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TO: Interested Parties

THROUGH: Jason Mickel, Water Supply Manager, Water Resources Bureau

FROM: Jay Yingling, Senior Economist, Water Resources Bureau
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SUBJECT: 2015 Draft Regional Water Supply Plan: Agricultural Acreage and Water Demand Projections

Introduction

Chapter 373, Florida Statutes (F.S.) sets forth the requirement for regional water supply planning. Under the provisions of this chapter, a Regional Water Supply Plan (RWSP) must be developed for those areas where available water supplies are not expected to meet projected demands over a 20-year planning horizon. The statute requires that the determination of the need for a RWSP be made every five years. Starting with the 2010 edition of the RWSP, as directed by the Governing Board, staff has developed demand projections for the portions of all sixteen counties within the Southwest Florida Water Management District (SWFWMD or District).

Purpose and Comparison to Florida Department of Agriculture and Consumer Services (FDACS) Projections (FSAID2)

This technical memorandum describes the methods and data sources used to generate irrigated, agricultural acreage and water use demand projections for 14 crop categories cultivated in the District's 16 counties. The crop categories are: Blueberries, Citrus, Cucumbers, Field Crops, Melons, Nurseries, Other Farm Uses, Other Fruit trees, Other Vegetables/Row Crops, Pasture, Potatoes, Sod, Strawberries, and Tomatoes. See Table 21 for details. Non-irrigation demand projection methods are also documented. Appendix A provides detailed, county-level and other regional crop acreage and water demand projections. Appendix B provides historic commercial citrus acreage data that are used as the basis for citrus demand projections. Appendix C provides a description of, and the reasons for, the District's deviation from using agricultural demand projections provided by the FDACS as required by statute. The projections are also compared.

Background

The District is divided into four planning regions: Heartland, Northern, Southern, and Tampa Bay. The Heartland Planning Region includes Hardee, Highlands, and Polk counties. Polk and Lake County projections were developed through the Central Florida Watershed Initiative or

CFWI (St. John’s River Water Management District (SJRWMD), South Florida Water Management District (SFWMD), SWFWMD and Florida Department of Environmental Protection, 2015). The Northern Planning Region includes Citrus, Hernando, Lake, Levy, Marion, and Sumter counties; the Southern Planning Region includes Charlotte, DeSoto, Manatee, and Sarasota counties; and the Tampa Bay Planning Region includes Hillsborough, Pasco, and Pinellas counties. For the 2015 RWSP, 2010 is the starting point, or baseline year, for the purpose of developing and reporting acreage and water demand projections. The data for the baseline year consists of reported and estimated acreages and withdrawals for 2010, whereas data for the years 2015 through 2035 are projected acreage and water demands (estimated needs). Demands for Lake and Polk counties are from the Draft CFWI RWSP, Volume 2 (May 2015).

Non-irrigated Agricultural Demand Projections

Water uses associated with non-irrigated agriculture include aquaculture, dairy, cattle, poultry, and others. Between 2007 and 2011, combined water use in edible and tropical fish farms averaged 68 percent of non-irrigated agricultural withdrawals (Table 1). During the same period, total non-irrigation withdrawals averaged 8.773 mgd and fluctuated little. As in the 2010 RWSP, these demands were assumed to remain constant though the planning horizon. Using 2010 CFWI RWSP values for Polk and Lake Counties and 2010 withdrawals for others, non-irrigation demand is projected to be 10.026 mgd during the planning period (Tables 2 and 3).

Table 1. 2007-2011 Non-Irrigated Agricultural Water Withdrawals by Use Type (mgd)

		2007-2011	2007-2011	
Water Use Code	Water Use Code Description	Average Withdrawals	Average Percent of Total	Rank
L600	Animals	0.515	5.87%	4
L605	Cattle, Feedlot	0.004	0.05%	14
L610	Cattle, Pastured	0.046	0.52%	10
L615	Dairy Farming	0.882	10.05%	3
L620	Product Cooling	0.085	0.97%	9
L625	Equipment and Facility Cleaning	0.442	5.04%	5
L630	Fish Farm (Edible)	1.100	12.54%	2
L632	Commercial Food	0.398	4.54%	6
L633	Feeder	0.046	0.52%	11
L635	Horses	0.002	0.02%	15
L640	Livestock Cooling	0.043	0.49%	12
L645	Personal Sanitary Use	0.000	0.00%	17
L650	Poultry/Turkeys	0.090	1.03%	8
L660	Tropical Fish Farms	4.832	55.08%	1
L661	Commercial Tropical	0.281	3.20%	7
L700	Animal Cleaning	0.000	0.00%	16
L705	Cleaning / Maintenance	0.007	0.08%	13
Total		8.773	100.00%	NA

Irrigated Citrus Acreage Estimates and Projections

Citrus acreage was obtained from the U.S. Department of Agriculture (USDA) National Agricultural Statistics Service (NASS) for the years 2001 through 2013 (USDA NASS, 2014). Projections were generated by applying five-year acreage growth rates for the period 2008-2013 to the 2010 (base year) acreage. For split-jurisdiction counties (e.g. Charlotte, Highlands, etc.), the District's share of the citrus acreage was obtained from draft 2010 acreage estimates generated by The Balmoral Group (2014) as part of the Florida Statewide Agricultural Irrigation Demand (FSAID) project for the FDACS (2014).

In citrus producing counties, the general long-term trend (2001-2013) is declining acreage. In the more urbanized central counties of the District, the general short-term trend (2008-2013) is also declining acreage. However, in some southern counties, the short-term trend is significantly increasing acreage. This appears to be related to recovery efforts from the 2004 hurricane season (and the resulting spread of canker) or the replanting of citrus acres infected by Huanglongbing (HLB or Citrus Greening) disease, although it is unlikely that citrus acreage in the 2004 hurricane-affected counties would increase above the 2004 acreage level, as the trend prior to 2004 was generally declining acreage.

The county-level long-term trends run counter to what is occurring in many counties. The short-term trends better reflect industry conditions within the District; however, some of these rates of change are so significant that citrus would disappear in several traditional citrus producing counties and increase above 2004 levels in others. It is believed that these trends are more short-term and localized, and are not reflective of industry or Districtwide trends. To address this, a short-term citrus growth rate was also calculated for each county in the District. To bring more Districtwide industry and development trends to bear in each county, the short-term county and Districtwide growth rates were averaged to project future acreage. This allows, but moderates, the short-term increasing growth rates in the southern counties and allows, but moderates, the short-term declining growth rates in the more urbanized central counties. The Districtwide short-term trend is for stable acreage (0.046 percent five year growth). In cases where the citrus acreage is projected to exceed 2004 levels prior to 2035 (e.g., Desoto County), the increase will be limited to the 2004 acreage for the county (the significant hurricane-related reductions in acreage began to appear in the 2005 citrus acreage estimates).

The following is an example of how the citrus acreage projection for Hardee County was generated:

- 1) Hardee County's reported 2010 citrus acreage = 46,921 irrigated acres
- 2) Based on the period 2008-2013, the averaged Districtwide and Hardee County five-year growth rate is 1.775 percent
- 3) Thus, the 2015 citrus acreage projection would be 47,754 (46,921 times 1.01775)
- 4) Likewise, the 2020 citrus acreage projection would be 48,602 (47,754 times 1.01775).

Table 4 below lists averaged growth rates, estimates, and projections for citrus acreage in the District. See Appendix A for citrus acreage estimates and projections by county. See Appendix B tables and graphs showing county-level historic commercial citrus acreage. Data in Appendix B was used to calculate Table 4 growth rates (except for CFWI counties). No NASS acreage was published for 2010 or subsequent years for the following counties: Citrus, Levy, Marion, Pinellas and Sumter. In those counties, acreage had fallen below NASS reporting levels.

Table 4. Citrus Acreage Estimates and Projections by County (Non-CFWI Counties)

County	2008-2013 Averaged District and County Growth Rates	Percent of Total Citrus Acreage in SWFWMD	2010	2015	2020	2025	2030	2035	Difference 2010 to 2035	% Difference 2010 to 2035
Charlotte	5.12%	60.85%	7,459	7,841	8,243	8,664	9,108	9,574	2,115	28.35%
DeSoto	3.08%	100.00%	62,508	64,436	66,421	68,472	68,559	68,559	6,051	9.68%
Hardee	1.78%	100.00%	46,921	47,754	48,602	49,465	50,343	51,237	4,316	9.20%
Hernando	-3.11%	100.00%	906	878	851	824	799	774	-132	-14.59%
Highlands	-0.71%	49.56%	30,945	30,726	30,509	30,293	30,079	29,866	-1,079	-3.49%
Hillsborough	-17.34%	100.00%	9,677	7,999	6,612	5,465	4,518	3,734	-5,943	-61.41%
Manatee	-1.20%	100.00%	18,400	18,179	17,961	17,745	17,532	17,322	-1,078	-5.86%
Pasco	-6.96%	100.00%	7,423	6,906	6,426	5,979	5,563	5,176	-2,247	-30.28%
Sarasota	-5.54%	100.00%	1,403	1,325	1,252	1,183	1,117	1,055	-348	-24.78%

Non-Citrus Irrigated Acreage Estimates

Since specific crop annual acreage by county is no longer published in Florida (with the exception of citrus), the challenge for the District has historically been collecting accurate data on irrigated crop acreages. Some agricultural permits are not required to report irrigated planted acres seasonally or annually. However, the District maintains a database of metered and estimated water use for all permitted agricultural withdrawals and does receive crop reports for many agriculture permits in the southern region of the District. Using information from this database and agricultural permits, historic annual irrigated acres for crops other than citrus were estimated by dividing annual water use by the permitted gallons per acre.

As a starting point, permits with agricultural water use were pulled from the Water Use Well Package Database (SWFWMD, 2013). Estimated acreage for the years 2000-2011 were calculated by dividing the annual water use for each year by the crop permitted withdrawal rate per acre in each county. For example, assume that a 300-acre irrigated crop farm was permitted for 300,000 gallons per day (gpd). This equals 1,000 gallons per acre per day. In 2011, this farm reported using 240,000 gpd to irrigate its planted acres. Accordingly, the farm planted 240 acres in 2011 (240,000 gallons divided by 1,000 gallons per acre). Irrigated acres were estimated at the permit level and then aggregated by county by use. See Appendix A for acreages and projections for all crops by county.

Comparison with 2007 and 2012 Census of Agriculture Data

County-level estimates for acreages other than citrus were compared against both 2007 and 2012 Census of Agriculture data. This comparison process consisted of three steps:

1) Comparison of Census of Agriculture Data to District RWSP Crop Categories

Since publication of annual county crop-level acreage data ceased in the early 2000s, the USDA NASS Census of Agriculture (Census) has become the best point of comparison to District estimated crop acreage and is published at five-year intervals. The FDACS is currently working on a methodology to project annual crop acreage by county, which is described in a recent report (FDACS, 2014). Such data comparable to District projections was not believed to be available during the timeframe required for the

2015 RWSP. As such, using the Census data for the comparison allowed the District to judge the efficacy of any methodology for estimating irrigated acreage of crops by county and identify areas for potential improvement.

The 2007 Census Florida publication (USDA NASS, 2009) was reviewed and the applicable crops and acreage tallied. Due to the effect that nondisclosure restrictions have on reporting specific irrigated crop acreage by county, not all crop acreages are classified as irrigated versus non-irrigated acreage in the Census. Every attempt was made to identify total acres of crops that were both harvested and irrigated. These totals typically exceed “acres irrigated” counts in the Census because acres irrigated of vegetable crops, for example, may not include a second crop grown on the same acre of irrigated land, but harvested acres would. Harvested acres were used for many crops that are assumed to be irrigated, thus allowing for the inclusion of all irrigated acres.

To ensure that Census crop acreages were not undercounted, harvested acres for large crop groupings (like *vegetable acres harvested*) were tallied and those specific crop acreages that correspond to RWSP broad category single crops (like *tomatoes*) were subtracted from the total harvested acreage and then the harvested acres for the specific RWSP single crop categories (like *tomatoes*) were tallied separately. This reduced the number of data entries, minimized potential errors and ensured that all harvested acres were included. For example, no Census data is entered for peppers because it is not a RWSP single crop category, but the acreage is included in the count of acres harvested in the “Other Vegetable and Row Crop” category.

Where disclosure restrictions prevented inclusion of specific crop acreage in the Census, acreage was estimated by calculating the statewide acres per farm and applying it to the number of farms listed for the particular crop in the county of interest. Specific District crop use codes were matched to appropriate Census crops and then consolidated into RWSP broad crop classifications.

Census citrus acreage was handled in a similar manner. A review of the Census data indicated that very few acres of “other” tree crops were reported in the District. Due to the aforementioned disclosure restrictions, to determine the most accurate count of irrigated citrus in each county, acres of other tree crops were deducted from county total “Land in Orchards, Irrigated Acres” to arrive at an estimate of irrigated citrus acres in each county. Acres of other tree crops (not necessarily irrigated, but assumed irrigated) were then tallied under the RWSP category of “other fruit trees.”

The Census acres were then summed according to the District RWSP broad categories for ready comparison to District estimated acres based on pumpage. To provide a range of likely Census acreage estimates, in addition to the lower level aggregation totals described above (e.g. the higher harvested acreage), the Census also includes an estimate of total irrigated harvested cropland acres and a total irrigated pasture and other land acres. These can be added to provide a lower end estimate of acreage, while the total harvested acres described above provides an upper end estimate of acreage because it includes multiple harvested acres and some acres that may have been planted and harvested, but not irrigated (dry land crops). In general, the pattern holds true that the total harvested acreage of individual RWSP crop categories exceeds the Census total irrigated cropland and irrigated pasture and other lands. Where this is not

the case, it is likely due to calculated acreage estimates in lieu of acreage not reported due to disclosure restrictions. District estimates of 2010 irrigated acreage data were also compared to 2012 Census data (USDA NASS, 2014) as an additional cross-check.

2) Split Jurisdiction County Acreage

There are several counties in the District where the county is included in two or more water management districts. As the Census acreage data in the county is not disaggregated into the areas covered by the specific water management districts, a one-to-one comparison between the District-estimated acreage to the Census acreage data is not possible. Contacts were established with adjacent districts to obtain land use/land cover or other data that would best represent irrigated agricultural data for their portion of a split jurisdiction county. As the land use or other categories of acreage do not perfectly match with those used by the SWFWMD, except for those crop designations that are very specific and always irrigated, it is only possible to compare the totals of the SWFWMD acreage and the totals of agricultural acreage from the jurisdictional area of the other district(s). In general, the SJRWMD data is irrigated and seems to match well when added to the SWFWMD totals. The SFWMD and SRWMD data are more like land use/land cover data and are not necessarily irrigated. In spite of this, the combined SFWMD/SWFWMD acreage seems to match well once pasture is removed from the totals and the Census "Irrigated pasture and other land" estimates are used as the county total for irrigated pasture.

3) Adjustments to Acreages and AGMOD Application Rates

District pumpage-based acreage data were compared to the Census data. For most counties, the total acreage data were quite similar and demonstrated the general validity of the methodology. However, when comparing initial pumpage-based data to Census acreage data, some significant differences were noted in vegetable/row and melon crop acreages in counties where vegetable/row crops comprised significant crop acreage. Improvements to the initial methodology for pumpage-based estimation reduced some of the differences. However, some significant differences persisted in counties with significant vegetable/row and melon crops. Potential explanations were posited and discussed with District permit evaluators. The most likely explanation is that many vegetable/row and melon crops are second/third crops of the year and may not require all the crop establishment/bed formation quantities used on the primary crop. Furthermore, evaluator interviews of two strawberry and vegetable/row crop producers, each with more than 20 years of production experience, indicate that vegetable/row and melon crops, whether primary or second crops, rarely use more than 10% of the establishment quantities that are permitted for strawberries. Strawberry producers generally use the full establishment/bed formation quantities permitted for use on strawberries. This is due to the fact that strawberries are typically planted as bare root transplants that require significant amounts of overhead establishment irrigation, whereas vegetable/row crops are typically planted as plugs or seed therefore they do not require as much establishment quantities. These second crops are sometimes planted between established plants to take advantage of irrigation of the existing crop and remaining fertilizer.

Given that the acreage estimated from pumpage is calculated as pumpage divided by average permitted quantity by use code, if not all the permitted quantity is used, the denominator (permitted quantity per acre) is too large relative to actual usage and will

underestimate irrigated acreage. A potential correction is to use AGMOD to calculate an adjustment factor. AGMOD is a computer program used in the District's water use permitting process to calculate supplemental irrigation, crop establishment and other irrigation water uses. This program was used to estimate a typical strawberry establishment quantity per acre for each county. The next step was to identify vegetable/row and melon crops likely to be issued establishment quantities based on the typical use/non-use of mulch and main and auxiliary irrigation system used for the crop in the county of interest.

Where there were crop establishment quantities identified as part of the total permitted quantity, the establishment quantities were reduced to 10 percent of strawberry establishment quantities calculated for the county. For example, if the average permitted quantity was 27 inches and the estimated reduction in establishment quantity was 3 inches, the ratio would be $27/(27-3) = 1.125$. Such a ratio is applied to the pumpage estimated acres for that crop in the county to account for likely lower establishment use than is permitted and generally has the effect of increasing the estimated acreage. The use of this ratio is mathematically equivalent to reducing the average permitted quantity in the pumpage based acreage estimation calculation.

The calculated ratios were then applied to the pumpage-based estimated acres for crops assumed to require establishment quantity adjustments. In general, the District-estimated combined vegetable/row crop acreage adjusted for establishment increased and better resembled the Census combined vegetable and row crop acreage. Note that it is highly unlikely that specific row and vegetable crop acreages (such as cucumber acreage), reported in the Census and estimated by the District from permitting data, will match because growers annually change the mix of vegetable and row crop acreages relative to what is permitted based on market conditions and rotation practices. Combined vegetable and row crop acreage likely provides a more accurate comparison.

Non-Citrus Irrigated Acreage Projection Methods

Historic estimated acreage trends by major crop type were used to determine projection trends. Both long-term historic acreage and short-term historic acreage were reviewed. Long-term for non-citrus crops was generally considered being 2001-2011, as acreage was developed from pumpage data for those years. Short-term for non-citrus crops was generally considered being the period 2006-2011. Table 5 lists non-citrus acreage estimates and projections by county.

Initially, both the short-term and long-term acreage data for a major crop type were graphed and a linear trend line applied from the Microsoft® Excel Charts options. If both the long-term and short-term slopes were similar and of the same sign, the long-term trend was generally preferred, as it usually has a gentler slope and is less subject to short-term "noise." Linear trend equations of the form $y=m*x+b$ were developed where:

- Y is the resulting acreage
- m is the slope
- x is the year of interest, and
- b is the intercept

Trends from short-term data were considered when the trend was clear and sustained.

Where a linear equation would result in acreage approaching zero or negative acreage during the projection period (2010-2035), the linear equation was replaced with an exponential equation of the form $y=a*b^x$ where:

- Y is the resulting acreage
- a is the coefficient
- b is the base value, and
- x is the exponent (year of interest).

In most cases, it was unlikely that there would actually be zero acres and this step also prevented the projection of negative acres. Longer-term data trends generally do a better job of smoothing out short-term data noise.

If both (long- and short-term data) generated trends took the same direction, generally the long-term trend with the slower rate of change was chosen.

Where long- and short-term data trends were significantly different in direction, the long-term data trend was typically used and limited to the highest (increasing trend) or lowest acreage (decreasing trend) value in the historical data range used. The “divergent trend” phenomena typically occurred in nursery and sod crops. During the housing boom in the early to the mid-part of the 2000 to 2010 decade, there was a significant increase in the acreage of these crops in many counties to service the housing construction industry. This upward trend reversed during the latter part of that decade after the housing bubble burst. The long-term trend analyses sometimes produced projections well above the acreage that occurred during the housing construction boom and the short-term trend data from the end of the boom period produced projections of rapidly decreasing acreage going to zero. It is believed that the short-term declines will level out as housing construction stabilizes and that it is unlikely that the projected acreage will rise above levels experienced during the boom.

Peach and “Other Fruit Tree” Acreage Projection

Internal staff review of projections and resulting data searches revealed that peach acreage is beginning to appear within Florida and the District, sometimes as an alternative to citrus (Levy, 2010 and Buck, 2014). It is difficult to discover a developing trend for peaches from permit data, as peaches are permitted as “Other Fruit Trees.” While permit data has not generally shown an increasing trend in “Other Fruit Trees” acreage caused by an increase in peaches, it could be that with such a new trend, permits may not yet have been modified to reflect changes from other crops to peaches (other fruit trees). A review of 2012 Census data shows peach acreage in some counties that is greater than all the pumpage-based acreage accounted for in the RWSP “Other Fruit Tree” category in 2011. As peach production and the number of growers per county is still relatively small, county-level Census data for peaches alone is often not revealed. To reflect documented peach acreage without losing information on other non-citrus fruit tree acreage, the projected pumpage-estimated “Other Fruit Tree” acreage for 2015 through 2035 was replaced by 2012 Census “Non-citrus, All” county-level acreage unless the 2035 projected pumpage-based projections exceeded the 2012 Census data. Note that peach acreage is included in the Census “Non-citrus, All” acreage category.

In all applicable counties, the ‘Non-citrus, all’ 2012 Census-derived acreage data was greater than the pumpage-based projected 2035 “Other Fruit Tree” acreage. This resulted in increased projected acreage and pumpage relative to the pumpage-based projections for “Other Fruit Trees”. As there is only one year of relatively reliable peach acreage, there is not enough data

from which to produce a projection, so “Other Fruit Tree” acreage was held at the acreage derived from the 2012 Census, unless pumpage-derived acreage trend data produced higher acreage. In counties split between water management districts, the Census “Other Fruit Tree” acreage was apportioned based on estimates of the percent of total county citrus acres in the SWFWMD if citrus is grown in the county. It has been suggested that peaches are being grown in former citrus groves. Where citrus is not grown, the proportion of the acreage in the SWFWMD is based on an estimate of the percent of total county irrigated acres in the SWFWMD (The Balmoral Group, 2014).

