

Technical Fact Sheet SJ2009-FS1  
2008 Annual Water Use Survey



September 30, 2009



**St. Johns River Water Management District  
2008 Annual Water Use Survey**

**Date: September 30, 2009**

**Introduction:** This document reports 2008 water use data by category for the St. Johns River Water Management District (SJRWMD).

**The following are notes and disclaimers regarding water use data:**

**General**

- Water use statistics are subject to change as updated information becomes available. Changes in methodologies may make year-to-year data comparisons inappropriate.
- SJRWMD is not the only source of information for the reporting of *2008 Annual Water Use Survey*. Water use data are obtained from the following multiple sources: raw water withdrawal data submitted to SJRWMD on or before June 11, 2009, via EN-50 forms; treated water data from Florida Department of Environmental Protection (FDEP) monthly operating reports (MOR) and annual reuse report; data communicated via mail, e-mail, and phone surveys; and data stored in the SJRWMD reclaimed water destination database. SJRWMD attempts to compile the best available data, but it cannot guarantee that contributors use consistent measurement techniques or quality control standards. In most cases, very limited quality assurance of the data is conducted by SJRWMD and the information is reported as received.
- In cases for which water use data are unavailable from any other sources, SJRWMD uses professional analyses of historical data and trends to estimate values.
- A reported threshold of 0.1 million gallons per day (mgd) of average daily flow by individual water users was used for all water use categories, excluding agricultural irrigation, in reporting of the *2008 Annual Water Use Survey*.

For additional information, please contact David Hornsby, Division of Water Supply Management, at (386) 312-2371 or [dhornsby@sjrwmd.com](mailto:dhornsby@sjrwmd.com).

<b>Term</b>	<b>Definition</b>	<b>Data Source/Methodology</b>
mgd	Million gallons per day—all water use is expressed in average million gallons per day (mdg) unless otherwise noted.	NA

Term	Definition	Data Source/Methodology
Freshwater	Water with total dissolved solids (TDS) concentrations less than 1,000 milligrams per liter (mg/L); freshwater may be withdrawn from either groundwater or surface water sources. This definition is based on the U.S. Geological Survey (USGS) definition as presented in USGS Water Supply Paper 2254, <i>Study and Interpretation of the Chemical Characteristics of Natural Water</i> by John D. Hem, and is used for purposes of reporting consistency with USGS. This definition is different than the definition used by SJRWMD for determining whether a source water is “brackish” when identifying an alternative water supply source. SJRWMD generally identifies source waters that do not always meet federal and state drinking water standards for chloride, sulfate, or total dissolved solids as “brackish” waters. Brackish water sources are considered as alternative water supply sources.	NA
Saline water	Water with TDS concentrations greater than or equal to 1,000 mg/L—all reported saline water is withdrawn from surface water or surficial aquifer sources.	NA
Reuse	The use of reclaimed water—treated wastewater that has received at least secondary treatment and basic disinfection for distribution for nonpotable uses and which has achieved a water resource benefit as described in SJRWMD Technical Publication SJ2006-2, <i>District Water Supply Plan, 2005</i> .	SJRWMD’s methodology would have been based on quantities of reuse water reported by FDEP in its 2008 Reuse Inventory Report, which was scheduled for publication in August 2009. However, these data were not available from FDEP at the time of SJRWMD’s preparation of this document. Therefore, reuse values are not reported in this document.

NA = not applicable

Term	Definition	Data Source/Methodology
Florida population	Estimated number of permanent residents living within the state of Florida.	The source for population is University of Florida, Bureau of Economic Business and Research (BEBR), <i>Florida Estimates of Population</i> , April 1, 2008.
SJRWMD population	Estimated number of permanent residents living within SJRWMD.	Population estimates are intended for planning purposes only; 2008 county population estimates are from BEBR, <i>Florida Estimates of Population</i> , April 1, 2008. For counties within more than one water management district, the portion of the 2008 estimates within SJRWMD is derived by estimating SJRWMD's portion of the 2000 U.S. Census population at the block level. The proportion of each county's population within the public supply and domestic self-supply and small public supply systems categories is based on the proportionality from 2005 population projections made for SJRWMD's <i>Water Supply Assessment, 2008</i> .
Water use category	Classification of water use based on one of the following six categories—public supply, domestic self-supply and small public supply systems, agricultural irrigation self-supply, commercial/industrial/institutional self-supply, recreational self-supply, or thermoelectric power generation self-supply.	NA

Term	Definition	Data Source/Methodology
Public supply	Water withdrawn, treated, and delivered to service areas within SJRWMD by privately and publicly owned water supply utilities— includes both residential and nonresidential uses by utilities that withdraw more than 0.1 mgd from groundwater or surface water sources.	Water use information in this category is obtained from MORs data submitted to FDEP and represents reporting by approximately 98% of the public supply utilities for which SJRWMD consumptive use permits, issued for quantities greater than 0.1 mgd, were in effect during 2008. Note: Water for use by the city of Cocoa in Brevard County is withdrawn in Orange County.

