Albuquerque Bernalillo County Children's Water Festival 2008 ANNUAL REPORT

Executive Summary

The Albuquerque Bernalillo County Children's Water Festival (ABC CWF), formally known as the Middle Rio Grande Children's Water Festival, celebrated its 10th anniversary this year. This a quite an accomplishment and a tribute to the volunteers and dedication of everyone involved. Through the 10 years we have educated over 10,000 4th graders — 2,000 of whom were eligible to vote in the 2008 elections!

The ABC CWF was held October 27 & 28, 2008 at the Albuquerque Convention Center where 1,021 4th grade students, approximately 50 teachers from 44 classes, and at least 100 adult chaperones spent the day learning about water from many perspectives. Eleven public schools participated including one charter school. For the first time, this year's event was completely funded by the Albuquerque Bernalillo County Water Utility Authority as part of its comprehensive water resources education outreach program. Even with the great financial support from the ABCWUA this event could not have occurred without nearly $34,000 in in-kind support from many local organizations which provided volunteers to help plan, implement and evaluate the festival. Please note that additional funding was concurrently raised to support other water-related outreach in 2008-2009, the results of which are described in the *Children's Water Festivals and Outreach Program 2008 Annual Report*. It will be posted along with this annual report on our website at **www.waterfestnm.com**.

The mission of the ABC CWF is to introduce students and teachers to new ideas, options and solutions so they will conserve and protect water for the future, lay the foundation for further learning, and reach as many children as possible. This field trip was provided at no cost to participants. Additionally, most teachers whose class attended the festival also attended a pre-festival Teacher Workshop held at the ABCWUA Southside Reclamation Facility (waste water treatment plant). The workshop provided teachers with logistical information, a large bag of classroom resource materials and a tour of the facility.

For the third consecutive year we provided custom T-shirts for all students, presenters and volunteers. All 1,200 T-shirts featured original artwork on the front which was created by one of the students from North Albuquerque Community Cooperative Charter School. Contributor logos were featured on the reverse side. In a change from previous years we opened the art contest to all schools attending and let them choose a theme based on *The Big Water Questions.* Some of the artwork was displayed on tack boards at the entrance to the festival along with *The Big Water Questions* themselves. This was a great addition to the festival as it provided an interesting and fun beginning to the student's day.

We continued our robust evaluation program with Pre– and Post-festival Student Surveys to measure the impact of the activities on student learning and to provide feedback to presenters to improve their activity content and facilitation. The long-term outcome is for all classes to correctly answer at least 70% of Post-festival Student Survey questions. This year's results were impressive:

- The average overall score for all respondents was 19.14% higher in the Post-festival Student Survey when compared to the Pre-festival Student Survey. This score is up from 9.7% last year.
- An improvement of 20% or more occurred on 23 questions, up from 14 questions last year.
- Four classes had an average score of 70% or more correct on the Post-festival Student Survey.

PLANNING, FUNDRAISING & SUPPORT

The work of designing, planning and implementing the festival was done by an all-volunteer Steering Committee in coordination with Experiential EE, LLC's Festival Team.

Experiential EE, LLC is a local project management consulting firm owned by Katie Babuska, which currently is under contract with ABCWUA to produce this festival and implement the organization's education outreach program in grades 1-12.

The project plan, schedule and work tasks were developed based on the festival model used to produce the Middle Rio Grande Children's Water Festivals held annually since 1999. This event was re-named in 2007 to the Albuquerque Bernalillo County Children's Water Festival. Annual Reports for all Children's Water Festivals produced by Experiential EE, LLC are published on our website, **www.waterfestnm.com.**

The *Bosque Ecosystem Monitoring Program* teaches students learn how the Rio Grande and Bosque are intimately connected.

Steering Committee Members

Sharon Sivinski	ABCWUA, Water Education Coordinator
Ben Zimmerman	ABCWUA, Pollution Prevention Program
Matthew Cross-Guillén	Bernalillo County Office of Environmental Health
Elliott Sachse	Bernalillo County Cooperative Extension, 4-H
Tamara Rowland	Bernalillo County Cooperative Extension, 4-H
Jill Turner	New Mexico Environment Department, Surface Water Quality Bureau
Joe Alderete	U.S. Bureau of Reclamation

Festival Team

Katie Babuska	Festival Director
Michelle Watson	Festival Manager
Nora Romero	Festival Coordinator

Project Description

The Festival Event

The festival was held October 27 & 28, 2008 at the Albuquerque Convention Center from 10:00 am–1:15 pm. Albuquerque 4th grade students from 11 public schools attended, with 22 classes attending on Monday and 21 different classes attending on Tuesday. This was the maximum number of classes that the facility could accommodate, as we even expanded to a new room not used in the past. Our general policy is that all 4th grade classes from the accepted schools must attend. In total, 1,021 students from 44 classes, approximately 50 teachers and dozens of parent chaperones attended from the following schools:

Carlos Rey Elementary
John Baker Elementary
Lew Wallace Elementary
Petroglyph Elementary
Tierra Vista Elementary
North Albuquerque Community Cooperative Charter School
Dennis Chavez Elementary
North Star Elementary
McCollum Elementary
Sunset View Elementary
Ventana Ranch Elementary

Once again, applications to attend the festival exceeded the number we could accept by exactly double. Priority was given to schools that had never attended before and those that had attended longest ago. Six of the 11 schools attending this year had never attended the festival before. The other schools had not attended for at least four years.

Students learn how a cloud is formed in *Weather or Not*.

All activities addressed at least one 4th grade New Mexico Science Standard; however, most activities addressed multiple standards not only in science but in all core curriculum areas. Twenty-two activities were presented simultaneously on Monday and 21 were presented on Tuesday by 54 presenters (see Appendix B). Three activities were only presented on one day. Activities were grouped according to their primary water theme so that each class could be assigned to one 30-minute hands-on activity in each of the following five water themes:

- Web of life
- General hydrology and the water cycle
- Watershed and water quality
- Water conservation
- Water and our society/culture

Presenters were predominantly professionals in the water industry but also included high school students from Albuquerque Academy, School on Wheels Alternative High School, the Bosque School, and college students from the University of New Mexico. The festival stimulated the development of water education activities by the presenting organizations. In many cases, organizations were motivated to develop activities for 4th grade students only because of the opportunity offered by the festival. We are very excited that this year's festival included three newly developed activities: *Water Court*, *Energy Drink* and *Grease Police*. The event also provided an excellent opportunity for high school age presenters to learn how to facilitate a water education activity for elementary age students. School on Wheels students once again served as "festival reporters" (see Appendix A).

The Festival Volunteers

Presenters represented the following organizations:

Albuquerque Academy Environment Club
Albuquerque Bernalillo County Water Utility Authority
Bernalillo County Cooperative Extension, 4-H
Bernalillo County Office of Environmental Health
Bernalillo County Public Works
CH2MHill OMI
City of Albuquerque/BioPark
City of Rio Rancho, Water Conservation Office
Ciudad Soil and Water Conservation District
Explora!
National Weather Service
NM Environment Dept., Surface Water Quality Bureau
Rio Grande Nature Center
Roots and Shoots
Sandia National Laboratories/Lockheed Martin
Sandoval County Cooperative Extension, 4-H
School on Wheels Alternative High School
Smart Use, LLC
U.S. Bureau of Reclamation
U.S. Forest Service, Santa Fe National Forest
UNM Dept. of Biology & Bosque School (BEMP)

In addition, logistical, evaluation and other in-kind support was provided by the following organizations:

Accion
Albuquerque Bernalillo County Water Utility Authority
Albuquerque Public Schools
Bernalillo County Cooperative Extension, 4-H
Bernalillo County Cooperative Extension Master Gardeners
Central New Mexico Community College
City of Albuquerque/BioPark
City of Rio Rancho
Eisenhower Middle School, NJHS
Native Plant Society of NM
New Mexico Tech University
New Mexico Utilities, Inc.
NM Department of Health
NM Environment Department
NM Office of the State Engineer
OMI
PNM
Sandia National Laboratories/Lockheed Martin
Sandoval County Cooperative Extension Master Gardeners
School on Wheels Alternative High School
Thingamababa
U.S. Bureau of Reclamation
U.S. Forest Service, Santa Fe National Forest
Whole Foods

Students from New Mexico Tech University provided a Water Treatment Demonstration during Tuesday's festival day. This was a great way to get them involved and experience the festival. Hopefully next year they will be able to contribute as presenters.

