

**City of Flagler Beach**  
**2035 COMPREHENSIVE PLAN**  
**Data and Analysis**

## **CHAPTER A - FUTURE LAND USE SUPPORTING DATA AND ANALYSIS**

### **General Setting**

The Future Land Use Element is prepared to evaluate the strengths and weaknesses of the City of Flagler Beach as it is today and to offer estimates of the probable growth, or lack thereof, of the City for the next planning period. This analysis supports the City's land planning activities.

The City of Flagler Beach remains relatively built-out as a small municipality of just over four square miles located in southeastern Flagler County along the Atlantic Coast. Two arterial roads exist within the City of Flagler Beach. The first is A1A, which passes through the City running north-south and is located directly west of the barrier dunes. The second is SR 100, which runs east-west; its eastern terminus is an intersection with A1A. To the north is unincorporated Flagler County and the Town of Beverly Beach, to the east is the Atlantic Ocean, to the west is the Intracoastal Waterway, unincorporated Flagler County and the City of Palm Coast, and to the south is unincorporated Volusia County. There are some wetlands along the Intracoastal Waterway preserved for environmental reasons.

### **Population Forecasts**

A population forecast provides estimates of the most likely future trends in population size and in demographic indicators such as population distribution by age and sex. A forecast is based on the current understanding of the roles played by various factors affecting population growth and on an appropriate, accepted methodology for calculating the effects of future changes in these factors. A variety of methodologies are available for making forecasts, ranging from the simple extrapolation of past trends to complex multiple-equation models involving dozens of demographic, socioeconomic, and environmental variables. In practice, most projections made in recent years rely on the so-called cohort-component method, which computes future demographic trajectories implied by assumptions (based on demographic transition theory) about future trends in birth, death, and migration rates.

The extrapolation technique (curve fitting) is a simplistic model that uses past gross population trends to project future population levels. This essentially means using historical values to determine the best possible projection of population for future years. A variety of methods were used and these are described in more detail below.

Table A-1 reports the census data for the City of Flagler Beach for the years 1980 through 2010. The population statistics are reported in ten-year increments.

**Table A-1 City of Flagler Beach Census Data, 1980-2010**

Census Year	Population	Change	
1980	2,208	-	-
1990	3,818	1,166	72.91%
2000	4,954	1,106	29.75%
2010	4,484	-442	-9.48%

Source: BEBR, Florida Estimates of Population

**Forecasting Methodologies and Results**

Table A-2 report BEBR population estimates and projections for 2010, 2018, and five-year increments thereafter through 2045.

**Table A-2 City of Flagler Beach – Population Projections**

FLAGLER BEACH - POPULATION PROJECTIONS						
Year	Flagler Beach <sup>2</sup> Projection Methods			Flagler Beach <sup>2</sup> Population Forecast		
	Linear <sup>3</sup>	SOG <sup>4</sup>	Average	Permanent Residents <sup>5</sup>	Seasonal Residents <sup>6</sup>	Peak Seasonal Population <sup>7</sup>
2010	4,484	4,484	4,484	4,484	1,505	5,989
2018	4,714	4,744	4,729	4,729	1,587	6,316
2020	4,771	4,862	4,817	4,817	1,617	6,434
2025	4,915	5,136	5,026	5,026	1,687	6,713
2030	5,058	5,372	5,215	5,215	1,750	6,965
2035	5,202	5,589	5,395	5,395	1,811	7,206
2040	5,345	5,784	5,565	5,565	1,868	7,433
2045	5,489	5,973	5,731	5,731	1,923	7,654

Sources: BEBR population estimates, and 2018 BEBR population projections (Florida Population Studies, Bulletin 180, January 2018)

**NOTES:**

- Includes population in Flagler and Volusia Counties, but the Volusia County percentage is only about 1% of the City's total population.
- The Linear Method assumes that future growth in the City of Flagler Beach will be similar to the average annual growth for the City over the base period (2010-2017).
- The Share of Growth (SOG) Method assumes that future growth in Flagler Beach will be similar to its percentage of the County's growth over the base period (2010-2017).
- BEBR's forecast of permanent residents is the average of the linear and SOG methods.
- The seasonal resident estimates and projections are based on the ratio of the units vacant for seasonal, recreational or occasional use to occupied units from the 2010 Census.
- The Peak Seasonal Population is the Permanent Residents plus the Seasonal Residents. This is almost identical to the number of active residential electrical connections (x) the average household size. Note that this is likely to include some occasional users that are not seasonal residents.

## Flagler Beach Population Projections

The year 2000 reports a population of 4,954 people. It can be assumed that the years 1990 through 2000 is when the City experienced recent significant growth. With high migratory patterns and a significant population of non-residents and tourists, this increase in population is indicative of “snow birds” moving into Florida. Growth patterns experienced in Flagler County and neighboring jurisdictions lend to the dynamics of the City of Flagler Beach in this decade. However, the historical trends, the demographics and economic statistics suggest this decade was unusual and does not reflect the future growth trends realistically foreseeable in years 2020 and 2035 for the City of Flagler Beach. Additionally, the 2010 reported population of 4,484 was a decrease from the year 2000. This is largely due to the effects of the Great Recession.

By the year 2020, the population of the City of Flagler Beach is estimated to be 4,771 people and by 2035 it is estimated to be 5,202 people. Determining a method of extrapolation for projecting the population for the City is not simplistic. It is suggested that the City use the various methods above first by beginning with the simple linear regression method. Interpolation of the population can be used if there are anomalies in the data sets (as demonstrated in the Table above).

## Population and Housing

The City of Flagler Beach was incorporated in 1925 as a unique seaside community. To date, its charm and relatively small geographic size have remained. From 1990 to 2000, there was a substantial population increase, but that trend has reversed from 2000 to 2010 even though the greater Palm Coast Metropolitan Statistical Area (MSA) continues to increase in population. The City of Flagler Beach is the second largest incorporated community in Flagler County; only Palm Coast is larger (BEBR). Table A-3 shows the situation of households concerning the occupancy of their main residence, while Table A-4 identifies a basic feature of the housing inventory.

**Table A-3 Housing Occupancy**

<b>HOUSING OCCUPANCY</b>	
<b>Total housing units</b>	<b>3,888</b>
<b>Occupied housing units</b>	<b>2,331</b>
<b>Vacant housing units</b>	<b>1,557</b>
<b>Homeowner vacancy rate</b>	<b>1.5</b>
<b>Rental vacancy rate</b>	<b>9.4</b>

*Source: 2012-2016 American Community Survey 5-Year Estimates  
DP04 Selected Housing Characteristics*

**Table A-4 Housing Tenure**

<b>HOUSING TENURE</b>	
<b>Occupied housing units</b>	<b>2,331</b>
<b>Owner-occupied</b>	<b>1,795</b>
<b>Renter-occupied</b>	<b>536</b>
<b>Average household size of owner-occupied unit</b>	<b>2.08</b>
<b>Average household size of renter-occupied unit</b>	<b>1.96</b>

*Source: 2012-2016 American Community Survey 5-Year Estimates  
DP04 Selected Housing Characteristics*

### **Seasonal Population**

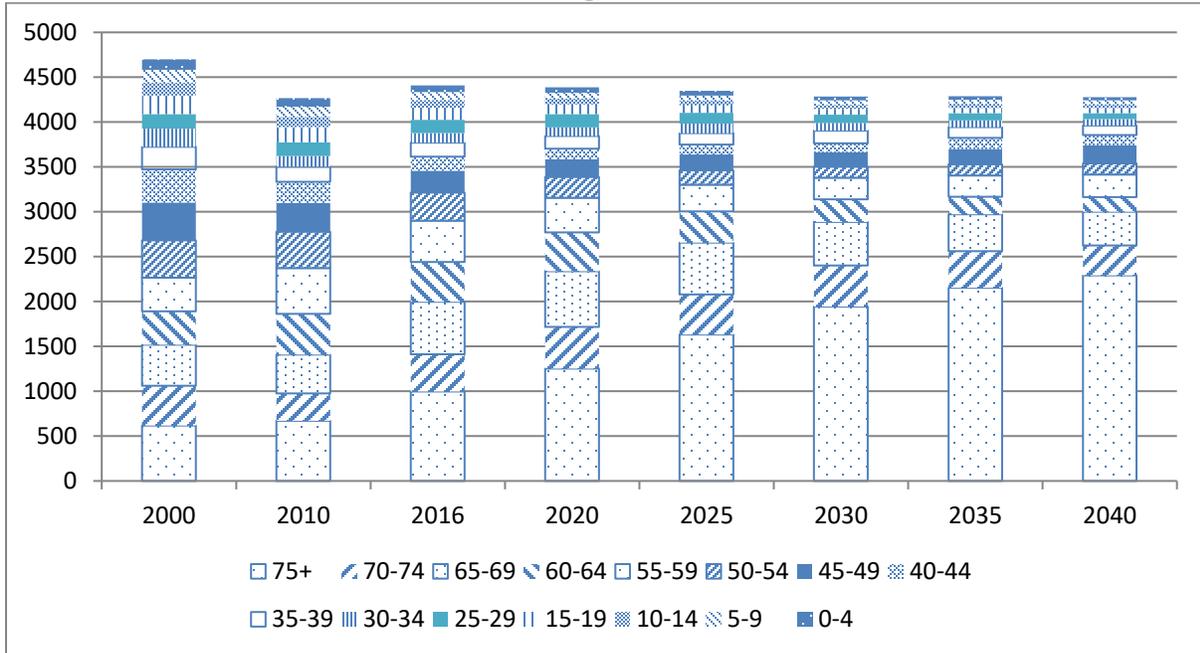
An historical census review of the vacant housing units within Flagler County shows seasonal fluctuation in housing units has been between 58% and 62%. The seasonal population was approximately 18% in 2010 (US Census, Occupancy and Unit rates). This percentage is consistent with other seasonal household adjustment information provided by the recent *East Central Florida Housing Demand, Supply and Need Methodology* submitted as part of the *Application for Development Approvals* for recent Developments of Regional Impact.

### **Sufficient Land Use Allocation and Infrastructure**

The City currently serves its population with central water and sewer facilities. The City has sufficient water supply and facility capacity to meet demand for the 10-year planning period. No significant population growth is forecasted; therefore infrastructure is determined to be adequate for the current planning period.

The City is experiencing a dramatic aging shift of its population. The number and percentage of persons older than 75 was 617 or 12.4% of the total population in the year 2000, increasing to a projected 2,292 or 52.7% of the total population in the year 2040. Persons 50-54 years old shrinks from 417 or 8.5% of the total population in the year 2000 to 124 or less than 3% of the total population in the year 2040. All of the age groups younger than 60 years old are in general decline. Figure A-1 represents the population projection by age from 2000 to 2040.

**Figure A-1**

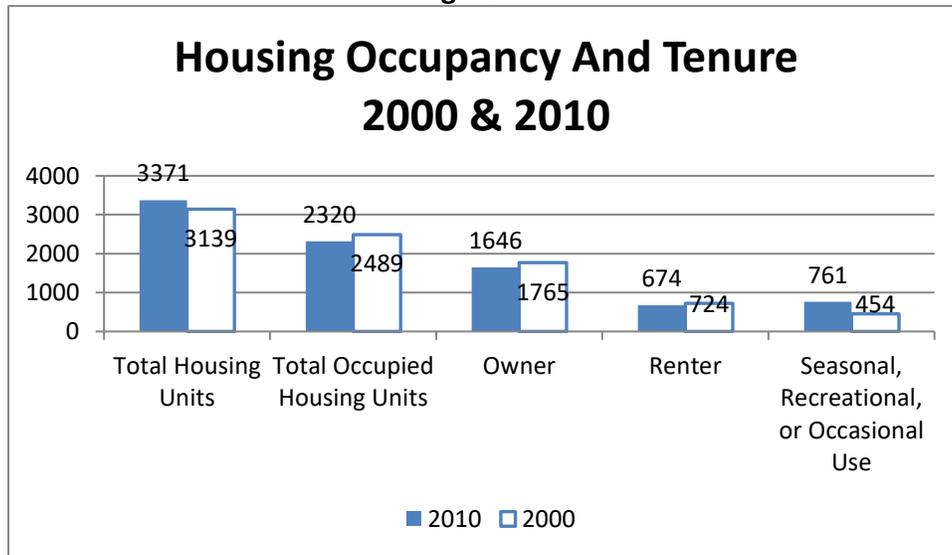


Source: Florida Housing Data Clearinghouse Population Projection by Age for 2000-2040 Results

**Population Characteristics**

This section compares the demographic characteristics of the City’s population for Year 2000 and Year 2010. Figure A-2 represents the occupancy and tenure within the city from 2000-2010

**Figure A-2**



Source: US Census - Table 11 Housing Occupancy and Tenure 2000 and 2010

Between 2000 and 2010, the number of total housing units increased, while the population decreased. The number of vacant housing units for seasonal, recreational or occasional use increased by 307 units up to 761 units of the 3,371 total number of units.

While the total number of units increased, the total numbers of total occupied, occupied rental and owner occupied units dropped, but the vacancy rate increased. Household size decreased for owners and increased for renters. Table A-5 represents this shift.

**Table A-5**

Average Household Size	Owner	Renter
2000	2.04	1.77
2010	1.93	1.86

*Source: US Census - Table 11 Housing Occupancy and Tenure 2000 and 2010*

### **Employment & Income**

The figure below shows the cohorts of Civilian Employed Population. The single largest cohort at 25% of the total of 1,870 workers is Educational Services and Health Care and Social Assistance, followed by Retail Trade at 21%. Figure A-3 shows the breakout of the employment sectors that residents of Flagler Beach are employed in, while Figure A-4 represents the distribution of income and benefits amongst residents.

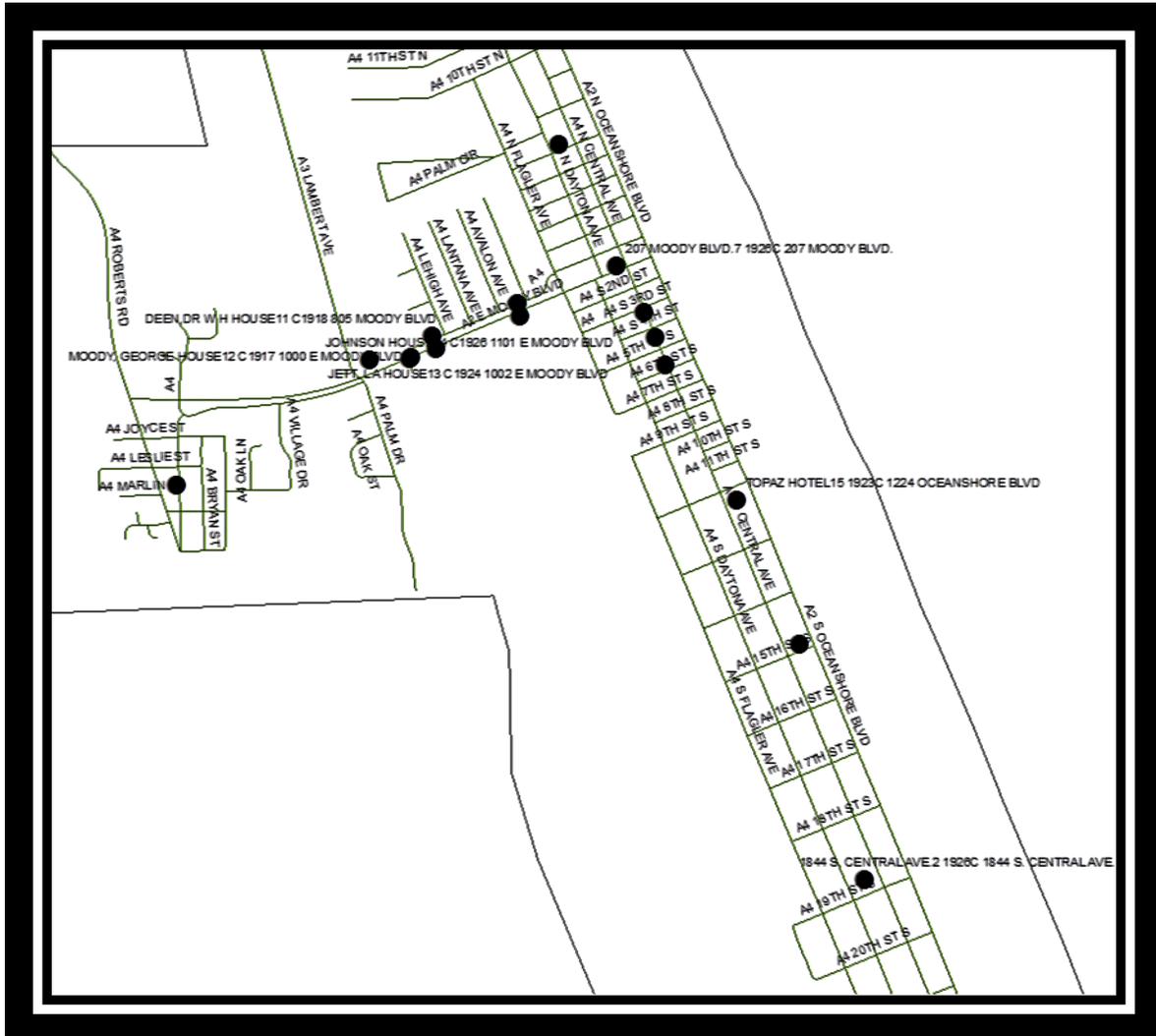
### **Historical and Archeological Sites**

The City of Flagler Beach has six structures identified in the Florida Master Site File Inventory of Historic Properties and identified in Table E-1. These properties are primarily residential, constructed in the 1920's. The remainder of the 15 structures (dots) on the map indicates structures that qualify for designation, but have not been designated to date.

**Table A-6: Historical Structure Inventory**

Address/ Location	Date	Style
1440 A1A South	c. 1926	Masonry Vernacular
512 S. Central Ave	c. 1926	Frame Vernacular
312 S. Central Ave	c. 1920	Bungalow
402 S. Central Ave	c. 1926	Masonry Vernacular
701 N. Central Ave	c. 1926	Frame Vernacular
301 Connecticut Rd.	c. 1926	Bungalow

Figure A-3: Location of Historical Sites in Flagler Beach.



The Florida Department of State, Division of Historic Resources was contacted to determine if any known or archeological sites were listed with them. A search of their records revealed a total of forty four (44) sites. Due to the fact that archaeological sites are sensitive, information identifying the location of archaeological sites is exempt from the public records law, under Florida Statute 267.135.

### Employment & Income

The figure below shows the cohorts of Civilian Employed Population. The single largest cohort at 25% of the total of 1,870 workers is Educational Services and Health Care and Social Assistance, followed by Retail Trade at 21%. Figure A-4 shows the breakout of the employment sectors that residents of Flagler Beach are employed in, while Figure A-5 represents the distribution of income and benefits amongst residents.

Figure A-4: Civilian Employed Population Breakout

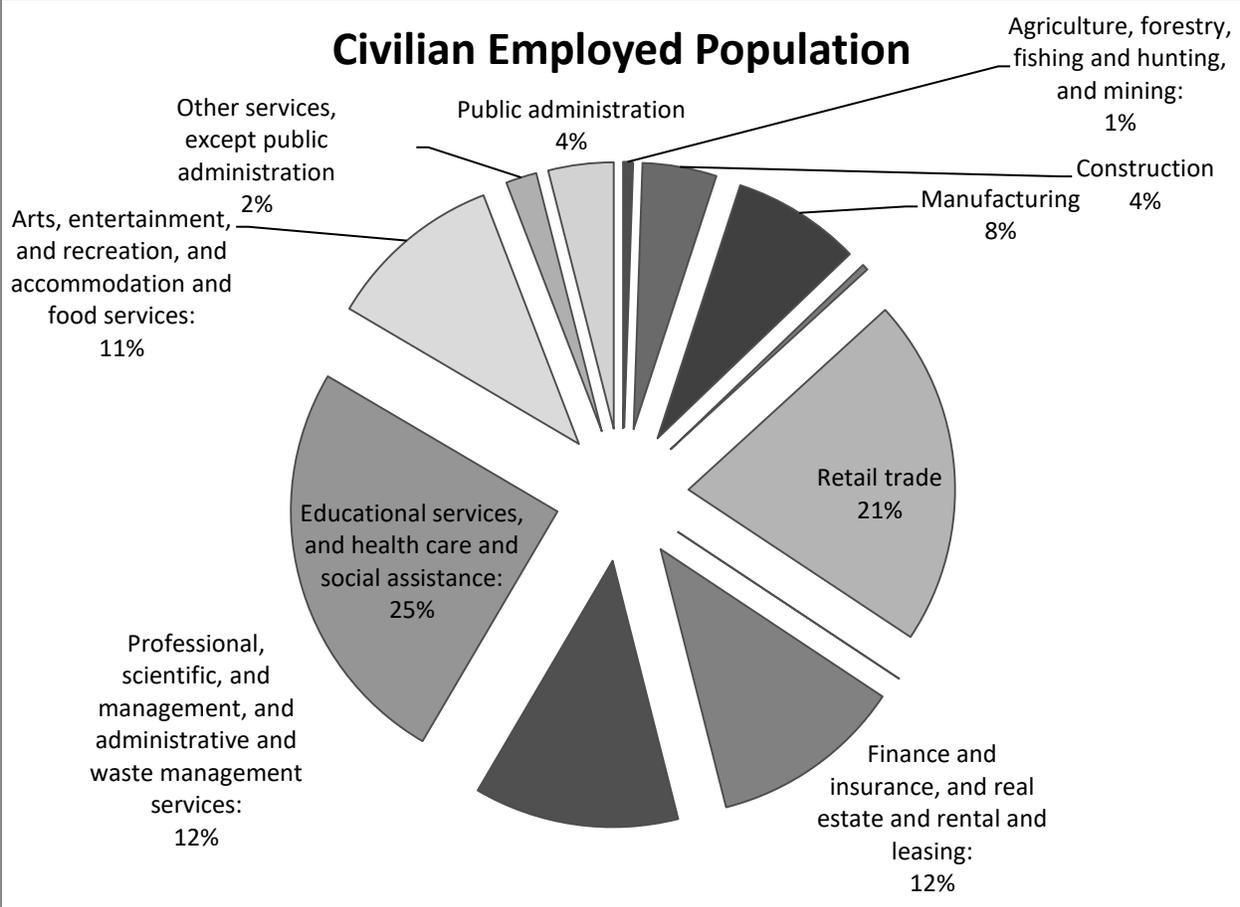
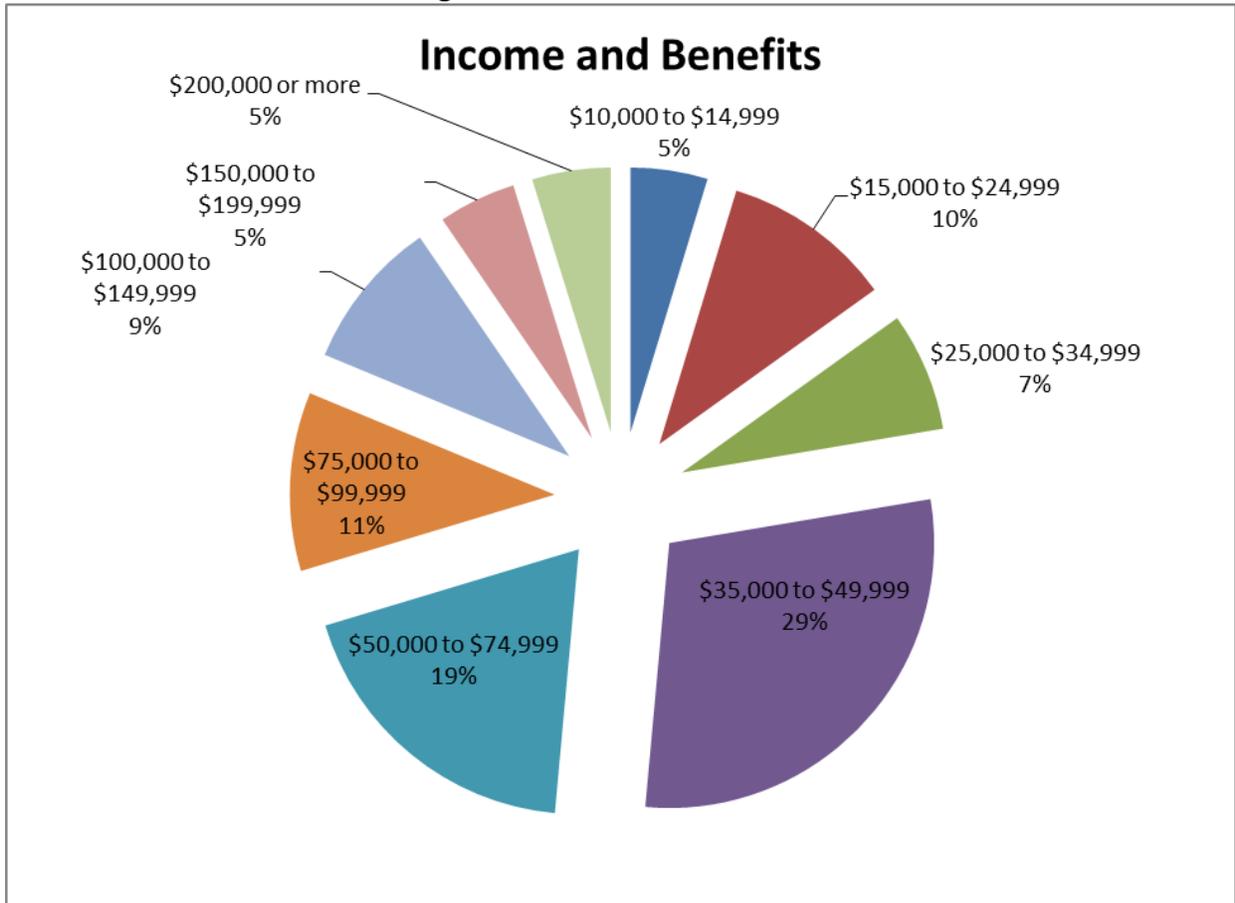


