



# Children's Water Festival

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## Middle Rio Grande Children's Water Festival 2004 Report on Outcomes

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# Middle Rio Grande Children's Water Festival 2004

## Report on Outcomes

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The organizers of the Middle Rio Grande Children's Water Festival 2004 are committed to implementing an event that delivers effective and meaningful water education. We are determined to seek methods to verify that specific outcomes have been achieved. So we have set performance targets for the Water Festival that focus on learning and also on action - changing behavior!

### Goals and Performance Targets

Educating students and teachers about water and its relationship to human and other natural resources in a fun and interactive atmosphere continues to be the primary goal of the Children's Water Festival. The Water Festival program is designed to help students understand that water is an essential and limited resource; to present water related facts, concepts and values through fun, hands-on learning activities; and to demonstrate actions that each of us can take to protect and conserve our precious water.

#### Performance Targets

- ◆ Students demonstrate that they can answer the Big Water Questions:
  1. Why is water so important to life?
  2. What is the water cycle and why is it important?
  3. What is a watershed and how does it function?
  4. How do trees, plants, animals, people, soils, and water depend on each other?
  5. How do our actions affect water quality?
  6. How much water does my family use?
- ◆ Students take action to conserve water and protect water quality.
- ◆ Students urge their family and friends to take action to conserve water and protect water quality.
- ◆ Teachers continue water education in the classroom using the resources and concepts learned at the Teacher Workshop and Festival.
- ◆ Teachers utilize new resources, adopt expanded curricula and modify teaching methods.
- ◆ Teachers take action to conserve water and protect water quality.

How will we verify that the performance targets were reached? Three methods were used:

Water Conservation Before and After - We developed questions about water use at home and asked teachers to ask their students to complete these questions and return the questionnaires to us. After the Festival, we asked the same teachers to ask their students to complete another set of questions to see if their water use at home has changed.

Evaluations - Teachers, students, volunteers and presenters were asked to complete evaluation surveys. In addition each activity was observed at least once per day by an Activity Evaluator, but most activities were observed more than once on a single day.

Classroom Visits - We made visits to 12 classrooms, to ask what everyone learned at the Water Festival and discuss the Big Water Questions. We used the Enviroscape to demonstrate how water pollution happens and what we can do about it.

The analysis of the results of these three verification methods are presented in this report. Based on these results, it is possible to conclude that all of the performance targets were reached by many of the student and teacher participants and that some participants actually reached most of the targets.

The quantity of water that will be conserved by participants and their families was calculated based on the analysis of the Before and After Water Conservation Surveys. The outcomes for water conservation and protection of water quality that will be achieved in the coming months and years can only be approximated but we believe that the value of the water education that is delivered by the Children's Water Festival is significant and essential.

## Before and After Water Use Surveys Analysis and Conclusions

Before and After Water Use Surveys were administered in order to estimate the actual amount of water conservation that resulted from the Water Festival. Teachers were asked to send home a water use survey before the Water Festival, and to send home another survey after the Water Festival. The survey requires each student to enlist the help of an adult to complete the responses, which, in itself, emphasizes to families the importance of water conservation and actions that they can take to conserve water.

### Conclusions

Based on the survey results that follow, water savings of at least 5 gallons per person per day can be estimated from shorter showers and turning off the water while brushing

	Students	Family*	Students	Family*
Participants	Gallons/Day	Gallons/Day	Gallons/Year	Gallons/Year
1018	5090	20360	1,857,850	7,431,400
* Family of 4, assuming conservation of 5 gal/day/family member				

teeth. Therefore, the water conservation that resulted is shown in the table below: This number does not include additional savings from future decisions about landscaping or other household water conservation efforts that the students may influence. Even where the survey does not show demonstrable water savings on some questions, the numbers clearly show that many families are conserving water, both before and after the Water Festival.

### Analysis

The survey instruments, presented below, have the total number of responses for each question, and the percentage of the total responses for that question. The percentages are helpful in comparing answers from before and after the Water Festival because the number of respondents for the “Before” survey is greater (approx. 360), compared to the number of respondents for the “After” survey (approx. 190).

#### *Indoor Water Use*

The survey begins with questions about shower habits. First we asked whether the student’s home has a low-flow or regular shower head. Then we asked students to time their own and a family member’s shower. The times are computed according to the water flow for the shower head (2.5 gpm for low flow, 5.0 gpm for regular) to assess the water usage for showers. Some students have reported numbers of minutes exceeding the hot-water capacity of most water heaters, leading us to believe that they may have been timing baths instead of showers. Future surveys will ask for clarification on this. For this survey, answers that reported more than 60 minutes in the shower were discarded.

Shower times decreased, in most cases, after the Water Festival. For the student respondent, usage with a low-flow shower head was 25.8 gallons before and 20.4 gallons after, and with a regular shower head it was 52.2 gallons per shower before and 54.2 gallons after. For the respondent’s family member, usage with a low-flow shower

head was 30.1 gallons before and 20.5 gallons after, and with a regular shower head it was 60 gallons per shower before and 48.15 gallons after the Water Festival.

Next we asked students about turning off the water when brushing teeth. There was an increase in students and family members turning off the water when they brushed their teeth. This is not surprising, as it is one of the easiest concepts to understand and take action.

There was no increase in number of low-flow toilets. The data seem to show a decrease, although that is not likely to be the case. The small number of drippy faucets remained approximately the same after the Water Festival.

