WATER SUPPLY FACILITIES WORK PLAN
2025 - 2045

FOR

CITY OF GREEN COVE SPRINGS, FLORIDA

Prepared by:

CPH CONSULTING, LLC
(FORMERLY MITTAUER & ASSOCIATES, INC.)
CONSULTING ENGINEERS
Orange Park, Florida

Project No. M890519.000
Client No. 8905-19-1
May 2025

06/25/25

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1.0 INTRODUCTION AND OBJECTIVE

Chapters 163 and 373 F.S. establishes a link between regional water supply plans prepared by water management districts and local government comprehensive plans. Water management districts are required by Florida Statutes to prepare a water supply plan for a 20-year planning period in order to ensure that existing water sources are adequate to meet projected water demand. Concurrently, local governments within a regional water supply planning area are required to develop a water supply facilities work plan (WSFWP) to ensure that adequate water supply is available to meet future demands over a minimum 10-year planning period. This plan covers a 20-year planning period concurrent with the City's Consumptive Permit. The plan includes identification of water supply facilities and identification of capital improvement projects required to provide for projected water demands. The City of Green Cove Springs Comprehensive Plan has been updated to reflect goals, objective and policies as needed to reflect the water supply facilities work plan.

The City falls within the boundaries of the St. Johns River Water Management District (SJRWMD). In 2023, the governing boards of both the SJRWMD and Suwannee River Water Management District approved the North Florida Regional Water Supply Plan (NFRWSP) that covers 14 counties in North Florida counties, including the City of Green Cove Springs. The data and analysis provided in this plan supports the requirement for the City to develop a WSFWP that is consistent with the NFRWSP.

This plan addresses the planning period of 2025-2045. The work plan will be adopted by reference into the City's Comprehensive Plan and will be updated as the SJRWMD governing board approves updated regional water supply plans that affects the City.

