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H.R. 3644, the "Bay-Watershed Education and Training (B-WET) Regional Program and National Environmental Literacy Grant Program Act"
October 15, 2009

In June of 2000, the Governors of Pennsylvania, Maryland, Virginia, and Mayor of the District of Columbia signed the Chesapeake 2000 Agreement. This agreement set an important goal for Virginia Schools to meet. Beginning with the class of 2005, provide a meaningful Bay or stream outdoor experience for every school student in the watershed before graduation from high school. The Education work group crafted a definition of the Meaningful Watershed Educational Experience (MWEE) that offers a wonderful vision for what is to be included. MWEEs should be:

- Investigative or experimental design activities where students or groups of students use equipment, take measurements, and make observations for the purpose of making interpretations and reaching conclusions.
- Project-oriented experiences, such as restoration, monitoring, and protection projects, that are problem solving in nature and involve many investigative skills.
- Social, economic, historical, and archaeological questions, problems, and issues that are directly related to Bay peoples and cultures. These experiences should involve fieldwork, data collection, and analysis and directly relate to the role of the Bay (or other bodies of water) to these peoples' lives.

With the relatively recent implementation of the Virginia Standards of Learning accountability system, many schools were investing a great deal of time and resources into professional learning for their teachers and materials for their students. The Chesapeake 2000 goal of each student participating in a MWEE prior to graduation was an unfunded mandate. However, the Bay Watershed Education and Training Grants offered much needed funds to plant the seeds for this important work to begin.

I was a science specialist with the VIrginia Department of Education which partnered with other state agencies such as the Virginia Department of Environmental Quality, Virginia Department of Game and Inland Fisheries, Virginia Department of Forestry, Virginia Department of Conservation and Recreation in an organization called the Virginia Resource-Use Education Council (VRUEC) to build the capacity within Virginia to be able to reach the goal of every student having a MWEE the time they graduate in 2005.

This important capacity building would have been nearly impossible without the NOAA Bay Watershed Education and Training Grants (B-WET). This grant program supported important teacher professional programs such as the Chesapeake Bay Academies held over the past several years. These B-WET funded professional development opportunities offered the foundation for teachers understanding of how to get their students engaged in becoming stewards of the Chesapeake Bay. The evaluations reflected positively on the efforts of the VRUEC.

The VRUEC also partnered on a grant called ***Improving Student Achievement and C2K Meaningful Watershed Educational Experience Implementation in Virginia.*** The model for this grant was to offer teachers professional development, including a field experience, and a minigrant that would spark watershed education in their school. Over the three year period of the B-WET, **268** Virginia educators and **17,054** students in 26 school divisions were served. A full report can be viewed in Appendix A.

Over the past years, the B-WET grant program has responded to the needs of the field of education in order to meet the Chesapeake 2000 Stewardship and Education Goal. The B-WET

program has grants focused on students, teachers, and a combination of students and teachers (exemplary programs). In my current role as the Mathematics and Science Supervisor in Stafford County Public Schools (SCPS) in Stafford, Virginia I worked with the science coordinator, Rita Truelove, and the principals at each of our eight middle schools to identify a need for our teachers to be engaged in watershed-related professional learning focused on our newly revised middle school Science Standards of Learning (SOL). The Grade Six Science SOL has a strong focus on watershed education and the Grade Seven Life Science SOL also includes watershed-related concepts. The literature indicates middle school-aged students have a strong interest in the environment and the literature also suggests that adolescent years are an entry point into developing environmental stewardship. We capitalized on the need for professional development and the natural interest students have in the environment for the focus of our grant. In an effort also to build regional capacity, SCPS partnered with Spotsylvania Public Schools, Fredericksburg City Public Schools (FCPS), and the Friends of the Rappahannock.

The project offered a week-long professional development experience in June 2008 and again in June 2009 (approximately forty hours of instruction) for 30 Grade Six Science and special education teachers. The professional development was designed and delivered in cooperation with the Friends of the Rappahannock and the SCPS Science Instruction Department. The professional development opportunity will provided instruction and experiences pertaining to watershed concepts and the effective delivery of MWEE. The ultimate goal of the training was for teachers to be able to offer students an opportunity to:

- Participate in authentic watershed experiences involving activities such as water monitoring and habitat restoration;
- Share their collected data with other students, teachers, and community members;
- Protect and improve the watershed through their actions; and
- Become active in community decision making as effective stewards of the environment.

