

STREAM*A*SYST

A Tool to Help You Examine
Stream Conditions on Your Property

EM 8761
Reprinted March 2001
\$1.50





**OREGON STATE
UNIVERSITY**
EXTENSION SERVICE



*Development of Stream*A*Syst was coordinated by Gail Glick Andrews, Home*A*Syst-Farm*A*Syst coordinator, Oregon State University; and Lyn Townsend of the USDA NRCS Watershed Science Institute, Portland, OR. Funding was provided by the USDA Natural Resources Conservation Service in Oregon through the Environmental Quality Incentives Program. There was extensive input and review from staff of the USDA Natural Resources Conservation Service, Oregon State University, Soil and Water Conservation Districts, and others.*



STREAM*A*SYST

A Tool to Help You Examine Stream Conditions on Your Property

G. Andrews and L. Townsend

What Is Stream*A*Syst?

*Stream*A*Syst* stands for Streamside Assessment System. It is a set of materials for landowners who want to learn more about managing their streamside areas. You can go through these materials *on your own* to determine whether there are factors related to your stream that could be improved by better management practices. There are two main parts:

- The **Stream*A*Syst Worksheet**—a set of yes-no questions to be answered while observing your stream
- The **Stream*A*Syst Action Plan**—a chart to help you decide what to do once you find a potential concern

The Stream*A*Syst Worksheet

You obviously want to learn more about your stream. The worksheet is a quick way to help you focus on the aspects of your stream that need the most attention. If you aren't sure about the answer to a question, don't worry. There is no score or grade for the worksheet. It is just a way to draw your attention to some of the indicators of stream and streamside conditions.

This worksheet covers aspects that **you** can evaluate with no special equipment or expertise. It is not intended to be all-inclusive, just to get you started.

The Stream*A*Syst Action Plan

The action plan takes you beyond learning about your stream. You can use it by itself or after you have completed the worksheet. It has a checklist of possible concerns about your stream. The numbers on the action plan correspond to the question numbers on the worksheet.

Once you have checked your *areas of concern*, you can read *what to do* and find out *who to call*. If you *record your actions* in the space provided, you can look back and see how your management made a difference in your stream.

Learning More About Your Stream

There are many sources of information about streams and streamside areas. Ask any of the agencies listed on the Statewide Resources list (page 11) about printed resources, upcoming workshops, or staff available to work with landowners. Most of the Web sites have materials you can download. A few stream-related publications and ordering information are provided on page 12 to help get you started.

	Pages
Worksheet	2-3
Action Plan	4-10
Statewide Resources	11
Related Publications	12

STREAM*A*SYST WORKSHEET

A Tool to Help You Examine Stream Conditions on Your Property

Directions: These questions will help you identify potential concerns for your stream or streamside area. For the items you answer YES, refer to the **Stream*A*Syst Action Plan** (pages 4–10) to find out what you can do to improve or protect your stream resource. Ask your Watershed Council, Soil & Water Conservation District (SWCD), or OSU Extension Service office for information. *A YES answer doesn't necessarily mean there is a problem, but it can help focus your efforts as you learn more about your particular situation.*

1. Water pollution	A. Are there ever any signs of pollution such as soap bubbles, oil sheen, unusual odors, or trash in or along the stream?	NO	YES
	B. Can you smell or see any evidence that manure or sewage might be entering the stream?	NO	YES
2. Algae	A. Is the water green?	NO	YES
	B. Is there a green scum or thick, stringy, green clumps?	NO	YES
	C. Is there a heavy, dirty-brownish, slimy material coating underwater objects?	NO	YES
3. Muddy water	A. Does the stream become muddy after storms and then take a long time to clear up again?	NO	YES
	B. Is the stream water muddier or cloudier when it leaves your property than when it enters?	NO	YES
4. Long-term data	A. Do long-term data show that your stream is limited in any water quality measurements? (<i>The Oregon 303(d) stream segment database is available on DEQ's Web site and at most libraries.</i>)	NO	YES
	B. Is water quality information un available for your stream?	NO	YES
5. Barriers to fish or water flow	A. Are there any culverts, dams, or other artificial structures in your stream that could block fish passage?	NO	YES
	B. Are bridges or in-stream culverts inadequate in size to be able to convey high, overbank flood flows?	NO	YES
6. Ditches and drainage	Are there any irrigation ditches, tile lines, drainage ditches, or other artificial waterways connected to the stream?	NO	YES
7. Water removal	A. Do water withdrawals or upstream dams ever result in extremely low water levels?	NO	YES
	B. Is water removed from the stream for any reason without a Water Right?	NO	YES

