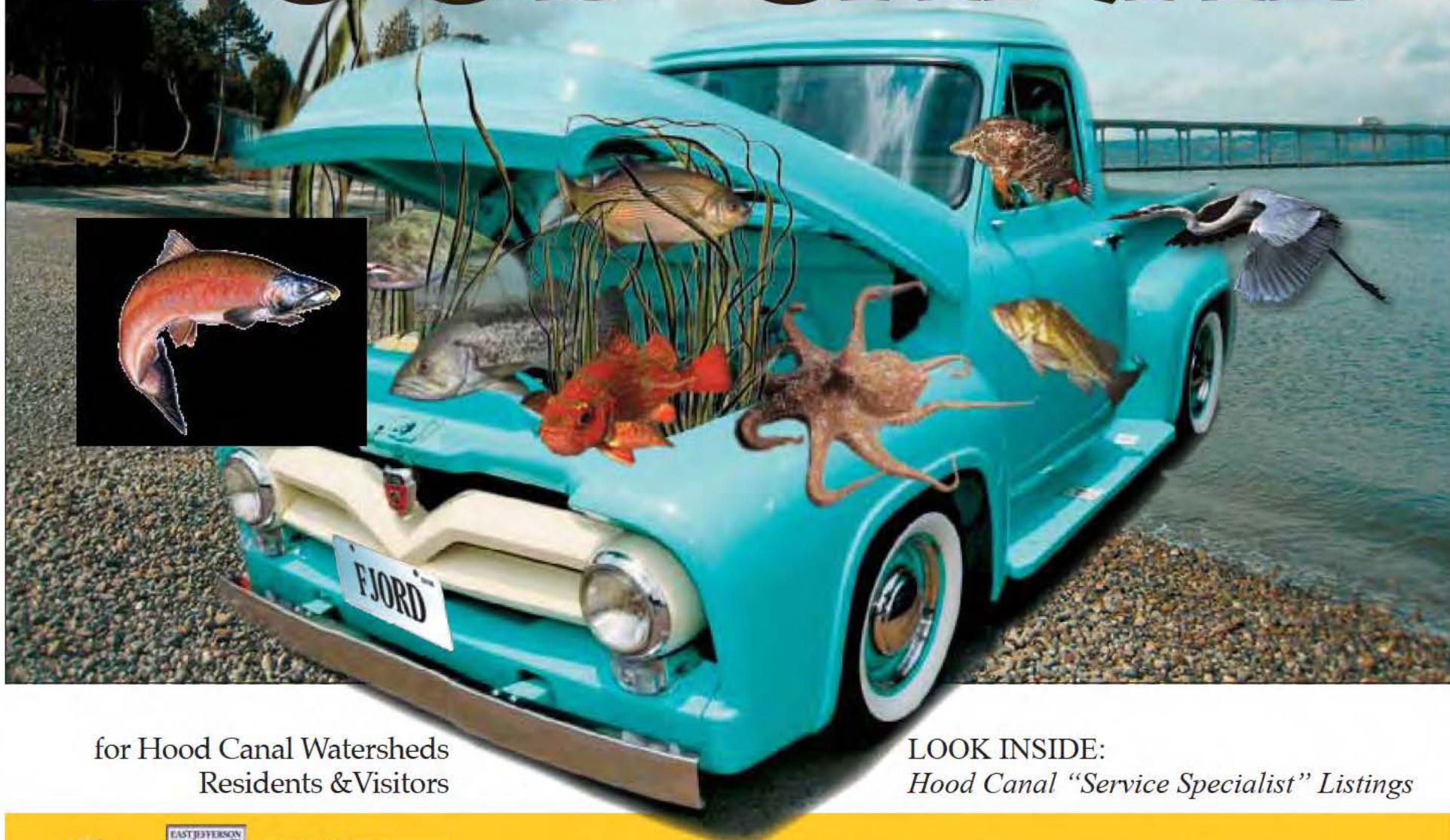


A Look Under the Hood  
Diagnostics for

# HOOD CANAL



for Hood Canal Watersheds  
Residents & Visitors

LOOK INSIDE:  
*Hood Canal "Service Specialist" Listings*



This publication was produced by the WRIA 16/14b Watershed Planning Unit in cooperation with the East Jefferson Watershed Council, Kitsap County and Washington Department of Ecology (Grant #G0800033).  
View this document online at [www.ecy.wa.gov/programs/eap/wrias/Planning/16-14b.html](http://www.ecy.wa.gov/programs/eap/wrias/Planning/16-14b.html).

