Water and Sediment Control Basin (WASCoB) Design Information Sheet (Single WASCoB System)

Imperial Units

This worksheet is a supplement to Publication 832: Agricultural Erosion Control Structures: A Design and Construction Manual.

Note: Use this Design Information Sheet if only one WASCoB is to be constructed and drained through a single subsurface tile outlet.

WASCoB Identification _____

Section 1: Watershed Data Input

No.	Description	Input Value
1	Watershed area	_____ ac
2	Watershed slope	_____ %
3	Runoff curve number from Tables 2.2–2.4	_____
4	Peak flow from watershed for 10-year storm from Table 4.25-I to 4.31-I	_____ ft^3/s
5	Peak flow from watershed for 25-year storm from Table 4.25-I to 4.31-I	_____ ft^3/s
6	Obtain the storm duration for a 10-year storm from Table 4.25-I to 4.31-I	_____ hrs
7	Obtain the storm volume expected for a 10-year storm from Table 4.25-I to 4.31-I	_____ ft^3

Section 2: Storage and Pond Dimensions

No.	Description	Input Value
8	Determine slope of ponding area upstream from storage berm from field measurements	_____ %
9	Determine slope of side of ponding area upstream from storage berm from field measurements. If side slopes are different, use the average of the two slopes	_____ %
10	Determine soil loss expected above ponding area from Table 4.32-I	_____ tons/ac/yr
11	Storage required for eroded soil for 15-year life expectancy	Line (**10**) _____ x Line (**1**) _____ x 15 = _____ tons x 21.7 ft^3/tons = _____ ft^3
12	Total pond storage	Line (**7**) _____ + Line (**11**) _____ = _____ ft^3

(Storage and Pond Dimensions table continued on next page)

Section 2: Storage and Pond Dimensions *(continued)*

No.	Description	Input Value
13	Determine volume factor	Line (**12**) _____ x Line (**8**) _____ x Line (**9**) _____ = _____ ft³
14	Obtain pond depth (design berm height) from table 4.33-I	_____ ft
15	Determine pond length	Line (**14**) _____ ÷ Line (**8**) _____ x 100 = _____ ft
16	Determine maximum pond width **Note:** In Line 16, if pond side slopes vary by more than 50%, the calculated pond width will be different than the actual field pond width. For accuracy, separate the sides and calculate individually.	Line (**14**) _____ ÷ Line (**9**) _____ x 200 = _____ ft

Section 3: Outlet Design

No.	Description	Input Value
17	Obtain maximum flooding time from Table 4.34	_____ hrs
18	Determine outlet capacity	Line (**7**) _____ ÷ (Line (**17**) _____ - Line (**6**) _____) x 0.000277 = _____ ft³/s
19	Determine the horizontal pipe and riser pipe sizes. Complete the following	Horizontal pipe slope: _____ % Horizontal pipe diameter (Table 4.28-I of Figure 4.31 or Publication 29, Drainage Guide for Ontario): _____ in Riser Pipe diameter (Tables 4.19-I to 4.20-I): _____ in Orifice diameter (if required) (Tables 4.21-I to 4.22-I): _____ in

Section 4: Emergency Spillway Design & Final Berm Construction

No.	Description	Input Value
20	Emergency overflow spillway type to be used. (**Check one**)	☐ Grass Lined ☐ Rock Lined
21	Determine emergency overflow spillway capacity from Line (**5**)	_____ ft³/s

(Emergency Spillway Design & Final Berm Construction table continued on next page)

Section 4: Emergency Spillway Design & Final Berm Construction *(continued)*

No.	Description	Input Value
22	Determine emergency overflow spillway notch dimensions from Table 4.35-I to meet capacity requirements from Line (**21**)	Notch width (L): _____ ft Notch depth (D): _____ ft
23	Actual berm height (**Note**: Freeboard is 10% of Line (**14**) to maximum of 0.5 ft)	Line (**14**) _____ ft + freeboard _____ ft + notch depth (D) (Line (**22**)) _____ ft = _____ ft
24	Actual berm length	Line (**23**) _____ ÷ Line (**9**) _____ x 200 = _____ ft
25	Berm side slope (minimum 2:1, maximum 8:1)	_____ :1
26	Top width of berm (**Note**: Default width of 4 ft)	_____ ft
27	Bottom width of berm	Line (**26**) _____ + (2 x Line (**23**) _____ x Line (**25**) _____) = _____ ft
28	Earth volume for berm from Table 4.36-I to 4.38-I	_____ yd^3

Tables and figures referenced in this document are found in *Publication 832: Agricultural Erosion Control Structures: A Design and Construction Manual*

Agricultural Information Contact Centre
1-877-424-1300
1-855-696-2811 (TTY)
Email: ag.info.omafa@ontario.ca
ontario.ca/omafa