Irrigated Pasture Acreage Projections

There was some concern that irrigated pasture acreage was projected to decline in 14 counties and stay the same in two. Overall, irrigated pasture acreage is projected to decline 53.06 percent between 2010 and 2035. A potential method for determining if these trends made sense is to look at the trend in acreage permitted for irrigated pasture (Figure 1.). Upon review of the data, it was determined that permitted pasture acreage declined by 42.83 percent between 2002 and 2012 while total permitted agricultural acreage declined 32.39 percent. This is consistent with the notion that crop acreage with lower water use allocations (such as pasture) are likely being re-permitted as more water intensive crop acreage. Some pasture may continue to be irrigated under a different permitted crop type. However, the projected decline in irrigated pasture acreage is likely accurate and is a result of ongoing reductions in permitted pasture acreage.

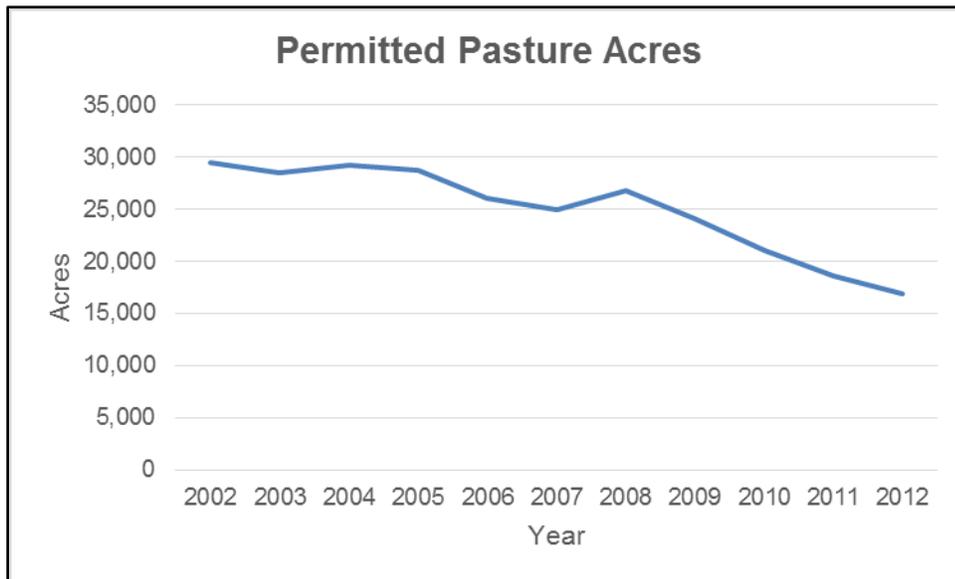


Figure 1. Permitted Pasture Acreage Trend

Strawberry Historic Acreage Estimates

When reviewing pumpage-based historic strawberry acreage for trend analysis, it was clear that 2010 estimated acreage was significantly higher than previous years. This was not unexpected. There were freeze events in 2009 and 2010 that generated large quantities of freeze protection pumpage (SWFWMD, 2012). The sum of pumpage-based acreage estimates for the District exceeded Statewide planted acreage for both years (FDACS, 2012). As strawberries, a crop grown on plastic mulch, are permitted for full evapotranspiration water demand, it is reasonable to presume that the large increases in pumpage and estimated acreage that exceeded Statewide production are related to freeze protection pumpage and are not part of 5-in-10 irrigation demand for strawberries. To remove the influence of such events, Districtwide estimated strawberry acreage was adjusted to Statewide planted strawberry acreage when Districtwide acreage exceeded Statewide planted acreage. The Statewide planted acreage for adjusted years was apportioned to District counties based on the proportion of the year's county pumpage-based acres to the Districtwide total pumpage-based acres.

Total Non-Citrus Acreage

Table 5, below, contains the total non-citrus acreage projections developed primarily through trend analysis of acreage derived from historic metered and estimated pumpage data.

Table 5. Non-Citrus Irrigated Acreage Estimates and Projections by County

County	Base Year	Estimated and Projected Irrigated Acreage					Difference (2010 to 2035)	% Difference (2010 to 2035)
	2010	2015	2020	2025	2030	2035		
Charlotte	3,439	3,877	4,452	5,040	5,635	6,235	2,796	81.30%
Citrus	1,098	995	956	953	974	1,010	-89	-8.08%
DeSoto	8,593	9,414	10,491	11,765	13,156	14,615	6,022	70.07%
Hardee	7,093	6,851	6,608	6,422	6,332	6,303	-789	-11.13%
Hernando	991	951	966	990	1,023	1,062	70	7.10%
Highlands	854	931	1,016	1,130	1,259	1,396	542	63.54%
Hillsborough	18,311	18,080	17,932	18,185	18,396	18,668	358	1.95%
Lake	781	781	781	781	781	781	0	0.00%
Levy	4,583	4,923	4,978	5,087	5,216	5,354	771	16.83%
Manatee	29,952	29,927	30,069	30,344	30,701	31,112	1,160	3.87%
Marion	3,289	3,178	3,337	3,540	3,777	4,038	749	22.78%
Pasco	2,984	2,936	2,992	3,070	3,167	3,281	297	9.95%
Pinellas	38	29	20	15	11	9	-28	-75.24%
Polk	10,040	9,685	9,685	9,685	9,685	9,685	-355	-3.54%
Sarasota	1,478	1,510	1,373	1,300	1,259	1,236	-243	-16.41%
Sumter	3,731	3,591	3,198	2,956	2,816	2,749	-982	-26.33%
Total	97,256	97,659	98,854	101,263	104,189	107,535	10,280	10.57%

Combined Citrus and Non-Citrus Estimated Base Year and Projected Crop Acreage

Acreage estimates and projections by planning region and county, respectively, are listed in Tables 6 and 7. Appendix A contains acreage estimates and projections by county by crop.

Table 6. Total Irrigated Acreage Estimates and Projections by Planning Region

Planning Region	Base Year	Projected Irrigated Acreage					Difference (2010 to 2035)	% Difference (2010 to 2035)
	2010	2015	2020	2025	2030	2035		
Heartland	170,008	170,103	170,576	171,151	171,854	172,643	2,635	1.55%
Northern	16,045	15,870	15,545	15,517	15,678	15,973	-72	-0.45%
Southern	133,234	136,510	140,264	144,513	147,067	149,708	16,475	12.37%
Tampa Bay	38,433	35,950	33,981	32,713	31,655	30,869	-7,564	-19.68%
Total	357,720	358,433	360,366	363,894	366,254	369,194	11,474	3.21%

Table 7. Total Irrigated Acreage Estimates and Projections by County

County	Base Year	Projected Irrigated Acreage					Difference (2010 to 2035)	% Difference (2010 to 2035)
	2010	2015	2020	2025	2030	2035		
Charlotte	10,899	11,718	12,695	13,704	14,743	15,810	4,911	45.06%
Citrus	1,098	995	956	953	974	1,010	-89	-8.08%
DeSoto	71,101	73,850	76,914	80,237	81,715	83,174	12,073	16.98%
Hardee	54,014	54,605	55,210	55,886	56,675	57,540	3,526	6.53%
Hernando	1,897	1,829	1,816	1,815	1,822	1,836	-62	-3.26%
Highlands	31,799	31,657	31,525	31,423	31,338	31,262	-536	-1.69%
Hillsborough	27,988	26,079	24,544	23,650	22,914	22,403	-5,585	-19.95%
Lake*	1,447	1,354	1,260	1,166	1,073	987	-460	-31.79%
Levy	4,583	4,923	4,978	5,087	5,216	5,354	771	16.83%
Manatee	48,352	48,106	48,030	48,090	48,233	48,434	82	0.17%
Marion	3,289	3,178	3,337	3,540	3,777	4,038	749	22.78%
Pasco	10,407	9,842	9,418	9,048	8,730	8,457	-1,950	-18.74%
Pinellas	38	29	20	15	11	9	-28	-75.24%
Polk*	84,196	83,841	83,841	83,841	83,841	83,841	-355	-0.42%
Sarasota	2,881	2,835	2,625	2,483	2,376	2,291	-590	-20.49%
Sumter	3,731	3,591	3,198	2,956	2,816	2,749	-982	-26.33%
Total	357,720	358,433	360,366	363,894	366,254	369,194	11,474	3.21%

* From Volume 2 of the Draft RWSP for the CFWI, May 2015.

Total Average (5-in-10) Irrigated Acreage Water Demand Projections

Average water demand is the irrigation demand for a typical year. It was calculated by multiplying estimated/projected acreage by the average permitted irrigation rate per acre. The acres are the declared acres for the crop permitted. An average permitted irrigation rate per acre for each crop (gallons per acre) was calculated at the county level over a 10-year period (SWFWMD, 2002-2012). To arrive at the demand projection, the number of estimated/projected acres for each crop (both citrus and non-citrus) in each county was multiplied by the historic average permitted gallons per acre for that crop for that county. The same quantity per acre is applied for the base year estimate and the projected year estimates. For example, assume that the forecast calls for 1,000 acres of potatoes in 2035 and the average permitted irrigation rate for potatoes in that county is 100 gallons per acre. Thus, the 2035 average demand for potatoes is 100,000 gallons (1,000 acres times 100 gallons per acre).

Tables 8 and 9 list average irrigation water demand by region and county, respectively. Tables 10 through 15 list the total 5-in-10 water demand for irrigated and non-irrigated crops by county and by region. See Appendix A for water demand projections by county by irrigated crop.

Table 8. Total Average (5-in-10) Agricultural Irrigation Water Demand (mgd) Projections by Planning Region

Planning Region	Base Year	Projected Agricultural Water Demand (mgd)					Difference (2010 to 2035)	% Difference (2010 to 2035)
	2010	2015	2020	2025	2030	2035		
Heartland	180.746	181.064	181.885	182.829	183.949	185.179	4.433	2.45%
Northern	24.089	24.274	24.201	24.523	25.107	25.935	1.846	7.66%
Southern	168.528	171.748	176.675	182.249	186.409	190.728	22.200	13.17%
Tampa Bay	72.695	67.982	64.514	63.208	61.836	60.932	-11.763	-16.18%
Total	446.059	445.068	447.275	452.810	457.302	462.775	16.716	3.75%

Table 9. Total Average (5-in-10) Agricultural Irrigation Water Demand (mgd) Projections by County

County	Base Year	Projected Agricultural Water Demand (mgd)					Difference (2010 to 2035)	% Difference (2010 to 2035)
	2010	2015	2020	2025	2030	2035		
Charlotte	13.415	14.589	15.977	17.395	18.841	20.315	6.899	51.43%
Citrus	1.805	1.759	1.752	1.787	1.849	1.929	0.124	6.84%
DeSoto	69.828	72.994	76.738	80.731	83.069	85.402	15.574	22.30%
Hardee	53.552	54.324	54.982	55.701	56.563	57.513	3.962	7.40%
Hernando	2.527	2.457	2.398	2.363	2.348	2.349	-0.178	-7.05%
Highlands	41.825	41.710	41.873	42.098	42.356	42.636	0.812	1.94%
Hillsborough	57.462	53.589	50.613	49.707	48.653	47.994	-9.468	-16.48%
Lake*	1.690	1.560	1.430	1.300	1.170	1.100	-0.590	-34.91%
Levy	6.644	7.513	7.769	8.084	8.422	8.770	2.127	32.01%
Manatee	81.088	79.887	79.952	80.286	80.781	81.382	0.294	0.36%
Marion	4.647	4.409	4.599	4.858	5.169	5.519	0.872	18.76%
Pasco	15.090	14.193	13.718	13.333	13.028	12.795	-2.295	-15.21%
Pinellas	0.143	0.200	0.183	0.168	0.155	0.144	0.001	0.49%
Polk*	85.370	85.030	85.030	85.030	85.030	85.030	-0.340	-0.40%
Sarasota	4.198	4.278	4.008	3.837	3.719	3.630	-0.567	-13.52%
Sumter	6.776	6.576	6.253	6.130	6.148	6.268	-0.508	-7.50%
Total	446.059	445.068	447.275	452.810	457.302	462.775	16.716	3.75%

* From Volume 2 of the Draft RWSP for the CFWI, May 2015.

Table 10. Average (5-in-10) Total Agricultural (Irrigated and Non-Irrigated) Water Demand (mgd) Projections by County

County	2010			2015			2020			2025			2030			2035			Change 2010 to 2035	
	Irrigation	Non-Irrigation	Total	Total	Percent															
Charlotte	13.415	0.003	13.418	14.589	0.003	14.592	15.977	0.003	15.980	17.395	0.003	17.398	18.841	0.003	18.844	20.315	0.003	20.318	6.899	51.42%
Citrus	1.805	0.013	1.818	1.759	0.013	1.772	1.752	0.013	1.765	1.787	0.013	1.800	1.849	0.013	1.862	1.929	0.013	1.942	0.124	6.79%
DeSoto	69.828	0.717	70.545	72.994	0.717	73.711	76.738	0.717	77.455	80.731	0.717	81.448	83.069	0.717	83.786	85.402	0.717	86.119	15.574	22.08%
Hardee	53.552	0.584	54.136	54.324	0.584	54.908	54.982	0.584	55.566	55.701	0.584	56.285	56.563	0.584	57.147	57.513	0.584	58.097	3.962	7.32%
Hernando	2.527	0.216	2.743	2.457	0.216	2.673	2.398	0.216	2.614	2.363	0.216	2.579	2.348	0.216	2.564	2.349	0.216	2.565	-0.178	-6.49%
Highlands	41.825	0.078	41.903	41.710	0.078	41.788	41.873	0.078	41.951	42.098	0.078	42.176	42.356	0.078	42.434	42.636	0.078	42.714	0.812	1.94%
Hillsborough	57.462	3.157	60.619	53.589	3.157	56.746	50.613	3.157	53.770	49.707	3.157	52.864	48.653	3.157	51.810	47.994	3.157	51.151	-9.468	-15.62%
Lake	1.690	0.001	1.691	1.560	0.001	1.561	1.430	0.001	1.431	1.300	0.001	1.301	1.170	0.001	1.171	1.100	0.001	1.101	-0.590	-34.89%
Levy	6.644	0.017	6.661	7.513	0.017	7.530	7.769	0.017	7.786	8.084	0.017	8.101	8.422	0.017	8.439	8.770	0.017	8.787	2.127	31.93%
Manatee	81.088	0.565	81.653	79.887	0.565	80.452	79.952	0.565	80.517	80.286	0.565	80.851	80.781	0.565	81.346	81.382	0.565	81.947	0.294	0.36%
Marion	4.647	0.029	4.676	4.409	0.029	4.438	4.599	0.029	4.628	4.858	0.029	4.887	5.169	0.029	5.198	5.519	0.029	5.548	0.872	18.64%
Pasco	15.090	0.116	15.206	14.193	0.116	14.309	13.718	0.116	13.834	13.333	0.116	13.449	13.028	0.116	13.144	12.795	0.116	12.911	-2.295	-15.09%
Pinellas	0.143	0.000	0.143	0.200	0.000	0.200	0.183	0.000	0.183	0.168	0.000	0.168	0.155	0.000	0.155	0.144	0.000	0.144	0.001	0.49%
Polk	85.370	2.000	87.370	85.030	2.000	87.030	85.030	2.000	87.030	85.030	2.000	87.030	85.030	2.000	87.030	85.030	2.000	87.030	-0.340	-0.39%
Sarasota	4.198	0.189	4.387	4.278	0.189	4.467	4.008	0.189	4.197	3.837	0.189	4.026	3.719	0.189	3.908	3.630	0.189	3.819	-0.567	-12.93%
Sumter	6.776	2.341	9.117	6.576	2.341	8.917	6.253	2.341	8.594	6.130	2.341	8.471	6.148	2.341	8.489	6.268	2.341	8.609	-0.508	-5.57%
Total	446.059	10.026	456.085	445.068	10.026	455.094	447.275	10.026	457.301	452.810	10.026	462.836	457.302	10.026	467.328	462.775	10.026	472.801	16.716	3.67%

Table 11. Average (5-in-10) Total Agricultural (Irrigated and Non-Irrigated) Water Demand (mgd) Projections by Region

Planning Region	2010			2015			2020			2025			2030			2035			Change (2010 to 2035)	
	Irrigation	Non-Irrigation	Total	Total	Percent															
Heartland	180.746	2.662	183.408	181.064	2.662	183.726	181.885	2.662	184.547	182.829	2.662	185.491	183.949	2.662	186.611	185.179	2.662	187.841	4.433	2.42%
Northern	24.089	2.617	26.706	24.274	2.617	26.891	24.201	2.617	26.818	24.523	2.617	27.140	25.107	2.617	27.724	25.935	2.617	28.552	1.846	6.91%
Southern	168.528	1.474	170.002	171.748	1.474	173.222	176.675	1.474	178.149	182.249	1.474	183.723	186.409	1.474	187.883	190.728	1.474	192.202	22.200	13.06%
Tampa Bay	72.695	3.273	75.968	67.982	3.273	71.255	64.514	3.273	67.787	63.208	3.273	66.481	61.836	3.273	65.109	60.932	3.273	64.205	-11.763	-15.48%
Total	446.059	10.026	456.085	445.068	10.026	455.094	447.275	10.026	457.301	452.810	10.026	462.836	457.302	10.026	467.328	462.775	10.026	472.801	16.716	3.67%

Table 12. Heartland Average (5-in-10) Total Agricultural Water Demand (mgd) Projections

County	2010			2015			2020			2025			2030			2035			Change 2010 to 2035	
	Irrigation	Non-Irr.	Total	Total	Percent															
Hardee	53.552	0.584	54.136	54.324	0.584	54.908	54.982	0.584	55.566	55.701	0.584	56.285	56.563	0.584	57.147	57.513	0.584	58.097	3.962	7.32%
Highlands	41.825	0.078	41.903	41.710	0.078	41.788	41.873	0.078	41.951	42.098	0.078	42.176	42.356	0.078	42.434	42.636	0.078	42.714	0.812	1.94%
Polk	85.370	2.000	87.370	85.030	2.000	87.030	85.030	2.000	87.030	85.030	2.000	87.030	85.030	2.000	87.030	85.030	2.000	87.030	-0.340	-0.39%
Total	180.746	2.662	183.408	181.064	2.662	183.726	181.885	2.662	184.547	182.829	2.662	185.491	183.949	2.662	186.611	185.179	2.662	187.841	4.433	2.42%

Table 13. Northern Average (5-in-10) Total Agricultural Water Demand (mgd) Projections

County	2010			2015			2020			2025			2030			2035			Change 2010 to 2035	
	Irrigation	Non-Irr.	Total	Total	Percent															
Citrus	1.805	0.013	1.818	1.759	0.013	1.772	1.752	0.013	1.765	1.787	0.013	1.800	1.849	0.013	1.862	1.929	0.013	1.942	0.124	6.79%
Hernando	2.527	0.216	2.743	2.457	0.216	2.673	2.398	0.216	2.614	2.363	0.216	2.579	2.348	0.216	2.564	2.349	0.216	2.565	-0.178	-6.49%
Lake	1.690	0.001	1.691	1.560	0.001	1.561	1.430	0.001	1.431	1.300	0.001	1.301	1.170	0.001	1.171	1.100	0.001	1.101	-0.590	-34.89%
Levy	6.644	0.017	6.661	7.513	0.017	7.530	7.769	0.017	7.786	8.084	0.017	8.101	8.422	0.017	8.439	8.770	0.017	8.787	2.127	31.93%
Marion	4.647	0.029	4.676	4.409	0.029	4.438	4.599	0.029	4.628	4.858	0.029	4.887	5.169	0.029	5.198	5.519	0.029	5.548	0.872	18.64%
Sumter	6.776	2.341	9.117	6.576	2.341	8.917	6.253	2.341	8.594	6.130	2.341	8.471	6.148	2.341	8.489	6.268	2.341	8.609	-0.508	-5.57%
Total	24.089	2.617	26.706	24.274	2.617	26.891	24.201	2.617	26.818	24.523	2.617	27.140	25.107	2.617	27.724	25.935	2.617	28.552	1.846	6.91%

Table 14. Southern Average (5-in-10) Total Agricultural Water Demand (mgd) Projections

County	2010			2015			2020			2025			2030			2035			Change 2010 to 2035	
	Irrigation	Non-Irr.	Total	Total	Percent															
Charlotte	13.415	0.003	13.418	14.589	0.003	14.592	15.977	0.003	15.980	17.395	0.003	17.398	18.841	0.003	18.844	20.315	0.003	20.318	6.899	51.42%
DeSoto	69.828	0.717	70.545	72.994	0.717	73.711	76.738	0.717	77.455	80.731	0.717	81.448	83.069	0.717	83.786	85.402	0.717	86.119	15.574	22.08%
Manatee	81.088	0.565	81.653	79.887	0.565	80.452	79.952	0.565	80.517	80.286	0.565	80.851	80.781	0.565	81.346	81.382	0.565	81.947	0.294	0.36%
Sarasota	4.198	0.189	4.387	4.278	0.189	4.467	4.008	0.189	4.197	3.837	0.189	4.026	3.719	0.189	3.908	3.630	0.189	3.819	-0.567	-12.93%
Total	168.528	1.474	170.002	171.748	1.474	173.222	176.675	1.474	178.149	182.249	1.474	183.723	186.409	1.474	187.883	190.728	1.474	192.202	22.200	13.06%

Table 15. Tampa Bay Average (5-in-10) Total Agricultural Water Demand (mgd) Projections

County	2010			2015			2020			2025			2030			2035			Change 2010 to 2035	
	Irrigation	Non-Irr.	Total	Total	Percent															
Hillsborough	57.462	3.157	60.619	53.589	3.157	56.746	50.613	3.157	53.770	49.707	3.157	52.864	48.653	3.157	51.810	47.994	3.157	51.151	-9.468	-15.62%
Pasco	15.090	0.116	15.206	14.193	0.116	14.309	13.718	0.116	13.834	13.333	0.116	13.449	13.028	0.116	13.144	12.795	0.116	12.911	-2.295	-15.09%
Pinellas	0.143	0.000	0.143	0.200	0.000	0.200	0.183	0.000	0.183	0.168	0.000	0.168	0.155	0.000	0.155	0.144	0.000	0.144	0.001	0.49%
Total	72.695	3.273	75.968	67.982	3.273	71.255	64.514	3.273	67.787	63.208	3.273	66.481	61.836	3.273	65.109	60.932	3.273	64.205	-11.763	-15.48%

Drought (2-in-10) Water Demand Projections

The District also forecasts supplemental agricultural irrigation demands for dry years. A “severe drought” is a drought that falls in the 10th percentile (1-in-10). As of the time of this memorandum, AGMOD does not calculate 1-in-10 water demands. A “moderate drought” is a drought that falls in the 20th percentile (2-in-10). A “moderate drought” is twice as likely to occur as a “severe drought”. AGMOD was used to generate irrigation rates for average and dry conditions. The ratio of the dry to the average condition was multiplied by the average water demand to generate 2-in-10 water demands. Continuing with the previous example, assume further that the dry-to-average irrigation rate ratio is 1.05 (14.8 inches /14.1 inches). Thus, the drought demand is 105,000 gallons (100,000 gallons times 1.05). Table 16 lists the dry-to-average ratios by county by crop. Tables 17 and 18 list the 2-in-10 in irrigation water demands by county and by planning region. Note that Lake and Polk Counties are excluded from Tables 17 and 18, as the CFWI RWSP did not include dry year demand estimates for any year except 2035. Tables 19 and 20 include the total 2-in-10 drought irrigation, non-irrigation and total demand quantities. Lake and Polk Counties are excluded except for 2035 as drought quantities were not included in the CFWI RWSP except for 2035.