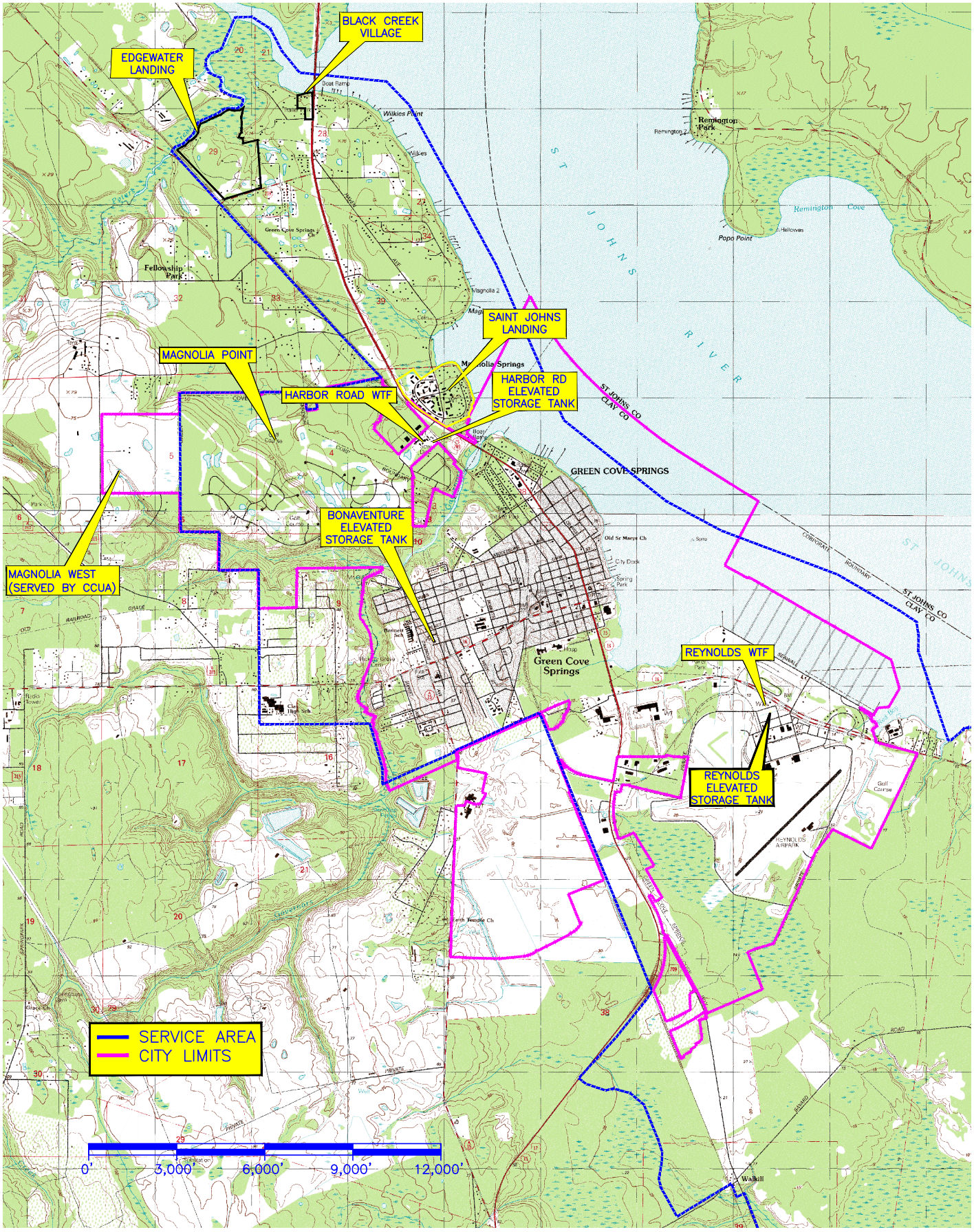
2.0 BACKGROUND

The City of Green Cove Springs ("City") is located on the St. Johns River in Clay County, Florida and lies at the crossroads of State Road 16 and U.S. Highway 17, approximately 30 miles south of the City of Jacksonville, Florida. The City owns and operates two permitted Water Treatment Facilities (WTF). The Harbor Road WTF (HRWTF) generally serves Magnolia Point, elevated areas along Randall Road to SR 16 at Clay High School, and customers North of Harbor Road along U.S. Highway 17. The Reynolds WTF (RWTF) is located toward the south end of the City and serves the majority of the core city and Reynolds Industrial Area. The two WTFs are interconnected via distribution piping that is connected to three (3) separate elevated storage tanks (EST). The HRWTF includes two hydraulic control valve stations that isolate portions of the distribution system from the ESTs to ensure high-pressure service to the elevated regions of Magnolia Point and Randall Road is maintained but also allow the HRWTF to pump finished water to the larger distribution system when the control valves are open. The City's Utility Service Area and municipal limits with water treatment component locations are shown in **Figure 2-1**, and **Figure 2-2** depicts the general system configuration.

The City's future water demand requirements and associated Floridan Aquifer well withdrawals are anticipated to be largely impacted by the Reynolds Industrial Parcel Redevelopment.

This report outlines the projected water demands associated with general growth estimations within the City's Service Area and general review of historical water use trends.

SCALE: 1" = 4,500'



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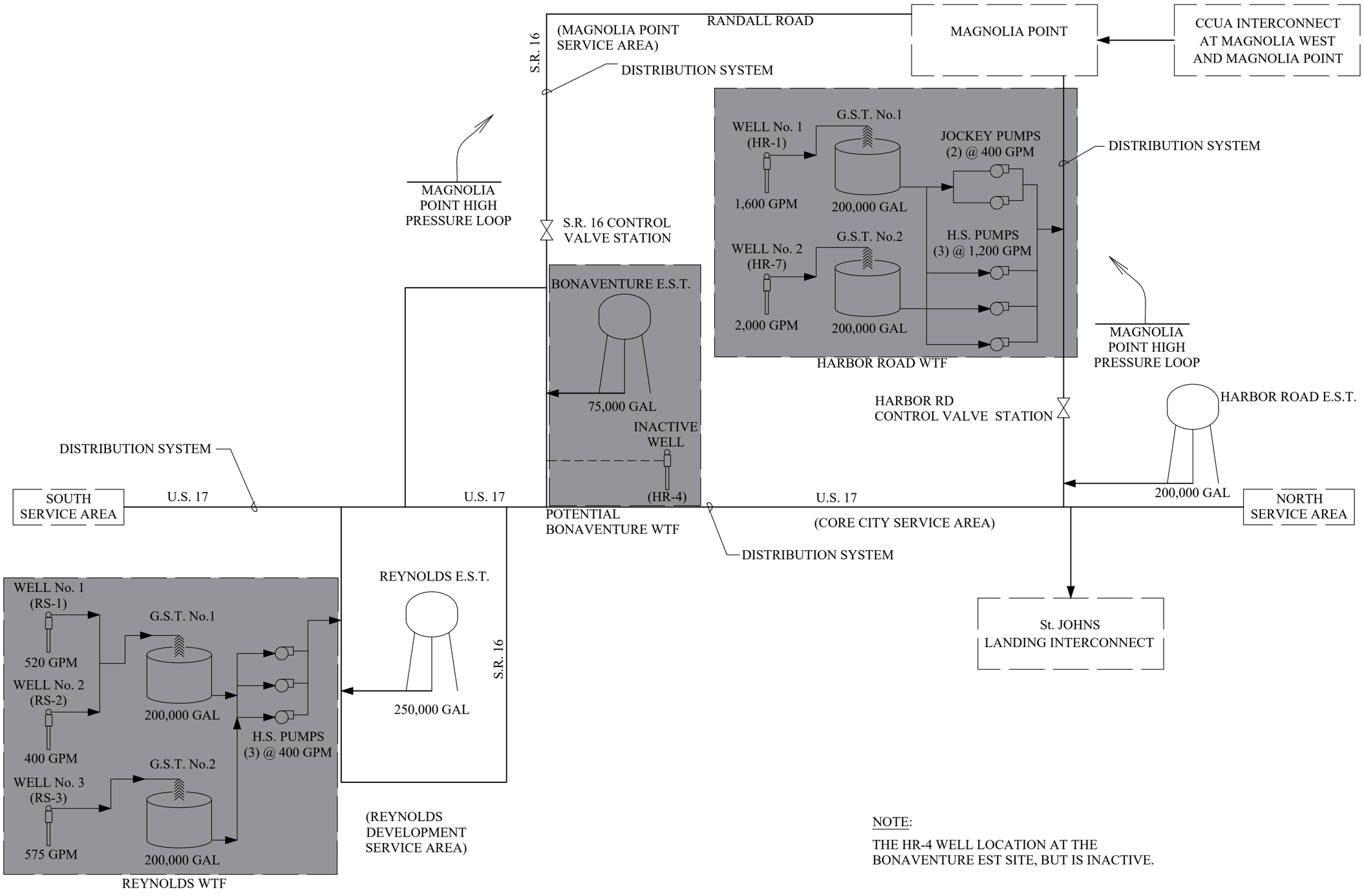
CITY OF GREEN COVE SPRINGS
Water Facilities Work Plan
Overall Service Area Map
Clay County, Florida

FIGURE 2-1
May 2025
Project No. 8905-19-1



NOTE:

THE HR-4 WELL LOCATION AT THE BONAVENTURE EST SITE, BUT IS INACTIVE.

