

Resident shares knowledge of Do-It-Yourself flood forecasting

by William Langmaid

If you've lived in Vernonia for any time at all, chances are you know someone who was affected by a flood. We had one in 1996, and then another in 2007. Other events have occurred as well, but they were much more localized than either of those 100-500 year flood events. As winter approaches, people look fearfully at the rivers, certain that the floods will happen again.

Well, that's true, they will, but it takes a very specific set of circumstances for a flood to oc-

cur. It's not just when we get a lot of rain, or just when there is snow on the ground, or when the folks on the Portland news stations are casting about for another sensational story and want to speculate on a recurrence of high water.

Now, I am no expert in any of the fields which are typically associated with flood forecasting, but I did pay attention to the available data and made some key observations of the data's behavior during the flood events. Hopefully you'll gain some knowledge from this arti-

cle so that you'll be able to recognize when there is a danger and when there isn't one. But, if something does happen, even if you aren't expecting it, make sure to be prepared by following official recommendations as they are issued.

The two key floods in our recent history were similar in components, even if they acted differently. In 1996 the flood hit in the middle of winter, when we had had very cold weather followed by snow. This did two things. It made the ground impermeable, like a parking lot, and the snow provided water storage. The amount of water in one cubic foot of powdery snow is considerably less than that in one cubic foot of slushy snow.

In 1996 it didn't. The Pineapple Express headed right up the Willamette Valley, and the combination of very warm weather and heavy rains over a few days melted all that slushy snow. But the ground stayed frozen, and the melted snow and rain just ran to the valley bottoms and into the rivers. So, 1996 was frozen ground, a decent snowpack, lots of rain, and warm air.

The 2007 flood was caused by hurricane-like conditions. There was a super-saturated weather system that moved quickly to the coast and then stalled as it climbed the Oregon coast range. As it stalled, the western edge of the system was still over the ocean, picking up water, which it then dumped over the land. A total of 11" fell in the Vernonia area, at a prolonged rate of .4" per hour.

The rain alone would have caused some flooding, but the real kicker was that the rain was being absorbed into the upland snow. The hurricane also brought warm air, and that warm air increased the temperature from 32 to 50°F in 24 hours, and melted all the snow, releasing 9" of rain in fewer than 8 hours. That meant there was an effective rainfall rate of over 1.5" every hour.

The river rose at a rate of 7" per hour on the Clear Creek gauge, and when those waters ran into the flow from Rock Creek, it was too much. Both rivers slowed down and backed up, dumping water over their banks and into the town. The events leading up to the flooding were eerily similar, and al-

low us to predict our future actions with some accuracy. Rapidly increasing temperatures, saturated snowpack, and heavy rains were shared characteristics. The main difference was that the 1996 rain event lasted several days, and the 2007 event lasted one day.

That is what happened, and here are some tools to help you monitor the river. By looking at the USGS website (<http://waterdata.usgs.gov/nwis/uv?14299800>) that shows the Clear Creek gauge, anyone can check the rate of increase in the river height. Since the river is a modified vee shape, meaning the bankful width is greater than the bed's width, it takes more volume of water to increase height as it gets higher. For example, at 5' of depth, the river is moving 270 cubic feet per second (cfs). At 10', still under flood stage, it has increased twelvefold, to 3,270 cfs. It more than doubles again to reach 15' (it peaked at 18.6' in 2007) flowing at 8,640 cfs.

When I am monitoring the river because of my interest in evacuating the food bank, I am only interested in height increasing after it hits 9 feet. This is an important number because there is already a significant, but not dangerous, volume of water at that level. I then look at the shape of increase, and if it looks like a very steep line, with an increase of over .4 feet per hour, then it is important for me to look at other indicators, like snowpack, temperature, and duration of rain forecast.

The Snotel-Saddle Mountain recording station is also available on the web, but isn't as user friendly. The site is located at <http://www.wcc.nrcs.usda.gov/nwcc/site?sitenum=726&state=or> but the data is obscured by some links. The easiest one to use to get the information is the Snow Water Equivalent hourly chart for the last 7 days, selected by the relevant report features and clicking on the yellow [View Current] button. Since this area accumulates snow all winter, the important indicators here are temperature increasing and snow pack decreasing. Those two, combined, mean additional water, beyond rainfall, will be entering the rivers.

The final site I watch is the north coast National Weather

Service (NWS) forecast report at <http://forecast.weather.gov/MapClick.php?zoneid=ORZ003>. This is a forecast for a pretty general area, but the important factors are when they warn about unusual amounts of rain, and rapidly warming temperatures.

The floods of '96 and '07 were learning experiences for the NWS, and now they broadcast those warnings in conjunction with any flood warnings. Keeping these sites bookmarked in your browser can be helpful. There are more resources out there, but these are what I use.

Healthy habits can help you live longer

From page 11

enjoy life more. People with positive attitudes decrease their risk of poor health and early death by 50% over pessimists.

- Establish healthy habits. Get regular physical checkups, blood pressure and cholesterol checks, floss daily, don't smoke, and drink in moderation. Move around and get regular exercise every day. Slow down your fast life pace – take time to relax.

- Watch your waist and exercise regularly. It is hard to find obese centenarians. Keeping a trim waistline is one of the keys to living longer because excess weight contributes to heart disease, high blood pressure and diabetes. Be smart about what and how much you eat. Eat more fruits and veggies, less red meat and fries.

- Faith matters. Older people with an active faith had lower blood pressure and lived longer, according to a study at the Duke University Medical Center. Churches or religious services provide a social network and a source of comfort and support.

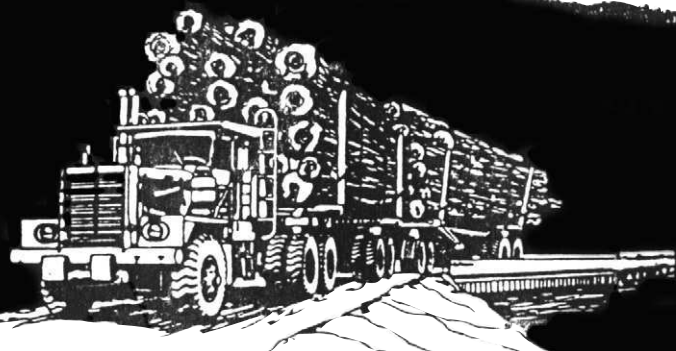
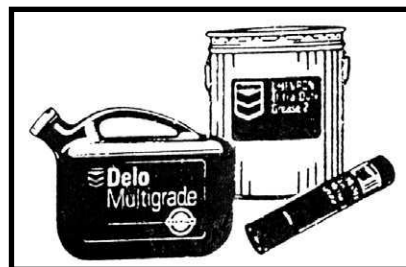
- Be a volunteer. When volunteering, you are making friends, helping people, having a social connection and experiencing the psychological benefits of feeling needed. People who spend time volunteering in the community are happier and healthier.

Source: Nina Chen, Ph.D., CFLE, University of Missouri Extension

Run with Extra Confidence with Chevron DELO 400™ PLUS MOTOR OIL

The name you trust for:

- Gasoline
- Diesel Fuel
- Oils • Solvents
- Additives • Greases



Winter is here... see us for



ANTI FREEZE HEATING OIL



CALL

(503) 429-6606



WILCOX & FLEGEL

720 Rose Avenue • Vernonia