REPUBLIC OF KENYA




MINISTRY OF WATER DEVELOPMENT

# MERU

## WATER RESOURCES ASSESSMENT STUDY

## APPENDICES

**June 1991**

WATER RESOURCES
ASSESSMENT SECTION
NAIROBI, KENYA

WRAP
WATER RESOURCES
ASSESSMENT & PLANNING

TNO – INSTITUTE
OF APPLIED GEOSCIENCE
DELFT, THE NETHERLANDS

# APPENDICES

## TABLE OF CONTENTS

APPENDIX 3 - GEOPHYSICAL SURVEY

APPENDIX 4 - DATA ON RAINFALL, EVAPORATION AND STREAMFLOW

APPENDIX 5 - DATA ON BOREHOLES AND SPRINGS, CHEMISTRY OF SPRINGS AND WELLS, WELL TESTS AND DRINKING WATER STANDARDS

- HYDROGEOLOGICAL MAP - PLATE 5.1

Note:

*The numbers of the Appendices correspond with the respective numbers of the chapters of the Water Resources Assessment Study - Main Report.*

# APPENDIX 3

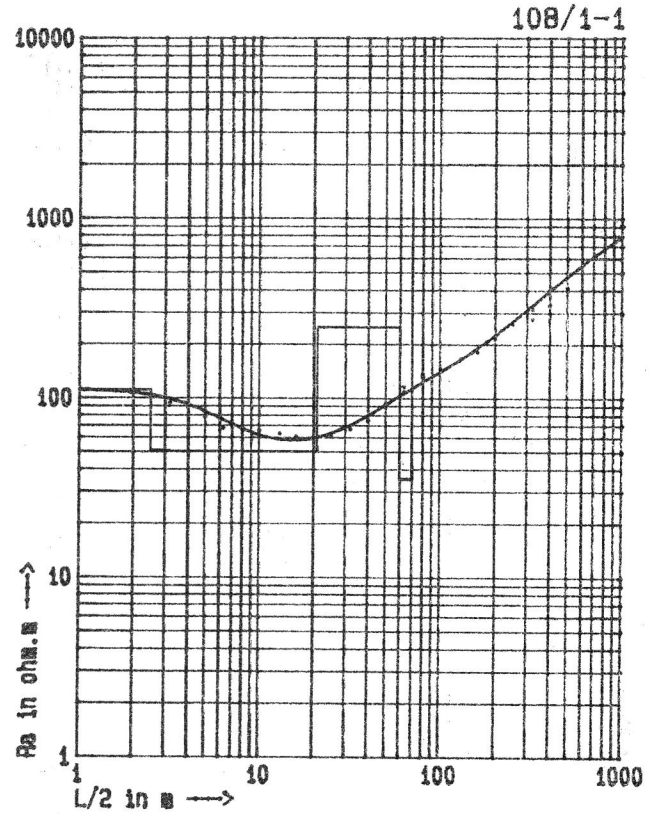
## GEOPHYSICAL SURVEY

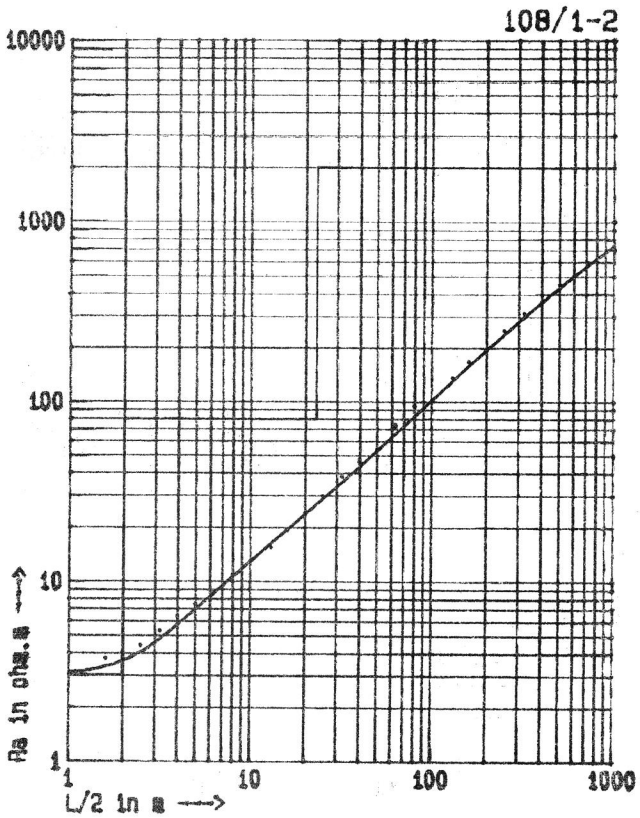
# APPENDIX 3

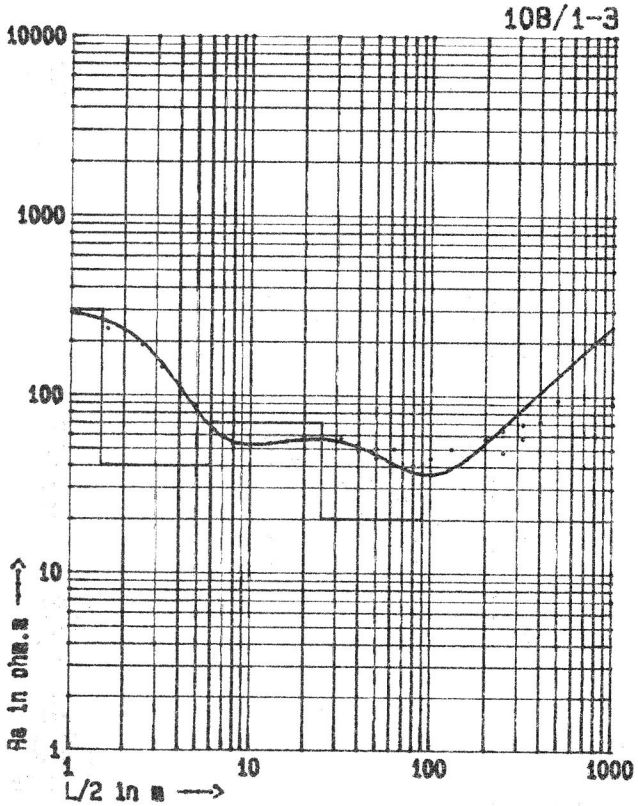
## GEOPHYSICAL SURVEY

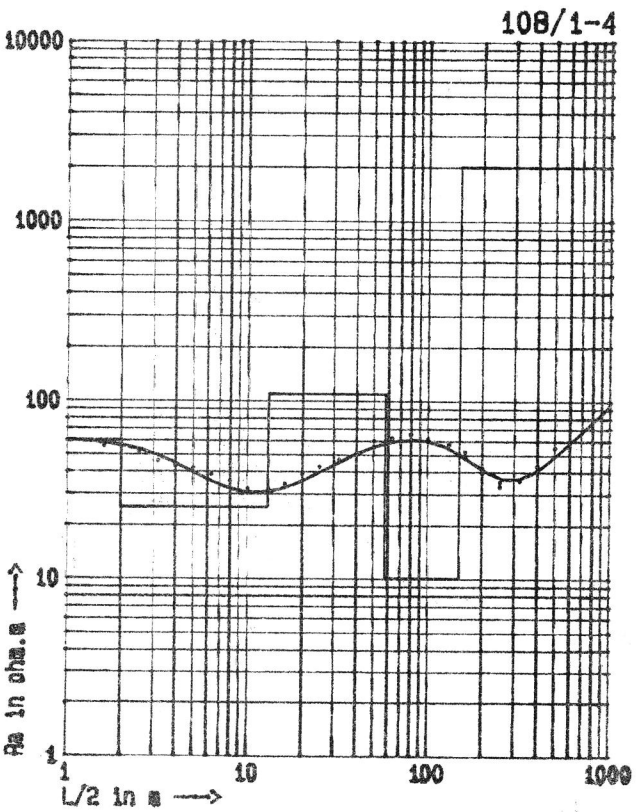
3.1 Resistivity Soundings

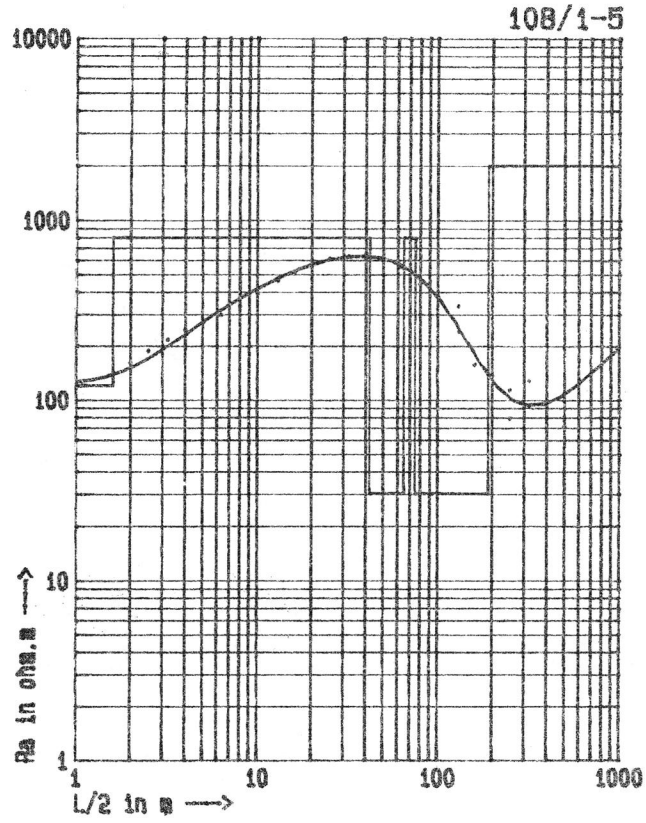
3.2 Depth to the Unweathered Basement
*(map contained in pocket)*

