

# A

## Water Demand Projections

# TABLE OF CONTENTS

<b>Water Demand Projections.....</b>	<b>A-1</b>
Population Estimates and Projections .....	A-5
Utility Service Areas .....	A-6
Population Projection Methodology .....	A-6
Population Projection Results .....	A-6
Public Supply .....	A-8
PS Projection Methodology.....	A-9
PS Projection Results.....	A-14
Domestic Self-Supply .....	A-17
Agriculture.....	A-18
AG Projection Methodology.....	A-18
AG Projection Results.....	A-20
Commercial/Industrial/Institutional.....	A-31
CII Projection Methodology.....	A-31
CII Projection Results.....	A-32
Landscape/Recreational.....	A-32
L/R Projection Methodology.....	A-32
L/R Projection Results.....	A-33
Power Generation.....	A-35
Summary of Demand Projections .....	A-35
References .....	A-38

## LIST OF TABLES

Table A-1.	Service area population projections in the UEC Planning Area.....	A-6
Table A-2.	Average net (finished) water per capita use rates (in gallons per capita per day) in the UEC Planning Area. ....	A-9
Table A-3.	PS net (finished) water demands under average rainfall conditions in the UEC Planning Area.....	A-10
Table A-4.	Raw-to-finished water adjustment ratios for PS utilities in the UEC Planning Area.....	A-11
Table A-5.	PS gross (raw) water demands under average rainfall conditions in the UEC Planning Area.....	A-14
Table A-6.	PS net (finished) water demands under 1-in-10 year drought conditions in the UEC Planning Area.....	A-15
Table A-7.	PS gross (raw) water demands under 1-in-10 year drought conditions in the UEC Planning Area.....	A-16
Table A-8.	DSS gross (raw) water demands under average rainfall conditions in the UEC Planning Area.....	A-17
Table A-9.	DSS gross (raw) water demands under 1-in-10 year drought conditions in the UEC Planning Area.....	A-17
Table A-10.	Irrigated agricultural acres in the UEC Planning Area. ....	A-18
Table A-11.	Irrigated agricultural demands (in mgd) in the UEC Planning Area. ....	A-19
Table A-12.	Gross irrigation demands (in mgd) for citrus acreage in the UEC Planning Area. ....	A-21
Table A-13.	Gross irrigation demands (in mgd) for sugarcane acreage in the UEC Planning Area.....	A-22
Table A-14.	Gross irrigation demands (in mgd) for fresh market vegetable acreage in the UEC Planning Area.....	A-23
Table A-15.	Gross irrigation demands (in mgd) for hay/pasture acreage in the UEC Planning Area.....	A-24
Table A-16.	Gross irrigation demands (in mgd) for greenhouse/nursery acreage in the UEC Planning Area.....	A-25
Table A-17.	Gross irrigation demands (in mgd) for sod acreage in the UEC Planning Area. ....	A-26
Table A-18.	Gross irrigation demands (in mgd) for potato acreage in the UEC Planning Area. ....	A-27
Table A-19.	Gross irrigation demands (in mgd) for fruit (non-citrus) acreage in the UEC Planning Area.....	A-28
Table A-20.	Gross water demands (in mgd) for livestock in the UEC Planning Area.....	A-28
Table A-21.	Gross water demands (in mgd) for aquaculture in the UEC Planning Area. ....	A-29
Table A-22.	Summary of gross water demands (in mgd) for all agricultural acreage, livestock, and aquaculture in the UEC Planning Area, by commodity. ....	A-30
Table A-23.	Summary of gross water demands (in mgd) for all agricultural acreage, livestock, and aquaculture in the UEC Planning Area, by county. ....	A-31
Table A-24.	CII demand projections in the UEC Planning Area.....	A-32
Table A-25.	L/R permitted acres in the UEC Planning Area.....	A-33
Table A-26.	L/R gross irrigation demands under average rainfall conditions in the UEC Planning Area.....	A-34

Table A-27.	L/R gross irrigation demands under 1-in-10 year drought conditions in the UEC Planning Area.....	A-34
Table A-28.	Average gross water demand for PG in the UEC Planning Area between 2019 and 2045.....	A-35
Table A-29.	Summary of gross water demands under average rainfall conditions in the UEC Planning Area, by water use category.....	A-36
Table A-30.	Summary of gross water demands under 1-in-10 year drought conditions in the UEC Planning Area, by water use category.....	A-37

## LIST OF FIGURES

Figure A-1.	Comparison of population projections from the 2011, 2016, and 2021 UEC water supply plan updates.....	A-8
Figure A-2.	Potable water treatment plants and Public Supply utility service areas in Martin County. ....	A-12
Figure A-3.	Potable water treatment plants and Public Supply utility service areas in St. Lucie County. ....	A-13
Figure A-4.	Comparison of average water demands from the seventh Florida Statewide Agricultural Irrigation Demand (FSAID VII) report and the Agricultural Field-Scale Irrigation Requirements Simulation (AFSIRS).....	A-20

The South Florida Water Management District (SFWMD or District) develops water demand estimates and projections in coordination with stakeholder groups, other agencies, utilities, and local governments. **Chapter 2** provides summary information, and this appendix describes the methods used to develop water demand estimates for 2019 and projections through 2045 for the Upper East Coast (UEC) Planning Area. Demands are developed for six water use categories: Public Supply (PS), Domestic Self-Supply (DSS), Agriculture (AG), Commercial/Industrial/Institutional (CII), Landscape/Recreational (L/R), and Power Generation (PG). Water demand estimates and projections are provided in 5-year increments through 2045 for average rainfall and 1-in-10 year drought conditions. In addition, demands are described and analyzed in two ways: gross (or raw) demand and net (or finished) demand.

## POPULATION ESTIMATES AND PROJECTIONS

This section presents the methodology used to develop the 2019 population estimates and 2045 population projections for the UEC Planning Area, which are essential to determining water demands. The University of Florida's Bureau of Economic and Business Research (BEBR) provides population estimates and projections at the county level; however, water supply planning requires population projections at the sub-county level to delineate DSS areas and PS utility service areas. Section 373.709(2)(a)1., Florida Statutes (F.S.), prescribes the use of population projections in determining water supply needs in regional water supply plans.

In accordance with Section 373.709(2)(a)1., F.S., permanent resident estimates and projections for each county, published by BEBR (Rayer and Wang 2020), were used as the basis for population projections in this 2021 UEC Plan Update. BEBR county population estimates and projections are also used by local governments in their Comprehensive Plans. While the most recent medium BEBR projections were used for Martin and northeastern Okeechobee counties, high BEBR projections were used for St. Lucie County because of it is used in the county's comprehensive planning efforts. The St. Lucie County Transportation Planning Organization formally adopted the high BEBR projection for its long-term transportation plans, and the high BEBR projection will be part of other elements of the county's Comprehensive Plan. For Okeechobee County, adjustments were made to the medium BEBR projections to include only the northeastern portion of the county within the UEC Planning Area. Adjustments were made based on the distribution of 2010 census blocks (United States Census Bureau 2012). The 2019 permanent resident populations within the UEC Planning Area were as follows:

◆ Martin County:	158,598 permanent residents
◆ St. Lucie County:	309,357 permanent residents
◆ Okeechobee County:	544 permanent residents

## Utility Service Areas

To establish current and future PS and DSS populations, each PS utility's 2019 and 2045 potable water service area was delineated. A utility service area refers to the area with water distribution infrastructure and water customers served by a particular PS utility. The SFWMD developed 2019 and 2045 utility service area maps based on information from utilities and the SFWMD's water use permit database. Accuracy of the service area maps was verified through correspondence with all PS utilities. Note that there are no PS utilities in the northeastern portion of Okeechobee County within the UEC Planning Area boundary.

## Population Projection Methodology

Census block populations from the 2010 census (United States Census Bureau 2012) and 2019 PS service area maps were used to estimate the 2019 permanent resident populations for PS utilities and DSS areas. Each census block within the UEC Planning Area was assigned to a PS service area or DSS area. The distribution of population in census blocks not entirely within a single PS service area or DSS area was based on visual comparison of residential land use coverage. PS service area and DSS population estimates for 2015 through 2019 were calculated by applying annual county growth rates published by BEBR (Rayer and Wang 2020) to 2010 population estimates.

Detailed sub-county population projections from county planning departments were assigned to PS utility service areas and DSS areas. In some cases, modifications were made to service area populations based on information from local land use planning maps and local government Comprehensive Plans. Population projections to 2045 were calculated using traffic analysis zone data developed by the transportation planning organizations in Martin and St. Lucie counties. The data provide distributions of population growth within each county using traffic analysis zones and are integral to comprehensive planning efforts. Population growth provided by the traffic analysis zones was applied to PS utility service areas and DSS areas. These results were adjusted proportionally to match the latest set of county population projections from BEBR (Rayer and Wang 2020), in accordance with Section 373.709, F.S.

## Population Projection Results

**Table A-1** presents the results of the population distributions by county and PS utility (or DSS area) from 2019 to 2045. The results were shared with and reviewed by utility, municipal, and local government staff. The populations shown in **Table A-1** indicate the UEC Planning Area will have an additional 217,910 permanent residents by 2045, an increase of approximately 47%. The City of Port St. Lucie Utility Systems Department has the largest current and future populations, accounting for almost half of the region's projected 2045 PS population.

Table A-1. Service area population projections in the UEC Planning Area.

PS Utility or DSS	2019	2020	2025	2030	2035	2040	2045
<b>Martin County</b>							
Indiantown, Village of	6,367	6,447	6,943	7,383	7,767	8,122	8,455
Jupiter, Town of (Martin portion)	2,257	2,285	2,416	2,527	2,617	2,697	2,770
Martin County Utilities	94,163	95,352	101,153	106,077	110,170	113,844	117,215
Port St. Lucie Utility Systems Department, City of (Martin portion)	1,609	1,629	1,670	1,694	1,703	1,706	1,705
Sailfish Point	1,054	1,068	1,095	1,112	1,119	1,122	1,122
South Martin Regional	21,126	21,392	22,286	22,973	23,473	23,882	24,228
St. Lucie Mobile Village	801	811	844	869	887	901	913
Stuart, City of	20,596	20,856	21,707	22,356	22,823	23,201	23,518
Tequesta, Village of (Martin portion)	3,533	3,578	3,679	3,743	3,777	3,795	3,804
<b>PS Total</b>	<b>151,506</b>	<b>153,418</b>	<b>161,793</b>	<b>168,734</b>	<b>174,336</b>	<b>179,270</b>	<b>183,730</b>
<b>DSS Total</b>	<b>7,092</b>	<b>7,181</b>	<b>7,706</b>	<b>8,166</b>	<b>8,564</b>	<b>8,930</b>	<b>9,271</b>
<b>Martin County Total</b>	<b>158,598</b>	<b>160,599</b>	<b>169,499</b>	<b>176,900</b>	<b>182,900</b>	<b>188,200</b>	<b>193,001</b>
<b>St. Lucie County</b>							
Fort Pierce Utilities Authority	46,615	49,060	53,432	46,267	49,269	52,038	54,635
Harbour Ridge	1,042	1,093	1,165	1,237	1,295	1,348	1,397
Martin County Utilities (St. Lucie portion)	1,934	2,012	2,065	2,119	2,150	2,173	2,192
Meadowood Communities Association	589	654	654	654	654	654	654
Port St. Lucie Utility Systems Department, City of	186,206	198,658	226,252	253,834	278,245	301,107	322,742
Reserve Community Development District	3,353	3,485	3,564	3,644	3,685	3,713	3,735
Spanish Lakes Country Club	1,649	1,781	1,781	1,781	1,781	1,781	1,781
Spanish Lakes Fairway	2,241	2,319	2,322	2,327	2,307	2,280	2,251
St. Lucie County Utilities	14,883	16,024	19,517	34,546	49,022	52,887	56,544
St. Lucie West Services District	13,785	13,785	13,785	13,785	13,785	13,785	13,785
<b>PS Total</b>	<b>272,297</b>	<b>288,871</b>	<b>324,537</b>	<b>360,194</b>	<b>402,193</b>	<b>431,766</b>	<b>459,716</b>
<b>DSS Total</b>	<b>37,060</b>	<b>38,630</b>	<b>40,063</b>	<b>41,506</b>	<b>31,907</b>	<b>32,532</b>	<b>33,085</b>
<b>St. Lucie County Total</b>	<b>309,357</b>	<b>327,501</b>	<b>364,600</b>	<b>401,700</b>	<b>434,100</b>	<b>464,298</b>	<b>492,801</b>
<b>Okeechobee County*</b>							
<b>PS Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>DSS Total</b>	<b>544</b>	<b>547</b>	<b>564</b>	<b>577</b>	<b>589</b>	<b>598</b>	<b>607</b>
<b>Okeechobee County Total</b>	<b>544</b>	<b>547</b>	<b>564</b>	<b>577</b>	<b>589</b>	<b>598</b>	<b>607</b>
<b>UEC Planning Area</b>							
<b>PS Total</b>	<b>423,803</b>	<b>442,289</b>	<b>486,330</b>	<b>528,928</b>	<b>576,529</b>	<b>611,038</b>	<b>643,446</b>
<b>DSS Total</b>	<b>44,696</b>	<b>46,358</b>	<b>48,333</b>	<b>50,249</b>	<b>41,060</b>	<b>42,060</b>	<b>42,963</b>
<b>UEC Planning Area Total</b>	<b>468,499</b>	<b>488,647</b>	<b>534,663</b>	<b>579,177</b>	<b>617,589</b>	<b>653,096</b>	<b>686,409</b>

DSS = Domestic Self-Supply; PS = Public Supply; UEC = Upper East Coast.

