



Cistern Use on Marco Island

The Florida Department of Health presently requires that septic tanks must be removed or made unusable when a property connects to a central sewer system, and the State Legislature has allowed variances on a case-by-case basis. On March 6, 2009, the Department of Health published new guidelines that, pending changes in the Legislature, will change the rules on April 26, 2009 to allow the conversion of septic tanks to cisterns to store rainwater for irrigation use. Residents have been interested in this change as a potential means to resolve the issue of septic tank abandonment with the City's Septic Tank Replacement Program.

What has changed that Cisterns would be allowed on Marco Island? A variance allowed for properties in the Florida Keys highlights the potential that this conversion offers for homes in areas of water shortage or to encourage water conservation, and the Department of Health is proposing rule changes to incorporate this option statewide.

Is converting a septic tank to a cistern a good idea? Yes, as a water conservation tool.

Will converting a septic tank to a cistern save money? No, this is an environmental or conservation issue, and is not a cost-savings measure. The cost of conversion is much greater than the value of water that may be saved.

What is the City doing regarding the use of Cisterns on Marco Island? For the ninth consecutive year, the South Florida Water Management District (SFWMD) is offering a technology-based water conservation grant program that addresses the demand side of water use, and reducing water consumption. This SFWMD Water Savings Incentive Program (Water SIP) is an opportunity for public water providers and homeowners' associations to submit a grant application for specific water conservation projects that are not on the City's capital improvement program, and cisterns are eligible for at least partial funding under this grant program. Individual residences are not eligible for the grant, and must submit under a public water provider or homeowner's association.

The grant requirements include an expectation that an eligible project will reduce water consumption by 500,000 gallons or more, and based on the assumptions made to determine water volume savings, a **minimum** of 27 properties must participate in this Water SIP conservation effort for the grant application to be considered on this issue.

How much grant funding is available? Should a grant to the City be awarded for this program, the maximum value that the Water Management District may award is \$75,000. The amount that is available for each homeowner is based on the number of conversions (minimum 27 is required) and the total value of the actual grant awarded.

What would need to be done at a home to convert a septic tank to a cistern for use? The concept is that rainwater should be captured on a home and routed through the home's gutters into the sterilized former septic tank for storage and available for irrigation.

In general the former septic tank (now referred to as the tank) must be sterilized and sealed, the home must have gutters to carry the water from the roof to the tank, and a pump must be installed to pump the water from the tank to the irrigation system. Many rain events on Marco Island do not generate enough water for storage to fill the former septic tank (tank) and the water supply system from the City must also be diverted from the irrigation system into the tank to ensure that sufficient irrigation water is available during an irrigation cycle. A level sensing device must be installed to ensure that water is maintained in the tank at all times, as maintaining the tank empty has the risk of uplift and damage to the property.

What permits are required? A Florida Department of Health permit to abandoned and convert the tank to a cistern would be required. A City of Marco Island electric and plumbing permit are needed.

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What would be the costs associated? The estimated cost to convert a septic tank to a cistern and connect to the irrigation system, per the proposed new regulations, is approximately \$3,000- \$5,000. As a result of this conversion property owners are expected to save \$100 per year in water cost. The electric cost to operate the pump system annually is \$40, with net savings estimated at \$60 per year.

How much water is needed for irrigation per day? The volume of rainwater that can be stored is much smaller than the amount that is typically used on each irrigation cycle. The typical total tank volume is 1,050 gallons, of which approximately 900 gallons are usable. This 900 gallons has an equivalent \$3.25 value as potable water. A typical home on Marco Island uses 15 gallons a minute irrigation flow per zone. During a 20-30 minute cycle, each zone would receive about 300-450 gallons. The typical home has six zones, which would need about 1,800 - 2,700 gallons of water per irrigation period. The amount of water in the tank represents about 1/2 to 1/3 of the irrigation needs. The balance of the irrigation water would need to come from the City water system.

How often will my system be filled by rainwater? Over the past 5 years, the average number of rain events sufficient to fill a cistern is 7 events during the 8-month dry season, and 14 events during the wet season. The total number of rain events during the rainy season has averaged over 60 events of various volume each year for 5 years. This indicates that very limited, if any, supplemental irrigation is needed during this wet period. Maintaining the stagnant water "fresh" in the cistern will be a challenge during this wet period. During the balance of the year (8 month dry season), the availability of rain to fill the cistern is limited and unpredictable. Assuming two rain events in a month, each filling the cistern, this would represent a total savings of (2 x 8 month x 900 gallons) 14,400 gallons or a \$52 savings in water.

Will this save money? There is no doubt that collection of even small amounts of water would allow for conservation. The question is, however, whether money can be saved? The decision to convert a septic tank to a cistern must be based on the desire to undertake a water conservation activity. Based on the above assumptions, a typical homeowner may be able to save approximately \$50 - \$60 in water cost annually. This potential savings needs to be compared to the cost of conversion from a septic tank to a cistern and the cost to operate and maintain the pumping system.

What are the estimated costs?

Conversion of the septic tank to a cistern

- Sealing, disinfecting, and testing \$2000
- Installing a pump system \$1000
- Connecting the pump to electricity \$250
- Installing an auto-controller/backflow preventer on the cistern \$600

Retrofitting the irrigation system

- Retrofit the rain gutter/down spouts to cistern \$600
- Reroute potable water to cistern \$250
- Install additional piping to the valve distribution controller \$250

Permits

- A County health department permit \$40
- A City plumbing and electrical permit \$157

\$5147

Reimbursement allowed by grant (estimated) (\$500)

Total Cost to Homeowner \$4647

Who should I contact if I am interested in more information? Contact the City's Public Works Department, Leslie Sanford at 239-389-5002.