Figure A-5: Income and Benefits



The median household income is \$46,768. The largest segment of the households (29%) make between 35,000 and \$50,000. However, 19% of the households make between \$50,000 and \$75,000 and 11% percent of the households make between \$75,000 and \$100,000.

**Land Use**

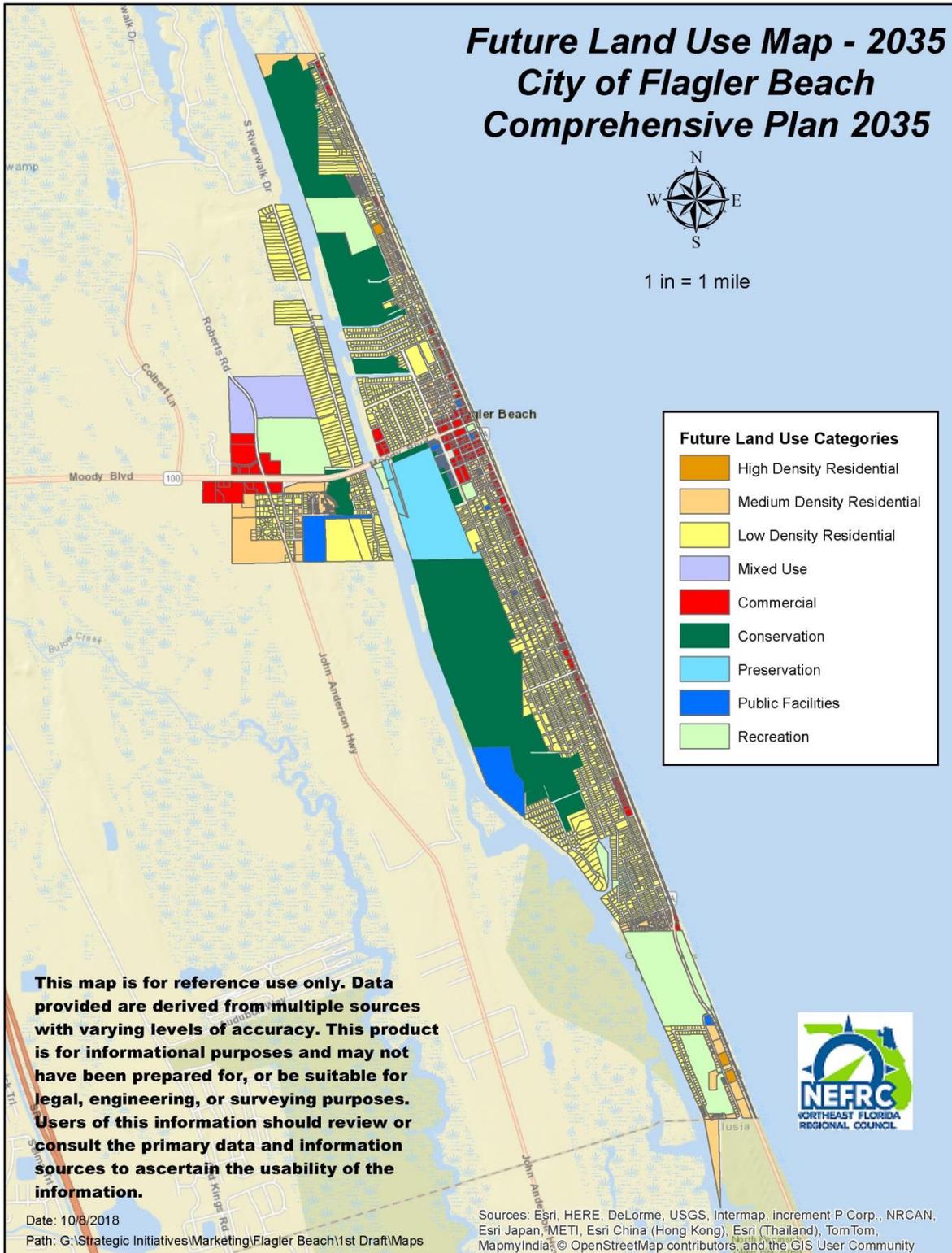
The future land use categories have changed since the last comprehensive plan. When the final Future Land Use Map has been determined, a figure will be added that lists the acreage in each category.

**Figure A-6: FLU Acreage Analysis**

High Density Residential	
Medium Density Residential	
Low Density Residential	
Mixed Use	
Mobile Home Park	
Commercial	
Conservation	
Preservation	
Public Facilities	
Recreation	

*Source: Northeast Florida Regional Council GIS 2017 and City of Flagler Beach Comprehensive Plan*

Map A-1: Future Land Use Map



The City of Flagler Beach contains 2,082 acres. The large amount of salt water marsh lands on the east side of the Intracoastal is the reason why the conservation category is so large. The thirty-five foot building height restriction is one of the reasons that the high density residential category is so small. Most of the growth in commercial acreage has been re-designating residential along A1A on the beachfront. Some forty-one percent of the land within the City is designated and used as residential.

The population is declining. The vacancy rate is growing, while the number of rental units is declining and the number of dwelling units is increasing. The 2010 number of seasonal units was 790 compared to 492 in 2000. These factors taken together indicate that short-term rentals are driving growth.

The forty-one percent of residential acres with a declining full-time population is being converted into short-term rentals and can accommodate the growth of seasonal population. An annexation of land at the southern boundary of the part of the City of Flagler Beach, west of the Intracoastal and south of S.R. 100 where the City already provides water services is being discussed. It is anticipated that this would primarily be residential land.

## **Land Use Categories**

### **A. Residential**

#### **1. Low Density**

Provides for a range of densities from two (2) units per acre to five (5) units per acre. In the eastern part of the City, on the barrier island, single family units have been constructed, with intermittent vacant building lots, for the entire north-south length of the City and from the west side of A1A to the east edge of the marsh adjacent to the Intracoastal Waterway. In the western part of the City, single family units occur mostly along the west bank of the Intracoastal Waterway and also east of John Anderson Highway south of S.R. 100.

#### **2. Medium Density**

Provides for a range of densities from above five (5) units per acre to 18 units per acre. This use consists of single family homes and multi-family homes and occupies 36 net acres or 1.6 percent of the existing land mass. The 1980 census showed a total of 459 units. By 1987, the windshield survey conducted by the Northeast Florida Regional Planning Council showed 1,091 units. Medium Density residential use permits a density of over 10 units per acre.

As with commercial uses, the smaller multiple dwelling units are concentrated along the length of A1A with a clustering of units around the intersection of Moody Boulevard and A1A. In addition, there are condominiums and hotels near the northern and southern boundaries of the City of Flagler Beach on the barrier island. In the western part of the City, there is a clustering

of multi-family units east of John Anderson Highway and south of S.R. 100 within a subdivision called "The Village," which also has single family units.

3. High Density

Provides for a range of densities from above 18 units per acre to 20 units per acre. There is one 14-story high rise multiple dwelling building in the City of Flagler Beach located on acres in the northern section of the City. The owner has an approved DRI under which another four similar buildings as high as 19 stories can be constructed. Recently, the second building was permitted; it will be nine stories in height and will contain 50 units. The conditions of the approved DRI were modified at that time to require that the remaining buildings be permitted at a maximum of two-year intervals with up to 65 units each.

4. Mobile Home Park

Provides for various types of mobile home developments with a density range up to 15 dwelling units per acre. The 1980 census showed 48 units for a net density of 16 units per acre. The 1987 windshield survey conducted by the Northeast Florida Regional Planning Council showed 76 units for a net density of 25.3 units per acre. These 76 mobile homes are concentrated in eastern part of the City, in a two block area just south of Moody Boulevard between Flagler and Daytona Avenues.

5. Mixed Use

The mixed use designation provides for land that could support a variety of urban land uses, including commercial and office facilities, and medium density residential. Mixed use development shall be served by central water and sewer systems. The types, sizes, densities and intensity of land uses in this classification are outlined below:

Type of Use: Predominant land is anticipated to be commercial/office in nature. However, residential development constitutes between 15 to 30 percent of the land use mix. Commercial professional office, business office, and medium density residential (does not include industrial processing, manufacturing, or animal research facilities).

Intensity of Each Use: In order to maintain adequate open space and control the intensity of uses in this classification, the maximum allowable impervious surface for each use shall be 65%. Maximum building height is three (3) stories or 35 feet.

Density of Use: The residential component within this classification provides for a density of 5.0 to 18.0 residential units per acre.

6. Commercial

The commercial and service uses category in the City of Flagler Beach consists primarily of retail trade, offices, motels, restaurants, service stations and repair facilities. This land use covers some 18 net acres or 0.7 percent of the total existing land use. Most of the commercial uses are small, tourist-oriented activities that are scattered along the length of A1A with a clustering of commercial uses centered on the intersection of Moody Boulevard (S.R. 100) and A1A. One commercial use (mini-storage) exists in the western part of the City, near the wastewater treatment plant.

7. Conservation

This use includes freshwater lakes, open saline water, saltwater marches and spoil areas. There are also some small stands of temperate hardwood hammock; however, single family residential construction is already occurring in them and they will not be able to be conserved. For a detailed discussion of these natural communities see the Conservation Element.

8. Preservation

The Preservation Land Use shall include areas of land that are of significant ecological or historical value.

9. Public Facilities

Uses include civic and community centers, hospitals, libraries, fire stations and government administration buildings. There are approximately five (5) acres of land in the City designated with this land use. This land use exists principally in the downtown area of the City.

10. Recreation

Land designated for recreation is intended for a variety of leisure time activities.

Areas of Critical State Concern

Presently, there are no properties designated as areas of critical state concern in the City. However, the northern portion of the Tomoka Aquatic Preserve, an Outstanding Florida Water, encompasses the southern portion of the Intracoastal Waterway within the City's boundaries.

**Discouraging Sprawl**

Unlike some neighboring communities, in the last twenty years Flagler Beach has not seen an influx of population or an increase in economic growth and development. The projections both in population and need over the next twenty (20) years indicate such minimal growth there will not likely be negative impacts to the infrastructure resources. The Future Land Use Map has not changed substantially over the past twenty years and based on this analysis, is not likely to

change substantially for the next twenty years. The slow growth and the limitation of the Atlantic Ocean to the east of the Town, reduces the likelihood for additional annexations and expansion of the Town limits. In essence, the current policies in Flagler Beach are proactive in encouraging and leading local government and citizens to develop a community that acknowledges and responds in a more fiscally responsible manner. Flagler Beach enjoys a stress free environment where there are no strains of overburdened schools or roads, parks and infrastructure. This reality predisposes the City to seek a future direction where infill and redevelopment is a probable and attainable goal.

## **CHAPTER B – TRANSPORTATION SUPPORTING AND DATA ANALYSIS**

### **Introduction**

The Transportation Element provides an assessment of the capability of the existing transportation system to serve current and future demand. Existing levels of service are determined and existing roadway deficiencies, if applicable, are identified.

Land use and transportation systems are interdependent; changes in one often have a direct effect on the other. The Element emphasizes mobility of residents, and supports the Future Land Use Element. This Element is based on the 2035 planning horizon.

### **Relationship to Other Elements of the Comprehensive Plan**

The Transportation Element is closely related to many of the other Comprehensive Plan Elements. A key relationship exists between this Element and the Future Land Use Element, which provides an overall blueprint for the future growth patterns within the City of Flagler Beach. Land use decisions will determine transportation demands and those areas where investments in transportation improvements are necessary. The Transportation Plan has been developed based on intensities and locations of development on the Future Land Use Map.

The Recreation and Open Space Element determines the location and types of recreational facilities for which access is necessary, as well as addressing conversions of abandoned transportation facilities to active recreational trails, and the establishment of an overall system of bikeways and pedestrian trails.

The Infrastructure Element describes the availability of public water and sewer, and drainage patterns; thereby helping to shape development trends within the planning horizon and influencing the analysis of transportation demand and facility need.

The Coastal & Conservation Element identifies all City natural resources that, due to their function or characteristic, require preservation and/or land management techniques ensuring protection, including protection from encroachment due to road building and roadway widening projects as identified in the Transportation Element.

The Intergovernmental Coordination Element provides opportunities to improve the City's collaboration and coordination with other agencies, such as the Florida Department of Transportation, the Northeast Florida Regional Council, as well as neighboring Counties and jurisdictions, in the transportation planning and provision of transportation services in the Region.

The Capital Improvements Element will reflect the five-year budget plan for transportation capital outlay, which should support the Goals, Objectives, and Policies of this Element. In

addition, levels of service standards identified in the Transportation Element are included in the Capital Improvements Element.

### **Existing Conditions**

The transportation network of the City of Flagler Beach consists of State Road (S.R.) A1A, S.R. 100, County Road (C.R.) 201 (John Anderson Highway), roads that are owned and maintained by the City, and privately owned and maintained roads. S.R. A1A is a minor arterial that runs north-south along the coastline and coastal area of the City of Flagler County. S.R. A1A is a two-lane, undivided roadway on the State Highway System. The southern end of S.R. A1A in Flagler County travels through the City of Flagler Beach and the City of Flagler Beach. S.R. A1A has been designated as a Florida Scenic Highway and an America Scenic Byway, known as the State Road A1A River and Sea Trail Scenic Highway. The roadway facilities, which provide the City of Flagler Beach with access to the mainland, are the S.R. 100 Bridge and the new Palm Coast Parkway Bridge that spans the Intracoastal Waterway and is located 6.7 miles north of Flagler Beach.

### **Current Inventory**

#### **S.R. A1A**

S.R. A1A is a north-south minor arterial that runs the entire length of the City. The two-lane roadway provides the City of Flagler Beach residents with access to the City of St. Augustine to the north and the City of Daytona Beach to the south. In addition, S.R. A1A provides residents with access to Palm Coast Parkway and S.R. 100, which provide residents with east-west access. S.R. A1A is a part of the state federal-aid primary roadway system. The road is used extensively by tourists to Florida because of the scenery along the A1A corridor. S.R. A1A through the City of Flagler Beach provides an unrestricted view of the Atlantic Ocean and beach areas. The operational analysis for the roadway segment in the City of Flagler Beach reveals an existing operating level of service a 2035 LOS D.

#### **S.R. 100**

S.R. 100 is a four-lane facility that runs west from its eastern terminus with S.R. A1A in the City of Flagler Beach to Bunnell and continues west through Flagler County. State Road 100 has been classified as a principal arterial and is on the state federal-aid secondary roadway system. It provides access to the City of Bunnell, the City of Palm Coast, and Interstate 95. The operational analysis for the roadway segment in the City of Flagler Beach reveals an existing operating level of service a 2035 LOS D.

#### **C.R. 201**

The only County roadway facility within the City is John Anderson Highway (CR 201). It is classified as a minor collector and runs south from its terminus with Roberts Rd to Volusia County. The operational analysis for the roadway segment in the City of Flagler Beach reveals an existing operating level of service a 2035 LOS D.

## **Local Roads**

All local roads within the City limits have an adopted a level of service of “D.”

## **Existing Planning and Regulatory Framework**

### **Federal**

The *United States Department of Transportation* (USDOT) administers the nation’s transportation policy. The agencies within USDOT include the Federal Highway Administration (FHWA), the National Highway Traffic Safety Administration (NHTSA) and the Urban Mass Transit Administration (UMTA). The FHWA reviews and approves federally funded highway projects. These projects include primary, secondary and urban system aid, the federal bridge replacement program and the maintenance and widening of federal facilities. Federal highway facilities are operated and maintained by the Florida Department of Transportation (FDOT) as part of the State Highway System.

There are no Federal Highway facilities in the City.

### **State and Regional**

The *Florida Department of Transportation* (FDOT) is responsible for the planning, construction, maintenance and access to the State Highway System, as well as the State Rail Plan and the Florida Aviation System Plan. The State Highway System is established by Florida Statutes, and consists of all State and Federally designated roadways. FDOT is decentralized in accordance with legislative mandates. Each of the districts is managed by a District Secretary. The Districts vary in organizational structure, but in general each has major divisions for Administration, Planning, Production and Operations. The City of Flagler Beach is in FDOT District Five. FDOT has adopted the Florida Transportation Plan, which is part of the State Comprehensive Plan and guides major transportation planning for state facilities.

The Northeast Florida Regional Council (NEFRC) is a regional planning agency comprised of seven counties (Baker, Clay, Duval, Flagler, Nassau, Putnam, and St. Johns) and their 27 municipalities. The NEFRC mission is to be a dynamic network of local governance, providing visionary leadership, advocacy, and coordination between counties and local, state, and federal governmental agencies to preserve and enhance the quality of Northeast Florida’s economic, natural, built, and social environment. The NEFRC maintains the Strategic Regional Policy Plan (SRPP), which serves as a guidebook on coordinated steps to achieve the goals for Northeast Florida. The Plan contains policy guidelines only where statute requires them. In other cases, it recommends approaches and supports communities in the strategies they choose to achieve regional goals. The SRPP has identified S.R. A1A, S.R. 100, and C.R. 201 as Transportation Facilities of Regional Significance.

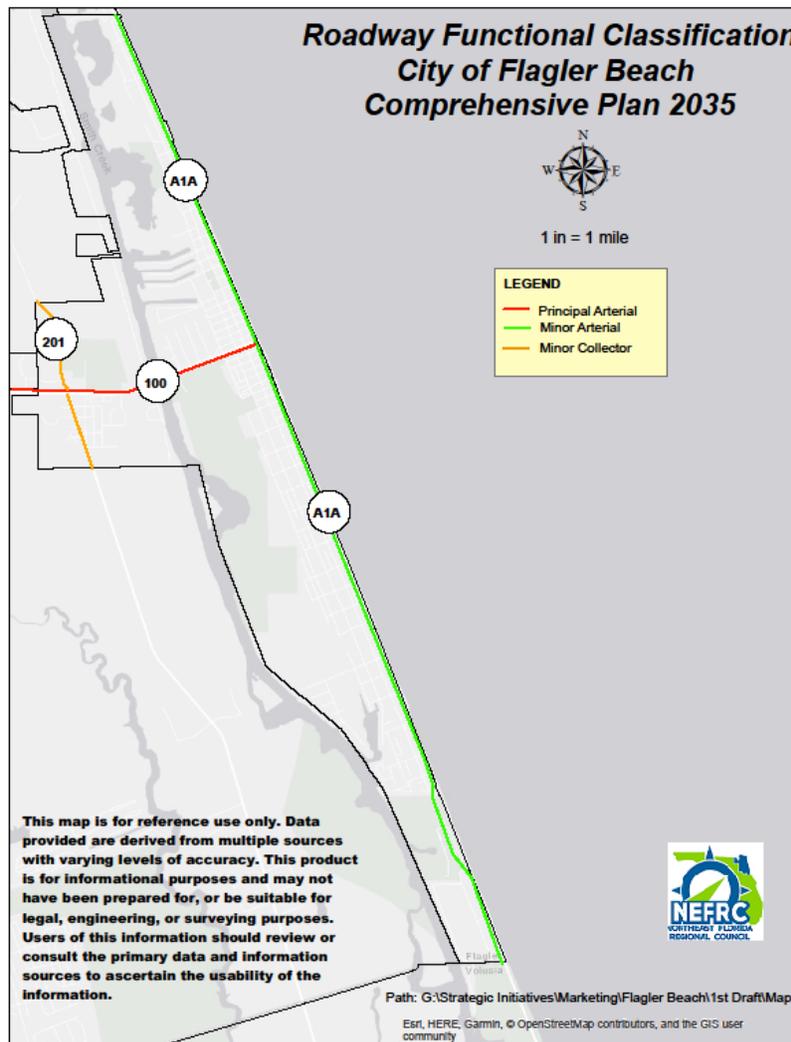
The River to Sea Transportation Planning Organization (TPO) is the duly designated and constituted body responsible for carrying out the urban transportation planning and programming process for designated Metropolitan Planning Area (MPA). The TPO’s Metropolitan Planning Area map below includes all of Volusia County and the developed areas

of eastern Flagler County, including the City of Flagler Beach and a portion of Town of Beverly Beach as well as portions of the cities of Palm Coast and the City of Bunnell (see map below). The responsibility of the River to Sea TPO is to manage a “3-C” planning process (continuing, cooperative and comprehensive planning) that results in the development of transportation plans and programs.

