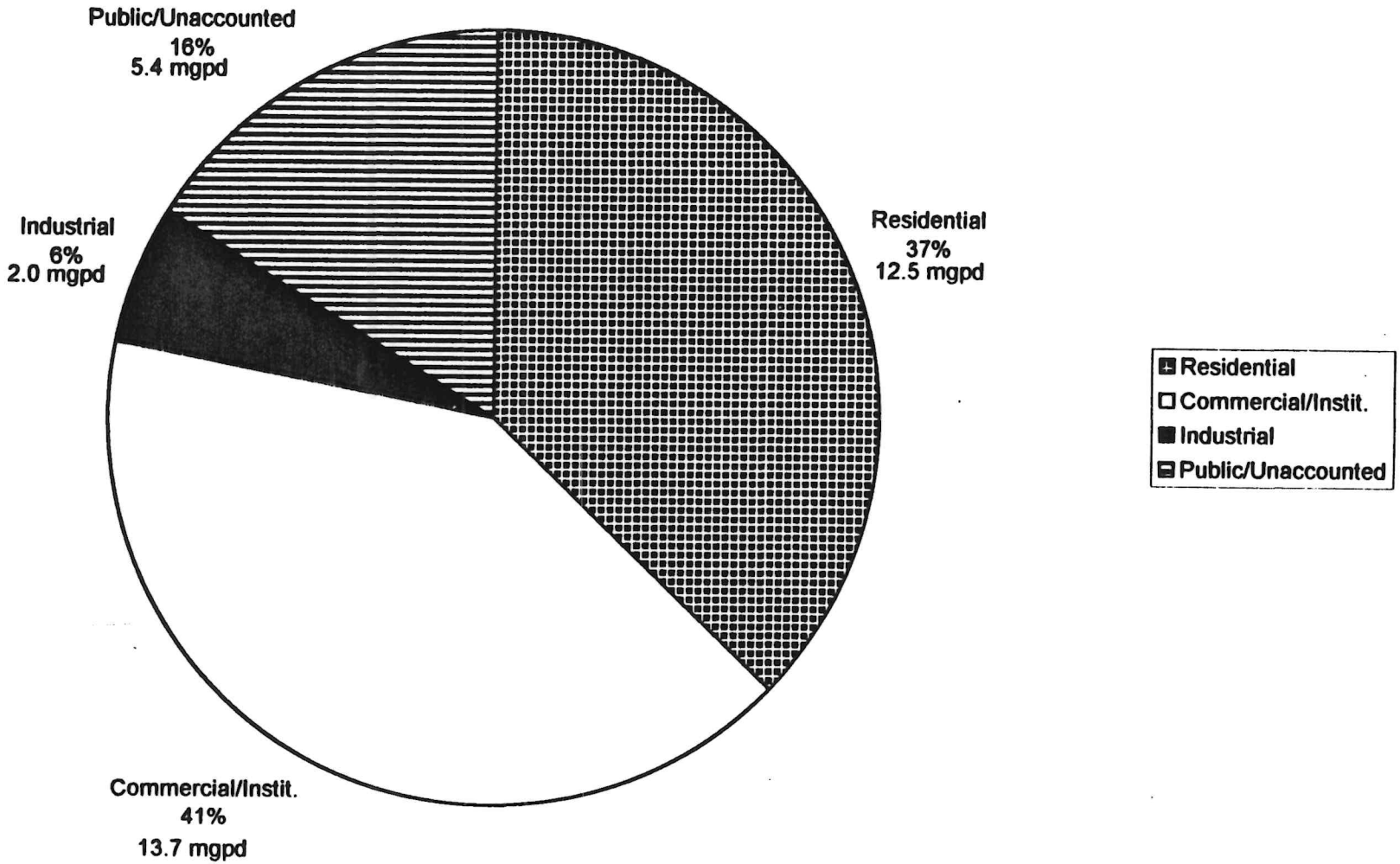
Northern Kentucky Water Service District: 1995 Actual Use (Avg Mgpd)



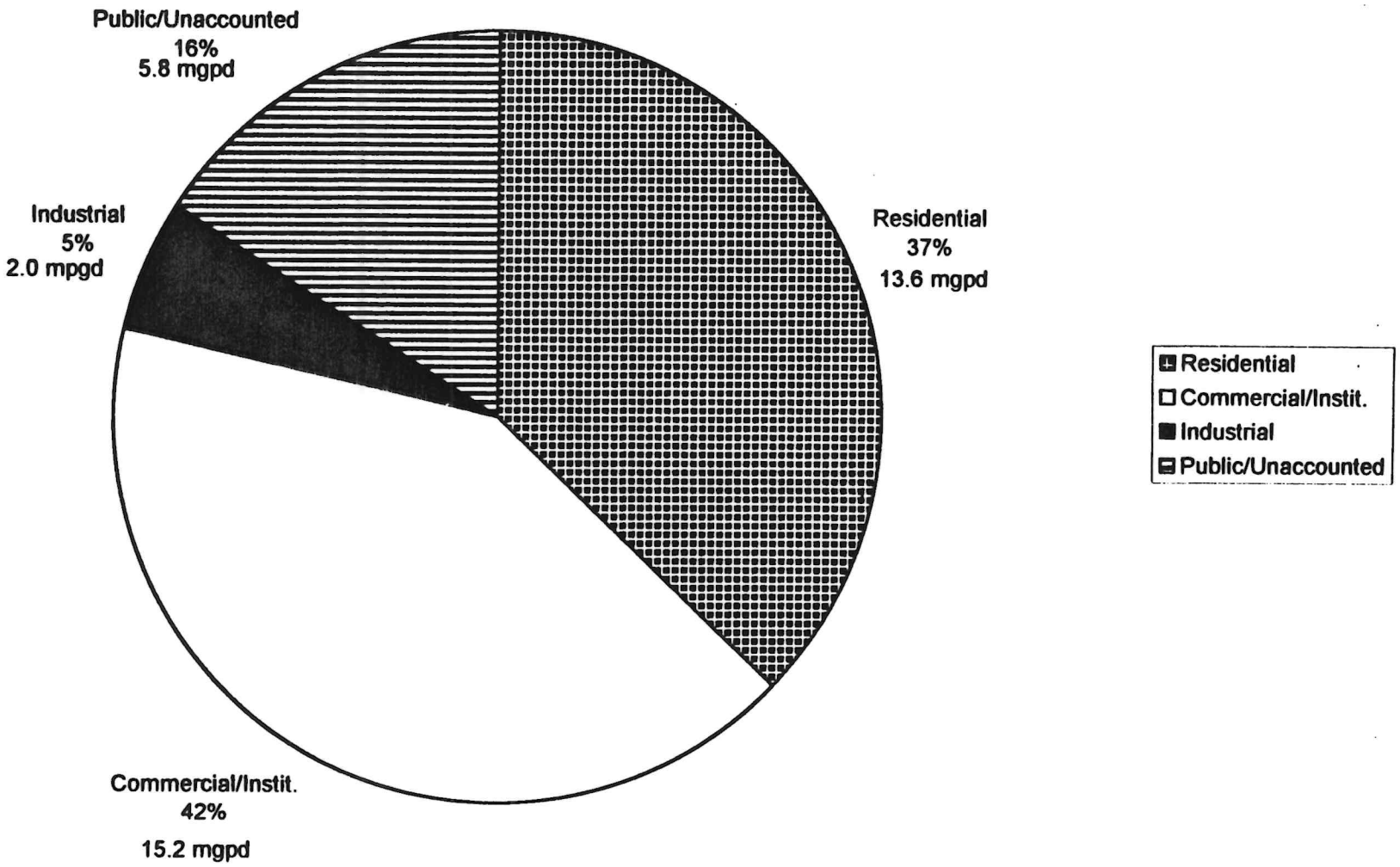
Northern Kentucky Water Service District: 1995 Projected Use (Avg Mgpd)



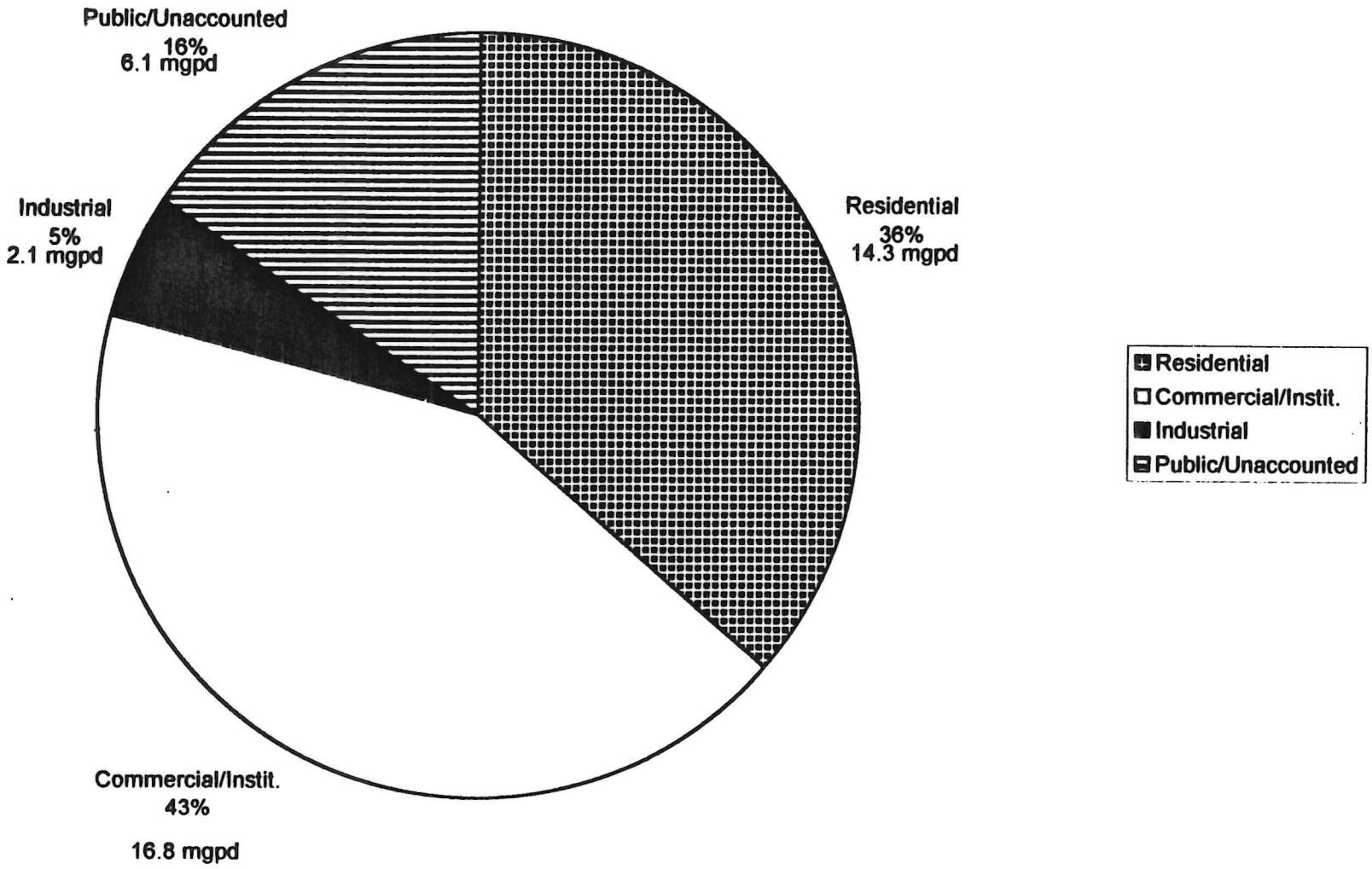
Northern Kentucky Water Service District: 2000 Projected Use (Avg Mgpd)



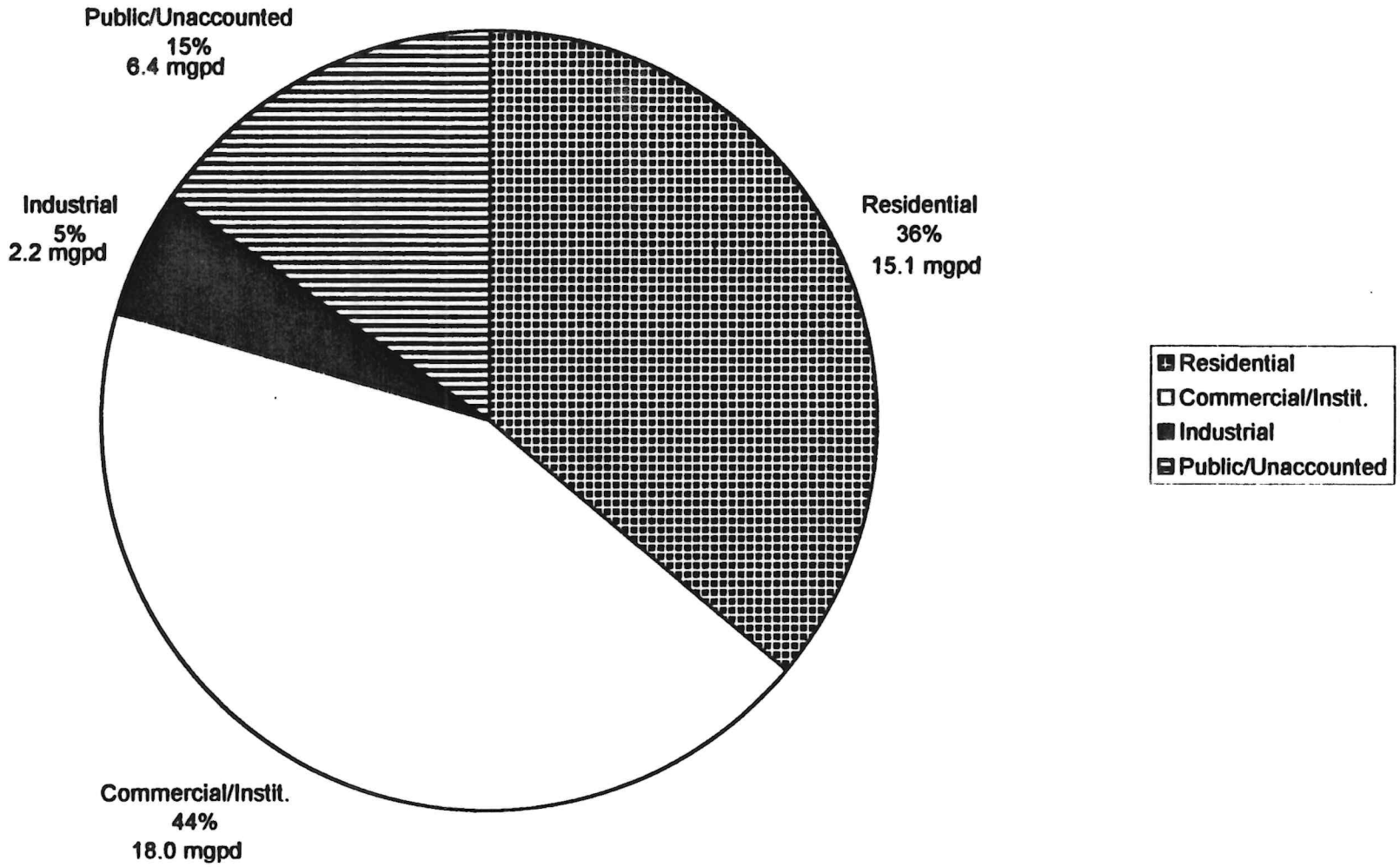
Northern Kentucky Water Service District: 2005 Projected Use (Avg Mgpd)



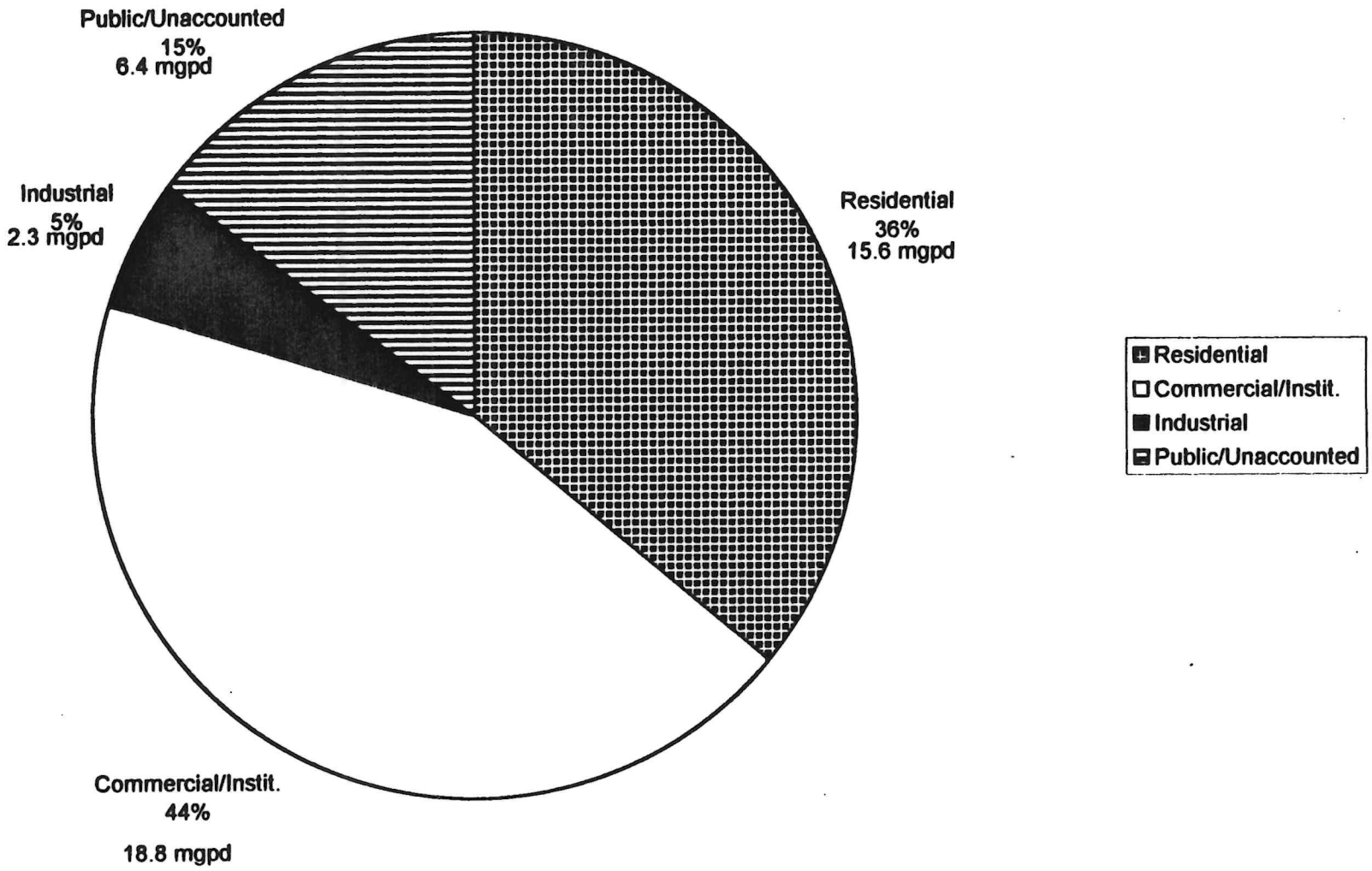
Northern Kentucky Water Service District: 2010 Projected Use (Avg Mgpd)



Northern Kentucky Water Service District: 2015 Projected Use (Avg Mgpd)



Northern Kentucky Water Service District: 2020 Projected Use (Avg Mgpd)



BULLOCK PEN WATER DISTRICT

Bullock Pen Water District (BPWD) serves approximately 102 customers in southern Kenton County. In addition, BPWD also serves northern Grant County and parts of Boone, Gallatin, and Pendleton Counties. Bullock Pen currently meets water demand with both treated and purchased water. The source of treated water is Bullock Pen Lake. Permitted withdrawal limits from the lake vary by month. BPWD also purchases water from the City of Walton with a 100,000 gallon per day maximum and from the City of Williamstown with a 150,000 gallon per day minimum with no stated limit.

Assumptions Used in the Modeling Process

A number of assumption were used in the modeling process.

1. The City of Crittenden is demographically representative of this area in terms of income and housing values.

2. Currently, there is limited industrial water use in this area and it is assumed that this will continue to be true.

3. The majority of all future residential, commercial, and institutional water use will occur in water-served areas.

4. Public/unaccounted water was calibrated at five percent rather than the ten percent automatically set by the IWR-MAIN model. According to the survey completed by BPWD, five percent is a more accurate figure.

5. Residential water use is not shown broken down into single-family, multi-family, flat-rate, metered, sewered, and unsewered categories in the following figures. BPWD does not keep data at this level of detail and best "guesstimates" and census data were used for the model where required by entry screens.

Data Sources

1. 1990 Census of Population and Housing.

2. Population projections are from the high growth series of How Many Kentuckians: 1995 Edition.

3. Unemployment insurance data was used to estimate employment by sector in Grant County.

4. Manufacturing data was compiled from the Kentucky Directory of Manufacturers. Surveys completed by water suppliers and distributors were used for calibration and to verify accuracy.

Methodology and Verification of Estimates

1990 was the base year and 1995 was the projection year. The projections were then compared against actual water use for 1990 and 1995. Figure 5.11 shows projected and actual water use (where available) for the water service area. The model appears to be fairly accurate with water use underestimated by 3.4 percent in 1990 and by only .1 percent in 1995. Figures 5.12 through 5.20 show actual and projected water use by sector.

Conclusions

Figure 5.21 compares the projected demand for water to available supply. As mentioned previously, the maximum permitted withdrawal from Bullock Pen Lake is 800,000 gpd; however, in some months, it is as low as 550,000 gpd. Therefore, BPWD relies on a combination of purchased and treated water to meet demand. The City of Walton provides a maximum of 150,000 gallons per day. The City of Williamstown does not currently have a maximum limit, only a minimum of 150,000 gpd. However, for planning purposes, it was assumed that the City of Williamstown could not provide for more than 500,000 gpd. Therefore, a total of 1,450,000 gpd would be available. Using this figure, supply would meet demand during the planning period; however, this is very dependent on the City of Williamstown providing a significant percentage of the supply for this water service area.