We continued with a question about whether the dishwasher or washing machine is full when run. The data show a small decrease from 85% to 75% affirmative responses after the festival. Still, both the before and after numbers were high, demonstrating awareness of the efficiency of running the machines when full. As mentioned earlier, the “don’t know” answers after the festival seem to reduce the number of definitive answers.

#### *Outdoor Water Use*

We asked about adding or removing grass from the family’s landscape but due to the timing, this question was not realistic. Changes to landscaping may occur in the spring as a result of the student’s learning experience at the Water Festival. We will modify this question to, “Have you spoken to your family about removing grass or planting native plants in your yard?”

More than 80% of families are watering their lawns in the morning or evening, with some still watering midday. Apparently, local prohibitions to midday watering and conservation education efforts are showing success.

Native plants in the student’s yard are reported to have decreased after the festival, although half of the families report having some native species planted. Rain barrel use increased.

The last question on the survey asked how cars were washed at home. Many students reported both before and after of the use of a bucket rather than a hose. Many responded that they used a car wash, and that option should be available for respondents in future surveys.

#### **Lessons We Learned**

Some of the survey questions will be modified, as noted above, for future evaluations in order to be more certain that the students understand the question. We also observed that the students in some of the classes have not taken the surveys home. Rather, the survey has been administered in class by the teacher. There was a greater proportion of “After” surveys not taken home than “Before” surveys. We noted that these surveys are not creased or crinkled -- too neat to have been taken home! The effect of this is that the proportion of definitive answers (yes or no) is relatively smaller and the proportion of “don’t know” answers is relatively larger, making comparisons before and after the Festival less clear. We decided to retain these surveys’ results in the totals, but to make it clearer to teachers in the future that the surveys are to be sent home with the students in order to have more accurate results.

## Before the Water Festival

### How Much Water Does My Family Use?

#### ***Indoors***

##### Shower Time

Does your shower have a Low-Flow shower head?

Yes 164 45%                      No 104 29%                      Not sure 96 26%

How many minutes does it take for a shower?

✓ Ask a family member to time you when you take a shower.

My Shower took 10.32 minutes with a low-flow shower head.

My Shower took 10.44 minutes without a low-flow shower head.

My Shower took 11.00 minutes with an unknown shower head.

✓ Now, time a family member when they take a shower.

His/Her Shower took 12.02 minutes with a low-flow shower head.

His/Her Shower took 12.00 minutes without a low-flow shower head.

His/Her Shower took 12.14 minutes with an unknown shower head.

##### Brushing Teeth

Do you turn off the water when you brush your teeth?

Yes 319 88%                      No 41 11%                      Not sure 4 1%

Does everyone in your house turn off the water when they brush their teeth?

Yes 209 60%                      No 112 32%                      Not sure 28 8%

##### Flushing the Toilet

Is the toilet in your home a Low-Flow Toilet?

(Look between the tank and the seat. If it tells the number of gallons, like 1.6gpf, it is a Low-Flow Toilet.)

Yes 186 51%                      No 97 26%                      Not sure 84 23%

##### Drip, Drip, Drip

Look around the house for dripping faucets. Did you find a drip?

Yes 50 14%                      No 296 82%                      Not sure 15 4%

Washing clothes and dishes

Does everyone in your family make sure the dishwasher and washing machine are full before running them?

Yes 306 85%                      No 24 7%                      Not sure 31 9%

### ***Outdoors***

In the yard

Do you have a lawn?

Yes 243 69%                      No 111 31%                      Not sure 0 0%

If so, what time of day is the lawn watered?

Morning 156 54%                      Midday 45 16%                      Night 87 30%

Do you have native plants in your yard?

Yes 187 59%                      No 88 28%                      Not sure 43 14%

Do you have a rain barrel in your yard?

Yes 34 10%                      No 273 80%                      Not sure 33 10%

Car Washing

When your family washes the car at home, does the hose run all the time or do you use a bucket of water?

Hose 55 17%                      Bucket 233 71%                      Not sure 38 12%

## After the Water Festival

### How Much Water Does My Family Use?

#### ***Indoors***

##### Shower Time

Does your shower have a Low-Flow shower head?

Yes 84 44%                      No 48 25%                      Not sure 59 31%

How many minutes does it take for a shower?

✓ Ask a family member to time you when you take a shower.

My Shower took 8.14 minutes with a low-flow shower head.

My Shower took 10.84 minutes without a low-flow shower head.

My Shower took 8.45 minutes with an unknown shower head.

✓ Now, time a family member when they take a shower.

His/Her Shower took 8.22 minutes with a low-flow shower head.

His/Her Shower took 9.63 minutes without a low-flow shower head.

His/Her Shower took 12.75 minutes with an unknown shower head.

##### Brushing Teeth

Do you turn off the water when you brush your teeth?

Yes 175 93%                      No 13 7%                      Not sure 1 <1%

Does everyone in your house turn off the water when they brush their teeth?

Yes 127 67%                      No 38 20%                      Not sure 24 13%

##### Flushing the Toilet

Is the toilet in your home a Low-Flow Toilet?

(Look between the tank and the seat. If it tells the number of gallons, like 1.6 gpf, it is a Low-Flow Toilet.)

Yes 84 44%                      No 48 25%                      Not sure 59 31%

##### Drip, Drip, Drip

Look around the house for dripping faucets. Did you find a drip?