8. Flood and erosion-control structures	A. Are there any berms, dikes, or riprap along the stream?	NO	YES
	B. Has the stream been straightened?	NO	YES
9. Floodplain	Are there any buildings or chemical storage facilities within the 100-year floodplain? (<i>Find the 100-year floodplain on Federal Emergency Management Agency (FEMA) maps available at SWCD or county development offices.</i>)	NO	YES
10. Channel condition	A. Is the channel much wider and shallower than in the past?	NO	YES
	B. Are gravel, sand, or silt bars noticeably building?	NO	YES
	C. Are there high, vertical banks in straight sections?	NO	YES
11. Changes after large flows	Are there major changes to the stream after large flow events? For example, are pools filled in, riffle areas moved, streambanks greatly eroded, or the whole channel moved?	NO	YES
12. Streambank protection	Are there areas of bare soil along the stream that will come into contact with water during high or over-bank flows?	NO	YES
13. Vegetation along the streambank	Have activities such as construction, grazing, landscaping, or tilling within 35 feet of the top of the streambank disturbed the permanent vegetation?	NO	YES
14. Type of streamside plants	A. Are there very few trees along the stream?	NO	YES
	B. Are there large areas with plants considered to be weeds, such as blackberry, scotch broom, reed canarygrass, English ivy, thistle, cheatgrass, or others?	NO	YES
	C. Do bare soil or thin stands of grass dominate the area?	NO	YES
15. Other	Do you have other concerns about the condition of your stream?	NO	YES

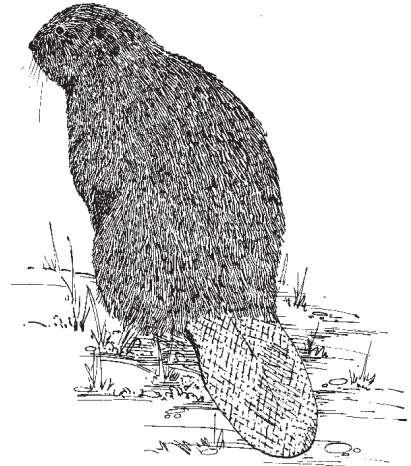
Notes



STREAM*A*SYST ACTION PLAN

Location of property _____

Date of plan _____



Directions: Based on your **Stream*A*Syst Worksheet**, mark your **Areas of Concern** below. If you identified concerns that are not listed, add them at the end of the chart. Use the recommended steps to address your concerns. Phone numbers and Web sites for “Who to Call” are on the Statewide Resources list on page 11.

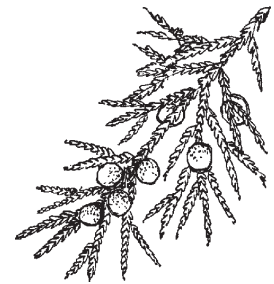
Area of Concern	What You Can Do	Who to Call	Record of Your Actions
<p>1. Water pollution</p> <p><input type="checkbox"/> A. Chemical odors, oil sheen, or other signs of water pollution.</p>	<ol style="list-style-type: none"> 1. Use <i>Home*A*Syst</i> Petroleum Tank, Hazardous Waste, or Pesticide Storage Worksheets to check for leaks, spills, or waste disposal on your property. 2. Check with upstream neighbors. 3. Report pollution to DEQ. 	<ol style="list-style-type: none"> 1. Home*A*Syst 2. Watershed council, your neighbors 3. DEQ 	
<p><input type="checkbox"/> B. Evidence of manure or sewage entering the stream.</p>	<ol style="list-style-type: none"> 1. Use <i>Home*A*Syst</i> Septic System and/or Manure Management Worksheets to evaluate your situation. 2. Have your septic system pumped and inspected. If problems are found, make needed repairs. 3. Have someone help you evaluate your manure management practices and make recommended changes. 	<ol style="list-style-type: none"> 1. Home*A*Syst 2. Septic pumping company (information available from OSU Extension) 3. OSU Extension, SWCD/NRCS 	

