



STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

ANGUS S. KING, JR.
GOVERNOR
August 5, 2002

MARTHA KIRKPATRICK
COMMISSIONER



Pam Deahl
Hydro International
94 Hutchins Drive
Portland, ME 04102

Dear Ms. Deahl,

The purpose of this letter is to inform you that, in accordance with the Laboratory Testing Protocol for Manufactured Treatment Systems and based on the results of the confirmation test for removal of OK-110 grade silica sand performed on July 12, 2002 and described in the attached report, the Downstream Defender stormwater treatment device with an aspect ratio of 0.5 is approved for a total suspended solids (TSS) removal rating of 60%, provided that the device is sized such that the projected one year peak flow from the device's drainage area does not exceed the flow indicated by the following formula:

$Q_{1ypf} = 583 (D/4)^{2.5}$
Where:

All treatment devices were given this RATING by MEDEP. Please see the following paragraph stating that the Downstream Defender has been shown to provide 80% removal.

Q_{1ypf} = the projected one year peak flow from the device's drainage area and
D = the diameter in feet of the device's treatment chamber

This scaling factor is based on Froude's Law and on the fact that a 4 ft diameter Downstream Defender has been shown to provide at least 80 % removal of OK-110 grade silica sand at a flow of 583 gpm (see attached report). Solutions of this formula for a variety of Downstream Defender diameters are given in the following table.

Diameter of treatment chamber (ft)	Maximum 1 year peak flow (gpm//cfs)
2	103//0.23
4	583//1.30
6	1607//3.58
8	3297//7.35
10	5761//12.85
12	9088//20.27

If you have any questions regarding this letter or the attached report, please feel free to call Jeff Dennis at 207-287-7847.

Sincerely,

Donald T. Witherill

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