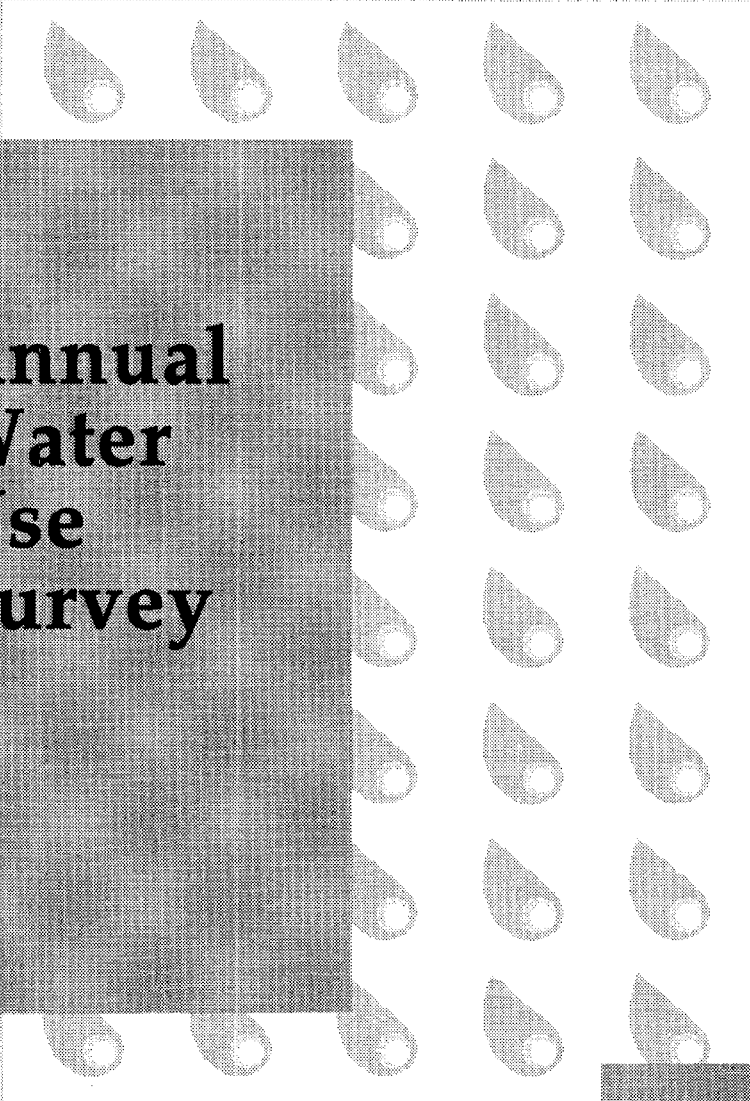


Technical Publication SJ97-4



**Annual
Water
Use
Survey**

1995

St. Johns River Water Management District

Technical Publication SJ97-4

ANNUAL WATER USE SURVEY: 1995

by

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1997



EXECUTIVE SUMMARY

Water use data have been published annually by the St. Johns River Water Management District (SJRWMD) since 1978. This report assesses water use in SJRWMD for 1995; it presents the total quantities of water used. The information is arranged by source (ground or surface), category of use, and county. Water use covers all water withdrawals from ground or surface water sources and is expressed in million gallons per day (mgd).

The total amount of water used in SJRWMD in 1995, including fresh and saline water, was 3,232.57 mgd. Of that total, 1,404.33 mgd, or 43%, was fresh water. The total surface water use for SJRWMD was 2,158.64 mgd, of which 1,828.24 mgd was saline and 330.40 mgd was fresh. The total amount of ground water withdrawn in SJRWMD was 1,073.93 mgd. All ground water was fresh water.

The largest use of fresh ground water was for public supply—449.65 mgd, or 42% of the total fresh ground water use in SJRWMD. Agricultural fresh ground water use was 306.28 mgd, or 29% of the ground water total.

The largest use of fresh surface water was for agricultural irrigation—190.06 mgd, or 58% of the total fresh surface water use in SJRWMD. Most surface water used was saline water, used primarily for thermoelectric power generation (1,825.99 mgd).

Brevard County had the largest total water use, at 1,399.97 mgd, and the highest total freshwater use, at 202.66 mgd.

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INTRODUCTION

Water use data have been published annually by the St. Johns River Water Management District (SJRWMD) since 1978. This report assesses water use in SJRWMD for 1995; it presents the total quantities of water used. The information is arranged by source (ground or surface), category of use, and county.

Water use covers all water withdrawals from ground or surface water sources and is expressed in million gallons per day (mgd). This unit, mgd, is based on the average annual water use (see glossary).

SJRWMD includes all or part of 19 counties in northeast Florida (Figure 1). The following counties are wholly or partly* included in SJRWMD:

Alachua*	AL	Nassau	NS
Baker*	BK	Okeechobee*	OK
Bradford*	BF	Orange*	OR
Brevard	BV	Osceola*	OS
Clay	CL	Polk*	PK
Duval	DU	Putnam*	PT
Flagler	FL	St. Johns	SJ
Indian River	IR	Seminole	SM
Lake*	LK	Volusia	VL
Marion*	MR		

WATER USE CATEGORIES

Water withdrawal information is reported for seven categories of use:

- Public supply
- Domestic self-supply
- Commercial/industrial use
- Agricultural irrigation
- Recreational irrigation
- Thermoelectric power generation
- Abandoned artesian wells

Water is not provided by a public supply system for any category other than public supply.

PUBLIC SUPPLY

The public supply category consists of water supplied by utilities to homes and industries. The reported amounts are a minimum, because some utilities report water withdrawals from the ground water system as water enters the treatment plant and others report only the amount of water delivered from the plant, which can be less than the actual withdrawals. Utilities that serve 400 or more people or that withdraw more than 0.01 mgd from ground or surface water sources are included in the public supply category. Public supply water use data come from utility records and are estimated to the nearest 0.01 mgd.

In 1995, 292 public supply utilities served 2,939,130 people, or 84% of the total population in SJRWMD (Table 1 and appendix). Public supply population is defined as the permanent resident population served by the supplier. The rest of the population is assumed to use domestic self-supplied systems. County, city, and municipal population data are estimated from Florida Bureau of Economics and Business Research figures (University of Florida 1996a, 1996b, 1996c). If none of these data are available, estimates are made by (1) multiplying the supplier's previous year population by the yearly percent change in county population or (2) communicating with the supplier. Estimates also can be obtained from the data collected by the Florida Department of Environmental Protection (FDEP) (1996). To maintain consistency for

each utility from year to year, the same data source is used to determine public supply population.

Table 1. Population in the St. Johns River Water Management District (SJRWMD) by county, 1995

County	County Population	SJRWMD Population	Percentage of County Population in SJRWMD	Public Supply Population	Domestic Self-Supply Population
Alachua	198,261	160,988	81.2	140,180	20,808
Baker	20,275	19,261	95.0	4,130	15,131
Bradford	24,336	1,825	7.5	364	1,461
Brevard	444,992	444,992	100.0	403,819	41,173
Clay	120,896	120,896	100.0	93,055	27,841
Duval	718,355	718,355	100.0	641,774	76,581
Flagler	36,997	36,997	100.0	26,213	10,784
Indian River	100,261	100,261	100.0	61,886	38,375
Lake	176,931	175,162	99.0	160,089	15,073
Marion	224,612	175,871	78.3	81,385	94,486
Nassau	49,127	49,127	100.0	26,499	22,628
Okeechobee	32,855	493	1.5	0	493
Orange	758,962	599,582	79.0	548,315	51,267
Osceola	136,627	3,142	2.3	0	3,142
Polk	443,153	4,432	1.0	1,663	2,769
Putnam	69,516	69,516	100.0	21,118	48,398
St. Johns	98,188	98,188	100.0	76,651	21,537
Seminole	324,130	324,130	100.0	276,969	47,161
Volusia	402,970	402,970	100.0	375,020	27,950
Total	4,381,444	3,506,188		2,939,130	567,058

Note: Total population for the state of Florida in 1995 was 14,149,317.

Source: University of Florida 1996a

DOMESTIC SELF-SUPPLY

The domestic self-supply category includes water withdrawn from individual domestic wells or provided by utilities that serve fewer than 400 people. All domestic self-supplied water is assumed to be ground water, and it is assumed that these wells are drilled into the easiest accessible aquifer that could produce potable water. Small utilities and domestic wells are not inventoried, so water use in this category is estimated from population and per capita water use figures.

Populations are based initially on the 1990 census data. SJRWMD follows watershed boundaries and not county boundaries; therefore, some counties are only partially included in SJRWMD. SJRWMD population figures for those counties are based on estimated population percentages (Florence 1996b).

Domestic self-supply water use is derived by (1) subtracting the number of people served by public supply systems from the water use population of the county, to obtain a domestic self-supplied population and (2) multiplying the result by the county per capita water use. Per capita water use is derived by dividing the public supply water use by the population served by public supply systems.

COMMERCIAL/INDUSTRIAL USE

The commercial/industrial use category consists of the larger commercial and industrial users not served by public supply utilities. The commercial category includes businesses and institutions, such as government facilities, military installations, schools, prisons, and hospitals. The industrial category includes mining, processing, and manufacturing facilities; it does not include water used for power generation by thermoelectric power plants.

Only commercial/industrial facilities that use, on average, more than 0.01 mgd of ground or surface water were inventoried. Sixty industrial users and 75 commercial users, including 73 institutions, are included in this report of 1995 water use (see appendix). Of the commercial/industrial users, two users had an average water use in 1995 that was less than 0.01 mgd. Water used for transporting materials from the mine pit to the plant and for dewatering mine pits is considered conveyance and is not included in estimates of water use.

The data for this category are based on reported water use or permitted allowances. The data were collected using information from the consumptive use permits (CUPs) issued by SJRWMD to the facilities and information from monthly operating reports received by SJRWMD, FDEP, or the Florida Department of Health and Rehabilitative Services (HRS). Industries not reporting to FDEP, HRS, or SJRWMD were contacted by SJRWMD staff.

AGRICULTURAL IRRIGATION

The agricultural water use category consists of estimated water withdrawals from ground and surface sources for crop irrigation. This water is not provided by public supply utilities. Estimates of the acreage planted in various crops are multiplied by estimates of the water necessary to irrigate those crops per acre.

Water use for irrigation is assessed by crop, because crops have specific consumptive use requirements (USDA 1970). Thirty-two crop categories were assessed for 1995, and these are divided into four groups (Table 2):

- Vegetable crops
- Fruit crops
- Field crops
- Ornamentals and grasses

Table 2. Crops included in estimates of water use for agricultural irrigation

Vegetable Crops	Fruit Crops	Field Crops	Ornamentals and Grasses
Cabbage	Blueberries	Field corn	Ferns
Carrots	Citrus	Peanuts	Foliage
Cucumbers	Grapes	Rice	Woody ornamentals
Peppers	Peaches	Sorghum	Improved pasture
Potatoes	Pecans	Soybeans	Sod
Tomatoes	Strawberries	Sugar cane	Turf grass (other than golf)
Sweet corn	Watermelons	Tobacco	
Watercress	Miscellaneous fruits	Wheat	
Miscellaneous vegetables		Miscellaneous grains	

Acreage data are supplied primarily by the Cooperative Extension Service of the Institute of Food and Agricultural Sciences (IFAS) at the University of Florida, supplemented by information from SJRWMD. In

some instances, discrepancies exist between IFAS and SJRWMD crop acreage estimates (e.g., fern acreage in Volusia County and irrigated pasture acreage in Indian River and Brevard counties). IFAS figures have been used in the 1995 survey to maintain consistency with previous surveys.

The estimates of irrigation necessary for each crop acre are calculated using the modified Blaney-Criddle irrigation model (USDA 1970) and data from the SJRWMD Benchmark Farms irrigation monitoring project (Singleton 1996), supplemented by other information from the U.S. Department of Agriculture Soil Conservation Service (USDA 1970, 1982) and the National Oceanographic and Atmospheric Administration (NOAA 1995a-h).

RECREATIONAL IRRIGATION

The recreational irrigation category includes water used to irrigate turf grass for golf courses. This water is not provided by public supply utilities. Prior to the 1992 *Annual water use survey* report, turf grass irrigation was included in the agricultural water use category as "turf grass (golf)." In the 1992 survey, the recreational irrigation category included turf grass used for golf and other purposes. Since 1992, recreational irrigation includes only turf grass for golf courses. Recreational water use is assumed to be fresh water and does not include estimates of reclaimed water use.

The acreage data are supplied primarily by the Cooperative Extension Service of IFAS at the University of Florida, supplemented by information from the CUP files at SJRWMD. The estimate of irrigation necessary for the crop acreage is calculated using the modified Blaney-Criddle irrigation model (USDA 1970).

THERMOELECTRIC POWER GENERATION

The thermoelectric power generation category of water use consists of water used by power plants primarily for cooling. This water is not provided by public supply utilities. These figures are derived from information in the CUP files at SJRWMD or from data supplied by the power companies to SJRWMD, FDEP, or HRS in monthly operating

reports. In 1995, water use data were collected for 13 self-supplied thermoelectric power plants.

ABANDONED ARTESIAN WELLS

The abandoned artesian wells category consists of water flowing from abandoned artesian wells. According to available data, all abandoned artesian wells are supplied by the Floridan aquifer system. Water flowing from abandoned artesian wells is estimated based on an average of metered flow from monitored wells multiplied by an estimated number of wells. For counties where known flows exist, the average of the known flows in that county is used to estimate flow from the wells of unknown flow. For counties where no flows have been measured, the districtwide average for all wells of known flow is used. In 1995, the districtwide average for all wells of known flow was about 0.24 mgd per well (Curtis 1997 [draft]).

Prior to 1990, the estimated amount of water flowing from abandoned artesian wells was included in the miscellaneous category of water use along with other types of water use.

Abandoned artesian well reports are dated by the year in which the fiscal year ends (e.g., October 1994 through September 1995 data are included in the 1995 report).

1995 WATER USE BY SOURCE

Water in SJRWMD is withdrawn from both surface and ground water sources. Water quality from either source is defined as fresh, saline, or slightly saline.

For the purposes of this report, fresh water (ground or surface) is defined as any water containing 1,000 milligrams per liter (mg/L) or less of total dissolved solids (TDS) (see glossary). Slightly saline water is defined as water with a chloride concentration between 250 and 1,000 mg/L or a TDS concentration between 500 and 3,000 mg/L. Small amounts of slightly saline ground water are either diluted with fresh water or treated by reverse osmosis to public supply standards. For other uses, slightly saline water is not treated. In this report, slightly saline water that has been treated is included in the reported quantities of fresh water. In reports published before 1987, slightly saline water was reported as saline.

Some of the surface water use recorded in this report is saline water. Saline water is defined as water with a TDS concentration of more than 3,000 mg/L.

TOTAL WATER USE

Total water use in 1995 was 3,232.57 mgd, of which 2,158.64 mgd came from surface water sources and 1,073.93 mgd came from ground water sources (Table 3). These figures do not include reuse of reclaimed water. Over one-half of the total water use was saline (1,828.24 mgd), and the remaining water use was fresh water (1,404.33 mgd).

The largest use of saline surface water was for thermoelectric power generation—1,825.99 mgd (Table 4), or nearly all of the total saline surface water use in SJRWMD.

The largest use of fresh water was for agricultural irrigation—496.34 mgd (Table 4), or 35% of the total fresh water. The second largest use of fresh water was for public supply—461.80 mgd, or 33% of the total freshwater use in SJRWMD.

Table 3. Total 1995 water use by county, St. Johns River Water Management District (in million gallons per day)

County	Fresh Water			Saline Water*	Total Water Use
	Ground	Surface	Total	Surface	
Alachua	31.75	0.11	31.86	0.00	31.86
Baker	4.39	0.63	5.02	0.00	5.02
Bradford	0.35	0.00	0.35	0.00	0.35
Brevard [†]	180.16	22.50	202.66	1,197.31	1,399.97
Clay	22.09	0.24	22.33	0.00	22.33
Duval	151.20	0.48	151.68	575.09	726.77
Flagler	13.60	0.85	14.45	0.00	14.45
Indian River	98.94	136.29	235.23	53.59	288.82
Lake	74.69	7.56	82.25	0.00	82.25
Marion	39.85	0.75	40.60	0.00	40.60
Nassau	45.09	0.11	45.20	2.25	47.45
Okeechobee	11.98	0.00	11.98	0.00	11.98
Orange [‡]	131.50	24.23	155.73	0.00	155.73
Osceola	5.88	9.20	15.08	0.00	15.08
Polk	2.12	0.17	2.29	0.00	2.29
Putnam	38.79	50.32	89.11	0.00	89.11
St. Johns	54.01	0.64	54.65	0.00	54.65
Seminole	84.75	0.88	85.63	0.00	85.63
Volusia	82.79	75.44	158.23	0.00	158.23
Total	1,073.93	330.40	1,404.33	1,828.24	3,232.57

Note: 0.00 value means pumpage was insignificant (less than 0.01 million gallons per day [mgd]) or did not occur.

*Saline water is all from surface water sources.

[†]Includes 24.21 mgd withdrawn from Orange County for public supply use in Brevard County.

[‡]Does not include 24.21 mgd withdrawn for use in Brevard County. Does not include 39.83 mgd consumed in the South Florida Water Management District.

Table 4. Total 1995 water withdrawals by category, St. Johns River Water Management District (in million gallons per day)

Category	Fresh Water			Saline Water
	Ground	Surface	Total Fresh	Surface
Public supply	449.65	12.15	461.80	0.00
Domestic self-supply	93.42	0.00	93.42	0.00
Commercial/industrial use	95.76	35.88	131.64	2.25
Agricultural irrigation	306.28	190.06	496.34	0.00
Recreational irrigation	15.40	7.51	22.91	0.00
Thermoelectric power generation	7.66	84.80	92.46	1,825.99
Abandoned artesian wells	105.76	0.00	105.76	0.00
Total	1,073.93	330.40	1,404.33	1,828.24

SURFACE WATER

In 1995, surface water accounted for a total of 2,158.64 mgd of water use (Table 3). This use included water from both fresh and saline surface water sources. Fifteen percent (330.40 mgd) of the total surface water used in SJRWMD came from fresh surface water sources. The remaining 85% of surface water came from saline sources. All of the saline water discussed in this report came from surface water sources.

Fresh Water

The county using the most fresh surface water (136.29 mgd) was Indian River County (Table 3). Virtually all of this water was for agricultural irrigation (see appendix). Volusia County used 75.44 mgd of fresh surface water, 93% of which was for thermoelectric power generation. Combined water use in these two counties totaled 211.73 mgd, or 64% of the total fresh surface water use in SJRWMD in 1995.

The largest category of fresh surface water use was agricultural irrigation, which accounted for 190.06 mgd (Table 4), or 58% (Figure 2) of the total fresh surface water use in SJRWMD. The second largest category of fresh surface water use was thermoelectric power generation, which accounted for 84.80 mgd, or 26% of the total. Commercial/industrial fresh surface water use accounted for 35.88 mgd, or 11% of the total fresh surface water use in SJRWMD. Fresh surface water withdrawn for public supply accounted for 12.15 mgd, or 4% of the total fresh surface water used. Fresh surface water withdrawn for recreational irrigation accounted for 7.51 mgd, or 2% of the total fresh surface water used.

Saline Water

Total saline water use in SJRWMD in 1995 was 1,828.24 mgd (Tables 3 and 4). Saline surface water is primarily used in SJRWMD for thermoelectric power generation or for commercial/industrial plant operation. Thermoelectric power plants use large amounts of saline water for cooling purposes. This saline water is recorded as a water use in this report even though nearly all of the cooling water is returned to its original source.

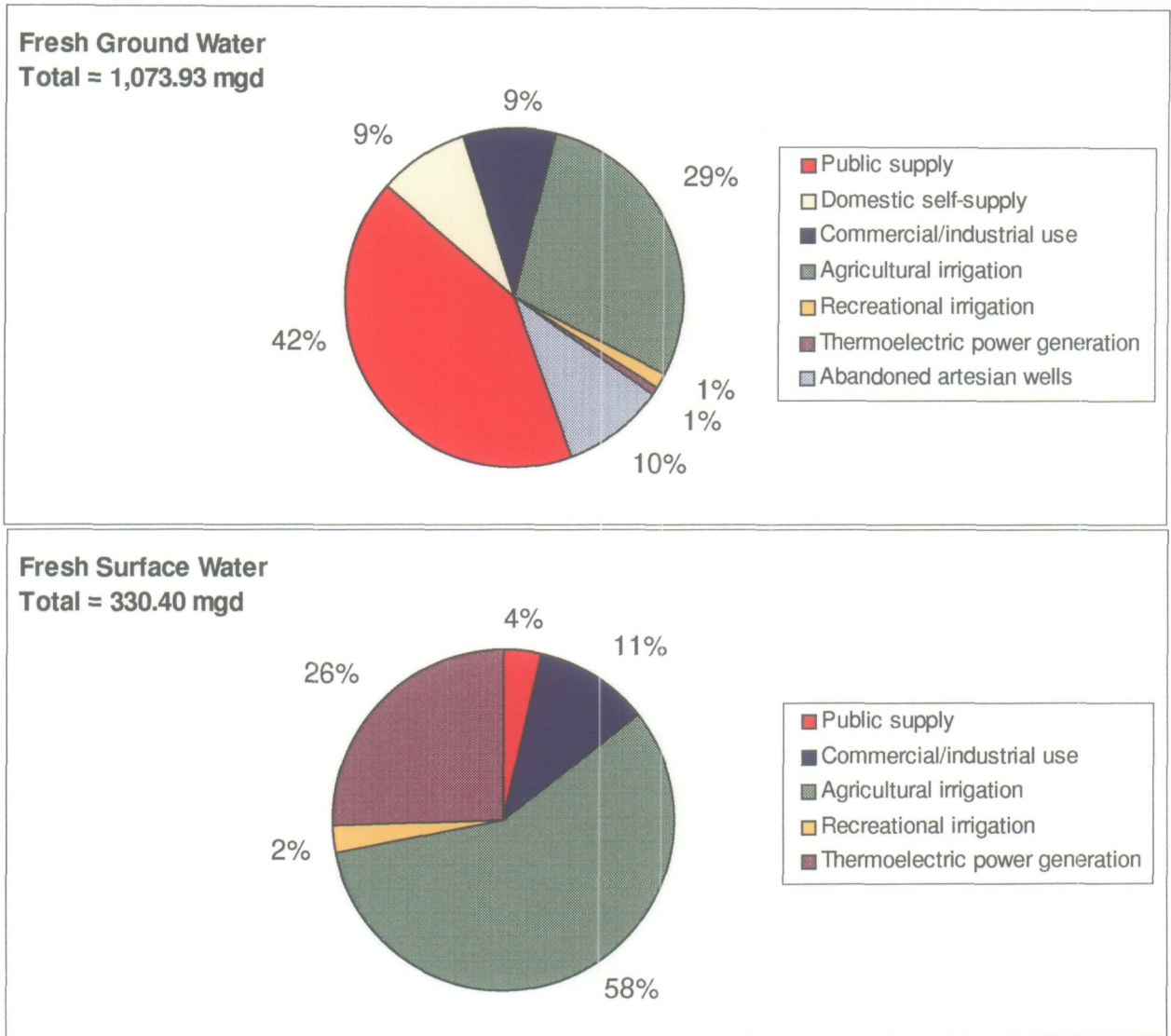


Figure 2. Total freshwater use, 1995. Most of the fresh water used in the St. Johns River Water Management District comes from ground water sources. Surface water is used primarily for agricultural irrigation and thermoelectric power generation. (Note: Percentages do not equal 100 because of rounding.)

Brevard County had the highest saline surface water use—1,197.31 mgd (Table 3)—for thermoelectric power generation at two plants (see appendix):

- Florida Power and Light, Cape Canaveral (680.79 mgd)
- Orlando Utilities Commission, Indian River (516.52 mgd)

Duval County had the next highest saline surface water use—575.09 mgd (Table 3)—for thermoelectric power generation at two plants (see appendix):

- Jacksonville Electric Authority, Eastport Power Plant (494.94 mgd)
- St. Johns River Power Park (80.15 mgd)

Indian River County had a saline surface water use of 53.59 mgd at the Vero Beach Municipal Power Plant, and Nassau County had saline water use of 2.25 mgd at the Rayonier paper mill (see appendix).

GROUND WATER

There are three aquifer systems which yield ground water in SJRWMD: the surficial, the intermediate, and the Floridan. Most ground water used in SJRWMD comes from the Floridan aquifer system.

In 1995, ground water accounted for a total of 1,073.93 mgd of water use (Table 3), or 76% of the total freshwater use in SJRWMD. Generally, almost all ground water withdrawals are from freshwater sources.

The counties in SJRWMD where the most ground water was used were Brevard (180.16 mgd), Duval (151.20 mgd), and Orange (131.50 mgd) (Table 3). These counties had a combined total of 462.86 mgd or 43% of the total ground water use in SJRWMD in 1995.

The largest category of ground water use in 1995 in SJRWMD was public supply, which accounted for about 449.65 mgd (Table 4), or 42% of the total ground water use (Figure 2). The second largest category of ground water use was agricultural irrigation, accounting for 306.28 mgd, or 29% of the total ground water use. Abandoned artesian wells accounted for 105.76 mgd, or 10% of the total ground water use; commercial/industrial water use accounted for 95.76 mgd, or 9% of the total; domestic self-supply water use accounted for 93.42 mgd, or 9% of the total; recreational irrigation accounted for 15.40 mgd, or 1% of the total; and thermoelectric power generation accounted for 7.66 mgd, or less than 1% of the total ground water use.

1995 WATER USE BY CATEGORY

In the following five categories of water use, most or all of the water used is fresh water:

- Public supply
- Domestic self-supply
- Agricultural irrigation
- Recreational irrigation
- Abandoned artesian wells

In the following two categories of water use, both fresh and saline water are used:

- Commercial/industrial use
- Thermoelectric power generation

PUBLIC SUPPLY

The public supply category consists of water supplied by utilities to homes and industries. Total water use from ground and surface sources for public supply in 1995 was 461.80 mgd (Tables 4 and 5). All public supply water was fresh water, and most of the water supplied in 1995 (97%) was ground water (Table 4). Fresh surface water (12.15 mgd) was used for public supply in Brevard County (see appendix). Eighty-nine percent of the ground water used in SJRWMD for public supply was withdrawn from the Floridan aquifer system; the remaining 11% was withdrawn from the intermediate and surficial aquifer systems (SJRWMD 1992). The public supply category of ground water use accounted for 42% of the total ground water use in SJRWMD in 1995 (Figure 2).

The figures in this report for fresh ground water use include a small amount of slightly saline ground water that was treated by reverse osmosis or blended with fresh water for use in public supply systems. In the SJRWMD *Annual water use survey* reports published before 1987, this slightly saline ground water was reported as saline water.

Table 5. Public supply and domestic self-supply water use in the St. Johns River Water Management District, 1995 (in million gallons per day [mgd])

County	Public Supply Population	Public Supply Water Use	Per Capita (gallons per day)	Domestic Self-Supply Population	Domestic Self-Supply Water Use
Alachua	140,180	22.15	158	20,808	3.29
Baker	4,130	0.68	165	15,131	2.50
Bradford	364	0.04	110	1,461	0.16
Brevard	403,819	51.35*	127	41,173	5.23
Clay	93,055	12.04	129	27,841	3.59
Duval	641,774	99.59	155	76,581	11.87
Flagler	26,213	4.51	172	10,784	1.85
Indian River	61,886	11.16	180	38,375	6.91
Lake	160,089	26.46	165	15,073	2.49
Marion	81,385	14.38	177	94,486	16.72
Nassau	26,499	4.96	187	22,628	4.23
Okeechobee	0	0.00	157 [†]	493	0.08
Orange	548,315	100.99 [‡]	203 [§]	51,267	10.41
Osceola	0	0.00	157 [†]	3,142	0.49
Polk	1,663	0.13	78	2,769	0.22
Putnam	21,118	3.59	170	48,398	8.23
St. Johns	76,651	10.30	134	21,537	2.89
Seminole	276,969	50.69	183	47,161	8.63
Volusia	375,020	48.78	130	27,950	3.63
Total	2,939,130	461.80	157 ^{**}	567,058	93.42 ^{††}

*Includes 24.21 mgd withdrawn in Orange County.

[†]Districtwide per capita (see footnote *).

[‡]Does not include 24.21 mgd withdrawn in Orange County for use in Brevard County.

[§]Per capita value derived from the average of two water management districts (Marella, pers. com. 1997).

^{**}Represents average districtwide per capita based on counties for which per capita data were available.

^{††}Total of the county domestic self-supply figures, not based on SJRWMD per capita.

Per Capita Use

The average per capita water use in SJRWMD in 1995, based on the population served by public supply, was 157 gallons per day (Table 5). This amount includes water used for residential as well as non-residential purposes.

Water Use by County

The counties with the largest populations in SJRWMD—and consequently the counties with the largest public supply water use—are Duval (641,774) and Orange (548,315) counties (Table 5 and Figure 3). Together, these counties represent about 40% of the SJRWMD public supply water use population.

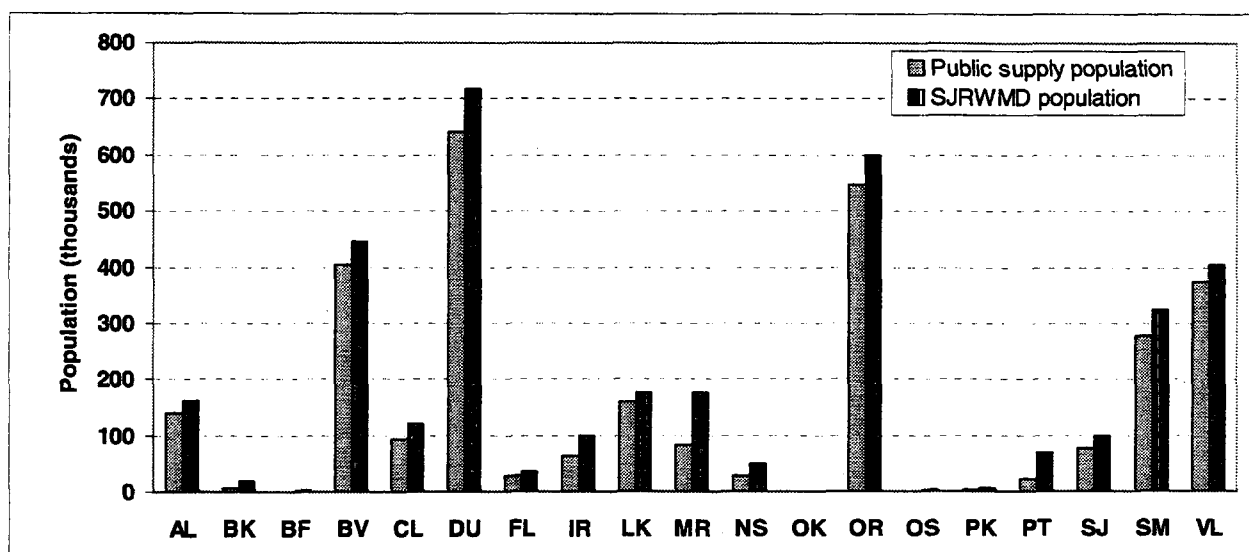


Figure 3. Population served by public supply in the St. Johns River Water Management District (SJRWMD), 1995. Duval and Orange counties are the largest in population in SJRWMD. Okeechobee and Osceola counties do not have a public supply population in SJRWMD. (County abbreviations are listed on page 1.)

