

ORDINANCE NO. _____

AN ORDINANCE OF THE CITY OF KEY WEST, FLORIDA, AMENDING THE COMPREHENSIVE PLAN TO REPLACE APPENDIX C: CITY OF KEY WEST WATER SUPPLY FACILITIES WORK PLAN, AS WELL AS AMENDING COMPREHENSIVE PLAN CHAPTER 1: FUTURE LAND USE ELEMENT, OBJECTIVES 1-1.7, AND POLICIES 1-1.12.6, 1-1.12.7 AND 1-1.12.8; CHAPTER 4: PUBLIC FACILITIES ELEMENT, OBJECTIVES 4-1.2, AND POLICIES 4-1.2.1 AND 4-1.2.2; CHAPTER 5: COASTAL MANAGEMENT ELEMENT, POLICY 5-1.2.2; CHAPTER 6: CONSERVATION ELEMENT, POLICIES 6-1.2.5, 6-1.2.8, 6-1.2.9, 6-1.2.12, 6-1.2.14 AND 6-1.2.19; CHAPTER 8: INTERGOVERNMENTAL COORDINATION ELEMENT, POLICY 8-1.3.5; AND CHAPTER 9: CAPITAL IMPROVEMENTS ELEMENT, POLICIES 9-1.6.1, AND 9-4.1.3; PROVIDING FOR TRANSMITTAL TO THE STATE LAND PLANNING AGENCY; PROVIDING FOR SEVERABILITY; PROVIDING FOR REPEAL OF INCONSISTENT PROVISIONS; PROVIDING FOR THE INCLUSION IN THE CITY OF KEY WEST COMPREHENSIVE PLAN; AND PROVIDING FOR AN EFFECTIVE DATE.

WHEREAS, in order for the City's Comprehensive Plan to remain consistent with State, Regional and County plans, and fulfill legislative requirements the Comprehensive Plan must be updated from time to time; and

WHEREAS, the adopted and effective City of Key West Comprehensive Plan of 2013 contains the Water Supply Work Plan required by Florida Statutes 163, Part II.; and

WHEREAS, this statute requires local governments to update their Water Supply Work Plans every five years, following updates to the Lower East Coast Regional Water Supply Plan (LECWSP) from the South Florida Water Management District; and

WHEREAS, the State of Florida requires that Water Supply Facilities Work Plans address the development of traditional and alternative water supplies and management strategies, including conservation and reuse; and

WHEREAS, the data and analyses, including population projections,

water demand and service areas must cover at least a 10-year planning period and be consistent to the LECWSP and the updated comprehensive plan amendments;

WHEREAS, the City of Key West relies entirely on the Florida Keys Aqueduct Authority (FKAA) for all water production and distribution, FKAA projections of water supply, water demand and management strategies; and

WHEREAS, the aforementioned matters form the basis of the amendments to the City's Comprehensive Plan Elements and Water Supply Plan; and

WHEREAS, the City Commission has determined that the proposed amendment is consistent with the Comprehensive Plan; is in conformance with all applicable requirements of the Code of Ordinances; is stimulated by changed conditions after the effective date of the Comprehensive Plan; will promote land use compatibility; will not negatively affect property values in the area or general welfare; and is not in conflict with public interest; and

WHEREAS, changes to language in this ordinance for 2nd reading were drafted to address comments from the South Florida Water Management District received on December 9, 2022. The City subsequently received no objections, recommendations, or comments from the Florida Department of Economic Opportunity and received their letter of no appeal on January 9, 2023, and

WHEREAS, these amendments were reviewed and approved by the City's Legal Department; and

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WHEREAS, these amendments are made in conjunction with a mandatory amendment to the Utilities Chapter of the Code of Ordinances with South Florida Water Management District mandates; and

WHEREAS, these amendments to the City of Key West's Comprehensive Plan will increase the long-term adaptation and resilience of the citizens and visitors of the City of Key West.

NOW, THEREFORE, BE IT ORDAINED BY THE CITY OF KEY WEST, FLORIDA:

Section 1: That the Comprehensive Plan is hereby amended as follows*:

CHAPTER 1: - FUTURE LAND ELEMENT

{ . . . }

OBJECTIVE 1-1.7: IMPLEMENT WATER SUPPLY PLANNING IN ACCORDANCE WITH STATE GROWTH MANAGEMENT REQUIREMENTS.

Monitoring Measure(s): Adoption and Update of Water Supply Plan by 2014 within 18 months after the governing board of South Florida Water Management District approves its Lower East Coast Water Supply Plan, expected every 5 years.

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OBJECTIVE 1-1.12: CONSIDER APPLICATION OF INNOVATIVE LAND AND WATER RESOURCE MANAGEMENT, CLIMATE ADAPTATION, AND ENERGY CONSERVATION CONCEPTS.

The City of Key West shall maintain Land Development Regulations which incorporate concepts for managing land, water, and energy resources which are responsive to unique development and conservation issues identified in the City's Comprehensive Plan. The City of Key West shall adopt Land Development Regulations which incorporate concepts for managing land, water, and the built environment which are responsive to climate change issues including but not limited to sea level rise and increased frequency of intense rainfall events.

Monitoring Measure(s): Number of structures and sites protected through regulatory mechanisms.

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Policy 1-1.12.6: Water Efficiency in Building and Construction.

As necessary to meet goals, the City shall research and recommend progressive water efficient building codes and retrofits, including but not limited to retrofit at resale, mandatory reuse areas, conservation tier rates, irrigation pump pressure control reduction, and the International Green Construction Code.

As necessary to meet goals, the City shall explore regulatory and/or incentive programs and timelines to increase submetering, fixed interval metering, irrigation audits, rain/moisture sensor retrofits.

The City shall promote attendance at regional training workshops in water conservation in construction and continue to foster cooperative relationships between building trades, architects, engineers and building officials.

Policy 1-1.12.7: Conservation Tier Rates.

The City shall seek to coordinate with the FCAA and other local governments on an updated conservation rate structure before the next Work Plan Update.

Policy 1-1.12.8: Stormwater Mitigation.

The City shall research and adopt new methodologies for rainwater retention in order to increase freshwater recharge as well as reduce stormwater flooding and nonpoint pollution before the next Work Plan Update. These new methodologies could include but are not limited to cisterns, percolation tanks, green infrastructure, and stormwater mitigation fees.

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CHAPTER 4: PUBLIC FACILITIES ELEMENT

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Objective 4-1.2: Adoption of the Key West Water Supply Facilities Work Plan.

The City of Key West shall comply and implement ~~with its~~ Water Supply Facilities Work Plan 2020-2030 ~~2012-2025~~ (Work Plan), adopted in 2022, as

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required by section 163.3177(6)(c), F.S. within 18 months after the governing board of South Florida Water Management District adopted its Lower East Coast Water Supply Plan Update on November 8, 2018, and as included in Appendix C of the City's Comprehensive Plan.

The Work Plan shall be updated, at a minimum, every 5 years.

The City's Work Plan is designed to: assess current and projected potable water demands; evaluate the sources and capacities of available water supplies; and identify those water supply projects, using all available technologies, necessary to meet the City's water demands for the planning period.

The City adopts by reference into the City's Work Plan and Comprehensive Plan, the Florida Keys Aqueduct Authority's (FKAA) Water System Capital Improvement Plan (2020-2024) and the most recent 20-Year Water System Capital Improvement Plan (Dec 2006).

Policy 4-1.2.1: Compliance with the Adopted Water Supply Facilities Work Plan.

The City of Key West shall comply with its Water Supply Facilities Work Plan (Dec 2006), ~~(2012-2025)~~ which is incorporated by reference into the Comprehensive Plan.

Policy 4-1.2.2: Intergovernmental Coordination with Water Supply Planning.

The City shall coordinate appropriate aspects of its Comprehensive Plan with the South Florida Water Management District's Lower East Coast Regional Water Supply Plan update adopted ~~February 15, 2007~~ November 8, 2018, with the Florida Keys Aqueduct Authority's (FKAA) most recent 20-Year Water System Capital Improvement Program (2020-2024) ~~December 2006~~ and with the Monroe County Water Supply Plan adopted ~~November 25, 2008~~ June 17, 2020. The City shall amend its Comprehensive Plan and Work Plan as required to provide consistency with the District, County and FKAA plans.

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CHAPTER 5: COASTAL MANAGEMENT ELEMENT

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Policy 5-1.2.2: Limit Impacts of Development and Redevelopment Upon Water Quality and Quantity, Wildlife Habitat and Living Marine Resources and Implement Policies for Shoreline Land Uses.

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6. Ocean, Gulf, and Estuarine Water Quality.

In order to protect the water quality of the Atlantic Ocean and the Gulf of Mexico, no new point source pollution shall be permitted to discharge into these waters or into ditches or canals flowing into these waters. In addition, in order to reduce nonpoint source pollutants, the City shall require the following:

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e. The City shall explore incorporating ~~evaluation of~~ rainwater collection, distribution, and percolation systems into stormwater management planning.

f. The City ~~shall research~~ will research and recommend certification and licensing programs which encourage responsible business practices by landscaping professionals. This includes but is not limited to EPA's WaterSense and Energy Star, Florida's WaterStar, Green Industries - Best Management Program and the irrigation specialty contractor's license.

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CHAPTER 6: CONSERVATION ELEMENT

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Policy 6-1.2.5: Protection and Conservation of Potable Water Supply.

The City of Key West has no wellfields and has no need for a wellfield protection ordinance. In order to comply with policies of the South Florida Water Management District directed toward conservation of potable water supply and to achieve a reduction in the current rates of water consumption, Land Development Regulations shall be amended to incorporate the following performance standards:

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- 3. In order to reduce demand for irrigation water (which in turn often places greater demand upon potable water sources), at least seventy percent (70%) of all landscaping material obtained from offsite sources for use on any site should be native plant material adapted to soil and climatic conditions existing on the subject site. Further, at least 30—fifty percent (50%) of all trees used in landscaping shall be native species adapted to soil and climatic conditions existing on-site in order to lessen water demand.
- 4. The City will explore and pilot innovative concepts in reuse of water, including use of cisterns for collecting rainwater for use in spray irrigation. In addition, the City shall study the feasibility

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of potable and/or landscape reuse of treated effluent and (gray water).

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6. At least seventy-five percent (75%) of the landscape must utilize 'right plant, right place' practices, as defined by Florida-Friendly Landscaping Design Standards.
7. In order to reduce demand for potable water used as irrigation, the City intends to adopt SFWMD's mandatory year-round permanent landscape irrigation measures into its Code of Ordinances, with the intent and purpose of establishing a regulatory framework to protect the water resources of the City of Key West.

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Policy 6-1.2.8: Water Supply Demand.

Implementation of the Work Plan shall ensure that adequate water supplies and public facilities are available to serve the water supply demands of any population growth that the City may experience.

The City will seek to reduce the water supply demand from 101 gallons per capita per day to 80 gallons per capita per day through efficiencies and conservation.

Policy 6-1.2.9: Coordinated Water Supply Planning.

The City shall coordinate the planning of potable water and sanitary sewer facilities, water supply sources, demands, other services and level-of-service standards with the Florida Keys Aqueduct Authority, South Florida Water Management District, other local municipalities, and through the Lower East Coast Water Supply Plan Update adopted November 8, 2018, as necessary.

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Policy 6-1.2.12: Efficient Equipment and Appliances.

The City will require the use of high efficiency/ultra-low volume toilets, showerheads, faucets, clothes washers, and dishwashers that are Energy Star rated and WaterSense certified in all ~~new~~ residential and commercial projects, including renovations.

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Policy 6-1.2.14: Landscape Guidelines.

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The City will encourage the use of Florida-Friendly Landscape guidelines and principals; gutter downspouts, roof runoff, and rain harvesting through the use of cisterns, rain barrels and directing runoff to landscaped areas; drip irrigation or micro- sprinklers; rain or moisture sensor irrigation controllers; and the use of porous surface materials (bricks, gravel, turf block, mulch, pervious concrete, etc.) on walkways, driveways and patios.

By 2025, the City shall research and recommend policies and guidelines allowing cistern capacity to satisfy some portion of stormwater storage requirements.

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Policy 6-1.2.19: Proactive Building Codes

By 2025, the City shall research and recommend sections of the International Green Construction Code or other established efficiency standards that increase efficiency without substantially increasing cost or complexity.

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CHAPTER 8: INTERGOVERNMENTAL COORDINATION ELEMENT

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Policy 8-1.3.5: Coordinated Facility Planning.

The City shall coordinate the planning of potable water and sanitary sewer facilities, water supply sources, demands, other services and level-of-service standards with the Florida Keys Aqueduct Authority, South Florida Water Management District, other South Florida local governments and through the Lower East Coast Water Supply Plan Update adopted November 8, 2018, as necessary. This includes the City of Florida City activities that affect its wellfield area. The City shall achieve this through:

1. On-going coordination activities, such as the quarterly Utilities meeting with FKAA and Keys Energy, which seek to align Capital Improvement Projects for maximum efficiency.
2. Continuing to participate in FKAA planning efforts and management activities.
3. Upholding and enforcing SFWMD's Mandatory Irrigation policies.
4. Continuing to stay abreast of FPL's Turkey Point activities, especially those related to Miami Dade DERM's 2015 Consent Agreement and FDEP's 2016 Consent order.

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5. Continuing to stay abreast of City of Florida City activities that may affect the City's wellfield.
6. Coordination with SFWMD and FKAA following the LEC Plan Update, in preparation to update the City's Water Supply Facilities Workplan.
7. Continuing to participate wherever possible in SFWMD planning and management activities.
8. Additional coordination activities as needed for major initiatives.

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CHAPTER 9: CAPITAL IMPROVEMENTS ELEMENT

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Policy 9-1.6.1: Level of Service Standards.

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Potable Water Level of Service:

Residential & Commercial:

100 gal/capita/day
Minimum Pressure: 20 PSI at customer service
Minimum Potable Water Quality: Shall be defined by Chapter 62-550 F.A.C.

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Policy 9-4.1.3: Capital Improvement Schedules of Other Agencies.

~~The City shall incorporate capital improvements affecting City levels of service by referencing the Capital Improvements Schedules of the Florida Keys Aqueduct Authority (2011/2012 through 2015/2016) (FY2020 through FY2024) state agencies and other units of government providing services, but not having regulatory authority over the use of land, into its Five Year Schedule of Capital Improvements (Fiscal Years 2012/2013 through 2017/2018) (Fiscal Years 2020 through 2024). The City Schedule shall be maintained and updated annually.~~

The City adopts by reference into the Cities Five-Year Schedule of Capital Improvements, the Capital Improvement Schedules of other agencies which affecting City levels of service of water supply. These include the Florida Keys Aqueduct Authority's (FKAA) Water System Capital Improvement

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Plan (2020-2024) and the most recent 20-Year Water System Capital Improvement Plan (Dec 2006). This Includes:

1. Kermit H Lewin Reverse Osmosis Facilities Upgrades
2. J. Robert Dean WTP Wastewater Forcemain with Miami-Dade
3. Transmission Terminus Replacement
4. Distribution Replacement South Street
5. Distribution Desal Storage Tank

Section 2: That the City of Key West Comprehensive Plan Appendix C is hereby amended by replacement with the 2022 Key West Water Supply Work Plan, as follows:

APPENDIX C
CITY OF KEY WEST WATER SUPPLY FACILITIES WORK PLAN
(2020-2030)
{2012-2025}

Prepared For:

**Florida Department of Economic Opportunity
and
City of Key West Planning Department**

Prepared By:

City of Key West Planning Department

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City of Key West Sustainability Coordinator

Acknowledgements

Mayor Teri Johnston

Commissioner Jimmy Weekley

Commissioner Samuel Kaufman

Commissioner Billy Wardlow

Commissioner Lissette Carey

Commissioner Mary Lou Hoover

Commissioner Clayton Lopez

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1.0 INTRODUCTION

The Florida Water Resources Act, Chapter 373, Florida Statute addresses the state's water supply needs to improve coordination between the local land use planning and regional water supply planning. Residents of the City of Key West obtain their water directly from the Florida Keys Aqueduct Authority (FKAA), which is responsible for ensuring that enough capacity is available for existing and future customers.

