

# Texas Water Development Board

P.O. Box 13231, 1700 N. Congress Ave.  
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**TO:** Board Members

**FROM:** Robert E. Mace, <sup>RE</sup> Deputy Executive Administrator, Water Science & Conservation  
Carolyn L. Brittin, Deputy Executive Administrator, Water Resources Planning & Information  
Brenner Brown, Management Analyst, Water Science & Conservation <sup>RE FOR CB</sup> BB

**DATE:** August 8, 2012

**SUBJECT:** Contractor Selections for Fiscal Year 2012 Priority Research Topics

## ACTION REQUESTED

Authorize the executive administrator to (a) negotiate and execute up to three contracts on or before February 21, 2013, not to exceed a total amount of \$300,000 for solicited research on the fiscal year 2012 priority research topics; and (b) transfer funds from the Water Assistance Fund to the Research and Planning Fund.

## BACKGROUND

At the May 15, 2012, Texas Water Development Board (TWDB) meeting, staff received authorization to publish a Request for Statements of Qualifications in the *Texas Register* for three priority research topics with total funding not to exceed \$300,000. A Request for Statements of Qualifications was published in the *Texas Register* on May 25, 2012, (see Attachment A) and a total of 14 statements of qualifications were received by July 13, 2012, the designated submittal deadline. Also attached is a compilation of the past five years research projects (see Attachment B).

## KEY ISSUES

The three priority research topics for fiscal year 2012 funding are listed below as they appeared in the Request for Statements of Qualifications. Detailed information on these topics in the Request for Statements of Qualifications is included in Attachment A.

1. Determining cost benefit and demand savings of municipal water conservation efforts (not to exceed \$100,000)
2. A manual to assist utilities in reducing water loss (not to exceed \$100,000)
3. Evaluating the potential for direct potable reuse in Texas (not to exceed \$100,000)

Our Mission :	Board Members		
To provide leadership, planning, financial assistance, information, and education for the conservation and responsible development of water for Texas :	Billy R. Bradford Jr., Chairman	Lewis H. McMahan, Member	Monte Cluck, Member
	Joe M. Crutcher, Vice Chairman	Edward G. Vaughan, Member	F.A. "Rick" Rylander, Member
	Melanie Callahan, Executive Administrator		

TWDB staff reviewed and ranked the statements of qualifications for the three priority research topics. Ranking criteria from 31 TAC 355.5(2) were used and included the description of the proposed research project, responsiveness of the application to the requests for qualifications, approach to organizing and managing the research project, estimated time required to complete the research project, and ability to perform the research and complete the project.

**RECOMMENDATIONS**

The following table includes staff's recommended top ranked applicant for each research topic in priority order.

<b>TOPIC</b>	<b>RECOMMENDED APPLICANT</b>
1. Determining cost benefit and demand savings of municipal water conservation efforts	Watearth, Inc.
2. A manual to assist utilities in reducing water loss	Black and Veatch
3. Evaluating the potential for direct potable reuse in Texas	Alan Plummer Associates, Inc.

TWDB staff recommends approval of the above item.

Summaries of staff recommendations for each of the priority research topics are included in Attachment C. Total funding negotiated for recommended topics will not exceed \$300,000.

If negotiations with the recommended applicant should prove unsuccessful, staff recommends approval to negotiate and execute a contract with the next ranked applicant shown in Attachment C.

*These recommendations have been reviewed by legal counsel and are in compliance with applicable statutes and TWDB rules.*



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Kenneth L. Petersen  
General Counsel

- Attachments:**
- A: Request for Statements of Qualifications (RFQ) in *Texas Register* (May 25, 2012)
  - B: History of Grants for Priority Research Topics from the Research and Planning Fund (2006-2011)
  - C: Summary of Staff Recommendations

1. Estimate overall statewide and regional water conservation savings through the development and use of a “top down” econometric statistical model that incorporates existing data and attempts to control for fixed and random variables.
2. Estimate the provider level of water conservation savings through the development and use of a “bottom up” desktop tool that will evaluate and quantify the effectiveness of individual conservation measures in an overall conservation program.

This completed research study also emphasizes that water providers have a strong desire for desktop tools that provide a consistent and confident measure of actual water savings.

The proposed new research is not duplicative of previous research studies but rather would build upon the previous studies that have identified the need for such a tool and have preliminarily identified key elements and characteristics of an ideal desktop quantification tool.

