

# Chapter 2: DEVELOPING A QAPP

The purpose of this chapter is to discuss the steps a volunteer monitoring program might take in preparing a *quality assurance project plan (QAPP)*. If your plan does not need to be approved by EPA (that is, you are not receiving EPA grant or contract money to conduct your monitoring), you need not submit your QAPP for EPA approval. In that case, consult your data users, such as the state or county water quality agency, regarding their QAPP requirements.

Developing a QAPP is a dynamic, interactive process. Seek as much feedback as possible from those who have gone before you in the QAPP development process. You will be investing a substantial amount of time and energy, but don't be discouraged. The person who writes the QAPP is usually the one who ends up with the most technical expertise and monitoring insights. Your efforts will pay off in a living document that helps current and future volunteers, staff, and data users understand exactly how your project works.

| <b>STEPS TO DEVELOPING A QAPP</b> |   |
|-----------------------------------|---|
| step 1:                           | Establish a QAPP team   |
| step 2:                           | Determine the goals & objectives of your project              |
| step 3:                           | Collect background information                                |
| step 4:                           | Refine your project   |
| step 5:                           | Design your projects sampling, analytical & data requirements |
| step 6:                           | Develop an implementation plan                                |
| step 7:                           | Draft your standard operating procedures (SOPs) & QAPP        |
| step 8:                           | Solicit feedback on your draft SOPs & QAPP                    |
| step 9:                           | Revise your QAPP & submit it for final approval               |
| step 10:                          | Begin your monitoring project                                 |
| step 11:                          | Evaluate and refine your QAPP                                 |

## **STEP 1**

### **Establish a small QAPP team**

It will be helpful to pull together a small team of two or three people who can help you develop the QAPP. Include representatives from groups participating in the monitoring project who have technical expertise in different areas of the project.

Take the time to establish contact with your state, local or EPA Quality Assurance Officer, or other experienced volunteer organizations. Remember, if you are getting any EPA funding through a grant or contract, EPA must approve your QAPP. However, even if EPA approval isn't needed, you can consult with

EPA QA representatives if you need advice. Let them know a bit about your project, and find out if they have any resources that might help you out (such as a copy of an approved volunteer monitoring QAPP, or specific regional guidance on preparing plans). Also ask your QA contact if he or she would be willing to review your draft plan.



## **STEP 2**

### **Determine the goals and objectives of your project**

Why are you developing this monitoring project? Who will use its information, and how will it be used? What will be the basis for judging the usability of the data collected? If you don't have answers to these questions, you may flounder when it comes time to put your QAPP down on paper.

Project goals could include, for example:

*Why are you developing this monitoring project?*

- › identifying trends in a lake to determine if nuisance vegetation problems are on the rise

*Who will use its information, and how will it be used? If you don't have answers to these questions, you may flounder when it comes time to put your QAPP down on paper.*

- › monitoring in conjunction with the county health department to be sure a beach is safe for swimmers
- › teaching local elementary schoolers about stream macroinvertebrates
- › monitoring the effectiveness of a stream restoration project

Write down your goal. The more specific your project's goal, the easier it will be to design a QAPP. Identify the objectives of your project--that is, the specific statements of how you will achieve your goal. For example, if your project's goal is to identify trends in a lake plagued by nuisance vegetation, your objectives might be to collect three years of data on weed beds, algae, and nutrients, and to develop yearly reports for nearby lake residents.

Knowing the use of the collected data will help you determine the right kind of data to collect, and the level of effort necessary to collect, analyze, store, and report it. Volunteer monitoring data can be used to screen for problems, educate youth and the community, supplement state agency data, help set statewide priorities for pollution control, and a myriad of other uses. Each use of volunteer data has potentially different requirements.

Your project should be designed to meet the needs of your data users. Data users can include the volunteers themselves, state water quality analysts, local planning agencies, parks staff, or many others. You will also probably need to strike a balance between data quality and available resources.