The purpose of the City of Key West Water Supply Facilities Work Plan (Work Plan) is to identify and plan for the water supply sources and facilities needed to serve existing and new development within its jurisdiction. Chapter 163, Part II, F.S., requires local governments to prepare and adopt Work Plans into their comprehensive plans within 18 months after the water management district approves a regional water supply plan or after its update every five years. The Lower East Coast Water Supply Plan Update was adopted by the South Florida Water Management District (SFWMD) on November 8, 2018 ~~February 15, 2007~~. ~~An update to the County Comprehensive Plan including Potable Water was completed in July 2011 (Technical Document) and is referenced herein.~~

Residents of the City of Key West obtain their water directly from the Florida Keys Aqueduct Authority (FKAA), which is responsible for ensuring that enough capacity is available for existing and future customers.

The City of Key West Work Plan is incorporated into the City of Key West's Comprehensive Plan, Appendix C, and will be updated upon its approval.

~~The City of Key West Work Plan will, by reference, include the data, projected supply and demand numbers, conservation initiatives and capital improvements already identified in the FKAA 20-Year Water System Capital Improvement Master Plan (FKAA Master Plan dated December 2006) because Key West is a retail buyer and FKAA is the sole provider of water to the City.~~

According to state guidelines, the Work Plan and the comprehensive plan amendment must address the development of traditional and alternative water supplies, bulk sales agreements and conservation and reuse programs that are necessary to serve existing and new development for at least a 10-year planning period. FKAA has not yet adopted an updated Water System Master Plan. ~~The City of Key West Work Plan will address a 13-year planning period and identify projects from the FKAA Work Plan consistent with this planning period.~~

Key West is a retail buyer and FKAA is the sole provider of water to the City. The City of Key West Work Plan will, by reference, include the data, projected supply and demand numbers, conservation initiatives and capital improvements already identified in FKAA's:

- Draft 20-Year Water System Master Plan, including population and water demand forecast (Provided March of 2020)
- Capital Improvement Program 2020-2024

Monroe County Water Supply Plan was adopted on June 17, 2020.

The City of Key West Work Plan will have the same planning time schedule consistent with the comprehensive plan and the Lower East Coast Water Supply Plan Update.

The City's Work Plan is divided into ~~five~~ eight ~~seven~~ sections:; ~~Figures and Attachments:~~

Section 1 – Introduction

Section 2 – Background Information

Section 3 – Data and Analysis

Section 4 – Work Plan Projects/Capital Improvement Element/Schedule

Section 5 – Goals, Objectives and Policies, ~~Proposed Comprehensive Plan Changes~~

~~Section 6 – Proposed Changes to Code of Ordinances / Land Development Regulations~~

Section 67 – References

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1.1 Statutory History

The Florida Legislature has enacted bills in the 2002, 2004 and 2005, 2011, 2012, 2015, and 2016 sessions to address the state's water supply needs. These bills, especially Senate Bills 360 and 444 (2005 legislative session), significantly changed Chapter 163 and 373 Florida Statutes (F.S.) by strengthening the statutory links between the regional water supply plans prepared by the water management districts and the comprehensive plans prepared by local governments. In addition, these bills established the basis for improving coordination between local land use planning and water supply planning.

1.2 Statutory Requirements

The City of Key West considered the following statutory provisions when updating the Water Supply Facilities Work Plan:

1. Coordinate appropriate aspects of its comprehensive plan with the South Florida Water Management District's (SFWMD) Lower East Coast Water Supply Plan, [163.3177(4)(a), F.S.]
2. Ensure that its future land use plan is based upon availability of adequate water supplies and public facilities and services [s.163.3177(6)(a), F.S., ~~effective July 1, 2005~~] Data and analysis demonstrating that adequate water supplies and associated public facilities will be available to meet projected growth demands must accompany all proposed Future Land Use Map amendments submitted to the Department (DEO) for review. The submitted package must also include an amendment to the Capital Improvements Element, if necessary, to demonstrate that adequate public facilities will be available to serve the proposed Future Land Use Map modification.
3. Ensure that adequate water supplies and facilities are available to serve new development no later than the date on which the City anticipates issuing a certificate of occupancy and consult with the applicable water supplier prior to approving a building permit to determine whether adequate water supplies will be available to serve the development by the anticipated issuance date of the certificate of occupancy [s.163.3180 (2), F.S., effective July 1, 2005].
4. For local governments subject to a regional water supply plan, revise the General Sanitary Sewer, Solid Waste, Drainage, Potable Water, and Natural Groundwater Aquifer Recharge

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Element (the “Infrastructure Element”), within 18 months after the water management district approves an updated regional water supply plan, to:

- a. Identify and incorporate the alternative water supply project(s) selected by the local government from projects identified in the updated Lower East Coast Regional Water Supply Plan, or the alternative project proposed by the local government under s. 373.709(8)(b), F.S. [s. 163.3177(6)(c), F.S.];
 - b. Identify the traditional and alternative water supply projects, bulk sales agreements, and the conservation and reuse programs necessary to meet current and future water use demands within the Lower East Coast Regional Water Supply Plan [s. 163.3177(6)(c), F.S.]; and
 - c. Update the Work Plan ~~Include a water supply facilities work plan~~ for at least a 10-year planning period for constructing the public, private, and regional water supply facilities identified in the element as necessary to serve existing and new development. [s. 163.3177(6)(c), F.S.]
5. Revise the Five-Year Schedule of Capital Improvements to include any water supply, reuse, and conservation projects and programs to be implemented during the five-year period.
 6. To the extent necessary to maintain internal consistency after making changes described in Paragraphs 1 through 5 above, revise the Conservation Element to assess projected water needs and sources for at least a 10-year planning period, considering the SFWMD Lower East Coast Water Supply Plan, as well as the Florida Keys Aqueduct Authority’s consumptive use permit. [s.163.3177(6)(d), F.S.]

~~If the established planning period of a comprehensive plan is greater than ten years, t~~The plan must address the water supply sources necessary to meet and achieve the existing and projected water use demand for the established planning period, considering the appropriate regional water supply plan. [s.163.3167(9), F.S.]

7. To the extent necessary to maintain internal consistency after making changes described in Paragraphs 1 through 5 above, revise the Intergovernmental Coordination Element to ensure coordination of the comprehensive plan with the Lower East Coast Regional Water Supply Plan. ~~the applicable regional water supply plans and regional water supply authorities’ plans.~~ [s.163.3177(6)(h)1., F.S.]
8. Address in the Evaluation and Appraisal Report the extent to which the local government has implemented the 10-year water supply facilities work plan, including the development of alternative water supplies, and determine whether the identified alternative water supply projects, traditional water supply projects, bulk sales agreements, and conservation and reuse programs are meeting local water use demands. [s.163.3191 (2), F.S.]

2.0 BACKGROUND INFORMATION

2.1 Overview

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The City of Key West was incorporated in 1828, making it the 1st municipality established in Monroe County 17 years before Florida became a state. The City is at the end of island chain known as the Florida Keys (See Figure C1). The City boundaries incorporate the entirety of the main island and also the northern one half of Stock Island to the east. It also includes the Navy's properties of Fleming Key and Sigsbee. The projected permanent population for 2020, according to the 2010 Ear-based Comprehensive Plan amendments, is 23,997 residents ~~is 24,649 residents based on the 2010 U.S. Census.~~

The City also has a significant "seasonal population" (approximately 4,000), "transient residents" (over 14,000 on average), cruise ship visitors (high daily average of 3,100), "day trippers" (3,100) and commuters into the City (averaging 3,900). All of these population segments will utilize the City's potable water resources. The combined amount of all population segments above and others represents the "daily functional population" of the City and is estimated to be approximately 58,000 during peak periods. Based on factors unique to Key West, including the Building Permit Allocation System (BPAS), the daily functional population should remain constant throughout the planning period.

The City of Key West has a Building Permit Allocation System (BPAS) that limits new residential and transient development growth based on hurricane evacuation times. In ~~2013~~1993, the City was allocated ~~1,093~~940 Equivalent Single-Family Units (ESFU) for development to be distributed over the following 10 years. Since then 300 additional affordable units have been allocated by the State, which was challenged and awarded in court. ~~Since then no new units have been allocated. Additionally, the City is substantially built-out.~~

The functional population projections shown in Table C3.1 are compared with the service area functional population projections contained in ~~the FCAA's~~the FCAA's draft 20-Year Water System Master Plan (Provided March 2020). The Monroe County Planning Department's permanent and seasonal population projections were used to develop this functional population for FCAA's entire service area through ~~2025~~2040. The projected population was then multiplied by FCAA's projected per capita demand to project customer demand in the service area.

2.2 Relevant Regional Issues

As the state agency responsible for water supply in the Lower East Coast (LEC) planning area, the SFWMD plays a pivotal role in resource protection through criteria used for Consumptive Use Permitting. Consumptive water use permits are issued for a fixed period of time and allow the holder to withdraw a specified amount of water ~~from the ground (aquifers) or a canal, lake or river (surface water)~~for reasonable-beneficial uses, while requiring water conservation to prevent wasteful uses. The permits also set limits on how much water can be withdrawn at each location in the aquifer or from surface water. These ~~limits~~rules protect existing residents' water supplies and protect aquifers from saltwater intrusion damage, as well as to keep surface water sources from drying up.

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As pressure increased on the Everglades ecosystem resource, the Governing Board initiated rulemaking to limit increased allocations dependent on the Everglades system. As a result, the Regional Water Availability Rule was adopted by the Governing Board on February 15, 2007 as part of the SFWMD's water use permit program. This reduced reliance on the regional system for future water supply needs, mandated the development of alternative water supplies, and increased conservation and reuse.

The LEC Planning Area relies on fresh groundwater and surface water for urban, agricultural, and industrial uses. However, traditional freshwater sources in the LEC Planning Area are not sufficient to meet projected 2040 water demands. Analyses indicate increases in allocations of fresh groundwater from the Surficial Aquifer System of the Floridan Aquifer and surface water from Lake Okeechobee are not available to meet the growing needs of the LEC Planning Area during 1-in-10-year drought conditions.

The regional issues identified for 2040 in the Lower East Coast Water Supply Plan Update (adopted November 8, 2018) include:

1. Fresh surface water and groundwater are limited; further withdrawals could have impacts on the regional system, wetlands, existing legal uses, and saltwater intrusion. As a result, additional alternative water supplies need to be developed.
2. Expanded use of reclaimed water is necessary to meet future water supply demands and the Ocean Outfall Law.
3. Expanded use of brackish groundwater from the Floridan aquifer system requires careful planning and wellfield management to prevent undesirable changes in water quality.

The sole source provider of potable water to Monroe County is FCAA, whose wellfield is located in Florida City. The limited availability of Surficial Aquifer System withdrawals presents a potential risk to the water supply for all of Monroe County. While this is a ten-year plan, longer term threats from sea level rise, exacerbated by Turkey Point hypersaline plume have grave fiscal and physical consequences for our area that need to be planned for now.

Turkey Point

Industrial discharge with heavy levels of salt and weak radiation are spreading from a 6,000-acre cooling canal system (CCS) at the Florida Power & Light Company (FPL) Turkey Point nuclear plant.

A Florida Administrative Judge ruled on Feb 15, 2016 that FPL is polluting south Florida's groundwater, threatening to contaminate wellfields providing drinking water to the Florida Keys and parts of Miami Dade County. The Judge also faulted the Florida Department of Environmental Protection (FDEP) for approving a faulty management plan for the Plant. Both were ordered to remediate the cooling canals that continue to release contaminants into groundwater and surface water in Biscayne Bay National Park.

Formally, at its current rate of spread, the impacts from the pollution to our wellfields would not be happen for 40-80 years, which is beyond the scope of this Water Plan. However, the City feels that

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all efforts to halt the spread now combined with our Water Plans' efficiency and reuse regulations will ensure the health of our wellfield for many decades into the future.

FKAA is leading the effort to ensure the pollution is reversed, and the City of Key West, Monroe County and other Keys local governments have given monetary assistance. FKAA contends that FPL is not allowed to expand or get any permits until it has decommissioned the cooling canal system at the heart of the plume.

Sea Level Rise

Sea level rise has been identified as a regional water issue by the Southeast Florida Regional Climate Change Compact, which includes Palm Beach, Broward, Miami-Dade and Monroe Counties. The 4 Compact counties have adopted the sea level rise projections of between 10 and 17 inches by 2040, and between 21 and 40 inches by the year 2070 for planning purposes in the Southeast Florida region until more definitive information on future sea level rise is available (See the Compact's, "A Unified Sea Level Rise Projection for Southeast Florida, October 2019). The potential landward movement of the saltwater intrusion line resulting from the impact of sea level rise may affect future decisions regarding the implementation of capital improvements, requiring mitigation and adaptation strategies to preserve the potable water supply. Monroe County's climate change and sustainability consultants have recently summarized hydrologic modeling by the United States Geological Survey that suggests relatively low risk to the FKAA wellfields in Florida City under even the worst-case 2060 sea level rise scenarios. However, FKAA continues to monitor the most current data and analysis regarding this issue.

FKAA is currently in negotiations with Miami Dade County on a shared freshwater treatment facility. FKAA's treatment facility has extra capacity and Miami Dade's nearest wellfield cannot treat their potable water to the same quality. It is considered highly likely that this partnership will happen, although it isn't settled yet.

FKAA also operates Reverse Osmosis (RO) facilities in Marathon and Stock Island, with a combined supply capacity of 3 MGD, as an alternative water source for the County. Potable water costs are approximately 35x more per gallon when produced at these facilities and are for emergencies and extreme peaks in demand only. The Stock Island Plant will be receiving \$30 million in state funding to renovate and upgrade the plant, which should make it more efficient and less costly to operate.

2.3 Intergovernmental Coordination Activities

The City has no Memoranda of Understanding(s), water related bulk service agreements or contracts.

The City coordinates often with FKAA on water projects. The City has consulted with FKAA regarding water policy issues, collaborates with FKAA on local educational events such as the annual Rainbarrel Workshop and Cistern Presentations, and requests water services comments from them monthly at our Development Review Committee meetings.

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Every five years, after the adoption of the Lower East Coast Water Supply Plan, the City hosts a workshop with SFWMD, FCAA and all the other Florida Keys local governments to review the LEC and brainstorm new conservation efforts.

Due to Turkey Point, the local governments have become even more engaged with FCAA, financially assisting their legal case.

3.0 DATA AND ANALYSIS

The intent of the data and analysis section of the Work Plan is to describe the information that local governments need to provide to state planning and regulatory agencies as part of their proposed comprehensive plan amendments, particularly those that would change the Future Land Use Map (FLUM) to increase density and intensity.

3.1 Population Information

~~The City of Key West existing and future population figures are derived from the 2010 U.S Census. Table 1 shows the City's permanent and functional population projections through 2025~~2040~~. The City of Key West population figures through 2030 are derived from the projections prepared by Keith and Schnars for the City of Key West Ear-based Comprehensive Plan amendments in 2012. The 2035 and 2040 estimates were extrapolated from FCAA's draft 20-Year Water System Master Plan (Provided March 2020), as 34.54 percent of Monroe County's functional population.~~

Table C3.1 - 2010-2030~~25~~: Population Projections

Year	Permanent Population	<u>Seasonal and Temporary</u>	Functional Population
2010	24,649	<u>21,704</u>	<u>54,347</u> 58,000
2015	24,348 <u>24,235</u>	<u>22,104</u>	<u>54,446</u> 58,000
2020	23,997 <u>23,820</u>	<u>22,756</u>	<u>54,747</u> 58,000
2025	23,660 <u>23,405</u>	<u>23,407</u>	<u>55,061</u> 58,000
<u>2030</u>	<u>23,350</u>	<u>24,059</u>	<u>55,403</u>
<u>2035</u>	X	X	<u>56,891</u>
<u>2040</u>	X	X	<u>57,274</u>

This decline in permanent population growth is reflective of the fact that the City's ~~City is substantially built-out, with future development potential and population growth are~~ limited by the scarcity of vacant and developable land and the BPAS.

