

# POST OAK SAVANNAH GROUNDWATER CONSERVATION DISTRICT TEXAS WATERWISE™ PROGRAM SUMMARY REPORT

2017-2018

SUBMITTED BY:



**RESOURCEACTION**  
PROGRAMS

A FRANKLIN ENERGY COMPANY

# Post Oak Savannah Groundwater Conservation District Texas WaterWise™ Program Summary Report 2017-2018

Made possible by:




Submitted by:



A FRANKLIN ENERGY COMPANY

July 2018




*“The students enjoyed installing the  
products with a parent at their house.”*

**Jessica Kreusel, Teacher**

*Caldwell Intermediate School*

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*“The students liked the activities and especially liked getting to take the kits home.”*

**Cindy Widner, Teacher**  
*Thorndale Elementary School*

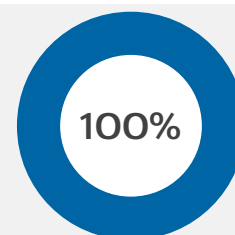
# Executive Summary

Resource Action Programs® (RAP) is pleased to present this Program Summary Report to Post Oak Savannah Groundwater Conservation District, which summarizes the 2017-2018 Post Oak Savannah Groundwater Conservation District Texas WaterWise™ Program. The program was implemented in the Post Oak Savannah Groundwater Conservation District service area in the state of Texas by 570 teachers, students, and their families.

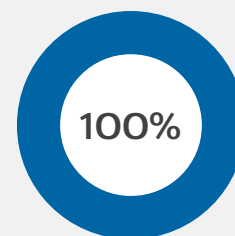
The following pages provide an overview of the program and materials, outline of program implementation, introduction to the program team, description of program enhancements, impact of the program, and summary of results from the home activities. In addition to this information, evaluations, letters, and comments are provided for a glimpse into actual participant feedback. Lastly, projected savings from the individual measures found within the Texas WaterWise Kit are also included.

## Participant Satisfaction

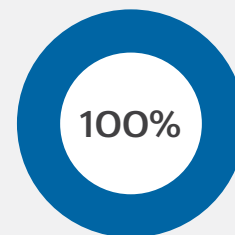
A successful program excites and engages participants. Students, parents, and teachers are asked to evaluate the program and provide personal comments. A sample of the feedback is given in the margin. >



*Teachers who indicated that the program materials were clearly written and well organized.*

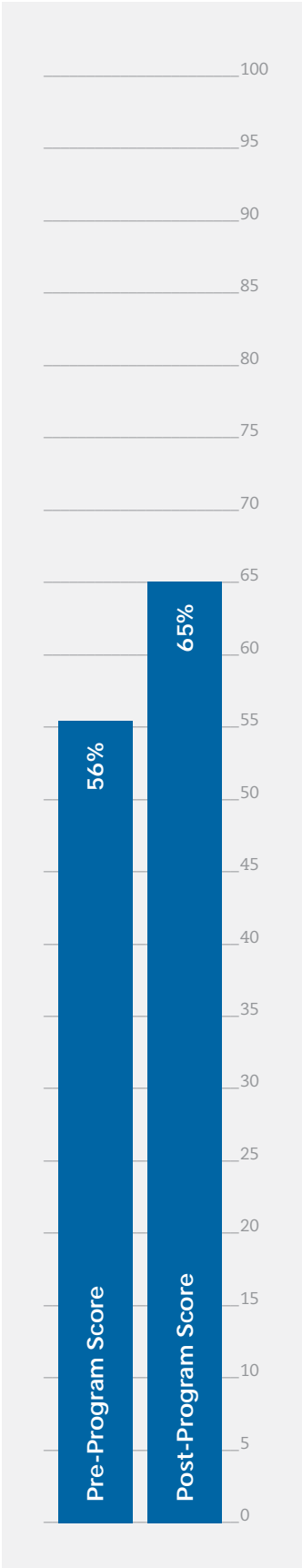


*Teachers who indicated they would recommend this program to other colleagues.*



*Teachers who indicated they would conduct this program again.*

A summary of responses can be found in Appendix D.



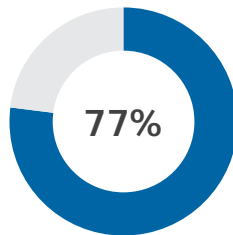
## Knowledge Gained

Identical tests were taken by students prior to the program and again upon program completion to measure knowledge gained. Scores and subject knowledge improved from 56% to 65%.

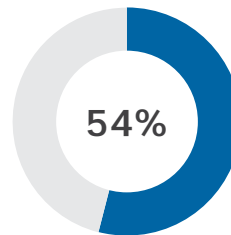
## Data Obtained

Home surveys were performed by students and their families, collecting household demographic and consumption data along with program participation information.

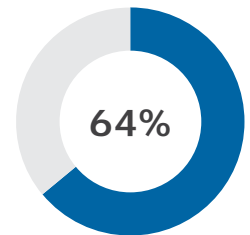
*A summary of responses can be found in Appendix B.*



*Students who reported that their family homes were owned.*



*Students who reported that their water was heated by electricity.*

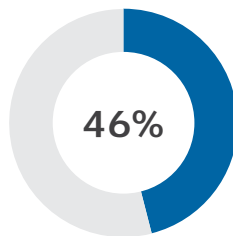


*Students who reported that their home has a dishwasher.*

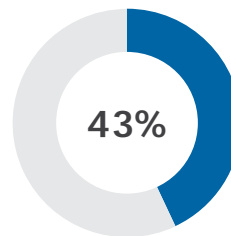
## Measures Installed

Students completed retrofit activities as part of the program, and reported the measures they installed in their own homes.

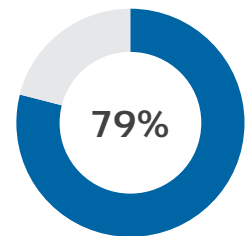
*A summary of responses can be found in Appendix B.*



*Students who reported they installed the High-Efficiency Showerhead.*



*Students who reported they installed the Bathroom Faucet Aerator.*



*Students who reported they utilized the Shower Timer.*

## Water and Energy Savings Results

In addition to educating students and their parents, a primary program goal is to generate cost-effective water and energy savings. Student home surveys not only provided the data used in the savings projections, but also reinforced the learning benefits.


