INFRASTRUCTURE ELEMENT

Potable Water Subelement

Goal 5.1: Ensure adequate public supply and treatment of potable water to City residents and businesses.

Level of Service Standards

Objective 5.1.1: Establish and protect potable water level of service standards for use in planning capital improvements and reviewing applications for development.

Policy 5.1.1.1: The City shall not issue permits for new development or redevelopment which would result in an increase in demand for deficient facilities unless the necessary facilities are in place and available to serve the development at the time of issuance of a certificate of occupancy or its equivalent.

Policy 5.1.1.2: The following levels of service standards shall be used as the basis for determining the availability of facility capacity and the demand generated by a development:

a. Average design flow - 125 gallons per capita per day.
b. Storage capacity - minimum reserve of 24 hours water demand.

Policy 5.1.1.3: The City shall establish and utilize levels of service provided for facilities as outlined in standards for public facilities with state, regional and local authorities or otherwise consistent with state law.

Treatment Capacity

Objective 5.1.2: Expand the treatment capacity of Inverness commensurate with the growth of the service base.

Policy 5.1.2.1: The City shall develop water treatment capacity to process sufficient quantities of potable water to meet the projected long-range (year 2026) needs of Inverness.

Policy 5.1.2.1: The City shall treat its water supply in accordance with state and federal standards of purity.

Distribution System

Objective 5.1.3: Develop a potable water distribution system plan on the basis of projected water needs to the year 2026 and the established level of service standards for potable water.

Policy 5.1.3.1: The City shall plan and design a water supply and distribution system to accommodate growth in accordance with population projections in this Comprehensive Plan.

Policy 5.1.3.2: The City shall develop strategies, as needed, to balance fluctuation in water demand, safeguard continuance of supply in case of plant or water main breakdown, and to provide adequate fire flow.

Conservation

Objective 5.1.4: Implement water conservation measures in the City of Inverness.

Policy 5.1.4.1: The City shall enforce SWFWMD water use restrictions during a SWFWMD declared water shortage.

Policy 5.1.4.2: The City will encourage the use of water conserving devices, landscaping with native vegetation, and water reuse.

Policy 5.1.4.3: As part of the Land Development Regulations, the City will restrict the use of hazardous substances in the wellhead protection areas for the City's potable water wells.

Systems Maintenance

Objective 5.1.5: Maintain, repair, and replace water system components on a regularly scheduled basis.

Policy 5.1.5.1: The City shall maintain records and procedures for identifying needed repairs, their costs, and subsequent implementation.

Policy 5.1.5.2: The City shall continue to meter all existing and future water customers for billing purposes.

Policy 5.1.5.3: The City shall maintain a rate schedule based upon the cost of providing service and adjust rates and fees periodically to ensure that water revenues are sufficient to finance future expansion, repair, and replacement.

Policy 5.1.5.4: The City shall establish standards and priorities for replacement, correcting existing facilities deficiencies and providing for future facility needs based on need and demand

Systems Expansion

Objective 5.1.6: Coordinate the expansion of, or increase capacity of current facilities to address future needs and goals.

Policy 5.1.6.1: The City shall expand facilities as growth and development demands and as specified by comprehensive plan goals, policies and objectives.

Policy 5.1.6.2: The expansion of water facilities will direct growth within the services boundaries.

Sanitary Sewer Subelement

Goal 5.2: To ensure orderly development which maximizes the use of sanitary sewer system facilities and provides the adopted level of service concurrent with development.

Level of Service

Objective 5.2.1: Establish the level of service standards for planning capital improvements and for reviewing applications for development approval.

Policy 5.2.1.1: The following levels of service standards shall be used as the basis for determining the availability of sanitary sewer facility capacity and demand generated by a development:

a. Average flow - 75 gallons per capita per day.
b. Peak flow - 125 gallons per capita per day.

Policy 5.2.1.2: The City of Inverness will continue to utilize a data base system to provide existing available capacity of wastewater facilities. As part of the data base, reports to the City Manager's office on a monthly basis will state the daily flows of the wastewater facility as well as monthly volume of solid waste collected.

Policy 5.2.1.3: The City shall update facility demand and capacity information in conjunction with the Comprehensive Plan amendment process.

Policy 5.2.1.4: Amendments to the Comprehensive Plan and/or Future Land Use Map shall not increase the demand for public facilities and services unless adequate capacity is either available or ensured through other means to service the anticipated demand of new population and commerce brought about by any and all Comprehensive Plan amendments.

Policy 5.2.1.5: The City shall not issue permits for new development or redevelopment which would result in an increase in demand for deficient facilities unless the necessary facilities are in place and available to serve the development at the time of issuance of a certificate of occupancy or its equivalent.

Effluent and Sludge Disposal

Objective 5.2.2: Dispose of effluent and sludge in an environmentally acceptable manner.

Policy 5.2.2.1: Effluent and sludge from all City owned treatment plants shall meet all biological and chemical standards of the applicable regulatory authority(s).

Capital Improvements Planning

Objective 5.2.3: Maintain a five-year schedule of capital improvement needs for public sanitary sewer facilities to be updated annually in conformance with the review process for the Plan's Capital Improvement Element.

Policy 5.2.3.1: Projects shall be undertaken in accordance with the schedule provided in the Capital Improvements Element.

Policy 5.2.3.2: Proposed capital improvement projects will be evaluated and ranked according to the following guidelines:

a. Level One - whether the project is needed to protect public health and safety, to fulfill the City's legal commitment to provide facilities and services, to preserve or achieve full use of existing facilities, or, if permitted, capacity has been reached.

b. Level Two - whether the project increases efficiency of use of existing facilities, prevents or reduces future improvement costs, provides service to developed areas lacking full service, or promotes in-fill development.

c. Level Three - whether the project represents a logical extension of facilities and services within a designated service area.

Additional Treatment Capacity

Objective 5.2.4: Maintain an ongoing program for wastewater treatment capacity expansion necessary to accommodate projected future water flows through 2026.

Policy 5.2.4.1: The City shall plan for wastewater facilities expansion including design, permitting, and construction, in compliance with planning requirements set forth by the applicable regulatory authority(s).

Policy 5.2.4.2: The City shall negotiate or enter into an interlocal agreement with Citrus County to require that any development in the urban fringe or planning area that will be served by package treatment plants shall be such that the plants shall either be interim in nature or can eventually be linked as a regional system and be publicly owned and operated.

System Priorities

Objective 5.2.5: Inhibit urban sprawl through maximum use of existing sanitary sewer facilities.

Policy 5.2.5.1: Package treatment plants and septic tanks will not be allowed for new development if existing sanitary sewer system facility capacity is available to maximize the use of existing facility and to discourage urban sprawl.