\* Values listed are only for the area within the UEC Planning Area boundary. No PS utilities are located in the portion of Okeechobee County within the UEC Planning Area.

Comparing this 2021 UEC Plan Update population projection to those published in the 2011 and 2016 UEC plan updates can provide insight into the importance of population growth rates based on BEBR projections. Prior to the national economic downturn in 2008, high rates of development in the region pointed to higher population growth rates (**Figure A-1**). The population projections in the 2011 UEC Plan Update were a result of higher population growth rates prior to the recession. The BEBR projections used in this 2021 UEC Plan Update indicate slower growth rates from previous plan updates. However, they are closely aligned with the projections published in the 2016 UEC Plan Update.

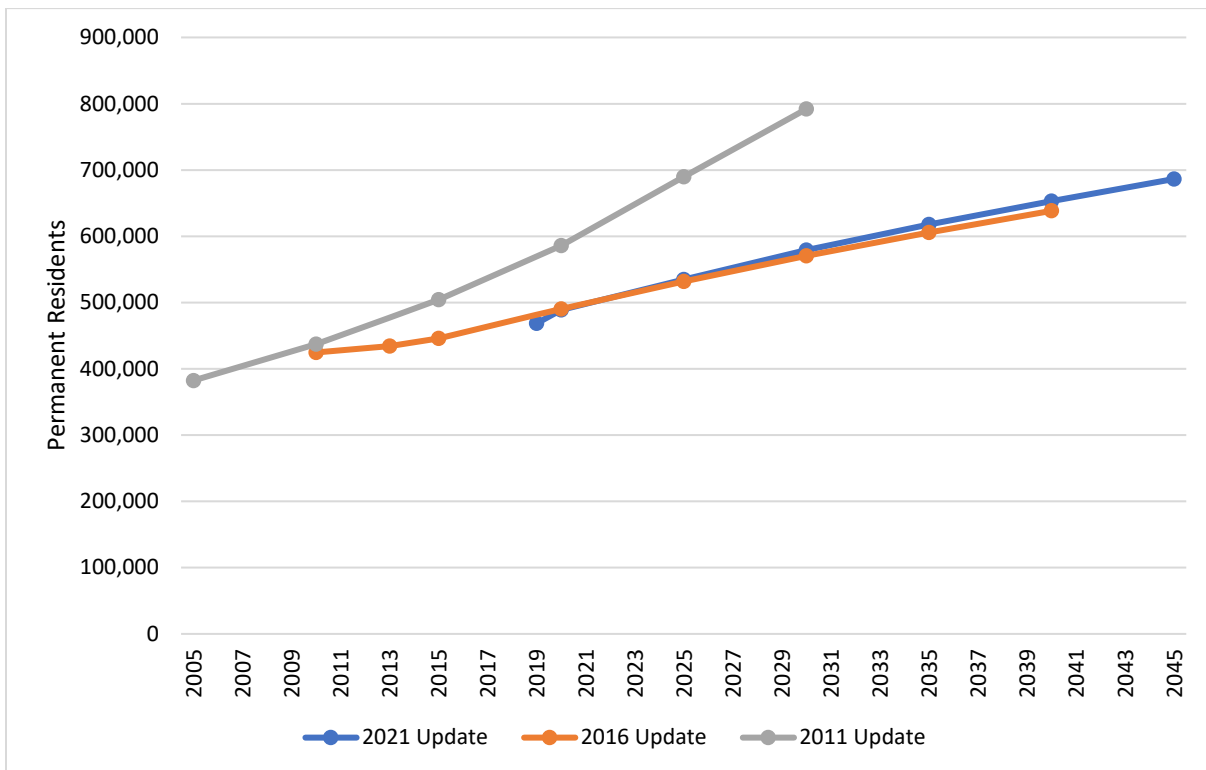


Figure A-1. Comparison of population projections from the 2011, 2016, and 2021 UEC water supply plan updates.

## PUBLIC SUPPLY

The PS category includes potable water supplied by water treatment plants with a current allocation of 0.10 million gallons per day (mgd) or greater. Developing PS demand projections in the UEC Planning Area was a multistep process that included determining PS utility service area and DSS populations, calculating per capita use rates (PCURs), and projecting future water needs.

### NOTE

Perceived discrepancies in table totals are due to rounding.



## PS Projection Methodology

### *Per Capita Use Rates*

For each PS utility, a net (finished) water PCUR was developed by dividing the annual net (finished) water volume for 2015 through 2019 by the corresponding service area estimated population (permanent residents) for each year; then, the five annual PCURs were averaged (**Table A-2**). Net (finished) water volumes for 2015 through 2019 were obtained from the PS utility monthly operating reports submitted to the Florida Department of Environmental Protection (FDEP). The net (finished) water volume reported to the FDEP includes all water produced for permanent and seasonal residents; industrial, landscaping, and irrigation water supplied by PS utilities; and any water distribution losses. The resulting PCURs conform to guidance provided by the FDEP for consistent statewide water supply planning. Future water conservation savings (**Chapter 3**) were not factored into demand projections and PCURs due to water savings uncertainty. The UEC Planning Area county average PCURs were calculated by averaging PS and DSS PCURs, weighted by their respective permanent resident populations.

Table A-2. Average net (finished) water per capita use rates (in gallons per capita per day) in the UEC Planning Area.

County	PS Utility or DSS	2015-2019 Average PCUR
Martin	Indiantown, Village of	86
	Jupiter, Town of	201
	Martin County Utilities	108
	Sailfish Point	146
	South Martin Regional	177
	St. Lucie Mobile Village	112
	Stuart, City of	145
	Tequesta, Village of	261
	Martin County DSS	156
	<b>Martin County</b>	<b>156</b>
St. Lucie	Fort Pierce Utilities Authority	168
	Harbour Ridge	117
	Meadowood Communities Association	121
	Port St. Lucie Utility Systems Department, City of	89
	Reserve Community Development District	68
	Spanish Lakes Country Club	109
	Spanish Lakes Fairway	94
	St. Lucie County Utilities	72
	St. Lucie West Services District	122
	St. Lucie County DSS	124
	<b>St. Lucie County</b>	<b>106</b>
Okeechobee*	Okeechobee County DSS	99
	<b>Okeechobee County</b>	<b>99</b>
<b>UEC Planning Area</b>		<b>128</b>

DSS = Domestic Self-Supply; PCUR = per capita use rate; PS = Public Supply; UEC = Upper East Coast.

\* Values listed are only for the area within the UEC Planning Area boundary. No PS utilities are located in the portion of Okeechobee County within the UEC Planning Area.

## Finished to Raw Water Conversion

Net (finished) demands (**Table A-3**) were calculated by multiplying the PS utility service area or DSS area population and the 5-year average PCUR. Gross (raw) water withdrawals are the volumes needed from the water source(s) to produce the required net (finished) water volumes, considering water treatment process losses. Water use permit allocations for PS utilities are based on the gross (raw) water volume to meet service area demands. To determine gross (raw) water demand for each PS utility, net (finished) water projections were multiplied by raw-to-finished ratios (**Table A-4**), which are based on the treatment efficiency of each PS water treatment plant. For example, if a typical reverse osmosis treatment facility withdraws a gross (raw) volume of 10.00 mgd and produces 8.00 mgd of net (finished) water, its treatment losses are 20%. Therefore, its raw-to-finished ratio would be 1.25 (10 mgd divided by 8 mgd).

Table A-3. PS net (finished) water demands under average rainfall conditions in the UEC Planning Area.\*

PS Utility	Net (Finished) Demand – Average Rainfall Conditions (mgd)						
	2019	2020	2025	2030	2035	2040	2045
<b>Martin County</b>							
Indiantown, Village of	0.55	0.55	0.60	0.63	0.67	0.70	0.73
Martin County Utilities	10.17	10.30	10.92	11.46	11.90	12.30	12.66
Sailfish Point	0.15	0.16	0.16	0.16	0.16	0.16	0.16
South Martin Regional	3.74	3.79	3.94	4.07	4.15	4.23	4.29
St. Lucie Mobile Village	0.09	0.09	0.09	0.10	0.10	0.10	0.10
Stuart, City of	2.99	3.02	3.15	3.24	3.31	3.36	3.41
Jupiter, Town of (Martin portion)	0.45	0.46	0.49	0.51	0.53	0.54	0.56
Port St. Lucie Utility Systems Department, City of (Martin portion)	0.14	0.15	0.15	0.15	0.15	0.15	0.15
Tequesta, Village of (Martin portion)	0.92	0.93	0.96	0.98	0.99	0.99	0.99
<b>Martin County Total</b>	<b>19.20</b>	<b>19.45</b>	<b>20.46</b>	<b>21.30</b>	<b>21.96</b>	<b>22.53</b>	<b>23.05</b>
<b>St. Lucie County</b>							
Fort Pierce Utilities Authority	7.83	8.24	8.98	7.77	8.28	8.74	9.18
Harbour Ridge	0.12	0.13	0.14	0.14	0.15	0.16	0.16
Martin County Utilities (St. Lucie portion)	0.21	0.22	0.22	0.23	0.23	0.23	0.24
Meadowood Communities Association	0.07	0.08	0.08	0.08	0.08	0.08	0.08
Port St. Lucie Utility Systems Department, City of	16.57	17.68	20.14	22.59	24.76	26.80	28.72
Reserve Community Development District	0.23	0.24	0.24	0.25	0.25	0.25	0.25
Spanish Lakes Country Club	0.18	0.19	0.19	0.19	0.19	0.19	0.19
Spanish Lakes Fairway	0.21	0.22	0.22	0.22	0.22	0.21	0.21
St. Lucie County Utilities	1.07	1.15	1.41	2.49	3.53	3.81	4.07
St. Lucie West Services District	1.68	1.68	1.68	1.68	1.68	1.68	1.68
<b>St. Lucie County Total</b>	<b>28.17</b>	<b>29.83</b>	<b>33.30</b>	<b>35.64</b>	<b>39.37</b>	<b>42.15</b>	<b>44.78</b>
<b>UEC Planning Area</b>							
<b>UEC Planning Area Total</b>	<b>47.37</b>	<b>49.28</b>	<b>53.76</b>	<b>56.94</b>	<b>61.33</b>	<b>64.68</b>	<b>67.83</b>

mgd = million gallons per day; PS = Public Supply; UEC = Upper East Coast.

\* No PS utilities are located in the portion of Okeechobee County within the UEC Planning Area.

Table A-4. Raw-to-finished water adjustment ratios for PS utilities in the UEC Planning Area.\*

County	PS Utility	Raw-to-Finished Ratio
Martin	Indiantown, Village of	1.03
	Jupiter, Town of (Martin portion)	1.25
	Martin County Utilities	1.20
	Sailfish Point	1.33
	South Martin Regional	1.13
	St. Lucie Mobile Village	1.33
	Stuart, City of	1.03
	Tequesta, Village of (Martin portion)	1.22
St. Lucie	Fort Pierce Utilities Authority	1.16
	Harbour Ridge	1.03
	Meadowood Communities Association	1.03
	Port St. Lucie Utility Systems Department, City of	1.21
	Reserve Community Development District	1.03
	Spanish Lakes Country Club	1.33
	Spanish Lakes Fairway	1.33
	St. Lucie County Utilities	1.33
	St. Lucie West Services District	1.33

PS = Public Supply; UEC = Upper East Coast.

