



# Rivers for Life

A Newsletter of the WRIA 16 Planning Unit



Holiday Beach December 3, 2007

## Focus on Flooding

Springtime has returned to the watersheds of WRIA 16 & 14B and the floods of last December may seem a world away. Even so, there's no time like the present to prepare for extreme weather events.

In this issue the Planning Unit revisits the floods and explores flood-related topics—from how floods affect fish to how they can impact septic systems and drink-

ing water supplies. Flooding affects people and communities in numerous ways. In the short-term, floods can harm wildlife and fish. Flooding, however, is an essential natural process that renews habitat, enhances diversity, and supports ecological productivity. Floods form new stream channels, wetlands and log jams that provide habitat. Floods renew soils and recharge aquifers.

Many of the harmful impacts of flooding can be lessened if we work together and plan ahead. By making preparations during the drier months, we'll be much better off if and when high waters return. The WRIA 16 Watershed Management Plan addresses water quality issues linked to flooding in at least 13 of its 84 action items.

## d3shLabu'xt Returns!

### Flows Increase in the North Fork Skokomish River

By Tiffany Royal, NW Indian Fisheries Commission

More than 80 years ago, President Calvin Coolidge pushed a button that energized Cushman Dam No. 1 on the North Fork of the Skokomish River. The hydroelectric dam dewatered the North Fork, wiping out salmon runs upon which the Skokomish Tribe have always depended.

Cushman Dam No. 1 was joined a few years later by Cushman Dam No. 2, built just down



Fisheries Policy Representative Dave Herrera, of the Skokomish Tribe, speaks to an assembled audience atop Cushman Dam No. 2 at the March 7 event.

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## Watershed Action Plan THE "DIP"

The Planning Unit has completed a "rough draft" of its Detailed Implementation Plan (DIP). This document will show "who will do what by when" to implement the WRIA 16 Watershed Management Plan. The DIP is scheduled to be finalized in June, and will serve as the guidebook for future Planning Unit efforts and funding opportunities.

The Planning Unit always welcomes the interest of everyone in the watershed as these plans are developed and move forward. If you would like to follow the progress, or get actively involved, please contact Susan Gulick, Project Manager, to get added to our e-mail distribution list. Phone (206) 548-0469 or email:

[susan@soundresolutions.com](mailto:susan@soundresolutions.com)

You can also access copies of the initial Watershed Management Plan and other studies conducted by the Planning Unit by going to this e-mail address:

<http://www.ecy.wa.gov/apps/watersheds/planning/16.html>

## NORTH FORK

*(Continued from page 1)*

stream. Neither dam allows fish passage. Together the two dams reduced water flows to a trickle, fundamentally altering the biology and geology of the river system, and deeply affecting Skokomish tribal culture and treaty-reserved fishing rights.

On March 7, 2008, after decades of efforts, a representative of the Skokomish Tribe pressed a button that restored a small part of the North Fork's historic flow from Dam No. 2.

"While we are happy to see part of the river's flow returned, we will continue working to restore a more normal flow regime to the North Fork" said Tom Strong, Skokomish deputy tribal manager and tribal council secretary "It has been a long battle to get water back to the North Fork."

After decades of struggle between the tribe and the dams' owner, Tacoma Public Utilities (TPU), the federal courts have required the restoration of flows up to 240 cubic feet per second (cfs) into the North Fork. These flows will begin on March 8 after a series of varying flows are released on March 7 to test a new valve installed at the base of Dam No. 2. The flow requirement was originally imposed by the Federal Energy Regulatory Commission in TPU's dam re-licensing proc-

ess. Before the construction of the Cushman Project, the average annual flow was 847 cfs.

The main stem of the Skokomish River, which feeds off the North Fork and runs through the tribe's reservation on Hood Canal, had its flow reduced by nearly



Increased flow at Cushman Dam No. 2

half, allowing sediment to build up and leading to chronic flooding of the reservation.

Tribal treaty-reserved rights to fish, hunt and gather are still affected by the dams. Traditional fishing sites on the North Fork Skokomish are unusable because of a lack of water, or at times, too much water from main stem flooding.

