

Technical Fact Sheet SJ2016-FS3

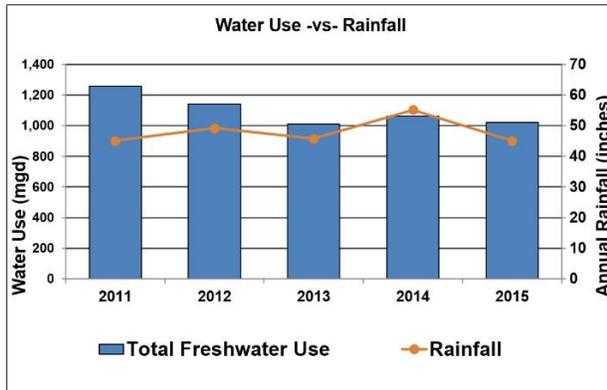
2015 Survey of Estimated Annual Water Use
for St. Johns River Water Management District



St. Johns River Water Management District 2015 Estimated Annual Water Use Executive Summary

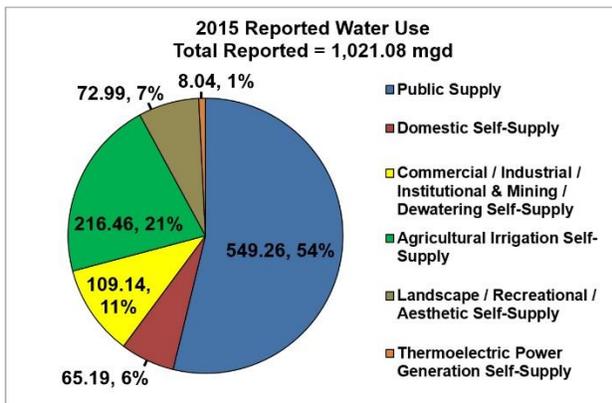
2015 Rainfall

- 6% lower than average over the last five years
- 18% lower than last year



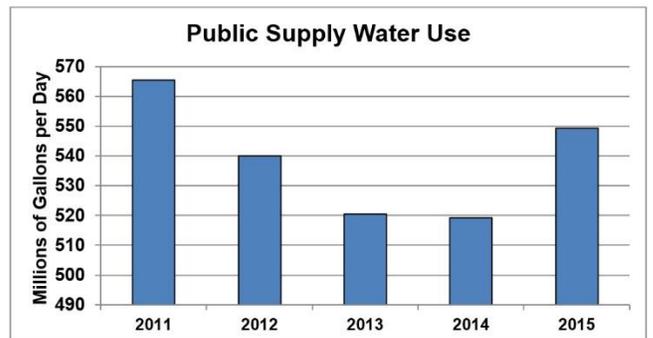
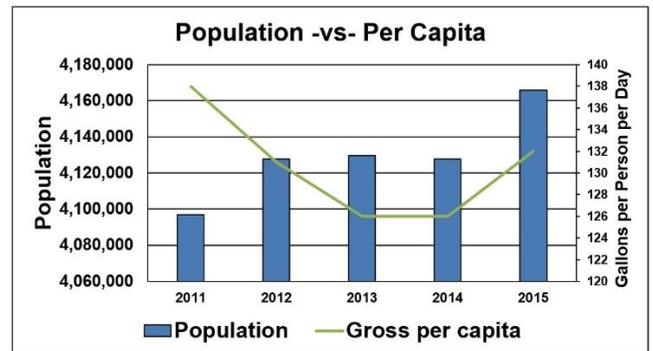
2015 Total Water Use

- 7% lower than annual average over the last five years
- Third straight year annual water use is lower than annual average over last five years



2015 Public Supply Water Use

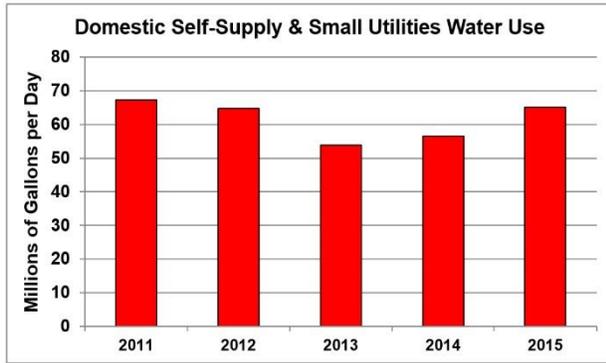
- Since 1978, population increased 50% more than public supply water use
- Between 2011 and 2015, public supply water use decreased 3% (from 565.50 million gallons per day (mgd) to 549.26 mgd), while population increased 2% (from 4,096,942 to 4,166,048 persons)
- Public supply water use increased 5% from 2014



2015 Survey of Estimated Annual Water Use for St. Johns River Water Management District

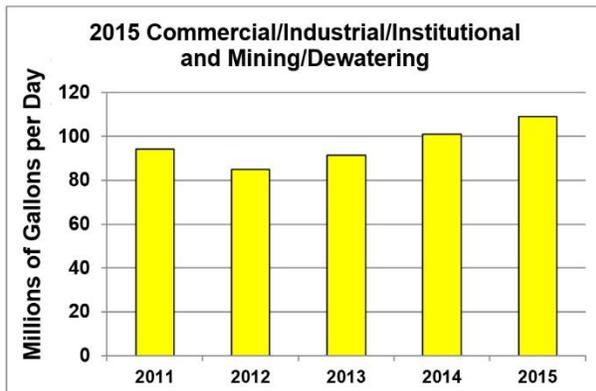
2015 Domestic Self-Supply

- At 65.19 mgd, it was 6% higher than the average use over the last five years
- Self-supplied households consumed 93 gallons per person per day



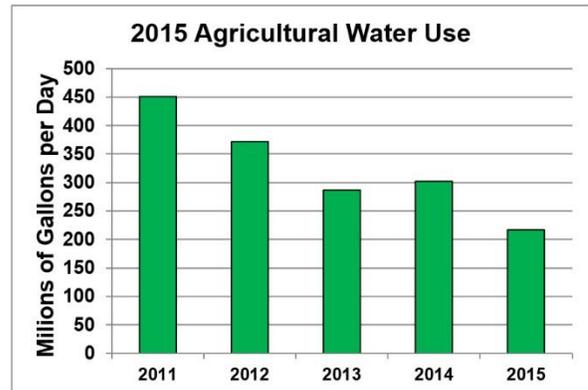
2015 Commercial/Industrial/Institutional and Mining/Dewatering (CII/MD)

- Mining and pulp and paper make up 73% of CII/MD water use
- At 109.14 mgd, CII/MD use is 13% above the annual average of the last five years



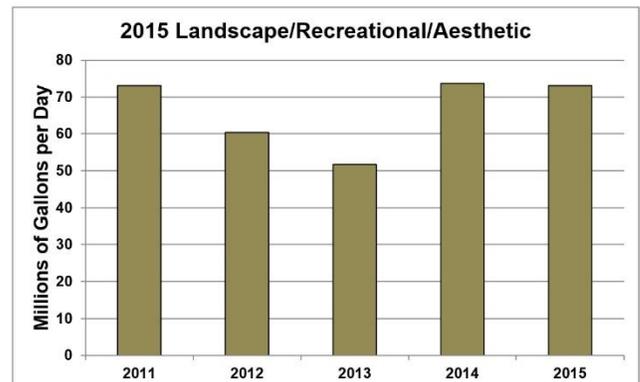
2015 Agricultural Water Use

- At 216.46 mgd, reported water use was 34% lower than the annual average over the last five years
- Dewatering of agricultural fields is included in the reported agricultural water use. With rainfall being 18% lower in 2015, there was reduced need for dewatering. The reduced dewatering, along with some changes in calculation methodology, contributed to the reduction in reported agricultural water use.



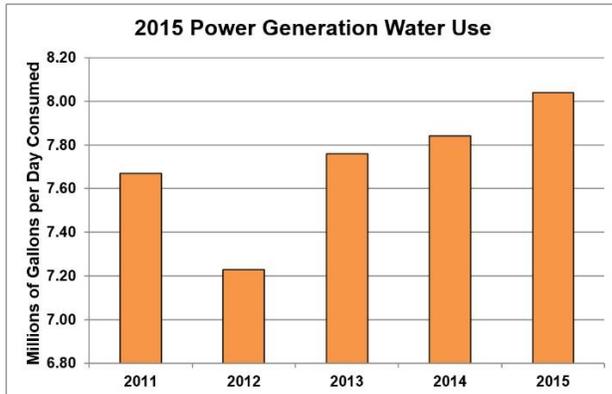
2015 Landscape/Recreational/Aesthetic (L/R/A)

- At 56.17 mgd, the 186 active golf courses represent 77% of the water use under this category, 72.99 mgd
- Total L/R/A water use was 10% higher than the annual average over the last five years



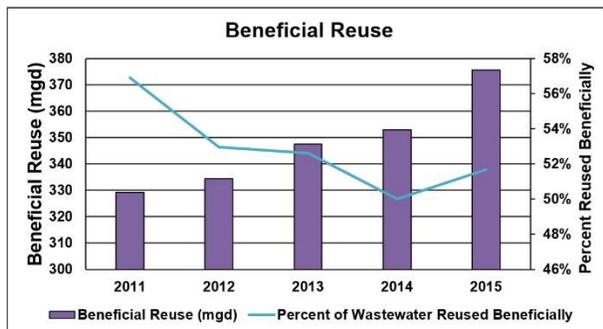
2015 Power Generation Water Use

- FPL – Putnam was closed in early 2015, however the power generation use increased due to megawatt increases
- Only 1% of reported withdrawals are considered consumptive
- This category represents around 1% of the total water withdrawals



2015 Beneficial Reuse

- Beneficial reuse was 6% higher than 2014 and 8% higher than the average over the last five years
- On average, 50% of the wastewater flows are beneficially reused
- Since 2011, more than 50% of wastewater flows have been reused beneficially
- Countywide reuse utilization rates range from 3% (Baker) to 98% (Putnam)



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for St. Johns River Water Management District

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, *www.sjrwmd.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.