Yes 29 15%                      No 147 78%                      Not sure 13 7%



Washing clothes and dishes

Does everyone in your family make sure the dishwasher and washing machine are full before running them?

Yes 142 75%                      No 15 8%                      Not sure 33 17%

### ***Outdoors***

In the Yard

Have you added grass to your lawn since the Water Festival?

Yes 24 16%                      No 105 72%                      Not sure 17 12%

Have you removed grass from your lawn since the Water Festival?

Yes 15 9%                      No 131 81%                      Not sure 15 9%

What time of day is your lawn watered?

Morning 94 54%                      Midday 31 18%                      Night 49 28%

Do you have native plants in your yard?

Yes 86 48%                      No 65 37%                      Not sure 27 15%

Do you have a rain barrel in your yard?

Yes 25 14%                      No 128 72%                      Not sure 24 14%

Car Washing

When your family washes the car at home, does the hose run all the time or do you use a bucket of water?

Hose 46 25%                      Bucket 119 64%                      Not sure 22 12%

## Presenter Evaluations

**Activities Presented: 23**

**Presenter Evaluations Returned: 14**

0-BioVan and Home Sweet Home	0-The Incredible Journey
0-Birds, Rivers and the Web of Life	0-The Long Haul
0-Drink the Rio Grande	0-The Rolling River
0-Edible Aquifer	0-There Otter Be Otters
0-Every Drop Counts	3-Thrifty Plants in a Thirsty Land
1-Exploring Coral Reefs	0-Water and Life
1-Groundwater Treasure	4-Water Jeopardy (3 submitted are Rio Grande High School students)
0-Insectopia	0-Water Olympics
1-Water Bugs	2-Weather or Not (two presenters submitted one evaluation)
1-Our Cottonwood Forest	1-Why the River Runs Brown
0-Rio Grande Bosque Water Cycle	
0-Runoff and Erosion	
0-Swimmin' in the Rio Grande	

**Evaluate your activity. Was it appropriate for the age group? Did it work effectively in the time frame? Did it involved student participation, and if so did they engage in the activity?**

- In all cases, activities were considered appropriate for the age group, the presenters worked effectively in the time frame, and students were engaged in the activities.
  - “All students had a blast.”
  - “It was appropriate. Sometimes we had time left over. Students did get involved and they had fun with the activity.”
  - “It was appropriate for age group but we will cut back on number of points we are trying to get across. Some groups can’t process the info in such little time. Each year we find that one or more groups are late to our session, making it very difficult to rotate the entire class through the three hands-on activities.”

**What could you do to improve activity for next year?**

- Presenters could improve their activities in a few minor ways, such as by keeping a better watch on the time, by making their activities more hand-on, and by refining their activity so that there is sufficient time to get all the points across.
  - “Have more questions if you have time left over.”
  - “Cut back on number of points and info we aim to get across to the students.”
  - “More hands-on involvement.”

**What could Festival organizers to do make your job easier? Were you satisfied with the room set-up? Did you have everything you requested?**

- Room set-up was fine, except for one or two minor issues. Festival organizers could make presenters' jobs easier by notifying presenters as soon as possible of group "no shows". Two important and appreciated jobs of Festival staff were checking in on presenters to make sure everything is fine, and keeping presenters stay on time.

"Everything was fine, we were satisfied with set-up and got everything we needed."

"We would like to know immediately if a group is not showing up. No one came to tell us. The sessions must be kept on time to be fair to the other presenters. Tables were dirty but we cleaned them."

"It was great. Someone checked in on me regularly to make sure I had everything I needed. I loved the fact that we could drop off props and they were taken to our rooms before going to find a parking space."

**What general comments about the Festival did you hear from teachers, students, parents?**

- Comments about the Festival from teachers, students and parents to the presenters were extremely positive. There were no negative comments.  
"Teachers said that the students had a great time and the students said the same thing."

"Several teachers were thrilled that this is being done. Some of the parents indicated they'd learned a lot."

"Teachers seemed to be very appreciative of all the presentations."

**What did you enjoy most about the CWF?**

- Presenters overwhelmingly said that they enjoyed the direct involvement with the kids.

"Kids were so fun."

"The curiosity and insight of the children was very gratifying."

"Enjoyed interacting with the kids. The groups are always very different even though they are all fourth graders."

**Do you have any suggestions for improvident the Festival as a whole?**

- Suggestions for improving the Festival as a whole included these comments:  
"Have lunch in the same building as the festival."  
"Offer hot cocoa or plain water as an option (coffee and items to eat were very generous). Also, recycling bins for cans on lower level of convention center."  
"This year it seemed as though the time was not kept as well. More groups were late. Also, we really rely on the "helpers" in each group to watch our time. A five minute warning would be appreciated. It is really nice when the kids wear name tags with big letters. Not all groups had name tags."

**Do you have any ideas for new activities?**

- Ideas for new activities include:
  - “Having space outside, like they do in Farmington’s Water Fair. It allows more activities such as the BioVan, Fire Fighters, Rolling River.”
  - “Maybe the Native Plant Society, Xeriscape Club or a second Master Gardener group would be willing to dream up a presentation. What about a 4-H club?”
  - “Imagine what life in Albuquerque would be like if we do not preserve water.”
  - “Seed adaptations that help save water.”

