

CHADWYCK SILT BASIN

Calculate Sediment Storage Required

- A) Avg. Slope = 2%
B) Avg. Length of Slope = 313 linear feet
C) Drainage Area = 130 acres
D) Soil Type = Loss Soil (MNFRO) Hydraulic Type C & (WINFIELD) Hydraulic Type D
E) Wet Basin
F) Estimated Life = 1 year (min. allowed)

LS = 0.28 (SOIL LOSS RATIO - Table B-6)
DR = 0.40 (DELIVERY RATIO - Table B-7)
SY = 0.038 (SEDIMENT YIELD - Table B-8)

SS (SEDIMENT STORAGE) = (LS)(DR)(SY)(DRAINAGE AREA)(LIFE)
= (0.28)(0.40)(0.038)(130)(1)
= 0.55

SEDIMENT STORAGE (REQUIRED) = 0.55 AC-FT

Lowest inflow elevation into basin = 526.33 ft.
Volume @ 526.33 ft = 233,370 cu. ft.
Sediment Volume / Year = 0.55 ac-ft x 42560 cu. ft./ac = 23,558 cu. ft./yr.
233,370 cu. ft. / 23,558 cu. ft./yr. = 9.7 yr.
10 years to Impede Flow

TABLE B-7
SEDIMENT DELIVERY RATIO

Table with 2 columns: Drainage Area (Acres), Gross Erosion Delivered to Sediment Basin. Rows include 0-1, 1-5, 5-15, 15-60, 60-250, and greater than 250.

TABLE B-8
SEDIMENT YIELD

Table with columns for Soil Type, Delivery Ratio, and Wet Pools. Rows include Brown Soils and Other Soils.

Combined Spillway Capacities

Spillways for the basin shall consist of a mechanical spillway or an emergency spillway or a combination of the two. These must have capacities that can safely pass any base flow plus the runoff from a design frequency storm...

TABLE B-6
SOIL LOSS RATIO (LS)
PERCENT SLOPE (S)

Large data table for Table B-6 showing Soil Loss Ratio (LS) for various Percent Slope (S) values ranging from 0.2 to 40.0.

When the length of slope exceeds 400 feet and (or) percent of slope exceeds 24 percent, soil loss estimates are speculative as these values are beyond the range of research data.

Summary of routing computations for Chadwyck Detention Basin, including starting pond elevation (535.00 ft), peak inflow (212.92 cfs), peak outflow (140.47 cfs), and total storage (892,322 cu-ft).

Routing computation tables showing inflow hydrograph and routing computations for two different scenarios.

Summary of routing computations for Chadwyck Detention Basin, including starting pond elevation (535.00 ft), peak inflow (212.92 cfs), peak outflow (140.47 cfs), and total storage (892,322 cu-ft).

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Vertical project information strip containing drawing title (CHADWYCK DETENTION DATA), sheet number (31), and contact information for J.H.B. Properties, Inc.

Professional engineer stamp for William Charles Hahn, Missouri State Engineer #19628, dated 9/25/96.