The goal of this research is to assist municipal water providers in their conservation planning and implementation efforts through the use of a desktop tool. This research will allow for a provider to evaluate and measure the impacts and savings resulting from the implementation of their water conservation strategies, measures, and best management practices.

The desktop tool should assist a water supply provider in the following areas:

- planning for future water supply and infrastructure (water and wastewater) needs;
- evaluating cost-efficiency and water-savings effectiveness among various conservation measures and programs;
- tracking effectiveness and water savings over time; and
- establishing a practice of using consistent methodology in fulfilling reporting.

Common questions for which this research should provide answers:

- “How much water is being saved by individual conservation measures?”
- “Which conservation measures or best management practices are the most cost effective?”; and
- “What are the cost benefit impacts on revenue?”

Deliverables should include the report containing the desktop tool that can be reproduced by printing and also be available via website in accessible format. In addition, all spreadsheets and worksheets contained in the report should be in an unlocked version if a utility chooses to modify the forms to match specific local conditions.

## **2. A Manual to Assist Utilities in Reducing Water Loss (not to exceed \$100,000)**

Addressing water loss is one way a utility can achieve water conservation goals specified in the 2012 State Water Plan or its water conservation plan, especially if that water loss represents the real loss of water. Addressing water loss, real or apparent, is also a way for a utility to maximize income while saving water. Certain utilities are required to submit water loss reports to the TWDB every five years and some are required to submit annual reports. While the American Water Works Association and the International Water Association have developed water loss audit guidelines and the TWDB has a water loss audit manual and an on-line audit worksheet, there is not a manual that provides strategies for how to interpret and verify water loss reports and describes cost effective approaches to verify and ultimately reduce water loss and real water savings due to reducing water loss.

**Request for Statements of Qualifications  
Water Research Study Priority Topics**  
(published in the *Texas Register* May 25, 2012)

The Texas Water Development Board (TWDB) requests the submission of Statements of Qualifications from interested applicants leading to the possible award of contracts for state fiscal year 2012 to conduct water research on three priority topics. The total amount of the grants awarded by the board shall not exceed \$300,000 from the Research and Planning Fund. Rules governing the Research and Planning Fund (31 Texas Administrative Code, Chapter 355) are available upon request from the board, or may be found at the Secretary of State's Internet address: {<http://www.sos.state.tx.us/tac/>}; then sequentially select, "TAC Viewer," "Title 31," "Part 10," "Chapter 355,." and "Subchapter A." Guidelines for responding to this request for Statements of Qualifications, which include an application form and detailed information on the research topic, will be available at the board's website at: [http://www.twdb.texas.gov/about/contract\\_admin/RFQ/](http://www.twdb.texas.gov/about/contract_admin/RFQ/), or will be provided upon request.

**Description of the Research Objectives and Purpose**

Statements of Qualifications are requested for the following three priority research topics.

**1. Determining Cost Benefit and Demand Savings of Municipal Water Conservation Efforts (not to exceed \$100,000)**

As the state's population and economy continues to grow and drought occurs more frequently, municipal water conservation efforts become critical to sustaining our needs. Regional water planning groups are actively identifying and incorporating municipal water conservation as a key strategy to meet future needs. The 2012 State Water Plan highlights water conservation as a significant strategy to meet the state's future water supply needs.

One of the main issues challenging our state's water planning efforts on both a regional level and an individual water provider level is the ability to quantify water conservation savings. For many water providers, large and small, having the tools to measure savings and perform cost benefit analyses allows for improved conservation planning. This type of data also enables providers to perform evaluations of their overall conservation programs and existing conservation measures. Provided with proper and effective tools, municipalities will be able to provide more accurate measurements of water savings. This will assist them in measuring the implementation of their water conservation plans.

Because of the increasingly important role that municipal water conservation will have, there is an increasing focus on the ability to determine revenue impacts and demand savings achieved by municipal conservation efforts. A recent research study funded by the TWDB (*Water Conservation Savings Quantification Study*, BBC Research & Consulting) produced findings and recommendations related to quantifying water conservation savings. The report recommended the following two approaches for quantifying water conservation savings:

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The research study will result in the completion of a manual and other information that can be used by all sizes of retail water providers to further define their actual water losses and the cause of the loss and then suggest practical cost-effective solutions to address the water losses.

Questions that the study should provide guidance on are:

- How can the utility determine the correct amount of water usage and water loss contained in the TWDB water loss audit worksheet?
- Are there appropriate “rule of thumb” estimates for data that the utility cannot measure?
- How can the utility prioritize which form of loss to address first or to postpone?
- How can the utility calculate the benefit/cost ratio of the options to reducing water loss on their system?