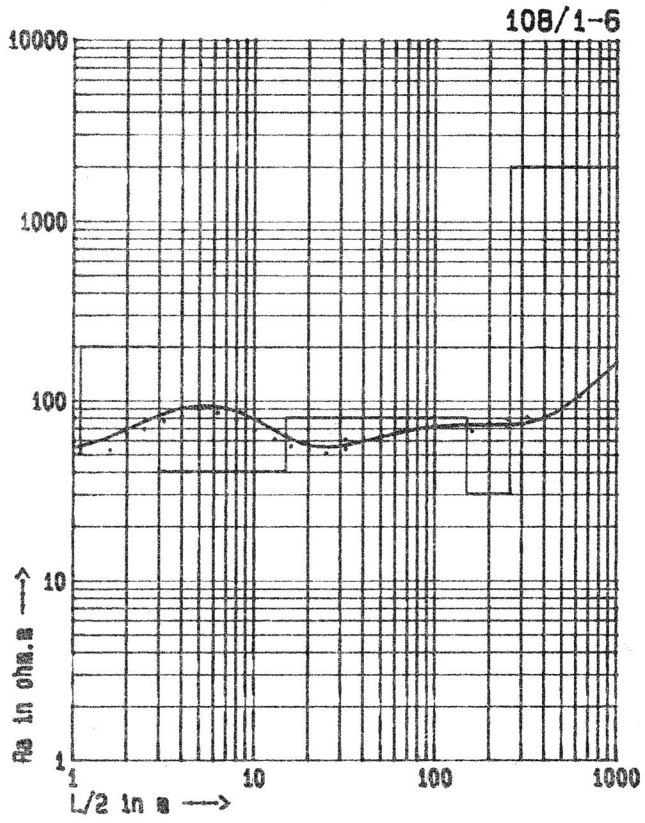

108/1-1
10000
1000
100
10
1
Ra in ohm.m ⟶
1
10
100
1000
L/2 in m ⟶

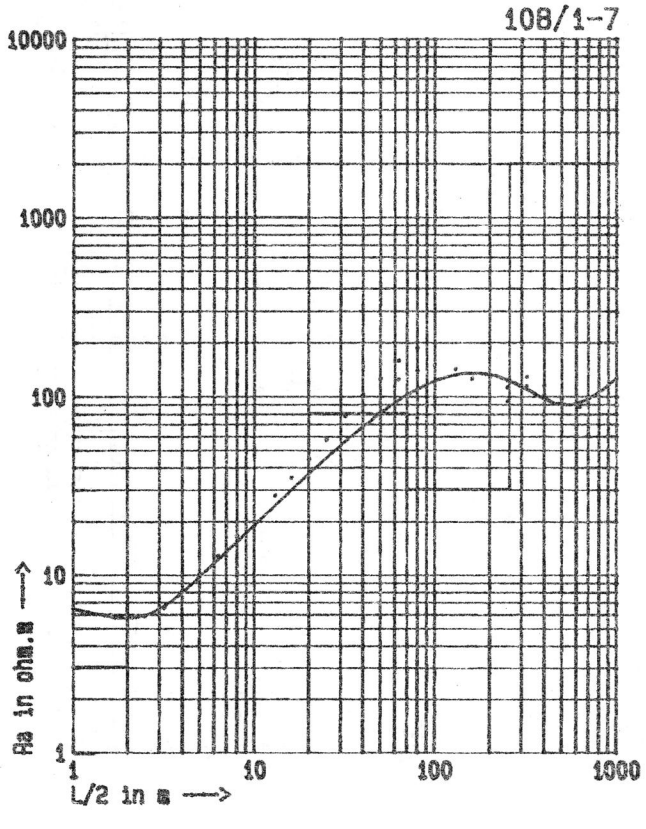

108/1-2
10000
1000
100
10
1
Ra in ohm.m ⟶
1
10
100
1000
L/2 in m ⟶

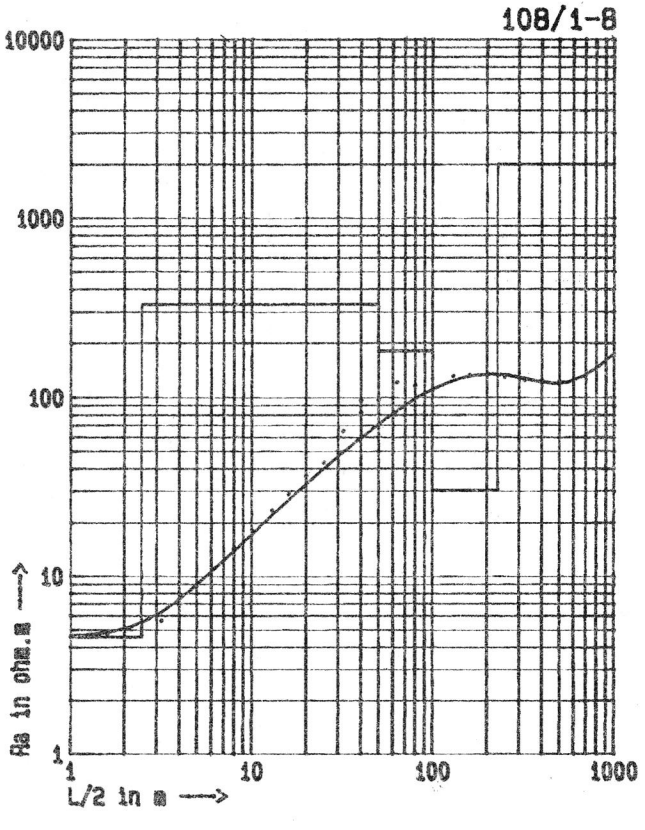

108/1-3
10000
1000
100
10
1
Ra in ohm.m ⟶
1
10
100
1000
L/2 in m ⟶

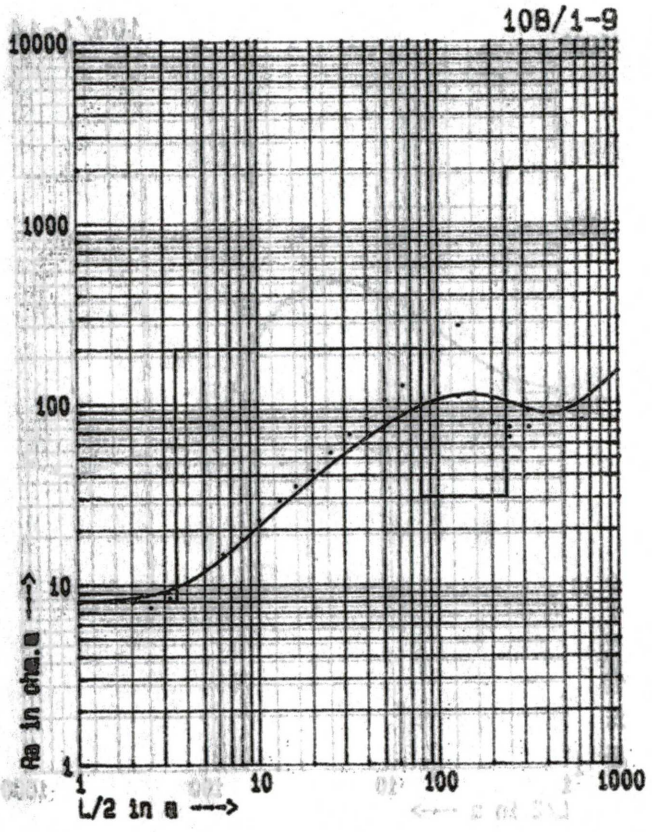

108/1-4
10000
1000
100
10
1
Ra in ohm.m ⟶
1
10
100
1000
L/2 in m ⟶

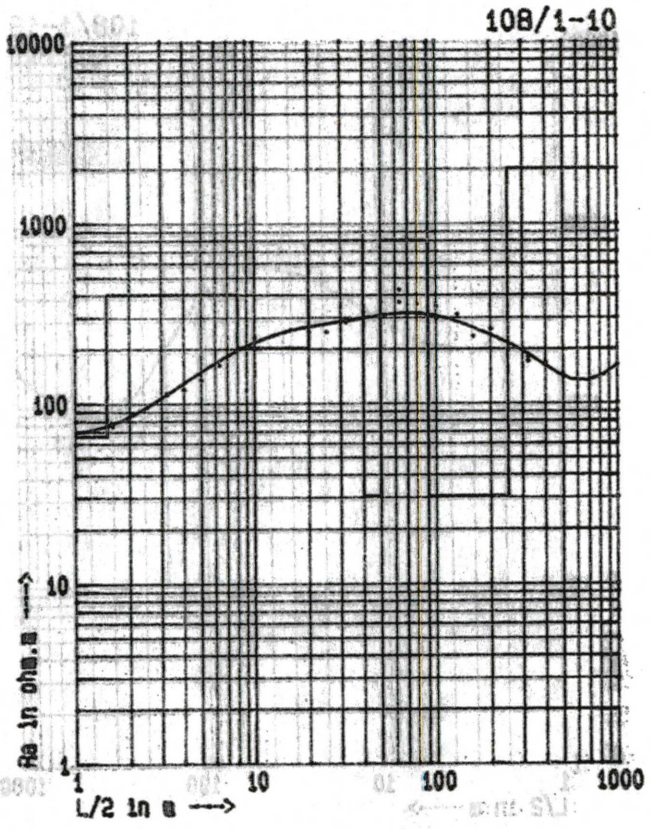

108/1-5
10000
1000
100
10
1
Ra in ohm.m ⟶
1
10
100
1000
L/2 in m ⟶

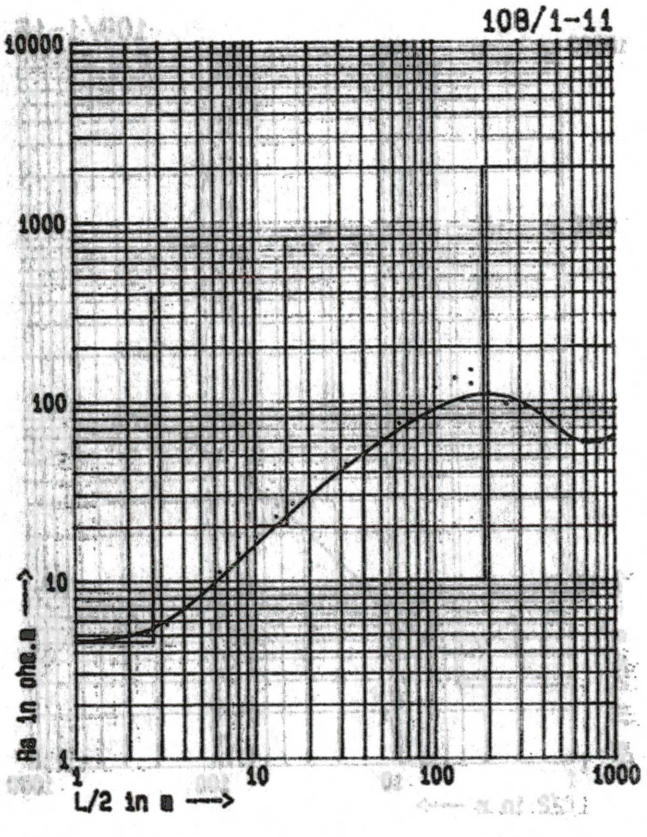

108/1-6
10000
1000
100
10
1
Ra in ohm.m ⟶
1
10
100
1000
L/2 in m ⟶

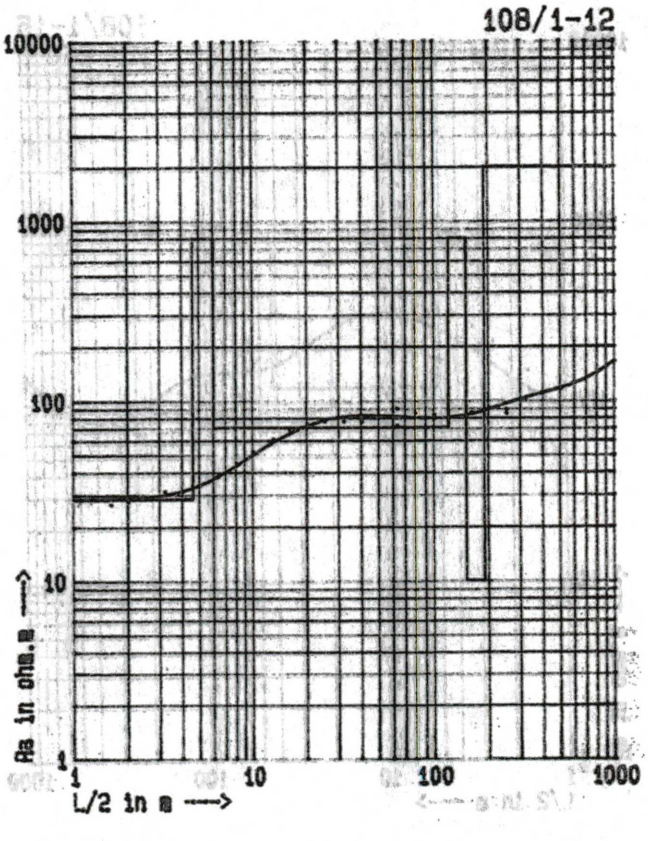

108/1-7
10000
1000
100
10
1
Ra in ohm.m ⟶
1
10
100
1000
L/2 in m ⟶

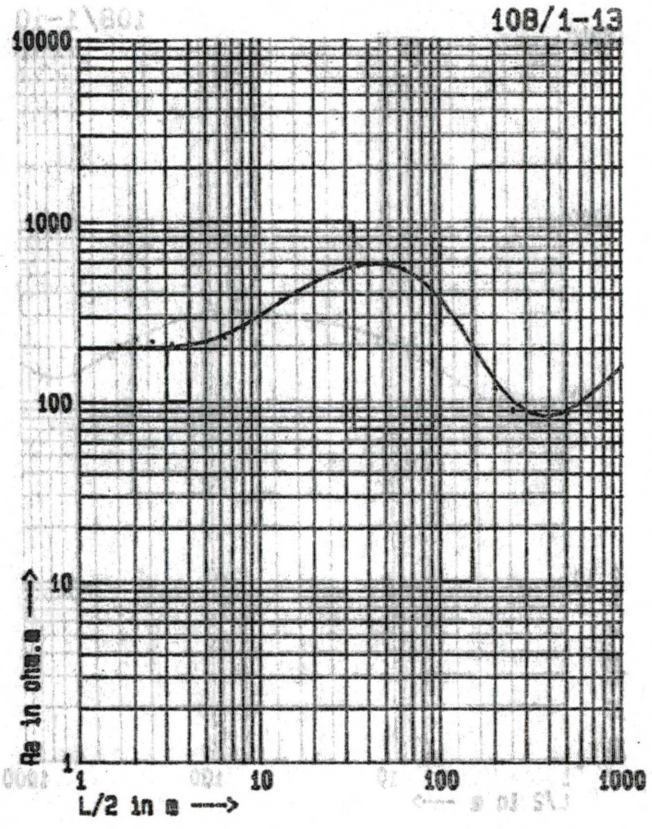

108/1-8
10000
1000
100
10
1
Ra in ohm.m ⟶
1
10
100
1000
L/2 in m ⟶

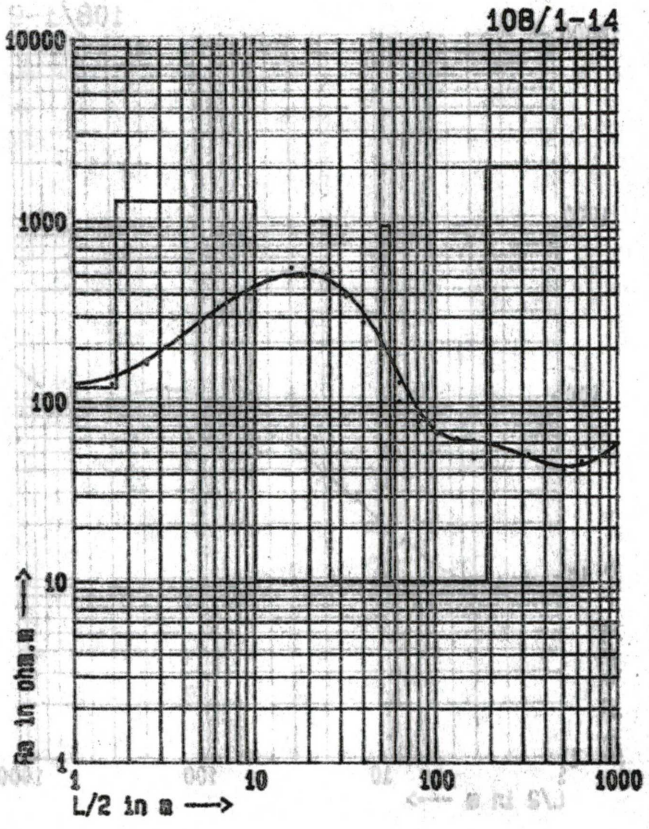

108/1-9
10000
1000
100
10
1
Ra in ohm.m ⟶
1
10
100
1000
L/2 in m ⟶

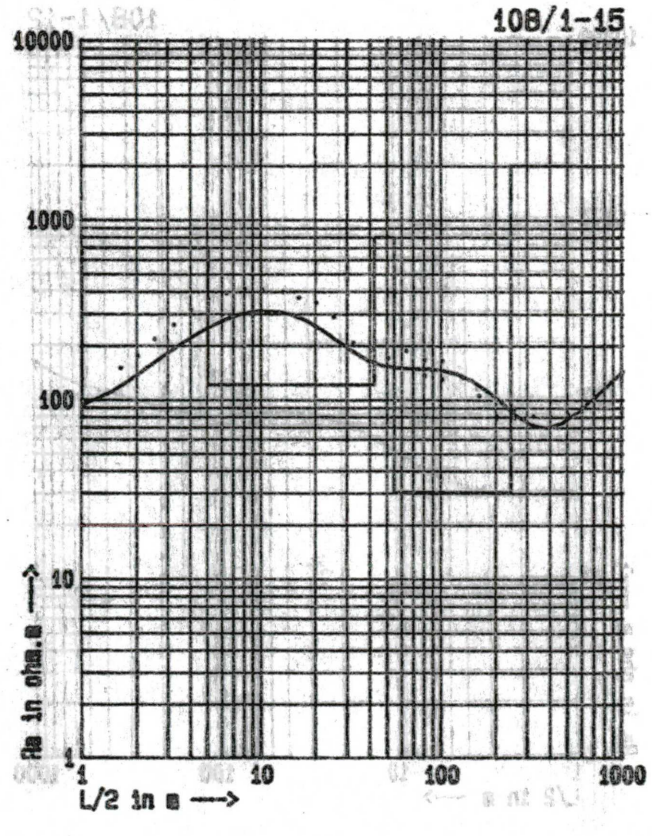

108/1-10
10000
1000
100
10
1
Ra in ohm.m ⟶
1
10
100
1000
L/2 in m ⟶

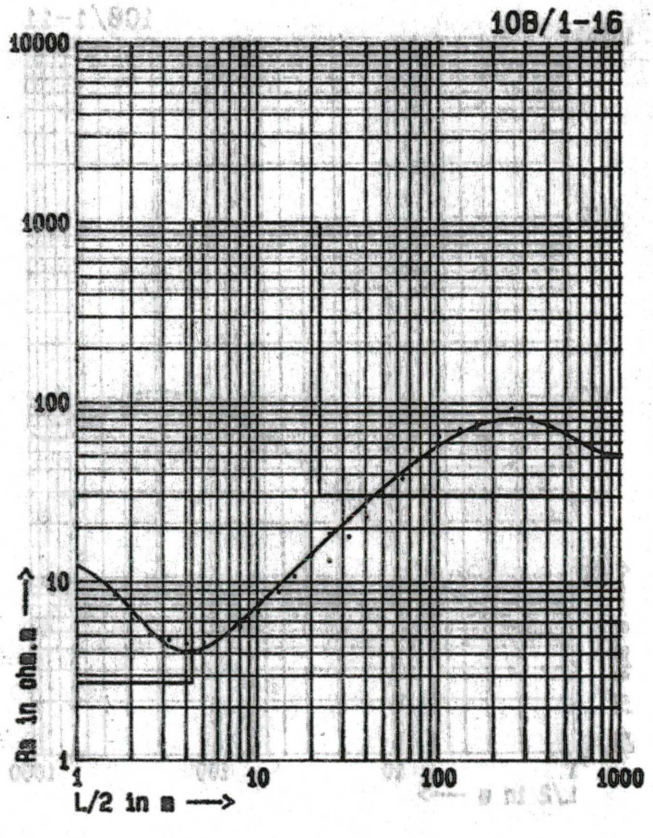

108/1-11
10000
1000
100
10
1
Ra in ohm.m ⟶
1
10
100
1000
L/2 in m ⟶

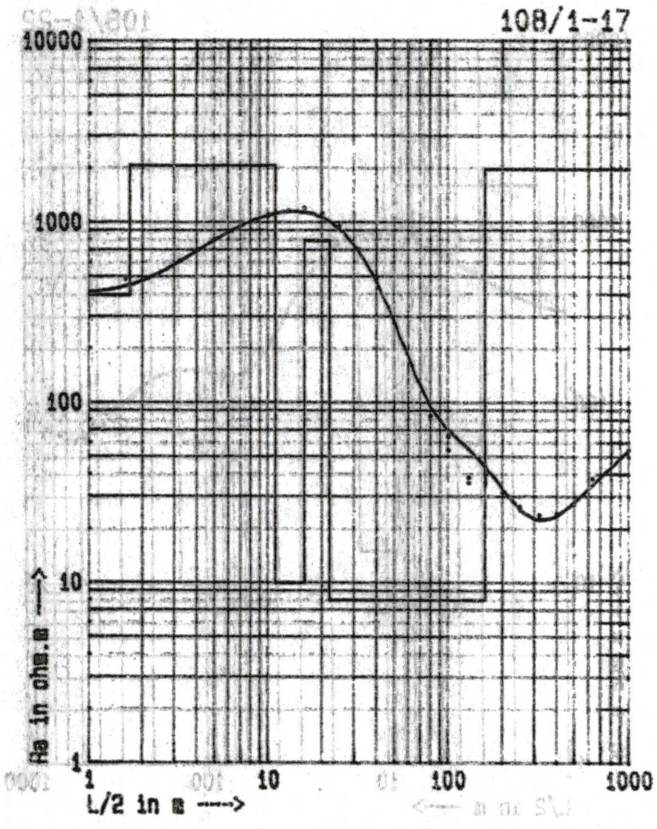

108/1-12
10000
1000
100
10
1
Ra in ohm.m ⟶
1
10
100
1000
L/2 in m ⟶

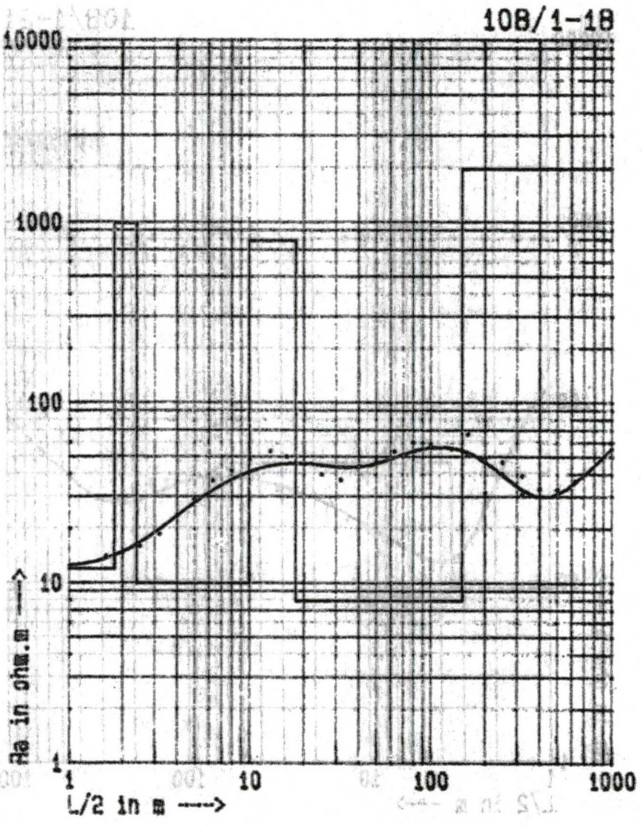

108/1-13
10000
1000
100
10
1
Ra in ohm.m ⟶
1
10
100
1000
L/2 in m ⟶

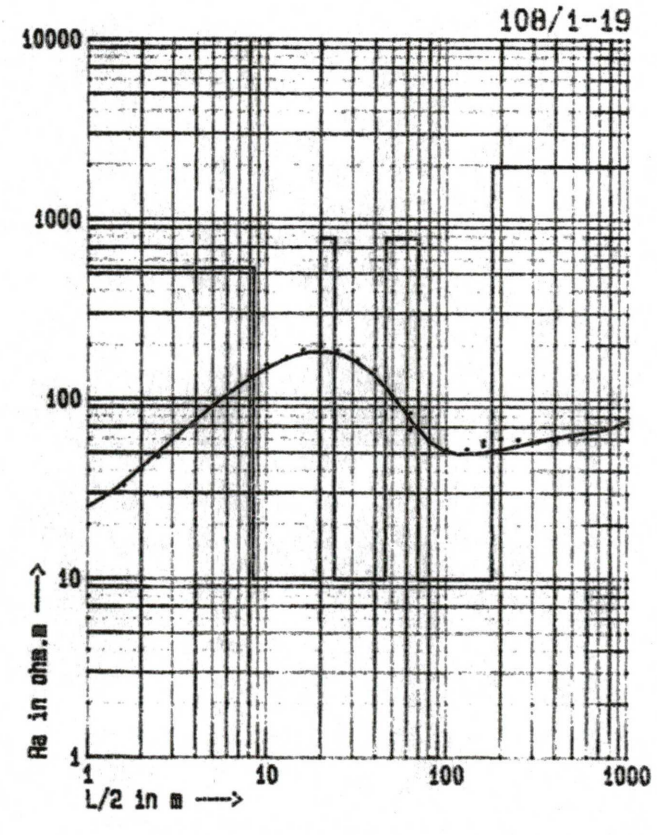

108/1-14
10000
1000
100
10
1
Ra in ohm.m ⟶
1
10
100
1000
L/2 in m ⟶

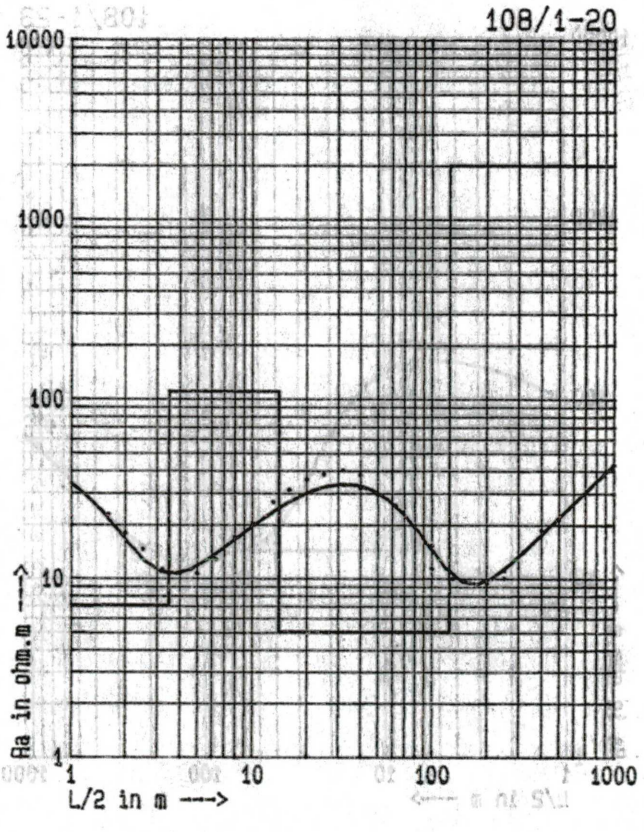

108/1-15
10000
1000
100
10
1
Ra in ohm.m ⟶
1
10
100
1000
L/2 in m ⟶

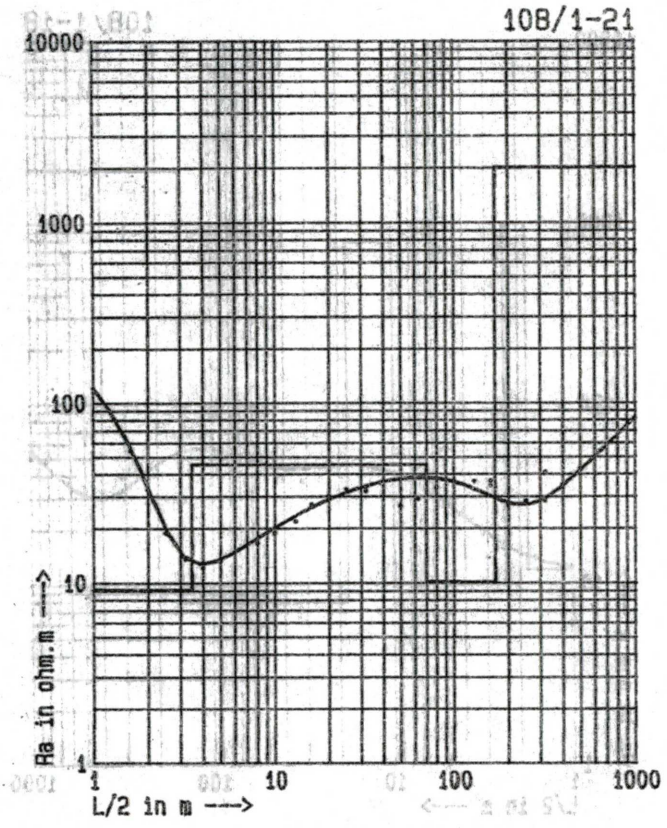

108/1-16
10000
1000
100
10
1
Ra in ohm.m ⟶
1
10
100
1000
L/2 in m ⟶

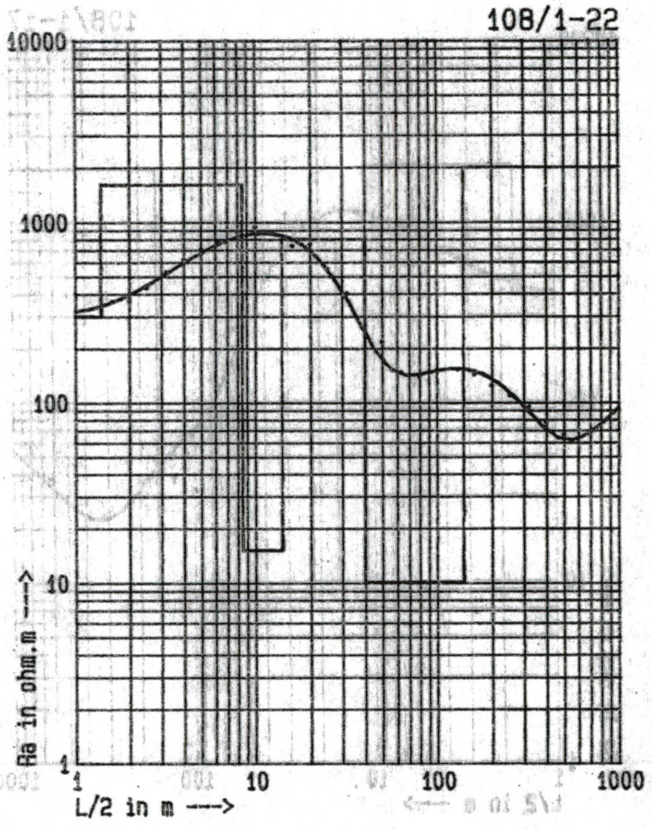

108/1-17
10000
1000
100
10
1
Ra in ohm.m ---->
1
10
100
1000
L/2 in m --->

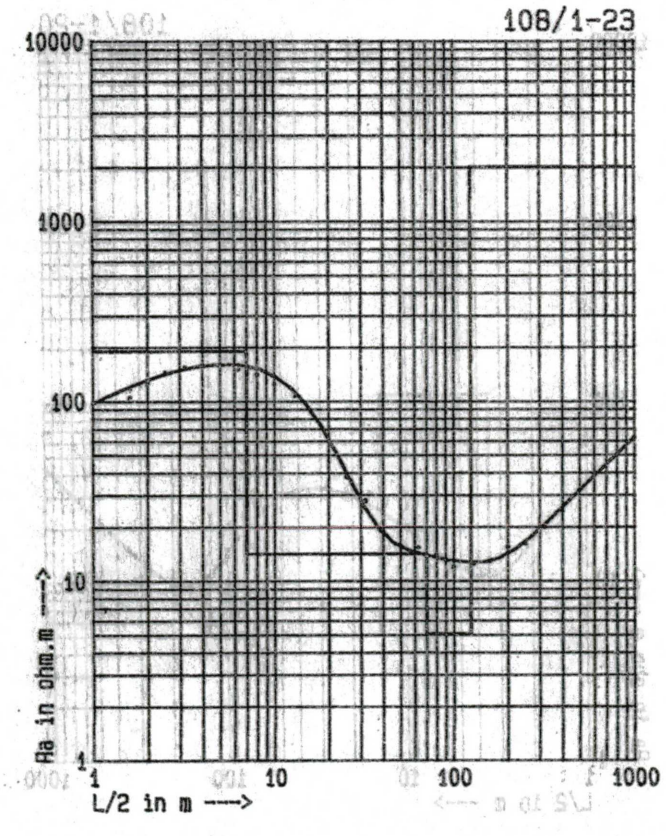

108/1-18
10000
1000
100
10
1
Ra in ohm.m ---->
1
10
100
1000
L/2 in m ---->

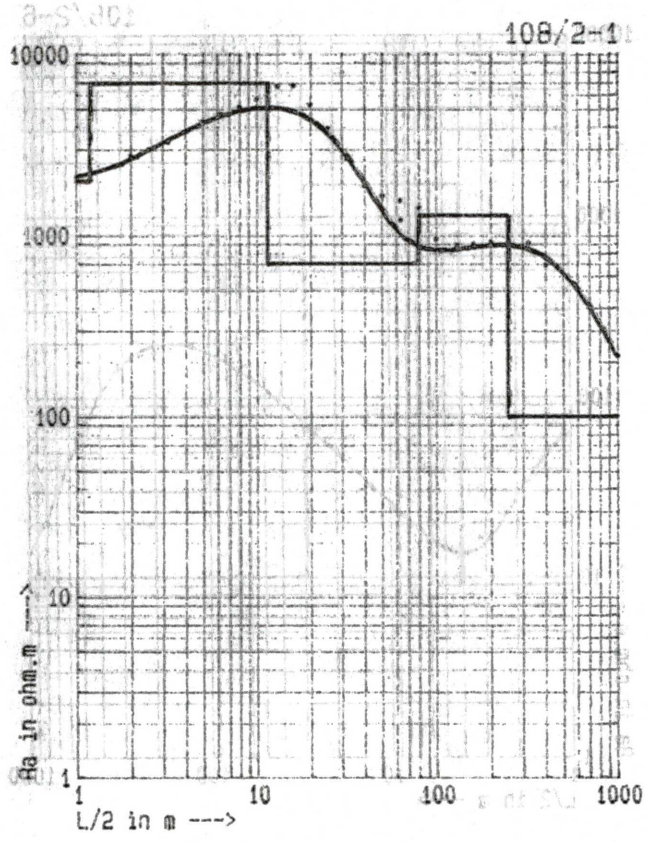

108/1-19
10000
1000
100
10
1
Ra in ohm.m ---->
1
10
100
1000
L/2 in m ---->

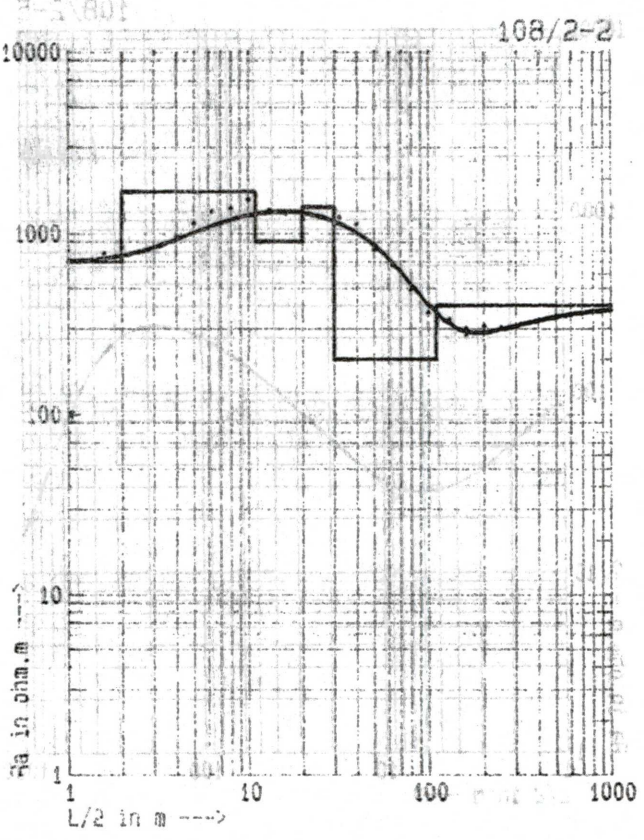

108/1-20
10000
1000
100
10
1
Ra in ohm.m ---->
1
10
100
1000
L/2 in m ---->

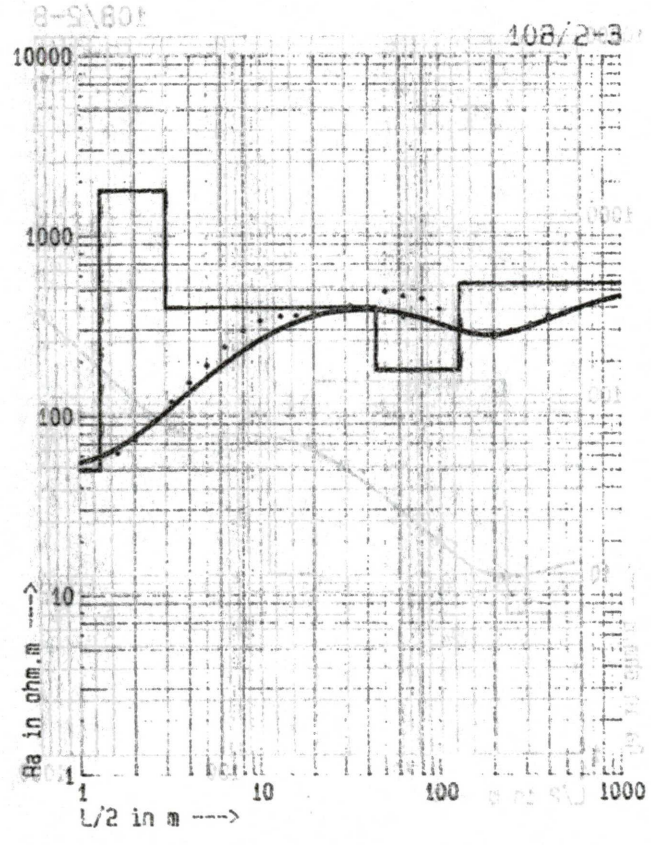

108/1-21
10000
1000
100
10
1
Ra in ohm.m ---->
1
10
100
1000
L/2 in m ---->

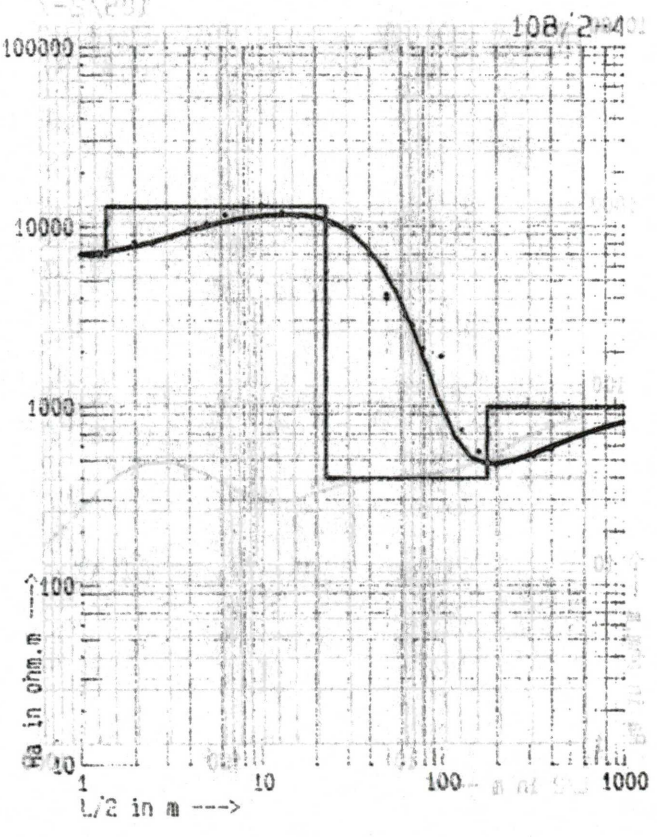

108/1-22
10000
1000
100
10
1
Ra in ohm.m ---->
1
10
100
1000
L/2 in m ---->

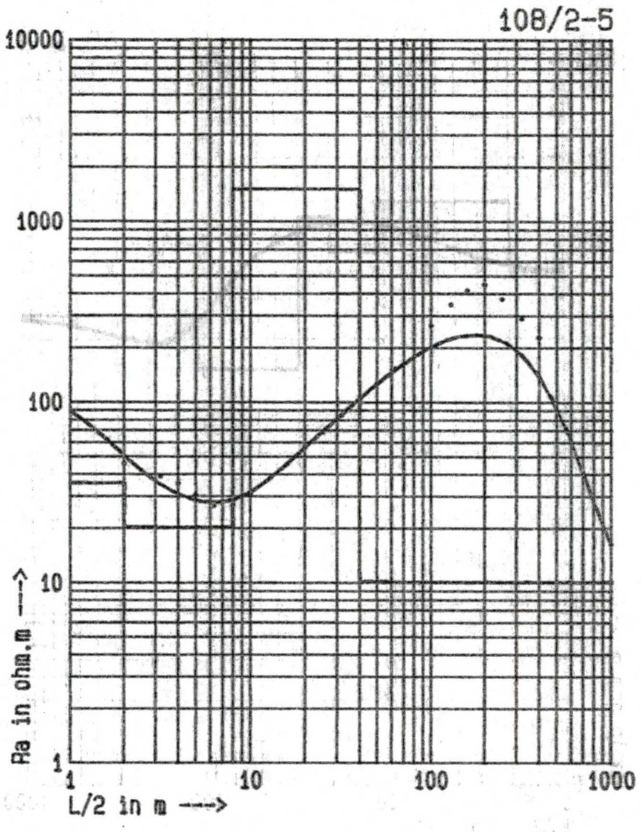

108/1-23
10000
1000
100
10
1
Ra in ohm.m ---->
1
10
100
1000
L/2 in m ---->

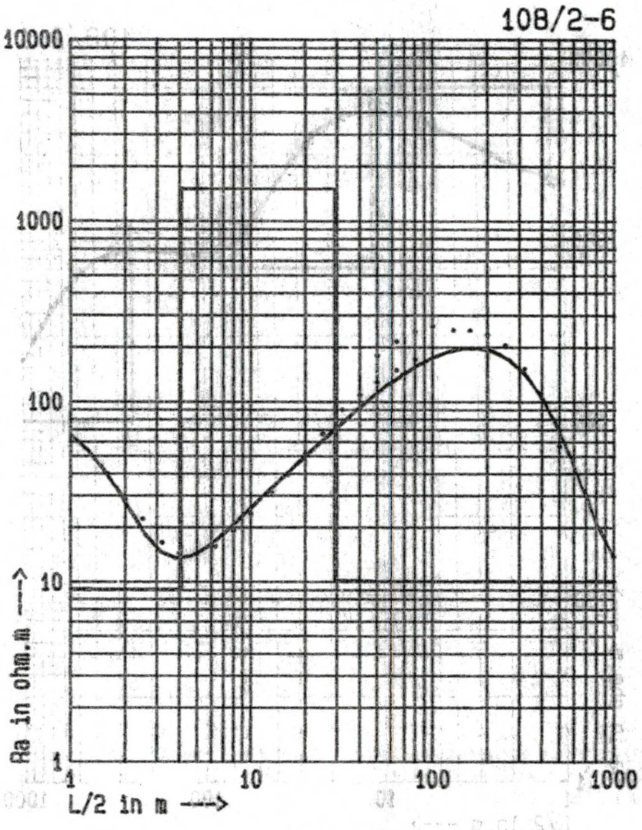

108/2-1
10000
1000
100
10
1
Ra in ohm.m --->
1
10
100
1000
L/2 in m --->

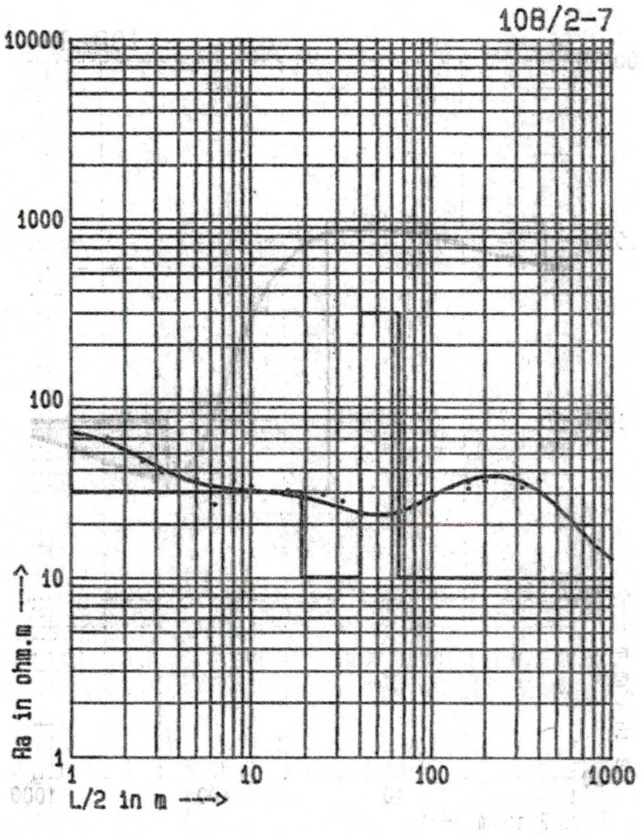

108/2-2
10000
1000
100
10
1
Ra in ohm.m --->
1
10
100
1000
L/2 in m --->

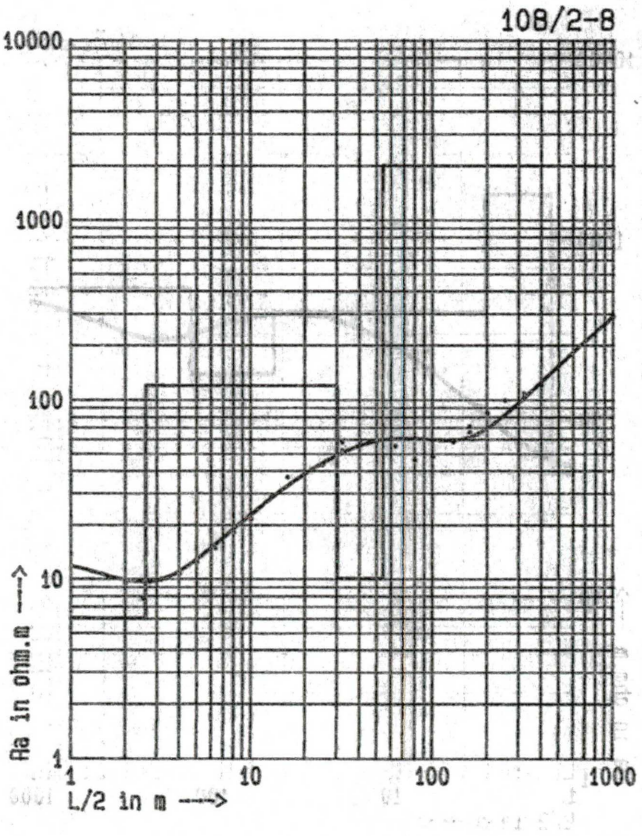

108/2-3
10000
1000
100
10
1
Ra in ohm.m --->
1
10
100
1000
L/2 in m --->

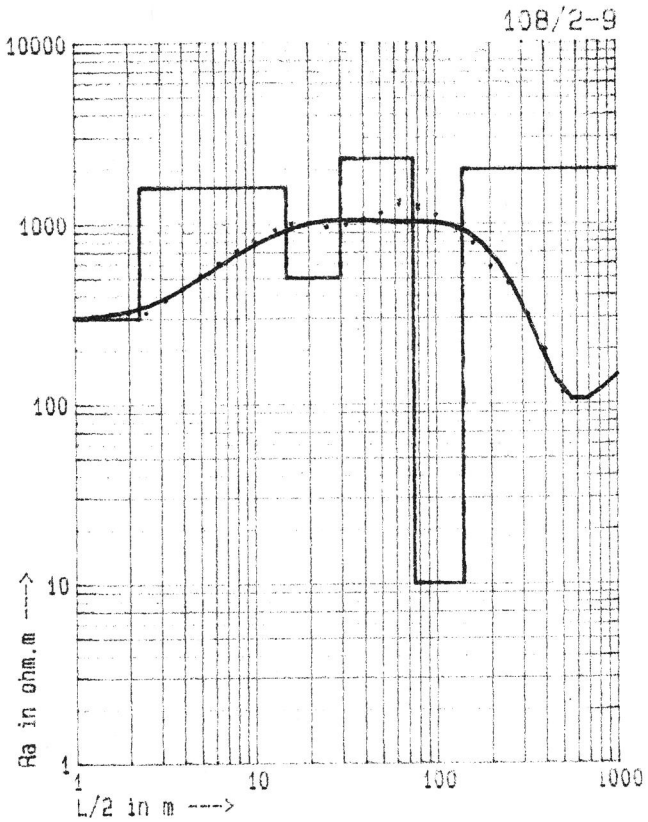

108/2-4
100000
10000
1000
100
10
Ra in ohm.m --->
1
10
100
1000
L/2 in m --->

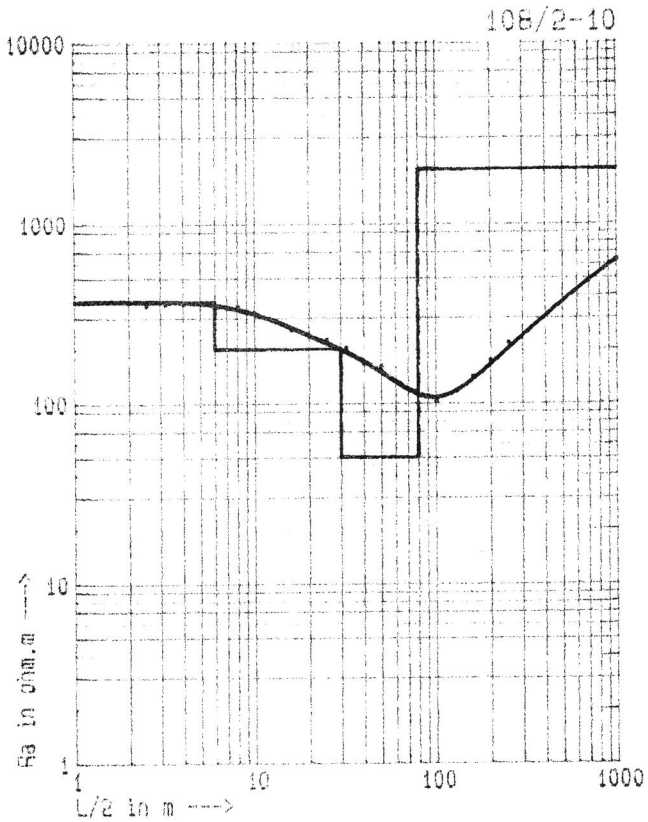

108/2-5
10000
1000
100
10
1
Ra in ohm.m ---->
1
10
100
1000
L/2 in m --->

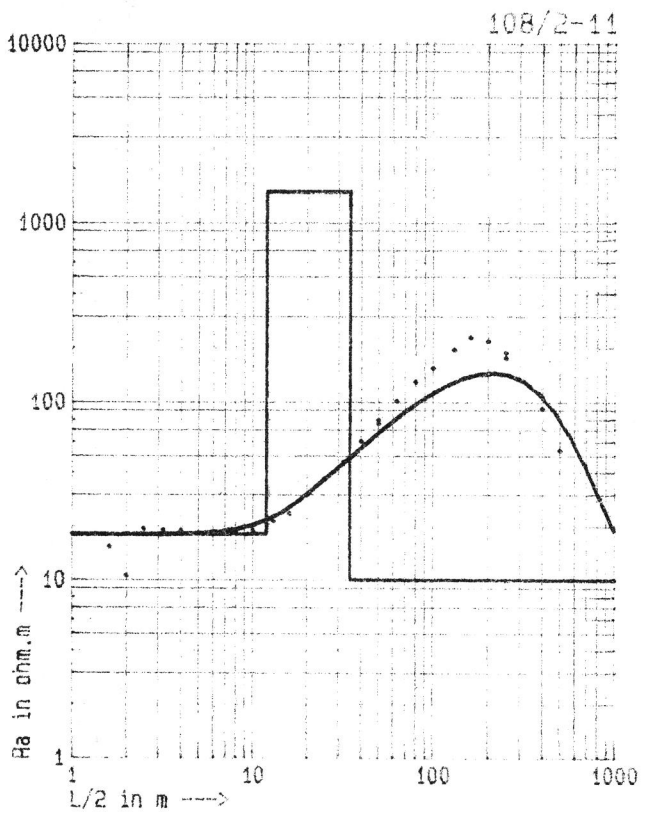

108/2-6
10000
1000
100
10
1
Ra in ohm.m ---->
1
10
100
1000
L/2 in m ---->

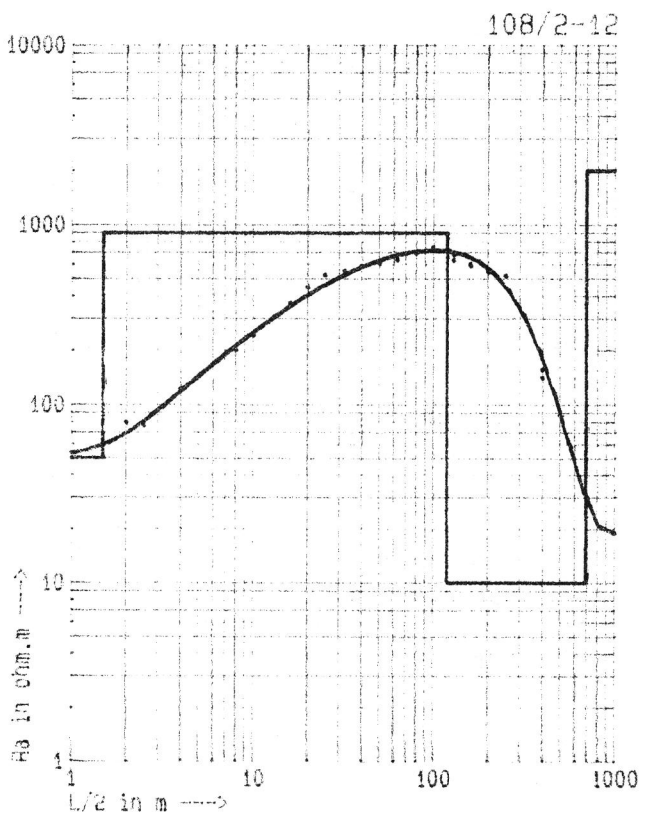

108/2-7
10000
1000
100
10
1
Ra in ohm.m ---->
1
10
100
1000
L/2 in m ---->

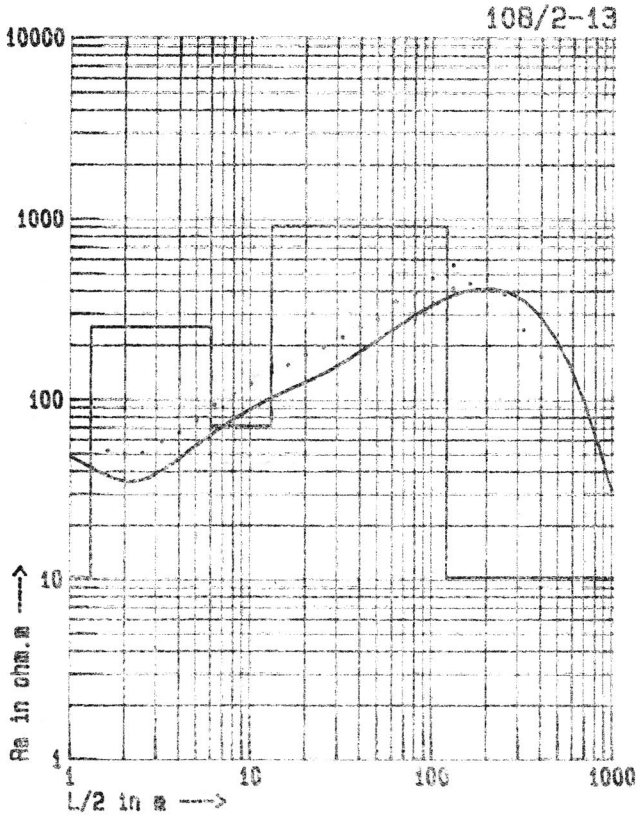

108/2-8
10000
1000
100
10
1
Ra in ohm.m ---->
1
10
100
1000
L/2 in m ---->

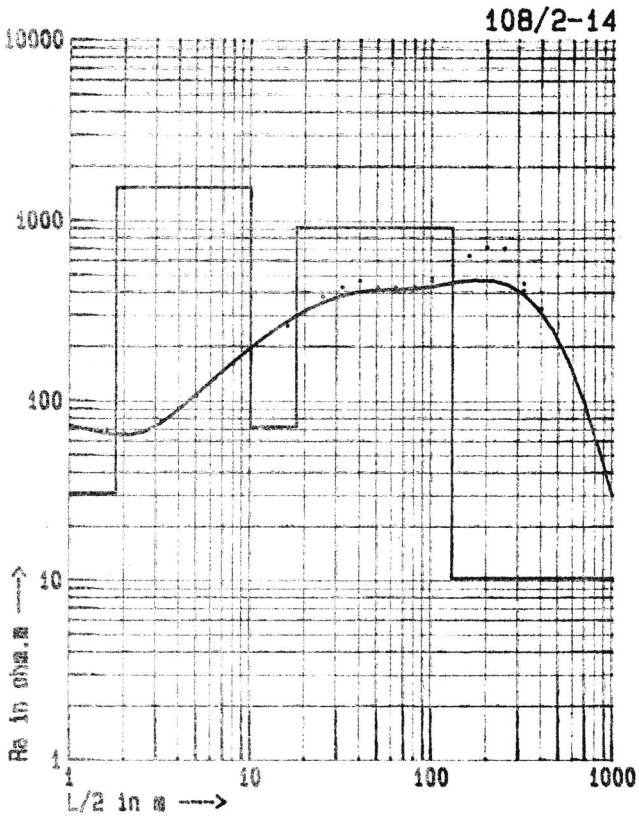

108/2-9
10000
1000
100
10
1
Ra in ohm.m ---->
1
10
100
1000
L/2 in m --->

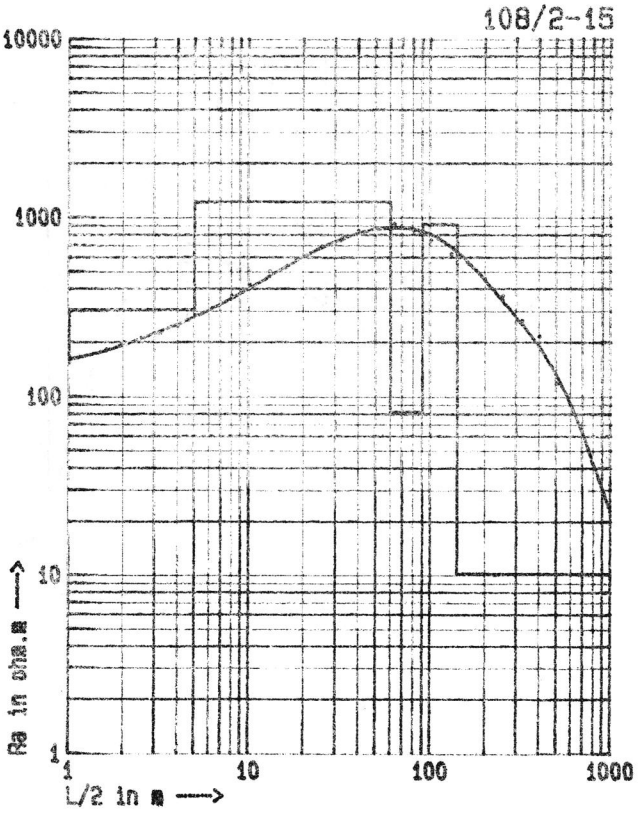

108/2-10
10000
1000
100
10
1
Ra in ohm.m ---->
1
10
100
1000
L/2 in m ---->

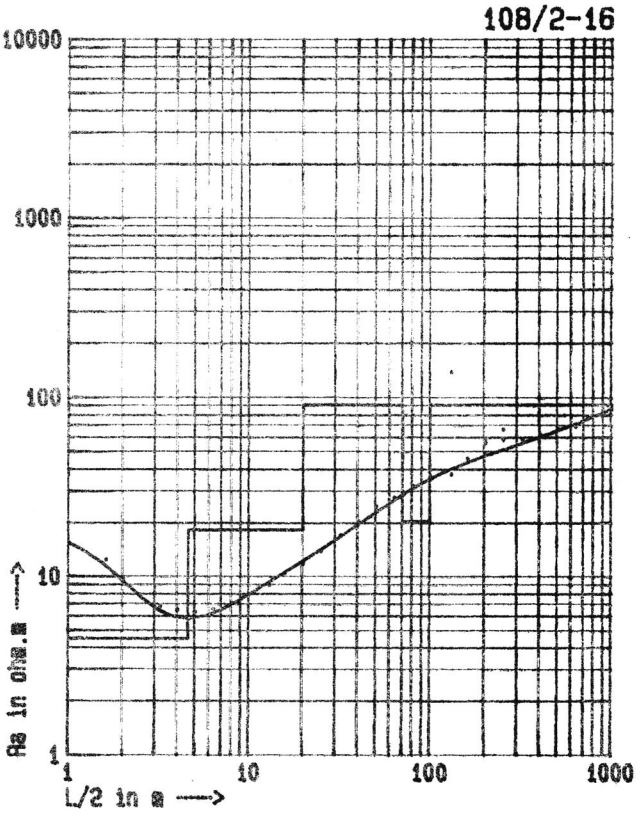

108/2-11
10000
1000
100
10
1
Ra in ohm.m ---->
1
10
100
1000
L/2 in m ---->

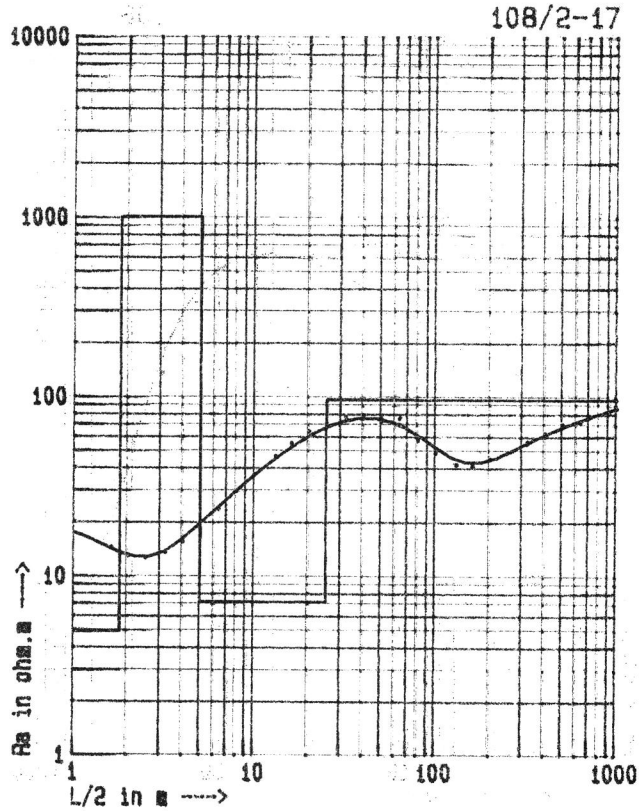

108/2-12
10000
1000
100
10
1
Ra in ohm.m ---->
1
10
100
1000
L/2 in m ---->

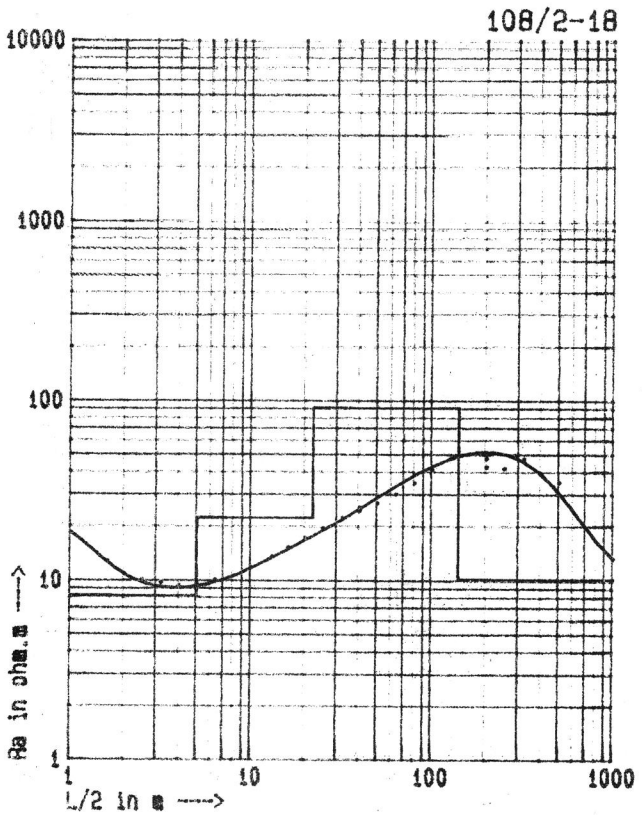

108/2-13
10000
1000
100
10
1
Ra in ohm.m ⟶
1
10
100
1000
L/2 in m ⟶

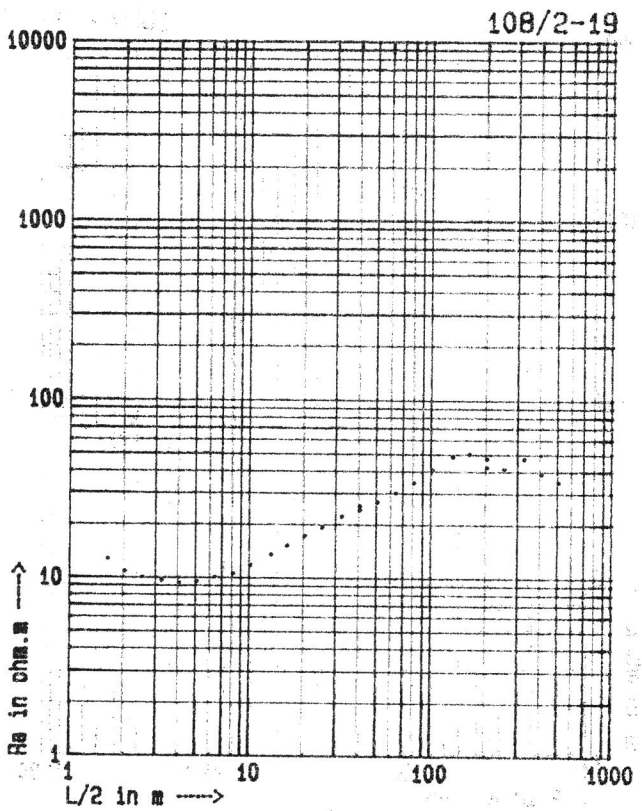

108/2-14
10000
1000
100
10
1
Ra in ohm.m ⟶
1
10
100
1000
L/2 in m ⟶

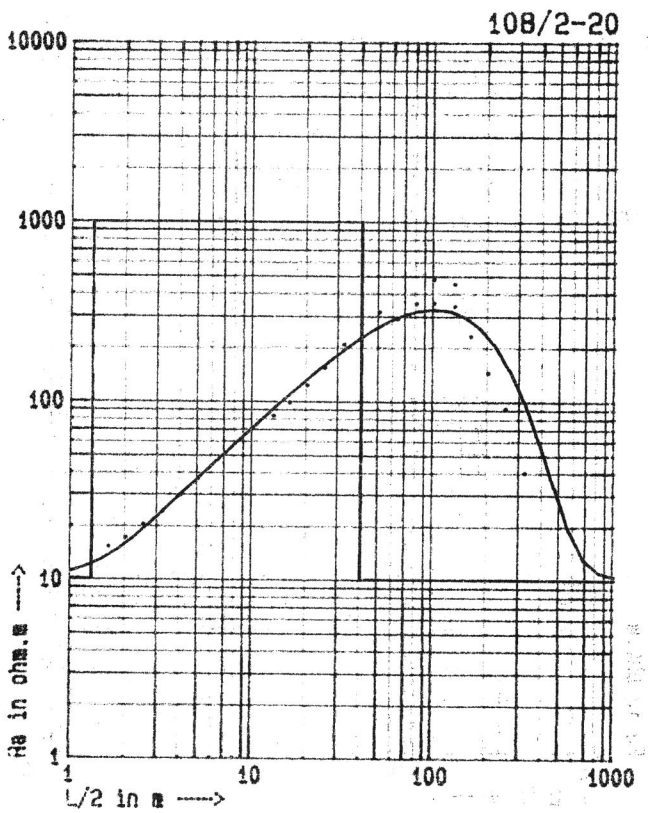

108/2-15
10000
1000
100
10
1
Ra in ohm.m ⟶
1
10
100
1000
L/2 in m ⟶

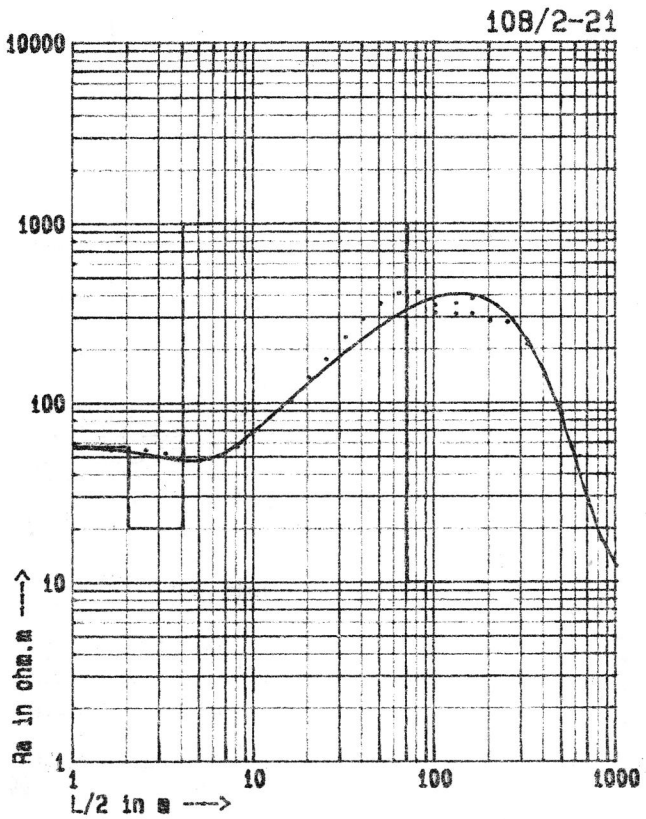

108/2-16
10000
1000
100
10
1
Ra in ohm.m ⟶
1
10
100
1000
L/2 in m ⟶

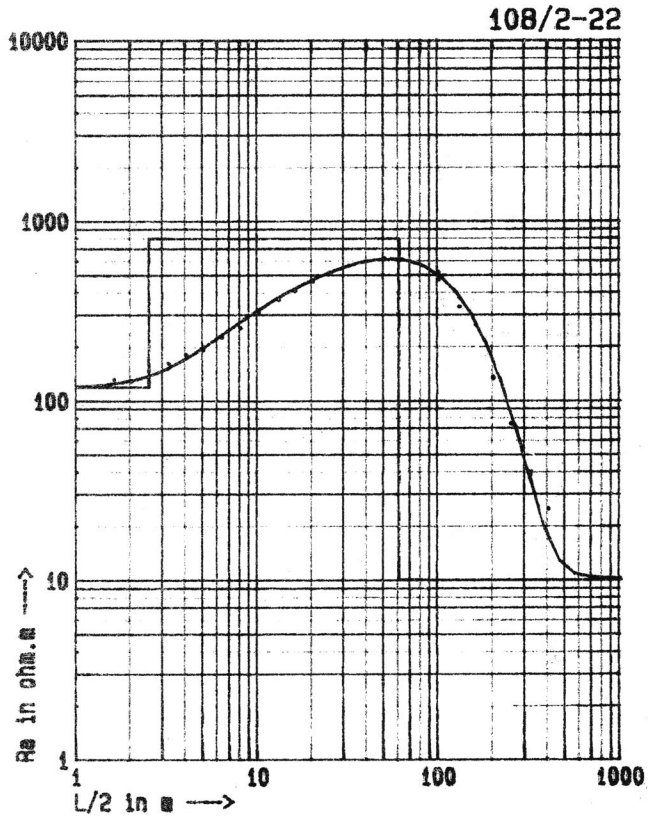

108/2-17
10000
1000
100
10
1
Ra in ohm.m ——>
1
10
100
1000
L/2 in m ——>

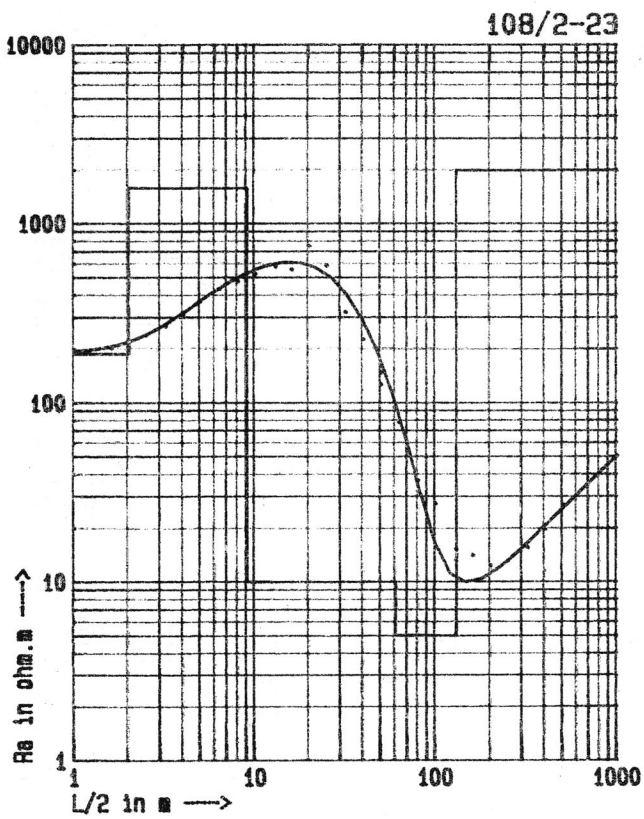

108/2-18
10000
1000
100
10
1
Ra in ohm.m ——>
1
10
100
1000
L/2 in m ——>

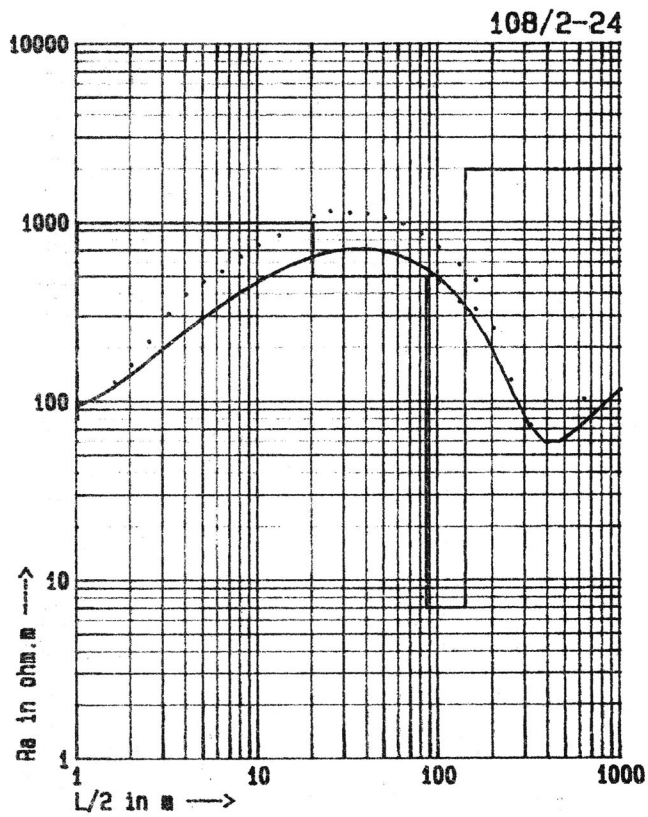

108/2-19
10000
1000
100
10
1
Ra in ohm.m ——>
1
10
100
1000
L/2 in m ——>

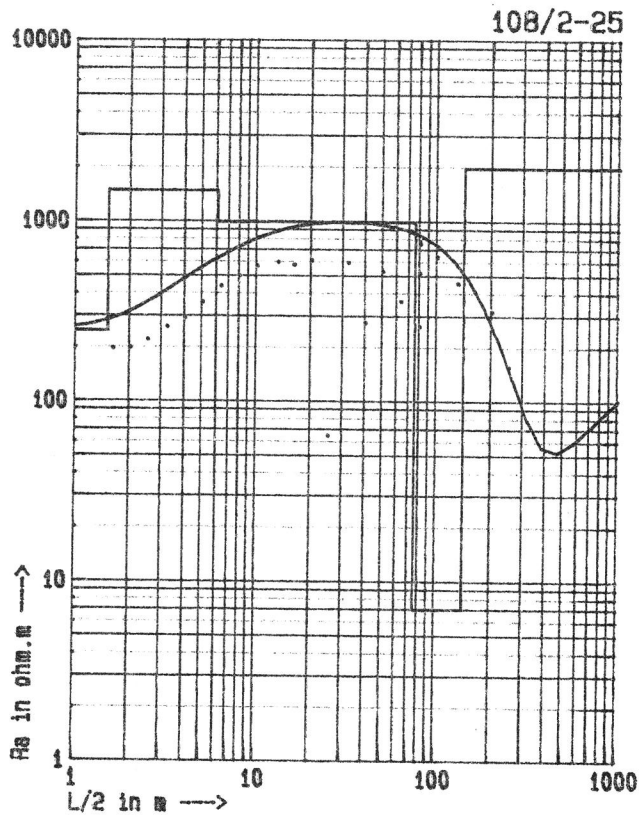

108/2-20
10000
1000
100
10
1
Ra in ohm.m ——>
1
10
100
1000
L/2 in m ——>

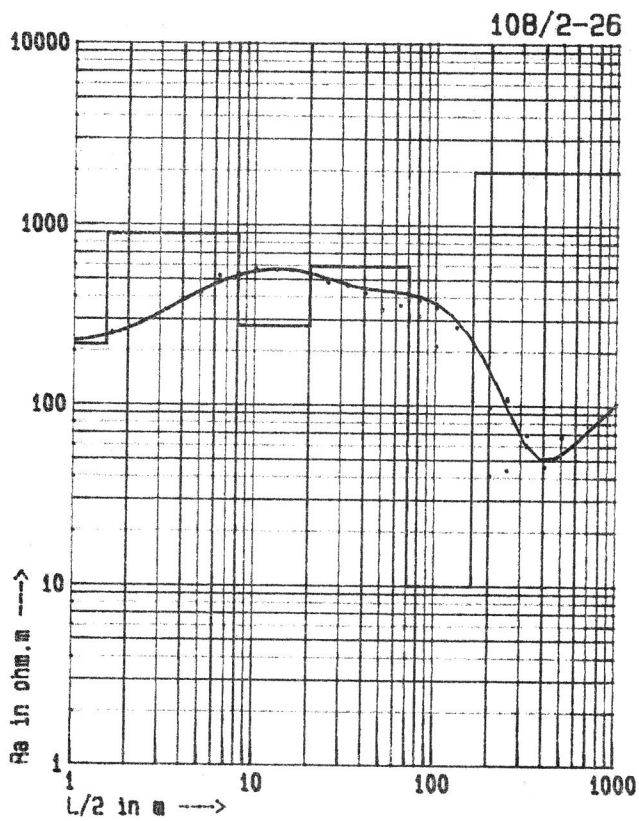

108/2-21
10000
1000
100
10
1
Ra in ohm.m ——>
1
10
100
1000
L/2 in m ——>

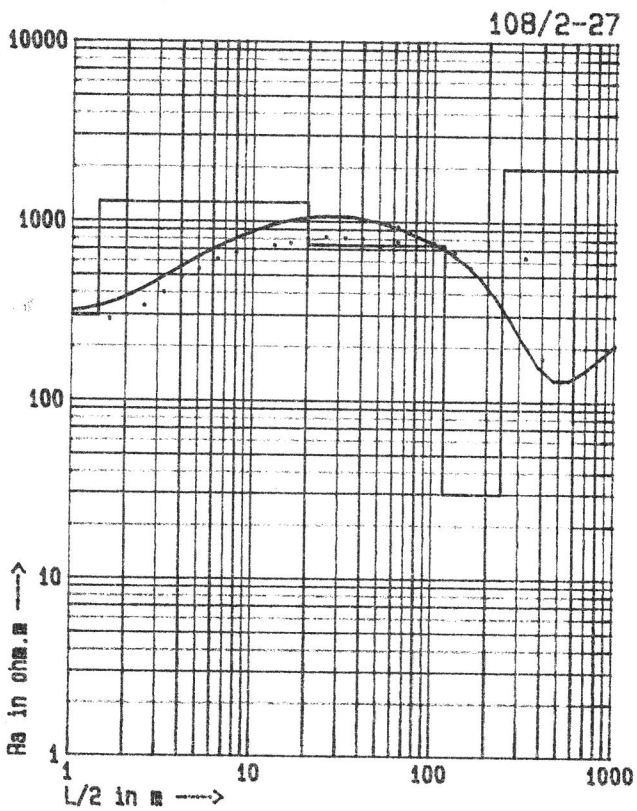

108/2-22
10000
1000
100
10
1
Ra in ohm.m ——>
1
10
100
1000
L/2 in m ——>

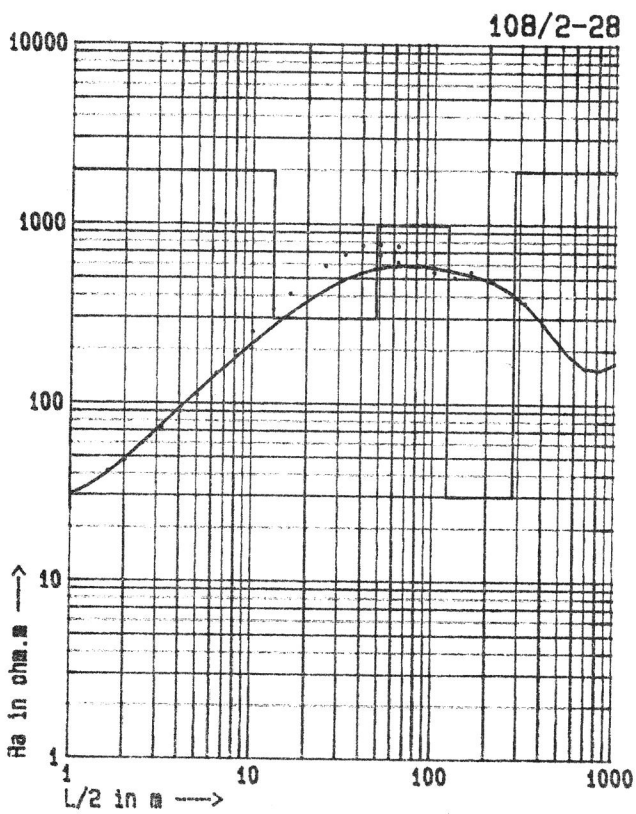

108/2-23
10000
1000
100
10
1
Ra in ohm.m ——>
1
10
100
1000
L/2 in m ——>

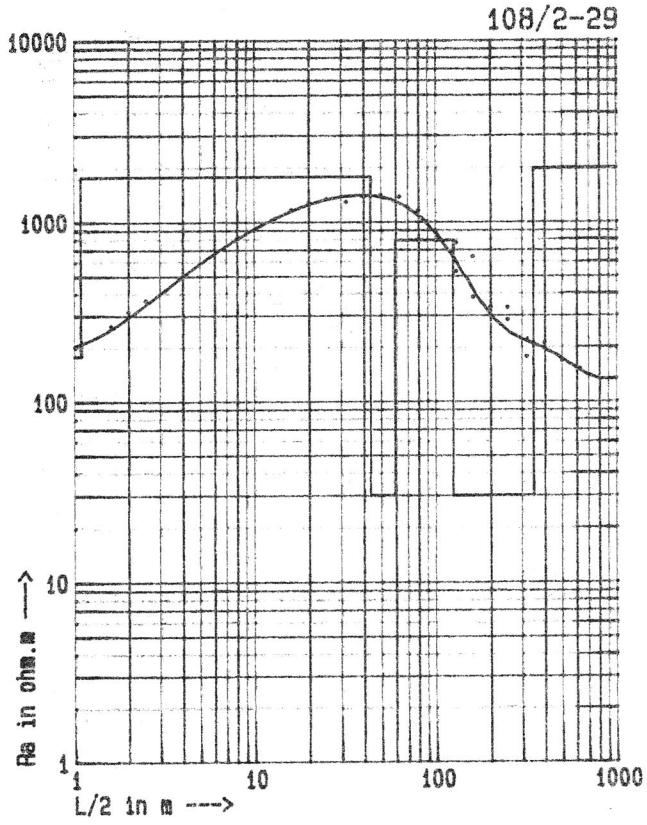

108/2-24
10000
1000
100
10
1
Ra in ohm.m ——>
1
10
100
1000
L/2 in m ——>

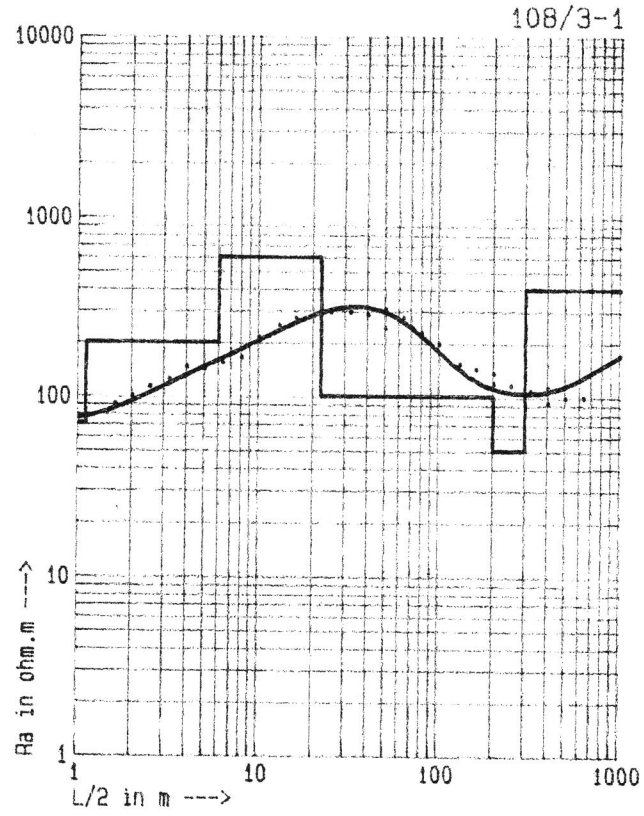

108/2-25
10000
1000
100
10
1
Ra in ohm.m ——>
1
10
100
1000
L/2 in m ——>

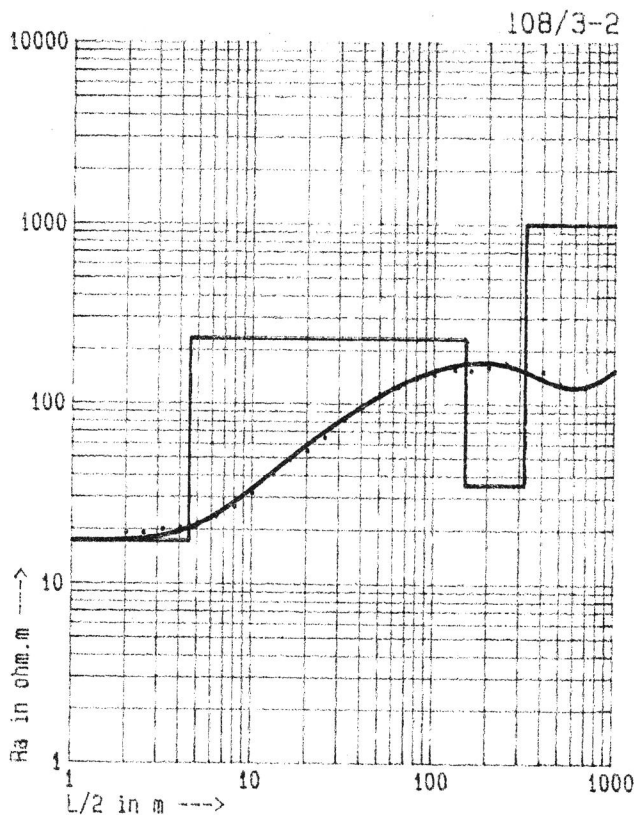

108/2-26
10000
1000
100
10
1
Ra in ohm.m ——>
1
10
100
1000
L/2 in m ——>

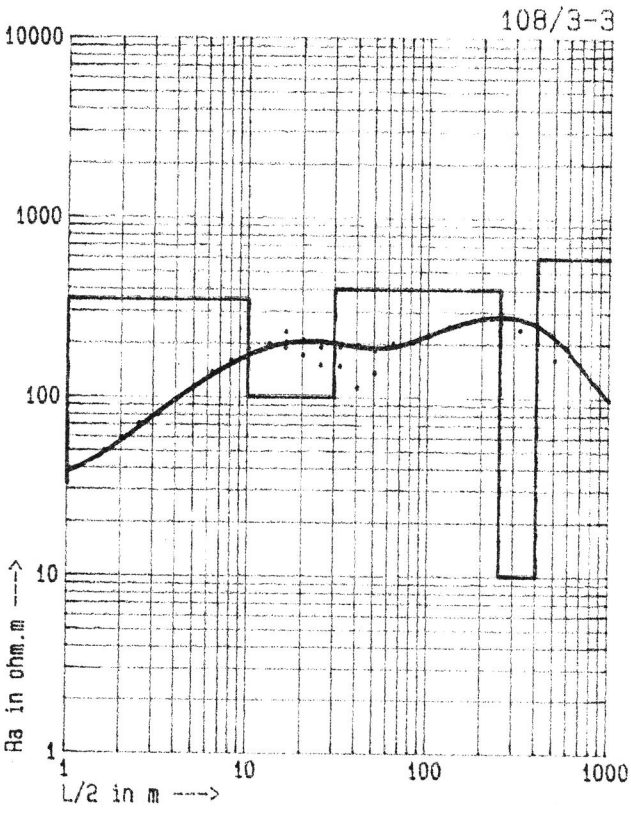

108/2-27
10000
1000
100
10
1
Ra in ohm.m ——>
1
10
100
1000
L/2 in m ——>

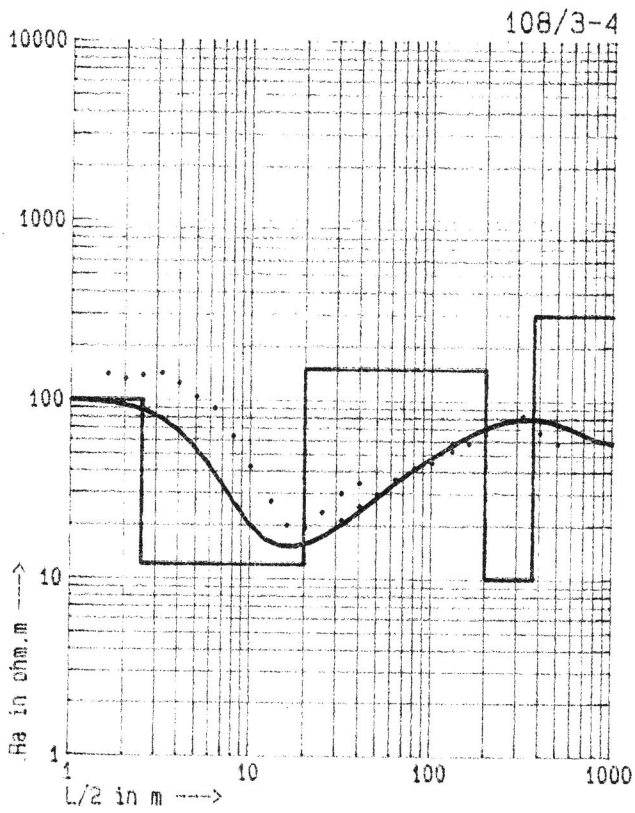

108/2-28
10000
1000
100
10
1
Ra in ohm.m ——>
1
10
100
1000
L/2 in m ——>

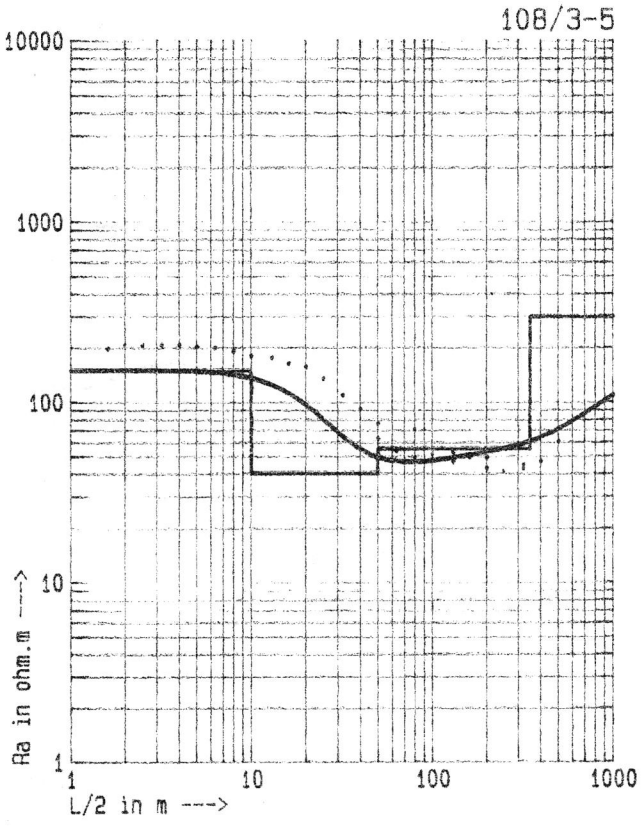

108/2-29
10000
1000
100
10
1
Ra in ohm.m ---->
1
10
100
1000
L/2 in m --->

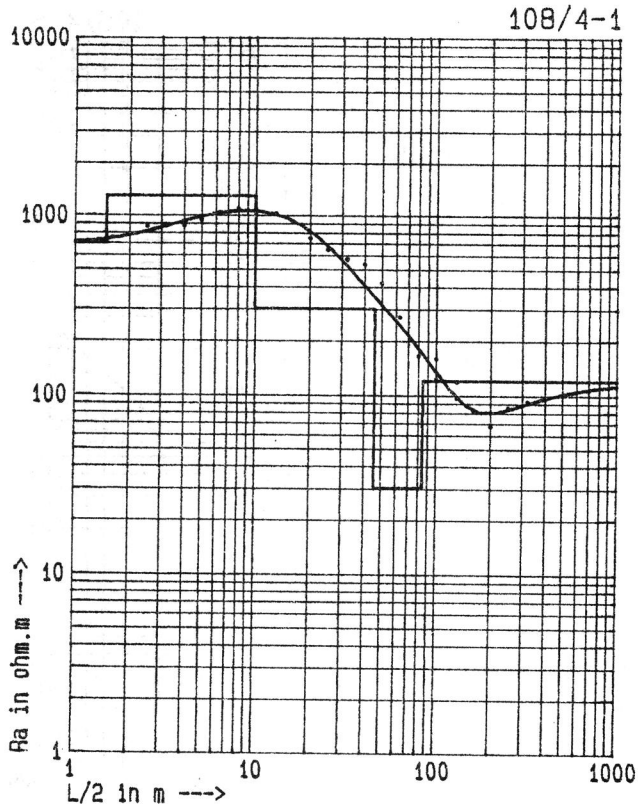

108/3-1
10000
1000
100
10
1
Ra in ohm.m --->
1
10
100
1000
L/2 in m --->

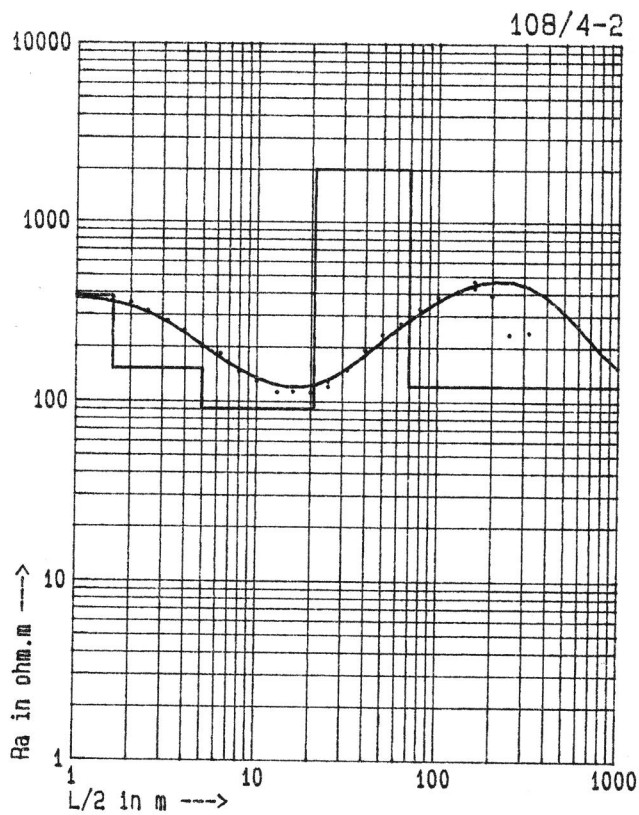

108/3-2
10000
1000
100
10
1
Ra in ohm.m --->
1
10
100
1000
L/2 in m --->

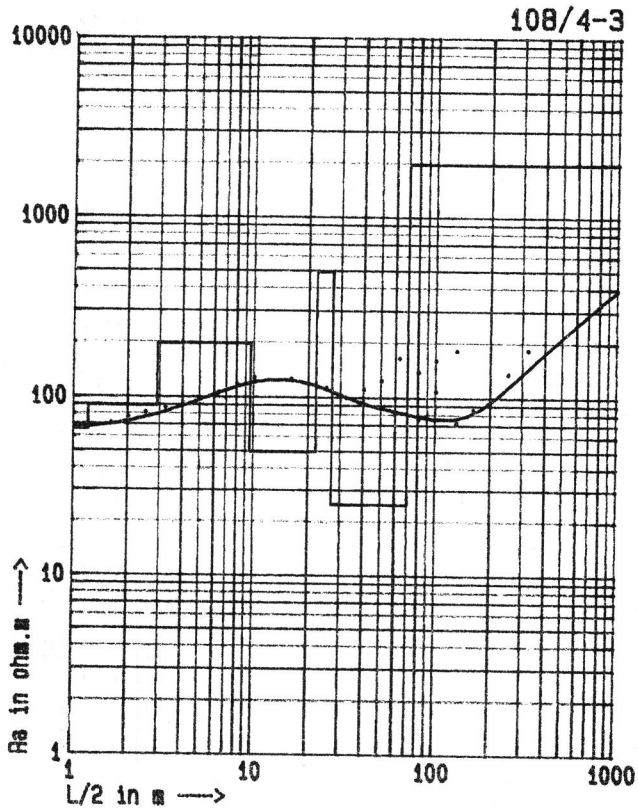

108/3-3
10000
1000
100
10
1
Ra in ohm.m --->
1
10
100
1000
L/2 in m --->

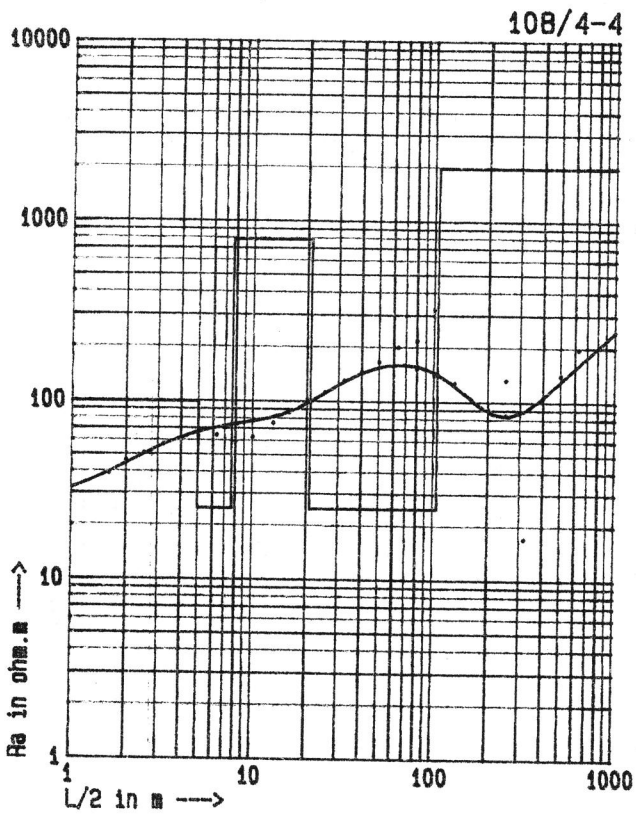

108/3-4
10000
1000
100
10
1
Ra in ohm.m --->
1
10
100
1000
L/2 in m --->

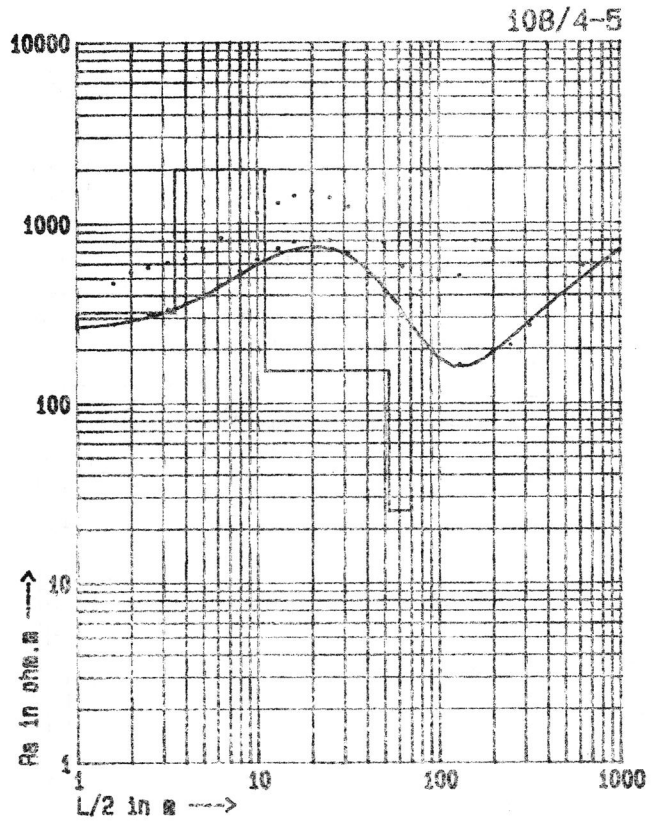

108/3-5
10000
1000
100
10
1
Ra in ohm.m ---->
1
10
100
1000
L/2 in m --->

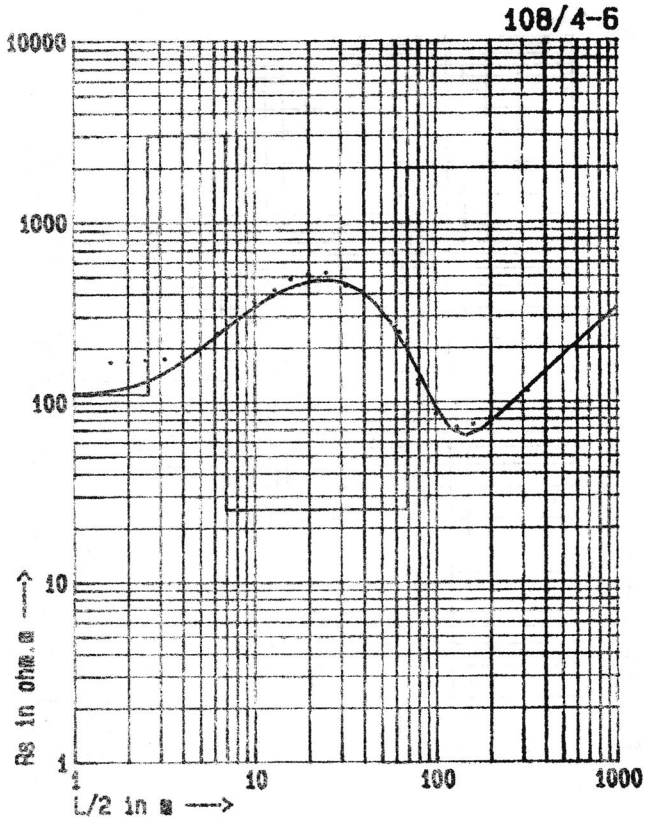

108/4-1
10000
1000
100
10
1
Ra in ohm.m ---->
1
10
100
1000
L/2 in m --->

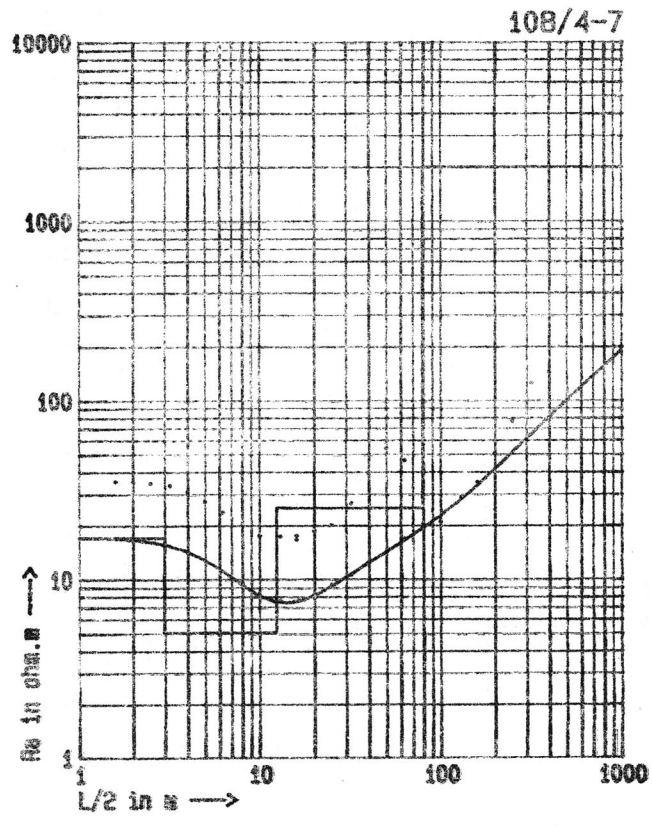

108/4-2
10000
1000
100
10
1
Ra in ohm.m ---->
1
10
100
1000
L/2 in m --->

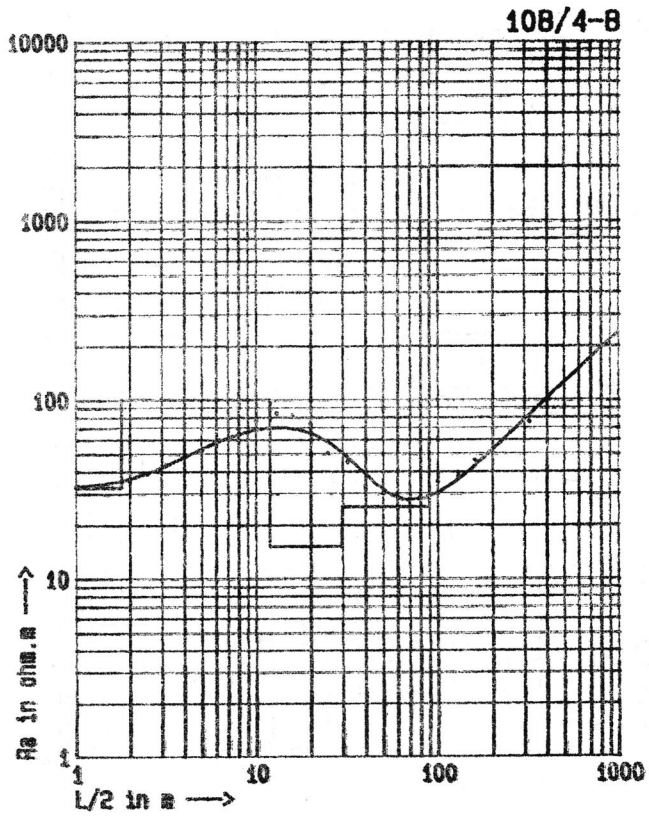

108/4-3
10000
1000
100
10
1
Ra in ohm.m ---->
1
10
100
1000
L/2 in m ---->

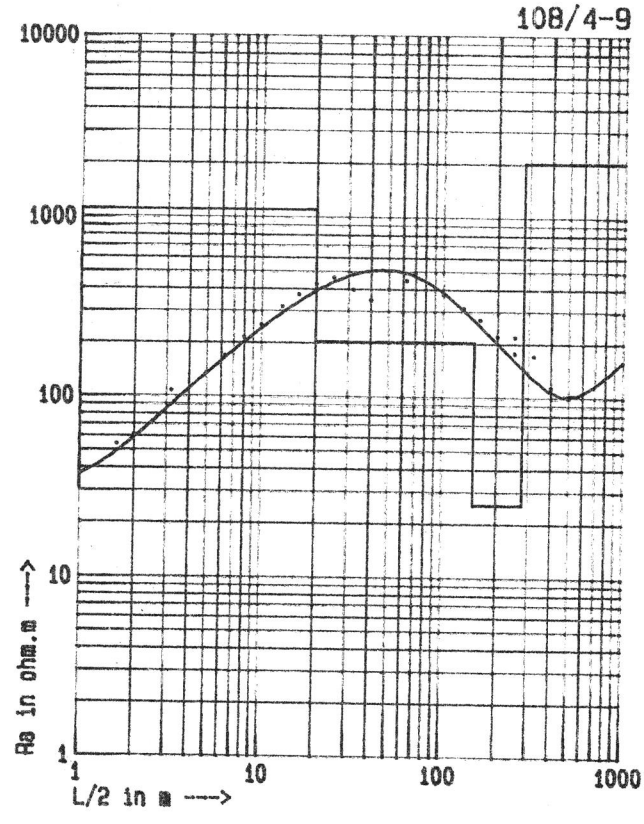

108/4-4
10000
1000
100
10
1
Ra in ohm.m ---->
1
10
100
1000
L/2 in m ---->

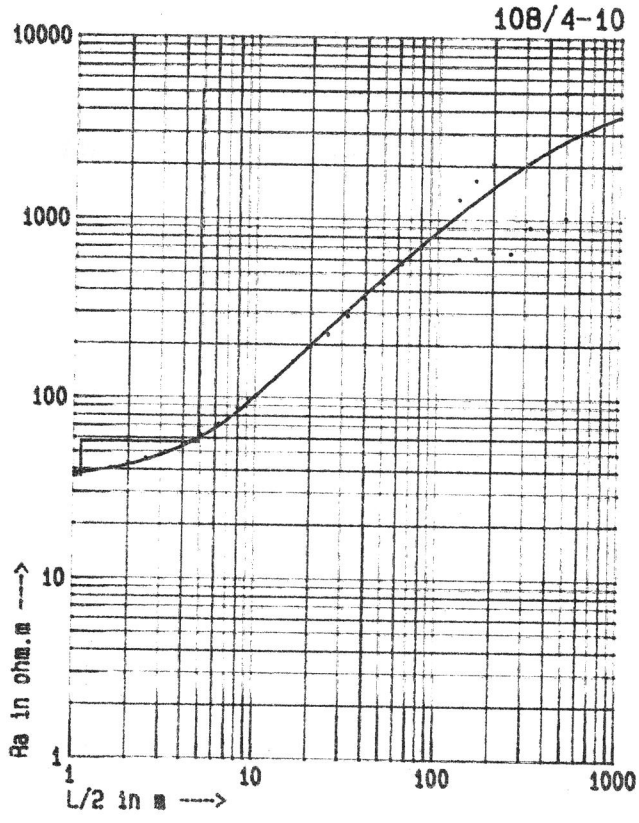

108/4-5
10000
1000
100
10
1
Rs in ohm.m ⟶
1
10
100
1000
L/2 in m ⟶

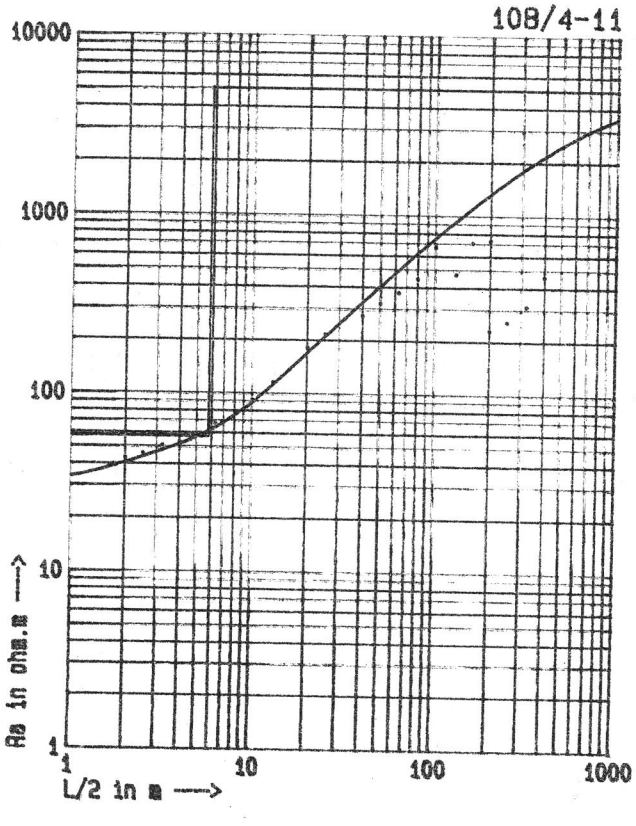

108/4-6
10000
1000
100
10
1
Rs in ohm.m ⟶
1
10
100
1000
L/2 in m ⟶

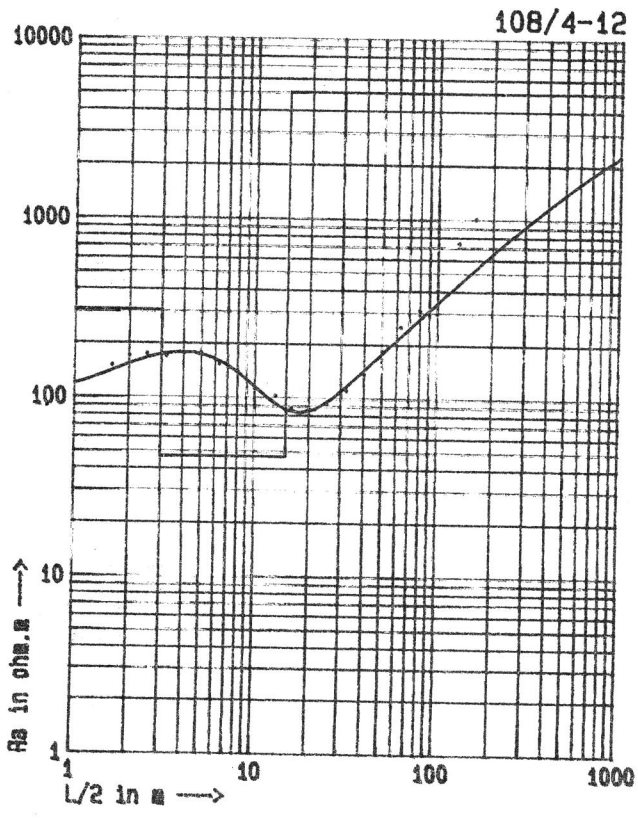

108/4-7
10000
1000
100
10
1
Rs in ohm.m ⟶
1
10
100
1000
L/2 in m ⟶

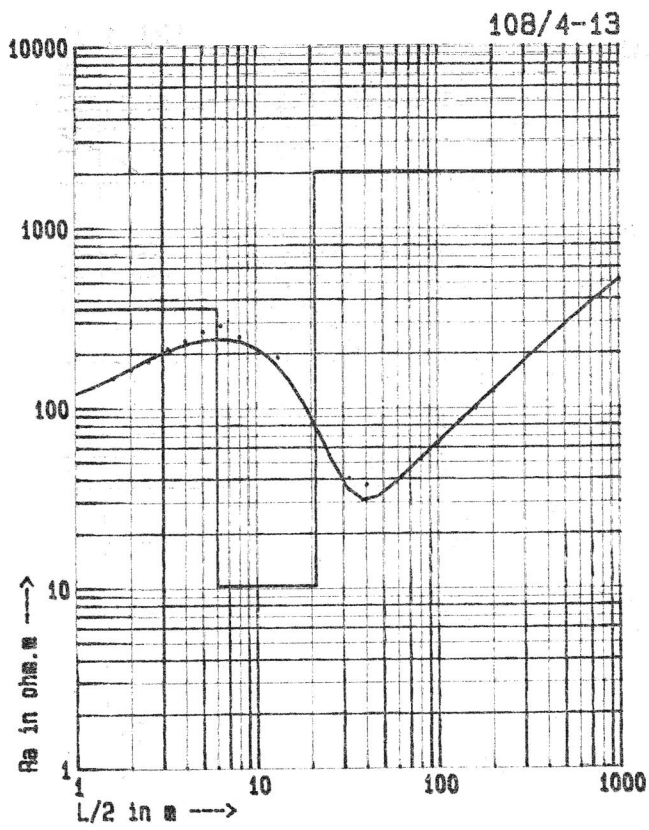

108/4-8
10000
1000
100
10
1
Rs in ohm.m ⟶
1
10
100
1000
L/2 in m ⟶

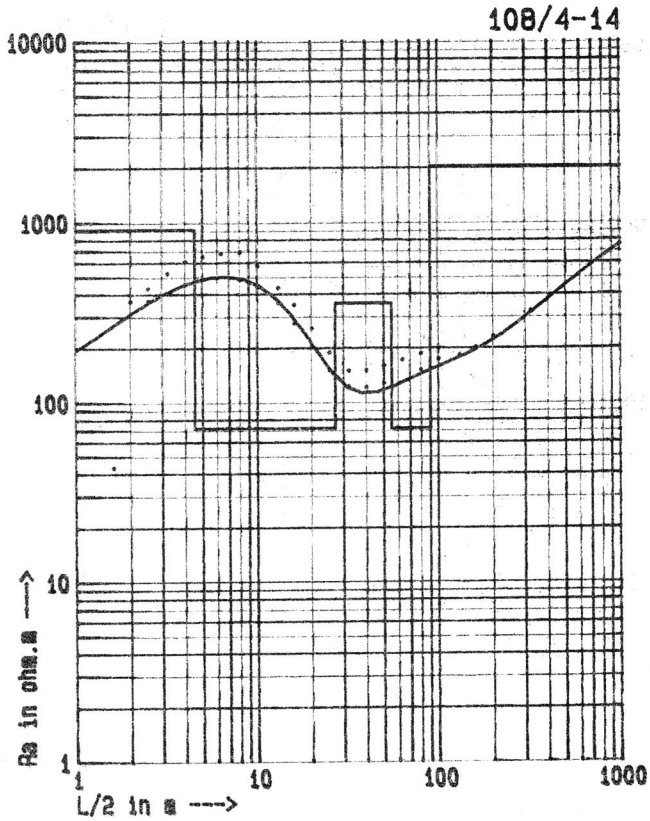

108/4-9
10000
1000
100
10
1
Ra in ohm.m ---->
1
10
100
1000
L/2 in m ---->

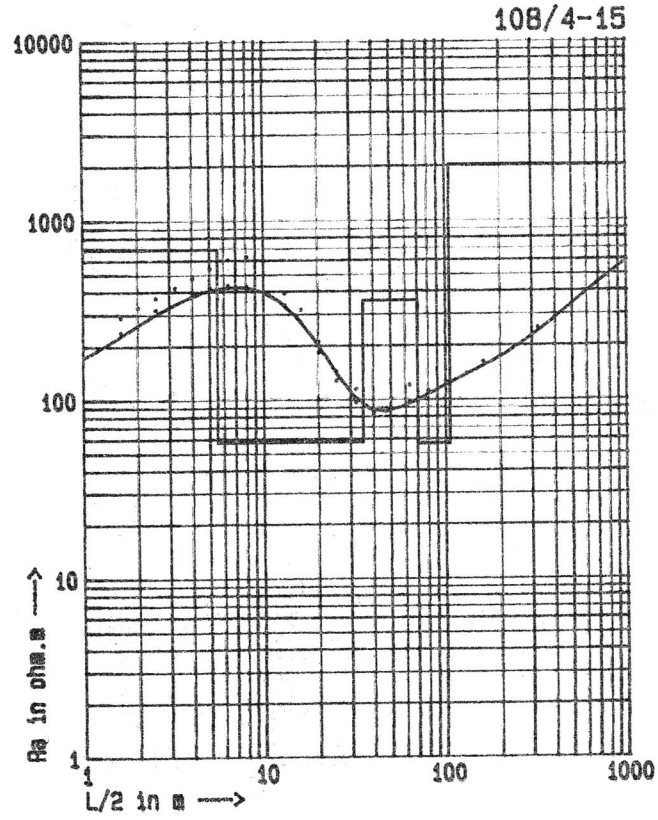

108/4-10
10000
1000
100
10
1
Ra in ohm.m ---->
1
10
100
1000
L/2 in m ---->

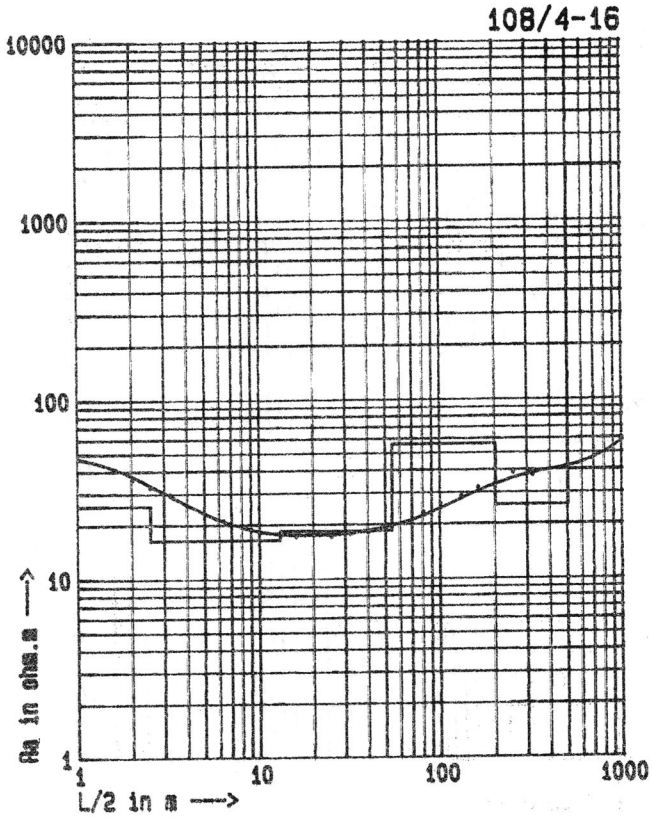

108/4-11
10000
1000
100
10
1
Ra in ohm.m ---->
1
10
100
1000
L/2 in m ---->

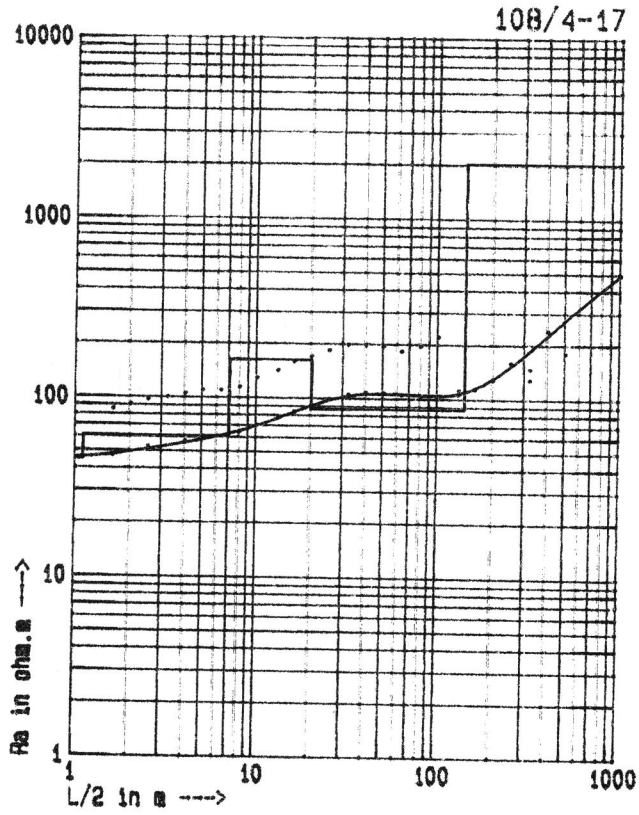

108/4-12
10000
1000
100
10
1
Ra in ohm.m ---->
1
10
100
1000
L/2 in m ---->

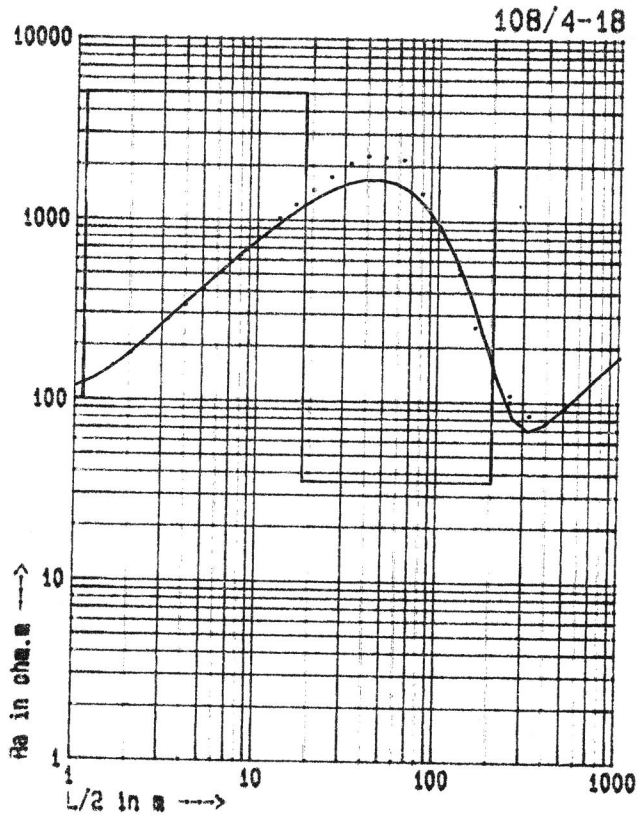

108/4-13
10000
1000
100
10
1
Ra in ohm.m ---->
1
10
100
1000
L/2 in m --->

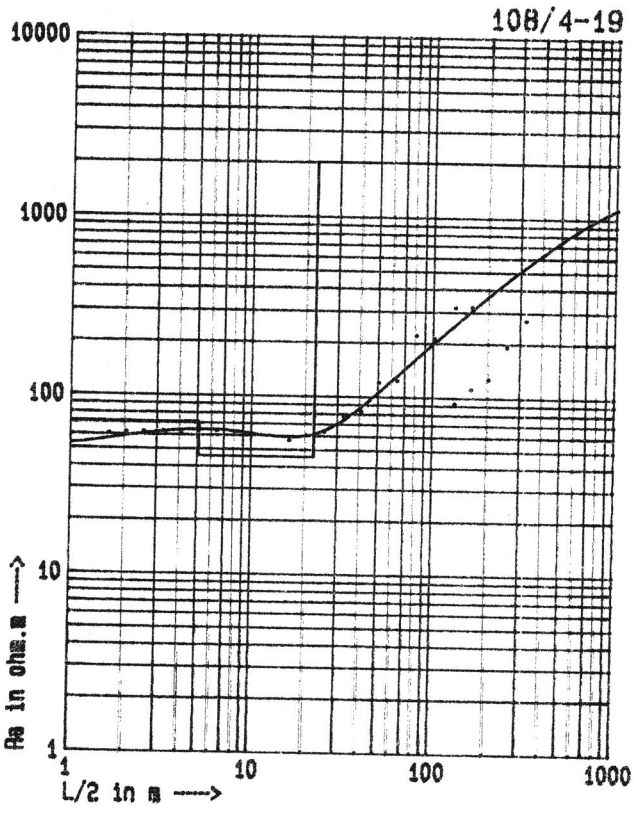

108/4-14
10000
1000
100
10
1
Ra in ohm.m ---->
1
10
100
1000
L/2 in m ---->

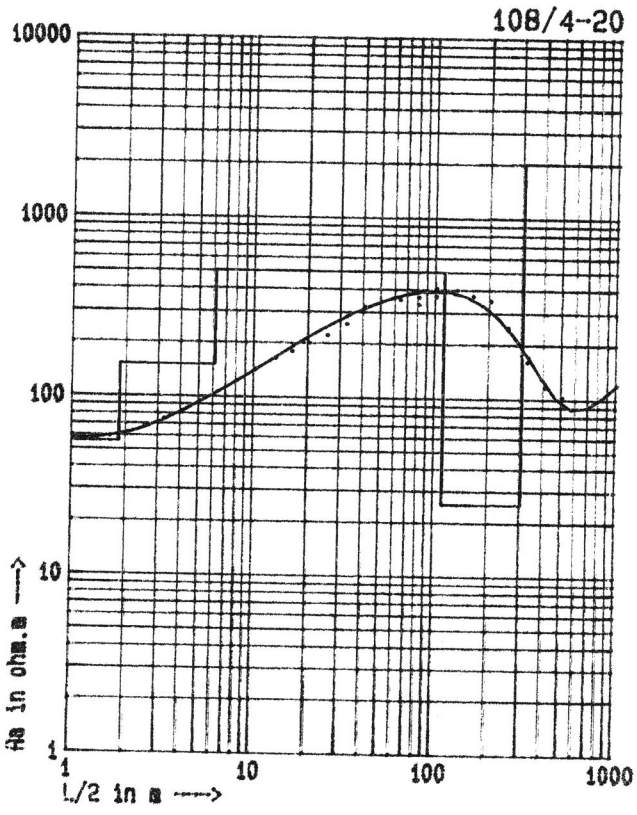

108/4-15
10000
1000
100
10
1
Ra in ohm.m ---->
1
10
100
1000
L/2 in m ---->

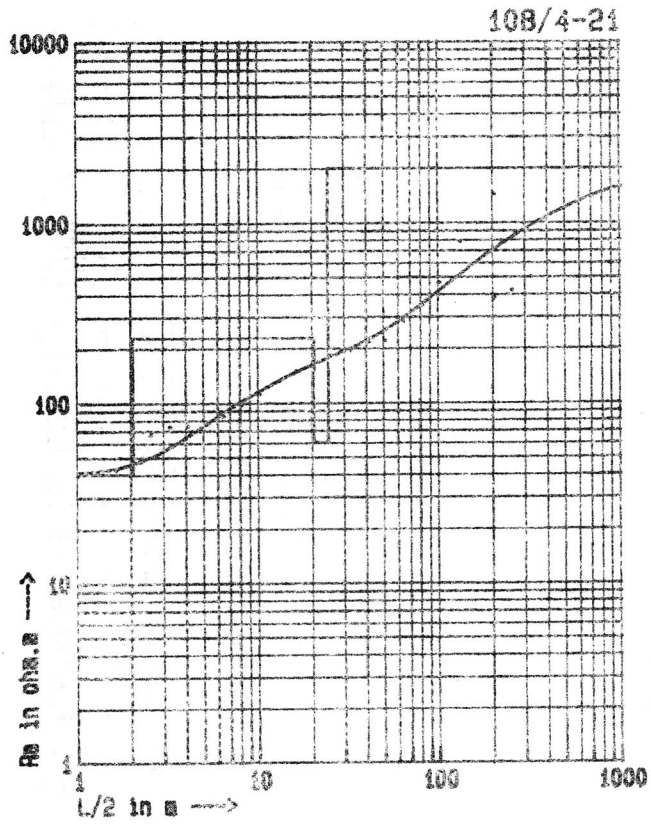

108/4-16
10000
1000
100
10
1
Ra in ohm.m ---->
1
10
100
1000
L/2 in m ---->

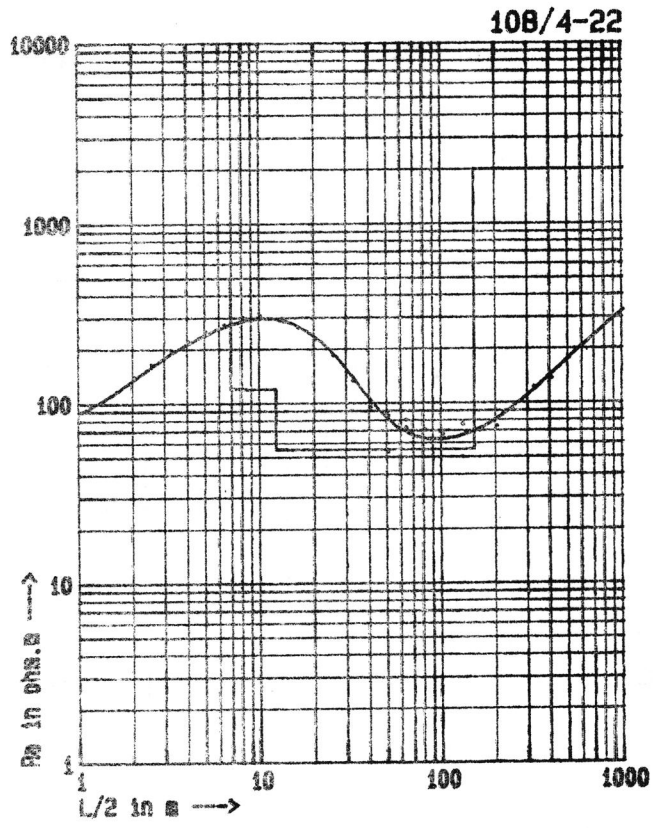

108/4-17
10000
1000
100
10
1
Ra in ohm.m ⟶
1
10
100
1000
L/2 in m ⟶

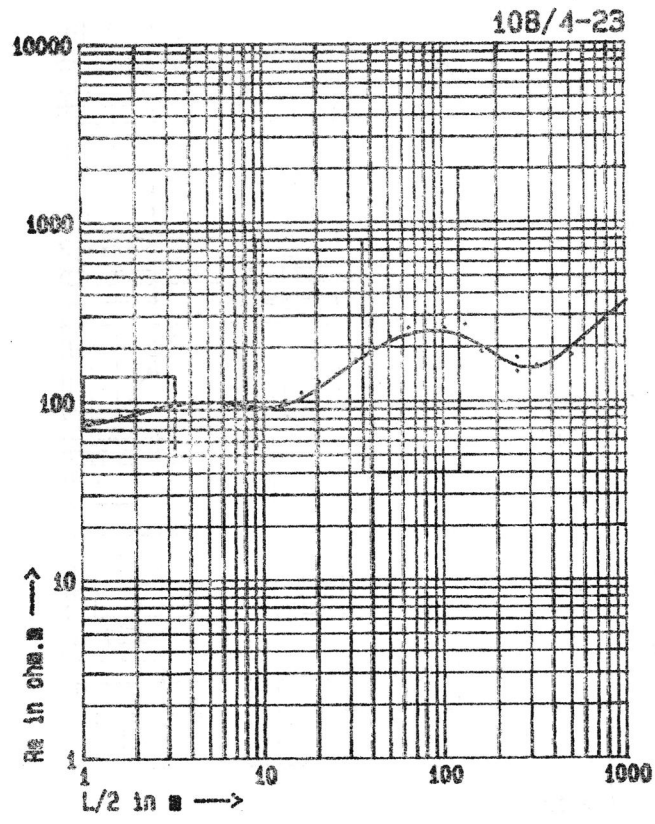

108/4-18
10000
1000
100
10
1
Ra in ohm.m ⟶
1
10
100
1000
L/2 in m ⟶

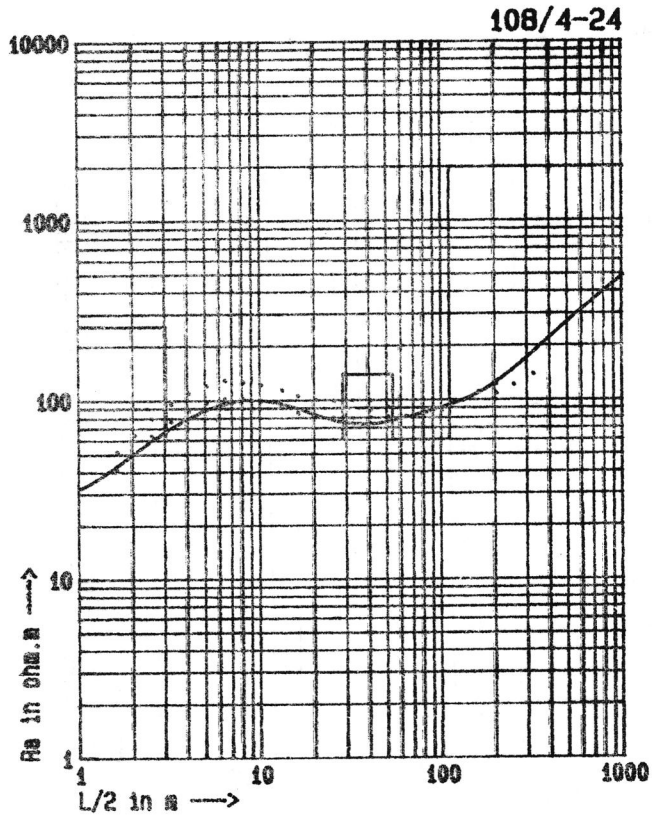

108/4-19
10000
1000
100
10
1
Ra in ohm.m ⟶
1
10
100
1000
L/2 in m ⟶

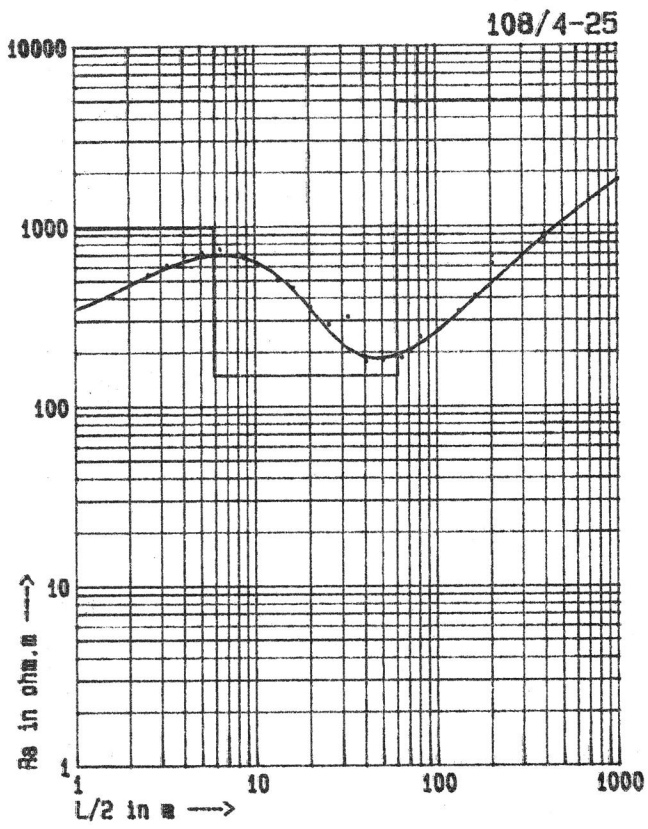

108/4-20
10000
1000
100
10
1
Ra in ohm.m ⟶
1
10
100
1000
L/2 in m ⟶

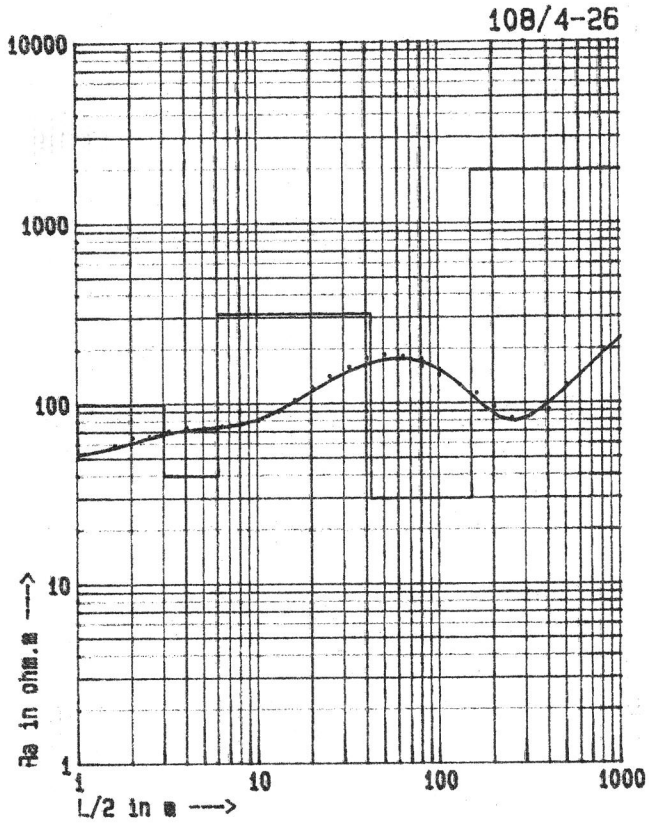

108/4-21
10000
1000
100
10
1
Re in ohm.m ⟶
1
10
100
1000
L/2 in m ⟶

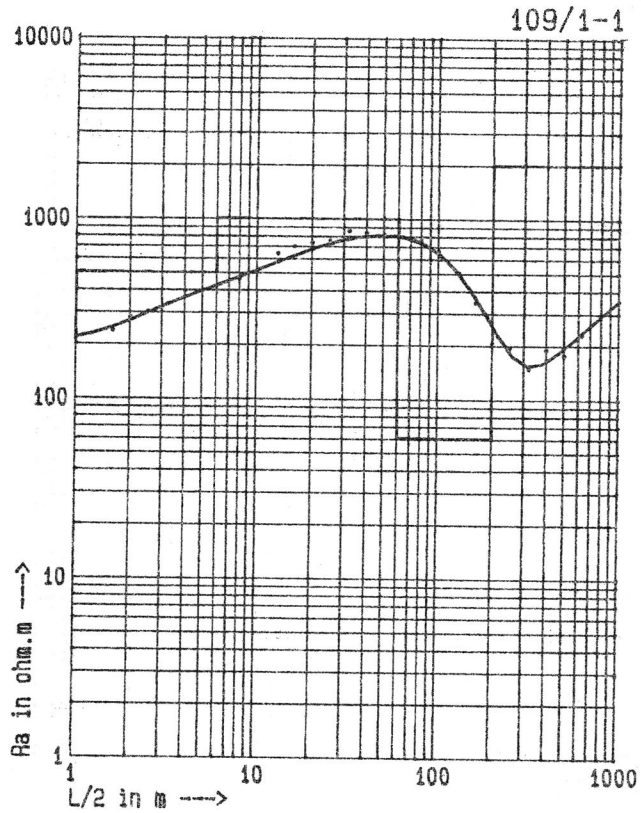

108/4-22
10000
1000
100
10
1
Re in ohm.m ⟶
1
10
100
1000
L/2 in m ⟶

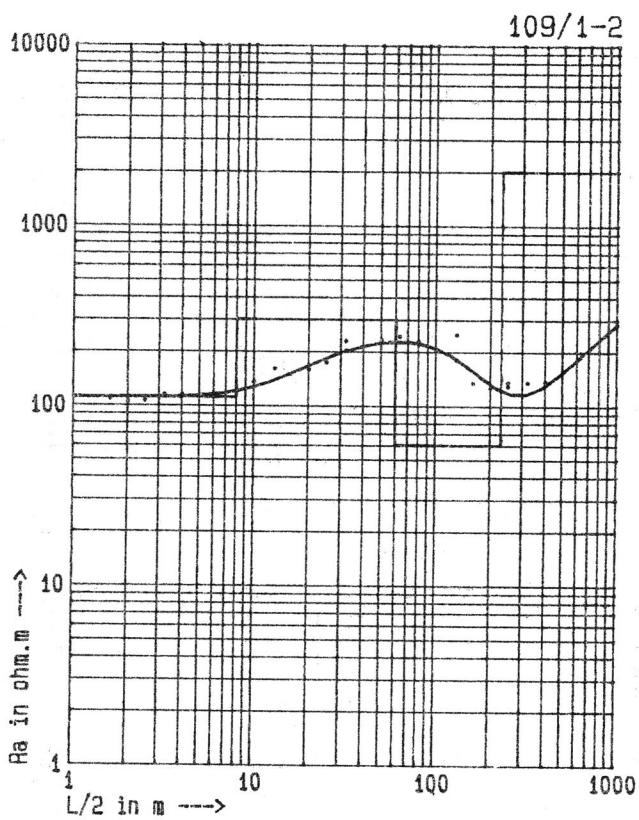

108/4-23
10000
1000
100
10
1
Re in ohm.m ⟶
1
10
100
1000
L/2 in m ⟶

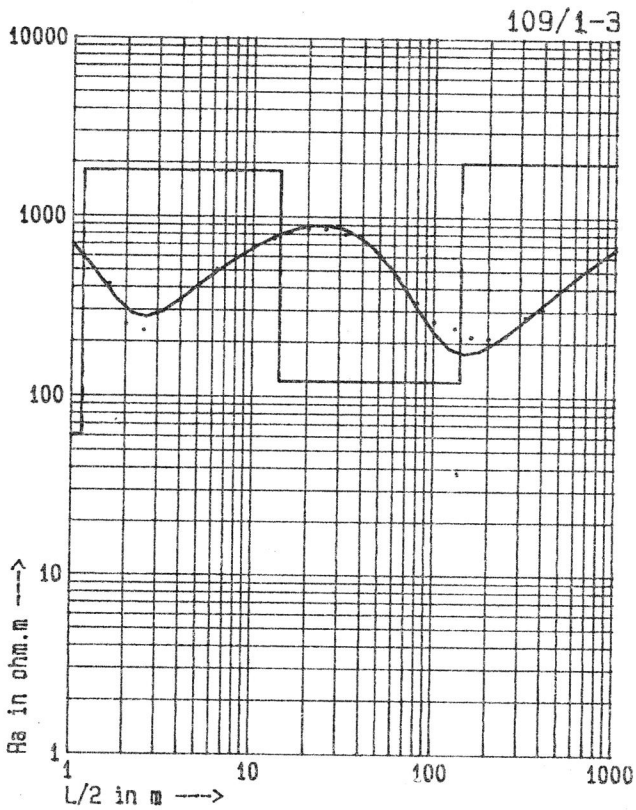

108/4-24
10000
1000
100
10
1
Re in ohm.m ⟶
1
10
100
1000
L/2 in m ⟶

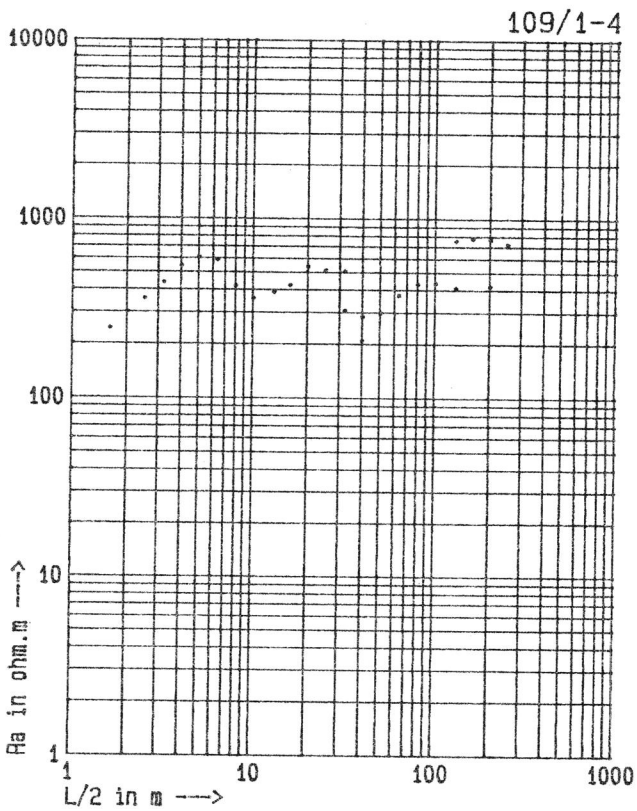

108/4-25
10000
1000
100
10
1
Ra in ohm.m ---->
1
10
100
1000
L/2 in m --->

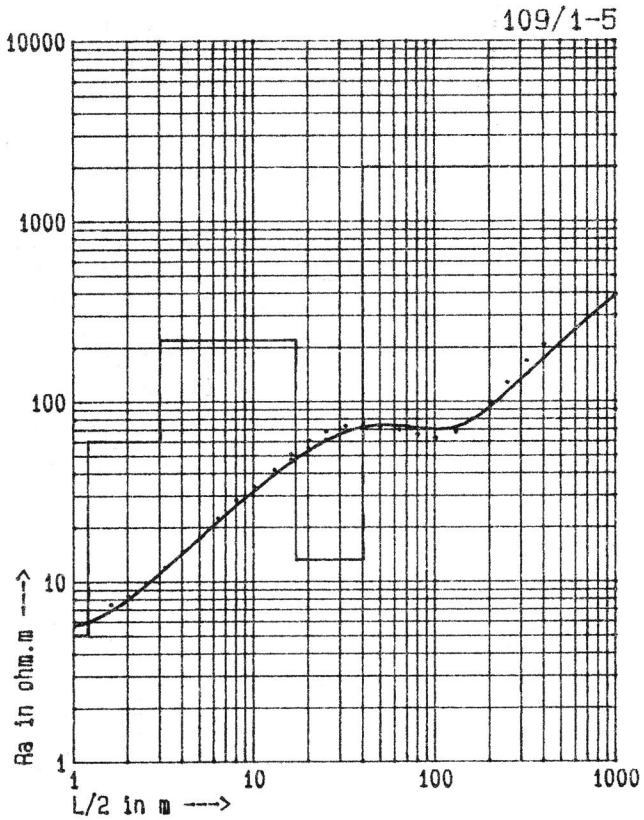

108/4-26
10000
1000
100
10
1
Ra in ohm.m ---->
1
10
100
1000
L/2 in m ---->

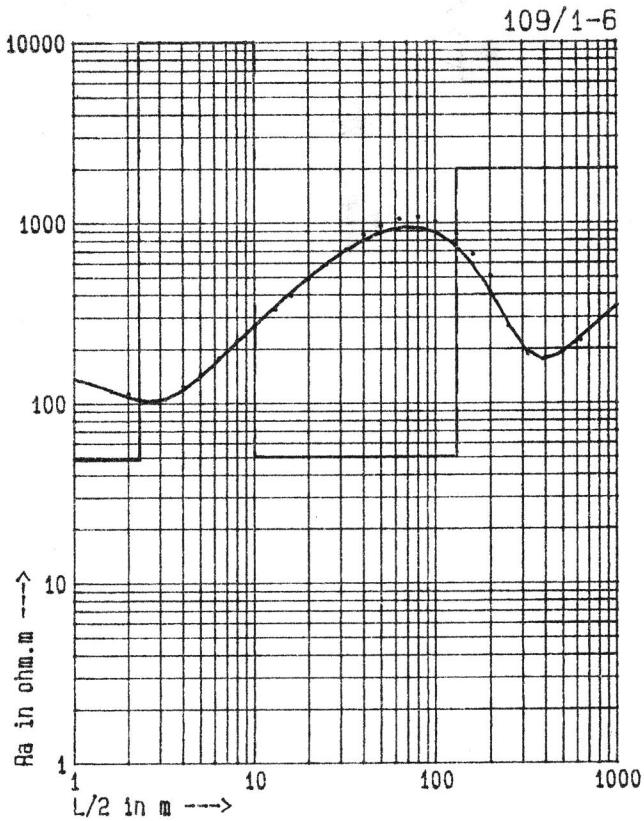

109/1-1
10000
1000
100
10
1
Ra in ohm.m ---->
1
10
100
1000
L/2 in m --->

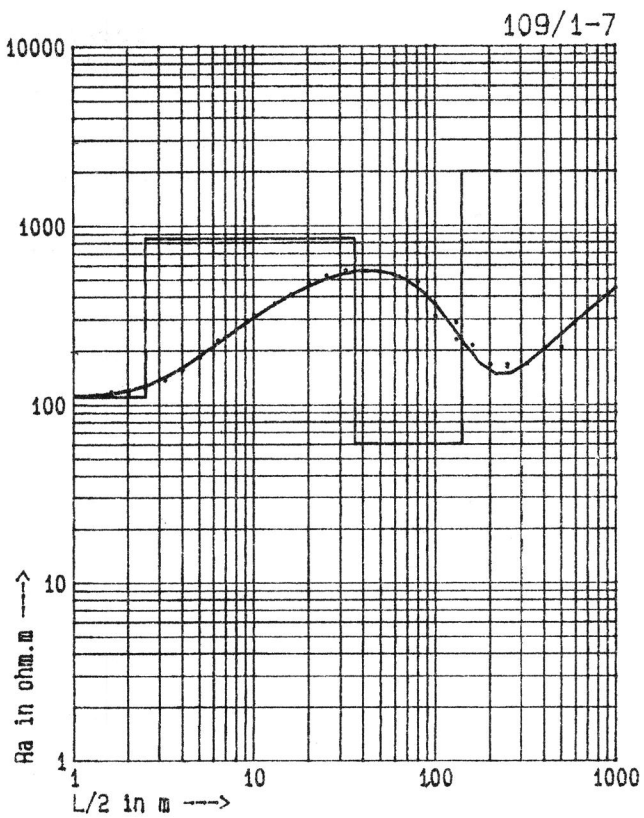

109/1-2
10000
1000
100
10
1
Ra in ohm.m ---->
1
10
100
1000
L/2 in m ---->

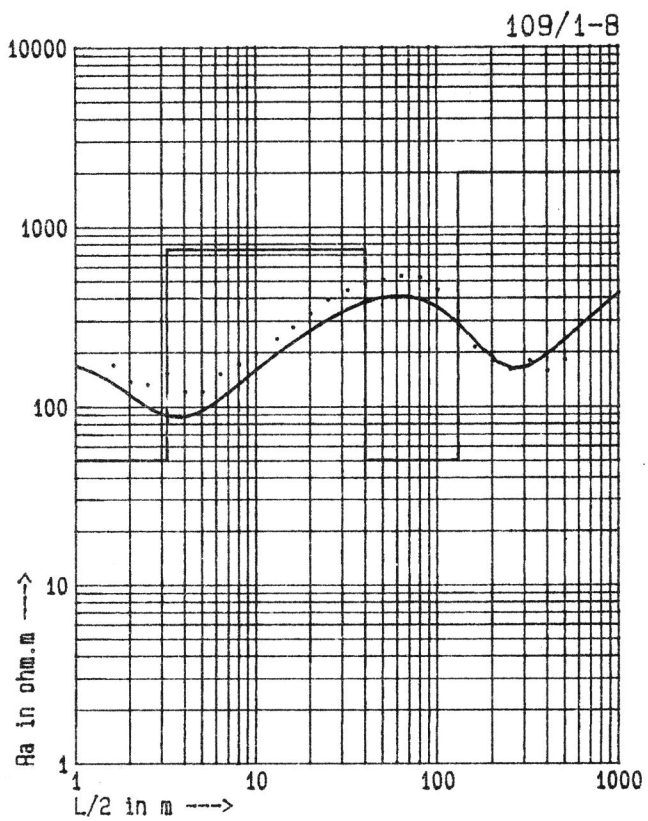

109/1-3
10000
1000
100
10
1
Ra in ohm.m ---->
1
10
100
1000
L/2 in m ---->

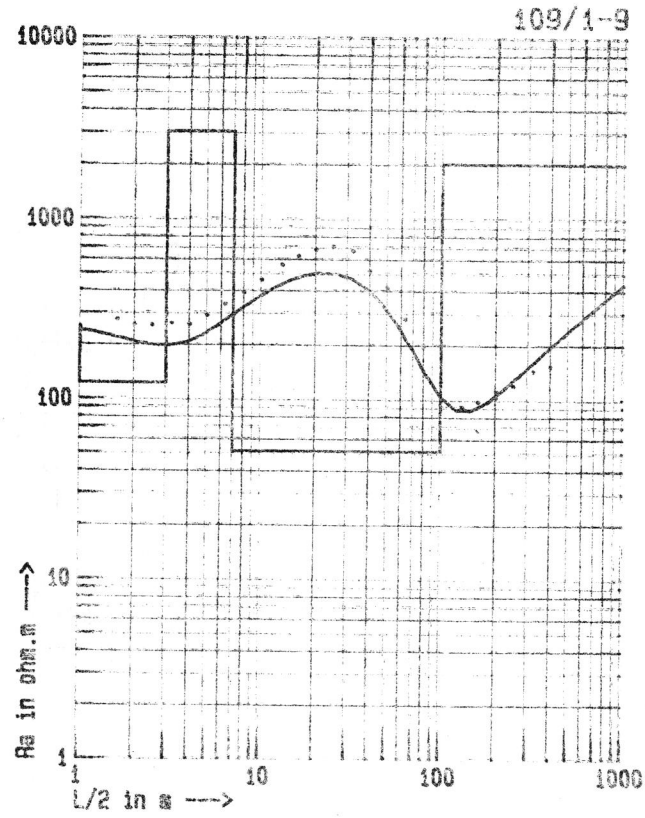

109/1-4
10000
1000
100
10
1
Ra in ohm.m ---->
1
10
100
1000
L/2 in m ---->

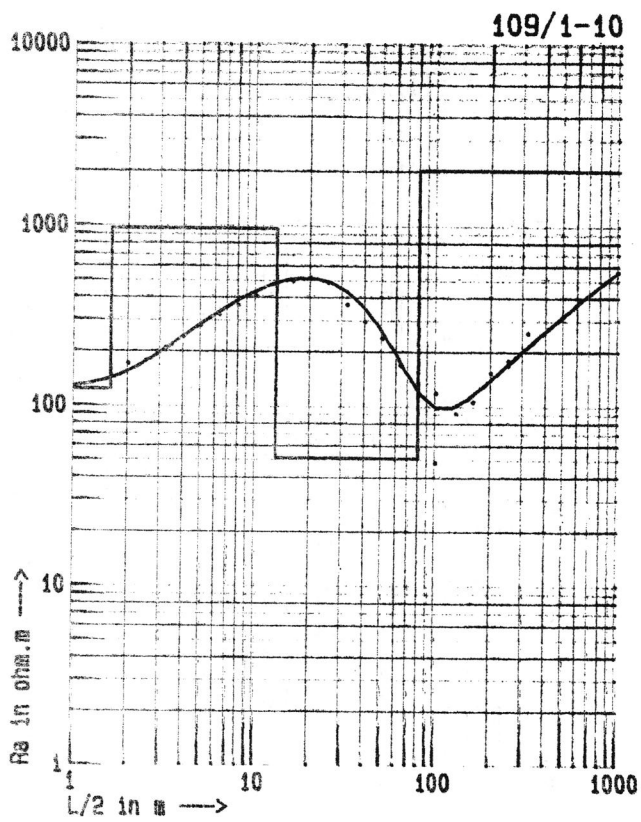

109/1-5
10000
1000
100
10
1
Ra in ohm.m --->
1
10
100
1000
L/2 in m --->

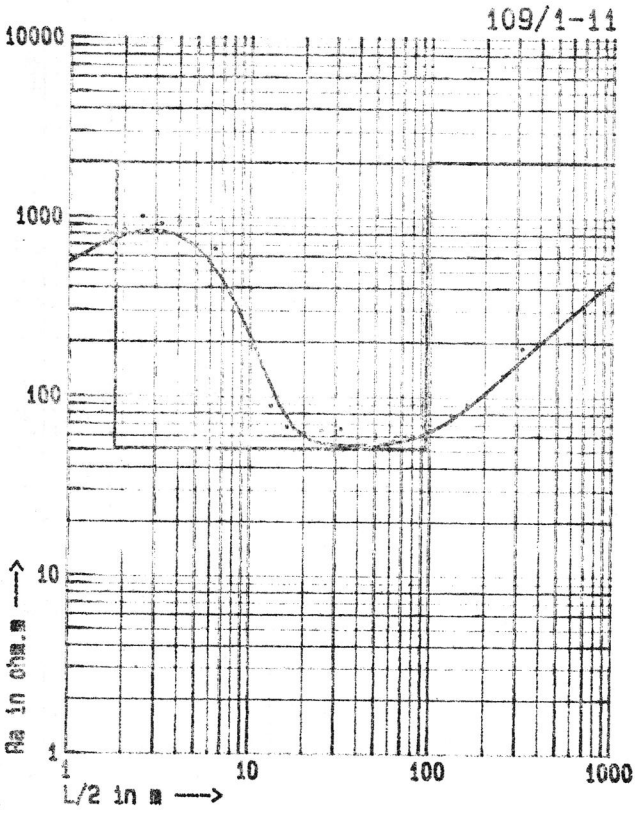

109/1-6
10000
1000
100
10
1
Ra in ohm.m --->
1
10
100
1000
L/2 in m --->

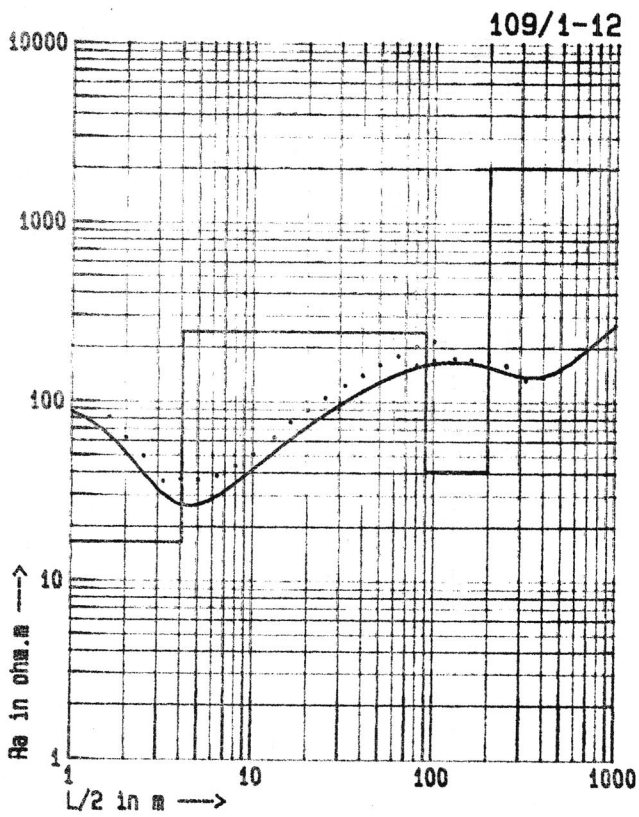

109/1-7
10000
1000
100
10
1
Ra in ohm.m --->
1
10
100
1000
L/2 in m --->

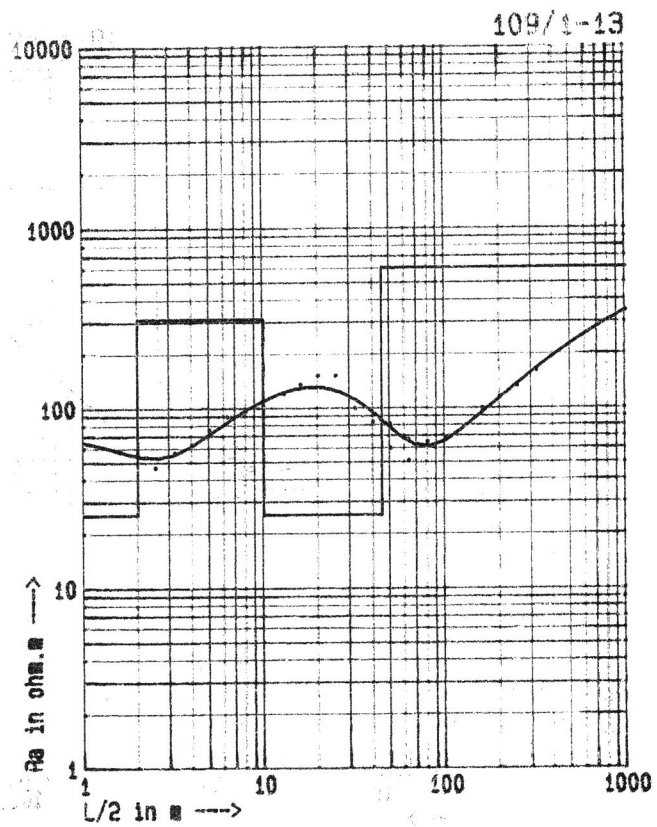

109/1-8
10000
1000
100
10
1
Ra in ohm.m --->
1
10
100
1000
L/2 in m --->

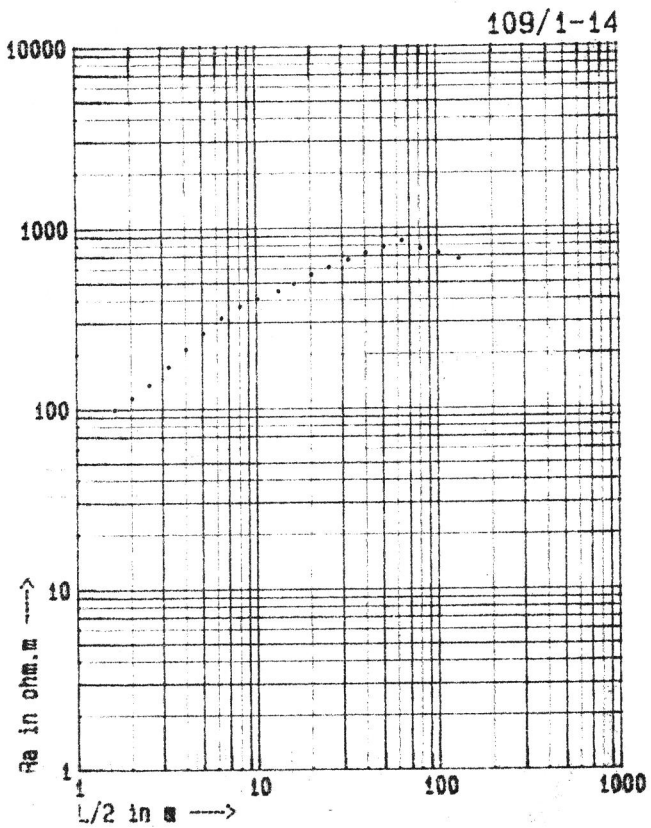

109/1-9
10000
1000
100
10
1
Ra in ohm.m ——>
1
10
100
1000
L/2 in m ——>

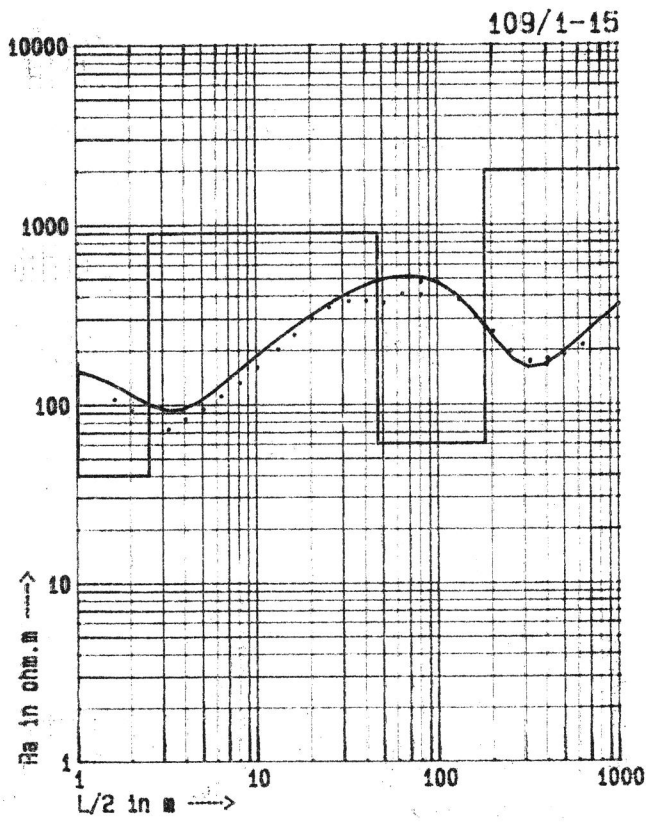

109/1-10
10000
1000
100
10
1
Ra in ohm.m ——>
1
10
100
1000
L/2 in m ——>

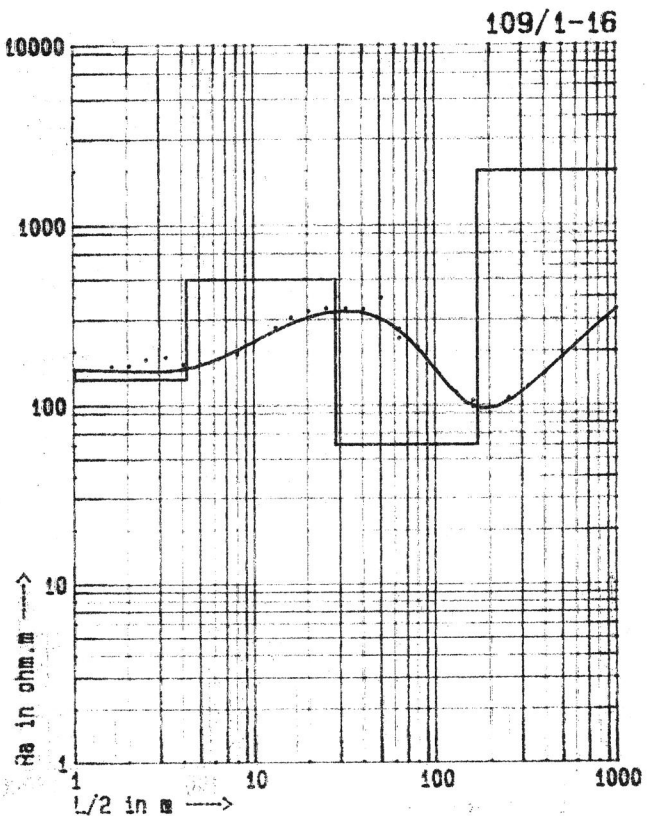

109/1-11
10000
1000
100
10
1
Ra in ohm.m ——>
1
10
100
1000
L/2 in m ——>

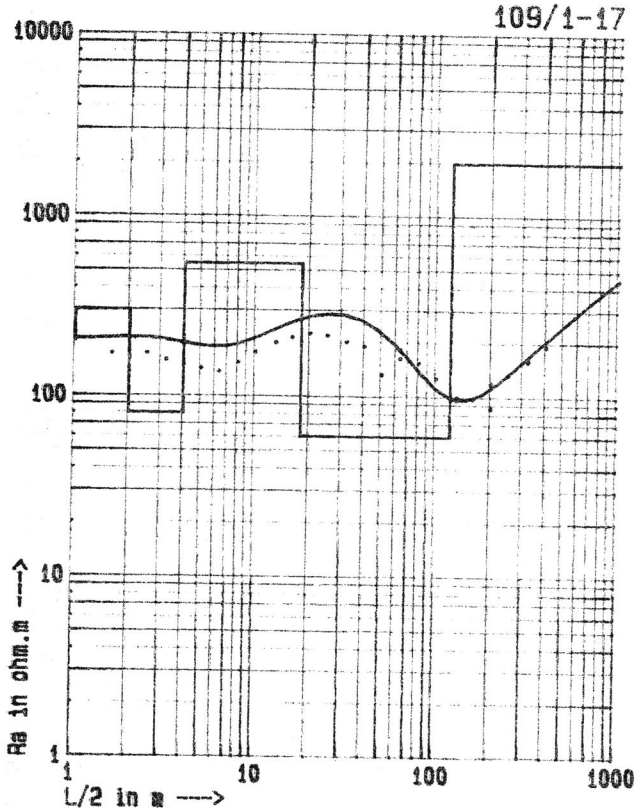

109/1-12
10000
1000
100
10
1
Ra in ohm.m ——>
1
10
100
1000
L/2 in m ——>

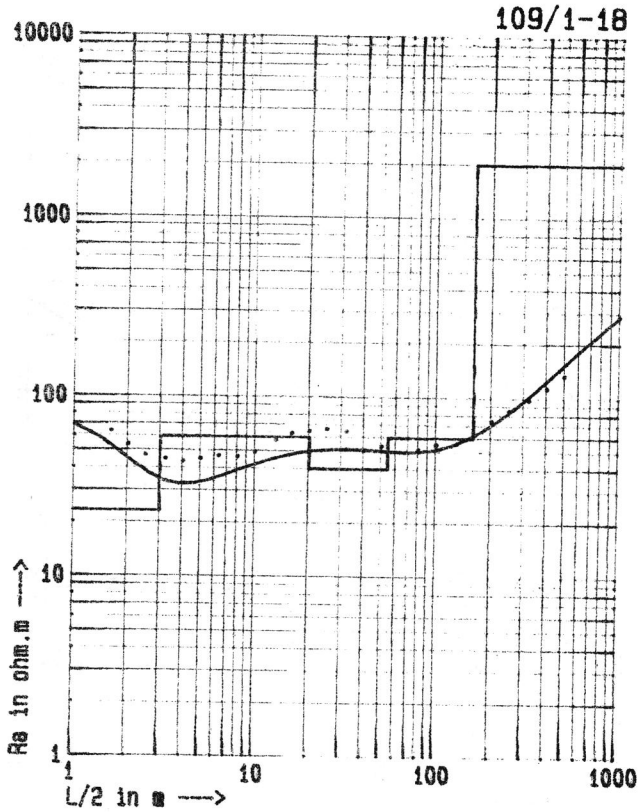

109/1-13
10000
1000
100
10
1
Ra in ohm.m ---->
1
10
100
1000
L/2 in m --->

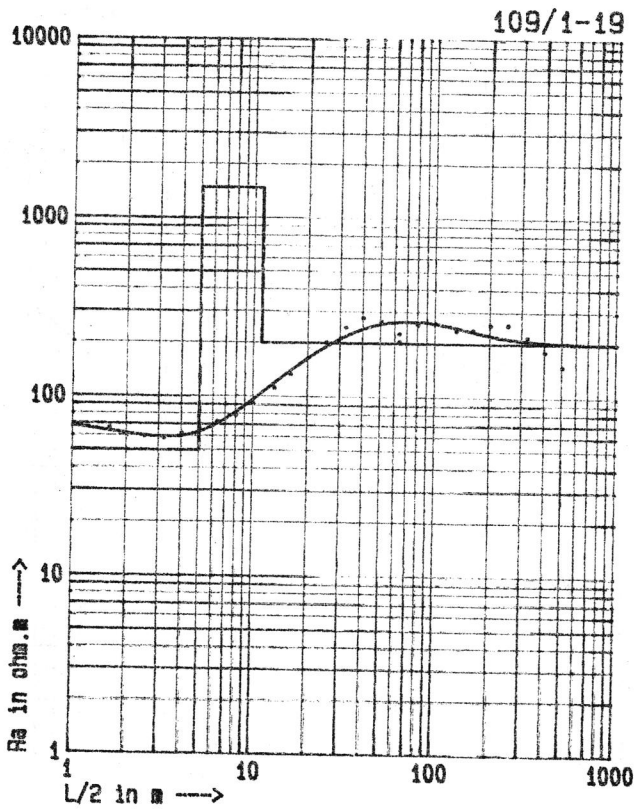

109/1-14
10000
1000
100
10
1
Ra in ohm.m ---->
1
10
100
1000
L/2 in m ---->

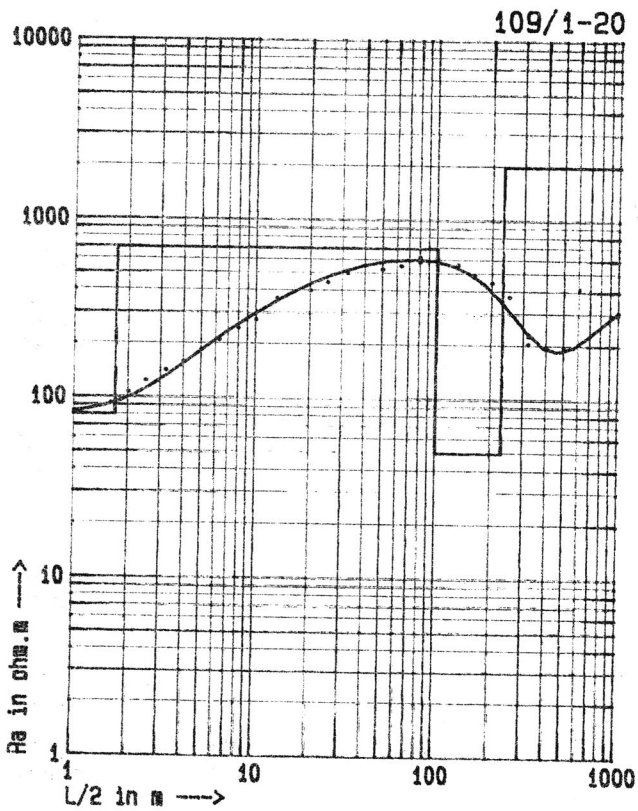

109/1-15
10000
1000
100
10
1
Ra in ohm.m ---->
1
10
100
1000
L/2 in m ---->

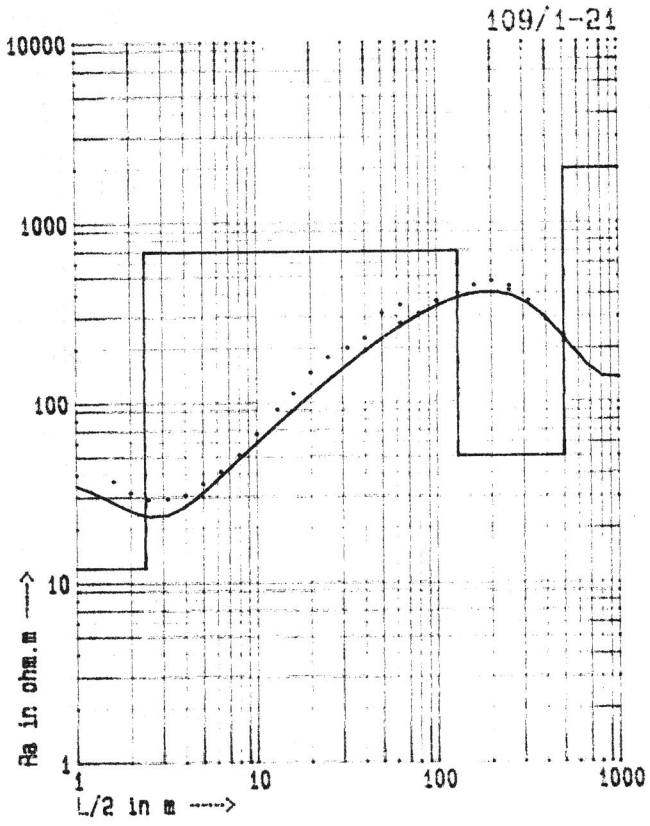

109/1-16
10000
1000
100
10
1
Ra in ohm.m ---->
1
10
100
1000
L/2 in m ---->

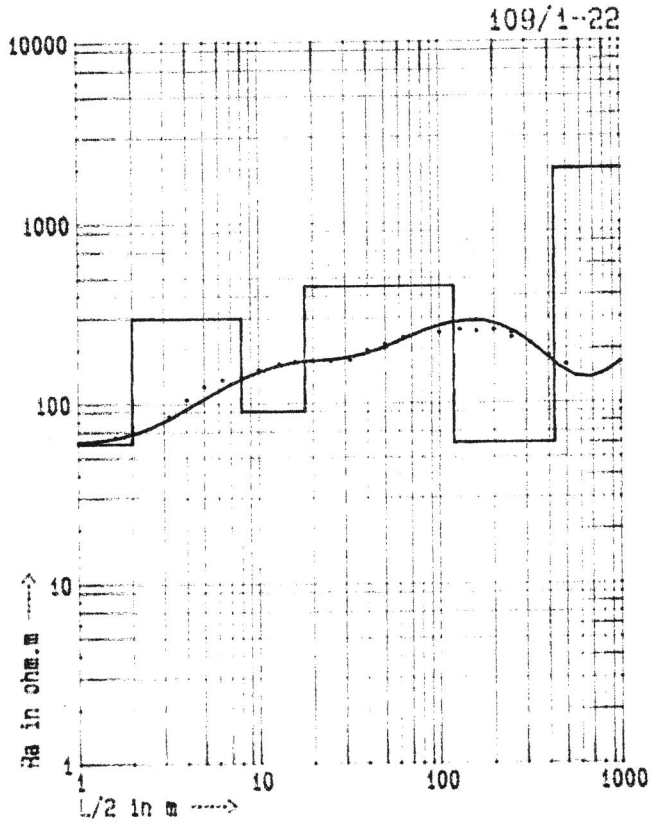

109/1-17
10000
1000
100
10
1
Ra in ohm.m ---->
1
10
100
1000
L/2 in m --->

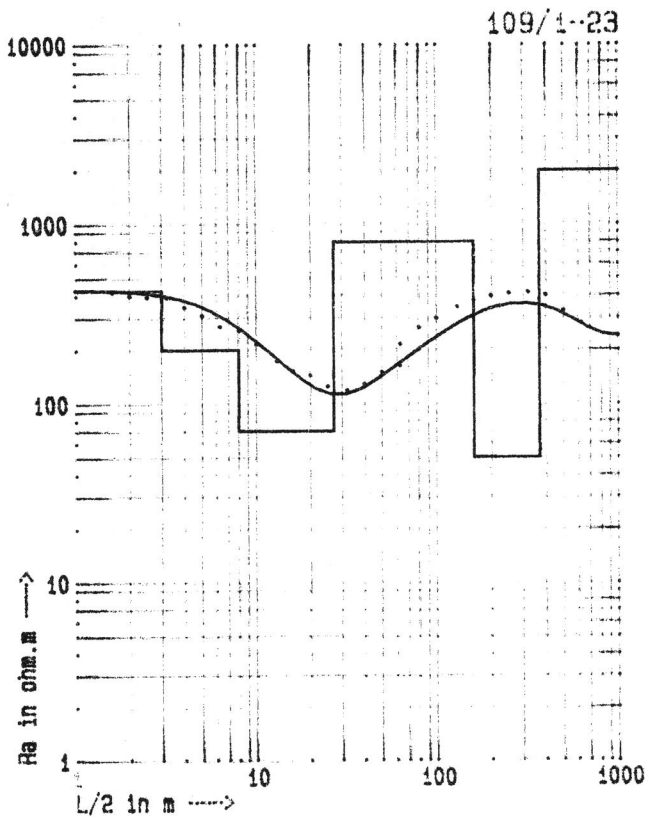

109/1-18
10000
1000
100
10
1
Ra in ohm.m ---->
1
10
100
1000
L/2 in m ---->

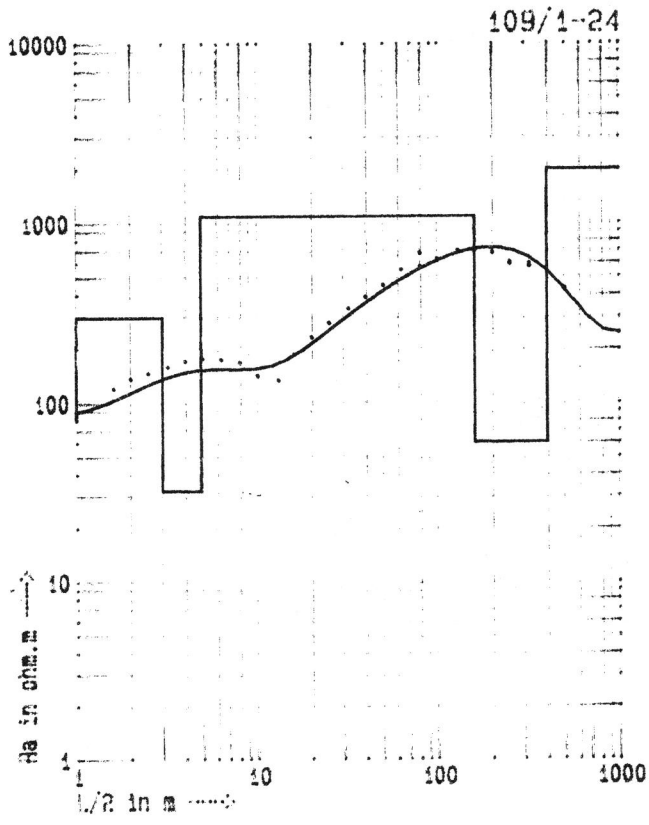

109/1-19
10000
1000
100
10
1
Ra in ohm.m ---->
1
10
100
1000
L/2 in m ---->

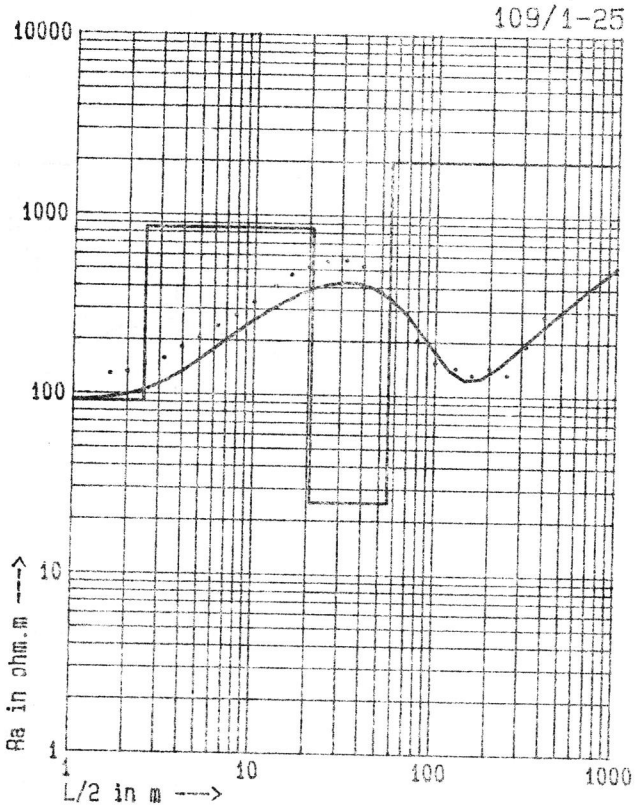

109/1-20
10000
1000
100
10
1
Ra in ohm.m ---->
1
10
100
1000
L/2 in m ---->

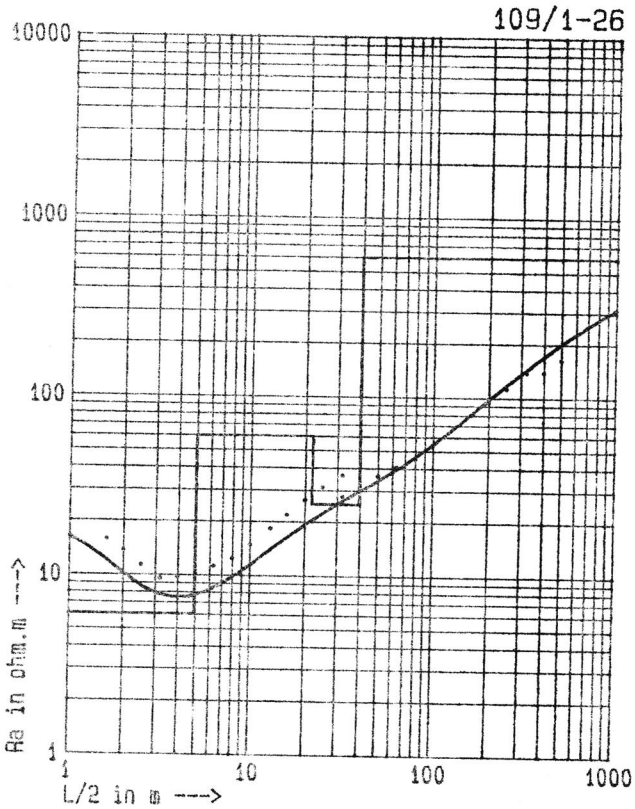

109/1-21
10000
1000
100
10
1
Ra in ohm.m ——>
1
10
100
1000
L/2 in m ——>

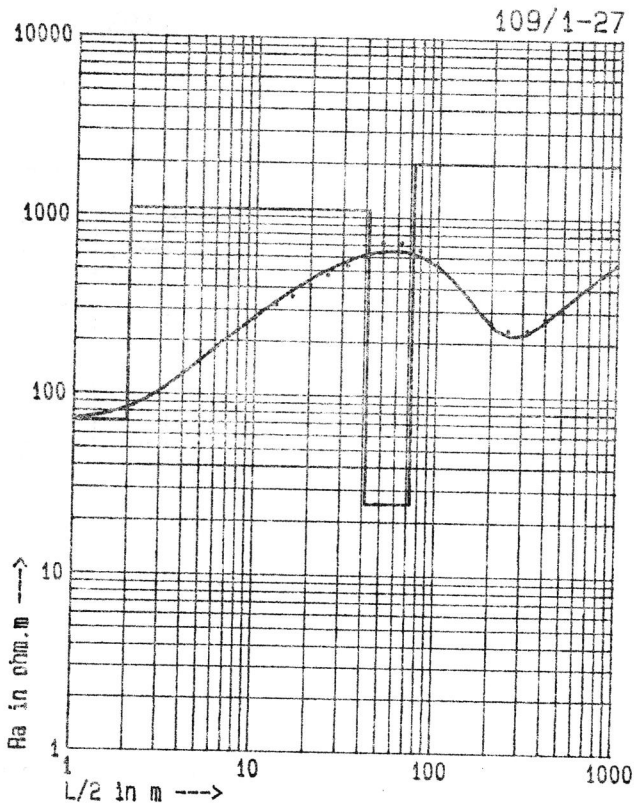

109/1-22
10000
1000
100
10
1
Ra in ohm.m ——>
1
10
100
1000
L/2 in m ——>

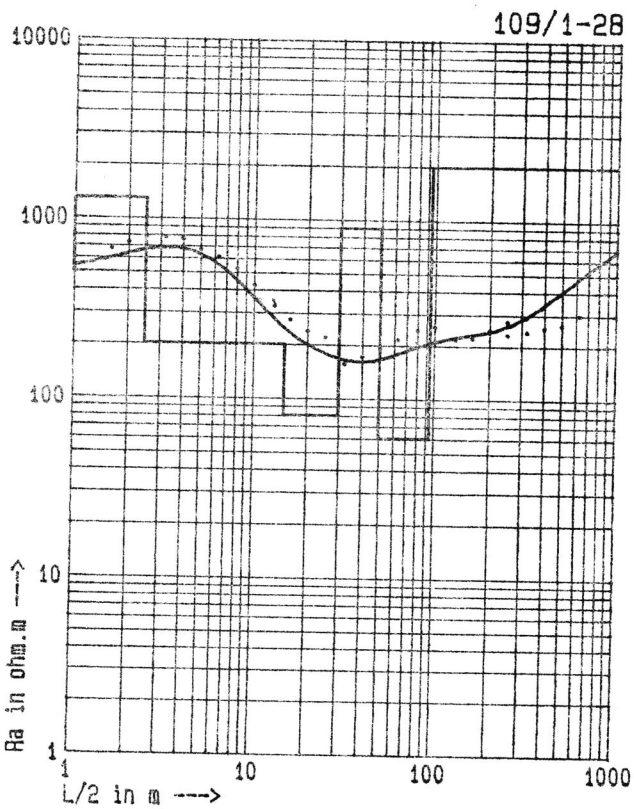

109/1-23
10000
1000
100
10
1
Ra in ohm.m ——>
1
10
100
1000
L/2 in m ——>


109/1-24
10000
1000
100
10
1
Ra in ohm.m ——>
1
10
100
1000
L/2 in m ——>

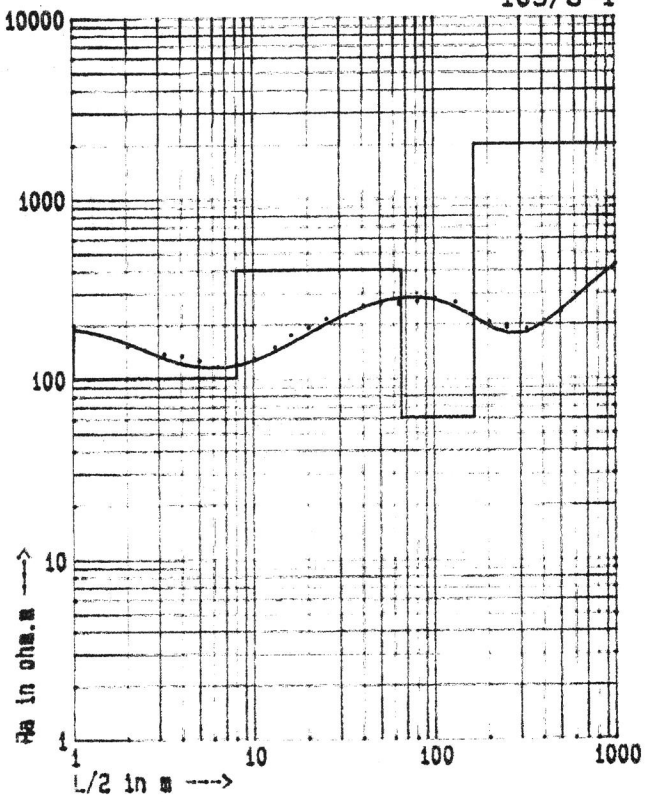

109/1-25
10000
1000
100
10
1
Ra in ohm.m --->
1
10
100
1000
L/2 in m --->


109/1-26
10000
1000
100
10
1
Ra in ohm.m --->
1
10
100
1000
L/2 in m --->

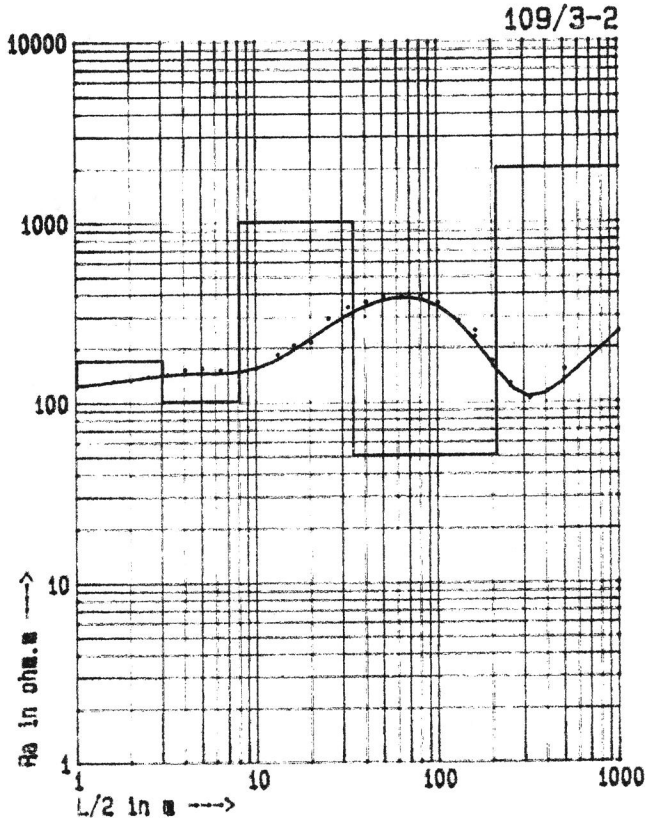

109/1-27
10000
1000
100
10
1
Ra in ohm.m --->
1
10
100
1000
L/2 in m --->


109/1-28
10000
1000
100
10
1
Ra in ohm.m --->
1
10
100
1000
L/2 in m --->

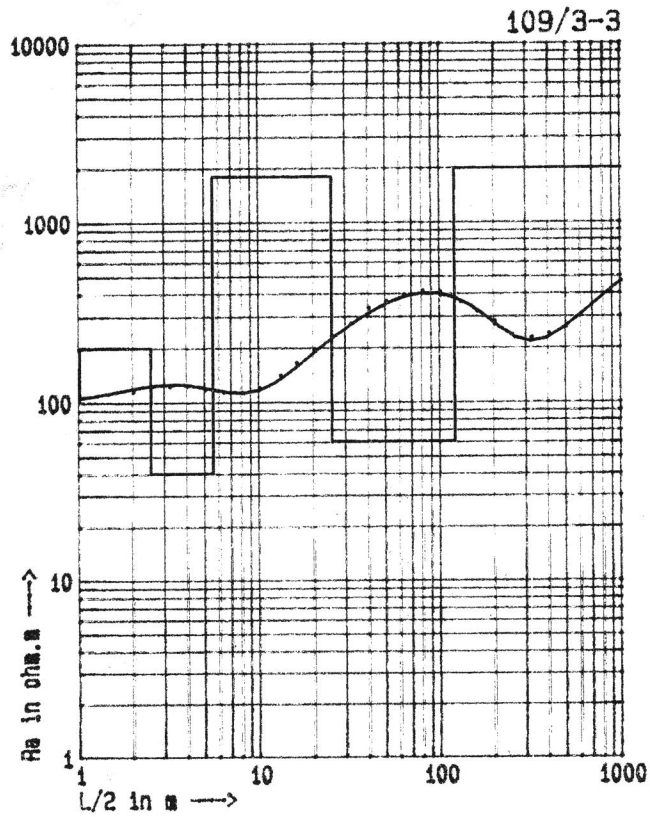
109/3-1



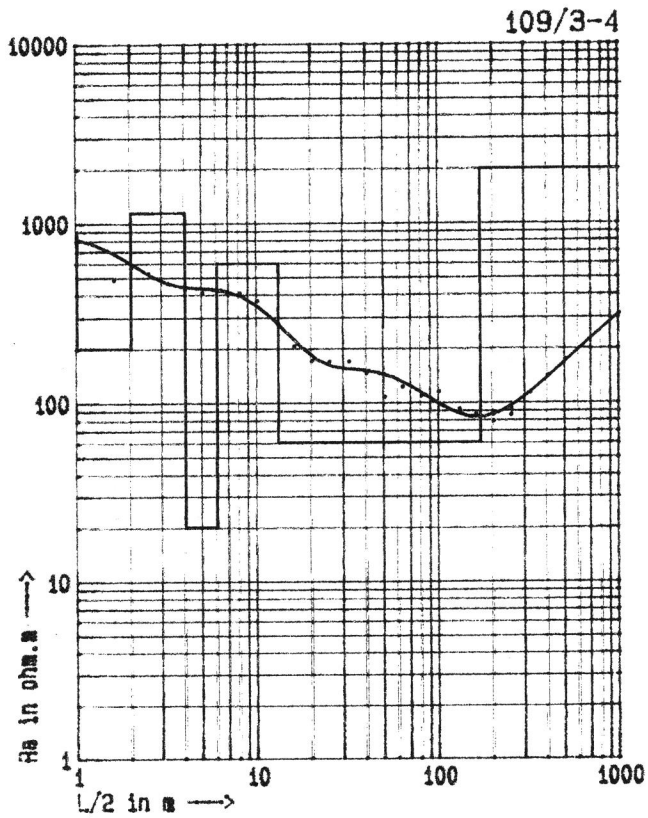

109/3-2

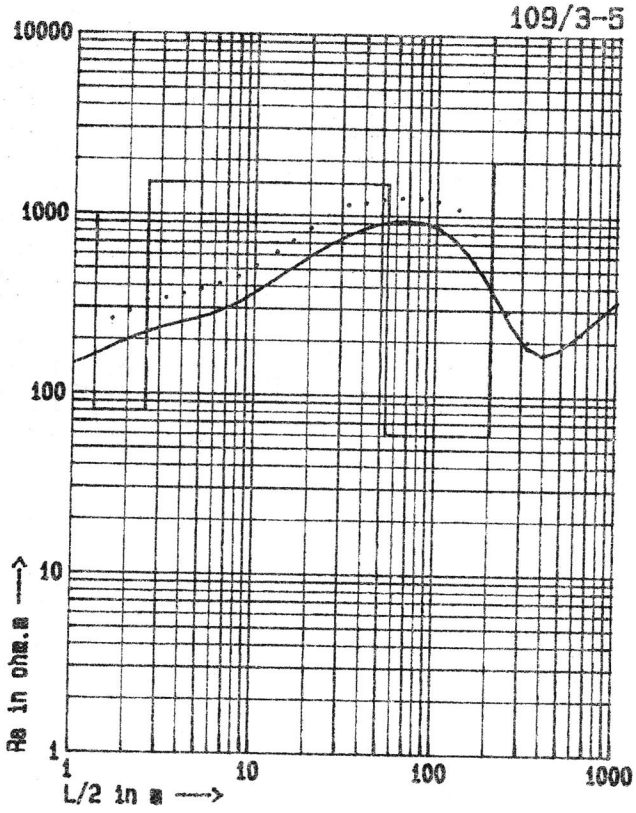


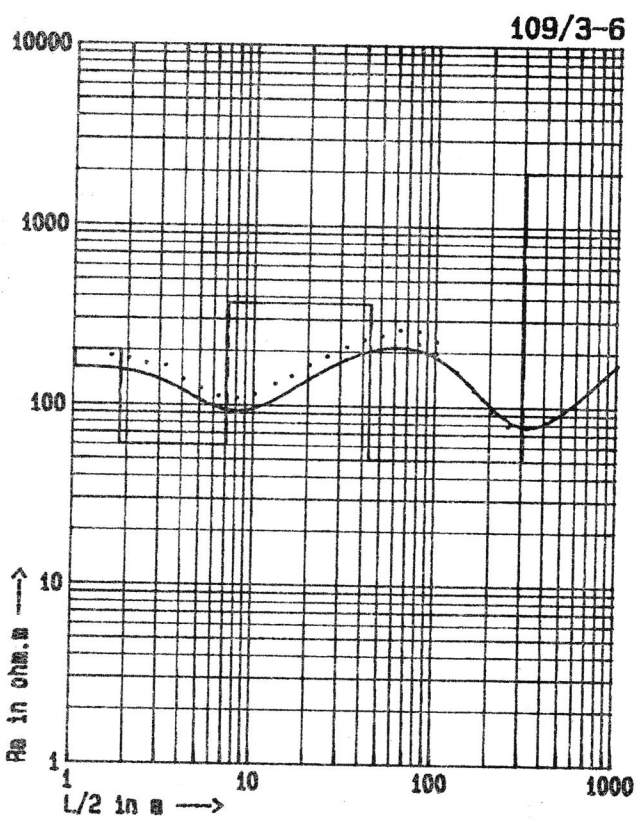

109/3-3

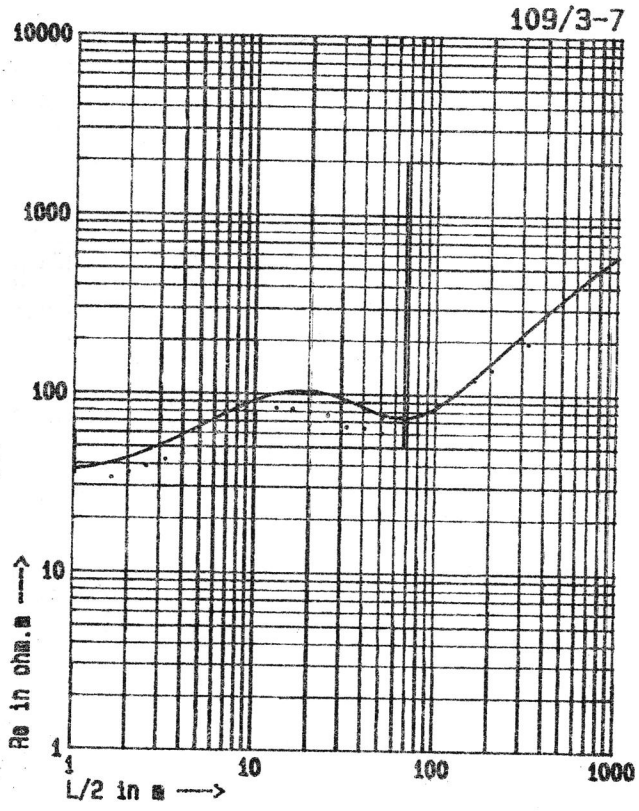


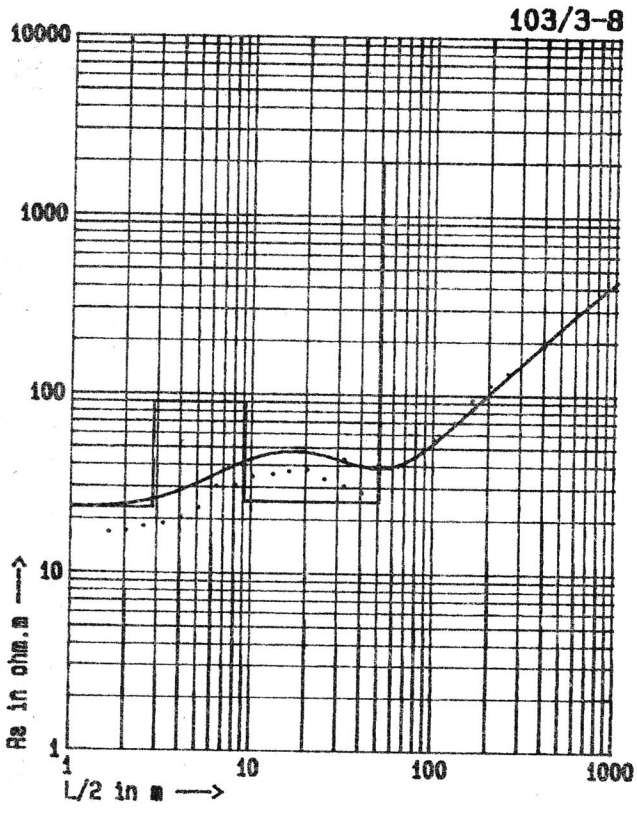

109/3-4

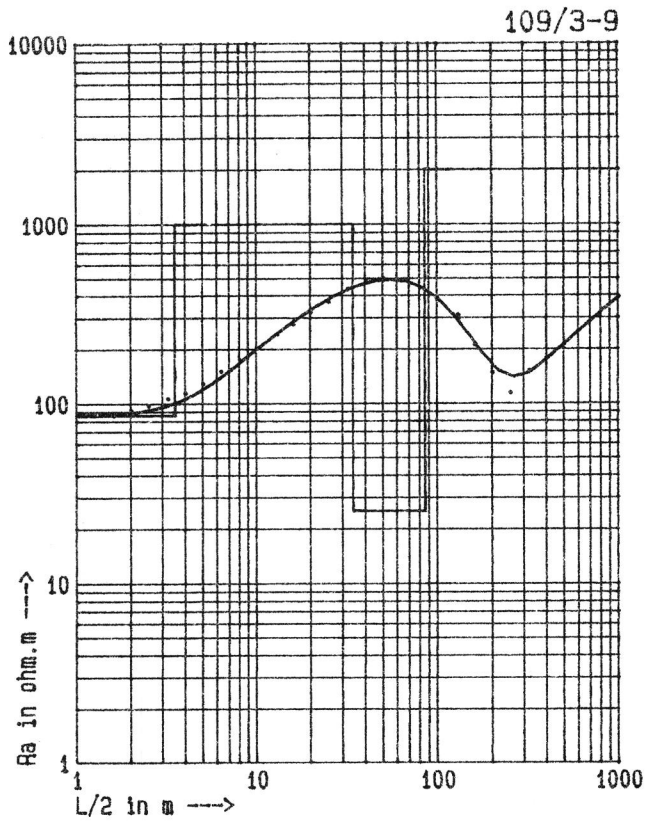


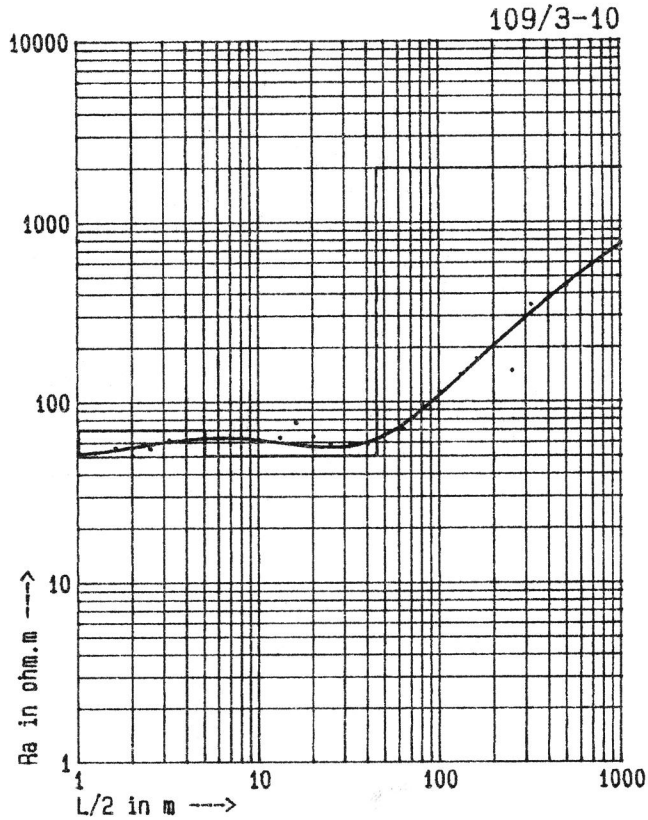

109/3-5
10000
1000
100
10
1
Re in ohm.m ⟶
1
10
100
1000
L/2 in m ⟶

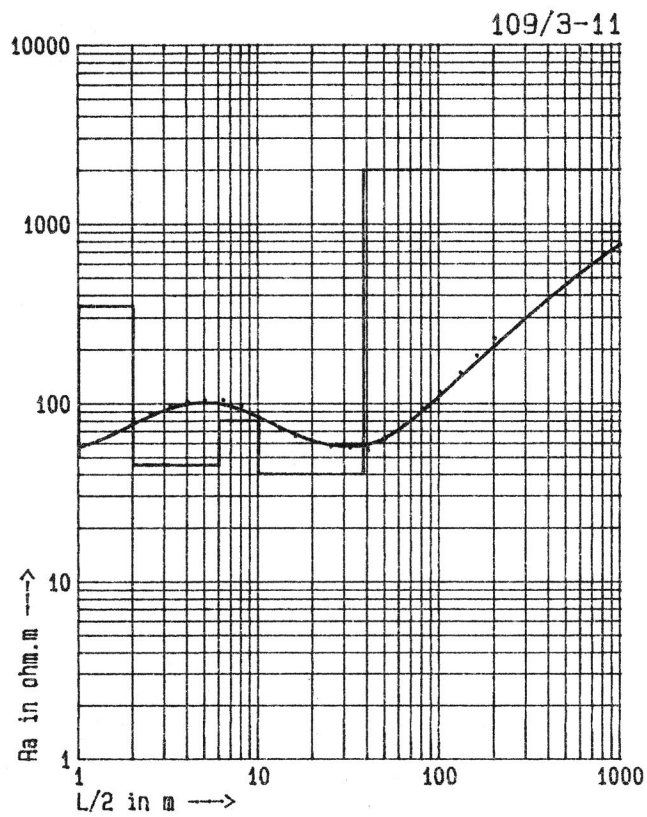

109/3-6
10000
1000
100
10
1
Re in ohm.m ⟶
1
10
100
1000
L/2 in m ⟶

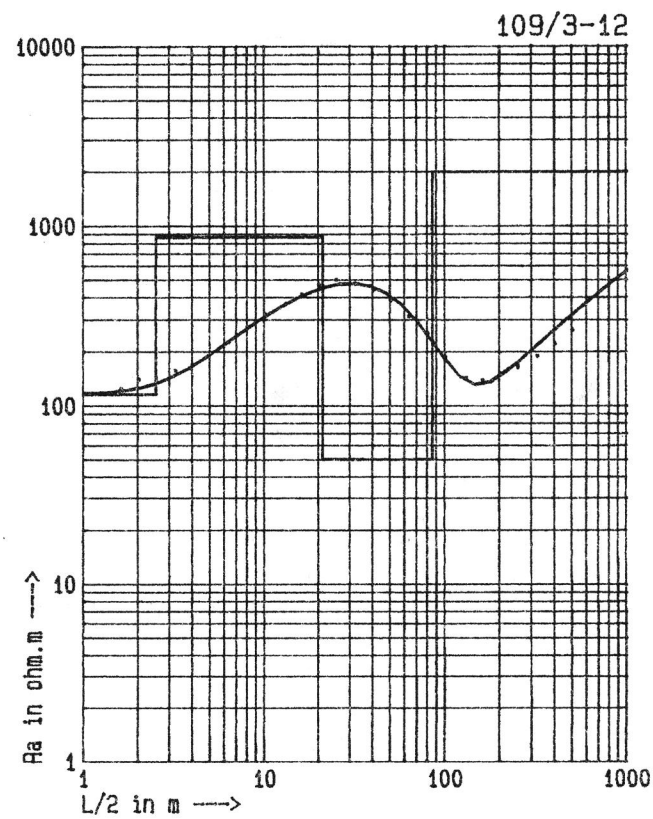

109/3-7
10000
1000
100
10
1
Re in ohm.m ⟶
1
10
100
1000
L/2 in m ⟶

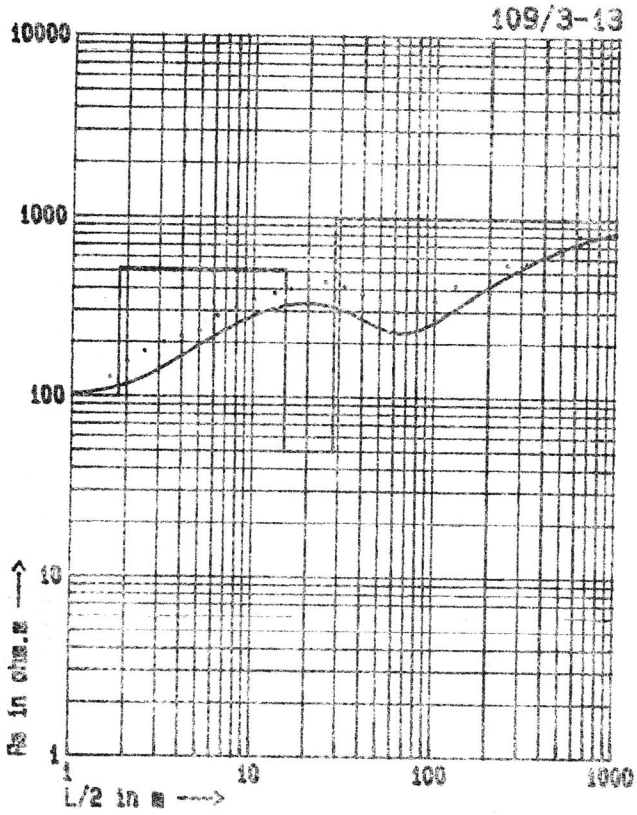

103/3-8
10000
1000
100
10
1
Re in ohm.m ⟶
1
10
100
1000
L/2 in m ⟶

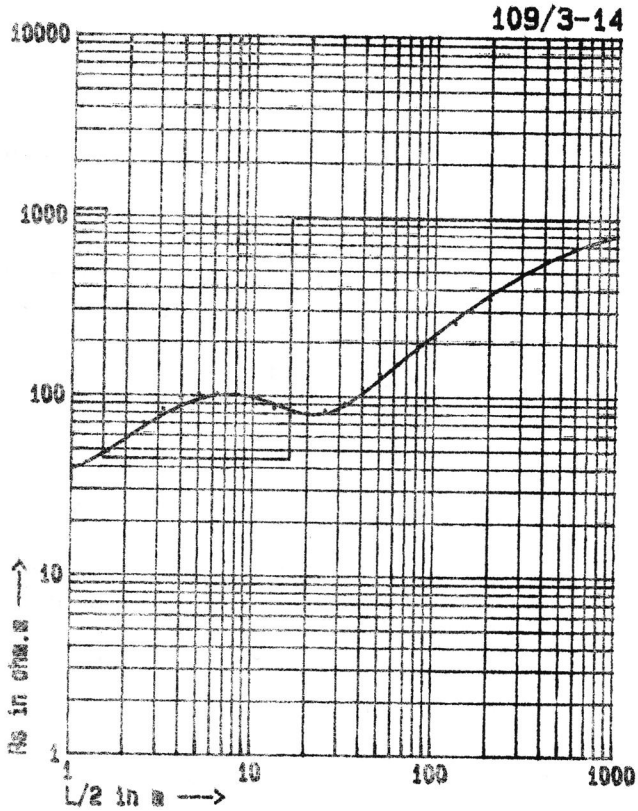

109/3-9
10000
1000
100
10
1
Ra in ohm.m ---->
1
10
100
1000
L/2 in m --->

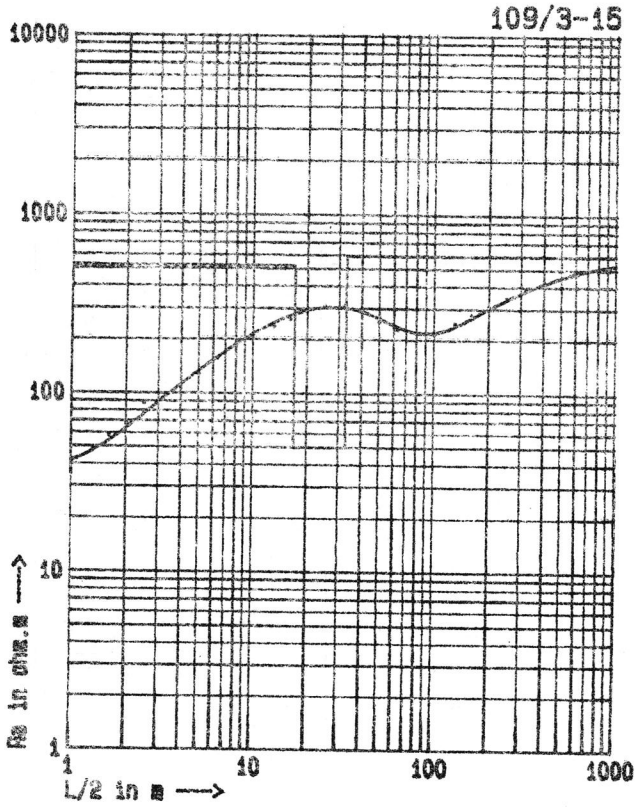

109/3-10
10000
1000
100
10
1
Ra in ohm.m ---->
1
10
100
1000
L/2 in m ---->

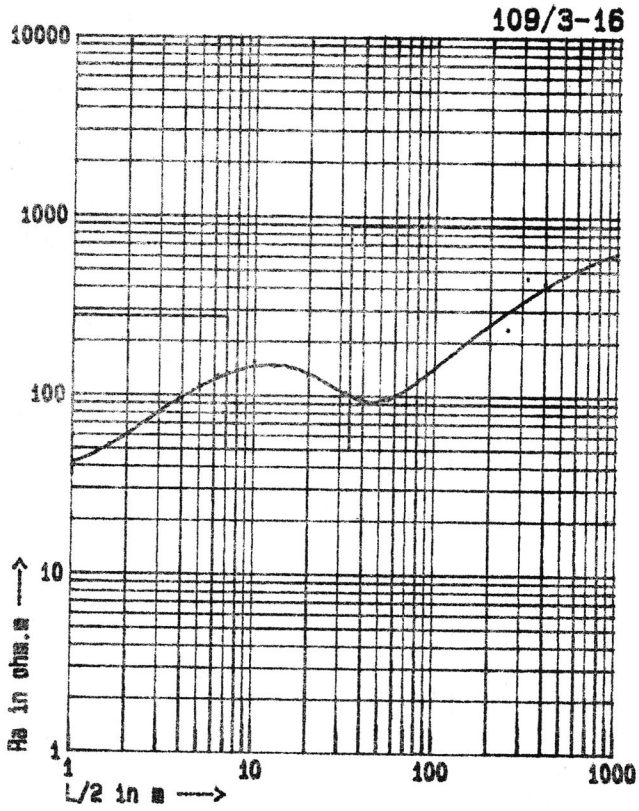

109/3-11
10000
1000
100
10
1
Ra in ohm.m ---->
1
10
100
1000
L/2 in m ---->

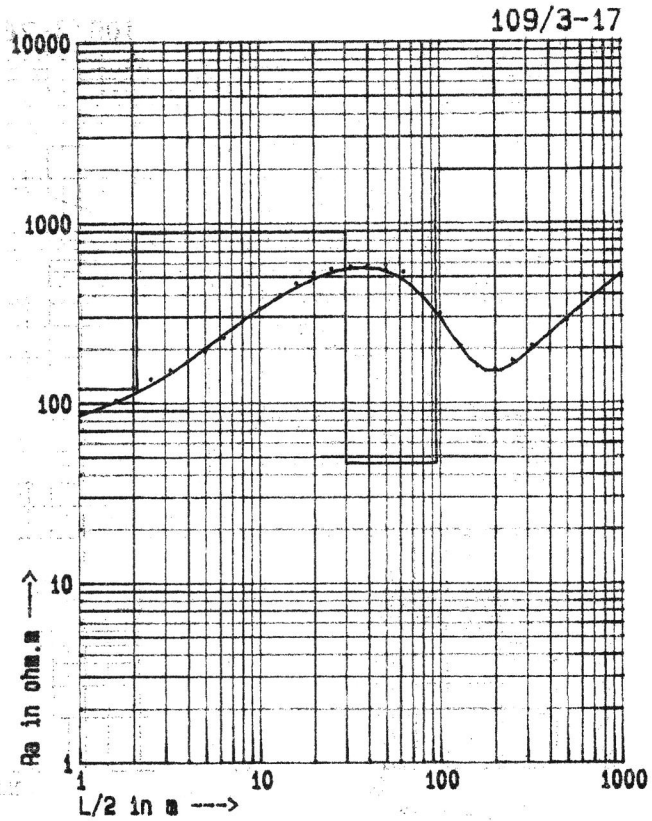

109/3-12
10000
1000
100
10
1
Ra in ohm.m ---->
1
10
100
1000
L/2 in m ---->

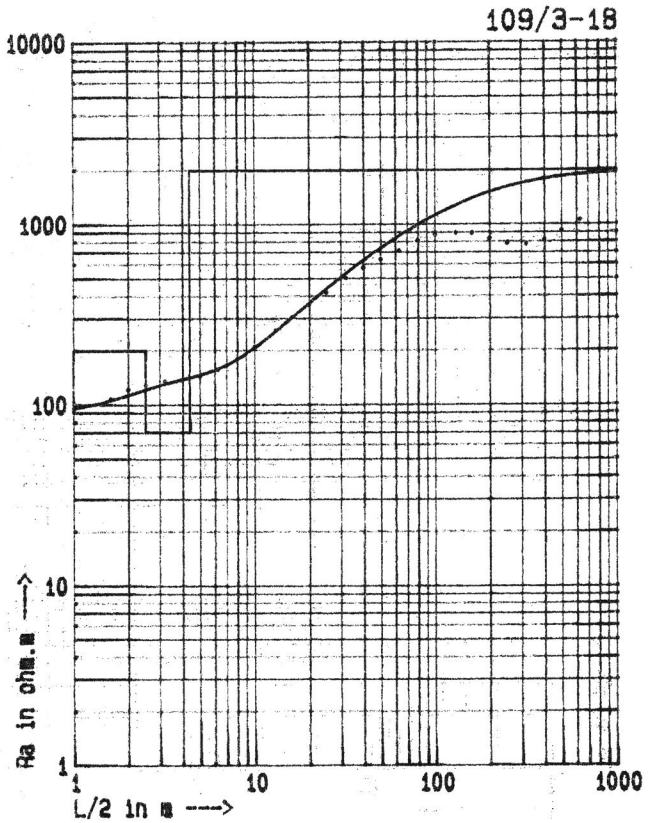

109/3-13
10000
1000
100
10
1
Ra in ohm.m ⟶
1
10
100
1000
L/2 in m ⟶

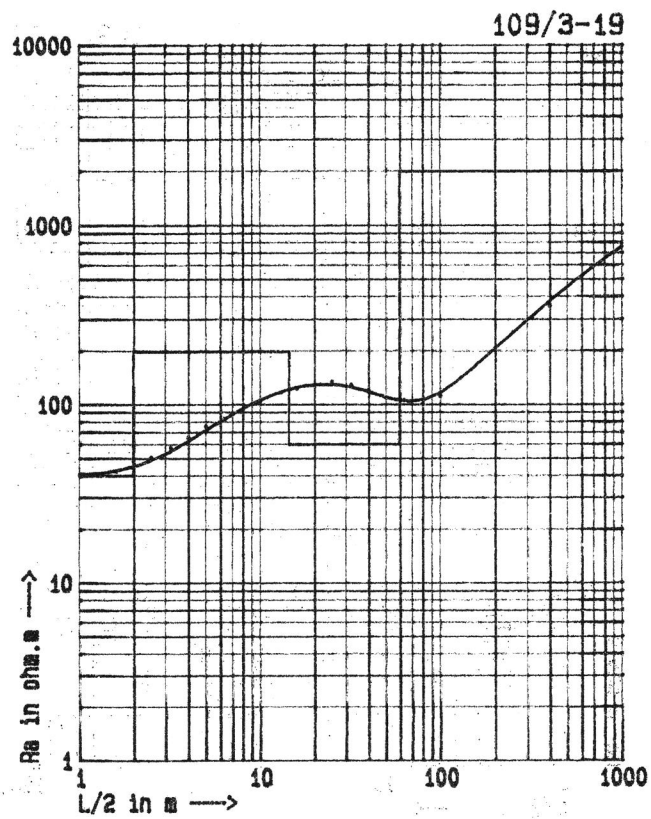

109/3-14
10000
1000
100
10
1
Ra in ohm.m ⟶
1
10
100
1000
L/2 in m ⟶

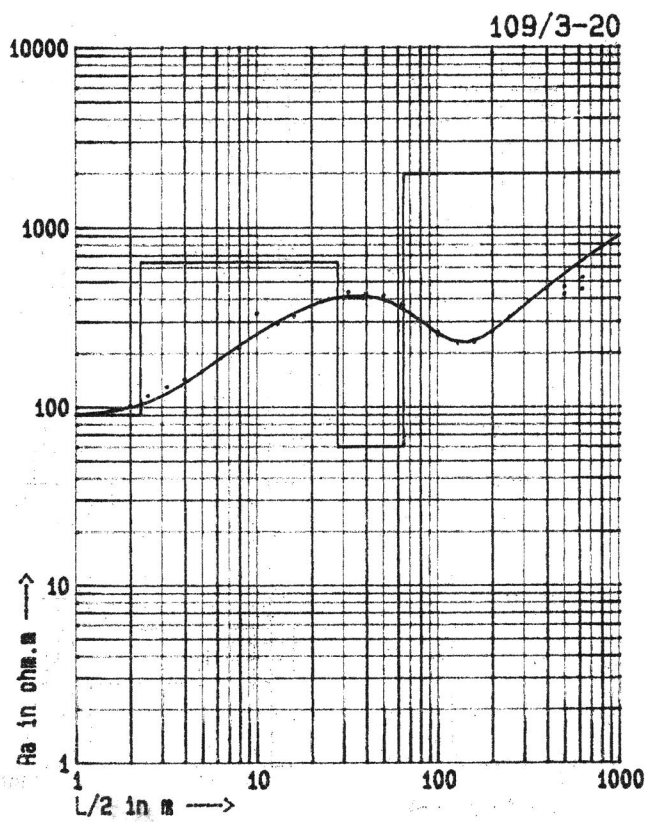

109/3-15
10000
1000
100
10
1
Ra in ohm.m ⟶
1
10
100
1000
L/2 in m ⟶

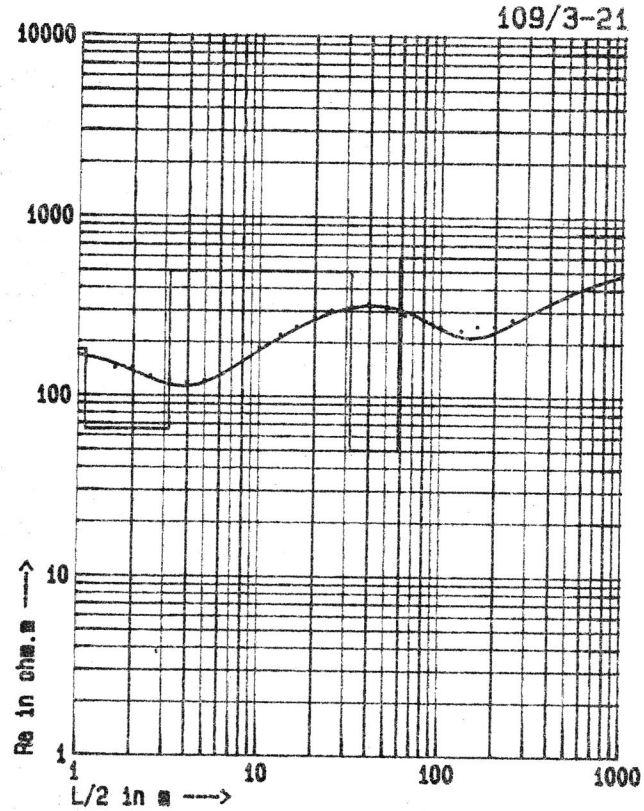

109/3-16
10000
1000
100
10
1
Ra in ohm.m ⟶
1
10
100
1000
L/2 in m ⟶

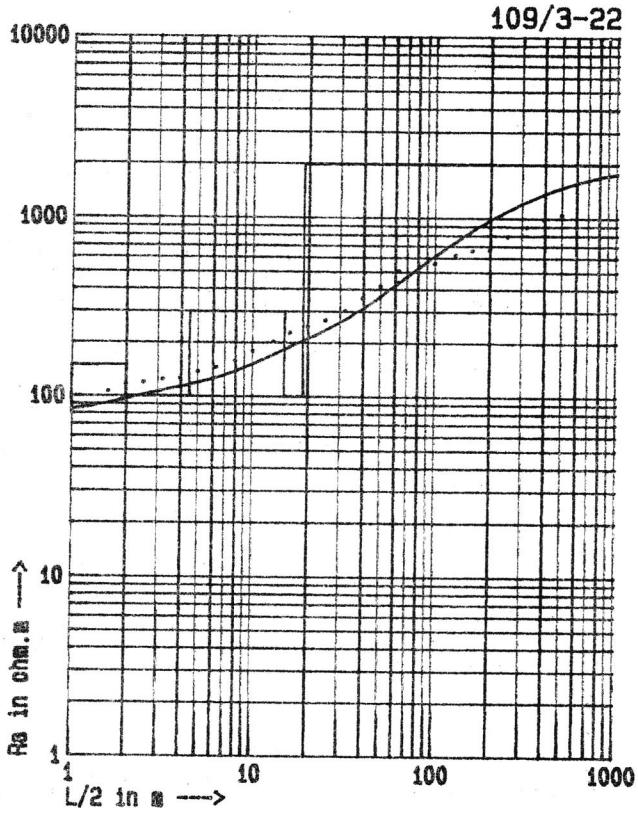

109/3-17
10000
1000
100
10
1
Ra in ohm.m ---->
1
10
100
1000
L/2 in m --->

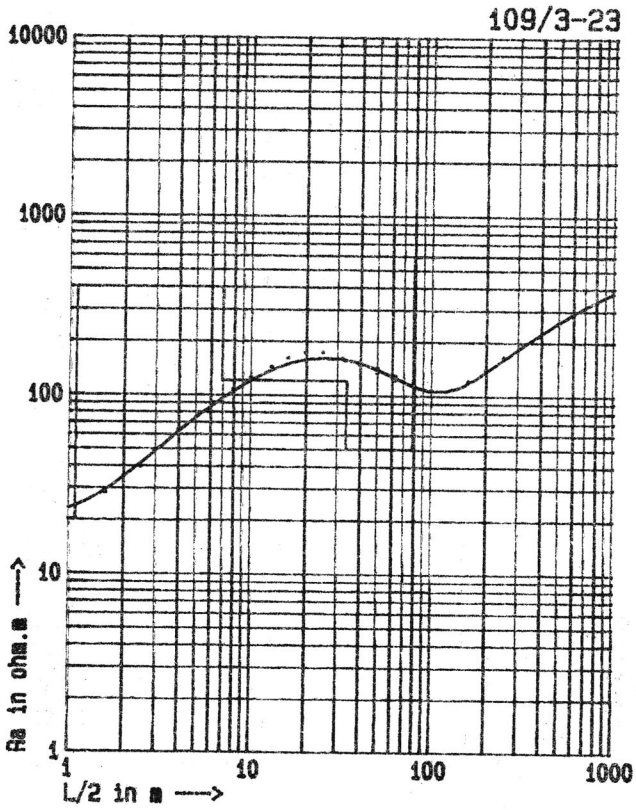

109/3-18
10000
1000
100
10
1
Ra in ohm.m ---->
1
10
100
1000
L/2 in m ---->

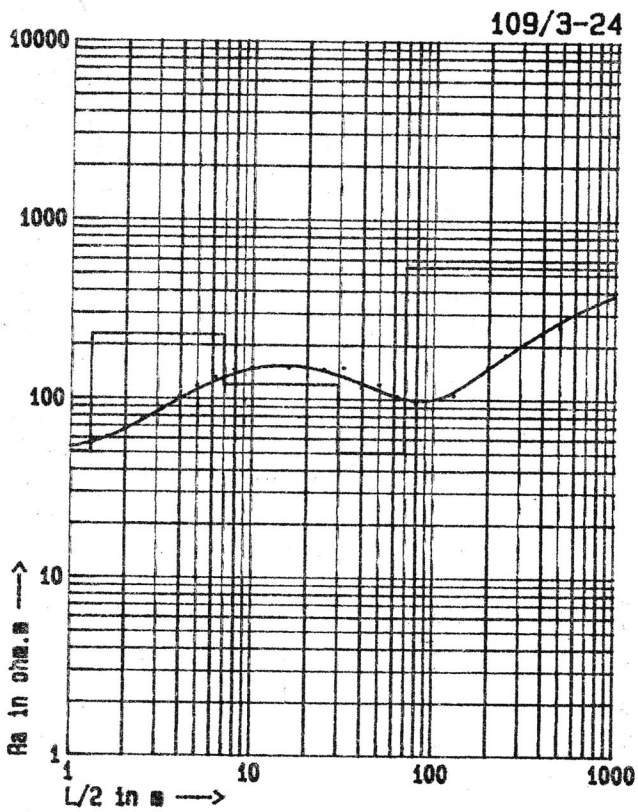

109/3-19
10000
1000
100
10
1
Ra in ohm.m ---->
1
10
100
1000
L/2 in m ---->

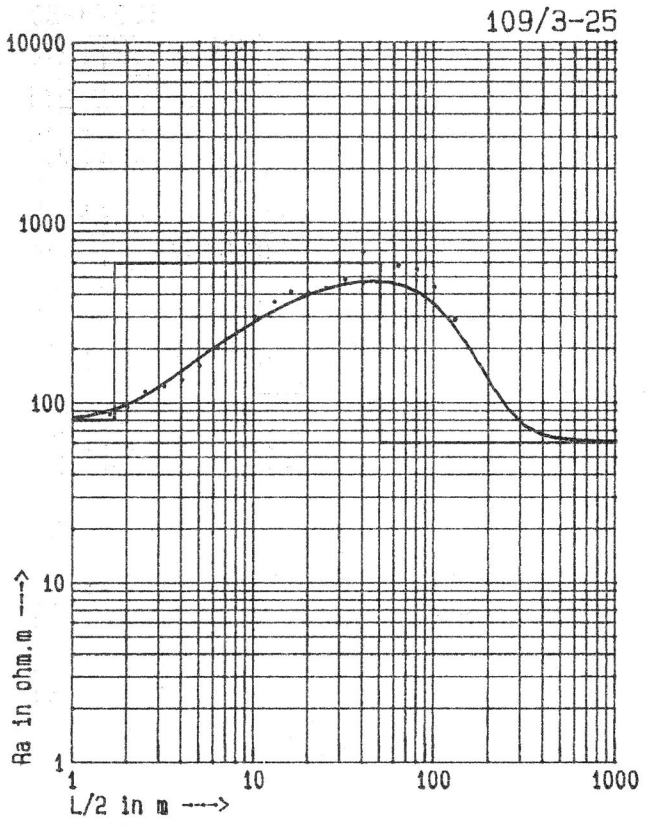

109/3-20
10000
1000
100
10
1
Ra in ohm.m ---->
1
10
100
1000
L/2 in m ---->

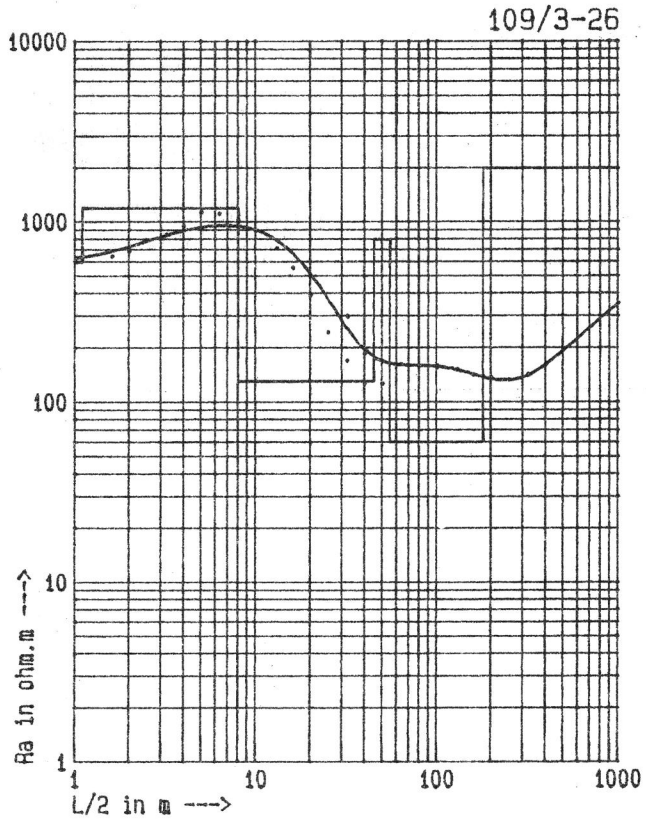

109/3-21
10000
1000
100
10
1
Ra in ohm.m ——>
1
10
100
1000
L/2 in m ——>

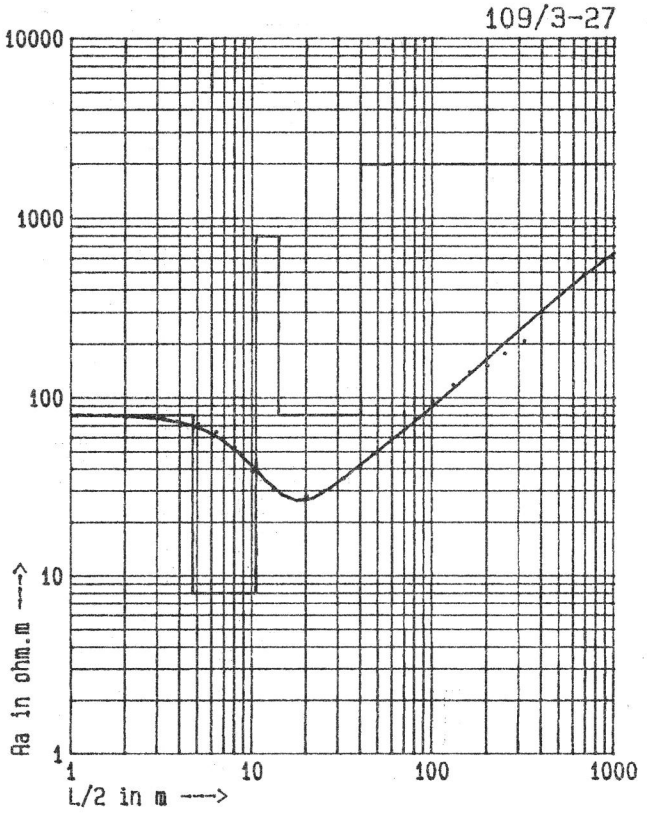

109/3-22
10000
1000
100
10
1
Ra in ohm.m ——>
1
10
100
1000
L/2 in m ——>

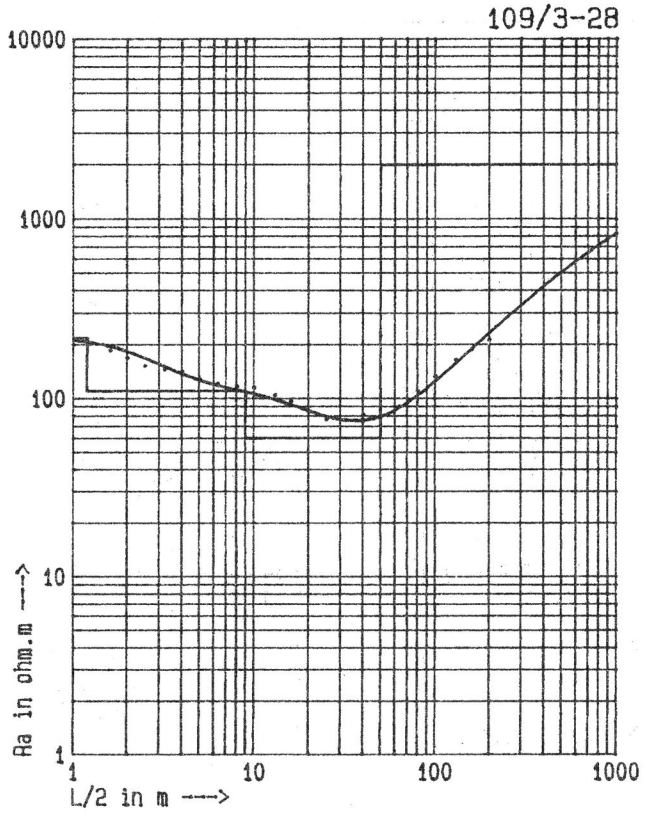

109/3-23
10000
1000
100
10
1
Ra in ohm.m ——>
1
10
100
1000
L/2 in m ——>

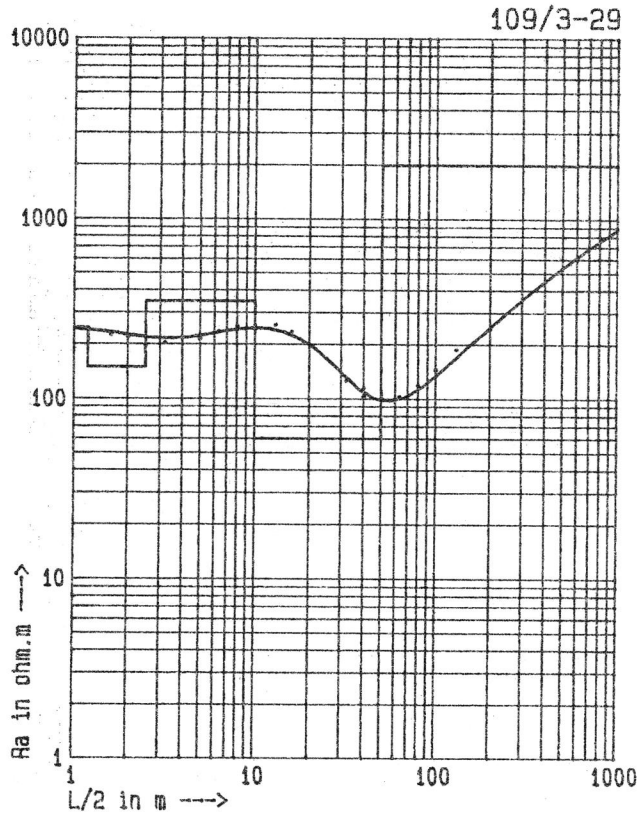

109/3-24
10000
1000
100
10
1
Ra in ohm.m ——>
1
10
100
1000
L/2 in m ——>

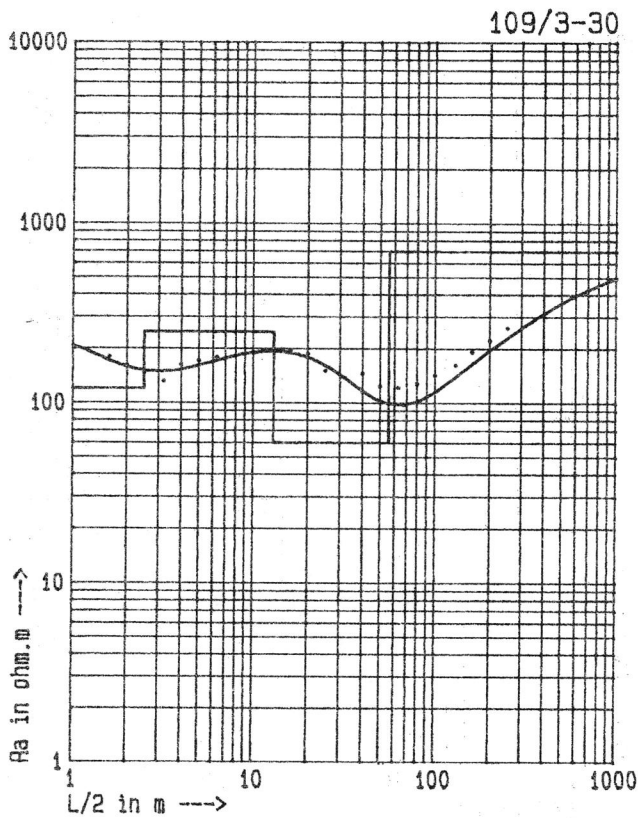

109/3-25
10000
1000
100
10
1
Ra in ohm.m ---->
1
10
100
1000
L/2 in m --->

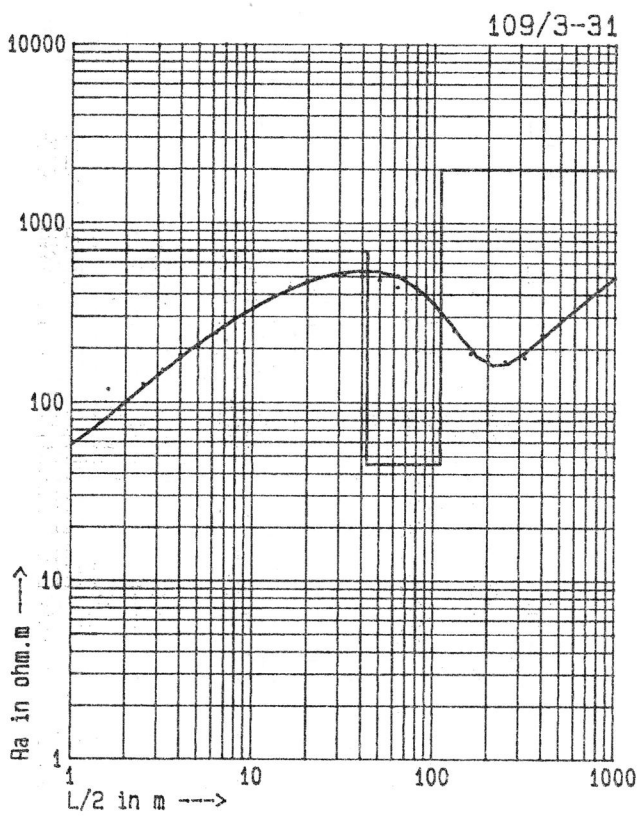

109/3-26
10000
1000
100
10
1
Ra in ohm.m ---->
1
10
100
1000
L/2 in m ---->

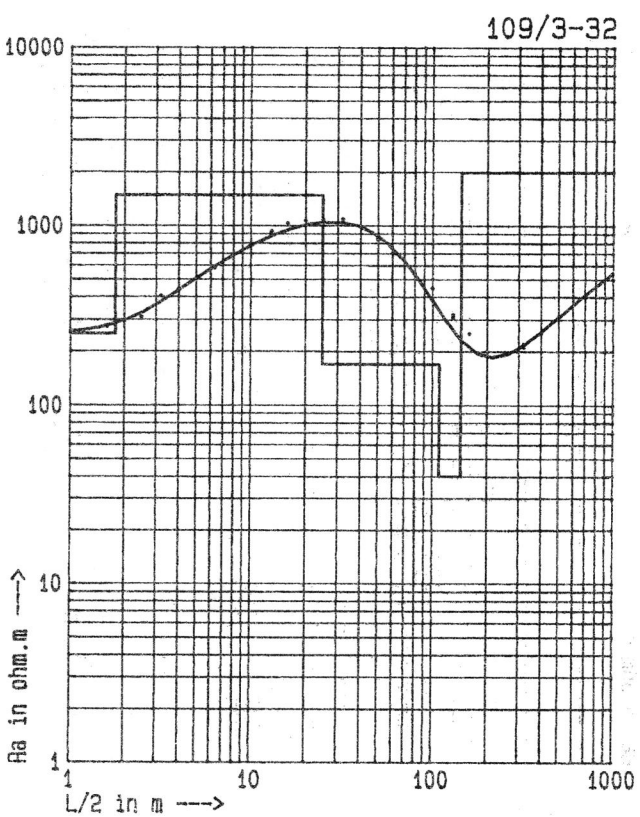

109/3-27
10000
1000
100
10
1
Ra in ohm.m ---->
1
10
100
1000
L/2 in m ---->

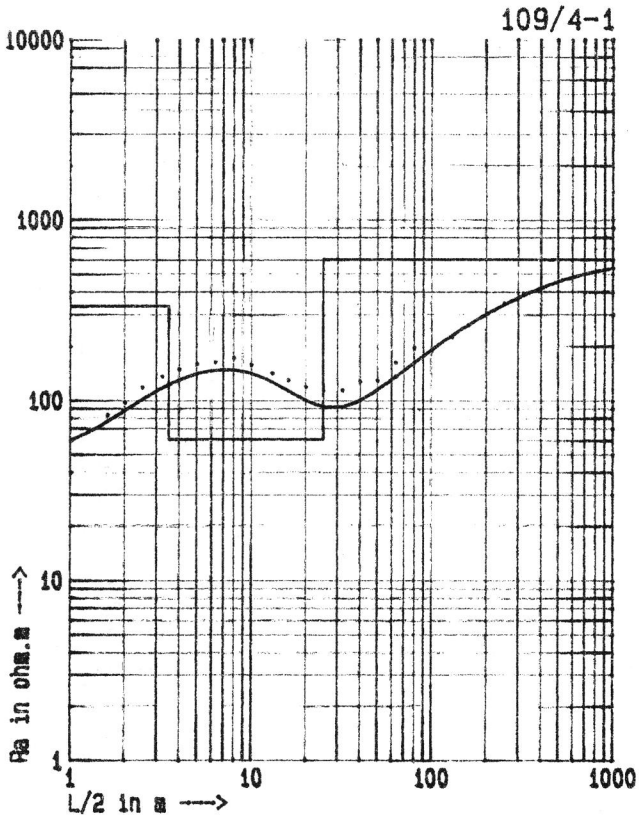

109/3-28
10000
1000
100
10
1
Ra in ohm.m ---->
1
10
100
1000
L/2 in m ---->

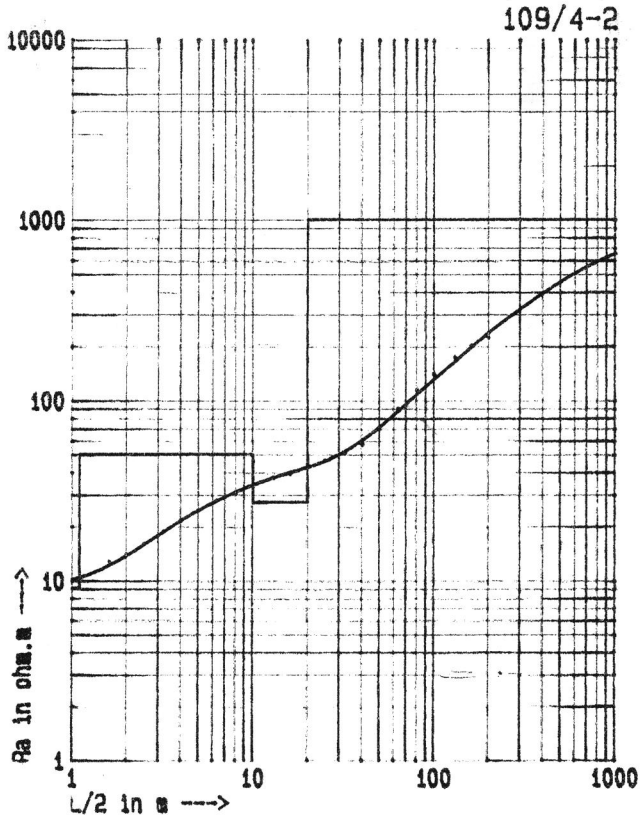

109/3-29
10000
1000
100
10
1
Ra in ohm.m ---->
1
10
100
1000
L/2 in m --->

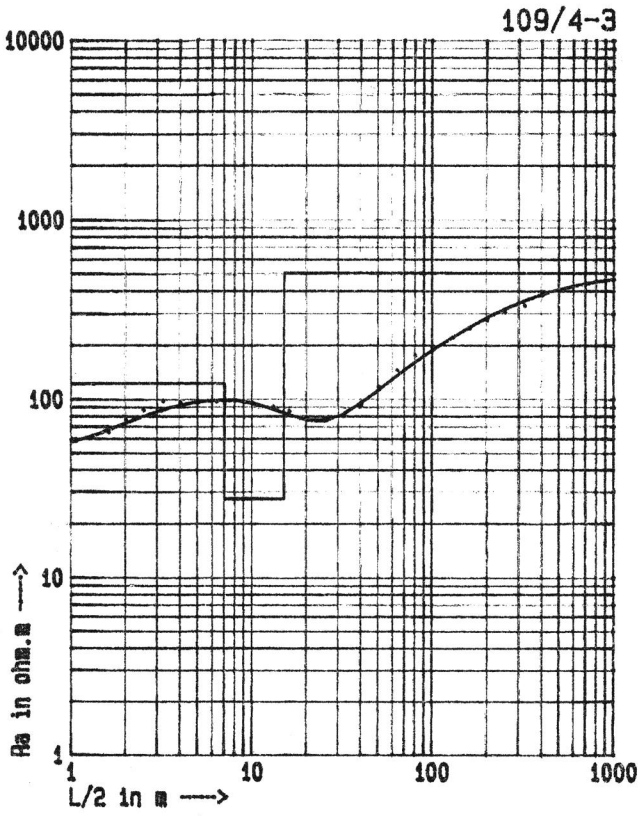

109/3-30
10000
1000
100
10
1
Ra in ohm.m ---->
1
10
100
1000
L/2 in m --->

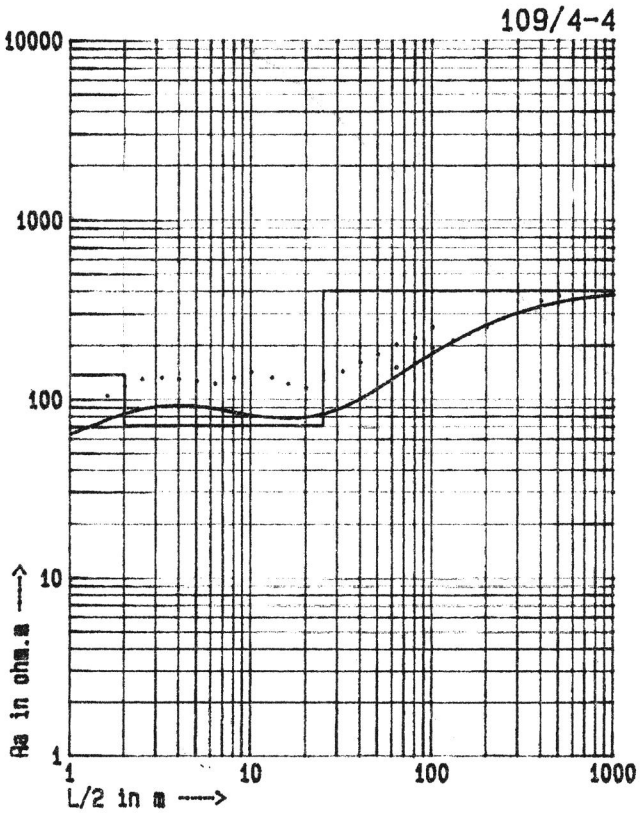

109/3-31
10000
1000
100
10
1
Ra in ohm.m ---->
1
10
100
1000
L/2 in m --->

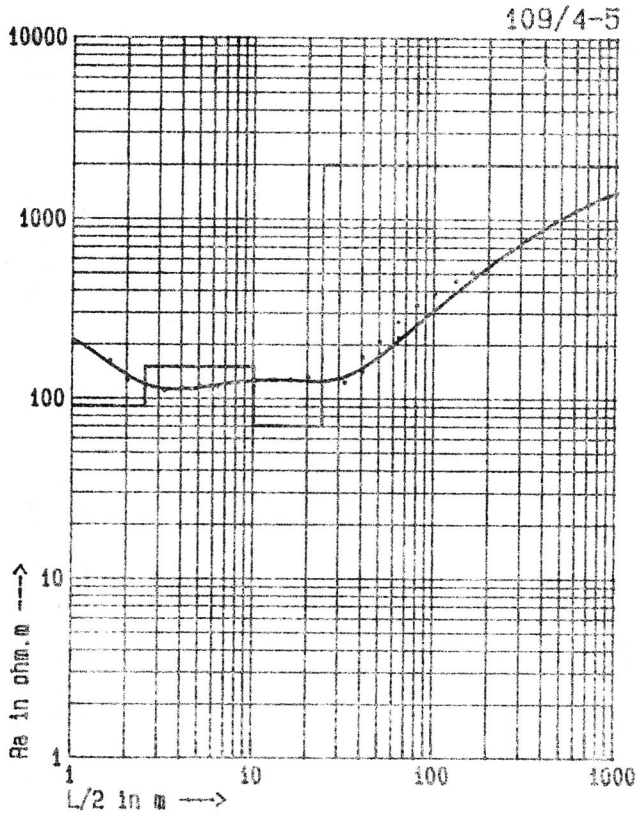

109/3-32
10000
1000
100
10
1
Ra in ohm.m ---->
1
10
100
1000
L/2 in m --->

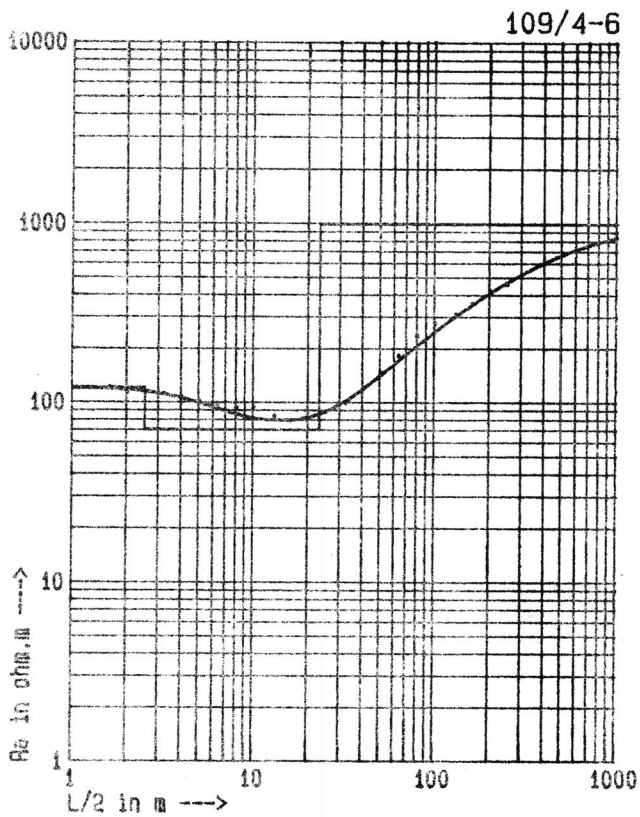

109/4-1
10000
1000
100
10
1
Ra in ohm.m ---->
1
10
100
1000
L/2 in m --->

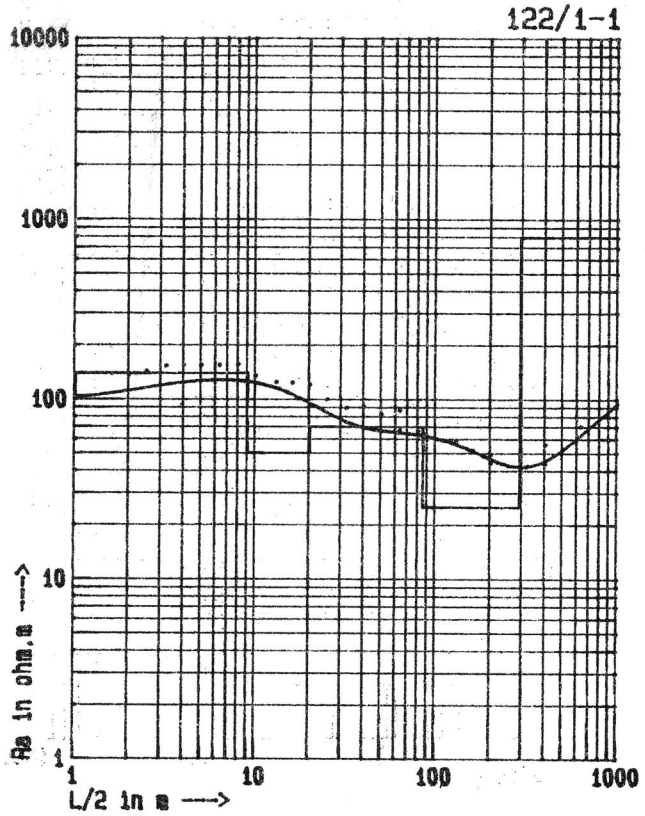

109/4-2
10000
1000
100
10
1
Ra in ohm.m ---->
1
10
100
1000
L/2 in m ---->

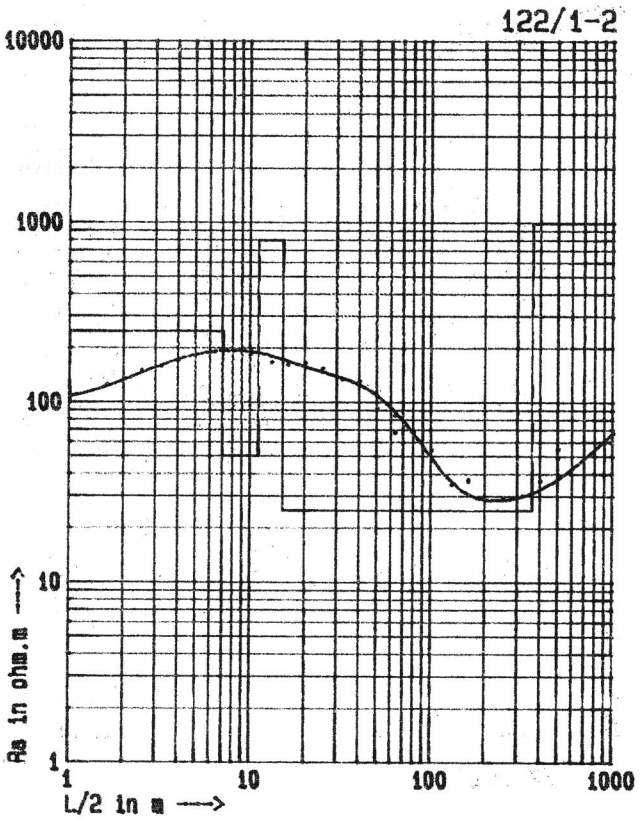

109/4-3
10000
1000
100
10
1
Ra in ohm.m ---->
1
10
100
1000
L/2 in m ---->

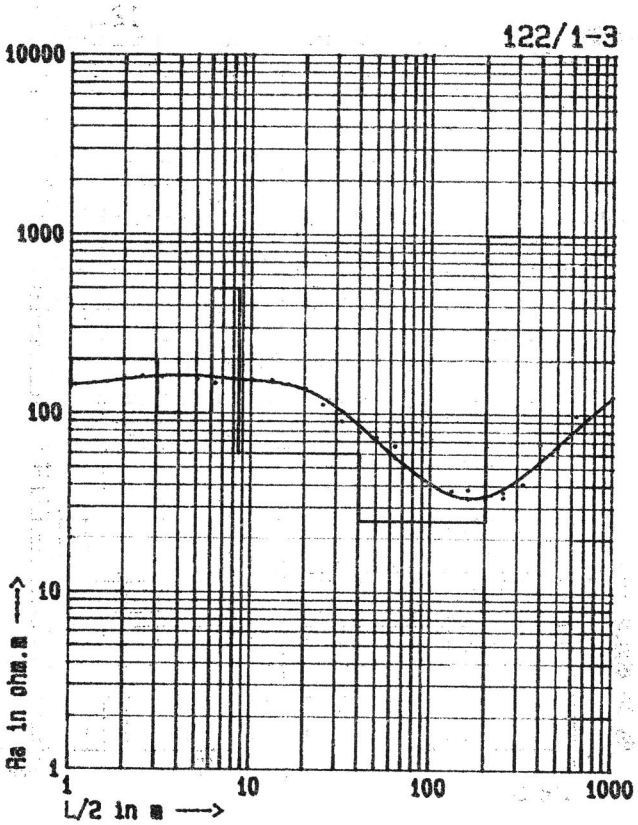

109/4-4
10000
1000
100
10
1
Ra in ohm.m ---->
1
10
100
1000
L/2 in m ---->

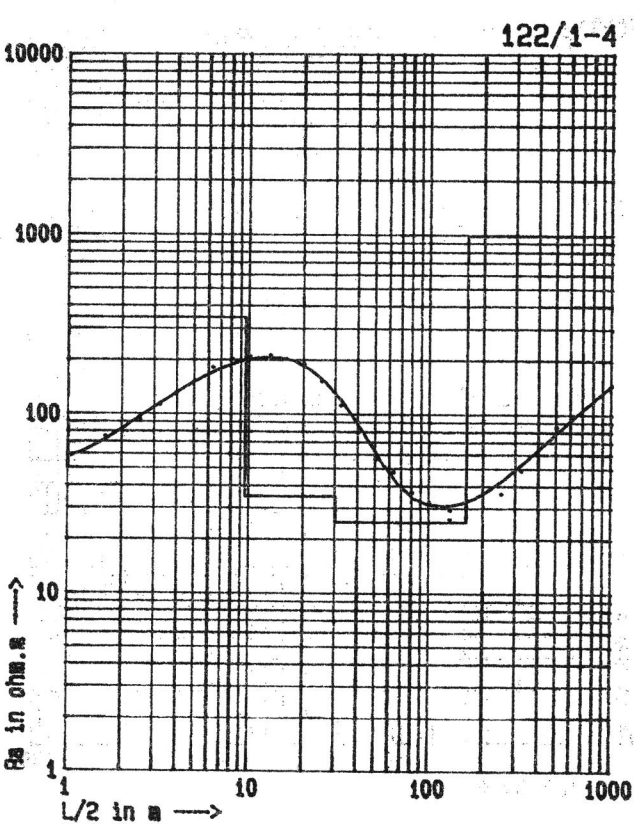

109/4-5
10000
1000
100
10
1
Ra in ohm.m ---->
1
10
100
1000
L/2 in m --->

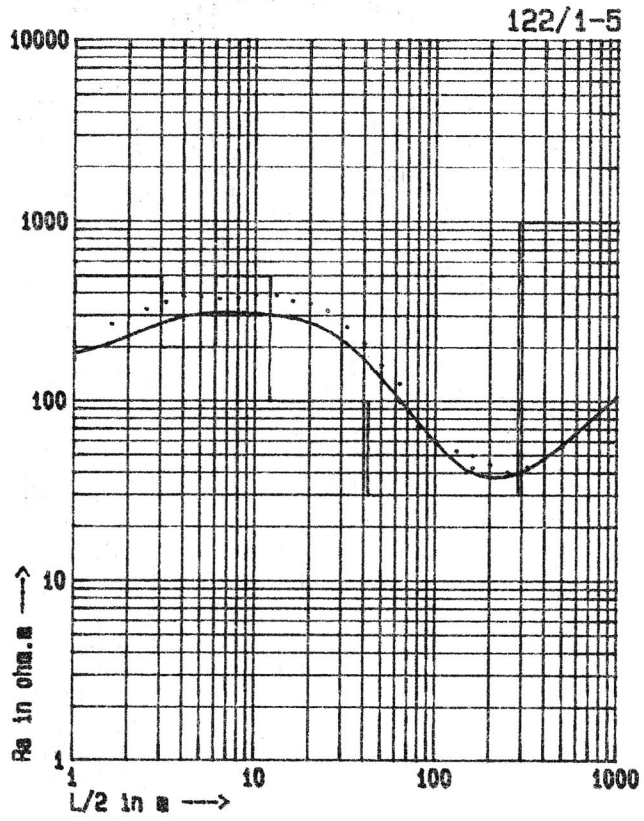

109/4-6
10000
1000
100
10
1
Ra in ohm.m ---->
1
10
100
1000
L/2 in m --->

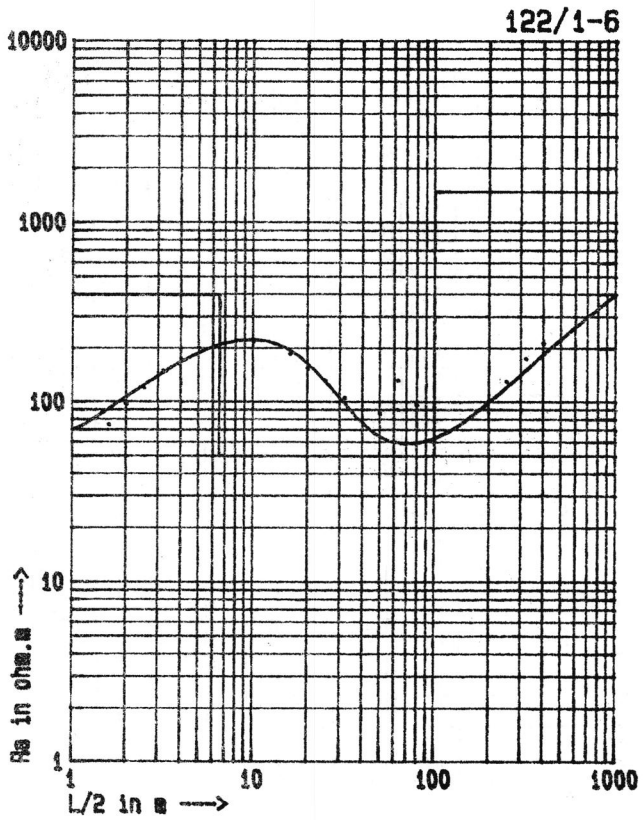

122/1-1
10000
1000
100
10
1
Ra in ohm.m ⟶
1
10
100
1000
L/2 in m ⟶

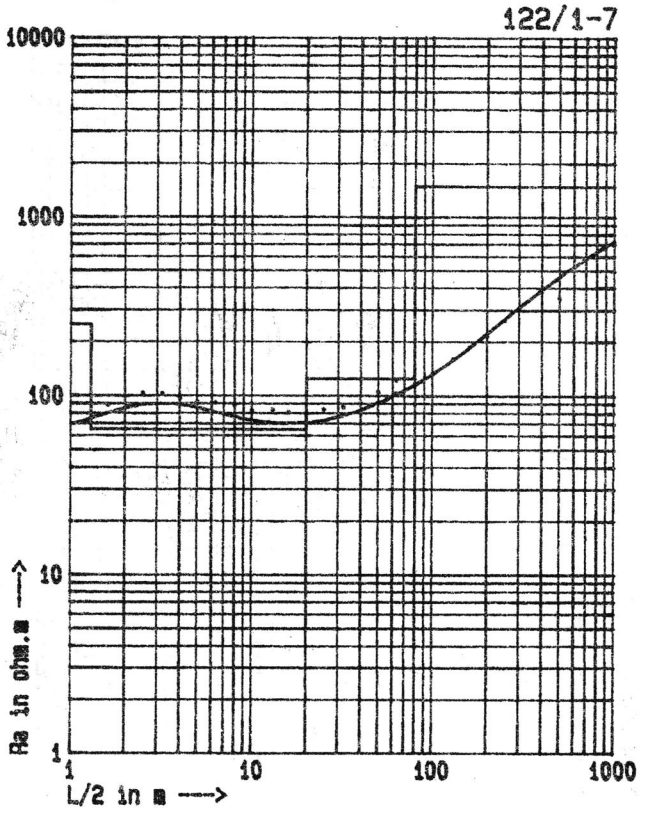

122/1-2
10000
1000
100
10
1
Ra in ohm.m ⟶
1
10
100
1000
L/2 in m ⟶

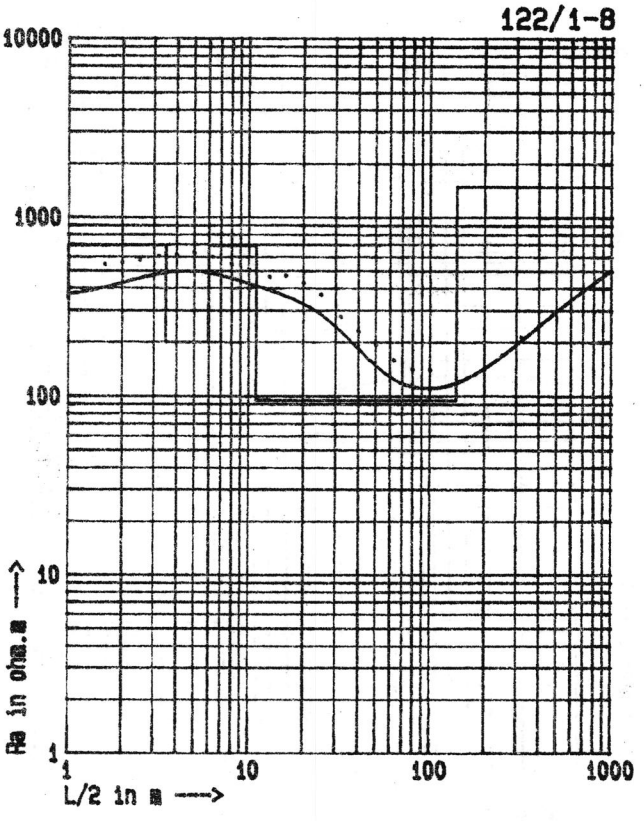

122/1-3
10000
1000
100
10
1
Ra in ohm.m ⟶
1
10
100
1000
L/2 in m ⟶

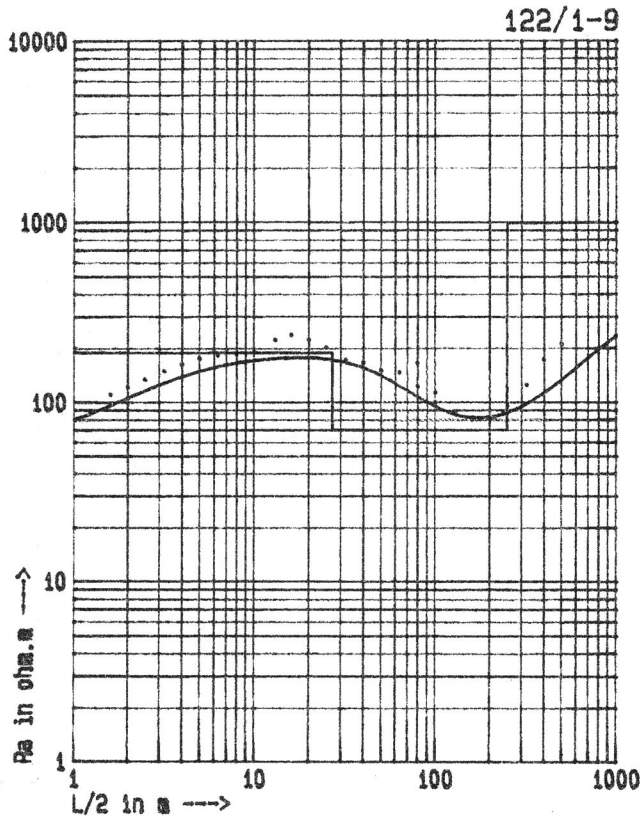

122/1-4
10000
1000
100
10
1
Ra in ohm.m ⟶
1
10
100
1000
L/2 in m ⟶

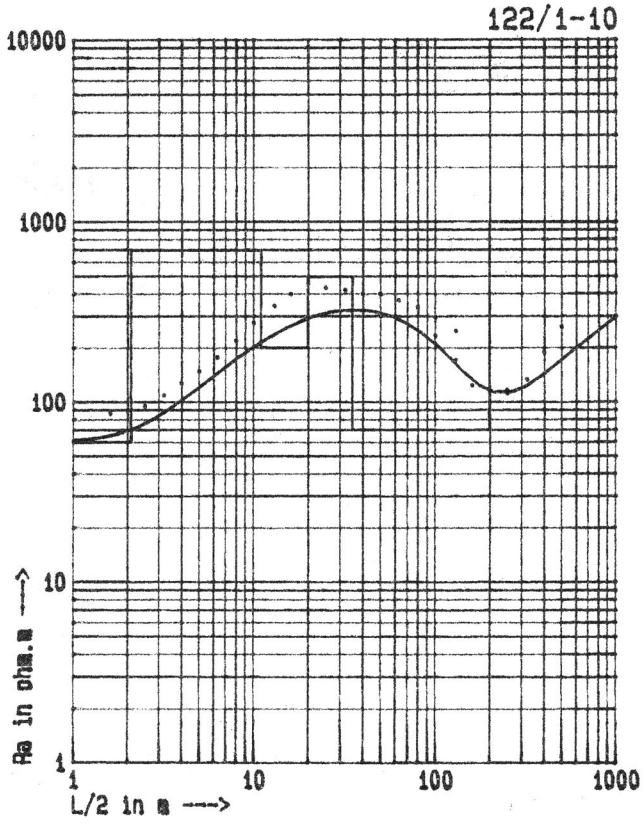

122/1-5
10000
1000
100
10
1
Ra in ohm.m ⟶
1
10
100
1000
L/2 in m ⟶

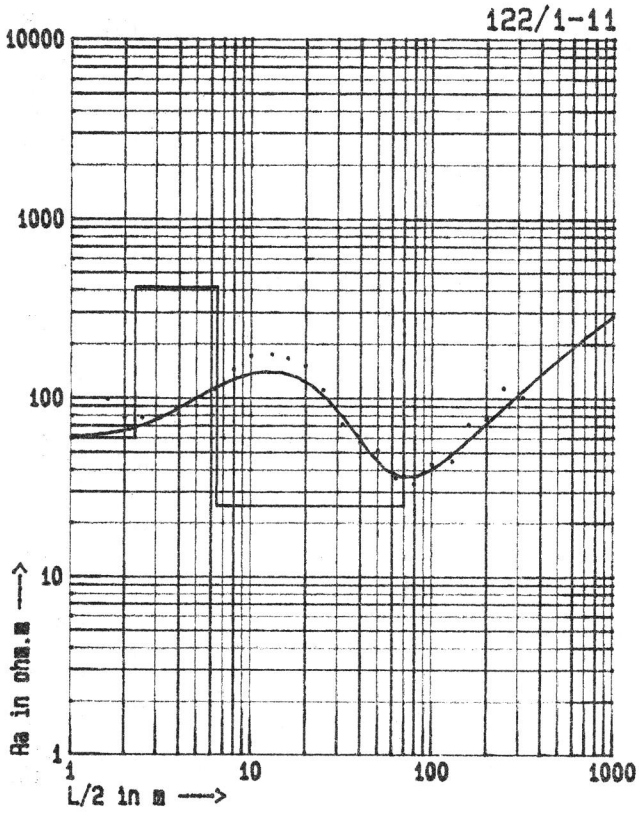

122/1-6
10000
1000
100
10
1
Ra in ohm.m ⟶
1
10
100
1000
L/2 in m ⟶

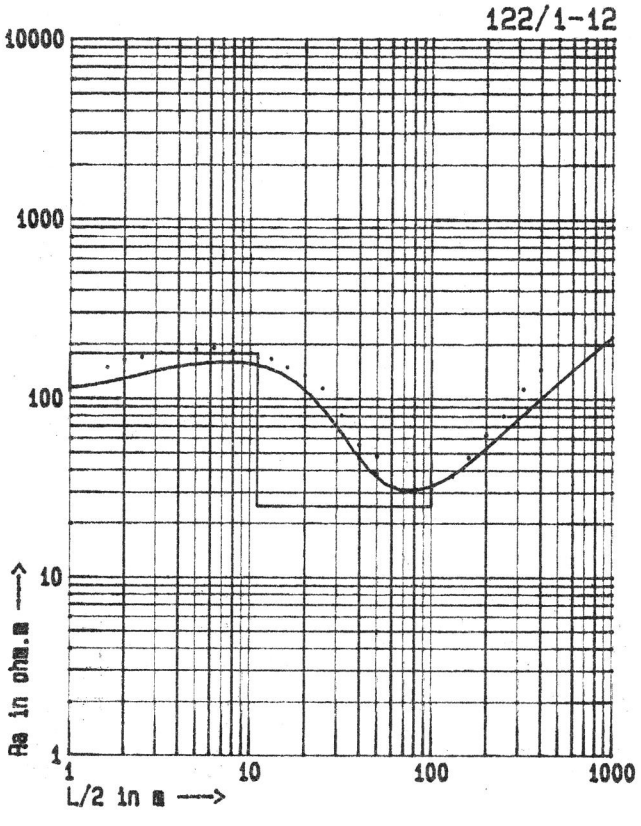

122/1-7
10000
1000
100
10
1
Ra in ohm.m ⟶
1
10
100
1000
L/2 in m ⟶

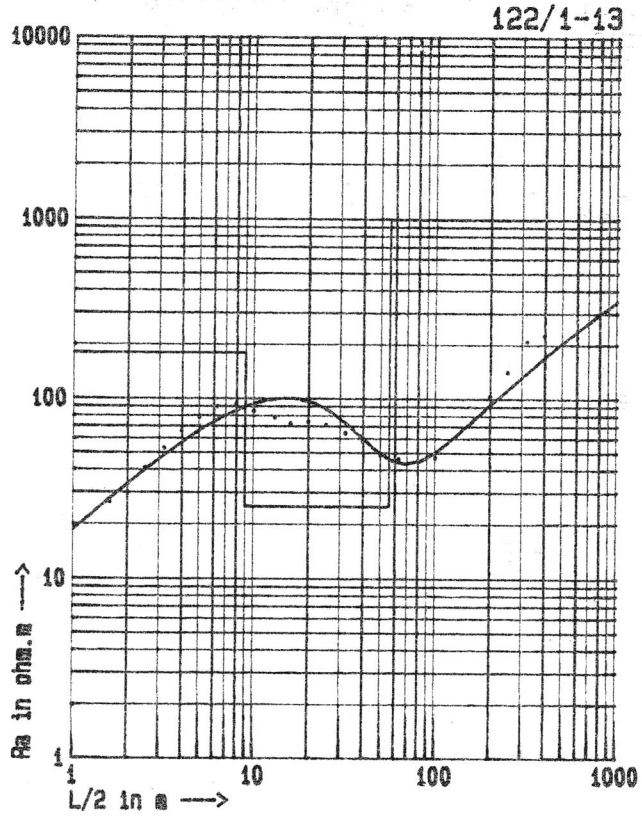

122/1-8
10000
1000
100
10
1
Ra in ohm.m ⟶
1
10
100
1000
L/2 in m ⟶

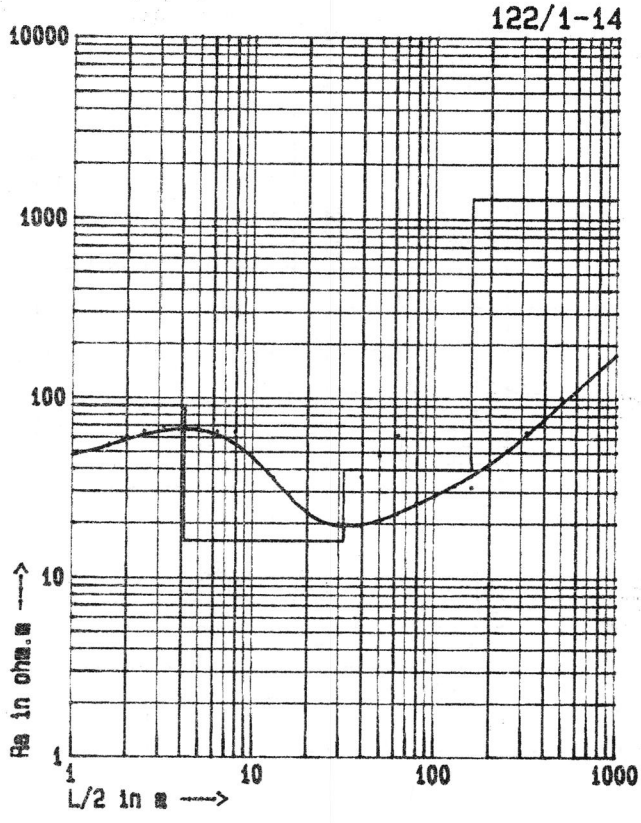

122/1-9
10000
1000
100
10
1
Ra in ohm.m ⟶
1
10
100
1000
L/2 in m ⟶

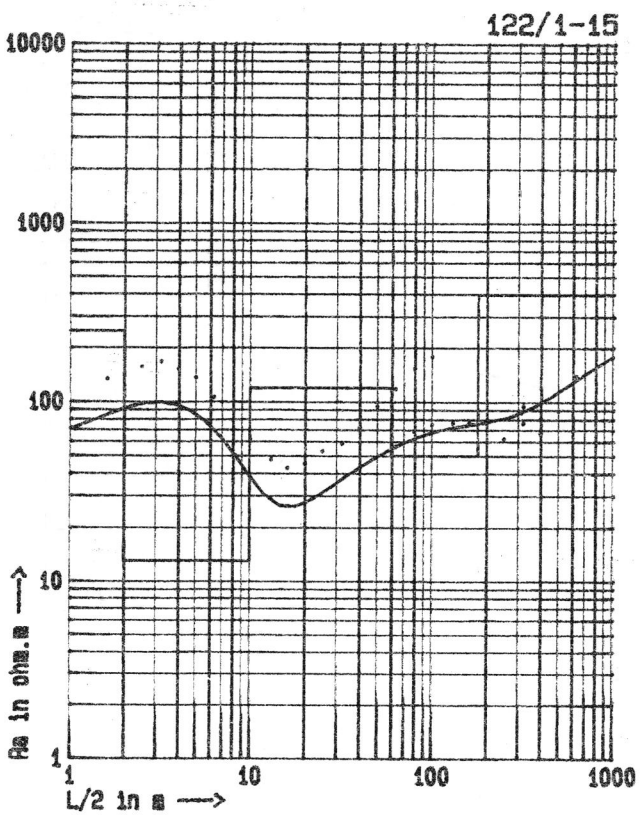

122/1-10
10000
1000
100
10
1
Ra in ohm.m ⟶
1
10
100
1000
L/2 in m ⟶

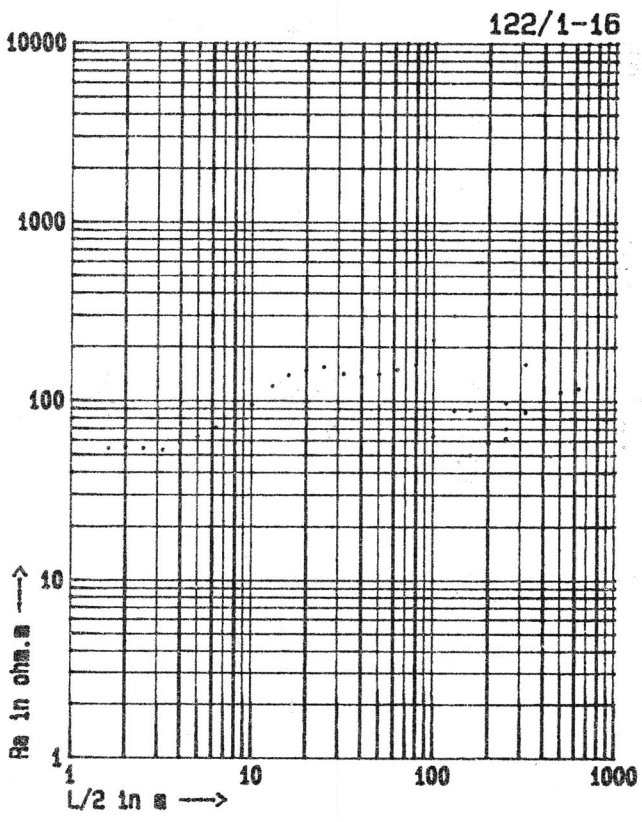

122/1-11
10000
1000
100
10
1
Ra in ohm.m ⟶
1
10
100
1000
L/2 in m ⟶

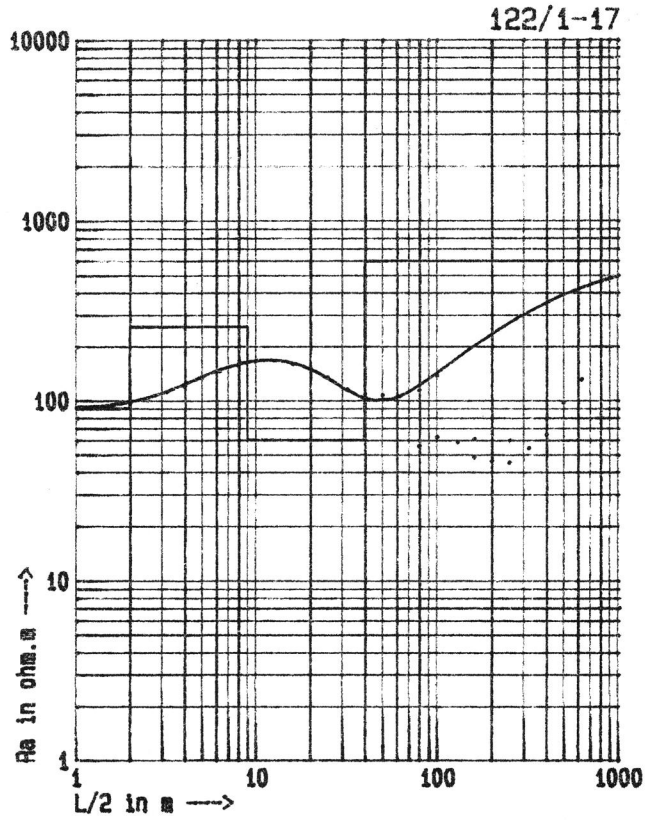

122/1-12
10000
1000
100
10
1
Ra in ohm.m ⟶
1
10
100
1000
L/2 in m ⟶

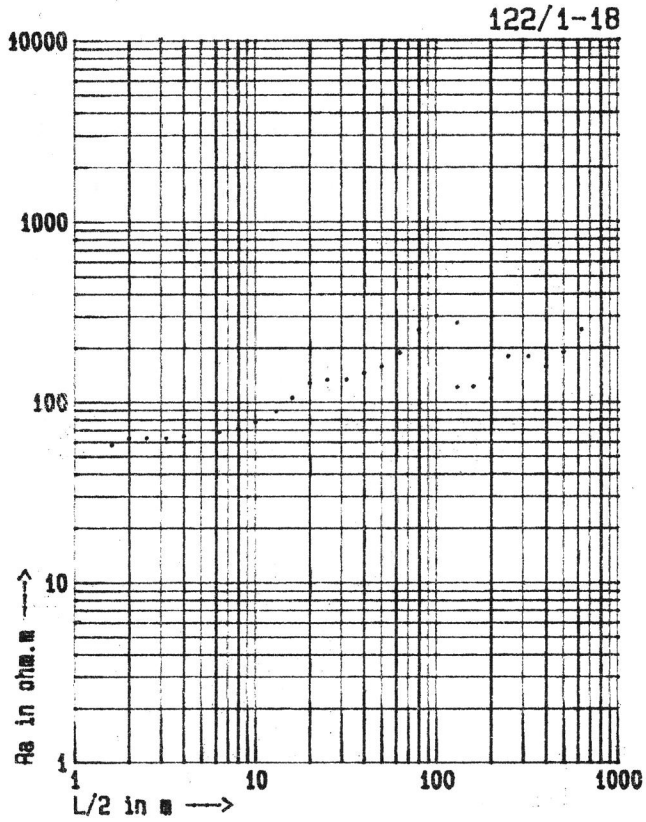

122/1-13
10000
1000
100
10
1
Ra in ohm.m ⟶
1
10
100
1000
L/2 in m ⟶

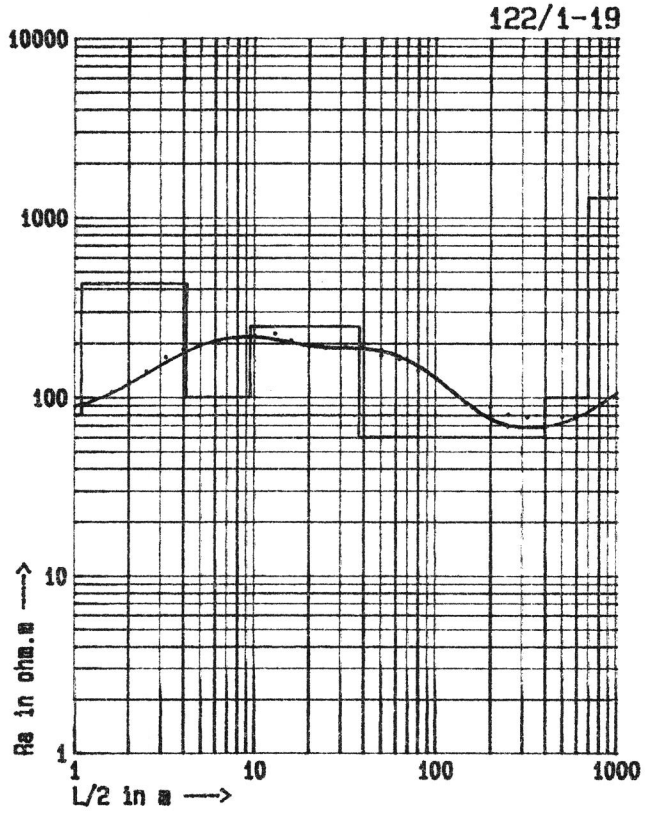

122/1-14
10000
1000
100
10
1
Ra in ohm.m ⟶
1
10
100
1000
L/2 in m ⟶

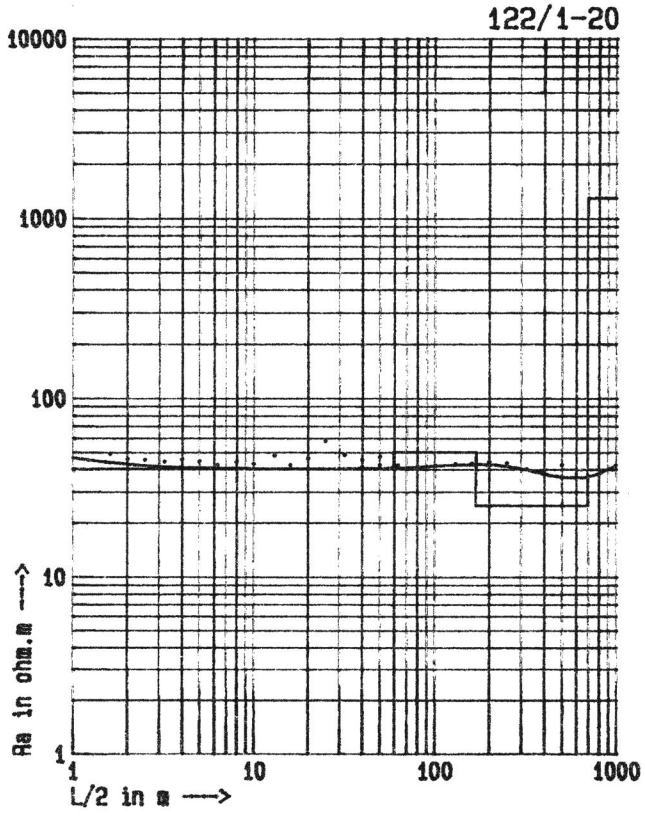

122/1-15
10000
1000
100
10
1
Ra in ohm.m ⟶
1
10
100
1000
L/2 in m ⟶

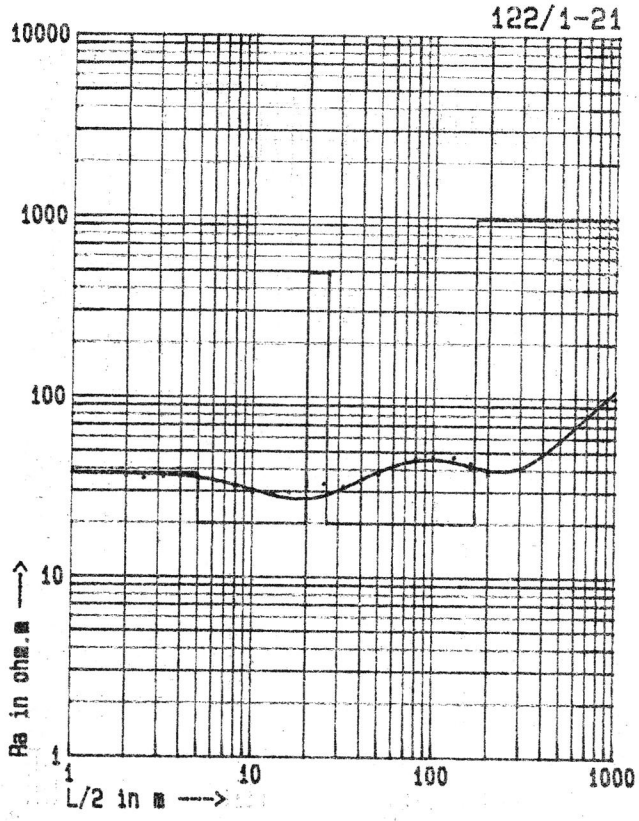

122/1-16
10000
1000
100
10
1
Ra in ohm.m ⟶
1
10
100
1000
L/2 in m ⟶

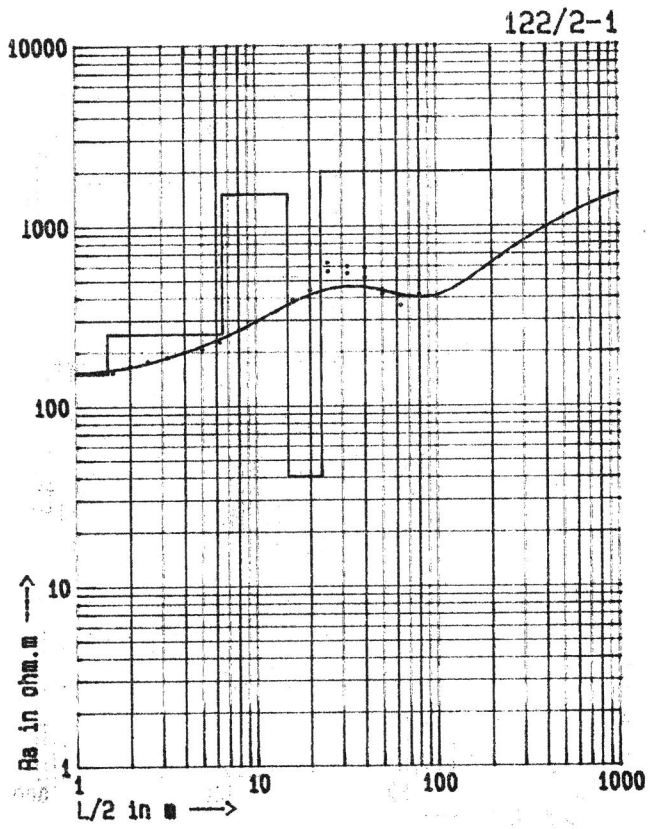

122/1-17
10000
1000
100
10
1
Ra in ohm.m ⟶
1
10
100
1000
L/2 in m ⟶

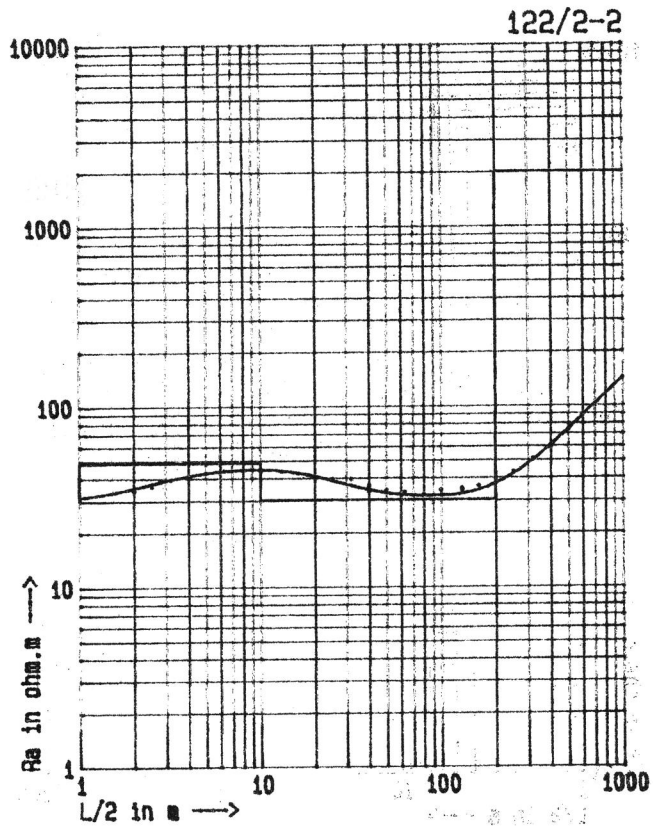

122/1-18
10000
1000
100
10
1
Ra in ohm.m ⟶
1
10
100
1000
L/2 in m ⟶

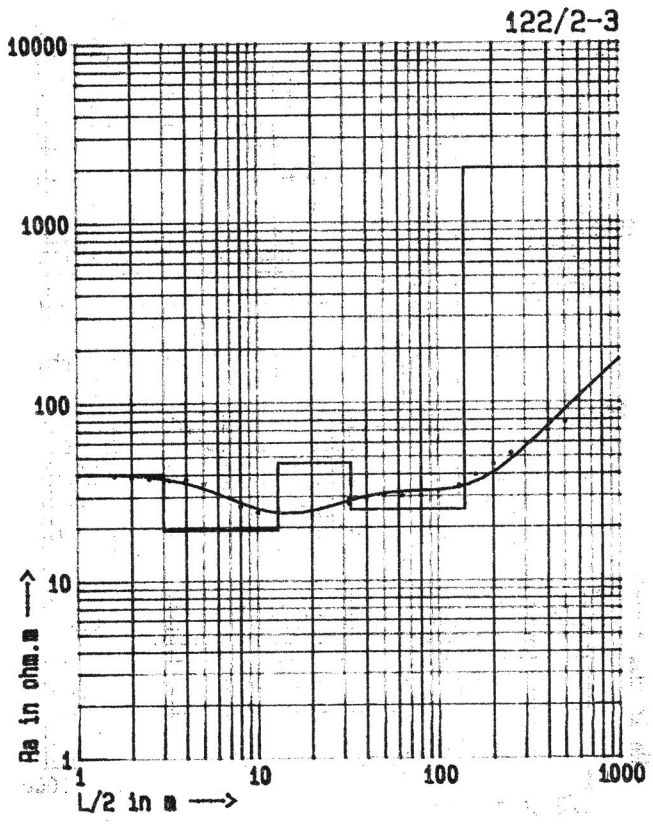

122/1-19
10000
1000
100
10
1
Ra in ohm.m ⟶
1
10
100
1000
L/2 in m ⟶

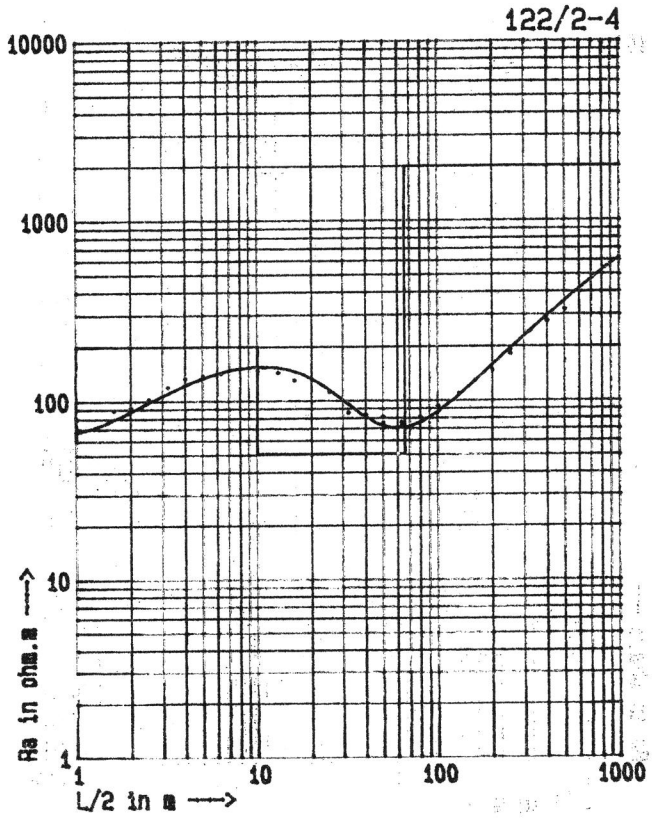

122/1-20
10000
1000
100
10
1
Ra in ohm.m ⟶
1
10
100
1000
L/2 in m ⟶


122/1-21
10000
1000
100
10
1
Ra in ohm.m ⟶
1
10
100
1000
L/2 in m ⟶

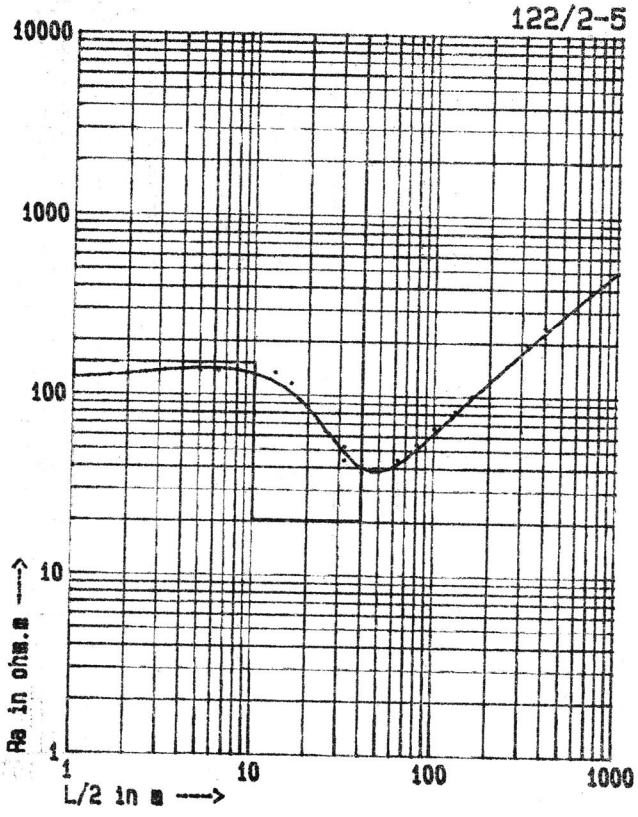

122/2-1
10000
1000
100
10
1
Ra in ohm.m ⟶
1
10
100
1000
L/2 in m ⟶


122/2-2
10000
1000
100
10
1
Ra in ohm.m ⟶
1
10
100
1000
L/2 in m ⟶

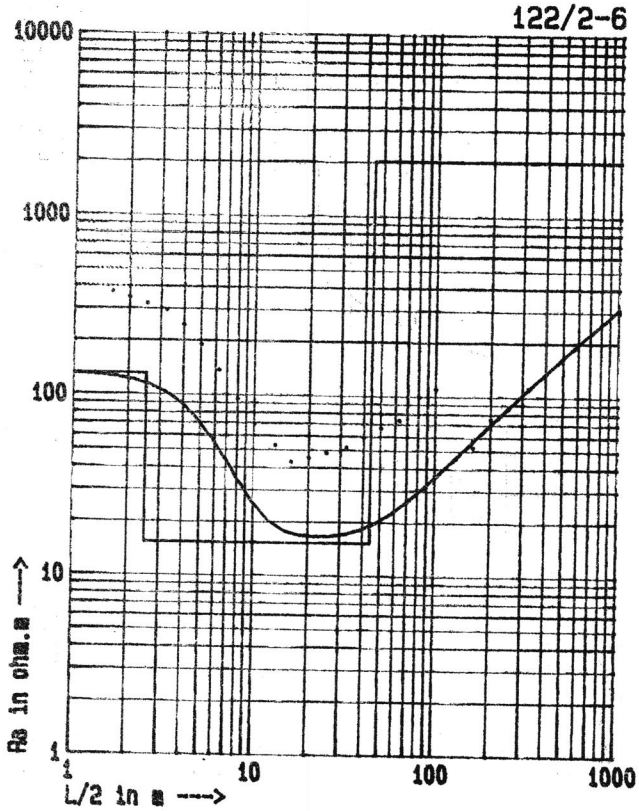

122/2-3
10000
1000
100
10
1
Ra in ohm.m ⟶
1
10
100
1000
L/2 in m ⟶


122/2-4
10000
1000
100
10
1
Ra in ohm.m ⟶
1
10
100
1000
L/2 in m ⟶

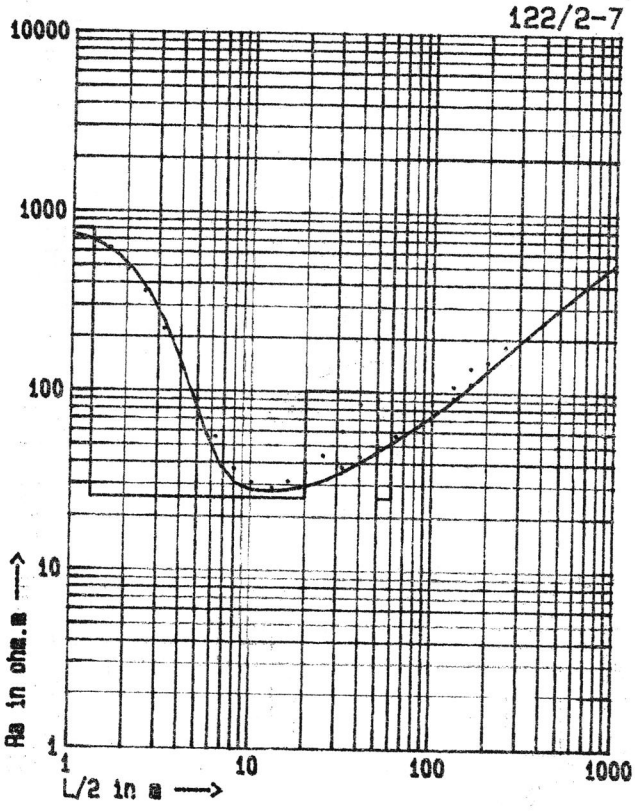
122/2-5



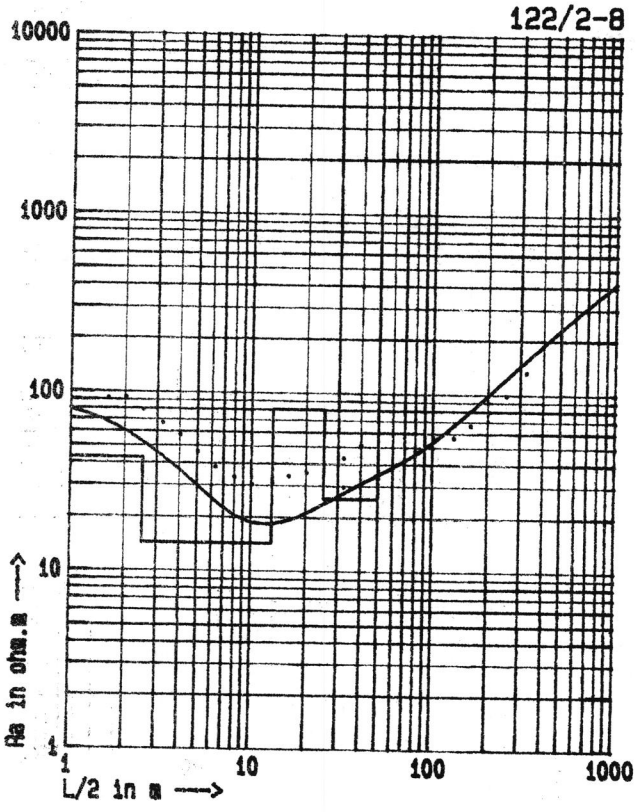

122/2-6

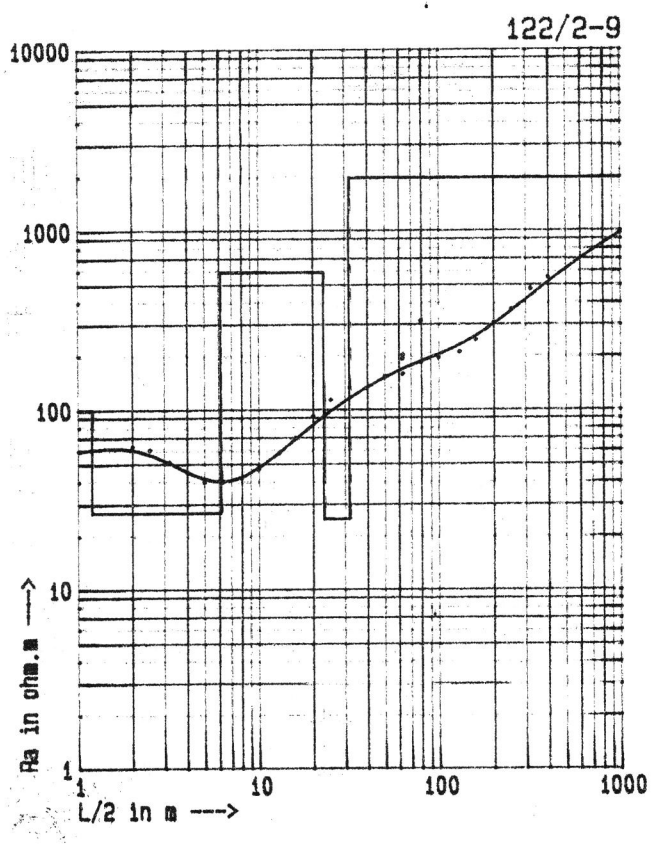


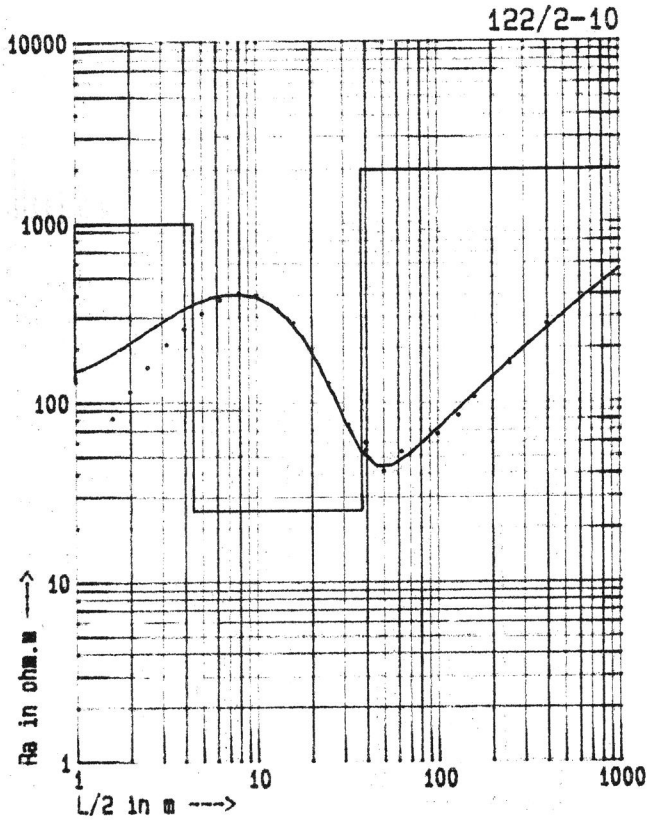

122/2-7

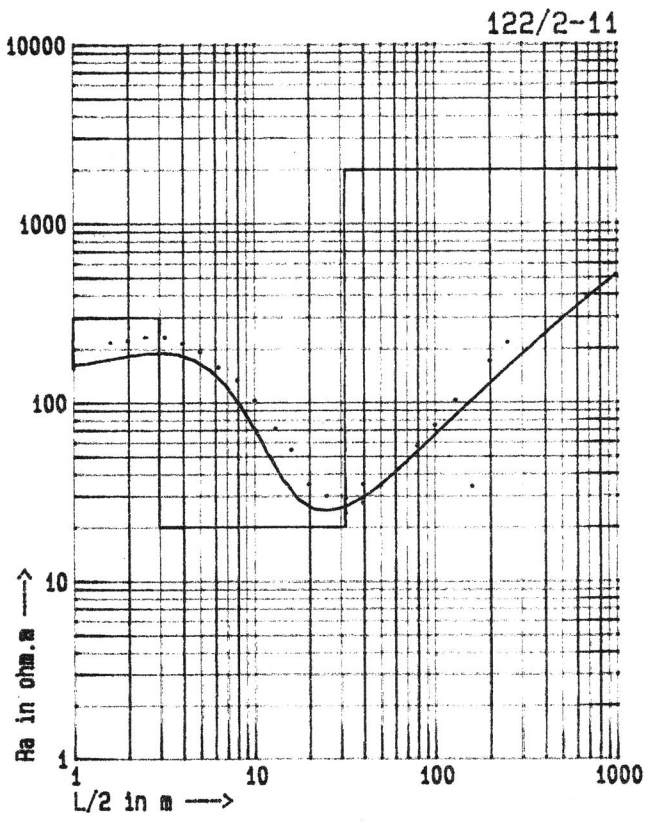


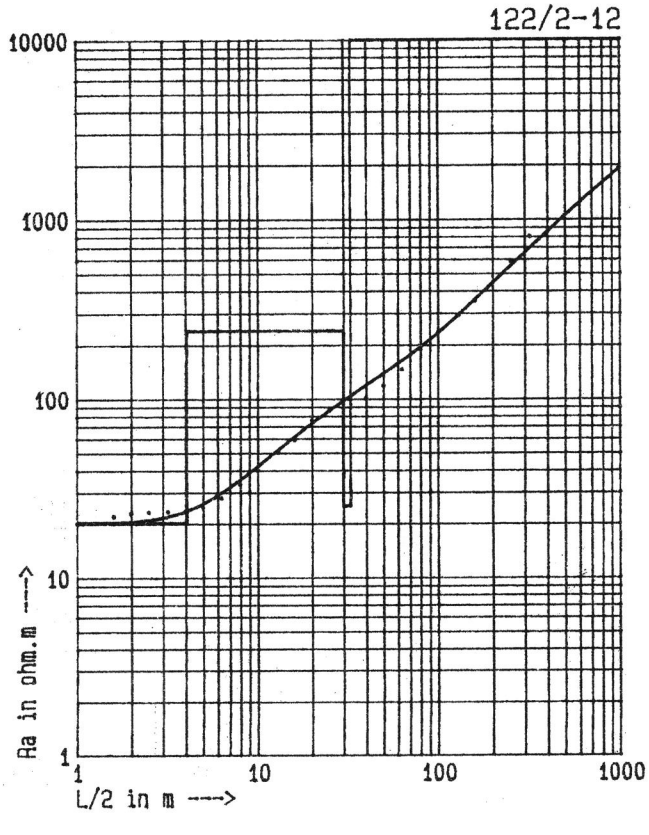

122/2-8

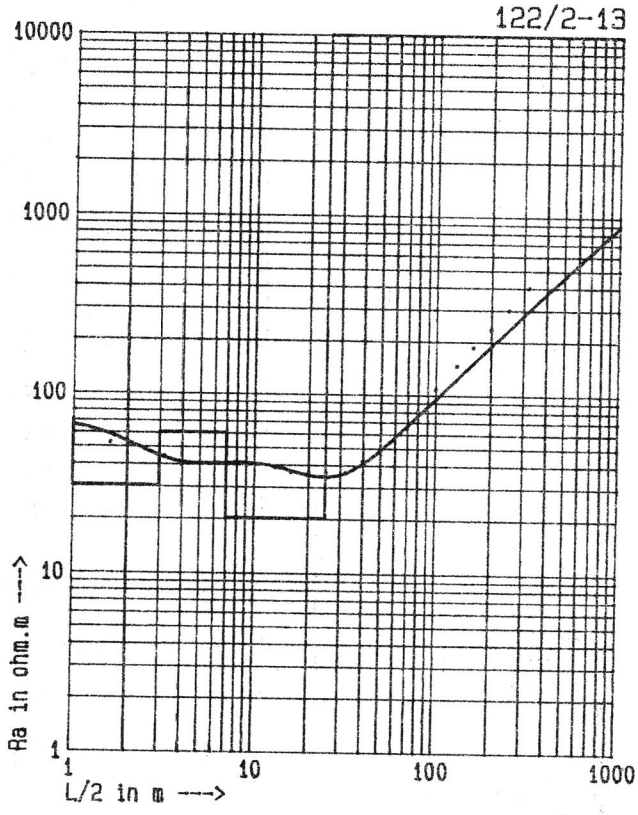


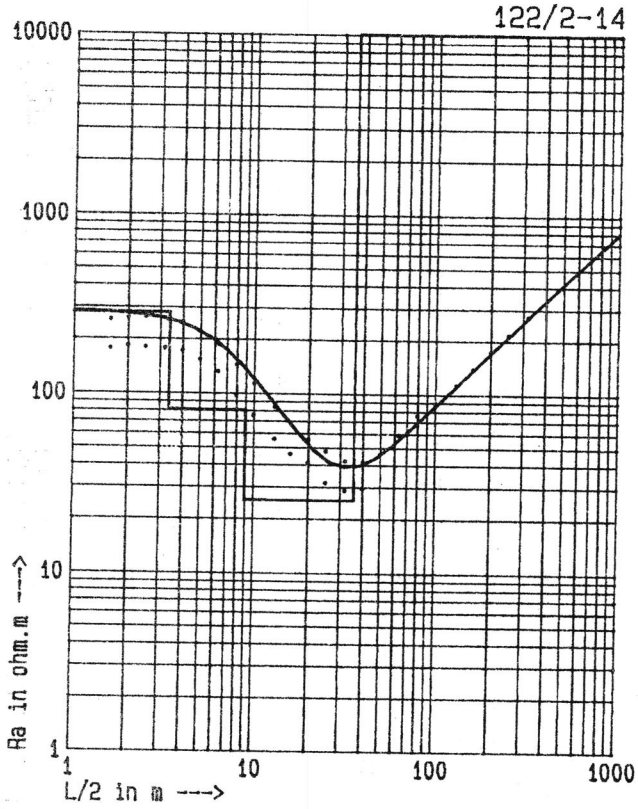

122/2-9
10000
1000
100
10
1
Ra in ohm.m ---->
1
10
100
1000
L/2 in m --->

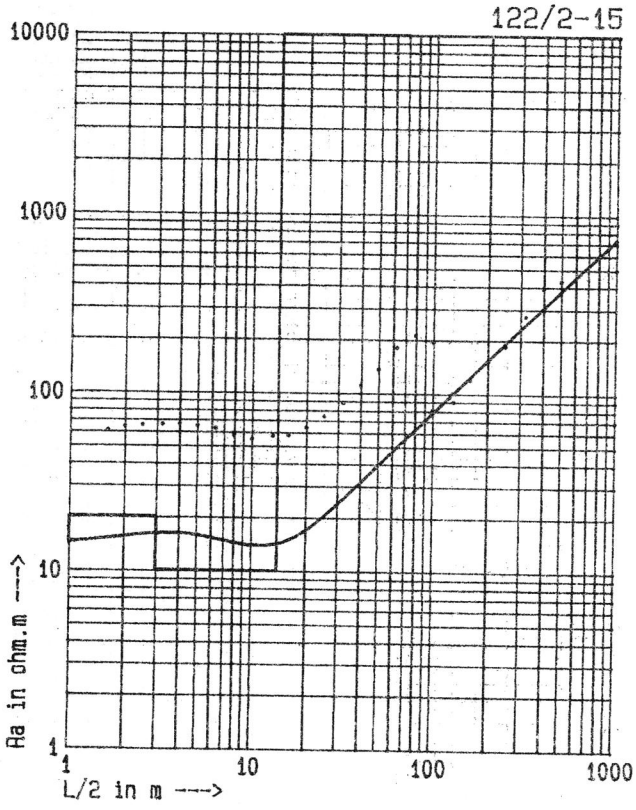

122/2-10
10000
1000
100
10
1
Ra in ohm.m ---->
1
10
100
1000
L/2 in m ---->


122/2-11
10000
1000
100
10
1
Ra in ohm.m ---->
1
10
100
1000
L/2 in m ---->


122/2-12
10000
1000
100
10
1
Ra in ohm.m ---->
1
10
100
1000
L/2 in m ---->


122/2-13
10000
1000
100
10
1
Ra in ohm.m --->
1
10
100
1000
L/2 in m --->


122/2-14
10000
1000
100
10
1
Ra in ohm.m --->
1
10
100
1000
L/2 in m --->


122/2-15
10000
1000
100
10
1
Ra in ohm.m --->
1
10
100
1000
L/2 in m --->

# APPENDIX 4

## DATA ON RAINFALL, EVAPORATION AND STREAMFLOW

# APPENDIX 4

## DATA ON RAINFALL, EVAPORATION AND STREAMFLOW

4.1 List of Rainfall Stations and Bar Graph of Available Records

4.2 List of Evaporation Pan Stations and Bar Graph of Available Records

4.3 List of River Gauging Stations (RGS) and Bar Graph of Available Records

4.4 Rainfall Data Summaries and Figures

4.5 Evaporation Data Summaries and Figures

4.6 Streamflow Data Summaries and Figures

4.7 Baseflow Hydrographs

4.8 Chemical Data Rivers Meru

# Appendix 4.1

## List of Rainfall Stations and Bar Graph of Available Records

# Appendix 4.1

RAINFALL STATIONS IN MERU DISTRICT

| Station Number | Location | Latitude (North) d m s | Longitude (East) d m s | Altitude ( m ) | Record Period | Remarks |
|---|---|---|---|---|---|---|
| 89.37.000 | Meru D.C.s Office | 0 2 59 | 37 38 55 | 1555 | 1910-71 | No Records 1911-3 |
| 89.37.002 | Timau, Marania Farm | 0 5 19 | 37 27 19 | 2530 | 1925- | |
| 89.37.004 | Ngare Unga - Timau | 0 10 28 | 37 24 28 | 1951 | 1930-41 | |
| 89.37.005 | Meru Methodist Missionary Society | 0 3 58 | 37 39 21 | 1585 | 1931-59 | |
| 89.37.006 | Berresford Memorial Hospital | 0 14 10 | 37 56 23 | 1646 | 1931-56 | |
| 89.37.007 | Igembe Catholic Mission | 0 11 34 | 37 57 56 | 1402 | 1918-40 | No data 1927-30 |
| 89.37.008 | Timau Marula | 0 13 11 | 37 22 54 | 1738 | 1933-39 | |
| 89.37.011 | Timau Ardencaple Farm House | 0 5 16 | 37 15 31 | 2256 | 1933-50 | |
| 89.37.013 | Nkabune Agricultural Department | 0 2 7 | 37 42 2 | 1341 | 1937-38 | |
| 89.37.014 | Mikinduri Primary School | 0 7 26 | 37 50 4 | 1280 | 1937- | No data 1965-72 |
| 89.37.016 | K.A.R. Meru | 0 2 59 | 37 38 45 | 1585 | 1938-38 | |
| 89.37.017 | Timau Store | 0 4 53 | 37 14 27 | 2226 | 1938-40 | |
| 89.37.019 | Miatheni Agriculture Staff house | 0 8 54 | 37 47 26 | 1433 | 1939- | |
| 89.37.021 | Meru College of technology (Kianjai) | 0 9 40 | 37 44 25 | 1402 | 1939- | |
| 89.37.028 | Timau Inghi Farm | 0 4 43 | 37 17 18 | 2439 | 1946-64 | |
| 89.37.030 | Timau Settlement Scheme | 0 3 12 | 37 13 25 | 2256 | 1944-64 | |
| 89.37.031 | Tigania Water Supply | 0 14 10 | 37 49 45 | 1707 | 1947- | |
| 89.37.034 | Timau Ardencaple Farm House | 0 5 16 | 37 15 31 | 2256 | 1948- | No data 1955-56 |
| 89.37.038 | Meru Forest Station | 0 3 12 | 37 37 27 | 1707 | 1948- | |
| 89.37.040 | Ontulili Forest Station | 0 1 21 | 37 10 56 | 2134 | 1948- | |
| 89.37.041 | Lare Divisional Agricultural Office | 0 20 24 | 37 56 13 | 1768 | 1950- | Many years uncomplete |
| 89.37.044 | Timau, Salmon's Farm | 0 10 15 | 37 18 6 | 2195 | 1950-68 | |
| 89.37.046 | Marania Forest | 0 5 6 | 37 28 40 | 2470 | 1951-53 | |
| 89.37.047 | Birds Hill Rest Camp | 0 15 18 | 37 31 19 | 1494 | 1951-59 | |
| 89.37.051 | Meru Agricultural Department | 0 2 59 | 37 38 55 | 1555 | 1952-74 | |
| 89.37.053 | Mikinduri Girls Secondary School | 0 7 59 | 37 50 59 | 1402 | 1952-81 | No data 1975-9,82-6 |
| 89.37.054 | Lugilada Farm, Timau | 0 6 21 | 37 16 36 | 2287 | 1953-57 | |
| 89.37.055 | Katheri District Office | 0 0 49 | 37 36 3 | 1738 | 1954-57 | |
| 89.37.056 | Kiirua District Office | 0 7 20 | 37 33 28 | 1982 | 1954-58 | |
| 89.37.057 | Timau Taraquet | 0 3 6 | 37 14 59 | 2348 | 1954-63 | |
| 89.37.059 | Maua Police Station | 0 14 0 | 37 56 19 | 1646 | 1959- | |
| 89.37.060 | Michimukuru Tea Estate Office | 0 11 53 | 37 50 50 | 1829 | 1960- | |
| 89.37.062 | Nkabune Catholic Mission | 0 1 57 | 37 41 46 | 1341 | 1962- | No data 1971-4,83-4 |
| 89.37.065 | Meru Meteorological Station (Kaaga) | 0 5 6 | 37 38 48 | 1616 | 1966- | |
| 89.37.066 | Miathene Secondary School | 0 8 51 | 37 47 29 | 1372 | 1967- | No data 1969,78-9 |
| 89.37.068 | Meru Leopard Camp | 0 6 34 | 37 50 1 | 1220 | 1966-70 | |
| 89.37.070 | Timau Settlement Scheme | 0 3 12 | 37 13 25 | 2256 | 1971-84 | No data 1975-83 |
| 89.37.071 | Kiegoi Primary School | 0 14 16 | 37 54 52 | 1890 | 1970- | Incomplete data 1978-87 |
| 89.37.072 | Giaki Cotton Research Farm | 0 1 28 | 37 45 49 | 1098 | 1971- | |
| 89.37.077 | Ngare Ndare West | 0 10 58 | 37 20 26 | 1982 | 1973- | No data 1978-9 |
| 89.37.078 | Muchene Forest Station | 0 5 3 | 37 32 11 | 2256 | 1973- | |
| 89.37.080 | Katheri Farmers Co-operative Society | 0 0 46 | 37 36 7 | 1860 | 1974- | Only 1975-6 complete |
| 89.37.081 | M'Mburi Kinyota's Farm, Kiengu | 0 16 23 | 37 58 29 | 1494 | 1974-85 | |
| 89.37.082 | Kunati Chief's Centre | 0 6 1 | 37 55 11 | 1067 | 1974-81 | Only 1975 complete |
| 89.37.083 | Ntumburi Primary School | 0 9 23 | 37 30 53 | 1707 | 1974- | |
| 89.37.084 | Kiirua Police Station | 0 6 37 | 37 33 35 | 2104 | 1974- | |
| 89.37.085 | Thuura Chief's Camp | 0 3 28 | 37 42 25 | 1250 | 1974- | Many gaps |
| 89.37.086 | Athiru Gaiti Coffee Factory | 0 12 42 | 37 58 16 | 1372 | 1974- | |
| 89.37.087 | Kangeta Chiefs Camp | 0 16 36 | 37 53 25 | 1829 | 1974- | |
| 89.37.088 | Ruiri Farmers Co-operative Society | 0 9 27 | 37 39 11 | 1524 | 1974- | |
| 89.37.089 | Kathanga Primary School | 0 24 35 | 38 0 32 | 1799 | 1974- | |
| 89.37.090 | Liliaba Assistant Chief's Office | 0 19 0 | 37 50 17 | 1341 | 1974- | |
| 89.37.091 | Akachiu Chiefs Camp | 0 11 4 | 37 57 34 | 1341 | 1976- | |
| 89.37.092 | Atheru Rujine Coffee Factory | 0 18 40 | 37 58 0 | 1616 | 1974- | |
| 89.37.096 | Meru Teachers Training College | 0 3 58 | 37 38 42 | 1646 | 1976- | Many gaps |

RAINFALL STATIONS IN MERU DISTRICT

| Station | Location | Latitude (North) d m s | Longitude (East) d m s | Altitude (m) | Record Period | Remarks |
|---|---|---|---|---|---|---|
| 89.37.097 | Meru Technical Secondary School | 0 3 58 | 37 37 57 | 1677 | 1977-80 | Poor records |
| 89.37.098 | St. Kizito Mixed Secondary School | 0 12 6 | 37 47 23 | 1494 | 1982- | |
| 89.37.099 | Kabuline Chief's Office | 0 3 32 | 37 47 39 | 1128 | 1979- | |
| 89.37.100 | Marurui Primary School | 0 11 34 | 37 30 43 | 1738 | 1979- | |
| 89.37.104 | Marania Forest Station | 0 4 7 | 37 26 24 | 2744 | 1982- | |
| 89.37.105 | Ngare Ndare Farm | 0 14 3 | 37 21 33 | 1707 | 1984- | |
| 89.38.006 | Kanjoo Assistant Chief's Camp | 0 15 9 | 38 1 33 | 915 | 1974- | |
| 89.38.007 | Ura Gate Meru National Park | 0 1 41 | 38 3 49 | 671 | 1980- | |

New and Ministry Of Water Development Stations

| | | | | | | |
|---|---|---|---|---|---|---|
| WD 281 | Esbori Farm | 0 4 1 | 37 20 55 | 2652 | 1959- | |
| 312A | Kisima Limited | 0 7 7 | 37 24 44 | 2409 | 1929-60 | |
| 592 | Mituntu Location | 0 10 6 | 37 41 56 | 1433 | 1972- | |
| 688 | Kibirichia Chief's Office | 0 5 35 | 37 30 50 | 2287 | 1975- | |
| | Kabaranyeki Forest Guard Post | 0 0 23 | 37 33 2 | 2195 | 1988- | |

| Station | Location | Latitude (South) d m s | Longitude (East) d m s | Altitude (m) | Record Period | Remarks |
|---|---|---|---|---|---|---|
| 90.37.003 | Igoji Mission | 0 11 17 | 37 39 53 | 1372 | 1915-40 | |
| 90.37.011 | Mujwa Catholic Mission | 0 4 11 | 37 42 2 | 1311 | 1915- | No data 1941-9,78-82 |
| 90.37.027 | Chogoria Boys High School | 0 13 41 | 37 37 40 | 1524 | 1938- | No data 1956-66,73-5,78-83 |
| 90.37.032 | Nkubu Mission Hospital | 0 4 1 | 37 40 3 | 1463 | 1939-51 | |
| 90.37.033 | Kanyakine Dispensary | 0 7 26 | 37 40 19 | 1341 | 1939-58 | |
| 90.37.034 | Chuka Chief's Office | 0 19 39 | 37 38 52 | 1433 | 1939- | No data 1967-71 |
| 90.37.065 | Maguma Primary School | 0 13 28 | 37 44 18 | 1189 | 1947-78 | Gauge still in operation |
| 90.37.066 | Chiokariga | 0 16 27 | 37 55 24 | 823 | 1947-57 | |
| 90.37.074 | Nkubu Police Station | 0 3 42 | 37 39 50 | 1494 | 1948- | No data 1975-85 |
| 90.37.085 | Mitunguu Tree Nursery | 0 6 54 | 37 47 0 | 1006 | 1949- | |
| 90.37.086 | Wathine-Kithurine Dairy Co-op. Society | 0 5 29 | 37 35 50 | 1860 | 1949- | |
| 90.37.098 | Mutindwa | 0 14 43 | 37 36 23 | 1646 | 1952-56 | |
| 90.37.102 | Marimba Livestock Farm | 0 3 6 | 37 33 57 | 2134 | 1949- | |
| 90.37.106 | Kibugwa D.O's Office | 0 21 56 | 37 36 52 | 1463 | 1954-57 | |
| 90.37.108 | Muthambi D.O's Office | 0 16 27 | 37 39 30 | 1402 | 1954-56 | |
| 90.37.123 | Chogoria Forest Station | 0 14 13 | 37 35 34 | 1707 | 1961 | |
| 90.37.124 | Mariene Coffee Research Foundation | 0 0 26 | 37 38 32 | 1616 | 1961- | |
| 90.37.148 | St. Mary Igoji Girls Secondary School | 0 11 30 | 37 40 6 | 1433 | 1968- | No data 1973-4,78-85 |
| 90.37.150 | Igoji Teachers Training College | 0 10 38 | 37 39 43 | 1433 | 1969- | |
| 90.37.153 | Chuka High School | 0 20 2 | 37 38 58 | 1433 | 1969- | No data 1983-4 |
| 90.37.155 | Sirimon Gate, Mt. Kenya National Park | 0 0 0 | 37 14 56 | 2652 | 1970- | |
| 90.37.160 | Marimanti Meteorological Station | 0 9 4 | 37 58 19 | 640 | 1965- | |
| 90.37.175 | Nchigi Full Primary School | 0 12 3 | 37 40 1 | 1341 | 1973- | |
| 90.37.184 | Tunyai Tree Nursery | 0 10 25 | 37 50 1 | 884 | 1973- | |
| 90.37.185 | Kanyakine High School | 0 7 20 | 37 40 19 | 1372 | 1974- | |
| 90.37.186 | Igwanjau Secondary School | 0 14 26 | 37 42 2 | 1280 | 1974- | |
| 90.37.187 | Chiokarige D.O's Office | 0 16 24 | 37 55 31 | 823 | 1974- | |
| 90.37.188 | Chogoria Chief's Centre | 0 14 30 | 37 37 15 | 1585 | 1974- | |