Again, this event would not have been so successful without the incredible support from these wonderful volunteers.

Students learn about agriculture and irrigation during the *Farming to Feed You* activity. This is often a new topic for children that are growing up in the city.

Teacher Workshop

Participating teachers were required to attend one of two pre-festival Teacher Workshops held October 4 and October 7, 2008 to obtain logistical information, help teachers understand how to integrate the lessons of the festival with the core curriculum, and present teachers with opportunities for professional development. **Our goal remains to entice elementary teachers to go beyond minimum state science standards and use water as a tool to teach multiple curriculum standards**. At the workshop, teachers received a resource kit filled with in-class teaching resources, were introduced to kit contents, and were asked to integrate these resources during the school year. All materials were donated by the wonderful organizations listed on Page 6.

In addition, each teacher received a set of customized Pre–festival Student Surveys to administer to their students before the festival. The customized survey included multiple choice questions developed by presenters relating only to the five activities each class was to attend. If the teachers returned their Pre-festival Student Surveys the day of the festival, a set of Post-festival Student Surveys was handed to them in a pre-paid addressed envelope.

For the first time, the Teacher Workshop was held at ABCWUA's Southside Reclamation Facility. Following the workshop, all teachers were escorted on a tour by a plant manager. It was an eye — and nose — opening experience for many! Some teachers took pictures to show their students upon returning. Such a detailed tour is not generally available to the public, and few teachers even knew anything about the facility. Clearly, the workshop was of high value in educating our teachers about our water resources.

Teachers learn how our wastewater is treated at the ABCWUA Southside Reclamation Plant.

Unique to This Year

Following our philosophy that there is always room for improvement, we implemented several modifications.

Integrating *The Big Water Questions:*

The *Big Water Questions* themselves are not new, as they were developed and fine-tuned by festival Steering Committees from Albuquerque, Santa Fe and Rio Rancho as a way to re-focus the festival as an outcomes-based program. **Our emphasis and broadcasting of them took a new tack this year.**

We refocused our T-shirt art contest to involve all of the questions, distributed the questions to the teachers in their Teacher Resource Kits, and also added visibility of the questions themselves at the festival. The long-term outcome of the festival program is that students understand *The Big Water Questions* and can formulate logical, fact-based answers by the time they finish elementary school. We believe that students who can synthesize water facts to understand larger water questions will have the proper foundation for further discussion in middle and high school so that they will become informed citizens and voters on water issues. *The Big Water Questions* are:

- Why is water so important to life?
- How do all living things depend on each other?
- What is the water cycle?
- What is a watershed?
- Where does my drinking water come from?
- What makes water dirty?
- How much water does my family use?
- Who are the other water users in our society?
- What can ***I*** do to protect our water?

T-shirt Contest:

In order to reinforce the concepts of *The Big Water Questions* to all participants, we opened the T-shirt art contest to all schools instead of only one school as in previous years. Students were able to choose which question they wanted to address in their artwork. The idea behind this was to provoke thoughtful conversation in the classroom before attending the festival. It was evident in the art that there were some great conversations. Three schools participated, generating about 300 works of art. While this made choosing a single piece of art for the T-shirts more difficult, it served as a great pre-festival activity for the schools that participated. We plan to take this same approach next year with hope that more schools will participate.

Sophia, our winning artist with her teacher, Miss Abbie.

Visual Displays:

As students stepped off the school bus they were greeted by “Otto the Otter” and the “Water Wizard,” who guided them safely through the Albuquerque Convention Center’s entrance near Civic Plaza. They were then treated to a mini-art show on large tack boards which displayed some of the colorful art work created for the T-shirt contest. We also displayed a large poster board with the *Big Water Questions* and new, colorful directional signs.

Celebrating 10 years of the Children’s Water Festival.

On the lower level of the West Complex, we created another large tack board full of fun photos, T-shirts, articles and other memorabilia from the past nine festival years. This provided volunteers and presenters with a way to reflect on the history and difference we have made through the years. Many of these participants have been involved for years. Cake was served at lunch in celebration of this milestone.

Lunch:

While the festival attendees provided their own lunch, we provided lunch for presenters and volunteers through a local restaurant on Civic Plaza. This is worth noting in that we were able to reduce waste from our event by:

- Serving chips from large bowls instead of individual bags,
- Serving drinks from large cooler dispensers instead of individual water bottles and cans,
- No gas was consumed for delivery of the food itself.

Once again we did our best to recycle any material possible, including the waste for the participants lunches.

Coats and Lunch Storage:

Upon arrival, students stored their coats, lunches and backpacks on large tables in the Northwest Exhibit hall upstairs. In previous years this storage was either in the main hallways or in a glassed in room at the bottom of the escalators. This change was an improvement in several ways.

- There was no backup or long line waiting for the escalator as we had seen previously so the students could board the busses more efficiently.
- There was plenty of room in the NW Exhibit Hall for the teachers to perform head counts before boarding their busses.
- It freed up the former coat room on the lower level which we then used for an activity. This room was larger than some of the other activity rooms.

EVALUATION

After many years of festival production, we have learned that clear outcomes, strong evaluation and competent logistics are the foundation of a successful event. Children's water festivals are now implemented in all 50 states, and it is likely that many of them owe their existence to the Project WET program. Certainly ours does. However, our festival continues to be one of the few in the nation that is outcomes-based and which has a comprehensive evaluation component.

Our approach to evaluation was somewhat modified this year in hopes of continuing to provide meaningful feedback and data analysis. Over time, we are trying to identify and ultimately prevent the disconnect that sometimes occurs between what a presenter intends to convey as key concepts, what concepts actually get conveyed by the presenter, and whether or not the key concepts are internalized by students. The goal is to make the 30 minute activity experience as memorable and productive as possible. The reality is that the festival is often the only form of water education many of these students will receive all year.

Evaluation Tools

Over the past several years we have moved toward the use of evaluation tools that help us identify strengths and weaknesses in 1) how information is conveyed by presenters, and 2) how it is understood by students. We used three instruments to collect feedback and performance data:

- Pre– and Post-festival Student Surveys
- Activity Evaluation
- Teacher Evaluation

Pre– and Post-festival Student Surveys:

This is our second year using these survey tools. The purpose of the student surveys is to measure the impact of the activities on student learning, and to provide presenters with specific feedback about student learning so presenters can improve activity content and delivery for future festivals.

All presenters were asked to submit (or review from last year) multiple choice format questions and answers addressing the main points about their activities. The result is a master list of questions and answers (see Appendix C). We were able to refine some of the questions from last year to increase clarity and for easier tabulation, which we believe contributed to our higher scores.

Students learn from School on Wheels high school students during *Water Olympics.*

We also provided presenters with large paper in their classroom to write and display their Student Survey questions throughout the festival. Our intention was to help presenters remember their survey questions and provide a means for them to talk about the survey questions covered in that activity. However, not all presenters chose to use this strategy.

Customized Pre– and Post-festival Student Surveys were created using questions relating only to the five activities assigned to a class. To do this, an Access database was created so we could track the information and run queries to create the surveys. The time investment was significant but the results were worth it: fewer errors during customized survey creation and consistency across all surveys.

Teachers were asked to administer the Pre-festival Student Surveys before the festival and return them on the day of the festival. Those who did this were given a pre-paid, pre-addressed envelope for return of the Post-festival Student Surveys. Twenty-seven classes out of 43 (62.8%) returned both Pre- and Post-festival Student Surveys — a much improved return rate compared to 2007.

Pre– and post-survey results were obtained on all 69 questions representing the 23 different activities. The number of respondents on an activity ranged from a low of 68 (four classes) to a high of 183 (eight classes). While there is a margin of error associated with our survey data, enough data was collected on all activities to make the data statistically valid. This is impressive because three activities were presented one day only (*BioVan*, *Grease Police*, and *Message in a Bottle*). Presenters were provided with results relating to their activity.

