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GOAL-ORIENTED WATER POLICY – THE SHENANDOAH VALLEY EXPERIENCE

Jim Giraytys, Certified Consulting Meteorologist, Winchester, Virginia *
David L. Bulova, AMEC Earth & Environmental, Inc., Chantilly, Virginia
Thomas J. Christoffel, Northern Shenandoah Valley Regional Commission, Front Royal, Virginia
John R. Staelin, Clarke County Board of Supervisors, Millwood, Virginia

1.0 INTRODUCTION

Risk in decision-making is a fact of life. Acceptable levels of risk can only be measured against the goals – the expectations – that have been set. When the Shenandoah Valley in western Virginia faced a prolonged drought from roughly 1998 to 2002/3, the decision was made to engage the entire community from government to citizens in setting the goals of how water policy would be set and executed.

In October 2002, elected officials from the Shenandoah Valley formed the Regional Water Resources Policy Committee (RWRPC) to begin a broad dialogue among local governments about common water issues facing the region. The initial focus of the effort was in response to the drought of 2002. The RWRPC also recognized that for any plan to be successful, it needed to be: (1) goal driven and involve a broad range of community and citizen stakeholders; and, (2) based on a sound understanding of available resources.

The first two steps taken were: (1) an extensive stakeholder input process designed to identify regional water resources goals as well as strengths, weaknesses, opportunities, and threats, and (2) a data collection process, including information on agencies and organizations involved in water resources management, the existing programmatic and regulatory framework, and best practices/model programs.

In this paper we discuss how that strategy came about and is being put into practice to set goals and then to match the goals to specific objectives. A data base structure has been created to allow the decision makers to track the progress being made toward achieving those Goals. "Decision makers" in this context is defined broadly as leadership within the government, business/industrial, and citizen sectors. The ultimate objective of the database is to define "what if" scenarios, and to allow the decision makers to define the acceptable limits of uncertainty they are willing to accept and still achieve their goals. At this time the database is still being populated with information, so the work is very much an effort in progress. The Assessment does, however, represent an excellent example of what regional cooperation and coordination can achieve.

* *Corresponding author address:* Jim Giraytys, 301 Longview Lane, Winchester, VA 22602; email: giraytys@shentel.net

2.0 WATER SUPPLY PLANNING

A 1999 forum, "Regional Water Relationships and the Future of the Northern Shenandoah Valley" resulted in the counties of Clarke, Frederick, Page, Shenandoah, and Warren, and the City of Winchester, agreeing on the need to engage in water resources planning over a 50 year planning horizon. It was also proposed that a regional authority might be a potential solution. A subsequent water supply study showed population demands outstripping water supply in the North Fork of the Shenandoah River by 2025, resulting in a proposal to create a hybrid authority that would conduct planning as well as implement solutions. However, while there was broad agreement on the need for planning, there was hesitation about the creation of a regional authority.

In response to the planning need, the Northern Shenandoah Valley Regional Commission created a Regional Water Resources Policy Committee (RWRPC), with the goal of creating a Water Resources Comprehensive Plan. The counties of Clarke, Frederick, Page, Shenandoah, and Warren, the City of Winchester, and the Town of Front Royal each appointed an elected official to serve on the RWRPC. The members recognized that the effort could not be truly comprehensive without the participation of upstream and downstream jurisdictions. Invitations were issued, and

Augusta County and Jefferson County, West Virginia were represented at the next meeting. Also joining the RWRPC were Rockingham County, the City of Staunton, and Berkeley County, West Virginia. The result is that approximately two-thirds of the Shenandoah watershed is included in the planning process.

Figure 1. Shenandoah Valley Watersheds Planning Area.

In June 2003, the RWRPC received a staff report: "The Shenandoah Valley Watersheds – Water Resources Comprehensive Plan White Paper" which stated, "To be action oriented and comprehensive over a wide range of issues, each having many stakeholders and plans, a strategic approach is recommended. The plan format has three main components:

1. Goals: Goals will be established based on local and regional concerns.
2. Current Situation: Current situations may be established from existing studies or, when lacking, studies may be initiated by the RWRPC or such studies endorsed by the Committee.
3. Policies and Actions: Strategies in response to dealing with the gap between the goals and current situation are likely to be a mix of policies which lead to actions."