Combined water use for public supply in Orange (100.99 mgd) and Duval (99.59 mgd) counties was 200.58 mgd, or 43% of the public supply water use in SJRWMD in 1995. Orange County falls within two water management districts; 39.83 mgd of public supply water withdrawn in Orange County was used in the South Florida Water Management District and, therefore, is not included in the totals in this report (see appendix). Also, some of the water withdrawn in Orange County (24.21 mgd) was for the City of Cocoa public supply system in Brevard County (Table 5).

The City of Jacksonville (Duval County), which has the largest public supply utility in SJRWMD, supplied its 481,634 customers with 75.28 mgd of fresh ground water in 1995 (see appendix).

DOMESTIC SELF-SUPPLY

In 1995, an estimated 567,058 people used 93.42 mgd of domestic self-supplied water (Tables 4 and 5), or 9% of the total fresh ground water use in SJRWMD (Figure 2). All of the domestic self-supplied water was assumed to be ground water.

Marion County had the largest self-supplied population—94,486 people (Tables 1 and 5). Duval County had the second largest, with 76,581 people, followed by Orange County, with 51,267 people.

COMMERCIAL/INDUSTRIAL USE

The total freshwater use in the commercial/industrial category was 131.64 mgd (Tables 4 and 6), or 9% of the total freshwater use in SJRWMD. Of this total, 95.76 mgd was ground water and 35.88 mgd was fresh surface water. In addition, 2.25 mgd of saline water was used in this category.

Most of the water withdrawn for commercial/industrial purposes supplied the pulp and paper industries in Putnam, Nassau, and Duval counties. In 1995, water use for pulp and paper production included 57.46 mgd of fresh ground water, 32.89 mgd of fresh surface water, and 2.25 mgd of saline surface water (see appendix). The second largest water user in this category was the mining industry, which accounted for 15.34 mgd of fresh ground water and 2.99 mgd of fresh surface water. Together, pulp and paper production and mining accounted for 108.68 mgd of fresh water, or 83% of the commercial/industrial freshwater use in SJRWMD.

The largest amount of fresh water used for commercial/industrial purposes (45.93 mgd) was in Putnam County (Table 6). Nassau (34.49 mgd) and Duval (24.75 mgd) counties also had significant amounts of freshwater use in this category. Of the total fresh water used for commercial/industrial purposes in SJRWMD, 80% (105.17 mgd) was used in these three counties.

Table 6. Commercial/industrial water use in the St. Johns River Water Management District, 1995 (in million gallons per day)

County	Fresh Water			Saline Water
	Ground	Surface*	Total	Surface
Alachua	1.91	0.00	1.91	0.00
Baker	0.19	0.00	0.19	0.00
Bradford	0.00	0.00	0.00	0.00
Brevard	1.80	0.00	1.80	0.00
Clay	4.46	0.00	4.46	0.00
Duval	24.75	0.00	24.75	0.00
Flagler	0.18	0.00	0.18	0.00
Indian River	0.16	0.00	0.16	0.00
Lake	10.23	1.14	11.37	0.00
Marion	1.85	0.00	1.85	0.00
Nassau	34.49	0.00	34.49	2.25
Okeechobee	0.03	0.00	0.03	0.00
Orange	3.61	0.00	3.61	0.00
Osceola	0.00	0.00	0.00	0.00
Polk	0.02	0.00	0.02	0.00
Putnam	11.19	34.74	45.93	0.00
St. Johns	0.06	0.00	0.06	0.00
Seminole	0.14	0.00	0.14	0.00
Volusia	0.69	0.00	0.69	0.00
Total	95.76	35.88	131.64	2.25

Note: 0.00 value means pumpage was insignificant (less than 0.01 million gallons per day) or did not occur.

*Does not include water used in mining for dewatering and transport.

AGRICULTURAL IRRIGATION

Almost all the water used for agricultural irrigation in SJRWMD was fresh water. Information from the CUP files at SJRWMD indicates that a small but undetermined amount of moderately saline water (TDS >1,000 but <3,000 mg/L) was used for agricultural irrigation in Indian River County. Total freshwater use for agricultural irrigation was estimated at 496.34 mgd, or 35% of the total freshwater use in SJRWMD in 1995 (Tables 4 and 7). Of this total, 306.28 mgd, or 62% of the total water used for agriculture, was ground water. It was assumed that most ground water used for agricultural irrigation came from the Upper and Lower Floridan aquifers.

Table 7. Agricultural irrigation water use in the St. Johns River Water Management District, 1995 (in million gallons per day)

County	Fresh Water			Acreage	
	Ground	Surface	Total	Farmed	Irrigated
Alachua	3.28	0.05	3.33	38,390	5,485
Baker	0.93	0.63	1.56	14,699	571
Bradford	0.09	0.00	0.09	160	160
Brevard	89.65	8.58	98.23	133,070	88,630
Clay	0.73	0.00	0.73	44,061	419
Duval	1.11	0.05	1.16	13,400	1,552
Flagler	6.67	0.26	6.93	24,705	7,240
Indian River	56.34	135.30	191.64	134,543	95,032
Lake	34.09	5.72	39.81	78,047	24,570
Marion	3.30	0.36	3.66	71,349	5,173
Nassau	0.19	0.00	0.19	6,761	205
Okeechobee	11.87	0.00	11.87	34,785	7,785
Orange	12.74	23.95	36.69	68,181	29,935
Osceola	5.39	9.20	14.59	126,974	12,354
Polk	1.75	0.17	1.92	1,060	1,060
Putnam	14.25	1.08	15.33	51,465	9,315
St. Johns	31.38	0.00	31.38	30,700	26,200
Seminole	6.99	0.26	7.25	11,350	4,797
Volusia	25.53	4.45	29.98	12,781	11,720
Total	306.28	190.06	496.34	896,481	332,203

Note: 0.00 value means pumpage was insignificant (less than 0.01 million gallons per day) or did not occur.

Water Use by County

The largest water use for agricultural irrigation occurred in Indian River County—191.64 mgd of fresh water (Table 7), or 39% of the agricultural water use in SJRWMD. Most of this amount, 135.30 mgd, was fresh surface water. The second largest water use for agriculture was in Brevard County—98.23 mgd, most of which was ground water. The combined water use in these two counties was 289.87 mgd, or 58% of the total agricultural irrigation water use in SJRWMD in 1995.

Water Use by Acreage and Crop

An estimated 896,481 acres were farmed in SJRWMD in 1995, of which 332,203 acres were irrigated (see Table 7 and appendix). Of the total acreage irrigated, 232,408 acres were irrigated by flood systems,

56,176 acres were irrigated by low-pressure/low-volume systems, and 56,044 acres were irrigated by sprinkler systems. The amount of irrigated acres decreased from 338,138 acres in 1994 (including turf grass [other than golf])—a net decrease of 5,935 acres (Florence 1996b).

The largest water use for a crop type was for fruit crops, which accounted for 46% of the agricultural water use (Figure 4). The largest water use for a single crop was for citrus irrigation, which accounted for 222.92 mgd, or 45% of the agricultural water use in SJRWMD (see appendix). Irrigation of improved pastureland accounted for 122.98 mgd, or 25% of the agricultural water use. Fern water use was high compared to previous years; freeze events that occurred in December required a higher than normal use of water for freeze protection.

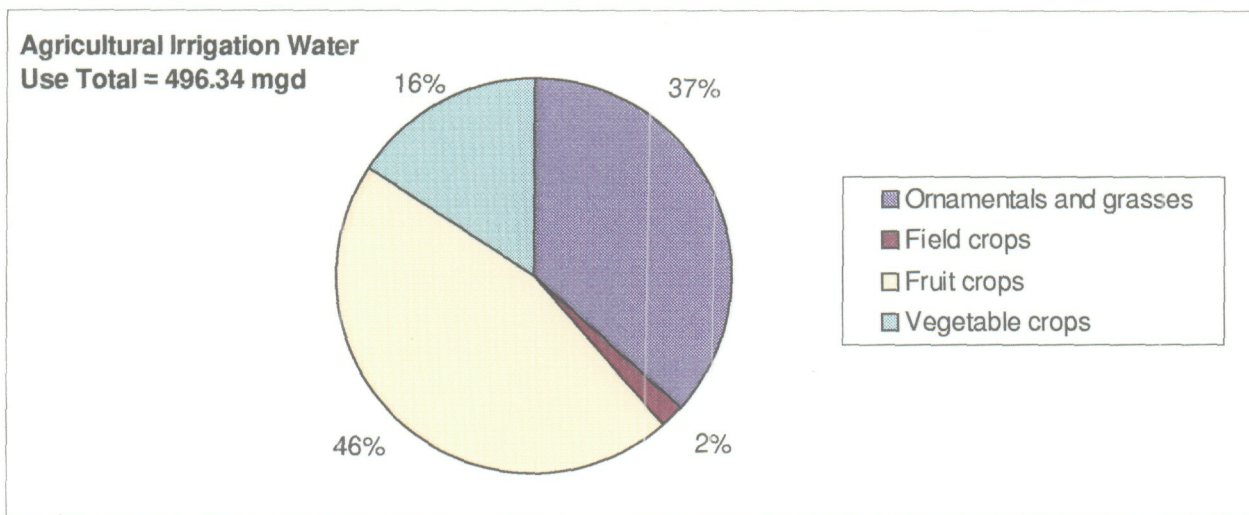


Figure 4. Agricultural irrigation water use in the St. Johns River Water Management District for four crop types, 1995. Fruit crops accounted for 46% of agricultural irrigation water use in 1995. (Note: Percentages do not equal 100 because of rounding.)

RECREATIONAL IRRIGATION

Water used in the recreational irrigation category totaled 22.91 mgd, or about 2% of the total freshwater use in SJRWMD (Tables 4 and 8). Of this amount, 15.40 mgd was ground water.

Table 8. Recreational irrigation water use in the St. Johns River Water Management District, 1995 (in million gallons per day)

County	Fresh Water			Acreage	
	Ground	Surface	Total	Farmed	Irrigated
Alachua	0.48	0.06	0.54	480	328
Baker	0.09	0.00	0.09	124	60
Bradford	0.06	0.00	0.06	40	30
Brevard	1.07	1.77	2.84	1,900	1,475
Clay	0.46	0.24	0.70	530	380
Duval	1.79	0.43	2.22	2,992	1,413
Flagler	0.09	0.59	0.68	362	362
Indian River	2.01	0.99	3.00	1,637	1,276
Lake	0.86	0.70	1.56	1,591	769
Marion	0.53	0.39	0.92	1,500	500
Nassau	0.67	0.11	0.78	645	565
Okeechobee	0.00	0.00	0.00	0	0
Orange	1.42	0.28	1.70	1,534	939
Osceola	0.00	0.00	0.00	0	0
Polk	0.00	0.00	0.00	0	0
Putnam	0.15	0.00	0.15	196	76
St. Johns	1.10	0.64	1.74	1,192	1,011
Seminole	2.46	0.62	3.08	2,875	1,678
Volusia	2.16	0.69	2.85	2,960	1,563
Total	15.40	7.51	22.91	20,558	12,425

Note: 0.00 value means pumpage was insignificant (less than 0.01 million gallons per day) or did not occur.

The largest water use for recreational irrigation occurred in Seminole County—3.08 mgd (Table 8). The second largest water use was in Indian River County—3.00 mgd.

Approximately 12,425 of 20,588 acres were irrigated using sprinkler systems (see appendix). The amount of reported irrigated acres was the same in 1994 and 1995.

THERMOELECTRIC POWER GENERATION

Total water use for the 13 self-supplied power plants accounted for 1,825.99 mgd of saline surface water, 84.80 mgd of fresh surface water, and 7.66 mgd of fresh ground water (Tables 4 and 9). The largest amount of saline water used for thermoelectric power generation was in

Brevard County—1,197.31 mgd. The largest amount of fresh water used was in Volusia County—70.67 mgd.

Table 9. Thermoelectric power generation water use in the St. Johns River Water Management District, 1995 (in million gallons per day)

County	Fresh Water			Saline Water
	Ground	Surface	Total	Surface
Alachua	0.40	0.00	0.40	0.00
Baker	0.00	0.00	0.00	0.00
Bradford	0.00	0.00	0.00	0.00
Brevard	0.31	0.00	0.31	1,197.31
Clay	0.00	0.00	0.00	0.00
Duval	5.47	0.00	5.47	575.09
Flagler	0.00	0.00	0.00	0.00
Indian River	0.00	0.00	0.00	53.59
Lake	0.00	0.00	0.00	0.00
Marion	0.00	0.00	0.00	0.00
Nassau	0.00	0.00	0.00	0.00
Okeechobee	0.00	0.00	0.00	0.00
Orange	0.41	0.00	0.41	0.00
Osceola	0.00	0.00	0.00	0.00
Polk	0.00	0.00	0.00	0.00
Putnam	0.70	14.50	15.20	0.00
St. Johns	0.00	0.00	0.00	0.00
Seminole	0.00	0.00	0.00	0.00
Volusia	0.37	70.30	70.67	0.00
Total	7.66	84.80	92.46	1,825.99

Note: 0.00 value means pumpage was insignificant (less than 0.01 million gallons per day) or did not occur.

ABANDONED ARTESIAN WELLS

Water flowing from 588 abandoned artesian wells totaled an estimated 105.76 mgd in SJRWMD (Tables 4 and 10). The total known flow for 56 wells was 6.04 mgd. The estimated flow from 532 wells was 99.72 mgd. All water was fresh ground water (Curtis 1997 [draft]).

SJRWMD began its Abandoned Artesian Well Plugging Program in 1976. As of 1995, 2,446 abandoned artesian wells had been identified, of which 1,068 wells had been plugged or repaired by SJRWMD, 790 had been plugged or repaired by the well owners, and 588 are still flowing

Table 10. Flow from abandoned artesian wells in the St. Johns River Water Management District, 1995 (in million gallons per day)

County	Number of Wells of Known Flow	Known Flow	Number of Wells of Unknown Flow	Estimated Flow	Total Estimated Flow
Alachua	0	0.00	1*	0.24	0.24
Baker	0	0.00	0	0.00	0.00
Bradford	0	0.00	0	0.00	0.00
Brevard	15	2.98	156	39.92	42.90
Clay	0	0.00	5†	0.81	0.81
Duval	0	0.00	19†	6.62	6.62
Flagler	0	0.00	9†	0.30	0.30
Indian River	3	1.73	45	20.63	22.36
Lake	0	0.00	10†	0.56	0.56
Marion	0	0.00	14†	3.07	3.07
Nassau	0	0.00	7†	0.55	0.55
Okeechobee	0	0.00	0	0.00	0.00
Orange	0	0.00	30†	1.92	1.92
Osceola	0	0.00	1†	0.00	0.00
Polk	0	0.00	0	0.00	0.00
Putnam	3	0.03	15	0.65	0.68
St. Johns	2	0.36	27	7.92	8.28
Seminole	30	0.82	175	15.02	15.84
Volusia	3	0.12	18	1.51	1.63
Total	56	6.04	532	99.72	105.76

Note: 0.00 value means pumpage was insignificant (less than 0.01 million gallons per day) or did not occur.

*SJRWMD average of known flow from composite inventory used for estimated flow.

†County average of known flow from composite inventory used for estimated flow.

Source: Curtis 1997 (draft)

(Curtis 1997 [draft]). From October 1, 1994, to September 30, 1995, an estimated 16.50 mgd of fresh water had been saved as a result of properly plugging or abandoning these wells. As of September 1995, a total estimated 254.63 mgd of fresh water had been saved as a result of properly plugging or abandoning these wells.

TRENDS

1986 TO 1995

The 10-year (yr) period from 1986 to 1995 shows no significant trend in total freshwater use, despite a 25% increase in SJRWMD population (Figure 5 and Table 11). A 21% average increase in public supply water use has been offset by a 16% average decrease in agricultural and recreational water use, and an 11% average decrease in commercial/industrial water use. However, neither the increase nor the decreases are consistent; in any one year, total water use may increase or decrease depending on climatic conditions. No comparable trend analysis was performed for saline water use.

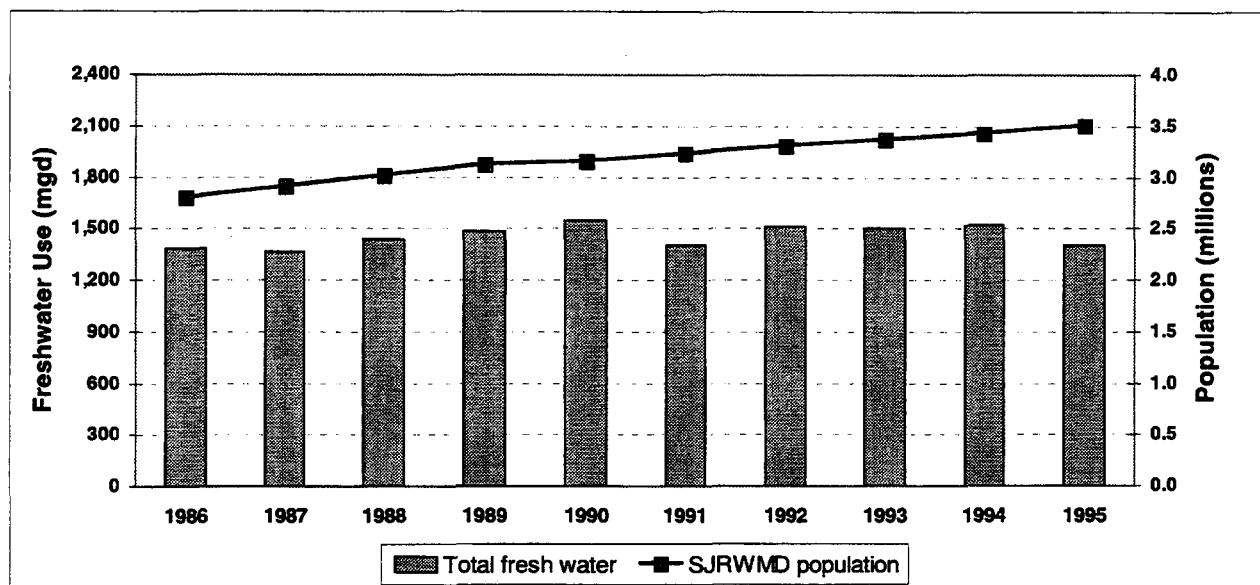


Figure 5. Freshwater use and population in the St. Johns River Water Management District, 1986–95. *Water use has remained constant, changing only slightly from year to year, while population has increased gradually. Note: Thermoelectric power generation water use and flow from abandoned artesian wells are not included.*

Table 11. Population and freshwater use (in million gallons per day) in the St. Johns River Water Management District (SJRWMD), 1986-95

Category	1986	1987	1988	1989*	1990	1991	1992	1993	1994	1995	Average
SJRWMD population	2,813,578	2,919,028	3,023,277	3,135,756	3,166,715	3,243,380	3,313,721	3,375,486	3,439,716	3,506,188	Not applicable
Public supply population	2,315,929	2,403,847	2,498,520	2,598,404	2,665,791	2,700,294	2,785,107	2,858,527	2,889,409	2,939,130	Not applicable
Domestic self-supply population	497,646	515,181	521,607	537,352	500,924	543,086	528,614	516,959	550,307	567,058	Not applicable
Public supply per capita	165	167	164	166	167	153	152	154	150	157	Not applicable
Fresh ground water	1,003.12	1,012.03	1,054.55	1,119.32	1,085.97	1,027.22	1,042.67	1,099.52	1,117.59	1,073.93	1,063.59
Fresh surface water	379.62	353.47	379.15	360.47	459.00	373.41	469.22	404.15	403.62	330.40	391.25
Total fresh water	1,382.74	1,365.50	1,433.70	1,479.79	1,544.97	1,400.63	1,511.89	1,503.67	1,521.21	1,404.33	1,454.84
Public supply	381.99	400.39	409.29	431.12	444.14	414.15	424.63	440.86	434.06	461.80	424.24
Domestic self-supply	82.33	85.71	86.73	90.24	83.86	84.51	84.92	82.20	85.35	93.42	85.93
Commercial/industrial	148.46	145.67	150.11	148.66	137.65	144.24	148.20	133.74	125.87	131.64	141.42
Agricultural and recreational irrigation [†]	617.97	581.24	630.92	600.09	605.31	561.12	642.04	607.18	607.56	519.25	597.27
Thermoelectric power generation	133.72	134.37	135.78	137.11	213.31	139.99	136.43	136.96	142.37	92.46	140.25
Abandoned artesian wells	18.27	18.12	20.87	56.60	60.70	56.62	75.67	102.73	126.00	105.76	64.13

Note: Over the years, some of the methods have changed. Check each source before making any detailed comparisons.

*Abandoned artesian well data came from Steele (pers. com. 1992). The sum of water use by category will not match the total by source.

[†]In 1992, recreational irrigation water use became a separate category; it had previously been included under agricultural irrigation. For this table, the 1995 quantity is a sum of both categories.

Source: Marella 1985, 1986, 1988, 1990; Florence 1990, 1991, 1992, 1994, 1995, 1996a, 1996b; Curtis 1997 (draft)

The normal yearly rainfall for the period 1961–90 is 49.84 inches (in.) (SJRWMD 1994). The average rainfall of 50.92 in. for the 10-yr period 1986–95 (Table 12) is nearly 2% above normal, and in 1995 was 5% above the 10-yr average. The average total use for this 10-yr period is 1,454.84 mgd. The highest total water use occurred in 1990, at 1,544.97 mgd, 6% above the 10-yr average. That year was the driest year of the period, with an average of 38.85 in. of rainfall, or 22% below normal and 24% below the 10-yr average.

The second highest amount of water use occurred in 1994, at 1,521.21 mgd, or 5% above the 10-yr average. The year 1991 was the wettest year during the period, with an average rainfall of 63.21 in. (Table 12), or 27% above normal and 24% above the 10-yr average. The lowest amount of water use occurred in 1987, at 1,365.50 mgd, or 6% below the 10-yr average.

Public supply water use increased most rapidly from 1986 to 1990, after which the rate of increase began to level off (Figure 6 and Table 11). Water use for this category was highest in 1995 (461.80 mgd) and lowest in 1986 (381.99 mgd). The average for this 10-yr period is 424.24 mgd; water use in 1995 was 9% above the average. There appears to be a general decline in per capita water use. Districtwide per capita use (for all use categories) for 1991 to 1995 ranged from 150 to 157 gallons per day, whereas the average use between 1986 and 1990 ranged from 164 to 167 gallons per day.

Domestic self-supply water use has fluctuated between 82.33 mgd (1986) and 93.42 mgd (1995) over the 10-yr period (Table 11). The average for this 10-yr period is 85.93 mgd; water use in 1995 was about 9% above the average.

Commercial/industrial water use has remained relatively constant, with an overall average decline of 11% (Figure 6 and Table 11). Water use for this category was highest in 1988 (150.11 mgd) and lowest in 1994 (125.87 mgd). The average for this 10-yr period is 141.42 mgd; water use in 1995 was 7% below the average.

Between 1986 and 1995, the combined agricultural and recreational (turf grass) irrigation water use had an overall average decline of 16%; however, this decline was not steady or constant (Figure 6 and Table 11). Water use for this category was highest in 1992 (642.04 mgd) and lowest

Table 12. Average annual rainfall from ten rainfall stations in the St. Johns River Water Management District, 1986-95 (in Inches)

Station	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	Average
Clermont	48.58	52.92	58.89	49.89	44.58	43.34	53.78	38.63	65.47	52.90	50.90
Daytona Beach	48.00	45.72	40.91	44.65	36.12	67.19	46.41	35.71	66.64	52.88	48.42
Gainesville Airport	52.31	46.63	61.21	46.38	47.56	57.00	51.65	42.42	50.12	51.73	50.70
Glen St. Mary	49.33	53.97	59.00	43.10	31.61	74.16	61.82	53.43	53.08	49.03	52.85
Jacksonville Airport	44.10	43.39	60.68	51.45	31.20	79.63	63.18	50.12	67.30	48.57	53.96
Melbourne Airport	30.90	50.38	36.11	43.00	48.00	58.58	49.36	33.90	79.13	70.56	49.99
Ocala	45.94	50.58	55.23	51.88	33.94	48.86	45.07	40.78	55.80	58.04	48.61
Orlando Airport	49.83	56.79	52.49	45.66	31.68	60.90	52.96	42.23	67.93	42.10	50.26
Sanford	43.90	46.23	60.00	40.65	36.59	69.28	68.88	34.49	35.49	59.32	49.48
Titusville	40.37	50.32	59.80	45.62	47.24	73.20	58.84	40.18	74.20	49.95	53.97
Average	45.33	49.69	54.43	46.23	38.85	63.21	55.20	41.19	61.52	53.51	50.92

Source: Jenab et al. 1997 (draft); NOAA 1995h; AWIS 1996

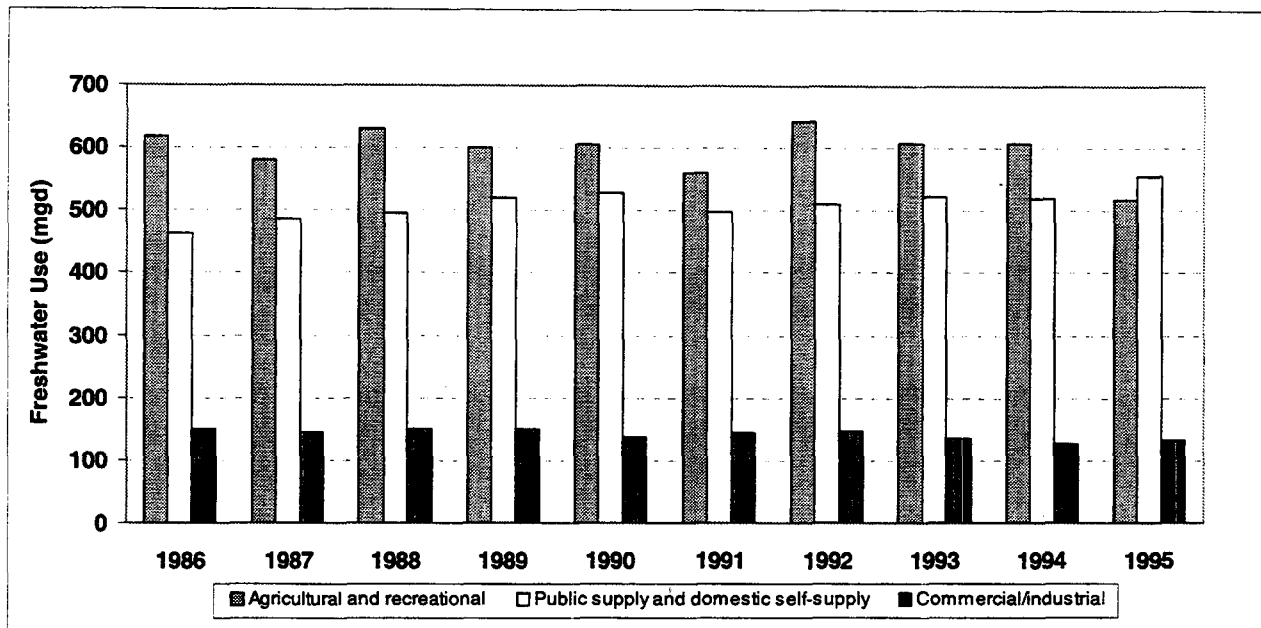


Figure 6. Freshwater use in the St. Johns River Water Management District by category, 1986–95. *Water use for agricultural and recreational irrigation has fluctuated from year to year in response to rainfall. Water use for public supply has increased steadily with increasing population and tourism.*

in 1995 (519.25 mgd). The average for this 10-yr period is 597.27 mgd; water use in 1995 for this category was 13% below the average.

For thermoelectric power generation and abandoned artesian wells, either data over the 10-yr period are incomplete or the methods for determining water use have varied. Therefore, comparisons of data for these categories are inappropriate.

1994 TO 1995

From 1994 to 1995, total freshwater use in SJRWMD decreased from 1,521.21 mgd to 1,404.33 mgd, or about 8% (Table 11). Fresh ground water use decreased from 1,117.59 mgd in 1994 to 1,073.93 mgd in 1995, or 4%. Fresh surface water use decreased from 403.62 mgd to 330.40 mgd in 1995, or 18%. Saline surface water use increased from 1,669.04 mgd (Florence 1996b) to 1,828.24 mgd in 1995, or 10% (Table 4).

Three categories of freshwater use increased from 1994 to 1995 (Tables 4 and 11):

- Public supply freshwater use increased 6%, from 434.06 mgd in 1994 to 461.80 mgd in 1995. This increase can be attributed primarily to population growth during the year.
- Domestic self-supply freshwater use increased 9%, from 85.35 mgd in 1994 to 93.42 mgd in 1995.
- Commercial/industrial freshwater use increased 5%, from 125.87 mgd in 1994 to 131.64 mgd in 1995. Saline surface water withdrawals, however, remained unchanged—2.25 mgd in 1994 and 1995.

Four categories of freshwater use decreased from 1994 to 1995 (Tables 4 and 11):

- Agricultural irrigation freshwater use decreased 13%, from 570.99 mgd in 1994 to 496.34 mgd in 1995. This change was mostly due to a decrease in pasture water use resulting from increased rainfall.
- Recreational irrigation freshwater use decreased 37%, from 36.57 mgd in 1994 to 22.91 mgd in 1995.
- Thermoelectric power generation freshwater use decreased 35%, from 142.37 mgd in 1994 to 92.46 mgd in 1995. Saline surface water withdrawals, however, increased 10%, from 1,666.79 mgd in 1994 to 1,825.99 mgd in 1995.
- Abandoned artesian well estimated flows decreased 16%, from 126.00 mgd in 1994 to 105.76 mgd in 1995.