Area of Concern	What You Can Do	Who to Call	Record of Your Actions
<p>2. Algae</p> <p><input type="checkbox"/> Green water, mats of algae, or heavy slime on rocks.</p>	<p>Determine whether nutrients from fertilizer or manure runoff are entering the stream from your property. If so, take steps to prevent it. If not, check with upstream neighbors.</p>	<ul style="list-style-type: none"> • SWCD/NRCS • Watershed council • OSU Extension • Your neighbors 	
<p>3. Muddy water</p> <p><input type="checkbox"/> A. Water is very muddy after storms or takes a long time to clear.</p>	<p>If the source of sediment is not found on your land, check with upstream neighbors. Look into upstream land-use practices that might be causing muddy runoff.</p>	<ul style="list-style-type: none"> • SWCD/NRCS • Watershed council • Your neighbors 	
<p><input type="checkbox"/> B. Stream becomes cloudy or muddy on your land.</p>	<p>Determine whether sediment is entering the stream from your property; look for runoff from unpaved roads, fields, severe bank erosion, or other sources. When you find the problem, take steps to prevent it.</p>	<ul style="list-style-type: none"> • SWCD/NRCS • Watershed council 	
<p>4. Long-term data</p> <p><input type="checkbox"/> A. Data show that your stream is water quality limited.</p>	<ol style="list-style-type: none"> 1. Search for your stream on the Web (waterquality.deq.state.or.us/WQLData/SelectBasin98a.asp) or in the bound copy of DEQ's 1998 303(d) database at most libraries. Ask listed contacts for information. 2. Learn more about the specific limiting factor and its connection with activities on your land. 3. Get involved with local efforts to improve water quality. 	<ol style="list-style-type: none"> 1. Watershed council, DEQ, SWCD/NRCS 2. SWCD/NRCS, OSU Extension, watershed council 3. Watershed council 	



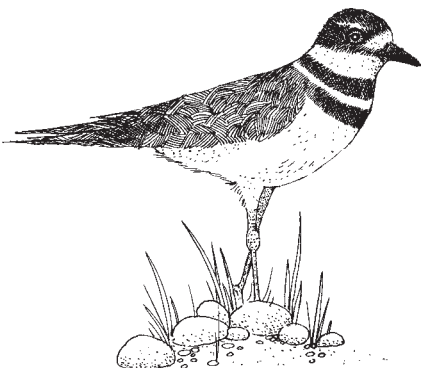
Area of Concern	What You Can Do	Who to Call	Record of Your Actions
<p>4. Long-term data (continued)</p> <p><input type="checkbox"/> B. There is inadequate water quality data for your stream.</p>	<p>Check with your watershed council to determine how you can help gather needed data.</p>	<ul style="list-style-type: none"> • Watershed council 	
<p>5. Barriers to fish or water flow</p> <p><input type="checkbox"/> A. Barriers might block fish passage.</p>	<p>Get ODFW form and evaluate the barrier. If the barrier prevents fish passage, modify it as needed.</p>	<ul style="list-style-type: none"> • ODFW 	
<p><input type="checkbox"/> B. Culverts or bridges not sized adequately.</p>	<p>Measure culvert and contact forestry expert to help determine size of culvert required.</p>	<ul style="list-style-type: none"> • Oregon Dept. of Forestry (503-945-7422) • OSU Extension forestry agent 	