### Roadway Functional Classification

Roadways are formally categorized by the Florida Department of Transportation (FDOT) through a statewide, cooperative process with City and local jurisdictions. This ongoing process, known as Functional Classification, is used primarily to assign governmental responsibility for maintenance and roadway improvement funding. In recent times, a host of additional FDOT policy definitions has also been linked to the State’s functional classification system. The existing functional classification of the City roadway network is provided in Map B-1.

**Map B-1: Functional Classification of Roadways**



Arterial roadways can be broadly defined as those facilities that carry relatively heavy volumes of traffic for activities such as shopping, employment and the movement of goods and services. Arterial roadways provide for regional movement; for travel to destinations outside the City; or for non-locally-oriented traffic to travel through the City of Flagler Beach to other destinations within the Region.

**Principal Arterial** – S.R. 100 serves the major centers of activity of a metropolitan area, has the highest traffic volume corridors, and the longest trip desires; and should carry a high portion of the total urban area travel on a minimum of mileage. It carries most trips entering and leaving urban areas, and it provides continuity for rural principal arterials that intercept urban boundaries.

**Minor Arterial**—S.R. A1A is a facility class designed to carry moderate volumes of traffic between urban areas and to connect with the principal arterial system. A main function is to provide an intermediate connection between the major arterial system and streets within the local area. This facility allows more access to adjacent properties than the previous types of facilities.

**Minor Collector**— C.R. 201 provides traffic access and traffic circulation in lower density residential and commercial/industrial areas. Minor Collectors may penetrate residential neighborhoods for only a short distance and also channel traffic from local streets to/from the arterial system.

**Local**—A roadway or street having the primary purpose of providing access to adjacent property. Mobility is a secondary function. Average speeds and volumes are low; trips are usually of short duration with a purpose of connecting with a higher order facility. A local road should not carry through traffic. The trip being served should originate or be destined for the immediate surrounding area.

### **Transportation Level of Service (LOS)**

Florida law requires transportation level of service standards to be adopted for roads and public transit facilities. Roadway level of service standards have long been used in systems planning and traffic operations. The roadway level of service (LOS) standard is a qualitative assessment of the road user's perception of the quality of flow of traffic. The LOS standards are represented by letters A through F, with A representing the most favorable conditions and F representing the least favorable. The LOS is measured by dividing the number of vehicle trips (i.e., volume) on the facility by the capacity of that facility. The six levels of service as described by the Transportation Research Board's *Highway Capacity Manual* are:

**LOS A**—This represents a condition of free flow. Individual users are virtually unaffected by the presence of others in the traffic stream. Traffic volumes are low and speeds are high, and drivers have complete freedom in selecting their speeds and may change lanes at will. The motorists experience a high level of driving comfort. Stopped delays at signalized intersections are minimal.

**LOS B**—With this level of service, operating speeds are beginning to be restricted somewhat by traffic conditions, although drivers still have reasonable freedom in choosing their speeds and travel lanes. Flow is stable and average operating speeds are only slightly lower. The general level of motorist comfort is still high.

**LOS C**—Traffic flow is still stable at this level of service, but most drivers are restricted in their choice of speeds and maneuverability. Traffic conditions are still tolerable for most drivers and operating speeds are satisfactory. Traffic flows are such that small increases in flow will result in a substantial deterioration in service. Motorists will experience an increase in tension due to the increased attention needed for safe operation.

**LOS D**—This level of service represents high traffic volumes. Although speeds may still be maintained, delays may begin to occur frequently due to high traffic volumes. Drivers have little freedom to choose their own speeds or lanes of operation, and their comfort and convenience are low. Small increases in traffic flow will generally cause operational problems at this level.

**LOS E**—This level of service describes a roadway that is operating near or at capacity. Speeds are low and there are virtually no gaps in the traffic stream. There is very little driver independence with regard to speed choice and lane choice. Small increases in volume or minor disturbances within the traffic stream will cause a breakdown in traffic flow.

**LOS F**—This describes a forced flow situation. Vehicle density is beyond the optimum for maximum volume; therefore, traffic volume has dropped below that of level of service E. Frequent and prolonged stoppages may occur, and average travel speeds are very low, as is driver comfort. Vehicles may progress at reasonable speeds for several hundred feet or more, and then be required to stop in a cyclic fashion. It is to the point at which arrival flow exceeds discharge flow that causes a queue to form.

The adopted LOS for the City is described in Table 1 below. Local roads will be maintained at LOS D.

**Table B-1 – Level of Service (LOS) Standards**

<b>Facility</b>	<b>LOS Standard</b>
Freeways/Principal Arterial	D
Collectors/Minor Arterial	D
Local Roads	D

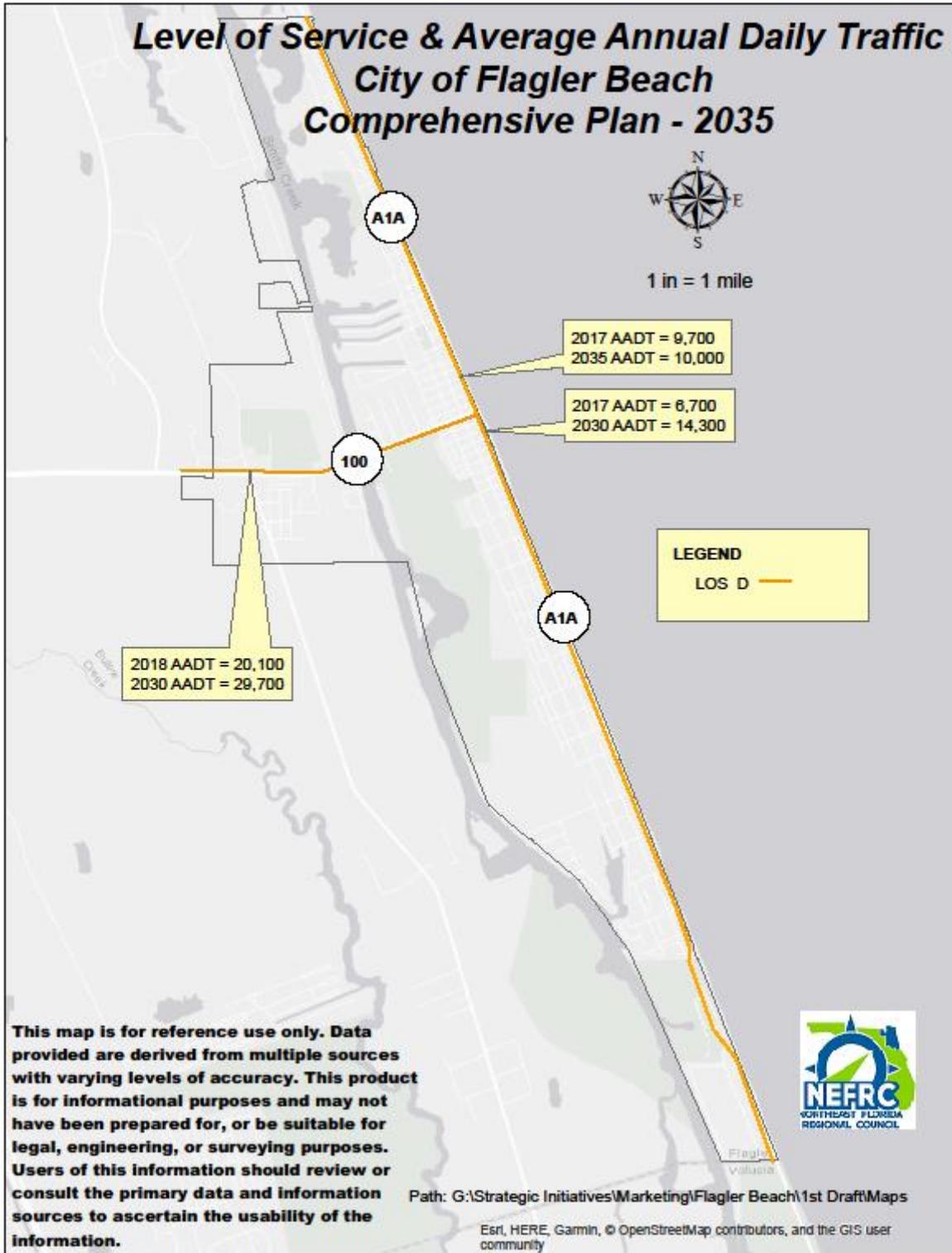
The boundaries between levels of service are quantitatively described by volume of traffic. The actual numerical value corresponding to the upper boundary of each level of service (service volume) depends on the roadway’s functional classification, engineering characteristics, traffic characteristics and control characteristics. Typically, roadways are said to reach capacity when traffic volume is equivalent to the service volume at the boundary between LOS E and LOS F.

Capacity does not mean the highest number of vehicles that can physically occupy a road (jam density), but the greatest volume at which traffic is still flowing in a reasonably predictable and stable manner.

Roadway level of service standards define the maximum traffic volume a particular roadway should carry. Level of service standards are established, in part, to ensure that adequate facility capacity will be provided for future development and for purposes of issuing development orders and permits. Levels of service standards are set for each individual facility or facility type and not on a system-wide basis.

Based on the Future Land Use Element population projection analyses, the estimates for future traffic may be considered unrealistic. Traffic patterns for this area indicate a predominant through traffic movement (within the City limits), attributed to both north and south bound traffic from neighboring jurisdictions. The neighboring jurisdictions have estimated higher population projections that may yield higher traffic volumes going through the City. S.R. A1A is a constrained facility due to existing policies and physical limitations. All of S.R. A1A in Flagler County is a designated Scenic Highway and the current policy precludes any widening to four (4) lanes in the future.

Map B-2: Levels of Service



### **Constrained Facilities**

A constrained facility is a roadway facility or project that does not have sufficient financial resources committed to fully complete by the five year planning horizon. Typically, these roads cannot be added to, due to physical or environmental conditions or policy. While the projected traffic for segments along S.R. A1A within the City are projected to fail, S.R. A1A is a scenic highway and is considered a constrained facility in the City.

The only roadway facility in the City planned for expansion is John Anderson Highway, a County owned and maintained road.

### **Bicycle Facilities**

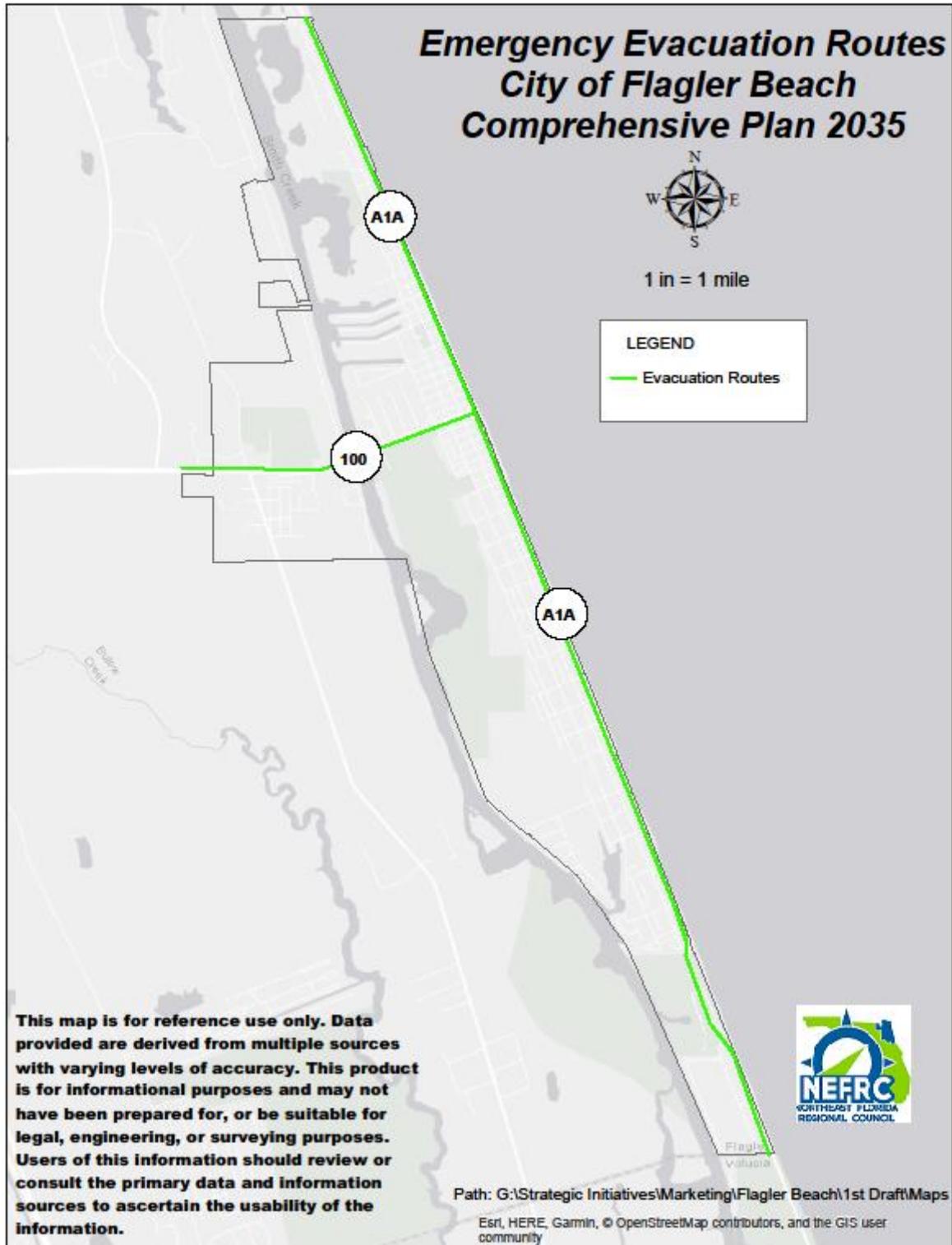
Facilities are in place along S.R. A1A in the City of Flagler Beach and within unincorporated Flagler County. The River to Sea TPO has identified top priority projects for pedestrian/bicycle path general intersection improvements and upgrading existing sidewalks to trails along S.R. A1A. It has also identified a gap for trail placement along Old Kings Highway west of the City and Royal Palms Parkway north of the City.

The Office of Greenways and Trails, of the Florida Department of Environmental Protection, depicts a Multi-use trail coming south from the City of Palm Coast on Colbert Road and stopping at S.R. 100 as well the River to Sea Trail along S.R. A1A and a paddling trail along the Intracoastal waterway at Bulow State Park.

### **Evacuation Routes and Coastal Evacuation**

Evacuation routes, as defined by the Statewide Regional Evacuation Study Program (SRESP), includes roadways designated by county emergency management officials, in coordination with FDOT and NEFRC as official regional evacuation routes; roadways and roadway segments identified by the SRESP as routes used to interconnect City designated evacuations routes or routes used to interconnect evacuation routes between study regions. This includes major highways that are part of the regional and statewide network including primary (interstates and turnpikes), secondary (major arterials), and certain local roadways (Minor arterials) that provide significant evacuation transportation capacity to move vulnerable populations to “points of safety.” S.R. A1A and S.R. 100 are designated evacuation routes. Map B-4 indicates the designated evacuation routes.

Map B-4 (and E-5): Emergency Evacuation Routes





### **Transit/Public Transportation Services**

The only available public transit in Flagler Beach is under the Transportation Disadvantaged Program (see below). The Transportation Disadvantaged (TD) program started in 1989 under the auspices of the Florida Commission for Transportation Disadvantaged. TD serves residents with physical disabilities, those aged 60 and older, children at risk, qualified low-income residents, and those living in rural areas. These riders make reservations at least 24 hours in advance for trips for life-sustaining activities such as congregate dining, medical appointments, and grocery stores.

### **Community Transportation Coordinator (CTC)**

The Commission for the Transportation Disadvantaged designated Flagler County Transit, which is a division of Flagler County Government, to serve as the Community Transportation Coordinator. Flagler County Transit is the sole source provider of Transportation Disadvantaged services in the County.

### **Alternative Modes of Transportation**

When evaluating existing and future transportation needs for the City of Flagler Beach, consideration should be given to alternative modes of travel as part of the overall integrated transportation system. Currently, travel or modal choice alternatives are limited for the residents of the City of Flagler Beach, but will be briefly discussed. These alternatives include mass transit, ridesharing, rail, aviation, and bicycles.

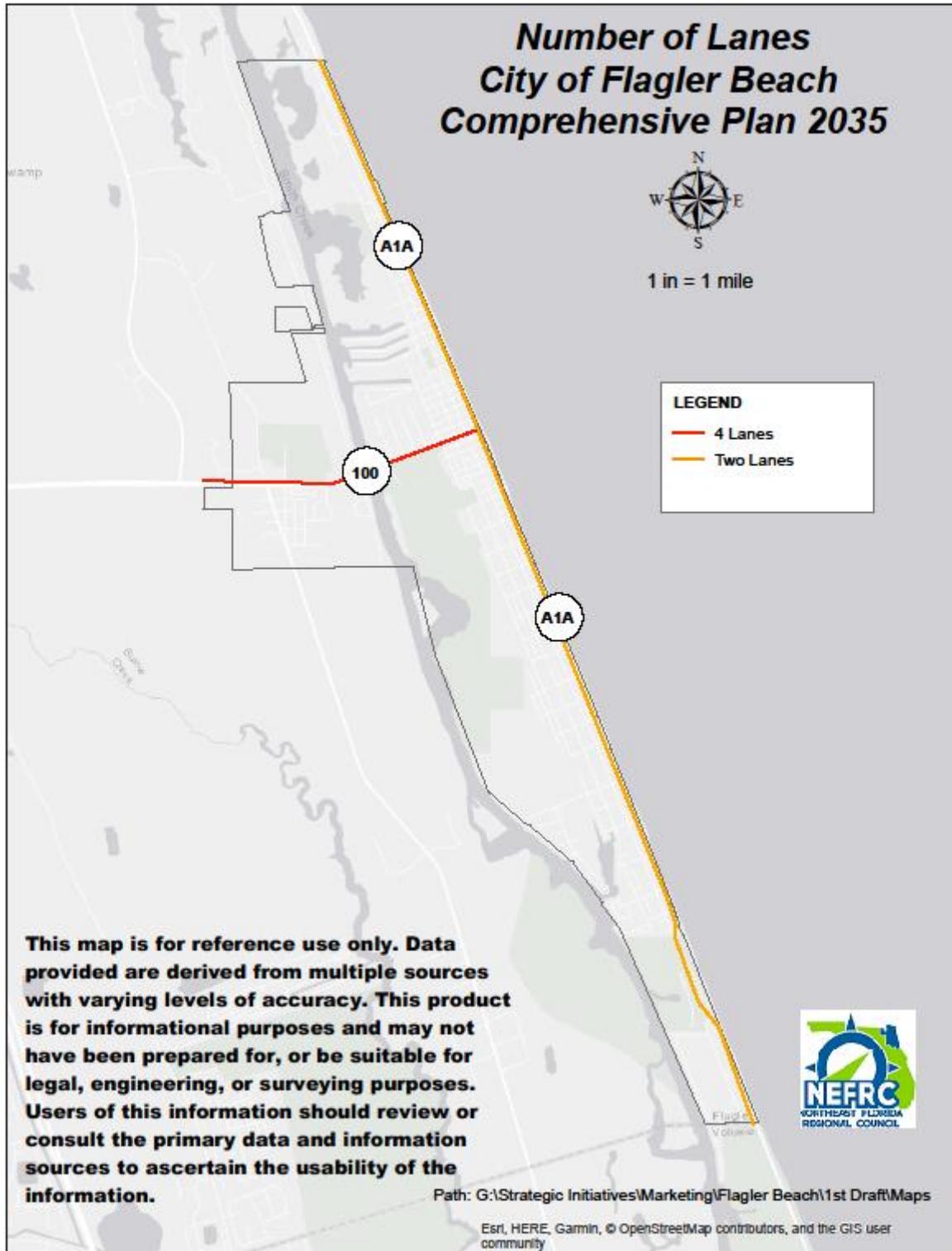
A cost effective fixed-route mass transit system would not be a feasible alternative due to the City's small population and area. However, residents could reduce their travel cost by carpooling to places such as St. Augustine, Bunnell, and Daytona Beach for shopping and work.

The use of bicycles for transportation is another alternative to be considered. To make this alternative a viable one, the designation of street bicycle lanes and/or bicycle paths for exclusive bicycle use must be based on approved, recognized, and coordinated design and location criteria.

### **Trends and Future Transportation Needs**

There is adequate capacity through the planning timeframe. The population growth and the projected traffic will not have a significant impact on the City's roadway network. All of S.R. A1A in Flagler County is a designated Scenic Highway and the current policy precludes any widening to four (4) lanes in the future. Map B-5 show the number of lanes for the two arterials within City limits.

Map B-5: Number of Lanes



**Aviation, Port and Military, Rail Facilities**

There are no existing ports, rail, aviation or military facilities within City limits.

**Transportation Concurrency**

The City has adopted a Concurrency Management System. The monitoring and maintenance of the system are through Flagler County, FDOT and the NEFRC.

## CHAPTER C – HOUSING

### SUPPORTING DATA AND ANALYSIS

#### Introduction

This Chapter inventories and evaluates the existing housing conditions and characteristics in the City of Flagler Beach.

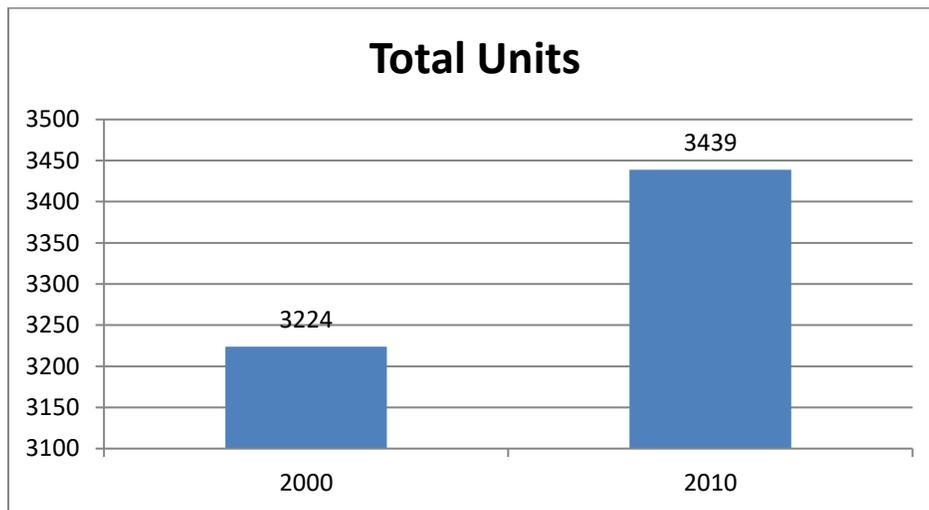
The purpose of the Housing Element is to provide guidance to the City in developing appropriate plans and policies to meet identified or projected deficits in the supply of housing for moderate income, low income and very low-income households, group homes, foster care facilities and households with special housing needs, including rural and farmworker housing.