SEASONAL TRENDS

Seasonal trends are evaluated based on the monthly totals. The monthly totals for each water use category were summed and divided by 365 days to get an average value in million gallons per day.

In 1995, total freshwater use was highest in May (Figure 7 and Table 13). Monthly trends in total water use follow the trends in agricultural water use, which depend on rainfall and growing season. March, April, and May tend to be both Florida's dry season and peak crop irrigation months, so irrigation demand usually increases during these months (Figure 8). In 1995, the peak agricultural water use continued through the month of June. Demand for residential lawn irrigation also tends to increase during these months, generating an increase in public supply water use.

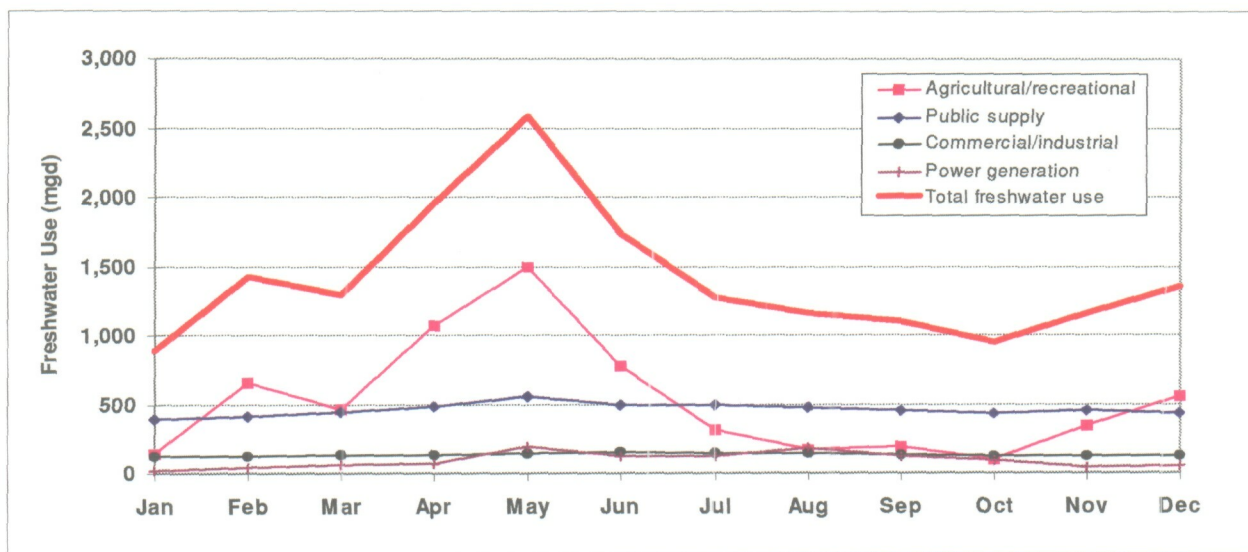


Figure 7. Total monthly freshwater use and freshwater use by category in the St. Johns River Water Management District, 1995. *Total monthly fluctuations in water use follow the fluctuations in agricultural irrigation. Note: Total freshwater use includes domestic self-supply and artesian well water uses, which are not individually graphed because of their low values.*

Public Supply

Public supply water use in SJRWMD in 1995 fluctuated from a low of 392.86 mgd in January to a high of 560.08 mgd in May (Figures 7 and 9 and Table 14). Typically, water use increases during the warm season (April through October), when outdoor residential use is at a high. The enclosed diskette (see pocket) provides a table showing monthly public supply water use by utility.

Table 13. Total monthly freshwater use by county, 1995 (in million gallons per day)

County	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Alachua	25.40	28.95	29.04	36.51	46.38	33.57	32.04	30.96	34.20	29.18	28.14	27.56
Baker	5.50	6.93	4.40	4.42	4.96	4.32	4.38	4.13	3.89	3.98	4.66	8.67
Bradford	0.20	0.30	0.39	0.48	0.46	0.41	0.31	0.26	0.38	0.32	0.28	0.28
Brevard	100.93	131.98	123.46	434.50	577.04	360.51	122.87	111.41	113.80	104.50	122.59	126.80
Clay	19.02	19.80	21.15	24.00	28.13	23.14	24.32	22.31	22.09	20.26	21.42	22.35
Duval	137.05	141.41	146.20	156.75	175.84	161.33	165.33	155.63	149.40	146.12	145.40	139.12
Flagler	10.20	16.12	24.97	27.50	27.34	11.88	8.62	7.88	8.08	11.65	11.77	7.41
Indian River	60.27	329.00	165.78	337.09	568.01	343.56	195.05	135.91	137.69	79.51	216.50	284.20
Lake	46.73	107.65	71.31	98.00	140.13	89.06	81.36	62.56	62.90	46.78	80.60	105.11
Marion	34.34	38.19	38.05	48.25	55.69	42.20	40.18	37.71	37.47	36.36	38.94	38.94
Nassau	41.37	43.43	44.08	43.92	45.93	47.71	47.77	46.66	47.13	45.90	43.65	44.55
Okeechobee	1.05	15.00	5.89	21.75	37.53	22.56	7.81	4.91	5.05	2.02	9.05	12.60
Orange	116.97	145.49	164.92	215.34	226.54	162.92	163.57	123.07	126.06	119.56	149.57	154.88
Osceola	0.82	5.60	2.47	49.47	63.68	44.07	3.13	2.14	2.20	1.15	3.55	4.77
Polk	0.84	3.98	1.76	2.34	4.38	2.57	2.07	1.46	1.40	0.79	2.32	3.72
Putnam	78.98	94.06	105.05	100.05	111.54	96.71	88.17	88.88	77.58	67.33	68.74	92.13
St. Johns	42.06	78.15	139.62	121.39	97.77	29.33	26.43	23.02	24.46	26.12	24.95	24.16
Seminole	70.26	84.70	86.06	96.11	109.77	89.64	87.74	77.62	81.63	74.41	83.58	86.43
Volusia	94.78	135.65	118.08	141.36	267.11	173.39	173.58	226.74	162.65	130.31	102.35	169.40
Total	886.77	1,426.39	1,292.68	1,959.23	2,588.23	1,738.88	1,274.73	1,163.26	1,098.06	946.25	1,158.06	1,353.08

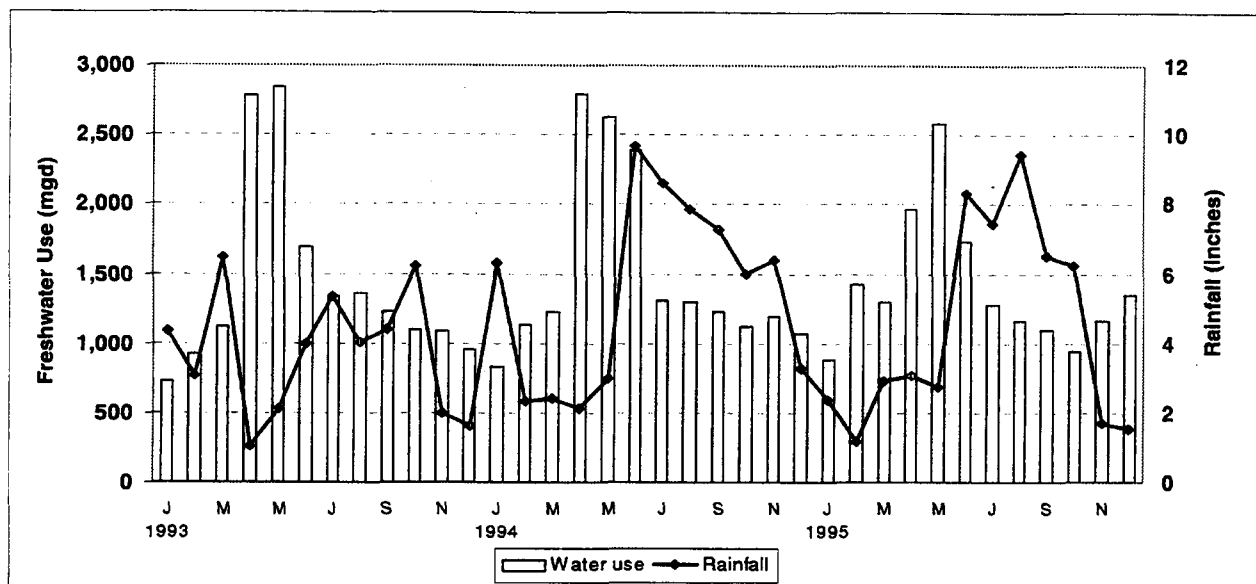


Figure 8. Total monthly freshwater use and average rainfall in the St. Johns River Water Management District, 1993–95. Water use is usually higher during periods of low rainfall.

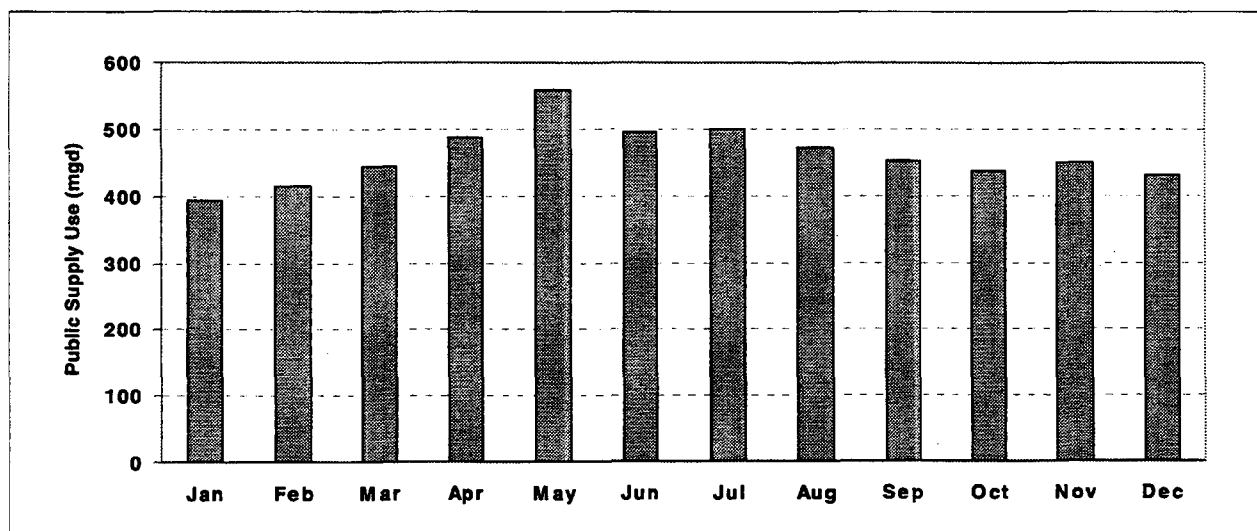


Figure 9. Monthly freshwater use for public supply in the St. Johns River Water Management District, 1995. Water use increases when outdoor residential use is high, typically during the warmer months of the year.

Table 14. Monthly public supply water use by county, 1995 (In million gallons per day)

County	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Alachua	19.28	20.47	21.59	22.93	26.06	23.78	22.67	22.31	24.54	21.93	20.57	19.58
Baker	0.59	0.62	0.62	0.61	0.83	0.73	0.79	0.72	0.68	0.68	0.63	0.66
Bradford	0.03	0.03	0.04	0.04	0.05	0.05	0.04	0.05	0.04	0.03	0.07	0.03
Brevard	46.11	48.03	50.09	53.40	59.93	54.14	53.06	51.30	50.11	48.82	51.98	49.17
Clay	9.58	9.85	11.11	12.86	16.99	12.98	14.26	12.96	10.40	10.94	11.71	10.73
Duval	84.24	82.58	92.87	102.49	119.74	105.97	111.64	107.09	99.40	96.51	94.66	91.71
Flagler	4.60	4.80	4.61	4.77	5.06	4.94	4.67	4.83	4.25	4.00	4.05	3.77
Indian River	10.11	10.87	10.86	11.11	12.18	11.20	11.05	12.83	10.12	10.10	11.81	11.58
Lake	20.60	23.29	26.20	28.23	34.91	29.47	28.76	25.72	25.77	23.69	25.72	24.77
Marion	11.64	12.69	14.07	15.21	18.39	15.17	15.30	14.37	13.71	13.86	14.07	13.64
Nassau	4.14	4.41	4.77	5.52	5.91	5.94	5.97	5.09	4.56	4.86	4.33	4.03
Okeechobee	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Orange	85.17	89.40	95.89	107.90	121.96	109.09	107.79	101.73	100.82	95.86	100.10	95.12
Osceola	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polk	0.06	0.11	0.15	0.17	0.17	0.22	0.15	0.12	0.11	0.10	0.12	0.12
Putnam	3.24	3.35	3.57	3.70	4.23	4.05	3.86	3.81	3.43	3.37	3.34	3.29
St. Johns	8.74	9.47	10.28	10.98	11.99	10.95	12.08	10.79	9.24	10.00	9.76	9.34
Seminole	40.80	44.67	50.32	55.72	63.87	55.22	55.84	49.05	48.53	46.04	50.36	47.39
Volusia	43.93	46.15	49.32	52.67	57.81	50.61	51.53	49.54	46.23	45.83	47.30	45.33
Total	392.86	415.79	446.36	488.31	460.08	494.51	499.46	472.31	451.94	436.62	450.28	430.31

Note: Okeechobee and Osceola counties did not have public supply water use in the St. Johns River Water Management District in 1995.

Commercial/Industrial Use

Commercial/industrial freshwater use in SJRWMD in 1995 varied from a low of 121.40 mgd in December to a high of 148.94 mgd in June (Figures 7 and 10 and Table 15). The enclosed diskette (see pocket) provides a table showing monthly commercial/industrial water use by utility.

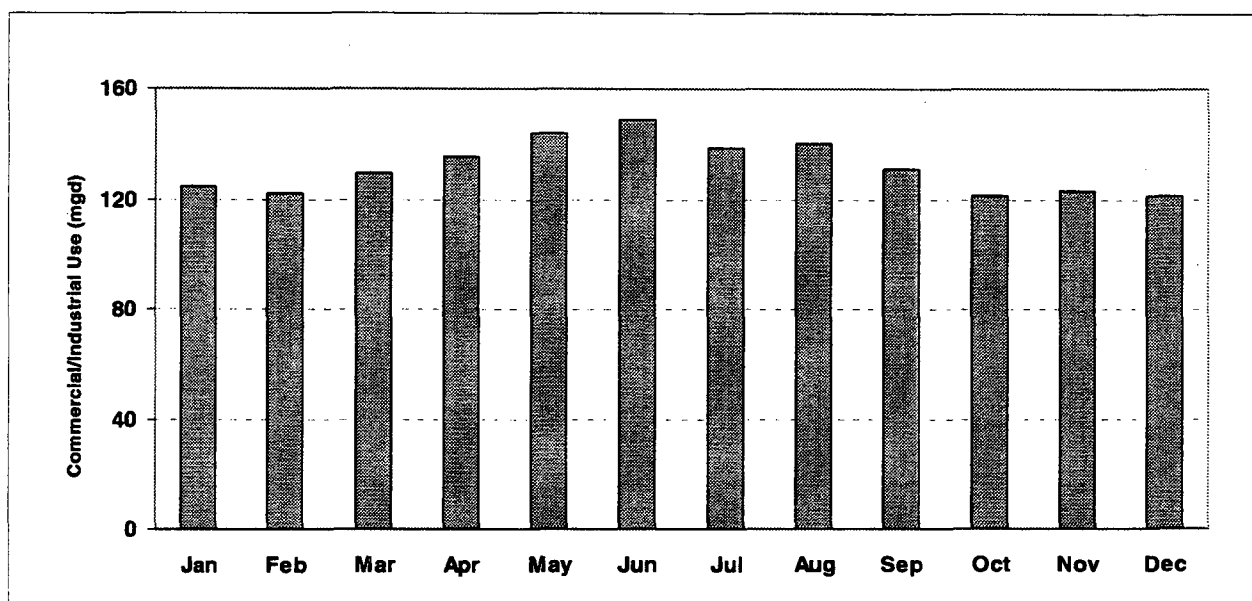


Figure 10. Monthly freshwater use for commercial/industrial purposes in the St. Johns River Water Management District, 1995. Commercial/industrial water use fluctuates slightly over the year.

Agricultural and Recreational Irrigation

Agricultural and recreational irrigation water use in SJRWMD in 1995 had a greater seasonal fluctuation than any other water use category—from a low of 102.37 mgd in October to a high of 1,497.02 mgd in May (Figures 7 and 11 and Table 16). These fluctuations are typical of irrigation water use and are inversely correlated to rainfall. October was atypically wet, and almost no agricultural irrigation occurred during the month.

Table 15. Monthly commercial/Industrial freshwater use by county, 1995 (In million gallons per day)

County	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Alachua	1.85	1.88	1.90	1.94	1.95	1.93	1.92	1.92	1.89	1.89	1.89	1.93
Baker	0.17	0.18	0.17	0.19	0.18	0.19	0.19	0.20	0.21	0.22	0.20	0.23
Bradford	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Brevard	1.33	1.38	1.28	1.80	1.92	1.94	1.98	2.00	1.98	1.99	1.97	1.94
Clay	4.39	3.95	4.33	4.81	4.37	4.37	4.27	4.00	5.54	3.91	4.42	5.29
Duval	27.58	26.96	27.15	26.17	25.37	24.90	23.82	23.41	22.77	23.66	24.45	20.94
Flagler	0.16	0.18	0.20	0.20	0.20	0.20	0.21	0.18	0.18	0.17	0.17	0.17
Indian River	0.29	0.25	0.20	0.21	0.14	0.09	0.08	0.13	0.08	0.10	0.14	0.13
Lake	10.25	10.61	10.58	13.68	13.53	13.10	12.31	11.66	11.28	10.32	10.00	9.38
Marion	2.05	1.98	1.61	2.14	1.97	1.76	1.60	1.27	1.74	1.54	2.46	2.11
Nassau	32.25	33.43	33.58	31.71	33.06	36.20	35.19	36.76	37.77	34.98	33.88	34.91
Okeechobee	0.03	0.03	0.03	0.04	0.03	0.03	0.04	0.05	0.03	0.02	0.03	0.03
Orange	4.95	3.95	4.17	5.01	4.08	2.68	2.39	2.59	3.07	2.66	3.42	4.50
Osceola	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polk	0.03	0.03	0.05	0.02	0.03	0.01	0.01	0.01	0.01	0.01	0.02	0.02
Putnam	38.61	36.36	43.32	46.42	56.06	60.70	53.45	55.01	43.54	39.04	38.84	39.00
St. Johns	0.05	0.06	0.06	0.06	0.07	0.06	0.06	0.06	0.06	0.07	0.06	0.06
Seminole	0.12	0.13	0.13	0.14	0.15	0.14	0.12	0.14	0.14	0.14	0.13	0.13
Volusia	0.70	0.75	0.73	0.70	0.74	0.64	0.71	0.76	0.66	0.72	0.67	0.63
Total	124.81	122.11	129.49	135.24	143.85	148.94	138.35	140.15	130.95	121.44	122.75	121.40

Note: Bradford and Osceola counties did not have any commercial/Industrial water use in the St. Johns River Water Management District in 1995.

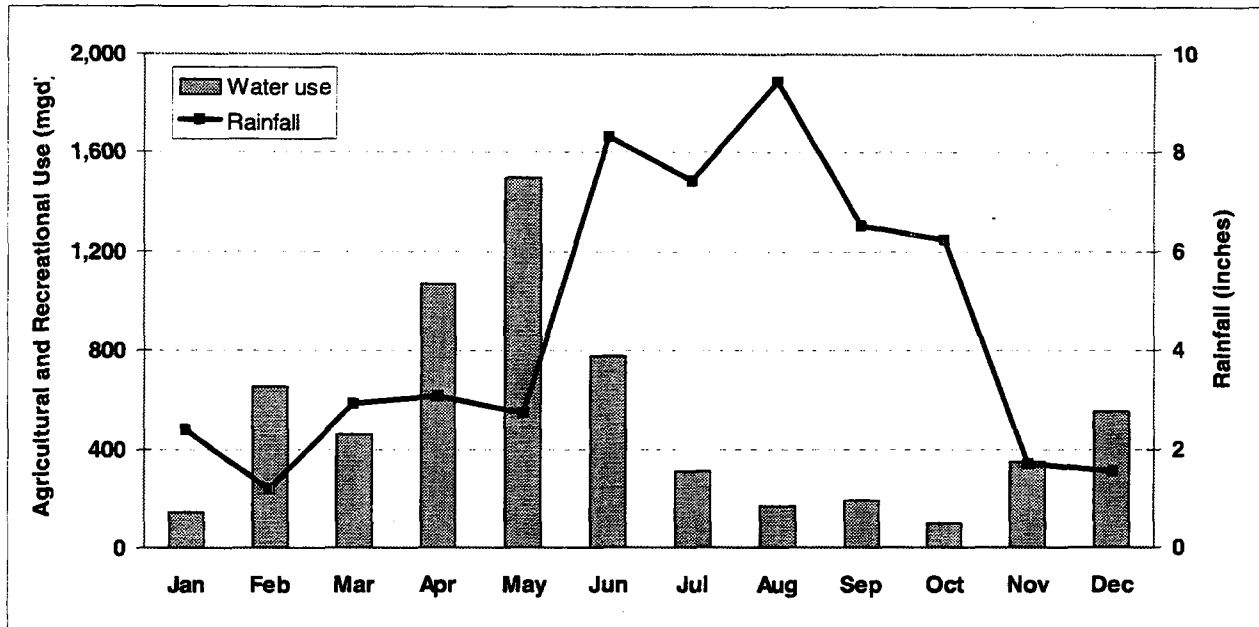


Figure 11. Monthly freshwater use for agricultural and recreational irrigation in the St. Johns River Water Management District, 1995. Agricultural irrigation and recreational irrigation (golf course) water use is inversely correlated to rainfall.

Thermoelectric Power Generation

Thermoelectric power generation freshwater use in SJRWMD in 1995 fluctuated from a low of 24.75 mgd in January to a high of 188.96 mgd in May (Figures 7 and 12 and Table 17). Fluctuations in water use are related to power plant shutdowns for maintenance or increased power demands during periods of extremely high or low temperature. The enclosed diskette (see pocket) provides a table showing monthly thermoelectric power generation water use by utility.

Table 16. Monthly agricultural and recreational water use by county, 1995 (In million gallons per day)

County	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Alachua	0.72	2.97	1.80	7.49	14.39	3.97	3.26	2.51	3.74	1.21	1.82	2.33
Baker	2.24	3.63	1.11	1.12	1.45	0.90	0.90	0.71	0.50	0.58	1.33	5.28
Bradford	0.01	0.11	0.19	0.28	0.25	0.20	0.11	0.05	0.18	0.13	0.05	0.09
Brevard	5.02	34.20	25.57	332.41	467.70	254.91	19.64	8.94	12.64	4.92	20.80	27.80
Clay	0.65	1.60	1.31	1.93	2.37	1.39	1.39	0.95	1.75	1.01	0.89	1.93
Duval	1.25	2.53	3.37	5.50	7.02	6.21	5.31	0.69	1.87	2.10	2.02	2.64
Flagler	3.29	8.99	18.01	20.38	19.93	4.59	1.59	0.72	1.50	5.33	5.40	1.32
Indian River	20.60	288.61	125.45	296.50	526.42	303.00	154.65	93.68	98.22	40.04	175.28	243.22
Lake	12.83	70.70	31.48	53.04	88.64	43.44	37.24	22.13	22.80	9.72	41.83	67.91
Marion	0.86	3.73	2.58	11.11	15.54	5.48	3.49	2.28	2.23	1.17	2.62	3.40
Nassau	0.20	0.81	0.95	1.91	2.18	0.79	1.83	0.03	0.02	1.28	0.66	0.83
Okeechobee	0.94	14.89	5.78	21.63	37.42	22.45	7.69	4.78	4.94	1.92	8.94	12.49
Orange	14.14	39.44	52.06	89.76	87.82	38.42	40.68	6.01	9.39	8.20	33.31	42.42
Osceola	0.33	5.11	1.98	48.98	63.19	43.58	2.64	1.65	1.71	0.66	3.06	4.28
Polk	0.53	3.62	1.34	1.93	3.96	2.12	1.69	1.11	1.06	0.46	1.96	3.36
Putnam	15.48	30.86	35.92	30.66	24.30	4.96	3.39	3.36	2.65	3.66	7.15	24.12
St. Johns	22.10	57.45	118.11	99.18	74.54	7.15	3.12	1.00	3.99	4.88	3.96	3.59
Seminole	4.89	15.44	11.14	15.78	21.26	9.82	7.32	3.97	8.50	3.78	8.64	14.46
Volusia	39.02	66.90	22.96	29.26	38.64	20.50	17.65	15.10	13.48	11.32	27.05	93.39
Total	145.10	651.59	461.11	1,068.85	1,497.02	773.88	313.59	169.67	191.17	102.37	346.77	554.86

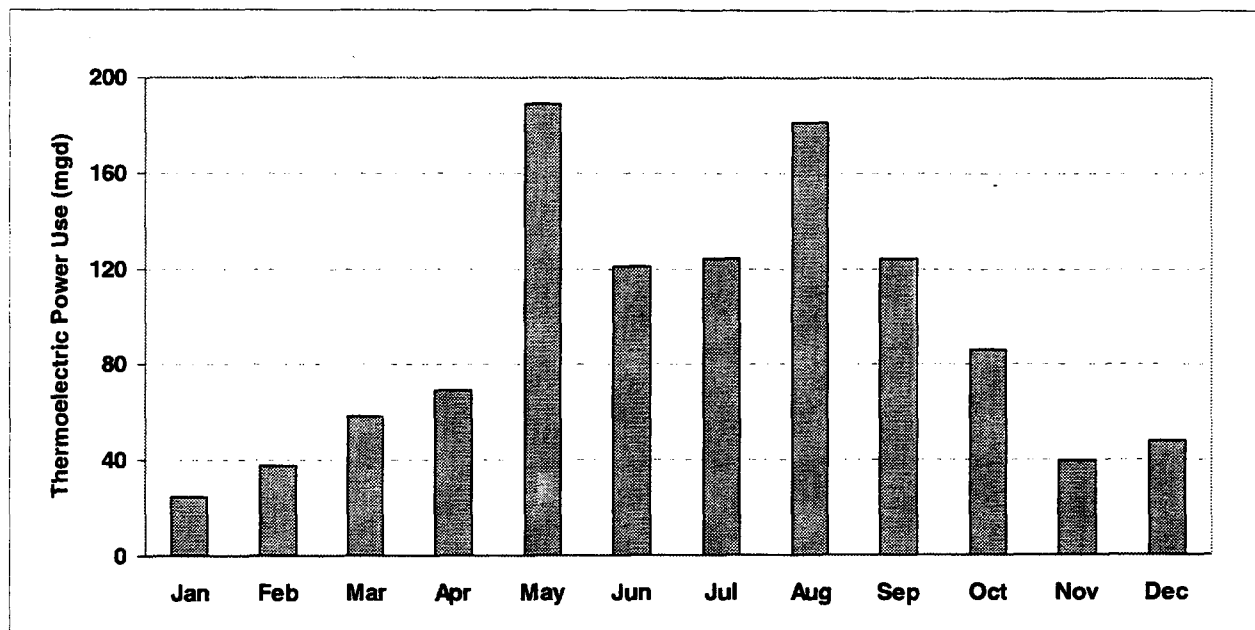


Figure 12. Monthly freshwater use for thermoelectric power generation in the St. Johns River Water Management District, 1995. Monthly fluctuations in water use for power generation are due to increased seasonal power demands or plant shutdowns for maintenance.

Table 17. Monthly thermoelectric power generation water use by county, 1995 (In million gallons per day)

County	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Alachua	0.02	0.10	0.22	0.62	0.45	0.36	0.66	0.69	0.50	0.62	0.33	0.19
Brevard	0.27	0.27	0.21	0.24	0.28	0.28	0.27	0.37	0.67	0.34	0.29	0.28
Duval	5.46	5.81	4.28	4.07	5.18	5.72	6.04	5.93	6.84	5.33	5.75	5.31
Indian River	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Orange	0.39	0.38	0.47	0.34	0.35	0.41	0.38	0.42	0.45	0.50	0.41	0.45
Putnam	0.63	0.73	0.83	0.75	0.82	0.71	0.81	0.83	0.75	0.57	0.59	0.44
Volusia	0.34	0.27	0.31	0.40	0.38	0.47	0.43	0.38	0.41	0.39	0.29	0.38
Total Fresh Groundwater	7.11	7.56	6.32	6.42	7.46	7.95	8.59	8.62	9.62	7.75	7.66	7.05
Putnam	12.11	13.85	12.50	9.61	17.22	17.38	17.75	16.96	18.30	11.78	9.91	16.37
Volusia	5.53	16.32	39.50	53.07	164.28	95.91	98.00	155.70	96.61	66.79	21.78	24.41
Total Fresh Surface Water	17.64	30.17	52.00	62.88	181.50	113.29	115.75	172.66	114.91	78.57	31.69	40.78
Total Fresh Water	24.75	37.73	58.32	69.10	188.96	121.24	124.34	181.28	124.53	86.32	39.35	47.83
Brevard	1,008.41	1,056.54	1,027.72	1,176.16	1,280.89	1,271.63	1,309.38	1,322.92	1,322.92	1,277.67	1,159.53	1,144.90
Duval	526.10	555.32	420.33	451.21	631.07	687.25	723.38	806.41	689.18	398.11	438.58	571.17
Indian River	43.25	29.91	66.13	40.15	40.87	58.62	60.79	77.19	56.69	38.43	33.44	94.50
Total Saline Surface Water	1,577.76	1,641.77	1,514.18	1,667.52	1,952.83	2,017.50	2,093.55	2,206.52	2,068.79	1,714.21	1,631.55	1,810.57

Note: Counties not listed did not have any thermoelectric power generation water use in the St. Johns River Water Management District in 1995.

GLOSSARY

Abandoned artesian well. An artesian well, with or without a mechanism for controlling discharge, that allows water to flow continuously at the land surface or into other aquifers through internal flow because of improper well construction or condition. Also called *wild flowing well*, *free-flowing well*, or *uncontrolled artesian well*.

