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# **Water Conservation White Paper**

Prepared by the Florida Conservation Coalition

## **Contents**

Introduction & Background – Page 2

Recommendations – Page 4

# Introduction

The Florida Conservation Coalition (FCC) is composed of over 50 conservation organizations and thousands of individuals devoted to protecting and conserving Florida's land, fish and wildlife and water resources. The first priority of the Coalition is to protect and preserve Florida's water resources.

## Background

Recently headlines in newspapers across Florida have illustrated the urgent need for state and local governments, water managers, utilities, industry, agricultural interests, and all Florida residents to address the growing scarcity of groundwater supplies and assure the availability of water for natural systems and reasonable and beneficial consumptive uses which serve the public interest.

A recent survey by the University of Florida Center for Public Issues Education found that 83% of Florida residents rated water as highly or extremely important, placing it only behind the economy and healthcare on the list of issues Florida voters are concerned about. In addition, at least 85% responded that having enough water for cities, agriculture and freshwater resources is extremely or highly important. The survey showed that Floridians were willing to take personal responsibility for protecting water resources by installing energy efficient appliances and paying more on their water bills, supported local government water restrictions and would vote for water conservation programs.

The survey follows the release of the Central Florida Water Initiative (CFWI) Draft Supply Plan which states that "fresh groundwater resources alone cannot meet future water demands in the CFWI planning area without resulting in unacceptable impacts to water resources and related natural systems." The CFWI projected that water use in the 5 county area will increase by approximately 40%, from 800 million gallons per day (mgd) in 2010 to 1,100 mgd in 2035. Modeling undertaken as part of the initiative found "that the sustainable groundwater withdrawal limit is 850 million gallons per day," resulting in a groundwater deficit of 250 mgd by 2035. These figures assume no increase in water conservation.

Additional concern was raised when it was announced that Florida will pass New York as the United States' third most populace state in 2014. This news is important because it shows a return to the kind of high population growth rates Florida experienced before growth stagnated during the worst periods of the Great Recession. In fact, the CFWI found that the population within its planning area is expected to grow by nearly 50% between now and 2035, and that public supply, already the largest use category, would account for 70% of the growth in demand for water.

Two options exist to handle any scarcity: increase supply or decrease demand. In terms of water resources these two options are often defined as the production of alternative water supplies (increase supply) or water conservation/efficiency (decrease demand).

The Florida Conservation Coalition believes that the only way to meet Florida's long-term water demand is through a sophisticated mix of efficiency and supply policies which would result in a combination of projects to increase supply through the development of cost-effective and environmentally sustainable alternative water resources and incentives and mandates to increase water conservation. Conservation and alternative supply solutions should be evaluated together, using the same metrics, based on their cost-effectiveness, long-term sustainability, and effect on water resources and their related natural systems. As a recent paper presented at the UF Water Institute by the environmental engineering firm Hazen and Sawyer contends, water conservation should be considered as an alternative water supply option and water supply planners should begin to pay more attention to the demand side of the water equation relative to the traditional focus on the supply side. This same view is promoted in a 2010 report released by the Florida Department of Environmental Protection which states, in part,

"In many parts of the state, inexpensive groundwater is reaching its limit as a source of supply to meet human needs without causing environmental harm. Meeting the state's increasing demand for water will require development of alternative sources such as reclaimed water, brackish groundwater, surface water, and seawater. However, these sources can be expensive to develop. Conservation is a 'source' that is both inexpensive and plentiful."

When compared with other alternative water supply proposals, a growing body of research shows that water conservation has numerous significant advantages for Florida including lower capital and incremental costs; reduced energy consumption which minimizes greenhouse gas emissions; improved water quality by reducing runoff from inefficient irrigation practices; increased flow and levels in springs, rivers, lakes, and aquifers; and greater predictability and sustainability for all water resource users.

With the exception of desalination (which is largely cost prohibitive and has numerous environmental drawbacks), water conservation is the only "source" of water which is not dependent upon uncontrollable external factors like rainfall. In fact, surface waters, identified as the primary "alternative water source" by the CFWI and other regional water supply plans, are dependent upon adequate rainfall. Consequently, these alternative sources, which would be relied upon most heavily during periods of reduced rainfall, would themselves be under the greatest stress during the same conditions: when rainfall is short. By relying upon surface water withdrawals to meet Florida's future water needs we are locking our state into an unavoidable clash between the needs of our water resources and related natural systems and the needs of consumptive water users during times of decreased rainfall. At the very times when our rivers and lakes will most need to maintain their flows and levels for sustaining wetlands, fisheries, and estuarine systems and to reduce salt water intrusion, water users (particularly agricultural and residential users, the two largest use classes), will need to withdraw the greatest amounts of water. The bottom-line is that relying on surface water withdrawals to meet Florida's future water needs is unsustainable in the long-term and unwise in the short-term.