# Hood Canal

## TECH SPECS:

Body type .....	fjord
Length .....	more than 60 miles
Major rivers .....	9
Average depth .....	177 feet
Average width .....	1.5 miles
Shoreline .....	213 miles
Salmon species .....	5
Human population .....	about 54,000
Square miles in the Hood Canal Watershed .....	1,067.7
Area of residential use .....	55.4 sq. miles
Area of agricultural use .....	2.3 sq. miles
Area of forest .....	1010 sq. miles

## If Hood Canal were a car, what kind would it be?

### *A classic made in the U.S.A.*

**H**ood Canal is a cherished asset. A natural glacier-carved fjord, the Canal is known for its sleek shape, abundant harvests, wildlife, forests, close-knit communities and boundless recreation. But Hood Canal's "check engine" light has flashed repeatedly in recent years. Fish kills and other impacts to marine life appear more common than in the past. Water quality problems, wildlife habitat losses and changing ocean conditions raise concerns about the future health of Hood Canal and the surrounding watersheds.



## Built to Last and Maintenance-free?

**W**e take care of our cars and trucks – maybe even show them off to friends and neighbors. We want them to last and provide years of enjoyment.

We also expect Hood Canal to run smoothly for a long, long time.

Many of the choices we make every day are influencing the Canal's water resources and wildlife habitat. Our classic fjord is showing signs of wear.

But with regular maintenance, monitoring and "engine-uity," Hood Canal can continue to support fish, wildlife and a great quality of life for people.

### *Tour your watershed*

Wherever we work, play or go to school, we are in a watershed. This is an area of land that drains down to the same body of water, such as a stream or bay. A watershed includes rain and snow that soak into the ground, run over the land, or flow into streams and rivers.

Washington is divided into watershed management areas called Water Resource Inventory Areas (WRIAs). Some of these areas are represented by "planning units" or watershed councils. These groups, and others, gather scientific information

This "Look Under the Hood" is a report to Hood Canal owner-operators on what we can do right now to tune up Hood Canal in simple and significant ways.

about the Canal and its watersheds. They identify actions to help improve water resources.



Photo by Tami Pokorny

# High quality, well-maintained parts

**L**ike an automobile, Hood Canal functions best with high quality, well-maintained parts. These parts include the marine water, beaches and estuaries, as well as the streams, wetlands, forests and developed land that surround Hood Canal.

But some of these parts have gone missing. Others are malfunctioning. Under current circumstances, nature can't take care of its "engine trouble" alone. Government agencies, community groups and citizens are working to inventory,

By the year 2000, Hood Canal had already lost 35 percent of its historical tidal shoreline areas.

protect and repair the vital parts and pieces of Hood Canal. We're learning how they function together to create the abundance and beauty



After a rain, stormwater runoff containing nutrients, bacteria, sediment and toxic chemicals collects in roadside ditches, runs into culverts, and flows into Hood Canal.

Photo by Tami Pokorny

we enjoy.

We can all engage in efforts to help Hood Canal run smoothly on the challenging road ahead.

## *High-octane premium*

Quality fuel matters in a high performance car. The "premium fuel" for Hood Canal is clean, cold, abundant fresh



Around Hood Canal, the best place for dog waste is in the garbage.

water. However, some of that water isn't as clean and cold as we would like it to be.

Small amounts of pollution from countless household sources really do add up. We spray, spread, scatter, drop, leak, build, paint, place and throw many things onto our waterways that can influence water quality.

