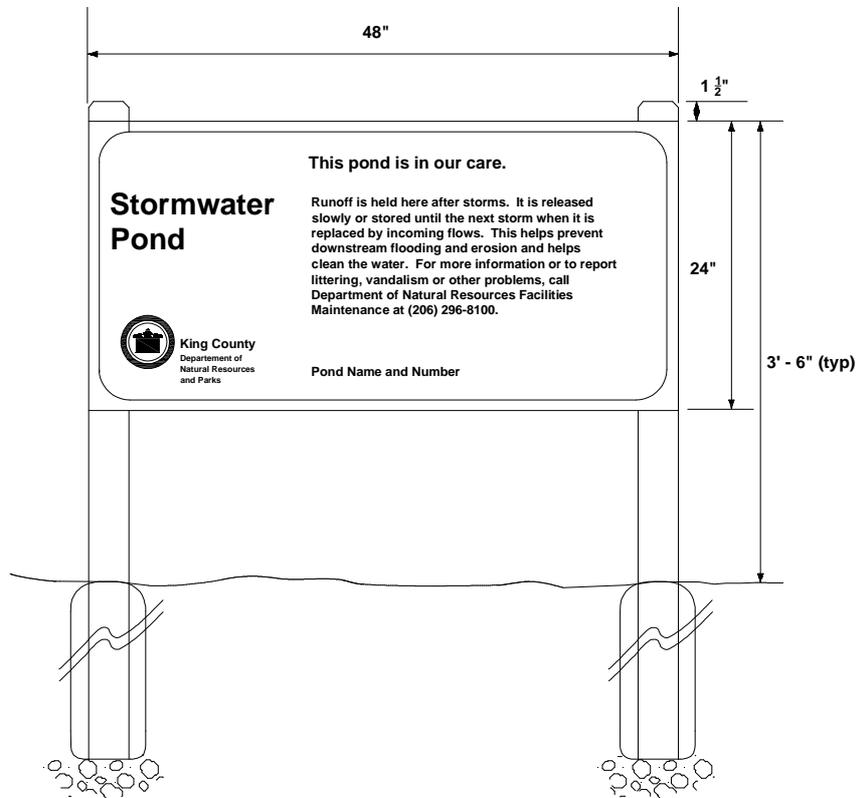


FIGURE 5.3.1.D PERMANENT SURFACE WATER CONTROL POND SIGN



SPECIFICATIONS:

- Size: 48 inches by 24 inches
- Material: 0.125-gauge aluminum
- Face: Non-reflective vinyl or 3 coats outdoor enamel (sprayed).
- Lettering: Silk screen enamel where possible, or vinyl letters.
- Colors: Beige background, teal letters.
- Type face: Helvetica condensed. Title: 3 inch; Sub-Title: 1¹/₂ -inch; Text: 1 inch; Outer border: 1¹/₈ inch border distance from edge: 1¹/₄ -inch; all text 1³/₄ -inch from border.
- Posts: Pressure treated, beveled tops, 1¹/₂ -inch higher than sign.
- Installation: Secure to chain link fence if available. Otherwise install on two 4"x4" posts, pressure treated, mounted atop a gravel bed, installed in 30-inch concrete filled post holes (8-inch minimum diameter), with the top of sign no higher than 42 inches from ground surface.
- Placement: Face sign in direction of primary visual or physical access. Do not block any access road. Do not place within 6 feet of structural facilities (e.g. manholes, spillways, pipe inlets).

Note: If the facility has a liner to restrict infiltration of stormwater, the following note must be added to the face of the sign: "This facility is lined to protect groundwater quality." In addition, specific information about the liner must be added to the back of the sign as specified in Section 6.2.4.

5.3.1.2 METHODS OF ANALYSIS

Detention Volume and Outflow

The volume and outflow design for detention ponds shall be in accordance with the performance requirements in Chapter 1 and the hydrologic analysis and design methods in Chapter 3. Restrictor orifice structure design shall comply with Section 5.3.4 (p. 5-38). *Note: The **design water surface elevation** is the highest elevation that occurs in order to meet the required outflow performance for the pond.*

Detention Ponds in Infiltrative Soils

Detention ponds may occasionally be sited on till soils that otherwise meet the basic criteria of "**sufficient permeable soil**" for a properly functioning infiltration system (see Section 5.4.1, p. 5-57). These detention ponds have a surface discharge and may also utilize infiltration as a second pond outflow. Detention ponds sized with infiltration as a second outflow must meet all the requirements of Section 5.4 for infiltration ponds, including a soils report, performance testing, groundwater protection, presettling, and construction techniques.

Emergency Overflow Spillway Capacity

The emergency overflow spillway weir section shall be designed to pass the 100-year runoff event for developed conditions assuming a broad-crested weir. The **broad-crested weir equation** for the spillway section in Figure 5.3.1.E, for example, would be:

$$Q_{100} = C (2g)^{1/2} \left[\frac{2}{3} LH^{3/2} + \frac{8}{15} (\text{Tan } \theta) H^{5/2} \right] \quad (5-1)$$

where Q_{100} = peak flow for the 100-year runoff event (cfs)
 C = discharge coefficient (0.6)
 g = gravity (32.2 ft/sec²)
 L = length of weir (ft)
 H = height of water over weir (ft)
 θ = angle of side slopes

Assuming $C = 0.6$ and $\text{Tan } \theta = 3$ (for 3:1 slopes), the equation becomes:

$$Q_{100} = 3.21 (LH^{3/2} + 2.4 H^{5/2}) \quad (5-2)$$

To find width L for the weir section, the equation is rearranged to use the computed Q_{100} and trial values of H (0.2 feet minimum):

$$L = [Q_{100} / (3.21 H^{3/2})] - 2.4 H \quad \text{or} \quad 6 \text{ feet minimum} \quad (5-3)$$