Policy 5.2.5.2: The City shall maintain an interlocal agreement with Citrus County to prohibit the use of package treatment plants and septic tanks by new development in the fringe area of Inverness if existing facility capacity is available in order to maximize the use of existing facilities and discourage urban sprawl.

Septic Tanks

Objective 5.2.6: Reduce septic tank usage in areas identified as having high concentrations of septic tanks or being unsuitable for septic tank use.

Policy 5.2.6.1: Consistent with environmental need, the City shall designate a portion of its operation and capital improvements budgets for use in connecting residences and businesses using septic tanks to the sanitary sewer system.

Policy 5.2.6.2: The City shall prohibit the creation of new septic systems or the use of existing septic systems in areas where sewer systems are available.

Solid Waste Subelement

Goal 5.3: Dispose of the City's solid waste in a manner which is environmentally safe and economically efficient.

Level of Service

Objective 5.3.1: The City will conform to Citrus County's solid waste collection disposal and resource recovery regulations and programs to meet the City's existing and projected needs and demands of the population.

Policy 5.3.1.1: The City will operate under Citrus County's established level of service standards of 3.50 pounds per capita per day for Class I waste.

Policy 5.3.1.2: The City shall continue to implement the solid waste monitoring system to assist Citrus County in determining the amount and type of material contained within the City's solid waste stream.

Waste Exclusion

Objective 5.3.2: Continue to participate in Citrus County's management program of Class I and Class III wastes.

Policy 5.3.2.1: The City shall continue to implement procedures for the disposal of yard trash through the use of composting and chipping operations.

Policy 5.3.2.2: The City will coordinate with Citrus County for the designation of areas for the disposal of scrap and construction debris.

Recycling

Objective 5.3.3: Recycle solid waste in accordance with State policies and requirements.

Policy 5.3.3.1: The City shall assist Citrus County in the continued implementation of residential and non-residential development recycling programs.

Policy 5.3.3.2: The City shall assist Citrus County in maintaining a recycling rate in accordance with state policies and goals through continued coordination in the establishment of collection centers in conjunction with private industry and through the maintenance of the following recycling programs.

a. governmental office paper recycling;
b. waste tire recycling;
c. recovered materials (white goods)
d. lead-acid and household batteries recycling;
e. composting of yard trash;
f. curbside separation and collection of recyclables; and,
g. other materials which may become recyclable in the future.

Hazardous Waste Management

Objective 5.3.4: Assist Citrus County in the implementation of programs to reduce improper disposal of hazardous waste.

Policy 5.3.4.1: The City shall continue to analyze all nonresidential development plans to determine if appropriate provisions for hazardous waste management are included.

Policy 5.3.4.2: The City, jointly with Citrus County, shall implement an environmental review process to ensure proper management of hazardous material.

Policy 5.3.4.3: The City shall assist the Citrus County Department of Public Works with its Small Quantity Generator hazardous waste monitoring program.

Policy 5.3.4.4: The City shall continue to cooperate and promote Citrus County "Amnesty Days" for proper disposal of hazardous waste.

Hazardous Materials Accident Management

Objective 5.3.5: Protect the public and the environment through hazardous materials accident preparedness.

Policy 5.3.5.1: The City shall assist the County in maintaining an inventory of all non-residential establishments that produce and/or use hazardous materials or bio-hazardous waste within the city limits.

Policy 5.3.5.2: The City shall assist Citrus County in implementing the HAZ-MAT hazardous materials accident management plan which is consistent with the State Hazardous Materials Accident Management Plan.

Stormwater Drainage Subelement

Goal 5.4: Reduce existing and avoid future flooding problems and improve surface water quality in the City of Inverness.

Master Drainage Plan

Objective 5.4.1: Implement priorities of the City of Inverness Master Stormwater Management Plan which provide for improvements to the primary drainage system.

Objective 5.4.1: The City of Inverness shall enforce a Master Stormwater Management Plan which provide for improvements to the primary drainage system to the standards equal to the levels of protection required by SWFWMD for water quality standards.

Policy 5.4.1.1: The City shall incorporate in the five year Capital Improvements Program corrective measures for stormwater management facility deficiencies identified in the City of Inverness Master Stormwater Management Plan.

Policy 5.4.1.2: Water quality standards for stormwater discharge shall be for all new and existing stormwater management systems. The City shall rely on the resources and expertise of the applicable regulatory authority(s) for assisting the City to maintain standards for water quality or otherwise remain consistent with state law.

Level of Service

Objective 5.4.2: Establish the following level of service standards for planning capital improvements and reviewing applications for development approval.

Policy 5.4.2.1: The City's level of service standards for drainage plans and facilities are as follows:

a. Residential (single family) - First one inch of rainfall runoff;
b. Nonresidential developments and new subdivisions or planned developments - 25 year storm/24 hour duration rainfall (peak flow); and,

Policy 5.4.2.2: The Inverness Land Development Regulations shall continue to require that all new stormwater control facilities treat stormwater for removal of pollutants as required by the applicable regulatory authority

Policy 5.4.2.3: The City shall require the application of water quality standards as established by the applicable regulatory authority to maintain water bodies for recreation and the propagation and maintenance of a healthy, well-balanced population of fish and wildlife.

Policy 5.4.2.4: The adopted flood protection level of service standards for the City of Inverness shall be equivalent to the FEMA design criteria for special flood hazard areas. By the end of the planning period, the City shall assign specific flood protection strategies for individual drainage basins.

Policy 5.4.2.5: By the end of the planning period, the City shall evaluate the water quality treatment capacity for each sub-basin in the City for use in developing water quality level of service standards. As part of the evaluation, the City shall identify point sources of pollution and quantify impacts to receiving waters. The City shall develop and implement water quality level of service standards in an effort to meet water quality goals of maintaining the water quality of local water bodies.

Hydrologic Impacts

Objective 5.4.3: Regulate development in a manner that will minimize adverse hydrological impacts.

Policy 5.4.3.1: The City shall require development in any area adjacent to environmentally significant wetlands to be situated, designed, and constructed so as to minimize the adverse impacts on the beneficial characteristics and functions of wetlands.

Policy 5.4.3.2: The City shall encourage the restoration of altered and disturbed wetlands.

Stormwater Management Facilities

Objective 5.4.4: Protect groundwater and surface water quality while protecting life and property from flood hazard.

Policy 5.4.4.1: Basins, swales, and culverts shall be designed to protect groundwater and surface water quality as well as accommodate stormwater flows in all new developments.

Policy 5.4.4.2: In case of emergency, the City is exempt from pollutant reduction and filtering requirements.