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CITY OF GREEN COVE SPRINGS
Water Facilities Work Plan
Water System Schematic Layout
Clay County, Florida

FIGURE
2-2
May 2025
Project No.
8905-19-1

3.0 DATA AND ANALYSIS

The U.S. 2010 Census listed the City's population at 6,908 persons, the 2020 Census counted 9,786 persons, and the University of Florida Bureau of Economic and Business Research's ("BEBR") Year 2024 estimate is 10,270 persons. From 2010 to 2020, the population growth was approximately 4.2% per year, while the more recent trend is approximately 1.2% per year (2020-2024). These population figures are limited to the City's corporate limits. The City also serves customers outside of the City Limits within unincorporated areas of Clay County. The largest growth sectors have been the northern portions of the City's Utility Service Area. Electric, water, and wastewater services are provided by the City and the electric service area varies from the water and sewer service area limits. The City also implemented a Reclaimed Water Service Area (RWSA) in 2015/2016 that focuses on future growth areas as well as existing locations within the City that have more significant irrigation demands. The RWSA is located within the City's existing Utility Service Area, but is a subset of the overall area whose limits will be reviewed in more detail in **Section 6.0**. The electrical and wastewater systems are not reviewed as part of this Work Plan, but the Build-Out Study and previous reports completed by Mittauer & Associates, Inc. (e.g., 2016 Reclaimed Water System Master Plan, 2018 Water System Master Plan, etc.) include more detailed discussions on future demands for those utilities. The water service area ("Service Area") encompasses approximately 6.77 square miles. The City limits and Service Area boundaries differ from one another, and the respective limits were shown in **Figure 2-1**. The sub-areas and system components within the overall service area boundaries are also presented in this figure.

3.1 Existing System

The City owns and operates a Water System that interconnects two water treatment facilities, Reynolds Water Treatment Facility (RWTF) and Harbor Road Water Treatment Facility (HRWTF), through distribution system piping and three elevated storage tanks. The Water System's components are further detailed into the following major subsystems:

- Raw Water Production System: This system is comprised of three production wells at the RWTF and two production wells at the HRWTF. An additional well is located at the Bonaventure elevated storage tank site, but this facility remains offline at this time.

- Water Treatment System: Both WTFs have cascading aerators for sulfide removal with ground storage facilities and chlorination systems with high service pumping systems to meet the City's water quality requirements and water system demands. The HRWTF generally serves Magnolia Point and elevated areas along Randall Road to SR 16 at Clay High School, while the RWTF is located toward the south end of the City and serves the majority of the core city and customers to the north.

- Elevated Storage System: A total of three elevated storage tanks (EST) maintain pressure on the distribution system and provide additional storage to address peak demands as well as fire suppression reserves. The RWTF and HRWTF each have one elevated storage tank ("Reynolds EST" and "Harbor Road EST"), and another tank is located on Bonaventure Road near SR 16 ("Bonaventure EST"). The various tanks are set at differing elevations, which complicate operations and those complications are discussed further herein.

- Distribution System: Interconnecting the aforementioned systems are distribution piping varying in size from 2-inch to 16-inch diameters with valves, hydrants, and fittings to provide potable water to the City's customers as well as providing a fire suppression system. The City also maintains a high-pressure loop to serve the Magnolia Point development that sits at a higher elevation than the rest of the City. Two control valve stations linked to the Harbor Road WTF high service pumps maintain pressure on this system. One control valve station is located at the HRWTF site, and the other is located along SR 16 near the Clay High School.

The City is also interconnected with a small development adjacent to the HRWTF called St. Johns Landing. This development was originally part of Navy housing, when the Reynolds Port facilities were a Navy shipyard. St. Johns Landing currently pumps all of their wastewater to the City's Harbor Road Wastewater Treatment Facility, but provides their own potable water system via an on-site well and EST. The City has a potable water interconnect, but this connection is only utilized for emergency supply conditions.

Another interconnect was completed with the Clay County Utility Authority (CCUA) just west of Magnolia Point. This connection was completed to increase service pressure within elevated areas of the Magnolia Point development that

experienced lower service pressures during peak hour demands typically related to irrigation.

These various systems were depicted in the diagram provided as **Figure 2-2**.

3.2. Treatment Facilities

3.2.1. Harbor Road WTF: The HRWTF has the following critical components:

- Two groundwater production wells (Well No. 1 - 1,600 gpm and Well No. 2 - 2,000 gpm); three high service pumps (HS Pump 1 through 3 - 1,200 gpm/pump); two jockey pumps (Pump 1 and 2 - 400 gpm/pump); and two ground storage tanks (200,000 gallons/each).

- The HRWTF Firm Capacity is limited on a maximum daily flow (MDF) basis of 1.36 MGD (GST volume limiting) and peak hourly flow basis (PHF) of 1,667 gpm (GST limiting). An additional GST is needed at the Harbor Road site based on current peak hourly flow demands.

- The maximum daily flow peaking factor is approximately 2.10, and current peak hour flows can approach or exceed 2,000 gpm (2.88 MGD-PHF).

- As Magnolia Point has built-out, irrigation demands can lead to reduced service pressures. The City has begun to address this dynamic by coordinating with CCUA to complete an interconnect with CCUA's Peter's Creek WTF Service Area at the westerly boundary of Magnolia Point and Magnolia West at Medinah Lane.

Table 3-1 summarizes the HRWTF components.