#### Housing Elements Data and analysis

The information in this chapter is based on the 2010 US Census Bureau data, the Florida Bureau of Economic and Business Research (BEBR), the American Community Survey 3-Year Estimates, and the Shimberg Center. Highlights of the housing conditions are presented.

**Figure C- 1: Total Units**

Total number of housing units grew by 215 units or 6.7% between the years 2000 and 2010.

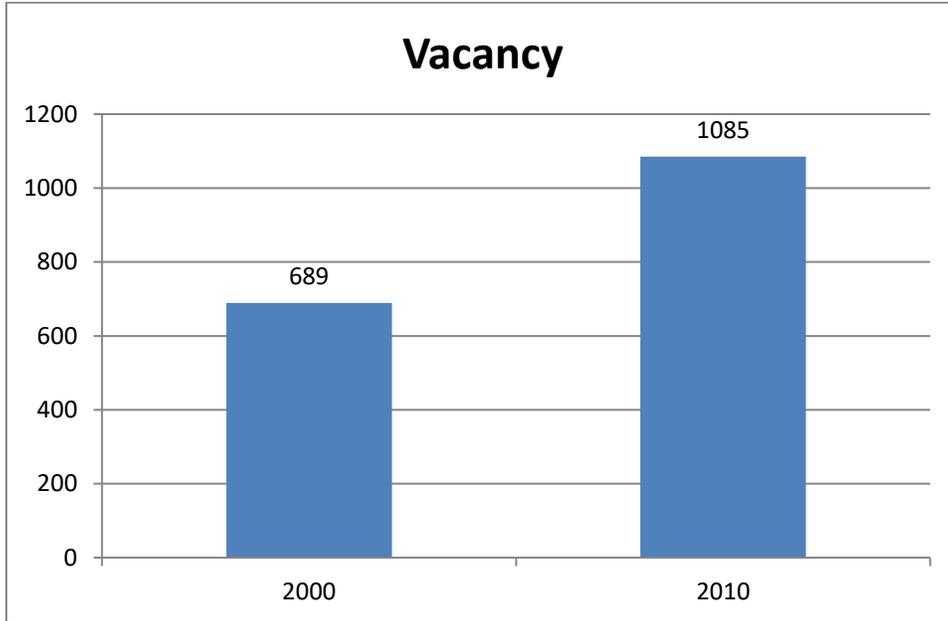


Source: American Fact Finder Q2 H1 General Housing Characteristics: 2010, 2000

## Occupancies

**Figure C- 2: Vacancy**

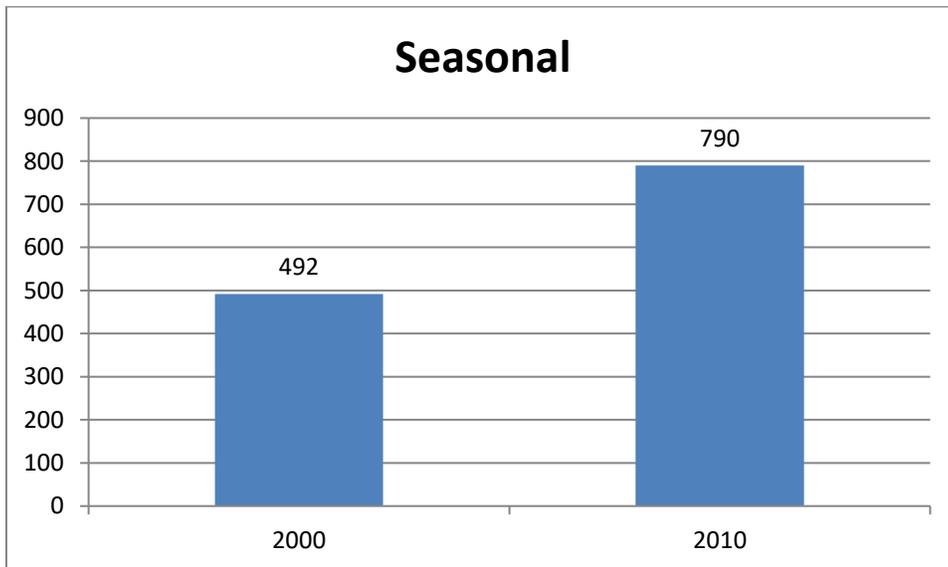
The number of vacancies in dwelling units grew by 396 or 57.5%.



Source: American Fact Finder Q2 H1 General Housing Characteristics: 2010, 2000

**Figure C- 3: Seasonal**

Number of dwelling units for seasonal, recreational, or occasional use grew by 298 units or 61%.

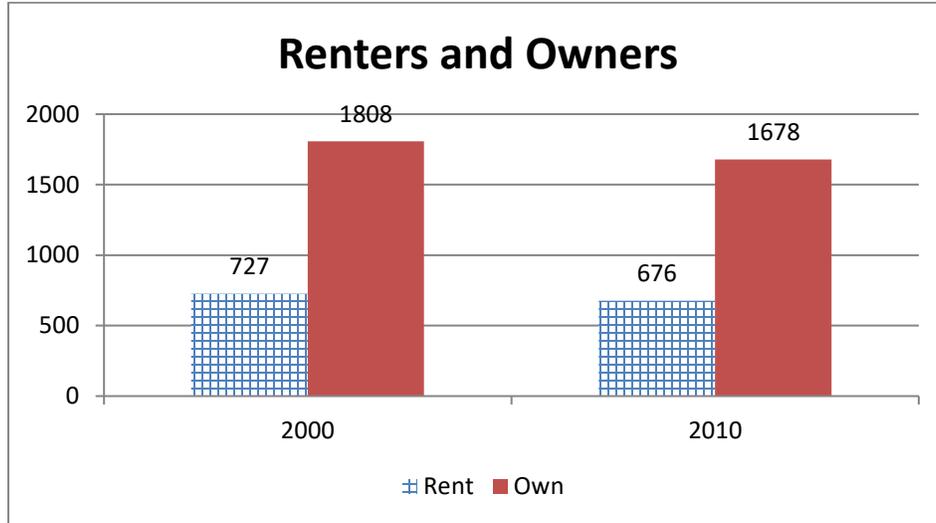


Source: American Fact Finder Q2 H1 General Housing Characteristics: 2010, 2000

## Ownership

**Figure C- 4: Renters v. Owners**

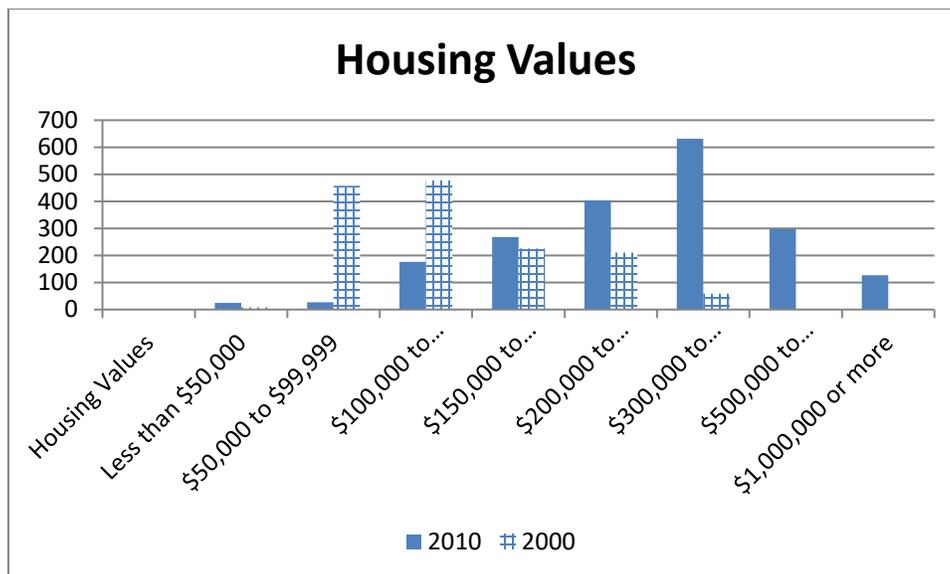
Number of rented units dropped by 51 units or 7% and owned units dropped 130 units or 7.2%.



Source: American Fact Finder Q2 H1 General Housing Characteristics: 2010, 2000

**Figure C-5: Housing Values**

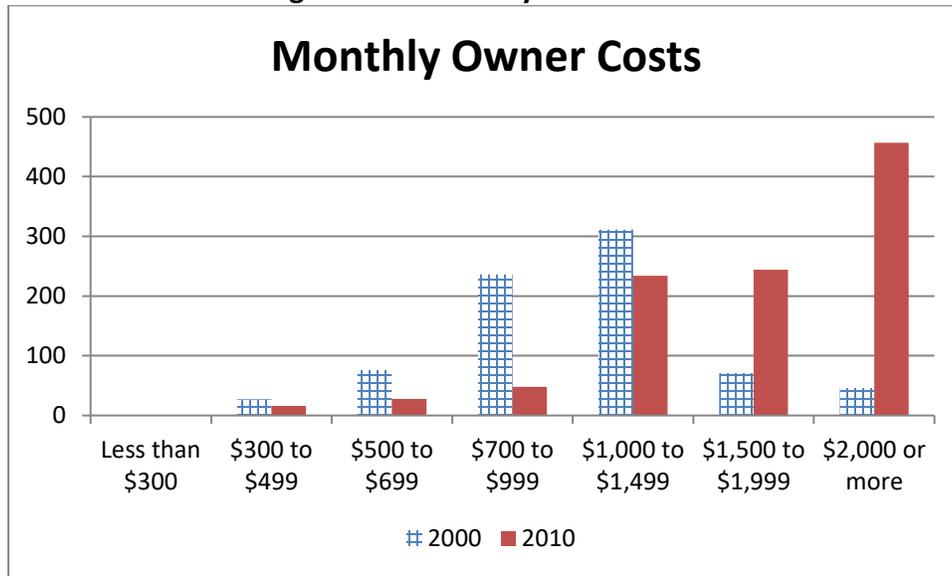
Value of owner occupied units increased with about 1000 units valued at \$50,000 to \$150,000 in the year 2000 up to about 1000 units valued at \$200,000 to 3 \$500,000 in the year 2010.



Source: US Census DP-4 Selected Housing Characteristics 2000, 2010

**Financial Values**

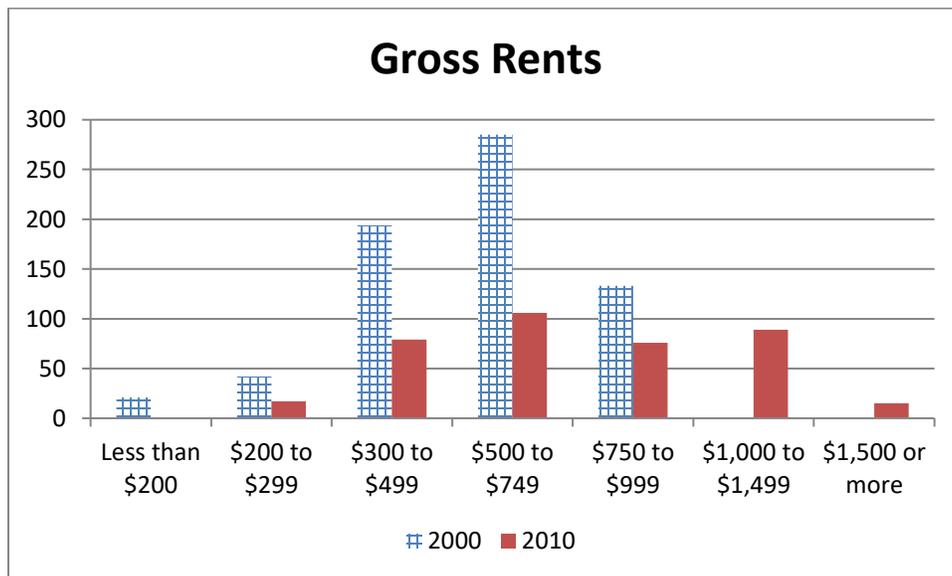
**Figure C- 6: Monthly Owner Costs**



Source: US Census DP-4 Selected Housing Characteristics 2000, 2010

**Figure C-7: Gross Rents**

The number of rental units has dropped (see Owners and Renters figure above), while the gross rents have gone up.



Source: US Census DP-4 Selected Housing Characteristics 2000, 2010

## Housing Conditions

**Figure C- 7: Housing Characteristics**

Year	2000	2010
<b>SELECTED CHARACTERISTICS</b>		
<b>Lacking complete plumbing facilities</b>	10	0
<b>Lacking complete kitchen facilities</b>	19	0
<b>No telephone</b>	56	94

Source: US Census DP-4 Selected Housing Characteristics 2000, 2010

Less than one percent of all households lacked complete plumbing and kitchen facilities.

## Projections

The City of Flagler Beach must know what is in place, what needs to be in place and how to fund it in order to develop a viable plan for sustainability in the City. The first step is to review the past trends and identify the population growth trends for the planning timeframe. The following tables provide a summary of the total population and land use trends for the City for the 25-year planning horizon.

**Table C-1: Population Trends, 1980-2040**

Year	Population	Year	Population
<b>1980</b>	2,208	<b>2020</b>	4,771
<b>1990</b>	3,818	<b>2030</b>	5,026
<b>2000</b>	4,954	<b>2035</b>	5,395
<b>2010</b>	4,484	<b>2040</b>	5,565

Source: BEBR population estimates, and 2018 BEBR population projections (Florida Population Studies, Bulletin 180, January 2018)

By the year 2035, the population of the City of Flagler Beach is estimated to be 5,395 people. This is an increase of approximately 911 people from 2010. These projections provide for a basic estimate of population so that the City can better project the number of needed housing units.

A historical census review of the vacant housing units within Flagler County shows seasonal fluctuation in housing units has been between 58% and 62%. The seasonal population is approximately 18% in 2010 (US Census, Occupancy and Unit rates). This percentage is consistent with other seasonal household adjustment information provided by the recent *East*

*Central Florida Housing Demand, Supply and Need Methodology* submitted as part of the *Application for Development Approvals* for recent Developments of Regional Impact.

**Projected Housing Needs**

The size of an average household in Florida is 2.46 persons. The average household size in the City of Flagler Beach is 1.95; with a median age of 53 (2010 US Census), the persons per household calculation in the City is closer to 1.63 persons per household. The persons per household for the City of Flagler Beach accounts for occupied housing units. The total number of housing units in the City is 3,439. Based on the elderly and median age of the City of Flagler Beach, the historical trends indicate very little change in the future and the 1.95 persons per household is anticipated to stay the same through the planning timeframe. Table C-9 depicts residential unit estimates and projections from 2010 to 2035.

**Table C-9: The City of Flagler Beach Residential Dwelling Unit Estimates & Projections**

	YEAR			
	2010	2020	2030	2035
Total Population	4,484	4,771	5,026	5,395
Persons per dwelling unit	1.95	1.95	1.95	1.95
Total dwelling units	2,299	2,447	2,577	2,767

With 1.95 persons per dwelling unit, the City of Flagler Beach may need 2,767 dwelling units to support its projected population in 2035. The City’s current housing stock of 3,439 currently supports the projected population.

## **CHAPTER D - PUBLIC FACILITIES SUPPORTING DATA AND ANALYSIS**

### **INTRODUCTION**

The Public Facilities Element and its sub-elements are an overview of potable water and sanitary sewage treatment, storm water management, solid waste facilities, and areas of aquifer recharge for the City of Flagler Beach.

This Element identifies the likely future demands for public facilities and services correlated with future growth projections including design capacities and *Levels of Service* (LOS) for sanitary sewer, potable water, solid waste, and storm water management. This Element documents the general performance of existing facilities, the general condition of local facilities, the impact these facilities have on adjacent natural resources, and an analysis of the problems and opportunities for:

- Sanitary sewer
- Solid waste
- Storm water management
- Potable water
- Natural groundwater aquifer recharge.

The City of Flagler Beach is located in Flagler County on the northeast coast of Florida.

Flagler County has five incorporated areas of which Flagler Beach is one. Flagler Beach is located adjacent to the City of Beverly Beach to the north, the City of Palm Coast and unincorporated Flagler County to the west, and unincorporated Volusia County to the south. Current land development patterns show most of the residential development in the coastal area is occurring in the City of Palm Coast and surrounding unincorporated areas where central water and sewer facilities are available. Other residential development occurs in the incorporated areas of Beverly Beach or Bunnell, and older, small subdivisions or isolated single-family residences along A1A, SR 100, Old Dixie Highway, Old Kings Road and John Anderson Highway.

### **Sanitary Sewer Sub-Element**

The Florida Department of Health regulates the installation of septic tanks and drain fields according to rules adopted in Chapter 64E-6 FAC. Lots platted before January 1, 1972 are allowed certain exemptions to the minimum lot size depending on various factors, including when the lot was platted and the types of soil on the site. Other criteria must also be met, including the requirement from Chapter 64E-6.006 (2) FAC that the water table elevation at the wettest season of the year be at least 24-inches below the bottom surface of the drain field. This requirement has resulted in the mounding of many newer drain fields to meet the minimum separation of drain field and high water tables.

There are some remaining septic tanks in Flagler Beach. Liquid waste from the typical Flagler Beach home or business flows through pipes from toilets and sinks to a concrete septic tank buried beneath the ground somewhere on the lot. Liquid wastes are treated within the septic tank. The typical build-up of solid waste in the tank must be pumped out and disposed of for proper system maintenance as the treated water commonly flows into an underground field of pipe, where it percolates downward into the sandy soil. The household or business is responsible for providing and operating the septic tank system. The County Health Department grants permits for these on-site systems. However, the City has required that any new construction be connected to the City's wastewater system.

### **Soil Suitability for Septic Tanks**

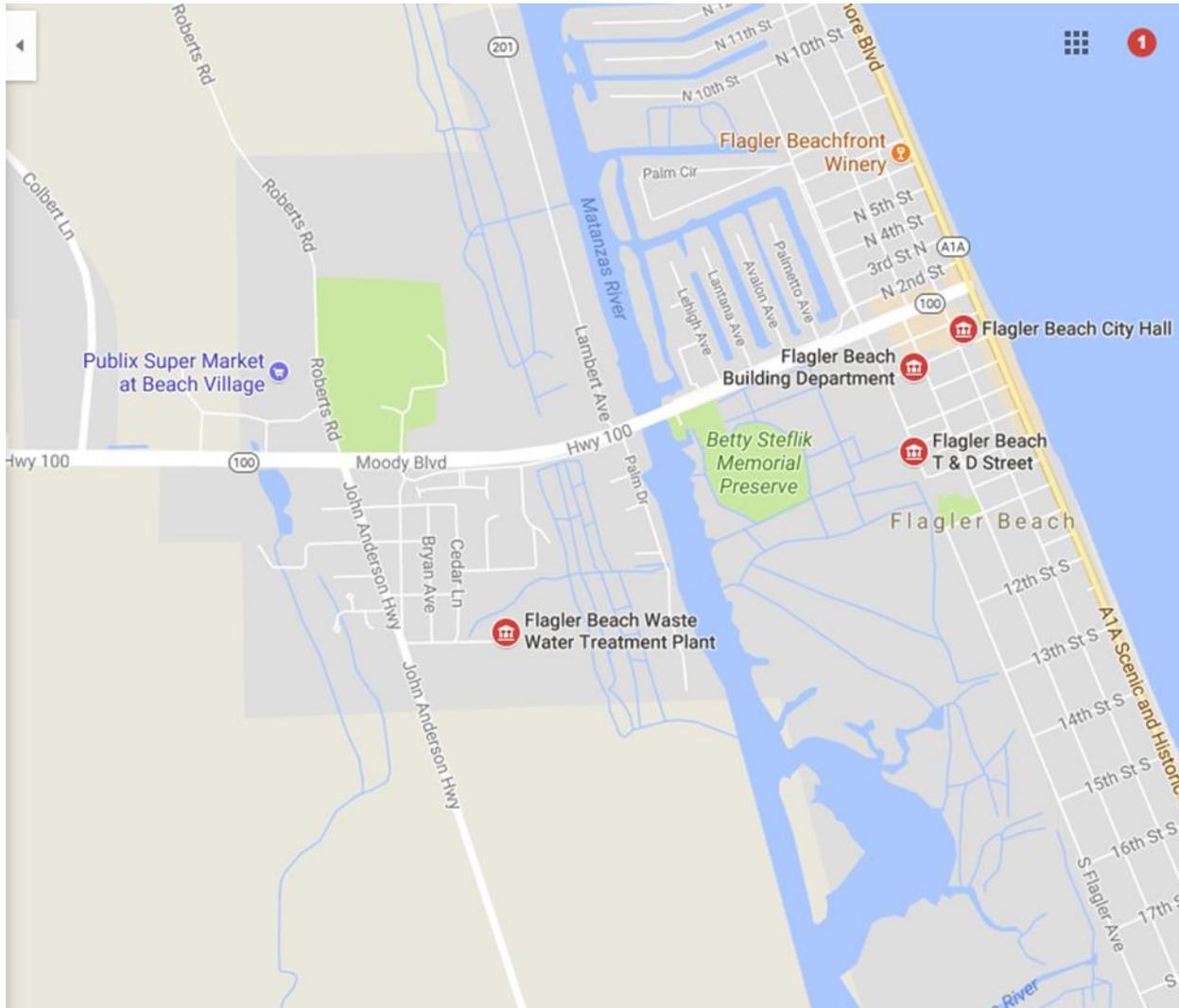
Septic tanks function best in well-drained sandy soils. The dominant soil in Flagler Beach is Palm Beach Fine sand associated with the east side of A1A and has a moderate to severe rating for septic tanks (depending on the slope). Figure D-1 (Soils Map) shows those soils best suited for and having the fewest limitations to septic tank effluent absorption fields in Flagler Beach.

### **Wastewater – Existing Conditions and Deficiencies**

The City's currently owns and operates one (1) wastewater treatment plant ("WWTP"), located three (3) miles east of the water treatment plant, which has a maximum capacity of 1.0 Million Gallons Per Day ("mgd"). The WWTP provides advanced secondary treatment and disposes of the effluent into the Intracoastal Waterway. The City's wastewater service area is essentially identical to the potable water service area. The City is underway with improvements and expansion planning for the existing wastewater treatment plant, with an emphasis on efficiency and future capacity. The waste water treatment plant was built in 1987 and has a maximum permitted capacity of 1.0 mgd. The current actual use is about 0.6 million gallons per day or about 60% of capacity.