Term	Definition	Data Source/Methodology
Domestic self-supply and small public supply systems	Domestic self-supply refers primarily to water use by individuals not served by a public supply water utility (i.e., a residence with a private well); small public supply utility systems with average daily flows under 0.1 mgd also are included in this category.	Water use information in this category is estimated from residential population and residential public supply per capita water use rates at the county level. Residential water use for each public supply utility is calculated by multiplying the total public supply water use by the percent of the total water use allocated to residential use, as authorized in the SJRWMD-issued consumptive use permit. The resulting water use values for each public supply utility are then summed to the county level and divided by the total county permanent/residential public supply population to obtain the county-level residential per capita value. The residential per capita value is multiplied by the domestic self-supply population, resulting in the estimated water use for this category. The domestic self-supply population for each county is obtained by subtracting the total number of people served by public supply utilities in each county in 2005 from the total permanent/residential population of each county, respectively. The districtwide, average residential public supply per capita of 111 gallons per day was used for counties that have less than 5% of the county population within SJRWMD or that have no public supply water use.

Term	Definition	Data Source/Methodology
Commercial/ industrial/ institutional self- supply	Water used for commercial, industrial, or institutional purposes not provided by public supply utilities—includes businesses, government facilities, military installations, schools, prisons, hospitals, and industrial uses such as mining, processing, and manufacturing. (Note: Surface water use by mining operations in the commercial/industrial/institutional self-supply category reported in this document represents 5% of the surface water use to account for loss of water in the mining products. The remaining surface water is assumed to be recirculated in the mining process and, therefore, is considered nonconsumptive.)	Information in this category reflects water use data reported to SJRWMD by consumptive use permittees on EN-50 forms, not including the use of reuse water.
Thermoelectric power generation self- supply	Water withdrawn from groundwater and surface water sources and used by power plants not supplied by public supply systems. (Note: This does not include water used for once-through cooling, which is considered nonconsumptive.)	Information in this category reflects water use data reported to SJRWMD by power plant operators on EN-50 forms or through SJRWMD survey, not including the use of reuse water.



Term	Definition	Data Source/Methodology
Agricultural irrigation self-supply	Water that is withdrawn from groundwater and surface water sources and used for supplemental crop irrigation.	Water use for irrigation is assessed by crop type due to crop-specific consumption requirements. Monthly water use estimates are based on a modified Blaney-Criddle model. Climate data for running a modified Blaney-Criddle model is obtained from the National Oceanic and Atmospheric Administration (NOAA) and the Florida Climate Center. For instances in which climate data are unavailable, substitute data may be obtained from historical or average values or data from the next closest weather station. Benchmark Farms Program (BMF) crop-specific data is substituted for modified Blaney-Criddle data in Indian River, Lake, Putnam, St. Johns, and Volusia counties, where BMF crops are significantly represented. Crop type and acreage data are provided through SJRWMD surveys and geographic information system (GIS)-based crop layers, University of Florida–Institute of Food and Agricultural Sciences (IFAS), county agricultural extension agents, and U.S. Department of Agricultural surveys (USDA).
Recreational self-supply	Water withdrawn from groundwater and surface water sources and used for golf course irrigation that is not supplied by public supply systems.	Information in this category reflects water use data reported to SJRWMD by consumptive use permittees on EN-50 forms or through SJRWMD survey, not including the use of reuse water.

**Table 1**

**St. Johns River Water Management District  
2008 Population by County**

<b>County</b>	<b>County Population</b>	<b>Percentage of County Population in SJRWMD</b>	<b>SJRWMD Population</b>	<b>Public Supply Population</b>	<b>Domestic Self-Supply and Small Public Supply Systems Population</b>
Alachua	252,388	79.5%	200,740	190,011	10,643
Baker	25,890	98.1%	25,396	4,915	20,481
Bradford	29,059	4.2%	1,233	330	903
Brevard	556,213	100.0%	556,213	529,860	26,353
Clay	185,168	100.0%	185,168	132,278	52,890
Duval	904,971	100.0%	904,971	858,400	46,571
Flagler	95,512	100.0%	95,512	76,369	19,143
Indian River	141,667	100.0%	141,667	122,878	18,789
Lake	288,379	99.7%	287,656	231,826	55,830
Marion	329,418	69.8%	229,827	140,545	89,282
Nassau	71,915	100.0%	71,915	35,557	36,358
Okeechobee	40,003	1.9%	750	0	750
Orange	1,114,979	75.2%	837,921	757,273	80,648
Osceola	273,709	0.3%	955	0	955
Putnam	74,989	100.0%	74,989	13,518	61,471
St. Johns	181,180	100.0%	181,180	144,913	36,267
Seminole	426,413	100.0%	426,413	408,476	17,937
Volusia	510,750	100.0%	510,750	471,928	38,822
<b>Total</b>	<b>5,502,603</b>		<b>4,733,256</b>	<b>4,119,163</b>	<b>614,093</b>

Notes: 2008 population estimates are from BEBR, *Florida Estimates of Population*, April 1, 2008

Total population for the state of Florida in 2008 = 18,807,219.