Figure 5.11

Bullock Pen Water Service Area: Actual Vs. Projected Water Demand

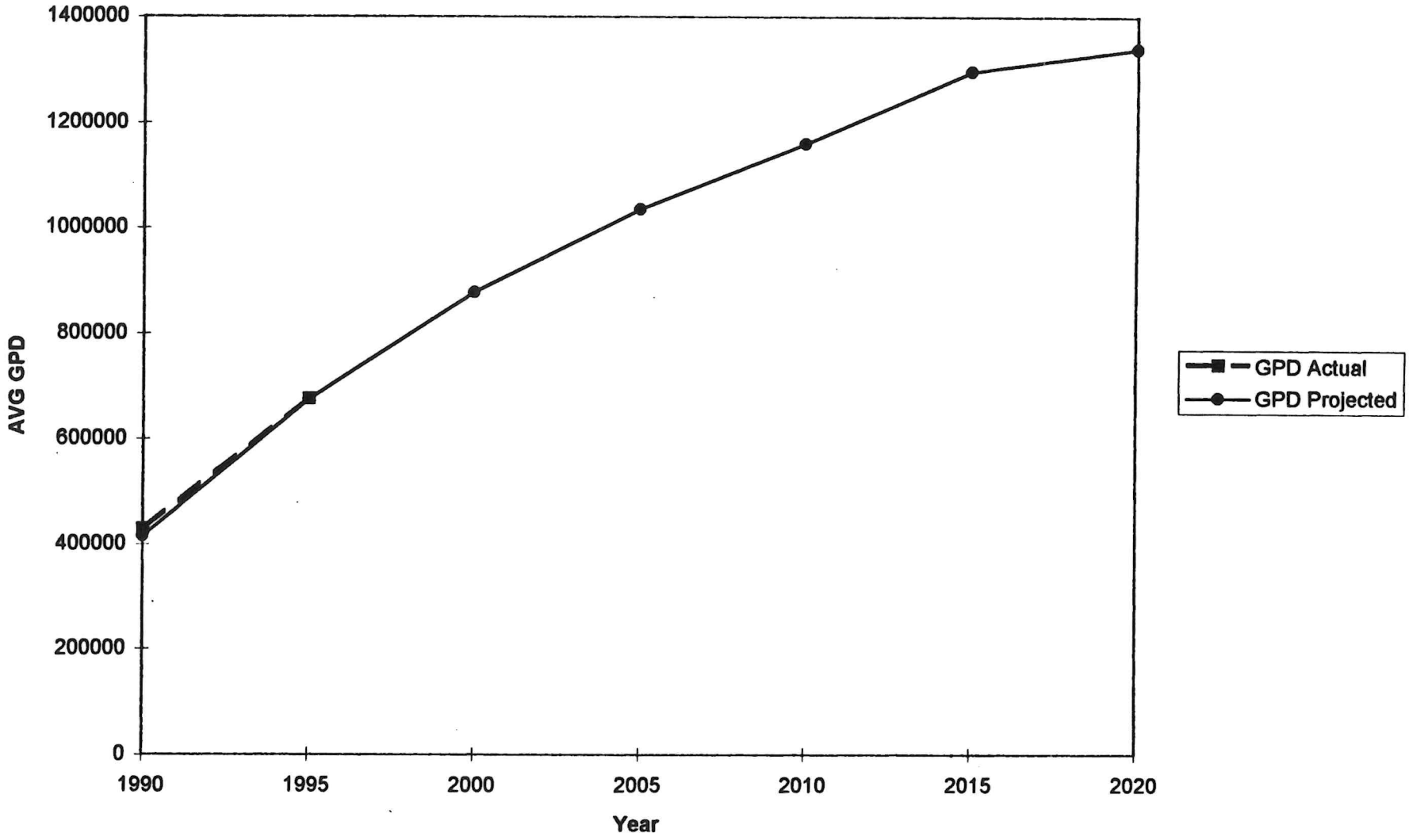


Figure 5.12

Bullock Pen Water Service Area: 1990 Actual Use

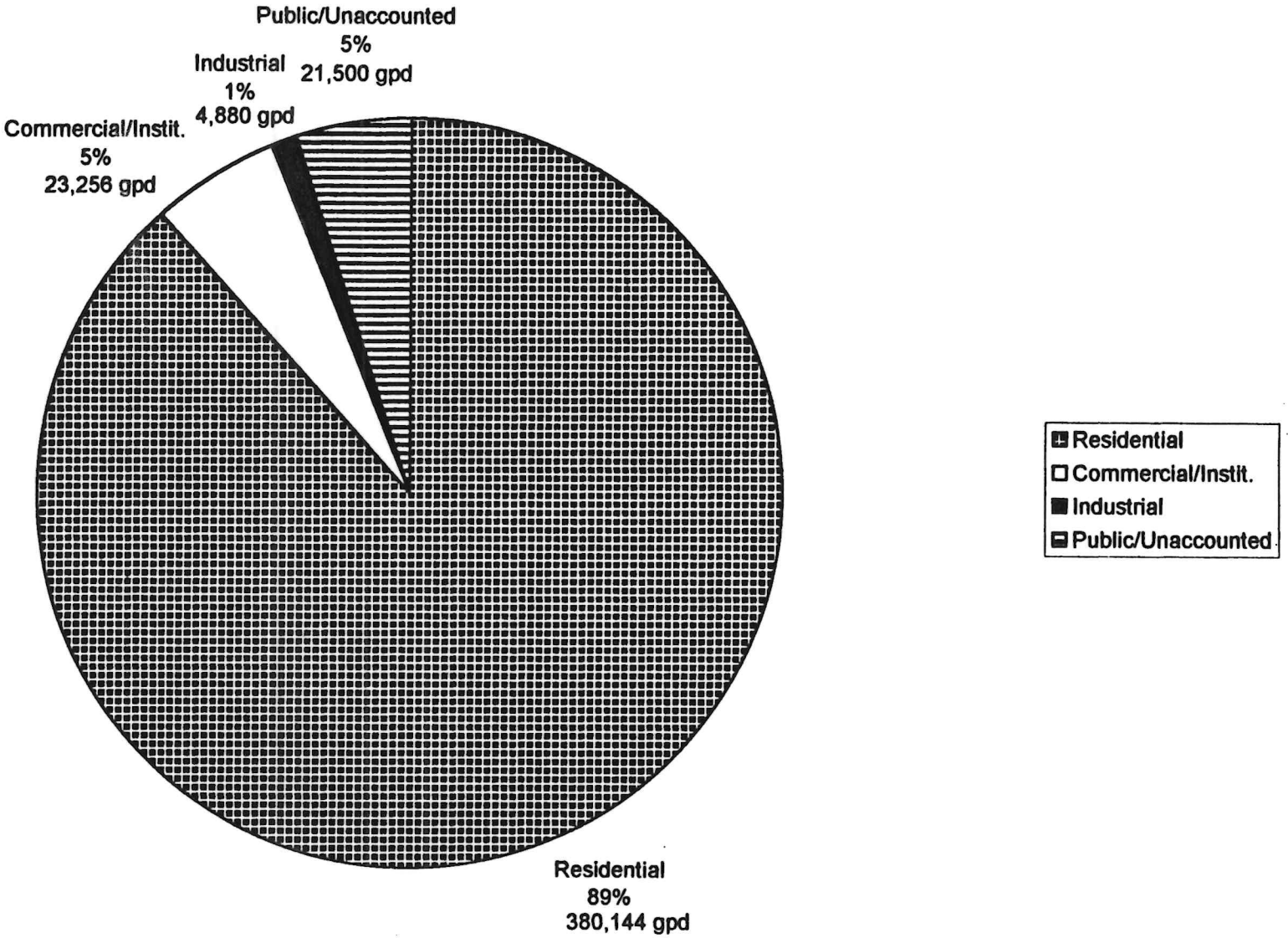


Figure 5.13

Bullock Pen Water Service Area: 1990 Projected Use

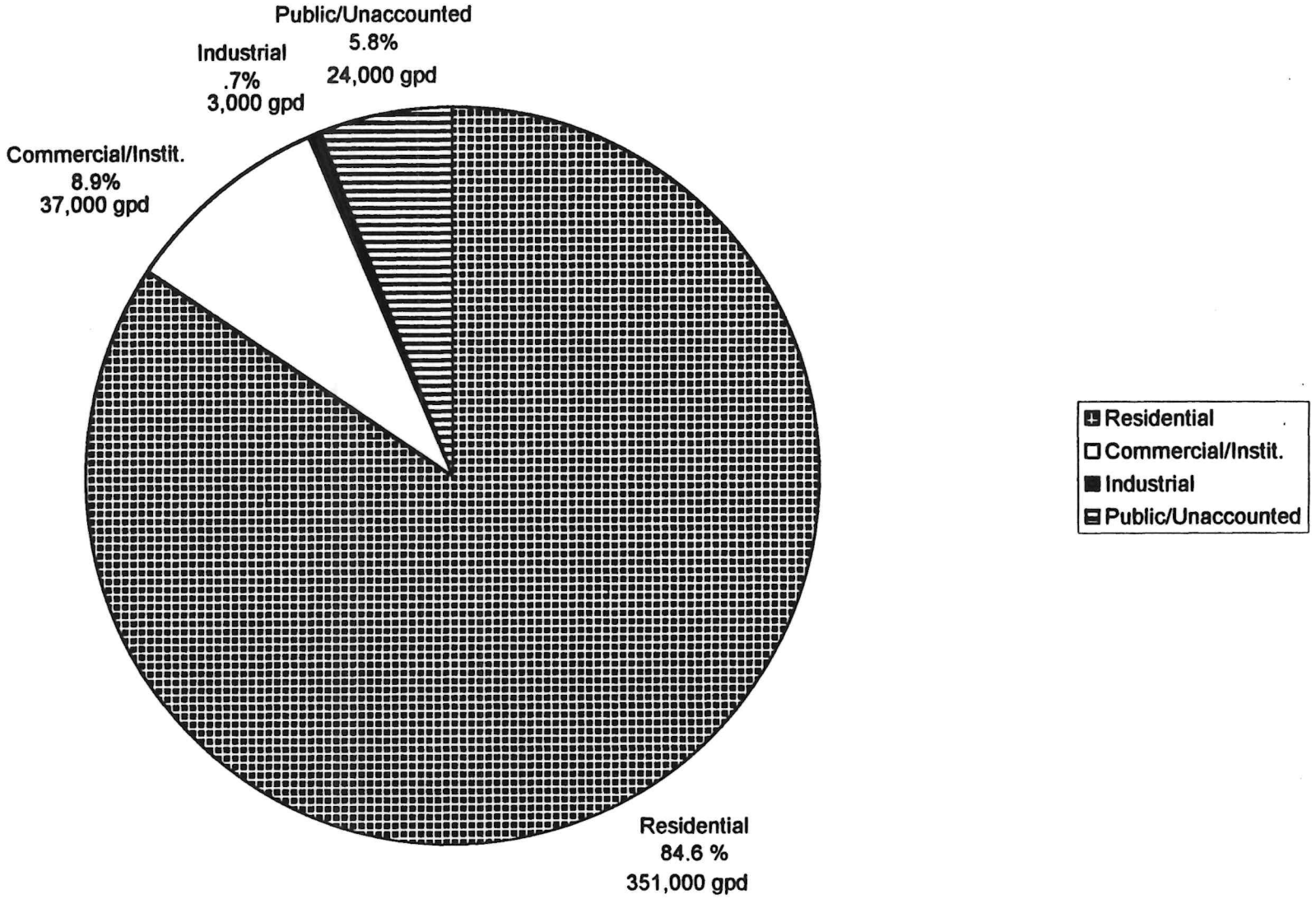


Figure 5.14

Bullock Pen Water District: 1995 Actual Use

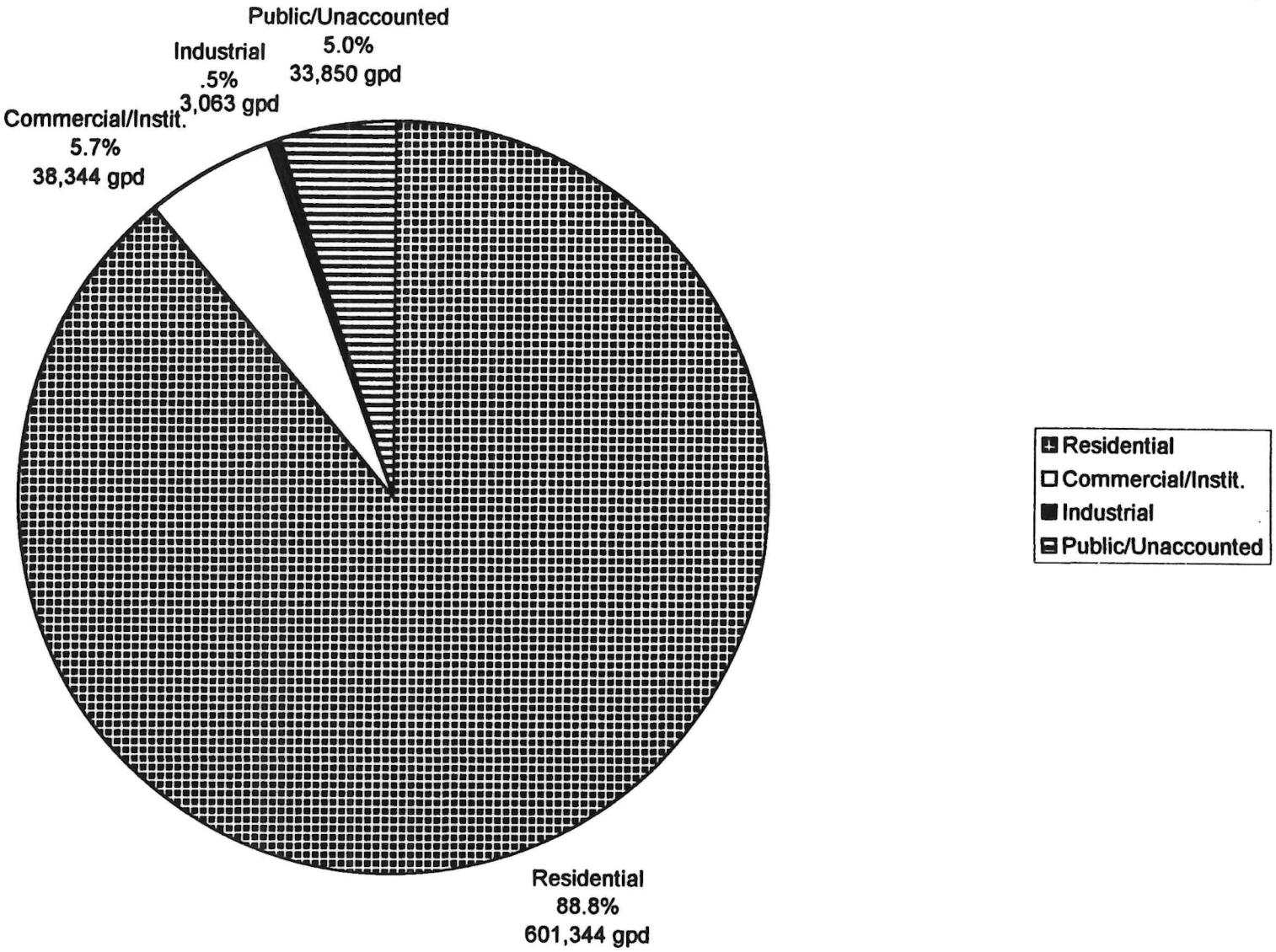


Figure 5.15

Bullock Pen Water Service Area: 1995 Projected Use

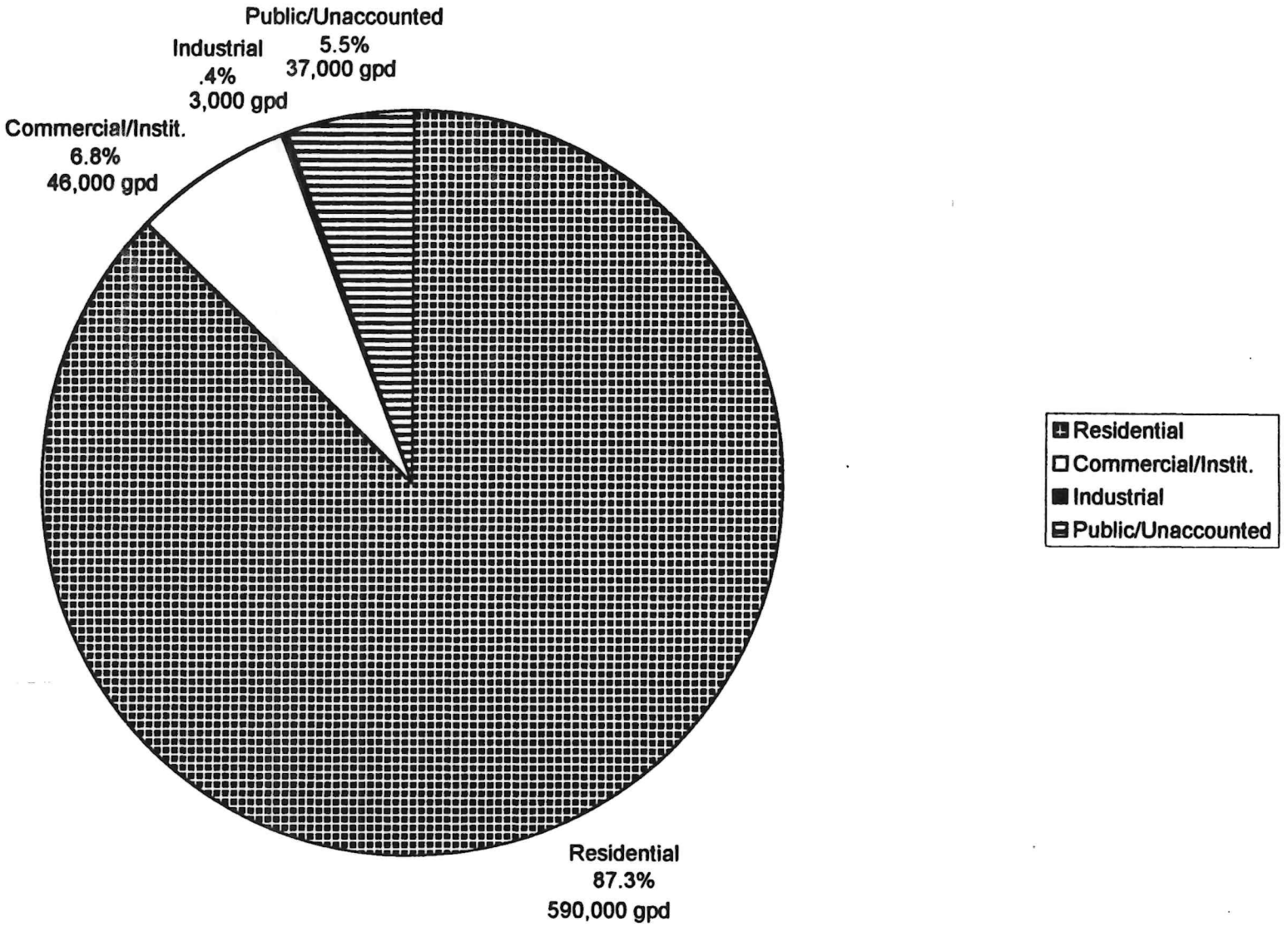


Figure 5.16

Bullock Pen Water Service Area: 2000 Projected Use

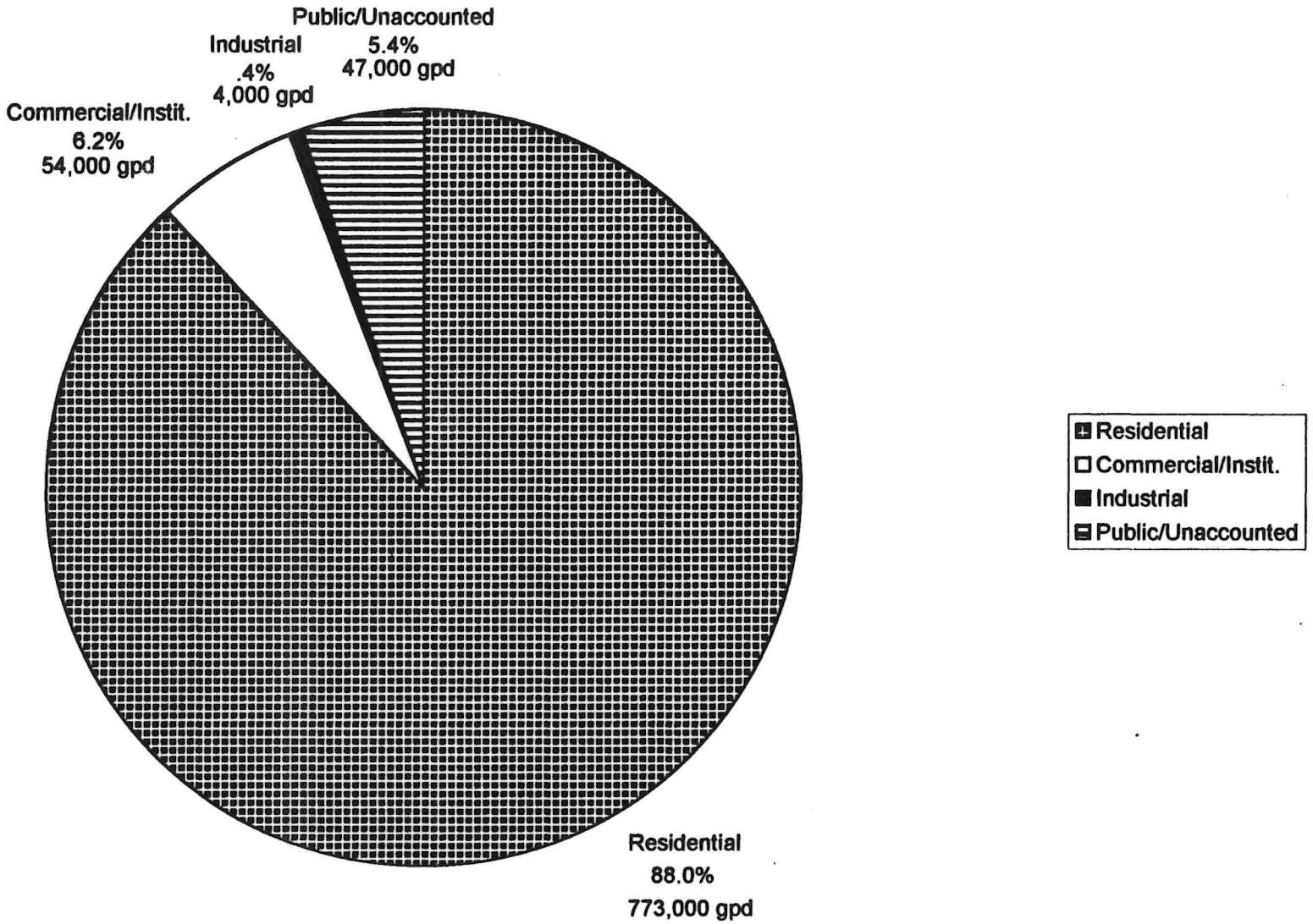


Figure 5.17

Bullock Pen Water Service Area: 2005 Projected Use

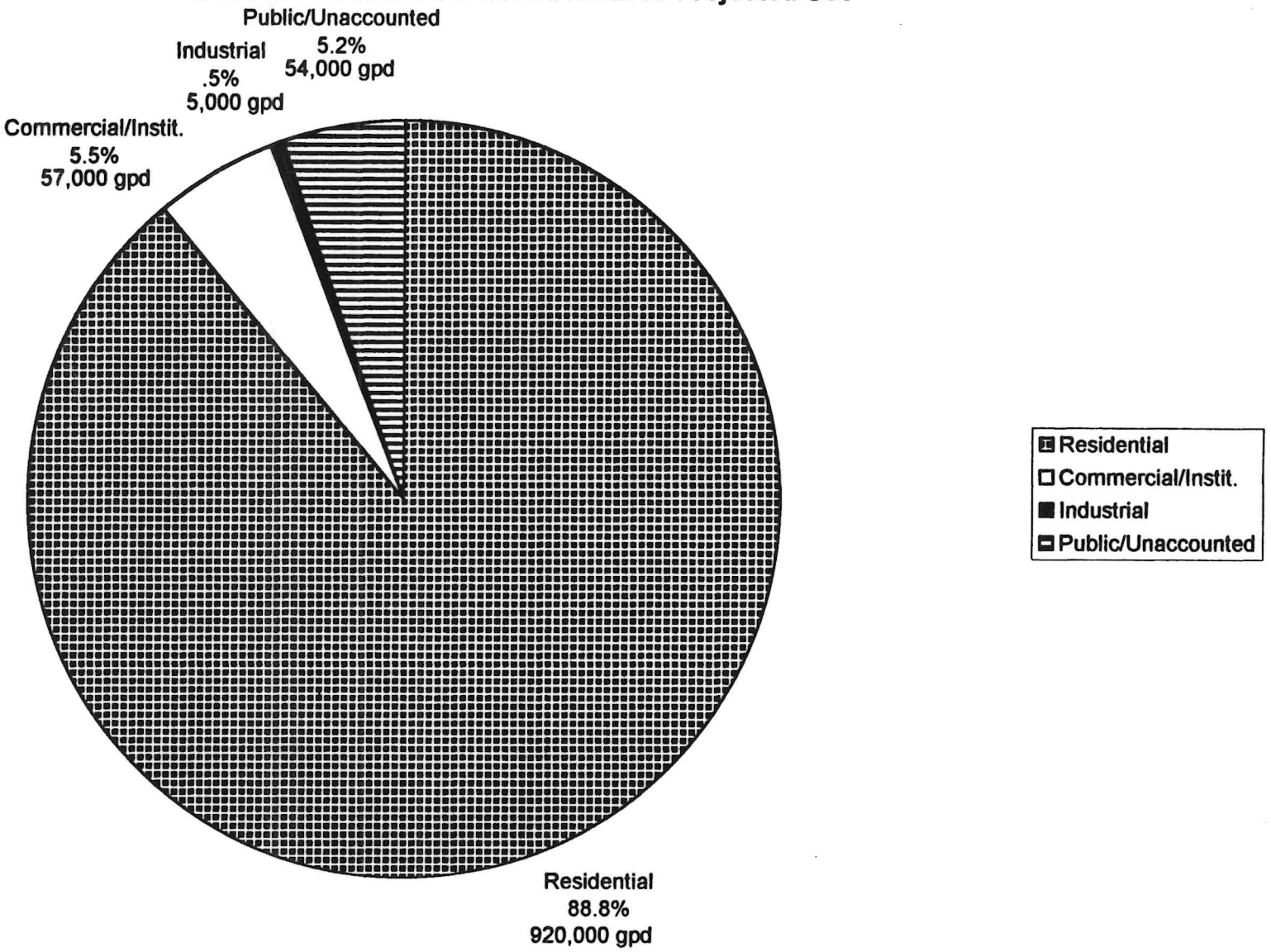


Figure 5.18

Bullock Pen Water Service Area: 2010 Projected Use

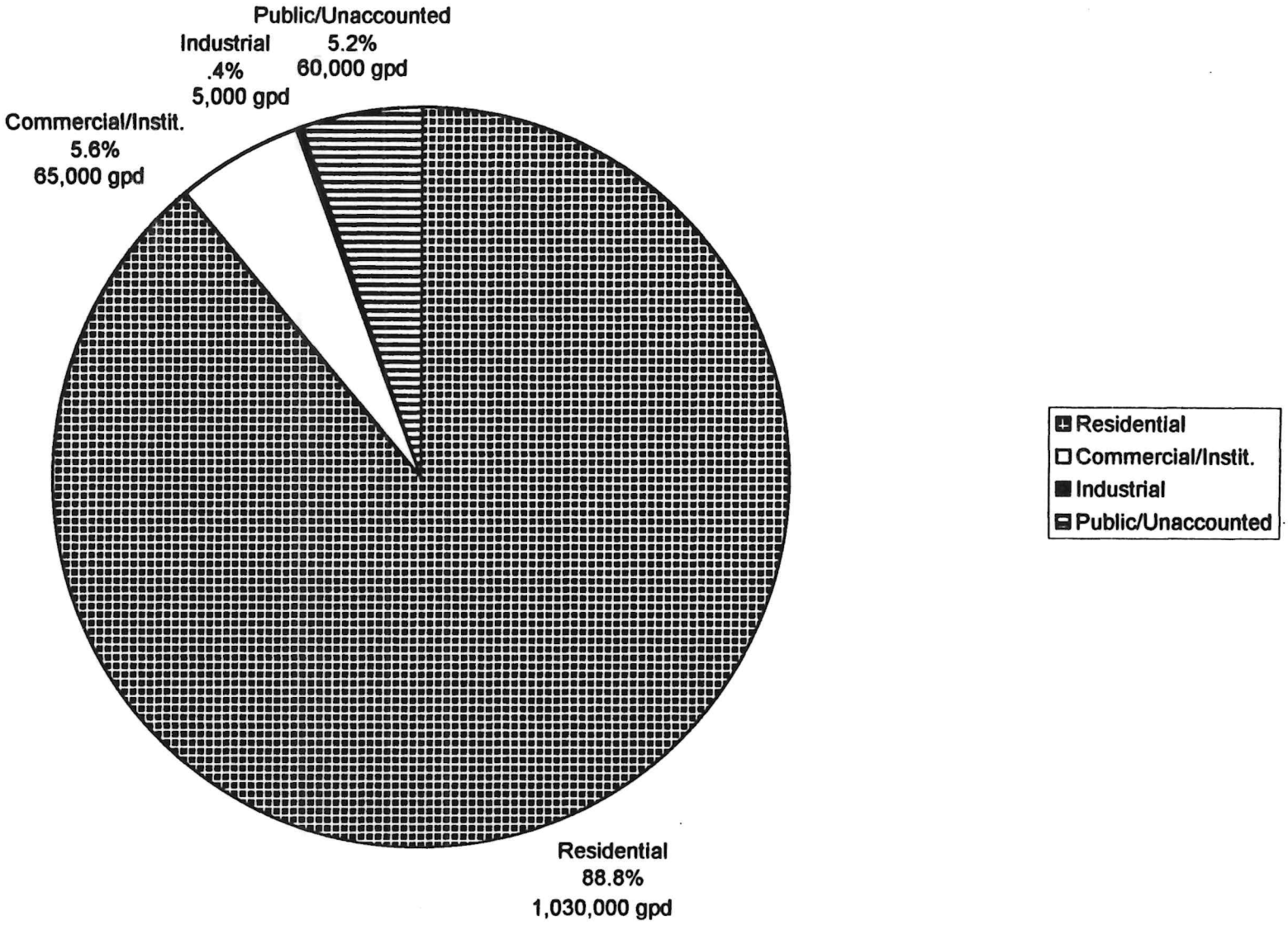


Figure 5.19

Bullock Pen Water Service Area: 2015 Projected Use

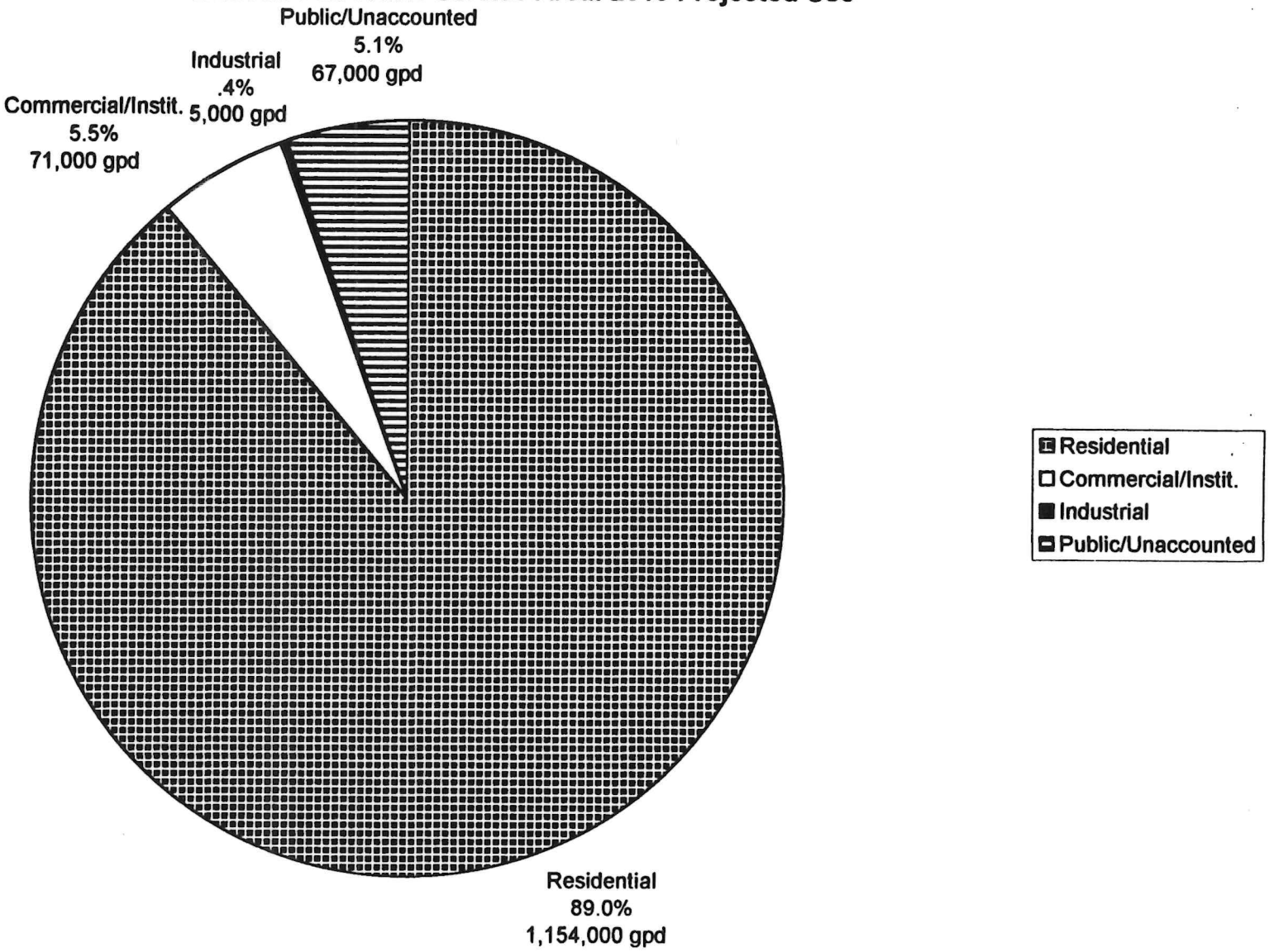
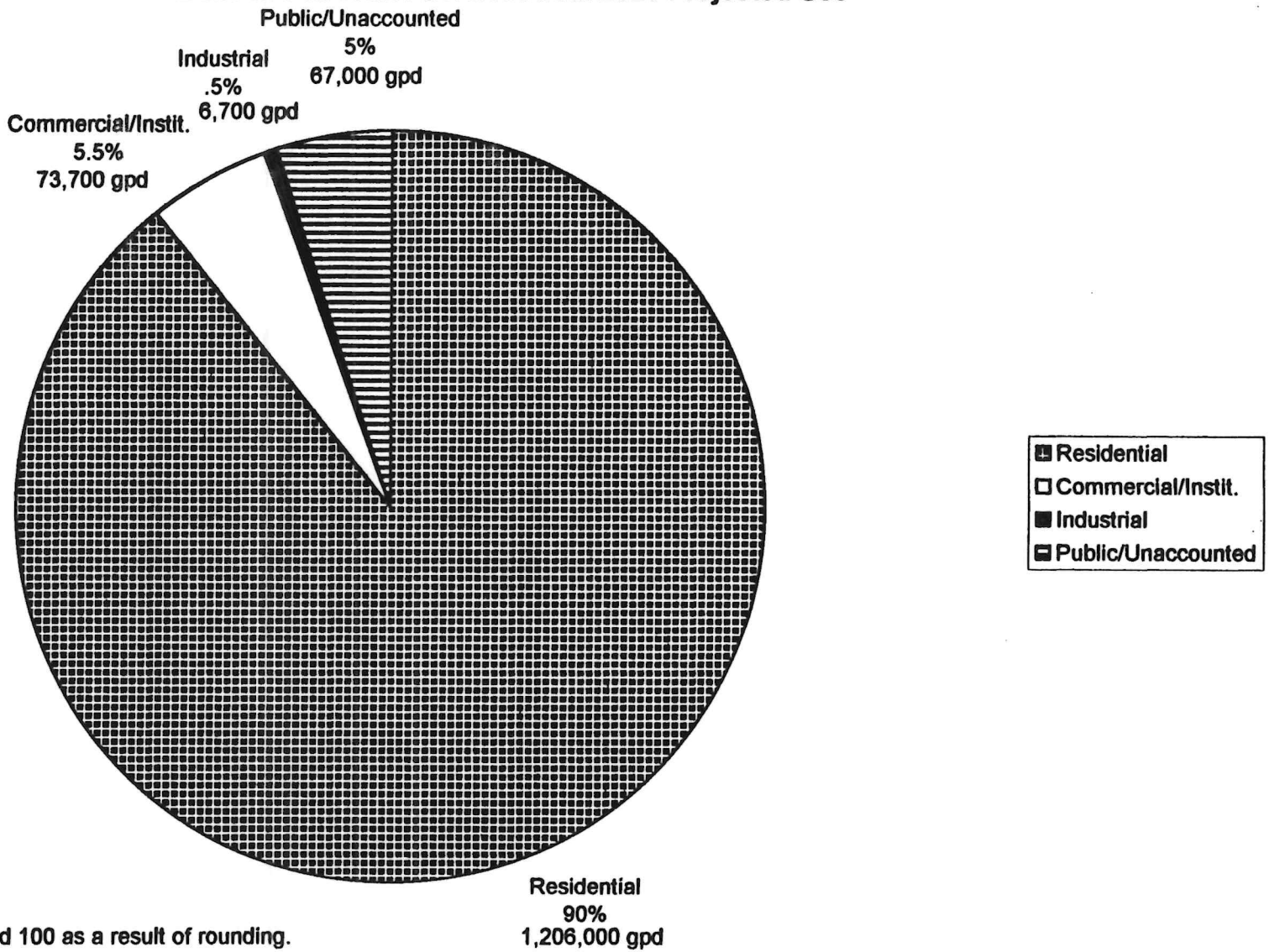


Figure 5.20

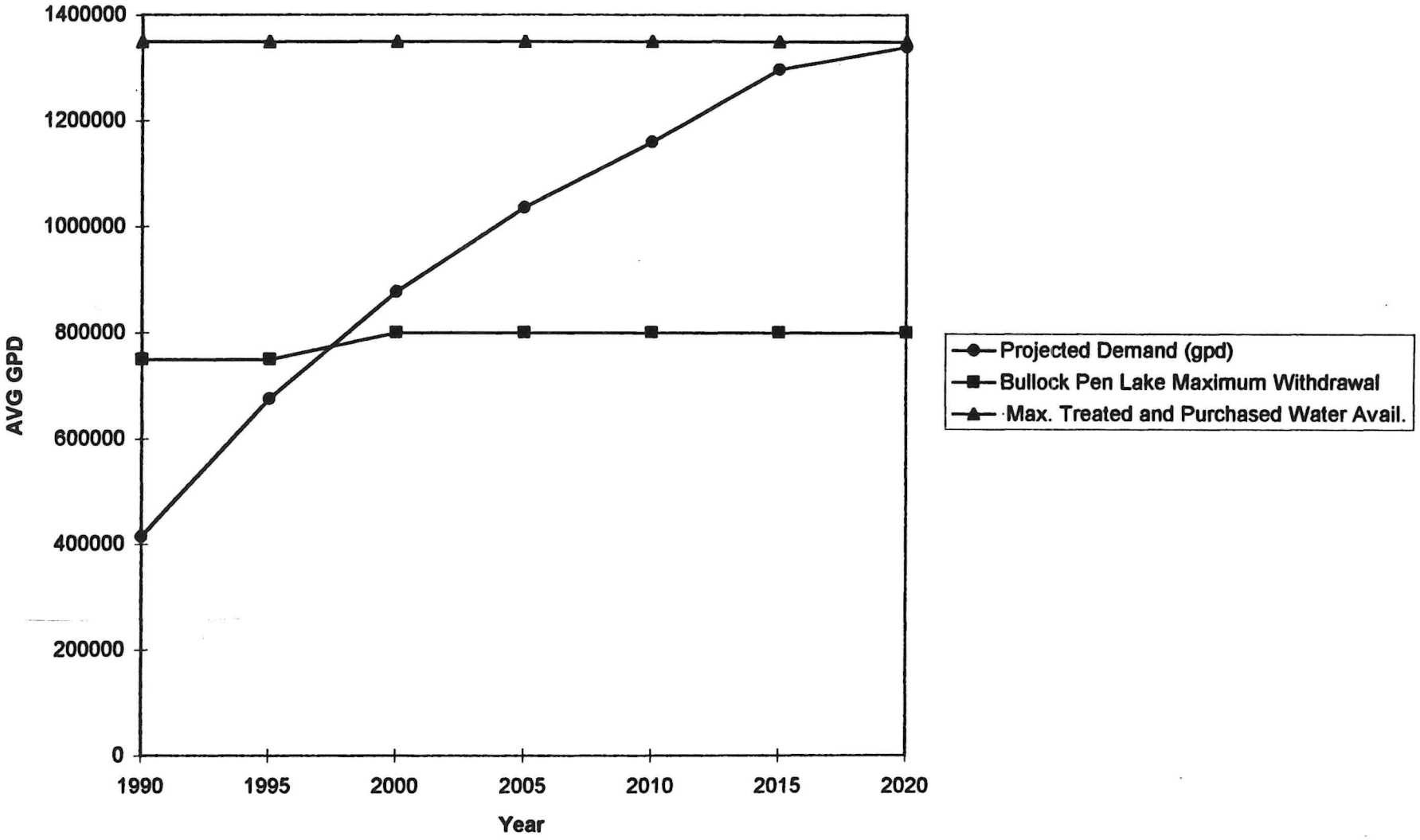
Bullock Pen Water Service Area: 2020 Projected Use



*Percentages exceed 100 as a result of rounding.

Figure 5.21

Bullock Pen Water Service Area: Water Source(s) Vs. Projected Demand



C. Infrastructure Assessment

This section provides a general assessment of the infrastructure capacity of the water suppliers and distributors in Kenton County. Map 5 shows the areas currently served by the major suppliers and distributors.

Northern Kentucky Water Service District

The Northern Kentucky Water Service District currently has two treatment plants. The Ft. Thomas plant, constructed in 1936, has a capacity of 44 mgd. It is in good condition and treatment processes include: coagulation, sedimentation, filtration, and chlorine disinfection. The Taylor Mill plant, constructed in 1954, is in good condition and has a capacity of 10 mgd. Treatment processes include coagulation, sedimentation, filtration, and chlorine disinfection. Figure 5.22 shows that treatment capacity is adequate through the planning period. A new 20 mgd treatment plant, in western Boone County, is currently under consideration.

A new water intake on the Ohio River, adjacent to the existing intake, began operation in November 1997. Both intakes will operate initially; however, the old intake will be phased out. There are no problems with the elevation of the Licking and Ohio intakes or pump capacities.

The storage capacity is 34.3 mg at locations noted previously. The storage system is in good condition. The Water District has approximately 800 miles of lines which are considered to be in satisfactory condition. Some of the very old water mains in the system occasionally cause discolored water. In rural southern Campbell and Kenton Counties, there are some small diameter lines. The Water District has $500,000 budgeted annually for main replacement, but would be able to spend $2 million per year if funds were available. In addition, the Water District coordinates main replacement with road construction whenever possible. A hydraulic study will be conducted this year to determine which lines need to be replaced.

Water losses are estimated at 15 percent. Leak detection methods include walking cross-country lines during dry weather and investigating all reports of possible main breaks. The system is metered.

Taylor Mill Water Department

