

# ENVISION ALACHUA: RESOURCE EFFICIENCY

## Establishing Water Consumption Baselines for Alachua County

Final Report to Plum Creek

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Envision Alachua: Resource Efficiency – Water Consumption Baselines



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## EXECUTIVE SUMMARY

**BACKGROUND:** Plum Creek is the largest landowner in Alachua County, with 65,000 acres. Five years ago the County’s planning staff asked Plum Creek if it had a strategic plan for its properties, and in response the company initiated a master planning process. Over the last two years as part of that process, Plum Creek has conducted Envision Alachua, facilitating an on-going, open conversation about the future of East Alachua County through a series of meetings, presentations and discussions. The first phase of the Envision Alachua community conversation resulted in a statement of general goals and planning principles intended to guide the proposed project. In the *Envision Alachua Vision Document* under “Goal D – Water”, the second stated planning principle is to “develop communities that optimize water conservation and achieve a 50 percent or greater reduction in water usage based on current usage.” Evaluation of this goal requires specification of water use baselines against which Plum Creek’s conceptual community designs can be compared.

The **OBJECTIVE OF THIS ANALYSIS** is to estimate water consumption baselines that are locally relevant, current, reliable, and scalable measures of actual water use by specific segments of users in Alachua County. The **ANALYSIS BOUNDARY** includes homes and businesses in Alachua County serviced with potable water by Gainesville Regional Utilities (GRU). All baselines are derived from three calendar years of water consumption data. Baselines for water use from GRU reclaimed supply, private well withdrawals, and on-site reuse water are not estimated for this study. The residential analysis sample includes single-family detached (SFD) homes, condominiums and apartment complexes with ten or more units, all built since year 2000. The non-residential sample includes active businesses in typical non-residential (commercial, industrial and institutional) use categories.

**METHODS:** To estimate water consumption baselines, we examined historic water billing records, Alachua County Property Appraiser (ACPA) data and City of Gainesville Chamber of Commerce business information for GRU water customers. Primary data from these sources were joined, screened, cleaned and analyzed to generate typical residential and non-residential water use profiles. These profiles were further segmented by housing type, water use features and business types. Average baselines were measured for each user segment and were quantitatively compared to calculate differentials in baseline consumption between groups, which represent water savings potentials. To make the comparisons more locally meaningful and to feature variability in baseline water use, individual neighborhoods and businesses were also directly compared.

**KEY METRIC:** All water consumption baselines are reported as average gallons used per day (gpd) per household or per business. Residential baselines averaged water use in calendar years 2009, 2010 and 2013.<sup>1</sup> Homes in neighborhoods serviced with reclaimed water were excluded when calculating the weighted average consumption for all SFD homes and for all residential units. Non-residential baselines averaged water use in calendar years 2011, 2012 and 2013.

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<sup>1</sup> We do not have complete GRU residential water consumption data for years 2011 and 2012. Once we obtain these records, baselines can be updated to reflect 2011-2013 consumption.

**RESIDENTIAL SAMPLE AND RESULTS:** The final residential analysis sample includes 5,180 housing units in 56 neighborhoods: 3,035 SFD homes, 725 condominiums and 1,420 apartments. SFD homes consumed an average of 308 gpd over the three analysis years and average use varied substantially across different neighborhoods in the sample, ranging from 152 gpd per household for the most efficient SFD neighborhood to 536 gpd per household for the least efficient SFD neighborhood. Three-quarters of the SFD homes in the sample are “irrigators”, meaning that they have a sprinkler system (according to property appraisal records) and/or an irrigation meter (according to GRU billing records). SFD homes with a sprinkler system and/or an irrigation meter (“irrigators”) consumed an average of 358 gpd while those without a sprinkler system or irrigation meter (“non-irrigators”) consumed an average of 190 gpd. Extrapolating from the differential between these two SFD baselines (168 gpd/household), we estimate that irrigation accounted for 41% of sample SFD homes’ total water use. Condominiums consumed an average of 94 gpd per household (74% less than “irrigator” SFD homes and 51% less than “non-irrigator” SFD homes), with average use across associations ranging from 70 to 148 gpd per household. Apartments consumed an average of 116 gpd per household (68% less than “irrigator” SFD homes and 39% less than “non-irrigator” SFD homes), with average use across complexes ranging from 91 to 154 gpd per household. The weighted average consumption across all housing types in the residential sample is 232 gpd per household. Figure 1 summarizes key findings of the residential water consumption baseline analysis.

**NON-RESIDENTIAL SAMPLE AND RESULTS:** The final non-residential analysis sample includes 151 commercial, industrial and institutional businesses (in 31 categories), half of which are “irrigators” (with a sprinkler system and/or irrigation meter). Businesses’ baseline water consumption is reported for each business and as average consumption across individual businesses within each category. Using the category averages, each business type is characterized as a “very high”, “high”, “medium”, or “low” water user. Key results of the non-residential water consumption baseline analysis are illustrated in Figure 2; note that average consumption values are plotted on a logarithmic scale to capture the full range of consumption across the sample. Only one business in the sample was categorized as a “very high” water user: a hotel conference center using 24,885 gpd. In Figure 2, “high use” business types are those inside the red border; “medium use” are those inside the blue border; and “low use” are those inside the green border. Non-residential water use varies widely both across and within business categories. Low use categories range from 27 gpd (churches) to 611 gpd (gas stations); medium use categories range from 888 gpd (financial institutions) to 2,318 gpd (golf clubs); and high use categories range from 2,573 gpd (grocery stores) to 7,244 gpd (hotels and motels). Additional results for the non-residential baseline analysis are presented as “business exemplar” figures with details of a relatively high and relatively low water user from select business categories.

**CONCLUSIONS AND POLICY IMPLICATIONS:** The water consumption baselines reported here are recent, locally relevant, and derived from a large sample of residential and non-residential water users (5,180 dwelling units and 151 businesses). They suggest that *Plum Creek’s goal of a 50% reduction in water consumption relative to comparable new developments is achievable if aggressive conservation and efficiency measures are adopted and fully implemented*. Since residential demand is expected to account for the majority of total water demand, *the most promising conservation strategies include elimination of potable water for landscape irrigation and increasing the ratio of high-density (apartments and condominiums) to low-density (SFD homes) dwelling units*. We estimate, conservatively, that these two strategies alone could readily reduce



consumption by 40%. In addition, a commitment to prohibit the installation of private wells for landscape irrigation would provide assurances that demand would not be shifted from public to self-supply. The ability to reduce water use in the non-residential sector is less certain, particularly for indoor use. However, findings of this study *reveal potential for additional water savings through commercial building and landscape design guidelines* that eliminate irrigation (beyond initial establishment) and specify appropriate conservation and efficiency practices.

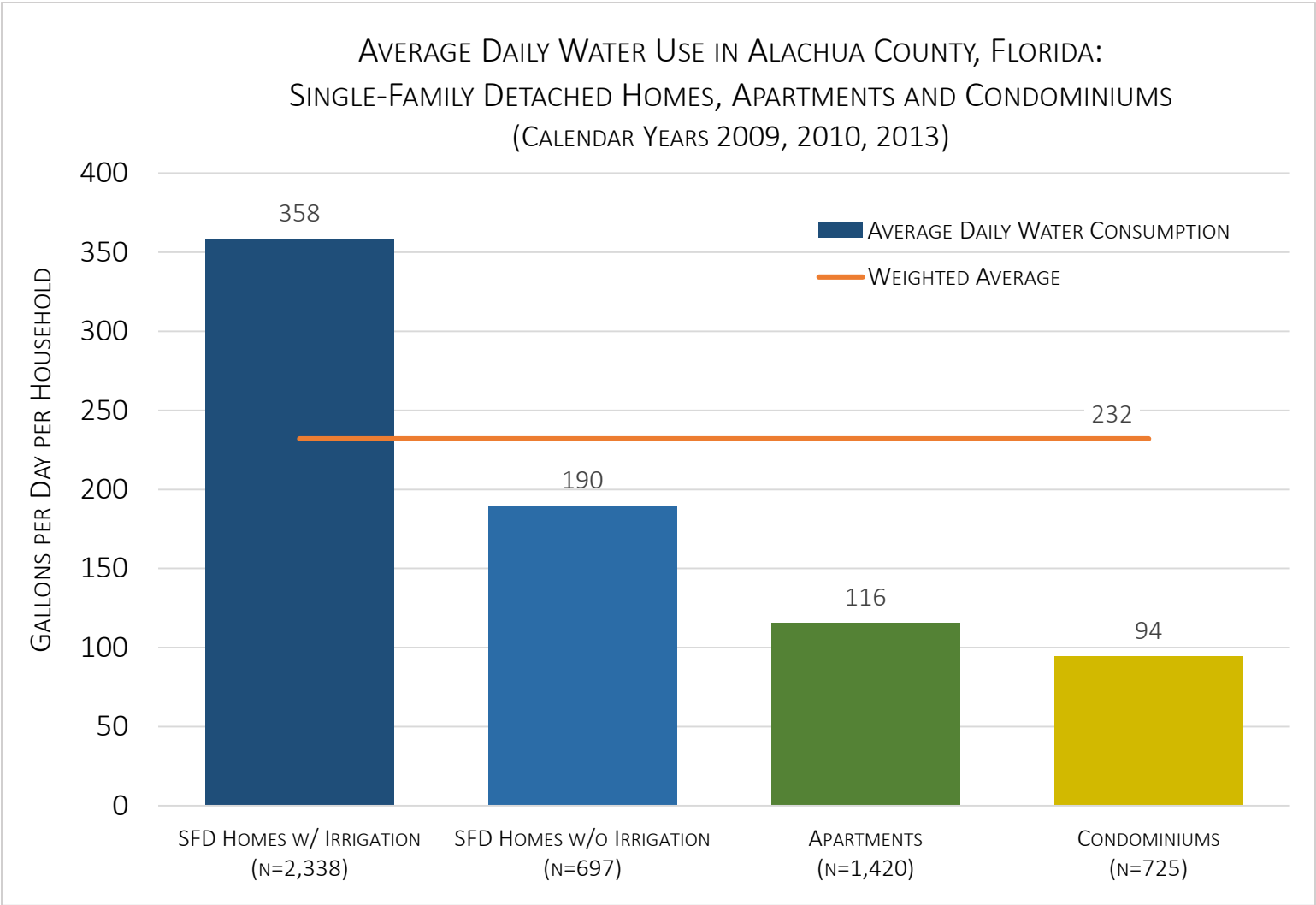
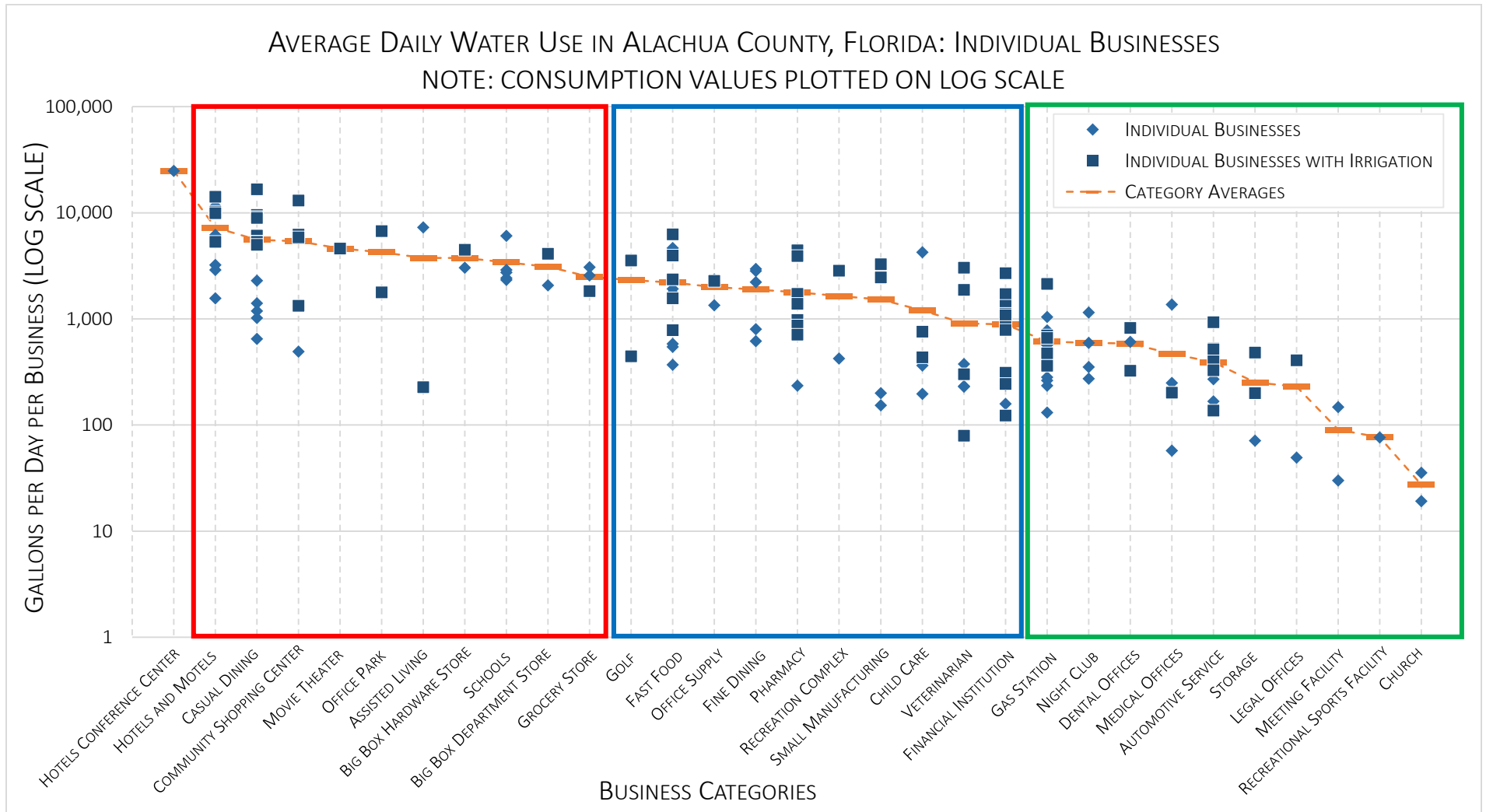


FIGURE 1. ALACHUA COUNTY RESIDENTIAL WATER CONSUMPTION BASELINES SUMMARY RESULTS



**FIGURE 2. ALACHUA COUNTY NON-RESIDENTIAL WATER CONSUMPTION BASELINES SUMMARY RESULTS**

## BACKGROUND

Plum Creek is the largest landowner in Alachua County, with 65,000 acres. Five years ago the County’s planning staff asked Plum Creek if it had a strategic plan for its properties, and in response the company initiated a master planning process. Over the last two years as part of that process, Plum Creek has conducted Envision Alachua, facilitating an on-going, open conversation about the future of East Alachua County through a series of meetings, presentations and discussions. The first phase of the Envision Alachua community conversation resulted in a statement of general goals and planning principles intended to guide the proposed project. In the *Envision Alachua Vision Document* under “Goal D – Water”, the second stated planning principle is to “develop communities that optimize water conservation and achieve a 50 percent or greater reduction in water usage based on current usage.” Evaluation of this goal requires specification of water use baselines against which Plum Creek’s conceptual community designs can be compared.

Gainesville Regional Utilities (GRU) has been the major water utility in Alachua County for more than 100 years and is the best source of data for evaluating local water consumption patterns to establish baselines. GRU supplies water to three broad categories of metered accounts: residential, non-residential and other (e.g., University of Florida and Shands Hospital). In 2012, GRU supplied an average of 23 million gallons of water per day (MGD) from the Floridan aquifer to all of its users in Alachua County: 12.5 MGD to its 63,273 residential accounts; 5.5 MGD to its 5,983 non-residential accounts and 5.1 MGD to the University of Florida. GRU’s current consumptive use permit (CUP) expires in August 2014 and the utility reports that it is “asking for no increase in the CUP for the next 20 years, despite a projected 25-percent customer increase”.<sup>2</sup> The Envision Alachua planning principle that any community proposed for Plum Creek’s property “achieve a 50 percent or greater reduction in water usage” is consistent with GRU’s goals to reduce per-capita water demand.

## ANALYSIS OBJECTIVE

Plum Creek’s “50 percent or greater reduction in water usage” goal should be measured against baselines that are locally relevant, current, reliable and scalable measures of actual potable water use. The objective of this analysis is to estimate water consumption baselines that meet these criteria, reflecting water use by specific segments of homes and businesses in Alachua County.

## ANALYSIS BOUNDARY

The analysis boundary includes customers (homes and businesses) in Alachua County serviced with GRU-supplied, potable water. All baselines are derived from three calendar years of water consumption data. Water use from GRU reclaimed supply, private well withdrawals, and reuse

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<sup>2</sup> Source: *Gainesville Regional Utilities 2013 Water Quality Report*, page 3:

<https://www.gru.com/Portals/0/Legacy/OurCommunity/Environment/WaterQuality/GRUWaterReport.pdf>.

water is not estimated for this study. The residential sample includes dwelling units in three housing type categories: single-family detached (SFD) homes/neighborhoods, condominium associations, and apartment complexes (ten or more units). The non-residential sample includes active businesses in the most common property uses and business types in Alachua County and for which we were able to reliably join utility, property appraiser and chamber of commerce data.

## METHODS

All water consumption baselines are derived from three full calendar years of water use data. To calculate baselines, we examined historic water billing records, ACPA parcel-level data and Chamber of Commerce business information for GRU's residential and non-residential customers. Primary data from these three sources were joined, screened, cleaned and analyzed to generate typical residential and non-residential water use profiles relevant for extrapolation to alternative land development scenarios. These profiles were further segmented by housing type, parcel water use features and business types. Average baselines were measured for each user segment and then compared to calculate differentials in baseline consumption between groups. Baseline differentials represent potential for water savings by moving from one housing or use profile to another. To ensure that comparisons are locally meaningful and to feature variability in consumption patterns at a higher resolution, we also present baseline results for individual neighborhoods and businesses.

Residential records were screened to include only:

- SFD homes in neighborhoods with 50 or more homes (according to ACPA data);
- condominiums (according to ACPA data);
- apartment complexes with ten or more units (according to ACPA data);
- dwelling units constructed since year 2000 (according to ACPA data);
- dwelling unit heated (conditioned) area between 500 and 6,000 square feet (according to ACPA data);
- “domestic meter” and “irrigation only” meter water consumption records (according to GRU data);<sup>3</sup>
- parcel-level water consumption (according to GRU data), meaning that SFD homes and condominiums consumption excludes use in common areas (separate parcels) whereas apartments include use in common areas (single parcels);
- monthly water consumption records from calendar years 2009, 2010 and 2013 (we have not yet acquired GRU's residential water consumption data from calendar years 2011 and 2012);
- customers with over 330 days of domestic meter water consumption per year (according to GRU data);
- customers with domestic water meter consumption between 12 and 4,000 thousand gallons (kgal) per year (according to GRU data); and

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<sup>3</sup> Reclaimed water consumption is metered separately and these readings (beyond the scope of the analysis) were not obtained from GRU for this study.

- units with no change in customer account over the three analysis years (according to GRU data).

SFD homes' and condominiums' water consumption baselines exclude use in common areas and the water use of SFD homes in neighborhoods serviced with reclaimed water was excluded when SFD weighted average water consumption baselines were calculated.

Non-residential baselines were calculated by averaging water use of individual businesses and summarizing by business category. Commercial, industrial and institutional properties were initially grouped by common categories, as indicated by their real name, property use code and/or business use type. In certain cases, these categories were subdivided further to create distinct categories while accurately capturing common business types within the final groups. Each business type group was then assigned to a water use category – “very high”, “high”, “medium”, or “low” – based on its average use across individual businesses. Additional results for the non-residential baseline analysis are presented as “business exemplar” figures with details of a relatively high and relatively low water user from select business categories.

Non-residential customer records were screened to include only:

- active businesses (according to the Chamber of Commerce Active Business List);
- commercial, industrial and institutional parcel-level property use codes (according to ACPA data);
- “normal service” meter and “irrigation only” meter water consumption readings (according to GRU data);
- parcel-level water consumption (according to GRU data), meaning that each customer consumption record captures the use of all businesses on the parcel;
- parcels joined with a single non-residential customer (according to GRU data), with the exception of those in the “Community Shopping Center” business category;
- monthly water consumption readings from calendar years 2011, 2012 and 2013 (according to GRU data); and
- customers with over 330 days of normal service meter water consumption per year (according to GRU data).

## KEY METRIC

Baseline results are intended to provide reliable and recent measures of actual potable water consumption by residential and non-residential users in Alachua County. All water consumption baselines are reported as average gallons used per day (gpd) per household or per business for each housing type or business category. Residential baselines averaged water use in calendar years 2009, 2010 and 2013.<sup>4</sup> Homes in

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<sup>4</sup> We do not have complete GRU residential water consumption data for years 2011 and 2012. Once we obtain these records, baselines can be updated to reflect 2011-2013 consumption.

neighborhoods serviced with reclaimed water were excluded when calculating the weighted average consumption for all SFD homes and for all residential units. Non-residential baselines averaged water use in calendar years 2011, 2012 and 2013.

Appendix A (page 39) provides further detail of the methods used for the analysis, including: data joining; data screening and cleaning; assumptions; consumption metrics; and data limitations and considerations.

## RESULTS

### RESIDENTIAL BASELINES

The residential sample includes 5,180 dwelling units (in 56 neighborhoods), 3,035 (59%) of which are SFD homes, 1,420 (27%) of which are apartments, and 725 (14%) of which are condominiums. Figure 3 maps the sample of residential parcels by housing type, with SFD home parcels in blue, apartment parcels in green and condominium parcels in gold.