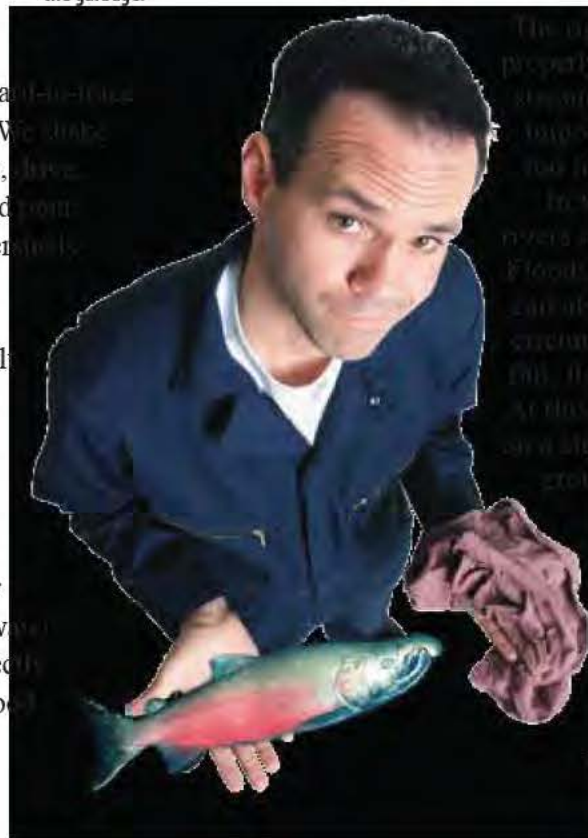
When rain and snowmelt run off hardened surfaces such as rooftops, paved streets, parking lots and even lawns, they pick up pollutants. The resulting soup is called "stormwater runoff." Typically, stormwater runoff flows untreated directly into streams, rivers and Hood Canal.



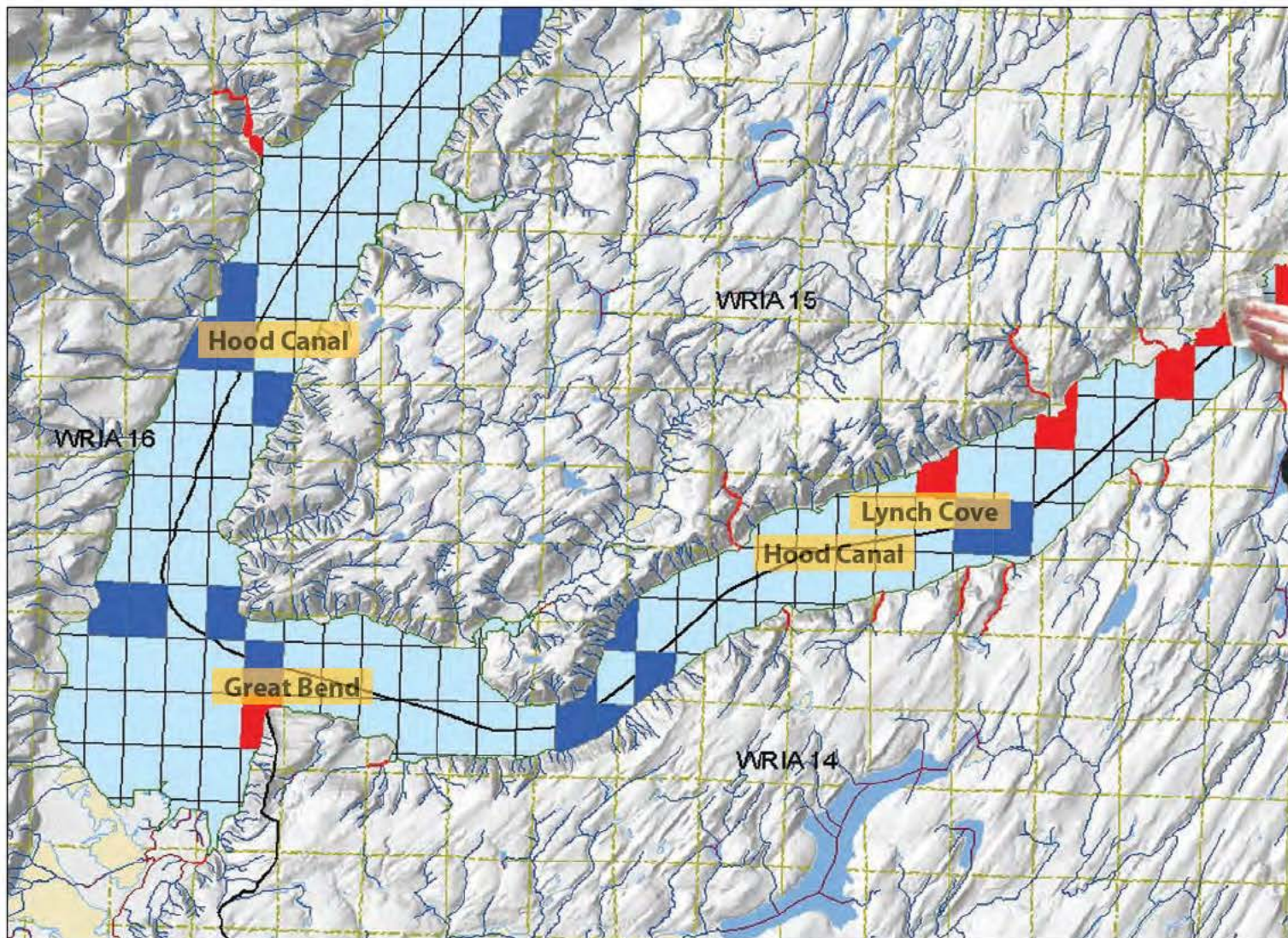
One of many beautiful Hood Canal streams. This waterfall is in the Hamma Hamma watershed.

