

Longitudinal Profiles of the Manhari Khola

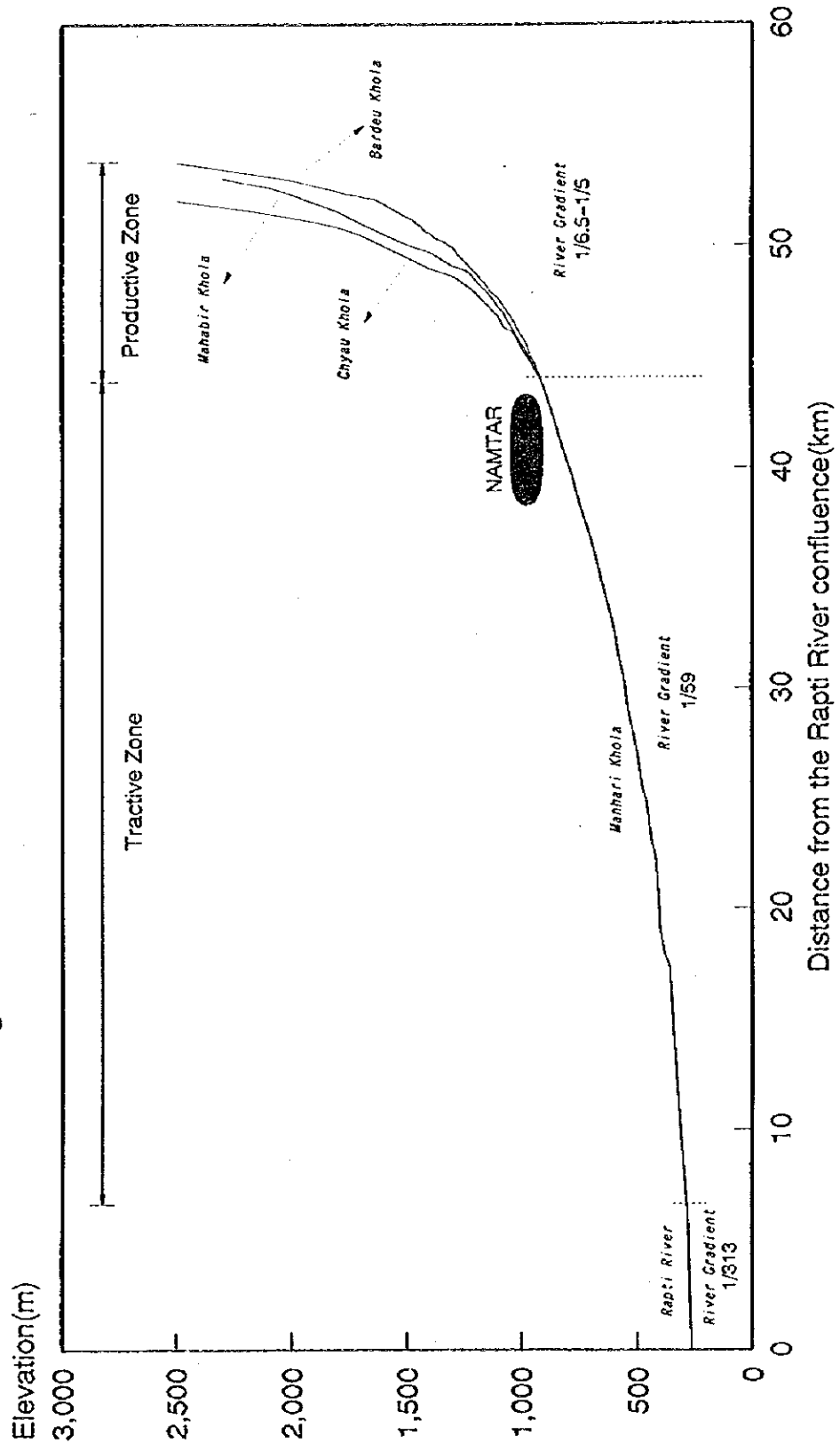
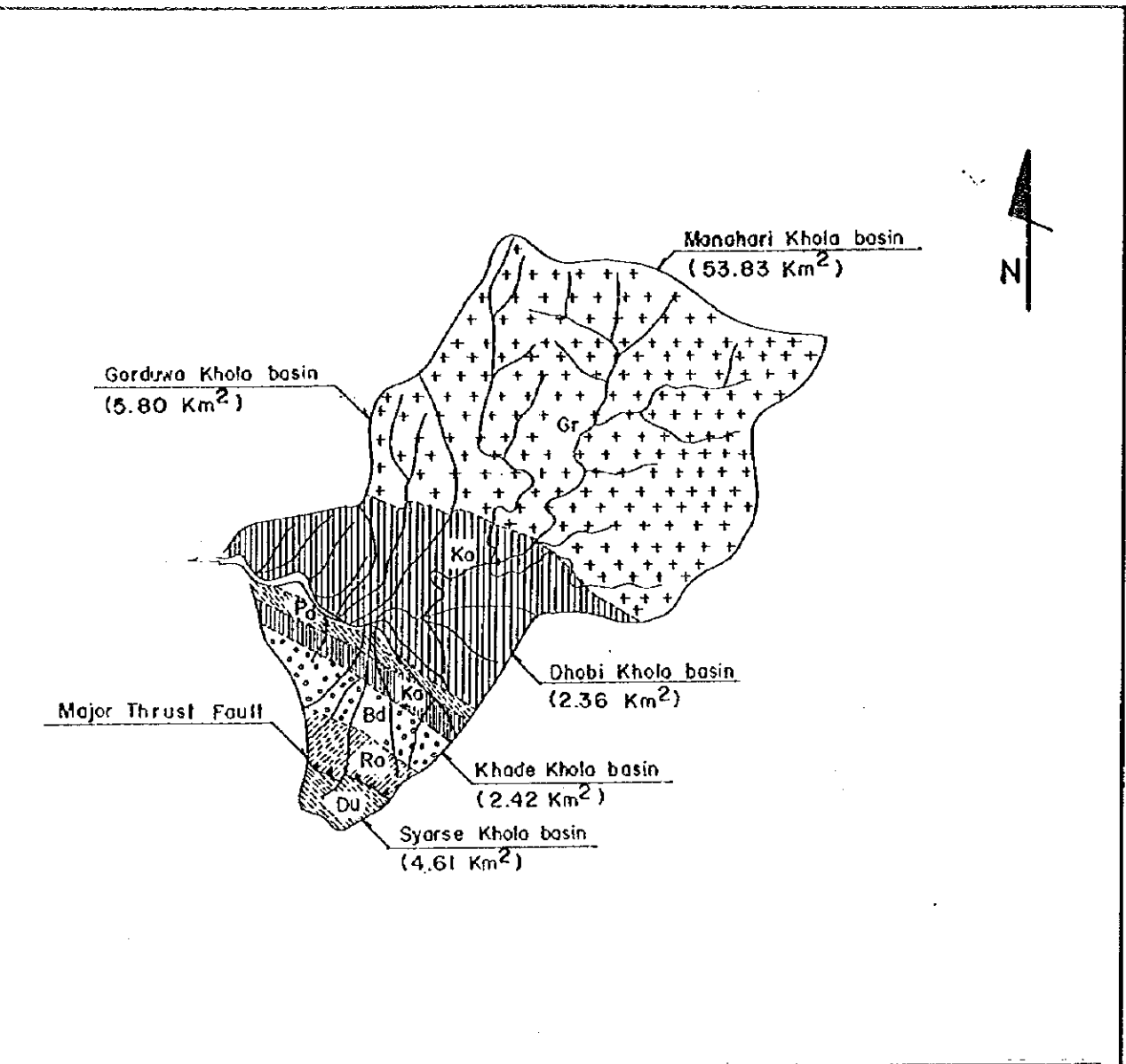


Fig. 3.1.1
River Profile of Manhari Khola

His Majesty's Government of Nepal
 Ministry of Forest and Soil Conservation/Department of Soil Conservation
 THE STUDY ON THE DISASTER PREVENTION PLAN
 FOR SEVERELY AFFECTED AREAS BY 1993 DISASTER
 IN THE CENTRAL DEVELOPMENT REGION OF NEPAL
 JAPAN INTERNATIONAL COOPERATION AGENCY

