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River Voices

Establishing Watershed Benchmarks

Tools for gauging progress

by Don Elder

In the widget business, measuring success is simple. At the end of the year, you count widgets sold and profits earned. Then you report to your shareholders what you accomplished with their money.

In the watershed business, measuring success isn't nearly as cut-and-dried. It is, however, even more important.

The long-term, incremental nature of watershed work makes it essential that we find ways to determine if we are heading in the right direction — and if we are making progress fast enough. As watershed organizations mature, and as expectations of them rise, it becomes increasingly important to find ways to measure progress each year.

Measuring progress in watershed work can help us fine-tune our strategies so that we invest our energies and money where they can make the most difference. Through regular evaluation exercises, we can generate accurate, reliable information about our progress that keeps volunteers, staff and board members, donors, and the general public informed and enthused about our work.

Benchmarks

River Network encourages watershed organizations to establish benchmarks: measures that can be used to gauge progress year to year and over the long haul. These benchmarks should be as objective and quantifiable as possible. They should fall into three general categories:

1. *Organizational benchmarks*: measures of the health of a watershed organization.

2. *Activity benchmarks*: measures of the efforts being expended to improve the health of the watershed.

3. *Watershed benchmarks*: measures of trends in watershed health.

Some might contend that it's only the last category that really matters. It's true that the purpose of a watershed organization is to improve watershed health. But it's also true that measuring watershed health isn't always easy, and that improving it measurably often takes a very long time.

The problems of most of our watersheds weren't created overnight, and they certainly won't be solved overnight. Progress toward watershed health can be slow, indeed, sometimes undetectable — even if a watershed organization is doing all the right things. That's why it is so important to recognize the importance of building strong, healthy

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River Voices

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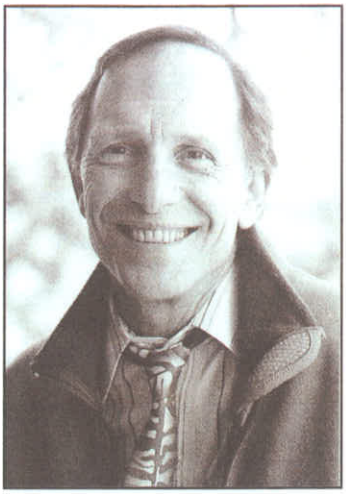
River Network is a national nonprofit organization whose mission is to help people organize to protect and restore rivers and watersheds.

We support river and watershed advocates at the local, state and regional levels, help them build effective organizations, and promote our working together to build a nationwide movement for rivers and watersheds. River Network also acquires and conserves riverlands that are critical to the services that rivers perform for human communities: drinking water supply, floodplain management, fish and wildlife habitat, recreation and open space.

From the President



© photo by Linda Kliewer

It seems strange, in a way, that America's conservation movement has evolved into a collection of specialist protection endeavors. Forests, rivers, oceans, desserts, ducks and insects, birds and rare plants: it seems that every component of the natural world has its own organized protectors.

The reason this can seem strange is that environmentalism's greatest insight is that everything is connected. A poorly built logging road high in the mountains can produce erosion that ends by killing a marine coral reef hundreds of miles away. Extirpation of a single species can cause an unforeseen cascade of extinctions.

Of course, the specialized approaches to conservation have risen from the specific issues raised in different kinds of ecosystems, and the bodies of knowledge and law that have grown from them. In many ways, this diversity strengthens our movement.

Still, it is also useful to remember—precisely because everything is connected—that, ultimately, it is whole systems that we must protect, manage, and restore.

We are still learning how to do that. Ecosystems interpenetrate and intergrade in subtle ways and can be impossible to map with precision. More and more, those who study and work for conservation believe that watersheds may be the most useful units for us to protect and manage. And the best way to measure watershed health is by studying the rivers that drain them. As Dr. James Karr writes, "Aquatic ecosystems embrace an interactive mosaic of environments, extending from headwater streams and meadows through mainstem rivers to the sea. Because rivers integrate everything in their landscapes, the living organisms found in rivers tell us about the status and quality of their watersheds.

This issue of *River Voices* tackles the question of how river and watershed conservationists can measure our success. In the long run, we can do so only in terms of the health and diversity of our watersheds. That measurement, in turn, will tell us much about the health and viability of our society.

Sincerely,

Ken Margolis

Ken Margolis
President

WELCOME

River Network Hires New President

We are pleased to announce that previous River Network board chairman Ken Margolis has accepted a position with our organization as president.

As chair of the board Ken helped draft our five-year strategic plan to systematically expand the state and local river and watershed protection movement in the U.S. Most recently, Ken helped found Ecotrust and Ecotrust Canada, organizations devoted to working with local communities in Oregon, the Pacific Northwest and British Columbia. The groups work to strengthen their local economies while protecting the environment.

Founding president Phil Wallin will stay on with River Network as he builds the Riverland Conservancy into a national program. Phil's vision and leadership has made River Network what it is today. We eagerly look forward to his success with the Riverland Conservancy Program.

Establishing Watershed Benchmarks

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watershed organizations that can serve as catalysts for the kinds of ongoing activities that make long-term progress possible.

Building and maintaining healthy organizations

Clearly, to make a difference, most watershed organizations need to become healthy institutions that will be around for a very long time. If they are to do so, attention must be paid to their internal structure and strength from Day One.

In a newly forming organization, people don't tend to flock to tasks like filing articles of incorporation, drafting a good set of bylaws, setting up strong financial management systems, or helping meet the year's revenue goals. However, these types of activities are as important to the cause as other, more glamorous, and seemingly more urgent matters that attract the attention of many new watershed groups.