Teacher training included field-based instruction regarding watershed health indicators. The teachers also received training related to the integration of problem-based learning strategies. The school division science education leaders along with Friends of the Rappahannock education director and environmental scientist, and Stafford Science Instruction Department.

The teachers developed MWEEs plans to integrate these experiences into the science curriculum (see Attachment 1 for sample plans). Throughout the Fall 2008 and Spring 2009, the teachers in the partnering school divisions engaged students in a variety of MWEEs.

As the teachers worked with their students, the focused on the following statement from the NOAA Chesapeake Bay Program's ***Stewardship and Meaningful Watershed Experiences*** definition is the focus of each of our NOAA B-WET funded student experiences.

> "There is overwhelming consensus that knowledge and commitment build from firsthand experience, especially in the context of one's neighborhood and community. Carefully selected experiences driven by rigorous academic learning standards, engendering discovery and wonder, and nurturing a sense of community will further connect students with the watershed and help reinforce an ethic of responsible citizenship."

The following are examples of NOAA B-WET funded projects:

At **Stafford Middle School**, the students and teachers focused on investigating a silt pond between their school and Brooke Point High School. The students began by learning about the Chesapeake Bay watershed and the overall health of the watershed. They then looked to their

local community for a means to investigate their local watershed as part of the Chesapeake Bay watershed. They first made schoolyard observations that led to improvements in their schoolyard in terms of pollutants. The branched out to investigate some of the potential issues surrounding their school grounds.
The investigation led them to a silt point that is situated between their Stafford Middle School and Brooke Point High School. The middle and high school students have partnered to develop a plan to have the silt pond dredged and the non-native species removed and native species incorporated.

At **Drew Middle School**, the students and teachers focused on the Shad run in the Rappahannock River as their context for learning. The students investigated the spawning of the Shad prior to barriers being put into place and then the spawning afterwards. Also, they investigated the health of the Rappahannock River as one of the tributaries that flows into the Chesapeake Bay. The students determined the relative heath of the Rappahannock River and extrapolated the health of the Bay from the data they gathered. The teacher worked closely with local and state agencies such as the Virginia Department of Game and Inland Fisheries (DGIF) to bring a "shock" rig to the Rappahannock River to determine the current number of Shad running on a particular day during the April spawning event as well as other native and non-native species. Also, each student completed water quality testing that will be shared with subsequent years of students and kept longitudinally as well as having an opportunity to fish for Shad. An angler education specialist from DGIF taught students who had never fished before how to use the tackle to be successful. The students walked away with a keen understanding of the human impact on the Rappahannock River as it relates to the Chesapeake Bay watershed.

At **Dixon-Smith Middle School**, the students and teachers focused their investigation on their schoolyard at first. The students recognized an area of their schoolyard in which there was significant erosion. The students determined there was a significant amount of sedimentation that was occurring as a result of the steep slope and lack of vegetation on the slope. So much so that the bio-filters that were put into place during the construction of the building were becoming clogged with sedimentation, litter, etc. during significant rainfalls. After correcting that issue, the students hypothesized that if they could make a difference along tributary banks by creating riparian buffers, they could have a significant impact on the Chesapeake Bay watershed. The students decided they would create a Black Willow farm which would provide vegetation for stream bank restoration projects for those wanting to create riparian buffers. The sixth grade students determined the best species, developed a planting plan, and worked with their teacher to plan hundreds of saplings in an effort to reduce the amount of sedimentation in the tributaries flowing into the Chesapeake Bay.

These are just three stories related to the NOAA B-WET funded project. The teacher professional development of our project fueled the teachers knowledge and interest in the Chesapeake Bay watershed. The outdoor professional development experience helped the teachers see the value of using their environment as an context for learning as well as led them to make the following comments:

> *This workshop really opened my eyes to the environmental issues that we have locally."*
>
> *"You made this SOL come alive and more interesting than a book or worksheets. I wish we had this class when we first introduced the SOLs. I appreciated your timetable, going to different sites, relaxed atmosphere..."*

"I learned a lot about the River and protections during this in-service. Shame on me, living here 21 years and not spending more time on the river. I just returned from my 2nd six-mile float with a neighbor. He loved it. I built my own reserve rainwater barrel system the week after the class. Using the water for plants, carwash, and occasional toilets."