| 90.37.189 | Kionyo Dispensary | 0 7 26 | 37 34 39 | 2073 | 1974- | |
| 90.37.190 | Kaongo Dispensary | 0 2 20 | 37 43 17 | 1250 | 1974- | |

RAINFALL STATIONS IN MERU DISTRICT

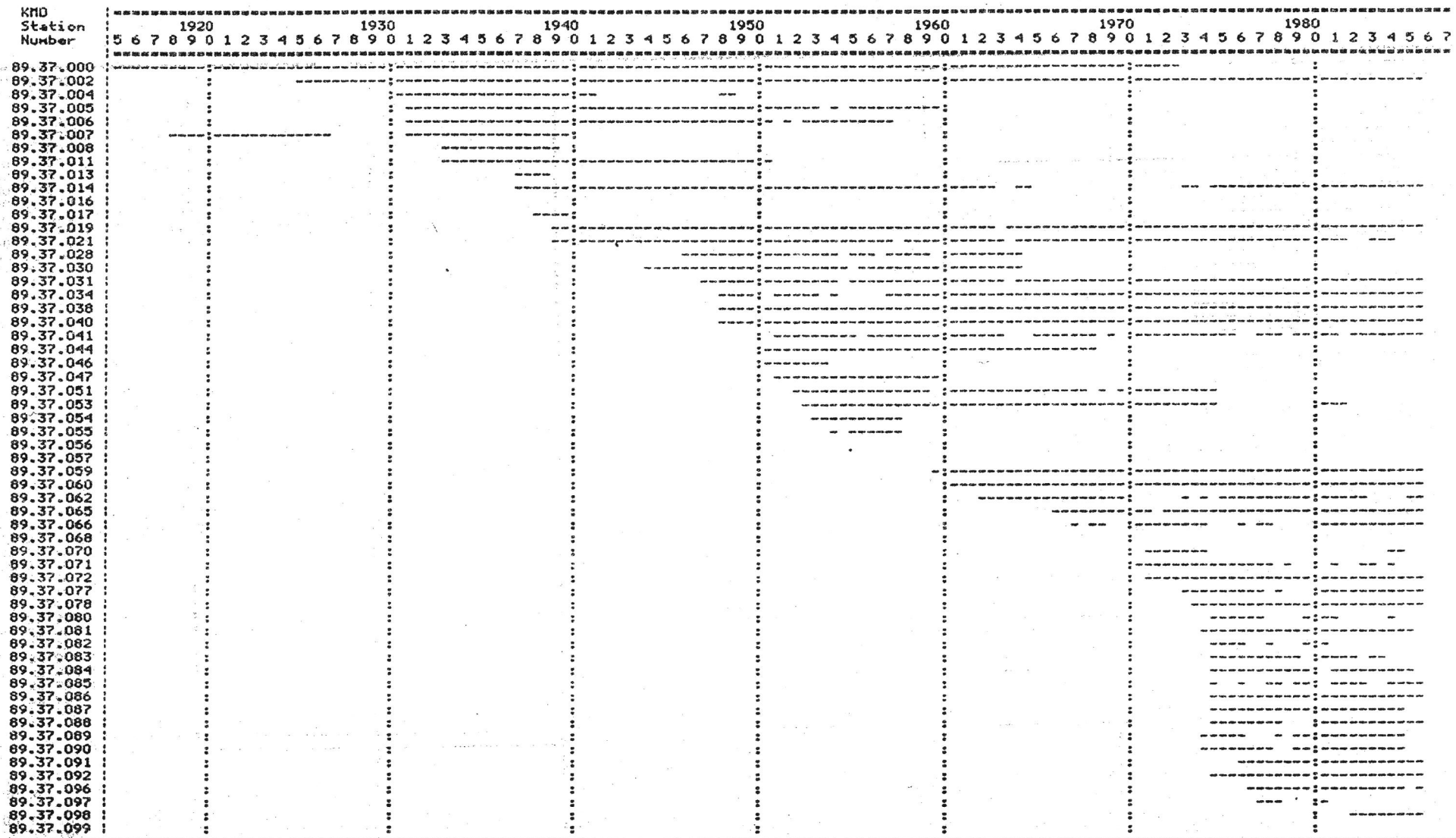
| Station | Location | Latitude (South) d m s | Longitude (East) d m s | Altitude (m) | Record Period | Remarks |
|---|---|---|---|---|---|---|
| 90.37.191 | Gaitu Cotton and Lint Board Store | 0 0 23 | 37 45 58 | 1098 | 1973 | |
| 90.37.193 | Kaanwa Dispensary | 0 19 10 | 37 43 7 | 1128 | 1974- | |
| 90.37.194 | Magundu Girls Secondary School | 0 18 5 | 37 40 48 | 1311 | 1974- | |
| 90.37.195 | Mwangariawe Chief's Camp | 0 16 27 | 37 39 30 | 1402 | 1974- | |
| 90.37.196 | Weru Dispensary | 0 21 39 | 37 42 48 | 1189 | 1974- | No data 1978-9,80-1,83 |
| 90.37.197 | Kanjuki Chief's Camp | 0 19 58 | 37 49 58 | 762 | 1975- | No data 1978-80 |
| 90.37.198 | Mumbuni Primary School | 0 16 43 | 37 44 8 | 1098 | 1975- | |
| 90.37.199 | Kibugua Chief's Camp | 0 21 56 | 37 36 52 | 1463 | 1975- | |
| 90.37.200 | Materi Girls Centre | 0 11 21 | 37 48 40 | 854 | 1976- | Poor records |
| 90.37.209 | Kiamuriuki Forest Guard Post | 0 22 2 | 37 35 8 | 1555 | 1976- | |
| 90.37.213 | Ntakani Primary School | 0 17 45 | 37 47 32 | 884 | 1977- | |
| 90.37.214 | Kaguru Farmers Training Centre | 0 5 0 | 37 39 47 | 1463 | 1977- | |
| 90.37.221 | Kaburine Tse Tse Fly Research Station | 0 0 7 | 37 52 59 | 854 | 1972- | |
| 90.37.230 | Thuchi Barrier | 0 23 4 | 37 51 22 | 732 | 1964 | |
| 90.37.231 | Ngigi Primary School | 0 17 51 | 37 41 11 | 1280 | 1977- | |
| 90.37.232 | Karua Mutonga River | 0 22 28 | 37 53 51 | 640 | 1978- | |
| 90.37.236 | Gacuru Primary School | 0 1 44 | 37 48 27 | 1006 | 1987- | |
| 90.37.237 | Ruthumbi Forest Station | 0 6 18 | 37 33 44 | 2226 | 1987- | |
| 90.38.010 | Gatunga Police Post | 0 5 42 | 38 0 19 | 579 | 1966- | |
| 90.38.032 | Tana Grand Falls | 0 15 18 | 38 0 48 | 488 | 1956 | |

New and Ministry Of Water Development Stations

| | | | | | | |
|---|---|---|---|---|---|---|
| WD 569 | Nkubu Divisional Agriculture Office | 0 3 45 | 37 39 34 | 1494 | 1970- | |
| 635 | Kanyakine Water Supply | 0 7 23 | 37 40 25 | 1341 | 1975- | |
| - | Ndegene Secondary School | 0 4 37 | 37 35 12 | 1982 | 1988- | |
| - | Chuka Forest Station | 0 19 0 | 37 36 26 | 1555 | 1988- | |
| - | Mutonga Tree Nursery | 0 18 18 | 37 52 23 | 671 | 1984- | Data in Meru Forest Stn |

| Longterm Rainfall Stations on Mountain Kenya | | Latitude d m s | Longitude d m s | Altitude (m) | Record Period | Remarks |
|---|---|---|---|---|---|---|
| LT 19 | Sirimon Track | 0 1 31N | 37 14 14 | 2439 | 1959-72 | Measurements taken |
| 12 | | 0 0 3S | 37 15 22 | 2744 | 1959-82 | 3 times |
| 13 | | 0 1 21S | 37 16 49 | 3140 | 1959-82 | in a year |
| 14 | | 0 2 40S | 37 17 18 | 3354 | 1959-82 | |
| 15 | | 0 3 48S | 37 18 0 | 3720 | 1959-82 | |
| 16 | | 0 4 53S | 37 18 39 | 4101 | 1959-82 | |
| LT 17 | Kisima Track | 0 3 35N | 37 24 28 | 2896 | 1959-76 | |
| 18 | | 0 1 15N | 37 23 40 | 3171 | 1959-76 | |
| 28 | | 0 2 10S | 37 23 27 | 3476 | 1969-76 | |
| 29 | | 0 3 2S | 37 22 22 | 3659 | 1969-76 | |
| LT 22 | Chogoria Track | 0 11 50S | 37 30 8 | 2348 | 1959- | |
| 23 | | 0 11 17S | 37 28 24 | 2591 | 1959- | |
| 24 | | 0 10 25S | 37 27 42 | 2744 | 1959- | |
| 6 | | 0 9 14S | 37 25 42 | 3018 | 1959- | |

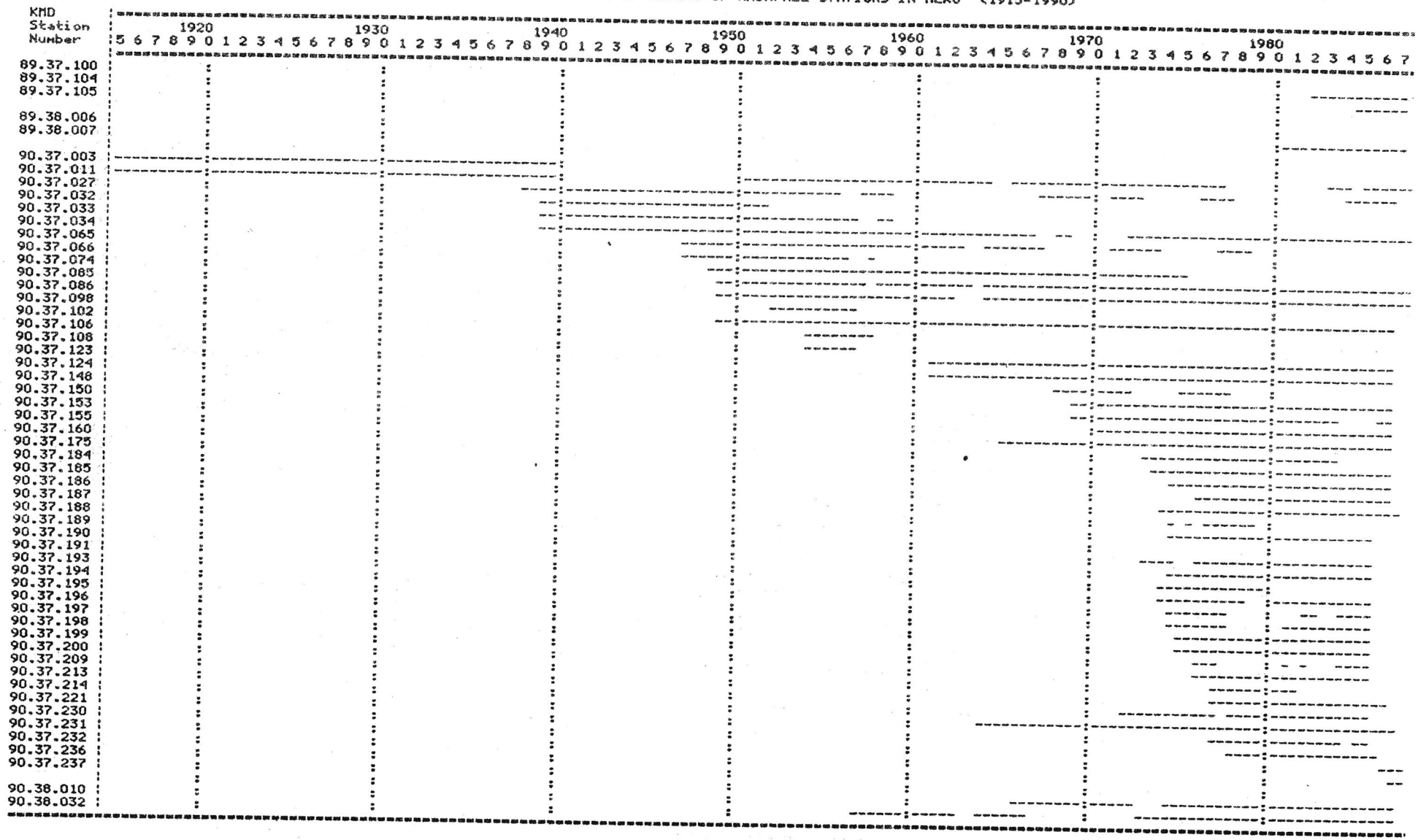
BAR GRAPH SHOWING PERIOD OF RECORD OF RAINFALL STATIONS IN MERU (1915-1990)






Appendix 4.1

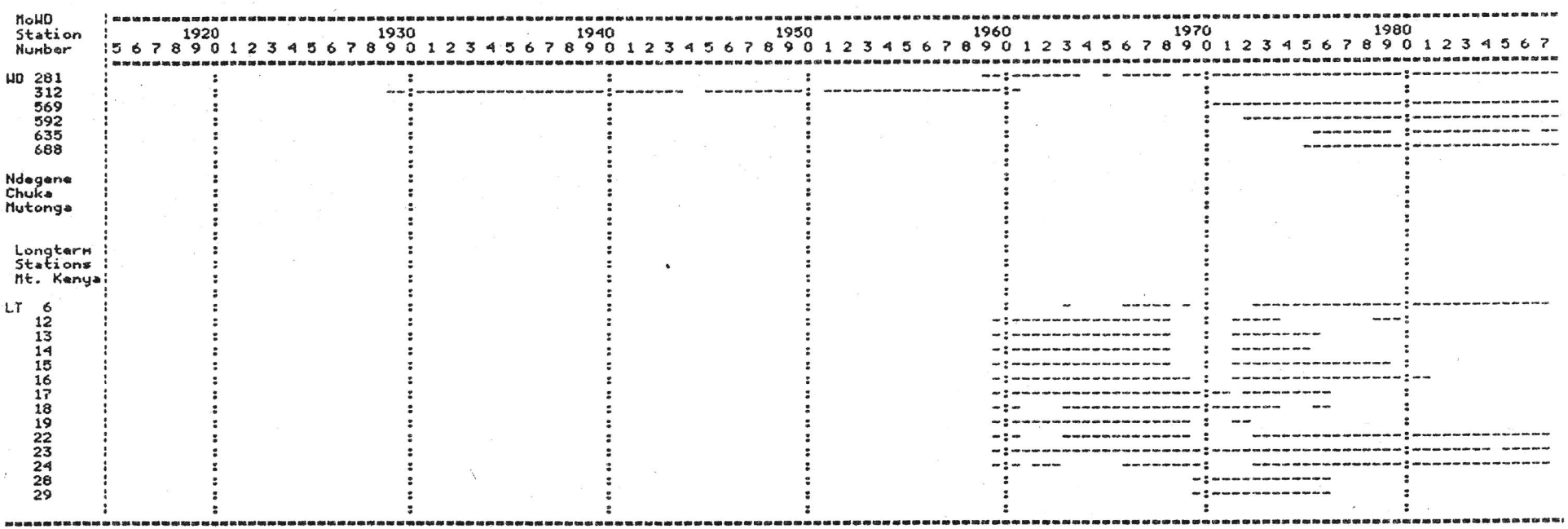
BAR GRAPH SHOWING PERIOD OF RECORD OF RAINFALL STATIONS IN MERU (1915-1990)






Appendix 4.1

BAR GRAPH SHOWING PERIOD OF RECORD OF RAINFALL STATIONS IN MERU (1915-1990)




Appendix 4.1

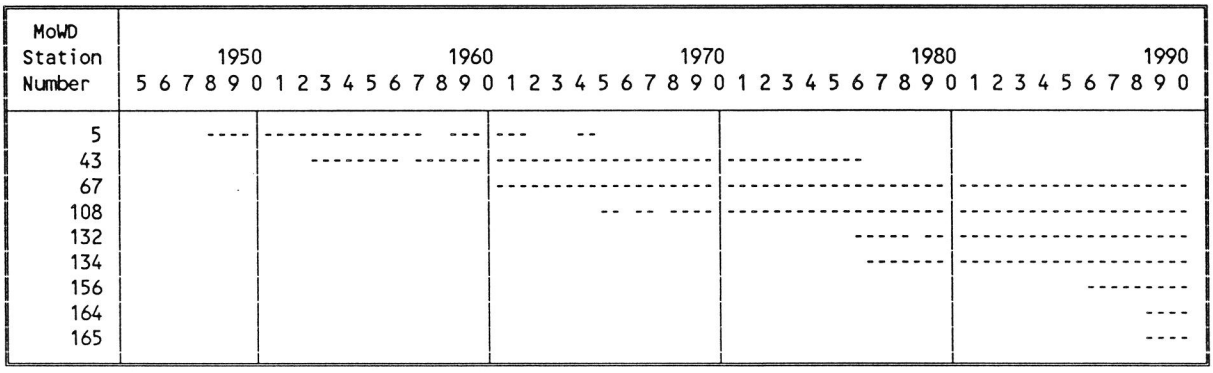
# Appendix 4.2

## List of Evaporation Pan Stations and Bar Graph of Available Records

## Meteorological and Evaporation Stations in Meru District

| Station Number KMD | Station Number MoWD (Evap) | Location | Latitude d m s | Longitude d m s | Altitude (m) | Record Period |
|---|---|---|---|---|---|---|
| **Full Meteorological Station** | | | | | | |
| 89.37.065 | 132 | Meru Meteorological Station (Kaaga) | 0 05 06 N | 37 38 48 | 1616 | 1966- |
| 90.37.160 | 108 | Marimanti Meteorological Station | 0 09 04 S | 37 58 18 | 640 | 1965- |
| **Sub-Meteorological Station** | | | | | | |
| 90.37.124 | 67 | Mariene Coffee Research Foundation | 0 00 26 S | 37 38 32 | 1616 | 1960- |
| **Evaporation Stations** | | | | | | |
| | 156 | Embori Farm | 0 04 01 N | 37 20 55 | 2652 | 1985- |
| 89.37.059 | 165 | Maua Police Station | 0 14 02 N | 37 56 19 | 1646 | 1988- |
| 90.37.214 | 134 | Kaguru Farmers Training Centre | 0 05 02 S | 37 39 47 | 1463 | 1976- |
| | 164 | Chuka Forest Station | 0 19 01 S | 37 36 26 | 1555 | 1988- |
| | 5 | Tana Grand Falls | 0 15 18 S | 38 00 48 | 488 | 1948-64 |
| | 43 | Meru Water Supply | 0 03 10 N | 37 38 15 | 1585 | 1952-76 |

## Bar Graph Showing Period of Record of Evaporation Stations in Meru (1945-1990)



# Appendix 4.3

## List of River Gauging Stations (RGS) and Bar Graph of Available Records

# RIVER GAUGING STATIONS (RGS) IN MERU DISTRICT

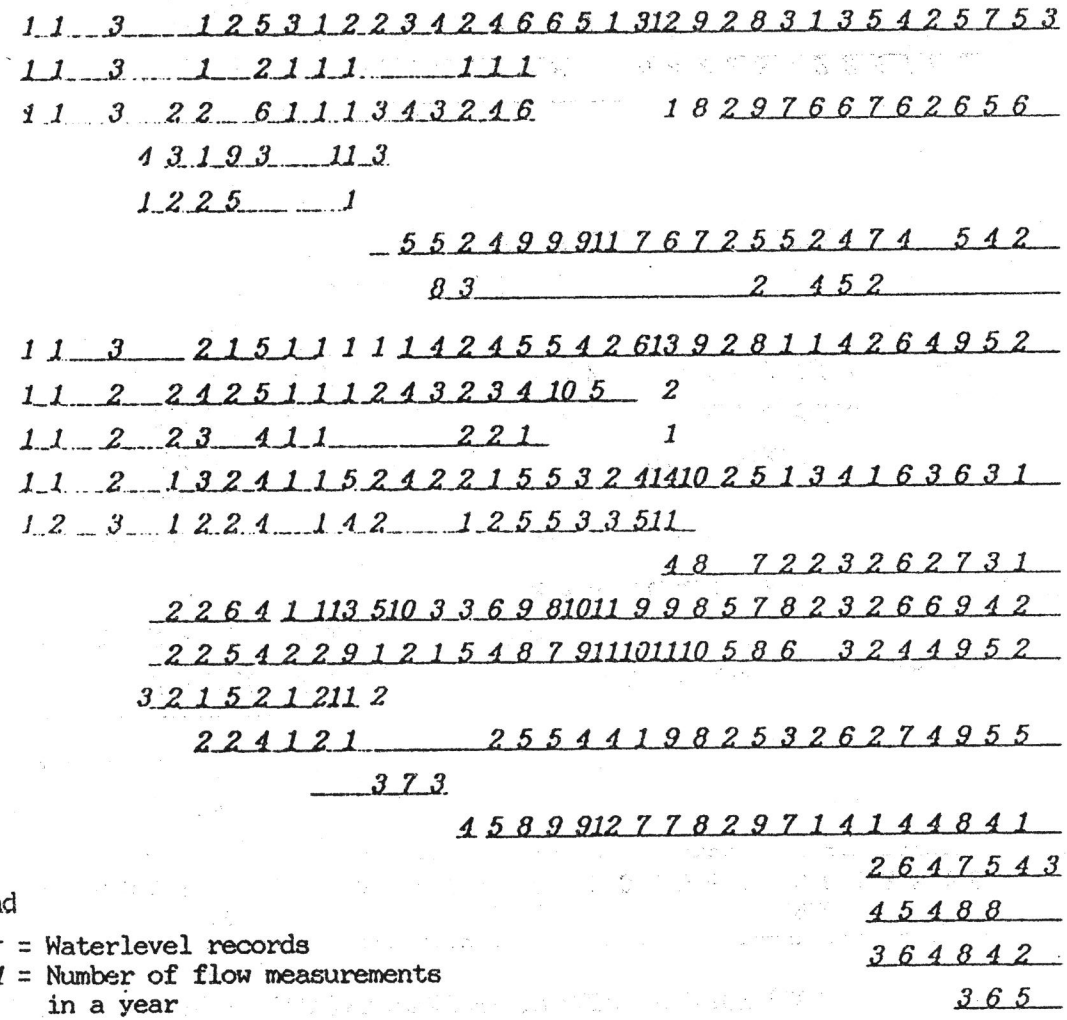
| RGS No | Name of River | Type of Station | Latitude | Longitude (East) | Area Km² | Rated or Not | Date Established | Date Closed | Sheet Ref | Altitute (m) |
|---|---|---|---|---|---|---|---|---|---|---|
| 4EA1 | Mutonga | 0-3.0m | 0 12 05 S | 37 39 30 | 124 | Rated | 09/1952 | To Date | 122/1 | 1311 |
| 4EA2 | Iraru | 0-10ft | 0 09 10 S | 37 40 25 | 67 | | 09/1952 | 10/1969 | 122/1 | 1220 |
| 4EA3 | Kithenu | 0-1.5m | 0 06 06 S | 37 40 50 | 44 | | 09/1952 | To Date | 122/1 | 1311 |
| 4EA4 | Mutonga | 0-15ft | 0 19 55 S | 37 53 15 | 624 | | 03/1957 | 10/1964 | 122/4 | 671 |
| 4EA5 | Mutonga | 0-15ft | 0 22 40 S | 37 53 39 | 1827 | | 06/1956 | 04/1962 | 122/4 | 625 |
| 4EA6 | Mutonga | 0-4.5m | 0 18 35 S | 37 52 30 | 613 | Rated | 01/1964 | To Date | 122/4 | 762 |
| 4EA7 | Mutonga | 0-4.5m, Recorder | 0 22 45 S | 37 53 45 | 1880 | Rated | 01/1966 | To Date | 122/4 | 625 |
| 4EB1 | Nithi | 0-3.0m | 0 17 05 S | 37 39 55 | 120 | Rated | 09/1952 | To Date | 122/3 | 1250 |
| 4EB2 | S. Mara | 0-10ft | 0 15 50 S | 37 39 50 | 83 | | 09/1952 | 12/1972 | 122/3 | 1341 |
| 4EB3 | N. Mara | 0-10ft | 0 12 55 S | 37 39 25 | 44 | | 09/1952 | 10/1969 | 122/1 | 1360 |
| 4EB4 | Thuchi | 0-3.0m | 0 23 00 S | 37 35 55 | 111 | Rated | 09/1952 | To Date | 122/3 | 1387 |
| 4EB5 | Ruguti (Old) | 0-3.0m | 0 21 35 S | 37 37 15 | 115 | Rated | 09/1952 | 11/1975 | 122/3 | 1402 |
| 4EB5 | Ruguti (New) | 0-3.0m | 0 21 40 S | 37 37 30 | 118 | | 09/1974 | To Date | 122/3 | 1402 |
| 4EB6/A | Ruguti | 0-3.0m | 0 21 04 S | 37 52 20 | 368 | Rated | 03/1957 | To Date | 122/4 | 686 |
| 4EB7 | Thuchi | 0-3.0m | 0 21 43 S | 37 52 17 | 495 | Rated | 10/1956 | To Date | 122/4 | 701 |
| 4EB8 | Mara | 0-15ft | 0 20 30 S | 37 52 10 | 533 | | 03/1957 | 10/1963 | 122/4 | 686 |
| 4EB9 | Tungu | 0-1.5m | 0 18 15 S | 37 39 36 | 80 | Rated | 10/1958 | To Date | 122/3 | 1311 |
| 4EB10 | Mara | 0-10ft | 0 20 35 S | 37 52 15 | 534 | Rated | 06/1962 | 11/1966 | 122/4 | 686 |
| 4EB11 | Mara | 0-4.5m | 0 20 30 S | 37 52 15 | 534 | | 03/1967 | To Date | 122/4 | 686 |
| 4EB12 | S. Mara | 0-1.5m | 0 15 50 S | 37 39 55 | 74 | | 01/1981 | To Date | 122/3 | 1341 |
| 4EB13 | Mara | 0-4.5m | 0 18 20 S | 37 48 50 | 250 | | 01/1981 | To Date | 122/4 | 823 |
| 4EB15 | S. Mara | 0-3.0m | 0 16 25 S | 37 45 40 | 117 | | 01/1981 | To Date | 122/4 | 1006 |
| 4EB16 | N. Mara | 0-1.5m | 0 12 50 S | 37 39 25 | 44 | | 09/1984 | To Date | 122/1 | 1360 |
| 4F1 | Tana G. Falls | 0-25ft | 0 16 00 S | 38 00 40 | 1717 | Rated | 02/1948 | 06/1962 | 123/3 | 457 |
| 4F2 | Kathita | 0-10ft | 0 15 15 S | 38 00 15 | 1642 | | 02/1948 | 03/1960 | 123/3 | 479 |
| 4F3 | Kathita | Weir | 0 02 36 N | 37 38 30 | 246 | Rated | 04/1952 | 11/1961 | 108/3 | 1646 |
| 4F4 | Thingithu | 0-1.5m | 0 03 30 S | 37 39 35 | 91 | | 09/1952 | To Date | 122/1 | 1679 |
| 4F5 | Mariara (Old) | 0-5ft | 0 01 40 S | 37 39 30 | | Rated | 10/1955 | 08/1970 | 122/1 | 1494 |
| 4F5 | Mariara (New) | 0-1.5m | 0 01 30 S | 37 39 30 | | Rated | 09/1970 | To Date | 122/1 | 1494 |
| 4F6 | Gatabora | 0-5ft,Weir | 0 03 03 N | 37 37 18 | 18 | Rated | 05/1955 | 04/1976 | 108/3 | 1768 |
| 4F7 | Mpuri | 0-5ft,Weir | 0 02 58 N | 37 37 16 | | | 05/1955 | 11/1958 | 108/3 | 1768 |
| 4F8 | Thangatha | 0-3.0m | 0 00 01 N | 38 04 20 | 210 | | 08/1957 | To Date | 109/3 | 640 |
| 4F9 | Ura | 0-3.0m | 0 01 35 N | 38 03 55 | 198 | | 08/1957 | To Date | 109/3 | 659 |
| 4F10 | Kathita | 0-4.5m | 0 09 05 S | 37 58 40 | 878 | Rated | 09/1959 | To Date | 122/2 | 579 |
| 4F11 | Thingithu | 0-10ft | 0 10 05 S | 37 58 37 | 347 | | 09/1959 | 04/1965 | 122/2 | 564 |
| 4F12 | Thanantu | 0-15ft | 0 11 00 S | 38 00 50 | 269 | | 09/1959 | 09/1971 | 123/1 | 534 |
| 4F13 | Tana, Grand Falls | 0-45ft,Recorder, Cableway | 0 16 00 S | 38 00 45 | 1717 | Rated | 06/1962 | To Date | 123/3 | 457 |
| 4F14 | Rojewero | 0-10ft | 0 07 10 N | 38 17 30 | 352 | | 11/1962 | 03/1969 | 109/4 | 488 |
| 4F15 | Kathita | 0-15ft | 0 02 00 N | 37 40 20 | 254 | | 11/1962 | 10/1964 | 108/3 | 1372 |
| 4F16 | Tana, Adams Falls | 0-40ft,Recorder, Cableway | 0 04 15 S | 38 25 20 | 18142 | | 11/1962 | 01/1974 | 123/2 | 320 |
| 4F17 | Thingithu | 0-3.0m | 0 10 00 S | 37 57 35 | 303 | | 07/1965 | To Date | 122/2 | 579 |
| 4F18 | Rojewero | 0-15ft, Recorder | 0 02 30 N | 38 21 00 | 479 | Rated | 11/1965 | 09/1974 | 109/4 | 427 |
| 4F19 | Kathita | 0-4.5m, Recorder | 0 15 15 S | 38 00 15 | 1702 | Rated | 09/1968 | To Date | 123/1 | 479 |

# (CONT.) RIVER GAUGING STATIONS (RGS) IN MERU DISTRICT

| RGS No | Name of River | Type of Station | Latitude | Longitude (East) | Area Km² | Rated or Not | Date Established | Date Closed | Sheet Ref | Altitute (m) |
|---|---|---|---|---|---|---|---|---|---|---|
| 4F20 | Thanantu (Old) | 0-15ft | 0 05 40 S | 38 00 35 | 211 | | 02/1966 | 11/1966 | 123/1 | 579 |
| 4F20 | Thanantu (New) | 0-4.5m | 0 05 47 S | 38 00 30 | 212 | | 08/1978 | To Date | 123/1 | 579 |
| 4F21 | Runkunu (Old) | 0-3.0m | 0 03 57 N | 37 59 51 | 70 | | 10/1977 | 10/1987 | 108/4 | 732 |
| 4F21 | Runkunu (New) | 0-1.5m | 0 03 57 N | 37 58 45 | 78 | | 10/1987 | To Date | 108/4 | 747 |
| 4F22 | Ura | 0-3.0m | 0 03 55 N | 38 00 05 | 176 | | 10/1977 | To Date | 109/3 | 732 |
| 4F23 | Ura | 0-1.5m | 0 04 00 N | 38 00 05 | 98 | | 09/1978 | To Date | 109/3 | 732 |
| 4F24 | Thangatha | No gauge | 0 06 30 N | 37 54 35 | 63 | | 09/1978 | 10/1984 | 108/4 | 1095 |
| 4F25 | Kuuru | 0-3.0m | 0 01 50 N | 37 50 10 | 49 | | 09/1978 | To Date | 108/4 | 1037 |
| 4F26 | Kathita | 0-1.5m | 0 03 20 S | 37 55 50 | 752 | | 10/1978 | To Date | 122/2 | 732 |
| 4F27 | Thangatha | 0-1.5m | 0 04 00 N | 37 56 45 | 84 | | 09/1978 | To Date | 108/4 | 808 |
| 4F28 | Thanantu | 0-1.5m | 0 01 29 N | 37 52 00 | | | 02/1979 | To Date | 108/4 | 976 |
| 4F29 | Kathita | 0-3.0m | 0 00 38 S | 37 52 37 | | | 02/1979 | To Date | 122/2 | 863 |
| 4F31 | Kathita | 0-3.0m | 0 01 33 N | 37 35 14 | | | 09/1980 | To Date | 108/3 | 1951 |
| 4F32 | Rojewero | 0-1.5m | 0 12 05 N | 38 05 10 | | | 09/1980 | 11/1980 | 109/3 | 762 |
| 4F33 | Thanantu | 0-1.5m | 0 06 35 N | 37 49 06 | | | 09/1980 | To Date | 108/4 | 1207 |
| 4F34 | Rojewero | 0-1.5m | 0 14 23 N | 38 02 10 | | | 09/1980 | To Date | 109/4 | 869 |
| 4F35 | Kindani | 0-1.5m | 0 11 44 N | 38 02 41 | | | 09/1980 | 11/1980 | 109/4 | 823 |
| 4F36 | Liutu | 0-1.5m | 0 11 26 N | 37 50 47 | | | 09/1982 | To Date | 108/4 | 1784 |
| 4F37 | Liutu | 0-1.5m | 0 08 00 N | 37 49 30 | | | 09/1982 | To Date | 108/4 | 1280 |
| 5BE2 | Ontulili | 0-1.5m, weir, Rec | 0 02 25 N | 37 08 25 | 64 | Rated | 03/1931 | To Date | 107/3 | 2012 |
| 5BE3 | Kongoni | 0-1.5m, weir | 0 03 20 N | 37 11 18 | 14 | Rated | 03/1931 | To Date | 107/3 | 2119 |
| 5BE4 | Sirimon | 0-3.0m, weir, Rec | 0 04 00 N | 37 11 20 | 62 | Rated | 07/1931 | To Date | 107/3 | 2073 |
| 5BE5 | Teleswani | 0-1.5m, weir, Rec | 0 04 57 N | 37 14 00 | 36 | Rated | 01/1944 | To Date | 107/3 | 2210 |
| 5BE6 | Timau | 0-1.5m, weir, Rec | 0 05 35 N | 37 14 30 | 64 | Rated | 12/1943 | To Date | 107/3 | 2195 |
| 5BE7 | Liki | 0-3m, Recorder | 0 01 15 N | 37 05 13 | 176 | Rated | 01/1944 | To Date | 107/4 | 1951 |
| 5BE10 | Timau | 0-5ft, weir | 0 03 30 N | 37 18 00 | | Rated | 03/1948 | 08/1953 | 107/4 | 2509 |
| 5BE11 | Liki (centre) | 0-1.5m, weir | 0 01 55 S | 37 08 58 | 41 | Rated | 02/1951 | To Date | 121/1 | 2119 |
| 5BE12 | Liki (south) | 0-1.5m, weir | 0 02 55 S | 37 08 50 | 26 | Rated | 02/1951 | To Date | 121/1 | 2119 |
| 5BE15 | Liki (main) | 0-5ft | 0 00 00 N | 37 06 30 | | Not Rated | 12/1958 | 1959 | 107/3 | 2012 |
| 5BE17 | Liki (north) | 0-5ft | 0 01 10 S | 37 08 30 | 62 | Rated | 1959 | 1960 | 121/1 | 2104 |
| 5BE19 | Ngushishi | 12"V-Notch weir | 0 06 35 N | 37 15 40 | 13 | Rated | 01/1959 | 07/1962 | 107/4 | 2256 |
| 5D1 | Ngare Ndare | 0-5ft | 0 11 47 N | 37 21 00 | 140 | Rated | 03/1944 | 07/1963 | 107/4 | 1829 |
| 5D2 | Ngare Nything | 0-5ft | 0 11 00 N | 37 25 22 | 34 | Rated | 03/1944 | 07/1963 | 107/4 | 1738 |
| 5D4 | Ngare Ndare | 0-5ft, weir | 0 11 35 N | 37 21 00 | 137 | Rated | 01/1948 | 11/1961 | 107/4 | 1829 |
| 5D9 | Lewa Springs | Temp 2ft weir | 0 11 30 N | 37 37 30 | | Not Rated | 01/1959 | 01/1962 | 107/4 | 1707 |
| 5D10 | W. Marania | Temp 3ft weir | 0 11 36 N | 37 28 28 | 65 | Not Rated | 01/1959 | 01/1962 | 107/4 | 1707 |
| 5D11 | E. Marania | Temp 3'x 16' weir | 0 12 02 N | 37 29 30 | 83 | Not Rated | 07/1959 | 01/1962 | 107/4 | 1707 |
| 5D12 | Ngare Unga | Temp 12"x18" weir | 0 10 55 N | 37 25 00 | 21 | Not Rated | 03/1959 | 01/1962 | 107/4 | 1738 |
| 5D13 | Ngare Unga | Temp 12"V weir | 0 10 54 N | 37 25 12 | | Not Rated | 03/1959 | 01/1962 | 107/4 | 1738 |
| 5D14 | Likiundu | 0-1.5m | 0 14 17 N | 37 48 20 | | Not Rated | 10/1982 | To Date | 108/4 | 1555 |

## BAR GRAPH SHOWING PERIOD OF RECORD OF RIVER GAUGING STATIONS IN MERU DISTRICT (1945-1990)

| RGS No. | Name of River | Years of Operation |
|---|---|---|
| 4EA1 | Mutonga | 1952- |
| 4EA2 | Iraru | 1952-1969 |
| 4EA3 | Kithemu | 1952- |
| 4EA4 | Mutonga | 1956-1964 |
| 4EA5 | Mutonga | 1956-1962 |
| 4EA6 | Mutonga | 1964- |
| 4EA7 | Mutonga | 1966- |
| 4EB1 | Nithi | 1953- |
| 4EB2 | S. Mara | 1952-1972 |
| 4EB3 | N. Mara | 1952-1969 |
| 4EB4 | Thuchi | 1952- |
| 4EB5 | Ruguti (Old) | 1952-1975 |
| 4EB5 | Ruguti (New) | 1974- |
| 4EB6/A | Ruguti | 1957- |
| 4EB7 | Thuchi | 1956- |
| 4EB8 | Mara | 1956-1963 |
| 4EB9 | Tungu | 1958- |
| 4EB10 | Mara | 1962-1966 |
| 4EB11 | Mara | 1967- |
| 4EB12 | S. Mara | 1981- |
| 4EB13 | Mara | 1981- |
| 4EB15 | S. Mara | 1981- |
| 4EB16 | N. Mara | 1984- |



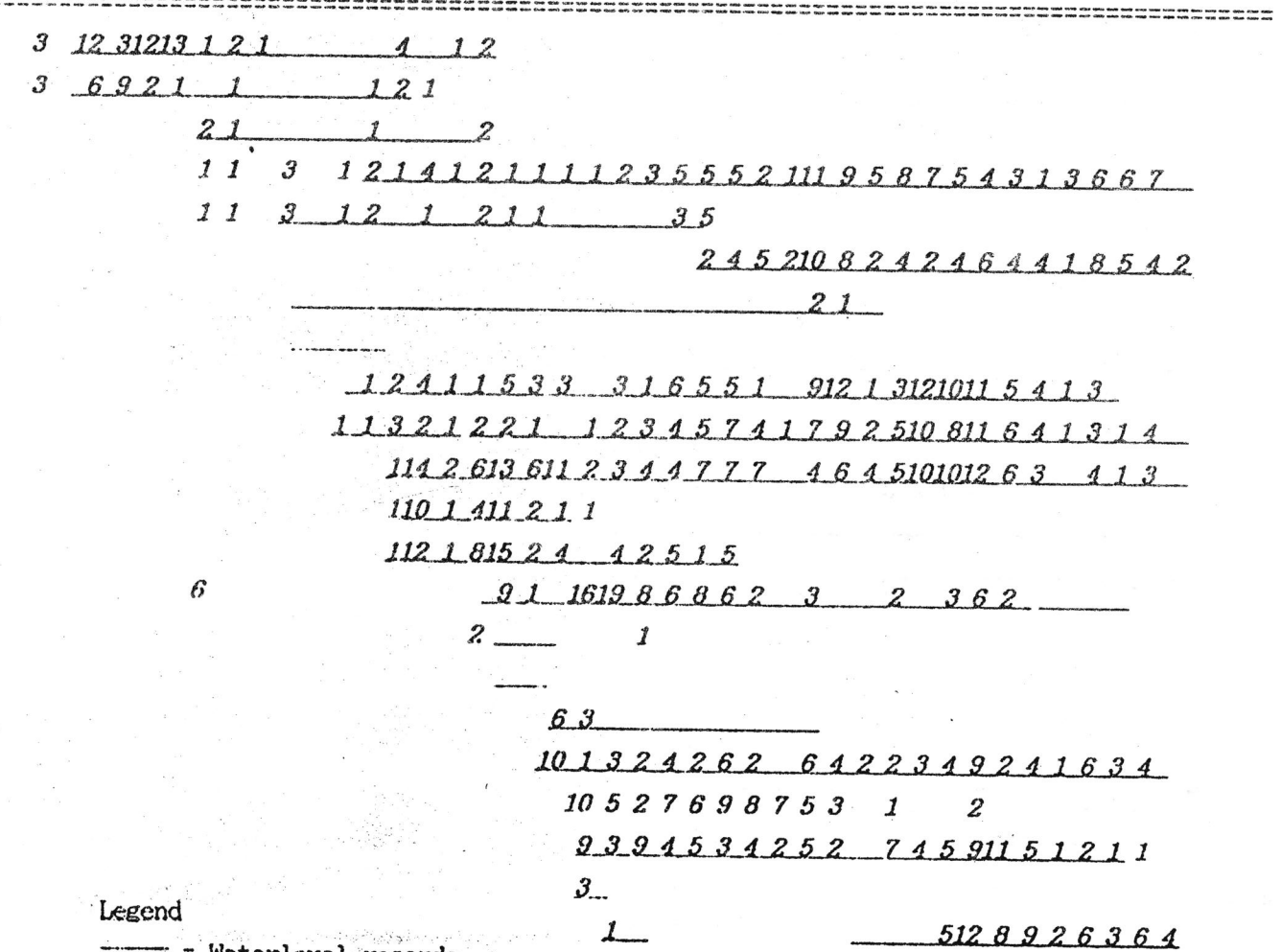

Legend

——— = Waterlevel records

*3 5 1* = Number of flow measurements in a year

BAR GRAPH SHOWING PERIOD OF RECORD OF RIVER GAUGING STATIONS IN MERU DISTRICT (1945-1990)

| RGS No. | Name of River | Years of Operation |
|---|---|---|
| 4F1 | Tana Gr.Falls | 1948-1962 |
| 4F2 | Kathita | 1948-1960 |
| 4F3 | Kathita | 1952-1961 |
| 4F4 | Thingithu | 1952- |
| 4F5 | Mariara (old) | 1955-1970 |
| 4F5 | Mariara (new) | 1970- |
| 4F6 | Gatabora | 1955-1976 |
| 4F7 | Mpuri | 1955-1958 |
| 4F8 | Thangatha | 1957- |
| 4F9 | Ura | 1957- |
| 4F10 | Kathita | 1959- |
| 4F11 | Thingithu | 1959-1965 |
| 4F12 | Thanantu | 1959-1971 |
| 4F13 | Tana Gr.Falls | 1962- |
| 4F14 | Rojiwero | 1962-1969 |
| 4F15 | Kathita | 1962-1964 |
| 4F16 | Adams Falls | 1966-1974 |
| 4F17 | Thingithu | 1965- |
| 4F18 | Rojiwero | 1966-1974 |
| 4F19 | Kathita | 1966- |
| 4F20 | Thanantu (old) | 1966-1966 |
| 4F20 | Thanantu (new) | 1966- |
| 4F21 | Runkunu (old) | 1978-1987 |
| 4F21 | Runkunu (new) | 1988- |




Legend

——— = Waterlevel records

3.5.1 = Number of flow measurements in a year

BAR GRAPH SHOWING PERIOD OF RECORD OF RIVER GAUGING STATIONS IN MERU DISTRICT (1945-1990)

| RGS No. | Name of River | Years of Operation | 1950 5 6 7 8 9 | 1960 0 1 2 3 4 5 6 7 8 9 | 1970 0 1 2 3 4 5 6 7 8 9 | 1980 0 1 2 3 4 5 6 7 8 9 | 1990 0 |
|---|---|---|---|---|---|---|---|
| 4F22 | Ura | 1978- | | | | 3 111 3 5 3 1 5 | |
| 4F23 | Ura | 1978- | | | | 312 3 4 1 3 | |
| 4F24 | Thangatha | 1978-1984 | | | | 3 9 6 5 2 3 1 | |
| 4F25 | Kuuru | 1979- | | | | 411 4 3 2 3 2 4 2 | |
| 4F26 | Kathita | 1978- | | | | 2 4 2 1 2 1 3 2 | |
| 4F27 | Thangatha | 1978- | | | | 210 3 5 2 3 | |
| 4F28 | Thanantu | 1979- | | | | 511 5 2 1 2 1 | |
| 4F29 | Kathita | 1979- | | | | 314 5 3 2 2 4 | |
| 4F31 | Kathita Katheri | 1980- | | | | 2 3 2 1 8 4 6 | |
| 4F32 | Rojiwero | 1980- | | | | 2 | |
| 4F33 | Thanantu | 1980- | | | | 3 7 3 5 4 6 | |
| 4F34 | Rojiwero | 1980- | | | | 1 1 | |
| 4F35 | Kindani | 1980- | | | | - | |
| 4F36 | Liutu | 1982- | | | | 1 2 7 2 6 | |
| 4F37 | Liutu | 1982- | | | | 1 3 6 4 1 | |

BAR GRAPH SHOWING PERIOD OF RECORD OF RIVER GAUGING STATIONS IN MERU DISTRICT (1945-1990)

| RGS No. | Name of River | Years of Operation | 1950 5 6 7 8 9 | 1960 0 1 2 3 4 5 6 7 8 9 | 1970 0 1 2 3 4 5 6 7 8 9 | 1980 0 1 2 3 4 5 6 7 8 9 | 1990 0 |
|---|---|---|---|---|---|---|---|
| 5BE2 | Ontulili | 1931- | From 1931 1 | 1 5 1 2 1 3 1 4 3 2 1 2 | 1 3 1 4 2 3 1 2 2 1 5 5 2 3 2 2 | | |
| 5BE3 | Kongoni | 1931- | From 1931 | 2 3 1 1 1 1 | 1 1 2 1 3 2 1 1 | | |
| 5BE4 | Sirimon | 1931- | From 1931 2 | 7 4 3 1 5 5 7 3 5 9 4 2 1 | 4 5 5 3 1 4 3 3 2 2 5 6 2 1 1 | | |
| 5BE5 | Teleswani | 1944- | | 2 1 3 1 3 2 2 2 5 2 1 | 1 1 3 5 4 2 3 4 3 2 2 4 2 5 5 2 1 | | |
| 5BE6 | Timau | 1944- | 1 | 1 1 3 1 4 1 4 3 1 6 3 | 2 1 7 1 4 6 3 1 4 5 8 7 8 2 5 4 2 1 | | |
| 5BE7 | Liki | 1944- | 1 4 1 1 2 6 1 | 1 2 1 3 2 6 2 1 3 2 1 3 1 2 3 | 2 1 3 5 2 2 | 1 5 3 1 4 6 3 8 6 2 | |
| 5BE10 | Timau | 1948-1953 | | | | | |
| 5BE11 | Liki (centre) | 1951 | | 1 1 | 1 | 3 1 3 1 1 2 3 | |
| 5BE12 | Liki (south) | 1951- | | 2 | 1 | 2 1 2 2 1 2 3 | |
| 5BE15 | Liki (main) | 1958-1959 | | 1 1 0 | | | |
| 5BE17 | Liki (north) | 1959-1960 | | 1 | | | |
| 5BE19 | Ngushishi | 1959-1962 | | 1 | | | |
| 5D1 | Ngare Ndare | 1944-1963 | | | | | |
| 5D2 | Ngare Nything | 1944-1963 | | 1 3 | | | |
| 5D4 | Ngare Ndare | 1948-1961 | | 1 1 2 1 | | | |
| 5D9 | Lewa Springs | 1959-1962 | | 1 | | | |
| 5D10 | W. Mariana | 1959-1962 | | 1 | | | |
| 5D11 | E. Mariana | 1959-1962 | | 3 | | | |
| 5D12 | Ngare Unga | 1959-1962 | | | | | |
| 5D13 | Ngare Unga | 1959-1962 | | | | | |
| 5D14 | Likiundu | 1982- | | | | | 3 3 6 2 1 0 1 |

# Appendix 4.4

## Rainfall Data Summaries and Figures

## Appendix 4.4

### Rainfall Data Summaries and Figures

- Summary of Rainfall Data Statistics
- Mean Monthly Rainfall Figures
- Annual Rainfall Variations
- Frequency Distribution of Maximum Daily Rainfall

MERU: SUMMARY OF THE MAIN DATA FROM RAINFALL STATIONS

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Total | No. of Raindays |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Number: 89.37.000 MERU D.C.'s OFFICE** | | | | | | | | | | | | | | 1910-1971 |
| Mean | 53.9 | 31.3 | 123.2 | 286.1 | 142.9 | 9.3 | 11.2 | 10.5 | 18.8 | 236.8 | 323.4 | 145.0 | 1392.6 | 92 |
| % of Annual | 4 | 2 | 9 | 21 | 10 | 1 | 1 | 1 | 1 | 17 | 23 | 10 | 100 | |
| No. of Obs. | 60 | 60 | 59 | 59 | 59 | 59 | 58 | 59 | 59 | 59 | 59 | 59 | | 50 |
| Maximum | 325.9 | 226.2 | 481.1 | 553.0 | 382.6 | 81.8 | 102.6 | 53.3 | 101.3 | 1386 | 889.5 | 439.4 | 2945.1 | |
| Minimum | 0.0 | 0.0 | 0.0 | 29.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 15.2 | 96.8 | 0.0 | 799.8 | |
| Std. Dev. | 57.1 | 46.4 | 110.8 | 119.1 | 93.2 | 13.6 | 15.7 | 13.7 | 25.7 | 200.8 | 144.2 | 100.9 | 376.1 | |
| Var. Coeff. | 1.06 | 1.48 | 0.90 | 0.42 | 0.65 | 1.45 | 1.40 | 1.30 | 1.36 | 0.85 | 0.45 | 0.70 | 0.27 | |
| **Number: 89.37.002 TIMAU, MARANIA FARM** | | | | | | | | | | | | | | 1925-1985 |
| Mean | 39.1 | 32.6 | 94.8 | 152.1 | 76.8 | 17.1 | 21.5 | 20.4 | 16.2 | 135.1 | 182.8 | 101.9 | 890.4 | 82 |
| % of Annual | 4 | 4 | 11 | 17 | 9 | 2 | 2 | 2 | 2 | 15 | 21 | 11 | 100 | |
| No. of Obs. | 60 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 60 | 61 | 61 | 61 | | 38 |
| Maximum | 238.2 | 204.6 | 368.3 | 358.6 | 292.6 | 109.8 | 107.2 | 127.3 | 127.3 | 533.9 | 493.0 | 409.8 | 1783.3 | |
| Minimum | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 12.7 | 54.4 | 0.0 | 413.6 | |
| Std. Dev. | 48.6 | 38.5 | 79.7 | 72.1 | 64.0 | 23.9 | 25.5 | 26.9 | 22.5 | 86.3 | 74.9 | 81.7 | 239.9 | |
| Var. Coeff. | 1.25 | 1.18 | 0.84 | 0.47 | 0.83 | 1.39 | 1.18 | 1.32 | 1.39 | 0.64 | 0.41 | 0.80 | 0.27 | |
| **Number: 89.37.003 ISIOLO DISTRICT OFFICE** | | | | | | | | | | | | | | 1930-1986 |
| Mean | 34.8 | 36.7 | 84.0 | 122.0 | 32.6 | 4.5 | 4.8 | 4.7 | 6.7 | 64.1 | 147.5 | 76.1 | 618.5 | |
| % of Annual | 6 | 6 | 14 | 20 | 5 | 1 | 1 | 1 | 1 | 10 | 24 | 12 | 100 | |
| No. of Obs. | 55 | 55 | 56 | 56 | 57 | 56 | 55 | 56 | 56 | 54 | 54 | 54 | | 0 |
| Maximum | 140.4 | 176.9 | 240.8 | 304.0 | 157.7 | 48.8 | 62.7 | 49.3 | 68.0 | 377.2 | 468.8 | 226.8 | 1278.6 | |
| Minimum | 0.0 | 0.0 | 8.4 | 18.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 28.7 | 1.8 | 314.8 | |
| Std. Dev. | 31.0 | 37.4 | 52.6 | 54.3 | 33.9 | 10.3 | 12.4 | 10.9 | 11.4 | 55.9 | 80.7 | 51.5 | 190.6 | |
| Var. Coeff. | 0.89 | 1.02 | 0.63 | 0.44 | 1.04 | 2.28 | 2.58 | 2.32 | 1.71 | 0.87 | 0.55 | 0.68 | 0.31 | |
| **Number: 89.37.019 MIATHENI AGRICULTURE STAFF HOUSE** | | | | | | | | | | | | | | 1939-1985 |
| Mean | 46.2 | 30.8 | 133.0 | 385.3 | 172.7 | 26.1 | 11.8 | 11.7 | 17.7 | 245.4 | 378.8 | 147.1 | 1606.6 | 88 |
| % of Annual | 3 | 2 | 8 | 24 | 11 | 2 | 1 | 1 | 1 | 15 | 24 | 9 | 100 | |
| No. of Obs. | 46 | 47 | 46 | 47 | 45 | 45 | 44 | 44 | 41 | 44 | 43 | 40 | | 29 |
| Maximum | 338.1 | 260.1 | 458.5 | 768.9 | 744.4 | 305.6 | 64.8 | 53.0 | 111.0 | 1538 | 870.5 | 588.5 | 2458.9 | |
| Minimum | 0.0 | 0.0 | 0.0 | 155.8 | 18.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 103.2 | 9.4 | 871.5 | |
| Std. Dev. | 56.8 | 52.1 | 125.4 | 143.3 | 136.6 | 63.1 | 12.6 | 14.1 | 26.0 | 289.9 | 167.4 | 125.1 | 434.4 | |
| Var. Coeff. | 1.23 | 1.69 | 0.94 | 0.37 | 0.79 | 2.42 | 1.06 | 1.21 | 1.47 | 1.18 | 0.44 | 0.85 | 0.27 | |
| **Number: 89.37.038 MERU FOREST STATION** | | | | | | | | | | | | | | 1948-1985 |
| Mean | 50.7 | 39.6 | 118.3 | 292.1 | 144.1 | 9.2 | 11.9 | 11.6 | 15.1 | 223.3 | 319.4 | 130.7 | 1366.1 | 89 |
| % of Annual | 4 | 3 | 9 | 21 | 11 | 1 | 1 | 1 | 1 | 16 | 23 | 10 | 100 | |
| No. of Obs. | 37 | 37 | 37 | 37 | 37 | 38 | 38 | 38 | 38 | 38 | 38 | 36 | | 28 |
| Maximum | 253.8 | 281.9 | 472.7 | 534.9 | 470.8 | 95.3 | 77.7 | 158.8 | 58.9 | 945.6 | 1054 | 385.1 | 2476.8 | |
| Minimum | 0.0 | 0.0 | 2.4 | 56.2 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 15.5 | 4.5 | 2.0 | 771.9 | |
| Std. Dev. | 53.9 | 57.9 | 118.2 | 118.3 | 88.7 | 15.9 | 14.8 | 25.9 | 14.5 | 188.7 | 179.8 | 97.1 | 424.3 | |
| Var. Coeff. | 1.06 | 1.46 | 1.00 | 0.41 | 0.62 | 1.73 | 1.25 | 2.23 | 0.96 | 0.85 | 0.56 | 0.74 | 0.31 | |

MERU: SUMMARY OF THE MAIN DATA FROM RAINFALL STATIONS

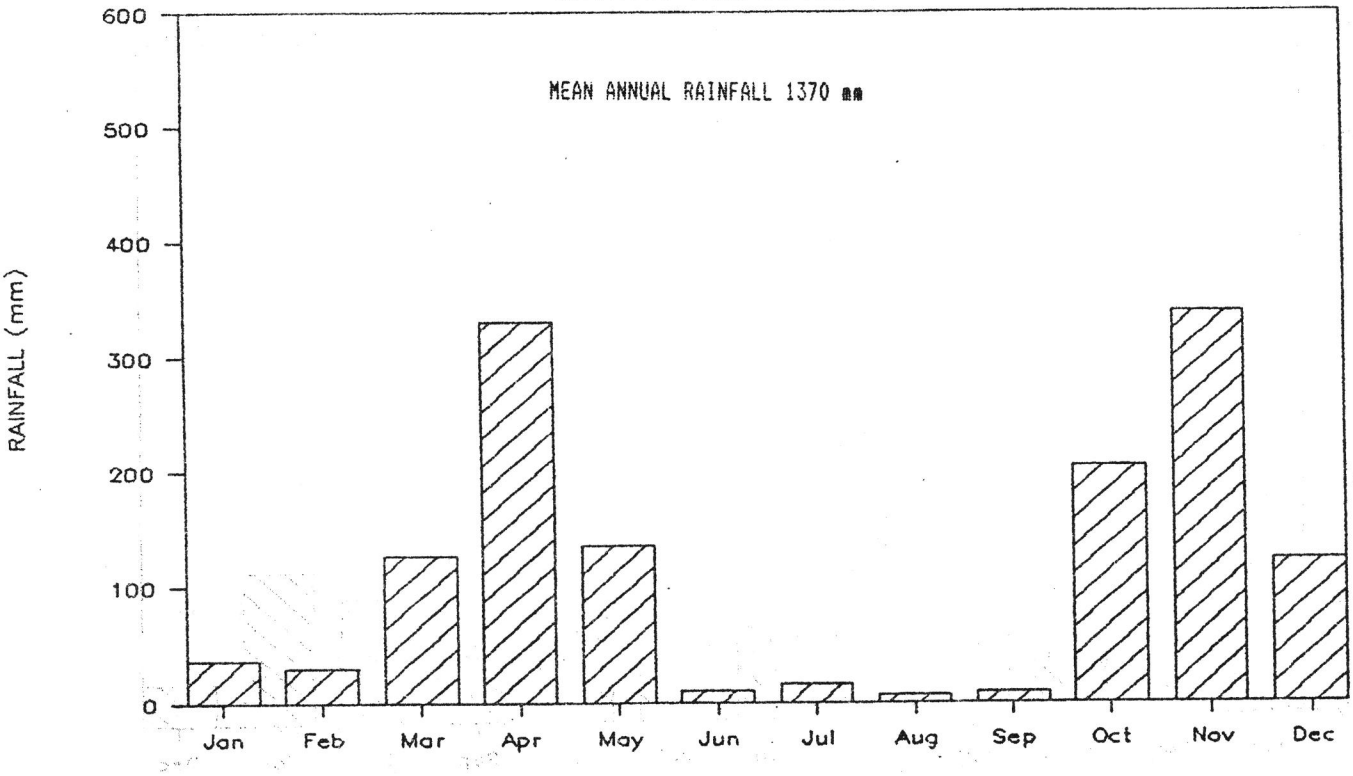
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Total | No. of Raindays |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Number: 89.37.040 ONTULILI FOREST STATION** | | | | | | | | | | | | | | 1948-1985 |
| Mean | 24.7 | 26.8 | 52.1 | 150.5 | 131.4 | 60.5 | 65.6 | 76.9 | 59.4 | 92.1 | 113.1 | 41.9 | 894.9 | 88 |
| % of Annual | 3 | 3 | 6 | 17 | 15 | 7 | 7 | 9 | 7 | 10 | 13 | 5 | 100 | |
| No. of Obs. | 37 | 36 | 37 | 37 | 37 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | | 29 |
| Maximum | 119.3 | 98.8 | 210.0 | 315.3 | 238.2 | 154.2 | 172.7 | 215.3 | 174.0 | 324.4 | 290.6 | 158.0 | 1375.4 | |
| Minimum | 0.0 | 0.0 | 0.0 | 12.9 | 40.6 | 0.0 | 4.6 | 12.4 | 0.0 | 10.7 | 25.9 | 1.7 | 0.0 | |
| Std. Dev. | 30.2 | 30.2 | 45.0 | 70.5 | 49.9 | 37.8 | 42.6 | 46.1 | 38.4 | 61.2 | 65.8 | 40.4 | 307.9 | |
| Var. Coeff. | 1.22 | 1.13 | 0.86 | 0.47 | 0.38 | 0.63 | 0.65 | 0.60 | 0.65 | 0.66 | 0.58 | 0.96 | 0.34 | |
| **Number: 89.37.041 LARE DIVISIONAL AGRICULTURE OFFICE** | | | | | | | | | | | | | | 1950-1985 |
| Mean | 59.5 | 81.3 | 187.4 | 468.4 | 277.8 | 17.8 | 25.7 | 24.7 | 22.2 | 338.4 | 464.7 | 147.5 | 2115.5 | 85 |
| % of Annual | 3 | 4 | 9 | 22 | 13 | 1 | 1 | 1 | 1 | 16 | 22 | 7 | 100 | |
| No. of Obs. | 31 | 28 | 33 | 30 | 30 | 30 | 30 | 26 | 27 | 27 | 27 | 22 | | 9 |
| Maximum | 412.5 | 429.0 | 914.2 | 1036 | 972.1 | 96.3 | 354.8 | 109.7 | 101.1 | 1333 | 1409 | 826.3 | 4097.5 | |
| Minimum | 0.0 | 0.0 | 0.0 | 70.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 56.9 | 95.8 | 0.0 | 941.3 | |
| Std. Dev. | 100.8 | 127.9 | 192.5 | 239.1 | 233.9 | 27.8 | 62.8 | 32.3 | 29.8 | 328.7 | 279.4 | 197.5 | 968.7 | |
| Var. Coeff. | 1.69 | 1.57 | 1.03 | 0.51 | 0.84 | 1.56 | 2.44 | 1.31 | 1.34 | 0.97 | 0.60 | 1.34 | 0.46 | |
| **Number: 89.37.059 MAUA POLICE STATION** | | | | | | | | | | | | | | 1959-1985 |
| Mean | 43.2 | 52.0 | 194.8 | 610.2 | 287.1 | 45.1 | 41.9 | 57.6 | 44.8 | 419.2 | 540.6 | 158.1 | 2494.6 | 109 |
| % of Annual | 2 | 2 | 8 | 24 | 12 | 2 | 2 | 2 | 2 | 17 | 22 | 6 | 100 | |
| No. of Obs. | 26 | 24 | 25 | 27 | 27 | 27 | 27 | 26 | 27 | 26 | 27 | 27 | | 20 |
| Maximum | 137.8 | 312.9 | 520.4 | 1374 | 902.2 | 426.4 | 163.8 | 184.3 | 109.7 | 1140 | 1216 | 456.1 | 4725.3 | |
| Minimum | 0.0 | 0.0 | 0.0 | 0.0 | 34.0 | 0.0 | 0.0 | 0.0 | 0.0 | 21.8 | 200.5 | 13.0 | 1323.4 | |
| Std. Dev. | 36.3 | 82.9 | 170.4 | 351.2 | 189.8 | 78.8 | 32.6 | 42.2 | 30.2 | 302.1 | 271.5 | 114.2 | 833.3 | |
| Var. Coeff. | 0.84 | 1.59 | 0.87 | 0.58 | 0.66 | 1.75 | 0.78 | 0.73 | 0.67 | 0.72 | 0.50 | 0.72 | 0.33 | |
| **Number: 89.38.001 KINNA SCHEME** | | | | | | | | | | | | | | 1972-1986 |
| Mean | 15.2 | 7.1 | 28.0 | 104.6 | 28.9 | 0.0 | 0.3 | 0.2 | 1.3 | 79.2 | 121.1 | 65.7 | 451.6 | 29 |
| % of Annual | 3 | 2 | 6 | 23 | 6 | 0 | 0 | 0 | 0 | 18 | 27 | 15 | 100 | |
| No. of Obs. | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | | 2 |
| Maximum | 98.3 | 60.6 | 147.1 | 322.6 | 91.5 | 0.0 | 1.8 | 2.8 | 12.1 | 381.3 | 254.5 | 270.0 | 879.8 | |
| Minimum | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 38.0 | |
| Std. Dev. | 25.9 | 15.3 | 41.4 | 102.6 | 35.2 | 0.0 | 0.6 | 0.7 | 3.3 | 106.6 | 70.1 | 69.1 | 233.0 | |
| Var. Coeff. | 1.70 | 2.17 | 1.48 | 0.98 | 1.22 | | 2.13 | 3.74 | 2.48 | 1.35 | 0.58 | 1.05 | 0.52 | |
| **Number: 90.37.011 MUJWA CATHOLIC MISSION** | | | | | | | | | | | | | | 1915-1985 |
| Mean | 53.3 | 32.5 | 117.3 | 305.7 | 170.1 | 16.3 | 10.9 | 15.2 | 20.3 | 244.2 | 346.0 | 136.1 | 1468.0 | 76 |
| % of Annual | 4 | 2 | 8 | 21 | 12 | 1 | 1 | 1 | 1 | 17 | 24 | 9 | 100 | |
| No. of Obs. | 52 | 52 | 53 | 54 | 55 | 52 | 52 | 51 | 52 | 54 | 56 | 55 | | 45 |
| Maximum | 321.1 | 241.2 | 346.2 | 603.0 | 471.2 | 131.3 | 109.0 | 172.7 | 108.0 | 878.1 | 909.3 | 562.1 | 2755.4 | |
| Minimum | 0.0 | 0.0 | 0.0 | 27.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 54.6 | 28.9 | 0.0 | 761.9 | |
| Std. Dev. | 62.6 | 47.7 | 98.6 | 131.6 | 109.9 | 22.3 | 17.2 | 27.0 | 25.0 | 157.4 | 166.0 | 112.5 | 417.9 | |
| Var. Coeff. | 1.17 | 1.47 | 0.84 | 0.43 | 0.65 | 1.36 | 1.58 | 1.77 | 1.23 | 0.64 | 0.48 | 0.83 | 0.28 | |

MERU: SUMMARY OF THE MAIN DATA FROM RAINFALL STATIONS

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Total | No. of Raindays |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number: 90.37.034 CHUKA CHIEF'S OFFICE | | | | | | | | | | | | | 1939-1985 | |
| Mean | 49.3 | 38.8 | 127.8 | 384.9 | 166.8 | 18.2 | 28.6 | 26.5 | 27.4 | 201.9 | 328.7 | 116.0 | 1515.0 | 98 |
| % of Annual | 3 | 3 | 8 | 25 | 11 | 1 | 2 | 2 | 2 | 13 | 22 | 8 | 100 | |
| No. of Obs. | 40 | 43 | 43 | 43 | 42 | 42 | 43 | 43 | 42 | 42 | 42 | 41 | | 33 |
| Maximum | 343.6 | 257.2 | 324.7 | 661.3 | 412.2 | 63.0 | 286.8 | 99.3 | 160.4 | 937.0 | 938.5 | 319.0 | 2793.7 | |
| Minimum | 0.0 | 0.0 | 4.3 | 29.0 | 12.2 | 0.0 | 0.0 | 0.0 | 0.0 | 10.0 | 79.5 | 11.9 | 702.6 | |
| Std. Dev. | 63.9 | 54.4 | 96.6 | 149.1 | 100.9 | 17.7 | 46.9 | 24.2 | 33.3 | 175.7 | 152.4 | 77.4 | 432.8 | |
| Var. Coeff. | 1.29 | 1.40 | 0.76 | 0.39 | 0.61 | 0.97 | 1.64 | 0.91 | 1.21 | 0.87 | 0.46 | 0.67 | 0.29 | |
| Number: 90.37.102 MARIMBA LIVESTOCK FARM | | | | | | | | | | | | | 1949-1985 | |
| Mean | 75.5 | 76.2 | 181.8 | 438.8 | 232.3 | 19.1 | 15.1 | 22.1 | 37.7 | 342.8 | 463.1 | 202.5 | 2107.0 | 115 |
| % of Annual | 4 | 4 | 9 | 21 | 11 | 1 | 1 | 1 | 2 | 16 | 22 | 10 | 100 | |
| No. of Obs. | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | | 31 |
| Maximum | 356.3 | 366.7 | 565.7 | 707.1 | 603.3 | 81.5 | 113.5 | 108.6 | 145.8 | 1448 | 958.9 | 573.7 | 3896.9 | |
| Minimum | 0.0 | 0.0 | 11.5 | 161.1 | 36.8 | 0.0 | 0.0 | 0.0 | 0.0 | 11.7 | 201.7 | 30.7 | 1168.9 | |
| Std. Dev. | 72.9 | 81.0 | 154.2 | 144.8 | 121.7 | 19.6 | 20.7 | 19.0 | 34.8 | 237.1 | 167.8 | 133.2 | 546.2 | |
| Var. Coeff. | 0.97 | 1.06 | 0.85 | 0.33 | 0.52 | 1.03 | 1.37 | 0.86 | 0.92 | 0.69 | 0.36 | 0.66 | 0.26 | |
| Number: 90.38.006 THARAKA DISPENSARY-KITUI | | | | | | | | | | | | | 1952-1986 | |
| Mean | 30.5 | 18.7 | 70.7 | 202.6 | 53.8 | 3.6 | 0.0 | 3.1 | 4.5 | 55.3 | 187.4 | 82.4 | 712.7 | 33 |
| % of Annual | 4 | 3 | 10 | 28 | 8 | 1 | 0 | 0 | 1 | 8 | 26 | 12 | 100 | |
| No. of Obs. | 34 | 35 | 34 | 35 | 35 | 35 | 35 | 34 | 34 | 35 | 33 | 34 | | 23 |
| Maximum | 173.1 | 197.2 | 358.2 | 1107 | 276.9 | 46.4 | 1.3 | 52.8 | 80.4 | 351.3 | 1008 | 354.3 | 2538.7 | |
| Minimum | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 218.8 | |
| Std. Dev. | 47.6 | 39.4 | 87.8 | 182.2 | 64.9 | 9.4 | 0.2 | 10.6 | 15.8 | 73.9 | 187.8 | 77.6 | 461.5 | |
| Var. Coeff. | 1.56 | 2.10 | 1.24 | 0.90 | 1.21 | 2.60 | 5.83 | 3.45 | 3.51 | 1.34 | 1.00 | 0.94 | 0.65 | |