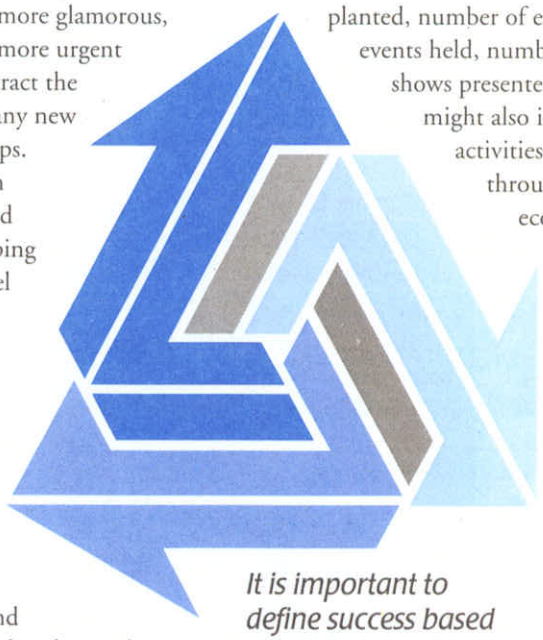
Similarly, in more established groups, developing sound personnel policies, maintaining active and effective fundraising and board development committees, building membership, and conducting regular, thorough program evaluations aren't the kinds of things that people typically knock down the doors to do. But, if these tasks are not done regularly and done well, the organization will fail to achieve its full potential - and may be headed for real trouble down the road.

As watershed groups mature, the need for them to assess their organization's health on a regular basis never diminishes.

Measuring watershed activities

Watershed organizations aren't in business just to be in business. They are in business to make things happen. If an organization is internally strong but isn't making things happen in the outside world, what good is it? In addition to internal measures of a watershed organization's health, there need to be external measures of its effectiveness.

One of the ways to measure effectiveness is to measure watershed *activities*. Watershed activities worth measuring might include pounds of trash collected, number of trees planted, number of educational events held, number of slide shows presented, etc. They might also include activities that break through social, economic, or political barriers and lead to increased potential for watershed improvement.



It is important to define success based on what condition your watershed is in.

Watershed activities can be those of the watershed group itself or those of others that the group supports or inspires. It's important to measure each type. In many instances, much work is accomplished by individuals, organizations, governments, and businesses that are motivated to action by a watershed group, but that are not, strictly speaking, part of the group. (For instance, the Kiwanis Club might be inspired to organize a series of river cleanups after you offer a slide show about your watershed at one of their meetings.) Measuring their activities is just as valid as measuring those of the group itself. In many cases, those actions would not have been taken if the watershed group didn't exist, so it's perfectly legitimate to count them. In fact, it's absolutely necessary to count them to measure the group's full effect.

Interpreting your benchmarks thoughtfully is as important as monitoring them accurately.

Measuring watershed health

Individual activities are important, but, in the end, it's overall *results* that really count. Any complete set of benchmarks will include some that can be used to determine trends in watershed health.

To know whether you've made progress, you must know where you started. That's why a basic assessment of the chemical, physical and biological condition of the watershed is funda-

mental to any watershed organization's evaluation program. Once you know where you started, it can still be a challenge to determine how much progress you have made. Rivers and streams support dynamic ecosystems. There is a considerable degree of natural variability that can make it difficult for the uninitiated to discern trends and interpret them accurately.

Fortunately, in recent years, procedures have been developed that allow any watershed organization with some volunteer energy to choose a few reliable, easy-to-measure, and easy-to-interpret benchmarks of watershed health. Combined with a few-well chosen benchmarks in other categories, these allow a watershed group to get on the fast track to measuring its success.

Interpreting and acting on what is measured

Don't get discouraged if a few of your chosen benchmarks indicate little or even negative progress in a given year. Some of these measures need to be taken with a grain of salt. Others need to be taken with a whole shaker-full. For instance, a slight drop in your membership isn't necessarily bad if those you lost only joined the year before to get a neat-looking tote bag, and if those you kept gave more generously and became more involved. A decrease in the amount of trash collected isn't necessarily bad if your previous year's evaluation showed that putting the same amount of effort and money into restoring vegetation along a particular degraded tributary would do more good than your whole trash collection program — or if you simply did such a good job of trash collection the year before that not much remained to be gathered. An increase in the average measured turbidity of your river isn't necessarily bad if you know that it was not the result of poorer erosion control, but of a series of unusually heavy thunderstorms that year. Interpreting

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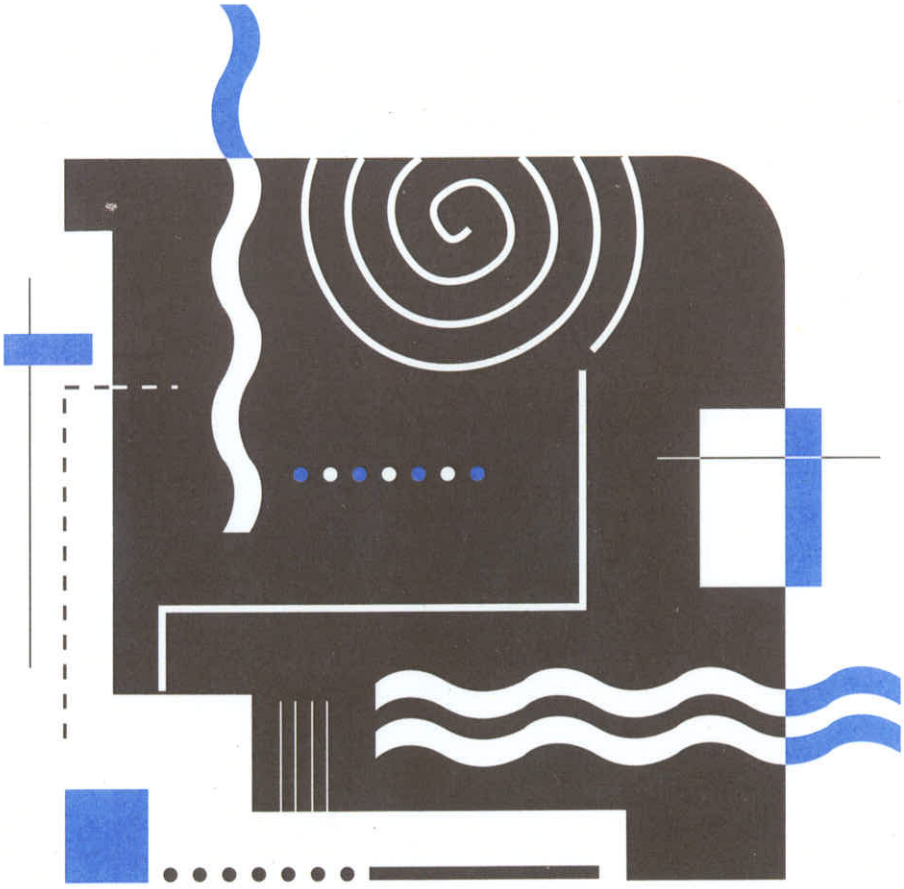