The teachers then led their students on an educational journey that offered students an opportunity to become stewards of the Chesapeake Bay watershed. More information about our NOAA B-WET funded project can be found in Appendix B
Appendix A

NA05NMF1179
Improving Student Achievement and C2K Meaningful Watershed Educational Experience Implementation in Virginia

FINAL REPORT
(June 1, 2005 – May 31, 2009)

Statistics: Total Served during Grant Period: **268** Virginia educators and **17,054** students in 26 school divisions.
Financial Reports: submitted separately
Summary:
From June 2005 through May 2009, three rounds of grants in support of "Meaningful Watershed Educational Experiences" (MWEE) were awarded to Virginia school divisions for the 2005-06, 2006-07 and 2008-09 school years. A total of 26 school systems agreed to implement 31 different MWEE projects as pilot programs for their school divisions as a means to improve student achievement. As a condition of receiving funding, each school system agreed to submit a work plan that included professional development, curriculum integration and revision (if needed), field investigation and project evaluation components. Other requirements included participation in planning meetings and periodic teleconferences, and submission of mid-year and final reports. After each award cycle, modifications were made to the application process in hopes of improving compliance with the terms of the agreement and enhancing the experience for the students. In total, 16 middle school projects, 12 high school projects, one upper elementary project and two division wide professional development programs were funded. Please see separate attachment for a list of the projects.
Approximately 75% of the grant recipients completed their work plan without major revision. Divisions reported that nearly all students involved increased their knowledge of the local sub-watershed, sources of water pollution and water quality parameters through introductory lessons, visits from natural resource professionals and other activities normally completed in the first semester of school. Obstacles to implementation of MWEE work plans related to lack of support by building administrators or by other units of the school divisions (e.g. transportation), weather delays, and scheduling accounted for approximately 25% of the school systems not completing the second half of their work plans.
Those school divisions trying to establish a rain garden or school yard habitat improvement area proved to be the most difficult projects to implement for a variety of reasons. In most cases, it became apparent that the schools would need support for 2-3 years, so the recipients of these MWEE school grants focused on developing a plausible plan and implementing the first phase with the current students. Despite the inherent difficulties, approximately 7 acres of vegetative cover were restored or improved due to the efforts of Virginia students.
Approach:
For each of the three rounds of grant awards, VADEQ staff worked with representatives from the VA Department of Education and other environmental education professionals to identify prospective school systems. Attempts were made to balance the awards geographically across

the Bay watershed and ensure middle and high schools were represented adequately. Initially, large, mid-size and smaller school systems were included, but after the first round, it became apparent that the award amount was most suitable for small – mid size school divisions. Large school systems were funded for specialized projects such as GIS/GPS teacher training, after that point. While developing a list of prospective recipients, recent scores on standardized tests, frequency of professional development related to natural resources and other factors were considered in identifying under-served areas. Generally, one-half of the recipients in each round were targeted for inclusion in this manner.
During the first two rounds, the average grant award was approximately $6,500 per project and results were mixed. It was determined that a more significant return on the investment would be made by giving divisions a choice in regards to the amount of their grant and the associated expectations. For year three, criteria were developed for $2,000, $3,000 and $6,000 awards with the highest tier being reserved for those school systems who were investing in physical improvements to their school grounds or an appropriate restoration project in their community. By lowering the amount of the average award, a larger number of schools representing a broader cross section of school systems were reached. The number of projects were: 10 in year one, 8 in year two and 13 in year three.

School grant applications that included strong community partnerships were considered most favorable, especially as the program evolved and it became evident the most successful projects benefited from that type of support. Across the state, the most reliable partners included: river friends or other watershed groups if they existed in that locality, Virginia Cooperative Extension 4-H Agents and Soil and Water Conservation Districts. Regional field staff from Virginia Departments of Environmental Quality, Forestry and Game and Inland Fisheries and student volunteers from local universities assisted with program delivery intermittently.

Grants were awarded in three payments in years one and two, and two payments in year three to simplify the process. Generally, the first payments were made after a positive review of the work plan, the second after submission of a mid-year report that documented adequate progress and the third (when required) after completion of the final portion of the project.

VADEQ Office of Environmental Education staff responsibilities included: promoting the program, working with key contacts to identify prospective recipients, assisting school systems in fleshing out their pre-proposal and designing the work plan, regular communication with the grant recipients, interfacing with the VADEQ fiscal department to obtain needed documentation for payments, facilitating regional meetings of the recipients, conducting professional development sessions as needed, serving as an instructor for student field days and reporting.

Accomplishments:

In summary more than 17,000 students received meaningful watershed education through grants totaling $169,000 awarded to 26 school systems. In addition, 268 educators attended one of 24 days of professional development sessions that were conducted by VADEQ staff and community partners in conjunction with this MWEE grant program.