3.2 Maps of Current and Future Areas Served

The maps contained in the Figure C3.2 map series at the end of this document depicts the FCAA Water System in its entirety. The map depicting current and future City boundaries served by the FCAA is provided in Figure 3.2a. At this time, there are no areas anticipated to be annexed.

3.3 Potable Water Level of Service Standard

*(Coding: Added language is underlined; deleted language is ~~struck through~~ at first reading. Added language is double underlined and ~~double struck through~~ at second reading.)

FKAA's potable water consumption level of service planning standard is 115 gallons/capita/day (GPCD) and Key West's recent averages have been 101 GPCD. In light of Turkey Point and Sea Level Rise, it is advised that the City keep their 100 GPCD LOS standard, as well as adopt strong water conservation policies as outlined in this Plan and the associated Goals, Objectives and Policies to achieve 80 GPCD.

Key West's non-residential LOS is recommended to be deleted as a separate standard. The rationale for this recommendation is that different non-residential uses vary significantly in their water needs. For example, a 20,000 square foot parking lot would require a fraction of water used in a 20,000 square foot laundry facility. Most municipal water supply plan LOS in the State of Florida are calculated on the same GPCD basis. For example, Monroe County uses 100 GPCD for all developments.

~~Both Policies 4-1.1.1 (Public Facilities Element) and 9-1.6.1 (Capital Improvements Element) provide for a Level of Service Standard of 93 gal/capita/day for residential uses and 650 gal/acre/day for non-residential uses. For comparison, Monroe County standards are 66.5 gal/capita/day for residential uses and 0.35 gal/square foot/day for commercial (non-residential) uses. If calculated per acre the Monroe County LOS for non-residential would be equivalent to 15,246 gallons per day (assuming an FAR of 1.0 for properties both in Key West and in the unincorporated area). The non-residential LOS is recommended to be deleted as a separate standard. The rationale for this recommendation is that depending on the non-residential use a wide range of the number of gallons of water used is possible. For example, a 20,000 square foot parking lot would require a fraction of water used in a 20,000 square foot laundry facility. Also, more typically, most municipal water supply plan LOS in the State of Florida are calculated on a "gallons/capita/day" basis.~~

Table 2 – Level of Standards for Potable Water

	City of Key West	Monroe County
Residential & Non-Residential	100 93 gallons/capita/day	100 66.5 gallons/capita/day
Non-Residential	650 gallons/acre/day	0.35 gallons/capita/day

~~The goal of the FKAA for potable water consumption is to maintain an overall level of service standard of 100 gallons/capita/day. As part of this Water Supply Plan it is recommended that the City adopt this as its standard, providing for consistency with the goals of the water service provider. In addition, it is recommended that the City adopt water conservation policies as outlined in this Plan and the associated Goals, Objectives and Policies.~~

3.4 Population and Potable Water Demand Projections by Local Government and Utility

Table C3.4 - City of Key West Population and Water Supply Demands

	WATER SUPPLY UTILITY SERVICE WITHIN WATER DISTRIBUTION SERVICE AREA	
SERVICE AREA	FUNCTIONAL POPULATION PROJECTIONS	WATER SUPPLY DEMAND Million Gallons per Day (MGD) Max

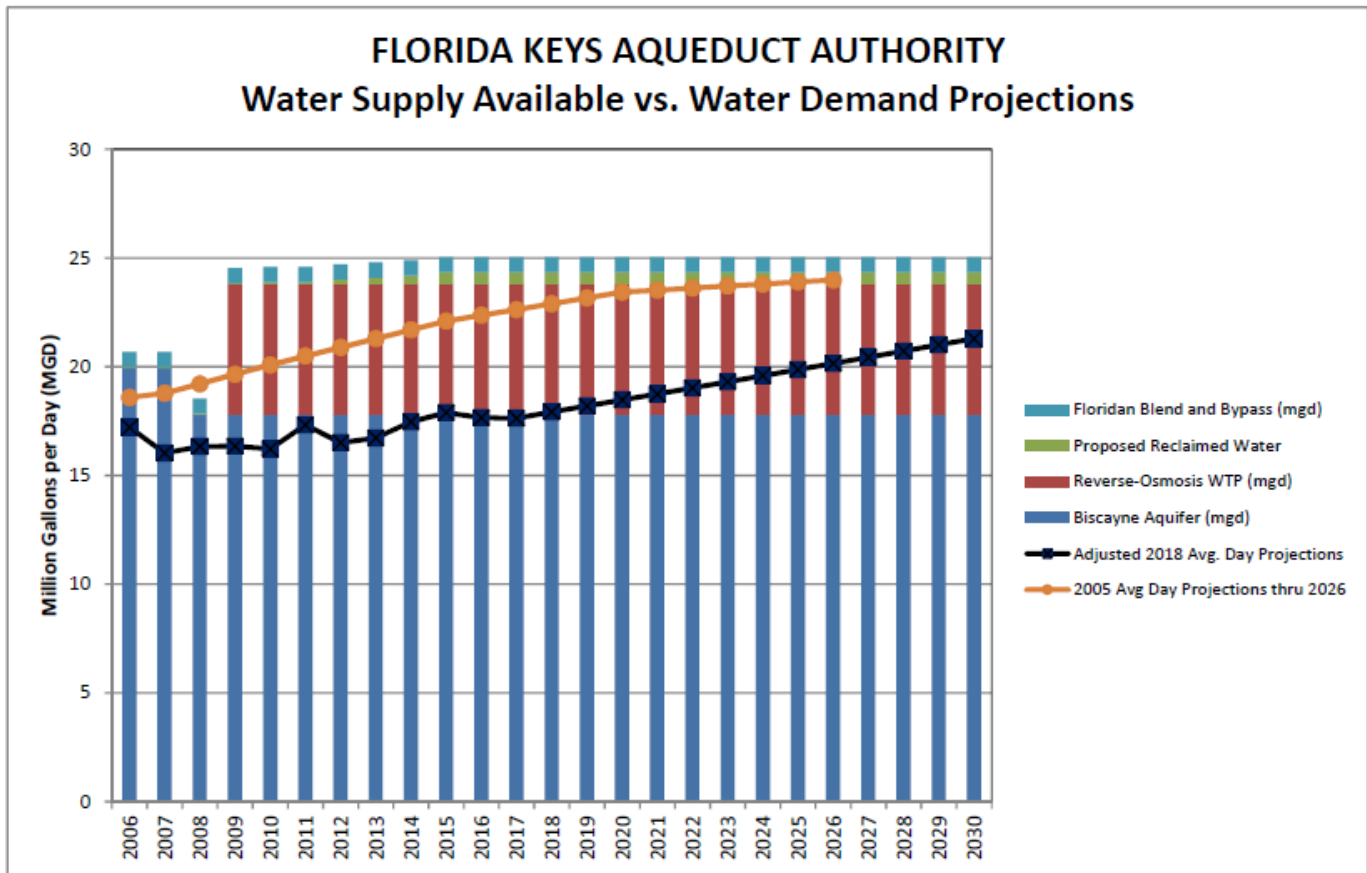
*(Coding: Added language is underlined; deleted language is ~~struck through~~ at first reading. Added language is double underlined and ~~double struck through~~ at second reading.)

YEAR	<u>2020</u> <u>2010</u>	<u>2025</u> <u>2015</u>	<u>2030</u>	<u>2040</u>	<u>2020</u> <u>2010</u>	<u>2025</u> <u>2015</u>	<u>2030</u>	<u>2040</u>
TOTAL FCAA SERVICE POPULATION *	<u>159,252</u> 157,933	<u>161,604</u> 158,511	<u>163,956</u>	<u>165,797</u>	<u>22.9</u> 20.07	<u>23.2</u> 22.08	<u>23.6</u>	<u>23.8</u>
Daily Functional Population	<u>54,747</u> 58,000	<u>55,061</u> 58,000	<u>55,403</u>	<u>57,274*</u>	<u>5.47</u> 5.80	<u>5.50</u> 5.80	<u>5.54</u>	<u>5.72</u>

*estimated by multiplying 2040 Monroe County functional population by 2010-2030 Key West functional population percentage (34.54%).

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Graph C3.4a: FCAA 2019 Water Demand Projections Update



3.5 Water Supply Provided by Local Government

The FCAA is a retailer service provider to residents, businesses and other entities requiring water services. Therefore, water supply is not provided by the City.

3.6 Water Supply Provided by Other Entities

~~The Biscayne and Floridan Aquifers are the sources of the FCAA's water supply. The Authority's FCAA wellfield is located in a pineland preserve west of Florida City in southern Miami-Dade County (See Figure C3.6, Miami-Dade County Wellfield Protection Areas). The water is treated at the FCAA's Water Treatment Facility in Florida City which has a maximum design capacity of 29.8 Million Gallons per Day (MGD). The primary water treatment process is a conventional lime softening/filtration water treatment plant and is capable of treating up to 23.8 ~~29.8~~ MGD from the Biscayne Aquifer. The secondary water treatment facility at this location is the Reverse Osmosis (RO) plant which is capable of producing 6 MGD from the brackish Floridan Aquifer ~~(included in the 29.8 MGD)~~. Under CUP 13-0005-W (valid through March 13, 2028), the FCAA is allowed an annual withdrawal from the aquifers of 8.751 billion gallons of water. The purchase of a new wellfield is scheduled for FY2022.~~

Water from these facilities, with the aid of booster pump stations, travels the length of the Keys terminating at Key West (approximately 130 miles). Distribution is generally through a 36-inch

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transmission line decreasing in size to an 18-inch line upon entering the City. From that line a feeder system disperses the water through-out the community.

The FCAA maintains storage tank facilities which provide an overall storage capacity of This integrated system also includes 45.2 million gallons systemwide. The sizes of tanks vary from 0.2 to 5.0 million gallons. These tanks are utilized during periods of peak water demand and serve as an emergency water supply. Since the existing transmission line serves the entire Florida Keys (including Key West), and storage capacity is an integral part of the system, the capacity of the entire system must be considered together, rather than in separate service districts. Under the FCAA Master Plan there is a proposal to increase storage to 90 MG by 2025 which would provide a 10-day supply of water at 50% of the annual daily flow based on 2010 consumption rates.

Additionally,~~Also~~ two saltwater RO plants, located on Stock Island and Marathon, are available to produce water under emergency conditions. Their design capacities are 2.0 and 1.0 MGD, respectively.

At this time ~~Notably,~~ the FCAA system is a closed system that is, ~~therefore,~~ not connected to any other system.

3.6.1 Demand for Potable Water

Tables 3.6.1 and 3.6.1a provide a historical overview of the water demands in the FCAA service area including Water Use Permit (WUP) allocation limits, yearly percent changes, and remaining water allocations. Along with the reverse osmosis water treatment plant in Florida City, compliance with withdrawal limits can also be accomplished by using other alternative water sources (blending of the Floridan Aquifer, reclaimed water and operation of the RO desalination plants), pressure reduction, public outreach, and assistance from municipal agencies in enforcing water conservation ordinances.

Table 3.6.1 - Annual Water Withdrawals 2002-2018

*(Coding: Added language is underlined; deleted language is ~~struck through~~ at first reading. Added language is double underlined and ~~double struck through~~ at second reading.)

Year	Annual Withdrawal (MG)	% Change	WUP Limit (MG)	WUP +/- Annual Allocation (MG)
2002	6,191	10.03%	7,274	1,083
2003	6,288	1.57%	7,274	986
2004	6,383	2.74%	7,274	813
2005	6,477	0.16%	7,274	803
2006	6,283	-2.49%	7,274	964
2007	5,850	-7.35%	7,274	1,428
2008	5,960	1.89%	8,751	2,791
2009	5,966	0.09%	8,751	2,785
2010	5,919	-0.79%	8,751	2,832
2011	6,327	6.89%	8,751	2,424
2012	6,042	-4.50%	8,751	2,709
2013	6,105	1.04%	8,751	2,646
2014	6,377	4.46%	8,751	2,374
2015	6,530	2.40%	8,751	2,221
2016	6,462	-1.04%	8,751	2,289
2017	6,324	-2.13%	8,751	2,427
2018	6,526	3.10%	8,751	2,225

Source: Florida Keys Aqueduct Authority, 2019

In 2018, the FKAA distributed an annual average of 17.64 MGD from the Biscayne Aquifer plus 0.24 MGD from Floridan RO Production (Table 5). This table also provides the water treatment capacities of the emergency RO plants. Since the emergency RO plants utilize seawater, a Water Use Permit (WUP) is not required for these facilities.

Table 3.6.1a – FKAA Projected Water Demand in 2019 (in MG)

*(Coding: Added language is underlined; deleted language is ~~struck through~~ at first reading. Added language is double underlined and ~~double struck through~~ at second reading.)

	FKAA Permit Thresholds	2018 Water Demand	2019 Water Demand Projected
Annual Allocation			
Average Daily Demand	23.98	17.64	18.2
Maximum Monthly Demand	809.01	586.04	604.37
Annual Demand	8,751	6,440	6,641
Biscayne Aquifer Annual Allocation/Limitations			
Average Daily Demand	17.79	17.64	17.79
Annual Demand	6,492	6,439	6,492
Floridan RO Production			
Average Daily Demand	6.00	0.24	0.41
Emergency RO WTP Facilities			
Kermit L. Lewin Design Capacity	2.00 (MGD)	0.00 (MGY)	0.00

The 2019 figures and projections for 2020 indicate a slight increase in annual average daily demand from 17.64 to 18.2 MGD and an increase in maximum monthly demand from 586.04 MGD to 604.37 MG. Preliminary projections from FKAA for 2020 indicate no increase in annual average daily demand from the 2019 projections.

Table 3.6.1b provides the amount of water used on a per capita basis. Based on Functional Population and average daily demand, the average future water consumption expected is 115 gallons per capita (person), which reflects the entire FKAA service area, including unincorporated Monroe County, Key West, Marathon, Islamorada, Key Colony Beach, and Layton.

Table 3.6.1c breaks down the jurisdictions, showing Key West predicted at 101 gallons per capita.

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Table 3.6.1b – Keyswide Per Capita Water Use

*(Coding: Added language is underlined; deleted language is ~~struck through~~ at first reading. Added language is double underlined and ~~double struck through~~ at second reading.)

Year		Permanent ¹	Seasonal ²	Functional	Per capita (MGD)
Actual	2005	76230	73737	149967	118
	2006	74252	75228	149480	111
	2007	73499	76453	149952	103
	2008	73333	78647	151980	106
	2009	73299	77516	150815	105
	2010	73219	78401	151620	107
	2011	73981	77974	151955	114
	2012	74627	78431	153058	108
	2013	75914	78887	154801	108
	2014	76492	79343	155835	112
	2015	77003	79800	156803	114
	2016	77304	80270	157574	112
	2017	77013	80740	157753	112
	2018	77101	81211	158312	112
Projected	2019	77101	81681	158782	115
	2020	77101	82151	159252	115
	2021	77101	82622	159723	115
	2022	77101	83092	160193	115
	2023	77101	83562	160663	115
	2024	77101	84033	161134	115
	2025	77101	84503	161604	115
	2026	77101	84973	162074	115
	2027	77101	85444	162545	115
	2028	77101	85914	163015	115
	2029	77101	86384	163485	115
	2030	77101	86855	163956	115
	2031	77101	87037	164138	115
	2032	77101	87220	164321	115
	2033	77101	87403	164504	115
	2034	77101	87587	164688	115
	2035	77101	87771	164872	115
	2036	77101	87955	165056	115
	2037	77101	88140	165241	115
	2038	77101	88325	165426	115
	2039	77101	88510	165611	115
	2040	77101	88696	165797	115

*(Coding: Added language is underlined; deleted language is ~~struck through~~ at first reading. Added language is double underlined and ~~double struck through~~ at second reading.)

