

Middle Rio Grande Children's Water Festival 2004 Project Report



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By Susan Gorman
Project Manager

Middle Rio Grande Children's Water Festival 2004 Project Report

Middle Rio Grande Children's Water Festival 2004 was held on Thursday and Friday, October 14 and 15 at the Albuquerque Convention Center. A total of 46 teachers and 1018 students from 18 schools in Albuquerque and Rio Rancho participated in the Water Festival. Nearly 6,000 students, over 250 teachers and hundreds of parents have participated in the six successful MRG Water Festivals held since 1999.

Goals and Performance Targets

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

In 15 years or so the students who participate in the Water Festival will be the water engineers and managers; the voters and decision makers. They will have to make choices about water and they must have the facts, concepts, values and critical thinking skills to do that. The Water Festival provides students and teachers with some of those water facts and concepts and values.

We have set performance targets for the Water Festival that focus on learning and also on actions -- changing behavior:

Performance Targets

- ◆ Students demonstrate that they can answer the Big Water Questions:
 1. Why is water so important to life?
 2. What is the water cycle and why is it important?
 3. What is a watershed and how does it function?
 4. How do trees, plants, animals, people, soils, and water depend on each other?
 5. How do our actions affect water quality?
 6. How much water does my family use?

- ◆ Students take action to conserve water and protect water quality.
- ◆ Students urge their family and friends to take action to conserve water and protect water quality.

- ◆ Teachers continue water education in the classroom using the resources and concepts learned at the Teacher Workshop and Festival.
- ◆ Teachers utilize new resources, adopt expanded curricula and modify teaching methods.
- ◆ Teachers take action to conserve water and protect water quality.

Work Products

The MRG Children's Water Festival 2004 provided effective community education about water by teaching children and enabling them to educate their friends, parents and other family members. Through the Teacher Workshops, 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 the work that they do.

The Water Festival Project delivered the following specific work products:

- ◆ The Children's Water Festival 2004 event attended by 1018 4th grade students and 46 teachers from 18 Albuquerque and Rio Rancho schools.
- ◆ A Teacher Workshop which provided concepts that enabled the teachers to prepare their students before the Water Festival and continue with water education after the Water Festival.
- ◆ A Water Resource Kit for each teacher to provide water education resources for use in each classroom.
- ◆ Communication with local media to build awareness of the Water Festival.
- ◆ Water Festival Toolkit on CD to provide assistance to New Mexico communities that intend to hold Water Festivals.

Water Festival Event

The Festival was held on October 14 and 15 at the Albuquerque Convention Center. The students were accompanied by their teachers and over 100 parents. Each group of students attended the Water Festival for one full day and participated in five 25 minute activities.

Assistance was provided by 56 volunteers and members of the Steering Committee.

Twenty-three different activities were presented by 55 people each day. This year, the program included four new activities that expanded the range of topics and core curriculum areas that were covered. Students made model aquifers from ice cream, ice and soda and tested their water knowledge in lively games of Water Jeopardy. They discovered what it's like to be a Rio Grande Cutthroat Trout and how to determine the purity of a stream by identifying which "bugs" live there. They learned to really appreciate how much water a gallon of water is as they hauled enough to flush the toilet or brush their teeth. They learned why the river runs brown and how thrifty plants can survive in a thirsty land like New Mexico.

This year, students from Rio Grande and Valley High Schools, Bosque School and Albuquerque Academy led activities for the 4th graders because we have found that the younger students pay special attention because they really respect the older students. (See Program - Attachments)

Teacher Workshops

The Teacher Workshops were held on September 23 and 25 at the Special Collections Library. The Workshop program included discussions of teachers' expectations, Festival outcomes and the importance of water education. Festival logistics and the contents of the Resource Kits were reviewed. Each teacher received a Resource Kit filled with water education resources. A total of 39 teachers attended.