The study should include collecting comments, information and responses from a cross section of retail water providers as input to the development of the manual.

Deliverables should include the manual that can be reproduced by printing and also be available via website in accessible format. In addition, all spreadsheets and worksheets contained in the manual should be in unlocked version if a utility chooses to modify the forms to match specific local conditions.

### **3. Evaluating the potential for direct potable reuse in Texas (not to exceed \$100,000)**

Potable reclaimed water projects have historically played an important role in meeting water needs in Texas. Until recently, these projects involved indirect reuse, that is, the use of reclaimed water that is discharged to a stream or reservoir and diverted downstream for subsequent treatment and use. The Texas Commission on Environmental Quality has recently approved a project to provide advanced treatment (including microfiltration, reverse osmosis, and advanced oxidation) to effluent from the City of Big Spring’s wastewater treatment plant. This advanced-treated water will then be blended with other raw water supplies and delivered directly to water treatment facilities. Approval of this project and drought conditions have peaked the interest in the water supply community about the viability of and risks associated with implementing direct potable reuse projects (projects for which advanced-treated reclaimed water is delivered directly to an entity’s raw or treated potable delivery systems without the use of an environmental buffer) or indirect potable reuse projects that limit the use of an environmental buffer to shorten detention times and use larger percent blends of reclaimed water.

In general, the consensus among experts is that potable reuse is a viable and safe water management strategy, if implemented with sufficient barriers, monitoring protocols, and operational controls. However, much of the research and nearly all of the experience to date has focused on implementation of indirect potable reuse projects with significant environmental barriers.

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The proposed project would examine the range and incidence of contaminants of concern for potable reuse in Texas; benchmark water quality goals and treatment strategies for potable reuse projects; identify potential treatment performance indicators; and summarize characteristics (such as costs, energy requirements, residual disposal issues, advantages, and disadvantages) of each treatment strategy for a range of potable reuse implementation scenarios. The end result would be a guidance document summarizing water quality goals and recommended treatment approaches for potable reuse in Texas.

The following questions will be answered by this research:

1. What water quality constituents should be measured to assess the suitability of reclaimed water for potable use in Texas?
2. What are reasonable target levels for these constituents?
3. How many and what kinds of treatment barriers are appropriate for potable reuse projects in Texas?
4. How many and what types of multiple barriers are appropriate for potable reuse projects?
5. What treatment process trains can be used to meet the target levels (question 2)?
6. Which treatment trains provide the best overall balance between protection of human health, product water quality, energy consumption, cost and secondary (energy, environmental) impacts?

This study will benefit water and wastewater utilities throughout the state, as well as elsewhere in the U.S. and abroad. The information developed will help utilities make critical decisions about steps they should take to protect the public, evaluation of the cost and feasibility of implementation, and ultimately whether a potable reuse project is appropriate for their utility.

**Deadline for Submittal, Review Criteria and Contact Person for Additional Information**

Historically Underutilized Businesses (HUBs) are encouraged to submit Statements of Qualifications and/or participate as subcontractors in the water research program. As instructed at Texas Administrative Code (TAC) 2161.252 and TAC 111.14, if the anticipated cost of the study is to exceed \$100,000, the applicant must complete a HUB Subcontracting Plan according to: <http://www.window.state.tx.us/procurement/prog/hub/hub-subcontracting-plan/>.

All applicants must obtain the board's guidelines for responding to the Statements of Qualifications. The guidelines are available at [http://www.twdb.texas.gov/about/contract\\_admin/RFQ/](http://www.twdb.texas.gov/about/contract_admin/RFQ/).

Six double-sided, double-spaced copies and one CD with a copy of the application in .pdf format of a completed Statement of Qualifications must be filed with the board prior to 12:00 p.m. on Friday, July 13, 2012.

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Statements of Qualifications can be directed either in person to Mr. David Carter, Texas Water Development Board, Stephen F. Austin Building, Room 610D, 1700 North Congress Avenue, Austin, Texas; or by mail to Mr. David Carter, Texas Water Development Board, P.O. Box 13231--Capitol Station, Austin, Texas 78711-3231.