Percent of total state of Florida population that lives within SJRWMD = 25%.

Percent of SJRWMD population served by public supply = 87%.

SJRWMD population is derived from the county population multiplied by the percentage of county population in SJRWMD. The percentage of county population, as presented, is rounded to the nearest tenth. Thus, in some cases, the presented SJRWMD population is slightly different than the product of the county population multiplied by the percentage of county population in SJRWMD.

**Table 2**

**St. Johns River Water Management District  
2008 Total Water Use by County  
in Million Gallons per Day (mgd)**

<b>County</b>	<b>Freshwater (mgd)</b>	<b>Saline Water (mgd)</b>	<b>All Water Use (mgd)</b>
Alachua	33.91	0.00	33.91
Baker	4.96	0.00	4.96
Bradford	1.08	0.00	1.08
Brevard	114.43	0.00	114.43
Clay	25.83	0.00	25.83
Duval	164.08	0.00	164.08
Flagler	29.18	2.51	31.69
Indian River	110.04	0.00	110.04
Lake	105.18	0.00	105.18
Marion	48.62	0.00	48.62
Nassau	50.89	1.29	52.18
Okeechobee	18.93	0.00	18.93
Orange	148.91	0.00	148.91
Osceola	23.58	0.00	23.58
Putnam	47.88	0.00	47.88
St. Johns	47.44	0.00	47.44
Seminole	69.72	0.00	69.72
Volusia	87.42	0.00	87.42
<b>Total</b>	<b>1,132.08</b>	<b>3.80</b>	<b>1,135.88</b>

Note: Reuse data are not reported in this survey because the data were not available from FDEP at the time of publication of this document.

**Table 3**

**St. Johns River Water Management District  
2008 Total Water Use by Category  
in Million Gallons per Day (mgd)**

<b>Category</b>	<b>Freshwater (mgd)</b>	<b>Saline Water (mgd)</b>	<b>All Water Use (mgd)</b>
Public supply	569.28	0.00	569.28
Domestic self-supply and small public supply systems	69.20	0.00	69.20
Commercial/industrial/institutional self-supply	105.65	3.80	109.45
Agricultural irrigation self-supply	332.19	0.00	332.19
Recreational self-supply	48.95	0.00	48.95
Thermoelectric power generation self-supply	6.81	0.00	6.81
<b>Total</b>	<b>1,132.08</b>	<b>3.80</b>	<b>1,135.88</b>

Note: Reuse data are not reported in this survey because the data were not available from FDEP at the time of publication of this document.

**Table 4**

**St. Johns River Water Management District  
2008 Public Supply and Domestic Self-Supply and  
Small Public Supply Systems Water Use  
in Million Gallons per Day (mgd)**

<b>County</b>	<b>Public Supply (mgd)</b>	<b>Domestic Self-Supply and Small Public Supply Systems* (mgd)</b>
Alachua	26.11	0.93
Baker	0.89	3.34
Bradford	0.51	0.10
Brevard <sup>a</sup>	53.23	1.79
Clay	15.38	5.39
Duval	124.46	6.71
Flagler	9.09	1.30
Indian River	14.43	1.30
Lake	47.65	8.77
Marion	18.95	7.41
Nassau	7.55	6.80
Okeechobee	0.00	0.08
Orange <sup>b</sup>	118.09	8.31
Osceola	0.00	0.11
Putnam	2.73	7.87
St. Johns	17.38	3.81
Seminole	57.48	1.72
Volusia	55.35	3.46
<b>Total</b>	<b>569.28</b>	<b>69.20</b>

\*For domestic self-supply and small public supply systems, all water is from groundwater sources.

<sup>a</sup> Includes 21.58 mgd withdrawn in Orange County for public supply use in Brevard County.

<sup>b</sup> Does not include 21.58 mgd withdrawn in Orange County for public supply use in Brevard County.

Note: Reuse data are not reported in this survey because the data were not available from FDEP at the time of publication of this document.

