

Contacts for more information

Office of Communications and Education

Dave Workman, Director
360.407.7004; dwor461@ecy.wa.gov

Air Pollution

Tami Dahlgren
360.407.6830; tdah461@ecy.wa.gov

Composting

Chery Sullivan
360.407.6915; chs461@ecy.wa.gov

Publication Editor

Lynne Geller
360.407.6078; lgel461@ecy.wa.gov

Puget Sound Initiative

Josh Baldi
360.407.6829; jbal461@ecy.wa.gov

Recycling

Gretchen Newman
360.407.6829; gnew461@ecy.wa.gov

Reducing Toxic Threats

Michael Bergman
360.407.6243; mber461@ecy.wa.gov

Water Conservation

Lynn Coleman
360-407-6738; lcol461@ecy.wa.gov

Water Quality/Stormwater

Sandy Howard
360.407.6408; srud461@ecy.wa.gov

Watershed Planning

Bill Zachmann
360.407.6548; bzac461@ecy.wa.gov

Wetlands

Dana Mock
360.407.6947; dmoc461@ecy.wa.gov

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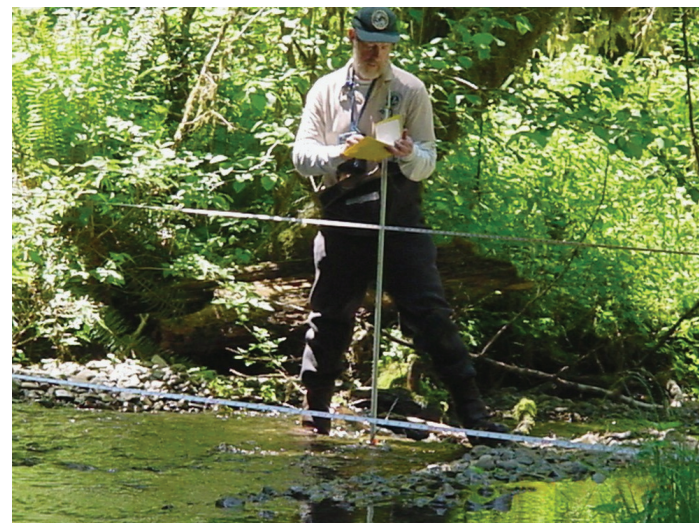
Photo: Paul Collins

The opportunity to hike in scenic areas like Lake of the Angels contributes to the quality of life in Washington State.



Photo: Brian Walsh

Healthy watersheds support beautiful wildlife like this Wood Duck.



State fish biologist measuring stream flow levels. The data collected will help protect our streams.



Photo: Debbie Smith, Tumwater Stream Team

Working for Washington's future: Healthy Watersheds, Healthy People

What is a watershed?

Everyone lives in a watershed. You know your county and city, but do you know your watershed address?

Unlike states and counties, watersheds have natural boundaries defined by the shape of the land and the flow of water. In basic terms, a watershed, or basin, is all the land that drains to the same body of water, such as a lake or river. Smaller watersheds become part of larger watersheds, as streams feed into rivers, and rivers flow into oceans. This means wherever you are and wherever you go, you're in a watershed.

Why should you care?

You are a citizen of a watershed.

Your health and the health of your watershed are inseparable. This is because a watershed is an interconnected system of land, water, air, and the life they support—including people and cities. Your everyday actions affect your watershed.

When a watershed is unhealthy, everything living in it suffers. The symptoms are easy to see: Beaches are closed because of pollutants. Fish populations dwindle because there isn't enough water or the quality is too poor to support them. Air pollution endangers our health and damages soil, water, crops, forests, and wildlife.

A polluted watershed puts our drinking water supplies at risk. Our food sources are affected: Contaminated shellfish are unsafe to eat. Toxic chemicals in fish can accumulate in our bodies. Your watershed's health can directly impact you and your family's health.

Our future is linked to the health of our watersheds - and our watersheds have many challenges. You can make a difference.



WASHINGTON
waters
OURS TO PROTECT

What defines a healthy watershed?

A healthy watershed is a well-balanced system, capable of sustaining a variety of environments and many forms of life.