Photo by Bill Graham

## Fluid Levels

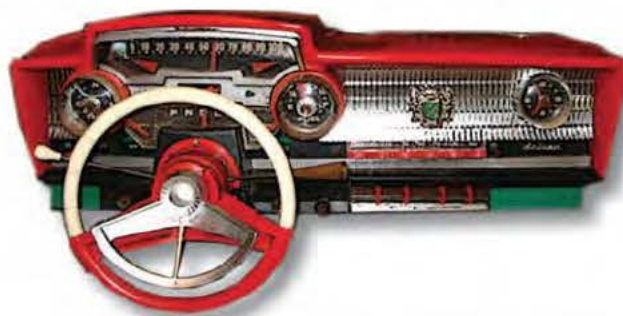


The right amount of each fluid keeps a car running smoothly. The right amount of water flowing in a stream helps keep that stream healthy. There is an important balance between too much water and too little water that changes with the seasons. In winter and spring, flows may gush from our streams and sometimes cause flooding. Floods often improve habitat conditions. They can also create difficult or changing circumstances for people. In summer and early fall, flows steadily decline as dry spells lengthen. At this time, people, fish and wildlife all rely on the stream's residual snowmelt, wetlands, or groundwater to meet their water needs. As the Hood Canal area's demand for water grows, we are concerned that the water supply may not be enough. Consequently, water supply is the subject of intensive study and public discussion in some areas. Reducing water use is often a money-saving practice that may also benefit fish habitat.



The red lines and boxes indicate streams and areas that have not met state and federal water quality standards for fecal coliform. The dark blue boxes have not met standards for dissolved oxygen.

Photo by Mike Dawson



## DASHBOARD LIGHTS

Just as your dashboard warning lights indicate when your car has a problem, scientists use indicators to measure the health of our streams and Hood Canal. Regular monitoring of a bay, stream or river may show that it is largely free of

Every modern car is continuously monitored by on-board computers and, hopefully, an attentive driver for signs of trouble. Water quality monitoring in and around the Canal involves all of us.

contaminants, such as fecal coliform bacteria, and that dissolved oxygen levels are acceptable. If not, additional monitoring is necessary to focus appropriate actions. The desired result is clean water for fishing, swimming and drinking.

The WRIA 16/14b Planning Unit gratefully acknowledges the assistance of many individuals, agencies and organizations concerned with Hood Canal in the development of *Under the Hood*. The information provided was considered accurate at the time of publication and is subject to change (but we are just kidding about the knuckle wolf eel in the caption on the last page).

Graphic artist: Kathy Busic • Concept and cover photo: Tami Pokorny • Photos of Hood Canal sea life: Janna Nichols • Special thanks to Kitsap County Surface and Stormwater Management and Constance Ibsen.

# Filters

**C**ars have fuel filters, and so do watersheds. Wetlands, plants, trees and soils naturally filter out pollutants from stormwater. Because they are so effective, we are finding ways to make developed land act more like these natural places. One way to do this is to install a rain garden. A rain garden is a carefully designed depression with amended soils that are planted to collect, soak up and filter stormwater runoff from roofs, driveways, parking lots and other hard surfaces. Rain gardens treat the water that lands on your property before it leaves your property. They also help slow the movement of water.