Since 1978, total public supply water use, which represents 54% of total water use, has increased by 135% (from 233.84 mgd to 549.26 mgd). At the same time, total population served by public supply has increased 185% (from 1,460,900 to 4,166,048 persons). In the five-year period ending in 2015, public supply water use decreased 3% (from 565.50 mgd to 549.26 mgd), while population served by public supply increased 2% from 4,096,942 to 4,166,048 persons.

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 4.9 million people, or approximately 25% 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 portions of the St. Marys River basin and Florida Ridge.

Area Rainfall Statistics. Annual rainfall within SJRWMD for 2015 was 45.12 inches. From the most recent 5-year period, 2011–2015, average annual rainfall within SJRWMD varied by 10 inches (from 45.05 to 55.13 inches). Average annual rainfall within SJRWMD for the 5-year period January 2011–December 2015 was 48.07 inches. Above-average annual rainfall occurred in 2012 (49.26 inches) and 2014 (55.13 inches), while below-average rainfall occurred in 2011 (45.05 inches), 2013 (45.80 inches), and 2015 (45.12 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, Methodology and Terminology. Data for the 2015 Annual Water Use Survey came from a variety of sources: raw water withdrawal data submitted to SJRWMD (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 *2015 Reuse Inventory Report* (DEP 2016). Rainfall by county was obtained from SJRWMD’s monthly hydrologic conditions reports (SJRWMD 2016). In this 2015 survey, the estimated figures 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.



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 in the SJRWMD.

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 *2015 Reuse Inventory Report* (DEP 2015). DEP regards several applications of reclaimed water as reuse that SJRWMD does not. Therefore, it is common for 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 for disposal; 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 *Projections of Florida Population by County, 2020–2045, with Estimates for 2015* (BEBR 2016a).

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; 2015 county population estimates are from *Projections of Florida Population by County, 2020–2045, with Estimates for 2015* (BEBR 2016a).

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 self-supply, (4) commercial/industrial/institutional and mining/dewatering self-supply, (5) landscape/recreational/aesthetic self-supply, and (6) thermoelectric power generation self-supply. This report also includes estimates and figures for beneficially reused wastewater flows.

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 two sources: SJRWMD EN-50 forms and DEP's MOR datasets. Individual CUPs (withdrawing at least 0.10 mgd) are required to submit pumpage data to the District via the EN-50. Water use data for smaller permits, who are not required to report water use, were obtained from MORs. These are submitted to DEP by approximately 98% of the public supply utilities for which SJRWMD had individual consumptive use permits (CUPs) in effect during 2015. (Note: Water for use by the City of Cocoa, in Brevard County, is withdrawn from wells in 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 wholly within SJRWMD 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. The domestic self-supply population for each county partially within SJRWMD is obtained by multiplying the number of residential parcels within SJRWMD known to have domestic-self supply wells by the 2015 persons per household estimate obtained from BEBR (BEBR 2016b). 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 92 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 obtained 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 entrained in mining products and evaporative losses. 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 self-supply. This is reported and estimated water from groundwater and surface water sources for use in supplemental crop irrigation. It also includes non-irrigation use such as draining an agricultural field after a large rain storm.

Data Source/Methodology: Data in this category reflect water use information reported to SJRWMD by agricultural water users via SJRWMD EN-50 forms and water use estimates from the Florida Department of Agricultural and Consumer Services (FDACS) Florida Statewide Agricultural Irrigation Demand 3 (FSAID 3). Individual CUPs report water use data via the EN-50 forms. For smaller CUPs and non-permitted agricultural fields, water use was obtained from the FSAID 3. Of note, the method for estimating agricultural water use for smaller CUPs and non-permitted agricultural fields was changed for this 2015 report. Previous years employed a modified Blaney-Criddle agricultural model for supplemental irrigation, which often overestimated the irrigation needs seen for the year being estimated. With the use of the FSAID 3 estimates, SJRWMD has observed a decrease in agricultural estimates for these agricultural fields and has achieved consistency with FDACS agricultural water use estimates. With reduced rainfall in 2015, there was reduced need for agricultural dewatering which is included in this water use category. This also contributed to the lower reported agricultural water use for 2015.

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.

2015 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 2015 survey, the estimated amounts are based on best available data as of April 4, 2016. 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 self-supply, (5) landscape/recreational/aesthetic irrigation self-supply, and (6) thermoelectric power generation self-supply. This report also includes information on beneficially reused wastewater flows. 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 self-supply and domestic self-supply and small public supply systems categories, in the reporting of consumptive use for 2015. 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 2015, including fresh, saline, and reuse (reclaimed) water, was 1,209.74 mgd. Of the estimated total consumptive amount, 1,021.08 mgd was freshwater and 3.10 mgd was saline water (Tables 1–3). In 2015, the largest consumptive use of freshwater within SJRWMD was public supply, which totaled 549.26 mgd, or 54%, of total consumptive freshwater use (Tables 2 and 3, Figure 1). Next was agricultural water use, which used 216.46 mgd, or 21%, of total consumptive freshwater within SJRWMD (Tables 2 and 3, Figure 1). Reuse water accounted for 185.56 mgd and was reported under the

agricultural, commercial/industrial/institutional, 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 2015, 329 public supply utilities (or systems) served an estimated 4,166,048 people, or 86%, of the SJRWMD total population (see Table 4 note). Total water use, from both groundwater and surface water sources, was 2% below the average annual use for the preceding 5-year period (Tables 2 and 3, Figures 1 and 2). Average gross per capita use, based on the population served by a public supply system, was 132 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. In 2015, water use ranged from a low of 441.79 mgd (106 gpcd) in February to a high of 639.47 mgd (153 gpcd) in May (Figure 2). Of the total water withdrawn for public supply use, 97 percent was groundwater.

Counties with the largest public supply water use during 2015 were Orange County¹ (118.32 mgd, serving 843,444 people; 140 gpcd) and Duval County (109.03 mgd, serving 768,688 people; 142 gpcd) (Table 3, Figures 3 and 4). These counties combined represented 41% of total public supply water use and 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. Because water use for domestic self-supply is not inventoried, this 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 2015, an estimated 701,237 people used 65.19 mgd of domestic self-supply water (including small public supply systems), or 6%, of total freshwater used in SJRWMD (Tables 1–3, Figure 1). Duval County had the largest self-supplied population, with 136,886 people (12.73 mgd). Marion County had the second-largest population, 103,724 (8.12 mgd), followed by Clay County, 71,009 (6.86 mgd) (Table 4).

Domestic self-supply water use (including small public supply systems) has fluctuated over the 5-year period, reaching a low of 53.84 mgd in 2013 to a high of 67.37 mgd in 2011. The average for the 5-year period was 61.55 mgd; water use in 2015 was 6% above average. Fluctuations in water use are mainly attributed to changes in methodologies over the years. In 2015, average domestic self-supply and small public supply system water use per capita within SJRWMD was 93 gpcd.

¹ Orange County totals only include the water consumed and population served in SJRWMD.

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 evaporative losses. The remaining surface water is assumed to be recirculated in the mining process and, therefore, is considered nonconsumptive. A total of 266 commercial/industrial/institutional and mining/dewatering individual permit holders reported water use in 2015.

Total freshwater use in the commercial/industrial/institutional and mining/dewatering category was 109.14 mgd, or 11%, of total freshwater use (Tables 2 and 3, Figure 1). Of this freshwater total, 75.17 mgd was groundwater and 33.97 mgd was surface water. Reclaimed water use totaled 24.11 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 2015 included 41.23 mgd of fresh groundwater, 23.86 mgd of fresh surface water, and 1.08 mgd of saline surface water. The second-largest water user in this category was the mining industry, which accounted for 12.97 mgd of fresh groundwater and 1.89 mgd of fresh surface water. Pulp/paper production and mining accounted for a combined total of 79.95 mgd of freshwater, or 73%, of the commercial/industrial/institutional and mining/dewatering freshwater use.

Commercial/industrial/institutional and mining/dewatering self-supply water use was highest in 2015 (109.14 mgd) and lowest in 2012 (84.91 mgd). The average for the 5-year period was 96.18 mgd; water use in 2015 was 13% above the average. Commercial/industrial/institutional and mining/dewatering freshwater use in 2015 varied from a low of 88.85 mgd in February to a high of 118.63 mgd in May (Figure 5).