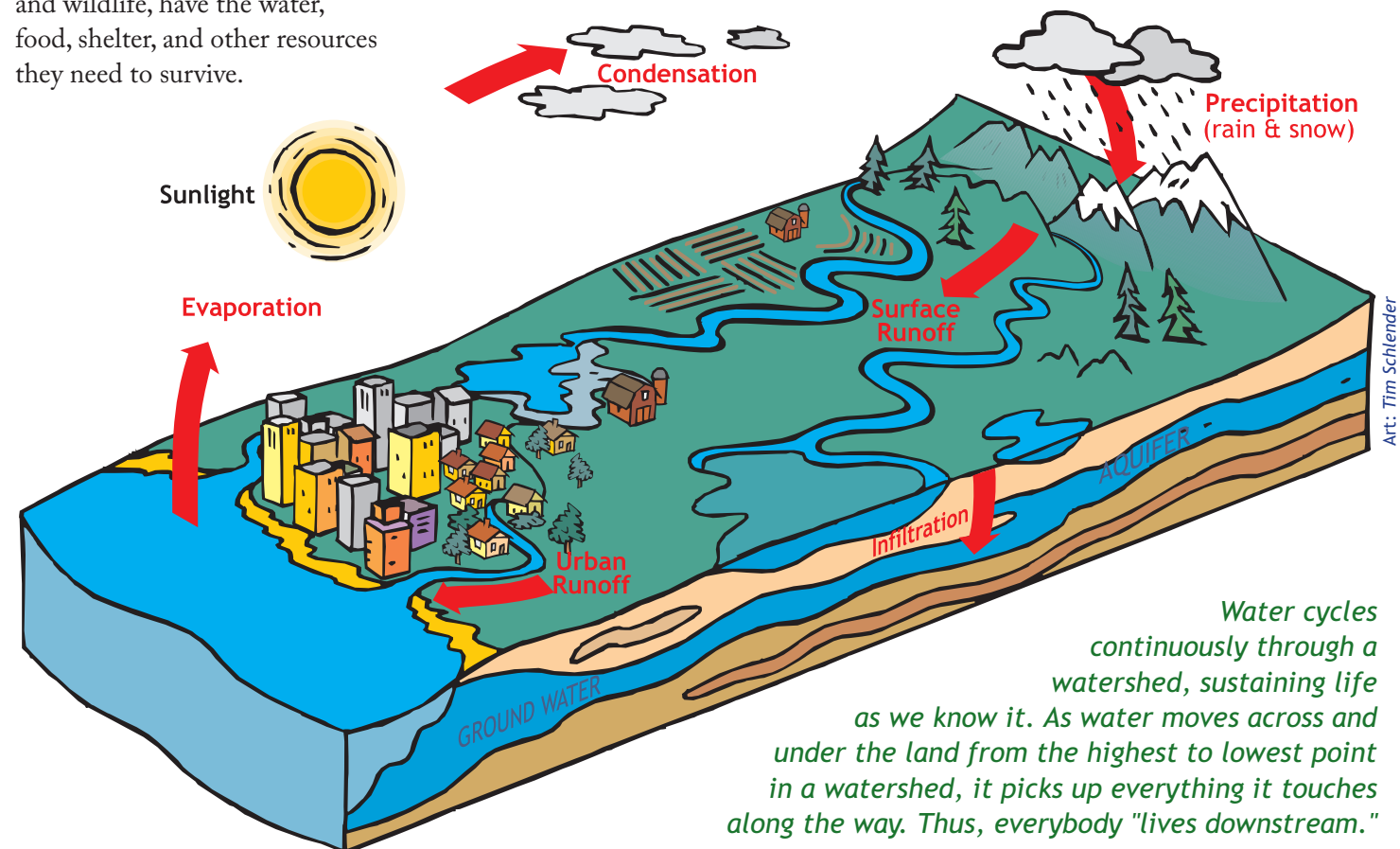
Healthy watersheds perform a number of "jobs." As water continually cycles through (see graphic below), the watershed stores and releases water and filters many pollutants. Trees and plants help anchor soil and absorb rain and snowmelt, so flooding and landslides are less severe. Vegetation also provides shade, keeping water temperatures cool and stable so fish and other aquatic life can thrive. In a healthy watershed, water, soil and air are clean. People, as well as fish and wildlife, have the water, food, shelter, and other resources they need to survive.

The health of our watersheds is in danger.

Many of our watersheds are unhealthy, and all are in need of protection.

Increased population and increased pollution go hand-in-hand. In urban areas, stormwater runoff is the Number 1 water pollution problem. Developing land typically creates changes in the natural water patterns of an area. As more surfaces can't absorb water, polluted runoff from rain or snowfall carries oil, fertilizers, pesticides, trash and pet waste into lakes, streams and the Puget Sound. Bacteria from failing septic

systems are released into the earth. Our waters, both on the surface and underground, become contaminated. Despite occasional high-snowfall years, such as the winter of 2007-08, global warming and climate change are shrinking snow packs and lengthening droughts. Increasingly, Washington lacks water where and when it is needed for communities and the environment.