TABLE 3-1 HARBOR ROAD WTF COMPONENT SUMMARY	
Unit	**Description**
Well No. 1[a] SJRWMD ID = HR-1 (Raw Water Pump)	Well Total Depth: 1,148' (bls) Well Casing Diameter: 16" Well Casing Depth: 750' (bls) Well Capacity: 1,600 gpm (2.30 MGD) Well Motor Size: 40 Hp
Well No. 2[a] SJRWMD ID = HR-7 (Raw Water Pump)	Well Total Depth: 1,000' (bls) Well Casing Diameter: 16" Well Surface Casing Depth: 360' (bls) Well Capacity: 2,000 gpm (2.88 MGD) Well Motor Size: 60 Hp
Jockey Pump No. 1 and No. 2	Capacity: 400 gpm @ 165' TDH (71 psig) Motor Size: 30 Hp
High Service Pumps No. 1 through No. 3	Capacity: 1,200 gpm @ 165' TDH (71 psig) Motor Size: 75 Hp
Chlorination System	Chlorine Analyzer Two 550 Gallon HDPE Double-Walled Hypochlorite Storage Tanks Two Hypochlorite Chemical Metering Pumps for Well No. 1 and Two Hypochlorite Chemical Metering Pumps for Well No. 2
Instrumentation and Control System	Magnolia Point High Pressure Indicator HR EST Pressure Indicator One (1) 16-inch Turbine Finished Water Meter Data Flow System (DFS) SCADA Control Hydraulic Control Valves
Auxiliary Power System	300 kW Auxiliary Generator with 48 hour Steel Diesel Fuel Tank capacity for Generator
HR GST No. 1 (Finished Water Storage)	200,000 gallon Pre-Stressed Concrete Storage Tank 2,600 gpm Cascade Aerator Finished Floor Elevation (FFE) = 21.30' High Water Level (HWL) = 34.88'

TABLE 3-1 (cont.) HARBOR ROAD WTF COMPONENT SUMMARY	
Unit	**Description**
HR GST No. 2 (Finished Water Storage)	200,000 gallon Pre-Stressed Concrete Storage Tank 2,600 gpm Cascade Aerator FFE = 21.30' HWL = 34.88'
HR EST (Finished Water Storage)	200,000 gallon Steel Elevated Storage Tank Grade Elevation = 23.5' Bottom Bowl Elevation = 119.3' (41.5 psi) High Water Elevation = 147.3' (53.6 psi)
FDEP Permitted Capacity	2.304 MGD (MDF)
Operating Category & Class	5C (see category and class rating requirements in Rule 62-699.310(2)(e), F.A.C.)

a: Bonaventure EST has an out-of-service well (HR-4) that is a 10" production well with 425' of casing and 65' of total depth.

3.2.2. <u>Reynolds WTF</u>: The RWTF has the following critical components:

- Three groundwater production wells (Well No. 1 - 520 gpm, Well No. 2 - 400 gpm, and Well No. 3 - 575 gpm); three high service pumps (HS Pump 1 thru 3 - 400 gpm/pump); and two ground storage tanks (200,000 gallons/each). All three wells are dated with limited capacities.

- The RWTF Firm Capacity is limited on a: maximum daily flow (MDF) basis of 1.15 MGD (HS Pumping capacity limiting); and peak hourly flow basis (PHF) of 1,200 gpm (HS Pumping capacity limiting).

- The maximum daily flow peaking factor is approximately 1.5, and current peak hour flows can approach or exceed 800 gpm.

- The reduction of peaks at the RWTF in comparison to the HRWTF is due to the amount of elevated storage on the Reynolds 'side' of the distribution system. This value would drastically change if the ESTs were removed from service and the City relied on ground storage for system reliability.

- FDEP reviews the City's Water System in its entirety since the different components are interconnected. However, the RWTF would not provide sufficient service pressure should the HRWTF come offline, but the HRWTF could back-up the RWTF.

Table 3-2 summarizes the RWTF components.

TABLE 3-2 REYNOLDS WTF COMPONENT SUMMARY	
Unit	**Description**
Well No. 1 SJRWMD ID = RS-1 (Raw Water Pump)	Well Capacity: 520 gpm (0.75 MGD) Well Motor Size: 10 Hp *Existing well construction information is not available*
Well No. 2 SJRWMD ID = RS-2 (Raw Water Pump)	Well Capacity: 400 gpm (0.58 MGD) Well Motor Size: 7.5 Hp *Existing well construction information is not available*
Well No. 3 SJRWMD ID = RS-3 (Raw Water Pump)	Well Capacity: 575 gpm (0.83 MGD) Well Motor Size: 7.5 Hp *Existing well construction information is not available*
High Service Pumps No. 1 through No. 3	Capacity: 400 gpm @ 153‘ TDH (66 psig) Motor Size: 40 Hp
Chlorination System	Hypochlorite Metering System
Instrumentation and Control System	One (1) 8-inch Turbine Finished Water Meter One (1) Chlorine Residual Analyzer One (1) True line Chart Recorder Radio Telemetry/Control with WTF No. 2 and WTF No. 3 and Total DFS SCADA System
Auxiliary Power System	250 kW Auxiliary Generator with (48 hour) Steel Diesel Fuel Tank for Generator
Reynolds GST No. 1 (Finished Water Storage)	200,000 gallon Poured-in-Place Concrete Storage Tank with Cascade Aerator
Reynolds GST No. 2 (Finished Water Storage)	200,000 gallon Poured-in-Place Concrete Storage Tank with Cascade Aerator
Reynolds EST (Finished Water Storage)	250,000 gallon Steel Elevated Storage Tank [Operable Volume = 200,000 gallon] Grade Elevation = 13.8' Bottom Bowl Elevation = 138.8' (54.1 psi) High Water Elevation = 157.5' (62.2 psi)
FDEP Permitted Capacity	1.728 MGD (MDF)
Operating Category and Class	5C (see category and class rating requirements in Rule 62-699.310(2)(e), F.A.C.)

Based on the analysis of the two treatment facilities, the limiting capacity for the City’s overall water treatment system is the raw water production system.

The capacity would be limited to approximately 4.457 MGD (MDF). However, the overall FDEP capacity for the combined system is 4.032 MGD (MDF). The difference between the two values is likely a result of looking at each facility independently and then summing the capacities from each facility.

In summary, **Table 3-3** recaps the firm capacity for each WTF.

