



EXPLANATION		
Qal	Alluvium	QUATERNARY
Oss	Silt and alluvium	
Ols	Silt and loam	
Obf	Alluvial and boulder fans	
Oc	Talus or colluvium	QUATERNARY
Ob	Slump deposits	
Qt	Older alluvial deposits	QUATERNARY
Qt	Older alluvial deposits	
Qtad	Dhok Pathan Formation	Middle Pliocene and younger (?)
Qtan	Nagri Formation	Lower Pleistocene through Lower Pliocene
Tsc	Chariji Formation	Lower Miocene
Tmk	Mitha Khatak Formation	Miocene or Oligocene
Ts	Sakesar Limestone	Lower Eocene
Tn	Namnal Marl	Eocene to Paleocene
Tp	Patala Shale	TERTIARY
Tl	Lockhart Limestone	
TI	Hangu Formation (includes Makarwal coal bed)	CRETACEOUS
Kl	Lumshiwai Formation	
Kjc	Chichali Formation	CRETACEOUS AND JURASSIC
Js	Samana Suk Limestone	JURASSIC
Jsd	Shinawari and Datta Formations, undifferentiated	
Jk	Kingriah Dolomite	TRIASSIC(?)
Tk	Tredian Formation, Khakiara Sandstone Member	
Ttm	Tredian Formation, Land Member and Mianwali Formation, undifferentiated	TRIASSIC
Pzw	Zalkuch Group, Chidru and Wargal Formations, undivided	PERMIAN
Contact		
Dashed where approximately located		
Fault		
Dashed where approximate; dotted where concealed		
Anticline		
Showing trace of axial plane and bearing and plunge of axis		
Syncline		
Showing trace of axial plane		
Strike and dip of beds		
Strike of overturned beds		
Strike and dip of beds		
Based on photography		
Coal adit		

Scale 1:50,000  
1 0 1 2 3 KILOMETERS  
1 0 1 MILE  
Geology mapped 1962 by Walter Danilchik



GEOLOGIC MAP AND SECTIONS OF THE MAKARWAL QUADRANGLE, PAKISTAN