

Georgia Water Use and Conservation Profiles

TM 2 - Data Analysis

PREPARED FOR: Alice Miller Keyes/Georgia EPD

PREPARED BY: Brian Skeens/CH2M HILL

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Introduction

Georgia's population is increasing, and the available water supplies are remaining constant or becoming more cost prohibitive to develop. Therefore, it becomes necessary to ensure water is used efficiently to extend the life of existing water supplies and defer the cost of developing new ones. The municipal sector is the second largest user of water in Georgia after thermoelectric use, is the fastest growing use sector in the state, and perhaps holds the most potential for savings. Water conservation programs and efficiency practices are usually implemented for one of two reasons; first because they are perceived as being important, such as public education efforts, or because they have the potential to be very cost-effective at saving water, such as a water use device replacement program. Some level of analysis should be performed to determine the cost-effectiveness of a water conservation program before implementation.

Throughout Georgia, some conservation measure evaluations have been performed, but not on a large scale. In the 16-county Metropolitan North Georgia Water Planning District (MNGWPD), detailed characterization and analysis of water use was performed. Using this analysis, specific conservation programs were recommended that were cost effective and/or showed the most potential for water savings. Most municipal water suppliers in Georgia have water conservation plans, but the level of implementation is uncertain. A few other municipal water suppliers throughout the state have incorporated water conservation programs and the resultant savings into their long-term water supply planning.

This project will select communities in Georgia outside the MNGWPD in an attempt to characterize the diverse nature of municipal water use in Georgia, and identify some specific conservation measures that could be cost-effective, if implemented properly. This Technical Memorandum (TM) describes the analysis of the data collected from each of the communities. The general procedure will be presented, as well as a summary of the results.

Objectives of Analysis

The objectives of the analysis are to:

1. Characterize how the water is used by each community selected throughout Georgia.
2. Calculate average daily and monthly water use for each community (at a minimum, calculate gallons used per capita or per residential account per day).
3. Develop a consistent methodology for calculating water usage for communities around the state.

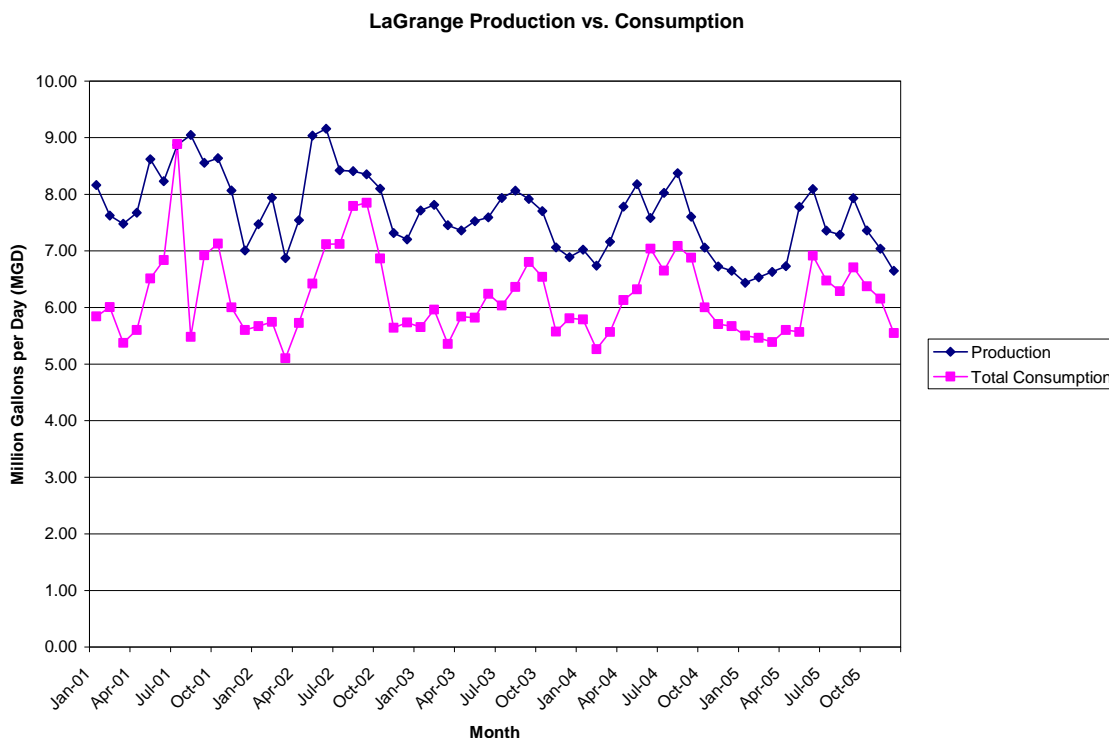
In order to do this, it is necessary to identify the total volumes of water used in each customer class within the water system, and then calculate the average volume of water used by each customer in that category. Monthly analysis of the use by each category can allow for the identification of seasonal trends, in order to calculate indoor and outdoor usages. For certain categories, further analysis can be performed. For example, for residential categories, water usage on a per person (or per capita) basis can be calculated. Another example is for certain non-residential categories. If the number of employees is known, the water usage per employee can be calculated; or if the product being produced is known, a water use per unit production can be calculated. Upon completion of the analysis, at a minimum, each community's residential gallons per person per day will be calculated in a similar manner and can be compared and contrasted; and water use in these representative Georgia communities can be characterized.

For this project, the analysis has a second purpose, the evaluation of water conservation measures. Each system's capacity for water savings is dependant on the end uses of water. Savings capacity can be calculated by determining a series of cost-effective water conservation measures and calculating the estimated savings potential of each measure individually and collectively. The capacity for savings is determined by the per account and per capita water use, as well as the percentage of the total overall water use for each water system. This procedure is discussed in TM 3 Water Conservation Analysis.

Procedures of Analysis

A general procedure can be followed to perform the analysis of the data collected from the water systems. However, usually some cleanup of the data is required, as well as a general understanding of the data. The first and simplest type of analysis to perform is an overall mass balance of the system. Using monthly data collected on pumping (into the distribution system), and meter sales (out of the distribution system), a mass balance can be performed. It is important to ensure that the units of volume are understood. Frequently used units for volume and flows are gallons, thousand gallons, million gallons, cubic feet (cf), and hundred cubic feet (ccf). The pumping and sales volumes must be converted into the same units before comparison. Figure 1 shows monthly pumping and sales values. This information can also be useful to determine if all the data have been collected, as well as to visually comprehend leakage and water loss in each water system.

FIGURE 1
 Production versus Consumption



Each water system uses different methods to categorize its accounts. For example, the City of LaGrange uses two categories for commercial accounts, Commercial-14 and Commercial-21. In this case, the division of account types is related to a billing issue, and not to the type of user. Therefore, these categories can be merged together for the purposes of analyzing the water use. Many water systems also have separate irrigation accounts, which are offered to water users so the customer does not pay sewer charges on the water for that account. However, because not all water systems offer irrigation meters to their customers, the irrigation accounts should be combined with their main water use category for the analysis. For example, residential irrigation accounts and water use should be combined with residential use accounts, and similarly for other categories.

Another practice of classifying customers is through the use of water meter sizes. For example, Pickens County Water Authority uses meter sizes to classify its customers. An initial analysis of the average usage per account in each meter size can help determine in which customer classification to put each meter size. For example, in Pickens County the annual average water use per account for a 3/4-inch meter is 154 gallons per account per day (gal/acct/day), and for a 1-inch meter use is 370 gal/acct/day. Therefore, 3/4-inch is assumed to be residential and 1-inch is assumed to be commercial. However, this is not as accurate as actually classifying the users by use type, and therefore the analysis results will not be as accurate. There may be additional ways identify the types of uses in each meter size. For example, Savannah has other codes attached to each customer for other utility billing purposes such as sewer or trash. In this case, these can help distinguish residential

and light commercial for the smaller meter sizes, as was the case in this analysis for Savannah. **It is recommended that each water system should classify its customers by use type.** For this analysis, the water system account types should be understood well enough to break the accounts into the categories listed in Table 1 if possible.

TABLE 1
 Customer Classifications
Water Use Types for Analysis

General Water Use Type	Customer Classification	Suggested Meter Size
Residential	Single-Family	½-inch, 5/8-inch, ¾-inch
	Multi-Family	Varies
Non-Residential	Commercial	1-inch, 2-inch, 3-inch
	Industrial	3-inch, 4-inch, 6-inch, 8-inch, 10-inch
	Institutional	Varies
Other	Wholesale	Varies

Notes: It is recommended to perform additional analysis of accounts classified by meter size to help establish water use type classification. Identification of Multi-Family, Institutional or Wholesale users from meter sizes is not apparent without further examination of individual accounts.

The evaluation of water conservation measures will typically focus on residential (single-family and multi-family) and CII (Commercial, Industrial, and Institutional). Evaluation of measures for additional categories (other and wholesale) will, more than likely, require information beyond customer classification, which usually is not available to water suppliers.

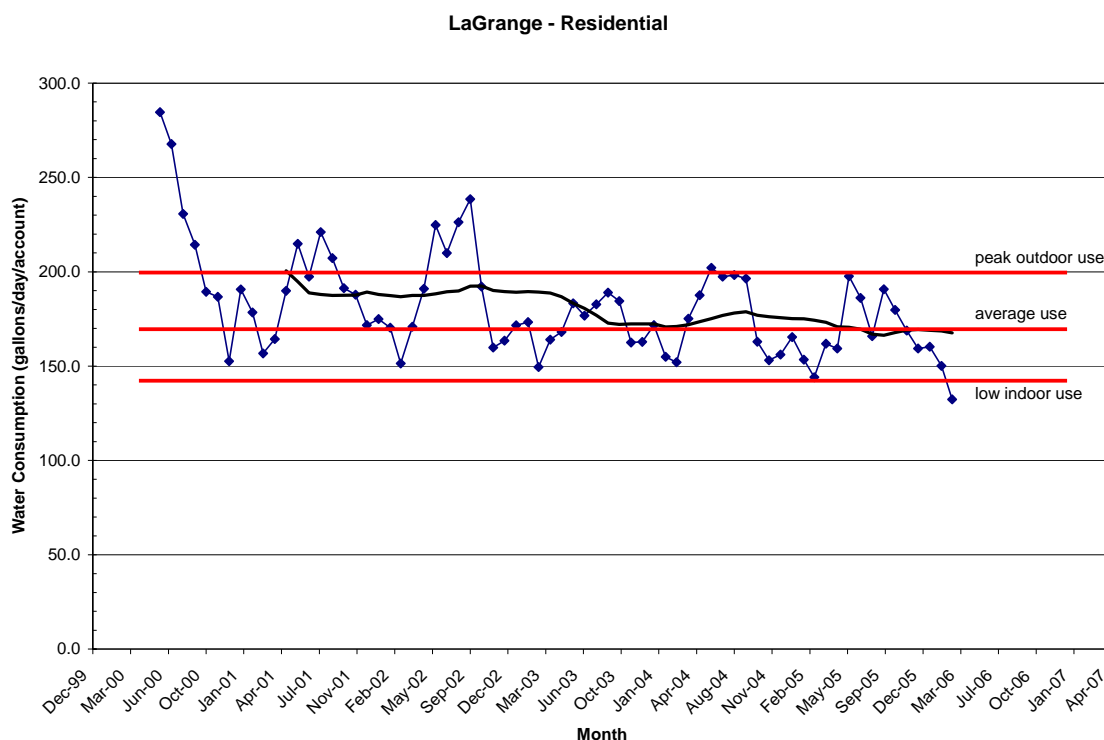
Using the categories listed in Table 1, Microsoft Excel can be used to analyze the data. The first critical indicator of water use is the average annual usage per account for each customer type. A worksheet containing monthly data for each customer type can be created using the number of accounts per month and the volume of usage in that category per month, calculated as gallons per account per day (gal/acct/day). Annual average gal/acct/day can also be calculated. An example of the spreadsheet and calculation in Excel is provided in Attachment A.

Some water suppliers may read their customers meters on a schedule other than monthly, and adjustments should be made to the data during analysis. For example, Savannah reads their meters on a bimonthly schedule. Therefore, the gal/acct should be divided by 2 before dividing by the number of days. Other billing practices include quarterly, and the data should be adjusted accordingly. However, monthly data provides more detailed information about water usage and provides more frequent feedback to the customer about their water use. **Therefore, it is recommended that each water system should read their customer meters and send bills on a monthly basis.**

Monthly values should be calculated to identify seasonal trends in water usage and help quantify outdoor water usage. Using the monthly gal/acct/day values, seasonal trends and

outdoor water use can be detected. A graph should be generated for each customer category showing monthly average gal/acct/day for the period of record. Using this graph, average values can be selected for the entire data set, or simply the most recent years. Also, peak outdoor use in the summer and low use in the winter can be demonstrated. Further, long-term trends become more obvious in this type of graphic, such as decreasing or increasing account use. Figure 2 shows an example of this analysis.

FIGURE 2
 Monthly Average Account Water Use
Identify Seasonal and Long-Term Trends



Per capita (person) usage, both total and residential, can be determined in several ways. For this calculation, it is necessary to determine the population served. This can sometimes be difficult, but several methods are available to calculate this factor. For this analysis, the population served was determined using the number of residential accounts and the average household size from the latest Census (2000). By multiplying the number of accounts by the household size, a population served can be determined. Using this population, the per capita usage based on amount of water pumped, used by all users and only by residential accounts, can be calculated. This value is usually referred to as gallons per capita per day (g/c/d). Many national leaders in conservation analysis suggest that the most effective measure of a community's efficiency is calculating the residential gallons per capita per day (res g/c/d) Table 2 shows how to calculate each of these values.