TABLE 3-3
OVERALL FIRM CAPACITY REVIEW

Facility	Wells (MGD-MDF)	HS Pump (MGD-MDF)	GST (MGD-MDF)	EST + GST (MGD-MDF)	2022 ADF (MGD)
HRWTF	2.304	3.460	1.360	4.64	1.20
RWTF	1.325	1.152	1.360		
Combined Review	4.457	5.184	4.640		
FDEP Permitted Capacity	4.032				

The City's current aggregate MDF is approximately 2.40 MGD or 60% of the system's rated capacity.

The City's other limiting permit basis is through the St. Johns River Water Management District (SJRWMD), which regulates groundwater allocations. The City's Consumptive Use Permit (CUP) was renewed in 2024 and expires in 2044. The current permitted annual average withdrawals are a limiting value as listed as follows:

TABLE 3-4
2025 THROUGH 2044 SJRWMD CUP ALLOCATIONS

Year	CUP Allocation (MGD-AADF)[a]
2025	1.479
2030	1.479
2035	1.479
2040	1.479
2044	1.479

a: CUP allocations expire in 2044.

3.3 Growth Review and Projections

BEBR population projections are utilized to estimate future water demands. In addition, various dynamics affect population growth within and around the City. In particular, the following resources were reviewed, discussed, and analyzed regarding population growth potential and projections within the City's 2040 Urban Boundary:

- Reynolds Future Land Use Map ("FLUM") Amendment
- Clay County 2045 Comprehensive Plan
- City of Green Cove Springs 2045 Comprehensive Plan
- Florida Department of Transportation (FDOT) First Coast Expressway
- City of Green Cove Springs 2040 Urban Boundary
- City of Green Cove Springs Build-Out Study
- University of Florida Bureau of Economic and Business Research ("BEBR") Population Projections

The 2023 University of Florida's Bureau of Economic and Business Research (BEBR) population projections for Clay County are provided in **Table 3-5**. The percentage growth between each period is shown for a low-growth, medium-growth, and high-growth projection as well as an annualized value for average growth per year.

TABLE 3-5

2025 THROUGH 2050 CLAY COUNTY POPULATION PROJECTIONS[a]

	Low Growth		Medium Growth		High Growth	
Year	(Pop)	5-yr | Avg/yr (% Δ)	(Pop)	5-yr | Avg/yr (% Δ)	(Pop)	5-yr | Avg/yr (% Δ)
2020[a]	209,500	-------	223,400	-------	235,000	-------
2025	221,200	5.6 | 0.9%	235,400	5.4 | 1.1%	249,500	6.2 | 1.2%
2030	224,800	1.6 | 0.7%	249,800	6.1 | 1.2%	274,800	10.1 | 2.0%
2035	225,500	0.3 | 0.5%	261,400	4.6 | 0.9%	297,400	8.2 | 1.6%
2040	223,700	-0.8 | -0.2%	270,300	3.4 | 0.7%	316,900	6.6 | 1.3%
2045	220,800	-1.3 | -0.3%	277,700	2.7 | 0.5%	334,700	5.6 | 1.1%
2050	217,800	-1.4 | -0.3%	284,700	2.5 | 0.5%	351,600	5.0 | 1.0%

In **Table 3-5**, the percentage growth decreases for each of the three options but sustains larger growth through the near-term periods. For the purposes of this analysis, the 'medium-growth' projections will be utilized for the City. As noted above the City population based upon the 2020 census was 9,786 capita, but the City's Service Area extends beyond the City limits. For purposes of the analysis, the estimated population being served by the City's water system is based upon the provided potable water billing data which indicated 3,392 connections in August 2020 which corresponds to a total of 8,820 capita (assuming 2.6 capita/connection per SJRWMD modeling). Applying the 'Medium-Growth' criteria, the following population estimates are calculated for the City as shown in **Table 3-6.**

TABLE 3-6

2020 THROUGH 2050 CITY SERVICE AREA POPULATION PROJECTIONS

Year	Medium Growth (% Δ)	Medium Growth Population (capita)	Medium Growth Population (connections)[b]
2020[a]	--	8,778	3,376
2025	5.4%	9,303	3,578
2030	6.1%	9,862	3,793
2035	4.6%	10,319	3,969
2040	3.4%	10,670	4,104
2045	2.7%	10,964	4,217
2050	2.5%	11,240	4,323

a: Noted percentage changes are over a five-year period and are not annualized values.
b: Total residential connection projection

The SJRWMD also provides two population projections; one projection is from a "Parcel Projection Model" and the other projection is described as the "Utility Projection". **Table 3.7** summarizes the SJRWMD provided population projections.

TABLE 3-7

SJRWMD 2020 THROUGH 2045
CITY SERVICE AREA POPULATION PROJECTIONS

Year	Parcel Projection Model (capita)(% Δ)[a]	Parcel Model (connections)	Utility Projection (capita) (% Δ)[a]	Utility Model (connections)
2020[b]	8,820[b]	3,376	8,820[b]	3,376
2025	8,492 (-3.7%)[c]	3,266	7,920 (-10.2%)[c]	3,046
2030	8,492 (0.0%)	3,266	8,338 (6.1%)	3,207
2035	8,492 (0.0%)	3,266	8,474 (4.6%)	3,259
2040	8,883 (4.6%)	3,417	8,702 (3.4%)	3,347
2045	8,883 (0.0%)	3,417	8,702 (2.7%)	3,347

a: Noted percentage changes are over a five-year period and are not annualized values.
b: Per capita projections for 2020 were based upon actual potable meter account data and calculated assuming 2.6 capita per meter connection.
c: SJRWMD model projections are less than current connected service population.

As highlighted in **Table 3-7**, applying the City's current connection count with the SJRWMD anticipated household densities results in a current service population that exceeds the SJRWMD models. For purposes of projecting future service population, the BEBR medium growth projection was maintained.

Table 3-8 summarizes the various connection count projections.