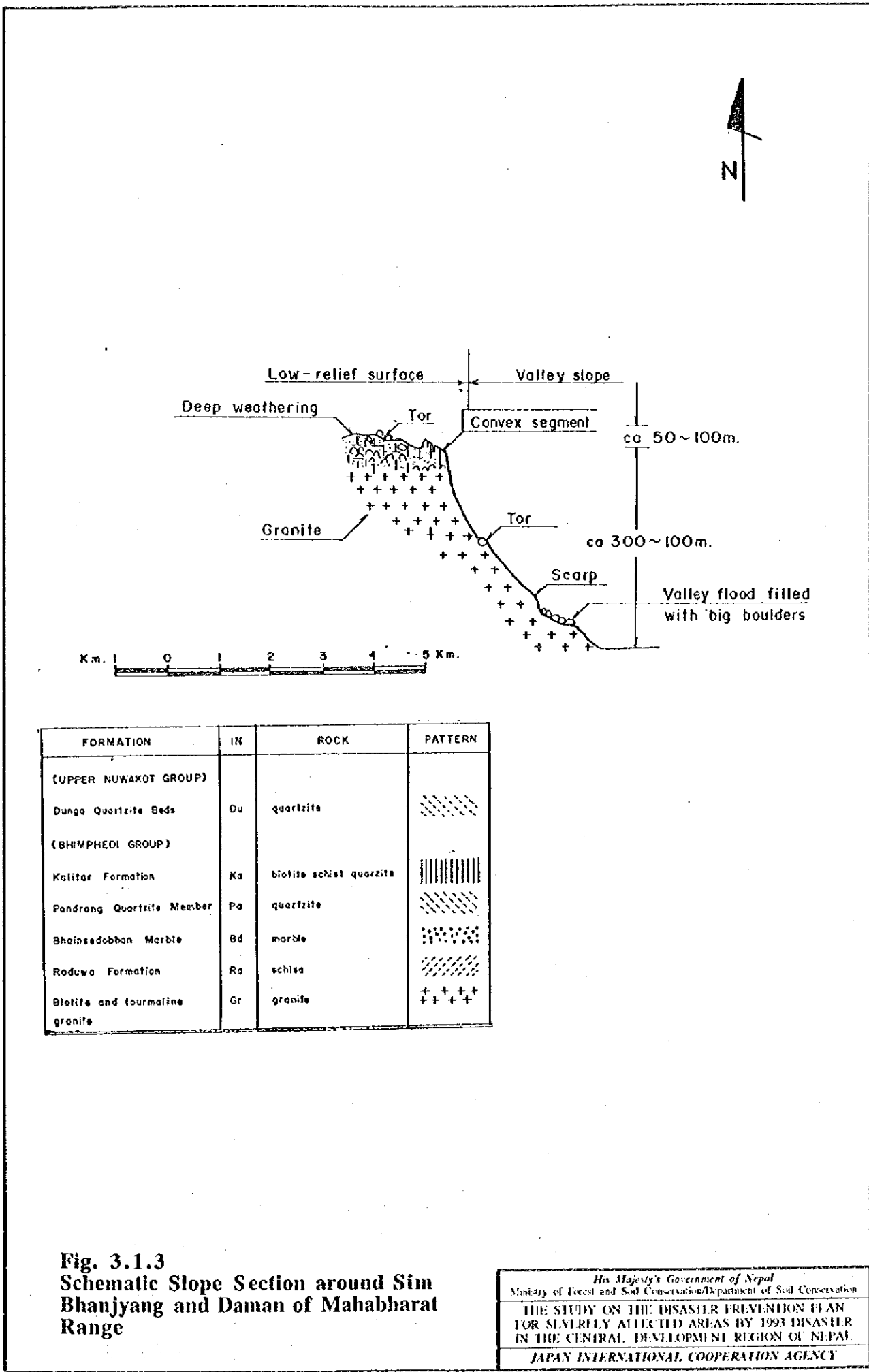


Km. 0 1 2 3 4 5

FORMATION	IN	ROCK	PATTERN
(UPPER NUWAKOT GROUP)			
Dunga Quartzite Beds	Du	quartzite	
(BHIMPHEDI GROUP)			
Kalitar Formation	Ko	biotite schist quartzite	
Pandrang Quartzite Member	Pa	quartzite	
Bhainsadobhan Marble	Bd	marble	
Redwa Formation	Ro	schist	
Biotite and tourmaline granite	Gr	granite	

Fig. 3.1.2
Geological Map of Manhali Catchment Area

His Majesty's Government of Nepal
Ministry of Forest and Soil Conservation/Department of Soil Conservation
THE STUDY ON THE DISASTER PREVENTION PLAN FOR SEVERELY AFFECTED AREAS BY 1993 DISASTER IN THE CENTRAL DEVELOPMENT REGION OF NEPAL.
JAPAN INTERNATIONAL COOPERATION AGENCY



FORMATION	IN	ROCK	PATTERN
(UPPER NUWAKOT GROUP)			
Dungra Quartzite Beds	Du	quartzite	Diagonal hatching (top-left to bottom-right)
(BHIMPHEDI GROUP)			
Kalitar Formation	Ka	biotite schist quartzite	Vertical hatching
Pandrong Quartzite Member	Pa	quartzite	Diagonal hatching (bottom-left to top-right)
Bhainsadobhan Marble	Bd	marble	Stippled pattern
Raduwa Formation	Ra	schist	Diagonal hatching (top-left to bottom-right)
Biotite and tourmaline granite	Gr	granite	Plus sign pattern (+ + + +)

Fig. 3.1.3
Schematic Slope Section around Sim Bhanjyang and Daman of Mahabharat Range

His Majesty's Government of Nepal
 Ministry of Forest and Soil Conservation/Department of Soil Conservation
THE STUDY ON THE DISASTER PREVENTION PLAN FOR SEVERELY AFFECTED AREAS BY 1993 DISASTER IN THE CENTRAL DEVELOPMENT REGION OF NEPAL
JAPAN INTERNATIONAL COOPERATION AGENCY