As some Florida policymakers downplay the effects of altering surface water conditions in current water supply planning initiatives, examples of the repercussions of such policies can

be found throughout our state. Recently the state of Florida decided to pursue legal action against the State of Georgia because of the negative effects of surface water withdrawals on the Apalachicola River and Bay. Reductions in freshwater flow have altered the traditional salinity cycles of the River and Bay resulting in an unprecedented decline in the abundance of oysters and extensive harm to other flora and fauna, including a number of threatened and endangered species. Despite this ecological and economic crisis, Florida has thus far been unable to find any means to restore the flow of freshwater. Not only should this serve as a lesson as to the ecological and economic consequences of reducing surface water flows, but also as a lesson in the difficulty of restoring water flow once surface waters become relied upon as a means for meeting growing water demand. The Tampa Bay water wars offer a further example of the detrimental effects to waterbodies and significant costs associated with the mismanagement of water resources to meet unmitigated demand.

In short, reliance on surface waters for meeting increased water demands involves an inherent trade-off between the needs of upstream water consumptive users and the needs of those downstream who rely upon freshwater flows to provide healthy ecosystems for their livelihoods. Through the conservation of water, which reduces the need for surface water withdrawals, downstream users and ecosystems can be protected while ensuring that the needs of reasonable and beneficial water users are met today and into the future.

Despite a large and growing body of evidence that water conservation is the most cost-effective, sustainable, and environmentally protective option for meeting Florida's future water needs, many water managers and elected officials continue to make public policy decisions that undervalue the benefits of water conservation and ecosystems that depend on surface waters while simultaneously undervaluing the costs, both financial and environmental, of surface water withdrawals.

The American Water Works Association Florida 2030 Plan provides insight into the bias against water conservation,

"An obstacle that must be overcome is a perception of uncertainty by some with respect to the reliability of certain water conservation program savings. There is a growing body of research that conclusively demonstrates quantifiable savings from implementation of common practices such as conservation rate structures and equipment and fixture upgrades."

## Recommendations

### Public Education & Public Supply Rate Structures

In some areas of Florida, and throughout the United States, water conservation public education campaigns have been shown to lead to significant voluntary water use reductions. Recently, however, some of these programs in Florida have been cut due to budget constraints. Florida's water management districts, state agencies, and public utilities should continue and expand funding for public education programs that illustrate the costs, both financially and environmentally, of excessive water usage. Educational programs could

include requiring water supply utilities to provide informative billing to all customers to and phase in conservation rate structures which are at least as effective as those recommended by the American Water Works Association in its "Principles of Water Rates, Fees, and Charges."

#### Know the amount of water being used and by whom

An essential first step in understanding current water use, future water use, and where the most cost-effective and meaningful conservation gains can be achieved is knowing how much water each consumptive use permit (CUP) holder in Florida uses throughout the year. Monitoring water use is also the only way to know whether or not current water use regulations are being adhered to and if consumptive use permits accurately reflect the reasonable/beneficial criteria. Therefore, all permitted water users should be metered, with meter readings expeditiously provided to the applicable water management district. Based on such "real time" monitoring, consumptive use permit holders could be evaluated for efficiency of use and additional opportunities for conservation which should be incorporated into decisions for permit renewals.

#### Opportunities for Water Conservation in Public Supply

Over the past decade, major innovations have been made in water-saving technology for indoor and outdoor water fixtures. To take advantage of these innovations, Florida should identify opportunities to increase water conservation and efficiency and provide incentives and direct payments to retrofit buildings with water efficient fixtures and appliances.

As new businesses and residents enter our state, they place increased stresses on our water resources. All new buildings should be required to meet Florida Water Star Certification. Water savings from such a requirement would be significant, as a single family home built to meet Florida Water Star Silver criteria uses at least 40% less water outdoors and approximately 20% less water indoors than a home built to the current Florida building code. In addition, new homes and businesses should be incentivized to install "dual plumbing" that allows for the use of grey water for lawn irrigation and be required to hook up to a grey water source if one is available within a certain distance from the property.

Florida should develop a new Bronze tier for the Water Star program that applies to existing homes and businesses. Bronze tier certification should include upgrading water intensive appliances and installing soil moisture sensors for landscape irrigation.