# MEAN MONTHLY RAINFALL at Station No.90.37.085

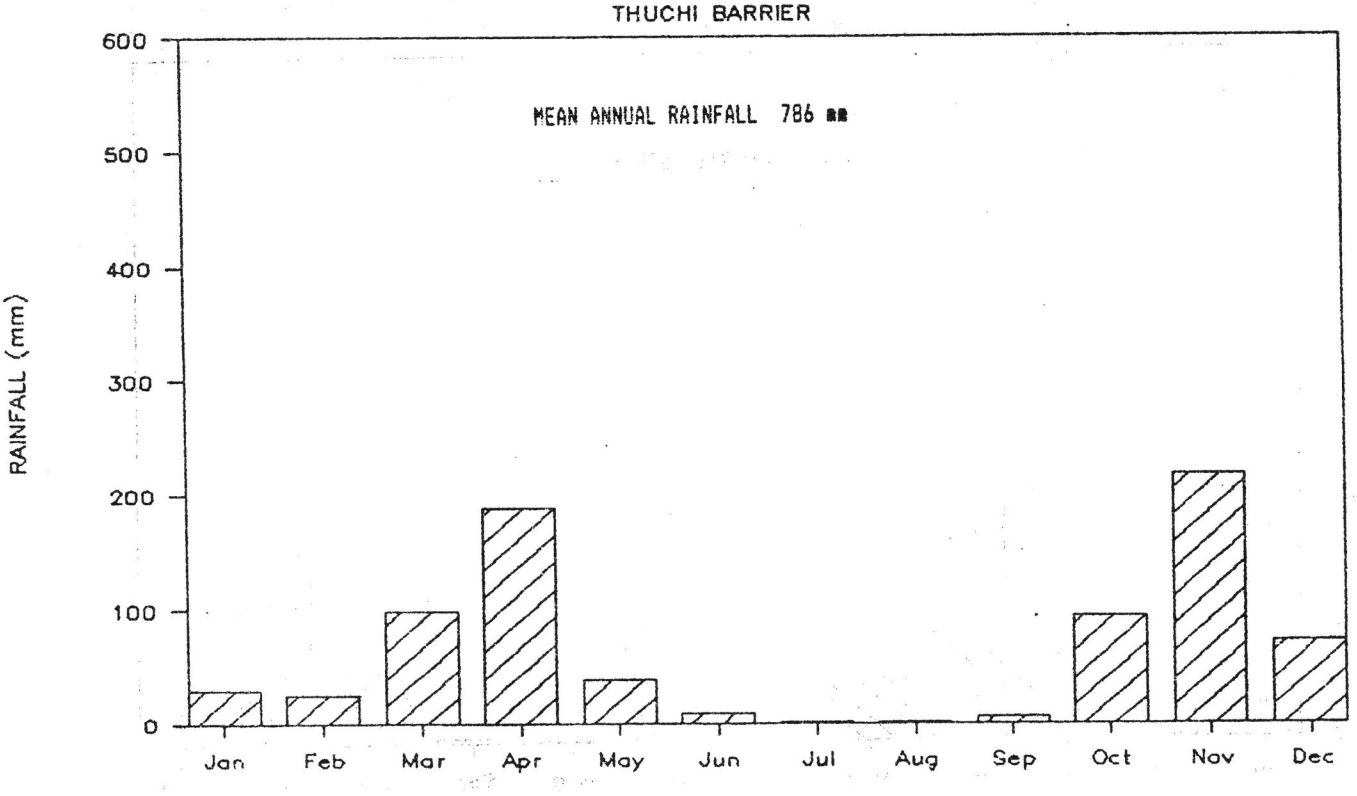
MITUNGUU TREE NURSERY




Record Period: 1949-1985

# MEAN MONTHLY RAINFALL at Station No.90.37.230

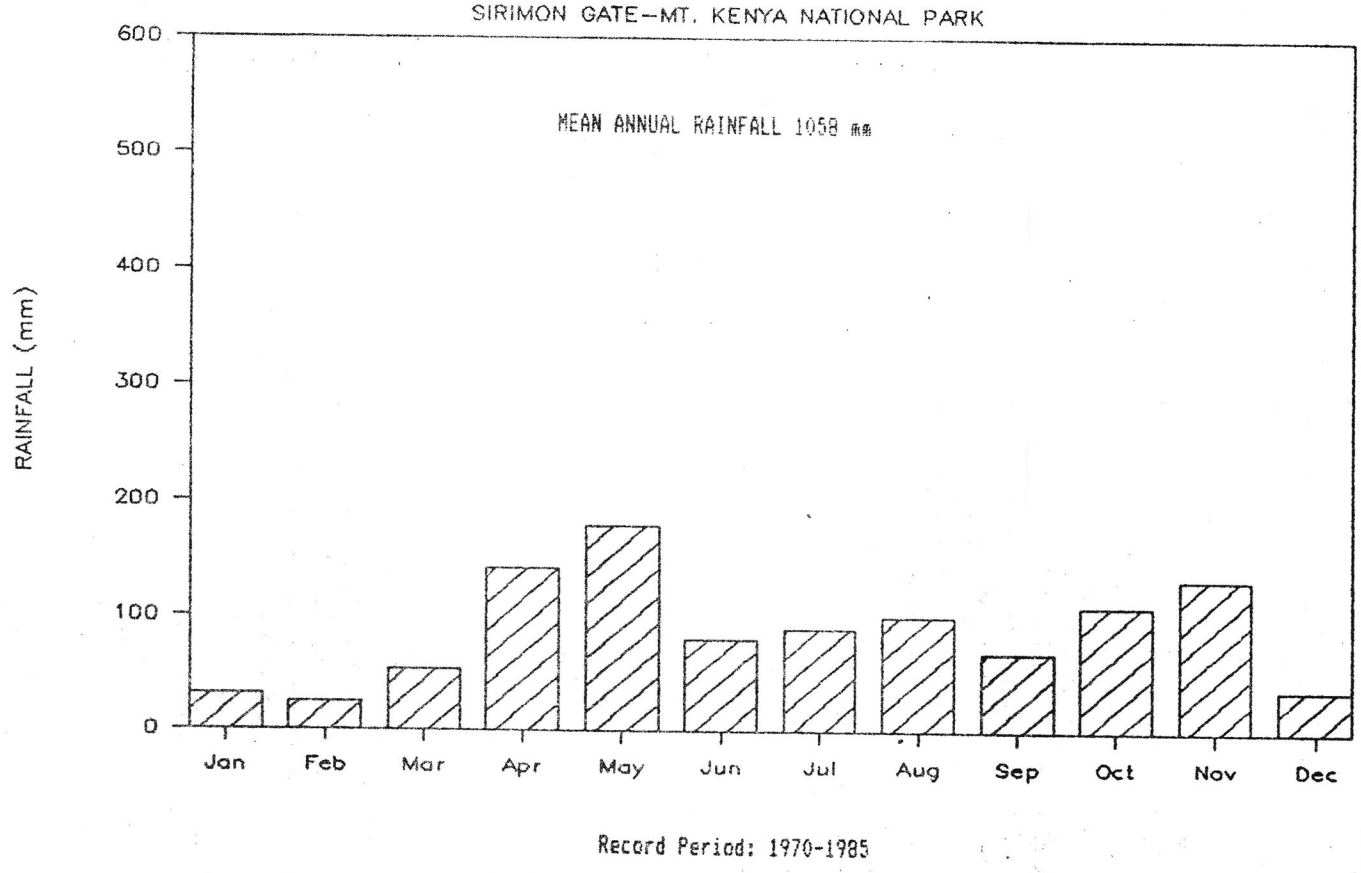
THUCHI BARRIER




Record Period: 1964-1987

# MEAN MONTHLY RAINFALL at Station No.90.37.155

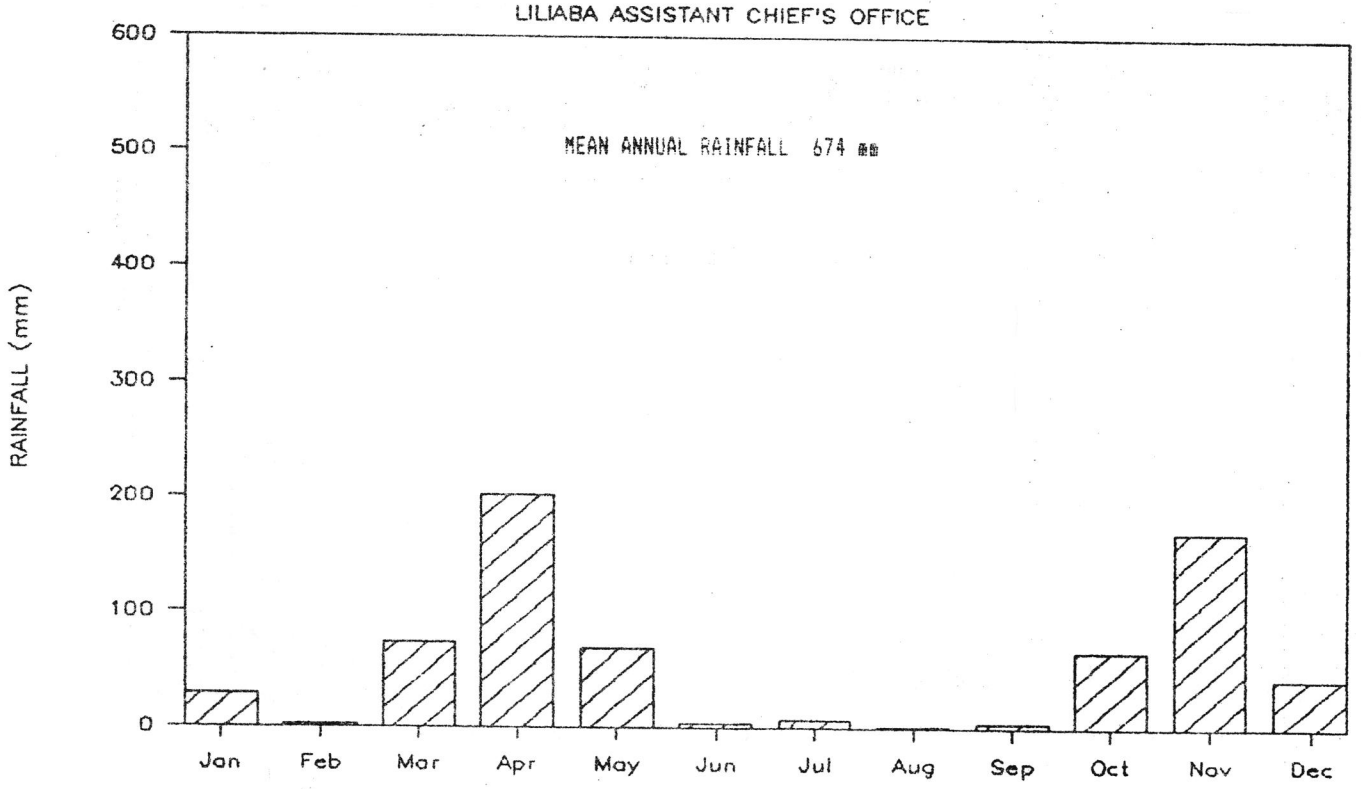
SIRIMON GATE–MT. KENYA NATIONAL PARK




Record Period: 1970-1985

# MEAN MONTHLY RAINFALL at Station No. 89.37.090

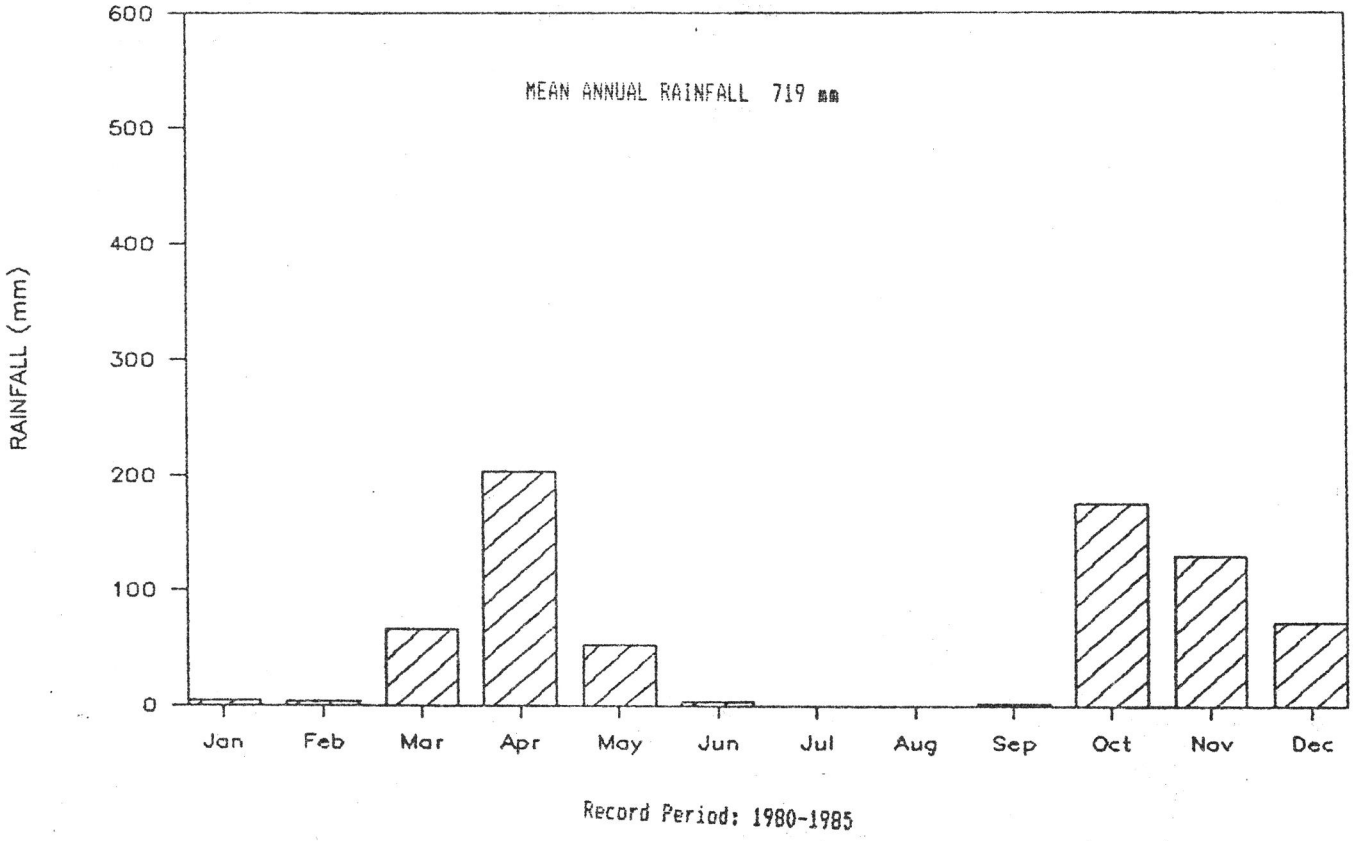
LILIABA ASSISTANT CHIEF'S OFFICE




Record Period: 1974-1984

# MEAN MONTHLY RAINFALL at Station No. 89.38.007

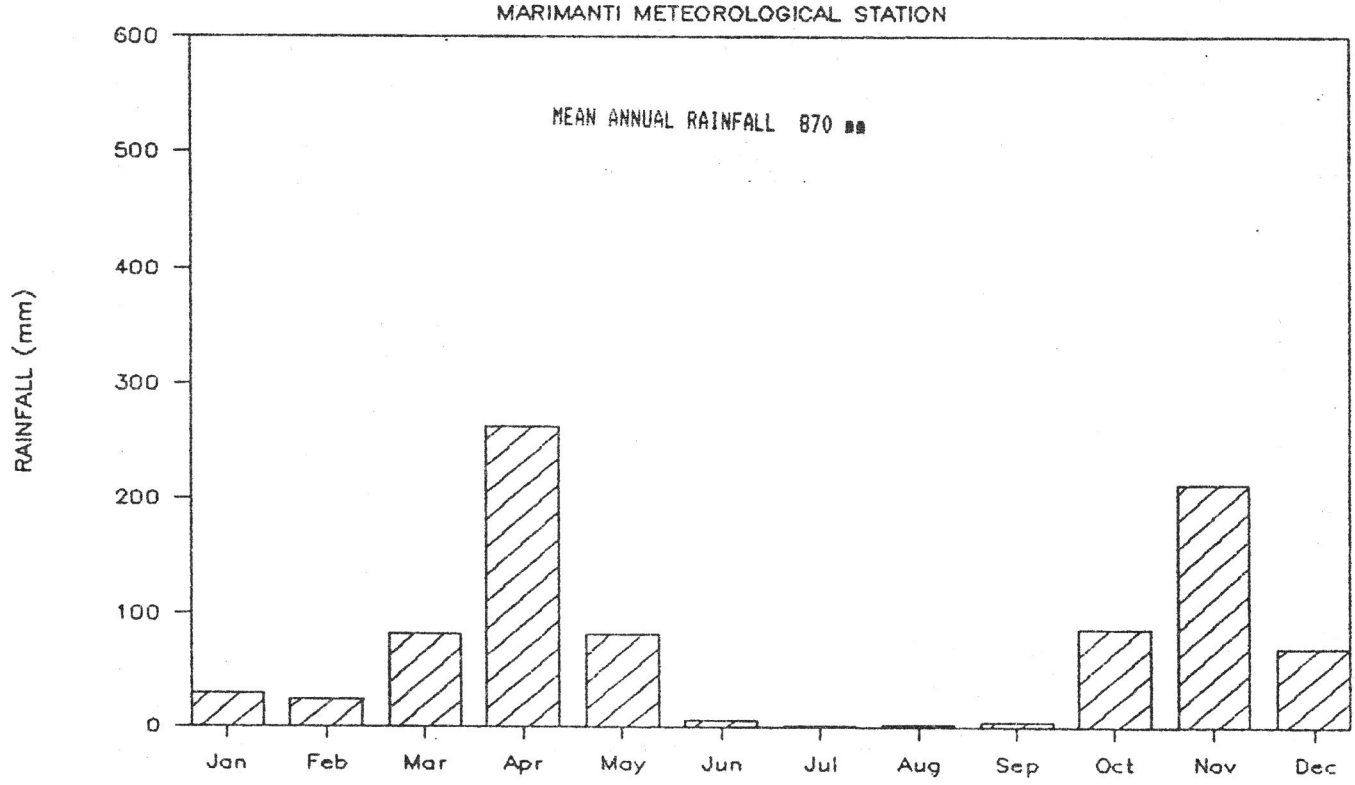
URA GATE—MERU NATIONAL PARK




Record Period: 1980-1985

# MEAN MONTHLY RAINFALL at Station No.90.37.160

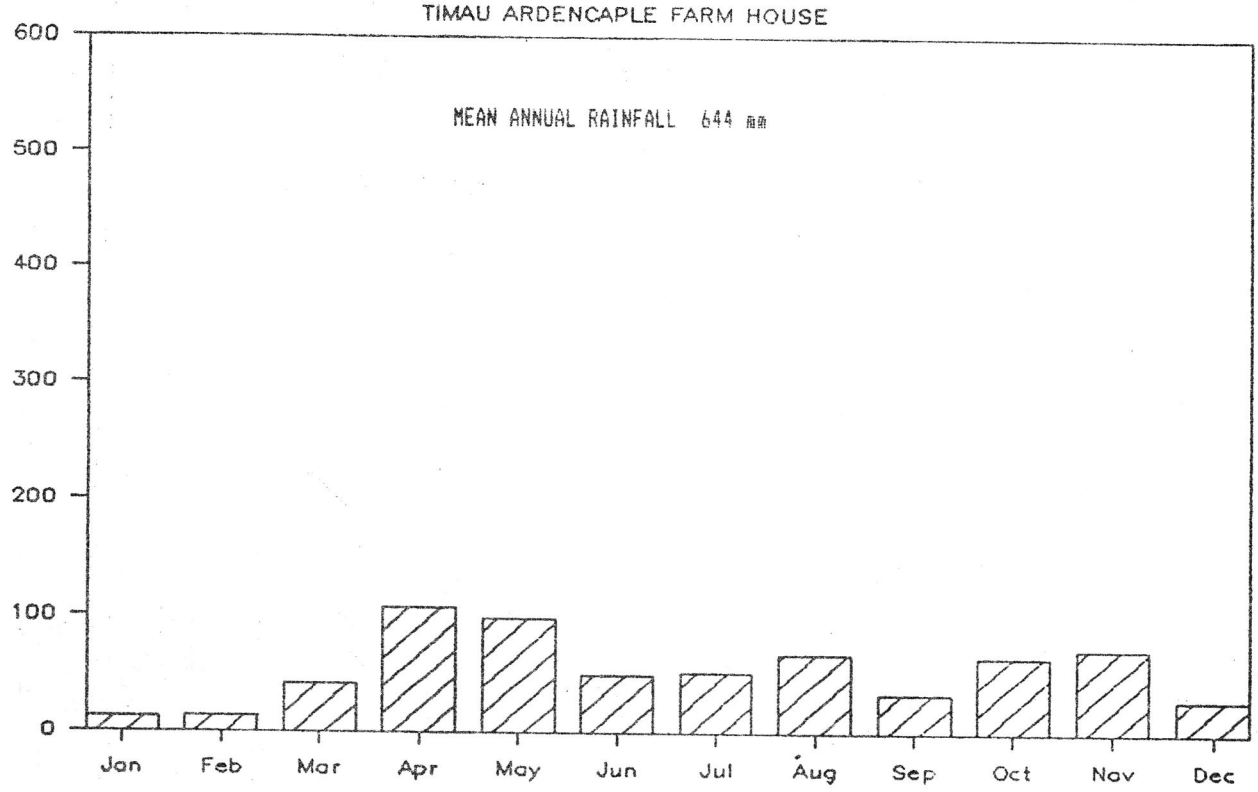
MARIMANTI METEOROLOGICAL STATION




Record Period: 1965-1985

## MEAN MONTHLY RAINFALL at Station No.89.37.034

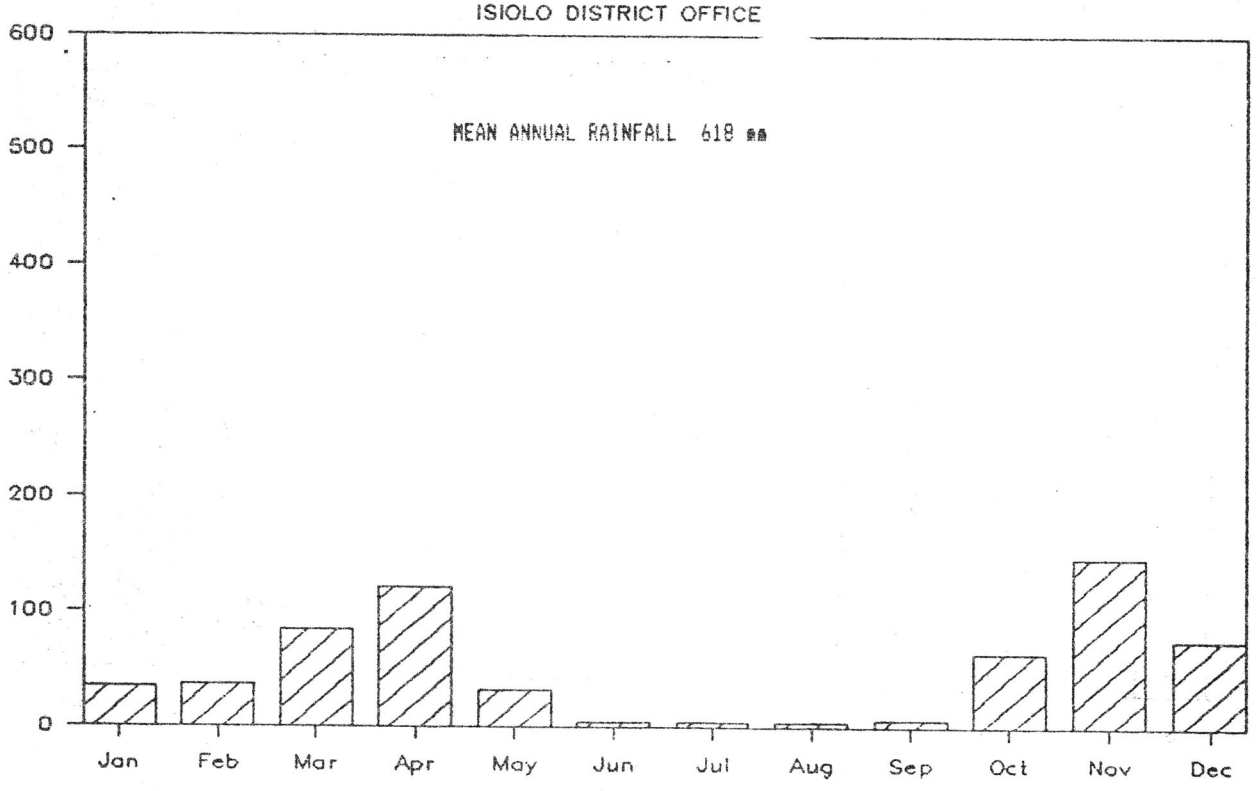
TIMAU ARDENCAPLE FARM HOUSE




Record Period: 1948-1985

## MEAN MONTHLY RAINFALL at Station No. 89.37.003

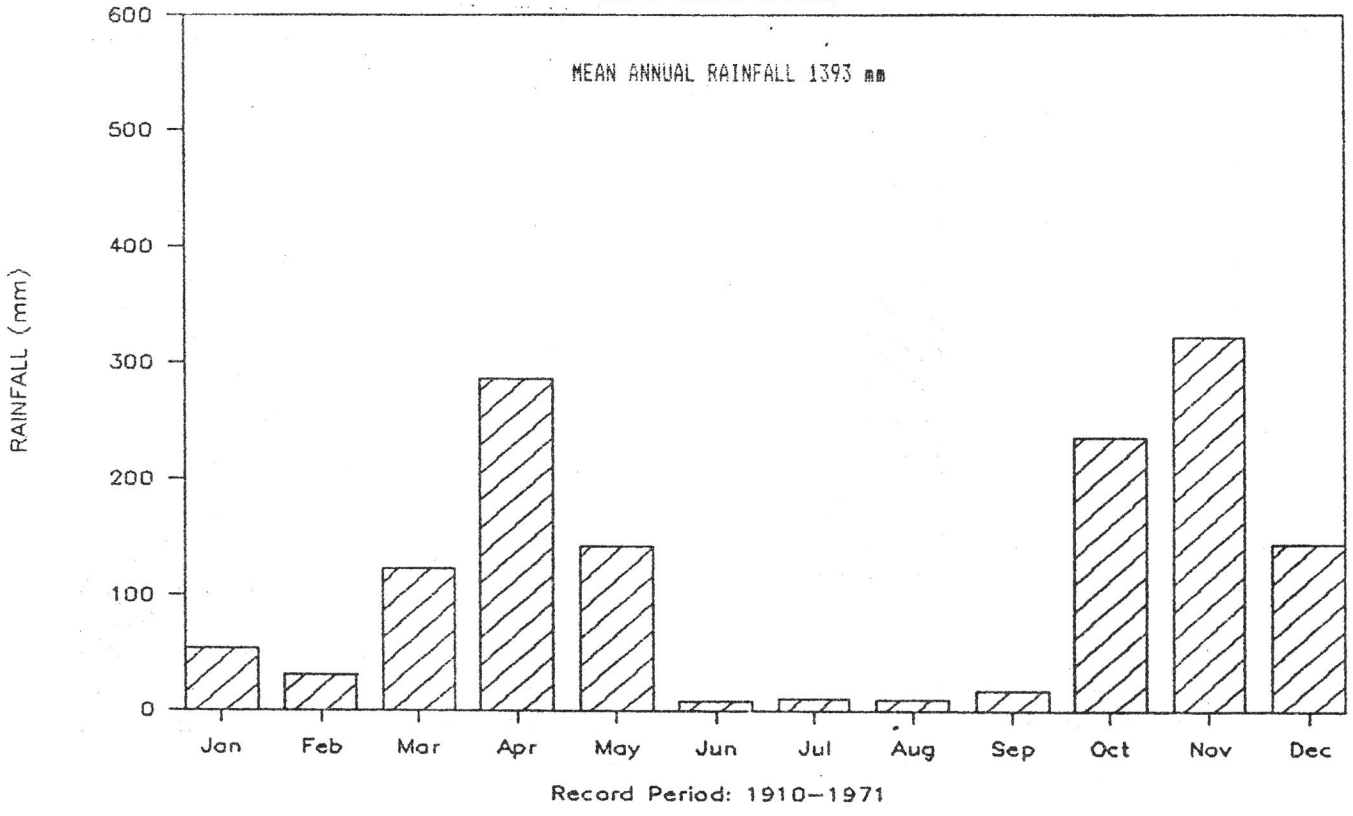
ISIOLO DISTRICT OFFICE




Record Period: 1930-1986

# MEAN MONTHLY RAINFALL at Station No. 89.37.000

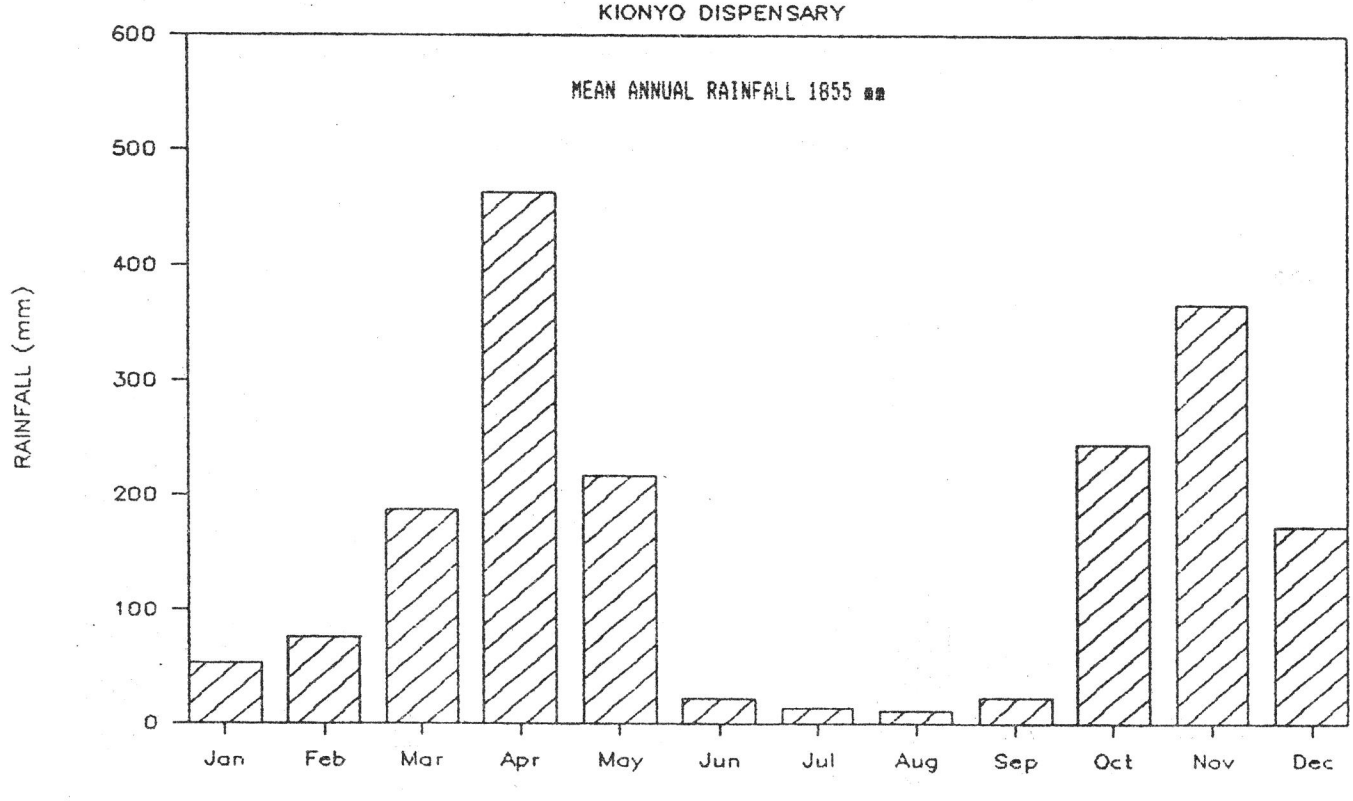
MERU D.C.'s OFFICE




Record Period: 1910–1971

# MEAN MONTHLY RAINFALL at Station No. 90.37.189

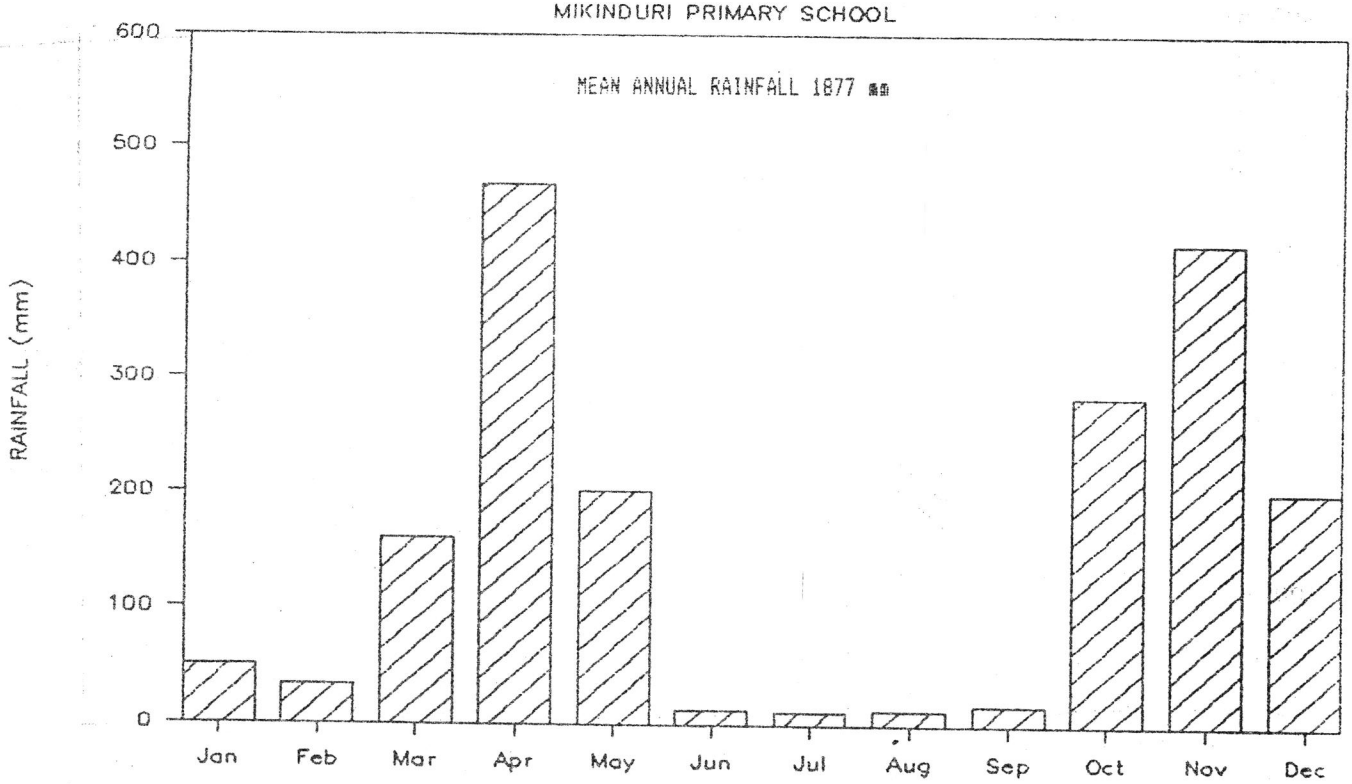
KIONYO DISPENSARY




Record Period: 1974-1985

## MEAN MONTHLY RAINFALL at Station No.89.37.014

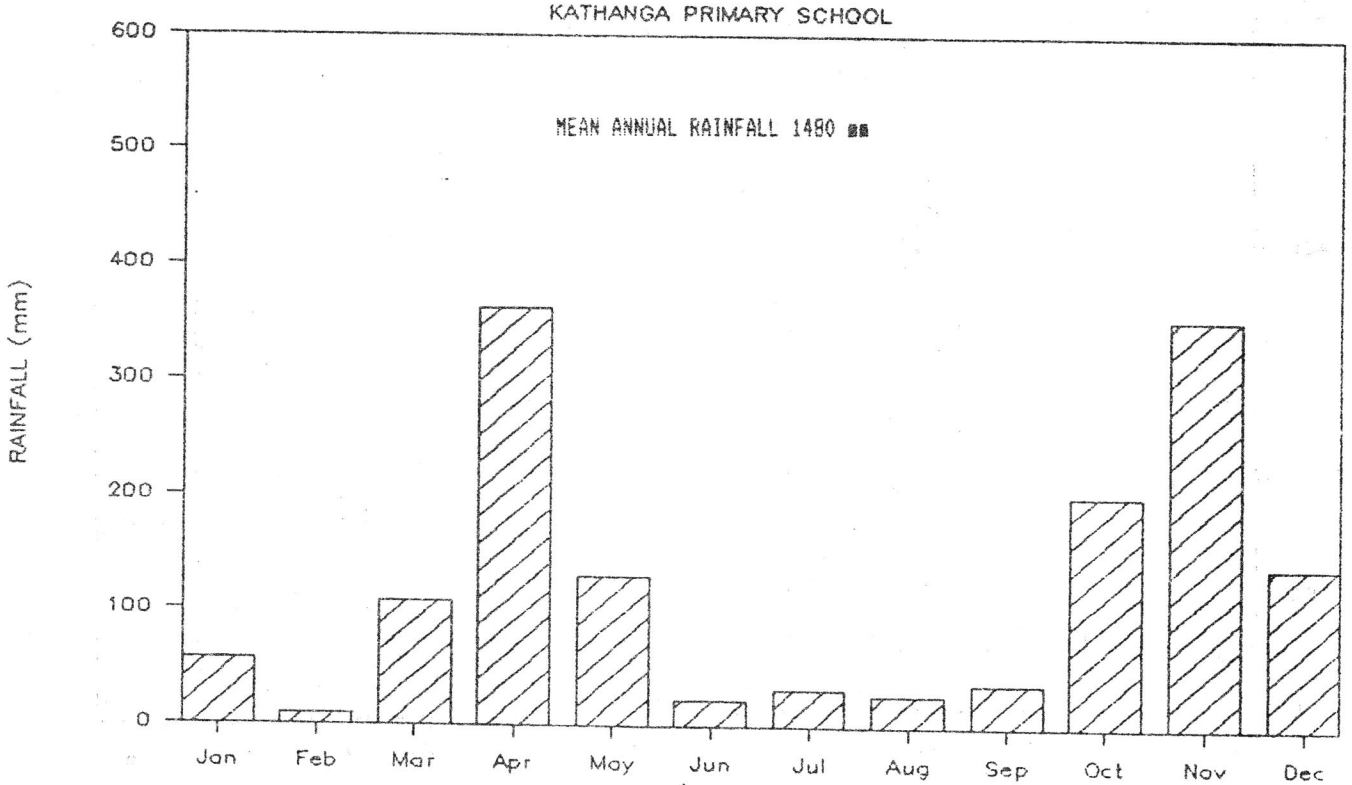
MIKINDURI PRIMARY SCHOOL




Record Period: 1937-1985

## MEAN MONTHLY RAINFALL at Station No. 89.37.089

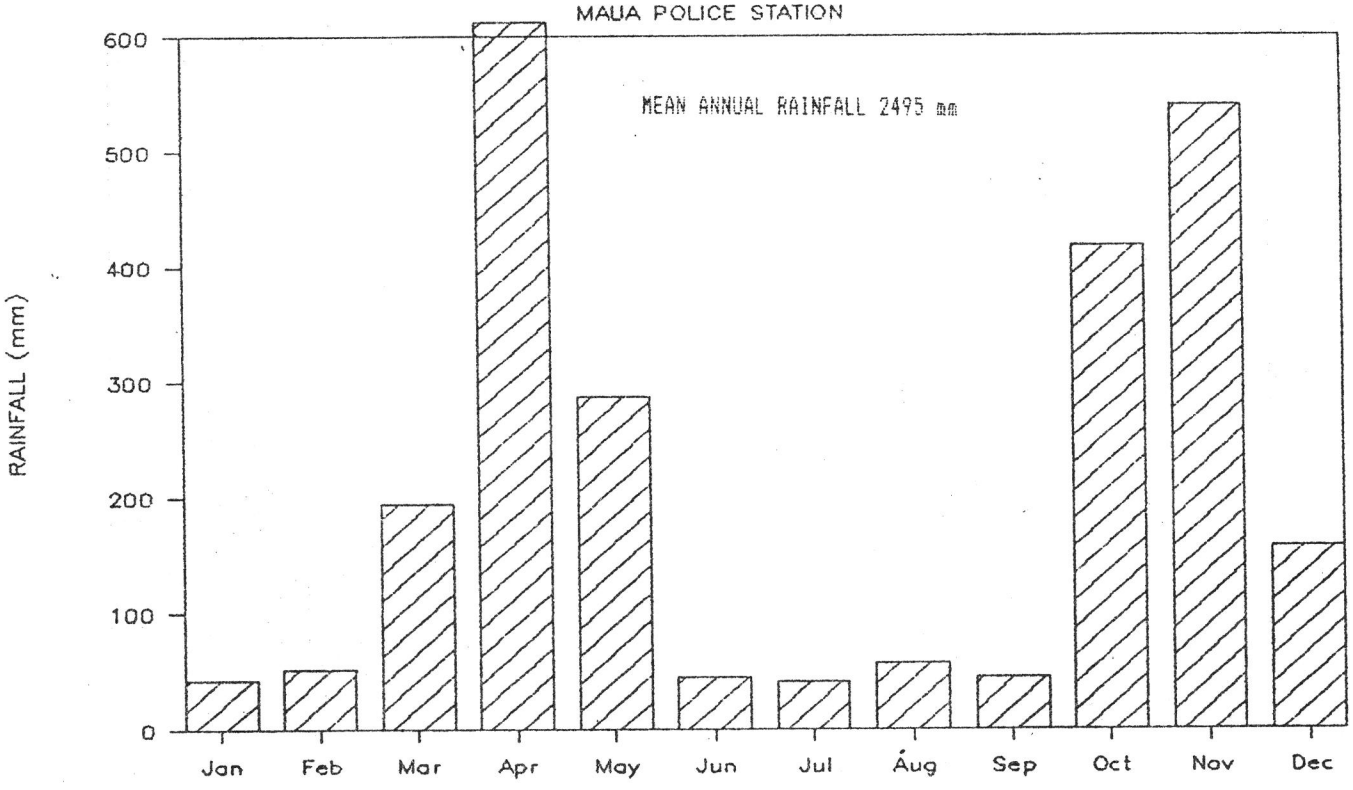
KATHANGA PRIMARY SCHOOL




Record Period: 1974-1984

# MEAN MONTHLY RAINFALL at Station No. 89.37.059

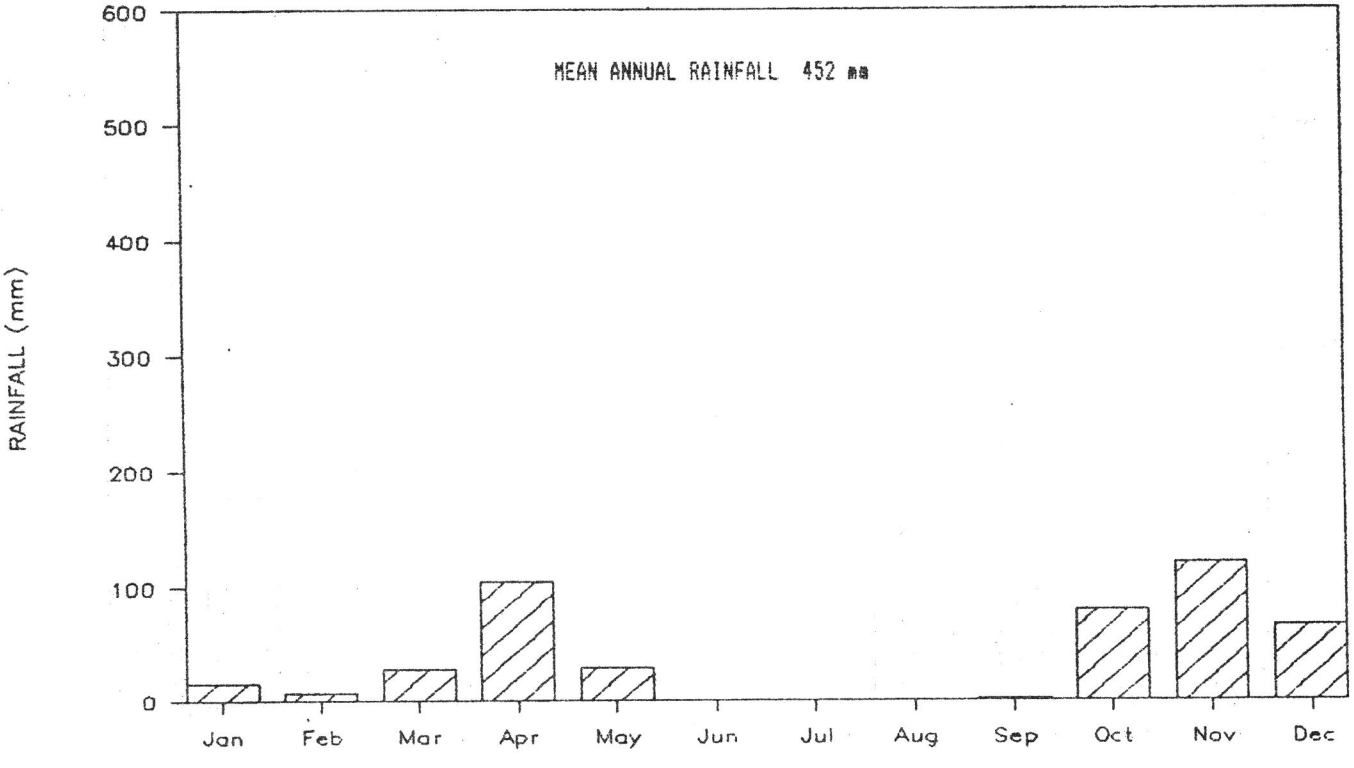
MAUA POLICE STATION




Record Period: 1959-1985

# MEAN MONTHLY RAINFALL at Station No. 89.38.001

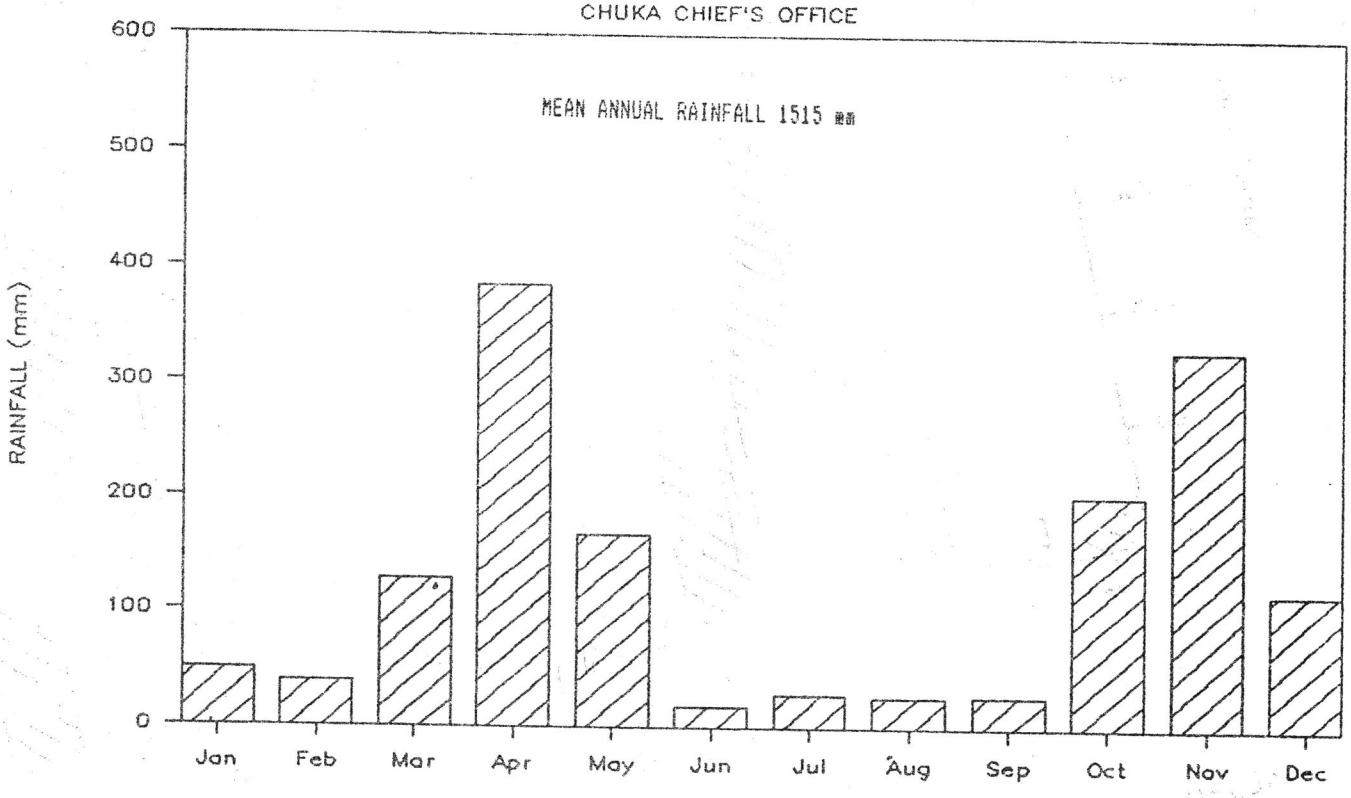
KINNA SCHEME




Record Period: 1972-1986

# MEAN MONTHLY RAINFALL at Station No. 90.37.034

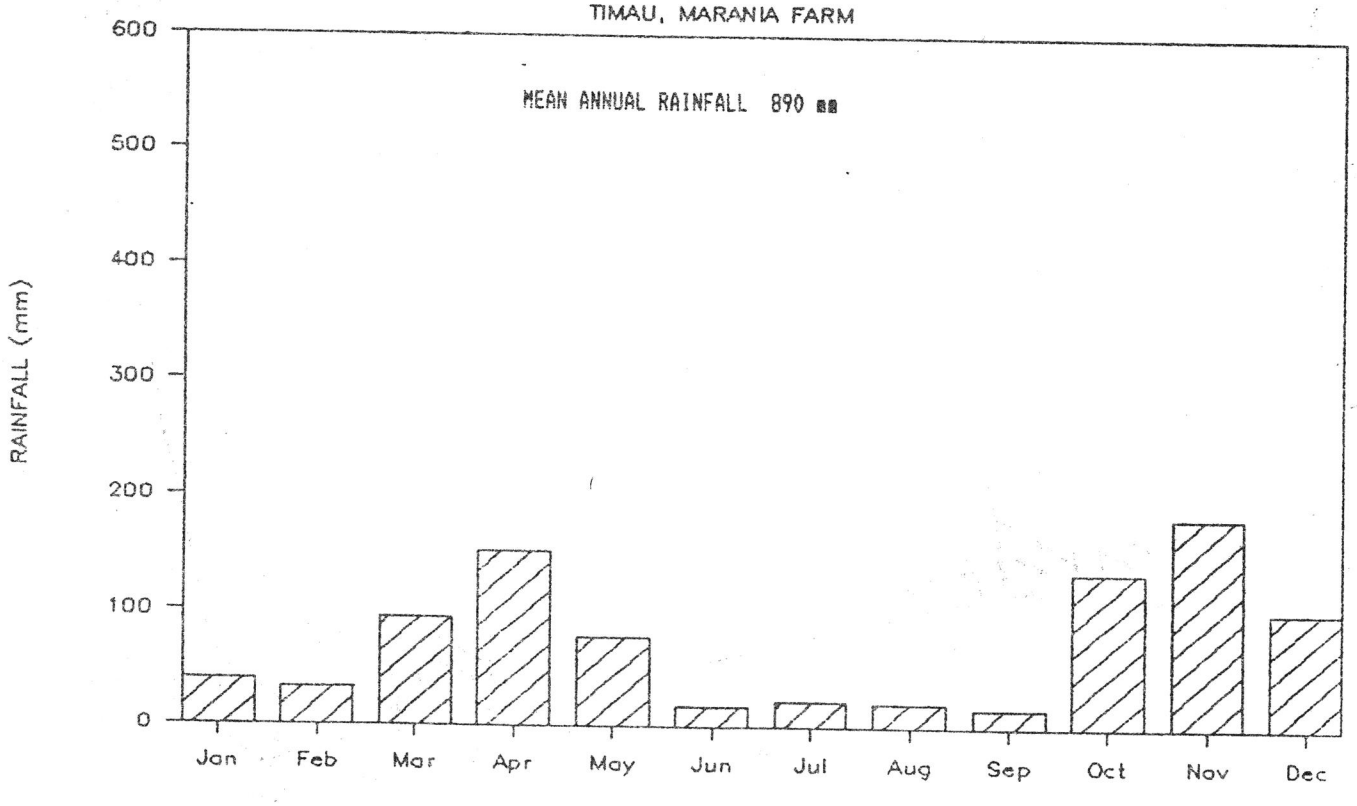
CHUKA CHIEF'S OFFICE




Record Period: 1939-1985

# MEAN MONTHLY RAINFALL at Station No.89.37.002

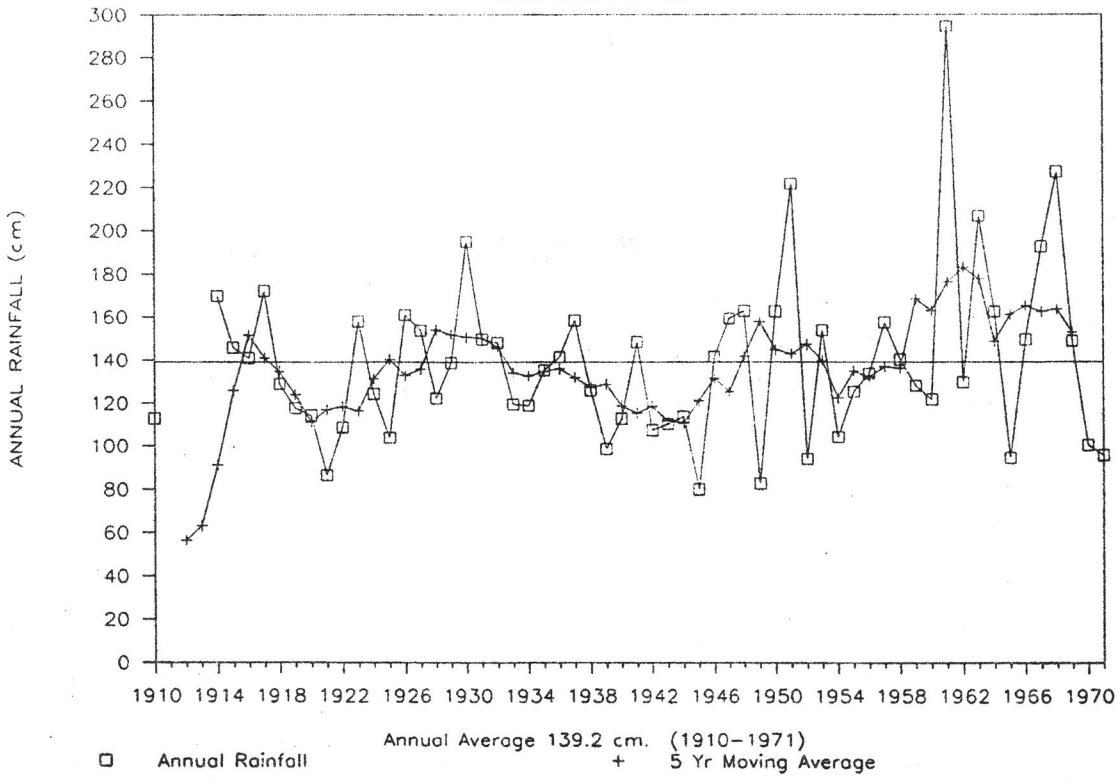
TIMAU, MARANIA FARM




Record Period: 1925-1985

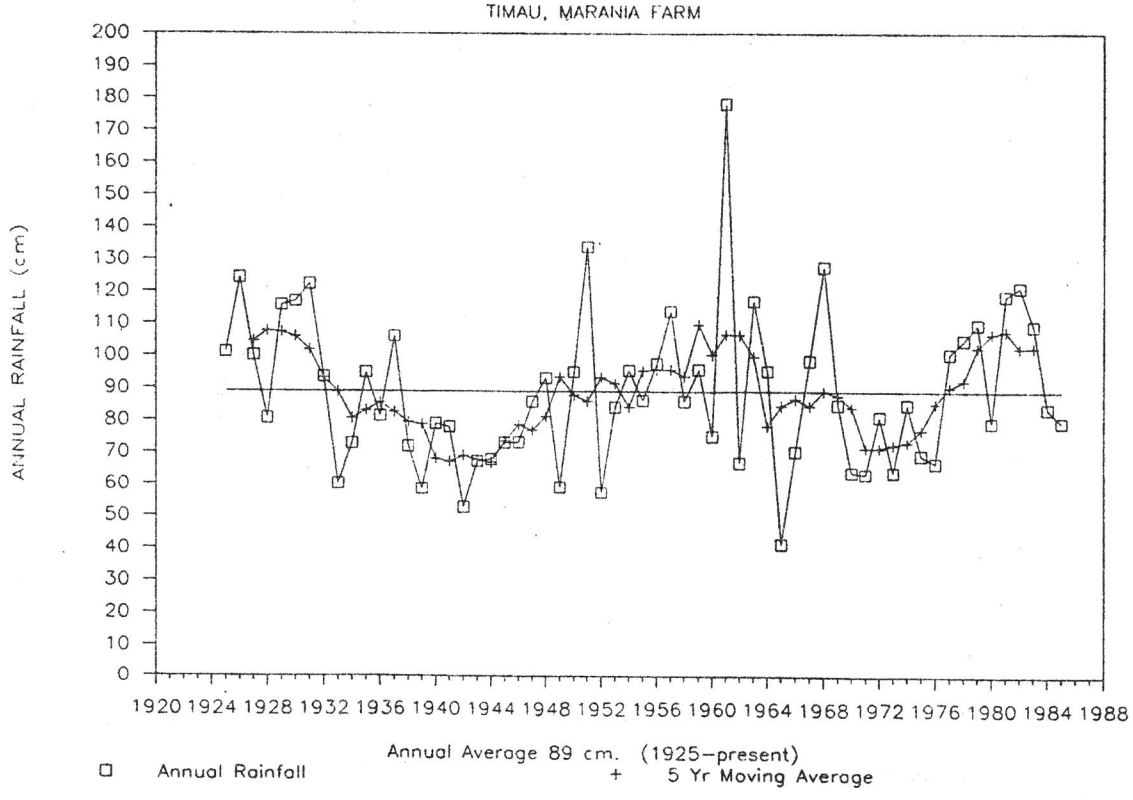
## ANNUAL RAINFALL VARIATION at Station No. 89.37.000

MERU D.C.'s OFFICE



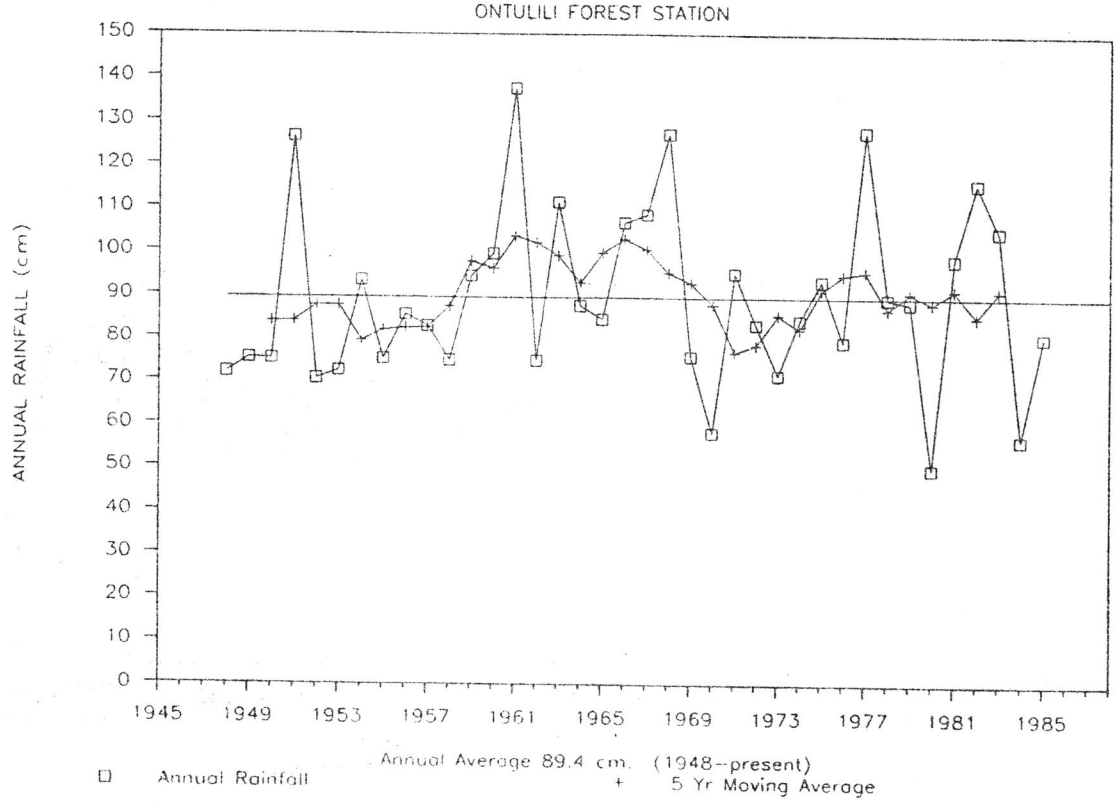

## ANNUAL RAINFALL VARIATION at Station No. 89.37.002

TIMAU, MARANIA FARM



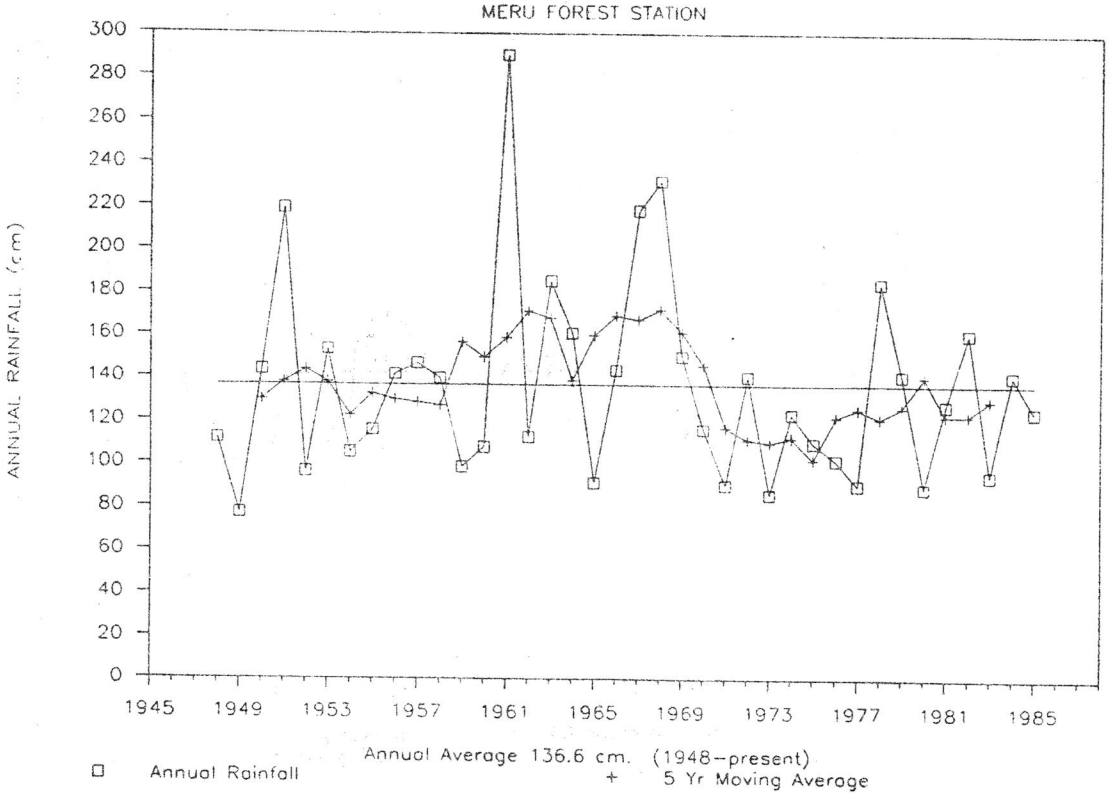
## ANNUAL RAINFALL VARIATION at Station No. 89.37.040

ONTULILI FOREST STATION



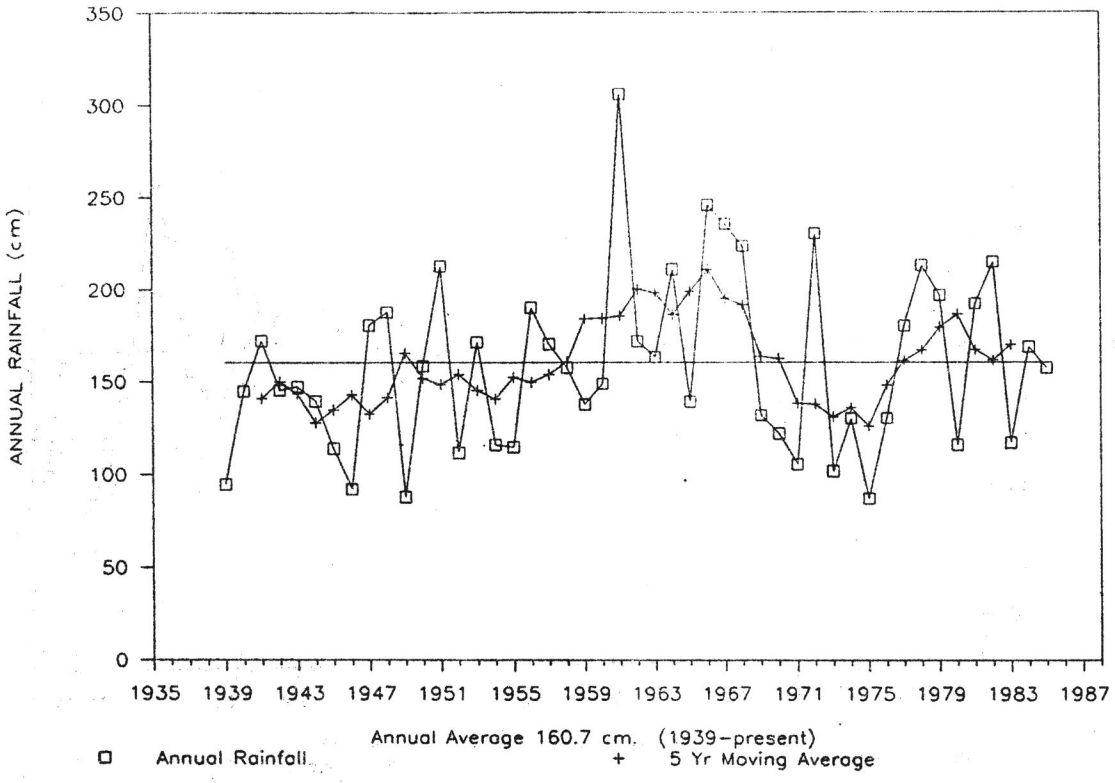

## ANNUAL RAINFALL VARIATION at Station No. 89.37.038

MERU FOREST STATION



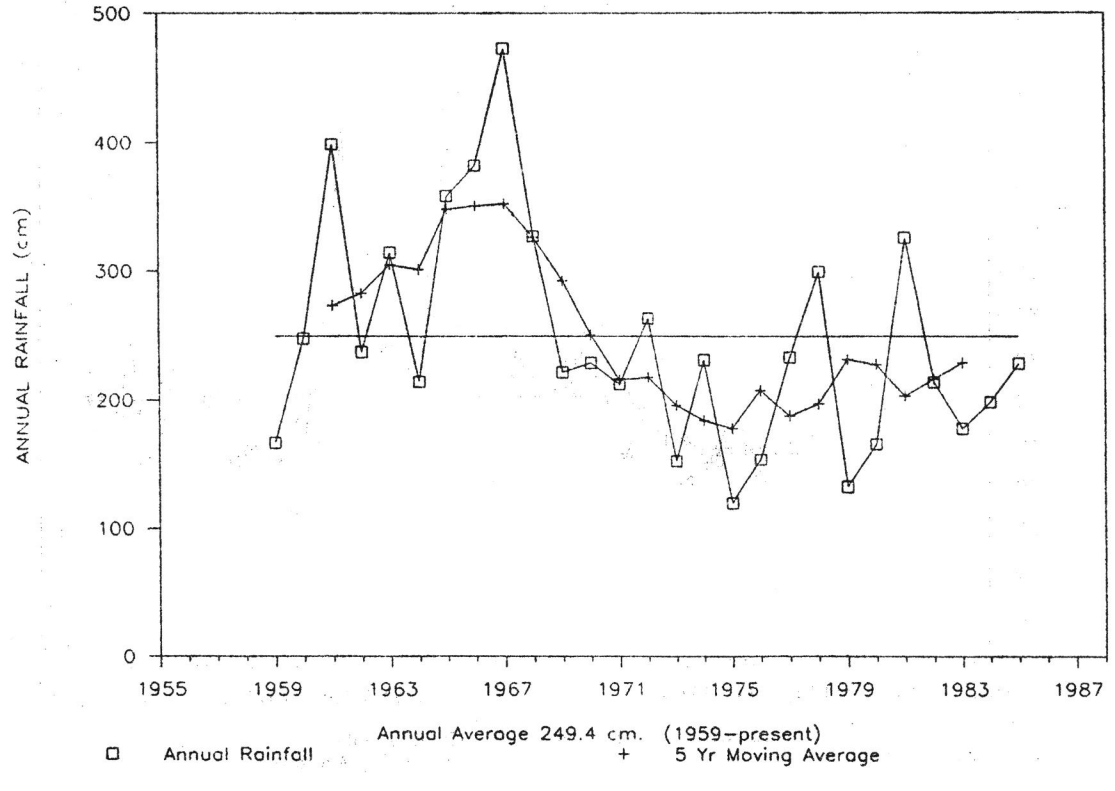
## ANNUAL RAINFALL VARIATION at Station No. 89.37.019

MIATHENI AGRICULTURE STAFF HOUSE



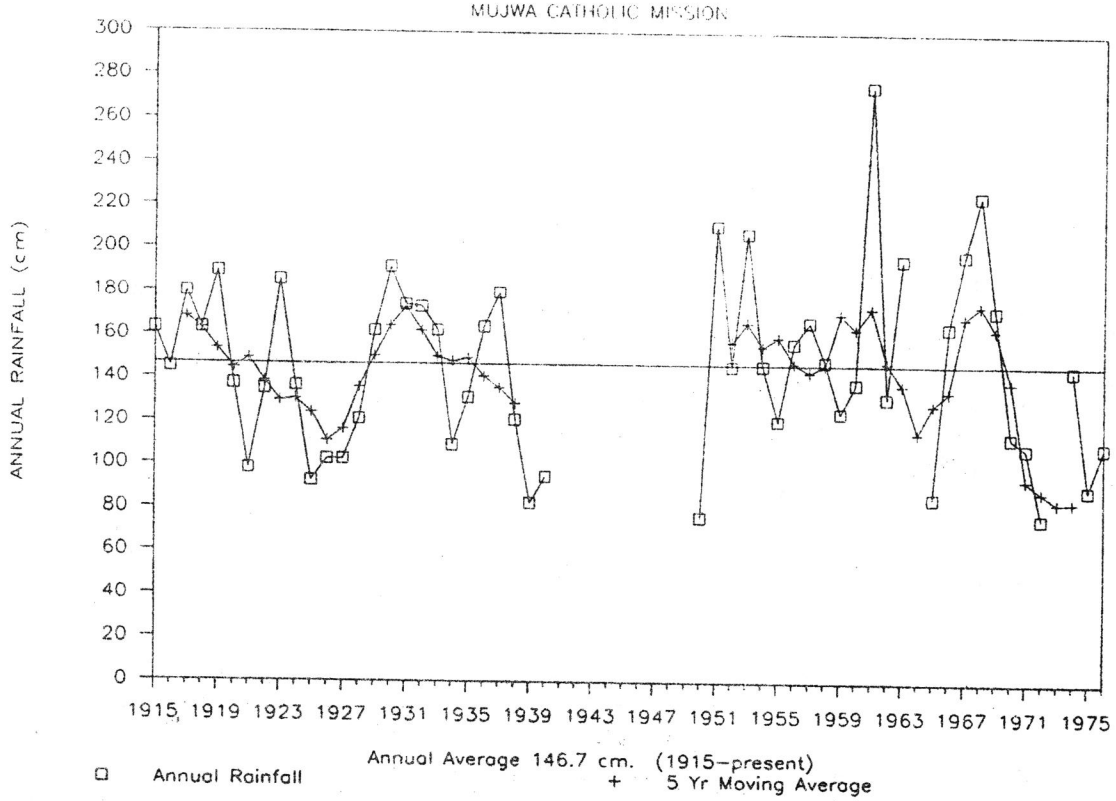

## ANNUAL RAINFALL VARIATION at Station No. 89.37.059

MAUA POLICE STATION



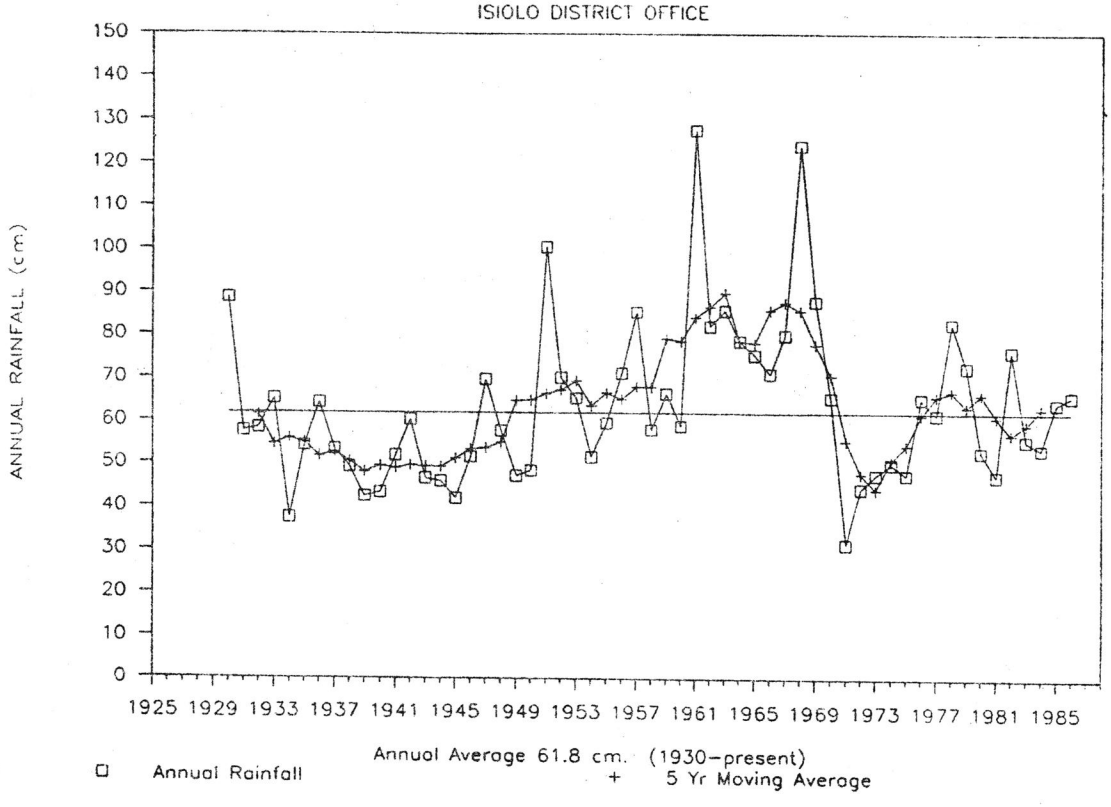
## ANNUAL RAINFALL VARIATION at Station No. 90.37.011

MUJWA CATHOLIC MISSION



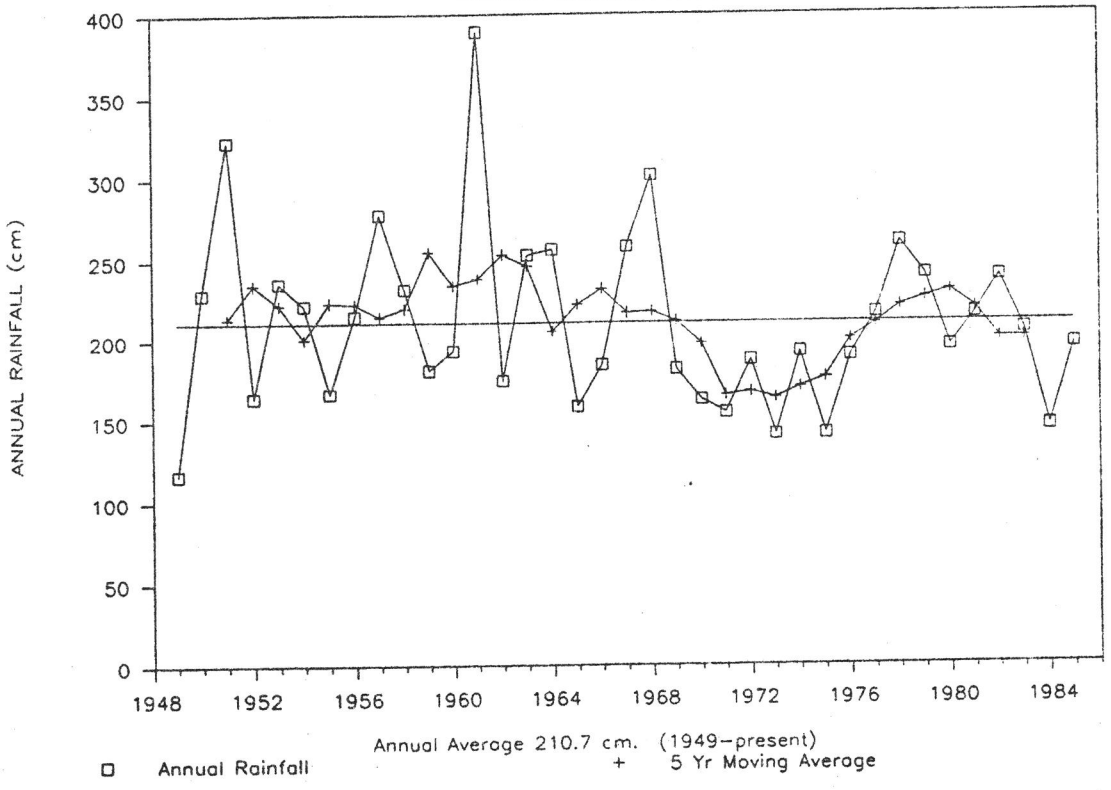

## ANNUAL RAINFALL VARIATION at Station No. 89.37.003

ISIOLO DISTRICT OFFICE



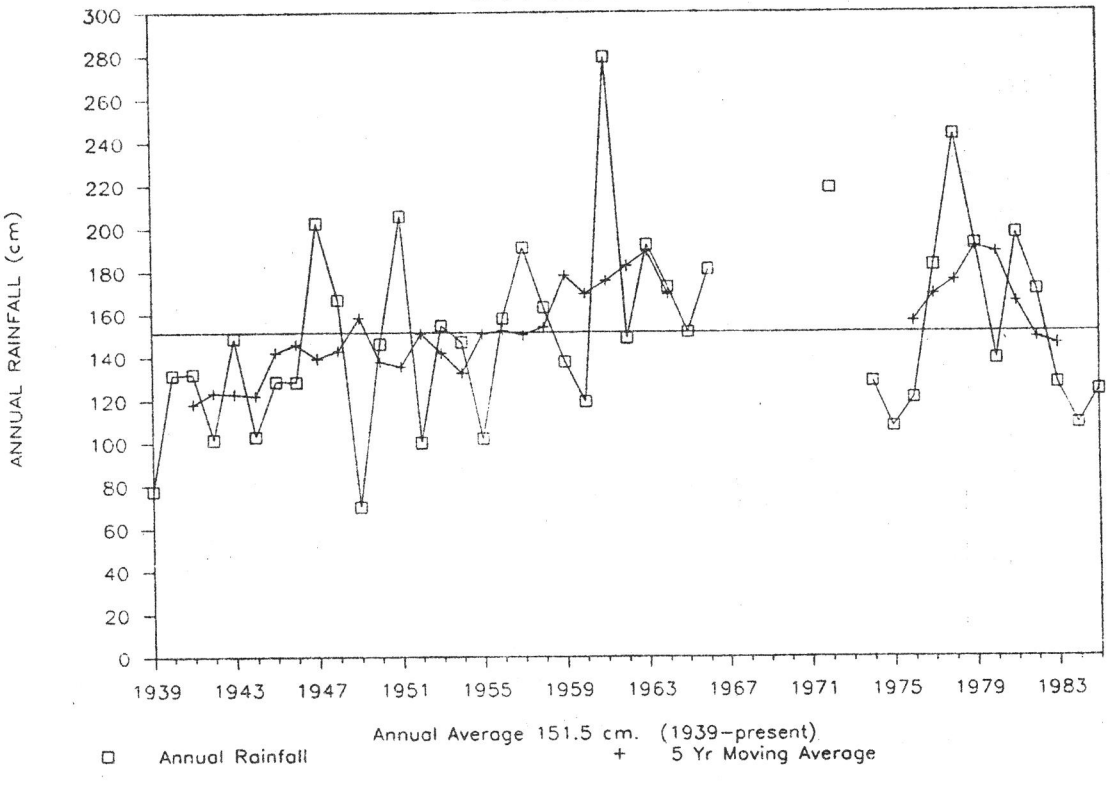
## ANNUAL RAINFALL VARIATION at Station No. 90.37.102

MARIMBA LIVESTOCK FARM



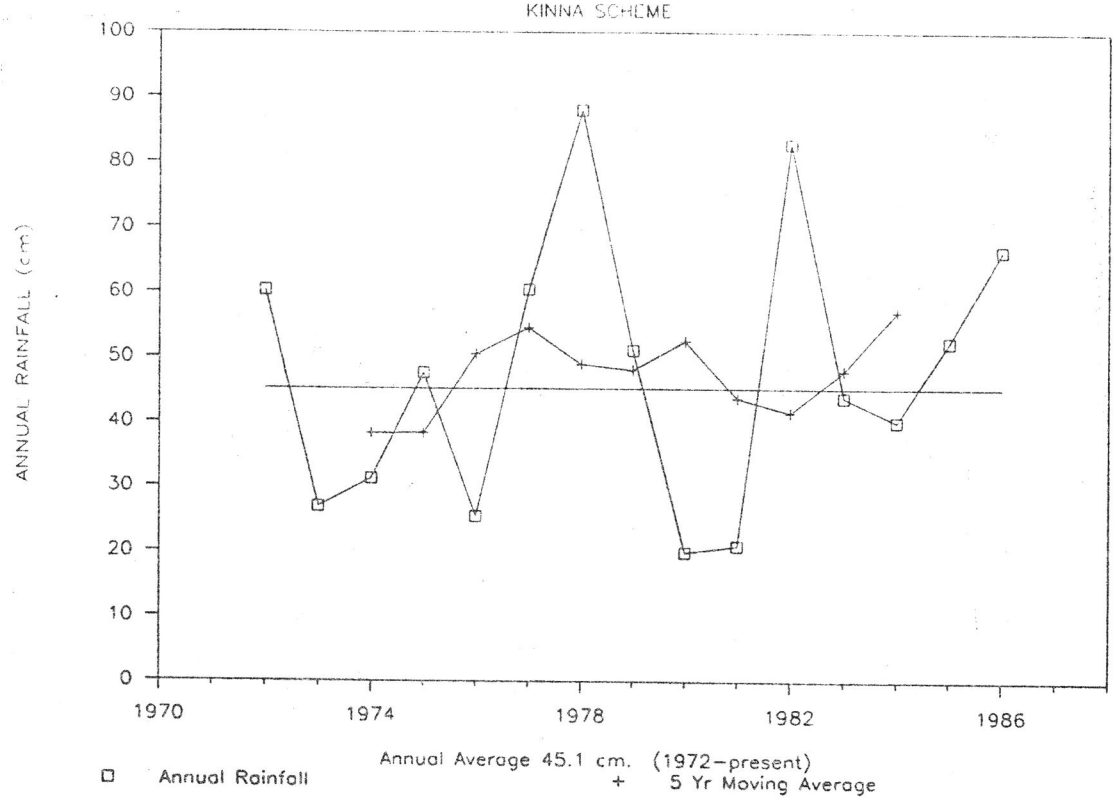

## ANNUAL RAINFALL VARIATION at Station No. 90.37.034

CHUKA CHIEF'S OFFICE



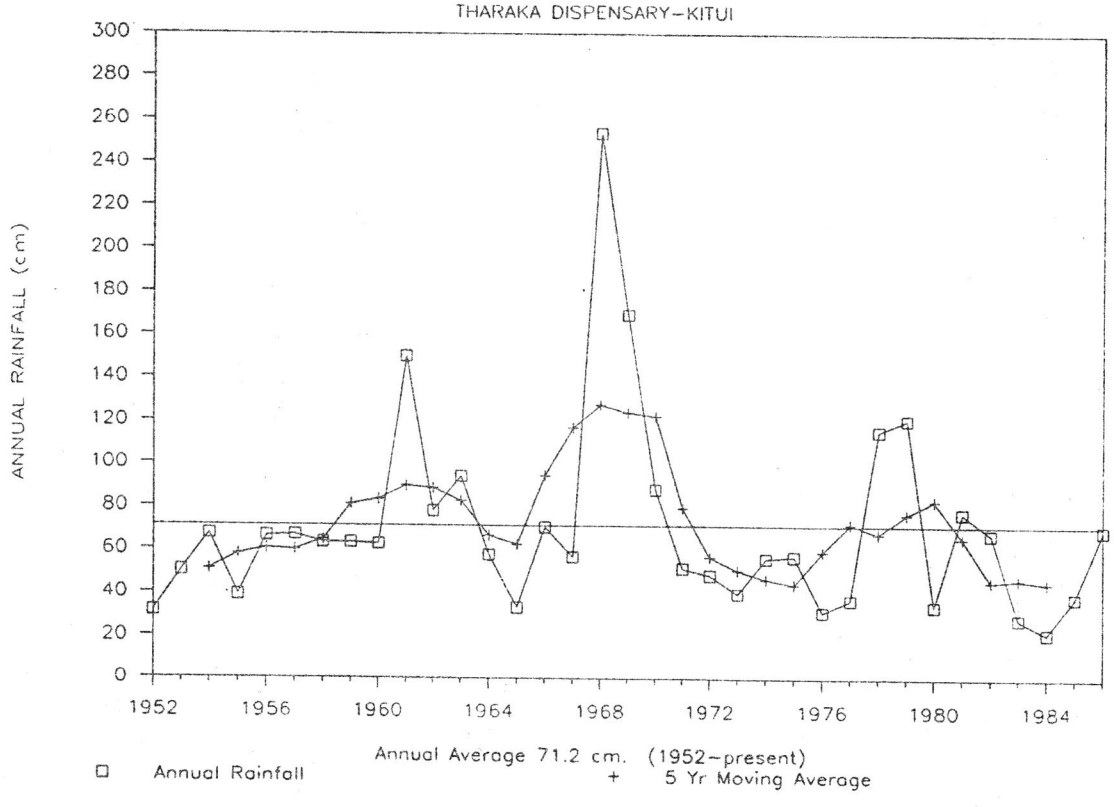
## ANNUAL RAINFALL VARIATION at Station No. 89.38.001

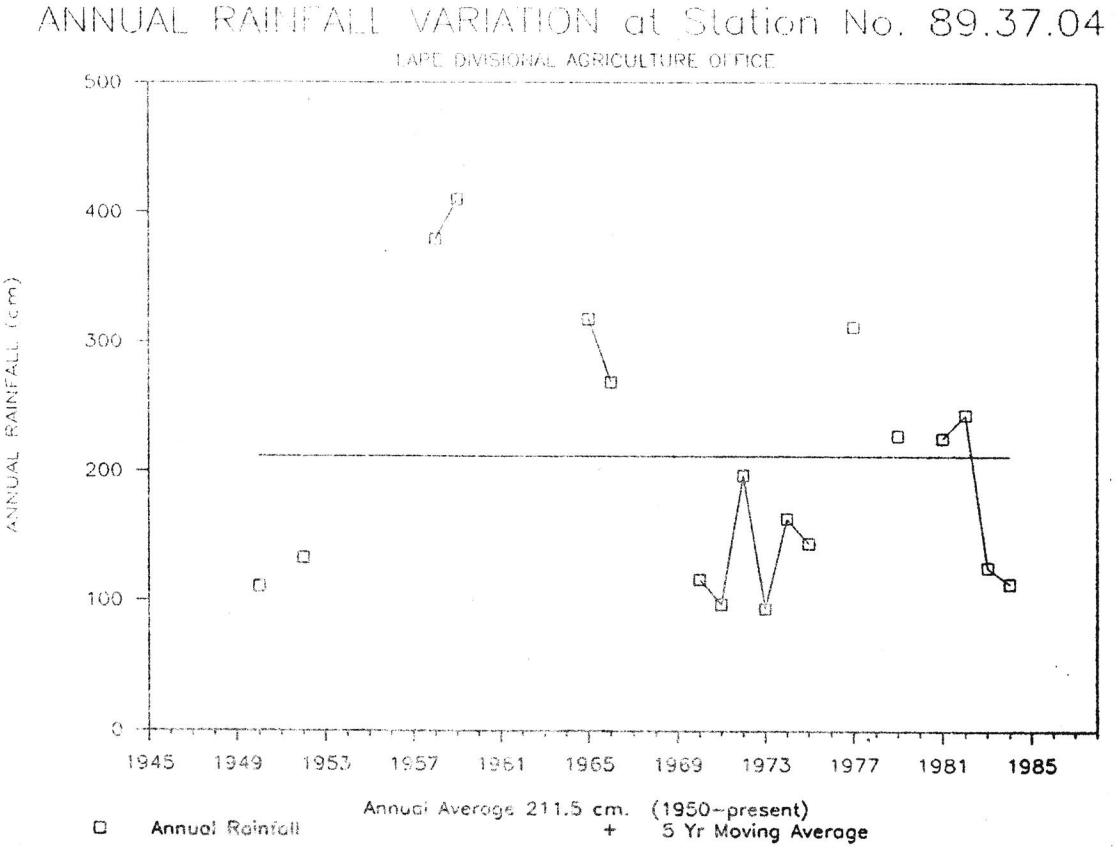
KINNA SCHEME

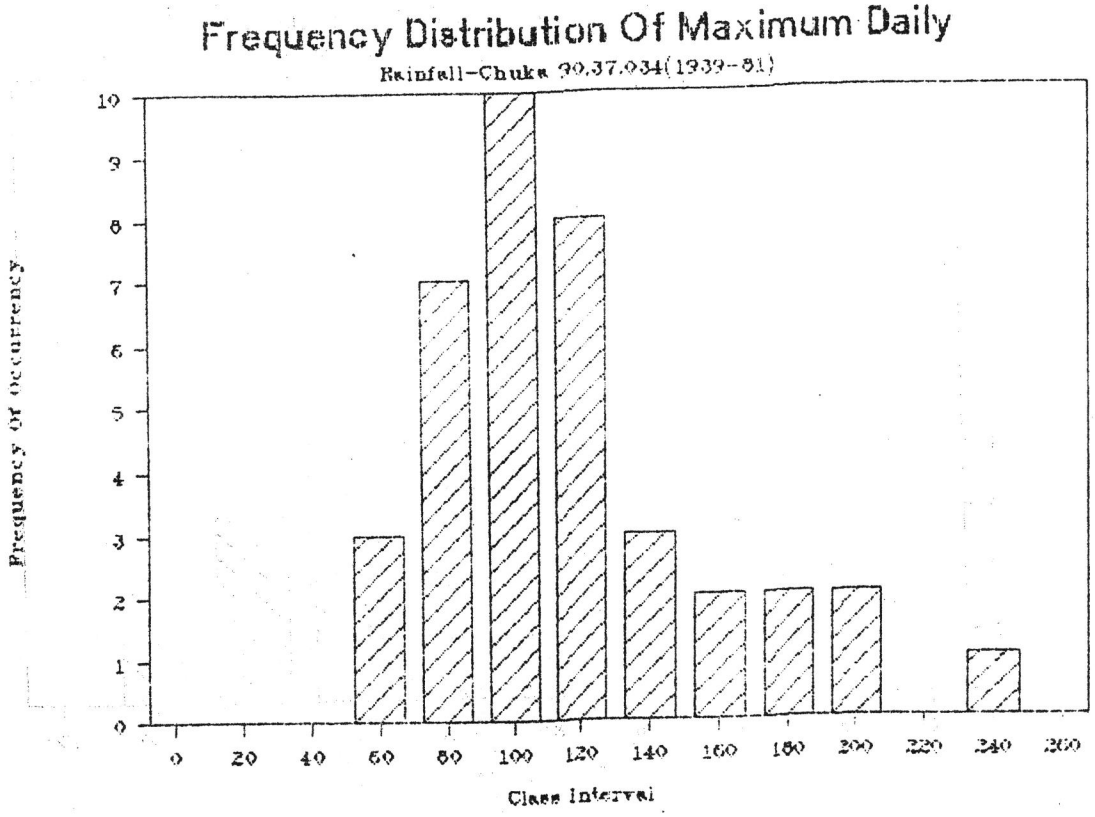


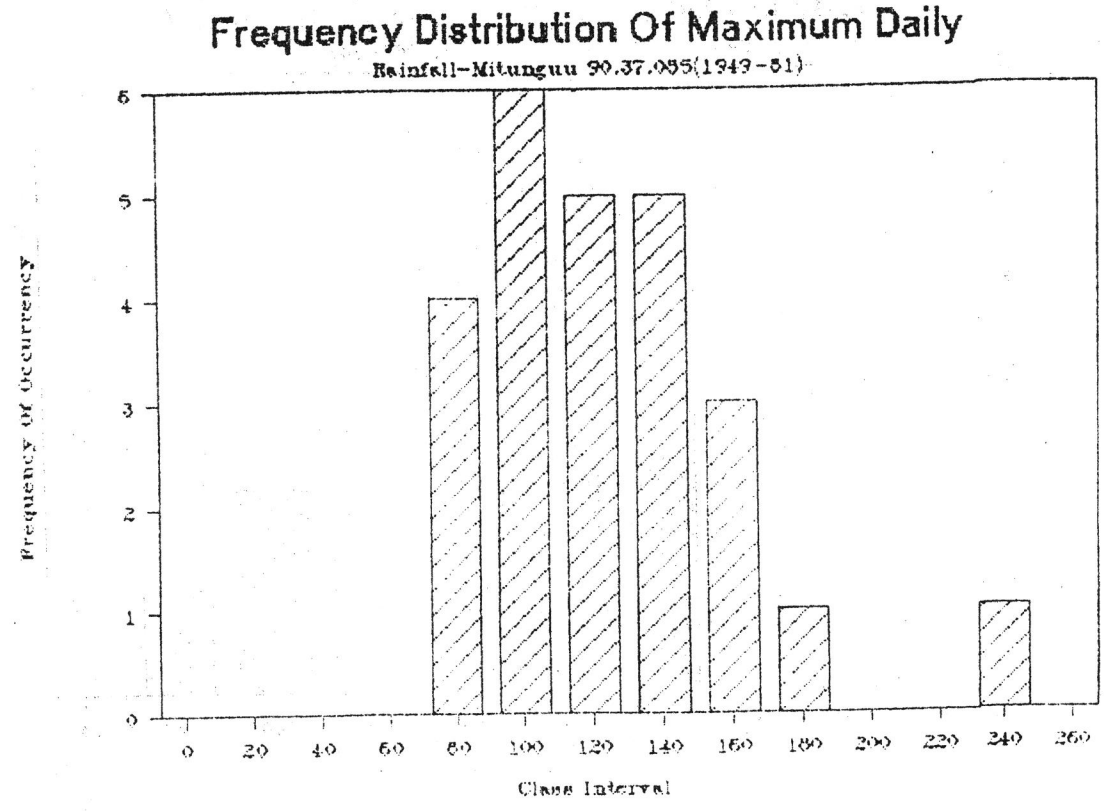

## ANNUAL RAINFALL VARIATION at Station No. 90.38.006

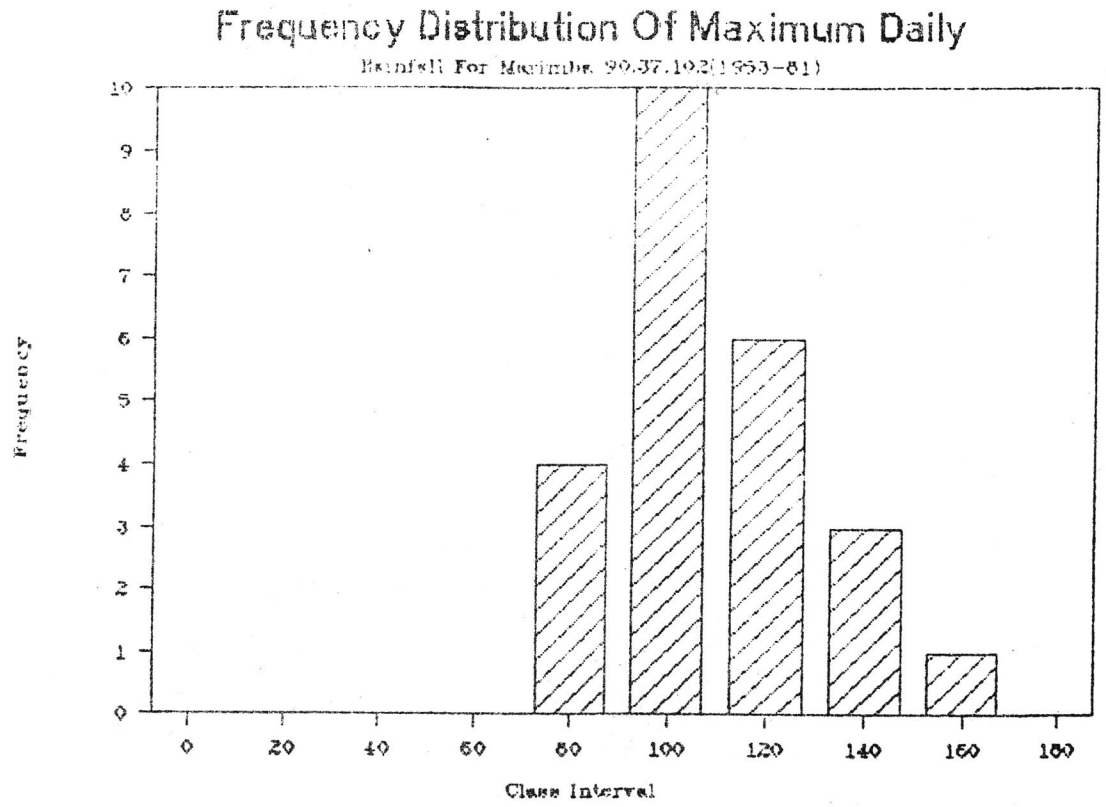
THARAKA DISPENSARY–KITUI

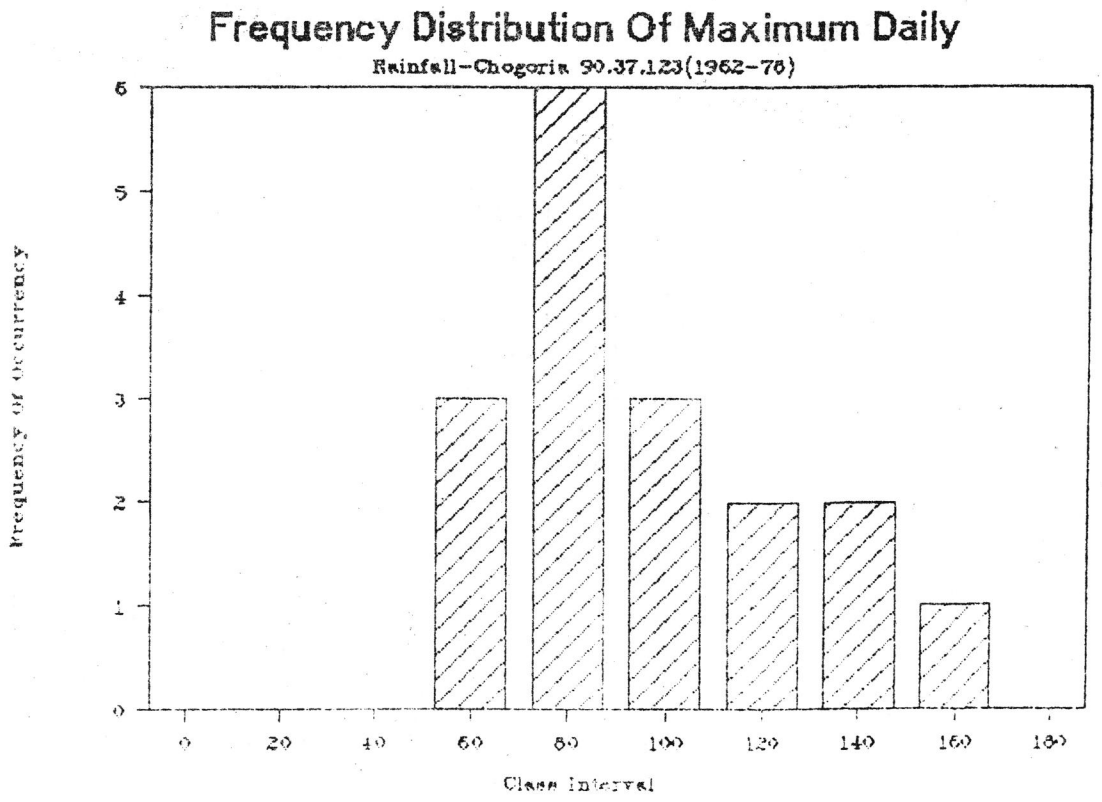


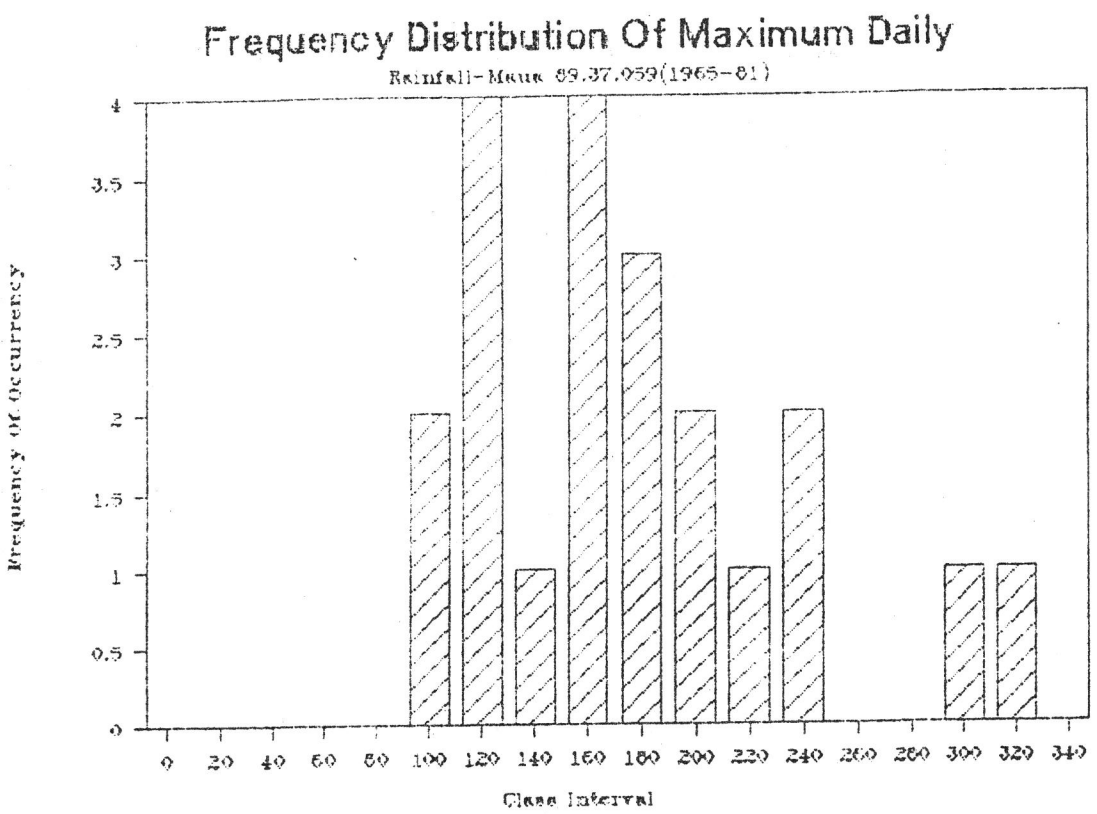

ANNUAL RAINFALL VARIATION at Station No. 89.37.041
LAPE DIVISIONAL AGRICULTURE OFFICE
ANNUAL RAINFALL (cm)
500
400
300
200
100
0
1945
1949
1953
1957
1961
1965
1969
1973
1977
1981
1985
Annual Average 211.5 cm. (1950-present)
Annual Rainfall
5 Yr Moving Average

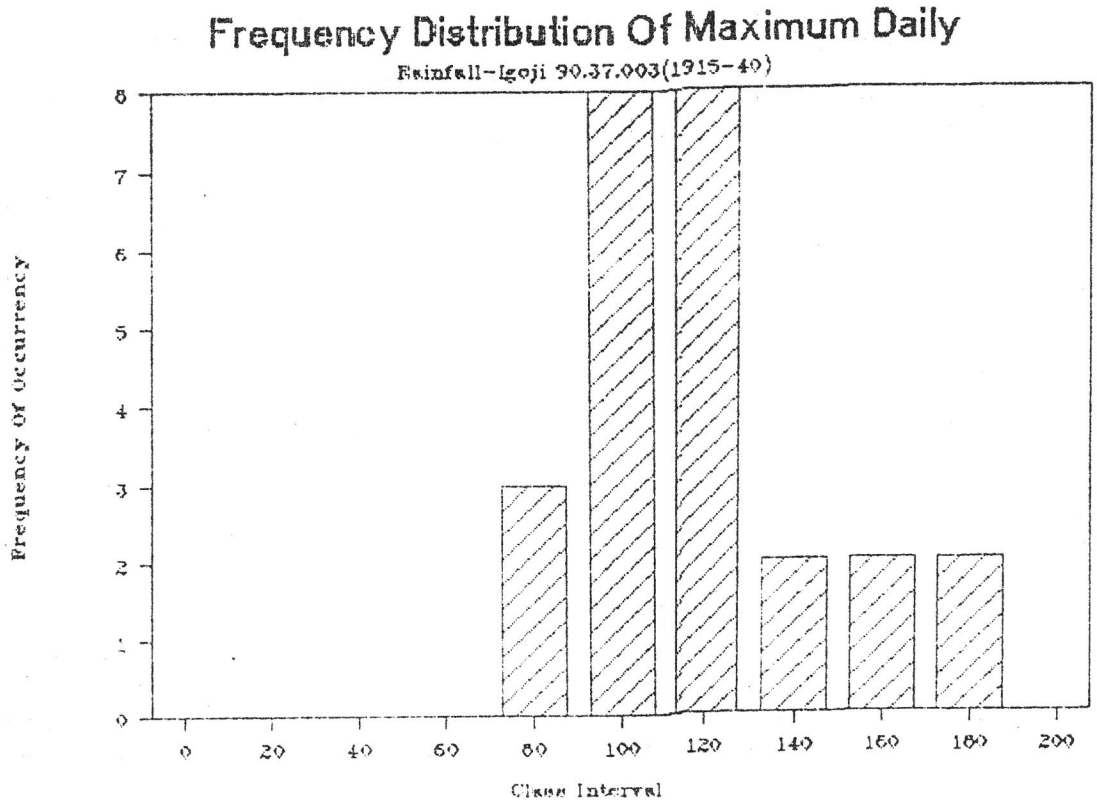

Frequency Distribution Of Maximum Daily
Rainfall-Chuka 90.37.034(1939-81)
Frequency Of Occurrence
0
1
2
3
4
5
6
7
8
9
10
0
20
40
60
80
100
120
140
160
180
200
220
240
260
Class Interval

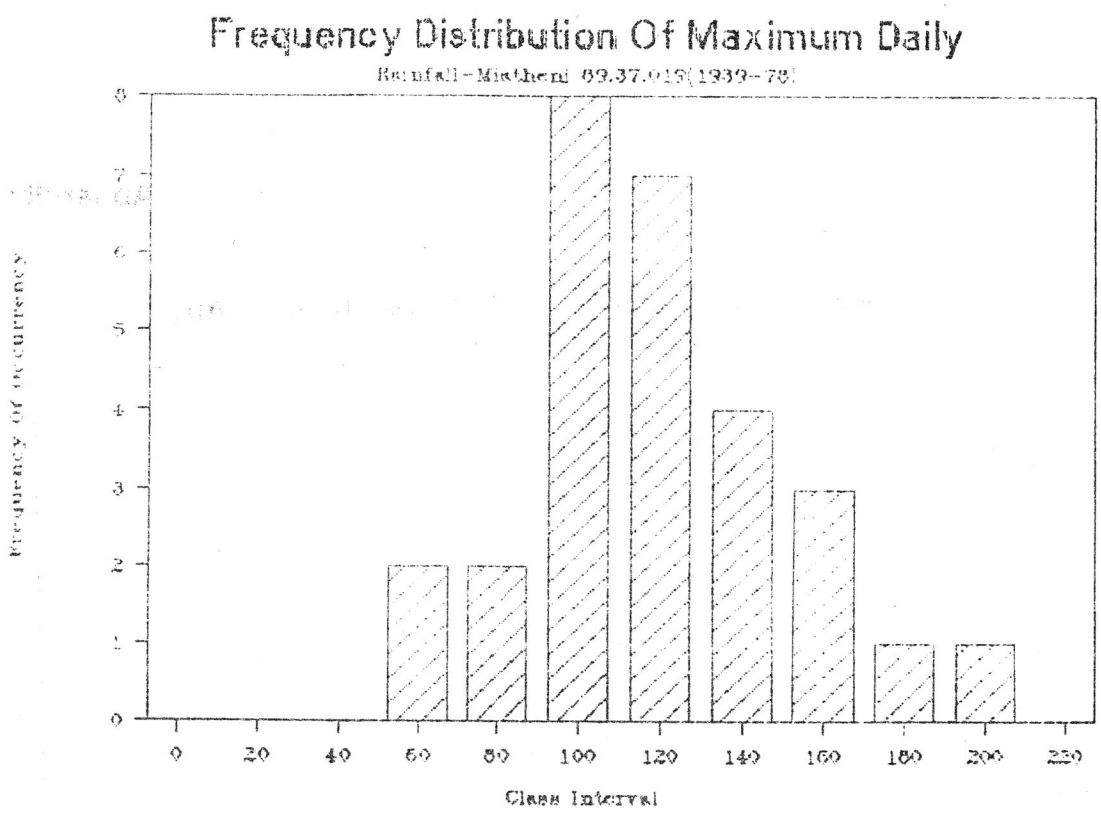

Frequency Distribution Of Maximum Daily
Rainfall-Mitunguu 90.37.055(1949-81)
Frequency Of Occurrence
0
1
2
3
4
5
6
0
20
40
60
80
100
120
140
160
180
200
220
240
260
Class Interval

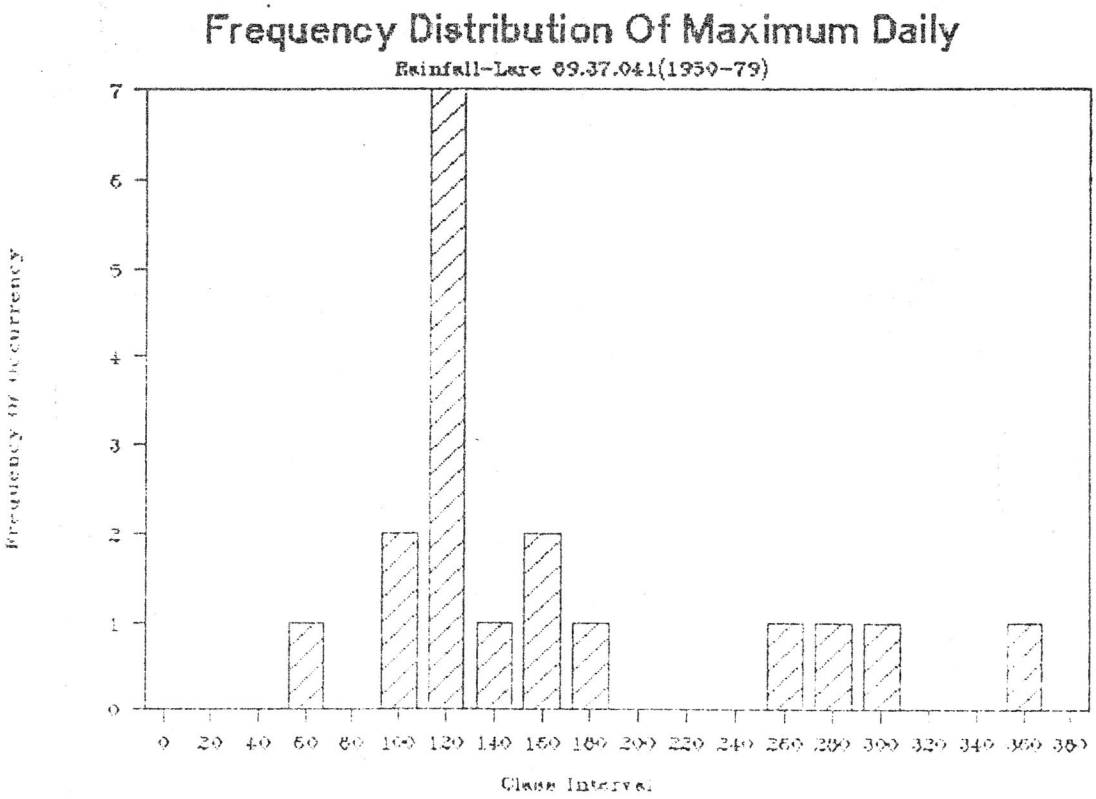

Frequency Distribution Of Maximum Daily
Rainfall For Marimba 90.37.102(1953-81)
Frequency
0
1
2
3
4
5
6
7
8
9
10
0
20
40
60
80
100
120
140
160
180
Class Interval

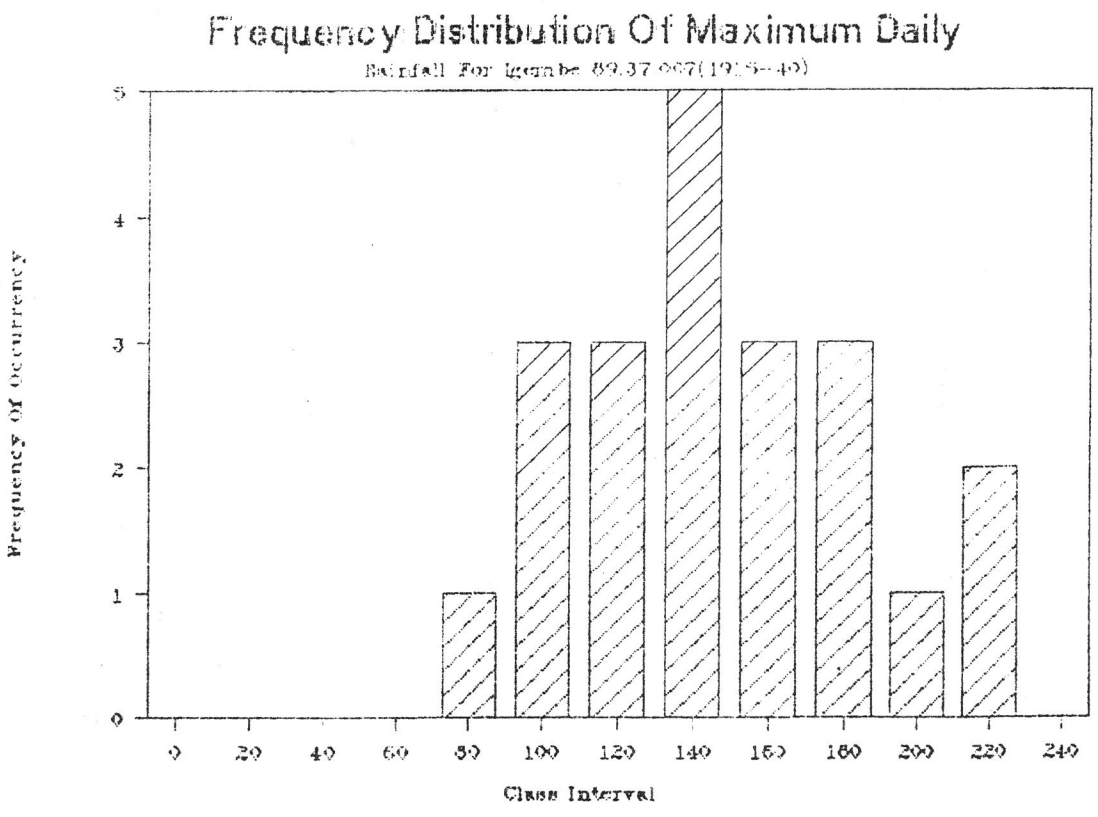

Frequency Distribution Of Maximum Daily
Rainfall-Chogoria 90.37.123(1962-76)
Frequency Of Occurrency
0
1
2
3
4
5
6
0
20
40
60
80
100
120
140
160
180
Class Interval

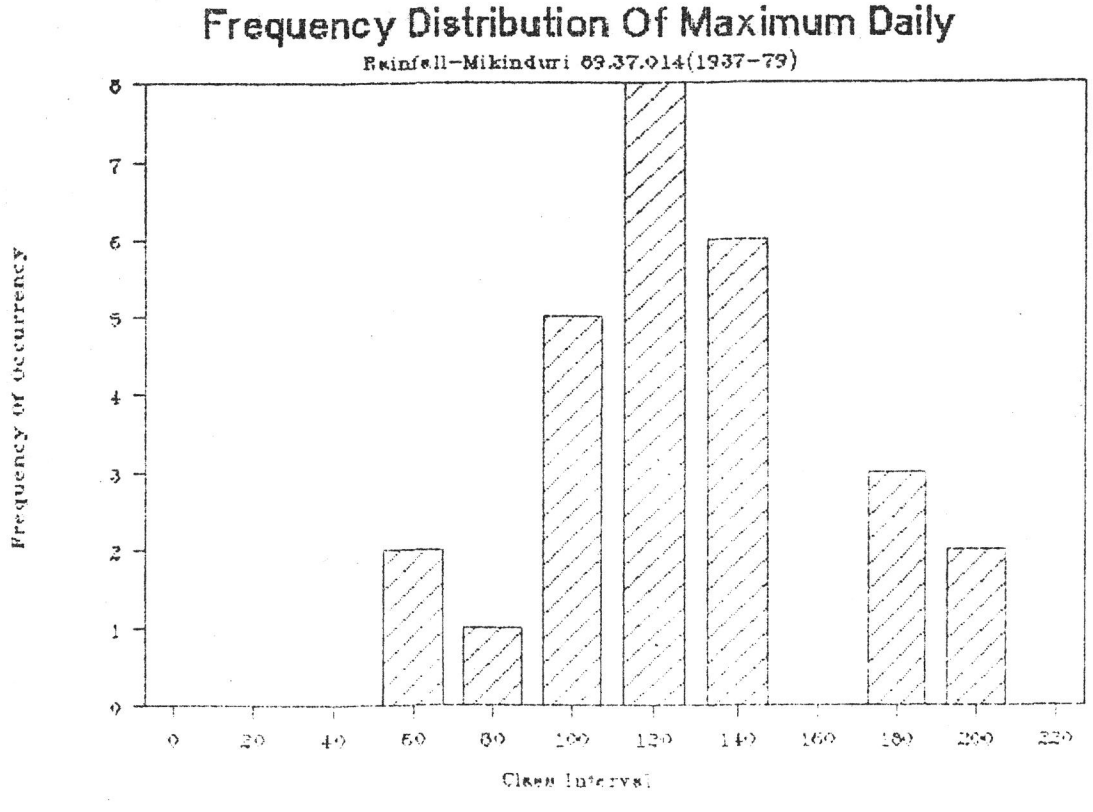

Frequency Distribution Of Maximum Daily
Rainfall-Maun 89.37.059(1965-81)
Frequency Of Occurrency
Class Interval
0
0.5
1
1.5
2
2.5
3
3.5
4
0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300 320 340

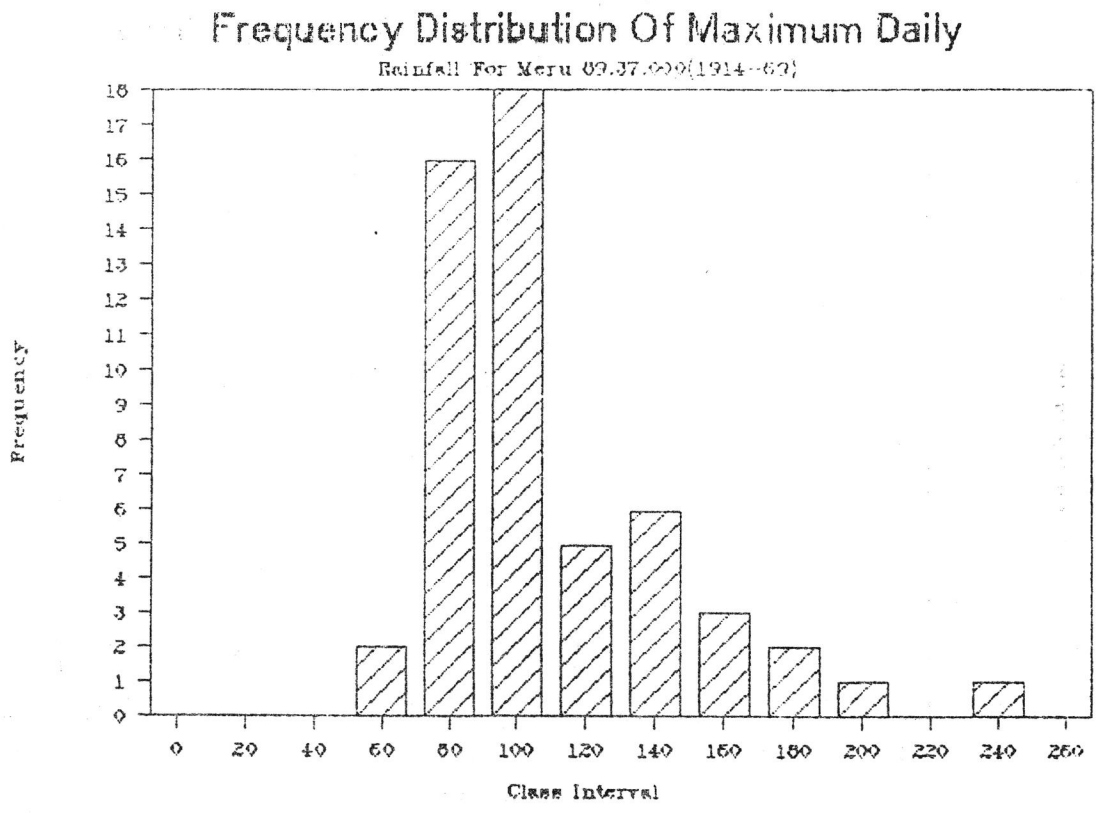

Frequency Distribution Of Maximum Daily
Rainfall-Igoji 90.37.003(1915-40)
Frequency Of Occurrency
Class Interval
0
1
2
3
4
5
6
7
8
0 20 40 60 80 100 120 140 160 180 200

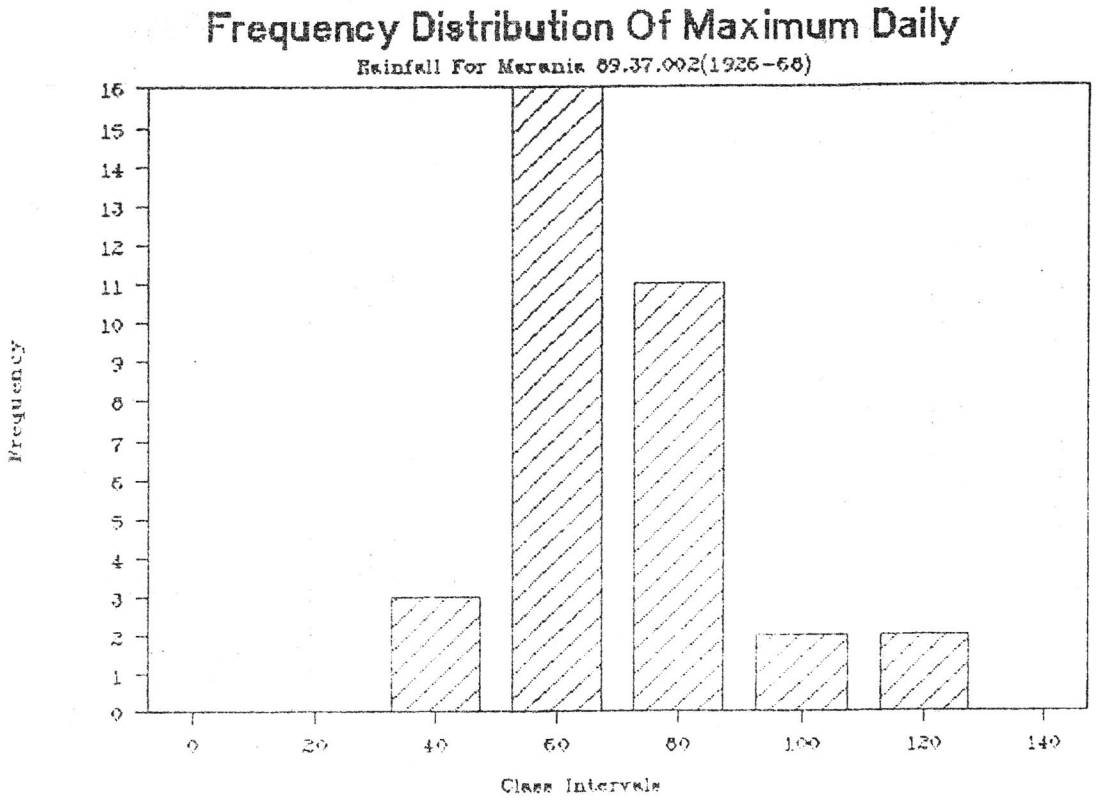

Frequency Distribution Of Maximum Daily
Rainfall-Mistheni 69.37.019(1939-78)
Frequency of occurrency
0
1
2
3
4
5
6
7
0 20 40 60 80 100 120 140 160 180 200 220
Class Interval

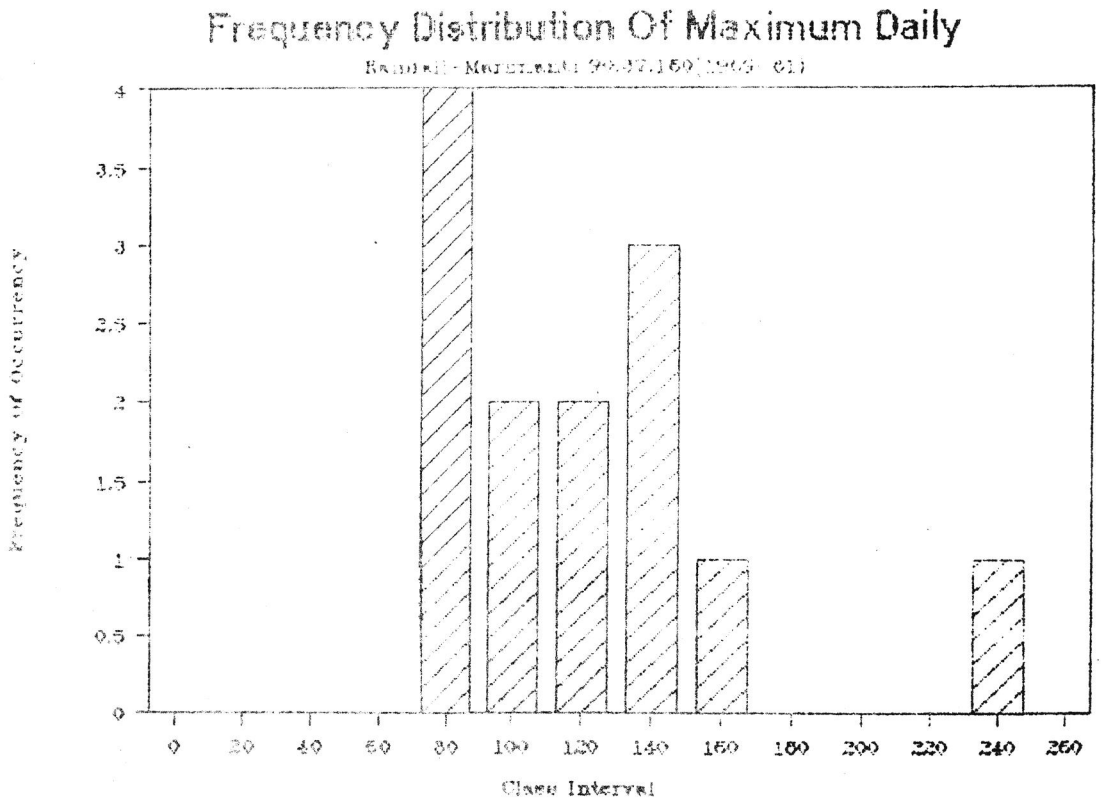

Frequency Distribution Of Maximum Daily
Rainfall-Lare 69.37.041(1950-79)
Frequency of occurrency
0
1
2
3
4
5
6
7
0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380
Class Interval

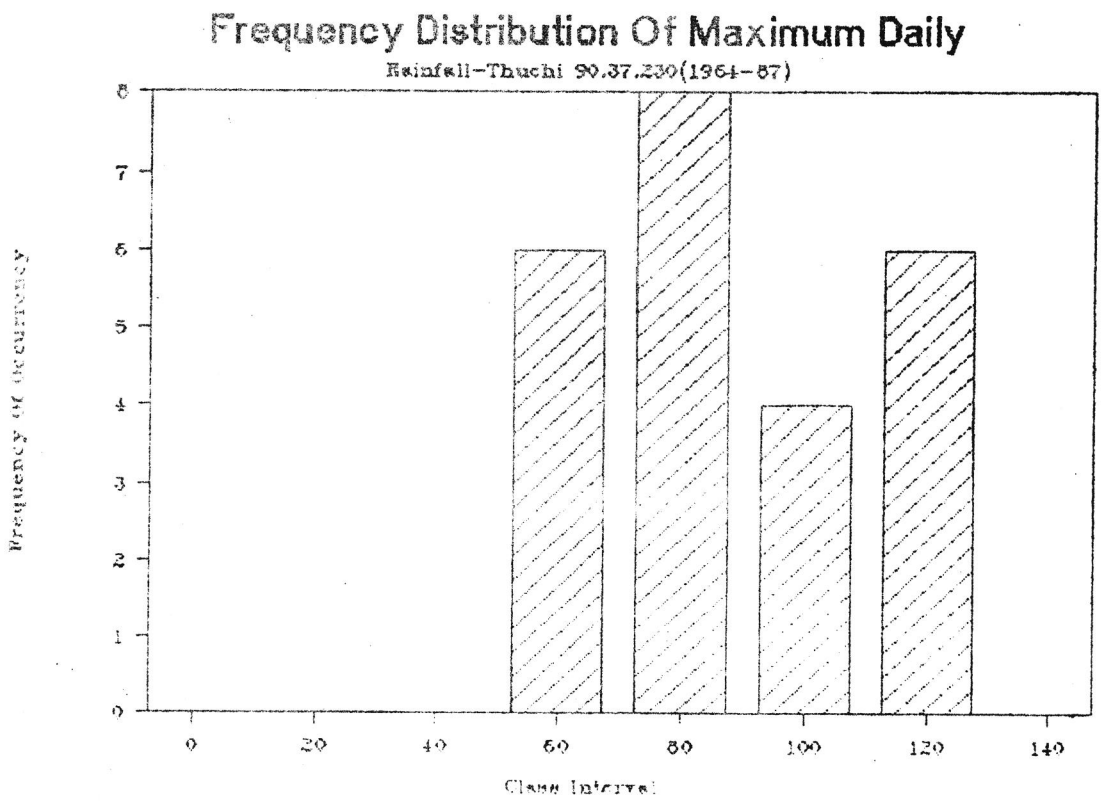

Frequency Distribution Of Maximum Daily
Rainfall For Igembe 69.37.007(1935-49)
Frequency Of Occurrence
0
1
2
3
4
5
0
20
40
60
80
100
120
140
160
180
200
220
240
Class Interval


Frequency Distribution Of Maximum Daily
Rainfall-Mikinduri 69.37.014(1937-79)
Frequency Of Occurrence
0
1
2
3
4
5
6
7
8
0
20
40
60
80
100
120
140
160
180
200
220
Class Interval


Frequency Distribution Of Maximum Daily
Rainfall For Meru 89.37.000(1914-62)
Frequency
Class Interval
0 20 40 60 80 100 120 140 160 180 200 220 240 260


Frequency Distribution Of Maximum Daily
Rainfall For Meranie 89.37.002(1926-68)
Frequency
Class Intervals
0 20 40 60 80 100 120 140


Frequency Distribution Of Maximum Daily
Frequency of Occurrency
0
0.5
1
1.5
2
2.5
3
3.5
4
0
20
40
60
80
100
120
140
160
180
200
220
240
260
Class Interval


Frequency Distribution Of Maximum Daily
Rainfall-Thuchi 90.37.230(1964-87)
Frequency of Occurrency
0
1
2
3
4
5
6
7
8
0
20
40
60
80
100
120
140
Class Interval

# Appendix 4.5

## Evaporation Data Summaries and Figures

## Appendix 4.5

### Evaporation Data Summaries and Figures

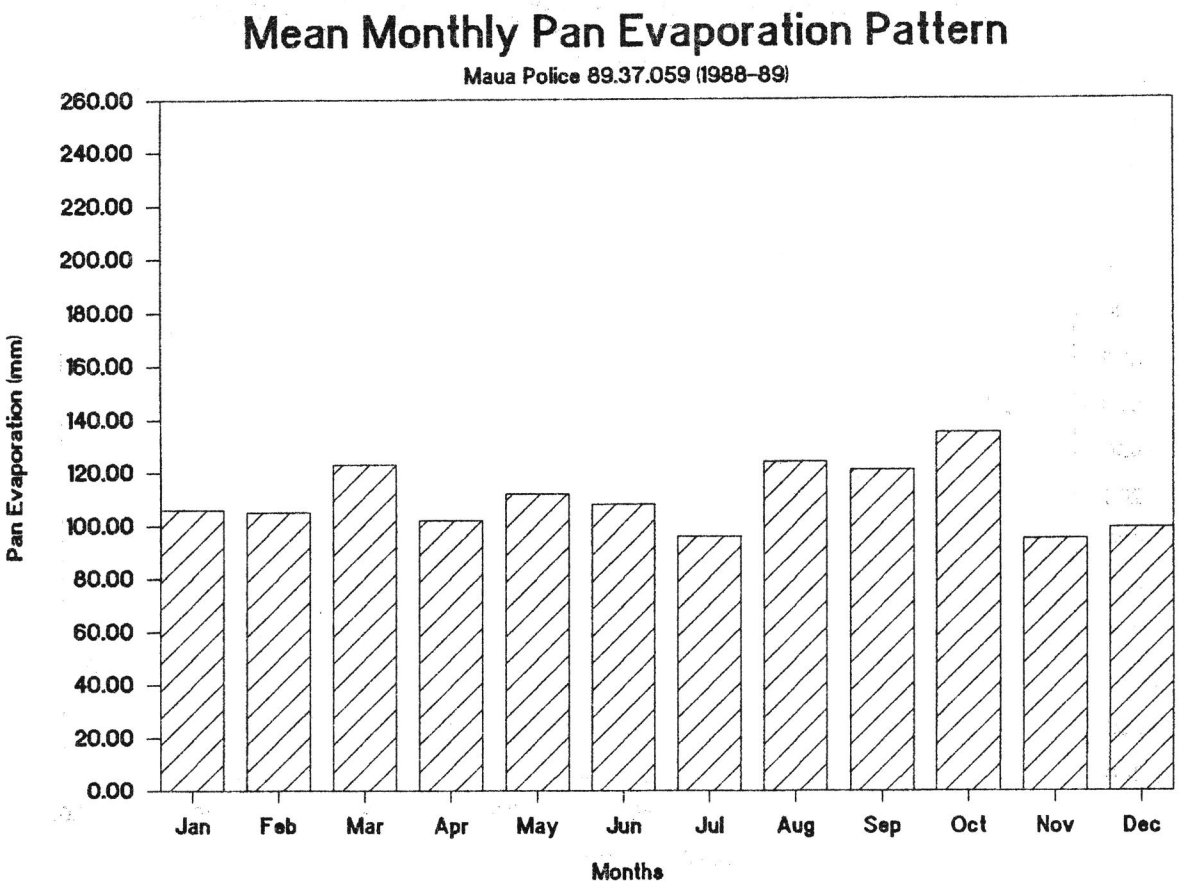
- Summary of Evaporation Data Statistics
- Mean Monthly Pan Evaporation Figures
- Comparison of Monthly Rainfall and Pan Evaporation

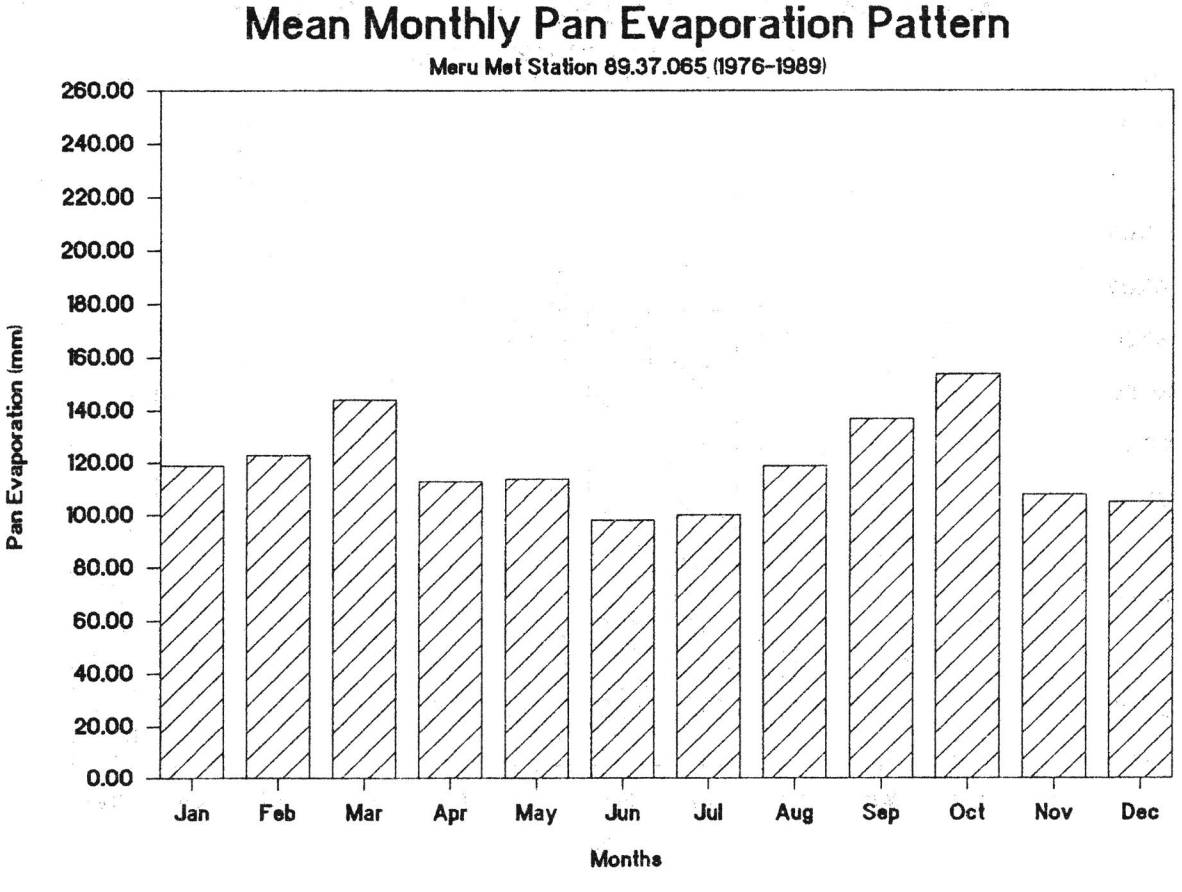
MERU: SUMMARY OF THE MAIN DATA FROM EVAPORATION STATIONS

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Annual Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number: 164 CHUKA FOREST 1988-89 | | | | | | | | | | | | | |
| Mean | 97.0 | 92.0 | 130.0 | 116.5 | 107.0 | 85.0 | 72.0 | 82.5 | 102.5 | 118.0 | 105.0 | 86.0 | 1193.5 |
| % of Annual | 8 | 8 | 11 | 10 | 9 | 7 | 6 | 7 | 9 | 10 | 9 | 7 | 100 |
| No. of Obs. | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | |
| Maximum | 97.0 | 92.0 | 130.0 | 126.0 | 114.0 | 86.0 | 87.0 | 85.0 | 110.0 | 118.0 | 105.0 | 86.0 | |
| Minimum | 97.0 | 92.0 | 130.0 | 126.0 | 114.0 | 86.0 | 87.0 | 85.0 | 110.0 | 118.0 | 105.0 | 86.0 | |
| Std. Dev. | 0.0 | 0.0 | 0.0 | 9.5 | 7.0 | 1.0 | 15.0 | 2.5 | 7.5 | 0.0 | 0.0 | 0.0 | 0.0 |
| Var. Coeff. | 0.0 | 0.0 | 0.0 | 90.3 | 49.0 | 1.0 | 225.0 | 6.3 | 56.3 | 0.0 | 0.0 | 0.0 | 0.0 |
| Number: 156 EMBORI FARM 1985-1989 | | | | | | | | | | | | | |
| Mean | 136.6 | 141.3 | 144.6 | 128.4 | 124.8 | 102.0 | 94.4 | 101.2 | 123.0 | 126.6 | 120.0 | 125.8 | 1468.6 |
| % of Annual | 9 | 10 | 10 | 9 | 9 | 7 | 6 | 7 | 8 | 9 | 8 | 9 | 100 |
| No. of Obs. | 4 | 4 | 4 | 4 | 4 | 5 | 5 | 5 | 5 | 3 | 4 | 4 | |
| Maximum | 158.0 | 166.6 | 170.7 | 146.6 | 148.0 | 116.8 | 118.6 | 119.4 | 170.2 | 135.9 | 127.3 | 140.5 | |
| Minimum | 118.0 | 108.0 | 115.0 | 120.9 | 107.0 | 86.1 | 82.0 | 88.4 | 100.0 | 116.0 | 112.3 | 112.5 | |
| Std. Dev. | 18.4 | 22.2 | 19.8 | 10.6 | 15.7 | 10.6 | 13.5 | 10.5 | 24.9 | 8.2 | 5.4 | 10.8 | |
| Var. Coeff. | 0.13 | 0.16 | 0.14 | 0.08 | 0.13 | 0.10 | 0.14 | 0.10 | 0.20 | 0.06 | 0.04 | 0.09 | |
| Number: 89.37.065 (132) MERU METEOROLOGICAL STATION (KAAGA) 1975-1989 | | | | | | | | | | | | | |
| Mean | 119.1 | 123.6 | 143.6 | 116.2 | 113.7 | 97.6 | 101.1 | 118.7 | 136.7 | 154.2 | 109.4 | 104.6 | 1438.4 |
| % of Annual | 8 | 9 | 10 | 8 | 8 | 7 | 7 | 8 | 10 | 11 | 8 | 7 | 100 |
| No. of Obs. | 13 | 13 | 13 | 14 | 13 | 12 | 13 | 13 | 11 | 12 | 14 | 13 | |
| Maximum | 140.5 | 154.2 | 177.8 | 150.9 | 131.6 | 133.9 | 131.1 | 159.0 | 170.2 | 189.5 | 122.7 | 124.2 | |
| Minimum | 103.1 | 95.5 | 124.7 | 91.7 | 97.8 | 72.6 | 80.0 | 90.4 | 90.7 | 121.9 | 86.6 | 87.1 | |
| Std. Dev. | 10.4 | 15.9 | 14.0 | 15.5 | 9.0 | 19.3 | 15.4 | 18.6 | 23.8 | 22.1 | 10.7 | 11.1 | |
| Var. Coeff. | 0.09 | 0.13 | 0.10 | 0.13 | 0.08 | 0.20 | 0.15 | 0.16 | 0.17 | 0.14 | 0.10 | 0.11 | |
| Number: 90.37.214 (134) KAGURU FARMER'S TRAINING CENTRE 1976-1989 | | | | | | | | | | | | | |
| Mean | 126.7 | 136.2 | 148.5 | 119.1 | 113.1 | 102.4 | 99.9 | 113.3 | 145.5 | 148.2 | 111.3 | 110.4 | 1474.7 |
| % of Annual | 9 | 9 | 10 | 8 | 8 | 7 | 7 | 8 | 10 | 10 | 8 | 7 | 100 |
| No. of Obs. | 13 | 12 | 13 | 12 | 13 | 14 | 14 | 14 | 12 | 13 | 12 | 12 | |
| Maximum | 166.4 | 163.1 | 176.8 | 156.7 | 158.5 | 143.5 | 121.4 | 143.0 | 168.1 | 186.7 | 149.6 | 174.5 | |
| Minimum | 97.3 | 94.2 | 111.5 | 74.4 | 72.4 | 63.8 | 83.6 | 89.6 | 114.4 | 86.1 | 80.3 | 92.2 | |
| Std. Dev. | 19.3 | 19.9 | 18.1 | 26.1 | 20.3 | 21.4 | 12.5 | 17.7 | 15.9 | 29.8 | 17.9 | 20.9 | |
| Var. Coeff. | 0.15 | 0.15 | 0.12 | 0.22 | 0.18 | 0.21 | 0.13 | 0.16 | 0.11 | 0.20 | 0.16 | 0.19 | |
| Number: 90.37.124 (67) MARIENE COFFEE RESEARCH FOUNDATION 1960-1989 | | | | | | | | | | | | | |
| Mean | 131.5 | 141.0 | 156.8 | 136.8 | 129.5 | 111.0 | 112.2 | 121.8 | 155.0 | 174.0 | 130.0 | 121.2 | 1620.9 |
| % of Annual | 8 | 9 | 10 | 8 | 8 | 7 | 7 | 8 | 10 | 11 | 8 | 7 | 100 |
| No. of Obs. | 28 | 27 | 29 | 28 | 27 | 30 | 30 | 29 | 28 | 26 | 25 | 26 | |
| Maximum | 166.4 | 177.3 | 192.3 | 203.2 | 183.4 | 165.1 | 158.0 | 162.1 | 187.5 | 268.5 | 189.2 | 157.2 | |
| Minimum | 100.1 | 107.4 | 121.2 | 95.5 | 100.3 | 73.4 | 77.2 | 92.7 | 120.1 | 127.5 | 103.6 | 84.8 | |
| Std. Dev. | 17.7 | 18.1 | 19.9 | 21.4 | 19.2 | 20.5 | 20.5 | 17.5 | 16.9 | 28.5 | 20.1 | 16.9 | |
| Var. Coeff. | 0.13 | 0.13 | 0.13 | 0.16 | 0.15 | 0.18 | 0.18 | 0.14 | 0.11 | 0.16 | 0.15 | 0.14 | |

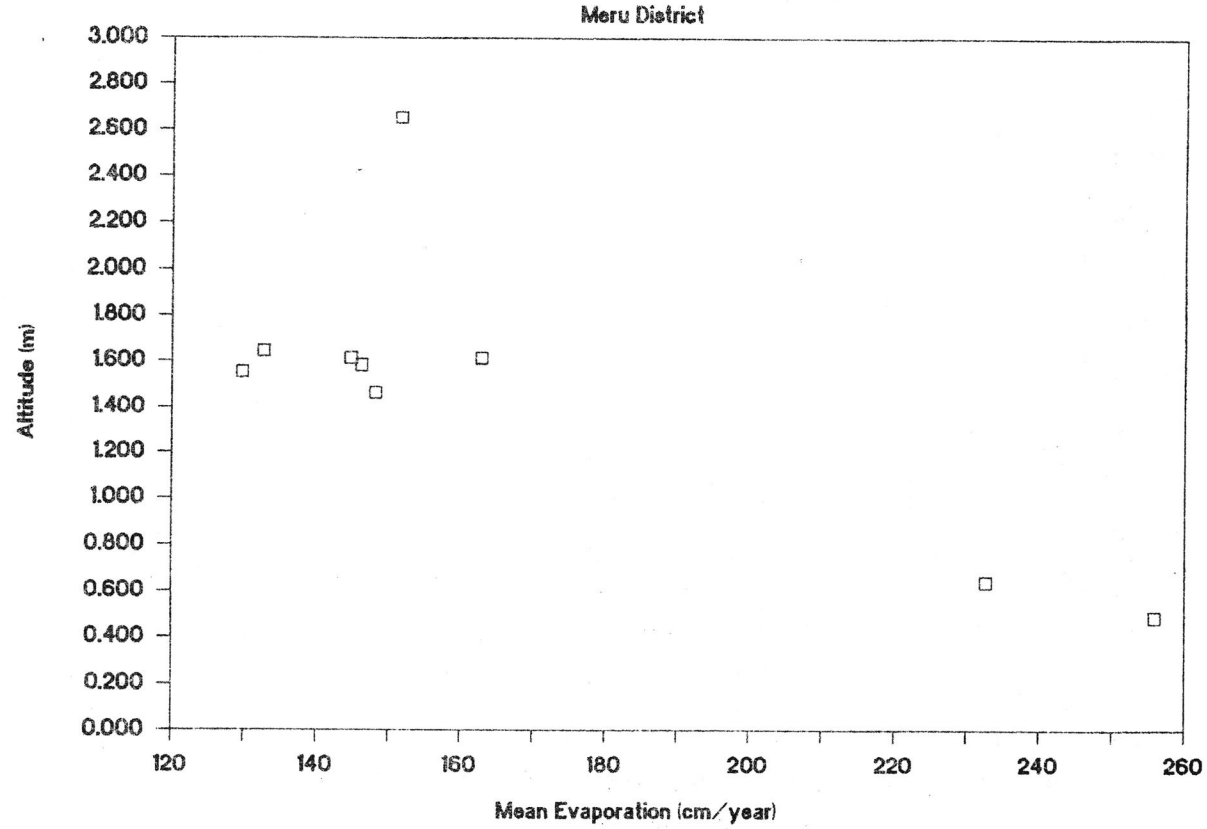
MERU: SUMMARY OF THE MAIN DATA FROM EVAPORATION STATIONS