Aquifer. A reservoir of ground water. In the St. Johns River Water Management District, there are three major aquifer systems: the Floridan, the intermediate, and the surficial. In this report, data for the intermediate and surficial aquifers are combined.

Average annual water use. The estimated annual average daily use determined by dividing the total quantity of water withdrawn from ground or surface water sources during the year (in gallons) by 365 days, except in a leap year. Total quantity is calculated by summing monthly totals reported in million gallons per month. Water use is reported in million gallons per day.

Desalinization. The process of removing dissolved salts, notably sodium chloride, from seawater and brackish waters.

Fresh water. Water with a total dissolved solids (TDS) concentration less than or equal to 1,000 milligrams per liter (mg/L). The freshwater category includes both potable and nonpotable water.

Per capita use. The average amount of water used per person during a standard time period, generally per day. Public supply per capita use refers to the amount of water withdrawn for all uses by public supply water, divided by the population served.

Reverse osmosis. A water treatment process which uses pressure to separate inorganic salts and/or simple organic compounds from water.

Saline water. Water with a chloride concentration greater than 1,000 mg/L or a TDS concentration greater than 3,000 mg/L.

Self-supplied water. Water withdrawn from a ground or surface water source by a user and not obtained from a public supply.

Slightly saline water. Water with a chloride concentration between 250 and 1,000 mg/L or a TDS concentration between 500 and 3,000 mg/L. This water is nonpotable, but treatable. Slightly saline water is either diluted with fresh water or treated by a desalinization process to potable standards for public supply. For other uses, this water is generally not treated. In this report, treated or diluted slightly saline water is included in the reported quantities of fresh water.

Water use. The quantity of water used and the way in which the water is used in the St. Johns River Water Management District. In most cases, water use equals withdrawals; however, in some cases, water is withdrawn in one county for use in another county. In the latter case, notations are made; otherwise, water use equals withdrawal.

Water withdrawal. The amount of water withdrawn from a source (ground or surface). Withdrawals are equivalent to *intake, water diversion, or pumpage*, terms commonly associated with industrial, agricultural irrigation, and public supply use, respectively. Water withdrawals are considered water use for this report.

Source: Marella 1993

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APPENDIX: 1995 WATER USE BY COUNTY

This appendix presents the detailed water use data from which this report is constructed. First, SJRWMD totals are presented for population, land area (University of Florida 1996a), water withdrawals by category, and agricultural acreage and water use by crop.

Then, for each county, tables present population and land area totals, water withdrawals by category, the reported water use of large water users, and agricultural acreage and water use by crop. On the county water user tables, the withdrawal source is fresh water unless designated (by footnote) as saline water. Monthly freshwater use is graphed for public supply water use except for Okeechobee and Osceola counties, which have only a small area within SJRWMD and where the numbers are very small. Some totals may not equal 100% because of rounding.

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Appendix—St. Johns River Water Management District

STATE OF FLORIDA

Total population 14,149,317
 Total area 53,937 mi²

St. Johns River Water Management District

<u>Population</u>		<u>Land Area (acres)</u>	
Total	3,506,188	Total area	7,096,817 (11,089 mi ²)
Public supply	2,939,130	Farmed	917,039
Self-supplied	567,058	Irrigated	344,628
Per capita (gallons per day)	157		

1995 Water Withdrawals (in mgd) by Category

	<u>Fresh Water</u>		<u>Saline Water</u>	
	<u>Ground</u>	<u>Surface</u>	<u>Total Fresh</u>	<u>Surface</u>
Public supply*	449.65	12.15	461.80	0.00
Domestic self-supply†	93.42	0.00	93.42	0.00
Commercial/industrial use	95.76	35.88	131.64	2.25
Agricultural irrigation	306.28	190.06	496.34	0.00
Recreational irrigation	15.40	7.51	22.91	0.00
Thermoelectric power generation	7.66	84.80	92.46	1,825.99
Abandoned artesian wells	<u>105.76</u>	<u>0.00</u>	<u>105.76</u>	<u>0.00</u>
Total	1,073.93	330.40	1,404.33	1,828.24
Total ground	1,073.93			
Total surface		<u>2,158.64</u>		
SJRWMD total		3,232.57		

*Includes slightly saline water (250 to 1,000 mg/L chlorides) treated through reverse osmosis and diluted with fresh water

†Total of the county domestic self-supply figures, not based on SJRWMD per capita

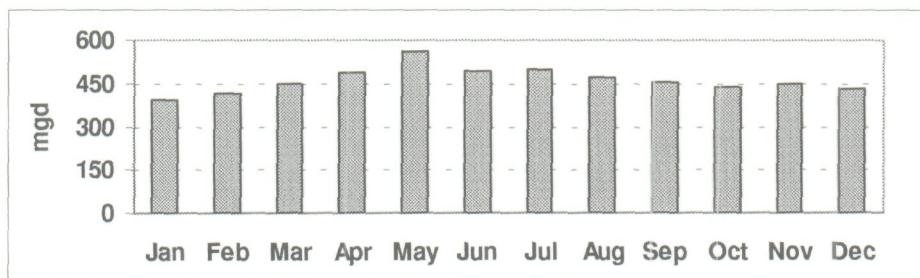


Figure A1. Monthly public supply water use in the St. Johns River Water Management District, 1995

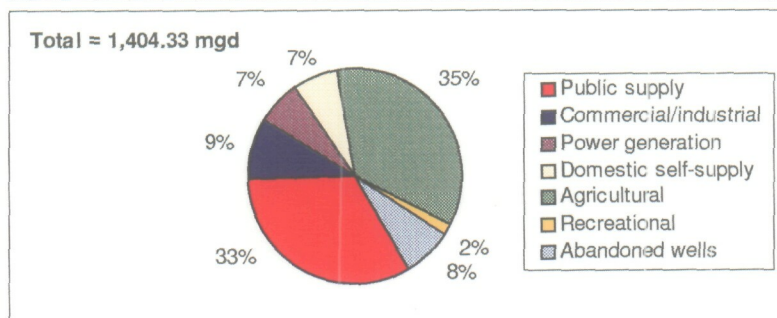


Figure A2. St. Johns River Water Management District—percentages, by category, of freshwater use, 1995

Annual Water Use Survey: 1995

1995 Total St. Johns River Water Management District Agricultural and Recreational Water Use

	Total Acres		Water Use (mgd)		Total
	Farmed	Irrigated	Ground	Surface	
Vegetable Crops					
Cabbage	6,080	5,750	2.79	0.04	2.83
Carrots	14,050	7,425	1.15	7.46	8.61
Cucumbers	2,190	1,895	0.92	0.09	1.01
Peppers	340	330	0.25	0.00	0.25
Potatoes	31,400	31,400	41.22	0.00	41.22
Tomatoes	95	95	0.09	0.00	0.09
Sweet corn	15,400	8,660	2.10	8.90	11.00
Watercress	150	150	0.51	0.00	0.51
Miscellaneous vegetables	23,847	16,415	6.37	9.02	15.39
Fruit Crops					
Blueberries	836	809	0.30	0.00	0.30
Citrus	112,866	103,082	97.60	125.32	222.92
Grapes	143	140	0.14	0.00	0.14
Peaches	100	75	0.10	0.00	0.10
Pecans	2,915	390	0.51	0.00	0.51
Strawberries	142	142	0.08	0.00	0.08
Watermelons	4,270	3,530	1.09	0.03	1.12
Miscellaneous fruit	450	340	0.76	0.01	0.77
Field Crops					
Field corn	15,740	7,240	3.93	2.71	6.64
Peanuts	2,250	209	0.11	0.00	0.11
Rice	50	50	0.16	0.00	0.16
Sorghum	8,000	1,150	0.34	0.05	0.39
Soybeans	300	200	0.03	0.03	0.06
Sugar cane	0	0	0.00	0.00	0.00
Tobacco	168	120	0.02	0.04	0.06
Wheat	150	0	0.00	0.00	0.00
Miscellaneous grains	7,894	510	0.13	0.07	0.20
Ornamentals and Grasses					
Ferns	8,856	8,856	26.25	5.34	31.59
Foliage	1,611	1,611	5.33	0.41	5.74
Woody ornamentals	3,617	3,228	10.15	1.35	11.50
Improved pasture	623,080	119,078	96.33	26.65	122.98
Sod	6,847	6,717	3.58	1.79	5.37
Turf grass (other than golf)	2,644	2,606	3.94	0.75	4.69
Total Agricultural	896,481	332,203	306.28	190.06	496.34
Recreational					
Turf grass (golf)	20,558	12,425	15.40	7.51	22.91
Grand total	917,039	344,628	321.68	197.57	519.25
Sprinkler acreage	56,044				
Flood acreage	232,408				
Low-volume acreage	<u>56,176</u>				
Total irrigated acreage	344,628				

ALACHUA COUNTY

Total population	198,261
Total area	874 mi ²

St. Johns River Water Management District

Population		Land Area (acres)	
Total	160,988	Total area	280,799 (439 mi ²)
Public supply	140,180	Farmed	38,870
Self-supplied	20,808	Irrigated	5,813
Per capita (gallons per day)	158		

1995 Water Withdrawals (in mgd) by Category

	Fresh Water		Saline Water	
	Ground	Surface	Total Fresh	Surface
Public supply	22.15	0.00	22.15	0.00
Domestic self-supply	3.29	0.00	3.29	0.00
Commercial/industrial use	1.91	0.00	1.91	0.00
Agricultural irrigation	3.28	0.05	3.33	0.00
Recreational irrigation	0.48	0.06	0.54	0.00
Thermoelectric power generation	0.40	0.00	0.40	0.00
Abandoned artesian wells	<u>0.24</u>	<u>0.00</u>	<u>0.24</u>	<u>0.00</u>
Total	31.75	0.11	31.86	0.00
Total ground	31.75			
Total surface	<u>0.11</u>			
County total	31.86			

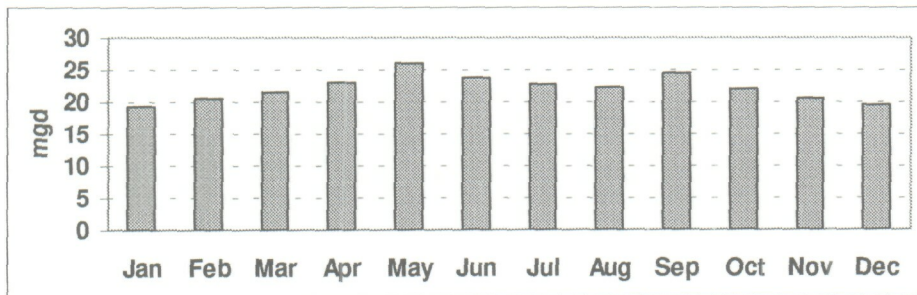


Figure A3. Monthly public supply water use in Alachua County, 1995

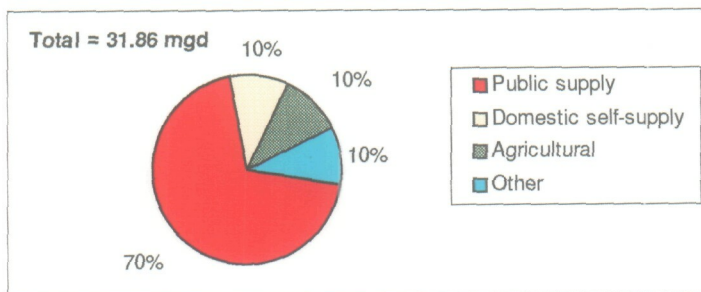


Figure A4. Alachua County—percentages, by category, of freshwater use, 1995. The "other" category includes abandoned artesian wells, commercial/industrial use, thermoelectric power generation, and recreational irrigation.

Annual Water Use Survey: 1995

1995 Water Users in Alachua County

User Utility/Facility	Category	Population Served	Ground Water (mgd)	Withdrawal Source	Surface Water (mgd)	Withdrawal Source
Arredondo Farms subdivision	Public supply	586	0.06	Floridan aquifer	0.00	
Arredondo Utilities	Public supply	569	0.06	Floridan aquifer	0.00	
Gainesville, City of	Public supply	135,000	21.52	Floridan aquifer	0.00	
Hawthorne, City of	Public supply	1,338	0.19	Floridan aquifer	0.00	
Hillcrest Township	Public supply	237	0.03	Floridan aquifer	0.00	
Kincaid Hills subdivision	Public supply	753	0.10	Floridan aquifer	0.00	
Micanopy, Town of	Public supply	837	0.08	Floridan aquifer	0.00	
Oak Park MHP	Public supply	621	0.08	Floridan aquifer	0.00	
West Gate MHP	Public supply	239	0.03	Floridan aquifer	0.00	
Total Public Supply		140,180	22.15		0.00	
Tacachale	Institutional		0.20	Floridan aquifer	0.00	
University of Florida*	Institutional		1.71	Floridan aquifer	0.00	
Total Commercial/Industrial			1.91		0.00	
Gainesville Regional Utilities, J.R. Kelly Plant	Power generation		0.40	Floridan aquifer	0.00	
Total Power Generation			0.40		0.00	

Note: MHP = mobile home park

*1994 figures

1995 Agricultural and Recreational Water Use in Alachua County

	Total Acres		Water Use (mgd)		Total
	Farmed	Irrigated	Ground	Surface	
Vegetable Crops					
Cabbage	0	0	0.00	0.00	0.00
Carrots	0	0	0.00	0.00	0.00
Cucumbers	300	300	0.07	0.00	0.07
Peppers	250	250	0.15	0.00	0.15
Potatoes	0	0	0.00	0.00	0.00
Tomatoes	0	0	0.00	0.00	0.00
Sweet corn	200	200	0.12	0.00	0.12
Watercress	0	0	0.00	0.00	0.00
Miscellaneous vegetables	1,300	1,300	0.60	0.00	0.60
Fruit Crops					
Blueberries	450	450	0.14	0.00	0.14
Citrus	40	40	0.05	0.00	0.05
Grapes	30	30	0.02	0.00	0.02
Peaches	15	15	0.02	0.00	0.02
Pecans	2,600	300	0.36	0.00	0.36
Strawberries*	5	5	0.00	0.00	0.00
Watermelons	1,100	1,100	0.26	0.00	0.26
Miscellaneous fruit	90	80	0.13	0.00	0.13
Field Crops					
Field corn	1,200	100	0.04	0.00	0.04
Peanuts	200	75	0.04	0.00	0.04
Rice	0	0	0.00	0.00	0.00
Sorghum	0	0	0.00	0.00	0.00
Soybeans	0	0	0.00	0.00	0.00
Sugar cane	0	0	0.00	0.00	0.00
Tobacco	0	0	0.00	0.00	0.00
Wheat	0	0	0.00	0.00	0.00
Miscellaneous grains	1,500	0	0.00	0.00	0.00
Ornamentals and Grasses					
Ferns	0	0	0.00	0.00	0.00
Foliage	4	4	0.01	0.00	0.01
Woody ornamentals	100	100	0.31	0.05	0.36
Improved pasture	28,500	680	0.28	0.00	0.28
Sod	100	50	0.03	0.00	0.03
Turf grass (other than golf)	406	406	0.65	0.00	0.65
Total Agricultural	38,390	5,485	3.28	0.05	3.33
Recreational					
Turf grass (golf)	480	328	0.48	0.06	0.54
Grand total	38,870	5,813	3.76	0.11	3.87
Sprinkler acreage 5,218					
Flood acreage 0					
Low-volume acreage 595					
Total irrigated acreage 5,813					

*Water use below threshold of 0.01 mgd

BAKER COUNTY

Total population 20,275
 Total area 585 mi²

St. Johns River Water Management District

Population		Land Area (acres)	
Total	19,261	Total area	341,453 (534 mi ²)
Public supply	4,130	Farmed	14,823
Self-supplied	15,131	Irrigated	631
Per capita (gallons per day)	165		

1995 Water Withdrawals (in mgd) by Category

	Fresh Water		Saline Water	
	Ground	Surface	Total Fresh	Surface
Public supply	0.68	0.00	0.68	0.00
Domestic self-supply	2.50	0.00	2.50	0.00
Commercial/industrial use	0.19	0.00	0.19	0.00
Agricultural irrigation	0.93	0.63	1.56	0.00
Recreational irrigation	0.09	0.00	0.09	0.00
Thermoelectric power generation	0.00	0.00	0.00	0.00
Abandoned artesian wells	0.00	0.00	0.00	0.00
Total	4.39	0.63	5.02	0.00
Total ground	4.39			
Total surface		0.63		
County total		5.02		

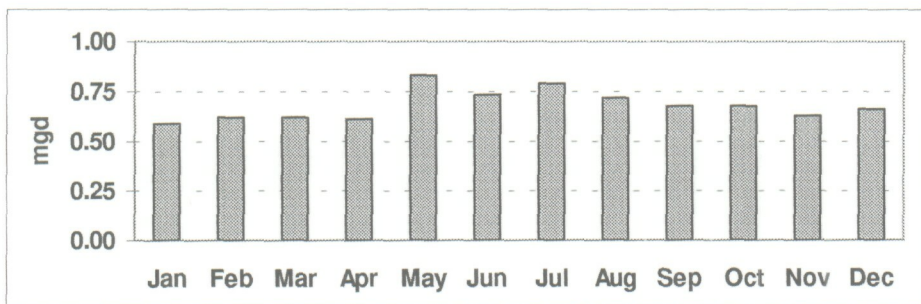


Figure A5. Monthly public supply water use in Baker County, 1995

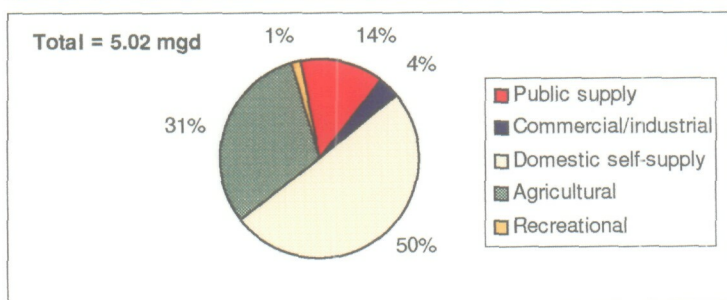


Figure A6. Baker County—percentages, by category, of freshwater use, 1995

Annual Water Use Survey: 1995

1995 Water Users in Baker County

User Utility/Facility	Category	Population Served	Ground Water (mgd)	Withdrawal Source	Surface Water (mgd)	Withdrawal Source
Macclenny, City of	Public supply	3,900	0.65	Floridan aquifer	0.00	
Macclenny II subdivision	Public supply	230	0.03	Floridan aquifer	0.00	
Total Public Supply		4,130	0.68		0.00	
Florida Wire and Cable	Industrial		0.04	Floridan aquifer	0.00	
Northeast Florida State Hospital	Institutional		0.15	Floridan aquifer	0.00	
Total Commercial/Industrial			0.19		0.00	

1995 Agricultural and Recreational Water Use in Baker County

	Total Acres		Water Use (mgd)		Total
	Farmed	Irrigated	Ground	Surface	
Vegetable Crops					
Cabbage	10	0	0.00	0.00	0.00
Carrots	0	0	0.00	0.00	0.00
Cucumbers	20	0	0.00	0.00	0.00
Peppers	10	0	0.00	0.00	0.00
Potatoes	0	0	0.00	0.00	0.00
Tomatoes	0	0	0.00	0.00	0.00
Sweet corn	100	0	0.00	0.00	0.00
Watercress	0	0	0.00	0.00	0.00
Miscellaneous vegetables*	522	4	0.00	0.00	0.00
Fruit Crops					
Blueberries	5	0	0.00	0.00	0.00
Citrus	0	0	0.00	0.00	0.00
Grapes*	2	2	0.00	0.00	0.00
Peaches*	3	3	0.00	0.00	0.00
Pecans	50	0	0.00	0.00	0.00
Strawberries*	2	2	0.00	0.00	0.00
Watermelons	400	60	0.02	0.00	0.02
Miscellaneous fruit	0	0	0.00	0.00	0.00
Field Crops					
Field corn	800	0	0.00	0.00	0.00
Peanuts	50	0	0.00	0.00	0.00
Rice	0	0	0.00	0.00	0.00
Sorghum	0	0	0.00	0.00	0.00
Soybeans	100	0	0.00	0.00	0.00
Sugar cane	0	0	0.00	0.00	0.00
Tobacco	128	80	0.00	0.04	0.04
Wheat	150	0	0.00	0.00	0.00
Miscellaneous grains	1,584	0	0.00	0.00	0.00
Ornamentals and Grasses					
Ferns	0	0	0.00	0.00	0.00
Foliage	0	0	0.00	0.00	0.00
Woody ornamentals	763	420	0.91	0.59	1.50
Improved pasture	10,000	0	0.00	0.00	0.00
Sod	0	0	0.00	0.00	0.00
Turf grass (other than golf)	0	0	0.00	0.00	0.00
Total Agricultural	14,699	571	0.93	0.63	1.56
Recreational					
Turf grass (golf)	124	60	0.09	0.00	0.09
Grand total	14,823	631	1.02	0.63	1.65
Sprinkler acreage 567					
Flood acreage 0					
Low-volume acreage 64					
Total irrigated acreage 631					

*Water use below threshold of 0.01 mgd

BRADFORD COUNTY

Total population 24,336
 Total area 293 mi²

St. Johns River Water Management District

Population		Land Area (acres)	
Total	1,825	Total area	3,750 (6 mi ²)
Public supply	364	Farmed	200
Self-supplied	1,461	Irrigated	190
Per capita (gallons per day)	110		

1995 Water Withdrawals (in mgd) by Category

	Fresh Water		Saline Water	
	Ground	Surface	Total Fresh	Surface
Public supply	0.04	0.00	0.04	0.00
Domestic self-supply	0.16	0.00	0.16	0.00
Commercial/industrial use	0.00	0.00	0.00	0.00
Agricultural irrigation	0.09	0.00	0.09	0.00
Recreational irrigation	0.06	0.00	0.06	0.00
Thermoelectric power generation	0.00	0.00	0.00	0.00
Abandoned artesian wells	0.00	0.00	0.00	0.00
Total	0.35	0.00	0.35	0.00
Total ground	0.35			
Total surface	0.00			
County total	0.35			

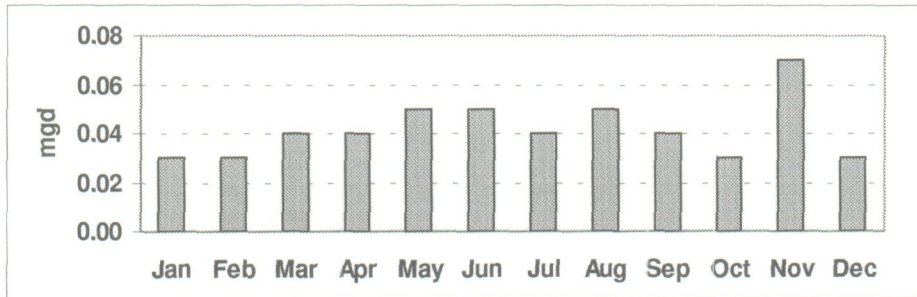


Figure A7. Monthly public supply water use in Bradford County, 1995

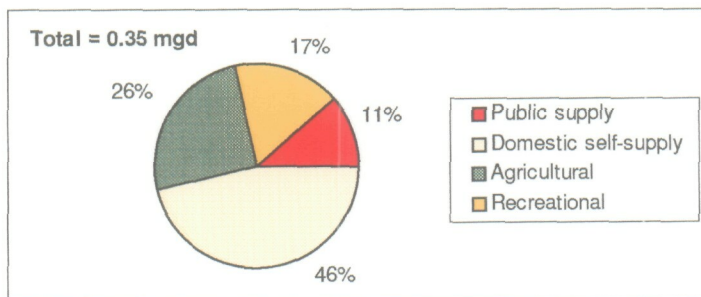


Figure A8. Bradford County—percentages, by category, of freshwater use, 1995

Annual Water Use Survey: 1995

1995 Water Users in Bradford County

User Utility/Facility	Category	Population Served	Ground Water (mgd)	Withdrawal Source	Surface Water (mgd)	Withdrawal Source
Southern States Utilities, Keystone Club Estates	Public supply	364	0.04	Floridan aquifer	0.00	
Total Public Supply		364	0.04		0.00	

1995 Agricultural and Recreational Water Use in Bradford County

	Total Acres		Water Use (mgd)		Total
	Farmed	Irrigated	Ground	Surface	
Vegetable Crops					
Cabbage	0	0	0.00	0.00	0.00
Carrots	0	0	0.00	0.00	0.00
Cucumbers	50	50	0.02	0.00	0.02
Peppers	0	0	0.00	0.00	0.00
Potatoes	0	0	0.00	0.00	0.00
Tomatoes	0	0	0.00	0.00	0.00
Sweet corn	0	0	0.00	0.00	0.00
Watercress	0	0	0.00	0.00	0.00
Miscellaneous vegetables	50	50	0.03	0.00	0.03
Fruit Crops					
Blueberries	0	0	0.00	0.00	0.00
Citrus	0	0	0.00	0.00	0.00
Grapes	0	0	0.00	0.00	0.00
Peaches	0	0	0.00	0.00	0.00
Pecans	0	0	0.00	0.00	0.00
Strawberries	50	50	0.02	0.00	0.02
Watermelons	0	0	0.00	0.00	0.00
Miscellaneous fruit	0	0	0.00	0.00	0.00
Field Crops					
Field corn	0	0	0.00	0.00	0.00
Peanuts	0	0	0.00	0.00	0.00
Rice	0	0	0.00	0.00	0.00
Sorghum	0	0	0.00	0.00	0.00
Soybeans	0	0	0.00	0.00	0.00
Sugar cane	0	0	0.00	0.00	0.00
Tobacco	0	0	0.00	0.00	0.00
Wheat	0	0	0.00	0.00	0.00
Miscellaneous grains	0	0	0.00	0.00	0.00
Ornamentals and Grasses					
Ferns	0	0	0.00	0.00	0.00
Foliage	0	0	0.00	0.00	0.00
Woody ornamentals	0	0	0.00	0.00	0.00
Improved pasture	0	0	0.00	0.00	0.00
Sod	0	0	0.00	0.00	0.00
Turf grass (other than golf)	10	10	0.02	0.00	0.02
Total Agricultural	160	160	0.09	0.00	0.09
Recreational					
Turf grass (golf)	40	30	0.06	0.00	0.06
Grand total	200	190	0.15	0.00	0.15
Sprinkler acreage 190					
Flood acreage 0					
Low-volume acreage 0					
Total irrigated acreage 190					

BREVARD COUNTY

Total population	444,992
Total area	1,019 mi ²

St. Johns River Water Management District

Population		Land Area (acres)	
Total	444,992	Total area	652,160 (1,019 mi ²)
Public supply	403,819	Farmed	134,970
Self-supplied	41,173	Irrigated	90,105
Per capita (gallons per day)	127		

1995 Water Withdrawals (in mgd) by Category

	Fresh Water		Saline Water	
	Ground	Surface	Total Fresh	Surface
Public supply*	39.20	12.15	51.35	0.00
Domestic self-supply	5.23	0.00	5.23	0.00
Commercial/industrial use	1.80	0.00	1.80	0.00
Agricultural irrigation	89.65	8.58	98.23	0.00
Recreational irrigation	1.07	1.77	2.84	0.00
Thermoelectric power generation	0.31	0.00	0.31	1,197.31
Abandoned artesian wells	<u>42.90</u>	<u>0.00</u>	<u>42.90</u>	<u>0.00</u>
Total	180.16	22.50	202.66	1,197.31
Total ground	180.16			
Total surface	<u>1,219.81</u>			
County total	1,399.97			

*Includes slightly saline water (250 to 1,000 mg/L chlorides) treated through reverse osmosis and diluted with fresh water. Includes 24.21 mgd of water withdrawn in Orange County for public supply use in Brevard County

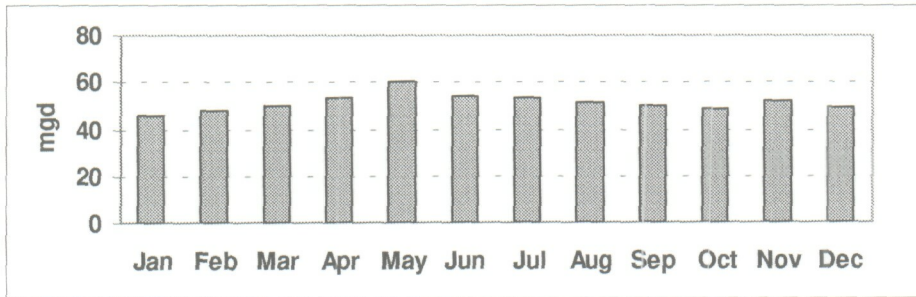


Figure A9. Monthly public supply water use in Brevard County, 1995

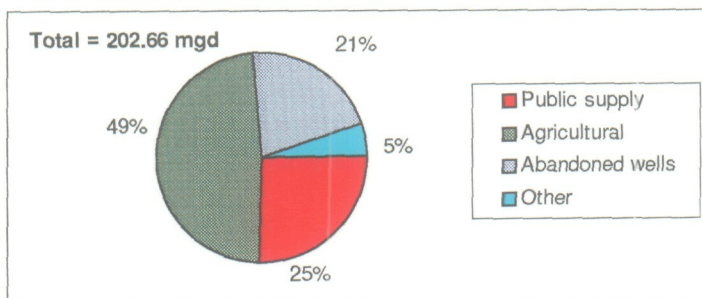


Figure A10. Brevard County—percentages, by category, of freshwater use, 1995. The "other" category includes domestic-self supply, commercial/industrial use, recreational irrigation, and thermoelectric power generation.