TABLE 2
 Per Capita Water Use Calculation

Type of Per Capita Use	Calculation	Units	Considerations
Overall per capita (based on withdrawal)	(water withdrawal per day) ÷ (total population)	G/c/d Overall based on withdrawal	Includes non-revenue water, and all customers (residential, commercial, industrial, etc.)
Overall per capita (for all users)	(total water sales per day) ÷ (total population)	G/c/d Overall	Includes all customers (residential, commercial, industrial, etc.)
Residential per capita	(residential water sales per day) ÷ (total population)	G/c/d Residential	Includes residential customers only

Note: Depending on data availability, not all of these types of per capita usages can always be calculated. Total population was calculated by multiplying the number of residential accounts by the household size from the latest Census (2000)

Another way to characterize water use within a water system’s customer base is to identify the major portion of the water use. This can be shown with a pie chart. In order to create a consistent profile, and not include yearly variations, the data should be analyzed in on an annual basis, as well as over a period of several years. Figure 3 shows a pie chart of the water use displayed for a single year.

FIGURE 3
 Water Use Pie Chart
 Annual Data Used for Analysis

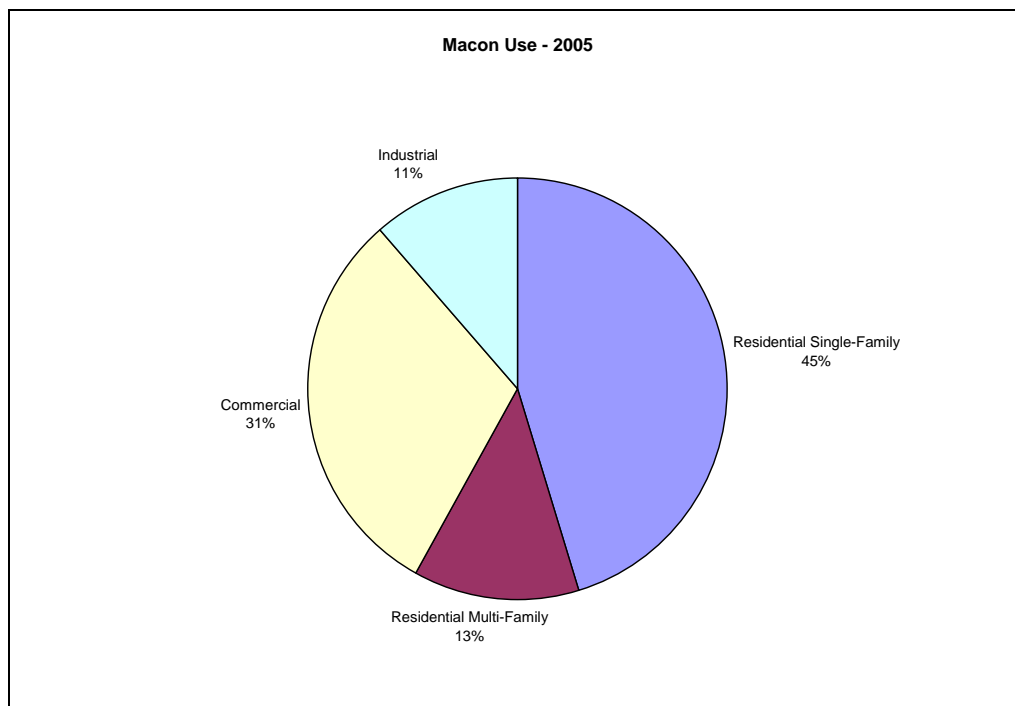
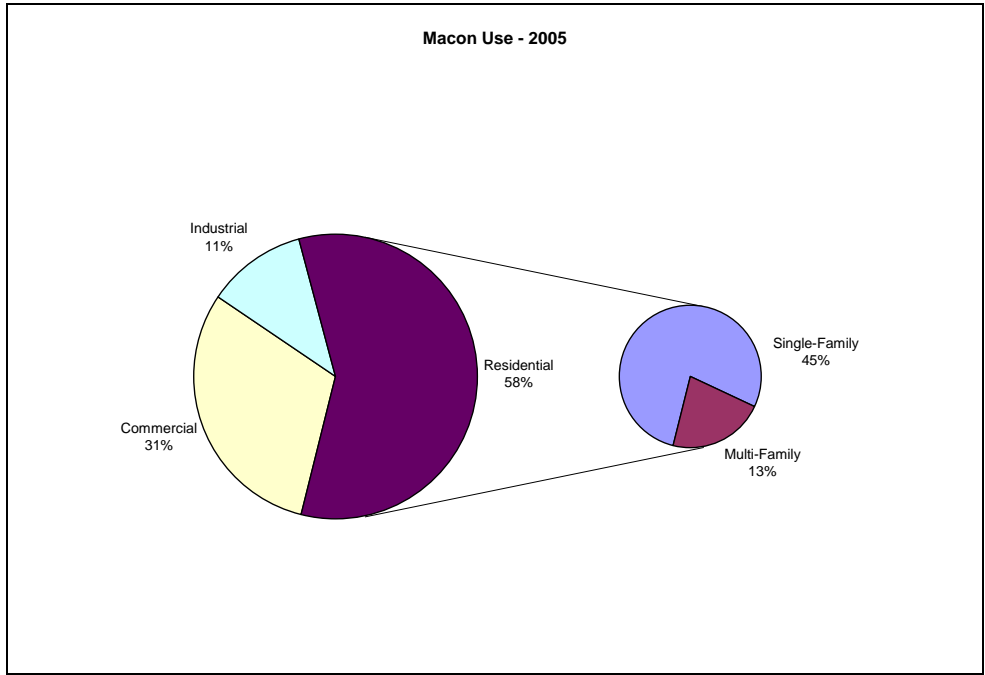


Figure 4 shows an additional way to show the analysis, by combining Single-Family and Multi-Family into one Residential category.

FIGURE 4
Water Use Pie Chart
Combining Residential Categories



Additionally, the change over time of the water use for a water system can be shown through the use of bar charts, as shown on Figure 5. These differences may be minimal from year to year, but can help to indicate overall trends in water use that may be occurring within the community.

FIGURE 5
 Annual Water Use Bar Chart

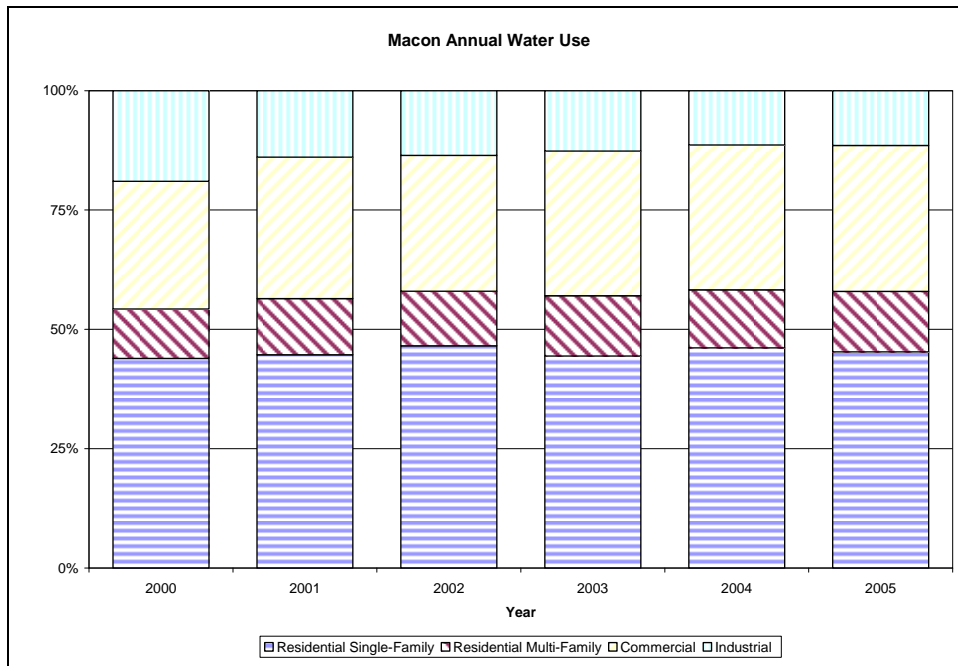


Figure 5 shows several trends, based on annual data. First, Industrial use, as a percentage of the total use, has decreased from 2000 to 2005. It also appears that commercial use has been the fastest growing sector from 2000 to 2005. Residential use has stayed fairly constant, only slightly increasing from 2000 to 2005, while maintaining the majority of the use between single and multi-family, at around 55 percent.

Monthly data can only be valuable in understanding how the major user may shift seasonally. This can be valuable in targeting conservation measures to groups in months when peak usage is highest. Figure 6 shows a bar chart with the monthly variation in water use to detect seasonal changes.

FIGURE 6
 Monthly Water Use
 Bar Chart

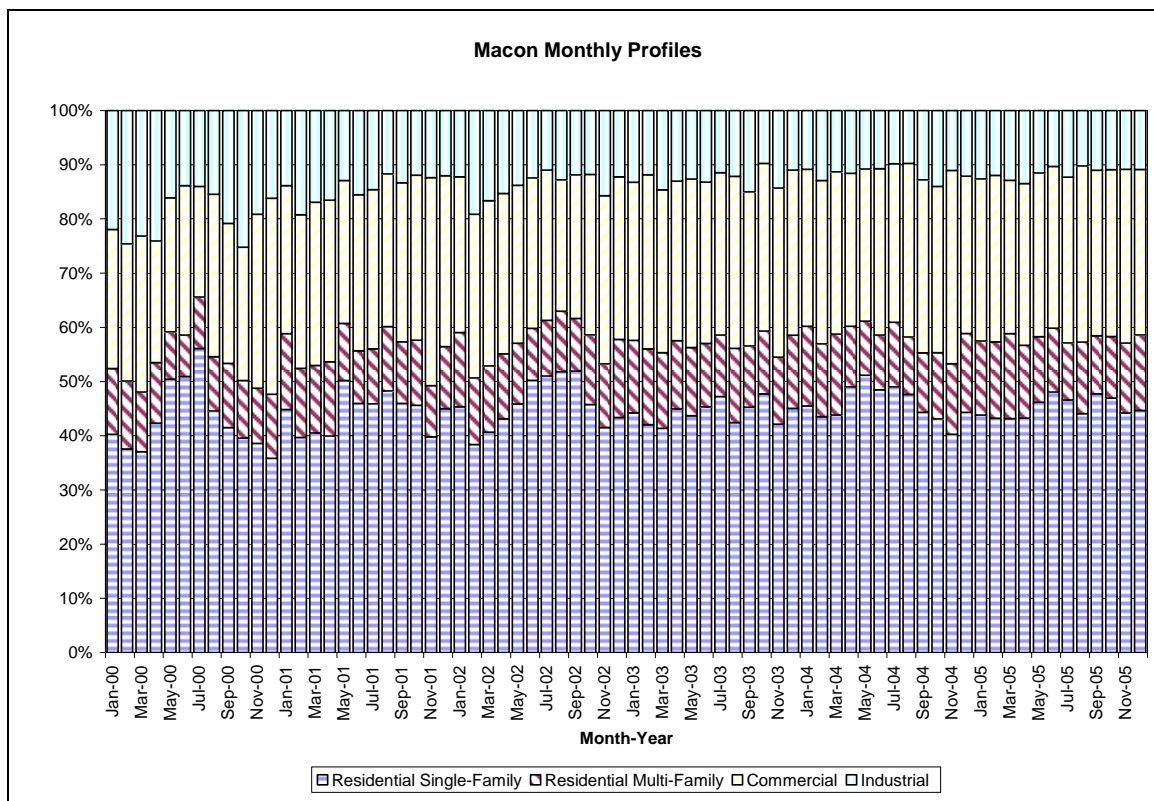


Figure 6 shows some interesting trends based on monthly data. First, in 2003 through 2005, while the percentage of residential use increases in the summer months, it is not significantly different from the winter months. This indicates that perhaps all the uses increase throughout the year, in a proportional manner. Further analysis is needed to determine if that is the case, such as shown on Figure 2. Also, the reduction of the industrial use seems more pronounced than in the annual data shown on Figure 5.

The use of charts such as Figures 5, 6, and 7 can be useful in identifying the major water use type for a water system, as well as any trends that may be occurring. These figures can also be valuable tools for comparing different water systems.

The procedures shown above can be performed on data from the water system and duplicated easily for all systems.

It should be noted that analysis of a water systems data may bring unexpected or unusual results. There are several possibilities for this, which emphasizes the need for adequate review of the analysis for QA/QC purposes. Some causes of unusual results may include incorrect units, incomplete data sets resulting in data gaps, duplicate data sets resulting in double counting, or simply a misunderstanding of the data being requested. In these cases, discussions with water system personnel should take place to help identify the reason for the results.

Summary of Analysis

Summary sheets were created for each water system being analyzed. These summaries are in Attachment B. Each summary includes some statistics of the water system, and a summary of the analysis. The charts created to perform the analysis are also included in the summary of each water system.

Comparison of the water use for each water system can be valuable to classify the diversity of water use. These include statistics about the major water use type, the residential per capita use, and the outdoor use or peak usage compared to the average use. Table 3 shows a comparison of the water use types for each of the water systems in this study.

