

Technical Fact Sheet SJ2014-FS4

2013 Survey of Estimated Annual Water Use
for St. Johns River Water Management District



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Introduction

St. Johns River Water Management District (SJRWMD) has published estimates of annual water use data since 1978. These “annual water use surveys” assess estimated total water use, with data arranged by source, category of use, and county. Estimated amounts are based on best available data at the time of publication. Published reports can be found on the SJRWMD website, *floridaswater.com*. In publishing the annual data, SJRWMD cooperates with the U.S. Geological Survey (USGS) that compiles national estimates of water use on 5-year intervals.

Geographic Survey Area

SJRWMD includes all or part of 18 counties, encompassing 12,300 square miles in northeast and east-central Florida and representing more than 4.7 million people, or approximately 21% of the state’s population. The following water basins are located within SJRWMD: the entire St. Johns River and Nassau River basins, the Indian River Lagoon and Northern Coastal basins, and Florida’s portion of the St. Marys River basin.

Area Rainfall Statistics

Average annual rainfall within SJRWMD for the 10-year period January 2004–December 2013 was 48.99 inches. Annual rainfall within SJRWMD for 2013 was 49.42 inches. The driest year of the 10-year period was 2006, with 36.23 inches, 26% below normal. The wettest year of the 10-year period was 2005, with 59.82 inches, 22% above normal.

From 2009 to 2013, average annual rainfall within SJRWMD varied by nearly 11 inches (from 41.51 to 52.57 inches). Above-average annual rainfall occurred in 2009 (52.57 inches), 2012 (51.01 inches) and 2013 (49.42 inches), while below-average rainfall occurred in 2010 (41.51 inches) and 2011 (44.93 inches).

Through evapotranspiration, nearly 70% of rainfall within SJRWMD is returned to the atmosphere, while the remaining 30% becomes runoff to surface waters or recharge to aquifers (Fernald and Purdum 1998).

Data Sources and Methodology

SJRWMD is not the only source of water use data for the reporting of 2013 Survey of Estimated Annual Water Use. Water use data were obtained from the following sources: raw water withdrawal data submitted to SJRWMD on or before April 30, 2014, (via EN-50 forms) and treated water data from Florida Department of Environmental Protection (DEP) monthly operating reports (MORs). Reuse water data were derived from the *2013 Reuse Inventory Report* (DEP 2014). Rainfall by county was obtained from SJRWMD’s radar rainfall data via the SJRWMD Oracle database. In this 2013 survey, the estimated amounts are based on best available data at the time of publication. SJRWMD attempts to compile the best available data, but it cannot guarantee that contributors use consistent measurement techniques or quality control standards. If water use information is not available from any other source, SJRWMD uses professional analyses of historical data and trends to estimate values. Water use statistics are subject to change as updated information becomes available. Changes in methodologies should be considered when making year-to-year data comparisons.



Data Collection Terminology

Freshwater. Water with concentration of total dissolved solids (TDS) less than 1,000 milligrams per liter (mg/L) is considered freshwater and may be withdrawn from either groundwater or surface water sources. This definition is based on the one provided by USGS, in Water Supply Paper 2254 (Hem 1985), and has been used for reporting consistency with USGS. This definition differs from that used by SJRWMD in determining if a source is “brackish” when identifying an alternative water supply source. Source waters that do not always meet federal and state drinking water standards for chloride, sulfate, or total dissolved solids are generally identified by SJRWMD as “brackish” waters. SJRWMD may list brackish waters as alternative water supply sources in some areas.

Saline water. Water with more than 1,000 mg/L TDS is considered saline. All water reported as saline is withdrawn from surface water or surficial aquifer sources.

Reuse. Reclaimed water is treated wastewater that has received at least secondary treatment and basic disinfection. It may be distributed for nonpotable uses that achieve a water resource benefit (SJRWMD 2006).

Data Source/Methodology: SJRWMD’s methodology is based on quantities of reuse water reported by DEP in the *2013 Reuse Inventory Report* (DEP 2014). DEP regards several applications of reclaimed water as reuse that SJRWMD does not. Therefore, it is common for

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SJRWMD to report beneficial reuse quantities lower than that reported by DEP. SJRWMD requires that water be applied in such a way as to achieve a water resource benefit before qualifying as reuse. In particular, SJRWMD requires that reuse must take the place of an existing or potential use of higher-quality water or be used to grow useful crops; restore or maintain adopted minimum flows and/or levels of a river, lake, or wetland; or effectively recharge a useable aquifer. If the water applied does not meet one of these requirements, it is considered by SJRWMD as disposal. Types of reclaimed water considered as reuse by DEP but disposal by SJRWMD are as follows: underground injection; absorption fields and rapid infiltration basins located in discharge areas; surface water augmentation where not required; spray fields; artificial wetlands.

Florida population. This is the estimated number of permanent residents living within Florida.

Data Source/Methodology: The source for population is *Estimates of Population by County and City in Florida: April 1, 2013* (BEBR 2014).

SJRWMD population. This is the estimated number of permanent residents living within SJRWMD's 18-county region.

Data Source/Methodology: Population estimates are intended for planning purposes only; 2013 county population estimates are from *Estimates of Population by County and City in Florida: April 1, 2013* (BEBR 2014). For counties located within more than one water management district, the amount of the 2013 estimates within SJRWMD is derived by estimating SJRWMD's portion of the 2010 U.S. Census population at the block level.

Water use category. Classification of water use is based on one of the following six categories: (1) public supply, (2) domestic self-supply and small public supply systems, (3) agricultural irrigation self-supply, (4) commercial/industrial/institutional and mining/dewatering self-supply, (5) landscape/recreational/aesthetic self-supply, (6) thermoelectric power generation self-supply.

Public supply. Water withdrawn, treated, and delivered to service areas within SJRWMD by privately and publicly owned water supply utilities (or systems) is defined as public supply. This encompasses both residential and nonresidential uses by utilities that are permitted to withdraw equal to or more than 0.10 million gallons per day (mgd) from groundwater or surface water sources.

Data Source/Methodology: Water use data in this category were obtained from SJRWMD EN-50 forms. In cases where SJRWMD EN-50 forms were missing, MORs submitted to DEP were used. Of note, MORs are submitted to DEP by approximately 98% of the public supply utilities for which SJRWMD had consumptive use permits (CUPs) in effect during 2013 for quantities greater than 0.10 mgd. (Note: Water for use by the City of Cocoa, in Brevard County, is withdrawn from Orange County.)

Domestic self-supply and small public supply systems. Domestic self-supply water use refers primarily to water use by individuals not served by a public supply water utility (e.g., a residence with a private well). The population associated with small public supply utility systems (permitted average daily flow under 0.10 mgd) is also included in this category. In most cases,

small public supply utility systems need not report water use data to SJRWMD. However, many of these small public supply utility systems do report water use data to DEP via MORs.

Data Source/Methodology: Domestic self-supply water use is estimated from residential population and residential public supply (including small public supply systems) per capita water use rates at the county level. Residential water use for each public supply utility and small public supply system is calculated by multiplying the total public supply and small public supply system water use by the percent of the total water use allocated to residential use, as authorized in the SJRWMD-issued CUP. The resulting water use values for each public supply utility and small public supply system are then summed to the county level and divided by the total county permanent/residential public supply and small public supply population to obtain the county-level residential per capita value. The county residential per capita value is multiplied by the domestic self-supply population, resulting in the estimated amount of water use for domestic self-supply. The domestic self-supply population for each county is obtained by subtracting the total number of people served by public supply utilities and small public supply systems in a county from the total number of permanent residents living in the county. For counties with a population of less than 5% within the jurisdiction of SJRWMD or that have no public supply or small public supply system water use, SJRWMD's average residential public supply (including small public supply systems) per capita figure of 90 gallons per day (gpd) was used as a best estimate. For the purpose of reporting, all domestic self-supply water is assumed to be groundwater. Water use data for small public supply systems was from SJRWMD EN-50 and/or DEP MORs.

Commercial/industrial/institutional and mining/dewatering self-supply. This is water withdrawn from groundwater and surface water sources for commercial, industrial, institutional, mining or dewatering purposes not provided by public supply systems. It includes businesses, government facilities, military installations, schools, prisons, hospitals, industrial uses such as processing and manufacturing and mining and long-term dewatering operations. (Note: For this report, surface water use by mining and long-term dewatering operations represents 5% of surface water use, to account for the loss of water in mining products and evapotranspiration. The remaining surface water is assumed to be recirculated in the mining process and, therefore, is considered nonconsumptive. Nonconsumptive is defined by SJRWMD as any use of water that does not reduce the water supply from which it is withdrawn or diverted.)