Once you know where you started, it can still be a challenge to determine how much progress you have made. Rivers and streams support dynamic ecosystems. There is a considerable degree of natural variability that can make it difficult for the uninitiated to discern trends and interpret them accurately.

Establishing Watershed Benchmarks

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your benchmarks thoughtfully is as important as monitoring them accurately.

However, when your benchmarks tell you a particular area needs attention, by all means, pay attention — and be willing to ask yourself the hardest possible questions. If your membership is dropping, is it because the general public doesn't understand or support what you do? If less trash is being collected, is it because you have recruited fewer volunteers? If turbidity is rising, is it because all the "best management practices" that can be applied simply aren't going to be enough until you directly influence land-use decisions in a rapidly developing area? After all, identifying areas that require additional attention is one of the fundamental purposes of setting and monitoring benchmarks.

While you may find some areas where you need to work harder or work differently, you in all likelihood will also find many areas where you are making real progress. Recognizing both, using a well balanced set of benchmarks tailored to your organization, is the key.

The payoff

Using your benchmarks to measure progress will help your organization plan better, accomplish more, demonstrate its effectiveness, and raise more money. It will also remind you to celebrate the success of the important, hard work you do in your watershed more often. Finally, it will help give everyone involved with your organization confidence that their efforts are adding up to meaningful, long-term results.

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Someone holding a clerical position with a large, effective nonprofit social-change organization was recently asked what he did for a living. He could have replied that he answered the phone and distributed the mail. Instead he replied that he helped change the world.

He had more than just a belief in the organization's mission to support his statement. He knew of specific things that his organization was accomplishing that were making a real difference, and he knew that his work was vital to the progress being made. Any watershed organization's staff, board, volunteers, and funders need to have the same sense. When they do, everyone involved feels that their contributions are helping change the world, watershed-by-watershed.

Don Elder is the director of River Network's watershed programs and co-editor of River Voices.

BENCHMARK RESOURCE

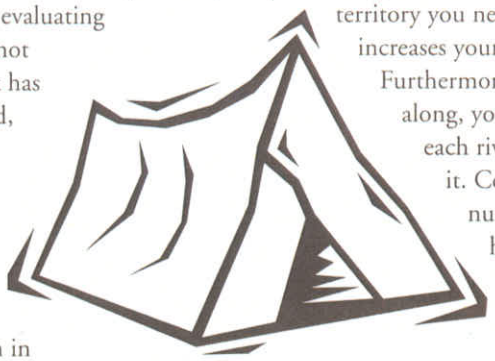
If you need a practical guide for measuring the success of your watershed ecosystem program, watch for *Seeking Signs of Success.* The Conservation Resource Alliance (CRA) is producing a book and worksheets to help guide you through the process of measuring how well your watershed or ecosystem is working. The book is in the publishing stages. Brochures and additional information is available.

For more information contact CRA at (616) 946-6817 or email watershed @ msn.com

Planning for Success

by Ken Margolis

The first step in measuring success is determining what you want to accomplish. So, the progress of evaluating success begins not when your task has been completed, but before you have even begun. The methodology developed to facilitate coherent action in complex situations is known as strategic planning. Strategic planning is not something we do before we begin our work, or that we interrupt our work to do — it is a central, critical part of our work.



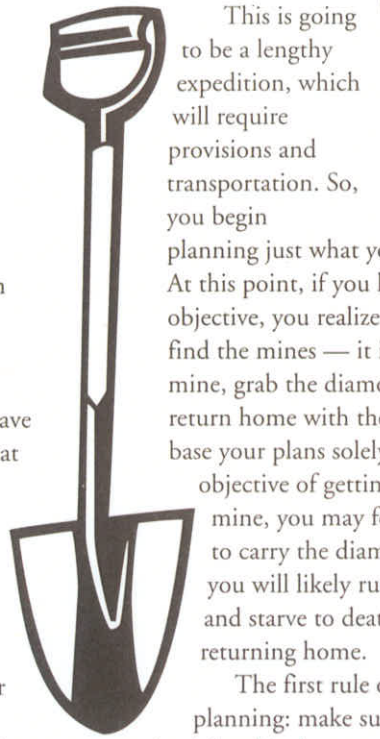
Defining your objective

Imagine that you and some friends have decided to mount an expedition to find King Solomon's mines. Once you find them, you will be fabulously wealthy.

It won't be easy. The mines are rumored to exist, but no living person has actually seen them. Their purported location is vague, the country between you and them is only partly mapped, and is known to be hazardous. Nevertheless, you have decided to try it, no matter what your saner friends may say.

How are you going to find the mines? All the stories about them speak of a beautiful river that runs next to the cave where the diamonds are tumbled together in a gigantic pile. This information allows you to develop a strategy for searching: you will look at all the river valleys on the map and eliminate those where you know others have searched. Like any good strategy, this narrows down the territory you need to cover, and increases your odds of success.

Furthermore, as you go along, you can cross off each river as you explore it. Comparing the number of rivers you have explored to your available time and resources allows you to make evaluation an integral part of the work. When half your provisions are gone, and you have explored only three of 10 rivers, it is time to sit down and revise your plan.