**Would you be interested in presenting at the 2005 MRG Children’s Water Festival?**

- All but one presenter is interested in returning to next year’s MRG Children’s Water Festival. This presenter would rather be an evaluator.

**Overall rating:**

- 5-Wonderful
- 9-Really good

**Additional Comments and suggestions:**

- Additional comments and suggestions include:
  - “Great organization. Water Festival Guides helping with moving kids should continue.”
  - “I think that the festival is a great way to better teach students about how valuable and important our water is.”

## **Students Evaluations**

**Number of Schools: 18**

**Number of Students: 1018**

**Schools and number of students returning evaluations: 10 classes (8 schools) totaling 170 student evaluations.**

- S.Y. Jackson Elem., Ms. Moyer (22 evals.) – attended The Long Haul, Rio Grande Bosque Water Cycle, Swimmin' in the Rio Grande, Every Drop Counts, Insectopia
- Zia Elem., David Wilson (15 evals.) – attended Water Olympics, Insectopia, There Otter Be Otters, Why the River Runs Brown, Water Olympics, Exploring Coral Reefs
- Hubert Humphrey Elem., Lanelle Taylor (24 evals.) – attended the Rio Grande Bosque Water Cycle, Jeopardy, Swimmin' in the Rio Grande, The Long Haul, Every Drop Counts
- Double Eagle Elem., K. Stearns (21 evals.) – attended Water Jeopardy, The Long Haul, Edible Aquifer, Exploring Coral Reefs, Bosque Water Cycle
- Double Eagle Elem., Mrs. Middleton (21 evals.) – attended Why the River Runs Brown, Water Olympics, Edible Aquifer, Exploring Coral Reefs, Insectopia
- Vista Grande Elem., Mrs. Ware (11 evals.) – attended The Long Haul, Drink the Rio Grande, Insectopia, Bosque Water Cycle, Swimmin' in the Rio Grande
- Martin Luther King, Jr. Elem., Mrs. Marquez (19 evals.) – attended Water and Life, Weather or Not, Meet Water Bugs, Groundwater Treasure, Cottonwood Forest
- Martin Luther King, Jr. Elem., Ms. Fletcher-Gill (5 evals.) – attended Water and Life, Weather or Not, Meet Water Bugs, Groundwater Treasure, Cottonwood Forest
- Hodgin Elem., Nichole Peters (12 evals.) – attended Swimmin' in the Rio Grande, Every Drop Counts, Thrifty Plants in a Thirsty Land, Incredible Journey, BioVan
- Georgia O'Keeffe Elem., Mia Brink (1 eval. prepared by teacher for entire class/20) – attended Swimmin' in the Rio Grande, Every Drop Counts, Water Jeopardy, Incredible Journey, BioVan

**What were your favorite activities at the Children's Water Festival and why?**

- The top two favorite activities with the number of responses for each class were: Every Drop Counts (12) and The Long Haul (9) for S.Y. Jackson; Why the River Runs Brown (5) and Water Olympics (4) for Zia; Water Jeopardy (16) and Swimmin' in the Rio Grande (4) for H. Humphrey; Water Jeopardy (13) and Edible Aquifer (11) for Double Eagle/Stearns; Edible Aquifer (10) and Water Olympics (9) for Double Eagle/Middleton; The Long Haul (4) and Drink the Rio Grande (3) for Vista Grande; Meet Water Bugs (9) and Weather or Not (5) for M. L. King/Markuez; Meet Water Bugs (2) for M.L. King/Fletcher-Gill; Swimmin' in the Rio Grande (4) and Every Drop Counts (4) for Hodgin; and Water Jeopardy (10) and BioVan (10) for Georgia O'Keeffe.

- The most common reasons students gave for all favorite activities were that it was fun and hands-on.

“Making the aquifers was fun.”

“It had exercise involved.”

“We got to do lots of activities.”

“We got to answer a lot of questions.”

### **What were your least favorite activities and why?**

- The top two least favorite activities for each class with the number of responses were:

Insectopia (13) and Long Haul (3)/None (3) for S.Y. Jackson;

Insectopia (4) and Water Olympics (2) for Zia;

None (10) and Bosque Water Cycle (4) for H. Humphrey;

Bosque Water Cycle (13) and Exploring Coral Reefs (7) for Double Eagle/Stearns;

Exploring Coral Reefs (7) and Insectopia (6) for Double Eagle/Middleton;

Bosque Water Cycle (4) and Long Haul (2)/None (2) for Vista Grande;

None (8) and Weather or Not (4) for M.L. King/Marquez;

Weather or Not (2) for M.L. King/Fletcher-Gill;

None (4) and Every Drop Counts/Incredible Journey (2) for Hodgin; and

None (20) for Georgia O’Keeffe.

- The most common reasons students gave for all least favorite activities were that the activity was boring, and the students hated bugs.

“We didn’t do very many things.”

“It was not that interesting.”

“We didn’t get to do any hands-on stuff.”

“I do not like insects.”

