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# **Rainwater Harvesting (RWH)**

**- A valuable technique for providing  
alternate water supplies**



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Austin, Texas

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# What is Rainwater Harvesting?



It is a system to collect and store runoff from rainfall, either for immediate use, or to be used at a later time.



# Types of RWH Systems



- a. Runoff from Land Surfaces**  
(Farm Ponds, Detention Ponds &  
Surface Reservoirs)
  - b. Runoff from Roof Surfaces**
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## What are the components of a RWHS?

- Roof
- Gutter System
- Roof Washer / Pre-filter
- Cistern



## Additional components for indoor use

- Pump
- Filtration - Sediment filters  
Activated carbon filter
- Disinfection - U.V. Light

## When / where would you select RWHS?

- No other water supply is available
- Groundwater is unsatisfactory - Inadequate quantity or poor groundwater quality
- Piped water supply is expensive
- Rainfall received several months of the year
- Country living preferred

# Advantages of Rainwater

- Zero Hardness (Soft Water)
- pH neutral / slightly acidic
- Na-free for salt-free / low sodium diets
- Reduces demand on municipal systems
- Reduces demand on groundwater
- Provides reduction in peak flows for storm water

# Benefits of RWH

- Provides water conservation
- Reduces erosion
- Reduces the overall cost of water for the consumer
- Provides water for landscape irrigation
- Can provide water for indoor use

# How much water can you collect ?

## Thumb Rule

- 600 gallons of water can be collected per inch of rain, from 1,000 sq.ft. of roof area
- $RWH = 0.6 \times \text{Rainfall(in)} \times \text{Roof Area(sqft)}$   
Gallons

# How much water can you collect ?

- For Math Lovers :
- $RWH \text{ (Gallons)} = \text{Collection Efficiency} \times \text{Rainfall(in)}/12 \times \text{Roof Area(sq.ft.)} \times 7.48 \text{ gallons/cu.ft.}$

## Quantity of Harvested Rain Water

- Roof area of 2,500 sq. ft.
- Annual rainfall of 32 inches
- Collection efficiency of 85 percent
- **42,400 gallons of water collected annually or 116 gallons/day, on average.**

# Utilizing Rainwater

- Garden & Landscape Irrigation, livestock
- Toilets
- *After filtration + U.V. light:*
  - Shower / clothes washer
  - Potable use / kitchen
- *Bottled Rainwater (after R.O. process)*









Filterquip

30 days

30 days

OWENS CORNING R-19

CAUTION: REFER TO WARNING & FIRE HAZARD STATEMENT ON PACKAGE

replace uv bulb  
@ 14 months

# Runoff from large areas

- A 20,000 sq.ft. parking lot or commercial/ industrial roof in Austin will provide 360,000 gallons of runoff annually, which is almost 1000 gallons of water/day, on average.







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# Rainwater

Bottled between Heaven and  
Dripping Springs, Texas

## What is the cost of a RWH system?

- Depends on the size of the system
- < \$500 - over \$10,000
- Complete system for a typical home:  
Guttering, 10,000 gallon cistern, roof washer, pump, filters, and UV light  
Approximate cost: \$8,500

# Water Quality Issues

- Landscape Irrigation (No treatment needed)
- Indoor Use (Disinfection needed)
  - Filtration
  - Ultraviolet light

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## State of Texas - Incentives for RWH

### *Statutory Tax Exemption*

Effective since September 1, 2001:

No Sales Tax on Rainwater Harvesting  
equipment or supplies

## Other incentives for RWH

- Hays county, Texas (County-level Rebates)
  - \$100 rebate in application fee w/ RWH
  - Smaller size lots permitted if RWH included
  - No Property tax on the RWH system
  - Link Deposit program to finance RWHS

# City of Austin - RWH Rebates

- Cash rebate of up to **\$450.00** per customer, for installing a RWH system (based on \$0.15/gallon of storage)
- Cash Rebates of \$30.00 per rain barrel

# RWH Systems in Building Design

- Stand-alone cisterns
- Incorporate into ground floor or basement
- Concrete cistern under patio
- Concrete cistern under garage

# Rainwater Harvesting Sites

- President George W. Bush's ranch home, Crawford, Texas
- L. B. Johnson Wildflower Research Center, Austin, Texas
- Numerous homes in Texas
- Supermarkets, Commercial establishments
- TX, WA, OR, AZ, NM, OH, KY, HI, VI...











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# For a RWHS to succeed.....

- Design and build a system that is suitable to local conditions and your needs
- Genuine interest in Conservation & Recycling
- Be able to do minor repairs and properly maintain the system

# RWH Information Resources

- Texas Water Development Board  
[www.twdb.state.tx.us](http://www.twdb.state.tx.us)
- ARCOSA - American Rainwater Catchment Systems Association [www.arcosa-usa.org](http://www.arcosa-usa.org)
- Hari.Krishna@twdb.state.tx.us

*Thank You !!*



Support Rainwater Harvesting !!  
It's the right thing to do .....