The City does not currently have a reuse service area. The City completed a Reuse Feasibility Study in 2013. The Study concluded that wastewater flow is expected to increase only modestly, 1% per year, from 0.602 mgd AADF in 2013 to 0.665 mgd by 2023. The Study demonstrated that it was cost prohibitive to produce and distribute reuse within the City's service area until the City is anticipated to experience significant growth in the future which could support the costs of installation of reuse piping, required WWTP upgrades and pre-treatment to remove chlorides. The City's CUP contains a permit condition (#40) that requires the City to conduct another Reuse Feasibility Study by October 2026 to address the potential to beneficially reuse or recharge wastewater discharge

**Map D-1: Location of Flagler Beach Water Treatment Plant**



**Potable Water Sub-Element**

FDEP is responsible for implementing the Florida Safe Drinking Water Act (Section 403.850 - 403.864 FS) through promulgated rules regulating public water systems under Chapter 62 555, FAC. These rules establish drinking water quality standards, designate minimum monitoring requirements, list acceptable sampling and analytical methods, and set construction standards for public water supply wells. Potable water is defined as water safe for drinking, cooking, and other domestic uses.

The Water Management Districts (WMDs) are responsible for conserving and promoting the efficient use of Florida’s water supply to meet existing and future demands. The WMDs regulate consumptive use of water through a permitting system. The *St. Johns River Water Management District* (SJRWMD) requires permits for uses exceeding 100,000 gallons per day average annual daily withdrawal, for withdrawals from facilities having a withdrawal capacity of

more than 1,000,000 gallons per day, or for withdrawal from wells six inches or greater in diameter.

The Governing Board of the SJRWMD has designated the entire area of the District as described in subsection 373.069(2)(c), F.S., to implement the requirement of Rule 62-40.416, F.A.C., and has named this area “Water Resource Caution Area.” The Governing Board has determined that the entire area of the District meets the requirement of Rule 62-40.416, F.A.C., because within recent history all parts of the District have been subject to a declaration of water shortage pursuant to Section 373.175, F.S., on more than one occasion. Additionally, the Governing Board’s policy is to implement reuse, and provide for the greater availability of reclaimed water District-wide to conserve available water resources pursuant to the requirements of Section 373.250, F.S. All of Flagler County has been identified as a Water Resource Caution Area.

### **Potable Water Consumptive Use and LOS**

The City of Flagler Beach originally developed along A1A on the barrier island. However, the City has expanded to include portions of the mainland in Flagler County. The City’s is the only water supplier of potable water within the City limits. Additionally, the City also serves a 76-unit condominium in unincorporated Volusia County and some areas south of the City limits along John Anderson Highway.

The City pumps ground water from the confined surficial aquifer and upper Floridan aquifer as the raw water supply. The water is then treated at the City’s water treatment plant, which started service in 2009 and currently has a maximum capacity of 2.0 mgd and uses nano filtration. The City’s current consumptive use permit (CUP) [#59-5] was issued in October 2016 and expires in 2036. The CUP has an allocation of 0.912 mgd annual average of groundwater from the UFA.

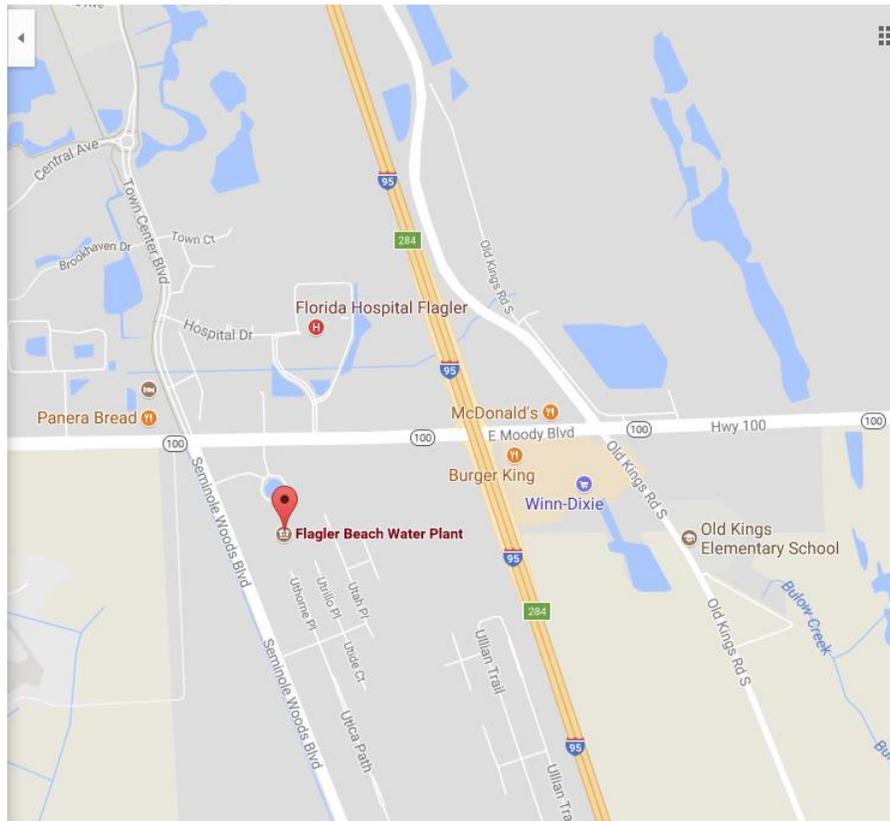
Figure D-3 shows average daily consumption between 2013 and 2016. The period between 2013 and 2015 shows consumption declining from 0.559 mgd to 0.518 mgd. However, in 2016, consumption dramatically increased to 0.600 mgd. At this new rate of consumption, the City is at approximately two-thirds of its consumptive use permit allocation.

### **Water Resource Caution Area**

The *North Florida Regional Water Supply Plan (2015-2035)* [NFRWSP] was approved by the St. Johns River Water Management District’s (SJRWMD’s) Governing Board on January 17, 2017. The NFRWSP was developed as part of the North Florida Regional Water Supply Partnership in coordination with the Suwannee River Water Management District. The NFRWSP identified the North Florida area, including the City, as a Water Resource Caution Area (WRCA). WRCA’s are geographic areas identified by the SJRWMD as having existing water resource problems or areas in which water resource problems are projected to develop during the next twenty years.

In accordance with Section 163.3177(6)(c), *Florida Statutes (F.S.)*, local governments within the NFRWSP area are required to amend their comprehensive plans to include a new or updated a Water Supply Facilities Work Plan (WSFWP). The City of Flagler Beach has included a WSFWP in Appendix A of the Public Facilities Element. Map D-2 shows the location of the City’s Water Treatment Plant. Table D-1 shows historical average daily use Table D-2 shows the correlation between project water demand, population, the City’s CUP allocation, and water treatment plant capacity.

**Map D-2: Flagler Beach Water Plant Location**



**Table D- 1: Flagler Beach Water Treatment Plant Average Daily Use (ADU)**

Water Treatment Plant				
Year	2013	2014	2015	2016
ADU	559,452	528,603	518,274	600,145

Figure D-2: ADU Graph

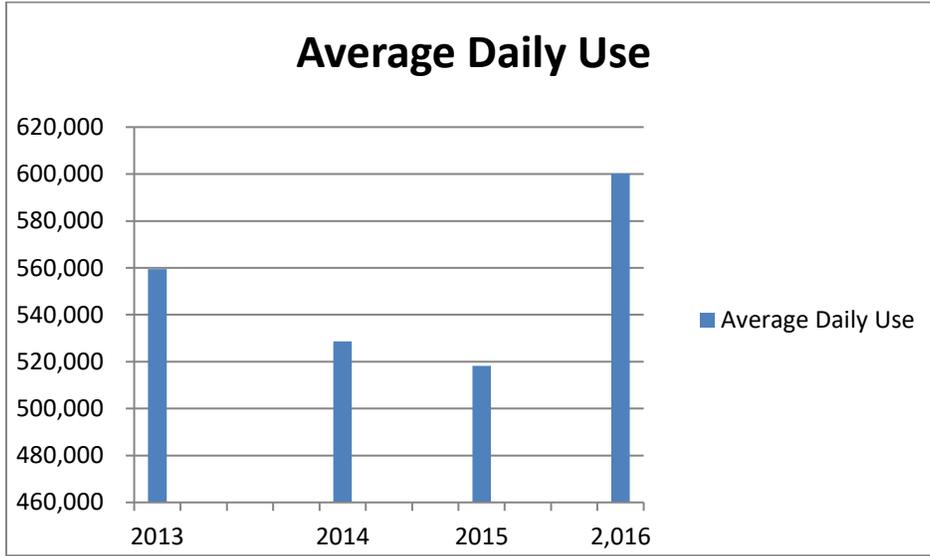


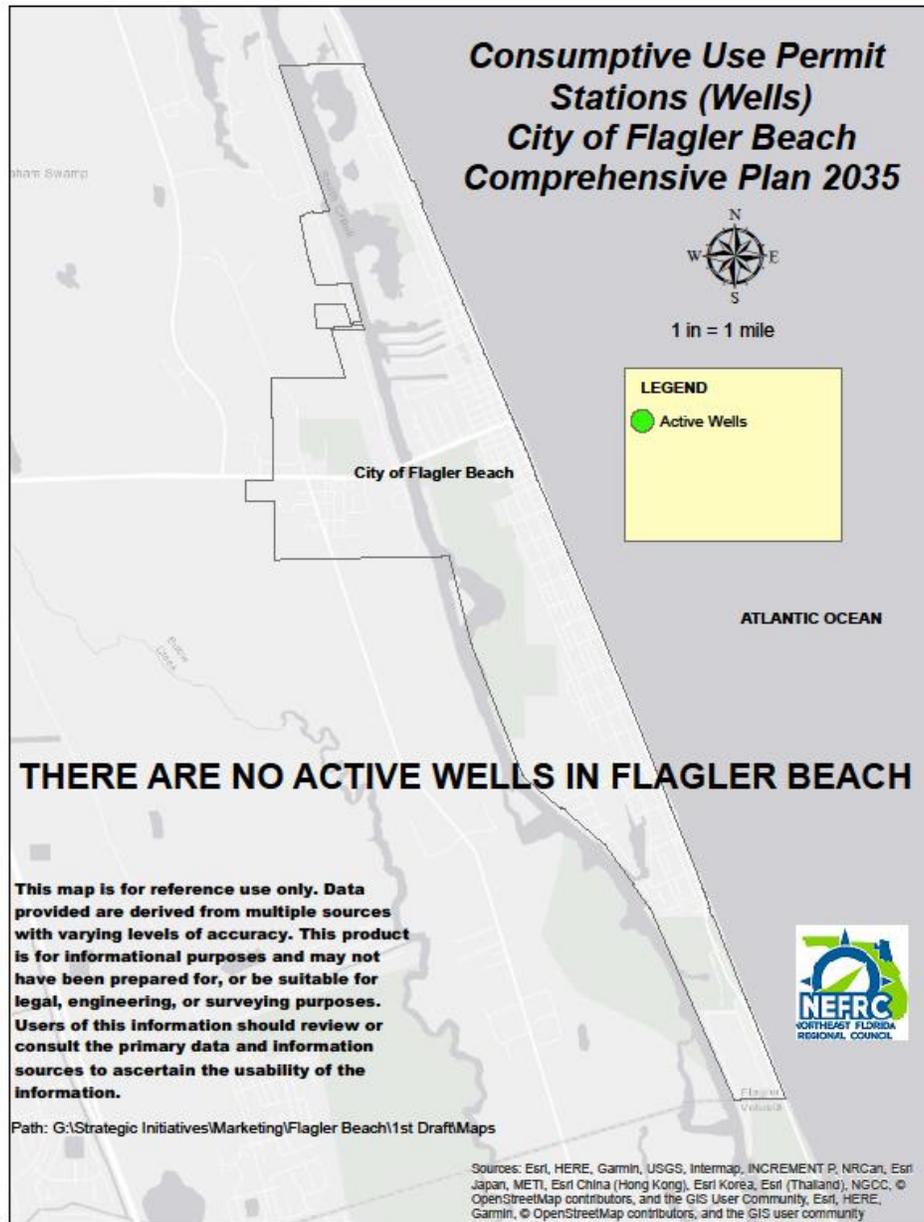
Table C-2 shows that the City has sufficient CUP allocation and WTP capacity beyond the 10-year planning period.

Table C-2. Population per Capita Use

Year		Average Number of Active Residential Connections	Residential Population Served	Residential Water Use Average Day (mgd)	Uniform Residential Per Capita Use (gpcd)
Historical	2011	2,899	4,551	0.465	102.07
	2012	2,923	4,589	0.473	102.97
	2013	2,965	4,655	0.497	106.78
	2014	2,871	4,507	0.379	84.00
	2015	2,943	4,621	0.378	81.76
Projected	2021	3,320	5,212	0.491	94.28
	2026	3,576	5,615	0.529	94.28
	2031	3,853	6,049	0.570	94.28
	2036	4,151	6,517	0.614	94.28

There are not active wells within the City of Flagler Beach’s jurisdictional limits. Map D-3 depicts this.

**Map D-3: Well Locations**



### **Solid Waste Sub-Element**

The City provides solid waste services and provides curbside service twice per week to both the Town of Beverly Beach and the City of Flagler Beach. In the calendar year 2017, the City of Flagler Beach hauled a total of 4,896.34 tons of solid waste. Policy D.2.3.1 of the Future Land

Use Element has a citation of solid waste at 3.7 pounds per person per day. Flagler Beach disposes of the solid waste at the Environmental Land Service (ELS) of Flagler County, Inc located at 1841 N State St, Bunnell, FL 32110. The ELS Florida Department of Environmental Protection (FDEP) ID is 100977. The landfill is categorized as a Class 3 landfill, which means it can receive yard trash, construction and demolition debris, processed tires, asbestos, carpet, cardboard, paper, glass, plastic, furniture other than appliances, or other materials approved by FDEP, that are not expected to produce leachate that poses a threat to public health or the environment.

### **Groundwater Recharge Sub-Element**

As defined by Chapter 9J-5.003 FAC, natural groundwater aquifer recharge areas provide volumes of water that contribute to the storage or regional flow of an aquifer. Nearly all of the water recharging the Floridan aquifer in the SJRWMD and SRWMD is derived from rainfall in the districts.

#### **Areas of Aquifer Recharge in Flagler County**

The Floridan aquifer underlies all of Flagler County. It is present at depths greater than 15 feet below the National Geodetic Vertical Datum (NGVD) of 1929 at three locations in the northern part of the County and at depths less than 50 feet NGVD in the south central part of the County. The most significant recharge area of the upper Floridan aquifer in Flagler County is the DeLand Ridge, which lies outside the County. Recharge to Flagler County from the DeLand Ridge is estimated to range from 0.9 inch per year to 2.6 inches per year. Within Flagler County, recharge to the upper Floridan aquifer is estimated at a range of evapotranspiration (combination of plant transpiration and natural evaporation). The evapotranspiration rate for Flagler County is estimated to be greater than 35 inches per year, while the annual average rainfall is approximately 50 inches per year. Discharge of the aquifer occurs in topographically low areas along the east coast, in the Crescent Lake area and in the Haw Creek Basin. Discharge also occurs through upward seepage, free flowing wells and through pumpage for irrigation and public water supply.

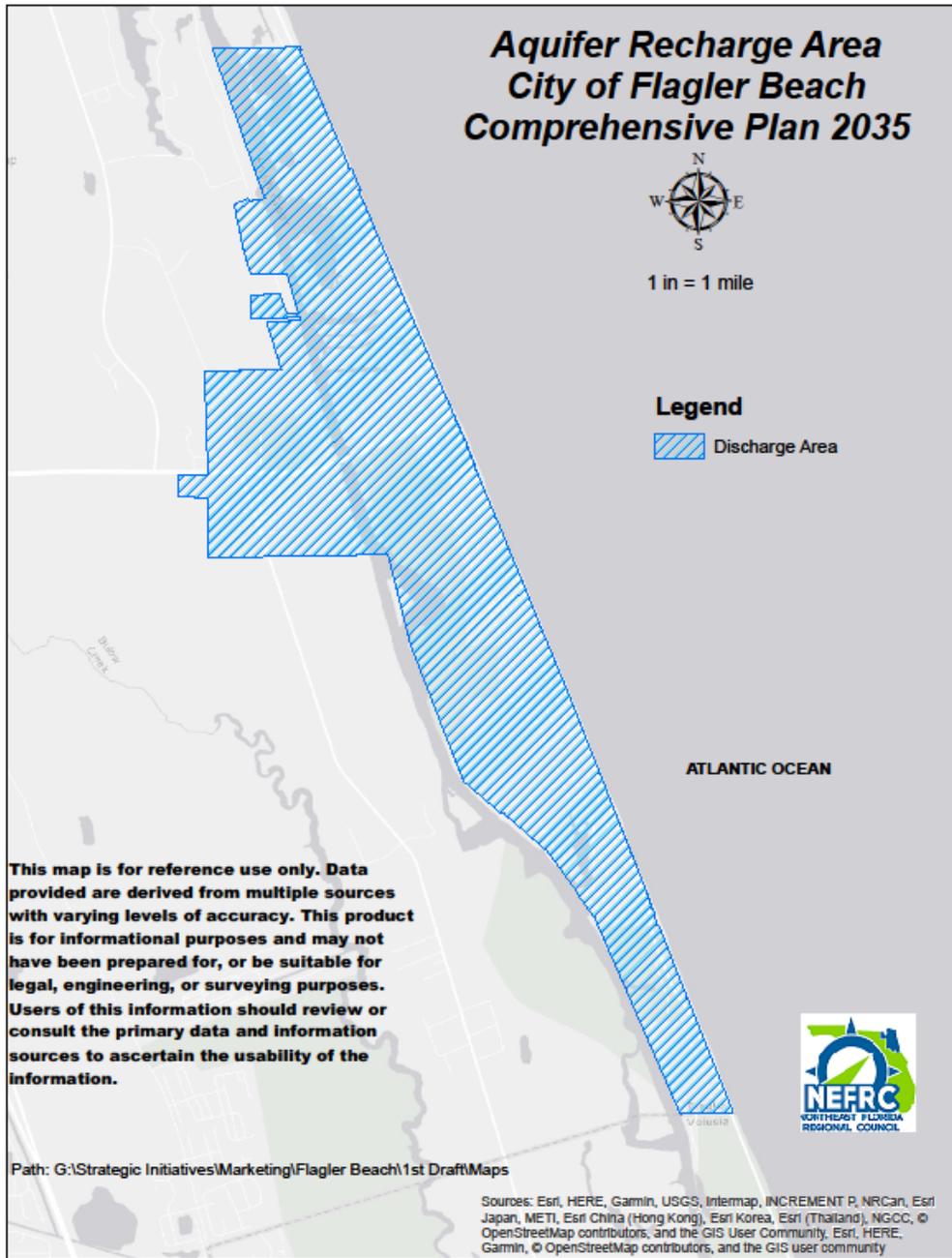
The intermediate aquifer receives recharges either from the upper Floridan aquifer or from the surficial aquifer. The amount of recharge to the intermediate aquifer system is dependent upon its degree of confinement and the head differentials between the aquifer and those systems above and below it.

The surficial aquifer system receives recharge from rainfall and by upward movement of water in from the upper Floridan aquifer. Most recharge areas occur in low-lying areas, where the land is poorly drained. Water in the surficial aquifer is discharged through evapotranspiration, pumpage, and lateral seepage into canals, streams, and the ocean, as well as downward into the intermediate aquifer system. Map D-4 shows that all of Flagler Beach is within the recharge area.

The DOH and FDEP promulgate regulations that protect aquifer water quality. Chapter 62-

528 FAC controls the permitting of underground injection wells. Chapter 62-522 FAC regulates discharges to groundwater and Chapter 62-550 FAC regulates the source and quality of drinking water supplies. These regulations provide minimum protection of groundwater resources. The Town must plan carefully to ensure that growth does not adversely impact groundwater quantity or quality.

**Map D-4: Aquifer Recharge Area**



## **Groundwater—Existing Conditions and Deficiencies**

Population growth and land development significantly impact high recharge areas of the Floridan aquifer. Land use planning in Beverly Beach must balance the trade-off between protecting groundwater resources and encouraging local growth and development. However, the Bureau of Economic and Business Research (BEBR) population projections indicate the likelihood of a very modest increase in residential use (highest water consumptive land use).

### **Drainage Areas Sub-Element**

Drainage in Flagler County is divided into two major drainage basins, the Upper East Coast Basin and the Lower St. Johns River Basin. There are fifteen sub-basins in the Upper East Coast basin. The water draining into the Intracoastal Waterway is discharged eventually into the Atlantic Ocean via inlets. The closest inlet to Flagler County is the Matanzas Inlet, located three miles north in St. Johns County. Ponce de Leon Inlet is twenty-five miles south in Volusia County. Because of these distances, limited tidal flushing occurs in the wetlands adjacent to the Intracoastal Waterway.

The major wetlands in this area are Graham Swamp in the southern half, and Pringle and Hulett Swamps in the northern half. Due to the extensive storage provided by these flat swamplands, surface flows are typically very slow. However, natural drainage patterns have been somewhat altered by man-made canals and mosquito control. Discharges occur into the Graham Swamp primarily via the Lehigh Canal, approximately one mile north of SR 100, the Little and Iroquois Canals, south of the County airport, and the Korona Canal, north of the Old Dixie Highway (U.S. Highway 1).

Discharge to the Intracoastal Waterway occurs at the St. Joe Canal in the north end of the swamp and via Bulow Creek across the Volusia County border to the Halifax River in the southern section. Bulow Creek is designated as Class II waters by DEP. Storm water also collects and drains out of Graham Swamp through mosquito control ditches along the Intracoastal Waterway.

Much of the historical drainage patterns in this basin have been changed by the Palm Coast development and its system of swales and canals. Storm water runoff is collected and diverted into the network of Palm Coast canals and discharged into the swamps feeding Pellicer Creek, Bulow Creek and the Matanzas River. Pringle and Hulett are the largest of the swamps discharging into Pellicer Creek. They are drained by the Pringle and Hulett Branches, respectively. The Hominy Branch is the third main tributary of Pellicer Creek in Flagler County. It flows into Styles Creek that discharges into Pellicer Creek near its mouth. Pellicer Creek flows into the Matanzas River and forms part of the northeastern boundary of Flagler County. It

originates near the confluence of the Pringle Branch, Dave Branch and Stevens Branch. The latter two cross into northern Flagler County from St. Johns County. However, much of the Dave Branch drainage basin lies within Flagler County. Beverly Beach does not have a storm water management system.

