1. Erosion Hazard and Sediment Basins

Site Name:

Site Location:

Precinct/Stage:

Other Details:

Site area	Sub-catchment or Name of Structure						Notes
Total catchment area (ha)							
Disturbed catchment area (ha)							

Soil analysis (enter sediment type if known, or laboratory particle size data)

Sediment Type (C, F or D) if known:							From Appendix C (if known)
% sand (fraction 0.02 to 2.00 mm)							Enter the percentage of each soil fraction. E.g. enter 10 for 10%
% silt (fraction 0.002 to 0.02 mm)							
% clay (fraction finer than 0.002 mm)							
Dispersion percentage							E.g. enter 10 for dispersion of 10%
% of whole soil dispersible							See Section 6.3.3(e). Auto-calculated
Soil Texture Group							Automatic calculation from above

Rainfall data

Design rainfall depth (no of days)							See Section 6.3.4 and, particularly, Table 6.3 on pages 6-24 and 6-25.
Design rainfall depth (percentile)							
x-day, y-percentile rainfall event (mm)							
Rainfall R-factor (if known)							Only need to enter one or the other here
IFD: 2-year, 6-hour storm (if known)							

RUSLE Factors

Rainfall erosivity (*R*-factor)							Auto-filled from above
Soil erodibility (*K*-factor)							RUSLE LS factor calculated for a high rill/interrill ratio.
Slope length (m)							
Slope gradient (%)							
Length/gradient (*LS*-factor)							
Erosion control practice (*P*-factor)	1.3	1.3	1.3	1.3	1.3	1.3	
Ground cover (*C*-factor)	1	1	1	1	1	1	

Sediment Basin Design Criteria (for Type D/F basins only. Leave blank for Type C basins)

Storage (soil) zone design (no of months)	2	2	2	2	2	2	Minimum is generally 2 months
Cv (Volumetric runoff coefficient)							See Table F2, page F-4 in Appendix F

Calculations and Type D/F Sediment Basin Volumes

Soil loss (t/ha/yr)							
Soil Loss Class							See Table 4.2, page 4-13
Soil loss (m^3/ha/yr)							Conversion to cubic metres
Sediment basin storage (soil) volume (m^3)							See Sections 6.3.4(i) for calculations
Sediment basin settling (water) volume (m^3)							See Sections 6.3.4(i) for calculations
Sediment basin total volume (m^3)							

NB for sizing of Type C (coarse) sediment basins, see Worksheet 3 (if required).

2. Flow Calculations

Peak flow is given by the Rational Formula: $Qy = 0.00278 \times C_{10} \times F_Y \times I_{y,\,tc} \times A$

where:
- Q_y is peak flow rate (m^3/sec) of average recurrence interval (ARI) of "Y" years
- C_{10} is the runoff coefficient (dimensionless) for ARI of 10 years.
- F_y is a frequency factor for "Y" years.
- A is the catchment area in hectares (ha)
- $I_{y,\,tc}$ is the average rainfall intensity (mm/hr) for an ARI of "Y" years and a design duration of "tc" (minutes or hours)

Time of concentration (t_c) = $0.76 \times (A/100)^{0.38}$ hrs

Note: For urban catchments the time of concentration should be determined by more precise calculations or reduced by a factor of 50 per cent. Place an x in the appropriate row below to automatically halve the time of concentration for that sub-catchment.

Structure Details									Notes
Name									
Catchment Area (ha)									
Place an x here to halve tc									Place an x if disturbed catchment
Time of concentration (tc)									minutes

Rainfall Intensities

1-year, tc									Enter the relevant rainfall intensities (in mm/hr) for each of the nominated rainfall events. The time of concentration (tc) determines the duration of the event to be used
2-year, tc									
5-year, tc									
10-year, tc									
20-year, tc									
50-year, tc									
100-year, tc									

C10 runoff coefficient									Use AR&R or Table F3, pg F-6

Frequency Factors

FF, 1-year	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	Can use 0.8 for a construction site
FF, 2-year	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	Can use 0.85 for a construction site
FF, 5-year	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	Can use 0.95 for a construction site
FF, 10-year	1	1	1	1	1	1	1	1	Generally always 1
FF, 20-year	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	Can use 1.05 for a construction site
FF, 50-year	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	Can use 1.15 for a construction site
FF, 100-year	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	Can use 1.2 for a construction site

Flow Calculations									Notes
1-year, tc (m^3/s)									
2-year, tc (m^3/s)									
5-year, tc (m^3/s)									
10-year, tc (m^3/s)									
20-year, tc (m^3/s)									
50-year, tc (m^3/s)									
100-year, tc (m^3/s)									

NB for flow calculations on sediment basin spillways, see Worksheet 3 (if required).

3. Sediment Basin Spillway Design

Structure Details

Structure Name							Auto-filled from Worksheet 1
Catchment Area (ha)							Auto-filled from Worksheet 1
Time of concentration (tc)							Auto-calculated assuming tc is halved

Rainfall Intensities (IFD Values)

1 year, tc							Enter the relevant rainfall intensities (in mm/hr) for each of the nominated rainfall events. The time of concentration (tc) determines the duration of the event to be used
2 year, tc							
5 year, tc							
10 year, tc							
20 year, tc							
50 year, tc							
100 year, tc							

C_{10} runoff coefficient							Use AR&R or Table F3, pg F-6
Design ARI event (select):	100	100	100	100	100	100	Select design ARI (years) from dropdown
Frequency Factor	1.2	1.2	1.2	1.2	1.2	1.2	Auto-filled based on selected ARI
Flow Calculation							Auto-calculated based on selected ARI

4. Volume of Type C (Coarse) Sediment Basins

Type C Basin Design Criteria

Structure Name							Auto-filled from Worksheet 1
Catchment Area (ha)							Auto-filled from Worksheet 1
Sediment type (C, F or D)							Auto-filled from Worksheet 1
Design rainfall event							Choose design event from dropdown
Flow volume (m^3/s)							Calculated from IFD values above
Area Factor	4100	4100	4100	4100	4100	4100	Default is 4,100. See pg 6-12
Depth of settling (water zone) (m)	0.6	0.6	0.6	0.6	0.6	0.6	Minimum is 0.6m (pg 6-12)

Type C Basin Volume Calculations

Basin Surface Area (m^2)	Not Type C	Not Type C	Not Type C	Not Type C	Not Type C	Not Type C	Auto-calculated
Settling (water) zone volume (m^3)	Not Type C	Not Type C	Not Type C	Not Type C	Not Type C	Not Type C	Auto-calculated
Storage (soil) zone volume (m^3)	Not Type C	Not Type C	Not Type C	Not Type C	Not Type C	Not Type C	Auto-calculated
Total basin volume (m^3)	Not Type C	Not Type C	Not Type C	Not Type C	Not Type C	Not Type C	Auto-calculated

Basin Shape

Enter length:width ratio	3	3	3	3	3	3	E.g. for 3:1 (L:W) enter 3.
Length (m)	N/A	N/A	N/A	N/A	N/A	N/A	These figures should be taken as a guide only. Detailed calcs might be required.
Width (m)	N/A	N/A	N/A	N/A	N/A	N/A	