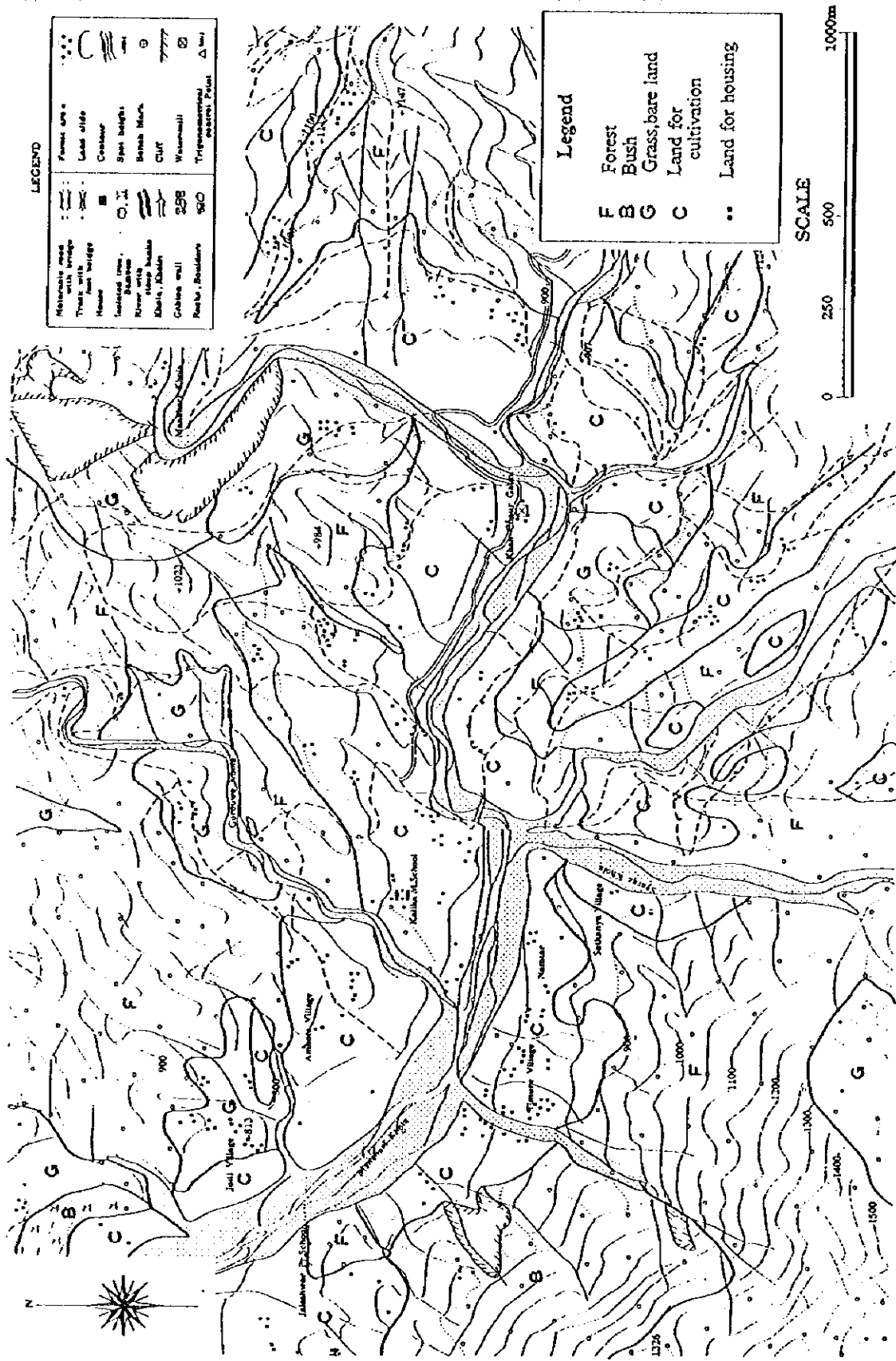


Fig. 3.1.4
Land Use Map for Namtar

His Majesty's Government of Nepal
 Ministry of Forest and Soil Conservation/Department of Soil Conservation
 THE STUDY ON THE DISASTER PREVENTION PLAN
 FOR SEVERELY AFFECTED AREAS BY 1993 DISASTER
 IN THE CENTRAL DEVELOPMENT REGION OF NEPAL
 JAPAN INTERNATIONAL COOPERATION AGENCY



Legend:









-  Slope Failure
-  Landslide (Typical)
-  Landslide (Non-typical)
-  Debris
-  River terrace
-  TH (Upper terrace)
-  TL (Lower terrace)
-  River Floor

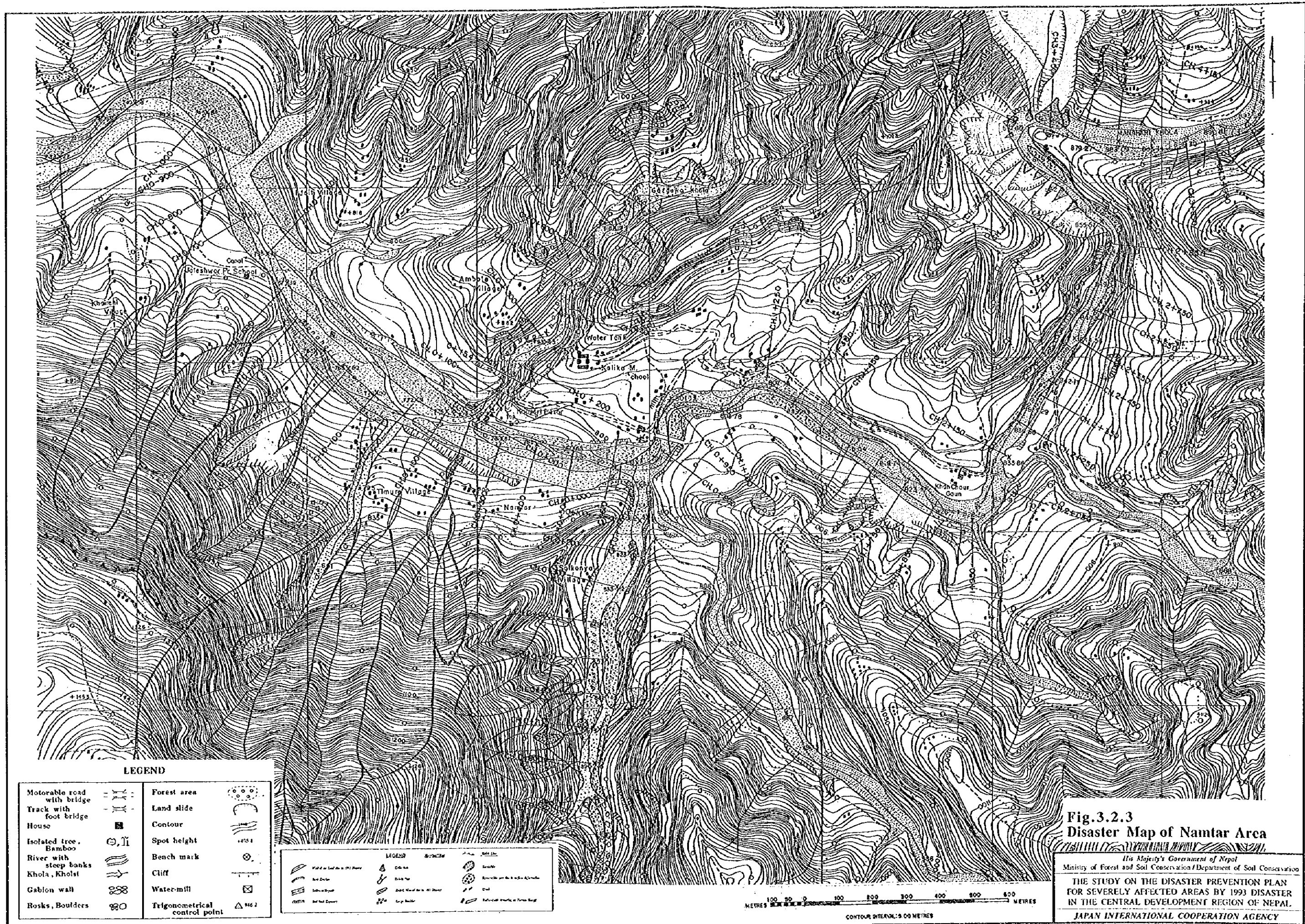
Fig. 3.2.1
Distribution Map of mainly Slope Failure
around Namtar/Tifar

His Majesty's Government of Nepal
 Ministry of Forest and Soil Conservation/Department of Soil Conservation
THE STUDY ON THE DISASTER PREVENTION PLAN
FOR SEVERELY AFFECTED AREAS BY 1993 DISASTER
IN THE CENTRAL DEVELOPMENT REGION OF NEPAL
JAPAN INTERNATIONAL COOPERATION AGENCY



Fig. 3.2.2
Detailed River Conditions at Upstream
Part of Manhari Khola

His Majesty's Government of Nepal
 Ministry of Forest and Soil Conservation/Department of Soil Conservation
THE STUDY ON THE DISASTER PREVENTION PLAN
FOR SEVERELY AFFECTED AREAS BY 1993 DISASTER
IN THE CENTRAL DEVELOPMENT REGION OF NEPAL
 JAPAN INTERNATIONAL COOPERATION AGENCY



