

# Equipment and Technology

**B**efore purchasing equipment, call your local Soil and Water Conservation District or state park to learn if they have (or know of) equipment that can be lent to your school. To find phone numbers for these and other conservation contacts in your watershed, see the “Yellow Pages” that were compiled by the Virginia Department of Conservation and Recreation ([www.dcr.state.va.us/sw/wsheds.htm#contacts](http://www.dcr.state.va.us/sw/wsheds.htm#contacts)). Funding sources for equipment can be found in the next appendix section.

## **Cloth for Optical Brightener test**

Ozark Underground Lab

## **Groundwater simulators and models**

Fisher Science Education

Ward’s Natural Science

Also, Virginia’s Karst Education Coordinator (provider of “Project Underground”) has several simulators available for loan. Call 540-831-4057 for details.

## **Maps and aerial photos**

National Archives and Records Administration

(Photographs, generally from before 1955)

U.S. Department of Agriculture

U.S. Environmental Protection Agency

U.S. Geological Survey

## **Nets for sampling macroinvertebrates, fish, etc.**

Ben Meadows Company

Forestry Suppliers, Inc.

Izaak Walton League

(Save Our Streams Program)

Nichols Net and Twine, Inc.

Water Monitoring Equipment & Supply

Wildlife Supply Company

## **Riparian (streamside) planting equipment**

Forestry Suppliers, Inc.

## **Storm-drain stenciling kits**

VA Department of Conservation & Recreation

(Adopt A Stream Program)

The Ocean Conservancy

## **Water cycle models**

Fisher Science Education

Carolina Biological Supply Company

## **Water monitoring equipment (Secchi disk, water samplers, transparency tubes, etc.)**

Aquatic Research Instruments

Carolina Biological Supply Company

Earth Force GREEN

Fisher Science Education

Forestry Suppliers, Inc.

LaMotte

VWR

Water Monitoring Equipment & Supply

Wildlife Supply Company



## APPENDICES

### **Water testing kits (pH, nutrients, dissolved oxygen, etc.)**

Carolina Biological Supply Company  
Chemetrics  
Fisher Science Education  
Forestry Suppliers, Inc.  
Hach  
LaMotte  
Ward's Natural Science

## ADDRESSES OF VENDORS

### **Aquatic Research Instruments**

P.O. Box 93  
Lemhi, ID 83465  
Phone: 800-320-9482; 208-756-8433  
Web site: <http://www.aquaticresearch.com>

### **Ben Meadows Company**

190 Etowah Industrial Court  
Canton, GA 30114  
Phone: 800-241-6401  
Web site: <http://www.benmeadows.com>

### **Carolina Biological Supply Company**

2700 York Court  
Burlington, NC 27215  
Phone: 800-334-5551  
Web site: <http://www.carolina.com>

### **Chemetrics**

Route 28  
Calverton, VA 20138  
Phone: 800-356-3072  
Web site: <http://www.chemetrics.com>

### **Earth Force GREEN**

1908 Mt. Vernon Avenue  
Alexandria, VA 22301  
Phone: 703-299-9485  
E-mail: [green@earthforce.org](mailto:green@earthforce.org)  
Web site: <http://www.earthforce.org>

### **Fisher Science Education**

711 Forbes Ave.  
Pittsburgh, PA 15219  
Phone: 800-955-1177  
Web site: [www.fisheredu.com](http://www.fisheredu.com)

### **Forestry Suppliers, Inc.**

P.O. Box 8397  
Jackson, MS 39284-8397  
Phone: 800-647-5368; 601-345-4565  
Web site: <http://www.forestry-suppliers.com>

### **GREEN**

*See Earth Force*

### **Hach Water Testing Kits**

Hach Company  
P.O. Box 389  
Loveland, CO 80539  
Phone: 800-227-4224; 970-669-3050  
Web site: [www.hach.com](http://www.hach.com)

### **Izaak Walton League of America**

National Headquarters:  
707 Conservation Lane  
Gaithersburg, MD 20878  
Phone: 301-548-0150  
Web site: <http://www.iwla.org/> or  
[www.iwla.org/SOS/](http://www.iwla.org/SOS/)

*Virginia Office:*

### **Virginia Save Our Streams**

7598 North Lee Highway  
Raphine, VA 24472  
Phone: 540-461-0044; 888-656-6664  
E-mail: [stacey@vasos.org](mailto:stacey@vasos.org)  
Web site: [www.vasos.org](http://www.vasos.org)

### **LaMotte Environmental Science Education Products**

LaMotte Company  
P.O. Box 329  
802 Washington Avenue

## APPENDICES

Chestertown, MD 21620  
Phone: 800-344-3100; 410-778-3100  
Fax: 410-778-6394  
Web site: [www.lamotte.com](http://www.lamotte.com)

### **National Archives and Records Administration**

Cartographic and Architectural Branch  
8601 Adelphi Road  
College Park, MD 20740-6001  
Phone: 301-713-7040  
E-mail: [carto@arch2.nara.gov](mailto:carto@arch2.nara.gov)  
Web site: <http://www.nara.gov/research/ordering/mapordr.html>