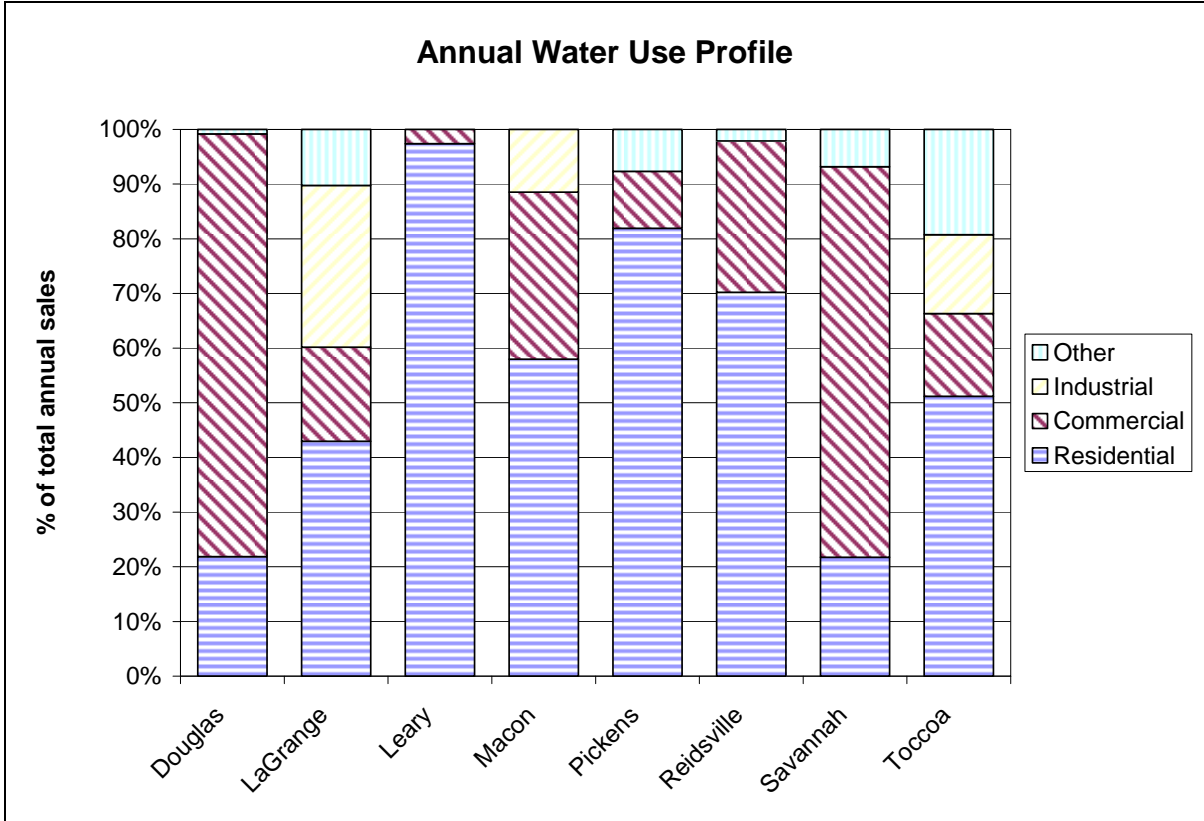
TABLE 3
 Water System Annual Water Use Profiles
Percentage of total sales

Water System	Residential	Commercial	Industrial	Other
Douglas	22%	77%	-	1%
LaGrange	43%	17%	30%	10%
Leary	97%	3%	-	-
Macon	58%	31%	11%	-
Pickens	82%	10%	-	8%
Reidsville	70%	28%	-	2%
Savannah	22%	71%	-	7%
Toccoa	51%	15%	14%	19%

Note: 2005 billing data was used except for Reidsville, for which 2004 was used due to bad data.
 Savannah commercial and industrial categories were combined for this analysis.
 Savannah data only includes the residential customers that could be identified by City codes, and not all were identified.

By comparing the percentages in Table 3, it can be observed that the major water use varies by water provider. For example, residential use is more than 70 percent for Leary, Pickens and Reidsville, so these systems could be classified as primarily residential water suppliers. Conversely, Douglas and Savannah have 77 and 71 percent of their water use in the Commercial and Industrial category. Other water systems have a split between residential, commercial, and industrial categories, with residential being the largest, such as LaGrange, Macon, and Toccoa. Another way to view Table 3 is shown on Figure 7.

CHART 7
 Annual Water Use Profiles for Water Systems
 Data from Table 3



Next, the per capita uses should be compared. Table 4 shows the residential per capita water use for each water system.

TABLE 4
 Water System Residential Water Use
Annual Average Usage

Water System	Residential Consumption (gal/person/day)	Residential Consumption (gal/acct/day)	2000 Census Average Household Size (people per household)
Douglas	78	200	2.57
LaGrange	68	170	2.5
Leary	65	170	2.6
Macon	88	220	2.49
Pickens	60	152	2.54
Reidsville	68	160	2.37
Savannah	85	211	2.49
Toccoa	63	145	2.29

Notes: Values are based on 2005 usage, except for Reidsville for which 2004 was used due to bad data.
 See Appendix B for charts from which gal/acct/day values were verified.
 Per capita use is calculated by dividing the gal/acct/day by the 2000 census household size for that water system (Appendix B).
 Savannah data only includes the residential customers that could be identified by City codes, and not all were identified.

Table 4 shows that the water systems with the highest water use per account (and per capita) are Douglas and Macon. One possible reason for this is that these water systems offer irrigation accounts to their residential customers. (Toccoa has an irrigation category listed but only has 2 residential irrigation customers.) This could cause the annual average water use for the residential category to increase. Table 5 shows the range of residential per capita water use within one year. The use in the summer months increases to much higher levels in Douglas and Macon than the other water systems.

TABLE 5
 Water System Residential Water Use Variation (gallons/person/day)

Water System	Minimum Use (Winter)	Average Use	Maximum Use (Summer)
Douglas	66	78	105
LaGrange	57	68	80
Leary	54	65	77
Macon	72	88	118
Pickens	46	60	77
Reidsville	59	68	77
Savannah	73	85	98
Toccoa	52	63	74

Notes: Values are based on 2005 usage, except for Reidsville for which 2004 was used due to bad data. See Appendix B for charts from which gal/acct/day values were verified. Per capita use is calculated by dividing the gal/acct/day by the 2000 census household size for that water system (Appendix B). Savannah data only includes the residential customers that could be identified by City codes, and not all were identified.

The age of the housing stock in the water system service area is another factor that can affect water use variations. Those water systems with primarily older homes would tend to have water using appliances and fixtures that use more water than newer homes, based on plumbing code changes. However, there is an indication that many newer homes actually use more water than older homes, and currently a study is underway to investigate this phenomenon (http://www.aquacraft.com/Projects/EPA_efficiency_2006/).

Average commercial account water use is typically higher than residential account water use. For the water systems studied, commercial account use is between 100 to 2,800 gallons per account per day. However, water systems may classify customers differently, and these values should only be compared to identify the different types of commercial customers in each water system – not the efficiency of the water use. For example, some water systems differentiate between commercial and industrial, while other water systems may only use commercial for all of their non-residential customers.

Attachment A
Calculations Example

**Leary
Billing Data Analysis**

Month	Days	gallons	gallons		# of customers		gal/day/acct		gallons	mgd	mgd
		Treated Water Pumped	Residential	Commercial	Residential	Commercial	Residential	Commercial	Total Consumption	consumption	pumped
Jan-04	31	2,313,000	1,343,020	22,730	235	13	184.4	56.4	1,365,750	0.04	0.07
Feb-04	29	2,061,000	1,411,900	44,560	238	11	204.6	139.7	1,456,460	0.05	0.07
Mar-04	31	2,321,500	1,133,400	28,210	238	11	153.6	82.7	1,161,610	0.04	0.07
Apr-04	30	2,436,500	1,015,010	29,860	237	10	142.8	99.5	1,044,870	0.03	0.08
May-04	31	2,434,000	1,491,297	20,940	238	10	202.1	67.5	1,512,237	0.05	0.08
Jun-04	30	2,290,000	1,451,303	38,970	238	10	203.3	129.9	1,490,273	0.05	0.08
Jul-04	31	2,667,000	900,950	42,180	239	10	121.6	136.1	943,130	0.03	0.09
Aug-04	31	2,592,000	1,935,570	28,330	239	10	261.2	91.4	1,963,900	0.06	0.08
Sep-04	30	2,329,000	1,494,570	44,280	238	11	209.3	134.2	1,538,850	0.05	0.08
Oct-04	31	2,397,000	1,375,720	78,620	238	11	186.5	230.6	1,454,340	0.05	0.08
Nov-04	30	2,169,000	966,250	88,930	232	11	138.8	269.5	1,055,180	0.04	0.07
Dec-04	31	2,328,500	1,065,100	89,640	234	11	146.8	262.9	1,154,740	0.04	0.08
Jan-05	31	2,424,000	1,158,030	26,960	230	11	162.4	79.1	1,184,990	0.04	0.08
Feb-05	28	2,319,000	1,250,470	34,210	229	11	195.0	111.1	1,284,680	0.05	0.08
Mar-05	31	2,313,000	1,000,219	22,700	228	11	141.5	66.6	1,022,919	0.03	0.07
Apr-05	30	2,297,000	988,470	23,640	229	11	143.9	71.6	1,012,110	0.03	0.08
May-05	31	2,708,000	1,214,510	25,820	231	11	169.6	75.7	1,240,330	0.04	0.09
Jun-05	30	2,563,000	1,112,490	28,460	234	11	158.5	86.2	1,140,950	0.04	0.09
Jul-05	31	2,413,000	1,183,560	33,830	234	11	163.2	99.2	1,217,390	0.04	0.08
Aug-05	31	2,526,000	1,444,710	28,350	233	11	200.0	83.1	1,473,060	0.05	0.08
Sep-05	30	2,588,000	1,096,860	37,310	234	11	156.2	113.1	1,134,170	0.04	0.09
Oct-05	31	2,661,000	1,395,430	40,570	234	11	192.4	119.0	1,436,000	0.05	0.09
Nov-05	30	2,307,000	1,099,960	52,840	234	11	156.7	160.1	1,152,800	0.04	0.08
Dec-05	31	2,428,500	1,190,630	26,960	234	11	164.1	79.1	1,217,590	0.04	0.08
Jan-06	31	2,131,451	1,134,540	20,790	226	11	161.9	61.0	1,155,330	0.04	0.07
Feb-06	28	2,431,700	1,143,130	27,520	231	11	176.7	89.4	1,170,650	0.04	0.09
Mar-06	31		1,251,600	37,890	224	11	180.2	111.1	1,289,490	0.04	-

Year	Days	gallons	gallons		Residential	Commercial
			Residential	Commercial		
2004	366	28338500	15,584,090	557,250	97%	3%
2005	365	29547500	14,135,339	381,650	97%	3%
2004-2005	731		29719429	938900	97%	3%

gallons	MGD	MGD
Consumption	Consumpti	Production
16141340	0.044102	0.077428
14516989	0.039773	0.080952

Attachment B
Water System Analysis Summaries

Water System Name:	Douglas
County:	Coffee
Basin	Suwanee
Water Source Type:	Ground
SDWIS Population Served	13,902
2000 Census Average Household Size:	2.57
2005 Average Annual Production:	4.04 MGD
2005 Average Annual Consumption (Sales):	4.01 MGD
% Non Revenue Water:	1%

Residential

2005 Residential Accounts:	3,994
Residential Served Population:	10,265
Per capita Residential Consumption:	78 gal/person/day
Average Residential Consumption:	200 gal/acct/day
Indoor %:	85%
Outdoor % of Average:	15%
Outdoor Peak:	270 gal/acct/day

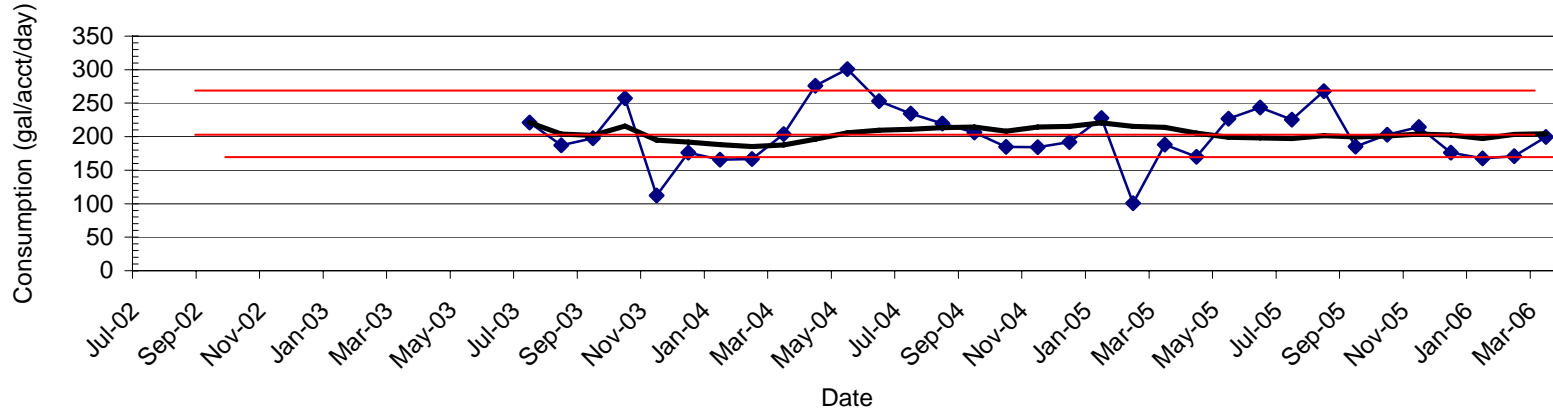
Commercial

2005 Commercial Accounts:	1,129
Average Commercial Consumption:	2800 gal/acct/day
Indoor %:	88%
Outdoor %:	12%
Outdoor Peak:	3200 gal/acct/day