Annual Water Use Survey: 1995

1995 Water Users in Brevard County

User Utility/Facility	Category	Population Served	Ground Water (mgd)	Withdrawal Source	Surface Water (mgd)	Withdrawal Source
Aquarina Utilities	Public supply	208	0.03	Floridan aquifer and R/O	0.00	
Avatar Utilities	Public supply	8,965	0.47	Surficial aquifer	0.00	
Cocoa Wellfield*	Public supply	162,000	24.21	Floridan aquifer	0.00	
Melbourne, City of	Public supply	110,723	3.74		12.15	Lake Washington
Mobile Manor Trailer Park	Public supply	248	0.03	Surficial aquifer	0.00	
North Brevard County Utilities	Public supply	5,314	0.70	Surficial aquifer	0.00	
Northgate Trailer Park	Public supply	243	0.03	Floridan aquifer and R/O	0.00	
Palm Bay Utilities	Public supply	73,137	4.94	Surficial aquifer	0.00	
Pinewood Village	Public supply	175	0.02	Floridan aquifer	0.00	
Snug Harbor Village	Public supply	496	0.06	Floridan aquifer	0.00	
South Brevard Water Co-op	Public supply	815	0.07	Floridan aquifer	0.00	
Titusville, City of	Public supply	41,495	4.90	Floridan aquifer	0.00	
Total Public Supply		403,819	39.20		12.15	
Harris Corporation	Industrial		0.03	Surficial aquifer	0.00	
Praxair, Inc.	Industrial		0.08	Surficial aquifer	0.00	
FDOT I-95 rest facility	Institutional		0.01	Surficial aquifer	0.00	
JFK Space Center	Institutional		1.65	Surficial aquifer	0.00	
Longpoint Recreation Park	Institutional		0.03	Surficial aquifer	0.00	
Total Commercial/Industrial			1.80		0.00	
FPL, Cape Canaveral	Power generation		0.18	Surficial aquifer	680.79	Indian River [†]
OUC, Indian River	Power generation		0.13	Surficial aquifer	516.52	Indian River [†]
Total Power Generation			0.31		1,197.31	

Note: FDOT = Florida Department of Transportation
 FPL = Florida Power & Light
 OUC = Orlando Utilities Commission
 R/O = reverse osmosis

*Water withdrawn from Orange County

[†]Saline water

[‡]1994 figure

1995 Agricultural and Recreational Water Use in Brevard County

	Total Acres		Water Use (mgd)		Total
	Farmed	Irrigated	Ground	Surface	
Vegetable Crops					
Cabbage	0	0	0.00	0.00	0.00
Carrots	0	0	0.00	0.00	0.00
Cucumbers	0	0	0.00	0.00	0.00
Peppers	0	0	0.00	0.00	0.00
Potatoes	1,300	1,300	1.71	0.00	1.71
Tomatoes	0	0	0.00	0.00	0.00
Sweet corn	0	0	0.00	0.00	0.00
Watercress	0	0	0.00	0.00	0.00
Miscellaneous vegetables	100	100	0.09	0.00	0.09
Fruit Crops					
Blueberries	0	0	0.00	0.00	0.00
Citrus	11,000	6,450	9.93	3.86	13.79
Grapes	0	0	0.00	0.00	0.00
Peaches	0	0	0.00	0.00	0.00
Pecans	0	0	0.00	0.00	0.00
Strawberries	40	40	0.03	0.00	0.03
Watermelons	450	400	0.19	0.03	0.22
Miscellaneous fruit	20	20	0.04	0.00	0.04
Field Crops					
Field corn	1,500	1,500	1.52	0.00	1.52
Peanuts	0	0	0.00	0.00	0.00
Rice	0	0	0.00	0.00	0.00
Sorghum	800	800	0.29	0.00	0.29
Soybeans	0	0	0.00	0.00	0.00
Sugar cane	0	0	0.00	0.00	0.00
Tobacco	0	0	0.00	0.00	0.00
Wheat	0	0	0.00	0.00	0.00
Miscellaneous grains	0	0	0.00	0.00	0.00
Ornamentals and Grasses					
Ferns	0	0	0.00	0.00	0.00
Foliage	10	10	0.04	0.00	0.04
Woody ornamentals	200	200	0.71	0.00	0.71
Improved pasture	115,700	75,860	73.34	3.86	77.20
Sod	1,300	1,300	0.54	0.81	1.35
Turf grass (other than golf)	650	650	1.22	0.02	1.24
Total Agricultural	133,070	88,630	89.65	8.58	98.23
Recreational					
Turf grass (golf)	1,900	1,475	1.07	1.77	2.84
Grand total	134,970	90,105	90.72	10.35	101.07
Sprinkler acreage	4,430				
Flood acreage	81,360				
Low-volume acreage	<u>4,315</u>				
Total irrigated acreage	90,105				

CLAY COUNTY

Total population	120,896
Total area	601 mi ²

St. Johns River Water Management District

Population		Land Area (acres)	
Total	120,896	Total area	384,640 (601 mi ²)
Public supply	93,055	Farmed	44,591
Self-supplied	27,841	Irrigated	799
Per capita (gallons per day)	129		

1995 Water Withdrawals (in mgd) by Category

	Fresh Water		Saline Water	
	Ground	Surface	Total Fresh	Surface
Public supply	12.04	0.00	12.04	0.00
Domestic self-supply	3.59	0.00	3.59	0.00
Commercial/industrial use	4.46	0.00	4.46	0.00
Agricultural irrigation	0.73	0.00	0.73	0.00
Recreational irrigation	0.46	0.24	0.70	0.00
Thermoelectric power generation	0.00	0.00	0.00	0.00
Abandoned artesian wells	0.81	0.00	0.81	0.00
Total	22.09	0.24	22.33	0.00
Total ground	22.09			
Total surface	0.24			
County total	22.33			

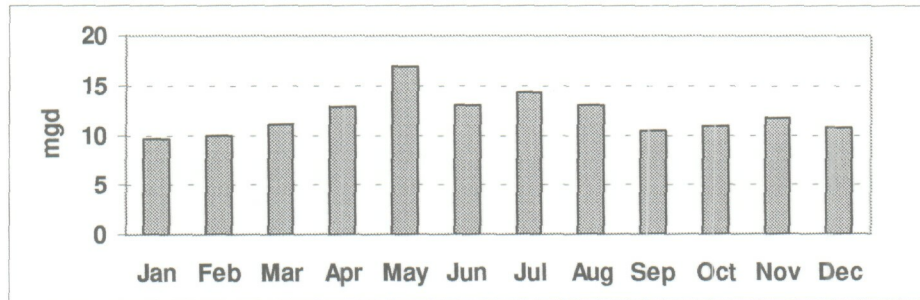


Figure A11. Monthly public supply water use in Clay County, 1995

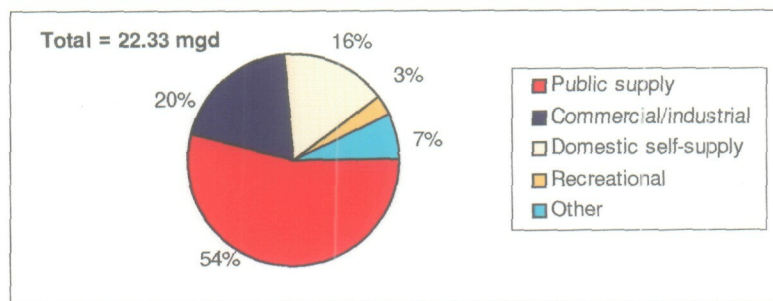


Figure A12. Clay County—percentages, by category, of freshwater use, 1995. The "other" category includes abandoned artesian wells and agricultural irrigation.

Annual Water Use Survey: 1995

1995 Water Users in Clay County

User Utility/Facility	Category	Population Served	Ground Water (mgd)	Withdrawal Source	Surface Water (mgd)	Withdrawal Source
Black Creek subdivision	Public supply	111	0.03	Floridan aquifer	0.00	
Clay County Utilities Authority	Public supply	72,914	8.87	Floridan aquifer	0.00	
Clay Utilities	Public supply	128	0.01	Floridan aquifer	0.00	
Green Cove Springs, Town of	Public supply	4,847	0.91	Floridan aquifer	0.00	
Magnolia Apts.	Public supply	821	0.08	Floridan aquifer	0.00	
McRae Landing	Public supply	251	0.03	Floridan aquifer	0.00	
Orange Park, City of	Public supply	9,514	1.62	Floridan aquifer	0.00	
Penney Farms, Town of	Public supply	638	0.04	Floridan aquifer	0.00	
Penney Retirement Community	Public supply	400	0.07	Floridan aquifer	0.00	
Southern States Utilities	Public supply	3,431	0.38	Floridan aquifer	0.00	
Total Public Supply		93,055	12.04		0.00	
E. I. DuPont, Trail Ridge	Industrial*		1.46	Floridan aquifer	0.00	
FRI, Goldhead Sand	Industrial*		0.95	Floridan aquifer	0.00	
Gilman Building Products	Industrial		0.05	Floridan aquifer	0.00	
J-M Manufacturing	Industrial		0.16	Floridan aquifer	0.00	
RGC Mineral Sands	Industrial*		1.35	Floridan aquifer	0.00	
Reynolds Industrial Park	Industrial ^f		0.06	Floridan aquifer	0.00	
Camp Blanding Military Base	Institutional		0.28	Floridan aquifer	0.00	
Lake Asbury Elementary	Institutional		0.02	Floridan aquifer	0.00	
Ridgeview Jr. High	Institutional		0.04	Floridan aquifer	0.00	
St. Johns River Community College	Institutional		0.05	Floridan aquifer	0.00	
Tynes Elementary	Institutional		0.04	Floridan aquifer	0.00	
Total Commercial/Industrial			4.46		0.00	

Note: FRI = Florida Rock Industries

*Mining industry

^fWater supplied by Green Cove Springs, mid-July through December

1995 Agricultural and Recreational Water Use in Clay County

	Total Acres		Water Use (mgd)		Total
	Farmed	Irrigated	Ground	Surface	
Vegetable Crops					
Cabbage	0	0	0.00	0.00	0.00
Carrots	0	0	0.00	0.00	0.00
Cucumbers	0	0	0.00	0.00	0.00
Peppers	0	0	0.00	0.00	0.00
Potatoes	0	0	0.00	0.00	0.00
Tomatoes	0	0	0.00	0.00	0.00
Sweet corn	0	0	0.00	0.00	0.00
Watercress	0	0	0.00	0.00	0.00
Miscellaneous vegetables	200	60	0.03	0.00	0.03
Fruit Crops					
Blueberries	15	13	0.01	0.00	0.01
Citrus	0	0	0.00	0.00	0.00
Grapes	0	0	0.00	0.00	0.00
Peaches	0	0	0.00	0.00	0.00
Pecans	0	0	0.00	0.00	0.00
Strawberries	0	0	0.00	0.00	0.00
Watermelons	0	0	0.00	0.00	0.00
Miscellaneous fruit	0	0	0.00	0.00	0.00
Field Crops					
Field corn	800	0	0.00	0.00	0.00
Peanuts	0	0	0.00	0.00	0.00
Rice	0	0	0.00	0.00	0.00
Sorghum	0	0	0.00	0.00	0.00
Soybeans	0	0	0.00	0.00	0.00
Sugar cane	0	0	0.00	0.00	0.00
Tobacco	0	0	0.00	0.00	0.00
Wheat	0	0	0.00	0.00	0.00
Miscellaneous grains	2,800	0	0.00	0.00	0.00
Ornamentals and Grasses					
Ferns	0	0	0.00	0.00	0.00
Foliage	50	50	0.18	0.00	0.18
Woody ornamentals	50	50	0.18	0.00	0.18
Improved pasture	40,000	100	0.07	0.00	0.07
Sod	0	0	0.00	0.00	0.00
Turf grass (other than golf)	146	146	0.26	0.00	0.26
Total Agricultural	44,061	419	0.73	0.00	0.73
Recreational					
Turf grass (golf)	530	380	0.46	0.24	0.70
Grand total	44,591	799	1.19	0.24	1.43
Sprinkler acreage 636					
Flood acreage 110					
Low-volume acreage 53					
Total irrigated acreage 799					

DUVAL COUNTY

Total population 718,355
 Total area 774 mi²

St. Johns River Water Management District

Population		Land Area (acres)	
Total	718,355	Total area	495,360 (774 mi ²)
Public supply	641,774	Farmed	16,392
Self-supplied	76,581	Irrigated	2,965
Per capita (gallons per day)	155		

1995 Water Withdrawals (in mgd) by Category

	Fresh Water		Saline Water	
	Ground	Surface	Total Fresh	Surface
Public supply	99.59	0.00	99.59	0.00
Domestic self-supply	11.87	0.00	11.87	0.00
Commercial/industrial use	24.75	0.00	24.75	0.00
Agricultural irrigation	1.11	0.05	1.16	0.00
Recreational irrigation	1.79	0.43	2.22	0.00
Thermoelectric power generation	5.47	0.00	5.47	575.09
Abandoned artesian wells	6.62	0.00	6.62	0.00
Total	151.20	0.48	151.68	575.09

Total ground	151.20
Total surface	575.57
County total	726.77

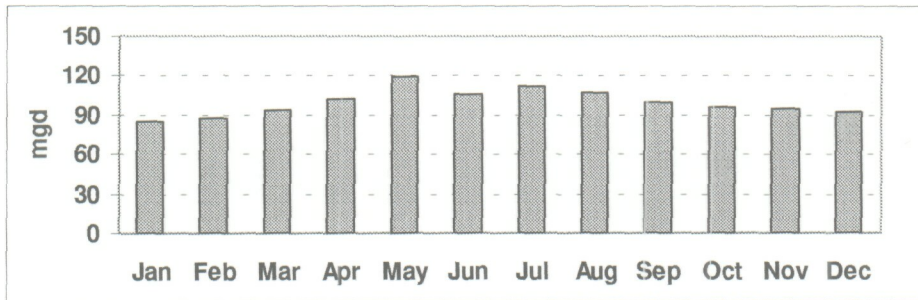


Figure A13. Monthly public supply water use in Duval County, 1995

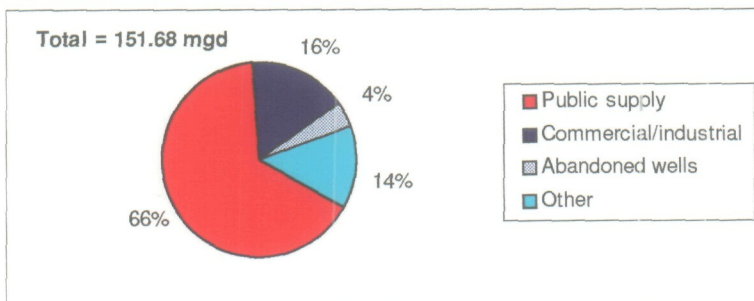


Figure A14. Duval County—percentages, by category, of freshwater use, 1995. The "other" category includes thermoelectric power generation, domestic self-supply, recreational irrigation, and agricultural irrigation.

Annual Water Use Survey: 1995

1995 Water Users in Duval County

User Utility/Facility	Category	Population Served	Ground Water (mgd)	Withdrawal Source	Surface Water (mgd)	Withdrawal Source
Atlantic Beach, City of	Public supply	15,833	3.15	Floridan aquifer	0.00	
Azalea MHP	Public supply	330	0.04	Floridan aquifer	0.00	
Baldwin, City of	Public supply	1,546	0.22	Floridan aquifer	0.00	
Baptist Home for Children	Public supply	100	0.03	Floridan aquifer	0.00	
Buccaneer Trailer Park	Public supply	508	0.05	Floridan aquifer	0.00	
Colonial Apts.	Public supply	231	0.02	Floridan aquifer	0.00	
Country Roads MHP	Public supply	445	0.08	Floridan aquifer	0.00	
Jacksonville Beach, City of	Public supply	20,135	2.90	Floridan aquifer	0.00	
Jacksonville, City of	Public supply	481,634	75.28	Floridan aquifer	0.00	
Lampighter MHP	Public supply	743	0.06	Floridan aquifer	0.00	
Malibu Gardens Apts.	Public supply	264	0.02	Floridan aquifer	0.00	
Neighborhood Utilities	Public supply	627	0.05	Floridan aquifer	0.00	
Neptune Beach, City of	Public supply	7,423	1.21	Floridan aquifer	0.00	
Normandy Village Utilities	Public supply	4,272	0.39	Floridan aquifer	0.00	
Oaks of Atlantic Beach MHP	Public supply	559	0.08	Floridan aquifer	0.00	
Ortega Utilities	Public supply	9,064	0.94	Floridan aquifer	0.00	
Regency Utilities	Public supply	5,019	0.94	Floridan aquifer	0.00	
Southern States Utilities	Public supply	15,042	1.83	Floridan aquifer	0.00	
United Water Florida	Public supply	77,999	12.30	Floridan aquifer	0.00	
Total Public Supply		641,774	99.59		0.00	
Building Products (Celotex)	Industrial		0.12	Floridan aquifer	0.00	
Bush Boake & Allen, Inc.	Industrial		1.73	Floridan aquifer	0.00	
Castleton Beverages Company	Industrial		0.09	Floridan aquifer	0.00	
Gate Maritime	Industrial		0.07	Floridan aquifer	0.00	
Jefferson Smurfit, Jacksonville	Industrial*		6.69	Floridan aquifer	0.00	
JPA, Blount Island	Industrial		0.07	Floridan aquifer	0.00	
Reichold Chemicals, Inc.	Industrial		0.14	Floridan aquifer	0.00	
SCM Glidco Organics	Industrial		1.81	Floridan aquifer	0.00	
Simplex Products	Industrial		0.48	Floridan aquifer	0.00	
Stone Container Corporation	Industrial*		8.76	Floridan aquifer	0.00	
Swisher & Son Mfg. Company	Industrial		0.10	Floridan aquifer	0.00	
U.S. Gypsum	Industrial		0.41	Floridan aquifer	0.00	
Bolles School	Institutional		0.07	Floridan aquifer	0.00	
Cecil Field NAS	Institutional		0.60	Floridan aquifer	0.00	
Dinsmore Correctional Facility	Institutional		0.01	Floridan aquifer	0.00	
FDOT I-10 rest facility'	Institutional		0.00	Floridan aquifer	0.00	
Jacksonville International Airport	Institutional		0.16	Floridan aquifer	0.00	
Jacksonville NAS	Institutional		1.52	Floridan aquifer	0.00	
Jacksonville University	Institutional		0.41	Floridan aquifer	0.00	
Mayport NAS	Institutional		1.44	Floridan aquifer	0.00	
Montgomery Correctional	Institutional		0.07	Floridan aquifer	0.00	
Total Commercial/Industrial			24.75		0.00	

1995 Water Users in Duval County—Continued

User Utility/Facility	Category	Population Served	Ground Water (mgd)	Withdrawal Source	Surface Water (mgd)	Withdrawal Source
Cedar Bay Generating Facility	Power generation		0.91	Floridan aquifer	0.00	
JEA, Eastport Power	Power generation		0.99	Floridan aquifer	494.94	St. Johns River [†]
SJR Power Park	Power generation		3.57	Floridan aquifer	80.15	St. Johns River [†]
Total Power Generation			5.47		575.09	

Note: FDOT = Florida Department of Transportation
 JEA = Jacksonville Electric Authority
 JPA = Jacksonville Port Authority
 MHP = mobile home park
 NAS = Naval Air Station
 SJR = St. Johns River

*Pulp and paper industry
[†]Pumpage less than 0.01 mgd
[‡]Saline water

Annual Water Use Survey: 1995

1995 Agricultural and Recreational Water Use in Duval County

	Total Acres		Water Use (mgd)		Total
	Farmed	Irrigated	Ground	Surface	
Vegetable Crops					
Cabbage	0	0	0.00	0.00	0.00
Carrots	0	0	0.00	0.00	0.00
Cucumbers	0	0	0.00	0.00	0.00
Peppers	0	0	0.00	0.00	0.00
Potatoes	0	0	0.00	0.00	0.00
Tomatoes	0	0	0.00	0.00	0.00
Sweet corn	0	0	0.00	0.00	0.00
Watercress	0	0	0.00	0.00	0.00
Miscellaneous vegetables	150	10	0.01	0.00	0.01
Fruit Crops					
Blueberries*	18	13	0.00	0.00	0.00
Citrus	0	0	0.00	0.00	0.00
Grapes	10	7	0.01	0.00	0.01
Peaches	0	0	0.00	0.00	0.00
Pecans	0	0	0.00	0.00	0.00
Strawberries	0	0	0.00	0.00	0.00
Watermelons	0	0	0.00	0.00	0.00
Miscellaneous fruit	0	0	0.00	0.00	0.00
Field Crops					
Field corn	200	0	0.00	0.00	0.00
Peanuts	0	0	0.00	0.00	0.00
Rice	0	0	0.00	0.00	0.00
Sorghum	0	0	0.00	0.00	0.00
Soybeans	0	0	0.00	0.00	0.00
Sugar cane	0	0	0.00	0.00	0.00
Tobacco	0	0	0.00	0.00	0.00
Wheat	0	0	0.00	0.00	0.00
Miscellaneous grains	200	200	0.06	0.00	0.06
Ornamentals and Grasses					
Ferns	0	0	0.00	0.00	0.00
Foliage	12	12	0.04	0.00	0.04
Woody ornamentals	60	60	0.21	0.00	0.21
Improved pasture	12,000	500	0.25	0.00	0.25
Sod	600	600	0.30	0.05	0.35
Turf grass (other than golf)	150	150	0.23	0.00	0.23
Total Agricultural	13,400	1,552	1.11	0.05	1.16
Recreational					
Turf grass (golf)	2,992	1,413	1.79	0.43	2.22
Grand total	16,392	2,965	2.90	0.48	3.38
Sprinkler acreage	2,891				
Flood acreage	40				
Low-volume acreage	34				
Total irrigated acreage	2,965				

*Water use below threshold of 0.01 mgd

FLAGLER COUNTY

Total population 36,997
 Total area 485 mi²

St. Johns River Water Management District

Population		Land Area (acres)	
Total	36,997	Total area	310,400 (485 mi ²)
Public supply	26,213	Farmed	25,067
Self-supplied	10,784	Irrigated	7,602
Per capita (gallons per day)	172		

1995 Water Withdrawals (in mgd) by Category

	Fresh Water		Saline Water	
	Ground	Surface	Total Fresh	Surface
Public supply	4.51	0.00	4.51	0.00
Domestic self-supply	1.85	0.00	1.85	0.00
Commercial/industrial use	0.18	0.00	0.18	0.00
Agricultural irrigation	6.67	0.26	6.93	0.00
Recreational irrigation	0.09	0.59	0.68	0.00
Thermoelectric power generation	0.00	0.00	0.00	0.00
Abandoned artesian wells	0.30	0.00	0.30	0.00
Total	13.60	0.85	14.45	0.00
Total ground	13.60			
Total surface	0.85			
County total	14.45			

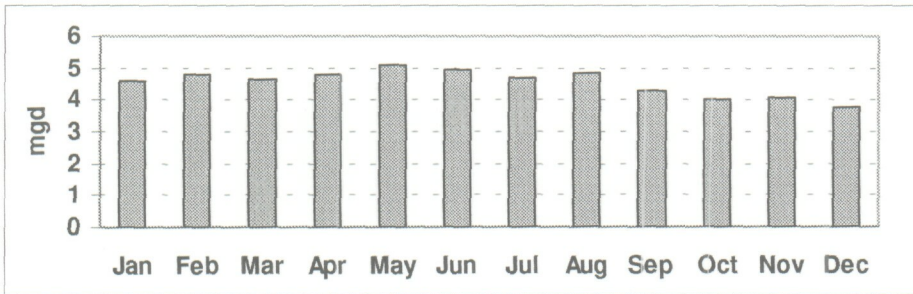


Figure A15. Monthly public supply water use in Flagler County, 1995

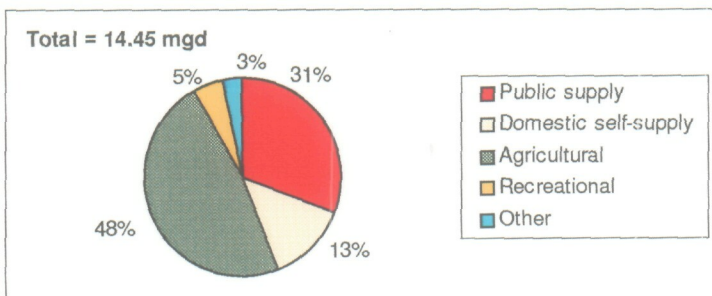


Figure A16. Flagler County—percentages, by category, of freshwater use, 1995. The "other" category includes abandoned artesian wells and commercial/industrial use.

Annual Water Use Survey: 1995

1995 Water Users in Flagler County

User Utility/Facility	Category	Population Served	Ground Water (mgd)	Withdrawal Source	Surface Water (mgd)	Withdrawal Source
Bunnell, City of	Public supply	2,087	0.25	Floridan aquifer	0.00	
Flagler Beach, City of	Public supply	4,175	0.49	Floridan aquifer	0.00	
Ocean City Utilities	Public supply	322	0.05	Floridan aquifer	0.00	
Palm Coast Utilities	Public supply	18,852	3.66	Floridan and surficial aquifers	0.00	
Plantation Bay	Public supply	777	0.06	Floridan aquifer	0.00	
Total Public Supply		26,213	4.51		0.00	
Bulow KOA	Institutional		0.11	Floridan aquifer	0.00	
Holiday Travel Park	Institutional		0.02	Floridan aquifer	0.00	
Marineland	Institutional		0.05	Floridan aquifer	0.00	
Total Commercial/Industrial			0.18		0.00	

1995 Agricultural and Recreational Water Use in Flagler County

	Total Acres		Water Use (mgd)		Total
	Farmed	Irrigated	Ground	Surface	
Vegetable Crops					
Cabbage	2,000	2,000	0.87	0.00	0.87
Carrots	0	0	0.00	0.00	0.00
Cucumbers	0	0	0.00	0.00	0.00
Peppers	0	0	0.00	0.00	0.00
Potatoes	3,000	3,000	3.94	0.00	3.94
Tomatoes	0	0	0.00	0.00	0.00
Sweet corn	0	0	0.00	0.00	0.00
Watercress	0	0	0.00	0.00	0.00
Miscellaneous vegetables	1,000	1,000	0.86	0.00	0.86
Fruit Crops					
Blueberries	20	20	0.01	0.00	0.01
Citrus	50	50	0.12	0.00	0.12
Grapes	0	0	0.00	0.00	0.00
Peaches	0	0	0.00	0.00	0.00
Pecans	0	0	0.00	0.00	0.00
Strawberries	0	0	0.00	0.00	0.00
Watermelons	100	100	0.04	0.00	0.04
Miscellaneous fruit	0	0	0.00	0.00	0.00
Field Crops					
Field corn	0	0	0.00	0.00	0.00
Peanuts	0	0	0.00	0.00	0.00
Rice	0	0	0.00	0.00	0.00
Sorghum	1,500	0	0.00	0.00	0.00
Soybeans	0	0	0.00	0.00	0.00
Sugar cane	0	0	0.00	0.00	0.00
Tobacco	0	0	0.00	0.00	0.00
Wheat	0	0	0.00	0.00	0.00
Miscellaneous grains	0	0	0.00	0.00	0.00
Ornamentals and Grasses					
Ferns	0	0	0.00	0.00	0.00
Foliage	0	0	0.00	0.00	0.00
Woody ornamentals	5	5	0.02	0.00	0.02
Improved pasture	16,580	695	0.63	0.00	0.63
Sod	300	220	0.16	0.00	0.16
Turf grass (other than golf)	150	150	0.02	0.26	0.28
Total Agricultural	24,705	7,240	6.67	0.26	6.93
Recreational					
Turf grass (golf)	362	362	0.09	0.59	0.68
Grand total	25,067	7,602	6.76	0.85	7.61
Sprinkler acreage 1,652					
Flood acreage 5,950					
Low-volume acreage 0					
Total irrigated acreage 7,602					

INDIAN RIVER COUNTY

Total population	100,261
Total area	503 mi ²

St. Johns River Water Management District

Population		Land Area (acres)	
Total	100,261	Total area	321,920 (503 mi ²)
Public supply	61,886	Farmed	136,180
Self-supplied	38,375	Irrigated	96,308
Per capita (gallons per day)	180		

1995 Water Withdrawals (in mgd) by Category

	Fresh Water		Saline Water	
	Ground	Surface	Total Fresh	Surface
Public supply*	11.16	0.00	11.16	0.00
Domestic self-supply	6.91	0.00	6.91	0.00
Commercial/industrial use	0.16	0.00	0.16	0.00
Agricultural irrigation	56.34	135.30	191.64	0.00
Recreational irrigation	2.01	0.99	3.00	0.00
Thermoelectric power generation	0.00	0.00	0.00	53.59
Abandoned artesian wells	22.36	0.00	22.36	0.00
Total	98.94	136.29	235.23	53.59
Total ground	98.94			
Total surface		136.29		
County total		235.23		

*Includes slightly saline water (250 to 1,000 mg/L chlorides) treated through reverse osmosis and diluted with fresh water

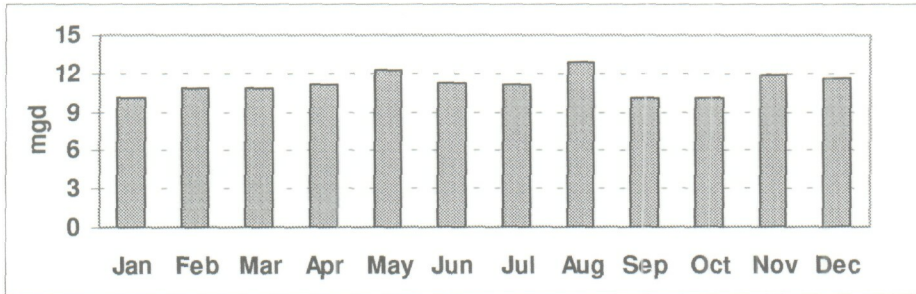


Figure A17. Monthly public supply water use in Indian River County, 1995

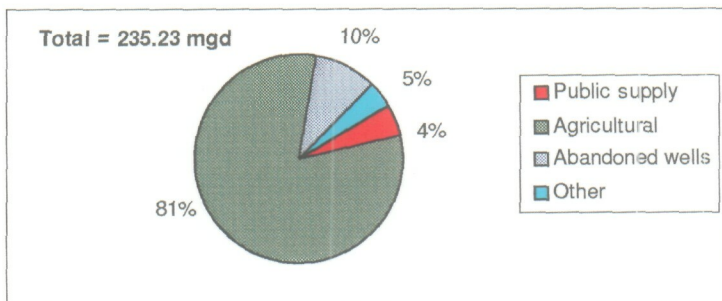


Figure A18. Indian River County—percentages, by category, of freshwater use, 1995. The "other" category includes commercial/industrial use, thermoelectric power generation, recreational irrigation, and domestic self-supply.