#### Single-Family Detached Homes

First, we examine the water use of 3,035 SFD homes in 28 neighborhoods. All SFD homes in the sample were constructed since year 2000, with an average effective year built of 2004. Figure 4 shows average baseline consumption for the overall sample of SFD homes and for each of the sample neighborhoods. Note that four neighborhoods shown – Wilds Plantation, Stillwind, Haile Plantation and Cobblefield – are serviced with reclaimed water by GRU.<sup>5</sup> The water use values reported in Figure 4 exclude reclaimed use, so we expect the *actual* average use per household for these four neighborhoods to be higher than their reported baseline consumption and we exclude their use from the calculations for weighted average water consumption of SFD homes. Overall, the sample of SFD homes consumed an average of 308 gpd in calendar years 2009, 2010 and 2013, with wide variation around this average for individual homes and neighborhoods. Turnberry Lake homes consumed the most, averaging 536 gpd (74% more than the average for all SFD homes), while Blues Creek homes consumed the least, averaging 152 gpd (51% less than the average for all SFD homes). Table 1 shows SFD neighborhoods' baseline water consumption, home and lot characteristics. In general and as expected, neighborhoods with larger homes and lots consumed more water per household than those with smaller homes and lots. Yet the data do show that two developments with similar home and lot sizes can indeed have very different water consumption patterns. Eloise Gardens and Broadmoor, for example, both have homes averaging ~2,500 square feet of conditioned area and lot sizes over 10,000 square feet, yet Eloise Gardens homes consume 413 gpd while Broadmoor homes consume 254 gpd, nearly 40% less.

To further explore this variability around the average SFD baseline of 308 gpd, we split the same SFD sample into “irrigator” and “non-irrigator” groups of homes. A home is classified as an “irrigator” if the property appraisal records identify its parcel as having a sprinkler system and/or GRU identifies the customer as having an irrigation meter. Three-quarters (2,338) of the SFD homes in the sample met this “irrigator” criterion. Figure

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<sup>5</sup> According to information as of February 2014 from GRU, residential neighborhoods serviced with reclaimed water for irrigation include Cobblefield, Wilds Plantation, sections of Haile Plantation and the common area at Stillwind. See Figure 17 in Appendix B (page 42) for a map of GRU's reclaimed water service areas.

5 shows the average annual water consumption for SFD homes (grouped by neighborhood) with the overall averages for “irrigator” and “non-irrigator” homes. SFD “irrigator” homes consumed an average of 358 gpd while the “non-irrigators” consumed an average of 190 gpd. Extrapolating from these two SFD baselines and their differential of 168 gpd/household, we estimate that irrigation accounted for 41% of SFD homes’ total potable water use over the three analysis years. It is important to reiterate that reclaimed water use is excluded from weighted average consumption (gpd) calculations. Table 2 shows baseline water consumption and housing characteristics for the SFD “irrigator” and “non-irrigator” subgroups of homes. Note that the neighborhoods with greater portions of “irrigator” homes tend to consume the most water overall while those with fewer “irrigator” homes tend to consume the least. Furthermore, to return to the previous comparison of Eloise Gardens to Broadmoor, we see that irrigation systems are standard in Eloise Gardens homes while ~2/3 of Broadmoor homes are “non-irrigators”. These data reflect the influence of the “embedded” sprinkler system on total potable water use of recent developments of SFD homes in Alachua County.

#### Condominiums

We also estimated water consumption baselines for condominium associations, with an analysis sample of 725 units in 18 neighborhoods. The average effective year built for the condominium sample is 2005. Figure 6 illustrates the results of this analysis. We find that condominiums consume an average of 94 gpd per household: 74% less than “irrigator” SFD homes and 51% less than “non-irrigator” SFD homes. As with SFD homes, we find substantial variation around average water use: the least water-efficient condominium association in the sample (Oxford Terrace) used more than twice the water on average (148 gpd) than the most efficient association (Jackson Square at 70 gpd). Brighton Park, Woods Edges and Lofts Oasis reflect “typical” water use per unit for recently-constructed condominium associations in Alachua County. Table 3 summarizes baseline water consumption and housing characteristics of the sample condominium associations.

#### Apartments

Last, for the residential analysis, we examined the water use of 1,420 apartments in 10 neighborhoods. The average effective year built for the apartment sample is 2003. Figure 7 shows the water use of apartments grouped by complex. Apartments consumed an average of 116 gpd per household: 68% less than “irrigator” SFD homes and 39% less than “non-irrigator” SFD homes. We find less variability around apartment complexes’ average baseline consumption than that among the SFD homes and condominiums. Lewis Place apartments consumed the most, on average (154 gpd) while Oak Hammock apartments consumed the least (91 gpd). Table 4 lists the unit sample sizes and water consumption by apartment complex.

Table 5 summarizes results of the residential analysis, showing baseline water consumption, sample sizes and total water use for each housing segment and for all residential units. Baseline consumption per household across all residential units in the sample<sup>6</sup> is 232 gpd; all SFD homes is 308 gpd; SFD “irrigator” homes is 358 gpd; SFD “non-irrigator” homes is 190 gpd; all condominiums is 94 gpd; and all apartments is 116 gpd.

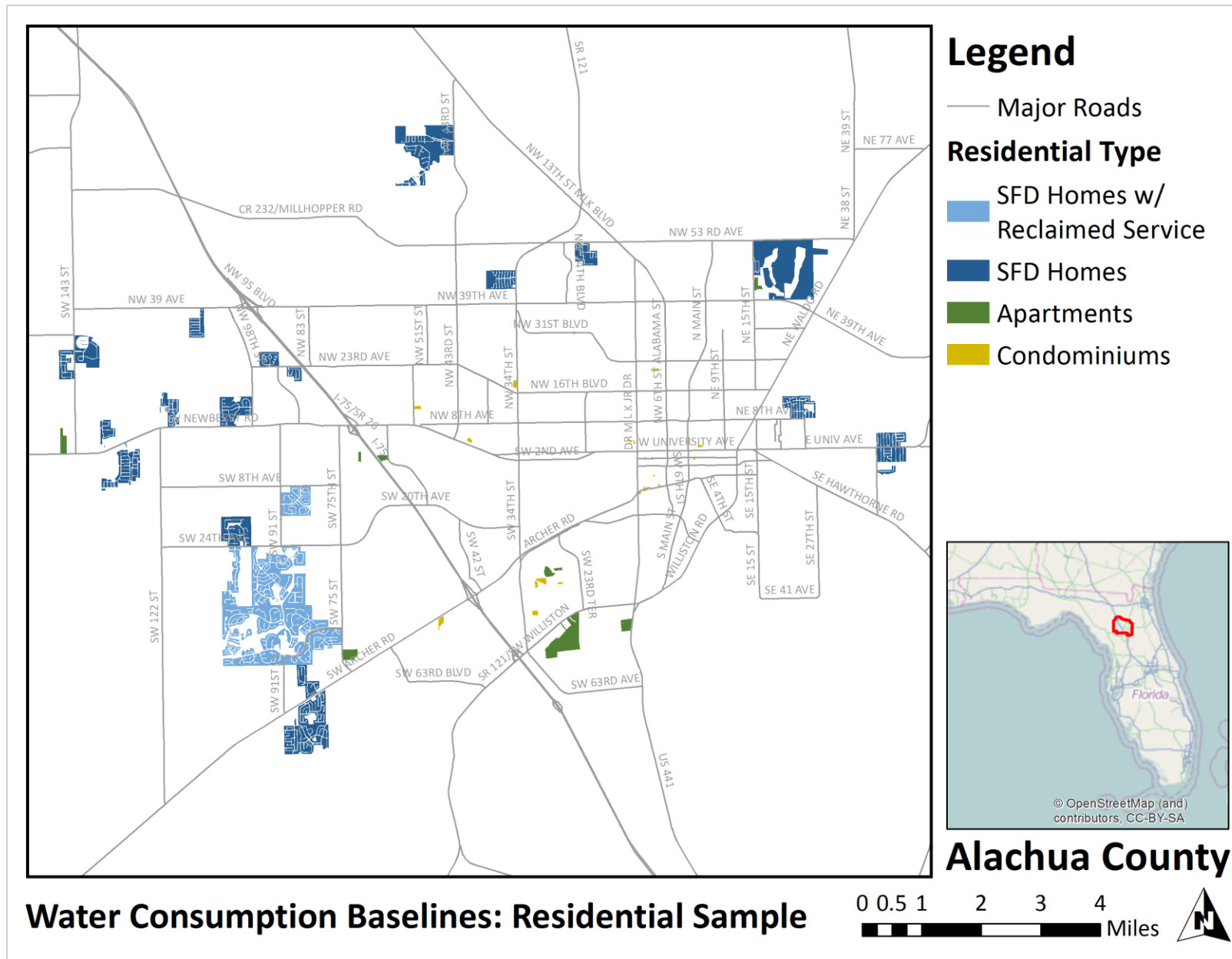
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<sup>6</sup> All SFD weighted average baselines exclude use of homes in the four neighborhoods serviced with reclaimed water.

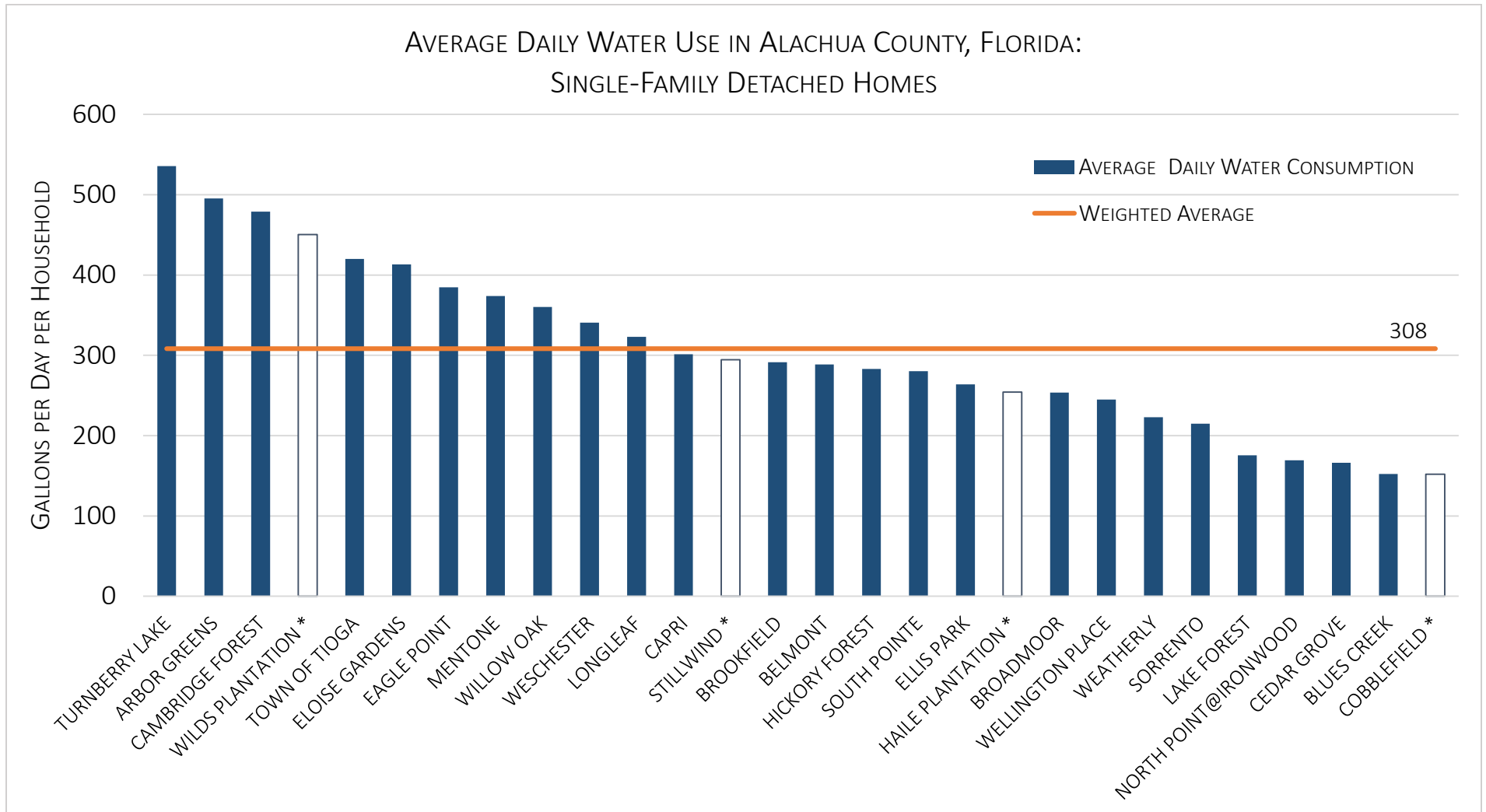
Collectively, the 3,035 residential units in the sample used 1.20 MGD, with SFD homes accounting for the majority (81%) of total use. Note that SFD “irrigators” account for less than half (45%) of the units in the residential sample yet consume 70% of the total water. In contrast, condominiums account for 14% of the sample and consume only 6% of the total water.

Appendix B (page 48) provides supplemental detail for the residential water consumption baselines analysis, including *preliminary* estimates of marginal use by SFD homes from private pools and potential undocumented use from private wells. Appendix D (page 66) tabulates reference residential water use measures.





**FIGURE 3. ALACHUA COUNTY RESIDENTIAL ANALYSIS SAMPLE MAP: LOCATION OF NEIGHBORHOODS**  
 Envision Alachua: Resource Efficiency – Water Consumption Baselines

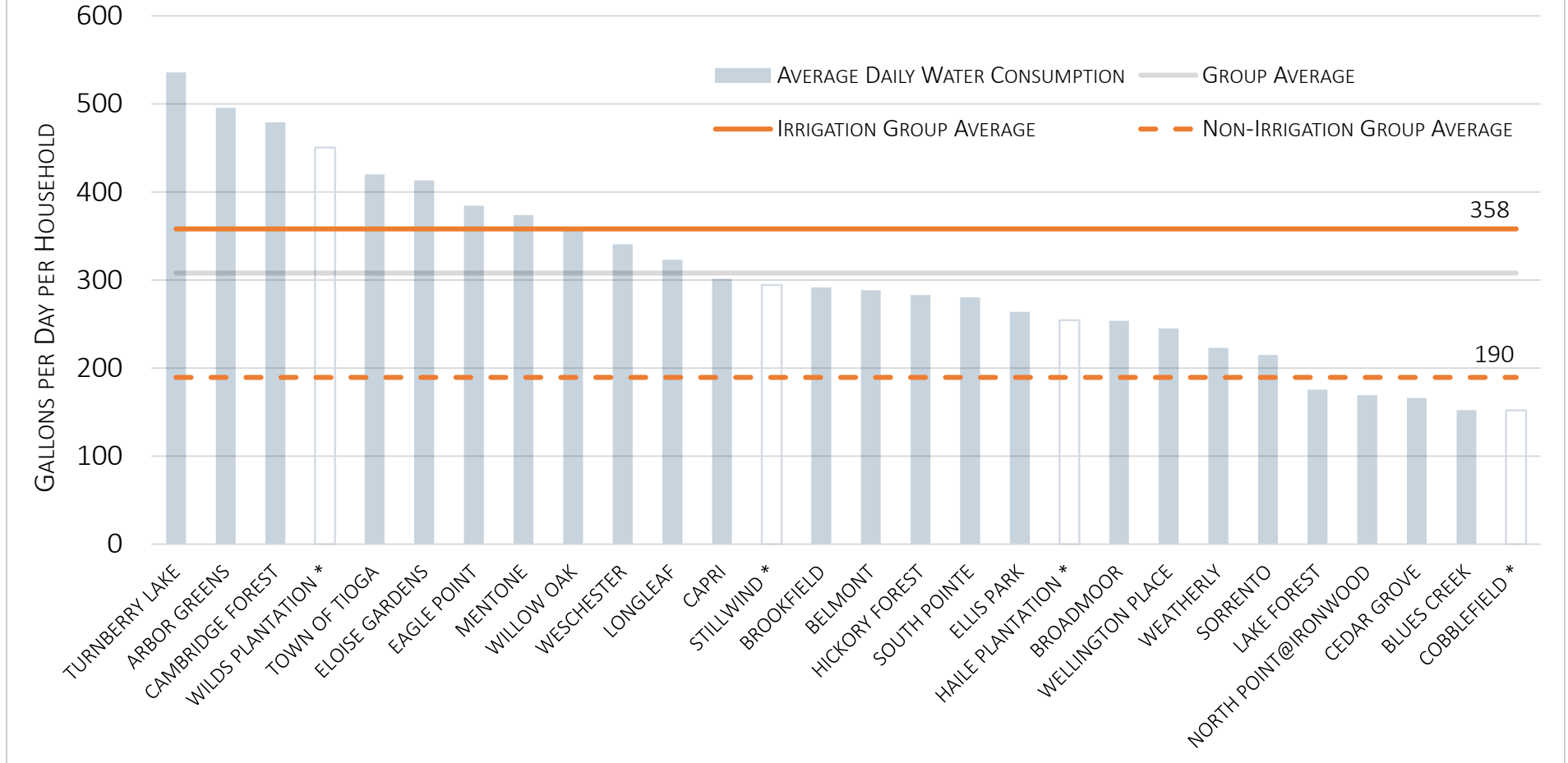


**FIGURE 4. RESIDENTIAL AVERAGE WATER CONSUMPTION (GPD/HOUSEHOLD) IN SFD HOMES. \*NOTE: HOMES IN NEIGHBORHOODS SERVICED WITH RECLAIMED WATER ARE EXCLUDED FROM CALCULATION FOR WEIGHTED AVERAGE WATER CONSUMPTION.**

**TABLE 1. RESIDENTIAL AVERAGE WATER CONSUMPTION (GPD/HOUSEHOLD) IN ALACHUA COUNTY SFD HOMES BY NEIGHBORHOOD**

Neighborhood Name	Average Water Consumption (gpd)	Number of Homes in Sample	Average Conditioned Floor Area (sf)	Average Lot Size (sf)	Average Effective Year Built
TURNBERRY LAKE	536	79	3,059	21,462	2007
ARBOR GREENS	495	51	2,697	10,572	2007
CAMBRIDGE FOREST	479	55	3,213	36,108	2001
WILDS PLANTATION *	450	64	3,115	22,684	2007
TOWN OF TIOGA	420	199	2,668	10,605	2005
ELOISE GARDENS	413	69	2,379	10,065	2006
EAGLE POINT	385	103	2,551	15,516	2002
MENTONE	374	143	1,976	10,652	2002
WILLOW OAK	360	73	1,862	6,704	2010
WESCHESTER	341	57	2,043	6,923	2009
LONGLEAF	323	228	1,990	7,650	2007
CAPRI	301	103	1,921	8,391	2001
STILLWIND *	294	69	2,020	8,844	2001
BROOKFIELD	292	120	2,126	7,875	2003
BELMONT	289	100	1,778	7,926	2007
HICKORY FOREST	283	77	1,575	11,786	2001
SOUTH POINTE	280	73	2,051	10,652	2004
ELLIS PARK	264	84	2,184	6,218	2007
HAILE PLANTATION *	254	504	2,786	13,890	2003
BROADMOOR	254	55	2,171	13,785	2001
WELLINGTON PLACE	245	69	1,765	9,075	2003
WEATHERLY	223	59	1,652	9,582	2004
SORRENTO	215	146	1,674	6,063	2005
LAKE FOREST	176	81	1,333	8,047	2004
NORTH POINT@IRONWOOD	169	48	1,380	7,236	2007
CEDAR GROVE	166	87	1,458	7,688	2003
BLUES CREEK	152	157	1,537	4,678	2003
COBBLEFIELD *	152	217	2,743	14,986	2004
<b>Sum</b>		<b>3,170</b>			
<b>Weighted Average*</b>	<b>308*</b>	<b>2,316*</b>	<b>2,224</b>	<b>11,084</b>	<b>2004</b>
*Note: homes in neighborhoods serviced with reclaimed water are excluded from calculations for weighted average water consumption.					

