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WATERSHED RESOURCE INVENTORY AREA 16

Rivers for Life

A Quarterly Newsletter of the WRIA 16 Planning Unit

What's at Stake in WRIA 16: Key Issues for Our Watershed Plan

This past winter the WRIA 16 Planning Unit identified key issues facing the WRIA 16 Skokomish-Dosewallips watershed.

Using the limited number of scientific studies available, they inventoried water quantity, water quality, and habitat problems basin-wide and within the Dosewallips, Duckabush, Hamma Hamma, Finch/Lilliwaup, Skokomish, South Shore, and Hood Canal sub-basins.

The Planning Unit also brainstormed a wide variety of preliminary ideas for dealing with these issues. The group will work to achieve consensus on a list of recommendations for the final watershed plan that may or may not include some of the options listed in the accompanying insert.

The public is invited to comment on key issues and help identify possible options to correct deficiencies in watershed health. Please send your sug-

(See **Plan** *on page 2)*

The WRIA 16 Planning Unit Vision:

A watershed connects people to one another and to the natural landscape. WRIA 16's purpose is to manage this shared resource to benefit both people and the environment. We will listen to every individual in our watershed community who voices their needs, concerns, and ideas. Our vision is to develop a plan that achieves a broad consensus within this unique community. Only with the involvement of our whole community can this vision be realized.

A Stormwater Story:

"Drip and Splat"

There were once two raindrops, each searching for a pool of friends. One raindrop, *Drip*, preferred the slower pace of the country life. He descended through the sky towards an expansive forest of older trees. The second raindrop, *Splat*, rode the nearest breeze toward a suburban rooftop.

Drip landed on the bough of a cedar, dropped from one branch to another, trickled down the tree's trunk and onto a pillow of moss. He stayed with the moss for quite some time. Then more rain fell and *Drip* washed out of the moss and into the soil. He meandered slowly downward through decaying leaves, forest duff, and into a thick layer of organic soil called humus.

Time passed and then there was an even bigger storm. *Drip* joined other raindrops making their way to the water table. Together they percolated through the gritty remains of a glacier's passing until they reached the aquifer. They occupied countless tiny spaces between pieces of sand and gravel and permeated the bedrock in little cracks and crevices. Many wonderful years passed cavorting with the other raindrops until one day *Drip* emerged into a beautiful river and flowed into the sea, to begin his next journey in the great water cycle.

In established forests like the one *Drip* landed in, there's no natural fast lane

(See **Drip** *on page 4)*

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Otter tracks along the Dosewallips.

gestions to Susan Gulick, WRIA 16 facilitator, at soundres@earthlink.net.

Water quantity

A growing human population will likely increase demand for water in the future. In many locations throughout WRIA 16, it's anticipated that low flows in summer months and periods of drought may restrict supplies of clean water for people and fish. Water conservation is one important mechanism for extending water supplies. However, current policies often provide little or no incentive for implementing low impact development (LID) and other practices that help conserve water. In addition, global climate changes could influence the timing of high and low flows as well as the quantity of snow and rainfall that the area receives in the future. The low dissolved oxygen levels in Hood Canal appear to be caused by excessive nutrients entering the salt water.

Water quality

Much remains to be learned about water quality in WRIA 16 as more data is gathered and analyzed. Stormwater runoff, including from state routes 106, 101, and 119, degrades water quality and carries pollutants like petro leum compounds, pesticides, fertilizers, and animal wastes into Hood Canal. Fecal coliform levels are known to exceed state standards in many streams, particularly in the southern half of WRIA 16, and have forced the closure of shellfish harvesting areas.

The Skokomish River in March.

Elevated stream temperatures, exceeding state standards, have been observed in the Dosewallips River, McDonald Creek, Lebar Creek, the South Fork of the Skokomish River the Great Bend/Lynch Cove area and perhaps also Fulton Creek and the Duckabush sub-basin. Saltwater intrusion threatens local groundwater supplies in the South Shore sub-basin.

Habitat

Many of the issues affecting salmon habitat in WRIA 16 are reflected elsewhere in Puget Sound region. Three of WRIA 16's fish species are listed under the Federal Endangered Species Act and several factors have contributed to the decline in the availability and quality of salmon habitat here.

Sediment loading, a lack of woody debris, reductions in streamside forests and vegetation, barriers to fish passage, water quality problems, the loss of habitat to development, and cumulative impacts reduce the productivity of WRIA 16 streams.

New Hydrogeologic Study of the Brinnon Area

River water predictably travels from the mountains to the sea. It also moves into and out of aquifers. For example, ground water may seep into a river or spring. Or, conversely, river water may percolate into an aquifer. The direction of flow depends on geology as well as the elevation of the water table, which may vary over space and time. Surface/groundwater exchanges hold ecological significance for salmon and influence water availability for people.