### **STEP 3**

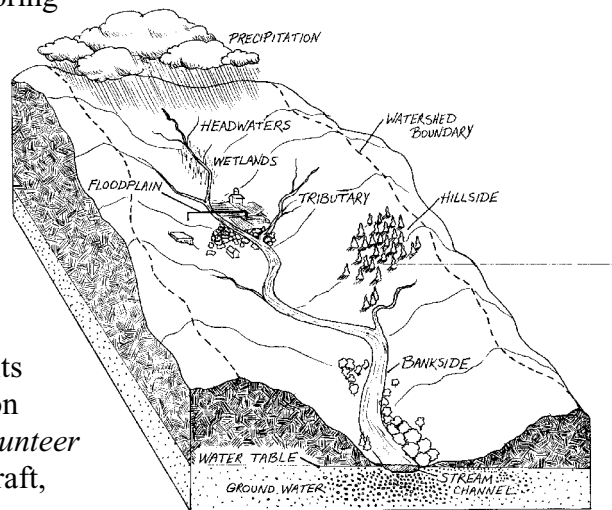
#### **Collect background information**

As you learn more about the area you are choosing to monitor, you will be better able to design an effective monitoring project. Begin by contacting programs and agencies that might already monitor in your area. Talk to the state water quality agency, the county and/or city environmental office, local universities, and neighboring volunteer monitoring programs. Ask about their sampling locations, what parameters they monitor and what methods they use.

If they are already monitoring in your chosen area, find out if they will share their data, and identify what gaps exist that your project could fill. If no monitoring is ongoing, find out what kind of data your local or state agencies could use (if one of your goals is that these agencies use your data), where they would prefer you locate your sampling sites, and what monitoring methods they recommend. Government agencies are not likely to use your data unless it fills a gap in their monitoring network and was collected using approved protocols.

A watershed survey can help you set the foundation for your monitoring project design. This is simply a practical investigation of how the watershed works, its history, and its stressors. For information on conducting a watershed survey, consult *Volunteer Stream Monitoring: A Methods Manual* (Draft, April 1995, EPA 841-D-95-001).

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## **STEP 4**

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### **Refine your project**

Once you've collected background information for your project and coordinated with potential data users, you may find it necessary to refine your original project goals and objectives. You may have found, for example, that the county already regularly monitors weed and algae growth in your lake. In that case, your project might better examine nutrient inputs from tributaries, lake water clarity, or other parameters.

*Once you've collected background information for your project and coordinated with potential data users, you may find it necessary to refine your original project goals and objectives.*

Don't hesitate to reevaluate your project goals and objectives. Now is the best possible time to do so: *before* you've invested time, money, and effort in equipment purchases, training, grant proposals and quality assurance plan development.

## **STEP 5**

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### **Design your project's sampling, analytical, and data requirements**

Once you feel comfortable with your project's goals and objectives, and have gathered as much background information as possible on the area you will be monitoring, it is time to focus on the details of your project. Convene a planning committee consisting of the project coordinator, key volunteers, scientific advisors, and data users, along with your QAPP team. This committee should address the following questions:

- › What parameters or conditions will you monitor, and which are most important to your needs? Which are of secondary importance?
- › How good does your monitoring data need to be?
- › How will you pick your sampling sites, and how will you identify them over time?
- › What methods or protocols will you use for sampling and analyzing samples?
- › When will you conduct the monitoring?
- › How will you manage your data and ensure your data are credible?

As a general rule, it is a good idea to start small and build to a more ambitious project as your volunteers and staff grow more experienced.

## **STEP 6**

### **Develop an implementation plan**

You've done the hard part once you've developed your monitoring project design. The next step is to decide the particulars -- the logistics, if you will. These are, essentially, the whos and whens of your project.

Determine *who* will carry out individual tasks such as volunteer training, data management, report generation, assuring lab and field quality assurance, and recruiting volunteers. If you send your samples to an outside lab, choose the lab and specify why you chose it.

