

# **RAINWATER HARVESTING EVALUATION COMMITTEE – FINDINGS AND RECOMMENDATIONS**

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## **ABSTRACT**

The Texas Rainwater Harvesting Evaluation Committee (TRHEC) was required to assess the potential for rainwater harvesting in the state, recommend minimum water quality guidelines and treatment methods, and provide recommendations to promote rainwater harvesting in the state.

The TRHEC determined that in most areas of the state, rainfall is sufficient to make rainwater harvesting a reliable and economical source of water even during short-term droughts. The committee report indicated that a considerable amount of water could be generated in the state through rainwater harvesting, particularly in urban and suburban areas. Recommendations were made to consider expanding the state's role in promoting rainwater harvesting. Minimum water quality guidelines and treatment methods were provided in the report for the safe use of harvested rainwater for indoor purposes. With the application of appropriate water quality standards, treatment methods and cross-connection safeguards, the report indicated that rainwater harvesting systems could be used effectively in conjunction with public water systems. The report provided ten recommendations for consideration by the 80<sup>th</sup> Texas Legislature.

At the time this paper was submitted in February 2007, House Bill 4 had just been introduced in the legislature that included some of the recommendations from the TRHEC report. A further update on this bill would be provided during the conference presentation.

## **KEYWORDS**

Rainwater Harvesting, Rainwater Catchment, Rainwater Quality, Roof Runoff, Texas

## **INTRODUCTION**

In 2005, the Texas Legislature passed House Bill 2430 that established the Rainwater Harvesting Evaluation Committee. It consisted of representatives from the Texas Water Development Board, the Texas Commission on Environmental Quality, the Texas Department of State Health Services, and the Conservation and Reuse Division of the American Water Works Association, Texas section.

House Bill 2430 directed the Texas Rainwater Harvesting Evaluation Committee to evaluate the potential for rainwater harvesting in Texas and to recommend:

- (a) minimum water quality guidelines and standards for potable and non-potable indoor uses of rainwater;
- (b) treatment methods for potable and non-potable indoor uses of rainwater;
- (c) ways, such as dual plumbing systems, to use rainwater harvesting systems in conjunction with existing municipal water systems; and
- (d) ways that the state can further promote rainwater harvesting.

The bill required the Texas Commission on Environmental Quality to adopt the recommended standards, and the Texas Rainwater Harvesting Evaluation Committee to submit a report to the Texas Governor, Lieutenant Governor, and Speaker of the Texas House of Representatives by December 1, 2006.

## **METHODOLOGY**

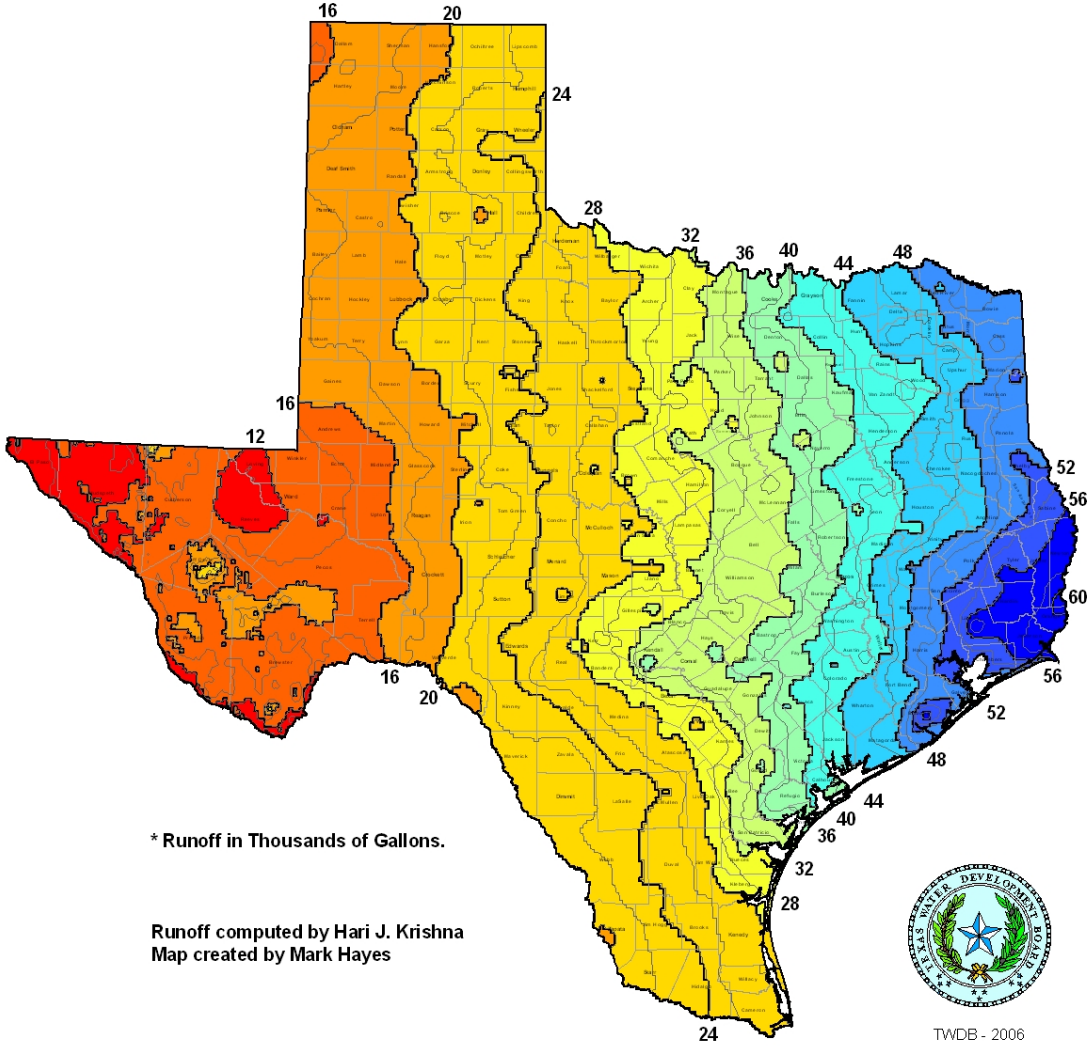
The TRHEC scheduled monthly meetings for one year from September 2005 to August 2006 and a number of resource persons and other individuals with experience in rainwater harvesting provided information to the committee. The TRHEC prepared a draft report in October 2006, and posted it on the Texas Water Development Board website for public comments. The committee received 30 comments and many of them were incorporated into the final report which was submitted to the Texas Governor, Lieutenant Governor, and Speaker of the Texas House of Representatives on December 1, 2006.

