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Water Resource Education for Rural Middle Schools

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Abstract Text:

The investigators conducted a water resource, teacher training in Dinwiddie County Virginia with an emphasis on rural wellhead protection, septic maintenance and non-point source, surface-water BMPs. The target audience was 12 science and social studies teachers and 600 middle school students (grades 6- 8). Teachers were pre-tested on related water resource concepts and terminology prior to training. An awareness/attitude survey was also administered to determine teachers' knowledge and concern regarding community, water resource issues and trends.

Three hours of teacher training involved model simulations, water quality testing, and classroom curriculum and activity review. Instructional materials included Enviroscape and groundwater flow models, water quality testing (ph, alkalinity, conductivity, nitrogen, coliform), interactive CD curricula and education DVDs. The educational equipment and materials will remain at the school so teachers can continue the instructional content in the future.

The investigators conducted nine classroom visits to demonstrate model use and educational activities for the teachers in a classroom situation. This process reinforced the teacher training and provided an opportunity for student evaluation. Student learning objectives included:

- Describe the major characteristics of and issues facing Virginia's watersheds including the Chesapeake Bay.
- Explain how Virginia manages its water resources and which agencies are involved.
- Demonstrate how land use affects water quality.
- Describe and demonstrate how surface water and groundwater are connected and how well and septic systems function.
- How to protect private wells and maintain a healthy septic system.
- Demonstrate and describe how water quality is monitored (physical, chemical, biological).
- Demonstrate and describe effective Best Management Practices used for water quality protection.

Pre/post tests were administered to students to measure changes in knowledge and awareness of water resource processes and issues. A follow-up survey was conducted with teachers and students to determine project effectiveness on Standards of Learning performance and water resource stewardship. Survey queries included:

- Knowledge of local water resources,
- Changes in home water conservation practices,
- Actions to protect well heads, and
- Actions to protect septic system operation.

This session will present the results of this project and discuss opportunities for more effective water resource, education programs in rural settings.

Impact Statement:

Evaluation of this project has not been completed at this time. However, the investigators project that the educational program will result in a significant increase in instructional effectiveness related to water resources for the teachers. Similar programs in the past have resulted in a 70 – 90 percent approval rating with instructional effectiveness increasing 60 – 85 percent. Key points in teacher evaluation will include the increase in awareness of water resource issues and trends in their community, and how they relate these to their students. The investigators project that at least 50 percent of the students will implement a BMP to conserve and protect their home water resources.