Through a grant of $25,000 from the Agua Fund arranged by stakeholders active in the process, the RWRPC developed an RFP for a Watersheds Policy Integration Assessment. Based on a competitive process, the RWRPC engaged the services of AMEC Earth & Environmental, Inc. The final report of the Assessment was adopted by the RWRPC on October 7, 2004. The Assessment represents a new "regional community" model for expanding cooperation and increasing coordination for regional resources like water – in a multi-community, multi-jurisdictional, multi-regional, and multi-state environment region like the Shenandoah Valley.

3.0 WATERSHEDS POLICY INTEGRATION ASSESSMENT

The Watersheds Policy Integration Assessment was initiated by the RWRPC to help define a path for meeting its goal of developing the Water Resources Comprehensive Plan. Key to defining this path was recognition of the importance of developing a regional consensus on the goals that would serve as the foundation for the Comprehensive Plan. Once these goals were developed, it would then be possible to gain an understanding of potential hurdles and opportunities, as well as to create the tools needed for regional leaders to begin aligning management efforts with common goals. Based on these needs, the Assessment was designed to result in three key outcomes: (1) a regional water resources goals framework; (2) an assessment of how existing information sources and activities support the goals; and, (3) a proposed Comprehensive Plan outline.

Three major work elements were conducted to support the Assessment outcomes. These included two focus groups, a stakeholder survey, and the development and population of a water resources database. The two focus groups resulted in an initial set of water resources goals that served as the basis for a larger discussion and ultimately resulted in the consensus goal statements approved by the RWRPC. The survey served several functions. First, it served as a means of checking the validity of the work of the focus groups in developing the goal statements. Second, it resulted in valuable qualitative information about why stakeholders become involved in water resources issues, what is working (and not working) with regard to water resources management, and what opportunities are available to further water resources protection.

The water resources database was designed to organize the large amount of information

collected as a result of the project and to allow the information to be sorted and analyzed by long-term goal. However, the database was also designed to take into consideration its potential to serve as a regional information sharing and network building tool.

4.0 REGIONAL WATER RESOURCES GOALS

Although goal setting is nothing new in the Shenandoah Valley, the development of water resources goals that apply both locally and regionally represents a significant accomplishment. The purpose of devoting time and energy to creating these goals is to help decision-makers better focus energy and limited resources as well as to ensure that those responsible for the region's water resources (including government and non-government entities) are not working towards conflicting goals. Identifying long-term goals makes it possible to quickly adjust regional efforts in response to a rapidly changing environment because the ultimate direction that the region wishes to go has already been defined.

In designing a process to develop regional water resources goals, the primary challenge was how to create a sense of ownership by local elected officials as well as among the region's many active stakeholder groups. The process was further complicated by the multi-state nature of the effort, which meant dealing with different regulatory drivers and political climates. For instance, legislation adopted by the Virginia General Assembly in 2003 will require local and/or regional water supply planning in Virginia, while West Virginia has not yet taken such a step.

A multi-step process was selected for the development of the water resources goals, which began with the use of facilitated focus groups in March 2004. Two stakeholder focus groups were conducted. The advantage of the focus group approach is that it allows for in-depth discussion of specific questions and allows the facilitator to create a sense of group ownership of the final product. However, this advantage is tempered by the inherent limit on the number of participants – which can create a sense of exclusivity if the process is not well designed. The solution chosen to overcome this issue was to allow potential focus group participants to self-nominate, and to then allow the study team to chose the final focus groups based on geographic representation and representation from a range of interests and expertise. Several means of communication were used to advertise the focus groups, including a press release and the Internet. A total of 23 participants were chosen for the two sessions.

Each focus group began with an initial brainstorming session, where participants were asked the question "As water resource users, what should be our goals for water resources in the Shenandoah Valley?" Each participant was allowed to provide one answer in round-robin fashion until everyone had a chance to speak. The process was repeated until no more goals could be identified. The next step in the process was a SWOT (strengths, weaknesses, opportunities, and threats) exercise. The purpose of the SWOT exercise was to enable focus group participants to clearly see where the region stands now – in other words, the region's *situation*. Then, the focus group participants ranked the responses to the SWOT exercise. The information and rankings were used to validate or modify the goals identified during the initial brainstorming process.