A new study by Aspect Consulting, LLC provides a baseline view of existing surface water-groundwater interaction for the Brinnon area by examining the exchange of water between the Dosewallips River, the largest river entering northern Hood Canal, and local aquifers. The *Hydrogeologic Study of the Lower Dosewallips/Brinnon Area*, was released last winter. It will serve as a tool to aid water resource management, including decisions related to additional water supply development.

Erick Miller, senior associate hydrogeologist, and his colleagues at Aspect studied three river reaches between the mouth of the river and the boundary with the National

Aspect Project Engineer Joe Lubischer, PE measuring stream flow.

Forest. They calculated groundwater and surface water flows and used data from a wellhead elevation survey conducted by Jefferson County. They took hydraulic, thermal, and naturally occurring geochemical measurements to differentiate gaining from losing reaches of the Dosewallips River.

The Dosewallips River estuary.

Around Brinnon, ground water is stored in loose sediments derived from river or glacial deposition and in bedrock composed of fractured basalt. Rain and snow percolate into the ground to recharge these aquifers. A portion of the Dosewallips River is lost through the riverbed to the shallow aquifer system in the Brinnon Flats area. This is particularly true in June, when the river is high from spring runoff and groundwater levels are dropping in response to diminished precipitation. Not surprisingly, the chemical characteristics of the river are nearly identical to water sampled from two wells in the Brinnon Flats area.

Lubischer using the manometer to measure water level difference between river and groundwater

Brinnon area groundwater flows into a spring creek above Whitney Gardens and directly to tidal sloughs and Hood Canal. Groundwater is discharged via wells too, although pumping withdrawals are likely to be a relatively small component of the total discharge

Above the Flats (river mile 1), the Dosewallips may gain water from aquifers, especially during winter months when groundwater levels reach a seasonal maximum as a result of heavy winter precipitation.

The Aspect study also identifies the need for better understanding of the seawater/freshwater mixing zone to minimize seawater intrusion. It points out the need to evaluate the capacity of the basalt aquifer to store water for pumping. The eventual development of a water balance based on this information will help define the safe yield of area water for future development.

The fieldwork for this project would not have been possible without the assistance of many residents of Brinnon and the Dosewallips River valley. The Planning Unit and Aspect Consulting wish to thank them for allowing access to their property and wells.

An electronic copy of the final report will be available on the Department of Ecology website in June.

Running a River with "Instream Flows"

"Setting instream flows defines the stream flows needed to protect instream resources and values, and therefore provides the key benchmark for future water management decisions."

—Washington Dept. of Ecology

Stream flows and instream flows are not the same thing. *Stream flow* is the amount of water flowing in a stream. *Instream flow* is a legal term that describes a stream flow regime adopted by state rule. Instream flow is a very important concept that's fundamental to watershed planning. Starting this summer, the WRIA 16 Planning Unit will begin meeting with the Departments of Ecology and Fish and Wildlife in an attempt to reach consensus on Instream Flow levels. These flow levels will ultimately be adopted as the state rule.

An instream flow essentially functions as a water right for the ecosystem and values that a river or stream supports. Ideally, the formalized instream flow sustains acceptable water quality, quantity, and riparian habitat.

The amount of water in a free-flowing river varies naturally over time. Instream flows are established to mimic that variability. They're calculated from measurements of actual and/or estimated stream flows, usually expressed in cubic feet per second, at specific locations for

(See **Instream** *on page 5)*

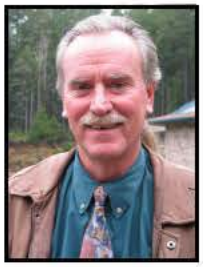
Hoodsport shoreline.

Meet some Planning Unit Members

Allan Borden has been the Mason County Department of Community Development representative on WRIA 16's planning efforts since February 2005. As a long range planner, he has worked on updating the Mason County Comprehensive Plan, implementing development regulations since, and has recently represented Mason County on the WRIA 14 and WRIA 15 water resource plans. Alan has worked for Mason County since 1991, spearheading the citizen efforts in the completion of the Lower Hood Canal Watershed Action Plan in 1992 - 1994. Between 1994 and 2000 he did Planning Department current permit review in the Belfair - Tahuya area.

Frank Benvavente is a retired serviceman, a business owner in Hoodsport since 1991, and is currently a Port Commissioner for the Port of Hoodsport. He serves with the Peninsula Regional Transportation Planning Organization (PRTPO), Mason County Trails Committee and is President of the Hoodsport Community Events Association.

George Fisher is a retired FBI agent and has resided at Lake Cushman for 14 years. He is the president of Save The Lakes Coalition, a group of concerned residents and business owners of the Lake Cushman and Lake Kokanee community interested in preserving the lakes. The beauty, recreational activities and environment the lakes provide to property owners, thousands of visitors and wildlife are worth protecting.



Phil Wiatrak, senior planner for the Department of Ecology has over 30 years of experience in State Government; including senior management positions with the State Energy Office and the Department of Licensing. At the Department of Ecology, he represents the State's interests on three Planning Units (14, 16, and 17).