Mapping out the details

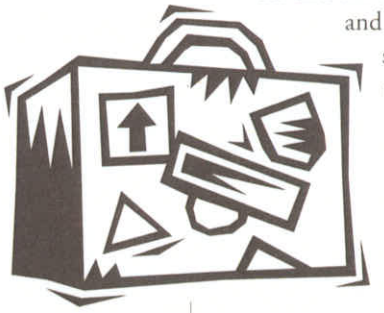
This is going to be a lengthy expedition, which will require provisions and transportation. So, you begin planning just what you will need. At this point, if you look at your objective, you realize it is not to find the mines — it is to find the mine, grab the diamonds, and return home with them. If you base your plans solely on the objective of getting to the mine, you may forget the sack to carry the diamonds and you will likely run out of food and starve to death before returning home.

The first rule of strategic planning: make sure you have the right objective.

Clearly stating your long-term objective allows you to begin work on your interim objectives: getting the horses ready, buying the food and clothing you'll need, and studying the maps in order to trace your route.

Finally, the morning comes when you are ready to start off, and you are awake and dressed even before the alarm goes off. Enjoy the moment; it may be the last time everything looks simple.

Inevitably, something unexpected happens. For instance, you come upon a river that is not on the map. This throws your entire plan into question. How many other unmapped rivers are there? How much extra time and provisions will it take to explore them? You sit around the campfire that night and devise a new strategy. Using topographic maps, you determine where there are likely to be unmapped rivers and you revise your route accordingly.



This is the second law of strategic planning: you must periodically revise your plan to incorporate new information.

To make a long story short, you finally discover the mines. You fill your sacks, return safely home and find yourself rich beyond your wildest dreams.

the first rule of strategic planning: make sure you hav the right objective.

Then what?

Well, if you are like many lottery winners who find themselves suddenly rich, you end up in debt

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Planning for Success

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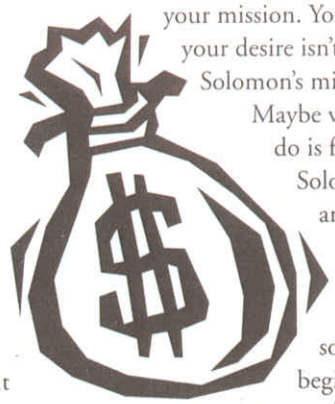
three years later. What happened? Where did all that money go?

Determining your mission

Your plan lacked one element. You had the long-range objective clearly in mind, and you accomplished it and were briefly rich. Now you are worse off than before the whole thing started. What went wrong?



You had an objective, but you did not have a mission. An objective is time-bound and measurable. A mission is the reason you are seeking to accomplish the objective. It is timeless, and most important it is value-based. Your core values, as expressed by your mission statement, create the ultimate context for determining whether you reached your objective and whether it was the right objective in the first place as well as what your next objective should be.

The second law of strategic planning: you must periodically revise your plan to incorporate new information.

Before you determine your objectives, you need to understand your mission. You may learn that, your desire isn't to find King Solomon's mines after all. Maybe what you want to do is find King Solomon himself and go fishing with him.

In short, evaluation is not something you begin at the completion of a task. It begins as soon as you frame your initial objectives and ask whether they are correct and achievable. Ongoing evaluation as you proceed is what empowers you to make changes in course as they are called for. The best way to achieve success is to know what it is, and keep it in mind throughout the process. Watershed conservation is a complex task, and our planning/implementation/evaluation cycles must mirror that complexity.

Ken Margolis is the president of River Network.

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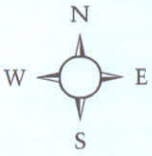
Steps for Success

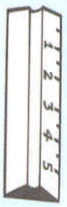
Determine what you want to accomplish.



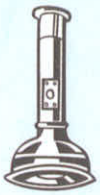
Understand your mission.

Based on your mission, define your objective

Act on your plan.



Make evaluation an integral part of the plan.



Revise your plan based on experience.

Assessing Your Organization: How strong is it?

by Liz Raisbeck

The river and watershed movement across the country is fortunate to have extraordinary individuals hard at work protecting their rivers. However, if a key person moves or burns out, the voice for the river also vanishes. Strong organizations involving many voices for the river have staying power and will be there for the long haul.

One means of building a successful future is to institute benchmarks as part of your organization's planning. Below is a checklist you can use to measure your progress in building and maintaining a strong, healthy organization.

Strong organizations involving many voices for the river have staying power and will be there for the long haul.

	Yes	Partly	No
Program and Planning			
1. Does your organization have a clear mission statement?			
2. Does your program have measurable goals that will benefit the river? Can your board and staff articulate them?			
3. Do you have a written plan and a short-term (1-2 years) or long-term (3-10 years) timeline for achieving these goals?			
4. Is the entire organization—staff, board, members—committed to this plan and involved in delivering it?			
5. Do staff and board meet annually to review, revise and approve the plan?			
6. Do you have the needed skills within the organization to accomplish the goals?			
7. Does your organization have a system for evaluating its programs?			
8. Do staff members have work plans that reflect the annual plan and a system for measuring progress on the work plans?			
Board			
9. Do board members understand their roles and responsibilities within the organization?			
10. Does the board have functioning committees, especially finance and nominating?			
11. Is there an effective process for recruiting new board members? Do board members adhere to regular terms?			
12. Do officers rotate in and out of their roles on a regular basis?			
13. Do all board members make a financial contribution and have clear fundraising responsibilities?			
14. Do staff and board have a clear understanding of their respective roles and work together as a team?			
15. Are there job descriptions for board members and an orientation system for training new board members?			
16. Is the current size, structure, and composition of the board appropriate for what the organization wants to accomplish?			
17. Are board meetings well-attended and efficiently run? Are clear decisions and follow-up tasks accomplished?			