# AVERAGE DAILY WATER USE IN ALACHUA COUNTY, FLORIDA: SINGLE-FAMILY DETACHED HOME IRRIGATION VS. NON-IRRIGATION GROUPS



**FIGURE 5. RESIDENTIAL AVERAGE WATER CONSUMPTION (GPD/HOUSEHOLD) IN SFD HOMES: IRRIGATION AND NON-IRRIGATION GROUPS. \*NOTE: HOMES IN NEIGHBORHOODS SERVICED WITH RECLAIMED WATER ARE EXCLUDED FROM CALCULATIONS FOR WEIGHTED AVERAGE WATER CONSUMPTION.**

**TABLE 2. RESIDENTIAL AVERAGE WATER CONSUMPTION (GPD/HOUSEHOLD) IN ALACHUA COUNTY SFD HOMES BY NEIGHBORHOOD WITH IRRIGATION AND NON-IRRIGATION GROUPS**

Neighborhood Name	Full Neighborhood		Homes with Irrigation			Homes without Irrigation		
	All Homes (n)	Average Water Consumption (gpd)	Number of Homes in Sample (n)	(%)	Average Water Consumption (gpd)	Number of Homes in Sample (n)	(%)	Average Water Consumption (gpd)
TURNBERRY LAKE	79	536	79	(100%)	536			
ARBOR GREENS	51	495	46	(90%)	499			
CAMBRIDGE FOREST	55	479	54	(98%)	466			
WILDS PLANTATION *	64	450	63	(98%)	454			
TOWN OF TIOGA	201	420	192	(96%)	421			
ELOISE GARDENS	70	413	65	(93%)	418			
EAGLE POINT	103	385	61	(59%)	471	42	(41%)	259
MENTONE	143	374	126	(88%)	367			
WILLOW OAK	74	360	66	(89%)	373			
WESCHESTER	63	341	56	(89%)	337			
LONGLEAF	228	323	225	(99%)	322			
CAPRI	103	301	86	(83%)	302			
STILLWIND *	69	294	33	(48%)	337	36	(52%)	256
BROOKFIELD	121	292	75	(62%)	325	45	(37%)	235
BELMONT	100	289	97	(97%)	288			
HICKORY FOREST	77	283	46	(60%)	309	31	(40%)	244
SOUTH POINTE	73	280	49	(67%)	280	24	(33%)	282
ELLIS PARK	86	264	84	(98%)	264			
HAILE PLANTATION *	506	254	477	(94%)	261			
BROADMOOR	56	254	21	(38%)	306	34	(61%)	220
WELLINGTON PLACE	69	245	28	(41%)	282	41	(59%)	220
WEATHERLY	59	223	25	(42%)	238	34	(58%)	212
SORRENTO	146	215	71	(49%)	251	75	(51%)	180
LAKE FOREST	81	176				77	(95%)	176
NORTH POINT@IRONWOOD	53	169				45	(85%)	162
CEDAR GROVE	87	166				85	(98%)	167
BLUES CREEK	157	152				128	(82%)	135
COBBLEFIELD *	218	152	213	(98%)	153			
<b>Sum</b>	<b>3,192</b>		<b>2,338</b>			<b>697</b>		
<b>Weighted Average</b>		<b>308</b>			<b>358</b>			<b>190</b>

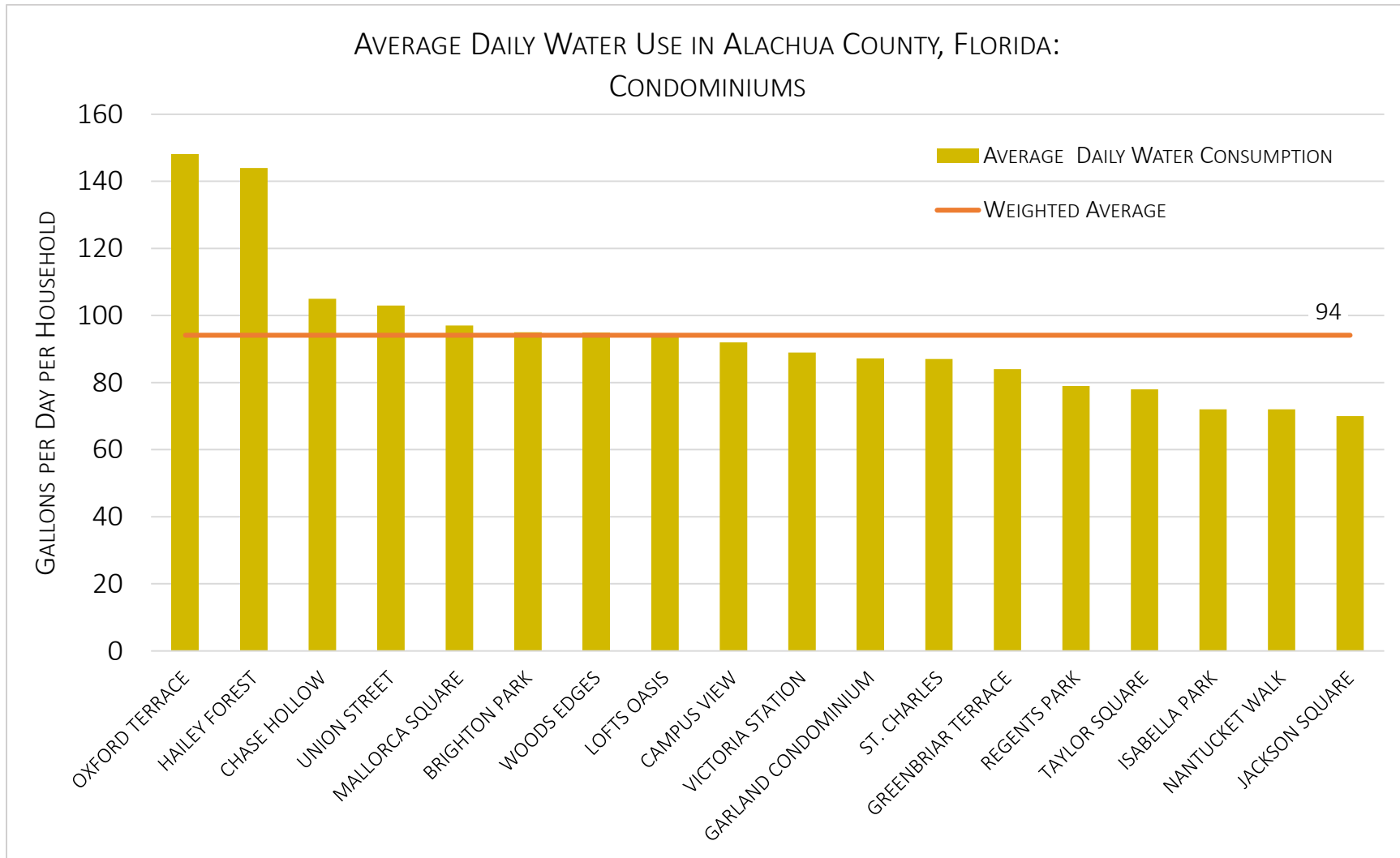


FIGURE 6. RESIDENTIAL AVERAGE WATER CONSUMPTION (GPD/HOUSEHOLD) IN CONDOMINIUMS

**TABLE 3. RESIDENTIAL AVERAGE WATER CONSUMPTION (GPD/HOUSEHOLD) IN ALACHUA COUNTY CONDOMINIUMS BY ASSOCIATION**

Condominium Association Name	Average Water Consumption (gpd)	Number of Condos in Sample	Average Conditioned Floor Area (sf)	Average Effective Year Built
OXFORD TERRACE	148	34	1,424	2005
HAILEY FOREST	144	25	1,336	2007
CHASE HOLLOW	105	101	1,107	2008
UNION STREET	103	50	1,381	2000
MALLORCA SQUARE	97	36	1,503	2006
BRIGHTON PARK	95	69	1,172	2000
WOODS EDGES	95	19	1,351	2004
LOFTS OASIS	94	40	1,400	2007
CAMPUS VIEW	92	26	1,326	2005
VICTORIA STATION	89	60	1,114	2002
GARLAND CONDOMINIUM	87	37	1,323	2005
ST. CHARLES	87	16	989	2005
GREENBRIAR TERRACE	84	25	2,235	2006
REGENTS PARK	79	45	1,835	2005
TAYLOR SQUARE	78	23	961	2006
ISABELLA PARK	72	27	1,141	2004
NANTUCKET WALK	72	39	768	2006
JACKSON SQUARE	70	53	957	2007
<b>Sum</b>		<b>725</b>		
<b>Weighted Average</b>	<b>94</b>		<b>1,265</b>	<b>2005</b>

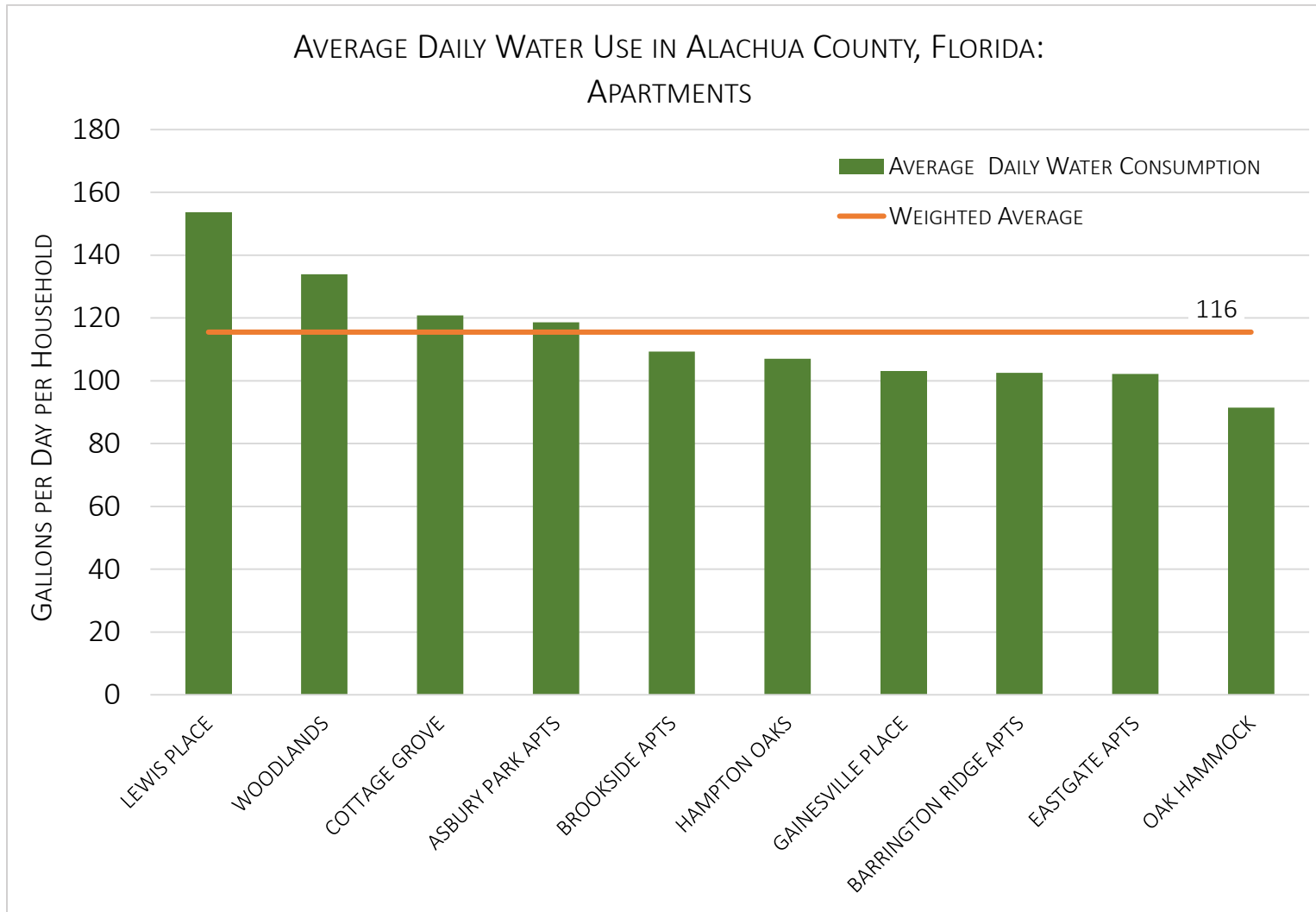


FIGURE 7. RESIDENTIAL AVERAGE WATER CONSUMPTION (GPD/HOUSEHOLD) IN APARTMENTS



**TABLE 4. RESIDENTIAL AVERAGE WATER CONSUMPTION (GPD/HOUSEHOLD) IN ALACHUA COUNTY APARTMENTS BY COMPLEX**

Apartment Complex Name	Average Water Consumption (gpd)	Number of Apartments in Sample	Average Effective Year Built
LEWIS PLACE	154	99	2000
WOODLANDS	134	257	2008
COTTAGE GROVE	121	84	2008
ASBURY PARK APTS	119	192	2001
BROOKSIDE APTS	109	53	2003
HAMPTON OAKS	107	160	2003
GAINESVILLE PLACE	103	411	2000
BARRINGTON RIDGE APTS	103	60	2001
EASTGATE APTS	102	54	2003
OAK HAMMOCK	91	50	2004
<b>Sum</b>		<b>1,420</b>	
<b>Weighted Average</b>	<b>116</b>		<b>2003</b>

**TABLE 5. RESIDENTIAL WATER CONSUMPTION BASELINES SUMMARY RESULTS**

Residential Consumption Baseline Group	Average Water Consumption (gpd)	Number of Neighborhoods in Sample	Number of Housing Units in Sample		Total Water Use of Sample Housing Units	
			(n)	(%)	(MGD)	(%)
SINGLE-FAMILY DETACHED (SFD) HOMES	308	28	3,035	59%	0.97	81%
SFD "IRRIGATORS"	358	24	2,338	45%	0.84	70%
SFD "NON-IRRIGATORS"	190	13	697	14%	0.13	11%
APARTMENTS	116	10	1,420	27%	0.16	14%
CONDOMINIUMS	94	18	725	14%	0.07	6%
<b>Sum</b>		<b>56</b>	<b>5,180</b>	<b>100%</b>	<b>1.20</b>	<b>100%</b>
<b>Weighted Average</b>	<b>232</b>					

## NON-RESIDENTIAL BASELINES

The non-residential sample includes a total of 151 business, primarily commercial. Figure 8 maps the sample of non-residential parcels, with commercial business parcels in blue, institutional parcels in green and industrial parcels in gold. Figure 9 summarizes baseline water consumption results for the sample of 151 non-residential (commercial, industrial and institutional) properties in Alachua County. Because of the limited sample sizes for industrial and institutional businesses, their water use baselines are summarized together with those for the commercial businesses. Each individual business' average water use (gpd) from 2011-2013 is plotted along the vertical axis together with the consumption of businesses in the same category (along the horizontal axis). Each average consumption value is represented by a blue data marker, with the dark blue square markers corresponding to businesses that are either identified in the property appraiser data to have sprinkler systems and/or identified by GRU records to have an irrigation meter (i.e., "irrigators"). The orange dash markers represent the average use (gpd) across businesses within in each of the 31 business categories. These average consumption values for each business type can be referenced for ballpark baselines and/or estimates of expected consumption, but we emphasize that sample sizes within each category are small, and these baselines vary widely both across and within business categories. Because of this wide variability, we analyze non-residential water use by first breaking the sample into sub-categories based on average use within business categories and then by selecting exemplars of relatively high and relatively low water use within each business category.

### Water Use Groupings

Sample businesses in Alachua County are separated into four water use groups based on the average daily consumption for each business type/category: "very high", "high", "medium", or "low". Figures 10, 11 and 12 show results for "high", "medium" and "low" use businesses, respectively, and apply the same formatting and styles as Figure 9 to represent group averages, "irrigators" and "non-irrigators". One business in the sample is considered a "very high" water user: a hotel conference center averaging 24,885 gpd. All other businesses fall into either "high", "medium" or "low" use categories, with ten business types in group. In Figure 9, red, blue and green boxes/borders highlight the businesses in the "high", "medium" and "low" use groups, respectively. "High" use categories (Figure 10) range from 7,244 gpd (hotels and motels) to 2,573 gpd (grocery stores); "medium" use categories (Figure 11) range from 2,318 gpd (golf clubs) to 888 gpd (financial institutions); and "low" use business categories (Figure 12) range from 611 gpd (gas stations) to 27 gpd (churches).

### Business Use Categories

Table 6 lists the representative consumption baselines for each business category along with corresponding parcel and building characteristics from property appraiser data: number of sprinkler systems; average conditioned floor area, average lot size, and average effective year built. The largest business type sample is for gas stations, with sixteen businesses. The three business types with the greatest average square feet of conditioned building area, an indicator of the greatest potential opportunities for indoor water use savings, are the hotel conference center, community shopping centers and big box hardware stores. The three business types with the greatest average lot size, an indicator of potential opportunity for outdoor water use savings, are the golf clubs, schools and office parks.

As a rough indicator of potable water consumption for irrigation among the non-residential sample, Table 7 lists the consumption data and property characteristics for the ten businesses with irrigation-only meters. Irrigation meter consumption ranges from 1% of total metered use (for a Publix shopping center) to 97% for a Wells Fargo bank. This wide variation suggests that strategies to reduce the use of potable water for irrigation in the non-residential sector should be targeted to specific business types that have a demonstrated history of relatively high outdoor water use. The property appraiser metrics can also be used to calculate water consumption intensities such as use per square foot of potential irrigable area.

Table 8 summarizes results of the non-residential water consumption baselines. Table 15 in Appendix C (page 57) lists consumption metrics and property and building characteristics for all 151 sample businesses. Appendix D (page 66) tabulates reference non-residential water use measures.

#### Business Type Exemplars

Figures 13-16 provide detailed “exemplar” comparisons of relatively high vs. relatively low water use businesses within the casual dining (Figure 13), office park (Figure 14), big box hardware store (Figure 15) and gas station (Figure 16) categories. Details of these “exemplar” businesses are examined to identify opportunities for water savings potential in the non-residential sector.

#### Business Comparison #1

The first “high use” business comparison (Figure 13) shows two casual dining restaurants: Miller’s Ale House and Satchel’s Pizza. Between 2011 and 2013, Miller’s Ale House used an average of seven times the amount of water that Satchel’s used: 16,625 vs. 2,296 gpd. Satchel’s parcel acreage is ~60% smaller than that of Miller’s Ale House and its building size is ~54% that of Miller’s Ale House. The businesses also differ with respect to potentially irrigable area and the total number of water meters on the property. With ample greenery around the building, including landscaped parking lot islands, Miller’s Ale House uses two water meters. The parcel property appraiser data indicate presence of a sprinkler system, suggesting that Miller’s Ale House is using potable water for landscape irrigation. One of the water meters from Miller’s Ale House had a fairly steady water use ranging between 180 and 220 kgal of water per month. The other varied over the 3-year time period with most months usage between 20 and 50 kgal. In contrast, Satchel’s features decorative and edible landscapes, including a kitchen garden to grow vegetables and herbs used in their menu items. These plants are irrigated by large rain barrels that collect and store rainwater. Over the 3-year time period, Satchel’s consumption from its single water meter is mostly between 35 and 90 kgal per month.

#### Business Comparison #2

The second “high use” business comparison (Figure 14) shows Cox Communication and CH2M Hill office parks in the analysis sample. Between 2011 and 2013, Cox Communications used almost four times the amount of water used by CH2M Hill: 6,710 vs. 1,784 gpd. Cox Communications features a nearly 18-acre landscaped lot with four buildings, three water meters and property appraiser indication of a sprinkler system. CH2M Hill has a 5-acre landscaped lot with one building, one normal service and one irrigation meter, and property appraiser indication of a sprinkler system. Although Cox Communication’s lot is nearly three and a half times larger than that of CH2M Hill, the total building square footage for all

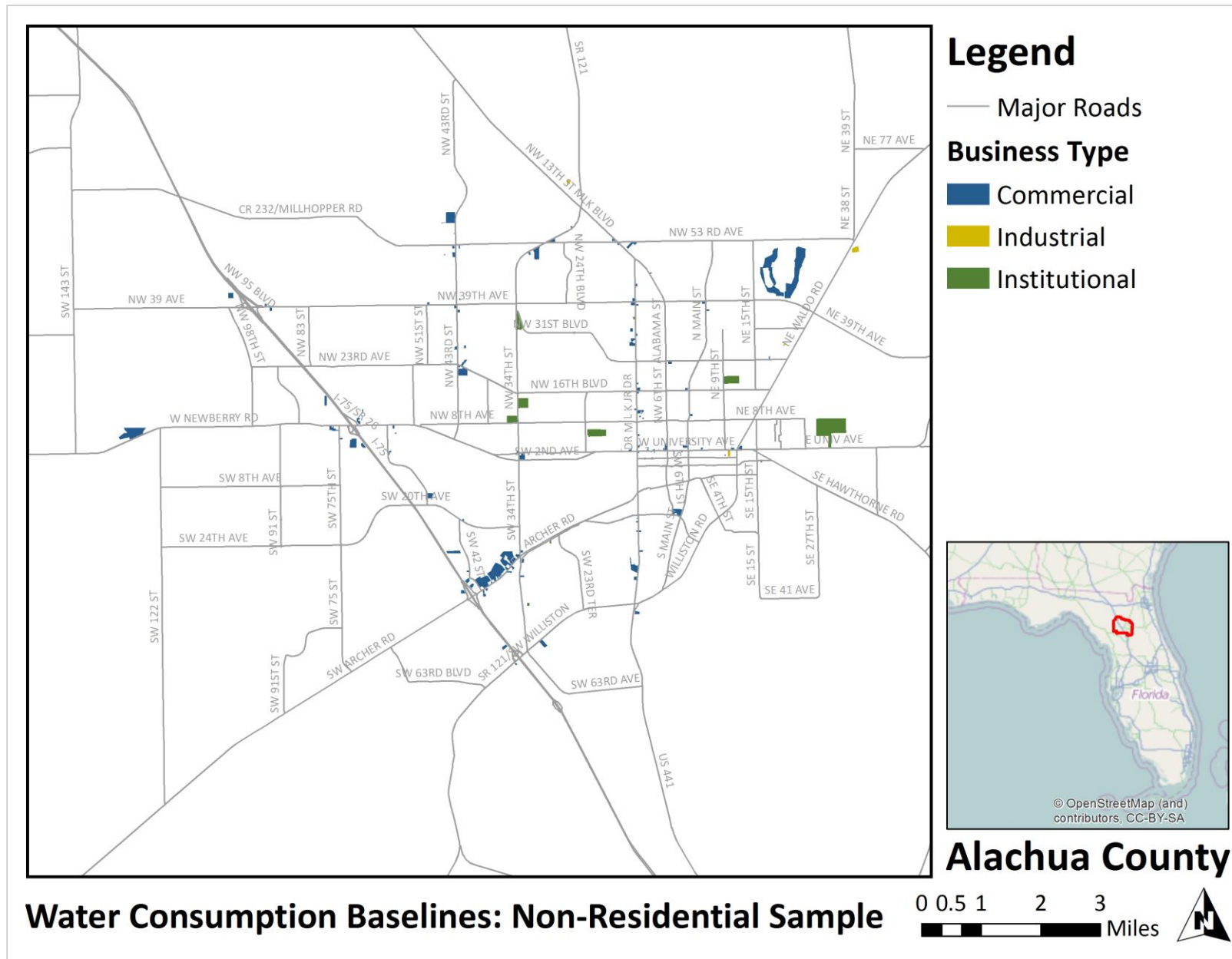
of the Cox Communication's buildings is significantly smaller (64% less) than that of the CH2M Hill office park. Cox has three water meters: the first with typical consumption of 1-4 kgal per month, a second with typical consumption of 20-35 kgal per month, and the last with typical consumption of 70-350 kgal per month. CH2M Hill has a single normal service water meter with typical monthly consumption of 20-50 kgal per month and an irrigation meter with monthly consumption that varies dramatically over the 3-year time period.