### **What did you learn at the Festival that you did not know before?**

- There were numerous answers from each class that were grouped into themes. The following quotes reflect the most common answers from that class:

“An average person uses 200 gallons” (9) from S.Y. Jackson;

“Otters were here in NM” (7) from Zia;

“I didn’t know that we get water from an aquifer” (11) from H. Humphrey;

“The average family uses 200 gallons of water a day” (6) from Double Eagle/Stearns;

“It is important to keep our water clean” (14) from Double Eagle/Middleton;

“It is not good to use a lot of water” (2) from Vista Grande;

“The water cycle” (8) from M.L. King/Marquez;

“I learned about water bugs” (2) from M.L. King/Fletcher;

“There is clay underground” (2) from Hodgin; and

“The aquifer is 10,000 years old” (4) from Georgia O’Keeffe.

### **Why do you think learning about water is important?**

- The overriding reason students think learning about water is important relates to water conservation, but water quality was also important:
  - “So we will have some in the future” (16) from S.Y. Jackson;
  - “We live in a desert” (6) from Zia;
  - “We might run out” (18) from H. Humphrey;
  - “If we learn about water we’ll be able to understand it and will use less of it (14) from Double Eagle/Stearns;
  - “So we can learn how to conserve water” (8) from Double Eagle/Middleton;
  - “So you don’t waste it” (4) from Vista Grande;
  - “Because we’ll get dehydrated and go dead” (3) from M.L. King/Marquez;
  - “To learn how to save water” (2) from M.L. King/Fletcher-Gill;
  - “So you don’t waste it” (6) from Hodgkin; and
  - “We want clean water” (20) from Georgia O’Keeffe.

### **What are you doing that is different, concerning water, that you did not do before the Children’s Water Festival?**

- Almost every student has changed a habit. Only 13 students answered “no” to this question. The change most often cited was taking shorter showers:
  - “I am taking shorter showers” (5) and “I am saving water” (5) for S.Y. Jackson;
  - “Now I take a shorter showers” (3), for Zia;
  - “Now I take about 5 minute showers” (9) for H. Humphrey;
  - “Taking shorter baths/showers” (9) for Double Eagle/Stearns;
  - “Nothing yet” (4) for Double Eagle/Middleton;
  - “Shorter shower” (2) for Vista Grande;
  - “Not wasting it” (8) for M.L. King/Marquez;
  - “Turning off water while brushing teeth” (2) for M.L. King/Fletcher-Gill;
  - “Turn off water while brushing teeth” (3) from Hodgkin; and
  - “Shorter showers” (7) from Georgia O’Keeffe.

### **Have you talked to your family and friends about conserving water and protecting water quality?**

- Of the 159 respondents to this question, 81% of students said “Yes,” “Not Yet” or “Sometimes.” In one case (Double Eagle/Middleton), more students answered “No” than “Yes”, which may indicate that the Student Evaluation was given immediately after the Festival, giving little time for students to talk to their family and friends.
  - “Yes, like 24 times!”
  - “They already know a lot but I told them a lot more.”
  - “We have been protecting our water for a long time even when I was a baby.”
  - “I told my family that we can’t waste water ‘cause we don’t have all the water in the world!!”

## **Teacher Evaluations**

**Number of Schools: 18**

**Number of Teachers: 46 (43 class groups - some have 2 teachers)**

**Number of Teachers Returning Evaluations: 8**

**Schools Represented: 7 (Acoma Elem., S.Y. Jackson Elem., Zia Elem., Hubert Humphrey Elem., Double Eagle Elem., Martin Luther King, Jr. Elem., Hodgkin Elem.)**

**Which activities were most effective in teaching your students about water?**

**Why?**

"Water Jeopardy really got kids to use their knowledge and use teamwork."

"The game activities were very effective – movement and fun equals something remembered."

"Insectopia, Brown River and Water Olympics because they were relevant, straightforward, tactile and concrete, plus lots of fun."

"The Long Haul because the hands-on activity was powerful. Water Jeopardy because they are motivated by competition."

"Swimmin' in the Rio Grande and Every Drop Counts because the students were put into the water cycle through the activities."

"Weather or Not, Cottonwood Forest, Meet Water Bugs."

"All we attended were excellent."

**Which were not effective and why?**

"The matching of insect to pollution level (Insectopia) went too quickly. I think if you could have some live samples of microscopic insects the kids would get into it."

"The directions in Bosque Water Cycle were a bit confusing at first."

"All were effective."

**Do you have any suggestions for new activities?**

"No, only that we would like to attend more of them."

"How water is used in manufacturing and/or food processing."

"No, and since you don't see them all, I don't know what we missed."

**Was the Teacher Workshop useful? If yes, how so? If no, how could it be improved?**

"I'm not sure it is necessary other than to pick-up materials."

"Yes, thank you for follow-up materials."

"Yes, it explained what we would be doing in terms of learning activities and logistics."

"I was unable to attend, but I heard it was great!"

"Yes, it let me know what to expect and how to prepare my students."

"Yes, knowing how the day would run and what to expect was helpful."



**Do you plan to use the materials in the Resource kit during the rest of the school year?**

"I have used quite a few already but the rest doesn't necessarily fit into APS 4<sup>th</sup> grade standards. Can adapt some to fit standards."

"Just during my unit on water/water conservation mainly."

"Yes."

**Will you be able to utilize and extend on what your students learned during the Festival in your curriculum? If so, how?**

"Yes, food webs, food chains and their relationship to water concerns."

"Yes, we're studying Lewis and Clark and the Corps of Discover all year. All the activities related to rivers and riparian life will be very relevant to our study."

"Yes, in our study of NM and the SW."

"Yes, using the materials from the Resource Kit."