Groundwater Recharge Subelement

Goal 5.5: To maximize the rechargeability of developed lands and ensure proper protection of wetlands and existing natural groundwater recharge areas.

Objective 5.5.1: Increase the amount of unpolluted water that can percolate into the aquifer. Protect high recharge areas and prime recharge areas with a level of protection commensurate with their significance to the natural system and their importance as current and future sources of potable water.

Policy 5.5.1.1: The City, as part of its Land Development Regulations, will continue to emphasize the proper use of structural drainage techniques, such as swales, that allow natural vegetation to absorb pollutants and allow percolation of clean water into the aquifer recharge area.

Policy 5.5.1.2: In the Land Development Regulations, the City will continue to prohibit development in established preservation areas as depicted on the Future Land Use Map.

Policy 5.5.1.3: As part of the Land Development Regulations, the City will continue to maintain established preservation wetlands as depicted on the Future Land Use Map as natural tools to enhance water management practices.

Policy 5.5.1.4: The City shall maintain a list of all known suspected underground tanks that are a potential source of groundwater pollution and will require abandoned or leaking tanks to be removed, repaired, or otherwise neutralized, at the expense of the landowner, at the time of property development, redevelopment, remodeling, rezoning, land use amendment, or any other activity requiring government permitting process.

Policy 5.5.1.5: In the Land Development Regulations, the City will continue to prohibit pollutant discharge from industrial and commercial establishments.

Policy 5.5.1.6: The city shall establish and utilize potable water conservation, strategies and techniques.

Policy 5.5.1.7: The city shall regulate land use and development to protect the functions of natural drainage features and natural groundwater aquifer recharge areas.

WATER SUPPLY FACILITIES WORK PLAN, 20012 – 2025

CITY OF INVERNESS, FLORIDA

1. INTRODUCTION

The City of Inverness 10-Year Water Supply Facilities Work Plan (Work Plan) represents the City's plan to meet current water demands and the anticipated growth in demand within the Inverness Utility Service Area through 2025. The Work Plan is an addendum to the Infrastructure Element of the Inverness Comprehensive Plan and is supported by policies in the Infrastructure, Conservation, Intergovernmental Coordination and Capital Improvements elements of the Comprehensive Plan. The Work Plan includes statutorily required analysis, as per Chapter 163.3177, Florida Statutes (see Table 8).

2. POTABLE WATER DEMAND

Existing Conditions

This plan employs data consistent with the Regional Water Supply Plan for the Northern District of the Southwest Florida Water Management District (SWFWMD). To ensure consistent data, SWFWMD has provided the City and each local government in the district with community water use data. The City's Water System serves a functional population of 8,266 people. The Utility Service Area population of 8,266 persons in 2010 is not to be confused with the municipal population of 7,210 (2010 Census), as Inverness provides water service to many homes outside the City Limits (see MAP 1 and MAP 2). Ninety percent of Inverness' developed areas are served by the water system. Serving less developed areas, such as in the western portion of the City, is not cost effective at this time.

Based on average daily flows in 2010, potable water demand in the water system service area is 1.364 million gallons per day (MGD), or 165 gallons per day per capita (GPDC). According to the SWFWMD Regional Water Supply Plan the per capita use rate between 2003 and 2007 was also 165 gallons / capita/day. This 2010 use rate evidenced the need for the City-wide conservation efforts (e.g., implementation of an inclining potable water rate structure). Current 2012 consumption rates document by the Public Works Department are significantly lower.

Future Conditions

The projected functional population in the Water System Service Area, shown in Table 1, is based on historical growth rates for City utility customers rather than availability of land in the Future Service Area. Growth trends in the Utility Service Area show a modest increase.

Table 1: Projected Functional Population, Inverness Water System Service Area

	2010	2015	2020	2025	2030
Municipal Population Served	8,057	8,264	8,506	8,748	9, 129
Total Utility Service Area Population	8,266	8,473	8,716	8,958	9,339

Source: SWFWMD community data sheet, 2011

The City's utility customer base largely increases as a result of periodic annexations approved by the City over the time period used to establish the historic growth rate for utility customers. It is anticipated that a mix of both future annexations and infill development within the existing city boundaries will be the source of new utility customers.

Projected potable water demand in the Water System Service Area through 2030 is shown in Table 2. Projected demand is based on the population projections in Table 1 and the current per capita potable water demand and historical use rates. Again, the methodology employed by the Southwest Florida Water Management district for the Regional Water Supply Plan for the Northern district provides a consistent regional baseline.

Table 2: Projected Water Demand and Supply, Inverness Water System Service Area (MGD)

	2010	2015	2020	2025	2030
Total Demand (Municipal)	1.329	1.363	1.404	1.443	1.506
Total Demand (Utilities)	1.364	1.398	1.438	1.478	1.541

Source: SWFWMD community data sheet, 2011

Non-Potable Water Demand

The City's reclaimed water system, which supplies 413,000 GPD, currently serves only nonresidential uses in the Water System Service Area. The Inverness Golf Course uses all of the available reclaimed water for irrigation purposes. The literature on irrigation demands and offsets confirms that the use of reclaimed water directly correlates to reductions in the use of potable water. The SWFWMD research shown in Table 3 indicates that the use of reclaimed water in lieu of potable water sources offsets those sources at an average rate of 75 percent. This factor is not reflected in the Utility Service Area demand for non-potable water shown in Table 2. If the reclaimed water offset was used to calculate a reduced water demand, the offset would be a 309,750 GPD reduction in water demand. A total of 771,000 GPD of reclaimed water is projected to be available by 2020.

Table 3: Reclaimed Water Customer Type and Efficiency (Potable Water Offset)

Reclaimed Water Use	Offset (%)	Comments
Industrial / Power Generation	100%	Normally use the same amount regardless of source
Agricultural/Recreational/ Aesthetic	75%	Normally do not overwater
Public Supply Irrigation	40%	25%-35%flat rate; 45% - 55% for metered
All Customer Types (Average)	60%	25% Industrial Power Generation; 25% Agricultural/Recreational/Aesthetic 50% Public Supply

Source: Effective Use of Reclaimed Water Demonstrated to Offset Water Demand, Southwest Florida Water Management District, 2002.

3. WATER SUPPLIES

Based on the foregoing demand analysis and the inventory of existing and projected potable and non-potable water resources discussed below, the City's water supply will be adequate to meet projected demand through 2025.

