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## MEMO

**TO: All Building Officials in Miami-Dade County**

**FROM: Herminio F. González, P.E., M.S., Director  
Building Code Compliance**

A handwritten signature in blue ink, appearing to be "HFG", written over the name in the FROM field.

**DATE: March 2<sup>nd</sup>, 2010**

**SUBJECT: Miami-Dade County Board of Rules and Appeals Approved Rainwater Harvesting Guidelines**

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On February 4, 2010 a joint Sub-Committee comprised of members from both the Broward and Miami-Dade County Board of Rules and Appeals was convened.

The task undertaken by the joint Sub-Committee was to review existing procedures and create clear, concise and understandable guidance to building department officials and others regarding the uniform permitting, design and installation of rainwater harvesting systems. By identifying minimum requirements and introducing standardization, the community's access to innovative and environmentally friendly systems will be enhanced.

The joint Sub-Committee established a set of procedures titled "*Rainwater Harvesting Guidelines*". (See attached). This document was presented to the full Miami-Dade County Board of Rules and Appeals (BORA) and approved for countywide implementation at their February 18, 2010 meeting.

If you have any questions on this information, please contact my staff, Mr. Michael L. Goolsby, RRC at (305) 375-4496.

HFG:MG:jms

**Attachment**

*Delivering Excellence Every Day*

# MIAMI-DADE COUNTY BOARD OF RULES AND APPEALS

## APPROVED

### ***RAINWATER HARVESTING GUIDELINES***

#### **Introduction**

This document has been created to assist owners, designers, contractors and building department personnel with the application of appropriate guidelines when addressing the permitting, installation and inspection of a *rainwater harvesting system (RWS)* for irrigation and other non-potable outdoor domestic uses in one- and two-family dwellings. The *Rainwater Harvesting Guidelines* addresses only rainwater harvesting systems collecting from roof surfaces. The *Rainwater Harvesting Guidelines* are not intended to contemplate all *rainwater harvesting system* designs, systems, materials or components either currently in use or under development. Rather, where little regulatory direction exists, the *Rainwater Harvesting Guidelines* will serve to introduce a level of countywide uniformity and consistency in the design, review, permitting and installation of *rainwater harvesting systems*.

## Section 1.0 Scope

Although beyond the scope of the *Rainwater Harvesting Guidelines*, rainwater may be approved by the Authority Having Jurisdiction for a variety of purposes for both potable and non-potable uses in one- and two-family dwellings, multifamily, commercial, institutional or industrial facilities.

The *Rainwater Harvesting Guidelines* are intended primarily for use to assist owners, designers and building department personnel with the application of appropriate procedures when addressing the installation of a rainwater harvesting system for non-potable use for irrigation and other outdoor domestic uses in one- and two-family dwellings. The *Rainwater Harvesting Guidelines* are applicable to the High-Velocity Hurricane Zones of Broward and Miami-Dade Counties.

Rainwater harvesting systems must be appropriately configured for each individual application and comply with the Florida Building Code, this guideline, and published manufacturer's installation instructions. The provisions of the *Rainwater Harvesting Guidelines* shall only apply to non-potable use for irrigation and other outdoor domestic uses in residential dwellings and shall not apply to any indoor potable or non-potable applications.

## Section 2.0 Definitions

In addition to other definitions used in the Florida Building Code, the following definitions apply to rainwater harvesting systems:

**BACKFLOW PREVENTER** - a device to prevent the reverse flow of water from a potentially polluted source into a potable water supply system.

**CISTERN** - the central storage component of the rainwater harvesting system.

**CONVEYANCE SYSTEM** - the roof, guttering, downspouts and catchment piping that transports rainwater from the roof to the cistern; including debris excluders, roof washers or first flush diverters.

**DEBRIS EXCLUDER** - a device installed on the gutter or downspout system to prevent the accumulation of leaves, needles, or other debris from the first flush into the system.

**FERROCEMENT** - a type of thin wall reinforced concrete construction where usually hydraulic cement is reinforced with layers of continuous and relatively small diameter mesh.

**FIRST FLUSH** - the initial runoff from a roof surface.

**FIRST FLUSH DIVERTER** - a device used to automatically divert the initial rainfall, during a rain event, away from the cistern.

**GREYWATER** - waste discharged from lavatories, bathtubs, showers, clothes washers and laundry trays.

**GUTTER** - a trough or channel along or under the eaves of a roof, to carry off rain water.

**HARVESTED WATER** - rainwater that has been intercepted, collected, and stored for any outdoor non-potable use.

**POTABLE** - water that is safe to drink and fit for domestic purposes without further treatment.

**PUMP OR PRESSURE SYSTEM** - the mechanical device necessary to distribute the harvested rainwater from the cistern to the designated fixtures.

