
APPENDIX B

Sediment Basin Calculations

<u>REVISED UNIVERSAL SOIL LOSS EQUATION</u>		
PROJECT:-	BALLINA WEST	DESIGNER:- SW
JOB No:-	GCE1022	DATE:- 4/Aug/09
<u>SEDIMENT STORAGE ZONE VOLUME</u>		
A = R.K.LS.P.C		
Where	Description	Value
A	= Computed soil loss (tonnes/ha/yr)	
S	= 2 Year ARI, 6 Hour Storm Event	= 16.76 mm/h
R	= Rainfall Erosivity Factor	= 5000 (Appendix B - 'The Blue Book')
or	= $164.74 (1.1177)^S S^{0.6444}$	= 6541.12 (use if no chart exists)
		<u>INPUT</u>
R	= from above	= 5000 mm/h
K	= Soil Erodibility Factor	= 0.04
LS	= Slope Length / Gradient Factor	= 0.20 From Table A1
P	= Erosion Control Practice Factor	= 0.80 From Table A2
C	= Ground Cover	= 1.00 From Table A3 or A4
A Soil Loss	= 32.0 (tonnes/ha/yr)	
V Volume	= 25 (m ³ /ha/yr)	
	Disturbed Surface Area (ha)	= 4.24 Ha.
	Computed soil loss	= 106.00 m ³ /yr
	Sediment Storage Zone Volume	= 30.00 m ³ Assuming regeneration after 3 Months
<u>SEDIMENT BASIN VOLUME - Type D Soils</u>		
Settling Zone	= 10 x Cv x A x R(y%ile, 5day)	
10	= Unit Conversion Factor	= 10.00
Cv	= Volumetric Runoff Coefficient	= 0.50
A	= Catchment Area of the Basin Ha.	= 4.24 Ha.
R(y%ile, 5day)	= 5 day total rainfall depth (mm) which is not exceeded in y percent of rainfall events.	= 29.50 mm
Settling Zone	= 625.40 m ³ / s Settling Zone Volume	
Depth of Basin	= Basin Depth, min. 0.6 m	= 1.00 m
TOTAL BASIN VOLUME	= Settling Zone Volume + Sediment Storage Zone Volume	
	= 655.40 m ³	
	= 655 m ³	
BASIN VOLUME PER HECTARE	= 155 m ³	
Using a ratio of 1:3, pond size	= 15 x 44 m	