Table 16. *Dry-to-Average Irrigation Rate Ratio by County by Crop*

County	Crop	Ratio of Dry-to-Average Irrigation Rate	County	Crop	Ratio of Dry-to-Average Irrigation Rate
Charlotte	Citrus	1.350	Levy	Blueberry	1.240
Charlotte	Cucumbers, Fall	1.000	Levy	Commercial Hay	1.190
Charlotte	Commercial Hay	1.130	Levy	All Grains (Wheat, Rye, Barley, Sorghum, etc.)	1.110
Charlotte	Melons	1.060	Levy	Sweet Corn	1.060
Charlotte	Field Nursery	1.100	Levy	Melons	1.200
Charlotte	Fall Small Vegetable	1.000	Levy	Field Nursery	1.160
Charlotte	Spring Small Vegetables	1.050	Levy	Spring Peanuts	1.150
Charlotte	Pasture	1.000	Levy	Pasture	1.000
Charlotte	Potato	1.050	Levy	Sod	1.110
Charlotte	Sod	1.100	Manatee	Blueberry	1.290
Charlotte	Fall Tomatoes	1.000	Manatee	Citrus	1.240
Charlotte	Spring Tomatoes	1.000	Manatee	Cucumbers, Fall	1.000
Citrus	Blueberry	1.210	Manatee	Cucumbers, Spring	1.000
Citrus	Citrus	1.210	Manatee	Commercial Hay	1.160
Citrus	Commercial Hay	1.170	Manatee	Melons	1.090
Citrus	Melons	1.110	Manatee	Field Nursery	1.170
Citrus	Field Nursery	1.120	Manatee	Container Nursery	1.060
Citrus	Container Nursery	1.060	Manatee	Fruit trees, not Citrus	1.220
Citrus	All Beans	1.110	Manatee	Spring Peppers	1.000
Citrus	Pasture	1.000	Manatee	All Beans	1.070
Citrus	Strawberries	1.000	Manatee	Fall Small Vegetable	1.100
DeSoto	Blueberry	1.300	Manatee	Squash, Zucchini - (Non Cover Crop)	1.000
DeSoto	Citrus	1.440	Manatee	Spring Small Vegetables	1.070
DeSoto	Flatwood Citrus	1.440	Manatee	Cabbage Bok Choy	1.070
DeSoto	Field Nursery	1.150	Manatee	Pasture	1.000
DeSoto	All Grains (Wheat, Rye, Barley, Sorghum, etc.)	1.080	Manatee	Potato	1.070
DeSoto	Commercial Hay	1.220	Manatee	Sod	1.110
DeSoto	Melons	1.100	Manatee	Strawberries	1.000
DeSoto	Container Nursery	1.060	Manatee	Spring Tomatoes	1.000
DeSoto	Spring Small Vegetables	1.050	Manatee	Fall Tomatoes	1.000
DeSoto	Spring Peppers	1.050	Marion	All Grains (Wheat, Rye, Barley, Sorghum, etc.)	1.130
DeSoto	Fall Small Vegetable	1.210	Marion	Commercial Hay	1.170
DeSoto	Pasture	1.000	Marion	Melons	1.150
DeSoto	Sod	1.110	Marion	Field Nursery	1.120

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County	Crop	Ratio of Dry-to-Average Irrigation Rate	County	Crop	Ratio of Dry-to-Average Irrigation Rate
DeSoto	Strawberries	1.000	Marion	Container Nursery	1.060
DeSoto	Fall Tomatoes	1.000	Marion	Spring Peanuts	1.110
DeSoto	Spring Tomatoes	1.000	Marion	Fall Peanuts	1.110
Hardee	Blueberry	1.340	Marion	Pasture	1.000
Hardee	Citrus	1.460	Marion	Spring Tomatoes	1.110
Hardee	Flatwood Citrus	1.450	Pasco	Blueberry	1.200
Hardee	Container Nursery	1.060	Pasco	Citrus	1.320
Hardee	Cucumbers, Spring	1.000	Pasco	Field Nursery	1.110
Hardee	All Grains (Wheat, Rye, Barley, Sorghum, etc.)	1.100	Pasco	Flatwood Citrus	1.320
Hardee	Commercial Hay	1.190	Pasco	Commercial Hay	1.180
Hardee	Melons	1.090	Pasco	All Grains (Wheat, Rye, Barley, Sorghum, etc.)	1.120
Hardee	Field Nursery	1.160	Pasco	Melons	1.090
Hardee	Fruit trees, not Citrus	1.300	Pasco	Container Nursery	1.060
Hardee	Spring Peppers	1.060	Pasco	Fall Peppers	1.000
Hardee	Fall Small Vegetable	1.110	Pasco	Eggplant	1.140
Hardee	Squash, Zucchini - (Non Cover Crop)	1.140	Pasco	Spring Peanuts	1.110
Hardee	Peas, Snow Peas	1.060	Pasco	Spring Peppers	1.080
Hardee	Spring Small Vegetables	1.000	Pasco	Fall Small Vegetable	1.120
Hardee	Pasture	1.000	Pasco	Spring Small Vegetables	1.070
Hardee	Sod	1.130	Pasco	Pasture	1.000
Hardee	Strawberries	1.000	Pasco	Potato	1.070
Hardee	Spring Tomatoes	1.090	Pasco	Sod	1.130
Hardee	Fall Tomatoes	1.000	Pasco	Strawberries	1.040
Hernando	Blueberry	1.270	Pasco	Spring Tomatoes	1.090
Hernando	Citrus	1.280	Pasco	Fall Tomatoes	1.120
Hernando	Commercial Hay	1.220	Pinellas	Container Nursery	1.060
Hillsborough	Container Nursery	1.060	Sarasota	Citrus	1.260
Hillsborough	Field Nursery	1.160	Sarasota	Feed Corn, Silage Corn	1.110
Hillsborough	Fruit trees, not Citrus	1.250	Sarasota	Commercial Hay	1.160
Hillsborough	Squash, Zucchini - (Non Cover Crop)	1.000	Sarasota	Melons	1.000
Hillsborough	Fall Peppers	1.000	Sarasota	Field Nursery	1.160
Hillsborough	Spring Small Vegetables	1.000	Sarasota	Container Nursery	1.060
Hillsborough	Fall Small Vegetable	1.120	Sarasota	Fall Small Vegetable	1.110
Hillsborough	Spring Peppers	1.000	Sarasota	Pasture	1.000
Hillsborough	Fall Small Vegetable	1.080	Sarasota	Sod	1.110

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County	Crop	Ratio of Dry-to-Average Irrigation Rate	County	Crop	Ratio of Dry-to-Average Irrigation Rate
Hillsborough	Spring Peanuts	1.120	Sarasota	Spring Tomatoes	1.090
Hillsborough	Onions	1.000	Sarasota	Fall Tomatoes	1.150
Hillsborough	Peas, Snow Peas	1.050	Sumter	Blueberry	1.170
Hillsborough	All Beans	1.080	Sumter	Citrus	1.190
Hillsborough	Pasture	1.000	Sumter	Container Nursery	1.040
Hillsborough	Sod	1.100	Sumter	Commercial Hay	1.140
Hillsborough	Strawberries	1.000	Sumter	All Grains (Wheat, Rye, Barley, Sorghum, etc.)	1.090
Hillsborough	Spring Tomatoes	1.000	Sumter	Melons	1.080
Hillsborough	Fall Tomatoes	1.000	Sumter	Field Nursery	1.090
			Sumter	Fall Small Vegetable	1.000
			Sumter	Pasture	1.000
			Sumter	Sod	1.090
			Sumter	Fall Tomatoes	1.000
			Sumter	Spring Tomatoes	1.000

Table 17. Total 2-in-10 Agricultural Irrigation Water Demand (mgd) Projections by County (Excluding Lake and Polk Counties)

County	Base Year	Projected Agricultural Irrigation Water Demand (mgd)					Difference (2010 to 2035)	% Difference (2010 to 2035)
	2010	2015	2020	2025	2030	2035		
Charlotte	16.426	17.778	19.340	20.941	22.579	24.252	7.826	47.64%
Citrus	1.994	1.965	1.963	2.007	2.078	2.169	0.175	8.79%
DeSoto	95.370	99.407	104.096	109.059	111.592	114.085	18.716	19.62%
Hardee	73.766	75.034	76.114	77.259	78.561	79.960	6.194	8.40%
Hernando	3.008	2.961	2.897	2.861	2.848	2.852	-0.156	-5.17%
Highlands	55.494	55.299	55.396	55.561	55.763	55.987	0.493	0.89%
Hillsborough	63.053	58.333	54.585	53.151	51.642	50.624	-12.429	-19.71%
Lake	NA	NA	NA	NA	NA	NA	NA	NA
Levy	7.507	8.480	8.745	9.078	9.436	9.807	2.301	30.65%
Manatee	86.199	85.085	85.140	85.491	86.015	86.653	0.454	0.53%
Marion	5.154	4.931	5.168	5.479	5.845	6.252	1.098	21.29%
Pasco	18.430	17.362	16.720	16.185	15.746	15.392	-3.038	-16.48%
Pinellas	0.147	0.203	0.185	0.170	0.157	0.146	-0.001	-0.75%
Polk	NA	NA	NA	NA	NA	NA	NA	NA
Sarasota	4.783	4.861	4.552	4.352	4.210	4.101	-0.682	-14.26%
Sumter	7.381	7.138	6.758	6.597	6.591	6.697	-0.684	-9.26%
Total	438.711	438.837	441.659	448.191	453.061	458.977	20.266	4.62%

Table 18. Total 2-in-10 Agricultural Irrigation Water Demand (mgd) Projections by Planning Region (Excluding Lake and Polk Counties)

Planning Region	Base Year	Projected Agricultural Irrigation Water Demand (MGD)					Difference (2010 to 2035)	% Difference (2010 to 2035)
	2010	2015	2020	2025	2030	2035		
Heartland	129.260	130.333	131.510	132.821	134.323	135.947	6.687	5.17%
Northern	25.044	25.476	25.531	26.021	26.798	27.778	2.734	10.92%
Southern	202.778	207.131	213.129	219.844	224.395	229.091	26.313	12.98%
Tampa Bay	81.630	75.898	71.490	69.506	67.544	66.161	-15.468	-18.95%
Total	438.711	438.837	441.659	448.191	453.061	458.977	20.266	4.62%

Table 19. Total Drought (2-in-10) Agricultural Irrigation and Non Irrigation Water Demand (mgd) Projections by County (Excluding Lake and Polk Counties, Except 2035)

County	2010			2015			2020			2025			2030			2035			Difference (2010 to 2035)	
	Irrigation	Non-Irrigation	Total	Total	Percent															
Charlotte	16.426	0.003	16.429	17.778	0.003	17.781	19.340	0.003	19.343	20.941	0.003	20.944	22.579	0.003	22.582	24.252	0.003	24.255	7.826	47.63%
Citrus	1.994	0.013	2.007	1.965	0.013	1.978	1.963	0.013	1.976	2.007	0.013	2.020	2.078	0.013	2.091	2.169	0.013	2.182	0.175	8.73%
DeSoto	95.370	0.717	96.087	99.407	0.717	100.124	104.096	0.717	104.813	109.059	0.717	109.776	111.592	0.717	112.309	114.085	0.717	114.802	18.716	19.48%
Hardee	73.766	0.584	74.350	75.034	0.584	75.618	76.114	0.584	76.698	77.259	0.584	77.843	78.561	0.584	79.145	79.960	0.584	80.544	6.194	8.33%
Hernando	3.008	0.216	3.224	2.961	0.216	3.177	2.897	0.216	3.113	2.861	0.216	3.077	2.848	0.216	3.064	2.852	0.216	3.068	-0.156	-4.83%
Highlands	55.494	0.078	55.572	55.299	0.078	55.377	55.396	0.078	55.474	55.561	0.078	55.639	55.763	0.078	55.841	55.987	0.078	56.065	0.493	0.89%
Hillsborough	63.053	3.157	66.210	58.333	3.157	61.490	54.585	3.157	57.742	53.151	3.157	56.308	51.642	3.157	54.799	50.624	3.157	53.781	-12.429	-18.77%
Lake*	NA	1.600	0.001	1.601	NA	NA														
Levy	7.507	0.017	7.524	8.480	0.017	8.497	8.745	0.017	8.762	9.078	0.017	9.095	9.436	0.017	9.453	9.807	0.017	9.824	2.301	30.58%
Manatee	86.199	0.565	86.764	85.085	0.565	85.650	85.140	0.565	85.705	85.491	0.565	86.056	86.015	0.565	86.580	86.653	0.565	87.218	0.454	0.52%
Marion	5.154	0.029	5.183	4.931	0.029	4.960	5.168	0.029	5.197	5.479	0.029	5.508	5.845	0.029	5.874	6.252	0.029	6.281	1.098	21.17%
Pasco	18.430	0.116	18.546	17.362	0.116	17.478	16.720	0.116	16.836	16.185	0.116	16.301	15.746	0.116	15.862	15.392	0.116	15.508	-3.038	-16.38%
Pinellas	0.147	0.000	0.147	0.203	0.000	0.203	0.185	0.000	0.185	0.170	0.000	0.170	0.157	0.000	0.157	0.146	0.000	0.146	-0.001	-0.75%
Polk*	NA	117.890	2.000	119.890	NA	NA														
Sarasota	4.783	0.189	4.972	4.861	0.189	5.050	4.552	0.189	4.741	4.352	0.189	4.541	4.210	0.189	4.399	4.101	0.189	4.290	-0.682	-13.72%
Sumter	7.381	2.341	9.722	7.138	2.341	9.479	6.758	2.341	9.099	6.597	2.341	8.938	6.591	2.341	8.932	6.697	2.341	9.038	-0.684	-7.03%
Total	438.711	8.025	446.736	438.837	8.025	446.862	441.659	8.025	449.684	448.191	8.025	456.216	453.061	8.025	461.086	578.467	10.026	588.493	NA	NA

*Lake and Polk @ 2035 2-in-10 from Table A-4, Page A-17 of CFWI RWSP Appendices. Years other than 2035 excluded for Lake and Polk.

Table 20. Total Drought (2-in-10) Agricultural Irrigation and Non-Irrigation Water Demand (mgd) Projections by Planning Region (Excluding Lake and Polk Counties, Except 2035)

Planning Region	2010			2015			2020			2025			2030			2035			Difference (2010 to 2035)	
	Irrigation	Non-Irrigation	Total	Total	Percent															
Heartland*	129.260	0.662	129.922	130.333	0.662	130.995	131.510	0.662	132.172	132.821	0.662	133.483	134.323	0.662	134.985	253.837	2.662	256.499	NA	NA
Northern*	25.044	2.616	27.660	25.476	2.616	28.092	25.531	2.616	28.147	26.021	2.616	28.637	26.798	2.616	29.414	29.378	2.617	31.995	NA	NA
Southern	202.778	1.474	204.252	207.131	1.474	208.605	213.129	1.474	214.603	219.844	1.474	221.318	224.395	1.474	225.869	229.091	1.474	230.565	26.313	12.88%
Tampa Bay	81.630	3.273	84.903	75.898	3.273	79.171	71.490	3.273	74.763	69.506	3.273	72.779	67.544	3.273	70.817	66.161	3.273	69.434	-15.468	-18.22%
Total*	438.711	8.025	446.736	438.837	8.025	446.862	441.659	8.025	449.684	448.191	8.025	456.216	453.061	8.025	461.086	578.467	10.026	588.493	NA	NA

*Lake and Polk @ 2035 2-in-10 from Table A-4, Page A-17 of CFWI RWSP Appendices. Years other than 2035 excluded for Lake and Polk.

Crop Aggregation and Classification for AGMOD

Table 21 lists specific crops and shows how they were aggregated to broader RWSP crop groups. Per the recommendation of District staff in the Information Technology Bureau, some outdated codes assigned in the permit database had to be modified to run AGMOD for various purposes. Here are the details:

- 1) Acreage under crop codes A420 (Container Citrus Nursery), A475 (Nurseries), and A487 (Greenhouse Plants/Nursery) were run under code A480 (Nursery, Container).
- 2) Acreage under crop code A500 (Peanuts) was run under A52F (Peanuts, Fall)
- 3) Acreage under crop code A575 (Vegetables, Oriental) was run under crop code A57F (Vegetables Small, Fall)
- 4) Acreage under crop code A425 (Field Citrus Nursery) was run under crop code A485 (Nursery, Field)

Table 21. Broad Classification Key for Agricultural Crops in the District

Water Use Type Code	Water Use Type Description	AGMOD Crop	RWSP Crop Group
A410	Blueberries	Blueberry	Blueberries
A415	Citrus	Citrus	Citrus
A416	Citrus, Flatwood	Flatwood Citrus	Citrus
A480	Container Citrus Nursery	Container Nursery	Nurseries
A485	Field Citrus Nursery	Nursery, Container	Nurseries
A43F	Cucumbers, Fall	Cucumbers, Fall	Cucumbers
A44S	Cucumbers, Spring	Cucumbers, Spring	Cucumbers
A491	Alfalfa	Alfalfa	Field Crops
A450	Corn, Feed	Feed Corn, Silage Corn	Field Crops
A550	Corn, Sweet	Sweet Corn	Field Crops
A455	Grains, All (Wheat, Rye, Barley, Sorghum, etc.)	All Grains (Wheat, Rye, Barley, Sorghum, etc.)	Field Crops
A495	Hay, Commercial	Commercial Hay	Field Crops
A470	Melons	Melons	Melons
A480	Greenhouse Plants/Nursery	Nursery, Container	Nurseries
A480	Nurseries	Nursery, Container	Nurseries
A480	Nursery, Container	Container Nursery	Nurseries
A485	Nursery, Field	Field Nursery	Nurseries
A460	Lawn & Landscape Irrigation	Lawn & Landscape Irrigation	Other Farm Uses
A445	Fruit trees other than citrus	Fruit trees, not Citrus	Other Fruit trees
A590	Vineyards	Vineyards	Other Fruit trees
A465	Beans, Dry	All Beans	Other Vegetables/Row Crops
A615	Cabbage Bok Choy	Cabbage Bok Choy	Other Vegetables/Row Crops
A430	Cover Crop	Cover Crop	Other Vegetables/Row Crops

Water Use Type Code	Water Use Type Description	AGMOD Crop	RWSP Crop Group
A635	Eggplant	Eggplant	Other Vegetables/Row Crops
A646	Onions	Onions	Other Vegetables/Row Crops
A52F	Peanuts	Peanuts	Other Vegetables/Row Crops
A52F	Peanuts, Fall	Fall Peanuts	Other Vegetables/Row Crops
A52S	Peanuts, Spring	Spring Peanuts	Other Vegetables/Row Crops
A651	Peas, Snow Peas	Peas, Snow Peas	Other Vegetables/Row Crops
A50F	Peppers, Fall	Fall Peppers	Other Vegetables/Row Crops
A51S	Peppers, Spring	Spring Peppers	Other Vegetables/Row Crops
A655	Squash, Zucchini - (Non Cover Crop)	Squash, Zucchini - (Non Cover Crop)	Other Vegetables/Row Crops
A58H	Summer Small Vegetables	Summer Small Vegetables	Other Vegetables/Row Crops
A57F	Vegetables Small, Fall	Fall Small Vegetable	Other Vegetables/Row Crops
A58S	Vegetables Small, Spring	Spring Small Vegetables	Other Vegetables/Row Crops
A57F	Vegetables, Oriental	Vegetables, Small	Other Vegetables/Row Crops
A57S	Vegetables, Spring	Vegetables, Small	Other Vegetables/Row Crops
A490	Pasture	Pasture	Pasture
A515	Potatoes	Potato	Potatoes
A525	Sod	Sod	Sod
A535	Strawberries	Strawberries	Strawberries
A56F	Tomatoes, Fall	Fall Tomatoes	Tomatoes
A56S	Tomatoes, Spring	Spring Tomatoes	Tomatoes

Summary

The District has generated projections for both livestock and irrigated agriculture. In the case of irrigated agriculture, the District is expecting a net increase in demand of 16.7 million gallons per day (mgd) from 446.1 mgd in 2010 to 462.8 mgd in 2035. This increase is distributed as follows: 4.4 mgd increase in the Heartland Planning Region, 1.8 mgd increase in the Northern Planning Region, 22.2 mgd increase in the Southern Planning Region, and 11.8 mgd decrease in the Tampa Bay Planning Region. Livestock (non-irrigation) water demand is expected to remain steady at 10.03 mgd. The projected increase in demand is within existing agricultural permit quantities.

Appendices

Appendix A is a collection of tables with detailed agricultural data by county by crop. Appendix B presents tables and graphs showing commercial citrus acreage by county for the years 2000-2013. Appendix C provides a description of the deviation from the projections provided by FDACS.