Table 3.6.1c – Potable Water Demand Summary

FLORIDA KEYS AQUEDUCT AUTHORITY				
Potable Water Demand Summary - New Water Demand, Actual Water Demand, and Expected Water Demand				
Municipality	Year - 2019		Year - 2019	Year 2020
	New Water Service - Gallons/Year	Metered Water - Gallons/Year	Actual Water Demand - Gallons/Year*	Expected Water Demand - Gallons/Year
Unincorporated Monroe County	2,335,000	2,194,005,542	2,824,051,412	2,826,386,412
City of Key West	617,000	1,569,905,703	2,020,730,729	2,021,347,729
City of Marathon	1,337,700	586,491,003	754,911,833	756,249,533
City of Key Colony	0	108,107,301	139,152,144	139,152,144
City of Layton	0	12,290,772	15,820,275	15,820,275
City of Islamorada	324,500	654,275,664	842,162,008	842,486,508
Entire Florida Keys	4,614,200	5,125,075,985	6,596,828,401	6,601,442,601
SFWMD WUP Annual Allocation			8,751,000,000	8,751,000,000
<small>*metered + unmetered water demand (ie. flushing, leaks, etc.)</small>				

**From FCAA, Potable Water Demand Summary, 2020 Update*

3.6.2 Improvements to Potable Water Facilities

FCAA has a 2020-2024 Capital Improvements Program and a draft 20-year Water System Master Plan (Provided March 2020) for water supply, water treatment, transmission mains and booster pump stations, distribution mains, facilities and structures, information technology, reclaimed water systems, and Navy water systems.

In 1989, FCAA embarked on the Distribution System Upgrade Program to replace approximately 190 miles of galvanized lines throughout the Keys. FCAA continues to replace and upgrade its distribution system throughout the Florida Keys and the schedule for these upgrades is reflected in their long-range capital improvement plan.

Table 3.6.2 provides the schedule and costs projected for the capital improvements to the potable/alternative water systems planned by the FCAA. The total cost of the scheduled improvements is approximately \$140 million over the next 5 years. These projects are to be funded by water rate structure, long-term bank loans, and grants.

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Table 3.6.2 – FCAA Projected 5 Year Capital Improvement Plan (2020-2024)

	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total
Key West Administrative Building	9,000,000	9,000,000	4,364,000	-	-	22,364,000
Stock Island RO Facility	3,000,000	14,000,000	18,000,000	15,000,000	-	50,000,000
Grassy Key Transmission Line Replacement	8,000,000					8,000,000
Transmission Terminus Replacement				840,000	3,360,000	4,200,000
Simonton, Front, Whithead	750,000				1,250,000	2,000,000
Islamorada Transmission Line Replacement	2,670,000	13,350,000	10,680,000			26,700,000
Ocean Reef Distribution and Storage Improvements				3,200,000	3,900,000	7,100,000
New Distribution System at No Name Key	2,600,000					2,600,000
Stock Island Garage Replacement	-				420,000	420,000
Box Girder Bridge Coating/coupling Replacement	-				3,870,000	3,870,000
Florida City Generator Control Panel Replcaemnt					500,000	500,000
Stock Island Pump Station And Generator Replacement	7,000,000					7,000,000
Repair/Upgrade Subaqueous Crossing	2,000,000					2,000,000
Repair/Replace Cathodic Protection	2,700,000					2,700,000
Repair/Upgrade Electrical and Instrumentation	1,000,000					1,000,000
Totals	38,720,000	36,350,000	33,044,000	19,040,000	13,300,000	140,454,000

Source: Florida Keys Aqueduct Authority, 2019 Budget & Financial Plan

In summary, based on current conditions and projects, an adequate supply of water to meet current and future demands is provided by the following: The Biscayne permitted water supply of 17.79 MGD, the 6.0 MGD RO water treatment plant, the new reclaimed water systems, and the ability to operate the 3.0 MGD RO combined desalination plants during emergency situations. The FCAA continues to monitor and track conditions and events that could negatively impact the existing water supply. Any such impacts will be evaluated to determine future changes necessary to continue servicing Monroe County with adequate water supply.

3.7 Conservation

A high priority is placed on water conservation by the SFWMD, FCAA, Monroe County and the City of Key West. It is a mandate to implement Best Management Practices in addition to various irrigation, xeriscape, plumbing fixture efficiency and wastewater reuse requirements.

3.7.1 Regional and County-wide Issues

Water conservation continues to be of the highest priority within the Lower East Coast region of Florida, no more so than in the Keys:

- Monroe County and the City of Key West have Rate of Growth Ordinances that limit new residential and transient development growth based on hurricane evacuation times.
- Monroe County, the City of Marathon and the City of Key West have irrigation restrictions (Chapter 74, Article III, Division II, Subdivision II), including 5pm-9am watering hours, outlawing wastage, and requiring a water sensing device. They have also adopted the State’s Water Shortage Plan (F.A.C. ch. 40E-21).
- The use of potable water for irrigation is regulated by SFWMD’s mandatory year-round landscape irrigation conservation measures under Chapter 40E-24, Florida Administrative

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Code. Key West intends to incorporate this as an ordinance upon the acceptance of this plan. the Year Round Water Conservation rules in Rule 40E-2 and 20, F.A.C.

- SFWMD's offers many funding opportunities to help enact water conservation projects under the WaterSIP and Cooperative Funding Program programs
- FKAA implements a high base water rate for water use, which deters the most wasteful water uses.
- Other programs that have been instituted by the FKAA and as outlined in its 2007 Water Conservation Plan include: leak detection, a public information program, the Florida-Friendly Landscape Ordinance/Permanent Irrigation Ordinance, plumbing fixture efficiency standards, filter backwash recycling, reuse of wastewater, and metering.
- FKAA is transitioning to smart meters which allow customers to electronically monitor usage and receive leak status reports. These meters have shown to help conservation greatly.
- One Conservation Program available in the LEC that would be very helpful for the Keys would be to have our own dedicated urban Mobile Irrigation Lab for one year.

3.7.2 Local Government Specific Actions, Programs, Regulations, or Opportunities

The City of Key West continues to strive to reduce potable water use, with a gallons/capita/day (GPCD) lower than the whole of the Keys (101 vs 114 GPCD). The City's goal is to reduce the GPCD of Key West from 101 to 80 GPCD.

The City's Building Permit Allocation System (BPAS) requires the installation of a cistern for every new residential building, with its capacity equal to the roofs' square footage. Every new residential building also has to build to a Green Building Certification of at least "bronze", which incorporates many water saving measures. Through just eight (8) years of BPAS, not only have 291,600 gallons of cistern capacity been approved, but more than half of the buildings built to a higher tier than Bronze, including 77 Platinum units. This program has been very successful.

Since 2012, the City has partnered with the FKAA for a Rainbarrel Workshop in April for Water Conservation Month. Through this small program, we have supported the construction of more than one hundred rainbarrels that can each hold up to fifty gallons of rainwater. This program hasn't been as successful, as we only host it once per year. It is expected that the 2021 update to the Stormwater Master Plan will highlight more opportunities for water catchment based on our urban environment.

For the first Water Supply Facilities Work Plan, the City coordinated multiple meetings with all six planning departments across the Keys' local governments and worked alongside FKAA and SFWMD to help each other create policies that could be adopted across jurisdictions. The City repeated the process this year as well, which led to a ranking of future water conservation projects, as considered from the LEC Plan Update and other local opportunities:

Table 3.7.2 – Keyswide Planners Ranking for Water Efficiency Actions

Rank	Action
<u>1</u>	<u>Formally support FKAA in opposing Turkey Point cooling systems and their FDEP permits for expansion</u>
<u>2</u>	<u>Enact Building Code amendments to mandate high efficiency water fixtures like Miami Dade County</u>
<u>3</u>	<u>Enforce existing water conservation rules (soil moisture sensors, daytime watering)</u>
<u>4</u>	<u>Enact Building Code amendments to mandate fixtures have Water Sense Certification</u>
<u>5</u>	<u>Explore feasibility of Toilet to Tap at Fleming Key Wastewater Treatment Plant</u>

*(Coding: Added language is underlined; deleted language is ~~struck through~~ at first reading. Added language is double underlined and ~~double struck through~~ at second reading.)

#1) Formally support FKAA in opposing Turkey Point cooling systems and their FDEP permits for expansion

The topmost ranked action has already happened, with the City Commission providing funds for FKAA's legal fees.

#2) Enact Building Code amendments to mandate high efficiency water fixtures like Miami Dade County

This Work Plan amends Chapter 14 of our Code of Ordinances to mandate high efficiency water fixtures as part of our Building Code.

#3) Enforce existing water conservation rules

As part of our Planners Forum, many jurisdictions discovered that they had land development regulations requiring soil moisture sensors in all new irrigation systems, but because they were not a part of the Building Code, were not being enforced. The group intends to work together on a Building Code amendment and supporting material similar to Miami Dade's high efficiency water features amendment.

The Work Plan enacts additional Ordinances that the City will need to be ready to enforce, including Chapter 108's addition of the Mandatory Year-Round Landscape Irrigation Conservation Measures, as detailed in chapter 40E-24, Florida Administrative Code, adopted by the Districts' Governing Board in 2010. Once the Work Plan is adopted and the Ordinance is passed, the City will create an educational campaign for landscapers and homeowners before Code officers write tickets.

#4) Enact Building Code amendments to mandate fixtures have Water Sense Certification

The Planners Forum decided to wait and see how well #2 worked to meet water conservation goals before pursuing this goal. The Work Plan amendments that do address certification programs include:

- The Coastal Management Element will recognize the importance of certification and licensing programs like WaterSense and Florida's WaterStar.
- The Conservation Element will incorporate Florida-Friendly Landscaping Design Standards and research sections of the International Green Construction Code for efficiency standards.

#5) Explore feasibility of Toilet to Tap at Fleming Key Wastewater Treatment Plant

This goal is a high planning priority but is not budgeted yet. The City intends to have studied this before the next Work Plan.

#6) Partner with FKAA to examine feasibility of further refinement of Water Consumption Tiers

This is another Planners Forum workshop that will happen during the 5 years between now and the next years Work Plan. It was prioritized because the group believes that the existing Tiers do not foster conservation.

Overall, the Work Plan amendments to the City's Comprehensive Plan and Code of Ordinances create many new avenues to address water conservation in the City:

- The Future Land Use Element will include many innovative tools and technologies to the City's toolkit for water conservation into the future.

*(Coding: Added language is underlined; deleted language is ~~struck through~~ at first reading. Added language is double underlined and ~~double struck through~~ at second reading.)

- The Conservation Element will incorporate SFWMD's Year-Round Permanent Landscape Irrigation Measures, Water Supply Demand Goals, and High efficiency/ultra-low volume fixtures.

The City will continue to coordinate future water conservation efforts with the FCAA, the SFWMD, Monroe County and all other Florida Keys municipalities as necessary to ensure that proper techniques are applied. In addition, the City will continue to support and expand existing goals, objectives and policies in the comprehensive plan that promote water conservation in a cost-effective and environmentally sensitive manner. The City will continue to actively support the SFWMD, FCAA and Monroe County in the implementation of new regulations or programs that are designed to conserve water. As stated previously, the FCAA Planning Standard potable water consumption is 115 gallons/capita/day. As part of this Water Supply Plan, it is recommended that the City maintain its 100 GPCD LOS standard, while working towards a goal of 80 GPCD by the end of this Planning period.

~~The City will coordinate future water conservation efforts with the FCAA, the SFWMD and Monroe County as necessary to ensure that proper techniques are applied. In addition, the City will continue to support and expand existing goals, objectives and policies in the comprehensive plan that promotes water conservation in a cost-effective and environmentally sensitive manner. The City will continue to actively support the SFWMD, FCAA and Monroe County in the implementation of new regulations or programs that are designed to conserve water. As stated previously, the goal of the FCAA for potable water consumption is to maintain an overall level of service standard of 100 gallons/capita/day. As part of this Water Supply Plan it is recommended that the City adopt this as its standard, providing for consistency with the goals of the water service provider. In addition, it is recommended that the City adopt water conservation policies as outlined in this Plan and the associated Goals, Objectives and Policies. Within two years of plan adoption, the City shall set (as separate to the LOS) water efficiency standards to reduce demand on the potable water system. Subsequent, to those recommendations, if accepted, revisions to the City's Land Development Regulations.~~

3.8 Reuse

Water reuse is a method for supplementing water availability. Desalination at the source through reverse osmosis is presently incorporated within the design of new water treatment facilities that tap into the Floridan Aquifer. The City's Golf course on north Stock Island, receives reuse water for irrigation from Monroe County's WWTP on south Stock Island.

FCAA and the City have looked into incorporating reuse from the Fleming Key WWTP, but the cost of developing a separate distribution system for recycled water in a very urban area creates significant disturbance and cost challenges.

~~The City does have a wastewater facility but would require upgrades and additional infrastructure for distribution.~~

3.8.1 Regional and County-wide Issues

State law supports reuse efforts. Florida's utilities, local governments, and water management districts have led the nation in implementing water reuse programs that increase the quantity of

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reclaimed water used and public acceptance of reuse programs. Section 373.250(1) F.S. provides that “water reuse programs designed and operated in compliance with Florida’s rules governing reuse are deemed protective of public health and environmental quality.” In addition, Section 403.064(1), F.S., provides that “reuse is a critical component of meeting the State’s existing and future water supply needs while sustaining natural systems.”

The LEC Work Plan noted that additional alternative water supplies need to be developed and that expanded use of reclaimed water is necessary to meet future water supply demands.

The City supports water reuse policies and programs being implemented by the SFWMD, Monroe County and the FCAA. The FCAA has committed to implement water reuse/reclaimed water projects. Reclaimed water serves as an Alternative Water Supply. The benefits of reclaimed water include the disposal of appropriately treated effluent (sewage) in an environmentally friendly manner (such as into marshland), extending the life of water sources, postponing water supply related infrastructure, and irrigation. Both the Big Coppitt Wastewater Treatment Plant and the Hawk’s Cay/Duck Key Wastewater Treatment Plant are water reclamation facilities providing reclaimed water to a portion of their service areas.

3.8.2 Local Government Specific Actions, Programs, Regulations, or Opportunities

The City’s Richard A. Heyman Environmental Protection Facility is a Wastewater Treatment Plant (RH-WWTP) that is one treatment step away from potable water.

The City’s June 2018 Application for Operations Permit Renewal to FDEP for the RH-WWTP included a Reuse Feasibility Study that looked at multiple reuse options as well as direct potable treatment. At this time, the annualized costs of all the projects fall below the minimum consumption charge from FCAA, making them unattractive in the short term, but still viable in the long term. The City will continue to monitor these options going forward.

Policy 6-1.2.5: Protection and Conservation of Potable Water Supply states that where nonpotable alternative sources of irrigation water are available, potable water supplies may not meet irrigation needs.

The City will support the SFWMD, FCAA and Monroe County water reuse projects and implementation of new regulations or programs designed to increase the volume of reclaimed water used and the public acceptance of reclaimed water, ~~as well as the volume of it used.~~

4.0 CAPITAL IMPROVEMENTS

4.1 Work Plan Projects

The City’s Five-Year Capital Improvements Program for FY 2020/2021 – 2024/2025 ~~2011/2012–2015/2016~~ does not include improvements to the Potable Water System, as all Potable Water is provided by FCAA, which is owned and operated by the FCAA. See 4.2.1 below for proposed system wide improvements.

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The Work Plan incorporates FCAA's Capital Improvement Program 2020-2024 as Figure 4.1, listing all proposed work projects within Monroe County.

4.2.1 Capital Improvements Element/Schedule

The FCAA Capital Improvement Program 2020-2024 (see Figure C.4.1) will serve as the City of Key Wests' Capital Improvement Elements/Schedule for potable water.

Projects that affect the City of Key West are:

- **Stock Island Reverse Osmosis Facility** (\$50M) will greatly help in emergency situations.
- **Distribution Main on Simonton, Front and Whitehead** (\$2M) streets is underway and well-coordinated with the City.
- **Stock Island Pump Station** (\$7M) will maintain water pressure and power resiliency.
- **Key West Administration Building Replacement** (\$22M) will not affect water supply
- **Stock Island Garage Replacement** (\$420K) will not affect water supply

The City of Key West will continue to work with FCAA on the Findings and Recommendations (Figure C.4.2.1) from their draft 20-Year Water System Master Plan (Provided March 2020).