The lack of water in the North Fork has reshaped the river's mouth on Hood Canal. Without a strong, steady flow, silt has built up in the river's estuary, destroying shellfish beds upon which the tribe relies heavily for subsistence, cultural and economic purposes.

The river's South Fork also has been severely affected by reduced flows from the dams. Since 2003,

excessive gravel buildup has caused the lower stretch of South Fork to run dry during salmon spawning season. These dry portions of the river have cut off Chinook salmon migration to the South Fork and Vance Creek, where salmon normally spawn in the upper reaches of the river.

"It is not all that we hoped for, but this is an important step in the right direction," said Strong. "Restoring this amount of flow is an accomplishment. This is an important milestone on our journey to put this watershed back together."

For more information contact: Tom Strong, 360 426-4232 ext. 221.

## What is Aggradation?

Channel aggradation means the building up of sediment on a riverbed. This is a natural phenomenon that's intensified and accelerated in many places by human activities.

Aggradation makes flooding worse by raising the height of the river channel. It can cause the river to "fall off" of its bed or abandon its channel (avulse), especially on wide floodplains. These "channel migration zones" have often been modified for development and agricultural purposes.

## The Puget Sound Partnership and its Action Agenda

The Puget Sound Partnership is a new state agency with a goal “to make Puget Sound healthy again, and create a roadmap for how to get it done”. The tool being developed to achieve this goal is called the “Action Agenda”. The Partnership is in the process of building an Action Agenda for each of the seven “Action Areas” in Puget Sound. Hood Canal is one of these Action Areas.

The WRIA 16 Planning Unit is actively following the Partnership’s efforts, and is providing the information and recommendations developed over its nine years of existence. The Planning Unit has emphasized that the comprehensive Watershed Management Plan and draft Detailed Implementation Plan reflect the priorities and recommended actions of the local governments and citizens who live here. Clearly, a Hood Canal Action Agenda should take these efforts into account.

This work is proceeding rapidly,

**PugetSoundPartnership**  
our sound, our community, our chance

and a draft Action Agenda is scheduled to be completed over the summer. The agendas from each of the seven areas will be put together, and a combined Puget Sound proposal will be finalized this fall. The proposal will be presented to the state legislature so they may consider programs and projects that merit state funding.

There are several ways that individuals and groups can get involved, or simply get more information. Teri King, Washington Sea Grant Program, is the representative to the Partnership for the Hood Canal action area. She can be reached by phone at (360) 432-3054 or email at:

[guatemal@u.washington.edu](mailto:guatemal@u.washington.edu).

Also, if you want to join a special web site set up to follow Hood Canal activities, simply go to [https://mailman1.u.washington.edu/mailman/listinfo/hood canal action area](https://mailman1.u.washington.edu/mailman/listinfo/hood_canal_action_area)

to sign up.

Finally, if you want more information on the Partnership itself, the email address is:

<http://www.psp.wa.gov/>.

## WRIA 16 Planning Area Now Includes South Shore

Soon after local watershed planning began, the WRIA 16 Planning Unit members recognized the common sense of including the south shore of Lower Hood Canal (located in WRIA 14) in its efforts. The WRIA 14 and 16 Planning Units reached an agreement to accommodate this.

This year, the 2008 Legislature passed SB 6204 which, for the first time, formally recognizes this planning area as WRIA 14b. It also authorizes the WRIA 16 Planning Unit to include this drainage in their ongoing planning and implementation activities. The WRIA 16 comprehensive watershed planning area therefore encompasses Hood Canal drainage basins along all the south shore from just west of Belfair, then north along the west shore up to and including the Dosewallips River.

## Dosewallips and Duckabush Rivers to have Flood Hazard Management Plan

Jefferson County has been awarded a \$100,000 grant from the Washington State Department of Ecology to develop a Comprehensive Flood Hazard Management Plan for both rivers. The non-regulatory plan will aid in planning for future growth anticipated near

these river valleys and in managing existing flood hazards.