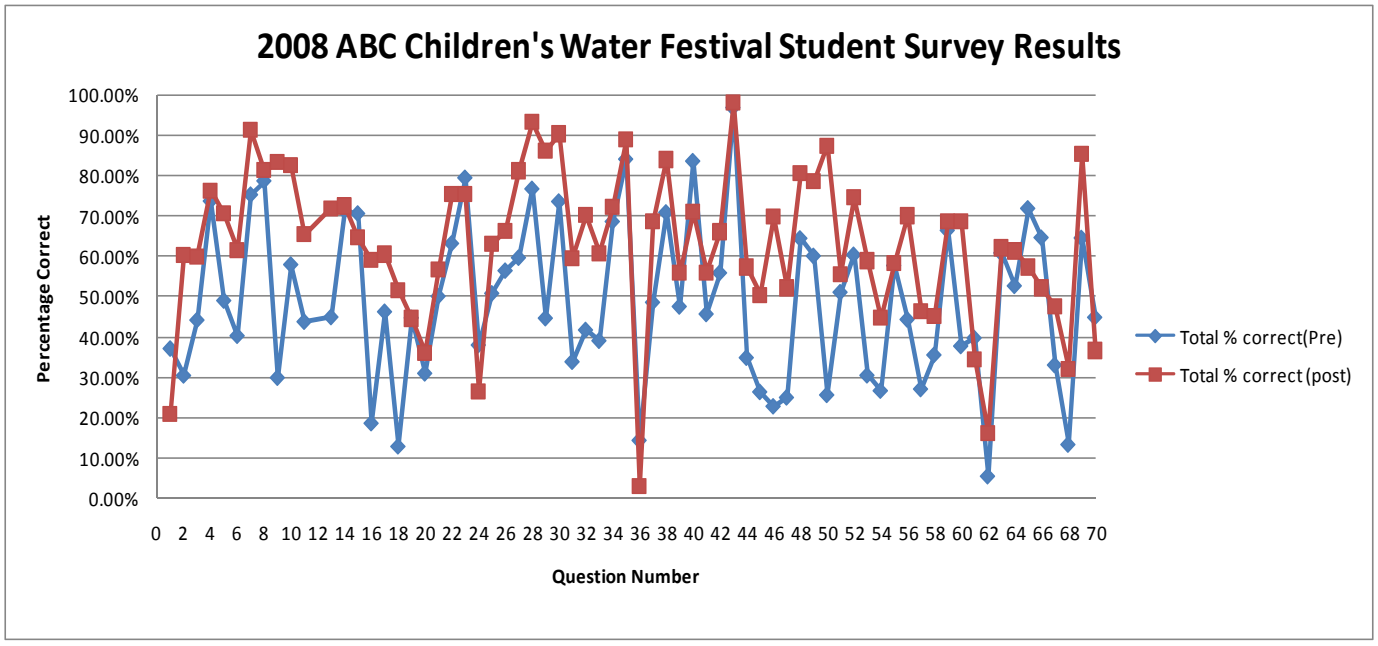
As with all surveys, ours included some oddities worth noting:

- One class's survey results had to be disregarded because we learned that the Post-festival Student Survey was used as an in-class review and nearly everyone scored 100%.
- One school did not submit results from either survey because the contact teacher had some extenuating circumstances and could not relay this information.
- One teacher had taught an incorrect answer to her class. Our correct answer or the teacher's were counted as acceptable.
- Due to a late modification, there was no number 12 on any survey.

Results:

- Average improvement in student learning for all respondents was 19.14%, up from 9.7% in 2007.
- An improvement of at least 20% occurred on 22 questions.
- There were 69 survey questions. The long-term goal is for all classes to correctly answer at least 70% of these questions. In the pre-festival survey, students scored at least 70% correct on 13 questions. In the post-festival survey they scored at least 70% correct on 25 questions. In other words, our goal was met on 25 out of the 69 survey questions.
- The overall score for all students in all activities was 62.85%.

The graph below compares pre– and post-survey data for all questions. We believe the revisions/ clarifications made to the survey questions accounted for some of this; however, for 2009 we will continue to improve the quality and content of the questions. Students scored particularly low (below 40%) on seven Post-festival Student Survey questions.



We believe low scoring is due to:

- Students having very little background on the subject matter to begin with;
- Questions not being as clear as possible;
- Students being confused by answer choices such as “all of the above”;
- Misinformation being taught in the classroom; and/or
- Presenters not being clear, or not emphasizing the survey points, during the activity.

The Pre– and Post-festival Student Surveys are valuable not only as a means to gauge our progress in disseminating specific information, they are valuable because presenters now know what students believe is the correct answer and can deal with these misconceptions.

***The Big Water Questions* vs. Student Survey Results**

The *Big Water Questions* were created to invoke thoughtful discussion from many water perspectives. Because of their nature, most are not questions we can ask on a multiple choice survey. There are several questions from various activities that strike close to *The Big Water Questions*. In fact, all but two *Big Water Questions* are asked in some form; however, we know from observation that the concepts of all Big Water Questions are being covered during the festival.

Note that certain survey questions are similar. This is because activities may have more than one theme. Thus, there is a lot of overlap in concepts covered. We consider this desirable because students attend only one activity in each of the five water themes. Repetition is important.

Referring to the master list of questions and answer options (Appendix C), below is a list of questions as they relate to the *Big Water Question* with the percentage of students who answered the question correctly on their Post-festival Student Survey.

- **How do all living things depend on each other?**
  - 22: How does human use impact the amount of water available for animals and plants? (75.24%)
  - 24: How would you make changes to ensure that residents, agriculture, industry and plants and animals have enough water? (26.46%)
- **What is the water cycle?**
  - 23: Where does our rainwater come from and return to?(75.24%)
- **What is a watershed?**
  - 25: What is a watershed? (62.88%)
  - 36: What is a watershed? (2.92%)

The watershed topic continues to be an area of uncertainty to our students. Clearly one activity provided a stronger explanation and answer choices than the other. If Question 36 is to be used in the future, it needs to be modified to read “What is name of our watershed?” because the current answers provided as option list different names of watersheds, not definitions.

- **Where does my drinking water come from?**
  - 31: What is Albuquerque and Rio Rancho's current water supply? (59.34%)
  - 32: What is one of the planned future water supplies for the region? (70%)
  - 33: What source of water is expected to provide more than half of Albuquerque's future water supply? (60.56%)
  - 39: Where does Albuquerque’s drinking water come from today? (55.70%)
  - 57: As of today, our local drinking water currently comes from… (46.22%)
  - 58: As of the 2009, our local drinking water will come from… (45%)

The festival fell at an interesting time in Albuquerque history. At the time of the festival (October) we were still drawing from the aquifer for all of our drinking water. The students performed quite well on all questions regarding this matter, indicating the transition to surface water by January 2009 was well understood.

- **What makes water dirty?**
  - 1: Any pollutants that enter the Rio Grande may eventually end up in the _____. (20.83%)
  - 7: If pollution starts at one place in the water cycle, can it spread to other places in the water cycle? (91.15%)
  - 37: How does pollution get into the river? (68.42%)
- **How much water does my family use?**
  - 13: Approximately how much water does my family use per day? (71.74%)
- **What can *I* do to protect our water?**

This *Big Water Question* asks the students to take action. The seven student survey questions that related to this question deserve a closer look since we are hoping not only to educate the students but to make them active participants in protecting our water.

8: What can you do to prevent pollution from ending up in our water? (81.08%)
14: What are three ways to reduce your own water use? (72.26%)
24: How would you make changes to ensure that residents, agriculture, industry and plants and animals have enough water? (26.42%)
30: What can you do to help the Rio Grande cutthroat trout? (90.18%)
38: What is one thing we can do to keep our river clean? (83.72%)
43: How can we help prevent sewer manholes from overflowing? (97.80%)
69: How can we reduce pollutants in our water? (85.14%)

Question 24 actually had a decrease in correct answers after the festival with 11.45% fewer students answering correctly. Most students believed "drink less water" was the correct answer instead of "let the water users decide together". While these results need to be improved in the future, the question and the survey results show that an active discussion of different ways to conserve water took place during this activity. We do not feel the question itself needs to be modified (as it is thought provoking), just the clarity of the correct answer.

Other than Question 24, these are phenomenal results because all scores are well above 70% and these questions address perhaps the most important of *The Big Water Questions* — the only questions that addresses personal responsibility.

Number 43 received the highest score of any question. Even if the students don't always comprehend why they should take certain actions, they clearly know which choices are responsible. We are encouraged by these results as our presenters are calling the students to action but also because these messages are being conveyed by other sources. Most of these questions also had high pre-festival results:

8, 14, and 43 had negligible increases in the range of less than 1% to 12%
30, 38, and 69 had increases in the range of 12-20%

We believe the Pre– and Post– festival Student Surveys provide us with enlightening data as they help us pinpoint problem areas as well as highlight strong messages. We are pleased with the results from this year's survey as we continue to improve and are close to reaching our 70% goal.