*(Coding: Added language is underlined; deleted language is ~~struck through~~ at first reading. Added language is double underlined and ~~double struck through~~ at second reading.)

5.0 GOALS, OBJECTIVES AND POLICIES
~~PROPOSED COMPREHENSIVE PLAN CHANGES~~

5.0 GOALS, OBJECTIVES AND POLICIES PROPOSED COMPREHENSIVE PLAN CHANGES

The adopted and presently effective Code of Ordinances and 2013 City of Key West Comprehensive Plan includes several Goals, Objectives and Policies (GOPs) that implement water supply concurrency and conservation. These GOPs are located within the Future Land Use, Public Facilities, Coastal Management, Conservation, Intergovernmental and Capital Improvement Elements of the Comprehensive Plan and the Buildings and Building Regulations and Utilities Chapters of the General Ordinances. The following GOPs, as approved by City Commission on April 4, 2023, reflect amendments born from the 2022 Key West Water Supply Facilities Workplan:

~~That the following modifications and/or additions of Goals, Objectives and Policies to the 2013 City of Key West Comprehensive Plan are hereby modified as follows*:~~

CHAPTER 1: FUTURE LAND USE ELEMENT

OBJECTIVE 1-1.7: IMPLEMENT WATER SUPPLY PLANNING IN ACCORDANCE WITH STATE GROWTH MANAGEMENT REQUIREMENTS.

Monitoring Measure: Adoption and Update of Water Supply Plan by 2014 within 18 months after the governing board of South Florida Water Management District approves its Lower East Coast Water Supply Plan, expected every 5 years.

OBJECTIVE 1-1.12: CONSIDER APPLICATION OF INNOVATIVE LAND AND WATER RESOURCE MANAGEMENT, CLIMATE ADAPTATION, AND ENERGY CONSERVATION CONCEPTS.

Policy 1.1.12.6: Water Efficiency in Building and Construction.

As necessary to meet goals, the City shall research and recommend progressive water efficient building codes and retrofits, including but not limited to retrofit at resale, mandatory reuse areas, conservation tier rates, irrigation pump pressure control reduction, and the International Green Construction Code.

As necessary to meet goals, the City shall explore regulatory and/or incentive programs and timelines to increase submetering, fixed interval metering, irrigation audits, rain/moisture sensor retrofits.

The City shall promote attendance at regional training workshops in water conservation in construction and continue to foster cooperative relationships between building trades, architects, engineers and building officials.

Policy 1.1.12.7: Conservation Tier Rates. The City shall seek to coordinate with the FCAA and other local governments on an updated conservation rate structure before the next Work Plan update.

Policy 1.1.12.8: Stormwater Mitigation. The City shall research and recommend new methodologies for rainwater retention in order to increase freshwater recharge as well as reduce stormwater flooding and nonpoint pollution before the next Work Plan update. These new methodologies could include but are not limited to cisterns, percolation tanks, green infrastructure, and stormwater mitigation fees.

CHAPTER 4: PUBLIC FACILITIES ELEMENT

Objective 4-1.2: Adoption of the Key West Water Supply Facilities Work Plan.

The City of Key West shall comply and implement the ~~with its~~ Water Supply Facilities Work Plan 2020-2030 ~~2012-2025~~ (Work Plan) as required by section 163.3177(6)(c), F.S. within 18 months after the governing board of South Florida Water Management District adopted its Lower East Coast Water Supply Plan Update on November 8, 2018, and as included in Appendix C of the City's Comprehensive Plan.

The Work Plan shall be updated, at a minimum, every 5 years.

The City's Work Plan is designed to: assess current and projected potable water demands; evaluate the sources and capacities of available water supplies; and identify those water supply projects, using all available technologies, necessary to meet the City's water demands for the planning period.

The City adopts by reference into the City's Work Plan and Comprehensive Plan, the Florida Keys Aqueduct Authority's (FCAA) Water System Capital Improvement Plan (2020-2024) and the most recent 20-Year Water System Capital Improvement Plan (Dec 2006).

Monitoring Measure: The Work Plan shall remain consistent with the Florida Keys Aqueduct Authority 20-Year Water System Capital Improvement Master Plan (Dec 2006), which is compatible with the FCAA Water Use Permit renewals and with the projects listed in the South Florida Water Management District's Lower East Coast Regional Water Supply Plan. The Work Plan will be updated, at a minimum, every five years and within 18 months after the South Florida Water Management District's approval of an updated Lower East Coast Regional Water Supply Plan.

Policy 4-1.2.1: Compliance with the Adopted Water Supply Facilities Work Plan.

The City of Key West shall comply with its Water Supply Facilities Work Plan. ~~2012-2025 which is incorporated by reference into the Comprehensive Plan.~~

Policy 4-1.2.2: Intergovernmental Coordination with Water Supply Planning

The City shall coordinate appropriate aspects of its Comprehensive Plan with the South Florida Water Management District's Lower East Coast Regional Water Supply Plan update, adopted November 8, 2018, with the Florida Keys Aqueduct Authority's (FKAA) most recent 20-Year Water System Capital Improvement Master Plan (2020-2024) ~~adopted December 2006~~ and with the Monroe County Water Supply Plan adopted ~~November 25, 2008~~ June 17, 2020. The City shall amend its Comprehensive Plan and Work Plan as required to provide consistency with the District, County and FKAA plans.

CHAPTER 5: COASTAL MANAGEMENT ELEMENT

Policy 5-1.2.2: Limit Impacts of Development and Redevelopment Upon Water Quality and Quantity, Wildlife Habitat and Living Marine Resources and Implement Policies for Shoreline Land Uses.

6. Ocean, Gulf, and Estuarine Water Quality.

In order to protect the water quality of the Atlantic Ocean and the Gulf of Mexico, no new point source pollution shall be permitted to discharge into these waters or into ditches or canals flowing into these waters. In addition, in order to reduce nonpoint source pollutants, the City shall require the following:

- e. The City shall explore incorporating ~~evaluation of~~ rainwater collection, distribution, and percolation systems into stormwater management planning.
- f. The City shall will research and recommend certification and licensing programs which encourage responsible business practices. This includes, but is not limited to EPA's WaterSense, Florida's WaterStar, Green Industries – Best Management Program and the irrigation specialty contractor's license.

CHAPTER 6: CONSERVATION ELEMENT

Policy 6-1.2.5: Protection and Conservation of Potable Water Supply.

The City of Key West has no wellfields and has no need for a wellfield protection ordinance. In order to comply with policies of the South Florida Water Management District directed toward conservation of potable water supply and to achieve a reduction in the current rates of water consumption, Land Development Regulations shall be amended to incorporate the following performance standards:

3. In order to reduce demand for irrigation water (which in turn often places greater demand upon potable water sources), at least seventy percent (70%) ~~50 percent~~ of all landscaping material obtained from off-site sources for use on any site should be native plant material adapted to soil and climatic conditions existing on the subject site. Further, at least fifty ~~30~~ percent (50%) of all trees used in landscaping shall be native species adapted to soil and climatic conditions existing on-site in order to lessen water demand.
4. The City will explore and pilot innovative concepts in reuse of water, including use of cisterns for collecting rainwater for use in spray irrigation. In addition, the City shall study the feasibility of potable and/or landscape reuse of treated effluent and and ~~{gray water}~~.
6. At least seventy-five percent (75%) of the landscape must utilize 'right plant, right place' practices, as defined by Florida-Friendly Landscaping Design Standards.
7. In order to reduce demand for potable water used as irrigation, the City intends to adopt SFWMD's mandatory year-round permanent landscape irrigation measures into its Code of Ordinances, with the intent and purpose of establishing a regulatory framework to protect the water resources of the City of Key West.

Policy 6-1.2.8: Water Supply Demand.

Implementation of the City Work Plan shall ensure that adequate water supplies and public facilities are available to serve the water supply demands of any population growth that the City may experience.

The City will seek to reduce the water supply demand from 101 gallons per capita per day to 80 gallons per capita per day through efficiencies and conservation.

Policy 6-1.2.9: Coordinated Water Supply Planning.

The City shall coordinate the planning of potable water and sanitary sewer facilities, water supply sources, demands, other services and level-of-service standards with the Florida Keys Aqueduct Authority, South Florida Water Management District, other local municipalities, and through the Lower East Coast Water Supply Plan Update adopted November 8, 2018, as necessary.

Policy 6-1.2.12: Efficient Equipment and Appliances.

The City will require the use of high efficiency/ultra-low volume toilets, showerheads, faucets, clothes washers and dishwashers that are Energy Star rated and WaterSense certified in all new residential and commercial projects including renovations.

Policy 6-1.2.14: Landscape Guidelines.

The City will encourage the use of Florida-Friendly Landscape guidelines and principals; gutter downspouts, roof runoff, and rain harvesting through the use of cisterns, rain barrels and directing runoff to landscaped areas; drip irrigation or micro-sprinklers; rain or moisture sensor irrigation controllers; and the use of porous surface materials (bricks, gravel, turf block, mulch, pervious concrete, etc.) on walkways, driveways and patios.

By 2025, the City shall research and recommend policies and guidelines allowing cistern capacity to satisfy some portion of stormwater storage requirements.

Policy 6-1.2.19: Proactive Building Codes

By 2025, the City shall research and recommend sections of the International Green Construction Code or other established efficiency standards that increase efficiency without substantially increasing cost or complexity.

CHAPTER 8: INTERGOVERNMENTAL COORDINATION ELEMENT

Policy 8-1.3.5: Coordinated Facility Planning.

The City shall coordinate the planning of potable water and sanitary sewer facilities, water supply sources, demands, other services and level-of-service standards with the FCAA, South Florida Water Management District, other South Florida local governments and through the Lower East Coast Water Supply Plan Update adopted November 8, 2018, as necessary. This includes the City of Florida City activities that affect its wellfield area.
The City shall achieve this through:

9. On-going coordination activities, such as the quarterly Utilities meeting with FCAA and Keys Energy, which seek to align Capital Improvement Projects for maximum efficiency.
10. Continuing to participate in FCAA planning efforts and management activities.
11. Upholding and enforcing SFWMD's Mandatory Irrigation policies.
12. Continuing to stay abreast of FPL's Turkey Point activities, especially those related to Miami Dade DERM's 2015 Consent Agreement and FDEP's 2016 Consent order.
13. Continuing to stay abreast of City of Florida City activities that may affect the City's wellfield.
14. Coordination with SFWMD and FCAA following the LEC Plan Update, in preparation to update the City's Water Supply Facilities Workplan.
15. Continuing to participate wherever possible in SFWMD planning and management activities.
16. Additional coordination activities as needed for major initiatives.

CHAPTER 9: CAPITAL IMPROVEMENTS ELEMENT

Policy 9-1.6.1: Level of Service Standards.

Potable Water Level of Service

Residential <u>& Commercial</u> :
100 gal/capita/day
<u>Minimum Pressure: 20 PSI at customer service</u>
<u>Minimum Potable Water Quality: Shall be defined by Chapter 62-550 F.A.C.</u>

Policy 9-4.1.3: Capital Improvement Schedules of Other Agencies.

~~The City shall incorporate capital improvements affecting City levels of service by referencing the Capital Improvements Schedules of the Florida Keys Aqueduct Authority (2011/2012 through 2015/2016), state agencies and other units of government providing services but not having regulatory authority over the use of land into its five-year Schedule of Capital Improvements (Fiscal Years 2012/2013 through 2017/2018).~~

The City adopts by reference into the Cities Five-Year Schedule of Capital Improvements, the Capital Improvement Schedules of other agencies which affecting City levels of service of water supply. These include the Florida Keys Aqueduct Authority's (FKAA) Water System Capital Improvement Plan (2020-2024) and the most recent 20-Year Water System Capital Improvement Plan (Dec 2006). This Includes:

6. Kermit H Lewin Reverse Osmosis Facilities Upgrades
7. J. Robert Dean WTP Wastewater Forcemain with Miami-Dade
8. Transmission Terminus Replacement
9. Distribution Replacement South Street
10. Distribution Desal Storage Tank

The City Schedule shall be maintained and updated annually.

* * *

SUBPART A – GENERAL ORDINANCES

CHAPTER 14 – BUILDINGS AND BUILDING REGULATIONS
 ARTICLE II. – BUILDING CODES
 Section 14-35. - Amendments to Building Code.

The Florida Building Code adopted by the provisions of section 14-351 is amended in the following respects:

Sec. 604.4, Florida Building Code, Plumbing

The City hereby adopts the following local technical amendments to Chapter 6 (Plumbing) of the Florida Building Code.

604.4 Maximum flow and water consumption.

The maximum water consumption flow rates and quantities for all plumbing fixtures, ~~and fixture fittings~~ and appliances shall be in accordance with Table 604.4. Effective November 1, 2022, permit applications for all residential and commercial new construction and renovations shall include high efficiency plumbing fixtures, fixture fittings and appliances as provided in Table 604.4. Such high efficiency plumbing fixtures, fixture fittings and appliances shall comply with the specifications in Table 604.4 or have received the U.S. Environmental Protection Agency (EPA) WaterSense or EnergyStar Certification labels.

Exceptions:

1. Blowout design water closets [3.5 gallons (13L) per flushing cycle].
2. Vegetable sprays.
3. Clinical sinks [4.5 gallons (17 L) per flushing cycle].
4. Service sinks.
5. Emergency showers.

TABLE 604.4 MAXIMUM FLOW RATES AND CONSUMPTION FOR PLUMBING FIXTURES, ~~AND FIXTURE FITTINGS~~ AND APPLIANCES

PLUMBING FIXTURE OR FIXTURE FITTING	MAXIMUM FLOW RATE OR QUANTITY ^(b)
Lavatory, private	<u>WaterSense Certified (1.5 gpm at 60 psi)</u> 2.2 gpm at 60psi
Lavatory, public, (metering)	0.25 gallon per metering cycle
Lavatory, public (other than metering)	0.5 gpm at 60 psi

Shower head ^(a)	<u>WaterSense Certified (1.5 gpm at 80 psi)</u> <u>2.5 gpm at 80 psi</u>
Sink & Kitchen faucet	<u>WaterSense Certified (1.5 gpm at 60 psi)</u> <u>2.2 gpm at 60 psi</u>
Urinal	<u>WaterSense Certified (Waterless or 0.5 gallon per flushing cycle)</u> <u>1.0 gallon per flushing cycle</u>
Water closet	<u>WaterSense Certified (1.28 gallons per flushing cycle)</u> <u>1.6 gallons per flushing cycle</u>
<u>Dishwasher (residential)</u>	<u>Energy Star Certified (3.5 gallons per cycle)</u>
<u>Dishwasher (commercial)</u>	<u>Less than 1.2 gallons per rack for fill and dump machines and less than 0.9 gallons per rack for all other types of machines</u>
<u>Dishwasher (under the counter machines)</u> _____	<u>1.0 gallon or less per rack for high-temperature machines and 1.7 gallons per rack for low-temperature machines</u>
<u>Washing machine</u>	<u>EnergyStar Certified (4.3 Water Factor) ^(c)</u>

For SI:

1 gallon = 3.785 L

1 gallon per minute = 3.785 L/m

1 pound per square inch = 6.895 kPa.

(a) A hand-held shower spray is a shower head.

(b) Consumption tolerances shall be determined from referenced standards.

(c) Water Factor in gallons per cycle per cubic foot.

P2906.2, Florida Building Code, Residential

The City hereby adopts the following local technical amendments to Chapter 29 (Residential) of the Florida Building Code.

P2903.2 Maximum flow and water consumption.

The maximum water consumption flow rates and quantities for all plumbing fixtures and, fixture fittings and appliances shall be in accordance with Table P2903.2. Effective November 1, 2022, permit applications for all residential and commercial new construction

and renovations shall include high efficiency plumbing fixtures, fixture fittings and appliances as provided in Table P2903.2. Such high efficiency plumbing fixtures, fixture fittings and appliances shall comply with the specifications in Table P2903.2 or have received the U.S. Environmental Protection Agency (EPA) WaterSense or EnergyStar Certification labels.