Water Resource Kit

This kit contained the following teaching resources:

- ◆ Posters
 - Albuquerque's Water Cycle
 - When You're Not Looking, A Lot Can be Happening along a Southwestern Stream
 - Wetlands: Water, Wildlife, Plants and People!
 - Clouds
 - Rainwater Harvesting
 - Never Swim Alone

- ◆ Bookmarks & Flyers
 - PNM Classroom Innovation Grant Information
 - PNM Earth Study Grant Information
 - Assorted Bookmarks
 - Protect Our Water (1 per student)
 - How to Make an Aquifer Activity Description
 - Big Water Questions

- ◆ Books, Guides, Videos and Stuff
 - Discover Ground Water & Springs Activity Book (1 per student)
 - Conserve Water Activity Book (1 per student)
 - Water Stories (1 per student)
 - Storm Water
 - Floods - The Awesome Power
 - Water Squad Video
 - Bug Viewer
 - Protect our Water* Pencils (1 per student)

Outreach to other New Mexico Communities

The successful outreach initiative is continuing to encourage and assist people in other New Mexico communities to initiate planning for their own Water Festival event. More than 500 4th graders from schools in the Santa Fe area participated in the 2nd Santa Fe Children's Water Festival that was held on February 18 and 19.

Silver City and Socorro held Water Festivals as well. A Festival Workshop was held in Carlsbad and planning is underway for a Water Festival there. The Toolkit on CD was produced and is available to anyone who is interested in planning a Water Festival. Advice and information have been provided to water educators in Gallup, NM, Arizona, Texas, Massachusetts and Turkmenistan.

Media Communication

Two press releases were sent to the area media and calls were made to follow up. More than 140 invitations were sent to elected officials, sponsors and other VIPs. The Albuquerque Journal published a good photo with caption. Stories about the event have been published in newsletters of several water and environmental education organizations.

Process

The work of designing, planning and implementing the Festival was accomplished by a Steering Committee, a Festival Manager, two Festival Coordinators and a Volunteer Coordinator. Steering Committee members include water conservation and protection professionals from the cities of Albuquerque and Rio Rancho, Cooperative Extension/4-H agents, the State Engineer Office Water Conservation educator, and others who are interested in water education. (List Attached)

Project management services were provided by Susan Gorman, owner of PioneerWest, a local project management consulting firm. Festival Coordination was also provided by Pam Riley and Darrel Kundargi, followed by Matthew Cross-Guillen and Barbara Garrity and Jeanette Salazar provided Volunteer Coordination services.

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 previous Water Festivals. Major Tasks included Teacher Outreach and Communication, Teacher Workshop, Program Development, Media Communication, Logistics, and Financial Management. The Steering Committee met monthly. The E-mail list serve was used for meeting notices and progress reports. Information on the Festivals was 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 fund raising 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, listing on the Festival 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 & 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 4th grade students because of the opportunity offered by the Festival.

The Festival brought together 46 more dedicated teachers who are committed to giving their students an excellent education. These teachers and those who attended previous Water Festivals have the motivation and resources to continue water education that was started at the Festivals in their classrooms.

The Festival offered an opportunity for a wide range of organizations to participate. A total of 41 organizations provided support through donations of time, resources and money. 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)

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

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

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

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

The highlights of the results of all three verification methods are reported here. The full report will be published and made available in print and on the website.

Most evaluators rated the experience as 6 (Wonderful) or 5 (Really Good) on a scale of 1 to 6.

Evaluations

We asked presenters:

What did you enjoy most about the Children's Water Festival?

"Kids were so fun."

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

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

Comments about the Festival from teachers, students and parents to the presenters were extremely positive. There were no negative comments.

"Teachers said that the students had a great time and the students said the same thing."

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

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

We asked students:

Why do you think learning about water is important?

"So we will have some in the future"

"We live in a desert"

"We might run out"

"If we learn about water we'll be able to understand it and will use less of it"

"Because we'll get dehydrated and go dead"

"To learn how to save water"

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

"I am taking shorter showers"

"I am saving water"

"Nothing yet"

"Not wasting it"

"Turning off water while brushing teeth"

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

"Yes, like 24 times!"

"They already know a lot but I told them a lot more."

"We have been protecting our water for a long time even when I was a baby."

"I told my family that we can't waste water 'cause we don't have all the water in the world!!"