Activity Evaluation:

Each of the 23 activities were evaluated at least twice and up to six times over the two days by volunteer Activity Evaluators who come from education and/or water-related organizations. he evaluation consisted of five categories to rate on a 1-5 scale (with 1 being low and 5 high) as well as four open response questions and a place for additional comments. Some of the best feedback was in the written comments. All Activity Evaluations were photocopied and mailed to presenters.

The five scaled evaluation categories were:

- Activity is hands-on
- Activity is relevant to the topic of water
- Material seems to be at the students' level
- Presenter is clearly understood by the students
- Presenter is enthusiastic and engaging

All but six activities received a score of 3 or better. The six lower rated activities were because the activity was not hands-on. Only one activity received more than one evaluation with a score lower than three. Fourteen evaluations received scores of five in all categories. These perfect scores came from seven different evaluators and included two of the new activities.

Teacher Evaluation:

We moved the teacher evaluation online this year by using the free version of "Survey Monkey". Teachers were sent an email the day after the festival that contained the link to our survey. Ten evaluations were completed. Teachers were pleased with their festival experience. The only negative comments dealt with wanting to experience more activities. Teachers were asked seven questions.

1. Which activities were most effective in teaching your students about water? Why?
Three responses liked all of their activities. *Water Jeopardy* and *Are there Monsters in our Water* were cited most frequently. Other comments include: engaging, effective, and kinesthetic.

2. Which were not effective? Why?
With only six activities being listed, no activity was listed multiple times. Reasons were: material not presented on the students' level, presentation was dry, activity was not explained well, need a wrap up to drive home the point.

3. Was the Teacher Workshop useful? If so, how? If not, how could it be improved?
All teachers who attended said yes, it was useful. Many commented on appreciating the resource kits provided to them. Two mentioned enjoying the tour of the Waste Water Treatment Plant.

4. Do you plan to use the materials in the Resource Kit during the rest of the school year?
All respondents answered yes. Some already had used some of the resources, one "hoped to fit it in".

5. Will you be able to utilize and extend on what your students learned during the Festival?
100% answered yes.

6. Are you interested in further water education in your classroom, by guest presenters?
77% of teachers said "yes".

7. Rate the festival overall (scale 1-5 with 1 poor and 5 excellent).
10% Average, 40% Above Average, 50% Excellent

Teacher Evaluation — continued:

8. Additional Comments:
There were six additional comments that included items such as “lunch was too short” and “our bus was late.” However, all of them were generally positive including this compliment:

> *I cannot express how well run this festival was. The kids enjoyed it thoroughly and I, the teacher, was extremely pleased I didn't have to spend much time managing behavior. Our guide (Bill) was personable, answered questions, and seemed to enjoy being there. The art contest was a great way to get kids excited and thinking about the theme. Its too bad not more schools competed. The majority of the activities were well planned, engaging, and meaningful. The kids (and adults) walked away with a vast amount of new knowledge. The timing of each lesson, lunch, passing periods, etc was all perfect as well. I congratulate you all for such a successful festival. I am so grateful to have had this experience and hope to come back in the future!! Much appreciation!*

Conclusions

We continue to strive toward a high quality festival where all participants have fun, students are actually internalizing information they learn are presented, and participants begin to take action. We believe the festival activities and information are so compelling that students will choose to protect our water once they develop a solid foundation of understanding.

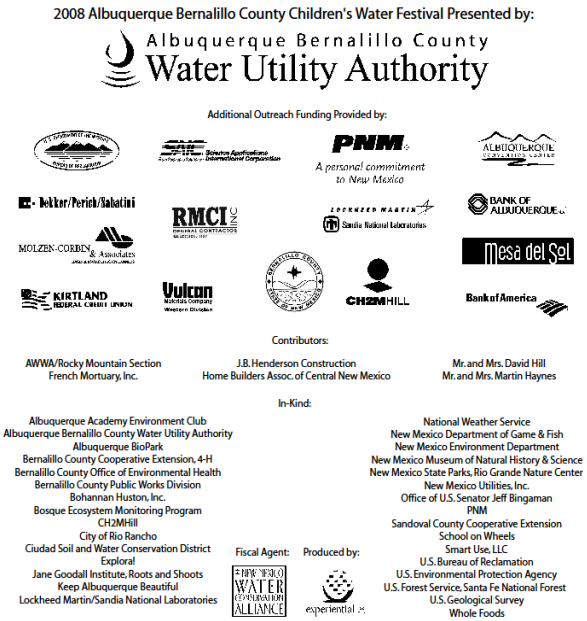
Each evaluation tool has a role in providing specific feedback to help us understand what changes to implement, if necessary. The Pre– and Post-festival Student Survey and the Activity Evaluation are powerful feedback tools for presenters, most of whom are not full-time educators. The Teacher Evaluation provides critical information that we need to create and maintain such a high quality event, which has become our trademark. Without maintaining this reputation we feel we would quickly lose interest and have far fewer applicants year after year. While improvements are always possible, we believe that after ten years we have essentially mastered most logistics of this event with the exception of late bus arrivals. The solution appears to be out of our control, but nonetheless it is an ongoing issue that we must deal with.

As we look to the future, we will continue to refine our evaluation tools to acquire the most accurate and informative data possible while minimizing classroom or other “intrusion.”

PUBLIC RELATIONS

For the second year we engaged high school students from School on Wheels Alternative High School to write an article about the event. They were required to conduct interviews, then write and edit their article to produce a high quality piece worthy of publishing. This process required many hours of mentorship by Sharon Sivinski, ABCWUA Water Education Coordinator. The article is located in Appendix A and is also posted on the Albuquerque Bernalillo County Water Utility Authority's web site http://www.abcwua.org/pdfs/waterfestival08.pdf/. A VIP mailing was sent to tribal and other state dignitaries announcing the festival and inviting them to attend. Press releases were sent to the *Albuquerque Journal*.

Large banners were created to celebrate the contributions of so many sponsors in our 10th festival year.



Photos featured in this report and on our website were taken by Sarah Holcomb (NM Environment Department) , Joseph Rice (PNM) and Katie Babuska.

1,200 T-shirts were worn by students, teachers, volunteers, presenters and organizers. Logos and organizational names were featured on the reverse side, as seen above.

Financial Analysis

The Albuquerque Bernalillo County Water Utility Authority provided the entire festival cash income as part of a larger contract with Experiential EE, LLC to provide festival production and in-class water resource education in grades 1-12 throughout 2008-2009.

As mentioned in the Executive Summary, this Annual Report describes the Albuquerque Bernalillo County Children's Water Festival event only. Additional funding raised in 2008 as part of the Children's Water Festivals and Outreach Program provided for additional water resource education outreach for 4th grade teachers and students in Albuquerque Public Schools and Rio Rancho Public Schools. The outreach included a Project WET teacher professional development workshop, the RiverXchange project, the Rio Rancho Children's Water Festival and fourth grade classroom outreach in Rio Rancho Public Schools. An account of these outreach activities is described in the *Children's Water Festivals and Outreach Program 2009 Annual Report,* which can be found on **www.waterfestnm.com.**

The festival would not have been possible without the **1118 volunteer hours** donated by Steering Committee members, Activity Evaluators, Presenters and Volunteers plus meeting space, all valued at **$24,911.99**. In addition, **$8,764.09 in classroom resource materials** were donated by presenter organizations, steering committee organizations and sponsor organizations.

In-kind Services	
Volunteer Services	$9180.00
Steering Committee Services	6371.99
Presenter Services	9360.00
Resource kit materials	8764.09
Total In-kind	**$33676.08**

Next Steps

Lessons learned in 2008 indicate the need to continue focusing on the following program areas:

Planning
Planning will always remain the key to a successful event. Next year Michelle Watson will continue as our Festival Manager using the knowledge obtain this year.

Outreach
Find new ways to integrate middle and high school students into the festival experience effectively.

Marketing/Public Relations
Continue the expanded T-shirt artwork project. Continue to notify elected officials and other VIPs of the festival program and its role in educating our youth. Find new ways to share and/or promote our program within the community, particularly to the parents of the students attending.

Evaluation
Continue to improve the Access database that is used for the surveys, teacher and presenter contact information, and all scheduling. Continue to refine the process of understanding what students are learning and how presenters can do a better job of delivering information. Engage the Steering Committee to help review student survey questions for relevance and clarity.

Event Logistics
Refine and improve our automated scheduling. Revisit any room assignments and flow of students for any issues.

