

## 650.0808 UGO Design

### (b) Storage Pool Volume Calculations

#### Graphical Routing Procedure for Terraces and Water and Sediment Control Basins

One of the methods which may be used to determine the required storage pool volume due to runoff is a simplified flood routing procedure commonly referred to as the “Caldwell method”. This method is utilized in the Underground Outlet Design part of the Terrace Design Tool. While it is recommended that the TDT be used to design terraces and water and sediment control basins, there may be instances when it is helpful to perform the simplified routing manually. This amendment provides a graph which may be used to perform the routing.

The following procedure may be used:

1. Determine the runoff from a 10 yr. 24 hr. rainfall. This may be done in a number of ways including using the hydraulics tab in the TDT or by using the Engineering Field Handbook Chapter 2 (EFH2) program.
2. Determine the Drainage Coefficient to be used for the design. This should generally be the value needed to drain the terrace or basin within 48 hours after the storm. For example, if the storm runoff is 3.0 inches, a drainage coefficient of 1.5 inches/day will be needed to drain the terrace or basin within 48 hours.
3. Determine the storage volume required due to runoff from the graph. Enter the graph on the bottom with the runoff; go vertically up to the appropriate drainage coefficient line; read horizontally to the left to determine the storage required due to runoff.
4. The minimum storage required from runoff is 60% of the total runoff. This can be checked by a simple calculation or by making sure the point where the runoff intersected the drainage coefficient line on the graph is above the minimum storage line.
5. Determine the sediment storage required. This is generally the amount of sediment to be accumulated over the ten year life span of the terrace or basin. This value can be obtained from the sediment storage tab within the TDT.
6. The total volume of storage required is the sum of the volume due to runoff (step 3) and the volume due to sediment (step 5).

## Required Storage From Runoff