Data Source/Methodology: Data in this category reflects water use information reported to SJRWMD by consumptive use permittees via SJRWMD EN-50 forms.

Thermoelectric power generation self-supply. This is 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.)

Data Source/Methodology: Data in this category reflect water use information reported to SJRWMD by power plant operators via SJRWMD EN-50 forms or through a yearly SJRWMD survey. In cases where SJRWMD EN-50 forms were missing or a survey was not returned, MORs submitted to DEP were used.

Agricultural irrigation self-supply. This is water withdrawn from groundwater and surface water sources for use in supplemental crop irrigation.

Data Source/Methodology: 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 (for calculating evapotranspiration). Climate data for running a modified Blaney-Criddle model is obtained from the National Oceanic and Atmospheric Administration and the Florida Climate Center. In places where climate data are missing, substitute data are obtained from historical (or average values) or data from the next closest weather station. Crop type and acreage data are provided through yearly SJRWMD surveys and geographic information system-based crop layers or through data from the University of Florida–Institute of Food and Agricultural Sciences, county agricultural extension agents, and U.S. Department of Agriculture surveys.

Landscape/recreational/aesthetic self-supply. This is water withdrawn from groundwater and surface water sources for use in golf course irrigation, irrigation of urban landscapes or athletic fields, water-based recreational areas, and ornamental or decorative purposes not supplied by public supply systems.

Data Source/Methodology: Data in this category reflect water use information reported to SJRWMD by consumptive use permittees via SJRWMD EN-50 forms.

2013 Estimated Water Use by Category

Water use is estimated for water withdrawals from fresh, saline, and reuse water sources, expressed in average mgd unless otherwise noted. In this 2013 survey, the estimated amounts are based on best available data as of September 12, 2014. Water withdrawal information is reported for six categories of use: (1) public supply, (2) domestic self-supply and small public supply systems, (3) commercial/industrial/institutional and mining/dewatering self-supply, (4) agricultural irrigation self-supply, (5) landscape/recreational/aesthetic irrigation self-supply, and (6) thermoelectric power generation self-supply. A reporting threshold of 0.10 mgd of permitted average daily flow by individual water users was used for all water use categories, excluding the agricultural irrigation self-supply and domestic self-supply and small public supply systems categories, in the reporting of consumptive use for 2013. Consumptive use is defined by SJRWMD as any use of water that reduces the supply from which it is withdrawn or diverted.

Rainfall and water use totals within SJRWMD are shown in Table 1, with figures tabulated by county. Table 2 shows total water use by category, and Table 3 shows water use by county and category. The estimated total consumptive use in SJRWMD for 2013, including fresh, saline, and reuse (reclaimed) water, was 1,166.63 mgd. Of the estimated total consumptive amount, 1,011.75 mgd was freshwater and 2.81 mgd was saline water (Tables 1–3). In 2013, the largest consumptive use of freshwater within SJRWMD was public supply, which totaled 520.56 mgd, or 52%, of total consumptive freshwater use (Tables 2 and 3, Figure 1). Next was agricultural irrigation, which used 286.30 mgd, or 28%, of total consumptive freshwater within SJRWMD (Tables 2 and 3, Figure 1). Reuse water accounted for 152.07 mgd and was reported under the commercial/industrial/institutional and mining/dewatering, agricultural irrigation, and landscape/recreational/aesthetic categories of water use (Tables 2 and 3).

Public Supply

The public supply water use category consists of water supplied to homes and industries by both privately and publicly owned water supply utilities. It includes both residential and nonresidential uses. Utilities that are permitted to withdraw 0.10 mgd or more from groundwater or surface water sources are included in this category.

In 2013, 172 public supply utilities (or systems) served an estimated 4,128,504 people, or 87%, of the SJRWMD total population (see Table 4 note). Total water use, from both groundwater and surface water sources, was 520.56 mgd (Tables 2 and 3, Figures 1 and 2), nearly 9% below the average annual use of 569.35 mgd for the 10-year period. Average gross per capita use, based on the population served by public supply, was 126 gallons per capita per day (gpcd). Public supply water use typically fluctuates during the year in response to seasonal rainfall and temperature variations. Water use tends to increase during the warm season (April–October), when outdoor use is highest. The monthly average gross per capita also fluctuates throughout the year in response to these variations. In 2013, water use ranged from a low of 404.71 mgd (98 gpcd) in November to a high of 538.81 mgd (131 gpcd) in May (Figure 2).

Of the total water withdrawn for public supply use, 97% was groundwater, of which 89% was withdrawn from the Floridan aquifer system; the remaining 11% was withdrawn from the intermediate and surficial aquifers.

Counties with the largest public supply water use during 2013 were Orange County (112.75 mgd, serving 845,423 people; 133 gpcd) and Duval County (107.58 mgd, serving 748,311 people; 144 gpcd) (Table 3, Figures 3 and 4). These counties combined represented 42% of total public supply water use for 39% of the public supply population. (Note: There is no public supply water use in the portions of Okeechobee and Osceola counties within SJRWMD.)

Domestic Self-Supply and Small Public Supply Systems

The domestic self-supply category includes water withdrawn from individual domestic wells. Water use for domestic self-supply was not inventoried, so water use is estimated at a county level based on population not served by public supply or small public supply systems and residential per capita rates for the public supply utilities (including small public supply systems) within the county. For the purpose of reporting, all domestic self-supply water was assumed to be groundwater.

In 2013, an estimated 603,740 people used 53.84 mgd of domestic self-supply water (including small public supply systems), or 5%, of total freshwater used in SJRWMD (Tables 1–3, Figure 1). Duval County had the largest self-supplied population, with 118,764 people. Marion County had the second-largest population, 97,308, followed by Clay County, 71,604 (Table 4). This is a change when compared to previous years, as a result of obtaining tabular use summary data from JEA; which has enabled SJRWMD to more accurately calculate domestic self-supply population within the counties JEA serves.

Domestic self-supply water use (including small public supply systems) has fluctuated over the 10-year period, reaching a low of 53.84 mgd in 2013 to a high of 72.91 mgd in both 2004 and 2006. The average for the 10-year period was 67.62 mgd; water use in 2013 was 20% below average. Fluctuations in water use are attributed to changes in methodologies over the years. In

2013, average residential public supply (including small public supply systems) per capita within SJRWMD was 90 gpcd. This average gpcd was used to estimate the total for domestic self-supplied water in Okeechobee County.

Commercial/Industrial/Institutional and Mining/Dewatering Self-Supply

The commercial/industrial/institutional and mining/dewatering self-supply use category consists of larger commercial, industrial, and institutional users and mining and dewatering operations not served by public supply utilities that are permitted to withdraw 0.10 mgd or more. The commercial and institutional categories include businesses and institutions, such as government facilities, military installations, schools, prisons, and hospitals. The industrial category includes processing and manufacturing facilities; it does not include water used for power generation by thermoelectric power plants. Surface water use by mining and long-term dewatering operations represents 5% of surface water use, to account for the loss of water in mining products and evapotranspiration. The remaining surface water is assumed to be recirculated in the mining process and, therefore, is considered nonconsumptive. There were 190 commercial/industrial/institutional and mining/dewatering users reported in 2013.

Total freshwater use in the commercial/industrial/institutional and mining/dewatering category was 91.55 mgd, or 9%, of total freshwater use (Tables 2 and 3, Figure 1). Of this freshwater total, 73.62 mgd was groundwater and 17.93 mgd was surface water. Saline surface water accounted for 2.81 mgd, and reuse was 22.74 mgd (Tables 2 and 3).

Most of the freshwater withdrawn for commercial/industrial/institutional and mining/dewatering purposes supplied the pulp and paper industries in Duval, Nassau, and Putnam counties. Water use for pulp and paper production in 2013 included 40.70 mgd of fresh groundwater, 16.66 mgd of fresh surface water, and 1.11 mgd of saline surface water. The second-largest water user in this category was the mining industry, which accounted for 10.64 mgd of fresh groundwater and 0.81 mgd of fresh surface water. Pulp and paper production and mining accounted for a combined total of 68.81 mgd of freshwater, or 75%, of the commercial/industrial/institutional and mining/dewatering freshwater use.