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Appendix A

Agricultural Data Tables

Charlotte County

Table A-1. Projected Irrigated Acreage in Charlotte County

Major Crop Category	Irrigated Acreage					
	2010	2015	2020	2025	2030	2035
Blueberries	0	0	0	0	0	0
Citrus	7,459	7,841	8,243	8,664	9,108	9,574
Cucumbers	137	88	61	42	29	20
Field Crops	68	92	107	122	136	151
Melons	789	1,113	1,243	1,372	1,501	1,630
Nurseries	169	122	127	132	136	141
Other Farm Uses	0	0	0	0	0	0
Other Fruit trees	0	51	51	51	51	51
Other Veg./Row Crops	49	25	16	10	6	4
Pasture	786	389	458	527	596	665
Potatoes	115	154	141	128	116	103
Sod	199	263	312	361	410	458
Strawberries	0	0	0	0	0	0
Tomatoes	1,128	1,579	1,937	2,295	2,653	3,011
Total	10,899	11,718	12,695	13,704	14,743	15,810

Table A-2. Projected Average Irrigation Water Demand (mgd) for Agriculture in Charlotte County

Major Crop Category	Average Demands (mgd)					
	2010	2015	2020	2025	2030	2035
Blueberries	0.000	0.000	0.000	0.000	0.000	0.000
Citrus	7.972	8.380	8.809	9.260	9.734	10.232
Cucumbers	0.078	0.050	0.035	0.024	0.017	0.011
Field Crops	0.147	0.201	0.233	0.265	0.297	0.329
Melons	1.059	1.495	1.669	1.842	2.016	2.190
Nurseries	1.014	0.732	0.760	0.789	0.817	0.845
Other Farm Uses	0.000	0.000	0.000	0.000	0.000	0.000
Other Fruit trees	0.000	0.072	0.072	0.072	0.072	0.072
Other Veg./Row Crops	0.048	0.025	0.016	0.010	0.006	0.004
Pasture	0.736	0.364	0.429	0.493	0.558	0.623
Potatoes	0.090	0.120	0.110	0.100	0.090	0.080
Sod	0.376	0.497	0.590	0.682	0.775	0.867
Strawberries	0.000	0.000	0.000	0.000	0.000	0.000
Tomatoes	1.896	2.654	3.256	3.858	4.460	5.061
Total	13.415	14.589	15.977	17.395	18.841	20.315

Table A-3. Projected 2-in-10 Irrigation Water Demand (mgd) for Agriculture in Charlotte County

Major Crop Category	2-in-10 Demands (mgd)					
	2010	2015	2020	2025	2030	2035
Blueberries	0.000	0.000	0.000	0.000	0.000	0.000
Citrus	10.763	11.314	11.893	12.502	13.141	13.814
Cucumbers	0.078	0.050	0.035	0.024	0.017	0.011
Field Crops	0.166	0.226	0.263	0.299	0.335	0.371
Melons	1.119	1.579	1.762	1.946	2.129	2.312
Nurseries	1.113	0.804	0.835	0.866	0.897	0.928
Other Farm Uses	0.000	0.000	0.000	0.000	0.000	0.000
Other Fruit trees	0.000	0.089	0.089	0.089	0.089	0.089
Other Veg./Row Crops	0.049	0.025	0.016	0.010	0.006	0.004
Pasture	0.736	0.364	0.429	0.493	0.558	0.623
Potatoes	0.094	0.126	0.116	0.105	0.095	0.084
Sod	0.413	0.547	0.649	0.750	0.852	0.954
Strawberries	0.000	0.000	0.000	0.000	0.000	0.000
Tomatoes	1.896	2.654	3.256	3.858	4.460	5.061
Total	16.426	17.778	19.340	20.941	22.579	24.252

Citrus County

Table A-4. Projected Irrigated Acreage in Citrus County

Major Crop Category	Irrigated Acreage					
	2010	2015	2020	2025	2030	2035
Blueberries	33	38	44	49	55	61
Citrus	0	0	0	0	0	0
Cucumbers	0	0	0	0	0	0
Field Crops	362	378	395	412	430	449
Melons	238	111	69	43	27	17
Nurseries	84	88	92	97	101	106
Other Farm Uses	14	12	11	10	9	8
Other Fruit trees	0	62	62	62	62	62
Other Veg./Row Crops	70	57	82	106	131	155
Pasture	201	143	90	57	36	23
Potatoes	0	0	0	0	0	0
Sod	0	3	4	6	7	9
Strawberries	96	103	107	112	116	121
Tomatoes	0	0	0	0	0	0
Total	1,098	995	956	953	974	1,010

Table A-5. Projected Average Irrigation Water Demand (mgd) for Agriculture in Citrus County

Major Crop Category	Average Demands (mgd)					
	2010	2015	2020	2025	2030	2035
Blueberries	0.065	0.074	0.085	0.096	0.107	0.118
Citrus	0.000	0.000	0.000	0.000	0.000	0.000
Cucumbers	0.000	0.000	0.000	0.000	0.000	0.000
Field Crops	0.505	0.527	0.550	0.574	0.599	0.626
Melons	0.330	0.154	0.096	0.059	0.037	0.023
Nurseries	0.408	0.428	0.449	0.472	0.495	0.520
Other Farm Uses	0.022	0.014	0.014	0.014	0.014	0.014
Other Fruit trees	0.000	0.131	0.131	0.131	0.131	0.131
Other Veg./Row Crops	0.086	0.070	0.100	0.131	0.161	0.191
Pasture	0.180	0.128	0.081	0.051	0.032	0.020
Potatoes	0.000	0.000	0.000	0.000	0.000	0.000
Sod	0.000	0.008	0.012	0.016	0.020	0.024
Strawberries	0.209	0.223	0.233	0.243	0.253	0.262
Tomatoes	0.000	0.000	0.000	0.000	0.000	0.000
Total	1.805	1.759	1.752	1.787	1.849	1.929

Table A-6. Projected 2-in-10 Irrigation Water Demand (mgd) for Agriculture in Citrus County

Major Crop Category	2-in-10 Demands (mgd)					
	2010	2015	2020	2025	2030	2035
Blueberries	0.078	0.089	0.103	0.116	0.129	0.143
Citrus	0.000	0.000	0.000	0.000	0.000	0.000
Cucumbers	0.000	0.000	0.000	0.000	0.000	0.000
Field Crops	0.591	0.616	0.643	0.672	0.701	0.732
Melons	0.368	0.172	0.107	0.066	0.041	0.026
Nurseries	0.450	0.473	0.496	0.521	0.547	0.574
Other Farm Uses	0.022	0.014	0.014	0.014	0.014	0.014
Other Fruit trees	0.000	0.163	0.163	0.163	0.163	0.163
Other Veg./Row Crops	0.095	0.078	0.112	0.145	0.179	0.213
Pasture	0.180	0.128	0.081	0.051	0.032	0.020
Potatoes	0.000	0.000	0.000	0.000	0.000	0.000
Sod	0.000	0.008	0.012	0.016	0.020	0.024
Strawberries	0.209	0.223	0.233	0.243	0.253	0.262
Tomatoes	0.000	0.000	0.000	0.000	0.000	0.000
Total	1.994	1.965	1.963	2.007	2.078	2.169

Desoto County

Table A-7. Projected Irrigated Acreage in DeSoto County

Major Crop Category	Irrigated Acreage					
	2010	2015	2020	2025	2030	2035
Blueberries	52	119	129	138	148	157
Citrus	62,508	64,436	66,423	68,472	68,559	68,559
Cucumbers	0	0	0	0	0	0
Field Crops	201	105	81	62	48	37
Melons	2,825	2,882	3,771	4,659	5,548	6,437
Nurseries	26	17	22	28	35	44
Other Farm Uses	4	0	0	0	0	0
Other Fruit trees	0	95	95	95	95	95
Other Veg./Row Crops	929	981	1,397	1,814	2,230	2,647
Pasture	960	1,073	621	359	208	120
Potatoes	0	0	0	0	0	0
Sod	1,093	1,303	1,309	1,314	1,320	1,326
Strawberries	715	791	910	1,030	1,149	1,269
Tomatoes	1,790	2,049	2,158	2,266	2,375	2,484
Total	71,101	73,850	76,914	80,237	81,715	83,174

Table A-8. Projected Average Irrigation Water Demands (mgd) for Agriculture in DeSoto County

Major Crop Category	Average Demands (mgd)					
	2010	2015	2020	2025	2030	2035
Blueberries	0.084	0.192	0.207	0.222	0.238	0.253
Citrus	56.442	58.183	59.977	61.827	61.906	61.906
Cucumbers	0.000	0.000	0.000	0.000	0.000	0.000
Field Crops	0.222	0.116	0.089	0.069	0.053	0.041
Melons	4.067	4.149	5.428	6.708	7.987	9.266
Nurseries	0.122	0.082	0.103	0.130	0.164	0.207
Other Farm Uses	0.003	0.062	0.079	0.095	0.110	0.124
Other Fruit trees	0.000	0.133	0.133	0.133	0.133	0.133
Other Veg./Row Crops	1.431	1.511	2.153	2.794	3.436	4.078
Pasture	0.916	1.024	0.592	0.342	0.198	0.115
Potatoes	0.000	0.000	0.000	0.000	0.000	0.000
Sod	2.405	2.867	2.879	2.892	2.905	2.917
Strawberries	1.594	1.767	2.034	2.301	2.569	2.836
Tomatoes	2.541	2.910	3.064	3.218	3.372	3.526
Total	69.828	72.994	76.738	80.731	83.069	85.402

Table A-9. Projected 2-in-10 Irrigation Water Demands (mgd) for Agriculture in DeSoto County

Major Crop Category	2-in-10 Demands (mgd)					
	2010	2015	2020	2025	2030	2035
Blueberries	0.110	0.249	0.270	0.290	0.310	0.330
Citrus	81.188	83.692	86.274	88.935	89.048	89.048
Cucumbers	0.000	0.000	0.000	0.000	0.000	0.000
Field Crops	0.257	0.134	0.103	0.079	0.061	0.047
Melons	4.466	4.556	5.960	7.365	8.770	10.175
Nurseries	0.129	0.086	0.109	0.137	0.173	0.218
Other Farm Uses	0.003	0.062	0.079	0.095	0.110	0.124
Other Fruit trees	0.000	0.165	0.165	0.165	0.165	0.165
Other Veg./Row Crops	1.496	1.580	2.251	2.922	3.593	4.263
Pasture	0.916	1.024	0.592	0.342	0.198	0.115
Potatoes	0.000	0.000	0.000	0.000	0.000	0.000
Sod	2.669	3.182	3.196	3.210	3.224	3.239
Strawberries	1.594	1.767	2.034	2.301	2.569	2.836
Tomatoes	2.541	2.910	3.064	3.218	3.372	3.526
Total	95.370	99.407	104.096	109.059	111.592	114.085

Hardee County

Table A-10. Projected Irrigated Acreage in Hardee County

Major Crop Category	Irrigated Acreage					
	2010	2015	2020	2025	2030	2035
Blueberries	201	342	452	562	672	782
Citrus	46,921	47,754	48,602	49,465	50,343	51,237
Cucumbers	6	0	0	0	0	0
Field Crops	586	860	889	917	946	975
Melons	1,305	1,499	1,261	1,023	785	546
Nurseries	623	651	680	710	741	774
Other Farm Uses	55	47	46	44	43	41
Other Fruit trees	19	28	28	28	28	28
Other Veg./Row Crops	130	68	68	33	23	16
Pasture	2,339	1,529	1,205	950	749	590
Potatoes	0	0	0	0	0	0
Sod	1,050	1,153	1,406	1,660	1,913	2,166
Strawberries	220	164	168	171	175	179
Tomatoes	559	511	407	324	259	206
Total	54,014	54,605	55,210	55,886	56,675	57,540

Table A-11. Projected Average Irrigation Water Demands (mgd) for Agriculture in Hardee County

Major Crop Category	Average Demands (mgd)					
	2010	2015	2020	2025	2030	2035
Blueberries	0.304	0.517	0.684	0.850	1.017	1.183
Citrus	42.022	42.768	43.527	44.300	45.086	45.887
Cucumbers	0.006	0.000	0.000	0.000	0.000	0.000
Field Crops	0.511	0.751	0.776	0.801	0.826	0.851
Melons	2.158	2.479	2.085	1.691	1.298	0.904
Nurseries	2.664	2.782	2.905	3.034	3.169	3.310
Other Farm Uses	0.108	0.061	0.060	0.059	0.057	0.056
Other Fruit trees	0.031	0.045	0.045	0.045	0.045	0.045
Other Veg./Row Crops	0.218	0.114	0.114	0.055	0.038	0.026
Pasture	1.963	1.283	1.012	0.797	0.628	0.495
Potatoes	0.000	0.000	0.000	0.000	0.000	0.000
Sod	1.898	2.084	2.542	3.000	3.457	3.915
Strawberries	0.505	0.376	0.385	0.394	0.403	0.412
Tomatoes	1.163	1.064	0.847	0.675	0.538	0.429
Total	53.552	54.324	54.982	55.701	56.563	57.513

Table A-12. Projected 2-in-10 Irrigation Water Demands (mgd) for Agriculture in Hardee County

Major Crop Category	2-in-10 Demands (mgd)					
	2010	2015	2020	2025	2030	2035
Blueberries	0.407	0.693	0.916	1.139	1.362	1.586
Citrus	61.338	62.427	63.535	64.663	65.811	66.979
Cucumbers	0.006	0.000	0.000	0.000	0.000	0.000
Field Crops	0.586	0.860	0.889	0.917	0.946	0.975
Melons	2.351	2.700	2.271	1.842	1.413	0.984
Nurseries	2.818	2.943	3.074	3.211	3.353	3.502
Other Farm Uses	0.108	0.061	0.060	0.059	0.057	0.056
Other Fruit trees	0.040	0.059	0.059	0.059	0.059	0.059
Other Veg./Row Crops	0.238	0.124	0.124	0.060	0.041	0.029
Pasture	1.963	1.283	1.012	0.797	0.628	0.495
Potatoes	0.000	0.000	0.000	0.000	0.000	0.000
Sod	2.141	2.352	2.868	3.385	3.901	4.418
Strawberries	0.505	0.376	0.385	0.394	0.403	0.412
Tomatoes	1.264	1.156	0.921	0.734	0.585	0.466
Total	73.766	75.034	76.114	77.259	78.561	79.960

Hernando County

Table A-13. Projected Irrigated Acreage in Hernando County

Major Crop Category	Irrigated Acreage					
	2010	2015	2020	2025	2030	2035
Blueberries	149	193	230	267	304	341
Citrus	906	878	851	824	799	774
Cucumbers	0	0	0	0	0	0
Field Crops	35	49	36	26	19	14
Melons	0	0	0	0	0	0
Nurseries	184	141	113	90	72	57
Other Farm Uses	0	15	22	29	36	43
Other Fruit trees	2	52	52	52	52	52
Other Veg./Row Crops	8	3	2	1	1	0
Pasture	432	324	335	347	359	372
Potatoes	0	0	0	0	0	0
Sod	0	0	0	0	0	0
Strawberries	0	0	0	0	0	0
Tomatoes	181	174	176	178	180	182
Total	1,897	1,829	1,816	1,815	1,822	1,836

Table A-14. Projected Average Irrigation Water Demand (mgd) for Agriculture in Hernando County

Major Crop Category	Average Demands (mgd)					
	2010	2015	2020	2025	2030	2035
Blueberries	0.282	0.364	0.433	0.503	0.573	0.643
Citrus	1.081	1.047	1.015	0.983	0.953	0.923
Cucumbers	0.000	0.000	0.000	0.000	0.000	0.000
Field Crops	0.055	0.077	0.056	0.041	0.030	0.022
Melons	0.000	0.000	0.000	0.000	0.000	0.000
Nurseries	0.567	0.434	0.347	0.277	0.221	0.176
Other Farm Uses	0.000	0.006	0.006	0.006	0.006	0.006
Other Fruit trees	0.003	0.092	0.092	0.092	0.092	0.092
Other Veg./Row Crops	0.000	0.000	0.000	0.000	0.000	0.000
Pasture	0.382	0.287	0.297	0.307	0.318	0.329
Potatoes	0.000	0.000	0.000	0.000	0.000	0.000
Sod	0.000	0.000	0.000	0.000	0.000	0.000
Strawberries	0.000	0.000	0.000	0.000	0.000	0.000
Tomatoes	0.157	0.151	0.152	0.154	0.156	0.158
Total	2.527	2.457	2.398	2.363	2.348	2.349

Table A-15. Projected 2-in-10 Irrigation Water Demand (mgd) for Agriculture in Hernando County

Major Crop Category	2-in-10 Demands (mgd)					
	2010	2015	2020	2025	2030	2035
Blueberries	0.359	0.463	0.552	0.640	0.729	0.818
Citrus	1.386	1.343	1.301	1.261	1.222	1.184
Cucumbers	0.000	0.000	0.000	0.000	0.000	0.000
Field Crops	0.067	0.093	0.068	0.050	0.036	0.026
Melons	0.000	0.000	0.000	0.000	0.000	0.000
Nurseries	0.634	0.485	0.387	0.309	0.247	0.197
Other Farm Uses	0.000	0.006	0.006	0.006	0.006	0.006
Other Fruit trees	0.004	0.114	0.114	0.114	0.114	0.114
Other Veg./Row Crops	0.000	0.000	0.000	0.000	0.000	0.000
Pasture	0.382	0.287	0.297	0.307	0.318	0.329
Potatoes	0.000	0.000	0.000	0.000	0.000	0.000
Sod	0.000	0.000	0.000	0.000	0.000	0.000
Strawberries	0.000	0.000	0.000	0.000	0.000	0.000
Tomatoes	0.176	0.170	0.172	0.174	0.176	0.178
Total	3.008	2.961	2.897	2.861	2.848	2.852

Highlands County

Table A-16. Projected Irrigated Acreage in Highlands County

Major Crop Category	Irrigated Acreage					
	2010	2015	2020	2025	2030	2035
Blueberries	55	80	105	130	155	181
Citrus	30,945	30,726	30,509	30,293	30,079	29,866
Cucumbers	0	0	0	0	0	0
Field Crops	0	0	0	0	0	0
Melons	0	0	0	0	0	0
Nurseries	425	493	615	737	858	980
Other Farm Uses	18	14	12	10	9	8
Other Fruit trees	0	34	34	34	34	34
Other Veg./Row Crops	44	53	66	81	99	121
Pasture	113	179	151	124	97	70
Potatoes	0	0	0	0	0	0
Sod	200	78	33	14	6	3
Strawberries	0	0	0	0	0	0
Tomatoes	0	0	0	0	0	0
Total	31,799	31,657	31,525	31,423	31,338	31,262

Table A-17. Projected Average Irrigation Water Demand (mgd) for Agriculture in Highlands County

Major Crop Category	Average Demands (mgd)					
	2010	2015	2020	2025	2030	2035
Blueberries	0.106	0.155	0.204	0.253	0.302	0.351
Citrus	39.416	39.137	38.860	38.586	38.313	38.042
Cucumbers	0.000	0.000	0.000	0.000	0.000	0.000
Field Crops	0.000	0.000	0.000	0.000	0.000	0.000
Melons	0.000	0.000	0.000	0.000	0.000	0.000
Nurseries	1.663	1.931	2.407	2.883	3.359	3.835
Other Farm Uses	0.034	0.022	0.021	0.021	0.021	0.020
Other Fruit trees	0.000	0.048	0.048	0.048	0.048	0.048
Other Veg./Row Crops	0.102	0.126	0.154	0.189	0.232	0.285
Pasture	0.080	0.127	0.107	0.088	0.069	0.049
Potatoes	0.000	0.000	0.000	0.000	0.000	0.000
Sod	0.423	0.165	0.070	0.030	0.013	0.005
Strawberries	0.000	0.000	0.000	0.000	0.000	0.000
Tomatoes	0.000	0.000	0.000	0.000	0.000	0.000
Total	41.825	41.710	41.873	42.098	42.356	42.636

Table A-18. Projected 2-in-10 Irrigation Water Demand (mgd) for Agriculture in Highlands County

Major Crop Category	2-in-10 Demands (mgd)					
	2010	2015	2020	2025	2030	2035
Blueberries	0.135	0.197	0.259	0.321	0.383	0.445
Citrus	52.931	52.557	52.186	51.816	51.450	51.086
Cucumbers	0.000	0.000	0.000	0.000	0.000	0.000
Field Crops	0.000	0.000	0.000	0.000	0.000	0.000
Melons	0.000	0.000	0.000	0.000	0.000	0.000
Nurseries	1.749	2.031	2.532	3.033	3.534	4.035
Other Farm Uses	0.034	0.022	0.021	0.021	0.021	0.020
Other Fruit trees	0.000	0.059	0.059	0.059	0.059	0.059
Other Veg./Row Crops	0.102	0.126	0.154	0.189	0.232	0.285
Pasture	0.080	0.127	0.107	0.088	0.069	0.049
Potatoes	0.000	0.000	0.000	0.000	0.000	0.000
Sod	0.462	0.180	0.077	0.033	0.014	0.006
Strawberries	0.000	0.000	0.000	0.000	0.000	0.000
Tomatoes	0.000	0.000	0.000	0.000	0.000	0.000
Total	55.494	55.299	55.396	55.561	55.763	55.987

Hillsborough County

Table A-19. Projected Irrigated Acreage in Hillsborough County

Major Crop Category	Irrigated Acreage					
	2010	2015	2020	2025	2030	2035
Blueberries	194	236	286	336	386	436
Citrus	9,677	7,999	6,612	5,465	4,518	3,734
Cucumbers	742	793	892	992	1,091	1,190
Field Crops	320	279	345	411	477	543
Melons	336	515	645	775	905	1,036
Nurseries	939	597	269	269	181	121
Other Farm Uses	46	17	8	4	2	1
Other Fruit trees	9	224	224	224	224	224
Other Veg./Row Crops	1,458	1,517	1,528	1,538	1,549	1,560
Pasture	232	186	102	55	30	17
Potatoes	0	0	0	0	0	0
Sod	754	744	594	475	379	303
Strawberries	7,127	7,524	8,313	9,102	9,890	10,679
Tomatoes	6,154	5,448	4,726	4,003	3,281	2,559
Total	27,988	26,079	24,544	23,650	22,914	22,403

Table A-20. Projected Average Irrigation Water Demands (mgd) for Agriculture in Hillsborough County

Major Crop Category	Average Demands (mgd)					
	2010	2015	2020	2025	2030	2035
Blueberries	0.432	0.526	0.637	0.748	0.860	0.971
Citrus	11.161	9.226	7.626	6.304	5.211	4.307
Cucumbers	1.273	1.360	1.530	1.701	1.871	2.041
Field Crops	0.437	0.381	0.471	0.561	0.651	0.742
Melons	0.650	0.996	1.248	1.500	1.752	2.004
Nurseries	4.826	3.067	1.383	1.383	0.929	0.623
Other Farm Uses	0.164	0.090	0.076	0.062	0.047	0.031
Other Fruit trees	0.009	0.234	0.234	0.234	0.234	0.234
Other Veg./Row Crops	2.586	2.691	2.710	2.729	2.748	2.768
Pasture	0.248	0.198	0.108	0.059	0.032	0.018
Potatoes	0.000	0.000	0.000	0.000	0.000	0.000
Sod	1.722	1.701	1.358	1.085	0.867	0.692
Strawberries	17.961	18.963	20.951	22.939	24.927	26.915
Tomatoes	15.991	14.158	12.280	10.403	8.526	6.648
Total	57.462	53.589	50.613	49.707	48.653	47.994