TABLE P2903.2

MAXIMUM FLOW RATES AND CONSUMPTION FOR PLUMBING FIXTURES, FIXTURE FITTINGS AND APPLIANCES ^(b)

PLUMBING FIXTURE OR FIXTURE FITTING	MAXIMUM FLOW RATE OR QUANTITY
Lavatory faucet	<u>WaterSense© Certified (1.5 gpm at 60 psi)</u> <u>2.2 gpm at 60 psi</u>
Shower head ^(a)	<u>WaterSense© Certified (1.5 gpm at 80 psi)</u> <u>2.5 gpm at 80 psi</u>
Sink faucet	<u>WaterSense© Certified (1.5 gpm at 60 psi)</u> <u>2.2 gpm at 60 psi</u>
Water closet	<u>WaterSense© Certified (1.28 gallons per flushing cycle)</u> <u>1.6 gallons per flushing cycle</u>
<u>Dishwasher</u>	<u>EnergyStar© Certified (3.5 gallons per cycle)</u>
<u>Washing machine</u>	<u>Energy Star© Certified (4.3 Water Factor) ^(c)</u>

For SI:

- 1 gallon = 3.785 L
- 1 gallon per minute = 3.785 L/m
- 1 pound per square inch = 6.895 kPa.

- (a) A handheld shower spray shall be considered a shower head.
- (b) Consumption tolerances shall be determined from referenced standards.
- (c) Water factor in gallons per cycle per cubic foot.

SUBPART A – GENERAL ORDINANCES

Chapter 74 – UTILITIES
 ARTICLE III – WATER AND WATER MANAGEMENT
 Division 2. - CONSERVATION

Subdivision II. Permanent Water Conservation Measures

Sec 74-295. – Title; purpose

- (a) This subdivision shall be known as the "City of Key West's Water and Irrigation Conservation Ordinance."
- (b) This subdivision sets restrictions, constraints and prohibitions on persons in Key West in order to enhance the city's water resources and provides a permanent water conservation measure. Unless otherwise provided, nothing in this subdivision shall be construed to relieve any person from compliance with any applicable regulations enacted by the city or any other political subdivision of the state.
- (c) The purpose of this subdivision is to establish a regulatory framework to ensure that water and landscape irrigation conservation will be consistent throughout the city and with the South Florida Water Management District's (District) mandatory year-round landscape irrigation conservation measures.

Sec. 74-296. - Definitions.

The following definitions shall apply:

Address means the "house number" (a numeric or alphanumeric designation) that, together with the street name, describes the physical location of a specific property. This includes "rural route" numbers but excludes post office box numbers. If a lot number in a mobile home park or similar community is used by the U.S. Postal Service to determine a delivery location, the lot number shall be the property's address. If a lot number in a mobile home park or similar residential community is not used by the U.S. Postal Service (e.g., the park manager sorts incoming mail delivered to the community's address), then the community's main address shall be the property's address. If a property has no address, it shall be considered "even-numbered."

Agriculture means the growing of farm products including, but not limited to, vegetables, citrus and other fruits, sod or nursery stock including, but not limited to, ornamental foliage and greenhouse plants.

Athletic Play Area means all golf course fairways, tees, roughs, greens, and other athletic play surfaces, including, football, baseball, soccer, polo, tennis, lawn bowling fields, and rodeo, equestrian and livestock arenas.

Consumptive Use Permit (CUP) means a permit issued pursuant to Chapter 40E-2, F.A.C., authorizing the consumptive use of water.

District means the South Florida Water Management District, a government entity created under Chapter 373, Florida Statutes.

Even-Numbered Address means an address ending in the number 0, 2, 4, 6 or 8; rights-of-way or other locations with no address; or the letters A-M.

Existing Landscaping means any landscaping which has been planted in the ground for more than ninety (90) days.

Impervious means land surfaces that do not allow the penetration of water, including paved roads, sidewalks, driveways, parking lots and highly compacted areas such as shell or clay.

Irrigation means the direct application of water by means other than precipitation.

Irrigation systems means equipment and devices that deliver water to plants being irrigated including, but not limited to pipelines, control structures, pipes and ditches, pumping stations, emitters, valves and fittings. This does not include the transfer of water through water management systems from one location to another.

Landscaping means shrubbery, trees, lawns, sod, grass, ground covers, plants, vines, ornamental gardens, and such other flora not intended for resale, which are situated in such diverse locations as residential landscapes, recreation areas, cemeteries, public, commercial, and industrial establishments, public medians, and rights-of-way, except athletic play areas.

Landscape Irrigation means the outside watering of shrubbery, trees, lawns, sod, grass, ground covers, plants, vines, ornamental gardens, and such other flora not intended for resale, which are planted and are situated in such diverse locations as residential landscapes, recreation areas, cemeteries, public, commercial, and industrial establishments, public medians, and rights-of-way, except athletic play areas.

Law Enforcement Official(s) means city/county/village/town should include a definition of a law enforcement, code enforcement, or any local government employee who may be responsible for enforcing this Ordinance.

Low Volume Hand Watering means the watering of landscape by one (1) person, with one (1) hose, fitted with a self-canceling or automatic shutoff nozzle.

Low Volume Irrigation means the use of equipment and devices specifically designed to allow the volume of water delivered to be limited to a level consistent with the water requirement of the plant being irrigated, and to allow that water to be placed with a high degree of efficiency in the root zone of the plant. The term also includes water used in mist houses and similar establishments for plant propagation. Overhead irrigation and flood irrigation are not included.

Micro-irrigation means the application of small quantities of water on or below the soil surface as drops or tiny streams of spray through emitter or applicators placed along a

water delivery line. Micro-irrigation includes a number of methods or concepts such as bubbler, drip, trickle, mist or micro-spray, and subsurface irrigation.

New Landscaping means any landscaping which has been planted and established for ninety (90) days or less.

Odd-Numbered Address means an address ending in the number 1, 3, 5, 7 or 9; or the letters N-Z.

Person includes any natural person, individual, public or private corporation, firm, association, joint venture, partnership, municipality, governmental agency, political subdivision, public officer or any other entity whatsoever, or any combination of such, jointly or severally.

Reclaimed Water means wastewater that has received at least secondary treatment, and basic disinfection and is reused after flowing out of a wastewater treatment facility as defined by Rule 62-40.210, F.A.C.

User means any person, individual, firm, association, organization, partnership, business trust, corporation, company, agent, employee or other legal entity, whether natural or artificial, the United States of America, and the State and all political subdivisions, regions, districts, municipalities, and public agencies thereof, which directly or indirectly takes water from the water resource, including uses from private or public utility systems, uses under water use permits issued pursuant to Chapter 40E-2, F.A.C., or uses from individual wells or pumps.

Wasteful and unnecessary means allowing water to be dispersed without any practical purpose to the water use; for example, excessive landscape irrigation, leaving an unattended hose on a driveway with water flowing, allowing water to be dispersed in a grossly inefficient manner, regardless of the type of water use; for example, allowing landscape irrigation water to unnecessarily fall onto pavement, sidewalks and other impervious surfaces; or allowing water flow through a broken or malfunctioning water delivery or landscape irrigation system.

Water Resource means any and all water on or beneath the surface of the ground, including natural or artificial watercourses, lakes, ponds, or diffused surface water, and water percolating, standing, or flowing beneath the surface of the ground.

Water Shortage means when the District determines there is the possibility that insufficient water will be available to meet the present and anticipated needs of the users, or when conditions are such as to require a temporary reduction in total use within a particular area to protect water resources from serious harm. A water shortage usually occurs due to drought.

Water Shortage Emergency means when the District determines the provisions listed in Part II of Chapter 40E-21, F.A.C., are not sufficient to protect the public health, safety, or welfare; the health of animals, fish, or aquatic life; a public water supply; or commercial, industrial, agricultural, recreational, or other reasonable-beneficial uses.

Sec. 74-297. - Restrictions.

- (a) Irrigation of any residential, commercial, institutional, governmental or industrial landscape areas shall be restricted to the hours of 5:00 p.m. to 9:00 a.m.
- (b) It shall be unlawful to operate or cause the operation of any irrigation system or device in a manner causing potable water to be wasted. Such unlawful operations shall include, but not be limited to, unnecessary watering of impervious areas, other than that which may occur incidental to the proper operation of the primary irrigation system.
- (c) Upon the effective date of Ordinance [No. 02-28, January 1, 2003,] new installations of automatic irrigation systems shall be equipped with a water sensing device that shall automatically discontinue irrigation during periods of rainfall.
- (d) Irrigation of existing landscaping shall comply with the following provisions:
 - (1) Even-Numbered Addresses and rights-of-way, or other locations without an address, may accomplish necessary landscape irrigation only on Thursdays, and/or Sundays.
 - (2) Odd-Numbered Addresses may accomplish necessary landscape irrigation only on Wednesdays, and/or Saturdays.
- (e) Irrigation of new landscaping shall comply with the following provisions:
 - (1) New Landscaping may be irrigated once on the day it is installed without regard to the listed watering days and times. Irrigation of the soil immediately prior to the installation of the new landscaping is allowed without regard to the listed watering days and times.
 - (2) A ninety (90) day establishment period begins on the day new landscaping is installed. The new landscaping shall be installed within a reasonable time from the date of purchase, which may be demonstrated with a dated receipt or invoice.
 - (3) Irrigation of new landscaping which has been in place for thirty (30) days or less may be accomplished on Monday, Tuesday, Wednesday, Thursday, Saturday, and/or Sunday.
 - (4) Irrigation of new landscaping which has been in place for thirty-one (31) to ninety (90) days may be accomplished on Monday, Wednesday, Thursday, and/or Saturday.

- (5) Irrigation of the new landscaping is limited to areas containing only the new landscaping. An entire zone of an irrigation system shall only be utilized for landscape irrigation under this Code if the zone in question is for an area that contains at least fifty percent (50%) new landscaping. If a zone contains less than fifty percent (50%) new landscaping, or if the new landscaping is in an area that will not typically be irrigated by an irrigation system, only the individual new plantings are eligible for additional irrigation. Targeted watering may be accomplished by low volume hand watering, or any appropriate method which isolates and waters only the new landscaping.
- (f) Irrigation systems may be operated outside restricted days and/or times for cleaning, maintenance, and repair with an attendant on-site in the area being tested. Landscape irrigation systems may routinely be operated for such purposes no more than once per week, and the run time for any one (1) test should not exceed ten (10) minutes per zone.
- (g) Landscape irrigation for the purpose of watering-in fertilizers, insecticides, pesticides, fungicides, and herbicides, where such watering-in is required by the manufacturer, or by federal, state or local law, shall be allowed under the following conditions:
- (1) Such watering-in shall be limited to one (1) application in the absence of specific alternative instructions from the manufacturer; and
- (2) Such watering-in shall be accomplished during normal watering days and times listed above unless a professional licensed applicator has posted a temporary sign containing the date of application and the date(s) of needed watering-in activity.
- (h) Any plant material may be watered using low volume irrigation, micro-irrigation, low volume hand watering methods, rain barrels, cisterns, or other similar rain-harvesting devices without regard to the listed watering days or times.
- (i) In addition to the specific listed measures, all wasteful and unnecessary water use is prohibited.
- (j) In the event the District imposes restrictions on landscape irrigation for new and existing installations which are more restrictive than those imposed by this Code, such as under the declaration of a water shortage or water shortage emergency, the more restrictive regulations shall apply for the applicable duration of the more restrictive regulations.
- (k) It shall be the duty of each user to keep informed as to the landscape irrigation conservation measures within this Code, which affect each particular water use.

Sec. 74-299. - Enforcement.

- (a) Every law enforcement official having jurisdiction in the area governed by this Code shall, in connection with all other duties imposed by law, diligently enforce the provisions of this Code by issuance of a citation, summons, or notice to appear in county court, or by filing an action in civil court for injunctive relief. The city manager may also delegate enforcement responsibility for this Code to other departments of the town government.
- (b) A failure to comply with the requirements of this subdivision shall constitute a violation, punishable as provided in section 2-680. Each day a person is in violation of a provision of this subdivision shall constitute a separate offense.
- (c) In addition to the penalties contained herein, the city may take appropriate action, including but not limited to, administrative action and requests for temporary and permanent injunctions, to enforce the provisions hereof.

Sec. 74-300. - Variance relief.

- (a) Any person affected by the provisions of this subdivision may make written application to the city manager for a variance, if compliance would impose a unique, unnecessary and inequitable hardship on such person. Relief may be granted only upon a demonstration that such hardship is peculiar to the person or the affected property and is not self-imposed, and that the grant of the variance will be consistent with the general intent and purpose of this subdivision.
- (b) Examples of circumstances for a variance include, but are not limited to:
 - (1) Two (2) or more properties which share a common source of water;
 - (2) A public or private water system experiencing or anticipating distribution problems;
 - (3) A user maintains an irrigation system that uses soil moisture sensors or weather-based irrigation controllers; or
 - (4) Where a contiguous property is divided into different zones, a variance may be granted so that each zone may be irrigated on days different than other zones of the property; or
 - (5) Where a user maintains, manages, or owns a non-residential property, such as a house of worship or weekly market (farmer/flea), where the primary day of use, operation, or attendance for the property coincides with the prescribed watering day for the address.

- (c) Upon receipt of an application for variance, the city manager shall render a decision on the variance within ten working days. The decision of the city manager shall constitute final administrative action.
- (d) An application for a variance, and/or the granting of a variance, shall operate prospectively, and shall not affect any pending enforcement action against the property owner pursuant to the provisions of this subdivision.

76.0 REFERENCES

- Florida Keys Aqueduct Authority, draft 20-Year Water System Master Plan (Provided March 2020)
- Florida Keys Aqueduct Authority, 20-Year Water System Capital Improvement Plan, Dec 2006.
- Florida Keys Aqueduct Authority, Annual Water Demand Update through 2030
- Florida Keys Aqueduct Authority, Annual Water Demand Update by Municipal Boundary
- Florida Keys Aqueduct Authority, Projected 5-Year Capital Improvement Plan (2020-2024)
- Keith and Schnars, P.A. and Fishkind and Associates, Monroe County 2010-2030 Population Projections, March 15, 2011
- Monroe County Growth Management, Monroe County 2030 Comprehensive Plan
- South Florida Water Management District, Lower East Coast Water Supply Plan Update, November 8, 2018
- Southeast Florida Regional Climate Change Compact, Integrating Climate Change & Water Supply Planning in Southeast Florida, June 10, 2014
- Southeast Florida Regional Climate Change Compact, A Unified Sea Level Rise Projection for Southeast Florida, October 2020.