Commercial/industrial/institutional and mining/dewatering self-supply water use was highest in 2004 (154.83 mgd) and lowest in 2012 (84.91 mgd). The average for the 10-year period was 109.02 mgd; water use in 2013 was 16% below the average. Commercial/industrial/institutional and mining/dewatering freshwater use in 2013 varied from a low of 81.98 mgd in December to a high of 95.48 mgd in September (Figure 5).

Agricultural Irrigation Self-Supply

The agricultural irrigation self-supply category consists of estimated water withdrawals from freshwater sources for supplemental crop irrigation. Estimates of the acreage planted in various crops are multiplied by estimates of the quantity of water per acre necessary to irrigate those crops. Water use for irrigation is assessed by crop, because crops have specific consumptive use requirements and suitable water quality.

Total consumptive use of freshwater for agricultural irrigation was estimated at 286.30 mgd, which is 28% of total freshwater use in SJRWMD during 2013 (Tables 2 and 3, Figure 1). Reuse water accounted for 6.16 mgd of agricultural irrigation use. Although both groundwater and surface water were used for agricultural irrigation, use by water source has not been defined for

this report. Agricultural irrigation allocations with SJRWMD permits in effect during 2013 indicated that 66% of agricultural irrigation use was groundwater and 34% was surface water. For the purpose of reporting, it was assumed that groundwater for agricultural irrigation originated from the Floridan aquifer system, because of available quantities.

It is estimated that of the total 183,361 acres irrigated, 81,916 acres were irrigated by low-pressure/low-volume systems; 70,482 acres were irrigated by flood systems; 30,963 acres were irrigated by sprinkler systems. Agricultural irrigation water use in 2013 had the largest seasonal fluctuation than any other water use category, reaching a low of 68.05 mgd in September to a high of 560.19 mgd in April (Figure 6). These fluctuations are typical of irrigation water use and inversely correlated to rainfall.

By county, the largest water use for agricultural irrigation occurred in Indian River County, with 86.39 mgd of freshwater, accounting for 30% of total SJRWMD agricultural irrigation water use (Table 3). Based on agricultural irrigation allocations with permits in effect during 2013, Indian River County is permitted to use 66% of its agricultural irrigation from surface water sources and 34% from groundwater sources. This would imply a surface water use of 57.14 mgd and an estimated groundwater use of 29.25 mgd.

Districtwide, the largest estimated water use for a single crop was for citrus, which accounted for 137.53 mgd, or 48%, of total agricultural irrigation water use. Improved pasture irrigation accounted for 52.02 mgd, or 18%, of total agricultural irrigation water use (Figure 7).



Landscape/Recreational/Aesthetic Irrigation Self-Supply

The landscape/recreational/aesthetic irrigation self-supply category includes water used to irrigate turf grass for golf courses, urban landscapes, athletic fields, water-based recreational areas, or for ornamental or decorative purposes. Use of freshwater in the landscape/recreational/aesthetic irrigation category totaled 51.74 mgd, about 5% of total freshwater use in 2013. Reuse water accounted for 123.17 mgd of landscape/recreational/aesthetic irrigation use. By county (Table 3), the largest freshwater use for landscape/recreational/aesthetic irrigation occurred in Indian River County (12.44 mgd), followed by Lake County (12.25 mgd), and Duval County (4.98 mgd).

During the 10-year period (January 2004–December 2013), landscape/recreational/aesthetic irrigation freshwater use was highest in 2011 (73.09 mgd) and lowest in 2009 (43.14 mgd), with 2009 as one of the wettest years (Figure 10). Average water use for the 10-year period was 56.51

mgd. Landscape/recreational/aesthetic irrigation water use in 2013 was 8% below the 10-year average. Landscape/recreational/aesthetic irrigation freshwater use in 2013 varied from a low of 35.42 mgd in December to a high of 60.74 mgd in May (Figure 8).

Thermoelectric Power Generation Self-Supply

The thermoelectric power generation self-supply category consists of water withdrawn from groundwater and surface water sources by power plants, excluding reuse water or water used for once-through cooling, which is considered nonconsumptive use. Estimates for 2013 reflect consumptive use data for 15 self-supplied thermoelectric power plants, totaling 7.76 mgd (Tables 2 and 3, Figure 1). The largest amount of freshwater use within this category (Table 3) occurred in Duval County (5.72 mgd).

Thermoelectric power generation freshwater use in 2013 fluctuated from a low of 4.79 mgd in March to a high of 7.19 mgd in September (Figure 9). Fluctuations in water use are related to power plant shutdowns for maintenance or increased power demands during periods of extremely high or low temperatures.

Summary of 2013 Estimated Water Use

Since 1978, when SJRWMD published its first annual survey, there has been a gradual increase in freshwater use. Total public supply water use has increased by nearly 123% (from 233.84 mgd to 520.56 mgd) during this 35-year period, while total population served by public supply has increased by 183% (from 1,460,900 to 4,128,504). However, between 2009 and 2013, public supply water use decreased by 4% (from 541.40 mgd to 520.56 mgd), while population served by public supply increased from 4,108,535 to 4,128,504; the small increase in population during this time frame can be attributed to economic conditions and housing foreclosures. Decreases in public supply water use are attributed to fluctuations in rainfall and conservation, as well as increased use of reclaimed water for irrigation. For example, during the 5-year period extending January 2009–December 2013, average annual rainfall throughout SJRWMD varied by nearly 11 inches (from 52.57 inches in 2009 to 41.51 inches in 2010). Above-average annual rainfall occurred in 2009 (52.57 inches), 2012 (51.01 inches) and 2013 (49.42 inches), while below-average rainfall occurred in 2010 (41.51 inches) and 2011 (44.93 inches). Meanwhile, in addition to hydrologic conditions, improved irrigation management by growers has brought a decrease in agricultural irrigation self-supply water use. In general, the trend in agricultural irrigation is static, if not declining, within SJRWMD. Water use amounts reported in this 2013 survey are estimated based on best available data through September 12, 2014. For additional information, please visit floridaswater.com.



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Table 1. Total water use (mgd) and rainfall by county in SJRWMD, 2013

County	Freshwater (mgd)	Saline Water (mgd)	Reuse (mgd)	Total Water Use (mgd)	Rainfall (inches)
Alachua	24.39	0.00	3.37	27.76	50.23
Baker	7.77	0.00	0.00	7.77	48.68
Bradford	1.05	0.00	0.00	1.05	47.44
Brevard	115.16	0.00	23.09	138.25	34.81
Clay	18.94	0.00	4.17	23.11	52.68
Duval	147.27	0.00	14.57	161.84	50.93
Flagler	14.38	1.70	4.98	21.06	48.75
Indian River	114.93	0.00	5.43	120.36	41.19
Lake	103.86	0.00	10.04	113.90	43.42
Marion	38.34	0.00	3.74	42.08	50.45
Nassau	46.24	1.11	1.11	48.46	45.74
Okeechobee	7.49	0.00	0.00	7.49	45.93
Orange	130.16	0.00	36.06	166.22	43.73
Osceola	14.76	0.00	0.00	14.76	41.32
Putnam	42.22	0.00	0.82	43.04	51.61
St. Johns	43.29	0.00	2.59	45.88	43.80
Seminole	58.80	0.00	20.90	79.70	55.81
Volusia	82.70	0.00	21.20	103.90	42.98
Total	1,011.75	2.81	152.07	1,166.63	49.42*

Note: Total water use is in million gallons per day (mgd).

Estimated amounts are based on best available data as of September 12, 2014.

Source of domestic self-supply is assumed to be groundwater, and domestic self-supply is an estimate.

* Districtwide rainfall average.

Table 2. Total water use (mgd) by category in SJRWMD, 2013

Category	Freshwater (mgd)	Saline Water (mgd)	Reuse (mgd)	Total Water Use (mgd)
Public supply	520.56	0.00	0.00	520.56
Domestic self-supply and small public supply systems	53.84	0.00	0.00	53.84
Commercial/industrial/institutional and mining/dewatering self-supply	91.55	2.81	22.74	117.10
Agricultural irrigation self-supply	286.30	0.00	6.16	292.46
Landscape/recreational/aesthetic self-supply	51.74	0.00	123.17	174.91
Thermoelectric power generation self-supply	7.76	0.00	0.00	7.76
Total	1,011.75	2.81	152.07	1,166.63

Note: Water use is in million gallons per day (mgd).

Source of domestic self-supply is assumed to be groundwater, and domestic self-supply is an estimate.

Estimated amounts are based on best available data as of September 12, 2014.