TABLE 3-8

2020 THROUGH 2050 SERVICE AREA DWELLING UNIT PROJECTIONS[a]

Year	BEBR (ERU)	SJRWMD Parcel Projection (ERU)	SJRWMD Utility Projection (ERU)
2020	3,376	3,376	3,376
2025	3,578	3,266	3,046
2030	3,793	3,266	3,207
2035	3,969	3,266	3,259
2040	4,104	3,417	3,347
2045	4,217	3,417	3,347

a: ERU = 2.6 capita/unit.

The City's comprehensive plan contains the following policies to promote conservation and ensure the protection and availability of potable water:

- Well Field Protection (Policies 4.8.1 and 5.9.1)
- Public Facilities Planning (Policy 8.1.1)
- Protection of Aquifer Recharge Areas (Policy 5.9.1)
- Water Conservation (Policy 5.3.1)
- Reclaimed Water (Policies 4.5.4, 4.5.7, and 5.4.5)
- Well Head Protection (Policies 4.5.8 and 5.3.2)
- Level of Service (Policies 4.1.1, 4.6.1, 4.6.2, and 8.3.1)

4.0 CONSUMPTIVE USE PERMIT

The City of Green Cove Springs withdraws groundwater from the Upper and Lower Floridan aquifers under authorization of SJRWMD Consumptive Use Permit (CUP) 499 issued September 3, 2024. CUP 499-6 authorizes the use of a daily average of 1.479 million gallons per day (MGD) of groundwater for public supply use, including household, commercial, irrigation, water utility and unaccounted use through 2044.

The authorized withdrawal of groundwater in CUP 499-6 was based on the data provided in **Table 4-1.**

TABLE 4-1

SERVICE AREA PER CAPITA RESIDENTIAL WATER USE PROJECTIONS

Year	Projected Population	Projected Per Capita Usage (gpd)	Projected Demand (MGD)
2025	9,303	133	1.245
2030	9,862	134	1.324
2035	10,319	134	1.388
2040	10,670	134	1.438
2045	10,964	134	1.479

TABLE 4-2

SERVICE AREA PROJECTIONS - AVERAGE DAILY WATER USE

Year	Residential Water Use (MGD)	Commercial Water Use (MGD)	Irrigation (MGD)	Water Utility Use (MGD)	Water Losses (MGD)	Raw Water Demand (MGD)
2025	0.643	0.244	0.316	0.0035	0.036	1.244
2030	0.681	0.258	0.340	0.0035	0.039	1.322
2035	0.713	0.270	0.359	0.0035	0.040	1.385
2040	0.737	0.279	0.374	0.0035	0.042	1.436
2045	0.757	0.287	0.387	0.0035	0.043	1.478

5.0 CAPACITY, SUPPLY, AND DEMAND PROJECTIONS

5.1 Water Capacity and Supply

The six Floridan aquifer supply wells currently serving the City's public water supply system with an operating capacity of 8.27 MGD are adequate to meet water demands well past the 20-year planning horizon of this plan.

The NFRWSP did not identify the City as an area with water shortages through the 2045 planning horizon provided water conservation, implementation of management measures and implementation of water resource and water supply development projects identified in the NFRWSP are completed. The NFRWSP findings indicate that the City may continue utilizing Floridan aquifer as its source of potable water. No alternative water supply source was identified, therefore the City will continue conservation efforts and efforts to maximize the amount of reclaimed water available for reuse.

5.2 Historical Water Demand

Table 5-1 provides historical water production and population data over the past five years. Water production over the past five years has increased from an annual average daily flow of 2.1 MGD in 2014 to 2.32 MGD in 2018, an increase of 10%.

TABLE 5-1
HISTORICAL WATER PRODUCTION

Year	Average Annual Daily Production (MGD)	Population Served
2019	1.147	8,364
2020	1.266	8,778
2021	1.172	9,025
2022	1.248	9,194
2023	1.026	10,130
2024	1.169	10,270

5.3 Demand Projections

The water demand projections derived utilized for Consumptive Use Permit 499 renewal range from 1.245 MGD in 2025 to 1.479 MGD at the end of the 2045 planning period (see **Table 5-2** below). The population in the utility service area will primarily grow through infill and redevelopment and is predicted to be 10,319 by 2035 and flattening out at 10,964 by 2045. The City of Green Cove Springs has adequate water supply over this planning period with a current production, treatment and distribution capacity of 4.03 MGD.

TABLE 5-2
SERVICE AREA SUMMARY TABLE

	2025	2030	2035	2040	2045
Projected Population	9,303	9,862	10,319	10,670	10,964
Projected Water Demand	1.244	1.322	1.385	1.436	1.479
CUP Allocation	1.479	1.479	1.479	1.479	1.479
FDEP WTP Capacity (MDF Combined)[b]	4.03	4.03	4.03	4.03	4.03
FDEP Capacity (ADF)[a]	2.02	2.02	2.02	2.02	2.02

a: ADF capacity utilizes a 2.0 peaking factor.
b: Future capital improvements are anticipated to increase system capacity. The City is reviewing capital improvements to increase service capacities at the Harbor Road and Reynolds Water Treatment Facilities.

6.0 RECLAIMED WATER, CONSERVATION PRACTICES, AND SOURCE PROTECTION

6.1 Reclaimed Water

The City implemented various Reclaimed Water Service Areas (RWSA) in 2015/2016 that focused on delivering reclaimed water to future growth areas, as well as existing locations within the City that have more significant irrigation demands. The resultant service areas were identified as North, West, and South. The RWSAs are located within the City's existing Utility Service Area but are specifically targeted for reclaimed water services detailed herein. **Figure 6-1** illustrates the current RWSA locations.