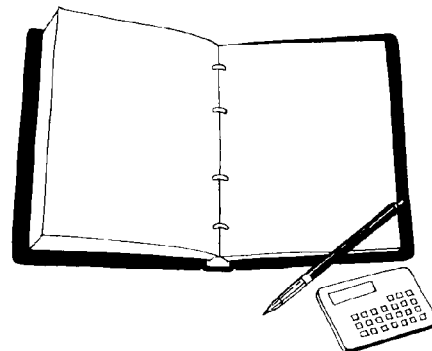
Set up schedules for *when* you will recruit and train volunteers, conduct sampling and lab work, produce reports, and report back to volunteers or the community.

## **STEP 7**

### **Draft your standard operating procedures and QAPP**

Now it's time to actually write your standard operating procedures and develop a draft QAPP. Your standard operating procedures (SOPs) are the details on all the methods you expect your volunteers to use and can serve as the project handbook you give your volunteers. Remember, there are many SOPs already available for sampling and analytical procedures. Where possible, adapt your procedures from existing methods and modify them as needed to fit your project objectives. Be sure to reference and cite any existing methods and documents you use in your project.

You should append your standard operating procedures to your QAPP and refer to them throughout the QAPP document. Use the elements described in Chapter 4 as your guide in developing a draft QAPP. Your written plan can be elaborate or simple, depending on your project goals.



*Your standard operating procedures (SOPs) are the details on all the methods you expect your volunteers to use.*

*This can serve as the project handbook you give your volunteers.*

## **STEP 8**

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### **Solicit feedback on your draft SOPs and QAPP**

Draft QAPP in hand, your next step is to run the draft by people "in the know." These are, primarily, state and EPA Regional volunteer monitoring coordinators and Quality Assurance Officers, EPA project officers, and any other agency data users (such as a representative from the county planning office or Natural Resource Conservation Service, if you are collecting data you hope they will use). Ask for their feedback and suggestions. Expect their review to take up to two or three months (times will vary).

*Based on the comments you receive from the review of your draft plan, you may have to revise your QAPP.*

While you are waiting for comments, you should probably try out your procedures with volunteers on a trial basis, to see if they really work. Don't plan to use the data at this early stage, however; you will probably be finding quirks in your plan, and the data will not be accepted by your data users until the QAPP is approved and accepted.

You may find that some of your QA contacts resist the idea of reviewing your draft plan. This is because they are often quite overburdened. Don't give up; after a reasonable time has elapsed since you submitted your plan, call back and inquire if you should submit the draft elsewhere for review. Solicit all the comments you can, from as many sources as possible.

## **STEP 9**

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### **Revise your QAPP and submit it for final approval**

Based on the comments you receive from the review of your draft plan, you may have to revise your QAPP. This could involve simply being more specific about existing methods and quality control procedures in the plan, or actually modifying your procedures to meet agency requirements. Once you have revised or fine-tuned your QAPP, submit it to the proper agency for formal approval.

Final review/approval can take a couple of months. During this time, you may be asked to incorporate additional comments, although this is less likely if you had previously asked the approving official to review your draft.

*Note: If you are developing a QAPP simply to document your methods and are not working in cooperation with a state, local, or federal agency, you need not submit a QAPP for review and approval.*

## STEP 10

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### **Once the QAPP is approved, begin your monitoring project**

Once you've received EPA and/or state approval of your QAPP, your monitoring project can begin. Follow the procedures described in your QAPP to train volunteers and staff, conduct sampling, analyze samples, compile results, and develop any reports.

## STEP 11

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### **Evaluate and refine your project over time**

As time goes on, you may decide to improve on sampling techniques, site selection, lab procedures or any of the other elements of your monitoring project design. Project evaluation should occur *during* the course of your project rather than after the project or a sampling season is completed.

If you make any substantive changes in your QAPP, document them and seek EPA/state approval for the changes. A phone call to your QA official can help you determine if the changes require a new QAPP. Also, always be prepared for formal audits or QC inquiries from data users during the course of your project.

