

**Written Testimony for  
December 8, 2011 Hearing: Opportunities and Challenges to  
Address Domestic and Global Water Supply Issues**

**Submitted to:**

**Honorable Jeanne Shaheen**

**Chairman**

**Subcommittee on Water & Power**

**Committee on Energy and Natural Resources**

**United States Senate**

**Presented by:**

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**Public Agency**

## **Introduction**

Thank you for the opportunity to provide testimony to the Subcommittee on Water and Power of the Senate Committee on Energy and Natural Resources. We appreciate Chairman Jeanne Shaheen's heightened focus on the critical issue of water supply challenges and opportunities. My name is Melissa L. Meeker, and I appear before the subcommittee in my capacity as Executive Director of the South Florida Water Management District.

Headquartered in West Palm Beach, the South Florida Water Management District is one of Florida's five regional water management districts created to oversee and manage the state's water resources. Operating for the past forty years, these public agencies are charged with four broad mission responsibilities: flood control, water supply, natural systems and water quality. With general oversight and guidance provided by the Florida Department of Environmental Protection, the water management districts utilize a variety of tools and technologies to help ensure a reliable and sustainable supply of water for Florida's citizens, environment and economy, both for today and for our future.

The South Florida Water Management District has two additional responsibilities unique to South Florida. The first is managing and operating the Central and Southern Florida Project, one of the world's largest public works projects. This extensive infrastructure of canals, levees and structures was built by the U.S. Army Corps of Engineers fifty years ago to provide flood control and water supply benefits to an estimated population of 2 million. Today that system is supporting a population of 7.7 million – nearly four times the number of people it was designed for. At the same time, operation of this complex system of water management structures is capable of delivering nearly 1.4 billion gallons per day – or 500 billion gallons annually – to support the water supply needs of urban areas and the agricultural industry.

The agency's second unique responsibility is implementing the federal-state partnership to restore America's Everglades, the largest ecosystem restoration initiative in North America. The Comprehensive Everglades Restoration Plan is focused specifically on "getting the water right" – in quantity, quality, timing and distribution. Successful restoration will capture, store, treat and deliver water to revitalize the natural system, improve wildlife habitat and recharge the underground aquifer to ensure a reliable and sustainable supply of water for the Everglades and South Florida. This effort is a critical component of our overall water management strategy.

## **Overview: Where Does Florida's Water Come From?**

Florida is a rainfall-dependent state. Average annual rainfall is 53 inches, making it one of the wettest states in the nation. Unlike other parts of the country, nearly two-thirds of Florida's freshwater use is pumped from underground aquifers. These include the deep

Floridan Aquifer and the shallower Biscayne Aquifer, which is highly dependent on rainfall for replenishment. The state's remaining fresh water is supplied from surface waters, including lakes and rivers, which are also dependent on rainfall. In South Florida, approximately 90 percent of the water used in homes and businesses comes from groundwater sources, with only 10 percent from surface waters.

At the center of South Florida sits the 730-square-mile Lake Okeechobee – the liquid heart of the greater Everglades ecosystem. It serves as both a direct source of public water supply and provides a supplemental source of irrigation water to more than 700,000 acres in agricultural production. In addition, the 'big lake' serves as the backup water supply for more than five million residents.

America's Everglades are a vital part of South Florida's water story. Dubbed the *River of Grass* for the sawgrass that flourished throughout the marsh, the Everglades is a mosaic of freshwater ponds, prairies and forested uplands that is home to dozens of federally threatened and endangered species, including the Florida panther, American crocodile, snail kite and wood stork. These vast, shallow wetlands, which once covered almost 11,000 square miles, help to recharge the region's underground water supplies. But because of efforts to drain the marshland for urban development, agriculture and flood control, the Everglades is today half the size it was a century ago.

### **Florida's Water Supply Challenges**

Florida's water supply challenges are three-fold: the need for storage, unpredictable weather extremes and a growing demand coupled with competing uses.

