

QUALITY ASSURANCE...

...or, How to Get Your Data into the Database & Not the Dustbin!

In order to gather data that others will trust and use, Streamkeepers performs its quarterly monitoring procedures under a Quality Assurance Project Plan that has been approved by the Washington State Department of Ecology. In order to get approval on this plan and its implementation, we need to follow certain procedures to maintain a consistent quality of data. This chapter outlines some of those procedures.

GROUND RULES FOR MONITORING:

- Rule #1: Follow the written protocols. They are the key to data credibility. If you have questions about the correct procedure or interpretation, ask your team leader or note your questions on the data sheet or in a separate note to program managers.
- Take field notes. Include weather observations, appearance of the reach or water, equipment problems or substitutions, and any modifications to the written protocols.
- Think about your data and whether it seems reasonable. Compare it to your common sense, past data at that site, data from similar sites, or the typical data ranges given to you on your data sheet. If you are at all uncertain about the data you've taken, try taking the data again. Note what you did, and your results, on your data sheet.
- If you're getting tired and sloppy, go home—no data is far better than junk data.

HANDLING THE ELECTRONIC EQUIPMENT:

Our field kit's electronic meters require special care to work properly and last a long time:

- Don't drop them or the bag they're carried in. Remember to turn them off when you're finished, and set them in the bag in such a way that they won't turn on accidentally.
- Cables are most vulnerable near their junctions. Avoid putting too much stress on them at these points—for instance, by kinking, pinching, or yanking on them where they meet the probe or meter, or by storing them in such a way that they are kinked.
- When the temperature is below freezing, you must take extra precautions about storage and use:
 - The YSI meters should not be stored or used in temperatures <23°F (-5°C).
 - Don't let your purified water freeze!
 - The turbidity reference vials go bad and have to be replaced if they freeze. If you're out in the field on a below-freezing day, keep all 3 turbidity vials in your pocket to keep them warm--and remove anything from your pocket that might scratch them.

RECORDING DATA:

- When signing in on the top page of a data-sheet packet, all samplers should include their full initials plus full last names.
- For each parameter, one sampler will initial, indicating responsibility for the data. This should be a person who has been trained by a staff person or attended a training session on that parameter. If none of the samplers have been trained, note that on the data sheet.
- Fill in all blanks on the data sheets. Remember especially the lines at the top of each page where you enter the name of the site and the date; otherwise, your data could get lost!
- If you forget your site name (usually, stream name + stream miles), there should be a list on your field forms folder. Or write the stream name plus a description of the site location.
- Write legibly. Your fellow volunteers have to enter your data into the database!
- For any procedure, if you looked for whatever the data sheet asks for (fish, wildlife, weeds, flow, etc.) and found none, write "NONE" and your initials on the data sheet.

STREAMKEEPERS' NUMBER-ROUNDING CONVENTION:

Your protocols and field sheets will tell you how many decimal places to include when you record numbers. Often, our electronic meters will give you more decimal places than you are supposed to record. Please record only the number of decimal places asked for in the protocol—if you record more decimal places, you'll cause problems for the volunteers who do data-entry.

Streamkeepers' rounding convention is NOT the same one you learned in school. It can be summed up by the phrase, "Round halfway to the nearest even." Details are below; pay close attention to the "tricky part," which is #3 & 4:

1. If the figure beyond the last figure to be retained is less than 5, do not change the last figure to be retained. Example: rounding 34.44 to the nearest tenth gives 34.4.
2. If the figure beyond the last figure to be retained is greater than 5, then increase the last figure to be retained by 1. Example: rounding 34.46 to the nearest tenth gives 34.5.
3. If the figure beyond the last figure to be retained is 5 (followed by zeroes or with no following figures)...
 - a) keep the last figure to be retained if it is even, or
 - b) increase the last figure to be retained if it is odd.
 Example: rounding 34.45 to the nearest tenth gives 34.4. Rounding 34.55 to the nearest tenth gives 34.6.
4. If the figure beyond the last figure to be retained is 5, followed by figures other than zeroes, regard the "5" as really greater than 5 and use Rule 2 above. Example: rounding 34.451 to the nearest tenth gives 34.5.

SAMPLES OF STREAMKEEPERS' ROUNDING CONVENTION:

This number...	...when rounded to this many decimal places...	...rounds to this number:
43.64	.1 (nearest tenth)	43.6
43.66	.1 (nearest tenth)	43.7
43.65	.1 (nearest tenth)	43.6
43.75	.1 (nearest tenth)	43.8
43.85	.1 (nearest tenth)	43.8
43.851	.1 (nearest tenth)	43.9
43.855	.1 (nearest tenth)	43.9
43.855	.01 (nearest one-hundredth)	43.86
43.995	.01 (nearest one-hundredth)	44.00