Agricultural Self-Supply. The agricultural self-supply category consists of reported water withdrawals from freshwater sources for supplemental crop irrigation and dewatering of agricultural fields. Total consumptive use of freshwater for agricultural water use was estimated at 216.46 mgd, which is 21% of total freshwater use in SJRWMD during 2015 (Tables 2 and 3, Figure 1). Reuse water accounted for 2.80 mgd of agricultural water use. Agricultural permittees used 189.58 mgd of groundwater (88%) and 26.88 mgd of surface water (12%). Districtwide, there are currently 294,061 irrigated acres in SJRWMD. Ninety-five percent of these acres (278,693) are covered by a consumptive use permit. Agricultural water use in 2015 had the largest seasonal fluctuation than any other water use category, reaching a low of 108.73 mgd in January to a high of 331.31 mgd in May (Figure 6). These fluctuations are typical of irrigation water use and inversely correlated with rainfall.

By county, the largest water use for agriculture occurred in Indian River County, with 40 mgd of freshwater, accounting for 18% of total SJRWMD agricultural water use (Table 3). Fifty-two

percent of the agricultural water use in this county in 2015 was from surface water sources, compared to 60% in 2014. Please note that agricultural water use estimates include stormwater flows from various canals associated with rainfall events used to drain large agricultural fields.

Districtwide, the largest estimated water use for a single crop was improved pasture/forage, which accounted for 60 mgd or 28%, of total agricultural water use. Ornamentals and ferns accounted for 43 mgd (20%), potatoes accounted for 26 mgd (12%) and citrus accounted for 28 mgd (13%) of total agricultural water use (Figure 7).



Landscape/Recreational/Aesthetic Irrigation Self-Supply. The landscape/recreational/aesthetic (L/R/A) 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 L/R/A irrigation category totaled 72.99 mgd, about 7% of total freshwater use in 2015. Nearly 77% (56.43 mgd) of the quantities were withdrawn from surface water sources. The remainder 16.56 mgd (23%) came from groundwater sources. Reuse water under this category totaled 158.65 mgd. By county (Table 3), the largest freshwater use for L/R/A irrigation occurred in Indian River County (18.02 mgd), followed by Lake County (13.44 mgd) and Duval County (6.86 mgd). In terms of reuse, the four counties with the largest reclaimed water used for L/R/A are Orange (48.38 mgd), Seminole (20.45 mgd), Brevard (20.21 mgd) and Volusia (19.72 mgd).

During the past five years (2011–2015), L/R/A irrigation freshwater use was highest in 2014 (73.72 mgd) and lowest in 2012 (60.33 mgd). Average water use over the five-year period was 66.37 mgd. Landscape/recreational/aesthetic irrigation water use in 2015 was 10% above the 5-year average. Landscape/recreational/aesthetic irrigation freshwater use in 2015 varied from a low of 42.22 mgd in February to a high of 107.78 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 2015 reflect consumptive use data for 16 self-supplied thermoelectric power plants, totaling 8.04 mgd (Tables 2 and 3, Figure 1). The largest amount of freshwater use within this category (Table 3) occurred in Duval County (5.82 mgd).

Thermoelectric power generation freshwater use in 2015 fluctuated from a low of 6.94 mgd in March to a high of 9.67 mgd in June (Figure 9). Fluctuations in water use are related to power

plant shutdowns for maintenance or increased power demands during periods of high or low temperatures. Lastly, the Florida Power and Light Plant in Putnam County was shut down in March, 2015.

Beneficial Reuse (Reclaimed Water). As explained on Page 4, beneficially reused wastewater has received at least secondary treatment and basic disinfection. It is currently used by permittees to help meet agricultural, commercial/industrial/institutional and recreation/aesthetic demands. In 2015, permittees used 185.56 mgd. In terms of utilization rates, the top four counties were Putnam (98%), Alachua (95%), Lake (80%) and Orange (78%), Figure 13. Eighty-five percent of the reclaimed water is applied to landscape, fields and golf courses, Figure 14. Of note, an additional 34.86 mgd in Orange County and 8.55 mgd in Alachua County was used for recharge.



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2015 Survey of Estimated Annual Water Use for St. Johns River Water Management District

Table 1. Total water use (mgd) and rainfall by county in SJRWMD, 2015

County	Freshwater (mgd)	Saline Water (mgd)	Reuse (mgd)	Total Water Use (mgd)	Rainfall (inches)
Alachua	31.90	0.00	10.05	41.95	51.50
Baker	3.58	0.00	0.03	3.61	40.69
Bradford	0.34	0.00	0.00	0.34	47.71
Brevard	102.70	0.00	21.89	124.59	40.95
Clay	22.54	0.00	4.04	26.58	48.14
Duval	155.15	0.00	12.50	167.65	46.84
Flagler	23.09	2.02	5.05	30.16	41.90
Indian River	75.31	0.00	6.08	81.39	47.67
Lake	105.05	0.00	11.21	116.26	45.56
Marion	40.50	0.00	4.92	45.42	48.21
Nassau	48.41	1.08	1.22	50.71	43.84
Okeechobee	2.75	0.00	0.00	2.75	49.54
Orange	134.45	0.00	58.22	192.67	47.85
Osceola	0.54	0.00	0.00	0.54	48.18
Putnam	55.55	0.00	1.59	57.14	46.83
St. Johns	64.45	0.00	2.35	66.80	45.59
Seminole	64.07	0.00	25.01	89.08	45.02
Volusia	90.70	0.00	21.40	112.10	43.17
Total	1,021.08	3.10	185.56	1,209.74	45.12

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

Estimated amounts are based on best available data as of April 4, 2016.

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, 2015

Category	Freshwater (mgd)	Saline Water (mgd)	Reuse (mgd)	Total Water Use (mgd)
Public supply	549.26	0.00	0.00	549.26
Domestic self-supply and small public supply systems	65.19	0.00	0.00	65.19
Commercial/industrial/institutional and mining/dewatering self-supply	109.14	3.10	24.11	136.35
Agricultural self-supply	216.46	0.00	2.80	219.26
Landscape/recreational/aesthetic self-supply	72.99	0.00	158.65	231.64
Thermoelectric power generation self-supply	8.04	0.00	0.00	8.04
Total	1,021.08	3.10	185.56	1,209.74

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 April 4, 2016.

2015 Survey of Estimated Annual Water Use for St. Johns River Water Management District

Table 3. Total water use (mgd) by county and category in SJRWMD, 2015

County	Freshwater							Saline Water	Reuse	All Water Use
	Public Supply	Domestic Self-Supply	Commercial/Industrial/Institutional	Agricultural Self-Supply	Landscape/Recreational/Aesthetic Self-Supply	Thermoelectric Power Generation Self-Supply	Total Freshwater	Commercial/Industrial/Institutional		
Alachua	21.20	1.32	4.61	3.94	0.31	0.52	31.90	0.00	10.05	41.95
Baker	0.90	2.08	0.15	0.45	0.00	0.00	3.58	0.00	0.03	3.61
Bradford	0.06	0.28	0.00	0.00	0.00	0.00	0.34	0.00	0.00	0.34
Brevard	54.39	2.79	6.65	32.88	5.98	0.01	102.70	0.00	21.89	124.59
Clay	13.51	6.86	0.38	1.17	0.62	0.00	22.54	0.00	4.04	26.58
Duval	109.03	12.73	18.88	1.83	6.86	5.82	155.15	0.00	12.50	167.65
Flagler	9.17	0.30	0.00	11.30	2.32	0.00	23.09	2.02	5.05	30.16
Indian River	16.94	0.20	0.15	40.00	18.02	0.00	75.31	0.00	6.08	81.39
Lake	48.68	9.47	5.80	27.43	13.44	0.23	105.05	0.00	11.21	116.26
Marion	18.37	8.12	2.71	7.34	3.96	0.00	40.50	0.00	4.92	45.42
Nassau	7.00	3.86	33.71	0.33	3.51	0.00	48.41	1.08	1.22	50.71
Okeechobee	0.00	0.13	0.00	2.62	0.00	0.00	2.75	0.00	0.00	2.75
Orange	118.32	3.06	3.48	6.17	2.69	0.73	134.45	0.00	58.22	192.67
Osceola	0.00	0.00	0.00	0.54	0.00	0.00	0.54	0.00	0.00	0.54
Putnam	2.10	2.47	27.76	21.21	1.56	0.45	55.55	0.00	1.59	57.14
St. Johns	16.83	2.88	1.62	37.58	5.54	0.00	64.45	0.00	2.35	66.80
Seminole	57.31	1.99	0.00	2.81	1.96	0.00	64.07	0.00	25.01	89.08
Volusia	55.45	6.65	3.24	18.86	6.22	0.28	90.70	0.00	21.40	112.10
Total	549.26	65.19	109.14	216.46	72.99	8.04	1,021.08	3.10	185.56	1,209.74

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

Estimated amounts are based on best available data as of April 4, 2016.

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.

