## A Stormwater Story:

# "Drip and Splat"

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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 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 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 compacted 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.

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

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