Nine (9) of these days (2 each year) were devoted to introducing the participants to the concept of a Meaningful Watershed Educational Experience, sample projects, potential field sites, curriculum resources and overcoming obstacles. Project WET, Healthy Water Healthy People, Wonders of Wetlands and other specialized curriculum training was provided by project staff on 8 additional days. Seven school divisions, Albemarle, City of Chesapeake, Franklin, Russell,

Henry, Hanover and Loudoun Counties offered system wide professional development programs with a variety of community partners. Teachers were able to select from a large menu of concurrent sessions and communicate afterward via intranet tools. Nine grant recipients participated in a series of one-day planning meetings and field site tours during the early stages of their projects.

During year one, 37 educators and 3,660 middle and high school students were reached by ten MWEE school division grant projects. Middle school projects featured on the water experiences and field days that were designed to reinforce introductory watershed science concepts. High school level projects included more in depth mapping and water quality studies of local waterways. Evaluation of the year one projects is limited to self-reporting. All ten reported favorably, despite logistical challenges. The Buford Middle School (City of Charlottesville) project grew from a 7th grade level field experience for 300 students to the establishment of an afterschool ecology club and ongoing relationship with the local television station who first covered the field day. An exemplary project from Powhatan County featured a partnership between the Biology II and Ecology classes from the high school and the 6th grade, reaching a total of 520 students. The older students became the "water quality experts," prepared teaching materials, trained 6th graders on the use of GPS and water quality testing equipment and participated in joint field work. A significant percentage of the grant funds in the first round were used to purchase equipment that will be used for years to come. Westmoreland County (High School) used an Adopt-A-Stream approach to monitor a woodland stream and tidal marsh. Ecology and marine biology students presented findings and comparisons to each other. Middlesex County (High School) conducted oyster restoration and water quality testing during trips to Port Isobel, Dragon Run and Piankatank and Rappahannock Rivers. Manassas (High School) Biology and Chemistry classes conducting water testing at Prince William National Park and made presentations to elementary schools. Hopewell (Middle School) researched native plants and conducted restoration project on school grounds. Culpeper (Middle School) expanded its field day with local SWCD by addition of sites (5 sites are visited). Kits were developed for the investigation and data sheets to compile information. Albemarle (Middle) incorporated new teaching resources into curriculum, including new local watershed curriculum. Each of the six middle schools developed its own MWEE project. Extensive professional development (canoe based) was conducted.

Educators in year two primarily evaluated their projects in a qualitative or anecdotal manner. Five of the seven reporting systems indicated that they had significantly increased the amount of time spent and depth of content focusing on water quality and watersheds. For example, the City of Chesapeake added 2 weeks to the 6th grade science unit on water and Henry County nearly doubled the time spent on the spring ecology unit. All of the reporting schools in year two indicated that the faculty, students and several community members became more aware of the water quality issues affecting the sub-watersheds in their communities. Teachers from both of the high schools in year two, Madison and Giles Counties, stated that the students acquired an increased understanding of how karst land, in particular is very vulnerable to groundwater contamination. Henry County schools sponsored a public trout release (the students helped raise juvenile fish) that was attended by the school board, numerous state government officials and the local media. An unanticipated benefit of the MWEE projects, as noted by three of the reporting school systems, was that several students who typically have behavior issues were highly engaged in a positive manner. Half of the respondents indicated that they planned to re-structure their pacing guides the following school year to allow for more substantial treatment of the reflection phase of the MWEE.

During the final year, approximately, 700 students completed water quality improvement and restorations projects on approximately 5 acres of land. Each grade level at Kemps Landing Middle School on the Lynnhaven River (near the mouth of the Bay) assisted in the development of a new rain garden and habitat improvement area in their school yard. A tree nursery was established at Colonial Forge High School (Stafford County – Rappahannock River Watershed) by the Learn-N-Serve and Horticulture classes who used their first generation of saplings to help stabilize a bank on a nearby farm. The 6th grade at Mayfield Intermediate School (City of Manassas – Potomac River Watershed) installed rain barrels and the first phase of a rain garden at their newly constructed building. An overhaul of the nature trail (which included removal of invasive species, bank stabilization, native plant restoration and improved signage) at Beverley Manor Middle School in Augusta County (Potomac River Watershed) began so that 6th-7th graders can better utilize the space for field investigations. Science and Technology classes at Matoaca High School (Chesterfield County –James River Watershed) completed phase I of the installation of a habitat improvement area / outdoor classroom that featured a fish pond with solar pumps. Lastly, fifth graders at Pearson's Corner Elementary School (Hanover County – York River Watershed) completed phase II of the installation of a school garden and outdoor classroom that is being utilized by the entire student body. During the 2008-09 school year, an additional 7,150 Virginia students participated in water quality monitoring projects and general watershed education field days offered by their schools and natural resource personnel in Loudoun, Hanover, Chesterfield, Augusta, Spotsylvania, Brunswick, Henry and Lee Counties and the Cities of Virginia Beach and Hopewell.