I-V River Terrace Surface

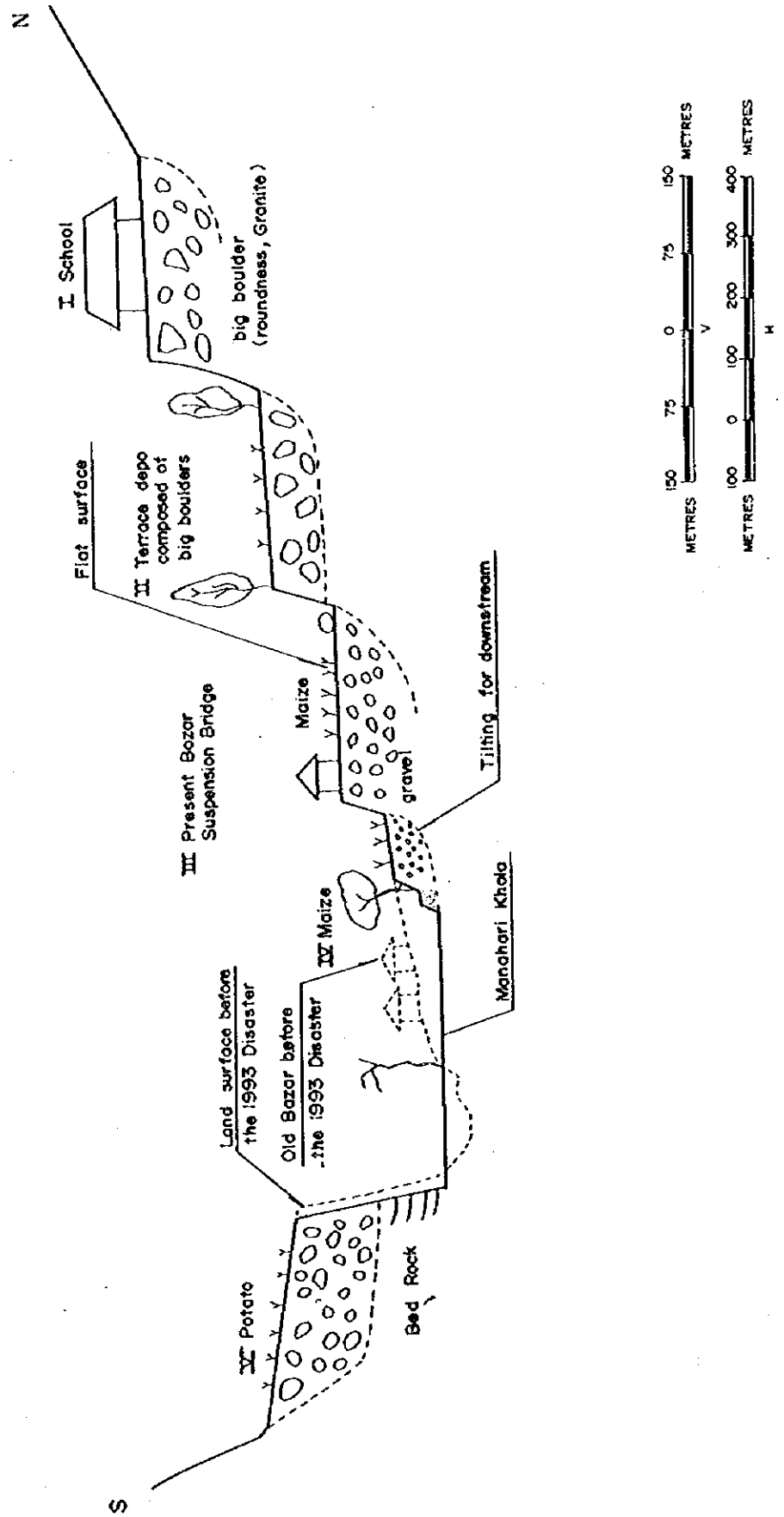
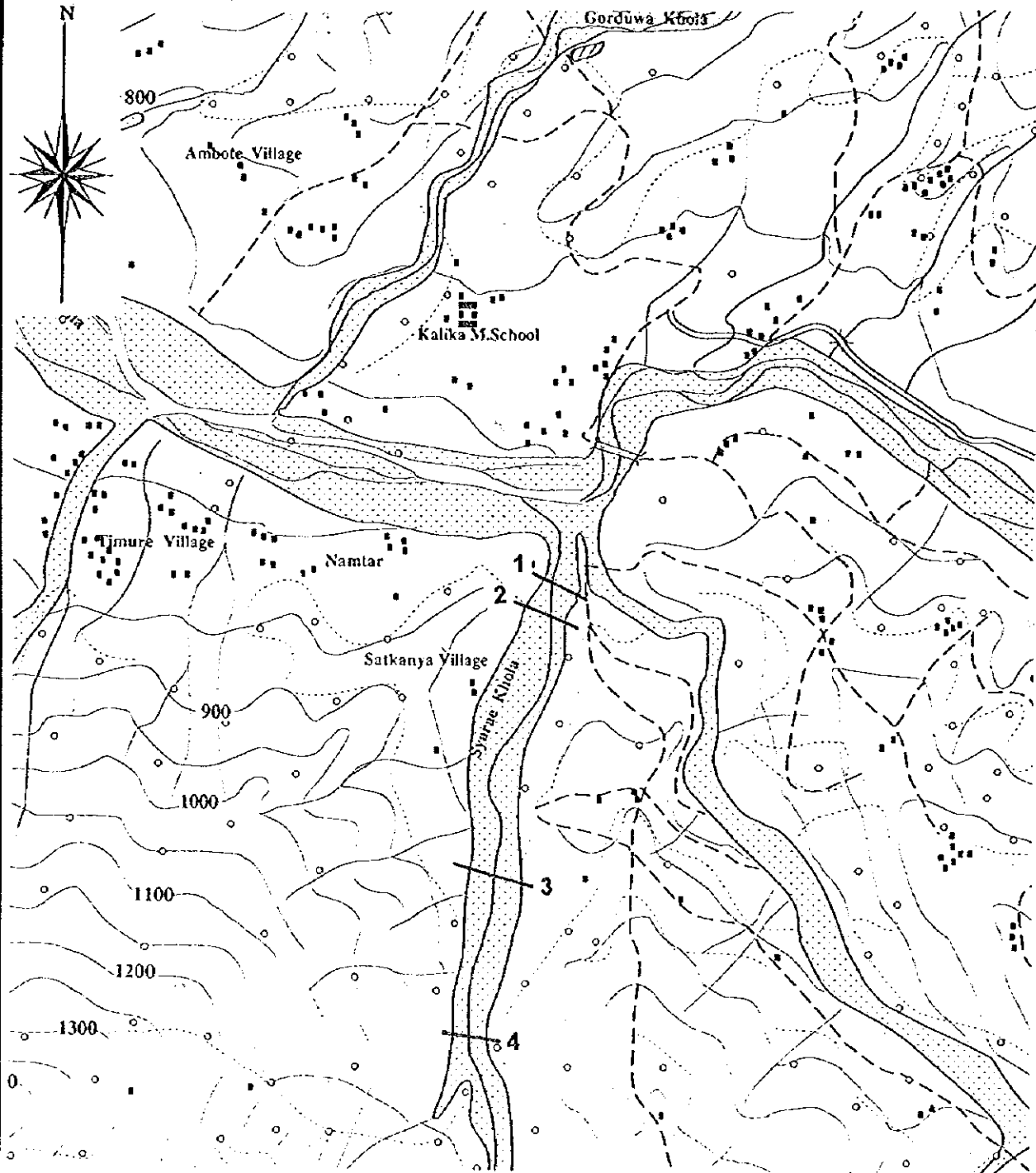


Fig. 3.2.4
Schematic Cross Section of Namtar

His Majesty's Government of Nepal
Ministry of Forest and Soil Conservation/Department of Soil Conservation
THE STUDY ON THE DISASTER PREVENTION PLAN
FOR SEVERELY AFFECTED AREAS BY 1993 DISASTER
IN THE CENTRAL DEVELOPMENT REGION OF NEPAL
JAPAN INTERNATIONAL COOPERATION AGENCY

NAMTAR



LEGEND

Motorable road with bridge	== ==	Forest area	
Track with foot beidge	- -	Land slide	
House	■	Contour	
Isolated tree, Bamboo	○, 卍	Spot height	
River with steep banks		Bench Mark	
Khola, Kholsi		Cliff	
Gabion wall		Water-mill	
Rocks, Boulders		Trigonometrical control Point	

SCALE

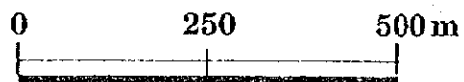


Fig. 3.2.5
Location of Cross Sectional Investigation
for Sarsare Khola

His Majesty's Government of Nepal
 Ministry of Forest and Soil Conservation/Department of Soil Conservation
THE STUDY ON THE DISASTER PREVENTION PLAN
FOR SEVERELY AFFECTED AREAS BY 1993 DISASTER
IN THE CENTRAL DEVELOPMENT REGION OF NEPAL.
JAPAN INTERNATIONAL COOPERATION AGENCY