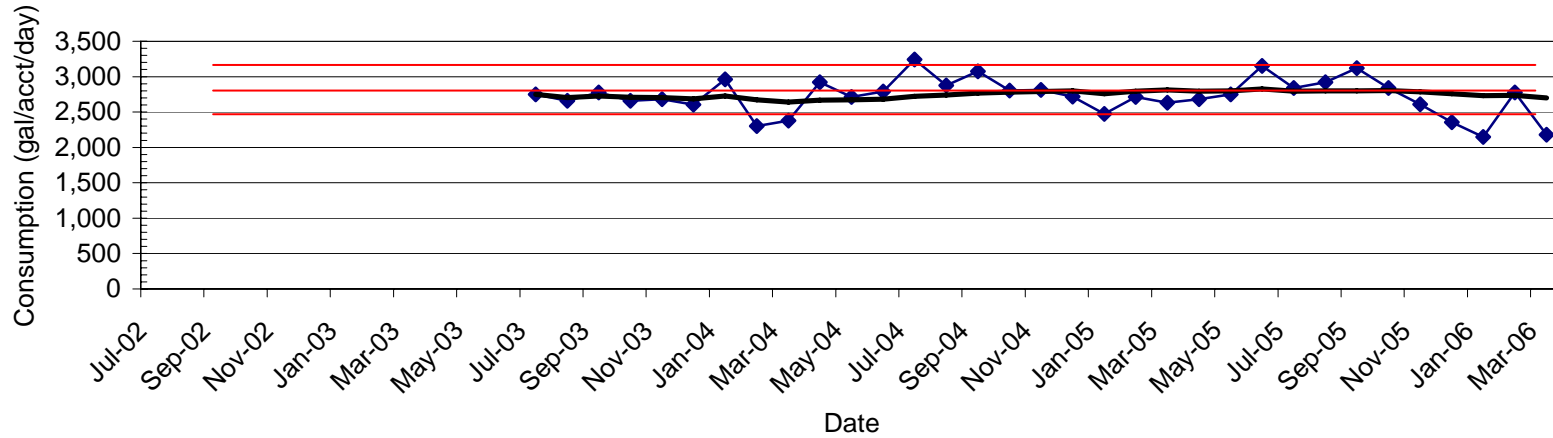
2000 Census Structure Age

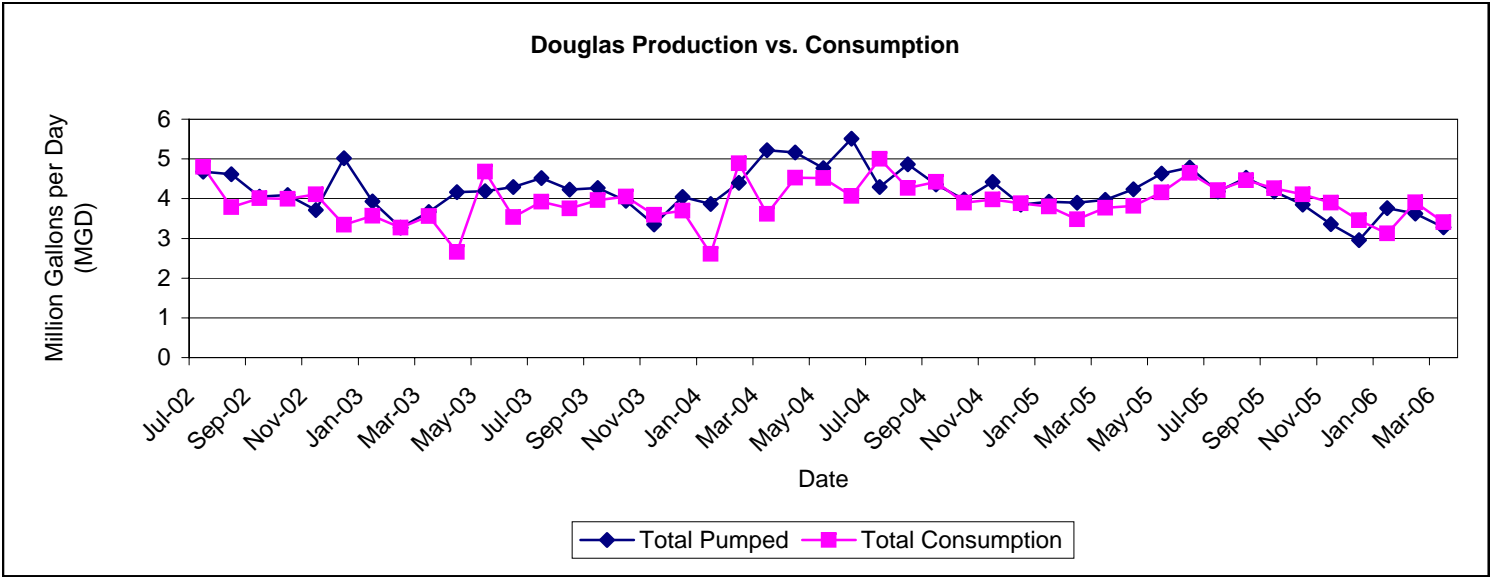
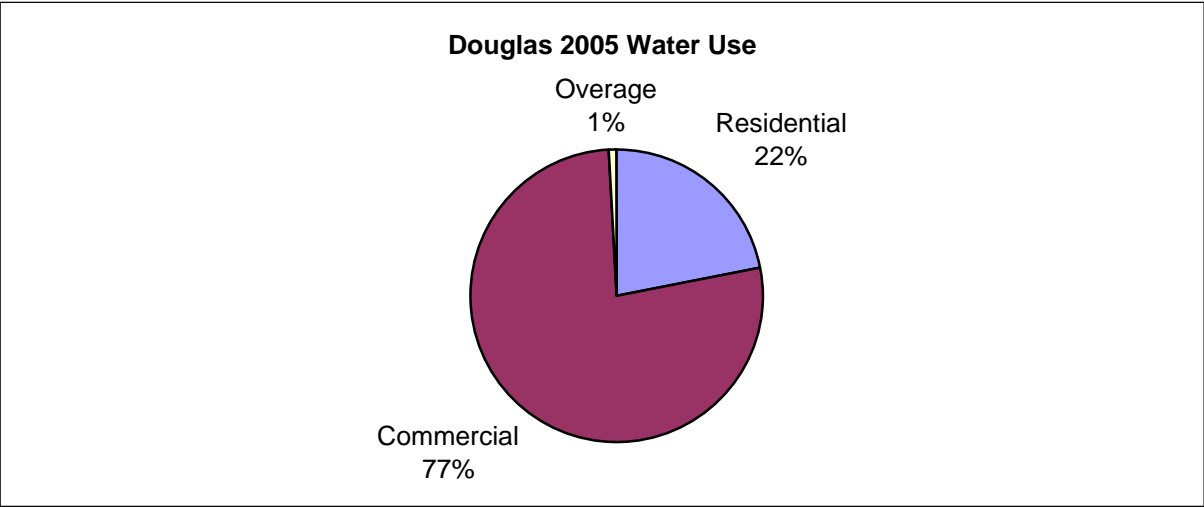
1990 to Present	16.2%
1980 to 1990	25.1%
Prior to 1980	58.7%

Douglas - Residential Water Use



Douglas - Commercial Water Use





Water System Name:	LaGrange
County:	Troup
Basin	Chattahoochee
Water Source Type:	Surface
SDWIS Population Served:	41,852
2000 Census Average Household Size:	2.5
2005 Average Annual Production:	7.15 MGD
2005 Average Annual Consumption (Sales):	6.00 MGD
% Non Revenue Water:	16%

Residential

2005 Residential Accounts:	15,266
Residential Served Population:	38,165
Per capita Residential Consumption:	68 gal/person/day
Average Residential Consumption:	170 gal/acct/day
Indoor %:	84%
Outdoor % of Average:	16%
Outdoor Peak:	200 gal/acct/day

Commercial

2005 Commercial Accounts:	1,678
Average Commercial Consumption:	605 gal/acct/day
Indoor %:	86%
Outdoor %:	14%
Outdoor Peak:	720 gal/acct/day

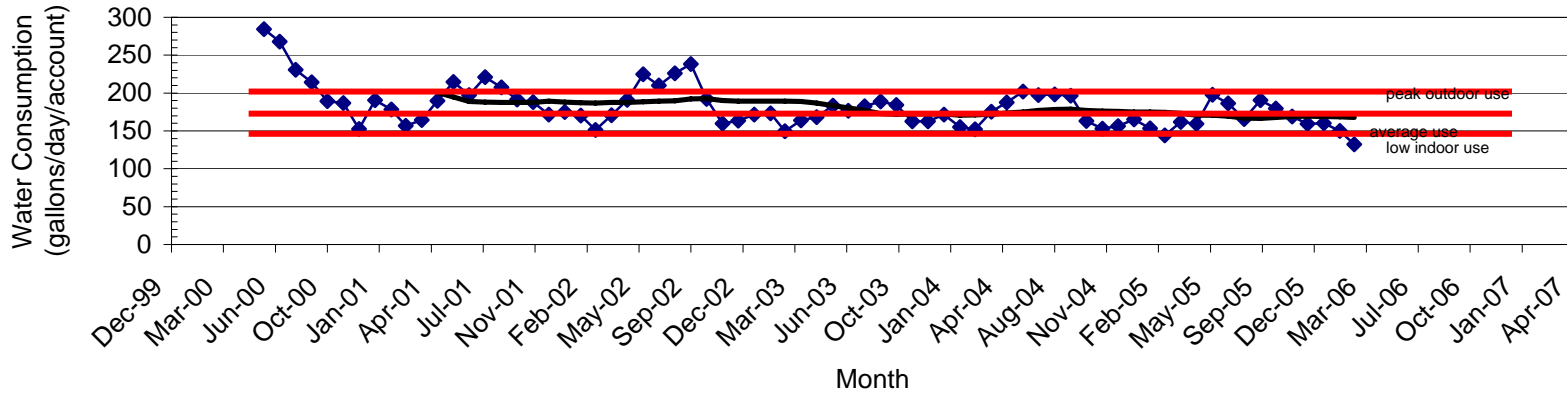
Industrial

2005 Industrial Accounts:	143
Average Industrial Consumption:	13,000 gal/acct/day
Indoor %:	82%
Outdoor %:	18%
Outdoor Peak:	14,400 gal/acct/day

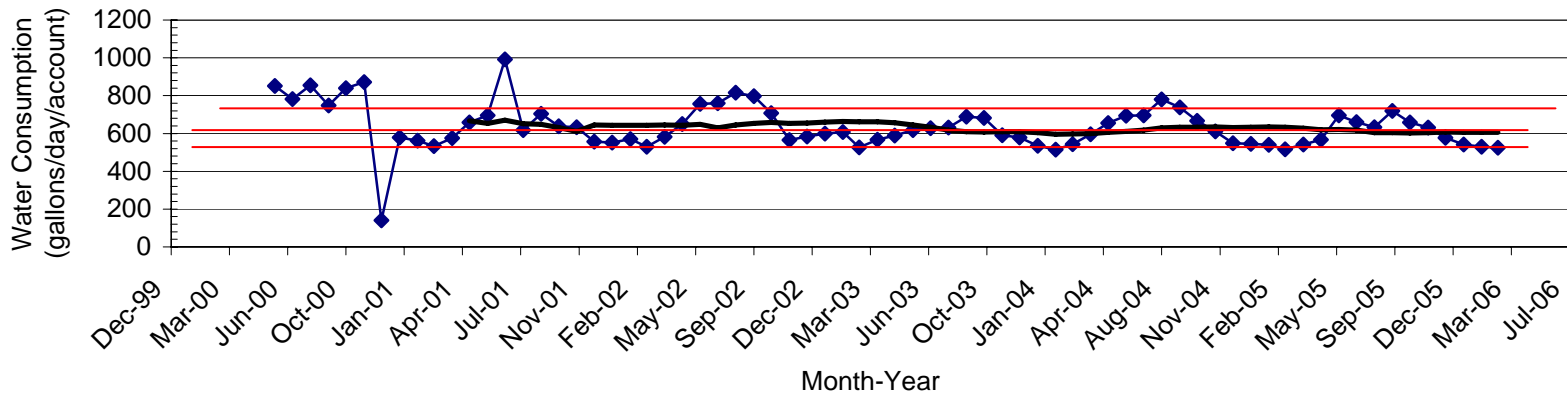
2000 Census Structure Age

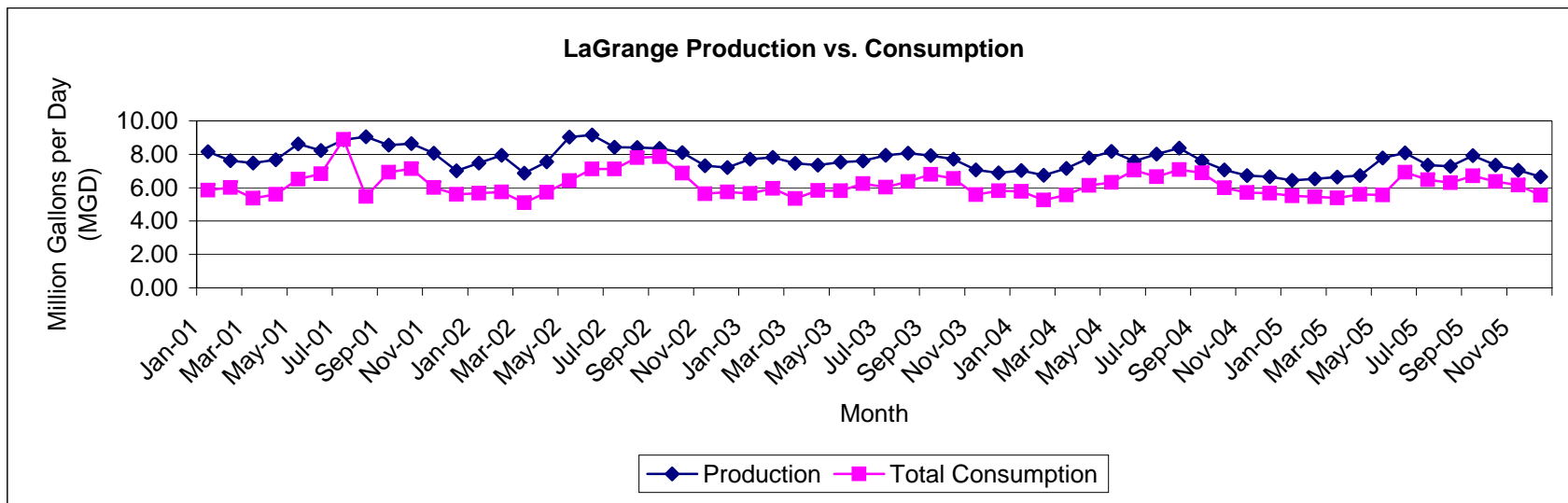
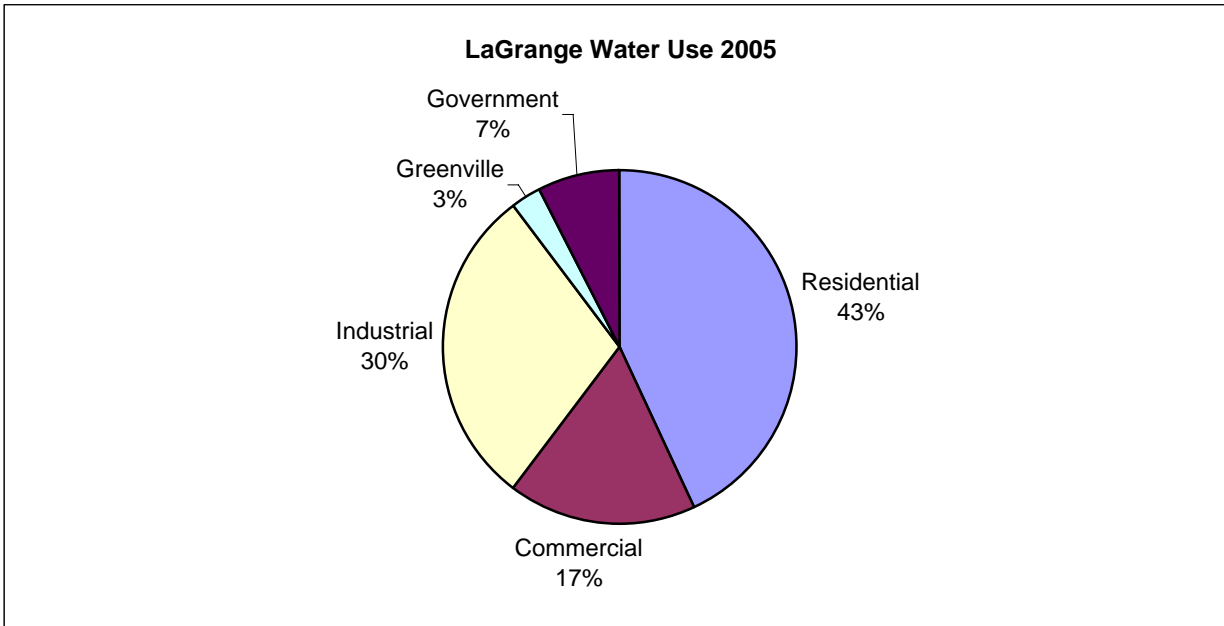
1990 to Present	11.5%
1980 to 1990	17.8%
Prior to 1980	70.6%