The project will include historical data, describe existing conditions, and lay the foundation for future flood management projects and policies. It will identify areas of the river that need more study and alternatives to managing flood hazards.

This approach to flood hazard management planning will ensure

that flooding problems are not simply transferred to another location within the watershed. An advisory committee and public meetings will help guide the process and inform the citizens.

For more information, contact Ryan Hunter, Assistant Planner in DCD at 379.4450 or via e-mail at [rhunter@co.jefferson.wa.us](mailto:rhunter@co.jefferson.wa.us) or go to the County’s Web site at [www.co.jefferson.wa.us](http://www.co.jefferson.wa.us).



# When Floods & Fish Mix

By Doris Small, WDFW

Salmon are adapted to be resilient when faced with extreme environmental conditions such as the 2007 December floods. The fish have diverse life history strategies so that some of the run will likely survive, even if catastrophic conditions kill many of the fish or eggs. The impact from the December floods to fish resources will not be known for some time. Impacts to early survival of salmon are sometimes offset somewhat by better than average survival in marine waters (or exacerbated by poor marine conditions). While the initial effect may be devastating (especially in watersheds altered by human-related activities), floods are necessary and even beneficial to fish in the long term. Floods are essential to maintaining healthy habitat conditions by periodically clearing sediment from gravels, bringing in new gravel and logs and increasing habitat diversity through pools and riffles around log jams.

Salmon return to the west Hood Canal watersheds from late summer through early spring. Steelhead and cutthroat trout typically return in winter and spring months along Hood Canal. Approximately 2500-4000 eggs are buried in a nest covered with gravel 12-18 inches deep (a "redd") in areas where the eggs will receive cool, oxygenated water. In an "average" year (although there is no such thing!), approximately 10 to 20% of the eggs emerge from the gravel after

incubating for several months.

Early spawners in WRIA 16 include pink and Chinook salmon, primarily in the Skokomish, Dosewallips, Duckabush & Hamma Hamma watersheds, and summer chum salmon in these streams and about a dozen others. These fish move upstream in low water of August and September, often concentrating spawning in the thalweg (center of the flow) of lower reaches. By October, spawners also include fall chum & coho salmon. Some of these fish are still entering the streams and rivers after early December.

Salmon are susceptible to flood impacts due to natural & man-made causes. Strong floodwaters sweeping over the nests can bury, suffocate with sediment, or wash away the eggs. While flooding is natural, its effects are intensified when the floodplains normally available for floodwaters to spread out are modified by levees, bank protection, road crossings and other development. Trees and brush, both along the shores and in the streams, play an important role in minimizing the erosive effects of floodwaters. Landowners in these watersheds can help salmon by retaining native vegetation and trees along streams and rivers and giving floodwaters plenty of room to spread over floodplains.

In lower portions of watersheds, historic development practices often filled deltas, marshlands, and side channels. These are places that were once available as alternative channels when gravels accumulating in low gradient streambeds became a barrier to flow (aggradation).

With development along Hood Canal shorelines often concentrated along the waterfront, many streams experienced severe aggradation of gravel during floods as the substrate had no where to go. This is a problematic situation, as the aggraded streambed creates additional flooding, causing additional flood protection measures, creating additional aggradation. Certainly salmon eggs in the lower reaches of these systems were heavily impacted, as the streambeds raised several feet in many locations.

However, not all the salmon had returned to the rivers and streams when the December flood arrived. Chum and coho salmon adults were observed in streams after the flood event. Coho salmon often benefit from high water years, as flows allow migration high into the watersheds. As juvenile coho salmon reside for a year in freshwater before migrating to saltwater, high flow years can increase habitat availability for young fish and increase survival. While the 2007 December floods were serious, the key to salmon survival during floods over time will be taking measures to prevent and reverse habitat impacts associated with floodplain development and loss of riparian vegetation. A flood of the magnitude that we experienced recently is likely to cause impacts even in watersheds with no development. Reducing floodplain modifications will be most helpful in preventing smaller rain events from turning into damaging floods and be beneficial to people and fish alike.





