Exploring Streams: Stream Monitoring Curriculum Guide for Middle & High School Teachers & Students

HANDS-ON LEARNING ABOUT STREAMS WITHIN & OUTSIDE THE CLASSROOM
Acknowledgements

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For more information about volunteer stream monitoring opportunities in Wisconsin, and for printable pdfs of this curriculum and addendum, visit: http://watermonitoring.uwex.edu/wav

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Streams are dynamic places to study! Middle and high school students will learn about at least six aspects of stream health in this Water Action Volunteers (WAV) stream monitoring curriculum. The following activity guide is divided into six sections:

Section 1: Pre-Field Trip Activities
Section 2: Field Trip Activities
Section 3: Post Field Trip Activities
Section 4: Student Workbook
Section 5: Resources
Section 6: Field Trip Materials

The first three sections contain teacher guidelines and activity descriptions designed to allow students to learn why water monitoring is important and methods to assess water quality. Optional extension activities are listed within each section, offering teachers the opportunity to address a topic in more depth if time and interest allow. Answer keys are provided for teacher reference where relevant. The fourth section, a student workbook, is designed to be photocopied (or printed from the WAV website) and distributed to students. Each student will work through the activities to learn how to monitor stream health as guided by their teacher and field trip facilitators. The fifth section contains resources that are referenced in or that augment the curriculum. The final section contains information and materials for use during the field trip.

We expect that carrying out the basic activities in these sections will take approximately three to four weeks of class time (depending on scheduling and depth of coverage), including one half-day to a full-day field trip. Resources are provided to extend the unit beyond this time period for teachers who are interested in doing so. Each activity is aligned with Wisconsin Model Academic Standards for grades 8 and 12. As this curriculum was developed during the shift to Common Core State Standards, an addendum has been developed to aid teachers in understanding how these new standards align with each activity. The addendum will be updated as new core curriculum standards are approved. (Visit: http://watermonitoring.uwex.edu/wav for printable pdfs of this curriculum and addendum.) The basic program is set up as follows:
Week 1 (3-5 days in classroom): To help students understand why we care about studying water, they will first be introduced to the concept of a watershed and will learn about how our uses of the land can affect water quality. Then to prepare to monitor a local stream, they will watch short (2-15 minute) videos about each monitoring method, read information about each to supplement the video training, and then practice the tests (when possible) in the classroom. The students will answer discussion questions for each parameter and will hypothesize what results they will find for each parameter when they monitor during the field trip. Students may have to answer some questions as homework.

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<td>Water monitoring post-test</td>
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| Week 4 | Report presentations | Report presentations |  |  |  |
Week 2 (3 days in classroom, 1 day in field): Students will complete watching videos and practicing how to monitor the parameters. Then students will take a one-half to a full day field trip to a local stream site. Field trip length depends on distance to the stream site from the school and teacher preference. Students will monitor at least six parameters and will complete a watershed activity.

Weeks 3 and 4 (2-4 days each in classroom): Students will make calculations to determine results of their monitoring efforts during the field trip. They will analyze their results and make conclusions about their findings. Optional extension activities include having students outreach to their local community with results of their monitoring (e.g., by writing a letter to the editor or visiting a town board), researching the meaning of their findings and making conclusions and recommendations for community action, preparing a report, and learning more about the science of streams by conducting various experiments.