

Stormwater Management Program - Flow Control Design Storm

Flow Control Design Storm

ODOT's goal is to reduce runoff generated from transportation-related projects first before using engineered stormwater facilities to meet water quantity standards. Changes in hydrology caused by increases in impervious surface can directly and indirectly damage a stream. By managing highway runoff, damage can be avoided and geomorphically significant range of flows can be maintained. A detailed discussion of the selection of the Flow Control Design Storms can be found at in the [Flow Control Guidance Files](#).

Projects may be excluded from water quantity design storm performance standards when the following occurs:

- Projects discharge into major water bodies, such as mainstem rivers and large lakes and reservoirs;
- Projects in local jurisdictions have more conservative discharge thresholds; and
- The uncontrolled peak post-construction runoff rate from the new impervious surface area is less than 0.5 cubic feet per second during the 10-year, 24-hour storm event.

Approaches based solely on peak discharge control (detention facilities) do not adequately address the range of impacts associated with urban runoff. Detention ponds can discharge flows at peak discharge rates for a much longer time than pervious areas found in a pre-development state. A detention facility can limit or reduce the peak discharge runoff from a given site, but the overall runoff volume will likely increase when compared to pre-project conditions, no matter the size of the project (impervious area).

Increased volume released over a longer period of time may contribute to stream bed and bank impacts to the receiving stream; therefore, ODOT Water Quantity Design Storm performance standards demand that pre-project flows would be equivalent to post-project flows.

The criteria for flow control for channel protection is to maintain the duration and frequency of discharges from the project for flow resulting from the range of Flow Control Design Storms. The endpoints are:

Lower Discharge Endpoint

1. - 42 percent of the 2-year, 24 hour event
2. Southeast, Northeast, North Central Regions: 48 percent of the 2-year, 24 hour event
3. Eastern Cascades Region: 56 percent of the 2-year, 24 hour event

Upper Discharge Endpoint

1. Minimally incised streams - Channel bank overtopping event
2. Incised Streams -10-year/24-hour storm event

Flow control is not necessary when:

1. The receiving water is a large river, lake, reservoir or estuary
2. The increase in discharge to surface waters is less than 0.5 cfs for the 10 year 24 hour storm

In addition to the flow control requirements for protection of stream channels, projects may be subject to requirements for flood control. Projects should be designed to meet all flow control and detention requirements.

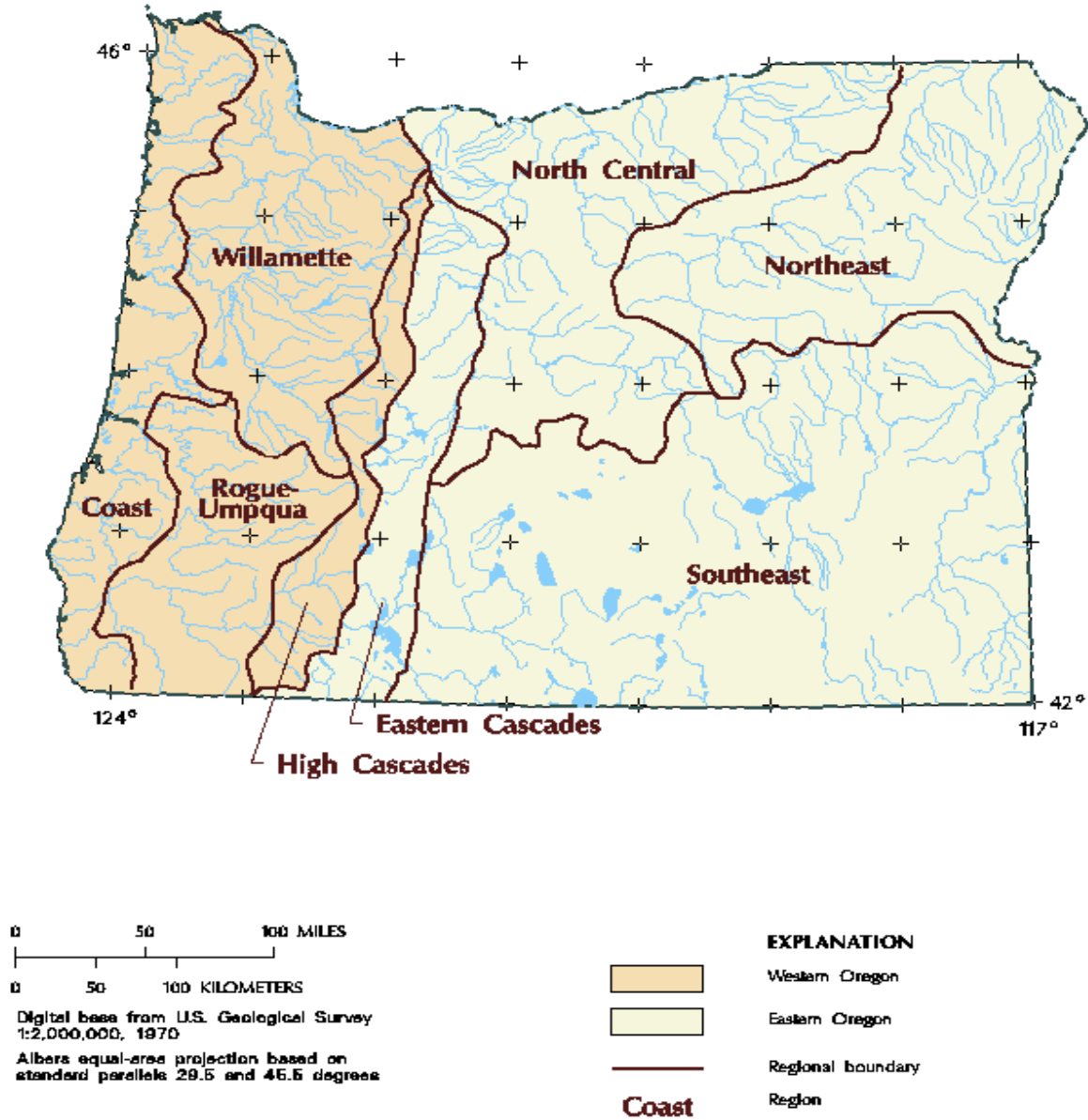


Figure 1. Flood-frequency region map for Oregon.

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