

Addendum A:

Volunteer Monitoring Training and Certification

Introduction

Volunteer water quality monitoring is an opportunity to connect with your community, contribute to the understanding and management of your local water resources, and experience hands on learning opportunities with water monitoring. This addendum is designed for groups and individuals wanting to advance their monitoring skills and be certified to collect data of sufficient quality to be used for water resource management decisions. The goal of the certification program is to train volunteer monitoring groups with technical skills and provide the support needed to collect quality data. This addendum outlines the three levels of training offered by Montana Watercourse including the specific expectations, training and requirements to be considered a certified volunteer water quality monitor.

There is much truth in the saying that an ounce of preparation is worth a pound of cure. Before beginning any project, it is vital to spend some time thinking about exactly how your monitoring program will function. Spending enough time and energy up front planning your project will ensure that the volunteers' time and effort are well spent. The technical terms in water quality speak for this "ounce of preparation" are quality assurance and quality control. These concepts are described on pages 30-33 of the Volunteer Monitoring Guidebook. Trainings will include sessions on quality assurance and quality control. Additionally, Montana Watercourse (MTWC) and Montana State University Water Quality Program (MSUWQ) are available to assist groups with their project plans.

The MTWC in cooperation with MSUWQ and the Department of Environmental Quality is committed to providing high quality monitoring training at the appropriate level for your group. Different training levels are tailored to the goals and experience of each group and are briefly described in Chapter 1 of the Volunteer Water Monitoring Guidebook and in more detail in this addendum. These trainings will provide an important knowledge base for participants and enable them to better understand and achieve the group's goal.

I. Level 1: Education and Awareness: This level provides an introduction to water quality monitoring.

Audience: Groups or individual who have no previous experience or who have had previous trainings but would like a refresher. Community groups, educators, school groups, or individuals will benefit from a level one training.

Training Specifics: The training will consist of 2-4 hours of classroom time and 4-6 hours of field training depending on the needs of your group. Monitors are

encouraged to enter their data into Public Folders on the Volunteer Monitoring database repository two times per year. Topics covered in the training will include:

- i. Introduction to water quality and monitoring
- ii. Starting a volunteer monitoring program
- iii. Designing a volunteer monitoring plan
- iv. Introduction to Quality Assurance (*optional*)
- v. Field based training for testing biological, chemical and physical parameters. The parameters are outlined in the MTWC Volunteer Monitoring (VM) Guidebook.
- vi. Introduction to the volunteer monitoring database repository

Equipment: For recommended equipment list see equipment list in MTWC Volunteer Monitoring Guidebook Appendix C, page 75. MTWC will not be able to supply everyone with equipment. Please contact us for details on funding options for purchasing monitoring equipment.

Follow-up: Montana Watercourse will follow up with level one certified groups through emails, phone calls, listserv. Level one volunteers have option of being level two certified.

II. Level 2: Continuous Record This level provides a more advanced training than level one, but is appropriate for first time volunteers who are interested in water monitoring.

Audience: Appropriate for community and school groups with some experience in water quality monitoring. Level two groups collect data that will be used for identifying long term trends or continuous record, educating local decision makers, or for a long term classroom project,. The water quality monitoring techniques are more advanced or may include additional parameters to level one. Level one training is not required to participate in level two training.

Quality Assurance for Level 2: Level two groups will receive and introduction to Quality Assurance / Quality Control (QA/QC) processes and will be encouraged to follow basic QA/QC processes. MTWC and MSU Water Quality Program will be available for assistance with QA/QC.

Training Specifics: The training will consist of 4-6 hours of classroom time and 4-8 hours of field training depending on the needs of your group. Monitors are encouraged to enter their data into Public Folders on the Volunteer Monitoring database repository two times per year. Topics covered in the training will include:

- i. Overview of watersheds processes and water quality
- ii. Introduction to water quality monitoring methods
- iii. Starting a volunteer monitoring program
- iv. Quality Assurance and designing a volunteer monitoring plan

- v. Field based training for testing biological, chemical and physical parameters. Parameters are outlined in the MTWC Volunteer Monitoring (VM) Guidebook and may include other more advanced methods. For additional parameters, see the EPA Water Monitoring and Assessing website: <http://www.epa.gov/owow/monitoring/> .
- vi. Volunteer monitoring equipment
- vii. Volunteer monitoring database repository
- viii. Understanding data.

Recommendations:

- i. Participants have some prior experience with chemical, physical and biological data collection methods outlined in MTWC Volunteer Monitoring Guidebook.
- ii. Participants or group leader have desire and willingness to upload data to Volunteer Monitoring data repository.
- iii. The group or individual monitor at least twice a year.
- iv. Participants are willing to commit at least one to two years of monitoring.

Equipment: For recommended equipment list see equipment list in MTWC Volunteer Monitoring Guidebook Appendix C, page 75. MTWC will not be able to supply everyone with equipment. Please contact us for details on funding options for purchasing monitoring equipment.