#### Business Comparison #3

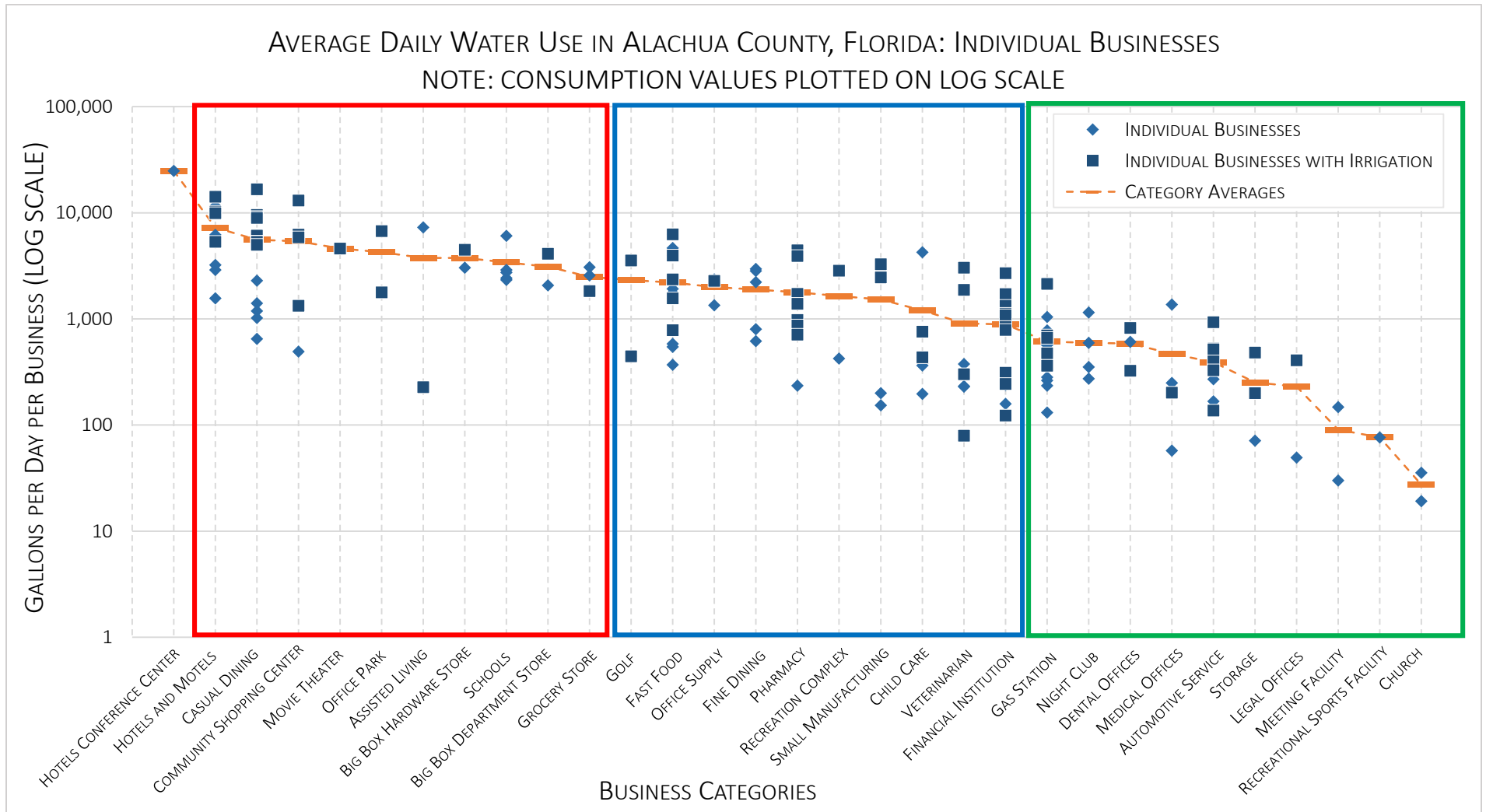
The third "high use" business comparison (Figure 15) shows Home Depot and Lowe's of the big box hardware store business category. Between 2011 and 2013, Home Depot used an average of one and a half times the amount of water that Lowe's used every day: 4,479 vs. 3,044 gpd. The stores have similar physical attributes in terms of building square footage, parcel lot size, and the total number of water meters on the property. Both businesses also have gardening centers and minimal landscaping outside of the stores. Despite evidence of extensive exterior landscaping on the Lowe's parcel, the property appraiser data for Lowe's does not indicate a sprinkler system while Home Depot does indicate a sprinkler system.

#### Business Comparison #4

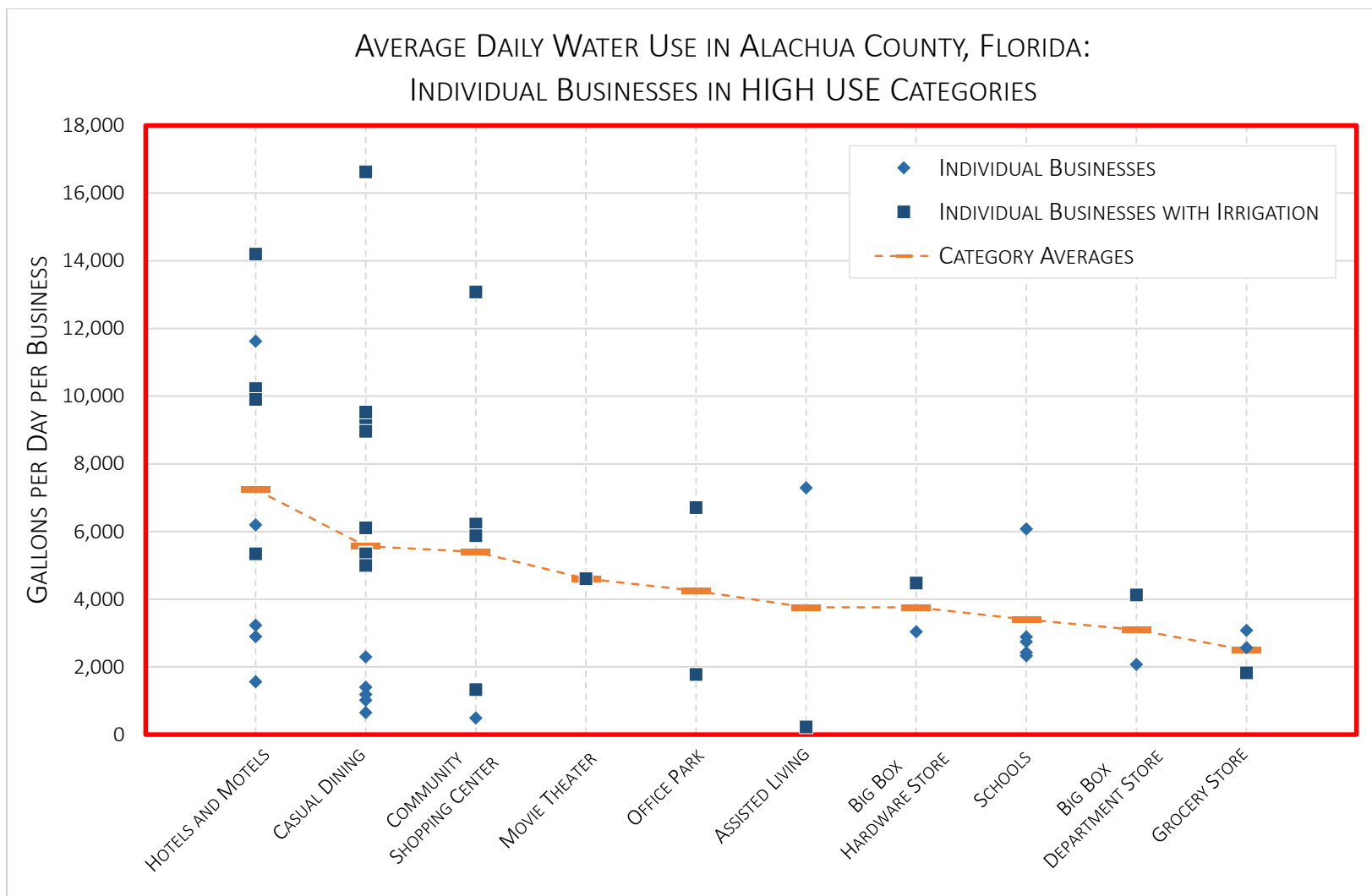
The "low use" business comparison (Figure 16) shows Kangaroo and Chevron gas stations, both on Main Street in Gainesville. Between 2011 and 2013, Kangaroo used an average of sixteen times the amount of water used by the Chevron: 2,142 vs. 132 gpd. The gas stations have different physical attributes in terms of lot size, building square footage and number of buildings. Chevron's total parcel acreage is approximately two-thirds the size of Kangaroo's and its building size is approximately one-quarter the size of Kangaroo's combined building square footage. The two businesses also differ with respect to other water-using features on the parcels. Kangaroo has a convenience store, car wash, and landscaping, with both a normal service water meter and an irrigation meter, indications that the business is using potable water for landscape irrigation and/or the carwash. The Kangaroo gas station's normal service water meter had a fairly consistent use of 50-90 kgal of water each month while their irrigation meter had very little relative consumption over the three year time period. In contrast, over the same time period, Chevron's average consumption was typically 30 or 31 kgal per month. Although there is some irrigable landscaped area around the Chevron, there is no property appraiser indication of a sprinkler system on the parcel.



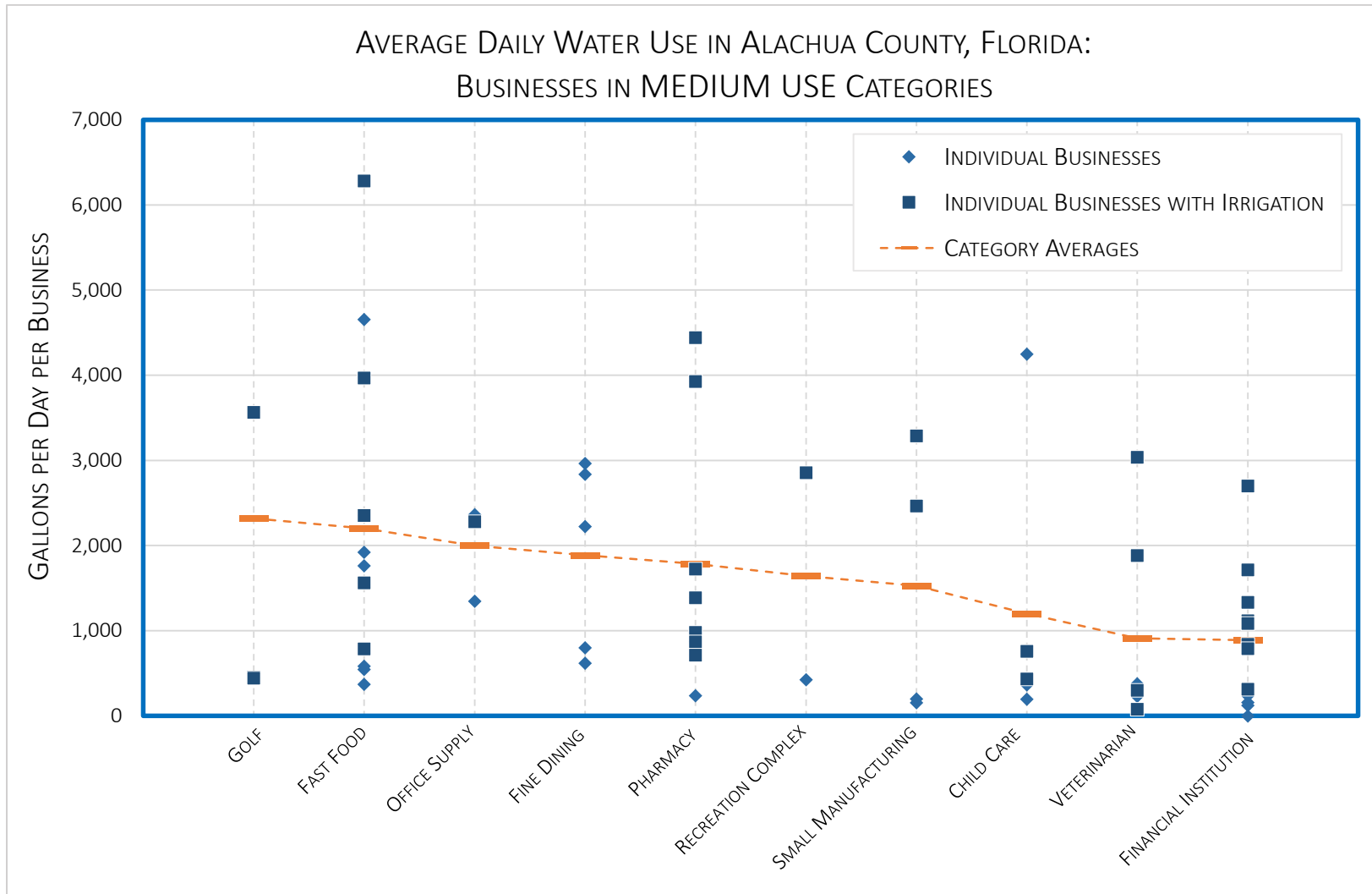
**FIGURE 8. ALACHUA COUNTY NON-RESIDENTIAL ANALYSIS SAMPLE MAP: LOCATION OF BUSINESSES**  
 Envision Alachua: Resource Efficiency – Water Consumption Baselines



**FIGURE 9. NON-RESIDENTIAL AVERAGE WATER CONSUMPTION (GPD/BUSINESS): ALL BUSINESS CATEGORIES**

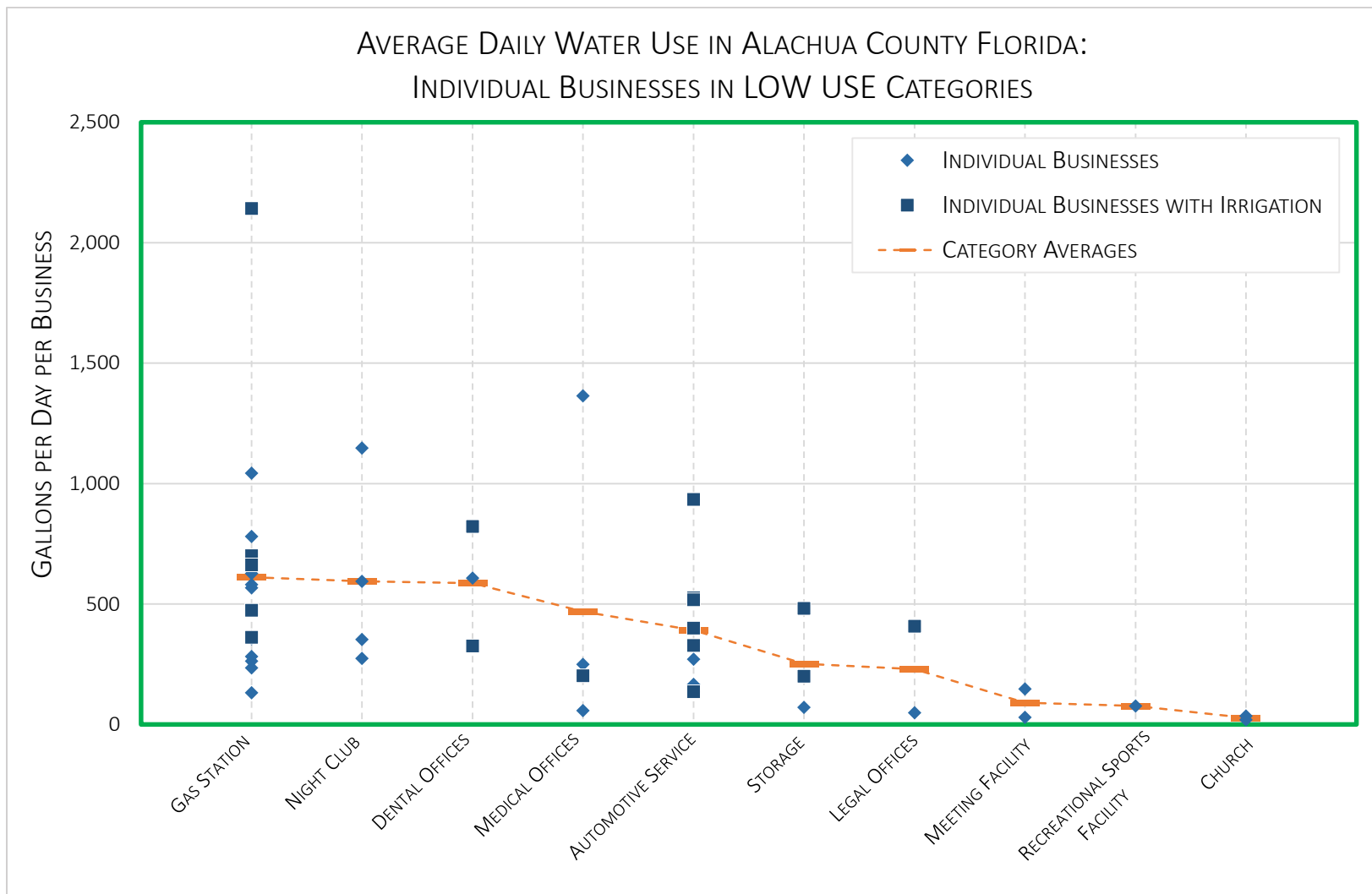


**FIGURE 10. NON-RESIDENTIAL AVERAGE WATER CONSUMPTION (GPD/BUSINESS): HIGH USE BUSINESS CATEGORIES**



**FIGURE 11. NON-RESIDENTIAL AVERAGE WATER CONSUMPTION (GPD/BUSINESS): MEDIUM USE BUSINESS CATEGORIES**





**FIGURE 12. NON-RESIDENTIAL AVERAGE WATER CONSUMPTION (GPD/BUSINESS): LOW USE BUSINESS CATEGORIES**

**TABLE 6. NON-RESIDENTIAL WATER CONSUMPTION BASELINES RESULTS BY BUSINESS CATEGORY**

Water Use Category	Business Type Category	Category Average Water Consumption (gpd)	Number Businesses in Sample	Number of Irrigation Systems in Sample	Average Conditioned Floor Area (sf)	Average Lot Size (sf)	Average Effective Year Built
VERY HIGH	HOTELS CONFERENCE CENTER	24,885	1	0	140,454	424,328	1974
HIGH	HOTELS AND MOTELS	7,244	9	4	42,679	103,875	1983
	CASUAL DINING	5,570	14	9	5,469	38,044	1988
	COMMUNITY SHOPPING CENTER	5,403	5	4	111,981	465,000	1988
	MOVIE THEATER	4,605	1	1	46,160	204,350	1995
	OFFICE PARK	4,247	2	2	50,762	499,080	1990
	BIG BOX HARDWARE STORE	3,762	2	1	107,240	440,547	1991
	ASSISTED LIVING	3,762	2	1	31,109	117,254	1987
	SCHOOLS	3,405	5	0	n/a	1,471,828	n/a
	BIG BOX DEPARTMENT STORE	3,101	2	1	97,630	378,268	1991
	GROCERY STORE	2,496	3	1	30,655	173,659	1991
MEDIUM	GOLF CLUB	2,318	2	2	9,122	3,724,859	1995
	FAST FOOD	2,200	11	5	3,914	36,126	1973
	OFFICE SUPPLY	1,997	3	1	27,869	95,091	1985
	FINE DINING	1,888	5	0	5,319	29,760	1981
	PHARMACY	1,784	8	7	12,324	50,411	1999
	RECREATION COMPLEX	1,641	2	1	21,785	104,296	1992
	SMALL MANUFACTURING	1,526	4	2	30,691	114,309	1977
	CHILD CARE	1,200	5	2	8,102	124,083	1977
	VETERINARIAN	910	7	4	3,875	61,386	1986
	FINANCIAL INSTITUTION	888	12	10	10,692	40,052	1983
LOW	GAS STATION	611	16	5	2,082	28,635	1986
	NIGHT CLUB	595	4	0	6,177	9,530	1966
	DENTAL OFFICES	586	3	2	4,189	14,531	1997
	MEDICAL OFFICES	468	4	1	4,481	24,036	1985
	AUTOMOTIVE SERVICE	392	9	6	6,880	33,726	1990
	STORAGE	252	3	2	41,213	162,729	2000
	LEGAL OFFICES	230	2	1	7,432	31,715	1982
	MEETING FACILITY	90	2	0	5,122	12,765	1972
	RECREATIONAL SPORTS FACILITY	77	1	0	47,084	441,471	1970
	CHURCH	27	2	0	2,683	38,620	1969
Sum			151	75 (49%)			