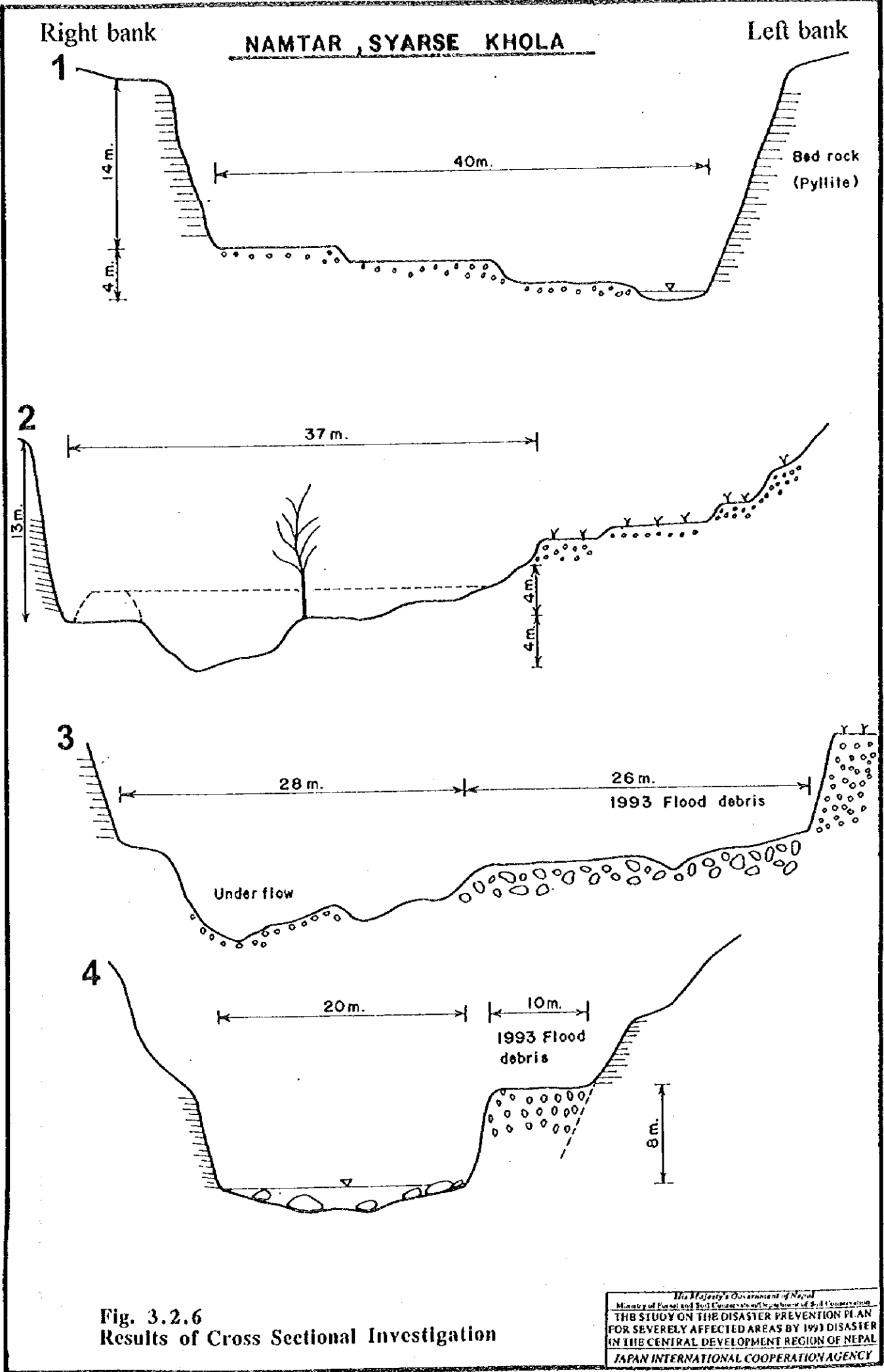


Fig. 3.2.6
Results of Cross Sectional Investigation

His Majesty's Government of Nepal
 Ministry of Forest and Soil Conservation/Department of Soil Conservation
THE STUDY ON THE DISASTER PREVENTION PLAN FOR SEVERELY AFFECTED AREAS BY 1993 DISASTER IN THE CENTRAL DEVELOPMENT REGION OF NEPAL
JAPAN INTERNATIONAL COOPERATION AGENCY

Major landslide in Tilar

* Maximum length	125m
* Maximum width	300m
* Area of landslide	25,625m ²
* Volume of displaced material	102,500m ³

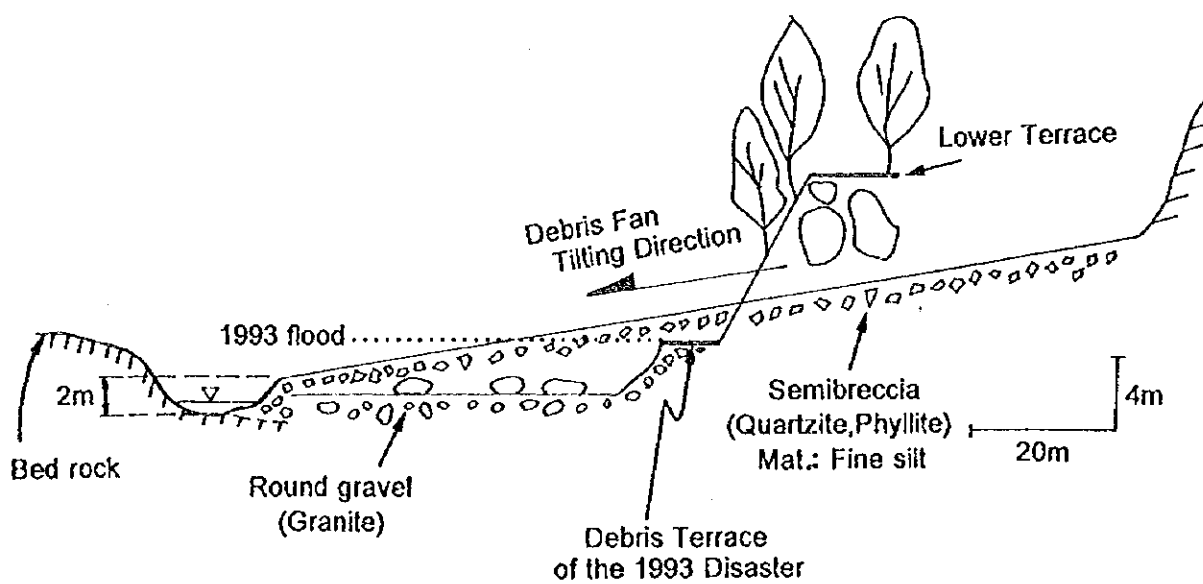


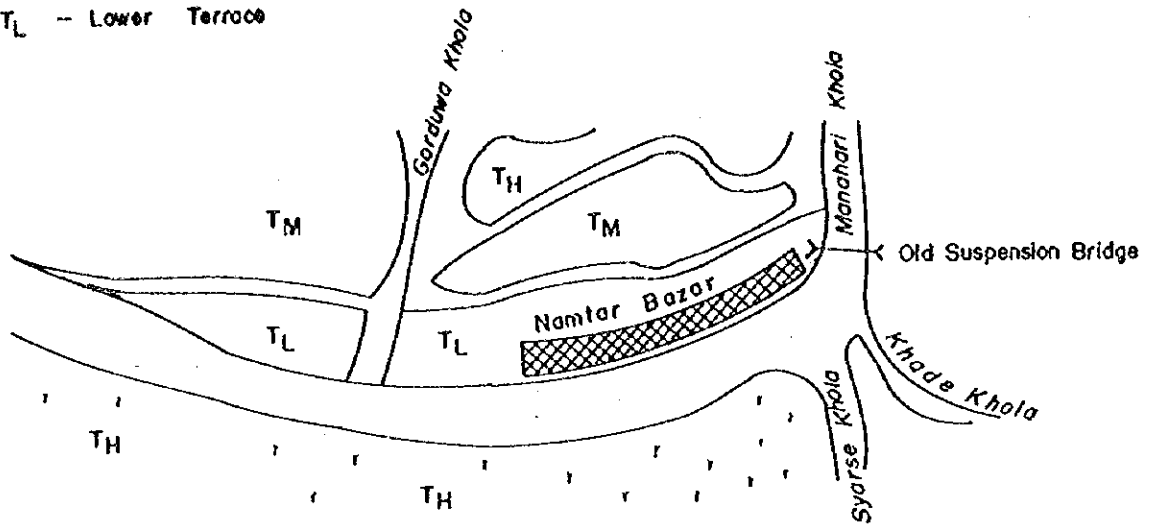
Fig. 3.2.7
Cross Section at the Large Scale Slope Failure
on the Right Bank of Upstream from Namtar