Notes and Sketches

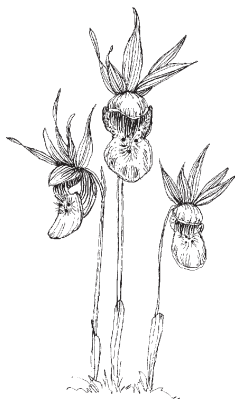


Area of Concern	What You Can Do	Who to Call	Record of Your Actions
<p>6. Ditches and drainage</p> <p><input type="checkbox"/> Waterways are connected directly to the stream.</p>	<p>1. Create grass filter strips or other means to remove contaminants before drainage water enters the stream.</p> <p>2. Screen ditches.</p>	<p>1. SWCD/NRCS</p> <p>2. ODFW or SWCD for technical and financial assistance</p>	
<p>7. Water removal</p> <p><input type="checkbox"/> A. Water withdrawals cause low water levels.</p>	<p>1. Improve efficiency of water use on your property.</p> <p>2. Take advantage of financial incentives for returning allocated water to the stream.</p>	<p>1. SWCD/NRCS, OSU Extension</p> <p>2. WRD</p>	
<p><input type="checkbox"/> B. Water is removed from the stream without a Water Right.</p>	<p>Do not withdraw water without a Water Right. Ask Watermaster about Water Rights for your stream.</p>	<ul style="list-style-type: none"> Local Watermaster or state office of WRD 	
<p>8. Flood and erosion-control structures</p> <p><input type="checkbox"/> A. Riprap, dikes, berms, etc. are present along the stream.</p>	<p>With the help of an expert, determine how these structures are affecting the condition of the stream. If a problem, modify as recommended by the expert.</p>	<ul style="list-style-type: none"> SWCD/NRCS 	
<p><input type="checkbox"/> B. Stream has been straightened.</p>	<p>With the help of an expert, determine whether straightening the stream is causing any functional problems with the stream.</p>	<ul style="list-style-type: none"> SWCD/NRCS 	

Area of Concern	What You Can Do	Who to Call	Record of Your Actions
<p>9. Floodplain</p> <p><input type="checkbox"/> Chemicals, fuel, or manure are stored on the 100-year floodplain.</p>	<ol style="list-style-type: none"> 1. If on your property, remove the source of future pollution to floodwaters. 2. If on your neighbors' land, discuss your concerns with them. 3. If a spill has occurred, report it to DEQ and clean up according to their guidelines. 	<ol style="list-style-type: none"> 1. Home*A*Syst for information on storage facilities for fuel, manure, fertilizer, or pesticides 2. Your neighbors 3. DEQ for information on disposing of hazardous chemicals, to report a spill, or for guidance with cleanup. 	
<p>10 & 11. Channel condition/ changes after large flows</p> <p><input type="checkbox"/> There are high, vertical banks; or the channel is getting wider and shallower; or gravel, sand, or silt bars are building; or there are major changes after large flows.</p>	<p><i>Do not</i> be tempted to “fix” on your own. Work with an expert to determine causes and possible solutions.</p> <p>The stream might be out of balance with the amount of water and sediment it is carrying. Ask about changes you can make or possible restoration efforts. Keep in mind that changes might be needed up- and downstream, so plan coordinated efforts with neighbors.</p>	<ul style="list-style-type: none"> • Watershed council • SWCD/NRCS • Your neighbors 	