Fall chum in Pierce Creek near the mouth of the Duckabush River.

## Protect Your Possessions and the Canal

Things that may become  
“yardsam” in a flood:

Outdoor furniture  
BBQ grills  
Propane tanks  
Fencing  
Garbage cans  
Recycling containers  
Fertilizers  
Pesticides  
Pet waste  
Landscaping fabric  
Plants and plant pots  
Yard equipment  
Children’s toys  
Tires  
Bicycles  
Coolers  
Firewood  
Yard debris  
Compost bins  
Lawn decorations  
Garden supports  
Landscape lighting  
Litter and garbage

## Protect Your Septic System from Flood Damage

Source: University of  
Minnesota Extension

Flooding can damage your septic system, but there are steps you can take to minimize potential problems. BEFORE FLOODING occurs, you can prepare to minimize the adverse effects of floodwaters on your septic system.

- Seal all possible points of entry to the system. If possible, seal the manhole and inspection ports to keep excess water out of the septic tank.
- Turn off the pump at the circuit box before the area floods. If you have a pump in the lift station of a mound system, turn off the electricity. Don't forget to turn the pump back on before you use the system again. If possible, remove the pump from the tank to prevent sediment damage.
- Waterproof all electrical connections to avoid electrical shock or damage to wiring, pumps, and the electrical system.
- If possible, have the tank pumped a week or more before the area floods. If floodwater enters the septic tank, sludge may be suspended and flushed into the drainfield. Proper pumping will reduce the amount of solid material and scum that is available to flush into the drainfield. Be sure there is enough time after

pumping for the tank to refill with effluent so the tank doesn't float when the area is flooded.

AFTER THE FLOOD, you can help your system recover:

- Pump the system again as soon as possible after the flood. Be sure to pump both the tank and the lift station. This will remove silt and debris that have washed into the system.
- Be careful not to compact the drainfield area by driving or operating equipment in the area, since saturated ground is especially susceptible. Compaction reduces the capacity of your drainfield to treat wastewater and could lead to an early failure of your entire system.
- Review electrical connections for damage or wear before turning electricity back on.
- Check that the manhole cover is secure and that inspection ports have not been blocked or damaged. Check for animal damage or intrusion in the drainfield area.
- Check the vegetation over your septic tank and drainfield. Repair erosion damage; sod or reseed as necessary to provide a good plant cover.
- Inside, be sure to disinfect thoroughly if sewage backed up into the house or garage. Disease-causing organisms (pathogens) in wastewater can cause serious illness, such as dysentery, hepatitis, and other waterborne illnesses.