Potable Water Supply

Existing Conditions
The Water System Service Area lies predominantly within the Withlacoochee River Groundwater Basin and includes conservation areas, such as the Withlacoochee State Forest and the large wetlands complex known as the Tsala Apopka (see MAP 1). The Eastern portion of the Utility Service Area falls within the Withlacoochee River drainage basin and is associated with the Tsala Apopka (see MAP 1). The western portion of the Utility Service Area overlies the high recharge sands of the Brooksville ridge. The principal hydrogeologic units in these basins are the surficial, intermediate and Floridan aquifer system. The Upper Floridan aquifer is the principal storage and water conveying component of the basin hydrologic system and is the principal source of potable water for domestic, agricultural and industrial supplies for the City, Citrus County and most of west central Florida.

Water demand and resource limitations in the region, particularly from major urban areas downstream, have prompted the Southwest Florida Water Management District (SWFWMD) to impose water use restrictions in this basin. SWFWMD regulates water withdrawals from the Floridan aquifer system via a Water Use Permit (WUP). A WUP specifies the maximum permitted pumping capacity for the area specified in the permit.

The City's WUP (dated January 25, 2011), allows a maximum water withdrawal in the Water System Service Area of 1,535,000 GPD (average annual) and 1,980,000 GPD (peak monthly). Averaging just over 1 million GPD, the current pumpage in the Water System Service Area is significantly below the average annual WUP limit. Additional production allowed under the current WUP will be from one planned well also located in the Withlacoochee River Groundwater Basin. The current WUP is set to expire January 25, 2021.

Future Conditions
Correlating the 2025 demand projections in Table 2 with the permitted supply above, demonstrates that the potable water supply needs of the Water System Service Area can be met through 2025. The expansion of the City's reclaimed water capacity will further augment the capacity of the system by an estimated 578,000 GPD (75% of 771,000). To continue to surpass the projected potable water demand during the 2012 to 2025 period, the City will also consider implementation of additional reclaimed water projects and conservation measures at levels commensurate with opportunity and demand.

MAP 1 shows public lands that are restricted from future development. The aquifers underlying these protected areas will serve supplement future potable water resources for the City.

Non-Potable Water Supply

Non-potable water supply in the Utility Service Area consists of reuse water from the City's reclaimed water system. The system currently produces 413,000 GPD which is distributed to the Inverness Golf and Country Club in the Water System Service Area. As stated previously, the City plans to expand the system to increase reclaimed water production to 771,000 GPD by year 2020.

4. WATER SUPPLY FACILITIES

The inventory and analysis of water supply facilities in this section indicates that no facility deficiencies are anticipated through the 2025 planning period.

Facility Inventory

Water Wells
Existing wells and wellhead protection areas in the City are shown on the Future land Use Map. The Inverness Public Works Department operates a system of three public supply water wells which draw water from the Floridan Aquifer (see Table 4). The public supply wells are 250 feet deep. The City's Capital Improvements Plan, proposes the construction of an addition to well 10/10 for backup use and to accommodate future growth.

Water Treatment Facilities
The City operates a primary water treatment plant, known as the 581 Plant that is fed by the three public supply wells but can also provide additional treatment at the Citrus Booster Station as a system redundancy. The plants have combined permitted capacity of 1.535 MGD.

The City water treatment process begins with aeration and disinfection with chlorine. The water is then treated with polyphosphate for corrosion control, and fluoride is added for dental health. In 2010 the City began adding ammonia and chlorine at the end of the treatment process in order to form chloramines. Chloramines allow for the benefits of chlorine in the distribution system without the production of potentially harmful disinfection by-products.

Table 4: Water Withdrawal Point Quantity Table

ID No.	Diam. (inches)	Well Depth	Casing Depth	Use	Average (GPD)	Peak Month (GPD)
PS 3/3	16	250	131	Public Supply	503,333	649,299
4/4	3	35	35	Irrigation	6,250	8,063
5/5	3	35	35	Irrigation	6,250	8,063
6/6	4	253	50	Irrigation	6,250	8,063
PS 4/8	16	250	150	Public Supply	503,333	649,299
PS 5/9	12	250	150	Public Supply	503,333	649,299
10/10	6	200	50	Irrigation	3,125	4,031
11/11	6	200	50	Irrigation	3,125	4,031

Water use from the withdrawal points above are restricted to the quantities listed
Source: City of Inverness Water Use Permit 2011.

Water Storage Facilities
The City has two ground storage tanks with a total storage capacity of 1,250,000 gallons. The system maximum daily flow capacity is 3.744 MGD. Therefore the tank capacity is sufficient to accommodate the needs of the City. The dual tank system employs a booster tank for stable water pressure and adequate fire flow throughout the Water System Service Area. The City plans to rehab the Citrus Booster Station water storage tank in 2013. The 581 Plant storage tank was rehabilitated in 2011.

Reclaimed Water Facilities
In 2009, Inverness was granted a permit to modify its wastewater treatment system for reclaimed water irrigation to the Inverness Golf and Country Club. Presently, the system is producing 413,000 GPD. The City plans to increase its reclaimed water production to 771,000 GPD by 2020.

According to the DEP permit, the system includes a type 1 oxidation ditch WWTF including : a pretreatment structure consisting of manual and automatic bar screens and new vortex type grit removal

system, two anoxic basins of 400,000 gallons total volume, two oxidation ditches of 1.2 million gallons total volume, four clarifiers 376,000 total volume and 5,028 square feet total surface area, two disk filters of 860 square feet total surface area, three chlorine contact chambers of 96,520 gallons total volume and one digester of 163,700 gallons volume. Disinfection is achieved by using a sodium hypochlorite solution.

Facility Condition

The City's water supply facilities perform well, and no problems in maintaining performance are anticipated over the 2025 planning period. The City's water treatment plant has consistently operated in compliance with all criteria established by the U.S. Environmental Protection Agency and Florida Department of Environmental Protection for public water supply facilities. The water treatment facilities are repaired and upgraded as needed to remain in good operating condition. The quality of water resources in the area is sufficiently good, requiring only chloramination treatment for the public water supply. The City plans and budgets for scheduled maintenance and replacement. System water loss at 12.3% remains within acceptable limits.

Level of Service

Capacity Analysis
The City's adopted level of service standard for potable water is used for three purposes—to assess the adequacy of the water supply and water facilities, to serve new development (concurrency), and to project needs for developing new water supplies and water supply facilities (facility planning). The City's adopted potable water level of service standard is 125 GPDC plus 24 hours reserve storage capacity (CIE Policy 8.1.1.4), which is below the current rate of water consumption in the Water System Service Area. The SWFWMD community data sheet documents water use between 2003 and 2007 at 165 GPDC. However, more recent consumption rates documented in the 2011 WUP include a consumption rate of 150 GPDC. Table 5 demonstrates that the City's water supply facilities currently meet the potable water level of service standard.