\* No PS utilities are located in the portion of Okeechobee County within the UEC Planning Area.

Treatment efficiencies were determined from information supplied in the water use permit and/or standard treatment process technical documents. The assumed losses are 0% for aeration/disinfection only, 3% for lime softening/flocculation, 15% for nanofiltration, and 25% for reverse osmosis. If a utility has more than one treatment method, the ratio reflects combined treatment efficiencies. Potable water treatment plants in the UEC Planning Area and their treatment processes are shown in **Figures A-2 and A-3**.

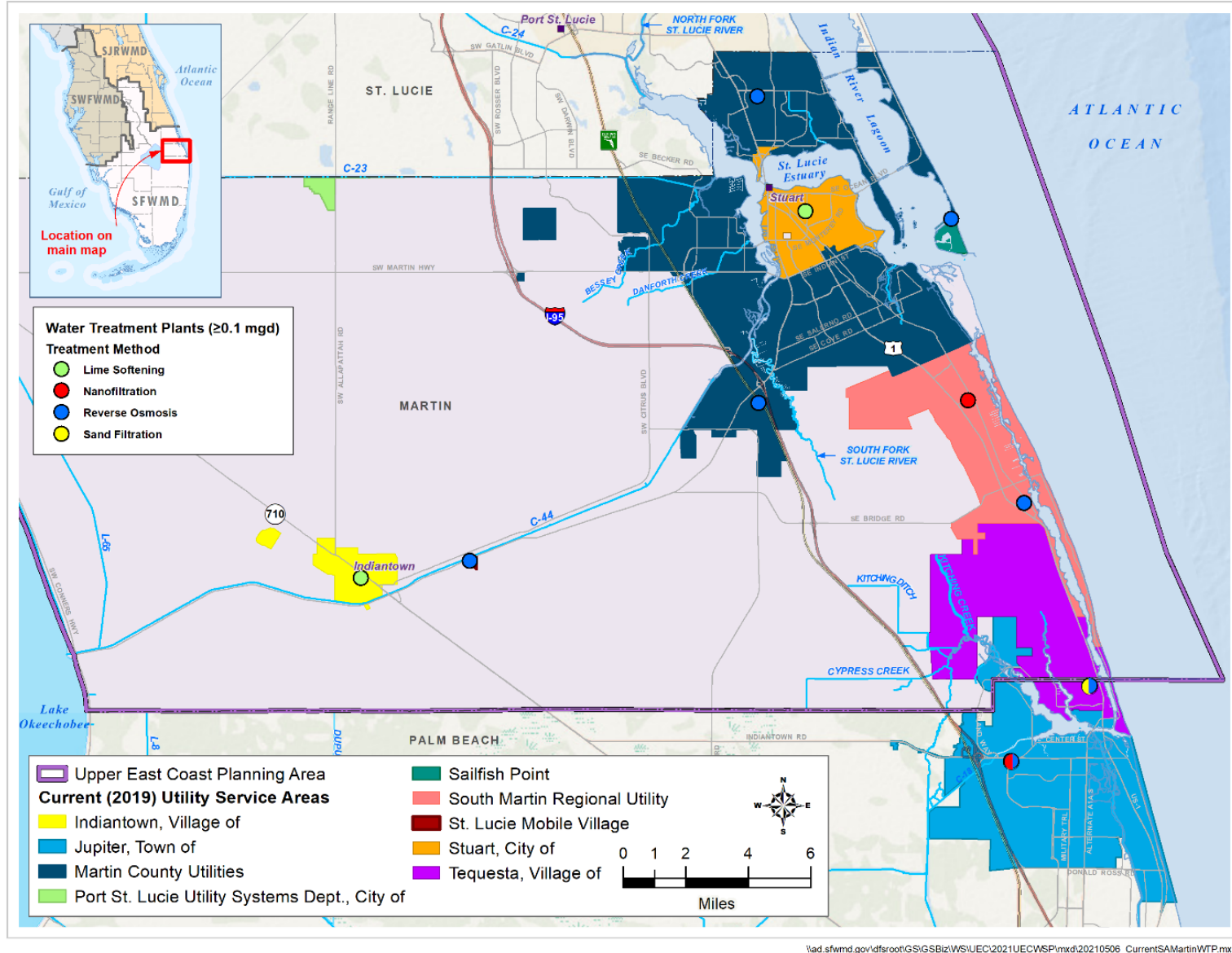


Figure A-2. Potable water treatment plants and Public Supply utility service areas in Martin County.

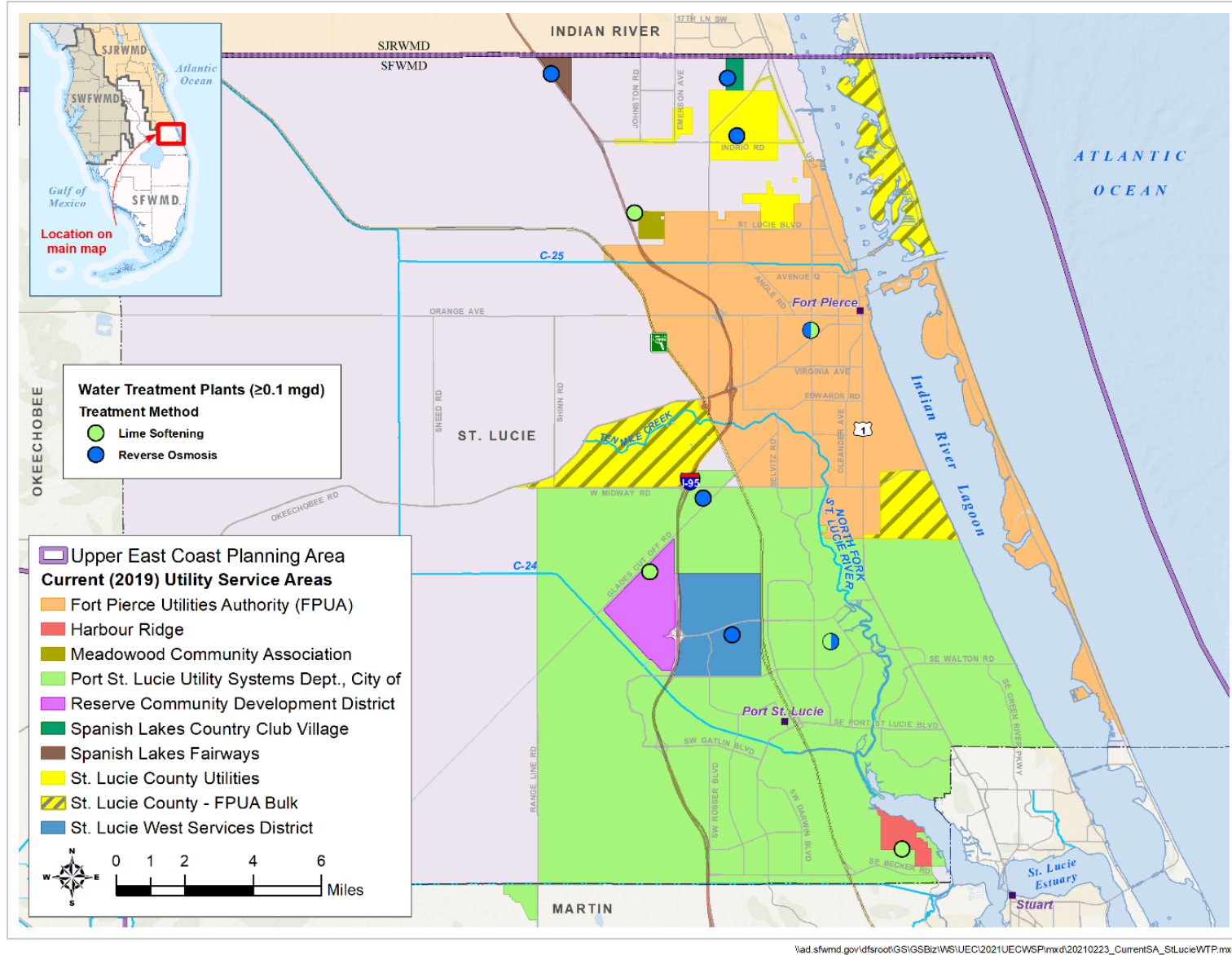


Figure A-3. Potable water treatment plants and Public Supply utility service areas in St. Lucie County.

## PS Projection Results

### *Average Rainfall Conditions*

Gross (raw) demands for PS under average rainfall conditions for 2019 through 2045 are provided in **Table A-5**.

Table A-5. PS gross (raw) water demands under average rainfall conditions in the UEC Planning Area.\*

PS Utility	Gross (Raw) Demand – Average Rainfall Conditions (mgd)						
	2019	2020	2025	2030	2035	2040	2045
<b>Martin County</b>							
Indiantown, Village of	0.56	0.57	0.62	0.65	0.69	0.72	0.75
Jupiter, Town of (Martin portion)	0.57	0.57	0.61	0.63	0.66	0.68	0.70
Martin County Utilities	12.20	12.36	13.11	13.75	14.28	14.75	15.19
Port St. Lucie Utility Systems Department, City of (Martin portion)	0.17	0.18	0.18	0.18	0.18	0.18	0.18
Sailfish Point	0.20	0.21	0.21	0.22	0.22	0.22	0.22
South Martin Regional	4.23	4.28	4.46	4.59	4.69	4.78	4.85
St. Lucie Mobile Village	0.12	0.12	0.13	0.13	0.13	0.13	0.14
Stuart, City of	3.08	3.11	3.40	3.66	3.87	3.94	3.99
Tequesta, Village of (Martin portion)	1.13	1.14	1.17	1.19	1.20	1.21	1.21
<b>Martin County Total</b>	<b>22.26</b>	<b>22.54</b>	<b>23.89</b>	<b>25.00</b>	<b>25.92</b>	<b>26.61</b>	<b>27.23</b>
<b>St. Lucie County</b>							
Fort Pierce Utilities Authority	9.08	9.56	10.41	9.02	9.60	10.14	10.65
Harbour Ridge	0.13	0.13	0.14	0.15	0.16	0.16	0.17
Martin County Utilities (St. Lucie portion)	0.25	0.26	0.27	0.27	0.28	0.28	0.28
Meadowood Communities Association	0.07	0.08	0.08	0.08	0.08	0.08	0.08
Port St. Lucie Utility Systems Department, City of	20.05	21.39	24.37	27.34	29.96	32.43	34.76
Reserve Community Development District	0.23	0.24	0.25	0.26	0.26	0.26	0.26
Spanish Lakes Country Club	0.24	0.26	0.26	0.26	0.26	0.26	0.26
Spanish Lakes Fairway	0.28	0.29	0.29	0.29	0.29	0.29	0.28
St. Lucie County Utilities	1.43	1.53	1.87	3.31	4.69	5.06	5.41
St. Lucie West Services District	2.24	2.24	2.24	2.24	2.24	2.24	2.24
<b>St. Lucie County Total</b>	<b>34.00</b>	<b>35.98</b>	<b>40.18</b>	<b>43.22</b>	<b>47.82</b>	<b>51.20</b>	<b>54.39</b>
<b>UEC Planning Area</b>							
<b>UEC Planning Area Total</b>	<b>56.26</b>	<b>58.52</b>	<b>64.07</b>	<b>68.22</b>	<b>73.74</b>	<b>77.81</b>	<b>81.62</b>

mgd = million gallons per day; PS = Public Supply; UEC = Upper East Coast.

\* No PS utilities are located in the portion of Okeechobee County within the UEC Planning Area.

## 1-in-10 Year Drought Conditions

Section 373.709, F.S., states that the level-of-certainty planning goal associated with identifying water demands shall be based on meeting demands during 1-in-10 year drought conditions. A 1-in-10 year drought is characterized by diminished rain and increased evapotranspiration relative to the historical record for a specific location. The increased PS demands during 1-in-10 year drought conditions were calculated using the method described in the *Districtwide Water Supply Assessment* (SFWMD 1998), which considers the increased demands on the irrigation portion of PS during droughts. The drought demand factors are 1.17 for Martin County, 1.09 for St. Lucie County, and 1.17 for northeastern Okeechobee County (within the UEC Planning Area). Average water demands were multiplied by the drought demand factor to calculate demands during 1-in-10 year drought conditions (**Tables A-6 and A-7**).