**Storage** – Florida's flat landscape creates one of our most significant water supply challenges: lack of storage. Although rainfall recharges underground supplies, the ability to capture and store the rainwater for future use is extremely limited. When floods threaten – which occurs even during water shortage situations – the South Florida Water Management District's top priority is channeling excess water away from homes and businesses as quickly as possible. To lower the levels in coastal canals and accommodate direct rainfall and stormwater runoff for flood protection, fresh water must oftentimes be released to the Atlantic Ocean or the Gulf of Mexico.

Effective management of the Central and Southern Florida Project provides for the delivery of nearly 1.4 billion gallons per day to meet South Florida's water supply needs. But because of limited surface water storage and an infrastructure designed for flood control, it is estimated that a staggering 1.7 billion gallons of water per day, on average, is diverted through the extensive canal system and discharged to tide.

**Weather Extremes** – Despite the abundance of rainfall, the state's climate types yield significant rainfall variability from region to region and from year to year. In South Florida, most of the rain falls during just four summer months. In addition, a significant

amount of rainfall is lost through evapotranspiration or – because of the flat landscape and lack of regional storage – channeled out to tide for flood protection.

Florida is also prone to prolonged droughts and water shortages. Just this year, the region emerged from a multi-year period of rainfall deficit. Lake Okeechobee reached an all-time low of 8.82 feet above sea level in the summer of 2007, and from October 2010 to June 2011, the region experienced its driest dry season since recordkeeping began 80 years ago. In some areas, the rainfall deficit grew to more than 20 inches, with Lake Okeechobee, a water body with an average depth of only 9 feet, dropping more than 3.5 feet below normal. In essence, the Sunshine State is a state of meteorological extremes, where extended dry spells and big rain days are considered the norm.

And because Florida is largely surrounded by salt water, drought conditions require a constant vigil to monitor and combat the intrusion of heavier seawater into the state’s underground freshwater supplies.

***Demands and Competing Uses*** – During the past half-century, Florida’s water demands have risen exponentially – and they are projected to continue increasing. Statewide, Floridians used an average of 6.7 billion gallons a day in 2010; the projection for 2030 is 8.1 billion gallons a day. That means that in the next 20 years, another 1.4 billion gallons a day must be identified and planned for. Planning and developing water for a growing population must also be balanced with ensuring water is available for our natural systems.

What makes Florida unique is its diversity of environmental features: beaches, rivers, lakes, bays, estuaries and wetlands, including the vast Everglades ecosystem. The vast interconnected Everglades system, which historically stretched from Orlando in the central part of the state down to Florida Bay, today encompasses 2.4 million acres and is the focus of a thirty-year, multi-billion dollar state-federal restoration effort.

The health of this ecosystem depends on delivering the right quality of water to the right places in the right amounts and at the right time. Successful restoration requires capturing, storing, treating and delivering water to revitalize the natural system. When complete, Everglades restoration has the very real potential to achieve both our environmental and economic water supply needs.

### **Florida’s Water Supply Solutions**

To meet Florida’s future demands, the state’s water management districts are diversifying the water supply portfolio to maximize traditional sources, while at the same time tapping into alternative sources. Strategies include sound planning and permitting; demand reduction through water conservation; development of alternative water sources such as surface waters, reuse and desalinization; and in South Florida,

restoring the Everglades, which will result in more water overall for environmental, urban and agricultural users.

***Planning and Permitting***—Water in the State of Florida is a public resource. Its use, as determined by state statutes, is guided by the diverse programs implemented by the water management districts (Chapter 373, Florida Statutes). The cornerstone of effective water supply management is sound planning and regulatory certainty.

To address future water needs, Florida’s water management districts work with utilities, agriculture and other stakeholders to develop region-specific water supply plans. These plans use a 20-year planning horizon to evaluate water needs and identify strategies for meeting future demands. Developed through a collaborative effort with local governments and other stakeholders, each plan includes water demand estimates and projections; an evaluation of existing regional water resources; identification of water supply-related issues and options; water resource and water supply development components, including funding strategies; and recommendations for meeting projected demands.