"We used the water cycle and moved into weather."

"Yes. Water Bugs – arthropods unit, and the Water Cycle."

**What are you doing that is different, concerning water, that you did not do before the Children's Water Festival?**

"More aware of my own usage in my home."

"I include water issues in discussions concerning NM economic development versus other regions of U.S. in Social Studies classes."

"I am encouraging my class to list ways they save water and to start saving in other ways, too."

"Talking about it more in the classroom."

"The students have a better understanding of the water cycle so activities are easier and we can go more in depth."

"Talking with other teachers about what I learned. I've always been good about conserving water."

"Nothing."

**What suggestions do you have for improving the Children's Water Festival next year?**

"Bus was an hour late picking us up and we missed the first activity."

"Continued "hands-on" activities – less lectures and visual aids."

"Being able to have more classes experience it would be nice."

"Nothing, you are so well organized."

**Overall rating:**

- 5-Wonderful
- 2-Really Good
- 1-Good

**Additional comments and suggestions:**

“Well organized and patient volunteers.”

“Our tour guide was really good with the kids. She was enthusiastic and motivating. She did, however, sometimes leave kids behind during transitions. She did not maintain control during those times.”

## **Volunteer Evaluations**

**Number of Volunteers:** 29 on Oct. 14; 38 on Oct. 15; 56 total.

**Number of Returned Evaluations:** 26

**Organizations represented:** PNM, Intel, Arid Solutions, Sandia National Labs, City of Rio Rancho, City of Santa Fe, Valley HS, West Mesa HS, Albuquerque/Bernalillo County Water Utility Dept., City of Albuquerque

### **How did your volunteer assignment help the Children's Water Festival?**

- In 22 cases, volunteers served as general guides; in two cases they were bilingual guides; in one case an evaluator; and in one case a water expert.  
    "I helped keep students organized and keep things running smoothly."  
    "I added water expertise, along with excitement for the activities and logistical information."  
    "Guided class around so teacher stressed less."

### **How were you affected by the experience?**

- Volunteers were extremely positive in their responses. Eighteen said they had a very positive experience, and nine pointed out that they learned a lot from the classes.  
    "I loved it. I was impressed by the kids' knowledge and interest."  
    "I personally learned from the lectures in each class. It was very informative."  
    "We saw how the community can get together to teach kids about important issues."  
    "It helped me realize how funny 4<sup>th</sup> graders could be and how much they know."

### **What could Festival organizers do to help make your volunteer job easier?**

- Volunteers overwhelmingly thought that the event was so well organized that nothing further could help make their job easier; however, there were five suggestions, with the bus issue mentioned twice.  
    "Write down room names next to demonstration classes on little card, and have recycling containers next to garbage containers."  
    "Instruct the guides to allow each entire group to go up and down the escalators together."  
    "Get someone to donate a port-o-pottie for the plaza."  
    "Everything except the busses was organized."  
    "There didn't seem to be enough time for lunch."

**Do you think teachers and students benefited from their day at the Festival? If yes, what made it a valuable experience? If no, what could be done to improve their experiences?**

- All volunteers answered “yes,” yet a few improvements were mentioned.  
“Yes, because educational and taught next generation about importance of water conservation and care for the environment. Even parents agree.”  
“The hands-on activities provide extensive water knowledge to the kids.”  
“Kids can go home and talk to their parents about what they learned. To me that is a valuable experience. Hopefully they can go home and make an effort to want to save water; the hands-on was very valuable.”  
“Ensure a group does not have any slightly redundant presentations (e.g., the water cycle was explained a number of times).”  
“Some of the exhibits were informative but not too interesting for 4<sup>th</sup> graders.”

**Do you think the Children’s Water Festival would be valuable for next year?**

- All volunteers who answered the question said “yes.” (22)

**Would you like to volunteer again for the 2005 Children’s Water Festival?**

- All but one volunteer who answered the question said “yes.” (22) One volunteer said “don’t know.”

**Overall rating:**

- 22-Wonderful
- 4-Really Good

**Additional comments and suggestions:**

- There were 14 additional comments and suggestions. Six were comments about the great experience the volunteer had.  
“I had never volunteered for anything like this. The way it was planned was excellent. Thank you for this experience.”
- Eight volunteers made the following six suggestions.  
“If possible, have large clearly marked recycling containers and garbage bins rolled out. It would be good for children to recycle themselves and learn to separate out recyclables from trash.”  
“A couple of buses got lost and went to wrong school (two schools have same name – Horizon Academy). Drivers need precise directions and times.” (2)  
“I think they would appreciate more interactive programs.” (2)  
“Different lunches.”  
“If the last event could pull all the learning together (like a Jeopardy event). Ask questions of what they learned and awards for right answers.”  
“One parent suggested giving everyone a bottle of water.”