Healthy Watersheds, Healthy People: Resource List

General information

- ★ Center for Watershed Protection
<http://www.cwp.org/>
- ★ Governor's Salmon Recovery Office
<http://www.governor.wa.gov/gvro/default.asp>
- ★ Puget Sound Partnership
<http://www.psp.wa.gov/>
- ★ Toxic-Free Legacy Coalition
<http://www.toxicfreelegacy.org/index.html>
- ★ University of Washington
> The Water Center:
<http://water.washington.edu/>
> Washington NatureMapping Program:
<http://depts.washington.edu/natmap/>
- ★ U.S. Environmental Protection Agency
> Find Your Watershed:
<http://cfpub.epa.gov/surf/locate/index.cfm>
> How to get involved in restoring and protecting your watershed:
Adopt Your Watershed Campaign:
<http://www.epa.gov/adopt/>
- ★ USGS Washington Water Science Center
<http://wa.water.usgs.gov/>
- ★ Washington Organic Recycling Council
<http://www.compostwashington.org/>
- ★ Washington Shore Stewards
<http://www.shorestewards.org/>



"Bike Your Watershed" events are a great way to get to know your watershed up-close.

- ★ Washington State Department of Ecology
> Home page: <http://www.ecy.wa.gov/>
> Climate Change: <http://www.ecy.wa.gov/climatechange/index.htm>
> Governor's Award for Pollution Prevention and Sustainable Practices:
<http://www.ecy.wa.gov/programs/hwtr/GovAward/index.html>
> Waste Reduction Program:
<http://www.ecy.wa.gov/beyondwaste>
> Watershed Information:
<http://www.ecy.wa.gov/apps/watersheds/wriapages/index.html>
- ★ Washington State Department of Health Office of Drinking Water:
<http://www.doh.wa.gov/ehp/dw/default.htm>
- ★ Washington State Department of Transportation Watershed Management:
<http://www.wsdot.wa.gov/Environment/Watershed/default.htm>
- ★ Washington State University
> Master Gardeners:
<http://mastergardener.wsu.edu/>
> Washington's Water:
<http://wa.water.wsu.edu/>
> The Water Center:
<http://depts.washington.edu/cuwrw>
- ★ Washington Toxics Coalition
<http://www.watoxics.org/>
- ★ Water Education for Teachers: Project WET
<http://www.projectwet.org/>



Picking up after your dog is one of the many small actions that will help keep our waters clean.

Things you can do

- ★ 1-800-RECYCLE
<http://1800recycle.wa.gov/>
- ★ Earth Day Network
<http://ww2.earthday.net/>
- ★ Environmental Protection Agency
<http://www.epa.gov/water/citizen/thingstodo.html>
- ★ King County
<http://dnr.metrokc.gov/WTD/community/thingstodo.htm>
- ★ Partnership for Water Conservation
http://www.bewaterSMART.net/conservationtips_home.html
- ★ Washington State Department of Ecology
Enviro-Tips: http://www.ecy.wa.gov/news/envirotips/tips_main.htm

Local examples

- ★ Bike the Deschutes
<http://web.mac.com/bikeyourwatershed/Site/Welcome.html>
- ★ King County Watersheds
<http://dnr.metrokc.gov/wlr/watersheds.htm>
- ★ Lands Council (Spokane River)
http://www.landsCouncil.org/water/river_toxics.asp
- ★ Thurston Stream Team
http://www.co.thurston.wa.us/wwm/Stream%20Team/stream_team.htm
- ★ Spokane Aquifer
<http://www.spokaneaquifer.org/kids/index.htm>
- ★ Vancouver Water Resources Education Center
<http://www.cityofvancouver.us/watercenter.asp?menuid=10466&submenuID=26863>
- ★ WSU Clark County Extension: Watershed Stewards
<http://clark.wsu.edu/volunteer/ws/>

Now it's your turn!

"Small" matters: even small actions can improve the health of your watershed.

Find out about activities in your watershed:

- ★ County Web sites and offices
- ★ Conservation Districts: <http://www.scc.wa.gov/> 360.407.6200
- ★ Washington State University Extension offices: <http://ext.wsu.edu/locations/> 509.335.2837
- ★ Ecology watershed planning: <http://www.ecy.wa.gov/apps/watersheds/wriapages/index.html> 360.407.6548
- ★ Environmental Protection Agency: <http://www.epa.gov/adopt/>

Washington Waters - Ours to Protect



The Department of Ecology, along with local, state and federal agencies, is encouraging people to make simple changes to help protect Washington waters from pollution. We are focusing our water campaign on the following areas:

- ★ Septic systems
- ★ Yard care
- ★ Dog waste
- ★ Manure management on small farms
- ★ Recreational boating spills.

Watershed Pledges



A number of Washington communities have adopted "watershed pledge" programs to help improve the condition of their watersheds, one person at a time.

Through these programs, individuals learn about their watershed and can commit to protecting the environment by pledging to change their daily routines.

