



## ***A Word from the Watershed: High Water and The Big Sponge***

By Corrie Aiuto

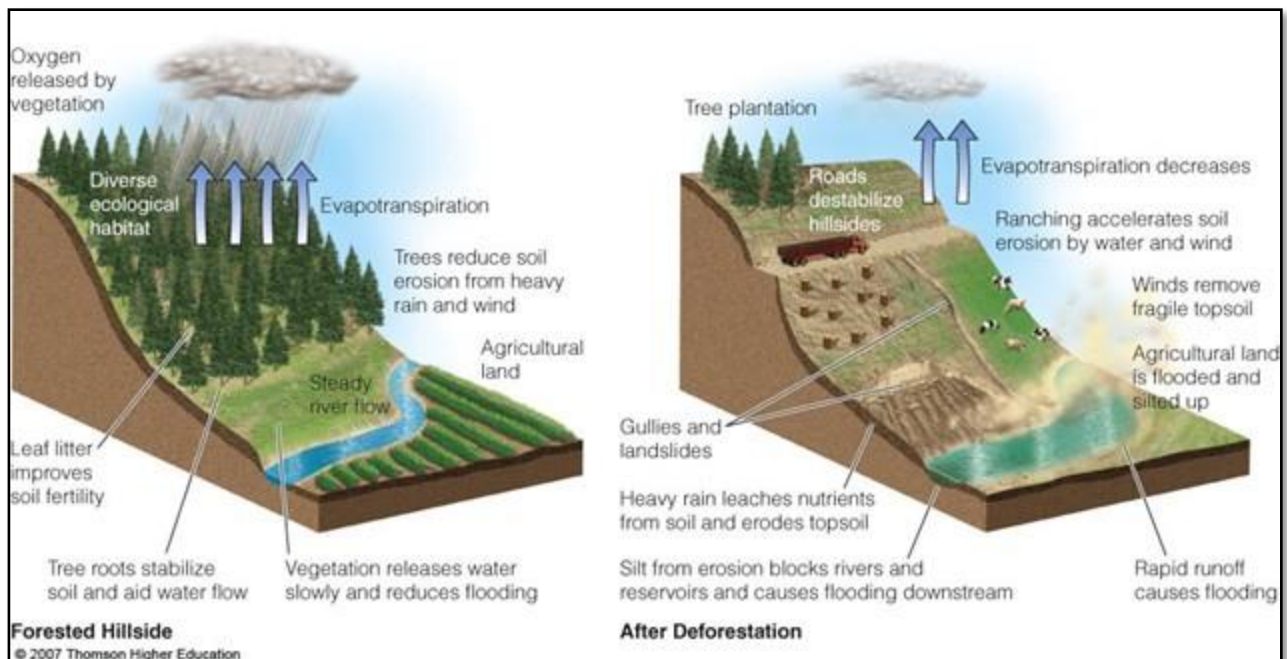
Flood season is here, which means brushing up on our emergency plans and learning about the sponge that is our watershed.

As the heat of summer ends, fall brings the rain again, revitalizing forests, land, streams, plants and animals alike. With the rain comes the Coho and the holidays and sometimes, floods. I recently spoke with Maggie Peyton, Executive Director of the Upper Nehalem Watershed Council (UNWC) and City Council Member Dale Webb about high flows and floods in our watershed. Both have worked with our local waterways for over 20 years and offered valuable information.

For Maggie, the key message is that our watershed is a giant sponge, the accumulating water is soaked up by the vegetation, soil and ground water reservoirs, which is then stored and released over time and seasons. A healthy watershed can maximize natural valley storage capacity. Forests provide canopy cover, which intercepts the rain, and mighty root systems that hold the soil in place. Complex ground vegetation continues to absorb rain accumulation and stabilize the soil. Mosses, beaver dams and aquifers store and filter water.

“When your watershed holding capacity is diminished and drainage accelerated, flood flows will peak faster and higher,” Maggie told me. “Having complex forest cover and ground vegetation overlaying intact expansive floodplains will slow down a flood event and bring faster recovery.”