### Projected Resource Savings

*A list of assumptions and formulas used for these calculations can be found in Appendix A.*

PROJECTED ANNUAL SAVINGS		PROJECTED LIFETIME SAVINGS	
4,032,284	gallons of water saved	22,819,005	gallons of water saved
8,667	therms of gas saved	51,362	therms of gas saved
201,148	kWh of electricity saved	1,194,360	kWh of electricity saved
4,032,284	gallons of wastewater saved	22,819,005	gallons of wastewater saved

PROJECTED ANNUAL SAVINGS PER HOME		PROJECTED LIFETIME SAVINGS PER HOME	
7,074	gallons of water saved	40,033	gallons of water saved
15	therms of gas saved	90	therms of gas saved
353	kWh of electricity saved	2,095	kWh of electricity saved
7,074	gallons of wastewater saved	40,033	gallons of wastewater saved





*“Participants and their  
parents/guardians realize  
actual water and energy  
savings within their home,  
benefitting two generations.”*

# Program Overview


The Post Oak Savannah Groundwater Conservation District Texas WaterWise™ Program, a school-based water and energy efficiency education program, is designed to generate immediate and long-term resource savings by bringing interactive, real-world education home to students and their families. The 2017-2018 program was taught in 4th grade throughout the Post Oak Savannah Groundwater Conservation District service area.

The Post Oak Savannah Groundwater Conservation District Texas WaterWise Program team identifies and enrolls students and teachers within the designated service area. The program physically begins with classroom discussions using a Student Guide that provides the foundations of using water and energy efficiently. It is followed by hands-on, creative, problem-solving activities led by the classroom teacher.

All program materials support Texas Essential Knowledge and Skills (TEKS) to allow the program to fit easily into a teacher's existing curriculum and requirements. The participating classroom teachers follow the Teacher Book and lesson plan. Information is given to guide lessons throughout the program in order to satisfy each student's individual needs, whether they are visual, auditory, or kinesthetic learners.

The Texas WaterWise Kit and Student Workbook comprise the take-home portion of the program. Students receive a kit containing high-efficiency measures they use to install within their homes. With the help of their parents/guardians, students install the kit measures and complete a home survey. The act of installing and monitoring new water and energy efficiency devices in their homes allows students to put their learning into practice. Here, participants and their parents/guardians realize actual water and energy savings within their home, benefitting two generations.

A critical element of RAP program design is the use of new knowledge through reporting. At the end of the program, the Post Oak Savannah Groundwater Conservation District program team tabulates all participant responses—including home survey information, teacher responses, student letters, and parent feedback—and generates this Program Summary Report.



*“For more than 25 years, Resource Action Programs (RAP) has designed and implemented Measure-Based Education® programs that inspire change in household energy and water use while delivering significant, measurable resource savings.”*

# Program Materials

Each participant in the Post Oak Savannah Groundwater Conservation District Texas WaterWise™ Program receives classroom materials and water and energy efficiency kits containing high-efficiency measures to perform the program's take-home activities. Program materials for students, parents/guardians, and teachers are outlined below.

## Each Student & Teacher Receives

Student Guide

Student Workbook

Parent Letter/Pledge Form\*

Student Survey Form

Certificate of Achievement

Texas WaterWise Kit Containing:

- High-Efficiency Showerhead\*
- Shower Timer
- Kitchen Faucet Aerator\*
- Bathroom Faucet Aerator\*
- Mini Tape Measure
- Digital Thermometer\*
- Rain/Drip Gauge\*
- Flow Rate Test Bag
- Natural Resources Fact Chart
- Toilet Leak Detector Tablets
- Parent/Guardian Program Evaluation

"GetWise" Wristbands

Program Website Access at [Getwise.org](http://Getwise.org)

Toll-Free HELP Line

## Each Teacher/Classroom Receives

Teacher Book

Step-by-Step Program Checklist

Lesson Plans

Teacher Survey Form

Texas Essential Knowledge and Skills (TEKS)

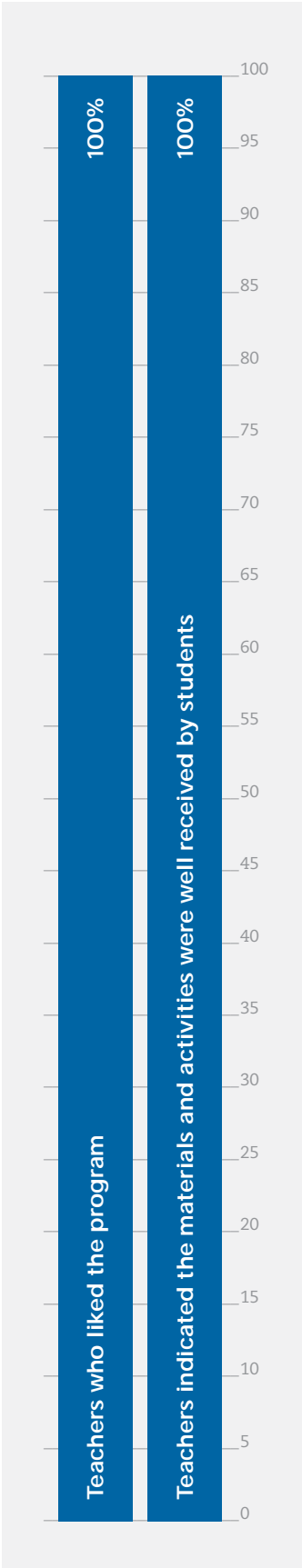
Standards Chart

Pre/Post Test Answer Keys

Texas Water Poster

Self-Addressed Postage-Paid Envelope

*\* Materials / Installation Instructions provided in English and Spanish*




### Custom Branding

In addition to increasing resource awareness and efficiency, the program has been designed to strengthen bonds between Post Oak Savannah Groundwater Conservation District and the community. One of the steps taken to ensure the greatest possible exposure is to feature the Post Oak Savannah Groundwater Conservation District logo throughout each Texas WaterWise Kit. In addition to the kit, the Teacher Survey Form and Parent Letter/Pledge Form also feature Post Oak Savannah Groundwater Conservation District branding.



## Program Materials

**TEACHER SURVEY**  
Your feedback is greatly appreciated.

Program brought to you by:  Date: \_\_\_\_\_  
School: \_\_\_\_\_  
Teacher name: \_\_\_\_\_  
E-mail: \_\_\_\_\_  
Number of Student Survey Forms returned: \_\_\_\_\_  
Teacher Signature: \_\_\_\_\_

Please assess the Texas WaterWise® Program by filling out this Teacher Survey Form. Upon completion, return this form, your Student Survey Forms, student thank-you notes, and a letter from you to Post Oak Savannah Groundwater Conservation District in the postage-paid return envelope provided.

**PLEASE FILL IN THE CIRCLE THAT BEST DESCRIBES YOUR OPINION:**

- The materials were clearly written and well organized.  
☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree
- The products in the kit were easy for students to use.  
☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree
- Which classroom activities did you complete? (Mark all that apply)  
☐ Save Time ☐ Save Water ☐ Save Energy ☐ Save Money ☐ Save Space ☐ Save Time
- I have a computer and access to the Internet in my classroom.  
☐ Yes ☐ No
- Students indicated that their parents supported the program.  
☐ Yes ☐ No
- Would you conduct this program again?  
☐ Yes ☐ No
- Would you recommend this program to other colleagues?  
☐ Yes ☐ No
- Would you be willing to participate in a Teacher Focus Group?  
☐ Yes ☐ No
- What did students like best about the program? Explain.
- What did you like best about the program? Explain.
- What would you change about the program? Explain.

