

## Susan Clark

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**From:** Bonnie Blessing <bonnie.blessing@gmail.com>  
**Sent:** Monday, September 19, 2022 4:28 PM  
**To:** Susan Clark  
**Subject:** public comment draft stormwater manual  
**Attachments:** stormwater2.pdf

Hello;

I am out of town on the hearing date for the stormwater drainage manual.

I have concerns after seeing the rain on snow event this last January. The draft manual states that the WWHM model does not factor in snow or its melt. If new impervious surfaces are created and snow and its melt products (water) are not factored in, aren't we going to have even more January 2022 rain on snow events? Please see attachment on your draft stormwater manual.

Thank you

Bonnie Blessing-Earle

Olympia WA

September 18, 2022

Comments on City of Olympia Stormwater Manual

I have concerns specifically over the comment on how WWHM models do not incorporate rain on snow.

Page 26 of City of Olympia's 2022 Stormwater Drainage and Design Manual (2022) *notes that the WWHM model does not include snowfall and melt. Ecology encourages local governments to use more detailed local precipitation data when available.* Here is a clip. See last sentence below from the stormwater manual.

#### ***Precipitation Data***

- **Length of record:** WWHM uses long-term (50 - 70 years) precipitation data to simulate the potential impacts of land use development in western Washington. A minimum period of 20 years is sufficient to simulate enough peak flow events to produce accurate flow frequency results. A 40 to 50-year record is preferred. The actual length of record of each precipitation station varies, but all the ones used in WWHM exceed 50 years.
- **Computational time step:** The computational time step used in earlier versions of WWHM was one hour. The one-hour time step was selected to better represent the temporal variability of actual precipitation than daily data. WWHM now incorporates 15-minute time steps.
- **The 15-minute time step** was selected to better represent the temporal variability of actual precipitation. These data are used in WWHM computations to generate runoff hydrographs. The computations include generating the water quality design flow rates and volumes for sizing Runoff Treatment BMPs.
- **Rainfall distribution:** WWHM uses over 17 precipitation stations, representing the different rainfall regimes found in western Washington. These stations represent rainfall at elevations below 1500 feet. WWHM does not include snowfall and melt. Ecology encourages local governments to use more detailed local precipitation data when available.

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DRAFT City of Olympia Drainage Design and Erosion Control Manual  
Volume III – Choosing, Modeling and Documenting Your BMPs

July 2022  
26/79

Rain on snow events happen a lot. Here's 3 examples

**Tumwater farmer response:** Tumwater, a developer designed a stormwater management basin. In January 2022, excessive flooding occurred downstream in Hopkins Ditch (according to hydrologist). The flooding occurred after a rain on snow event, not noted by the Clear Creek hydrologist but obvious to everyone around. My question is should the developers' hydrologist have considered potential effects of **rain on snow, which we often have**. See attached pdf and the ditch district website (<https://hopkinsdrainageditch.us/meetings-page>). Because of the persistent flooding the ditch district is attempting to find or secure funds to not flood. This is difficult. See the attached pdf and very drastic measures proposed by the ditch district folks who feel there is no other way to maintain their ditch (<https://www.thejoltnews.com/stories/endangered-frogs-no-match-for-planned-dynamite-blast-next-wednesday,7052>). I love frogs. Lets improve our stormwater designs!

**City of Aberdeen WA** Cost to taxpayers >> 100 million dollars for a 6+ mile long levee

**City of Olympia response to rain on snow:**

<https://mailchi.mp/olympiawa.gov/crews-prepare-for-possible-flooding-in-olympia-areas-near-capitol-lake>

**Ask City of Olympia to consult with hydrologists on how to factor in snow and snow melt and where to install more real gauges.**

Bonnie Blessing-Earle  
Olympia WA