Check out existing pledges for ideas on what you can do around your home and yard—and consider starting a pledge campaign in your neighborhood! Here are some examples of local campaigns:

- ★ Hood Canal Watershed Pledge: <http://mason.wsu.edu/WaterQual/Hood%20Canal%20Pledge.pdf>
- ★ Liberty Lake Watershed Pledge: <http://207.88.115.227/watershedpledge/index.htm>
- ★ Walla Walla Backyard Streamteam Pledge: <http://www.wallawalla.watershed.org/streamteam.html>
- ★ Whatcom Watersheds Pledge: <http://www.watershedpledge.org/>
> Residential Pledge: <http://www.watershedpledge.org/pledges/respledge.htm>
> Business Pledge: <http://www.watershedpledge.org/pledges/bizpledge.htm>

Volunteers cleaning up Golden Gardens Park in Seattle.



Photo: Friends of the Trail

Stormwater pollution



Did you know stormwater runoff is damaging salmon habitat, and causes and contributes to flooding? It is the Number 1 water pollution problem in the urban areas of our state.

"Protecting Washington's waters from stormwater pollution" is an eight-page color brochure from Ecology, illustrating the problems associated with stormwater and what can be done to help fight the problem. Read it online at <http://www.ecy.wa.gov/biblio/0710058.html>. (Publication #07-10-058.)

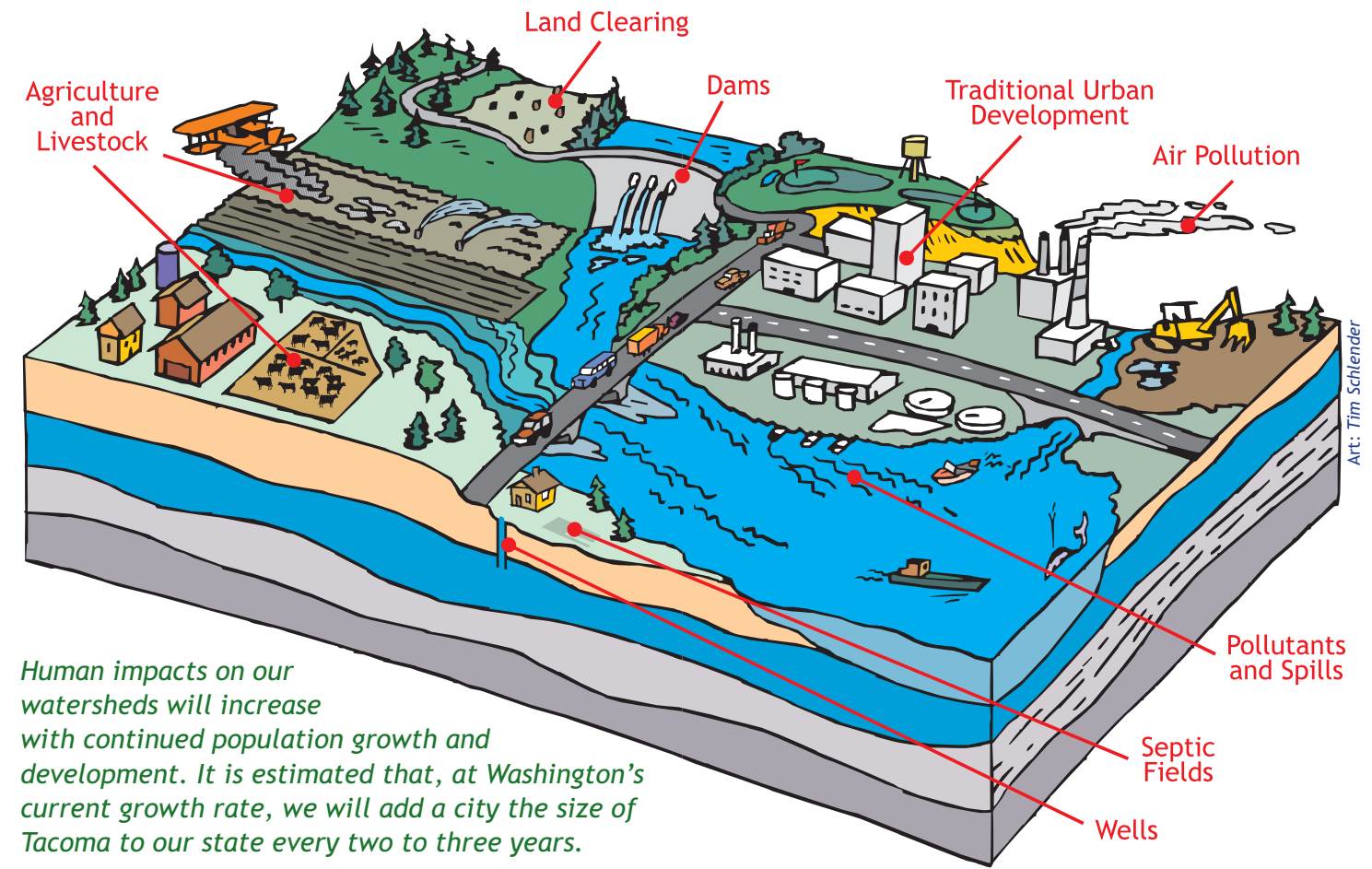
Sustaining our remaining wetlands

"Sustaining our remaining wetlands



for people, fish and wildlife" is an Ecology publication which looks at the important role of wetlands, and the legal requirements