Classroom Visits

Classroom visits were conducted to determine the level of learning long-term, with special focus on the Big Water Questions. Most students demonstrated a solid grasp of the above ground components of the water cycle, evaporation, condensation and precipitation. Fewer understood the below ground components of percolation and the nature of the aquifer.

Transpiration was an illusive concept for many.

Only a few students could explain the concept of a watershed. This may be partly because the concept is difficult to grasp and because all students did not attend an activity that focused on watersheds.

Many students demonstrated good understanding of animal, plant, tree, human, soil and water interdependency, some actions that cause water pollution, ways to conserve water and commitment to personal and familiar behavioral change to conserve water.

“Before” and “After” Water Use Surveys

The results of the “Before” and “After” Water Use Surveys is being analyzed. A complete report on the evaluations is available on request.

Financial Analysis

A careful accounting of the cost components was carried out to ensure that each funder was provided with the necessary documentation and also to provide a more accurate budget that could be used to plan future Festivals.

The major cost components are shown below:

Expenses		
Equipment	\$1,236	
Supplies	2,218	
Contractual	6,315	
Other (Outreach)	412	
Food	2,100	
Personnel	10,619	
Total	\$ 22,900	
Value of in-kind time and resources		\$17,118

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

Next Steps

The continuing work that has evolved from the Water Festival includes:

- ◆ Continuing water education for the teachers & students - Teachers will be offered additional opportunities to continue water education. The Water Festival section on the website, www.pioneerwest.net, provides contact information for the Festival presenters.
- ◆ Outreach to New Mexico Communities - Technical assistance will continue to be provided on request and the Water Festival Toolkit on CD will be sent to requesters.
- ◆ Planning for Future Water Festivals - A significant portion of the funding needed for the MRG Water Festival in 2005 and Santa Fe Water Festivals in 2005 and 2006 has been secured. Work has already begun to plan and organize both the Santa Fe Water Festival and the MRG Water Festival in 2005.

Attachments

Middle Rio Grande Children's Water Festival 2004 Program

1. Weather or Not

Acoma

Students analyze meteorological and hydrological data to determine if a flash flood might occur, issue warnings and monitor the flood event.

National Weather Service

Deirdre Kann & Kerry Jones, Phone 505-243-0702, E-mail deirdre.kann@noaa.gov

2. Our Cottonwood Forest

Cochiti

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

Bosque School

Dan Shaw & Students, Phone 505-898-6388, E-mail dshaw@bosqueschool.org

3. Meet Water Bugs Up Close

Apache

Students will learn about riverine aquatic habitats, including the food web with aquatic macro-invertebrates and fish. This is an introduction to identifying these animals and learning about their life cycle by observing live critters in their watery homes.

New Mexico Game & Fish Department

Colleen Welch & Jamie Brytowski, Phone 505-476-8119, E-mail cewelch@state.nm.us

4. Water and Life

Isleta

Students will examine a wide variety of prehistoric and historic water related items. They will try to guess what the items are and what their uses or benefits were. Help or hints, as necessary, will be provided by the instructors.

Albuquerque/Bernalillo County Water Utility Department

Larry Marken & Margie Monarez, Phone 505-268-5249

5. Groundwater - New Mexico's Buried Treasure

Jemez

Students learn about the water cycle underground - the aquifer, groundwater recharge, how contamination can move into groundwater, the effects of water well pumping in an aquifer, and why it's so important to conserve water.

New Mexico Environment Dept. Ground Water Quality Bureau

Dennis McQuillan, Phone 505-827-1400 x1004, Cell 505-660-1592, E-mail dennis_mcquillan@nmenv.state.nm.us

6. Soil Run Off & Erosion 102: A Portrait of the Rio Grande

Nambe

Students will demonstrate how precious top soil can run off the land and end up in the river and discuss ways to help prevent run off into the Rio Grande and to conserve more water.

Rio Grande River Rangers

Paula Morgan & Students, Phone 505-265-2253, E-mail thompaula_2000@yahoo.com

7. There Otter be Otters!

Navajo

Once upon a time otters swam in the rivers of New Mexico. Students will learn about the river otters' history and the efforts to bring them back.