**TABLE 7. NON-RESIDENTIAL WATER CONSUMPTION BASELINES, DETAILS FOR BUSINESSES WITH IRRIGATION METERS**

Business Categories & Individual Businesses	Average Total Water Consumption (gpd)	Average Irrigation Meter Consumption (gpd)	Irrigation Portion of Total Consumption (%)	Average Conditioned Building Area (sq ft)	Average Lot Size (sq ft)	Average Number of Buildings
<b>COMMUNITY SHOPPING CENTER</b>	<b>5,403</b>			<b>111,981</b>	<b>465,000</b>	<b>10.0</b>
<b>PUBLIX</b> 3100 SW 35TH BLVD	13,077	71	1%	124,242	525,666	23
<b>FAST FOOD</b>	<b>2,200</b>			<b>3,914</b>	<b>36,126</b>	<b>1.0</b>
<b>SUBWAY</b> 3316 SW 35TH BLVD	6,282	452	7%	7,918	40,387	1
<b>PHARMACY</b>	<b>1,784</b>			<b>12,324</b>	<b>50,411</b>	<b>1.0</b>
<b>CVS</b> 1521 NW 13TH ST	<b>2,711</b> 4,441	<b>2,101</b> 3,879	<b>60%</b> 87%	<b>19,936</b> 26,444	<b>29,723</b> 24,427	<b>2.0</b> 1
4145 NW 53RD AVE	981	323	33%	13,428	35,019	1
<b>SMALL MANUFACTURING</b>	<b>1,526</b>			<b>30,691</b>	<b>114,309</b>	<b>2.0</b>
<b>EXACTECH, INC.</b> 2402 NW 66TH CT	2,466	1,038	42%	13,152	65,264	1
<b>GAS STATION</b>	<b>611</b>			<b>2,082</b>	<b>28,653</b>	<b>1.1</b>
<b>KANGAROO GAS STATION</b> 3838 N MAIN ST	2,142	11	1%	4,300	52,877	2
<b>VETERINARIAN</b>	<b>910</b>			<b>3,875</b>	<b>61,386</b>	<b>1.0</b>
<b>NAVC NORTH AMERICAN VET</b> 5003 SW 41ST BLVD	1,885	1,729	92%	8,479	112,573	1
<b>OFFICE PARK</b>	<b>4,274</b>			<b>50,762</b>	<b>499,080</b>	<b>2.5</b>
<b>CH2M HILL</b> 3011 SW WILLISTON RD	1,784	578	32%	63,165	217,803	1
<b>FINANCIAL INSTITUTION</b>	<b>888</b>			<b>10,692</b>	<b>40,052</b>	<b>1.5</b>
<b>WELLS FARGO BANK</b> 5220 NW 43RD ST	1,334	1,296	97%	3,213	49,233	1
<b>STORAGE</b>	<b>252</b>			<b>41,213</b>	<b>162,729</b>	<b>3.7</b>
<b>GAINESVILLE SELF STORAGE UNITS</b> 1335 NW 53RD AVE	482	449	93%	52,276	201,163	4

**TABLE 8. NON-RESIDENTIAL WATER CONSUMPTION BASELINES SUMMARY RESULTS**

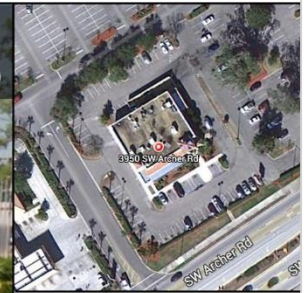
Non-Residential Consumption Baseline Group	Number of Business Categories in Sample	Number of Individual Businesses in Sample	Business Category Range of Average Water Consumption (gpd)
<b>Individual Businesses</b>	<b>31</b>	<b>151</b>	
<b>Water Use Categories</b>	<b>4</b>	<b>151</b>	<b>27-24,885</b>
Very High Use	1	1	24,885
High Use	10	42	2,573-7,244
Medium Use	10	63	888-2,318
Low Use	10	43	27-611

# **CASUAL DINING, ALACHUA COUNTY, FL** **AVERAGE WATER CONSUMPTION COMPARISON: 2011-2013**

## **MILLER'S ALE HOUSE**

3950 SW ARCHER RD, GAINESVILLE, FL

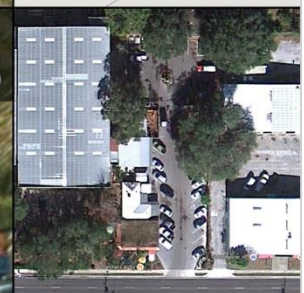
16,625 GPD



## **SATCHEL'S PIZZA**

1800 NE 23RD AVE, GAINESVILLE, FL

2,296 GPD



## **CONSUMPTION** **IN GALLONS PER DAY**

		MILLER'S ALE HOUSE	SATCHEL'S PIZZA
Miller's Ale House	16,625	Lot Size: 1.11 acres	0.6 acres
		Number of Buildings: 1	2
		Building Area: 7,574 sqft	4,551 sqft
Satchel's Pizza	2,296	Sprinkler System: Yes	No
		Number of Water Meters: 2	1
		Total Annual Water Use: 6,068,000 gal/yr	838,000 gal/yr

**FIGURE 13. NON-RESIDENTIAL WATER CONSUMPTION COMPARISON: CASUAL DINING RESTAURANTS (HIGH USE CATEGORY)**



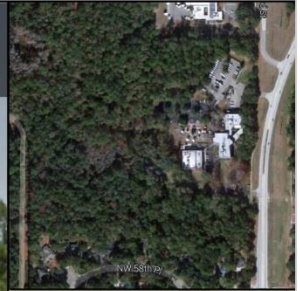
# OFFICE PARK, ALACHUA COUNTY, FL

## AVERAGE WATER CONSUMPTION COMPARISON: 2011-2013

### COX COMMUNICATIONS

6020 NW 43RD ST, GAINESVILLE, FL

6,710 GPD



### CH2M HILL

3011 SW WILLISTON RD, GAINESVILLE, FL

1,784 GPD



### CONSUMPTION IN GALLONS PER DAY

Cox Comm.

6,710

CH2M HILL

1,784

#### COX COMMUNICATIONS

#### CH2M HILL

Lot Size:	17.91 acres	5 acres
Number of Buildings:	4	1
Building Area:	41,149 sqft	64,010 sqft
Sprinkler System:	Yes	Yes
Number of Water Meters:	3	1 (+1 Irrigation Meter)
Total Annual Water Use:	2,449,000 gal/yr	651,000 gal/yr

FIGURE 14. NON-RESIDENTIAL WATER CONSUMPTION COMPARISON: OFFICE PARKS (HIGH USE CATEGORY)



## BIG BOX HARDWARE STORE, ALACHUA COUNTY, FL AVERAGE WATER CONSUMPTION COMPARISON: 2011-2013

### HOME DEPOT

7107 NW 4TH BLVD, GAINESVILLE, FL

4,479 GPD



### LOWE'S

3500 SW ARCHER RD, GAINESVILLE, FL

3,044 GPD



### CONSUMPTION IN GALLONS PER DAY

Home Depot

4,479

Lowe's

3,044

Lot Size:

HOME DEPOT

10.44 acres

LOWE'S

9.79 acres

Number of Buildings:

1

1

Building Area:

120,434 sqft

112,724 sqft

Sprinkler System:

Yes

No

Number of Water Meters:

2

2

Total Annual Water Use:

1,635,000 gal/yr

1,111,000 gal/yr

FIGURE 15. NON-RESIDENTIAL WATER CONSUMPTION COMPARISON: BIG BOX HARDWARE STORES (HIGH USE CATEGORY)



## GAS STATION, ALACHUA COUNTY, FL AVERAGE WATER CONSUMPTION COMPARISON: 2011-2013



FIGURE 16. NON-RESIDENTIAL WATER CONSUMPTION COMPARISON: GAS STATIONS (LOW USE CATEGORY)



## CONCLUSIONS AND POLICY IMPLICATIONS

The design parameters for development of any lands in Alachua County – as they are specified at the community, lot, home, business and landscape level – will be the anchors for and catalysts to future water demand. Collectively, these parameters determine the embedded water demands of a community, which will either follow the status quo for the region (current baseline) or raise the bar for water resource protection, conservation, efficiency of use, and restoration. Through the Envision Alachua process and the final plans that result, Plum Creek has an opportunity to shift the status quo for new development toward standards of practice that redefine water “needs” (conservation first), adopt “right water, right use” principles, and reflect the full value of our water resources. To make the most of this opportunity, the baselines against which consumption targets (i.e., 50% less use) are measured must be meaningful and valid, and they must serve as a foundation for actionable land use planning and community design decisions that facilitate water conservation goals.

The water consumption baselines reported here are recent, locally relevant, and derived from a large sample of residential and non-residential water users (5,180 dwelling units and 151 businesses). The differentials between baselines for different housing types and units with different water use features can be applied to estimate the water savings potential under alternative land development scenarios. For example, they can be used directly as multipliers for scaling to project total water demands of a community with a given number and/or ratio of housing types with or without different water use features. They can also be normalized (by building size, number of people per household, etc.) to generate measures of water use intensity, which also can be scaled to estimate water demands under alternative land development scenarios. Furthermore, residential water use baselines can serve as exemplars of efficiency (or, alternatively, inefficiency) that inform the design parameters for Alachua County’s future residential communities.

*Baseline water consumption per household across all residential units in our analysis is 232 gpd; all SFD homes is 308 gpd; SFD “irrigator” homes is 358 gpd; SFD “non-irrigator” homes is 190 gpd; all condominiums is 94 gpd; and all apartments is 116 gpd. These results suggest that if Plum Creek adopts and fully implements aggressive conservation and efficiency measures, their goal of reducing water consumption by 50% relative to current use is achievable. We find substantial savings potential from eliminating the use of potable water for residential landscape irrigation, with “non-irrigator” SFD homes consuming 168 gpd (47%) less, on average, than “irrigator” SFD homes. SFD “irrigator” homes represent less than half (45%) of the residential analysis sample yet consume 70% of the total water. Results also indicate that choice of housing forms and densities offer substantial opportunity for community water savings potential. We find that on average, apartments and condominiums consume 242 gpd (68%) less and 264 gpd (74%) less, respectively, than SFD “irrigator” homes. Non-SFD units represent 41% of the total residential sample yet consume only 20% of the water.*

*Applying measured water consumption values to various baseline and alternative development scenarios, we estimate the potential water savings from eliminating residential landscape irrigation and reducing the portion of housing in SFD units to range from ~40-55%. For example, If 1,000*

dwelling units are constructed in Alachua County following current (baseline) practice,<sup>7</sup> we expect the water demand of these homes to total 0.23 MGD, averaging 232 gpd per dwelling. Alternatively, if 1,000 dwelling units are constructed with a majority of apartments and condominiums (i.e., non-SFD) and no potable water is used for landscape irrigation,<sup>8</sup> we estimate community water demand to total 0.14 MGD (averaging 138 gpd per dwelling). The difference between these two development scenarios equates to a *conservative* savings estimate of 0.09 MGD (40%) for the alternative scenario relative to current practice. In addition, a commitment to prohibit the installation of private wells for landscape irrigation would provide assurances that demand would not be shifted from public to self-supply.

*Although difficult to quantify precisely, results also reveal potential for additional water savings in the non-residential sector.* Water use of individual businesses in Alachua County varies widely both within and across business types. Given that irrigation systems are present on half of the sample business properties, water consumption in this sector could potentially be reduced through commercial building and landscape design guidelines that eliminate irrigation (beyond initial establishment) and specify appropriate conservation and efficiency practices. The businesses profiled in the series of water consumption comparisons presented here can serve as exemplars for efficiency (or inefficiency) and offer insights to specific strategies for reducing water use by different business types in Alachua County's future communities.

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<sup>7</sup> The "current practice" or "status quo" scenario assumes that future development mirrors the proportions of housing types and water use features in the water consumption baselines analysis sample: 59% SFD homes (86% of which are "irrigators"), 14% condominiums and 27% apartments.

<sup>8</sup> The "alternative" scenario assumes that future development includes 41% SFD homes (all of which are "non-irrigators"), 39% condominiums and 20% apartments.

## APPENDIX A. ANALYSIS METHOD DETAILS

### ORIGINAL DATA SOURCES

Our analysis joined original data from three sources to estimate water and energy consumption baselines (comparables): Gainesville Regional Utilities (GRU), the Alachua County Property Appraiser (ACPA) and the City of Gainesville Chamber of Commerce. The GRU metered consumption datasets for residential and non-residential customers were obtained directly from GRU. The ACPA data were obtained through the property appraiser website at <http://www.acpafl.org/> or [http://kate.acpafl.org/ServiceCenter/gis\\_main.aspx](http://kate.acpafl.org/ServiceCenter/gis_main.aspx). The Chamber of Commerce data, in particular records for active businesses, were obtained through the City of Gainesville Open Data site at <https://data.cityofgainesville.org/>. Table 9 lists the original data sources and fields used to generate the water consumption baselines analysis datasets, with common fields used for internal and external joins highlighted in bold font.

**TABLE 9. ORIGINAL DATA SOURCES AND FIELDS USED TO CALCULATE WATER CONSUMPTION BASELINES**

Gainesville Regional Utilities (GRU)	Alachua County Property Appraiser (ACPA)	City of Gainesville Chamber of Commerce
Customer Type	<b>Parcel ID</b>	Property Use Code
Account ID	Property Use Code	Business Type
<b>Location ID</b>	Building Use Code	<b>Street Address</b>
Billing Address	<b>Physical Address</b>	Business Name
<b>Physical Address</b>	Parcel Area	Business ID
Consumption Type	Building Area	
Meter Read Month	Sprinkler System Code	
Meter Read Year	Well Code	
Consumption Value (kgal)	Square Footage	
Meter Type	Heated Square Footage	
Service Point ID	Number of Buildings	
	Pool Code	

### DATA JOINING

To ensure that the final consumption baselines were calculated using the most accurate and reliable information possible, we followed a careful data management protocol. The goal of the data joining phase was to create a comprehensive analysis dataset that linked water consumption data to parcel-level data (e.g., building attributes and water use features) for homes and businesses in Alachua County. First, the GRU data were joined with ACPA data using the physical address fields. This join linked information such as square footage and other building or parcel attributes to individual GRU customers and their respective monthly metered water consumption data (for domestic or normal service meters and irrigation-only meters). Properties where a match could not be made between GRU records and the property appraisal records were removed from the analysis dataset through this join.

The next phase of data joining used the Chamber of Commerce data to link specific business information to GRU non-residential consumption data via the common address field: “Physical Address” from the common GRU-ACPA table and “Street Address” from the Chamber of Commerce dataset. This join was completed using a program that parsed the addresses from both tables into sections, normalized each section of the addresses, and then compared them between the two tables. In certain cases where addresses did not match between the two datasets, we used online searches to find individual businesses and match the locations by hand. This allowed us to expand and populate the non-residential sample with parcel attribute data.

#### DATA SCREENING AND CLEANING

The GRU-ACPA dataset with consumption data linked to parcel-level data for homes and businesses was then screened and cleaned to generate the final residential and non-residential analysis samples.

*Residential* customer records were screened to include only:

- SFD homes in neighborhoods with 50 or more homes (according to ACPA data);
- condominiums (according to ACPA data);
- apartment complexes with ten or more units (according to ACPA data);
- dwelling units constructed since year 2000 (according to ACPA data);
- dwelling unit heated (conditioned) area between 500 and 6,000 square feet (according to ACPA data);
- “domestic meter” and “irrigation only” meter water consumption records (according to GRU data);<sup>9</sup>
- parcel-level water consumption (according to GRU data), meaning that SFD homes and condominiums consumption excludes use in common areas (separate parcels) whereas apartments include use in common areas (single parcels);
- monthly water consumption records from calendar years 2009, 2010 and 2013 (we have not yet acquired GRU’s residential water consumption data from calendar years 2011 and 2012);
- customers with over 330 days of domestic meter water consumption per year (according to GRU data);
- customers with domestic water meter consumption between 12 and 4,000 thousand gallons (kgal) per year (according to GRU data); and
- units with no change in customer account over the three analysis years (according to GRU data).

The resulting residential dataset was examined to remove duplicate consumption values and records with inconsistencies in the data. The final SFD homes in the sample included a portion in neighborhoods serviced with reclaimed water as reported by GRU. Figure 17<sup>10</sup> shows the location

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<sup>9</sup> Reclaimed water consumption is metered separately and these readings (beyond the scope of the analysis) were not obtained from GRU for this study.

<sup>10</sup> From page 4 of GRU’s reclaimed water brochure: “Water Reclamation: Reusing water through innovative technology”, accessible at <http://www.gru.com/Portals/0/Legacy/Pdf/Reclaimed%20Water%20brochure.pdf>.

of GRU's reclaimed water service areas. While SFD homes in neighborhoods serviced with reclaimed water were not removed from the residential analysis dataset through the screening process, their use was excluded when SFD weighted average water consumption baselines were calculated.

*Non-residential* customer records were screened to include only:

- active businesses (according to the Chamber of Commerce Active Business List);
- commercial, industrial and institutional parcel-level property use codes (according to ACPA data);
- “normal service” meter and “irrigation only” meter water consumption readings (according to GRU data);
- parcel-level water consumption (according to GRU data), meaning that each customer consumption record captures the use of all businesses on the parcel;
- parcels joined with a single non-residential customer (according to GRU data), with the exception of those in the “Community Shopping Center” business category;
- monthly water consumption readings from calendar years 2011, 2012 and 2013 (according to GRU data); and
- customers with over 330 days of normal service meter water consumption per year (according to GRU data).

After carefully removing unusable non-residential records, specific fields were filtered to generate smaller tables for different categories of businesses and examine the data for duplicate consumption values, inconsistencies in the data or other errors with attribution of consumption data. GIS and property appraiser data were used to verify that business names, locations and accounts matched utility consumption data and to ensure that individual business were grouped with similar business types/categories. After examining these tables to ensure that properties were categorized correctly and their consumption data were reliable, they were rejoined with the other screened and cleaned tables. Using a preliminary non-residential (commercial, industrial and institutional) site list as a base (Table 10), we filtered the comprehensive (joined, cleaned and screened) non-residential dataset for the properties of particular interest or priority to generate the final non-residential analysis dataset.

#### ASSUMPTIONS

For both residential and non-residential properties, we assumed that:

- data from original sources were accurate and reliable;
- records with eleven or fewer months of consumption records were unreliable;
- households with average annual consumption in the upper and lower 2.5% of the sample distribution were outliers (i.e., not representative of the residential sample population as defined for this study);
- residential and non-residential GRU customers with continuous monthly consumption values of “0.00” identified an unused utility meter;
- for non-residential records, if a single GRU customer was on a given parcel, and a single business was also located on that parcel, then the GRU customer was linked to that business, and as such, the consumption information could be attributed to that business.

To the extent feasible, all records with unreliable or incomplete information were removed from the final analysis datasets.

#### CONSUMPTION METRICS

All water consumption baselines are reported as average gallons used per day (gpd) per household or per business for each housing type or business category. Descriptions of key metrics used to estimate water consumption baselines, including both original data and calculated fields, are given in Table 11.

#### DATA LIMITATIONS & CONSIDERATIONS

Given the sample sizes for SFD homes, condominiums and apartments, the *residential* water consumption baselines are statistically robust. They are derived from water consumption data for *new homes (built since 2000) in Alachua County* and consistently occupied. The consumption data includes potable water use from GRU supply (domestic meter and irrigation-only meter) and excludes use from reclaimed water, private wells and on-site reuse water. SFD and condominiums exclude use in common areas because of complications associated with identifying consumption data that can be reliably attributed to individual homes in specific neighborhoods and also with allocating common area use among the individual properties. Residential baselines also screen out the very high and very low water users so that they are representative of typical “current” new residential developments. The analysis of “irrigator” vs. “non-irrigator” SFD homes relies on ACPA records indicating the presence of a sprinkler system on the parcel and GRU records of residential customers with an irrigation-only meter. While this categorization method is not perfect, we determined that it was the most reliable approach for this analysis given the scope of the study and the data and resource constraints.

*Non-residential* water consumption baselines were calculated using a small sample for each business category or grouping because of data limitations that restricted our ability to attribute specific water consumption values to individual commercial, industrial and institutional properties/customers. A large number of non-residential properties were excluded from baseline calculations because of one or more of the following limitations:

- the time frame of consumption records was insufficient;
- the parcel contains multiple businesses and/or GRU customers and therefore individual consumption records could not be reliably attributed to individual businesses located on that parcel;
- the size and/or usage of several businesses of a given type were so large or so small that they skewed the range and average consumption values in their grouping; and/or
- other information necessary to join consumption records to individual properties was incomplete.

Another consideration with the non-residential data is how they were grouped to create representative baselines. These consumption data were initially tabulated and grouped by their parcel-level property use codes (from ACPA data). Because property use codes did not consistently match the actual business type on a particular property, we determined that automatically joining and grouping consumption values by property use codes did not generate an accurate representation of typical consumption baselines for each business type. To address this data limitation and improve the reliability of the business baseline results, we created our own non-residential grouping categories and manually assigned the

businesses for which we had complete and reliable consumption and property appraiser data to the most appropriate business category. Some property appraiser data (e.g., building information) are unavailable for schools in the sample.