Area of Concern	What You Can Do	Who to Call	Record of Your Actions
<p>12. Streambank protection</p> <p><input type="checkbox"/> Streambanks are not protected from erosion during high flows.</p>	<p>Provide natural, long-term streambank protection with plantings that will introduce large wood and/or add stability from roots. Determine whether artificial protection measures are needed while plants are becoming established.</p>	<ul style="list-style-type: none"> • SWCD/NRCS • Watershed council 	
<p>13. Vegetation along the streambank</p> <p><input type="checkbox"/> Vegetation near the stream has been disturbed.</p>	<p>Identify streamside area that needs to have vegetation and commit to management changes within that area. If the area is grazed by livestock, develop and follow a prescribed grazing program, build off-stream watering facilities, and establish fencing as necessary.</p>	<ul style="list-style-type: none"> • SWCD/NRCS • Watershed council • OSU Extension 	
<p>14. Type of streamside plants</p> <p><input type="checkbox"/> A. Trees are not surviving or reproducing in the streamside area.</p>	<p>Determine whether the water level has dropped or the channel has deepened. If so, roots of young trees might not be able reach the water table.</p> <p>If water level is not the problem, remove brush that might be shading young conifers. Protect young trees from browse damage with tubes. Plant only trees recommended for your site.</p>	<ul style="list-style-type: none"> • SWCD/NRCS • OSU Extension • Watershed council 	



Area of Concern	What You Can Do	Who to Call	Record of Your Actions
<p>14. Type of streamside plants (continued)</p> <p><input type="checkbox"/> B. Invasive weeds are evident in the streamside area.</p> <p><input type="checkbox"/> C. Bare soil or thin stands of grass dominate the streamside.</p>	<p>Identify the most appropriate method for removing the weeds. Determine whether grazing management changes are needed.</p>	<ul style="list-style-type: none"> • SWCD/NRCS • OSU Extension • Watershed council 	
	<p>Identify reason for lack of vegetation and take care of it. Restore vegetation to the streamside area. Make sure to plant trees and shrubs suited to your location and follow through with the project to ensure survival. <i>Ask about financial assistance.</i></p>	<ul style="list-style-type: none"> • SWCD/NRCS • Watershed council 	
<p>15. Other concerns</p>			

Notes and Sketches



OREGON STATEWIDE RESOURCES FOR THE STREAM*A*SYST ACTION PLAN

The contacts listed below correspond to the **Who to Call** column of the Stream*A*Syst Action Plan. While this list seems fairly long, it is *not* a complete listing of agency contacts available to help landowners with stream and streamside issues. Staff from various agencies often work together and know each other's special area of expertise, so you might be referred from one office to another in an effort to get you to the best local person to handle your situation.

Abbreviation	Contact Information	Local Phone
SWCD/NRCS	<p>USDA Natural Resources Conservation Service & Soil and Water Conservation District Local offices usually listed under United States Department of Agriculture under <i>Federal</i> in the phone book Government pages. Web (NRCS): www.or.nrcs.usda.gov Web (SWCD): www.netcnct.net/community/oacd Phone: 503-414-3200</p>	_____
OSU Extension	<p>Oregon State University Extension Service County offices listed under <i>County</i> in the phone book Government pages. Web: osu.orst.edu/extension/ Phone: 541-737-1388 (to locate your county office)</p>	_____
ODFW	<p>Oregon Department of Fish and Wildlife Regional offices listed under <i>State</i> in the phone book Government pages. Web: www.dfw.state.or.us Phone: 503-872-5252</p>	_____
DEQ	<p>Oregon Department of Environmental Quality Regional offices listed under <i>State</i> in the phone book Government pages. Web: www.deq.state.or.us Phone: 800-452-4011</p>	_____
WRD	<p>Oregon Water Resources Department Contact the state office to locate local Watermaster offices. Web: www.wrd.state.or.us Phone: 800-624-3199</p>	_____
Home*A*Syst	<p>Oregon Home*A*Syst Well Water Protection Project Based at Oregon State University—materials at many county Extension offices. Web: osu.orst.edu/extension/wellwater Phone: 541-737-6294</p>	_____
Watershed councils	<p>State-recognized stakeholder groups based on stream or river drainages. Check with your SWCD or OSU Extension Service office for local contacts. A list of Oregon watershed groups is on the Web at: www.4sos.org/wsgroups/wsgroups-or.htm</p>	_____

Related Publications

Check with the publishing organization for current prices, additional publications, and ordering information.