2015 Survey of Estimated Annual Water Use for St. Johns River Water Management District

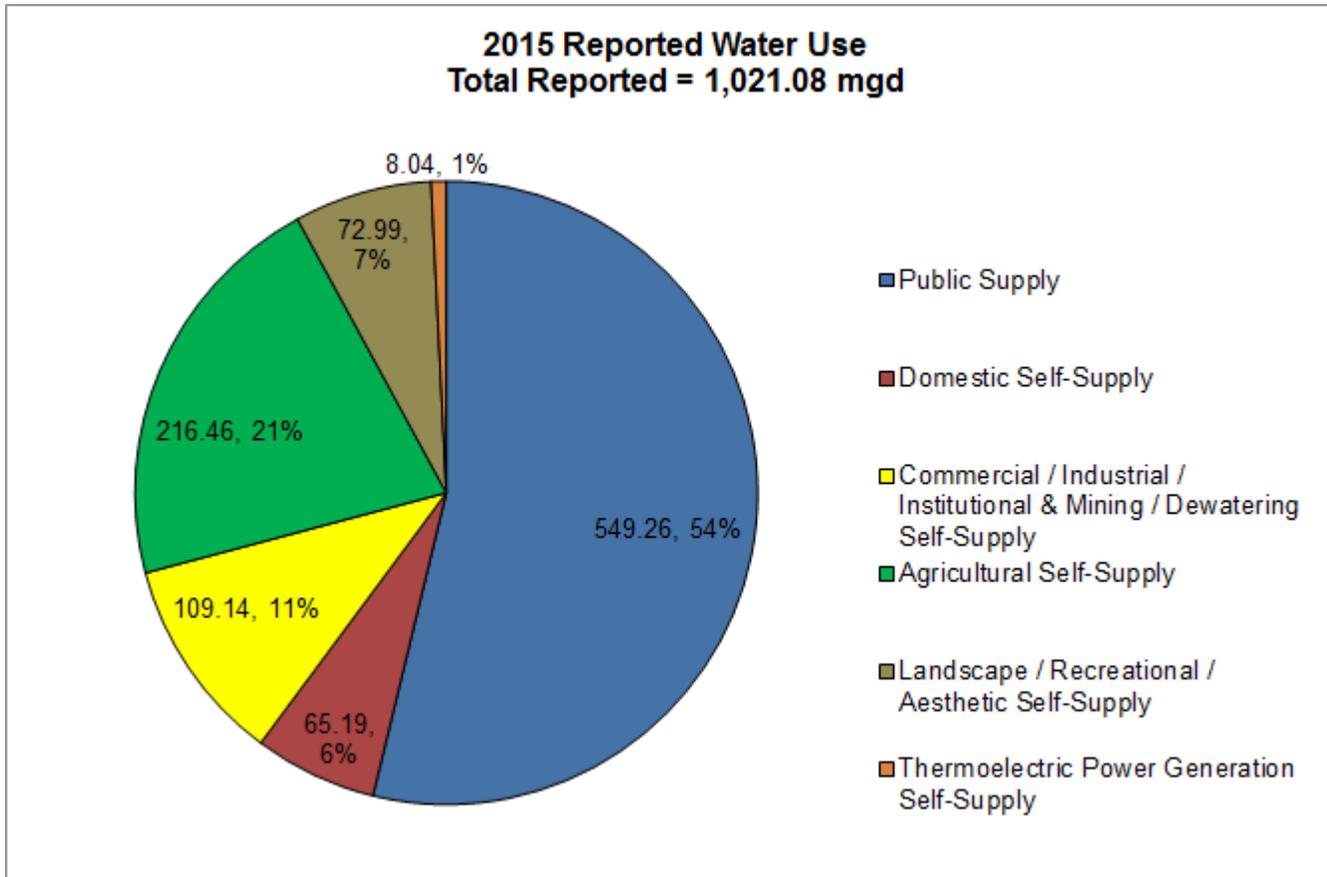


Figure 1. Total freshwater use (mgd), 2015

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

Estimated amounts are based on best available data as of April 4, 2016.

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

2015 Survey of Estimated Annual Water Use for St. Johns River Water Management District

Table 4. Population by county, 2015

County	County Population	Percentage of County Population in SJRWMD	SJRWMD Population	Public Supply Population	Domestic Self-Supply and Small Public Supply Systems Population
Alachua	254,893	77.9%	198,585	185,270	13,315
Baker	27,017	97.8%	26,423	6,430	19,993
Bradford	27,310	20.3%	5,544	905	4,639
Brevard	561,714	100.0%	561,714	520,159	41,555
Clay	201,277	100.0%	201,277	130,268	71,009
Duval	905,574	100.0%	905,574	768,688	136,886
Flagler	101,353	100.0%	101,353	95,539	5,814
Indian River	143,326	100.0%	143,326	138,821	4,505
Lake	316,569	99.8%	315,936	251,488	64,448
Marion	341,205	64.2%	218,965	115,241	103,724
Nassau	76,536	100.0%	76,536	47,209	29,327
Okeechobee	40,052	3.6%	1,442	0	1,442
Orange	1,252,396	69.5%	870,632	843,444	27,188
Osceola	308,327	0.1%	259	0	259
Putnam	72,756	100.0%	72,756	20,521	52,235
St. Johns	213,566	100.0%	213,566	172,195	41,371
Seminole	442,903	100.0%	442,903	423,877	19,026
Volusia	510,494	100.0%	510,494	445,993	64,501
Total	5,797,268		4,867,285	4,166,048	701,237

Note: 2015 population estimates are from BEBR, Florida Estimates of Population (BEBR 2015)

Total population for the state of Florida in 2015 = 19,815,183

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

Percent of SJRWMD population served by public supply = 86%

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

2015 Survey of Estimated Annual Water Use for St. Johns River Water Management District

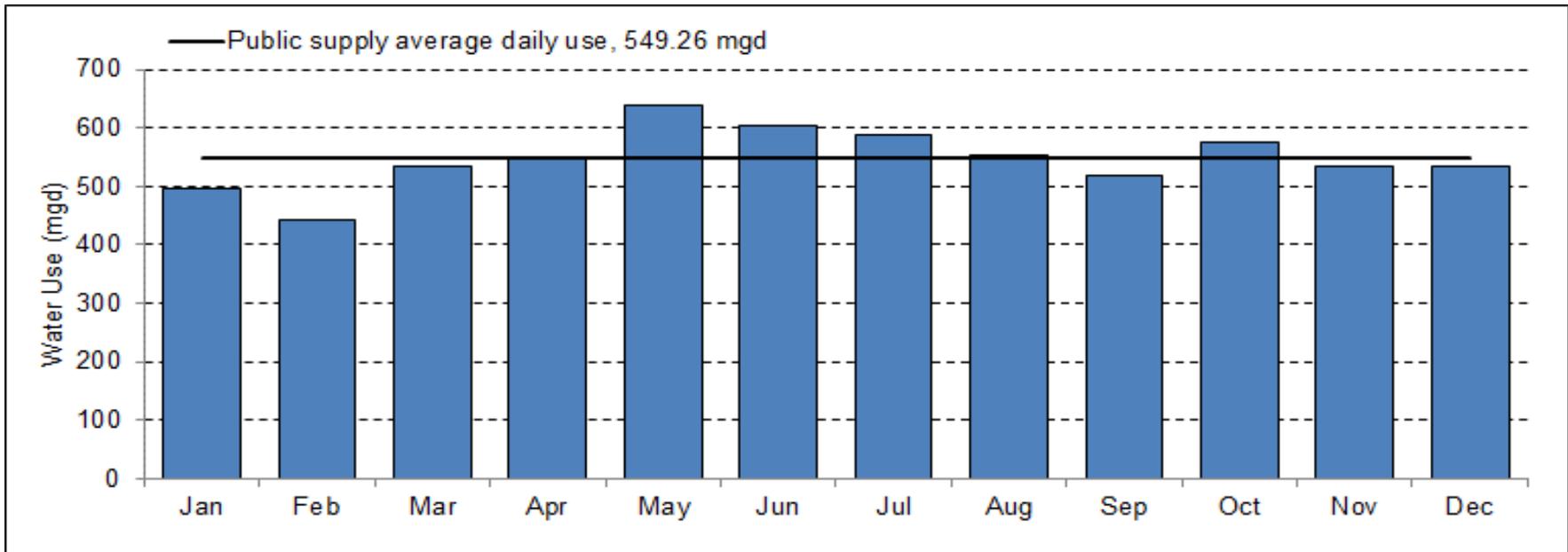


Figure 2. Average daily public supply water use (mgd) by month, 2015

Note: Water use is in million gallons per day (mgd).
Estimated amounts are based on best available data as of April 4, 2016.