## NOTE

### Average Rainfall and 1-in-10 Year Drought

An **average rainfall** year is defined as a year with a rainfall amount that has a 50% probability of being exceeded in any other year.

A **1-in-10 year drought** is defined as a year in which below normal rainfall occurs, with a 90% probability of being exceeded in any other year. It has an expected return frequency of once in 10 years.

Table A-6. PS net (finished) water demands under 1-in-10 year drought conditions in the UEC Planning Area.\*

PS Utility	Net (Finished) Demand – 1-in-10 Year Drought Conditions (mgd)						
	2019	2020	2025	2030	2035	2040	2045
<b>Martin County</b>							
Indiantown, Village of	0.64	0.65	0.70	0.74	0.78	0.82	0.85
Jupiter, Town of (Martin portion)	0.53	0.54	0.57	0.59	0.61	0.63	0.65
Martin County Utilities	11.87	12.02	12.75	13.37	13.89	14.35	14.77
Port St. Lucie Utility Systems Department, City of (Martin portion)	0.17	0.17	0.17	0.18	0.18	0.18	0.18
Sailfish Point	0.18	0.18	0.19	0.19	0.19	0.19	0.19
South Martin Regional	4.36	4.42	4.60	4.60	4.85	4.93	5.00
St. Lucie Mobile Village	0.10	0.11	0.11	0.11	0.12	0.12	0.12
Stuart, City of	3.49	3.53	3.67	3.78	3.86	3.93	3.98
Tequesta, Village of (Martin portion)	1.08	1.09	1.12	1.14	1.15	1.16	1.16
<b>Martin County Total</b>	<b>22.42</b>	<b>22.71</b>	<b>23.88</b>	<b>24.70</b>	<b>25.63</b>	<b>26.31</b>	<b>26.90</b>
<b>St. Lucie County</b>							
Fort Pierce Utilities Authority	8.54	8.98	9.78	8.47	9.02	9.53	10.00
Harbour Ridge	0.13	0.14	0.15	0.16	0.17	0.17	0.18
Martin County Utilities (St. Lucie portion)	0.23	0.24	0.24	0.25	0.25	0.26	0.26
Meadowood Communities Association	0.08	0.09	0.09	0.09	0.09	0.09	0.09
Port St. Lucie Utility Systems Department, City of	18.06	19.27	21.95	24.62	26.99	29.21	31.31
Reserve Community Development District	0.25	0.26	0.26	0.27	0.27	0.28	0.28
Spanish Lakes Country Club	0.20	0.21	0.21	0.21	0.21	0.21	0.21
Spanish Lakes Fairway	0.23	0.24	0.24	0.24	0.24	0.23	0.23
St. Lucie County Utilities	1.17	1.26	1.53	2.71	3.85	4.15	4.44
St. Lucie West Services District	1.83	1.83	1.83	1.83	1.83	1.83	1.83
<b>St. Lucie County Total</b>	<b>30.72</b>	<b>32.52</b>	<b>36.28</b>	<b>38.85</b>	<b>42.92</b>	<b>45.96</b>	<b>48.83</b>
<b>UEC Planning Area</b>							
<b>UEC Planning Area Total</b>	<b>53.14</b>	<b>55.23</b>	<b>60.16</b>	<b>63.55</b>	<b>68.55</b>	<b>72.27</b>	<b>75.73</b>

mgd = million gallons per day; PS = Public Supply; UEC = Upper East Coast.

\* No PS utilities are located in the portion of Okeechobee County within the UEC Planning Area.



Table A-7. PS gross (raw) water demands under 1-in-10 year drought conditions in the UEC Planning Area.\*

PS Utility	Gross (Raw) Demand – 1-in-10 Year Drought Conditions (mgd)						
	2019	2020	2025	2030	2035	2040	2045
<b>Martin County</b>							
Indiantown, Village of	0.66	0.67	0.72	0.76	0.80	0.84	0.87
Jupiter, Town of (Martin portion)	0.66	0.67	0.71	0.74	0.77	0.79	0.81
Martin County Utilities	14.24	14.42	15.30	16.04	16.66	17.22	17.73
Port St. Lucie Utility Systems Department, City of (Martin portion)	0.20	0.20	0.21	0.21	0.21	0.21	0.21
Sailfish Point	0.24	0.24	0.25	0.25	0.25	0.25	0.25
South Martin Regional	4.93	4.99	5.20	5.36	5.48	5.57	5.66
St. Lucie Mobile Village	0.14	0.14	0.15	0.15	0.15	0.16	0.16
Stuart, City of	3.59	3.64	3.97	4.27	4.52	4.59	4.66
Tequesta, Village of (Martin portion)	1.31	1.33	1.37	1.39	1.40	1.41	1.41
<b>Martin County Total</b>	<b>25.97</b>	<b>26.30</b>	<b>27.88</b>	<b>29.17</b>	<b>30.24</b>	<b>31.04</b>	<b>31.76</b>
<b>St. Lucie County</b>							
Fort Pierce Utilities Authority	9.90	10.42	11.35	9.83	10.47	11.05	11.61
Harbour Ridge	0.14	0.14	0.15	0.16	0.17	0.18	0.18
Martin County Utilities (St. Lucie portion)	0.27	0.28	0.29	0.30	0.30	0.31	0.31
Meadowood Communities Association	0.08	0.09	0.09	0.09	0.09	0.09	0.09
Port St. Lucie Utility Systems Department, City of	21.86	23.32	25.56	29.80	32.66	35.34	37.88
Reserve Community Development District	0.26	0.27	0.27	0.28	0.28	0.28	0.29
Spanish Lakes Country Club	0.26	0.28	0.28	0.28	0.28	0.28	0.28
Spanish Lakes Fairway	0.31	0.32	0.32	0.32	0.31	0.31	0.31
St. Lucie County Utilities	1.55	1.67	2.04	3.61	5.12	5.52	5.90
St. Lucie West Services District	2.44	2.44	2.44	2.44	2.44	2.44	2.44
<b>St. Lucie County Total</b>	<b>37.07</b>	<b>39.23</b>	<b>42.79</b>	<b>47.11</b>	<b>52.12</b>	<b>55.80</b>	<b>59.29</b>
<b>UEC Planning Area</b>							
<b>UEC Planning Area Total</b>	<b>63.04</b>	<b>65.53</b>	<b>70.67</b>	<b>76.28</b>	<b>82.36</b>	<b>86.84</b>	<b>91.05</b>

mgd = million gallons per day; PS = Public Supply; UEC = Upper East Coast.

\* No PS utilities are located in the portion of Okeechobee County within the UEC Planning Area.



## DOMESTIC SELF-SUPPLY

The DSS category includes potable water used by households that are served by small utilities with current allocations less than 0.10 mgd or that are self-supplied by private wells. Permanent resident populations within DSS areas were developed simultaneously with the PS population estimates and projections, as described earlier. All permanent residents outside of PS utility service area boundaries were considered DSS population. To determine the current and future DSS demands, the average PCUR of PS utilities in each county, weighted by the population (**Table A-2**), was multiplied by the DSS permanent resident population in each county. DSS county PCURs remain constant through 2045. For DSS demands, the raw-to-finished water ratio is assumed to be 1.00. Therefore, no distinction is made between gross (raw) and net (finished) water demands.

**Tables A-8 and A-9** contain the UEC Planning Area's DSS demand estimates and projections under average rainfall and 1-in-10 year drought conditions, respectively. The drought demand factor used for PS was used to calculate 1-in-10 year drought demands for DSS. The average DSS demand in 2019 was 5.76 mgd for 44,695 permanent residents (**Table A-1**) and is expected to decrease to 5.61 mgd in 2045 due to expansion of PS utility service areas to serve current DSS areas.

Table A-8. DSS gross (raw) water demands under average rainfall conditions in the UEC Planning Area.

County DSS	Demand – Average Rainfall Conditions (mgd)						
	2019	2020	2025	2030	2035	2040	2045
Martin	1.11	1.12	1.20	1.27	1.34	1.39	1.45
St. Lucie	4.60	4.79	4.97	5.15	3.96	4.03	4.10
Okeechobee*	0.05	0.05	0.06	0.06	0.06	0.06	0.06
<b>UEC Planning Area Total</b>	<b>5.76</b>	<b>5.96</b>	<b>6.23</b>	<b>6.48</b>	<b>5.36</b>	<b>5.48</b>	<b>5.61</b>

DSS = Domestic Self-Supply; mgd = million gallons per day; UEC = Upper East Coast.

\* Values listed are only for the area within the UEC Planning Area boundary.

Table A-9. DSS gross (raw) water demands under 1-in-10 year drought conditions in the UEC Planning Area.

County DSS	Demand – 1-in-10 Year Drought Conditions (mgd)						
	2019	2020	2025	2030	2035	2040	2045
Martin	1.29	1.31	1.40	1.49	1.56	1.63	1.69
St. Lucie	5.01	5.22	5.10	5.61	4.31	4.40	4.47
Okeechobee*	0.06	0.06	0.07	0.07	0.07	0.07	0.07
<b>UEC Planning Area Total</b>	<b>6.36</b>	<b>6.59</b>	<b>6.57</b>	<b>7.17</b>	<b>5.94</b>	<b>6.10</b>	<b>6.23</b>

DSS = Domestic Self-Supply; mgd = million gallons per day; UEC = Upper East Coast.

\* Values listed are only for the area within the UEC Planning Area boundary.

## AGRICULTURE

Water demands reported under AG include water used for agricultural production, such as farm irrigation, operation of greenhouses and nurseries, and raising livestock. Water used in the processing of agricultural commodities is accounted for under the CII category.

The 2016 UEC Plan Update relied on various sources to develop agricultural acreage estimates and projections, including agricultural water use permits, parcel-level land use maps, and results from the United States Census of Agriculture. Irrigated acres were translated to water volume estimates (in mgd) using the Agricultural Field-Scale Irrigation Requirements Simulation (AFSIRS) model (Smajstrla 1990).

Florida State legislation passed in 2013 prescribed a new approach for water management districts to consider when developing agricultural water demands for regional water supply plans. Section 570.93, F.S., directs the Florida Department of Agriculture and Consumer Services (FDACS) to develop annual statewide agricultural acreage and water demand projections based on the same 20-year planning horizon used in water supply planning. Under Section 373.709(2)(a), F.S., water management districts are required to consider FDACS projections, and any adjustments or deviations from the projections published by FDACS, "...must be fully described, and the original data must be presented along with the adjusted data."

### AG Projection Methodology

#### *FSAID VII Acreage and Demands Data*

FDACS publishes 20-year agricultural acreage and associated water demand projections in annual Florida Statewide Agricultural Irrigation Demand (FSAID) reports. The seventh annual report (referred to as FSAID VII) was published in 2020 (FDACS 2020). The FSAID VII acres (**Tables A-10**) were used for this 2021 UEC Plan Update to calculate AG demands. For the purposes of this 2021 UEC Plan Update, the 2018 acres in FSAID VII were considered representative of 2019 conditions. The FSAID VII demands, as calculated by FDACS (**Table A-11**), were not used in this plan update, and the deviation from using these projections is described below.

Table A-10. Irrigated agricultural acres in the UEC Planning Area (From: FDACS 2020).

Crop	2018*	2020	2025	2030	2035	2040	2045
Citrus	32,478	32,137	29,377	27,464	24,919	22,351	20,109
Sugarcane	24,081	24,081	23,774	22,673	21,494	20,500	20,359
Fresh Market Vegetables	20,586	19,162	17,758	17,403	17,304	17,167	16,163
Hay/Pasture	20,493	20,475	20,131	19,069	18,413	17,111	15,486
Greenhouse/Nursery	5,394	5,068	4,874	4,649	4,310	4,206	3,753
Sod	2,900	2,448	2,364	2,181	2,057	1,856	1,856
Potatoes	1,101	1,101	1,101	1,101	1,080	1,080	1,080
Fruit (Non-Citrus)	350	350	350	198	198	198	198
<b>Total</b>	<b>107,383</b>	<b>104,822</b>	<b>99,729</b>	<b>94,738</b>	<b>89,775</b>	<b>84,469</b>	<b>79,004</b>

FDACS = Florida Department of Agriculture and Consumer Services; UEC = Upper East Coast.