Annual Water Use Survey: 1995

1995 Water Users in Indian River County

User Utility/Facility	Category	Population Served	Ground Water (mgd)	Withdrawal Source	Surface Water (mgd)	Withdrawal Source
Aspen Whispering Palms	Public supply	300	0.02	Floridan aquifer and R/O	0.00	
Countryside North MHP	Public supply	1,000	0.03	Surficial aquifer	0.00	
Fellsmere, City of	Public supply	2,354	0.19	Floridan aquifer	0.00	
Indian River County Utilities	Public supply	19,411	3.75	Floridan aquifer	0.00	
Lakewood Village	Public supply	876	0.02	Floridan aquifer and R/O	0.00	
Oyster Pointe	Public supply	58	0.03	Floridan aquifer	0.00	
Sebastian Highlands	Public supply	3,246	0.36	Floridan aquifer	0.00	
Vero Beach, City of	Public supply	34,641	6.76	Floridan and surficial aquifers	0.00	
Total Public Supply		61,886	11.16		0.00	
Ocean Spray processing plant	Industrial		0.10	Floridan and surficial aquifers	0.00	
Sun-Ag/Fellsmere Packing House	Industrial		0.03	Surficial aquifer	0.00	
Indian River Correctional Facility	Institutional		0.03	Surficial aquifer	0.00	
Total Commercial/Industrial			0.16		0.00	
Vero Beach Municipal Power Plant	Power generation		0.00	Floridan aquifer	53.59	Indian River*
Total Power Generation			0.00		53.59	

Note: MHP = mobile home park
R/O = reverse osmosis

*Saline water

1995 Agricultural and Recreational Water Use in Indian River County

	Total Acres		Water Use (mgd)		Total
	Farmed	Irrigated	Ground	Surface	
Vegetable Crops					
Cabbage	150	150	0.09	0.00	0.09
Carrots	50	50	0.07	0.00	0.07
Cucumbers	0	0	0.00	0.00	0.00
Peppers	0	0	0.00	0.00	0.00
Potatoes	100	100	0.13	0.00	0.13
Tomatoes	10	10	0.01	0.00	0.01
Sweet corn	700	700	0.53	0.53	1.06
Watercress	150	150	0.51	0.00	0.51
Miscellaneous vegetables	2,020	2,020	1.34	1.34	2.68
Fruit Crops					
Blueberries	0	0	0.00	0.00	0.00
Citrus	65,446	65,446	38.92	116.75	155.67
Grapes	0	0	0.00	0.00	0.00
Peaches	0	0	0.00	0.00	0.00
Pecans	0	0	0.00	0.00	0.00
Strawberries	20	20	0.02	0.00	0.02
Watermelons	100	50	0.03	0.00	0.03
Miscellaneous fruit	100	100	0.34	0.00	0.34
Field Crops					
Field corn	2,000	2,000	0.00	2.45	2.45
Peanuts	0	0	0.00	0.00	0.00
Rice	50	50	0.16	0.00	0.16
Sorghum	0	0	0.00	0.00	0.00
Soybeans	0	0	0.00	0.00	0.00
Sugar cane	0	0	0.00	0.00	0.00
Tobacco	0	0	0.00	0.00	0.00
Wheat	0	0	0.00	0.00	0.00
Miscellaneous grains	300	300	0.07	0.07	0.14
Ornamentals and Grasses					
Ferns	0	0	0.00	0.00	0.00
Foliage	25	25	0.09	0.00	0.09
Woody ornamentals	60	60	0.21	0.00	0.21
Improved pasture	62,208	22,747	13.37	13.37	26.74
Sod	1,000	1,000	0.45	0.68	1.13
Turf grass (other than golf)	54	54	0.00	0.11	0.11
Total Agricultural	134,543	95,032	56.34	135.30	191.64
Recreational					
Turf grass (golf)	1,637	1,276	2.01	0.99	3.00
Grand total	136,180	96,308	58.35	136.29	194.64
Sprinkler acreage	2,040				
Flood acreage	67,545				
Low-volume acreage	<u>26,723</u>				
Total irrigated acreage	96,308				

LAKE COUNTY

Total population 176,931
 Total area 953 mi²

St. Johns River Water Management District

Population		Land Area (acres)	
Total	175,162	Total area	555,637 (868 mi ²)
Public supply	160,089	Farmed	79,638
Self-supplied	15,073	Irrigated	25,339
Per capita (gallons per day)	165		

1995 Water Withdrawals (in mgd) by Category

	Fresh Water		Saline Water	
	Ground	Surface	Total Fresh	Surface
Public supply	26.46	0.00	26.46	0.00
Domestic self-supply	2.49	0.00	2.49	0.00
Commercial/industrial use	10.23	1.14	11.37	0.00
Agricultural irrigation	34.09	5.72	39.81	0.00
Recreational irrigation	0.86	0.70	1.56	0.00
Thermoelectric power generation	0.00	0.00	0.00	0.00
Abandoned artesian wells	0.56	0.00	0.56	0.00
Total	74.69	7.56	82.25	0.00
Total ground	74.69			
Total surface		7.56		
County total		82.25		

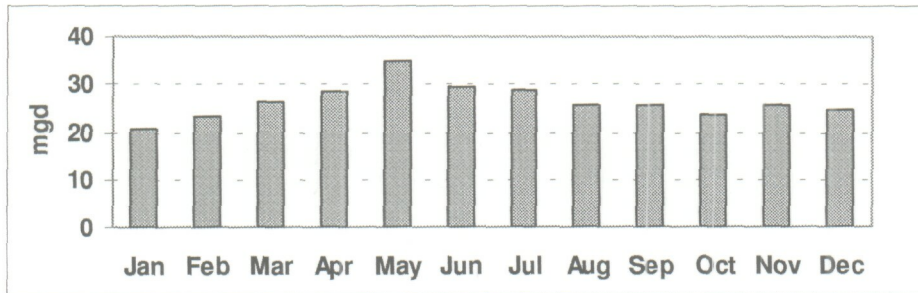


Figure A19. Monthly public supply water use in Lake County, 1995

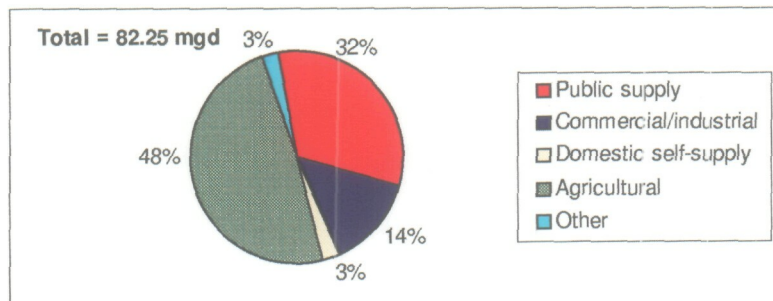


Figure A20. Lake County—percentages, by category, of freshwater use, 1995. The "other" category includes abandoned artesian wells and recreational irrigation.

Annual Water Use Survey: 1995

1995 Water Users in Lake County

User Utility/Facility	Category	Population Served	Ground Water (mgd)	Withdrawal Source	Surface Water (mgd)	Withdrawal Source
Astor Park Water Association	Public supply	2,600	0.27	Floridan aquifer	0.00	
B's RV Resort	Public supply	503	0.02	Floridan aquifer	0.00	
Bonfire MHP	Public supply	312	0.05	Floridan aquifer	0.00	
Brendenwood Water System	Public supply	159	0.04	Floridan aquifer	0.00	
Brittany Estates	Public supply	461	0.06	Floridan aquifer	0.00	
Century Estates	Public supply	250	0.03	Floridan aquifer	0.00	
Chain O'Lakes MHP	Public supply	692	0.06	Floridan aquifer	0.00	
Chateau-Orange Lake MHP	Public supply	384	0.13	Floridan aquifer	0.00	
Citrus Cove subdivision	Public supply	82	0.06	Floridan aquifer	0.00	
Clerbrook RV Resorts	Public supply	1,200	0.14	Floridan aquifer	0.00	
Clermont, City of	Public supply	7,233	1.35	Floridan aquifer	0.00	
Clermont East	Public supply	1,995	0.28	Floridan aquifer	0.00	
Corley Island MHP	Public supply	500	0.04	Floridan aquifer	0.00	
Country Life Family Park	Public supply	220	0.07	Floridan aquifer	0.00	
Country Squire MHP	Public supply	257	0.03	Floridan aquifer	0.00	
Crescent West subdivision	Public supply	126	0.15	Floridan aquifer	0.00	
Cypress Creek	Public supply	339	0.05	Floridan aquifer	0.00	
Dora Pines MHP	Public supply	230	0.17	Floridan aquifer	0.00	
Eagle Nest MHP	Public supply	340	0.06	Floridan aquifer	0.00	
Eustis, City of	Public supply	24,993	2.33	Floridan aquifer	0.00	
Forester Haven	Public supply	120	0.02	Floridan aquifer	0.00	
Forty-Eight Estates	Public supply	220	0.03	Floridan aquifer	0.00	
Fruitland Park, City of	Public supply	2,935	0.59	Floridan aquifer	0.00	
Grand Terrace subdivision	Public supply	262	0.04	Floridan aquifer	0.00	
Greater Groves	Public supply	945	0.12	Floridan aquifer	0.00	
Groveland, City of	Public supply	2,391	0.36	Floridan aquifer	0.00	
Harbor Hills	Public supply	277	0.19	Floridan aquifer	0.00	
Harbor Oaks MHP	Public supply	421	0.06	Floridan aquifer	0.00	
Haselton Mobile Villas	Public supply	600	0.04	Floridan aquifer	0.00	
Hawthorne at Leesburg	Public supply	2,747	0.42	Floridan aquifer	0.00	
Hill Water System	Public supply	65	0.08	Floridan aquifer	0.00	
Howey-in-the-Hills, Town of	Public supply	1,040	0.21	Floridan aquifer	0.00	
King's Cove subdivision	Public supply	440	0.06	Floridan aquifer	0.00	
Lady Lake Central	Public supply	3,042	0.26	Floridan aquifer	0.00	
Lady Lake MHP	Public supply	286	0.03	Floridan aquifer	0.00	
Lake Beauclaire subdivision	Public supply	58	0.02	Floridan aquifer	0.00	
Lake Crescent Hills	Public supply	138	0.12	Floridan aquifer	0.00	
Lake Griffin Isles MHP	Public supply	924	0.09	Floridan aquifer	0.00	
Lake Ridge Club	Public supply	84	0.09	Floridan aquifer	0.00	
Lake Utility Company	Public supply	2,796	0.53	Floridan aquifer	0.00	
Lake Yale Estates	Public supply	40	0.02	Floridan aquifer	0.00	
Lakeside Village	Public supply	262	0.04	Floridan aquifer	0.00	
Lakeview Terrace Center	Public supply	271	0.05	Floridan aquifer	0.00	
Leesburg, City of	Public supply	23,103	4.87	Floridan aquifer	0.00	

1995 Water Users in Lake County—Continued

User Utility/Facility	Category	Population Served	Ground Water (mgd)	Withdrawal Source	Surface Water (mgd)	Withdrawal Source
Leisure Meadows MH Ranch	Public supply	236	0.03	Floridan aquifer	0.00	
Little Lake Harris Shores	Public supply	316	0.03	Floridan aquifer	0.00	
Mascotte, Town of	Public supply	2,297	0.25	Floridan aquifer	0.00	
Mid Florida Lakes MHP	Public supply	2,296	0.31	Floridan aquifer	0.00	
Minneola, City of	Public supply	2,182	0.39	Floridan aquifer	0.00	
Molokai Park Water System	Public supply	559	0.03	Floridan aquifer	0.00	
Monteverde MHP	Public supply	600	0.06	Floridan aquifer	0.00	
Monteverde, Town of	Public supply	1,097	0.15	Floridan aquifer	0.00	
Mt. Dora, City of	Public supply	18,778	2.72	Floridan aquifer	0.00	
Oak Springs MHP	Public supply	1,025	0.17	Floridan aquifer	0.00	
Palm Shores RV Resort	Public supply	702	0.05	Floridan aquifer	0.00	
Pennbrooke Fairways	Public supply	328	0.11	Floridan aquifer	0.00	
Raintree Harbor	Public supply	55	0.03	Floridan aquifer	0.00	
Ridge Crest MHP	Public supply	476	0.05	Floridan aquifer	0.00	
Shangri-La by the Sea	Public supply	393	0.06	Floridan aquifer	0.00	
Silver Oaks subdivision	Public supply	85	0.03	Floridan aquifer	0.00	
South Umatilla Water Association	Public supply	334	0.05	Floridan aquifer	0.00	
Southern States Utilities	Public supply	8,113	1.50	Floridan aquifer	0.00	
Southlake Utilities	Public supply	650	0.07	Floridan aquifer	0.00	
Springs Park Area	Public supply	316	0.08	Floridan aquifer	0.00	
Summit Chase Villas	Public supply	474	0.03	Floridan aquifer	0.00	
Sunlake Estates	Public supply	667	0.28	Floridan aquifer	0.00	
Tavares, City of	Public supply	10,259	1.49	Floridan aquifer	0.00	
Treasure Cove	Public supply	50	0.02	Floridan aquifer	0.00	
Umatilla, City of	Public supply	2,406	0.44	Floridan aquifer	0.00	
Utilities Inc. of Florida	Public supply	796	0.29	Floridan aquifer	0.00	
Villages of Lake-Sumter	Public supply	16,031	3.39	Floridan aquifer	0.00	
Water Oak Estates	Public supply	1,474	0.34	Floridan aquifer	0.00	
Waterwood subdivision	Public supply	295	0.07	Floridan aquifer	0.00	
Wedgewood subdivision	Public supply	304	0.16	Floridan aquifer	0.00	
Woodland Heritage MHP	Public supply	152	0.05	Floridan aquifer	0.00	
Total Public Supply		160,089	26.46		0.00	
SSU, Sunshine Parkway	Commercial		0.09	Floridan aquifer	0.00	
Classic Manufacturing	Industrial		0.02	Floridan aquifer	0.00	
Coca Cola, Leesburg plant	Industrial		0.51	Floridan aquifer	0.00	
Eustis Sand Company	Industrial*		0.93	Floridan aquifer	1.14	Mine pit [†]
Florida Select Citrus (B&W Canning)	Industrial		0.21	Floridan aquifer	0.00	
FRI, Astatula mine	Industrial*		0.10	Floridan aquifer	0.00	
FRI, Lake Sand Plant	Industrial*		0.00	Floridan aquifer	0.00	
Golden Gem	Industrial		0.96	Floridan aquifer	0.00	
Service Ice Company	Industrial		0.09	Floridan aquifer	0.00	
Silver Sand Company, Clermont mine	Industrial*		6.14	Floridan aquifer	0.00	
Southridge Industrial	Industrial		0.04	Floridan aquifer	0.00	
All Seasons Resort	Institutional		0.03	Floridan aquifer	0.00	
Blue Parrot RV Park	Institutional		0.06	Floridan aquifer	0.00	

Annual Water Use Survey: 1995

1995 Water Users in Lake County—Continued

User Utility/Facility	Category	Population Served	Ground Water (mgd)	Withdrawal Source	Surface Water (mgd)	Withdrawal Source
Camp La-Noche, BSA	Institutional		0.02	Floridan aquifer	0.00	
Camp Ocala	Institutional		0.02	Floridan aquifer	0.00	
Citrus Valley Campground	Institutional		0.08	Floridan aquifer	0.00	
Fisherman's Cove	Institutional		0.03	Floridan aquifer	0.00	
Florida United Methodist	Institutional		0.04	Floridan aquifer	0.00	
Holiday Travel Resort	Institutional		0.13	Floridan aquifer	0.00	
Lake Correctional Facility	Institutional		0.18	Floridan aquifer	0.00	
Lake County Inn	Institutional		0.03	Floridan aquifer	0.00	
Lake Yale Baptist Assembly	Institutional		0.04	Floridan aquifer	0.00	
Mission Inn	Institutional		0.22	Floridan aquifer	0.00	
Orlando Resort	Institutional		0.04	Floridan aquifer	0.00	
Pine Lake Retreat	Institutional		0.03	Floridan aquifer	0.00	
Thousand Trails Campground	Institutional		0.09	Floridan aquifer	0.00	
Vacation Village Condominiums	Institutional		0.08	Floridan aquifer	0.00	
Wekiva Falls Resort	Institutional		0.02	Floridan aquifer	0.00	
Total Commercial/Industrial			10.23		1.14	

Note: BSA = Boy Scouts of America
 FRI = Florida Rock Industries
 MHP = mobile home park
 RV = recreational vehicle
 SSU = Southern States Utilities

*Mining industry
 †1994 figure

1995 Agricultural and Recreational Water Use in Lake County

	Total Acres		Water Use (mgd)		Total
	Farmed	Irrigated	Ground	Surface	
Vegetable Crops					
Cabbage	150	150	0.04	0.04	0.08
Carrots	500	500	0.28	0.28	0.56
Cucumbers	370	370	0.09	0.09	0.18
Peppers	0	0	0.00	0.00	0.00
Potatoes	50	50	0.07	0.00	0.07
Tomatoes	0	0	0.00	0.00	0.00
Sweet corn	750	750	0.52	0.35	0.87
Watercress	0	0	0.00	0.00	0.00
Miscellaneous vegetables	850	850	0.44	0.29	0.73
Fruit Crops					
Blueberries	61	61	0.03	0.00	0.03
Citrus	20,555	16,842	25.67	3.84	29.51
Grapes	54	54	0.06	0.00	0.06
Peaches	7	7	0.01	0.00	0.01
Pecans	80	80	0.13	0.00	0.13
Strawberries*	5	5	0.00	0.00	0.00
Watermelons	320	320	0.09	0.00	0.09
Miscellaneous fruit	25	25	0.04	0.01	0.05
Field Crops					
Field corn	2,000	500	0.17	0.17	0.34
Peanuts	0	0	0.00	0.00	0.00
Rice	0	0	0.00	0.00	0.00
Sorghum	300	150	0.02	0.02	0.04
Soybeans	0	0	0.00	0.00	0.00
Sugar cane	0	0	0.00	0.00	0.00
Tobacco	0	0	0.00	0.00	0.00
Wheat	0	0	0.00	0.00	0.00
Miscellaneous grains	0	0	0.00	0.00	0.00
Ornamentals and Grasses					
Ferns	550	550	1.77	0.20	1.97
Foliage	100	100	0.36	0.00	0.36
Woody ornamentals	950	950	3.21	0.17	3.38
Improved pasture	50,000	1,886	0.86	0.04	0.90
Sod	250	250	0.03	0.18	0.21
Turf grass (other than golf)	120	120	0.20	0.04	0.24
Total Agricultural	78,047	24,570	34.09	5.72	39.81
Recreational					
Turf grass (golf)	1,591	769	0.86	0.70	1.56
Grand total	79,638	25,339	34.95	6.42	41.37
Sprinkler acreage	7,814				
Flood acreage	3,070				
Low-volume acreage	<u>14,455</u>				
Total irrigated acreage	25,339				

*Water use below threshold of 0.01 mgd

MARION COUNTY

Total population 224,612
 Total area 1,579 mi²

St. Johns River Water Management District

Population		Land Area (acres)	
Total	175,871	Total area	730,635 (1,142 mi ²)
Public supply	81,385	Farmed	72,849
Self-supplied	94,486	Irrigated	5,673
Per capita (gallons per day)	177		

1995 Water Withdrawals (in mgd) by Category

	Fresh Water		Saline Water	
	Ground	Surface	Total Fresh	Surface
Public supply	14.38	0.00	14.38	0.00
Domestic self-supply	16.72	0.00	16.72	0.00
Commercial/industrial use	1.85	0.00	1.85	0.00
Agricultural irrigation	3.30	0.36	3.66	0.00
Recreational irrigation	0.53	0.39	0.92	0.00
Thermoelectric power generation	0.00	0.00	0.00	0.00
Abandoned artesian wells	<u>3.07</u>	<u>0.00</u>	<u>3.07</u>	<u>0.00</u>
Total	39.85	0.75	40.60	0.00
Total ground	39.85			
Total surface	<u>0.75</u>			
County total	40.60			

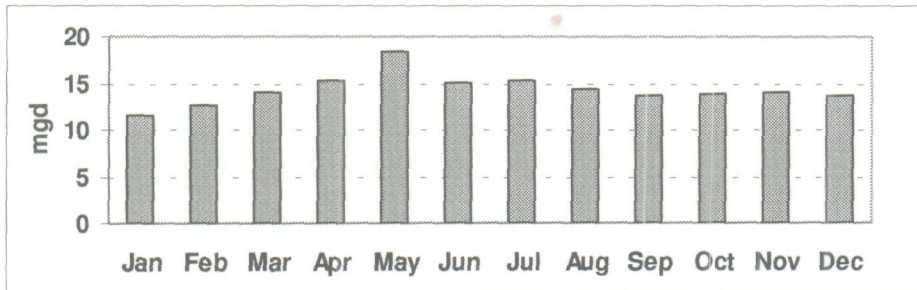


Figure A21. Monthly public supply water use in Marion County, 1995

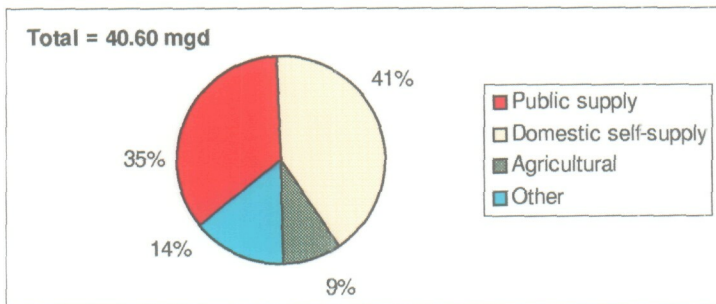


Figure A22. Marion County—percentages, by category, of freshwater use, 1995. The "other" category includes abandoned artesian wells, recreational irrigation, and commercial/industrial use.

Annual Water Use Survey: 1995

1995 Water Users in Marion County

User Utility/Facility	Category	Population Served	Ground Water (mgd)	Withdrawal Source	Surface Water (mgd)	Withdrawal Source
Bellevue, City of	Public supply	3,287	0.63	Floridan aquifer	0.00	
Community Water Cooperative	Public supply	378	0.03	Floridan aquifer	0.00	
Eagle Springs Utilities	Public supply	464	0.04	Floridan aquifer	0.00	
Fort King Forest	Public supply	273	0.05	Floridan aquifer	0.00	
GDU, Silver Springs Shores	Public supply	8,940	0.95	Floridan aquifer	0.00	
Greenfields subdivision	Public supply	859	0.10	Floridan aquifer	0.00	
Hawks Point subdivision	Public supply	200	0.02	Floridan aquifer	0.00	
Hideaway MHP	Public supply	250	0.04	Floridan aquifer	0.00	
Hilltop Estates MHP	Public supply	84	0.03	Floridan aquifer	0.00	
J & J MHP	Public supply	300	0.03	Floridan aquifer	0.00	
Linadale Water System	Public supply	230	0.09	Floridan aquifer	0.00	
Maco/South Oaks subdivision	Public supply	837	0.16	Floridan aquifer	0.00	
Marion Utilities	Public supply	3,482	0.43	Floridan aquifer	0.00	
McIntosh, City of	Public supply	423	0.07	Floridan aquifer	0.00	
Oak Bend MHP	Public supply	250	0.04	Floridan aquifer	0.00	
Oak Haven Quadruplexes	Public supply	90	0.03	Floridan aquifer	0.00	
Oak Park MHP	Public supply	93	0.03	Floridan aquifer	0.00	
Oakmuir Village	Public supply	128	0.04	Floridan aquifer	0.00	
Ocala, City of	Public supply	43,207	8.70	Floridan aquifer	0.00	
Ocala East Villas	Public supply	400	0.11	Floridan aquifer	0.00	
Ocala Oaks Utilities	Public supply	2,472	0.32	Floridan aquifer	0.00	
Paddock Park South MHP*	Public supply		0.03	Floridan aquifer	0.00	
Peppertree Village	Public supply	400	0.07	Floridan aquifer	0.00	
Quadvilla Estates	Public supply	488	0.04	Floridan aquifer	0.00	
Raven Hills subdivision	Public supply	451	0.12	Floridan aquifer	0.00	
Residential Water System	Public supply	1,281	0.17	Floridan aquifer	0.00	
Shady Road Villas	Public supply	110	0.02	Floridan aquifer	0.00	
Smith Lake Shores MHP	Public supply	385	0.07	Floridan aquifer	0.00	
Southern States Utilities	Public supply	1,249	0.20	Floridan aquifer	0.00	
Spruce Creek South Utilities	Public supply	4,000	0.87	Floridan aquifer	0.00	
Stonecrest/Floridian	Public supply	300	0.12	Floridan aquifer	0.00	
Sunshine Utilities	Public supply	4,171	0.49	Floridan aquifer	0.00	
Tradewinds Village Utilities	Public supply	732	0.09	Floridan aquifer	0.00	
Windgate Estates	Public supply	288	0.04	Floridan aquifer	0.00	
Winding Waters	Public supply	339	0.03	Floridan aquifer	0.00	
Windstream subdivision	Public supply	235	0.04	Floridan aquifer	0.00	
Woods & Lakes subdivision	Public supply	309	0.04	Floridan aquifer	0.00	
Total Public Supply		81,385	14.38		0.00	
American Panel Corporation	Industrial		0.03	Floridan aquifer	0.00	
Certified Grocers	Industrial		0.03	Floridan aquifer	0.00	
FRI, Marion mine	Industrial [†]		0.85	Floridan aquifer	0.00	
Golden Flake Inc., Ocala plant	Industrial		0.09	Floridan aquifer	0.00	
Days Inn	Institutional		0.07	Floridan aquifer	0.00	
Daytop Village, Grant	Institutional		0.02	Floridan aquifer	0.00	
Florida Elks Youth Camp	Institutional		0.02	Floridan aquifer	0.00	
Harbour View Elementary	Institutional		0.04	Floridan aquifer	0.00	

1995 Water Users in Marion County—Continued

User Utility/Facility	Category	Population Served	Ground Water (mgd)	Withdrawal Source	Surface Water (mgd)	Withdrawal Source
Holiday Inn West	Institutional		0.06	Floridan aquifer	0.00	
Juniper Springs	Institutional		0.02	Floridan aquifer	0.00	
Lake Weir Middle School	Institutional		0.05	Floridan aquifer	0.00	
Marion Correctional Facility	Institutional		0.26	Floridan aquifer	0.00	
Market of Marion	Institutional		0.02	Floridan aquifer	0.00	
Ocala Quality Inn	Institutional		0.03	Floridan aquifer	0.00	
Silver Springs, Inc.	Institutional		0.24	Floridan aquifer	0.00	
Springs Resort	Institutional		0.02	Floridan aquifer	0.00	
Total Commercial/Industrial			1.85		0.00	

Note: FRI = Florida Rock Industries
 GDU = General Development Utilities
 MHP = mobile home park

*1995 population not available
 †Mining industry

Annual Water Use Survey: 1995

1995 Agricultural and Recreational Water Use in Marion County

	Total Acres		Water Use (mgd)		Total
	Farmed	Irrigated	Ground	Surface	
Vegetable Crops					
Cabbage	0	0	0.00	0.00	0.00
Carrots	0	0	0.00	0.00	0.00
Cucumbers	0	0	0.00	0.00	0.00
Peppers	0	0	0.00	0.00	0.00
Potatoes	0	0	0.00	0.00	0.00
Tomatoes	10	10	0.01	0.00	0.01
Sweet corn	40	40	0.03	0.00	0.03
Watercress	0	0	0.00	0.00	0.00
Miscellaneous vegetables	1,700	940	0.49	0.00	0.49
Fruit Crops					
Blueberries	100	100	0.04	0.00	0.04
Citrus	1,200	700	0.97	0.07	1.04
Grapes	20	20	0.02	0.00	0.02
Peaches	10	10	0.01	0.00	0.01
Pecans	10	0	0.00	0.00	0.00
Strawberries	0	0	0.00	0.00	0.00
Watermelons	1,300	1,000	0.29	0.00	0.29
Miscellaneous fruit	200	100	0.18	0.00	0.18
Field Crops					
Field corn	3,000	350	0.09	0.07	0.16
Peanuts	2,000	134	0.07	0.00	0.07
Rice	0	0	0.00	0.00	0.00
Sorghum	200	0	0.00	0.00	0.00
Soybeans	0	0	0.00	0.00	0.00
Sugar cane	0	0	0.00	0.00	0.00
Tobacco	0	0	0.00	0.00	0.00
Wheat	0	0	0.00	0.00	0.00
Miscellaneous grains	1,500	0	0.00	0.00	0.00
Ornamentals and Grasses					
Ferns	20	20	0.07	0.00	0.07
Foliage	14	14	0.05	0.00	0.05
Woody ornamentals	52	52	0.15	0.04	0.19
Improved pasture	59,230	940	0.28	0.18	0.46
Sod	660	660	0.40	0.00	0.40
Turf grass (other than golf)	83	83	0.15	0.00	0.15
Total Agricultural	71,349	5,173	3.30	0.36	3.66
Recreational					
Turf grass (golf)	1,500	500	0.53	0.39	0.92
Grand total	72,849	5,673	3.83	0.75	4.58
Sprinkler acreage 4,973					
Flood acreage 0					
Low-volume acreage 700					
Total irrigated acreage 5,673					

NASSAU COUNTY

Total population 49,127
 Total area 652 mi²

St. Johns River Water Management District

Population		Land Area (acres)	
Total	49,127	Total area	417,280 (652 mi ²)
Public supply	26,499	Farmed	7,406
Self-supplied	22,628	Irrigated	770
Per capita (gallons per day)	187		

1995 Water Withdrawals (in mgd) by Category

	Fresh Water		Saline Water	
	Ground	Surface	Total Fresh	Surface
Public supply	4.96	0.00	4.96	0.00
Domestic self-supply	4.23	0.00	4.23	0.00
Commercial/industrial use	34.49	0.00	34.49	2.25
Agricultural irrigation	0.19	0.00	0.19	0.00
Recreational irrigation	0.67	0.11	0.78	0.00
Thermoelectric power generation	0.00	0.00	0.00	0.00
Abandoned artesian wells	0.55	0.00	0.55	0.00
Total	45.09	0.11	45.20	2.25
Total ground	45.09			
Total surface		2.36		
County total		47.45		

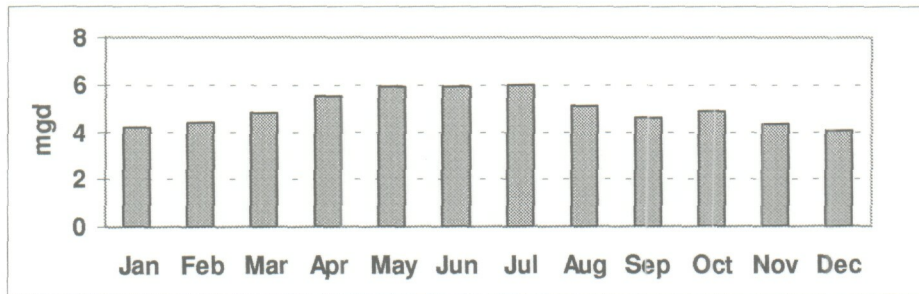


Figure A23. Monthly public supply water use in Nassau County, 1995

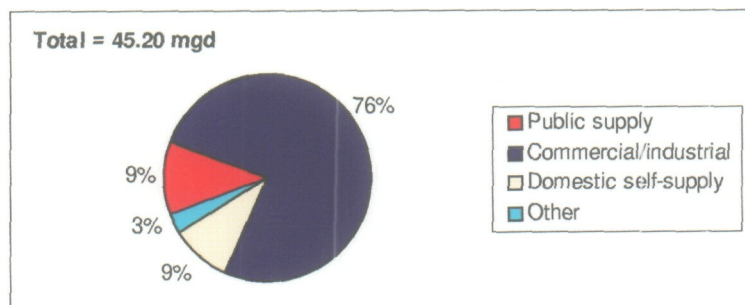


Figure A24. Nassau County—percentages, by category, of freshwater use, 1995. The "other" category includes agricultural irrigation, recreational irrigation, and abandoned artesian wells.