Table 5: Potable Water Level of Service Analysis, Inverness Water System Service Area

Water Supply	
Potable Water Wells (rated capacity)	4,536,000 GPD
Plant Design Capacity	3,740,000 GPD
Storage Tank Capacity	1,250,000 Gallons
Maximum Daily Flow (WUP Limit)	1,535,000 GPD
Water Demand	
Functional Population	8,266
Service Connections	4,104
Average Annual Daily Flow	1,116,789 GPD

Source: City of Inverness, Public Works and SWFWMD

Table 6 shows the projected potable water demand in the Utility Service Area compared to the (FDEP) rated capacity of the City's water treatment plants. The analysis, based on the level of service standard of 125 GPD per capita, indicates that the rated capacity of 1,725,000 GPD will be adequate throughout the 2025 planning period. The combined storage capacity of the water tanks is sufficient also.

Table 6: Projected Water Treatment Capacity, Inverness Water System Service Area

Year	Functional	Per Capita /Day	Service Area	FDEP Permit	Remaining Treatment

	Population	Potable Water Demand (GPD)	Potable Water Demand (GPD)	Treatment Capacity (GPD)	Capacity (GPD under current permit)
2010	8,266	150	1,239,990	1,725,000	485,010
2015	8,473	150	1,270,950	1,725,000	454,050
2020	8,716	150	1,307,400	1,725,000	417,600
2025	8,958	150	1,343,700	1,725,000	381,300

Source: City of Inverness, Public Works and SWFWMD

Concurrency Management System
Development proposals are reviewed by the City in accordance with the Inverness Concurrency Management System as set forth in the Comprehensive Plan Capital Improvements Element and Article V. Adequate Public Facilities, Inverness Land Development Code. Prior to the issuance of a level of service determination, it must be demonstrated that the adopted level of service standards will be met at the time of issuance of a final local development order for a development. Final development orders are conditioned upon authorization and approval of necessary utility services by the Inverness Public Works Director.

5. IMPACTS ON NATURAL RESOURCES

Water supply projects in the Water System Service Area are not anticipated to impact the surficial aquifer or on-site and off-site lakes and wetlands. Continued enforcement of the City's wellfield protection regulations will help ensure continued groundwater quality. Furthermore, City conservation programs and reclaimed water system expansions will reduce demand for groundwater resources.

Surficial Aquifer Impacts

In the Inverness area, the surficial aquifer is moderately well connected to the Upper Floridan aquifer through a leaky semi-confining unit. The result of this leaky confinement is that, when pumping from the Upper Floridan aquifer system, water level drawdown can be transmitted from the deeper aquifers up to the surficial aquifer. The permanent open space of the Withlacoochee State Forest, which is adjacent to the City, will help to ensure adequate storage capacity in the aquifer and mitigate future pumpage increases by the City.

Lake and Wetland Impacts

Inverness is a lakefront community. Wetlands in the city are associated with the large lake and wetland complex known as the Tsala Apopka. Layers of clay soils provide a measure of confinement from the aquifer to prevent impact to the lake from pumpage. City drinking water wells are located at higher elevations in the city, profiting from the high recharge soils of the Brooksville ridge.

Surface water quality of the City's lakes is good to fair depending on water levels and time of year. Lake Tsala Apopka has been designated an Outstanding Florida Water by FDEP. The City has completed a Master Stormwater Management Plan which addresses water quality impacts associated with stormwater runoff and recommends methods of correcting existing deficiencies to improve water quality.

Wellfield Protection

The City adheres to FDEP standards adopted for wellhead protection, including restricting the type of development allowed in the vicinity of a wellhead and requiring a 500-foot protection zone around wellheads (see MAP 3). The future land use element of the Inverness comprehensive plan establishes land uses which are not permitted within wellhead protection areas. A Cone of Influence and Secondary Cone of Influence based on travel times through the aquifer have not been modeled.

Future land use policy 4.1.3.9 states: The city shall protect groundwater and water quality by restricting activities and land uses known to adversely affect the quality and quantity of identified water sources; including natural groundwater recharge areas, wellhead protection areas and groundwater used as a source of public water supply.

6. CONSERVATION POLICIES & PROGRAMS

This section identifies the current conservation-related policies, programs and practices being implemented by the City. Most notably, the City has adopted a Water Conservation Plan. Prepared by the City Public Works Department, the plan addresses: Water conservation rate structures, Customer billing and meter reading procedures, Water Losses, Irrigation practices and Reclaimed water.

Inverness Municipal Water Conservation Rate Structure.

Inverness, as a lake front community and Citrus County have been well aware of water supply issues based on periodic fluctuations due to drought. In fact, low water conditions were of great community concern in the late 80's, immediately prior to the adoption of the comprehensive plan.

In 2009 and 2011 the City adopted changes to the Code of Ordinances encouraging water conservation initiatives in the form of a rate structure. The 2009 potable water rate structure is also provided for comparison to understand the implications of the City's conservation efforts. Due to the recent enactment, actual results are not available at this time and will be documented at a multi-year level in the next 10-year water supply facilities work plan.

Ordinance 2009-661 amending Section 22-98 of the City of Inverness Code of Ordinances established a conservation rate structure for municipal water supply fees to residential customers inside the City as follows:

Availability charge per unit	$6.50	
0-10,000 gallons,	per 1,000 gallons	$2.15
10,001-20,000 gallons,	per 1,000 gallons	$2.30
20,001-and over,	per 1,000 gallons	$2.50

(Customers outside the City pay 125% of the costs above.)

Ordinance 2011-683 enacts higher rates for a higher category of residential consumers of potable water as provided below:

Residential Service

Description	10-1-11	10-1-12	10-1-13

Water Availability Fee (All Meters)	$7.00	$7.25	$7.50
Water Usage Fees (per 1,000 gallons)	0	0	0
0 -10,000 gallons	$2.15	$2.15	$2.15
10,001-20,000 gallons	$2.30	$2.30	$2.30
20,001-30,000 gallons	$2.50	$2.50	$2.50
Above 30,000 gallons	$3.00	$3.00	$3.00

The City will annually review and revise the rate structure based on any increase established by the Florida Public Service Commission.