\* 2018 acres are considered representative of 2019 conditions for the purposes of this plan update.

Table A-11. Irrigated agricultural demands (in mgd) in the UEC Planning Area  
(From: FDACS 2020).

Crop	2018*	2020	2025	2030	2035	2040	2045
Citrus	28.83	28.33	25.96	24.39	22.28	20.10	18.14
Sugarcane	29.74	29.80	29.56	28.31	26.95	25.83	25.77
Fresh Market Vegetables	28.20	26.33	24.48	24.04	23.94	23.80	22.44
Hay/Pasture	14.34	14.40	14.03	12.98	12.46	11.41	10.20
Greenhouse/Nursery	13.70	12.94	12.54	11.94	11.14	10.87	9.82
Sod	2.63	2.26	2.17	2.00	1.91	1.75	1.74
Potatoes	1.29	1.29	1.30	1.30	1.26	1.26	1.27
Fruit (Non-Citrus)	0.63	0.63	0.64	0.35	0.35	0.35	0.35
<b>Total</b>	<b>119.36</b>	<b>115.98</b>	<b>110.68</b>	<b>105.31</b>	<b>100.29</b>	<b>95.37</b>	<b>89.73</b>

FDACS = Florida Department of Agriculture and Consumer Services; mgd = million gallons per day; UEC = Upper East Coast.

\* 2018 acres are considered representative of 2019 conditions for the purposes of this plan update.

Prior to the publication of the FSAID VII report, SFWMD staff identified FSAID VI parcels for removal from irrigated acreage based on visual inspection of historical aerial imagery, recent regulatory water use data, and the location of recently implemented surface water management or environmental restoration projects. All edits were made in coordination with FDACS and integrated into the FSAID VII report. The FSAID VII acreage estimates and projections are used in this 2021 UEC Plan Update; however, water demands were calculated separately by SFWMD staff using the AFSIRS model. AG demands published in the 2016 UEC Plan Update and in other regional water supply plans were developed using the AFSIRS model. Alternative demands developed using FSAID VII acreages and the AFSIRS model were evaluated with the demands published in the FSAID VII report, as described below.

### *Comparison of FSAID VII and AFSIRS Demands*

The estimated 2019 and projected 2045 demands from the AFSIRS model were compared to the demands in the FSAID VII report. Both sets of demands are based on the same irrigated acreages, established in the FSAID VII report. Despite being based on the same unadjusted irrigated footprint, the demand projections differed by 53.39 mgd in 2019 and 39.29 mgd in 2045 (**Figure A-4**).

The SFWMD uses AFSIRS to estimate demands simulated in regional groundwater models, and the demands using AFSIRS resemble those obtained through the SFWMD's permitting methods. After reviewing water demands from FSAID VII and AFSIRS, the SFWMD chose to use water demand estimates and projections from AFSIRS based on irrigated acres published in the FSAID VII report. The decision to deviate from water demands published in the FSAID VII report was made to maintain a consistent approach with previous planning and regional modeling efforts.

Data for soil type, rainfall, reference evapotranspiration, and irrigation method are among the key inputs for AFSIRS to calculate current and future demands. Soil input data were obtained from the Natural Resources Conservation Service's SSURGO database (<https://websoilsurvey.nrcs.usda.gov>). Daily rainfall data were obtained from the SFWMD's Next Generation Radar (NEXRAD) rainfall data set. Reference evapotranspiration data were obtained from the United States Geological Survey's Statewide Evapotranspiration Information and Data database (<http://fl.water.usgs.gov/et/>). The irrigation method for each irrigated parcel used with AFSIRS is part of the FSAID VII data set. Most citrus groves are irrigated via micro-spray. Flood irrigation is the most common method for all other crop categories.

Water demands associated with livestock and aquaculture production complete the demands for the AG category. Demands for these activities were taken directly from the FSAID VII report (FDACS 2020) without adjustment.

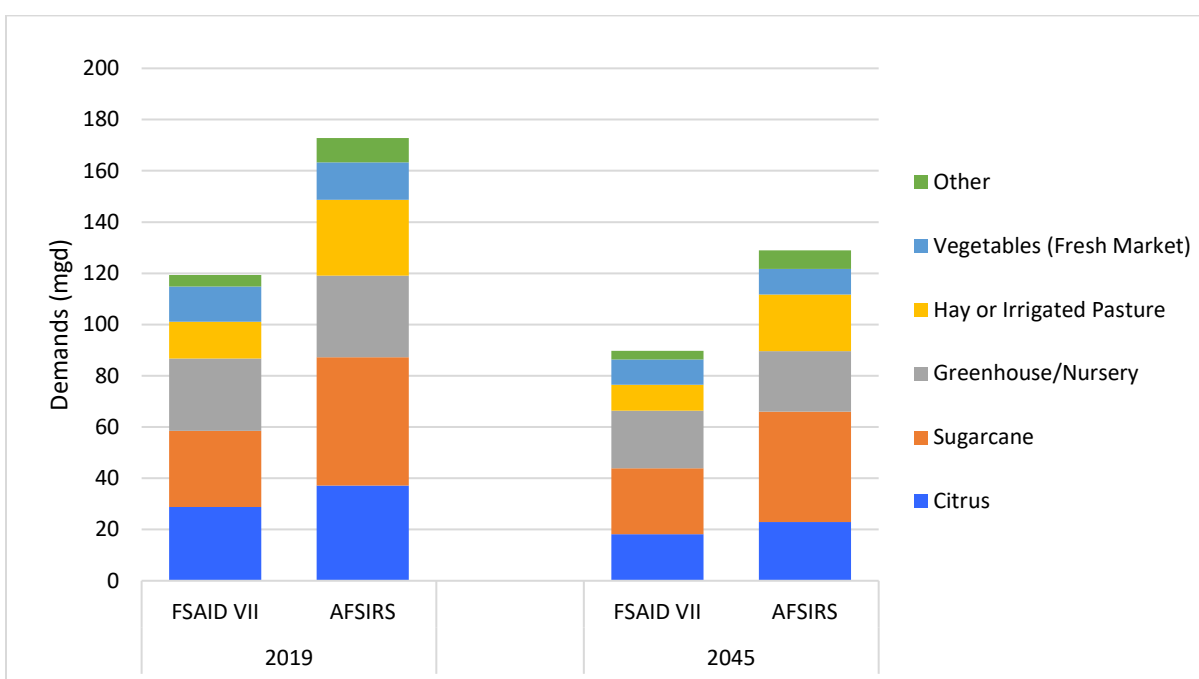


Figure A-4. Comparison of average water demands from the seventh Florida Statewide Agricultural Irrigation Demand (FSAID VII) report and the Agricultural Field-Scale Irrigation Requirements Simulation (AFSIRS). Note: The “Other” category includes commodities combined from **Table A-11** that are not graphed individually.

## AG Projection Results

AG acres and water demands depend on the choices of individual agricultural producers from year to year. Those choices are affected by several factors, including weather, markets, disease, proprietary information, and urban development pressure. AG projections can be affected by population changes as well as future land use conversions.

The gross irrigation requirements for various crop types under the AG category are provided in **Tables A-12 to A-19**. **Tables A-20** and **A-21** summarize the gross water requirements for livestock and aquaculture.

## Citrus

**Table A-12** presents the citrus acreage and gross irrigation requirement (water withdrawal demand) projections under average rainfall and 1-in-10 year drought conditions.

Table A-12. Gross irrigation demands (in mgd) for citrus acreage in the UEC Planning Area.

	2019	2020	2025	2030	2035	2040	2045
Martin County							
Irrigated acres	3,260	3,260	3,260	3,175	3,175	3,175	2,563
Average rainfall	3.61	3.61	3.61	3.54	3.54	3.54	2.72
1-in-10 year drought	4.59	4.59	4.59	4.49	4.49	4.49	3.48
St. Lucie County							
Irrigated acres	27,033	26,692	23,932	22,104	19,559	16,992	15,361
Average rainfall	31.22	30.78	27.65	25.53	22.10	19.34	17.61
1-in-10 year drought	39.39	38.84	34.89	32.22	27.89	24.41	22.47
Okeechobee County*							
Irrigated acres	2,185	2,185	2,185	2,185	2,185	2,185	2,185
Average rainfall	2.37	2.37	2.37	2.37	2.37	2.37	2.37
1-in-10 year drought	2.94	2.94	2.94	2.94	2.94	2.94	2.94
UEC Planning Area							
Irrigated acres	32,478	32,137	29,377	27,464	24,919	22,351	20,109
Average rainfall	37.20	36.76	33.63	31.44	28.01	25.25	22.70
1-in-10 year drought	46.92	46.37	42.42	39.65	35.32	31.84	28.89

mgd = million gallons per day; UEC = Upper East Coast.

\* Values listed are only for the area within the UEC Planning Area boundary.



Citrus Grove



## Sugarcane

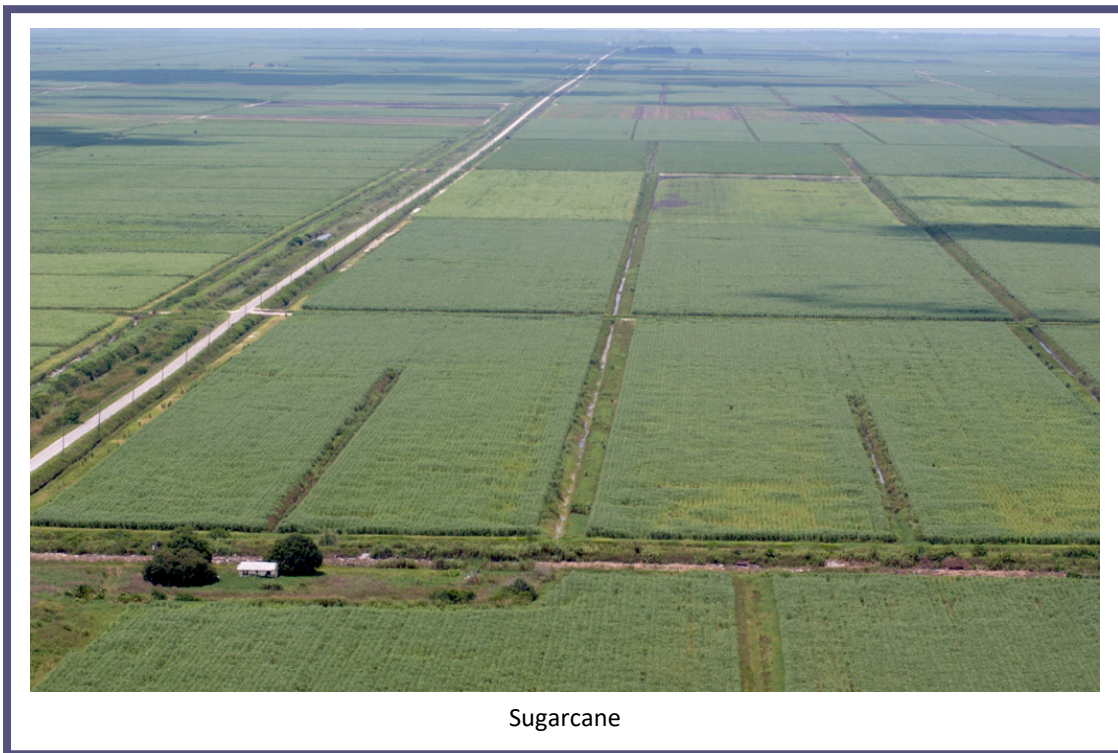
**Table A-13** presents the sugarcane acreage and gross irrigation requirement (water withdrawal demand) projections under average rainfall and 1-in-10 year drought conditions.

Table A-13. Gross irrigation demands (in mgd) for sugarcane acreage in the UEC Planning Area.