# Emergency Managers Recount the December Floods

By Tami Pokorny, Jefferson County

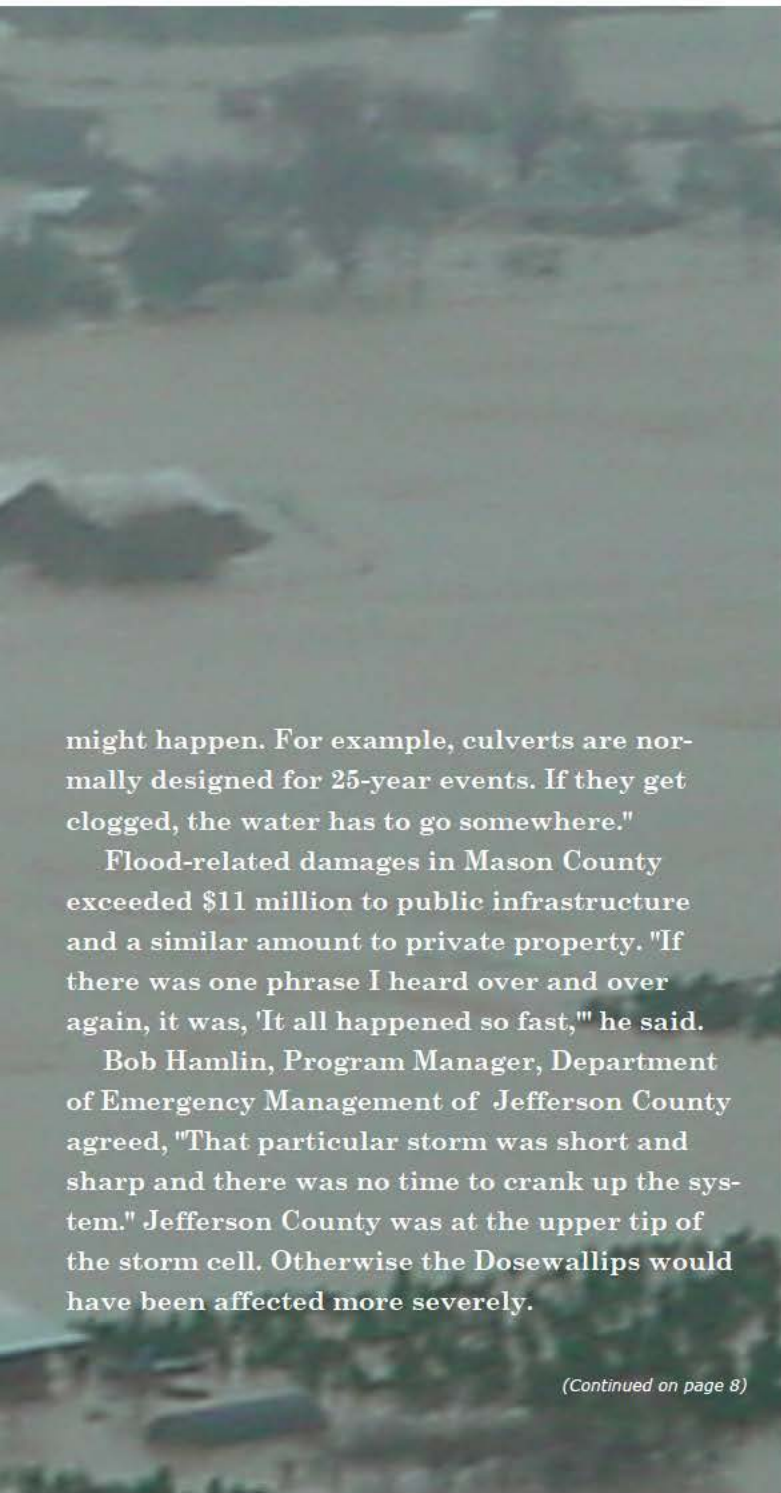
In WRIA 16, severe flooding occurred along the Skokomish and Duckabush Rivers and Miller Creek in Mason County. Flood stage on the Skokomish reached at least 18.1 feet and floodwaters occupied previously untouched areas; landslide conditions closed county and state roads, limited access for weeks, and caused one fatality; destruction of county and private bridges, levies, homes, as well as power and phone outages occurred in various locations.

A "pineapple express" brought a snow storm and then rain fell on the snow. The National Weather Service (NWS) indicated that this event ranged from a 500-year frequency at the Lake Cushman power plant, to somewhere between a 200 - 400 year event on the Tahuya Peninsula.

Martin Best, Emergency Management Manager for Mason County, with almost 20 years of emergency management experience, including 24 presidential disaster declarations, said that this storm was the most significant event in recent memory. He advises, "Know your river and its characteristics and the things that can affect it. Even creeks can surprise. If you build near water, you should expect that something

Thanks to Mason County Public Works, Martin Best, and Chief Bob Herbst for providing images for this publication.





might happen. For example, culverts are normally designed for 25-year events. If they get clogged, the water has to go somewhere."

Flood-related damages in Mason County exceeded \$11 million to public infrastructure and a similar amount to private property. "If there was one phrase I heard over and over again, it was, 'It all happened so fast,'" he said.

Bob Hamlin, Program Manager, Department of Emergency Management of Jefferson County agreed, "That particular storm was short and sharp and there was no time to crank up the system." Jefferson County was at the upper tip of the storm cell. Otherwise the Dosewallips would have been affected more severely.