LaGrange - Residential



LaGrange - Commercial





Water System Name:	Leary
County:	Calhoun
Basin	Flint
Water Source Type:	Ground
SDWIS Population Served	750
2000 Census Average Household Size:	2.6
2005 Average Annual Production:	0.08 MGD
2005 Average Annual Consumption (Sales):	0.04 MGD
% Non Revenue Water:	51%

Residential

2005 Residential Accounts:	234
Residential Served Population:	608
Per capita Residential Consumption:	65 gal/person/day
Average Residential Consumption:	170 gal/acct/day
Indoor %:	82%
Outdoor % of Average:	18%
Outdoor Peak:	200 gal/acct/day

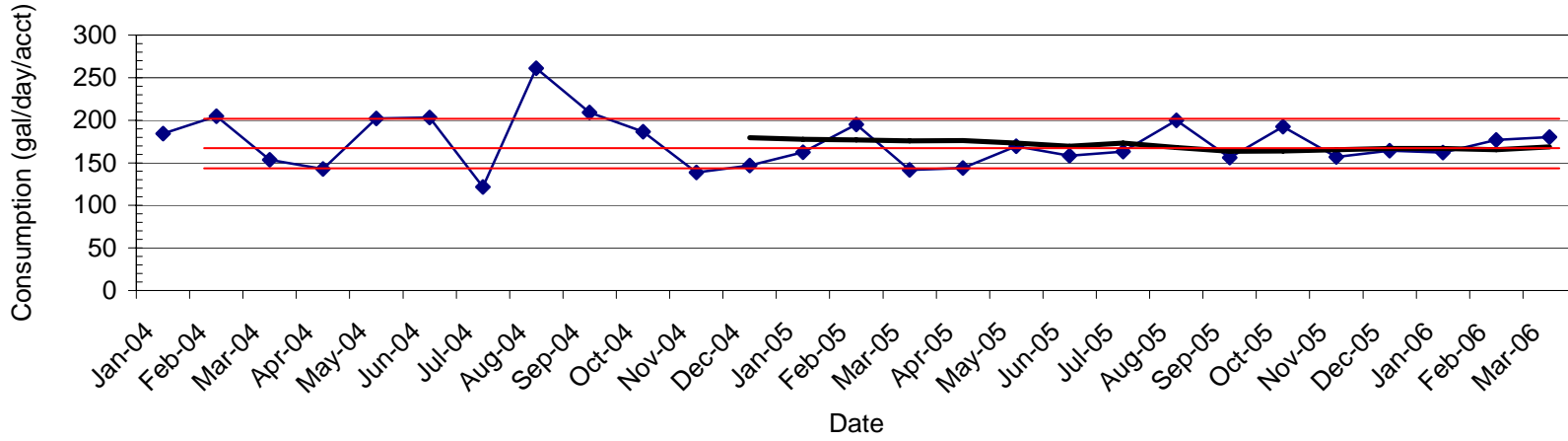
Commercial

2005 Commercial Accounts:	11
Average Commercial Consumption:	100 gal/acct/day
Indoor %:	68%
Outdoor %:	32%
Outdoor Peak:	160 gal/acct/day

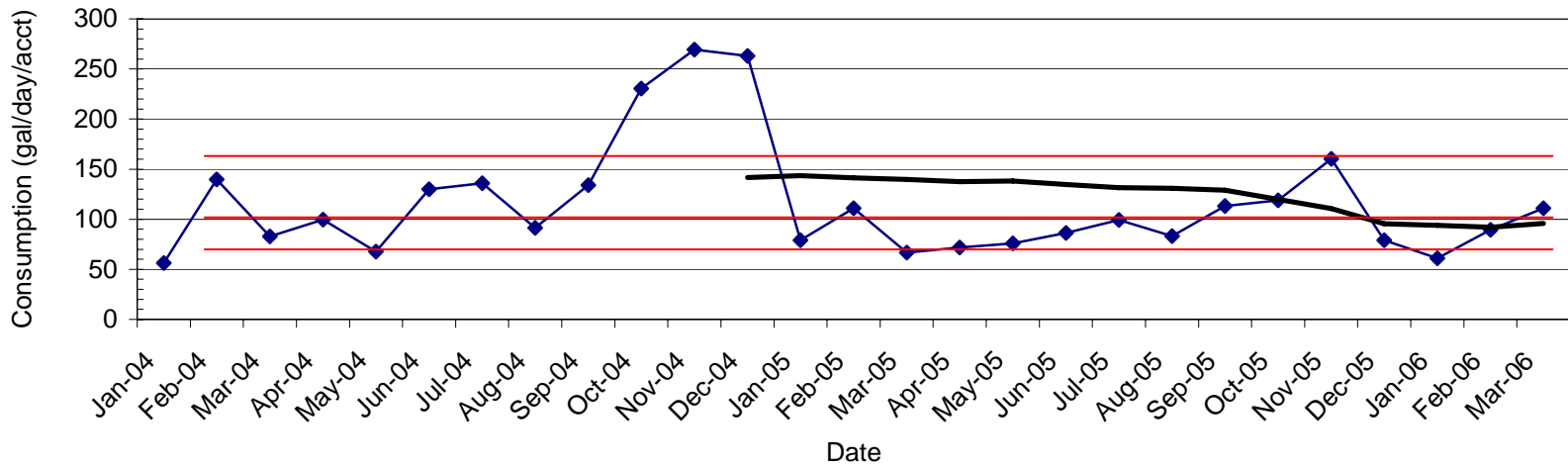
2000 Census Structure Age

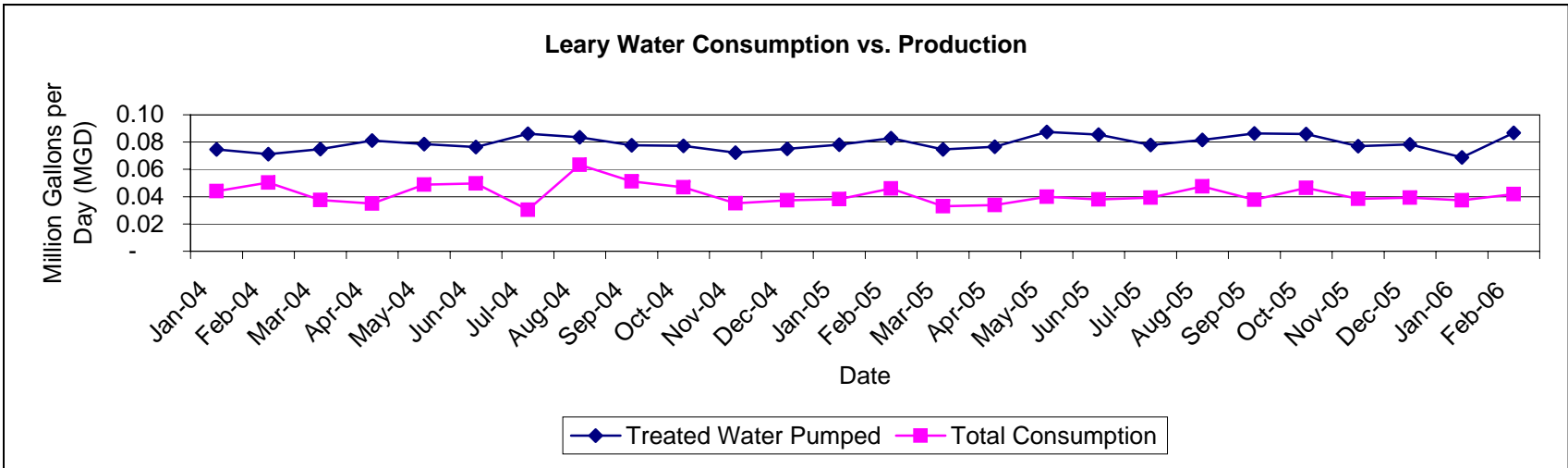
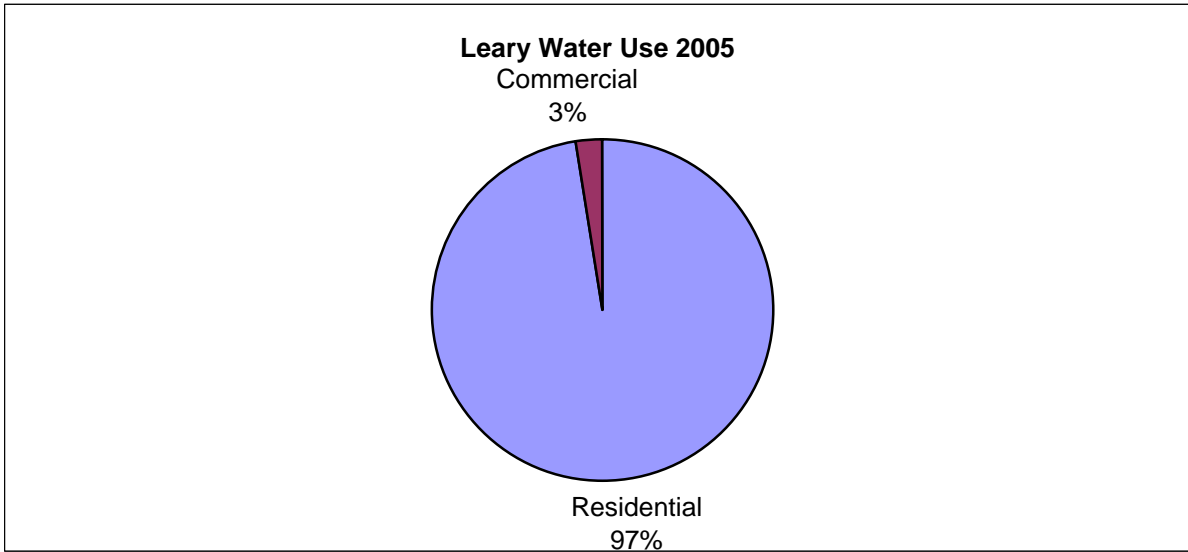
1990 to Present	23.6%
1980 to 1990	14.6%
Prior to 1980	61.8%

Leary - Residential



Leary - Commercial





Water System Name:	Macon
County:	Bibb
Basin	Ocmulgee
Water Source Type:	Surface
SDWIS Population Served	128,378
2000 Census Average Household Size:	2.49
2005 Average Annual Production:	26.89 MGD
2005 Average Annual Consumption (Sales):	22.87 MGD
% Non Revenue Water:	15%

Residential Single Family (SF)

2005 Residential SF Accounts:	44,690
Residential SF Served Population:	111,278
Per capita Residential SF Consumption:	88 gal/person/day
Average Residential SF Consumption:	220 gal/acct/day
Indoor %:	82%
Outdoor % of Average:	18%
Outdoor Peak:	295 gal/acct/day

Commercial

2005 Commercial Accounts:	4,612
Average Commercial Consumption:	1460 gal/acct/day
Indoor %:	75%
Outdoor %:	25%
Outdoor Peak:	2100 gal/acct/day