2015 Survey of Estimated Annual Water Use for St. Johns River Water Management District

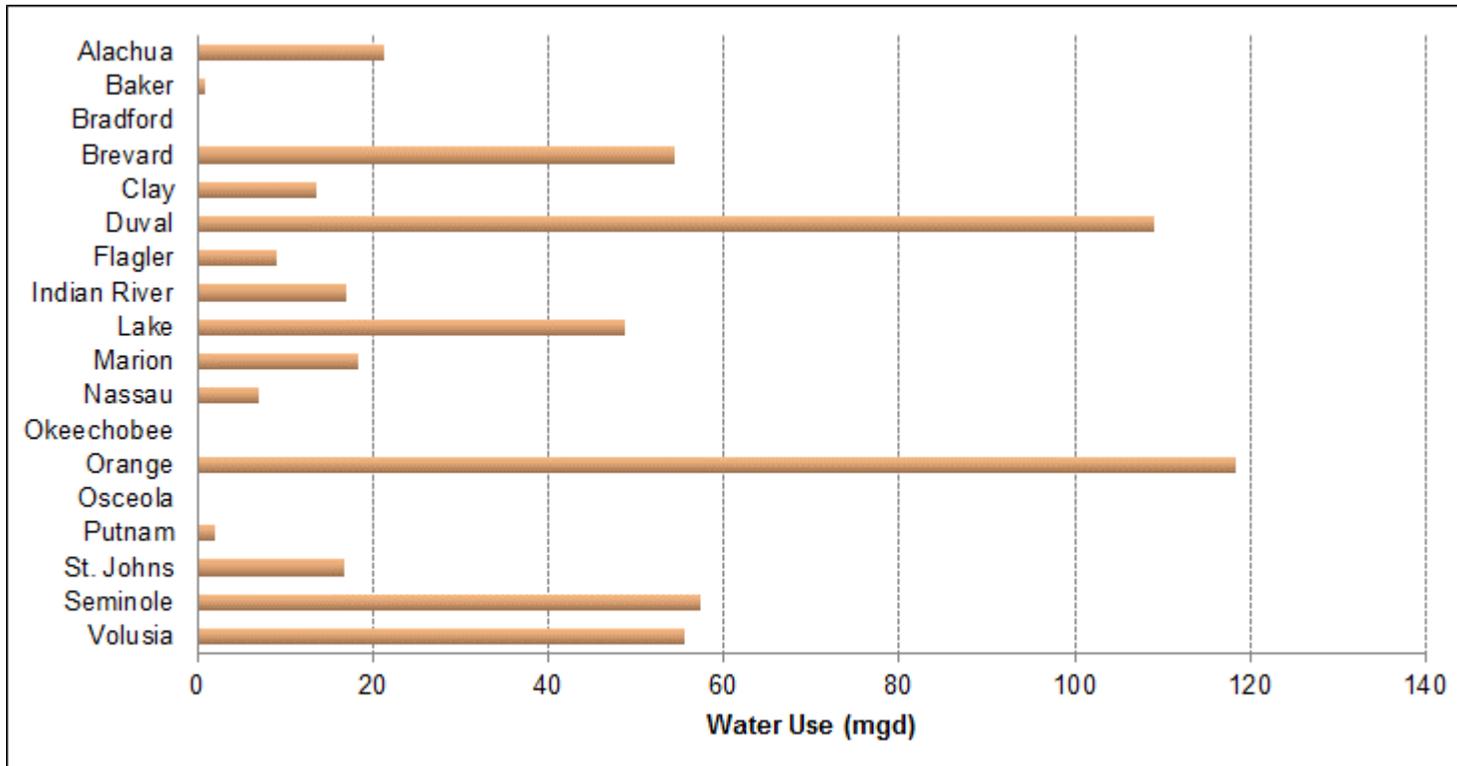


Figure 3. Freshwater use (mgd) for public supply in SJRWMD, 2015

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

Estimated amounts are based on best available data as of April 4, 2016.

2015 Survey of Estimated Annual Water Use for St. Johns River Water Management District

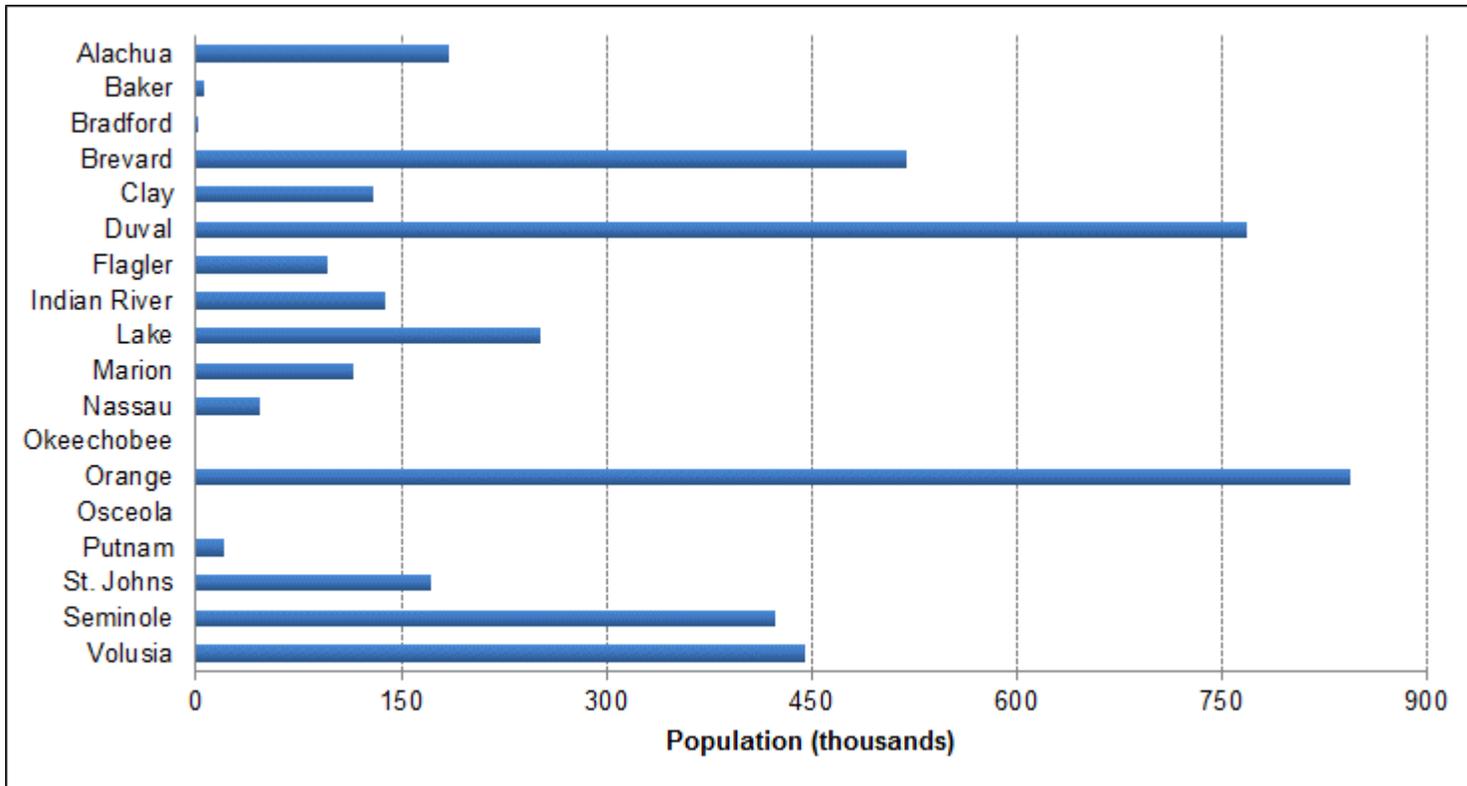


Figure 4. Population served by public supply in SJRWMD, 2015

Note: Estimated amounts are based on best available data as of April 4, 2016.

2015 Survey of Estimated Annual Water Use for St. Johns River Water Management District

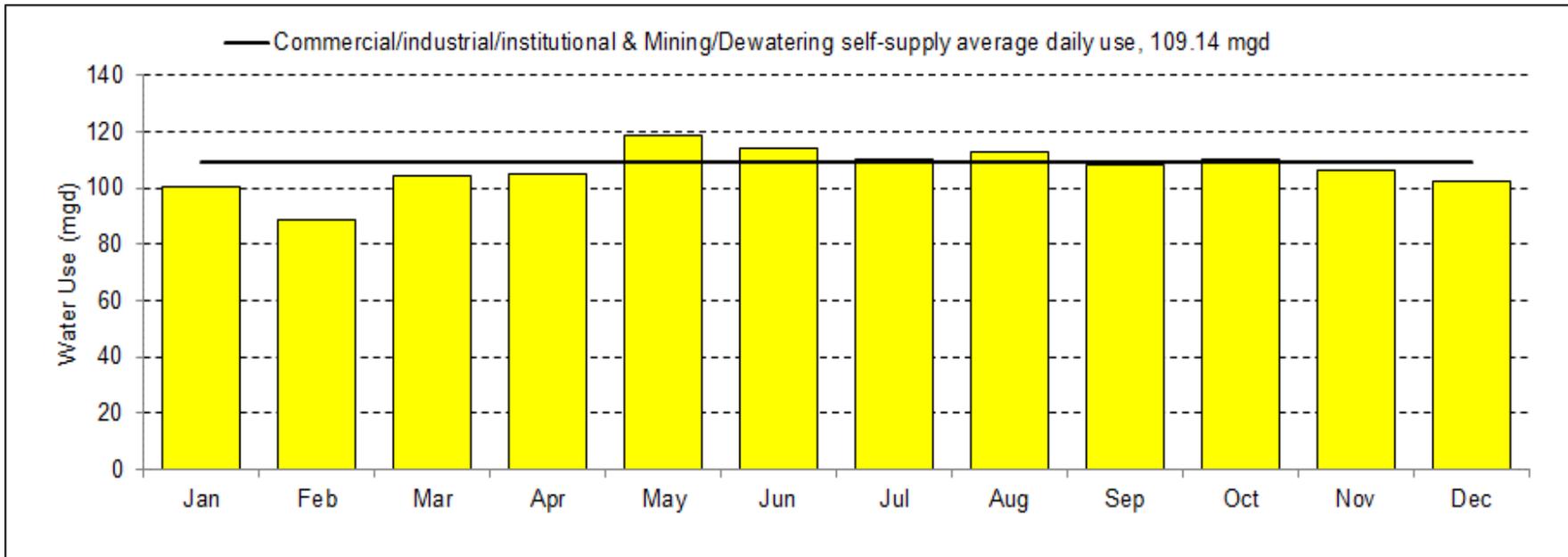


Figure 5. Average daily commercial/industrial/institutional and mining/dewatering self-supply freshwater use (mgd) by month, 2015

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

Estimated amounts are based on best available data as of April 4, 2016.