Students learn how water and energy are linked together in the new activity entitled *Energy Drink.*

Appendix A: News Article

Water Education Starts Early

With the San Juan – Chama Drinking Water Project coming online, it's more critical than ever that we understand the importance – and the scarcity – of our water resources. Promoting that understanding every year is the Albuquerque Bernalillo County Children's Water Festival. This event, sponsored by the Albuquerque Bernalillo County Water Utility Authority, took place at the Convention Center on October 27 – 28. It provided effective education about water to 1,040 fourth graders from the metro area. Students participated in fun learning activities dealing with how water works and why it is so important to our desert environment. In a fun, informative, and interactive way, students learned about water issues such as:

- The Web of Life
- Watershed/Water Quality
- Water Conservation
- Water and our Society
- Water Cycle
- General Hydrology

Mike Sanchez and Jessica Sapunar-Jursich from the NM Museum of Natural History had to grow water invertebrates all fall so students at their presentation, "Meet Water Bugs Up Close," would be able to view live bugs with magnifying lenses in spite of the cold October weather.

Not only does the Water Festival seek to help students understand water issues, but also informs children that water is an essential and limited resource. The Water Festival gets children to learn how they can make a difference just by making a few changes in their daily water routine. For instance, students learned to turn off the water while brushing their teeth, shorten their shower time, water the lawn only when it needs it, and keep sprinklers on their lawns (not sidewalks, driveway, or gutters). They even learned why they should install a toilet that uses less water when flushing. The Water Festival encourages parents, teachers, and most importantly children to become informed about water. You can lean more by visiting **www.waterfestnm.com**.

Raising his hand with a smile on his face, this student was participating in the Rio Grande Bosque Water Cycle activity presented by the Rio Grande Nature Center.

2008 Water Festival's Happy Faces

As soon as the kids walked in, they all had smiles on their faces. Each school participated in five activities, and the students kept their smiles throughout the entire day. Kids commented that this was a fun fieldtrip and that they learned so much. Sarah, a student from Dennis Chavez Elementary School, said "I learned about water flow and that in 2009 we will be drinking Rio Grande River water." Another student named Luis exclaimed, "I had the most fun playing the game where we were saving water for the planet to survive."

This year's water festival was very educational and enjoyable to all of the 4th graders there. As always, more than twice as many teachers wanted their students to attend than there was room for.
Each year the festival organizers have to choose which schools will attend based upon applications and attendance from current and previous years. The event is open to 4th grade teachers from public, private, and home schools. Applications are accepted online beginning each March and closing in mid-August, **www.waterfestnm.com**.

Students made aquifer models in an activity taught by Lynn Kronowit and Mariah Wrage from the City of Rio Rancho and Lynn Kronowit from CH2M HILL-OMI.

Parents and Teachers Getting Involved

Parents and teachers had the same opinions about the Children's Water Festival. Both said, "Hands-on activities really help students learn." For example, in the photos below, the Bosque Ecosystem Monitoring Program (BEMP) gave students, teachers, and parents the opportunity to actually measure precipitation, groundwater from a well, and leaf litter fall.

Teachers and parents were also interested and learned about water during the festival.

Teachers really enjoyed being involved with the students while they were learning. A teacher from Dennis Chavez Elementary School said, "I think this Water Festival shows how important water ecology is. It also makes them aware of our water waste."
One parent said, "The activities were very enjoyable and educational for the kids – and the adults learn too!"

This year's 10th annual Children's Water Festival, sponsored by the Albuquerque Bernalillo County Water Utility Authority was a great experience for children and adults!

Presenters and Volunteers Donated Over 1000 Hours of Time

Altogether there were 22 different activities and at least 50 adult volunteers who took off work for one or two days to present information about water to students. Presenters came from all over the state, from organizations as diverse as the Rio Grande Nature Center, the National Weather Service, Bernalillo County Office of Environmental Health, City of Albuquerque Biopark, and Sandia Labs – just to name a few!

Albuquerque Bernalillo County Water Utility Authority employees presented two activities each day. Katherine Yuhas, Water Conservation Officer, presented an activity entitled, "The Long Haul." Students carried gallons of water to help them understand just how much water we use in every day tasks like doing a load of laundry or watering our lawns.

A popular hands-on activity was "The Life of a Rio Grande Cutthroat Trout Game," presented by Chantel Cook from New Mexico Game and Fish Department.

Ben Zimmerman (Pollution Prevention), Alex Salazar and Alex Lovato (Reclamation Facility-Pretreatment) put nasty chemicals and dog poop on trial. Students voted to keep them out of our river.

Ben Zimmerman and his coworkers from the Reclamation Facility at the Water Authority presented "Water Court," where students became jurors and voted on what kinds of materials and chemicals they would like to keep out of our river system.

Another activity, "Water Olympics," was presented jointly by students from School on Wheels Alternative High School and Albuquerque Academy. The student-presenters really enjoyed being role models to the fourth graders and teaching them about water's properties. While teaching, the student- presenters learned about their own abilities to work as a team.

Mike Quintana and Omar Escarcega, from School on Wheels, present "The Water Olympics" activity where fourth graders learn about water's chemical characteristics of adhesion and cohesion.

Otto the Otter aides 4th graders in crossing the road to Civic Plaza (it's really Ed Kandl, a hydrologist with the US Bureau of Reclamation in disguise!).

Altogether, the festival presented 23 activities, requiring more than 50 volunteer presenters to make the festival a success. In addition, Nora Romero coordinated nearly 100 volunteers, over 50 each day, to help out this year! Some volunteers helped keep presenters stay on time and aided school groups moving from one activity to the next. Other volunteers evaluated the presentations to help give feedback about clarity and interest. Most presenters came prepared with their own volunteers but if they needed a little more help "***Otto the Otter***" and the "***Water Wizard***" were there to lend a hand. Organizers and presenters are already thinking about next years' festival and making plans so it will be even better than this year's festival – and the Water Authority is making plans to help them succeed.

Ruben Archuleta, City of Rio Rancho's Water Conservation Tech, greeted students as he demonstrated the whimsical powers of water!

Festival Planning Takes All Year

To have this much fun and make it educational takes a lot of work! Katie Babuska runs the show. She is the Festival Director so she manages the festival team. Katie believes the water festival is a good investment in the future of this community. "I want the children to fall in love with where they live. I want them to keep loving to live here. This is a very efficient way for us to deliver education and it's free to them!" She feels that we need to inform students about things they can do at home or school to conserve water and improve water quality. The lesson is even more important now that we are drinking water from the Rio Grande.

Katie Babuska is interviewed by School on Wheels students.

Michelle Watson is interviewed by School on Wheels students.

Michelle Watson, Festival Manager, says, "Schools often go to the same places year after year for their field trips. This event is different in that the kids get to see many different organizations in one place. The Water Festival teaches kids about water which they may not get in any other field trips or in their regular curriculum." She makes sure the presenters are coordinated with the teachers, takes care of the event logistics, and implements evaluations of the presentations after the festival.

Estevan Ramirez, Horacio Ortiz, Gabi Flores, Mike Quintana, Sabrina Ochs-Bane, Ashly Nichols, Omar Escarcega (back row), Ortensia Laurence, teacher Vince Case, Jasmin Espinosa, and Estevan Sedillo (front row), all of School on Wheels – Main Campus, celebrate another year of presenting, reporting, and photographing at the 10th Annual Children's Water Festival.

School on Wheels students and their teacher would like to personally thank Sharon Sivinski (ABCWUA), Katie Babuska and Michelle Watson (festival director and organizer), and Karen Temple-Bemish (Albuquerque Academy) for their incredible support, guidance, and help during this year's water festival.

Reporters/Writers: Gabi Flores, Ashly Nichols, Horatio Ortiz, Sabrina Ochs-Bane
Editors: Sharon Sivinski & Vince Case

APPENDIX B: FESTIVAL PROGRAM

10th ANNUAL ALBUQUERQUE BERNALILLO COUNTY CHILDREN'S WATER FESTIVAL FESTIVAL PROGRAM

1. Are There Monsters in Our Water? — Laguna

Students will be able to recognize a few sources of surface water / runoff contamination. They will also be able to create simple graphs, using fake water samples, to show how much of each contaminant was found in their particular water sample.