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## MANAGERS

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County-wide, damages to infrastructure totaled \$7.5 million. Much of this occurred in WRIA in the Hoh and Bogachiel watersheds. Damage to privately-owned improvements was nearly impossible to determine since much of it likely affected secondary and insured residences and went unreported.

"Many homeowners were unwilling to tell us whether or not they suffered damage. However, they may not realize that damage figures above a certain level trigger federal help in the form of unemployment insurance, food aid, legal assistance and other support that can assist an entire community," said Hamlin.

More efforts are needed to improve trust between homeowners and government agencies and foster communication. Hamlin stressed that Jefferson County Emergency Services isn't in the business of inspecting for compliance and doesn't make any judgments. However there are real consequences to vulnerable populations if damage figures go underreported. The level of damage to private infrastructure triggers the availability of essential forms of disaster assistance.

On the West End, some needy families who live on the south (Jefferson County) side of the Bogachiel River were denied many forms of help while their neighbors across the river (in Clallam County) were eligible. They went without power for over a week and were

denied assistance because the county itself was denied by FEMA.

Flood damage estimates are made in two stages. In Phase I local agencies gather information from homeowners on uninsured damage to property that affects habitability, including driveways, septic tank damage, drainfield flooding, and water damage. This is the figure that launches federal assistance to the county as a whole. FEMA then revisits homeowners to assess uninsured damage, and the determination of eligibility of flood damage to personal property is between FEMA and the homeowner.

The Duckabush and Dosewallips Rivers are somewhat unique in Western Washington because flooding tends to occur rapidly. It's not far off to say they flash flood. This makes it especially difficult to forecast flood emergencies and prepare for them in response to a warning. These rivers, and other locations in north Mason County, are also especially prone to isolation during heavy weather events. Last December, the area was cutoff from the south by landslides, from the east by floating bridge closures, the Whidbey ferry was out, and Hwy 101 was also closed to the west. Only Jefferson General Hospital was accessible on the day of the storm.

## How to Manage Your Drinking Water and Well After A Flood

By Wendy Mathews, Mason County

Extreme weather events in Washington this winter reminded us that you don't have to live in a flood plain to experience flooding. Initial response from emergency management services, and from home and business owners, is all about safety, access and other emergent issues. But equally important are the health issues of sewage disposal (see article on page 5) and the availability of clean water.

A flood can create a drinking water emergency by contaminating wells. If a well is flooded, the tap water should be considered unsafe until you have it tested. Keep in mind, addressing water quality deficiencies for immediate use is only the first step—addressing your well must follow. If you are on a public water system, your water system manager will let you know the status of the well. However, the manager may not live locally or may be dealing with his/her own flood emergency, so do not rely on immediate notification. Until you know your tap water is safe, use only clean bottled water or water that has been treated.

The easiest way to avoid being without clean water is to be prepared for emergencies like floods. Take the following precautions:

1. Store drinking water: one gallon per person per day and don't forget the pets. Rotate stored water every 6 months. Keep at least a 3-day supply on hand.





2. Make sure you have a way to boil water, even without electricity.

3. Keep on hand a fresh supply of liquid household bleach.

4. Include instructions for treating contaminated drinking water with your emergency supplies. Publications can be found on your county web site at:

[www.co.mason.wa.us/envhealth/water/index.php](http://www.co.mason.wa.us/envhealth/water/index.php),  
[www.jeffersoncountypublichealth.org/pdf/Water\\_Bacteria\\_Testing.pdf](http://www.jeffersoncountypublichealth.org/pdf/Water_Bacteria_Testing.pdf)  
or from the State Dept. of Health  
[http://www.doh.wa.gov/ehp/dw/our\\_main\\_pages/dwflood.htm#Water\\_Systems](http://www.doh.wa.gov/ehp/dw/our_main_pages/dwflood.htm#Water_Systems).

Treat unsafe water before using for drinking, cooking, making ice, dishwashing, or brushing teeth. The two primary ways to treat water are boiling or adding bleach. Filter cloudy water before you treat it, if possible. Filters designed for use when camping, coffee filters, towels, or a cotton plug in a funnel are effective filters.