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Annual Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number: 90.37.160 (108) MARIMANTI METEOROLOGICAL STATION 1965-1989 | | | | | | | | | | | | | |
| Mean | 179.4 | 189.3 | 217.3 | 179.5 | 172.3 | 172.6 | 186.7 | 210.6 | 245.6 | 252.5 | 170.0 | 151.4 | 2327.2 |
| % of Annual | 8 | 8 | 9 | 8 | 7 | 7 | 8 | 9 | 11 | 11 | 7 | 7 | 100 |
| No. of Obs. | 23 | 24 | 24 | 23 | 25 | 24 | 25 | 24 | 22 | 22 | 21 | 21 | |
| Maximum | 241.6 | 249.4 | 261.4 | 248.9 | 258.3 | 249.4 | 221.0 | 240.5 | 302.5 | 327.4 | 203.5 | 176.0 | |
| Minimum | 120.4 | 103.9 | 135.4 | 132.1 | 132.3 | 130.3 | 149.9 | 170.4 | 168.1 | 187.2 | 143.5 | 119.9 | |
| Std. Dev. | 31.2 | 37.4 | 36.5 | 33.0 | 30.8 | 25.9 | 20.8 | 20.2 | 29.7 | 34.2 | 17.7 | 15.5 | |
| Var. Coeff. | 0.17 | 0.20 | 0.17 | 0.18 | 0.18 | 0.15 | 0.11 | 0.10 | 0.12 | 0.14 | 0.10 | 0.10 | |
| Number: 165 MAUA POLICE STATION 1988-1989 | | | | | | | | | | | | | |
| Mean | 100.0 | 99.0 | 116.0 | 95.5 | 106.5 | 102.0 | 90.5 | 117.0 | 114.0 | 128.0 | 90.0 | 94.0 | 1252.5 |
| % of Annual | 8 | 8 | 9 | 8 | 9 | 8 | 7 | 9 | 9 | 10 | 7 | 8 | 100 |
| No. of Obs. | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 1 | 2 | 1 | 1 | 1 | |
| Maximum | 100.0 | 99.0 | 116.0 | 96.0 | 109.0 | 103.0 | 92.0 | 117.0 | 122.0 | 128.0 | 90.0 | 94.0 | |
| Minimum | 100.0 | 99.0 | 116.0 | 95.0 | 104.0 | 101.0 | 89.0 | 117.0 | 106.0 | 128.0 | 90.0 | 94.0 | |
| Std. Dev. | 0.0 | 0.0 | 0.0 | 0.5 | 2.5 | 1.0 | 1.5 | 0.0 | 8.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Var. Coeff. | 0.0 | 0.0 | 0.0 | 0.3 | 6.3 | 1.0 | 2.3 | 0.0 | 64.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Number: 43 MERU WATER SUPPLY 1952-1976 | | | | | | | | | | | | | |
| Mean | 124.1 | 130.6 | 141.4 | 122.5 | 121.3 | 104.9 | 100.6 | 106.3 | 137.5 | 150.6 | 111.9 | 109.6 | 1461.2 |
| % of Annual | 8 | 9 | 10 | 8 | 8 | 7 | 7 | 7 | 9 | 10 | 8 | 7 | 100 |
| No. of Obs. | 22 | 23 | 23 | 22 | 22 | 21 | 22 | 22 | 23 | 24 | 21 | 23 | |
| Maximum | 169.4 | 187.5 | 185.2 | 162.3 | 252.2 | 205.5 | 138.2 | 138.4 | 169.7 | 207.5 | 221.7 | 141.7 | |
| Minimum | 95.3 | 94.5 | 99.8 | 82.8 | 79.8 | 73.4 | 57.9 | 75.9 | 103.9 | 120.9 | 68.6 | 86.1 | |
| Std. Dev. | 16.6 | 19.7 | 18.3 | 20.7 | 37.3 | 28.1 | 20.8 | 15.2 | 16.6 | 19.3 | 30.0 | 15.3 | |
| Var. Coeff. | 0.13 | 0.15 | 0.13 | 0.17 | 0.31 | 0.27 | 0.21 | 0.14 | 0.12 | 0.13 | 0.27 | 0.14 | |
| Number: 5 TANA GRAND FALLS 1948-1964 | | | | | | | | | | | | | |
| Mean | 197.4 | 219.6 | 232.4 | 183.5 | 203.9 | 212.2 | 221.1 | 238.8 | 250.1 | 252.5 | 188.0 | 159.6 | 2559.1 |
| % of Annual | 8 | 9 | 9 | 7 | 8 | 8 | 9 | 9 | 10 | 10 | 7 | 6 | 100 |
| No. of Obs. | 12 | 13 | 14 | 14 | 14 | 16 | 15 | 15 | 15 | 14 | 13 | 13 | |
| Maximum | 297.7 | 293.1 | 311.2 | 236.0 | 296.2 | 309.9 | 269.2 | 305.8 | 298.2 | 316.2 | 272.8 | 244.3 | |
| Minimum | 112.3 | 165.1 | 152.1 | 114.6 | 133.4 | 150.9 | 172.2 | 167.1 | 165.6 | 171.5 | 129.0 | 121.2 | |
| Std. Dev. | 59.2 | 36.3 | 48.1 | 31.7 | 44.2 | 46.3 | 32.3 | 38.4 | 42.0 | 41.4 | 39.3 | 34.6 | |
| Var. Coeff. | 0.30 | 0.17 | 0.21 | 0.17 | 0.22 | 0.22 | 0.15 | 0.16 | 0.17 | 0.16 | 0.21 | 0.22 | |

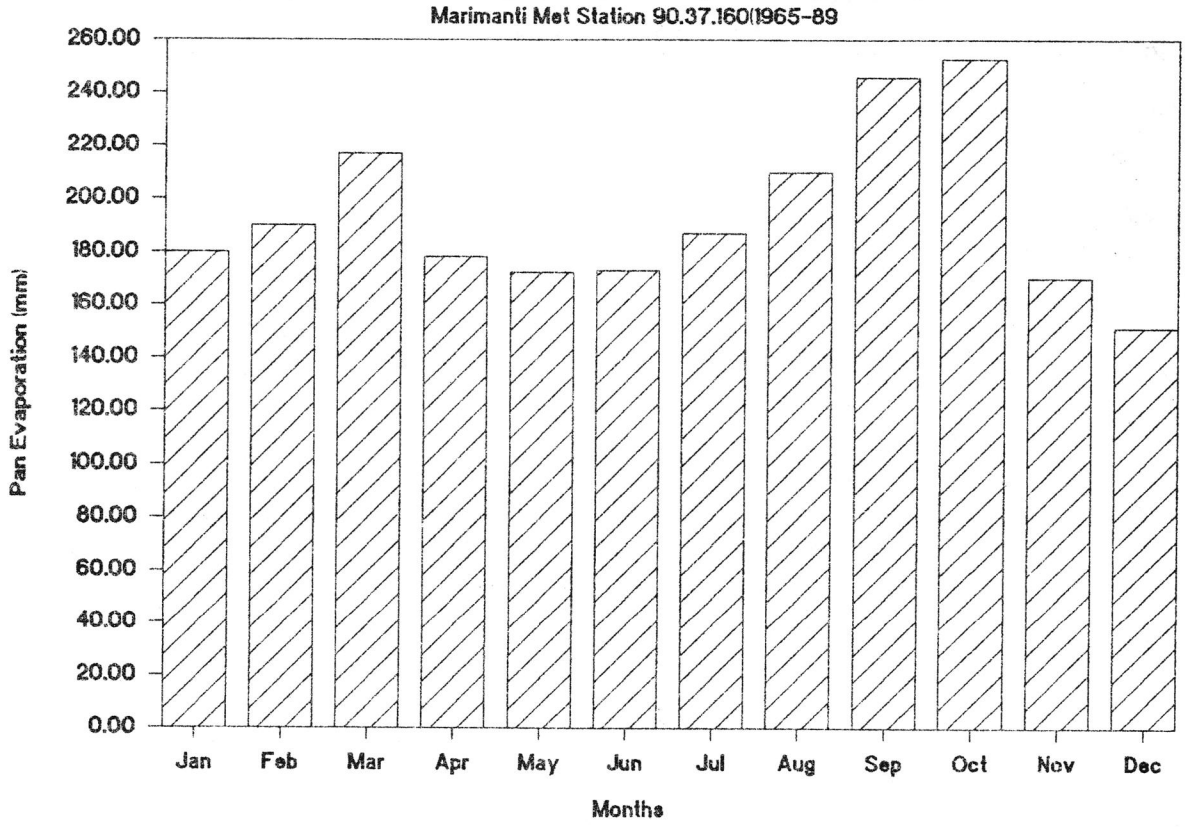

Mean Monthly Pan Evaporation Pattern
Maua Police 89.37.059 (1988-89)
Pan Evaporation (mm)
260.00
240.00
220.00
200.00
180.00
160.00
140.00
120.00
100.00
80.00
60.00
40.00
20.00
0.00
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Months

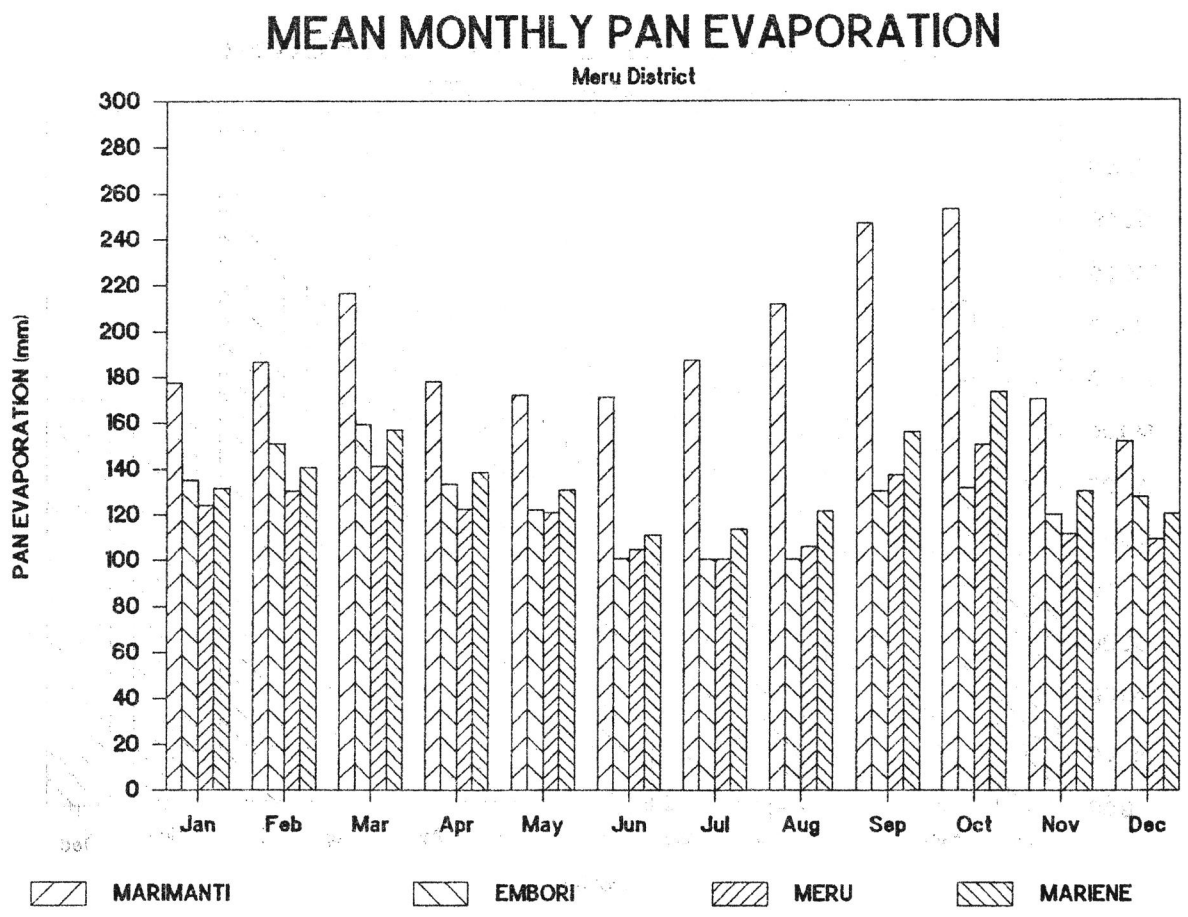

Mean Monthly Pan Evaporation Pattern
Meru Met Station 89.37.065 (1976-1989)
Pan Evaporation (mm)
260.00
240.00
220.00
200.00
180.00
160.00
140.00
120.00
100.00
80.00
60.00
40.00
20.00
0.00
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Months

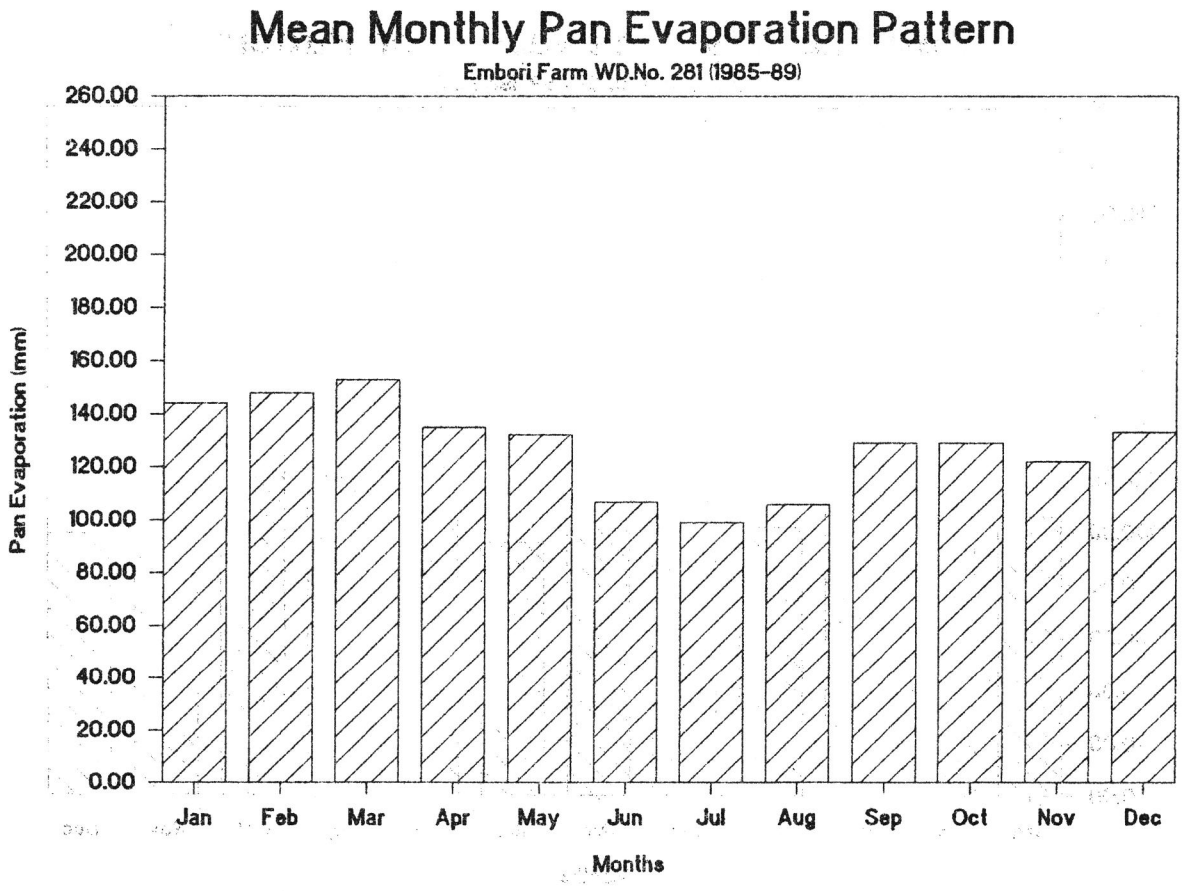
# EVAPORATION – ALTITUDE CORRELATION

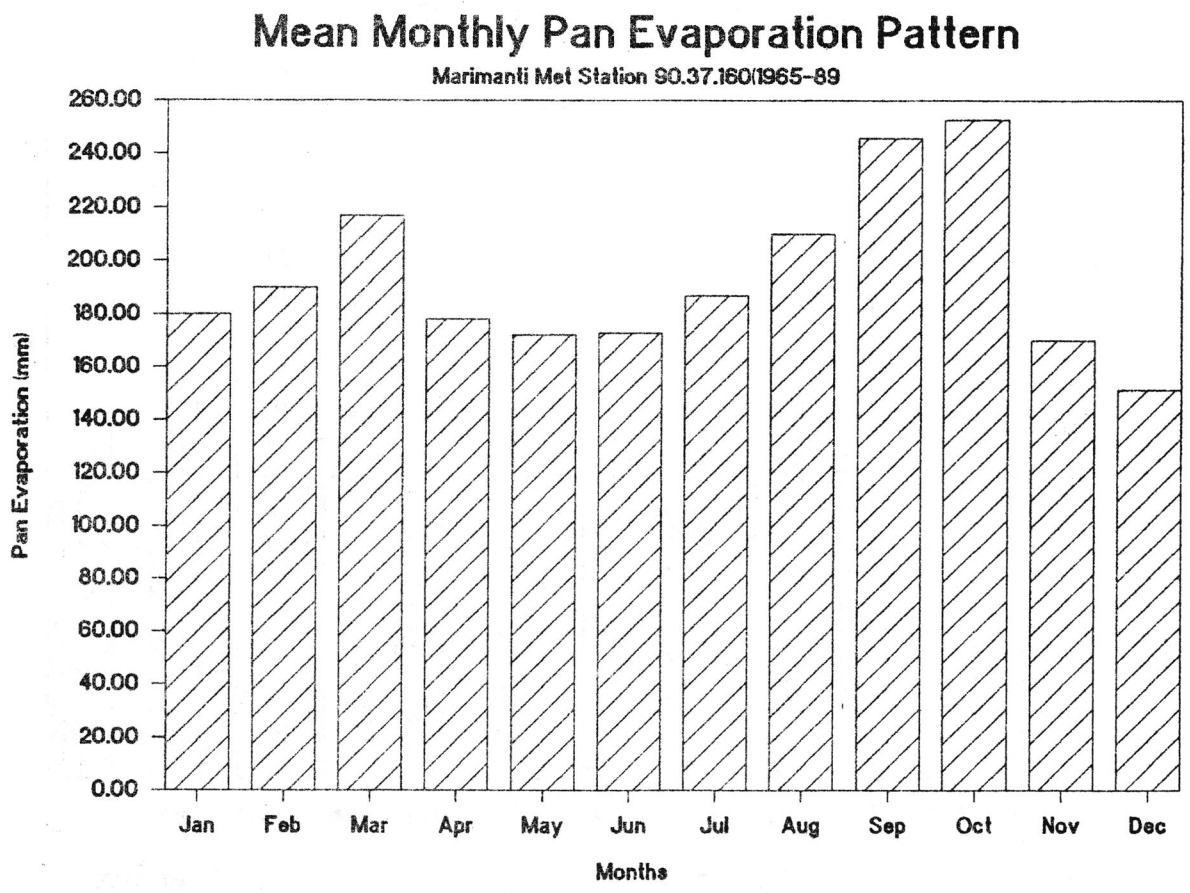


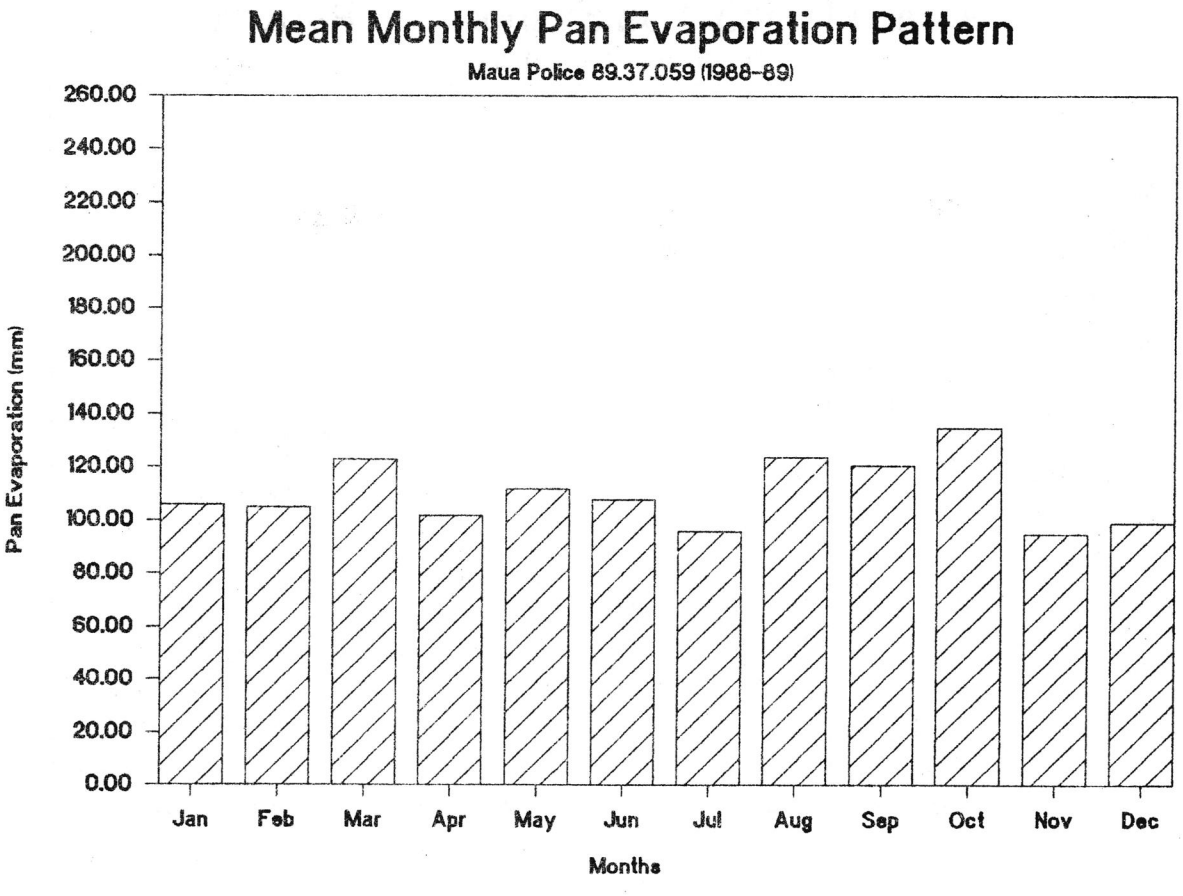

# Mean Monthly Pan Evaporation Pattern

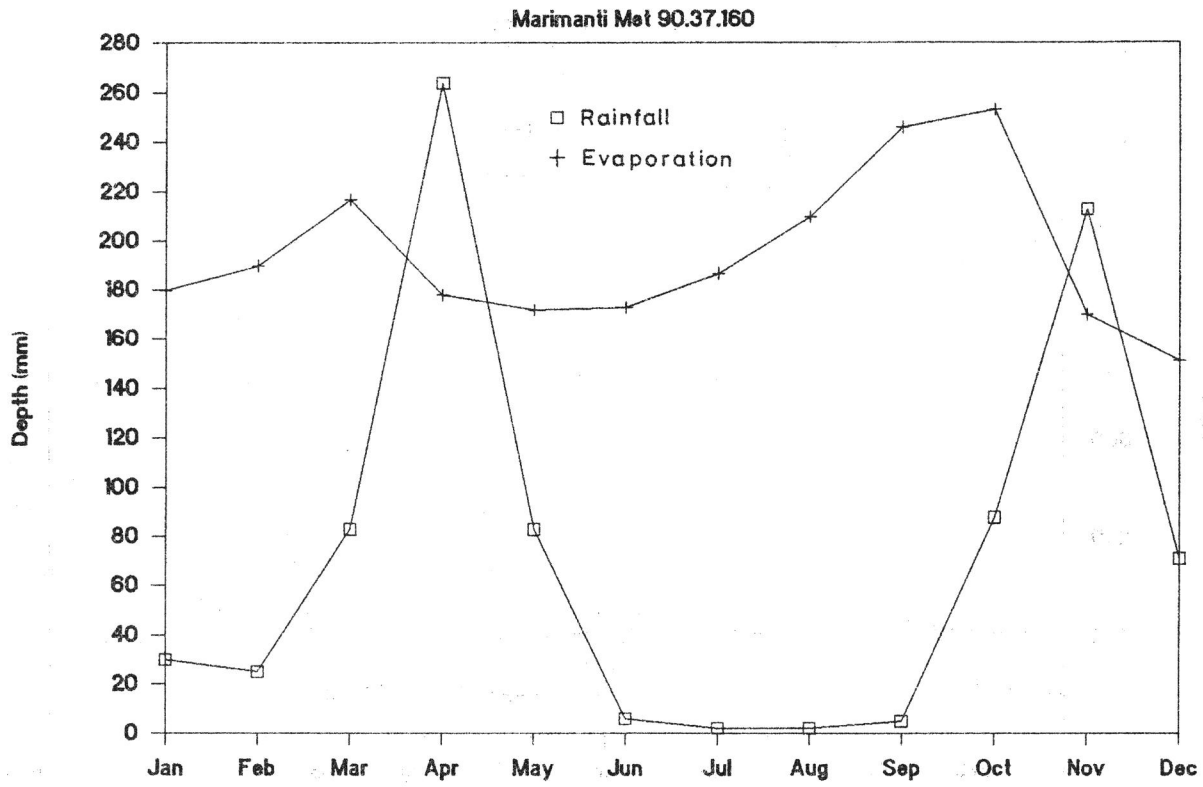


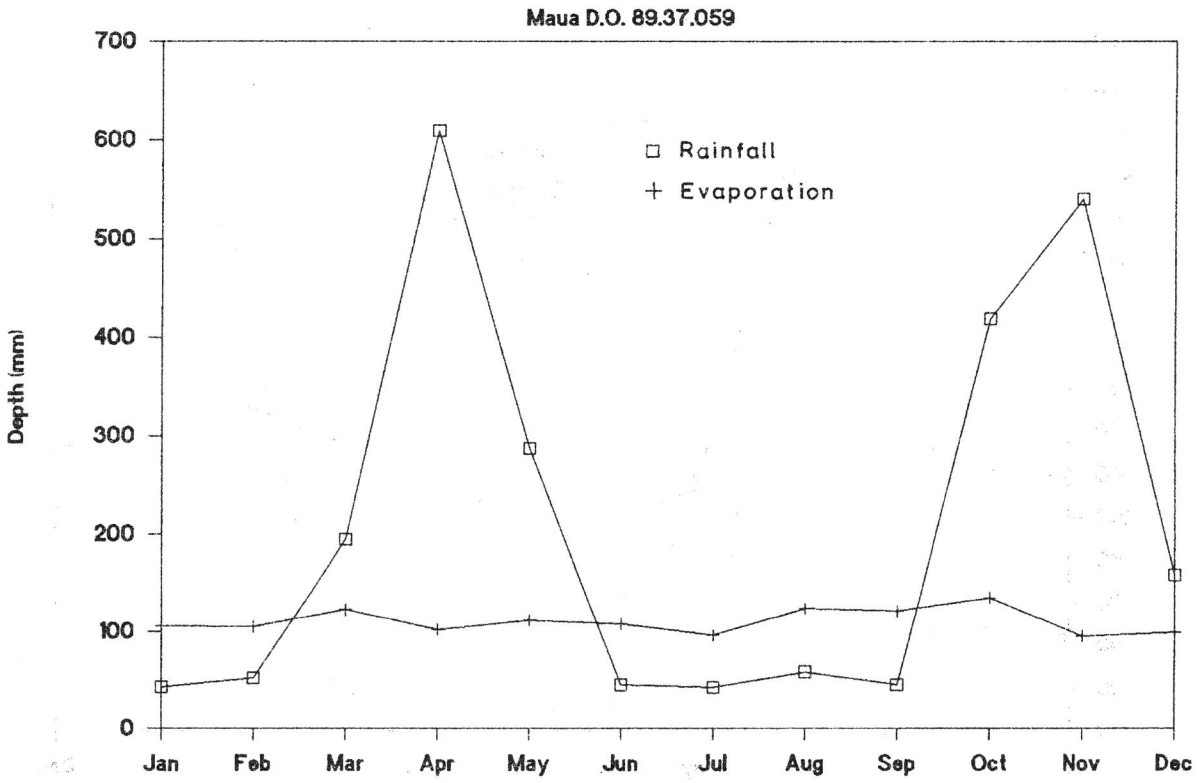

MEAN MONTHLY PAN EVAPORATION
Meru District
PAN EVAPORATION (mm)
300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
MARIMANTI
EMBORI
MERU
MARIENE

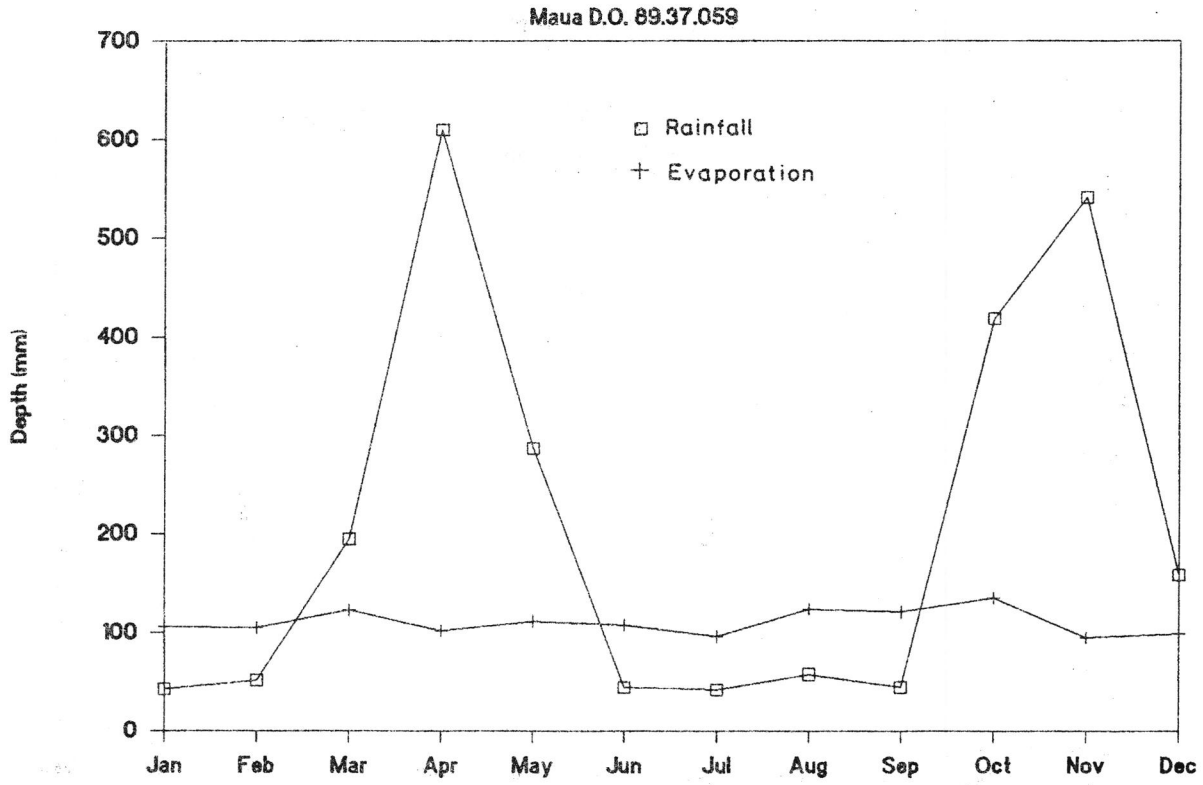

Mean Monthly Pan Evaporation Pattern
Embori Farm WD.No. 281 (1985-89)
Pan Evaporation (mm)
260.00
240.00
220.00
200.00
180.00
160.00
140.00
120.00
100.00
80.00
60.00
40.00
20.00
0.00
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Months

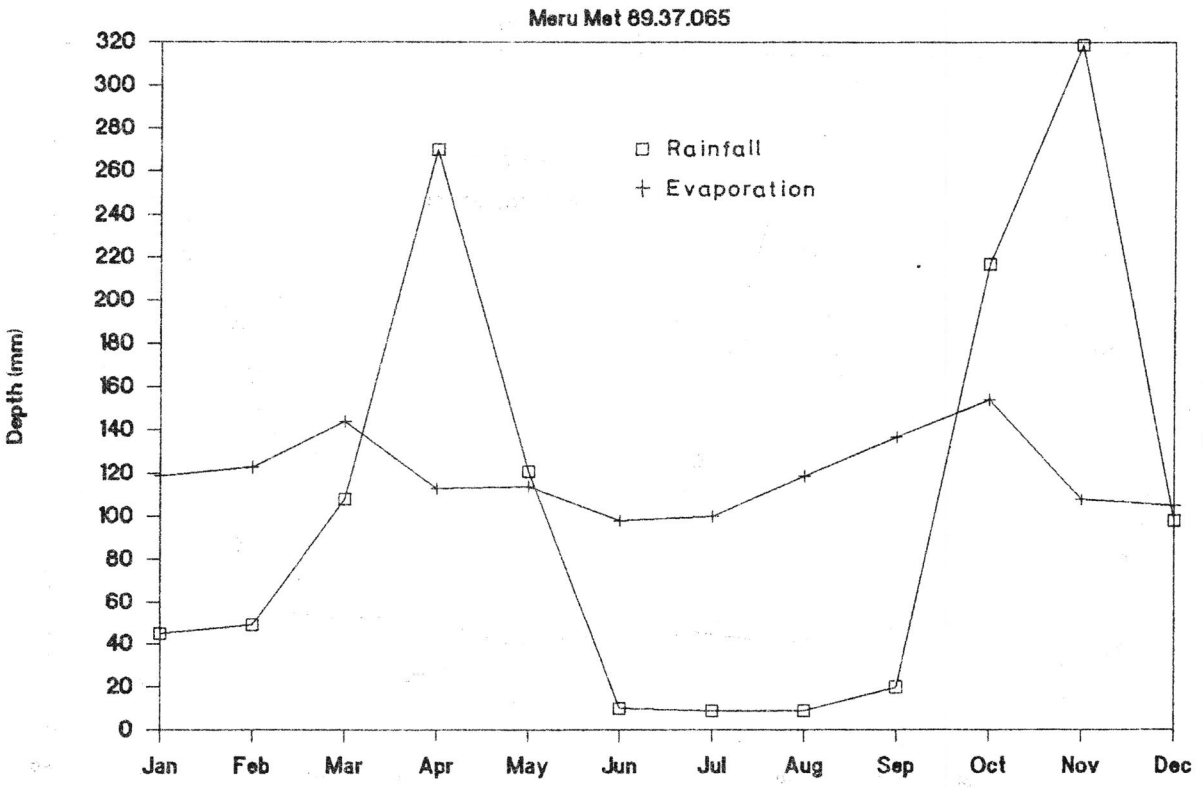

Mean Monthly Pan Evaporation Pattern
Marimanti Met Station 90.37.160(1965-89
Pan Evaporation (mm)
260.00
240.00
220.00
200.00
180.00
160.00
140.00
120.00
100.00
80.00
60.00
40.00
20.00
0.00
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Months

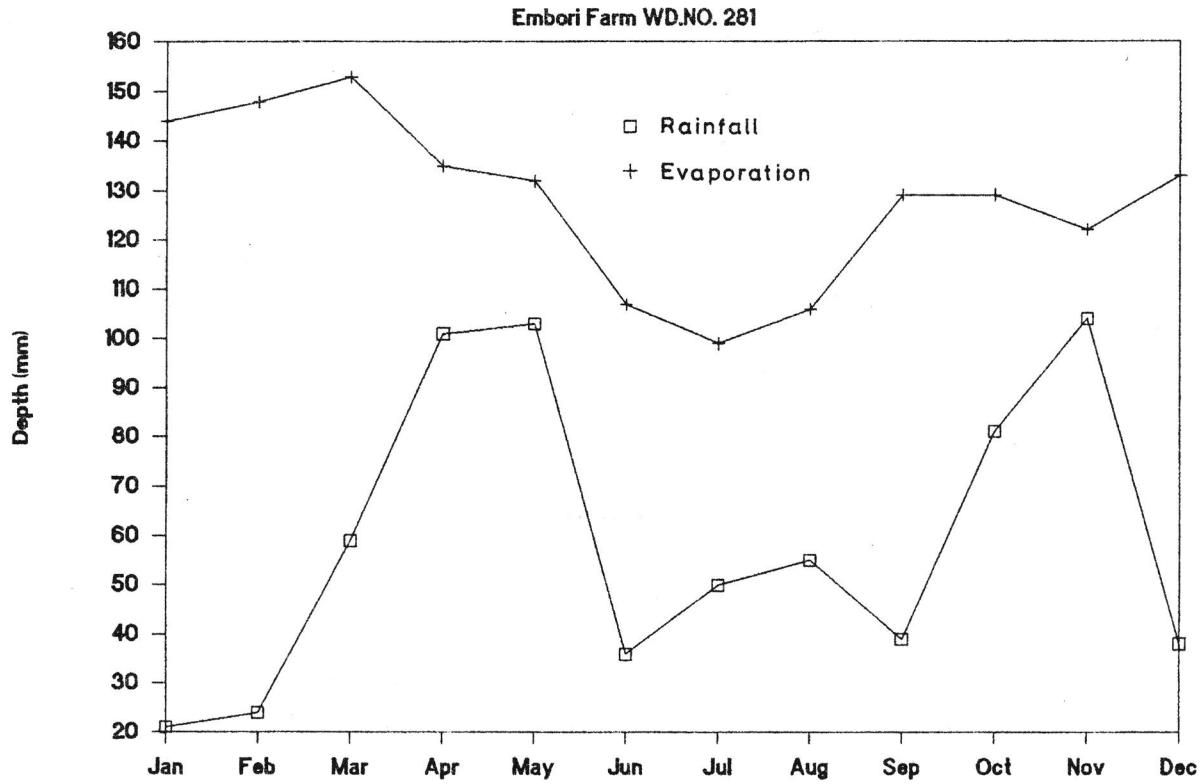

Mean Monthly Pan Evaporation Pattern
Maua Police 89.37.059 (1988-89)
Pan Evaporation (mm)
260.00
240.00
220.00
200.00
180.00
160.00
140.00
120.00
100.00
80.00
60.00
40.00
20.00
0.00
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Months

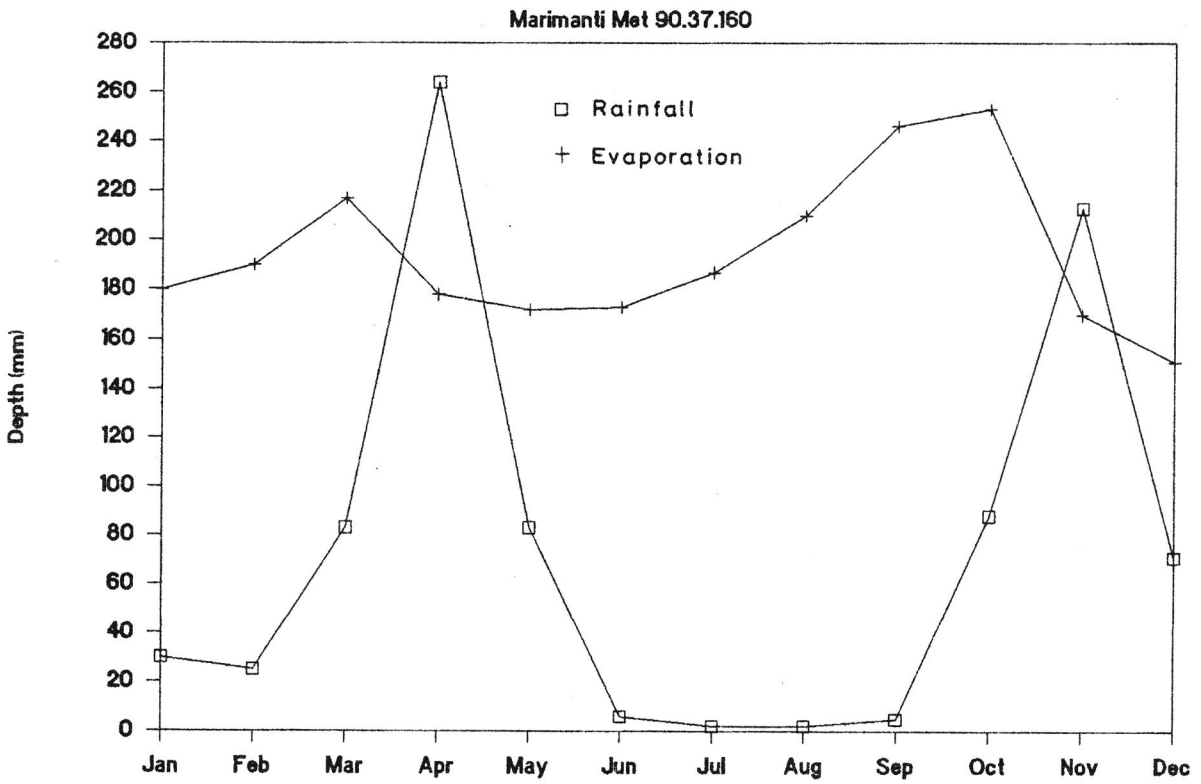

Marimanti Met 90.37.160
Depth (mm)
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
Rainfall
Evaporation
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec

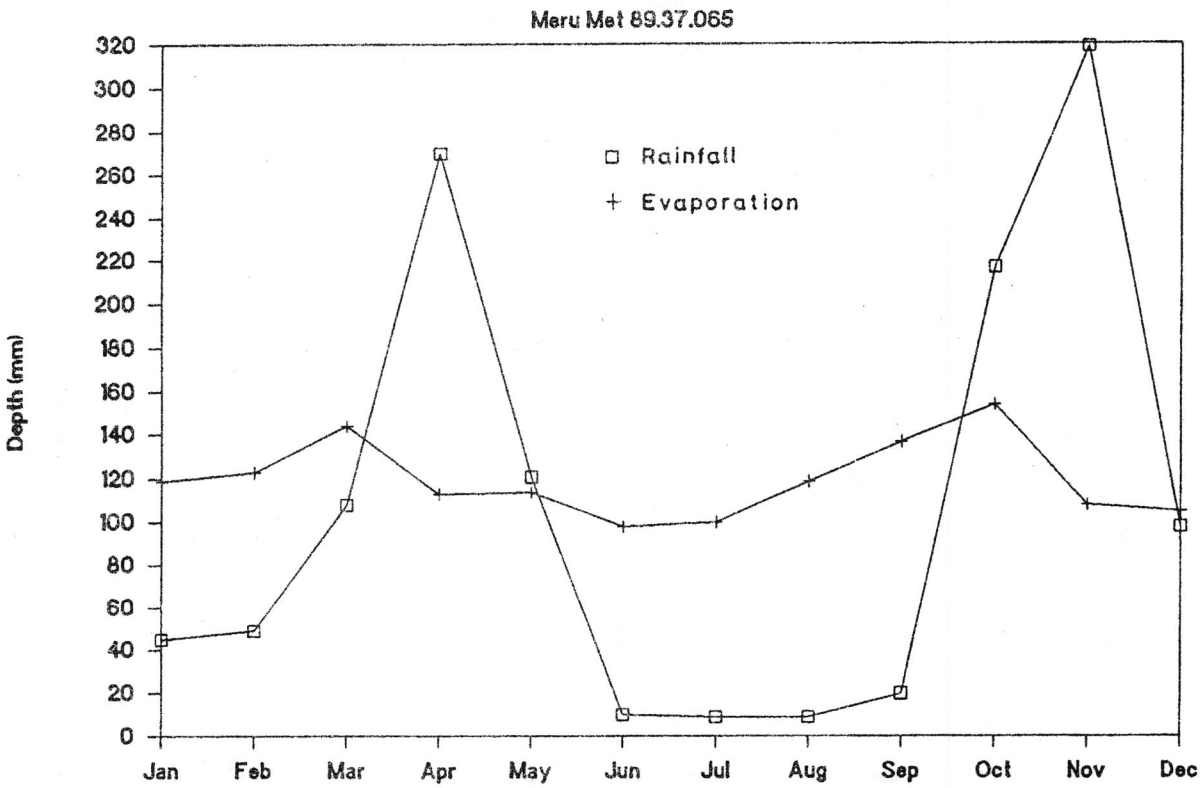

Maua D.O. 89.37.059
Depth (mm)
700
600
500
400
300
200
100
0
Rainfall
Evaporation
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec


Maua D.O. 89.37.059
Depth (mm)
700
600
500
400
300
200
100
0
Rainfall
Evaporation
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec


Meru Met 89.37.065
Depth (mm)
320
300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
Rainfall
Evaporation
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec


Embori Farm WD.NO. 281
Depth (mm)
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
Rainfall
Evaporation
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec


Marimanti Met 90.37.160
Depth (mm)
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
Rainfall
Evaporation
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec


Meru Met 89.37.065
Depth (mm)
320
300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
Rainfall
Evaporation
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec

# Appendix 4.6

# Streamflow Data Summaries and Figures

## Appendix 4.6

### Streamflow Data Summaries and Figures

- Monthly and Annual Discharge Data
- Peak Flow Measurements by WRAP
- Frequency Distributions of Annual Peak Flows
- Frequency Distributions of Daily Flows
- Discharge Analysis of Tana River Tributaries

MINISTRY OF WATER DEVELOPMENT

Water Resources Assessment Project  Documentation Section

MONTHLY AND ANNUAL DISCHARGE DATA

River: MUTONGA RIVER
R.G.S: 4EA1
Area : 124 sq km

The flows are in: CUMEC

| Year | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Year | Daily max | Daily min | Days without readings |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1952 | | | | | | | | | | 2.71 | 4.03 | 2.98 | | | | 264 |
| 1953 | | 1.77 | 1.75 | 4.05 | 7.28 | 3.16 | | | 6.87 | 4.74 | 29.08 | 6.97 | | | | 116 |
| 1954 | 2.45 | 1.82 | 1.55 | 3.87 | 8.72 | 3.88 | 2.63 | | | 2.17 | 4.59 | 6.01 | | | | 96 |
| 1955 | 2.92 | 2.31 | 1.94 | 3.17 | 3.74 | 2.78 | 2.06 | 1.80 | 1.56 | 5.61 | 5.20 | 3.68 | 3.07 | 47.27 | 1.45 | 61 |
| 1956 | 3.93 | 2.99 | 2.27 | 7.81 | 9.50 | 4.10 | 2.93 | 2.37 | | | 5.78 | 3.88 | | | | 87 |
| 1957 | 2.93 | 2.57 | 2.08 | 4.05 | 6.96 | 3.90 | 2.59 | 2.14 | 1.64 | 3.58 | 6.33 | 11.34 | 4.19 | 32.48 | 1.42 | 89 |
| 1958 | 6.42 | 5.62 | 4.72 | 5.71 | 12.53 | 4.92 | 3.93 | 3.37 | 2.87 | 3.18 | 6.78 | 5.89 | 5.50 | 39.48 | 2.73 | 79 |
| 1959 | 3.96 | 3.18 | 3.10 | 4.67 | 5.86 | 3.79 | 3.13 | 2.87 | 2.68 | 2.51 | 6.56 | 4.92 | 3.94 | 22.54 | 2.39 | 78 |
| 1960 | 3.29 | 2.83 | 3.18 | 5.46 | 5.02 | 3.44 | 3.00 | 2.72 | 2.49 | 3.59 | 8.96 | 5.62 | 4.13 | 30.32 | 2.28 | 67 |
| 1961 | 4.42 | 3.93 | 4.14 | 5.30 | 9.63 | 4.83 | 4.24 | 4.16 | 4.40 | 26.27 | 46.99 | 9.98 | 10.69 | 116.60 | 3.62 | 62 |
| 1962 | 5.79 | 3.91 | 3.41 | 4.54 | 9.40 | 4.01 | 3.26 | 2.76 | 2.53 | 3.43 | 3.30 | 3.32 | 4.15 | 17.55 | 2.28 | 61 |
| 1963 | 2.81 | 2.57 | 2.77 | 11.20 | 10.43 | 4.91 | 3.54 | 2.98 | 2.54 | 2.77 | 4.77 | 7.53 | 4.91 | 37.06 | 2.24 | 83 |
| 1964 | 5.51 | 3.59 | 3.88 | 10.66 | 6.55 | 3.42 | 2.61 | 2.39 | 1.86 | 3.74 | 5.33 | 13.45 | 5.26 | 44.58 | 1.42 | 66 |
| 1965 | 4.04 | 2.82 | 2.42 | 3.53 | 4.75 | 2.77 | 2.26 | 2.03 | 1.60 | 1.90 | 4.64 | 2.67 | 2.95 | 8.62 | 1.35 | 69 |
| 1966 | 2.08 | 2.10 | 2.83 | 7.65 | 6.02 | 3.08 | 2.32 | 1.86 | 1.70 | 5.75 | 15.41 | 3.46 | 4.51 | 75.68 | 1.26 | 66 |
| 1967 | 2.39 | 1.94 | 1.71 | 3.99 | 11.46 | 3.97 | | | | 8.39 | 17.05 | 7.33 | | | | 112 |
| 1968 | 3.69 | 3.20 | 6.42 | 12.40 | 9.93 | 4.87 | 3.74 | 2.98 | 2.39 | 3.03 | 12.16 | 9.74 | 6.21 | 30.32 | 2.13 | 70 |
| 1969 | 4.06 | 4.46 | 4.23 | 3.63 | 5.41 | 3.36 | 2.77 | 2.43 | 2.08 | 2.53 | 7.39 | 6.73 | 4.09 | 22.36 | 1.82 | 67 |
| 1970 | 3.05 | 2.47 | | 7.89 | 6.71 | 3.59 | 2.65 | 2.31 | 1.90 | | | 2.37 | | | | 89 |
| 1971 | 1.91 | 1.66 | 1.56 | 3.31 | 4.91 | 3.00 | 2.27 | | | 1.97 | 3.74 | 3.00 | | | | 42 |
| 1972 | 2.27 | 1.96 | 1.73 | 2.45 | 4.21 | 3.29 | 2.35 | 1.96 | 2.01 | 5.81 | 12.27 | 4.48 | 3.73 | 25.63 | 1.40 | 23 |
| 1973 | 3.19 | 2.34 | 1.91 | 3.07 | 3.35 | 2.75 | 2.15 | 1.99 | 1.73 | 2.36 | 4.46 | 2.99 | 2.69 | 16.41 | 1.45 | 39 |
| 1974 | 2.41 | 1.90 | 2.40 | 6.54 | 4.61 | 2.85 | 2.95 | 2.42 | 2.24 | 3.25 | 8.78 | 4.09 | 3.70 | 31.40 | 1.40 | 14 |
| 1975 | 2.82 | 2.29 | 2.20 | 5.78 | 4.82 | 3.36 | 2.87 | 2.55 | 2.41 | 5.52 | | 4.83 | | | | 59 |
| 1976 | 3.48 | 3.63 | 3.03 | 6.47 | 9.60 | 6.34 | 4.72 | 3.98 | 3.51 | 5.21 | 7.81 | | | | | 62 |
| 1977 | | 4.70 | 4.86 | 12.72 | 15.06 | 6.30 | 4.61 | 3.94 | 3.46 | 3.73 | 12.62 | 7.92 | | | | 21 |
| 1978 | 6.54 | | 17.37 | 27.52 | 25.55 | 11.99 | 8.65 | 7.59 | 8.59 | 14.55 | 15.53 | 12.47 | | | | 34 |
| 1979 | 15.24 | 13.29 | | 14.24 | 22.59 | 17.36 | 9.74 | 6.90 | 6.40 | 11.09 | 15.68 | 8.68 | | | | 38 |
| 1980 | 6.67 | 6.10 | 5.65 | 8.72 | 13.89 | 7.96 | 5.91 | 5.88 | 5.24 | 7.49 | | | | | | 70 |
| 1981 | 7.03 | 6.26 | 10.26 | 15.93 | 16.77 | 8.00 | 5.42 | 5.20 | 5.07 | 7.65 | 12.36 | 8.35 | 9.03 | 28.73 | 4.53 | 16 |
| 1982 | 7.18 | 5.48 | | 9.38 | 16.84 | 16.20 | 9.35 | 7.71 | 7.08 | 13.14 | 15.67 | 14.25 | | | | 46 |
| 1983 | 8.37 | 7.27 | 6.36 | 9.08 | 15.55 | 6.84 | 5.47 | 5.03 | 4.79 | 6.00 | 11.14 | 10.39 | 8.03 | 31.40 | 4.60 | 10 |
| 1984 | 7.40 | 5.06 | 4.82 | 5.52 | 4.97 | 4.44 | 4.28 | 4.08 | 4.06 | 10.18 | 16.55 | 10.96 | 6.86 | 31.40 | 3.88 | 38 |
| 1985 | 6.32 | 6.09 | 7.45 | 13.61 | 16.74 | 10.10 | 7.36 | 6.47 | 5.86 | 7.00 | 8.79 | | | | | 73 |
| 1986 | 6.29 | 5.66 | 5.71 | 10.12 | 13.04 | 7.95 | 6.19 | 5.41 | 5.24 | 5.95 | 9.87 | 10.26 | 7.65 | 28.32 | 4.77 | 29 |
| 1987 | 6.49 | 5.53 | 5.25 | 7.11 | 7.19 | 7.72 | 5.77 | 5.74 | 5.19 | 5.17 | 8.59 | 6.23 | 6.33 | 17.41 | 4.90 | 30 |
| 1988 | 2.50 | 1.99 | 2.08 | 6.07 | 5.94 | 2.64 | 2.02 | 1.81 | 1.79 | 2.40 | 4.68 | 3.90 | 3.15 | 10.42 | 1.60 | 51 |
| Max | 15.2 | 13.3 | 17.4 | 27.5 | 25.6 | 17.4 | 9.7 | 7.7 | 8.6 | 26.3 | 47.0 | 14.2 | 10.7 | 116.6 | 4.90 | |
| Min | 1.91 | 1.66 | 1.55 | 2.45 | 3.35 | 2.64 | 2.02 | 1.80 | 1.56 | 1.90 | 3.30 | 2.37 | 2.69 | 8.62 | 1.26 | |
| Mean | 4.70 | 3.87 | 4.09 | 7.70 | 9.60 | 5.50 | 4.11 | 3.68 | 3.55 | 5.84 | 10.67 | 6.78 | 5.22 | 33.91 | 2.50 | |
| Runoff(mm) | 101.6 | 83.5 | 88.4 | 166.3 | 207.3 | 118.7 | 88.8 | 79.5 | 76.8 | 126.1 | 230.5 | 146.5 | 112.7 | 732.4 | 53.9 | |

26-Jan-90

MINISTRY OF WATER DEVELOPMENT

Water Resources Assessment Project Documentation Section

MONTHLY AND ANNUAL DISCHARGE DATA

River: KITHENU RIVER
R.G.S: 4EA3
Area : 44 sq km

The flows are in: CUMEC

| Year | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Year | Daily max | Daily min | Days without readings |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1952 | | | | | | | | | | 0.82 | 2.04 | 3.04 | | | | 261 |
| 1953 | 1.05 | 0.76 | 0.80 | 1.03 | 2.49 | | 1.40 | 1.17 | 0.88 | 1.03 | 3.05 | 3.17 | | | | 17 |
| 1954 | 2.19 | 1.70 | 1.34 | 1.99 | 3.40 | 2.78 | 1.98 | 1.54 | 1.18 | 1.30 | 2.12 | 3.86 | 2.12 | 6.45 | 0.919 | 6 |
| 1955 | 2.66 | 2.12 | 1.75 | 1.51 | 2.02 | 1.69 | 1.46 | 1.21 | 0.90 | 1.03 | 1.69 | 3.40 | 1.79 | 3.92 | 0.698 | 1 |
| 1956 | 3.19 | 2.92 | 2.08 | 3.77 | 5.38 | 2.94 | 2.08 | 1.63 | 1.15 | 0.97 | 2.76 | 3.01 | 2.66 | 9.30 | 0.739 | 3 |
| 1957 | 2.14 | 1.65 | 1.44 | 1.79 | 4.00 | 2.84 | 1.94 | 1.47 | | 1.00 | 2.04 | 4.23 | | | | 30 |
| 1958 | 2.61 | 1.90 | 1.54 | 1.79 | 4.26 | 3.28 | 2.23 | 1.57 | 0.98 | 0.77 | 1.60 | 3.05 | 2.13 | 5.51 | 0.553 | 0 |
| 1959 | 2.23 | 1.65 | 1.24 | 1.00 | 1.62 | | 1.22 | 0.87 | 0.65 | 0.53 | 1.19 | 2.08 | | | | 33 |
| 1960 | 1.83 | 1.41 | 1.35 | 2.87 | 2.82 | 1.76 | 1.31 | 0.88 | 0.58 | 1.06 | 2.31 | 2.29 | 1.70 | 6.22 | 0.404 | 7 |
| 1961 | 1.74 | 1.20 | 0.98 | 2.16 | 4.54 | 2.06 | 1.37 | 0.88 | 0.61 | 3.30 | 9.49 | 5.39 | 2.81 | 9.64 | 0.404 | 0 |
| 1962 | 2.50 | 1.61 | 1.16 | 1.48 | 3.76 | 1.63 | 0.93 | 0.58 | 0.41 | 0.48 | 0.49 | 0.71 | 1.31 | 8.01 | 0.331 | 1 |
| 1963 | 0.67 | 0.46 | 0.41 | 2.70 | 3.29 | 2.64 | 1.77 | 1.31 | 1.05 | 0.96 | 2.72 | 5.33 | 1.95 | 9.62 | 0.309 | 3 |
| 1964 | 3.57 | 1.98 | 1.53 | | | | 1.89 | 1.35 | 1.06 | 1.12 | 1.40 | 4.93 | | | | 64 |
| 1965 | 3.18 | 1.98 | 1.47 | 1.51 | 1.66 | 1.43 | 1.20 | 1.11 | 0.87 | 0.96 | 1.79 | 1.74 | 1.57 | 4.05 | 0.549 | 2 |
| 1966 | 1.26 | 0.95 | 1.10 | 2.90 | 3.65 | 2.29 | 1.55 | 1.17 | 0.97 | 1.36 | 3.36 | 1.63 | 1.85 | 5.88 | 0.706 | 0 |
| 1967 | 1.20 | 0.95 | 0.88 | 1.45 | 5.24 | 2.57 | 1.73 | 1.31 | 1.05 | 1.73 | 5.82 | 4.50 | 2.38 | 9.99 | 0.753 | 0 |
| 1968 | 2.35 | 1.98 | 3.95 | 4.98 | 5.07 | 3.13 | 2.12 | 1.57 | 1.14 | 1.25 | 4.59 | 6.12 | 3.19 | 11.41 | 0.868 | 0 |
| 1969 | 3.10 | 2.35 | 2.53 | 2.57 | 3.19 | 2.57 | 1.82 | 1.36 | 1.09 | 1.04 | | | | | | 61 |
| 1970 | | | | | | | | | | | | | | | | 365 |
| 1971 | | | | | | | | | | | | | | | | 365 |
| 1972 | | | | | | | | | | | | | | | | 360 |
| 1973 | | | | | | | | | | | | | | | | 365 |
| 1974 | | | | | | | | | | | | | | | | 365 |
| 1975 | | | | | | | | 0.83 | 0.74 | 0.77 | 1.23 | 1.26 | | | | 239 |
| 1976 | 1.03 | 0.86 | 0.69 | 1.06 | 1.31 | 1.40 | 1.11 | 0.85 | 1.14 | 2.71 | 1.94 | 2.26 | 1.36 | 5.12 | 0.601 | 68 |
| 1977 | 2.40 | 1.46 | 1.17 | 2.91 | 7.06 | 2.51 | 1.54 | 2.27 | 1.61 | 1.16 | | | | | | 98 |
| 1978 | | | | | | | | | 0.73 | 0.98 | 1.29 | 1.73 | | | | 232 |
| 1979 | 1.66 | | | 3.01 | 5.67 | 2.75 | 1.64 | 1.15 | 1.40 | 1.88 | 3.40 | 2.00 | | | | 74 |
| 1980 | 1.34 | 1.18 | 1.75 | 6.98 | 9.14 | 3.04 | 1.54 | 1.19 | 1.06 | 1.04 | 3.75 | 2.71 | 2.89 | 10.87 | 0.895 | 64 |
| 1981 | 1.84 | 1.47 | 1.64 | 3.16 | 3.62 | 2.00 | 1.38 | 1.03 | 0.82 | 1.30 | 1.84 | 1.55 | 1.80 | 4.64 | 0.711 | 62 |
| 1982 | 1.31 | 0.91 | 0.65 | 1.63 | 2.22 | 2.29 | 0.98 | 0.65 | 1.31 | 1.86 | 2.76 | 2.20 | 1.56 | 5.81 | 0.522 | 58 |
| 1983 | 1.44 | 1.64 | 1.02 | 0.78 | 1.89 | 1.34 | 0.74 | 0.51 | 0.43 | 0.44 | 1.75 | 2.31 | 1.19 | 4.06 | 0.257 | 98 |
| 1984 | 2.05 | 1.10 | 0.62 | 0.55 | 0.68 | 0.84 | 0.65 | 0.50 | 0.42 | 1.71 | 4.20 | 3.23 | 1.38 | 8.62 | 0.372 | 113 |
| 1985 | 1.95 | 1.58 | 1.24 | 3.54 | | 2.90 | 1.93 | 1.43 | 1.14 | 1.36 | | | | | | 142 |
| 1986 | | 1.09 | 0.95 | | 4.24 | 2.34 | 1.73 | 1.27 | 0.88 | 1.09 | 2.16 | 3.49 | | | | 137 |
| 1987 | 2.13 | 1.48 | 0.95 | 1.33 | 1.10 | 1.42 | 1.14 | 0.98 | 0.63 | 0.52 | 1.24 | 1.12 | 1.17 | 3.22 | 0.419 | 112 |
| 1988 | 1.03 | 0.68 | 0.55 | 4.54 | 6.74 | 2.61 | 1.81 | 1.21 | 0.92 | 0.90 | 2.62 | 2.63 | 2.19 | 10.05 | 0.410 | 119 |
| 1989 | 2.88 | 2.21 | 1.68 | 2.98 | 4.84 | 2.64 | 1.85 | 1.22 | 0.93 | 1.47 | 4.33 | | | | | 136 |
| Max | 3.6 | 2.9 | 3.9 | 7.0 | 9.1 | 3.3 | 2.2 | 2.3 | 1.6 | 3.3 | 9.5 | 6.1 | 3.2 | 11.4 | 0.919 | |
| Min | 0.67 | 0.46 | 0.41 | 0.55 | 0.68 | 0.84 | 0.65 | 0.50 | 0.41 | 0.44 | 0.49 | 0.71 | 1.17 | 3.22 | 0.257 | |
| Mean | 2.02 | 1.49 | 1.33 | 2.43 | 3.75 | 2.28 | 1.53 | 1.16 | 0.93 | 1.21 | 2.70 | 2.93 | 1.95 | 7.12 | 0.571 | |
| Runoff(mm) | 122.9 | 90.7 | 80.7 | 147.8 | 228.1 | 139.0 | 93.4 | 70.8 | 56.4 | 73.6 | 164.3 | 178.4 | 118.8 | 433.4 | 34.8 | |

30-Mar-90

MINISTRY OF WATER DEVELOPMENT
Water Resources Assessment Project Documentation Section

MONTHLY AND ANNUAL DISCHARGE DATA

River: MUTONGA RIVER
R.G.S: 4EA6
Area : 613 sq km

The flows are in: CUMEC

| Year | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Year | Daily max | Daily min | Days without readings |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1964 | | 11.54 | 10.83 | 56.23 | | | | | | | | | | | | 254 |
| 1965 | 16.80 | 9.27 | 6.77 | 10.68 | 12.57 | 6.72 | 5.31 | 4.38 | 3.59 | 4.80 | 10.41 | 7.32 | 8.21 | 29.33 | 3.16 | 82 |
| 1966 | 5.02 | 4.29 | 7.05 | 23.06 | 16.95 | 8.12 | 5.70 | 4.43 | 3.83 | 4.80 | 33.63 | 10.21 | 10.57 | 89.72 | 3.16 | 70 |
| 1967 | 6.48 | 4.83 | 4.16 | 13.97 | 57.28 | 13.49 | 8.10 | 5.50 | 4.42 | 14.62 | 44.20 | 29.53 | 17.30 | 180.00 | 3.50 | 70 |
| 1968 | 12.10 | 12.66 | 23.77 | 47.55 | 35.84 | 15.54 | 9.35 | 6.74 | 5.04 | 6.37 | 57.52 | 62.60 | 24.58 | 239.50 | 4.16 | 72 |
| 1969 | 15.14 | 12.30 | 18.42 | 12.29 | 21.49 | 10.38 | 6.85 | 5.55 | 4.37 | 4.93 | 14.83 | 10.59 | 11.43 | 88.84 | 3.81 | 62 |
| 1970 | 7.11 | 5.34 | 6.24 | 32.94 | 17.54 | 8.63 | 5.86 | 4.61 | 3.87 | 4.08 | 7.79 | 5.33 | 9.10 | 100.50 | 3.36 | 76 |
| 1971 | 3.92 | 3.15 | 2.84 | 13.18 | 15.63 | 6.67 | 4.73 | | 3.35 | 4.38 | 6.83 | 6.56 | | | | 83 |
| 1972 | 5.03 | 4.36 | 3.38 | 3.67 | 9.57 | 6.47 | 4.26 | 3.47 | 3.55 | 9.84 | 39.32 | 15.11 | 8.98 | 68.65 | 2.46 | 73 |
| 1973 | 8.77 | 6.27 | 4.58 | 5.28 | 5.89 | 5.56 | 4.55 | 3.55 | 3.41 | 3.57 | 8.85 | 6.37 | 5.55 | 25.30 | 2.91 | 76 |
| 1974 | 4.21 | 3.38 | 4.64 | 24.79 | 14.31 | 6.97 | 6.40 | 4.82 | 4.07 | 3.87 | 15.37 | 8.60 | 8.45 | 71.10 | 2.91 | 78 |
| 1975 | 5.87 | 4.48 | 3.91 | 10.16 | 7.50 | 5.64 | 4.41 | 3.68 | 3.36 | 8.10 | 10.90 | 6.60 | 6.22 | 84.26 | 2.91 | 88 |
| 1976 | 4.53 | 3.59 | 3.25 | 6.52 | 9.79 | | | 4.14 | 3.73 | 7.49 | 14.29 | 12.49 | | | | 86 |
| 1977 | 9.30 | 6.40 | 6.35 | 21.15 | 28.34 | 9.76 | 6.69 | 5.11 | 4.35 | 4.30 | 36.55 | 27.17 | 13.81 | 70.28 | 2.58 | 75 |
| 1978 | 10.66 | 7.09 | 22.55 | 60.38 | 29.72 | 11.22 | 7.22 | 5.79 | 4.57 | 9.08 | 22.24 | 23.29 | 17.83 | 82.41 | 4.06 | 75 |
| 1979 | 16.55 | 23.19 | 12.08 | 28.91 | 40.55 | 16.24 | 8.18 | 6.23 | 5.05 | 4.94 | 26.46 | 10.97 | 16.53 | 100.10 | 4.17 | 85 |
| 1980 | 7.17 | 5.78 | 4.72 | 7.55 | 21.05 | 8.72 | 6.17 | 4.97 | 4.42 | 4.23 | 28.40 | 11.43 | 9.54 | 50.55 | 2.99 | 82 |
| 1981 | 7.23 | 5.36 | 17.63 | 35.31 | 33.92 | 13.60 | 7.68 | 5.70 | 4.80 | 5.28 | 15.52 | | | | | 95 |
| 1982 | | 5.06 | 4.85 | 19.27 | 32.06 | 15.28 | 7.28 | 5.57 | | 21.31 | 40.73 | 32.93 | | | | 120 |
| 1983 | 9.97 | 5.74 | 3.75 | 6.97 | 16.03 | 6.14 | 3.63 | 2.94 | 2.49 | 4.32 | 19.05 | 13.06 | 7.85 | 100.10 | 2.22 | 106 |
| 1984 | 8.51 | 4.24 | 5.00 | 7.01 | 3.62 | 3.40 | 3.71 | | | 11.75 | 18.48 | 11.41 | | | | 152 |
| 1985 | 5.37 | 3.95 | 5.30 | | | 8.67 | | | | 4.25 | 3.67 | 8.90 | | | | 171 |
| 1986 | 5.00 | 3.85 | | 20.87 | 24.47 | 8.85 | | | | | | | | | | 216 |
| 1987 | 16.31 | 5.20 | | | 7.98 | 7.28 | | | | | | 6.66 | | | | 192 |
| 1988 | 5.38 | 3.86 | 5.47 | | | 8.82 | 4.98 | 4.25 | | | 27.78 | | | | | 174 |
| 1989 | | 8.51 | 5.24 | 16.79 | 25.75 | | | | | | | | | | | 280 |
| Max | 16.8 | 23.2 | 23.8 | 60.4 | 57.3 | 16.2 | 9.4 | 6.7 | 5.1 | 21.3 | 57.5 | 62.6 | 24.6 | 239.5 | 4.17 | |
| Min | 3.92 | 3.15 | 2.84 | 3.67 | 3.62 | 3.40 | 3.63 | 2.94 | 2.49 | 3.57 | 3.67 | 5.33 | 5.55 | 25.30 | 2.22 | |
| Mean | 8.54 | 6.68 | 8.03 | 21.07 | 21.21 | 9.22 | 6.05 | 4.81 | 4.01 | 6.97 | 22.86 | 15.58 | 11.73 | 92.04 | 3.22 | |
| Runoff(mm) | 37.3 | 29.2 | 35.1 | 92.0 | 92.7 | 40.3 | 26.4 | 21.0 | 17.5 | 30.4 | 99.9 | 68.1 | 51.2 | 402.2 | 14.1 | |

14-Aug-89

MINISTRY OF WATER DEVELOPMENT

Water Resources Assessment Project Documentation Section

MONTHLY AND ANNUAL DISCHARGE DATA

River: NITHI RIVER
R.G.S: 4EB1
Area : 120 sq km

The flows are in: CUMEC

| Year | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Year | Daily max | Daily min | Days without readings |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1953 | | 0.96 | 1.01 | 2.97 | 11.64 | 2.52 | | | 1.26 | 3.28 | 40.97 | 8.80 | | | | 113 |
| 1954 | 1.60 | 1.12 | 0.96 | 3.50 | 36.50 | 12.64 | 1.97 | | | 2.43 | 4.26 | 7.86 | | | | 96 |
| 1955 | 1.74 | 1.42 | 1.13 | 4.51 | 3.58 | 2.30 | 1.73 | 1.35 | 1.24 | 8.48 | 5.94 | 3.14 | 3.06 | 55.71 | 0.93 | 61 |
| 1956 | 2.85 | 1.72 | 1.28 | 13.37 | 11.54 | 3.25 | 1.86 | 1.59 | | | | | | | | 94 |
| 1957 | 1.97 | 1.49 | 1.23 | 3.92 | 8.76 | 3.43 | 1.75 | 1.40 | 1.31 | 2.90 | 8.57 | | | | | 97 |
| 1958 | | | | 7.02 | 22.93 | 4.03 | 2.50 | 1.94 | 1.42 | 2.19 | 7.23 | 4.02 | | | | 151 |
| 1959 | | 1.37 | 1.31 | 4.45 | 5.15 | 2.20 | 1.60 | 1.45 | 1.38 | 1.47 | 3.28 | 2.91 | | | | 50 |
| 1960 | 1.50 | 1.18 | 2.19 | 4.41 | 4.78 | 2.21 | 1.64 | 1.26 | 1.10 | 4.15 | 9.17 | 3.05 | 3.05 | 31.57 | 0.93 | 0 |
| 1961 | 1.65 | 1.36 | 1.44 | 6.51 | 8.42 | 2.37 | 2.24 | 2.69 | | | | 9.86 | | | | 71 |
| 1962 | 3.80 | 2.26 | | | | | | | | | | | | | | 306 |
| 1963 | | | | | | | | | | | | | | | | 365 |
| 1964 | | | | | | | | | | | | | | | | 366 |
| 1965 | | | | | | 1.59 | 1.23 | 1.14 | 0.94 | 1.31 | 3.89 | 1.89 | | | | 170 |
| 1966 | 1.24 | 1.08 | 1.87 | 7.83 | 3.67 | 2.11 | 1.55 | 1.19 | 1.43 | 3.04 | 13.13 | 2.18 | 3.35 | 48.52 | 0.89 | 60 |
| 1967 | 1.36 | 1.05 | 1.05 | 2.81 | 16.87 | 3.48 | 2.12 | 1.82 | 2.00 | 9.52 | 12.96 | 6.66 | 5.17 | 97.94 | 0.85 | 74 |
| 1968 | 2.10 | 2.69 | 6.53 | 11.31 | 8.63 | 4.01 | 2.61 | 2.03 | 1.51 | 2.54 | 20.82 | 10.39 | 6.25 | 67.99 | 1.26 | 70 |
| 1969 | 2.41 | 2.03 | 2.57 | 1.63 | | 1.86 | 1.44 | 1.31 | 1.14 | | 3.44 | 2.14 | | | | 100 |
| 1970 | 1.43 | 1.26 | 1.62 | | 5.85 | 2.21 | 1.54 | 1.35 | 1.13 | 1.95 | 2.70 | 1.61 | | | | 82 |
| 1971 | 1.07 | 0.89 | 0.84 | 2.71 | 5.83 | 2.40 | 1.62 | 1.31 | 1.16 | 1.49 | 2.86 | 2.35 | 2.05 | 11.90 | 0.78 | 86 |
| 1972 | 1.57 | 1.26 | 0.87 | 1.69 | 3.29 | 2.65 | 1.71 | 1.25 | 1.56 | 9.60 | 18.31 | 3.07 | 3.89 | 64.61 | 0.52 | 72 |
| 1973 | 1.99 | 1.56 | 1.33 | 3.39 | 3.93 | 2.54 | 1.73 | 1.73 | 1.58 | 3.17 | 5.77 | 2.59 | 2.61 | 21.12 | 0.99 | 75 |
| 1974 | 1.50 | 1.21 | 1.25 | 4.14 | 2.27 | 1.47 | 2.78 | 1.86 | 1.63 | 2.91 | 11.63 | 2.64 | 2.94 | 31.49 | 1.07 | 84 |
| 1975 | 1.63 | 1.21 | 1.25 | 3.56 | 3.98 | 2.30 | 1.73 | 1.57 | 1.31 | 3.33 | 5.09 | 1.97 | 2.41 | 14.84 | 1.11 | 76 |
| 1976 | 1.17 | 0.97 | 0.83 | 2.17 | 3.84 | 2.42 | 1.59 | 1.17 | 1.13 | 1.54 | 4.14 | 3.28 | 2.02 | 14.84 | 0.78 | 83 |
| 1977 | 1.61 | 1.15 | 1.25 | 5.53 | 7.40 | 2.51 | 1.59 | 1.20 | 1.04 | 1.32 | 6.46 | 3.03 | 2.84 | 17.51 | 0.92 | 78 |
| 1978 | 1.76 | 1.45 | 4.52 | 8.74 | 7.59 | 2.39 | 1.63 | 1.30 | 1.16 | 2.58 | 6.13 | 5.76 | 3.76 | 15.35 | 1.07 | 82 |
| 1979 | 2.38 | 3.37 | 1.70 | 3.08 | 7.01 | 4.82 | 2.10 | 1.49 | 1.17 | 2.72 | 7.83 | 2.71 | 3.36 | 14.35 | 1.11 | 70 |
| 1980 | 1.28 | 0.99 | 0.90 | 1.63 | 6.08 | 1.92 | 1.58 | 1.36 | 1.09 | 1.42 | 7.75 | 2.65 | 2.39 | 26.70 | 0.78 | 66 |
| 1981 | 1.41 | 1.22 | 3.19 | 11.00 | 6.28 | 2.41 | 1.56 | 1.28 | 1.22 | 1.97 | | | | | | 86 |
| 1982 | 1.32 | 0.99 | 1.00 | 3.20 | 7.74 | | | 1.42 | 1.20 | 3.63 | 5.39 | 4.06 | | | | 98 |
| 1983 | 1.88 | 1.34 | 1.04 | 2.73 | 5.69 | | | 1.22 | 1.16 | 2.03 | 4.19 | 3.52 | | | | 137 |
| 1984 | | 1.21 | 1.06 | 1.92 | | | | 0.87 | 0.80 | 3.61 | 4.34 | 3.48 | | | | 179 |
| 1985 | 1.57 | 1.39 | 1.80 | 5.30 | | | 1.64 | 1.30 | 1.20 | 2.37 | | | | | | 168 |
| 1986 | | 1.02 | | | 6.98 | 2.89 | 1.66 | 1.27 | 1.23 | 1.37 | 2.94 | 3.24 | | | | 140 |
| 1987 | 1.33 | 1.16 | 1.06 | 1.82 | 1.90 | 2.95 | 1.35 | 1.37 | 1.07 | 1.21 | 2.29 | 1.79 | 1.61 | 8.50 | 0.84 | 122 |
| 1988 | | 1.07 | 1.13 | 8.75 | 6.17 | 2.04 | 1.43 | 1.35 | 1.56 | | | | | | | 161 |
| Max | 3.8 | 3.4 | 6.5 | 13.4 | 36.5 | 12.6 | 2.8 | 2.7 | 2.0 | 9.6 | 41.0 | 10.4 | 6.2 | 97.9 | 1.26 | |
| Min | 1.07 | 0.89 | 0.83 | 1.63 | 1.90 | 1.47 | 1.23 | 0.87 | 0.80 | 1.21 | 2.29 | 1.61 | 1.61 | 8.50 | 0.52 | |
| Mean | 1.75 | 1.39 | 1.64 | 4.85 | 8.08 | 2.96 | 1.78 | 1.45 | 1.27 | 3.09 | 8.27 | 3.95 | 3.17 | 33.93 | 0.93 | |
| Runoff(mm) | 39.0 | 31.0 | 36.6 | 108.3 | 180.3 | 66.1 | 39.7 | 32.3 | 28.4 | 68.9 | 184.5 | 88.2 | 70.8 | 757.4 | 20.7 | |

02-Apr-90

MINISTRY OF WATER DEVELOPMENT

Water Resources Assessment Project Documentation Section

MONTHLY AND ANNUAL DISCHARGE DATA

River: SOUTH MARA RIVER
R.G.S: 4EB2
Area : 83 sq km

The flows are in: CUMEC

| Year | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Year | Daily max | Daily min | Days without readings |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1952 | | | | | | | | | | 0.95 | 1.85 | 1.38 | | | | 264 |
| 1953 | | 0.67 | 0.77 | 1.77 | 5.59 | 1.97 | | | 0.91 | 1.38 | 18.28 | 5.08 | | | | 113 |
| 1954 | 1.70 | 1.05 | 0.81 | 2.91 | 9.94 | 3.74 | 1.88 | | | 1.42 | 2.35 | 4.44 | | | | 108 |
| 1955 | 1.69 | 1.31 | 0.89 | 2.04 | 2.62 | 2.46 | 1.48 | 1.10 | 0.78 | 1.61 | 2.46 | 2.01 | 1.71 | 6.58 | 0.66 | 61 |
| 1956 | 2.26 | 1.64 | 1.27 | 6.92 | 7.41 | 3.20 | 1.84 | 1.34 | | | | | | | | 94 |
| 1957 | 1.64 | 1.80 | 1.36 | 2.63 | 6.67 | 3.33 | 1.86 | 1.36 | 1.13 | 2.04 | 4.75 | 5.77 | 2.87 | 11.80 | 0.97 | 85 |
| 1958 | | | 2.71 | 4.38 | 16.19 | 4.46 | 2.62 | 1.96 | 1.32 | 1.10 | 3.91 | 4.56 | | | | 126 |
| 1959 | 2.54 | 1.55 | 1.32 | 1.99 | 3.37 | 2.49 | 1.62 | 1.18 | 0.99 | 0.69 | 2.13 | 2.64 | 1.88 | 5.86 | 0.57 | 60 |
| 1960 | 1.50 | 0.98 | 1.70 | 4.69 | 4.49 | 2.01 | 1.21 | 0.86 | 0.66 | 2.06 | 6.46 | 3.13 | 2.48 | 24.94 | 0.53 | 0 |
| 1961 | 1.54 | 1.01 | 1.05 | 4.23 | 8.48 | 2.58 | 1.53 | 1.23 | | | | 7.23 | | | | 65 |
| 1962 | 2.62 | 1.44 | | | | | | | | | | | | | | 306 |
| 1963 | | | | | | | | | | | | | | | | 365 |
| 1964 | | | | | 2.59 | | | | | 1.45 | 1.56 | 2.57 | | | | 191 |
| 1965 | | | | | | | | | 0.79 | 0.92 | 1.96 | 1.68 | | | | 208 |
| 1966 | 1.40 | 1.15 | 1.36 | 2.62 | 2.45 | 1.67 | 1.19 | 0.80 | 0.41 | | 2.54 | 1.55 | | | | 75 |
| 1967 | 1.05 | 0.59 | | 1.18 | 2.90 | 1.78 | 1.25 | 0.89 | 0.58 | 1.30 | 2.72 | 2.32 | | | | 91 |
| 1968 | 1.36 | 0.98 | 1.91 | 2.55 | 2.66 | 1.85 | 1.23 | 0.89 | | | 2.68 | 2.63 | | | | 86 |
| 1969 | 1.38 | 0.78 | 0.96 | | | 0.78 | | | | | | | | | | 203 |
| 1970 | 1.71 | 1.12 | 1.20 | | 4.90 | 2.49 | 1.50 | 1.07 | 0.74 | 1.00 | 1.70 | 0.96 | | | | 80 |
| 1971 | 0.82 | 0.68 | 0.47 | 0.97 | 1.18 | 1.03 | 0.89 | 0.72 | 0.54 | | 0.76 | 0.63 | | | | 97 |
| 1972 | | | | | | | | | | | 1.05 | | | | | 287 |
| Max | 2.6 | 1.8 | 2.7 | 6.9 | 16.2 | 4.5 | 2.6 | 2.0 | 1.3 | 2.1 | 18.3 | 7.2 | 2.9 | 24.9 | 0.97 | |
| Min | 0.82 | 0.59 | 0.47 | 0.97 | 1.18 | 0.78 | 0.89 | 0.72 | 0.41 | 0.69 | 0.76 | 0.63 | 1.71 | 5.86 | 0.53 | |
| Mean | 1.66 | 1.12 | 1.27 | 2.99 | 5.43 | 2.39 | 1.55 | 1.12 | 0.81 | 1.33 | 3.57 | 3.04 | 2.23 | 12.30 | 0.68 | |
| Runoff(mm) | 53.4 | 36.1 | 41.0 | 96.5 | 175.2 | 77.1 | 49.9 | 36.0 | 26.0 | 42.8 | 115.3 | 98.0 | 72.0 | 396.8 | 22.0 | |

27-Mar-90

MINISTRY OF WATER DEVELOPMENT
Water Resources Assessment Project Documentation Section

River: NORTH MARA RIVER
R.G.S: 4EB3
Area : 44 sq km

MONTHLY AND ANNUAL DISCHARGE DATA

The flows are in: CUMEC

| Year | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Year | Daily max | Daily min | Days without readings |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1952 | | | | | | | | | | 0.595 | 1.07 | 0.89 | | | | 265 |
| 1953 | | 0.58 | 0.587 | 1.29 | 3.29 | 1.04 | | | 0.670 | 0.878 | 10.92 | 2.97 | | | | 113 |
| 1954 | 1.08 | 0.79 | 0.645 | 1.74 | 8.87 | 2.44 | 1.16 | | | 0.892 | 1.63 | 2.90 | | | | 96 |
| 1955 | 1.28 | 1.03 | 0.782 | 1.77 | 1.64 | 1.35 | 1.02 | 0.80 | 0.678 | 0.840 | 1.26 | 1.41 | 1.15 | 7.23 | 0.651 | 61 |
| 1956 | 1.71 | 1.30 | 0.994 | 4.23 | 4.39 | 1.83 | 1.22 | 1.04 | | | 2.07 | 1.48 | | | | 86 |
| 1957 | 1.21 | 1.29 | 1.014 | 1.98 | 4.12 | 1.96 | 1.20 | 0.94 | 0.737 | 0.953 | 1.93 | 3.75 | 1.76 | 10.61 | 0.332 | 89 |
| 1958 | 1.40 | 1.02 | 1.062 | 2.38 | 11.41 | 2.26 | 1.35 | 1.07 | 0.843 | 0.771 | 2.42 | 2.86 | 2.42 | 28.02 | 0.651 | 80 |
| 1959 | 1.54 | 0.93 | 0.792 | 1.01 | 1.73 | 1.36 | 0.92 | 0.77 | 0.656 | 0.582 | 1.90 | 1.61 | 1.15 | 7.84 | 0.509 | 76 |
| 1960 | 1.01 | 0.70 | 0.834 | 2.53 | 2.02 | 1.09 | 0.79 | 0.64 | 0.583 | 0.846 | 4.06 | 1.54 | 1.38 | 20.78 | 0.470 | 67 |
| 1961 | 0.93 | 0.70 | 0.697 | 2.02 | 4.78 | 1.20 | 0.80 | 0.65 | 0.653 | 8.933 | 27.89 | 4.13 | 4.44 | 57.48 | 0.445 | 62 |
| 1962 | 1.90 | 1.17 | 0.806 | 1.84 | 6.59 | 1.53 | 0.97 | 0.78 | 0.665 | 0.698 | 0.86 | 0.97 | 1.57 | 13.00 | 0.564 | 61 |
| 1963 | 0.73 | 0.68 | 0.703 | 5.50 | 4.96 | 1.53 | 0.92 | 0.72 | 0.552 | 0.585 | 1.27 | 2.77 | 1.75 | 21.90 | 0.433 | 81 |
| 1964 | 1.80 | 0.79 | 0.752 | 4.58 | 2.99 | 1.06 | 0.85 | 0.58 | 0.410 | 0.962 | 1.12 | 5.20 | 1.76 | 26.85 | 0.293 | 62 |
| 1965 | 1.22 | 0.68 | 0.543 | 0.84 | 1.36 | 0.61 | 0.44 | 0.40 | 0.286 | 0.353 | 1.71 | 0.81 | 0.77 | 3.29 | 0.221 | 69 |
| 1966 | 0.57 | 0.42 | 0.559 | 3.18 | 2.54 | 0.79 | 0.49 | 0.38 | 0.335 | 0.666 | 5.03 | 0.83 | 1.31 | 25.47 | 0.247 | 65 |
| 1967 | 0.49 | 0.36 | 0.305 | 0.96 | 4.90 | 1.20 | | | | 1.357 | 5.32 | 2.05 | | | | 109 |
| 1968 | 0.72 | 0.53 | 1.575 | 3.89 | 3.11 | 1.01 | 0.55 | 0.37 | 0.231 | 0.377 | 4.45 | 4.43 | 1.77 | 14.21 | 0.168 | 70 |
| 1969 | 0.71 | 0.82 | 0.907 | 0.73 | 1.68 | 0.74 | 0.40 | 0.32 | 0.251 | 0.275 | | | | | | 114 |
| Max | 1.9 | 1.3 | 1.58 | 5.5 | 11.4 | 2.4 | 1.4 | 1.1 | 0.84 | 8.93 | 27.9 | 5.2 | 4.4 | 57.5 | 0.651 | |
| Min | 0.49 | 0.36 | 0.305 | 0.73 | 1.36 | 0.61 | 0.40 | 0.32 | 0.231 | 0.275 | 0.86 | 0.81 | 0.77 | 3.29 | 0.168 | |
| Mean | 1.14 | 0.81 | 0.798 | 2.38 | 4.14 | 1.35 | 0.87 | 0.68 | 0.539 | 1.210 | 4.41 | 2.39 | 1.77 | 19.72 | 0.415 | |
| Runoff(mm) | 69.7 | 49.4 | 48.6 | 144.9 | 252.0 | 82.4 | 53.0 | 41.1 | 32.8 | 73.6 | 268.2 | 145.4 | 107.8 | 1200.6 | 25.3 | |

13-Mar-90

MINISTRY OF WATER DEVELOPMENT

Water Resources Assessment Project Documentation Section

MONTHLY AND ANNUAL DISCHARGE DATA

River: THUCHI RIVER
R.G.S: 4EB4
Area : 111 sq km

The flows are in: CUMEC

| Year | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Year | Daily max | Daily min | Days without readings |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1952 | | | | | | | | | | 2.66 | 3.22 | 1.60 | | | | 265 |
| 1953 | 1.01 | 0.54 | 0.45 | 1.72 | 5.34 | 1.78 | | | 1.55 | 2.70 | | | | | | 132 |
| 1954 | | | | | | | | | | | | | | | | 364 |
| 1955 | | | | | | | | | | | | | | | | 364 |
| 1956 | | | | 5.84 | 11.81 | 5.33 | 2.75 | 2.40 | 1.75 | | 3.84 | 2.53 | | | | 100 |
| 1957 | 1.45 | 1.05 | | | 9.08 | 5.60 | 2.45 | 2.05 | 1.88 | 2.99 | 5.07 | 4.89 | | | | 47 |
| 1958 | 2.26 | 1.61 | 1.77 | 4.09 | 11.24 | 6.97 | 4.04 | 3.46 | 1.89 | 1.99 | 3.31 | 2.79 | 3.80 | 21.91 | 0.79 | 0 |
| 1959 | 1.77 | 1.11 | 1.26 | 2.83 | 5.85 | 3.80 | 2.16 | 1.83 | 2.32 | 1.47 | 1.79 | 2.31 | 2.38 | 8.56 | 0.64 | 1 |
| 1960 | 1.38 | 0.82 | 2.37 | 5.94 | 9.21 | 4.26 | 2.73 | 1.87 | 1.34 | 3.22 | 8.34 | 3.22 | 3.73 | 23.70 | 0.64 | 46 |
| 1961 | 1.42 | 0.88 | 0.77 | 3.83 | 8.66 | 2.82 | 2.70 | 3.59 | 4.83 | 23.19 | 38.94 | 10.53 | 8.53 | 49.69 | 0.47 | 52 |
| 1962 | 4.00 | 1.93 | 1.30 | 1.64 | | 3.14 | 1.91 | 1.83 | 1.89 | 3.00 | 3.18 | 1.92 | | | | 81 |
| 1963 | 1.47 | 1.07 | | | | | | 2.23 | 1.57 | | | | | | | 198 |
| 1964 | 2.08 | 1.50 | 1.56 | 11.07 | 7.51 | 3.79 | 2.22 | 2.51 | 1.96 | 3.53 | 3.86 | 6.23 | 3.98 | 27.21 | 0.99 | 74 |
| 1965 | 2.65 | 1.61 | 1.18 | 2.51 | 3.31 | 1.87 | 1.35 | 1.44 | 1.12 | 1.69 | 6.40 | 2.84 | 2.33 | 13.99 | 0.75 | 59 |
| 1966 | 1.73 | 1.26 | 1.73 | 10.29 | 13.15 | 4.37 | 2.31 | 1.66 | 1.36 | 4.54 | 16.18 | 3.58 | 5.18 | 50.53 | 0.71 | 70 |
| 1967 | | | | | | 4.91 | | | 2.94 | | | 5.33 | | | | 201 |
| 1968 | 2.15 | 2.01 | 3.68 | 7.71 | 10.54 | 6.28 | 3.23 | 3.18 | 2.23 | 3.42 | 14.88 | 10.63 | 5.83 | 35.61 | 1.24 | 77 |
| 1969 | 2.54 | 1.99 | 1.58 | 1.04 | 4.24 | 2.02 | 1.59 | 2.04 | 1.73 | 1.59 | 2.58 | 2.02 | 2.08 | 18.64 | 0.73 | 67 |
| 1970 | 1.56 | 1.13 | 1.09 | 5.81 | 9.27 | 2.93 | 1.82 | 1.74 | 1.71 | 2.45 | 3.04 | 2.06 | 2.89 | 21.73 | 0.79 | 76 |
| 1971 | 1.32 | 0.79 | 0.59 | 1.74 | 6.57 | 3.43 | 2.63 | 2.36 | | | 2.65 | 2.32 | | | | 107 |
| 1972 | 1.57 | 1.52 | 1.47 | | | 3.34 | | | | 8.72 | 18.15 | 4.90 | | | | 116 |
| 1973 | 2.24 | 1.47 | 0.92 | 2.29 | 6.28 | 3.99 | 2.07 | 2.44 | 2.11 | 3.04 | 4.47 | 2.46 | 2.82 | 22.81 | 0.61 | 76 |
| 1974 | 1.39 | 0.94 | 0.79 | 2.57 | 2.14 | 2.00 | 5.28 | 2.93 | 2.22 | 1.98 | 3.48 | 2.02 | 2.32 | 11.24 | 0.56 | 80 |
| 1975 | 1.31 | 0.80 | 0.62 | 2.61 | 4.59 | 2.75 | 2.55 | 2.25 | 2.03 | 2.77 | 3.00 | 1.80 | 2.26 | 17.36 | 0.52 | 79 |
| 1976 | 1.12 | 0.87 | 0.60 | 2.01 | 4.80 | 2.75 | 1.73 | 1.26 | 1.16 | 1.30 | 3.65 | 2.72 | 2.00 | 17.36 | 0.47 | 80 |
| 1977 | 1.06 | 0.74 | 0.78 | 3.38 | | | 1.72 | 1.32 | 0.93 | 1.25 | 5.98 | 3.87 | | | | 98 |
| 1978 | 1.71 | 1.22 | 2.67 | 11.60 | 10.65 | 3.02 | 2.03 | 1.77 | 1.70 | 1.79 | 3.66 | 2.42 | 3.69 | 29.63 | 0.93 | 84 |
| 1979 | 2.02 | 1.96 | 1.48 | 2.32 | 8.06 | 7.40 | 2.59 | 1.69 | 1.21 | 1.85 | 3.93 | 1.85 | 3.03 | 16.72 | 1.06 | 71 |
| 1980 | 1.11 | 0.78 | 0.76 | 1.21 | 5.34 | 2.08 | 1.36 | 1.50 | 1.21 | 1.35 | 6.03 | 3.23 | 2.17 | 13.40 | 0.56 | 66 |
| 1981 | 1.25 | 1.01 | 2.28 | 5.93 | 9.60 | 3.69 | | | 1.54 | 2.26 | 3.02 | | | | | 104 |
| 1982 | 1.22 | 0.81 | 0.61 | 2.48 | 8.36 | 4.91 | 2.12 | 1.63 | 1.45 | 4.91 | 5.12 | 2.84 | 3.05 | 19.06 | 0.48 | 77 |
| 1983 | 1.73 | 1.28 | 0.78 | 1.76 | 5.58 | 2.94 | 1.96 | | | 2.07 | 4.06 | 2.15 | | | | 123 |
| 1984 | 1.57 | 0.96 | 0.67 | 1.56 | 1.08 | 0.76 | 0.75 | 0.66 | 0.52 | | | 2.19 | | | | 142 |
| 1985 | 1.22 | 1.10 | 1.07 | 3.07 | 9.82 | 3.43 | 1.90 | 1.43 | 1.65 | 2.22 | | | | | | 144 |
| 1986 | 1.27 | 0.81 | 0.74 | 2.64 | 7.27 | | 2.06 | | 1.20 | 1.20 | | | | | | 159 |
| 1987 | 1.20 | 0.89 | 0.66 | 1.80 | 3.04 | 3.68 | 1.79 | 2.03 | 1.40 | 1.07 | | | | | | 150 |
| 1988 | | 0.72 | 0.77 | 8.52 | 9.94 | 2.97 | | | 3.11 | | | | | | | 183 |
| Max | 4.0 | 2.0 | 3.7 | 11.6 | 13.2 | 7.4 | 5.3 | 3.6 | 4.8 | 23.2 | 38.9 | 10.6 | 8.5 | 50.5 | 1.24 | |
| Min | 1.01 | 0.54 | 0.45 | 1.04 | 1.08 | 0.76 | 0.75 | 0.66 | 0.52 | 1.07 | 1.79 | 1.60 | 2.00 | 8.56 | 0.47 | |
| Mean | 1.67 | 1.16 | 1.23 | 4.06 | 7.32 | 3.64 | 2.28 | 2.04 | 1.79 | 3.32 | 6.73 | 3.47 | 3.45 | 23.29 | 0.72 | |
| Runoff(mm) | 40.3 | 28.0 | 29.8 | 98.0 | 176.7 | 88.0 | 55.0 | 49.3 | 43.2 | 80.0 | 162.5 | 83.8 | 83.2 | 561.9 | 17.3 | |

12-Mar-90

MINISTRY OF WATER DEVELOPMENT
Water Resources Assessment Project Documentation Section

River: RUGUTI RIVER
R.G.S: 4EB6A
Area : 368 sq km

MONTHLY AND ANNUAL DISCHARGE DATA

The flows are in: CUMEC

| Year | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Year | Daily max | Daily min | Days without readings |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1962 | | | 3.24 | 4.42 | 12.94 | 5.00 | 2.97 | 2.56 | 2.212 | 4.64 | 4.00 | 2.70 | | | | 53 |
| 1963 | 2.22 | 1.89 | 2.14 | 12.69 | 19.01 | | 4.28 | 2.90 | 2.039 | 1.86 | 7.41 | 11.88 | | | | 31 |
| 1964 | 7.41 | 3.28 | 3.84 | 16.63 | 10.67 | 5.75 | 3.18 | 3.06 | 2.199 | | | 7.32 | | | | 61 |
| 1965 | 3.28 | 2.06 | 1.60 | 2.83 | 4.77 | 2.10 | 1.67 | 1.55 | 0.851 | 1.55 | 7.51 | 2.67 | 2.70 | 14.09 | 0.376 | 0 |
| 1966 | 1.77 | 1.41 | 2.43 | 10.85 | 7.66 | 3.38 | 2.29 | 1.94 | 1.796 | 2.83 | 11.77 | 2.98 | 4.25 | 27.03 | 0.997 | 0 |
| 1967 | 2.22 | 1.31 | 1.06 | 4.74 | 19.79 | 7.22 | 3.63 | 3.19 | 3.734 | 10.01 | 20.28 | 10.27 | 7.32 | 39.64 | 0.258 | 6 |
| 1968 | 3.69 | 4.47 | 9.81 | 21.48 | 19.17 | 9.90 | 4.44 | 3.64 | 2.956 | 4.09 | 22.94 | 23.68 | 10.85 | 56.01 | 2.390 | 0 |
| 1969 | 5.61 | 4.04 | 5.05 | 2.78 | 8.48 | 2.79 | 2.54 | | | | | 2.75 | | | | 70 |
| 1970 | | | | 18.12 | 10.33 | 3.48 | 2.36 | 2.07 | 1.653 | 2.56 | 4.18 | 2.10 | | | | 115 |
| 1971 | 1.52 | 0.96 | 0.77 | 7.28 | 11.68 | 3.91 | 2.42 | | 1.400 | 1.95 | 2.99 | 2.24 | | | | 83 |
| 1972 | 1.39 | 0.89 | 0.79 | 1.11 | 4.44 | 3.09 | 1.46 | 0.97 | 1.292 | 11.24 | 30.59 | 6.12 | 5.26 | 60.11 | 0.476 | 74 |
| 1973 | 2.39 | 1.63 | 1.01 | 4.13 | 4.28 | 3.23 | 1.46 | 1.22 | 1.152 | 1.92 | 6.26 | 2.36 | 2.58 | 52.12 | 0.646 | 78 |
| 1974 | 1.01 | 0.76 | 1.18 | 10.90 | 5.93 | 2.77 | 5.83 | 2.84 | 1.825 | 1.91 | 7.65 | 3.05 | 3.81 | 60.11 | 0.466 | 76 |
| 1975 | 1.41 | 0.88 | 0.69 | 7.11 | 7.47 | 3.34 | 2.64 | 2.02 | 1.603 | 4.71 | 12.23 | 3.32 | 3.95 | 36.38 | 0.532 | 90 |
| 1976 | 1.70 | 1.16 | 2.19 | 3.60 | 8.18 | | | 1.28 | 1.146 | 2.32 | 6.04 | 5.47 | | | | 86 |
| 1977 | 1.90 | 1.46 | 2.45 | 10.69 | | | 1.63 | 1.40 | 1.177 | 1.46 | 16.45 | 6.45 | | | | 102 |
| 1978 | 3.48 | 3.13 | 8.99 | 19.07 | 14.66 | 2.62 | 1.54 | 1.26 | 0.262 | 3.20 | 12.31 | 11.37 | 6.84 | 25.92 | 0.069 | 77 |
| 1979 | 6.80 | 8.86 | 4.65 | 8.51 | 14.81 | 9.03 | 3.16 | 1.65 | 0.515 | 1.54 | 10.20 | 2.86 | 6.01 | 25.92 | 0.407 | 85 |
| 1980 | 1.64 | 1.12 | 1.16 | 2.43 | 6.83 | 2.30 | 1.55 | 1.26 | 1.037 | 1.77 | 9.06 | 3.65 | 2.82 | 17.79 | 0.840 | 83 |
| 1981 | 1.94 | 1.57 | 4.14 | 11.01 | 14.72 | 5.93 | 2.81 | 2.09 | 1.912 | 2.22 | 4.14 | | | | | 96 |
| 1982 | | 2.09 | 1.56 | 5.17 | 13.63 | 5.73 | 2.56 | 1.87 | | 8.40 | 15.04 | 8.46 | | | | 120 |
| 1983 | 3.39 | 2.28 | 1.57 | 5.38 | 8.12 | 3.07 | 2.18 | 2.55 | 2.366 | 2.38 | 5.56 | 3.85 | 3.56 | 23.36 | 1.230 | 111 |
| 1984 | 2.57 | 1.38 | 1.45 | 1.95 | 1.88 | 1.00 | 0.90 | | | 6.94 | 7.83 | 4.53 | | | | 152 |
| 1985 | 2.15 | 1.72 | 2.40 | | | 6.61 | 6.61 | 3.40 | 1.662 | 1.73 | 3.99 | 2.00 | | | | 147 |
| 1986 | 0.81 | 0.57 | | 2.63 | 6.23 | 3.49 | | | | | | 16.02 | | | | 201 |
| 1987 | 1.80 | 1.11 | 0.90 | 2.48 | 2.45 | 4.61 | 2.00 | 2.26 | 1.176 | 0.98 | 4.84 | 2.47 | 2.26 | 26.85 | 0.667 | 114 |
| 1988 | 1.41 | 0.84 | | | | | 1.32 | 1.33 | 2.331 | | 12.21 | | | | | 179 |
| Max | 7.4 | 8.9 | 9.8 | 21.5 | 19.8 | 9.9 | 6.6 | 3.6 | 3.73 | 11.2 | 30.6 | 23.7 | 10.9 | 60.1 | 2.390 | |
| Min | 0.81 | 0.57 | 0.69 | 1.11 | 1.88 | 1.00 | 0.90 | 0.97 | 0.262 | 0.98 | 2.99 | 2.00 | 2.26 | 14.09 | 0.069 | |
| Mean | 2.65 | 2.03 | 2.71 | 7.92 | 9.92 | 4.36 | 2.70 | 2.10 | 1.665 | 3.57 | 10.23 | 6.02 | 4.79 | 35.79 | 0.720 | |
| Runoff(mm) | 19.3 | 14.8 | 19.7 | 57.6 | 72.2 | 31.7 | 19.6 | 15.3 | 12.1 | 26.0 | 74.4 | 43.8 | 34.8 | 260.5 | 5.2 | |

10-Jul-89

MINISTRY OF WATER DEVELOPMENT

Water Resources Assessment Project Documentation Section

MONTHLY AND ANNUAL DISCHARGE DATA

River: THUCHI RIVER
R.G.S: 4EB7
Area : 495 sq km

The flows are in: CUMEC

| Year | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Year | Daily max | Daily min | Days without readings |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1960 | 1.66 | 1.18 | | | | 3.39 | 2.27 | 1.67 | 1.18 | 1.99 | 6.62 | 3.32 | | | | 93 |
| 1961 | 1.61 | 1.11 | 3.42 | 4.31 | 8.66 | 3.81 | 3.39 | 3.86 | 4.56 | 24.32 | 59.09 | 23.12 | 11.79 | 87.06 | 0.69 | 47 |
| 1962 | | | 3.62 | 3.95 | 12.75 | 5.21 | 3.15 | 2.74 | 2.57 | | 3.16 | 1.93 | | | | 117 |
| 1963 | 1.64 | 1.28 | 1.57 | 11.96 | 21.92 | 11.58 | 4.97 | 3.17 | 1.93 | 1.55 | 7.12 | 8.51 | 6.46 | 39.51 | 0.53 | 78 |
| 1964 | 5.71 | 3.08 | 3.16 | 11.30 | 10.08 | 5.96 | 3.47 | 3.29 | 2.36 | 3.67 | 3.96 | 7.01 | 5.26 | 15.51 | 1.88 | 79 |
| 1965 | 3.57 | 2.16 | 1.64 | 3.13 | 4.70 | 2.08 | 1.60 | 1.58 | 1.26 | 1.46 | 7.90 | 3.76 | 2.90 | 14.83 | 0.63 | 87 |
| 1966 | 2.31 | 1.88 | 2.50 | 11.71 | | | 3.00 | 2.11 | 2.17 | 2.15 | 16.81 | 4.03 | | | | 93 |
| 1967 | 2.17 | 1.33 | 1.10 | 4.87 | 32.77 | | 3.97 | 3.03 | 2.95 | 6.39 | 15.46 | 8.97 | | | | 72 |
| 1968 | 3.57 | 2.95 | 6.33 | 20.31 | 22.00 | 10.72 | 5.14 | 4.15 | 2.54 | 3.09 | 25.84 | 44.38 | 12.61 | 228.10 | 1.54 | 72 |
| 1969 | 6.21 | 4.09 | 5.09 | 2.49 | 6.82 | 3.21 | 2.38 | 2.51 | 2.06 | 2.02 | 4.31 | 2.96 | 3.69 | 13.20 | 1.62 | 62 |
| 1970 | 2.17 | 1.51 | 1.59 | 16.55 | 13.33 | 4.67 | 2.79 | 2.36 | 2.08 | 2.49 | 3.77 | 2.07 | 4.62 | 88.61 | 0.92 | 76 |
| 1971 | 1.44 | 1.42 | 0.51 | 3.87 | 12.66 | 5.98 | 3.88 | | 2.19 | 2.18 | 3.19 | 2.42 | | | | 84 |
| 1972 | 1.91 | 1.44 | 1.47 | 1.34 | 3.66 | 3.33 | 2.07 | 1.91 | 1.87 | 8.23 | 22.79 | 7.45 | 4.78 | 55.44 | 0.68 | 73 |
| 1973 | 3.71 | 1.95 | 1.25 | 2.00 | 4.79 | 3.36 | 1.78 | 1.76 | 1.72 | 2.16 | 4.40 | 2.51 | 2.62 | 27.08 | 0.49 | 76 |
| 1974 | 1.50 | 0.99 | 3.89 | 14.68 | 3.29 | 2.24 | 4.84 | 2.79 | 1.96 | 1.57 | 4.35 | 2.36 | 3.70 | 216.00 | 0.47 | 76 |
| 1975 | 1.36 | 0.81 | 0.71 | 6.30 | 4.70 | 2.91 | 2.56 | 2.19 | 1.63 | 4.03 | 3.79 | 1.70 | 2.73 | 40.28 | 0.48 | 88 |
| 1976 | 1.23 | 1.08 | 0.90 | 1.55 | 4.97 | | | 1.82 | 1.65 | 1.57 | 3.52 | 2.29 | | | | 85 |
| 1977 | 1.57 | 1.20 | 1.44 | 5.48 | 12.31 | 4.45 | 2.43 | 1.99 | 1.31 | 1.37 | 14.92 | 6.68 | 4.60 | 22.39 | 0.78 | 77 |
| 1978 | 3.22 | 2.17 | 4.68 | 25.34 | 22.39 | 5.26 | 2.76 | 1.95 | 1.41 | 3.57 | 9.18 | 7.02 | 7.42 | 65.23 | 1.18 | 75 |
| 1979 | 4.78 | 6.21 | 3.48 | 5.99 | 12.92 | 10.86 | 3.52 | 1.93 | 1.22 | 1.57 | 10.25 | 2.70 | 5.43 | 53.24 | 0.86 | 87 |
| 1980 | 1.65 | 1.19 | 0.80 | 1.42 | 5.39 | 2.18 | 1.25 | 1.01 | 0.88 | 1.56 | 6.11 | 2.81 | 2.19 | 18.01 | 0.54 | 77 |
| 1981 | 1.30 | 0.86 | 2.36 | 17.06 | 30.71 | 7.98 | 3.32 | 1.99 | 1.65 | 1.73 | 3.18 | | | | | 101 |
| 1982 | | 0.66 | 0.56 | 11.80 | 15.62 | 7.46 | | 1.82 | | 11.27 | 28.03 | 8.19 | | | | 126 |
| 1983 | 3.13 | 1.80 | 1.01 | 9.45 | 8.94 | 4.47 | 2.47 | 1.55 | 1.16 | 2.39 | 6.01 | 3.05 | 3.79 | 108.00 | 0.65 | 106 |
| 1984 | 2.21 | 1.39 | 0.75 | 1.47 | 1.18 | 0.67 | 0.69 | | | 4.19 | 5.82 | 2.90 | | | | 149 |
| 1985 | 1.75 | 1.42 | 2.34 | | | 4.93 | 4.07 | 1.99 | 1.65 | 2.80 | 4.71 | 2.51 | | | | 147 |
| 1986 | 1.28 | 0.96 | | 3.99 | 9.11 | 5.39 | | | | | | 10.20 | | | | 200 |
| 1987 | 4.95 | 1.40 | 1.18 | 2.87 | 3.40 | 5.75 | 2.26 | 3.02 | 1.65 | 1.19 | 4.32 | 2.24 | 2.86 | 30.57 | 0.69 | 113 |
| 1988 | 1.33 | 0.72 | 1.36 | | | 4.57 | 2.63 | 2.67 | 3.53 | 3.85 | 12.04 | | | | | 153 |
| Max | 6.2 | 6.2 | 6.3 | 25.3 | 32.8 | 11.6 | 5.1 | 4.2 | 4.6 | 24.3 | 59.1 | 44.4 | 12.6 | 228.1 | 1.88 | |
| Min | 1.23 | 0.66 | 0.51 | 1.34 | 1.18 | 0.67 | 0.69 | 1.01 | 0.88 | 1.19 | 3.16 | 1.70 | 2.19 | 13.20 | 0.47 | |
| Mean | 2.55 | 1.72 | 2.17 | 7.89 | 11.56 | 5.09 | 2.95 | 2.34 | 1.97 | 3.87 | 10.74 | 6.56 | 5.14 | 66.06 | 0.86 | |
| Runoff(mm) | 13.8 | 9.3 | 11.8 | 42.7 | 62,6 | 27.6 | 15.9 | 12.7 | 10.6 | 20.9 | 58.1 | 35.5 | 27.8 | 357.5 | 4.7 | |

01-Aug-89

MINISTRY OF WATER DEVELOPMENT

Water Resources Assessment Project Documentation Section

MONTHLY AND ANNUAL DISCHARGE DATA

River: TUNGU RIVER
R.G.S: 4EB9
Area : 80 sq km

The flows are in: CUMEC

| Year | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Year | Daily max | Daily min | Days without readings |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1958 | | | | | | | | | | | 1.54 | 1.89 | | | | 302 |
| 1959 | 1.214 | 0.676 | 0.628 | 0.60 | 1.46 | 1.06 | 0.618 | 0.442 | 0.369 | 0.225 | 0.58 | 0.95 | 0.74 | 2.75 | 0.173 | 4 |
| 1960 | 0.544 | 0.311 | 0.426 | 1.34 | 1.94 | 0.80 | 0.463 | 0.317 | 0.315 | 0.316 | 1.99 | 1.10 | 0.82 | 7.30 | 0.116 | 48 |
| 1961 | 0.480 | 0.302 | 0.267 | 0.88 | 2.99 | 1.27 | 0.695 | 0.556 | 0.564 | 7.221 | | | | | | 104 |
| 1962 | | | | | | | | 0.517 | 0.367 | 0.580 | 0.58 | 0.38 | | | | 236 |
| 1963 | 0.301 | | | | | | | 0.790 | 0.409 | | | | | | | 238 |
| 1964 | 2.205 | 1.102 | 0.938 | 6.80 | 4.99 | 1.60 | 0.775 | 0.500 | 0.330 | 0.870 | 0.86 | 2.73 | 1.98 | 17.01 | 0.128 | 75 |
| 1965 | 1.115 | 0.597 | 0.413 | 0.87 | 0.97 | 0.46 | 0.317 | 0.286 | 0.170 | 0.227 | 2.09 | 1.07 | 0.71 | 4.68 | 0.094 | 63 |
| 1966 | 0.572 | 0.386 | 0.625 | 3.92 | 3.18 | 1.00 | 0.572 | 0.378 | 0.247 | 0.610 | 4.66 | 1.26 | 1.45 | 11.22 | 0.169 | 61 |
| 1967 | 0.584 | 0.327 | 0.297 | 0.88 | 13.21 | 2.27 | 0.961 | 0.562 | 0.388 | 2.007 | 6.01 | 3.84 | 2.63 | 44.41 | 0.147 | 75 |
| 1968 | 1.223 | 1.076 | 2.422 | 7.84 | 11.40 | 4.24 | 1.836 | 1.212 | 0.705 | 1.291 | 15.68 | 10.44 | 4.95 | 47.93 | 0.483 | 70 |
| 1969 | 1.892 | 1.477 | 1.283 | 0.83 | | 1.37 | 0.817 | 0.654 | 0.478 | | 1.00 | 0.68 | | | | 101 |
| 1970 | 0.608 | 0.302 | 0.332 | | 2.50 | 0.98 | 0.568 | 0.457 | 0.330 | 0.443 | 1.11 | 0.54 | | | | 82 |
| 1971 | 0.337 | 0.245 | 0.277 | | 4.39 | 1.88 | 0.980 | 0.656 | 0.462 | 0.508 | 0.97 | 0.83 | | | | 92 |
| 1972 | 0.441 | 0.362 | 0.242 | 0.41 | 1.16 | 0.92 | 0.577 | 0.416 | 0.408 | 2.823 | 23.18 | 2.82 | 2.79 | 110.20 | 0.193 | 80 |
| 1973 | 1.076 | 0.471 | 0.328 | 0.81 | 0.59 | 0.35 | 0.213 | 0.211 | 0.143 | 0.189 | 0.91 | 0.47 | 0.48 | 2.98 | 0.103 | 77 |
| 1974 | 0.219 | 0.158 | 0.150 | 1.31 | | | 0.981 | 0.634 | 0.412 | 0.395 | 1.93 | 0.65 | | | | 91 |
| 1975 | 0.399 | 0.279 | 0.166 | 0.59 | 0.72 | 0.46 | 0.346 | 0.270 | 0.204 | 0.427 | 0.82 | 0.62 | 0.44 | 5.29 | 0.132 | 76 |
| 1976 | 0.350 | 0.245 | 0.142 | 0.76 | 0.50 | 0.62 | 0.370 | 0.224 | 0.177 | 0.221 | 1.01 | 0.93 | 0.46 | 3.82 | 0.090 | 84 |
| 1977 | 0.500 | 0.284 | 0.368 | 2.31 | 5.01 | 1.54 | 0.623 | 0.393 | 0.248 | 0.220 | 2.52 | 1.67 | 1.31 | 8.37 | 0.132 | 78 |
| 1978 | 0.845 | 0.511 | 1.437 | 2.10 | 5.98 | 1.72 | 0.785 | 0.554 | 0.399 | 0.901 | 2.97 | 3.90 | 1.85 | 12.17 | 0.337 | 83 |
| 1979 | 2.487 | 3.253 | 1.794 | 2.76 | 10.21 | 4.12 | 1.693 | 1.031 | 0.579 | 0.633 | 3.74 | 1.51 | 2.81 | 26.30 | 0.307 | 69 |
| 1980 | 0.626 | 0.361 | 0.240 | 0.35 | 1.32 | 0.66 | 0.358 | 0.260 | 0.159 | 0.332 | 2.88 | 1.73 | 0.77 | 4.01 | 0.090 | 66 |
| 1981 | 0.682 | 0.413 | 0.953 | 6.59 | 11.41 | 2.36 | 0.787 | 0.410 | 0.264 | 0.257 | | | | | | 85 |
| 1982 | 0.339 | 0.175 | 0.111 | 0.88 | 4.78 | | | 0.334 | 0.260 | 1.720 | 3.37 | 2.66 | | | | 98 |
| 1983 | 1.209 | 0.579 | 0.280 | 1.20 | 4.17 | | | 0.340 | 0.294 | 0.268 | 1.52 | 1.02 | | | | 137 |
| 1984 | | 0.287 | 0.165 | 0.86 | | | | 0.083 | 0.039 | 0.594 | 1.55 | 1.29 | | | | 179 |
| 1985 | 0.535 | 0.511 | 0.369 | 1.91 | | | 0.729 | 0.392 | 0.263 | 0.250 | | | | | | 167 |
| 1986 | | 0.245 | | | 3.62 | 1.35 | 0.585 | 0.310 | 0.212 | 0.283 | 1.21 | 1.48 | | | | 141 |
| 1987 | | | 0.158 | 1.53 | 1.16 | 1.37 | 0.572 | 0.354 | 0.170 | 0.129 | 1.18 | 0.53 | | | | 141 |
| 1988 | | 0.095 | 0.307 | 5.04 | 7.13 | 1.37 | 0.591 | 0.367 | | | | | | | | 165 |
| Max | 2.49 | 3.25 | 2.42 | 7.8 | 13.2 | 4.2 | 1.84 | 1.21 | 0.71 | 7.22 | 23.2 | 10.4 | 4.9 | 110.2 | 0.483 | |
| Min | 0.219 | 0.095 | 0.111 | 0.35 | 0.50 | 0.35 | 0.213 | 0.083 | 0.039 | 0.129 | 0.58 | 0.38 | 0.44 | 2.75 | 0.090 | |
| Mean | 0.831 | 0.557 | 0.560 | 2.14 | 4.37 | 1.47 | 0.713 | 0.464 | 0.323 | 0.887 | 3.30 | 1.81 | 1.61 | 20.56 | 0.180 | |
| Runoff(mm) | 27.8 | 18.6 | 18.7 | 71.5 | 146.2 | 49.2 | 23.9 | 15.5 | 10.8 | 29.7 | 110.5 | 60.5 | 54.0 | 688.4 | 6.0 | |

16-Feb-90

MINISTRY OF WATER DEVELOPMENT
Water Resources Assessment Project Documentation Section

MONTHLY AND ANNUAL DISCHARGE DATA

River: MARA RIVER
R.G.S: 4EB11
Area : 534 sq km

The flows are in: CUMEC

| Year | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Year | Daily max | Daily min | Days without readings |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1967 | | | | 10.66 | | | | | 5.25 | 14.99 | 37.40 | 27.59 | | | | 180 |
| 1968 | 10.39 | 9.28 | 22.70 | 42.65 | | | | | | | 37.12 | 46.62 | | | | 188 |
| 1969 | 12.92 | 8.39 | 12.12 | 8.51 | 24.94 | 9.57 | 6.10 | 4.81 | 3.79 | 4.63 | 11.46 | 7.58 | 9.59 | 46.5 | 3.06 | 64 |
| 1970 | 5.97 | 4.53 | 4.88 | 25.32 | 19.61 | 8.40 | 5.63 | 5.08 | 3.70 | 4.05 | 8.11 | 4.25 | 8.29 | 62.3 | 2.74 | 76 |
| 1971 | 3.20 | 2.35 | 2.41 | 10.76 | 18.62 | 8.68 | 5.62 | | 3.43 | 3.80 | 6.35 | 6.47 | | | | 82 |
| 1972 | 4.53 | 3.34 | 2.48 | 2.99 | 9.88 | 6.89 | 4.34 | 3.06 | 2.94 | 14.93 | 47.38 | 17.70 | 10.02 | 94.8 | 2.04 | 74 |
| 1973 | 9.10 | 5.84 | 3.94 | 7.07 | 7.38 | 6.28 | 4.12 | 3.45 | 3.51 | 4.80 | 10.88 | 7.68 | 6.16 | 34.0 | 2.50 | 77 |
| 1974 | 4.02 | 2.97 | 3.00 | 17.80 | 11.75 | 6.54 | 7.74 | 5.58 | 4.28 | 4.33 | 15.71 | 7.51 | 7.60 | 35.3 | 2.18 | 78 |
| 1975 | 4.87 | 3.82 | 3.22 | 12.11 | 9.25 | 7.12 | 5.36 | 4.29 | 3.51 | 6.57 | 9.32 | 6.68 | 6.35 | 37.0 | 2.07 | 88 |
| 1976 | 3.62 | 2.93 | 2.71 | 6.87 | 9.60 | | | 3.59 | 3.62 | 4.14 | 10.67 | 10.81 | | | | 86 |
| 1977 | 7.68 | 5.49 | 6.45 | 28.70 | 32.59 | 11.87 | 6.55 | 4.77 | 3.54 | 3.71 | 35.72 | 14.91 | 13.49 | 53.9 | 2.73 | 77 |
| 1978 | 8.90 | 6.09 | 15.17 | 46.40 | 33.23 | 10.63 | 6.90 | 4.88 | 3.64 | 9.24 | 21.30 | 23.61 | 15.86 | 65.1 | 3.21 | 75 |
| 1979 | 16.41 | 21.31 | 11.59 | 22.57 | 34.97 | 16.98 | 8.51 | 5.92 | 4.32 | 5.59 | 25.72 | 9.47 | 15.21 | 71.1 | 3.46 | 86 |
| 1980 | 5.83 | 4.30 | 3.32 | 6.76 | 14.00 | 7.04 | 4.57 | 4.46 | 3.85 | 6.27 | 26.03 | 12.72 | 8.26 | 36.7 | 2.18 | 79 |
| 1981 | 6.14 | 4.16 | 9.33 | 30.61 | 32.60 | 13.46 | 6.81 | 4.67 | 3.65 | 4.01 | 10.52 | | | | | 96 |
| 1982 | | 3.36 | 2.34 | 15.33 | 31.03 | 15.34 | 6.68 | 4.73 | | 16.46 | 37.91 | 24.33 | | | | 120 |
| 1983 | 10.81 | 6.89 | 4.44 | 19.90 | 25.85 | 9.88 | 6.02 | 4.50 | 3.45 | 5.74 | 17.73 | 14.75 | 10.84 | 138.3 | 3.09 | 109 |
| 1984 | 8.54 | 3.55 | 3.08 | 4.09 | 3.00 | 2.33 | 2.43 | | | 10.37 | 19.95 | 13.50 | | | | 152 |
| 1985 | 6.41 | 4.74 | 6.41 | | | 19.48 | 17.30 | 6.96 | 3.41 | 4.45 | 23.59 | 11.33 | | | | 148 |
| 1986 | 5.23 | 3.45 | | 12.85 | 30.68 | 13.34 | | | | | | | | | | 214 |
| 1987 | 10.57 | 5.56 | 3.45 | 11.59 | 8.44 | 12.62 | 5.73 | 5.21 | 3.19 | | | 7.07 | | | | 137 |
| 1988 | 4.52 | 3.14 | 3.55 | | | | | | | | | | | | | 269 |
| Max | 16.4 | 21.3 | 22.7 | 46.4 | 35.0 | 19.5 | 17.3 | 7.0 | 5.3 | 16.5 | 47.4 | 46.6 | 15.9 | 138.3 | 3.46 | |
| Min | 3.20 | 2.35 | 2.34 | 2.99 | 3.00 | 2.33 | 2.43 | 3.06 | 2.94 | 3.71 | 6.35 | 4.25 | 6.16 | 34.0 | 2.04 | |
| Mean | 7.48 | 5.50 | 6.33 | 17.18 | 19.86 | 10.36 | 6.49 | 4.75 | 3.71 | 7.11 | 21.73 | 14.45 | 10.15 | 61.4 | 2.66 | |
| Runoff(mm) | 37.5 | 27.6 | 31.8 | 86.2 | 99.6 | 51.9 | 32.6 | 23.8 | 18.6 | 35.7 | 109.0 | 72.5 | 50.9 | 307.7 | 13.3 | |

28-Jun-89

MINISTRY OF WATER DEVELOPMENT
Water Resources Assessment Project Documentation Section

River: SOUTH MARA
R.G.S: 4EB12
Area : 74 sq km

MONTHLY AND ANNUAL DISCHARGE DATA

The flows are in: CUMEC

| Year | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Year | Daily max | Daily min | Days without readings |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1980 | | | | | | | | | | 0.94 | 7.58 | 4.71 | | | | 279 |
| 1981 | 2.39 | 1.51 | 2.18 | | | | | | | 1.04 | | | | | | 199 |
| 1982 | 1.41 | 0.96 | 0.75 | 2.85 | 7.07 | | | 1.36 | 1.09 | 2.83 | 4.97 | 4.61 | | | | 99 |
| 1983 | 2.32 | 1.52 | 1.09 | 1.84 | 5.90 | | | 1.12 | 1.05 | 1.06 | 2.57 | | | | | 138 |
| 1984 | | 1.26 | 0.89 | 1.61 | | | | | 0.43 | 1.76 | 2.82 | 2.74 | | | | 184 |
| 1985 | 1.45 | 1.35 | 1.32 | 3.37 | | | 1.90 | 1.35 | 1.23 | 1.41 | | | | | | 167 |
| 1986 | | 1.03 | | | 7.03 | 2.72 | 1.59 | 1.13 | 0.89 | 1.01 | 2.55 | | | | | 137 |
| 1987 | | | 0.85 | 1.77 | 1.96 | 2.91 | 1.47 | 1.13 | 0.81 | 0.69 | 1.79 | 1.20 | | | | 141 |
| 1988 | | 0.68 | 0.84 | 5.66 | 6.51 | 2.27 | 1.64 | 1.32 | 1.22 | | | | | | | 149 |
| Max | 2.4 | 1.5 | 2.2 | 5.7 | 7.1 | 2.9 | 1.9 | 1.4 | 1.2 | 2.8 | 7.6 | 4.7 | NA | NA | NA | |
| Min | 1.41 | 0.68 | 0.75 | 1.61 | 1.96 | 2.27 | 1.47 | 1.12 | 0.43 | 0.69 | 1.79 | 1.20 | NA | NA | NA | |
| Mean | 1.89 | 1.19 | 1.13 | 2.85 | 5.69 | 2.63 | 1.65 | 1.24 | 0.96 | 1.34 | 3.71 | 3.31 | NA | NA | NA | |
| Runoff(mm) | 68.5 | 42.9 | 40.9 | 103.1 | 206.0 | 95.2 | 59.7 | 44.7 | 34.7 | 48.5 | 134.4 | 119.9 | NA | NA | NA | |

02-Mar-90

MINISTRY OF WATER DEVELOPMENT
Water Resources Assessment Project Documentation Section

MONTHLY AND ANNUAL DISCHARGE DATA

River: NORTH MARA RIVER
R.G.S: 4EB16
Area : 44 sq km

The flows are in: CUMEC

| Year | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Year | Daily max | Daily min | Days without readings |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1984 | | | | | | | | | | 0.91 | 2.39 | 2.09 | | | | 262 |
| 1985 | 1.08 | 0.87 | 0.77 | 3.61 | 6.53 | 2.21 | 1.10 | 0.79 | 0.55 | 0.63 | 1.88 | 1.92 | 1.83 | 8.49 | 0.484 | 11 |
| 1986 | 0.87 | 0.60 | 0.45 | 3.90 | 9.39 | 2.42 | 1.02 | 0.75 | 0.62 | 0.56 | 1.62 | 2.95 | 2.11 | 13.86 | 0.302 | 0 |
| 1987 | 1.22 | 0.79 | 0.58 | 0.53 | 1.29 | 1.48 | 0.85 | 0.61 | 0.47 | 0.41 | 1.51 | 1.24 | 0.92 | 2.96 | 0.348 | 0 |
| 1988 | 0.65 | 0.51 | 0.49 | 5.68 | 6.24 | 1.49 | 0.87 | 0.83 | 0.79 | 1.31 | 3.39 | 2.83 | 2.09 | 9.32 | 0.372 | 6 |
| 1989 | 3.61 | 2.02 | 1.55 | 3.94 | 6.22 | 1.48 | 1.36 | 0.75 | 0.56 | 1.20 | 6.81 | 7.89 | 3.12 | 13.70 | 0.484 | 4 |
| Max | 3.6 | 2.0 | 1.5 | 5.7 | 9.4 | 2.4 | 1.4 | 0.8 | 0.8 | 1.3 | 6.8 | 7.9 | 3.1 | 13.9 | 0.484 | |
| Min | 0.65 | 0.51 | 0.45 | 0.53 | 1.29 | 1.48 | 0.85 | 0.61 | 0.47 | 0.41 | 1.51 | 1.24 | 0.92 | 2.96 | 0.302 | |
| Mean | 1.49 | 0.96 | 0.77 | 3.53 | 5.93 | 1.82 | 1.04 | 0.75 | 0.60 | 0.84 | 2.93 | 3.15 | 2.01 | 9.67 | 0.398 | |
| Runoff(mm) | 90.6 | 58.2 | 46.7 | 215.0 | 361.0 | 110.6 | 63.3 | 45.4 | 36.4 | 50.9 | 178.5 | 191.9 | 122.6 | 588.4 | 24.2 | |

19-Mar-90

MINISTRY OF WATER DEVELOPMENT

Water Resources Assessment Project  Documentation Section

MONTHLY AND ANNUAL DISCHARGE DATA

River: THINGITHU RIVER
R.G.S: 4F04
Area : 91 sq km

The flows are in: CUMEC

| Year | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Year | Daily max | Daily min | Days without readings |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1952 | | | | | | | | | | 1.51 | 1.67 | 1.74 | | | | 260 |
| 1953 | 1.68 | 1.50 | | | 2.09 | 1.79 | 1.50 | 1.39 | 1.30 | 1.29 | 2.00 | 2.13 | | | | 35 |
| 1954 | 1.81 | 1.53 | 1.41 | 1.60 | 2.40 | 2.41 | 1.98 | 1.70 | 1.52 | 1.61 | 2.16 | 3.30 | 1.96 | 3.82 | 1.36 | 6 |
| 1955 | 2.73 | 2.20 | 1.84 | 1.92 | 1.88 | 1.72 | 1.47 | 1.29 | 1.22 | 1.47 | 2.62 | 3.42 | 1.98 | 4.71 | 1.17 | 0 |
| 1956 | 2.94 | 2.50 | 2.28 | 2.91 | 4.12 | 3.01 | 2.41 | 1.92 | 1.76 | 1.64 | 2.66 | 2.80 | 2.58 | 6.49 | 1.50 | 3 |
| 1957 | 2.44 | 2.12 | 1.96 | 2.15 | 3.91 | 3.28 | 2.57 | 2.19 | 1.73 | 1.83 | 2.99 | 4.90 | 2.68 | 6.62 | 1.32 | 0 |
| 1958 | 3.74 | 2.92 | 2.53 | 2.64 | 3.86 | 3.08 | 2.56 | 2.29 | 1.99 | 1.55 | 2.09 | 2.95 | 2.68 | 7.14 | 1.24 | 6 |
| 1959 | 2.91 | 2.19 | 1.91 | 1.80 | 1.90 | 1.80 | 1.62 | 1.39 | 1.23 | 1.08 | 1.61 | 2.03 | 1.79 | 3.77 | 0.99 | 2 |
| 1960 | 1.96 | 1.75 | 1.89 | 2.15 | 2.07 | 1.78 | 1.76 | 1.35 | 1.13 | 1.33 | 2.50 | 2.09 | 1.81 | 15.51 | 1.05 | 8 |
| 1961 | 1.80 | 1.56 | 1.39 | 2.82 | 3.99 | 2.59 | 1.90 | 1.57 | 1.47 | 5.78 | | | | | | 46 |
| 1962 | | | 2.92 | 3.06 | 4.05 | 3.15 | 2.43 | 2.06 | 1.83 | 2.02 | 2.04 | 2.00 | | | | 59 |
| 1963 | 2.22 | 1.87 | 1.88 | 4.23 | 5.68 | 3.57 | 2.75 | 2.12 | 1.85 | 1.93 | 2.99 | 4.49 | 2.97 | 11.63 | 1.68 | 0 |
| 1964 | 4.79 | 3.22 | 2.81 | 6.83 | 5.88 | 3.92 | 3.76 | 3.81 | 3.79 | 3.52 | 3.80 | 5.49 | 4.30 | 12.70 | 1.98 | 1 |
| 1965 | 4.24 | 2.98 | 2.34 | 2.29 | | 2.12 | 2.06 | 2.09 | 1.29 | 2.65 | 4.37 | 3.05 | | | | 31 |
| 1966 | 2.01 | 2.10 | 3.02 | 3.57 | 3.53 | 2.66 | 2.04 | 1.88 | 1.79 | | 2.90 | 2.08 | | | | 8 |
| 1967 | 1.68 | 1.47 | 1.32 | | 4.17 | 2.77 | 2.32 | 1.94 | 1.40 | 2.33 | 5.11 | 5.04 | | | | 33 |
| 1968 | 2.84 | 2.84 | 4.61 | 5.37 | 6.13 | 3.97 | 2.94 | 2.13 | 1.80 | 2.48 | 4.72 | 6.85 | 3.90 | 12.89 | 1.62 | 0 |
| 1969 | 3.74 | 3.63 | 3.64 | 2.76 | 3.13 | 2.65 | 2.33 | 1.99 | 1.64 | 1.73 | 2.42 | 2.00 | 2.63 | 12.70 | 1.48 | 0 |
| 1970 | 2.06 | 1.94 | 2.12 | 2.71 | 2.72 | 2.25 | 1.75 | 1.47 | 1.45 | 1.59 | 1.99 | 1.65 | 1.97 | 3.67 | 1.40 | 0 |
| 1971 | 1.44 | 1.21 | 1.07 | 1.65 | 2.17 | 1.71 | 1.32 | 1.20 | 1.02 | 1.04 | 1.28 | 1.23 | 1.36 | 5.85 | 0.89 | 65 |
| 1972 | 1.38 | 1.30 | 1.17 | 1.13 | 1.50 | 1.34 | 1.21 | 1.04 | 1.24 | 1.77 | 3.57 | 2.68 | 1.61 | 6.06 | 0.85 | 69 |
| 1973 | 2.08 | 1.57 | 1.43 | 1.49 | 1.67 | 1.70 | 1.50 | 1.29 | 1.12 | 1.17 | 1.48 | 1.28 | 1.48 | 3.10 | 1.00 | 66 |
| 1974 | 1.22 | 1.13 | 1.22 | 2.74 | 2.96 | 1.95 | 1.54 | 1.31 | 1.15 | 1.28 | 2.26 | 2.01 | 1.73 | 5.19 | 0.93 | 62 |
| 1975 | 1.64 | 1.31 | 1.16 | 1.37 | 1.32 | 1.15 | 1.07 | 0.97 | 0.89 | 1.31 | 1.44 | 1.54 | 1.27 | 5.30 | 0.79 | 61 |
| 1976 | 1.41 | 1.29 | 1.09 | 1.43 | 1.32 | 1.44 | 1.37 | 1.18 | 1.10 | 1.23 | 1.49 | 2.76 | 1.43 | 9.41 | 0.96 | 62 |
| 1977 | 2.28 | 1.87 | 1.70 | 2.86 | 4.09 | 2.63 | 1.88 | 1.60 | 1.36 | 1.34 | 2.58 | 2.38 | 2.22 | 8.54 | 1.16 | 63 |
| 1978 | 1.79 | 1.56 | 2.64 | 7.22 | 5.76 | 3.53 | 2.56 | 2.00 | 1.66 | 1.85 | 2.33 | 2.96 | 2.99 | 9.66 | 1.40 | 66 |
| 1979 | 2.98 | 3.33 | 2.58 | 3.07 | 5.03 | 3.47 | 2.47 | 2.02 | 1.65 | 1.74 | 3.39 | 2.40 | 2.84 | 12.01 | 1.35 | 63 |
| 1980 | 1.77 | 1.48 | 1.34 | 1.58 | 2.19 | 2.20 | 1.71 | 1.39 | 1.13 | 1.07 | 3.11 | 3.00 | 1.83 | 6.28 | 0.91 | 64 |
| 1981 | 1.97 | 1.67 | 1.96 | 3.30 | 3.86 | 2.80 | 2.01 | 2.31 | 2.08 | 2.02 | 2.22 | 2.56 | 2.40 | 9.66 | 1.55 | 46 |
| 1982 | 2.48 | 2.19 | 2.23 | 3.12 | 4.15 | 3.91 | 3.28 | 2.52 | 2.44 | 3.30 | 5.57 | 4.13 | 3.28 | 8.00 | 1.76 | 48 |
| 1983 | 2.94 | 2.77 | 2.15 | | | 2.09 | 1.83 | 1.59 | 1.44 | 1.45 | 1.62 | 2.39 | | | | 103 |
| 1984 | 2.60 | 1.89 | 1.58 | 1.47 | 1.43 | 1.24 | 1.12 | 2.23 | 3.02 | 3.27 | 3.62 | 3.47 | 2.25 | 5.15 | 0.98 | 111 |
| 1985 | 2.75 | 2.69 | 2.48 | 2.99 | | 2.87 | 2.53 | 2.05 | 1.73 | 2.56 | | | | | | 136 |
| 1986 | | 2.63 | 2.33 | 2.74 | 3.26 | 2.57 | 2.14 | 2.18 | 2.34 | 2.36 | 2.76 | 3.77 | | | | 126 |
| 1987 | 3.09 | 2.70 | 2.54 | 2.64 | 2.42 | 2.59 | 2.40 | 2.28 | 2.03 | 1.73 | 2.21 | 2.28 | 2.41 | 4.04 | 1.56 | 113 |
| 1988 | 2.32 | 2.14 | 2.05 | 3.49 | 4.88 | 3.62 | 3.05 | 2.64 | 2.44 | 2.52 | 3.29 | | | | | 119 |
| Max | 4.8 | 3.6 | 4.6 | 7.2 | 6.1 | 4.0 | 3.8 | 3.8 | 3.8 | 5.8 | 5.6 | 6.9 | 4.3 | 15.5 | 1.98 | |
| Min | 1.22 | 1.13 | 1.07 | 1.13 | 1.32 | 1.15 | 1.07 | 0.97 | 0.89 | 1.04 | 1.28 | 1.23 | 1.27 | 3.10 | 0.79 | |
| Mean | 2.40 | 2.09 | 2.07 | 2.82 | 3.32 | 2.54 | 2.09 | 1.84 | 1.67 | 1.95 | 2.71 | 2.91 | 2.32 | 7.69 | 1.26 | |
| Runoff(mm) | 70.7 | 61.4 | 61.1 | 83.0 | 97.7 | 74.7 | 61.4 | 54.3 | 49.1 | 57.5 | 79.8 | 85.6 | 68.3 | 226.3 | 37.2 | |