His Majesty's Government of Nepal
 Ministry of Forest and Soil Conservation/Department of Soil Conservation
 THE STUDY ON THE DISASTER PREVENTION PLAN
 FOR SEVERELY AFFECTED AREAS BY 1993 DISASTER
 IN THE CENTRAL DEVELOPMENT REGION OF NEPAL
 JAPAN INTERNATIONAL COOPERATION AGENCY

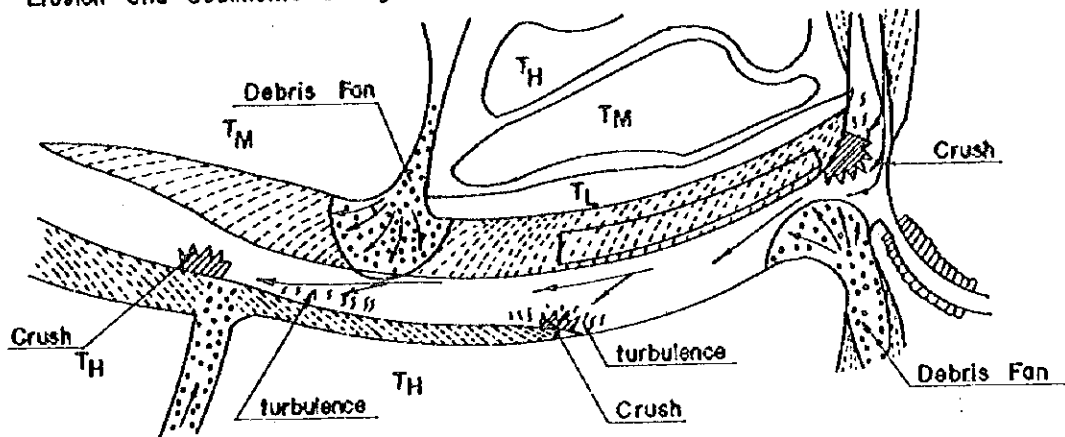
(1) Before the 1993 Disaster

T_H - Higher Terrace

T_L - Lower Terrace



(2) Erosion and Sediments during the 1993 Disaster



(3) Present River Channel

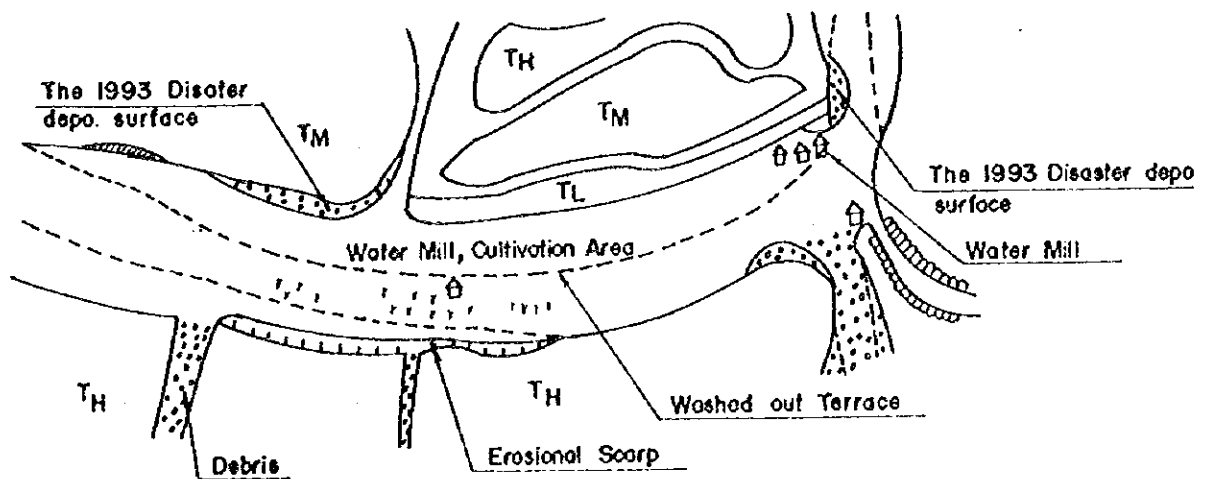


Fig. 3.3.1
Landform Changing Map before and after
1993 Disaster

The Majesty's Government of Nepal
Ministry of Forest and Soil Conservation/Department of Soil Conservation
THE STUDY ON THE DISASTER PREVENTION PLAN
FOR SEVERELY AFFECTED AREAS BY 1993 DISASTER
IN THE CENTRAL DEVELOPMENT REGION OF NEPAL
JAPAN INTERNATIONAL COOPERATION AGENCY

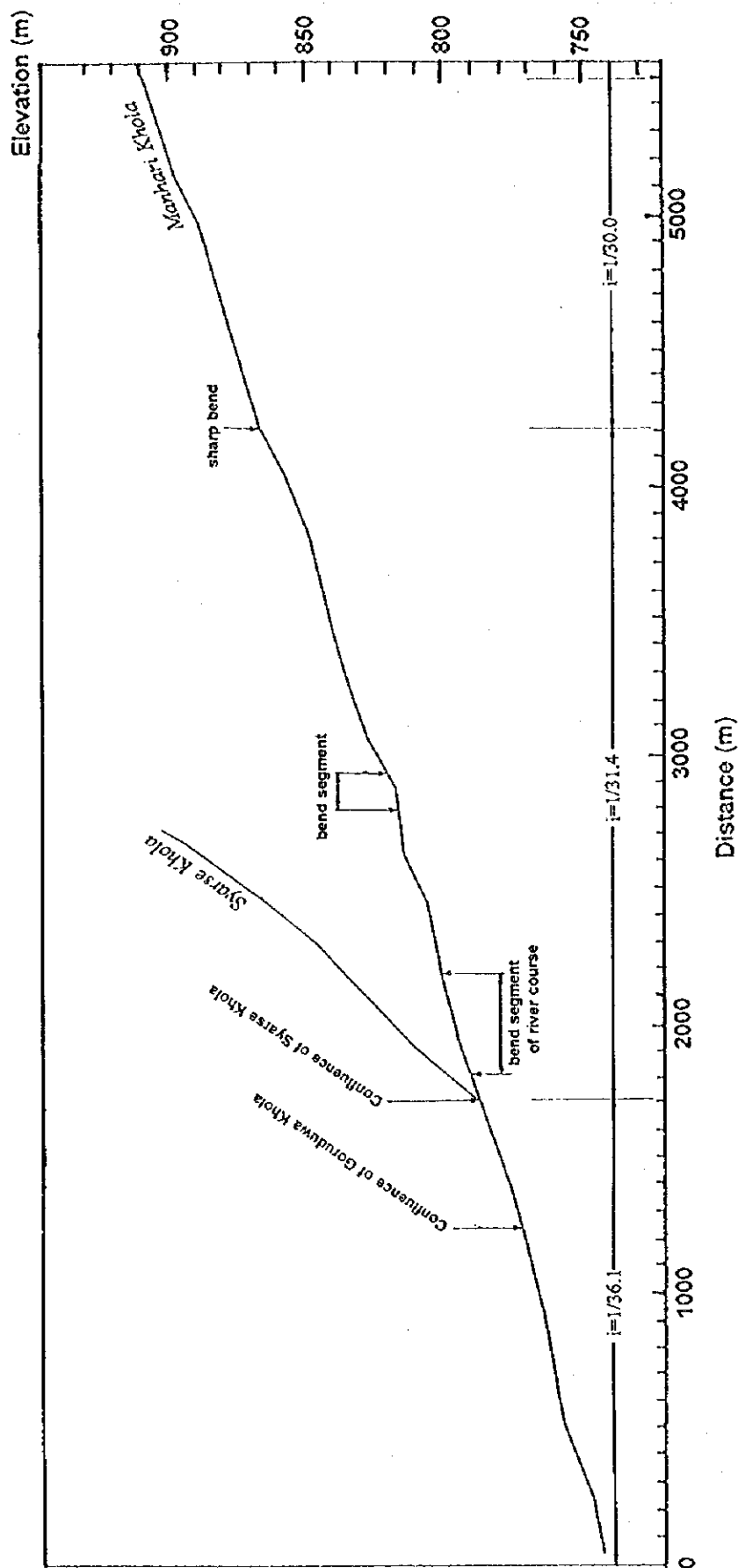


Fig. 3.3.2
Detailed River Profile of
Manhari Khola near Namtar

His Majesty's Government of Nepal
 Ministry of Forest and Soil Conservation/Department of Soil Conservation
THE STUDY ON THE DISASTER PREVENTION PLAN
FOR SEVERELY AFFECTED AREAS BY 1993 DISASTER
IN THE CENTRAL DEVELOPMENT REGION OF NEPAL
JAPAN INTERNATIONAL COOPERATION AGENCY

