



2006 Santa Fe Children's Water Festival Project Report

April 30, 2006
By Katie Babuska

2006 Santa Fe Children's Water Festival Project Report

Students and teachers gathered to celebrate water at the fourth annual Santa Fe Children's Water Festival, held on Wednesday and Thursday, February 13 & 14, 2006, at Santa Fe Community College.

Goals and Performance Targets

The primary goal of the Children's Water Festival is to educate fourth grade students and their teachers in a fun and interactive atmosphere about water and its relationship to human and other natural resources. Our vision is to lay the foundation for further water instruction by exposing students to new ideas, options and solutions so the likelihood increases that they will make good environmental choices in the future.

Students and teachers attend five activities during the course of one day that help them understand three main concepts:

- 1) water is an essential and limited resource;
- 2) water-related facts, concepts and values; and
- 3) each of us can take action to protect and conserve water.

Performance Targets

We set three performance targets for students and three for teachers.

- Students demonstrate that they can answer these Six Big Water Questions:
 - Why is water so important to life?
 - What is the water cycle and why is it important?
 - What is a watershed and how does it function?
 - How do trees, animals, people, soils, and water depend on each other?
 - How do our actions affect water quality?
 - 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.

The 2006 Santa Fe Children's Water Festival provided effective community water education by teaching children and enabling them to educate their friends, parents and other family members. Through the Teacher Workshop, teachers received resources and activity ideas to use themselves and to share with colleagues. The organizations that participated benefit from greater recognition and community awareness of their involvement in elementary age water education.

Work Products

The Children's Water Festival Project delivered the following specific work products:

- The event was attended by 563 fourth grade students, 27 teachers, and approximately 80 parents from public and private schools in Santa Fe. In addition, 38 volunteers attended.
- A Teacher Workshop was attended by 25 teachers and provided concepts that enabled them to prepare their students before the Festival and continue with water education after the Festival.
- A Water Resource Kit for each teacher to provide water education materials and ideas for use in each classroom.
- A Water Festival Toolkit on CD.
- Communication with local media to build awareness of the Water Festival.
- Outreach to other New Mexico communities to encourage them to hold Water Festivals.

Water Festival Event

The Festival was held on February 13 & 14, 2006, at the Santa Fe Community College. Twenty seven classes totaling 563 students attended (13 one day, 14 the other), accompanied by their teachers and parent chaperones. Each class attended five activities lasting 25 minutes each. Assistance was provided by 38 volunteers and Steering Committee members.

Twelve hands-on activities were presented simultaneously each day, with a total of 13 unique activities offered (see attached Program). All activities address at least one New Mexico Science Standard for the fourth grade, and most activities address multiple standards not only in science but in other subject areas. The activities covered a variety of water topic areas including web of life, general hydrology and the water cycle, watershed, water quality, water conservation and water and our society/culture. Presenters were predominantly professionals in the water industry, but also included one group of high school students from Capital High School in Santa Fe.

Teacher Workshop

One Teacher Workshop was held January 26 at Wood Gormley Elementary library with 25 teachers attending. Teachers learned what to expect as well as what was expected of them and their students. We went over the contents of the Resource Kit and how they might use the materials and information before and after the Festival. Teachers learned about our evaluation process and how we use the Six Big Water Questions during the Classroom Visits. We gave feedback about the previous year's evaluation results and encouraged teachers to incorporate more water vocabulary and concepts. Teachers signed up for Classroom Visits, which took place during March and April 2006.

Resource Kit

This kit contained the following teaching resources:

- "Before" Water Use Survey
- Permission to photograph students
- Water Conservation Works! A Report from the City of Santa Fe
- 2006 City of Santa Fe Water Conservation calendar
- Rain gauge (1 per student)
- Shower timer (1 per student)
- Labels for name tags (1 per student)
- Conserve Water activity books (1 per student)
- The True Story of Smokey the Bear (1 per student)

Water conservation refrigerator note and pen (1 per student)
Water conservation pen (1 per student)
Water conservation tattoo (1 per student)
Storm Water as a Resource book (1 per student)
Water Games -- Protect Our Water
Our Climate Our Future Poster Contest announcement
About Wastewater Treatment Book (1 per student)
Reduce Your Use magnet (1 per student)
PNM Earth Study Grant announcement
PNM Classroom Innovation Grant announcement
Make Your Own Aquifer activity description
The Six Big Water Questions
Posters:
- Never Swim Alone
- Santa Fe's Water Cycle
- When You're Not Looking, A Lot Can Happen
- Rainwater Harvesting

Outreach and Children's Water Festival Toolkit

This interactive multimedia Water Festival Toolkit on CD was distributed upon request to people in other communities to assist them with planning a Water Festival. The Toolkit includes information about the importance of water education and the Water Festival as a powerful delivery method. It also includes festival planning aids, document templates and activity descriptions and instructions. The Toolkit is available through the PioneerWest website, www.pioneerwest.net, and copies were sent to many people in New Mexico and other states.