Amigos Bravos

Rachel Conn, Phone 505-758-3874, E-mail rconn@amigosbravos.org

8. Insectopia

Laguna

Water health can be determined by the particular kinds of aquatic insects living in it. Do you know if that river, lake or pond is polluted or pristine (unspoiled)? By identifying the aquatic insects students will be able to determine water quality.

City of Albuquerque /Open Space Division

Bonnie Dils, Phone 505-452-5205, E-mail bdils@cabq.gov

9. Why the River Runs Brown

Picuris

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 Environment Dept., Surface Water Quality Bureau

Abe Franklin & Dan Guevara, Phone 505-827-2793, E-mail abraham_franklin@nmenv.state.nm.us

10Th. Water Olympics

(Thursday only)

Sandia

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

Albuquerque Academy Environment Club

Karen Temple Beamish & Students, Phone 505-858-8873, E-mail beamish@aa.edu

10Fr. Birds, Rivers and the Web of Life

(Friday only)

Sandia

Students will learn that birds and people share river habitats and what it is like to be a bird living along the river.

Valley High School Environmental Club

Andrew Rominger & Students, Phone 505-243-7355, E-mail ecopiranga@cybermesa.com

11. Exploring Coral Reefs

Santa Ana

Students learn about amazing coral animals, why coral reefs are important and how the Rio Grande connects us to the reefs in the Gulf of New Mexico.

City of Albuquerque/BioPark's Albuquerque Aquarium

Deborah Green, Phone 505 -848-7172, E-mail dgreen@cabq.gov

12Th. Edible Aquifer

(Thursday only)

San Juan

Students make an aquifer model from edible ingredients and learn about hydrogeology, pollution and pumping.

Albuquerque Academy Environment Club

Karen Temple Beamish & Students, Phone 505-858-8873, E-mail beamish@aa.edu

12Fr. Drink the Rio Grande!

(Friday only)

San Juan

Students will learn how to build a filter and treat river water to make it usable in our homes.

Albuquerque/Bernalillo County Water Utility Department

Roberta Haynes-Sparks & Youth Aquifer Corps, Phone 505-768-3245, E-mail rhsparks@cabq.gov

13. The Long Haul

Santo Domingo

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.

Albuquerque/Bernalillo County Water Utility Department

Katherine Yuhas, Phone 505-768-3633, E-mail kyuhas@cabq.gov

14. Water Jeopardy

Taos

Students compete to give questions for the water answers (like the TV show).

Albuquerque Academy Environment Club **(Thursday only)**

Karen Temple Beamish & Students, Phone 505-858-8873, E-mail beamish@aa.edu

Rio Grande High School

(Friday only)

Judy Stewart Vidal & Students, Phone 505-873-0220 x 270, E-mail vidaljudy@hotmail.com

15. Rio Grande Bosque Water Cycle

Tesuque

Students become water molecules traveling through a water cycle. Students learn that water cycles through the 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.

Rio Grande Nature Center

Rebecca Tydings, Betty Smith & Corinne Howard, Phone 505-344-7240, E-mail rtydings@state.nm.us

16. 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.

Souder Miller & Associates

Scott McKittrick, Phone 505-299-0942, E-mail sam@soudermiller.com

17. Swimmin' in the Rio Grande

Enchantment 1

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

Kimberly Kelly, Phone 505-829-3535/505-834-9222, E-mail kakelly@fs.fed.us

18. Thrifty Plants in a Thirsty Land

Enchantment 2

Our New Mexico wild landscapes are full of plants that flourish in our high desert climate. How do these plants survive freezing winters, searing summers, wide temperature swings, high winds, plenty of ultraviolet radiation and very little natural rainfall? Students will discover how roots, leaves and stems play the leading roles in helping plants thrive in our beautiful but challenging environment.

Cooperative Extension Master Gardeners

Margo Murdock, Virginia Burris & Katie Babuska, Phone 505-323-5138, E-mail vit.babuska@gd-ais.com

19. Incredible Journey

Estancia

Students become water drops and travel through the Water Cycle.