### **Manmade Stormwater Management Features**

In 2002, Hartman & Associates, Inc., under contract with the City, produced a Stormwater Master Plan. It was updated in 2009 under contract with Quentin L. Hampton Associates. These two studies identified areas of the City that experienced localized flooding during heavy rain events, and grant monies were obtained to implement projects that modified the drainage system. Over the past decade, the City has made major strides toward reducing localized flooding. It began with the installation of storm sewers and Miami curbing (shallow dip concrete curbs that are more pedestrian-friendly) in the downtown Community Redevelopment District. Soon afterward, there followed a vegetated swale project in Mirror Lake. Of the eight neighborhoods identified in the Stormwater Master Plan, seven have had vegetated swales constructed, most recently Palma Vista Subdivision and South Flagler Avenue between 9<sup>th</sup> and 13<sup>th</sup> Streets.

A vegetated swale is an open channel used to convey stormwater. A drain with an underground pipe is installed in the driveway to minimize the dip to the homeowner. This type of conveyance system has the following advantages over traditional concrete-lined ditches or storm sewers:

- They are less expensive to build (although they do take up more surface area);
- They are less expensive to maintain;
- They more closely preserve the natural hydrologic characteristics of the drainageway;  
and
- They clean the stormwater by filtering it through the vegetation.

By gradually varying the elevation of the swale, the force of gravity conveys the excess water to a stormdrain where it is piped to the Intracoastal Waterway (ICW) or to a retention pond.

These stormwater projects are built to handle the 25-year storm; they will not convey all the runoff expected to accumulate during the “100-Year Storm”. Swales would have to be much deeper and wider otherwise.

## **CHAPTER E –COASTAL MANAGEMENT & CONSERVATION SUPPORTING DATA AND ANALYSIS**

### **INTRODUCTION**

This report of the existing coastal conditions of the City of Flagler Beach has been completed to set the context and assess the needs, issues, and opportunities that exist within the City. This comprehensive overview is meant to direct the City to develop specific goals, objectives, and policies to be included in the Coastal Management Element of the Comprehensive Plan. The Coastal Management Element includes data and analysis of existing and future conditions regarding the City’s natural communities and resources. The purpose of the Coastal Management Element is to promote the conservation, use, and protection of the natural resources of the City.

The resources addressed in the “Protection of Natural Resources” section include: air quality, energy conservation measures, quality and quantity of water resources, conservation of water resources, storm water management, shoreline access, prioritization of shoreline use, wetlands and estuarine ecological systems, native vegetative communities, floodplain protection, wildlife habitats, threatened and endangered species, mineral and soil resources, and educational outreach. Each of these resources, including natural resources within the Coastal Planning Area, has been identified as well as the potential for their conservation, use or protection. The “Natural Disaster Management” section includes data and analysis addressing exposure to hurricanes, coastal high hazard area, disaster mitigation, evacuation, provision of shelter space, and Firewise planning.

Gamble Rogers Memorial State Recreation Area plays host to an extremely wide variety of wildlife and plant life. The park plays host to many different birds. This park is located on the east section of the Great Florida Birding and Wildlife Trail. During late spring, summer, and early fall, many sea turtles crawl up on the park's beach to lay their eggs. Many interesting creatures call this beach home, such as shore birds, crabs, and fish. Right whales can be found hanging out offshore during winter months. During the warmer months, manatees and dolphins can be seen frolicking in the ocean or in the Intracoastal Waterway. Wildlife such as butterflies, otters, bobcats, deer, owls, gopher tortoise, snakes, and alligators are all present. Figure E-1 lists Federally listed species within Flagler County, FL.

**Figure E-1: Federally Listed Species in Flagler County, FL**

**Federally Listed Species in Flagler County, Florida**

This information is provided as a guide to project planning, and is not a substitute for site-specific surveys. Such surveys may be needed to assess species' presence or absence, as well as the extent of project effects on listed species and/or designated critical habitat.

The following table lists those federally-listed species known to be present in the county.

Code Key: E = Endangered, T = Threatened, CH = Critical Habitat Designated, C = Candidate Note 1

Category	Species Common Name	Species Scientific Name	Code
Mammals	West Indian (Florida) Manatee	<i>Trichechus manatus latirostris</i>	E/CH
Birds	Florida Scrub-jay	<i>Aphelocoma coerulescens</i>	T
	Wood Stork	<i>Mycteria americana</i>	E
	Red-cockaded Woodpecker	<i>Picoides borealis</i>	E
Fish	Shortnose Sturgeon	<i>Acipenser brevirostrum</i>	E
Reptiles	Gopher Tortoise	<i>Gopherus polyphemus</i>	C
	Eastern Indigo Snake	<i>Dymarchon corais couperi</i>	T
	Green Sea Turtle	<i>Chelonia mydas</i>	E
	Hawksbill Sea Turtle	<i>Eremochelys imbricata</i>	E
	Leatherback Sea Turtle	<i>Dermochelys coriacea</i>	E
	Kemp's ridley Sea Turtle	<i>Lepidochelys kempii</i>	E
	Loggerhead Sea Turtle	<i>Caretta caretta</i>	T
Amphibians	Striped Newt	<i>Notophthalmus perstriatus</i>	C
Mollusks	None		
Crustaceans	None		
Plants	None		

**Water Dependent sites**

Flagler Beach has over six miles of beachfront, most of which cannot be developed because of the narrow strip of land located between SR A1A and the beach. All development, with the exception of the City Pier and restaurant and dwelling units at the south end of the City is located on the west side of SR A1A. There is beach access at every point where a side street meets SR A1A and a pedestrian crossover. There are several boat ramps on the Intracoastal. The City obtained a previously private marina at the north end of the City in 2017.

**Land Use Conflicts**

There are no traditional industrial land use conflicts currently in the City of Flagler Beach since there are no parcels designated industrial. There are many locations of commercial adjacent to residential, especially on the beachfront. This conflict is minimized by the strict thirty-five foot height limit throughout the City causing all scale to be compatible.

The City serves as 'the beach' for a significant part of Flagler County and many non-residents use the beach on weekends and for special events and holidays causing some conflicts and some development pressure. The development pressure is converting residential to short-term rentals, light commercial, and commercial support (parking).

**Coastal Erosion & Beach Re-nourishment**

The loss of beach sand from coastal erosion in the City of Flagler Beach from 2000 to 2017 has been profound. The repetitive damage from hurricanes to the beach and to SR A1A is well documented. The Florida Department of Transportation's options to repair SR A1A have included scenarios of 1) relocating the roadway inland 1 block, 2) keeping the current right of

way and hardening the seawall to separate the sea from the road, and 3) pumping offshore sand onto the eroded beach to raise the elevation.

The beach and the fishing pier (which has also sustained extensive damage from recent hurricanes) are a major part of the identity and economy of the City. Loss of either of these resources is considered a major threat.

### **Coastal High Hazard Area (CHHA)**

The Coastal High Hazard Area is an area particularly vulnerable to the effects of coastal flooding from tropical storm events and is defined by section 163.3178(2)(h)9, Florida Statutes, as the area below the elevation of the category 1 storm surge line as established by a Sea, Lake, and Overland Surges from Hurricanes (SLOSH) computerized storm surge model. Local governments which abut the the Atlantic Ocean, or are contiguous to waters of the state where marine species of vegetation listed by rule as ratified in section 373.4211, Florida Statutes, constitute the dominant plant community, are required by sections 163.3177(6)(g) and 380.24, Florida Statutes, to develop a coastal zone management element.

Section 163.3177(6)6., Florida Statutes, requires that local governments limit public expenditures that subsidize development in Coastal High Hazard Areas. Section 163.3177(6)(a)10.a., Florida Statutes, requires that local governments designate Coastal High Hazard Areas on their future land use map series. Section 163.3178(1), Florida Statutes, expresses the legislative intent that local governments restrict development activities where such activities would damage or destroy coastal resources and that such plans protect human life and limit public expenditures in areas that are subject to destruction by natural disasters.

The City of Flagler Beach abuts both the Atlantic Ocean and intercostal waterway. As shown in Map E-1, it is within the CHHA. Therefore, the City has adopted objectives and policies which limit or restrict residential density, the type of development allowed, establish special building requirements, and that limit the use of public funds within the CHHA.

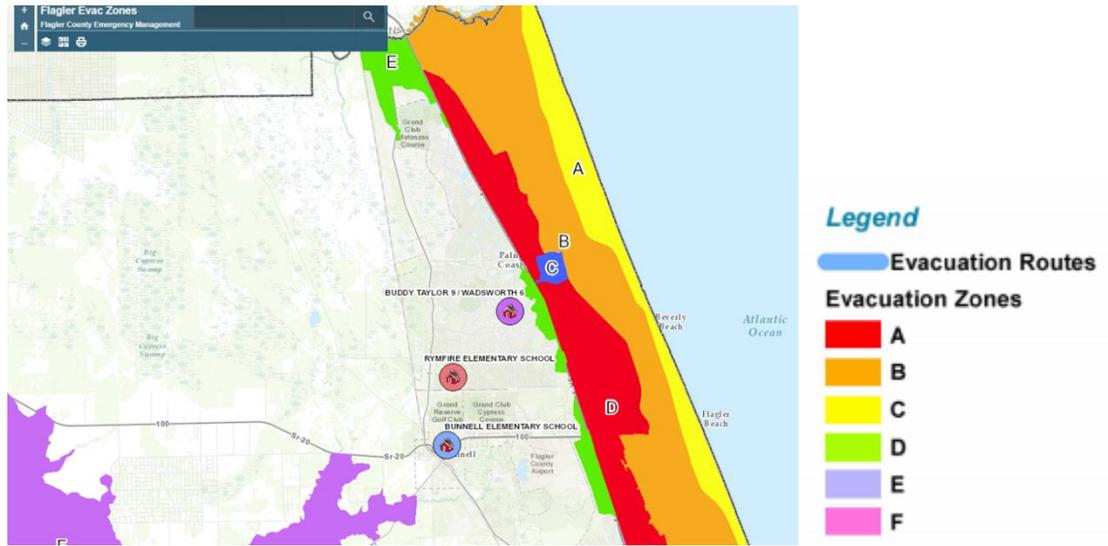
Map E-1: CHHA



### Evacuation Zones

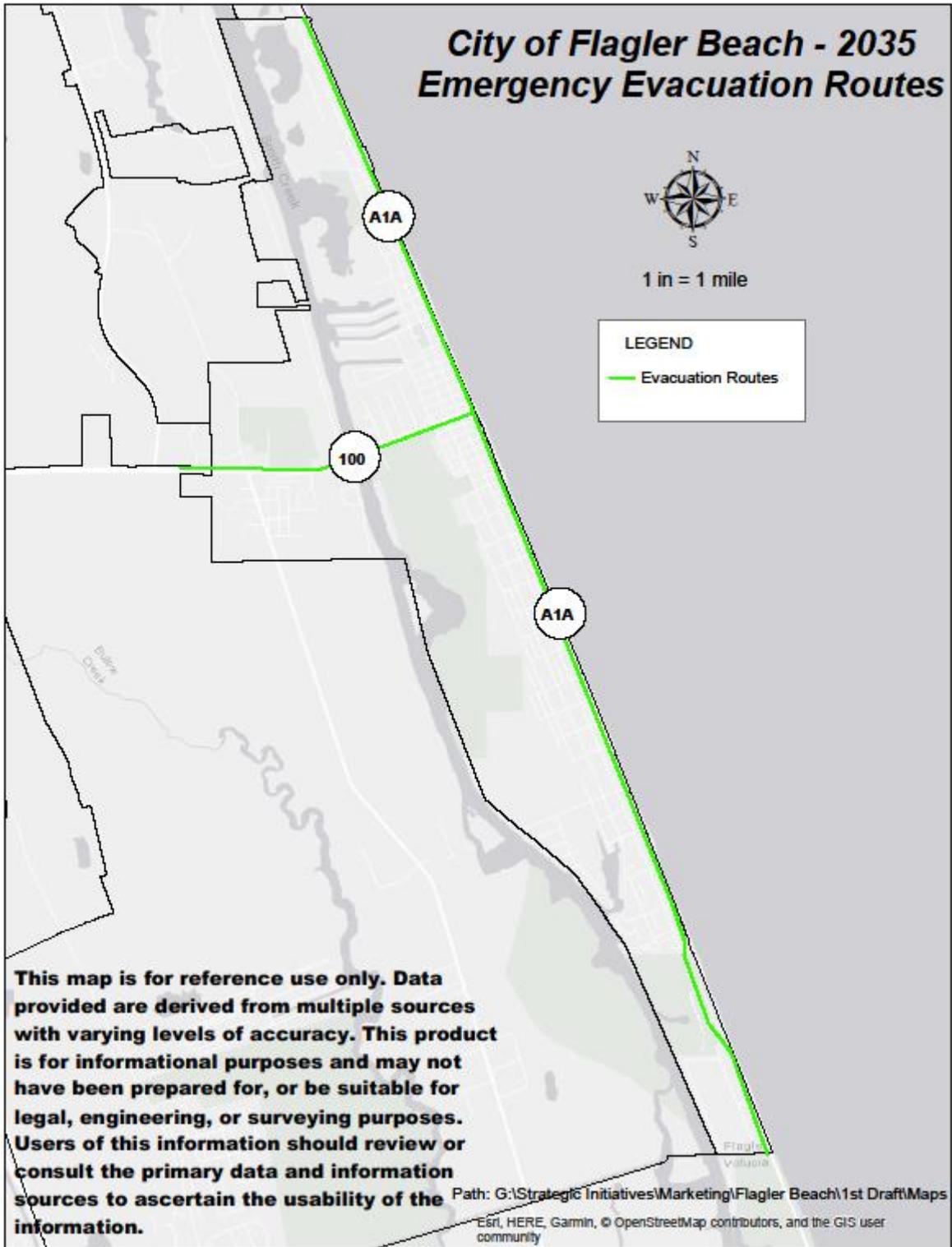
A majority of the City of Flagler lies in Hurricane Evacuation Zones A, B and C as can be seen from the figure E-3 below. Additionally, all of the within the Category 1 storm surge is designated as the Coastal High Hazard Area.

Figure E-3: Evacuation Zones



Map E-5 depicts the designated emergency evacuation routes for the City of Flagler Beach. The designated emergency evacuation routes are SR-A1A and SR-100.

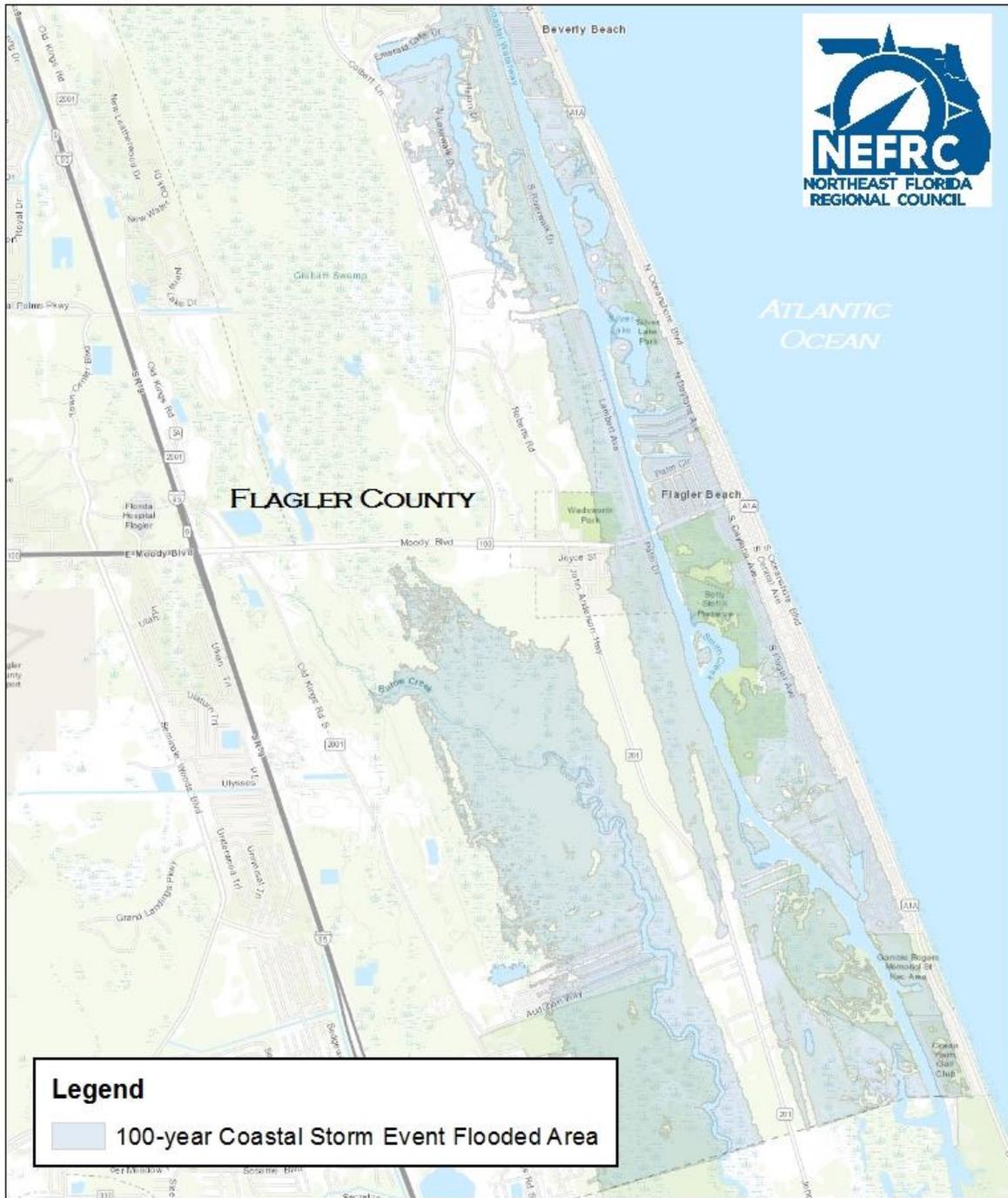
Map E-5: Emergency Evacuation Routes



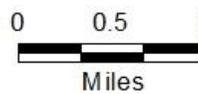
## **Adaptation Action Area**

The City of Flagler Beach is designating the Coastal High Hazard Area, Map E-1 in Data and Analysis, as an Adaptation Action Area. One focus of the designation will be to strengthen the link between emergency preparedness and adaptation so that residents and businesses understand that readiness for storm events is enhanced by adaptation efforts to increase resiliency. Extensive analysis of vulnerability to flood and sea level rise was included in the 2018 Resiliency Flagler County plan sponsored by the River to Sea Transportation Planning Organization. Flagler Beach planners therefore have access to various projections for the extent of potential flooding. Two examples created for that study, 100 Year Base Flood Elevation and the Year 2040 Low Inundation Scenario for sea level rise (see maps below) show that the CHHA is flood prone and subject to sea level rise. It is also a familiar designation which lends itself to an expansion of community conversation and messaging, which public input indicated was preferred to creation of a new area with new messaging. Map E-6 and Map E-7 were produced using model data provided by University of Florida Geoplan Center, utilizing FEMA's Hazus-MH software for modeling 100-year flood hazard areas with the addition of sea level rise.

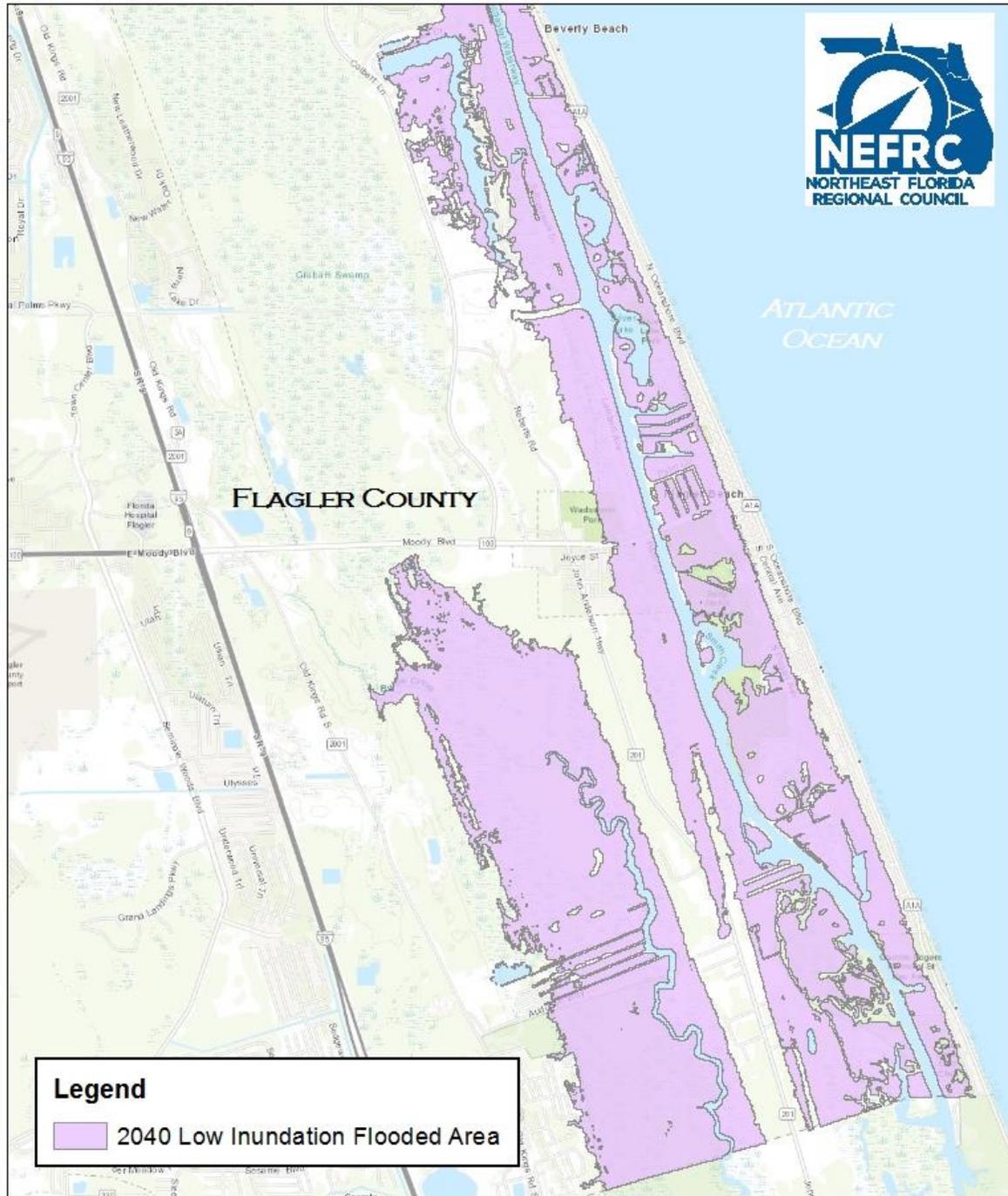
# Map E-6 100 Year Base Flood Elevation



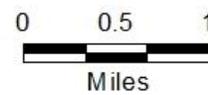
## 100-Year Base Flood Elevation City of Flagler Beach



Map E-7 Year 2040 Low Inundation Scenario for Sea Level Rise



Sea Level Rise: City of Flagler Beach  
Year 2040 Low Inundation Scenario



## **B. CONSERVATION**

### **INTRODUCTION**

This report of the existing environmental conditions of the City of Flagler Beach has been completed to set the context and assess the needs, issues, and opportunities that exist within the City. This comprehensive overview is meant to direct the City to develop specific goals, objectives, and policies to be included in the Conservation and Coastal Management Element of the Comprehensive Plan. The Conservation and Coastal Management Element includes data and analysis of existing and future conditions regarding the City's natural communities and resources. The purpose of the Conservation and Coastal Management element is to promote the conservation, use and protection of the natural resources of the City.