Media Communication

VIP invitations were mailed to 133 people including members of the NM Senate and House from Santa Fe districts. Several VIP visitors, including representatives from the Office of the State Engineer and Bureau of Reclamation, toured the Festival. Stories about the event appeared in the newsletters of several water and environmental education organizations. A local radio station featured an interview with the Festival Manager.

Real Water Use Measurement

Parents of students were invited to provide their addresses for a study of actual water use, conducted by the City of Santa Fe Water Division. Results will be analyzed and reported by this agency.

Process

The work of designing, planning and implementing the Festival was done by a Steering Committee, a Festival Manager, two Festival Coordinators and a Volunteer Coordinator. The Steering Committee includes representatives from the City of Santa Fe Water Conservation Office, Santa Fe County Facilities Management Department, NMED Surface Water Quality Bureau, NM Game and Fish Department, the Office of the State Engineer Water Conservation office, the State Land Office Educator, and others who are interested in water education (list attached).

Project management services were provided by PioneerWest, a local project management consulting firm.

Fiscal sponsor services were provided by New Mexico Water Conservation Alliance, a nonprofit organization of municipal and industrial water conservation professionals dedicated to water conservation education and networking.

The project plan, schedule and work tasks were developed based on the experience derived from Middle Rio Grande Children's Water Festivals held annually since 1999 and Santa Fe Children's Water Festivals held since 2003. Work Groups were formed to work on Teacher Outreach and Communication, Teacher Workshop, Program Development, Media Communication, Logistics, and Financial Management. The Steering Committee met monthly and the Work Groups met as necessary. E-mail was used for meeting notices and progress reports. Project Reports and Reports on Outcomes for previous Children's Water Festivals in the Middle Rio Grande and Santa Fe areas are published on PioneerWest's website, www.pioneerwest.net.

Support

In addition to planning and implementing the project, it was necessary to raise the funds needed for implementation. We developed a budget and wrote proposals to potential sponsors. The fundraising initiative resulted in grants, in-kind donations and contracts for service from many organizations. In addition, other organizations contributed through the work of their representatives on the Steering Committee and by volunteering and presenting activities at the Festival (list attached).

The major donors, contributors and presenters were recognized through press releases, T-shirts, large signs and logos displayed at the Festival, and lists in teacher packets.

Results

The Festival activities covered a wide range of core curriculum areas including language arts, math, science, social studies, visual arts, and health and wellness. Presenters endeavored to present water-related facts, concepts and values through hands-on learning activities.

The Festival stimulated the development of water education activities by the presenting organizations. In many cases, organizations were motivated to develop activities for fourth grade students because of the opportunity offered by the Festival. 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.

The Festival brought together 27 teachers who are committed to giving their students an excellent education. These teachers have the motivation and resources to continue water education that was started at the Festival in their classrooms.

The Festival offered an opportunity for a wide range of organizations to participate. The list of organizations that were major donors, contributors and presenters includes businesses, state and federal agencies, local governments, community organizations and schools (list attached).

Verification of Performance Targets

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

➤ Water Conservation Before and After Surveys

Students completed questionnaires about home water use both before and after the Festival. The response rate was 48% for the Before Surveys, and 34% for the After Surveys. We did not track student respondents. Answers to the questionnaires enabled us to determine the impact of the Festival on water use. Our analysis shows that participants are saving at least four gallons per person per day as a result of attending the Festival. This is down from last year by about one gallon per person per day. It is important to note that, 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 Children's Water Festival.

➤ Evaluations

Teachers, students, presenters and volunteers completed written questionnaires after the Festival. In addition, each activity was observed at least once per day during the Festival by an Activity Evaluator, but most activities were observed more than once on a single day. Detailed results of these evaluations, including each group's comments and suggestions for improvement, are included in the 2006 Santa Fe Children's Water Festival Report on Outcomes, www.waterfestnm.com.

Overall, at least 85% of teachers, presenters and volunteers rated their experiences as Really Good or Wonderful – the two highest ratings. Activity Evaluators rated Festival activities an average of 5.9 for relevance (on a scale of 1-6 with 6 being highly relevant), and 5.2 for student comprehension.

➤ Classroom Visits

Additional funding this year enabled us to provide a Classroom Visit to every teacher requesting one. In all, 17 Classroom Visits (63% of classes) were conducted after the Festival to determine the degree to which students reached the performance targets. The visits combined evaluation and outreach in an interactive lecture style. Students were asked the Six Big Water Questions. As needed, staff helped them develop answers to these questions.