**GET YOUR \$50.00 MINI GRANT!**  
Return the following by May 15, 2018:  
 • 80% of Student Survey Forms  
 • This Teacher Survey Form  
 • Student Thank-you notes  
 • A letter from you

Teacher Survey Form

**PARENTS**

**CONGRATULATIONS!**

Your child has been selected to participate in the exciting Texas WaterWise® Program. This program is designed to teach your child the value of water and energy and help you save money on your utility bills. The program is being provided by **Post Oak Savannah Groundwater Conservation District** at NO COST to you. Your child's school or the school district.

For example, \$15.00 in energy savings per year is a lot of money! And you can reduce those costs with just a few simple changes. Your child will be given a kit which includes LED's, high quality water and energy saving products that contain the latest efficiency technology.

To participate, please do the following:

- Have your child take to you about the ways they would like to save water and energy and reward them from your kit. Note, we have more products than what you will be able to use.
- Send all of the kit items to you and your child can do most of the activities in less than 15 minutes. If you need additional help, call the kit items, call 1-888-GET-WISE.
- Sign with your child to ensure all of the safety questions in the Student Workbook.

The Texas WaterWise® Program will be an easy and fun experience for your entire family. Not only will it allow your child the chance to be a leader in your home and community, but also your family will certainly benefit from lower utility bills. Thank you for your participation.

**LET'S GET STARTED!**

**SIGN** + **INSTALL** = **SAVE**

**STUDENTS**

**PLEDGE FORM**

Name: \_\_\_\_\_ Date: \_\_\_\_\_  
School: \_\_\_\_\_ Teacher: \_\_\_\_\_

Pledging to save water and energy is an important step in conserving our natural resources and reducing your family's water and energy bills. As you go through the program, you will learn why it is important to conserve water and energy. The program will teach you simple ways to save water, energy and money. Taking the pledge shows that you want to be more water and energy efficient in home.

**TAKE THE PLEDGE**



We have helped you not by sending your kit. All you have to do is complete the first pledge and energy efficient at home. Remember, it's a promise.

- I pledge to do my part by turning off all of the items in my kit to save water and energy as well as reduce my family's utility bills.
- \_\_\_\_\_
- \_\_\_\_\_

**SIGN THE PLEDGE**

I have written and received my pledge above and by signing this form I promise to use water and energy more efficiently at home.

Student Signature: \_\_\_\_\_ Parent Signature: \_\_\_\_\_

This kit was made possible by:  

QUESTIONS? • 1-888-GET-WISE • [www.getwise.org](http://www.getwise.org)

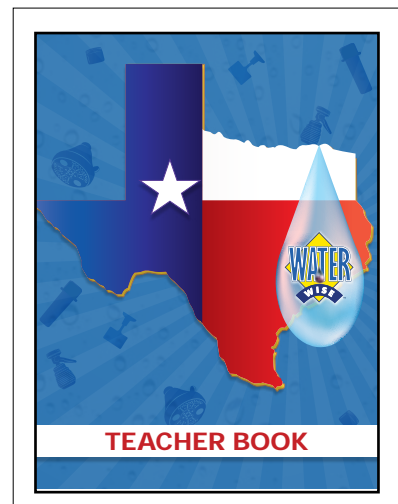
Parent Letter/Pledge Form



Student Guide



Student Workbook



Teacher Book




Certificate of Achievement



Kit Box



Kit Label



*“I like the way the program is organized.  
It has tons of great information.”*

**Cindy Widner, Teacher**  
*Thorndale Elementary School*

# Program Implementation

The 2017-2018 Post Oak Savannah Groundwater Conservation District Texas WaterWise™ Program followed this comprehensive implementation schedule:

1. Identification of Texas Essential Knowledge and Skills (TEKS)
2. Curriculum development and refinement (completed annually)
3. Curriculum correlation to Texas Essential Knowledge and Skills (TEKS)
4. Materials modification to incorporate Post Oak Savannah Groundwater Conservation District branding
5. Incentive program development
6. Teacher/school identification - with Post Oak Savannah Groundwater Conservation District approval
7. Teacher outreach and program introduction
8. Teachers enrolled in the program individually
9. Implementation dates scheduled with teachers
10. Program material delivered to coincide with desired implementation date
11. Delivery confirmation
12. Periodic contact to ensure implementation and teacher satisfaction
13. Program completion incentive offered
14. Results collection
15. Program completion incentive delivered to qualifying teachers
16. Thank you cards sent to participating teachers
17. Data analysis
18. Program Summary Report generated and distributed

Participating teachers are free to implement the program to coincide with their lesson plans and class schedules. Appendix C provides a comprehensive list of classrooms in grade 4 that participated during the 2017-2018 school year.



For more than 25 years, Resource Action Programs (RAP) has designed and implemented Measure-Based Education® programs that inspire change in household energy and water use while delivering significant, measurable resource savings. All RAP programs feature a proven blend of innovative education, comprehensive implementation services, and hands-on activities to put efficiency knowledge to work in students' homes.

RAP has a strong reputation for providing a high level of client service as part of a wide range of energy efficiency education solutions for utilities, municipalities, states, community agencies, corporations, and more. In 2013, RAP was the only conservation services provider honored by the American Council for an Energy-Efficient Economy (ACEEE) and the Alliance for Water Efficiency (AWE) as one of 12 top programs that provides sustained achievement. RAP was honored for market penetration, innovative design, and its ability to achieve substantial/sustained energy and water savings.



# Program Team

RAP implements nearly 300 individual programs that serve more than 650,000 households each year. All-inclusive program delivery occurs in its 80,000 square-foot Nevada Program Center where implementation teams and support departments work together to provide:

- 1:1 teacher support
- Curriculum development
- Customized materials
- Data tracking and reporting
- Water and energy efficiency measures
- Graphic and web design
- Kit assembly
- Marketing communications
- Shipping
- Printing
- Program management
- Participant enrollment
- Warehousing

## The Implementation Team


For the Post Oak Savannah Groundwater Conservation District Texas WaterWise™ Program, RAP assigned a specific implementation team to Post Oak Savannah Groundwater Conservation District made up of a PMP®-designated Program Manager, CEM®-designated energy analyst, graphic designer, outreach personnel, educator, and administrative staff. This team immersed themselves into the Post Oak Savannah

Groundwater Conservation District brand, and handled all program implementation for Post Oak Savannah Groundwater Conservation District. Post Oak Savannah Groundwater Conservation District also received the benefit of fully staffed support departments, which worked with the implementation team to define success for Post Oak Savannah Groundwater Conservation District. These departments include education, marketing, information technology, and warehouse/logistics.

## Continuous Improvement

In addition to successful implementation of the Post Oak Savannah Groundwater Conservation District Texas WaterWise Program, RAP engages in continuous program improvement, as well as enhancements to educational materials, with modifications based on emerging technology, industry trends, and EM&V findings.