	Yes	Partly	No
Financial Management			
18. Do you have an easily understandable financial reporting system for board and staff that provides information on a monthly, or at least quarterly, basis?			
19. Do you have a small (3-6 month) cash reserve, as well as an emergency fund (with pre-determined procedures governing its use)?			
20. Does the organization have an annual audit?			
21. Do you regularly budget for and achieve a small surplus?			
People Management			
22. If staffed, are there personnel policies and job descriptions?			
23. Do staff have a competitive benefits package?			
24. Is there a program for recruiting and training volunteers?			
25. Do staff and volunteers believe they have adequate input into the organization's decision-making process?			
Fundraising			
26. Is there a fundraising plan that identifies realistic goals and funding sources and outlines responsibilities?			
27. Do you have diversified funding sources — individual donors, events, foundations, etc.?			
28. Do you thank your donors promptly and in a variety of ways?			
29. Do you have people who are skilled in fundraising on the board and/or staff?			
30. Is there a program to upgrade donors to higher giving levels?			
31. Do you provide training in fundraising for staff and board?			
Marketing and Public Relations			
32. Does your annual plan have a public relations and media component?			
33. Have you assessed how visible your organization is in your community and what constituencies you want to reach?			
34. Do staff or volunteers have relationships with the local print and electronic media?			
35. Does your organization receive publicity several times a year?			
36. Do you combine program, fundraising, and public relations, using all three to reach new constituencies or strengthen old?			
37. Do you have events to introduce new people to your organization?			
38. Do members of your group regularly make presentations to other groups and speak at public meetings where issues relevant to the river are discussed?			
39. Do members of your organization know the key public officials and other leaders in your community?			
40. Do your members speak at public meetings where issues relevant to the river are discussed?			

Adapted from "Assessing Your Organization," a tip sheet by the Citizen Forestry Support System.

Liz Raisbeck is a watershed program manager for River Network.

Evolution of Broad-based Watershed Initiatives: Measures of Success

by Don Elder and Sari Sommarstrom

So, you have a thriving new watershed-based conservation organization. You've built it around those in your area who are true believers in your mission to improve watershed health. Now what?

You may need to find ways to engage the rest of the people of the watershed.

Across the country, organizations are experimenting with new ways to involve people far beyond the traditional conservation community in watershed conservation. The experiments are all over the map, both literally and figuratively. Barriers are being broken down, better communication and coordination are taking place, and — slowly but surely — healthier watersheds are resulting.

However, it takes time to build better watershed protection processes, and even more time for watershed improvement to be seen. Many watershed problems take years or even decades to solve. One of the great challenges in the watershed movement today is keeping all the necessary people involved and enthused over the long periods of time it takes to get things done.

Monitoring progress in building broader involvement

At the second meeting of the "Four Corners Watershed Innovators Initiative" (see sidebar) there was much discussion about how to do this. Ideas flowed freely. People wrote and drew furiously as they tried to synthesize and represent what they were hearing and thinking. One idea that developed broad support was that since it often takes years for a community-based process to result in measurable improvement in watershed health, it is important to find ways to gauge the progress of the process itself.

After the workshop, Sari Sommarstrom, one of the workshop participants from California, built on the group's work by developing a chart showing steps to success and positive indicators.

1. **Steps to success.** These are descriptions of basic steps between the starting point - where apathy, lack of awareness, lack of confidence, or gridlock exists - and some sort of ideal state - where watershed resources are healthy, and all the people necessary to keep them that way are constructively engaged for the long term. (This Utopian state may never be reached, but it should always be the goal.)

2. **Positive indicators.** These are indicators of success for each step along the path. They provide a set of benchmarks for people who want to make sure that progress continues steadily.

In the real world, of course, progress along these lines is never linear. Still, over time, most successful community-based watershed protection initiatives follow the general path outlined below.

This is a work in progress. It recognizes that the road to Utopia is full of twists, turns, and even some switchbacks. It represents what Sari has learned through her extensive work with watershed groups and what she took away from the second of the "Four Corners" meetings. It will be a jumping-off point for discussion at the third meeting in California next spring. Most importantly, it should provide food for thought for watershed groups across the country. Your reactions and ideas are invited.

THE FOUR CORNERS INITIATIVE

In March 1997, River Network helped a group of watershed innovators from four states embark on a two-year effort to identify important common elements among successful watershed protection and restoration initiatives.

The group's premise is that some of the most important environmental management innovations during the next decade will take place at the watershed level, and that these innovations will involve the collaboration of state and local governments and a wide variety of non-governmental organizations and interests. It is believed that an in-depth evaluation of noteworthy watershed protection efforts in four quite different states can reveal key issues and critical elements for success common to most watershed protection efforts in most states.

The strategy of the "Four Corners Initiative" is to:

- assemble a variety of leaders from four states-Florida, Washington, California, and Massachusetts-where watershed innovations are taking place today;
- arrange a series of energetic, in-depth discussions among these individuals in meetings held in each of the four states;
- provide a fertile environment in which critical thinking can occur and creative new ideas can be formed and developed; and
- summarize and disseminate the products of this group's efforts to a much wider national audience of watershed practitioners.

Toward the Watershed Ideal:

Measuring progress in building communication, cooperation, and success in the watershed

Phase	Step	Benchmark
GENESIS	One or more individuals recognize need for some new type of approach. (Recognition can be born either from proactive response to long-term issues or reactive response to crisis.)	• Talk in community of new approach begins (newspaper articles, organization board meetings, coffee shop discussions, etc.)
	Small group of interested individuals meet to discuss new approach.	• Meeting date and place established.
INCUBATION	Organizers meet to discuss 5Ws: What (problem), Why (purpose) Who (interests & size), Where (watershed size) & When (group mtg.)	• Meeting occurs • What, Why, Who, Where & When discussed • Tentative agreement on the 5Ws reached
	Organizers solicit broader participation	• List of potential interests and representatives developed • Personal contacts made • Requests for participation accepted • Diversity of interests represented • Small "steering committee" established
INITIATION	Broadly representative participants attend first meeting.	• Meeting held • Attendance strong • Broadly representative group agrees to meet again
DEFINITION	Basic organizational processes are established	• Basic ground rules set • Rules for orderly meetings agreed upon • Use of facilitator considered • Process for making decisions agreed upon (Who decides what? How?) • Leaders emerge, are supported
	Regular meetings or forums are held	• Agendas prepared • Minutes kept • Positive publicity secured • Strong, diverse attendance continues
	Issues are defined and prioritized.	• List of issues with priorities set
ANAYLYSIS	Joint fact-finding on the selected issue(s) by participants begins	• Most contribute to effort • Experts contacted for information and opinions • Joint field trips with experts held • Basic watershed reference library established • Existing data synthesized • Research needs identified • Watershed and inter-disciplinary perspectives developed