Overall, students demonstrated a good grasp of four of the Six Big Water Questions. Two of the Six Big Water Questions continue to be difficult for students to answer:

What is a watershed and how does it function?

How much water does my family use?

There was, however, a marked increase this year in the number of students who could explain the concept and components of a watershed. We attribute this to improved feedback by staff to teachers and presenters about the need to use words such as "watershed" and to clarify what constitutes a watershed during watershed-oriented activity presentations.

Students continue to have no concept of how much water their families use in a day, and they do not know the source of their drinking water. We showed them how to utilize their math skills to predict such things as water use for various household tasks, and to calculate how many dog feces end up in the Rio Grande following a rain event after three months of no precipitation. They were impressed!

Financial Analysis

A careful accounting of the cost components was carried out to ensure that each sponsor was provided with the necessary documentation and also to provide a more accurate budget that could be used to plan future Children's Water Festival. The major cost components and expenses are shown below.

Santa Fe Water Festival Expenses

Equipment	653.98
Supplies	2,123.34
Contractual	2,098.50
Travel	1,001.44
Personnel	7,799.71
Total	13,667.97

It is important to note that the Festival would not have been possible without the hundreds of hours of volunteer work that were donated by teachers, parents, presenters, volunteers and members of the Steering Committee.

Next Steps

Effective March 1, 2006, Susan Gorman of PioneerWest turned over project management of the Children's Water Festivals in the Santa Fe and Middle Rio Grande areas to Katie Babuska of Experiential EE. PioneerWest will provide information for the Financial Analysis Addendum to this Project Report no later than May 31, 2006.

The continuing work that has evolved from previous festivals includes:

- Festival website development: in April 2006, Experiential EE developed a website, www.waterfestnm.com, that provides a wide range of information for teachers, presenters, sponsors, students, volunteers and water educators. For the first time, teachers will be required to apply on-line.
- Expansion of teacher water education resources: the website includes information about speakers and local field trips that we hope will further encourage teachers to incorporate more water education throughout the elementary school years.
- Festival marketing: all activities will be tied to the 4th grade NM Science Standards and teachers will have access to this information via the website. We hope to attract schools that have never applied, and make life easier for all teachers.
- Outreach: continued outreach to organizations to attract a wide variety of presenters, activities, teachers and sponsors.
- Fundraising: secure additional funds to broaden our evaluation and outreach program component.

Attachments

2006 Santa Fe Children's Water Festival Activity Program

February 15-16, 2006

Santa Fe Community College, Witter Fitness Center

Main Level

Down by the River's Edge

1011

Students learn how native vegetation like cottonwoods and willows along the river's edge prevents erosion.

Santa Fe County

Ron Sandoval, Phone 505-490-2269, E-mail rsandoval@co.santa-fe.nm.us and Colleen Baker, Phone 505-992-9868, Email cbaker@co.santa-fe.nm.us.

Long Haul

1013

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.

City of Santa Fe, Water Division

Randy Sugrue, Phone 505-955-4220, E-mail rcsugrue@ci.santa-fe.nm.us and Dan Ransom, Email dsrcansom@ci.santa-fe.nm.us.

Weather or Not

Revised!

1015/1014

Students get a unique hands-on weather experience by demonstrating how precipitation is produced in the atmosphere and how heavy precipitation can lead to flash flooding. Experiments illustrating convection and cloud formation are completed by the students, then runoff from a thunderstorm is simulated using a terrain model. The use of meteorological instruments, including a weather balloon and rain gage, is demonstrated. Finally, students learn about the dangers of flash floods and review safety rules.

National Weather Service

Deirdre Kann, Phone 505-243-0702, Email deirdre.kann@noaa.gov.

Rolling River

Outdoors

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

NM State Land Office & NM Environment Dept., Surface Water Quality Bureau

Nina Wells & Dana Strang, Phone 505-827-5096, E-mail nina_wells@nmenv.state.nm.us and dvackar@slo.state.nm.us

Upper Level

First in Time, First in Right

New!

2010

New Mexico has a long history of irrigated agriculture. Methods of fairly parceling out water to farmers date back 200 years to the earliest Spanish settlers. In this hands-on activity, students will determine fair ways to distribute water rights among various agricultural, rural and recreational users.

New Mexico Ag in the Classroom

Dalene Hodnett, Phone 505-532-4704, E-mail dhodnett@zianet.com

Incredible Journey

2011

Students act as water droplets moving through the water cycle. They learn about the movement and distribution of water -- as well as pollution -- on the earth.