"Being involved in implementing the Watershed Planning Act is one of the best jobs I've had in state service. Most importantly, the law is designed to enable local decision and policy making (a grass-roots versus top-down planning process). I've been privileged to be working with dedicated local governments, tribes, citizen groups and individuals. The effort is not only broad-based in terms of the community participants but also with respect to the subject matter.

"Every aspect of this most important resource is considered in the planning process. Topics including water availability, quality, appropriation, habitat, storage, conservation and all the associated alternatives keep the process engaging, fresh and rewarding."

(**Drip** continued from page 1)
for water—except rocky outcrops or cliffs. Slick, non-porous surfaces are rare otherwise, so *Drip's* route through the soil was anything but a straight line. He was coaxed along by gravity and, alternately, held back by plants and decaying vegetation. In forests, the rich layer of decaying leaf litter, duff, and humus acts like a very large and very absorbent sponge.

When this forest sponge captures rain, surface runoff is reduced—at least until the sponge becomes completely saturated. In areas of extensive native forest, flooding is less frequent and less severe than in developed areas.

Our second raindrop, *Splat*, collided with a rooftop and took a wild, fast ride from there. He could have hit a road, driveway, parking lot, highway, or sidewalk, but his story would be pretty much the same. Even lawns wouldn't have slowed his pace much because they're not very sponge-like compared to forest soils. And lawns and landscaping also frequently contain animal wastes and pesticides.

Almost from the moment he hit the roof, *Splat* was practically run over by countless other raindrops, all rushing downhill. There was no time to talk. Gravity was in complete control. *Splat* sped on, via gutters, storm drains, and pipes to the nearest stream and then, in a rushing torrent, into Puget Sound. Along

(See **Drip** *continued on page 5)*

(**Drip** continued from page 4) the way he and the other raindrops dislodged soil particles and rushed them along, causing erosion and sedimentation. They also picked up gangs of pollutants. Pesticides, heavy metals, motor oil, and animal waste: it all came along for the ride. *Splat* swirled around with countless raindrops, but hardly had a moment with any of them. Besides, they were all painfully aware of how dirty they all were.

Did you ever think about how water gets clean? A shower, for a raindrop, is a trip through plants, roots, bacteria and soil. Impurities get bound up or broken down into less harmful constituents. In developed areas, raindrops stay dirty because they aren't filtered through the soils that would clean them up. Instead they're forced into rivers and streams in a great pulse that can become a costly and dangerous flood. Stormwater, laced with pollution and laden with sediments eroded enroute, degrades the spawning and rearing habitat available to salmon and is one reason why several species are threatened with extinction.

By the way, raindrops that never touch soil don't feed aquifers. That's unfortunate because aquifers supply groundwater to wells, and "baseflow" to rivers or streams, during late summer and early fall when salmon and people need water the most. So, when native soils are damaged or removed, there are often two consequences for nearby rivers: flooding and, perhaps surprisingly, drought.

Fortunately, low impact development (LID) practices can help reduce pollution and flooding by protecting natural watershed hydrology. Permeable pavement, green roofs, rooftop rainwater harvesting, and innovative foundations reduce surface runoff. But the best answer to flooding and stormwater pollution is leaving the native vegetation and soils undisturbed. To the degree that they're left in place during development, they'll do an excellent job of managing your stormwater and helping to keep water clean and pure.

The moral of the story: *Drip, don't Splat!* The forest soils of Puget Sound continue to be scraped up and compressed by pavement or lawns. For a future of clean water, a better water supply, more salmon, fewer shellfish closures, reduced danger of flooding and landslides, maintain as much natural forest and undisturbed soils as you possibly can on your lot or acreage.

Remember *Drip's* parting quip,

"The road to good water quality is not paved!"

For more information on low impact development, visit the Puget Sound Action Team website: http://www.psat.wa.gov/Programs/LID.htm and download *Natural Approaches to Stormwater Management* at http://www.psat.wa.gov/Publications/LID_studies/LID_approaches.htm

Author's note: Many thanks to Elliott Menashe of Greenbelt Consulting, www.greenbeltconsulting.com for contributing to this story.

(**Instream** continued from page 3)
specified lengths of time.

The science of instream flows presumes that rivers can be maintained in a range of conditions. The challenge lies in determining what sort of condition is represented by each of a proposed range of instream flows. That comes down to data and scientific analyses of flow patterns, river ecology and the needs of certain species, especially salmon. If possible, enough information is gathered to render a safe assessment although hard choices often must be made based on the availability of data and the cost and time required for obtaining it.

The process of establishing instream flows also serves to build awareness of the competing demands for this finite resource. Ultimately, the goal of instream flow science is watershed management that is environmentally and socially acceptable over the long-term.

You're invited to participate

The **Planning Unit** meets on the first Thursday of each month.
Technical Committee meetings are on the third Thursday.
Call for times and locations.

For more information
and to correspond with the
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