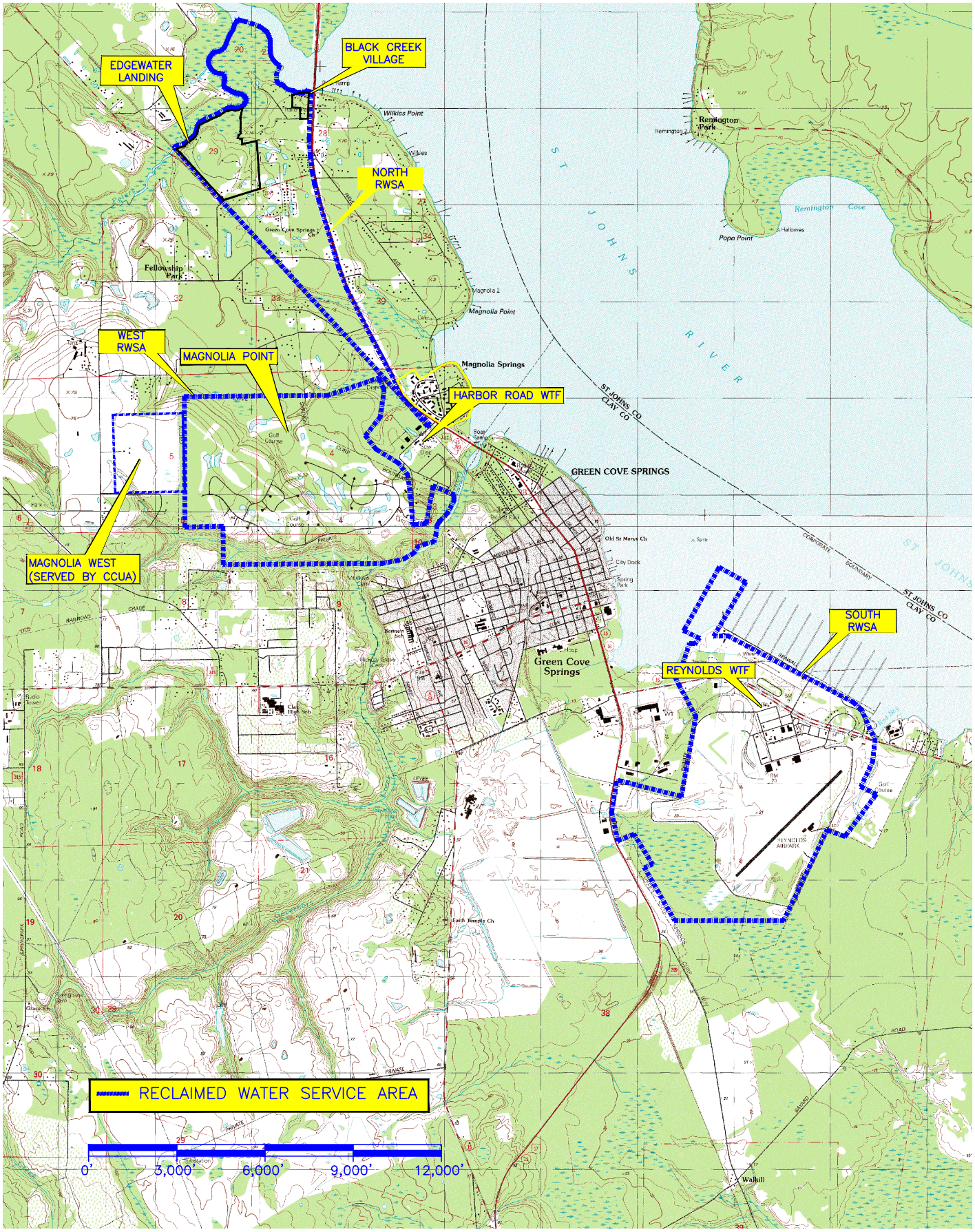
Both water reclamation facilities (WRFs) have capabilities to produce public-access reclaimed water ("reuse"), but only the Harbor Road WRF (HRWRF) has an existing bulk-use customer located at the Magnolia Point Golf Course. In 2020, the HRWRF completed Phase 1 construction, which included construction of a reclaimed water storage tank and high-service reclaimed water pumps, to allow for "retail" reclaimed water service. Phase 2 includes construction completion of all the upstream components to provide advanced wastewater (AWT) capabilities. This system is slated for completion by September of 2025.

Associated with these improvements, reclaimed water distribution systems were extended to and within Black Creek Village and Edgewater Landing. A portion of Magnolia Point (Phase 8) has an existing reclaimed water distribution system. The reclaimed water system provides the City with the following benefits:

- Reclaimed water is a commodity and provides a revenue stream, in comparison to other effluent disposal options that have no revenue capabilities;
- Maximizing reclaimed water use decreases use of the Floridan Aquifer, thus limiting withdrawals for non-essential water use;
- Extending reclaimed water infrastructure into Magnolia Point enhances opportunities to create interconnects with the CCUA reclaimed water infrastructure; and
- Serving irrigation demands from the reclaimed water system will 'offload' large hydraulic peak demands from the potable water system, allowing for more consistent service pressures.

Black Creek Village and Edgewater Landing have been constructed with reclaimed water distribution piping. However, the completion of the HRWRF has limited the ability to provide public-access reclaimed water to these

SCALE: 1" = 4,500'



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CITY OF GREEN COVE SPRINGS
Water Supply Facilities Work Plan
Reclaimed Water Service Area
Clay County, Florida

FIGURE 6-1
May 2025
Project No. 8905-19-1

developments. Following completion of the HRWRF improvements, anticipated to be complete in late 2025, the development will be able to switch from potable water to reclaimed water for irrigation purposes. Magnolia Point consists of 980 lots and is largely built out. Excluding Phase 8, the development lacks reclaimed water distribution piping; however, funding applications have been completed to allow for the design and construction of a reclaimed water distribution system. Due to anticipated capital costs to extend reclaimed water into Magnolia Point, significant grant funding will be required to ensure the improvements are cost effective.