Moreover, GRU consumption information is listed by service location identification numbers with no common name or field to verify the business to which consumption values were attributed. Because of this limitation, business names were obtained using the Active Business list from <http://data.cityofgainesville.org> and various web searches, and in cases where the property could still not be identified with certainty they were omitted from the non-residential baseline consumption dataset.

**TABLE 10. PRELIMINARY NON-RESIDENTIAL SITE LIST**

Property Type	Business Category	Business Name
COMMERCIAL	Fast Food	McDonalds Chick-Fil-A Starbucks Pizza Hut
	Casual Dining	Chili's Sonny's BBQ Bonefish Grill Ruby Tuesday The Top
	Fine Dining	Dragonfly Sushi & Sake Co. Mark's Prime Steakhouse & Seafood Mildred's Big City food
	Convenience Store	Kangaroo
	Grocery Store	Publix Winn-Dixie Sweetbay
	Pharmacy	CVS Walgreens
	Child Care	O2B Kids Sun Country Sports Center Skate Station Funworks
	Medical Offices	Orthopedic Institute
	Dental Offices	
	Veterinarians	Gainesville Animal Hospital Shore's Animal Hospital Butler Plaza Animal Hospital
	Office Park	CH2M Hill Nationwide
	Churches	
	Movie Theaters	Royal Park Regal Cinemas
	Gyms	Gainesville Health and Fitness Planet Fitness YMCA
	Big Box Stores	Walmart Best Buy Lowes



Property Type	Business Category	Business Name
		Home Depot Target
	Recreational Sports Facility	Gainesville Rock Climbing Gym Public Pool Facilities
INDUSTRIAL	Small Manufacturing	Exactech, Inc. FABCO Air, Inc. GPE Products
INSTITUTIONAL	Assisted Living	Oak Hammock Atrium at Gainesville Emeritus at Gainesville
	Schools	J.J. Finley Elementary School Littlewood Elementary School Howard Bishop Middle School Westwood Middle School Gainesville High School Buchholtz High School

**TABLE 11. KEY DATA FIELDS USED TO CALCULATE BASELINE METRICS**

Original Data Source	Metric	Description / Calculations	Units
GRU CONSUMPTION TABLE	Monthly Domestic Meter Water Consumption	Residential customer potable water use between monthly read dates for service points on a “domestic” (i.e., standard) GRU meter	1,000 gallons (kgal)
	Monthly Normal Service Meter Water Consumption	Non-residential customer potable water use between monthly read dates for service points on a “normal service” (i.e., standard) GRU meter	1,000 gallons (kgal)
	Monthly Irrigation Only Meter Water Consumption	Residential and non-residential customer potable water use between monthly read dates for service points on an “irrigation only” GRU meter	1,000 gallons (kgal)
	Household Total Annual Water Consumption	Calculated field: Total of all monthly “Domestic” and “Irrigation Only” consumption readings for each residential customer in each year. Includes consumption data (meter readings) from calendar years 2009, 2010 and 2013.	1,000 gallons (kgal)
	Business Total Annual Water Consumption	Calculated Field = Total of all monthly “Normal Service” and “Irrigation Only” consumption readings for each non-residential customer in each year. Includes consumption data (meter readings) from calendar years 2011, 2012 and 2013.	1,000 gallons (kgal)
	Household Average Daily Water Consumption	Calculated Field = Average of Household Total Annual Water Consumption over the three residential analysis years/365 days per year * 1000 gallons	Gallons per day (gpd)
	Business Average Daily Water Consumption	Calculated Field = Average of Business Total Annual Water Consumption over the three non-residential analysis years/365 days per year * 1000 gallons	Gallons per day (gpd)
ACPA DATA	Property Size (Lot Size)	Total area of the parcel(s) on which each residential or business customer is located	Square feet (ft2)
	Number of Buildings	Total number of buildings on an individual parcel (residential or non-residential)	Whole number
	Effective Year Built	ACPA assessment of the property on an individual parcel considering improvements and remodeling	Calendar Year
	Building Area (Floor Area)	Total area of the buildings on an individual parcel (residential or non-residential)	Square feet (ft2)
	Building Heated Area (Conditioned Floor Area)	Total heated (conditioned) area of the buildings on an individual parcel (residential or non-residential)	Square feet (ft2)
	Sprinkler (Irrigation) System	Presence of a sprinkler systems on an individual parcel (residential or non-residential)	Nominal / Code

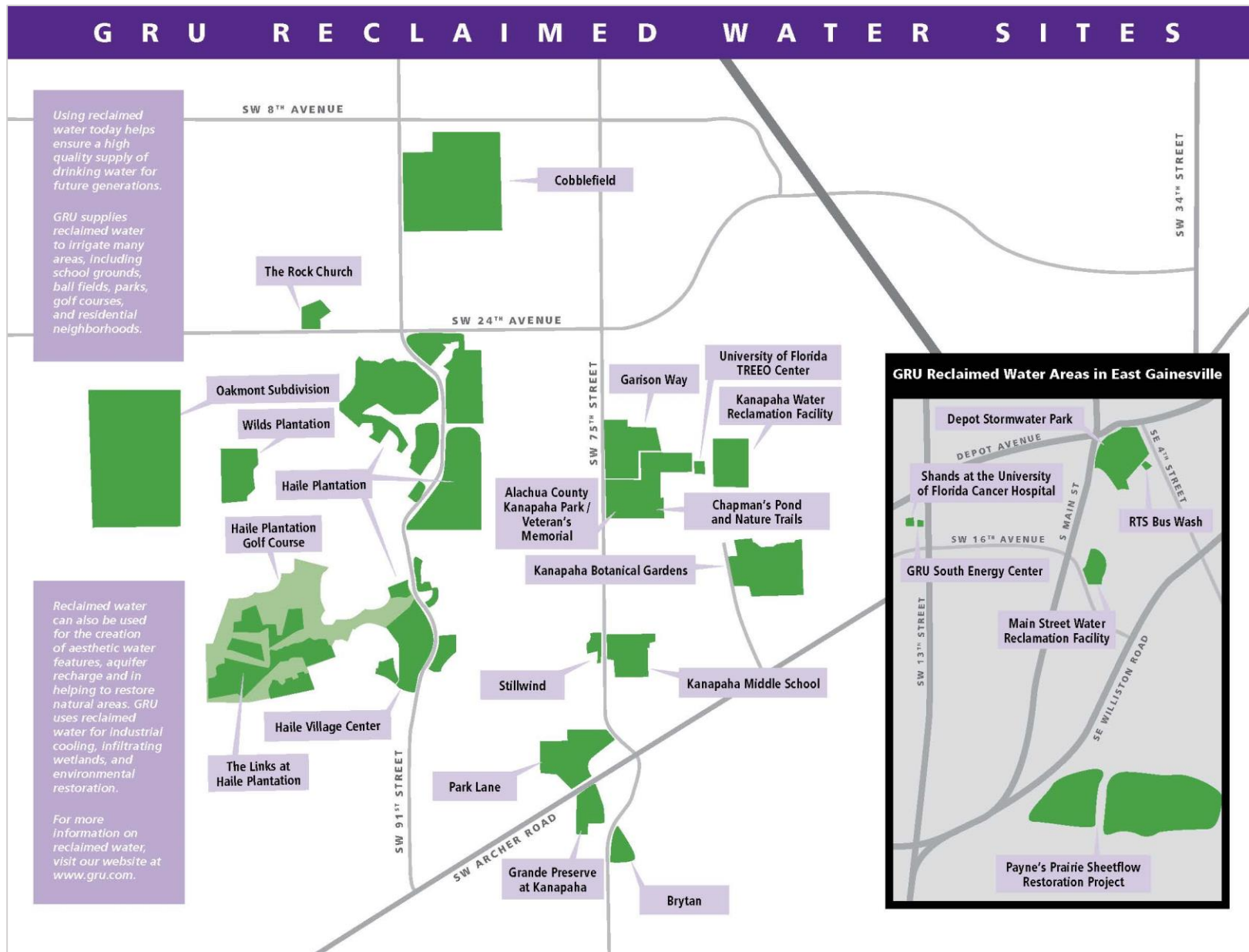


FIGURE 17. RECLAIMED WATER MAP: LOCATION OF RECLAIMED WATER SERVICE AREAS AS REPORTED BY GRU

## APPENDIX B. RESIDENTIAL SAMPLE SUPPLEMENTAL ANALYSES

This appendix provides a brief description of *preliminary* analyses to estimate the marginal water use for residential pools and the potential unaccounted for use from private wells. To derive both estimates, we relied on the same set of SFD homes as described in the body of this report *in addition to* those in neighborhoods with less than 50 homes (i.e. those that were excluded from previous analyses but met all other screening criteria.) This expanded the SFD analysis sample to 3,855 homes. Figure 18 summarizes the key findings of these preliminary analyses combined with those detailed in the body of this report. Based on a preliminary analysis of all SFD homes by water use features on the parcel, we estimate that the additional marginal water use of SFD homes for private pools is 81 gpd and the potential undocumented withdrawals from wells is 172 gpd. If the construction of private pools in future SFD communities is limited and wells are prohibited *in addition to restricting the use of potable water for irrigation*, Plum Creek can minimize the potential for simply shifting potable water demand from metered municipal supply to unmetered self-supply wells. The rest of this appendix details the analysis of water use for private pools and from private wells.

### RESIDENTIAL POOLS

The *preliminary* analysis to estimate marginal use of GRU-supplied potable water by pools included a sample of 3,855 SFD homes in four sub-groups: homes with a sprinkler system and a pool (n=446); homes with a sprinkler system and no pool (n=2,095); homes with no sprinkler system and a pool (n=53); and homes with no sprinkler system and no pool (n=1,261). To estimate pool use, we measured the differentials in total use between groups in the first pair of homes (those with sprinkler systems) and between groups in the second pair (those with no sprinklers). Then, we calculated the weighted average of these differentials using the number of “pool” homes in each subgroup as the weighting factor.

Figure 19 illustrates the baseline water use for each of the four groups, with the “sprinkler system” group shown in dark blue, the “no sprinkler system” group shown in blue and the estimated pool differentials shown in the light blue. The baseline water use for SFD homes with a sprinkler system and a pool is 408 gpd while baseline use for homes with a sprinkler system and no pool is 329 gpd, a differential of 80 gpd (due to rounding). The baseline water use for homes with no sprinkler system and a pool is 289 gpd while baseline use for homes with no sprinkler system and no pool is 197 gpd, a differential of 92 gpd. From the weighted average of these two differentials, we estimate that SFD homes with pools use 81 gpd more water than SFD homes without pools. Table 12 lists the average water use, sample size and home and lot characteristics for each group in the SFD pool analysis. Note that the average lot sizes for groups of homes with pools are substantially larger than those for groups of homes with no pools. This variation in potential irrigable area across groups is likely to explain a portion of the estimated marginal use by pools, warranting further study beyond this preliminary analysis.

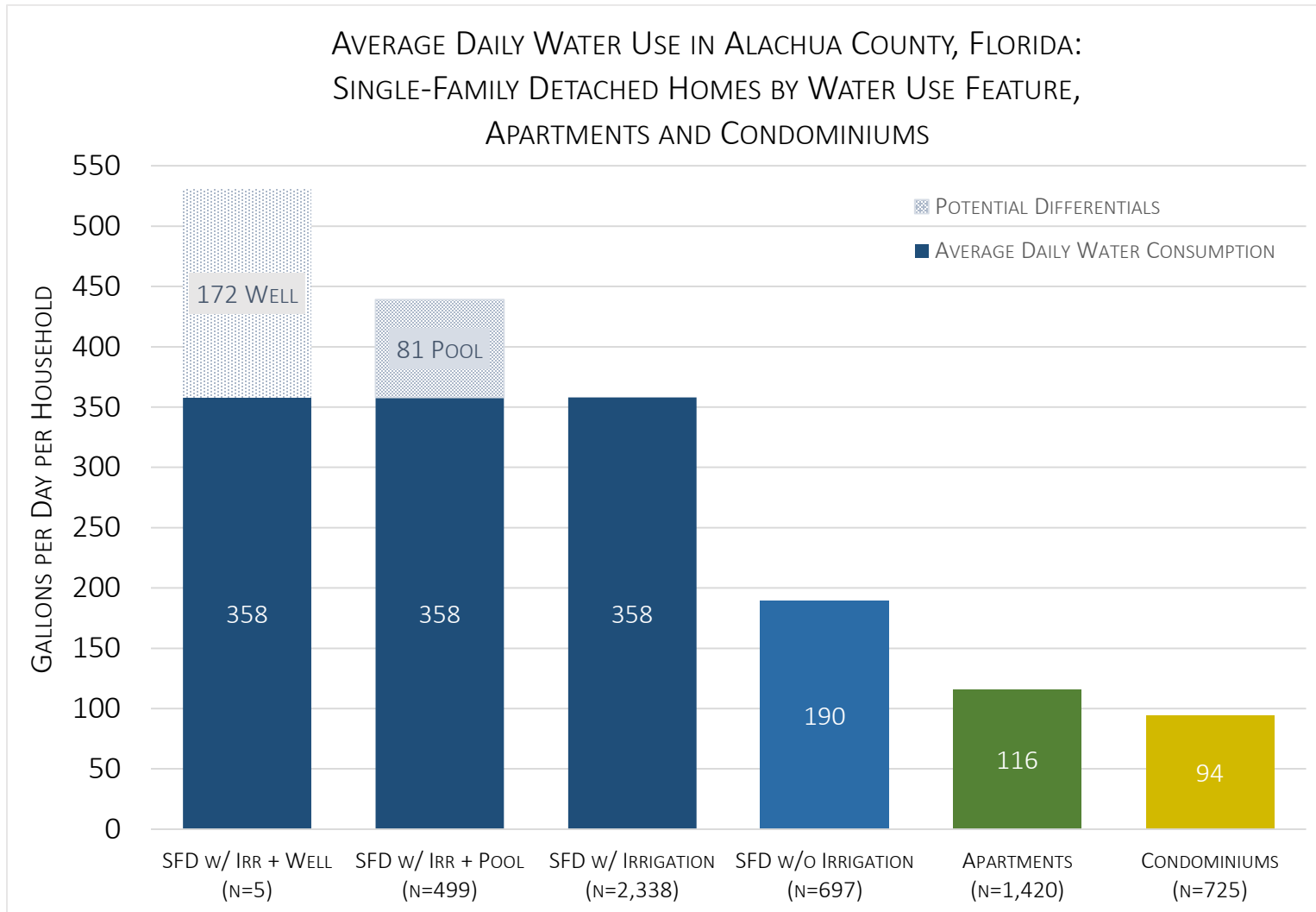
### PRIVATE WELLS

The *preliminary* analysis to estimate potential unaccounted for water withdrawals from private wells included a sample of 2,546 SFD homes – all with sprinkler systems – in four sub-groups: homes with a pool (n=446); homes with a pool and a well (n=3); homes with a sprinkler system alone (n=2,095); and homes with a sprinkler system and a well (n=2). To estimate water use from private wells, we measured the differentials in total use between groups in the first pair of homes (those with sprinkler systems and pools) and groups in the second pair (those with sprinkler

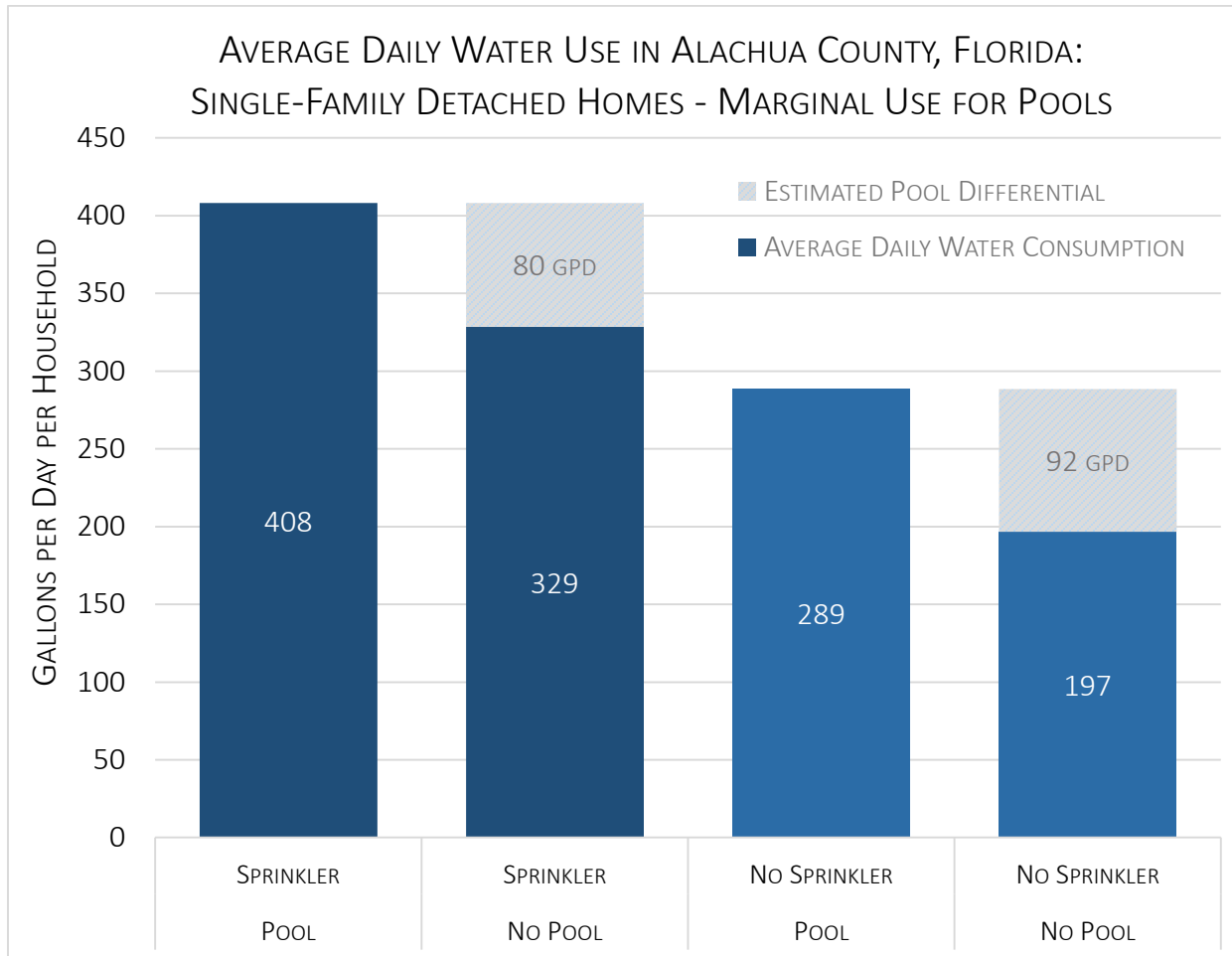
systems and no pools). Then, we calculated the weighted average of these differentials using the number of “well” homes in each subgroup as the weighting factors. While the sample of SFD parcels with wells was insufficient to estimate robust differentials for well use, preliminary results provide a rough estimate of what we might expect this use to be among Alachua County’s new (constructed since 2000) SFD homes.

Figure 20 maps the location of permitted wells in Alachua County, as indicated by ACPA data. Note that most of the parcels shown are in the suburban and rural areas of the county. Table 13 shows the number of permitted wells (from 1994-2014) by use category, as indicated by well construction completion report records from the Suwannee River Water Management District (SRWMD) and St. Johns River Water Management District (SJRWMD). According to these data, there are roughly 6,000 parcels with private water wells in Alachua County, 95% of which are for domestic use. Water withdrawals from these wells represent “invisible” water demand by Alachua County homes and businesses. Using GRU’s residential water customers with private wells on their parcels, we can estimate (roughly) the expected marginal use of well water by homes that are restricted from using potable water for irrigation.

Figure 21 illustrates the baseline water use for each of the four groups in the “well” analysis. All four groups have sprinkler systems. The paired groups with pools are shown in dark blue and the paired groups with no pools are shown in blue. The estimated well use differentials are shown in the light blue. The baseline water use for SFD homes with a sprinkler system and a pool is 408 gpd while baseline use for homes with a sprinkler system, a pool and a well is 245 gpd, a differential of 163 gpd. The baseline water use for homes with a sprinkler system alone is 329 gpd while baseline use for homes with a sprinkler system and a well is 143 gpd, a differential of 186 gpd. From the weighted average of these two differentials, we estimate that SFD homes with a sprinkler system and private wells use 172 gpd more water than SFD homes with a sprinkler system and no private well. Table 14 lists the average water use, sample size and home and lot characteristics for each group in the SFD private well analysis. Similar to the pool analysis, the lot sizes for homes with private wells are substantially larger than those for groups of homes with no wells. For this preliminary analysis, however, this suggests that estimates of undocumented water well withdrawals are conservative (i.e., low). In other words, the homes with more irrigable area are likely to have higher demands for irrigation and those with wells are likely to apply more irrigation than those on GRU supply because the cost per unit of well water is effectively zero.