As part of this plan, RAP utilizes an extensive network of educators for program feedback. This feedback ensures that educational components meet the changing needs of educators, keep information relevant to students, and, in turn, provide increased water and energy literacy amongst program participants.



*“Upon completion of the program, participating families are asked to complete a home survey to assess their resource use, verify product installation, provide demographic information, and measure participation rates.”*

# Program Impact

The Post Oak Savannah Groundwater Conservation District Texas WaterWise™ Program has had a significant impact within the community. As illustrated below, the program successfully educated participants about water and energy efficiency while generating resource savings through the installation of efficiency measures in homes. Home survey information was collected to track projected savings and provide household consumption and demographic data. Program evaluations and comments were collected from teachers, students, and parents.

## A. Home Survey

Upon completion of the program, participating families are asked to complete a home survey to assess their resource use, verify product installation, provide demographic information, and measure participation rates. A few samples of questions asked are below while a complete summary of all responses is included in the appendices.

**Did you work with your family on this program?**

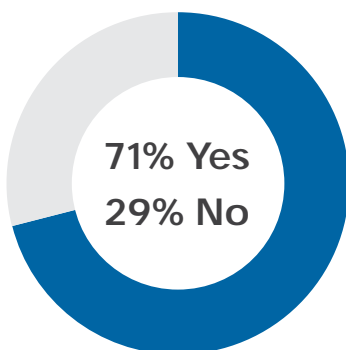
**Yes - 71%**

**Did your family change the way they use water?**

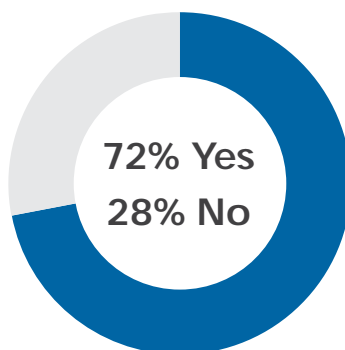
**Yes - 72%**

**Did your family install the new Kitchen Faucet Aerator**

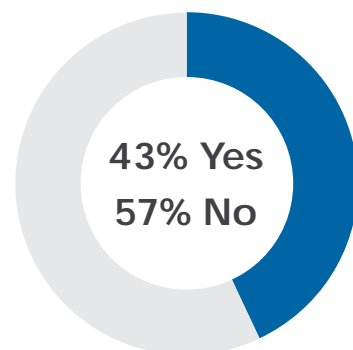
**Yes - 43%**



*Students who indicated they worked with their family on this program.*



*Students who indicated their family changed the way they use water.*

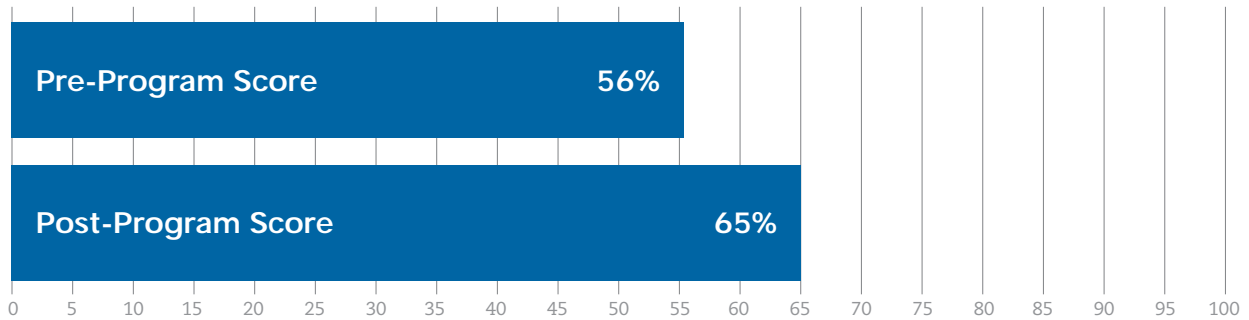


*Students who indicated they installed the Kitchen Faucet Aerator.*

## B. Pre-Program and Post-Program Tests

Students were asked to complete a 10-question test before the program was introduced and then again after it was completed to determine the knowledge gained through the program. The average student answered 5.6 of the questions correctly prior to being involved in the program and then improved to answer 6.5 of the questions correctly following participation.

**Scores improved from 56% to 65%.**



## C. Home Activities

As part of the program, parents and students installed resource efficiency measures in their homes. They also measured the pre-existing devices to calculate savings that they generated. Using the family habits collected from the home survey as the basis for this calculation, 570 households are expected to save the following resource totals. Savings from these actions and new behaviors will continue for many years to come.

### Projected Resource Savings

*A list of assumptions and formulas used for these calculations can be found in Appendix A.*

Number of Participants:	570	
	Annual	Lifetime
Projected reduction from Showerhead retrofit:	853,731	8,537,312 gallons
Product Life: 10 years	2,579	25,793 therms
	60,594	605,937 kWh
Projected reduction from Shower Timer installation:	537,024	1,074,048 gallons
Product Life: 2 years	1,622	3,245 therms
	38,115	76,231 kWh
Projected reduction from Kitchen Faucet Aerator retrofit:	966,440	4,832,202 gallons
Product Life: 5 years	2,160	10,798 therms
	49,547	247,737 kWh
Projected reduction from Bathroom Faucet Aerator retrofit:	1,031,661	5,158,304 gallons
Product Life: 5 years	2,305	11,526 therms
	52,891	264,455 kWh
Projected reduction from the Toilet Leak repair:	377,645	1,888,224 gallons
Estimated Useful Life (EUL): 5 years		
Projected reduction from the Faucet Leak repair:	265,783	1,328,914 gallons
Estimated Useful Life (EUL): 5 years		
<b>TOTAL PROJECTED PROGRAM SAVINGS:</b>	<b>4,032,284</b>	<b>22,819,005</b> gallons
	<b>8,667</b>	<b>51,362</b> therms
	<b>201,148</b>	<b>1,194,360</b> kWh
<b>TOTAL PROJECTED PROGRAM SAVINGS PER HOUSEHOLD:</b>	<b>7,074</b>	<b>40,033</b> gallons
	<b>15</b>	<b>90</b> therms
	<b>353</b>	<b>2,095</b> kWh

## D. Teacher Program Evaluation

Program improvements are based on participant feedback received. One of the types of feedback obtained is from participating teachers via a Teacher Program Evaluation Form. They are asked to evaluate relevant aspects of the program and each response is reviewed for pertinent information. The following is feedback from the Teacher Program Evaluation for the Post Oak Savannah Groundwater Conservation District Texas WaterWise Program.