In South Florida, the regional plans completed to-date have concluded that the use of traditional fresh water sources have been maximized. In 2010, urban and agricultural users in South Florida used an estimated 3.5 billion gallons per day of water. Over the next 20 years, water needs in the region are projected to increase by almost 1 billion gallons a day.

Regulatory programs also play an important a role in water supply management. When applied fairly and consistently, they aid in advancing water use efficiency, promoting water conservation, sustaining limited supplies and protecting the natural environment. Permit applications for water use are evaluated by Florida’s water management districts under a “three-pronged test”: the proposed use must be reasonable-beneficial, it must not interfere with any presently existing legal use of water, and it must be consistent with the public interest.

Additional rules are in place for protecting Florida’s water bodies, especially wetlands, from harm that could result from water supply over-pumping. In addition, the state’s Water Reservations authority allow for water to be set aside in an ecosystem for the protection of fish and wildlife. This has become an important tool in Everglades restoration.

Furthermore, in South Florida it is no longer an option for utilities or businesses to address future demands by requesting increased withdrawals from certain regions. Restricted Allocation Area rules prevent water users from tapping the famed *River of Grass* for new or additional supplies. “New” water from the Everglades is now

restricted for environmental restoration purposes only. A similar rule is in effect that limits withdrawals from Lake Okeechobee to current levels.

*Alternative Water Supplies* – Diversifying water supply sources is important to Florida's future and ensures communities are less susceptible to the effects of drought. In 2005, the Florida Legislature recognized this and enacted the Water Protection and Sustainability Program. Through funding, this precedent-setting program encourages cooperation between municipalities, counties, the state and the five water management districts to protect and develop water supplies in a sustainable manner. Examples of alternative water supplies that meet this objective include: treatment of saltwater and brackish water; water reuse; stormwater/surface water captured during heavy rainfalls; and sources made available through the addition of new storage capacity.

Since 2005, more than \$551 million in state funding assistance has been provided toward 327 projects, about 15 percent of the \$3.8 billion estimated total construction costs. When constructed, these alternative water supply projects will create a combined 761 million gallons a day of “new water” – more than 50 percent of the additional 1.4 billion gallons a day needed to meet the projected growth in demand.

In South Florida alone, funding has been provided in support of local alternative water supply projects since 1997. To-date, a total of \$204 million in grants has been directed toward 474 alternative water supply projects that produced 429 million gallons of water per day. Funded projects have included reuse, use of brackish and seawater sources and aquifer storage and recovery.

The reuse of reclaimed water is a key component of the new “water pie.” To date, more than 60 percent of the alternative water supply projects funded are for reclaimed water. This underscores the value of wastewater as a critical water resource rather than a disposal challenge. It is no longer acceptable to use water just once and then dispose of it. Water reuse is an excellent opportunity to integrate wastewater management and water supply. Reclaimed water can safely be used for irrigation, groundwater recharge, saltwater intrusion barriers, environmental enhancement and other beneficial uses.

Florida is today a leader in water reuse. The state’s total reuse capacity has increased 331 percent between 1986 and 2010. Statewide today, there are more than 480 facilities in operation – collectively reusing 659 million gallons a day of reclaimed water that is estimated to have avoided the use of more than 121 billion gallons of potable quality water. This also adds more than 80 billion gallons back to available groundwater supplies.

To further increase the use of treated wastewater, the Florida Legislature in 2008 authorized the elimination of six ocean outfalls remaining in the state. This legislation requires utilities currently using ocean outfalls as a wastewater disposal method to go

to advanced wastewater treatment by 2018; to eliminate discharges (except for wet weather) by 2025; and to achieve, at a minimum, 60 percent reuse of the facility's actual annual flow by December 31, 2025.