Commercial uses are also subject to the rate structure with an added higher availability fee based on the size (diameter) of the service. **Inverness Land Development Code**

The Inverness Land Development Code currently includes the following conservation-related regulations:

Sec. 2.13 B. *Potable Water.*

1. *Level of service.* The potable water supplement of the City's comprehensive plan contains the following level of service requirements for the distribution of potable water:

Minimum design flow	125 GPD/person
Storage capacity	24 hour reserve
Pressure	20 psi to user

2. *Methods of compliance.* An application for a proposed development approval or a building permit shall indicate that one of the following requirements has been met:

a. Capacity exists at the City's water facility to serve the project or the first phase of the project. Determination of the existence of capacity shall be based upon estimated demand by the project, consideration of the other approved but not built developments to be served by the same facility in the same time period, and total capacity of the facility.

b. Capacity shall exist at the City's facility at the time of occupancy of the project based upon plans for expansion of capacity. Capacity shall be ensured through one of the following:

1) Existence of valid contracts for construction;
2) Existence of funds budgeted and appropriated for construction.

c. *Additional requirements:* An application for a proposed development shall provide complete documentation to indicate compliance with the following requirements:

1) An agreement that the proposed development shall connect to the City's potable water facility as soon as the service is available.

Sec. 2.8. - Landscape, Buffer, Visual Screens and Tree Requirements

C. *Landscaping Requirements.*
1. Where it is not possible to retain existing natural ground cover, landscaped areas shall be seeded and/or sodded, or provided with other acceptable ground cover.

2. Landscaping will be used to minimize potential soil erosion through the use of plant materials which aid in soil stabilization and through the use of accepted Best Management Practices (BMP), as applicable.

3. Landscaping will maximize the shading of roads and off-street parking areas, as applicable.

4. The use of plant materials endemic (native) to the area is strongly recommended. Plants that are not adaptable to the area because of cultural requirements shall not be used.

> g. Grass species shall be of the types which are normally grown for lawns in the City of Inverness and vicinity. The respective turf establishment areas may be seeded, sodded, plugged or sprigged. For slopes greater than 4:1 (25%), sod and/or ground cover shall be required. Other soil stabilization methods may be utilized upon approval of the Development Review Committee.

6. All landscaped areas shall be provided with an irrigation system, or other reliable source of water supply as approved by the Development Review Committee or substitute xeric landscaping as approved by the Development Review Committee.

D. *General Landscape Requirements.* All proposed landscaping shall meet the following minimum requirements.

1. The preservation and protection of existing endemic (native) species of plant material is strongly encouraged. Existing native species and natural cover will be retained wherever possible. Where planting requirements for landscaped areas results in the need for additional materials in an existing natural area, there will be minimum disturbance to native species.

5. The use of plant materials endemic (native) to the area is strongly recommended. Plants that are not adaptable to the area because of cultural requirements shall not be used.

E. *Acceptable and Unacceptable Plant Species.*

1. *Landscape material selection.* The species of required landscape materials shall be selected based on the existing and neighboring vegetative communities, soil types, proposed function of the materials, cold tolerance, existence of utilities or overhead power lines and aesthetics. In addition, landscape materials shall be selected in accordance with the following:

> a. A minimum of 75 percent of the required trees shall be planted on any one site shall be native trees. A list of approved species is provided under paragraph 2. below.
>
> b. Aside from lawn area, a minimum of 75 percent of the required landscape materials to be planted on any one site shall be drought or moderate drought resistant plantings incorporated into

a low or moderate water use zone. A list of approved plantings to satisfy this requirement is provided under paragraph 2. below.

c. Landscape plans shall be designed to group landscaping materials together into zones according to water use needs as follows:

1. High water use zone.
2. Moderate water use zone.
3. Low water use zone.

Plant materials may be grouped with those associated with the same or higher water use zone.

Inverness 2020 Comprehensive Plan

Included below are supporting Goals, Objectives and Policies in the City of Inverness Comprehensive Plan.

Conservation Element
Groundwater

Objective 4.1.3: Institute proper actions to ensure that the quality and the quantity of City groundwater resources are properly protected and conserved.

Policy 4.1.3.1: The City shall continue to implement the high recharge and future well/wellfield location plan in accordance with the future requirements of the regional water supply plan. [163.3177(4)(a)], [163.3191(2)(1)], [163.3167]

Policy 4.1.3.2: The City, in cooperation with FDEP and SWFWMD, shall continue to monitor groundwater quality and levels.

Policy 4.1.3.4: The City shall cooperate with Citrus County to provide protection for all public water supply wells by restricting activities and land uses detrimental to those areas.

Policy 4.1.3.8: The City shall require all new development activity within wellhead protection areas, as determined in the City's 1995 Wellhead Protection Areas Study, to have appropriate stormwater treatment facilities as permitted by SWFWMD.

Policy 4.1.3.9: The city shall protect groundwater and water quality by restricting activities and land uses known to adversely affect the quality and quantity of identified water sources; including natural groundwater recharge areas, wellhead protection areas and groundwater used as a source of public water supply.

Water Conservation

Objective 4.1.4: The City shall continue to implement procedures to promote conservation of potable water to reduce the per capita water usage.

Policy 4.1.4.1: The City shall continue to cooperate with the Southwest Florida Water Management District in the implementation of water conservation programs for both emergency and annual needs.

Policy 4.1.4.2: The city shall require future developments be permitted based on the availability of water resource capacity. These capacities shall be in accordance with the Regional Water Supply Plan.

Infrastructure Element
Potable Water Sub-element

Goal 5.1: Ensure adequate public supply and treatment of potable water to City residents and businesses.

Level of Service Standards

Objective 5.1.1: Establish and protect potable water level of service standards for use in planning capital improvements and reviewing applications for development.

Policy 5.1.1.1: The City shall not issue permits for new development or redevelopment which would result in an increase in demand for deficient facilities unless the necessary facilities are in place and available to serve the development at the time of issuance of a certificate of occupancy or its equivalent.

Policy 5.1.1.2: The following levels of service standards shall be used as the basis for determining the availability of facility capacity and the demand generated by a development:

a. Average design flow - 125 gallons per capita per day.
b. Storage capacity - minimum reserve of 24 hours water demand.

Treatment Capacity

Objective 5.1.2: Expand the treatment capacity of Inverness commensurate with the growth of the service base.

Policy 5.1.2.1: The City shall develop water treatment capacity to process sufficient quantities of potable water to meet the projected long-range (year 2015) needs of Inverness.

Policy 5.1.2.1: The City shall treat its water supply in accordance with state and federal standards of purity.

Distribution System

Objective 5.1.3: Develop a potable water distribution system plan on the basis of projected water needs to the Year 2015 and the established level of service standards for potable water.

Policy 5.1.3.1: The City shall plan and design a water supply and distribution system to accommodate growth in accordance with population projections in this Comprehensive Plan.

Policy 5.1.3.2: The City shall develop strategies, as needed, to balance fluctuation in water demand, safeguard continuance of supply in case of plant or water main breakdown, and to provide adequate fire flow.

Conservation

Objective 5.1.4: Implement water conservation measures in the City of Inverness.

Policy 5.1.4.1: The City shall enforce SWFWMD water use restrictions during a SWFWMD declared water shortage.