### Teacher Response

*(A summary of responses can be found in Appendix D)*

**100%** of participating teachers indicated they would conduct the program again given the opportunity.

**100%** of participating teachers indicated they would recommend the program to their colleagues.

### What did students like best about the program? Explain.

*"They liked the water kit and being able to install and use the kit at home."*

Abigail Garcia, Cameron Elementary School

*"Saving money."*

Terica Fraction, Cameron Elementary School

*"They enjoyed installing the products with a parent at their house."*

Jessica Kreusel, Caldwell Intermediate School

*"Working with parents."*

Shelly Tucker, Caldwell Intermediate School

*"They liked the water kits. It made them excited."*

Megan Strange, Gause Elementary School

*"The students liked the activities and especially liked getting to take the kits home."*

Cindy Widner, Thorndale Elementary School

## Teacher Response

*(A summary of responses can be found in Appendix D)*

### What did you like best about the program? Explain.

*"I like that it gives me activities to do with the students."*

Abigail Garcia, Cameron Elementary School

*"Giving knowledge about something kids typically don't think about."*

Terica Fraction, Cameron Elementary School

*"The student guide and reading and discussing it with my students."*

Jessica Kreusel, Caldwell Intermediate School

*"Ease."*

Shelly Tucker, Caldwell Intermediate School

*"I liked the hands on activity ideas."*

Megan Strange, Gause Elementary School

*"I like the way the program is organized. It has tons of great information."*

Cindy Widner, Thorndale Elementary School

### What would you change about the program? Explain.

*"I believe it's fine the way it is."*

Abigail Garcia, Cameron Elementary School

*"Nothing."*

Terica Fraction, Cameron Elementary School

*"Better activity for the water treatment section."*

Shelly Tucker, Caldwell Intermediate School

*"The surveys should be able to be completed all at school."*

Megan Strange, Gause Elementary School

*"I would not change anything."*

Cindy Widner, Thorndale Elementary School



## E. Teacher Letter

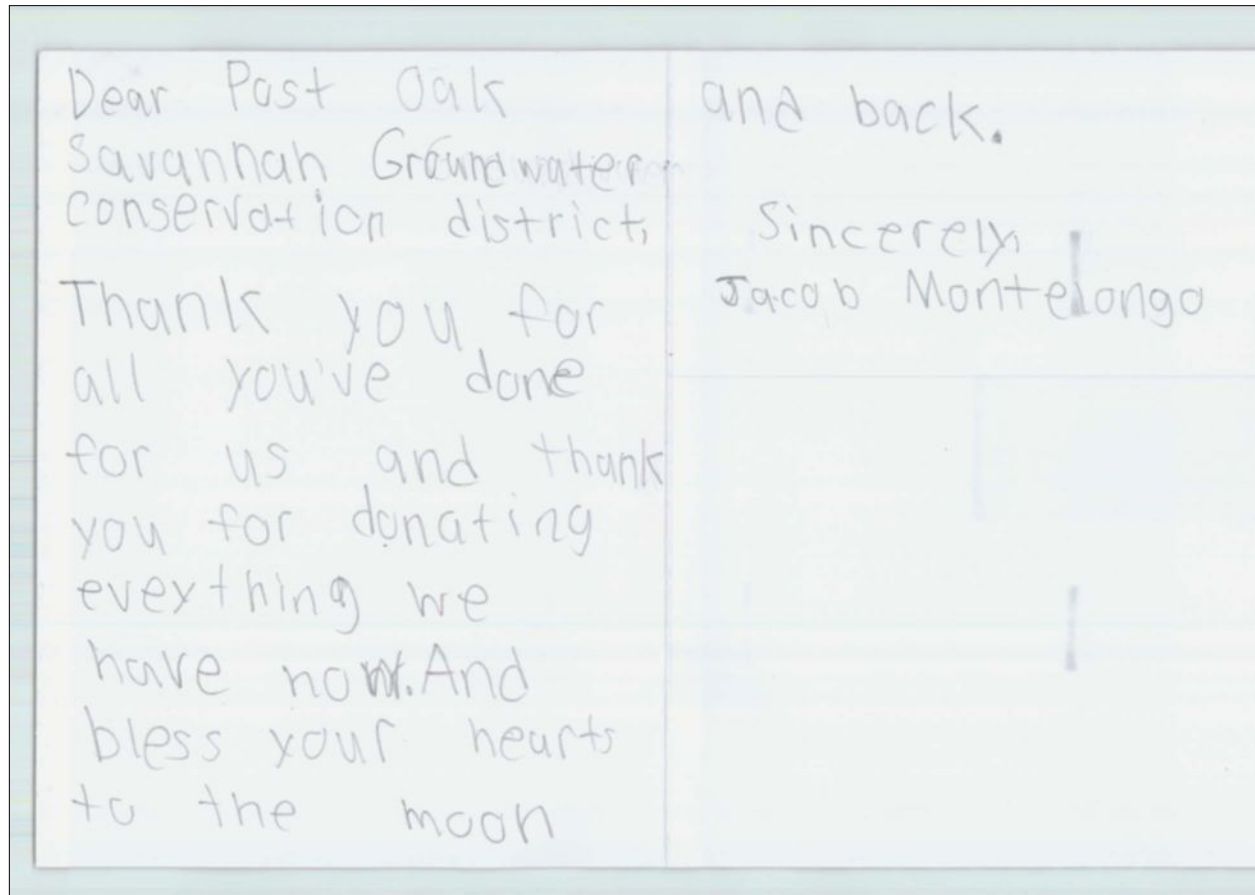
Water Wise -


Thanks for providing hands on experiences for students across Texas. Any activities that involve parents are always a plus! Your program is easily implemented + very exciting + beneficial!

Thanks

Shelly Tucker

## F. Student Letter





*“As a teacher, what I liked best about the program was giving knowledge about something kids typically don’t think about.”*

**Terica Fraction, Teacher**

*Cameron Elementary School*

# Appendices

## Appendix A

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## Projected Savings from Showerhead Retrofit

### Showerhead retrofit inputs and assumptions:

Average household size:	5.12	people <sup>1</sup>
Average number of full bathrooms per home:	1.83	full bathrooms per home <sup>1</sup>
% of water heated by gas:	45.99%	<sup>1</sup>
% of water heated by electricity:	54.01%	<sup>1</sup>
Installation / participation rate of:	46.46%	<sup>1</sup>
Average showerhead has a flow rate of:	1.82	gallons per minute <sup>1</sup>
Retrofit showerhead has flow rate of:	1.24	gallons per minute <sup>1</sup>
Number of participants:	570	<sup>1</sup>
Shower duration:	8.20	minutes per day <sup>2</sup>
Showers per day per person:	0.67	showers per day <sup>2</sup>
Product life:	10.00	years <sup>3</sup>

### Projected Water Savings:

Showerhead retrofit projects an <b>annual</b> reduction of:	853,731	gallons <sup>4</sup>
Showerhead retrofit projects a <b>lifetime</b> reduction of:	8,537,312	gallons <sup>5</sup>

### Projected Electricity Savings:

Showerhead retrofit projects an <b>annual</b> reduction of:	60,594	kWh <sup>2,6</sup>
Showerhead retrofit projects a <b>lifetime</b> reduction of:	605,937	kWh <sup>2,7</sup>

### Projected Natural Gas Savings:

Showerhead retrofit projects an <b>annual</b> reduction of:	2,579	therms <sup>2,8</sup>
Showerhead retrofit projects a <b>lifetime</b> reduction of:	25,793	therms <sup>2,9</sup>

<sup>1</sup> Data reported by program participants.