This sponge, deep and dense, can absorb a lot, but if certain conditions are



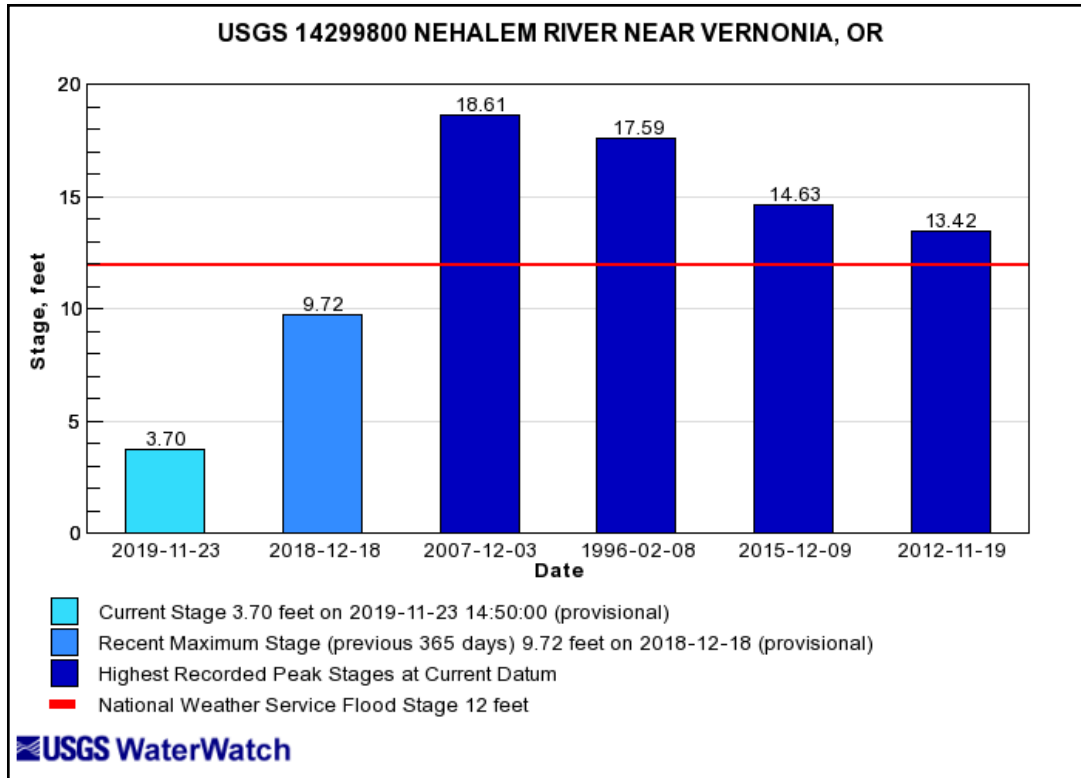
met it will overflow. Then water runs downhill seeking the path of least resistance.

When I spoke with Dale, he explained the conditions necessary for flooding.

“There are two key ingredients to a flood event,” he says, counting them off on his fingers, “Intensity and duration. It has to rain hard enough for a long enough period of time to bring the streams out of their equilibrium. For our area, it takes about 36 hours.”

He continues to explain that other factors can shorten that timeline. For instance, if the river is already high when heavy rain starts, flooding might occur in less than 36 hours. There are other factors that can exacerbate the situation, such as frozen or saturated ground, or snow, but without intense enough rain for a long enough time a flood is unlikely.

Peak flows typically occur between December and February and for Vernonia residents, the possibility of flooding worries us every winter. The Nehalem River, Rock Creek, and Bear Creek all flow through the city, making us particularly vulnerable during heavy rainfall because flooding can come from three different sources. Vernonia has experienced two major floods in recent history, one in February 1996 and the other in December 2007. Both events were devastating, leaving homes, schools, and businesses in standing, contaminated water. In December 2015 a storm caused power outages and minor flooding that closed roads and disrupted services.



To help us stay ahead of a flood event Dale monitors river gauges and watches rainfall around the watershed. The United States Geological Survey’s (USGS) “Near Vernonia” river gauge sits in the Nehalem at Clear Creek and on a recent November day measured at 3.70 feet. Typically, the river stays between 3 and 8 feet and is considered “bank full” at 11 feet. 12 feet is flood stage. Compare that with the 2007 flood that reached over 18 feet and over 17 feet in 1996 and you get an idea of how high the water can rise. Even just 14 feet flooded the roads in 2015.

“It’s important for people to be aware of where they sit in the floodplain,” Dale says. “For example, if they know their property doesn’t flood until we reach 15 feet, that can relieve some needless worry and stress when the river is at 9 or

10 feet. Then, if we start having intense rain, they can protect their resources.” If the rivers begin to leave their banks, he suggests thinking about moving vehicles, livestock, and chemicals to higher ground. Begin to take stock of food, fresh water, and fuel as well.

In the event of heavy rain and high stream flow, there are several sources for information and updates.

- The Vernonia Rural Fire Department is our official emergency response team.
- The Vernonia Weather Facebook page is run by local volunteers, including Dale Webb, who will make “Heads Up” and “Flood Potential” early warning posts. You must request to join the page and be approved by the admins.
- The City of Vernonia posts updates on their website and Facebook. They also plan to install an electronic reader board in Spencer Park that will display emergency updates. For flood preparedness tips and real-time river gauge data provided by the National Oceanic and Atmospheric Administration (NOAA) visit [www.vernonia-or.gov/flood/](http://www.vernonia-or.gov/flood/).
- The USGS website also has real-time stream data for the Near Vernonia gauge at Clear Creek. Visit [waterdata.usgs.gov](http://waterdata.usgs.gov) and search for gauge 14299800.

- Natural Resource Conservation Service (NRCS) maintains SNOTEL sites that collect data such as temperature, wind, rainfall and soil moisture. In addition, the system employs a snow pillow as a hydraulic weighing platform to measure the weight of accumulated snow. An on-site transducer then calculates the snow water equivalent (SWE), which is the amount of water in the snowpack. The closest SNOTEL site to the Nehalem valley is located in the coast range south of here and is labeled Saddle Mountain on a clickable map located at [www.nrcs.usda.gov/wps/portal/nrcs/detail/or/snow/?cid=nrcs142p2\\_0461](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/or/snow/?cid=nrcs142p2_0461)

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Preventative measures can be just as important as disaster preparedness. We must work to build up our watershed, maximizing its sponge-like capacity so it can not only capture more rain to reduce flood impacts, but also release water in the dry season. This means we must protect our forests and canopy cover, plant more trees in compromised areas, and maintain healthy riparian areas.

To learn more, become a volunteer, or donate to the UNWC, visit our website at [unwc.nehalem.org](http://unwc.nehalem.org).