Policy 5.1.4.2: The City will encourage the use of water conserving devices, landscaping with native vegetation, and water reuse.

Policy 5.1.4.3: As part of the Land Development Regulations, the City will restrict the use of hazardous substances in the wellhead protection areas for the City's potable water wells.

Systems Maintenance

Objective 5.1.5: Maintain, repair, and replace water system components on a regularly scheduled basis.

Policy 5.1.5.1: The City shall maintain records and procedures for identifying need repairs, their costs, and subsequent implementation.

Policy 5.1.5.2: The City shall continue to meter all existing and future water customers for billing purposes.

Policy 5.1.5.3: The City shall maintain a rate schedule based upon the cost of providing service and adjust rates and fees periodically to ensure that water revenues are sufficient to finance future expansion, repair, and replacement.

Policy 5.1.5.4: The city shall establish standards and priorities for replacement, correcting existing facilities deficiencies and providing for future facility needs based on need and demand

Systems Expansion

Objective 5.1.6: Coordinate the expansion of, or increase capacity of current facilities to address future needs and goals.

Policy 5.1.6.1: The City shall expand facilities as growth and development demands and as specified by comprehensive plan goals, policies and objectives.

Policy 5.1.6.2: The expansion of water facilities will direct growth within the services boundaries.

7. PLAN TO MEET WATER SUPPLY NEEDS

The foregoing analysis indicates that there will be adequate water supplies in the Water system Service Area through 2025. City implementation of a reclaimed water system has further reduced demand.

A schedule of the City's planned and programmed water supply facilities projects and conservation programs is shown in Table 7, along with the projected funding amounts. Projects and programs identified in the first five years of the schedule are part of the City's Capital Improvements Program (CIP). As new water supply facilities projects are identified and approved by the City, the CIP will be amended to include the projects. Over the Work Plan period, the City will continue to implement water conservation programs and develop water reuse strategies, including expansion of the reclaimed water system.

Water Supply Facilities Projects

The projects listed below have been identified by the City for potential application in the Water System Service Area. Projects, from the SWFWMD Regional Water Supply Plan, have been considered by the City and are not being pursued at this time. Capital improvements projects for potable water infrastructure will be implemented through the City's regular process for annual Capital Improvements Plan updates.

Table 7: Programmed Capital Improvements

Water Plant	Projected FY Expenditure	Project Cost ($)
Citrus Plant		
Ground Storage Tank Rehab	2013	145,000
Booster Pump Replacement	2017	40,000
581 Plant		
Well #10 Addition	2017	250,000
System		
Water Pant Site Study	2017	75,000

Regional Coordination for Water Supply Planning & Project Development

The City is a participant in the Withlacoochee Region Water Supply Authority (WRWSA). Other participants in WRWSA include the Citrus, Hernando, Marion and Sumter counties and their municipalities. WRWSA is in the process of adopting a 50-year water supply plan that addresses future sources of water such as desalination, surface water and expanded water reuse.

The City recognizes the value of water supply planning and the value of water. The City will continue to cooperate and coordinate with the Southwest Florida Water Management District and the Withlacoochee Region Water Supply Authority to ensure that a sufficient and sustainable supply of potable water is available to meet the needs of the citizens of Inverness.

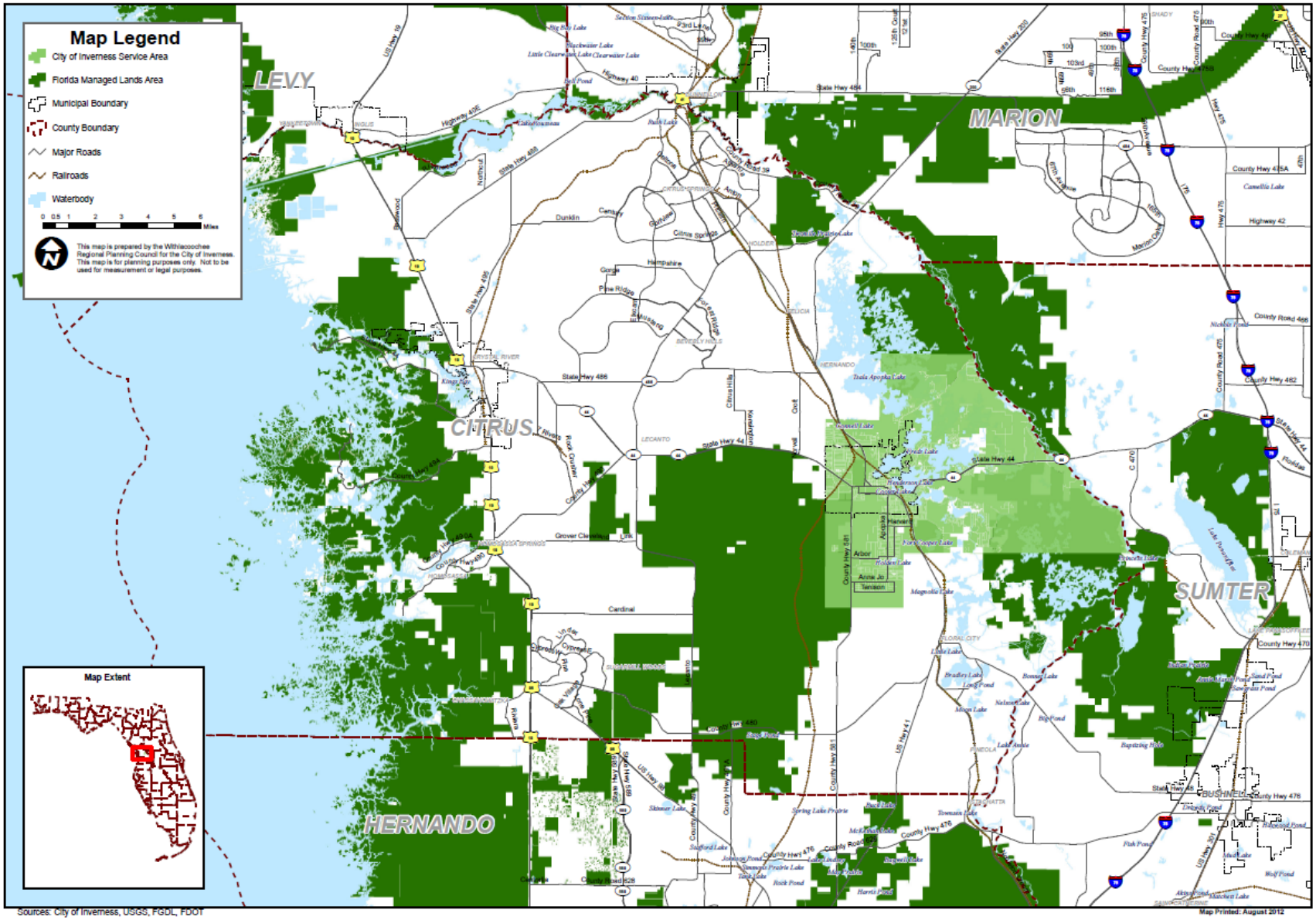
The Work Plan represents the City's plan to meet current water demands and the anticipated growth in demand within the Inverness Utility Service Area through 2025. The Work Plan is an addendum to the Infrastructure Element of the Inverness Comprehensive Plan and meets statutorily requirements, as per Chapter 163.3177, Florida Statutes (see Table 8).