## Benefits of rain gardens:

- Reduce flooding
- Remove pollutants
- Replenish groundwater



Rain gardens soak up and clean stormwater runoff.

Photo courtesy of Kitsap County SSWM



Stormwater improvements underway in Mason County.

Photo by Alan Easton

## Upgrades: Restore, enhance

Number of Hood Canal Watershed sites where fresh or marine waters  
have not met water quality standards...101

**I**n the Hood Canal Watershed, government agencies and nonprofit groups are taking actions to reduce stormwater runoff and ensure that the remaining runoff is clean. Storm system improvements include:

- Building conventional infrastructure such as ditches, pipes, catch basins and ponds
- Restoring and enhancing wetlands
- Installing “green” infrastructure to soak up polluted runoff naturally

In addition, many groups are trying to solve the problem of low-oxygen and the resulting impacts to marine life. High levels of nitrogen seem to cause this “dead zone” to occur. Nitrogen levels along the shorelines may be influenced by low performing septic systems, alder trees, animal waste, excessive fertilizer or other sources. We still need to learn more about low dissolved oxygen levels in Hood Canal and ways to fix the problem.



# Habitat in the Headlights

## Returning Quilcene Bay to a natural estuary

**Q**uilcene Bay is famous for its oysters and shellfish harvesting. It is an estuary – an area where fresh and salt waters mix, and tides carry out small amounts of sediment. In their natural state, estuaries are rich in diverse plant, animal and sea life.

However, over the years people built dikes and roads and straightened the rivers to create farmland near the bay. Consequently, the natural flows of rivers and tides into Quilcene Bay changed. Because sediment could not flow out, the bay filled up with silt. This prevented the movement of fish and wildlife and significantly reduced the quality and amount of their habitat.

Currently, many groups are working on a major restoration project to return Quilcene Bay to a more natural estuary, including:

- Removing dikes on the Big Quilcene and Little Quilcene rivers and the

Salmon are important to people living near Hood Canal. Estuary restoration projects are designed to help increase salmon populations.

associated fill

- Rechanneling the river so it meanders naturally
- Removing small culverts and other fish barriers
- Stabilizing stream banks and forest roads to prevent erosion
- Acquiring conservation easements to protect and restore habitat. In 2010, 76 acres were acquired to permanently protect and restore stream, riparian and wetland habitat along Donovan Creek.

## Restoring the Skokomish River

The Skokomish River is the



An elevated walkway allows people to appreciate first-hand the results of the Skokomish River Estuary restoration project.

most frequently flooded river in Washington State and the largest river system in Hood Canal. Over the years, severe floods have damaged property and threatened people's lives and livelihoods.

Historically, the Skokomish River is one of the state's most productive salmon-producing rivers. However, the river has changed because of several factors, including the Cushman hydro-electric dams built on the North Fork, dikes that turned tidelands into farmlands, logging and erosion. The result is that the river is wide and shallow, clogged with gravel and other sediment. These are difficult conditions for salmon to survive and for people to farm and fish.

Recently, the Skokomish Tribe and other government agencies began working on several projects that will restore the Skokomish River. These include:

- Cushman Dam settlement agreement. This agreement between the Skokomish Tribe and the City of Tacoma resolved a long-standing dispute over the impacts of the Cushman Dam. As a result, water flows will be higher and would push sediment out of the river. In addition, other activities will reduce flooding and restore fish populations and habitat.
  - Dike removal. Some dikes that were built to create farmland were removed, allowing fresh and salt water to mix in natural wetlands.
  - Decommissioning old forest roads. This work includes removing unstable soil, building natural drainage systems, and planting native plants and trees.
  - Prevent erosion. Placing trees along rivers helps stabilize the banks and provides habitat for fish.
- Restoring the Skokomish River may be one of the best roads to a healthier Hood Canal.



Looking south across Quilcene Bay from the mouth of Donovan Creek. Photos by Tami Pokorny

# 7-point Hood Canal **TUNE UP**



**Y**ou can help “tune-up” Hood Canal by making small changes in your everyday activities. These seven tips are a great place to start.

As you maintain your car (or bicycle), give Hood Canal some TLC, too. See the Hood Canal “Service Specialist” listings, inside, for contact information and other resources for improving the health of our Canal.