Table 6-1 outlines historical irrigation demands from 2019 through August 2023 for the three developments.

TABLE 6-1
HISTORICAL IRRIGATION DEMANDS

Calendar Year		Magnolia Point	Black Creek Village	Edgewater Landing	Total
2019	Total Use (Gallons)	71,434,637	4,703,740	11,105,300	87,243,677
	Number of Accounts	545	47	68	660
	Average Daily Use (Gallons/ERU/Day)	379	273	446	362
2020	Total Use (Gallons)	70,160,981	7,415,720	23,202,680	100,779,381
	Number of Accounts	533	79	205	817
	Average Daily Use (Gallons/ERU/Day)	360	256	308	338
2021	Total Use (Gallons)	73,133,639	4,199,930	19,566,430	96,899,999
	Number of Accounts	547	69	159	775
	Average Daily Use (Gallons/ERU/Day)	388	167	337	343
2022	Total Use (Gallons)	76,906,341	2,692,520	18,269,760	97,868,621
	Number of Accounts	509	79	164	752
	Average Daily Use (Gallons/ERU/Day)	414	93	304	357
2023 (Partial)	Total Use (Gallons)	51,970,150	1,602,030	12,422,580	65,994,760
	Number of Accounts	485	57	168	710
	Average Daily Use (Gallons/ERU/Day)	441	116	304	384

Average historic irrigation use for the three developments from 2019 through August 2023 indicates an annual consumption of 96,166,380 gallons.

As discussed in previous sections, the City will be replacing the current Black Creek Village and Edgewater Landing potable irrigation demands with reclaimed water as soon as the Harbor Road WRF, Phase 2 construction project is completed and operational. The Magnolia Point conversion to reclaimed water will be dependent on grant funding amounts. Financing the improvements without sufficient grant dollars will have a significant impact on the City's rate structure requiring large base and/or use rates to ensure sufficient revenue for debt service payments.

6.2 Conservation Practices

The City of Green Cove Springs updated the Water Conservation Plan in 2024 as part of the CUP renewal application. This plan identified the following practices that will be continued by the City in a continued effort to reduce daily water withdrawals:

- Water Conservation Public Education Program: This ongoing program is conducted in conjunction with the City's Environmental Stewardship Committee. The goal of this program is a 15% per capita water use reduction. The program includes website information, conservation related flyers & documents disseminated to the City's water customers, etc.

- Outdoor Water Use Reduction Program: The City has adopted each of the provisions set forth in Rule 40C-2.042(2)(a), FAC, which regulates small irrigation uses below consumptive use permit thresholds, encourages and promotes the use of reclaimed water for irrigation, has incorporated Florida Friendly landscape design criteria into City code and has enacted a fertilizer ordinance.

- Rate Structure: The City maintains an inclining block rate structure to encourage water conservation.

- Water Loss Reduction Program: Water audits are conducted annually; the City has an ongoing meter replacement program to replace or repair older water meters and will resume annual testing of 3-inch or larger water meters.

- Indoor Water Use Conservation: The City provides educational pamphlets to its customers and has adopted water conservation regulations requiring water conserving fixtures and toilets in its plumbing code.

Although per capita water use within the City's grid has been relatively constant in recent years, additional water conservation policies are not anticipated at this time. As the effectiveness of the updated Water Conservation Plan is benchmarked, adjustments will be made to enhance water conservation efforts and establish new or modified best management practices as appropriate in an effort reduce water withdrawals on a per capita basis.

6.3 Source Protection

Wellfield protection measures are authorized by Comprehensive Plan Policy 4.5.8 and 5.3.2 and are encoded in the City's land development regulations. These regulations require a 500 ft setback from any potable water supply well. These wellhead protection areas are mapped to assist the City in safeguarding its ground water resources. Any new potable water well will have its associated wellhead protection area mapped as well. In addition, areas that may be identified as potential recharge areas will be coordinated with Clay County and the SJRWMD (Comprehensive Plan Policies 4.8.1 and 5.9.1).

Historically, many residences within the City's service area obtained potable water via onsite artesian wells. Over the years, the majority of these wells have been capped or grout filled. No remaining uncontrolled free flowing artesian wells have been identified in the City's service area. If such a well is found, the City will work with the property owner to properly abandon the well.

The City remains committed to protecting groundwater resources, and additional changes to the City's Comprehensive Plan Conservation Element are not anticipated at this time.

7.0 NFRWSP COORDINATION

7.1 Reclaimed Water

The City coordinated with the SJRWMD during their 2024 CUP renewal. As part of that process, the City highlighted their reclaimed water system expansion goals that will begin as soon as the HRWRF Phase 2 construction is completed in 2025. As part of that effort, reclaimed water service to Black Creek Village and Edgewater Landing will begin which will reduce current potable water consumption utilized for irrigation purposes. The City is also completing design related activities to extend reclaimed water into the Magnolia Point subdivision, which will include separate funding applications for construction. Extension of reclaimed water service into this area may be completed in several phases with specific timing being dependent on funding.

These projects with associated potable water reductions were highlighted in the City's CUP Renewal application materials, and document the City's initiatives to meet the NFRWSP water conservation and alternative water supply goals.

8.0 CAPITAL IMPROVEMENT PROJECTS

The City has sufficient water supply capabilities to meet the planning period's projected demand requirement. Capital improvement projects that have been identified to help maintain and improve the City's potable water system with respect to conservation, water loss reduction, pressure, and quality over the next five years are provided in **Table 8-1**.

TABLE 8-1
WATER CAPACITY & STORAGE CAPITAL IMPROVEMENT PROJECTS (FY25-FY29)

Project Description	Estimated Cost
Harbor Road WTP - GST 3 [Construction]	$1,100,000
Reynolds WTP Upgrades [Design, Permitting, Construction]	$6,200,000
Magnolia Point Reclaimed Water Extension	$13,500,000