

D. Water Education

Introduction

As the driest state in the nation and one of the fastest growing, it is important that Nevada's residents understand the fundamental science of water, how water is managed in the state, and the issues affecting water management. An educated populace is clearly a key to future management of water resources, and therefore, water education must become a priority.

Benefits of Water Education

The overall goal of water education is to develop more knowledgeable citizens who can participate in public discussion and debate about water issues. Information improves people's ability to examine and evaluate information presented — and the information that is not presented. With a basic understanding of water, residents can respond intelligently to issues such as the need to develop water supplies or wastewater treatment facilities, the benefits and costs of conservation, the dangers associated with leaking contaminants, the risks posed by poor water quality, the benefits and costs of river restoration or flood control. With education, people can form their own opinions based on data and information, and rely less on emotion or rhetoric.

It is especially important that Nevada's children learn about water so that they develop an appreciation for the unique role water plays in the development of our state and become informed citizens who can think critically and evaluate information intelligently throughout their lives. Water as a topic has natural links to science, math, social studies, and language and is an excellent unifying curricular theme. Water attracts kids and learning about it can be interesting and fun, encouraging both a greater appreciation of the environment and a greater interest in selecting science and math oriented careers.

Background

The state of Nevada has had a water education program in the Nevada Division of Water Planning since 1991. The program has components focusing on both children and adults, and incorporates a variety of methods, tools and approaches to increase learning about water. The state water plan itself is an important educational tool.

Project WET

Project WET (Water Education for Teachers) is a science and math education enhancement program focused on grades K-12. It is an interdisciplinary program intended to supplement a school's existing curriculum. The mission of National Project WET is to increase awareness, appreciation, knowledge and stewardship of water resources. Project WET offers Nevada's teachers classroom-ready teaching

aids such as activity guides, lesson plans, groundwater and watershed models, computer simulations, publications and a network of specialists to call upon, so that incorporating water education into the classroom is easy for teachers and interesting for children.

National Project WET began in the 1980's at the University of North Dakota. The program's founder, Dennis Nelson, eventually moved to the University of Montana where the program is headquartered today. Forty states in the country have Project WET programs. In Nevada, the Division of Water Planning has sponsored the program with help from a variety of partners including the University of Nevada – Cooperative Extension and the U.S. Bureau of Reclamation. The Division of Water Planning operates the program under a cooperative agreement with National Project WET. National WET continues to establish guiding principles and standards for the program, develop new educational materials, sponsor national meetings for Project WET coordinators in all the participating states and assist with fund raising.

There are over 12,000 K-12 teachers in Nevada. Of these, approximately 700 have taken the 15-hour, 1-credit Project WET course. The course is accredited through the University of Nevada in both Reno and Las Vegas, Sierra Nevada College, Western Nevada Community College in Carson City and Fallon, and Brigham Young University in Salt Lake City. It is available for both graduate and undergraduate credit and for teacher in-service credit. Evaluations for the program have been outstanding. The only issues have concerned the large amount of information to be mastered, the desire to have more frequent classes in all areas of Nevada and the desire to obtain advanced training.

Nevada Project WET has no staff and has been dependent on grant funding. Over the last 7 years, the Division has raised close to \$175,000 to support the program, with a state contribution during this period of approximately \$15,000. In the last legislative session, the Legislature added \$20,000 per year to the Division of Water Planning's budget to help support the program. The state dollars are being used to fund two water education contractors, one of whom is responsible for managing, tracking and applying for more grants (among other duties), while the other coordinates and instructs the Project WET classes throughout Nevada. Yet another contractor is supported by federal grant funds to coordinate and teach Project WET classes in southern Nevada.

Funding and staffing for Nevada Project WET has been provided by the Eisenhower Foundation, the U.S. Bureau of Reclamation, the U.S. Environmental Protection Agency, National Project WET, the Nevada Division of Environmental Protection's Section 319 Grant Program, the Southern Nevada Water Authority and the University of Nevada – Cooperative Extension.

Nevada Riverwatch

In 1996 and 1997, the Division of Water Planning was awarded several federal grants to start a student water quality monitoring program. The goals of *Nevada Riverwatch* are to help students develop skills in: (1) science (through sample collection, field and laboratory analysis, recordation, observation and comparison); (2) math, statistics, and time series using computers (through analysis of the data); (3) writing (by keeping records and writing an end of the year report); and (4) public speaking (by presenting data at conferences.) The funds were used to hire a contractor to design and implement the program, and to purchase extensive field and classroom equipment to test local waters

in northern Nevada. It is expected that the program will be expanded throughout Nevada if the pilot program is successful.

The Division developed Memorandums of Understanding (MOUs) with junior high and high schools in Washoe and Lyon Counties and Carson City. Each school had to agree to have the students take pre- and post- tests to evaluate the knowledge they gained during the project, help co-sponsor an end-of-the-year conference where students from all three schools would present their testing results, and make a three-year commitment to the program. Testing sites along the Truckee and Carson Rivers were selected and the Division arranged to have staff from cooperating agencies instruct the students and teachers in proper sampling and analysis techniques.