03-Apr-90

MINISTRY OF WATER DEVELOPMENT

Water Resources Assessment Project — Documentation Section

MONTHLY AND ANNUAL DISCHARGE DATA

River: MARIARA RIVER
R.G.S: 4F05
Area : 17 sq km

The flows are in: CUMEC

| Year | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Year | Daily max | Daily min | Days without readings |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1955 | | | | | | | | | | | 1.52 | 1.74 | | | | 285 |
| 1956 | 1.71 | 1.45 | 1.45 | 1.71 | 2.23 | 1.55 | 1.21 | 0.96 | 0.87 | 1.19 | 1.60 | 1.76 | 1.47 | 2.76 | 0.863 | 0 |
| 1957 | 1.42 | 1.17 | 1.12 | 1.27 | 2.14 | 1.62 | 1.42 | 1.26 | 1.16 | 1.23 | 1.75 | 2.81 | 1.53 | 3.97 | 0.836 | 0 |
| 1958 | 2.24 | 1.70 | 1.34 | 1.78 | 2.07 | 1.73 | 1.51 | 1.28 | 1.18 | 1.10 | 1.48 | 2.11 | 1.63 | 2.48 | 0.786 | 0 |
| 1959 | 1.66 | 1.73 | 1.49 | 1.56 | 1.81 | 1.39 | | | | | | 2.32 | | | | 130 |
| 1960 | 1.85 | 1.69 | 1.77 | 1.71 | 1.45 | 1.28 | | | | | | 2.34 | | | | 115 |
| 1961 | 2.03 | 1.72 | 1.40 | 1.86 | 2.24 | 1.91 | 1.66 | 1.45 | 1.27 | 2.16 | 5.70 | 3.09 | 2.21 | 5.80 | 1.170 | 0 |
| 1962 | 1.64 | 1.31 | 1.16 | 1.93 | 2.12 | 1.77 | 1.22 | 1.12 | 1.06 | 1.34 | 2.15 | 2.29 | 1.59 | 2.36 | 0.485 | 1 |
| 1963 | 1.90 | 1.46 | 1.31 | 1.81 | 2.15 | 1.78 | 1.41 | 0.98 | 0.40 | 0.38 | 1.85 | 2.10 | 1.46 | 2.23 | 0.200 | 0 |
| 1964 | 2.06 | 1.42 | 0.97 | 1.62 | 1.69 | 1.38 | 1.13 | 1.14 | 0.49 | | 1.27 | 2.47 | | | | 31 |
| 1965 | 1.93 | 1.46 | 1.18 | 1.20 | 1.22 | 0.97 | 0.84 | 0.82 | 0.74 | 0.69 | 1.10 | 1.20 | 1.11 | 2.14 | 0.561 | 0 |
| 1966 | 1.17 | 0.84 | 0.96 | 2.10 | 1.75 | 1.46 | 1.18 | | 0.59 | 0.86 | 1.78 | 1.08 | | | | 31 |
| 1967 | 0.56 | 0.50 | 0.54 | 0.82 | 2.33 | 1.71 | 1.32 | 1.04 | 0.79 | 1.49 | 2.66 | 2.34 | 1.35 | 3.17 | 0.467 | 0 |
| 1968 | 1.60 | 1.50 | 2.29 | 2.44 | 2.32 | 1.82 | 1.48 | 1.34 | 1.04 | 1.22 | 2.28 | 2.80 | 1.85 | 3.75 | 0.889 | 0 |
| 1969 | 1.71 | 1.48 | 1.66 | 1.57 | 1.71 | 1.41 | 1.16 | 0.97 | 0.74 | 0.64 | 1.56 | 1.56 | 1.35 | 3.14 | 0.522 | 0 |
| 1970 | 1.30 | 1.25 | 1.20 | 1.48 | 1.34 | 1.20 | 1.13 | 0.98 | 0.85 | 0.72 | 1.63 | 1.03 | 1.17 | 2.11 | 0.645 | 1 |
| 1971 | 0.69 | 0.61 | 0.53 | 1.12 | 1.65 | 0.91 | 0.71 | 0.59 | 0.50 | 0.54 | 0.72 | 0.75 | 0.78 | 4.66 | 0.407 | 69 |
| 1972 | 0.74 | 0.68 | 0.65 | 0.54 | 0.76 | 0.61 | 0.52 | 0.49 | 0.44 | | | 1.84 | | | | 87 |
| 1973 | 1.24 | 0.85 | 0.68 | | | 0.80 | 0.74 | 0.67 | 0.59 | 0.65 | 1.03 | 0.94 | | | | 97 |
| 1974 | 0.72 | 0.68 | 0.73 | 2.14 | 2.72 | 1.61 | 1.07 | 0.90 | 0.75 | 0.80 | 1.75 | 1.58 | 1.29 | 3.91 | 0.538 | 67 |
| 1975 | | | | | | | | | | | | | | | | 365 |
| 1976 | | | | | | | | | | | | | | | | 366 |
| 1977 | | | | | | | | | | | | | | | | 365 |
| 1978 | | | | | | | | | | | | | | | | 365 |
| 1979 | | | | | | | | | | | | | | | | 365 |
| 1980 | 1.47 | 1.11 | 1.00 | 1.65 | 2.54 | 1.60 | 1.29 | 1.15 | 0.96 | 0.92 | 3.67 | 2.69 | 1.67 | 8.26 | 0.761 | 62 |
| 1981 | 1.54 | 1.27 | 1.64 | 2.55 | 3.32 | 1.92 | 1.34 | 1.10 | 0.93 | 0.90 | 1.59 | 1.61 | 1.64 | 7.40 | 0.701 | 60 |
| 1982 | 1.54 | 1.13 | 0.95 | 2.25 | 2.82 | 1.97 | 1.34 | 1.09 | 0.92 | 1.59 | 2.44 | 3.75 | 1.82 | 5.75 | 0.761 | 61 |
| 1983 | 1.85 | 1.75 | 1.05 | 1.31 | 1.72 | 1.29 | 1.20 | 1.09 | 0.97 | 0.98 | 1.79 | 3.92 | 1.58 | 12.31 | 0.644 | 69 |
| 1984 | 2.96 | 1.29 | 0.93 | 1.00 | 0.94 | 0.68 | 0.53 | 0.50 | 0.41 | 1.46 | 4.18 | 2.58 | 1.45 | 6.38 | 0.359 | 66 |
| 1985 | 1.35 | 1.21 | 1.10 | 2.42 | 3.64 | 2.12 | 1.33 | 1.00 | 0.91 | 0.81 | 1.93 | | | | | 84 |
| 1986 | | 0.93 | 0.91 | 2.34 | 3.02 | 1.46 | 0.96 | 0.78 | 0.71 | 0.70 | 1.47 | 3.15 | | | | 62 |
| 1987 | 1.57 | 1.05 | 0.85 | 1.10 | 1.12 | 1.48 | 0.88 | 0.87 | 0.66 | 0.57 | 1.42 | 1.18 | 1.06 | 4.24 | 0.490 | 61 |
| 1988 | 0.96 | 0.87 | 0.73 | 3.31 | 4.19 | 1.56 | 1.13 | 1.01 | 0.80 | 0.86 | 2.36 | 2.60 | 1.70 | 7.93 | 0.538 | 64 |
| Max | 3.0 | 1.7 | 2.3 | 3.3 | 4.2 | 2.1 | 1.7 | 1.4 | 1.3 | 2.2 | 5.7 | 3.9 | 2.2 | 12.3 | 1.170 | |
| Min | 0.56 | 0.50 | 0.53 | 0.54 | 0.76 | 0.61 | 0.52 | 0.49 | 0.40 | 0.38 | 0.72 | 0.75 | 0.78 | 2.11 | 0.200 | |
| Mean | 1.53 | 1.22 | 1.13 | 1.73 | 2.11 | 1.46 | 1.14 | 0.98 | 0.80 | 0.99 | 2.03 | 2.13 | 1.49 | 4.74 | 0.631 | |
| Runoff(mm) | 241.6 | 191.9 | 177.9 | 271.9 | 332.7 | 230.6 | 180.2 | 154.9 | 125.7 | 156.1 | 319.2 | 335.5 | 234.1 | 746.4 | 99.4 | |

22-Mar-90

MINISTRY OF WATER DEVELOPMENT

Water Resources Assessment Project Documentation Section

MONTHLY AND ANNUAL DISCHARGE DATA

River: THANGATHA RIVER
R.G.S: 4F08
Area : 210 sq km

The flows are in: CUMEC

| Year | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Year | Daily max | Daily min | Days without readings |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1957 | | | | | | | | | 0.791 | 1.24 | 7.01 | 6.23 | | | | 245 |
| 1958 | 2.250 | 1.510 | 0.965 | 3.59 | 5.84 | 1.67 | 0.99 | 0.336 | 0.696 | 0.83 | 2.25 | 5.02 | 2.17 | 31.14 | 0.274 | 61 |
| 1959 | | 1.684 | 1.164 | 1.48 | 4.69 | 1.92 | 1.09 | 0.801 | 0.596 | 0.38 | 1.91 | 1.67 | | | | 92 |
| 1960 | 0.904 | 0.607 | 2.208 | 12.48 | 6.08 | 2.48 | 1.28 | 0.870 | 0.601 | | 2.47 | 2.32 | | | | 76 |
| 1961 | 1.505 | 0.850 | 0.578 | 3.05 | 12.96 | 3.05 | | 0.952 | 0.872 | 16.50 | 140.28 | 12.44 | | | | 57 |
| 1962 | 5.056 | 2.735 | 0.592 | | 17.23 | 3.75 | 2.17 | 1.553 | 1.171 | 2.76 | 2.75 | 3.16 | | | | 65 |
| 1963 | 1.985 | 1.504 | 1.846 | | | | | | 1.048 | 0.92 | 16.22 | 17.65 | | | | 168 |
| 1964 | | 4.040 | 3.909 | 13.61 | 7.55 | 3.35 | 2.20 | 1.570 | 1.220 | 1.55 | 3.39 | 24.19 | | | | 78 |
| 1965 | 6.620 | 2.605 | 5.325 | 7.07 | 15.60 | 8.82 | 5.64 | 0.786 | 1.599 | 3.68 | 16.17 | 11.14 | 7.11 | 54.66 | 0.067 | 75 |
| 1966 | 8.278 | 6.078 | 8.273 | 22.44 | 22.60 | 10.70 | 8.11 | 6.050 | 4.271 | 7.93 | 25.14 | 8.13 | 11.50 | 73.17 | 3.200 | 76 |
| 1967 | 5.464 | 3.139 | 2.405 | 10.58 | 22.85 | 10.21 | 6.33 | 4.501 | 4.482 | 8.30 | 22.39 | 13.17 | 9.51 | 69.82 | 1.700 | 83 |
| 1968 | 8.608 | 7.058 | 11.182 | 17.48 | 15.94 | 7.87 | 3.96 | 2.832 | 1.921 | 3.58 | 30.58 | 24.75 | 11.30 | 117.90 | 1.730 | 88 |
| 1969 | 5.296 | 3.828 | 7.352 | 10.53 | 11.60 | 4.07 | 2.34 | 1.932 | 1.208 | 1.31 | 6.07 | 3.55 | 4.93 | 48.79 | 0.891 | 84 |
| 1970 | 1.871 | 1.262 | 0.901 | 20.23 | 5.56 | 2.58 | 1.05 | 0.546 | 0.294 | 0.74 | 3.61 | 1.60 | 3.34 | 182.10 | 0.212 | 76 |
| 1971 | 0.572 | 0.270 | 0.301 | 6.55 | 5.29 | 3.00 | 1.46 | 0.932 | 0.246 | 0.35 | 1.19 | 0.58 | 1.73 | 29.66 | 0.101 | 75 |
| 1972 | 0.290 | 0.185 | 0.136 | 0.46 | 8.31 | 3.23 | 1.74 | 1.172 | 0.982 | 15.65 | 28.27 | 5.74 | 5.51 | 206.40 | 0.063 | 85 |
| 1973 | 3.061 | 1.867 | 1.344 | 1.77 | | | 0.93 | 0.859 | 0.687 | 0.63 | 1.71 | 1.64 | | | | 102 |
| 1974 | 0.910 | 0.703 | 0.611 | 11.09 | 6.76 | 2.23 | 1.12 | 0.577 | 0.383 | 0.68 | 6.90 | 2.96 | 2.90 | 68.45 | 0.306 | 78 |
| 1975 | 1.301 | 0.731 | 0.548 | 2.73 | 3.23 | 1.74 | 1.07 | 0.686 | 0.550 | 0.69 | 1.64 | 1.36 | 1.36 | 13.11 | 0.407 | 83 |
| 1976 | 0.646 | 0.450 | 0.321 | 2.43 | 1.99 | 1.26 | 0.66 | 0.433 | 0.376 | 0.48 | 2.82 | 3.01 | 1.24 | 22.95 | 0.222 | 82 |
| 1977 | 2.249 | 1.029 | 1.038 | 10.70 | 16.99 | 3.82 | 1.93 | 1.153 | 0.918 | 0.87 | 7.95 | 7.04 | 4.66 | 51.58 | 0.640 | 74 |
| 1978 | 4.572 | 2.211 | 6.675 | 27.39 | 9.17 | 3.40 | 1.97 | 1.128 | 0.578 | 3.81 | 16.03 | 15.76 | 7.73 | 65.12 | 0.222 | 92 |
| 1979 | 6.527 | 6.104 | 4.686 | 19.89 | 19.40 | 7.00 | 3.67 | 1.885 | | 0.90 | 11.07 | 3.91 | | | | 94 |
| 1980 | 2.603 | 2.046 | 0.906 | 1.59 | 1.66 | 0.87 | 0.44 | 0.265 | 0.219 | 0.42 | 5.70 | 3.54 | 1.68 | 8.63 | 0.142 | 85 |
| 1981 | 1.515 | 0.899 | 2.225 | 15.48 | 27.67 | 4.78 | 2.41 | 1.561 | 0.984 | 2.13 | 7.22 | 3.96 | 5.93 | 104.40 | 0.644 | 73 |
| 1982 | 2.340 | 1.196 | 1.067 | 7.54 | 11.40 | 4.53 | 2.09 | 1.326 | 1.110 | | 17.72 | 12.28 | | | | 92 |
| 1983 | 5.014 | 2.589 | 1.495 | 3.27 | 6.87 | 3.13 | 1.51 | 0.965 | 0.695 | 0.73 | 1.43 | 3.81 | 2.63 | 39.06 | 0.499 | 109 |
| 1984 | 1.036 | 0.611 | 0.496 | 0.63 | 0.66 | 0.35 | 0.32 | 0.373 | 0.302 | 3.65 | 19.70 | 5.46 | 2.79 | 96.52 | 0.177 | 133 |
| 1985 | 2.268 | 1.339 | | | | | | | | | | | | | | 308 |
| 1986 | | | | | | | | | | | | | | | | 365 |
| 1987 | | | | | | | | | | | 3.57 | 3.18 | | | | 316 |
| 1988 | 1.619 | 0.743 | 0.747 | | | | 1.27 | 0.777 | 0.640 | 2.02 | 11.29 | | | | | 127 |
| Max | 8.61 | 7.06 | 11.18 | 27.4 | 27.7 | 10.7 | 8.1 | 6.05 | 4.48 | 16.5 | 140.3 | 24.8 | 11.5 | 206.4 | 3.200 | |
| Min | 0.290 | 0.185 | 0.136 | 0.46 | 0.66 | 0.35 | 0.32 | 0.265 | 0.219 | 0.35 | 1.19 | 0.58 | 1.24 | 8.63 | 0.063 | |
| Mean | 3.125 | 2.065 | 2.475 | 9.36 | 10.72 | 3.99 | 2.22 | 1.364 | 1.051 | 3.06 | 14.15 | 7.22 | 4.89 | 71.30 | 0.639 | |
| Runoff(mm) | 39.9 | 26.3 | 31.6 | 119.4 | 136.7 | 50.9 | 28.3 | 17.4 | 13.4 | 39.1 | 180.5 | 92.0 | 62.4 | 909.4 | 8.1 | |

05-Apr-90

MINISTRY OF WATER DEVELOPMENT
Water Resources Assessment Project Documentation Section

MONTHLY AND ANNUAL DISCHARGE DATA

River: URA RIVER
R.G.S: 4F09
Area : 198 sq km

The flows are in: CUMEC

| Year | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Year | Daily max | Daily min | Days without readings |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1957 | | | | | | | | | | 2.329 | | | | | | 287 |
| 1958 | | 2.59 | | 6.95 | 13.37 | 3.478 | 1.306 | 0.750 | 1.042 | 2.166 | 3.88 | 7.18 | | | | 116 |
| 1959 | 3.92 | 1.90 | 1.42 | 1.61 | 4.63 | 2.462 | 1.638 | 1.430 | 1.204 | 1.055 | 3.17 | 2.34 | 2.24 | 16.93 | 0.978 | 96 |
| 1960 | 1.49 | 1.07 | 2.46 | 20.03 | 12.22 | 2.177 | 1.382 | 1.091 | 0.918 | 2.006 | 4.59 | 4.06 | 4.45 | 27.90 | 0.751 | 78 |
| 1961 | 2.27 | 1.60 | 1.21 | 4.10 | 26.71 | 3.581 | | 1.605 | 1.594 | | 121.10 | | | | | 112 |
| 1962 | | | 2.15 | | 42.38 | 13.591 | 3.574 | 2.045 | 1.647 | 6.159 | 13.67 | 16.41 | | | | 119 |
| 1963 | 5.43 | 2.72 | 2.45 | | | | | | 1.571 | 1.561 | 26.84 | 30.61 | | | | 175 |
| 1964 | | 5.34 | 3.66 | 17.95 | 11.81 | 2.687 | 1.793 | 1.542 | 1.360 | 1.129 | 1.92 | 23.45 | | | | 81 |
| 1965 | 6.85 | 1.75 | 1.27 | 1.64 | 3.43 | 1.497 | 1.090 | 5.885 | 0.859 | 1.116 | 18.72 | 5.36 | 4.12 | 28.31 | 0.741 | 75 |
| 1966 | 1.75 | 1.28 | 1.69 | | | 5.146 | 2.788 | 1.625 | 0.923 | 1.649 | 19.38 | 6.05 | | | | 99 |
| 1967 | 2.82 | 1.67 | 1.13 | 7.60 | | 9.759 | | | | | | | | | | 180 |
| 1968 | 5.06 | 2.90 | 8.44 | 13.16 | 17.36 | 6.331 | 3.692 | 2.620 | 1.622 | 2.810 | 33.97 | 27.09 | 10.43 | 147.00 | 1.320 | 91 |
| 1969 | 5.90 | 3.89 | 10.29 | 18.38 | 16.07 | 5.398 | 2.843 | 1.945 | 1.374 | 1.690 | 8.68 | 6.96 | 6.96 | 114.40 | 1.070 | 91 |
| 1970 | 3.22 | 1.95 | 1.39 | 15.33 | 8.21 | 2.928 | 1.600 | 1.157 | 0.782 | 0.716 | 5.70 | 3.09 | 3.83 | 61.90 | 0.542 | 76 |
| 1971 | 1.30 | 0.69 | 0.45 | 7.19 | 10.46 | 4.969 | 2.020 | 1.192 | 0.845 | 0.855 | 1.90 | 2.27 | 2.85 | 21.91 | 0.335 | 77 |
| 1972 | 1.39 | 0.78 | 0.51 | 0.74 | 15.69 | 7.412 | 2.294 | 1.171 | 0.723 | 8.396 | 1.77 | 7.18 | 4.04 | 28.09 | 0.370 | 88 |
| 1973 | 3.67 | 1.89 | 1.01 | 2.21 | | | 0.594 | 0.575 | 0.583 | 1.145 | 3.27 | 3.06 | | | | 101 |
| 1974 | 1.45 | 0.85 | 1.30 | 10.55 | 8.86 | 4.427 | 3.081 | 1.753 | 1.068 | 0.907 | 10.94 | 5.33 | 4.21 | 36.91 | 0.506 | 77 |
| 1975 | 2.36 | 1.23 | 0.73 | 6.10 | 7.31 | 3.838 | 1.911 | 1.115 | 0.913 | 1.333 | 2.99 | 2.72 | 2.72 | 28.45 | 0.603 | 82 |
| 1976 | 1.27 | 0.72 | 0.48 | 3.50 | 3.85 | 2.489 | 1.236 | 0.741 | 0.478 | 0.664 | 5.18 | 5.78 | 2.20 | 40.51 | 0.377 | 83 |
| 1977 | 4.37 | 1.53 | 1.21 | 14.56 | 26.10 | 3.879 | 1.804 | 1.074 | 0.811 | 0.895 | 15.40 | 10.03 | 6.83 | 81.93 | 0.506 | 78 |
| 1978 | 5.97 | 2.78 | 9.56 | | | | | | 1.331 | 5.427 | 17.53 | | | | | 190 |
| 1979 | 8.46 | 6.92 | 4.10 | 20.43 | 20.39 | 5.766 | 3.235 | 1.940 | | 1.383 | 14.71 | 6.01 | | | | 96 |
| 1980 | 4.56 | 2.11 | 1.21 | 2.01 | 3.13 | 1.511 | 0.843 | 0.571 | 0.353 | 0.485 | 8.71 | 5.00 | 2.54 | 14.08 | 0.145 | 89 |
| 1981 | 1.89 | 1.07 | 4.06 | 28.78 | | 5.996 | 2.346 | 1.067 | 0.519 | 1.028 | 6.66 | 4.35 | | | | 86 |
| 1982 | 2.32 | 0.81 | 0.53 | 10.70 | 14.43 | 6.102 | 1.861 | 0.935 | 0.462 | | 31.29 | 15.24 | | | | 91 |
| 1983 | 5.20 | 2.03 | 0.79 | 2.13 | 10.21 | 4.884 | 1.391 | 0.590 | 0.568 | 0.572 | 2.05 | 4.36 | 2.91 | 42.61 | 0.355 | 112 |
| 1984 | 1.07 | 0.79 | 0.64 | 0.96 | 0.46 | 0.140 | 0.143 | 0.186 | 0.161 | 5.036 | 17.96 | 8.22 | 2.97 | 53.72 | 0.074 | 136 |
| 1985 | 3.18 | 1.42 | 1.63 | 13.67 | 16.67 | 5.541 | 2.203 | | 0.653 | 1.586 | | | | | | 149 |
| 1986 | | | 0.79 | 7.87 | 13.14 | 4.966 | 2.009 | 0.898 | 0.730 | 0.817 | 8.96 | | | | | 147 |
| 1987 | 4.05 | 1.76 | 0.79 | 3.34 | 5.16 | 3.291 | 1.333 | 0.731 | 0.389 | 0.294 | 2.30 | 3.70 | 2.26 | 9.45 | 0.206 | 109 |
| 1988 | 2.20 | 1.19 | 1.01 | | | | 1.664 | 1.352 | 1.156 | 1.618 | 20.79 | | | | | 129 |
| Max | 8.5 | 6.9 | 10.3 | 28.8 | 42.4 | 13.59 | 3.69 | 5.88 | 1.65 | 8.40 | 121.1 | 30.6 | 10.4 | 147.0 | 1.320 | |
| Min | 1.07 | 0.69 | 0.45 | 0.74 | 0.46 | 0.140 | 0.143 | 0.186 | 0.161 | 0.294 | 1.77 | 2.27 | 2.20 | 9.45 | 0.074 | |
| Mean | 3.46 | 1.97 | 2.28 | 9.29 | 13.00 | 4.602 | 1.914 | 1.392 | 0.919 | 1.960 | 14.97 | 8.63 | 4.10 | 47.13 | 0.555 | |
| Runoff(mm) | 46.8 | 26.7 | 30.8 | 125.6 | 175.9 | 62.2 | 25.9 | 18.8 | 12.4 | 26.5 | 202.4 | 116.8 | 55.4 | 637.6 | 7.5 | |

05-Apr-90

MINISTRY OF WATER DEVELOPMENT

Water Resources Assessment Project Documentation Section

MONTHLY AND ANNUAL DISCHARGE DATA

River: KATHITA RIVER
R.G.S: 4F10
Area : 878 sq km

The flows are in: CUMEC

| Year | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Year | Daily max | Daily min | Days without readings |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1959 | . | | | | | | | | | | 12.45 | 12.16 | | | | 305 |
| 1960 | 5.60 | 13.97 | 13.93 | 17.65 | 8.30 | 5.63 | 4.51 | 3.58 | 2.78 | 5.66 | 11.52 | 10.52 | 8.60 | 72.3 | 1.13 | 49 |
| 1961 | 5.28 | 3.96 | 3.29 | 18.13 | 14.11 | | | 4.34 | 3.28 | 91.66 | | | | | | 95 |
| 1962 | | | 16.59 | 96.48 | 26.70 | 12.17 | 9.78 | 14.74 | 10.15 | 11.07 | 11.36 | 10.35 | | | | 113 |
| 1963 | 7.40 | 5.40 | 7.16 | 34.05 | | 12.96 | 9.02 | | 6.00 | 5.88 | 65.23 | 56.86 | | | | 86 |
| 1964 | 36.40 | 19.20 | 15.48 | 49.91 | | 18.58 | 12.99 | 10.39 | 8.17 | 8.29 | 21.21 | 30.94 | | | | 90 |
| 1965 | 26.35 | 20.82 | 12.24 | 16.64 | 15.14 | 4.25 | 1.78 | 6.33 | 5.62 | 6.23 | 13.51 | 8.68 | 11.41 | 47.9 | 1.77 | 72 |
| 1966 | 6.05 | 4.98 | 8.56 | 43.61 | 16.94 | 9.16 | 6.78 | 5.50 | 4.47 | 11.73 | 38.55 | 10.68 | 13.88 | 470.8 | 3.71 | 70 |
| 1967 | 6.45 | 4.90 | 4.91 | 14.16 | 53.47 | 17.12 | 9.83 | 6.67 | 5.20 | 14.62 | 68.34 | 44.54 | 20.92 | 252.7 | 3.69 | 75 |
| 1968 | 17.42 | 15.72 | 29.92 | 53.09 | 46.66 | 29.43 | 13.57 | 9.98 | 7.17 | 12.42 | 54.39 | 69.63 | 29.96 | 222.1 | 5.78 | 64 |
| 1969 | 25.56 | 20.32 | 27.62 | 23.71 | 34.55 | 16.27 | 10.71 | 8.42 | 6.17 | 7.44 | 21.71 | 12.94 | 17.94 | 106.0 | 5.46 | 69 |
| 1970 | 8.57 | 6.63 | 9.01 | 24.44 | 10.52 | 7.53 | 5.75 | 4.97 | 4.04 | 4.27 | 8.62 | 5.47 | 8.30 | 154.4 | 3.51 | 67 |
| 1971 | | | 2.79 | 20.25 | 14.32 | 5.64 | 4.67 | 4.91 | 3.79 | 3.86 | 9.43 | 5.68 | | | | 80 |
| 1972 | 4.11 | 4.07 | 2.99 | 2.73 | 6.89 | 3.73 | 2.94 | 3.47 | 2.48 | 8.48 | 47.57 | 17.10 | 8.85 | 187.0 | 2.08 | 68 |
| 1973 | 10.85 | 6.81 | 5.28 | 6.39 | 5.49 | 4.79 | 4.49 | 3.72 | 3.33 | 3.48 | 6.87 | 5.15 | 5.55 | 18.5 | 3.07 | 65 |
| 1974 | 3.31 | 3.11 | 4.37 | 23.40 | 12.48 | 6.51 | 5.27 | 4.01 | 3.30 | 3.37 | 12.45 | 7.15 | 7.39 | 82.8 | 2.48 | 66 |
| 1975 | 4.77 | 3.55 | 3.08 | 7.83 | 7.67 | 4.32 | 3.46 | 3.14 | 2.74 | 5.80 | 7.72 | 5.86 | 5.00 | 56.8 | 2.48 | 62 |
| 1976 | 3.97 | 3.61 | 2.94 | 6.81 | 4.53 | | 3.20 | 2.63 | 2.24 | 2.84 | 8.79 | 9.97 | | | | 78 |
| 1977 | 6.40 | 4.56 | 6.45 | 21.74 | 19.71 | 8.82 | 6.27 | 5.10 | 3.86 | 4.17 | 40.21 | 27.10 | 12.87 | 101.7 | 3.23 | 73 |
| 1978 | 15.35 | 9.68 | 25.87 | 71.56 | 37.64 | 18.04 | 12.24 | 8.06 | 6.55 | 16.15 | 18.55 | 27.32 | 22.28 | 148.1 | 4.84 | 74 |
| 1979 | 22.99 | 26.64 | 17.95 | 27.37 | 28.50 | 16.89 | 11.06 | 7.88 | 6.26 | 6.52 | 36.62 | 14.00 | 18.46 | 216.9 | 5.04 | 73 |
| 1980 | 8.91 | 6.88 | 5.58 | 8.10 | 9.59 | 6.32 | 5.01 | 4.67 | 4.00 | 4.90 | 229.22 | 10.56 | 25.01 | 6086.0 | 3.23 | 77 |
| 1981 | 6.22 | 5.06 | 12.22 | 26.19 | 31.61 | 14.22 | 8.70 | 6.23 | 4.97 | 6.24 | 14.75 | 9.73 | 12.21 | 92.9 | 4.46 | 74 |
| 1982 | 6.61 | 4.90 | 4.48 | 19.59 | 19.34 | 11.54 | 7.02 | 5.41 | 4.39 | | | 37.17 | | | | 117 |
| 1983 | 15.79 | 10.19 | 6.80 | 12.64 | 12.68 | 7.46 | 5.58 | 4.90 | 4.27 | 4.23 | 8.21 | 10.90 | 8.63 | 70.8 | 3.56 | 91 |
| 1984 | 7.75 | 4.70 | 4.11 | 5.28 | 3.75 | 2.71 | 2.29 | 2.18 | 2.04 | 23.73 | 32.73 | 16.04 | 8.95 | 200.5 | 1.60 | 79 |
| 1985 | 8.09 | 6.33 | 6.97 | 25.25 | 26.44 | 13.09 | 7.84 | 5.77 | 4.68 | 5.40 | 11.72 | | | | | 97 |
| 1986 | | 4.67 | 4.40 | 16.05 | 18.19 | 8.64 | 6.15 | 4.48 | 3.87 | 3.94 | 15.76 | 26.76 | | | | 76 |
| 1987 | 9.19 | 6.06 | 4.15 | 6.68 | 4.47 | 4.94 | 3.04 | 2.51 | 1.80 | 1.81 | 10.60 | 5.07 | 5.01 | 92.2 | 1.28 | 76 |
| Max | 36.4 | 26.6 | 29.9 | 96.5 | 53.5 | 29.4 | 13.6 | 14.7 | 10.2 | 91.7 | 229.2 | 69.6 | 30.0 | 6086.0 | 5.78 | |
| Min | 3.31 | 3.11 | 2.79 | 2.73 | 3.75 | 2.71 | 1.78 | 2.18 | 1.80 | 1.81 | 6.87 | 5.07 | 5.00 | 18.49 | 1.13 | |
| Mean | 11.18 | 8.72 | 9.61 | 24.99 | 18.83 | 10.41 | 6.81 | 5.70 | 4.56 | 10.52 | 31.04 | 18.83 | 13.22 | 456.86 | 3.28 | |
| Runoff(mm) | 34.1 | 26.6 | 29.3 | 76.2 | 57.5 | 31.8 | 20.8 | 17.4 | 13.9 | 32.1 | 94.7 | 57.4 | 40.3 | 1393.7 | 10.0 | |

16-Jun-89

MINISTRY OF WATER DEVELOPMENT

Water Resources Assessment Project  Documentation Section

MONTHLY AND ANNUAL DISCHARGE DATA

River: THINGITHU RIVER
R.G.S: 4F17
Area : 303 sq km

The flows are in: CUMEC

| Year | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Year | Daily max | Daily min | Days without readings |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1965 | | | | | | | | 1.71 | 1.313 | 1.561 | 3.16 | 1.63 | | | | 224 |
| 1966 | 1.23 | 0.77 | 0.80 | | | | | | 0.231 | 4.621 | 17.04 | 3.82 | | | | 136 |
| 1967 | 2.34 | 1.54 | 1.34 | 4.56 | 24.96 | 4.18 | 2.13 | 1.30 | 0.836 | 5.357 | 41.27 | 10.79 | 8.39 | 265.30 | 0.629 | 77 |
| 1968 | 4.44 | 5.35 | 11.50 | 22.89 | 11.53 | 5.10 | 2.67 | 1.75 | 1.148 | 2.039 | 18.63 | 27.14 | 9.51 | 183.60 | 0.894 | 60 |
| 1969 | 5.21 | 4.81 | 6.51 | 4.15 | 8.88 | 3.24 | 2.09 | 1.50 | 1.064 | 1.318 | 9.49 | 2.92 | 4.26 | 80.54 | 0.914 | 70 |
| 1970 | 1.61 | 1.30 | 1.25 | 11.16 | 3.05 | 1.78 | 1.32 | 1.23 | 0.893 | 0.927 | 2.32 | 1.20 | 2.33 | 97.46 | 0.645 | 70 |
| 1971 | | | 0.87 | | 4.80 | 1.56 | 1.15 | 1.04 | 0.576 | 0.611 | 2.68 | 1.65 | | | | 101 |
| 1972 | 1.30 | 1.13 | 0.74 | 0.67 | 1.51 | 0.93 | 0.80 | 0.62 | 0.522 | 3.299 | 15.26 | 3.91 | 2.55 | 110.20 | 0.381 | 67 |
| 1973 | 2.28 | 1.19 | 0.92 | 1.14 | 1.03 | 0.93 | 0.74 | 0.56 | 0.514 | 0.488 | 1.63 | 1.43 | 1.07 | 5.91 | 0.381 | 63 |
| 1974 | 1.02 | 0.82 | 1.72 | 11.46 | 4.70 | 2.26 | 1.62 | 1.09 | 0.929 | 0.828 | 3.56 | 2.86 | 2.73 | 94.98 | 0.596 | 66 |
| 1975 | 1.48 | 1.00 | 0.86 | 4.33 | 1.81 | 1.30 | 1.10 | 0.84 | 0.790 | 2.002 | 3.35 | 2.30 | 1.76 | 23.64 | 0.154 | 62 |
| 1976 | 1.50 | 1.18 | 0.83 | 4.00 | 1.56 | | 1.25 | 1.10 | 0.926 | 1.220 | 8.94 | 6.87 | | | | 78 |
| 1977 | 3.21 | 1.98 | 4.13 | 11.43 | 11.73 | 3.89 | 2.20 | 1.75 | 1.239 | 1.179 | 18.14 | 11.21 | 6.01 | 69.90 | 1.010 | 75 |
| 1978 | 5.36 | 2.86 | 12.41 | 33.48 | 11.05 | 4.75 | 2.96 | 1.92 | 1.589 | 10.800 | 7.81 | 11.18 | 8.86 | 81.81 | 1.010 | 73 |
| 1979 | 9.27 | 10.39 | 5.36 | 11.55 | 12.33 | 5.29 | 3.13 | 2.37 | 1.612 | 2.069 | 18.72 | 3.83 | 7.11 | 109.50 | 1.320 | 79 |
| 1980 | 2.22 | 1.60 | 1.32 | 2.70 | 3.11 | 2.19 | 1.67 | 1.27 | 1.242 | 1.666 | 7.51 | 3.47 | 2.49 | 21.49 | 0.879 | 79 |
| 1981 | 1.95 | 1.51 | 3.97 | 25.28 | 15.80 | 4.20 | 2.27 | 1.67 | 1.260 | 1.787 | 4.11 | 2.84 | 5.55 | 144.40 | 1.080 | 75 |
| 1982 | 2.44 | 1.71 | 1.66 | 5.57 | 5.30 | 3.41 | 2.33 | 1.63 | 1.228 | 6.788 | 20.20 | | | | | 90 |
| 1983 | 3.52 | 2.49 | 1.65 | 4.40 | 3.12 | 2.00 | 1.54 | 1.28 | 1.022 | 1.249 | 2.73 | 2.99 | 2.33 | 32.95 | 0.817 | 92 |
| 1984 | 3.32 | 1.86 | 1.52 | 2.06 | 1.30 | 0.98 | 0.59 | 0.55 | 0.438 | 10.257 | 15.32 | 5.42 | 3.63 | 51.45 | 0.280 | 80 |
| 1985 | 2.98 | 2.31 | 3.54 | 8.35 | 11.58 | 4.22 | 2.53 | 1.81 | 1.347 | 1.405 | 3.72 | | | | | 97 |
| 1986 | | 1.07 | 1.15 | 7.99 | 8.89 | 3.01 | 1.68 | 0.92 | 0.630 | 0.747 | 6.55 | 9.48 | | | | 78 |
| 1987 | 3.20 | 1.69 | 1.23 | 2.20 | 1.92 | 1.68 | 1.08 | 0.82 | 0.507 | 0.308 | 4.20 | 2.41 | 1.77 | 58.19 | 0.251 | 79 |
| Max | 9.3 | 10.4 | 12.4 | 33.5 | 25.0 | 5.3 | 3.1 | 2.4 | 1.61 | 10.80 | 41.3 | 27.1 | 9.5 | 265.3 | 1.320 | |
| Min | 1.02 | 0.77 | 0.74 | 0.67 | 1.03 | 0.93 | 0.59 | 0.55 | 0.231 | 0.308 | 1.63 | 1.20 | 1.07 | 5.91 | 0.154 | |
| Mean | 2.99 | 2.31 | 2.97 | 8.97 | 7.14 | 2.84 | 1.75 | 1.31 | 0.950 | 2.719 | 10.28 | 5.68 | 4.40 | 89.46 | 0.703 | |
| Runoff(mm) | 26.5 | 20.4 | 26.2 | 79.3 | 63.1 | 25.1 | 15.5 | 11.5 | 8.4 | 24.0 | 90.8 | 50.2 | 38.9 | 790.8 | 6.2 | |

15-May-89

MINISTRY OF WATER DEVELOPMENT
Water Resources Assessment Project Documentation Section

MONTHLY AND ANNUAL DISCHARGE DATA

River: ROJEWERO RIVER
R.G.S: 4F18
Area : 479 sq km

The flows are in: CUMEC

| Year | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Year | Daily max | Daily min | Days without readings |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1966 | | 3.04 | 3.02 | | | 5.08 | 3.78 | 3.10 | 2.68 | 2.69 | 5.74 | 3.33 | | | | 35 |
| 1967 | 2.77 | 2.44 | 2.30 | 9.80 | | | | | 5.17 | 6.42 | 16.85 | 14.45 | | | | 116 |
| 1968 | 11.22 | 8.78 | | | 17.78 | 12.97 | 10.26 | 8.62 | 7.31 | 7.06 | 19.00 | 27.04 | | | | 34 |
| 1969 | 17.14 | 14.01 | 12.80 | 10.55 | 13.09 | 8.78 | 7.81 | 6.85 | 6.03 | 5.47 | 6.85 | 5.21 | 9.53 | 23.01 | 4.29 | 3 |
| 1970 | 4.08 | 3.85 | 3.53 | 4.87 | 2.99 | | 3.17 | 2.76 | 2.62 | 2.35 | 2.80 | 2.12 | | | | 30 |
| 1971 | 1.12 | 1.16 | | | 4.65 | 1.92 | | | 1.34 | 1.23 | 2.38 | 1.88 | | | | 72 |
| 1972 | 1.26 | 0.98 | 0.79 | 0.70 | 2.43 | 1.56 | 1.24 | 0.99 | 0.85 | | | | | | | 93 |
| 1973 | | | | | | | | | | 1.55 | 2.14 | 1.83 | | | | 218 |
| 1974 | | | | | | 1.52 | 1.34 | 1.25 | | | | | | | | 219 |
| Max | 17.1 | 14.0 | 12.8 | 10.5 | 17.8 | 13.0 | 10.3 | 8.6 | 7.3 | 7.1 | 19.0 | 27.0 | 9.5 | 23.0 | 4.29 | |
| Min | 1.12 | 0.98 | 0.79 | 0.70 | 2.43 | 1.52 | 1.24 | 0.99 | 0.85 | 1.23 | 2.14 | 1.83 | 9.53 | 23.01 | 4.29 | |
| Mean | 6.27 | 4.89 | 4.49 | 6.48 | 8.19 | 5.30 | 4.60 | 3.93 | 3.71 | 3.82 | 7.96 | 7.98 | 9.53 | 23.01 | 4.29 | |
| Runoff(mm) | 35.0 | 27.4 | 25.1 | 36.2 | 45.8 | 29.7 | 25.7 | 22.0 | 20.8 | 21.4 | 44.5 | 44.6 | 53.3 | 128.7 | 24.0 | |

02-Mar-90

MINISTRY OF WATER DEVELOPMENT

Water Resources Assessment Project  Documentation Section

MONTHLY AND ANNUAL DISCHARGE DATA

River: THANANTU RIVER
R.G.S: 4F20
Area : 211 sq km

The flows are in: CUMEC

| Year | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Year | Daily max | Daily min | Days without readings |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1966 | | 1.60 | 3.30 | 13.255 | 14.057 | 4.611 | 2.180 | 1.005 | 0.343 | | | | | | | 129 |
| 1967 | | | | | | | | | | | | | | | | 365 |
| 1968 | | | | | | | | | | | | | | | | 366 |
| 1969 | | | | | | | | | | | | | | | | 365 |
| 1970 | | | | | | | | | | | | | | | | 365 |
| 1971 | | | | | | | | | | | | | | | | 365 |
| 1972 | | | | | | | | | | | | | | | | 366 |
| 1973 | | | | | | | | | | | | | | | | 365 |
| 1974 | | | | | | | | | | | | | | | | 365 |
| 1975 | | | | | | | | | | | | | | | | 365 |
| 1976 | | | | | | | | | | | | | | | | 366 |
| 1977 | | | | | | | | | | | | | | | | 365 |
| 1978 | | | | | | | | | | | 5.69 | 9.72 | | | | 289 |
| 1979 | 7.221 | 5.82 | 4.56 | 15.119 | 12.544 | 6.203 | | | 1.697 | 1.423 | 11.26 | 2.79 | | | | 105 |
| 1980 | 1.880 | | | | | | | | 0.269 | 0.626 | 6.15 | 1.95 | | | | 207 |
| 1981 | 1.301 | 0.92 | 2.09 | | | 9.620 | 5.452 | 3.189 | 1.585 | 1.947 | 5.84 | 4.66 | | | | 50 |
| 1982 | 2.485 | 1.51 | 1.04 | 5.524 | 6.123 | 3.875 | 1.886 | 1.180 | 0.799 | 3.612 | 9.95 | 9.16 | 3.94 | 45.4 | 0.492 | 13 |
| 1983 | 5.539 | 3.35 | 1.63 | 4.245 | 5.763 | 2.162 | 1.167 | 0.645 | 0.267 | 0.161 | 0.52 | 0.32 | 2.14 | 32.1 | 0.074 | 42 |
| 1984 | 0.134 | | | 0.309 | 0.296 | 0.163 | 0.128 | 0.083 | | | | 4.81 | | | | 172 |
| 1985 | 2.790 | 1.81 | 1.47 | 6.023 | 7.068 | 4.091 | 2.394 | 1.509 | 0.928 | 1.076 | 4.41 | 3.13 | 3.06 | 32.4 | 0.225 | 121 |
| 1986 | 1.975 | 1.60 | 1.23 | 16.290 | 4.508 | 2.909 | 2.042 | 1.238 | 0.767 | 0.580 | 7.92 | 5.27 | 3.85 | 44.4 | 0.440 | 114 |
| 1987 | 2.938 | 2.11 | 1.27 | 1.974 | 1.523 | 0.844 | 0.399 | 0.175 | | | 2.16 | 1.41 | | | | 137 |
| 1988 | 0.929 | 0.47 | 0.44 | 7.523 | 3.668 | 2.227 | 1.481 | 0.854 | 0.637 | 0.857 | 8.33 | | | | | 109 |
| Max | 7.22 | 5.8 | 4.6 | 16.29 | 14.06 | 9.62 | 5.45 | 3.19 | 1.70 | 3.61 | 11.3 | 9.7 | 3.9 | 45.4 | 0.492 | |
| Min | 0.134 | 0.47 | 0.44 | 0.309 | 0.296 | 0.163 | 0.128 | 0.083 | 0.267 | 0.161 | 0.52 | 0.32 | 2.14 | 32.1 | 0.074 | |
| Mean | 2.719 | 2.13 | 1.89 | 7.807 | 6.172 | 3.670 | 1.903 | 1.098 | 0.810 | 1.285 | 6.22 | 4.32 | 3.25 | 38.6 | 0.308 | |
| Runoff(mm) | 34.5 | 27.1 | 24.0 | 99.1 | 78.3 | 46.6 | 24.2 | 13.9 | 10.3 | 16.3 | 79.0 | 54.9 | 41.2 | 489.4 | 3.9 | |

01-Aug-89

## Summary of Peak Flows Monitored in April-May and November/December 1988

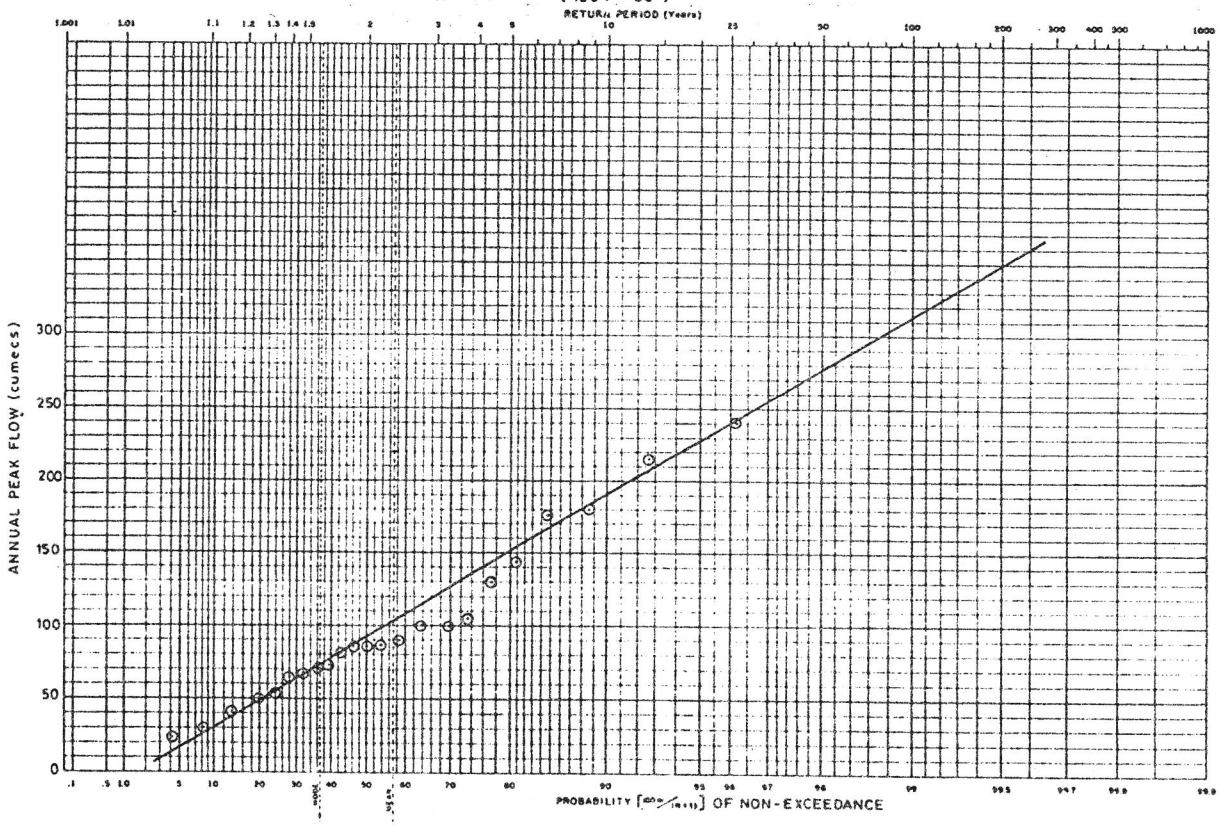
## By WRAP Assistant Hydrologist

## Using Bridge Crane Method.

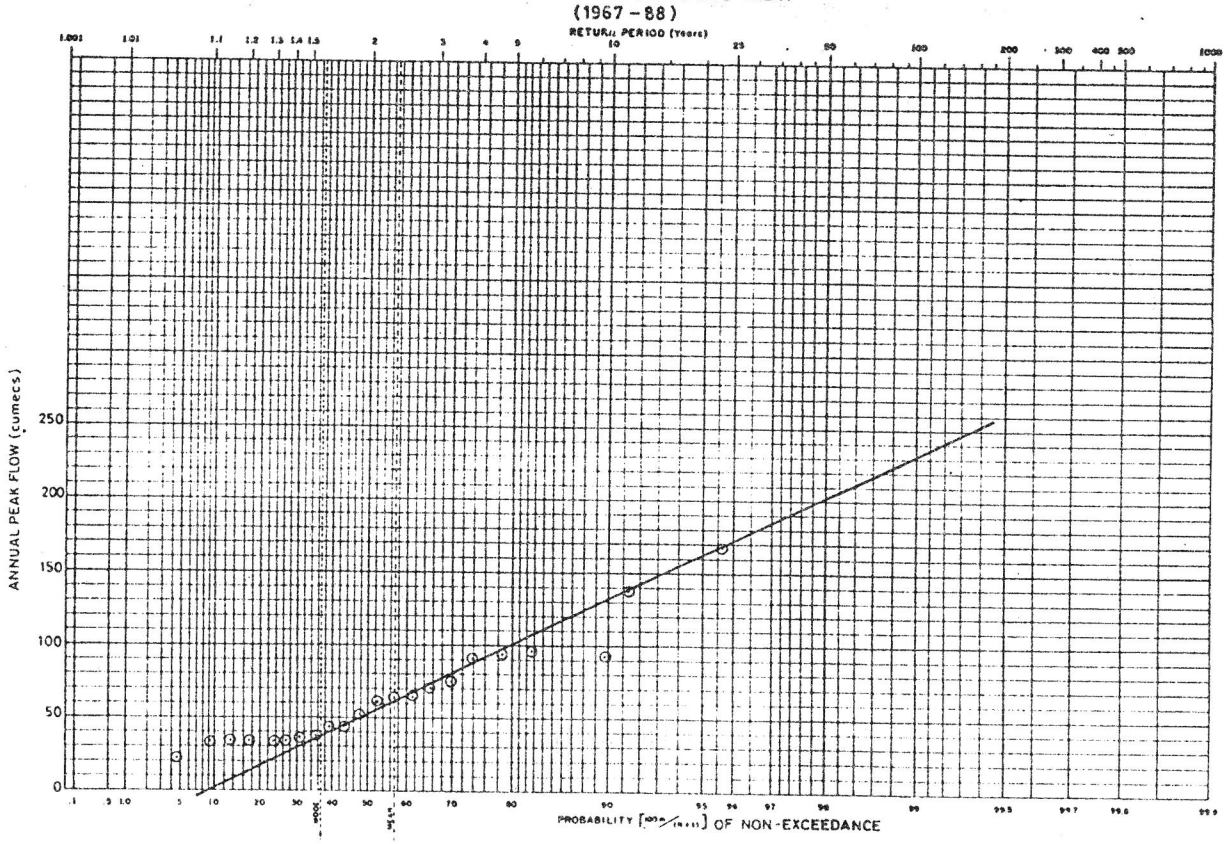
| River | RGS | H (m) | Q (cumecs) | Date | Remarks |
|---|---|---|---|---|---|
| Thangatha | 4F8 | 0.80 | 4.64 | 14/04/88 | Cleared vegetation at gauge. |
| | | 0.92 | - | 14/04/88 | Check reading (c/r) |
| | | 0.86 | 5.88 | 18/04/88 | |
| | | 1.33 | 30.39 | 18/04/88 | |
| | | 1.43 | 32.48 | 19/04/88 | |
| | | 4.00 | 118.78 | 20/04/88 | Flood level over 3 m. Flood mark pegged. |
| | | 4.48 | 128.72 | 20/04/88 | |
| | | 4.63 | - | 20/04/88 | c/r Maximum flood mark pegged 3.00-4.5m gauge required |
| | | 2.85 | 98.21 | 21/04/88 | |
| | | 1.45 | 30.62 | 21/04/88 | |
| | | 2.65 | 91.48 | 22/04/88 | |
| | | 2.70 | - | 27/04/88 | c/r |
| | | 2.08 | - | 27/04/88 | c/r |
| | | 1.60 | - | 27/04/88 | c/r |
| | | 0.95 | 7.48 | 04/11/88 | |
| | | 0.76 | 4.48 | 08/11/88 | |
| | | 2.10 | 31.68 | 14/11/88 | |
| Ura | 4F9 | 1.97 | 39.61 | 27/04/88 | |
| | | 0.89 | 11.79 | 14/04/88 | |
| | | 1.12 | 17.81 | 18/04/88 | |
| | | 1.32 | 19.14 | 19/04/88 | |
| | | 2.65 | 57.13 | 21/04/88 | |
| | | 2.48 | 53.01 | 21/04/88 | |
| | | 1.70 | 30.97 | 21/04/88 | |
| | | 2.61 | - | 22/04/88 | c/r |
| | | 3.66 | 163.23 | 25/04/88 | Flood level over 3 m. Flood mark pegged. |
| | | 3.36 | 132.03 | 27/04/88 | 3 - 4.5 m gauge requred. |
| | | 2.04 | 36.62 | 28/04/88 | |
| | | 1.06 | 12.56 | 04/11/88 | |
| | | 0.81 | 8.24 | 08/11/88 | |
| | | 1.50 | 24.68 | 14/11/88 | |
| | | 1.56 | 24.88 | 14/11/88 | |
| | | 1.60 | 28.83 | 14/11/88 | |
| | | 1.66 | 28.51 | 14/11/88 | |
| | | 1.73 | 34.50 | 14/11/88 | |
| | | 1.80 | 34.82 | 14/11/88 | |
| | | 1.86 | 40.67 | 14/11/88 | |
| | | 1.89 | 38.40 | 14/11/88 | |
| | | 1.92 | 41.68 | 14/11/88 | |
| | | 1.82 | 42.67 | 14/11/88 | |
| Kathita | 4F10 | 0.65 | 11.09 | 13/04/88 | |
| | | 0.58 | 7.15 | 15/04/88 | |
| | | 1.15 | 51.33 | 20/04/88 | |
| | | 1.40 | 69.71 | 21/04/88 | |
| | | 1.06 | - | 25/04/88 | c/r |
| | | 1.36 | 59.16 | 28/04/88 | |
| | | 1.35 | 51.44 | 27/04/88 | |
| | | 0.93 | 23.09 | 04/05/88 | |
| | | 0.91 | 26.56 | 04/05/88 | |
| | | 1.14 | 35.24 | 04/11/88 | |
| | | 1.34 | 86.55 | 04/11/88 | |
| | | 1.53 | 78.64 | 17/11/88 | |
| | | 1.46 | 68.06 | 17/11/88 | |
| | | 1.80 | 194.41 | 18/11/88 | |
| | | 2.14 | 220.22 | 18/11/88 | |
| Thingithu | 4F17 | 1.00 | 12.90 | 13/04/88 | |
| | | 0.70 | 3.52 | 15/04/88 | |
| | | 0.93 | - | 19/04/88 | c/r |
| | | 1.02 | 11.31 | 04/05/88 | |
| | | 0.81 | 4.90 | 09/11/88 | |

| River | RGS | H (m) | Q (cumecs) | Date | Remarks |
|---|---|---|---|---|---|
| Thanantu | 4F20 | 0.48 | - | 13/04/88 | c/r |
| | | 0.56 | 2.40 | 14/04/88 | |
| | | 0.80 | 6.69 | 14/04/88 | |
| | | 0.56 | - | 15/04/88 | c/r |
| | | 0.63 | 3.49 | 18/04/88 | |
| | | 1.00 | 12.40 | 19/04/88 | |
| | | 1.30 | 23.33 | 19/04/88 | |
| | | 0.85 | - | 20/04/88 | c/r |
| | | 2.70 | - | 21/04/88 | c/r |
| | | 2.84 | 59.70 | 21/04/88 | |
| | | 3.20 | - | 21/04/88 | c/r - maximum GHT 3.20 m |
| | | 2.75 | 50.79 | 21/04/88 | |
| | | 2.66 | 54.35 | 21/04/88 | |
| | | 1.36 | 13.52 | 21/04/88 | |
| | | 2.85 | - | 22/04/88 | c/r |
| | | 0.82 | - | 26/04/88 | c/r |
| | | 0.88 | - | 27/04/88 | c/r |
| | | 1.17 | 19.16 | 28/04/88 | |
| | | 0.74 | 6.51 | 02/05/88 | |
| | | 0.70 | 5.54 | 05/05/88 | |
| | | 1.12 | 7.37 | 04/11/88 | |
| | | 0.56 | 2.44 | 08/11/88 | |
| | | 1.35 | 28.94 | 14/11/88 | |
| | | 1.26 | 27.59 | 14/11/88 | |
| | | 0.92 | 12.91 | 17/11/88 | |
| | | 1.05 | 17.74 | 17/11/88 | |
| | | 1.10 | 18.78 | 17/11/88 | |
| Mutonga | 4EA6 | 1.93 | - | 15/04/88 | c/r - Bridge very high for the crane |
| | | 2.74 | - | 20/04/88 | c/r |
| | | 2.44 | - | 26/04/88 | c/r |
| | | 2.91 | - | 29/04/88 | c/r - Current very strong for the boat |
| | | 2.12 | 26.06 | 28/11/88 | |
| | | 2.00 | 19.17 | 02/12/88 | |
| Ruguti | 4EB6A (new) | 0.94 | - | 15/04/88 | c/r |
| | | 4.11 | - | 14/04/88 | c/r Flood level over 3.00 m. Flood mark Regged. 3 - 4.5 m gauge required |
| | | 1.93 | 26.19 | 20/04/88 | |
| | | 1.97 | 29.94 | 26/04/88 | |
| | | 1.78 | 21.08 | 28/04/88 | |
| | | 1.25 | 07.48 | 07/11/88 | |
| Thuchi | 4EB7 | 1.72 | - | 20/04/88 | c/r - the current was very strong for the boat. |
| | | 2.00 | - | 26/04/88 | c/r |
| | | 1.89 | - | 02/05/88 | c/r |
| Mara | 4EB11 | 0.84 | 11.30 | 15/04/88 | |
| | | 1.91 | 43.32 | 20/04/88 | |
| | | 2.24 | 71.60 | 26/04/88 | |
| | | 2.09 | 62.99 | 28/04/88 | |
| | | 1.39 | 30.86 | 07/11/88 | |

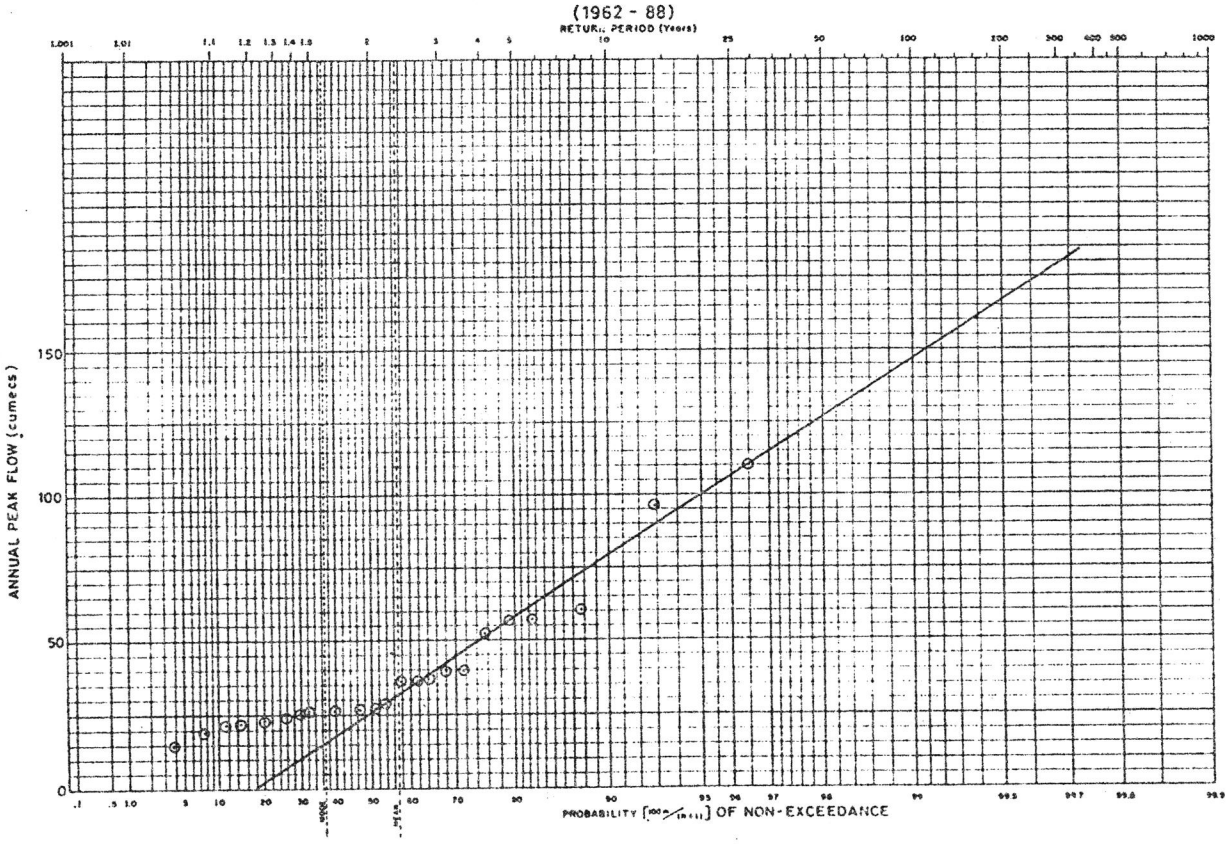
PEAK FLOW ANALYSIS AT RGS 4EA6
( 1964 - 88 )



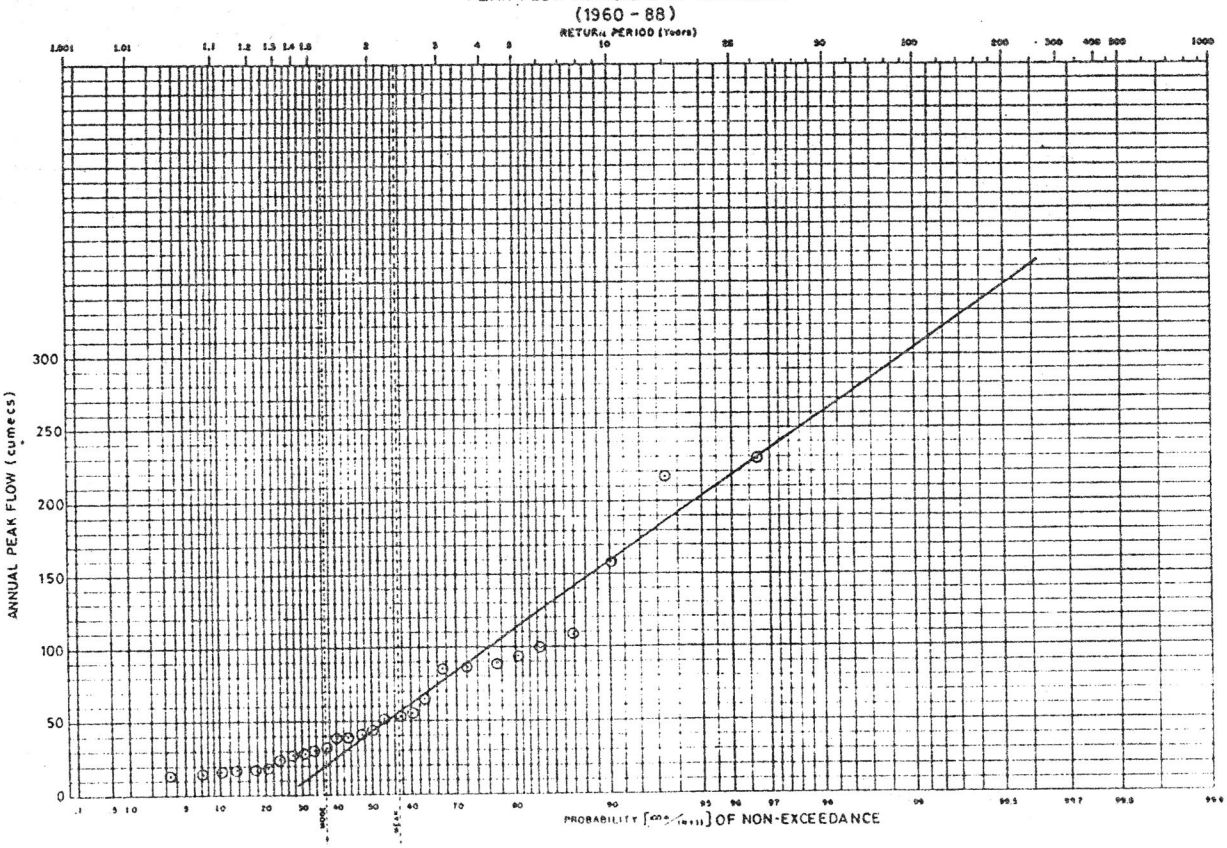

PEAK FLOW ANALYSIS AT RGS 4EB11
(1967 - 88)



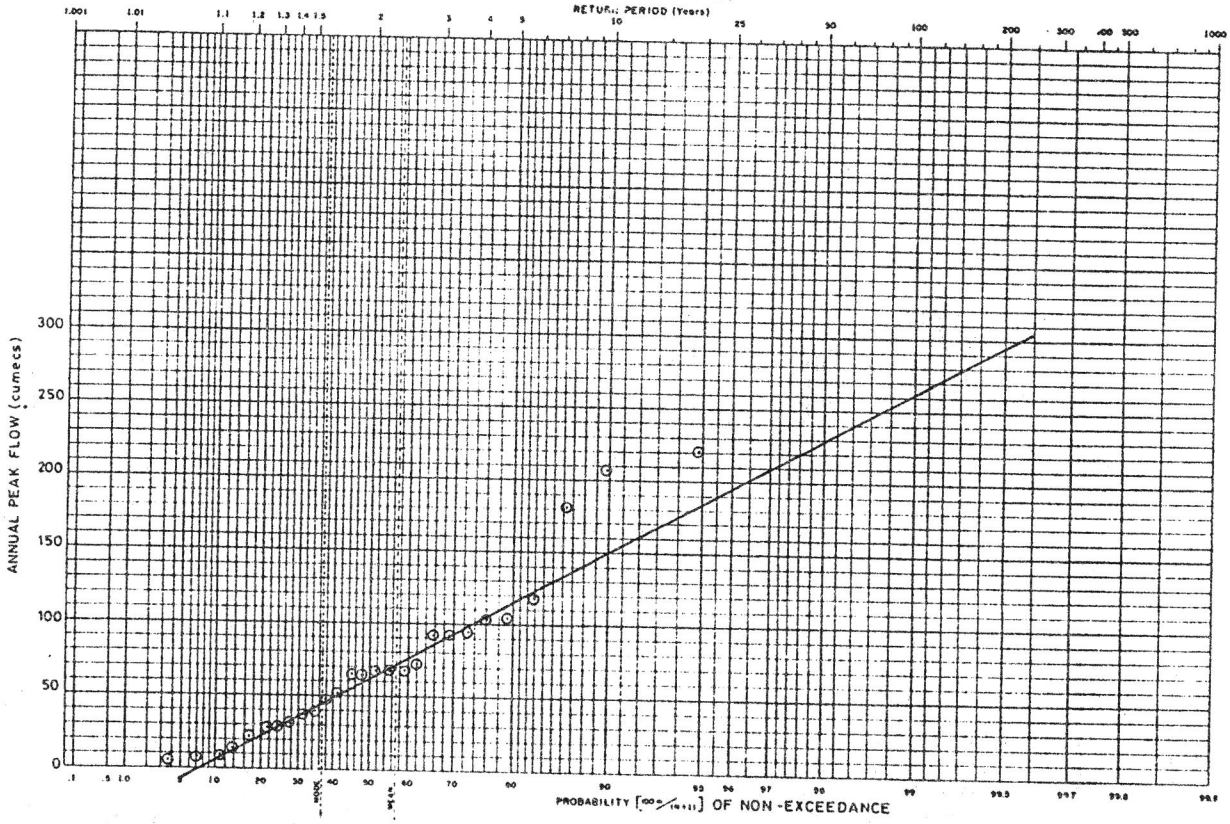
PEAK FLOW ANALYSIS AT RGS 4EB6A
(1962 - 88)



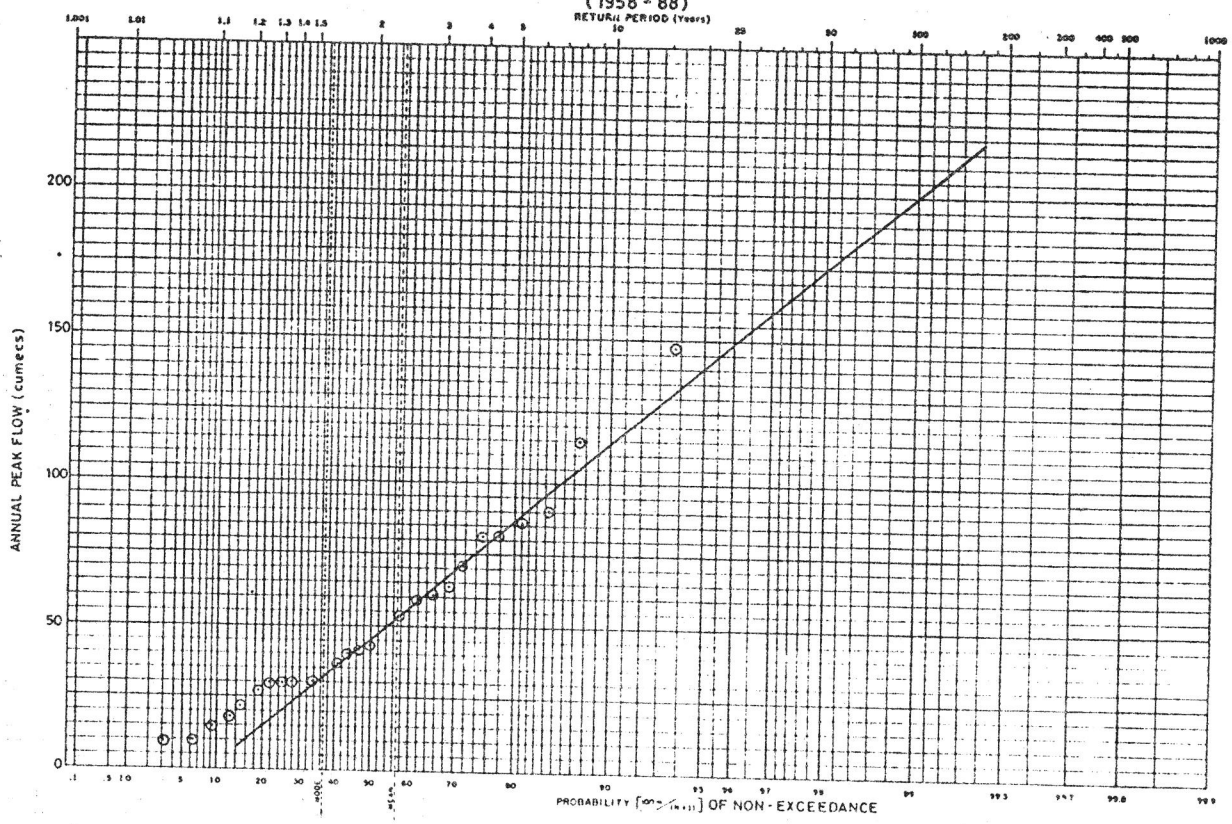

PEAK FLOW ANALYSIS AT RGS 4EB7
(1960 - 88)



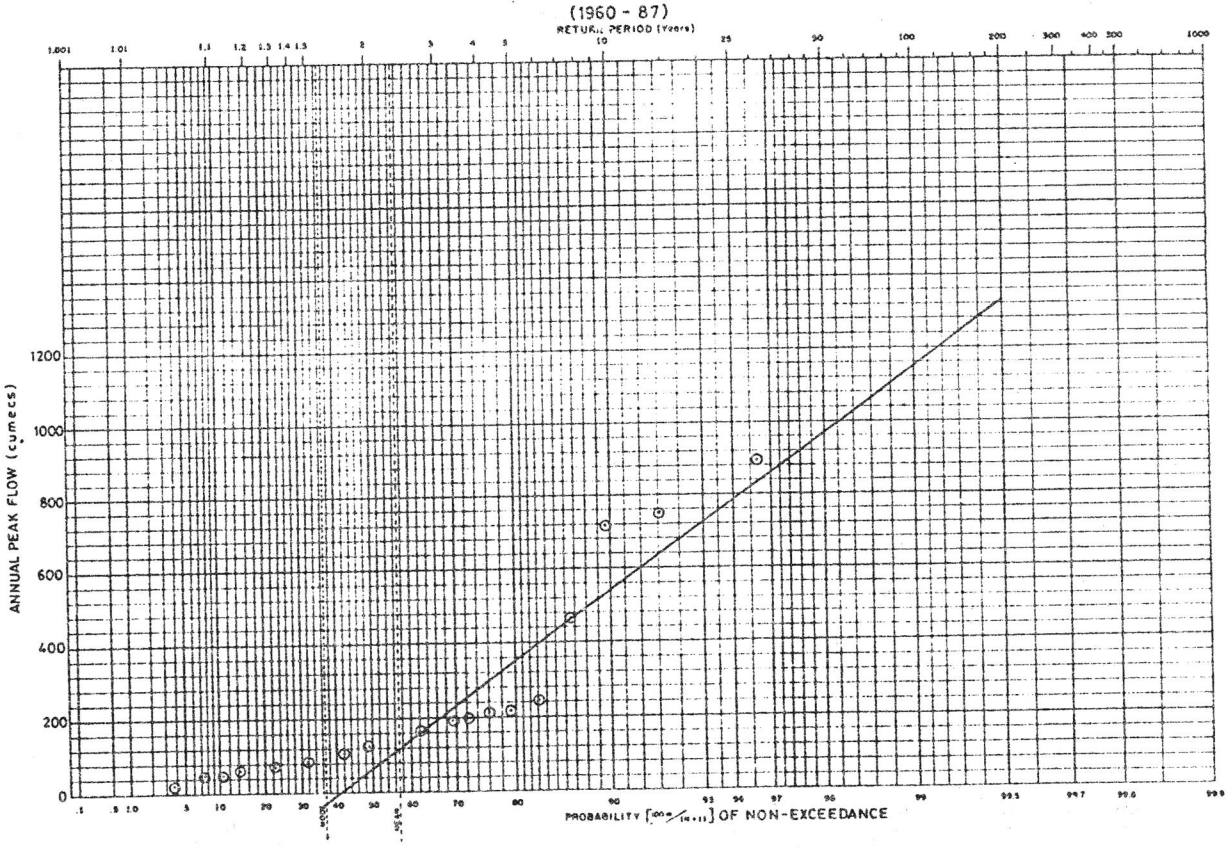
PEAK FLOW ANALYSIS AT RGS 4F8
(1958 - 1984 and 1988)



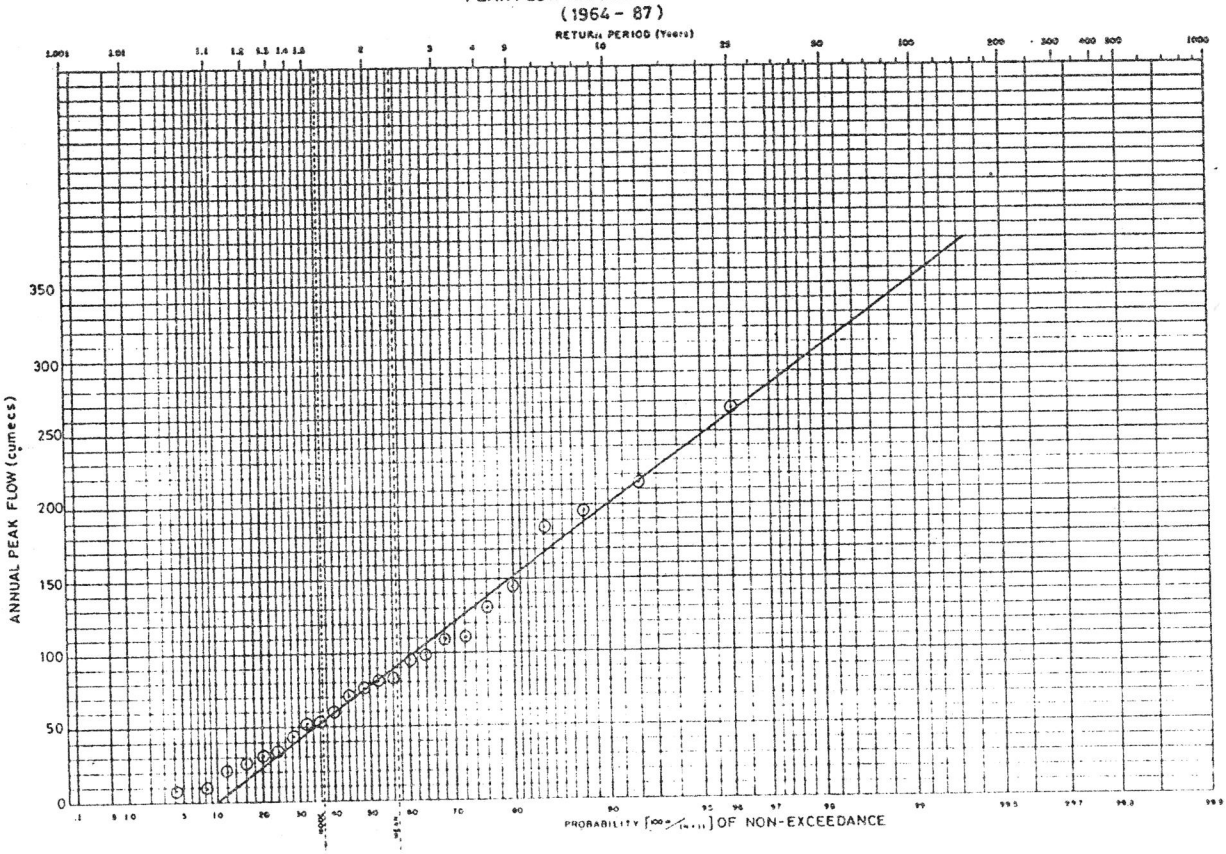

PEAK FLOW ANALYSIS AT RGS 4F9
(1958 - 88)



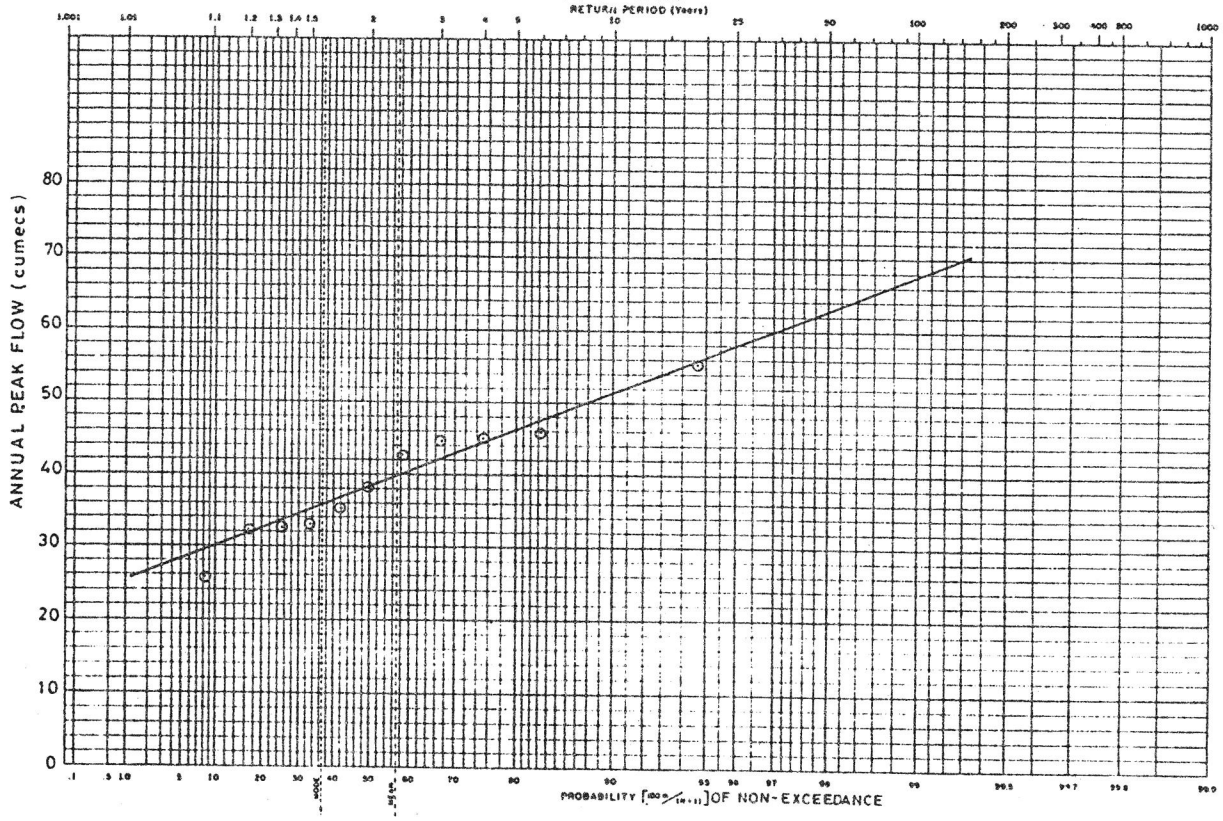
PEAK FLOW ANALYSIS AT RGS 4F10
(1960 - 87)

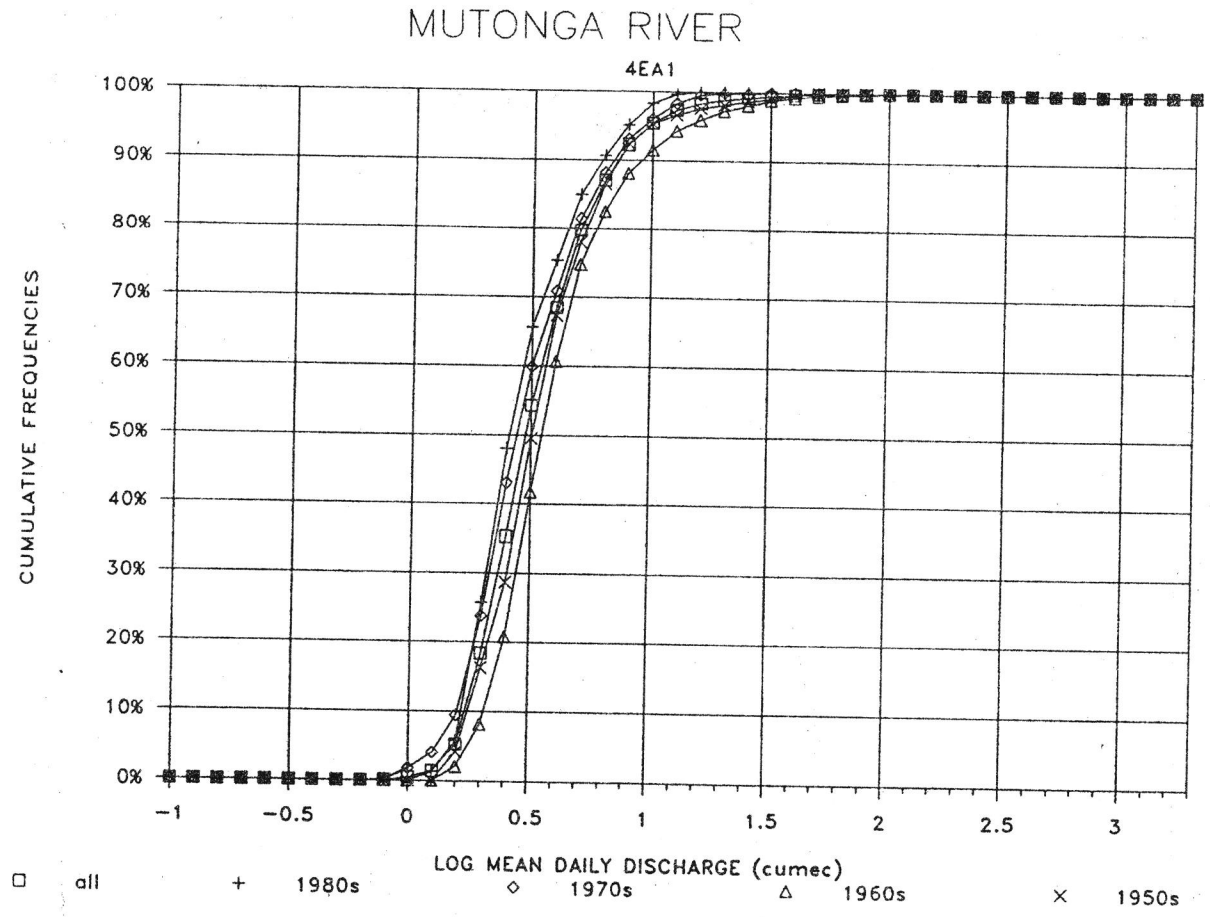


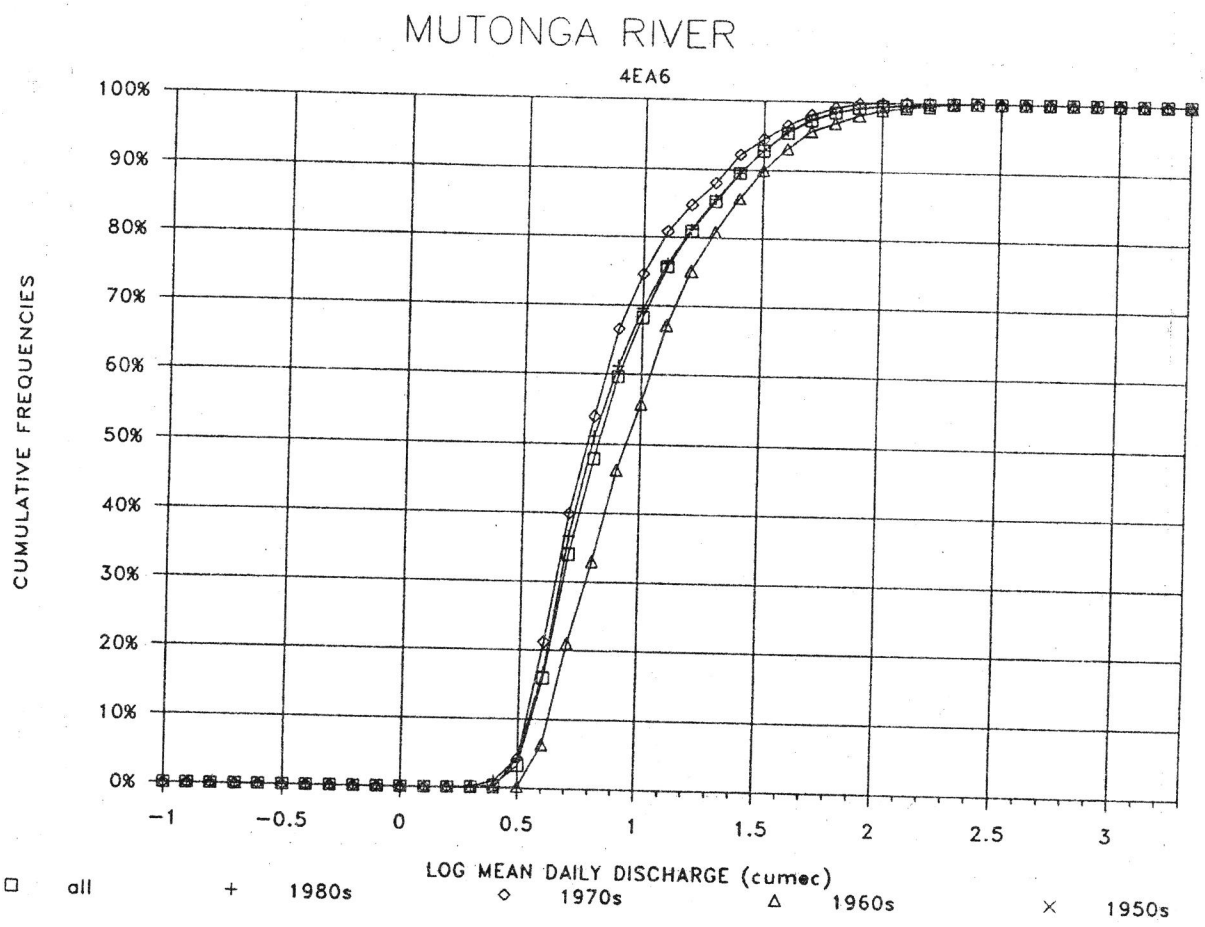

PEAK FLOW ANALYSIS AT RGS 4F17
(1964 - 87)

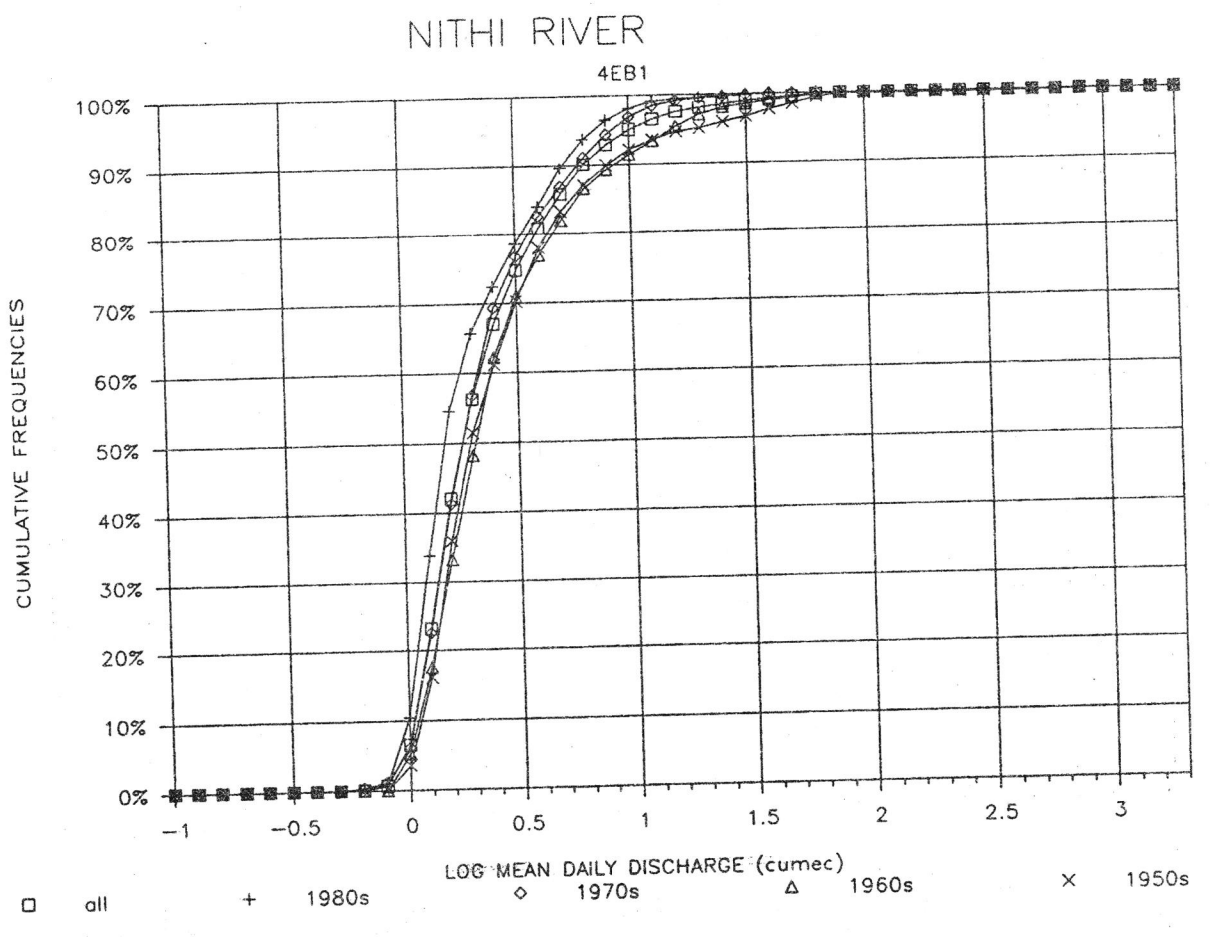


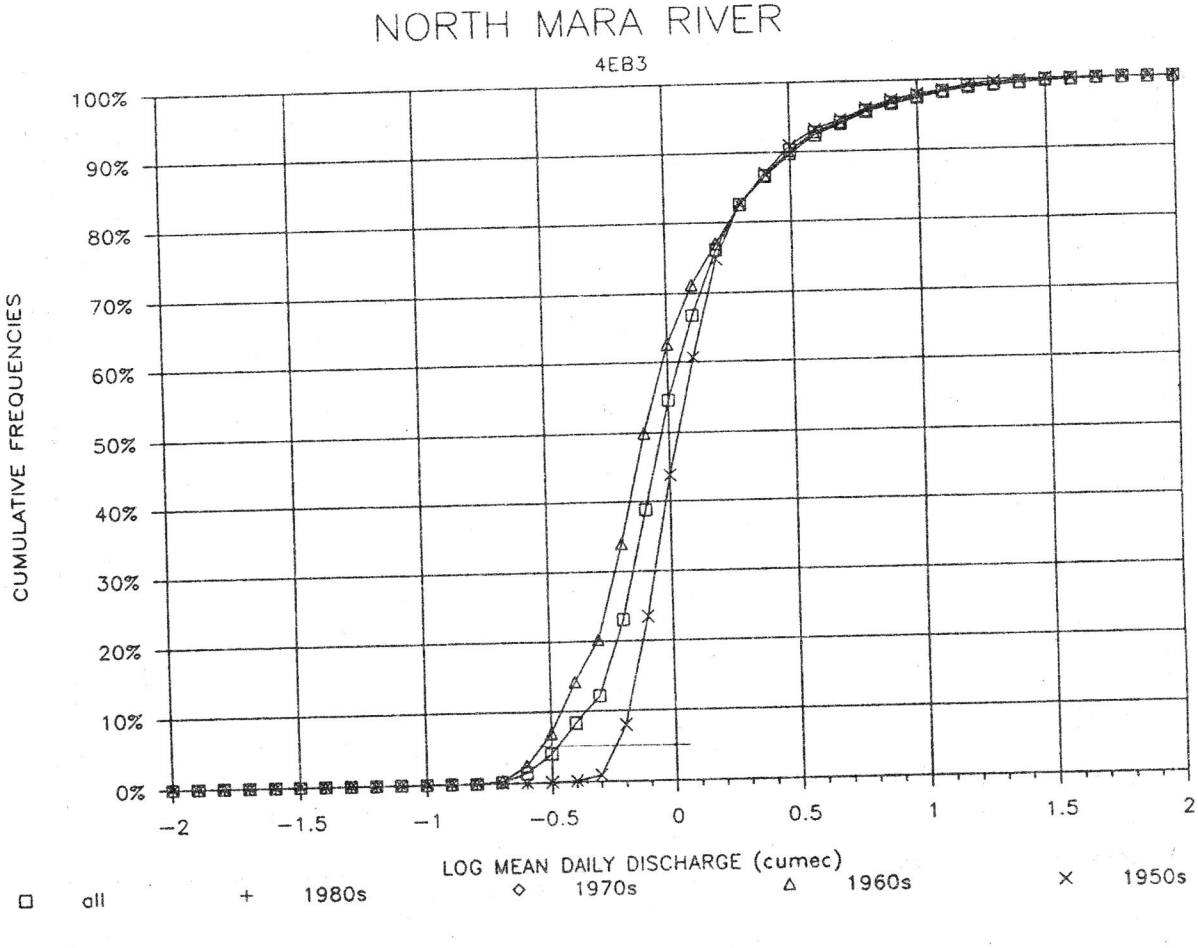
PEAK FLOW ANALYSIS AT RGS 4F20
(1979 - 1988)




MUTONGA RIVER
4EA1
CUMULATIVE FREQUENCIES
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
−1
−0.5
0
0.5
1
1.5
2
2.5
3
LOG MEAN DAILY DISCHARGE (cumec)
□ all
+ 1980s
◇ 1970s
△ 1960s
× 1950s

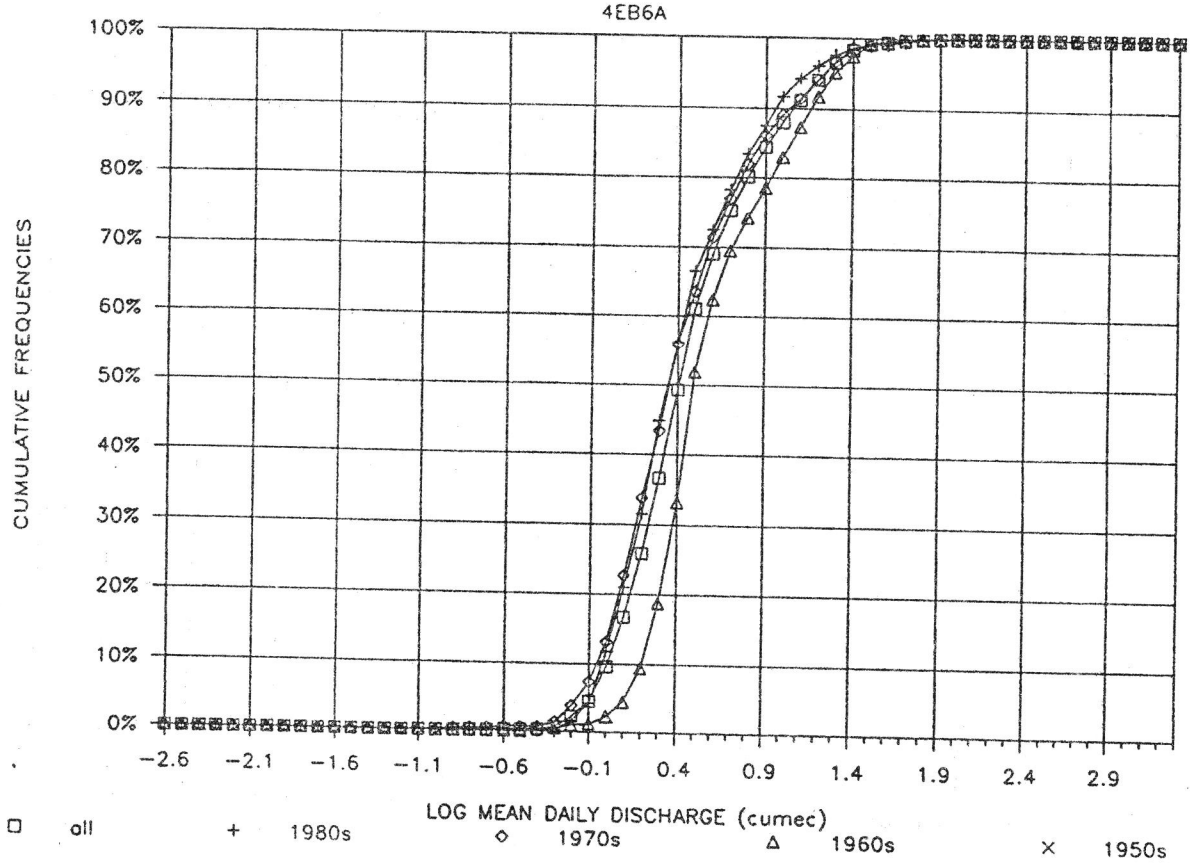

MUTONGA RIVER
4EA6
CUMULATIVE FREQUENCIES
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
−1
−0.5
0
0.5
1
1.5
2
2.5
3
LOG MEAN DAILY DISCHARGE (cumec)
□ all
+ 1980s
◇ 1970s
△ 1960s
× 1950s


NITHI RIVER
4EB1
CUMULATIVE FREQUENCIES
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
−1
−0.5
0
0.5
1
1.5
2
2.5
3
LOG MEAN DAILY DISCHARGE (cumec)
□ all
+ 1980s
◇ 1970s
△ 1960s
× 1950s


NORTH MARA RIVER
4EB3
CUMULATIVE FREQUENCIES
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
−2
−1.5
−1
−0.5
0
0.5
1
1.5
2
LOG MEAN DAILY DISCHARGE (cumec)
□ all
+ 1980s
◇ 1970s
△ 1960s
× 1950s

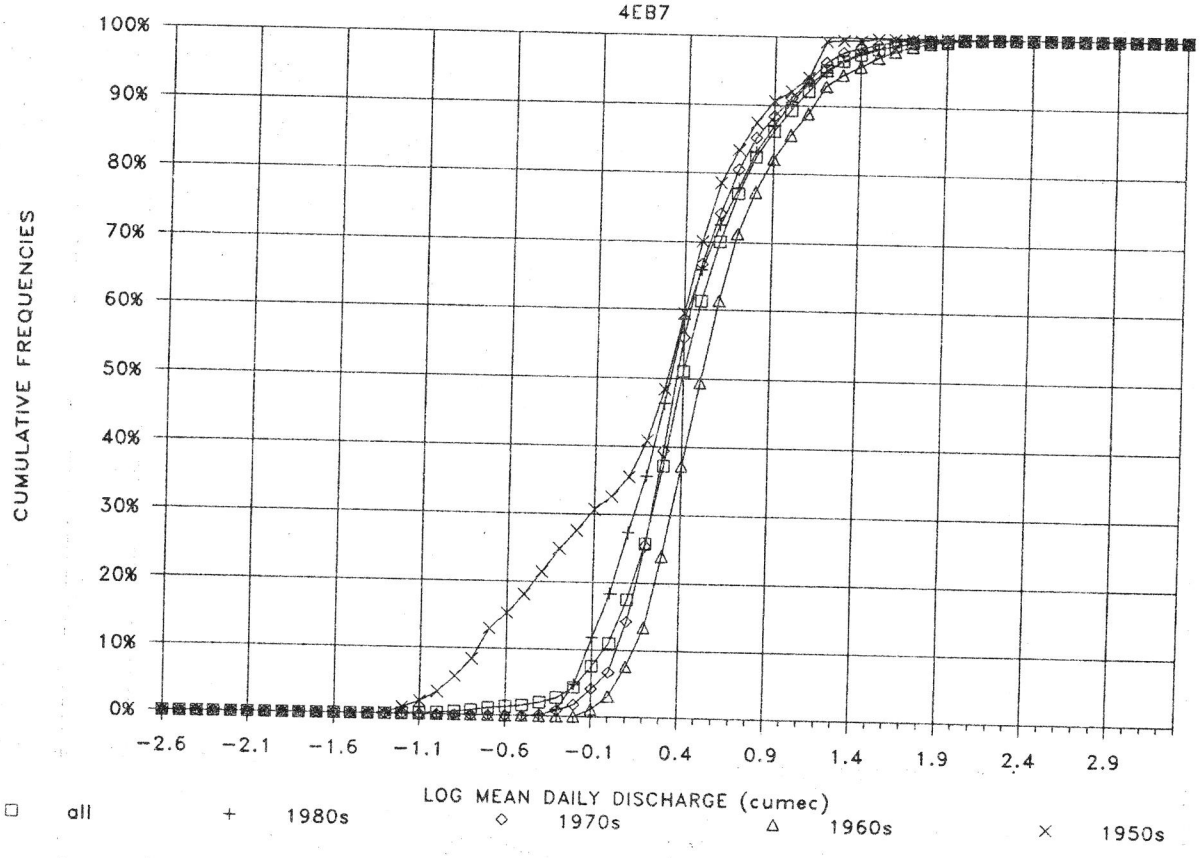
## RUGUTI RIVER

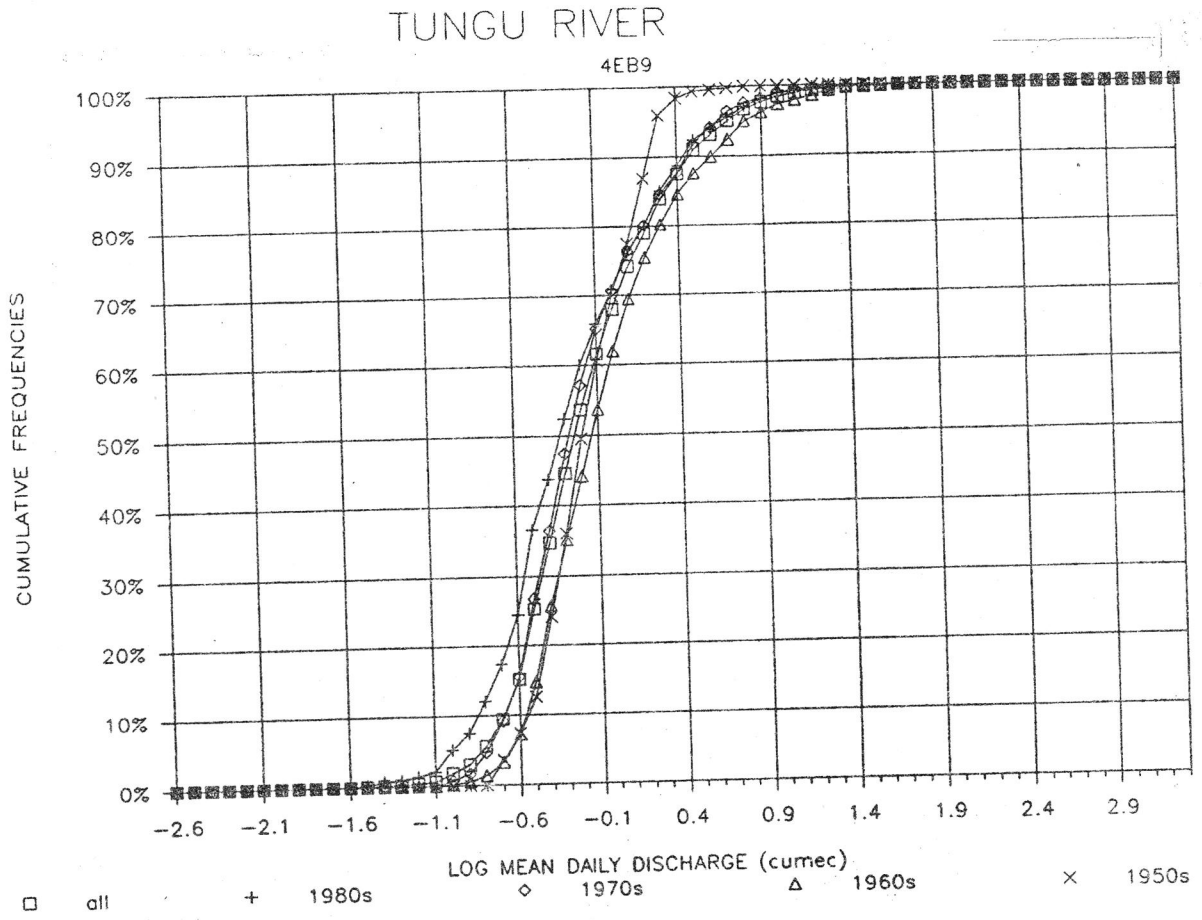
4EB6A

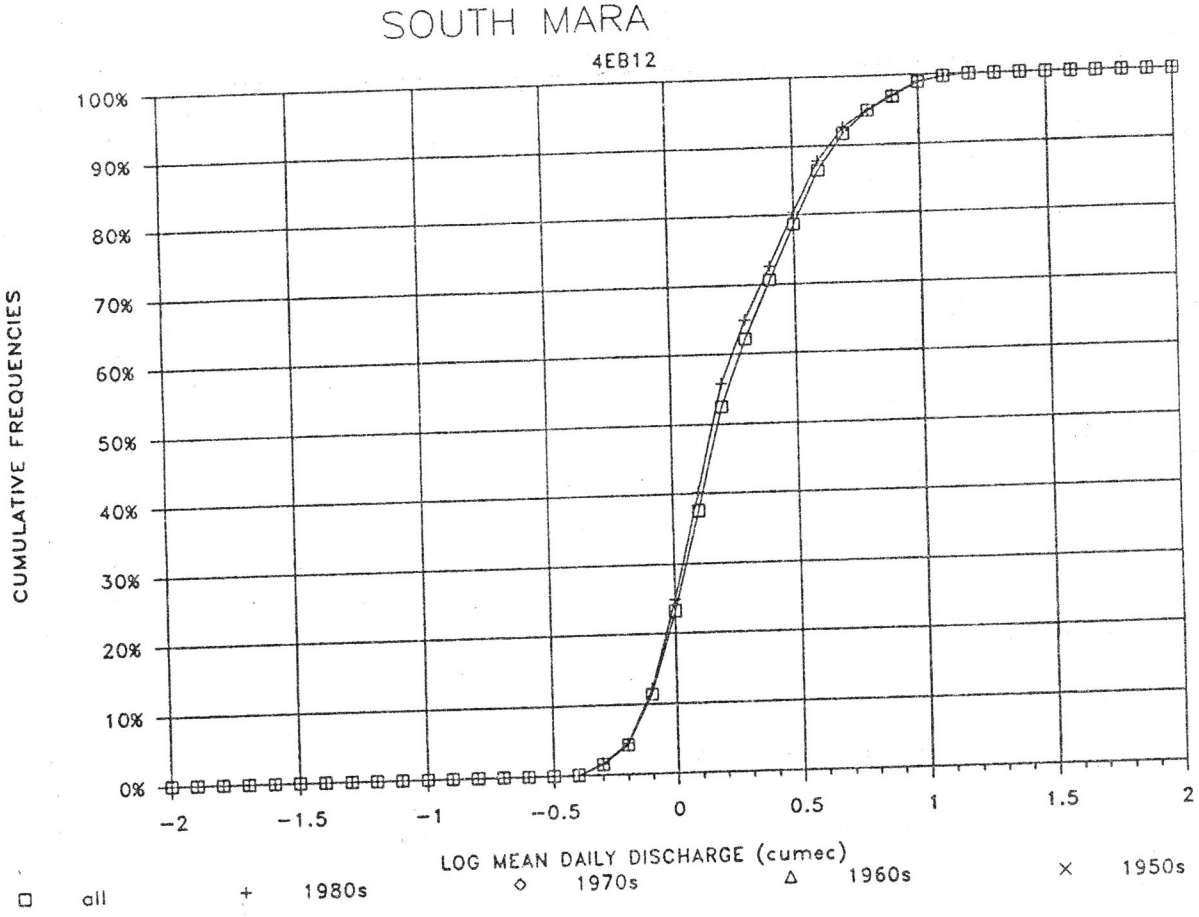



## THUCHI RIVER

4EB7

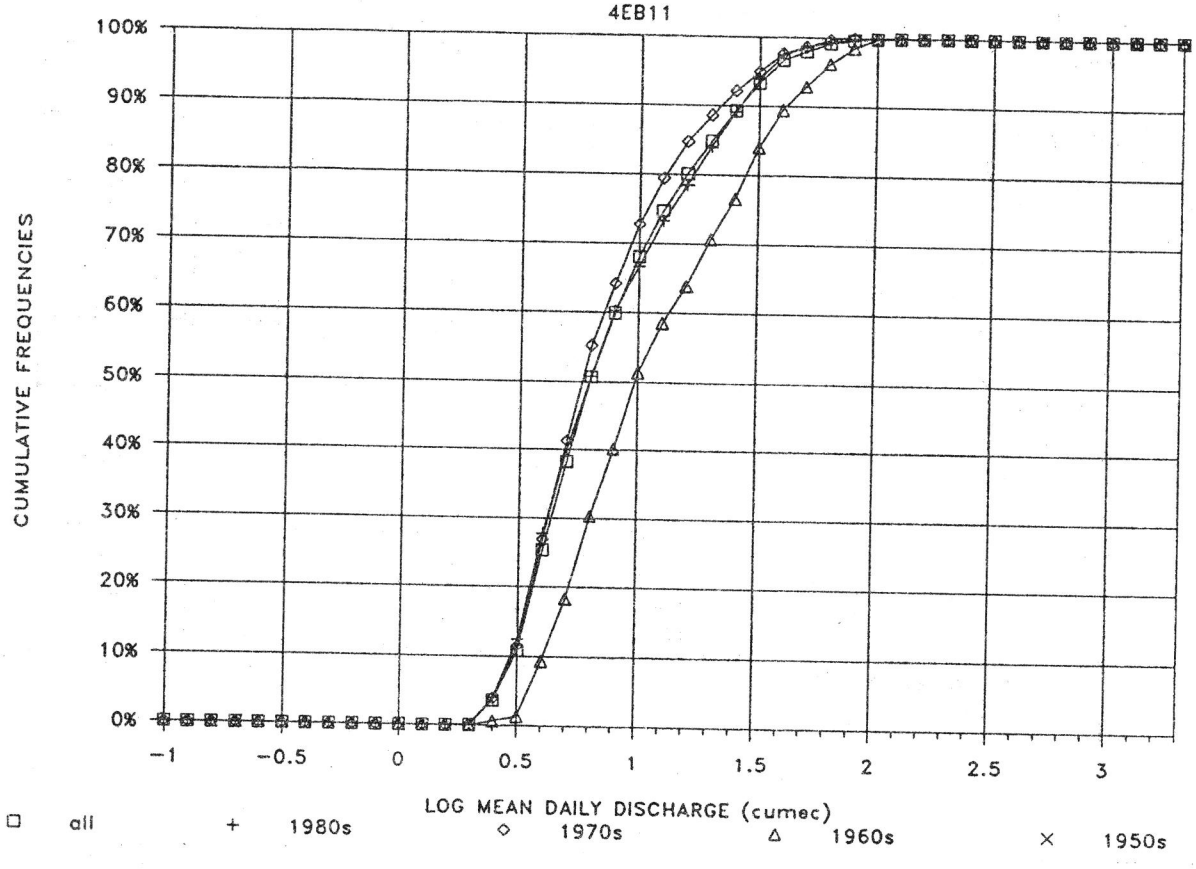



TUNGU RIVER
4EB9
CUMULATIVE FREQUENCIES
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
−2.6
−2.1
−1.6
−1.1
−0.6
−0.1
0.4
0.9
1.4
1.9
2.4
2.9
LOG MEAN DAILY DISCHARGE (cumec)
□ all
+ 1980s
◇ 1970s
△ 1960s
× 1950s


SOUTH MARA
4EB12
CUMULATIVE FREQUENCIES
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
−2
−1.5
−1
−0.5
0
0.5
1
1.5
2
LOG MEAN DAILY DISCHARGE (cumec)
□ all
+ 1980s
◇ 1970s
△ 1960s
× 1950s

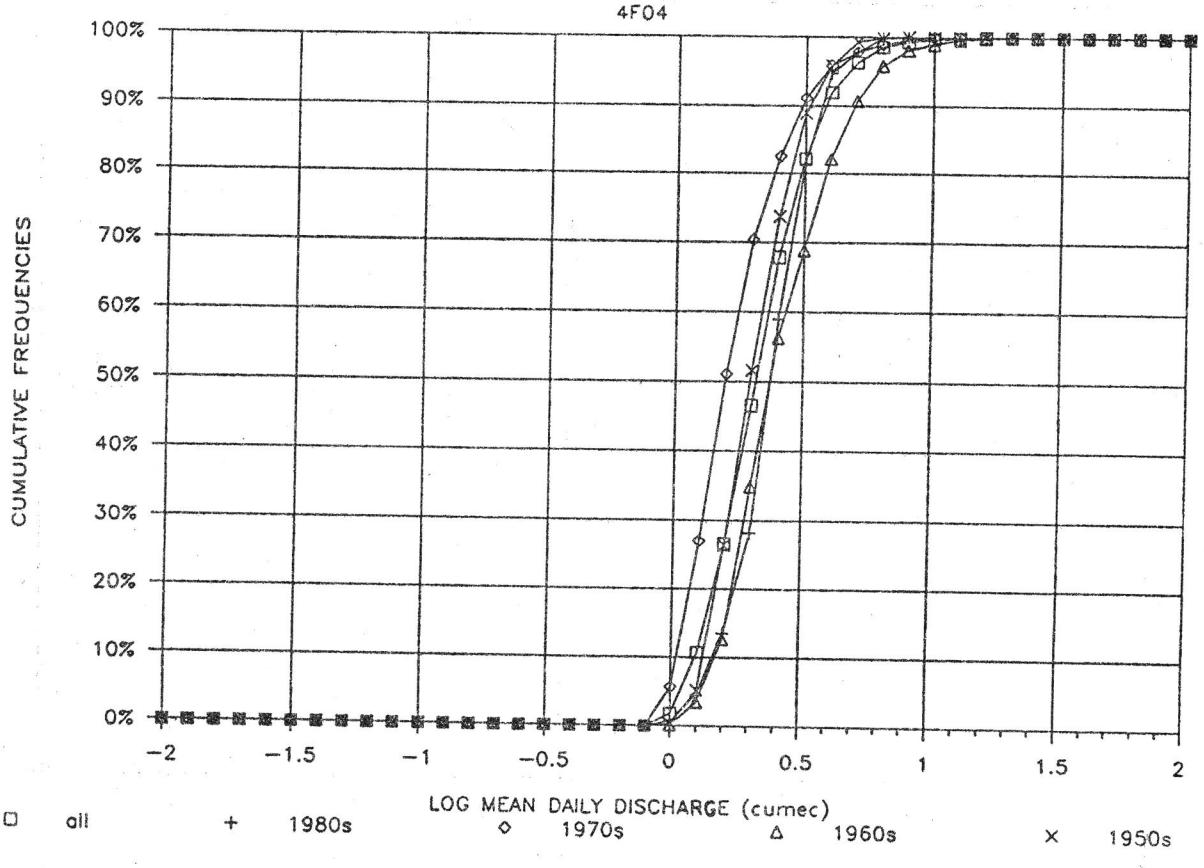
## MARA RIVER

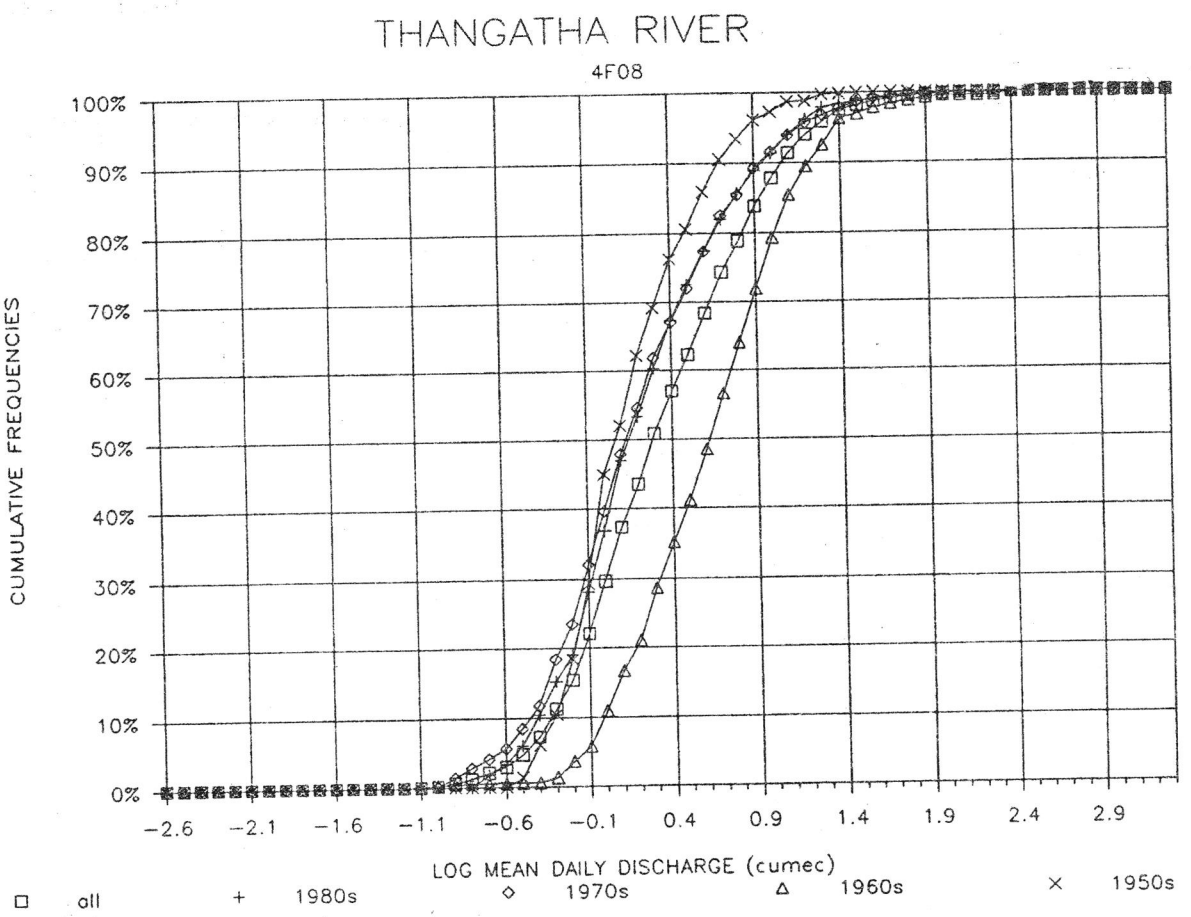
4EB11

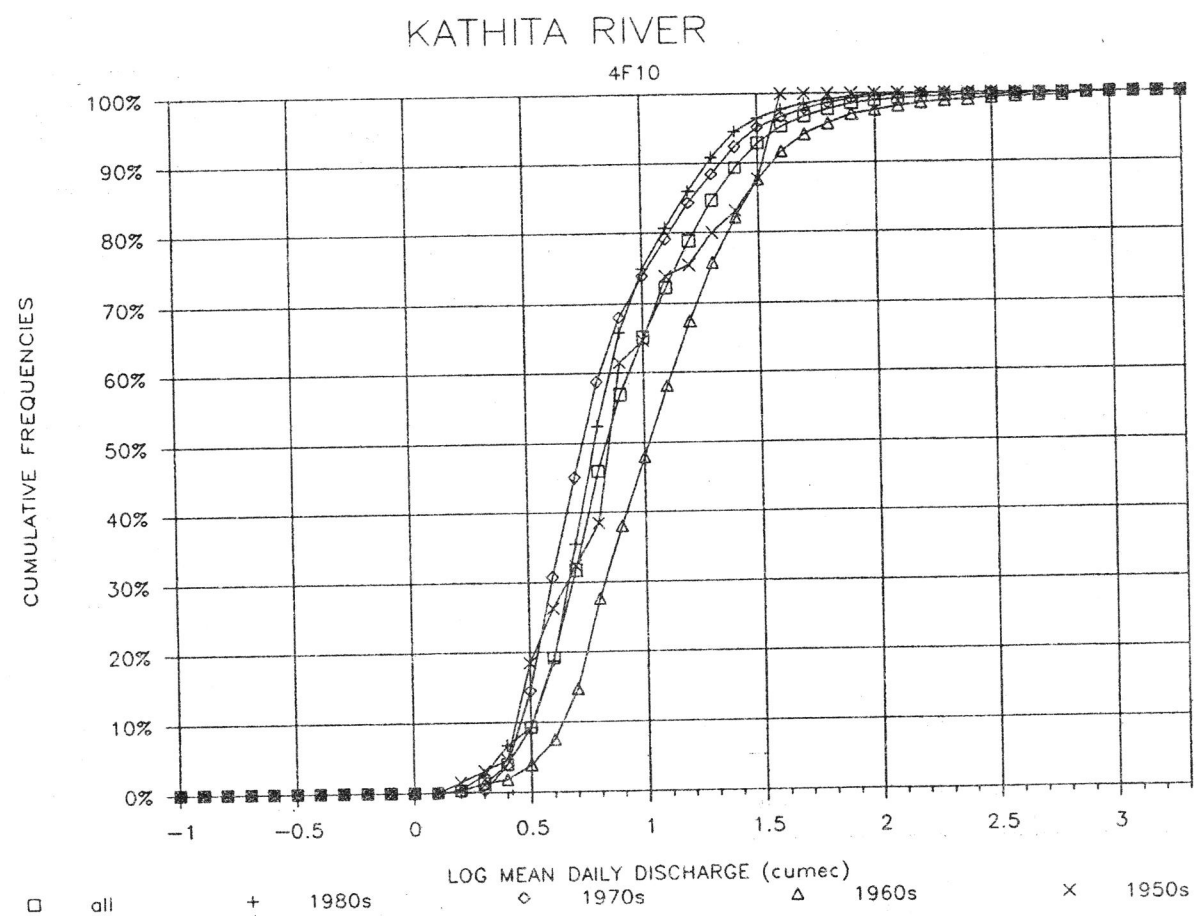


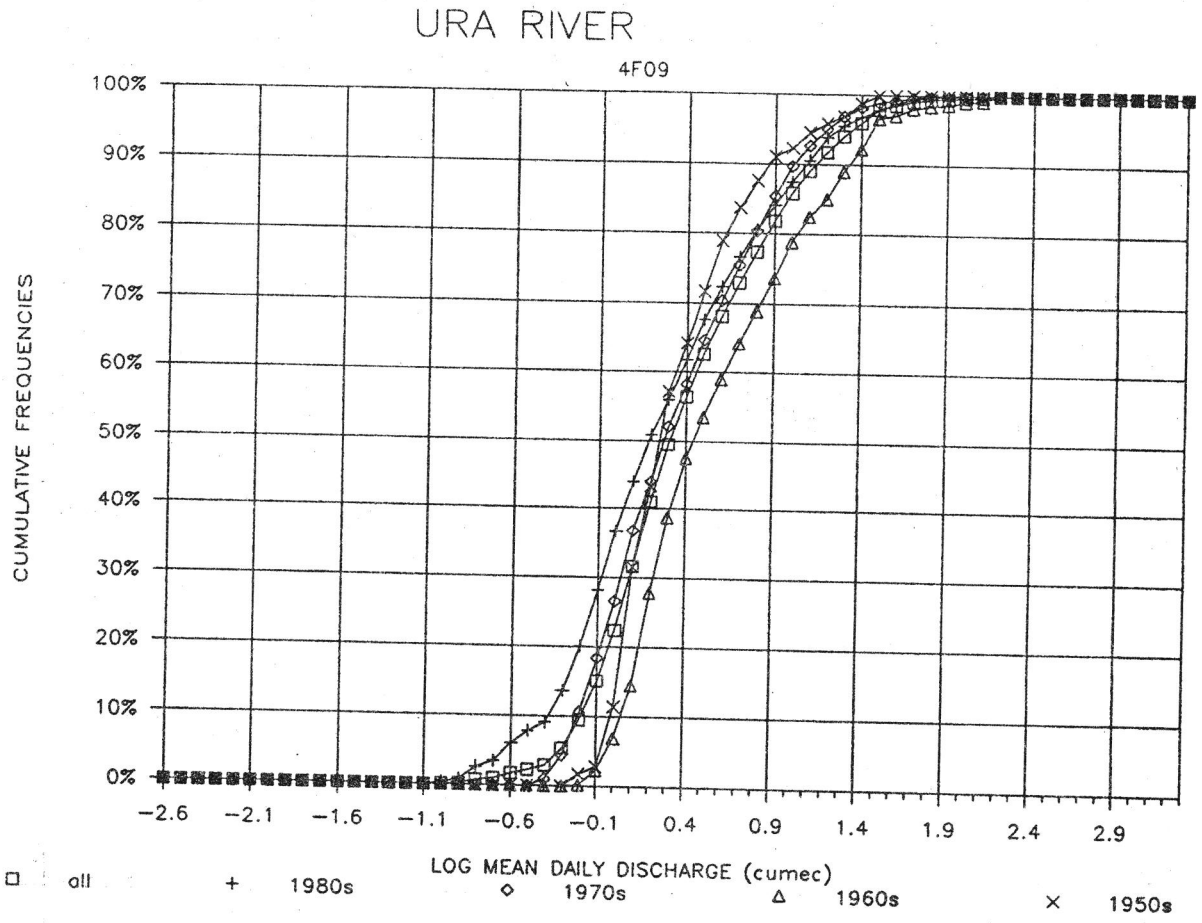

## THINGITHU RIVER

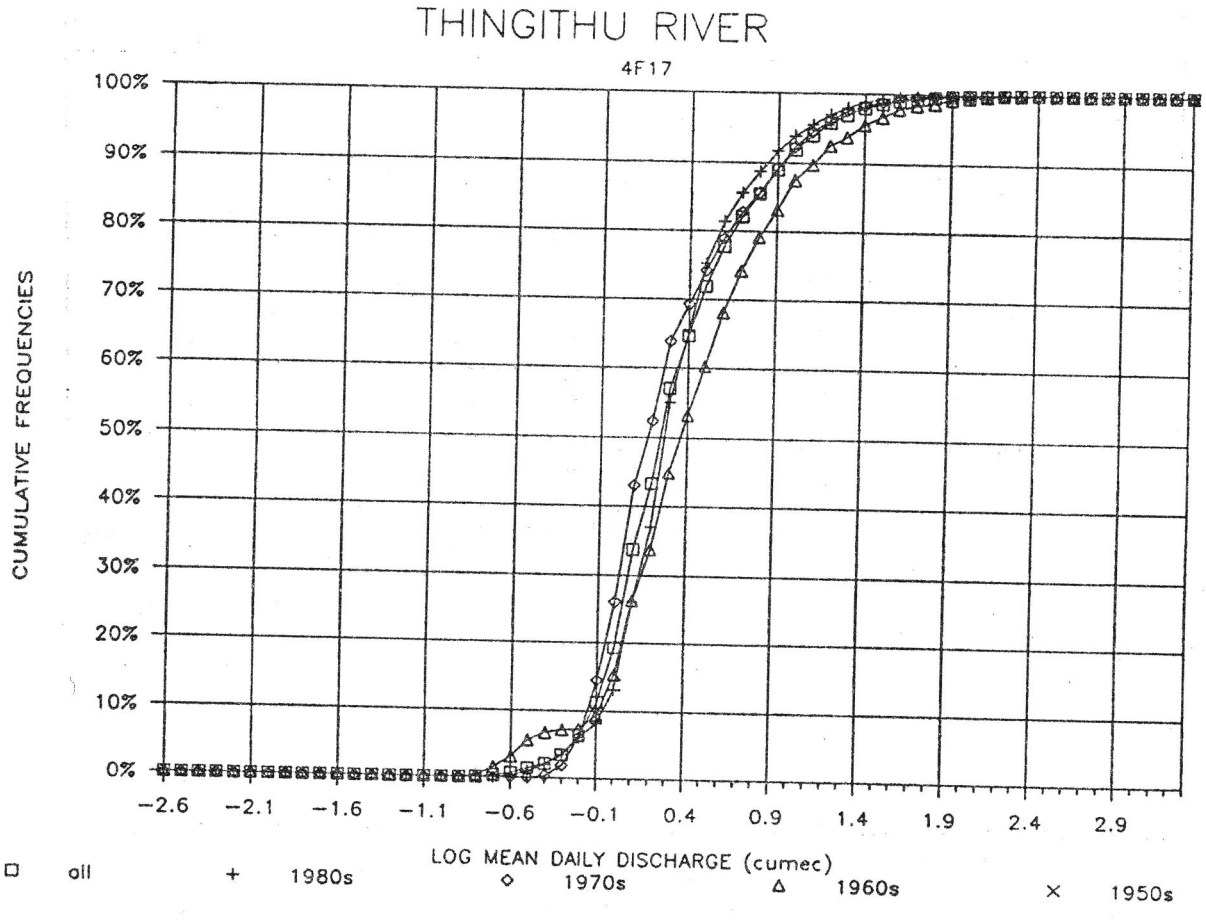
4F04

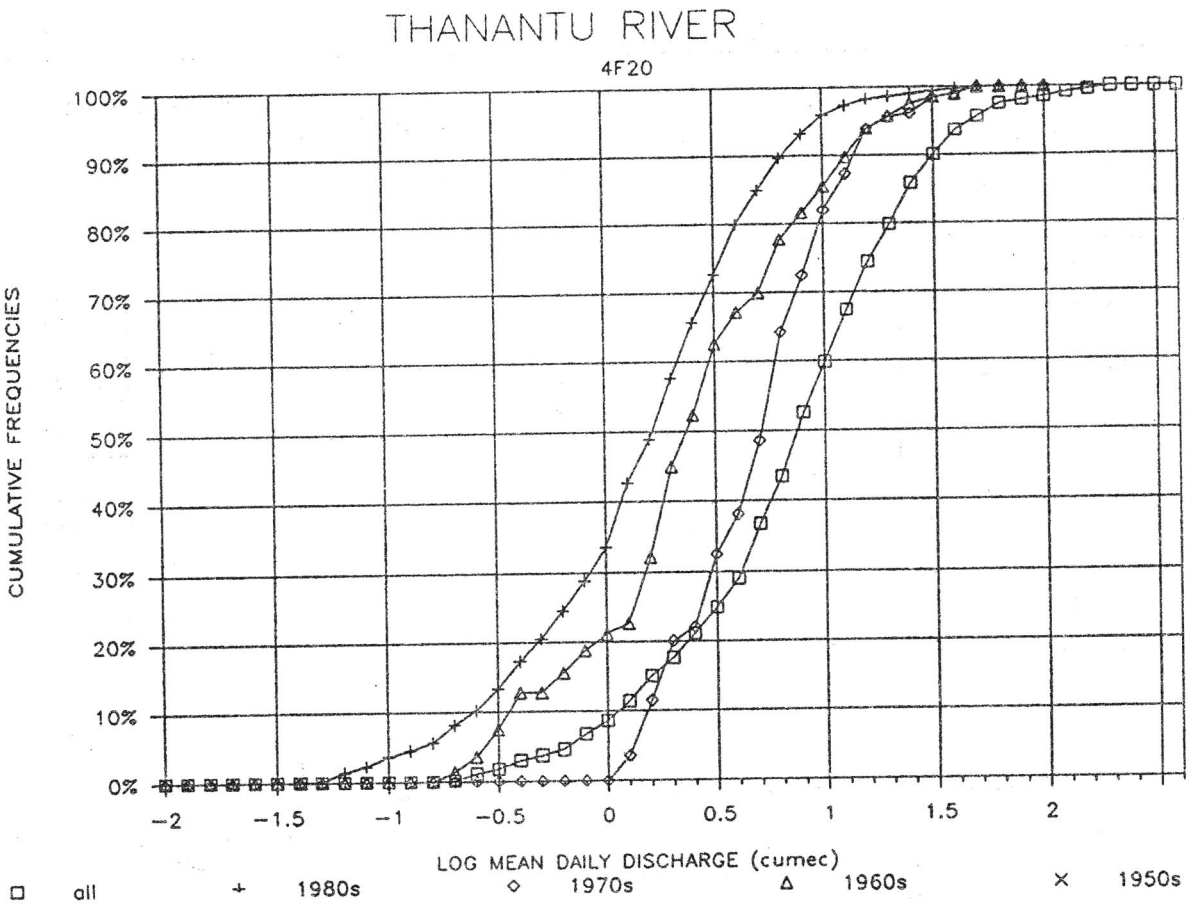


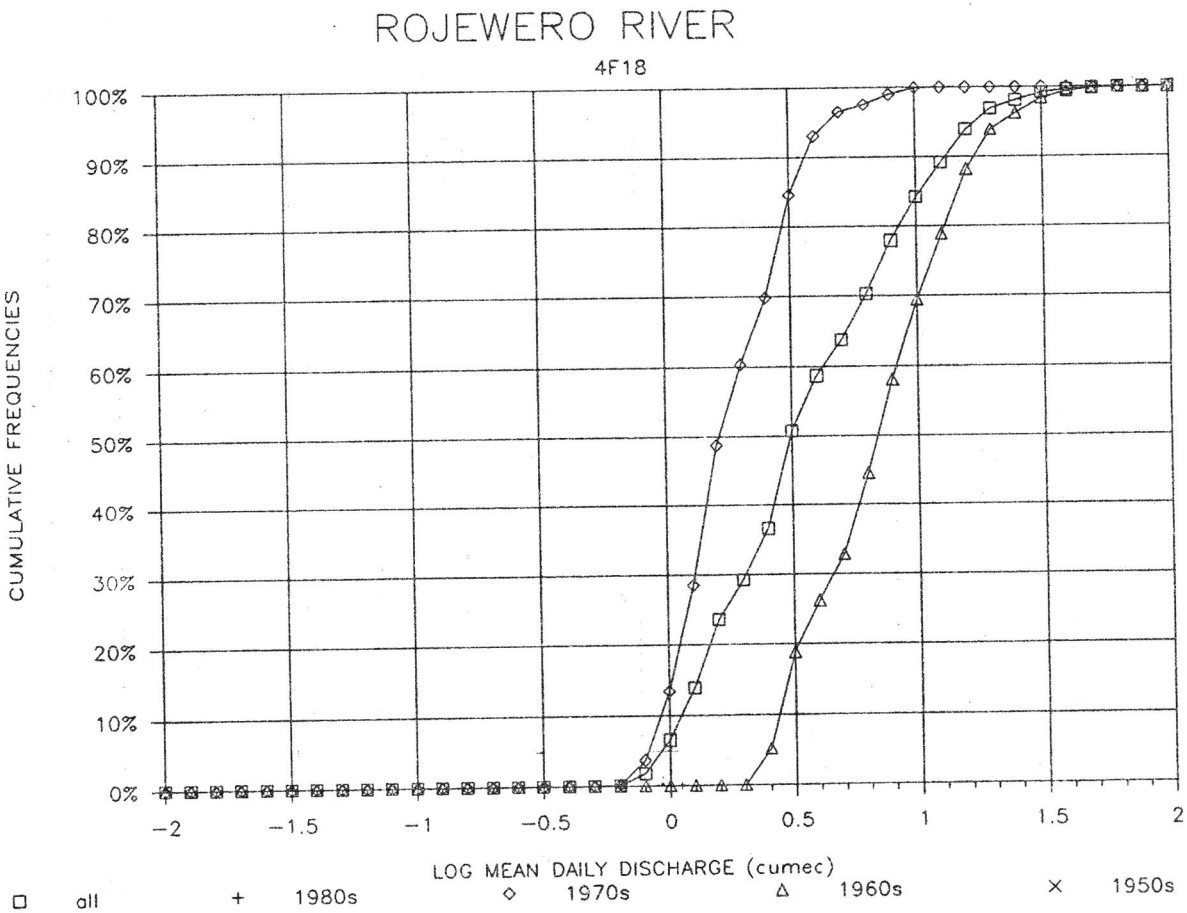

THANGATHA RIVER
4F08
CUMULATIVE FREQUENCIES
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
−2.6
−2.1
−1.6
−1.1
−0.6
−0.1
0.4
0.9
1.4
1.9
2.4
2.9
LOG MEAN DAILY DISCHARGE (cumec)
□ all
+ 1980s
◇ 1970s
△ 1960s
× 1950s


KATHITA RIVER
4F10
CUMULATIVE FREQUENCIES
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
−1
−0.5
0
0.5
1
1.5
2
2.5
3
LOG MEAN DAILY DISCHARGE (cumec)
□ all
+ 1980s
◇ 1970s
△ 1960s
× 1950s


URA RIVER
4F09
CUMULATIVE FREQUENCIES
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
−2.6
−2.1
−1.6
−1.1
−0.6
−0.1
0.4
0.9
1.4
1.9
2.4
2.9
LOG MEAN DAILY DISCHARGE (cumec)
□ all
+ 1980s
◇ 1970s
△ 1960s
× 1950s

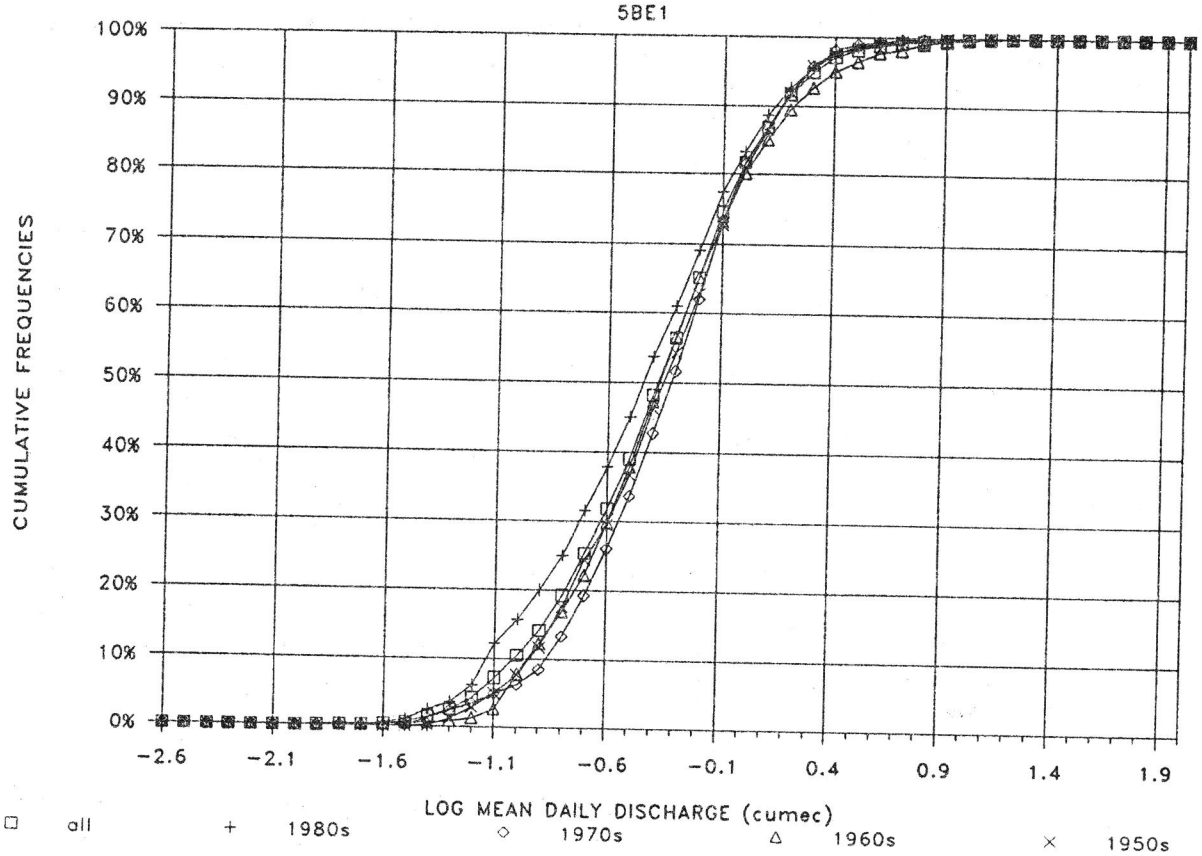

THINGITHU RIVER
4F17
CUMULATIVE FREQUENCIES
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
−2.6
−2.1
−1.6
−1.1
−0.6
−0.1
0.4
0.9
1.4
1.9
2.4
2.9
LOG MEAN DAILY DISCHARGE (cumec)
□ all
+ 1980s
◇ 1970s
△ 1960s
× 1950s


THANANTU RIVER
4F20
CUMULATIVE FREQUENCIES
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
−2
−1.5
−1
−0.5
0
0.5
1
1.5
2
LOG MEAN DAILY DISCHARGE (cumec)
all
1980s
1970s
1960s
1950s


ROJEWERO RIVER
4F18
CUMULATIVE FREQUENCIES
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
−2
−1.5
−1
−0.5
0
0.5
1
1.5
2
LOG MEAN DAILY DISCHARGE (cumec)
all
1980s
1970s
1960s
1950s

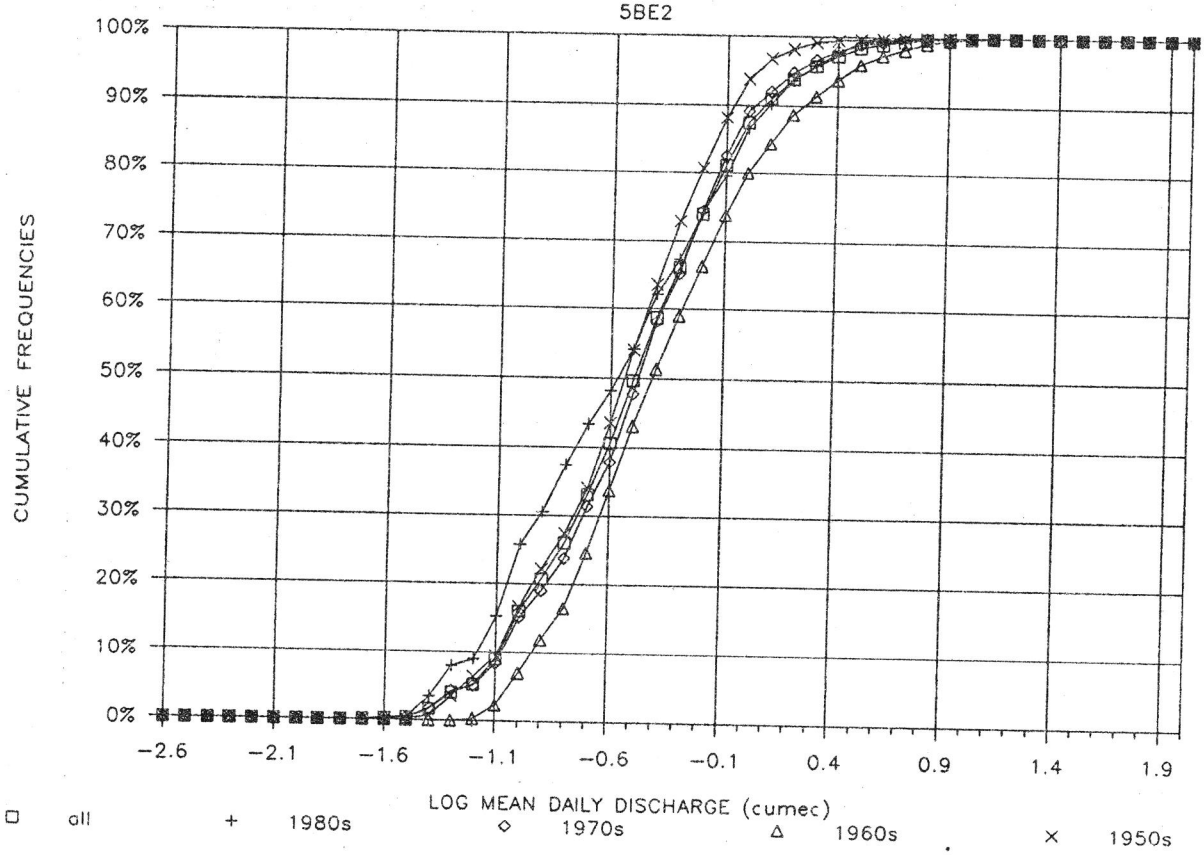
## NANYUKI RIVER

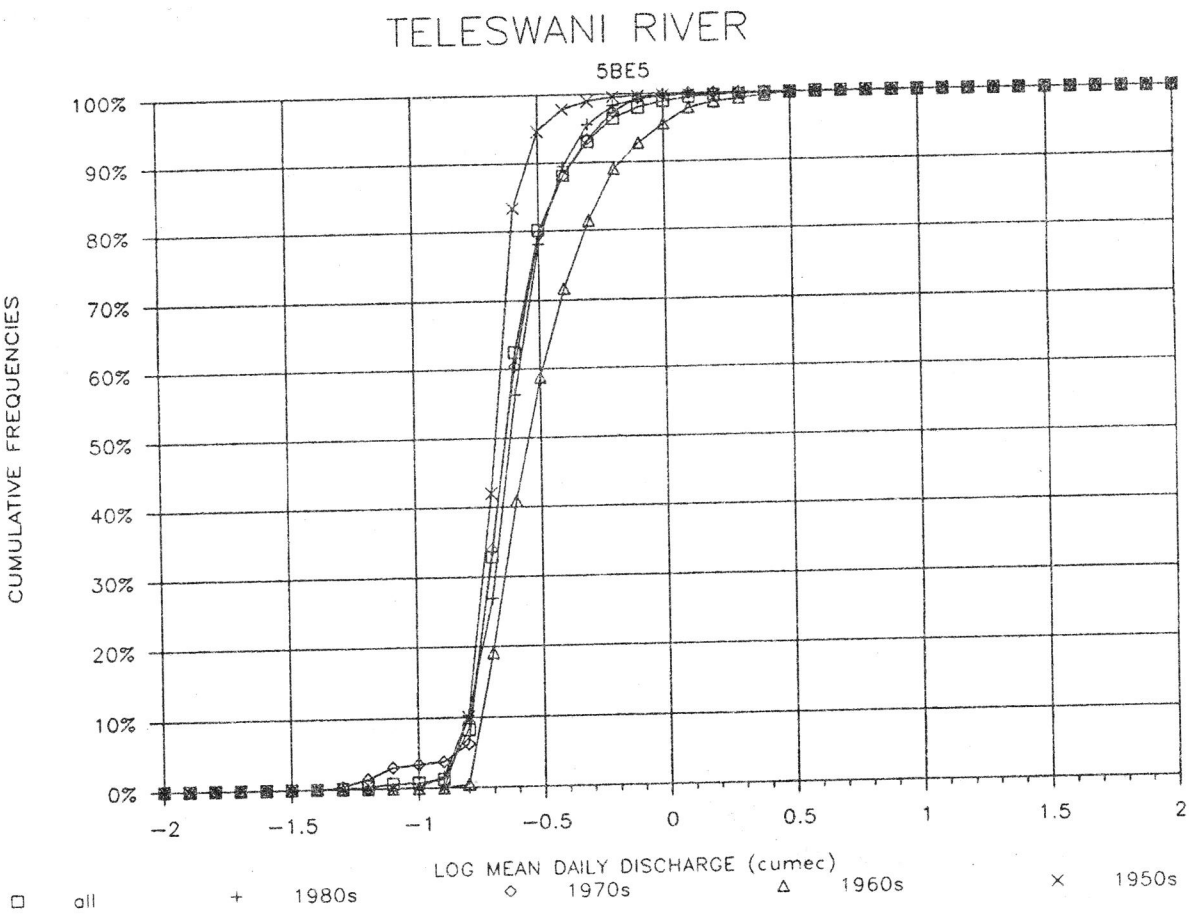
5BE1

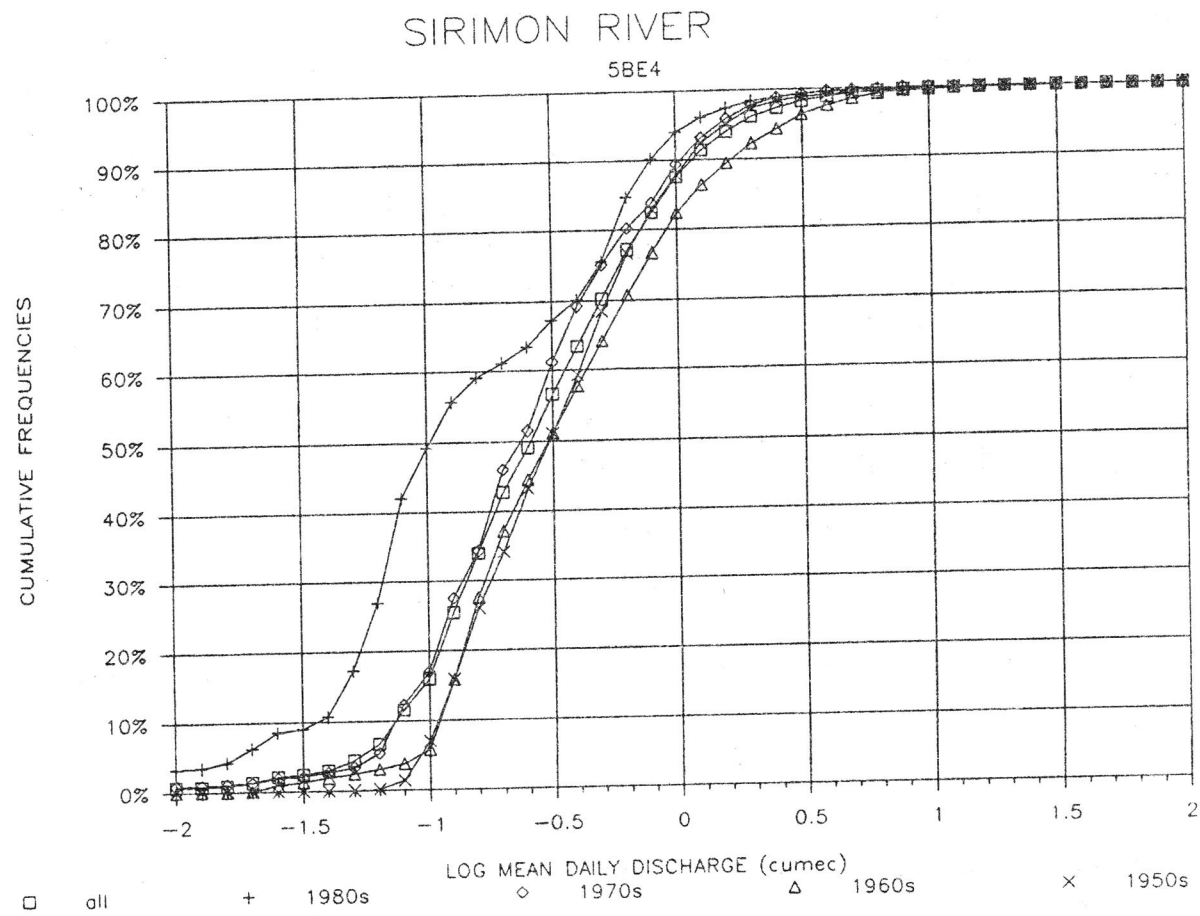


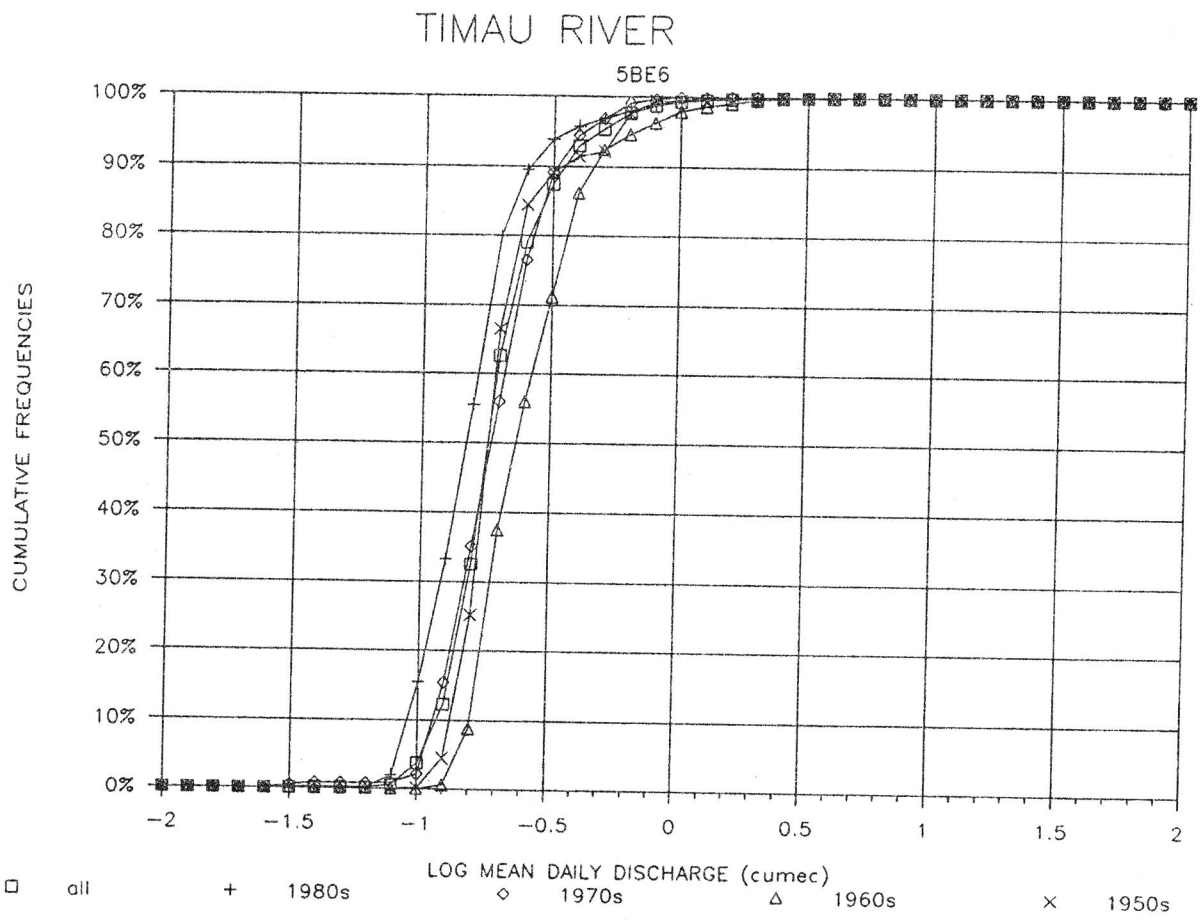

## ONTULULI RIVER

5BE2




TELESWANI RIVER
5BE5
CUMULATIVE FREQUENCIES
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
−2
−1.5
−1
−0.5
0
0.5
1
1.5
2
LOG MEAN DAILY DISCHARGE (cumec)
□ all
+ 1980s
◇ 1970s
△ 1960s
× 1950s


SIRIMON RIVER
5BE4
CUMULATIVE FREQUENCIES
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
−2
−1.5
−1
−0.5
0
0.5
1
1.5
2
LOG MEAN DAILY DISCHARGE (cumec)
□ all
+ 1980s
◇ 1970s
△ 1960s
× 1950s


TIMAU RIVER
5BE6
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
CUMULATIVE FREQUENCIES
−2
−1.5
−1
−0.5
0
0.5
1
1.5
2
LOG MEAN DAILY DISCHARGE (cumec)
all
1980s
1970s
1960s
1950s

**Appendix 4.6**

## DISCHARGE ANALYSIS OF TANA RIVER TRIBUTARIES

This Appendix gives a summary of the discharge characteristics of the 10 main tributaries of the Mutonga and Kathita branches of the Tana River originating in Meru District.