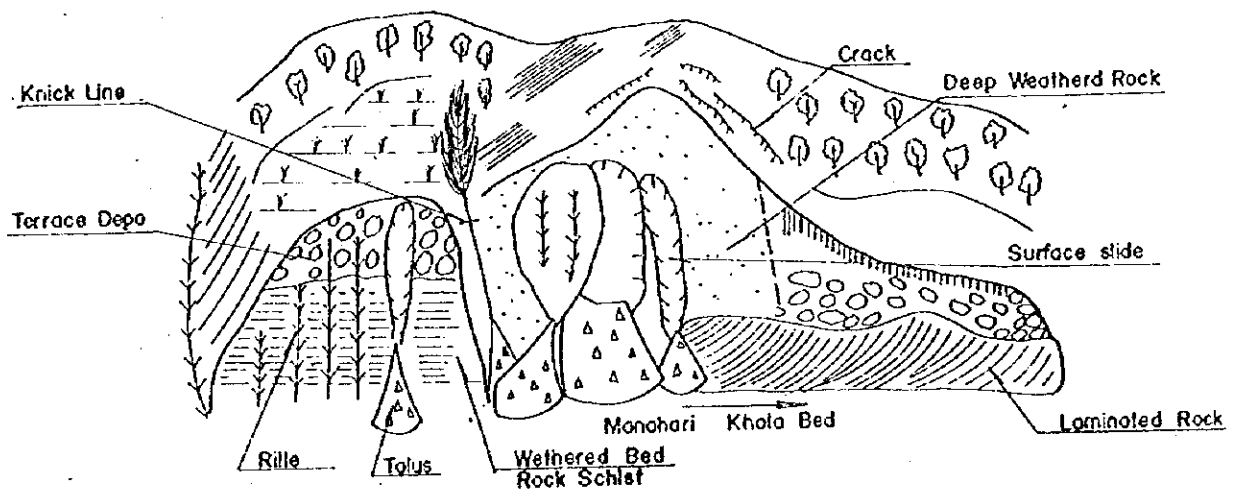


Fig. 3.3.3
Sketch of Bank Scouring in Manhari Khola

His Majesty's Government of Nepal
 Ministry of Forest and Soil Conservation/Department of Soil Conservation
 THE STUDY ON THE DISASTER PREVENTION PLAN
 FOR SEVERELY AFFECTED AREAS BY 1993 DISASTER
 IN THE CENTRAL DEVELOPMENT REGION OF NEPAL
 JAPAN INTERNATIONAL COOPERATION AGENCY

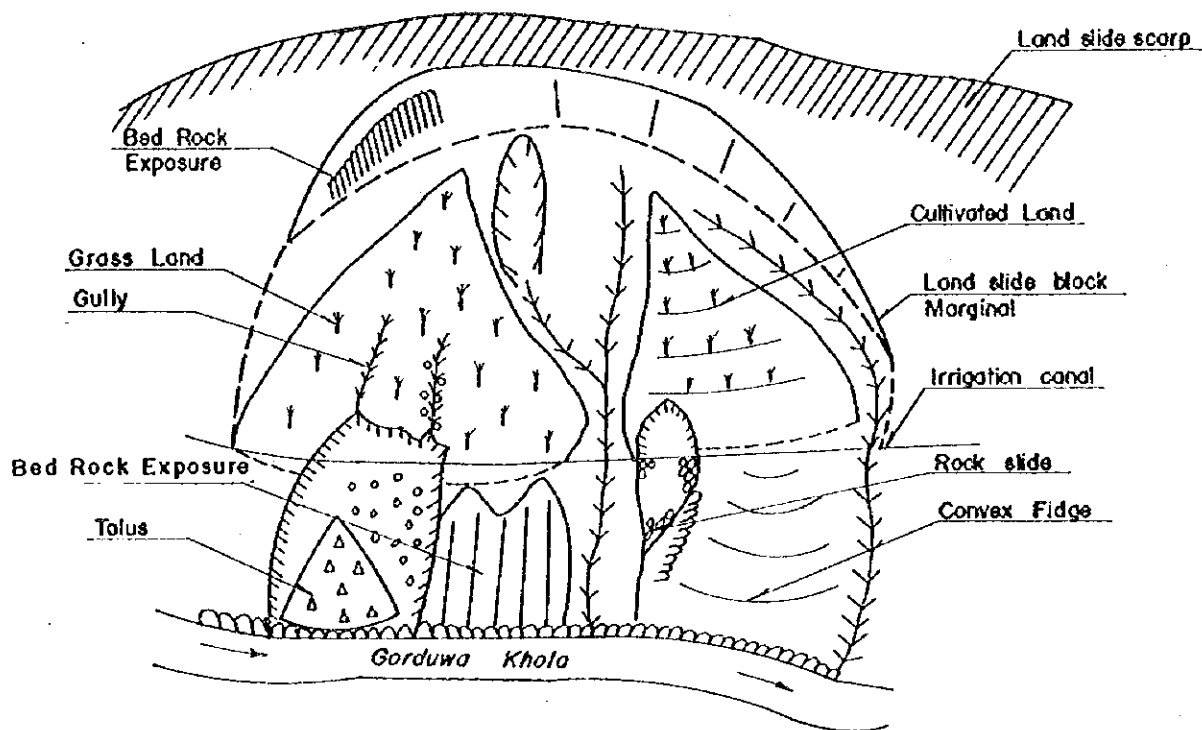


Fig. 3.3.4
Sketch of Landslide and Collapsed
Area in Gorduwa Khola

His Majesty's Government of Nepal
 Ministry of Forest and Soil Conservation/Department of Soil Conservation
 THE STUDY ON THE DISASTER PREVENTION PLAN
 FOR SEVERELY AFFECTED AREAS BY 1973 DISASTER
 IN THE CENTRAL DEVELOPMENT REGION OF NEPAL
 JAPAN INTERNATIONAL COOPERATION AGENCY