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Table 3. Total water use (mgd) by county and category in SJRWMD, 2013

County	Freshwater							Saline Water	Reuse	All Water Use
	Public Supply	Domestic Self-Supply	Commercial/Industrial/Institutional Fresh Water	Agricultural Irrigation Self-Supply	Landscape/Recreational/Aesthetic Self-Supply	Thermoelectric Power Generation Self-Supply	Total Freshwater	Commercial/Industrial/Institutional Saline Water		
Alachua	21.48	1.27	0.41	0.65	0.35	0.23	24.39	0.00	3.37	27.76
Baker	0.86	1.94	0.35	4.62	0.00	0.00	7.77	0.00	0.00	7.77
Bradford	0.44	0.11	0.02	0.48	0.00	0.00	1.05	0.00	0.00	1.05
Brevard	53.34	1.42	5.88	51.15	3.35	0.02	115.16	0.00	23.09	138.25
Clay	11.14	6.05	0.25	1.35	0.15	0.00	18.94	0.00	4.17	23.11
Duval	107.58	11.16	17.02	0.81	4.98	5.72	147.27	0.00	14.57	161.84
Flagler	9.13	0.13	0.00	3.37	1.75	0.00	14.38	1.70	4.98	21.06
Indian River	15.82	0.19	0.09	86.39	12.44	0.00	114.93	0.00	5.43	120.36
Lake	42.71	5.91	7.56	34.72	12.25	0.71	103.86	0.00	10.04	113.90
Marion	17.54	9.13	2.58	6.17	2.92	0.00	38.34	0.00	3.74	42.08
Nassau	7.14	3.81	32.81	0.28	2.20	0.00	46.24	1.11	1.11	48.46
Okeechobee	0.00	0.13	0.00	7.36	0.00	0.00	7.49	0.00	0.00	7.49
Orange	112.75	1.24	1.94	11.40	2.44	0.39	130.16	0.00	36.06	166.22
Osceola	0.00	0.03	0.00	14.73	0.00	0.00	14.76	0.00	0.00	14.76
Putnam	2.39	2.80	19.87	16.44	0.26	0.46	42.22	0.00	0.82	43.04
St. Johns	15.22	2.48	0.19	21.83	3.57	0.00	43.29	0.00	2.59	45.88
Seminole	50.50	0.78	0.00	6.08	1.44	0.00	58.80	0.00	20.90	79.70
Volusia	52.52	5.26	2.58	18.47	3.64	0.23	82.70	0.00	21.20	103.90
Total	520.56	53.84	91.55	286.30	51.74	7.76	1,011.75	2.81	152.07	1,166.63

Note: Water use is in million gallons per day (mgd).

Estimated amounts are based on best available data as of September 12, 2014.

Source of domestic self-supply is assumed to be groundwater, and domestic self-supply is an estimate.

Small public supply systems are included in the domestic self-supply estimates.

Mining and dewatering is included in the commercial/industrial/institutional estimates.

2013 Survey of Estimated Annual Water Use for St. Johns River Water Management District

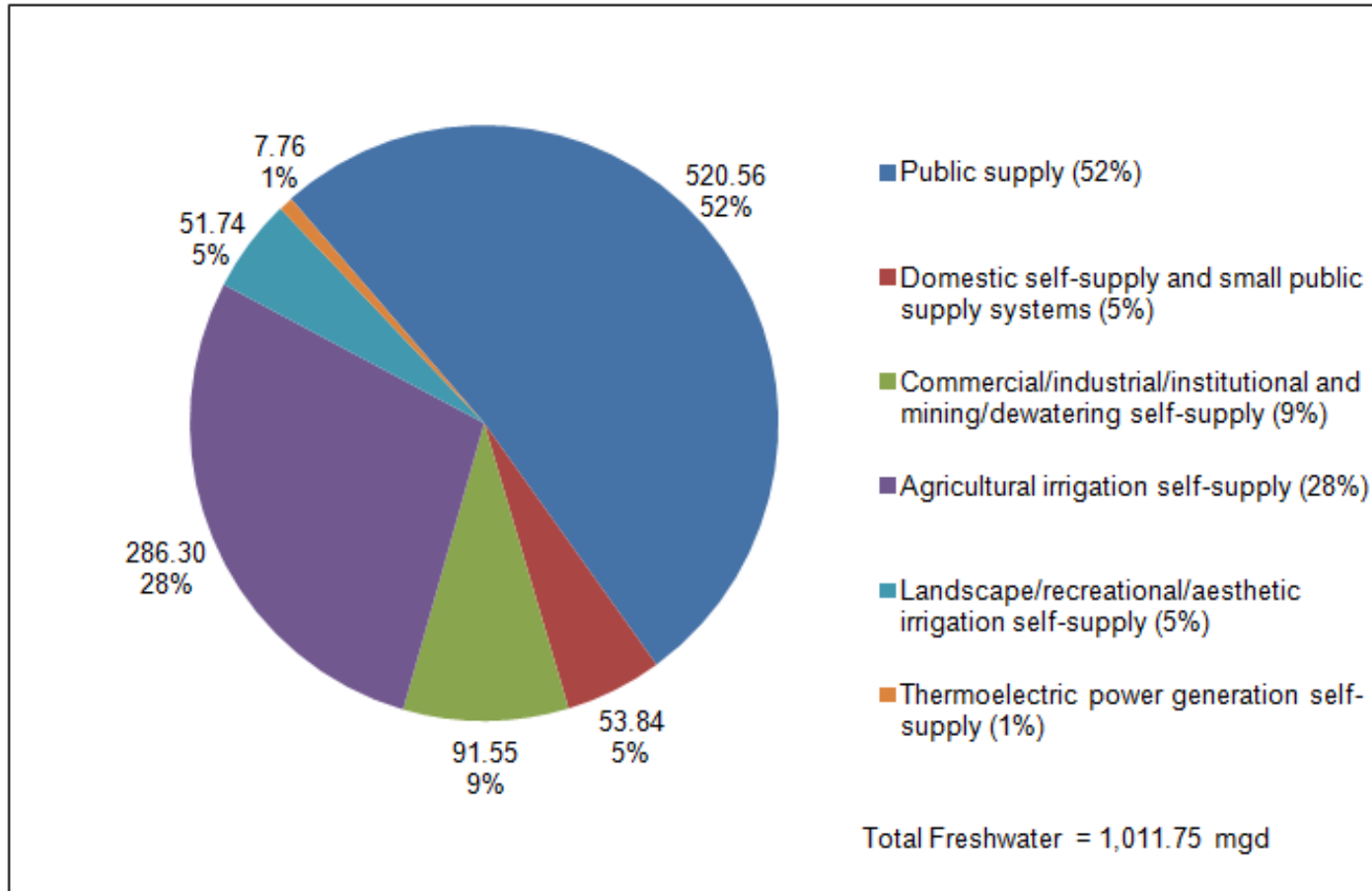


Figure 1. Total freshwater use (mgd), 2013

Note: Water use is in million gallons per day (mgd).

Estimated amounts are based on best available data as of September 12, 2014.

Source of domestic self-supply is assumed to be groundwater, and domestic self-supply is an estimate.

2013 Survey of Estimated Annual Water Use for St. Johns River Water Management District

Table 4. Population by county, 2013

County	County Population	Percentage of County Population in SJRWMD	SJRWMD Population	Public Supply Population	Domestic Self-Supply and Small Public Supply Systems Population
Alachua	248,002	82.5%	204,602	186,053	18,549
Baker	26,881	97.8%	26,290	6,600	19,690
Bradford	27,217	20.3%	5,525	4,319	1,206
Brevard	548,424	100.0%	548,424	527,164	21,260
Clay	192,843	100.0%	192,843	121,239	71,604
Duval	867,075	100.0%	867,075	748,311	118,764
Flagler	97,843	100.0%	97,843	95,271	2,572
Indian River	139,586	100.0%	139,586	135,279	4,307
Lake	303,317	99.8%	302,710	250,390	52,320
Marion	335,008	62.4%	209,045	111,737	97,308
Nassau	74,661	100.0%	74,661	46,518	28,143
Okeechobee	39,762	3.6%	1,431	0	1,431
Orange	1,202,978	71.3%	857,723	845,423	12,300
Osceola	288,361	0.1%	288	0	288
Putnam	72,605	100.0%	72,605	20,853	51,752
St. Johns	201,541	100.0%	201,541	163,658	37,883
Seminole	431,074	100.0%	431,074	421,597	9,477
Volusia	498,978	100.0%	498,978	444,092	54,886
Total	5,596,156		4,732,244	4,128,504	603,740

Note: Population estimates: *Estimates of Population by County and City in Florida: April 1, 2013* (BEER 2014)

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 from the product of the county population multiplied by the percentage of county population within SJRWMD. The percentage of county population within SJRWMD is derived from the 2010 U.S. Census population at the block level determined to be within the SJRWMD.

