CONTENTS

SUMMARY

1 INTRODUCTION : 1 - 17
1.1 Preamble
1.2 Hydrogeologic - Geophysical Conditions and problems
1.3 Groundwater Management
1.4 Development of Science of Groundwater: An overview
1.5 Studies on Groundwater in Hard Rocks
1.6 Geographical Set Up
1.7 Aims and objectives
1.8 Approach to the Study
1.9 Sources of Data

2 REMOTE SENSING STUDIES : 18 - 33
2.1 Introduction
2.2 Remote Sensing Satellites
2.3 Indian Remote Sensing Satellites
2.4 Review of literature
2.5 Data Used
2.5.1 Satellite Data
2.5.2 Aerial Data
2.5.3 Collateral Data
2.6 Image/ Data interpretation
2.7 Results
2.8 Lineament analysis
2.9 Fractures/ fracture traces
2.10 Lithologic discrimination
2.11 Soils
2.12 Geomorphology
2.13 Land Use / Land Cover
2.14 Irrigated croplands

3 GEOLOGY OF THE AREA : 34 - 47
3.1 Introduction
3.2 Geology of North Karnataka
3.3 Geology of Sasive Halla Basin
3.3.1 Migmatitic Gneisses
3.3.2 Granites
3.3.3 Cave- temple Arenites
3.3.4 Dolerite dykes
3.3.5 Quartz and pegmatitic veins
3.4 Tectonics (Structures)
3.5 Weathering
3.5.1 General features
3.5.2 Weathering in Sasive Halla Basin
3.6 Soils
3.7 Weathered layer profile
3.8 Extent and Thickness of Weathered layer
4 GEOMORPHOLOGY : 48 - 59

4.1 Introduction
4.2 Physiography
4.3 Drainage System
4.4 Morphometric Analysis
4.4.1 Stream order
4.4.2 Bifurcation ratio
4.4.3 Stream Length
4.4.4 Area of Drainage basin
4.4.5 Drainage Density
4.4.6 Stream Frequency
4.4.7 Slope Analysis
4.5 Landforms
4.5.1 Denudational Hills
4.5.2 Mesa and Butte
4.5.3 Ridges and Inselbergs
4.5.4 Dissected Pediment
4.5.5 Bajada / Buried Pediment
4.5.6 Pediplain
4.5.7 Colluvium

5 GEOELECTRICAL INVESTIGATIONS : 60 - 74

5.1 Introduction
5.2 Resistivity methods
5.3 Electrical Anisotropy
5.4 Resistivity Investigations in Sasive Halla Basin
5.5 Results
5.5.1 Comparison of Geoelectric and Lithological logs of borewells
5.6 Radial Soundings
5.6.1 Results and Discussion
5.7 Geoelectric Sections

6 HYDROGEOLOGY : 75 - 90

6.1 Introduction
6.2 Well Inventory
6.3 Groundwater Occurrence
6.4 Test Drilling
6.5 Aquifer Characteristics
6.5.1 Flow through Fractured media
6.5.2 Analysis of pump test data
6.6 Tests in Sasive Halla basin
6.6.1 Procedure adopted
6.7 Results

7 QUALITY OF GROUND WATER : 91 - 115

7.1 Introduction
7.2 Methodology
7.3 Results
7.3.1 pH