NM Environment Dept., Surface Water Quality Bureau

Jill Turner, Phone 505-476-1866, E-mail jill.turner@state.nm.us

- Perfect Little River** *New!* **2012**
 Students will build a watershed puzzle and learn about the impacts upstream activities have on downstream. We will learn about natural systems and effects of pollution in watersheds, specifically what water quality problems occur in the Santa Fe reach of the Rio Grande.
 City of Santa Fe, Stormwater Management
 Peggy Doolittle, Phone 505-955-6420, Email pjdoolittle@santafenm.gov
- Meet Water Bugs Up Close** **(Wednesday only)** **2013**
 Students observe and identify live macroinvertebrates commonly found in local ponds and rivers and learn how biologists determine the purity of the water by which critters live there.
 New Mexico Game & Fish Department
 Colleen Welch, Phone 505-476-8119, E-mail colleen.welch@state.nm.us, with Tina Tenario.
- Rio Grande Bosque Water Cycle** **(Thursday only)** **2013**
 Students role play water molecules going through a water cycle.
 Rio Grande Nature Center
 Rebecca Helianthus, Phone 505-344-7240, E-mail rydings@state.nm.us, with Linda Knowlton and Sharon Thomas
- What's in Your Water?** *New!* **2014**
 Everybody lives in a watershed but what is the quality of the water in that 'shed? How does the river get polluted and what can you do about it? Explore the sources of water pollution and discover solutions using a model of the watershed.
 Santa Fe Watershed Association
 Pamela Dupzyk, Phone 505-820-1696, E-mail pamelad@santafewatershed.org
- Swimmin' in the Rio Grande** **2015**
 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.
 US Forest Service, Santa Fe National Forest
 Kimberly Kelly, Phone 505-829-3535, E-mail: kakelly@fs.fed.us
- Waterfowl & Shorebirds of NM Waterways** **2016**
 Students learn how New Mexico's ducks and shore birds are adapted to their special environment. They will also learn what makes a bird a bird and the perils water birds face during migrations.
 Audubon New Mexico
 Eileen Everett, Phone 505-983-4609, E-mail everett@audubon.org
- Water Jeopardy** **2017**
 Students compete to give questions for the water answers (like the TV show).
 Capital High School (Wednesday only)
 Laura Hlinak and students, Phone 505-467-1000, E-mail nordfang@aol.com
 PioneerWest Staff and Souder Miller & Assoc. (Thursday only)
 Barbara Garrity and Julie Filatoff, Phone 505-473-9211, Email jrf@soudermiller.com
- Water Wizard who knows all there is to know about H₂O!**
 NM Game and Fish (Conservation Services Division)
 Tanya Dofflemyer, Phone 505-476-8101, Email tanya.dofflemyer@state.nm.us

2006 Santa Fe Children's Water Festival

Thanks to these organization for their generous support!

Lead Donors

U.S. Bureau of Reclamation
City of Santa Fe
Sierra Club, Rio Grande Chapter

Contributors

AWWA – Rocky Mountain Chapter
Business Water Task Force
CDM
Coca Cola
Environmental Education Association of New Mexico
New Mexico Environment Department, Surface Water Quality Bureau
New Mexico Game & Fish Department
New Mexico Office of the State Engineer, Water Conservation Office
New Mexico State Land Office
PNM
Rancho Viejo de Santa Fe
Rocky Mountain Water Environment Association
Santa Fe Community College
Science Applications International Corporation (SAIC)
Trader Joe's
U.S. Forest Service, Santa Fe National Forest
U.S. Forest Service, Southwest Region
WaterBank

Fiscal Agent

New Mexico Water Conservation Alliance

2006 Santa Fe Children's Water Festival

Thanks to these organization for their creative activities!

Presenters

Audubon New Mexico
Capital High School
City of Santa Fe, Stormwater Management
City of Santa Fe, Water Division
National Weather Service
New Mexico Agriculture in the Classroom
New Mexico Environment Department, Surface Water Quality Bureau
New Mexico Game & Fish Department
New Mexico State Land Office
Rio Grande Nature Center
Santa Fe County
Santa Fe Watershed Coalition
Souder Miller & Associates
U.S. Forest Service, Santa Fe National Forest

2006 Santa Fe Children's Water Festival

Steering Committee

Peggy Doolittle	City of Santa Fe, Stormwater Management
Dan Ransom	City of Santa Fe, Water Division
Randy Sugrue	City of Santa Fe, Water Division
Abraham Franklin	NMED, Surface Water Quality Bureau
Colleen Welch	NM Game & Fish Department
Dana Vackar-Strang	NM State Land Office
Cheri Vogel	Office of the State Engineer
Ron Sandoval	Santa Fe County
Pamela Dupzyck	Santa Fe Watershed Association