**RAINWATER HARVESTING SYSTEM (RWS)** – a roof, guttering system, conveyance piping, cistern(s), fittings, pumps and other plumbing appurtenances required for and/or used to harvest and distribute rainwater.

**RECLAIMED WATER** – water that has received treatment and is reused after flowing out of a domestic wastewater treatment facility.

**ROOF SURFACE** - the collection surface that rainwater falls on.

**ROOF WASHER** – a device to mechanically remove sediment and debris from captured rainwater before entry into the cistern(s).

**SCREEN** - corrosion resistant wire or other approved mesh having openings in determined sizes.

## **Section 3.0**

### **General Material and Installation Guidelines**

3.1 The requirements and allowances in this portion of the guide apply to one and two family dwellings only.

3.2 All rainwater harvesting systems shall comply with the Florida Building Code. In the event that the *Rainwater Harvesting Guidelines* or the manufacturer's published installation instructions are in conflict with those of the code, the code shall prevail. In the event that the published manufacturer's installation instructions are in conflict with the *Rainwater Harvesting Guidelines* the published manufacturer's installation instructions shall prevail.

3.3 All rainwater harvesting installations shall be designed, constructed and installed to conform to good engineering practice.

3.4 Engineered systems shall be installed per plans and specifications of the architect/engineer of record.

3.5 Rainwater distribution may be accomplished by a gravity system or include the pumps and pipes needed to move water from the storage system to the end use area.

3.6 All systems shall be designed to drain away from footings and foundations to an approved location.

3.7 Harvested rainwater may only be used for outdoor irrigation and other outdoor non-potable purposes.

## **Section 4.0 Catchment Area**

4.1 Rainwater shall only be harvested from roof surfaces.

## **Section 5.0 Conveyance System**

### 5.1 Gutters and Debris Excluder

- (a) Gutters intended to capture rainwater shall be designed and constructed in accordance with the Florida Building Code High Velocity Hurricane Zone Roofing Application Standard 111, Section 12 and shall be sized in accordance with the Florida Building Code, Residential Chapter 44.
- (b) Gutters shall have a continuous grade of a minimum of 1/16" per foot.
- (c) Gutters shall be clean and maintained in suitable working order. Installation of a debris excluder or screening is recommended to prevent large debris from entering the system.
- (d) All downspouts from the gutter to the cistern shall be graded from the roof to the storage tank.

### 5.2 First Flush Diverter/Roof Washer

- (a) Except for first flush diverters, no section of piping shall be installed in a manner to hold water.
- (b) All rainwater harvesting systems shall be equipped with a first flush diverter or roof washer. If not site built, follow the published manufacturer's installation instructions.

- (c) First flush diverters shall divert away from the cistern or storage tank a minimum of the first 1 gallon for each 100 square feet of collection surface generated by the rainwater harvesting system during any rain event.
- (d) Water drained from the first flush diverter/roof washer will be piped away from the cistern or storage tank to an approved location.
- (e) First flush diverter systems shall be equipped with an automatic self-draining device and a clean-out fitting.

## **Section 6.0**

### **Storage**

6.1 Cisterns or storage tanks may be installed above or below grade. Cisterns and storage tanks shall be watertight and be designed to withstand the structural loads required by their shape and size.

6.2 Cisterns or storage tanks may be constructed of fiberglass, polypropylene, metal, concrete, ferrocement, wood or other approved material.

6.3 All cisterns and storage tanks shall be designed and installed to prohibit algae growth.

6.4 Commercially available above-ground and below-ground cisterns or storage tanks shall be installed in compliance with manufacturers' recommendations.

6.5 All site-built and manufactured cisterns shall be approved for their intended purpose and provide adequate access for cleaning and maintenance.

6.6 All openings in cisterns and storage tanks must be completely covered or otherwise screened to prevent mosquito breeding.

6.7 Cisterns and storage tanks shall be equipped with an overflow equal in size to the tank inlet. Overflows shall be directed away from the tank to an approved disposal area.

6.8 Connection of overflow piping to any sanitary or storm/sanitary combined sewer piping is prohibited.

6.9 Above ground cisterns or storage tanks shall be placed on a stable level surface capable of accommodating the size and weight of the full tank.

6.10 Where the installation requires a foundation, the foundation shall comply with the requirements of the Florida Building Code and be flat and capable of supporting the cistern weight when the cistern is full.