	2019	2020	2025	2030	2035	2040	2045
Martin County							
Irrigated acres	24,081	24,081	23,774	22,673	21,494	20,500	20,359
Average rainfall	50.03	50.03	49.41	47.19	45.09	42.97	42.66
1-in-10 year drought	58.11	58.11	57.38	54.80	52.78	50.30	49.94
St. Lucie County							
Irrigated acres	0	0	0	0	0	0	0
Average rainfall	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1-in-10 year drought	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Okeechobee County*							
Irrigated acres	0	0	0	0	0	0	0
Average rainfall	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1-in-10 year drought	0.00	0.00	0.00	0.00	0.00	0.00	0.00
UEC Planning Area							
Irrigated acres	24,081	24,081	23,774	22,673	21,494	20,500	20,359
Average rainfall	50.03	50.03	49.41	47.19	45.09	42.97	42.66
1-in-10 year drought	58.11	58.11	57.38	54.80	52.78	50.30	49.94

mgd = million gallons per day; UEC = Upper East Coast.

\* Values listed are only for the area within the UEC Planning Area boundary.



## Fresh Market Vegetables

**Table A-14** presents the fresh market vegetable acreage and gross irrigation requirement (water withdrawal demand) projections under average rainfall and 1-in-10 year drought conditions, assuming two plantings per year, lasting 4 months each.

Table A-14. Gross irrigation demands (in mgd) for fresh market vegetable acreage in the UEC Planning Area.

	2019	2020	2025	2030	2035	2040	2045
Martin County							
Irrigated acres	9,992	9,435	8,245	8,208	8,208	8,170	7,636
Average rainfall	19.84	18.77	16.76	16.66	16.66	16.56	15.46
1-in-10 year drought	22.76	21.54	19.23	19.12	19.12	19.00	17.67
St. Lucie County							
Irrigated acres	10,524	9,656	9,444	9,124	9,025	8,927	8,457
Average rainfall	11.84	10.51	10.17	9.41	9.20	9.01	7.99
1-in-10 year drought	15.24	13.52	13.09	12.11	11.84	11.59	10.61
Okeechobee County*							
Irrigated acres	70	70	70	70	70	70	70
Average rainfall	0.18	0.18	0.18	0.18	0.18	0.18	0.18
1-in-10 year drought	0.21	0.21	0.21	0.21	0.21	0.21	0.21
UEC Planning Area							
Irrigated acres	20,586	19,162	17,758	17,403	17,304	17,167	16,163
Average rainfall	31.86	29.46	27.11	26.25	26.04	25.75	23.63
1-in-10 year drought	38.21	35.27	32.53	31.44	31.17	30.80	28.49

mgd = million gallons per day; UEC = Upper East Coast.

\* Values listed are only for the area within the UEC Planning Area boundary.



Tomato Harvest

## Hay/Irrigated Pasture

**Table A-15** presents the hay/pasture acreage and gross irrigation requirement (water withdrawal demand) projections under average rainfall and 1-in-10 year drought conditions. The FSAID acres for this category are labeled and modeled as hay. The associated demands calculated with AFSIRS are assumed to capture irrigation for hay and any irrigation used for improved pasture.

Table A-15. Gross irrigation demands (in mgd) for hay/pasture acreage in the UEC Planning Area.

	2019	2020	2025	2030	2035	2040	2045
<b>Martin County</b>							
Irrigated acres	9,167	9,167	9,167	8,883	8,752	8,060	7,815
Average rainfall	13.78	13.78	13.78	13.36	13.15	12.11	11.64
1-in-10 year drought	15.86	15.86	15.86	15.37	15.13	13.94	13.37
<b>St. Lucie County</b>							
Irrigated acres	10,123	10,104	9,760	8,983	8,458	7,848	6,468
Average rainfall	14.84	14.83	14.32	13.17	12.42	11.42	9.47
1-in-10 year drought	17.33	17.31	16.72	15.39	14.51	13.33	11.02
<b>Okeechobee County*</b>							
Irrigated acres	1,203	1,203	1,203	1,203	1,203	1,203	1,203
Average rainfall	0.92	0.92	0.92	0.92	0.92	0.92	0.92
1-in-10 year drought	1.14	1.14	1.14	1.14	1.14	1.14	1.14
<b>UEC Planning Area</b>							
Irrigated acres	20,493	20,475	20,131	19,069	18,413	17,111	15,486
Average rainfall	29.54	29.53	29.02	27.45	26.49	24.45	22.03
1-in-10 year drought	34.33	34.31	33.72	31.90	30.78	28.41	25.53

mgd = million gallons per day; UEC = Upper East Coast.

\* Values listed are only for the area within the UEC Planning Area boundary.



## Greenhouse/Nursery

**Table A-16** presents the greenhouse/nursery acreage and gross irrigation requirement (water withdrawal demand) projections under average rainfall and 1-in-10 year drought conditions.

Table A-16. Gross irrigation demands (in mgd) for greenhouse/nursery acreage in the UEC Planning Area.

	2019	2020	2025	2030	2035	2040	2045
<b>Martin County</b>							
Irrigated acres	3,310	3,209	3,136	3,044	2,844	2,792	2,373
Average rainfall	7.76	7.23	6.84	6.57	6.29	6.21	5.55
1-in-10 year drought	8.64	8.05	7.62	7.32	7.01	6.92	6.21
<b>St. Lucie County</b>							
Irrigated acres	2,009	1,784	1,664	1,530	1,392	1,340	1,305
Average rainfall	6.52	5.67	5.35	4.95	4.30	4.09	3.94
1-in-10 year drought	7.10	6.18	5.82	5.39	4.68	4.45	4.31
<b>Okeechobee County*</b>							
Irrigated acres	74	74	74	74	74	74	74
Average rainfall	0.46	0.46	0.46	0.46	0.46	0.46	0.46
1-in-10 year drought	0.51	0.51	0.51	0.51	0.51	0.51	0.51
<b>UEC Planning Area</b>							
Irrigated acres	5,394	5,068	4,874	4,649	4,310	4,206	3,753
Average rainfall	14.74	13.36	12.65	11.98	11.05	10.76	9.95
1-in-10 year drought	16.25	14.74	13.95	13.22	12.20	11.88	11.03

mgd = million gallons per day; UEC = Upper East Coast.

\* Values listed are only for the area within the UEC Planning Area boundary.

## Sod

**Table A-17** presents the sod acreage and gross irrigation requirement (water withdrawal demand) projections under average rainfall and 1-in-10 year drought conditions.

Table A-17. Gross irrigation demands (in mgd) for sod acreage in the UEC Planning Area.

	2019	2020	2025	2030	2035	2040	2045
Martin County							
Irrigated acres	1,858	1,406	1,406	1,406	1,282	1,216	1,216
Average rainfall	3.12	2.61	2.61	2.61	2.38	2.22	2.22
1-in-10 year drought	3.76	3.14	3.14	3.14	3.03	2.82	2.82
St. Lucie County							
Irrigated acres	865	865	781	728	728	594	594
Average rainfall	1.95	1.95	1.74	1.67	1.67	1.40	1.40
1-in-10 year drought	2.29	2.29	2.05	1.97	1.97	1.61	1.61
Okeechobee County*							
Irrigated acres	177	177	177	47	47	47	47
Average rainfall	0.49	0.49	0.49	0.09	0.09	0.09	0.09
1-in-10 year drought	0.58	0.58	0.58	0.10	0.10	0.10	0.10
UEC Planning Area							
Irrigated acres	2,900	2,448	2,364	2,181	2,057	1,856	1,856
Average rainfall	5.56	5.05	4.84	4.37	4.14	3.71	3.71
1-in-10 year drought	6.63	6.01	5.77	5.21	5.10	4.53	4.53

mgd = million gallons per day; UEC = Upper East Coast.

\* Values listed are only for the area within the UEC Planning Area boundary.



## Potatoes

**Table A-18** presents the potato acreage and gross irrigation requirement (water withdrawal demand) projections under average rainfall and 1-in-10 year drought conditions.

Table A-18. Gross irrigation demands (in mgd) for potato acreage in the UEC Planning Area.

	2019	2020	2025	2030	2035	2040	2045
Martin County							
Irrigated acres	1,101	1,101	1,101	1,101	1,080	1,080	1,080
Average rainfall	3.10	3.10	3.10	3.10	3.04	3.04	3.04
1-in-10 year drought	3.60	3.60	3.60	3.60	3.53	3.53	3.53
St. Lucie County							
Irrigated acres	0	0	0	0	0	0	0
Average rainfall	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1-in-10 year drought	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Okeechobee County*							
Irrigated acres	0	0	0	0	0	0	0
Average rainfall	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1-in-10 year drought	0.00	0.00	0.00	0.00	0.00	0.00	0.00
UEC Planning Area							
Irrigated acres	1,101	1,101	1,101	1,101	1,080	1,080	1,080
Average rainfall	3.10	3.10	3.10	3.10	3.04	3.04	3.04
1-in-10 year drought	3.60	3.60	3.60	3.60	3.53	3.53	3.53

mgd = million gallons per day; UEC = Upper East Coast.

\* Values listed are only for the area within the UEC Planning Area boundary.

## Fruit (Non-Citrus)

**Table A-19** presents the fruit (non-citrus) acreage and gross irrigation requirement (water withdrawal demand) projections under average rainfall and 1-in-10 year drought conditions.

Table A-19. Gross irrigation demands (in mgd) for fruit (non-citrus) acreage in the UEC Planning Area.

	2019	2020	2025	2030	2035	2040	2045
Martin County							
Irrigated acres	10	10	10	10	10	10	10
Average rainfall	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1-in-10 year drought	0.02	0.02	0.02	0.02	0.02	0.02	0.02
St. Lucie County							
Irrigated acres	340	340	340	187	187	187	187
Average rainfall	0.70	0.70	0.70	0.39	0.39	0.39	0.39
1-in-10 year drought	0.80	0.80	0.80	0.45	0.45	0.45	0.45
Okeechobee County*							
Irrigated acres	0	0	0	0	0	0	0
Average rainfall	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1-in-10 year drought	0.00	0.00	0.00	0.00	0.00	0.00	0.00
UEC Planning Area							
Irrigated acres	350	350	350	198	198	198	198
Average rainfall	0.71	0.71	0.71	0.40	0.40	0.40	0.40
1-in-10 year drought	0.82	0.82	0.82	0.47	0.47	0.47	0.47

mgd = million gallons per day; UEC = Upper East Coast.

\* Values listed are only for the area within the UEC Planning Area boundary.

## Livestock

**Table A-20** presents the FSAID VII water demand projections for livestock. Livestock demands published in the FSAID VII report were developed with assumed water requirements per head of livestock. Livestock demands were assumed to be the same under average rainfall and 1-in-10 year drought conditions.

Table A-20. Gross water demands (in mgd) for livestock in the UEC Planning Area.

2019	2020	2025	2030	2035	2040	2045
Martin County						
0.38	0.38	0.38	0.38	0.38	0.38	0.38
St. Lucie County						
0.47	0.47	0.47	0.47	0.47	0.47	0.47
Okeechobee County*						
1.06	1.06	1.06	1.06	1.06	1.06	1.06
UEC Planning Area						
1.91	1.91	1.91	1.91	1.91	1.91	1.91

mgd = million gallons per day; UEC = Upper East Coast.

\* Values listed are only for the area within the UEC Planning Area boundary.

Note: Water demands for livestock were obtained from the seventh Florida Statewide Agricultural Irrigation Demand (FSAID VII) report, not calculated using the Agricultural Field-Scale Irrigation Requirements Simulation (AFSIRS) model.

## Aquaculture

**Table A-21** presents the FSAID VII water demand projections for aquaculture. Aquaculture demands were assumed to be the same under average rainfall and 1-in-10 year drought conditions.

Table A-21. Gross water demands (in mgd) for aquaculture in the UEC Planning Area.

2019	2020	2025	2030	2035	2040	2045
Martin County						
0.04	0.04	0.04	0.04	0.04	0.04	0.04
St. Lucie County						
0.02	0.02	0.02	0.02	0.02	0.02	0.02
Okeechobee County*						
0.01	0.01	0.01	0.01	0.01	0.01	0.01
UEC Planning Area						
<b>0.07</b>	<b>0.07</b>	<b>0.07</b>	<b>0.07</b>	<b>0.07</b>	<b>0.07</b>	<b>0.07</b>

mgd = million gallons per day; UEC = Upper East Coast.

\* Values listed are only for the area within the UEC Planning Area boundary.

Note: Water demands for aquaculture were obtained from the seventh Florida Statewide Agricultural Irrigation Demand (FSAID VII) report, not calculated using the Agricultural Field-Scale Irrigation Requirements Simulation (AFSIRS) model.