**FIGURE 18. RESIDENTIAL AVERAGE WATER CONSUMPTION (GPD/HOUSEHOLD) OF SFD HOMES: HOUSING TYPE AND WATER USE FEATURE GROUPS**



**FIGURE 19. RESIDENTIAL AVERAGE WATER CONSUMPTION (GPD/HOUSEHOLD) OF SFD HOMES: MARGINAL USE FOR PRIVATE POOLS**

**TABLE 12. RESIDENTIAL AVERAGE WATER CONSUMPTION (GPD/HOUSEHOLD) OF SFD HOMES BY PRESENCE OF A POOL**

Water Using Features on the Parcel		Average Water Consumption (gpd)	Number of Homes in Sample	Average Conditioned Floor Area (sf)	Average Lot Size (sf)	Average Effective Year Built
SPRINKLER	POOL	408	446	3,321	33,115	2004
SPRINKLER	----	329	2,095	2,185	12,493	2005
----	POOL	289	53	2,755	38,167	2004
----	----	197	1,261	1,643	11,695	2004
Sum			3,855			
Weighted Average		294		2,147	14,970	2004



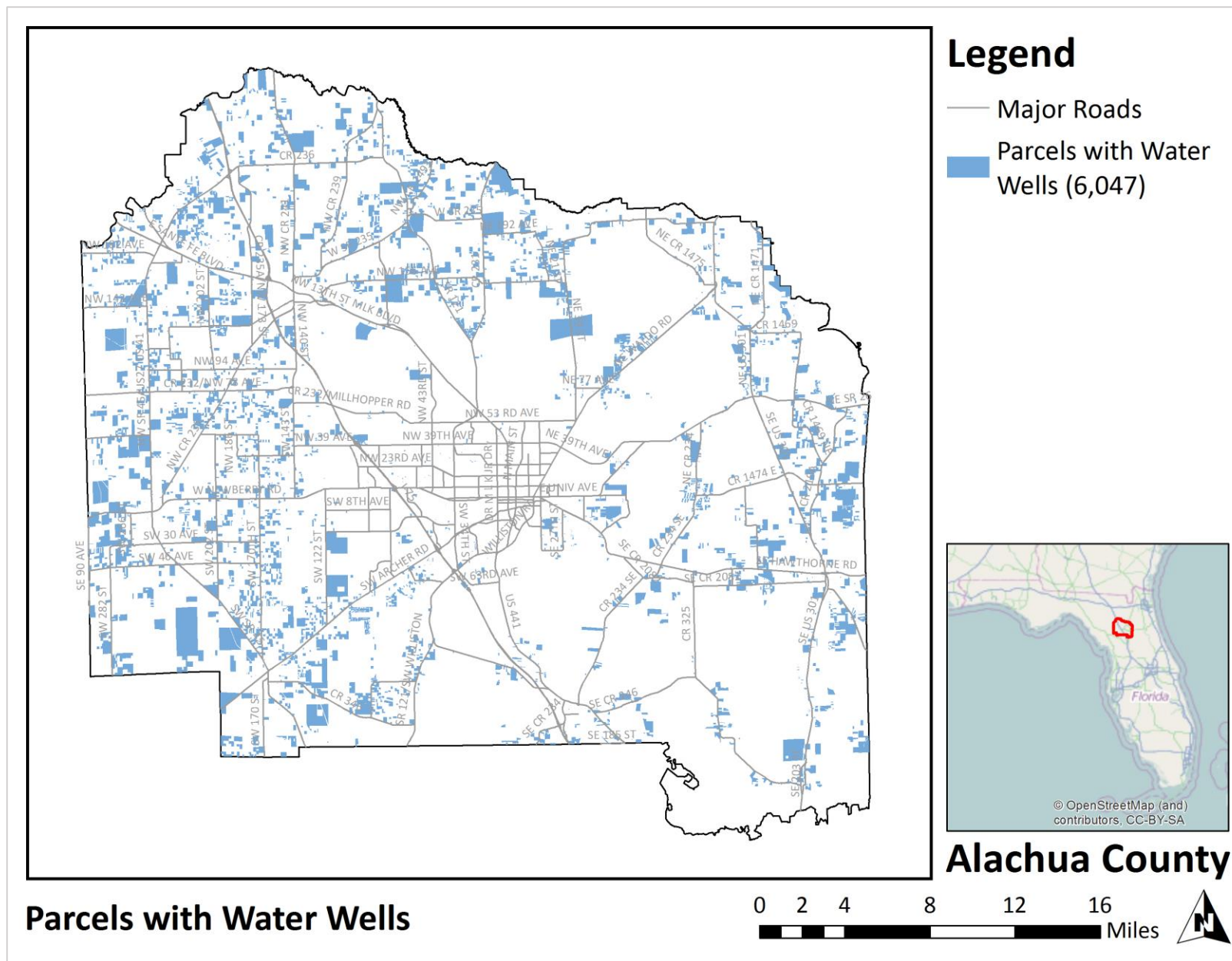
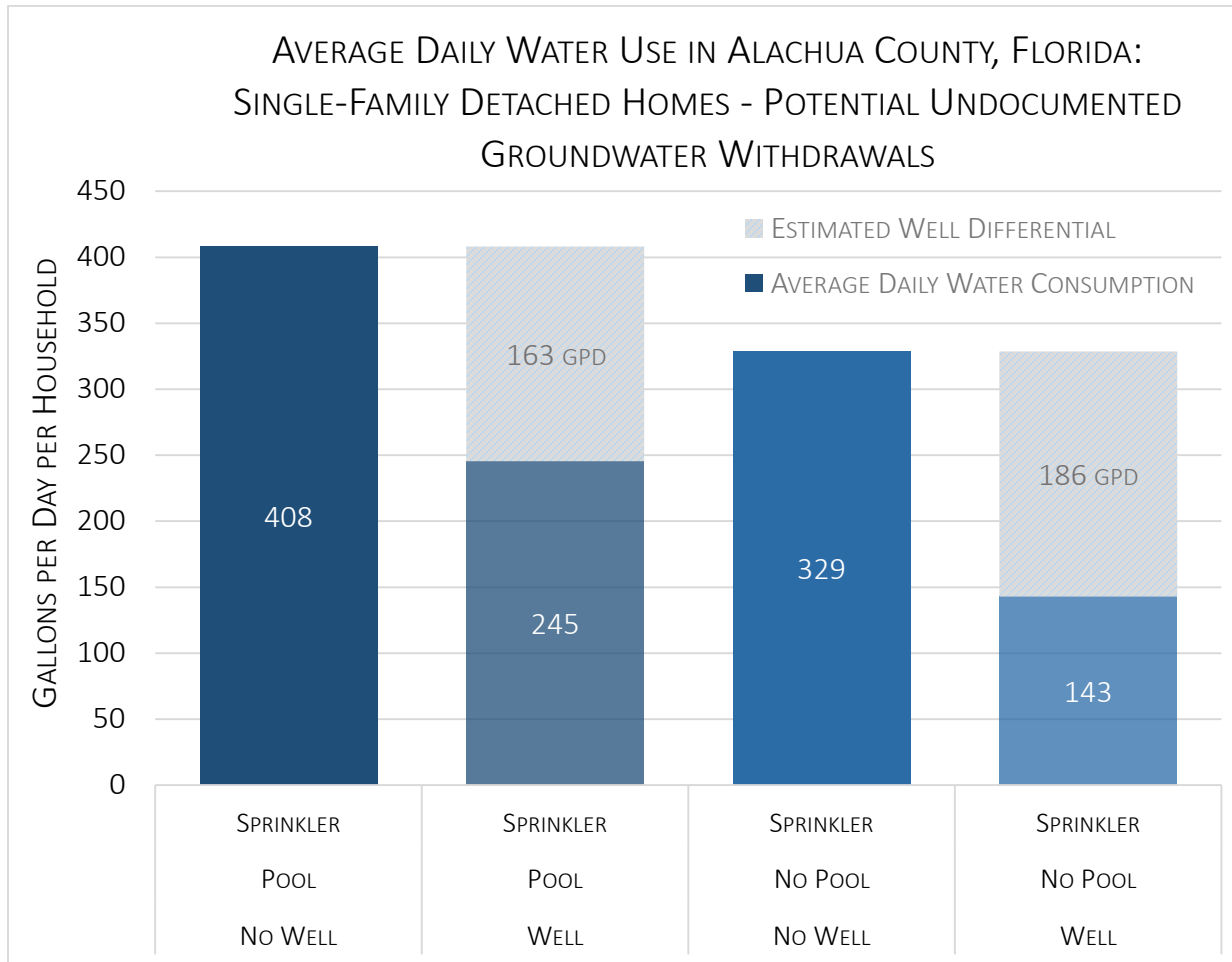


FIGURE 20. ALACHUA COUNTY WATER WELL MAP: LOCATIONS OF WELLS AS INDICATED BY PROPERTY APPRAISER DATA

**TABLE 13. NUMBER OF 3-4" WELLS CONSTRUCTED IN ALACHUA COUNTY FROM 1994-2014 BY PERMITTED WATER USE (AS INDICATED BY WATER MANAGEMENT DISTRICT RECORDS)**

Permitted Use	Number of Permitted Wells	
	Count	Percentage
DOMESTIC	5,513	94.4%
IRRIGATION – LANDSCAPE	199	3.4%
IRRIGATION – AGRICULTURAL	54	0.9%
IRRIGATION - NURSERY	38	0.7%
LIVESTOCK	24	0.4%
COMMERCIAL/INDUSTRIAL	12	0.2%
IRRIGATION – RECREATION AREA	1	0.0%
<b>Sum</b>	<b>5,841</b>	<b>100%</b>



**FIGURE 21. RESIDENTIAL AVERAGE WATER CONSUMPTION (GPD/HOUSEHOLD) OF SFD HOMES: POTENTIAL UNDOCUMENTED GROUNDWATER WITHDRAWALS**

**TABLE 14. RESIDENTIAL AVERAGE WATER CONSUMPTION (GPD/HOUSEHOLD) OF SFD HOMES BY PRESENCE OF A PRIVATE WELL**

Water Using Features on the Parcel			Average Water Consumption (gpd)	Number of Homes in Sample	Average Conditioned Floor Area (sf)	Average Lot Size (sf)	Average Effective Year Built
SPRINKLER	POOL	-----	408	446	3,321	33,115	2004
SPRINKLER	POOL	WELL	245	3	4,072	58,771	2004
SPRINKLER	-----	-----	329	2,095	2,185	12,493	2005
SPRINKLER	-----	WELL	143	2	1,992	24,278	2005
<b>Sum</b>				<b>2,546</b>			
<b>Weighted Average</b>			<b>342</b>		<b>2,386</b>	<b>16,169</b>	<b>2005</b>

## APPENDIX C. NON-RESIDENTIAL SAMPLE SUPPORTING DATA

Details of businesses in the non-residential sample are shown in Table 15. Average water use and parcel information are shown for each business category and for each individual business and are listed in order of highest to lowest average water consumption (2011-2013).

**TABLE 15. NON-RESIDENTIAL PROPERTIES BASELINE CONSUMPTION AND PARCEL CHARACTERISTICS BY INDIVIDUAL BUSINESS AND BY BUSINESS CATEGORY**

BUSINESS CATEGORIES INDIVIDUAL BUSINESSES	Average Water Consumption (gpd)	Average Conditioned Building Area (sq ft)	Average Lot Size (sq ft)	Number of Buildings	Number of Irrigation Systems	Number of Wells	Number of Pools	Effective Year Built
<b>HOTELS CONFERENCE CENTER</b>	<b>24,885</b>	<b>140,454</b>	<b>424,328</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1974</b>
PARAMOUNT PLAZA HOTEL AND SUITES 2900 SW 13TH ST	24,885	140,454	424,328	4	0	0	1	1974
<b>HOTELS AND MOTELS</b>	<b>7,243</b>	<b>42,679</b>	<b>103,875</b>	<b>18</b>	<b>4</b>	<b>0</b>	<b>8</b>	<b>1983</b>
RED ROOF INN 3500 SW 42ND ST	14,195	58,275	104,160	1	1	0	1	1998
HOLIDAY INN EXPRESS 3905 SW 43RD ST	11,622	59,627	102,786	1	0	0	1	1998
BAYMONTS INN AND SUITES GAINESVILLE 6901 NW 4TH BLVD	10,225	44,528	100,431	1	1	0	1	1989
COURTYARD BY MARRIOTT GAINESVILLE 3700 SW 42ND ST	9,910	45,271	89,014	1	1	0	1	1998
BEST WESTERN 4200 NW 97TH BLVD	6,197	107,529	214,481	3	0	0	1	2002
KNIGHTS INN 2820 NW 13TH ST	5,345	25,553	150,142	6	1	0	1	1961
BUDGET INN 4341 SW 13TH ST	3,236	11,835	107,388	2	0	0	1	1954
ECONOLODGE 2649 SW 13TH ST	2,896	17,813	42,396	2	0	0	0	1973
GAINESVILLE LODGE 413 W UNIVERSITY AVE	1,564	13,684	24,078	1	0	0	1	1970
<b>CASUAL DINING</b>	<b>5,571</b>	<b>5,469</b>	<b>38,044</b>	<b>15</b>	<b>9</b>	<b>0</b>	<b>0</b>	<b>1988</b>
MILLERS ALE HOUSE - GAINESVILLE 3950 SW ARCHER RD	16,625	6,230	48,564	1	1	0	0	1993
SWEETBERRIES EATERY AND FROZEN CUSTARD 505 NW 13TH ST	9,529	3,478	26,719	1	1	0	0	1970
RED LOBSTER 6910 W NEWBERRY RD	9,129	9,066	54,570	1	1	0	0	1996

BUSINESS CATEGORIES INDIVIDUAL BUSINESSES	Average Water Consumption (gpd)	Average Conditioned Building Area (sq ft)	Average Lot Size (sq ft)	Number of Buildings	Number of Irrigation Systems	Number of Wells	Number of Pools	Effective Year Built
<b>OLIVE GARDEN</b> 3440 SW ARCHER RD	8,964	9,042	51,493	1	1	0	0	1990
<b>T.G.I.FRIDAYS</b> 3598 SW ARCHER RD	6,112	6,739	45,146	1	1	0	0	2000
<b>CARRABBA'S ITALIAN GRILL</b> 3021 SW 34TH ST	5,370	6,844	62,263	1	1	0	0	2001
<b>APPLEBEE'S</b> 1005 NW 13TH ST	5,356	5,656	10,620	1	1	0	0	2000
<b>SONNY'S BBQ</b> 9213 NW 39TH AVE	5,345	6,074	63,651	1	1	0	0	2000
<b>CHILI'S</b> 3530 SW ARCHER RD	5,000	6,176	39,935	1	1	0	0	1985
<b>SATCHEL'S PIZZA</b> 1800 NE 23RD AVE	2,296	2,529	26,048	2	0	0	0	1980
<b>43RD ST. DELI &amp; BREAKFAST HOUSE</b> 3483 SW WILLISTON RD	1,403	4,304	25,591	1	0	0	0	1993
<b>LA FIESTA MEXICAN</b> 908 NW 69TH TER	1,192	7,425	60,613	1	0	0	0	1982
<b>WAFFLE HOUSE</b> 3919 SW 40TH BLVD	1,019	1,576	15,238	1	0	0	0	1985
<b>SUSHI2GO</b> 808 W UNIVERSITY AVE	649	1,420	2,164	1	0	0	0	1958
<b>COMMUNITY SHOPPING CENTER</b>	<b>5,402</b>	<b>111,981</b>	<b>465,000</b>	<b>50</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>1988</b>
<b>PUBLIX</b> 3100 SW 35TH BLVD	<b>6,484</b>	<b>108,430</b>	<b>495,088</b>	<b>39</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1986</b>
3930 SW ARCHER RD	13,077	124,242	525,666	23	0	0	0	1980
4115 NW 16TH BLVD	5,882	124,917	523,630	13	1	0	0	1992
	493	76,131	435,967	3	0	0	0	1985
<b>OFFICE MAX</b> 3642 SW ARCHER RD	6,225	222,515	796,325	10	1	0	0	1995
<b>TARGET COPY</b> 3422 SW ARCHER RD	1,334	12,100	43,412	1	1	0	0	1990
<b>MOVIE THEATER</b>	<b>4,605</b>	<b>46,160</b>	<b>204,350</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1995</b>
<b>REGAL CINEMA GAINESVILLE 14</b> 3101 SW 35TH BLVD	4,605	46,160	204,350	2	1	0	0	1995
<b>OFFICE PARK</b>	<b>4,247</b>	<b>50,762</b>	<b>499,080</b>	<b>5</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>1990</b>
<b>COX COMMUNICATIONS</b> 6020 NW 43RD ST	6,710	38,358	780,356	4	1	0	0	1982
<b>CH2M HILL</b>								

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3011 SW WILLISTON RD	1,784	63,165	217,803	1	1	0	0	1998
<b>BIG BOX HARDWARE STORE</b>	<b>3,762</b>	<b>107,240</b>	<b>440,547</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1991</b>
<b>HOME DEPOT</b>								
7107 NW 4TH BLVD	4,479	101,756	454,570	1	1	0	0	1989
<b>LOWE'S</b>								
3500 SW ARCHER RD	3,044	112,724	426,525	1	0	0	0	1993
<b>ASSISTED LIVING</b>	<b>3,762</b>	<b>31,109</b>	<b>117,254</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1987</b>
<b>EMERITUS AT GAINESVILLE</b>								
1001 SW 62ND BLVD	7,296	59,449	219,943	1	0	0	0	1998
<b>LOVING CARE ASSISTED LIVING &amp; ADULT DAY STAY</b>								
1205 NW 9TH AVE	227	2,768	14,564	1	1	0	0	1975
<b>SCHOOLS</b>	<b>3,296</b>	<b>0</b>	<b>1,471,828</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>n/a</b>
<b>HOWARD BISHOP MIDDLE SCHOOL</b>								
1901 NE 9TH ST	6,077	0	886,618	0	0	0	0	n/a
<b>LITTLEWOOD ELEMENTARY SCHOOL</b>								
812 NW 34TH ST	2,893	0	576,766	0	0	0	0	n/a
<b>WESTWOOD MIDDLE SCHOOL</b>								
3215 NW 15TH AVE	2,748	0	780,356	0	0	0	0	n/a
<b>W TRAVIS LOFTEN HIGH SCHOOL</b>								
3000 E UNIVERSITY AVE	2,427	0	4,090,921	0	0	0	0	n/a
<b>J.J. FINLEY ELEMENTARY SCHOOL</b>								
1912 NW 5TH AVE	2,334	0	1,024,480	0	0	0	0	n/a
<b>BIG BOX DEPARTMENT STORE</b>	<b>3,101</b>	<b>97,630</b>	<b>378,268</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1991</b>
<b>TARGET</b>								
3970 SW ARCHER RD	4,126	100,031	383,718	1	1	0	0	1992
<b>WALMART</b>								
3570 SW ARCHER RD	2,077	95,229	372,818	1	0	0	0	1990
<b>GROCERY STORE</b>	<b>2,495</b>	<b>30,655</b>	<b>173,659</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1991</b>
<b>WINN-DIXIE</b>								
300 SW 16TH AVE	3,082	52,320	326,792	1	0	0	0	1985
<b>THE FRESH MARKET</b>								
4120 NW 16TH BLVD	2,573	30,384	121,274	1	0	0	0	1998
<b>WARD'S SUPERMARKET</b>								
515 NW 23RD AVE	1,830	9,261	72,911	1	1	0	0	1990
<b>FAST FOOD</b>	<b>2,253</b>	<b>3,914</b>	<b>36,126</b>	<b>11</b>	<b>4</b>	<b>2</b>	<b>0</b>	<b>1995</b>
<b>CHIPOTLE</b>								
1432 W UNIVERSITY AVE	4,655	2,468	18,736	1	0	0	0	1990

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<b>SUBWAY</b>	<b>2,399</b>	<b>3,737</b>	<b>20,196</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2001</b>
1005 W UNIVERSITY AVE	370	1,193	5,960	1	0	0	0	1990
3316 SW 35TH BLVD	6,282	7,918	40,387	1	0	0	0	2005
5210 NW 13TH ST	545	2,100	14,241	1	0	0	0	2008
<b>MCDONALD'S</b>	<b>2,313</b>	<b>4,035</b>	<b>50,319</b>	<b>5</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>1994</b>
1030 E UNIVERSITY AVE	2,353	2,693	45,035	1	1	0	0	1994
201 NW 13TH ST	1,762	5,005	34,854	1	0	0	0	1990
2880 NW 13TH ST	1,921	5,171	88,858	1	0	1	0	2012
5110 NW 43RD ST	1,562	2,936	41,093	1	1	0	0	1994
6003 W NEWBERRY RD	3,967	4,368	41,757	1	1	0	0	1979
<b>BURGER KING</b>	<b>786</b>	<b>3,828</b>	<b>45,454</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>1995</b>
20 NW 16TH AVE								
<b>DOMINO'S PIZZA</b>	<b>584</b>	<b>5,369</b>	<b>21,010</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1989</b>
2106 SW 13TH ST								
<b>GOLF CLUBS</b>	<b>2,004</b>	<b>9,122</b>	<b>3,724,859</b>	<b>4</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>1973</b>
<b>IRONWOOD</b>								
2100 NE 39TH AVE	3,564	13,659	5,875,872	3	1	0	0	1972
<b>WEST END GOLF CLUB</b>								
12830 W NEWBERRY RD	444	4,584	1,573,846	1	1	0	0	1973
<b>OFFICE SUPPLY</b>	<b>1,997</b>	<b>27,869</b>	<b>95,091</b>	<b>9</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1985</b>
<b>CENTRAL FLORIDA OFFICE PLUS</b>								
10 NW 6TH ST	2,364	52,382	134,095	7	0	0	0	1960
<b>OFFICE DEPOT</b>								
1015 NW 13TH ST	2,282	23,503	129,950	1	1	0	0	2001
<b>TARGET COPY</b>								
1412 W UNIVERSITY AVE	1,345	7,722	21,230	1	0	0	0	1995
<b>FINE DINING</b>	<b>1,889</b>	<b>5,319</b>	<b>29,760</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1981</b>
<b>LEONARDO'S 706</b>								
706 W UNIVERSITY AVE	2,964	6,478	19,996	1	0	0	0	1975
<b>YAMATO JAPANESE STEAK HOUSE</b>								
526 NW 60TH ST	2,836	5,600	11,003	1	0	0	0	2000
<b>CHOP STIX</b>								
3500 SW 13TH ST	2,225	5,140	69,611	1	0	0	0	1964
<b>SAWAMURA JAPANESE STEAK HOUSE</b>								
1624 SW 13TH ST	800	3,142	3,794	1	0	0	0	1969
<b>MIRAKU</b>								
4005 SW 40TH BLVD	619	6,236	44,397	1	0	0	0	1995
<b>PHARMACY</b>	<b>1,785</b>	<b>12,324</b>	<b>50,411</b>	<b>8</b>	<b>7</b>	<b>0</b>	<b>0</b>	<b>1999</b>