Table A-21. Projected 2-in-10 Irrigation Water Demands (mgd) for Agriculture in Hillsborough County

Major Crop Category	2-in-10 Demands (mgd)					
	2010	2015	2020	2025	2030	2035
Blueberries	0.555	0.675	0.818	0.961	1.104	1.247
Citrus	15.975	13.205	10.915	9.023	7.458	6.165
Cucumbers	1.273	1.360	1.530	1.701	1.871	2.041
Field Crops	0.498	0.434	0.537	0.639	0.742	0.845
Melons	0.718	1.101	1.379	1.658	1.937	2.215
Nurseries	5.162	3.281	1.479	1.479	0.993	0.667
Other Farm Uses	0.164	0.090	0.076	0.062	0.047	0.031
Other Fruit trees	0.012	0.293	0.293	0.293	0.293	0.293
Other Veg./Row Crops	2.592	2.697	2.716	2.736	2.755	2.774
Pasture	0.248	0.198	0.108	0.059	0.032	0.018
Potatoes	0.000	0.000	0.000	0.000	0.000	0.000
Sod	1.903	1.879	1.501	1.199	0.957	0.765
Strawberries	17.961	18.963	20.951	22.939	24.927	26.915
Tomatoes	15.991	14.158	12.280	10.403	8.526	6.648
Total	63.053	58.333	54.585	53.151	51.642	50.624

Lake County

Table A-22. Projected Irrigated Acreage in Lake County (CFWI RWSP Draft - May 2015)

Major Crop Category	Irrigated Acreage					
	2010	2015	2020	2025	2030	2035
Citrus	666	573	479	385	292	206
Cucumbers	0	0	0	0	0	0
Field Crops	89	89	89	89	89	89
Melons	195	195	195	195	195	195
Nurseries	0	0	0	0	0	0
Other Veg./Row Crops	30	30	30	30	30	30
Pasture	467	467	467	467	467	467
Potatoes	0	0	0	0	0	0
Sod	0	0	0	0	0	0
Strawberries	0	0	0	0	0	0
Tomatoes	0	0	0	0	0	0
Miscellaneous	0	0	0	0	0	0
Total	1,447	1,354	1,260	1,166	1,073	987

Table A-23. Projected Average Irrigation Water Demand (mgd) for Agriculture in Lake Co. (CFWI RWSP Draft - May 2015)

Major Crop Category	Average Demands (mgd)					
	2010	2015	2020	2025	2030	2035
Citrus	0.930	0.800	0.670	0.540	0.410	0.340
Cucumbers	0.000	0.000	0.000	0.000	0.000	0.000
Field Crops	0.090	0.090	0.090	0.090	0.090	0.090
Melons	0.190	0.190	0.190	0.190	0.190	0.190
Nurseries	0.000	0.000	0.000	0.000	0.000	0.000
Other Veg./Row Crops	0.030	0.030	0.030	0.030	0.030	0.030
Pasture	0.450	0.450	0.450	0.450	0.450	0.450
Potatoes	0.000	0.000	0.000	0.000	0.000	0.000
Sod	0.000	0.000	0.000	0.000	0.000	0.000
Strawberries	0.000	0.000	0.000	0.000	0.000	0.000
Tomatoes	0.000	0.000	0.000	0.000	0.000	0.000
Miscellaneous	0.000	0.000	0.000	0.000	0.000	0.000
Total	1.690	1.560	1.430	1.300	1.170	1.100

Levy County

Table A-24. Projected Irrigated Acreage in Levy County

Major Crop Category	Irrigated Acreage					
	2010	2015	2020	2025	2030	2035
Blueberries	88	74	103	132	161	190
Citrus	0	0	0	0	0	0
Cucumbers	0	0	0	0	0	0
Field Crops	377	133	49	18	7	2
Melons	1,584	1,581	1,386	1,191	996	801
Nurseries	47	89	119	149	179	209
Other Farm Uses	0	0	0	0	0	0
Other Fruit trees	0	51	51	51	51	51
Other Veg./Row Crops	1,249	1,849	2,084	2,320	2,556	2,791
Pasture	763	649	664	679	694	709
Potatoes	0	0	0	0	0	0
Sod	475	498	521	546	572	599
Strawberries	0	0	0	0	0	0
Tomatoes	0	0	0	0	0	0
Total	4,583	4,923	4,978	5,087	5,216	5,354

Table A-25. Projected Average Irrigation Water Demands (mgd) in Levy County

Major Crop Category	Average Demands (mgd)					
	2010	2015	2020	2025	2030	2035
Blueberries	0.154	0.128	0.179	0.230	0.281	0.332
Citrus	0.000	0.000	0.000	0.000	0.000	0.000
Cucumbers	0.000	0.000	0.000	0.000	0.000	0.000
Field Crops	0.392	0.138	0.051	0.019	0.007	0.002
Melons	2.042	2.038	1.787	1.536	1.284	1.033
Nurseries	0.144	0.274	0.366	0.458	0.550	0.642
Other Farm Uses	0.000	0.000	0.000	0.000	0.000	0.000
Other Fruit trees	0.000	0.108	0.108	0.108	0.108	0.108
Other Veg./Row Crops	2.010	2.976	3.355	3.735	4.114	4.494
Pasture	0.722	0.615	0.629	0.643	0.657	0.672
Potatoes	0.000	0.000	0.000	0.000	0.000	0.000
Sod	1.179	1.235	1.294	1.355	1.420	1.487
Strawberries	0.000	0.000	0.000	0.000	0.000	0.000
Tomatoes	0.000	0.000	0.000	0.000	0.000	0.000
Total	6.644	7.513	7.769	8.084	8.422	8.770

Table A-26. Projected 2-in-10 Irrigation Water Demands (mgd) for Agriculture in Levy County

Major Crop Category	2-in-10 Demands (mgd)					
	2010	2015	2020	2025	2030	2035
Blueberries	0.191	0.160	0.223	0.286	0.350	0.413
Citrus	0.000	0.000	0.000	0.000	0.000	0.000
Cucumbers	0.000	0.000	0.000	0.000	0.000	0.000
Field Crops	0.455	0.160	0.059	0.022	0.008	0.003
Melons	2.451	2.446	2.144	1.843	1.541	1.240
Nurseries	0.168	0.319	0.426	0.533	0.640	0.747
Other Farm Uses	0.000	0.000	0.000	0.000	0.000	0.000
Other Fruit trees	0.000	0.134	0.134	0.134	0.134	0.134
Other Veg./Row Crops	2.217	3.281	3.700	4.118	4.537	4.955
Pasture	0.722	0.615	0.629	0.643	0.657	0.672
Potatoes	0.000	0.000	0.000	0.000	0.000	0.000
Sod	1.303	1.365	1.430	1.498	1.569	1.644
Strawberries	0.000	0.000	0.000	0.000	0.000	0.000
Tomatoes	0.000	0.000	0.000	0.000	0.000	0.000
Total	7.507	8.480	8.745	9.078	9.436	9.807

Manatee County

Table A-27. Projected Irrigated Acreage in Manatee County

Major Crop Category	Irrigated Acreage					
	2010	2015	2020	2025	2030	2035
Blueberries	18	13	11	9	7	6
Citrus	18,400	18,179	17,961	17,745	17,532	17,322
Cucumbers	2,911	3,153	3,415	3,700	4,007	4,341
Field Crops	543	441	549	657	765	873
Melons	1,001	1,086	1,367	1,648	1,930	2,211
Nurseries	472	537	534	531	528	525
Other Farm Uses	29	25	24	24	24	24
Other Fruit trees	27	143	143	143	143	143
Other Veg./Row Crops	5,260	6,763	7,269	7,776	8,282	8,789
Pasture	565	576	464	352	240	129
Potatoes	1,741	2,247	2,048	1,850	1,652	1,454
Sod	668	466	238	122	62	32
Strawberries	371	329	398	466	535	603
Tomatoes	16,346	14,150	13,608	13,067	12,525	11,984
Total	48,352	48,106	48,030	48,090	48,233	48,434

Table A-28. Projected Average Irrigation Water Demand (mgd) for Agriculture in Manatee County

Major Crop Category	Average Demands (mgd)					
	2010	2015	2020	2025	2030	2035
Blueberries	0.024	0.017	0.014	0.012	0.010	0.008
Citrus	16.487	16.289	16.093	15.900	15.709	15.520
Cucumbers	5.152	5.580	6.044	6.547	7.092	7.682
Field Crops	0.802	0.651	0.811	0.970	1.129	1.289
Melons	1.898	2.060	2.594	3.127	3.660	4.193
Nurseries	1.786	2.029	2.019	2.008	1.998	1.987
Other Farm Uses	0.075	0.397	0.420	0.441	0.462	0.481
Other Fruit trees	0.027	0.143	0.143	0.143	0.143	0.143
Other Veg./Row Crops	10.789	13.871	14.910	15.949	16.988	18.027
Pasture	0.605	0.616	0.496	0.377	0.257	0.138
Potatoes	1.971	2.544	2.319	2.095	1.870	1.646
Sod	1.374	0.958	0.490	0.250	0.128	0.065
Strawberries	0.900	0.799	0.965	1.131	1.298	1.464
Tomatoes	39.199	33.933	32.634	31.335	30.037	28.738
Total	81.088	79.887	79.952	80.286	80.781	81.382

Table A-29. Projected 2-in-10 Irrigation Water Demand (mgd) for Agriculture in Manatee County

Major Crop Category	2-in-10 Demands (mgd)					
	2010	2015	2020	2025	2030	2035
Blueberries	0.031	0.022	0.018	0.015	0.013	0.011
Citrus	20.438	20.193	19.950	19.711	19.474	19.240
Cucumbers	5.152	5.580	6.044	6.547	7.092	7.682
Field Crops	0.933	0.758	0.943	1.128	1.314	1.499
Melons	2.074	2.251	2.834	3.417	4.000	4.582
Nurseries	1.998	2.270	2.258	2.247	2.235	2.223
Other Farm Uses	0.075	0.397	0.420	0.441	0.462	0.481
Other Fruit trees	0.033	0.174	0.174	0.174	0.174	0.174
Other Veg./Row Crops	11.120	14.296	15.367	16.437	17.508	18.579
Pasture	0.605	0.616	0.496	0.377	0.257	0.138
Potatoes	2.118	2.733	2.492	2.251	2.010	1.768
Sod	1.525	1.062	0.543	0.277	0.142	0.072
Strawberries	0.900	0.799	0.965	1.131	1.298	1.464
Tomatoes	39.199	33.933	32.634	31.335	30.037	28.738
Total	86.199	85.085	85.140	85.491	86.015	86.653

Marion County

Table A-30. Projected Irrigated Acreage in Marion County

Major Crop Category	Irrigated Acreage					
	2010	2015	2020	2025	2030	2035
Blueberries	0	0	0	0	0	0
Citrus	0	0	0	0	0	0
Cucumbers	0	0	0	0	0	0
Field Crops	1,025	1,072	1,359	1,646	1,933	2,220
Melons	1,030	1,046	1,061	1,077	1,093	1,109
Nurseries	134	143	152	161	171	182
Other Farm Uses	208	214	227	240	253	266
Other Fruit trees	0	40	40	40	40	40
Other Veg./Row Crops	695	493	353	253	181	129
Pasture	193	163	140	120	103	89
Potatoes	0	0	0	0	0	0
Sod	0	6	3	2	1	0
Strawberries	0	0	0	0	0	0
Tomatoes	3	3	3	3	2	2
Total	3,289	3,178	3,337	3,540	3,777	4,038

Table A-31. Projected Average Irrigation Water Demands (mgd) for Agriculture in Marion County

Major Crop Category	Average Demands (mgd)					
	2010	2015	2020	2025	2030	2035
Blueberries	0.000	0.000	0.000	0.000	0.000	0.000
Citrus	0.000	0.000	0.000	0.000	0.000	0.000
Cucumbers	0.000	0.000	0.000	0.000	0.000	0.000
Field Crops	1.387	1.450	1.839	2.227	2.615	3.004
Melons	1.293	1.312	1.332	1.352	1.372	1.392
Nurseries	0.534	0.567	0.603	0.641	0.682	0.725
Other Farm Uses	0.080	0.002	0.000	-0.003	-0.005	-0.007
Other Fruit trees	0.000	0.084	0.084	0.084	0.084	0.084
Other Veg./Row Crops	1.103	0.783	0.560	0.401	0.287	0.205
Pasture	0.246	0.207	0.178	0.153	0.131	0.113
Potatoes	0.000	0.000	0.000	0.000	0.000	0.000
Sod	0.000	0.000	0.000	0.000	0.000	0.000
Strawberries	0.000	0.000	0.000	0.000	0.000	0.000
Tomatoes	0.004	0.003	0.003	0.003	0.003	0.003
Total	4.647	4.409	4.599	4.858	5.169	5.519

Table A-32. Projected 2-in-10 Irrigation Water Demand (mgd) for Agriculture in Marion County

Major Crop Category	2-in-10 Demands (mgd)					
	2010	2015	2020	2025	2030	2035
Blueberries	0.000	0.000	0.000	0.000	0.000	0.000
Citrus	0.000	0.000	0.000	0.000	0.000	0.000
Cucumbers	0.000	0.000	0.000	0.000	0.000	0.000
Field Crops	1.585	1.658	2.102	2.546	2.989	3.433
Melons	1.486	1.508	1.531	1.554	1.577	1.600
Nurseries	0.579	0.616	0.655	0.696	0.740	0.787
Other Farm Uses	0.080	0.002	0.000	-0.003	-0.005	-0.007
Other Fruit trees	0.000	0.104	0.104	0.104	0.104	0.104
Other Veg./Row Crops	1.173	0.832	0.595	0.426	0.305	0.218
Pasture	0.246	0.207	0.178	0.153	0.131	0.113
Potatoes	0.000	0.000	0.000	0.000	0.000	0.000
Sod	0.000	0.000	0.000	0.000	0.000	0.000
Strawberries	0.000	0.000	0.000	0.000	0.000	0.000
Tomatoes	0.004	0.004	0.004	0.003	0.003	0.003
Total	5.154	4.931	5.168	5.479	5.845	6.252

Pasco County

Table A-33. Projected Irrigated Acreage in Pasco County

Major Crop Category	Irrigated Acreage					
	2010	2015	2020	2025	2030	2035
Blueberries	43	95	124	153	182	212
Citrus	7,423	6,906	6,426	5,979	5,563	5,176
Cucumbers	0	0	0	0	0	0
Field Crops	719	809	818	827	836	845
Melons	306	297	332	367	402	437
Nurseries	308	307	342	378	413	448
Other Farm Uses	379	379	379	379	379	379
Other Fruit trees	0	119	119	119	119	119
Other Veg./Row Crops	305	260	297	340	388	444
Pasture	389	311	293	275	259	243
Potatoes	13	13	13	13	13	13
Sod	146	102	75	55	40	29
Strawberries	180	119	94	74	59	46
Tomatoes	196	125	106	90	76	65
Total	10,407	9,842	9,418	9,048	8,730	8,457

Table A-34. Projected Average Irrigation Water Demand (mgd) for Agriculture in Pasco County

Major Crop Category	Average Demands (mgd)					
	2010	2015	2020	2025	2030	2035
Blueberries	0.089	0.196	0.257	0.317	0.378	0.439
Citrus	9.793	9.111	8.477	7.888	7.339	6.828
Cucumbers	0.000	0.000	0.000	0.000	0.000	0.000
Field Crops	1.016	1.143	1.156	1.169	1.182	1.195
Melons	0.568	0.550	0.615	0.680	0.745	0.810
Nurseries	1.401	1.397	1.557	1.718	1.878	2.039
Other Farm Uses	0.086	0.095	0.076	0.057	0.039	0.020
Other Fruit trees	0.000	0.125	0.125	0.125	0.125	0.125
Other Veg./Row Crops	0.509	0.434	0.496	0.567	0.648	0.740
Pasture	0.387	0.310	0.291	0.274	0.257	0.242
Potatoes	0.033	0.033	0.033	0.033	0.033	0.033
Sod	0.328	0.229	0.167	0.122	0.089	0.065
Strawberries	0.432	0.285	0.225	0.178	0.141	0.111
Tomatoes	0.450	0.286	0.243	0.206	0.175	0.149
Total	15.090	14.193	13.718	13.333	13.028	12.795

Table A-35. Projected 2-in-10 Irrigation Water Demand (mgd) for Agriculture in Pasco County

Major Crop Category	2-in-10 Demands (mgd)					
	2010	2015	2020	2025	2030	2035
Blueberries	0.107	0.236	0.309	0.382	0.454	0.527
Citrus	12.675	11.793	10.973	10.209	9.499	8.838
Cucumbers	0.000	0.000	0.000	0.000	0.000	0.000
Field Crops	1.175	1.322	1.337	1.351	1.366	1.381
Melons	0.619	0.600	0.671	0.742	0.812	0.883
Nurseries	1.489	1.485	1.655	1.826	1.997	2.167
Other Farm Uses	0.086	0.095	0.076	0.057	0.039	0.020
Other Fruit trees	0.000	0.154	0.154	0.154	0.154	0.154
Other Veg./Row Crops	0.544	0.464	0.530	0.606	0.692	0.791
Pasture	0.387	0.310	0.291	0.274	0.257	0.242
Potatoes	0.035	0.035	0.035	0.035	0.035	0.035
Sod	0.370	0.259	0.189	0.138	0.101	0.074
Strawberries	0.448	0.296	0.234	0.185	0.146	0.116
Tomatoes	0.495	0.314	0.267	0.227	0.192	0.163
Total	18.430	17.362	16.720	16.185	15.746	15.392

Pinellas County

Table A-36. Projected Irrigated Acreage in Pinellas County

Major Crop Category	Irrigated Acreage					
	2010	2015	2020	2025	2030	2035
Blueberries	0	0	0	0	0	0
Citrus	0	0	0	0	0	0
Cucumbers	0	0	0	0	0	0
Field Crops	0	0	0	0	0	0
Melons	0	0	0	0	0	0
Nurseries	18	16	14	12	10	9
Other Farm Uses	19	13	6	3	1	1
Other Fruit trees	0	0	0	0	0	0
Other Veg./Row Crops	0	0	0	0	0	0
Pasture	0	0	0	0	0	0
Potatoes	0	0	0	0	0	0
Sod	0	0	0	0	0	0
Strawberries	0	0	0	0	0	0
Tomatoes	0	0	0	0	0	0
Total	38	29	20	15	11	9

Table A-37. Projected Average Irrigation Water Demand (mgd) for Agriculture in Pinellas County

Major Crop Category	Average Demands (mgd)					
	2010	2015	2020	2025	2030	2035
Blueberries	0.000	0.000	0.000	0.000	0.000	0.000
Citrus	0.000	0.000	0.000	0.000	0.000	0.000
Cucumbers	0.000	0.000	0.000	0.000	0.000	0.000
Field Crops	0.000	0.000	0.000	0.000	0.000	0.000
Melons	0.000	0.000	0.000	0.000	0.000	0.000
Nurseries	0.090	0.079	0.068	0.058	0.050	0.043
Other Farm Uses	0.053	0.121	0.115	0.110	0.105	0.101
Other Fruit trees	0.000	0.000	0.000	0.000	0.000	0.000
Other Veg./Row Crops	0.000	0.000	0.000	0.000	0.000	0.000
Pasture	0.000	0.000	0.000	0.000	0.000	0.000
Potatoes	0.000	0.000	0.000	0.000	0.000	0.000
Sod	0.000	0.000	0.000	0.000	0.000	0.000
Strawberries	0.000	0.000	0.000	0.000	0.000	0.000
Tomatoes	0.000	0.000	0.000	0.000	0.000	0.000
Total	0.143	0.200	0.183	0.168	0.155	0.144

Table A-38. Projected 2-in-10 Irrigation Water Demand (mgd) for Agriculture in Pinellas County

Major Crop Category	2-in-10 Demands (mgd)					
	2010	2015	2020	2025	2030	2035
Blueberries	0.000	0.000	0.000	0.000	0.000	0.000
Citrus	0.000	0.000	0.000	0.000	0.000	0.000
Cucumbers	0.000	0.000	0.000	0.000	0.000	0.000
Field Crops	0.000	0.000	0.000	0.000	0.000	0.000
Melons	0.000	0.000	0.000	0.000	0.000	0.000
Nurseries	0.094	0.082	0.070	0.060	0.052	0.044
Other Farm Uses	0.053	0.121	0.115	0.110	0.105	0.101
Other Fruit trees	0.000	0.000	0.000	0.000	0.000	0.000
Other Veg./Row Crops	0.000	0.000	0.000	0.000	0.000	0.000
Pasture	0.000	0.000	0.000	0.000	0.000	0.000
Potatoes	0.000	0.000	0.000	0.000	0.000	0.000
Sod	0.000	0.000	0.000	0.000	0.000	0.000
Strawberries	0.000	0.000	0.000	0.000	0.000	0.000
Tomatoes	0.000	0.000	0.000	0.000	0.000	0.000
Total	0.147	0.203	0.185	0.170	0.157	0.146

Polk County

Table A-39. Projected Irrigated Acreage in Polk County (CFWI Draft –May 2015)

Major Crop Category	Irrigated Acreage					
	2010	2015	2020	2025	2030	2035
Citrus	74,156	74,156	74,156	74,156	74,156	74,156
Cucumbers	0	0	0	0	0	0
Field Crops	797	797	797	797	797	797
Melons	0	0	0	0	0	0
Nurseries	1,283	1,300	1,300	1,300	1,300	1,300
Other Veg./Row Crops	2,372	2,000	2,000	2,000	2,000	2,000
Pasture	200	200	200	200	200	200
Potatoes	0	0	0	0	0	0
Sod	5,000	5,000	5,000	5,000	5,000	5,000
Strawberries	300	300	300	300	300	300
Tomatoes	88	88	88	88	88	88
Miscellaneous	0	0	0	0	0	0
Total	84,196	83,841	83,841	83,841	83,841	83,841