NM Environment Dept., Surface Water Quality Bureau

Julie Arvidson & Michele Mycris, Phone 505-476-3069, E-mail julie_arvidson@nmenv.state.nm.us

20. The BioPark's BioVan: Home Sweet Home

NW Exhibit Hall

Students observe five mini-ecosystems along the Rio Grande, Gulf Coast, and Atlantic Ocean, and the living organisms that call each one home. The BioVan exhibits live plants, invertebrates, fish, reptiles, amphibians, birds and mammals.

City of Albuquerque/BioPark's Rio Grande Zoo, Albuquerque Aquarium and Rio Grande Botanic Garden Louie Va, Phone 505-764-6242, E-mail ppacheco@cabq.gov

21. The Rolling River

NW Exhibit Hall

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

Ciudad Soil and Water Conservation District

Susan Rich, Phone 505-761-5446, E-mail susan.rich@nm.usda.gov

Water Wizard who knows all there is to know about H₂O.

Carol Phillips-McClure, Phone 505-982-2468

**Middle Rio Grande
Children's Water Festival 2004
Thanks to these organizations for their generous support!**

Lead Donors

New Mexico Environment Department, Surface Water Quality Bureau
US Environmental Protection Agency, Region 6, CWA, Section 319
US Bureau of Reclamation
Albuquerque/Bernalillo County Water Utility Department
Bernalillo County, Environmental Health Department
Sierra Club Rio Grande Chapter

Fiscal Partner

New Mexico Water Conservation Alliance

Contributors

Arid Solutions
AWWA - Rocky Mountain Chapter
Bernalillo County Cooperative Extension Service
Business Water Task Force
CH2M Hill
City of Albuquerque Convention Center
City of Rio Rancho Utilities Dept./Water Conservation Office
Environmental Education Association of New Mexico
Greetings Etc., Inc.
Home Builders Association of Central New Mexico
Intel Corporation
New Mexico Game & Fish Department
New Mexico State Engineer / Water Conservation Office
New Mexico State Land Office
PNM
Science Applications International Corporation
The Rain Well
University of New Mexico
WaterBank
WERC

**Middle Rio Grande
Children's Water Festival 2004
Thanks to these organizations for their creative activities!**

Presenters

Albuquerque Academy Environment Club
Albuquerque/Bernalillo County Water Utility Department
Amigos Bravos
Bernalillo County Cooperative Extension Service Master Gardeners
Bosque School
City of Albuquerque
- Open Space Division
- BioPark
Ciudad Soil & Water Conservation District
National Weather Service
New Mexico Environment Department
- Surface Water Quality Bureau
- Ground Water Quality Bureau
New Mexico Game & Fish Department
Rio Grande High School
Rio Grande Nature Center
Rio Grande River Rangers Project
Souder Miller & Associates
US Forest Service, Santa Fe National Forest
Valley High School Environmental Club

**Middle Rio Grande
Children's Water Festival 2004
Steering Committee**

Carol Edwards	CABQ Public Works/Water Res.
Roberta Haynes-Sparks	CABQ Public Works/Water Res.
Elliott Sachse	CES/4-H - Bernalillo County
Kelly Knight	CES/4-H - Bernalillo County
Lorri Skeie-Campbell	City of Rio Rancho
Cheri Vogel	NM Office of State Engineer
Abraham Franklin	NMED, Surface Water Bureau
Larry Marken	Water Educator
Susan Gorman	PioneerWest
Blair Brown	PioneerWest
Barbara Garrity	PioneerWest
Matthew Cross-Guillen	PioneerWest
Darrell Kundargi	PioneerWest
Pam Riley	PioneerWest
Jeanette Salazar	PioneerWest



Students from Rio Grande and Valley High Schools, Bosque School and Albuquerque Academy led activities for the 4th graders. The younger students pay special attention because they really respect the older students.



Top: Water Olympics by Albuquerque Academy (Photo by Tom Sahs)

Left: Water Jeopardy by Rio Grande High School (Photo by Daniel Vigil)

Bottom: Birds, Rivers and the Web of Life by Valley High School (Photo by Emily Blea)