Taylor Mill purchases water from the Northern Kentucky Water Service District. Storage capacity is 1.3 mg in locations noted previously. The storage system is in good condition.

Taylor Mill has a 14 square mile service area. The oldest lines were constructed in the 1960s and are in good condition. Many of the lines are brand new and are in excellent condition. There are several existing 2" mains which are scheduled for replacement. Water losses are estimated at 4 percent. Leak detection methods include visual inspection, reports from customers, and geophone stethoscope. The system is metered.

MAP 5

Ludlow Water Works

Bromley Water Works

Taylor Mill Utility District Area

Northern Kentucky Water Service District

Walton Water Works

Bullock Pen Water District Grant County

Ludlow
Covington
Park Hills
Villa Hills
Fort Wright
Fort Mitchell
Erlanger
Taylor Mill
Edgewood
Elsmere
Independence

Ky 8
I-71
I-75
I-275
Ky 16
I-75
Ky 17
U.S. 25

705 710 715 720 725
4330 4325 4320 4315 4310 4300 4295

KENTON COUNTY, KENTUCKY
WATER DISTRICTS

County Seat

N

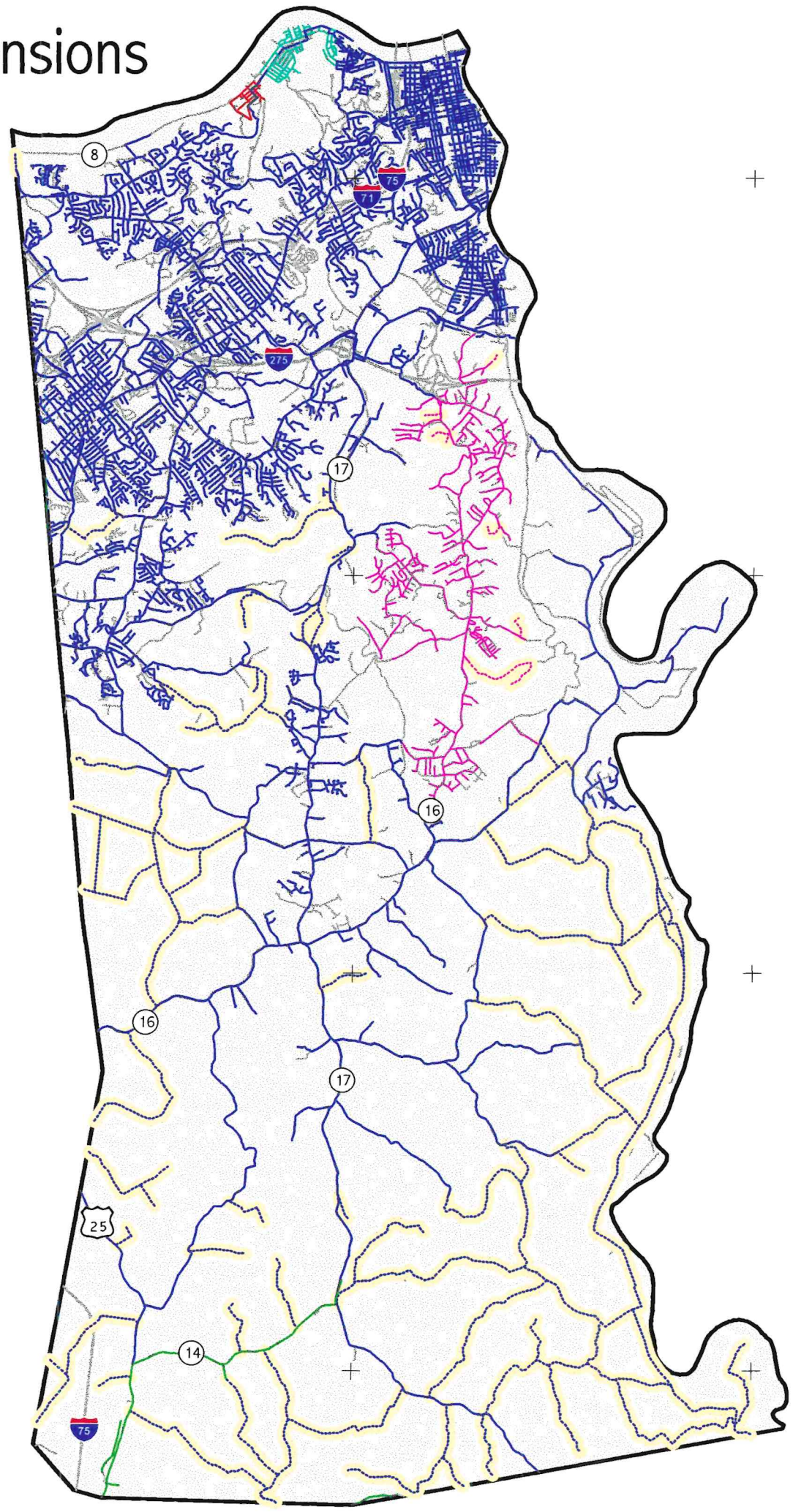
0.5 0 0.5 1 Miles

source: Northern Kentucky Water Service District

MAP 4:
Service Areas and Planned Extensions

1530000 1560000 1590000

570000 540000 510000 480000



N

Existing waterlines
- Northern Kentucky Water Service District
- Taylor Mill Water Department
- City of Bromley
- City of Ludlow Public Works
- Bullock Pen Water District

Proposed Waterlines
- Northern Kentucky Water Service District
- Taylor Mill Water Department
- Highways

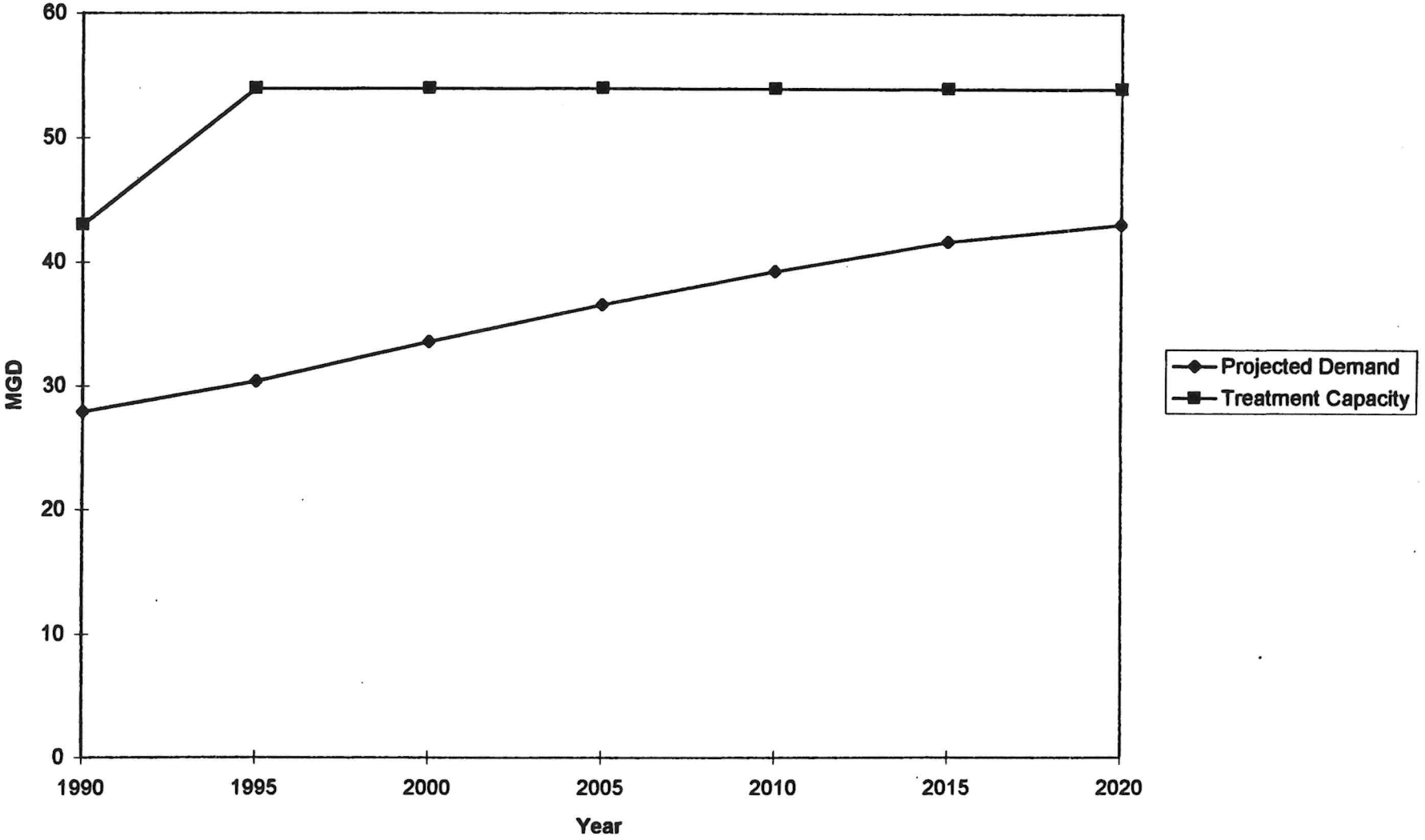
scale 1:126,720
1 inch = 2 miles
This map is intended for planning purposes only
NKADD
Jeffrey Burt
10/99

2 0 2 4 Miles

1530000 1560000 1590000

Figure 5.22

Northern Kentucky Water Service District: Projected Demand Vs. Treatment Capacity



Planned improvements include increasing storage capacity and extending a 16" main from Eggers Lane to Remke's. Also, improvements to increase the overall circulation of the system are being considered.

Bromley Water Works

Bromley purchases water from the Northern Kentucky Water Service District. There are approximately five miles of water lines. Lines are considered to be in fair condition. Rusty water is a problem. Water losses are estimated at 10 percent and leak detection methods are visual.

Ludlow Water Works

Ludlow purchases water from the Northern Kentucky Water Service District. Water losses are estimated at 14.3 percent. The western end of the system occasionally experiences brown or rusty water, but the source cannot be located.

Bullock Pen Water District

The Bullock Pen Water District currently has a treatment capacity of 1 mgd and a permit withdrawal maximum of 800,000 gpd. Bullock Pen recently applied to the Division of Fish & Wildlife for an increase in the withdrawal maximum to 1 mgd; however, only a 50,000 gpd increase was approved for the new maximum of 800,000 gpd. The treatment plant, constructed in 1962 and subsequently upgraded, is in good condition.

The Water District has a storage capacity of 925,000 gallons in locations noted previously. With an average demand of 675,000 gpd in 1995, storage capacity appears to be adequate at this time. However, there is considerable residential growth in the area and demand is expected to increase. Therefore, Bullock Pen will construct a new storage tank west of Dry Ridge. The exact location has not been determined. The storage system is in generally good condition with the exception of a standpipe in Dry Ridge that needs to be replaced.

