

FY2015 COOPERATIVE FUNDING INITIATIVE APPLICATION FORM

Project Name City of Venice - FreshKeeper Feasibility Study
Project Number N610
Cooperator City of Venice
Department
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Project Type:

☒ Water Supply
 ☒ Water Quality
 ☐ Flood Protection
 ☒ Natural Systems

Strategic Initiatives:

☒ Water Quality Maintenance and Improvement
 ☐ Water Quality Monitoring
☒ Alternative Water Supply
 ☐ Conservation
☐ Reclaimed Water
 ☐ Regional Water Supply Planning
☐ Emergency Flood Response
 ☐ Floodplain Management
☐ Minimum Flows and Level Establishment and Monitoring
 ☒ Minimum Flows and Levels Recovery
☐ Natural Systems Conservation and Restoration
 ☐ Natural Systems Identification and Monitoring

Indicate All Counties to Benefit From Project:

☐ Charlotte
 ☐ Citrus
 ☐ Desoto
 ☐ Hardee
 ☐ Hernando
 ☐ Highlands
 ☐ Hillsborough
 ☐ Lake
☐ Levy
 ☐ Manatee
 ☐ Marion
 ☐ Pasco
 ☐ Pinellas
 ☒ Sarasota
 ☐ Sumter
 ☐ Polk

Project Description:

The City of Venice wishes to conduct a feasibility study to evaluate the FreshKeeper concept as a means to improve water quality, restore aquifer levels, and increase water supply availability without additional withdrawals from the aquifer.

The City currently operates a reverse osmosis (RO) water treatment plant that receives water from two wellfields: the Western Wellfield and Eastern Wellfield. The Western Wellfield is located adjacent to the Intracoastal Waterway. Water quality from the wellfields limits recovery of the treatment process to 50 percent. The City has been able to manage water quality degradation, including saline intrusion, through an effective well rotation program.

The City's wellfields lie within the Southern Water Use Caution Area Most Impacted Area (MIA). Aquifer level recovery and water quality improvement are two of the District's strategic initiatives associated with the MIA. Further, because of the wellfields' locations, additional future withdrawals to meet future public supply are likely to be limited.

The FreshKeeper concept was developed in the Netherlands to reduce the impacts of saline intrusion, restore aquifer water quality, and prolong aquifer life. It has proven to be successful in the Netherlands and the Dutch Government is now interested in exporting the technology to other coastal areas throughout the world with similar saline intrusion issues. Members of the proposed team developed and implemented the concept in the Netherlands and is partnering with the City for this evaluation.

The FreshKeeper concept essentially consists of wells designed to partition groundwater flow, such that water is drawn from an upper (presumably higher water quality) and lower (presumably lower water quality) zone within the aquifer. This prevents upconing and saline intrusion. Water quality in the upper zone is preserved or improved, while groundwater from the lower zone can be treated by reverse osmosis and blended with the higher quality water, or the two waters can be blending prior to treatment. The concept can be further enhanced by potentially returning the RO concentrate to the aquifer, provided all FDEP permit requirements are met, which helps to restore aquifer levels without degrading water quality.

This project would consist of a desktop study to determine the applicability of the Fresh Keeper concept and the drilling of a test well to better characterize the hydrogeology and water quality within the aquifer in this region of the MIA and coastal Sarasota County. This project provides the following potential benefits:

1. Improves water quality within the MIA
2. Restores aquifer levels within the MIA
3. Provides alternative water supply without additional groundwater withdrawals.

If the feasibility study is successful, and the FreshKeeper concept appears viable within the MIA, a pilot-study would likely follow in FY16.

Cost Effectiveness

The FreshKeeper concept is cost-effective for a number of reasons:

1. It enables the City to take advantage of existing infrastructure
2. Eliminates the need to re-locate/abandon existing wellfields due to water quality degradation
3. Increases the production capability of the existing supply without new wells and with minimal improvements to the existing treatment process.

Describe your organizations efforts in developing, implementing and enforcing water conservation and flood protection ordinances.

The City of Venice has one of the lowest per capita water use rates in the region. This is due to a combination of the City's tiered water rate structure and its reclaimed water distribution system which has been in place for many years. The FreshKeeper concept has the potential to enable the City to meet future supply needs without increasing groundwater withdrawals, protect against saline intrusion, and provide level recovery within the Southern Water Use Caution Area - Most Impacted Area.

Funding Source	Prior Funding	FY2014 Budget	FY2015 Budget	Future Funding	Total Funding
Applicant Share			225,000		225,000
Manasota			225,000		225,000
Total			450,000		450,000

Matching Fund Reduction

☐ Check here if requesting a reduction in matching funds requirement pursuant to s.288.06561, F.S.

Timelines

Complete Desktop Evaluation	04/01/2015
Complete Exploratory Well Construction	06/01/2015
Complete Feasibility Study	09/30/2015