Table A

	Qo/Qi									
Vs/Vr	0.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
0.0	1.00	0.99	0.97	0.96	0.95	0.93	0.92	0.91	0.89	0.88
0.1	0.86	0.85	0.83	0.82	0.80	0.79	0.77	0.76	0.74	0.73
0.2	0.71	0.70	0.68	0.67	0.65	0.64	0.62	0.61	0.59	0.58
0.3	0.57	0.55	0.54	0.53	0.51	0.50	0.49	0.48	0.46	0.45
0.4	0.44	0.43	0.42	0.41	0.40	0.39	0.38	0.37	0.36	0.35
0.5	0.34	0.33	0.32	0.31	0.30	0.29	0.28	0.27	0.27	0.26
0.6	0.25	0.24	0.23	0.23	0.22	0.21	0.20	0.20	0.19	0.18
0.7	0.18	0.17	0.16	0.16	0.15	0.14	0.14	0.13	0.12	0.12
0.8	0.11	0.10	0.10	0.09	0.09	0.08	0.07	0.07	0.06	0.06
0.9	0.05	0.05	0.04	0.04	0.03	0.03	0.02	0.02	0.01	0.01

Table A: Values of Qo/Qi for pipe flow structures with a discharge over 0.47 ft_3 /s/acre/ (300csm).

Basic equation: $\frac{V_s}{V_r} = 1 - 2\left(\frac{Q_o}{Q_i}\right) + 1.8\left(\frac{Q_o}{Q_i}\right)^2 - 0.8\left(\frac{Q_o}{Q_i}\right)^3$

Where: Vs = Volume of temporary Storage, Ac–Ft.
Vr = Volume of runoff, Ac–Ft.
Qo = Required spillway discharge, c.f.s
Qi = Peak inflow from design storm, c.f.s

EXAMPLE:

Given: Vs = 8.0 Ac. Ft.
Vr = 12.0 Ac. Ft.
Qi = 75 c.f.s.

Find: Qo

Solution: $\frac{Vs}{Vr} = \frac{8.0}{12.0} = 0.67$

$\frac{Qo}{Qi} = 0.20$ (from Table A)

Qo = 0.20 x Qi

= 0.21 x 75 = 15.0 c.f.s

Farm Owner_____ County _____

Sec. ____ T. ___, R ____. Compiled by _____ Date _____

Predominant Land Use ---------- Cultivation, Pasture, woods
Watershed Condition ---------- Good, Average,
Poor Average Land Slope ---------- Flat,
Moderate Drainage Area (DA) ----------_____ Acres

Peak Discharges

Freq. _____ yrs. Peak (Qi) _____ c.f.s.
Freq. _____ yrs. Peak (Qi) _____ c.f.s.
Freq. _____ yrs. Peak (Qi) _____ c.f.s.
Freq. _____ yrs. Peak (Qi) _____ c.f.s.
Freq. _____ yrs. Peak (Qi) _____ c.f.s.

Peak Discharges

Freq. _____ yrs. Runoff (V) _____ inches.
Freq. _____ yrs. Runoff (V) _____ inches.

Computation of Spillway Discharge

Given: Vs = _____ acre feet at stage of _____feet

$Vr = \frac{(V)\ (DA)}{12}$ = _____ acre–feet

Qi = _____ c.f.s.

Find: Qo = _____ c.f.s.

Solution: $\frac{Vs}{Vr}$ = _____ = _____

$\frac{Qo}{Qi}$ (From table A) 1/ = _____

Qo = _____ x Qi = _____ c.f.s.

Q Aux. = _____ c.f.s.

Date
Designed ___ ___ ___ ___
Drawn M. QUINONES 8/1/14
Checked ___ ___ ___ ___
Approved ___ ___ ___ ___

HYDROLOGIC COMPUTATION SHEET

United States Department of Agriculture
Natural Resources Conservation Service

File No. IL–ENG–2
Drawing No.
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