Table A-40. Projected Average Irrigation Water Demand (mgd) for Agriculture in Polk County (CFWI Draft - May 2015)

Major Crop Category	Average Demands (mgd)					
	2010	2015	2020	2025	2030	2035
Citrus	75.640	75.640	75.640	75.640	75.640	75.640
Cucumbers	0.000	0.000	0.000	0.000	0.000	0.000
Field Crops	0.770	0.770	0.770	0.770	0.770	0.770
Melons	0.000	0.000	0.000	0.000	0.000	0.000
Nurseries	1.240	1.260	1.260	1.260	1.260	1.260
Other Veg./Row Crops	2.300	1.940	1.940	1.940	1.940	1.940
Pasture	0.190	0.190	0.190	0.190	0.190	0.190
Potatoes	0.000	0.000	0.000	0.000	0.000	0.000
Sod	4.850	4.850	4.850	4.850	4.850	4.850
Strawberries	0.290	0.290	0.290	0.290	0.290	0.290
Tomatoes	0.090	0.090	0.090	0.090	0.090	0.090
Miscellaneous	See Non-Irrigation Tables for Misc.					
Total	85.370	85.030	85.030	85.030	85.030	85.030

Sarasota County

Table A-41. Projected Irrigated Acreage in Sarasota County

Major Crop Category	Irrigated Acreage					
	2010	2015	2020	2025	2030	2035
Blueberries	0	0	0	0	0	0
Citrus	1,403	1,325	1,252	1,183	1,117	1,055
Cucumbers	0	0	0	0	0	0
Field Crops	82	62	20	7	2	1
Melons	453	507	519	532	544	556
Nurseries	70	71	77	83	89	94
Other Farm Uses	0	0	0	0	0	0
Other Fruit trees	0	0	0	0	0	0
Other Veg./Row Crops	136	103	60	35	20	12
Pasture	159	83	51	32	19	12
Potatoes	0	0	0	0	0	0
Sod	423	581	567	553	539	526
Strawberries	0	0	0	0	0	0
Tomatoes	156	102	78	60	46	35
Total	2,881	2,835	2,625	2,483	2,376	2,291

Table A-42. Projected Average Irrigation Water Demands (mgd) for Agriculture in Sarasota County

Major Crop Category	Average Demands (mgd)					
	2010	2015	2020	2025	2030	2035
Blueberries	0.000	0.000	0.000	0.000	0.000	0.000
Citrus	1.416	1.338	1.264	1.194	1.128	1.065
Cucumbers	0.000	0.000	0.000	0.000	0.000	0.000
Field Crops	0.124	0.094	0.031	0.010	0.003	0.001
Melons	0.713	0.798	0.817	0.836	0.856	0.875
Nurseries	0.302	0.305	0.330	0.355	0.380	0.405
Other Farm Uses	0.000	0.001	0.007	0.012	0.018	0.024
Other Fruit trees	0.000	0.000	0.000	0.000	0.000	0.000
Other Veg./Row Crops	0.205	0.155	0.090	0.052	0.030	0.017
Pasture	0.151	0.079	0.049	0.030	0.019	0.011
Potatoes	0.000	0.000	0.000	0.000	0.000	0.000
Sod	0.923	1.269	1.237	1.207	1.177	1.148
Strawberries	0.000	0.000	0.000	0.000	0.000	0.000
Tomatoes	0.364	0.239	0.183	0.140	0.108	0.082
Total	4.198	4.278	4.008	3.837	3.719	3.630

Table A-43. Projected 2-in-10 Irrigation Water Demands (mgd) for Agriculture in Sarasota County

Major Crop Category	2-in-10 Demands (mgd)					
	2010	2015	2020	2025	2030	2035
Blueberries	0.000	0.000	0.000	0.000	0.000	0.000
Citrus	1.787	1.688	1.595	1.507	1.423	1.344
Cucumbers	0.000	0.000	0.000	0.000	0.000	0.000
Field Crops	0.139	0.105	0.034	0.011	0.004	0.001
Melons	0.713	0.798	0.817	0.836	0.856	0.875
Nurseries	0.341	0.345	0.373	0.401	0.430	0.458
Other Farm Uses	0.000	0.001	0.007	0.012	0.018	0.024
Other Fruit trees	0.000	0.000	0.000	0.000	0.000	0.000
Other Veg./Row Crops	0.226	0.171	0.099	0.058	0.033	0.019
Pasture	0.151	0.079	0.049	0.030	0.019	0.011
Potatoes	0.000	0.000	0.000	0.000	0.000	0.000
Sod	1.027	1.412	1.377	1.343	1.310	1.278
Strawberries	0.000	0.000	0.000	0.000	0.000	0.000
Tomatoes	0.400	0.262	0.201	0.154	0.118	0.091
Total	4.783	4.861	4.552	4.352	4.210	4.101

Sumter County

Table A-44. Projected Irrigated Acreage in Sumter County

Major Crop Category	Irrigated Acreage					
	2010	2015	2020	2025	2030	2035
Blueberries	28	73	98	123	147	172
Citrus	0	0	0	0	0	0
Cucumbers	0	0	0	0	0	0
Field Crops	798	619	475	365	280	215
Melons	803	575	347	209	126	76
Nurseries	397	422	448	476	505	537
Other Farm Uses	200	441	436	432	427	423
Other Fruit trees	5	9	9	9	9	9
Other Veg./Row Crops	666	630	551	481	420	367
Pasture	254	228	173	131	100	76
Potatoes	0	0	0	0	0	0
Sod	310	333	357	382	410	439
Strawberries	0	0	0	0	0	0
Tomatoes	269	261	305	348	392	436
Total	3,731	3,591	3,198	2,956	2,816	2,749

Table A-45. Projected Average Irrigation Demand (mgd) for Agriculture in Sumter County

Major Crop Category	Average Demands (mgd)					
	2010	2015	2020	2025	2030	2035
Blueberries	0.055	0.144	0.192	0.240	0.288	0.336
Citrus	0.000	0.000	0.000	0.000	0.000	0.000
Cucumbers	0.000	0.000	0.000	0.000	0.000	0.000
Field Crops	1.061	0.823	0.632	0.485	0.372	0.286
Melons	0.991	0.709	0.428	0.258	0.156	0.094
Nurseries	1.983	2.107	2.238	2.377	2.525	2.682
Other Farm Uses	0.092	0.232	0.234	0.236	0.239	0.243
Other Fruit trees	0.010	0.019	0.019	0.019	0.019	0.019
Other Veg./Row Crops	0.917	0.868	0.758	0.662	0.579	0.505
Pasture	0.327	0.294	0.223	0.169	0.128	0.097
Potatoes	0.000	0.000	0.000	0.000	0.000	0.000
Sod	0.797	0.854	0.916	0.982	1.052	1.128
Strawberries	0.000	0.000	0.000	0.000	0.000	0.000
Tomatoes	0.542	0.526	0.614	0.702	0.790	0.878
Total	6.776	6.576	6.253	6.130	6.148	6.268

Table A-46. Projected 2-in-10 Irrigation Demand (mgd) for Agriculture in Sumter County

Major Crop Category	2-in-10 Demands (mgd)					
	2010	2015	2020	2025	2030	2035
Blueberries	0.065	0.168	0.224	0.280	0.337	0.393
Citrus	0.000	0.000	0.000	0.000	0.000	0.000
Cucumbers	0.000	0.000	0.000	0.000	0.000	0.000
Field Crops	1.207	0.937	0.719	0.552	0.423	0.325
Melons	1.075	0.769	0.464	0.280	0.169	0.102
Nurseries	2.061	2.190	2.326	2.471	2.624	2.788
Other Farm Uses	0.092	0.232	0.234	0.236	0.239	0.243
Other Fruit trees	0.011	0.022	0.022	0.022	0.022	0.022
Other Veg./Row Crops	1.134	1.073	0.938	0.819	0.715	0.625
Pasture	0.327	0.294	0.223	0.169	0.128	0.097
Potatoes	0.000	0.000	0.000	0.000	0.000	0.000
Sod	0.865	0.928	0.994	1.066	1.143	1.225
Strawberries	0.000	0.000	0.000	0.000	0.000	0.000
Tomatoes	0.542	0.526	0.614	0.702	0.790	0.878
Total	7.381	7.138	6.758	6.597	6.591	6.697

Districtwide (excludes Lake and Polk Counties)

Table A-47. Irrigated Acreage by Crop

Crops	Base Year	Projected Irrigated Acreage				
	2010	2015	2020	2025	2030	2035
Blueberries	862	1,262	1,580	1,899	2,218	2,537
Citrus	185,642	186,045	186,878	188,090	187,617	187,296
Cucumbers	3,797	4,035	4,369	4,734	5,128	5,551
Field Crops	5,115	4,899	5,122	5,469	5,879	6,324
Melons	10,670	11,211	12,000	12,896	13,856	14,856
Nurseries	3,897	3,694	3,603	3,851	4,021	4,229
Other Farm Uses	974	1,176	1,172	1,175	1,183	1,193
Other Fruit trees	61	908	908	908	908	908
Other Veg./Row Crops	10,998	12,802	13,772	14,787	15,887	17,036
Pasture	7,387	5,833	4,747	4,009	3,491	3,114
Potatoes	1,869	2,414	2,202	1,991	1,780	1,569
Sod	5,317	5,529	5,419	5,488	5,659	5,890
Strawberries	8,708	9,029	9,989	10,955	11,925	12,898
Tomatoes	26,782	24,402	23,503	22,635	21,790	20,963
Total	272,079	273,238	275,265	278,887	281,340	284,366

Table A-48. Average Irrigation Water Demand (mgd)

Crops	Base Year	Projected Agricultural Water Demand				
	2010	2015	2020	2025	2030	2035
Blueberries	1.595	2.312	2.892	3.472	4.052	4.633
Citrus	185.790	185.479	185.649	186.241	185.377	184.710
Cucumbers	6.509	6.990	7.610	8.272	8.979	9.734
Field Crops	6.659	6.352	6.693	7.190	7.765	8.386
Melons	15.770	16.742	18.099	19.590	21.162	22.784
Nurseries	17.503	16.215	15.536	16.584	17.217	18.041
Other Farm Uses	0.718	1.102	1.106	1.110	1.113	1.113
Other Fruit trees	0.080	1.234	1.234	1.234	1.234	1.234
Other Veg./Row Crops	20.004	23.623	25.416	27.274	29.267	31.341
Pasture	6.945	5.532	4.492	3.784	3.286	2.922
Potatoes	2.094	2.697	2.462	2.228	1.993	1.759
Sod	11.424	11.867	11.555	11.621	11.902	12.315
Strawberries	21.601	22.413	24.793	27.187	29.590	32.000
Tomatoes	62.307	55.922	53.277	50.695	48.164	45.673
Total	358.999	358.478	360.815	366.480	371.102	376.645

Table A-49. Projected 2-in-10 Water Demand (mgd)

Crops	Base Year	Projected Agricultural Water Demand				
	2010	2015	2020	2025	2030	2035
Blueberries	2.038	2.953	3.692	4.431	5.172	5.912
Citrus	258.482	258.212	258.621	259.625	258.526	257.698
Cucumbers	6.509	6.990	7.610	8.272	8.979	9.734
Field Crops	7.657	7.303	7.696	8.266	8.926	9.639
Melons	17.439	18.480	19.941	21.549	23.245	24.995
Nurseries	18.785	17.410	16.676	17.790	18.461	19.335
Other Farm Uses	0.718	1.102	1.106	1.110	1.113	1.113
Other Fruit trees	0.100	1.530	1.530	1.530	1.530	1.530
Other Veg./Row Crops	20.985	24.748	26.602	28.526	30.598	32.756
Pasture	6.945	5.532	4.492	3.784	3.286	2.922
Potatoes	2.247	2.894	2.643	2.391	2.139	1.888
Sod	12.679	13.174	12.836	12.916	13.234	13.697
Strawberries	21.617	22.424	24.802	27.193	29.595	32.005
Tomatoes	62.509	56.085	53.412	50.808	48.258	45.753
Total	438.711	438.837	441.659	448.191	453.061	458.977

Central Florida Water Initiative – Lake and Polk Counties

Table A-50. Projected Irrigated Acreage (CFWI RWSP Draft - May 2015)

Major Crop Category	Irrigated Acreage					
	2010	2015	2020	2025	2030	2035
Citrus	74,822	74,729	74,635	74,541	74,448	74,362
Cucumbers	0	0	0	0	0	0
Field Crops	886	886	886	886	886	886
Melons	195	195	195	195	195	195
Nurseries	1,283	1,300	1,300	1,300	1,300	1,300
Other Veg./Row Crops	2,402	2,030	2,030	2,030	2,030	2,030
Pasture	667	667	667	667	667	667
Potatoes	0	0	0	0	0	0
Sod	5,000	5,000	5,000	5,000	5,000	5,000
Strawberries	300	300	300	300	300	300
Tomatoes	88	88	88	88	88	88
Miscellaneous	0	0	0	0	0	0
Total	85,643	85,195	85,101	85,007	84,914	84,828

Table A-51. Projected Average Irrigation Water Demand (mgd) for Agriculture (CFWI Draft - May 2015)

Major Crop Category	Average Demands (mgd)					
	2010	2015	2020	2025	2030	2035
Citrus	76.570	76.440	76.310	76.180	76.050	75.980
Cucumbers	0.000	0.000	0.000	0.000	0.000	0.000
Field Crops	0.860	0.860	0.860	0.860	0.860	0.860
Melons	0.190	0.190	0.190	0.190	0.190	0.190
Nurseries	1.240	1.260	1.260	1.260	1.260	1.260
Other Veg./Row Crops	2.330	1.970	1.970	1.970	1.970	1.970
Pasture	0.640	0.640	0.640	0.640	0.640	0.640
Potatoes	0.000	0.000	0.000	0.000	0.000	0.000
Sod	4.850	4.850	4.850	4.850	4.850	4.850
Strawberries	0.290	0.290	0.290	0.290	0.290	0.290
Tomatoes	0.090	0.090	0.090	0.090	0.090	0.090
Miscellaneous	0.000	0.000	0.000	0.000	0.000	0.000
Total	87.060	86.590	86.460	86.330	86.200	86.130

Appendix B

Commercial Citrus Acreage by County

Appendix B

Commercial Citrus Acreage by County

Source: USDA National Agricultural Statistical Service and Florida Agricultural Statistical Services:

Table B-1: Charlotte County

District portion only.

Year	Acreage
2000	13,239
2001	12,855
2002	12,471
2003	12,376
2004	12,282
2005	9,757
2006	7,231
2007	7,264
2008	7,297
2009	7,362
2010	7,459
2011	7,672
2012	7,954
2013	8,041

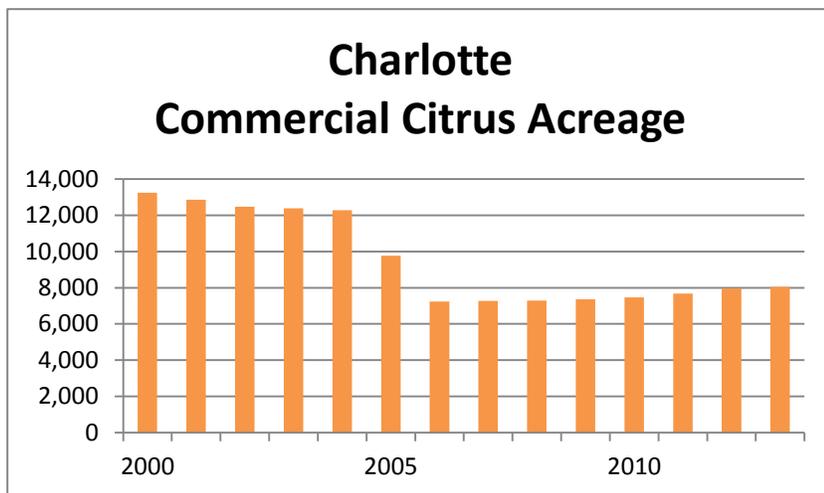


Table B-2: Citrus County

Year	Acreage
2000	247
2001	197
2002	147
2003	147
2004	146
2005	146
2006	145
2007	142
2008	138
2009	139
2010	NA
2011	NA
2012	NA
2013	NA

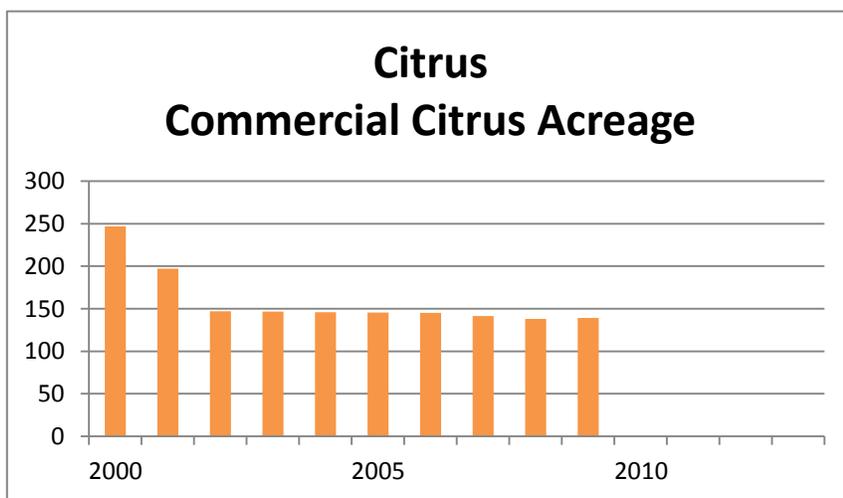


Table B-3: DeSoto County

Year	Acreage
2000	71,181
2001	71,073
2002	70,365
2003	69,462
2004	68,559
2005	64,821
2006	61,083
2007	61,255
2008	61,426
2009	62,304
2010	62,508
2011	63,247
2012	64,258
2013	65,187

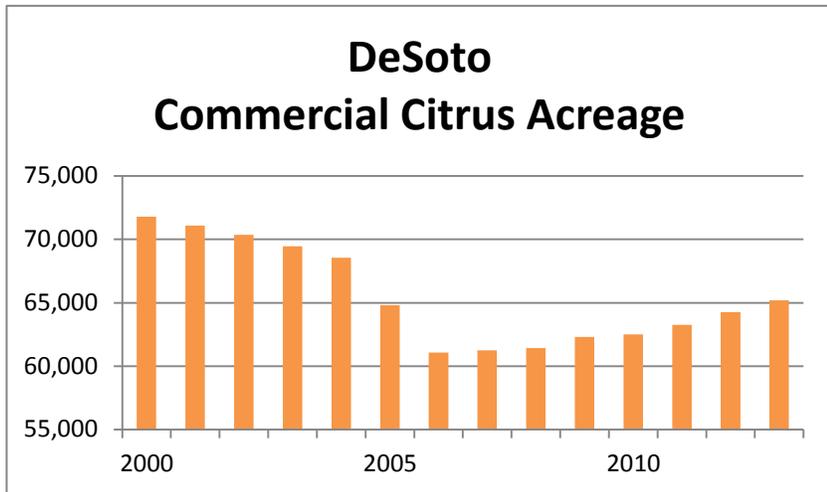


Table B-4: Hardee County

Year	Acreage
2001	54,038
2002	54,961
2003	54,688
2004	54,414
2005	49,749
2006	45,084
2007	45,097
2008	45,109
2009	47,130
2010	46,921
2011	47,121
2012	46,792
2013	46,690

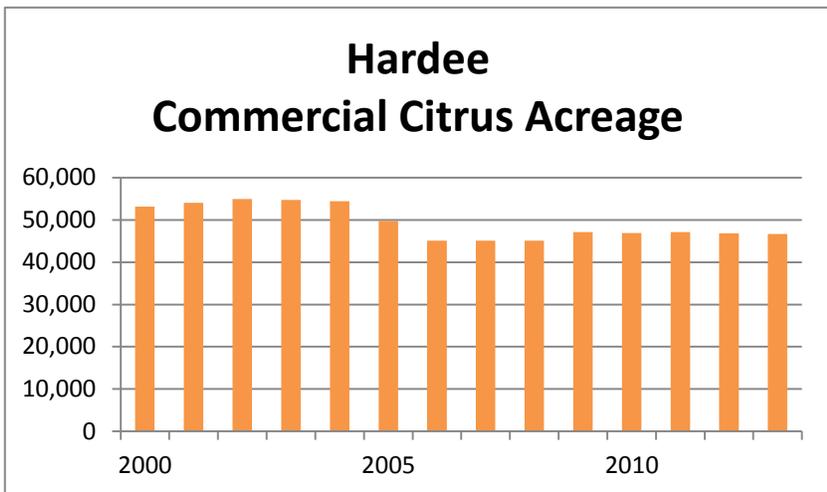


Table B-5: Hernando County

Year	Acreage
2000	1,105
2001	1,076
2002	1,046
2003	1,009
2004	971
2005	946
2006	921
2007	908
2008	895
2009	917
2010	906
2011	813
2012	800
2013	839

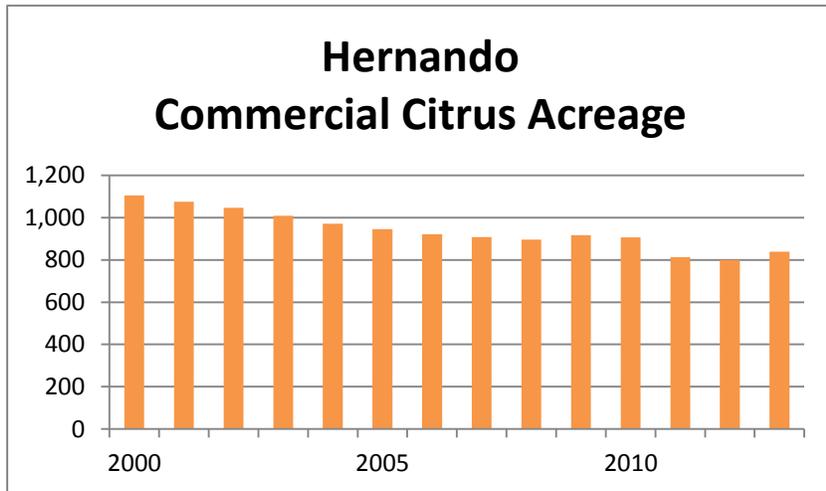


Table B-6: Highlands County
District portion only.

