

Developing Digital Monitoring Protocols for Use in Volunteer Stream Assessment

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(ABSTRACT)

The traditional paper-based method of field data collection has always been a time-consuming and cumbersome process. Agency personnel in the field complete a standard evaluation form, which is then returned to the office and entered into a computer database for storage and analysis. Throughout this process, data can easily be lost or misinterpreted. As data requirements continue to expand, field data collection can quickly overwhelm a regulatory agency's manpower and resources, which only serves to exacerbate these problems. Recent technological developments can help agencies and organizations keep up with this growing demand and have begun to change the method of data collection and management.

The overall goal of this study is to develop, demonstrate, and evaluate a digital protocol for the use of technology in a volunteer stream monitoring application and draw conclusions on its applicability as a more effective means of data collection in a wide variety of fields. The protocol includes digital evaluation forms and integrated help files for use in the field. The digital evaluation forms are based on paper evaluation forms developed by researchers conducting a stream corridor assessment of Stroubles Creek in Blacksburg, Virginia.

The protocol was developed using available hardware and software. Collected data can be downloaded directly from a Personal Digital Assistant (PDA) and stored on a hard drive or system server. The data can then be input directly into a Geographic Information System (GIS) database to enhance the visualization and usefulness of the information. The GIS allows surveyors to view the relationships among the many factors affecting the stream, as well as preparing the data for advanced analysis. Two examples are provided: a field application of the protocol on streams currently listed for Total Maximum Daily Load (TMDL) development; and an environmental education setting in a Virginia elementary school. Conclusions drawn from these applications are also described.