for mitigation when land is converted to roads and commercial and residential expansion. Compensating for building impacts will help wetlands continue to do their vital work for the people and environment of Washington. Read it online at <http://www.ecy.wa.gov/biblio/0601009.html>. (Publication #06-01-009.)



Art: Tim Schlander

Human impacts on our watersheds will increase with continued population growth and development. It is estimated that, at Washington's current growth rate, we will add a city the size of Tacoma to our state every two to three years.

"Small" matters.

The good news? Even small actions contribute to a healthy watershed.

Turning off the water when you brush your teeth saves as much as three gallons of water each time! Conserving water leaves more water in the watershed to support natural processes and meet future needs. What's good for the watershed is also good for your budget: Using less hot water reduces your energy bills; and less water use lowers your water bill.

Other actions you can take include driving less, cleaning up after your pets, and being smart about your use of pesticides and fertilizers.

These simple steps make a difference, and the more of us who take them, the healthier our watersheds will be.

Just as there are many ways you can have a positive impact, poor choices have the opposite effect.

Like a set of dominos, what you do to the watershed at one point will eventually affect everything else.

Organic materials make up over half of the solid waste generated in Washington. By composting, we can transform "wastes" such as yard debris and food scraps into valuable products. For example, compost can be applied to lawns and gardens to build soil health and replenish nutrients. Composting also means less garbage in our landfills.



Washington's Watershed Communities Roll Up Their Sleeves

Our watersheds have many challenges. Your neighbors and friends are already working to protect and restore the health of their watersheds. Here are a few of the important efforts being made across the state.

Alpowa Creek:

benefiting agriculture and wildlife by better stream health

Alpowa Creek in southeastern Washington supports wheat, barley, and cattle, as well as steelhead trout and other wildlife. Yet, before 2001, erosion, flooding, and high levels of bacteria from animal waste and failing septic systems threatened the health and productivity of this area.

In response, the local landowners, Pomeroy Conservation District, and Natural Resource Conservation Service have been working together to restore stream-side habitat and water quality. To prevent damage by grazing livestock, they've fenced the creek and created off-stream water sources for cattle. By planting native trees and shrubs, they've reduced erosion, provided shade, and improved habitat.

Recent monitoring shows lower bacteria levels; and livestock owners say the new watering sites better distribute animals across their range, so grasses do better, animals are healthier, and landowners save money on supplemental feed. The partners are now extending their efforts to other streams in Garfield County.



"Grass grid pavers," which replace traditional cement walks, and drought-tolerant landscaping are both part of Spokane's Green Zone environmental learning center.

Photo: The Green Zone

The Green Zone:

demonstrating better options for building & landscaping

Spokane's Green Zone has served as an environmental learning center since its debut at the Spokane Interstate Fair in 1996. Here, you can wander through indoor and outdoor exhibits exploring sustainable choices for building, landscaping, and daily living. Students come here for field trips, and visitors participate in hands-on workshops to learn how to install everything from drought-tolerant landscaping to recycled-content building materials.

Exhibits also let visitors see how materials perform. The "grass grid pavers," for example, reduce runoff by allowing more rain to drain through patios and walkways, lessening flooding and water pollution. The use of such materials can help sustain the quality and quantity of ground water beneath the urban landscape—no small matter in Spokane, where residents live directly over the aquifer that supplies drinking water to more than 600,000 people.

The Green Zone is a non-profit Washington state corporation, and its board of directors partners with the Spokane County Conservation District, WSU/Spokane County Extension, Master Gardeners and Master Composters. It also receives support from area businesses and agencies.

<http://www.thegreenzone.org/>

Today: Alpowa Creek stream-side habitat is restored as cattle use off-stream water sources.