## 1. Retain and plant native vegetation

- Plant native species along shorelines to prevent erosion and filter out pollutants
- Plant native species to reduce fertilizer and water use in the garden
- Minimize lawns
- Mulch

## 2. Properly manage your waste

- Have your septic system inspected and maintained



- Put pet waste in the trash
- Store manure in a covered structure

## 3. Maintain your car

- Fix any oil leaks promptly
- Recycle used motor oil and other fluids
- Wash your car at a car wash or on grass or gravel

## 4. Treat stormwater runoff on your site

- Keep compost and yard waste away from shorelines
- Install a rain barrel or cistern to collect and store rain water
- Install a rain garden
- Use permeable pavers or reduce pavement

## 5. Avoid and minimize the use of chemicals

- Choose compost over synthetic fertilizers
- Limit use of pesticides and herbicides
- Select the safest chemicals, and use the smallest quantities possible (follow labels)
- Dispose of unwanted pharmaceuticals at take-back sites or events

## 6. Recreate responsibly

- Collect litter and fishing debris
- Freeze and reuse excess fish
- If there are no restroom facilities, carry it out (both your own and your dog’s)

- Use elbow grease instead of chemicals when washing boats, decks and docks
- Maintain boats and engines
- Prevent fuel spills

## 7. Get involved

- Seek ways to volunteer in your watershed
- Join or organize a beach/shoreline clean up, weed removal or native plants project
- Install and maintain a pet waste collection station in your neighborhood
- Join Shore Stewards through your WSU Extension Office



Gathering and eating shellfish is a rich part of the Northwest heritage. Let’s take some small actions so these traditions continue to thrive. Photo courtesy of Hood Canal Coordinating Council.



# We're connected to Hood Canal in unexpected ways.

**W**hether we live, work, or play in or around Hood Canal, each of us can take action to repair and maintain this cherished resource. Start with the “7-point Hood Canal Tune-up” or use the Hood Canal “Service Specialist” listings to connect with local experts.

**Learn more inside.**



Hood Canal, streams and rivers surround us but we don't always pay them much attention. This knuckle wolf eel appeared during a routine vehicle inspection as a reminder that Canal watersheds, and not just cars, need regular attention and maintenance.

**Together we've got what it takes to  
keep Hood Canal smoothly humming along!**

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**TO REPORT:**

**Algal bloom, fish kill, oil spill or emergency environmental situation:**

Washington State Dept of Ecology Hotline – Ph: (800) 645-7911 (800-OILS-911)

**Dangerous wildlife:**

Washington Dept of Fish and Wildlife Hotline – Ph: (877) 933-9847 (911 if an emergency)

**Derelict fishing gear:**

Washington Dept of Fish and Wildlife Hotline – Ph: (800) 477-6224 Press 3

<http://wdfw.wa.gov/fishing/derelict>

**Invasive species** (plants, aquatic and terrestrial animals, and insects):

Washington Invasive Species Council Hotline – Ph: (877) 946-3378 (877-9-INFEST),

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

**Leak in utility water lines or get information on water conservation:**

Jefferson Public Utility District – Ph: (360) 385-5800, <http://pud.co.jefferson.wa.us>

Kitsap Public Utility District – Ph: (360) 779-7656, <http://www.kpud.org>

Mason Public Utility District #1 or #3 – Ph: (360) 877-5249 or (360) 426-8255

<http://www.masonpud1.org> or <http://www.masonpud3.org>

**Marine mammal concerns:**

National Oceanic and Atmospheric Administration Hotline – Ph: (800) 853-1964

# Under the Hood

## Hood Canal "Service Specialist" Listings

An electronic version of this document, with hotlinks, is available at:

<http://www.ecy.wa.gov/programs/eap/wrias/Planning/16-14b.html>



## TO GET INFORMATION ON:

### Community efforts:

Hood Canal Coordinating Council – Ph: (360) 394-0046, <http://hccc.wa.gov>  
Washington Sea Grant – Ph: (360) 432-3054, <http://www.wsg.washington.edu>