Existing properties should also be required to contribute to protecting Florida's water supplies upon their sale to a new owner. Florida should require (as with it does for other homebuyer protection measures, such as for wood-destroying organisms) that all property sales agreements include a provision that properties meet the new Florida Water Star Bronze Tier criteria prior to sale.

To assist current property owners, Florida should provide free residential and commercial water audits, including the use of dedicated mobile irrigation labs, to demonstrate low cost, or cost saving ways, to conserve water. As part of this effort, the state and/or local governments should incentivize Florida Friendly Landscaping for residential yards and

recreation spaces and the installation of soil moisture sensors for all irrigation systems through direct payments or reductions in water management district ad valorem taxes.

One method of incentivizing Florida Friendly Landscaping, dual plumbing installation, and other outdoor conservation measures is by charging a higher rate for the inefficient or excessive use of potable water, particularly for irrigation. A block rate billing structure accomplishes this goal by setting different price points for different levels of residential water usage. Under such a system, water for residential use remains very inexpensive up to a certain threshold established to cover the efficient use of water inside the home and higher rates are charted for water use above that threshold, which would primarily be from irrigation. Such charges would not only increase conservation but also more accurately reflect the lower benefits of water used for irrigation of lawns than other purposes.

There are existing water conservation incentive programs administered by Florida's water management districts which could be used as blueprints for additional statewide efforts. The South Florida Water Management District Water Savings Incentive Program (Water Sip) funds noncapital water conservation projects such as rain and soil moisture sensors, low flow and water-conserving appliances, sod replacement, rain barrels and cisterns, and other conservation measures. This program should be scaled-up to provide the funding necessary to achieve 100% participation for public water supply.

The case study on the benefits of water conservation technology implementation from the American Rivers report Hidden Reservoir: Why water efficiency is the best solution for the Southeast shows the potential benefits of upgrading water fixtures to increase conservation:

On August 1, 2007, residents of Orme, Tennessee, turned on their taps and nothing came out. Due to historic drought conditions water service was reduced to 3 hours per day. The town resorted to trucking in 30,000 gallons of water per day at twice the cost as public water. Members of the Plumbing Manufacturers Institute donated and installed water-efficient toilets, fill valves, showerheads, aerators and sinks in all Orme homes reducing average water consumption by 45%, with an average estimated savings of \$528 per household on the water bills.

#### Opportunities for Water Conservation in the Agricultural Sector

A recent study by Royal Consulting Services and funded by the St. Johns River Water Management District illustrates that significant water savings could be achieved by Florida's agricultural industries through water use planning and the implementation of reasonable and common sense best management practices. According to the study, 78% of agricultural sites audited did not even have an irrigation water management plan to direct water usage. These plans provide site specific and detailed operating plans specifying under which conditions watering should occur, the amount of water to be applied, and how to making watering decisions following rainfall. Another problem identified in the report was that 28% of agricultural operations did not have a rainfall or soil moisture measuring device to prevent unnecessary watering. Finally, leaks and broken valves were found in 40% of

audited sites and clogged emitters or nozzles were found in 50%. Given the findings of this report, irrigation water management plans, soil moisture or rainfall sensors, and audits to ensure that irrigation equipment is in proper working order to maximize conservation should be required in all new agricultural consumptive use permit applications or renewal applications.

In addition to the common sense measures outlined above, agricultural operations should be required and incentivized to identify and implement other site-specific best management practices to conserve water. Water management districts should provide additional mobile irrigation labs for monitoring, improving, and recommending additional best management practices and agricultural consumptive use permit holders should be required to undergo a mobile irrigation lab audit within a set timeframe and on an ongoing basis. When effective and cost-efficient opportunities for reducing water use are identified as part of a mobile irrigation lab audit, agricultural operations should be required to implement such best management practices and provided be provided direct payments to cover the cost of a portion of implementation.

The existing Facilitating Agricultural Resource Management Systems program (FARMS), administered by the Southwest Florida Water Management District, could be utilized as a model for statewide incentive programs to fund and assist in the installation of agricultural best management practices such as reservoirs to capture runoff, precision irrigation systems with integrated weather stations, and frost/freeze protection alternatives to massive water withdrawals. In Polk County the FARMS program was able to permanently offset 1.2 million gallons of agricultural water use per day for only \$3.3 million. Over a ten year period this equates to a cost of less than \$1 per 1,000 gallons of water saved.