Water losses are estimated at 5 percent. The system is metered. There is no single user that purchases 20 percent or more of the water produced. No accessibility problems related to intake elevation or pump capacity were identified. Bullock Pen has approximately 400 miles of distribution lines. There are approximately 3 miles of 2" lines; however, these are scheduled to be replaced with 6" lines in the future. All new lines will be 6" in diameter.

Walton Water Works

Walton has 600,000 gallons of storage at locations noted previously which is considered to be adequate. The mileage of mains and estimates of water losses were not available. The system is metered.

CHAPTER 6
WATER SUPPLIER SOURCE ASSESSMENT

I. INTRODUCTION

The Northern Kentucky Water Service District, the major supplier in Kenton County, relies on the Ohio and Licking Rivers as water sources. The Bullock Pen Water District uses a combination of purchased water and water from Bullock Pen Lake. This chapter is an assessment of the amount of water available to each supplier under normal and drought conditions.

II. GEOLOGIC AND SOIL CONDITIONS

Geology

Land forms in Kenton County can be divided into four major groups. Glacial outwash terraces are found in those areas immediately adjacent to the Ohio River and consist of deposits of silt, sand, and gravel that accumulated from melt waters off the glacial ice. The Licking and Ohio Rivers flow through alluviated valleys which are filled with consolidated silt, sand, and gravel that were deposited by these streams. The northern portion of Kenton County is characterized by limestone plateaus. The plateaus are upland areas with relatively flat slopes and steep side slopes whose rock formations have resisted weathering and erosion. Shale uplands are found in the southern portion of the County.

Soils

There are five major soil associations in Kenton County: Eden-Cynthiana, Faywood-Nicholson, Rossmoyne-Jessup, Licking-Captina, and Wheeling-Huntington-Alluvial. A generalized soils map can be found in Appendix E.

Approximately 44 percent of Kenton County soils are in the Faywood-Nicholson association. These soils are found mostly in large rolling areas in the central part of the County. Faywood-Nicholson soils are dominantly gently sloping to moderately steep soils that have a loamy to clayey subsoil. They are found on ridgetops and side slopes of the limestone and shale uplands.

The other dominant soil association in the County is Eden-Cynthiana, comprising 42 percent of the soils. This association occupies steep, highly dissected, hilly areas in the southern part of the county and very steep hillsides bordering the Ohio and Licking Rivers. These are dominantly steep to very steep soils with a clayey subsoil.

Rossmoyne-Jessup soils comprise eight percent of the county's soils and are found in the northwestern part of the county. These soils are nearly level to moderately steep soils that have a loamy to clayey subsoil and are found on ridgetops and side slopes of glaciated uplands.

Four percent of the soils are Licking-Captina. These soils are dominantly gently sloping to moderately steep soils with a clayey to loamy subsoil. Licking-Captina soils are found on bottom areas along the Licking River.

Finally, the remaining two percent of the soils are Wheeling-Huntington-Alluvial. These are characterized by dominantly, nearly level and gently sloping soils with a loamy subsoil. These soils are found on bottom areas along the Ohio River. These soils can be found in Covington and Ludlow.

Hydric Soils

Hydric soils are defined as those soils which are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper layer. Hydric soils may be an indication of wetlands. A wetland, under the current definition, will include hydric soils, hydrophytic vegetation, and wetlands hydrology. In Kenton County, there are approximately 560 acres of Robertsville silt loam, a hydric soil. These soils are primarily found along the Licking River. There are also 560 acres of Newark silt loam which may include small areas of hydric soil in poorly drained low spots.

III. SOURCE ASSESSMENT

Northern Kentucky Water District Service

The Water District's sources are the Ohio River and the mainstem of the Licking River. The permitted withdrawal at the Ohio River intake is 37.0 mgd. 1996 withdrawals averaged 23.4 mgd and withdrawals are expected to increase to 33.6 mgd by 2020.

The 7Q10 flow (the seven day, ten year low flow value) is 11,000 cfs. To meet minimum adequacy standards, withdrawals cannot exceed more than 85 percent of the available water under normal conditions. The following calculations assess the adequacy of the source for current and projected demand.

7Q10 at Ohio River Intake = 11,000 cfs
1 cubic foot = 7.4805195 gallons
7Q10 = 82,286 gallons per second
7Q10 = 7,109,510,400 gallons per day
Average 1996 Withdrawal = 23,400,000 gallons per day

$$\text{Rate of Use} = \frac{23{,}400{,}000 \text{ gallons}}{7{,}109{,}510{,}400 \text{ gallons}}$$

Rate of Use = .3%
Projected 2020 Demand = 33,600,000

$$\text{Rate of Use} = \frac{33{,}600{,}000 \text{ gallons}}{7{,}109{,}510{,}400 \text{ gallons}}$$

Rate of Use = .5%

Reviewing these calculations, it is obvious that the Ohio River is an adequate source.

The 7Q10 flow at the Licking River intake is 70 cfs and the permitted withdrawal limit is 11.0 mgd. 1996 withdrawals averaged 6.7 mgd and the 2020 projected demand is 9.5 mgd.

The 7Q10 flow at the Licking River intake is 70 cfs or 524 gallons per second. Converting gallons per second to gallons per day, the 7Q10 flow is 45,273,600 gallons. The following calculations assess the adequacy of the source for current and projected demand.

7Q10 = 45,273,600 gallons per day
Average 1996 Withdrawal = 6,700,000 gallons per day
Rate of Use = 6,700,000 gallons / 45,273,600 gallons
Rate of Use = 14.8%
Projected 2020 Demand = 9,500,000 gallons
Rate of Use = 9,500,000 gallons / 45,273,600 gallons
Rate of Use = 21.0 %

Applying minimum adequacy standards, this source is adequate. Map 5A shows the watershed protection area for the Licking River intake. The Ohio River intake protection area can be found in the Campbell County Water Supply Plan. Supply protection will be discussed in more detail in Chapter 8.

Bullock Pen Water District

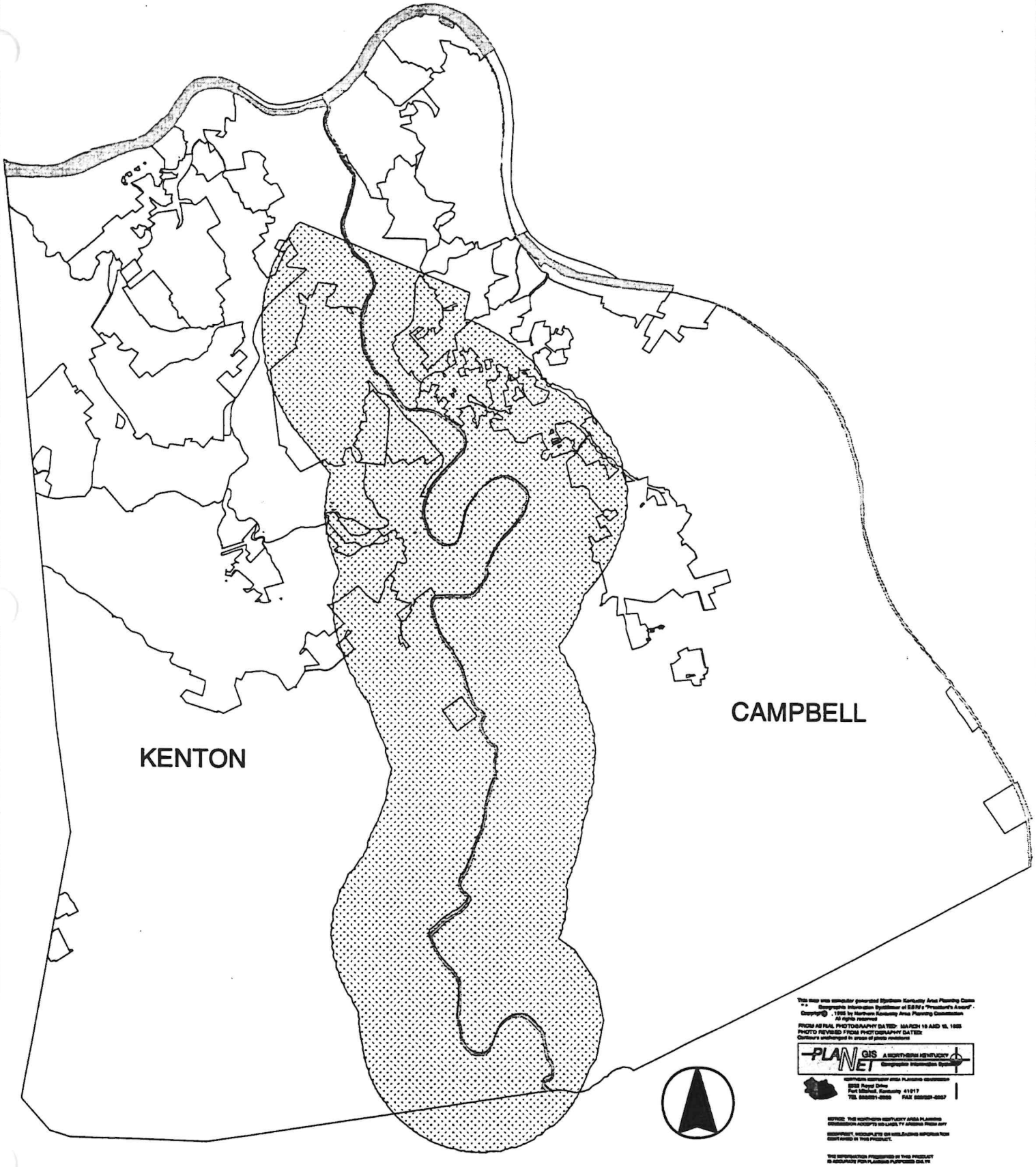
Bullock Pen Water District's source is Bullock Pen Lake which is an impoundment of Bullock Pen Creek. Bullock Pen Lake has an eight mile square watershed and a normal pool volume of 2,464 acre-feet or 803,264,000 gallons. Bullock Pen Water District has a variable permitted withdrawal limit ranging from 550,000 gpd to 800,000 gpd. Average withdrawals range from 500,000 to 600,000 gpd. During the drought period in the late 1980s, the level of water in the lake did drop to only 24 inches above the intake which was a source of concern. However, Bullock Pen Water District is not considered one of Kentucky's drought vulnerable water systems, undoubtedly because it has access to other sources as noted earlier.

The following calculations show the number of days of supply at the average rate and at the maximum permitted rate of 800,000 gpd.

Bullock Pen Lake Normal Pool Volume: 803,264,000 gallons
Bullock Pen Water District Average Daily Use from Lake: 600,000 gallons
Number of Days to Deplete Source: 1,338
Number of Days to Deplete Source Using Maximum Withdrawal Limit: 1,004

MAP 5A

LICKING RIVER INTAKE ZONE OF RESPONSIBILITY



FROM AERIAL PHOTOGRAPHY DATED: MARCH 19 AND 19, 1995
PHOTO REVISED FROM PHOTOGRAPHY DATED:
Contours unchanged in areas of photo revisions

PLANET GIS A NORTHERN KENTUCKY Computer Information System

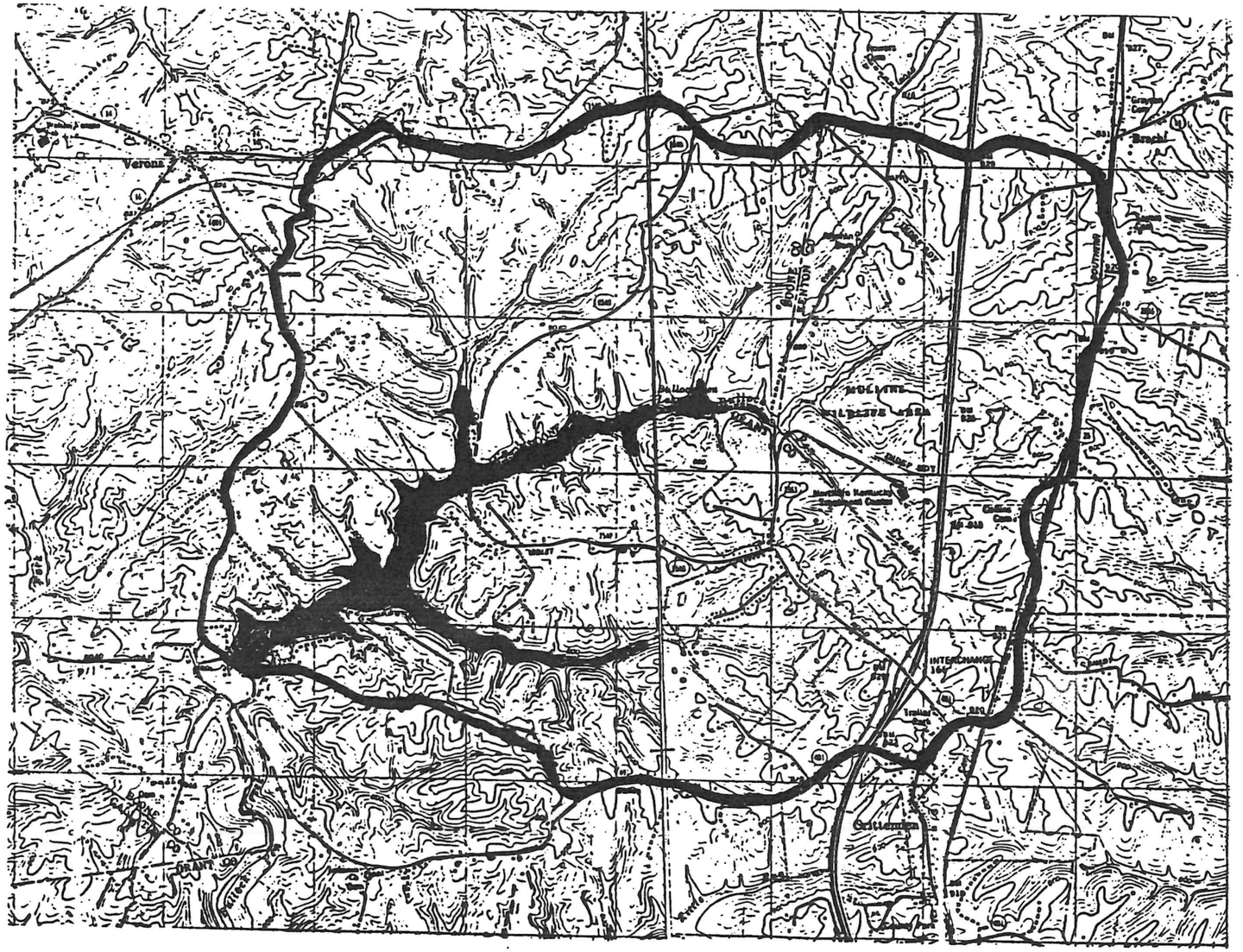
NORTHERN KENTUCKY AREA PLANNING COMMISSION
5500 Royal Drive
Fort Mitchell, Kentucky 41017
TEL 606/331-8980 FAX 606/331-8987

Of course, as mentioned previously, Bullock Pen Water District currently purchases water to meet demand and this is expected to continue. The contract between the City of Williamstown and Bullock Pen Water District is in effect through 2015. According to the City Administrator, it is likely that the contract will be renewed at that time. According to projections, Bullock Pen's demand will exceed 800,000 gpd by 2000. It is unlikely that any additional permit increases will be approved given the lake's status as a state wildlife and recreation area. Therefore, if relied upon as the sole source of supply, the lake would be an inadequate source by 2000.

Map 5B shows the recommended protection area for Bullock Pen Lake. Again, supply protection will be discussed further in Chapter 8. Table 6-1 shows source availability for both the Northern Kentucky Water Service District and the Bullock Pen Water District.

Lally Pipe & Tube

This water supplier did not provide any information regarding safe yield. The wellhead protection plan is scheduled for completion by July 15, 2000.



MAP 5B

↑
N

BULLOCK PEN LAKE:
RECOMMENDED PROTECTION AREA

1 inch = 2600 feet

Table 6-1

PUBLIC WATER SUPPLIER	SOURCE	SOURCE TYPE	NORMAL/1	MINIMUM/2	DROUGHT/3
Northern Kentucky Water Service District	Ohio River	Stream	Not Available	11,000 cfs	Not Available
	Licking River	Stream	Not Available	70 cfs	Not Available
Bullock Pen Water District	Bullock Pen Lake	Reservoir	803,264,000 gallons	Not Available	Not Available
Lally Pipe & Tube	Well	Groundwater	Not Available	Not Available	Not Available
	Notes	Stream	Reservoir	Wells	
	/1	Lowest Flow Month	Full Reservoir	Specific Capacity	
	/2	7Q10	7Q10 Inflow	Specific Capacity	
	/3	7Q20	7Q20 Inflow	Safe Yield	

CHAPTER 7
WATER SUPPLY ADEQUACY

I. Adequacy Standards

The Campbell-Kenton Water Supply Planning Council elected to plan for the provision of a continuous level of supply under all conditions and to encourage conservation to the maximum extent practical.

II. Application of Adequacy Standards

Northern Kentucky Water Service District

The Northern Kentucky Water Service District withdraws water from both the Ohio and Licking Rivers. Both sources are more than adequate to meet demand through the planning period. The Licking River permit does require withdrawals to cease if flows drop to 70 cfs (the 7Q10) or less for four consecutive days. However, the Ohio River supply is more than adequate to provide extra supply in that eventuality. The magnitude of both sources is such that withdrawals do not impact other users or aquatic life.

Bullock Pen Water District

The Bullock Pen Water District withdraws water from Bullock Pen Lake and purchases water from the Cities of Walton and Williamstown. These multiple sources impact the application of adequacy standards. While projected demand will exceed the permitted withdrawal limit (a maximum of 800,000 gpd) by 2005, the combination of purchased and treated water is adequate through the planning period (refer to Figure 5.21). However, with the growth in the county, supply adequacy should be reviewed regularly. In addition, there should be close coordination between the Water District and its suppliers.

As mentioned previously, the lake is owned by the Department of Fish & Wildlife. Obviously, those interests are paramount and increased withdrawals from the lake will not be permitted if they impact the lake in a negative manner. A recent request to increase the permitted withdrawal limit to 1 mgd was denied.

CHAPTER 8
SUPPLY PROTECTION

I. RISKS

A. Licking River Intake

In addition to its intake on the Ohio River, the Northern Kentucky Water Service District has an intake on the Licking River in Kenton County.

Licking River Potential Contaminant Inventory

A complete inventory of potential contaminant sources was conducted for both Zones I and II (Map 6). Zone I begins 1/4 below the intake and extends 5 miles above the intake. Zone II begins at the 5 mile mark and extends another 5 miles. The outer boundaries of both Zones I and II extend two miles on either side of the Licking River. Table 8.1 describes each of the potential contaminant sources by identification number. On the Campbell County side, slightly upstream from the intake, there is concentrated industrial development. On the Kenton County side, the railroad tracks and yards pose a potential threat. No critical threats, such as a chemical manufacturer or refinery, were discovered in Zone III (from 10 miles to Pendleton County line). Table 8.2 groups potential contaminants by degree of hazard.

Banklick Creek Potential Contaminant Inventory

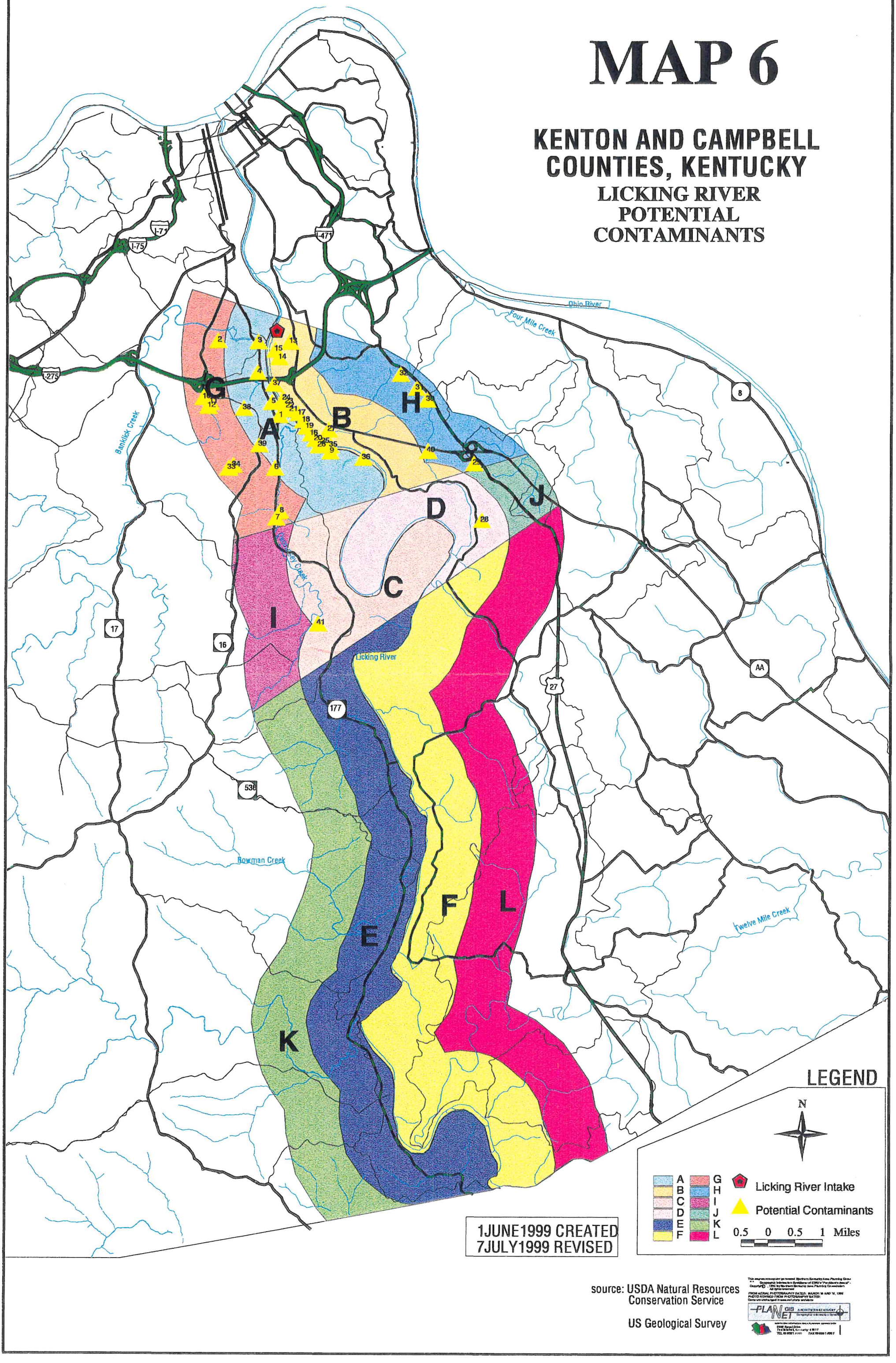
Because Banklick Creek, a major tributary, is located within 1/4 mile below the intake, a complete inventory of potential contaminant sources was conducted for both Zones I and II (Map 7). Zone I begins at the confluence of Banklick Creek and the Licking River and extends 5 miles. Zone II begins at 5 miles and extends another 5 miles. The outer boundaries of both Zones I and II extend two miles on either side of creek. Please note that there is some overlap in the inventory areas for the Licking River and Banklick Creek. The contaminants located in the inventory area from 1/4 mile below the intake to the intake are shown on Map 6 and are not repeated on Map 7. No critical threats were identified in Zone III, so that area is not mapped. Table 8.3 describes each of the potential contaminant sources by identification number. Table 8.4 groups potential contaminants by degree of hazard.

The inventory shows the area is quite urbanized. The report compiled by the Licking River Basin team (The Licking River Region in Kentucky: Status and Trends) notes that Banklick Creek is a stream of special concern. The water is polluted by nutrients, organics, enrichment/low oxygen, habitat alteration, and pathogens. In addition to the inventory, some of the major pollutant sources are non-point and cannot be easily mapped such as urban runoff/storm sewers and residential/commercial development/flow modifications.

MAP 6

KENTON AND CAMPBELL COUNTIES, KENTUCKY

LICKING RIVER POTENTIAL CONTAMINANTS



source: USDA Natural Resources Conservation Service

US Geological Survey

Table 8.1
Licking River Potential Contaminant Sources

ZONE I					
ID NUMBER	NAME	COMMENTS			
1	Railroad Tracks & DeCoursey Yard	RCRA notifier and heavy rail traffic.			
2	Ameristop	Currently replacing USTs to meet new standards.			
3	Bud's Auto Service	Repair shop probably has solvents, oil, and gasoline on site.			
4	Trucking Company	Appeared to have some maintenance and repair facilities.			
5	Kenton County Auto Salvage	Salvaged vehicles could potentially leak oil, anti-freeze, etc...			
6	Used Tire Sales & Auto Parts	May store solvents, oil, anti-freeze, etc...			
7	Lawless Lumber & Pallets	Facility appeared to be in poor condition, possibly abandoned.			
8	Farm	Small operation with approximately 20 cattle observed.			
9	Progress Rail Service & Lally Pipe & Tube	Both facilities are RCRA notifiers. Rail service has USTs.			
10	BP Foodmart	USTs			
11	Concord Custom Cleaners	RCRA Notifier			
12	Emergency Veterinary Clinic	May have medical waste.			
13	Carlisle Construction	RCRA Notifier, USTs, barge traffic.			
14	Ceramic Coating Company	Manufactures glass-lined pipe, glass-coated metal, jewelry enamel, and reactors			
15	Rees-Hardy Towing and Recovery	RV storage and some auto repair.			
16	Arc Electric & Air-Conditioning	May store freon or other air-conditioning fluids.			
17	Tom Butscha Sheet Metal Specialists	Located in Industrial Park			
18	Jeff WylerAutomotive- Body & Detail Center	Located in Industrial Park. Probably utilize solvents, paints, etc...			
19	Daffin Equipment	Industrial Park occupant is on State Superfund list as having an active petroleum incident.			
20	Display Specialty	Industrial Park occupant. Wholesales display supplies. Unlikely to have any hazardous chemicals on site.			
21	Jarco, Inc.	Industrial Park occupant. Company does concrete paving including curbs and gutters.			
22	Jolly Plumbing	Industrial Park occupant. Plumbing supplies may include some potentially hazardous chemicals.			
23	Wayne Dalton of Northern Kentucky	Industrial Park occupant.			
24	Wilder Winnelson	Industrial Park occupant. Plumbing and heating business.			
25	Building Crafts	Industrial Park occupant. Construction & Building contractor.			
26	Midwest Gas	Industrial Park occupant. Bottled gas distributor.			
27	Shell Mini-Mart & Gasoline Station	USTs.			
28	Farm	Appeared to have 15 to 20 cattle.			
29	SuperAmerica	USTs and RCRA notifier.			
30	Ameristop	USTs.			
31	D + D Printing	May store printing-related chemicals.			
32	Sunoco	USTs and RCRA notifier.			
33	Kenton County Board of Education	USTs.			
34	Floral Hills Cemetery	UST.			
35	Home City Ice	Industrial Park occupant. USTs.			
36	Licking River	River traffic.			
37	I-275 Bridge	Heavy interstate traffic, including trucks diverted from I-75 construction area.			
38	Taylor Mill City Building	USTs.			