Year	Acreage
2000	38,722
2001	38,538
2002	38,354
2003	37,669
2004	36,983
2005	34,021
2006	31,059
2007	31,042
2008	31,024
2009	30,946
2010	30,945
2011	30,876
2012	30,491
2013	30,571

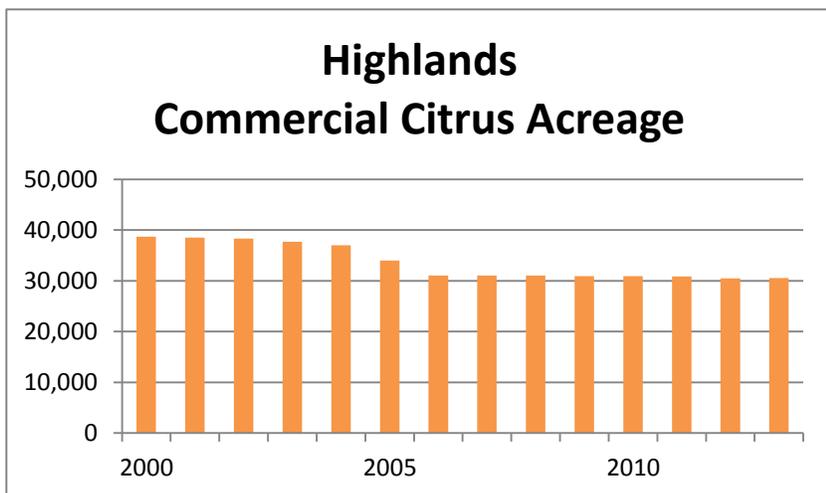


Table B-7: Hillsborough County

Year	Acreage
2000	26,223
2001	24,979
2002	23,734
2003	21,461
2004	19,187
2005	16,985
2006	14,783
2007	13,016
2008	11,248
2009	10,946
2010	9,677
2011	8,715
2012	8,023
2013	7,342

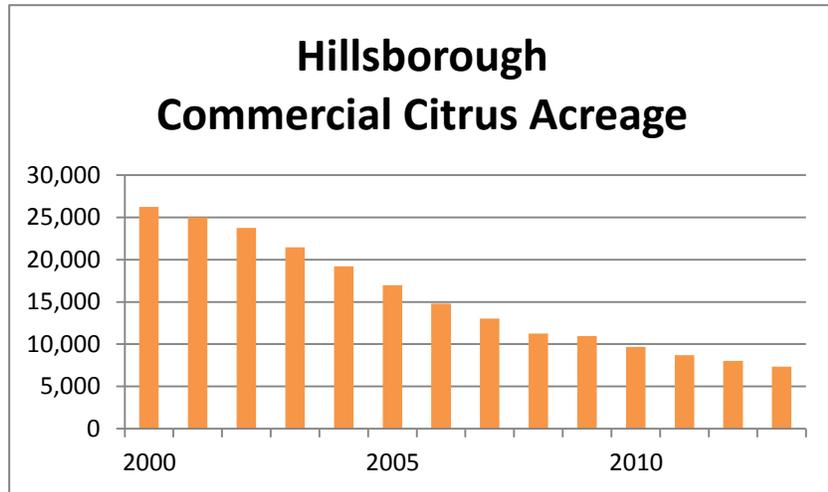


Table B-8: Lake County

Year	Acreage
2000	962
2001	932
2002	902
2003	869
2004	837
2005	782
2006	728
2007	677
2008	627
2009	617
2010	593
2011	570
2012	529
2013	494

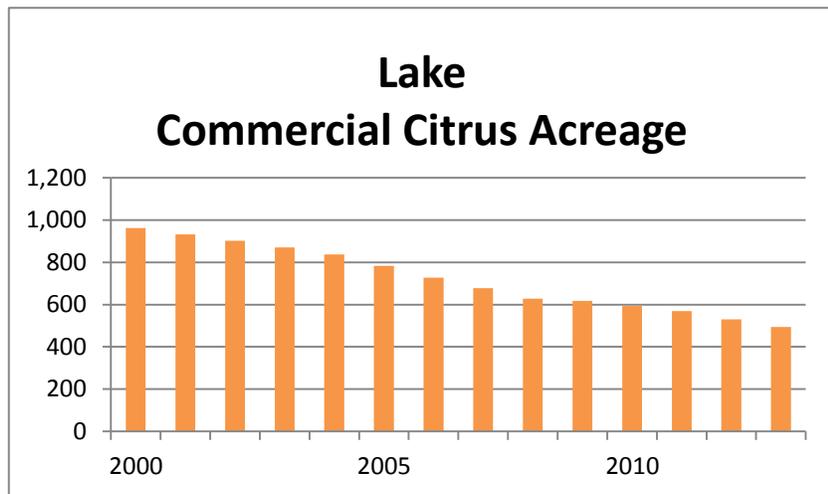


Table B-9: Levy County
District portion only.

Year	Acreage
2000	NA
2001	NA
2002	NA
2003	NA
2004	NA
2005	NA
2006	NA
2007	NA
2008	NA
2009	NA
2010	NA
2011	NA
2012	NA
2013	NA

Table B-10: Manatee County

Year	Acreage
2000	23,254
2001	22,588
2002	21,922
2003	21,119
2004	20,316
2005	19,432
2006	18,548
2007	18,469
2008	18,389
2009	18,609
2010	18,400
2011	18,410
2012	18,300
2013	17,939

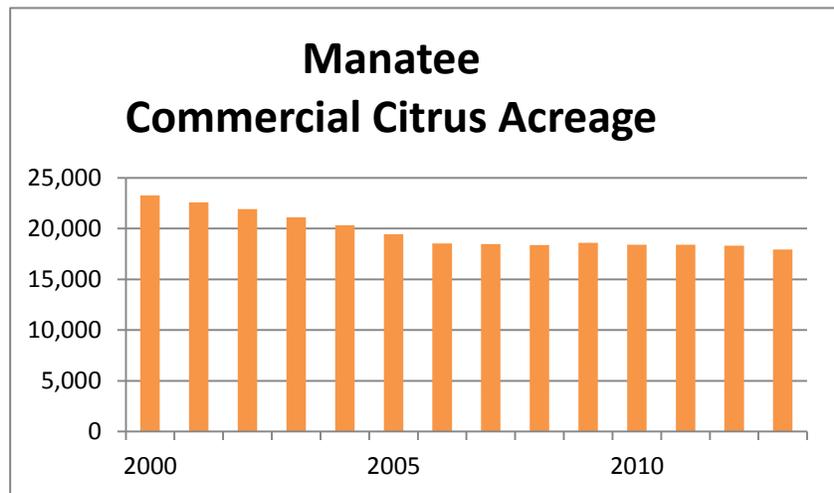


Table B-11: Marion County
District portion only.

Year	Acreage
2000	0
2001	0
2002	0
2003	0
2004	0
2005	0
2006	0
2007	0
2008	0
2009	0
2010	0
2011	0
2012	0
2013	0

Table B-12: Pasco County

Year	Acreage
2000	10,897
2002	10,467
2002	10,467
2003	10,149
2004	9,831
2005	9,011
2006	8,190
2007	8,074
2008	7,957
2009	7,615
2010	7,423
2011	7,097
2012	7,040
2013	6,846

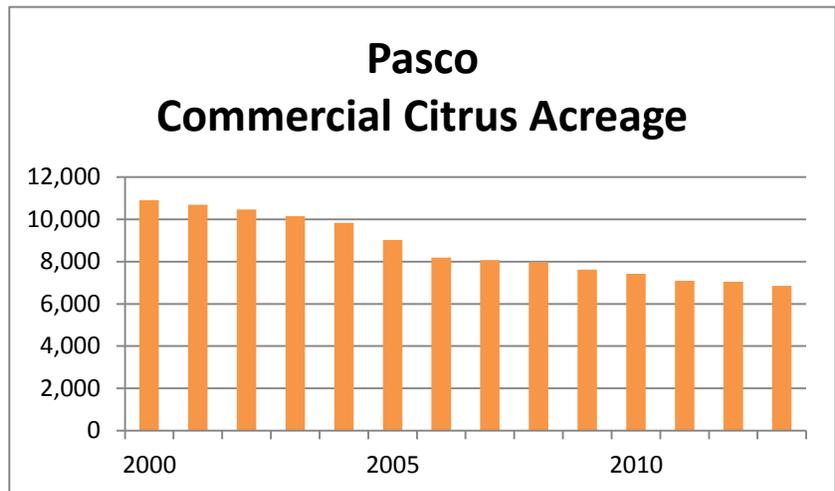


Table B-13: Pinellas County

Year	Acreage
2000	50
2001	44
2002	38
2003	38
2004	38
2005	NA
2006	NA
2007	NA
2008	NA
2009	NA
2010	NA
2011	NA
2012	NA
2013	NA

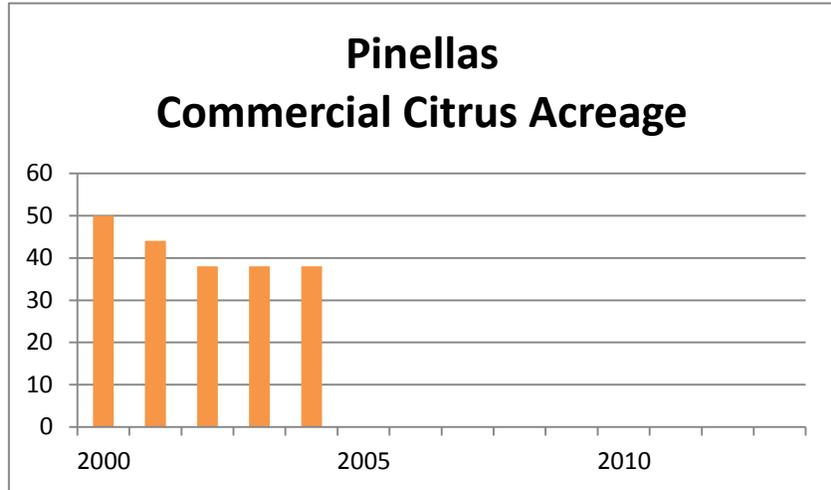


Table B-14: Polk County
District portion only.

Year	Acreage
2000	98,653
2001	98,030
2002	97,407
2003	94,903
2004	92,399
2005	88,193
2006	83,988
2007	81,547
2008	79,105
2009	80,324
2010	81,143
2011	80,274
2012	80,269
2013	79,417

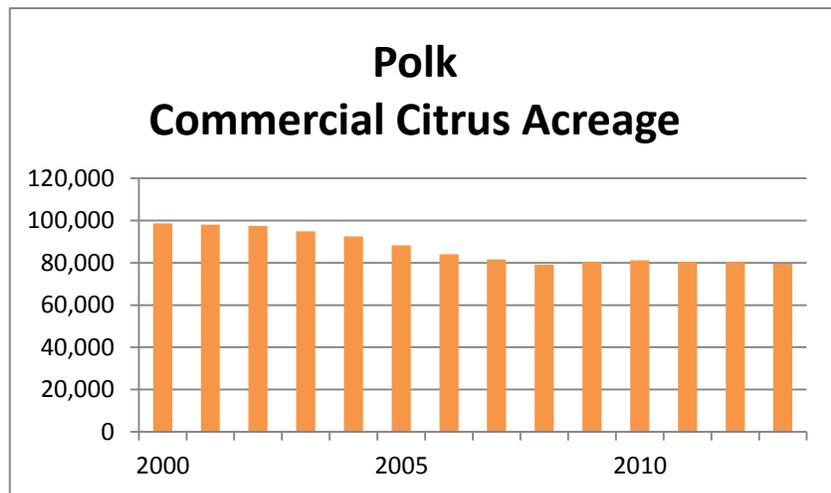


Table B-15: Sarasota County

Year	Acreage
2000	2,321
2001	2,252
2002	2,182
2003	1,933
2004	1,684
2005	1,668
2006	1,652
2007	1,577
2008	1,502
2009	1,411
2010	1,403
2011	1,398
2012	1,336
2013	1,335

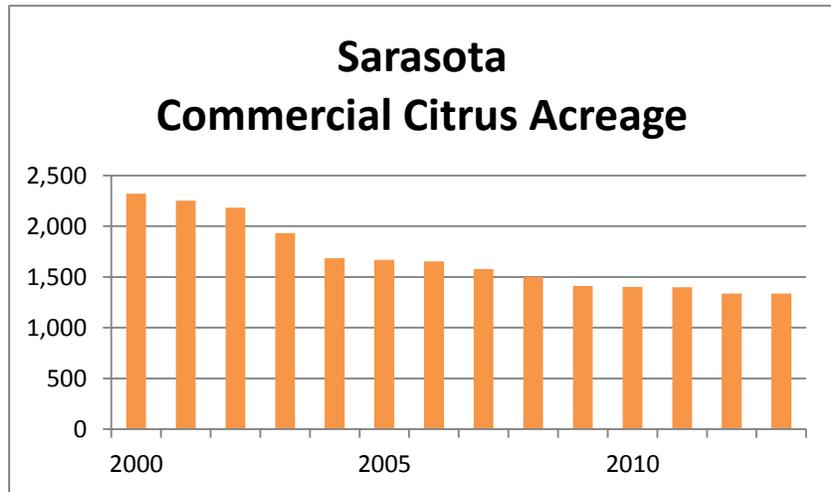
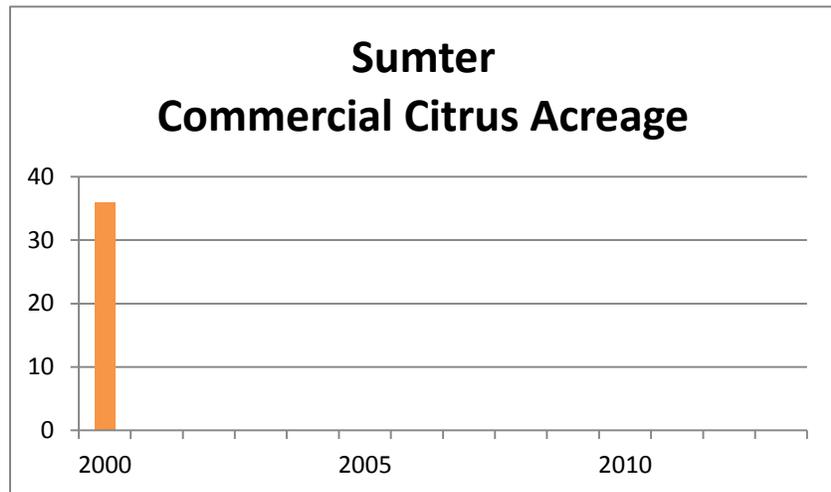


Table B-16: Sumter County

Year	Acreage
2000	36
2001	NA
2002	NA
2003	NA
2004	NA
2005	NA
2006	NA
2007	NA
2008	NA
2009	NA
2010	NA
2011	NA
2012	NA
2013	NA



Appendix C

Description of Deviation from Projections Provided by FDACS

Overview

Per Section 373.709 (2)(a), F.S., the District is required to provide a description of any deviation from agricultural demand projections provided by the FDACS. The District is deviating from the projections known as FSAID2 as provided by FDACS in 2015.

The primary reason for the deviation from FSAID2 has to do with the timing of the completed projections. In short, the District's agricultural projections were completed as scheduled and provided to the Governing Board for approval to conduct public workshops in April 2015. Final FSAID Version 2 (FSAID2) projections were not completed until July of 2015. The timing issue is further described in the "Timing" section below.

The specific differences between the District-developed and FSAID2 demand data are addressed in the "Comparison" section below. In general, once specific, reasonable data assumptions are addressed, the projections are not significantly different (e.g. 8.71 mgd average irrigation demand difference in 2035 and 2.72 mgd difference in livestock and aquaculture demand in 2035).

Timing

At an early FSAID2 coordination meeting, attending water management district personnel were informed that the FSAID2 projections would not be completed until late summer or autumn of 2015. Since the District was scheduled to have a draft of the RWSP to the Governing Board prior to that time, the District continued with the development of agricultural water demands.

District staff began presenting draft agricultural demand projections to our Agricultural Advisory Committee, permit evaluation staff, and other stakeholders in September 2014. As a result of their input, several revisions were made to the projection methodologies to better reflect actual trends. The District's technical memorandum outlining the projection methodologies and resulting demand projections have been posted on the District's website since January 21, 2015. These demand projections have been unchanged since February 25, 2015.

The District completed the first full draft of the RWSP and presented it to the Governing Board in April 2015 for approval to publish the results and initiate public workshops. Subsequent to Governing Board approval in April 2015, public workshops on the District's projections (including agricultural demand) were held on the following dates:

May 28, 2015

June 18, 2015

June 30, 2015

July 21, 2015

July 23, 2015

The feedback was overwhelmingly positive. The District's projections were well-received by the agricultural community and no significant issues were raised concerning the projected agricultural demand. The public workshop held in Inverness on July 23, 2015 was the last scheduled public workshop during the public comment period. A summary of these outreach activities is described in the Executive Summary and in each Regional Planning Document of the 2015 RWSP.

In summary, final FSAID2 projections were not available in April 2015 for Governing Board

approval to present them at the scheduled public workshops. Final 2015 FSAID2 projections were not provided to the District until July 15, 2015.

Comparison

District staff enjoyed a collaborative relationship with the consultant hired by FDACS to produce the FSAID projections and remained in contact with the consultant throughout the entire FSAID development period (both FSAID1 (2014) and FSAID2 (2015)). District staff provided pumpage, crop and permitting data when requested, reviewed and provided substantive comments on drafts of methodology summaries and acreage and demand projections. There was a mutual provision of advice and suggestions for improvement. District staff assisted the consultant in verifying the correct crop characterization of an array of different agricultural parcels to assure the quality of data. The philosophy of the District was that it is in the best interests of the agricultural industry and the agencies to develop the best possible projections regardless of which agency was producing the projections. With that said, the probability of two sets of agricultural projections being in complete agreement was very low due to the use of different data sets and data dates, data processing methods, assumed demand drivers, stakeholder input and the professional judgment of the analysts.

Average Annual Irrigation Demands

For the most part, the best comparison of the two projections is likely to be based on quantities demanded without regard to the crop because crops on a particular acre may vary from year to year based on market conditions and other factors. A notable exception to this statement is citrus, which will be discussed further in this memo. Table C-1 displays the average annual irrigation projection quantities within the District developed by the SWFWMD for the years 2015 through 2035. Note that the projections for Lake and Polk counties are from the CFWI RWSP, per an agreement between CFWI partners to use the CFWI projections in their RWSPs.

Table C-2 displays the average annual irrigation projection quantities within the District for the years 2015-2035, as developed for FSAID2 by the Balmoral Group. The FSAID2 projections are significantly higher than those developed by SWFWMD (611.19 and 462.78 mgd, respectively, in 2035). However, there are factors that, when considered, result in projections that are more similar. Potential adjustments based on these factors are addressed below, and are included in Table C-2.

First, it should be noted that the projected FSAID2 quantities for Lake and Polk counties are not based on CFWI projections. If the FSAID2 projections were adjusted to deduct the CFWI difference so that both sets of projections were based on CFWI projections, the FSAID2 projections would be reduced from 611.19 mgd to 545.60 mgd in 2035 (see "Total w/No CFWI Difference" in Table C-2).

Table C-1. SWFWMD 2015 Average Agricultural Irrigation Projections for the SWFWMD (mgd)

County	2015	2020	2025	2030	2035	% Change 2015-2035	% Difference from FSAID 2035
Charlotte	14.59	15.98	17.39	18.84	20.31	39.24%	-0.8%
Citrus	1.76	1.75	1.79	1.85	1.93	9.68%	46.9%
DeSoto	72.99	76.74	80.73	83.07	85.40	17.00%	-31.2%
Hardee	54.32	54.98	55.70	56.56	57.51	5.87%	-21.2%
Hernando	2.46	2.40	2.36	2.35	2.35	-4.41%	-283.2%
Highlands	41.71	41.87	42.10	42.36	42.64	2.22%	-1.0%
Hillsborough	53.59	50.61	49.71	48.65	47.99	-10.44%	17.1%
Lake ¹	1.56	1.43	1.30	1.17	1.10	-29.49%	59.6%
Levy	7.51	7.77	8.08	8.42	8.77	16.74%	-72.4%
Manatee	79.89	79.95	80.29	80.78	81.38	1.87%	-29.7%
Marion	4.41	4.60	4.86	5.17	5.52	25.17%	-214.3%
Pasco	14.19	13.72	13.33	13.03	12.79	-9.85%	-17.4%
Pinellas	0.20	0.18	0.17	0.16	0.14	-27.85%	100.0%
Polk ¹	85.03	85.03	85.03	85.03	85.03	0.00%	-77.9%
Sarasota	4.28	4.01	3.84	3.72	3.63	-15.13%	-156.4%
Sumter	6.58	6.25	6.13	6.15	6.27	-4.68%	68.4%
Total	445.07	447.27	452.81	457.30	462.78	3.98%	-32.1%

¹Projections for District's portion from Vol. 2 of the Draft RWSP for the CFWI (May 2015)

Table C-2. FSAID 2015 Average Agricultural Irrigation Projections for the SWFWMD (mgd)

County	2015	2020	2025	2030	2035	% Change 2015-2035
Charlotte	15.86	15.75	15.72	18.38	20.47	29.08%
Citrus	1.70	1.34	1.21	1.28	1.02	-39.84%
DeSoto	93.95	90.05	86.54	101.74	112.05	19.27%
Hardee	66.21	62.57	59.14	66.14	69.72	5.30%
Hernando	3.72	4.71	5.87	7.73	9.00	142.12%
Highlands	42.21	38.74	36.89	40.93	43.04	1.97%
Hillsborough	53.53	48.68	44.16	42.76	39.80	-25.65%
Lake	0.66	0.60	0.53	0.45	0.44	-32.25%
Levy	8.52	10.45	11.67	14.70	15.12	77.54%
Manatee	86.06	87.16	89.29	99.12	105.58	22.68%
Marion	6.46	8.31	10.31	15.24	17.35	168.54%
Pasco	16.01	14.93	13.80	14.70	15.02	-6.20%
Pinellas	0.04	0.03	0.03	0.00	0.00	-100.00%
Polk	124.33	121.44	118.14	138.38	151.27	21.67%
Sarasota	9.39	9.05	8.78	9.22	9.31	-0.87%
Sumter	5.45	4.45	3.55	2.88	1.98	-63.68%
FSAID Total	534.11	518.23	505.64	573.67	611.19	14.43%
CFWI Difference	-38.40	-35.58	-32.33	-52.63	-65.59	NA
Total w/No CFWI Difference	495.71	482.65	473.30	521.04	545.60	10.07%
No Citrus Ac/In Difference	0.00	1.95	4.27	-41.55	-74.12	NA
Total w/no CFWI Difference or Citrus Acre-Inch Difference	495.71	484.61	477.57	479.50	471.48	-4.89%

FSAID Data Source: FSAID 2 User Interface, <http://www.fsaaid2.com/>, Downloaded July 31, 2015

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Another significant factor is that the effective overall FSAID2 acre-inch application rate for citrus increases significantly in the year 2030 and continues to increase in 2035. While it was stated earlier that it is better to compare overall projected irrigation quantities than to focus too much on individual crops, land used for citrus does not convert to other crops quickly. Therefore, the comparison of projected acres and quantities for citrus is useful in understanding some of the differences in the FSAID2 and SWFWMD projections, particularly in terms of the FSAID2 change in acre-inch application rates over time.