### 1. Thuchi River - RGS 4EB7

Thuchi river basically forms the boundary between Embu and Meru districts. It has a catchment area of 495 km² which is long and narrow.

The river originates from high up in the Mount Kenya forest where rainfall is about 900 mm per year. As the altitude decreases, rainfall increases to about 1800 mm near Kiamuriuki Forest Guard's Post and thereafter decreases with altitude to about 750 mm before the confluence with Ruguti river in the semi-arid Kanjuki area. A number of springs feed the river along the forest edge and just upstream of the new Thuchi-Nkubu road.

River flow is monitored at two River Gauging Stations (RGSs) namely 4EB4, upstream of the new Thuchi-Nkubu road bridge and at 4EB7 about 4km downstream of the Ishiara-Chiokarige road bridge (Main Report, Figure 4.2 and Appendix 4.3).

Water level observations started in October 1956 upto date, and they have been recorded wholly from manual staff gauges. This means that most of the high water levels have been missed as these occur mostly at night when the observer is at home. Due to poor quality of the data collected from 1956-59, these have not been processed for further analysis.

The RGS site is fairly stable and it has only three rating curve periods. The river is rated for discharges in the range 0.453 - 32 cumecs, but extrapolations have been done to cover extreme discharges in the range 0.351 to 228 cumecs.

Daily discharge data for the period 1960 - 1988 have been calculated from which the lowest flow recorded was 0.351 cumecs on 19/03/71 while the highest was 228 cumecs on 03/12/68 (Table 1).

The river's mean monthly flow is 5.13 cumecs. The daily flow duration analysis indicates that the river discharge is 0.758 and 1.059 cumecs in 95 and 90 percent of the times respectively on long term average (Fig. 1 and Table 2).

Annual peak flow analysis shows the river's 50 and 100 - year floods as 260 and 303 cumecs respectively (Fig. 2).

Other flow characteristics are summarised in Table 2 for the main rivers and Table 3 for tributary streams.

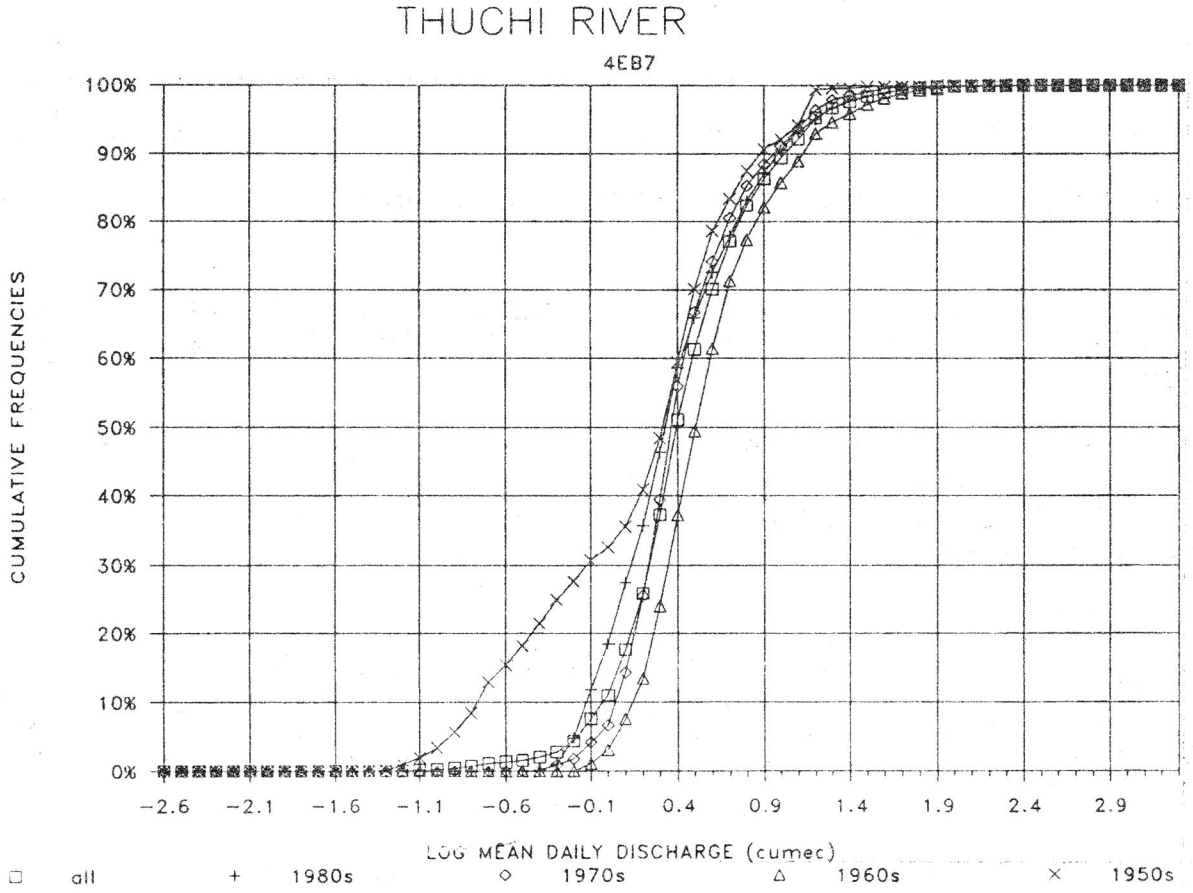



**Fig. 1 Frequency Distribution of Daily Flows**

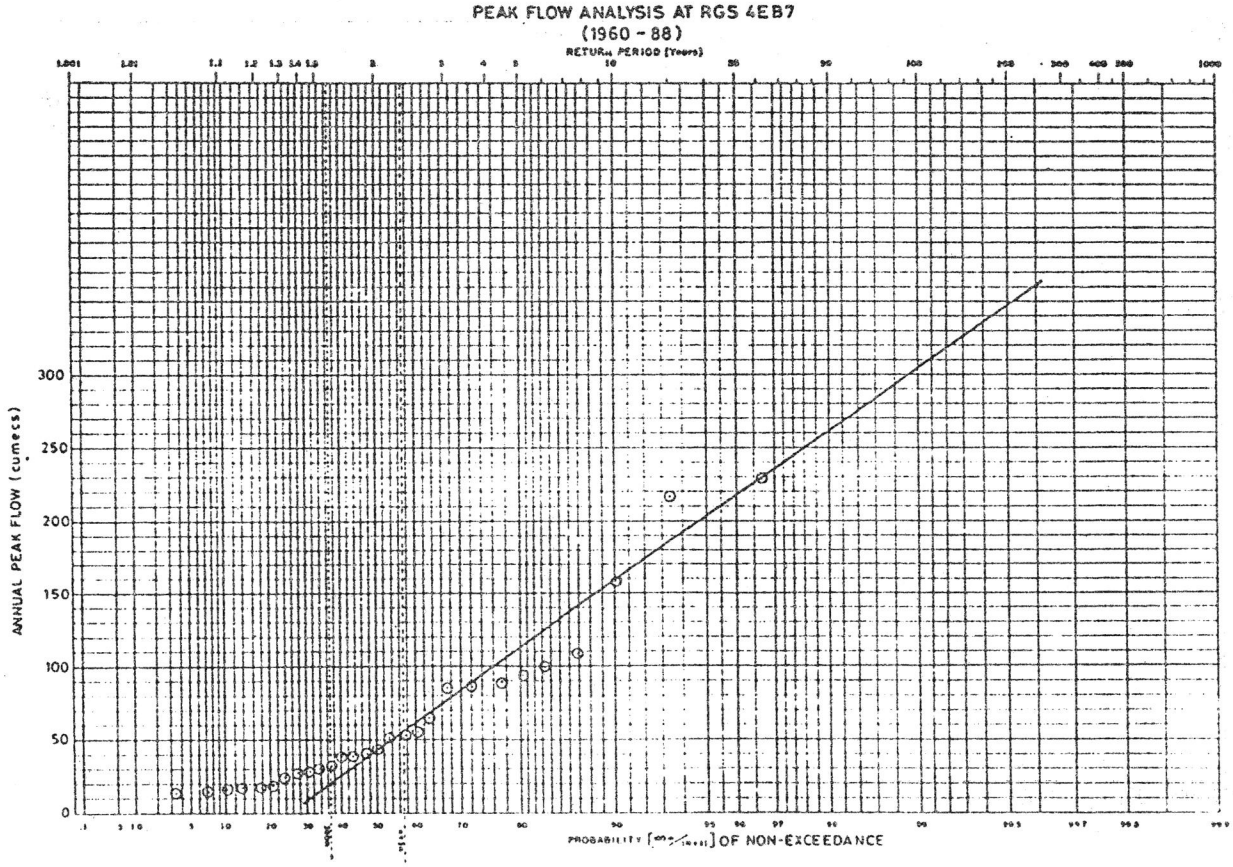



**Fig. 2 Frequency Distribution of Annual Peak Flows**

## 2. Ruguti River - RGS 4EB6A

Ruguti catchment area is similar in many respects to Thuchi catchment. It has an area of 368 km² and is also long and narrow.
The river is monitored at two RGSs, 4EB5 is located upstream of the new Thuchi - Nkubu road and 4EB6A is just downstream of the Ishiara-Chiokarige road bridge.

Water level observations at RGS 4EB6A started in February 1962 until the present day. The river bed has been very unstable as evidenced by the existing seven rating curve periods.

The river has been rated for discharges between 0.538 and 40 cumecs but discharges as high as 110 cumecs and as low as 0.258 cumecs have been extrapolated.

### Table 1 A Summary of Monthly and Annual Discharge Data on Thuchi River RGS 4EB7

MINISTRY OF WATER DEVELOPMENT
Water Resources Assessment Project Documentation Section

River: THUCHI RIVER
R.G.S: 4EB7
Area : 495 sq km

MONTHLY AND ANNUAL DISCHARGE DATA

The flows are in: CUMEC

| Year | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Year | Daily max | Daily min | Days without readings |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1960 | 1.66 | 1.18 | | | | 3.39 | 2.27 | 1.67 | 1.18 | 1.99 | 6.62 | 3.32 | | | | 93 |
| 1961 | 1.61 | 1.11 | 3.42 | 4.31 | 8.66 | 3.81 | 3.39 | 3.86 | 4.56 | 24.32 | 59.09 | 23.12 | 11.79 | 87.06 | 0.69 | 47 |
| 1962 | | | 3.62 | 3.95 | 12.75 | 5.21 | 3.15 | 2.74 | 2.57 | | 3.16 | 1.93 | | | | 117 |
| 1963 | 1.64 | 1.28 | 1.57 | 11.96 | 21.92 | 11.58 | 4.97 | 3.17 | 1.93 | 1.55 | 7.12 | 8.51 | 6.46 | 39.51 | 0.53 | 78 |
| 1964 | 5.71 | 3.08 | 3.16 | 11.30 | 10.08 | 5.96 | 3.47 | 3.29 | 2.36 | 3.67 | 3.96 | 7.01 | 5.26 | 15.51 | 1.88 | 79 |
| 1965 | 3.57 | 2.16 | 1.64 | 3.13 | 4.70 | 2.08 | 1.60 | 1.58 | 1.26 | 1.46 | 7.90 | 3.76 | 2.90 | 14.83 | 0.63 | 87 |
| 1966 | 2.31 | 1.88 | 2.50 | 11.71 | | | 3.00 | 2.11 | 2.17 | 2.15 | 16.81 | 4.03 | | | | 93 |
| 1967 | 2.17 | 1.33 | 1.10 | 4.87 | 32.77 | | 3.97 | 3.03 | 2.95 | 6.39 | 15.46 | 8.97 | | | | 72 |
| 1968 | 3.57 | 2.95 | 6.33 | 20.31 | 22.00 | 10.72 | 5.14 | 4.15 | 2.54 | 3.09 | 25.84 | 44.38 | 12.61 | 228.10 | 1.54 | 72 |
| 1969 | 6.21 | 4.09 | 5.09 | 2.49 | 6.82 | 3.21 | 2.38 | 2.51 | 2.06 | 2.02 | 4.31 | 2.96 | 3.69 | 13.20 | 1.62 | 62 |
| 1970 | 2.17 | 1.51 | 1.59 | 16.55 | 13.33 | 4.67 | 2.79 | 2.36 | 2.08 | 2.49 | 3.77 | 2.07 | 4.62 | 88.61 | 0.92 | 76 |
| 1971 | 1.44 | 1.42 | 0.51 | 3.87 | 12.66 | 5.98 | 3.88 | | 2.19 | 2.18 | 3.19 | 2.42 | | | | 84 |
| 1972 | 1.91 | 1.44 | 1.47 | 1.34 | 3.66 | 3.33 | 2.07 | 1.91 | 1.87 | 8.23 | 22.79 | 7.45 | 4.78 | 55.44 | 0.68 | 73 |
| 1973 | 3.71 | 1.95 | 1.25 | 2.00 | 4.79 | 3.36 | 1.78 | 1.76 | 1.72 | 2.16 | 4.40 | 2.51 | 2.62 | 27.08 | 0.49 | 76 |
| 1974 | 1.50 | 0.99 | 3.89 | 14.68 | 3.29 | 2.24 | 4.84 | 2.79 | 1.96 | 1.57 | 4.35 | 2.36 | 3.70 | 216.00 | 0.47 | 76 |
| 1975 | 1.36 | 0.81 | 0.71 | 6.30 | 4.70 | 2.91 | 2.56 | 2.19 | 1.63 | 4.03 | 3.79 | 1.70 | 2.73 | 40.28 | 0.48 | 88 |
| 1976 | 1.23 | 1.08 | 0.90 | 1.55 | 4.97 | | | 1.82 | 1.65 | 1.67 | 3.52 | 2.29 | | | | 85 |
| 1977 | 1.57 | 1.20 | 1.44 | 5.48 | 12.31 | 4.45 | 2.43 | 1.99 | 1.31 | 1.37 | 14.92 | 6.68 | 4.60 | 22.39 | 0.78 | 77 |
| 1978 | 3.22 | 2.17 | 4.68 | 25.34 | 22.39 | 5.26 | 2.76 | 1.95 | 1.41 | 3.57 | 9.18 | 7.02 | 7.42 | 65.23 | 1.18 | 75 |
| 1979 | 4.78 | 6.21 | 3.48 | 5.99 | 12.92 | 10.86 | 3.52 | 1.93 | 1.22 | 1.57 | 10.25 | 2.70 | 5.43 | 53.24 | 0.86 | 87 |
| 1980 | 1.65 | 1.19 | 0.80 | 1.42 | 5.39 | 2.18 | 1.25 | 1.01 | 0.88 | 1.56 | 6.11 | 2.81 | 2.19 | 18.01 | 0.54 | 77 |
| 1981 | 1.30 | 0.86 | 2.36 | 17.06 | 30.71 | 7.98 | 3.32 | 1.99 | 1.65 | 1.73 | 3.18 | | | | | 101 |
| 1982 | | 0.66 | 0.56 | 11.80 | 15.62 | 7.46 | | 1.82 | | 11.27 | 28.03 | 8.19 | | | | 126 |
| 1983 | 3.13 | 1.80 | 1.01 | 9.45 | 8.94 | 4.47 | 2.47 | 1.55 | 1.16 | 2.39 | 6.01 | 3.05 | 3.79 | 108.00 | 0.65 | 106 |
| 1984 | 2.21 | 1.39 | 0.75 | 1.47 | 1.18 | 0.67 | 0.69 | | | 4.19 | 5.82 | 2.90 | | | | 149 |
| 1985 | 1.75 | 1.42 | 2.34 | | | 4.93 | 4.07 | 1.99 | 1.65 | 2.80 | 4.71 | 2.51 | | | | 147 |
| 1986 | 1.28 | 0.96 | | 3.99 | 9.11 | 5.39 | | | | | | 10.20 | | | | 200 |
| 1987 | 4.95 | 1.40 | 1.18 | 2.87 | 3.40 | 5.75 | 2.26 | 3.02 | 1.65 | 1.19 | 4.32 | 2.24 | 2.86 | 30.57 | 0.69 | 113 |
| 1988 | 1.33 | 0.72 | 1.36 | | | 4.57 | 2.63 | 2.67 | 3.53 | 3.85 | 12.04 | | | | | 153 |
| Max | 6.2 | 6.2 | 6.3 | 25.3 | 32.8 | 11.6 | 5.1 | 4.2 | 4.6 | 24.3 | 59.1 | 44.4 | 12.6 | 228.1 | 1.88 | |
| Min | 1.23 | 0.66 | 0.51 | 1.34 | 1.18 | 0.67 | 0.69 | 1.01 | 0.88 | 1.19 | 3.16 | 1.70 | 2.19 | 13.20 | 0.47 | |
| Mean | 2.55 | 1.72 | 2.17 | 7.89 | 11.56 | 5.09 | 2.95 | 2.34 | 1.97 | 3.87 | 10.74 | 6.56 | 5.14 | 66.06 | 0.86 | |
| Runoff(mm) | 13.8 | 9.3 | 11.8 | 42.7 | 62.6 | 27.6 | 15.9 | 12.7 | 10.6 | 20.9 | 58.1 | 35.5 | 27.8 | 357.5 | 4.7 | |

01-Aug-89

## Table 2 Summary of Runoff Characteristics (cumecs) - Main Rivers

| | Mutonga System | | | | Kathita System | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 4EB7 Thuchi | 4EB6A Ruguti | 4EB11 Mara | 4EA6 Mutonga | 4F17 Thingithu | 4F10 Kathita | 4F20 Thanantu | 4F8 Thangatha | 4F9 Ura | 4F18 Rojewero |
| Catchment Area (km²) | 495 | 368 | 534 | 613 | 303 | 878 | 211 | 210 | 198 | 479 |
| Period of record | 1960-88 | 1962-88 | 1967-88 | 1964-88 | 1965-87 | 1960-87 | 1979-88 | 1958-88 | 1958-88 | 1966-74 |
| Mean monthly flow | 5.13 | 4.84 | 10.41 | 11.730 | 4.16 | 13.43 | 3.34 | 5.07 | 5.36 | 5.64 |
| Minimum flow measured | 0.453 | 0.538 | 1.529 | 2.767 | 0.468 | 1.699 | 0.165 | 0.283 | 0.425 | 0.530 |
| Minimum flow computed | 0.351 | 0.258 | 1.85 | 1.390 | 0.141 | 1.28 | 0.033 | 0.063 | 0.074 | 0.620 |
| Minimum mean monthly flow | 1.186 | 1.210 | 3.24 | 3.519 | 0.806 | 3.159 | 0.274 | 0.417 | 0.698 | 1.318 |
| Daily flow duration (95%) | 0.758 | 0.794 | 2.512 | 3.199 | 0.569 | 2.630 | 0.166 | 0.331 | 0.484 | 0.933 |
| (90%) | 1.059 | 1.000 | 3.020 | 3.467 | 0.733 | 3.273 | 0.282 | 0.468 | 0.661 | 1.096 |
| Maximum flow measured | 31.86 | 39.71 | 71.60 | 49.79 | 13.39 | 306.87 | 59.69 | 128.72 | 162.23 | 11.95 |
| Maximum flow computed | 228.10 | 109.68 | 168.30 | 239.50 | 265.30 | 895.20 | 54.97 | 220.10 | 147.00 | 70.25 |
| 50-year flood | 260 | 126 | 202 | 278 | 307 | 970 | | 228 | 175 | |
| 100-year flood | 303 | 145 | 232 | 314 | 352 | 1150 | | 260 | 200 | |

Daily discharge data for the period 1962-88 have been computed and important flow characteristics are summarised in Table 2. The river shows similar flow characteristics as Thuchi in terms of daily flow duration but differs in flood flows where Thuchi shows much higher flows than Ruguti.

## 3. Mara River - RGS 4EB11

Mara catchment is in the same climatic zone as Ruguti and Thuchi Rivers in which annual rainfall varies between 750 - 2000 mm. It has an area of about 534 km². It has important tributaries like the Nithi river which originates from Mount Kenya forest. This river is monitored by RGS 4EB1 which is just upstream of the new Thuchi - Nkubu road bridge.

The Tungu river also rises from Mount Kenya forest and flows near Chuka town. It is monitored by RGS 4EB9 which is located upstream of the new road. The Mara river itself is formed by South Mara and North Mara rivers. These two are monitored upstream of the new road by RGSs 4EB2 and 4EB16 respectively. Downstream of the new road, south Mara is also monitored by RGS 4EB15 after its confluence with a tributary stream. After the confluence of south and north Maras, river Mara is monitored by RGS 4EB13.

The RGS 4EB11 monitors the whole Mara river system and is located just upstream of the Ishiara-Chiokarige road bridge. Records on this station started in March 1967 upto now and the river has a very stable river bed since it has only two rating curve periods.

The station is rated for discharge range 1.529 to 72 cumecs. Computed daily discharges for the period 1967-88 show that the lowest flow recorded is 1.529 cumecs on 28 August 1984 while the highest is 168 cumecs in November 1982. The daily flow duration curve indicates a very reliable and stable normal flow of 3.02 and 2.512 cumecs for 90 and 95 percent of the times respectively. The estimated 50 and 100-year return period floods are about 220 and 250 cumecs respectively. These are relatively low flood flows for a catchment area of this size but it could be due to catchment characteristics and rainfall pattern. Lack of instantaneous peak water levels from an autographic water level recorder could be a major cause of the relatively low flood levels.

Thuchi, Ruguti and Mara Rivers are tributaries of the Mutonga river which drains into the Tana River.

## 4. Mutonga River - RGS 4EA6

This RGS has a catchment area of 613 km². The area experiences similar climatic conditions as the 4EB sub-catchment area.

Mutonga has two important tributaries namely Iraru and Kithenu. The individual rivers are monitored by RGSs 4EA1 on Mutonga, 4EA2 (closed) on Iraru and 4EA3 on Kithenu. These stations are located upstream of the Igoji-Nkubu road. After the confluence with Kithenu tributary, Mutonga is monitored by RGS 4EA6 which is just upstream of the Ishiara - Chiokarige road bridge.

Water level observations started in January 1964 upto date and these have been made from manual staff gauges.

The stability of the RGS site is indicated by the presence of only two rating curve periods one from 15 January 1964 to 3 November 1982 and the other from 4 November 1982 to Date.

The station is rated for discharge range 2.77 to 50 cumecs. Daily discharge data for the period 1964 - 88 have been computed and the lowest flow recorded is 1.390 cumecs in November 1985 while the highest is 240 cumecs in December 1968.

Analysis of the daily flow duration shows the river to be very stable and reliable giving a normal flow of 3.467 and 3.199 cumecs for 90 and 95 percent of the times. The 50 and 100-year return period floods estimated at 278 and 314 cumecs respectively are relatively low for this catchment area and this is due to lack of instantaneous peak water levels from an autographic water level recorder.

A summary of other flow characteristics is given in Tables 2 and 3 (Page 52).

## 5. Thingithu River - RGS 4F17

Thingithu catchment area is about 303 km² and experiences annual rainfall in the range 850 mm at Marimanti to over 2000 mm in the forested area of Mount Kenya.

The river is monitored at two RGSs. 4F4 is located a couple of metres upstream of the Nkubu - Meru road bridge. Just downstream of this RGS is the Nkubu town water supply intake. Records at this RGS began in September 1952 upto date.

The second RGS is 4F17 which was established in July 1965 and is located a few metres downstream of the Chiokariga - Marimanti road bridge. It has a stable site and two rating curve periods.

The station is rated for discharge range 0.468 to 14 cumecs but extrapolations to cover discharges between 0.141 and 265 cumecs have been made.

Computed daily discharge data for the period 1965-87 shows the lowest flow as 0.141 cumecs recorded in October 1966 and the highest as 265 cumecs recorded in November 1967.

The 90 and 95 percent duration flows are estimated at 0.733 and 0.569 cumecs respectively.

Fairly high flood flows have been manually recorded at this station, giving the 50 and 100-year flood estimates as 307 and 352 cumecs respectively.

Downstream of RGS 4F17, Thingithu is a tributary of Kathita River.

## 6. Kathita River - RGS 4F10

This has a large catchment area of 878 km² and has its major source deep into Mount Kenya forest. Rainfall varies from 2000 mm on the slopes of Mount Kenya to 850 mm in the lower reaches of Marimanti area.

The river has several tributaries feeding it, but only two of these are regularly monitored. The Mariara tributary is monitored by RGS 4F5 located just downstream of the Nkubu-Meru road bridge while Kuuru tributary is monitored by RGS 4F25.

After the confluence with Kuuru tributary, the river is monitored at Marimanti by RGS 4F10 established in September 1959.

The river has a stable bed as evidenced by the presence of only two rating curve periods. It is rated for discharge range 1.7 to 307 cumecs.

Daily discharge data for the period 1960-87 have been computed. The lowest flow recorded is 1.28 cumecs in September 1987 while the highest flow is 895 cumecs in November 1967 (manually recorded).

Daily flow duration analysis gives the 90 and 95 percent duration flows as 3.273 and 2.630 cumecs respectively. These are the kind of flows which occur most of the times and are used for design purposes (Table 2).

Flood flows passing this RGS appear to be very large as the 50 and 100 year flood estimates are 970 and 1150 cumecs respectively. The annual peak flows do not plot well on the extreme probability paper and the data could be unreliable. Extreme caution should therefore be exercised when making use of these data.

## 7. Thanantu River - RGS 4F20

Thanantu has its source in the Nyambeni Hills where annual rainfall is about 2000 mm. In the upper reaches, its tributary Liutu near Mikinduni town is monitored by RGS 4F37 established in September 1982. After the confluence with Liutu, the river is monitored by RGS 4F33. In the lower reaches of Tharaka area, the river is monitored at Gatunga by RGS 4F20. Rainfall in this area is about 800 mm per year.

RGS 4F20 was established in September 1978 and has a catchment area of 211 km². Its river bed is sandy and very unstable. This is indicated by the presence of seven rating curve periods in a span of about 10 years. The quality of the data is also affected by this unstability. In spite of this shortcoming, daily discharge data for the period 1979-88 have been computed.

The lowest flow recorded is 0.033 cumecs in January 1984 while the highest is 55 cumecs in November 1984. This occurrence of extreme flows in the same year is rather curious particularly for the maximum flow when it is well known that 1984 was a very dry year.

The estimated 90 and 95 percent duration flows are 0.251 and 0.138 cumecs respectively. Due to the short period of data record which is also incomplete, flood

flow estimates have not been computed.

Downstream of Gatunga, the river joins Kathita which then flows to Tana River.

## 8. Thangatha River - RGS 4F8

Thangatha has a catchment area of about 210 km². The river originates from Nyambeni Hills where annual rainfall is over 2000 mm.
RGS 4F8 in the Tharaka area was established in September 1957. Annual rainfall here is about 700 mm.

The river has a very unstable bed of sandy soil and this has contributed to the presence of seven rating curve periods. Despite this unstability, the quality of the data here is fairly good.

Although the station is rated for discharges between 0.283 and 129 cumecs, extrapolations have been made in the range 0.063 to 220 cumecs.

Computed daily discharges for the period 1958-88 give 0.063 cumecs as the lowest flow recorded in April 1972 and 220 cumecs as the highest flow recorded in November 1961.

The river appears to generate high flood flows of 228 and 260 cumecs for the 50 and 100-year return periods respectively. This could be due to the heavy rainfall storms which fall in the catchment in the Nyambeni Hills and the steepness of the area.

The river then flows through semi-arid area to the Tana river.

## 9. Ura River - RGS 4F9

The catchment area of Ura is about 198 km² and the river originates from Nyambeni Hills and flows through Maua area where annual rainfall is about 2500 mm.

Ura river is monitored at four RGSs. RGS 4F21 monitors flows of Runkunu tributary before its confluence with Ura. It was established in October 1977. RGS 4F23 monitors Ura before its confluence with Runkunu while RGS 4F22 monitors the combined flows of Ura and Runkunu after their confluence. These two RGSs were established in September 1978 and October 1977 respectively (Appendix 4.3 and Fig. 4.2). RGS 4F9 which is a couple of kilometres downstream of 4F22 basically measures the same amount of normal flow as 4F22 less seepage losses.

Ura river forms the boundary between Tharaka Division and Meru National Park.

RGS 4F9 was established in August 1957 and has a fairly stable river bed. It has four rating curve periods. The station is rated for discharge range 0.425 to 162 cumecs.

Daily discharge data for the period 1958-88 have been calculated giving the lowest flow as 0.074 cumecs in June 1984 and highest as 147 cumecs in November/-December 1961.

The flood flows generated by this catchment area are fairly large and the estimates for 50 and 100-year return periods are 175 and 200 cumecs respectively. As said for Thangatha river, heavy rainfall storms could be the cause of these high flashy floods.

The river carries a much higher normal flow than Thangatha river most of the times (Table 2). It drains into the Tana river through Meru National Park.

## 10. Rojewero River - RGS 4F18

Rojewero river is to be found on the eastern side of Meru District and forms the boundary between Meru and Isiolo districts in its lower reaches.

The river originates from the south-eastern slopes of Nyambeni Hills where annual rainfall is about 1700 mm. It has two tributaries, namely the Kindani and Murera. These were monitored by RGSs 4F35 and 4F14 respectively both of which are closed. The Murera tributary also forms the boundary between Meru and Isiolo districts in its middle and lower reaches before its confluence with Rojewero.

The Rojewero river system has five RGSs, four of which are closed due to insecurity from wild animals as a large proportion of the catchment area is in the Meru National Park.

RGS 4F18 is located in the lower reaches of the main river where annual rainfall is about 500 mm. It was established in November 1965 and due to lack of a reliable observer, all the stage observations were recorded wholly from an autographic water level recorded. Due to recorder operational problems, there are several gaps in the data record particularly during the rainy season leading to fairly low stages being recorded in the computerised data. However, from the original data file, a few peak stages were recorded as follows:

| Date | H(ft) | H(m) | Q(cumecs) |
|---|---|---|---|
| 13/04/66 | 14.45 | 4.40 | 88.49 |
| 30/04/67 | 16.26 | 4.96 | 103.56 |
| 22/11/68 | 11.68 | 3.56 | 66.63 |

Due to lack of flood gauging equipments like the cable ways, all discharge measurements were carried out by wading and as such only low to medium flows were monitored. Hence the highest flow measured is 11.95 cumecs on 20/02/69, which is too low for a catchment area of 479 km².

RGS 4F18 was closed in September 1974 when it was discovered that the autographic water level recorder was stolen by vandals.

Daily discharge data for the period 1966-74 have been computed and important flow characteristics are summarised in Table 2.

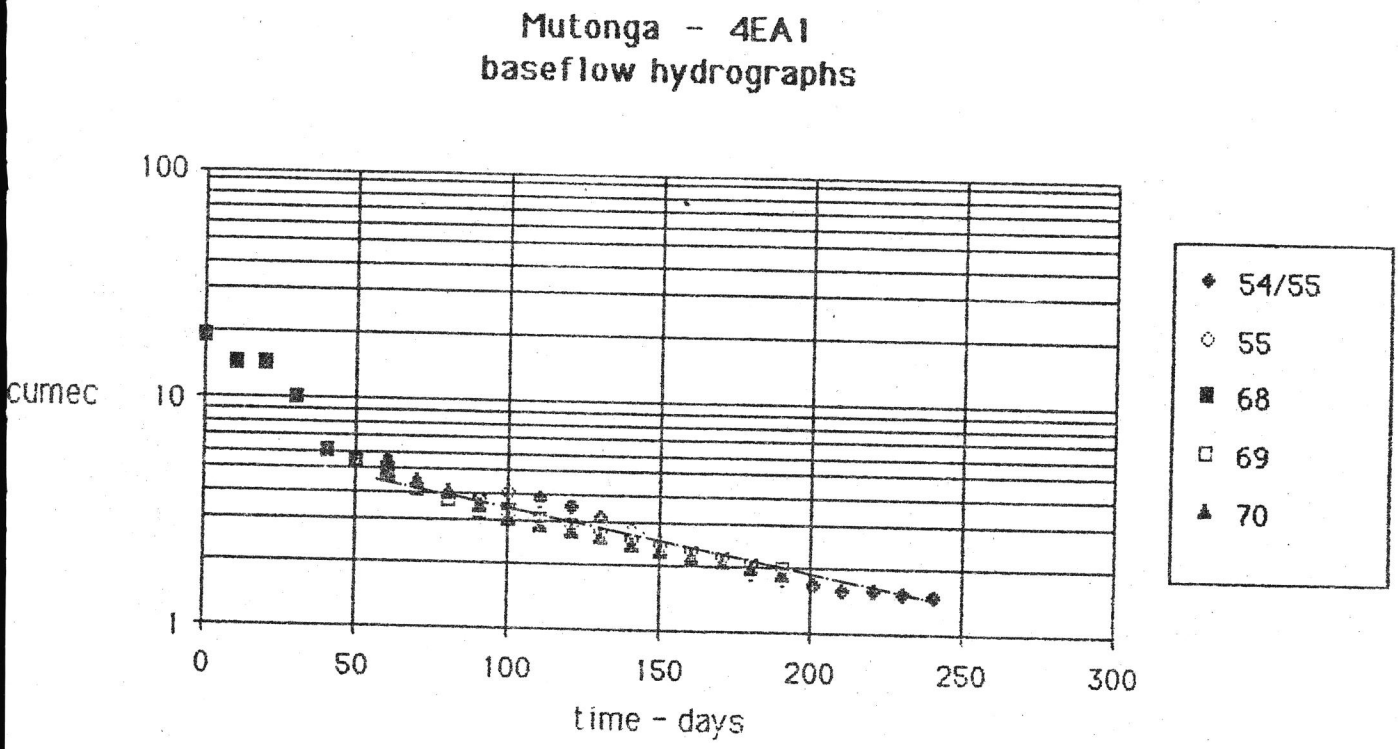
Rojewero river joins the Tana just downstream of the Adamson's Falls.

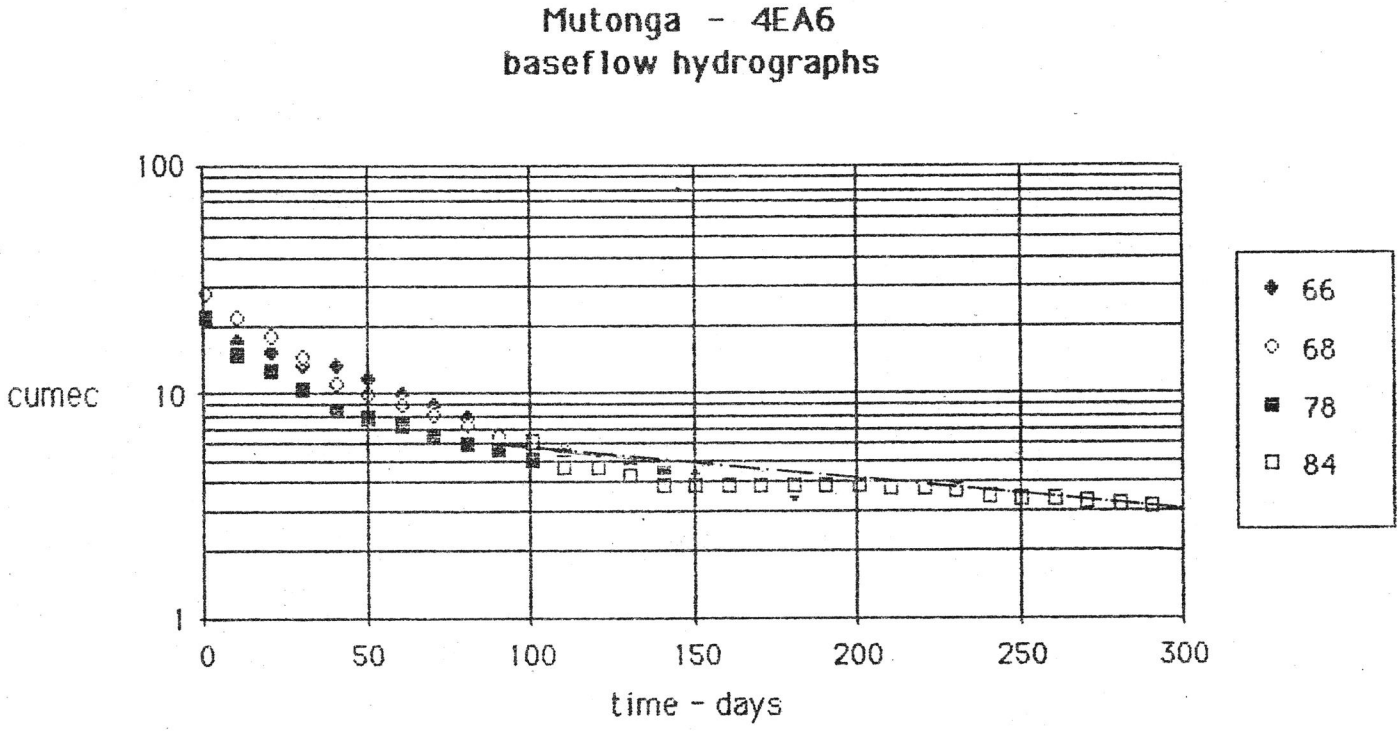
# Appendix 4.7

# Baseflow Hydrographs

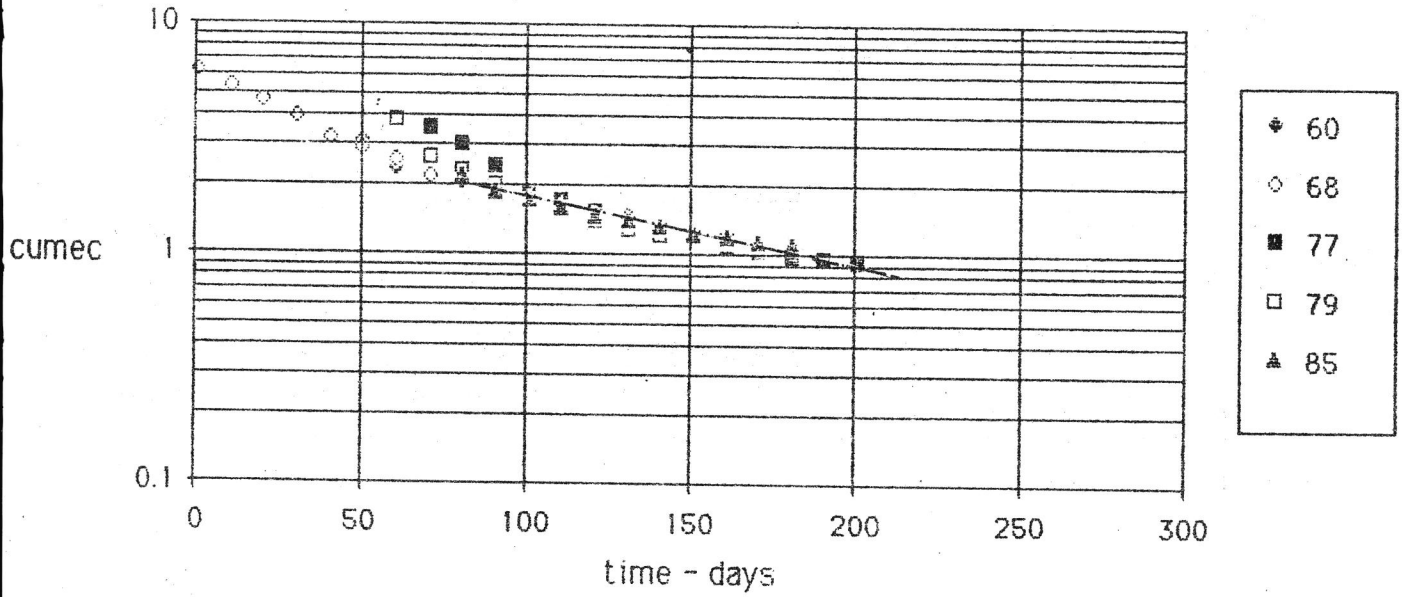
Table 4.1 Estimates of Hydrograph Depletion from Hydrograph Analysis

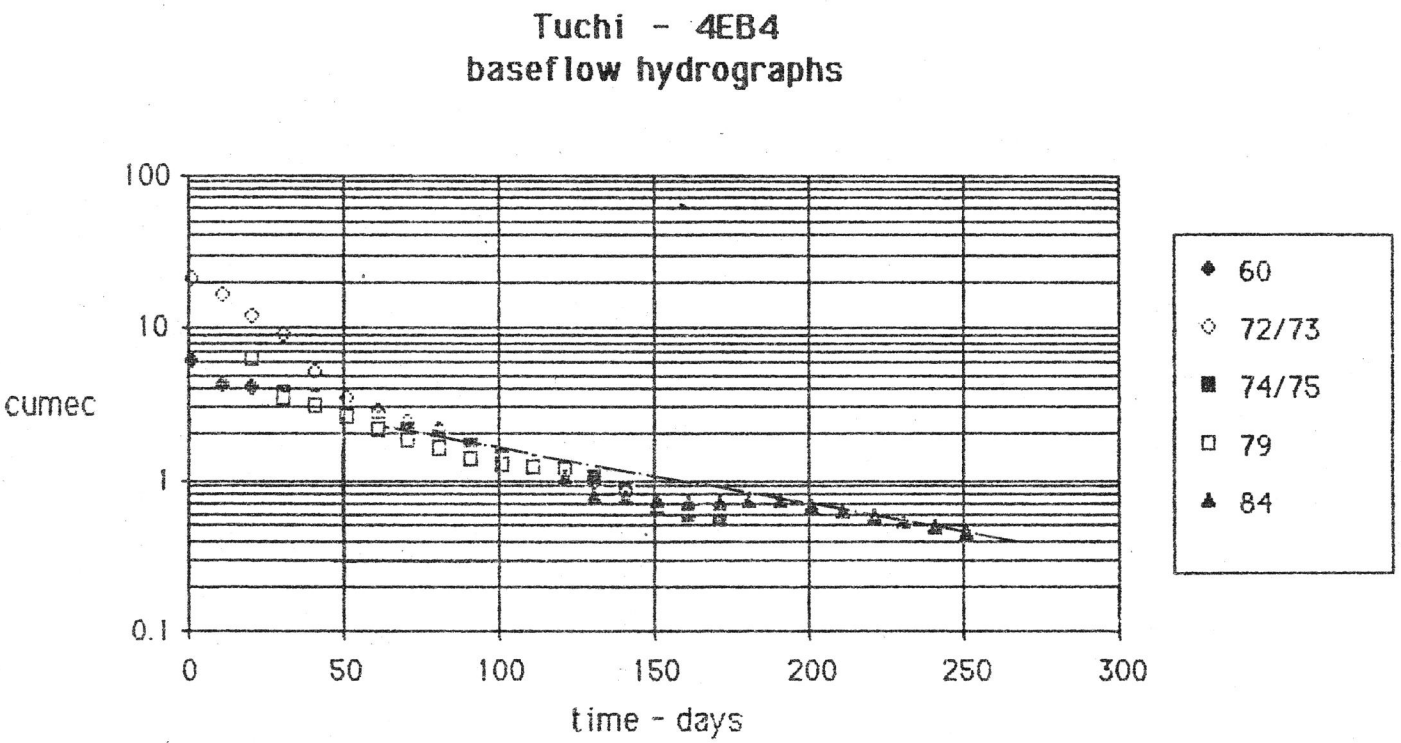
| River | RGS | Area km2 | Typical Qo cumec | Recession constant | | R U N - O F F after: 30 | 60 | 90 | 180 | 270 days |
|---|---|---|---|---|---|---|---|---|---|---|
| Mutonga | 4EA1 | 124 | 3.63 | 0.00613 | Mm3 | 8.59 | 15.7 | 21.7 | 34.19 | 41.39 |
| | | | | | mm | 69.3 | 127 | 175 | 276 | 334 |
| Mutonga | 4EA6 | 624 | 6.31 | 0.00416 | Mm3 | 15.4 | 28.9 | 40.9 | 69.07 | 88.43 |
| | | | | | mm | 24.6 | 46.4 | 65.6 | 111 | 142 |
| Nithi | 4EB1 | 120 | 1.99 | 0.00685 | Mm3 | 4.66 | 8.46 | 11.6 | 17.79 | 21.15 |
| | | | | | mm | 38.9 | 70.5 | 96.3 | 148 | 176 |
| Tuchi | 4EB4 | 111 | 2 | 0.008364 | Mm3 | 4.58 | 8.15 | 10.9 | 16.08 | 18.5 |
| | | | | | mm | 41.3 | 73.4 | 98.4 | 145 | 167 |
| Ruguti | 4EB6ε | 368 | 2.5 | 0.006571 | Mm3 | 5.9 | 10.8 | 14.7 | 22.89 | 27.4 |
| | | | | | mm | 16 | 29.2 | 40 | 62 | 74 |
| Tunga | 4EB9 | 80 | 0.63 | 0.012778 | Mm3 | 1.36 | 2.28 | 2.91 | 3.833 | 4.125 |
| | | | | | mm | 17 | 28.5 | 36.4 | 48 | 52 |
| Thingithu | 4F4 | 303 | 1.9 | 0.00511 | Mm3 | 4.57 | 8.48 | 11.8 | 19.32 | 24.04 |
| | | | | | mm | 15.1 | 28 | 39.1 | 64 | 79 |
| Thangatha | 4F8 | 210 | 2 | 0.0105 | Mm3 | 4.45 | 7.69 | 10.1 | 13.97 | 15.49 |
| | | | | | mm | 21.2 | 36.6 | 47.9 | 67 | 74 |
| Ura | 4F9 | 198 | 2 | 0.013143 | Mm3 | 4.28 | 7.17 | 9.12 | 11.91 | 12.77 |
| | | | | | mm | 21.6 | 36.2 | 46.1 | 60 | 64 |
| Kathita | 4F10 | 878 | 6.92 | 0.005476 | Mm3 | 16.5 | 30.6 | 42.5 | 68.44 | 84.29 |
| | | | | | mm | 18.8 | 34.8 | 48.4 | 78 | 96 |
| Thingithu | 4F17 | 303 | 1.9 | 0.005 | Mm3 | 4.57 | 8.51 | 11.9 | 19.48 | 24.32 |
| | | | | | mm | 15.1 | 28.1 | 39.3 | 64 | 80 |
| Ontulili | 5BE2 | 64 | 0.32 | 0.0209 | Mm3 | 0.62 | 0.95 | 1.12 | 1.292 | 1.318 |
| | | | | | mm | 9.63 | 14.8 | 17.5 | 20 | 21 |
| Teleswani | 5BE5 | 36 | 0.25 | 0.00192 | Mm3 | 0.63 | 1.22 | 1.79 | 3.287 | 4.551 |
| | | | | | mm | 17.5 | 34 | 49.6 | 91 | 126 |
| Liki | 5BE7 | 176 | 1 | 0.0265 | Mm3 | 1.79 | 2.6 | 2.96 | 3.233 | 3.258 |
| | | | | | mm | 10.2 | 14.7 | 16.8 | 18 | 19 |
| Ewaso Ngiro | 5,E3 | 15300 | 10 | 0.023711 | Mm3 | 18.5 | 27.7 | 32.1 | 35.93 | 36.38 |
| | | | | | mm | 1.21 | 1.81 | 2.1 | 2 | 2 |

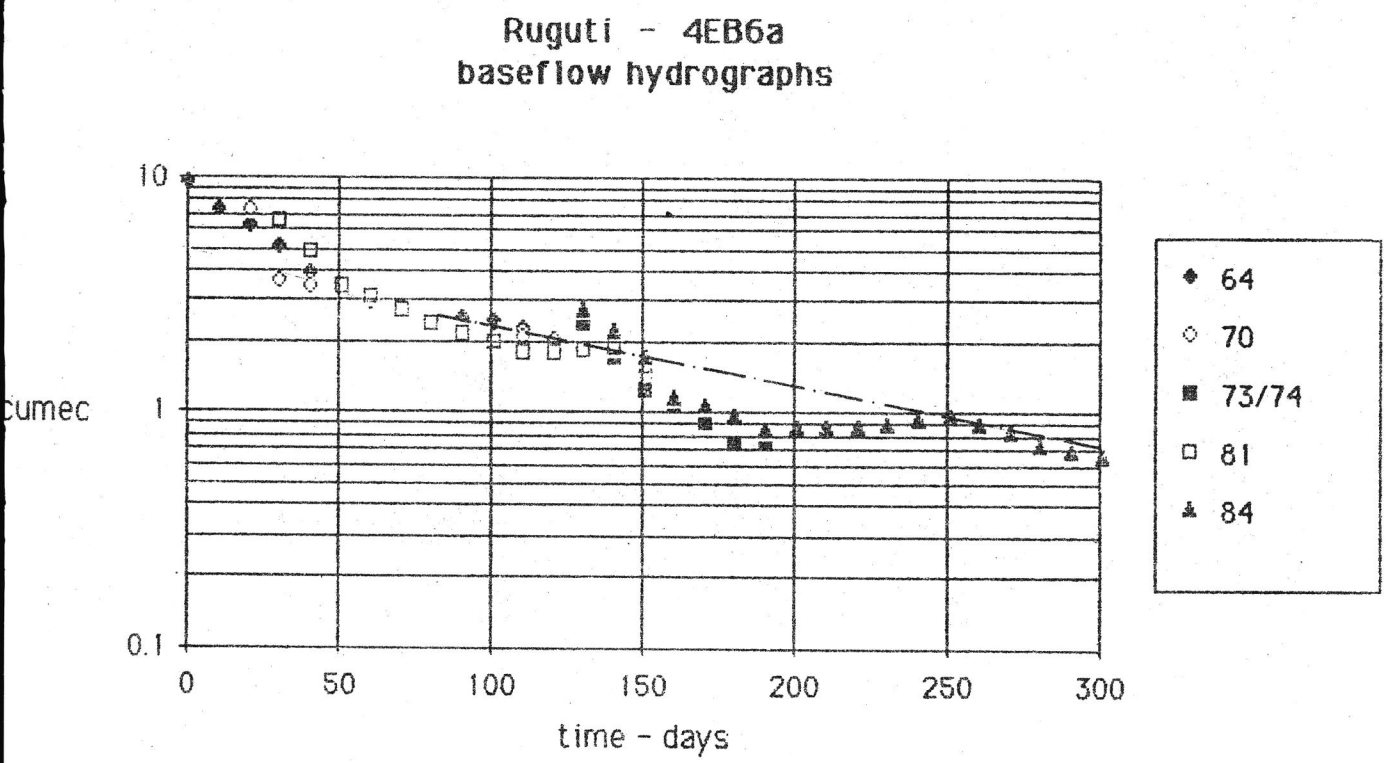

Mutonga - 4EA1
baseflow hydrographs
cumec
100
10
1
0
50
100
150
200
250
300
time - days
54/55
55
68
69
70

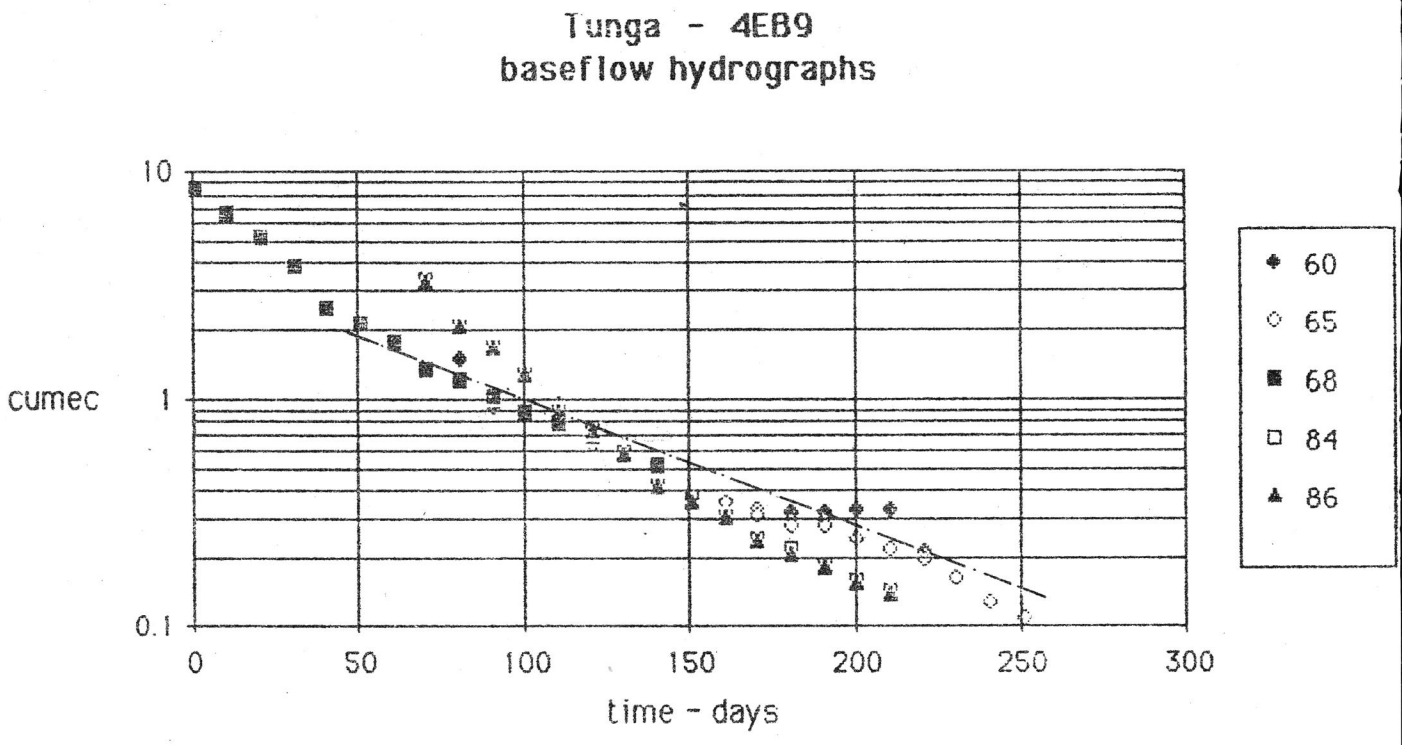

Mutonga - 4EA6
baseflow hydrographs
cumec
100
10
1
0
50
100
150
200
250
300
time - days
66
68
78
84

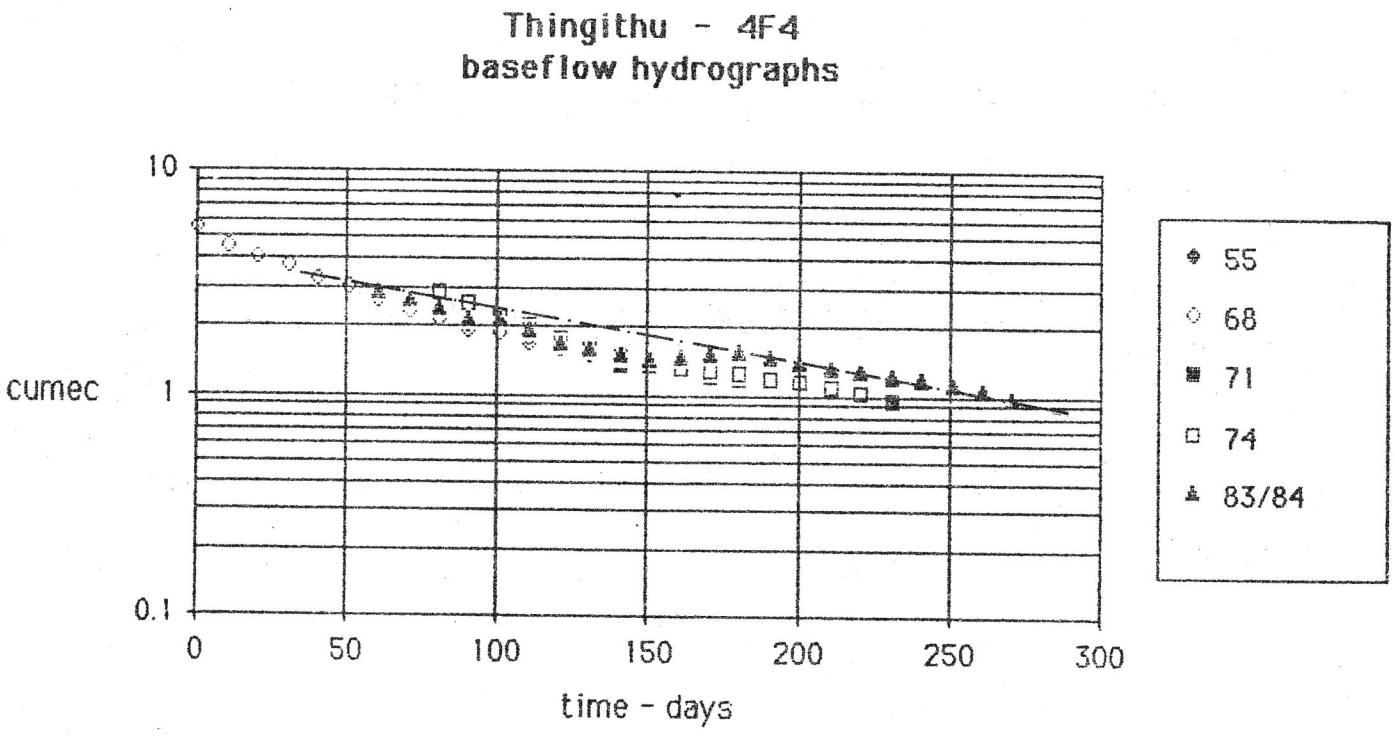
Nithi - 4EB1
baseflow hydrographs



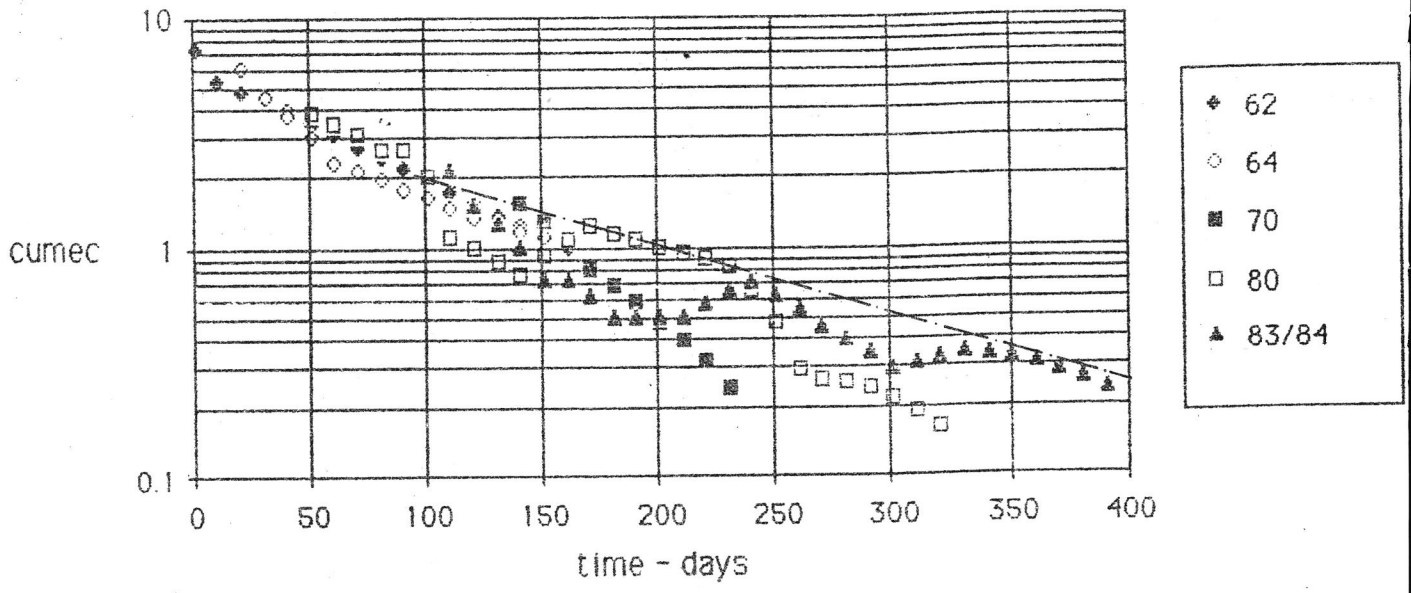

Tuchi - 4EB4
baseflow hydrographs
100
10
1
0.1
cumec
0
50
100
150
200
250
300
time - days
60
72/73
74/75
79
84

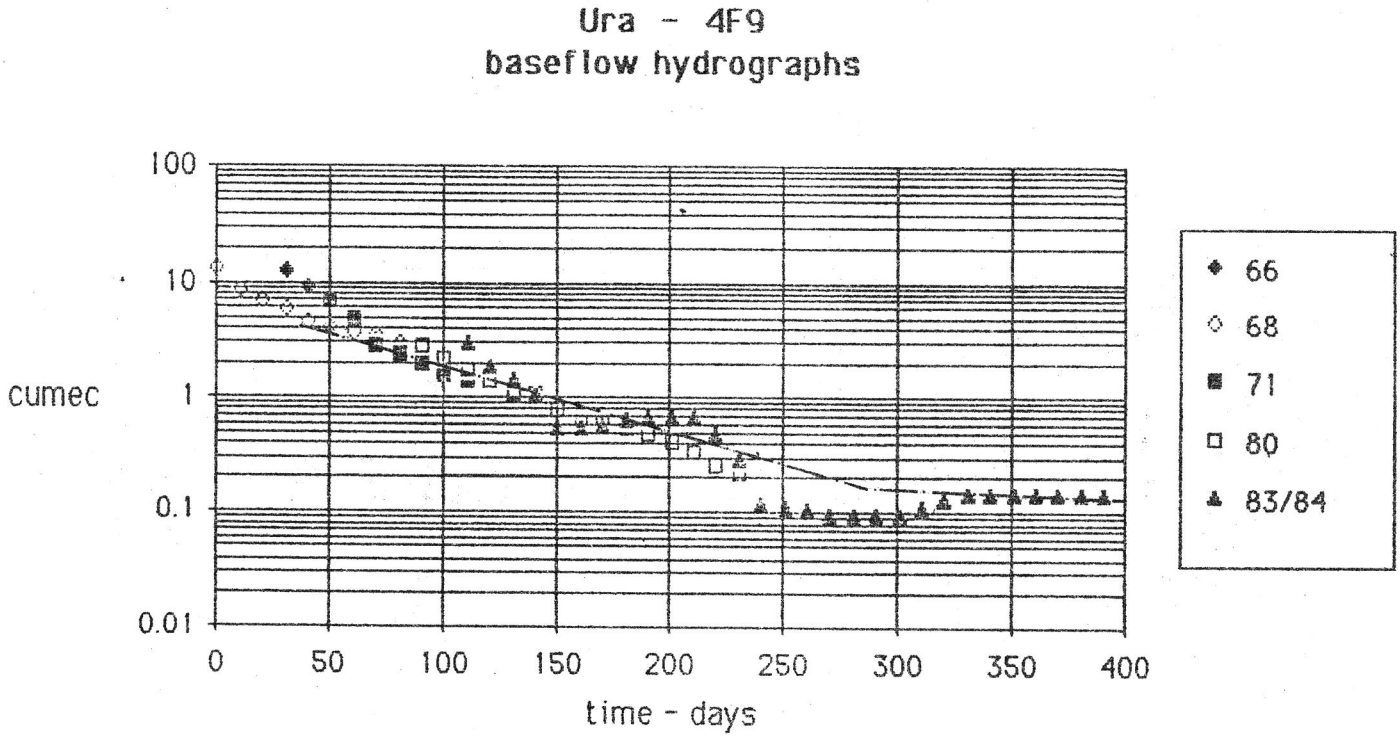

Ruguti - 4EB6a
baseflow hydrographs
10
1
0.1
cumec
0
50
100
150
200
250
300
time - days
64
70
73/74
81
84

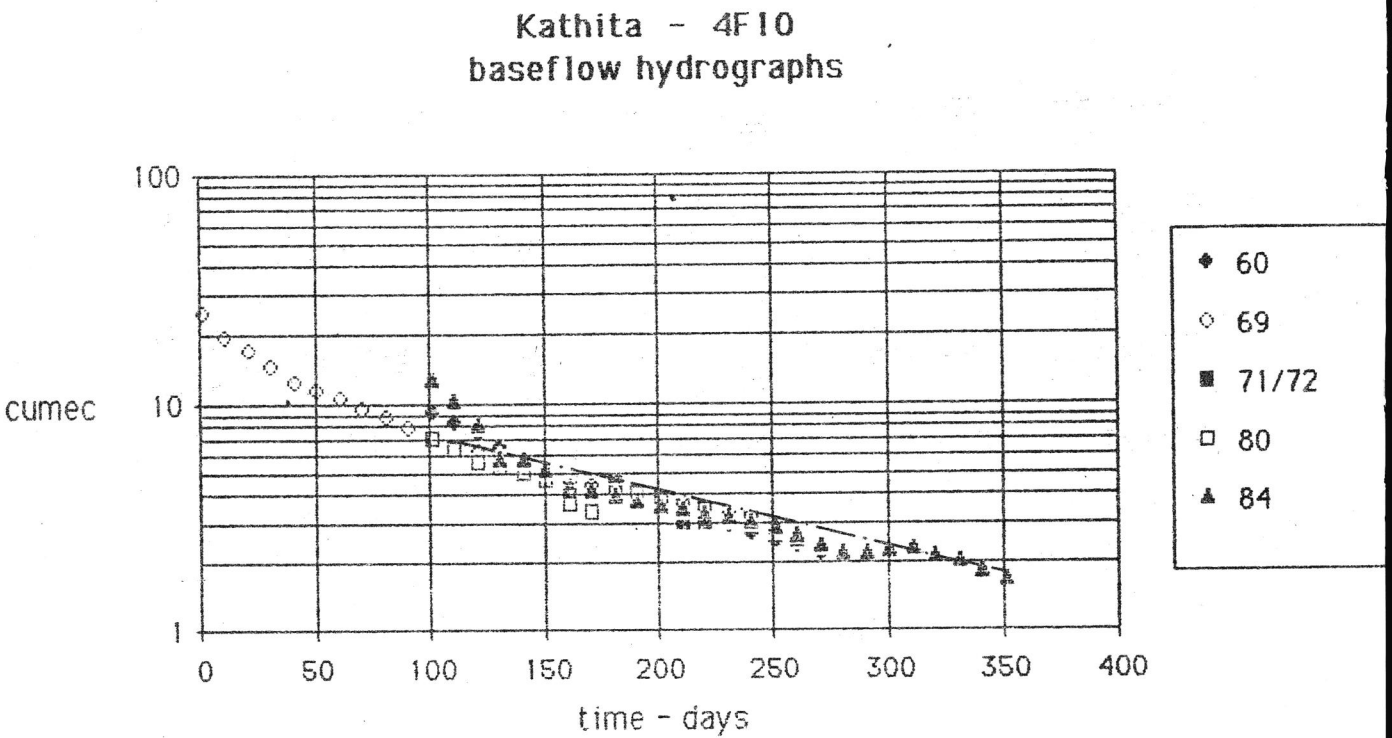

Tunga - 4EB9
baseflow hydrographs
cumec
10
1
0.1
0
50
100
150
200
250
300
time - days
60
65
68
84
86

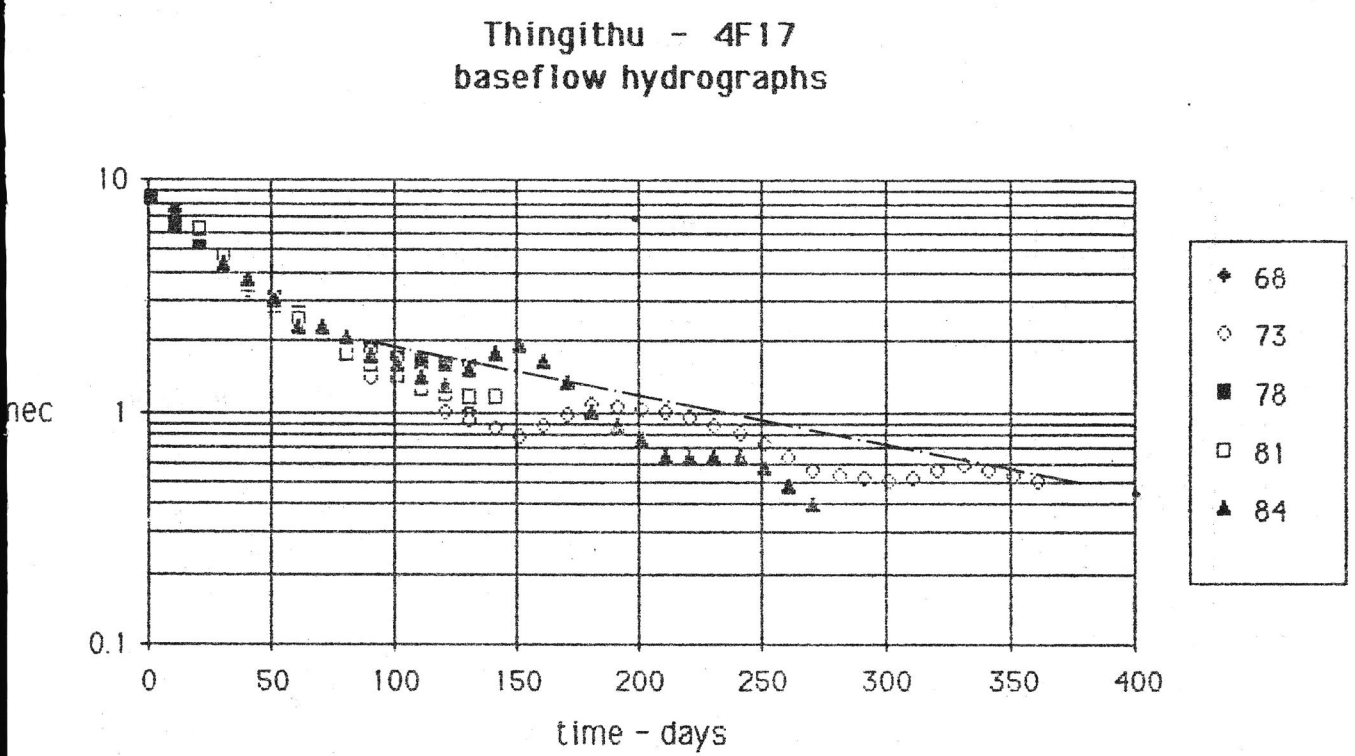

Thingithu - 4F4
baseflow hydrographs
cumec
10
1
0.1
0
50
100
150
200
250
300
time - days
55
68
71
74
83/84

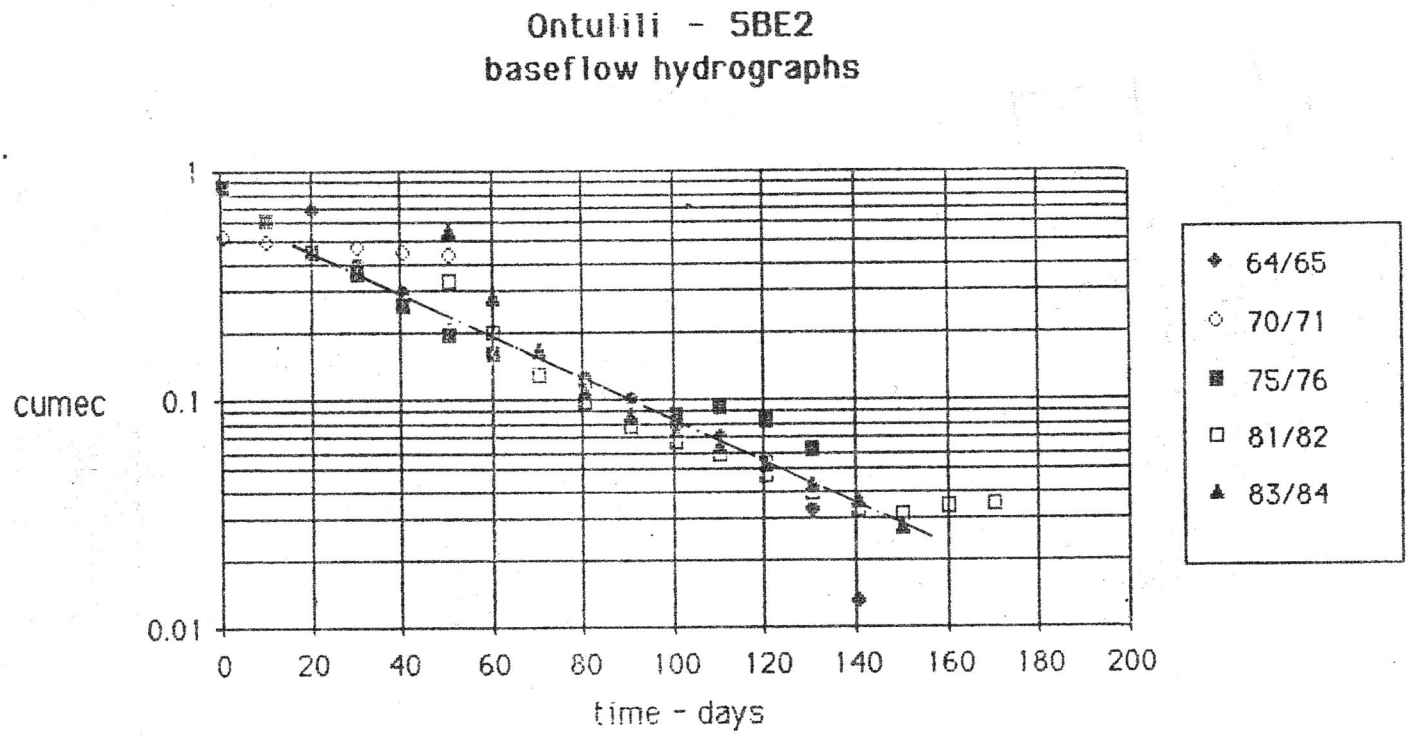
Thangatha - 4F8
baseflow hydrographs

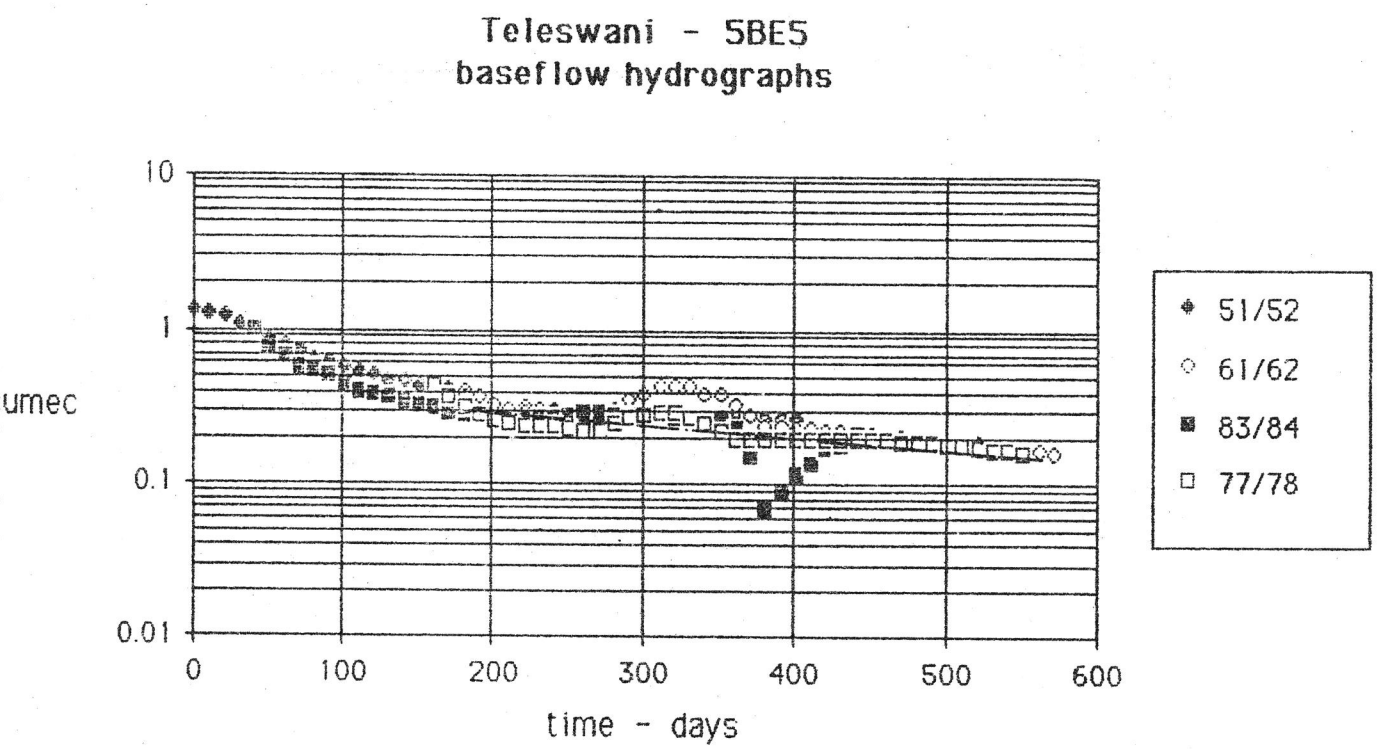


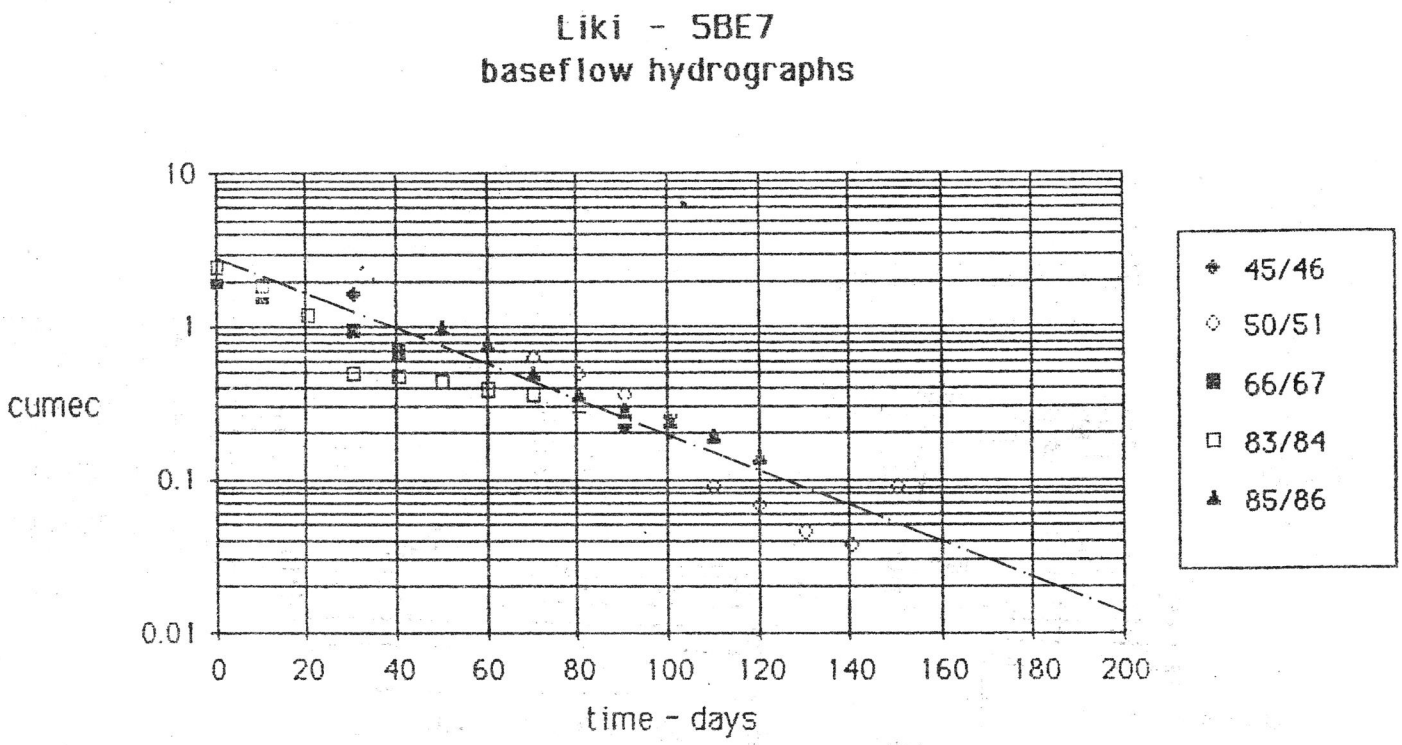

Ura - 4F9
baseflow hydrographs
100
10
1
0.1
0.01
cumec
0
50
100
150
200
250
300
350
400
time - days
66
68
71
80
83/84


Kathita - 4F10
baseflow hydrographs
cumec
100
10
1
0
50
100
150
200
250
300
350
400
time - days
60
69
71/72
80
84

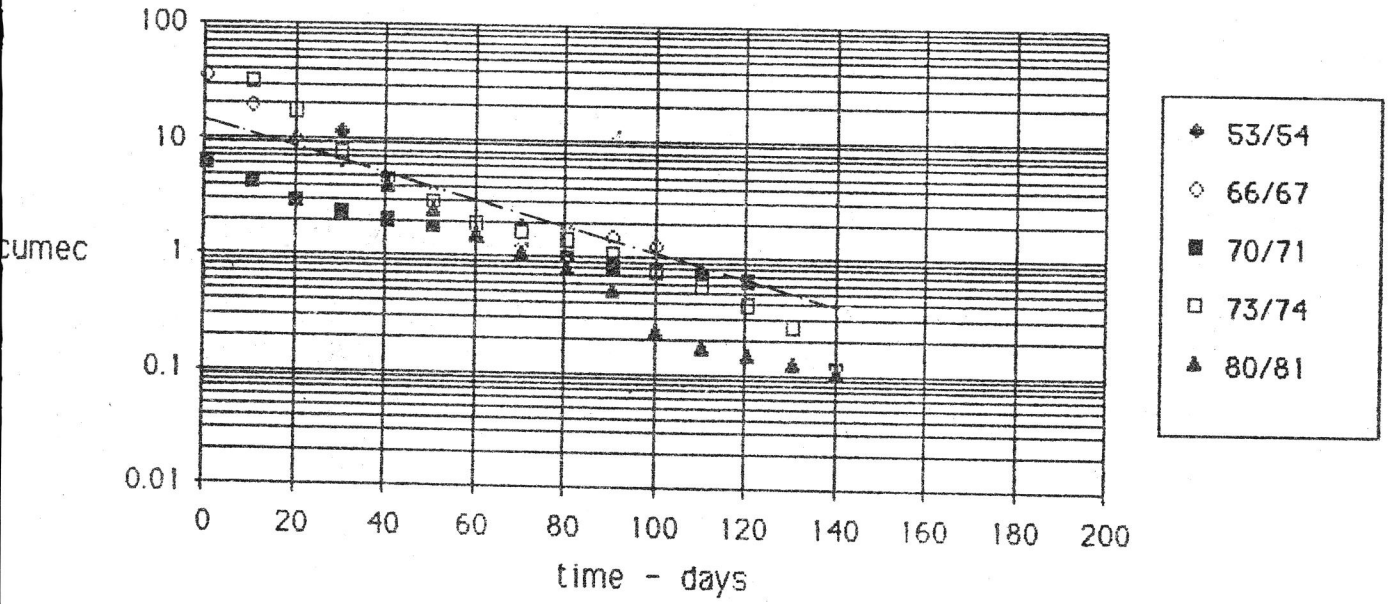

Thingithu - 4F17
baseflow hydrographs
10
1
0.1
nec
0
50
100
150
200
250
300
350
400
time - days
68
73
78
81
84


Ontulili - 5BE2
baseflow hydrographs
cumec
1
0.1
0.01
0
20
40
60
80
100
120
140
160
180
200
time - days
64/65
70/71
75/76
81/82
83/84


Teleswani - 5BE5
baseflow hydrographs
10
1
0.1
0.01
cumec
0
100
200
300
400
500
600
time - days
51/52
61/62
83/84
77/78


Liki - 5BE7
baseflow hydrographs
cumec
10
1
0.1
0.01
0
20
40
60
80
100
120
140
160
180
200
time - days
45/46
50/51
66/67
83/84
85/86

Ewaso Ngiro - SE3
baseflow hydrographs



# Appendix 4.8

## Chemical Data Rivers Meru

# CHEMICAL DATA RIVERS MERU

| | DATE OF SAMPLING | pH | color | Turb FTU | KMnO4 value | E.C. µS/cm | Fe | Mn | Ca | Mg | Na | K | Total Hard | Total Alk | HCO3 | Cl | F | NO3 | NO2 | NH3 | SO4 | Free CO2 | TDS | SiO2 | SUM Cation | SUM Anion | IONIC BALANCE | Suitable for domestic use | SAR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | mg/l | | | | | | | | | | | | | | | | | | meq/l | | % | | |
| Akamie water point (Stream) | 16.11.88 | 6.5 | 10 | 1.2 | 8.5 | 114 | <.1 | <.1 | | | 4.2 | 4.6 | 22 | 34 | | 19 | 0.5 | | < 0.01 | | 2 | 18 | 68 | | | | | | |
| Ewathu Mara | 10.3.88 | 7.1 < | 5 | 2.7 | 1.6 | 252 | 0.1 | <.1 | 7.2 | 3.9 | 30 | 6.2 | 36 | 96 | | 8 | 0.22 | | 0.02 | | 3.1 | 4 | 151 | | 2.54 | 2.21 | 6.9 | | 2.9 |
| Gitwe | 20.12.88 | 5.6 | 70 | 27 | | 33 | 2.8 | <.1 | 3.2 | 0.5 | 2.7 | 1.7 | 11 | 8 | | 4 | | | < 0.01 | | 1 | 4 | 20 | | 0.36 | 0.29 | 10.4 | | 0.4 |
| Gwathamara stream at Charuru | 12.12.87 | 7.2 < | 5 | 1.6 | 5.8 | 300 | 0.1 | 0.1 | 6.4 | 9.2 | | | 54 | 92 | | 7 | 0.2 | | < 0.01 | | 0.63 | 2 | 180 | | | | | | |
| Iraru | 15.08.87 | 6 | 50 | 34 | 1.03 | 72 | 1 | 0.08 | 1 | 0.8 | 7 | | 10 | 18 | 21.9 | 4 | 0.19 | | < 0.01 | | < 0.3 | 5 | 43 | | 0.42 | 0.48 | -6.5 | | 1.3 |
| Iraru at new Meru-Chuka Road | 06.03.86 | 7.9 | 10 | 12 | 6.5 | 66 | 0.4 | 0.02 | 0.7 | 0.3 | 8 | 4.4 | 10 | 30 | 36.6 | 5 | 0.55 | 0.01 | < 0.01 | | 0.35 | 4 | 40 | 27 | 0.52 | 0.75 | -18.0 | | 2 |
| Kalibuini | 08.10.85 | 7.1 | 5 | 17 | 47 | 155 | <0.1 | 0.03 | 10 | 5.3 | | | 48 | 76 | 92.6 | 5 | 0.55 | | | | < 0.03 | | 93 | | 0.90 | 1.06 | | | |
| Kamara stream | 22.3.88 | 5 | 100 | 42 | 4.7 | 23 | 2.5 | <.1 | 2.4 | | 3 | 1 | 6 | 2 | | 8 | < 0.1 | | < 0.01 | | < 0.3 | 6 | 14 | | | | | | |
| Kamjoo (stream) | 16.11.88 | 7.6 | 15 | 2 | 9.5 | 276 | <.1 | <.1 | | | 12 | 6 | 50 | 124 | | 9 | 0.7 | | < 0.01 | | 2.4 | 8 | 165 | | | | | | |
| Kangeta | 08.10.85 | 8 | 5 | 5 | 13 | 240 | 0.8 | <0.01 | 12 | 11 | | | 76 | 114 | 139 | 7 | 0.33 | | | | 54 | | 144 | | 1.52 | 3.6 | | | |
| Kangoo stream | 02.10.85 | 6.4 | 5 | 5.2 | 6.6 | 80 | 0.1 | <0.01 | 2.4 | 3.9 | | | 22 | 14 | 17.1 | 0.2 | | | | | 1.3 | | 48 | | 0.44 | 0.31 | | | |
| Kathita | 16.12.88 | 7.5 | Brown | 150 | | 137 | 4.5 | 0.3 | 12 | 2.9 | 10 | 4 | 42 | 58 | | 7 | | | < 0.01 | | 3.3 | 2 | 83 | | 1.37 | 1.43 | -1.8 | | 0.7 |
| Kathita 4F10 | 08.10.85 | 8.2 | 5 | 8.6 | 7.3 | 195 | 0.5 | 0.1 | 12 | 10 | | | 72 | 102 | 124 | 8 | 0.35 | | | | 32.9 | | 117 | | 1.44 | 2.95 | | | |
| Kathita 4F10 | 13.02.86 | 8.3 | 20 | 7.9 | 2.1 | 150 | 0.5 | 0.02 | 2.5 | 3.9 | 15 | 1.1 | 46 | 84 | | 8 | 0.32 | 0.01 | < 0.01 | | 1.4 | | 91 | | 1.13 | | | | 1.4 |
| Kathita 4F10 | 28.03.85 | 7.8 | 400 | 180 | 27 | 170 | 28 | 1.4 | 4.2 | 5.4 | 45 | 3 | 64 | 70 | 85.3 | 10 | 0.7 | | | | < 0.3 | | 102 | | 2.89 | 1.89 | 22.9 | | 3.4 |
| Kathita 4F10 | 05.02.87 | 7.8 | 30 | 20 | 0.47 | 180 | 1.9 | 0.12 | 2.8 | 5.5 | 20 | 2.7 | 46 | 74 | 90.2 | 8 | 0.42 | 0.59 | 0.03 | | 1.07 | 2 | 108 | 31 | 1.53 | 1.73 | -6.0 | | 1.6 |
| Kathita 4F19 | 26.08.86 | 8.4 | 5 | 6.5 | 1.5 | 165 | 0.1 | <0.01 | 7.5 | 5.9 | 21 | 3.1 | 54 | 78 | | 6 | 0.24 | 0.01 | 0.01 | | 2.66 | nil | 100 | 29 | 1.85 | | | | 1.4 |
| Kathita 4F19 | 28.03.85 | 7.5 | 300 | 160 | 25 | 160 | 31 | 1.1 | 3 | 4.3 | 44 | 5 | 50 | 66 | 80.5 | 8 | 0.6 | | | | < 0.3 | | 96 | | 2.55 | 1.55 | 24.3 | | 3.8 |
| Kathita 4F19 | 05.02.87 | 8 | 50 | 28 | 0.32 | 170 | 2.1 | 0.09 | 3.6 | 3.6 | 13 | 2 | 60 | 80 | 97.5 | 7 | 0.3 | 0.77 | 0.01 | | < 0.3 | 2 | 102 | 32 | 1.09 | 1.8 | -24.5 | | 1.2 |
| Kathita 4F19 | 03.02.86 | 8.2 | 10 | 6.4 | 1.5 | 150 | 1 | 0.03 | 3.6 | 5 | 13 | 1.3 | 60 | 82 | 100 | 6 | 0.21 | 0.02 | 0.01 | | 1.6 | 4 | 91 | | 1.19 | 1.84 | -21.5 | | 1 |
| Kathita 4F26 | 13.08.87 | 7 | 5 | 3.3 | 1.1 | 196 | 0.2 | 0.04 | 6.8 | 8 | 20 | | 45 | 68 | 82.9 | 7 | 0.44 | | < 0.01 | | 1 | 4 | 117 | | 1.97 | 1.58 | 11.0 | | 1.2 |
| Kathita 4F29 | 12.11.86 | 7.5 | 150 | 105 | 5.1 | 165 | 16 | 1.17 | 0.8 | 3.9 | 26 | 4.7 | 40 | 76 | 92.6 | 7 | 0.41 | 0.38 | 0.16 | | < 0.3 | 4 | 100 | | 1.61 | 1.72 | -3.3 | | 2.7 |
| Kathita, Nkabune self help water | 7.10.87 | 6.2 < | 5 | 3.4 | 1.6 | 130 | 1.1 | 0.1 | 1 | 1 | 19 | | 16 | 410 | | 6 | 0.7 | | < 0.01 | | 2.7 | 10 | 78 | | | | | | 3.2 |
| Kathita at 4F10 | 11.8.87 | 6.8 | 5 | 3.6 | 2.29 | 189 | <.1 | 1.2 | 4.8 | 7.5 | 18 | | 54 | 204 | | 7 | 0.4 | | < 0.01 | | 4.4 | 3 | 113 | | | | | | 1.2 |
| Kathita at 4F19 | 27.8.87 | 6.9 < | 5 | 4 | 11 | 210 | 0.6 | <.1 | 4 | 2.9 | 18 | | 59 | 56 | | 6 | 0.35 | | 0.01 | | 9.5 | 6 | 126 | | | | | | 1.7 |
| Kathita at 4F19 | 20.11.87 | 7.6 | 250 | 110 | | 247 | | | 22 | 4 | 8 | 6.1 | 73 | 84 | | 11 | 0.37 | | 0.7 | | < 0.3 | 6 | 148 | | 1.93 | 2 | -1.6 | | 0.4 |
| Kathita at Marimanti | 8.10.87 | 7.5 < | 5 | 2.3 | 0.4 | 4 | 0.1 | <.1 | 11 | 4.5 | 19 | | 53 | 80 | | 9 | 0.4 | | < 0.01 | | 1.7 | | 140 | | | | | | 1.2 |
| Kathita at Marimanti | 16.12.88 | 8 | 250 | 72 | | 155 | 2 | <.1 | 9.8 | 5.2 | 16 | 3.5 | 46 | 66 | | 7 | | | < 0.01 | | < 0.3 | 2 | 93 | | 1.69 | 1.52 | 5.3 | | 1 |
| Kathita at marimanti Bridge | 22.10.87 | 7.5 < | 5 | 9.8 | < 0.01 | 253 | 1.5 | <.1 | 5.8 | 9.2 | 19 | | 59 | 85 | | 8 | 0.6 | | < 0.01 | | 3 | 4 | 152 | | | | | | 1.1 |
| Kathita at Mbuya | 22.10.87 | 7 | 15 | 5.5 | 1.6 | 221 | 1.7 | 0.2 | 3.9 | 6.9 | 28 | | 49 | 74 | | 8 | 0.54 | | < 0.01 | | 3 | 6 | 133 | | | | | | 2 |
| Kathita at Ngonya | 21.10.87 | 7.2 < | 5 | 15 | < 0.01 | 325 | 1.8 | <.1 | 5 | 11 | 23 | | 61 | 84 | | 8 | 0.5 | | < 0.01 | | 1.43 | 4 | 195 | | | | | | 1.3 |
| Kathita at Ruken School | 21.10.87 | 7 < | 5 | 3.1 | 2.4 | 325 | 0.5 | <.1 | 6 | 8.9 | 22 | | 57 | 82 | | 7 | 0.5 | | 0.01 | | 3.5 | 8 | 195 | | | | | | 1.3 |
| Kathita Katheri 4F31 | 06.03.86 | 7.8 | 5 | 3 | 6.3 | 103 | 0.4 | 0.01 | 0.6 | 0.6 | 15 | 6.1 | 16 | 46 | 56.1 | 5 | 1.1 | 0.01 | 0.01 | | 0.79 | 4 | 62 | | 0.89 | 1.06 | -9.6 | | 3.3 |
| Kathita Katheri 4F31 | 11.08.87 | 6.3 | 5 | 0.9 | 0.32 | 112 | 0.3 | <0.01 | 0.7 | 0.6 | 15 | | 12 | 34 | 41.4 | 3 | 0.65 | | < 0.01 | | 1.06 | 3 | 67 | | 0.74 | 0.79 | -3.2 | | 3.2 |
| Kithenu 4EA3 | 19.11.86 | 6.6 | 5 | 16 | 2.8 | 55 | 0.1 | 0.26 | 1.4 | 0.7 | 21 | 3.3 | 0 | 10 | 12.2 | 20 | 4 | 0.23 | 0.63 | | < 0.3 | 2 | 32 | | 1.13 | 0.77 | 18.7 | | 3.6 |
| Kitheru 4EA3 | 15.08.87 | 6 | <5 | 6 | 1.5 | 82 | 1.7 | 0.08 | 1.2 | 1.2 | 11 | | 8.3 | 18 | 21.9 | 4 | 0.25 | | < 0.01 | | 0.87 | 4 | 50 | | 0.64 | 0.49 | 13.0 | | 1.7 |
| Kithima | 17.08.87 | 7 | 5 | 4 | 5.29 | 217 | 1.9 | 0.02 | 5.6 | 9.8 | 15 | | 70 | 82 | 100 | 118 | 0.29 | | < 0.01 | | 2.32 | 6 | 130 | | 1.74 | 5.02 | -48.5 | | 0.9 |
| Kithuriu | 10.11.88 | 8.2 | 85 | 26 | 4.3 | 79 | 0.8 | <.1 | 4.5 | 0.4 | 5.3 | 2.7 | 22 | 38 | | 5 | 0.16 | | | | 0.3 | 2 | 48 | | 0.56 | 0.91 | -23.9 | | 0.6 |
| Kongoni (d/s 5BE3) | 19.05.87 | 7.2 | 225 | 80 | 8 | 120 | 10 | 0.44 | 1.8 | 1.9 | 10 | | 48 | 64 | 78 | 5 | 0.3 | 0.39 | < 0.01 | | < 0.3 | 12 | 76 | 20 | 0.68 | 1.43 | -35.4 | | 1.2 |
| Kuuru 4F25 | 12.11.86 | 7.8 | 20 | 31 | 4.4 | 150 | 4.2 | 0.35 | 7 | 12 | 12 | 3.5 | 0 | 100 | 122 | 122 | 9 | 0.26 | 0.32 | | < 0.3 | 4 | 150 | | 1.95 | 5.45 | -47.3 | | 0.6 |
| Kuuru-intake at Nkondi Furrow | 17.11.86 | 7.8 | cloudy | 88 | 9.1 | 205 | 11 | 0.61 | 6.9 | 9 | 11 | 3.1 | 80 | 98 | 119 | 7 | 0.26 | 0.33 | 0.21 | | 0.3 | 4 | 123 | | 1.64 | 2.16 | -13.6 | | 0.6 |
| Laba (Liliaba) | 08.10.85 | 7.7 | 5 | 3.6 | 9.8 | 185 | 1.1 | <0.1 | 5.6 | 7.3 | | | 44 | 80 | 97.5 | 6 | 0.7 | | | | 0.12 | | 111 | | 0.88 | 1.77 | | | |

## CHEMICAL DATA RIVERS MERU

| | | DATE OF SAMPLING | pH | color | Turbid FTU | KMnO4 value | E.C. µS/cm | Fe | Mn | Ca | Mg | Na | K | Total Hard | Total Alk | HCO3 | Cl | F | NO3 | NO2 | NH3 | SO4 | Free CO2 | TDS | SiO2 | SUM Cation | SUM Anion | IONIC BALANCE | Suitable for domestic use | SAR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | mg/l | | | | | | | | | | | | | | | | | | meq/l | | % | | |
| Liki | | 16.2.88 | 6.3 | 20 | 6.3 | | 62 | 0.4 | <.1 | 2.3 | 2.4 | 8.3 | 3.1 | 14 | 20 | | 4 | 0.17 | | | | 2.1 | 4 | 37 | | 0.75 | 0.56 | 15.0 | | 0.9 |
| Liki | 5BE7 | 17.08.87 | 6.1 | 15 | 3.6 | 4 | 56 | 0.6 | <0.01 | 1.2 | 0.7 | 5 | | 8.1 | 14 | 17.1 | 5 | 0.19 | | < 0.01 | | 2.4 | 2 | 33 | | 0.33 | 0.47 | -16.9 | | 0.9 |
| Liki | 5BE7 | 26.08.86 | 7.5 | 5 | 6.5 | 3.9 | 40 | 0.9 | 0.03 | 2.4 | 0.5 | 8 | 1.8 | 10 | 10 | 12.2 | 4 | 0.11 | < 0.01 | < 0.01 | | 0.85 | 2 | 25 | 12 | 0.55 | 0.33 | 25.4 | | 1.2 |
| Liki | 5BE7 | 27.02.87 | 7 | 5 | 5.7 | 1.25 | 60 | 0.6 | 0.04 | 0.7 | 0.5 | 9 | 2 | 22 | 24 | 29.3 | 5 | 0.17 | 0.19 | 0.03 | | 1.18 | 37 | 14 | | 0.52 | 0.65 | -10.9 | | 2 |
| Liki | 5BE7 | 09.10.86 | 6.4 | 5 | 7.3 | 3.4 | 40 | 0.8 | 0.02 | 0.9 | 0.5 | 6 | 1.6 | 8 | 16 | 19.5 | 5 | 0.08 | 0.08 | < 0.01 | | 0.34 | 4 | 24 | | 0.39 | 0.47 | -9.3 | | 1.3 |
| Liki at | 4BE7 | 25.8.87 | 3 | 30 | 5 | 16 | 50 | 0.2 | <.1 | 0.4 | 0.5 | 3 | | 10 | | | 3 | 0.12 | | < 0.01 | | 14 | 4 | 29 | | | | | | 0.7 |
| Liki at | 5BE1 | 29.09.86 | 6.4 | 50 | 12 | 14.5 | 33 | 1 | <.1 | 3.2 | 2.4 | 3.3 | 1.8 | 18 | 12 | | < 1 | < 0.01 | | < 0.01 | | 0.97 | 26 | 20 | | 0.55 | 0.29 | 31.0 | | 0.3 |
| Likiundu | 5D14 | 08.10.85 | 7.9 | 70 | 32 | 14.5 | 210 | 0.1 | <0.01 | 8.8 | 8.3 | | | 56 | 94 | 115 | 10 | 0.32 | | | | 61 | | 126 | | 1.12 | 3.43 | | | |
| Likiundu | 5D14 | 13.08.87 | 6.8 | 30 | 13 | 1.66 | 280 | 3.2 | 0.14 | 2.6 | 4.1 | 27 | | 40 | 80 | 97.5 | 10 | 0.39 | | < 0.01 | | 0.29 | 4 | 168 | | 1.64 | 1.89 | -6.9 | | 2.4 |
| Liutu | 4F36 | 13.08.87 | 6.1 | 5 | 17 | 1.19 | 84 | <0.1 | 0.6 | 2.3 | 1.8 | 12 | 0 | 14 | 24 | 29.3 | 6 | 0.17 | | < 0.01 | | < 0.3 | 1 | 50 | | 0.8 | 0.66 | 9.8 | | 1.5 |
| Liutu at | 4F36 | 10.3.88 | 6.1 | < 5 | 3.9 | 0.79 | 120 | 0.2 | <.1 | 7.9 | 2.5 | 18 | 3.1 | 18 | 40 | | 8 | 0.25 | | < 0.01 | | 3 | 10 | 72 | | 1.46 | 1.03 | 17.3 | | 1.4 |
| Liutu at | 4F36 | 12.12.87 | 6.2 | 5 | 5.7 | 8.1 | 102 | 1.6 | 0.2 | 2.4 | 1.9 | | | 14 | 30 | | 4 | 0.12 | | < 0.01 | | < 0.3 | 6 | 62 | | | | | | |
| Liutu at | 4F37 | 7.10.87 | 6 | < 5 | 9.7 | 7 | 208 | 1 | 0.1 | 1.2 | 1.6 | 19 | | 18 | 36 | | 7 | 0.2 | | < 0.01 | | 1.5 | 12 | 125 | | | | | | 2.7 |
| Liutu at Amukui | | 7.10.87 | 6.2 | < 5 | 12 | 0.8 | 338 | 1.5 | 0.1 | 1.1 | 1 | 19 | | 14 | 38 | | 7 | 0.2 | | < 0.01 | | 1.4 | 6 | 203 | | | | | | 3.2 |
| Liutu Thanantu confluence | | 7.10.87 | 6.5 | < 5 | 14 | 2.4 | 117 | 1.2 | 0.1 | 2 | 1.8 | 15 | | 16 | 34 | | 6 | 0.2 | | < 0.01 | | 0.7 | 4 | 70 | | | | | | 1.9 |
| Liutu Tri. at Nyambeni tea fact. | | 10.3.88 | 6.7 | < 5 | 1.8 | 0.79 | 180 | 0.1 | <.1 | 32 | 0.5 | 32 | 3.3 | 10 | 60 | | 7 | 0.42 | | < 0.01 | | 1.6 | 2 | 108 | | 3.11 | 1.43 | 37.1 | | 1.5 |
| Mara | | 17.3.88 | 6.2 | < 5 | 11 | 5.5 | 65 | 0.3 | <.1 | 1.6 | 1.5 | 14 | 3 | 10 | 28 | | 10 | 0.25 | | < 0.01 | | 1.9 | 4 | 39 | | 0.89 | 0.88 | 0.4 | | 1.9 |
| Mara | | 17.03.88 | 6.2 | <5 | 11 | 5.5 | 65 | 0.3 | <.1 | 1.6 | 1.5 | 14 | 3 | 10 | 28 | 34.1 | 10 | 0.25 | | < 0.01 | | 1.9 | 4 | 39 | | 0.89 | 0.88 | 0.4 | | 1.9 |
| Mara at Mate road | | 14.12.88 | 6.5 | 250 | 73 | | 58 | 3.7 | <.1 | 2.4 | 0.5 | 21 | 2.1 | 8 | 20 | | 4 | | | < 0.01 | | < 0.3 | 6 | 35 | | 1.13 | 0.52 | 37.0 | | 3.2 |
| Mara North | | 15.12.88 | 6.4 | 30 | 15 | | 39 | 0.7 | <.1 | 3.2 | < 0.1 | 5 | 1.7 | 8 | 14 | | 8 | | | < 0.01 | | 1 | 4 | 24 | | 0.43 | 0.53 | -10.2 | | 0.8 |
| Mara North at Mate road | | 19.2.88 | 7.7 | 50 | 22 | 0.4 | 125 | 0.9 | 0.1 | 4.5 | 7.1 | 16 | 2.8 | 40 | 44 | | 6 | 0.15 | | < 0.01 | | < 0.3 | | 75 | | 1.58 | 1.05 | 19.8 | | 1.1 |
| Mara North at new Meru road | | 27.8.87 | 5.9 | 5 | 11 | 10 | 86 | <.1 | 0.1 | 1.9 | 0.3 | 9 | | 10 | 16 | | 6 | 0.19 | | < 0.01 | | 1.32 | 10 | 52 | | | | | | 1.6 |
| Mara North at new Meru-Chuka road | | 05.05.88 | 5.3 | 20 | 11 | | 22 | 0.4 | 0.1 | 0.1 | 0.3 | 7 | 1.2 | 4 | 4 | | 6 | < 0.1 | | < 0.01 | | 0.85 | 4 | 13 | | 0.36 | 0.27 | 15.5 | | 2.5 |
| Mara South at Mate road | | 22.10.88 | 8 | 5 | 10 | | 97 | 0.3 | <.1 | 8 | 2.4 | 13 | 1.4 | 30 | 44 | | 6 | < 0.1 | | | | | 2 | 58 | | | | | | 1 |
| Mara South at Mate road | | 19.2.88 | 6.6 | 10 | 16 | 0.4 | 121 | 0.7 | <.1 | 3.7 | 6.7 | 17 | 3.3 | 37 | 42 | | 17 | 0.17 | | < 0.01 | | < 0.3 | 4 | 73 | | 1.56 | 1.33 | 8.1 | | 1.2 |
| Mara South at new Meru road | | 15.12.88 | 6.6 | 5 | 7.5 | | 46 | 0.5 | <.1 | 1.6 | 0.5 | 10 | 1.8 | 6 | 16 | | 5 | | | < 0.01 | | 1 | 2 | 28 | | 0.6 | 0.48 | 11.1 | | 1.8 |
| Mara South at new Meru-Chuka road | | 05.05.88 | 5.3 | 20 | 8.8 | | 26 | 0.1 | <.1 | 0.3 | 0.4 | 6.9 | 1.1 | 8 | 4 | | 5 | 0.14 | | < 0.01 | | 3.2 | 2 | 16 | | 0.38 | 0.29 | 13.3 | | 1.9 |
| Mariara | 4F5 | 11.08.87 | 6.9 | <5 | 2 | 2.2 | 133 | 0.7 | 0.1 | 4.6 | 1.3 | 15 | | 26 | 42 | 51.2 | 12 | 0.13 | | < 0.01 | | 2.3 | 4 | 79 | | 0.99 | 1.23 | -10.7 | | 1.6 |
| Mariara at Nkubu road | | 10.11.88 | 8.6 | 150 | 44 | 4.7 | 101 | 0.8 | <.1 | 1.2 | 0.7 | 15 | 2.8 | 12 | 46 | | 5 | 0.28 | | | | 0.3 | | 61 | | 0.84 | 1.07 | -11.8 | | 2.7 |
| Mbooni near Maua W/S | | 04.11.87 | 6.9 | <5 | 5.5 | 3.5 | 84 | 3.5 | 0.1 | 4 | 2.6 | 5.1 | 2.5 | 20 | 26 | 31.7 | 5 | <0.1 | | < 0.01 | | 0.25 | 4 | 50 | | 0.7 | 0.67 | 2.5 | | 0.5 |
| Muamba | | 15.11.88 | 6.2 | 5 | 1 | 5.9 | 38 | 0.1 | 0.1 | | | 1.5 | 1.8 | 14 | 8 | | 7 | < 0.01 | | < 0.01 | | 0.9 | 4 | 22 | | | | | | |
| Mulika, intake of Mulika lodge | | 17.12.85 | 8.9 | <5 | 12 | 2.5 | 375 | 0.7 | 0.01 | 21 | 20 | | | 136 | 208 | | 4 | 0.25 | | | | 1.8 | | 225 | | 2.68 | | | | |
| Murera | | 17.12.85 | 8 | 5 | 2.5 | 2.1 | 360 | <0.1 | <0.01 | 20 | 16 | | | 115 | 196 | 241 | 4 | 0.25 | | | | 3.2 | | 216 | | 2.3 | 4.14 | | | |
| Mutonga | | 05.05.88 | 5.9 | 30 | 9.5 | | 39 | 0.4 | <.1 | 0.3 | 0.4 | 9.9 | 2 | 6 | 12 | | 6 | 0.22 | | < 0.01 | | 3.3 | 4 | 20 | | 0.53 | 0.48 | 5.2 | | 2.8 |
| Mutonga | | 10.11.88 | 7 | 20 | 15 | 7.3 | 54 | <.1 | <.1 | 5.6 | < 0.1 | 6.3 | 1.9 | 14 | 26 | | 4 | 0.8 | | | | 1 | 2 | 32 | | 0.61 | 0.65 | -3.4 | | 0.7 |
| Mutonga | | 17.3.88 | 6.6 | < 5 | 5.4 | 4 | 77 | 0.4 | <.1 | 3.2 | 1 | 16 | 4 | 12 | 32 | | 10 | 0.35 | | < 0.01 | | 1.7 | 6 | 46 | | 1.04 | 0.96 | 4.1 | | 2 |
| Mutonga | 4EA1 | 15.08.87 | 6 | <50 | 14 | 0.47 | 95 | 2.4 | 0.1 | 1.2 | 0.9 | 14 | | 19 | 22 | 26.8 | 6 | 0.31 | | < 0.01 | | < 0.3 | 5 | 97 | | 0.74 | 0.62 | 9.4 | | 2.4 |
| Mutonga | 4EA6 | 19.11.86 | 6.6 | cloudy | 175 | 4.4 | 60 | 13 | 0.54 | 0.1 | 0.6 | 8 | 2.6 | 20 | 24 | 29.3 | 5 | 0.24 | 0.54 | | | < 0.3 | 2 | 35 | | 0.47 | 0.63 | -14.4 | | 2.1 |
| Mutonga | 4EA6 | 14.12.88 | 6.9 | 300 | 98 | | 79 | 4 | <.1 | 4.8 | 1 | 63 | 2.2 | 16 | 10 | | 5 | | | < 0.01 | | < 0.3 | 2 | 47 | | 3.12 | 0.35 | 80.0 | | 0.8 |
| Mutonga | 4EA6 | 11.08.87 | 6.2 | 5 | 8.3 | 8.2 | 84 | 1.7 | <0.1 | 1.1 | 1.6 | 14 | | 13 | 110 | 134 | 7 | 0.26 | | < 0.01 | | 1.07 | 4 | 50 | | 0.8 | 2.42 | -50.5 | | 2 |