OSU Extension Service

Life on the Edge: Improving Riparian Function, VTP 33 (1999). \$19.95

Twelve-minute videotape discussing both eastern and western Oregon riparian area enhancement. Includes one copy of publication EM 8738.

Life on the Edge: Improving Riparian Function, EM 8738 (reprinted 2000). \$1.50

Publication discussing both eastern and western Oregon riparian area enhancement.

Watershed Stewardship: A Learning Guide, EM 8714 (2000). \$32.00

A curriculum for watershed councils and others wanting to work together on watershed projects (450-page guide in a 3-ring binder). Thorough chapters on stream ecology, riparian areas, water quality monitoring, and much more.

These materials are available from:

Publication Orders
Extension & Station Communications
Oregon State University
422 Kerr Administration
Corvallis, OR 97331-2119
Fax: 541-737-0817
E-mail: puborders@orst.edu
Web: eesc.orst.edu/

NRCS

Stream Visual Assessment Protocol, Technical Note 99-1 (USDA Natural Resources Conservation Service, Portland, OR, National Water and Climate Center, 1998), 36 pp.

The "SVAP" allows a trained staff person to complete an assessment of a stream. Good descriptions are given for each of the 15 criteria evaluated.

Available from:

USDA Natural Resources Conservation Service
101 SW Main, Suite 1600
Portland, OR 97204-3224
Web: www.ncg.nrcs.usda.gov/pdf/svapfnl.pdf

Stream Corridor Inventory and Assessment Techniques, WSI Technical Report (USDA Natural Resources Conservation Service, Watershed Science Institute, 2001), 30 pp.

A guide to a large number of stream assessment tools.

Available from:

USDA Natural Resources Conservation Service
National Watershed Science Institute
c/o NW&CC 101 SW Main, Suite 1600
Portland, OR 97204-3224
Web: www.wcc.nrcs.usda.gov/watershed/pdf/files/scit-revised.pdf

Washington County SWCD

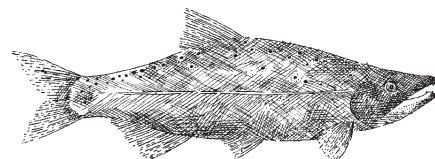
Tips for Small Acreages Series (1999)

A set of 20 publications (4–6 pages each). Several deal with streamside areas:

- No. 1 *Protecting Your Watershed: Eastern Oregon*
- No. 2 *Protecting Your Watershed: Northwestern Oregon*
- No. 3 *Protecting Your Watershed: Southwestern Oregon*
- No. 4 *Protecting Streambanks from Erosion*
- No. 5 *Managing Streamside Areas with Buffers*
- No. 9 *Providing Stockwater in Pastures and Near Streams*
- No. 10 *Planning and Installing a Fence*
- No. 14 *Planning and Managing Irrigation* (information on screening irrigation diversion)
- No. 20 *Filling Out a Project Permit* (for when you are ready to make changes!)

Available from:

Washington County Soil & Water Conservation District
1080 SW Baseline, Suite B2
Hillsboro, OR 97123
Email: Pam-Herinckx@or.nacdnct.org
Phone: 503-648-3174 ext. 102
Fax: 503-681-9772
Web: www.nctnct.net/community/oacd/fs00safes.htm



© 2000 Oregon State University

Produced and distributed in furtherance of the Acts of Congress of May 8 and June 30, 1914. Extension work is a cooperative program of Oregon State University, the U.S. Department of Agriculture, and Oregon counties. Oregon State University Extension Service offers educational programs, activities, and materials—*without regard to race, color, religion, sex, sexual orientation, national origin, age, marital status, disability, and disabled veteran or Vietnam-era veteran status*—as required by Title VI of the Civil Rights Act of 1964, Title IX of the Education Amendments of 1972, and Section 504 of the Rehabilitation Act of 1973. Oregon State University Extension Service is an Equal Opportunity Employer.

Published June 2000. Reprinted March 2001.