2015 Survey of Estimated Annual Water Use for St. Johns River Water Management District

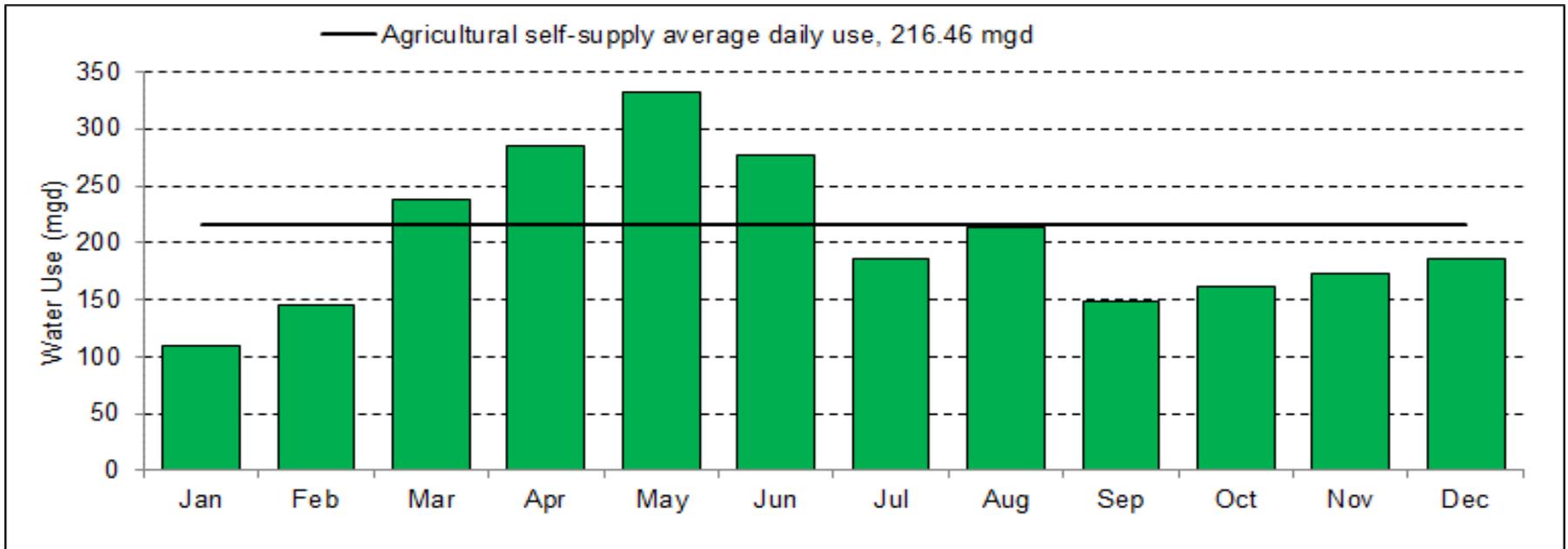


Figure 6. Average daily agricultural self-supply freshwater use (mgd) by month, 2015

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

Estimated amounts are based on best available data as of April 4, 2016.

2015 Survey of Estimated Annual Water Use for St. Johns River Water Management District

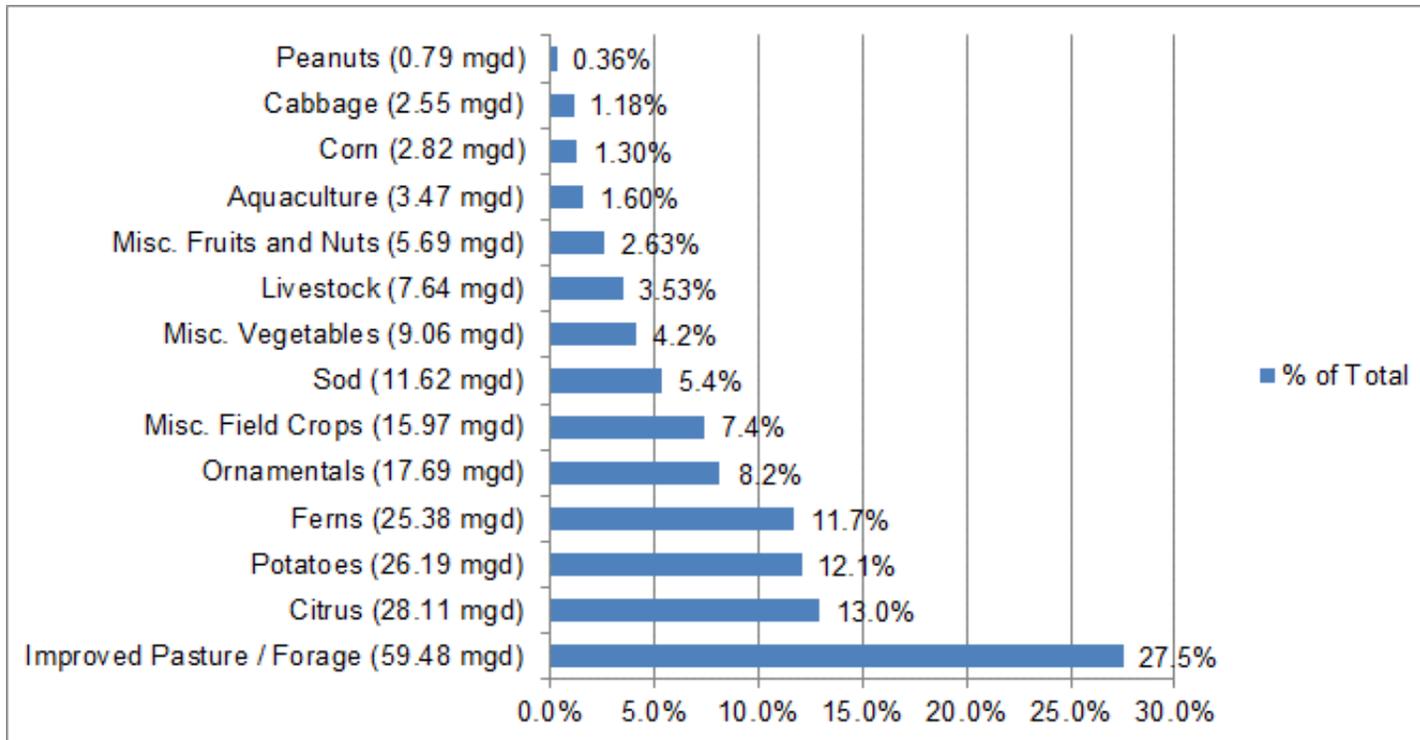


Figure 7. Agricultural water use by crop, 2015

Note: Water use is in million gallons per day (mgd).
 Estimated amounts are based on best available data as of April 4, 2016.
 Calculation anomalies due to rounding account for nominal discrepancies.

2015 Survey of Estimated Annual Water Use for St. Johns River Water Management District

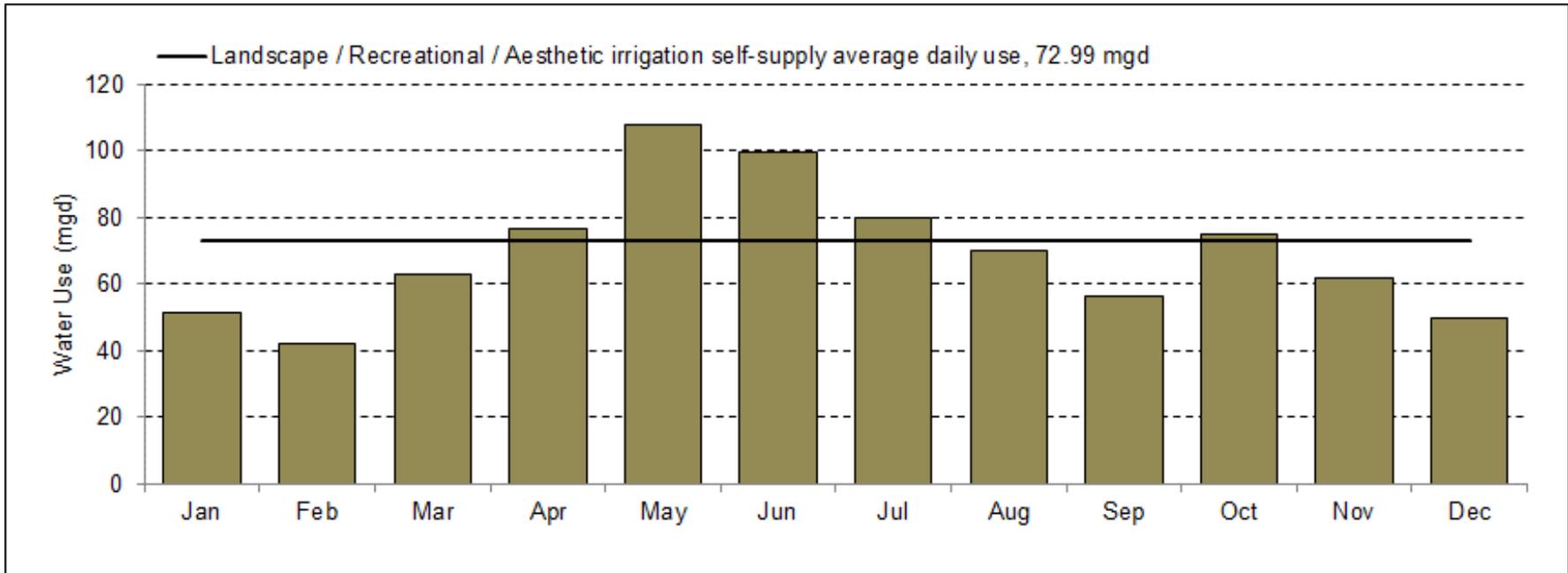


Figure 8. Average daily landscape/recreational/aesthetic irrigation self-supply freshwater use by month, 2015

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

Estimated amounts are based on best available data as of April 4, 2016.