Phase	Step	Benchmark
OUTREACH	Community education and involvement begins	• Community publicity begun • Public meetings and forums held; good attendance and participation obtained • Workshops on key issues held • Public field trips held • Involvement of interested citizens (not just K-12) secured
	Synthesis of findings about key issues developed	• Technically sound summary report in clear, layperson's language issued
DECISION	Options to address the key issue(s) identified	• List of options developed • Options discussed and considered by full group
	Easy, beneficial (or at least not detrimental) initial projects chosen.	• Initial projects agreed upon • Project descriptions & budgets developed • Necessary funding and permits obtained • Projects implemented • Favorable publicity obtained • Group enthusiasm built over initial beneficial action
	Long-term plan or strategy developed.	• Goals and objectives agreed upon • Findings summarized • Recommendations listed, with priorities • References cited • Draft plan made available for public review • Public input carefully considered • Plan approval achieved
ACTION	Priority recommendations and projects determined	• Project descriptions and rationale developed • Necessary permits identified and applied for • Potential project funders identified • Potential project funders approached
	Major projects implemented.	• Needed funding obtained • Necessary permits obtained • Project contracts awarded • Projects completed on time and within budget
EVALUATION	Short- to medium-term (1-5 year) success of projects, plan, and process evaluated.	• Project reports completed • Monitoring Program /Plan established • Monitoring data collected • Results evaluated and reported • Report reviewed by members and experts • Evaluation agreed upon • Environmental objectives met
REVISION	Plans and projects reviewed and revised.	• Quality assurance/quality control measures adopted • Evaluation methods determined • Plans and projects evaluated • Plans amended as appropriate • Goals revised and process modified as appropriate
RENEWAL	Long-term (5-25 year) success of projects, plan, and group process evaluated.	• Major project goals and objectives met • Measurable improvement in watershed health observed • Group process strong, sustainable • New problems and issues identified • New strategies developed

Maps, Data, & Timelessness: Assembling Your River's Baseline

by George Constantz

"The river doesn't hold its level like it used to."

"When I was a kid this river was full of hellgramites."

"Seems like the wood ducks are making a comeback."

Such anecdotes contribute little to conserving a river. To determine whether a river is getting healthier, sicker, or staying about the same, you need to understand how measurable indicators of ecological health change over time.

If you're going to try to detect a trend, you need a starting point. I define "baseline" as a snapshot description of a river. A good baseline establishes a set of benchmarks against which future conditions can be compared.

If you care about a river, it deserves a baseline. In this article, I suggest a series of steps for assembling a baseline for your river. I wish I'd had this list when I started the Cacapon River baseline project in 1988.

Tips for designing the baseline

• Operate from a watershed mindset. Consider the basin's landuses, point sources, tributaries, and the mainstem's entire continuum. "Conserving a stretch of river" is an oxymoron.

• To gather diverse perspectives, seek the advice of key watershed stakeholders. This step also helps instill a feeling of ownership of the baseline throughout the community.

• Build outreach into the baseline project. During data collection, recruit landowner volunteers to work under your supervision, offer in-stream classes to local schools, and issue press releases. While requesting permission to access river sites, teach landowners about the river and your baseline project.

• Avoid reinventing the wheel by reviewing pre-existing information. Studies, dusty data files, and knowledgeable people will help you make the most of scarce resources.

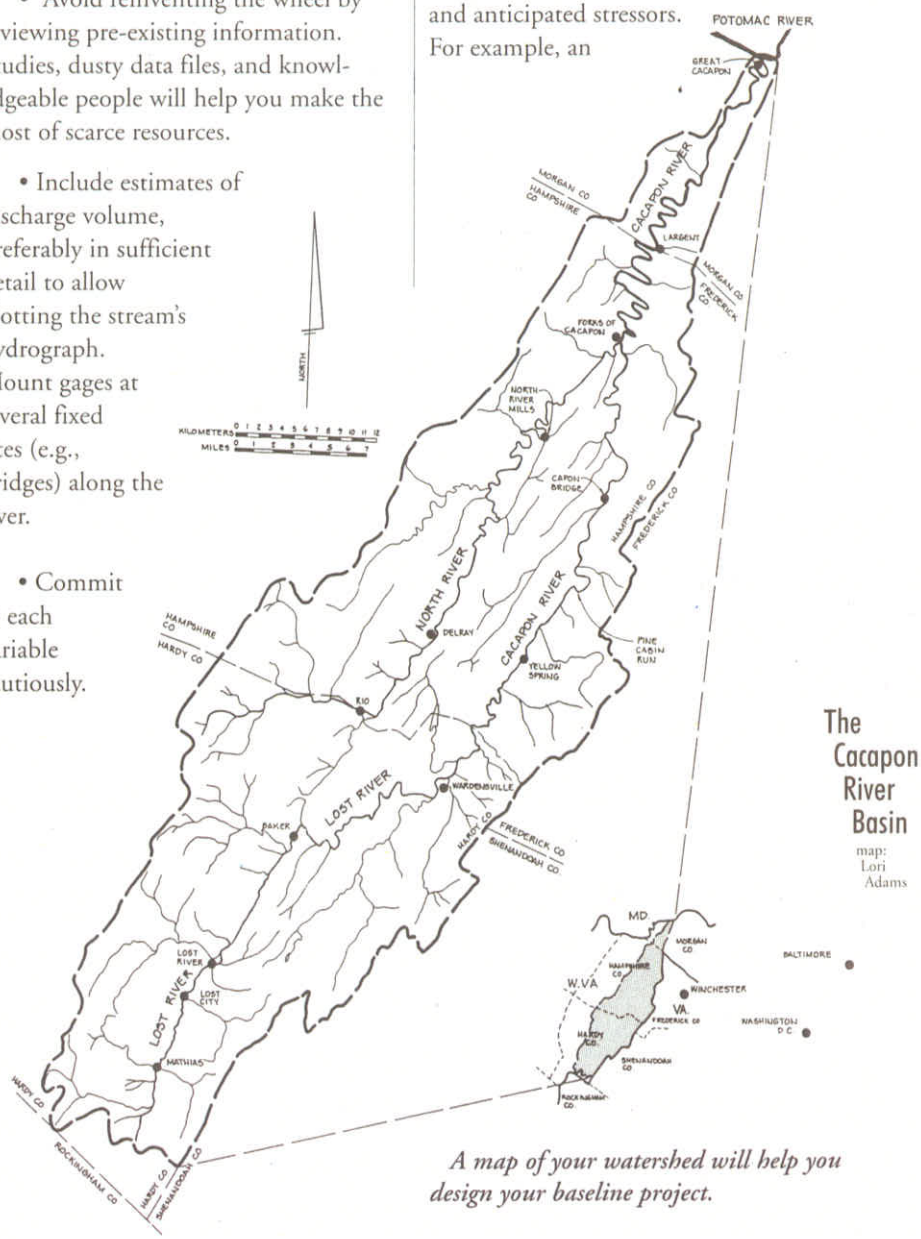
• Include estimates of discharge volume, preferably in sufficient detail to allow plotting the stream's hydrograph. Mount gages at several fixed sites (e.g., bridges) along the river.