Tables C-3 and C-4 display the SWFWMD and FSAID2 projected irrigated acres by crop category, respectively, for the years 2015-2035. Table C-3 indicates a very small SWFWMD projected increase in citrus acreage overall (0.34 percent), while the FSAID2 projections in Table C-4 show a 10.99% decrease in citrus acreage over the planning period. The SWFWMD irrigation quantities for citrus in Table C-5 show a very small decrease in quantity (-0.47 percent), while the FSAID2 irrigation quantities for citrus in Table C-6 show a nearly 21 percent increase during the same period.

With a small increase in SWFWMD acreage and a large decrease in FSAID2 citrus acreage, one may expect a small increase in SWFWMD projected citrus irrigation quantities and a significant decrease in FSAID2 quantities. The relationships are not necessarily linear, however. The small decrease in SWFWMD quantities is likely due to a shift in production to areas with lower irrigation requirements per acre (acre-inches). The significant increases in FSAID2 citrus quantities are predominantly due to increasing assigned acre-inch application rates over time.

Table C-3. SWFWMD Irrigated Agricultural Acres in the SWFWMD (acres)

Major Crop Category	2015	2020	2025	2030	2035	% Change 2015-2035
Blueberries	1,262	1,580	1,899	2,218	2,537	101.02%
Citrus	260,774	261,513	262,631	262,065	261,658	0.34%
Cucumbers	4,035	4,369	4,734	5,128	5,551	37.59%
Field Crops	5,785	6,008	6,355	6,765	7,210	24.64%
Melons	11,406	12,195	13,091	14,051	15,051	31.95%
Nurseries	4,994	4,903	5,151	5,321	5,529	10.73%
Other Farm Uses	1,176	1,172	1,175	1,183	1,193	1.43%
Other Fruit trees	908	908	908	908	908	0.00%
Other Veg. /Row Crops	14,832	15,802	16,817	17,917	19,066	28.54%
Pasture	6,500	5,414	4,676	4,158	3,781	-41.83%
Potatoes	2,414	2,202	1,991	1,780	1,569	-34.99%
Sod	10,529	10,419	10,488	10,659	10,890	3.43%
Strawberries	9,329	10,289	11,255	12,225	13,198	41.47%
Tomatoes	24,490	23,591	22,723	21,878	21,051	-14.04%
Total	358,433	360,366	363,894	366,254	369,194	3.00%

Table C-4. FSAID (2015) Irrigated Agricultural Acres in the SWFWMD (acres)

Major Crop Category	2015	2020	2025	2030	2035	% Change 2015-2035
Citrus	254,737	248,362	242,743	234,791	226,742	-10.99%
Field Crops	11,698	11,411	11,362	11,295	11,231	-3.99%
Fruit (Non-citrus)	17,769	16,929	16,148	15,114	13,887	-21.85%
Greenhouse or Nursery	10,115	10,232	10,623	9,842	9,381	-7.26%
Hay	13,019	12,413	11,838	11,379	11,009	-15.44%
Potatoes	2,135	4,042	4,745	24,599	27,291	1178.34%
Sod	11,092	10,346	9,980	9,741	9,461	-14.71%
Vegetables (Fresh Market)	75,894	75,328	75,362	61,356	60,886	-19.78%
Total	396,459	389,062	382,800	378,117	369,888	-6.70%

FSAID Data Source: FSAID 2 User Interface, <http://www.fsaid2.com/>, Downloaded July 31, 2015.

Table C-5. SWFWMD (2015) Average Irrigation by Crop in the SWFWMD (mgd)

Major Crop Category	2015	2020	2025	2030	2035	% Change 2015-2035
Blueberries	2.31	2.89	3.47	4.05	4.63	100.37%
Citrus	261.92	261.96	262.42	261.43	260.69	-0.47%
Cucumbers	6.99	7.61	8.27	8.98	9.73	39.25%
Field Crops	7.21	7.55	8.05	8.62	9.25	28.20%
Melons	16.93	18.29	19.78	21.35	22.97	35.69%
Nurseries	17.47	16.80	17.84	18.48	19.30	10.45%
Other Farm Uses	1.10	1.11	1.11	1.11	1.11	1.04%
Other Fruit trees	1.23	1.23	1.23	1.23	1.23	0.00%
Other Veg. /Row Crops	25.59	27.39	29.24	31.24	33.31	30.16%
Pasture	6.17	5.13	4.42	3.93	3.56	-42.29%
Potatoes	2.70	2.46	2.23	1.99	1.76	-34.78%
Sod	16.72	16.41	16.47	16.75	17.16	2.68%
Strawberries	22.70	25.08	27.48	29.88	32.29	42.23%
Tomatoes	56.01	53.37	50.78	48.25	45.76	-18.30%
Total	445.07	447.27	452.81	457.30	462.78	3.98%

Table C-6. FSAID (2015) Average Irrigation by Crop in the SWFWMD (mgd)

Major Crop Category	2015	2020	2025	2030	2035	% Change 2015-2035
Citrus	340.59	329.44	318.35	375.27	411.89	20.93%
Field Crops	8.27	8.00	7.96	7.87	7.78	-6.02%
Fruit (Non-citrus)	27.57	26.02	24.73	24.41	22.87	-17.04%
Greenhouse or Nursery	18.23	18.05	18.47	18.75	17.79	-2.39%
Hay	12.46	11.24	10.67	10.14	9.74	-21.87%
Potatoes	4.00	5.41	5.98	37.38	42.27	956.60%
Sod	13.98	13.11	12.64	12.78	12.71	-9.08%
Vegetables (Fresh Market)	109.00	106.96	106.86	87.07	86.16	-20.96%
Total	534.11	518.23	505.64	573.67	611.19	14.43%

FSAID Data Source: FSAID 2 User Interface, <http://www.fsaaid2.com/>, Downloaded July 31, 2015.

Using the projected demands and acreage, average acre-inch application rates were calculated¹ for each five-year period. As shown in Table C-7, the Districtwide FSAID2 average application rate increases dramatically in 2030 and 2035, which results in a 35.86 percent increase in average application rates from 2015 to 2035. The Districtwide average SWFWMD application rate declines slightly, again likely due to relocation of production. The SWFWMD average acre-inch rate is very similar to the average 13.39 acre-inch application rate for citrus based on metered and reported pumpage data in Table 8 on page 3 of the FSAID2 report.

While the FSAID2 report indicates that irrigation rates may increase based on long-term price projection models, the FSAID2 average 24.42 acre-inch application rate calculated for 2035 in Table C-7 is significantly higher than the typical 5-in-10 permitted allocation rates for citrus. Given that permitted quantities are based on plant needs and reasonable beneficial use, it is unlikely that such application rates would be permitted. Further, it is not known whether such applications rates would cause an increase in yield that would justify such an increase in irrigation. Mention has also been made of an increased need for citrus irrigation due to increased tree density. However, the District is not aware of any research indicating that the evapotranspiration needs of the trees on a per acre basis will increase significantly or that the reasonable application efficiencies for increased tree densities will decrease. Based on these factors, we do not feel that there is a need to project substantial increases in citrus application rates.

Some of the effect of increased citrus application rates has already been taken into account in the CFWI difference calculations. Therefore, it is necessary to estimate the increase in citrus quantities associated with increasing application rates in Lake and Polk counties so they can be removed from the total districtwide increase in quantities due to increased citrus application rates. Otherwise, the adjustment to the FSAID2 quantities would double-count the deduction of the increased application rates in Lake and Polk counties. The revisions are addressed in the lower portion of Table C-7 (Net Out Acre-Inch Difference in CFWI Counties Already Accounted for in CFWI Difference Calculations). Subtracting the CFWI counties' 2035 acre-inch difference

¹ The average application rate is calculated as (Crop mgd*1,000,000*365)/(Crop acres*27,154).

(34.61 mgd) reduces the Districtwide 2035 acre-inch adjustment to the FSAID2 quantities from 108.73 mgd to 74.12 mgd as shown below.

Table C-7. Impact of Changing Overall Citrus Acre-Inch Application Rate in the SWFWMD

	2015	2020	2025	2030	2035	% Change 2015-2035
Application Rates (acre-inch)						
FSAID Average Rate	17.97	17.83	17.63	21.48	24.42	35.86%
SWFWMD Average Rate	13.50	13.46	13.43	13.41	13.39	-0.81%
Resulting Quantities (mgd)						
FSAID mgd as Projected	340.59	329.44	318.35	375.27	411.89	20.93%
FSAID mgd @ 17.97 Acre-Inch	340.59	332.07	324.56	313.92	303.16	-10.99%
Acre-Inch Impact (mgd)	0.00	-2.63	-6.21	61.35	108.73	NA

	2015	2020	2025	2030	2035	% Change 2015-2035
Net Acre-Inch Out Difference in CFWI Counties Already Accounted for in CFWI Difference Calculations						
FSAID Lake Citrus Acres	280	270	238	171	166	-40.71%
FSAID Lake Citrus mgd	0.35	0.34	0.29	0.28	0.28	-20.00%
Estimated FSAID Lake Acre-Inch	16.80	16.93	16.38	22.01	22.67	34.94%
Revised Lake mgd @ 16.80	0.35	0.34	0.30	0.21	0.21	-40.71%
FSAID Polk Citrus Acres	79,151	77,817	76,583	75,348	74,044	-6.45%
FSAID Polk Citrus mgd	113.36	110.77	107.75	127.65	140.58	24.01%
Estimated FSAID Polk Acre-Inch	19.25	19.13	18.91	22.77	25.52	32.57%
Revised Polk mgd @ 19.25	113.36	111.45	109.68	107.91	106.05	-6.45%
Total CFWI mgd Adjustment	0.00	-0.68	-1.94	19.80	34.61	NA
Net Acre-Inch Difference	0.00	-1.95	-4.27	41.55	74.12	NA

FSAID Lake and Polk Acres and mgd Data Sources: FSAID 2015. Appendix B, Tables 211, 212, 215 and 216.

Returning to Table C-2, if we subtract the differences in the CFWI projections for 2035 (65.59 mgd) and the net impact of increased citrus acre-inch allocations (74.12 mgd), the total adjusted 2035 FSAID2 projection (471.48 mgd) would be much closer to the SWFWMD 2035 projection in Table C-1 (462.78 mgd). Based on these adjustments, the Districtwide difference between the 2035 FSAID2 and SWFWMD projections would be reduced from 148.42 mgd to 8.71 mgd.

This is not to say that either projection is correct or incorrect. District staff worked very closely with FDACS' consultant, have great respect for the amount and quality of work that went into

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the FSAID2 projections, and believe that both sets of projections benefited from that collaboration. District staff believes that the FSAID project is well worth the effort and resources expended. However, as noted, different data and assumptions can make significant differences in the resulting projections. When reasonable adjustments to data and assumptions have been made, as described above, the SWFWMD and FSAID2 average irrigation projections are not significantly different. The adjusted difference is 1.85 percent. The adjusted difference could be even less if the FSAID2-projected increases in potato acreage are not realized.

Drought Year Irrigation Demands

The same issues that create the differences between SWFWMD and FSAID2 average year irrigation demand projections also create the differences between the SWFWMD and FSAID2 drought year irrigation demand projections. As above, a primary difference is that SWFWMD drought demand quantities for Lake and Polk Counties are from the CFWI RWSP while those for the FSAID2 projections are not. Note that the CFWI RWSP projections do not include drought quantities for any year other than 2035.

The issue of FSAID2 increasing irrigation allocations for citrus, addressed above, is also an issue in the drought projections. If the CFWI data for Lake and Polk counties and the citrus allocation issues did not exist, the differences between the drought projections would be much smaller. As required, the drought projections produced by SWFWMD and FSAID2 are displayed for comparison in Tables C-8 and C-9.

Table C-8. SWFWMD 2015 Drought Agricultural Irrigation Projections for the SWFWMD (mgd)

County	2015	2020	2025	2030	2035	% Change 2015-2035
Charlotte	17.78	19.34	20.94	22.58	24.25	36.42%
Citrus	1.96	1.96	2.01	2.08	2.17	10.40%
DeSoto	99.41	104.10	109.06	111.59	114.09	14.77%
Hardee	75.03	76.11	77.26	78.56	79.96	6.57%
Hernando	2.96	2.90	2.86	2.85	2.85	-3.68%
Highlands	55.30	55.40	55.56	55.76	55.99	1.24%
Hillsborough	58.33	54.58	53.15	51.64	50.62	-13.22%
Lake ¹	NA	NA	NA	NA	1.60	NA
Levy	8.48	8.75	9.08	9.44	9.81	15.65%
Manatee	85.08	85.14	85.49	86.01	86.65	1.84%
Marion	4.93	5.17	5.48	5.84	6.25	26.79%
Pasco	17.36	16.72	16.19	15.75	15.39	-11.35%
Pinellas	0.20	0.19	0.17	0.16	0.15	-28.11%
Polk ¹	NA	NA	NA	NA	117.89	NA
Sarasota	4.86	4.55	4.35	4.21	4.10	-15.64%
Sumter	7.14	6.76	6.60	6.59	6.70	-6.18%
Total	NA	NA	NA	NA	578.47	NA

¹Projections for District's portion from Vol. 2 of the Draft RWSP for the CFWI (May 2015)

Table C-9. FSAID 2015 Drought Agricultural Irrigation Projections for the SWFWMD (mgd)

County	2015	2020	2025	2030	2035	% Change 2015-2035
Charlotte	18.24	18.11	18.07	21.14	23.54	29.08%
Citrus	1.96	1.54	1.40	1.48	1.18	-39.84%
DeSoto	108.04	103.55	99.52	117.00	128.86	19.27%
Hardee	76.15	71.96	68.01	76.07	80.18	5.30%
Hernando	4.28	5.41	6.75	8.88	10.35	142.12%
Highlands	48.54	44.55	42.43	47.07	49.50	1.97%
Hillsborough	61.56	55.98	50.78	49.18	45.77	-25.65%
Lake ¹	0.76	0.69	0.61	0.51	0.51	-32.25%
Levy	9.80	12.01	13.42	16.91	17.39	77.54%
Manatee	98.97	100.23	102.69	113.99	121.42	22.68%
Marion	7.43	9.55	11.86	17.52	19.95	168.54%
Pasco	18.42	17.17	15.87	16.91	17.27	-6.20%
Pinellas	0.04	0.04	0.03	0.00	0.00	-100.00%
Polk ¹	142.98	139.65	135.86	159.14	173.97	21.67%
Sarasota	10.80	10.40	10.10	10.60	10.70	-0.87%
Sumter	6.27	5.11	4.09	3.32	2.28	-63.68%
Total	614.22	595.97	581.48	659.72	702.87	14.43%

Data Source: FSAID 2 User Interface, <http://www.fsaid2.com/>, Downloaded Sept. 1, 2015.

Non-Irrigation (Livestock and Aquaculture) Demand

Both the 2015 District RWSP and FSAID2 report include projections of livestock and aquaculture demands through 2015. In the District RWSP these are classified as non-irrigation agricultural demands but the uses are the same. Table C-10 provides the District's projections and Table C-11 provides the FSAID2 projections.

The District is projecting demand to remain steady throughout the planning period at 10.026 mgd (comparable to year 2010 usage). This is based on several factors. Historic permitting and usage trend data were evaluated. In terms of Districtwide permitted quantities, permitted quantities for livestock and aquaculture declined from 18.7 mgd in 2002 to 11.6 mgd in 2011. More recently, used quantities declined from 9.38 to 9.23 mgd from 2007 to 2012.² Trend analysis would have led to further projected declines in use during the planning period. As beef prices have been strong over the last few years and there is a dearth of published projections data based on the type cattle operations in Florida, District staff considered it imprudent to project a further declining trend and to use 2010 usage quantities through the planning period.

FSAID2 projections were primarily based on 2007 and 2012 Census animal data, water management district permitted use data per animal, and aquaculture use data from the United States Geological Survey (USGS). The FSAID2 projections are higher than the SWFWMD projections. SWFWMD data may be lower, as it is based on usage and not on permitting coefficients. In general, usage quantities tend to be lower than permitted quantities. FSAID2, similar to District projections, also projects a constant demand throughout time citing a lack of data upon which to make better projections.

² The projected use (10.026 mgd) is slightly higher than the actual used quantity in 2010 as Lake and Polk county CFWI projections for 2010 are higher than the actual use in 2010.

Table C-10. SWFWMD 2015 Non-Irrigation (Livestock and Aquaculture) Projections for the SWFWMD (mgd)

County	2015	2020	2025	2030	2035
Charlotte	0.003	0.003	0.003	0.003	0.003
Citrus	0.013	0.013	0.013	0.013	0.013
Desoto	0.717	0.717	0.717	0.717	0.717
Hardee	0.584	0.584	0.584	0.584	0.584
Hernando	0.216	0.216	0.216	0.216	0.216
Highlands	0.078	0.078	0.078	0.078	0.078
Hillsborough	3.157	3.157	3.157	3.157	3.157
Lake ¹	0.001	0.001	0.001	0.001	0.001
Levy	0.017	0.017	0.017	0.017	0.017
Manatee	0.565	0.565	0.565	0.565	0.565
Marion	0.029	0.029	0.029	0.029	0.029
Pasco	0.116	0.116	0.116	0.116	0.116
Pinellas	0.000	0.000	0.000	0.000	0.000
Polk ¹	2.000	2.000	2.000	2.000	2.000
Sarasota	0.189	0.189	0.189	0.189	0.189
Sumter	2.341	2.341	2.341	2.341	2.341
Total	10.026	10.026	10.026	10.026	10.026

¹Projections for District's portion from Vol. 2 of the Draft RWSP for the CFWI (May 2015)

Table C-11. FSAID 2015 Livestock and Aquaculture Projections for the SWFWMD

County	Livestock and Aquaculture (mgd)				
	2015	2020	2025	2030	2035
Charlotte	0.21	0.21	0.21	0.21	0.21
Citrus	0.22	0.22	0.22	0.22	0.22
DeSoto	1.77	1.77	1.77	1.77	1.77
Hardee	2.70	2.70	2.70	2.70	2.70
Hernando	0.43	0.43	0.43	0.43	0.43
Highlands	0.75	0.75	0.75	0.75	0.75
Hillsborough	1.41	1.41	1.41	1.41	1.41
Lake	0.02	0.02	0.02	0.02	0.02
Levy	0.15	0.15	0.15	0.15	0.15
Manatee	0.93	0.93	0.93	0.93	0.93
Marion	0.19	0.19	0.19	0.19	0.19
Pasco	0.62	0.62	0.62	0.62	0.62
Pinellas	0.00	0.00	0.00	0.00	0.00
Polk	1.44	1.44	1.44	1.44	1.44
Sarasota	0.65	0.65	0.65	0.65	0.65
Sumter	1.24	1.24	1.24	1.24	1.24
Total	12.75	12.75	12.75	12.75	12.75

Source: File Name SWFWMD freeze demand by crop group.xlsx. Provided by Daniel Dourte, Balmoral Group, by email dated 7/6/2015.

Frost Protection Quantities

Table C-12 contains the FSAID2 projected frost protection quantities. Although it is not specified in the FSAID2 Report describing the methodology, discussions with Balmoral Group staff indicate that the quantities are developed from historic weather events and assumptions about hourly application rates and durations and then annualized to create an annual quantity that changes from year to year based on the crop acreage using frost protection and location (inside or outside a frost zone). Actual quantities are likely to vary significantly as there may be no freeze events in some years and yet severe freezes in others.

The SWFWMD has not projected frost protection quantities in this or any past RWSP. The reasons for the District not projecting frost protection quantities are twofold. Severe freezes tend to be infrequent, of short duration, and are difficult to predict. The second reason is that although water use during a freeze event can be very high, the potentiometric water level in the aquifer tends to recover very quickly. Frost protection quantities do not cause sustained suppression of water levels in the aquifer that occurs with increases in average annual agricultural irrigation and non-irrigation withdrawals. For water availability modeling purposes, the quantities are not as significant as year-in and year-out irrigation quantities.

This is not to minimize the severe impacts of frost protection quantities. The District has created special water resource caution area rules in the Dover-Plant City area to reduce potential frost protection impacts such as damage to pumps and wells and the formation of sinkholes.

Table C-12. FSAID 2015 Annualized Frost Protection Quantities in the SWFWMD

County	Frost Protection (mgd)				
	2015	2020	2025	2030	2035
Charlotte	0.27	0.29	0.28	0.20	0.21
Citrus	0.19	0.18	0.16	0.13	0.12
DeSoto	7.78	7.14	6.66	6.43	6.35
Hardee	6.47	6.21	5.94	5.37	5.00
Hernando	0.21	0.28	0.52	0.58	0.91
Highlands	3.95	3.79	3.67	3.36	3.04
Hillsborough	7.97	7.43	6.26	5.38	4.09
Lake	0.05	0.05	0.04	0.03	0.02
Levy	0.24	0.26	0.27	0.28	0.28
Manatee	3.50	4.04	4.52	4.81	5.08
Marion	0.22	0.24	0.22	0.23	0.24
Pasco	1.48	1.24	1.11	0.84	0.83
Pinellas	0.00	0.00	0.00	0.00	0.00
Polk	12.97	13.46	13.52	13.45	13.13
Sarasota	0.76	0.80	0.80	0.82	0.74
Sumter	0.18	0.14	0.13	0.06	0.03
Total	46.25	45.55	44.11	41.96	40.05

Source: File Name "SWFWMD freeze demand by crop group.xlsx". Provided by Daniel Dourte, Balmoral Group, by email dated 7/6/2015.