

GIS/GPS NEW TOOLS AND NEW WAYS TO COMPLETE THE CONSERVATION PLANNING PROCESS

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ABSTRACT

The process of developing and implementing conservation plans has typically utilized maps and typed narrative descriptions to help landowners install and manage conservation practices. Copies of aerial photos have been used for map development, while planning narratives describing practice standards and field locations were typed separately. Proposed practices were hand drawn on the aerial, at an approximate location, without an accurate map scale, and with no ability to quickly aggregate planning information from several narratives or photos.

In the past three years the USDA-NRCS, ODNR Division of Soil and Water Conservation and Ohio Soil and Water Conservation Districts have started using (ESRI developed) Arc View software, (NRCS developed) Customer Service Toolkit (CST) software, and Digital Ortho Quarter Quad photography to develop conservation plans, conservation easement maps, and geospatial data bases. These tools have increased the quality and accuracy of conservation plans, and allows for the aggregation of geospatial data from different sources.

INTRODUCTION

Historically conservation planners have helped land users plan and implement "Best Management Practices" (BMP's) that protect soil, water, air, plants, and animals. These BMP's were listed in conservation plans that typically included maps that identified the site location, planned BMP locations, and existing land forms/ features (such as streams, existing woodlands, pastures, ponds etc.). Planned BMP's were hand drawn on aerial photos, at approximate locations, with no accurate map scale. Aerial photo resolution was typically poor and many land users could not recognize their own farms /properties or read the hand written information on the maps. The plans also included narratives and job sheets that provided written descriptions of the BMP's, practice standards, program rules, and the land user's name, address, and goals. The conservation planning process used by Natural Resources Conservation Service (NRCS) and Soil and Water Conservation District (SWCD) employees was designed to meet state and federal program reporting needs and rarely provided field planners with summary data that was useful at the local level. The narrative information was not linked electronically to plan maps and there was no easy way for field office employees to graphically aggregate practices from several conservation plans onto one summary. If planners did want to graphically summarize practice information (such as practice type, number, location, size, length etc.) their only recourse was to complete the task by hand. Many times this process required an individual review of every conservation plan and was extremely time consuming. Consequently, graphic map summaries were rarely done and (if they were completed) provided planners very little editing ability of the



finished product. Planning tools that provided these abilities were needed if conservation planners were going to be able to produce quality plans in an efficient and integrated manner.

DISCUSSION

Since 1999 several Ohio NRCS and SWCD field offices have started using (ESRI developed) Arc View software, (NRCS developed) Customer Service Toolkit (CST) software, and digital Ortho Quarter Quad photography to develop conservation plans, conservation easement maps, and geospatial summaries of planning information.

These tools allow conservation planners to create high quality maps that are linked to the plan's narrative and the software also provides planners the ability to graphically summarize data. Since 1999 the Greenville, Ohio NRCS and SWCD field office served as one of Ohio's pilot sites for GIS/GPS implementation.

This presentation is a discussion of how that implementation has been used to improve the conservation planning process in the Greenville field office.

Prior to 1999, planning maps in the Greenville NRCS/SWCD office were traditionally hand drawn, using photocopies of FSA aerial maps. Property boundaries were outlined and the planned practices and landscape features were drawn onto the map. Map scales were typically not developed, photo quality was poor and landscape characteristics such as streams, woodlands, ponds, and pastures may not be easily identified. Soil survey maps were also included in the conservation plan and in some cases could help clarify landforms or natural features but the scale and resolution were such that it was difficult for land users to consistently identify their own properties.. Conservation narratives were typed using a typewriter or word processing program. Beginning in 1992 NRCS developed narrative software that listed the BMP's to be implemented and also provided for the ability to summarize some information from several conservation plans. This software operated in a Unix environment, did not provide a graphic component, and did not give planners any flexibility to add features or information that might be needed or useful at the field office level. The Unix software did not have the capability to help planners develop inventories or measure map areas and software fixes for known problems were slow in coming or not available. All of these issues made it difficult for the Greenville field office to create high quality conservation plans in a timely fashion. The conservation planning workload for the office is one of the highest in Ohio and typically ranges from 7,000 to 10,000 acres per year. Consequently, any proposed planning software had to not only provide high quality plan maps and narratives, but also had to be easy to use and not increase the time it takes to develop a conservation plan.

In 1999 the Greenville Field Office was selected as one of four pilot counties (in Ohio) to use and test an early version of USDA developed Customer Service Toolkit (CST) software. CST was designed to work on top of ESRI- Arc View software and provided the user with the best of both programs. Training was provided to the District Conservationist who then provided training to others in the field office. Training consisted of two elements: creating the conservation planning narrative and using Digital Ortho Photography to develop location and practice maps. The training for developing conservation plan narratives went smoothly and took field office personnel a relatively short time (1 to 2 days of training) to become proficient in its' use. Developing planning maps and learning how to integrate them with the practice narrative took



more training time (3 to 4 days) and a great deal more practice immediately after the (training) session in order for field office personnel to become proficient.

The CST and Arc View software creates a very high quality product that is easy to read and interpret. Most landowners ask for a copy of the map as soon as they see it and office personnel are very pleased with how quickly a planning narrative can be developed. With training and practice, map development can be as fast (or faster) as hand drawn maps and their quality is much better.

As planners develop confidence and proficiency in developing individual planning narratives and maps they can begin to aggregate data and geospatial information to look at and plan larger land areas such as watersheds, townships, and counties. Information from several conservation plans can be aggregated into a single database or used to create a watershed/township/county wide map that highlights problem areas or large groups of planned practices. Initial GIS exposure that provides the basic skills to create a conservation plan map and narrative should be followed up with immediate "hands on" application that reinforces all of the elements that were introduced during the training. If the trainees are not able to practice these new skills, their ability to use them effectively will diminish (rapidly). Therefore, it is important to have the Arc View/CST software installed on field office computers prior to personnel receiving GIS training.

The ability to create conservation plans of high quality, that are useful to landowners, and that can be used by planners to create aggregate reports, maps, and inventories make the GIS capability a must for NRCS/SWCD Field Offices. Use of these tools will help landowners make sound Best Management Practice decisions and allow NRCS/SWCD offices to create high quality planning products.