Follow-up: Montana Watercourse will follow up with level two trained volunteers through phone calls, emails, listserv, and possibly site visits. Committed and experienced level two monitoring groups are encouraged to move towards the certification process.

III. Level 3: Volunteer Certification / Problem Investigation: This training provides advanced level problem investigation training. When participants complete required training and proficiency tests, they will receive an official certification letter and certificate and have a set support system for field assistance, data interpretation and analysis, and data entry.

Audience: Participants must have completed level two training or have significant prior monitoring experience. Significant experience is considered one year monitoring at level two or a college degree or some professional experience with water quality monitoring. Montana Watercourse and MSU Water Quality Program will make the final determination as to what level training is most appropriate for the individual or group. The goals of this level training include collect data that can be submitted to federal or state agencies, determine current baseline conditions, monitoring trends, or assisting the evaluation of best management practices. The participants or their group leader will coordinate closely with the Department of Environmental Quality (DEQ) to ensure that appropriate methods and parameters will be measured.

Training Specifics: Training will consist of 6-8 hours of classroom and 6-8 hours of field time. Monitors must enter their data in the Volunteer Monitoring Data Repository. Training topics will include:

- i.** Overview of watersheds processes and water quality (optional depending on prior training of group)
- ii.** Field process for water quality sample collection. At a minimum, groups will collect basic site information (GPS & photographs), stream flow, pH, temperature, electrical conductivity (EC), and dissolved oxygen (DO), and nutrients. Nutrient samples will be sent to a lab for analysis and volunteers will be trained in how to properly collect lab samples. Stream flow, EC, temperature and DO will be measured using a properly calibrated probe. The standard operating procedures for these parameters are included in the QAPP provided.
- iii.** A more complete list for advanced water quality monitoring methods is included below. If the group needs to monitor additional parameters, they can do so in consultation with DEQ, MTWC or MSU Water Quality Program. Field methods will follow the DEQ standard operating procedures available at:
<http://www.deq.state.mt.us/wqinfo/monitoring/SOP/sop.asp>.
 1. using GPS to locate the site,
 2. photographs,
 3. physical and habitat assessment,
 4. using and calibrating a probe,
 5. width/depth ratio,
 6. pebble counts,
 7. pH,
 8. dissolved oxygen,
 9. electrical conductivity,
 10. riparian vegetation condition,
 11. chemistry sample collection for low level nutrients,
 12. metals,
 13. volatile and semi-volatile organics,
 14. streamflow using a flow meter,
 15. installation of a continuous monitor and how to download this data,
 16. how to install a staff gage
 17. periphyton, and
 18. macroinvertebrates.
- iv.** Advanced quality assurance / quality control and designing a volunteer monitoring plan. A standard volunteer monitoring QAPP and Sampling Analysis Plan (SAP) will be provided. The SAP will be adapted to fit the group's needs.
- v.** How to use and calibrate equipment. Certified volunteers will be trained to use and care for monitoring equipment. Dependent on

funding, it is recommended that certified volunteers use probes and if applicable data loggers.

- vi. Data management including volunteer monitoring database repository and STORET training.
- vii. Data interpretation, how to share and analyze data, data report, and turning data into action.

Quality Assurance for Level 3: Level three groups will be trained and tested on QA/QA processes and must use the standard VM Quality Assurance Project Plan and sampling analysis plan, (QAPP & SAP).

Equipment: Certified volunteers will use reliable monitoring equipment. Please consult with MTWC and MSU Water Quality Program to determine funding options and recommendations for volunteer monitoring equipment.

Requirements:

- i. Must attend at least 14 hours of advanced water monitoring training.
- ii. A committed VM coordinator within the watershed group that will serve as the contact person and lead on monitoring activities.
- iii. Must pass the Volunteer Monitoring Certification Exam with at least a 75% score. Volunteer may take the test up to twice a year. The test will consist of a field and a written portion.
- iv. Must follow the DEQ approved Volunteer Monitoring QAPP and SAP provided in this addendum.
- v. Volunteers must re-certify every two years.
- vi. Equipment check and Quality Assurance field observation by MTWC, MSU Water Quality Program or DEQ at least once every two years.
- vii. Two year commitment (three preferred).
- viii. Monitor at least two times per year.
- ix. Volunteers will be provided with a logbook including field sheets and equipment calibration documentation. Data and equipment calibration must be documented using forms provided. Volunteers will calibrate equipment prior to each use and check it against a second source standard. Volunteer's calibration log will be checked periodically.
- x. Data must be uploaded to the MTWC Volunteer Monitoring database repository at least once a year.

Follow-up: Montana Watercourse and MSU Water Quality Program follow up with level three certified groups through emails, phone calls, listserv, possibly site visits and external QA. Montana Watercourse and/or MSU Water Quality Program will encourage and assist certified VM groups with data entry to the VM database and ensure that VM data is uploaded to STORET at a minimum of two times per year. MTWC and MSUWQ will facilitate contact between certified VM groups and DEQ. MTWC and MSUWQ will ensure that DEQ is aware of VM certified groups and their efforts through phone calls and/or emails.