<sup>2</sup> (March 4, 2010). EPA WaterSense® Specification for Showerheads Supporting Statement. Retrieved from [http://www.epa.gov/WaterSense/docs/showerheads\\_nalsuppstat508.pdf](http://www.epa.gov/WaterSense/docs/showerheads_nalsuppstat508.pdf)

<sup>3</sup> Provided by manufacturer.

<sup>4</sup> [(Average Household Size x Shower Duration x Showers per Day per Person) ÷ Average Number of Full Bathrooms per Home] x (Average Showerhead Flow Rate - Retrofit Showerhead Flow Rate) x Number of Participants x Installation Rate x 365 days

<sup>5</sup> [(Average Household Size x Shower Duration x Showers per Day per Person) ÷ Average Number of Full Bathrooms per Home] x (Average Showerhead Flow Rate - Retrofit Showerhead Flow Rate) x Number of Participants x Installation Rate x 365 days x Product Life

<sup>6</sup> Projected Annual Water Savings x Percent of Water that is Hot Water x 0.18 kWh/gal x % of Water Heated by Electricity

<sup>7</sup> Projected Annual Water Savings x Percent of Water that is Hot Water x 0.18 kWh/gal x % of Water Heated by Electricity x Product Life

<sup>8</sup> Projected Annual Water Savings x Percent of Water that is Hot Water x 0.009 Therms/gal x % of Water Heated by Natural Gas

<sup>9</sup> Projected Annual Water Savings x Percent of Water that is Hot Water x 0.009 Therms/gal x % of Water Heated by Natural Gas x Product Life

## Projected Savings from Shower Timer Installation

### Shower Timer inputs and assumptions:

% of water heated by gas:	45.99%	<sup>1</sup>
% of water heated by electricity:	54.01%	<sup>1</sup>
Installation / participation rate of Shower Timer:	78.74%	<sup>1</sup>
Average showerhead has a flow rate of:	1.82	gallons per minute <sup>1</sup>
Retrofit showerhead has flow rate of:	1.24	gallons per minute <sup>1</sup>
Number of participants:	570	<sup>1</sup>
Average of baseline and retrofit showerhead flow rate:	1.53	gallons per minute <sup>2</sup>
Shower duration:	8.20	minutes per day <sup>3</sup>
Shower Timer duration:	5.00	minutes per day <sup>4</sup>
Showers per capita per day (SPCD):	0.67	showers per day <sup>3</sup>
Percent of water that is hot water:	73%	<sup>5</sup>
Days per year:	365.00	days
Product life:	2.00	years <sup>5</sup>

### Projected Water Savings:

Shower Timer installation projects an <b>annual</b> reduction of:	537,024	gallons <sup>6</sup>
Shower Timer installation projects a <b>lifetime</b> reduction of:	1,074,048	gallons <sup>7</sup>

### Projected Electricity Savings:

Shower Timer installation projects an <b>annual</b> reduction of:	38,115	kWh <sup>8</sup>
Shower Timer installation projects a <b>lifetime</b> reduction of:	76,231	kWh <sup>9</sup>

### Projected Natural Gas Savings:

Shower Timer installation projects an <b>annual</b> reduction of:	1,622	therms <sup>10</sup>
Shower Timer installation projects a <b>lifetime</b> reduction of:	3,245	therms <sup>11</sup>

<sup>1</sup> Data Reported by Program Participants.

<sup>2</sup> Average of the baseline GPM and the retrofit GPM

<sup>3</sup> (March 4, 2010). EPA WaterSense® Specification for Showerheads Supporting Statement. Retrieved from [http://www.epa.gov/WaterSense/docs/showerheads\\_nalsuppstat508.pdf](http://www.epa.gov/WaterSense/docs/showerheads_nalsuppstat508.pdf)

<sup>4</sup> Provided by manufacturer.

<sup>5</sup> Navigant EM&V Report for Super Savers Program in Illinois PY7

<sup>6</sup> Annual water savings = Water Flow (Average of baseline and retrofit) × (Baseline Shower duration - Shower Timer duration) × Participants × Days per year × SPCD × Installation Rate of Shower Timer

<sup>7</sup> Projected Annual Water Savings x Product Life

<sup>8</sup> Projected Annual Water Savings x Percent of Water that is Hot Water x 0.18 kWh/gal x % of Water Heated by Electricity x Participants

<sup>9</sup> Projected Annual Water Savings x Percent of Water that is Hot Water x 0.18 kWh/gal x % of Water Heated by Electricity x Product Life x Participants

<sup>10</sup> Projected Annual Water Savings x Percent of Water that is Hot Water x 0.009 Therms/gal x % of Water Heated by Natural Gas x Participants

<sup>11</sup> Projected Annual Water Savings x Percent of Water that is Hot Water x 0.009 Therms/gal x % of Water Heated by Natural Gas x Product Life x Participants

## Projected Savings from Bathroom Faucet Aerator Retrofit

### Bathroom Faucet Aerator retrofit inputs and assumptions:

Average household size:	5.12	people <sup>1</sup>
% of water heated by gas:	45.99%	<sup>1</sup>
% of water heated by electricity:	54.01%	<sup>1</sup>
Installation / participation rate of:	43.08%	<sup>1</sup>
Number of participants:	570	<sup>1</sup>
Average bathroom faucet aerator has a flow rate of:	2.50	gallons per minute <sup>2</sup>
Retrofit bathroom faucet aerator has flow rate of:	1.00	gallons per minute <sup>3</sup>
Product life:	5.00	years <sup>3</sup>
Length of use (per family member):	1.50	minutes per day <sup>4</sup>

### Projected Water Savings:

Bathroom Faucet Aerator retrofit projects an <b>annual</b> reduction of:	1,031,661	gallons <sup>5</sup>
Bathroom Faucet Aerator retrofit projects a <b>lifetime</b> reduction of:	5,158,304	gallons <sup>6</sup>

### Projected Electricity Savings:

Bathroom Faucet Aerator retrofit projects an <b>annual</b> reduction of:	52,891	kWh <sup>4,7</sup>
Bathroom Faucet Aerator retrofit projects a <b>lifetime</b> reduction of:	264,455	kWh <sup>4,8</sup>

### Projected Natural Gas Savings:

Bathroom Faucet Aerator retrofit projects an <b>annual</b> reduction of:	2,305	therms <sup>4,9</sup>
Bathroom Faucet Aerator retrofit projects a <b>lifetime</b> reduction of:	11,526	therms <sup>4,10</sup>

<sup>1</sup> Data reported by program participants.