2013 Survey of Estimated Annual Water Use for St. Johns River Water Management District

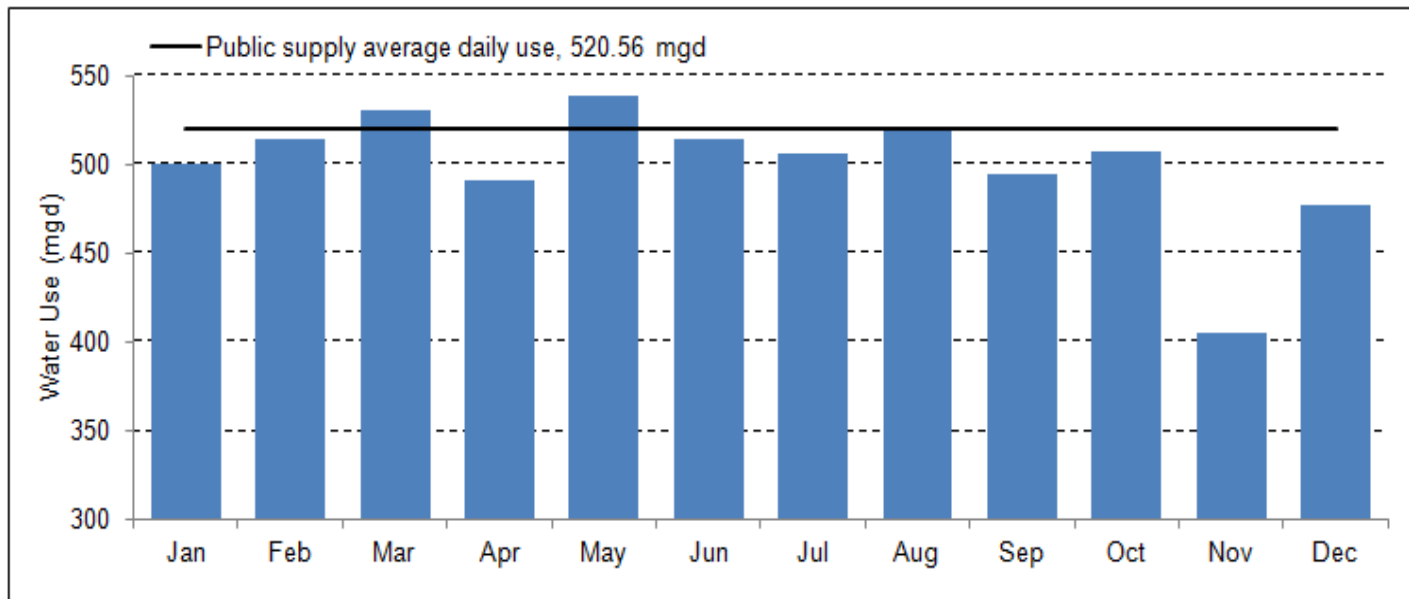


Figure 2. Average daily public supply water use (mgd) by month, 2013

Note: Water use is in million gallons per day (mgd).

Estimated amounts are based on best available data as of September 12, 2014.

2013 Survey of Estimated Annual Water Use for St. Johns River Water Management District

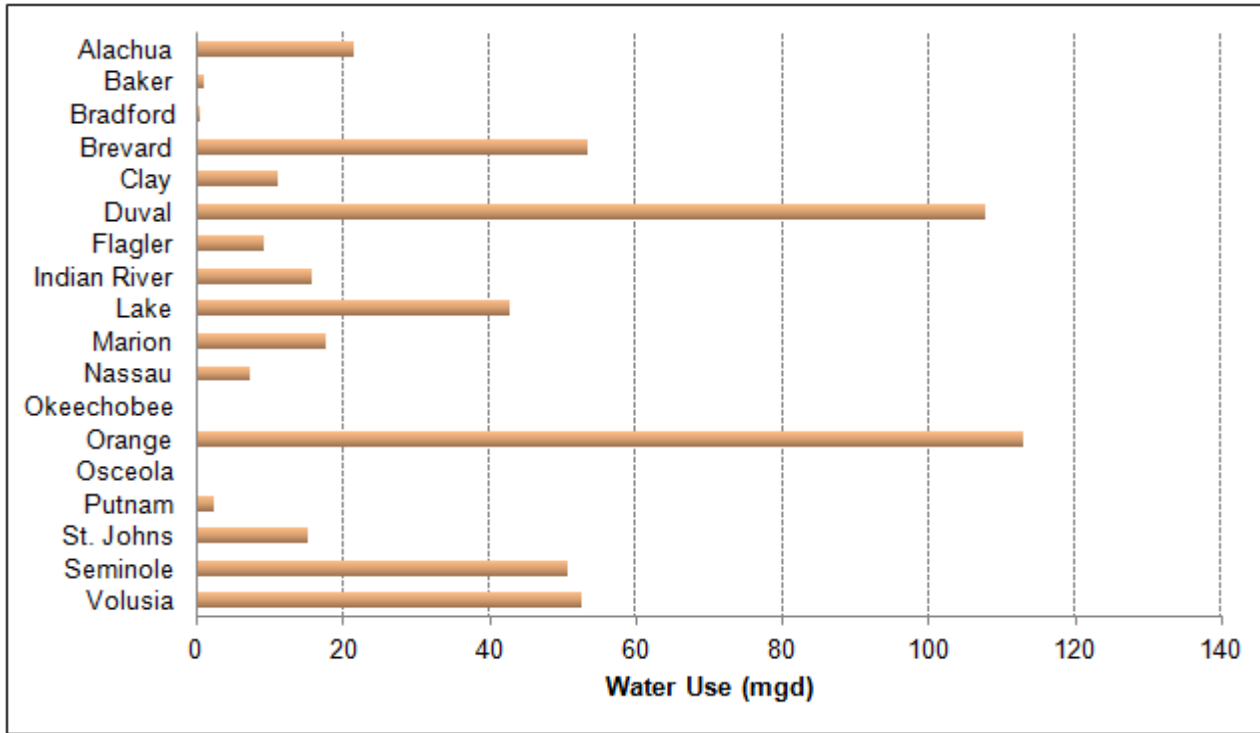


Figure 3. Freshwater use (mgd) for public supply in SJRWMD, 2013

Note: Water use is in million gallons per day (mgd).

Estimated amounts are based on best available data as of September 12, 2014.

2013 Survey of Estimated Annual Water Use for St. Johns River Water Management District

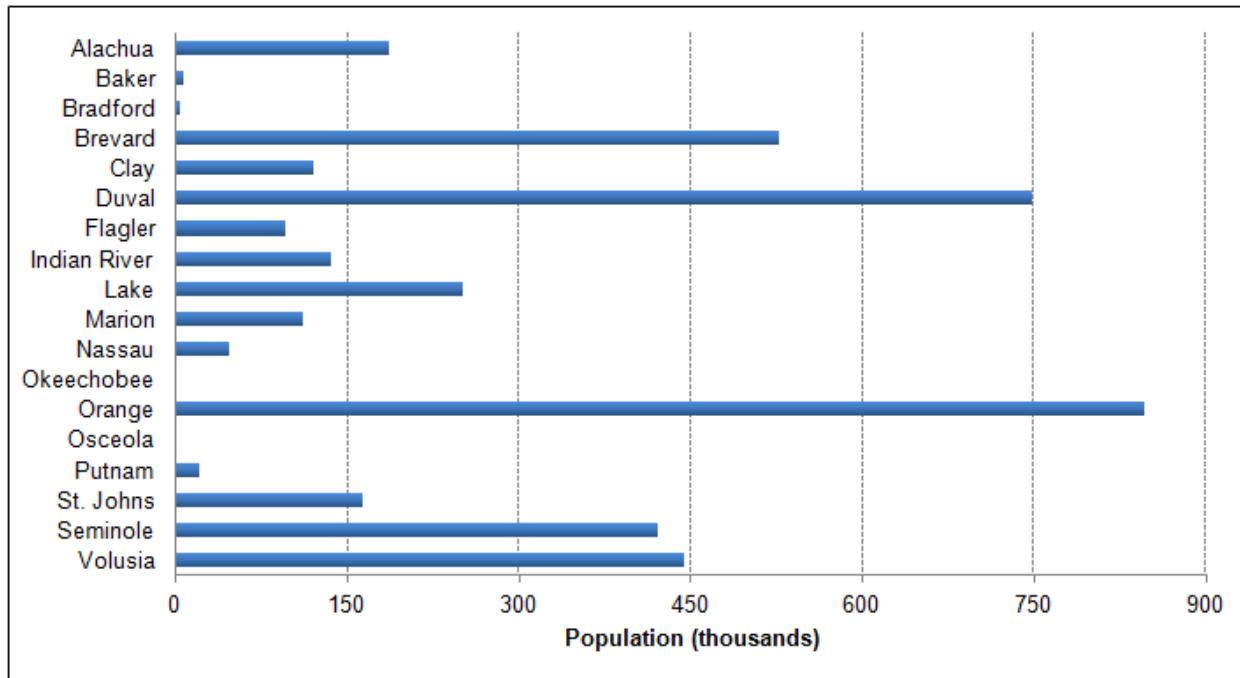


Figure 4. Population served by public supply in SJRWMD, 2013

Note: Estimated amounts are based on best available data as of September 12, 2014.