Table 8.1
Licking River Potential Contaminant Sources

39	Taylor Mill Residential Development & Construction	Run-off.			
40	Cold Spring and Alexandria Residential Development & Construction	Run-off.			
ZONE II					
41	Sanitary Sewage Discharge	Nutrients.			

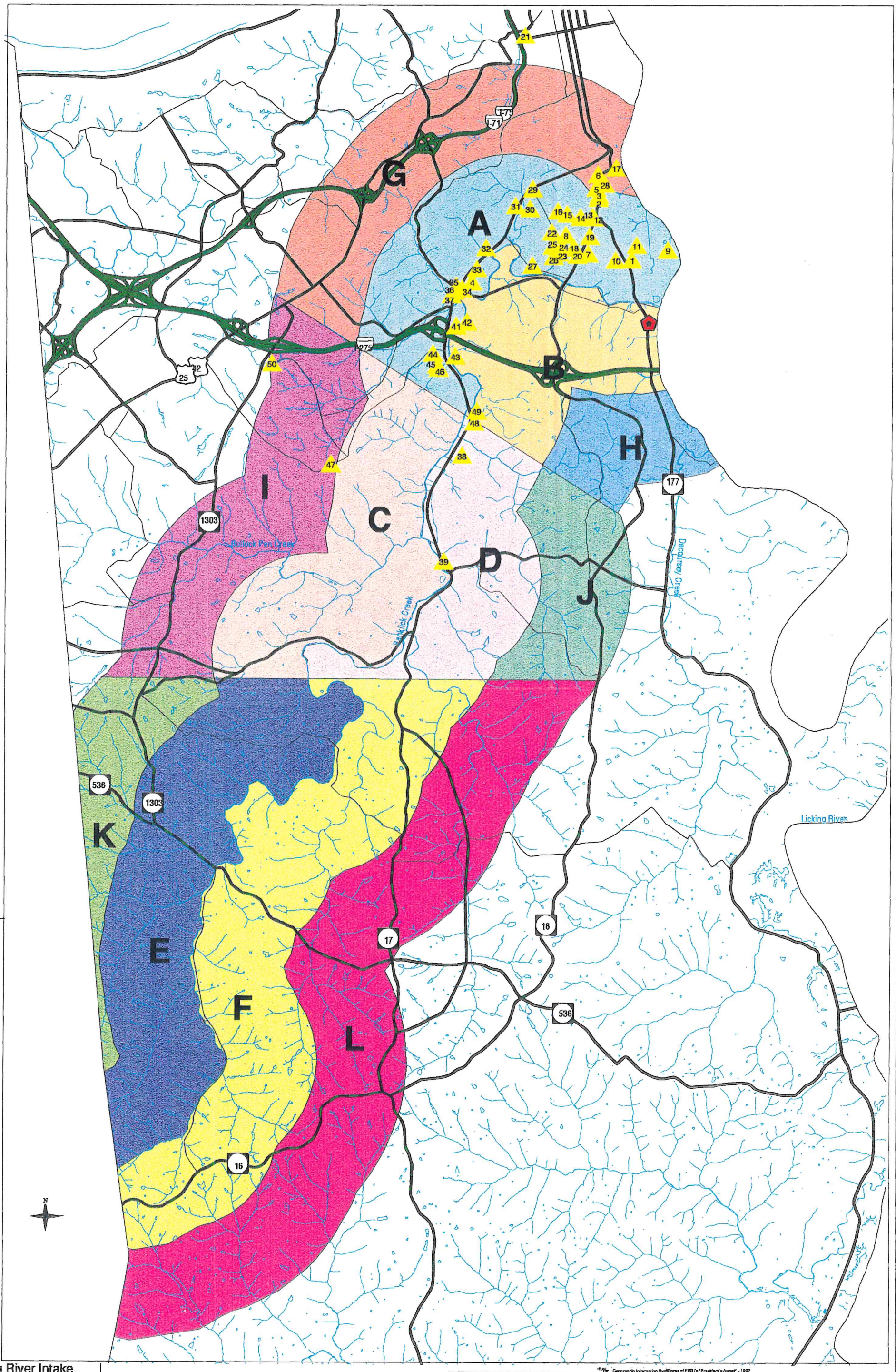
Table 8.2
Licking River Intake: Potential Pollutants Degree of Hazard

SOURCES OF POLLUTION	SHORT-TERM VS. LONG-TERM HAZARD	CHANCE OF CONTAMINANT RELEASE	DEGREE OF HAZARD
Rail Lines	Long-Term	Moderate	Low to High
USTs	Long-Term	Moderate	High
RCRA Notifiers	Long-Term	Low to Moderate	High
I-275 Bridge Traffic	Long-Term	Moderate	Low to High
River Traffic	Long-Term	Moderate	Low to High
Industry (Non-RCRA Notifiers)	Long-Term	Moderate	Moderate to High
Permitted Sanitary Sewage Discharge	Long-Term	High	Low
Auto Repair & Body Shops	Long-Term	Moderate	Moderate to High
Concentrated Residential Development	Long-Term	Moderate	Low to High
Construction Run-Off	Short-Term	Low to High	Low
Road Run-Off	Long-Term	Moderate	Low to High

KENTON COUNTY, KENTUCKY

BANKLICK CREEK POTENTIAL CONTAMINANTS

MAP 7



1JUNE1999 Created
23JUNE1999 Revised

FROM AERIAL PHOTOGRAPHY DATED: MARCH 10 AND 15, 1995
PHOTO REVISED FROM PHOTOGRAPHY DATED:
Contours unchanged in areas of photo revisions

PLANET GIS of NORTHERN KENTUCKY
Geographic Information System

NORTHERN KENTUCKY AREA PLANNING COMMISSION
2332 Royal Drive
Fort Mitchell, Kentucky 41017
TEL 606/331-8980 FAX 606/331-8987

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THIS INFORMATION WAS USED IN THIS PRODUCT IS ACCURATE FOR PLANNING PURPOSES ONLY.

SOURCE: USDA Natural Resources Conservation Service

US Geological Survey

Table 8.3
Banklick Creek Potential Contaminant Inventory

ZONE I		
ID NUMBER	NAME	COMMENTS
1	Precious Metal Recycling	RCRA Notifier
2	Kirk's Autobody	RCRA Notifier
3	Mac's Ashland	USTs
4	TANK	RCRA Notifier
5	Bonded Gasoline	USTs
6	Latonia Shell - Waco Oil	RCRA Notifier, USTs
7	C & J Containers	RCRA Notifier
8	Overhead Door Corporation	RCRA Notifier
9	Twin Oaks Golf Club	Lawncare chemicals
10	City of Covington - General Maintenance Garage	USTs
11	Kenton County Road Department	USTs
12	Trophy Award Manufacturing	Small firm that manufactures trophies and plaques
13	T & W Printing	May utilize solvents and oil
14	Aunt Nellie's Farm Kitchens	RCRA Notifier
15	Jerry Neiheisel Plumbing	USTs
16	Reliable Cleaners	RCRA Notifier
17	Covington Kentucky Terminal	USTs
18	Robke Ford	RCRA Notifier
19	SuperAmerica	RCRA Notifier, USTs
20	BP Oil	USTs
21	Shipman Industries	USTs
22	BP Chemicals, Filon Products, Silmar Resins	RCRA Notifier, USTs
23	Sohio Latonia Refinery	RCRA Notifier
24	Kentucky Wine & Spirits	USTs
25	Firestone Building Products	USTs
26	C & C Machine & Tool	May utilize oils and solvents
27	City of Covington	RCRA Notifier, USTs
28	Anderson Fabricating	RCRA Notifier
29	Latco Transmission	USTs
30	Mother of God Cemetery	Lawncare chemicals
31	Swifty Station	USTs
32	D & J Auto Body	RCRA Notifier
33	Ashland Oil	USTs

Table 8.3
Banklick Creek Potential Contaminant Inventory

34	SuperAmerica	USTs
35	UDF	USTs
36	Ideal Truck Painting	RCRA Notifier
37	Lawwill Sales & Service	RCRA Notifier
ZONE II		
38	Atkins & Pearce	RCRA Notifier
39	Kwik Mart	USTs
40	Deleted	Deleted
41	Lakeview Pump Station	USTs
42	Eaton Asphalt Paving	USTs
43	Dudley Construction Company	USTs
44	Midwest Communications Corp.	RCRA Notifier
45	Auto Vehicle Parts	May store oil and anti-freeze
46	Summitt Welding & Fabricating	USTs
47	Erpenbeck's Superette	USTs
48	White Castle Distributing	Truck traffic
49	ESCO Corporation	RCRA Notifier
50	NO KY Orthopedics Association	RCRA Notifier

Table 8.4
Banklick Creek: Potential Pollutants and Degree of Hazard

SOURCES OF POLLUTION	SHORT-TERM VS. LONG-TERM HAZARD	CHANCE OF CONTAMINANT RELEASE	DEGREE OF HAZARD
RCRA Notifiers	Long-Term	Low to Moderate	High
USTs	Long-Term	Moderate	High
Concentrated Urban Development	Long-Term	High	Low to High
Combined Sewer Overflows	Long-Term	High	Moderate
Road Run-Off	Long-Term	Moderate to High	Low to High
Industry (Non-RCRA Notifiers)	Long-Term	Low to Moderate	Moderate to High

Soils

Soils along the Licking River and Banklick Creek stream terraces are primarily Licking-Captina, while soils on the adjacent hillsides belong to the Eden-Cynthiana association. Licking soils are deep, moderately well-drained, with a clayey sub-soil. Captina soils are also moderately well-drained and have a fragipan. Eden soils are deep and well-drained with slow permeability. Cynthiana soils are shallow, somewhat excessively drained, and have moderately slow permeability.

Security of Access

The Licking River intake structure is secure with both gates and fencing. Of course, the Licking River has no security of access.

B. Bullock Pen Lake

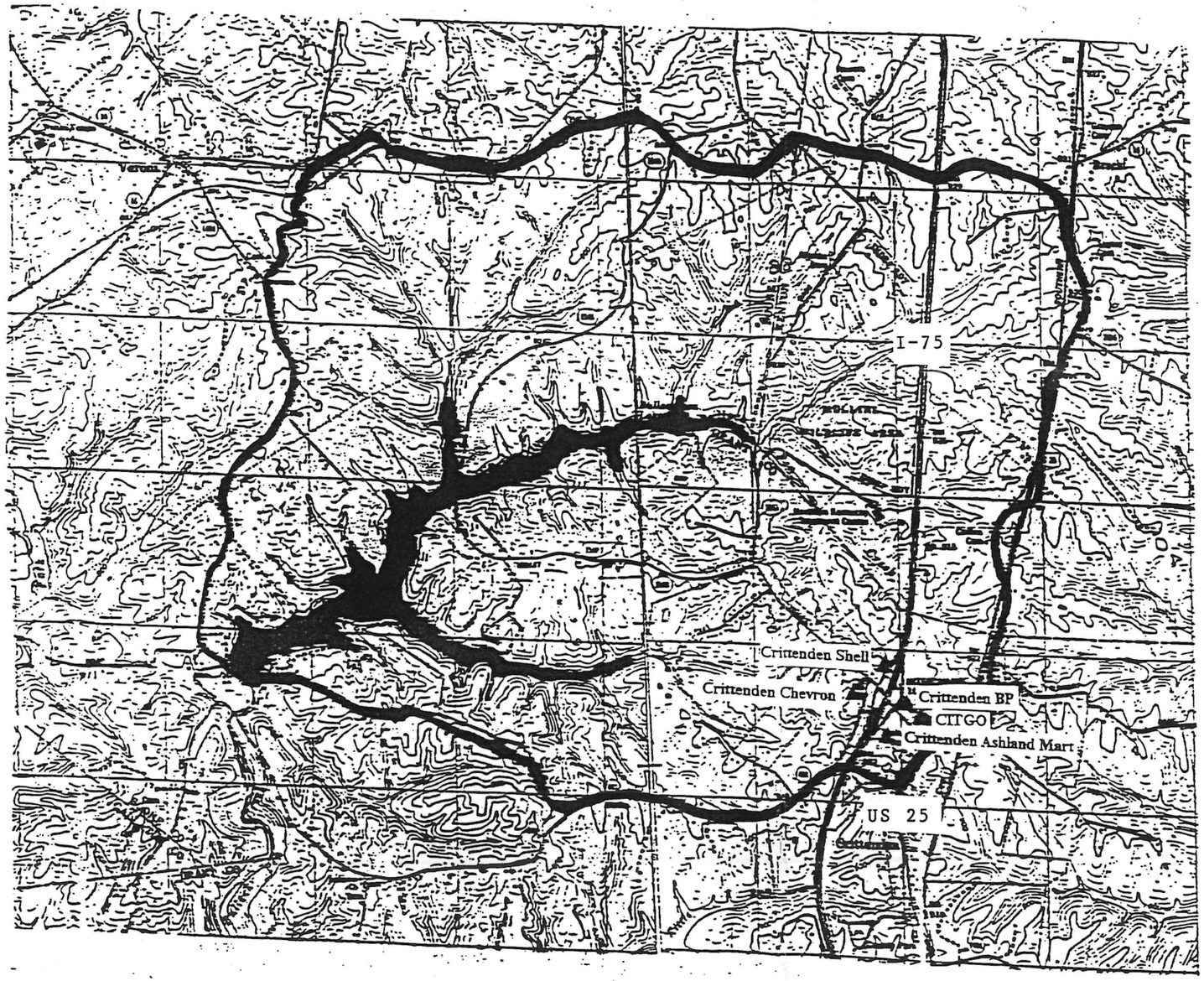
Bullock Pen Lake, the water source for the Bullock Pen Water District, is located in Grant County. It is a 134 acre man-made reservoir owned and operated by the Kentucky Department of Fish & Wildlife Resources. There are no public recreational facilities and the area is a nature preserve. The only recreational use is fishing. Motorboats are limited to 10 HP or less. The 1998 Kentucky Report to Congress on Water Quality found that Bullock Pen Lake fully supported all its uses and was not impaired. Map 8 shows the location of potential contaminants to the Bullock Pen Lake water supply.

Point Sources

There are 26 USTs located at the I-75 interchange. The Chevron USA service station is also a RCRA notifier. There are no known point source discharges to the lake. A potential point source could be the railroad tracks which are partially located in the protection area. Septic systems around the lake, if aging or poorly maintained, are potential pollutants.

Non-Point Sources

There is little development in the recommended protection area surrounding the lake; however, the limited residential and agricultural uses may pose a slight threat. Another potential source of non-point pollution is Interstate 75 which is located in the watershed. Run-off from the Interstate could possibly be polluted with motor oil, gasoline, road salt, or herbicides (from roadside spraying). Tankers traveling the highway carrying hazardous waste are also a potential threat if an accident occurred. Table 8.5 shows potential sources of both point and non-point source pollution, the risk of release, and the degree of hazard. Residential development refers to potential sources of pollution that may be associated with residential land use such as lawn care chemicals and improper disposal of household chemicals.



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MAP 8
BULLOCK PEN LAKE: POTENTIAL POLLUTANTS

1 inch = 2600 feet

July 12,1999

Table 8.5
Bullock Pen Lake: Potential Pollutants and Degree of Hazard

SOURCES OF POLLUTION	SHORT-TERM VS. LONG-TERM HAZARD	CHANCE OF CONTAMINANT RELEASE	DEGREE OF HAZARD
Septic Tanks	Long-Term	Moderate to High	Low
Residential Development	Long-Term	Low	Low to Moderate
Agriculture	Long-Term	Low	Low to Moderate
Interstate Run-Off	Long-Term	Low to Moderate	Low to High
Railroad Tracks	Long-Term	Low	Low to High
USTs	Long-Term	Low	High

Soils

A review of the soil survey shows the primary soil in the watershed is Eden silty clay loam (EdE2) which is well-drained with a loamy to clayey surface layer and a clayey lower subsoil. Permeability of the soil is categorized as moderately slow to slow with a permeability of less than two inches per hour.

Security of Access

The Kentucky Department of Fish & Wildlife, as mentioned previously, owns the lake and limits activity on the lake to fishing and the area is a nature preserve. However, there is no security of access to the lake. There is a road that passes over the lake and there are several roads around it as well. No limitations to access are anticipated during the planning period.

C. Other Water Supply Sources

Lally Pipe & Tube uses groundwater; however, this company has not participated in the planning process. They have been notified regarding the process and the wellhead protection requirements. However, no additional information is available at this time.

II. PROTECTION MEASURES

The primary focus of this section is on local, rather than state and federal, regulatory and non-regulatory protection measures for Kenton County's water supply.

Regulatory and Non-Regulatory Protection Measures

While there are no regulatory or non-regulatory measures specifically addressing protection of the water supply, Kenton County and its cities do have comprehensive planning and zoning. The cities have adopted zoning ordinances based on the model county code prepared by the Northern Kentucky Area Planning Commission. The county and city zoning ordinances address hillside development and the need to control erosion and sedimentation (see Appendix H for a sample).

Supply Protection Recommendations

A public hearing on supply protection recommendations was held on April 28, 1998. The meeting was advertised in the Kentucky Post (see Appendix B for a copy of the notice) and all the water watch groups were notified as well. The following recommendations were adopted at the April 28, 1998 Campbell-Kenton Water Supply Planning Council meeting.

1. Continue to encourage land use controls that protect existing water sources.

2. Work with the Natural Resource Conservation Service, Conservation Districts, and the Cooperative Extension Office to promote "best management practices" for construction and agricultural activities.

3. Provide assistance to the Northern Kentucky Solid Waste Management District in its efforts to clean open dump sites, promote proper disposal, and further public awareness and education.

4. Encourage and assist local water suppliers and distributors in their efforts to promote water conservation practices to customers.

5. Support the efforts of the Licking River Watershed Watch.

6. Promote ORSANCO'S Ohio River Sweep.

7. Cooperate with the Sanitation District to develop a regional Storm Water Management Plan.

8. Share information with the Health Department's Committee on Protocol for Assessing Community Excellence in Environmental Health.

CHAPTER 9
WATER RESOURCES INVENTORY

As detailed in Chapters 6 and 7, Kenton County's sources have been determined to be adequate. Therefore, an inventory of water resources was not conducted.

CHAPTER 10
WATER SUPPLY ALTERNATIVES

Existing water sources have been determined to be adequate and therefore, research into alternatives was unnecessary.

CHAPTER 11
PRIMARY WATER SUPPLY ALTERNATIVE

Since existing water sources have been determined to be adequate, selection of a primary water supply alternative was unnecessary.

CHAPTER 12
EMERGENCY PLANS

I. WATER SHORTAGE RESPONSE PLANS

Since no drought vulnerability was associated with any of the County's water sources, water shortage response plans were not prepared.

II. CONTAMINATION RESPONSE PLANS

The following contamination response plans outline the procedures that County water suppliers would take in the event of contamination or a threat of contamination to their water supply sources.

A. Northern Kentucky Water Service District (NKWSD)

Notification Procedures

NKWSD works with ORSANCO to respond to potential contamination threats. ORSANCO maintains 24 hour telephone service to receive spill reports and operates an electronic bulletin board to disseminate information. If contamination is reported, NKWSD would either adjust the treatment process to eliminate the contaminant or would shut-off the intakes until the contaminant had passed by. If there were any contamination of treated water or if the distribution system lost water pressure, the General Manager is responsible for public notifications and notifications to state and federal agencies.

Emergency Water Sources

The Water District maintains a one day storage of treated water and one to three days storage of untreated water. Given the average rate of flow on the Ohio River, this will allow enough time for a contaminant to completely pass by the intake. Also, working with ORSANCO, the Water District generally has sufficient notice to maximize its stored water volume. Of course, since the Water District relies on both the Ohio and Licking Rivers as sources, it is possible, depending on the contaminant, that one intake could remain open, while the other was closed.

Problems with the Distribution System

No problems were identified that would affect the ability of the Water District to cope with a contamination event.

Threat of Contamination

The Water District laboratory tests water on a continual basis. If a threat of contamination were identified, testing would occur even more frequently.

B. Bullock Pen Water District

Notification Procedures

The General Manager is responsible for notifying the public and any applicable state or federal agencies. Notification to the public would be made through the local radio stations, area television stations, the local newspaper, and flyers.

Emergency Water Sources

In a short-term emergency involving contamination of Bullock Pen Lake, the Water District could shut down the water treatment plant and rely on stored water for one to two days. Also, additional water could be purchased from the City of Williamstown. In a long-term emergency, demand would need to be met through purchased water from Williamstown, Walton, and the Northern Kentucky Water Service District (interconnection with NKWSD will probably occur within the next two years).

Problems with the Distribution System

No problems with the distribution system were identified that would hinder the Water District's ability to cope with a contamination event.

Threat of Contamination

If there were a threat of contamination, the treatment plant would be shut-down until testing assured that the water is safe. Purchased water would be used exclusively during that period.

C. Lally Pipe & Tube

Since Lally Pipe & Tube is not participating in the planning process, their contamination response procedures are unknown. However, the company could easily be served by the Taylor Mill Water Department if groundwater contamination occurred.

CHAPTER 13
IMPLEMENTATION PLAN

I. ANNUAL MEETING

The Campbell-Kenton Water Supply Planning Council will meet annually, with the next meeting date tentatively scheduled for September 14, 1999 at the Aqua Drive office of the Northern Kentucky Water Service District.

II. PLAN UPDATES AND AMENDMENTS

Once the Kenton County Water Supply Plan has been approved by the Division of Water, all participants will receive a hard copy of the plan. The Northern Kentucky Water Service District, the funding agency for the plan, will also receive a diskette with all plan documents so any necessary changes or revisions can be made. NKADD will be available to provide this service on a contractual basis, if so desired.

III. IMPLEMENTATION

Since the water supply for the County was considered to be adequate, plan implementation will be focused on the supply protection recommendations. The Campbell-Kenton Water Supply Planning Council will help promote the supply protection recommendations, the majority of which involve environmental education or coordination functions.

IV. PLANNED IMPROVEMENTS

The role of the water supply plans continues to expand, with infrastructure funding programs such as Community Development Block grant (CDBG) and the Kentucky State Drinking Water Revolving Loan Fund awarding points either for completed plans or for those projects that are in compliance with an approved plan. Therefore, to minimize amendments to the plan during the next several years, utilities were asked to submit any planned improvements or projects that are reasonably expected to be constructed or for which funding may be sought through the year 2003.

A. Northern Kentucky Water Service District

YEAR	PROJECT NAME	SIZE & LENGTH	ESTIMATED COST
1999	Park Hills - Dixie to Devou Tank	12", DND	$ 770,700
1999	Kennedy & Rivard Dr. from Kyles Ln. to Dixie Hwy.	16", DND	$ 533,300

1999	Highland Pike -- Ashley to Orphanage	20", DND	$ 719,960
1999	Richardson Rd to KY 17	16", DND	$ 1,209,525
1999	KY 17, Shaw to KY 16	16", DND	$ 1,333,000
2000	Shaw Rd., Wilson Rd. to KY 17	20", 5,150 LF	$ 643,750
2000	Banklick/Maher, Pump Station - Wilson	24", 13,140 LF	$ 1,839,600
2001	Bristow Rd. Pump Station - relocation and upgrade	NA	$ 1,125,000
2002	KY 17 from Hillcrest to Pelly	16", 2,800 LF	$ 324,800
2002	KY 17, KY 16 - Sub-District 8	16", 3,050 LF	$ 353,800
2002	Bristow Rd., Richardson Rd. - Pump Station	24", 12,750 LF	$ 1,877,000
2003	No projects planned to date in Kenton Co.	NA	NA

CHAPTER 14
PLAN APPROVALS

Council Members

Ron Barrow
Northern Kentucky Water Service District _____

Representative
Kenton County Fiscal Court _____

Sister Marilene Cullen
St. Anne Convent _____

Naguanda Deaton
Campbell County Fiscal Court _____

Representative
Newport Water Works _____

Mary Kathryn Dickerson
Boone, Campbell, Kenton Conservation Districts _____

Jeff Earlywine
City of Ft. Thomas _____

Kirtley Fillhardt
Green Valley Trailer Park _____

Phil Kloenne
Northern Kentucky District Health Department _____

Clark Millard
City of Wilder _____

Mark Pfefferman
St. Peter & Paul Elementary _____

Bob Reis
St. Peter & Paul Elementary _____

Steve Trauth
Louis Trauth Dairy _____

A missing signature indicates that the member became a non-participant during the planning process.