Boiling is the better treatment option to kill bacteria and parasites. Boiling is not an effective treatment when toxic metals, chemicals (pesticides, solvents, etc.) or nitrates have contaminated the water. Bring water to a full boil, then boil for 3 – 5 minutes. Cover to cool and store in a cool, safe and accessible place.

If boiling is not possible, water can be made safe for drinking by treating with liquid household bleach (typically between 5% and 6% chlorine). Avoid perfumes, dyes or other additives. Be sure to read the label.

1. Filter if water is cloudy or contains sediment – dangerous compounds can form when cloudy

water and bleach are mixed.

2. Add 10 drops (1/8 tsp) to 1 quart or 1 liter of water (2.5 tsp per 5 gallons). If cloudy or cold, use 5 drops per 1 quart or 1 liter (1/4 tsp per gallon).

3. Mix thoroughly and allow to stand for at least 30 minutes before using (60 minutes if cloudy).

Purifying tablets or chemicals designed for use when camping can also be an effective way to treat water. Chlorine and other chemicals will not kill certain parasites that are a special risk for people weakened with other health problems. Boiling is the best water treatment, especially for these circumstances. If you suspect the water is unsafe because of chemicals, oils, poisonous substances, sewage, etc do not use the water for drinking.

Now that you have provided yourself with drinkable water in the short term, you must examine your well. The more you know about your well before an emergency, the easier your job will be.

First, test for bacteria. Coliform bacteria is used to indicate the possible presence of pathogenic (disease causing) biological contaminants. Get sterile water sample bottles and instructions from your county health department. Follow the instructions carefully. If your sample is free of coliform bacteria, it may be safe to drink. However, if there is sediment in your well, wait until the water has cleared to test it. Sediment contains protozoa and other parasites not detectable with the standard test for bacteria.

Drink stored or treated water during this period.

The disinfection process should be used when coliform bacteria are

found to be present in your well water. Disinfection treats only biological, not chemical or mineral contaminants. After purging the chlorine



from the system, use the system as normal for 3-7 days and then retest. If the well is still contaminated with bacteria, call your county health department to discuss your options. In some cases, a source of contamination may exist that is not addressed with disinfection, and a review of the well and its surroundings may be in order.

It is not difficult to decontaminate your well, but unless you are familiar with its construction, you may cause yourself more problems. A well driller or plumber can also perform the disinfection. Be prepared with your well log from the Dept. of Ecology at <http://apps.ecy.wa.gov/wellog/> which can provide you with information to calculate how much water must be treated. Detailed instructions can be found on the county website at [www.co.mason.wa.us/forms/Env\\_Health/DisinfectingWell-brch.pdf](http://www.co.mason.wa.us/forms/Env_Health/DisinfectingWell-brch.pdf)

For more information, contact Jefferson or Mason County Public Health Depts., or the State Dept. of Health. Remember, nothing beats being prepared. 🌿

## You're Invited to Participate

The Planning Unit generally meets on the first and third Thursday of each month. Please call to confirm dates, times and locations. For more information and to correspond with the WRIA 16 Planning Unit contact:

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[www.ecy.wa.gov/  
apps/watersheds/planning/16html](http://www.ecy.wa.gov/apps/watersheds/planning/16html).



## Mysterious KRILL KILL

According to the Hood Canal Dissolved Oxygen Program, dead krill were observed in large numbers at several locations in Hood Canal between April 7 and 16. Krill are tiny shrimp-like marine invertebrates with the scientific name of euphausiids.

If you've observed these sorts of events in the past, please contact Emily Sanford, water resources educator, at [elpiper@wsu.edu](mailto:elpiper@wsu.edu). Kills or spills can be reported through the Dept. of Ecology Hotline: 1-800-Oils-911. Read more at: [http://www.hoodcanal.washington.edu/observations/bloom\\_fishkill.jsp](http://www.hoodcanal.washington.edu/observations/bloom_fishkill.jsp)



## RIVERS FOR LIFE

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