The focus group process resulted in over 40 issues and ideas – far too many to serve as an effective directional tool for the Comprehensive Plan. In addition, many of the identified "goals" were actually recommended "strategies" or "actions." As a result, the issues and ideas were first sorted into 12 categories, and then criteria were adopted to tease goal statements out of the issues and ideas. These criteria included that the statement needed to be value based, take a long view, be directional in nature, allow the concentration of resources, and support translation to strategies and actions. Based on this process, draft goal statements were presented to the North Fork Minimum In-stream Flow Technical Committee (MIF) on March 17, 2004 and at a meeting of local elected officials on March 30, 2004. The MIF acts as a technical advisory group to the RWRPC. A revised set of goals was presented to the RWRPC on April 1, 2004 and released to local governments for review and comment.

The goals adopted by the RWRPC on May 6, 2004 are presented in matrix format (Table 1) and are divided into "primary goals" and "supporting goals." While all of the goals are

inter-related and support the larger concept of "Take Care of the Water" (adopted as the overarching goal statement), the primary goals tend to be physical and measurable, while the supporting goals tend to be more thematic. For instance while the supporting goal of "Data and Information" is an important goal in itself, it is thematic in that it is essential to support each of the primary goals.

Table 1. Shenandoah Valley water resources goals matrix.

PRIMARY GOALS					
Water Supply Sustainability	**Water Quality**	**Natural Systems**	**Planning & Reg. Cooperation**	**Education & Stewardship**	**Recreational Access**
Ensure water supply and demand are kept in balance so that Valley residents, businesses, farms, and aquatic life all have the needed level of sustainable water (ground and surface).	*Aggressively achieve the level of water quality (ground and surface) required to support the human, business, and agricultural needs in the Valley, without sacrificing the needs of the watershed's fish and other aquatic life.*	*Protect and enhance the natural systems that are integral to water resources protection, including: karst geography, vegetative buffers, forests, and wetlands.*	*Achieve a broad regional consensus on the direction of water resources policy, planning, and management so that common goals can be achieved and solutions implemented more effectively and cost-efficiently.*	*Have well informed, conservation-minded citizens, business people, and elected officials who are actively involved in promoting water resources stewardship.*	*Ensure reasonable public access to the Valley's water resources while respecting private property rights and the need to protect water quality.*
SUPPORTING GOALS					
Data and Information *Provide Valley leaders and citizens alike with accessible, reliable and objective information and scientific data needed to support informed water resources decisions.*					
Financial Resources *Provide or obtain the financial resources needed to meet the Valley's water resources goals, continuously prioritizing efforts to maximize the value of each available dollar.*					
Build on Existing Abilities and Relationships *Strengthen the Valley's ability to address water resources issues by effectively using and adding to the skills of local, regional, state, and national resources.*					
Agricultural and Open Space Heritage *Enhance the Valley's agricultural and open space heritage linkage to water resources stewardship.*					
Economic Advantage *Enhance the Valley's economic advantage by protecting and wisely using water resources.*					
Standards and Regulations *Optimize standards and regulatory tools necessary to meet the Valley's water resource protection and planning needs and consistently and equitably enforce these standards and regulations.*					

The goals were established by the stakeholders in a "bottom up" process that gives a solid basis to the both the Comprehensive Plan and the development of supporting tools for decision makers. One of these is the database discussed in the next section. Throughout the goal-setting process, the fundamental importance of water supply and water quality to the economic prosperity of the region was stressed.