## Activity Evaluations

**Unique activities presented over the two days: 23**

**Evaluations performed 10/14: 41**

**Evaluations performed 10/15: 31**

Each activity was observed at least once per day by an Activity Evaluator, but most activities were observed more than once on a single day. Activity Evaluators were from the Middle Rio Grande Steering Committee, PioneerWest Staff and PNM. Key points of the Activity Evaluations include:

- All but a few presentations were considered by evaluators to be hands-on or a combination of lecture and hands-on.
- Children were observed to be interested, involved and attentive. In only five cases, children were seen as restless or bored. This was attributed by the evaluator to be the result of the presenter sometimes using language that was “over the kids’ heads”, the fact that all of the children could not see what was going on, or the need for more hands-on activities.
- In all cases, presenters spoke to children on their level.
- The quality of the activities was very high, with all activities receiving ratings of “high” (5) or “extremely high” (6) on how relevant the presentation was to the topic of water.
- Ratings were slightly lower for how well the children seemed to understand the concepts offered. Ratings were predominantly “5s” and “6s” with very few “4s.”
- All activities had visuals, with hands-on and larger visuals being the most effective. In some activities it was difficult for all children to see what was going on.
- Evaluators noted the need for presenters to create a role for adults/chaperones so they are able to participate.
- All activities were recommended for future Children’s Water Festivals.

Activity	# of Evaluators	Relevance	Comprehension	Comments
BioVan and Home Sweet Home	2	6	6	Excellent visuals.
Birds, Rivers and Web of Life	2	5.5	6	Good, dynamic speaker; great pictures and use of yarn.
Drink the Rio Grande	1	6	6	Excellent demonstration.
Edible Aquifer	2	6	5	Make newsprint papers colorful; teachers said kids learned a lot.
Every Drop Counts	4	6	5.5	Parents need to be assigned to group or to help; good aquifer model; good pace, great explanations.
Exploring Coral Reefs	3	6	4.67	Great slides; incorporate more hands-on activity; be sure all kids hear question from another student.
Groundwater Treasure	4	6	5	Students had trouble seeing everything, model could be more hands-on

Incredible Journey	4	6	5	Use larger manipulatives; clarify water topic with use of game; good game.
Insectopia	2	5.5	5	Have a few live specimens for children to see; make 8-1/2x11 sheets larger.
Meet Water Bugs	3	6	5	Pictures should be a little larger; incorporate more stations to accommodate students.
Our Cottonwood Forest	5	6	5.6	More explanation about relevance of concepts; demos were great; 7 <sup>th</sup> graders teaching very effective.
Rio Grande Bosque Water Cycle	3	6	5.67	Great; visuals were clear; students followed precise directions; notice students' waving hands.
Runoff and Erosion	3	6	4.67	Seating arrangement needed; poster writing too small and too much info; turning lights on and off became distracting.
Swimmin' in the Rio Grande	3	6	5.67	Board games great; very clear explanations.
The Long Haul	4	6	6	More visuals could be used; use assistant to record on newsprint; very practical explanations; excellent.
The Rolling River	2	6	6	Water trailer is large enough to be seen by all.
There Otter Be Otters	3	4.67	5.33	Room size, dark room/slide show and pulsing lights were problems for hearing impaired kids to see interpreter; consider seating arrangements for slide show; good job working with room obstacles.
Thrifty Plants in a Thirsty Land	3	5.33	5.33	Two of the three presenters could enliven presentation; lots of great visuals; sometimes focus seemed more on plants than water.
Water and Life	4	5.75	5.5	Good use of cultural aspects; signs could be larger; great job of capturing students' attention right away.
Water Jeopardy	4	6	5.75	A few terms over kids' heads; student presenters very effective; engage adults if possible.
Water Olympics	2	6	5.5	Well set-up; kids had great time.
Weather or Not	4	5.75	4.75	Incorporate hands-on activity; some concepts too advanced; excellent interaction with students; could be a little more responsive to raised hands.
Why the River Runs Brown	2	6	6	Talk about ways to keep pollutants out of streams; great hands-on models.

## Classroom Visits

**Total Number of Classrooms: 14**

**Elementary Schools Visited: 6 (Horizon Academy, Zia, Martin Luther King, Vista Grande, Dolores Gonzalez, Hodgkin)**

Each classroom was visited by at least two evaluators about two weeks after the Children's Water Festival. One evaluator took notes and one asked the questions below. During the discussions, the presenter reinforced the lessons taught at the water festival and touched on the major ideas of conservation and water quality. The visits lasted between 30 and 45 minutes. If there was time at the end, the Enviroscape watershed model was presented, and the students helped place homes, cars, animals and other small items and discussed the impacts of those environmental factors on the community.

**Think back to the day you went to the Water Festival! Who had a great time? Who learned something new? Share what you learned that was new.**

*The children's responses ranged from general statements about the importance of water to very specific statements that revealed which activities the children attended at the water festival.*

- The word conservation means saving water
- Water comes from Colorado
- How to make a filter
- How there can be flash floods
- When animals go to the bathroom, waste goes into ground
- Sewage takes years to get pumped back out
- Insects, metamorphosis
- Bugs live under water
- We use all kinds of gadgets to make sure water is clean
- Some bugs are fossilized
- How much a cloud can weigh and get a raindrop
- How they measure the temperature with a hot air balloon
- Its best to conserve water rather than wasting it
- Don't take long showers
- Don't pollute and make the water dirty
- There used to be otters in NM
- Turtles think that plastic bags are jelly fish, that eat them and get starved
- Not to drink water from Rio Grande
- Coral grows ½ inch every 7 years
- The aquifer spreads wide underground
- If you take coral out of sea, the fish will die

### **Why is water so important to life?**

*Life's dependence on water was nearly universally understood by the children in all the classes.*