2013 Survey of Estimated Annual Water Use for St. Johns River Water Management District

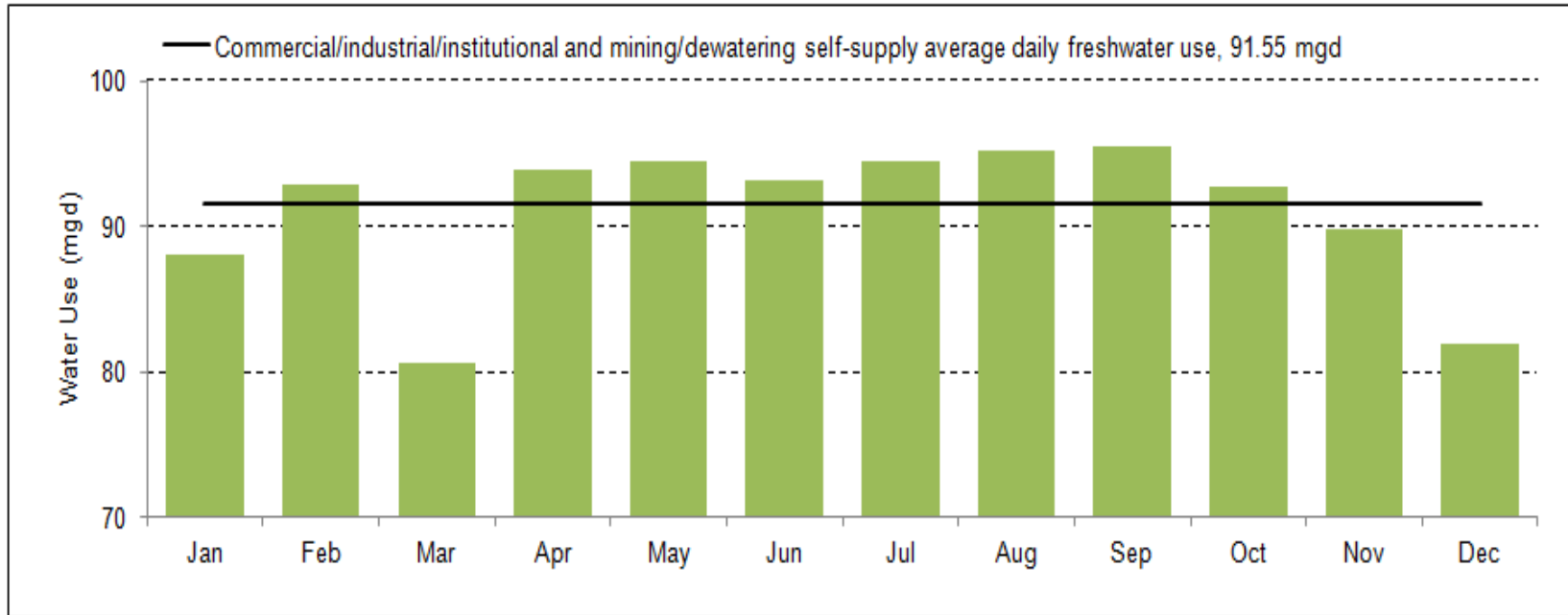


Figure 5. Average daily commercial/industrial/institutional and mining/dewatering self-supply freshwater use (mgd) by month, 2013

Note: Water use is in million gallons per day (mgd).

Estimated amounts are based on best available data as of September 12, 2014.

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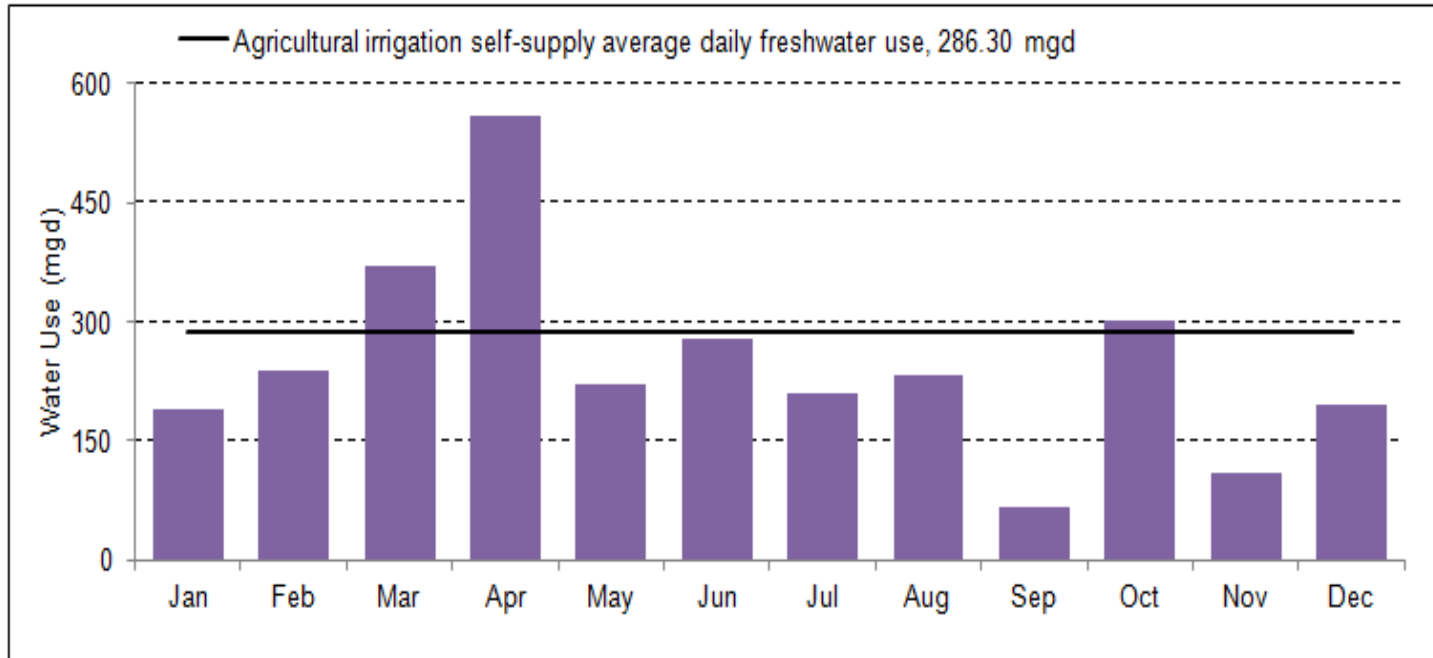


Figure 6. Average daily agricultural irrigation self-supply freshwater use (mgd) by month, 2013

Note: Water use is in million gallons per day (mgd).

Withdrawal amounts are estimated.

All estimates are based on best available data as of September 12, 2014.