#### Opportunities for Water Conservation in Other Sectors

Opportunity for water conservation exist across all water use sectors. All consumptive use permit applicants should be required to have measurable and enforceable goal-based water conservation plans. Currently, consumptive use permit applications for public supply are required to provide either standard or goal-based conservation plans, but given the long duration of public supply consumptive use permits there is insufficient enforcement opportunities to assure that these plans are followed in a timely manner. All conservation plans, and the performance of such plans in reducing consumptive uses of water, should undergo periodic review, regardless of the length of the length of the consumptive use permit, to ensure that they are being effectively implement and reflect changes in water conservation technology.

#### Government Leadership

Current state law provides many tools which are not being utilized by the Administration and water management districts to protect Florida's waters. An essential first step is expediting the establishment and adoption of Minimum Flows and Levels and incorporating them into water supply planning statewide. Additionally, given the clear evidence that current consumption levels are not sustainable, the trend of the legislature allowing, and in many cases encouraging, the Districts to issue longer and longer Consumptive Use Permits

must be reversed. However, it will take more than just addressing future permit applications to restore Florida's waters. Existing state law allowing for competition between permit applicants during the renewal process should be utilized to ensure that all consumptive water users are treated fairly, and to encourage the implementation of meaningful conservation measures as part of permitting process.

In light of present knowledge concerning aquifer depletion around the state, rules regarding conservation measures need to be adopted in the Water Resources Implementation Rule and required in all permits moving forward and water reservations should be adopted where they would contribute to sustaining ecosystems. Also, in recognition of the connection between water quality and water quantity, both elements should be considered in permitting decisions to ensure that Consumptive Use Permits do not result in withdrawals that contribute to the degradation of water quality.

Florida's state and local governments should also demonstrate leadership in water conservation and reducing waste. The Governor should issue an Executive Order mandating water use audits and water conservation plans for all state facilities. Such plans would include water use reduction goals, schedules for implementation, and annual reporting requirements. Local governments could also be required to implement similar measures for their facilities.

#### Price water to promote conservation<sup>i</sup>

Currently, the only costs for withdrawing water in Florida are an application fee, the user's costs to pump water from its source, and related overhead. Because there is no direct correlation between the amount of water used and the cost of water usage (including the public costs of impacts to natural systems and other potential reasonable-beneficial users) this system leads to an inefficient allocation of water. Placing a reasonable price on the quantity of water used, directly related to the excess amount consumed, would incentivize water conservation and direct water towards higher value uses.

The idea of water use fees has a long history in Florida. Although not one of the Code's final recommendations, the benefits of a "periodic fee for the use of water" were noted in the Model Water Code, upon which Florida's Water Resources Act of 1972 is based. The idea was again considered by Governor Bob Martinez' 1989 Water Resource Commission, which recommended that water management districts "collect a fee from all users based on water used," while giving credit for aquifer recharge, reclaimed water use, and other alternative water supply technologies which reduce the impact of water withdrawals on natural systems. Funds generated by the fee would be deposited into a Water Resource Trust Fund to aid in the development of alternative water sources (including conservation), resource protection activities, water quality testing, and incentives for water conservation by all water users. A review by Chase Securities found that even at the highest fee rate proposed by the Commission, 20 cents per 1,000 gallons, such a fee would have "negligible effects on major industrial water users" and meet "EPA guidelines for affordability" for Florida households. For agricultural operations it was determined that a lower fee of 2 cents per 1,000 gallons "was negligible when considered as a percentage of total production costs."



Water use fee legislation has been proposed by the Florida Legislature; considered by both the Northwest Florida and South Florida Water Management Districts; and recommended by the Partners for a Better Florida Advisory Council in 1993, the Florida Water Conservation Initiative in 2003, the Conservation Committee for the Florida Chapter of the American Water Works Association, and the American Society of Civil Engineers (ASCE). In the "Regulated Riparian Model Water Code" released by the ASCE in 2005 the authors wrote, "Without requiring fees for the value of water used, one cannot really hope to achieve real efficiency in the use of water and therefore of ensuring sustainable development."

Fees collected could be managed regionally by Florida's five water management districts or deposited into a state trust fund to be appropriated by the Legislature to the water management districts and Department of Environmental Protection. In either case, fees should be directed towards projects which further enhance water conservation through new infrastructure and technology, restore impaired water resources and natural systems, provide education to businesses and residents, and develop alternative water supplies which provide benefits to the environment. Additionally, depending upon the fee system implemented and revenue projections, a water use fee could be used to partially offset reductions in water management district property taxes, which would be an inherently more equitable system of funding water management in Florida.

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<sup>i</sup> Background information and history of water use fees based on "Florida's Water: A Fragile Resource in a Vulnerable State" by Tom Swihart