As the grant award process was refined, documentation of the reflection phase of the MWEE projects improved. Students projects included: shared water quality data with other classes, created power point presentations that were shared with community groups, wrote newsletters that were sent home to parents, created permanent artwork in their outdoor classrooms and incorporated the material in science fair projects.

Participating teachers noted additional positive impacts of the MWEE projects including: increased interest on the part of the students, parents and community at large in being good stewards of the school yard and the local waterway, intent among teachers of upper grade levels to provide additional opportunities for the students, expanded use and enhancement of outdoor learning areas and improved laboratory skills on the part students.

When asked to evaluate their ability to sustain the MWEE program, the most common responses in order were: ***yes***, if they continued to receive 1) administrative support, 2) the services of community partners and 3) at least partial funding.

Participants will be encouraged to continue or expand their efforts by taking advantage of the Virginia Naturally Classroom Grants program or applying directly to NOAA for funding assistance.

Appendix B

PROGRESS REPORT

Exemplar Programs Combining Teacher Professional Development with Long-term Classroom-integrated Meaningful Watershed Educational Experiences for their Students

Organization: Stafford County Public Schools
Project Title: Investigating the Chesapeake Bay Watershed through Problem-Based Learning
Award Number: NA08NMF4570448
Report Period: June 2008 – June 2009

Introduction: A Brief Summary of the Project and Work Accomplished to Date: The purpose of the **Investigating the Chesapeake Bay Watershed through Problem-Based Learning** project is to combine a week-long professional development experience for the partnering school divisions' sixth grade teachers with a long-term classroom MWEE for their students during the school year following the professional development.
In this model, the lead partners (Stafford County Public Schools and the Friends of the Rappahannock) planned a week-long, intense professional development for teachers to deepen their knowledge of their local watershed and the Chesapeake Bay watershed through hands-on experience. The teachers will provide a cadre of well-informed educators and citizens who will be able to educate approximately 4000 students each year using MWEEs. The model also involves student and teacher developed MWEEs rather than lesson-plan based activities. It is believed this will increase the personal investment by both the teachers and students.
The second year of the grant will involve seventh grade teachers using some of the sixth grade teachers as mentors.

Grant Objectives:

1. High quality professional development for 30 Grade Six Science and special education teachers during the summer academy, and
2. Engage approximately 4000 grade six science students in a meaningful watershed field experiences (MWEE) to help them understand the natural processes and human

interactions that affect watershed systems.

Approach:

The project offered a week-long professional development experience in June 2008 (approximately forty hours of instruction) for 30 Grade Six Science and special education teachers. The professional development was designed and delivered in cooperation with the Friends of the Rappahannock, Stafford Science Instruction Department, and Tri-County/City Soil and Water Conservation District. The professional development opportunity will provide instruction and experiences pertaining to watershed concepts and the effective delivery of MWEE. The ultimate goal of the training was for teachers to be able to offer students an opportunity to:

- Participate in authentic watershed experiences involving activities such as water monitoring and habitat restoration;
- Share their collected data with other students, teachers, and community members;
- Protect and improve the watershed through their actions; and
- Become active in community decision making as effective stewards of the environment.

Teacher training included field-based instruction regarding watershed health indicators. The teachers will also receive training related to the integration of problem-based learning strategies. The school division science education leaders along with Friends of the Rappahannock education director and environmental scientist, and Stafford Science Instruction Department.

The teachers developed MWEEs plans to integrate these experiences into the science curriculum (see Attachment 1 for sample plans). Throughout the Fall 2008 and Spring 2009, the teachers in the partnering school divisions engaged students in a variety of MWEEs.

Statistics:

Each of the schools identified in the grant have had teachers participate in the weeklong professional development in June 2008. Teachers who participated in the MWEE professional development in the project must develop an implementation plan. The Stafford County Public Schools teachers met in August 2008 for follow-up training and Meaningful Watershed Educational Experience Plan development. Spotsylvania County Public Schools and Fredericksburg City Schools' teachers have developed an implementation plan and will participate in follow-up training this winter. In all cases, the follow-up training focuses on utilizing problem-based learning in an environmental context. All teachers plan to implement during the spring 2009 semester.