2015 Survey of Estimated Annual Water Use for St. Johns River Water Management District

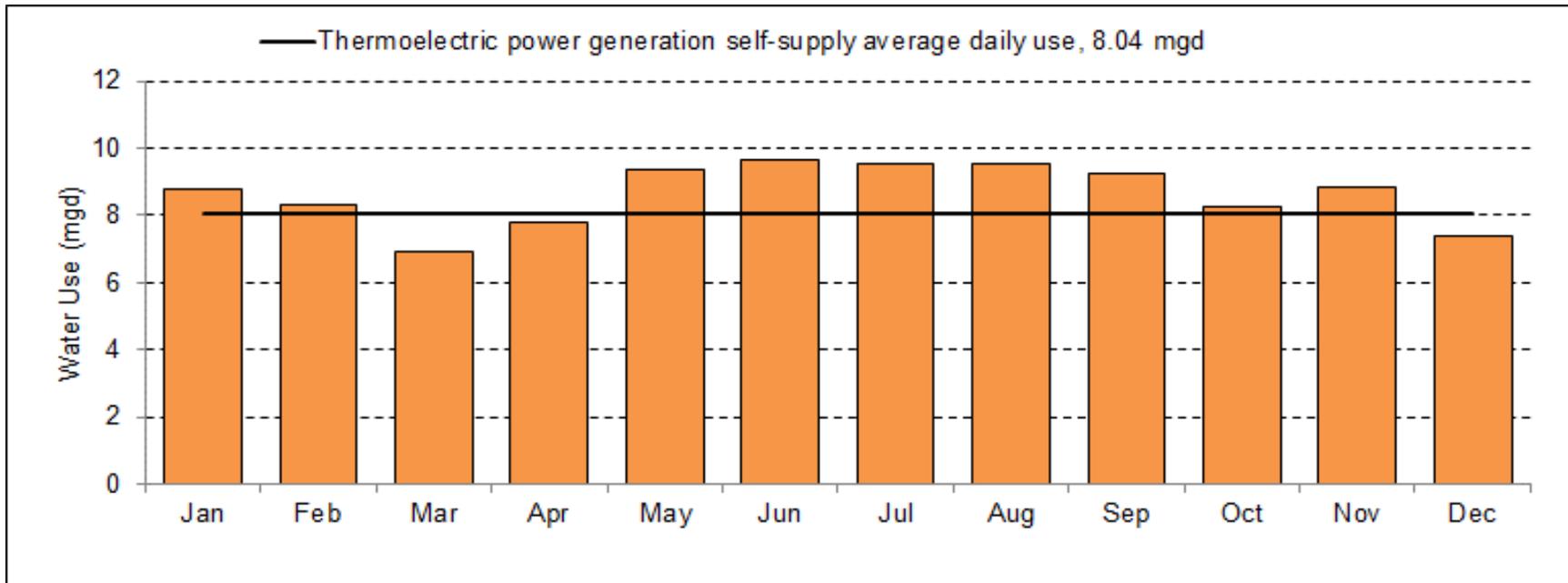


Figure 9. Average daily thermoelectric power generation self-supply freshwater use by month, 2015

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

Estimated amounts of consumptive freshwater use are based on best available data as of April 4, 2016.

2015 Survey of Estimated Annual Water Use for St. Johns River Water Management District

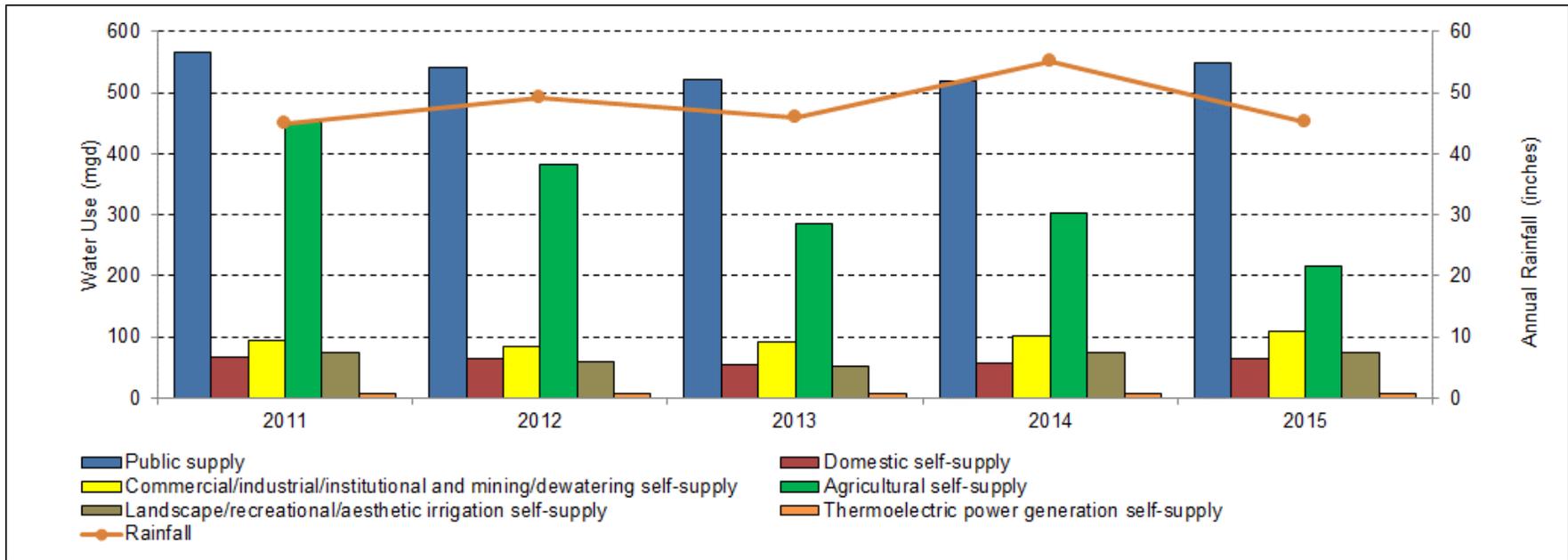


Figure 10. Annual rainfall and freshwater use by category, 2011–2015

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 April 4, 2016.

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

2015 Survey of Estimated Annual Water Use for St. Johns River Water Management District

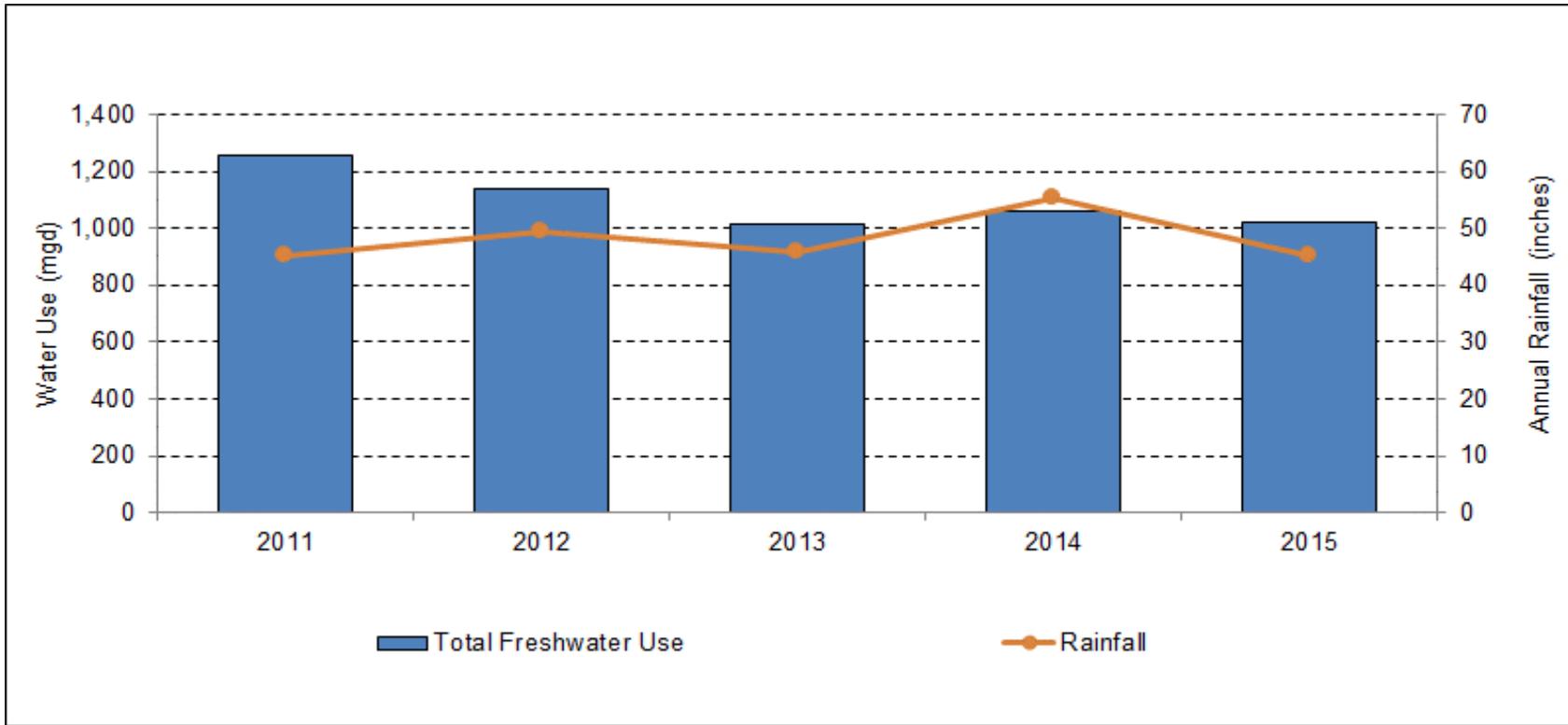


Figure 11. Annual rainfall and total freshwater use, 2011–2015

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 April 4, 2016.