## **RAINWATER HARVESTING POTENTIAL**

The TRHEC determined that in most areas of the state, rainfall is sufficient to make rainwater harvesting a reliable and economical source of water even during short-term droughts. Because rainfall is generally harvested in the same location where it will be used, the need for complex and costly distribution systems is eliminated. An estimated 2 billion gallons of water could be generated annually in a large metropolitan area the size of Dallas if 10 percent of the roof area were used to harvest rainwater. Approximately 38 billion gallons of water would be conserved annually if 10 percent of the roof area in Texas could be used for rainwater harvesting.

A map of Texas showing the average annual runoff from 2,000 square feet of roof area was prepared for the report and is shown in Figure 1. Assuming a rainfall collection efficiency of 80 percent, a rainwater harvesting system using 2,000 square feet of roof area will generate approximately 1,000 gallons of water for every inch of rainfall. This mathematical relationship holds true in all regions. For example, in the Austin area where the average annual rainfall is 33 inches, one can expect to collect approximately 33,000 gallons annually from a 2,000 square foot roof.

# Average Annual Runoff from 2,000 sq. ft. of Roof Area



\* Runoff in Thousands of Gallons.

Runoff computed by Hari J. Krishna  
Map created by Mark Hayes



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## **GUIDELINES AND TREATMENT METHODS FOR RAINWATER**

Harvested rainwater may be the only source of water supply for many rural and remote households where no other water supply is available. In urban and suburban environments, rainwater harvesting could help public water systems reduce peak demands and help delay the need for expanding water treatment plants. Rainwater harvesting can reduce storm water runoff, non-point source pollution, and erosion in urban environments. Rainwater is valued for its purity and softness and is generally superior for landscape purposes to most conventional public water supplies. Rainwater harvesting can be used for both indoor and outdoor purposes in residential, commercial, and industrial applications.

The TRHEC developed minimum water quality guidelines and treatment methods for both potable and non-potable uses of rainwater. A copy of the full report that includes these guidelines is posted on the Texas Water Development Board website at <http://www.twdb.state.tx.us/iwt/rainwater/docs/RainwaterCommitteeFinalReport.pdf>

## **RECOMMENDATIONS**

The following recommendations were submitted to the Texas legislature for their consideration, to expand the state's role in promoting rainwater harvesting:

1. Direct new state facilities with 10,000 square feet or greater in roof area (and smaller facilities, when feasible), to incorporate rainwater harvesting systems into their design and construction. Harvested rainwater at these locations may be used for restroom facilities and/or landscape watering.
2. Develop incentive programs to encourage the incorporation of rainwater harvesting systems into the design and construction of new residential, commercial, and industrial facilities in the state.
3. Consider a biennial appropriation of \$500,000 to the Texas Water Development Board to help provide matching grants for rainwater harvesting demonstration projects across the state.
4. Direct the Texas Commission on Environmental Quality and other state agencies to continue to exempt homes that use rainwater harvesting as their sole source of water supply from various water quality regulations that may be required of public water systems. Guidelines are provided in the report to assist homeowners in improving and maintaining the quality of rainwater for potable and non-potable indoor uses.
5. Direct the Texas Commission on Environmental Quality and other state agencies to require those facilities that use both public water supplies and harvested rainwater for indoor purposes to have appropriate cross-connection safeguards, and to use the rainwater only for non-potable indoor purposes.

6. Appropriate \$250,000 to the Texas Department of State Health Services to conduct a public health epidemiologic field and laboratory study to assess the pre- and post-treatment water quality from different types of rainwater harvesting systems in Texas, and to submit a report of findings to the next session of the legislature.
7. Direct Texas cities to enact ordinances requiring their permitting staff and building inspectors to become more knowledgeable about rainwater harvesting systems, and allow such systems in homes and other buildings, when properly designed.
8. Direct a cooperative effort by the Texas Commission on Environmental Quality and the Texas State Board of Plumbing Examiners to develop a certification program for rainwater harvesting system installers, and provide continuing education programs.
9. Direct Texas Cooperative Extension to expand their training and information dissemination programs to include rainwater harvesting for indoor uses.
10. Encourage Texas institutions of higher education and technical colleges to develop curricula and provide instruction on rainwater harvesting technology.

## **LEGISLATIVE UPDATE**

The House Natural Resources Committee scheduled a hearing on February 7, 2007 during which I was asked to provide testimony on the Rainwater Harvesting Evaluation Committee's report. At the time of submitting this paper to Texas Water 2007 for publication (February 14, 2007), House Bill 4 had just been introduced in the Texas Legislature by State Representative Robert Puente, Chair of the House Natural Resources Committee. The bill covers several topics related to water conservation including rainwater harvesting. Recommendations 1, 4, 5 and 10 from the above list are currently included in the draft bill at this stage. An update on the progress of the bill will be provided during the conference presentation.