Total Teachers Served During Reporting Period: 30

14 Stafford County Public School Teachers
14 Spotsylvania County Public Schools Teachers
2 Fredericksburg City Schools Teachers

School Divisions	Number of Students	Average Hours Actively Engaged per Student
Stafford County Public Schools	1121	36
Spotsylvania County Public Schools	1789	10

School Divisions	Number of Students	Average Hours Actively Engaged per Student
Fredericksburg City Schools	170	17
Total Students Served/Average Hours	**3080**	**21**

Financial Reports: submitted separately and up-to-date

Accomplishments/Results to Date

Teacher Outcomes:

During the first year of the **Investigating the Chesapeake Bay Watershed through Problem-Based Learning** project, one objective was to provide a weeklong professional development experience (approximately forty hours of instruction) for 30 Grade Six Science and special education teachers. The professional development was designed and delivered in cooperation with the Friends of the Rappahannock and Stafford Science Instruction Department. In June 2008, teachers from three partnering school districts participated in the weeklong professional development. The professional development included in-depth education about the Chesapeake Bay Watershed along with several field experiences that modeled effective instruction.

The following were some of the comments regarding the professional development:

"This workshop really opened my eyes to the environmental issues that we have locally."

"You made this SOL come alive and more interesting than a book or worksheets. I wish we had this class when we first introduced the SOLs. I appreciated your timetable, going to different sites, relaxed atmosphere..."

"I learned a lot about the River and protections during this in-service. Shame on me, living here 21 years and not spending more time on the river. I just returned from my 2nd six-mile float with a neighbor. He loved it. I built my own reserve rainwater barrel system the week after the class. Using the water for plants, carwash, and occasional toilets."

During the follow-up training in August of 2008, teachers were provided with further education regarding watershed concepts and the integration of problem-based learning into their projects. During this time the teachers also developed their project plans. After returning to their schools, the teachers met with the remaining teachers on their teams and their administrator to set the plans firm up the plans.

Throughout the fall, the partner organizations provide feedbacks to ensure NOAA products reviewed the plans and other resources were utilized effectively and efficiently.

Student Outcomes

As a result of the BWET grant from NOAA during the fall 2008 and spring 2009, over 3000 6th grade students from three school districts were able to participate in an outdoor watershed experience. Some of the outdoor activities include the following:

Battlefield Middle students went on a working field trip to Alum Spring Park where they participated in a stream survey, conducted water testing, used kick nets and dip nets to find and identify macro invertebrates. They used this information to determine the health of the water in the stream. Stafford, Rodney Thompson and Drew Middle Schools did similar activities on the

Rappahannock River with the help of Friends of the Rappahannock and Virginia Department of Game and Inland Fisheries.

AG Wright Middle students walked to a private wetland area near their school and learned about the wetland and the flora and fauna that reside there. The students planted a variety of native flowering plants outside the library to create a rain garden.

Chancellor Middle School students assisted in limiting an erosion problem in their school yard which was affecting a local stream on the property. They created an outdoor garden to serve as a buffer to limit erosion and pollution into the stream.

Freedom Middle School students created an outdoor classroom nestled in a natural wetland located on school property. This allows the students to do water testing and gain a better appreciation of wetland environments.

Post Oak Middle School students created a rain garden to investigate, observe, and experience ways of deceasing storm water runoff, increase the amount of water that filters into the ground, enhance the beauty of the school grounds, and provide a valuable habitat for birds, butterflies and other beneficial insects.

Fredericksburg City students also went to Alum Springs Park, where Fredericksburg Parks and Rec and Tri/County City Soil and Water professionals led water quality testing and Project WET activities.

Dixon Smith Middle students established a Tree Nursery on their school site to serve local environmental group restorations of local streams and river banks.

All of the 16 middle schools involved did similar projects to the ones listed above. (Note: SCPS included a newly opened middle school.)

Evaluation: the extent to which the project goals and objectives have been attained. Include a discussion of any unforeseen problems that may have affected the project.

The project goals to date are being met. A goal of the grant is to provide high-quality professional development for teachers. A web-based survey tool was utilized to gather feedback from participating teachers. An overall rating, as well as individual session ratings, was gathered. In all cases, the teachers' ratings were positive.
Data gathered regarding student participation show over 3000 students participated in MWEEs averaging 21 hours in length.