## Summary of Agricultural Results

Irrigated agricultural acres are projected to decrease 26% over the planning horizon, from 107,383 to 79,004 acres (**Tables A-22** and **A-23**). All counties are projected to experience reductions in demands, though Martin County will continue to have the majority of irrigated acres and AG demands through 2045 (**Table A-23**). AG demands across the UEC Planning Area are projected to decrease approximately 26%, from 174.72 mgd in 2019 to 130.10 mgd 2045 under average rainfall conditions. Sugarcane accounts for the largest share of AG demands: 50.03 mgd in 2019 and 42.66 mgd in 2045. Although citrus has the greatest number of irrigated acres in 2019, the crop is projected to have the greatest decrease in irrigated acreage and associated demands over the planning horizon. By 2045, citrus will be reduced to 20,109 acres and its demands will be 22.70 mgd.

Table A-22. Summary of gross water demands (in mgd) for all agricultural acreage, livestock, and aquaculture in the UEC Planning Area, by commodity.

	2019	2020	2025	2030	2035	2040	2045
Citrus							
Irrigated acres	32,478	32,137	29,377	27,464	24,919	22,351	20,109
Average rainfall	37.20	36.76	33.63	31.44	28.01	25.25	22.70
1-in-10 year drought	46.92	46.37	42.42	39.65	35.32	31.84	28.89
Sugarcane							
Irrigated acres	24,081	24,081	23,774	22,673	21,494	20,500	20,359
Average rainfall	50.03	50.03	49.41	47.19	45.09	42.97	42.66
1-in-10 year drought	58.11	58.11	57.38	54.80	52.78	50.30	49.94
Fresh Market Vegetables							
Irrigated acres	20,586	19,162	17,758	17,403	17,304	17,167	16,163
Average rainfall	31.86	29.46	27.11	26.25	26.04	25.75	23.63
1-in-10 year drought	38.21	35.27	32.53	31.44	31.17	30.80	28.49
Hay/Irrigated Pasture							
Irrigated acres	20,493	20,475	20,131	19,069	18,413	17,111	15,486
Average rainfall	29.54	29.53	29.02	27.45	26.49	24.45	22.03
1-in-10 year drought	34.33	34.31	33.72	31.90	30.78	28.41	25.53
Greenhouse/Nursery							
Irrigated acres	5,394	5,068	4,874	4,649	4,310	4,206	3,753
Average rainfall	14.74	13.36	12.65	11.98	11.05	10.76	9.95
1-in-10 year drought	16.25	14.74	13.95	13.22	12.20	11.88	11.03
Sod							
Irrigated acres	2,900	2,448	2,364	2,181	2,057	1,856	1,856
Average rainfall	5.56	5.05	4.84	4.37	4.14	3.71	3.71
1-in-10 year drought	6.63	6.01	5.77	5.21	5.10	4.53	4.53
Potatoes							
Irrigated acres	1,101	1,101	1,101	1,101	1,080	1,080	1,080
Average rainfall	3.10	3.10	3.10	3.10	3.04	3.04	3.04
1-in-10 year drought	3.60	3.60	3.60	3.60	3.53	3.53	3.53
Fruit (Non-Citrus)							
Irrigated acres	350	350	350	198	198	198	198
Average rainfall	0.71	0.71	0.71	0.40	0.40	0.40	0.40
1-in-10 year drought	0.82	0.82	0.82	0.47	0.47	0.47	0.47
Livestock							
Irrigated acres	--	--	--	--	--	--	--
Average rainfall	1.91	1.91	1.91	1.91	1.91	1.91	1.91
1-in-10 year drought	1.91	1.91	1.91	1.91	1.91	1.91	1.91
Aquaculture							
Irrigated acres	--	--	--	--	--	--	--
Average rainfall	0.07	0.07	0.07	0.07	0.07	0.07	0.07
1-in-10 year drought	0.07	0.07	0.07	0.07	0.07	0.07	0.07
UEC Planning Area							
Irrigated acres	107,383	104,820	99,729	94,737	89,774	84,470	79,004
Average rainfall	174.72	169.98	162.45	154.16	146.24	138.31	130.10
1-in-10 year drought	206.85	201.21	192.17	182.27	171.33	163.74	154.39

mgd = million gallons per day; UEC = Upper East Coast.

Table A-23. Summary of gross water demands (in mgd) for all agricultural acreage, livestock, and aquaculture in the UEC Planning Area, by county.

	2019	2020	2025	2030	2035	2040	2045
Martin County							
Irrigated acres	52,780	51,670	50,099	48,500	46,845	45,003	43,054
Average rainfall	101.67	99.56	96.54	93.46	90.58	87.08	83.72
1-in-10 year drought	117.76	115.33	111.86	108.28	105.53	101.44	97.46
St. Lucie County							
Irrigated acres	50,894	49,441	45,921	42,658	39,350	35,888	32,371
Average rainfall	67.56	64.93	60.42	55.61	50.57	46.14	41.29
1-in-10 year drought	82.64	79.43	73.86	68.02	61.83	56.33	50.96
Okeechobee County*							
Irrigated acres	3,709	3,709	3,709	3,579	3,579	3,579	3,579
Average rainfall	5.49	5.49	5.49	5.09	5.09	5.09	5.09
1-in-10 year drought	6.45	6.45	6.45	5.97	5.97	5.97	5.97
UEC Planning Area							
Irrigated acres	107,383	104,820	99,729	94,737	89,774	84,470	79,004
Average rainfall	174.72	169.98	162.45	154.16	146.24	138.31	130.10
1-in-10 year drought	206.85	201.21	192.17	182.27	173.33	163.74	154.39

mgd = million gallons per day; UEC = Upper East Coast.

\* Values listed are only for the area within the UEC Planning Area boundary.

## COMMERCIAL/INDUSTRIAL/INSTITUTIONAL

The CII water use category includes water demands associated with industrial and commercial operations for processing, manufacturing, and technical needs such as concrete, citrus processing, and mining operations. Industrial or commercial users that receive water from PS utilities or use recirculated water in closed-loop geothermal heating and cooling systems are not included in CII demand calculations. Although a large portion of CII water used by the mining industry for activities such as rock washing is returned to the source, all mining water use is included in demand estimates and projections. All CII demand estimates and projections are presumed to be the same for average rainfall and 1-in-10 year drought conditions.

### CII Projection Methodology

CII estimates and projections are based on water use data from the SFWMD's regulatory database. If an active CII permit holder did not report water use, demand estimates were calculated as described in the *2019 Estimated Water Use Report* (SFWMD 2020).

Increases in the CII category are expected to be driven by growth of the regional economy and permanent resident population. Therefore, CII projections are anticipated to increase steadily as county permanent resident populations increase. Previous analyses of the relationship between CII demands and population growth support this approach.

## CII Projection Results

**Table A-24** summarizes the current and projected CII demands in the UEC Planning Area in 5-year increments through 2045. Martin County maintains a dominant share of the region's CII demands over the planning horizon.

Table A-24. CII demand projections in the UEC Planning Area.

County	Demand (mgd)						
	2019	2020	2025	2030	2035	2040	2045
Martin	3.46	3.50	3.70	3.86	3.99	4.11	4.21
St. Lucie	0.92	0.97	1.08	1.19	1.29	1.38	1.47
Okeechobee*	0.05	0.05	0.05	0.05	0.05	0.06	0.06
<b>UEC Planning Area Total</b>	<b>4.43</b>	<b>4.52</b>	<b>4.83</b>	<b>5.10</b>	<b>5.33</b>	<b>5.55</b>	<b>5.74</b>

CII = Industrial/Commercial/Institutional; mgd = million gallons per day; UEC = Upper East Coast.

\* Values listed are only for the area within the UEC Planning Area boundary.

## LANDSCAPE/RECREATIONAL

L/R water demands include irrigation for golf courses and other landscaped areas such as parks, sports fields, and common areas of residential developments. Demands were calculated using a combination of water use reported to the SFWMD as part of its regulatory compliance program and reclaimed water use reported by wastewater utilities to the FDEP. Therefore, demands under the L/R category include areas that are permitted by the SFWMD and areas that are not permitted but rely on reclaimed sources.

There are two types of irrigated landscaped areas outside those permitted by the SFWMD that are excluded from the L/R demands. The first type includes landscaped areas irrigated with potable water provided PS utilities. These demands are accounted for in PS estimates and projections. The second type is irrigated landscaped areas served by individual residential wells permitted by rule (Rule 40E-2.061, Florida Administrative Code) rather than with an individual water use permit. Demands associated with small residential wells are not quantified as part of this 2021 UEC Plan Update due to a lack of water use and acreage data.

## L/R Projection Methodology

L/R 2019 water use data reported to the SFWMD and estimated data for those not required to report are available in the *2019 Estimated Water Use Report* (SFWMD 2020). The FDEP's (2019) Reuse Inventory Database provides reclaimed water use data for 2019. The 2019 use data from both sources were considered representative of demands under average rainfall conditions.



Both the SFWMD's reported water use and the FDEP's Reuse Inventory Database allow for the disaggregation of L/R demands into the landscape and golf irrigation subcategories. Irrigated landscape and golf course acres were calculated using the permitted L/R acreage from the SFWMD's regulatory database (**Table A-25**). The distinction is made between L/R demands for golf courses and other landscaped areas because they are projected to grow at different rates. Golf course acreage and associated water demands are projected to remain steady through 2045. Landscape irrigation was assumed to increase at the same rate as the counties' permanent resident populations. This approach is used in other planning areas within the SFWMD and by other water management districts in Florida.

Table A-25. L/R permitted acres in the UEC Planning Area.

Land Use	2019	2020	2025	2030	2035	2040	2045
Martin County							
Landscape	3,716	3,763	3,971	4,145	4,285	4,410	4,522
Golf	3,187	3,187	3,187	3,187	3,187	3,187	3,187
<b>Martin County Total</b>	<b>6,903</b>	<b>6,950</b>	<b>7,158</b>	<b>7,332</b>	<b>7,472</b>	<b>7,597</b>	<b>7,709</b>
St. Lucie County							
Landscape	6,115	6,474	7,207	7,940	8,581	9,178	9,741
Golf	2,219	2,219	2,219	2,219	2,219	2,219	2,219
<b>St. Lucie County Total</b>	<b>8,334</b>	<b>8,693</b>	<b>9,426</b>	<b>10,159</b>	<b>10,800</b>	<b>11,397</b>	<b>11,960</b>
Okeechobee County*							
Landscape	50	50	52	53	54	55	56
Golf	--	--	--	--	--	--	--
<b>Okeechobee County Total</b>	<b>50</b>	<b>50</b>	<b>52</b>	<b>53</b>	<b>54</b>	<b>55</b>	<b>56</b>
UEC Planning Area							
Landscape	9,881	10,287	11,230	12,138	12,920	13,642	14,319
Golf	5,406	5,406	5,406	5,406	5,406	5,406	5,406
<b>UEC Planning Area Total</b>	<b>15,287</b>	<b>15,693</b>	<b>16,636</b>	<b>17,544</b>	<b>18,326</b>	<b>19,048</b>	<b>19,725</b>

L/R = Landscape/Recreational; UEC = Upper East Coast.

\* Values listed are only for the area within the UEC Planning Area boundary.

## L/R Projection Results

L/R gross irrigation demand projections under average rainfall conditions are presented in **Table A-26**. **Table A-27** shows the additional quantity of water provided to meet projected demands during 1-in-10 year drought conditions.

Table A-26. L/R gross irrigation demands under average rainfall conditions in the UEC Planning Area.