NM State Science Standards, Fourth Grade: 4.1.1, 4.1.3, 4.1.4, 4.5.1

Bernalillo County Office of Environmental Health

Matthew Cross-Guillén | Phone 314-0324 | E-mail matthewc@bernco.gov

2. BioVan – MONDAY ONLY — NW Exhibit Hall

This mobile exhibit is designed to teach children about the journey of the Rio Grande, from its headwaters in Colorado to its mouth in the Gulf of Mexico. The BioVan includes invertebrates, fish, reptiles, amphibians, birds and mammals.

NM State Science Standards, Fourth Grade: 4.3.1, 4.3.2, 4.3.3, 4.3.4, 4.3.6, 4.3.8

City of Albuquerque/BioPark

Cynthia de la Rosa | Phone 764-6242 | E-mail cdelarosa@cabq.gov

3. Bosque Ecosystem Monitoring Program — Centro del Sol

Students learn about the Bosque ecosystem of cottonwoods and willows along the Rio Grande.

NM State Science Standards, Fourth Grade: 4.1.1, 4.1.2, 4.1.3, 4.1.4, 4.1.5, 4.1.6, 4.1.8, 4.1.9, 4.1.10, 4.2.2, 4.2.8, 4.3.1, 4.3.2, 4.3.3, 4.3.4, 4.3.5, 4.3.6, 4.3.7, 4.3.8, 4.4.4, 4.5.1, 4.5.3, 4.5.4

Bosque Ecosystem Monitoring Program, UNM Dept. Biology & Bosque School

Kimi Scheerer & Students | Phone 350-1438 | E-mail ksche@bosqueschool.org

4. Energy Drink — Taos

Students will build water wheels and complete a hands-on search for limited resources students will learn about the links between water and energy and how they are truly interdependent.

NM State Science Standards, Fourth Grade: 4.1.5, 4.2.4, 4.2.5, 4.2.7, 4.2.8

Sandia National Labs

Suzanne Pierce | Phone 845-7227 | E-mail spierce@sandia.gov

5. Every Drop Counts — Zuni

Students will learn how the aquifer was formed by building one of their own. They will learn about the various uses for water and why it is so important for everyone to conserve.

NM State Science Standards, Fourth Grade: 4.1.10, 4.4.4, 4.5.1

City of Rio Rancho

Marian Wrage | Phone 896-8737 | E-mail: mwrage@ci.rio-rancho.nm.us

6. Farming to Feed You — Jemez

Students become farm operators and learn watering methods for NM crops. We will explore flood irrigation, drip irrigation, and sprinkler irrigation systems through hands on field work.

NM State Science Standards, Fourth Grade: 4.1.1, 4.1.2, 4.1.3, 4.1.4, 4.1.5, 4.1.6, 4.1.7, 4.1.8, 4.1.9, 4.3.4, 4.3.6, 4.3.7, 4.3.8,4.5.1, 4.5.3, 4.5.4

Bernalillo County Cooperative Extension, 4-H

Tamara Rowland, Elliott Sachse & Cindy Schlenker Davies | Phone 243-1386 | Email trowland@nmsu.edu

7. Grease Police: Protectors of the High Tech River – MONDAY ONLY — Isleta

Officer Oil, a member of the Grease Police, explains how our water supply becomes wastewater and goes into the High Tech River (HTR) which is the sewer system and wastewater treatment plant. He explains how wastewater can pollute the environment via manholes overflowing, caused by household grease and construction debris. He explains how the wastewater is cleaned and returns again to the water supply, and how we can be protectors of the HTR to protect the water supply, homes, neighborhoods, and our river.

NM State Science Standards, Fourth Grade: 4.1.2, 4.1.6, 4.1.9, 4.2.1, 4.2.8, 4.5.1

CH2M Hill/OMI

Neal Klimek | Phone 891-5017 | E-mail nklimek@ci.rio-rancho.nm.us

8. How Does Water Do That? — Apache

How do we move water from its source to where we want to use it? Students will be challenged to build a water distribution system that can carry water from a single tank to one or more destinations. Along the way they will have to solve problems such as how to initiate a flow of water, how to make water flow up hill, and how to increase or decrease the amount of water flowing through the system.

NM State Science Standards, Fourth Grade: 4.1.1, 4.1.2, 4.1.3, 4.1.10, 4.2.5, 4.2.8, 4.2.9.

Explora

Derlly González — Email dgonzalez@explora.us

9. Incredible Journey — Santa Ana

Students become water drops to learn about the movement and distribution of water within the water cycle, and how pollution can move throughout the water cycle as well.

NM State Science Standards, Fourth Grade: 4.5.1

NM Environment Dept., Surface Water Quality Bureau

Jill Turner — Phone 476-1866 — E-mail jill.turner@state.nm.us

10. Leak Detective — Nambe

The students will be presented information about household water leaks, will observe a leak occurring, will predict the volume of the leak, then will scientifically measure the leak with a "leak cup" and a second hand to determine the actual size of the leak in gallons per day and per month.

NM State Science Standards, Fourth Grade: 4.1.1, 4.1.9

Smart Use, LLC

Richard Chapman — Phone 400-0283/400-4543 — E-mail rjchapman@aol.com

11. Long Haul — Civic Plaza

Students learn to really appreciate how much water a gallon of water is as they haul enough to flush the toilet or brush their teeth. They experience the difference between conserving and wasting uses.

NM State Science Standards, Fourth Grade: 4.1.2, 4.1.7

Albuquerque Bernalillo County Water Utility Authority

Katherine Yuhas — Phone 768-3633 — E-mail kyuhas@abcwua.org

12. Making River Water into Drinking Water — Enchantment I

Have you ever wondered about all of the different places that your drinking water can come from? The ground, the sky, and the earth's surface are all good places to find water. River water, like the water you see in the Rio Grande, might not look like the tastiest water to drink. With our miniature water treatment plant, you will see how it can go from brown river water to clean drinking water.

NM State Science Standards, Fourth Grade: 4.1.5, 4.1.9

CH2M Hill

Elizabeth Anderson — Phone 884-5600 — Email elizabeth.anderson2@ch2m.com

13. Meet Water Bugs Up Close — Tesuque

Students learn about riverine aquatic habitats by role-playing a food chain and larger food web, and through direct observation of live animals. Students practice using field macroscopes, create investigative sketches during this introduction to aquatic macroinvertebrates. Finally, students learn about aquatic invertebrate life cycles and how they adapt to river life.

NM State Science Standards, Fourth Grade: 4.1.1, 4.3.1, 4.3.2, 4.3.4, 4.3.6, 4.3.7, 4.5.1

New Mexico Museum of Natural History and Science

Jessica Sapunar-Jursich — Phone 841-2822 — E-mail: jessica.sapunar-jursich@state.nm.us
Tish Morris — Phone 841-2822 — E-mail: tish.morris@state.nm.us
Mike Sanchez — Phone 841-2853 — E-mail: michael.sanchez1@state.nm.us

14. Message in a Bottle -- TUESDAY ONLY — Isleta

How much water and petroleum does it take to make that plastic water bottle you're drinking from? Once its empty, what happens to it and how long does it take to biodegrade? And is the water *really* any better than what comes out of your tap? Students will learn the answers to these and many more questions, and learn how they can take action to help reduce/recycle/reuse and re-think the plastic water bottle.

NM State Science Standards, Fourth Grade: 4.1.1, 4.1.5, 4.2.4, 4.5.1, 4.5.2

Jane Goodall Institute, Roots & Shoots

Julie Velazquez — Phone 220-3396 — E-mail: jVelazquez@janegoodall.org

15. Mission Impossible — Navajo

The students' mission, if they choose to accept it, is to rescue Albuquerque from water shortages that could occur in the next 10 years. Students play an interactive game and make decisions about how to manage available water resources.

NM State Science Standards, Fourth Grade: 4.1.5, 4.1.9

Sandia National Laboratories/Lockheed Martin Geohydrology Department

Howard Passel — Phone 284-6469 — E-mail hdpasse@sandia.gov

16. Rio Grande Bosque Water Cycle — Picuris

Students become water molecules traveling through a water cycle. Students learn that water cycles through Earth and the atmosphere,and that the processes involved in the water cycle include precipitation, evaporation, runoff, percolation, transpiration, respiration and condensation. In the semi-arid climate of New Mexico, our scarce precipitation limits the quantity of water for plants, animals and humans to use. We need to consider all the water users.

NM State Science Standards, Fourth Grade: 4.2.4, 4.2.5, 4.4.5

Rio Grande Nature Center

Karen Herzenberg & Sarah Wood Phone 344-7240 E-mail karen.herzenberg@state.nm.us

17. Rolling River — NW Exhibit Hall

How does a river work? Students will see a model river and watch the effects of water as it flows down stream.