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<b>CVS</b>	<b>2,493</b>	<b>14,282</b>	<b>46,793</b>	<b>5</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>2003</b>
1521 NW 13TH ST	4,441	26,444	24,427	1	1	0	0	2010
3404 SW ARCHER RD	1,726	10,714	74,040	1	1	0	0	2002
3904 NW 13TH ST	3,926	10,665	59,419	1	1	0	0	1998
4145 NW 53RD AVE	981	13,428	35,019	1	1	0	0	2009
901 N MAIN ST	1,389	10,160	41,060	1	1	0	0	1997
<b>WALGREENS</b>	<b>790</b>	<b>12,585</b>	<b>79,883</b>	<b>2</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>1997</b>
1120 E UNIVERSITY AVE	868	12,606	75,152	1	1	0	0	1997
1615 NW 13TH ST	712	12,563	84,614	1	1	0	0	1997
<b>WISE'S PHARMACY</b>								
708 SW 4TH AVE	236	2,015	9,559	1	0	0	0	1980
<b>RECREATION COMPLEX</b>	<b>1,640</b>	<b>21,785</b>	<b>104,296</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1992</b>
<b>SKATE STATION</b>								
1311 NW 76TH BLVD	2,855	31,000	170,450	1	1	0	0	2004
<b>SUN COUNTRY SPORTS CENTER</b>								
4010 NW 27TH LN	425	12,570	38,142	1	0	0	0	1979
<b>SMALL MANUFACTURING</b>	<b>1,527</b>	<b>30,691</b>	<b>114,309</b>	<b>8</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>1977</b>
<b>FABCO-AIR, INC</b>								
3716 NE 49TH AVE	3,288	62,014	262,660	3	1	0	0	1970
<b>EXACTECH, INC.</b>								
2402 NW 66TH CT	2,466	13,152	65,264	1	1	0	0	1999
<b>COCA COLA BOTTLING</b>								
929 E UNIVERSITY AVE	200	38,118	105,455	3	0	0	0	1960
<b>PRECISION TOOL &amp; ENGINEERING OF GAINESVILLE</b>								
2709 NE 20TH WAY	153	9,480	23,857	1	0	0	0	1980
<b>CHILD CARE</b>	<b>1,201</b>	<b>8,102</b>	<b>124,083</b>	<b>5</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>1977</b>
<b>A CHILD'S ACADEMY AT HERITAGE PARK</b>								
3401 NW 34TH ST	4,247	26,793	487,604	1	0	0	0	1985
<b>LA PETITE ACADEMY</b>								
2755 SW ARCHER RD	759	5,415	43,278	1	1	0	0	1990
<b>LIL SCHOLARS LEARNING ACADEMY</b>								
901 SE 1ST AVE	436	1,684	11,049	1	1	0	0	1980
<b>A HIDDEN CHILD'S WORLD</b>								
3237 SW 41ST PL	364	3,755	49,439	1	0	0	0	1970
<b>BRIGHT FUTURE KIDZ ACADEMY</b>								
3520 NW 13TH ST	197	2,865	29,045	1	0	0	0	1960
<b>FINANCIAL INSTITUTION</b>	<b>888</b>	<b>10,923</b>	<b>41,773</b>	<b>18</b>	<b>10</b>	<b>0</b>	<b>0</b>	<b>1986</b>

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<b>WELLS FARGO BANK</b>	<b>1,468</b>	<b>24,466</b>	<b>64,514</b>	<b>10</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>1983</b>
104 N MAIN ST	1,715	84,962	77,517	7	1	0	0	1980
3505 SW ARCHER RD	123	3,437	53,379	1	1	0	0	1985
3838 NW 13TH ST	2,701	6,252	77,926	1	1	0	0	1972
5220 NW 43RD ST	1,334	3,213	49,233	1	1	0	0	1995
<b>COMPASS BANK</b>								
2201 NW 43RD ST	1,118	1,881	34,707	1	1	0	0	1998
<b>FIRST CREDIT UNION OF GAINESVILLE</b>								
412 E UNIVERSITY AVE	1,085	3,999	34,642	1	1	0	0	1995
<b>PNC BANK</b>								
1807 NW 13TH ST	789	2,162	17,084	1	1	0	0	1985
<b>M&amp;S BANK</b>	<b>542</b>	<b>3,740</b>	<b>38,985</b>	<b>2</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>1995</b>
3631 N MAIN ST	841	3,422	35,057	1	1	0	0	1994
5010 NW 43RD ST	244	4,058	42,914	1	1	0	0	1995
<b>SUNTRUST BANK</b>								
3814 NW 43RD ST	312	2,340	45,039	1	1	0	0	1983
<b>BANK OF AMERICA</b>	<b>199</b>	<b>7,673</b>	<b>16,887</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1973</b>
1116 W UNIVERSITY AVE	159	280	23,018	1	0	0	0	1971
1614 W UNIVERSITY AVE	238	15,066	10,756	1	0	0	0	1974
<b>VETERINARIAN</b>	<b>877</b>	<b>3,875</b>	<b>61,386</b>	<b>7</b>	<b>4</b>	<b>1</b>	<b>0</b>	<b>1983</b>
<b>MILLHOPPER VETERINARY MEDICINE CENTER</b>								
4209 NW 37TH PL	3,036	4,537	50,322	1	1	0	0	1995
<b>NAVC NORTH AMERICAN VET</b>								
5003 SW 41ST BLVD	1,885	8,479	112,573	1	1	0	0	2003
<b>SHORES ANIMAL HOSPITAL</b>								
3811 NW 13TH ST	375	3,550	29,244	1	0	0	0	1961
<b>ALL CATS</b>								
1034 NW 13TH ST	301	1,909	21,064	1	1	0	0	1960
<b>NORTHWOOD OAKS VETERINARY HOSPITAL</b>								
5331 NW 34TH BLVD	233	2,759	71,428	1	0	0	0	1981
<b>GAINESVILLE ANIMAL HOSPITAL</b>								
7615 W NEWBERRY RD	230	4,196	106,037	1	0	0	0	1990
<b>ALL CREATURES FAMILY PET CENTER</b>								
5027 NW 34TH BLVD	79	1,692	39,035	1	1	1	0	1990
<b>GAS STATION</b>	<b>598</b>	<b>2,082</b>	<b>28,635</b>	<b>17</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>1986</b>
<b>SUNOCO GAS STATION</b>								

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4207 NW 13TH ST	781	2,385	37,751	1	0	0	0	1974
<b>KANGAROO GAS STATION</b>	<b>682</b>	<b>2,131</b>	<b>27,873</b>	<b>12</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>1986</b>
1255 W UNIVERSITY AVE	474	2,076	16,543	1	1	0	0	1979
2152 NW 39TH AVE	627	1,848	8,750	1	0	0	0	1969
3525 SW 34TH ST	701	2,880	51,656	1	1	0	0	2002
3838 N MAIN ST	2,142	4,300	52,877	2	1	0	0	2007
3901 SW ARCHER RD	362	1,222	24,802	1	1	0	0	1990
4221 NW 16TH BLVD	364	1,036	17,706	1	0	0	0	2001
4234 SW 20TH AVE	356	1,724	24,140	1	0	0	0	1985
5310 NW 13TH ST	567	2,165	28,322	1	0	0	0	1985
5708 NW 34TH BLVD	1,044	1,992	19,585	1	0	0	0	1976
926 W UNIVERSITY AVE	282	1,176	21,080	1	0	0	0	1968
9404 NW 39TH AVE	581	3,024	41,141	1	0	0	0	1989
<b>GATE GAS STATION</b>								
3001 NW 13TH ST	663	1,784	24,389	1	1	0	0	1996
<b>TEXACO GAS STATION</b>								
2109 SW 13TH ST	263	2,136	25,547	1	0	0	0	1984
<b>EXXON GAS STATION</b>								
334 SW 16TH AVE	236	1,792	29,997	1	0	0	0	1999
<b>CHEVRON GAS STATION</b>								
1510 S MAIN ST	132	1,764	33,874	1	0	0	0	1979
<b>NIGHT CLUB</b>	<b>592</b>	<b>6,177</b>	<b>9,530</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1966</b>
<b>EIGHT SECONDS</b>	<b>1,148</b>	<b>17,211</b>	<b>10,876</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1960</b>
201 W UNIVERSITY AVE								
<b>UNIVERSITY CLUB OF GAINESVILLE</b>	<b>595</b>	<b>1,680</b>	<b>2,218</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1965</b>
18 E UNIVERSITY AVE								
<b>1982 BAR</b>	<b>353</b>	<b>4,200</b>	<b>7,788</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1970</b>
919 W UNIVERSITY AVE								
<b>GAMBLER'S SALOON</b>	<b>274</b>	<b>1,617</b>	<b>17,237</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1968</b>
4401 NW 6TH ST								
<b>DENTAL OFFICES</b>	<b>585</b>	<b>4,189</b>	<b>14,531</b>	<b>3</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>1997</b>
<b>UNIVERSITY FAMILY DENTISTRY</b>								
1230 NW 9TH AVE	822	3,595	19,468	1	1	0	0	2000
<b>GAINESVILLE FAMILY DENTISTRY</b>								
5622 NW 43RD ST	608	4,833	4,040	1	0	0	0	1993
<b>AGUIRRE ORTHODONTICS</b>								
4031 NW 43RD ST	326	4,138	20,085	1	1	0	0	1997
<b>MEDICAL OFFICES</b>	<b>468</b>	<b>4,481</b>	<b>24,036</b>	<b>4</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1985</b>

BUSINESS CATEGORIES INDIVIDUAL BUSINESSES	Average Water Consumption (gpd)	Average Conditioned Building Area (sq ft)	Average Lot Size (sq ft)	Number of Buildings	Number of Irrigation Systems	Number of Wells	Number of Pools	Effective Year Built
<b>EMERGENCY MEDICAL CENTER</b> 6121 NW 1ST PL	1,364	3,940	44,834	1	0	0	0	1990
<b>ALLIANCE PEDIATRICS</b> 4627 NW 53RD AVE	249	5,097	8,167	1	0	0	0	1999
<b>INTERVENTIONAL MEDICAL ASSOCIATES</b> 6821 NW 11TH PL	203	5,023	35,675	1	1	0	0	1990
<b>ATLANTIC COAST MEDICAL REHAB</b> 620 SW 4TH AVE	58	3,862	7,468	1	0	0	0	1961
<b>AUTOMOTIVE SERVICE</b>	<b>380</b>	<b>6,880</b>	<b>33,726</b>	<b>9</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>1990</b>
<b>GOOD YEAR</b> 407 NW 75TH ST	934	6,528	29,378	1	1	0	0	1991
<b>PEP BOYS AUTO PARTS &amp; REPAIR</b> 7725 W NEWBERRY RD	526	20,664	78,146	1	1	0	0	1992
<b>TIRES PLUS</b> 2605 SW 34TH ST	<b>423</b>	<b>5,668</b>	<b>26,234</b>	<b>2</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>1994</b>
3410 W UNIVERSITY AVE	329	7,335	40,215	1	1	0	0	1996
<b>GAINESVILLE HARLEY-DAVIDSON</b> 5032 NW 39TH AVE	518	4,000	12,254	1	1	0	0	1992
<b>JC'S CAR AUTO SERVICE</b> 1750 SW 13TH ST	400	5,416	43,119	1	1	0	0	1995
<b>ADVANCED AUTO CARE</b> 3820 SW ARCHER RD	271	1,827	15,357	1	0	0	0	1969
<b>FIRESTONE</b> 3744 SW ARCHER RD	167	4,142	16,816	1	0	0	0	1989
<b>MIDAS</b> 3845 SW ARCHER RD	137	6,618	35,900	1	0	0	0	1994
<b>STORAGE</b>	<b>251</b>	<b>41,213</b>	<b>162,729</b>	<b>11</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>2000</b>
<b>GAINESVILLE SELF STORAGE UNITS</b> 1335 NW 53RD AVE	137	5,390	32,353	1	1	0	0	1993
<b>INTERSTATE MINI STORAGE</b> 2707 SW 40TH BLVD	482	52,276	201,163	4	1	0	0	2003
<b>SOUTH WEST SELF STORAGE</b> 3300 SW 42ND ST	200	71,363	259,543	7	1	0	0	2001
<b>LEGAL OFFICES</b>	<b>229</b>	<b>7,432</b>	<b>31,715</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1982</b>
<b>BOGIN, MUNNS, &amp; MUNNS</b> 2700 NW 43RD ST	71	0	27,481	0	0	0	0	1996
<b>GALIGANI LAW FIRM</b> 317 NE 1ST ST	408	12,936	57,799	2	1	0	0	1989
	49	1,927	5,631	1	0	0	0	1975

<b>BUSINESS CATEGORIES INDIVIDUAL BUSINESSES</b>	<b>Average Water Consumption (gpd)</b>	<b>Average Conditioned Building Area (sq ft)</b>	<b>Average Lot Size (sq ft)</b>	<b>Number of Buildings</b>	<b>Number of Irrigation Systems</b>	<b>Number of Wells</b>	<b>Number of Pools</b>	<b>Effective Year Built</b>
<b>MEETING FACILITY</b>	<b>89</b>	<b>5,122</b>	<b>12,765</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1972</b>
<b>ELK'S LODGE</b> 511 SW 4TH AVE	148	3,520	9,180	1	0	0	0	1973
<b>MASONIC LODGE</b> 215 N MAIN ST	30	6,724	16,351	1	0	0	0	1970
<b>RECREATIONAL SPORTS FACILITY</b>	<b>77</b>	<b>47,084</b>	<b>441,471</b>	<b>3</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>1970</b>
<b>YMCA</b> 5201 NW 34TH BLVD	77	47,084	441,471	3	0	1	1	1970
<b>CHURCH</b>	<b>27</b>	<b>2,683</b>	<b>38,620</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1969</b>
<b>HIGHWAYS &amp; HEDGES--GO TELL</b> 1603 SE 3RD AVE	36	4,080	17,810	1	0	0	0	1962
<b>GRACE PRESBYTERIAN</b> 3121 NW 14TH ST	19	1,286	59,429	1	0	0	0	1975

## APPENDIX D. REFERENCE WATER USE ESTIMATES

To provide context for the water consumption baseline estimates in this report, this appendix tabulates residential and non-residential water use data relevant to Alachua County from other studies and existing literature. Reference residential water use metrics (all in units of gallons per day) for SFD homes are listed in Table 16 and reference non-residential water use metrics (with varying units) are listed in Table 17.

**TABLE 16. REFERENCE RESIDENTIAL SFD HOMES' WATER USE ESTIMATES**

Study Authors and Publication Year	Sample Location	Water User Subcategory	Water Use Category	Sample Size	Demand Estimate (gpd)
FRIEDMAN ET AL. (2013) <sup>1</sup>	Gainesville, FL	All	Total Use	29,501	261
		All	Outdoor Use (Inferred)	29,501	94
		All	Indoor Use	29,501	167
		Irrigators	Total Use (Calculated)	16,303	349
		Irrigators	Outdoor Use	16,303	186
		Irrigators	Indoor Use (Inferred)	16,303	163
PALENCHAR ET AL. (2009) <sup>2</sup>	Gainesville, FL	All	Total Use (Weighted Average)	30,906	258
		All	Outdoor Use (Weighted Average)	30,906	81
		All	Indoor Use (Weighted Average)	30,906	177
		Single Meter	Total Use	29,504	241
		Single Meter	Outdoor Use	29,504	64
		Dual Meter	Total Use	1,402	609
		Dual Meter	Outdoor Use	1,402	432
		Minimal Irrigation (Offline)	Total Use	21,820	156
		Mid-Range Irrigation	Total Use	7,819	434
		Mid-Range Irrigation	Irrigation Use	7,819	259
		Upper-Range Irrigation	Total Use	1,267	949
		Upper-Range Irrigation	Irrigation Use	1,267	774
MAYER ET AL. (1999) <sup>3</sup>	Tampa, FL	All	Total Use	99	241
		All	Outdoor Use	99	84
		All	Indoor Use	99	158

1: "Predicting and Managing Residential Potable Irrigation Using Parcel-Level Databases" in *Journal – American Water Works Association* at

<http://conservefloridawater.org/Publications/IrrigationPaperKenFinal.pdf>

2: "Reuse and Private Wells to Offset Irrigation with Potable Water in Urban Water Systems" in *Florida Watershed Journal* at

<http://conservefloridawater.org/publications/Reuse%20paper%20correct%20version%200110.pdf>

3: "Residential End Uses of Water" published by AWWA Research Foundation and American Water Works Association at

[http://listserver.energy.ca.gov/appliances/2013rulemaking/documents/responses/Water\\_Appliances\\_12-AAER-2C/California\\_IOU\\_Response\\_to\\_CEC\\_Invitation\\_to\\_Participate-Toilets\\_and\\_Urinals\\_REFERENCES/Aquacraft\\_1999\\_Residential\\_End\\_Uses\\_of\\_Water\\_Study.pdf](http://listserver.energy.ca.gov/appliances/2013rulemaking/documents/responses/Water_Appliances_12-AAER-2C/California_IOU_Response_to_CEC_Invitation_to_Participate-Toilets_and_Urinals_REFERENCES/Aquacraft_1999_Residential_End_Uses_of_Water_Study.pdf)

**TABLE 17. REFERENCE NON-RESIDENTIAL WATER USE ESTIMATES**

Study Authors and Publication Year	Sample Location	Water User Category	Water User Subcategory	Sample Size	Demand Estimate	Demand Estimate Units
MORALES AND HEANEY (2010) <sup>1</sup>	Gainesville, FL and Hillsborough County, FL	Commercial	Auto Sales / Repair	174	0.124	gpd per heated square foot
			Bowling Alleys / Skating Rinks	3	0.038	
			Community Shopping Centers	239	0.099	
			Department Stores	19	0.062	
			Enclosed Theaters / Auditoriums	3	0.120	
			Fast-Food Restaurants	105	0.657	
			Financial Institutions	98	0.373	
			Florists / Greenhouses	2	0.216	
			Hotels / Motels	50	0.231	
			Insurance Offices	11	0.073	
			Medical Offices	264	0.158	
			Mixed Use	143	0.092	
			Nightclubs / Bars	20	0.198	
			Office, Multi-Story	73	0.069	
			Office, One-Story	384	0.129	
			Regional Malls	3	0.073	
			Restaurants	120	0.741	
			Service Shops	49	0.176	
			Service Stations	5	0.170	
			Stores, One-Story	289	0.098	
			Supermarkets / Convenience Stores	123	0.270	
			Transit Terminals	6	0.339	
			Wholesale Outlets	5	0.025	
			Auto Sales / Repair	174	0.124	
			Bowling Alleys / Skating Rinks	3	0.038	
			Community Shopping Centers	239	0.099	
			Department Stores	19	0.062	
			Enclosed Theaters / Auditoriums	3	0.120	
			Fast-Food Restaurants	105	0.657	
			Financial Institutions	98	0.373	
			Florists / Greenhouses	2	0.216	
			Hotels / Motels	50	0.231	
			Insurance Offices	11	0.073	
CH2M HILL (n/a) <sup>2</sup>	Fayette County, GA	Industrial	Heavy Manufacturing	10	38,910	gpd
			Heavy Manufacturing	1	651	
			Heavy Manufacturing	1	1,844	

Study Authors and Publication Year	Sample Location	Water User Category	Water User Subcategory	Sample Size	Demand Estimate	Demand Estimate Units
CH2M HILL (n/a) <sup>2</sup>	Fayette County, GA	Industrial	Light Manufacturing	3	6,279	gpd
			Light Manufacturing	1	1,085	
			Light Manufacturing	1	26,289	
			Light Manufacturing	1	2,363	
			Light Manufacturing	1	51	
			Light Manufacturing	1	2,072	
			Light Manufacturing	1	586	
			Light Manufacturing	1	13,135	
			Light Manufacturing	1	1,104	
			Light Manufacturing	1	10,044	
			Light Manufacturing	1	931	
			Light Manufacturing	1	713	
			Light Manufacturing/Processing	1	174,634	
			Other Industrial	1	181	
			Other Industrial	1	423	
			Other Industrial	1	3,237	
			Other Industrial	1	8,203	
			Warehouse Distribution	17	4,085	
			Warehouse Distribution	1	4,066	
			Warehouse Distribution	1	745	
			Warehouse Distribution	1	916	
1: “Predominant Commercial Sectors in Florida and Their Water Use Patterns” in <i>Florida Water Resources Journal</i> at <a href="http://conservefloridawater.org/publications/m.morales_fwri.pdf">http://conservefloridawater.org/publications/m.morales_fwri.pdf</a>						
2: “Industrial Water Demands” Excel workbook of study results provided by Plum Creek to “Water Consumption Baselines” study authors						