NORTHERN KENTUCKY AREA DEVELOPMENT DISTRICT
16 SPIRAL DRIVE / P.O. BOX 668 / FLORENCE, KENTUCKY 41022-0668
PHONE (606) 283-1885 / FAX (606) 283-8178 / TDD (606) 282-2707

John Mays, Executive Director

October 20, 1999

Division of Water
14 Reilly Road
Frankfort, KY 40601

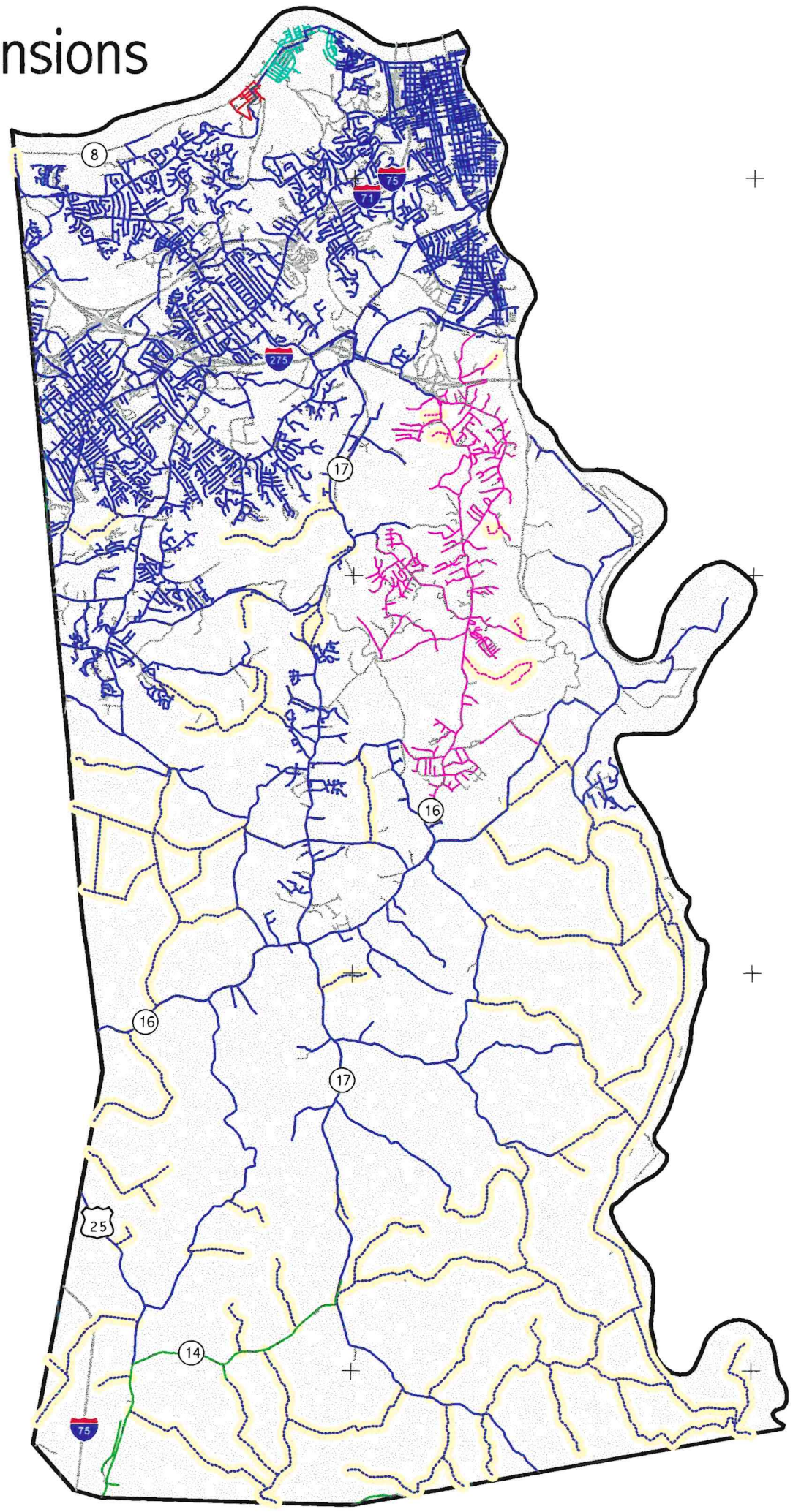
To Whom it May Concern:
Attached you will find an updated map of water service areas and planning expansions for Kenton County. This document reflects the most accurate information available at this time, and reflects the county's goal of providing water service to as many residences as feasible.

Please accept this documentation as an amendment to the existing approved Kenton County Water Supply Plan.

MAP 4:
Service Areas and Planned Extensions

1530000 1560000 1590000

570000 540000 510000 480000



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Existing waterlines
- Northern Kentucky Water Service District
- Taylor Mill Water Department
- City of Bromley
- City of Ludlow Public Works
- Bullock Pen Water District

Proposed Waterlines
- Northern Kentucky Water Service District
- Taylor Mill Water Department
- Highways

scale 1:126,720
1 inch = 2 miles
This map is intended for planning purposes only
NKADD
Jeffrey Burt
10/99

2 0 2 4 Miles

1530000 1560000 1590000

Appendix A: Minutes

CAMPBELL-KENTON WATER SUPPLY PLANNING COUNCIL

April 17, 1997 Meeting Summary

In attendance:

Sister Marilene Cullen, St. Anne Convent
Naguanda Deaton, Campbell County Fiscal Court
David Dezeeuw, Newport Water Works
Phil Kloenne, Northern Kentucky District Health Department
Dennis Willaman, Northern Kentucky Water Service District
Bob Reis, St. Peter & Paul School
Mark Pfefferman, St. Peter & Paul School
Heidi Van Keuren, Northern Kentucky Area Development District

The meeting began at 10:05 a.m. with a review of the planning process. Phase I focuses on data collection and projecting the demand for water over the twenty-year planning period. Phase II, assuming the water supply is adequate, concentrates on supply protection and emergency response plans. Ms. Van Keuren distributed surveys to water suppliers and distributors with a one month deadline for completion. The rest of the surveys will be mailed to those who were unable to attend.

Mr. Willaman was elected Planning Council Chair. After some discussion, the quorum was set at five members. Those who are eligible to be a part of the planning council, but have not responded will be called to ascertain interest. If they do not wish to participate, their names will be removed from the planning council membership list.

Ms. Van Keuren reviewed the notification process for the water supply plan. All the Judge/Executives, Mayors, and water suppliers in Campbell, Kenton, Grant, and Pendleton Counties must be notified and asked to provide any relevant information or water-related plans. Ms. Van Keuren will handle the notification process which must be completed within two weeks of the meeting. In addition, the public must be notified through the newspaper.

The planning objectives suggested by the water supply planning regulations were reviewed and amended. The planning council decided to "encourage" conservation and also to provide a continuous level of supply under all conditions. In addition, at the suggestion of Mr. Pfefferman, an objective was added to "encourage expansion where feasible". Council members agreed that feasibility would include both financial and environmental factors. A public hearing will be held at 10:00 a.m. on Thursday, May 15, 1997 at the Edgewood office of the Northern Kentucky Water Service District.

Under general discussion, Ms. Van Keuren updated the planning council on the recent water supply planning workshop. The Division of Water (DOW) has set a deadline of September 30, 1997 to complete Phase I of the Campbell and Kenton water supply plans. DOW will provide technical assistance with the wellhead protection plans; however, the water supply plans will need to include a schedule for wellhead protection plan completion. It may extend beyond the original deadline of July 15, 1998 for the wellhead plans. DOW intends to meet with each of the Area Development Districts to help prioritize the plans. The workshop also included a presentation on the amendments to the Safe Drinking Water Act. DOW stated that after July 15, 1998, no funds from the new drinking water revolving loan fund would be available to a county (or its municipalities) that does not have an approved water supply plan.

The meeting adjourned at 10:45 a.m..

CAMPBELL-KENTON WATER SUPPLY PLANNING COUNCIL

Meeting Summary
May 15, 1997

In Attendance:

Mark W. Pfefferman
Phil Kloenne
Steve Trauth
Dennis Willaman
David R. Dezeeuw
Heidi Van Keuren

The public hearing to consider the planning objectives opened at 10:00 a.m. with no members of the public present. The hearing closed at 10:10 a.m.. The Planning Council adopted the planning objectives unanimously after a motion by Mr. Kloenne and a second by Mr.Trauth.

Ms.Van Keuren summarized the responses to the notification process. The Mayors of Florence and Silver Grove asked to be placed on the mailing list for minutes. The Grant County Water Supply Planning Council would like to be kept informed of planning council activities. Ms. Van Keuren also received a letter and a phone call from Mr. and Mrs. Jim Baird of Grandview Rd. just outside of Alexandria. They are interested in having a water line extended down their road. Mr. Willaman felt that this was a Water District, rather than a planning council, issue and that the Water District would contact the Bairds. Mark Pfefferman asked that his evening phone number be given to the Bairds since he has had experience in organizing neighbors to try to obtain public water.

Mr. Trauth asked if any other council members had received a notice from the EPA regarding a meeting in Huntington, West Virginia for water suppliers in the Ohio River valley. Neither Mr. Dezeeuw nor Mr. Willaman were aware of the meeting and they asked Mr. Trauth to fax them a copy of the notice.

There was some brief discussion of the Smith Rd - KY 10 project in Campbell County. Council members who have not completed their surveys were urged to do so within the next two weeks. The next meeting was scheduled for July 10, 1997 at 10:00 a.m. at the Edgewood office of the Northern Kentucky Water Service District. The meeting adjourned at 10:20 a.m..

CAMPBELL-KENTON WATER SUPPLY PLANNING COUNCIL

July 10, 1997 Meeting Summary

In Attendance:

Sister Marilene Cullen
David Dezeeuw
Phil Kloenne
Bob Reis
Dennis Willaman
Heidi Van Keuren

The meeting began with a review of the May 15, 1997 meeting summary. There were no comments or changes.

Ms. Van Keuren gave a status report on Phase I of the water supply plan. She noted that surveys were still missing from the City of Newport and Green Valley Trailer Park. Mr. Dezeeuw thought he had mailed his, but promised to fax or e-mail a copy. Sister Cullen will remind Mr. Fillhardt about the survey. Ms. Van Keuren met with Tom East of the Area Planning Commission to discuss mapping requirements and there should be no problem getting the maps by the end of August.

Ms. Van Keuren distributed and reviewed Chapters One through Five of the Phase I water supply plan. Mr. Reis noted an incorrect spelling which will be corrected. Copies will be mailed to those who were unable to attend. Hopefully, Phase I will be completed by the end of September and Phase II by the end of January 1998. The next meeting was scheduled for Thursday, August 14, 1997 at 2:00 p.m..

The meeting adjourned at 10:30 a.m..

CAMPBELL-KENTON WATER SUPPLY PLANNING COUNCIL
August 14, 1997 Meeting Summary

In Attendance:

Mark Pfefferman
Phil Kloenne
Dennis Willaman
Heidi Van Keuren

The July 10, 1997 meeting summary was reviewed and there were no changes or comments.

Ms. Van Keuren updated the council on a recent meeting with the Water Quantity Management staff of the Division of Water. DOW staff hope to make the water supply planning program conform with the U.S. EPA Source Water Assessment Program (SWAP). The EPA has not released any guidance documents for the SWAP yet. The following activities will be included as a part of the SWAP: watershed delineation, wellhead protection, potential contaminant inventory, and susceptibility analysis. The potential contaminant inventory would create a substantial amount of work for the Campbell and Kenton County plans. The inventory would probably consist of investigating an area from 1/4 mile below a water supply intake to 5 miles above and 2 miles outward. Additional inventories would need to be completed for the 6 to 10 mile range and the 11 to 25 mile range. This would be a lot of work in an urbanized area such as Northern Kentucky.

The demand projections for Newport Waterworks were reviewed. Ms. Van Keuren explained that there were several factors which made it difficult to accurately project demand. First, Newport currently sells a considerable amount of water; however, during the 20 year planning period this could change. A new treatment plant could be built by a wholesale customer or proposals to purchase water from the City of Cincinnati could be accepted. Newport, ideally, would like to increase its treatment capacity and its wholesales sales. Therefore, the projections reflect this because this would probably be the maximum demand scenario. Ms. Van Keuren will expand the text to explain the rationale behind the projections and possible alternative scenarios. In addition to the uncertainty of wholesale sales, the City of Newport has very little historical data available by demand sector making the accuracy of the disaggregated demand rather suspect.

Ms. Van Keuren reported on a meeting with Area Planning Commission staff regarding the plan maps. The maps should be ready for the next meeting.

The next meeting was scheduled for Thursday, September 25, 1997 at 10:00 a.m. at the Edgewood office of the Northern Kentucky Water Service District. The meeting adjourned at 2:30 p.m..

CAMPBELL-KENTON WATER SUPPLY PLANNING COUNCIL

September 25, 1997 Meeting Summary

In Attendance:

David Dezeeuw
Clark Millard
Jeff Earlywine
Sr. Marilene Cullen
Dennis Willaman
Mary Kathryn Dickerson
Fr. Joseph Boschert
Heidi Van Keuren

The meeting began at 10:05 a.m. with introductions. The August 14, 1997 meeting summary was reviewed and there were no comments or changes.

The demand projections for the Northern Kentucky Water Service District were reviewed and discussed. Mr. Willaman thought that the projected demand may be a little high for average day demand. Mr. Earlywine had questions regarding the computer model and the type of data that was required. Ms. Van Keuren explained that the DOW requires that this model be used for water supply planning purposes. The model was developed by the U.S. Army Corps of Engineers and it forecasts the demand for water based on demographic and economic data. Inputs include: population, housing values, density of housing, income, employment data, and climatic data. Ms. Van Keuren emphasized the value of local knowledge regarding demand for water and asked that Mr. Willaman and Mr. Dezeeuw review the projections and provide comments in the next several weeks. The Newport Water Works projections were quickly reviewed and Ms. Van Keuren explained the changes that she had made since the last meeting regarding growth scenarios. One scenario assumes that the wholesale demand for water will increase considerably. Scenario two assumes that growth will be relatively flat because the City and other areas served are fully-developed with little additional land.

The draft maps, prepared by the Northern Kentucky Area Planning Commission, were reviewed. There are a number of changes and additions that need to be made to each map. Ms. Dickerson had some questions regarding the watershed boundaries, so she took the planning unit maps to her office to review.

The wellhead protection plans for St. Anne's Convent and the Green Valley Trailer Park were discussed. Ms. Van Keuren met with Ernie Ellison, Wellhead Protection Specialist for the Division of Water, several weeks ago. DOW can provide assistance with the geology section and

the wellhead protection area delineations. Ms. Van Keuren suggested that Sr. Cullen contact Terri Dowdy regarding DOW assistance. Mr. Willaman also offered assistance with maps. DOW would like to see the wellhead protection plans completed by August 1, 1998.

Mr. Millard discussed some of the concerns of the City of Wilder regarding water needs. He asked if there were a way to incorporate their needs into the plan. Ms. Van Keuren thought the needs could be incorporated as part of the information review conducted for the plan.

Father Boschert reiterated the school's need to be on a public water system. The testing requirements are expensive and the school needs to have water delivered to meet its demand. Father Boschert also mentioned a grant application that Elrod & Atkins prepared several years ago that would have gotten St. Peter & Paul Elementary on a public water system; however, the school was cut out of the project. No one present was really aware of the circumstances of the grant application.

There was some discussion about the lack of water lines in southern Campbell County while much of northern Pendleton County has public water. Mr. Willaman explained that often, in the past, rural water districts were able to expand by adding small sized water lines. Now as development occurs, these water lines are inadequate and have to be replaced.

Ms. Van Keuren indicated that she would like to submit the Phase I water plans as soon as possible because the Water Quantity Management section of DOW has quite a backlog of plans to review. She hopes to submit the plans by October 10, 1997.

The next meeting date was set for Thursday, November 6, 1997 at 10:00 a.m. at the Northern Kentucky Water Service District's Edgewood office.

CAMPBELL-KENTON WATER SUPPLY PLANNING COUNCIL

November 6, 1997 Meeting Summary

In Attendance:

David Dezeeuw, Newport Water Works
Phil Kloenne, Northern Kentucky District Health Department
Bob Reis, St. Peter & Paul Elementary
Dennis Willaman, Northern Kentucky Water Service District
Heidi VanKeuren, Northern Kentucky ADD

The meeting began at 10:05 a.m. with a review of the September 25, 1997 meeting summary. There were no changes.

Ms VanKeuren discussed the status of Phase I. She had hoped to submit a draft Phase I plan to DOW by mid-October; however, NKAPC has not been able to complete the maps yet due to staffing shortages. NKAPC hopes to have the maps completed by early next week.

The Infrastructure Assessment section of Phase I was discussed. Additional information about infrastructure deficiencies and/or planned improvements is needed. Mr. Willaman indicated that no decision regarding the treatment plant in western Boone County has been made yet. A treatment plant in that area would serve growth areas in Boone County and southern Kenton County. Mr. Willaman also reported on the opening of the new water intake on the Ohio River. While both the new and existing intakes will operate together initially, the old intake will be phased out. A hydraulic study is also being conducted to determine what lines need to be replaced in the future. The Northern Kentucky Water Service District coordinates main replacement with cities that are doing road work, whenever possible. In addition, the Water District has $500,000 allotted annually for main replacement; however, more than $2 million per year could be spent if it were available). Ms. Van Keuren asked about small diameter lines in the system and Mr. Willaman reported that most were located in rural areas; however, there were some small lines in the urban areas serving just a few households.

Mr. Dezeeuw elaborated on Newport's planned improvements. A new sludge treatment facility will be operational by early 1998 that will free-up a lagoon for raw water storage. Three new filters are being added to the air scour filtration system which will increase water quality. The vertical turbine at the river intake is being replaced which will save on energy costs. The booster station is being renovated with new pumps, valves, and surge anticipation. The surge anticipation will prevent water hammer which contributes to water main breakage in the old cast-iron lines. Newport currently has $250,000 allotted annually to main replacement. Also, water mains are being replaced in the riverfront redevelopment area.

Mr. Reis stated that the assessment of the St. Peter & Paul School infrastructure was accurate. Ms. Van Keuren asked about the access to public water for St. Anne Convent since their treatment plant is so old. While water is available on KY 8, it is a long distance from the Convent to the road. Since the Convent has an operational system, it is probably cheaper and easier at the present time to maintain it than to incur the expense of running a new water line.

The next meeting was scheduled for Tuesday, January 12, 1998 at 10:00 a.m. at the Edgewood office of the Northern Kentucky Water Service District. The meeting adjourned at 10:40 a.m..

CAMPBELL-KENTON WATER SUPPLY PLANNING COUNCIL

January 12, 1998 Meeting Summary

In Attendance:

Heidi Van Keuren, NKADD
Mary Kathryn Dickerson, Boone-Kenton-Campbell Conservation Dist.
Clark Millard, City of Wilder

Due to limited attendance and the lack of a quorum, the meeting was brief and informal. Ms. Van Keuren explained the potential contaminant sources inventory required for Phase II. Ms. Dickerson had some ideas of agencies that may have collected much of the data already, such as Kenton County DES.

Since so few people were in attendance, the next meeting date wasn't set. The meeting adjourned at 10:20 a.m..

CAMPBELL-KENTON WATER SUPPLY PLANNING COUNCIL

March 24, 1998 Meeting Summary

In Attendance:

Heidi Van Keuren, NKADD
Dennis Willaman, Northern Kentucky Water Service District
Phil Kloenne, Northern Kentucky District Health Department
Clark Millard, City of Wilder
Mark Pfefferman, Sts. Peter & Paul Elementary
Mary Kathryn Dickerson, Kenton-Campbell-Boone Conservation Districts

Ms. Van Keuren updated the group on the status of the Phase I plans. Both County plans were submitted in December to DOW, but no comments have been received to date. Also, a bill extending the water supply plan deadline to July 15, 1999 was passed by the House, but had not been passed by the Senate.

The Source Water Assessment portion of the Phase II plans was discussed. Topographic maps showing the area that needs to be inventoried for the Potential Contaminant Inventory were reviewed. The Licking River intake of the Northern Kentucky Water Service District will be time consuming because there is quite a bit of development in the area. Also, since Bank Lick Creek is within 1/4 mile of the intake, an inventory of this area will also need to be conducted. Kevin Flowers of the Florence DOW field office was suggested as a knowledgeable source about potential areas of contamination.

Supply protection recommendations were discussed. Ms. Van Keuren distributed a list of potential recommendations for the Council to review. The recommendations are rather generic because the primary water sources for the Counties are so large. Some suggestions for additional recommendations were made such as working with the Licking River Watch. The next meeting will begin with a public hearing to get input on water supply recommendations. The hearing will be advertised in the Kentucky Post.

Supply Contamination Response plans were discussed. Each water supplier needs a written plan detailing how the public would be notified of water supply contamination and identifying short and long term alternative sources of water. Questionnaires asking for pertinent information were distributed. Questionnaires will be mailed to water suppliers who were absent.

The public hearing and next meeting were scheduled for Tuesday, April 28, 1998 at 9:30 a.m. at the Northern Kentucky District Health Department Conference Room. The meeting adjourned at 10:40 a.m..

CAMPBELL-KENTON WATER SUPPLY PLANNING COUNCIL
April 28, 1998 Public Hearing & Planning Council Meeting

In Attendance:

Heidi Van Keuren, NKADD
Phil Kloenne, Northern Kentucky District Health Department
Jeff Earlywine, City of Ft. Thomas
David Dezeeuw, Newport Water
Mary Kathryn Dickerson, Kenton-Campbell Conservation Districts
Sr. Marilene Cullen, St. Anne Convent

Prior to the meeting, a public hearing was held to discuss the supply protection recommendations. Although the meeting was advertised in the Kentucky Post and a letter was sent to all the local water watch groups, no citizens attended. After some discussion, the following recommendations were unanimously adopted.

1. Continue to encourage land use controls that protect existing water sources.

2. Work with the Natural Resource Conservation Service, Conservation Districts, and the Cooperative Extension Office to promote "best management practices" for construction and agricultural activities.

3. Provide assistance to the Northern Kentucky Solid Waste Management District in its efforts to clean open dump sites, promote proper disposal, and further public awareness and education.

4. Encourage and assist local water suppliers and distributors in their efforts to promote water conservation practices to customers.

5. Support the efforts of the Licking River Watershed Watch.

6. Promote ORSANCO's Ohio River Sweep.

7. Cooperate with the Sanitation District to develop a regional Storm Water Management Plan.

8. Share information with the Health Department's Committee on Protocol for Assessing Community Excellence in Environmental Health.

There were no comments or questions regarding the March 24, 1998 meeting summary. Ms. Van Keuren reported on the status of the Phase I plans. DOW is asking for some minor changes which should be easy to address. DOW wanted additional water watch groups notified and asked that a wellhead protection schedule for Lally Pipe & Tube be included. There was some discussion regarding how to make a private industry comply with this. Also, DOW has helped the St. Anne Convent prepare a Phase I wellhead plan. This plan will be included in the Campbell County Water Supply Plan as an appendix. Also, the recommended protection areas for the Licking and Ohio River intakes have to show the 25 mile zone of responsibility.

Ms. Van Keuren updated the Council on the recent water supply planning workshop at General Butler State Park. DOW has not come up with an amendment process for the plans yet; however, they want to keep it simple. Also, there was some discussion regarding permitting for future use, instead of current use, based on the plan projections. Statewide, 55 Phase I and 16 Phase II plans have been approved.

Phase II planning activities were discussed. The contaminant inventory is a major undertaking and it is proving to be problematic to display the information graphically. Ms. Dickerson suggested that Ms. Van Keuren contact Steve Crabtree. Mr. Crabtree may have some information that would be useful.

Ms. Van Keuren shared a thank-you note that she had received from Wilma Baird on Grandview Road. Mr. Willaman has proposed a CDBG project that would include her road and she was very thankful for any assistance the Council may have provided.

The next meeting was tentatively scheduled for June 29, 1998 at 10:00 a.m. and the location was not decided. Mr. Dezeeuw offered some meeting space at the Newport Municipal Building.

Campbell-Kenton Water Supply Planning Council
June 29, 1998 Meeting Summary

In Attendance:

Heidi Van Keuren, NKADD
Dennis Willaman, Northern Kentucky Water Service District
Reverend Joseph Boschert, St. Peter & Paul School
David R. Dezeeuw, Newport Water Works
Phil Kloenne, Northern Kentucky District Health Department
Mary Kathryn Dickerson, Boone/Kenton/Campbell Conservation District

The meeting began with a review of the April 29, 1998 Public Hearing & Meeting Summary. There were no questions or comments.

Ms. Van Keuren updated the Council on the status of the Phase I plans. The changes requested by DOW, which related primarily to mapping, the water watch notification process, and wellhead protection plans, were submitted on June 24, 1998.

Ms. Van Keuren explained the Community Development Block Grant (CDBG) process and the recent addition of a point allocation based on the status of the water supply plan. Although the Department for Local Government (DLG) has not decided upon the number of points, points will be assigned based on the degree of completeness (Phase I submitted, Phase I approved, Phase II submitted, Phase II approved). Although the legislature extended the water supply plan deadline date until July 15, 1999, DLG has elected to keep the point allotment in this year's application. Applications are due by August 31, 1998. Since Campbell County is planning on submitting a water line extension project, the Campbell County Water Supply Plan is a priority. Ms. Van Keuren plans to submit the Phase II Campbell County plan by the end of July, hopefully assuring that the County receives at least 75 percent of the available points. It is improbable that DOW will review and approve the Phase II plan by the end of August; however, it is possible.