The elimination of the state's ocean outfalls – all of which are located within the South Florida Water Management District's boundaries – will generate an estimated 178 million gallons per day of reclaimed water for use within some of the most heavily-populated areas of South Florida. Water supply development projects that support the reuse of treated wastewater are included in regional water supply plans and its beneficial use is encouraged in consumptive use permits. The challenge we face is in retrofitting our communities to accommodate reclaimed water infrastructure and the public perceptions associated with this valuable resource.

I recently had the opportunity to talk to a national audience about Florida's leadership and commitment to increasing water reuse in the state at the "2011 Potable Reuse Conference" sponsored by the WaterReuse Association. A copy of that presentation is included here as part of my written testimony. *See attachment.*

***Realizing Everglades Restoration*** – Together with traditional water supply augmentation and demand management strategies, efforts are also under way to capture, conserve and more effectively utilize water for the natural system through environmental restoration.

Today, the South Florida Water Management District and the State of Florida, along with the U.S. Army Corps of Engineers and other partner agencies, are working to undo the environmental damage inadvertently caused by the construction of the Central and Southern Florida Project and a century of drainage. The overarching goal is to capture the 1.7 billion gallons per day of fresh water that now flows unused to the ocean and the gulf and redirect it to storage for natural areas that need it most for restoration purposes. Returning a more historic flow of water to the remnant *River of Grass* will not only revive the native habitat for 68 threatened and endangered species, it will also naturally replenish the underground aquifers that supply drinking water to the population.

Authorized in the Water Resources Development Act of 2000, the joint state-federal Comprehensive Everglades Restoration Plan (CERP) partnership provides a framework to restore, protect and preserve the water resources of central and southern Florida, including the Everglades. CERP includes more than 60 elements. Any new water resulting from the construction of restoration projects will, first and foremost, be directed to environmental restoration and then will be made available for other purposes. Major components include surface water storage reservoirs; water preserve areas; management of Lake Okeechobee as an ecological resource; improved water deliveries to coastal estuaries; underground water storage; treatment wetlands;

improved water deliveries to the Everglades; removal of barriers to the natural sheetflow of water; storage of water in existing quarries; reuse of wastewater and improved water conservation.

Approximately 60 percent of the nearly 400,000 acres of lands needed to move forward with Everglades restoration are in public ownership. Design and/or construction of projects to increase storage, improve water quality and reestablish more historic flow patterns and hydrologic characteristics are under way. Federal agency coordination and authorizations of projects ready-to-go, along with continued federal and state funding, is crucial to maintaining restoration progress.

### **Conclusion**

Just as rainfall is linked to water supplies, the availability of an affordable water supply is also tied to the economy. The economic downturn has been painful across the country, and the combination of a weak economy with recent record drought conditions has made it a challenge for many communities and businesses. That connection underscores the importance of planning for and developing adequate water supply for economic sustainability. Adequate, affordable water is needed to achieve economic growth; attract new industries and provide cooling water for new and existing utilities; sustain agriculture; and to maintain a healthy environment. These – and numerous other water-dependent businesses – all have the potential to create jobs. No one wants water scarcity or availability to be a limiting factor in any aspect of our state or nation’s economic future.

Finding and implementing workable, cost-effective solutions to environmental, water resource protection and water supply availability issues requires a concerted and collaborative approach – a combination of public works projects and private participation that can yield mutually beneficial dividends. We must employ a variety of resource management tools to address our challenges, and we must commit to financial and political investments in water conservation, water resource development and alternative water supplies to ensure that future water needs will be met – not at the expense of our natural systems but as a result of innovative and cooperative solutions.

Federal support and investment in the Comprehensive Everglades Restoration Plan, community infrastructure improvements and new technologies are vital to helping local communities – and our nation – meet its water supply needs. The long-term benefits, particularly that of a healthy and sustainable economy, truly outweigh the costs.

**Chairman Shaheen, the South Florida Water Management District would like to thank you for convening this hearing and for stimulating thoughtful dialogue that can lead to collaborative and productive solutions to the nation’s water supply challenges. We appreciate the invitation extended to the State of Florida to provide input and our perspective on this important issue.**