<sup>2</sup> Vickers, Amy (2002). Water Use and Conservation. Amherst, MA: WaterPlow Press.

<sup>3</sup> Provided by manufacturer.

<sup>4</sup> Quantec, LLC. (2008). Impact of Flipping the Switch: Evaluating the Effectiveness of Low Income Residential Energy Education Programs. Portland: Drakos, Jamie et al.

<sup>5</sup> [Length of use (each family member) x Average household size] x [Average Bathroom Aerator flow rate – Retrofit Bathroom Aerator flow rate] x Number of participants x Installation rate x 365 days

<sup>6</sup> [Length of use (each family member) x Average household size] x [Average Bathroom Aerator flow rate – Retrofit Bathroom Aerator flow rate] x Number of participants x Installation rate x 365 days x Product Life

<sup>7</sup> Projected Annual Water Savings x [(8.33lbs. / gallon x 35°F T) ÷ (3413 x water heater efficiency (0.90))] x % of Water Heated by Electricity

<sup>8</sup> Projected Lifetime Water Savings x [(8.33lbs. / gallon x 35°F T) ÷ (3413 x water heater efficiency (0.90))] x % of Water Heated by Electricity

<sup>9</sup> Projected Annual Water Savings x [(8.33lbs. / gallon x 35°F T) ÷ (100,000 x water heater efficiency (0.60))] x % of Water Heated by Natural Gas

<sup>10</sup> Projected Lifetime Water Savings x [(8.33lbs. / gallon x 35°F T) ÷ (100,000 x water heater efficiency (0.60))] x % of Water Heated by Natural Gas



## Projected Savings from Kitchen Faucet Aerator Retrofit

### Kitchen Faucet Aerator retrofit inputs and assumptions:

Average household size:	5.12	people <sup>1</sup>
% of homes with a dishwasher:	64.29%	<sup>1</sup>
% of homes without a dishwasher:	35.71%	<sup>1</sup>
% of water heated by gas:	45.99%	<sup>1</sup>
% of water heated by electricity:	54.01%	<sup>1</sup>
Installation / participation rate of:	43.18%	<sup>1</sup>
Number of participants:	570	<sup>1</sup>
Average kitchen faucet aerator has a flow rate of:	2.50	gallons per minute <sup>2</sup>
Retrofit kitchen faucet aerator has flow rate of:	1.50	gallons per minute <sup>3</sup>
Product life:	5.00	years <sup>3</sup>
Length of use without dishwasher:	15.00	minutes per day <sup>4</sup>
Length of use without dishwasher (each family member):	1.00	minute per day <sup>4</sup>
Length of use with dishwasher:	3.00	minutes per day <sup>4</sup>
Length of use with dishwasher (each family member):	0.50	minutes per day <sup>4</sup>

### Projected Water Savings:

Kitchen Faucet Aerator retrofit projects an <b>annual</b> reduction of:	966,440	gallons <sup>5</sup>
Kitchen Faucet Aerator retrofit projects a <b>lifetime</b> reduction of:	4,832,202	gallons <sup>6</sup>

### Projected Electricity Savings:

Kitchen Faucet Aerator retrofit projects an <b>annual</b> reduction of:	49,547	kWh <sup>4,7</sup>
Kitchen Faucet Aerator retrofit projects a <b>lifetime</b> reduction of:	247,737	kWh <sup>4,8</sup>

### Projected Natural Gas Savings:

Kitchen Faucet Aerator retrofit projects an <b>annual</b> reduction of:	2,160	therms <sup>4,9</sup>
Kitchen Faucet Aerator retrofit projects a <b>lifetime</b> reduction of:	10,798	therms <sup>4,10</sup>

<sup>1</sup> Data reported by program participants.

<sup>2</sup> Vickers, Amy (2002). Water Use and Conservation. Amherst, MA: WaterFlow Press.

<sup>3</sup> Provided by manufacturer.

<sup>4</sup> Quantec, LLC. (2008). Impact of Flipping the Switch: Evaluating the Effectiveness of Low Income Residential Energy Education Programs. Portland: Drakos, Jamie et al.

<sup>5</sup> {Length of use without dishwasher + [Average household size x Length of use without dishwasher (each family member)] x % of homes without dishwasher} + {Length of use with dishwasher + [Average household size x Length of use with dishwasher (each family member)] x % of homes with dishwasher} x [Average Kitchen Aerator flow rate - Retrofit Kitchen Aerator flow rate] x Number of participants x Installation rate x 365 days

<sup>6</sup> {Length of use without dishwasher + [Average household size x Length of use without dishwasher (each family member)] x % of homes without dishwasher} + {Length of use with dishwasher + [Average household size x Length of use with dishwasher (each family member)] x % of homes with dishwasher} x [Average Kitchen Aerator flow rate - Retrofit Kitchen Aerator flow rate] x Number of participants x Installation rate x 365 days x Product Life

<sup>7</sup> Projected Annual Water Savings x [(8.33lbs. / gallon x 35°F T) ÷ (3413 x water heater efficiency (0.90))] x % of Water Heated by Electricity

<sup>8</sup> Projected Lifetime Water Savings x [(8.33lbs. / gallon x 35°F T) ÷ (3413 x water heater efficiency (0.90))] x % of Water Heated by Electricity

<sup>9</sup> Projected Annual Water Savings x [(8.33lbs. / gallon x 35°F T) ÷ (100,000 x water heater efficiency (0.60))] x % of Water Heated by Natural Gas

<sup>10</sup> Projected Lifetime Water Savings x [(8.33lbs. / gallon x 35°F T) ÷ (100,000 x water heater efficiency (0.60))] x % of Water Heated by Natural Gas



## Projected Savings from Toilet Leak Repair

### Toilet Leak repair inputs and assumptions:

Number of participants:	570 <sup>1</sup>
% of toilets leaking:	15.75% <sup>1</sup>
% of toilets where the leak was repaired:	33.33% <sup>1</sup>
Number of homes with fixed toilet leaks:	29.92 <sup>1</sup>
USGS gallons lost per year per leak:	12,621.29 GPY per leak <sup>2</sup>
EUL:	5 years <sup>3</sup>

### Projected Water Savings:

Toilet Leak repair projects an <b>annual</b> reduction of:	377,645 gallons/year <sup>4</sup>
Toilet Leak repair projects a <b>lifetime</b> reduction of:	1,888,224 gallons <sup>5</sup>

<sup>1</sup> Data reported by program participants.