### Disposing of hazardous waste:

Jefferson County Household Hazardous Waste Facility – Ph: (360) 379-6911, <http://solidwaste.wordpress.com/hazardous-waste-households>  
Kitsap County Health District – Solid & Hazardous Waste – Ph: (360) 337-5235  
[http://www.kitsapcountyhealth.com/environmenta\\_health/solid\\_waste/hazardous\\_waste.htm](http://www.kitsapcountyhealth.com/environmenta_health/solid_waste/hazardous_waste.htm)  
Mason County Household Hazardous Waste Facility – Ph: (360) 427-5271 from the Shelton area – Ph: (360) 275-4467 ext 271 from Belfair  
[http://www.co.mason.wa.us/utilities\\_waste/solid\\_waste/household\\_hazardous.php](http://www.co.mason.wa.us/utilities_waste/solid_waste/household_hazardous.php)

### Disposing of unwanted pharmaceuticals:

Take Back Your Meds – <http://www.takebackyourmeds.org>

### Loans for septic system repairs:

Enterprise Cascadia, a non-profit lender – Ph: (360) 427-2875, <http://www.sbpac.com>

### Low Impact Development:

Jefferson County Department of Community Development – Ph: (360) 379-4450, <http://www.co.jefferson.wa.us/commdevelopment>  
Kitsap County Department of Community Development – Ph: (360) 337-5777, <http://www.kitsapgov.com/dcd>  
Mason County Department of Community Development – Ph: (360) 482-5269, [http://www.co.mason.wa.us/community\\_dev/index.php](http://www.co.mason.wa.us/community_dev/index.php)

### On-site septic system maintenance and other environmental issues:

Jefferson County Environmental Health and Water Quality – Ph: (360) 385-9444  
<http://www.jeffersoncountypublichealth.org/index.php?environmental>  
Kitsap County Health District – Ph: (360) 337-5235, [http://www.kitsapcountyhealth.com/environmenta\\_health/eh\\_index.htm](http://www.kitsapcountyhealth.com/environmenta_health/eh_index.htm)  
Mason County Public Health – Ph: (360) 427-9670 Ext 400 (Hoodsport, Union, Lilliwaup) or – Ph: (360) 275-4467 (Belfair)  
<http://www.co.mason.wa.us/health/envhealth/index.php>

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### Managing animal waste, small farms, or native plantings:

Jefferson County Conservation District – Ph: (360) 385-4105, <http://www.jeffersoncd.org>  
Kitsap Conservation District – Ph: (360) 337-7171, <http://www.kitsapcd.org>  
Mason Conservation District – Ph: (360) 427-9436, <http://www.masoncd.org>  
National Resource Conservation Service – Ph: (360) 704-7740, <http://www.nrcs.usda.gov>

### Managing stormwater runoff:

Jefferson County Stormwater Management – Ph: (360) 379-4450  
<http://www.co.jefferson.wa.us/commdevelopment/Stormwater%20Management.htm>  
Kitsap County Stormwater Management – Ph: (800) 825-4940, <http://www.kitsapgov.com/sswm>  
To report water pollution in Kitsap County – Ph: (360) 337-5777  
Mason County Stormwater Management – Ph: (360) 427-9670 Ext 769  
[http://www.co.mason.wa.us/public\\_works/stormwater.php](http://www.co.mason.wa.us/public_works/stormwater.php)

### Noxious weeds, native plants or landscaping, Shore Stewards:

WSU Jefferson County Extension – Ph: (360) 379-5610, <http://jefferson.wsu.edu>  
WSU Kitsap County Extension – Ph: (360) 337-7157, <http://www.kitsap.wsu.edu>  
WSU Mason County Extension – Ph: (360) 427-9670 ext 680, <http://mason.wsu.edu>  
Washington Sea Grant – Ph: (360) 432-3054, <http://www.wsg.washington.edu>

### Recycling or disposing of many items (batteries, electronics, paint, etc.):

Washington Department of Ecology – Ph: (800) 732-9253 (800-RECYCLE), <https://fortress.wa.gov/ecy/recycle>

### Shellfish and shellfish toxins:

WA Dept of Health Office of Shellfish and Water Protection – Ph: (360) 562-5632  
<http://www.doh.wa.gov/ehp/sf> (to report an illness from eating shellfish)

*This reference card has been provided as a service of the **WRIA 16/14b Watershed Planning Unit** (Covering the South Shore of Lower Hood Canal from just below Belfair, and the West Side from the Skokomish River to just north of Brinnon) with support from the WA Department of Ecology, the East Jefferson Watershed Council (<http://ejwc.org>) and Kitsap County.*