§7.0 Figures

Figure C1 – Maps (General Location, Water Service, Wellfield Cones of Influence)

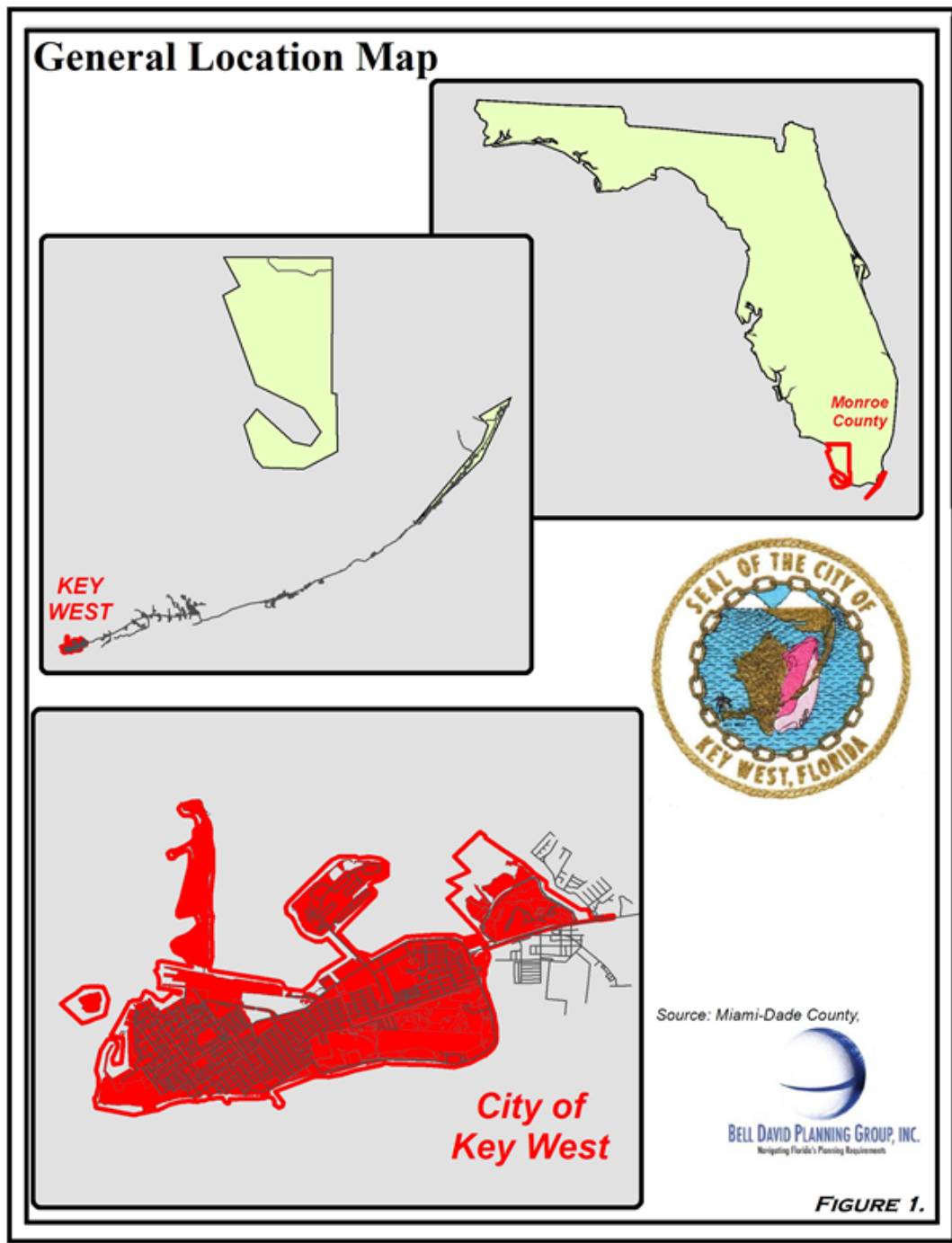
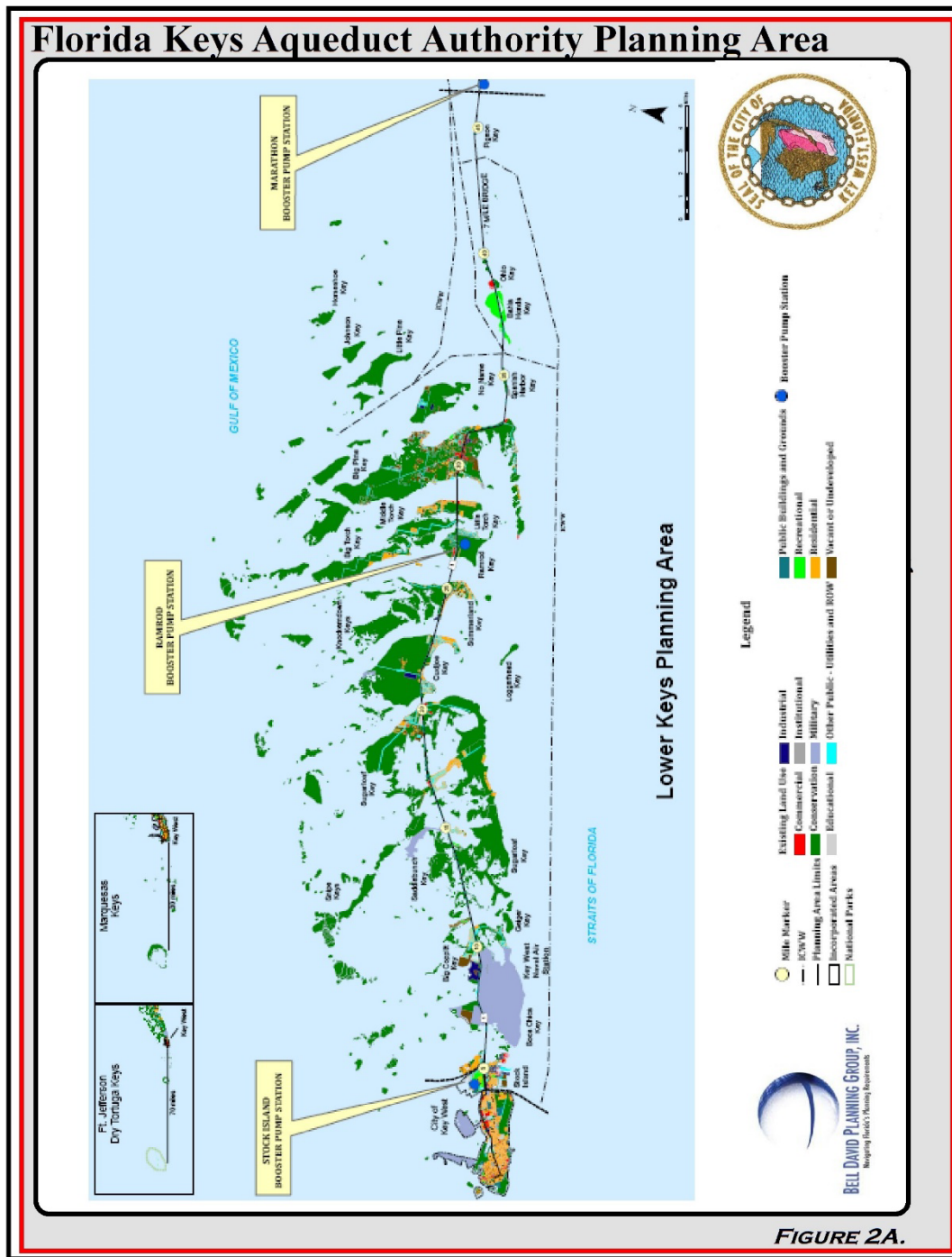


Figure C3.2 – Water Service Maps



Florida Keys Aqueduct Authority Planning Area

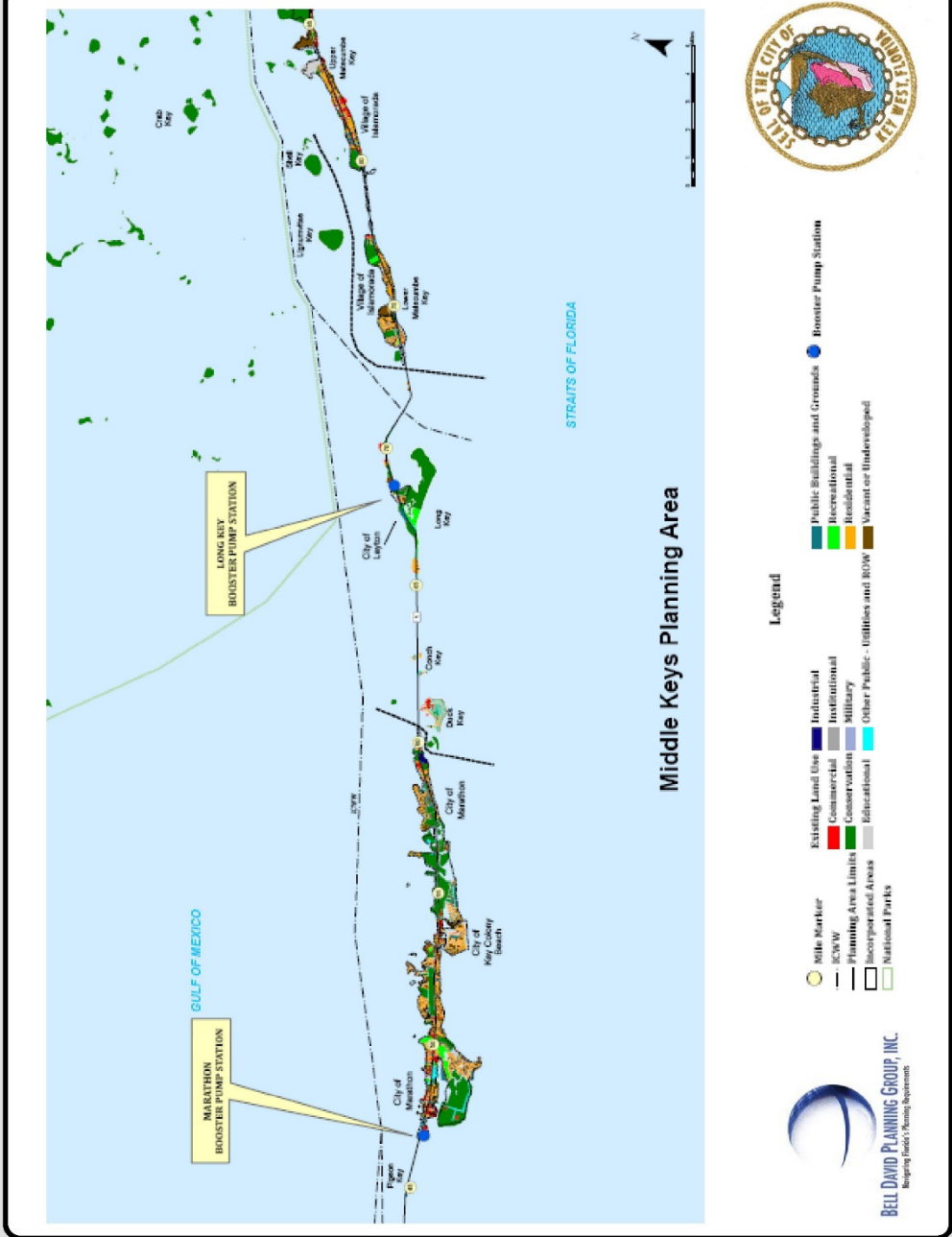


FIGURE 2B.

Florida Keys Aqueduct Authority Planning Area

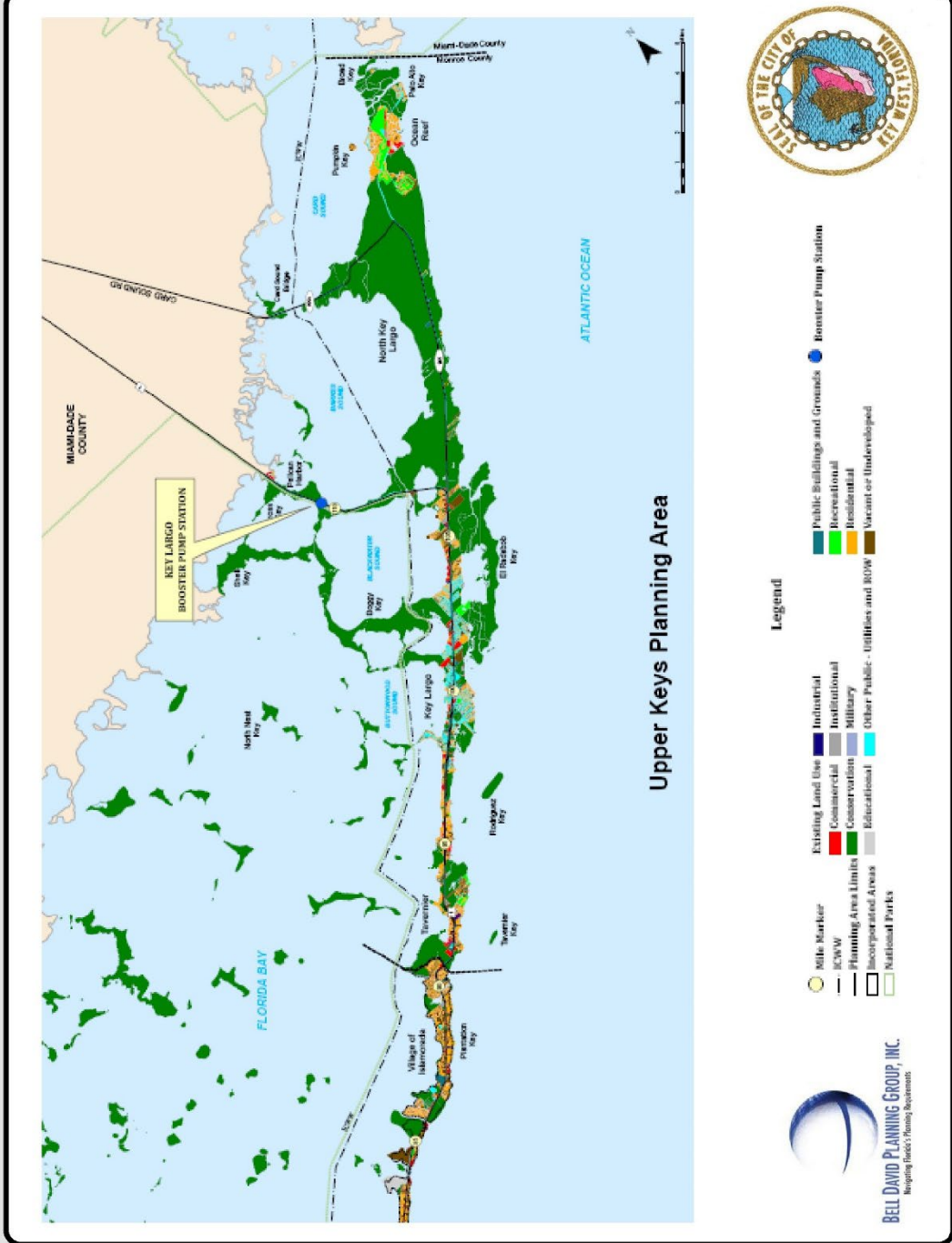


FIGURE 2C.

