

LIST OF FIGURES

		Page Number
Figure 0.1	Location of the study area	2-3
Figure 1.1	Geological setup of the Balason basin	7-8
Figure 1.2	Contour map of the Balason basin	11-12
Figure 1.3	Representative rainfall and temperature of three broad regions of the Balason basin	14-15
Figure 1.4	Soil map of the Balason basin	17-18
Figure 1.5	Landuse map of the Balason basin	24-25
Figure 2.1	Slope Morphology of the Balason basin	27-28
Figure 2.2	Relative relief of the Balason basin	29-30
Figure 2.3	Dissection index of the Balason basin	30-31
Figure 2.4	Drainage density of the Balason basin	31-32
Figure 2.5	Geomorphic units of the Balason basin	33-34
Figure 2.6	Geomorphological map of the Balason basin	35-36
Figure 2.7	Contour plan of the Bungkulung debris fan	39-40
Figure 2.8	Geomorphological Map of the Bungkulung debris fan	39-40
Figure 2.9	Cross-section across the Bungkulung debris fan	40-41
Figure 3.1	Index map for the third order basins	43-44
Figure 3.2	Frequency distribution curves for various basin morphometric properties of the third order	47-48
Figure 3.3	Third order basins of the Balason basin plotted on arithmetic probability paper	48-49
Figure 3.4	Regional dispersion of morphometric variables of third order basins	48-50
Figure 3.5	Linear regression analysis of some morphometric variables of the 55 third order basins	53-54
Figure 3.6	Groups of highly inter correlated variables found by resorting the data of table 3.5	54-55
Figure 4.1	Index map for sample sites for pedogeomorphic studies	59-60
Figure 4.2	Linear relationships among the various pedogeomorphic parameters in the Balason basin	61-62
Figure 4.3	Groups of highly inter-correlated variables found by resorting the data of table 4.2	63
Figure 5.1	Factors in soil erosion by water	73
Figure 5.2	Soil Erodibility Nomograph	74-75
Figure 5.3	Rain erosivity zone of the Balason basin	76-77
Figure 5.4	Soil erodibility zones of the Balason basin	78-79
Figure 5.5	Topographic erosivity zones of the Balason basin	79-80
Figure 5.6	Biological erosivity zones of the Balason basin	80-81
Figure 5.7	Potential soil loss of the Balason basin	82-83
Figure 5.8	Predicted soil erosion of the Balason basin	82-83

Figure 5.9	Proposed soil conservation scheme for the Balason basin	85-86
Figure 6.1	Landslide scars in the Balason basin	90-91
Figure 6.2	Landslide prone area of the Balason basin	96-97
Figure 6.3	Map of contour, rock units and structural elements of the Pankhabari landslide	97-98
Figure 6.4	Sequential change in the Ambootia landslide	104-105
Figure 7.1	Index map for hydrological study of the river	110-111
Figure 7.2.a.	Cross-sections across the river Balason at U/G (1998 – 2001)	111-112
Figure 7.2.b.	Cross-sections across the river Balason at C/G (1998 – 2001)	111-112
Figure 7.2.c.	Cross-sections across the river Balason at D/G (1998 – 2001)	111-112
Figure 7.3	Progressive changes in the cross-sectional area of the Balason river	113-114
Figure 7.4	Progressive changes in the wetted perimeter of the Balason river	114-115
Figure 7.5	Progressive changes in the hydraulic radii of the Balason river	115-116
Figure 7.6	Progressive change in channel depth	115-116
Figure 7.7	Progressive hydrographs of river Balason at Matigara (1998 – 2001)	116-117
Figure 7.8	Suspended sediment load of the river Balason at Matigara (June – October) from 1998 – 2001	119-120
Figure 7.9	Relation between Discharge and sediment load	121
Figure 7.10	Gauge height, bed elevation and hydraulic depth of the river Balason from 1998 – 2001 at Matigara	122-123
Figure 7.11	Stage Discharge relation (1998 – 2001)	124
Figure 7.12	Peak flood discharge variation (1998 – 2001)	125-126
Figure 7.13	Peak runoff – suspended sediment load correlation	126-127
Figure 7.14	Monthly bed materials extraction for the river Balason from 1998 – 2001	127-128
Figure 7.15	Morphological changes in braiding (1998 – 2001)	128-129
Figure 7.16	Transformation of braided channels in the lower Balason valley (1960 – 2001)	129-130
Figure 8.1	Precipitation and evaporation loss of some selected stations of the Balason basin	135-136
Figure 8.2	Rainfall and runoff correlation	137-138
Figure 8.3	Monsoon runoff of the Balason basin	140-141
Figure 8.4	Annual runoff of the Balason basin	141-142
Figure 9.1	Magnitude of environmental impact in the Balason basin	148-149
Figure 9.2	Environmental impact significance in the Balason basin	150-151
Figure 9.3	Frequency class diagram	153
Figure 9.4	Contour plan, geological and geomorphological set up of the Mirik landslide	155-156