**Table 5**

**St. Johns River Water Management District  
2008 Commercial/Industrial/Institutional Self-Supply Water Use  
in Million Gallons per Day (mgd)**

<b>County</b>	<b>Freshwater (mgd)</b>	<b>Saline Water (mgd)</b>	<b>All Water Use (mgd)</b>
Alachua	0.12	0.00	0.12
Baker	0.49	0.00	0.49
Bradford	0.18	0.00	0.18
Brevard	4.99	0.00	4.99
Clay	0.84	0.00	0.84
Duval	20.69	0.00	20.69
Flagler	0.00	2.51	2.51
Indian River	0.19	0.00	0.19
Lake	7.96	0.00	7.96
Marion	5.74	0.00	5.74
Nassau	33.05	1.29	34.34
Okeechobee	0.00	0.00	0.00
Orange	3.09	0.00	3.09
Osceola	0.00	0.00	0.00
Putnam	25.29	0.00	25.29
St. Johns	1.04	0.00	1.04
Seminole	0.00	0.00	0.00
Volusia	1.98	0.00	1.98
<b>Total</b>	<b>105.65</b>	<b>3.80</b>	<b>109.45</b>

Note: Reuse data are not reported in this survey because the data were not available from FDEP at the time of publication of this document.

**Table 6**

**St. Johns River Water Management District  
2008 Agricultural Irrigation Self-Supply Water Use  
in Million Gallons per Day (mgd)**

<b>County</b>	<b>Freshwater (mgd)</b>
Alachua	6.18
Baker	0.24
Bradford	0.16
Brevard	49.50
Clay	3.25
Duval	2.50
Flagler	16.98
Indian River	85.25
Lake	29.40
Marion	13.91
Nassau	0.65
Okeechobee	18.85
Orange	17.36
Osceola	23.47
Putnam	11.19
St. Johns	21.27
Seminole	9.10
Volusia	22.93
<b>Total</b>	<b>332.19</b>

Note: Reuse data are not reported in this survey because the data were not available from FDEP at the time of publication of this document.

**Table 7**

**St. Johns River Water Management District  
2008 Crops Included in Agricultural  
Irrigation Self-Supply Water Use**

<b>Vegetable Crops</b>	<b>Fruit Crops</b>	<b>Field Crops</b>	<b>Ornamentals and Grasses</b>
Cabbage	Blueberries	Field corn	Fern
Carrots	Citrus	Peanuts	Ornamentals (field grown)
Cucumbers	Grapes	Cotton	Ornamentals (container grown)
Peppers	Peaches		Improved pasture
Potatoes	Pecans		Sod
Sweet corn	Strawberries		
Misc. vegetables	Watermelon		
	Misc. fruits and nuts		

Note: The above table identifies the crops included in estimates of 2008 agricultural irrigation self-supply water use.

**Table 8**

**St. Johns River Water Management District  
2008 Recreational Self-Supply Water Use  
in Million Gallons per Day (mgd)**

<b>County</b>	<b>Freshwater (mgd)</b>
Alachua	0.31
Baker	0.00
Bradford	0.13
Brevard	4.92
Clay	0.97
Duval	4.40
Flagler	1.81
Indian River	8.87
Lake	11.40
Marion	2.61
Nassau	2.84
Okeechobee	0.00
Orange	1.68
Osceola	0.00
Putnam	0.25
St. Johns	3.94
Seminole	1.42
Volusia	3.40
<b>Total</b>	<b>48.95</b>

Note: Reuse data are not reported in this survey because the data were not available from FDEP at the time of publication of this document.



**Table 9**

**St. Johns River Water Management District  
2008 Thermoelectric Power Generation Self-Supply Water Use  
in Million Gallons per Day (mgd)**

<b>County</b>	<b>Freshwater* (mgd)</b>	<b>Saline Water* (mgd)</b>	<b>All Water Use (mgd)</b>
Alachua	0.26	0.00	0.26
Baker	0.00	0.00	0.00
Bradford	0.00	0.00	0.00
Brevard	0.00	0.00	0.00
Clay	0.00	0.00	0.00
Duval	5.32	0.00	5.32
Flagler	0.00	0.00	0.00
Indian River	0.00	0.00	0.00
Lake	0.00	0.00	0.00
Marion	0.00	0.00	0.00
Nassau	0.00	0.00	0.00
Okeechobee	0.00	0.00	0.00
Orange	0.38	0.00	0.38
Osceola	0.00	0.00	0.00
Putnam	0.55	0.00	0.55
St. Johns	0.00	0.00	0.00
Seminole	0.00	0.00	0.00
Volusia	0.30	0.00	0.30
<b>Total</b>	<b>6.81</b>	<b>0.00</b>	<b>6.81</b>

\*Nonconsumptive (returned to source) surface water usage is not reported.

Note: Reuse data are not reported in this survey because the data were not available from FDEP at the time of publication of this document.