<sup>2</sup> <http://www.epa.gov/WaterSense/pubs/leak.html>

<sup>3</sup> Estimation of years before toilet begins leaking again. Frontier and Associates

<sup>4</sup> USGS gallons lost per year per leak x 1 leak per home x Number of homes with fixed toilet leaks

<sup>5</sup> USGS gallons lost per year per leak x 1 leak per home x Number of homes with fixed toilet leaks x Product Life

## Projected Savings from Faucet Leak Repair

### Faucet Leak repair inputs and assumptions:

Number of participants:	570	<sup>1</sup>
Number of faucets leaking:	52	<sup>1</sup>
% of all faucets where the leak was repaired:	26.37%	<sup>1</sup>
Number of drips per minute:	1.00	<sup>2</sup>
Number of drips per day:	1,440	<sup>2</sup>
Number of drips per gallon:	15,140	<sup>2</sup>
Number of gallons per year:	34.00	GPY per leak <sup>2</sup>
EUL:	5	years <sup>3</sup>

### Projected Water Savings:

Faucet Leak repair projects an <b>annual</b> reduction of:	265,783	gallons/year <sup>4</sup>
Faucet Leak repair projects a <b>lifetime</b> reduction of:	1,328,914	gallons <sup>5</sup>

<sup>1</sup> Data reported by program participants.

<sup>2</sup> <http://water.usgs.gov/edu/activity-drip.html>

<sup>3</sup> Estimation of years before faucet begins leaking again. Frontier and Associates

<sup>4</sup> USGS gallons lost per year per leak x 1 leak per home x Number of homes with fixed faucet leaks

<sup>5</sup> USGS gallons lost per year per leak x 1 leak per home x Number of homes with fixed faucet leaks x Product Life

## Home Check-Up

<b>1 What type of home do you live in?</b>		
Single family home (mobile)		24%
Single family home (manufactured)		6%
Single family home (built)		54%
Multi-family Home (2-4 units)		7%
Multi-family home (5-20 units)		7%
Multi-family home (21+ units)		2%
<b>2 Was your home built before 1992?</b>		
Yes		42%
No		58%
<b>3 Is your home owned or rented?</b>		
Owned		77%
Rented		23%
<b>4 How many kids live in your home (age 0-17)?</b>		
1		10%
2		33%
3		29%
4		17%
5+		11%
<b>5 How many adults live in your home (age 18+)?</b>		
1		11%
2		68%
3		12%
4		4%
5+		6%
<b>6 Does your home have programmable outdoor sprinkler system?</b>		
Yes		21%
No		79%
<b>7 Does your home have a dishwasher?</b>		
Yes		64%
No		36%
<b>8 How many half-bathrooms are in your home?</b>		
0		71%
1		14%
2		11%
3		2%
4+		1%

*Due to rounding of numbers, percentages may not add up to 100%*

## Home Check-Up

(continued)

**9** How many full bathrooms are in your home?

1	35%
2	53%
3	9%
4	4%
5+	1%

**10** How many toilets are in your home?

1	26%
2	54%
3	15%
4	4%
5+	1%

**11** How is your water heated?

Natural Gas	46%
Electricity	54%

Due to rounding of numbers, percentages may not add up to 100%

## Home Activities

<b>1 What is the flow rate of your old showerhead?</b>		
0 - 1.0 gpm		18%
1.1 - 1.5 gpm		15%
1.6 - 2.0 gpm		30%
2.1 - 2.5 gpm		20%
2.6 - 3.0 gpm		9%
3.1+ gpm		8%
<b>2 Did your family install the new High-Efficiency Showerhead?</b>		
Yes		46%
No		54%
<b>3 If you answered "yes" to question 2, what is the flow rate of your new showerhead?</b>		
0 - 1.0 gpm		26%
1.1 - 1.5 gpm		35%
1.6 - 1.75 gpm		40%
<b>4 Did you use the Shower Timer?</b>		
Yes		79%
No		21%
<b>5 Did your family install the new Kitchen Faucet Aerator?</b>		
Yes		43%
No		57%
<b>6 Did your family install the new Bathroom Faucet Aerator?</b>		
Yes		43%
No		57%
<b>7 Did your family lower your water heater settings?</b>		
Yes		40%
No		60%
<b>8 Was your toilet leaking?</b>		
Yes		16%
No		84%
<b>9 If you answered "yes" to question 8, was the toilet leak repaired?</b>		
Yes		33%
No		67%

*Due to rounding of numbers, percentages may not add up to 100%*

## Home Activities

(continued)

**10** How many faucets are leaking?

0	75%
1	16%
2	5%
3	2%
4	1%
5+	1%

**11** If you answered that there were faucets leaking in question 10, were the faucet leaks repaired?

Yes, all of them	26%
Yes, some of them	13%
None	60%

**12** Did your family adjust the outdoor watering schedule?

Yes	31%
No	69%

**13** Did you work with your family on this program?

Yes	71%
No	29%

**14** Did your family change the way they use water?

Yes	72%
No	28%

**15** How would you rate the WaterWise ☐ Program?

Great	44%
Pretty good	33%
Okay	15%
Not so good	8%

Due to rounding of numbers, percentages may not add up to 100%

## Participant List

SCHOOL	TEACHER	T	S
Caldwell Intermediate School	Shelly Tucker	1	42
Caldwell Intermediate School	Jessica Kreusel	1	22
Caldwell Intermediate School	Brett Baxter	1	4
Caldwell Intermediate School	Lisa Hahn	1	42
Cameron Elementary School	Shelly Akin	1	37
Cameron Elementary School	Abigail Garcia	1	20
Cameron Elementary School	Terica Fraction	1	18
Cameron Elementary School	Angela McAnulty	1	39
Cameron Elementary School	Ashton Miller	1	36
Gause Elementary School	Megan Strange	1	24
Milano Elementary School	D’Nita Broussard	1	35
Rockdale Intermediate School	Emily Niemtschk	1	20
Rockdale Intermediate School	Karen Muston	1	20
Rockdale Intermediate School	Tammy Ammons	1	20
Rockdale Intermediate School	Renee Knesek	1	20
Rockdale Intermediate School	Megan Vance	1	20
Rockdale Intermediate School	Natalie Sibole	1	20
Snook Elementary School	Debbie Lander	1	41
Somerville Elementary School	Diane Ehler	1	41
Thorndale Elementary School	Cindy Widner	1	29
TOTALS		20	550
TOTAL PARTICIPANTS		570	

Note: “T” represents number of teachers and “S” represents number of students

## Teacher Program Evaluation Data

<b>1</b> The materials were clearly written and well organized.		
Strongly Agree		83%
Agree		17%
Disagree		0%
Strongly Disagree		0%
<b>2</b> The products in the Kit were easy for students to use.		
Strongly Agree		50%
Agree		50%
Disagree		0%
Strongly Disagree		0%
<b>3</b> I have access to the internet in my classroom.		
Yes		100%
No		0%
<b>4</b> Students indicated that their parents supported the program.		
Yes		67%
No		33%
<b>5</b> Would you conduct this program again?		
Yes		100%
No		0%
<b>6</b> Would you recommend this program to other colleagues?		
Yes		100%
No		0%

*Due to rounding of numbers, percentages may not add up to 100%*





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