Annual Water Use Survey: 1995

1995 Water Users in Nassau County

User Utility/Facility	Category	Population Served	Ground Water (mgd)	Withdrawal Source	Surface Water (mgd)	Withdrawal Source
Callahan, Town of	Public supply	1,400	0.16	Floridan aquifer	0.00	
Eastwood Oaks Apts.	Public supply	279	0.03	Floridan aquifer	0.00	
FPU, City of Fernandina Beach	Public supply	14,740	3.22	Floridan aquifer	0.00	
Hillard, Town of	Public supply	2,200	0.23	Floridan aquifer	0.00	
Marsh Cove Apts.	Public supply	337	0.05	Floridan aquifer	0.00	
Otter Run	Public supply	497	0.08	Floridan aquifer	0.00	
SSU, Amelia Island	Public supply	6,346	1.12	Floridan aquifer	0.00	
Yulee Villas Apts.	Public supply	700	0.07	Floridan aquifer	0.00	
Total Public Supply		26,499	4.96		0.00	
Jefferson Smurfit, Fernandina Beach	Industrial*		19.18	Floridan aquifer	0.00	
Rayonier	Industrial*		15.28	Floridan aquifer	2.25	Amelia River [†]
FDOT I-95 welcome center	Institutional		0.01	Floridan aquifer	0.00	
Nassau Correctional Facility	Institutional		0.02	Floridan aquifer	0.00	
Total Commercial/Industrial			34.49		2.25	

Note: FDOT = Florida Department of Transportation
 FPU = Florida Public Utilities
 SSU = Southern States Utilities

*Pulp and paper industry
[†]Saline Water

1995 Agricultural and Recreational Water Use in Nassau County

	Total Acres		Water Use (mgd)		Total
	Farmed	Irrigated	Ground	Surface	
Vegetable Crops					
Cabbage	0	0	0.00	0.00	0.00
Carrots	0	0	0.00	0.00	0.00
Cucumbers	0	0	0.00	0.00	0.00
Peppers	0	0	0.00	0.00	0.00
Potatoes	0	0	0.00	0.00	0.00
Tomatoes	0	0	0.00	0.00	0.00
Sweet corn	0	0	0.00	0.00	0.00
Watercress	0	0	0.00	0.00	0.00
Miscellaneous vegetables	100	50	0.03	0.00	0.03
Fruit Crops					
Blueberries*	30	15	0.00	0.00	0.00
Citrus	0	0	0.00	0.00	0.00
Grapes	0	0	0.00	0.00	0.00
Peaches	0	0	0.00	0.00	0.00
Pecans	0	0	0.00	0.00	0.00
Strawberries	0	0	0.00	0.00	0.00
Watermelons	0	0	0.00	0.00	0.00
Miscellaneous fruit	0	0	0.00	0.00	0.00
Field Crops					
Field corn	500	50	0.03	0.00	0.03
Peanuts	0	0	0.00	0.00	0.00
Rice	0	0	0.00	0.00	0.00
Sorghum	1,000	0	0.00	0.00	0.00
Soybeans	0	0	0.00	0.00	0.00
Sugar cane	0	0	0.00	0.00	0.00
Tobacco	40	40	0.02	0.00	0.02
Wheat	0	0	0.00	0.00	0.00
Miscellaneous grains	0	0	0.00	0.00	0.00
Ornamentals and Grasses					
Ferns	0	0	0.00	0.00	0.00
Foliage	20	20	0.07	0.00	0.07
Woody ornamentals	3	0	0.00	0.00	0.00
Improved pasture	5,000	0	0.00	0.00	0.00
Sod	0	0	0.00	0.00	0.00
Turf grass (other than golf)	68	30	0.04	0.00	0.04
Total Agricultural	6,761	205	0.19	0.00	0.19
Recreational					
Turf grass (golf)	645	565	0.67	0.11	0.78
Grand total	7,406	770	0.86	0.11	0.97
Sprinkler acreage	770				
Flood acreage	0				
Low-volume acreage	0				
Total irrigated acreage	770				

*Water use below threshold of 0.01 mgd

OKEECHOBEE COUNTY

Total population 32,855
 Total area 774 mi²

St. Johns River Water Management District

Population		Land Area (acres)	
Total	493	Total area	65,388 (102 mi ²)
Public supply	0	Farmed	34,785
Self-supplied	493	Irrigated	7,785
Per capita* (gallons per day)	157		

1995 Water Withdrawals (In mgd) by Category

	Fresh Water		Saline Water	
	Ground	Surface	Total Fresh	Surface
Public supply	0.00	0.00	0.00	0.00
Domestic self-supply	0.08	0.00	0.08	0.00
Commercial/industrial use	0.03	0.00	0.03	0.00
Agricultural irrigation	11.87	0.00	11.87	0.00
Recreational irrigation	0.00	0.00	0.00	0.00
Thermoelectric power generation	0.00	0.00	0.00	0.00
Abandoned artesian wells	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>
Total	11.98	0.00	11.98	0.00
Total ground	11.98			
Total surface	<u>0.00</u>			
County total	11.98			

*Used St. Johns River Water Management District average per capita

Annual Water Use Survey: 1995

1995 Water Users in Okeechobee County

User Utility/Facility	Category	Population Served	Ground Water (mgd)	Withdrawal Source	Surface Water (mgd)	Withdrawal Source
FDOT, Fort Drum Plaza	Institutional		0.03	Floridan aquifer	0.00	
Total Commercial/Industrial			0.03		0.00	

Note: FDOT = Florida Department of Transportation

1995 Agricultural and Recreational Water Use in Okeechobee County

	Total Acres		Water Use (mgd)		Total
	Farmed	Irrigated	Ground	Surface	
Vegetable Crops					
Cabbage	0	0	0.00	0.00	0.00
Carrots	0	0	0.00	0.00	0.00
Cucumbers	0	0	0.00	0.00	0.00
Peppers	0	0	0.00	0.00	0.00
Potatoes	0	0	0.00	0.00	0.00
Tomatoes	0	0	0.00	0.00	0.00
Sweet corn	0	0	0.00	0.00	0.00
Watercress	0	0	0.00	0.00	0.00
Miscellaneous vegetables	0	0	0.00	0.00	0.00
Fruit Crops					
Blueberries	17	17	0.02	0.00	0.02
Citrus	4,668	4,668	8.15	0.00	8.15
Grapes	0	0	0.00	0.00	0.00
Peaches	0	0	0.00	0.00	0.00
Pecans	0	0	0.00	0.00	0.00
Strawberries	0	0	0.00	0.00	0.00
Watermelons	100	100	0.05	0.00	0.05
Miscellaneous fruit	0	0	0.00	0.00	0.00
Field Crops					
Field corn	0	0	0.00	0.00	0.00
Peanuts	0	0	0.00	0.00	0.00
Rice	0	0	0.00	0.00	0.00
Sorghum	0	0	0.00	0.00	0.00
Soybeans	0	0	0.00	0.00	0.00
Sugar cane	0	0	0.00	0.00	0.00
Tobacco	0	0	0.00	0.00	0.00
Wheat	0	0	0.00	0.00	0.00
Miscellaneous grains	0	0	0.00	0.00	0.00
Ornamentals and Grasses					
Ferns	0	0	0.00	0.00	0.00
Foliage	0	0	0.00	0.00	0.00
Woody ornamentals	0	0	0.00	0.00	0.00
Improved pasture	30,000	3,000	3.65	0.00	3.65
Sod	0	0	0.00	0.00	0.00
Turf grass (other than golf)	0	0	0.00	0.00	0.00
Total Agricultural	34,785	7,785	11.87	0.00	11.87
Recreational					
Turf grass (golf)	0	0	0.00	0.00	0.00
Grand total	34,785	7,785	11.87	0.00	11.87
Sprinkler acreage 100					
Flood acreage 3,017					
Low-volume acreage 4,668					
Total irrigated acreage 7,785					

ORANGE COUNTY

Total population 758,962
 Total area 908 mi²

St. Johns River Water Management District

Population		Land Area (acres)	
Total	599,582	Total area	431,191 (674 mi ²)
Public supply	548,315	Farmed	69,715
Self-supplied	51,267	Irrigated	30,874
Per capita (gallons per day)	203*		

1995 Water Withdrawals (in mgd) by Category

	Fresh Water		Saline Water	
	Ground	Surface	Total Fresh	Surface
Public supply [†]	100.99	0.00	100.99	0.00
Domestic self-supply	10.41	0.00	10.41	0.00
Commercial/industrial use	3.61	0.00	3.61	0.00
Agricultural irrigation	12.74	23.95	36.69	0.00
Recreational irrigation	1.42	0.28	1.70	0.00
Thermoelectric power generation	0.41	0.00	0.41	0.00
Abandoned artesian wells	1.92	0.00	1.92	0.00
Total	131.50	24.23	155.73	0.00
Total ground	131.50			
Total surface		24.23		
County total		155.73		

*Per capita figure derived from the average of two water management districts (Marella, pers. com. 1997)

†Does not include 24.21 mgd of water withdrawn in Orange County for public supply use in Brevard County

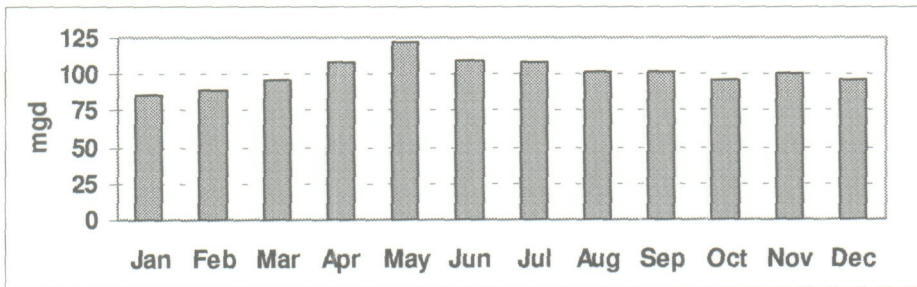


Figure A25. Monthly public supply water use in Orange County, 1995

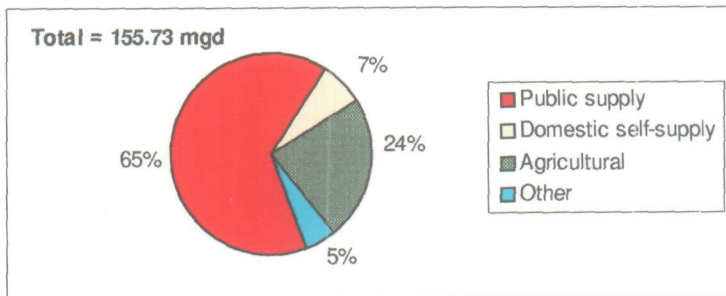


Figure A26. Orange County—percentages, by category, of freshwater use, 1995. The "other" category includes abandoned artesian wells, commercial/industrial use, thermoelectric power generation, and recreational irrigation.

Annual Water Use Survey: 1995

1995 Water Users in Orange County

User Utility/Facility	Category	Population Served	Ground Water (mgd)	Withdrawal Source	Surface Water (mgd)	Withdrawal Source
Apopka, City of	Public supply	33,372	5.90	Floridan aquifer	0.00	
Brightwood Manor MHP	Public supply	640	0.09	Floridan aquifer	0.00	
Eatonville, Town of	Public supply	1,920	0.65	Floridan aquifer	0.00	
Econ Utilities, Wedgefield	Public supply	1,884	0.18	Floridan aquifer	0.00	
Hidden Valley MHP	Public supply	776	0.07	Floridan aquifer	0.00	
Lake Downey MHP	Public supply	159	0.03	Floridan aquifer	0.00	
Maitland, City of	Public supply	14,641	2.82	Floridan aquifer	0.00	
Oakland, Town of	Public supply	768	0.11	Floridan aquifer	0.00	
Ocoee, City of	Public supply	17,935	3.68	Floridan aquifer	0.00	
Ola Beach Improvement	Public supply	197	0.05	Floridan aquifer	0.00	
Orange County Utilities*	Public supply	79,788	19.04	Floridan aquifer	0.00	
Orlando Utilities Commission*	Public supply	281,270	51.97	Floridan aquifer	0.00	
Park Manor Estates	Public supply	3,310	0.38	Floridan aquifer	0.00	
Rock Springs MHP	Public supply	1,408	0.23	Floridan aquifer	0.00	
Shadow Hills MHP	Public supply	1,715	0.18	Floridan aquifer	0.00	
Southern States Utilities	Public supply	8,786	1.06	Floridan aquifer	0.00	
Starlight Ranch MHP	Public supply	1,889	0.18	Floridan aquifer	0.00	
Tangerine, Town of	Public supply	540	0.18	Floridan aquifer	0.00	
Utilities Inc. of Florida	Public supply	940	0.10	Floridan aquifer	0.00	
Valencia Estates MHP	Public supply	305	0.04	Floridan aquifer	0.00	
Winter Garden, City of	Public supply	14,408	1.86	Floridan aquifer	0.00	
Winter Park, City of	Public supply	78,265	11.35	Floridan aquifer	0.00	
Zellwood Station Utilities	Public supply	2,529	0.57	Floridan aquifer	0.00	
Zellwood Water Association	Public supply	870	0.27	Floridan aquifer	0.00	
Total Public Supply		548,313	100.99		0.00	
Central Florida Research Park	Industrial		0.21	Floridan aquifer	0.00	
Coca Cola, Plymouth plant	Industrial		0.18	Floridan aquifer	0.00	
Consolidated Minerals, Inc.	Industrial ^f		0.01	Floridan aquifer	0.00	
Finrock Industries	Industrial		0.01	Floridan aquifer	0.00	
Lust & Long Precool Company	Industrial		0.05	Floridan aquifer	0.00	
Ralston Purina, Terry Farms	Industrial		0.13	Floridan aquifer	0.00	
Sawtek	Industrial		0.04	Floridan aquifer	0.00	
Twyford Plant Lab	Industrial		0.03	Floridan aquifer	0.00	
Winter Garden Citrus plant	Industrial		1.99	Floridan aquifer	0.00	
Outdoor World	Institutional		0.01	Floridan aquifer	0.00	
Sun Resort, Inc.	Institutional		0.20	Floridan aquifer	0.00	
University of Central Florida	Institutional		0.57	Floridan aquifer	0.00	
Yogi Bear Campground	Institutional		0.11	Floridan aquifer	0.00	
Yogi Bear's Jellystone Park	Institutional		0.07	Floridan aquifer	0.00	
Total Commercial/Industrial			3.61		0.00	

1995 Water Users in Orange County—Continued

User Utility/Facility	Category	Population Served	Ground Water (mgd)	Withdrawal Source	Surface Water (mgd)	Withdrawal Source
Orlando Utilities Commission, Stanton Power Plant	Power generation		0.41	Floridan aquifer	0.00	
Total Power Generation			0.41		0.00	

Note: MHP = mobile home park

*Does not include water used in the South Florida Water Management District (SFWMD). Total public supply population served by Orlando County Utilities was 149,822; total amount of ground water used was 31.58 mgd. Total public supply population served by Orlando Utilities Commission was 356,040; total amount of ground water used was 79.26 mgd. Total public supply water use for all of Orange County, including that consumed in SFWMD, was 140.82 mgd.

*Does not include water withdrawn (24.21 mgd) for public supply use in Brevard County by the City of Cocoa

*Mining industry

Annual Water Use Survey: 1995

1995 Agricultural and Recreational Water Use in Orange County

	Total Acres		Water Use (mgd)		Total
	Farmed	Irrigated	Ground	Surface	
Vegetable Crops					
Cabbage	1,200	880	0.56	0.00	0.56
Carrots	13,500	6,875	0.80	7.18	7.98
Cucumbers	1,020	745	0.51	0.00	0.51
Peppers	0	0	0.00	0.00	0.00
Potatoes	0	0	0.00	0.00	0.00
Tomatoes	75	75	0.07	0.00	0.07
Sweet corn	13,600	6,960	0.89	8.02	8.91
Watercress	0	0	0.00	0.00	0.00
Miscellaneous vegetables	14,100	8,276	0.82	7.39	8.21
Fruit Crops					
Blueberries	0	0	0.00	0.00	0.00
Citrus	3,596	3,596	4.58	0.51	5.09
Grapes	0	0	0.00	0.00	0.00
Peaches	0	0	0.00	0.00	0.00
Pecans	0	0	0.00	0.00	0.00
Strawberries	0	0	0.00	0.00	0.00
Watermelons	150	150	0.05	0.00	0.05
Miscellaneous fruit	0	0	0.00	0.00	0.00
Field Crops					
Field corn	200	200	0.11	0.00	0.11
Peanuts	0	0	0.00	0.00	0.00
Rice	0	0	0.00	0.00	0.00
Sorghum	200	200	0.03	0.03	0.06
Soybeans	200	200	0.03	0.03	0.06
Sugar cane	0	0	0.00	0.00	0.00
Tobacco	0	0	0.00	0.00	0.00
Wheat	0	0	0.00	0.00	0.00
Miscellaneous grains	0	0	0.00	0.00	0.00
Ornamentals and Grasses					
Ferns	40	40	0.14	0.00	0.14
Foliage	581	581	1.66	0.41	2.07
Woody ornamentals	576	576	1.85	0.20	2.05
Improved pasture	18,562	0	0.00	0.00	0.00
Sod	200	200	0.06	0.07	0.13
Turf grass (other than golf)	381	381	0.58	0.11	0.69
Total Agricultural	68,181	29,935	12.74	23.95	36.69
Recreational					
Turf grass (golf)	1,534	939	1.42	0.28	1.70
Grand total	69,715	30,874	14.16	24.23	38.39
Sprinkler acreage	5,225				
Flood acreage	23,736				
Low-volume acreage	1,913				
Total irrigated acreage	30,874				

OSCEOLA COUNTY

Total population 136,627
 Total area 1,322 mi²

St. Johns River Water Management District

<u>Population</u>		<u>Land Area (acres)</u>	
Total	3,142	Total area	312,204 (488 mi ²)
Public supply	0	Farmed	126,974
Self-supplied	3,142	Irrigated	12,354
Per capita* (gallons per day)	157		

1995 Water Withdrawals (in mgd) by Category

	<u>Fresh Water</u>		<u>Saline Water</u>	
	<u>Ground</u>	<u>Surface</u>	<u>Total Fresh</u>	<u>Surface</u>
Public supply	0.00	0.00	0.00	0.00
Domestic self-supply	0.49	0.00	0.49	0.00
Commercial/industrial use	0.00	0.00	0.00	0.00
Agricultural irrigation	5.39	9.20	14.59	0.00
Recreational irrigation	0.00	0.00	0.00	0.00
Thermoelectric power generation	0.00	0.00	0.00	0.00
Abandoned artesian wells	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>
Total	5.88	9.20	15.08	0.00
Total ground	5.88			
Total surface	<u>9.20</u>			
County total	15.08			

*Used St. Johns River Water Management District average per capita

Annual Water Use Survey: 1995

1995 Agricultural and Recreational Water Use in Osceola County

	Total Acres		Water Use (mgd)		Total
	Farmed	Irrigated	Ground	Surface	
Vegetable Crops					
Cabbage	0	0	0.00	0.00	0.00
Carrots	0	0	0.00	0.00	0.00
Cucumbers	0	0	0.00	0.00	0.00
Peppers	0	0	0.00	0.00	0.00
Potatoes	0	0	0.00	0.00	0.00
Tomatoes	0	0	0.00	0.00	0.00
Sweet corn	0	0	0.00	0.00	0.00
Watercress	0	0	0.00	0.00	0.00
Miscellaneous vegetables	0	0	0.00	0.00	0.00
Fruit Crops					
Blueberries	0	0	0.00	0.00	0.00
Citrus	1,174	1,174	2.80	0.00	2.80
Grapes	0	0	0.00	0.00	0.00
Peaches	0	0	0.00	0.00	0.00
Pecans	0	0	0.00	0.00	0.00
Strawberries	0	0	0.00	0.00	0.00
Watermelons	0	0	0.00	0.00	0.00
Miscellaneous fruit	0	0	0.00	0.00	0.00
Field Crops					
Field corn	0	0	0.00	0.00	0.00
Peanuts	0	0	0.00	0.00	0.00
Rice	0	0	0.00	0.00	0.00
Sorghum	0	0	0.00	0.00	0.00
Soybeans	0	0	0.00	0.00	0.00
Sugar cane	0	0	0.00	0.00	0.00
Tobacco	0	0	0.00	0.00	0.00
Wheat	0	0	0.00	0.00	0.00
Miscellaneous grains	0	0	0.00	0.00	0.00
Ornamentals and Grasses					
Ferns	0	0	0.00	0.00	0.00
Foliage	0	0	0.00	0.00	0.00
Woody ornamentals	0	0	0.00	0.00	0.00
Improved pasture	125,800	11,180	2.59	9.20	11.79
Sod	0	0	0.00	0.00	0.00
Turf grass (other than golf)	0	0	0.00	0.00	0.00
Total Agricultural	126,974	12,354	5.39	9.20	14.59
Recreational					
Turf grass (golf)	0	0	0.00	0.00	0.00
Grand total	126,974	12,354	5.39	9.20	14.59
Sprinkler acreage 274					
Flood acreage 11,900					
Low-volume acreage 180					
Total irrigated acreage 12,354					

POLK COUNTY

Total population 443,153
 Total area 1,875 mi²

St. Johns River Water Management District

Population		Land Area (acres)	
Total	4,432	Total area	37,200 (58 mi ²)
Public supply	1,663	Farmed	1,060
Self-supplied	2,769	Irrigated	1,060
Per capita (gallons per day)	78		

1995 Water Withdrawals (in mgd) by Category

	Fresh Water		Saline Water	
	Ground	Surface	Total Fresh	Surface
Public supply	0.13	0.00	0.13	0.00
Domestic self-supply	0.22	0.00	0.22	0.00
Commercial/industrial use	0.02	0.00	0.02	0.00
Agricultural irrigation	1.75	0.17	1.92	0.00
Recreational irrigation	0.00	0.00	0.00	0.00
Thermoelectric power generation	0.00	0.00	0.00	0.00
Abandoned artesian wells	0.00	0.00	0.00	0.00
Total	2.12	0.17	2.29	0.00
Total ground	2.12			
Total surface	0.17			
County total	2.29			

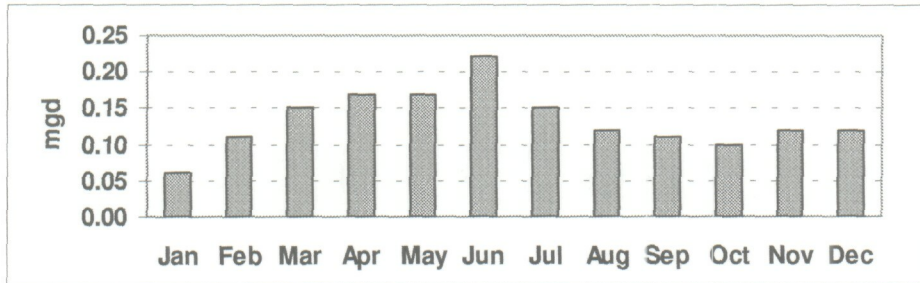


Figure A27. Monthly public supply water use in Polk County, 1995

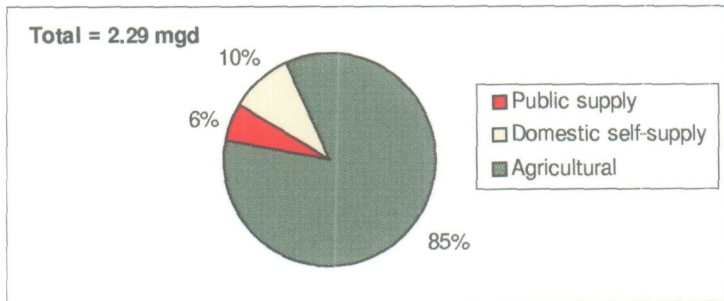


Figure A28. Polk County—percentages, by category, of freshwater use, 1995. Commercial/industrial use was less than 1%.

Annual Water Use Survey: 1995

1995 Water Users in Polk County

User Utility/Facility	Category	Population Served	Ground Water (mgd)	Withdrawal Source	Surface Water (mgd)	Withdrawal Source
Emerald Acres	Public supply	200	0.02	Floridan aquifer	0.00	
Polk County Utilities, Davenport	Public supply	1,463	0.11	Floridan aquifer	0.00	
Total Public Supply		1,663	0.13		0.00	
Oak Harbor Campground	Institutional		0.02	Floridan aquifer	0.00	
Total Commercial/Industrial			0.02		0.00	

1995 Agricultural and Recreational Water Use in Polk County

	Total Acres		Water Use (mgd)		Total
	Farmed	Irrigated	Ground	Surface	
Vegetable Crops					
Cabbage	0	0	0.00	0.00	0.00
Carrots	0	0	0.00	0.00	0.00
Cucumbers	0	0	0.00	0.00	0.00
Peppers	0	0	0.00	0.00	0.00
Potatoes	0	0	0.00	0.00	0.00
Tomatoes	0	0	0.00	0.00	0.00
Sweet corn	0	0	0.00	0.00	0.00
Watercress	0	0	0.00	0.00	0.00
Miscellaneous vegetables	0	0	0.00	0.00	0.00
Fruit Crops					
Blueberries	0	0	0.00	0.00	0.00
Citrus	1,000	1,000	1.54	0.17	1.71
Grapes	0	0	0.00	0.00	0.00
Peaches	0	0	0.00	0.00	0.00
Pecans	0	0	0.00	0.00	0.00
Strawberries	0	0	0.00	0.00	0.00
Watermelons	0	0	0.00	0.00	0.00
Miscellaneous fruit	0	0	0.00	0.00	0.00
Field Crops					
Field corn	0	0	0.00	0.00	0.00
Peanuts	0	0	0.00	0.00	0.00
Rice	0	0	0.00	0.00	0.00
Sorghum	0	0	0.00	0.00	0.00
Soybeans	0	0	0.00	0.00	0.00
Sugar cane	0	0	0.00	0.00	0.00
Tobacco	0	0	0.00	0.00	0.00
Wheat	0	0	0.00	0.00	0.00
Miscellaneous grains	0	0	0.00	0.00	0.00
Ornamentals and Grasses					
Ferns	0	0	0.00	0.00	0.00
Foliage	0	0	0.00	0.00	0.00
Woody ornamentals	60	60	0.21	0.00	0.21
Improved pasture	0	0	0.00	0.00	0.00
Sod	0	0	0.00	0.00	0.00
Turf grass (other than golf)	0	0	0.00	0.00	0.00
Total Agricultural	1,060	1,060	1.75	0.17	1.92
Recreational					
Turf grass (golf)	0	0	0.00	0.00	0.00
Grand total	1,060	1,060	1.75	0.17	1.92
Sprinkler acreage 530					
Flood acreage 0					
Low-volume acreage 530					
Total irrigated acreage 1,060					

PUTNAM COUNTY

Total population 69,516
 Total area 722 mi²

St. Johns River Water Management District

Population		Land Area (acres)	
Total	69,516	Total area	462,080 (722 mi ²)
Public supply	21,118	Farmed	51,661
Self-supplied	48,398	Irrigated	9,391
Per capita (gallons per day)	170		

1995 Water Withdrawals (in mgd) by Category

	Fresh Water		Saline Water	
	Ground	Surface	Total Fresh	Surface
Public supply	3.59	0.00	3.59	0.00
Domestic self-supply	8.23	0.00	8.23	0.00
Commercial/industrial use	11.19	34.74	45.93	0.00
Agricultural irrigation	14.25	1.08	15.33	0.00
Recreational irrigation	0.15	0.00	0.15	0.00
Thermoelectric power generation	0.70	14.50	15.20	0.00
Abandoned artesian wells	0.68	0.00	0.68	0.00
Total	38.79	50.32	89.11	0.00
Total ground	38.79			
Total surface		50.32		
County total		89.11		

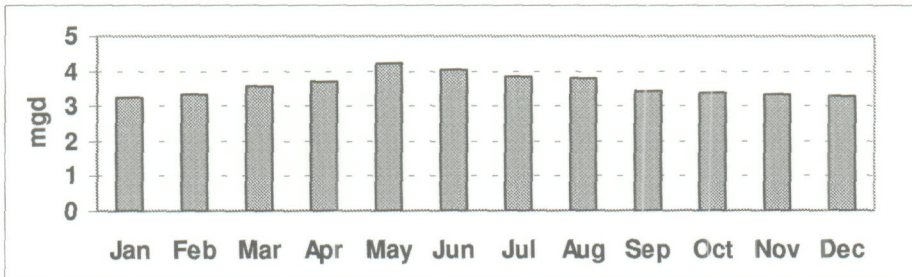


Figure A29. Monthly public supply water use in Putnam County, 1995

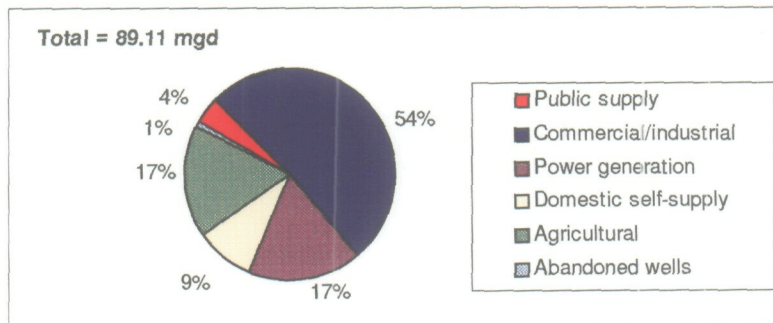


Figure A30. Putnam County—percentages, by category, of freshwater use, 1995. Recreational irrigation was less than 1%.