At this time the MOUs with the schools have been developed and all of the field and classroom equipment has been purchased. The first sampling period was to begin in winter of 1997, but was delayed a year because of flooding on the rivers, and then by restoration and clean-up work at the sample sites. The Division's contractor was laid off for a while due to fiscal issues arising from the grant funding. The Division is now about to rehire the contractor and continue the program. Funding sources for Nevada Riverwatch have included grants from the Nevada Division of Environmental Protection's Section 319 program and the U.S. Geological Survey (USGS) Educational Partnership program.

Nevada Water Education Calendar

For 7 years the Division of Water Planning has produced a Water Education Calendar for use in all 2nd through 6th grade classrooms in Nevada. Each year, the Division sponsors a poster contest using a different water theme. Children in grades 3 through 6 submit posters for judging. Thirteen of the posters are published in the water education calendar along with water facts and figures. To offset the costs of producing and printing the calendar, the Division solicits donations. The calendar includes a write-up on each major sponsor. A number of agencies in the Department of Conservation and Natural Resources help to co-sponsor the calendar including the Divisions of Water Resources and Environmental Protection. Other sponsors include the Bureau of Reclamation, Washoe and Clark Counties, mining companies, engineering companies, and private individuals.

Adult Education

The Division of Water Planning is also active in the adult water education arena. Throughout the year the Division co-sponsors seminars, conferences and events to help agency staff, professionals and the general public learn more about water. Examples from 1998 include two widely attended flood conferences about the Carson and Walker Rivers, the annual Nevada Water Resource Association Conference, a full day seminar on water banking, the Champions of the Truckee River Day, and Clean-up the Carson River Day. Frequent presentations on water topics and issues are made to service clubs, professional associations, and elected and advisory boards.

Staff from the Divisions of Water Resources (DWR) and Environmental Protection (DEP) provide similar educational support. In 1998, the DWR sponsored a number of full-day seminars on water rights and was actively involved in the NWRA conference, and the DEP gave many presentations to

groups, especially on the subject of groundwater protection.

Issues

1. **Grant Funding – Administrative and Fiscal Support.** Grants often require a large amount of administrative and fiscal support. Efforts must be devoted to researching grant opportunities and developing and writing grant proposals. Such proposals require a great deal of preliminary work to develop partnerships, prepare budgets, identify appropriate state match opportunities and generate letters of support. Once a grant is obtained, detailed administrative and fiscal data must be maintained and quarterly reports must be prepared. Tracking and accounting activities are usually significant. The time spent in grant administration could be more effectively spent in providing hands-on water education activities in the classroom or in the field.

The addition of funds for Project WET contractors has allowed some of the administrative work to be assigned to contractors. However, many administrative activities are not appropriately assigned to contractors. State staff is necessary to coordinate and manage the water education programs, grants and contracts.

2. **Grant Funding – Match Requirements.** Many federal grants require a state match. The limited amount of state dollars available has limited the state's ability to qualify for a number of grants in terms of meeting the match requirements.
3. **Grant Funding - Start-Up.** Many federal grants are designed to provide startup funds, not long-term, continued funding. Oftentimes the Division has been able to tap a funding source only two to three times. The federal granting agencies expect the state to pick-up support for the programs once they are up and rolling.
4. **Assessing the Value of Water Education.** The American Water Works Association recently published a study on the importance of water education at all levels.¹ They found a broad range of programs across the country. According to the research, the cost of these programs is quite low, ranging from 5 to 57 cents per household per year, with an average of only 24 cents per household per year. There was widespread agreement about the long term value of such programs and the fact that youth education programs provide an excellent opportunity for outreach. There is also agreement that agencies must continue to look for ways to evaluate the effectiveness of their education programs, but that the long-term efficacy of such programs is probably not quantifiable
5. **Coordination.** There are a number of groups working on water education goals throughout the state. Coordination of these groups could lead to greater effectiveness of the individual programs and increased funding opportunities.

¹ Mirvis and Clark, *Assessing the value of youth education*, in Journal of the American Water Works Association, Volume 90, Issue 1, January 1998.

Recommendations

1. The State should continue and enhance funding for the state water education program.
2. The State should create and fund a Water Education Coordinator position in the Division of Water Planning.
3. All organizations should continue to develop and implement methods to evaluate the effectiveness of their water education programs.
4. The Division of Water Planning should develop a water education coordination group to support water education programs, develop funding options, leverage dollars, share information, and coordinate activities. Participants could include the University of Nevada – Cooperative Extension, public and private water utilities, the Nevada Rural Water Association, the U.S. Bureau of Reclamation, and the Nevada Department of Education and Divisions of Environmental Protection, Wildlife and Water Resources.

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