2013 Survey of Estimated Annual Water Use for St. Johns River Water Management District

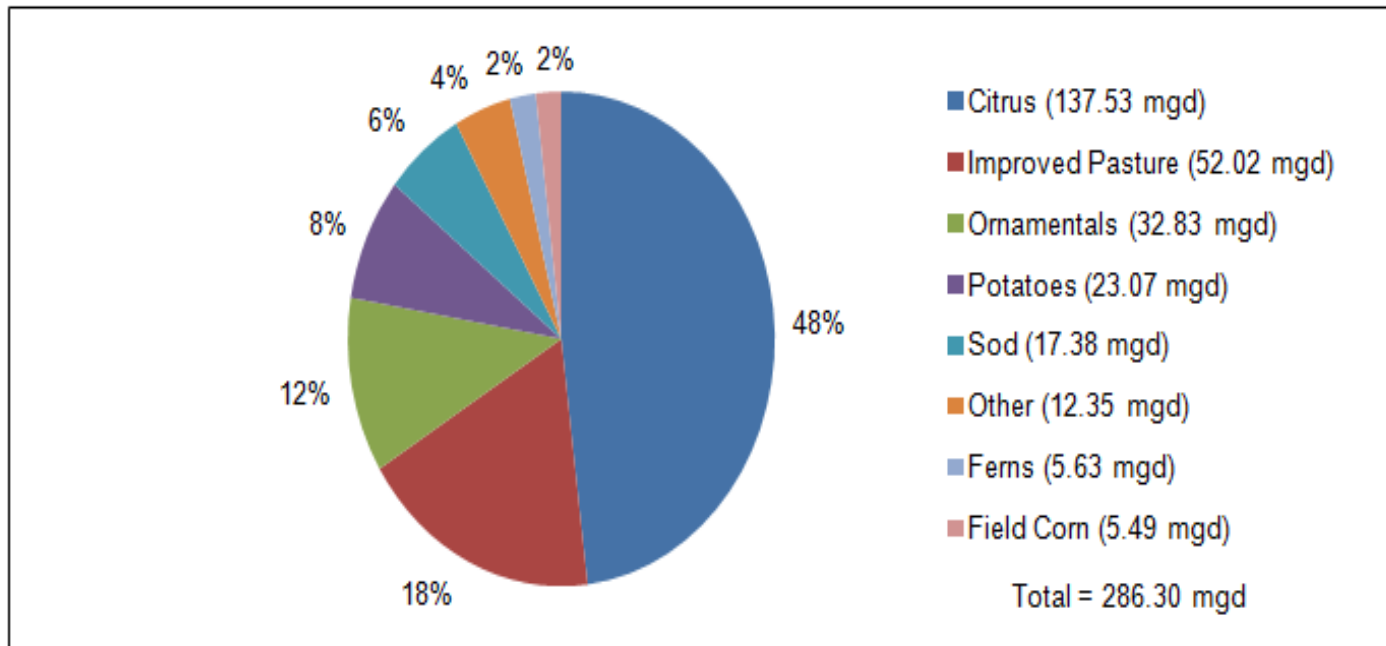


Figure 7. Agricultural irrigation by crop, 2013

Note: Water use is in million gallons per day (mgd).
Estimated amounts are based on best available data as of September 12, 2014.
Calculation anomalies due to rounding account for nominal discrepancies.

2013 Survey of Estimated Annual Water Use for St. Johns River Water Management District

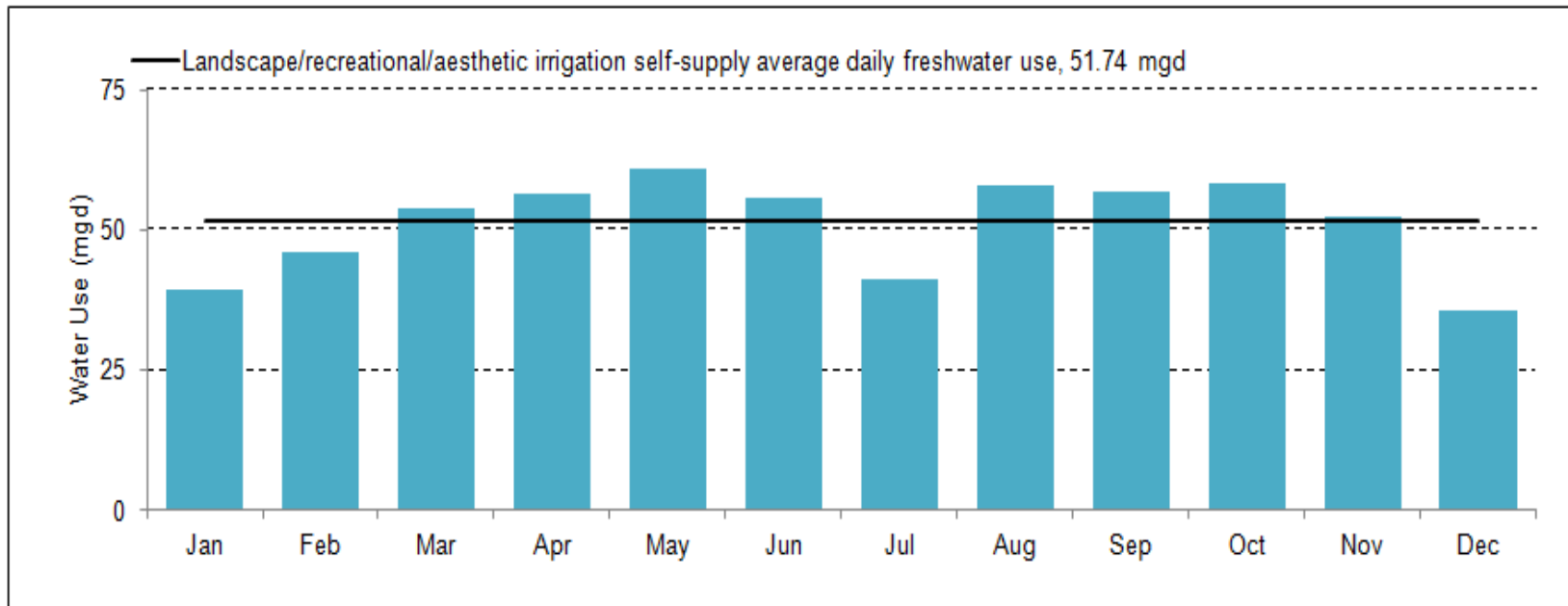


Figure 8. Average daily landscape/recreational/aesthetic irrigation self-supply freshwater use by month, 2013

Note: Water use is in million gallons per day (mgd).

Estimated amounts are based on best available data as of September 12, 2014.

2013 Survey of Estimated Annual Water Use for St. Johns River Water Management District

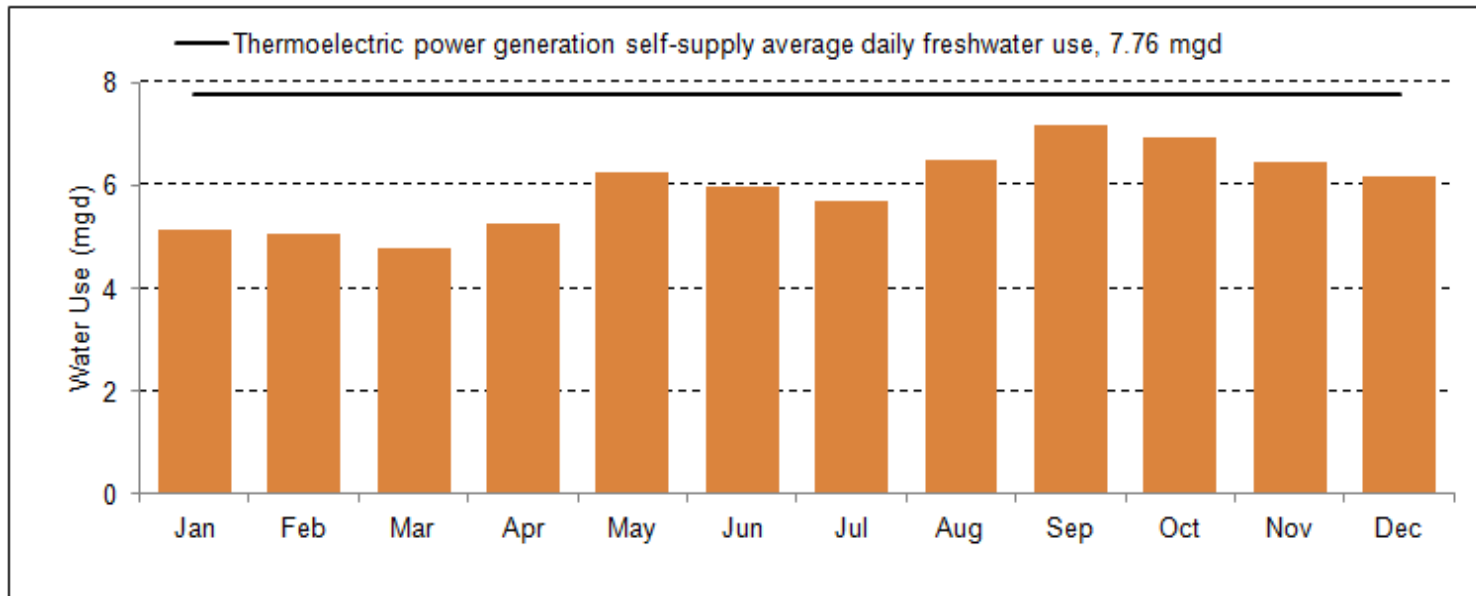


Figure 9. Average daily thermoelectric power generation self-supply freshwater use by month, 2013

Note: Water use is in million gallons per day (mgd).