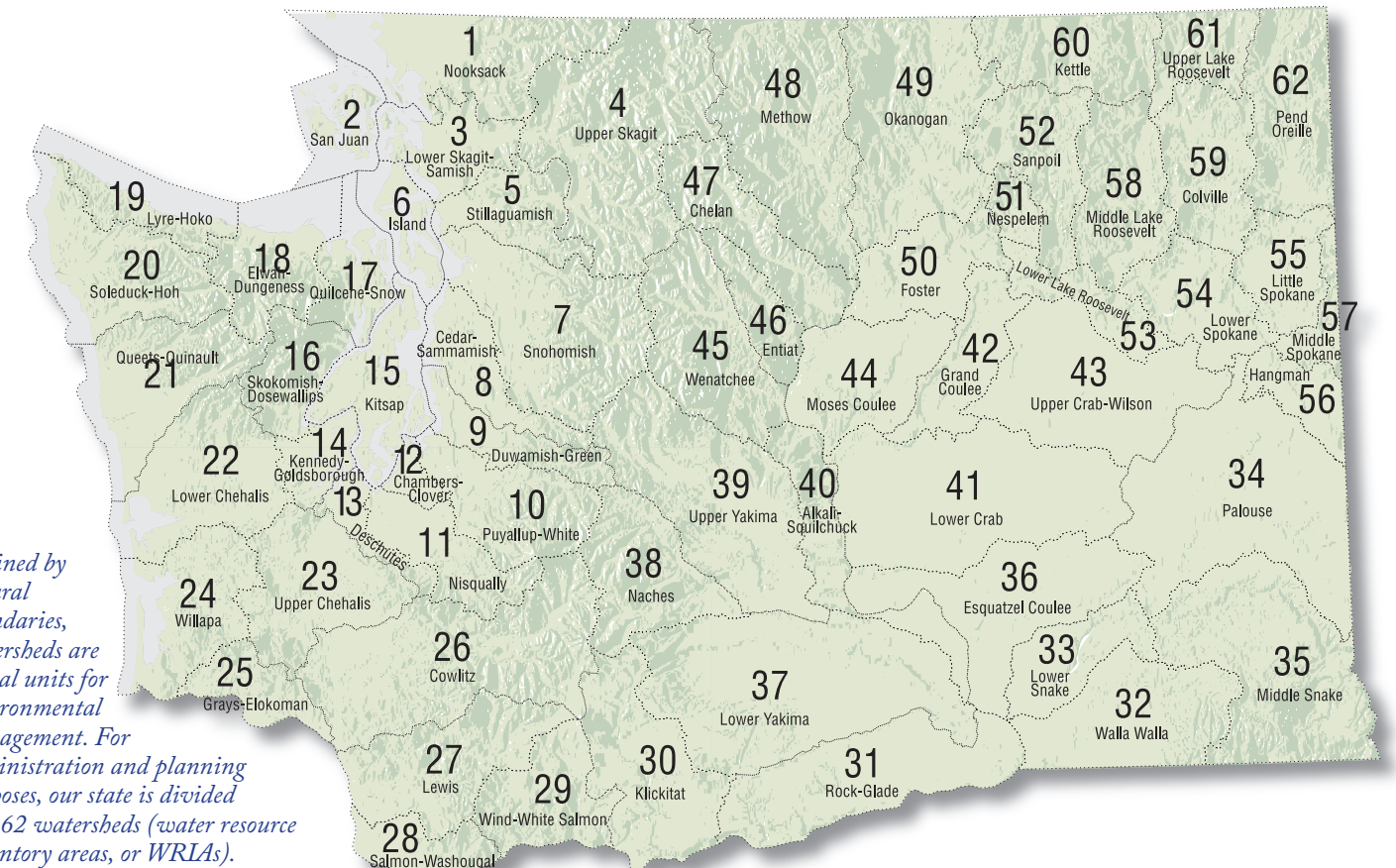
Before 2001: Erosion, flooding and high bacteria levels threatened the health of Alpowa Creek.

How healthy is your watershed?

Take a minute to review this checklist and assess the health of your watershed. If you can answer "yes" to most or all of these, congratulations! If you don't know, or answered "no" to any of these questions, it is time to learn more about your watershed and get involved with protecting and improving it. A Watershed Pledge campaign is a great way to start (see next page). Refer to our list of resources for many more ideas and opportunities.

Yes No Don't Know

- The water from my tap is clean enough to drink.
- There is enough clean water year-round for people, salmon and the natural environment.
- The indoor and outdoor air is healthy to breathe.
- There are sustainable, non-polluting energy sources to meet our needs both today and into the future.
- There is an abundance of locally grown food, and it is safe to eat.
- There are effective programs for reducing and managing garbage and trash (for example, recycling).
- There are effective programs for reducing, cleaning up and managing hazardous wastes (for example, collection sites for used motor oil and household cleaners).
- Our wetlands and shorelines are healthy and doing the jobs they are supposed to.
- Our watershed supports healthy populations of plant and animal life.
- Our community values are environmentally sustainable (for example, your community supports water conservation and public transportation efforts).



