DETERMINING DETENTION TIME OF SEDIMENTATION PONDS

Current regulations[1/] of the Office of Surface Mining require that sedimentation ponds be designed to have a detention time of not less than 24 hours. A detention time less than 24 but not less than 10 hours may be used under certain conditions.

A method has been developed by the National Engineering Staff to estimate the average detention time for sedimentation ponds. Using this method, two nomographs were designed to be an integral part of the Engineering Field Manual (EFM). These nomographs are for 10-hr and 24-hr detention times.

The nomographs can be used in the design of new ponds (Example 1) and to analyze the approximate detention time of an existing pond to determine if it meets the detention time requirements (Example 2).

The information needed to determine the pond size and principal spillway capacity is:

1. The estimated peak discharge for a small watershed using the Type II 24-hr storm distribution from Exhibit 2-14 (TSC NE-ENG-225).

2. The desired detention time for the sedimentation pond (10 or 24 hrs).

The information needed to determine if an existing pond meets current regulations is:

1. The estimated peak discharge from Exhibit 2-14 (TSC-NE-ENG-225).

2. The available detention storage V_S & the principal spillway capacity Q.

3. Minimum detention time T.

[1/] Federal Register, Col. 44, No. 50/3-13-79, Part II, article 816.46, Hydrologic Balance.