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Kenneth L. Petersen  
General Counsel  
Texas Water Development Board

## Attachment B

### History of Grants for Priority Research Topics from the Research and Planning Fund (2006-2011)

No.	Year	Grant Recipient	Amount	Project Description and Accomplishments	Status
1	2006	R.W. Beck, Inc. 0604830618	\$200,000	Socioeconomic Analysis of Major Interbasin Transfers in Texas	Project Complete. Report Available
2	2006	HDR, Freese & Nichols, R.J. Brandes, Inc. 0604830615	\$300,000	Reservoir Site Acquisition Study	Project Complete. Report Available
	<b>2006</b>	<b>SUBTOTAL</b>	<b>\$500,000</b>		
3	2007	TRC/Brandes 0704830751	\$99,381	Effect of small surface water impoundments on water supply reservoirs	Project Complete: Final Report Requested
4	2007	Freese and Nichols 0704830752	\$100,000	Dams and Reservoirs in Texas - an update of Report 126	Project Complete. Report Available
5	2007	URS Corporation 0704830753	\$70,000	Develop a baseline and a GIS tool to identify industrial water reuse potential in Texas.	Project Complete. Report Available
5	2007	Texas Engineering Extension Service 0704830755	\$13,900	Develop tools to improve the State's water availability models	Project Complete. Report Available
6	2007	University of Texas – BEG 0704830756	\$99,493	Provide new analysis of water demand projects for power generation	Project Complete. Report Available
	<b>2007</b>	<b>SUBTOTAL</b>	<b>\$382,774</b>		
7	2008	Alan Plummer Associates, Inc. 0804830853	\$99,670	To assess the use of storm water reuse as a water management strategy.	Project Complete. Report Available
8	2008	CH2M Hill, Inc. 0804830852	\$135,583	Assessment of osmotic mechanisms pairing desalination concentrate and wastewater treatment applications.	Project Complete. Report Available
9	2008	University of Texas at Austin 0804830855	\$61,400	Assessment of the effect of roof material on water quality for rainwater harvesting systems.	Project Complete. Report Available
10	2008	University of Texas at Austin 0904830856	\$99,870	High School Water Resource Education Program	Project Complete. Report Available
11	2008	Intera Incorporated 0904830857	\$100,000	Identification of the major components and types of uncertainty that exist in the planning process relating to water resources.	Project Complete. Report Available
	<b>2008</b>	<b>SUBTOTAL</b>	<b>\$496,523</b>		
12	2009	Alan Plummer Associates Inc. 0904830937	\$246,230	Advancing Water Reuse in Texas	Project Complete. Report Available
13	2009	Texas Tech University 0904830938	\$90,918	Assessment of Global Climate Models for Water Resources Planning Applications	Draft Report Complete. Final Report Pending Review
14	2009	University of Texas – BEG 0904830939	\$182,156	Mining and Oil and Gas Water Use	Project Complete. Report Available

No.	Year	Grant Recipient	Amount	Project Description and Accomplishments	Status
15	2009	Malcolm Pirnie, Inc. 0904830940	\$129,241	An Assessment of Aquifer Storage and Recovery in Texas	Project Complete. Report Available
	<b>2009</b>	<b>SUBTOTAL</b>	<b>\$648,545</b>		
16	2010	HDR Engineering, Inc. 1004831117	\$200,000	Texas Water System Map: The Compilation of a Statewide Geodataset and Digital Maps of Water Service Area Boundaries	Project Complete. Report Available
17	2010	BBC Research and Consulting 1004831118	\$175,000	Standardizing Measures of Long-term Water Conservation Implementation and Short-term Drought Contingency Plan Implementation in Texas (for purposes of reliably tracking, comparing, and aggregating water savings locally and statewide)	Project Complete. Report Available
18	2010	Half Associates, Inc. 1004831119	\$75,000	Identification of Funding Needs for Flood Mitigation Planning and Projects in Texas	Project Complete. Report Available
19	2010	Espey Consultants, Inc. 1004831120	\$150,000	Watershed Protection for Texas Reservoirs: Addressing Sedimentation and Water Quality Risks	Project Complete. Report Available
	<b>2010</b>	<b>SUBTOTAL</b>	<b>\$600,000</b>		
20	2011	HDR Engineering, Inc. 1148321307	\$100,000	Unified costing tool for regional water planning	Final Report due: 12/31/12
21	2011	Kellogg Brown and Root 1148321308	\$99,924	Lifetime cost/benefit assessment of natural channel design versus traditional stormwater infrastructure	Final Report due: 12/31/12
22	2011	URS Corporation 1148321309	\$75,000	Evaluation of Natural Resources Conservation Service flood and sediment control structure conditions to better estimate erosion rates	Final Report due: 12/31/12
23	2011	Carollo Engineers 1148321310	\$193,000	Developing practical alternatives to pilot plant studies for innovative water technologies	Final Report due: 10/24/13
24	2011	Texas State University, San Marcos 1148321311	\$106,710	Establishing a subdivision-scale rainwater harvesting system	Final Report due: 09/30/12
	<b>2011</b>	<b>SUBTOTAL</b>	<b>\$574,634</b>		
	<b>2006 - 2011</b>	<b>GRAND TOTAL</b>	<b>\$3,202,476</b>		