Land Use	Demand – Average Rainfall Conditions (mgd)						
	2019	2020	2025	2030	2035	2040	2045
Martin County							
Landscape	8.38	8.49	8.96	9.35	9.67	9.95	10.20
Golf	7.16	7.16	7.16	7.16	7.16	7.16	7.16
<b>Martin County Total</b>	<b>15.54</b>	<b>15.65</b>	<b>16.12</b>	<b>16.51</b>	<b>16.83</b>	<b>17.11</b>	<b>17.36</b>
St. Lucie County							
Landscape	11.43	12.10	13.47	14.84	16.04	17.16	18.21
Golf	5.00	5.00	5.00	5.00	5.00	5.00	5.00
<b>St. Lucie County Total</b>	<b>16.43</b>	<b>17.10</b>	<b>18.47</b>	<b>19.84</b>	<b>21.04</b>	<b>22.16</b>	<b>23.21</b>
Okeechobee County*							
Landscape	0.06	0.06	0.06	0.06	0.06	0.07	0.07
Golf	--	--	--	--	--	--	--
<b>Okeechobee County Total</b>	<b>0.06</b>	<b>0.06</b>	<b>0.06</b>	<b>0.06</b>	<b>0.06</b>	<b>0.07</b>	<b>0.07</b>
UEC Planning Area							
Landscape	19.87	20.65	22.49	24.25	25.77	27.18	28.48
Golf	12.16	12.16	12.16	12.16	12.16	12.16	12.16
<b>UEC Planning Area Total</b>	<b>32.03</b>	<b>32.81</b>	<b>34.65</b>	<b>36.41</b>	<b>37.93</b>	<b>39.34</b>	<b>40.64</b>

L/R = Landscape/Recreational; mgd = million gallons per day; UEC = Upper East Coast.

\* Values listed are only for the area within the UEC Planning Area boundary.

Table A-27. L/R gross irrigation demands under 1-in-10 year drought conditions in the UEC Planning Area.

Land Use	Demand – 1-in-10 Year Drought Conditions (mgd)						
	2019	2020	2025	2030	2035	2040	2045
Martin County							
Landscape	10.56	10.69	11.29	11.78	12.18	12.53	12.85
Golf	9.31	9.31	9.31	9.31	9.31	9.31	9.31
<b>Martin County Total</b>	<b>19.87</b>	<b>20.00</b>	<b>20.60</b>	<b>21.09</b>	<b>21.49</b>	<b>21.84</b>	<b>22.16</b>
St. Lucie County							
Landscape	14.40	15.25	16.98	18.70	20.21	21.62	22.95
Golf	6.50	6.50	6.50	6.50	6.50	6.50	6.50
<b>St. Lucie County Total</b>	<b>20.90</b>	<b>21.75</b>	<b>23.48</b>	<b>25.20</b>	<b>26.71</b>	<b>28.12</b>	<b>29.45</b>
Okeechobee County*							
Landscape	0.07	0.08	0.08	0.08	0.08	0.08	0.08
Golf	--	--	--	--	--	--	--
<b>Okeechobee County Total</b>	<b>0.07</b>	<b>0.08</b>	<b>0.08</b>	<b>0.08</b>	<b>0.08</b>	<b>0.08</b>	<b>0.08</b>
UEC Planning Area							
Landscape	25.03	26.02	28.35	30.56	32.47	34.23	35.88
Golf	15.81	15.81	15.81	15.81	15.81	15.81	15.81
<b>UEC Planning Area Total</b>	<b>40.84</b>	<b>41.83</b>	<b>44.16</b>	<b>46.37</b>	<b>48.28</b>	<b>50.04</b>	<b>51.69</b>

L/R = Landscape/Recreational; mgd = million gallons per day; UEC = Upper East Coast.

\* Values listed are only for the area within the UEC Planning Area boundary.

## POWER GENERATION

Demands under the PG category include use of groundwater, fresh surface water, or reclaimed water by thermoelectric power generation facilities. There are two power generation plants currently operating in the UEC Planning Area that are addressed in this plan update: Florida Power & Light (FPL) Martin Plant near Indiantown (Martin County) and the Treasure Coast Energy Center in Fort Pierce (St. Lucie County). The FPL Martin Plant draws surface water from the C-44 Canal and an on-site pond for cooling purposes. The Treasure Coast Energy Center withdraws groundwater from the Floridan aquifer system. No PG facilities used reclaimed water in 2019.

PG demands for 2019 and 2020 were based on reported pumpage and determined through coordination with power generation facility staff. Future demands beyond 2020 were projected by FPL based on past and current pumpage. No new power generation facilities are planned for construction or operation through 2045, and PG demands are projected to remain relatively stable (**Table A-28**). All PG demand estimates and projections are presumed to be the same for average rainfall and 1-in-10 year drought conditions.

Table A-28. Average gross water demand for PG in the UEC Planning Area between 2019 and 2045.

County	Demand (mgd)						
	2019	2020	2025	2030	2035	2040	2045
Martin	16.46	14.13	14.13	14.13	14.13	14.13	14.13
St. Lucie	1.45	3.34	3.34	3.34	3.34	3.34	3.34
<b>UEC Planning Area Total</b>	<b>17.91</b>	<b>17.47</b>	<b>17.47</b>	<b>17.47</b>	<b>17.47</b>	<b>17.47</b>	<b>17.47</b>

mgd = million gallons per day; PG = Power Generation; UEC = Upper East Coast.

## SUMMARY OF DEMAND PROJECTIONS

Total demands for the UEC Planning Area are anticipated to decrease by 9.93 mgd (3%). AG demands are projected to see the largest decrease from 2019 to 2045, falling from 174.72 mgd to 130.10 mgd (-26%). PS is expected to increase 45% due to the projected population growth of 219,643 permanent residents, reaching 81.62 mgd by 2045. Also driven by population growth, L/R demands are projected to reach 40.64 mgd by 2045. The demands for all remaining categories (DSS, CII, and PG) are small and projected to be 28.82 mgd, combined, in 2045. Gross water demands in 5-year increments, by county and water use category, are provided in **Table A-29** for average rainfall conditions and **Table A-30** for 1-in-10 year drought conditions.

Table A-29. Summary of gross water demands under average rainfall conditions in the UEC Planning Area, by water use category.

Water Use Category	Demand – Average Rainfall Conditions (mgd)						
	2019	2020	2025	2030	2035	2040	2045
<b>Martin County</b>							
Public Supply	22.26	22.54	23.89	25.00	25.92	26.61	27.23
Domestic Self-Supply	1.11	1.12	1.20	1.27	1.34	1.39	1.45
Agriculture	101.67	99.56	96.54	93.46	90.58	87.08	83.72
Commercial/Industrial/Institutional	3.46	3.50	3.70	3.86	3.99	4.11	4.21
Landscape/Recreational	15.54	15.65	16.12	16.51	16.83	17.11	17.36
Power Generation	16.46	14.13	14.13	14.13	14.13	14.13	14.13
<b>Martin County Total</b>	<b>160.50</b>	<b>156.50</b>	<b>155.58</b>	<b>154.23</b>	<b>152.79</b>	<b>150.43</b>	<b>148.10</b>
<b>St. Lucie County</b>							
Public Supply	34.00	35.98	40.18	43.22	47.82	51.20	54.39
Domestic Self-Supply	4.60	4.79	4.97	5.15	3.96	4.03	4.10
Agriculture	67.56	64.93	60.42	55.61	50.57	46.14	41.29
Commercial/Industrial/Institutional	0.92	0.97	1.08	1.19	1.29	1.38	1.47
Landscape/Recreational	16.43	17.10	18.47	19.84	21.04	22.16	23.21
Power Generation	1.45	3.34	3.34	3.34	3.34	3.34	3.34
<b>St. Lucie County Total</b>	<b>124.96</b>	<b>127.11</b>	<b>128.46</b>	<b>128.35</b>	<b>128.02</b>	<b>128.25</b>	<b>127.80</b>
<b>Okeechobee County*</b>							
Public Supply	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Domestic Self-Supply	0.05	0.05	0.06	0.06	0.06	0.06	0.06
Agriculture	5.49	5.49	5.49	5.09	5.09	5.09	5.09
Commercial/Industrial/Institutional	0.05	0.05	0.05	0.05	0.05	0.06	0.06
Landscape/Recreational	0.06	0.06	0.06	0.06	0.06	0.07	0.07
Power Generation	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Okeechobee County Total</b>	<b>5.65</b>	<b>5.65</b>	<b>5.66</b>	<b>5.26</b>	<b>5.26</b>	<b>5.28</b>	<b>5.28</b>
<b>UEC Planning Area</b>							
<b>UEC Planning Area Total</b>	<b>291.11</b>	<b>289.26</b>	<b>289.70</b>	<b>287.84</b>	<b>286.07</b>	<b>283.96</b>	<b>281.18</b>

mgd = million gallons per day; UEC = Upper East Coast.

\* Values listed are only for the area within the UEC Planning Area boundary.

Table A-30. Summary of gross water demands under 1-in-10 year drought conditions in the UEC Planning Area, by water use category.

Water Use Category	Demand – 1-in-10 Year Drought Conditions (mgd)						
	2019	2020	2025	2030	2035	2040	2045
Martin County							
Public Supply	25.97	26.30	27.88	29.17	30.24	31.04	31.76
Domestic Self-Supply	1.29	1.31	1.40	1.49	1.56	1.63	1.69
Agriculture	117.76	115.33	111.86	108.28	105.53	101.44	97.46
Commercial/Industrial/Institutional	3.46	3.50	3.70	3.86	3.99	4.11	4.21
Landscape/Recreational	19.87	20.00	20.60	21.09	21.49	21.84	22.16
Power Generation	16.46	14.13	14.13	14.13	14.13	14.13	14.13
<b>Martin County Total</b>	<b>184.81</b>	<b>180.57</b>	<b>179.57</b>	<b>178.02</b>	<b>176.94</b>	<b>174.19</b>	<b>171.41</b>
St. Lucie County							
Public Supply	37.07	39.23	42.79	47.11	52.12	55.80	59.29
Domestic Self-Supply	5.01	5.22	5.10	5.61	4.31	4.40	4.47
Agriculture	82.64	79.43	73.86	68.02	61.83	56.33	50.96
Commercial/Industrial/Institutional	0.92	0.97	1.08	1.19	1.29	1.38	1.47
Landscape/Recreational	20.90	21.75	23.48	25.20	26.71	28.12	29.45
Power Generation	1.45	3.34	3.34	3.34	3.34	3.34	3.34
<b>St. Lucie County Total</b>	<b>147.99</b>	<b>149.94</b>	<b>149.65</b>	<b>150.47</b>	<b>149.60</b>	<b>149.37</b>	<b>148.98</b>
Okeechobee County*							
Public Supply	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Domestic Self-Supply	0.06	0.06	0.07	0.07	0.07	0.07	0.07
Agriculture	6.45	6.45	6.45	5.97	5.97	5.97	5.97
Commercial/Industrial/Institutional	0.05	0.05	0.05	0.05	0.05	0.06	0.06
Landscape/Recreational	0.07	0.08	0.08	0.08	0.08	0.08	0.08
Power Generation	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Okeechobee County Total</b>	<b>6.63</b>	<b>6.64</b>	<b>6.65</b>	<b>6.17</b>	<b>6.17</b>	<b>6.18</b>	<b>6.18</b>
UEC Planning Area							
<b>UEC Planning Area Total</b>	<b>339.43</b>	<b>337.15</b>	<b>335.87</b>	<b>334.66</b>	<b>332.71</b>	<b>329.74</b>	<b>326.57</b>

mgd = million gallons per day; UEC = Upper East Coast.

\* Values listed are only for the area within the UEC Planning Area boundary.

## REFERENCES

- FDACS. 2020. *Florida Statewide Agricultural Irrigation Demand Estimated Agricultural Water Demand, 2018-2045*. Prepared by The Balmoral Group, Winter Park, FL, for the Florida Department of Agriculture and Consumer Services, Tallahassee, FL. June 30, 2020.
- FDEP. 2019. *Reuse Inventory Database*. Available at:  
<http://www.dep.state.fl.us/water/reuse/inventory.htm>.
- Rayer, S. and Y. Wang. 2020. *Projections of Florida Population by County, 2020-2045, with Estimates for 2019*. Florida Population Studies Bulletin 186. University of Florida, Bureau of Economic and Business Research.
- SFWMD. 1998. *1998 Districtwide Water Supply Assessment*. South Florida Water Management District, West Palm Beach, FL.
- SFWMD. 2020. *South Florida Water Management District 2019 Estimated Water Use Report*. South Florida Water Management District, West Palm Beach, FL.
- Smajstrla, A.G. 1990. *Technical Manual, Agricultural Field Scale Irrigation Requirements Simulation (AFSIRS) Model, Version 5.5*. Prepared by the Agricultural Engineering Department, University of Florida, Gainesville, FL, for St. Johns River Water Management District, Palatka, FL. Special Publication SJ2008-SP17.
- United States Census Bureau. 2012. *Florida 2010 Census of Population and Housing*. United States Department of Commerce, Economics and Statistics Administration. Washington, D.C.