Table 8: Compliance with Statutory Requirement

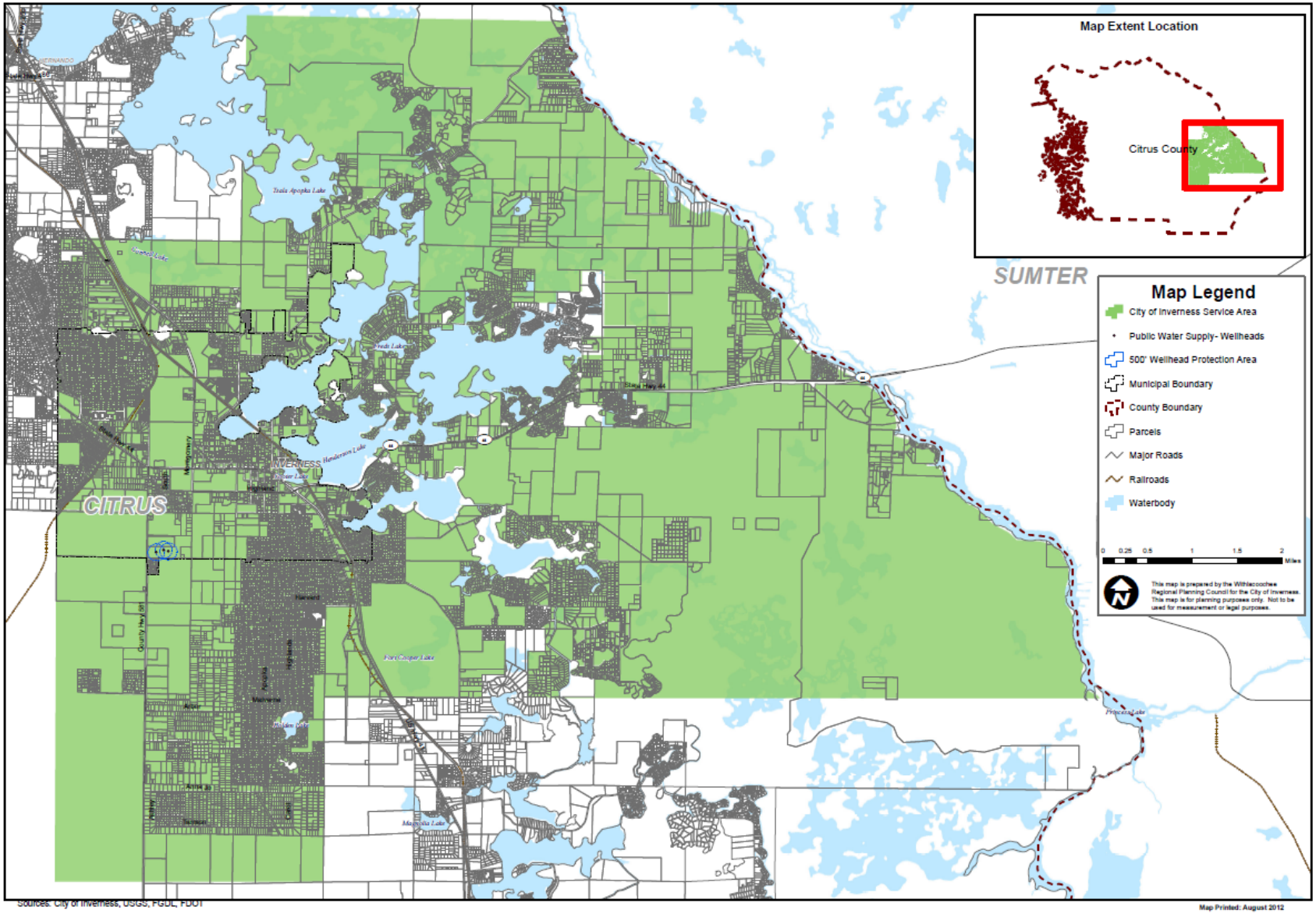
Statutory Requirement	Commentary
Within 18 months after the governing board approves an updated regional water supply plan,	Work Plan is due May 2017
the element must incorporate the alternative water supply project or projects selected by the local government from those identified in the regional water supply plan pursuant to s. 373.709(2)(a) or proposed by the local government under s. 373.709(8)(b).	Inverness' work plan incorporates water reuse and conservation rate structures.
If a local government is located within two water management districts, the local government shall adopt its comprehensive plan amendment within 18 months after the later updated regional water supply plan.	N/A
The element must identify such alternative water supply projects and traditional water supply projects and conservation and reuse necessary to meet the water needs identified in s. 373.709(2)(a) within the local government's jurisdiction	No water needs are identified by SWFWMD in the 2012 - 2025 timeframe.
and include a work plan, covering at least a 10-year planning period, for building public, private, and regional water supply facilities, including development of alternative water supplies, which are identified in the element as necessary to serve existing and new development.	No water supply facilities are identified as necessary in the 2012 - 2025 timeframe. The City endorses SWFWMD and WRWSA plans.
The work plan shall be updated, at a minimum, every 5 years within 18 months after the governing board of a water management district approves an updated regional water supply plan.	Acknowledged
Local governments, public and private utilities, regional water supply authorities, special districts, and water management districts are encouraged to cooperatively plan for the development of multijurisdictional water supply facilities that are sufficient to meet projected demands for established planning periods, including the development of alternative water sources to supplement traditional sources of groundwater and surface water supplies.	The City will continue to participate with WRWSA and SWFWMD in the development of future plans. The City supports a local sources first approach to water supply.

**Statutory Requirement column text is verbatim from Sub-paragraph 163.3177(5)(c)3, Florida Statutes*

MAP 1
CITY OF INVERNESS
Service Area Location Map



MAP 2
CITY OF INVERNESS
Public Water Supply (WUP 419) Service Area



MAP 3
CITY OF INVERNESS
Wellheads and Well Protection Areas Map