• Commit to each variable cautiously.

(1) Consider relevant laws such as your stream's highest designated use and its water quality standards.

(2) Create a list of candidate parameters via brainstorming. Use manuals, catalogs, and your personal knowledge of the watershed.

(3) From the above list, prioritize parameters based on current and anticipated stressors. For example, an



The Cacapon River Basin
map: Lori Adams

A map of your watershed will help you design your baseline project.

agricultural watershed in the path of urban sprawl should be studied for currently relevant variables (e.g. total nitrogen) as well as variables that could be important in the future (e.g. total residual chlorine).

(4) Measure variables that indicate the status of a variety of fundamental ecological functions, such as riparian and in-stream habitats and physical, chemical, and biological indicators of water quality. Also, record subjective impressions.

(5) Avoid the temptation to measure a variable just because it's cheap or someone has donated the equipment.

Tips for collecting the data

• Avoid collecting data without knowing how you will eventually analyze them. For example, consult a statistician to avoid surprises brought on by unmet assumptions.

• Randomize sampling through space and time as much as possible. You want a snapshot of the overall system, not just the details of selected areas of concern.

• Maximize acceptance of your findings by adopting the following procedures:

(1) Adopt a quality assurance plan. For example, analyze duplicates, splits, and knowns every 20th sample.

(2) Use EPA-approved techniques.

(3) Earn certification from your area's laboratory certifying group, e.g., a state agency's laboratory certification program.

• As an alternative to investing in the above three procedures, hire a local laboratory that meets these standards.

• Fund the baseline project from diverse sources. Donations from

Photo: Beth Maynard Young

Teach in the field. Strive to make every sampling trip a learning experience.

riparian landowners, local businesses, and state agencies, grants from foundations, and proceeds from special events all demonstrate broad-based support.

• Adopt a formal procedure for training people who will be collecting data and samples. Seek the help of an outside expert.

• Map the watershed. At a minimum, include the river's maintstem and tributaries, and its watershed boundary. Also consider including towns, county lines, roads, power lines, and other useful landmarks.

• Key all data, observations, calculations, and derived estimates to a location and a time. I used river kilometer and date to create a unique number that allowed me to trace every finding to a specific site visit. For example, "CR87.5-062090" identifies information gained during, or as a result of, my visit on June 20, 1990 to a site 87.5 km upstream of the Cacapon River's mouth. Consider using a global positioning system.

• Use a checklist. Include spaces for equipment (e.g., pH meter), supplies (e.g., calibration standards), and personal items (e.g., toilet paper). Using a word processor, maintain an evolving checklist laid out according to an efficient work flow.

• Allow space on your data sheets to include metadata (e.g., date, names, calibration readings), subjective impressions (e.g., "awfully dry"), and the quantitative data (e.g., pH=7.8). Gather ideas from published examples of field data sheets. Like the checklist, allow these forms to evolve. After all data are in, staple together the checklist, data sheets, and lab bench sheets for that particular site-time visit.

• Never trespass. In descending order of preference, obtain permission from landowners by contacting them face-to-face, over the phone, or via the mail. Think about how you would want to be treated.

• Teach in the field. Strive to make every sampling trip a learning experience for a volunteer, college intern, local high school class, or reporter.

• Maintain reference collections. Properly collect, preserve, label, and store a small series of each taxon sampled. Ask taxonomic authorities to verify the scientific names of your reference specimens.

• Avoid missing data. Not only do some statistical software packages not

(continued on page 16)

Photo courtesy: Air Photographics, Martinsburg, WV, and The Cacapon Institute, High View, WV.

Photos help convey your information. Above: Aerial view of the Cacapon River downstream from the community of Forks of Cacapon, West Virginia. The photo illustrates the two major land uses in the basin — forests and farms.

Maps, Data, & Timelessness: Assembling Your River's Baseline

continued from page 15

handle missing data very well, but a missing datum in the final document is painfully distracting.

• Keep good records. For field notes, use pencil on waterproof paper. Store archived paper copies and backup diskettes in a separate building.

Publishing the baseline

• Produce a timeless document. Your baseline should create interest today and serve as a tool 100 years from now.

• Include all quantitative data, preferably in one large appendix table.

• Place the baseline in several contexts, including geologic; prehistoric, historic, contemporary, and future; regional and local; and scientific.

• Include maps showing all sampling sites, sources of pollution, and major human uses of the river.