NM State Science Standards, Fourth Grade: 4.3.6, 4.5.1

Sandoval County Cooperative Extension

Steve Lucero Phone 867-2582 E-mail smlucero@nmsu.edu

18. Swimmin' in the Rio Grande — Santo Domingo

Students play a game to learn about the perils and challenges in the life of a Rio Grande Cutthroat Trout, New Mexico's state fish and a native.

NM State Science Standards, Fourth Grade: 4.3.1, 4.3.4, 4.3.6, 4.5.1

U.S. Forest Service, Santa Fe National Forest

Chantel Cook Phone 505 438-7879 Email: cmcook@fs.fed.us

19. Water Court — Estancia

Students will participate in a mock trial scenario. There will be a judge, jury, a prosecuting and a defense attorney. The defendants will be the students acting as the products on trial being accused of contaminating our wastewater stream by being thrown down our household drains. The Jury (the fourth grade peer group) will then decide if the product is considered beneficial, toxic, or harmful as it enters our waste water stream and if it passes through into the environment.

NM State Science Standards, Fourth Grade: 4.5.1, 4.5.4

City of Albuquerque Wastewater Utility Division, Pollution Prevention Program

Ben Zimmerman Phone 873-7058 E-mail bzimmerman@abcwua.org

20. Water Olympics — Cochiti

Students put water to the test! Through a series of experiments they demonstrate that water is no ordinary liquid!

NM State Science Standards, Fourth Grade: 4.2.1, 4.2.2, 4.3.3

School on Wheels – Monday

Vince Case & Students Phone 831-7873 Email case@aps.edu

Albuquerque Academy Environment Club – Tuesday

Karen Temple Beamish & Students Phone 858-8873 E-mail kbeamish@aa.edu

21. Water Supply Jeopardy Game — Enchantment 2

Students will learn some basic concepts and differences about ground water vs. surface water supply for potable drinking water. Concepts will be reinforced by participation in a game competing to determine the correct ground water or surface water 'question' for a seriesof given 'answers' (like the TV show).

NM State Science Standards, Fourth Grade: 4.1.1, 4.5.1

U.S. Bureau of Reclamation

Joe Alderete, Marsha Carra, & Michael Sanchez Phone 462-3578 E-mail jalderete@uc.usbr.gov

22. Weather or Not — Acoma

Students get a hands-on weather experience by demonstrating convection, creating clouds by two different methods, and simulating runoff from thunderstorms using a terrain model.

NM State Science Standards, Fourth Grade: 4.1.1, 4.2.2

National Weather Service

Deirdre Kann Phone 243-0702 E-mail deirdre.kann@noaa.gov

23. Why the River Runs Brown — Sandia

Students will learn about watersheds by examining and manipulating watershed models. They will learn that a watershed is the land area that drains to a water body such as a river or lake. They will see for themselves how watersheds can influence water quality.

NM State Science Standards, Fourth Grade: 4.3.6, 4.5.1

Bernalillo County Public Works

Anthony Chavez Phone 848-1544 E-mail anchavez@bernco.gov

APPENDIX C: SURVEY QUESTIONS

2008ABC County Children's Water Festival Pre and Post Festival Student Surveys

BIOVAN

1 Any pollutants that enter the Rio Grande may eventually end up in the _____.
a. Gulf of Mexico
b. Atlantic Ocean
c. Caribbean Sea
d. all of the above — ***Correct Answer:*** d

2 The journey of the Rio Grande begins and ends in which states?
a. begins in New Mexico, ends in Texas
b. begins in New Mexico, ends in New Mexico
c. begins in Colorado, ends in Texas
d. begins in Colorado, ends in New Mexico — ***Correct Answer:*** c

EVERY DROP COUNTS

3 What is the aquifer made up of?
a. mostly clay and boulders
b. mostly sand and gravel
c. giant slab of rock — ***Correct Answer:*** b

4 How do we get water out of our aquifer?
a. with straws
b. with wells
c. with sand, rocks and clay — ***Correct Answer:*** b

5 How long has the water been in our aquifer?
a. 10 years
b. 100 years
c. 1000 years
d. more than 10,000 years — ***Correct Answer:*** d

INCREDIBLE JOURNEY

6 Is there always enough water in the rivers, lakes, and groundwater for humans and animals to use?
a. no
b. yes — ***Correct Answer:*** a

7 If pollution starts at one place in the water cycle, can it spread to other places in the water cycle?
a. yes, because water is always moving
b. no, pollution stays in one place
c. no, because pollution must be moved in buckets — ***Correct Answer:*** a

8 What can you do to prevent pollution from ending up in our water?
a. let my dog's poop decompose naturally
b. drop litter wherever I go
c. ask my parents to recycle used motor oil when changing our car's oil
d. there is nothing I can do — ***Correct Answer:*** c

LEAK DETECTIVE

9 Where do most indoor leaks occur?
a. bathtub
b. shower
c. toilet
d. faucet — ***Correct Answer:*** c

10 When can leaks occur?
a. only when we use something
b. all the time, 24 hours per day — ***Correct Answer:*** b

11 Most people think a household leak is…
a. Bigger than it really is
b. Smaller than it really is — ***Correct Answer:*** b

LONG HAUL

13 Approximately how much water does my family use per day?
a. 5 gallons per person per day
b. 50 gallons per person per day
c. 500 gallons per person per day ***Correct Answer:*** b

14 What are three ways to reduce your own water use?
a. turn off water when brushing teeth
b. take shorter showers
c. reuse water when possible
d. all of the above ***Correct Answer:*** d

15 How much water does a person need to drink per day?
a. one glass, or about 8 ounces
b. eight glasses, or about half a gallon
c. ten gallons ***Correct Answer:*** b

MESSAGE IN A BOTTLE

16 How much money did Americans spend on bottled water last year?
a. 3 million dollars
b. 8 million dollars
c. 15 million dollars ***Correct Answer:*** c

17 On average, how many bottles of water did each American consume last year?
a. 43
b. 79
c. 167 ***Correct Answer:*** c

18 What percentage of disposable plastic water bottles are recycled in the United States?
a. 14 percent
b. 38 percent
c. 62 percent ***Correct Answer:*** a

MISSION IMPOSSIBLE

19 What is the Middle Rio Grande Basin?
a. the area of land around the river between Cochiti Reservoir and Elephant Butte Reservoir
b. a pond where they keep all our drinking water
c. a sink where you can get water from the Rio Grande ***Correct Answer:*** a

20 The human population and therefore the demand for water in the Middle Rio Grande Basin and on Earth is...
a. going down
b. staying the same
c. going up ***Correct Answer:*** c

21 The water supply that is easily available to humans in the Middle Rio Grande Basin and on Earth is…
a. getting smaller
b. staying the same
c. getting larger ***Correct Answer:*** a

RIO GRANDE BOSQUE WATER CYCLE

22 How does human use impact the amount of water available for animals and plants?
a. there is less water available
b. there is more water available
c. humans have no impact ***Correct Answer:*** a

23 Where does our rainwater come from and return to?
a. the ocean
b. the faucet
c. the water treatment plant ***Correct Answer:*** a

24 How would you make changes to ensure that residents, agriculture, industry and plants and animals have enough water?
a. drink less water
b. take all the water away from one group
c. let the water users decide together
d. let some people use as much water as they want ***Correct Answer:*** c

ROLLING RIVER

25 What is a watershed?
a. an area of land that drains to a common point
b. a shed in the backyard with water in it
c. a lake
Correct Answer: a

26 What is erosion?
a. soil coming off a slope because of rain, wind, or gravity
b. water vapor rising to the clouds
c. muddy rivers
Correct Answer: a

27 What is riparian vegetation?
a. ripe vegetables
b. plants that grow along rivers
c. birds that live in shrubs
Correct Answer: b

SWIMMIN' IN THE RIO GRANDE

28 What is the state fish of New Mexico?
a. rainbow trout
b. Rio Grande cutthroat trout
c. brown trout
Correct Answer: b

29 Name three stages of the Rio Grande cutthroat trout life cycle.
a. larvae, centipede and elder
b. egg, fry, adult
c. shell, pre-adult and post-adult
Correct Answer: b

30 What can you do to help the Rio Grande cutthroat trout?
a. recycle oil instead of dumping it down storm drains, and conserve river water
b. camp right next to the river and drive ATVs/vehicles quickly through streams
c. fish often so they don't overrun the other fish
Correct Answer: a