The resources addressed here include: water resources, conservation of water resources, storm water management, wetlands and estuarine ecological systems, native vegetative communities, floodplain protection, wildlife habitats, threatened and endangered species, and mineral and soil resources. Each of these resources, including natural resources within the Coastal Planning Area, has been identified as well as the potential for their conservation, use or protection.

### **Flagler Beach Coastal Area Boundaries**

The Florida Statutes require local governments to define the extent of the “coastal area” within its boundaries. The Florida Statutes also requires the area at a minimum encompass: water and submerged lands of oceanic or estuaries; coastal barriers; living marine resources; marine wetlands; water dependent or related facilities on oceanic or estuarine water; and all lands adjacent to such occurrences where development activities would impact the integrity or quality of the aforesaid. Geographically, Flagler Beach is oriented in a linear north/south fashion being approximately 6 miles long from north to south. The eastern portion of Flagler Beach is located between the Atlantic Ocean and the Intracoastal Waterway (ICW) and essentially acts as a barrier island. The western portion of Flagler Beach is located west of the ICW on the mainland. Flagler Beach area has been designated as the “coastal area” for planning purposes, based on the above criteria and to simplify the identification of the planning area,

### **Environmental Setting**

Flagler Beach is located within a physiographic division of Florida known as the *Coastal Lowlands*. This low land area parallels the coast of Florida and extends inland for some 30 to 60 miles. It consists of marine terraces, which were cut by ocean erosion during times when sea levels were higher. A major feature of this zone is the “Atlantic Coastal Ridge”—a series of relic beach dunes closely paralleling the entire east coast of Florida. Flagler Beach is located on top of this ridge as are most coastal communities. The region's climate is temperate with seasonal

changes typical of northern climates although not as severe. The Atlantic Ocean moderates winter and summer temperature extremes. Winters generally are mild with occasional freezes, whereas summer months are hot and humid.

### **Conflicting Shoreline Uses**

Outside of the Flagler Beach Municipal Pier, there are no conflicting shoreline uses. Conflicting shoreline uses normally involve commercial or industrial uses, which are dependent on waterfront sites versus residential developments, which also desire waterfront sites. Typically, these uses consist of marinas, boat repair facilities, commercial fishing docks, power plants, and ports. Residential uses are not compatible with noise, odors, heavy truck or boat traffic, or the visual pollution normally associated with these uses.

Potential sites for future marinas or other water dependent sites are limited. Water dependent sites normally need navigable waters adjacent to upland sites and thus the ideal site would be an upland area away from residential uses and directly adjacent to navigable waters. The spoil sites located along the east edge of the ICW are potential sites for water dependent uses; however, extensive dredging and/or filling within the salt marsh would be required in order to connect these sites with the ICW.

Another conflicting shoreline use can involve recreational use of beach versus beachfront development (normally residential or commercial) which can limit beach access. Flagler Beach has 6 miles (31,680 feet) of beachfront.

In Flagler Beach, public access is provided at the termination of each public street via wooden walkovers. Private beach access is also provided by several private developments. Vehicular parking takes place at five parking lots and on the east shoulder

### **Analysis of Need**

Aside from City owned facilities, there are no conflicting shoreline uses within Flagler Beach. In addition, there does not appear to be demand for future waterfront dependent uses such as marinas or water related industry.

### **Existing Infrastructure**

#### **Transportation**

The Flagler Beach traffic circulation system is currently composed of SR A1A, SR 100, CR 201, a system of roads maintained by the City, and privately owned and maintained roads.

The Florida Department of Transportation (FDOT) maintains SR A1A and SR 100. SR A1A is a north-south arterial that runs the entire length of the town. The two-lane roadway provides Beverly Beach residents with access to the Town of Beverly Beach to the North and to unincorporated Volusia County to the south. Because of the scenery along the SR A1A corridor, tourists use this road extensively.

State Road 100 (SR 100) is a 153-mile-long (246 km) east–west highway serving northeastern Florida. Its western terminus is at the Georgia-Florida border four miles (6 km) north of Avoca, Florida (its continuation in Georgia is State Route 11); its eastern terminus is an intersection with Shore Scenic Highway (SR A1A) in Flagler Beach. SR 100 provides access to the barrier island portion of Flagler Beach and interconnects to the I-95 Corridor.

CR 201 is the only County roadway facility within the City. It runs south from its terminus with Roberts Rd to Volusia County.

### **Future Transportation Needs and Costs**

All roads within the City limits have an adopted a level of service of “D.” The analysis indicates adequate capacity exists for SR A1A, SR 100, and CR 201 within Flagler Beach.

### **Potable Water**

The City is the only potable water supplier within its municipal limit. The City’s current consumptive use permit (CUP) [#59-5] was issued in October 2016 and expires in 2036. The CUP has an allocation of 0.912 mgd annual average of groundwater from the UFA. Population served by the utility varies due to visitors and seasonality. Even with anticipated growth and seasonal fluctuations in population, there remains available capacity for potable water use in Flagler Beach.

### **Future Potable Water Needs and Costs**

The current trend in population growth does not require additional expansion of potable water resources.

### **Drainage**

Flagler Beach is located within a physiographic division of Florida known as the “Coastal Lowlands”. A major feature of this zone is the “Atlantic Coastal Ridge”—a series of relic beach dunes closely paralleling the entire east coast of Florida. Flagler Beach is located on top of this ridge as are most coastal communities. Elevation along the top of this ridge is approximately 20 feet above sea level dropping to approximately sea level near the Intracoastal Waterway.

The City has made major strides toward reducing localized flooding. It began with the installation of storm sewers and Miami curbing (shallow dip concrete curbs that are more pedestrian-friendly) in the downtown Community Redevelopment District. Soon afterward there followed a vegetated swale project in Mirror Lake. Of the eight neighborhoods identified in the Stormwater Master Plan, seven have had vegetated swales constructed, most recently Palma Vista Subdivision and South Flagler Avenue between 9<sup>th</sup> and 13<sup>th</sup> Street.

These stormwater projects are built to handle the 25-year storm; they will not convey all the runoff expected to accumulate during the “100-Year Storm”. Swales would have to be much deeper and wider otherwise.

### **Future Needs and Cost**

There does not appear to be a need for an extensive drainage system to accommodate future growth. Drainage is adequate due to low intensity development and the extremely porous soils commonly associated with the coastal dune systems. Existing regulatory programs appear to be adequate to control future storm water run-off.

### **Estuarine Management**

In terms of hydrology, Flagler Beach is located within the Upper Coastal Drainage Basin (as defined by the St. Johns River Water Management District). This basin is drained by numerous small streams and canals, which flow directly into the estuarine lagoons and the ocean. The Intracoastal Waterway (ICW) facilitates drainage to the ocean via numerous inlets along the coast. Beverly Beach is bounded on the east by the Atlantic Ocean and on the west by the Intracoastal Waterway. The dominant surface water feature in Flagler Beach is the ICW (also known as Matanzas River) which runs north and south and forms Flagler Beach’s western boundary. This water is periodically dredged to maintain a navigable channel and spoil sites have been placed along the sides within the saltwater marshes.

### **Surface Water Quality**

Very little water quality information exists for the northeast Florida coastal areas. The *St. Johns River Water Management District* samples the Matanzas River six times per year at *Marineland* and at *Washington Oaks State Park* to the north of Beverly Beach as part of their permanent monitoring network (PMN). Sampling has shown water quality at these sites is good and meets Class II criteria for shellfish harvesting. The Department of Environmental Protection also samples the Matanzas River at Marineland approximately every month.

## **Point Source Pollution**

Water pollution is classified as either point source or non-point source. Examples of point source pollution would include industrial or wastewater discharges (from a pipe) and nonpoint sources would include area wide run-off from urban or agricultural sources or infiltration of septic tank effluent. The Flagler Beach Waste Water Treatment Plant (WWTP) discharges into the Intracoastal Waterway. The WWTP meets its permitted treatment criteria and is not considered to be a significant source of pollution.

## **Non-Point Source Pollution**

Non-point sources of pollution are much more difficult to quantify because they originate from many large and diverse sources. In Beverly Beach, non-point sources are primarily in the form of urban run-off and septic tank effluent.

Run-off drains west from the coastal ridge down to the ICW or to the adjacent marshlands. The existing drainage patterns closely resemble the natural drainage that existed even before Flagler Beach was developed. Soils in the area are porous enough to absorb much of the rainfall.

## **Existing Water Quality Related Regulatory Programs**

There currently exists a host of regulatory programs administered by Federal and State and local governments dealing with water quality problems.

### **Federal**

The U.S Army Corps of Engineers is responsible for issuing fill permits for “waters of the State” pursuant to Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899. The Environmental Protection Agency (EPA) requires a *National Pollution Discharge Elimination System* (NPDES) permit for the discharge of wastewater or other pollution sources into surface waters.

### **State**

The Florida Department of Environmental Protection (DEP) issues dredges and fill permits for projects within waters of the State. Dredge and fill permits can be for a variety of projects including: bulkheads and backfill; boardwalks; boathouses; docks; rip/rap and revetments; subterranean pipelines for water and sewer; outfall pipes for water, sewer, and storm water; and mosquito control. In addition, DEP requires permits for construction and operation of wastewater treatment plants and before the EPA issues a NPDES permit for a wastewater treatment plant discharge, the DEP must certify that state water quality standards will be met.

DEP also requires that any docks or piers built within State Sovereign Lands obtain a submerged lands lease. DEP also regulates the commercial harvesting of shellfish including clams and oysters and has the authority to open and close harvesting areas depending on established water quality standards.

The Florida Department of Health regulates permits for septic tanks. In some cases, the local health department is given this responsibility.

The St. Johns River Water Management District (SJRWMD) is responsible for several water quality related programs. The storm water permit is concerned primarily with water quantity and standing pre-construction run-off amounts. However, it also affects water quality in that run-off is required to be either retained or detained and filtered before discharge.

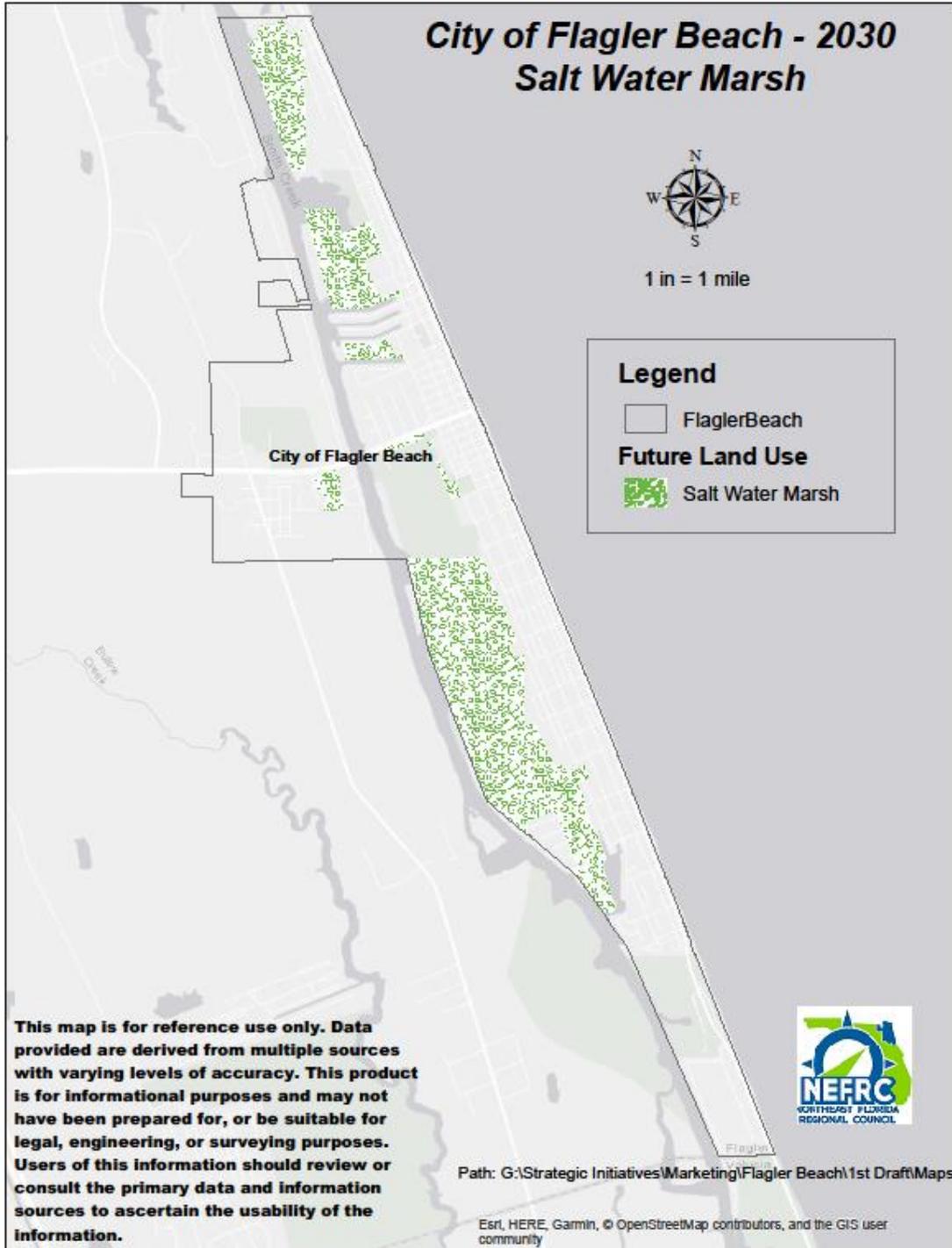
### **Local**

The purpose and intent of Section 5.05.01 of the City's Land Development Regulations is to manage stormwater drainage within the City of Flagler Beach in order to maintain and enhance the public health, safety, and welfare through the control of runoff volume and treatment of stormwater runoff for the protection of surface water and groundwater quality, and the control and prevention of erosion, sedimentation, and flooding by providing standards for the design, construction, and operation of stormwater management systems in conformance with best overall management practices. This section is intended to enforce the goals, objectives, and policies of the comprehensive plan, and to be consistent with the applicable policies and regulations of regional, state and federal agencies regarding stormwater management.

### **Wetlands**

As shown in Map E-3, the saltwater marshes border the City of Flagler Beach's western edge along the Intracoastal Waterway. This community provides habitat for many species of fish and invertebrates and acts as a cleansing buffer for any run-off entering from the coastal ridge.

Map E-3: Saltwater March Map



## **Groundwater Resources:**

### **Aquifers**

The Floridan Aquifer, which underlies all of Florida and southeast Georgia, is the major source of water supply for Flagler Beach. This aquifer contains water with high chloride levels, which requires it to be treated by reverse osmosis. The surficial aquifer, also known as the water table aquifer, provides a secondary potable water supply.

### **Projected Demand for Water**

Projected demand for potable water is based on average daily water use and population.

Flagler Beach has available capacity to serve the Town through 2036, which is the expiration date of their Consumptive Use Permit issued by the St. Johns River Water Management District.

### **Analysis of Need**

The City will work with its citizens and neighbors to encourage water saving devices in irrigation systems and individual households.

### **Vegetation and Wildlife**

The map below indicates that all of Flagler Beach, east of the Intracoastal, is developed or salt marsh with a few isolated patches of upland coniferous. West of the Intracoastal near State Road 100 is also upland coniferous with about an equal amount south of that of upland hardwood.

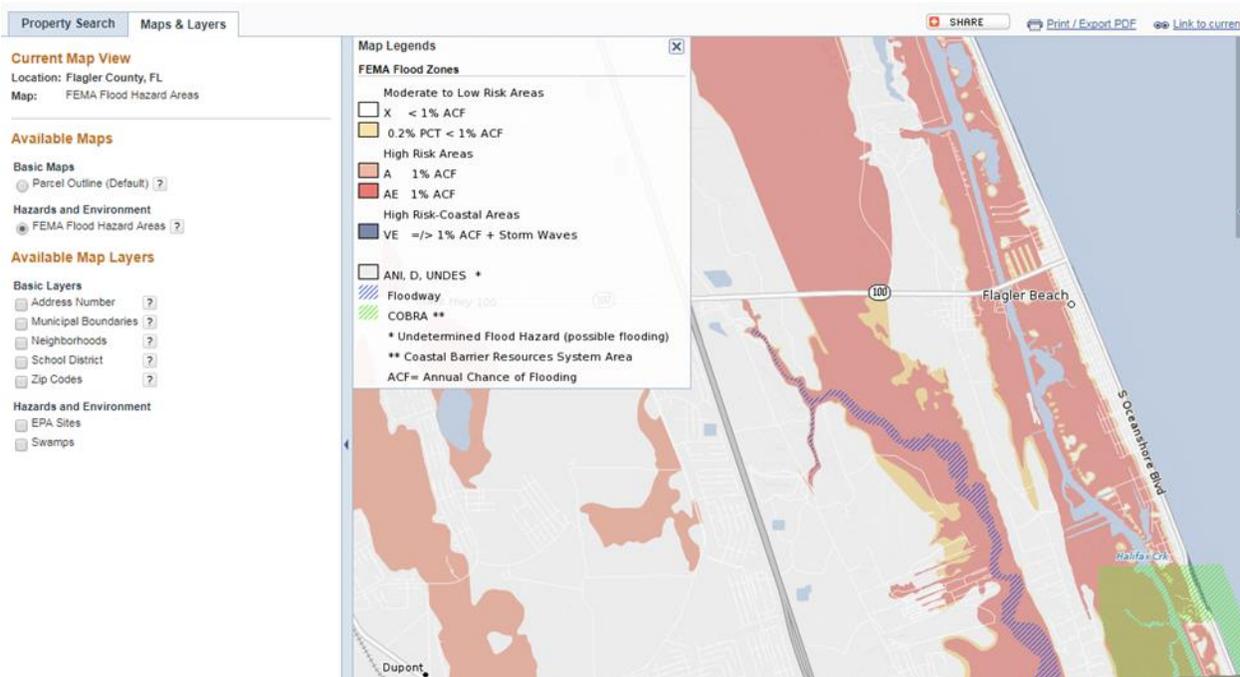
### **Floodplains**

About 90% of all of the land within the City limits is within the 100 year Federal Emergency Management Agency (FEMA) Flood Zone. Most of the three developed blocks built on the primary dune are not. Nor is the extreme western boundary north and south of State Road 100 in the 100-year FEMA Flood Zone. The City of Flagler Beach participates in the Community Rating System (CRS). The CRS recognizes and encourages community floodplain management activities that exceed the minimum National Flood Insurance Program standards. Depending upon the level of participation, flood insurance premium rates for policyholders can be reduced up to 45%. Besides the benefit of reduced insurance rates, CRS floodplain management activities enhance public safety, reduce damages to property and public infrastructure, avoid economic disruption and losses, reduce human suffering, and protect the environment.

There are ten classes within the CRS with class one being the highest level providing the largest flood insurance premium discount. Currently, the City of Flagler Beach is in class 6.

The Gamble Rogers State Park lies within lands designated by the Coastal Barrier Resources Act (CBRA) of 1982 that established the John H. Chafee Coastal Barrier Resources System (CBRS). They are lands defined as a set of coastal barrier units located along the Atlantic coast. These areas are delineated on a set of maps that are enacted into law by Congress and maintained by the Department of the Interior through the U.S. Fish and Wildlife Service (Service). Most new Federal expenditures and financial assistance are prohibited within the CBRS. The prohibition that is most significant to homeowners and insurance agents is the denial of Federal flood insurance through the National Flood Insurance Program (NFIP) for new or substantially improved structures within the CBRS. CBRA does not prevent development, and it imposes no restrictions on development conducted with non-Federal funds. Congress enacted CBRA to minimize the loss of human life, wasteful Federal expenditures, and damage to the natural resources associated with coastal barriers.

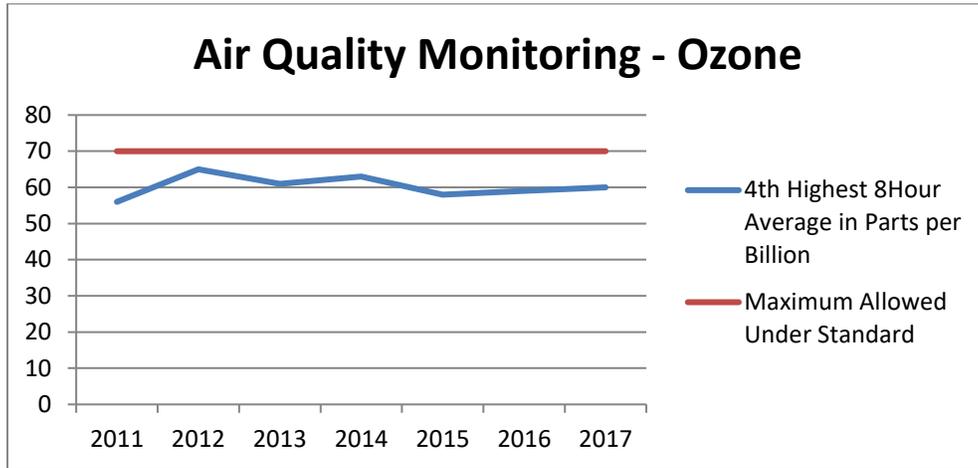
**Map E-4: FEMA Floodplains**



## Air Quality

The Ozone level as measured at AQS # 035-0004 Flagler 208 Sawgrass Rd Flagler County Bunnell, FL 32110 has not exceeded the 70 parts per billion standard (8 Hour Average Method) since 2011. Figure E-2 shows Ozone air quality levels from 2011-2017.

Figure E-2: Air Quality Monitoring – Ozone.



Source: Air Quality Monitoring Flagler County 2017 Air Monitor Site

## CHAPTER F - RECREATION AND OPEN SPACE SUPPORTING DATA AND ANALYSIS

### INTRODUCTION

The Recreation and Open Space element presents an inventory of existing public and private recreation sites in the City of Flagler Beach.