Summary of Staff Recommendation

- 1. TOPIC: Determining cost benefit and demand savings of municipal water conservation efforts.**

**Proposed Project Funding:** The total amount of TWDB grant funds to be allocated for this research topic is not to exceed \$100,000.

**Applicants:** Watearth, Inc.  
 BBC Research and Consulting, Inc.  
 Deloitte

**Staff Recommendation:** Staff recommends that TWDB authorize the executive administrator to negotiate and execute a contract with Watearth, Inc. However, this recommendation is contingent upon: (1) the applicant agreeing to conduct the study for an amount equal to or less than \$100,000 and (2) contract negotiations with the applicant are satisfactory to TWDB staff. If negotiations with the recommended applicant prove unsuccessful, staff recommends approval to negotiate and execute a contract with the next ranked applicant.

ITEM SUMMARY	REGULAR	August 8, 2012
The application and documentation submitted by the applicant for consideration of this financial assistance has been reviewed by Contract Administration and determined to meet funding requirements.	 Signature	David Carter
The Texas Water Development Board is authorized to provide funding for this application, which meets legal requirements of the subject financial assistance program.	 Signature	General Counsel

**Study Duration:** The duration of the study will be negotiated with the contractor by TWDB staff.

**Task and Expense Budget:** Task budget and expense budgets will be negotiated with the contractor by TWDB staff. TWDB's grant contribution for this research contract will not exceed \$100,000.

**Summary of Staff Recommendation**

**2. TOPIC: A manual to assist utilities in reducing water loss.**

**Proposed Project Funding:** The total amount of TWDB grant funds to be allocated for this research topic is not to exceed \$100,000.

**Applicants:** Black and Veatch  
 J. Stowe and Co.  
 Deloitte

**Staff Recommendation:** Staff recommends that TWDB authorize the executive administrator to negotiate and execute a contract with Black and Veatch. However, this recommendation is contingent upon: (1) the applicant agreeing to conduct the study for an amount equal to or less than \$100,000 and (2) contract negotiations with the applicant are satisfactory to TWDB staff. If negotiations with the recommended applicant should prove unsuccessful, staff recommends approval to negotiate and execute a contract with the next ranked applicant.

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**Study Duration:** The duration of the study will be negotiated with the contractor by TWDB staff.

**Task and Expense Budget:** Task budget and expense budgets will be negotiated with the contractor by TWDB staff. TWDB's grant contribution for this research contract will not exceed \$100,000.

### Summary of Staff Recommendation

**3. TOPIC: Evaluating the potential for direct potable reuse in Texas.**

**Proposed Project Funding:** The total amount of TWDB grant funds to be allocated for this research topic is not to exceed \$100,000.

**Applicants:** Alan Plummer Associates, Inc.  
 Malcolm Pirnie  
 MWH  
 Freese and Nichols, Inc.  
 Carollo Engineers  
 CDM Smith  
 Hazen and Sawyer  
 Deloitte

**Staff Recommendation:** Staff recommends that TWDB authorize the executive administrator to negotiate and execute a contract with Alan Plummer Associates, Inc. However, this recommendation is contingent upon: (1) the applicant agreeing to conduct the study for an amount equal to or less than \$100,000 and (2) contract negotiations with the applicant are satisfactory to TWDB staff. If negotiations with the recommended applicant should prove unsuccessful, staff recommends negotiating and executing a contract with the second ranked applicant.

ITEM SUMMARY	REGULAR	August 8, 2012
The application and documentation submitted by the applicant for consideration of this financial assistance has been reviewed by Contract Administration and determined to meet funding requirements.	 Signature	David Carter
The Texas Water Development Board is authorized to provide funding for this application, which meets legal requirements of the subject financial assistance program.	 Signature	General Counsel

**Study Duration:** The duration of the study will be negotiated with the contractor by TWDB staff.

**Task and Expense Budget:** Task budget and expense budgets will be negotiated with the contractor by TWDB staff. TWDB's grant contribution for this research contract will not exceed \$100,000.