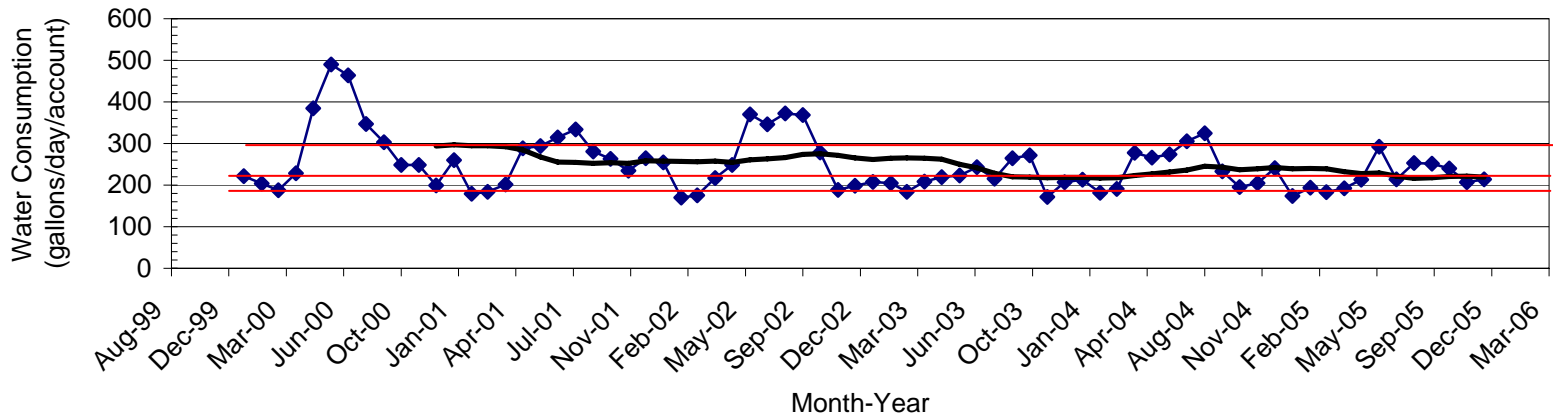
Industrial

2005 Industrial Accounts:	53
Average Industrial Consumption:	51,000 gal/acct/day
Indoor %:	88%
Outdoor %:	12%
Outdoor Peak:	68,000 gal/acct/day

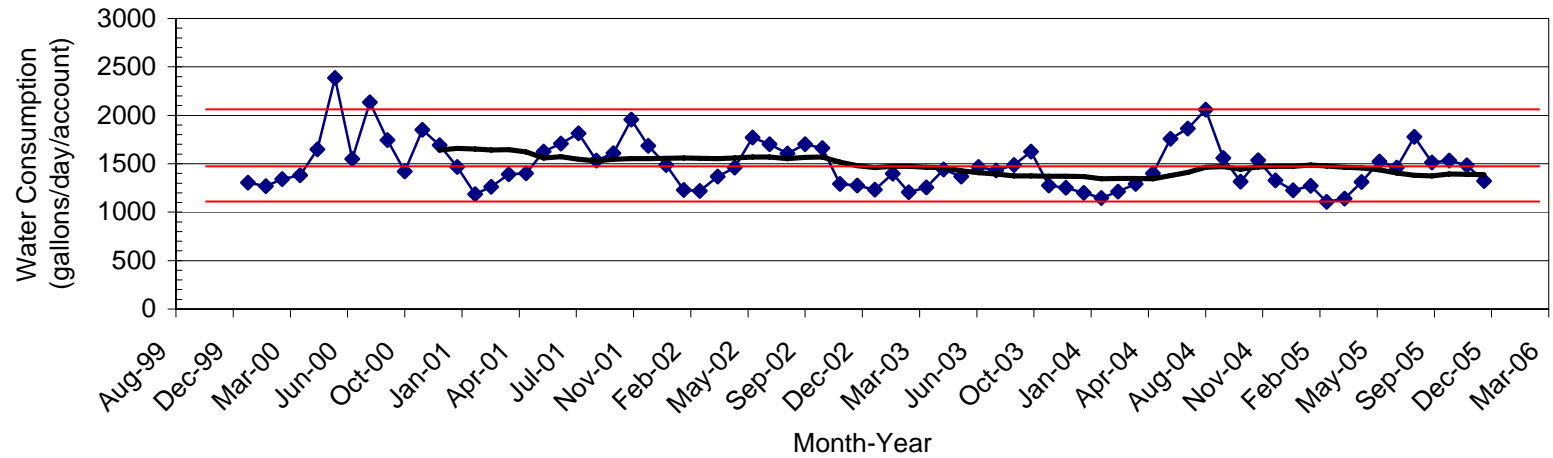
2000 Census Structure Age

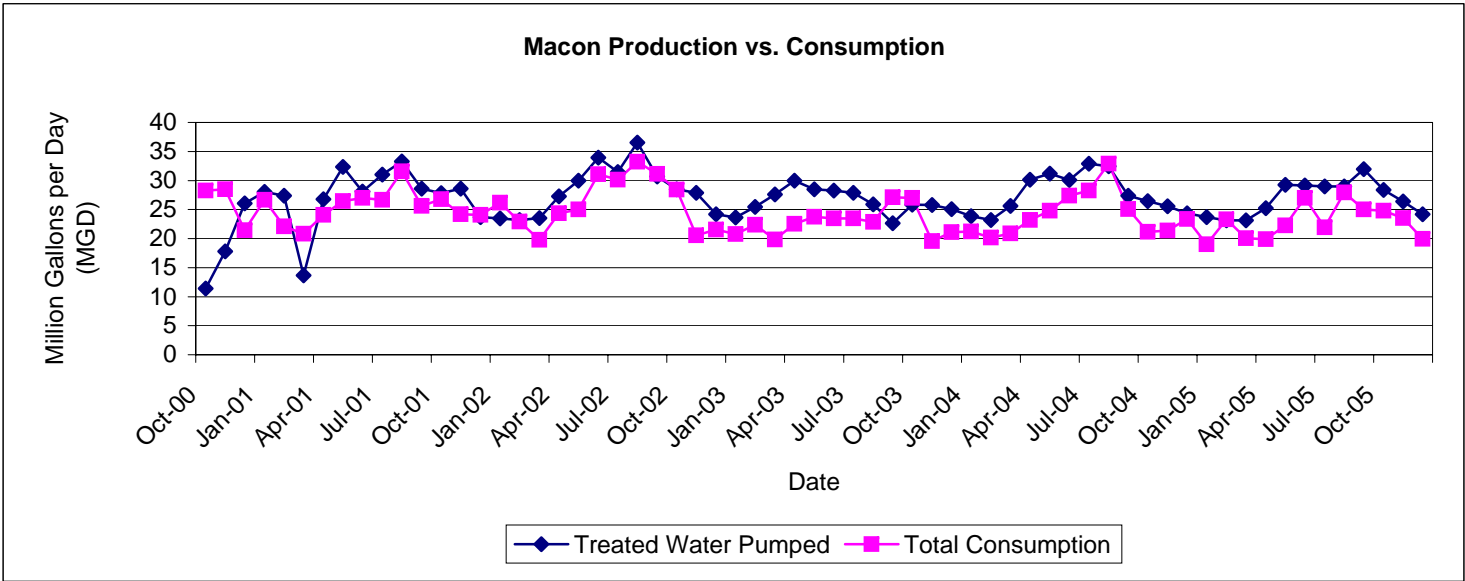
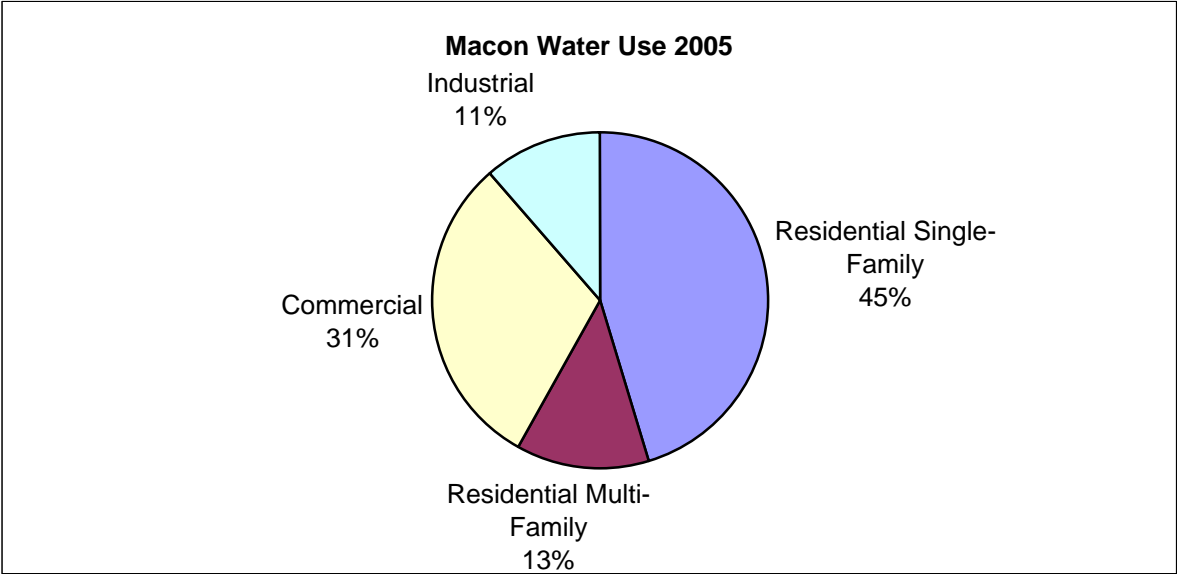
1990 to Present	15.4%
1980 to 1990	15.5%
Prior to 1980	69.2%

Macon - Residential Single-Family



Macon - Commercial





Water System Name:	Pickens County Water Authority
County:	Pickens
Basin	Coosa
Water Source Type:	Ground and Purchased Surface
SDWIS Population Served	3,744
2000 Census Average Household Size:	2.54

2005 Average Annual Production (and Purchases):	0.55 MGD
2005 Average Annual Consumption (Sales):	0.34 MGD
% Non Revenue Water:	38%

Residential

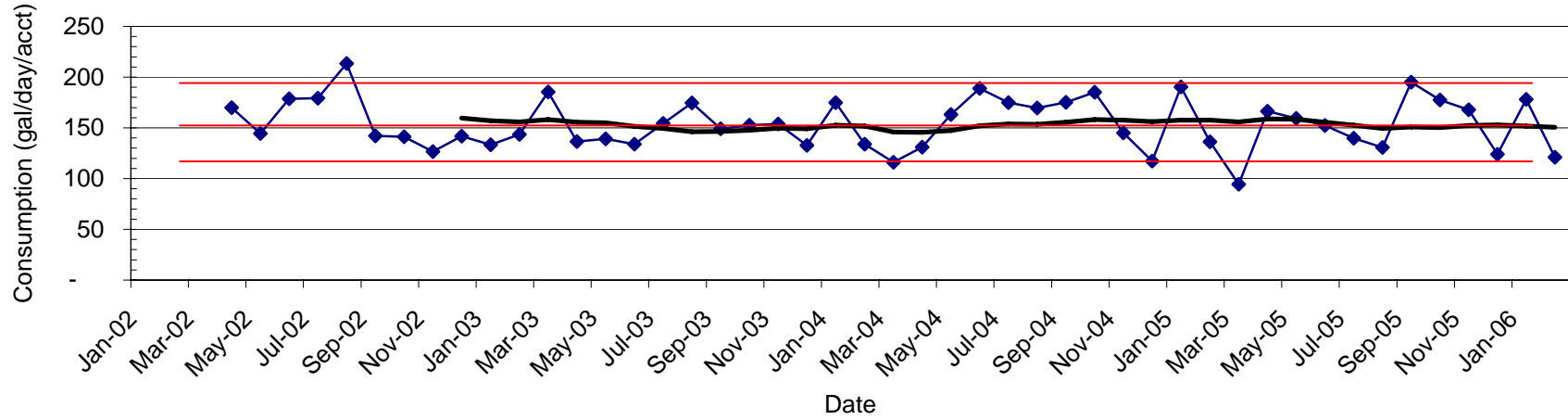
2005 Residential Accounts:	1,984
Residential Served Population:	5,039
Per capita Residential Consumption:	60 gal/person/day
Average Residential Consumption:	152 gal/acct/day
Indoor %:	77%
Outdoor % of Average:	23%
Outdoor Peak:	195 gal/acct/day

Commercial

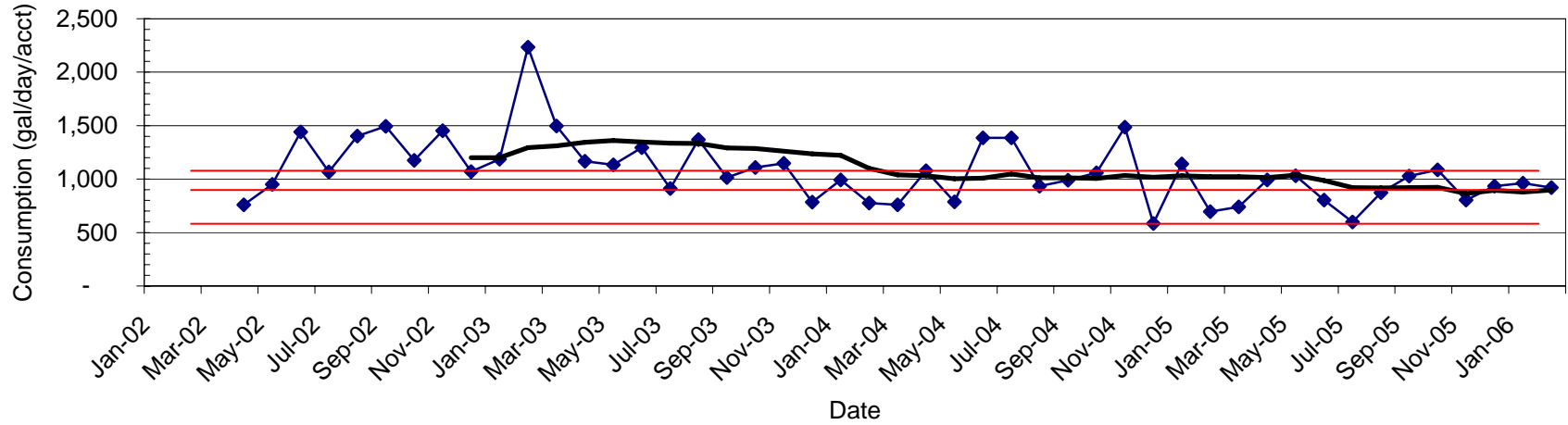
2005 Commercial Accounts:	45
Average Commercial Consumption:	900 gal/acct/day
Indoor %:	67%
Outdoor %:	33%
Outdoor Peak:	1,100 gal/acct/day