Defined by natural boundaries, watersheds are logical units for environmental management. For administration and planning purposes, our state is divided into 62 watersheds (water resource inventory areas, or WRIAs). To find out about your watershed, go to: <http://www.ecy.wa.gov/apps/watersheds/wriapages/index.html>.

The Lower Yakima River Watershed: working together to improve water quality

The Lower Yakima River Basin in south-central Washington is one of the most intensively irrigated areas in the U.S.

Before 1996, irrigation washed some 300 tons of pesticide-contaminated soil into the river every day during the irrigation season. The river's DDT levels were among the highest in the country: Although banned in 1972 because of its toxic effects on wildlife, this pesticide lingers in soil and so continued to enter the water. In 1993, people were advised against eating fish from the river. The lower Yakima had become so polluted, it was placed on the state's list of impaired waters.

Thanks to the efforts of farmers and irrigation districts, the Yakima is changing for the better. The Sunnyside Valley and Roza irrigation districts formed a partnership to ensure that irrigators meet water quality goals. Conservation districts are helping irrigators improve their irrigation methods.

Monitoring in 2003 revealed dramatic progress: The amount of soil entering the river was reduced by more than 50 percent; water quality overall improved by nearly 80 percent. The benefits are extensive. Cleaner water is better for fish, wildlife, and human health. By switching to drip and sprinkler irrigation systems, farmers retain more top soil, use less pesticide, and distribute water more efficiently, thus saving both money and valuable resources.

The efforts of irrigation districts, farmers and landowners, government agencies, and the Yakama Nation are ongoing, and monitoring of the river's health continues.



Before 2003: Topsoil and pesticides flow from the Sulfur Creek drain into the Lower Yakima River.

Today: Thanks to the efforts of farmers and irrigation districts, the river is changing for the better. Monitoring shows water quality has improved by nearly 80 percent.



Photo: USDA NRCS

Salmon and other fish are indicators of the vitality of our river ecosystems. Basic requirements for salmon spawning, rearing and migration include adequate amounts of cool, clean water, and sufficient food, cover and refuge from predators. Salmon and related fisheries are important to our state's economic base and cultural identity, and hold particular significance for northwest Indian tribes.

Nisqually River Basin:

exceptional collaboration leads to exceptional watershed health

Flowing from Mount Rainier to Nisqually National Wildlife Refuge, the Nisqually River crosses a diverse landscape before entering Puget Sound. It supports salmon runs and wildlife habitat, along with a range of human activities, from farming to recreation to hydropower generation. Thanks to the ongoing efforts of the Nisqually River Council and its community partners and supporters, the Nisqually River is one of the healthiest in Puget Sound. It's also a model for collaborative, voluntary stewardship.

Interest in a management plan for the river began more than 20 years ago, and resulted in a 1985 legislative order prompting the Department of Ecology to set up a planning task force. Government agencies, area businesses, the Nisqually Indian Tribe, and interested citizens came together to produce a plan, and the Nisqually River Council was formed to implement it. The Council and the community have accomplished a lot since then. Their projects include restoring the estuary, conserving forest lands and habitat, initiating salmon recovery efforts, and creating Nisqually-Mashel State Park.

The watershed community has met the key goals of the first plan; they're now working to implement a new plan for the health of the entire watershed.

The success of the first plan and the development of the next step — the Nisqually Watershed Stewardship Plan — demonstrate the advantages of cooperative stewardship. Long-term commitment and monthly meetings have built trust between partners, allowing them to anticipate challenges and find solutions that effectively balance the needs of the community, the economy, and the environment. <http://www.nisquallyriver.org/>

The ongoing efforts of the Nisqually River Council and its community partners and supporters have made the Nisqually River one of the healthiest in Puget Sound.



Photo: Dan Kowalski

Wetlands

Beautiful and diverse, wetlands are the vital link between land and water and are essential to the health of both. Wetlands are found throughout the state in all shapes and sizes, next to bodies of water or in isolation. Our wetlands provide flood control, recharge aquifers, filter and purify water, control erosion, and provide wildlife habitat. They're also great spots for bird watching, nature photography, and other recreation.

But there's bad news. Each year, the United States loses about 60,000 acres of wetlands—along with all the benefits they provide. More than half of America's original wetlands have already been destroyed.

For more information, and to find out what you can do to preserve this precious natural resource:

- > <http://www.ecy.wa.gov/programs/sea/wetlands/index.html>
- > <http://www.epa.gov/OWOW/wetlands>

Jimmycomelately Creek: restoring a watershed

Flowing north from the Olympic Peninsula into Sequim Bay, Jimmycomelately Creek is making a comeback thanks to the determined efforts of a partnership including the Jamestown S'Klallam Tribe, the Washington Departments of Fish & Wildlife and Transportation, Clallam County, Clallam Conservation District, and 22 others.