The status of water supply plans statewide was discussed. To date, 18 counties have Phase II plans approved. 11 counties have submitted Phase II. 34 counties have Phase I approved. 18 counties have submitted Phase I. Finally, the only counties that are not participating in the water supply planning process are Gallatin and Jefferson.

The next meeting was scheduled for Monday, July 27, 1998 at 10:00 a.m. at the Aqua Drive offices of the Northern Kentucky Water Service District. The meeting adjourned at 10:30 a.m..

CAMPBELL-KENTON WATER SUPPLY PLANNING COUNCIL
July 27, 1998 Meeting

In Attendance:

Dennis Willaman, Northern Kentucky Water Service District
Sister Marilene Cullen, St. Anne Convent
Phil Kloenne, Northern Kentucky District Health Department
Bob Reis, St. Peter & Paul Elementary
Heidi Van Keuren, NKADD

The meeting began with a review of the June 29, 1998 meeting summary. There were no questions or comments.

Ms. Van Keuren updated the Council on the status of the Phase I plans. DOW has stated that the plans are very close to being approved; however, the only remaining issue is the map showing the 25 mile zone of responsibility on the Ohio River. DOW has asked for some improvements to the map, if possible. Ms. Van Keuren has a meeting scheduled with the Area Planning Commission to address DOW's comments regarding the map.

The Phase II Campbell County Plan was reviewed and potential contaminant sources were discussed. Mr. Kloenne wondered if the trailer park in Melbourne still had a package treatment plant; however, Ms. Van Keuren thought that all housing units in the City were currently hooked up the sewer system, installed in the early 1990s. Ms. Van Keuren will check. A new golf course on Painter Road was discussed; however, it didn't fall into either Zone I or Zone II.

Under general discussion, various water-related news stories were discussed. Mr. Willaman explained that the City of Cincinnati had made another offer to sell water to Boone County and if that occurs, the Northern Kentucky Water Service District will have plenty of capacity and a new treatment plant will not be needed. The five county plan proposed by Judge/Executive "Biz" Cain was briefly discussed. Ms. Van Keuren explained that Judge Mays of Pendleton County was strongly in favor of this and viewed it as a quick solution to water supply problems in northern Pendleton County. Ms. Van Keuren also updated the Council on the proposed CDBG project to connect the Pendleton County and Northern Kentucky Water Service Districts at the Kenton County line. If funded, the Pendleton County Water District would sell water to the City of Butler and Butler's aging treatment plant would be taken off-line.

Mr. Willaman asked about the status of the Phase II Kenton County plan and Ms. Van Keuren estimated that it could be done in several months. The Licking River inventory is the most time-consuming element of that plan.

The next meeting was scheduled for Monday, September 14, 1998 at 10:00 a.m. at the Aqua Drive offices of the Northern Kentucky Water Service District. The meeting adjourned at 10:30 a.m..

CAMPBELL-KENTON WATER SUPPLY PLANNING COUNCIL

September 14, 1998 Meeting Summary

In Attendance:

Dennis Willaman, Northern Kentucky Water Service District
Phil Kloenne, Northern Kentucky District Health Department
David Dezeeuw, Newport Water Works
Father Joseph Boschert, St. Peter & Paul Church
Heidi Van Keuren, Northern Kentucky Area Development District

The July 27, 1998 meeting summary was reviewed and there were no comments or changes.

Ms. Van Keuren updated the Council on the status of the Phase I and Phase II plans. The Phase I Campbell and Kenton County plans were approved on July 31, 1998. The Campbell County Phase II plan was submitted on July 28, 1998. Although no written comments have been received regarding the Phase II plan, Division of Water staff indicated in a recent meeting that they would like to see a more detailed step-by-step implementation section. This section can include things like planned water line extensions or other infrastructure improvements. Ms. Van Keuren explained that DOW would like to see specific projects in the plans. These can be projects that are already funded or projects for which funding will be sought over the next several years. Ms. Van Keuren suggested that the recently submitted Campbell County CDBG be included in this section. Mr. Dezeeuw indicated that he would also put together some information on projects that are in the planning phase for inclusion. Ms. Van Keuren asked that this information be submitted in the next two to three weeks. Ms. Van Keuren also updated the Council on statewide planning activities. To date, 99 Phase I plans have been submitted and 75 have been approved. 25 Phase II plans have been submitted and 20 have been approved.

The statewide Drought Advisory Council was discussed. A drought alert may be issued in the Northern Kentucky area in the next few weeks and DOW has asked Ms. Van Keuren to distribute information about the alert via fax to all the water suppliers.

The proposed interconnection between the City of Cincinnati and Boone County was discussed. Mr. Willaman reported that it looked as if this were going to occur. There was some discussion among Council members about how such an arrangement would work and what agency or agencies would have jurisdiction over the arrangement. Ms. Van Keuren asked if there had been any more meetings among the County Judge\Executives regarding running 16 inch lines to the border of each county. Those present thought this proposal would probably be tabled if Boone County agrees to purchase water from Cincinnati.

Ms. Van Keuren shared a prioritization list from the Licking River Watershed Management Team that showed the Fleming Creek subwatershed as having priority for clean-up because of agricultural run-off. The issue of cryptospiridium contamination of public water systems was briefly discussed; however, this has not been a problem in the Ohio River.

The next meeting was scheduled for Monday, November 2, 1998 at 10:00 a.m. at the Aqua Drive Conference room. The meeting adjourned at 10:30 a.m..

CAMPBELL-KENTON WATER SUPPLY PLANNING COUNCIL
November 2, 1998 Meeting Summary

In Attendance:

Heidi Van Keuren, NKADD
Dennis L. Willaman, Northern Kentucky Water Service District
Phil Kloenne, Northern Kentucky District Health Department
Mary Kathryn Dickerson, Boone-Kenton-Campbell Conservation Dist.

The meeting began with a review of the September 14, 1998 meeting summary. There were no questions or revisions. There was a brief discussion regarding what constituted a quorum; however, since there were no actions to be taken, those present decided to proceed with the meeting.

Ms. Van Keuren reported on the status of the Campbell County Phase II plan. DOW has formally approved the plan; however, Ed Neal, the plan reviewer, did ask that the potential contaminants be transferred to the base map. Mr. Neal also noted that there were several abandoned landfills in the Silver Grove area that should be on the map. Mr. Kloenne was able to locate these for the group.

Those present reviewed the location of potential contaminants for the Licking River intake. Ms. Van Keuren noted that Carlisle Construction, which is located across the river and slightly north of the intake, is both a RCRA notifier and has USTs. Progress Rail Services also has USTs and is a RCRA notifier. Mr. Kloenne and Mr. Willaman also noted that Newport had an old landfill located roughly in the area that the Port Authority now owns. Ms. Dickerson expressed concern about run-off from urban development and residential construction. Ms. Van Keuren will locate high-growth areas on the map.

Ms. Van Keuren explained that the Banklick Creek inventory still needed to be completed. Mr. Kloenne said that the primary contaminant is sewage and that Kevin Flowers with DOW may have already done an inventory of some sort. Mr. Kloenne thought that the area around Taylor Mill and Grand had some very high fecal coliform counts.

Ms. Dickerson and Mr. Willaman had some questions regarding the Boone County Plan. Ms. Van Keuren explained that the plan had been approved since 1995, but no annual meetings had been held. Also, the plan does not contain a schedule for completion of wellhead protection plans. Boone County has quite a few (maybe 10) water suppliers that use wells. Most are located in the western part of the county. Ms. Van Keuren explained that while Boone County's plan probably does need some updating, she has been working to complete the remaining plans for

NKADD's counties.

Ms. Dickerson had some comments regarding the SWAPP program and the Water Supply Planning program. She posed some questions about how the two programs relate. She also raised concerns about how to make use of the potential contaminant inventory in the clean-up of local streams and rivers. Those present agreed that it would take local initiative to regulate land uses more strictly and to mandate sediment and erosion control; however, it was unclear what role the Planning Council could play. The Planning Council does have representation from the Fiscal Courts and several of the cities, but some of the members have not been very active.

Ms. Dickerson thought that the Northern Kentucky Area Planning Commission may have an erosion and control ordinance that should be included in the plan. With regard to land use regulations, Mr. Willaman said that the Water Service District had opposed a barge cleaning operation in Melbourne; however, he believed that the company had begun operations.

There was some discussion regarding the public's perception that the drinking water supply is not safe. Ms. Van Keuren thought that the media coverage of high cancer rates in the area may play a part in the perception. There was also some discussion of home water filtration systems and devices. The marketing of these devices rely heavily on scare tactics about the water quality. Mr. Kloenne had some comments regarding water softening systems and the sodium that they add to drinking water.

There was some discussion about Woolpert's efforts to map the existing storm water system. The management of storm water will help improve water quality in the area. ORSANCO and its role in testing the Ohio River and notifying utilities of spills and time of travel was discussed.

The difference between "safe" and "clean" water was discussed. It may not ever be possible for water to be "clean" enough that one could simply drink from a stream with no risk; however, making streams and rivers fully supportive of uses such as swimming, may be attainable.

Ms. Van Keuren will complete a draft of the Phase II Kenton County Plan and will submit it to DOW. Once the draft is approved, another meeting will be scheduled to sign copies of the plan. The meeting adjourned at 11:30 a.m..

Appendix B: Notifications

APPENDIX B
NOTIFICATIONS

Notifications to Adjacent Counties

A notification letter was sent to mayors, county judge/executives, and water suppliers in adjacent counties as required by 401 KAR 4:220 subsection 5.3(a) (see sample).

The following is a list of recipients of this letter.

Judge/Executive Ken Lucas, Boone County
Mayor Evelyn Kalb, City of Florence
Mayor Warren Moore, City of Union
Mayor Phil Trzop, City of Walton
Judge/Executive Shirley Howard, Grant County
Mayor Martha Hicks, City of Crittenden
Mayor Winford Colson, City of Corinth
Mayor Norman Ferguson, City of Dry Ridge
Mayor Robert Jones, City of Williamstown
Judge/Executive Don Mays, Pendleton County
Mayor Delbert Reid, City of Butler
Mayor Max Goldberg, City of Falmouth
Trapp Water Company
Rauh Water Supply
Arlinghaus Properties
Hillside Trailer Park
Birkle Water Supply
I-75 Camper's Village

Notification to Local Governments and Water Suppliers in the Planning Unit

A letter was also sent to local units of government in Campbell and Kenton Counties, water suppliers that provide water for use in Campbell and Kenton Counties, and all local governments that share the same water sources (Ohio and Licking Rivers, Bullock Pen Lake). Please note that most governments sharing the same water sources received the letter above which had the same content. Governments in Ohio were not notified per conversation with Water Quantity Management staff. The letter notified recipients of Campbell and Kenton Counties water supply planning activities and requested pertinent information (see sample).

The following is a list of recipients:

Mayor Patrick Fanning, City of Alexandria
Mayor Thomas Wiethorn, City of Bellevue
Mayor Walter Govan, City of California
Mayor Clarence Martin, City of Cold Spring

Mayor Pat Stortz, City of Crestview
Mayor Bobby Crittendon, City of Dayton
Mayor Steven Pendery, City of Ft. Thomas
Mayor Charles Roettger, City of Highland Heights
Mayor Maurice Hehman, City of Melbourne
Mayor Matt Franck, City of Mentor
Mayor Frank Peluso, City of Newport
Mayor Carl Schwarber, City of Silver Grove
Mayor Charles Melville, City of Southgate
Mayor Jerry Williams, City of Wilder
Mayor John Haun, City of Woodlawn
Judge/Executive Kenneth Paul, Campbell County
Judge/Executive Clyde Middleton, Kenton County
Mayor James Miller, City of Bromley
Mayor Denny Bowman, City of Covington
Mayor Maeston Ward, City of Crescent Park
Mayor George Stewart, City of Crescent Springs
Mayor Harold Ries, City of Crestview Hills
Mayor John Link, City of Edgewood
Mayor Al Wermeling, City of Elsmere
Mayor Marc Otto, City of Erlanger
Mayor Harold Parks, City of Fairview
Mayor Thomas Holocher, City of Ft. Mitchell
Mayor Cindy Pinto, City of Ft. Wright
Mayor Isaac Gabbard, City of Independence
Mayor Michael Pendery, City of Kenton Vale
Mayor Frank Smith, City of Lakeside Park
Mayor Clifford Coyle, City of Latonia Lakes
Mayor Gerald Holloway, City of Ludlow
Mayor Melissa Worstell, City of Park Hills
Mayor Bob Miller, City of Ryland Heights
Mayor Mark Kreimborg, City of Taylor Mill
Mayor Dennis Stein, City of Villa Hills
Bullock Pen Water District
Northern Kentucky Water Service District
St. Anne's Convent
Newport Water Works
Green Valley Trailer Park

Public Notifications

A Notice of Intent to Plan was placed in the legal section of the May 1, 1997 Kentucky Post and the public hearing notice for the planning objectives was placed in the May 8, 1997 Kentucky Post. Copies of the notices are included in the end of this appendix.

Water Watch Groups

The following representatives of Water Watch Groups were notified and invited to participate in the planning process (see sample).

Suzy Wera, Beechwood School
Gary Turner, Simon Kenton High School
Diane Becker, Ludlow School
Curtis Massey, Fourth District Schools, Covington
Marian Sumner, Holmes Jr. High School
Lanita Boyd, Ruth Moyer School
Tim Schneider, Campbell County Middle School
Carrie Eaton, St. Thomas School
Clarence Spencer, Dayton High School
Philip Ruwe, Ft. Thomas
Marg Theurer, Cincinnati Community Rowing Club
Giles Hertz, Sierra Club/Elkhorn Paddlers
Greg Cunningham, Sierra Club
Arli Eiseman, Lakeside Park
Larry Varney, Campbell County Conservation District
Ron and Mary Beth Lusby, Sierra Club
Jim Vogt, Latonia Neighborhood Association
Larry and Susan Patton, Sierra Club
Don Girton, Izaak Walton League
Mark Bergman, Izaak Walton League
Julie Moore, Sierra Club
Robin Root, APES-NKU
Kathy Saalfeld, Ft. Thomas
Rose and Jack Pfaff, Highland Heights
Daniel Cox, Independence
Daniel Phirman, Thomas More College
Colleen Epperson, Ludlow High School
Bill and Sharon Hearing, Sierra Club
Jennifer Williams, Melbourne
Joe Darpel, Cold Spring
Linda Riess, Independence
Anthony Blakely, Ft. Mitchell
Michael Born, Covington
Dan Feldman, Alexandria
Rose Marie Kuebbing, Latonia
Linda Heath, Melbourne
Dena Espenscheid, Thomas More College
Joseph Wall, Ft. Wright
Bill O'Malley, Sunrise
Priscilla Thompson, Lloyd High School

Information Review

The only information received was from the City of Wilder. Wilder's information is summarized in the Campbell County Water Supply Plan Formulation and Final Plan Document. However, there are several important sources including: 1990 Licking River Basin Study and the 1995 Northern Kentucky's Future: Comprehensive Plan Update.

NORTHERN KENTUCKY AREA DEVELOPMENT DISTRICT
16 SPIRAL DRIVE / P.O. BOX 668 / FLORENCE, KENTUCKY 41022-0668
PHONE (606) 283-1885 / FAX (606) 283-8178 / TDD (606) 282-2707

April 21, 1998

John Mays, Executive Director

Dear Water Watch Program Participant:

Campbell and Kenton Counties, a joint planning unit, are currently in the process of preparing water supply plans in accordance with state law, KRS 151.110 through 116. The purpose of the plans is to assess the long-range water supply availability for each County. Phase I plans, which have been submitted in a draft format to the Division of Water, assessed the adequacy of the existing water supply for residential, commercial, municipal and industrial needs through 2020. Since the Phase I plans found the water supply to be adequate, Phase II of the plan will focus on protection of the existing supply.

The Campbell-Kenton Water Supply Planning Council currently consists of the following members:

Dennis Willaman, Northern Kentucky Water Service District, Council Chair
Ralph Bailey, Kenton County Fiscal Court
Sister Marilene Cullen, St. Anne Convent
Naguanda Deaton, Campbell County Fiscal Court
David Dezeeuw, Newport Water Works
Jeff Earlywine, City of Ft. Thomas
Kirtley Fillhardt, Green Valley Trailer Park
Phil Kloenne - Northern Kentucky District Health Department
Clark Millard, City of Wilder
Mark Pfefferman, St. Peter & Paul Elementary
Bob Reis, St. Peter & Paul Elementary
Steve Trauth, Louis Trauth Dairy

As a member of a local water watch group, the Planning Council is interested in your input. If you would like to attend Planning Council meetings (next meeting is scheduled for Tuesday, April 28, 1998 at 9:30 a.m. at the Northern Kentucky District Health Department, 610 Medical Village Drive, Edgewood, KY), receive minutes from the meetings, or submit written comments involving the plan or planning process, please don't hesitate to contact me at NKADD, 16 Spiral Dr., P O Box 668, Florence, KY 41022-0668, (606) 283-1885 or e-mail at hvankeuren@juno.com.

Sincerely,

Heidi Van Keuren

Heidi Van Keuren
Planning Representative

HVK/mw

Fort Wright needs to provide accommodations, please notify the City of Fort Wright's staff of your requirements at least seven (7) days prior to the scheduled public hearing. This request does not have to be in writing. 26896/648203

LEGAL NOTICE

Nassar Inc. doing business at 308 West 19th St, Covington Ky 41014 by Majida Nassar, 1301 Stonelick Woods Batavia OH 45103, hereby declares her intention to apply for a license as a retail beer, wine cooler dealer under the state law.
25499/647808

LEGAL NOTICE

The Fort Wright Board of Adjustment will hold a public hearing at the Fort Wright City Building, 409 Kyles Lane, Fort Wright, KY, on **TUESDAY, APRIL 28, 1998, STARTING AT 7:00 PM** to consider the following issue: **AN APPLICATION TO THE FORT WRIGHT BOARD OF ADJUSTMENT BY:** RICK WESSELS, ON BEHALF OF WACO OIL COMPANY, REQUESTING A VARIANCE TO CONSTRUCT AN ADDITION TO THE CARWASH AT 1804 DIXIE HIGHWAY. Information submitted to the Fort Wright Board of Adjustment relative to the subject application is available for examination by interested parties at the offices of the Northern

junction of Ninth Avenue and Terrace Avenue, fronting forty (40) feet on Ninth Avenue and running back between parallel lines one hundred forty (140) feet to an alley, agreeable to the recorded plat of said subdivision. Being the same property conveyed to Steven A. Curtis by deed dated December 10, 1996 and recorded in Deed Book 590, Page 644, in the office of the Clerk of Campbell County, Kentucky at Newport, Kentucky. This property is being sold to raise the sum of $39,760.20 together with fees, costs, interest and assessments. Said property shall be sold subject to ad valorem taxes for the year 1998 and thereafter. For deferred payment the purchaser, with approved surety or sureties, must execute bonds, bearing legal interest from the day of sale, according to law. Purchaser will also be required to make a

Bankboston Mortgage Corporation Plaintiff vs. M. Diana Jackson, et. al., Defendants. Pursuant to a Judgment and Order of Sale of the Campbell Circuit Court, rendered March 30, 1998 in the above action, I shall offer for sale, at the COURTHOUSE DOOR, in Newport, Kentucky, to the highest bidder, at public AUCTION, on TUESDAY, the 28th day of April, 1998 at 10:00 o'clock A.M., with terms of Cash or one third Cash and the balance in equal installments, payable in six and twelve months from date of sale. The property to be sold is described as follows: Commonly known as 103 Southbrook Drive,Alexandria, KY 41001 and more particularly described as follows: Per attached: This property is being sold to raise the sum of $111,257.71 together with fees, costs, interest and assessments. Said property shall be sold subject to ad valorem tax-

subject to the right of way for Burns Road. This property is being sold to raise the sum of $85,638.53 together with fees, costs, interest and assessments. Said property shall be sold subject to ad valorem taxes for the year 1998 and thereafter. For deferred payment the purchaser, with approved surety or sureties, must execute bonds, bearing legal interest from the day of sale, according to law. Purchaser will also be required to make a deposit of $500.00 with the Master to be applied to any expense occasioned by any default on his part. Bidder's must be prepared to comply with these terms. **PATRICK J. WALSH, MASTER COMMISSIONER, Campbell Circuit Court** 13644/638540

COMMISSIONER'S SALE
CAMPBELL CIRCUIT COURT
97-CI-01024

Reliastar Mortgage Corporation, Plaintiff vs. Terry R. Stamper, et. al., Defendants. Pursuant to a Judgment and Order of Sale of the Campbell Circuit Court, rendered March 30, 1998 in the above action, I shall offer for sale, at the COURTHOUSE DOOR, in Newport, Kentucky, to the highest bidder, at public AUCTION, on TUESDAY, the 28th day of April, 1998 at 10:00 o'clock A.M., with terms of Cash or one third Cash and the balance in equal installments, payable in six and twelve months from date of sale. The property to be sold is described as follows: Commonly known as 3595 Neltner Road, Alexandria, KY 41001 and more particularly described as follows: GROUP NO. 70313/E1 Situated in the City of Alexandria, Kentucky, and being Lot Numbered Forty One (41), Section Five (5), Douglas Subdivision. For a further description of said lot, reference is made to the plat recorded in Cabinet Plat 85, Side A, Alexandria records of the Campbell County Clerk. Subject to easements, conditions, restrictions and rights-of-way of record and/or in existence, including but not limited to the lien and covenant recorded in Miscellaneous Book 24, page 17 and limitations, restrictions, and uses of record in Miscellaneous Book 24, page 14 of the Campbell County Clerk's records at Alexandria, Kentucky. This property is being sold to raise the sum of $66,327.11 together with fees, costs, interest and assessments. Said property shall be sold subject to ad valorem taxes for the year 1998 and thereafter. For deferred payment the purchaser, with approved surety or sureties, must execute bonds, bearing legal interest from the day of sale, according to law. Purchaser will also be required to make a deposit of $500.00 with the Master to be applied to any expense occasioned by any default on his part. Bidders must be prepared to comply with these terms. **PATRICK J. WALSH, MASTER COMMISSIONER, Campbell Circuit Court** 13424/638511

COMMISSIONER'S SALE
KENTON CIRCUIT COURT
Equity No. 97-01-02143, Third Division, N. American Mortgage Co., Etc., Plaintiff, vs. Marjorie A. Williams, et. al., Defendants. By virtue of a Judgment and Order of Sale of the Kenton Circuit Court, rendered February 17th, 1998 in the above cause I shall proceed to offer for sale at the Court House door Covington to the highest or best bidder at public auction, on TUESDAY, the 28th day of APRIL, 1998, at 10:00 a.m., upon a credit of four, eight and twelve months, the following property, to-wit: 9 Bluffside Drive, Covington, Kentucky, 41017, Group No.: Slide 499-B/Plat No.: 20/9, PIDN: 045-30-00-063.00, Situate in the City of Covington, Kenton County, Kentucky, and being all of Lot Numbered Two Hundred Seventy-Two (272), of Lakewood Hills Subdivision, Section 5, as recorded in Plat Book 20, Page 9, of the Kenton County Clerk's records at Independence, Kentucky. Subject to all easements, restrictions, covenants and conditions of record and/or in existence. Being the same property conveyed by deed recorded in Deed Book 1644, page 261, of the Kenton County Clerk's records at Covington, Kentucky. TO BE SOLD SUBJECT TO REAL ESTATE TAXES DUE AND OWING FOR THE YEAR 1998 AND

LEGAL NOTICE

March term of the Campbell District Court will convene at the District Court Building, 600 Columbia St., Newport, Ky. on April 30, 1998 at 10:00 a.m. The following settlements will appear on the docket.

Pauline Stephany Extr. Robert Shaneyfelt Dec'd Final
Atty. J. Robert Jennings

Bank One Trustee Pearl Trump Dec'd Final
Atty. John A. Bankemper

Written exceptions to the above mentioned settlements must be filed at the Campbell District Court, Newport, Ky. on or before April 30, 1998 at 10:00 a.m. If no exceptions are filed, and said settlements will be confirmed and ordered to be recorded.

Thomas J. Calme, Clerk Gloria Meiner, D.C.

EQUAL HOUSING OPPORTUNITY

All real estate advertising in this newspaper is subject to the Federal Fair Housing Act of 1968 which makes it illegal to advertise any preference, limitation or discrimination based on race, color, religion, sex, national origin, handicap or familial status or an intention to make any such preference, limitation or discrimination.

This newspaper will not knowingly accept any advertising for real estate which is in violation of the law. Our readers are hereby informed that all dwellings advertised in this newpaper are available on an equal opportunity basis.

105 Legal Advertising

105 Legal Advertising

PUBLIC HEARING NOTICE

To all interested citizens: The Campbell-Kenton Water Supply Planning Council will hold a public hearing to solicit input concerning recommendations for protection of the planning unit's water supply.