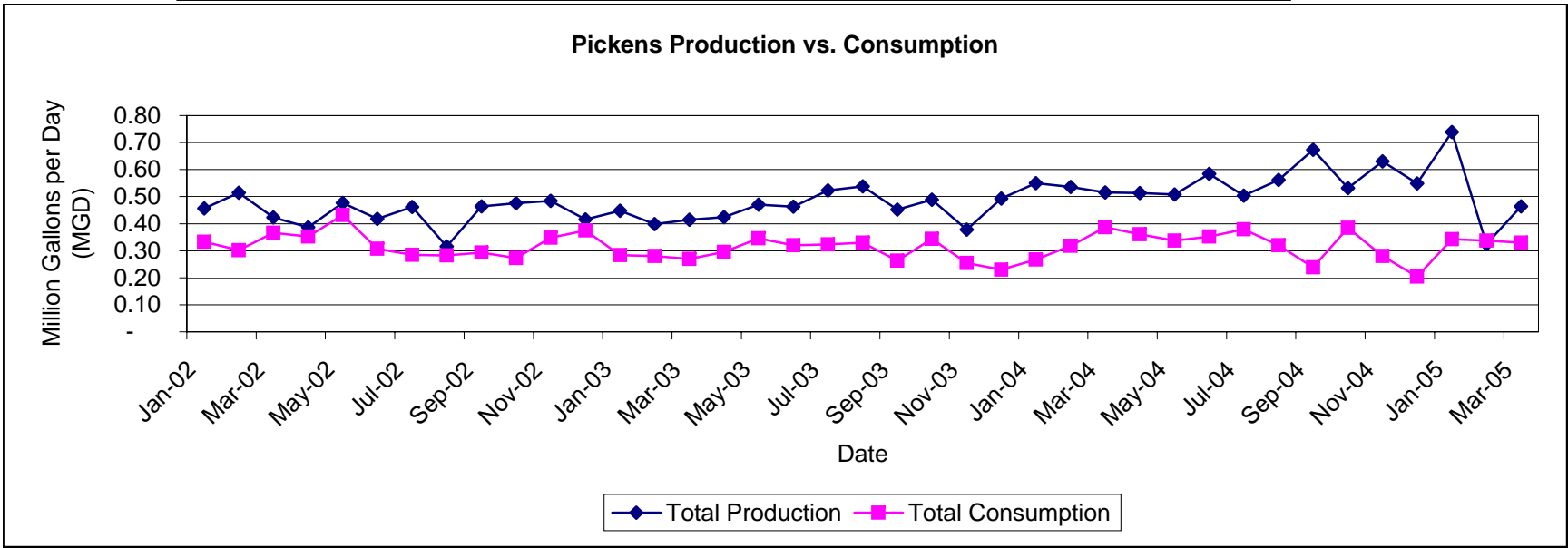
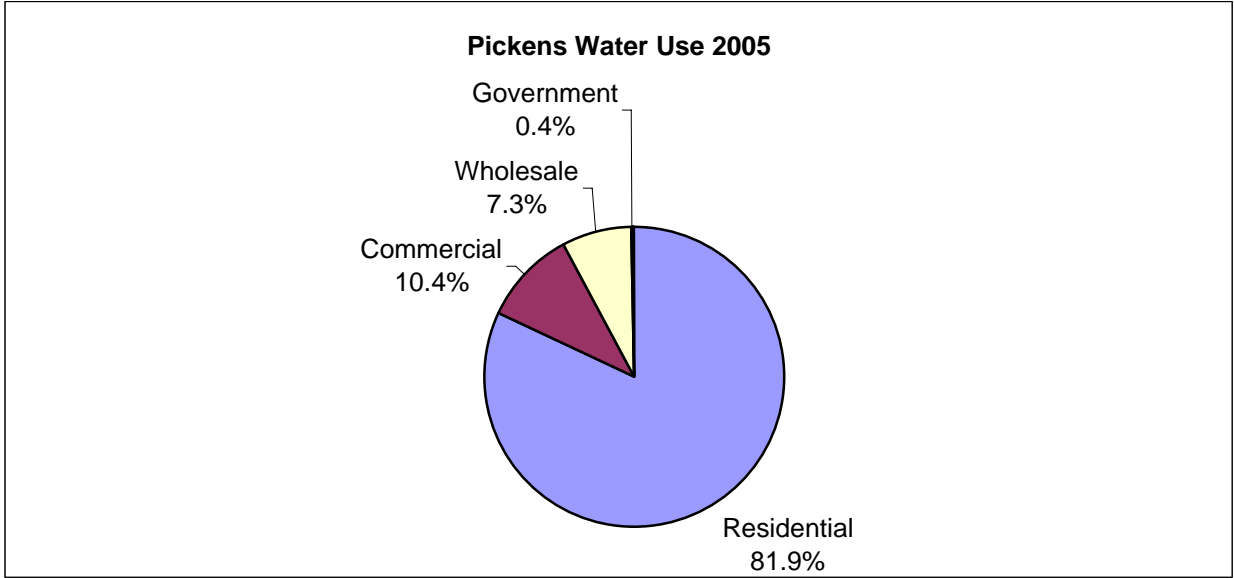
2000 Census Structure Age	
1990 to Present	42.0%
1980 to 1990	20.8%
Prior to 1980	37.2%

Pickens - Residential



Pickens - Commercial





Water System Name:	Reidsville
County:	Tattnall
Basin	Altamaha
Water Source Type:	Ground
SDWIS Population Served	2,730
2000 Census Average Household Size:	2.37
2004 Average Annual Production:	0.27 MGD
2004 Average Annual Consumption (Sales):	0.23 MGD
% Non Revenue Water:	14%

Residential

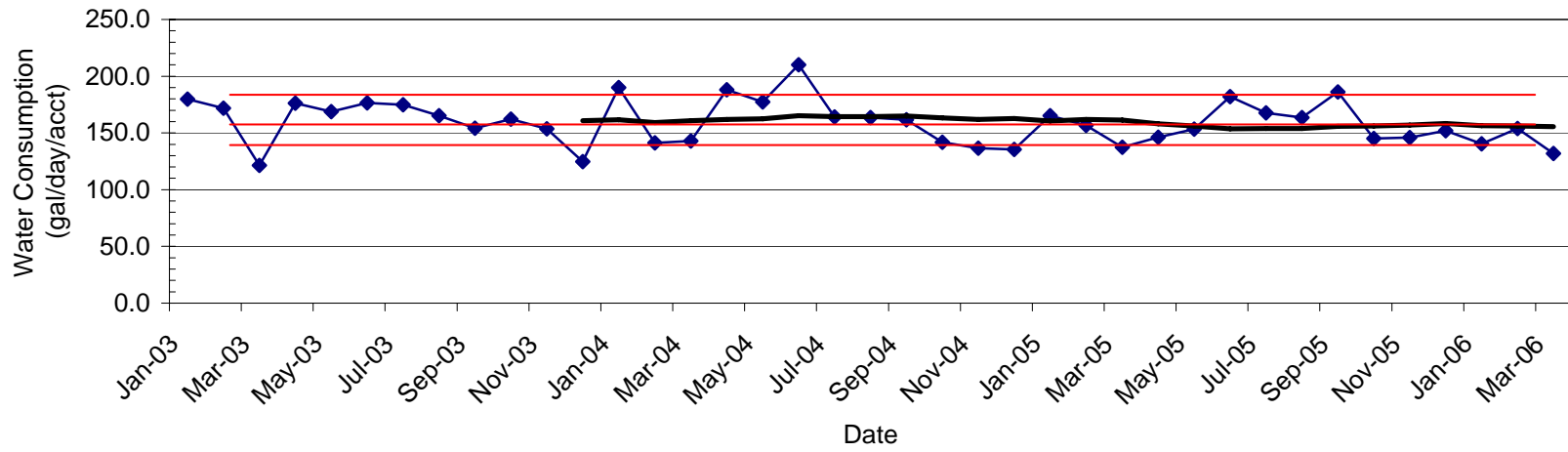
2004 Residential Accounts:	997
Residential Served Population:	2,363
Per capita Residential Consumption:	68 gal/person/day
Average Residential Consumption:	160 gal/acct/day
Indoor %:	88%
Outdoor % of Average:	13%
Outdoor Peak:	182 gal/acct/day

Commercial

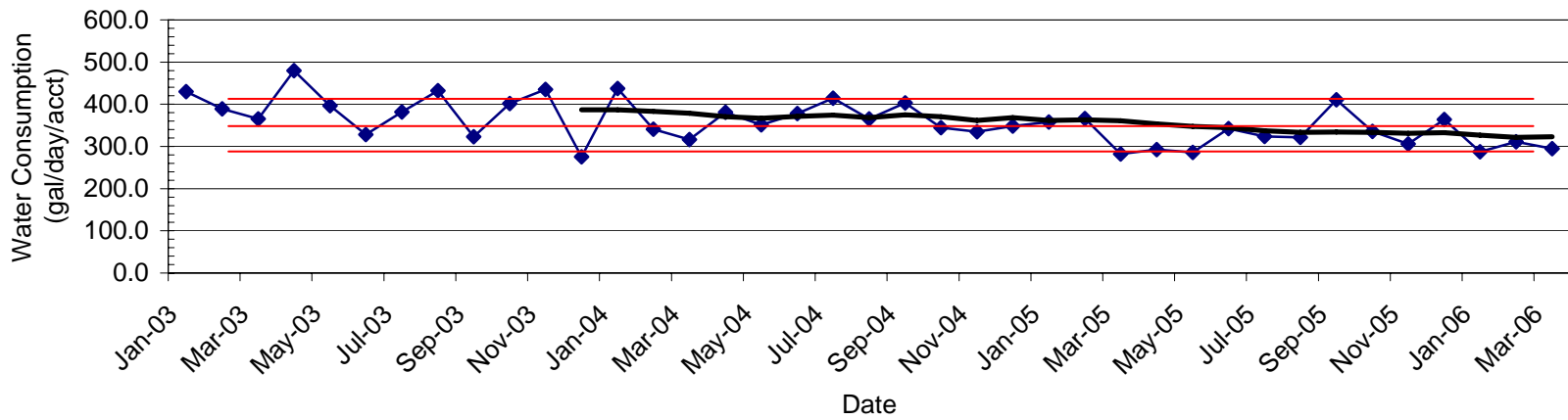
2004 Commercial Accounts:	170
Average Commercial Consumption:	340 gal/acct/day
Indoor %:	85%
Outdoor %:	15%
Outdoor Peak:	410 gal/acct/day

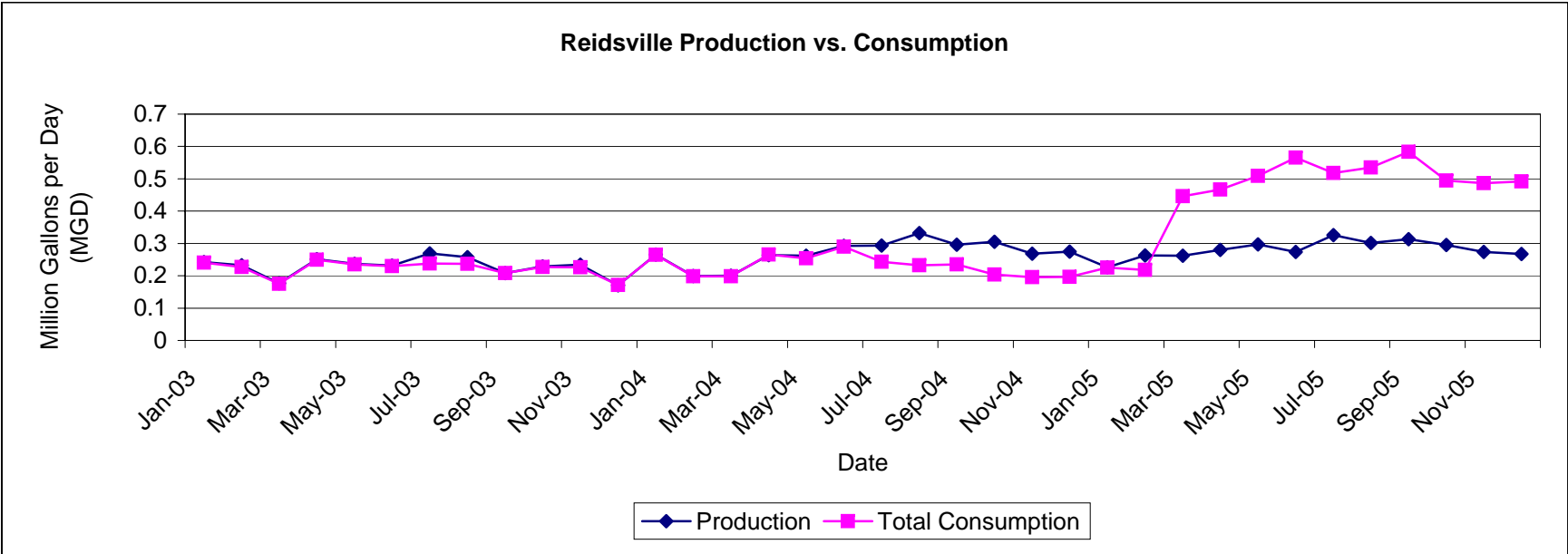
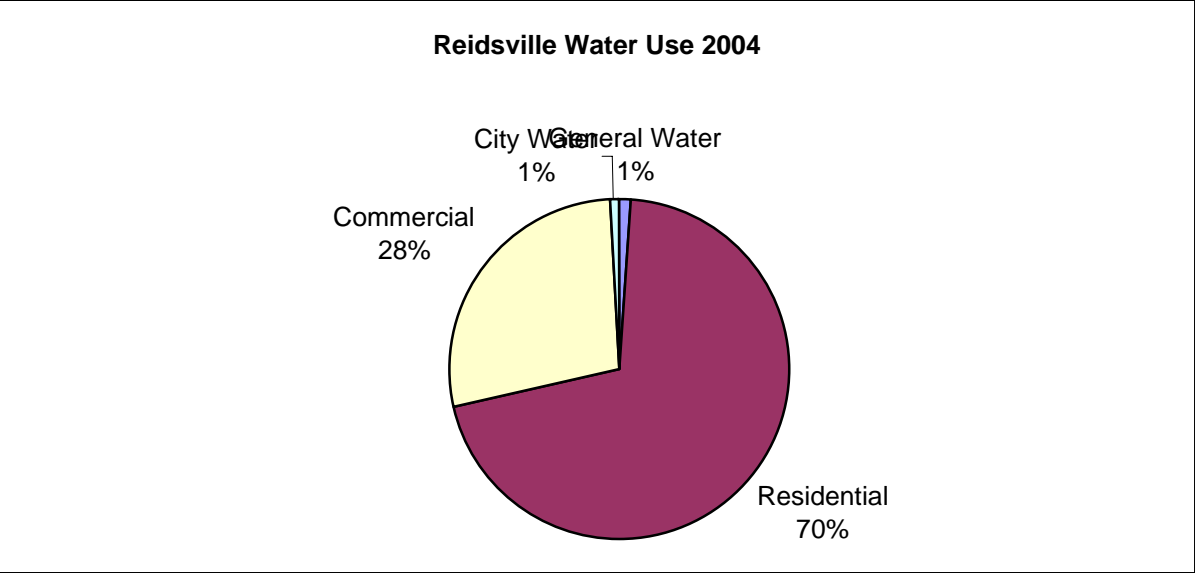
2000 Census Structure Age	
1990 to Present	14.1%
1980 to 1990	17.5%
Prior to 1980	68.4%