WATER JEOPARDY

31 What is Albuquerque and Rio Rancho's current water supply?
a. surface water from the Rio Grande
b. ground water
c. Rio Puerco
d. Cochiti Reservoir
Correct Answer: b

32 What is one of the planned future water supplies for the region?
a. Elephant Butte
b. surface water from the Rio Grande
c. icebergs from Antarctica
d. bottled water from Colorado
Correct Answer: b

33 What source of water is expected to provide more than half of Albuquerque's future water supply?
a. surface water
b. ground water
c. cleaning up water from mud puddles after rain storms
d. icebergs
Correct Answer: a

WEATHER OR NOT

34 How do temperature changes in the atmosphere help the process of cloud formation?
a. as air rises it gets colder, and water vapor condenses into small droplets and becomes visible.
b. the clouds dry out the lakes and oceans
c. if the wind blows the temperature gets warmer and clouds are produced
d. there are no temperature changes in the atmosphere
Correct Answer: a

35 What are some of the safety rules for flash floods in New Mexico?
a. never try to drive across a flooded area
b. never try to walk across
c. never try to swim across
d. all of the above
Correct Answer: d

WHY THE RIVER RUNS BROWN

36 What is a watershed?
a. Rio Grande River Watershed.
b. Colorado River Watershed
c. Mississippi Watershed ***Correct Answer:*** c

37 How does pollution get into the river?
a. when it rains the water picks up a lot of dirt in the watershed
b. because it is polluted with dangerous chemicals
c. because it has not rained in a long time ***Correct Answer:*** a

38 What is one thing we can do to keep our river clean?
a. dump motor oil on the ground or into storm drains
b. put lots of extra fertilizer and pesticides on our lawns
c. throw our dog's poop into the arroyo
d. pick up our dog's poop and throw it in the trash ***Correct Answer:*** d

ARE THERE MONSTERS IN OUR WATER?

39 Where does Albuquerque's drinking water come from today?
a. the ground/aquifer
b. Rio Grande river
c. the ocean ***Correct Answer:*** a

40 All water samples will have the same amount of all types of pollution.
a. true
b. false ***Correct Answer:*** b

41 What type of pollution will probably be found near a golf course and a neighborhood with lots of green lawns and gardens?
a. trash
b. dog waste
c. pesticides and fertilizers
d. oil and gasoline ***Correct Answer:*** c

GREASE POLICE

42 Why does oil or grease cause a sewer manhole to overflow?
a. It sticks and accumulates on the inside of the sewer pipe, blocking the flow.
b. It sticks in the top of the sewer pipe.
c. It slows down the flow in the sewer pipe.
d. All of the above. ***Correct Answer:*** d

43 How can we help prevent sewer manholes from overflowing?
a. Dump grease and oil in the sewer system.
b. Dump trash in the sewer system
c. Place oil and grease in containers and recycle or place in trash. ***Correct Answer:*** c

44 Where does the water from the High-Tech River (our sewer system) go after it leaves the wastewater treatment plant?
a. To the arroyos.
b. To the ground water.
c. To the groundwater and the Rio Grande River.
d. Back to the High-Tech River. ***Correct Answer:*** c

MEET WATER BUGS UP CLOSE

45 To be called an "aquatic insect," they must live:
a. All their lives in water
b. Only as larvae in water
c. Only as adults in water
d. Any of the above ***Correct Answer:*** d

46 For insects, what is incomplete metamorphosis?
a. Babies almost look like tiny adults
b. Babies and adults do not look at all alike
c. They don't finish changing into adults ***Correct Answer:*** a

47 Where can you see gills on dragonfly nymphs?
a. Near the mouth parts
b. On the thorax
c. On the legs
d. On the abdomen ***Correct Answer:*** d

BOSQUE ECOSYSTEM MONITORING PROGRAM

48 What does BEMP stand for?
a. Bosque Ecosystem Monitoring Program
b. Bosque Endangered Mammals Program
c. Bosque Effort to Monitor People
d. Building Ecosystems to Make Progress ***Correct Answer:*** a

49 What is one of the most common native trees found along the Rio Grande bosque?
a. cottonwood
b. Russian olive
c. salt cedar
d. tumbleweed ***Correct Answer:*** a

50 What mammals live in and around the Rio Grande bosque?
a. silvery minnows, cut-throat trout, red shiners
b. great horned owls, eagles, hummingbirds
c. beavers, porcupines, coyotes
d. whiptail lizards, snapping turtles, Rio Grande leopard frog ***Correct Answer:*** c

51 We use surface active arthropods traps (also known as pitfall traps) to collect which of the following critters that can live in the bosque?
a. spiders
b. ants
c. roly-polys
d. all of the above ***Correct Answer:*** d

FARMING TO FEED YOU

52 What is irrigation?
a. applying water to a crop
b. applying fertilizer to a crop
c. when it rains on a crop ***Correct Answer:*** a

53 What irrigation methods might farmers in New Mexico use to water their crops?
a. flood
b. drip
c. sprinkler
d. all of the above ***Correct Answer:*** d

54 Farmers conserve water by _____ the ground?
a. leveling
b. digging holes in
c. tilling ***Correct Answer:*** a

HOW DOES WATER DO THAT?

55 Water travels from a reservoir (bottle) through a narrow piece of plastic tubing. What will happen if the narrow tubing is replaced by a wider piece?
a. less water will flow through the wide tubing
b. more water will flow through the wide tubing
c. the same amount of water will flow through the wide tubing ***Correct Answer:*** b

56 If you want more water to flow out of your reservoir, what could you do?
a. raise the reservoir bottle higher
b. use smaller tubing to connect the reservoir to the rest of the system
c. seal the reservoir bottle by covering the top with your hand ***Correct Answer:*** a

MAKING RIVER WATER INTO DRINKING WATER

57 As of today, our local drinking water currently comes from…
a. the ocean
b. the Rio Grande River
c. the aquifer (through underground wells)
d. the Rio Grande River and the aquifer ***Correct Answer:*** c

58 As of the 2009, our local drinking water will come from…
a. the ocean
b. the Rio Grande River
c. the aquifer (through underground wells)
d. the Rio Grande River and the aquifer ***Correct Answer:*** d

59 What kinds of things are in river water that make it too dirty to drink?
a. thrash
b. chemicals
c. poop
d. all of the above ***Correct Answer:*** d

60 In order to drink river water, how is it purified?
a. settling, flocculation, ozone/hydrogen peroxide, filtered with carbon and sand, then chlorinated
b. chlorination only
c. filtration only
d. filter and chlorinate only ***Correct Answer:*** a

WATER OLYMPICS

61 What is an aquifer?
a. an underground lake
b. an underground source of water
c. a river
d. a tower that holds water ***Correct Answer:*** b

62 What percentage of Earth's surface is covered with water that we can drink?
a. 1%
b. 5%
c. 80%
d. 20% ***Correct Answer:*** a

63 Why can so many water drops stay on the head of a penny without flowing off?
a. because of glue
b. because surface tension holds the water molecules together
c. because the head of a penny is sticky
d. because the penny is shaped to prevent the water from flowing off ***Correct Answer:*** b

ENERGY DRINK

64 The total amount of non-renewable energy resources on earth are. . .
a. getting smaller
b. staying the same
c. getting larger ***Correct Answer:*** a

65 Which one of these is a renewable energy resource…
a. coal
b. oil
c. solar ***Correct Answer:*** c

66 Electricity generated using coal needs water to . . .
a. wash the coal
b. cool the system
c. turn the turbines ***Correct Answer:*** b

67 Electricity generated using hydroelectric needs water to . . .
a. wash the boats
b. cool the system
c. turn the turbines ***Correct Answer:*** c

WATER COURT

68 How many people live on the Rio Grande downstream from the City of Albuquerque?
a. six million (6,000,000)
b. six (6)
c. six hundred thousand (600,000)
d. six thousand (6,000) ***Correct Answer:*** a

69 How can we reduce pollutants in our water?
a. use extra water when putting waste down the drain.
b. let the City clean the waste water
c. don't pour pollutants down the drain
d. dump your waste on the ground ***Correct Answer:*** c

70 Hazardous products should be kept out of the drains in your house. Which of the following is NOT a hazardous products:
a. antifreeze
b. food leftovers
c. pills and medicine
d. motor oil ***Correct Answer:*** b