The hearing will be held on Tuesday, April 28, 1998 at 9:30 a.m. in the lower level conference room of the Northern Kentucky District Health Department, 610 Medical Village Drive, Edgewood, Kentucky. For more information or to submit written comments, please contact:

Heidi Van Keuren
NKADD
16 Spiral Dr., P.O. Box 668
Florence, KY 41022-0668
(606) 283-1885

105 Homes, Kentucky

Alexandria

OPEN HOUSE

OPEN SUN. 1-4

#133 Sheridan, Alex

DIRECTIONS: Rt 27 S to L o Rt 10 Main St, at Provider Bank, R on Pesimmon R o Shaw & L on Sheridan. Lk new 3 bdrm bi-level, 2 Fu BA, din. area, all glass, su rm, fam. rm, wbfp, garage lot 80x254. $119,900
CASSON REALTY 635-5805

ALEXANDRIA 114 Joann Lan $229,000. All brick 2-sty, 2600 sqft. 4 BR 2½ba, 2-car ga rage, nice level lot-1 acre
OPEN SUNDAY 1-4
(606) 635-0945

Alexandria-Top Of Builders' Line 3 yrs old, low mainte nance. Brick & vinyl. 25x21 fam rm. 2 car attached ga rage. Deck
Jansen Realty 781-6800

BELLEVUE–2 BR brick 1 full ba, LR, DR, kit, 1-car garage, util shed. $75K. 606-442-9993

BROMLEY–2 BR, 2 BA, full bsmt, garage, C/A, new gas furnace. $57,500. 491-5892

BURLINGTON–New 3 BR, 2 story, $129K w/gas heat & fireplace. 100% owner fin. Owner will consider long term land contract. 356-6190

BUTLER-108 High. Remod 2 br, c/a, det. 2-car gar. Must see. $64,900. 635-2693, 781-7500

CALIFORNIA–3BR 2½ BA 2 sty, 1 acre, city wtr, 3 car det. gar. $170,000. 781-1695

Cold Spring/Aexandria– Ranch on 7 ac, 5 BR, 4 BA, LR, DR, new kit & fam rm, c/a, lg deck w/view, in grnd pool, full bsmt, city wtr. Call for appt. 635-6805.

COLD SPRING–New custom transitional home. 3 BR, 3 BA, upgrades. 3300 sq ft. Deck w/gazebo, woods, river view. $289,900. PH 781-5833

Appendix C: Workplan

PROPOSAL

CAMPBELL-KENTON WATER SUPPLY PLAN

I. Introduction

In 1990, the Kentucky Legislature mandated county-level, long-range water supply planning. The subsequently promulgated water supply planning regulation divides the planning process into two phases. In Phase I, the future demand for water is projected over a twenty year period. Projected demand is then compared to available water from existing water sources. If the water supply is considered to be adequate, Phase II planning activities focus on supply protection and preparation for shortages or contamination. If the supply is inadequate, then alternative water sources will be considered in Phase II.

Every county must have an approved water supply plan in place by July 15, 1998. If an approved plan is not in place, then the Natural Resources & Environmental Protection Cabinet will not endorse projects that impact water under the Kentucky Intergovernmental Review Process (KIRP). The Division of Water is strongly suggesting that Phase I plans be submitted by June 30, 1997 to allow adequate time for review and revision.

The Division of Water encourages the formation of multi-county planning units; however, a separate plan document must be prepared for each county.

II. Scope of Services

NKADD staff will complete all duties assigned to the planning representative per 401 KAR 4:220, Section 6, except map preparation. NKADD will coordinate with NKAPC for mapping services. Tasks have been divided into the following categories: planning, data collection, computer modeling and analysis, and engineering. Additionally, NKADD staff will provide assistance with planning council responsibilities including meetings, public hearings, and public notices.

PHASE I

Planning

1. Develop a work plan for submission to the cabinet.

2. Identify and describe obstacles to the planning process.

3. Describe water-use conflicts or potential conflicts, if any.

4. Identify potential sources of water to use in case of contamination or some similar emergency.

5. Include all work in plan documents per regulation.

Data Collection

1. Assemble and review all information collected during the notification process.

2. Assess water use for the base year by determining the amounts of water used by water suppliers, by water supply distributors, by loss, by withdrawal by permittees other than water suppliers or distributors, by agricultural use or by other permit-exempt water withdrawals. Assessment will be completely documented.

3. Summarize soils and geologic characteristics for the county.

4. Identify and contact any single user that purchases twenty percent or more of the water produced by a water supplier and review any plans such users have that may affect future water use.

Computer Modeling and Data Analysis

1. Forecast the amount of water available under normal and drought conditions, from each source being used by water suppliers in the planning unit, during the base year.

2. Forecast water supply demands for dates five, ten, fifteen, and twenty years after the base year. Forecasts will be made using IWR-MAIN water forecast software developed by the Army Corps of Engineers which allows for projection disaggregated by types of usage. Forecasts prepared by water supplier staff and consultant will also be used.

3. Compare water source availability and water demand for the base year and forecasted demand for dates five, ten, fifteen, and twenty years afterward, for each water supplier.

4. Evaluate adequacy of water supply to meet forecasted demand for twenty years past the base year. If inadequate, inventory water resources of the county. If adequate, evaluate and describe security of access to supply.

Engineering

1. Calculate the amount of available water at the site of any water supplier intake on a stream.

2. Calculate the available amount of water at the site of any water supplier intake in a water supply reservoir during normal and drought conditions.

3. Calculate safe yield, specific capacity, zone of contribution and zone of influence for each water supplier well.

4. Determine existing treatment and distribution capacity of the water suppliers.

5. Determine if vertical elevation of an intake or capacity of a pump limits access to available water and describe access limitations.

6. Estimate the cost of finding and repairing leaks for water suppliers whose water losses are greater than fifteen percent.

PHASE II

Planning

1. Identify and evaluate the risk of water supply degradation, contamination, or depletion, resulting from activities in the watersheds or recharge areas in the planning unit.

2. Relate soils and geologic characteristics of the planning unit to the risks of water supply contamination, degradation, or depletion.

3. Describe local, existing regulatory and non-regulatory measures that protect the quality and quantity of the water supplier's sources.

4. Formulate recommendations for local regulatory and non-regulatory measures to protect the quality and quantity of the water supplier's sources through watershed, recharge area, or wellhead protection programs.

5. Summarize the available information related to the quality of water in the county.

6. Evaluate one or more alternatives if an existing source of supply is not adequate to meet forecasted needs for twenty years after the base year.

7. Examine each alternative that could potentially provide adequate water for normal supply provisions and clarify these alternatives for the public as prescribed by regulation.

8. If capital improvement projects are proposed, projects shall be described including: design components, storage capacity, location alternatives, proposed construction schedule, expected federal, state, and local costs, types of financing, and sources of local funding.

9. Prepare water shortage response and supply contamination plans according to regulation.

10. Determine and describe steps necessary to implement the water supply plan including methods for updating and amending the plan, containing a timetable for initiation and completion of tasks, showing anticipated costs of implementation, and recommending procedures to coordinate actions of local government and others, and describing existing authority to implement the plan and identifying any legal changes or agreements that are necessary to implement the plan.

11. Include all work in plan documents per regulation.

Data Collection and Analysis

1. Compile the following information:

   Historical streamflow data; average monthly precipitation from historical data; state and federal requirements and policies affecting water availability; construction data; usage data and average monthly static water levels, where readily available, of wells used at average rates of more than 10,000 gallons per day; generalized water quality data; description of groundwater aquifers, including confining layers, flow characteristics and predicted maximum yield; and ownership of dams or water body access rights to any reservoirs or impoundments.

2. Acquire and include U.S. Geological Survey topographic maps of the county.

III. Qualifications

The Northern Kentucky Area Development District prepared the Boone County Water Supply Plan which was the first to be approved in the state. NKADD is also currently assisting Carroll, Grant, Owen, and Pendleton Counties with the preparation of water supply plans.

IV. Cost

The total project cost is $16,200.00. The following shows costs by county for each phase. It is assumed that each county will contribute its 20 hours of free time to the project. Also, any costs related to mapping will be an additional charge.

Phase I	
Campbell County 20 Free Hours	$ 0.00
Campbell County 125 Hours X $34.00	$ 4,250.00
Kenton County 20 Free Hours	$ 0.00
Kenton County 125 Hours X $34.00	$ 4,250.00
Total	**$ 8,500.00**
Phase II	
Campbell County 125 Hours X $34.00	$ 4,250.00
Kenton County 125 Hours X $34.00	$ 4,250.00
Total	**$ 8,500.00**
Additional Costs	
Public Notice Newspaper Advertisements	$ 1,200.00
GRAND TOTAL	**$18,200.00**

Appendix D: Survey

NORTHERN KENTUCKY AREA DEVELOPMENT DISTRICT
CAMPBELL-KENTON COUNTY WATER SUPPLY PLAN
WATER SOURCE, TREATMENT, & DISTRIBUTION QUESTIONNAIRE

GENERAL INFORMATION

UTILITY NAME Bromley Water Works

MAILING ADDRESS 226 Boone St
Bromley Ky 41016

OPERATIONS MANAGER None

BUSINESS PHONE _____

PERSON COMPLETING QUESTIONNAIRE Gerard Smith Janet Gardiner

TREATED WATER SOURCE(S)

IF YOUR UTILITY PURCHASES TREATED WATER FROM ANOTHER UTILITY, PLEASE LIST THE SOURCE UTILITY, THE CONTRACT PRICE, AND THE MAXIMUM AMOUNT OF WATER THAT CAN BE DELIVERED TO YOU.

SOURCE UTILITY	CONTRACT PRICE	MAXIMUM DELIVERY
Kenton County Water	$1.19 per 100 cu ft	

TREATED WATER STORAGE

LOCATION	TYPE*	CAPACITY (Gal.)
None		

*S (Standpipe), E (Elevated Tank, G (Tank at Grade)

STORAGE SYSTEM COMMENTS (condition, etc.) None

DISTRIBUTION SYSTEM

GENERAL CONDITION OF WATER LINES Fair

ESTIMATE OF MILES OF WATER DISTRIBUTION LINES approx 5

BEST ESTIMATE OF SYSTEM EFFICIENCY

	WATER LOSSES
1985	10 %
1990	10 %
1995	10 %
1996	10 %

LEAK DETECTION METHODS Visual

NON-REVENUE SYSTEM USAGE

	ANNUAL AVG. (GAL/DAY)	MAX DAILY (GAL/DAY)
FIRE PROTECTION	7500 gal	
OTHER		

PLEASE ATTACH CURRENT RATE SCHEDULE AND EFFECTIVE DATE (INCLUDING AVERAGE YEARLY PRICE OF WATER IN DOLLARS PER 1,000 GALLONS).

TOTAL WATER USAGE (GALLONS PER DAY)

	ANNUAL AVERAGE		MAXIMUM DAILY	
1985		GPD		GPD
1990		GPD		GPD
1995		GPD		GPD
1996		GPD		GPD

CUSTOMERS (TOTAL BY CATEGORY)

	1985	1990	1995	1996
RESIDENTIAL	340 approx.	340	340	340
COMMERCIAL	10	10	10	10
INDUSTRIAL	X	X	X	X
INSTITUTIONAL	X	X	X	X

AVERAGE TOTAL USAGE BY CATEGORY

	1985	1990	1995	1996
RESIDENTIAL	____ GPD	____ GPD	____ GPD	____ GPD
COMMERCIAL	____ GPD	____ GPD	____ GPD	____ GPD
INDUSTRIAL	____ GPD	____ GPD	____ GPD	____ GPD
INSTITUTIONAL	____ GPD	____ GPD	____ GPD	____ GPD

MAJOR WATER USERS BY CATEGORY

INDUSTRIAL	AVERAGE (GPD)	PEAK (GPD)

COMMERCIAL (RETAIL, WHOLESALE*, CAR WASHES, LAUNDRIES, ETC.)

*IF UTILITY SELLS TREATED WATER TO ANOTHER UTILITY, (INCLUDE HERE)

INSTITUTIONAL (SCHOOLS, HOSPITALS, NURSING HOMES, ETC.)

RESIDENTIAL (APARTMENTS, TRAILER PARKS, ETC.)

2 apartment bldg. approx		
2 trailer parks		
30 rental apts.		

X

OTHER (PARKS, GOLF COURSES, SWIMMING POOLS, ETC.)

	AVERAGE (GPD)	PEAK (GPD)
X	X	X

PLEASE DESCRIBE ANY WATER QUALITY PROBLEMS.

Rust

DOES YOUR SYSTEM SELL TREATED WATER TO OTHER UTILITIES OR WATER DISTRICTS? ____ YES X NO

IF "YES", LIST CUSTOMERS, CONTRACT PRICE, AND CONTRACT AMOUNT, IF ANY.

CUSTOMER	CONTRACT PRICE
X	X

WHAT CURRENT CONSERVATION MEASURES, IF ANY, DO YOU FOLLOW? ____

NONE.

WHAT ABOUT CONSERVATION IN THE FUTURE?

NONE

DO YOU HAVE PLANS TO INCREASE CAPACITY WITHIN THE NEXT 10 YEARS? 5 YEARS? ____

NO

WHAT IMPROVEMENTS ARE PLANNED FOR YOUR FACILITIES?

NONE MAINT ONLY

IN THE NEXT 10 YEARS DO YOU ANTICIPATE AN INCREASE IN CUSTOMERS? WHY? WHY NOT?

No No area for expansion

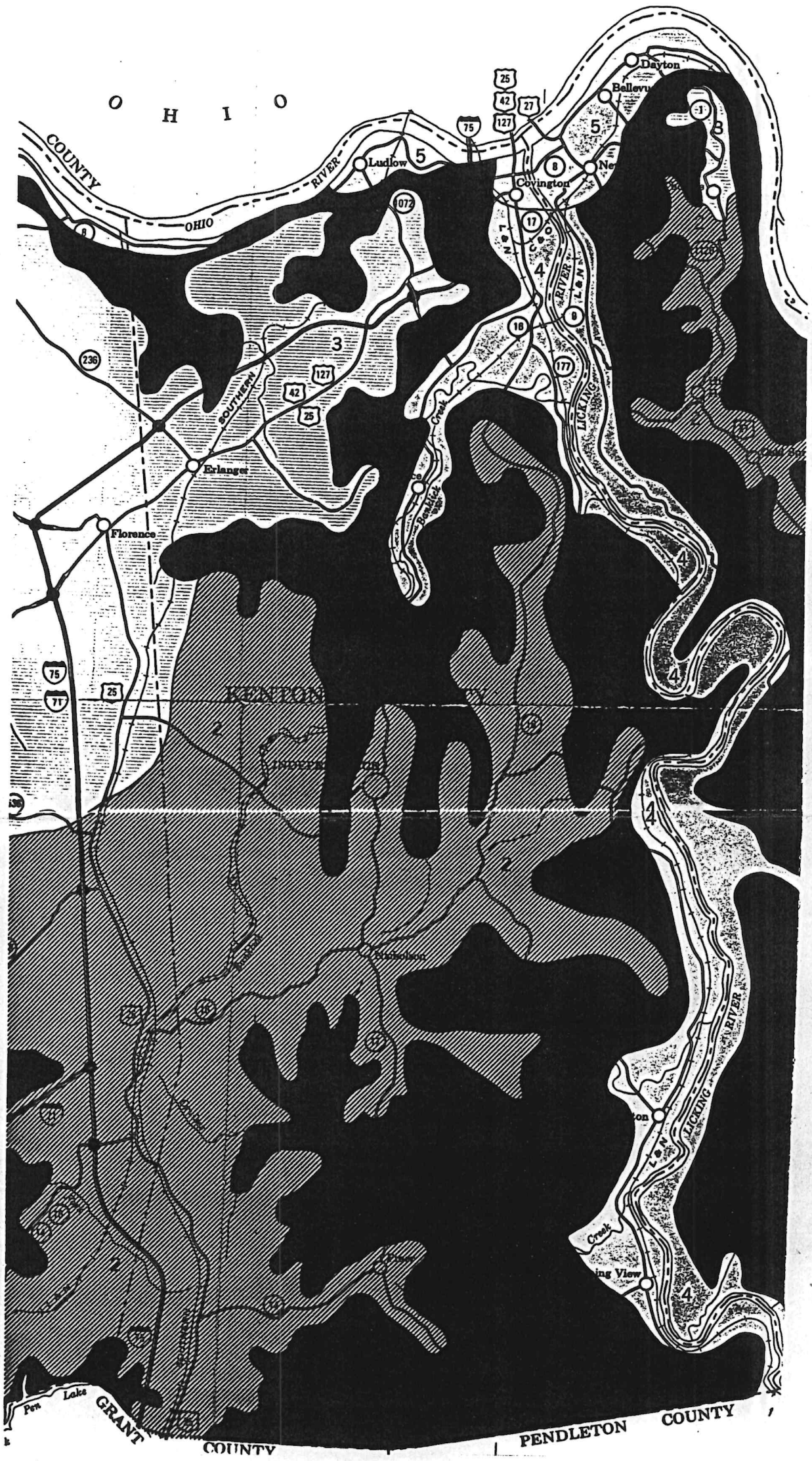
IF YOU HAVE ANY QUESTIONS ABOUT THIS FORM, PLEASE CONTACT HEIDI VAN KEUREN AT (606) 283-1885.

PLEASE MAIL OR FAX THE COMPLETED SURVEY TO THE NORTHERN KENTUCKY AREA DEVELOPMENT DISTRICT (NKADD).

NKADD
P.O. BOX 668
FLORENCE, KY 41022-0668
ATTN: HEIDI VAN KEUREN

FAX #: (606) 283-8178

Appendix E: Soil Map



SOIL ASSOCIATIONS

- Eden-Cynthiana association: Dominantly steep to very steep soils that have a clayey subsoil; on limestone and shale uplands
- Faywood-Nicholson association: Dominantly gently sloping to moderately steep soils that have a loamy to clayey subsoil; on ridgetops and side slopes of the limestone and shale uplands
- 3 Rossmoyne-Jessup association: Nearly level to moderately steep soils that have a loamy to clayey subsoil; on ridgetops and side slopes of the glaciated uplands
- 4 Licking-Captina association: Dominantly gently sloping to moderately steep soils that have a clayey to loamy subsoil; on stream terraces
- 5 Wheeling-Huntington-Alluvial land, steep association: Dominantly nearly level and gently sloping soils that have a loamy subsoil; on stream terraces, first bottoms, and moderately steep to steep areas of variable textured

Appendix F: Obstacles to the Planning Process

APPENDIX F
OBSTACLES TO THE PLANNING PROCESS

No significant obstacles to the planning process were identified. Should any be discovered during Phase II planning activities, this appendix will be amended.

APPENDIX F
OBSTACLES TO THE PLANNING PROCESS

No significant obstacles to the planning process were identified. Should any be discovered during Phase II planning activities, this appendix will be amended.

Appendix G: Paying for the Planning Process

APPENDIX G
PAYING FOR THE PLANNING PROCESS

Both the Campbell and Kenton County water supply plans were funded by the Northern Kentucky Water Service District. In addition, as members of NKADD, Campbell and Kenton Counties donated 40 free hours of NKADD staff time to the project.

The breakdown of costs is as follows:

Phase I	
Campbell and Kenton County Free Hours	$ 0.00
Northern Kentucky Water Service District	$ 8,500.00
Phase II	
Northern Kentucky Water Service District	$ 8,500.00
Advertising and Reproduction Costs	
Northern Kentucky Water Service District	$ 1,200.00
Total	**$18,200.00**

Mapping services were provided by the Northern Kentucky Area Planning Commission (NKAPC) at no cost because of the GIS partnership between NKAPC and the Northern Kentucky Water Service District.

Appendix H: Sample Zoning Ordinance Excerpt

for public water supply, and other similar utility uses, may be located in any zone subject to the approval of the board of adjustment, as set forth in Section 9.14 of this ordinance. The location of such facilities shall be in accordance with Kentucky Revised Statutes, and all other pertinent regulations, and the following requirements:

A. Such facilities shall be essential for the immediate area or for the proper functioning of the total utility system of which the element is a part.

B. A building or structure, except an enclosing fence, shall be set back at least fifty (50) feet from any property line.

C. Such facilities shall be enclosed by a protective fence as regulated by Article XIII.

D. Open spaces on the premises shall be suitably landscaped and maintained and a screening area according to Section 9.17 of this ordinance may be required in and along any yard.

E. The storage of vehicles and equipment on the premises, unless enclosed or screened, shall be prohibited.

F. The surrounding area shall not be adversely affected by, and shall be protected from, noise, odor, glare, dust, gas, smoke, and vibration, by such suitable means and conditions as the board of adjustment may specify.

SECTION 9.6 RAILROAD RIGHTS-OF-WAY LOCATION: Railroad rights-of-way, exclusive of such uses as marshaling yards, spur lines, passenger and freight terminals, maintenance shops, fueling facilities, and round houses, may be located in any zone of this ordinance providing said railroad rights-of-way meet the requirements of those sections of the Kentucky Revised Statutes and other pertinent state regulations.

SECTION 9.7 EXCAVATION, MOVEMENT OF SOIL, TREE REMOVAL, AND EROSION AND SEDIMENTATION CONTROL

A. No governmental entity or other person or entity shall strip, excavate, fill, or otherwise move soil, trees, or other vegetation, except for minor changes such as: the filling of small depressions, removal of vegetation which is diseased or endangering the public safety, etc. without first insuring that all requirements of the Subdivision Regulations of the legislative body, if applicable, have been fulfilled and then obtaining a permit from the building inspector after being informed by letter from the city engineer.

B. The building inspector may issue the required permit after determining that the resulting change in grade, or removal of trees and other vegetation, in the affected area will be in conformance with all applicable provisions of this ordinance. The provisions of this section shall not be construed to prohibit normal excavation or grading incidental to the construction or alteration of a building on the premises for which a building permit has been granted as required otherwise in this ordinance.

C. Erosion and Sedimentation Control: Erosion and sedimentation controls for excavation, movement of soil, and tree removal, shall be planned and applied according to the following:

1. The smallest practical area of land shall be exposed at any one time during development.

2. When land is exposed during development, the exposure shall be kept to the shortest practical period of time.

3. Temporary vegetation and/or mulching shall be used to protect critical areas exposed during development.

4. Sediment basins (debris basins or silt traps) shall be installed and maintained to remove sediment from run-off waters from land undergoing development.

5. Provisions shall be made to accommodate the increased run-off caused by changed soil and surface conditions during and after development.

6. Permanent final vegetation and structures shall be installed as soon as practical in the development.

7. The development shall be fitted to the topography and soils so as to create the least erosion potential.

8. Wherever feasible, natural vegetation shall be retained and protected.

SECTION 9.8 UNSIGHTLY OR UNSANITARY STORAGE: No rubbish, salvage materials, junk, or miscellaneous refuse shall be openly stored or kept in the open, and weeds shall not be allowed to go uncut within any zones, when the same may be construed to be a menace to public health and safety by the appropriate health department, or have a depressing influence upon property values in the neighborhood, in the opinion of the zoning administrator. Salvage and junkyards

SECTION 9.25 PHASED ZONING REGULATIONS

A. Phased zoning is an overlay type regulation to be used in cases where the timing and/or phasing of the zoning of an area is especially critical to the implementation of the adopted comprehensive plan. The intent of the phased zoning regulations is to encourage redevelopment of a specified area for the use and/or density designated within the comprehensive plan when the necessary conditions for such development are realized (e.g., demolition of existing buildings). Implicit in such a phased zoning approach is the premise that until such conditions are realized, the type of development designated within the comprehensive plan is premature; such development would be prevented by temporarily zoning the area to generally conform with the predominant existing land use, with a clear stipulation of an intended future rezoning, which would be in compliance with the adopted comprehensive plan.

B. The phased zoning regulations may be overlaid over any zoning classification by means of a zone change process. The use of the phased zoning regulations would indicate that the regulations of the overlaid zone are currently being enforced, based upon the general existing land use, but upon attainment of all the requirements of the zone which corresponds to the adopted comprehensive plan for the type of use and/or density, the area could be rezoned in direct compliance with the plan.

C. Phased zones are indicated on the official zoning map by adding to the overlaid zone, the letter "P", as a suffix enclosed in parentheses. For example, in order to properly phase its change, an area zoned R-1 , which is identified for future use on the adopted comprehensive plan for "industrial" could be temporarily zoned R-1M(P), indicating that present development on the site would be in conformance with the regulations of the overlaid R-1 Zone, but that, upon the attainment of certain conditions (e.g., demolition of existing buildings) as indicated on the local comprehensive plan, the area could be rezoned through a conventional zone change procedure. At the time of the zone change, the temporary R-1 (P) Zone is removed and the area is developed according to the regulations of the new zone, which is in conformance with the adopted comprehensive plan.

D. The minimum size of any area to be rezoned, as regulated by this section of the ordinance, is five (5) acres, provided that all other provisions of this ordinance and the subdivision regulations are adhered to.

SECTION 9.26 HILLSIDE DEVELOPMENT CONTROLS

A This section is designed to ensure, when development is proposed in those

areas of the community which have physical characteristics limiting development (hillside slopes of 20 percent or greater), that said development shall occur in a manner harmonious with adjacent lands so as to minimize problems of drainage, erosion, earth movement, and other natural hazards.

B. Areas of land on which development is physically restricted due to excessive hillside slopes shall be limited according to the following requirements:

1. Development proposed on land areas identified on the Comprehensive Plan as "Physically Restrictive Development Areas", and any other areas which have slopes of 20 percent or greater, shall require approval before development may occur. In those areas which are identified in the Comprehensive Plan as "Physically Restrictive Development Areas" and containing slopes less than 20 percent, the requirements contained herein may be waived; if, after review of the proposed site plan by the engineer, it is determined that said development will not result in any significant hillside slippage or soil erosion.

2. No excavation, removal, or placement of any soil, foundation placement, or construction of buildings or structures of any nature within the area identified as Physically Restrictive Development Area in (1) above, may occur until plans and specifications for such work have been submitted in the form of a site plan as regulated by Section 9.19 of this ordinance. In addition to site plan requirements, the following shall also be submitted:

   a. Plan(s) which show existing topography and the proposed physical changes necessary for construction, indicating grading (cutting and filling), compaction, erosion, sedimentation basins, areas to be defoliated, and any other pertinent information which will change the natural physical features of the site or general area.

   b. Information defining results of subsurface investigation of the area under consideration, including test borings, laboratory tests, engineering tests, and a geological analysis. Such investigation shall be made by a qualified, registered civil engineer and a geologist, indicating that any structural or physical changes proposed in the area will be completed in a manner which will minimize hillside slippage and/or soil erosion.

3. The site plan and other information required in this Section shall be reviewed by the engineer and the Northern Kentucky Area Planning Commission staff, who will recommend to the planning commission, or its