- You can't live without water – you would die of dehydration
- Everything that lives needs water
- Water is very healthy for you
- Plants need water and they give us oxygen
- Water cleans poisons from our livers
- To be clean
- To grow plants veggies, and fruits
- To water lawns
- Our body is mostly made of water – need to stay alive

### **What is the water cycle and why is it so important?**

*Most students understood the evaporation, condensation, and precipitation components of the water cycle. Some understood runoff (and related it to erosion) but did not know the term.*

- Evaporation, precipitation
- Condensation
- Run-off, goes to roots and seeds
- Drains
- Water vapor goes up and clouds drop it again
- Puddle evaporates and goes down into the ground, becomes groundwater
- Starts in ground, vapor, sky, down as rain, and all around
- Evaporating, condenses, precipitation, water table, ground water, well water
- If aquifer gets water, comes out, rains animals sweat and drool,
- Evaporation is water that steams up and rises
- Condensation is cloud gets heavier and heavier
- Water that goes down turns into aquifer

### **What is a watershed and how does it function?**

*Very few students had an understanding of the term "watershed." The term evokes an image of a little shed in the backyard, where water is stored. They often knew the location of the headwaters of the Rio Grande, its course, and where the river emptied into the ocean.*

- A big shed, there's a wheel and buckets
- Like a swamp that holds water
- A water wheel
- Water gets collected in Rio Grande
- Starts in Colorado
- Goes to Gulf of Mexico
- Place to keep extra water, a place where water comes in but can't come out
- When it rains and snows it goes into the Rio Grande
- Starts in CO, goes to lowest place – China
- Place where water goes to and turns into well
- Gathers water when it comes down from mountains
- Goes to arroyos
- Water table
- Water flows down to lowest point
- No, everyone does not live in watershed



### **How do plants, animals, people, soil, and water depend on each other?**

*The relationships between life forms and what supports life was well understood. Most of the students had studied the “life cycle” in there classrooms.*

- Animals and humans depend on trees and plants and vice versa
- All depend on minerals
- Plants depend on soils to give nutrients
- We get air from plants and animals
- Soil feeds plants
- People eat meat and vegetables
- We get protein from animals
- Trees and plants depend on each other
- Cows eat plants to get protein
- All of them depend on each other
- The soil needs plants, plants need water
- Soil blows away without plants
- Plants fertilize soil
- Worms
- Without people, plants can’t always grow
- Water helps trees, soil grows plants, plants help people and animals, provide shade
- Some plants give medicine

### **How do our actions affect water quality?**

*Students mentioned throwing trash in the water most often. We discussed other actions like using pesticide to kill bugs in the yard before a rain, leaving pet poop on the ground, letting car oil or dirt wash into the river, farmers using too much fertilizer or pesticide and other actions people might take. Most classes played with the interactive Enviroscope model, which allowed the children to demonstrate these concepts.*

#### **What makes it dirty?**

- Sand oil pollution, trash, smoke, mercury, waste, shampoos and conditioners, stuff we spray on plants
- Pollution, junk, trash, oil spills, toxic gas, paints, fireworks
- We throw trash in water
- People leave water on, put things down drain
- Living things in river can die
- We pollute oceans like with oil
- When you throw stuff in there it leads to sewer, river, oceans
- Factories could put chemicals in river
- They might burn trash, causes polluted air and comes back down in the rain
- Toxic waste company – if it gets in the river, etc.

**What can we do to keep it clean?**

- Recycle trash, make machines that make less smoke, stop cars from leaking oil, try ride share carpooling, pick up trash, buy stuff that has less wrapping
- Be more careful, check all the places that have oil, recycle, storm drains: go to Rio Grande, don't know if that water is treated, may poison plants
- You can help by not throwing junk into it
- Don't have open faucets to waste water
- Don't dump oil in sink, take it to Jiffy Lube to recycle
- Don't make dams all over
- You can filter water

**How much water does my family use?**

*Students did not have a realistic grasp of volume of usage. They were generally surprised to learn how much water an average family uses, as they guessed much less – 5 to 100 gallons per family per day.*

- My mom runs the water fully until it gets hot and it takes a long time
- We wash car with bucket
- We use lot of water, we have a lot of plants

**What are you doing differently, concerning water, that you did not do before the Children's Water Festival?**

*The answers to this question were very anecdotal, related to their own families' experiences.*

- Stop water when brushing teeth
- Cut back on baths
- Try not to leave water on when tooth brushing
- Shorter shower
- Mom uses bucket for dishwashing
- We buy bottled water
- We have a drip system and dog ruined water system by eating drips
- On-demand dog water thing on hose
- Now I only go to the bathroom once per day instead of twice

**Have you talked to your family about conserving water and protecting water quality?**

*A few students responded affirmatively.*

### Summary of student participation

*Approximately 64% of the students participated in the discussion and responded to the questions.*

School	Number of Students	Frequent Participation	Occasional Participation	No Participation
Horizon Academy	23	7	8	8
Horizon Academy	16	6	5	5
Horizon Academy	22	5	10	7
Zia	25	10	11	4
Martin Luther King	22	10	7	5
Vista Grande	21	3	8	10
Vista Grande	20	4	8	8
Vista Grande	45	4	12	29
Vista Grande	23	3	8	12
Dolores Gonzalez	6	1	3	2
Hodgin	21	12	5	4
Hodgin	16	8	4	4
Hodgin	20	8	6	6
Hodgin	17	5	8	4
Totals	297	86	103	108