More than a century of development had straightened the creek, drained and filled wetlands, and degraded habitat. By the 1990s, the impacts were acute, including severe flooding and declining numbers of summer chum salmon: In 1999, only seven of this threatened species returned to the creek to spawn.

With help from landowners, government agencies, and consultants, the partners secured funding to restore the creek. The work took over four years to complete and included reconstruction of a half-mile section of the creek channel. Jimmycomelately now meanders across the landscape into the bay, where the estuary has also been restored. A culvert under Highway 101 was replaced with a bridge to accommodate flood flows and improve passage for fish and wildlife. The project addressed water quality concerns by cleaning up petroleum-contaminated soil and creosote-treated pilings.

Monitoring will continue through 2014, but so far, Jimmycomelately shows every sign of again becoming a fully functioning watershed. The number of salmon returning to the creek to spawn has risen dramatically, and the creek and tidal areas offer greatly improved habitat for fish, shellfish, and birds. Native plants are voluntarily returning to some parts of the estuary, and flooding appears to have been successfully addressed.

http://www.jamestowntribe.org/jstweb_2007/programs/nrs/nrs_jimmy.htm

Friends of the Trail: cleaning up our environment, one site at a time

Wade and Tania Holden of North Bend show what a difference two people can make to watershed health. Concerned about illegal dumping, they formed Friends of the Trail in 1996 and have been working ever since to clean up our public lands and waterways.

Illegal dumping is ugly and hazardous to human health and wildlife. Since Friends of the Trail formed, they've mobilized some 2,000 people to clean up more than 1,700 tons of trash — and that's not counting all the appliances, abandoned vehicles, and tires they've removed. Wade coordinates the fieldwork and ensures that toxic materials are handled properly and recyclables sent to the right facilities. Tania focuses on obtaining the necessary funding.

With ongoing support from King and Snohomish counties, REI, the U.S. Forest Service, and others, Friends of the Trail has expanded beyond King County and now organizes cleanup activities across the state.

<http://www.friendsofthetrail.org/>



Photo: Friends of the Trail

Friends of the Trail (FOT) volunteer with a trailer house dumped in the Middle Fork Snoqualmie River. This is one of hundreds of illegal dump sites cleaned up by FOT volunteers.



Before 2001: More than a century of development had straightened Jimmycomelately Creek, destroyed wetlands and degraded habitat.



Photos: Jamestown S'Klallam Tribe

Today: Restoration efforts are helping bring the area back to a fully functioning watershed. The Creek now meanders across the landscape into the bay.

Thomason Creek Adoption Project: students give a creek a new lease on life

Thomason Creek in northeastern Washington is healthier thanks to Chewelah School District students and teachers, the Stevens County Conservation District, and volunteers.

A large section of the creek was overgrown with invasive weeds such as watercress. These clogged the stream and changed water conditions so the creek was less able to support healthy fish and insects.

As part of a Jenkins High School science project in 2002, students spent two days harvesting watercress. In 2003, a Gess Elementary School teacher worked with the conservation district to initiate a stream adoption program. Classroom lessons were combined with fieldwork to teach elementary and high school students about stream ecology and water quality. From 2005 to 2007, students removed more than 12 tons of wet weeds and muck from the creek. They also monitored results. Their work made the stream less sluggish, reduced the weed grow-back rate, and improved the quality of the water. The school district is now seeking grants to continue their watershed field studies.



Before 2007: Thomason Creek was overgrown with invasive weeds. Local elementary and high school students removed more than 12 tons of wet weeds and muck.

Today: The creek is flowing better, with a reduced weed grow-back rate and improved water quality.



Photos: Stevens County Conservation District

SEH America, Inc.: protecting watershed health is good business

SEH America, Inc. in Vancouver is a major manufacturer of the silicon wafers used to make computer chips. As a voluntary participant in the U.S. Environmental Protection Agency's National Environmental Performance Track program, the company demonstrates that protecting watershed health is good business.

Having set rigorous environmental goals, SEH America has taken great strides to meet them. By changing its manufacturing processes, the company reduced its use of manufacturing chemicals. The facility once produced 270,000 pounds of chromium wastewater per year; now that number is zero. Isopropyl alcohol is also being phased out, and has been reduced by 200,000 pounds per year. These efforts are helping improve the health of the Columbia River.

The company conserves water by collecting and reusing high-purity waste water. It also recycles metal, paper, and cardboard. With Clark County, SEH sponsors an annual household hazardous waste collection day.

Among the economic benefits of these efforts, the company cites lower municipal waste bills and improved employee and public safety.

Photo: Kelly Jenkins



The health of the Columbia River is important to the people and economy of Washington.