• Write for two kinds of readers. Your baseline report should be understandable to landowners, county commissioners, and teachers. It should also be scientifically rigorous enough to dispel the skepticism of agency regulators, a consulting chemist, and river ecologists. In essence, create a user-friendly baseline from scientifically defensible data.

• Personalize the implications for various types of river users, e.g., anglers, bird watchers, kayakers, riffle-sitters, riparian landowners.

• Use color photographs, graphics, marginal boxes, pull-out quotes, and other visual devices to convey your information.

• Include a glossary (Did you know the average person does not know what "watershed" means?)

• Use both sides of the front and back covers to pique curiosity, drawing the reader into the document.

• Distribute the baseline report to all stakeholders.

To the extent that you design a relevant study, collect valid data, publish an engaging document, and get it into important hands, you will create an heirloom baseline that will help protect your river for perpetuity.

During 1988-93, Dr. George Constantz produced Portrait of a river: the ecological baseline of the Cacapon River, *considered by many to be a model baseline. Currently, he serves as an environmental resources specialist in the watershed assessment program of the West Virginia Division of Environmental Protection.*

Portrait is available for $5 per copy from Cacapon Institute, R 1 Box 328, High View, WV 26808. The Institute's second baseline report, of the Greenbrier River, will be published soon.

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A special thank you to River Magic, Mark Dubois, Nancy Harris-Campbell, Dick Linford, and ECHO: The Wilderness Company, for making our Rogue River benefit trip so successful.

* Individuals, corporations and organizations that have recently contributed $100 or more to River Network. Foundation contributors are listed once a year in our annual report.

Tools to help your organization be more effective!

JOIN THE RIVER NETWORK PARTNERSHIP

Fundraising Assistance | River and Watershed Information | Networking | Mini Grants

River Network Partnership Benefits

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PUBLICATIONS BY RIVER NETWORK

River Voices

River Network's journal. Published four times a year, each issue provides river activists with in-depth coverage of a different river and watershed conservation or organization-building topic. Partnership includes one subscription — a $35 value; additional subscriptions for your board of trustees are available at a discounted price of $10 each.

River Fundraising Alert

Each issue focuses on a different fundraising topic, and is chock-full of helpful tips, case studies, and up-to-date information on potential funding sources. Four issues per year. Partnership includes one subscription — a $35 value; additional subscriptions for your board of trustees are available at a discounted price of $10 each.

How to Save A River: A Handbook for Citizen Action

A River Network publication by David Bolling. Presents in a concise and readable format the wisdom gained from years of river protection campaigns across the U.S. Partners receive one FREE copy of this invaluable resource — a $17 value; additional copies are available to Partners for only $12 each. (Island Press, 1994; 300 pages)

Special Discounts

In addition, all River Network Partners receive a discount of at least 20% on all River Network publications. Contact us for a complete list.

NETWORKING INFORMATION & ADVICE

Fundraising Assistance

Partners receive River Network's annual *Directory of Funding Sources for Grassroots River and Watershed Conservation Groups* (valued at $35). Upon request, we can provide model fundraising documents and how-to references, and information on local fundraising opportunities, as well as one-on-one fundraising advice. River Network also provides Partners with timely information on current funding opportunities, and notices of fundraising training workshops.

Access to the River Source Center

Upon request, Partners can receive assistance on conservation and organization-building issues: referrals to experienced river advocates and volunteer specialists; issue research assistance; written references and how-to materials; sample materials from other organizations; and one-on-one consultation with the River Network staff via a toll-free call or email.

Action Alerts & Special Invitations

Periodically, River Network hosts events such as Regional River Rallies and fundraising workshops. Partners receive advance invitations to these, as well as information on workshops sponsored by others, and, when appropriate, river-related action alerts from national or regional conservation organizations.

"We really do appreciate your support and excellent publications. Best $100 we've spent."

Steve Harris
Rio Grande Restoration

"I can pick up the phone and say, 'Help!' and get it right away. Our organization has never had a better friend."

Joy Huber
Rivers Council of Washington

By joining the River Network Partnership, we can help you navigate your river work

Since 1988 River Network has helped hundreds of river and watershed conservationists. Our vision is to have vigilant and effective citizen watershed organizations in each of America's 2,000 major watersheds. Helping river and watershed organizations through the Partnership is one strategy for making our vision a reality. Let us give you the tools you need to be effective in your watershed.

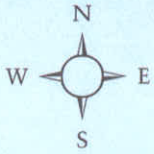
Here's some feedback from River Network Partners:

"I could not have founded this organization without the technical assistance and wonderful encouragement I have received from River Network."

Nancy Jacques
Colorado Rivers Alliance

"Everything we have received from River Network–the Fundraising Alert, the special publications–have been extremely helpful, providing the kind of practical information we badly need and can put to use."

Kevin Bixby, SW Environmental Center, NM



"River Network has saved me endless hours of research time."

Fred Miller, Nine Mile Creek Conservation Council, NY

"Having River Network available for advice and information on fundraising and other issues has made my job easier."

Sally Bethea, Upper Chattahoochee Riverkeeper, GA

Partnership Dues

Joining the River Network Partnership is one of the best investments you can make in protecting your river and its watershed. You'll receive valuable publications (a $122 value), plus one-on-one advice and the opportunity to network with hundreds of like-minded river and watershed conservationists from across the country.

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1998-1999
River Conservation Directory

Produced by
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and the
Department of the Interior
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Rivers, Trails and Conservation Assistance

Is your river group listed in the 1998-1999 River Conservation Directory?

River Network, in cooperation with the National Park Service's Rivers, Trails and Conservation Assistance Program, is producing the 1998-1999 *River Conservation Directory*. It will include more than 3,000 organizations whose primary purpose is river and watershed conservation.

We need your help to ensure the directory is accurate and complete. If you have not yet contacted us, please give us a call at 1-800-423-6747 ext. 20 and make sure your group is included and the information is correct.

Act now, the Directory goes to print in mid-January 1998.