Reidsville - Residential



Reidsville - Commercial





Water System Name:	Savannah
County:	Chatham
Basin	Savannah
Water Source Type:	Surface and Ground
SDWIS Population Served:	163,688
2000 Census Average Household Size:	2.49

Note: Savannah data only includes the residential customers that could be identified by City codes, and not all were identified.
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2005 Average Annual Production:	58.32 MGD
2005 Average Annual Consumption (Sales):	49.38 MGD
% Non Revenue Water:	15%

Residential

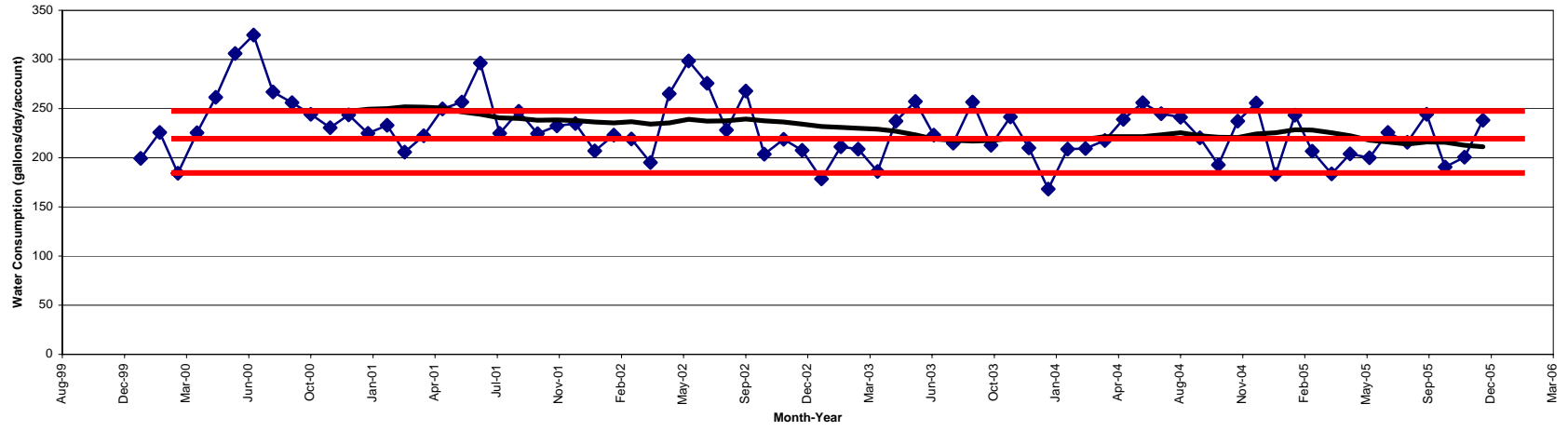
2005 Residential Accounts:	54,095
Residential Served Population:	134,697
Per capita Residential Consumption:	85 gal/person/day
Average Residential Consumption:	211 gal/acct/day
Indoor %:	87%
Outdoor % of Average:	13%
Outdoor Peak:	244 gal/acct/day

Commercial and Industrial

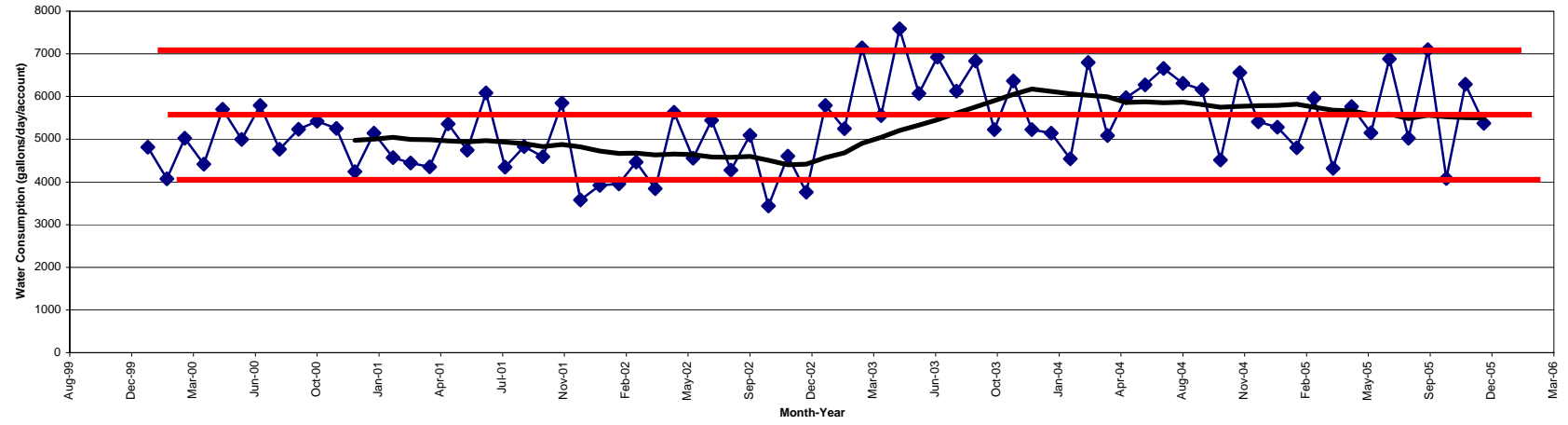
2005 Commercial and Industrial Accounts:	6,632
Average Commercial and Industrial Consumption:	5700 gal/acct/day
Indoor %:	71%
Outdoor %:	29%
Outdoor Peak:	7100 gal/acct/day

2000 Census Structure Age	
1990 to Present	17.6%
1980 to 1990	17.6%
Prior to 1980	64.8%

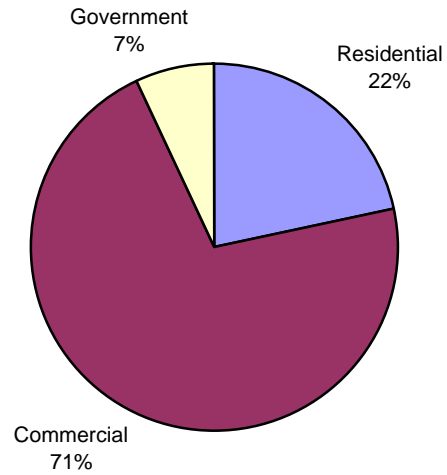
Savannah - Residential



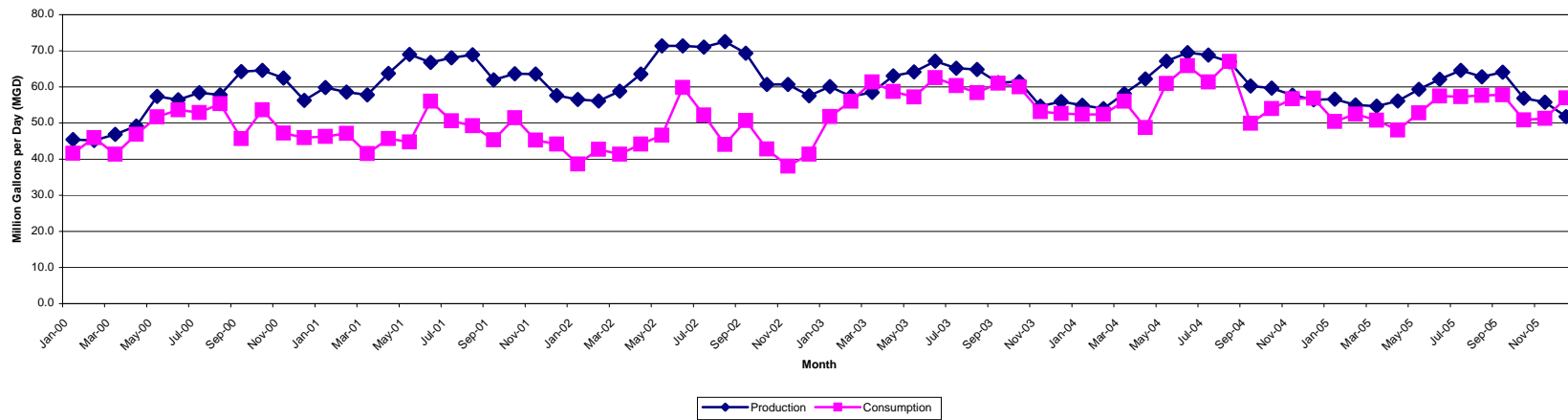
Savannah - Commercial



Savannah 2005



Savannah Production vs. Consumption



Water System Name:	Toccoa
County:	Stephens
Basin	Savannah
Water Source Type:	Surface
SDWIS Population Served:	24,960
2000 Census Average Household Size:	2.29
2005 Average Annual Production:	3.37 MGD
2005 Average Annual Consumption (Sales):	2.52 MGD
% Non Revenue Water:	25%

Residential

2005 Residential Accounts:	9,311
Residential Served Population:	21,322
Per capita Residential Consumption:	63 gal/person/day
Average Residential Consumption:	145 gal/acct/day
Indoor %:	83%
Outdoor % of Average:	17%
Outdoor Peak:	170 gal/acct/day

Commercial

2005 Commercial Accounts:	859
Average Commercial Consumption:	450 gal/acct/day
Indoor %:	71%
Outdoor %:	29%
Outdoor Peak:	590 gal/acct/day

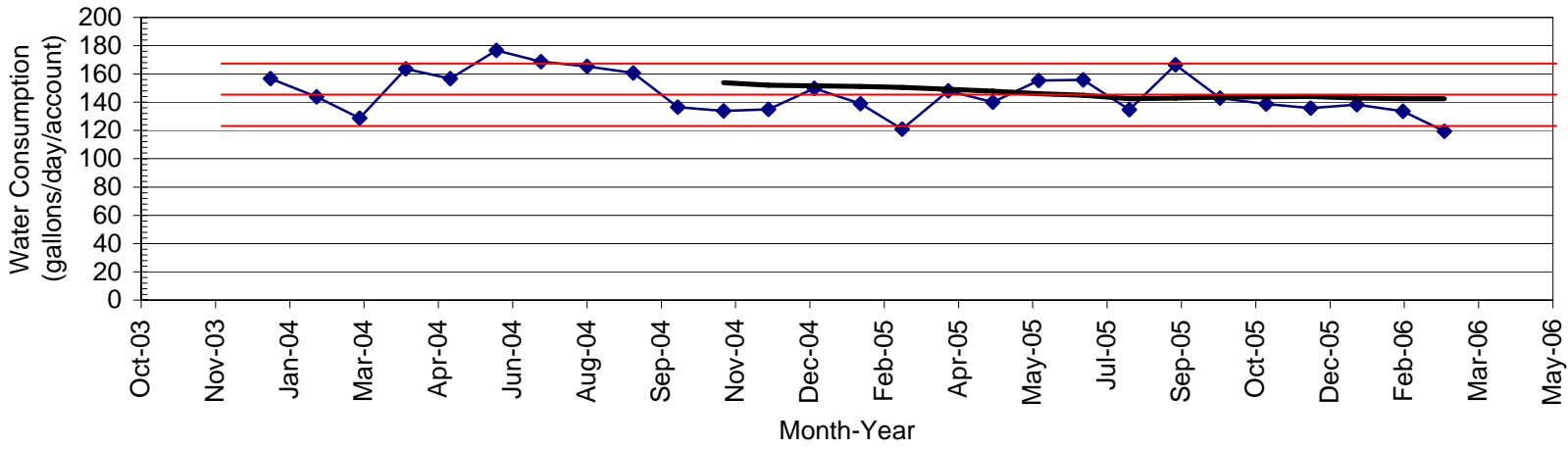
Industrial

2005 Industrial Accounts:	317
Average Industrial Consumption:	1,140 gal/acct/day
Indoor %:	88%
Outdoor %:	12%
Outdoor Peak:	1,500 gal/acct/day

2000 Census Structure Age

1990 to Present	9.4%
1980 to 1990	15.5%
Prior to 1980	75.1%

Toccoa - Residential



Toccoa - Commercial