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

2015 Survey of Estimated Annual Water Use for St. Johns River Water Management District

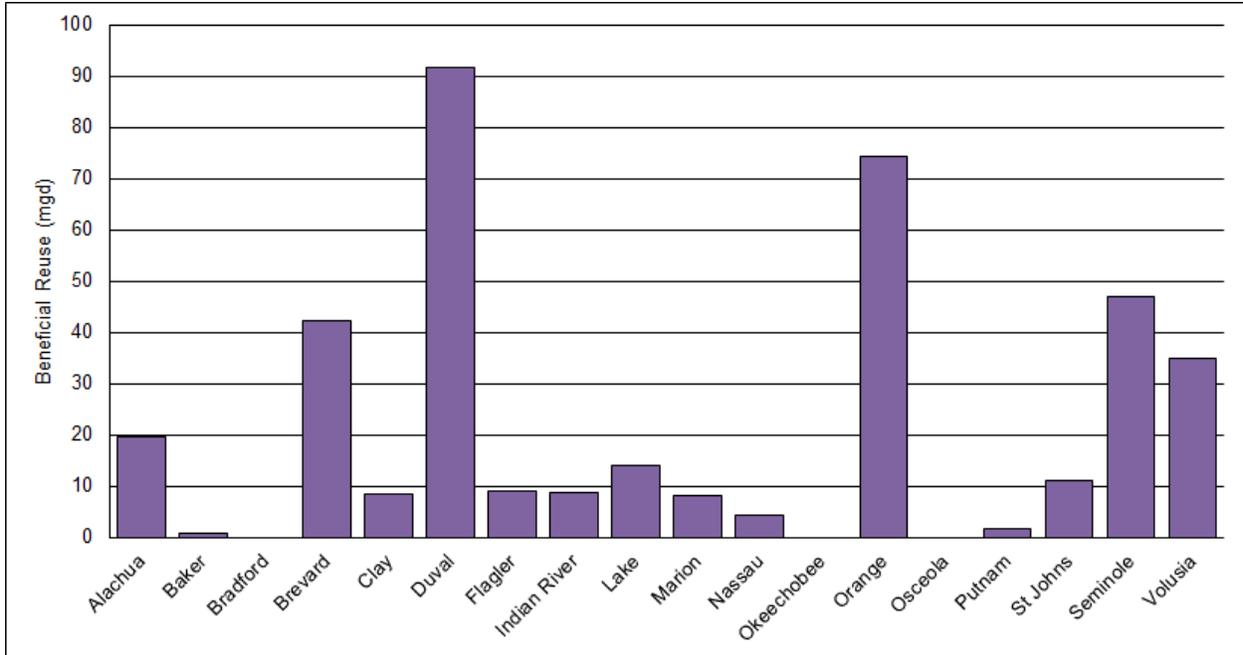


Figure 12. Wastewater flows reused beneficially, 2015

Note: Beneficial reuse is in million gallons per day (mgd).
Data obtained from the 2015 DEP Reuse Inventory.

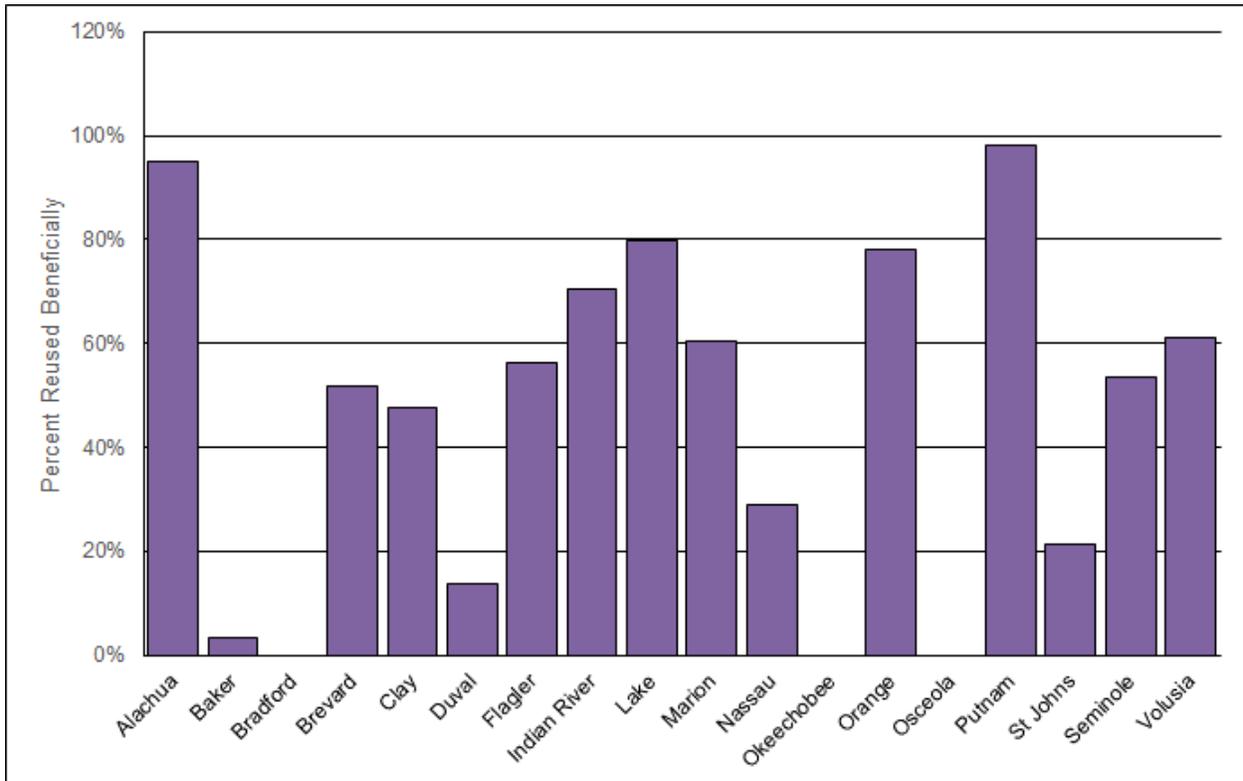


Figure 13. Percent of wastewater flows reused beneficially, 2015

Note: Data obtained from the 2015 DEP Reuse Inventory.

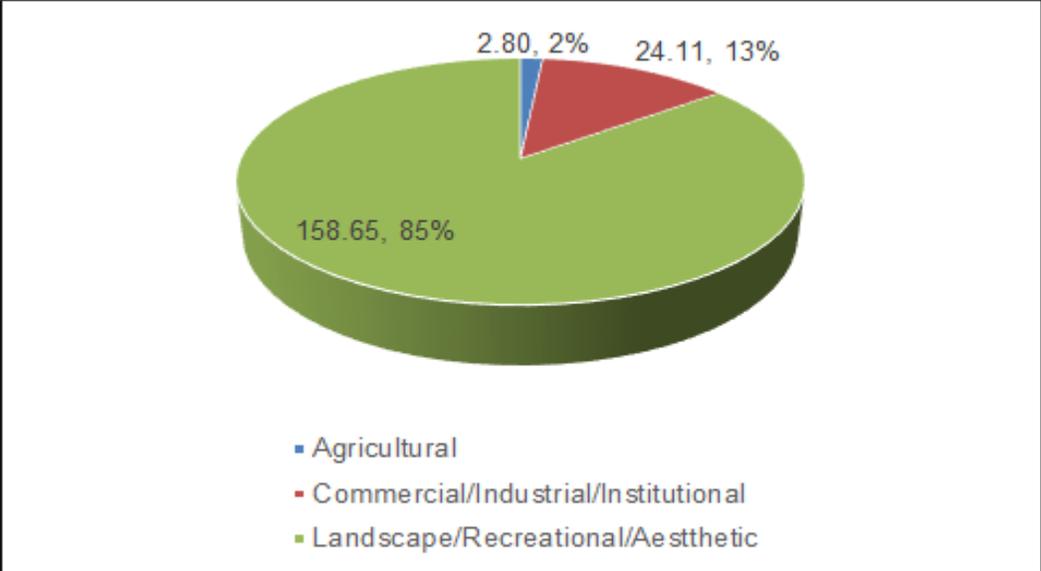


Figure 14. Beneficially used reclaimed water by use type

Note: Water use is in million gallons per day (mgd).
Data obtained from the 2015 DEP Reuse Inventory.