



# City of Stuart

121 SW Flagler Avenue • Stuart • Florida 34994  
Telephone (772) 288-5332  
Fax (772) 288-5381

Public Works Department  
Samuel T. Amerson, P.E.  
Public Works Director

[samerson@ci.stuart.fl.us](mailto:samerson@ci.stuart.fl.us)

November 3, 2016

Mark E. Elsner, P.E.  
Water Supply–Bureau Chief  
South Florida Water Management District (SFWMD)  
3301 Gun Club Road  
West Palm Beach, Florida 33406

**SUBJECT: SFWMD Pilot Alternative Water Supply Project**

Dear Mr. Elsner:

This letter transmits the City of Stuart's potential pilot project information, as requested in an email to Mr. David D. Peters, the City's Assistant Public Works Director in mid-October 2016.

Our understanding is that SFWMD staff is surveying stakeholders to inventory potential projects that may qualify as a pilot project under Section 373.037 of the Florida Statutes, for further consideration by the SFWMD Governing Board.

The two page write-up attached to this letter meets the statutory considerations, as follows:

1. Located in an area where the Governing Board of the water management district has applied allocation restrictions with regard to specific sources of water including the Lower East Coast Regional Water Supply Planning Area, Upper East Coast Regional Water Supply Planning Area, or Central Water Initiative Area as defined by the Statute
2. Provides water supply and environmental benefits
3. Identified as an alternative water supply project in a SFWMD regional water supply plan.

The City of Stuart thanks the SFWMD for the opportunity to submit a project for further consideration of this assistance.

Sincerely,

Samuel T. Amerson, P.E.  
Public Works Director

cc: David D. Peters, City of Stuart

## **CITY OF STUART**

### **SFWMD PILOT ALTERNATIVE WATER SUPPLY PROJECT OPTION SURVEY**

This information is provided to the South Florida Water Management District (SFWMD) in response to a survey of potential projects that may qualify as a pilot projects under the 2016 Water Policy Bill (Chapter 2016-1, Laws of Florida). The project must be located in an area where the SFWMD Governing Board has applied water allocation restrictions with regard to specific sources of water, provides water supply and environmental benefits, and is an alternative water supply project in a regional water supply plan.

#### **BACKGROUND**

Currently, the City of Stuart water supply is obtained from the Surficial Aquifer. The City's wellfield comprises 30 production wells, although 21 are currently in service. The wells are completed with screened intervals ranging between 90 feet to 130 feet below land surface. The wellfield currently withdraws an average of approximately 3 million gallons per day. Individual wells are pumped at rates of 140 to 500 gallons per minute, from semi-consolidated sandy strata. The wellfield is located on a peninsula surrounded by the brackish St Lucie River, an outstanding Florida Water. A majority of the wellfield is close to the north end of the peninsula and extends southwards away from the river. There are wetlands along the western part of the peninsula along the St Lucie River that limit wellfield pumping (in wells 26, 27 and 30) and concerns about salt water intrusion during drought conditions. Projected sea level rise also has the potential to increase salt water intrusion and further erode the ability to operate the City's wellfield, although the City of Stuart does maintain vigilant saltwater intrusion and wetland monitoring networks, consisting of wells completed at varying depths around the peninsula.

In addition to the challenges presented by natural phenomena, there is chemical contamination in the wellfield from previous industries that operated in the City. Production wells 1 through 15, closer to the salt water at the northern edge of the peninsula, are the primary pumped wells and are used to capture a contaminant plume from a prior Turbo-Combustor Technology (TCT) spill; some of these wells must remain continuous operation to capture the contaminants. In addition, as a result of the recent promulgation of the EPA's third Unregulated Contaminant Monitoring Rule (UCMR 3) in May 2016, which regulates a number of emerging contaminants of concern, wells 1, 3, 5 and 24 can no longer be used since they contain levels of per-fluorinated compounds (PFC's), per-fluoro-octane-sulfonic acid (PFOS) and per-fluoro-octanoic acid (PFOA) far exceeding the EPA's advisory limit. These contaminants of concern have consistently been detected in the City's wells since the rule was promulgated in May 2016. Wells 16 through 21 are located near the Martin County airport and have been under an EPA clean-up order since the early 1990's. Well 25 was under the Florida Department of Environmental Protection's dry cleaning clean-up program until recently. This well has not been returned to service because it is located at the downgradient (north) side of the Old City Landfill, which is an unlined landfill in the center of the wellfield. Wells 28 and 29 are on the south side of the landfill and are pumped on a limited basis to keep the plume underlying the landfill on the landfill property.

It has been the most recent contaminants, the PFC's, which has threatened the City's supply. Currently a pilot project is being conducted to see if the water from wells 1, 3, 5 and 24 can be treated using granular activated carbon, however results are not promising due to other water quality interferences in the raw water. Using membranes to treat the water laden with these, and potentially undiscovered contaminants might be the only solution. If membranes are the answer to solving the issues in the surficial aquifer, a further step would be to significantly reduce the City's reliance on the surficial aquifer

and develop a more reliable long term, uncontaminated supply for the City of Stuart. Consequently, the following project has been contemplated.

### PROJECT DESCRIPTION

The City of Stuart is proposing development of a new water supply tapping a deeper, brackish aquifer, while also using a significantly reduced volume of water from the surficial aquifer for blending purposes.

New facilities will include a 7.0 mgd reverse osmosis (RO) water treatment facility with a combination of supply wells from two different aquifers, to minimize impacts. The wells will include five (5) Upper Floridan aquifer wells, together with continued utilization of up to 35 percent of the existing surficial supply. Use of a blended supply is a unique characteristic of this alternative supply pilot.

7.0 Mgd MDF Water Plant Capacity Raw Water Supply:

Water Supply	% of total	Capacity MGD	Recovered (assumed)	Required Raw Capacity MGD(gpm)	Number Wells
Upper Floridan	65	4.5	80%	5.625 (3,900)	5 (1 spare)
Surficial	35	2.5	95%	2.700(1,890)	8 - 10

Disposal of reject concentrate from the membrane facility will be through a 3,000 ft existing deep injection well. The deep injection well is located at the water reclamation facility; it is large enough to be modified to accommodate the combined wastestream, the concentrate and function as back-up disposal for the water reclamation facility.

**TOTAL PROJECT COST:** The total estimated budget level cost for this project is approximately \$17,500,000.

**FUNDING BEING SOUGHT:** Rate Impacts

**WATER MADE AVAILABLE:** The water to be made available in this project will be two fold. It comprises water obtained from the Floridan aquifer to provide a reliable replacement supply of drinking water for City residents that is free from unregulated and emerging contaminants, as well as water made available in the surficial aquifer as a result of reduced pumping.

**SCHEDULE:** 2018 to 2022

**OUTCOME AND BENEFITS:** The outcome of this project will be as follows: Drinking Water will be obtained from a combination of the Upper Floridan aquifer and supplemented with approximately 2.7 mgd of surficial aquifer water.

This reduction of pumping in the surficial aquifer will reduce potential impacts to wetlands and become available for other environmental benefits on the Stuart peninsula and reduce salt water intrusion concerns under climate change scenarios.