PONDS 3.2 Technical Memo

Subject: Modeling an exfiltration trench using PONDS 3.2 Refined Method.

In PONDS 3.2, an exfiltration trench is modeled using the Refined Method module. Conceptually, an exfiltration trench is modeled as if it were a pond with one major exception.

The PONDS 3.2 Refined Method uses stage vs. area data in order to develop the storage characteristics of the pond. An exfiltration trench differs from a normal pond, in that an exfiltration trench is typical gravel filled (porosity < 1.0) with a perforated drain pipe , as shown in Exhibit 1 below, while a pond is open (porosity = 1).
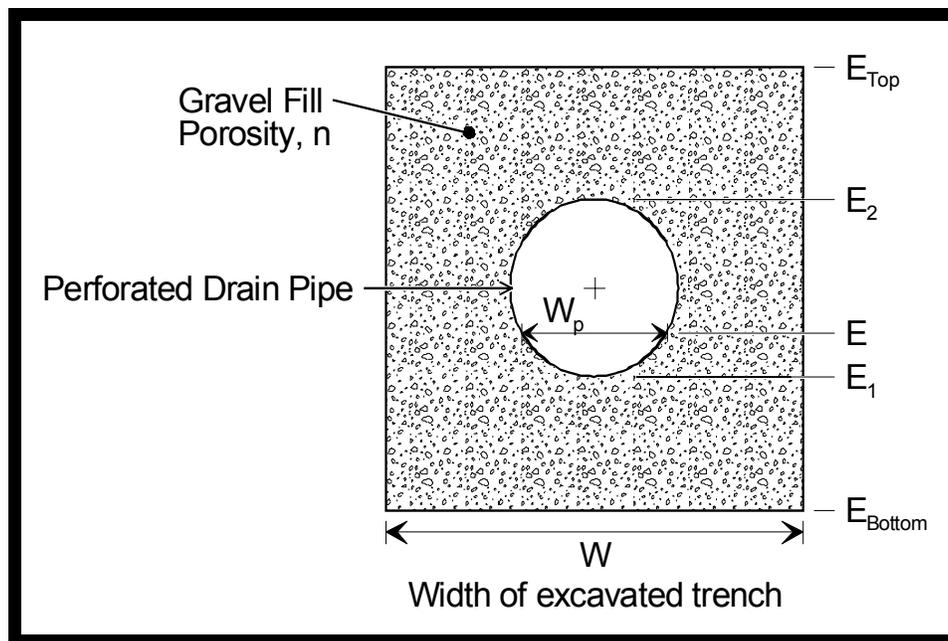
In order to accurately describe the storage capacity of an exfiltration trench, the stage vs. area should be modified to account for the porosity of the gravel fill.

Elevation, E	Effective Area
$E_{Bottom} \leq E \leq E_1$	$L \times W \times n$
$E_1 < E < E_2$	$L \times [(W - W_p) \times n + W_p]$
$E_2 \leq E \leq E_{Top}$	$L \times W \times n$

where:

        L is the length of the trench
        W is the width of the trench
        W_p is the width of the pipe at a given elevation
        n is the porosity of the gravel fill