Estimated amounts of consumptive freshwater use are based on best available data as of September 12, 2014.

2013 Survey of Estimated Annual Water Use for St. Johns River Water Management District

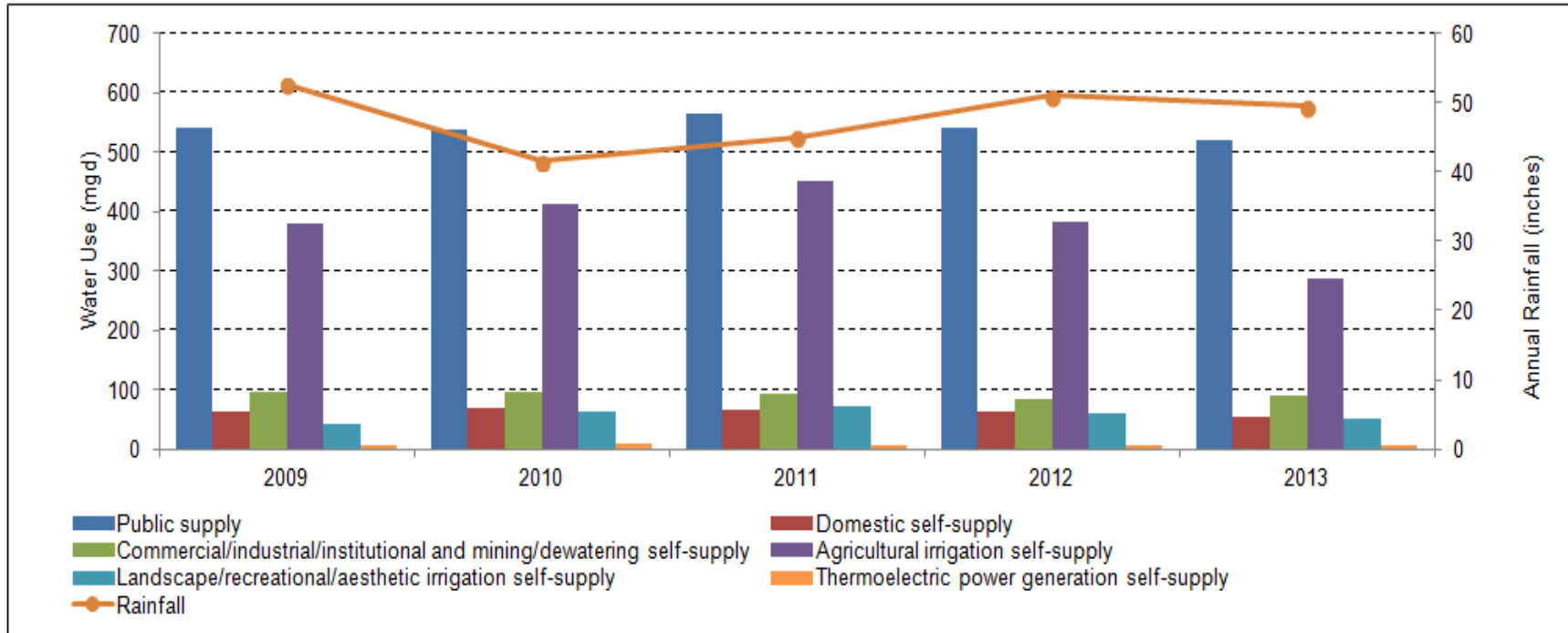


Figure 10. Annual rainfall and freshwater use by category, 2009–2013

Note: Water use is in million gallons per day (mgd); rainfall is measured in inches.

Estimated amounts are based on best available data as of September 12, 2014.

Source of domestic self-supply is assumed to be groundwater, and domestic self-supply is an estimate.

2013 Survey of Estimated Annual Water Use for St. Johns River Water Management District

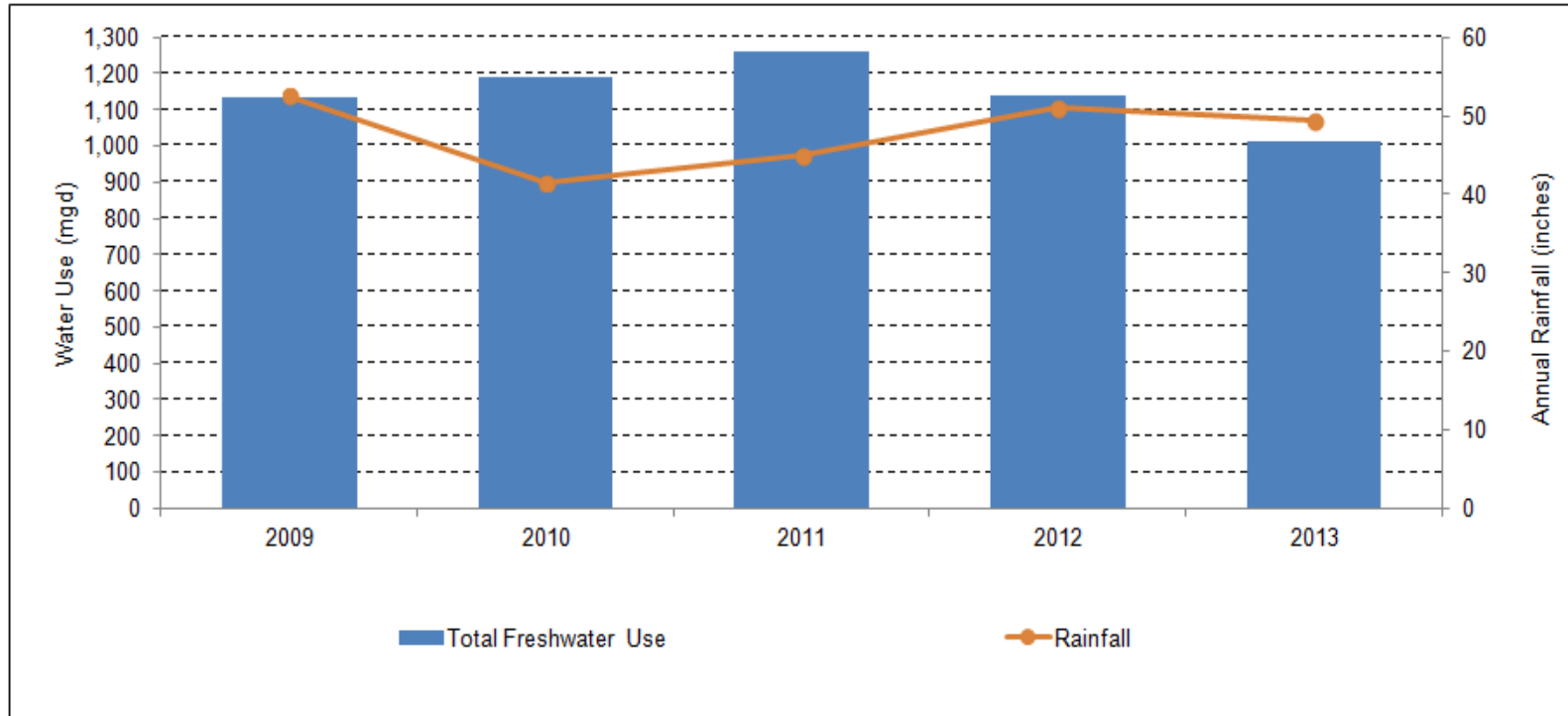


Figure 11. Annual rainfall and total freshwater use, 2009–2013

Note: Water use is in million gallons per day (mgd); rainfall is measured in inches.

Estimated amounts are based on best available data as of September 12, 2014.

Source of domestic self-supply is assumed to be groundwater, and domestic self-supply is an estimate.