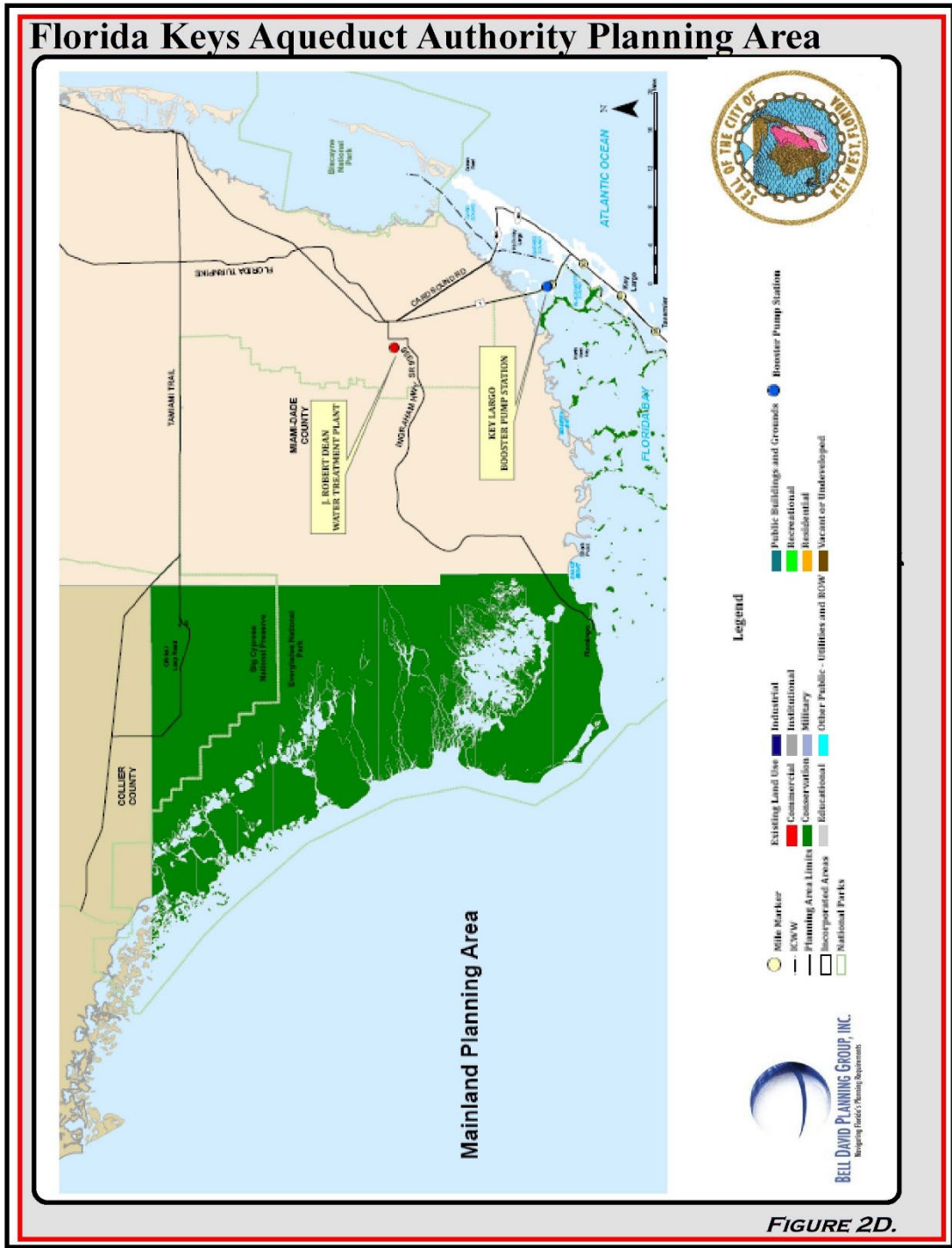


Figure C3.2a – City of Key West Water Service Boundaries

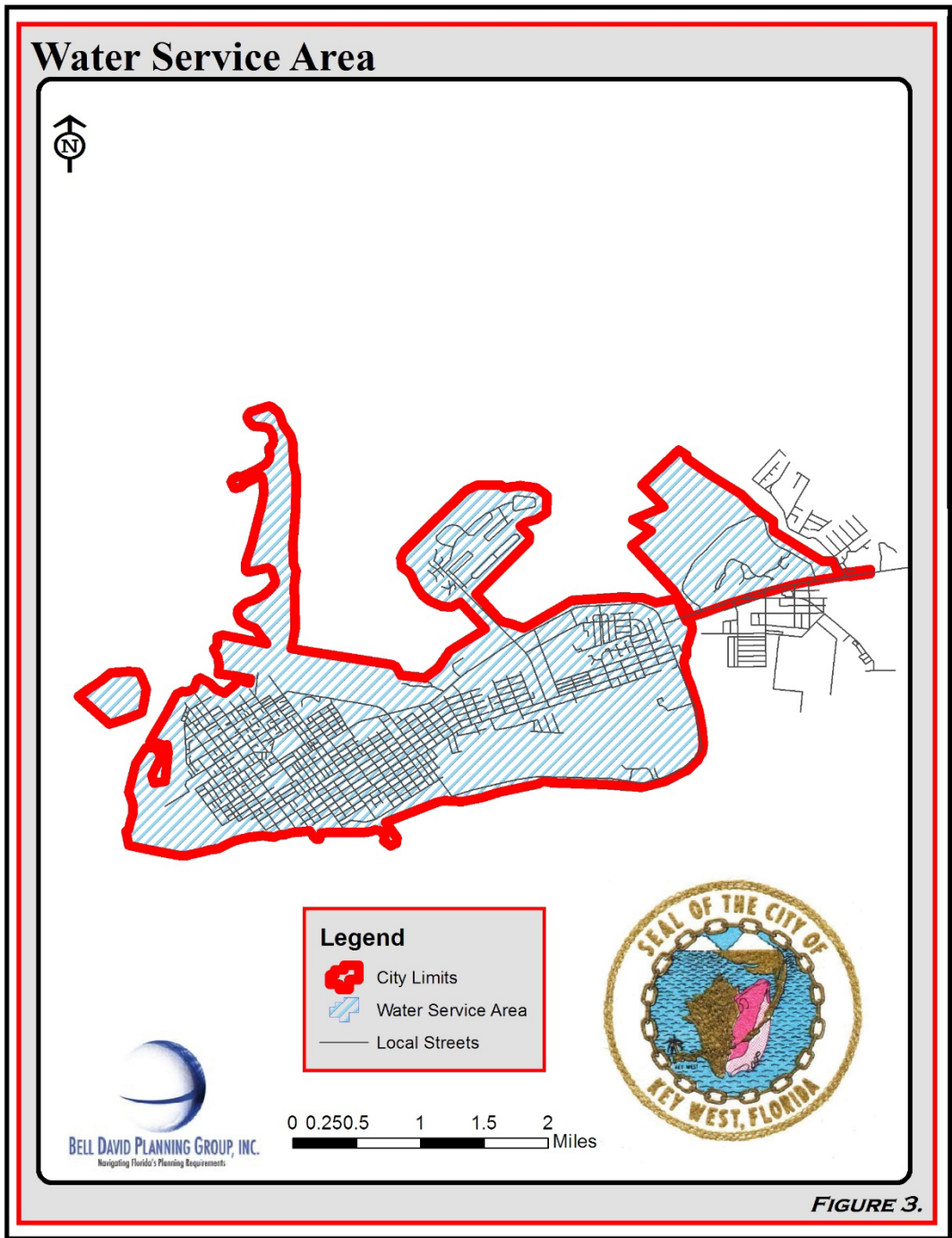


Figure C3.6 – Wellfield Cones of Influence

Wellfield Cones of Influence

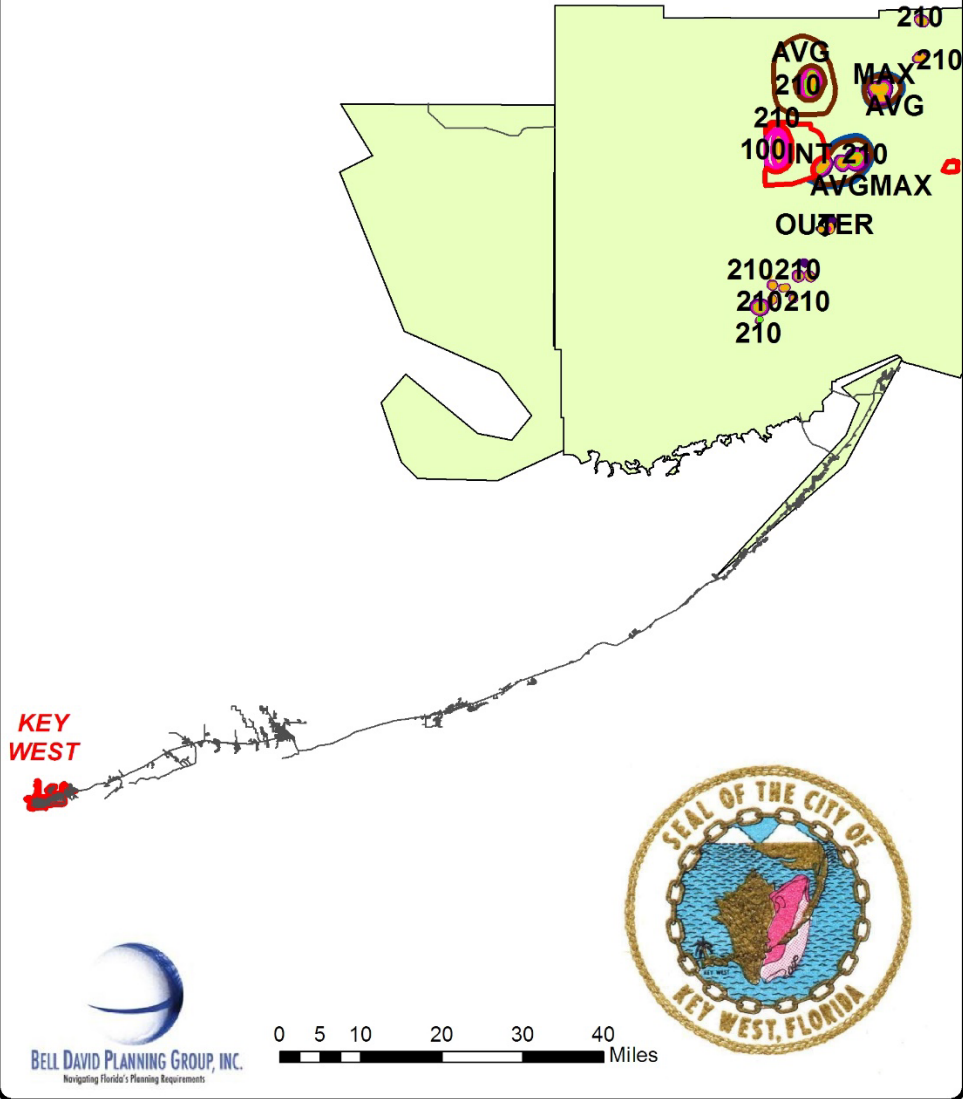


FIGURE 4.

Figure C4.1 – FCAA Five Year Capital Improvement Program (FY20-24)

Florida Keys Aqueduct Authority's Budget and Financial Plan 2020 Capital and Debt

Capital Improvement Budget

Description	Estimated five-year expenditures				
	2020	2021	2022	2023	2024
Water Projects					
Key West administrative building	\$ 9,000,000	\$ 9,000,000	\$ 4,364,000		\$ 22,364,000
Stock Island RO facility	3,000,000	14,000,000	18,000,000	15,000,000	50,000,000
Grassy Key transmission line replacement	8,000,000				8,000,000
Transmission Terminus rehabilitation				840,000	3,360,000
Simonton, Front and Whitehead distribution	750,000				4,200,000
Islamorada transmission line replacement	2,670,000	13,350,000	10,680,000		2,000,000
Ocean Reef distribution and storage improvements				3,200,000	26,700,000
New distribution system at No Name Key	2,600,000				7,100,000
Stock Island garage replacement					2,600,000
Box girder bridge coating/coupling replacement					420,000
Generator control panel replacement at Florida City					3,870,000
Stock Island pump station and generator replacement	7,000,000				500,000
Repair/upgrade subaqueous crossing	2,000,000				7,000,000
Repair/upgrade cathodic protection	2,700,000				2,000,000
Repair/Upgrade electrical and instrumentation	1,000,000				2,700,000
Total water projects	38,720,000	36,350,000	33,044,000	19,040,000	140,454,000

Figure C4.2.1 - Section 8, Findings and Recommendations of the FKAA draft 20-Year Water System Master Plan (Provided March 2020)

<u>Section</u>	<u>Findings</u>	<u>Recommendations</u>
<p style="text-align: center;"><u>Section 2:</u></p> <p style="text-align: center;"><u>Population and Water Demand Forecast</u></p>	<p><u>The permanent population in Monroe County is not expected to grow over the next 20 years and the seasonal population will grow at an annual rate of 0.2%</u></p> <p><u>FKAA has a historic and projected consumption rate of 115 gpcd based on its combined permanent and seasonal population. This value includes non-revenue water.</u></p>	<p><u>Continue to promote conservation to reduce max day demand.</u></p> <p><u>Continue to reduce non-revenue water.</u></p> <p><u>Update population growth and consumption estimates every two years.</u></p>
<p style="text-align: center;"><u>Section 3:</u></p> <p style="text-align: center;"><u>Water Supply System</u></p>	<p><u>The existing water supply system has sufficient capacity to meet average and maximum day demands during non-drought conditions.</u></p> <p><u>During drought conditions, an additional 1 MGD will be needed to meet future maximum day demand.</u></p> <p><u>The boundary of seawater intrusion into the Biscayne Aquifer is slowly approaching the FKAA wellfields.</u></p>	<p><u>Construct new Stock Island Osmosis Facility to supply maximum day demand.</u></p> <p><u>Consider constructing new Biscayne Aquifer wellfield further upstream of saline water interface.</u></p>
<p style="text-align: center;"><u>Section 4:</u></p> <p style="text-align: center;"><u>Water Treatment and Standards</u></p>	<p><u>The existing water treatment plants have sufficient capacity for future average and maximum day demands.</u></p> <p><u>The Stock Island Reverse</u></p>	<p><u>May need to provide a new Stock Island Reverse Osmosis Facility to provide potable water in the Lower Keys in the event of a failure of the transmission main.</u></p>

	<p><u>Osmosis Facility is in poor condition and needs to be replaced.</u></p> <p><u>New regulations for emerging contaminants, such as perfluoroalkyl and polyfluoroalkyl substances (PFAS) may be promulgated during this planning horizon.</u></p>	<p><u>Evaluate treatment alternatives for the lime softening TO, such as Granular Activated Carbon, to meet future water quality standards.</u></p>
<p><u>Section 5:</u></p> <p><u>Water Transmission System</u></p>	<p><u>The transmission system is at the limit of its maximum capacity to convey the future maximum day demand assuming that the pipe is capable of operating at its design pressures.</u></p> <p><u>However, due to the failing condition of the pipeline, the operating pressures in the transmission system have been reduced until the m[ppr sections of pipe are replaced.</u></p> <p><u>The Marathon Storage Tank is in poor condition and needs to be replaced.</u></p>	<p><u>Replace approximately one percent of the transmission mains per year.</u></p> <p><u>Prioritize pipe replacement using an Asset Mgmt system.</u></p> <p><u>As the transmission system is replaced, increase the pipe diameter to increase system capacity and lower operation costs.</u></p> <p><u>Replace 3-MG Marathon Storage Tank with a 4-MG tank.</u></p> <p><u>Maintain retired portions of the transmission main so they can be rehabilitated in the future to provide system redundancy.</u></p>
<p><u>Section 6:</u></p> <p><u>Water Distribution System</u></p>	<p><u>Most of the distribution system is comprised of PVC pipe, which is generally in good condition.</u></p> <p><u>The small diameter (2-inch) pipe, thin-walled PVS and</u></p>	<p><u>Develop pipe replacement schedule using Asset Mgmt System.</u></p> <p><u>Implement recommended alternative to upgrade Ocean Reef storage and pumping</u></p>

	<p><u>galvanized pipe should be replaced.</u></p> <p><u>The Capital Improvement Plan includes supplying potable water to some areas (No Name Key and Middle Torch Key) .</u></p> <p><u>The Ocean Reef storage tanks and pump station system are operating at the maximum capacity.</u></p>	<p><u>system.</u></p> <p><u>Once the Marathon Storage Tank is replace, decommission the 69th Storage Tank and Pump Station.</u></p>
<p><u>Section 7: Financial Plan</u></p>	<p><u>FKAA has a projected cumulative rate increase of 17.5% between 2020 and 2024.</u></p> <p><u>FKAA debt service coverage will increase from 1.37 to 1.63 between 2020 and 2024.</u></p>	<p><u>FKAA will evaluate the Capital Improvement Plan (CIP) and operating budget on an annual basis to determine appropriate funding needs.</u></p>

Section 3: If any section, provision, clause, phrase, or application of this Ordinance is held invalid or unconstitutional for any reason by any court of competent jurisdiction, the remaining provisions of this Ordinance shall be deemed severable therefrom and shall be construed as reasonable and necessary to achieve the lawful purposes of this Ordinance.

Section 4: All Ordinances or parts of Ordinances of said City in conflict with the provisions of this Ordinance are hereby superseded to the extent of such conflict.

Section 5: This Ordinance shall go into effect immediately upon its passage and adoption and authentication by the signature of the presiding officer and the Clerk of the Commission and approval by the Florida Department of Economic Opportunity, pursuant to Chapter 380, Florida Statutes.

Read and passed on first reading at a regular meeting held this _____ day of _____, 2023.

Read and passed on final reading at a regular meeting held this _____ day of _____, 2023.

Authenticated by the presiding officer and Clerk of the Commission on _____ day of _____, 2023.

Filed with the Clerk _____, 2023.

Mayor Teri Johnston _____

Vice Mayor Sam Kaufman _____

Commissioner Lisette Carey _____

Commissioner Mary Lou Hoover _____

Commissioner Clayton Lopez _____

Commissioner Billy Wardlow _____

Commissioner Jimmy Weekley _____

TERI JOHNSTON, MAYOR

ATTEST:

CHERYL SMITH, CITY CLERK