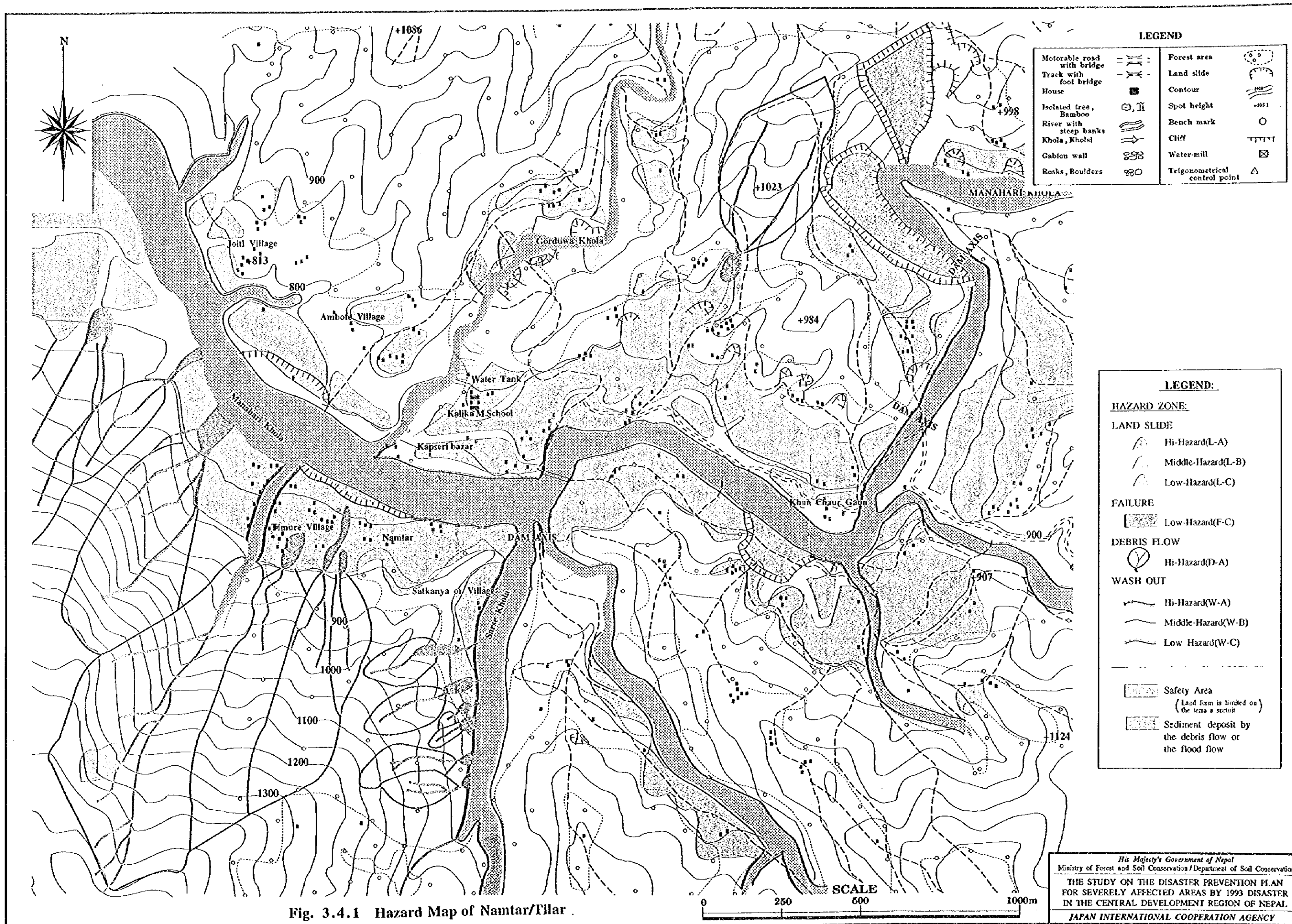


Fig. 3.4.1 Hazard Map of Namtar/Filar

His Majesty's Government of Nepal
 Ministry of Forest and Soil Conservation / Department of Soil Conservation
 THE STUDY ON THE DISASTER PREVENTION PLAN FOR SEVERELY AFFECTED AREAS BY 1993 DISASTER IN THE CENTRAL DEVELOPMENT REGION OF NEPAL
 JAPAN INTERNATIONAL COOPERATION AGENCY

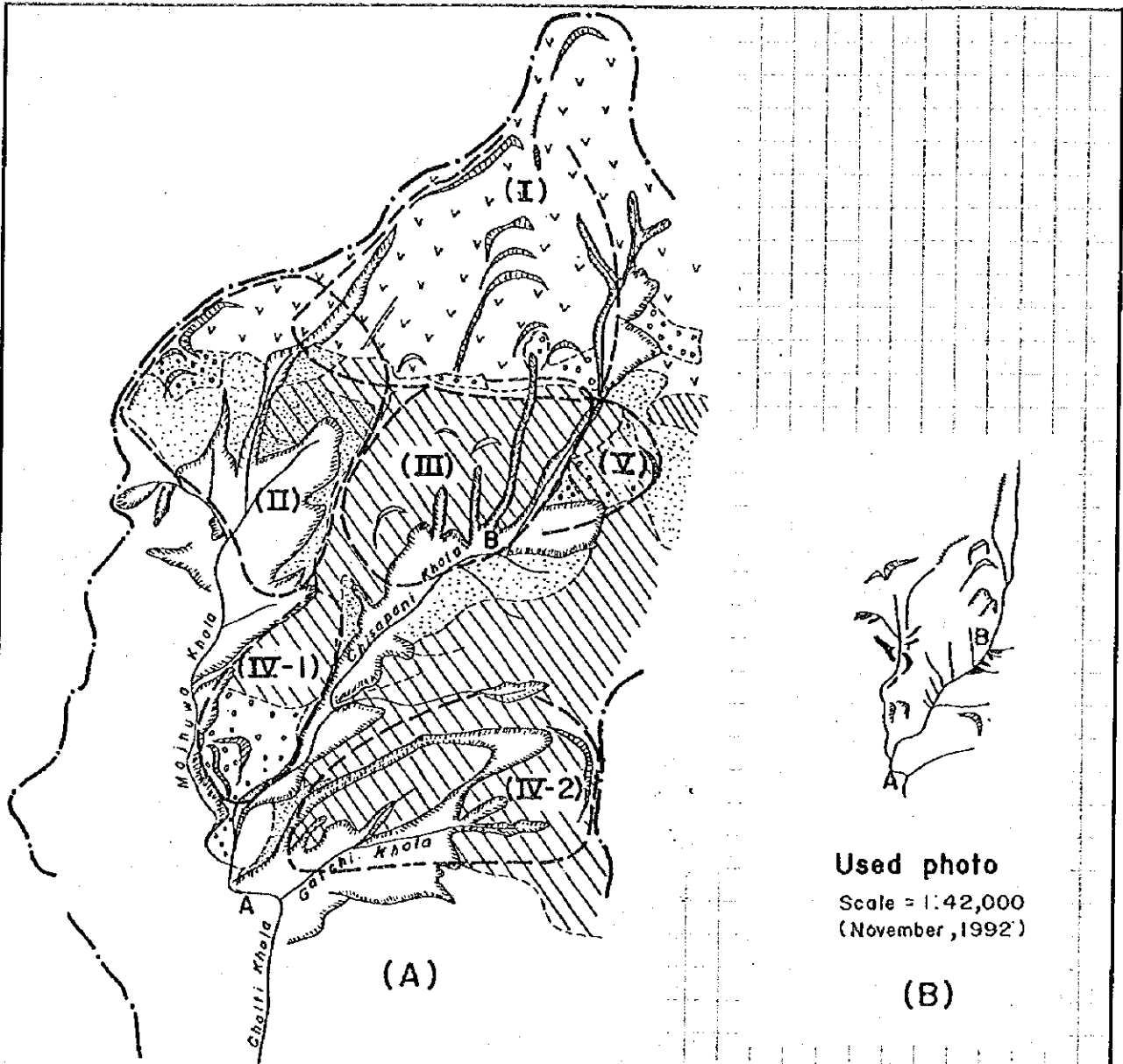


LEGEND:

- | | |
|------------------------------------|---|
| dip slope | dip (I.L: 20°-39°, II.L: 40°-69°, III.L: 70°-89°) |
| landslide due to the 1993 disaster | bad scarp due to land |
| fault | cave |
| photo lineament | straight cliff |
| barrier col | |
| valley | |
| ridge | |

Fig. 4.1.1 Outline of Topography and Geological Structure

With Major's Contribution of Nepal
 Ministry of Forest and Soil Conservation, Department of Soil Conservation
THE STUDY ON THE DISASTER PREVENTION PLAN FOR SEVERELY AFFECTED AREAS BY 1993 DISASTER IN THE CENTRAL DEVELOPMENT REGION OF NEPAL
 JAPAN INTERNATIONAL COOPERATION AGENCY



Used photo : L-4, 9401-23~24
 Scale = 1:20000 enlargement
 (24 March, 1994)

Used photo
 Scale = 1:42,000
 (November, 1992)

LEGEND:

- forest (copse)
- shrub forest (shrubby)
- thin shrubby mixed with bush
- bush, barren land
- farmland
- farmland shifted to barren land due to surface deformation (Not use)
- thin shrubby shifted from farmland due to surface deformation
- divided area
- landslide due to 1993 disaster
- head scarp of landslide
- ridge
- Valley

Fig. 4.1.2
Land Use Pattern by Aero-Photo
Investigation

His Majesty's Government of Nepal
 Ministry of Forest and Soil Conservation/Department of Soil Conservation
THE STUDY ON THE DISASTER PREVENTION PLAN
FOR SEVERELY AFFECTED AREAS BY 1993 DISASTER
IN THE CENTRAL DEVELOPMENT REGION OF NEPAL
 JAPAN INTERNATIONAL COOPERATION AGENCY