5.0 REGIONAL WATER RESOURCES DATABASE

A primary deliverable of the Assessment was a regional water resources database. The database was created to organize resource information in a way that allows the RWRPC to link regional water resources goals with existing information and data. This allows the RWRPC to prioritize future planning and data gathering efforts. The database is organized around the 12 water resources goals and contains information on: (1) the agencies and groups working to achieve water goals; (2) data sources helpful to understanding the current situation; (3) existing activities and programs; and, (4) state and federal regulatory requirements. The work effort consisted of the development of a Microsoft Access© database table structure and data entry forms, as well as the creation of standard database reporting functions. The database is divided into four main functions: data entry; data viewing; report generation; and, database re-configuration. Several meetings were conducted with RWRPC members to discuss database structure and design.

During this process, two key design elements were defined and built into the data base structure: (1) web-based simplicity/accessibility; and, (2) expandability. The first, web based simplicity/accessibility, recognizes that the database will reside in a distributed form. Key elements will be brought together in one place, but most of the information will be available by accessing material from web-based sources. That presents a number of difficulties, primarily in the lack of homogeneity among formats. Early on it was agreed that the problem could not be addressed within the scope of this project. We could and did design data entry forms to standardize information describing water projects in the Valley (goals, objectives, funding, contacts and so on), and as much other metadata as possible. Also recognized was the fact that many decision makers wanted high level summary reports initially to examine the overall situation. So, information for reports had to be available easily and in readily digestible formats for a wide variety of people who would not necessarily be experts in scientific, engineering, or related fields.

The concept of expandability (extensibility) has been mentioned briefly in that the database was expected to be a regional sharing and network building tool. The RWRPC recognized that the utility of the database went far beyond the immediate scope of the Assessment, and that the database could serve as a focus for strengthening social and institutional networking in the Shenandoah Valley region. As a result, a major outcome of the Assessment was a recommendation by the RWRPC for the Shenandoah Pure Water Forum to seek funding to maintain and continue to develop the database as a regional information sharing and network building tool. Based on this action, the Pure Water Forum has developed a concept for "ShenWater: A Knowledge Based-Network." The concept relies on the following two goals:

(1) Develop the database into an accessible, user-friendly information source that has expanded functions and serves the Shenandoah Valley as an up-to-date knowledge base.

(2) Determine how to encourage and enable decision makers, *professionals, experts, and citizens* to use and contribute to the knowledge base when considering water issues.

While immediate plans focus on how to develop the database as a central library, or knowledge base, it is hoped that the database eventually will provide a basic mechanism for estimating the risk of individual policy decisions. Later extensions could incorporate GIS-related information on factors that influence water decisions. Land use, location of infrastructure facilities, local and regional planning materials, demographic information, and the myriad of other information required could be either in the data base directly or accessible through the data base. As a result, decision makers would be able to make realistic estimates of the future impact of their decisions on the water supply. Then, they can decide on how much risk they are willing to accept. The current database will require substantial effort to reach that level. The structure, however, is there and the database is useable from the outset for the decision makers.

6.0 NEXT STEPS

Foremost amongst the next steps is to develop the Water Resources Comprehensive Plan. The Plan needs to incorporate the right mix of incentives, education, regulation, knowledge about the resources, as well as estimates of growth and demands for water for all kinds of uses including economic development, agriculture, and conservation and recreation.

Model programs need to be studied to determine what has worked and what has not. Mandated programs need to be examined to determine which ones can best be solved locally and which need regional approaches. To provide the knowledge base for moving forward, the database structure started during the Assessment needs to be completed and made accessible in a web-friendly format.

7.0 SUMMARY AND CONCLUSIONS

The formation of the Regional Water Resources Policy Committee was the next logical step in a process that had been developing in the Valley for a substantial period – perhaps for 20 years or more – to come to grips with both water quality and quantity issues. The prolonged drought provided the impetus to take that next step. One of the strengths of the RWRPC is that it is made up of elected officials who are responsive to the public, rather than being a group of appointed individuals. The participation in the RWRPC cuts across two states and covers both the Shenandoah and Opequon watersheds in the Shenandoah Valley. Finally, the RWRPC is supported by a broad cross section of stakeholders representing government, various state and federal agencies, public institutions, universities, corporations, and citizens groups. The Assessment was successful in establishing a clear set of goals with wide community "buy-in". This involvement across the entire Valley community bodes very well for establishing a comprehensive water policy throughout the Shenandoah Valley.

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