### Overview of Existing Parks System

Within the City’s municipal boundaries exists a system of six parks consisting of the State of Florida, Flagler County, and City of Flagler Beach parks. This system includes one state park, one county park, and four city parks. An inventory of parks is listed below in Figure F-1.

**Figure F-1: Inventory of State, County, and Local Parks Within Flagler Beach**

Park Name	State	County	City
Flagler Beach Fishing Pier			X
Gamble Rogers Memorial State Recreation Area	X		
Silver Lake Park			X
Veterans Park			X
Wadsworth Park		X	
Wickliffe Park			X

#### State Park -

**Gamble Rogers:** Nestled between the Atlantic Ocean and the Intracoastal Waterway, this 145-acre park is named for Florida folk singer and storyteller Gamble Rogers. The park’s very popular 68 campsites are split into two separate areas – the Beachside Camping Area and the Riverside Camping Area. Numerous activities are present at this park including, but not limited to birding, beach access, biking, boat ramp access, boating, camping, canoe/kayak launch, fishing, hiking, and wildlife viewing.

#### County Park -

**Wadsworth Park:** Wadsworth Park is a 45-acre park that stays busy both day and night because of its amenities: lighted soccer fields; racquetball, tennis, volleyball, and basketball courts; two playground areas; a picnic pavilion; an elevated boardwalk; a canoe launch site; and, a dog park. This park is home to many Flagler County sports leagues. It boasts a skate park, and a 60,000 square foot fenced dog park that allows dogs to run unleashed and mingle with other canines.

## **City Parks –**

**Flagler Beach Municipal Pier:** Officially opened in 1928, the pier is one of the most popular fishing spots. Open from 6:00 am to 12:00 am year round, the pier is great for fishing and bird watching, and stretches out into the Atlantic Ocean 806 feet. The pier includes a restaurant, a tackle supply shop, and covered picnic tables. Fees support the pier use.

**Silver Lake Park:** Silver Lake Park is comprised of 46 acres of sensitive wetlands lying east of the Intracoastal Waterway and bordering North Daytona Avenue and North 17th Street in order to ensure that the future of these pristine lands was not compromised by future development. The park features benches, picnic shelter, picnic tables, a playground, and trails.

**Veterans Park:** Veterans Park is located in front of the Flagler Beach City Hall. As it is in the geographical center of the city, it is utilized for many city special events. Although there are no major structures, there are park benches, shuffle board courts, and nighttime lighting.

**Wickline Park:** Wickline Park is bordered on the east side by South Daytona Avenue between South 7th and South 9th streets. On the north-east side of the park lies the entrance to a boardwalk, which meanders through the wetlands and continues to The Flagship Harbor boat launch on the Intracoastal Waterway. Amenities include a basketball court, beach volleyball court, children's playground, two pavilions, and two tennis courts.

## **Beaches**

### **Atlantic Ocean**

The City of Flagler Beach is home to more than 6 miles of beaches connecting the City with the Atlantic Ocean. There are 52 points of beach access (wooden walkovers) within the City Limits, one at every city street intersection. The Flagler Beach Fishing Pier may be the single most recognized identifying feature of the City.

### **Intracoastal Waterway**

There is approximately 6 miles of Intracoastal Waterway. The eastern bank of the Intracoastal Waterway extends the entire north to south length of the city. About two miles of the western bank of the Intracoastal Waterway is within the city limits.

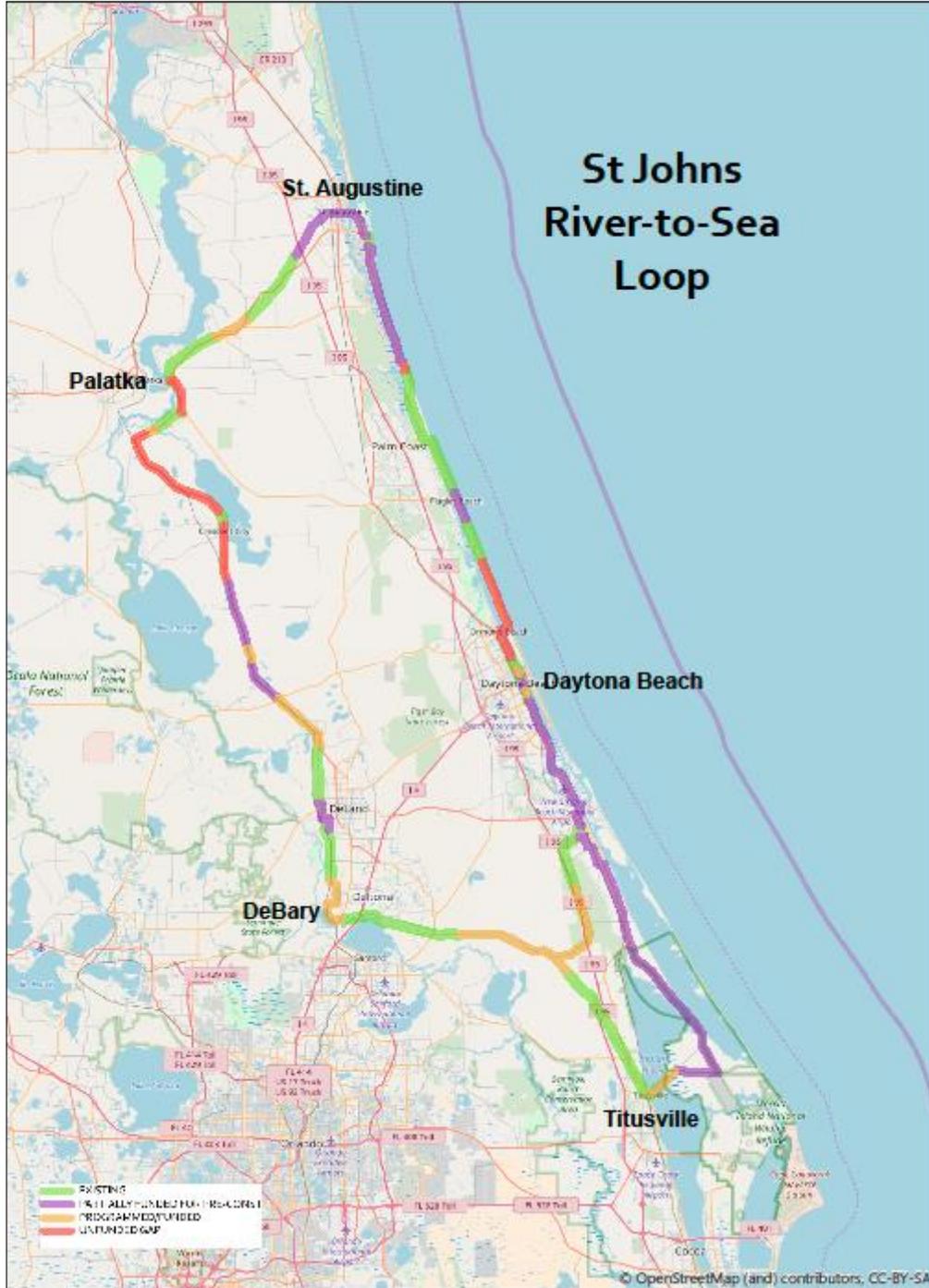
### **Level of Service**

The level of service of the City of Flagler Beach is based on the need for publicly owned beach access facilities. The State of Florida recommends a standard of one access point for every ½ mile of public shoreline. With four publicly owned beach access points, the City exceeds the minimum level of service required.

## St. Johns River-to-Sea Loop

The St. Johns River-to-Sea Loop (SJR2C) is a partially completed nearly 300 mile loop that follows the East Coast Greenway along Florida's Atlantic Coast and the St. Johns River corridor.

Map F-1: St. Johns River-To-Sea Loop



## **CHAPTER G – INTERGOVERNMENTAL COORDINATION SUPPORTING DATA AND ANALYSIS**

### **INTRODUCTION**

The Intergovernmental Coordination Element establishes mechanisms, processes, and procedures to accomplish the goals and objectives of the Comprehensive Plan in cooperation and coordination with other governmental entities and agencies, and in compliance with county, state, and federal codes with jurisdictional applicability within the City of Flagler Beach. Flagler Beach is an ocean-side community with 4,954 residents as of 2010 and projected to have 5,565 residents by 2040 (Source: BEBR Population Estimates). The City is located south of the Town of Beverly Beach, north of unincorporated Volusia County, and east of unincorporated Flagler County and the City Palm Coast.

### **Inventory and Effectiveness of Existing Agreements**

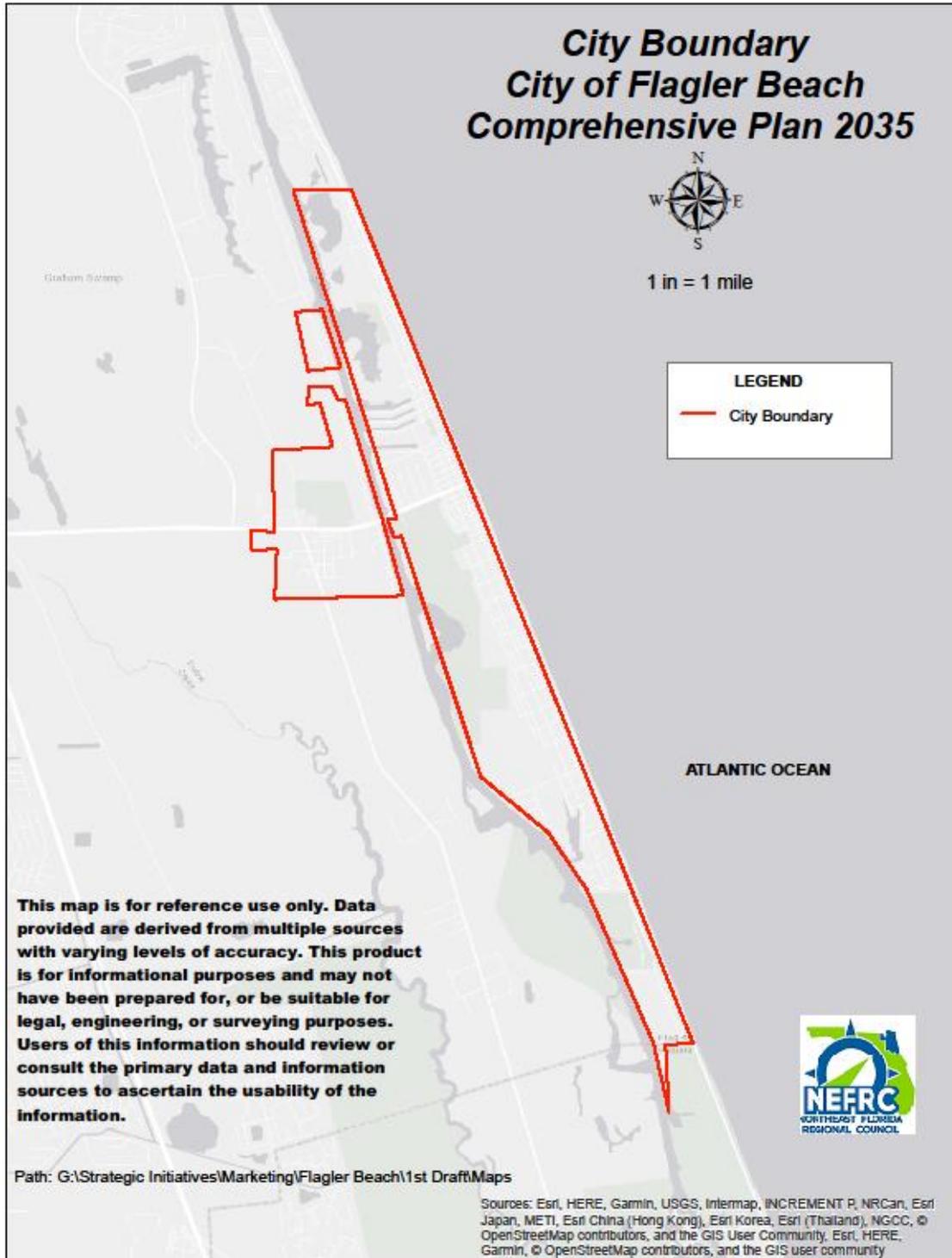
The past and current Intergovernmental Coordination Element describes established, effective relationships that have been in coordination for years. There is no evidence that precludes these relationships from continuing in good standing through the next planning horizon. The City is a full service municipality. The current inventory of agreements includes:

- Students attend school in Flagler County Public Schools.
- Flagler County works directly with the St. Johns River Water Management District and other state and federal agencies such as the Florida Department of Transportation and the State Land Planning Agency to administer planning activities such as building permits, consumptive use water permits, and road paving and maintenance with its associated drainage requirements.
- Electric and gas services are provided by Florida Power and Light.
- Road maintenance is provided by FDOT for S.R. 100 and S.R. A1A as a Scenic and Historic Coastal Byway.
- There is an understanding that the City will use the Northeast Florida Regional Council (NEFRC) as its mediation agent in planning related conflicts. Also, the County and the City coordinate with the NEFRC for Comprehensive Plan compliance and agreement with regional and state mandates, and strategic planning.

### **Effectiveness of Existing Agreements**

There are no areas identified as needing improved intergovernmental coordination. The City enjoys a good working relationship with the County and other regulatory agencies working through the County. No problems exist that require the attention of a new objective in the Intergovernmental Coordination Element. Map G-1 depicts the City's boundaries.

Map G-1: City of Flagler Beach Boundaries



## **CHAPTER H – CAPITAL IMPROVEMENT SUPPORTING AND DATA ANALYSIS**

### **Introduction**

The Capital Improvements Element establishes the methodology for meeting the standards of service set by applicable State, County, and local codes for current and future Levels-of-Service (LOS) for public facilities such as water and sewer services, roads, parks, and recreation. Reasonable capital projects balance the capital outlay for facilities between affordability and community expectations to maintain LOS standards.

### **Summary of Infrastructure Needs**

The primary purpose for the other 2040 Comprehensive Plan Elements is to identify infrastructure improvements required to correct existing and future deficiencies in public facilities and services. Future deficiencies are derived from forecasts of population growth in the community. The City of Flagler Beach is a small beachside community with minimal annual growth and a fluctuating seasonal population.

### **Population**

Due to the size of the community and the projected minimal population growth, there are no obvious current or projected future critical needs to be addressed in the Five-Year Schedule of Capital Improvements. Levels-of-Service for all facilities are currently being met and are projected to continue to do so through the next planning horizon of 2040. According to University of Florida – Bureau of Economic and Business Research, population projections through 2040 are:

- 2020 – 4,817
- 2025 – 5,026
- 2030 – 5,215
- 2035 – 5,395
- 2040 – 5,565

### **Levels of Service**

#### **Potable Water LOS**

- Residential potable water usage shall be calculated at a rate of 125 gallons per capita per day.
- Commercial potable water usage shall be calculated at a rate of 2,000 gallons per acre per day.
- Total storage capacity shall be 1,340,000 gallons.
- The water main pressure level shall be maintained in the range between 40 and 60 pounds per square inch (psi).

- Water main fire flow pressure shall be maintained at a minimum of 1,000 gpm at 20 psi residual pressure.

**Sanitary Sewer LOS**

- Peak design flow shall be calculated at a rate of 161 gallons per capita per day.
- Residential sewer usage shall be calculated at a rate of 119 gallons per capita per day.
- Commercial sewer usage shall be calculated at a rate of 2,000 gallons per acre per day.

**Solid Disposal Waste LOS**

- Solid waste collection and disposal planning of 3.7 pounds per capita per day as an average generation rate.

**Public Recreation and Open Space LOS**

- The LOS standards to be met for recreation facilities shall be:

**Table H-1: Level of Service – Recreation Facilities**

Facility	Number Required	Population Served
Community Center	1	6,000
Basketball courts	1	3,000
Tennis Courts	1	3,500
Racket ball courts	1	3,000
Softball fields	1	2,000
Equipped playgrounds	1	1,500
Fishing pier	1	6,000

**Transportation and Roads LOS**

- LOS Standard D for each individual roadway facility within the City, consistent with the standards contained in the FDOT Quality/Level of Service Handbook.

**Table H-2: Level of Service - Roads**

Facility	LOS Standard
Freeways/Principal Arterials	D
Collectors/Minor Arterials	D
Local Roads	D

**Existing Revenue Sources and Funding Mechanisms**

For all communities, there are revenue sources to fund operations and capital improvements including:

- **Ad Valorem Taxes:** Property taxes based on a millage rate (one mill is the equivalent of \$1 per \$1,000 of assessed value or 1%) which is applied to the total taxable value

of real property and other tangible personal property. Operating costs and capital projects are funded by revenue from ad valorem taxes.

- **Sales and Use Taxes, Franchise Taxes, Utility Taxes:** These are the only other tax revenues currently available to the City and generally are not restricted as to use, but may be pledged to cover all or a portion of bonded indebtedness.
- **Licenses and Permit:** This revenue category includes professional and occupational licenses, building permits, and other licensing fees.
- **Intergovernmental Revenue:** The funding source here is derived from federal and state funding. All local governments in Florida depend on annual disbursements from the State to supplement operating and capital budget revenues. The funds are: (a) generated and collected locally; then later returned by state agencies to the City; (b) adopted as a local option tax or license fee, collected and returned by the state; or (c) shared by the state by way of grants to local government, but originated from state general revenues. Amounts available from these sources may vary widely from year to year depending on legislative actions and the actual amount of retail sales for consumer-generated revenues.
- **Federal and State Grants and Loans:** The U.S. State and Local Fiscal Assistance Act of 1972 formerly provided a system of federal general revenue sharing that has been substantially modified since its inception. Federal funds are now either: (a) allocated to state agencies that administer block grants according to the programs they monitor; or (b) reserved at the federal agency level and disbursed as block grants directly to the state and local governments or other eligible organizations and individuals. Block grant programs enable greater latitude for recipients to use the funds, although recipients are not required to use the funds for specific categories or projects. These funds are not distributed by allocation, but require competitive applications. Consequently, these grants are generally nonrecurring sources of funds and cannot be accurately projected for budgeting purposes.

Other grants are administered at the state level with state executive departments acting as “pass-through agencies” for federally funded project grants such as the Community Development Block Grant (CDBG). The Department of Housing and Urban Development, which administers the program, allocates 70% of CDBG funds for “entitlement communities” to the larger urban areas. These communities apply for and receive grants to finance specific projects from a list of eligible activities outlined in Title I statutes, such as infrastructure improvements, housing projects, and commercial revitalization. The remaining 30% of the funds are disbursed to state pass-through agencies that administer these funds for similar types of projects, but restrict the availability to “small cities and counties.”

- **Charges for Services:** These funds are derived from fees paid for miscellaneous services such as fire protection and ambulance fees, utility fees, zoning fees, and fees for special events.
- **Fines and Forfeitures:** This revenue source includes revenue generated from court cases and other code violations.

- **Miscellaneous Sources of Revenue:** These funds result from interest on various funds, rent and royalties, special assessments and impact fees, the sale of City owned property, and private contributions given to the City such as real estate, gifts, donations, etc.
- **Special Sources of Revenue:** Depending on priorities assigned by the City governance, and the availability of other revenue sources, these revenue sources represent options available to finance required capital improvements:
  - **Impact Fees:** These are fees charged in advance of new development and designed to pay for infrastructure needs, which result from new development, but not operating costs. These fees must be allocated equitably to specific groups who will benefit directly from the capital improvement, and the assessment levied must fairly reflect the true costs of these improvements.
  - **Special Assessments:** Like impact fees, special assessments are levied against residents, agencies, or districts that benefit directly from a new service or facility.
  - **Borrowing:** The high cost of capital improvements requires local governments to borrow funds occasionally, either through short-term or long-term financing. Short-term financing (1-5 years) may be feasible through local banks. However, customarily the method is to authorize long-term bond issues, normally for five to forty years.

## Appendix A – 5 Year Capital Improvement Schedule

City of Flagler Beach - 5 Year CIP Schedule							
Funding Source	Project	Total Project Cost By Fund	Actuals FY17/18	Actuals FY18-19	Actuals FY19-20	Actuals FY20-21	Actuals FY21-22
R2C TPO	SR A1A S 28th St. to S 7 St. Road/Slope Protection Stabilization - Construction	\$ 3,842,463	\$ 3,842,463				
R2C TPO	SR A1A Trail S 26th St. N 9th St. - Engineering	\$ 3,115,000	\$ 610,000	\$ 2,505,000			
R2C TPO	SR A1A S 28th St. to S 9th St. & N 18th St. to Osprey Dr. Retaining Wall, dune & revetment - Engineering	\$ 2,599,000	\$ 2,599,000				
R2C TPO	SR A1A S 26th St. to S 22nd St. Revetment - Construction	\$ 7,051,999		\$ 7,051,999			
R2C TPO	SR A1A S22nd St. to S 9th St. Road Reconstruction - Construction	\$ 3,496,177		\$ 3,496,177			
R2C TPO	SR A1A N 18th St. to Osprey Dr. Retaining Wall and Dune - Construction	\$ 34,865,574		\$ 34,865,574			
R2C TPO	SR A1A 1.08 Mile Dune Restoration - Construction	\$ 12,000,000		\$ 12,000,000			
Utility Enterprise Funds	Well #14 Engineering 16/17,Construction 17/18	\$ 290,000	\$ 40,000	\$ 250,000			
TBD	Well #15 Engineering 18/19,Construction 19/20	\$ 290,000			\$ 40,000	\$ 250,000	
TBD	Well #16 Engineering 20/21	\$ 40,000					\$ 40,000
Water Impact Fees	John Anderson Water Main	\$ 400,000	\$ 400,000				
Utility Enterprise Funds	Meter Reading Telemetry System	\$ 1,000,000		\$ 250,000	\$ 250,000	\$ 250,000	\$ 250,000
Utility Enterprise Funds	Phase III Wastewater Treatment Plant	\$ 2,000,000	\$ 2,000,000				
Utility Enterprise Funds	Sliplining Project	\$ 420,000		\$ 270,000		\$ 150,000	
Stormwater Funds	Women's Club Stormwater Project	\$ 40,000	\$ 40,000				
Stormwater Funds	Lambert Avenue Stormwater Project	\$ 75,000	\$ 75,000				
Stormwater Funds	City Wide Swale Design 16/17 & Construction 18/19-21/22	\$ 240,000	\$ 40,000	\$ 50,000	\$ 50,000	\$ 50,000	\$ 50,000
General Fund	Gas Depot Construction	\$ 225,000		\$ 225,000			
TBD	Ocean Walk Park	\$ 200,000					\$ 200,000
General Fund	Pal & Irma Parker Park (Canoe Launch)	\$ 197,000	\$ 12,000		\$ 185,000		
<b>TOTAL</b>		<b>\$ 72,387,213</b>	<b>\$ 9,658,463</b>	<b>\$ 60,963,750</b>	<b>\$ 525,000</b>	<b>\$ 700,000</b>	<b>\$ 540,000</b>