Annual Water Use Survey: 1995

1995 Water Users in Putnam County

User Utility/Facility	Category	Population Served	Ground Water (mgd)	Withdrawal Source	Surface Water (mgd)	Withdrawal Source
Crescent City, City of	Public supply	2,484	0.32	Floridan aquifer	0.00	
Interlachen, Town of	Public supply	1,376	0.09	Floridan aquifer	0.00	
Lake Como Water Association	Public supply	330	0.03	Floridan aquifer	0.00	
Melrose, Town of	Public supply	1,337	0.10	Floridan aquifer	0.00	
Palatka, City of	Public supply	10,970	2.82	Floridan aquifer	0.00	
St. Johns Harbor WTP	Public supply	260	0.03	Floridan aquifer	0.00	
Southern States Utilities	Public supply	4,361	0.20	Floridan aquifer	0.00	
Total Public Supply		21,118	3.59		0.00	
Feldspar Corp., Edgar plant	Industrial*		0.22	Floridan aquifer	1.85	Retention pond
FRI, Grandin Sand	Industrial*		2.78	Floridan aquifer	0.00	
FRI, Keuka Industrial Sand	Industrial*		0.45	Floridan aquifer	0.00	
FRI, Keuka Sand	Industrial*		0.10	Floridan aquifer	0.00	
Georgia-Pacific, Hawthorne plant	Industrial [†]		0.15	Floridan aquifer	0.00	
Georgia-Pacific, Palatka plant	Industrial [†]		7.40	Floridan aquifer	32.89	Simms/Etonia
Putnam Correctional Facility	Institutional		0.09	Floridan aquifer	0.00	
Total Commercial/Industrial			11.19		34.74	
FPL, Palatka	Power generation		0.09	Floridan aquifer	1.32	St. Johns River
Seminole Electric	Power generation		0.61	Floridan aquifer	13.18	St. Johns River
Total Power Generation			0.70		14.50	

Note: FPL = Florida Power & Light
 FRI = Florida Rock Industries
 WTP = water treatment plant

*Mining industry
[†]Pulp and paper industry

1995 Agricultural and Recreational Water Use in Putnam County

	Total Acres		Water Use (mgd)		Total
	Farmed	Irrigated	Ground	Surface	
Vegetable Crops					
Cabbage	500	500	0.25	0.00	0.25
Carrots	0	0	0.00	0.00	0.00
Cucumbers	0	0	0.00	0.00	0.00
Peppers	0	0	0.00	0.00	0.00
Potatoes	5,500	5,500	7.22	0.00	7.22
Tomatoes	0	0	0.00	0.00	0.00
Sweet corn	0	0	0.00	0.00	0.00
Watercress	0	0	0.00	0.00	0.00
Miscellaneous vegetables	200	200	0.19	0.00	0.19
Fruit Crops					
Blueberries	80	80	0.04	0.00	0.04
Citrus	200	200	0.28	0.00	0.28
Grapes	10	10	0.01	0.00	0.01
Peaches	30	30	0.05	0.00	0.05
Pecans	150	0	0.00	0.00	0.00
Strawberries	0	0	0.00	0.00	0.00
Watermelons	200	200	0.05	0.00	0.05
Miscellaneous fruit	0	0	0.00	0.00	0.00
Field Crops					
Field corn	1,500	500	0.42	0.02	0.44
Peanuts	0	0	0.00	0.00	0.00
Rice	0	0	0.00	0.00	0.00
Sorghum	4,000	0	0.00	0.00	0.00
Soybeans	0	0	0.00	0.00	0.00
Sugar cane	0	0	0.00	0.00	0.00
Tobacco	0	0	0.00	0.00	0.00
Wheat	0	0	0.00	0.00	0.00
Miscellaneous grains	0	0	0.00	0.00	0.00
Ornamentals and Grasses					
Ferns	1,500	1,500	4.29	1.06	5.35
Foliage	250	250	0.89	0.00	0.89
Woody ornamentals	100	100	0.36	0.00	0.36
Improved pasture	37,000	0	0.00	0.00	0.00
Sod	220	220	0.15	0.00	0.15
Turf grass (other than golf)	25	25	0.05	0.00	0.05
Total Agricultural	51,465	9,315	14.25	1.08	15.33
Recreational					
Turf grass (golf)	196	76	0.15	0.00	0.15
Grand total	51,661	9,391	14.40	1.08	15.48
Sprinkler acreage 2,211					
Flood acreage 6,950					
Low-volume acreage <u>230</u>					
Total irrigated acreage 9,391					

ST. JOHNS COUNTY

Total population 98,188
 Total area 609 mi²

St. Johns River Water Management District

Population		Land Area (acres)	
Total	98,188	Total area	389,760 (609 mi ²)
Public supply	76,651	Farmed	31,892
Self-supplied	21,537	Irrigated	27,211
Per capita (gallons per day)	134		

1995 Water Withdrawals (in mgd) by Category

	Fresh Water		Saline Water	
	Ground	Surface	Total Fresh	Surface
Public supply	10.30	0.00	10.30	0.00
Domestic self-supply	2.89	0.00	2.89	0.00
Commercial/industrial use	0.06	0.00	0.06	0.00
Agricultural irrigation	31.38	0.00	31.38	0.00
Recreational irrigation	1.10	0.64	1.74	0.00
Thermoelectric power generation	0.00	0.00	0.00	0.00
Abandoned artesian wells	<u>8.28</u>	<u>0.00</u>	<u>8.28</u>	<u>0.00</u>
Total	54.01	0.64	54.65	0.00
Total ground	54.01			
Total surface	<u>0.64</u>			
County total	54.65			

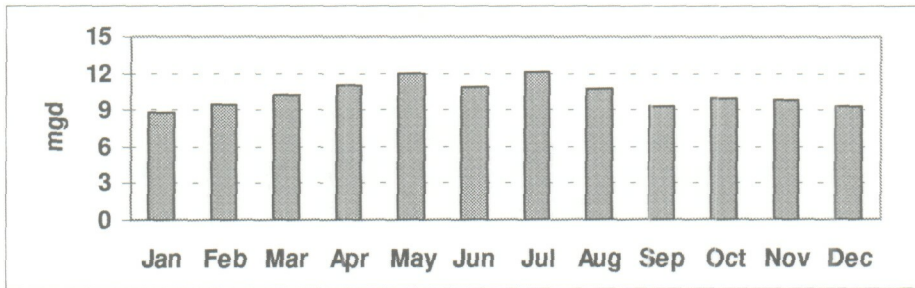


Figure A31. Monthly public supply water use in St. Johns County, 1995

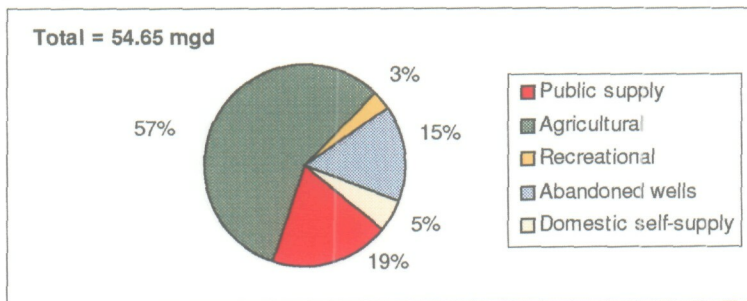


Figure A32. St. Johns County—percentages, by category, of freshwater use, 1995. Commercial/industrial use was less than 1%.

Annual Water Use Survey: 1995

1995 Water Users in St. Johns County

User Utility/Facility	Category	Population Served	Ground Water (mgd)	Withdrawal Source	Surface Water (mgd)	Withdrawal Source
Bayside Estates	Public supply	148	0.07	Floridan aquifer	0.00	
Fruit Cove Oaks subdivision	Public supply	511	0.05	Floridan aquifer	0.00	
GDU, Julington Creek subdivision	Public supply	1,650	0.27	Floridan and surficial aquifers	0.00	
Hastings, City of	Public supply	816	0.08	Floridan and surficial aquifers	0.00	
Intercoastal Utilities	Public supply	6,216	1.08	Floridan aquifer	0.00	
North Beach Water System	Public supply	1,790	0.22	Floridan aquifer	0.00	
Oakridge Apts.	Public supply	148	0.03	Floridan aquifer	0.00	
Ponce Deleon Utilities	Public supply	722	0.16	Floridan aquifer	0.00	
Ponte Vedra Utilities	Public supply	5,059	0.91	Floridan aquifer	0.00	
Porpoise Point	Public supply	200	0.08	Floridan and surficial aquifers	0.00	
SSU, Remington Forest	Public supply	231	0.04	Floridan aquifer	0.00	
St. Augustine, City of	Public supply	16,213	1.66	Floridan and surficial aquifers	0.00	
St. Johns County Utilities	Public supply	26,730	3.20	Floridan and surficial aquifers	0.00	
St. Johns Forest*	Public supply		0.03	Floridan aquifer	0.00	
St. Johns North Utilities	Public supply	1,119	0.33	Floridan aquifer	0.00	
St. Johns Service Company	Public supply	14,621	1.96	Floridan aquifer	0.00	
Wesley Manor Water System	Public supply	477	0.06	Floridan aquifer	0.00	
Wildwood Water System*	Public supply		0.07	Floridan aquifer	0.00	
Total Public Supply		76,651	10.30		0.00	
G&M Truck Stop	Commercial		0.02	Floridan aquifer	0.00	
Allen Nease Jr./Sr. High School	Institutional		0.02	Floridan aquifer	0.00	
FDOT I-95 rest facility (SR 207)	Institutional		0.01	Floridan aquifer	0.00	
FDOT I-95 rest facility (SR 210)	Institutional		0.01	Floridan aquifer	0.00	
Total Commercial/Industrial			0.06		0.00	

Note: FDOT = Florida Department of Transportation
 GDU = General Development Utilities
 SR = state road
 SSU = Southern States Utilities

*1995 population not available

1995 Agricultural and Recreational Water Use in St. Johns County

	Total Acres		Water Use (mgd)		Total
	Farmed	Irrigated	Ground	Surface	
Vegetable Crops					
Cabbage	1,500	1,500	0.72	0.00	0.72
Carrots	0	0	0.00	0.00	0.00
Cucumbers	0	0	0.00	0.00	0.00
Peppers	0	0	0.00	0.00	0.00
Potatoes	21,000	21,000	27.56	0.00	27.56
Tomatoes	0	0	0.00	0.00	0.00
Sweet corn	0	0	0.00	0.00	0.00
Watercress	0	0	0.00	0.00	0.00
Miscellaneous vegetables	500	500	0.42	0.00	0.42
Fruit Crops					
Blueberries*	10	10	0.00	0.00	0.00
Citrus	0	0	0.00	0.00	0.00
Grapes	10	10	0.01	0.00	0.01
Peaches	0	0	0.00	0.00	0.00
Pecans	0	0	0.00	0.00	0.00
Strawberries	0	0	0.00	0.00	0.00
Watermelons	0	0	0.00	0.00	0.00
Miscellaneous fruit	0	0	0.00	0.00	0.00
Field Crops					
Field corn	2,000	2,000	1.51	0.00	1.51
Peanuts	0	0	0.00	0.00	0.00
Rice	0	0	0.00	0.00	0.00
Sorghum	0	0	0.00	0.00	0.00
Soybeans	0	0	0.00	0.00	0.00
Sugar cane	0	0	0.00	0.00	0.00
Tobacco	0	0	0.00	0.00	0.00
Wheat	0	0	0.00	0.00	0.00
Miscellaneous grains	0	0	0.00	0.00	0.00
Ornamentals and Grasses					
Ferns	0	0	0.00	0.00	0.00
Foliage	25	25	0.09	0.00	0.09
Woody ornamentals	75	75	0.27	0.00	0.27
Improved pasture	5,500	1,000	0.73	0.00	0.73
Sod	60	60	0.04	0.00	0.04
Turf grass (other than golf)	20	20	0.03	0.00	0.03
Total Agricultural	30,700	26,200	31.38	0.00	31.38
Recreational					
Turf grass (golf)	1,192	1,011	1.10	0.64	1.74
Grand total	31,892	27,211	32.48	0.64	33.12
Sprinkler acreage	1,166				
Flood acreage	26,000				
Low-volume acreage	45				
Total irrigated acreage	27,211				

*Water use below threshold of 0.01 mgd

SEMINOLE COUNTY

Total population 324,130
 Total area 308 mi²

St. Johns River Water Management District

Population		Land Area (acres)	
Total	324,130	Total area	197,120 (308 mi ²)
Public supply	276,969	Farmed	14,225
Self-supplied	47,161	Irrigated	6,475
Per capita (gallons per day)	183		

1995 Water Withdrawals (in mgd) by Category

	Fresh Water		Saline Water	
	Ground	Surface	Total Fresh	Surface
Public supply	50.69	0.00	50.69	0.00
Domestic self-supply	8.63	0.00	8.63	0.00
Commercial/industrial use	0.14	0.00	0.14	0.00
Agricultural irrigation	6.99	0.26	7.25	0.00
Recreational irrigation	2.46	0.62	3.08	0.00
Thermoelectric power generation	0.00	0.00	0.00	0.00
Abandoned artesian wells	15.84	0.00	15.84	0.00
Total	84.75	0.88	85.63	0.00
Total ground	84.75			
Total surface		0.88		
County total		85.63		

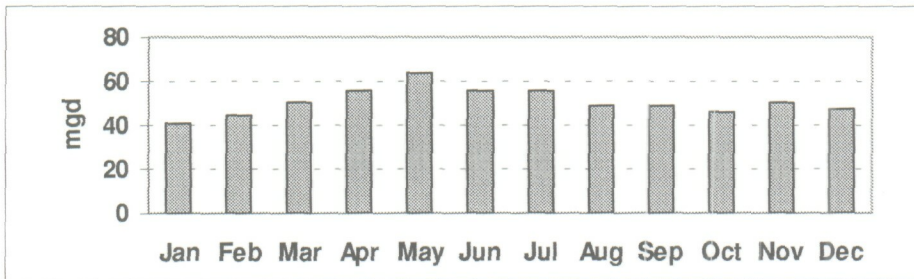


Figure A33. Monthly public supply water use in Seminole County, 1995

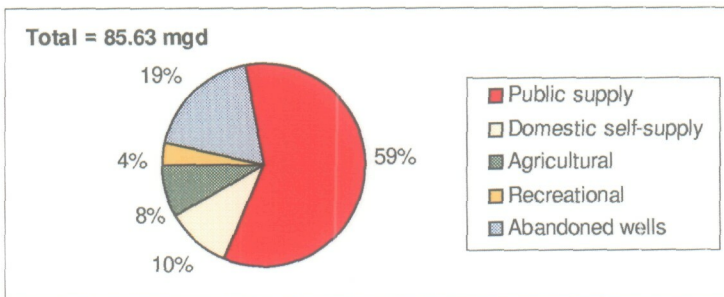


Figure A34. Seminole County—percentages, by category, of freshwater use, 1995. Commercial/industrial use was less than 1%.

Annual Water Use Survey: 1995

1995 Water Users in Seminole County

User Utility/Facility	Category	Population Served	Ground Water (mgd)	Withdrawal Source	Surface Water (mgd)	Withdrawal Source
Altamonte Springs, City of	Public supply	37,917	6.48	Floridan aquifer	0.00	
Bretton Woods	Public supply	886	0.13	Floridan aquifer	0.00	
Casselberry, City of	Public supply	35,000	5.92	Floridan aquifer	0.00	
Lake Harney Water Association	Public supply	437	0.05	Floridan aquifer	0.00	
Lake Mary, City of	Public supply	7,251	1.75	Floridan aquifer	0.00	
Longwood, City of	Public supply	13,602	2.00	Floridan aquifer	0.00	
Mullet Lake Water Association	Public supply	692	0.04	Floridan aquifer	0.00	
Oviedo, City of	Public supply	17,910	2.82	Floridan aquifer	0.00	
Palm Valley MHP	Public supply	1,649	0.23	Floridan aquifer	0.00	
Sanford, City of	Public supply	35,311	5.74	Floridan aquifer	0.00	
Sanlando Utilities	Public supply	28,560	8.81	Floridan aquifer	0.00	
Seminole County Utilities	Public supply	55,907	11.03	Floridan aquifer	0.00	
Seminole Pines/ Indian Creek	Public supply	318	0.04	Floridan aquifer	0.00	
Seminole Woods Community	Public supply	343	0.04	Floridan aquifer	0.00	
Southern States Utilities	Public supply	8,023	1.23	Floridan aquifer	0.00	
Town & Country RV	Public supply	100	0.02	Floridan aquifer	0.00	
Twelve Oaks RV	Public supply	500	0.03	Floridan aquifer	0.00	
Utilities Inc. of Florida	Public supply	6,890	0.78	Floridan aquifer	0.00	
Winter Springs, City of	Public supply	25,673	3.55	Floridan aquifer	0.00	
Total Public Supply		276,969	50.69		0.00	
Iron Bridge RWPCF	Industrial		0.06	Floridan aquifer	0.00	
Siemens Stromberg	Industrial		0.03	Floridan aquifer	0.00	
Lake Brantley High School	Institutional		0.03			
Teague Middle School	Institutional		0.02			
Total Commercial/Industrial			0.14		0.00	

Note: MHP = mobile home park
 RV = recreational vehicle
 RWPCF = regional water pollution control facility

1995 Agricultural and Recreational Water Use in Seminole County

	Total Acres		Water Use (mgd)		Total
	Farmed	Irrigated	Ground	Surface	
Vegetable Crops					
Cabbage	275	275	0.13	0.00	0.13
Carrots	0	0	0.00	0.00	0.00
Cucumbers	130	130	0.07	0.00	0.07
Peppers	0	0	0.00	0.00	0.00
Potatoes	450	450	0.59	0.00	0.59
Tomatoes	0	0	0.00	0.00	0.00
Sweet corn	10	10	0.01	0.00	0.01
Watercress	0	0	0.00	0.00	0.00
Miscellaneous vegetables	425	425	0.42	0.00	0.42
Fruit Crops					
Blueberries*	5	5	0.00	0.00	0.00
Citrus	1,816	1,816	3.01	0.00	3.01
Grapes	0	0	0.00	0.00	0.00
Peaches	0	0	0.00	0.00	0.00
Pecans	0	0	0.00	0.00	0.00
Strawberries	20	20	0.01	0.00	0.01
Watermelons	50	50	0.02	0.00	0.02
Miscellaneous fruit	0	0	0.00	0.00	0.00
Field Crops					
Field corn	40	40	0.04	0.00	0.04
Peanuts	0	0	0.00	0.00	0.00
Rice	0	0	0.00	0.00	0.00
Sorghum	0	0	0.00	0.00	0.00
Soybeans	0	0	0.00	0.00	0.00
Sugar cane	0	0	0.00	0.00	0.00
Tobacco	0	0	0.00	0.00	0.00
Wheat	0	0	0.00	0.00	0.00
Miscellaneous grains*	10	10	0.00	0.00	0.00
Ornamentals and Grasses					
Ferns	20	20	0.07	0.00	0.07
Foliage	200	200	0.71	0.00	0.71
Woody ornamentals	443	400	1.18	0.24	1.42
Improved pasture	7,000	490	0.28	0.00	0.28
Sod	320	320	0.22	0.00	0.22
Turf grass (other than golf)	136	136	0.23	0.02	0.25
Total Agricultural	11,350	4,797	6.99	0.26	7.25
Recreational					
Turf grass (golf)	2,875	1,678	2.46	0.62	3.08
Grand total	14,225	6,475	9.45	0.88	10.33
Sprinkler acreage	4,529				
Flood acreage	1,425				
Low-volume acreage	521				
Total irrigated acreage	6,475				

*Water use below threshold of 0.01 mgd

VOLUSIA COUNTY

Total population 402,970
 Total area 1,106 mi²

St. Johns River Water Management District

Population		Land Area (acres)	
Total	402,970	Total area	707,840 (1,106 mi ²)
Public supply	375,020	Farmed	15,741
Self-supplied	27,950	Irrigated	13,283
Per capita (gallons per day)	130		

1995 Water Withdrawals (in mgd) by Category

	Fresh Water		Saline Water	
	Ground	Surface	Total Fresh	Surface
Public supply*	48.78	0.00	48.78	0.00
Domestic self-supply	3.63	0.00	3.63	0.00
Commercial/industrial use	0.69	0.00	0.69	0.00
Agricultural irrigation	25.53	4.45	29.98	0.00
Recreational irrigation	2.16	0.69	2.85	0.00
Thermoelectric power generation	0.37	70.30	70.67	0.00
Abandoned artesian wells	1.63	0.00	1.63	0.00
Total	82.79	75.44	158.23	0.00
Total ground	82.79			
Total surface		75.44		
County total		158.23		

*Includes slightly saline water (250 to 1,000 mg/L chlorides) treated through reverse osmosis and diluted with fresh water

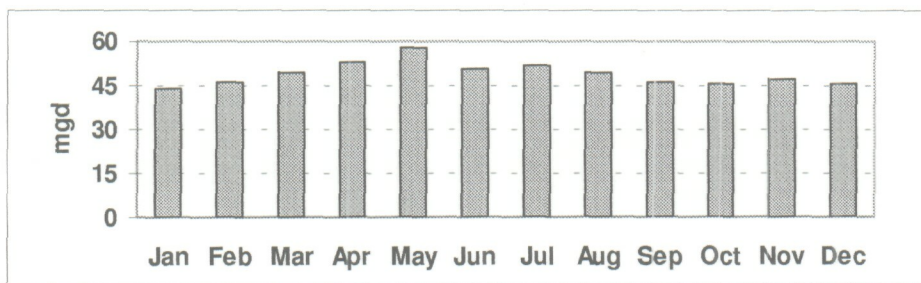


Figure A35. Monthly public supply water use in Volusia County, 1995

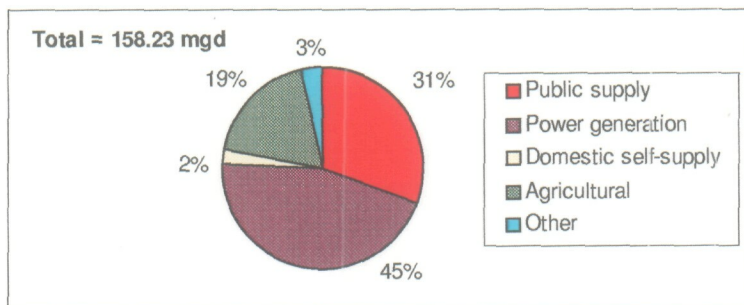


Figure A36. Volusia County—percentages, by category, of freshwater use, 1995. The "other" category includes abandoned artesian wells, commercial/industrial use, and recreational irrigation.

Annual Water Use Survey: 1995

1995 Water Users in Volusia County

User Utility/Facility	Category	Population Served	Ground Water (mgd)	Withdrawal Source	Surface Water (mgd)	Withdrawal Source
Colony in the Woods	Public supply	885	0.05	Floridan aquifer	0.00	
Daytona Beach, City of	Public supply	82,314	12.42	Floridan aquifer	0.00	
De Land, City of	Public supply	37,340	5.08	Floridan aquifer	0.00	
Duval Home for Children	Public supply	250	0.03	Floridan aquifer	0.00	
Edgewater, City of	Public supply	17,484	1.49	Floridan aquifer	0.00	
Eldorado Estates	Public supply	305	0.02	Floridan aquifer	0.00	
Elmwood Trailer Park	Public supply	240	0.01	Floridan aquifer	0.00	
Florida United Methodist Children's Home	Public supply	138	0.02	Floridan aquifer	0.00	
Hacienda Del Rio	Public supply	832	0.12	Floridan aquifer	0.00	
Hidden Valley Park	Public supply	463	0.02	Floridan aquifer	0.00	
Holly Hill, City of	Public supply	11,539	1.16	Floridan aquifer	0.00	
John Knox Village	Public supply	909	0.21	Floridan aquifer	0.00	
Kingston Shores Water Association	Public supply	250	0.02	Floridan aquifer and R/O	0.00	
Kove Estates Association	Public supply	715	0.03	Floridan aquifer	0.00	
Lake Beresford Water Association	Public supply	1,074	0.17	Floridan aquifer	0.00	
Lake Helen, City of	Public supply	2,344	0.24	Floridan aquifer	0.00	
Lemon Bluff Water Association	Public supply	189	0.01	Floridan aquifer	0.00	
Lingering Lane MHP	Public supply	203	0.02	Floridan aquifer	0.00	
Magnolias	Public supply	457	0.05	Floridan aquifer	0.00	
Meadowlea Estates	Public supply	431	0.03	Floridan aquifer	0.00	
Meadowlea on the River	Public supply	562	0.04	Floridan aquifer	0.00	
New Smyrna Beach, City of	Public supply	23,312	4.27	Floridan aquifer	0.00	
Orange City, Town of	Public supply	6,117	1.33	Floridan aquifer	0.00	
Ormond Beach, City of	Public supply	39,263	4.90	Floridan aquifer	0.00	
Pierson, Town of	Public supply	1,230	0.12	Floridan aquifer	0.00	
Pine Island Utility Co.	Public supply	340	0.01	Floridan aquifer	0.00	
Port Orange, City of*	Public supply	46,344	5.28	Floridan aquifer	0.00	
SSU-Deltona Utilities and Sugar Mill	Public supply	73,654	9.24	Floridan aquifer	0.00	
Strawn Water Plant	Public supply	42	0.01	Floridan aquifer	0.00	
Sunny Sands Resort, Inc.	Public supply	198	0.01	Floridan aquifer	0.00	
Terra Mar Village Water & Sewer	Public supply	769	0.01	Floridan aquifer	0.00	
Tomoka View Water Works	Public supply	405	0.04	Floridan aquifer	0.00	
Twin Rivers Estates	Public supply	205	0.03	Floridan aquifer	0.00	
Tymber Creek Utilities	Public supply	1,138	0.11	Floridan aquifer	0.00	
Village of Pine Run	Public supply	261	0.03	Floridan aquifer	0.00	
Volusia County Utilities	Public supply	22,818	2.15	Floridan aquifer and R/O	0.00	
Total Public Supply		375,020	48.78			
Ardmore Farms	Industrial		0.15	Floridan aquifer	0.00	
Sherwood Medical Mfg. Company	Industrial		0.18	Floridan aquifer	0.00	
Sparton Electronics	Industrial		0.00	Floridan aquifer	0.00	
T.G. Lee, Orange City	Industrial		0.08	Floridan aquifer	0.00	

1995 Water Users in Volusia County—Continued

User Utility/Facility	Category	Population Served	Ground Water (mgd)	Withdrawal Source	Surface Water (mgd)	Withdrawal Source
FDOC, Tomoka state park	Institutional		0.04	Floridan aquifer	0.00	
FDOT I-95 rest facility	Institutional		0.01	Floridan aquifer	0.00	
Holiday Inn	Institutional		0.03	Floridan aquifer	0.00	
Sunshine Holiday Campground	Institutional		0.02	Floridan aquifer	0.00	
Volusia County Government Complex	Institutional		0.18	Floridan aquifer	0.00	
Total Commercial/Industrial			0.69		0.00	
FPC, Debarry	Power generation		0.01	Floridan aquifer	0.00	
FPC, Lake Monroe [†]	Power generation		0.00	Floridan aquifer	0.00	Lake Monroe
FPL, Sanford	Power generation		0.36	Floridan aquifer	70.30	St. Johns River
Total Power Generation			0.37		70.30	

Note: FDOC = Florida Department of Corrections
 FDOT = Florida Department of Transportation
 FPC = Florida Power Corporation
 FPL = Florida Power & Light
 R/O = reverse osmosis
 SSU = Southern States Utilities

*Ponce Inlet water use is included with the City of Port Orange
[†]1994 figures

Annual Water Use Survey: 1995

1995 Agricultural and Recreational Water Use in Volusia County

	Total Acres		Water Use (mgd)		Total
	Farmed	Irrigated	Ground	Surface	
Vegetable Crops					
Cabbage	295	295	0.13	0.00	0.13
Carrots	0	0	0.00	0.00	0.00
Cucumbers	300	300	0.16	0.00	0.16
Peppers	80	80	0.10	0.00	0.10
Potatoes	0	0	0.00	0.00	0.00
Tomatoes	0	0	0.00	0.00	0.00
Sweet corn	0	0	0.00	0.00	0.00
Watercress	0	0	0.00	0.00	0.00
Miscellaneous vegetables	630	630	0.60	0.00	0.60
Fruit Crops					
Blueberries	25	25	0.01	0.00	0.01
Citrus	2,121	1,100	1.58	0.12	1.70
Grapes	7	7	0.01	0.00	0.01
Peaches	35	10	0.01	0.00	0.01
Pecans	25	10	0.02	0.00	0.02
Strawberries	0	0	0.00	0.00	0.00
Watermelons	0	0	0.00	0.00	0.00
Miscellaneous fruit	15	15	0.03	0.00	0.03
Field Crops					
Field corn	0	0	0.00	0.00	0.00
Peanuts	0	0	0.00	0.00	0.00
Rice	0	0	0.00	0.00	0.00
Sorghum	0	0	0.00	0.00	0.00
Soybeans	0	0	0.00	0.00	0.00
Sugar cane	0	0	0.00	0.00	0.00
Tobacco	0	0	0.00	0.00	0.00
Wheat	0	0	0.00	0.00	0.00
Miscellaneous grains	0	0	0.00	0.00	0.00
Ornamentals and Grasses					
Ferns	6,726	6,726	19.91	4.08	23.99
Foliage	320	320	1.14	0.00	1.14
Woody ornamentals	120	120	0.37	0.06	0.43
Improved pasture	0	0	0.00	0.00	0.00
Sod	1,837	1,837	1.20	0.00	1.20
Turf grass (other than golf)	245	245	0.26	0.19	0.45
Total Agricultural	12,781	11,720	25.53	4.45	29.98
Recreational					
Turf grass (golf)	2,960	1,563	2.16	0.69	2.85
Grand total	15,741	13,283	27.69	5.14	32.83
Sprinkler acreage	10,828				
Flood acreage	1,305				
Low-volume acreage	1,150				
Total irrigated acreage	13,283				



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