

State of Oregon
Department of Environmental Quality

**Industrial Stormwater Advisory Committee
Meeting 4- October 20, 2009**

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Subject: First Flush

The purpose of this memorandum is to discuss with the committee the requirements in the MSGP permit regarding when stormwater samples must be taken and whether first flush monitoring is appropriate.

Background:

The theory behind first flush monitoring is to conduct sampling near the start of runoff to capture the highest pollutant concentrations of the storm event because there are lower stream flow rates at the beginning of the storm.

DEQ's current permits do not specify a time period for collecting samples during a storm event. As a result, facilities have a lot of flexibility as to when they can collect stormwater samples.

EPA's permit is requiring facilities to sample during the first 30 minutes of a storm event to account for first flush. If it is impractical for a facility to collect a sample within the first 30 minutes, they can collect a sample as soon as practicable. Facilities must document in their stormwater plan why a sample could not be collected within the first 30 minutes. EPA's rationale for requiring first flush monitoring is that during the first 30 minutes of a storm event stream flows are at their lowest and the pollutant loading from stormwater runoff presents the greatest potential for adverse impacts to aquatic species. Also, by requiring facilities to collect samples at similar times during the storm event, EPA believes that the facilities will have a better ability to evaluate their monitoring results and determine if additional BMPs are necessary to reduce pollutant concentrations in their discharge.

Washington is not proposing first flush monitoring in their 2009 draft Industrial Stormwater General Permit. Under Washington's previous permit, the agency required facilities to sample discharges within the first hour after a discharge begins from a qualifying storm event (i.e., first flush). Many facilities found these criteria difficult to meet, which resulted in an increase of facilities not conducting benchmark monitoring. As a result, Washington's proposed sampling requirements in the 2009 draft permit are less complex. EPA formally commented on Washington's draft permit and recommended that facilities collect samples within the first twelve hours of the discharge, which was originally recommended by consultants that Washington hired to develop the proposed permit (2006 Herrera Evaluation).

Advisory committee members have raised concerns about whether first flush is characteristic of runoff events throughout Oregon. In general, studies have shown that the first flush occurrence is dependent on a number of factors and is more likely to occur with a smaller runoff area, a higher portion of impervious surface, and a greater amount of time since the preceding runoff event. The presence of a first flush is also influenced by the type of storm event. A storm beginning with high intensity rainfall is more effective in mobilizing pollutants during the start of

runoff. However, the frontal storm systems common to the Pacific Northwest are less likely to contribute to conditions that generate a first flush because high intensity rainfall does not typically happen at the start of the storm.

Options:

Given that many facilities may not be able to collect a sample within the first 30 minutes of a storm event as required in the MSGP permit, DEQ is seeking feedback from the committee on whether the department should broaden the time period in which facilities can collect samples. The twelve hour time period recommended in the 2006 Herrera Evaluation would provide facilities with more time to collect a sample and likely result in the department obtaining more stormwater data to evaluate the quality of industrial discharges. Other options are to require facilities to collect one first flush sample during the fall quarter each monitoring year or require “high risk” facilities collect first flush samples.