### **Nichols Net and Twine, Inc.**

2200 Highway 111  
Granite City, IL 62040  
Phone: 618-797-0211; 800-878-6387

### **The Ocean Conservancy**

Storm Drain Sentries campaign: register online or contact The Ocean Conservancy's Office of Pollution Prevention and Monitoring at 757-496-0920  
E-mail: [stormdrain@oceanconservancyva.org](mailto:stormdrain@oceanconservancyva.org)  
Web site: [www.oceanconservancy.org](http://www.oceanconservancy.org)

### **Ozark Underground Lab**

1572 Aley Lane  
Protom, MO 65733  
Phone: 417-785-4289  
Email: [oul@tri-lakes.net](mailto:oul@tri-lakes.net)

### **U.S. Department of Agriculture**

USDA Consolidated Farm Service Agency  
Aerial Photography Field Office  
2222 West 2300 South  
Salt Lake City, UT 84119-2020  
Phone: 801-975-3500  
Web site: <http://www.fsa.usda.gov/dam/APFO/airfto.htm>

### **U.S. Environmental Protection Agency**

Maps on Demand  
Web site: <http://www.epa.gov/enviro/html/mod/index.html>  
*Internet site that allows users to generate maps displaying environmental information for most locations in the U.S.*

### **U.S. Geological Survey**

USGS Information Services  
Box 25286  
Denver Federal Center  
Denver, CO 80225  
Phone: 888-ASK-USGS  
Web site: <http://mapping.usgs.gov/>

### **VWR Scientific**

P.O. Box 626  
Bridgeport, NJ 08014  
Phone: 800-932-5000; 908-757-4045  
Web site: [www.vwrsp.com](http://www.vwrsp.com)

### **Wards Natural Science Establishment, Inc.**

P.O. Box 92912  
Rochester, NY 14692-9012  
Phone: 800-962-2660; 716-359-2502  
Web site: [www.wardsci.com](http://www.wardsci.com)

### **Water Monitoring Equipment & Supply**

P.O. Box 344  
Seal Harbor, ME 04675  
Phone: 207-276-5746  
E-mail: [info@watermonitoringequip.com](mailto:info@watermonitoringequip.com)  
Web site: <http://watermonitoringequip.com>

### **Wildlife Supply Company**

301 Cass Street  
Saginaw, MI 48602  
Phone: 517-799-8100; 800-799-8301  
Web site: [www.wildco.com](http://www.wildco.com)

## Using Technology Probes to Collect Water Data

There can be advantages to collecting water data by using probes instead of traditional methods. One major advantage is that the data collected can be automatically transferred and viewed in appropriate graphs or tables. Probeware can be set up using either graphing calculators or computers. The actual probe is typically connected to an interface box that itself is then connected to a calculator or computer. If graphing calculators are used, the collected data can either be analyzed on the calculator or transferred from the calculator to a computer for analysis. Virginia schools all received calculators and some calculator-based laboratory (CBL) interfaces and probes from the state to support teaching of the Standards of Learning.

### *Calculator Probes*

Calculators represent the low-cost alternative to using computers for data collection with probes. Both Texas Instruments (TI) and Casio graphing calculators can be used for CBL data collection. Their calculators and probe interfaces are available direct from the companies or from retailers. The latest TI interface is the CBL 2 unit and the latest Casio interface is the EA-200 Data Analysis System. Vernier Software & Technology sells TI equipment and also a wide variety of data collecting probes that are used with both TI and Casio calculators.

Vernier sells a Lab Book, “Water Quality with Calculators,” containing a total of 16 water

quality tests to be carried out with calculators and probes. These 16 tests include all nine tests commonly included in the Water Quality Index (WQI) for determining overall stream quality. Different probes are needed to carry out different tests, including temperature, pH, and dissolved oxygen. A total of 11 probes are required to carry out all the 16 tests in this book.

### *Computer Probes*

Excellent computer probe systems for collecting data are available from PASCO. PASCO sells the high quality ScienceWorkshop interface and associated probes. For field measurements, the ScienceWorkshop interface box can be disconnected from the computer, and then reconnected later for analysis of data. PASCO also sells less expensive probe systems suitable for school use. Their PASPORT system is extremely easy and convenient to use. PASCO sells DataStudio computer software for comprehensive and easy analysis and display of data collected using either system.

Vernier Software & Technology sells a unique LabPro interface for collecting data with their probes. The LabPro interface is very versatile. It can be used as an interface between probes and either a computer or a TI calculator. In addition, it can also be used with probes as a stand-alone unit. Stand-alone use allows more data collection options in the field, and data can be analyzed on a computer later.

## APPENDICES

### ADDRESSES OF VENDORS

#### Casio

Web site: *www.casio.com*

#### Texas Instruments

Web site: *www.ti.com*

#### PASCO

10101 Foothills Boulevard

Roseville, CA 95747

Phone: 916-786-3800; 800-772-8700

Web site: *www.pasco.com*

#### Vernier Software & Technology

13979 SW Millikan Way

Beaverton, OR 97005-2886

Phone: 888-837-6437

Web site: *www.vernier.com*



## NOTES