## CHEMICAL DATA RIVERS MERU

| | DATE OF SAMPLING | pH | color | Turb FTU | KMnO4 value | E.C. µS/cm | Fe | Mn | Ca | Mg | Na | K | Total Hard | Total Alk | HCO3 | Cl | F | NO3 | NO2 | NH3 | SO4 | Free CO2 | TDS | SiO2 | SUM Cation | SUM Anion | IONIC BALANCE | Suitable for domestic use | SAR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | mg/l | | | | | | | | | | | | | | | | | | meq/l | | % | | |
| Mutonga 4EA7 | 20.03.86 | 7.5 | 20 | 20 | 4.4 | 72 | 1.1 | 0.07 | 0.6 | 0.5 | 16 | 2.9 | 14 | 34 | 41.4 | 5.8 | 0.45 | < 0.01 | < 0.01 | < 0.3 | 1 | 43 | 21 | 0.84 | 0.85 | -0.5 | | 3.7 |
| Mutonga at 4EA6 | 20.11.87 | 6.4 | 250 | 180 | | 78 | | | 1.6 | 2.1 | 9 | 3.3 | 12 | 20 | | 5 | 0.27 | | < 0.01 | < 0.3 | 6 | 47 | | 0.73 | 0.55 | 14.2 | | 1.1 |
| Mutonga at 4EA6 | 22.10.88 | 7.2 | 20 | 17 | | 86 | 0.4 | <.1 | 5.6 | 1.5 | 11 | 3.2 | 20 | 36 | | 7 | 0.19 | | | 0.3 | 4 | 51 | | 0.94 | 0.92 | 1.0 | | 1 |
| Mutonga at 4EA6 | 28.8.87 | 6.2 | 30 | 13 | 9.4 | 99 | 0.7 | <.1 | 1 | 1 | 11 | | 24 | 28 | | 5 | 0.2 | | < 0.01 | 0.62 | 4 | 59 | | | | | | 1.9 |
| Mutonga at 4EA7 | 28.8.87 | 6.5 | 15 | 8.2 | 9.9 | 98 | <.1 | <.1 | 1 | 1 | 10 | | 14 | 28 | | 6 | 0.3 | | < 0.01 | 1.3 | 6 | 59 | | | | | | 1.7 |
| Mutonga at 4EA7 | 29.11.87 | 6.5 | Muddy | 290 | 15 | 78 | | | 1.6 | 5.1 | 9.2 | 3.8 | 29 | 20 | | 5 | 0.22 | | < 0.01 | < 0.3 | 8 | 47 | | 1 | 0.55 | 29.1 | | 0.8 |
| Mutonga at 4EA7 | 14.12.88 | 6.1 | 140 | 90 | | 77 | 3 | <.1 | 2.4 | 1.5 | 42 | 2.5 | 12 | 24 | | 5 | | | < 0.01 | < 0.3 | 4 | 46 | | 2.13 | 0.63 | 54.6 | | 5.2 |
| Mutonga at New Meru road | 15.12.88 | 7.1 | 5 | 4.1 | | 77 | 0.3 | <.1 | 4 | 0.5 | 5 | 3.4 | 12 | 32 | | 6 | | | < 0.01 | 1.3 | 6 | 46 | | 0.55 | 0.84 | -21.0 | | 0.6 |
| Mutonga at new Meru road | 27.8.87 | 6 | 5 | 3.6 | 13 | 140 | <.1 | <.1 | 3.4 | 0.9 | 11 | | 18 | 34 | | 4 | 0.38 | | < 0.01 | 4.7 | 14 | 84 | | | | | | 1.4 |
| Mutonga (Mt. Kenya area) | 17.03.88 | 6.6 | <5 | 5.4 | 4 | 77 | 0.4 | <0.1 | 3.2 | 1 | 16 | 4 | 12 | 32 | 39 | 10 | 0.35 | | < 0.01 | 1.7 | 6 | 46 | | 1.04 | 0.96 | 4.1 | | 2 |
| Nanyuki | 16.2.88 | 6.2 | 70 | 20 | | 68 | 1.4 | <.1 | 2.3 | 2.4 | 10 | 6.4 | 12 | 22 | | 5 | 0.18 | | | 1.2 | 4 | 41 | | 0.91 | 0.61 | 20.1 | | 1.1 |
| Nanyuki 5BE1 | 27.01.87 | 7.6 | 5 | 4.8 | 2.37 | 60 | 0.5 | 0.03 | 0.8 | 0.6 | 9 | 1.6 | 14 | 26 | 31.7 | 5 | 0.2 | 0.34 | 0.02 | 1.14 | 3 | 36 | | 0.52 | 0.68 | -13.5 | | 1.9 |
| Nanyuki 5BE1 | 11.02.86 | 7.8 | 30 | 4.5 | 4.8 | 65 | 0.1 | 0.02 | 0.9 | 0.6 | 9 | 0.9 | 4 | 34 | 41.4 | 6 | 0.16 | 0.01 | 0.01 | 0.89 | 6 | 38 | | 0.51 | 0.87 | -26.0 | | 1.8 |
| Nanyuki 5BE1 | 07.05.87 | 7.2 | 50 | 6.3 | 8.6 | 68 | 0.7 | 0.14 | 2.3 | 0.7 | 6 | 1.7 | 22 | 34 | 41.4 | 3.5 | <0.1 | 0.13 | < 0.01 | 0.28 | 6 | 41 | 11 | 0.48 | 0.78 | -24.4 | | 0.9 |
| Nanyuki at 5BE20 | 27.09.88 | 8.2 | 175 | 66 | 14.5 | 79 | 0.2 | <.1 | 13 | 6.3 | 6.3 | 2.2 | 60 | 52 | | < 1 | < 0.01 | | < 0.01 | 0.3 | 26 | 47 | | 1.5 | 1.07 | 16.5 | | 0.4 |
| Nanyuki at 5BE20 | 16.2.88 | 6.6 | 50 | 15 | | 99 | 0.4 | <.1 | 5.4 | 0.1 | 11 | 4.1 | 27 | 40 | | 6 | 0.26 | | < 0.01 | 0.93 | 40 | 59 | | 0.86 | 0.99 | -6.9 | | 1.3 |
| Nanyuki at 5BE7 | 29.09.88 | 6.2 | 50 | 8 | 10.6 | 27 | 0.2 | <.1 | 2.4 | < 0.1 | 3.2 | 1.3 | 6 | 8 | | < 1 | < 0.01 | | < 0.01 | 0.65 | 36 | 16 | | 0.3 | 0.2 | 19.7 | | 0.6 |
| Ngare Naro (Kibirichia) | 12.11.87 | 6.3 | 10 | 2.1 | 15 | 104 | | | | | 9.8 | 3.7 | 27 | 30 | 36.6 | 6 | 0.19 | | 0.1 | 3.2 | 6 | 62 | | | 0.84 | | | |
| Ngushishi Furrow 1 (5BE19) | 19.05.87 | 7.2 | <5 | 0.5 | 0.95 | 169 | 0.5 | 0.18 | 16 | 4.2 | 7 | | 66 | 88 | 107 | 4 | 0.16 | 0.53 | 0.02 | 5 | 10 | 101 | 20 | 1.45 | 1.98 | -15.4 | | 0.4 |
| Nithi | 23.03.88 | 6.4 | 40 | 25 | 5.5 | 95 | 1 | <0.1 | 2.4 | 0.5 | 21 | 3 | 8 | 38 | 46.3 | 9 | 0.3 | | < 0.01 | 0.93 | 4 | 58 | | 1.15 | 1.03 | 5.4 | | 3.2 |
| Nithi | 23.3.88 | 6.4 | 40 | 25 | 5.5 | 95 | 1 | <.1 | 2.4 | 0.5 | 21 | 3 | 8 | 38 | | 9 | 0.3 | | < 0.01 | 0.93 | 4 | 58 | | 1.15 | 1.03 | 5.4 | | 3.2 |
| Nithi at new Meru road | 27.8.87 | 6.3 | 5 | 2.8 | 10 | 117 | 0.1 | <.1 | 0.8 | 0.6 | 14 | | 10 | 34 | | 5 | 0.23 | | < 0.01 | 0.72 | 14 | 70 | | | | | | 2.9 |
| Nithi at new Meru road | 15.12.88 | 7 | < 5 | 11 | | 72 | 0.5 | <.1 | 4.8 | 1 | 10 | 2.5 | 16 | 32 | | 5 | | | < 0.01 | 1.3 | 2 | 43 | | 0.82 | 0.81 | 0.8 | | 1.1 |
| Nithi at new Meru-Chuka Road | 05.05.88 | 5.6 | Brown | 57 | | 36 | 0.4 | 0.1 | 0.1 | 0.4 | 10 | 1.8 | 6 | 12 | | 5 | < 0.1 | | < 0.01 | < 0.3 | 4 | 22 | | 0.52 | 0.39 | 14.6 | | 3.2 |
| Nkubu Water supply (raw water) | 10.11.88 | 7.2 | 100 | 30 | 3.5 | 936 | 0.6 | <.1 | 1.6 | 1.9 | 10 | 3.8 | 12 | 38 | | 6 | 0.21 | | | 0.3 | 2 | 562 | | 0.77 | 0.93 | -9.8 | | 1.3 |
| Ontulili | 07.10.85 | 6.3 | 50 | 25 | 33 | 45 | 0.8 | <0.1 | 2 | 0.7 | | | 8 | 24 | 29.3 | 4 | <0.1 | | | < 0.03 | | 26 | | 0.16 | 0.59 | | | |
| Ontulili | 27.08.86 | 6.8 | 5 | 14 | 4 | 45 | 1.5 | 0.06 | 1.5 | 1 | 8 | 1.4 | 12 | 22 | 26.8 | 3 | 0.09 | < 0.01 | < 0.01 | 0.68 | 3 | 27 | 16 | 0.54 | 0.54 | 0.2 | | 1.2 |
| Rojewero (Stream) | 16.11.88 | 7.5 | 15 | 6.8 | 9 | 168 | 0.5 | <.1 | | | 19 | 4.6 | 48 | 68 | | 9 | | | | 36.5 | 6 | 101 | | | | | | |
| Rugusi Timau | 12.11.87 | 7.1 | 85 | 16 | 20 | 117 | | | 17 | 15 | 9.8 | 4.7 | 105 | 38 | 46.3 | 8 | 0.19 | | 0.05 | 0.8 | 4 | 70 | | 2.63 | 1 | 44.8 | | 0.4 |
| Rugusu at VOK | 09.10.85 | 6.3 | <5 | 1.2 | 11.4 | 85 | 0.1 | 0.1 | 8 | 5.8 | 0 | 0 | 44 | 40 | 48.8 | 5 | 0.4 | | | 0.09 | | 51 | | 0.88 | 0.94 | | | |
| Ruguti at Mate road | 14.12.88 | 6.9 | 250 | 97 | | 67 | 4 | <.1 | 3.2 | 1 | 32 | 4.7 | 12 | 24 | | 5 | | | < 0.01 | < 0.3 | 2 | 40 | | 1.75 | 0.63 | 47.3 | | 4 |
| Ruguti at new Meru road | 26.8.87 | 6 | 5 | 4.8 | 11 | 73 | 0.6 | <.1 | 0.7 | 0.7 | 7 | | 22 | 16 | | 4 | 0.15 | | < 0.01 | 0.56 | 4 | 44 | | | | | | 1.4 |
| Ruguti at new Meru road | 17.12.88 | 6.9 | 5 | 3.8 | | 45 | 0.2 | <.1 | < 0.1 | < 0.1 | 4.7 | 2 | 6 | 16 | | 5 | | | < 0.01 | 1.4 | 2 | 27 | | 0.27 | 0.49 | -29.1 | | 2.5 |
| Ruguti at new Meru-Chuka Road | 05.05.88 | 5.4 | < 5 | 14 | | 22 | <.1 | 0.1 | 0.2 | 0.3 | 5.2 | 1.1 | 4 | 6 | | 6 | < 0.1 | | < 0.01 | < 0.3 | 4 | 13 | | 0.29 | 0.3 | -1.1 | | 1.7 |
| Runkuru 4F21 | 13.08.87 | 6.5 | 50 | 20 | 2.21 | 84 | 1.1 | 0.04 | 2 | 1.5 | 7 | | 20 | 26 | 31.7 | 5 | 0.16 | | < 0.01 | 0.29 | 7 | 50 | | 0.53 | 0.67 | -11.6 | | 0.9 |
| Silimon | 17.8.87 | 6.2 | < 5 | 2.5 | 0.16 | 63 | 0.3 | <.1 | 1.9 | 1.5 | 8 | | 21 | 18 | | 3 | 0.26 | | < 0.01 | 0.72 | 4 | 40 | | | | | | 1.1 |
| Sirimon 5BE4 | 27.08.86 | 6.7 | 5 | 3 | 4.3 | 50 | <0.1 | 0.04 | 2.1 | 1 | 7 | 1.6 | 15 | 25 | 30.5 | 3 | 0.12 | < 0.01 | < 0.01 | 1.38 | 6 | 31 | 15 | 0.53 | 0.61 | -7.0 | | 1 |
| Sirimon 5BE4 | 27.01.87 | 6.5 | 30 | 3.4 | 4.74 | 65 | 0.2 | 0.05 | 1.4 | 1.1 | 9 | 1.4 | 16 | 30 | 36.6 | 4 | 0.23 | 1.11 | 0.27 | 0.79 | 6 | 38 | 14 | 0.59 | 0.73 | -10.7 | | 1.4 |
| Sirimon 5BE4 | 17.08.87 | 6 | 5 | 3 | 3.3 | 63 | 0.2 | <0.01 | 1.1 | 1.2 | 5 | | 14 | 16 | 19.5 | 6 | 0.19 | | 0.09 | 1.3 | 3 | 37 | | 0.37 | 0.52 | -16.3 | | 0.8 |
| Sirimon 5BE4 | 09.10.86 | 6.6 | <5.0 | 3.8 | 3.3 | 45 | <0.1 | 0.07 | 1.5 | 0.9 | 6 | 0.7 | 10 | 20 | 24.4 | 5 | 0.09 | < 0.01 | < 0.01 | 0.58 | 4 | 27 | | 0.43 | 0.55 | -12.7 | | 1 |

| | DATE OF SAMPLING | pH | color | Turbi FTU | KMnO4 value | E.C. µS/cm | Fe | Mn | Ca | Mg | Na | K | Total Hard | Total Alk | HCO3 | Cl | F | NO3 | NO2 | NH3 | SO4 | Free CO2 | TDS | SiO2 | SUM Cation | SUM Anion | IONIC BALANCE | Suitable for domestic use | SAR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | mg/l | | | | | | | | | | | | meq/l | | % | | |
| Tana 4F13 | 18.11.86 | 7.5 | muddy | muddy | 11 | 140 | 89 | 2.38 | 2.4 | 11 | 7 | 13 | 68 | 66 | 80.5 | 6 | 0.25 | 0.35 | | | | 85 | | 1.66 | 1.49 | | | 0.4 |
| Tana 4F13 | 05.02.87 | 7.3 | 125 | 45 | <0.1 | 120 | 4.1 | 0.15 | 3 | 3.9 | 11 | 2 | 38 | 46 | 56.1 | 10 | 0.33 | 0.56 | 0.01 | < 0.3 | 4 | 73 | 18 | 1 | 1.21 | -9.4 | | 1 |
| Tana 4F13 | 26.08.86 | 7.1 | 150 | 96 | 3.5 | 100 | 5.6 | 0.18 | 2.6 | 3.2 | 12 | 2.3 | 34 | 44 | 53.6 | 8 | 0.19 | 0.02 | < 0.01 | < 0.3 | 5 | 61 | 14 | 0.97 | 1.11 | -6.6 | | 1.2 |
| Tana 4F13 | 27.8.87 | 6.5 | 40 | 16 | 11 | 137 | 0.9 | 0.1 | 4.8 | 2.3 | 9 | | 37 | 28 | | 7 | 0.25 | | < 0.01 | 5.2 | 4 | 87 | | | | | | 0.8 |
| Tana 4F13 | 18.12.85 | 7.6 | 100 | 72 | 3.2 | 120 | 4.2 | 0.1 | 3.9 | 3.1 | 9 | 3.6 | 30 | 44 | 53.6 | 6.1 | 0.25 | 0.11 | < 0.01 | 0.3 | 6 | 71 | | 0.93 | 1.06 | -6.2 | | 0.8 |
| Tana at 4F12 | 20.11.87 | 6.9 | Brown | 240 | | 143 | | | 8 | 4.7 | 10 | 4.5 | 39 | 40 | | 7 | 0.28 | | < 0.01 | < 0.3 | 8 | 86 | | 1.34 | 1 | 14.2 | | 0.7 |
| Tana at 4F13 | 16.12.88 | 7 | Brown | 210 | | 109 | 1.5 | <.1 | 9.8 | 2.3 | 10 | 3.9 | 34 | 40 | | 8 | | | < 0.01 | < 0.3 | 2 | 65 | | 1.21 | 1.03 | 8.1 | | 0.7 |
| Tana at 4F13 | 28.1.88 | 6.7 | < 5 | 8.5 | 2.4 | 132 | <.1 | <.1 | 11 | 4.4 | 12 | 6.4 | 45 | 46 | | 9 | 0.26 | | < 0.01 | 3.8 | 4 | 79 | | 1.6 | 1.25 | 12.1 | | 0.8 |
| Tana at 4F19 | 28.1.88 | 7.4 | < 5 | 16 | | 168 | 0.7 | <.1 | 10 | 7.8 | 19 | 3.8 | 57 | 88 | | 6 | 0.29 | | < 0.01 | 0.62 | 2 | 101 | | 2.06 | 1.94 | 3.1 | | 1.1 |
| Tana (ens confluence) | 14.12.88 | 6.6 | Brown | 220 | | 114 | 1 | 0.1 | 9.8 | 3.8 | 32 | 2.3 | 40 | 40 | | 8 | | | < 0.01 | < 0.3 | 2 | 68 | | 2.25 | 1.03 | 37.2 | | 2.2 |
| Teleswani | 07.10.85 | 6.4 | 5 | 3.5 | 26 | 45 | 0.1 | <0.1 | 4 | 1.5 | | | 16 | 16 | 19.5 | 9 | <0.1 | | | 0.51 | | 27 | | 0.32 | 0.58 | | | |
| Teleswani 5BE5 | 27.01.87 | 7.1 | 5 | <5 | 0.71 | 80 | 1.1 | 0.1 | 1.5 | 1.2 | 8 | 2 | 20 | 36 | 43.9 | 6 | 0.22 | 0.27 | < 0.01 | 0.57 | 2 | 48 | 23 | 0.57 | 0.9 | -22.2 | | 1.2 |
| Thagara | 13.8.87 | 6.8 | 30 | 15 | 0.71 | 224 | 1.3 | <.1 | 2.3 | 1.9 | 32 | | 21 | 66 | | 19 | 0.23 | | < 0.01 | 1.5 | 4 | 134 | | | | | | 3.8 |
| Thanantu 4F20 | 17.11.86 | 6.7 | muddy | 110 | 4.4 | 110 | 143 | 12.8 | 0.5 | 8.1 | 7 | 12 | 70 | 64 | 78 | 4 | 0.23 | 1.31 | | 16 | 6 | 65 | | 1.3 | 1.72 | -13.9 | | 0.5 |
| Thanantu 4F20 | 05.02.87 | 7.6 | 5 | 18 | <0.1 | 180 | 1.6 | 0.07 | 3.6 | 5.9 | 13 | 5.9 | 58 | 74 | 90.2 | 6 | 0.28 | 1 | 0.04 | 0.36 | 2 | 108 | 32 | 1.38 | 1.66 | -9.0 | | 1 |
| Thanantu 4F20 | 11.08.87 | 6.9 | <5 | 2.6 | 1.6 | 182 | 0.7 | <0.01 | 4.3 | 5.9 | 10 | | 56 | 60 | 73.1 | 8 | 0.22 | | < 0.01 | 3.3 | 2 | 109 | | 1.14 | 1.49 | -13.6 | | 0.7 |
| Thanantu 4F20 | 08.10.85 | 8.5 | 5 | 2.8 | 10 | 185 | <0.1 | <0.1 | 27 | 8.3 | | | 102 | 88 | | 5 | 0.28 | | | 0.23 | | 111 | | 2.05 | 1.9 | | | |
| Thanantu 4F20 | 15.08.87 | 6.2 | 30 | 15 | 3.08 | 196 | 5 | 0.3 | 3.1 | 2.6 | 27 | | 31 | 64 | 78 | 11 | 0.15 | | 0.01 | 0.3 | 4 | 118 | | 1.54 | 1.6 | -1.7 | | 2.7 |
| Thanantu, Mukothima (u/s 4F20) | 17.11.86 | 6.7 | muddy | muddy | 9.9 | 70 | 137 | 13 | 0.1 | 2.8 | 5 | 5 | | 22 | 26.8 | 22 | 5 | 0.21 | 0.4 | | | 40 | | 0.58 | 1.06 | | | 0.6 |
| Thanantu at 4F33 | 7.10.87 | 6.6 | 20 | 17 | 0.8 | 143 | 1.3 | <.1 | 1.6 | 3.6 | 11 | | 8 | 41 | | 7 | 0.2 | | < 0.01 | 0.7 | 4 | 86 | | | | | | 1.1 |
| Thanantu at Gatunga | 8.10.87 | 7.9 | < 5 | 1.1 | 0.55 | 247 | <.1 | <.1 | 12 | 6 | 13 | | 69 | 90 | | 9 | 0.2 | | < 0.01 | 2.1 | | 148 | | | | | | 0.8 |
| Thanantu at Gatunga | 21.10.87 | 7.1 | < 5 | 2.1 | 2.4 | 390 | 1.6 | <.1 | 8.7 | 13 | 17 | | 77 | 92 | | 8 | 0.24 | | < 0.01 | 3.1 | 6 | 234 | | | | | | 0.9 |
| Thanantu at Gatunga | 16.12.88 | 7.1 | Brown | 127 | | 129 | 4 | <.1 | 9.8 | 4.3 | 10 | 3.7 | 42 | 30 | | 4 | | | < 0.01 | 11 | 4 | 77 | | 1.37 | 1.06 | 12.8 | | 0.7 |
| Thanantu at Kainga school | 21.10.87 | 7.5 | 5 | 2.2 | 1.6 | 273 | 0.9 | <.1 | 6.7 | 14 | 18 | | 79 | 101 | | 7 | 0.3 | | < 0.01 | 3 | 6 | 164 | | | | | | 0.9 |
| Thanantu at Mikinduri | 7.10.87 | 5.7 | < 5 | 21 | 6.8 | 104 | 4 | 0.4 | 1.9 | 3.3 | 7 | | 29 | 28 | | 7 | 1 | | 0.05 | 7.9 | 14 | 62 | | | | | | 0.7 |
| Thanantu at Mukothima | 21.10.87 | 7.2 | < 5 | 2.3 | < 0.01 | 234 | <.1 | <.1 | 1.4 | 11 | 13 | | 71 | 86 | | 7 | 0.24 | | < 0.01 | 4 | 6 | 140 | | | | | | 0.8 |
| Thangathe 4F8 | 13.08.87 | 6.7 | 5 | 3.6 | 0.55 | 112 | 0.5 | <0.01 | 2 | 2.8 | 7 | | 29 | 44 | 53.6 | 6 | 0.15 | 0 | < 0.01 | 1.5 | 5 | 67 | | 0.63 | 1.08 | -26.0 | | 0.7 |
| Thangathe at 4F21 | 13.8.87 | 6.4 | 5 | 3.2 | 3.2 | 87 | 0.5 | 0.02 | 1.3 | 2.4 | 7 | | 22 | 28 | | 6 | 0.14 | | < 0.01 | 2 | 2 | 52 | | | | | | 0.8 |
| Thingithu | 10.11.88 | 7.2 | 100 | 50 | 3.2 | 94 | 0.3 | 0.1 | 1.2 | 0.4 | 13 | 3.6 | 22 | 42 | | 5 | 0.26 | | | 0.3 | 2 | 56 | | 0.73 | 0.99 | -14.8 | | 2.5 |
| Thingithu 4F17 | 18.11.86 | 6.8 | muddy | 205 | 11 | 105 | 44 | 1.92 | 0.1 | 3.4 | 14 | 6.7 | 28 | 40 | 48.8 | 8 | 0.35 | 0.68 | | 2 | 4 | 62 | | 1.07 | 1.07 | -0.1 | | 1.6 |
| Thingithu 4F17 | 11.08.87 | 6.5 | 5 | 5 | 1.05 | 112 | 0.9 | 0.01 | 0.8 | 1 | 9 | | 18 | 34 | 41.4 | 6 | 0.28 | 0 | < 0.01 | 2.6 | 4 | 67 | | 0.51 | 0.9 | -27.5 | | 1.6 |
| Thingithu 4F4 | 30.04.86 | 7.6 | 40 | 21 | 0.4 | 84 | 3.4 | 0.13 | 0.2 | 0.3 | 14 | 6 | 22 | 36 | 43.9 | 3 | 0.5 | 0.02 | < 0.01 | 1.4 | 3 | 50 | | 0.8 | 0.83 | -2.2 | | 4.6 |
| Thingithu 4F4 | 11.08.87 | 6.9 | 10 | 8.5 | 14 | 113 | 2.6 | 0.09 | 1.2 | 1.1 | 12 | | 23 | 42 | 51.2 | 4 | 0.27 | 0 | < 0.01 | 2.2 | 4 | 66 | | 0.67 | 1 | -19.5 | | 1.9 |
| Thingithu 4F4 | 06.03.86 | 7.7 | 5 | 13 | 2.7 | 92 | 1.1 | 0.04 | 1.1 | 0.7 | 11 | 6 | 19 | 48 | 58.5 | 4 | 0.3 | 0.03 | 0.01 | 0.35 | 2 | 56 | | 0.74 | 1.08 | -18.4 | | 2 |
| Thingithu at 4F17 | 21.10.87 | 6.7 | < 5 | 5.8 | 1.6 | 195 | 0.2 | 0.1 | 6 | 3.1 | 14 | | 12 | 42 | | 7 | 0.32 | | < 0.01 | 2.9 | 4 | 117 | | | | | | 1.2 |
| Thingithu at Kanyaga School | 21.10.87 | 6.4 | < 5 | 4.1 | 3.2 | 130 | 1.1 | <.1 | 1.4 | 2.5 | 18 | | 33 | 39 | | 6 | 0.3 | | < 0.01 | 2.8 | 6 | 78 | | | | | | 2.1 |
| Thingithu at Marimanti | 8.10.87 | 7.5 | 5 | 45 | 0.47 | 143 | <.1 | <.1 | 4.5 | 1.5 | 14 | | 32 | 42 | | 8 | 0.2 | | < 0.01 | 1.7 | | 86 | | | | | | 1.5 |
| Thingithu at Mitunguu Bridge | 22.10.87 | 6.7 | < 5 | 7.8 | 1.6 | 124 | <.1 | 1.7 | 3.8 | 1.8 | 12 | | 18 | 35 | | 7 | 0.31 | | < 0.01 | 2.2 | 6 | 74 | | | | | | 1.3 |
| Thinkuri | 10.11.88 | 6.5 | Brown | 150 | 3 | 28 | <.1 | <.1 | 3.2 | 0 | 6.3 | 1.6 | 8 | 10 | | 6 | 0.1 | | | 0.3 | 4 | 17 | | 0.47 | 0.38 | 11.7 | | 1 |
| Thinkwi | 15.8.87 | 7 | Brown | 82 | 1.5 | 78 | 0.3 | 7.9 | 4.9 | 1.1 | 4.4 | | 39 | 24 | | 5 | 0.13 | | < 0.01 | < 0.3 | 2 | 47 | | | | | | 0.5 |

| | DATE OF SAMPLING | pH | color | Turb FTU | KMnO4 value | E.C. µS/cm | Fe | Mn | Ca | Mg | Na | K | Total Hard | Total Alk | HCO3 | Cl | F | NO3 | NO2 | NH3 | SO4 | Free CO2 | TDS | SiO2 | SUM Cation | SUM Anion | IONIC BALANCE | Suitable for domestic use | SAR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | mg/l | | | | | | | | | | | | | | | | | | meq/l | | % | | |
| Tana 4F13 | 18.11.86 | 7.5 | muddy | muddy | 11 | 140 | 89 | 2.38 | 2.4 | 11 | 7 | 13 | 68 | 66 | 80.5 | 6 | 0.25 | 0.35 | | | | | 85 | | 1.66 | 1.49 | | | 0.4 |
| Tana 4F13 | 05.02.87 | 7.3 | 125 | 45 | <0.1 | 120 | 4.1 | 0.15 | 3 | 3.9 | 11 | 2 | 38 | 46 | 56.1 | 10 | 0.33 | 0.56 | 0.01 | < 0.3 | 4 | 73 | 18 | 1 | 1.21 | -9.4 | | 1 |
| Tana 4F13 | 26.08.86 | 7.1 | 150 | 90 | 3.5 | 100 | 5.6 | 0.18 | 2.6 | 3.2 | 12 | 2.3 | 34 | 44 | 53.6 | 8 | 0.19 | 0.02 | < 0.01 | < 0.3 | 5 | 61 | 14 | 0.97 | 1.11 | -6.6 | | 1.2 |
| Tana 4F13 | 27.8.87 | 6.5 | 40 | 16 | 11 | 137 | 0.9 | 0.1 | 4.8 | 2.3 | 9 | | 37 | 28 | | 7 | 0.25 | | < 0.01 | 5.2 | 4 | 87 | | | | | | 0.8 |
| Tana 4F13 | 18.12.85 | 7.6 | 100 | 72 | 3.2 | 120 | 4.2 | 0.1 | 3.9 | 3.1 | 9 | 3.6 | 30 | 44 | 53.6 | 6.1 | 0.25 | 0.11 | < 0.01 | 0.3 | 6 | 71 | | 0.93 | 1.06 | -6.2 | | 0.8 |
| Tana at 4F12 | 20.11.87 | 6.9 | Brown | 240 | | 143 | | | 8 | 4.7 | 10 | 4.5 | 39 | 40 | | 7 | 0.28 | | < 0.01 | < 0.3 | 8 | 86 | | 1.34 | 1 | 14.2 | | 0.7 |
| Tana at 4F13 | 16.12.85 | 7 | Brown | 210 | | 109 | 1.5 | <.1 | 9.8 | 2.3 | 10 | 3.9 | 34 | 40 | | 8 | | | < 0.01 | < 0.3 | 2 | 65 | | 1.21 | 1.03 | 8.1 | | 0.7 |
| Tana at 4F13 | 28.1.88 | 6.7 | < 5 | 8.5 | 2.4 | 132 | <.1 | <.1 | 11 | 4.4 | 12 | 6.4 | 45 | 46 | | 9 | 0.26 | | < 0.01 | 3.8 | 4 | 79 | | 1.6 | 1.25 | 12.1 | | 0.8 |
| Tana at 4F19 | 28.1.88 | 7.4 | < 5 | 16 | | 168 | 0.7 | <.1 | 10 | 7.8 | 19 | 3.8 | 57 | 88 | | 6 | 0.29 | | < 0.01 | 0.62 | 2 | 101 | | 2.06 | 1.94 | 3.1 | | 1.1 |
| Tana (ena confluence) | 14.12.88 | 6.6 | Brown | 220 | | 114 | 1 | 0.1 | 9.8 | 3.8 | 32 | 2.3 | 40 | 40 | | 8 | | | < 0.01 | < 0.3 | 2 | 68 | | 2.25 | 1.03 | 37.2 | | 2.2 |
| Teleswani | 07.10.85 | 6.4 | 5 | 3.5 | 26 | 45 | 0.1 | <0.1 | 4 | 1.5 | | | 16 | 16 | 19.5 | 9 | <0.1 | | | | 0.51 | | 27 | | 0.32 | 0.58 | | | |
| Teleswani 5BE5 | 27.01.87 | 7.1 | 5 | <5 | 0.71 | 80 | 1.1 | 0.1 | 1.5 | 1.2 | 6 | 2 | 20 | 36 | 43.9 | 6 | 0.22 | 0.27 | < 0.01 | 0.57 | 2 | 46 | 23 | 0.57 | 0.9 | -22.2 | | 1.2 |
| Thagare | 13.8.87 | 6.8 | 30 | 15 | 0.71 | 224 | 1.3 | <.1 | 2.3 | 1.9 | 32 | | 21 | 66 | | 19 | 0.23 | | < 0.01 | 1.5 | 4 | 134 | | | | | | 3.8 |
| Thanantu 4F20 | 17.11.86 | 6.7 | muddy | 110 | 4.4 | 110 | 143 | 12.8 | 0.5 | 8.1 | 7 | 12 | 70 | 64 | 78 | 4 | 0.23 | 1.31 | | 16 | 6 | 65 | | 1.3 | 1.72 | -13.9 | | 0.5 |
| Thanantu 4F20 | 05.02.87 | 7.6 | 5 | 18 | <0.1 | 180 | 1.6 | 0.07 | 3.6 | 5.9 | 13 | 5.9 | 58 | 74 | 90.2 | 6 | 0.28 | 1 | 0.04 | 0.36 | 2 | 108 | 32 | 1.38 | 1.66 | -9.0 | | 1 |
| Thanantu 4F20 | 11.08.87 | 6.9 | <5 | 2.6 | 1.6 | 182 | 0.7 | <0.01 | 4.3 | 5.9 | 10 | | 56 | 60 | 73.1 | 8 | 0.22 | | < 0.01 | 3.3 | 2 | 109 | | 1.14 | 1.49 | -13.6 | | 0.7 |
| Thanantu 4F20 | 08.10.85 | 8.5 | 5 | 2.8 | 10 | 185 | <0.1 | <0.1 | 27 | 8.3 | | | 102 | 88 | | 5 | 0.28 | | | 0.23 | | 111 | | 2.05 | 1.9 | | | |
| Thanantu 4F20 | 15.08.87 | 6.2 | 30 | 15 | 3.08 | 196 | 5 | 0.3 | 3.1 | 2.6 | 27 | | 31 | 64 | 78 | 11 | 0.15 | | 0.01 | 0.3 | 4 | 118 | | 1.54 | 1.6 | -1.7 | | 2.7 |
| Thanantu, Mukothima (u/s 4F20) | 17.11.86 | 6.7 | muddy | muddy | 9.9 | 70 | 137 | 13 | 0.1 | 2.8 | 5 | 5 | | 22 | 26.8 | 22 | 5 | 0.21 | 0.4 | | | 40 | | 0.58 | 1.06 | | | 0.6 |
| Thanantu at 4F33 | 7.10.87 | 6.6 | 20 | 17 | 0.8 | 143 | 1.3 | <.1 | 1.6 | 3.6 | 11 | | 8 | 41 | | 7 | 0.2 | | < 0.01 | 0.7 | 4 | 86 | | | | | | 1.1 |
| Thanantu at Gatunga | 8.10.87 | 7.9 | < 5 | 1.1 | 0.55 | 247 | <.1 | <.1 | 12 | 6 | 13 | | 69 | 90 | | 9 | 0.2 | | < 0.01 | 2.1 | | 148 | | | | | | 0.8 |
| Thanantu at Gatunga | 21.10.87 | 7.1 | < 5 | 2.1 | 2.4 | 390 | 1.6 | <.1 | 8.7 | 13 | 17 | | 77 | 92 | | 8 | 0.24 | | < 0.01 | 3.1 | 6 | 234 | | | | | | 0.9 |
| Thanantu at Gatunga | 16.12.88 | 7.1 | Brown | 127 | | 129 | 4 | <.1 | 9.8 | 4.3 | 10 | 3.7 | 42 | 36 | | 4 | | | < 0.01 | 11 | 4 | 77 | | 1.37 | 1.06 | 12.8 | | 0.7 |
| Thanantu at Kainga school | 21.10.87 | 7.5 | 5 | 2.2 | 1.6 | 273 | 0.9 | <.1 | 6.7 | 14 | 18 | | 79 | 101 | | 7 | 0.3 | | < 0.01 | 3 | 6 | 164 | | | | | | 0.9 |
| Thanantu at Mikinduri | 7.10.87 | 5.7 | < 5 | 21 | 6.8 | 104 | 4 | 0.4 | 1.9 | 3.3 | 7 | | 29 | 28 | | 7 | 1 | | 0.05 | 7.9 | 14 | 62 | | | | | | 0.7 |
| Thanantu at Mukothima | 21.10.87 | 7.2 | < 5 | 2.3 | < 0.01 | 234 | <.1 | <.1 | 1.4 | 11 | 13 | | 71 | 86 | | 7 | 0.24 | | < 0.01 | 4 | 6 | 140 | | | | | | 0.8 |
| Thangatha 4F8 | 13.08.87 | 6.7 | 5 | 3.6 | 0.55 | 112 | 0.5 | <0.01 | 2 | 2.8 | 7 | | 29 | 44 | 53.6 | 6 | 0.15 | 0 | < 0.01 | 1.5 | 5 | 67 | | 0.63 | 1.08 | -26.0 | | 0.7 |
| Thangatha at 4F21 | 13.8.87 | 6.4 | 5 | 3.2 | 3.2 | 87 | 0.5 | 0.02 | 1.3 | 2.4 | 7 | | 22 | 28 | | 6 | 0.14 | | < 0.01 | 2 | 2 | 52 | | | | | | 0.8 |
| Thingithu | 10.11.88 | 7.2 | 100 | 50 | 3.2 | 94 | 0.3 | 0.1 | 1.2 | 0.4 | 13 | 3.6 | 22 | 42 | | 5 | 0.26 | | | 0.3 | 2 | 56 | | 0.73 | 0.99 | -14.8 | | 2.5 |
| Thingithu 4F17 | 18.11.86 | 6.8 | muddy | 205 | 11 | 105 | 44 | 1.92 | 0.1 | 3.4 | 14 | 6.7 | 28 | 40 | 48.8 | 8 | 0.35 | 0.68 | | 2 | 4 | 62 | | 1.07 | 1.07 | -0.1 | | 1.6 |
| Thingithu 4F17 | 11.08.87 | 6.5 | 5 | 5 | 1.05 | 112 | 0.9 | 0.01 | 0.8 | 1 | 9 | | 18 | 34 | 41.4 | 6 | 0.28 | 0 | < 0.01 | 2.6 | 4 | 67 | | 0.51 | 0.9 | -27.5 | | 1.6 |
| Thingithu 4F4 | 30.04.86 | 7.6 | 40 | 21 | 0.4 | 84 | 3.4 | 0.13 | 0.2 | 0.3 | 14 | 6 | 22 | 36 | 43.9 | 3 | 0.5 | 0.02 | < 0.01 | 1.4 | 3 | 50 | | 0.8 | 0.83 | -2.2 | | 4.6 |
| Thingithu 4F4 | 11.08.87 | 6.9 | 10 | 8.5 | 14 | 113 | 2.6 | 0.09 | 1.2 | 1.1 | 12 | | 23 | 42 | 51.2 | 4 | 0.27 | 0 | < 0.01 | 2.2 | 4 | 66 | | 0.67 | 1 | -19.5 | | 1.9 |
| Thingithu 4F4 | 06.03.86 | 7.7 | 5 | 13 | 2.7 | 92 | 1.1 | 0.04 | 1.1 | 0.7 | 11 | 6 | 19 | 48 | 58.5 | 4 | 0.3 | 0.03 | 0.01 | 0.35 | 2 | 56 | | 0.74 | 1.08 | -18.4 | | 2 |
| Thingithu at 4F17 | 21.10.87 | 6.7 | < 5 | 5.8 | 1.6 | 195 | 0.2 | 0.1 | 6 | 3.1 | 14 | | 12 | 42 | | 7 | 0.32 | | < 0.01 | 2.9 | 4 | 117 | | | | | | 1.2 |
| Thingithu at Kanyaga School | 21.10.87 | 6.4 | < 5 | 4.1 | 3.2 | 130 | 1.1 | <.1 | 1.4 | 2.5 | 18 | | 33 | 39 | | 6 | 0.3 | | < 0.01 | 2.8 | 6 | 78 | | | | | | 2.1 |
| Thingithu at Meriments | 8.10.87 | 7.5 | 5 | 45 | 0.47 | 143 | <.1 | <.1 | 4.5 | 1.5 | 14 | | 32 | 42 | | 8 | 0.2 | | < 0.01 | 1.7 | | 86 | | | | | | 1.5 |
| Thingithu at Mitunguu Bridge | 22.10.87 | 6.7 | < 5 | 7.8 | 1.6 | 124 | <.1 | 1.7 | 3.8 | 1.8 | 12 | | 18 | 35 | | 7 | 0.31 | | < 0.01 | 2.2 | 6 | 74 | | | | | | 1.3 |
| Thinkuri | 10.11.88 | 6.5 | Brown | 150 | 3 | 28 | <.1 | <.1 | 3.2 | 0 | 0.3 | 1.6 | 8 | 10 | | 6 | 0.1 | | | 0.3 | 4 | 17 | | 0.47 | 0.38 | 11.7 | | 1 |
| Thinkwi | 15.8.87 | 7 | Brown | 82 | 1.5 | 78 | 0.3 | 7.9 | 4.9 | 1.1 | 4.4 | | 39 | 24 | | 5 | 0.13 | | < 0.01 | < 0.3 | 2 | 47 | | | | | | 0.5 |

## CHEMICAL DATA RIVERS MERU

| | DATE OF SAMPLING | pH | color | Turb FTU | KMnO4 value | E.C. µS/cm | Fe | Mn | Ca | Mg | Na | K | Total Hard | Total Alk | HCO3 | Cl | F | NO3 | NO2 | NH3 | SO4 | Free CO2 | TDS | SiO2 | SUM Cation | SUM Anion | IONIC BALANCE | Suitable for domestic use | SAR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | mg/l | | | | | | | | | | | | | | | | | | meq/l | | % | | |
| Thuchi 4EB7 | 20.03.86 | 7.6 | 15 | 12 | 4 | 76 | 1 | 0.07 | 0.8 | 1.2 | 16 | 2.3 | 16 | 36 | 43.9 | 6.8 | 0.54 | < 0.01 | < 0.01 | | 1.8 | 2 | 46 | 13 | 0.89 | 0.95 | -3.0 | | 2.6 |
| Thuci at Mate road | 19.2.88 | 6.7 | | 32 | | 117 | | | 2.2 | | | | 36 | 7 | | | | | | | < 0.3 | 2 | 70 | | | | | | |
| Thuci at Mate road | 22.10.88 | 7.1 | 20 | 19 | | 49 | 0.3 | <.1 | 2.4 | 0.5 | 7.4 | 1.3 | 8 | 18 | | 4 | 0.13 | | | | 0.33 | 2 | 30 | | 0.52 | 0.48 | 3.6 | | 1.1 |
| Thuci at Mate road | 14.12.88 | 6.9 | 250 | 93 | | 56 | 6 | <.1 | 3.2 | 0.5 | 21 | 2.1 | 10 | 18 | | 5 | | | < 0.01 | | < 0.3 | 4 | 33 | | 1.17 | 0.51 | 39.5 | | 2.9 |
| Thuci at new Meru road | 26.8.87 | 5.7 | 5 | 4.6 | 8.8 | 52 | 0.5 | <.1 | 0.4 | 0.6 | 6 | | 10 | 10 | | 5 | 0.13 | | < 0.01 | | 2.1 | 4 | 31 | | | | | | 1.4 |
| Thuci at new Meru-Chuka Road | 05.05.88 | 5.3 | 15 | 8 | | 22 | 0.1 | 0.1 | 0.2 | 0.3 | 5.3 | 1.2 | 20 | 4 | | 6 | < 0.1 | | < 0.01 | | 2.8 | 2 | 13 | | 0.3 | 0.31 | -1.9 | | 1.8 |
| Thuci at New road | 17.12.88 | 0.1 | 5 | 7 | | 38 | 0.4 | <.1 | 1.6 | 0.5 | 3.8 | 0.8 | 6 | 18 | | 0 | | | < 0.01 | | 2 | 2 | 23 | | 0.31 | 0.57 | -30.1 | | 0.7 |
| Timau 5BE6 | 27.08.86 | 6.7 | 10 | 31 | 1.7 | 90 | 3.9 | 0.13 | 1.6 | 1.8 | 14 | 3.3 | 19 | 40 | 48.8 | 5 | 1.23 | 0.01 | 0.01 | | 0.34 | 6 | 54 | 25 | 0.92 | 0.95 | -1.4 | | 1.8 |
| Timau 5BE6 | 09.10.86 | 7.3 | 15 | 17 | 0.47 | 80 | <0.1 | 0.05 | 2.8 | 2.1 | 11 | 2 | 22 | 36 | 43.9 | 6 | 1.7 | 0.15 | 0.01 | | < 0.3 | 4 | 46 | | 0.84 | 0.89 | -3.0 | | 1.2 |
| Tungu at new Meru road | 27.8.87 | 5.9 | 50 | 19 | 17 | 52 | 1.1 | 0.1 | 0.3 | 0.7 | 6 | | 10 | 10 | | 5 | 0.13 | | < 0.01 | | 0.31 | 4 | 31 | | | | | | 1.4 |
| Tungu at new Meru road | 15.12.88 | 6.9 | 30 | 15 | | 42 | 0.6 | <.1 | 4.8 | 1 | 5 | 1.4 | 10 | 14 | | 4 | | | < 0.01 | | 1.7 | 2 | 25 | | 0.58 | 0.43 | 14.7 | | 0.5 |
| Tungu at new Meru-Chuka Road | 05.05.88 | 5.2 < | 5 | 66 | | 20 | 0.5 | 0.1 | 0.1 | 0.4 | 6 | 1.1 | 4 | 2 | | 4 | 0.1 | | < 0.01 | | < 0.3 | 4 | 12 | | 0.33 | 0.16 | 34.6 | | 1.9 |
| Tungu stream | 23.3.88 | 6.9 | 5 | 16 | 1.6 | 120 | 0.6 | <.1 | | | 8.1 | 2.6 | 28 | 34 | | 8 | 0.16 | | < 0.01 | | 0.66 | 4 | 72 | | | | | | |
| Ura | 22.9.87 | 6.7 < | 5 | 2.4 | 14 | 91 | 0.6 | <.1 | 1.6 | 1.6 | 8 | | 18 | 30 | | 5 | < 0.01 | | < 0.01 | | 0.6 | 4 | 55 | | | | | | 1.1 |
| Ura 4F9 | 22.09.87 | 6.7 | <5 | 2.4 | 14 | 91 | 0.6 | <0.1 | 1.6 | 1.6 | 8 | | 18 | 30 | 36.6 | 5 | <0.1 | | < 0.01 | | 0.6 | 4 | 55 | | 0.56 | 0.75 | -14.7 | | 1.1 |
| Ura 4F9 | 18.11.86 | 6.5 | 100 | 150 | 6.7 | 75 | 6 | 0.27 | 0.4 | 1.1 | 6 | 2.1 | 20 | 30 | 36.6 | 5 | 0.13 | 0.06 | 0.1 | | < 0.3 | 6 | 45 | | 0.43 | 0.75 | -27.4 | | 1.1 |
| Ura 4F9 | 13.08.87 | 6.1 | <10 | 6.8 | 0.47 | 100 | 0.8 | 0.04 | 1.6 | 2.5 | 6 | 0 | 20 | 24 | 29.3 | 5 | 0.2 | | < 0.01 | | 2.4 | 4 | 60 | | 0.56 | 0.67 | -9.3 | | 0.7 |
| W/Maranie Timau | 12.11.87 | 6.6 | 30 | 5.2 | 9.4 | 59 | | | 2.4 | 0.9 | 9.8 | 4.1 | 10 | 16 | 19.5 | 7 | 0.14 | - | < 0.01 | | 0.13 | 4 | 35 | | 0.72 | 0.52 | 16.3 | | 1.4 |
| HCO3 concentration is calculated from Total Alkalinity (for pH < 8.3) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum | | 3 | 5 | 0.5 | 0.01 | 4 | 0.1 | 0.01 | 0.1 | 0 | 0 | 0 | 0 | 2 | 12.2 | 0.2 | 0.01 | 0 | 0.01 | | 0.03 | 1 | 12 | 11 | 0.16 | 0.16 | -50.49 | | 0.3 |
| Minimum | | 8.9 | 400 | 290 | 47 | 936 | 143 | 13 | 32 | 20 | 63 | 13 | 136 | 410 | 241 | 122 | 9 | 1.31 | 0.7 | | 61 | 40 | 562 | 32 | 3.12 | 5.45 | 79.97 | | 0.8 |
| Standard Deviation | | 0.8 | 71.5 | 52 | 6.83 | 97 | 18 | 2.13 | 4.9 | 3.6 | 8.8 | 2 | 23.8 | 43.6 | 38.6 | 12 | 0.88 | 0.33 | 0.09 | | 7.19 | 5.8 | 58 | 7.2 | 0.64 | 0.84 | 20.88 | | 1 |
| Mean | | 6.8 | 41.8 | 31 | 6.12 | 122 | 4.6 | 0.64 | 4.1 | 3.2 | 13 | 3.1 | 29.3 | 46.5 | 58 | 7.7 | 0.4 | 0.25 | 0.03 | | 2.53 | 5.4 | 74 | 21 | 1.03 | 1.09 | 0.36 | | 1.6 |
| Number | | 180 | 151 | 177 | 142 | 180 | 151 | 85 | 174 | 172 | 166 | 110 | 179 | 179 | 77 | 179 | 154 | 43 | 149 | | 177 | 157 | 180 | 18 | 133 | 131 | 117 | | 158 |

# APPENDIX 5

## DATA ON BOREHOLES AND SPRINGS

## CHEMISTRY OF SPRINGS AND WELLS

## WELL TESTS AND

## DRINKING WATER STANDARDS

# APPENDIX 5

## DATA ON BOREHOLES AND SPRINGS CHEMISTRY OF SPRINGS AND WELLS

## WELL TESTS AND DRINKING WATER STANDARDS

5.1 List of Boreholes

5.2 List of Springs

5.3 Well Tests

5.4 Chemical Data Springs, Boreholes, Wells and Water Supplies

5.5 Drinking Water Standards for Kenya

# Appendix 5.1

## List of Boreholes

| BH NO | LOCATION | COORDINATES X | COORDINATES Y | SHEET NO | SURFACE ELEV. m+msl | TOTAL DEPTH (m) | COMPLETION DATE | STRUCK LEVEL DEPTH m | STRUCK LEVEL ELEV. m+msl | REST LEVEL DEPTH m | REST LEVEL ELEV. m+msl | YIELD m3/h | A | B | C | PRESENT STATE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C7308 | Mkothima Catholic Mission | 0 01'11"N | 37 56'28"E | 108/4 | 765 | 11.6 | 19/03/87 | 9 | 756 | 5.85 | 759.15 | 4.00 | - | - | Yes | Not in use |
| C7309 | Kamaguna Primary School | 0 10'19"S | 38 08'10"E | 123/1 | 450 | 11.5 | 30/03/87 | 5.5 | 444.5 | 3.3 | 446.7 | 2.40 | - | Yes | Yes | Operational |
| C7310 | Marimanti Market | 0 08'50"S | 37 58'27"E | 122/2 | 594 | 30.5 | 02/04/87 | 18 | 580 | 6.96 | 587.04 | 1.26 | - | - | Yes | Not in use |
| C7314 | Materi Girls Centre | 0 11'23"S | 37 48'38"E | 122/2 | 855 | 30.5 | 09/04/87 | 21 | 834 | 16.68 | 838.32 | 2.02 | - | - | Yes | Not in use |
| C7409 | Maliala | 0 23'16"N | 37 47'20"E | 108/2 | 1143 | 127 | 11/07/87 | 112 | 1031 | 79 | 1064 | 8.00 | - | - | Yes | Not in use |
| C7410 | Ugoti Primary School | 0 07'17"N | 37 58'25"E | 108/4 | 930 | 42 | 13/07/87 | 34 | 896 | 23 | 907 | 8.00 | - | Yes | Yes | Operational |
| C7411 | Marega | 0 06'54"N | 37 57'53"E | 108/4 | 1189 | 60 | 17/07/87 | - | - | - | - | - | - | - | - | Dry Hole |
| C7412 | Kiamathingira | 0 06'53"N | 38 58'22"E | 108/4 | 975 | 53 | 15/07/87 | 42 | 933 | 29 | 946 | 2.70 | - | Yes | Yes | Operational |
| C7413 | Gankuji | 0 06'42"N | 37 57'54"E | 108/4 | 1189 | 55 | 19/07/87 | 32 | 1157 | 22.7 | 1166.3 | 6.01 | - | Yes | Yes | Operational |
| C7414 | Kathangacwe | 0 04'18"N | 37 59'18"E | 108/4 | 762 | 49 | 21/07/87 | 32 | 730 | 6 | 756 | 2.70 | - | Yes | Yes | Operational |
| C7415 | Liamikuu Primary School | 0 04'07"N | 37 59'05"E | 108/4 | 762 | 87 | 24/07/87 | 62 | 700 | 83 | 679 | - | - | - | - | Abandoned |
| C7416 | Riigi | 0 06'49"N | 37 57'04"E | 108/4 | 1265 | 72 | 26/07/87 | 60 | 1205 | 55.4 | 1209.5 | 6.08 | - | Yes | Yes | Operational |
| C7417 | Ntuene Primary School | 0 16'17"N | 37 57'02"E | 108/2 | 1610 | 75 | 08/09/87 | 36 | 1574 | 51 | 1559 | 2.63 | - | Yes | Yes | Operational |
| C7418 | Kalimikuu | 0 15'38"N | 38 02'02"E | 109/1 | 940 | 84 | 15/08/87 | 56 | 884 | 46 | 994 | 6.00 | - | Yes | Yes | Operational |
| C7419 | Nkungi No.1 | 0 15'57"N | 38 02'46"E | 109/1 | 880 | 17 | 18/08/87 | - | | - | | - | - | - | - | Unsuccessful |
| C7420 | Nkungi No. 2 | 0 15'52"N | 38 02'45"E | 109/1 | 910 | 54 | 20/08/87 | 34 | 876 | 35.5 | 874.5 | 6.08 | - | Yes | Yes | Operational |
| C7421 | Muribariu | 0 16'57"N | 38 03'22"E | 109/1 | 890 | 75 | 30/08/87 | 54 | 836 | 57 | 833 | 5.69 | - | Yes | Yes | Operational |
| C7422 | Kabukuro | 0 17'19"E | 38 02'21"E | 109/1 | 1000 | 48 | 03/09/87 | 48 | 966 | 29 | 971 | 6.59 | - | - | - | Not in use |
| C7423 | Muomwere | 0 16'26"N | 38 03'48"E | 109/1 | 865 | 36 | 17/09/87 | 15 | 850 | 13 | 852 | 6.59 | - | - | - | Operational |
| C7741 | Mbayo Primary School | 0 24'13"N | 37 58'14"E | 108/2 | 1737 | 102 | 03/11/87 | - | - | - | - | - | - | - | - | Dry Hole |
| C7742 | Mutuati Primary School | 0 23'14"N | 37 58'03"E | 108/2 | 1676 | 49 | 30/10/87 | 30 | 1646 | 38.5 | 1637.5 | 2.73 | - | - | Yes | Operational |
| C7743 | Kiolo Primary School | 0 25'05"N | 37 58'43"E | 108/2 | 1715 | 104 | 24/10/87 | - | - | - | - | - | - | - | - | Dry Hole |
| C7744 | Kiolo Primary School | 0 25'10"N | 37 58'43"E | 108/2 | 1715 | 58 | 27/10/87 | - | - | - | - | - | - | - | - | Dry Hole |
| C7745 | Aithu Primary School | 0 23'32"N | 37 59'40"E | 108/2 | 1585 | 60 | 04/11/87 | 28 | 1557 | - | - | - | - | - | - | Dry Hole |
| C7746 | Mbiriata Primary School | 0 24'44"N | 38 02'10"E | 109/1 | 1220 | 66 | 09/11/87 | 32 | 1188 | - | - | - | - | - | - | Dry Hole |
| C7747 | Kieni Kia Mwanjela | 0 21'51"N | 37 59'42"E | 108/2 | 1509 | 78 | 29/11/87 | - | - | - | - | - | - | - | - | Dry Hole |
| C7748 | Naathu Primary School | 0 23'04"N | 37 57'07"E | 108/2 | 1829 | 90 | 22/11/87 | - | - | - | - | - | - | - | - | Dry Hole |
| C7749 | Kieni Kia Baithai Primary Sch. | 0 21'54"N | 37 57'53"E | 108/2 | 1707 | 96 | 02/12/87 | - | - | - | - | - | - | - | - | Dry Hole |
| C7750 | Ndoleli M.C.K. Demo. Farm | 0 17'54"N | 38 03'02"E | 109/1 | 955 | 70 | 09/12/87 | 62 | 893 | 53.3 | 901.7 | 4.40 | - | - | Yes | Operational |
| C7751 | Muruoin - Kanga | 0 16'49"N | 38 04'53"E | 109/1 | 835 | 19 | 06/01/88 | 15 | 820 | 15 | 820 | 7.90 | - | - | Yes | Operational |
| C7752 | Makutano | 0 15'18"N | 38 05'28"E | 109/1 | 790 | 28 | 07/01/88 | 18 | 772 | 11 | 779 | 7.90 | - | - | Yes | Operational |
| C7753 | Gachugu | 0 16'57"N | 38 05'00"E | 109/1 | 835 | 34.5 | 09/01/88 | 30 | 805 | 25 | 810 | 6.60 | - | - | Yes | Operational |
| C7754 | Baibario Primary School | 0 17'27"N | 38 02'38"E | 109/1 | 980 | 72 | 15/01/88 | 64 | 916 | 54 | 926 | 5.30 | - | - | Yes | Operational |

| BH NO | LOCATION | COORDINATES X | COORDINATES Y | SHEET NO | SURFACE ELEV. m+msl | TOTAL DEPTH (m) | COMPLETION DATE | STRUCK LEVEL DEPTH m | STRUCK LEVEL ELEV. m+msl | REST LEVEL DEPTH m | REST LEVEL ELEV. m+msl | YIELD m3/h | A | B | C | PRESENT STATE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C7142 | Nkodi Primary School | 0 01'51"S | 37 57'59"E | 122/2 | 747 | 8.85 | 10/03/87 | 3.5 | 743.5 | 1.45 | 745.55 | 6.01 | - | Yes | Yes | Not in use |
| C7143 | Mwanyani Primary School | 0 01'43"S | 37 55'23"E | 122/2 | 762 | 21.5 | 12/03/87 | 4.6 | 757.4 | 2.2 | 759.8 | 0.79 | - | - | Yes | NOt in use |
| C7144 | Kiborine Station | 0 00'16"S | 37 55'20"E | 122/2 | 815 | 15.5 | 15/03/87 | 12.4 | 802.6 | 9.7 | 805.3 | 2.99 | - | - | Yes | Not in use |
| C7145 | Mkothima Village | 0 00'31"N | 37 56'55"E | 108/4 | 757 | 30.5 | 16/03/87 | - | - | - | - | - | - | - | - | Dry Hole |
| C7233 | Athiru Runjine Market | 0 18'37"N | 37 57'47"E | 108/2 | 1631 | 93 | 09/11/86 | - | - | - | - | - | - | - | - | Dry Hole |
| C7234 | Kilalai Primary School | 0 14'05"N | 37 57'04"E | 108/4 | 1615 | | 14/10/86 | - | - | - | - | - | - | - | - | Dry Hole |
| C7235 | Maua Township | 0 14'01"N | 37 56'32"E | 108/4 | 1643 | 93 | 23/10/86 | 77 | 1566 | 30 | 1613 | 10.00 | - | Yes | Yes | Operational |
| C7236 | Athiru Runjine Sec. School | 0 18'11"N | 37 58'00"E | 108/2 | 1600 | 72 | 14/11/86 | 68 | 1532 | 71 | 1529 | - | - | - | - | Unsuccessful |
| C7237 | Athiru Runjine Primary | 0 18'02"N | 37 58'00"E | 108/2 | 1615 | 88 | 28/11/86 | 76 | 1539 | 84 | 1531 | - | - | - | - | Unsuccessful |
| C7238 | Athiru Gaiti Primary School | 0 12'41"N | 37 38'28"E | 108/2 | 1341 | 30 | 08/12/86 | 17 | 1324 | 15.9 | 1325.1 | 10.33 | - | Yes | Yes | Operational |
| C7239 | Athiru Gaiti Junction | 0 12'54"N | 37 58'19"E | 108/4 | 1372 | 18 | 09/01/87 | 6 | 1366 | 1.5 | 1370.5 | 0.50 | - | - | Yes | Operational |
| C7240 | Karurune Primary School | 0 13'08"N | 37 58'47"E | 108/4 | 1372 | 42 | 12/01/87 | 30 | 1342 | 24.4 | 1347.6 | 0.79 | - | Yes | Yes | Operational |
| C7241 | Nthare Primary School | 0 14'17"N | 37 58'51"E | 108/4 | 1362 | 33 | 15/01/87 | - | - | - | - | - | - | - | - | Unsuccessful |
| C7242 | Miori Primary School | 0 15'14"N | 37 57'39"E | 108/2 | 1565 | 70 | 18/01/87 | 56 | 1509 | 69 | 1496 | - | - | - | - | Unsuccessful |
| C7243 | Kianda Primary School | 0 08'07"N | 37 59'55"E | 108/4 | 945 | 63 | 11/02/87 | 36 | 909 | 24 | 921 | - | - | - | - | Unsucessful |
| C7244 | Thaicu Market | 0 10'03"N | 37 59'20"E | 108/4 | 1158 | 44 | 01/02/87 | 27 | 1131 | 18 | 1140 | 2.40 | - | Yes | Yes | Operational |
| C7245 | Kaliene | 0 09'44"N | 37 58'35"E | 108/4 | 1189 | 49 | 05/02/87 | 30 | 1159 | 29 | 1160 | 7.20 | - | Yes | Yes | Operational |
| C7246 | Thaicu Primary School | 0 10'11"N | 37 59'20"E | 108/4 | 1173 | 47 | 29/01/87 | 30 | 1143 | 15.8 | 1157.2 | 3.60 | - | Yes | Yes | Operational |
| C7247 | Kibangwa Primary School | 0 08'03"N | 38 01'05"E | 109/3 | 780 | 52 | - | 39 | 741 | 30 | 750 | 3.60 | - | Yes | Yes | Operational |
| C7248 | Tumutumu | 0 09'01"N | 37 59'20"E | 108/4 | 1120 | 57 | 13/02/87 | 33 | 1087 | 24.5 | 1095.5 | 2.40 | - | Yes | Yes | Operational |
| C7249 | Mangala | 0 15'08"N | 38 02'40"E | 109/3 | 875 | 40 | 25/02/87 | 27 | 848 | 17.3 | 85.7 | 7.20 | - | Yes | - | Operational |
| C7250 | Matyandui Primary School | 0 15'39"N | 38 00'11"E | 109/1 | 1035 | 90 | 05/03/87 | 56 | 979 | 40.5 | 994.5 | 7.90 | - | Yes | - | Operational |
| C7251 | Lakathi Primary School | 0 12'32"N | 38 02'41"E | 109/3 | 840 | 40 | 13/03/87 | 27 | 813 | 23.5 | 816.5 | 7.20 | - | Yes | Yes | Operational |
| C7252 | Muthucine Primary School | 0 15'41"N | 38 00'57"E | 109/1 | 990 | 90 | 17/03/87 | 50 | 940 | 38.83 | 951.17 | 3.60 | - | Yes | Yes | Operational |
| C7253 | Kabukuro | 0 17'20"N | 38 02'19"E | 109/1 | 960 | 67 | 20/04/87 | 43 | 962 | 40 | 965 | - | - | - | - | Abandoned |
| C7254 | Maritine Primary School | 0 18'34"N | 38 00'50"E | 109/1 | 1220 | 90 | 29/04/87 | - | - | - | - | - | - | - | - | Unsuccessful |
| C7255 | Kibangwa Cattle Dip | 0 08'06"N | 38 00'35"E | 109/3 | 850 | 60 | 09/05/87 | 37 | 813 | 28.5 | 821.5 | 7.20 | - | Yes | Yes | Operational |
| C7256 | Kirwiro | 0 09'56"N | 38 00'13"E | 109/3 | 955 | 73 | 13/05/87 | 39 | 916 | 33 | 922 | 7.20 | - | Yes | Yes | Operational |
| C7257 | Kiraone Market | 0 12'09"N | 37 58'47"E | 108/4 | 1280 | 45 | 20/05/87 | 32 | 1248 | 29.3 | 125 | 6.50 | - | Yes | Yes | Operational |
| C7258 | Kathithine | 0 16'23"N | 38 06'27"E | 109/1 | 790 | 38 | 20/06/87 | 24 | 766 | 18.4 | 771.6 | 11.90 | - | Yes | Yes | Operational |
| C7259 | Baithubuku | 0 17'08"N | 38 02'41"E | 109/1 | 960 | 53 | 22/06/87 | 33 | 927 | 29 | 931 | 7.90 | - | - | Yes | Operational |
| C7260 | Kianda Health Centre | 0 08'04"N | 37 59'55"E | 108/4 | 945 | 43 | 28/06/87 | 30 | 915 | 18.5 | 926.5 | 6.00 | - | Yes | Yes | Operational |
| C7261 | Kilili Primary School | 0 11'18"N | 38 00'26"E | 109/3 | 950 | 22 | 04/07/87 | 14 | 936 | 9.4 | 94.6 | 10.00 | - | Yes | Yes | Operational |

| BH NO | LOCATION | COORDINATES X | COORDINATES Y | SHEET NO | SURFACE ELEV. m+msl | TOTAL DEPTH (m) | COMPLETION DATE | STRUCK LEVEL DEPTH m | STRUCK LEVEL ELEV. m+msl | REST LEVEL DEPTH m | REST LEVEL ELEV. m+msl | YIELD m3/h | A | B | C | PRESENT STATE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C4251 | Muthambe Catholic Mission | 0 16'22"S | 37 39'48"E | 122/3 | 1402 | 201 | 09/10/76 | 31 | 1371 | 69.3 | 1332.7 | 2.27 | - | - | - | Operational |
| C4251 | | | | | | | | 75 | 1327 | | | | | | | |
| C4272 | Muthambe Girls' High School | 0 16'17"S | 37 39'52"E | 122/3 | 1402 | 123 | 13/11/76 | 68 | 1334 | 66.3 | 1335.7 | 5.40 | - | - | - | Operational |
| C4272 | | | | | | | | 70 | 1332 | | | | | | | |
| C4272 | | | | | | | | 106 | 1296 | | | | | | | |
| C4272 | | | | | | | | 108 | 1294 | | | | | | | |
| C4348 | Kanyakine Catholic Mission | 0 07'39"S | 37 40'36"E | 122/1 | 1320 | 154 | 27/06/77 | 18.2 | 1311.8 | 24 | 1296 | 6.59 | - | - | - | Operational |
| C4348 | | | | | | | | 88.2 | 1241.8 | | | | | | | |
| C4994 | Kariani | 0 16'12"S | 37 41'12"E | 122/3 | 1311 | | 1981 | | | | | 5.00 | - | - | - | Operational |
| C5404 | Forest Lodge | 0 06'24"N | 37 36'33"E | 108/3 | 1750 | 200 | 07/05/84 | 170.3 | 1579.7 | 150.3 | 1599.7 | 3.78 | - | - | - | Blocked by pum |
| C5543 | Ruiri | 0 09'44"N | 37 40'29"E | 108/3 | 1440 | 102 | 21/02/85 | 24 & 90 | 1350 | 27.3 | 1412.7 | 3.70 | - | - | - | Not in use |
| C5565 | Mutuntu | 0 10'07"N | 37 41'00"E | 108/3 | 1420 | 120 | 16/05/84 | 28 & 67 | 1353 | 24.68 | 1385.32 | 3.90 | - | Yes | Yes | Operational |
| C5752 | Charia Catholic Mission | 0 00'04"N | 37 46'00"E | 108/4 | 1097 | 122 | 27/05/84 | 44 & 69 | 1028 | 18.69 | 1078.3 | 3.90 | - | Yes | Yes | Operational |
| C5881 | Njoruta | 0 13'20"N | 37 35'36"E | 108/3 | 1480 | 150 | 13/02/85 | 38 & 119 | 1361 | 90 | 1390 | 5.04 | - | - | Yes | Operational |
| C6000 | Mulamba | 0 11'30"N | 37 40'48"E | 108/3 | 1420 | 120 | 04/08/84 | 40 & 106 | 1314 | 68 | 1352 | 2.99 | - | Yes | Yes | Operational |
| C6966 | Maua Town | 0 13'55"N | 37 56'47"E | 108/4 | 1648 | 120 | 12/10/86 | - | | - | - | - | - | - | - | Dry Hole |
| C6967 | Maua Stadium | 0 14'00"N | 37 56'07"E | 108/4 | 1646 | 42 | 16/09/86 | 27 | 1619 | 10.26 | 1635.7 | 0.50 | - | Yes | Yes | Operational |
| C7126 | Kiiji River | 0 11'44"S | 37 57'49"E | 122/2 | 552 | 18.5 | 03/12/86 | 15 | 537 | 4.4 | 547.6 | 6.01 | - | - | - | Not in use |
| C7127 | Marigoni River | 0 13'03"S | 37 57'24"E | 122/2 | 549 | 18.5 | 09/12/86 | 10 | 539 | 3.93 | 545.07 | ? | - | - | - | Not in use |
| C7128 | Gituma River | 0 13'11"S | 37 56'59"E | 122/2 | 556 | 21 | 12/12/86 | 9.5 | 546.5 | 6.63 | 549.37 | 2.02 | - | - | - | Not in use |
| C7129 | Karani Primary School | 0 13'52"S | 37 56'35"E | 122/2 | 587 | 33.5 | 20/12/86 | - | - | - | - | - | - | - | - | Dry Hole |
| C7130 | Karani Primary School | 0 14'00"S | 37 56'25"E | 122/2 | 594 | 18.5 | 11/01/87 | 2 | 592 | 1.5 | 592.5 | 0.50 | - | - | - | Not in use |
| C7131 | Kaguma | 0 14'00"S | 37 55'07"E | 122/2 | 610 | 30.5 | 16/01/87 | 6 | 604 | 3.05 | 606.95 | 0.14 | - | - | - | Not in use |
| C7132 | Marimanti Camp | 0 10'00"S | 37 59'37"E | 122/2 | 564 | 27.5 | 31/01/87 | - | - | - | - | - | - | - | - | Dry Hole |
| C7133 | Marimanti Camp | 0 09'49"S | 37 57'39"E | 122/2 | 594 | 18.5 | 01/02/87 | - | - | - | - | - | - | - | - | Dry Hole |
| C7134 | Marimanti Village | 0 10'20"S | 38 00'34"E | 123/1 | 540 | 21.5 | 03/02/87 | - | - | - | - | - | - | - | - | Dry Hole |
| C7135 | Kibunga | 0 04'39"S | 37 54'50"E | 122/2 | 732 | 27.5 | 05/02/87 | 18 | 714 | 8.75 | 723.25 | 0.90 | - | - | - | Not in use |
| C7136 | Marimanti Health Centre | 0 08'56"S | 37 58'22"E | 122/2 | 594 | 24.5 | 13/02/87 | 17 | 577 | 6.02 | 587.98 | 3.60 | - | - | - | Not in use |
| C7137 | Marimanti Market | 0 08'56"S | 37 58'27"E | 122/2 | 594 | 20 | 18/02/87 | - | - | - | - | - | - | - | - | Dry Hole |
| C7138 | Gatunga Market | 0 05'53"S | 38 00'28"E | 123/1 | 580 | 30.5 | 22/02/87 | 24 | 556 | 4.1 | 575.9 | >10 | - | Yes | Yes | Not in use |
| C7139 | Gatunga Mission Pri. School | 0 05'55"S | 38 00'25"E | 123/1 | 580 | 45.5 | 27/02/87 | 18 | 562 | 5 | 575 | 4.00 | - | - | Yes | Not in use |
| C7140 | Nkodi Primary School | 0 01'44"N | 37 57'56"E | 122/2 | 747 | 30.5 | 28/02/87 | 6 | 741 | 3 | 744 | - | - | - | - | Abandoned |
| C7141 | Nkodi Primary School | 0 01'44"S | 37 57'51"E | 122/2 | 747 | 10.5 | 07/03/87 | 4.5 | 742.5 | 1.6 | 745.4 | 0.61 | - | - | Yes | Not in use |

| BH NO | LOCATION | COORDINATES X | COORDINATES Y | SHEET NO | SURFACE ELEV. m+msl | TOTAL DEPTH (m) | COMPLETION DATE | STRUCK LEVEL DEPTH m | STRUCK LEVEL ELEV. m+msl | REST LEVEL DEPTH m | REST LEVEL ELEV. m+msl | YIELD m3/h | A | B | C | PRESENT STATE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SA6 | Isiolo | 0 20'15"N | 37 48'15"E | 108/1 | 1082 | 39.3 | 29/09/40 | 28 | 1054 | 12.2 | 1069.8 | 4.53 | - | - | - | Not traced |
| P144 | Oldoinyo Farm | 0 06'50"N | 37 18'46"E | 107/4 | 2370 | 50.3 | 10/06/31 | - | - | - | - | - | - | - | - | Unsuccessful |
| C91 | Isiolo/Garba Tula Road | 0 31'13"S | 37 56'46"E | 94/4 | 1005 | 55.4 | - | - | - | - | - | - | - | - | - | Unsuccessful |
| C153 | Lolomariko Farm | 0 07'17"N | 37 18'11"E | 107/4 | 2323 | 107 | 09/07/41 | 51.2, | 2271.8 | 47.8 | 2275.2 | 3.96 | - | - | - | Not in use |
| C153 | | | | | | | | 70.1 & | 2252.9 | | | | | | | |
| C153 | | | | | | | | 93 | 2240 | | | | | | | |
| C156 | Embori Farm | 0 04'14"N | 37 20'27"E | 107/4 | 2640 | 77.7 | 10/02/42 | - | - | - | | - | - | - | - | Unsuccessful |
| C185 | Timau | 0 08'53"N | 37 18'32"E | 107/4 | 2243 | 87 | 13/04/42 | 75 | 2168 | 15.84 | 2227.16 | 1.08 | - | - | - | Operational |
| C638 | Kisima Farm | 0 05'00"N | 37 23'52"E | 107/4 | 2705 | 83.2 | 04/02/48 | 81.7 | 2623.3 | 75 | 2630 | 0.029 | - | - | - | Abandoned |
| C639 | Kisima Farm | 0 06'11"N | 37 22'56"E | 107/4 | 2540 | 157.3 | 13/01/48 | 157.3 | 2382.7 | 150.9 | 2389.1 | 12.74 | - | - | - | Not in use |
| C650 | Oldoinyo Farm | 0 06'39"N | 37 18'46"E | 107/4 | 2380 | 88.4 | 18/03/48 | - | - | - | - | 13.68 | - | - | - | Not in use |
| C660 | Oldoinyo Farm | 0 06'53"N | 37 20'22"E | 107/4 | 2375 | 82.3 | 16/04/48 | 78.6 | 2296.4 | 59.4 | 2315.6 | 3.60 | - | - | - | Not in use |
| C1215 | Ngare Ndare | 0 11'51"N | 37 23'16"E | 107/4 | 1794 | 106.7 | 03/11/52 | 51.5 & | 1742.5 & | 48.8 | 1745.2 | 0.64 | - | - | - | Abandoned |
| C1215 | | | | | | | | 76.2 | 1717.8 | | | | | | | |
| C1293 | Ngare Ndare | 0 12'53"N | 37 21'49"E | 107/4 | 1783 | 62.5 | 18/01/51 | 33.5 & | 1749.5 & | 29 | 1754 | 4.10 | - | - | - | Abandoned |
| C1293 | | | | | | | | 50.3 | 1732.7 | | | | | | | |
| C1581 | Buloi | 0 28'16"N | 37 54'36"E | 108/2 | 1113 | 128 | 20/10/51 | 115.8 | 997.2 | 100.6 | 1012.4 | 0.002 | - | - | - | Not traced |
| C1620 | Shaba (Dogo) | 0 28'20"N | 37 50'44"E | 108/2 | 1097 | 122 | 18/12/51 | 71.9 & | 1025.1& | 67.1 | 1029.9 | 5.40 | - | - | - | Not in use |
| C1620 | | | | | | | | 115.8 | 981.2 | | | | | | | |
| C1992 | Kalalu River side Farm | 0 02'11"N | 37 12'10"E | 107/3 | 2230 | 118.3 | 05/53 | 82.9 | 2147.1 | 51.2 | 2178.8 | 1.44 | - | - | - | Abandoned |
| C2270 | Chuka Township | 0 19'37"S | 37 38'37"E | 122/3 | 1463 | 156.1 | 12/10/54 | 69.5 | 1393.5 | 61 | | 7.06 | - | - | - | Abandoned |
| C2270 | | | | | | | | 114.8 | 1348.2 | | | | | | | |
| C2977 | Isiolo/Garba Tula Road | 0 30'57"N | 37 56'46"E | 94/4 | 1016 | 213.4 | 20/12/59 | - | - | - | - | - | - | - | - | Not traced. |
| C3137 | Nkabune Catholic Mission | 0 01'51"N | 37 41'37"E | 108/3 | 1360 | 21 | 04/05/61 | 15.5 | 1344.5 | 13.1 | 1346 | 0.10 | - | - | - | Abandoned |
| C3139 | Igoji (St.Mary's G. H. Sch.) | 0 11'26"S | 37 40'08"E | 122/3 | 1420 | 91.4 | 27/05/61 | 32.9 | 1380.1 | 46.6 | | 2.38 | - | - | - | Operational |
| C3139 | | | | | | | | 51.2 | 1368.8 | | | | | | | |
| C3139 | | | | | | | | 73.8 | 1346.2 | | | | | | | |
| C3139 | | | | | | | | 91.4 | 1328.6 | | | | | | | |
| C3294 | Kiirua Catholic Mission | 0 07'30"N | 37 33'29"E | 108/3 | 1985 | 184.4 | 08/06/64 | 88.4 & | 1896.6& | - | - | 0.13 | - | - | - | Abandoned |
| C3294 | | | | | | | | 146.3 | 1838.7 | | | | | | | |
| C3295 | Nkabune Catholic Mission | 0 01'51"N | 37 41'34"E | 108/3 | 1360 | 21.3 | 21/05/64 | 15.2 & | 1344.8& | 8.53 | 1351.47 | 5.47 | - | - | - | Operational |
| C3295 | | | | | | | | 19.8 | 1340.2 | | | | | | | |
| C4233 | Kariakomo Catholic Mission | 0 14'09"S | 37 40'17"E | 122/1 | 1340 | 153.5 | 26/06/76 | 108.5 | 1231.5 | 66 | 1274 | 5.76 | - | - | - | Operational |

| BH NO | LOCATION | COORDINATES X | COORDINATES Y | SHEET NO | SURFACE ELEV. m+msl | TOTAL DEPTH (m) | COMPLETION DATE | STRUCK LEVEL DEPTH m | STRUCK LEVEL ELEV. m+msl | REST LEVEL DEPTH m | REST LEVEL ELEV. m+msl | YIELD m3/h | A | B | C | PRESENT STATE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C8975 | Magutuni | 0 13'17"S | 37 44'08"E | 122/1 | 1200 | 180 | 04/12/89 | 12&30 | 1170 | 9 | 1191 | 1.0 | - | Yes | Yes | Not in use |
| C8976 | Ngare Mara Village | 0 29'34"N | 37 38'20"E | 108/1 | 950 | 45.7 | 10/01/90 | 31 | 919 | 20.6 | 929.4 | >30 | - | Yes | Yes | Not in use |
| C8977 | Birikene | 0 01'13"N | 37 50'13"E | 108/4 | 1013 | 72 | 16/01/90 | 6.5 | 1006.5 | 6.5 | 1006.5 | >30 | - | Yes | Yes | Not in use |
| C8978 | Tutua | 0 11'58"N | 37 35'47"E | 108/3 | 1600 | 90 | 16/02/90 | 71 | 1529 | 56 | 1544 | >20 | - | Yes | Yes | Not in Use |
| C8992 | Gaitu (Chaaria) | 0 00'03"N | 37 46'00"E | 108/4 | 1097 | 120 | 05/03/90 | 44,96/116 | 1001 | 17 | 1080 | 7.20 | - | - | - | Unknown |
| C9070 | Kariikamburi | 0 06'08"S | 38 04'37"E | 123/1 | 630 | 33 | 24/01/90 | - | - | - | - | - | - | - | - | Dry Hole |
| C9071 | Kamwathu | 0 13'04"S | 38 03'28"E | 123/1 | 560 | 30 | 29/01/90 | 18 | 542 | 8.1 | 551.9 | ? | - | - | - | Not in use |
| C9081 | Kianjai | 0 10'08"N | 37 45'16"E | 108/4 | 1402 | 60 | 20/02/90 | 8,42 | 1360 | 7 | 1395 | >20 | - | Yes | Yes | Not in use |
| C9082 | Liliaba | 0 19'00"N | 37 50'18"E | 108/2 | 1341 | 95 | 25/03/90 | 82 | 1259 | 65 | 1276 | 24.00 | - | Yes | Yes | Not in use |
| C9083 | Near Ndoleli Pri. School | 0 18'56"N | 38 03'37"E | 109/1 | 965 | 90.5 | 12/05/90 | 70 | 895 | 59 | 906 | 24.00 | - | Yes | Yes | Not in use |
| C9084 | Malaeni | 0 19'12"N | 38 05'03"E | 109/1 | 900 | 120.4 | 20/05/90 | 92&114 | 808 | 56 | 844 | 36.00 | - | Yes | Yes | Not in use |
| C9084 | (Near Proposed Security Camp) | | | | | | | | | | | | | | | |
| C9085 | Meru (ASK) Showground | 0 04'14"N | 37 37'45"E | 108/3 | 1704 | 120 | 28/05/90 | 38&94 | 1666 | 70.6 | 1633.4 | 70.00 | - | Yes | Yes | Not in use |
| C9282 | Meia Crater (Near Water Tank) | 0 21'51"N | 37 52'53"E | 108/2 | 1402 | 42 | 17/06/90 | - | - | - | - | - | - | - | - | Dry Hole |
| C9283 | Mburieni (Near Water Tank) | 0 24'27"N | 37 53'29"E | 108/2 | 1326 | 84 | 26/06/90 | - | - | - | - | - | - | - | - | Dry Hole |

KEY:

A - Geological Log Available
B - Chemical Analysis Available
C - Test Pump Available

| BH NO | LOCATION | COORDINATES X | COORDINATES Y | SHEET NO | SURFACE ELEV. m+msl | TOTAL DEPTH (m) | COMPLETION DATE | STRUCK LEVEL DEPTH m | STRUCK LEVEL ELEV. m+msl | REST LEVEL DEPTH m | REST LEVEL ELEV. m+msl | YIELD m3/h | A | B | C | PRESENT STATE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C7755 | Kinna Police Post | 0 18'50"N | 38 10'34"E | 109/1 | 715 | 19 | 19/01/88 | 10 | 705 | 3.9 | 711.1 | 7.90 | - | - | Yes | Operational |
| C7756 | Mbuuni | 0 14'24"N | 38 04'24"E | 109/3 | 795 | 37 | 21/01/88 | 30 | 765 | 15.7 | 779.3 | 3.0 | - | - | Yes | Operational |
| C7757 | Kabwito Primary School | 0 14'29"N | 38 00'24"E | 109/3 | 980 | 24 | 26/01/88 | 15 | 965 | 9.5 | 970.5 | 3.10 | - | - | Yes | Operational |
| C7758 | Maarene Village | 0 14'11"N | 38 00'31"E | 109/3 | 960 | 42 | 01/02/88 | 36 | 924 | 10 | 950 | 6.60 | - | - | Yes | Operational |
| C7759 | Ndoleli Village | 0 18'17"N | 38 03'47"E | 109/1 | 950 | 45 | 13/02/88 | 42 | 908 | 35 | 915 | 6.60 | - | - | Yes | Operational |
| C7760 | Kinna Market | 0 19'14"N | 38 11'29"E | 109/1 | 710 | 19 | 15/02/88 | 15 | 695 | 9.3 | 700.7 | 7.90 | - | - | Yes | Operational |
| C7849 | Ishmael | 0 18'30"N | 38 07'35"E | 109/1 | 785 | 36 | 25/03/88 | 30 | 755 | 24.8 | 760.2 | 1.70 | - | - | Yes | Operational |
| C7850 | Enono Market | 0 22'58"N | 37 57'54"E | 108/2 | 1676 | 51 | 26/11/87 | 44 | 1632 | 35.4 | 1640.6 | 5.70 | - | - | Yes | Operational |
| C7851 | Ndoleli II Village | 0 18'06"N | 38 03'19"E | 109/1 | 960 | 56 | 16/03/88 | 50 | 910 | 42 | 918 | 5.90 | - | - | Yes | Operational |
| C7852 | Murera Village | 0 17'59"N | 38 05'30"E | 109/1 | 845 | 42 | 07/03/88 | 35 | 810 | 21.4 | 823.6 | 6.60 | - | - | Yes | Operational |
| C7853 | Gatwe Village | 0 17'55"N | 38 06'35"E | 109/1 | 820 | 40 | 04/03/88 | 35 | 785 | 21.2 | 798.8 | 6.60 | - | - | Yes | Operational |
| C7854 | Kinanduba | 0 18'30"N | 38 07'07"E | 109/1 | 785 | 21 | 01/03/88 | 18 | 767 | 12.7 | 772.3 | 7.20 | - | - | Yes | Operational |
| C7855 | Kinanduba | 0 18'38"N | 38 10'13"E | 109/1 | 718 | 18 | 16/02/88 | 12 | 706 | 3.9 | 714.1 | 7.90 | - | - | Yes | Operational |
| C7856 | Murera Village | 0 17'32"N | 38 05'33"E | 109/1 | 830 | 35 | 10/03/88 | 35 | 795 | 23.3 | 806.7 | 6.60 | - | - | Yes | Operational |
| C7923 | Kiirua Dispensary | 0 07'22"N | 37 33'08"E | 108/3 | 2004 | 136 | 30/06/89 | 76 | 1928 | - | - | - | - | - | - | Abandoned |
| C7924 | Isiolo Airstrip | 0 20'18"N | 37 35'49"E | 108/1 | 1040 | 184 | 31/07/89 | 112 | 928 | 18 | 1022 | ? | - | - | - | Abandoned |
| C7925 | Near Ngare Mara River | 0 23'35"N | 37 40'06"E | 108/1 | 1025 | 48 | 26/10/89 | 28 | 997 | 19 | 1006 | >25 | - | Yes | Yes | Not in use |
| C7926 | Near Bule Shime River | 0 25'57"N | 37 45'55"E | 108/2 | 1057 | 138 | 25/08/89 | 52 | 1005 | 41 | 1016 | >100 | - | Yes | Yes | Not in use |
| C7927 | Near `78 Barracks | 0 21'42"N | 37 36'39"E | 108/1 | 1080 | 78 | 25/09/89 | 22 | 1058 | 15 | 1065 | >30 | - | Yes | Yes | Not in use |
| C7928 | Kiirua | 0 07'50"N | 37 33'58"E | 108/3 | 1951 | 200 | 17/01/89 | - | - | - | - | - | - | - | - | Dry Hole |
| C8327 | Kibirichia | 0 06'15"N | 37 30'29"E | 108/3 | 2332 | 238.7 | 18/06/89 | - | - | - | - | - | - | - | - | Abandoned |
| C8919 | Nkararu | 0 07'35"S | 37 56'11"E | 122/2 | 674 | 30 | 08/08/89 | 12&16 | 658 | 7.5 | 666.5 | 2.20 | - | - | Yes | Not in use |
| C8920 | Nkururuni | 0 10'00"S | 37 53'19"E | 122/2 | 686 | 48 | 22/08/89 | 12 | 674 | 6.1 | 679.9 | 0.48 | - | - | Yes | Not in use |
| C8921 | Ntithini | 0 12'04"S | 37 58'06"E | 122/2 | 564 | 28 | 30/08/89 | - | - | - | - | - | - | - | - | Dry Hole |
| C8922 | Makomango Pri. School | 0 12'52"S | 37 58'35"E | 122/2 | 541 | 42 | 16/09/89 | 36 | 505 | 23.5 | 517.5 | 0.10 | - | - | - | Not in use |
| C8923 | Chiokariga (SIDA) Camp | 0 16'44"S | 37 54'55"E | 122/4 | 770 | 57 | 09/10/89 | 40 | 730 | 8.4 | 761.6 | 1.30 | - | - | - | Not in use |
| C8924 | Chiokariga | 0 16'33"S | 37 54'55"E | 122/4 | 777 | 40 | 13/10/89 | - | - | - | - | - | - | - | - | Dry Hole |
| C8925 | Ng'onya | 0 05'57"S | 37 56'50"E | 122/2 | 671 | 42 | 18/10/89 | 21-24 | 650 | 11 | 660 | ? | - | - | - | Not in use |
| C8926 | Kibunga (No.2) | 0 04'05"S | 37 55'29"E | 122/2 | 732 | 48 | 28/11/89 | 9-10 | 723 | 4.5 | 727.5 | ? | - | - | - | Not in use |
| C8927 | Ransa Pri. School | 0 05'22"S | 37 54'06"E | 122/2 | 747 | 18.5 | 16/12/89 | 6 | 741 | 1.5 | 745.5 | ? | - | - | - | Not in use |
| C8928 | Kiagu | 0 03'34"S | 37 54'29"E | 122/2 | 747 | 42 | 10/01/89 | 12 | 735 | 8.5 | 738.5 | ? | - | - | - | Not in use |
| C8929 | Gakauni Pri. School | 0 03'08"S | 38 04'44"E | 123/1 | 600 | 30 | 22/01/90 | 18 | 582 | 8.5 | 591.5 | 9.50 | - | - | - | Not in use |
| C8974 | Ruiri Coffee Factory | 0 09'19"N | 37 39'12"E | 108/3 | 1501 | 102 | 27/11/89 | 87 | 1414 | 33.3 | 1467.7 | >10 | - | Yes | Yes | Not in use |

# Appendix 5.2

## List of Springs

## Appendix 5.2

| SP. No | NAME OF SPRING | LOCATION | MAP SHEET NO 1:50.000 | CO-ORDINATES north o ' '' | CO-ORDINATES east o ' '' | ALTITUDE m | YIELD l/s | YIELD M^3/HR | QUALITY taste | E.C. nS/cm | T oC | pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Micii mikuru | | 108/4 | | | | 76.19 | 274.284 | fresh | 150 | 16.5 | |
| 2 | Micii mikuru | | 108/4 | | | | | | fresh | 62 | 17 | |
| 3 | Ruweru 1 | | 108/3 | 0 0 30 | 37 33 10 | 2140 | 41.24 | 148.464 | fresh | 50 | 15 | |
| 4 | Ruweru 2 | | 108/3 | 0 0 35 | 37 33 10 | 2140 | incl above | incl above | fresh | 27 | 14 | |
| 5 | Mukundukundu | Ntima | 108/3 | 0 2 30 | 37 36 40 | 1840 | 163.88 | 589.968 | fresh | 105 | 20 | |
| 6 | Mukundukundu | Ntima | 108/3 | 0 2 35 | 37 36 40 | 1845 | incl above | incl above | fresh | 100 | 20.8 | |
| 7 | Mukundukundu | Ntima | 108/3 | 0 2 40 | 37 36 40 | 1850 | incl above | incl above | fresh | 120 | 19 | |
| 8 | Kathima | Abathuguchi | 108/3 | 0 2 10 | 37 36 40 | 1900 | 0.80 | 2.880 | fresh | 100 | 19 | |
| 9 | Kathita munyi | Abathuguchi | 108/3 | 0 1 55 | 37 35 0 | 2140 | 12.80 | 46.080 | fresh | 63 | 20.1 | |
| 10 | Kathita River | Abathuguchi | 108/3 | 0 1 50 | 37 35 0 | 1930 | | | fresh | 66 | 18.5 | |
| 11 | Kathima ka Mwendantu | Ntima | 108/3 | 0 3 0 | 37 38 40 | 1501 | 19.28 | 69.408 | fresh | 110 | 22 | |
| 12 | | Mt Kenya forest | 108/3 | 0 2 30 | 37 33 30 | 2400 | ~1 | ~1 | fresh | 40 | 15.5 | |
| 13 | Ruji rwa ngombe | MtKenya forest | 108/3 | 0 2 40 | 37 33 0 | 1980 | 0.80 | 2.880 | fresh | 72 | 14.5 | |
| 14 | Murutu | Abathuguchi | 108/3 | 0 0 25 | 37 34 0 | 1920 | 2.40 | 8.640 | fresh | 100 | 16.5 | |
| 15 | Githimakia ntegi | Abathuguchi | 108/3 | 0 0 10 | 37 33 0 | 2010 | 0.20 | 0.720 | fresh | 46 | 18 | |
| 16 | Karumanthi 1 | Nkwene | 108/3 | 0 0 5 | 37 33 0 | 1720 | 50.00 | 180.000 | fresh | 65 | 17.5 | |
| 17 | Karumanthi 2 | Nkwene | 108/3 | 0 0 0 | 37 33 5 | 1720 | 37.50 | 135.000 | fresh | 55 | 23 | |
| 18 | Murinya | Abathuguchi | 122/1 | 0 0 15 | 37 33 45 | 1980 | 3.19 | 11.484 | fresh | 46 | 18.5 | 6.03 |
| 19 | Mariara | Abathuguchi | 122/1 | 0 0 30 | 37 32 0 | 2340 | 250.00 | 900.000 | fresh | 90 | 19 | 7.8 |
| 20 | Gikoromone | Abathuguchi | 122/1 | 0 0 38 | 37 32 45 | >2300 | 102.47 | 368.892 | fresh | 100 | 15.5 | 8.2 |
| 21 | Kanyoo | Abathuguchi | 122/1 | 0 0 50 | 37 34 0 | 2200 | 8.63 | 31.068 | fresh | 80 | 18 | 7.8 |
| 22 | Kanthungu | Abathuguchi | 122/1 | 0 1 10 | 37 34 30 | 1900 | 64.35 | 231.660 | fresh | 105 | 18.5 | 7.3 |
| 23 | Kirathuku | U.Abathuguchi | 122/1 | 0 1 35 | 37 33 50 | 1980 | 34.31 | 123.516 | fresh | 90 | 14.5 | 6.41 |
| 24 | Kathima ka Muitari | Abathuguchi | 122/1 | 0 1 55 | 37 34 10 | 1980 | incl above | incl above | fresh | 90 | 14.5 | 6.41 |
| 25 | Ciomati | U.Abathuguchi | 122/1 | 0 1 40 | 37 34 0 | 2060 | 4.99 | 17.964 | fresh | 92 | 15.5 | 6.6 |
| 26 | | Nkwene/Abath. | 122/1 | 0 2 0 | 37 33 50 | 2160 | none | none | fresh | 90 | 15 | 6.53 |
| 27 | Kagurama | Nkwene | 122/1 | 0 2 40 | 37 36 0 | 1730 | 2.79 | 10.044 | fresh | 39 | 20 | 7.1 |
| 28 | Karoro 1 | Nkwene | 122/1 | 0 2 40 | 37 35 55 | 1830 | incl above | incl above | fresh | 39 | 20 | 7.1 |
| 29 | Karoro 2 | Nkwene | 122/1 | 0 2 48 | 37 36 0 | 1830 | ~2 | ~2 | fresh | 39 | 20 | 7.1 |
| 30 | Kathiru | Nkwene | 122/1 | 0 2 48 | 37 35 55 | 1840 | 1.00 | 3.600 | fresh | 39 | 20 | 7.2 |
| 31 | Kagurama 2 | Nkwene | 122/1 | 0 2 40 | 37 36 15 | 1820 | 1.70 | 6.120 | fresh | 38 | 22 | 6.9 |
| 32 | Gitauga | Nkwene | 122/1 | 0 2 25 | 37 35 27 | 1920 | 23.59 | 84.924 | fresh | 69 | 16.5 | 5.98 |
| 33 | Kanthungu 2 | Nkwene | 122/1 | 0 2 18 | 37 35 55 | 1860 | 10.14 | 36.504 | fresh | 56 | 22.5 | 7.4 |
| 34 | Kanthungu 3 | Nkwene | 122/1 | 0 2 15 | 37 35 55 | 1860 | 5.26 | 18.936 | fresh | 50 | 21 | 7.4 |
| 35 | Cierende | Nkwene | 122/1 | 0 2 30 | 37 35 55 | 1860 | 1.00 | 3.600 | fresh | 44 | 22 | 6.8 |
| 36 | Kamare | Nkwene | 122/1 | 0 1 57 | 37 35 5 | 1950 | 1.00 | 3.600 | fresh | 39 | 18.5 | 6.8 |
| 37 | Kamare 2 | Nkwene | 122/1 | 0 1 55 | 37 35 0 | 1950 | 1.00 | 3.600 | fresh | 40 | 21.5 | 6.6 |
| 38 | Kathambara | Nkwene | 122/1 | 0 2 50 | 37 34 0 | 1900 | 35.40 | 127.440 | fresh | 78 | 15.5 | 6.94 |
| 39 | Kathambara 2 | Nkwene | 122/1 | 0 2 50 | 37 33 50 | 1920 | incl above | incl above | fresh | 78 | 15.5 | 7.51 |
| 40 | | Nkwene | 122/1 | 0 3 0 | 37 34 10 | 1900 | incl.below | incl.below | fresh | 90 | 14 | 6.64 |
| 41 | Kathambara 3 | Nkwene | 122/1 | 0 3 0 | 37 34 20 | 1900 | 40.48 | 145.728 | fresh | 91 | 14 | 6.45 |
| 42 | Marimba | Nkwene | 122/1 | 0 3 20 | 37 34 0 | 1980 | 350.00 | 1260.000 | fresh | 94 | 13.5 | 6.45 |
| 43 | Gaciongo | Nkwene | 122/1 | 0 3 45 | 37 34 15 | 1950 | 2.00 | 7.200 | fresh | 26 | 18 | 6.89 |
| 44 | Kigwandegwa | Nkwene | 122/1 | 0 4 10 | 37 33 10 | 2240 | 1.00 | 3.600 | fresh | 78 | 16.5 | 6.32 |
| 45 | above trib. | Nkwene | 122/1 | 0 4 10 | 37 33 20 | 2240 | 3.00 | 10.800 | fresh | 78 | 16.5 | 6.32 |
| 46 | | Nkwene | 122/1 | 0 3 45 | 37 34 45 | 2040 | 4.00 | 14.400 | fresh | 94 | 14 | 6.75 |
| 47 | Kagira | Nkwene | 122/1 | 0 4 30 | 37 34 5 | 2120 | non | non | fresh | | | |
| 48 | Ithima thambara | Abogeta | 122/1 | 0 5 5 | 37 33 30 | 2200 | incl.below | incl.below | fresh | 46 | 14 | 7.58 |
| 49 | Ithima thambara 2 | Abogeta | 122/1 | 0 5 10 | 37 33 30 | 2210 | 17.91 | 64.476 | fresh | 46 | 14 | 7.58 |
| 50 | Mutigwa | Abogeta | 122/1 | 0 6 0 | 37 37 0 | 1700 | 3.31 | 11.916 | fresh | 21.5 | 21.5 | 6.46 |

## Appendix 5.2

| SP. No | NAME OF SPRING | LOCATION | MAP SHEET NO 1:50.000 | CO-ORDINATES north o ' '' | CO-ORDINATES east o ' '' | ALTITUDE m | YIELD l/s | YIELD M^3/HR | QUALITY taste | E.C. nS/cm | T oC | pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 51 | Ntora | Abogeta | 122/1 | 0 5 50 | 37 37 30 | 1700 | incl above | incl above | fresh | 24 | 19.5 | 5.1 |
| 52 | Kangereini | Abogeta | 122/1 | 0 6 5 | 37 37 5 | 1710 | 1.04 | 3.744 | fresh | 60 | 20 | 6.33 |
| 53 | Mugumene | Abogeta | 122/1 | 0 6 5 | 37 36 50 | 1820 | 0.10 | 0.360 | fresh | 24 | 20.5 | 7.04 |
| 54 | Nathajwea | Abogeta | 122/1 | 0 6 30 | 37 36 20 | 1840 | 3.97 | 14.292 | fresh | 22 | 20 | 5.65 |
| 55 | Gathachu | Abogeta | 122/1 | 0 6 35 | 37 36 20 | 1840 | incl above | incl above | fresh | 11 | 21.5 | 6.28 |
| 56 | Kagendampara | Abogeta | 122/1 | 0 6 10 | 37 35 45 | 1890 | 11.11 | 39.996 | fresh | 18.5 | 20.5 | 6.6 |
| 57 | Kagendampara 2 | Abogeta | 122/1 | 0 6 5 | 37 35 45 | 1890 | incl above | incl above | fresh | 16.5 | 22 | 6.68 |
| 58 | | Abogeta | 122/1 | 0 6 0 | 37 36 50 | 1700 | 1.25 | 4.500 | fresh | 22 | 21 | 6.98 |
| 59 | Rumuiko | Abogeta | 122/1 | 0 6 50 | 37 33 45 | 2130 | 8.96 | 32.256 | fresh | 60 | 15 | 7.3 |
| 60 | Iraru (river) | Abogeta | 122/1 | 0 6 30 | 37 32 30 | 2000 | 510.00 | 1836.000 | fresh | 48 | 12.5 | 7.5 |
| 61 | Karianjage (river) | Abogeta | 122/1 | 0 8 30 | 37 32 5 | 2000 | 510.00 | 1836.000 | fresh | 40 | 15 | |
| 62 | M'thuria | Miitini | 122/1 | 0 8 40 | 37 34 30 | 1980 | 1.46 | 5.256 | fresh | 16 | 19.5 | |
| 63 | Gitiawene | Miitini | 122/1 | 0 8 50 | 37 34 50 | 2000 | 0.20 | 0.720 | fresh | 14 | 19 | |
| 64 | Kagwa Ndugu | Mikumbuni | 122/1 | 0 4 20 | 37 38 40 | 1550 | 0.99 | 3.568 | fresh | 76 | 22 | |
| 65 | Kathambathina | Igoki | 122/1 | 0 4 40 | 37 38 30 | 1550 | 0.89 | 3.204 | fresh | 165 | 23 | |
| 66 | Thagara | Igoki | 122/1 | 0 4 50 | 37 38 45 | 1550 | 2.50 | 9.000 | fresh | 370 | 23 | |
| 67 | Uja | Igoki | 122/1 | 0 5 50 | 37 38 30 | 1570 | 5.67 | 20.412 | fresh | 50 | 21 | |
| 68 | Kethima | Abogeta | 122/1 | 0 6 0 | 37 38 5 | 1630 | 0.57 | 2.039 | fresh | 24 | 21.5 | |
| 69 | Kathima Kanyaga | Abogeta | 122/1 | 0 6 0 | 37 38 50 | 1620 | 0.33 | 1.188 | fresh | 26 | 23 | |
| 70 | Kombokie | TOWN | 108/3 | 0 3 50 | 37 38 30 | 1600 | 176.10 | 633.960 | fresh | 180 | 17 | 7.02 |
| 71 | Kithimene | Abogeta | 122/1 | 0 7 5 | 37 38 10 | 1620 | 1.81 | 6.516 | fresh | 12.5 | 21 | 5.05 |
| 72 | Gakuu | Abogeta | 122/1 | 0 6 55 | 37 38 30 | 1600 | 1.81 | 6.516 | fresh | 28 | 23 | |
| 73 | Muuro Cionkere | Abogeta | 122/1 | 0 6 0 | 37 38 0 | 1600 | 0.30 | 1.080 | fresh | 18 | 15 | 7.3 |
| 74 | Kerambi | Abogeta | 122/1 | 0 7 0 | 37 38 0 | 1600 | 0.60 | 2.160 | fresh | 14 | 18 | 5.4 |
| 75 | Kanywithirio | Abogeta | 122/1 | 0 7 5 | 37 37 30 | 1590 | 1.12 | 4.032 | fresh | 13 | 21 | 6.36 |
| 76 | Wanja | Abogeta | 122/1 | 0 6 50 | 37 37 10 | 1640 | 0.45 | 1.620 | fresh | 26 | 21 | 6.77 |
| 77 | Gianchege | Abogeta | 122/1 | 0 6 45 | 37 37 0 | 1680 | | | fresh | 28 | 21 | 6.48 |
| 78 | Mworia | Abogeta | 122/1 | 0 6 45 | 37 36 50 | 1660 | 42.69 | 153.684 | fresh | 84 | 18 | 7.5 |
| 79 | Karumathi 3 | Abogeta | 122/1 | 0 8 0 | 37 36 55 | 1640 | 1.77 | 6.372 | fresh | 18 | 18 | 6.7 |
| 80 | Mtabatia | Abogeta | 122/1 | 0 8 10 | 37 36 55 | 1640 | 0.48 | 1.728 | fresh | 16 | 18 | 6.72 |
| 81 | Gituithira | Abogeta | 122/1 | 0 8 0 | 37 37 30 | 1640 | 0.33 | 1.199 | fresh | 40 | 16 | 6.57 |
| 82 | Iriri | Igoji | 122/1 | 0 10 50 | 37 39 0 | 1440 | 0.50 | 1.800 | fresh | 14 | 22 | 6.37 |
| 83 | Nai tributary | Miitini | 122/1 | 0 10 30 | 37 39 0 | 1440 | 1.15 | 4.140 | fresh | 18 | 21 | 5.88 |
| 84 | Nai | Miitini | 122/1 | 0 10 20 | 37 39 0 | 1440 | 3.81 | 13.716 | fresh | 16 | 21 | 5.52 |
| 85 | Gakanga | Miitini | 122/1 | 0 10 10 | 37 39 0 | 1480 | 1.92 | 6.912 | fresh | 18 | 20 | 5.7 |
| 86 | Kanambi | Miitini | 122/1 | 0 10 30 | 37 38 10 | 1500 | 4.37 | 15.732 | fresh | 16 | 21 | 6.52 |
| 87 | Kathambadaga | miitini | 122/1 | 0 10 40 | 37 38 30 | 1510 | 0.56 | 2.016 | fresh | 14 | 16 | 5.41 |
| 88 | Kashigiro | Miitini | 122/1 | 0 10 40 | 37 38 10 | 1530 | 2.14 | 7.704 | fresh | 12 | 21 | 5.48 |
| 89 | Kathanje | Miitini | 122/1 | 0 10 40 | 37 37 35 | 1580 | 1.61 | 5.796 | fresh | 20 | 21 | 5.99 |
| 90 | Gacani | Miitini | 122/1 | 0 9 35 | 37 37 20 | 1670 | 1.22 | 4.406 | fresh | 13 | 19 | 5.61 |
| 91 | Thagu/Kauronchoro | Miitini | 122/1 | 0 9 30 | 37 37 15 | 1690 | 0.43 | 1.537 | fresh | 21 | 18 | 6.8 |
| 92 | Kairune | Miitini | 122/1 | 0 9 0 | 37 37 50 | 1710 | 0.34 | 1.210 | fresh | 15 | 21 | 6.8 |
| 93 | Nyweri | Igoji | 122/1 | 0 10 40 | 37 37 0 | 1640 | 1.56 | 5.616 | fresh | 20 | 18 | 6.19 |
| 94 | Giacibi | Miitini | 122/1 | 0 10 5 | 37 36 0 | 1770 | 0.95 | 3.425 | fresh | 26 | 22 | 6.65 |
| 95 | Mwongoki | Miitini | 122/1 | 0 9 35 | 37 35 45 | 1880 | 0.73 | 2.628 | fresh | 26 | 18 | 6.64 |
| 96 | Igokini | Miitini | 122/1 | 0 9 35 | 37 36 0 | 1840 | 4.57 | 16.452 | fresh | 34 | 18 | 7.4 |
| 97 | Thinkwi | Miitini | 122/1 | 0 9 20 | 37 36 0 | 1840 | 2.86 | 10.296 | fresh | 30 | 18 | 7.34 |
| 98 | Karoko | Miitini | 122/1 | 0 8 40 | 37 36 50 | 1820 | 0.07 | 0.241 | fresh | 10 | 20 | 5.74 |
| 99 | Kamuuro Kamugai | Miitini | 122/1 | 0 9 0 | 37 36 5 | 1780 | 0.20 | 0.720 | fresh | 12 | 22 | 6.5 |
| 100 | Kamutanganga | Miitini | 122/1 | 0 8 40 | 37 36 30 | 1790 | 0.10 | 0.360 | fresh | 32 | 20 | 6.68 |

## Appendix 5.2

| SP. No | NAME OF SPRING | LOCATION | MAP SHEET NO 1:50.000 | CO-ORDINATES north o ' '' | CO-ORDINATES east o ' '' | ALTITUDE m | YIELD l/s | YIELD M^3/HR | QUALITY taste | E.C. nS/cm | T oC | pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 101 | Thagara 2 | Miitini | 122/1 | 0 8 40 | 37 36 0 | 1760 | 0.41 | 1.476 | fresh | 20 | 25 | 6.69 |
| 102 | Kirerema 1 | Miitini | 122/1 | 0 8 45 | 37 35 30 | 1800 | 0.48 | 1.728 | fresh | 24 | 21.5 | 6.97 |
| 103 | Kirerema 2 | Miitini | 122/1 | 0 9 0 | 37 35 25 | 1830 | 0.38 | 1.368 | fresh | 18 | 19 | 6.69 |
| 104 | Mukaragatine | Miitini | 122/1 | 0 9 0 | 37 35 20 | 1850 | 1.86 | 6.696 | fresh | 24 | 18 | 6.86 |
| 105 | | Miitini | 122/1 | 0 9 5 | 37 35 20 | 1900 | 0.48 | 1.728 | fresh | 20 | 17 | 6.36 |
| 106 | Irigu | Miitini | 122/1 | 0 9 15 | 37 35 25 | 1890 | 4.70 | 16.920 | fresh | 20 | 21.5 | 6.29 |
| 107 | Karuma | Abogeta | 122/1 | 0 7 0 | 37 35 55 | 1860 | | | fresh | 12 | 19 | 5.53 |
| 108 | Kiburu | Abogeta | 122/1 | 0 7 10 | 37 35 10 | 1980 | 2.21 | 7.956 | fresh | 20 | 16 | 6.41 |
| 109 | Muthanthara | Abogeta | 122/1 | 0 8 0 | 37 34 30 | 1985 | 63.04 | 226.944 | fresh | 56 | 17 | 7.71 |
| 110 | Mangoro | Abogeta | 122/1 | 0 7 55 | 37 34 40 | 1980 | 1.76 | 6.336 | fresh | 20 | 19 | 6.75 |
| 111 | Kirunji Kieru | Abogeta | 122/1 | 0 7 35 | 37 35 5 | 1780 | 8.69 | 31.284 | fresh | 56 | 22 | 7.52 |
| 112 | Mutonga river | Abogeta | 122/1 | 0 10 30 | 37 36 40 | | 1360.00 | 4896.000 | fresh | 78 | 17 | 7.2 |
| 113 | Konyo | Igoji | 122/1 | 0 11 0 | 37 35 55 | 1720 | 3.15 | 11.340 | fresh | 30 | 23 | 7.31 |
| 114 | Mbololo | Igoji | 122/1 | 0 11 5 | 37 35 55 | 1720 | 4.99 | 17.964 | fresh | 30 | 23 | 7.2 |
| 115 | Kabaranya | Igoji | 122/1 | 0 11 30 | 37 36 40 | 1680 | 0.26 | 0.936 | fresh | 19 | 21.5 | 7.31 |
| 116 | Mara Nene (river) | Igoji | 122/1 | 0 10 55 | 37 34 55 | | 220.00 | 792.000 | fresh | 98 | 22 | 8.18 |
| 117 | MartaManyi 1 (river) | Mwimbi | 122/1 | 0 11 45 | 37 35 10 | | 170.00 | 612.000 | fresh | 56 | 21.5 | 7.81 |
| 118 | Gatenderu 1 | Mwimbi | 122/1 | 0 12 40 | 37 37 25 | 1580 | 3.84 | 13.824 | fresh | 40 | 24 | 6.36 |
| 119 | Gatenderu 2 | Mwimbi | 122/1 | 0 14 0 | 37 37 0 | | 20.00 | 72.000 | fresh | 24 | 24 | 6.6 |
| 120 | Kamugwongo | Igoji | 122/1 | 0 11 20 | 37 38 30 | 1500-1 | 7.32 | 26.352 | fresh | 14 | 22 | 7.1 |
| 121 | | Igoji | 122/1 | 0 13 0 | 37 38 40 | 1580 | 3.69 | 13.284 | fresh | 44 | 25 | 6.96 |
| 122 | Muthanga | Mwimbi | 122/1 | 0 13 50 | 37 37 55 | 1560 | 16.32 | 58.752 | fresh | 26 | 24 | 6.86 |
| 123 | Kirurumwe | Mwimbi | 122/1 | 0 13 40 | 37 37 30 | 1550 | 34.73 | 125.028 | fresh | 24 | 20 | 6.62 |
| 124 | Kamara | Mwimbi | 122/1 | 0 14 10 | 37 36 20 | 1660 | 162.43 | 584.748 | fresh | 24 | 20 | 6.68 |
| 125 | Kiriri | Mwimbi | 122/1 | 0 14 25 | 37 37 30 | 1570 | 64.80 | 233.280 | fresh | 22 | 21 | 6.49 |
| 126 | Ganga | Kiera | 122/1 | 0 14 45 | 37 40 0 | 1380 | 12.74 | 45.864 | fresh | 24 | 23 | 6.12 |
| 127 | Kathina | Kiera | 122/3 | 0 15 10 | 37 39 40 | 1480 | 34.73 | 125.028 | fresh | 16 | 26.5 | 5.64 |
| 128 | Igogwa | Kiera | 122/3 | 0 15 10 | 37 39 40 | 1540 | incl above | incl above | fresh | 12 | 24.5 | 6.52 |
| 129 | Kamunyeri | Kiera | 122/3 | 0 15 10 | 37 39 40 | 1435 | 34.36 | 123.696 | fresh | 18 | 27 | 6.32 |
| 130 | South Mara (river) | Kiera | 122/3 | 0 14 40 | 37 36 5 | | 720.00 | 2592.000 | fresh | 68 | 22 | 8.19 |
| 131 | South Mara (river) | Mwimbi | 122/1 | 0 16 0 | 37 40 0 | | 500.00 | 1800.000 | fresh | 100 | 18 | 8.18 |
| 132 | Karigi | Karingani | 122/3 | 0 16 30 | 37 39 45 | 1403 | 12.37 | 44.532 | fresh | 44 | 23.5 | 7.16 |
| 133 | Nithi (river) | Karingani | 122/3 | 0 17 5 | 37 39 40 | | 890.00 | 3204.000 | fresh | 80 | 20 | 7.18 |
| 134 | Ntungu (river) | Kari./Muthambi | 122/3 | 0 18 20 | 37 39 0 | | 470.00 | 1692.000 | fresh | 42 | 21 | 6.91 |
| 135 | Ruguti (river) | Kari./Muthambi | 122/3 | 0 21 40 | 37 37 0 | | 1520.00 | 5472.000 | fresh | 60 | 19 | 8.02 |
| 136 | Thuchi (river) | Mugumoni | 122/3 | 0 22 50 | 37 37 0 | | 1110.00 | 3996.000 | fresh | 52 | 20 | 7.76 |
| 137 | Gatamathina | Chogoria | 122/1 | 0 14 10 | 37 36 5 | 1820-2 | 0.18 | 0.648 | fresh | 79 | 17.5 | |
| 138 | Kinji/kamugarie | Chogoria | 122/1 | 0 14 55 | 37 36 0 | 1800-2 | 0.50 | 1.814 | fresh | | | |
| 139 | Mwithanga | Chogoria | 122/3 | 0 15 10 | 37 36 5 | 2100-2 | 0.14 | 0.518 | fresh | 28 | 19 | |
| 140 | Nduka | Chogoria | 122/3 | 0 16 10 | 37 37 0 | 1907 | 0.07 | 0.259 | fresh | 19 | 21 | |
| 141 | Kandumi | Muthambi | 122/3 | 0 16 15 | 37 38 40 | 1680 | 1.32 | 4.752 | fresh | 30 | 24 | |
| 142 | Kiandume | Muthambi | 122/3 | 0 16 10 | 37 38 45 | 1785 | 0.04 | 0.130 | fresh | 25.2 | 25 | |
| 143 | Kitheru | Muthambi | 122/3 | 0 17 55 | 37 39 25 | 1600-1 | 0.11 | 0.389 | fresh | 38.5 | 22 | |
| 144 | Kurugucha | Karingani | 122/3 | 0 19 30 | 37 39 30 | 1645 | 0.04 | 0.130 | fresh | 41.8 | 23.5 | |
| 145 | Chikuu | Karingani | 122/3 | 0 19 25 | 37 42 0 | 1610 | 0.04 | 0.130 | fresh | 48.4 | 28 | |
| 146 | Naka | Karingani | 122/3 | 0 20 5 | 37 38 30 | 1750-1 | 1.44 | 5.184 | fresh | 48.4 | 27.5 | |
| 147 | Kiogo | Ntima | 108/3 | 0 3 40 | 37 39 0 | 1890 | 0.04 | 0.130 | fresh | 159 | 20 | 7.4 |
| 148 | Kunugu | Ntima | 108/3 | 0 3 45 | 37 39 20 | 1890 | 0.01 | 0.052 | fresh | 158 | 20 | 7.8 |
| 149 | Gachioge | Ntima | 108/3 | 0 3 50 | 37 39 20 | 1750 | 1.47 | 5.292 | fresh | 106 | 25 | 6.72 |
| 150 | Kanthokia | Ntima | 108/3 | 0 3 55 | 37 39 50 | 1715 | 0.01 | 0.026 | fresh | 159 | 20 | 6.93 |

## Appendix 5.2

| SP. No | NAME OF SPRING | LOCATION | MAP SHEET NO 1:50.000 | CO-ORDINATES north o ' '' | CO-ORDINATES east o ' '' | ALTITUDE m | YIELD l/s | YIELD M^3/HR | QUALITY taste | E.C. nS/cm | T oC | pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 151 | Karurumo | Nyaki | 108/3 | 0 4 45 | 37 40 0 | 1628 | 0.01 | 0.052 | fresh | 150. | 22 | 7. |
| 152 | Igeto | Nyaki | 108/3 | 0 6 0 | 37 40 0 | 1645 | 0.04 | 0.130 | fresh | 325 | 25 | 7.8 |
| 153 | | Ntima | 108/3 | 0 3 55 | 37 37 55 | 1942 | 0.13 | 0.468 | fresh | 173. | 20 | |
| 154 | Kithamara | Muthambi | 122/3 | 0 16 12 | 37 40 0 | 1387 | 1.14 | 4.114 | fresh | 23 | 23 | |
| 155 | Kamukua | Muthambi | 122/3 | 0 16 10 | 37 41 0 | 1320 | 1.33 | 4.800 | fresh | 44 | 22 | 5.7 |
| 156 | Kanjiamukui | Muthambi | 122/3 | 0 16 15 | 37 41 5 | 1350 | 1.00 | 3.600 | fresh | 46 | 23.5 | 5.8 |
| 157 | Mbugini | Muthambi | 122/3 | 0 16 40 | 37 40 30 | 1330 | 1.00 | 3.600 | fresh | 35 | 23.5 | |
| 158 | Kinoro | Muthambi | 122/3 | 0 15 30 | 37 38 0 | | 12.00 | 43.200 | fresh | 18 | 19 | 6.6 |
| 159 | Kakendi | Muthambi | 122/3 | 0 15 35 | 37 36 30 | 1610 | incl above | incl above | fresh | 16 | 21 | 6.3 |
| 160 | Kaadi | Muthambi | 122/3 | 0 15 40 | 37 36 45 | 1580 | incl above | incl above | fresh | 16 | 20 | 6.1 |
| 161 | Muraga | Muthambi | 122/3 | 0 15 45 | 37 35 5 | 1630 | incl above | incl above | fresh | 16 | 18.5 | 6.5 |
| 162 | Ingirita | Muthambi | 122/3 | 0 16 20 | 37 37 30 | 1560 | 0.21 | 0.752 | fresh | 18 | 20.5 | 5.4 |
| 163 | Karimi | Muthambi | 122/3 | 0 16 20 | 37 37 15 | 1550 | 0.21 | 0.752 | fresh | 24 | 19.5 | 6.02 |
| 164 | Kathima ka Ben | Muthambi | 122/3 | 0 15 45 | 37 38 15 | 1460 | 0.29 | 1.059 | fresh | 24 | 23 | 5.22 |
| 165 | Kithima kia Kangethe | Muthambi | 122/3 | 0 15 40 | 37 38 15 | 1470 | 1.00 | 3.600 | fresh | 19 | 24.5 | 6.23 |
| 166 | | Muthambi | 122/3 | 0 15 45 | 37 38 10 | 1480 | 0.50 | 1.800 | fresh | 24 | 24.5 | 6.05 |
| 167 | Kiega | Muthambi | 122/3 | 0 15 25 | 37 39 40 | 1400 | 9.60 | 34.560 | fresh | 17 | 22.5 | 5.92 |
| 168 | Kenywa | Muthambi | 122/3 | 0 17 25 | 37 39 5 | 1417 | 3.00 | 10.800 | fresh | 32 | 21 | 6.11 |
| 169 | Kithambo | Muthambi | 122/3 | 0 17 25 | 37 38 5 | 1433 | 1.00 | 3.600 | fresh | 26 | 22 | 5.06 |
| 170 | Kathuri | Muthambi | 122/3 | 0 17 25 | 37 38 30 | 1433 | 0.50 | 1.800 | fresh | 26 | 28 | 5.09 |
| 171 | Kamaronda | Muthambi | 122/3 | 0 17 30 | 37 37 30 | 1520 | 1.25 | 4.500 | fresh | 24 | 21 | 6.02 |
| 172 | Mitheru | Muthambi | 122/3 | 0 17 40 | 37 37 15 | 1560 | 0.27 | 0.960 | fresh | 24 | 21 | 6.3 |
| 173 | Kiimbu | Muthambi | 122/3 | 0 17 15 | 37 37 20 | 1560 | 0.27 | 0.960 | fresh | 22 | 22 | 5.16 |
| 174 | Bwee | Muthambi | 122/3 | 0 17 30 | 37 36 40 | 1580 | 21.30 | 76.680 | fresh | 26 | 18 | 6.39 |
| 175 | Kabwe | Muthambi | 122/3 | 0 17 30 | 37 36 40 | 1590 | incl above | incl above | fresh | 22 | 18.5 | 5.31 |
| 176 | Ngurumbacii | Karingani | 122/3 | 0 17 35 | 37 36 20 | 1585 | 6.00 | 21.600 | fresh | 33 | 24 | 6.61 |
| 177 | Gatogo A | Karingani | 122/3 | 0 19 15 | 37 38 0 | 1478 | 7.00 | 25.200 | fresh | 28 | 20 | 5.77 |
| 178 | Gatogo B | Karingani | 122/3 | 0 19 25 | 37 37 45 | 1448 | incl above | incl above | fresh | 28 | 20 | 5.77 |
| 179 | Kathima Ka Muchiri | Karingani | 122/3 | 0 19 0 | 37 38 0 | 1494 | incl below | incl below | fresh | 26 | 22 | 4.01 |
| 180 | Kaiginyo | Karingani | 122/3 | 0 19 0 | 37 37 45 | 1494 | 40.00 | 144.000 | fresh | 28 | 21 | 4.77 |
| 181 | Kamagogo | Karingani | 122/3 | 0 18 15 | 37 36 5 | 1576 | in 179 | in 179 | fresh | 31 | 18.5 | 5.43 |
| 182 | Kariani | Karingani | 122/3 | 0 18 30 | 37 36 50 | 1576 | in 179 | in 179 | fresh | 34 | 21 | 5.42 |
| 183 | Thamia | Karingani | 122/3 | 0 18 40 | 37 36 45 | 1768 | in 179 | in 179 | fresh | 27 | 18 | 6.3 |
| 184 | Kabwe 2 | Karingani | 122/3 | 0 19 0 | 37 36 30 | 1554 | in 179 | in 179 | fresh | 19 | 22.5 | 6.6 |
| 185 | Kandaa | Karingani | 122/3 | 0 19 5 | 37 36 35 | 1554 | in 179 | in 179 | fresh | 22 | 21.5 | 5.42 |
| 186 | Njwaita | Karingani | 122/3 | 0 19 45 | 37 36 10 | 1600 | 0.40 | 1.440 | fresh | 35 | 21 | 6 |
| 187 | Gankuri | Karingani | 122/3 | 0 20 0 | 37 36 15 | 1600 | 0.30 | 1.080 | fresh | 24 | 20 | 6.21 |
| 188 | Kanuku | Karingani | 122/3 | 0 21 10 | 37 37 15 | | 1.43 | 5.143 | fresh | 66 | 21.5 | 5.49 |
| 189 | Nkunu | Karingani | 122/3 | 0 21 5 | 37 36 30 | 1524 | 1.50 | 5.400 | fresh | 20 | 20 | |
| 190 | Nyiri | Karingani | 122/3 | 0 21 30 | 37 37 25 | 1494 | 0.70 | 2.520 | fresh | 52 | 21.5 | 5.64 |
| 191 | Irini | Karingani | 122/3 | 0 21 30 | 37 37 35 | 1494 | 3.40 | 12.240 | fresh | 34 | 22 | 5.56 |
| 192 | Gakuu | Karingani | 122/3 | 0 20 40 | 37 38 10 | 1478 | 2.40 | 8.640 | fresh | 41 | 21.5 | 5.6 |
| 193 | Kathira | Karingani | 122/3 | 0 20 35 | 37 38 40 | 1433 | 3.50 | 12.600 | fresh | 96 | 21.5 | 6.2 |
| 194 | Kaburuti | Karingani | 122/3 | 0 21 0 | 37 38 40 | 1463 | 1.50 | 5.400 | fresh | 20 | 22 | 5.47 |
| 195 | Kangati | Karingani | 122/3 | 0 20 45 | 37 36 50 | 1433 | 1.40 | 5.040 | fresh | 35 | 20.5 | 6.34 |
| 196 | Mucuni | Magumoni | 122/3 | 0 21 0 | 37 35 50 | 1554 | 3.90 | 14.040 | fresh | 40 | 20.5 | 6.04 |
| 197 | Mwirithi | Magumoni | 122/3 | 0 22 0 | 37 36 40 | 1676 | 50.80 | 182.880 | fresh | 32 | 17 | 7.01 |
| 198 | Gaichianjuri | Magumoni | 122/3 | 0 22 0 | 37 36 15 | 1494 | 2.20 | 7.920 | fresh | 35 | 21 | 6.15 |
| 199 | Gacangaga | Magumoni | 122/3 | 0 22 5 | 37 36 0 | 1494 | incl below | incl below | fresh | 38 | 20 | 6.94 |
| 200 | Kanthiuthuku | Magumoni | 122/3 | 0 22 15 | 37 36 5 | | 26.20 | 94.320 | fresh | 47 | 17.5 | 6.6 |

## Appendix 5.2

| SP. No | NAME OF SPRING | LOCATION | MAP SHEET NO 1:50.000 | CO-ORDINATES north o ' '' | CO-ORDINATES east o ' '' | ALTITUDE m | YIELD l/s | YIELD M^3/HR | QUALITY taste | E.C. nS/cm | T oC | pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 201 | Kangiria | Magumoni | 122/3 | 0 22 35 | 37 35 45 | 1494 | 6.00 | 21.600 | fresh | 27 | 21 | 6.72 |
| 202 | Gachoka | Magumoni | 122/3 | 0 21 50 | 37 36 45 | 1500 | 1.60 | 5.760 | fresh | 32 | 20.5 | 6 |
| 203 | Kamaranga | Magumoni | 122/3 | 0 22 15 | 37 37 10 | 1470 | 1.10 | 3.960 | fresh | 30 | 22.5 | 5.37 |
| 204 | Ndau | Magumoni | 122/3 | 0 22 30 | 37 37 50 | 1417 | 0.20 | 0.720 | fresh | 34 | 24 | 5.98 |
| 205 | Kithinu | Magumoni | 122/3 | 0 22 15 | 37 37 30 | 1463 | 1.60 | 5.760 | fresh | 38 | 21.5 | 6.14 |
| 206 | Ntuku | Magumoni | 122/3 | 0 21 30 | 37 38 0 | 1494 | 1.10 | 3.960 | fresh | 24 | 20.5 | 6.31 |
| 207 | Kanthuki | Magumoni | 122/3 | 0 22 5 | 37 38 25 | 1402 | 1.10 | 3.960 | fresh | 100 | 19 | 6.05 |
| 208 | Kanthata | Magumoni | 122/3 | 0 22 10 | 37 39 0 | 1402 | 1.40 | 5.040 | fresh | 36 | 22 | 5.58 |
| 209 | siiri | Magumoni | 122/3 | 0 23 0 | 37 40 0 | 1341 | non | non | fresh | 50 | 25 | 6.33 |
| 210 | siri | Magumoni | 122/3 | 0 23 30 | 37 41 15 | | 4.40 | 15.840 | fresh | 60 | 23.5 | 6.85 |
| 211 | kwamateri | Muthambi | 122/3 | 0 17 50 | 37 40 50 | 1280 | 6.60 | 23.760 | fresh | 39 | 19 | 7.32 |
| 212 | Kibunu | Muthambi | 122/3 | 0 17 35 | 37 40 40 | 1265 | incl above | incl above | fresh | 41 | 20 | 6.85 |
| 213 | Gathanji | Muthambi | 122/3 | 0 17 25 | 37 40 50 | 1265 | incl above | incl above | fresh | 62 | 20.5 | 6.86 |
| 214 | Mbweta | Karingani | 122/3 | 0 19 40 | 37 42 35 | 1143 | 0.35 | 1.263 | fresh | 60 | 20 | 7.22 |
| 215 | Kionyo | Karingani | 122/3 | 0 18 30 | 37 40 5 | 1326 | 0.08 | 0.300 | fresh | 32 | 21 | 6.7 |
| 216 | Nkinduri | Karingani | 122/3 | 0 19 0 | 37 40 40 | 1280 | 2.30 | 8.280 | fresh | 50 | 22 | 5.54 |
| 217 | Kitima Kia Nkara | Mwimbi | 122/3 | 0 13 30 | 37 40 5 | 1340 | 0.90 | 3.240 | fresh | 20 | 25 | 6.14 |
| 218 | Therera | Mwimbi | 122/3 | 0 13 40 | 37 39 10 | 1400 | 4.20 | 15.120 | fresh | 22 | 24.5 | 6.71 |
| 219 | Kamtu | Mwimbi | 122/3 | 0 13 45 | 37 40 15 | | 0.30 | 1.080 | fresh | 29 | 24 | 6.57 |
| 220 | Karidi | Mwimbi | 122/1 | 0 14 50 | 37 40 10 | 1360 | 0.70 | 2.520 | fresh | 26 | 19.5 | 6.24 |
| 221 | Urongo | Mwimbi | 122/1 | 0 14 45 | 37 37 10 | 1360 | 0.70 | 2.520 | fresh | 22 | 22 | 5.42 |
| 222 | Githima Kia Ndunguri | Mwimbi | 122/1 | 0 14 50 | 37 40 45 | 1340 | 0.90 | 3.240 | fresh | 26 | 20.5 | 6.33 |
| 223 | Kigogo | Mwimbi | 122/1 | 0 14 55 | 37 41 25 | 1300 | 1.30 | 4.680 | fresh | 29 | 22 | 6 |
| 224 | Gankima | Mwimbi | 122/3 | 0 15 30 | 37 41 40 | 1311 | 0.70 | 2.520 | fresh | 31 | 23.5 | 6.29 |
| 225 | Mariuko Maingi | Mwimbi | 122/1 | 0 15 15 | 37 41 20 | 1311 | 0.60 | 2.160 | fresh | 32 | 26 | 7.48 |
| 226 | Kiabarire | Mwimbi | 122/1 | 0 14 5 | 37 40 50 | 1325 | 0.40 | 1.440 | fresh | 48 | 20.5 | 6.65 |
| 227 | Irera | Mwimbi | 122/1 | 0 14 5 | 37 43 30 | 1195 | 2.20 | 7.920 | fresh | 32 | 23 | 5.59 |
| 228 | Nguwe | Mwimbi | 122/1 | 0 12 55 | 37 41 0 | 1310 | 3.50 | 12.600 | fresh | 28 | 23.5 | 5.61 |
| 229 | Iriri | Mwimbi | 122/1 | 0 13 0 | 37 42 10 | 1250 | 0.05 | 0.180 | fresh | 22 | 27.5 | 6.54 |
| 230 | Kiriri | Mwimbi | 122/1 | 0 13 0 | 37 43 40 | 1165 | 0.05 | 0.180 | fresh | 43 | 29 | 6.17 |
| 231 | Gakobo | Mwimbi | 122/1 | 0 12 40 | 37 43 50 | 1120 | 50.70 | 182.520 | fresh | 40 | 24 | 5.45 |
| 232 | Kona Mukene | Mwimbi | 122/1 | 0 12 35 | 37 41 40 | 1250 | 1.10 | 3.960 | fresh | 42 | 23.5 | 5.66 |
| 233 | Kaigwa | | 122/1 | 0 12 40 | 37 41 55 | 1250 | incl above | incl above | fresh | 40 | 28 | 7.91 |
| 234 | Kajiji | Igoji | 122/1 | 0 12 35 | 37 39 30 | 1350 | 3.40 | 12.240 | fresh | 77 | 20 | 6.67 |
| 235 | Kiharu | Igoji | 122/1 | 0 12 0 | 37 39 55 | 1330 | 4.00 | 14.400 | fresh | 50 | 22 | 5.77 |
| 236 | Kithima kia Kaguangi | Igoji | 122/1 | 0 11 35 | 37 39 55 | 1400 | 0.60 | 2.160 | fresh | 42 | 22.5 | 5.09 |
| 237 | Karuri | Igoji | 122/1 | 0 11 25 | 37 40 45 | 1340 | 2.80 | 10.080 | fresh | 22 | 25 | 6.42 |
| 238 | Uri | Igoji | 122/1 | 0 11 10 | 37 40 10 | 1335 | 2.60 | 9.360 | fresh | 44 | 22 | 6.94 |
| 239 | Gicimaru | Igoji | 122/1 | 0 11 5 | 37 41 15 | 1300 | 0.50 | 1.800 | fresh | 10 | 23 | 6.73 |
| 240 | Mugeco | Igoji | 122/1 | 0 10 5 | 37 42 10 | 1160 | 7.80 | 28.080 | fresh | 35 | 24.5 | 6.76 |
| 241 | Gatukuya | Igoji | 122/1 | 0 10 15 | 37 42 30 | 1180 | 0.50 | 1.800 | fresh | 44 | 24 | 5.52 |
| 242 | Koru | Igoji | 122/1 | 0 10 35 | 37 42 40 | 1170 | 2.50 | 9.000 | fresh | 56 | 23.5 | 6.34 |
| 243 | Kianyaru | Igoji | 122/1 | 0 11 0 | 37 43 30 | 1150 | 2.50 | 9.000 | fresh | 37 | 24.5 | 6.59 |
| 244 | Kiuru | Miitine | 122/1 | 0 9 40 | 37 39 50 | 1320 | 0.50 | 1.800 | fresh | 30 | 21 | 7 |
| 245 | Gakui | Miitine | 122/1 | 0 8 40 | 37 39 30 | 1280 | 2.40 | 8.640 | fresh | 56 | 21.5 | 7.15 |
| 246 | Kinyuru | Kanyekine | 122/1 | 0 8 30 | 37 40 5 | | 2.60 | 9.360 | fresh | 30 | 23 | 5.83 |
| 247 | Karwirwi | Kanyekine | 122/1 | 0 7 35 | 37 39 20 | 1360 | 3.30 | 11.880 | fresh | 23 | 21.5 | 6.7 |
| 248 | Karuri | Kanyekine | 122/1 | 0 7 15 | 37 45 5 | 1340 | 0.90 | 3.240 | fresh | 37 | 23 | 6.98 |
| 249 | Gataiba | Kanyekine | 122/1 | 0 7 45 | 37 40 15 | 1300 | 0.68 | 2.430 | fresh | 34 | 22 | 5.67 |
| 250 | Muuro wa Ntigiri | Kanyekine | 122/1 | 0 8 10 | 37 40 30 | 1250 | 1.50 | 5.400 | fresh | 44 | 23 | 5.52 |

## Appendix 5.2

| SP. No | NAME OF SPRING | LOCATION | MAP SHEET NO 1:50.000 | CO-ORDINATES north o ' '' | CO-ORDINATES east o ' '' | ALTITUDE m | YIELD l/s | YIELD M^3/HR | QUALITY taste | QUALITY E.C. nS/cm | QUALITY T oC |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 251 | Konje | Kanyekine | 122/1 | 0 8 15 | 37 41 5 | 1200 | 2.40 | 8.640 | fresh | 46 | 24.5 |
| 252 | Kereri | Kanyekine | 122/1 | 0 7 30 | 37 41 35 | 1240 | 0.30 | 1.080 | fresh | 70 | 22.5 |
| 253 | Ngonyi | Kanyekine | 122/1 | 0 8 10 | 37 42 40 | 1130 | 0.86 | 3.086 | fresh | 46 | 23 |
| 254 | Gituma | Kanyekine | 122/1 | 0 7 55 | 37 41 25 | 1220 | 0.80 | 2.880 | fresh | 60 | 25.5 |
| 255 | Kiroro | Kanyekine | 122/1 | 0 7 55 | 37 42 40 | 1150 | 4.10 | 14.760 | fresh | 36 | 26 |
| 256 | Nchigi | Kanyekine | 122/1 | 0 8 0 | 37 40 30 | 1310 | 5.90 | 21.240 | fresh | 30 | 23 |
| 257 | Nkurune | Kanyekine | 122/1 | 0 8 15 | 37 40 40 | 1290 | 0.80 | 2.880 | fresh | 34 | 23.5 |
| 258 | Kithambo | Kanyekine | 122/1 | 0 7 45 | 37 40 45 | 1320 | 0.90 | 3.240 | fresh | 42 | 23.5 |
| 259 | Keiya | Kanyekine | 122/1 | 0 7 30 | 37 40 5 | 1370 | 0.86 | 3.086 | fresh | 52 | 23.5 |
| 260 | Kathima | Kanyekine | 122/1 | 0 6 25 | 37 39 30 | 1430 | 0.40 | 1.440 | fresh | 25 | 22.5 |
| 261 | Gampuri | Kanyekine | 122/1 | 0 5 50 | 37 40 45 | | 33.20 | 119.520 | fresh | 20 | 22.5 |
| 262 | Kaguru | Kanyekine | 122/1 | 0 5 5 | 37 39 30 | 1500 | 19.50 | 70.200 | fresh | 55 | 20.5 |
| 263 | Nugu | Nkwene | 122/1 | 0 5 0 | 37 40 30 | 1420 | 0.40 | 1.440 | fresh | 120 | 22.5 |
| 264 | Kamanda | Nkwene | 122/1 | 0 4 55 | 37 40 35 | 1410 | 0.40 | 1.440 | fresh | 260 | 25 |
| 265 | Gakui | Nkwene | 122/1 | 0 5 0 | 37 40 10 | 1440 | 3.40 | 12.240 | fresh | 60 | 21.5 |
| 266 | | Nkwene | 122/1 | 0 5 0 | 37 40 55 | | 0.20 | 0.720 | fresh | 580 | 31 |
| 267 | Muguru | Nkwene | 122/1 | 0 5 15 | 37 42 5 | 1300 | 5.10 | 18.360 | fresh | 150 | 26.5 |
| 268 | Gakui | Nkwene | 122/1 | 0 5 10 | 37 42 10 | 1300 | 1.20 | 4.320 | fresh | 50 | 24.5 |
| 269 | Gathima | Nkwene | 122/1 | 0 4 50 | 37 42 5 | 1340 | 0.10 | 0.360 | fresh | 50 | 22.5 |
| 270 | Kauga Nyoni | Nkwene | 122/1 | 0 5 45 | 37 43 15 | 1240 | 1.50 | 5.400 | fresh | 47 | 23 |
| 271 | Gakuu | Igoki | 122/1 | 0 6 5 | 37 42 50 | 1240 | 0.80 | 2.880 | fresh | 62 | 23 |
| 272 | Gacogomo | Igoki | 122/1 | 0 6 10 | 37 42 40 | 1240 | 1.50 | 5.400 | fresh | 90 | 23 |
| 273 | Nduthi | Igoki | 122/1 | 0 6 15 | 37 42 25 | 1190 | 11.90 | 42.840 | fresh | 28 | 23 |
| 274 | Kathamba | Mitunguu | 122/1 | 0 6 0 | 37 44 45 | 1150 | 1.11 | 4.000 | fresh | 70 | 25 |
| 275 | Kauga Nkio | Nkwene | 122/1 | 0 4 0 | 37 39 40 | 1490 | 1.70 | 6.120 | fresh | 56 | 24.5 |
| 276 | Mugumba | Nkwene | 122/1 | 0 4 0 | 37 39 30 | 1500 | 0.90 | 3.240 | fresh | 76 | 27 |
| 277 | Kauga Mbiti | Nkwene | 122/1 | 0 4 0 | 37 41 15 | 1350 | 5.70 | 20.520 | fresh | 45 | 25 |
| 278 | Gakunyi | Nkwene | 122/1 | 0 3 25 | 37 41 55 | 1320 | 15.90 | 57.240 | fresh | 24 | 23 |
| 279 | Kenywa | Mwangantia | 122/1 | 0 3 15 | 37 42 0 | 1320 | 1.30 | 4.680 | fresh | 40 | 23 |
| 280 | Gauku | Nkwene | 122/1 | 0 3 0 | 37 39 5 | 1540 | 8.60 | 30.960 | fresh | 40 | 19 |
| 281 | Njwe | Nkwene | 122/1 | 0 2 25 | 37 39 15 | 1530 | 0.90 | 3.240 | fresh | 52 | 19.5 |
| 282 | Nondoni | Nkwene | 122/1 | 0 3 0 | 37 41 5 | 1350 | 0.20 | 0.720 | fresh | 22 | 21 |
| 283 | Kaguru (2) | Nkwene | 122/1 | 0 2 5 | 37 41 45 | 1310 | 0.90 | 3.240 | fresh | 52 | 22 |
| 284 | Ngoma | U.Abathuguci | 122/1 | 0 2 30 | 37 40 0 | 1470 | 0.11 | 0.411 | fresh | 50 | 20 |
| 285 | Ruguti | Nkwene | 122/1 | 0 1 30 | 37 38 25 | 1600 | 2.80 | 10.080 | fresh | 33 | 19 |
| 286 | Karigu | Nkwene | 122/1 | 0 1 35 | 37 39 5 | 1520 | 0.80 | 2.880 | fresh | 38 | 22 |
| 287 | Karigu (2) | Nkwene | 122/1 | 0 1 5 | 37 37 45 | 1660 | 2.60 | 9.360 | fresh | 18 | 20 |
| 288 | Karugagu | Nkwene | 122/1 | 0 0 30 | 37 38 5 | 1640 | 0.30 | 1.080 | fresh | 640 | 21 |
| 269 | Kurune | Nkwene | 122/1 | 0 0 5 | 37 38 0 | 1640 | 4.10 | 14.760 | fresh | 30 | 23 |
| 290 | Konyo | Nkwene | 122/1 | 0 0 0 | 37 39 10 | * | 4.40 | 15.840 | fresh | 100 | 25 |
| 291 | Mwirangara | Nkwene | 122/1 | 0 4 5 | 37 37 40 | 1670 | 1.30 | 4.680 | fresh | 78 | 25 |
| 292 | Tarage | Nkwene | 122/1 | 0 3 55 | 37 37 35 | 1680 | 13.20 | 47.520 | fresh | 86 | 23 |
| 293 | Kauruge | Nkwene | 122/1 | 0 3 45 | 37 37 15 | 1720 | incl above | incl above | fresh | 80 | 23 |
| 294 | Kanyoo | Nkwene | 122/1 | 0 4 10 | 37 36 10 | 1840 | 0.54 | 1.944 | fresh | 20 | 23 |
| 295 | | Nkwene | 122/1 | 0 4 0 | 37 34 45 | 1860 | 2.40 | 8.640 | fresh | 220 | 20 |
| 296 | Kauruge (2) | Nkwene | 122/1 | 0 3 30 | 37 35 50 | 1880 | 2.60 | 9.360 | fresh | 47 | 22 |
| 297 | Murumba | Nkwene | 122/1 | 0 3 25 | 37 35 40 | 1880 | 12.10 | 43.560 | fresh | 60 | 19 |
| 298 | Karumanyethu | Nkwene | 122/1 | 0 3 20 | 37 35 45 | 1880 | 52.80 | 190.080 | fresh | 67 | 17.5 |
| 299 | | Nkwene | 122/1 | 0 3 0 | 37 39 45 | 1880 | 13.60 | 48.960 | fresh | 68 | 19 |
| 300 | Karumanyethu | tribu.Nkwene | 122/1 | 0 3 15 | 37 35 50 | 1860 | 13.60 | 48.960 | fresh | 66 | 19.5 |

## Appendix 5.2

| SP. No | NAME OF SPRING | LOCATION | MAP SHEET NO 1:50.000 | CO-ORDINATES north o ' '' | CO-ORDINATES east o ' '' | ALTI-TUDE m | YIELD l/s | YIELD M^3/HR | QUALITY taste | E.C. nS/cm | T oC | pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 351 | | Timau | 107/3 | 0 1 15 | 37 13 30 | 2360 | 72.10 | 259.560 | fresh | 43.7 | 13.5 | 7.2 |
| 352 | Karinda Ngurue | Gatimbi | 122/1 | 0 0 55 | 37 39 40 | 1520 | 57.5 | 207.000 | fresh | 37.2 | 22 | |
| 353 | Kithinu | Gatimbi | 122/1 | 0 0 25 | 37 40 0 | 1480 | 19.6 | 70.560 | fresh | 28.7 | 23 | 6.3 |
| 354 | | Gatimbi | 122/1 | 0 0 40 | 37 39 50 | 1520 | 15.5 | 55.800 | fresh | 21.7 | 24.5 | 6.11 |
| 355 | Kubi | Gatimbi | 122/1 | 0 1 30 | 37 41 0 | 1380 | 24.7 | 88.920 | fresh | 54.5 | 24.5 | 6.17 |
| 356 | Kanji Keru | Gatimbi | 122/1 | 0 0 35 | 37 41 40 | 1320 | 61.9 | 222.840 | fresh | 110. | 25 | 6.45 |
| 357 | Ntikari | Mwanganthia | 122/2 | 0 0 55 | 37 45 15 | 1128 | 3 | 10.800 | fresh | 73.7 | 26 | 6.59 |
| 358 | | Mwanganthia | 122/2 | 0 1 5 | 37 45 25 | 1120 | incl above | incl above | fresh | 75.3 | 26 | 5.57 |
| 359 | Koru | Mwanganthia | 122/2 | 0 0 45 | 37 45 0 | 1120 | 40 | 144.000 | fresh | 81.7 | 27 | 6.78 |
| 360 | Kauga Ngogo | Mwanganthia | 122/2 | 0 0 20 | 37 45 0 | 1120 | 90 | 324.000 | fresh | 77 | 27 | 6.7 |
| 361 | | Mwanganthia | 122/2 | 0 2 15 | 37 48 45 | 960 | 43.2 | 155.520 | fresh | 180. | 26 | 7.04 |
| 362 | Nankere | Mwanganthia | 122/2 | 0 4 10 | 37 48 0 | 945 | 129.6 | 466.560 | fresh | 77 | 24 | 7.05 |
| 363 | Kirimba | Nyaki | 108/3 | 0 6 40 | 37 43 45 | 1173 | 482 | 1735.200 | fresh | 164. | 20.5 | 7.64 |
| 364 | Kathima Kethara | Nyaki | 108/3 | 0 5 55 | 37 44 45 | 1204 | 1.5 | 5.400 | fresh | 354 | 24.5 | 7.75 |
| 365 | Kaburu | Giaki | 108/4 | 0 3 40 | 37 45 25 | 1173 | 40 | 144.000 | fresh | 158. | 28.5 | 7.46 |
| 366 | Ciokura | Giaki | 108/4 | 0 2 25 | 37 45 55 | 1097 | Not gauged | Not gauged | fresh | 164 | 30 | 7.32 |
| 367 | Kirimba Ciontare | Giaki | 108/4 | 0 1 5 | 37 45 30 | 1097 | 180 | 648.000 | fresh | 201 | 26 | 7.1 |
| 368 | Kiguru A | Ntima | 108/3 | 0 8 5 | 37 38 10 | 1676 | 44.2 | 159.120 | fresh | 65.2 | 21.5 | 6.78 |
| 369 | Kiguru B | Ntima | 108/3 | 0 8 25 | 37 37 20 | 1750 | 81.7 | 294.120 | fresh | 57.7 | 22 | 7.04 |
| 370 | Liji Tributary | Ntima | 108/3 | 0 1 0 | 37 37 15 | 1768 | 15.8 | 56.880 | fresh | 53.4 | 25 | 6.19 |
| 371 | Luedi Tributary | Ntima | 108/3 | 0 1 50 | 37 37 40 | 5650 | 17.1 | 61.560 | fresh | 28.1 | 22 | 6.22 |
| 372 | Luedi | Ntima | 108/3 | 0 0 45 | 37 37 5 | 1798 | 50 | 180.000 | fresh | 37.2 | 22 | 6.67 |
| 373 | Iria | Ntima | 108/3 | 0 0 15 | 37 39 5 | 1615 | 10.8 | 38.880 | fresh | 26.8 | 20 | 5.8 |
| 374 | Kanyuru A | Ntima | 108/3 | 0 2 5 | 37 39 5 | 1554 | 23.2 | 83.520 | fresh | 107 | 21 | 5.88 |
| 375 | Kanyuru B | Ntima | 108/3 | 0 2 5 | 37 39 0 | 1615 | Incl above | Incl above | fresh | 173. | 20.5 | 7.49 |
| 376 | Kinyagia | Ntima | 108/3 | 0 2 0 | 37 38 40 | 1560 | 15.9 | 57.240 | fresh | 104 | 21 | 7.26 |
| 377 | Kachiege | Ntima | 108/3 | 0 1 10 | 37 39 15 | 1530 | 4.2 | 15.120 | fresh | 61.2 | 22 | 6.8 |
| 378 | Kathima Kainami | Ntima | 108/3 | 0 0 45 | 37 40 5 | 1500 | 10.125 | 36.450 | fresh | 50.2 | 22 | 5.06 |
| 379 | | Gatimbi | 108/3 | 0 0 15 | 37 40 50 | 1520 | Incl below | Incl below | fresh | 42.2 | 23.5 | 5.9 |
| 380 | | Gatimbi | 108/3 | 0 0 5 | 37 39 45 | 1540 | 19.8 | 71.280 | fresh | 36 | 23 | 5.26 |
| 381 | Kanune | Gatimbi | 108/3 | 0 0 0 | 37 40 50 | 1402 | 8.8 | 31.680 | fresh | 59.3 | 22.5 | 6.02 |
| 382 | | Gatimbi | 108/3 | 0 0 15 | 37 40 50 | 1372 | 0.4 | 1.440 | fresh | 36.2 | 22.5 | 5.35 |
| 383 | | Ntima | 108/3 | 0 1 50 | 37 40 45 | 1353 | 4.3 | 15.480 | fresh | 125. | 28 | 6.85 |
| 384 | | Ntima | 108/3 | 0 0 0 | 37 42 20 | 1274 | 2.6 | 9.360 | fresh | 93.1 | 26.5 | 6.82 |
| 385 | Kahuro | Ntima | 108/3 | 0 2 0 | 37 42 0 | 1311 | 26 | 93.600 | fresh | 132. | 24.5 | 6.37 |
| 386 | Kanyuru | Ntima | 108/3 | 0 2 25 | 37 40 5 | 1387 | 8.9 | 32.040 | fresh | 118. | 22.5 | 5.52 |
| 387 | Sirimon | Timau | 108/3 | 0 2 30 | 37 14 0 | 2270 | 750 | 2700.000 | fresh | 40.5 | 11.5 | 7.34 |
| 388 | Ontilili Tributary | Timau | 107/3 | 0 1 20 | 37 11 20 | 2160 | 230 | 828.000 | fresh | 52 | 12 | 7.32 |
| 389 | Ontilili | Timau | 107/3 | 0 1 15 | 37 11 0 | 2150 | 290 | 1044.000 | fresh | 32.3 | 13 | 7.23 |
| 390 | Kathanji | Timau | 107/3 | 0 1 40 | 37 7 20 | 2020 | 6.1 | 21.960 | fresh | 90.3 | 15 | 7.03 |
| 391 | Ngare Niting | N.G.Area | 108/1 | 0 23 45 | 37 40 5 | 1045 | 110 | 396.000 | fresh | 206 | 23 | 7.98 |
| 392 | Ngare Mara | N.G.Area | 108/1 | 0 24 0 | 37 40 45 | 1045 | 150 | 540.000 | fresh | 187 | 22.5 | 7.57 |
| 393 | Kathima | Ntima | 108/3 | 0 3 5 | 37 39 5 | 1615 | ~1 | ~3.6 | fresh | 216 | 21 | 7.32 |
| 394 | Matiandui | Muthara | 108/4 | 0 11 23 | 37 50 11 | 1722 | 20.75 | 74.70 | fresh | 70 | 18 | - |
| 395 | Buathumala | Muthara | 108/4 | 0 11 26 | 37 50 8 | 1722 | 31.72 | 114.19 | fresh | 230 | 17.5 | - |
| 396 | Buathumala | Muthara | 108/4 | 0 11 23 | 37 50 5 | 1707 | 0.02 | 0.07 | fresh | 47 | 20 | - |
| 397 | Liutu 1 | Muthara | 108/4 | 0 12 5 | 37 50 50 | 1859 | 32.96 | 118.66 | fresh | 95 | 17.5 | - |
| 398 | Liutu 2 | Muthara | 108/4 | 0 12 15 | 37 50 43 | 1875 | 0.05 | 0.18 | fresh | 34 | 17 | - |
| 399 | Liutu 3 | Muthara | 108/4 | 0 12 28 | 37 50 53 | 1859 | | | fresh | 48 | 16.5 | - |
| 400 | Liutu 4 | Muthara | 108/4 | 0 12 5 | 37 50 50 | 1829 | 0.05 | 0.18 | fresh | 71 | 16.5 | - |

## Appendix 5.2

| SP. No | NAME OF SPRING | LOCATION | MAP SHEET NO 1:50.000 | CO-ORDINATES north o ' '' | CO-ORDINATES east o ' '' | ALTI-TUDE m | YIELD l/s | YIELD M^3/HR | QUALITY taste | E.C. nS/cm | T oC | pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 300 | Karumanyethu tribu. | Nkwene | 122/1 | 0 3 15 | 37 35 50 | 1860 | 13.60 | 48.960 | fresh | 66 | 19.5 | |
| 301 | Kagwa mbiti | Nkwene | 122/1 | 0 2 55 | 37 35 45 | 1860 | 9.00 | 32.400 | fresh | 50 | 19 | |
| 302 | Gatabora | Kinoru | 108/3 | 0 3 5 | 37 37 15 | 1768 | 17.60 | 63.360 | fresh | 159 | 18.5 | |
| 303 | Murogo | Kinoru | 108/3 | 0 2 40 | 37 37 15 | | 20.30 | 73.080 | fresh | 75 | 21 | |
| 304 | Muuro jwa Nthoro | | 108/3 | 0 2 30 | 37 37 20 | 1737 | 17.40 | 62.640 | fresh | 61 | 21 | |
| 305 | Ruguso | Kibirichia | 107/4 | 0 5 35 | 37 29 30 | | 19.80 | 71.280 | fresh | 66 | 17 | |
| 306 | | Timau | 107/4 | 0 3 30 | 37 26 10 | 2800 | 45.60 | 164.160 | fresh | 24 | 10 | |
| 307 | | | 107/4 | 0 8 55 | 37 29 0 | | 22.20 | 79.920 | fresh | 28.5 | 17.5 | |
| 308 | Ngare Naro | Kibirichia | 108/3 | 0 1 15 | 37 32 30 | 2286 | 11.90 | 42.840 | fresh | 68 | 11 | |
| 309 | Kigerie | Kibirichia | 108/3 | 0 1 0 | 37 33 0 | 2225 | 3.60 | 12.960 | fresh | 49 | 15 | |
| 310 | Ciantere | Kibirichia | 108/3 | 0 2 15 | 37 32 15 | | 0.25 | 0.900 | fresh | 64 | 15 | |
| 311 | Kisima Maili Nane | Kirwa | 108/1 | 0 15 15 | 37 32 15 | 1450 | 3.90 | 14.040 | fresh | 153 | 21.5 | |
| 312 | Kithima | Kirwa | 108/1 | 0 15 40 | 37 32 55 | 1400 | 52.60 | 189.360 | fresh | 206 | 25 | |
| 313 | Ruguso | Mutunyi | 108/1 | 0 15 10 | 37 31 45 | 1460 | 46.60 | 167.760 | fresh | 241 | 21.5 | |
| 314 | Buffallo Springs | Isiolo central | 94/3 | 0 36 40 | 37 38 50 | 853 | 31.30 | 112.680 | fresh | 1470 | 31.5 | 6.8 |
| 315 | Buffallo Lodge Sp. | Isiolo central | 94/3 | 0 35 40 | 37 37 15 | 853 | 10.00 | 36.000 | fresh | 1398 | 28.5 | |
| 316 | Ntongai | Isiolo central | 94/3 | 0 38 30 | 37 42 20 | 9022 | 0.68 | 2.432 | saline | 1590 | 30 | 8.1 |
| 317 | Shaba Sarova Sp. | Isiolo central | 94/3 | 0 39 45 | 37 42 30 | 777 | 0.07 | 0.263 | fresh | 1333 | 29 | 7.3 |
| 318 | | Isiolo central | 94/3 | 0 39 0 | 37 44 5 | 823 | 0.33 | 1.200 | fresh | 1443 | 35 | 8.2 |
| 319 | | Isiolo central | 94/3 | 0 37 55 | 37 41 30 | 853 | Non | Non | fresh | 978 | 30 | 9.1 |
| 320 | Lewa Spring | Timau | 107/4 | 0 11 40 | 37 26 0 | 1720 | 40.70 | 146.520 | fresh | 126 | 20.5 | 6.6 |
| 321 | Pore Spring | Timau | 107/4 | 0 11 5 | 37 25 25 | 2400 | 76.50 | 275.400 | fresh | 117 | 20 | 7.9 |
| 322 | | Timau | 107/4 | 0 10 40 | 37 24 55 | 1800 | 5.70 | 20.520 | fresh | 240 | 25 | 7.4 |
| 323 | Engare Ondare | Timau /Laikipia | 107/4 | 0 11 45 | 37 20 55 | 1840 | 75.80 | 272.880 | fresh | 172 | 21.5 | 8.3 |
| 324 | | Timau | 107/4 | 0 4 55 | 37 17 45 | 2420 | 31.00 | 111.600 | fresh | 87.5 | 10 | 7.3 |
| 325 | Kiamuthuri | Timau | 107/4 | 0 5 40 | 37 17 55 | 2380 | 7.50 | 27.000 | fresh | 99.5 | 18.5 | 7.3 |
| 326 | | Timau | 107/4 | 0 5 40 | 37 17 45 | 2380 | 1.25 | 4.500 | fresh | 104 | 18.5 | 7.5 |
| 327 | Kithima | Kinoru | 108/3 | 0 5 0 | 37 37 15 | 1737 | 0.83 | 3.000 | fresh | 297 | 25 | 7.6 |
| 328 | | Timau | 107/4 | 0 10 30 | 37 24 50 | 1800 | 11.40 | 41.040 | fresh | 378 | 21 | 7.8 |
| 329 | Kangutu | Timau | 107/4 | 0 3 10 | 37 18 55 | 2620 | 40.50 | 145.800 | fresh | 45 | 11 | 7.7 |
| 330 | Timau Tributary | Timau | 107/4 | 0 2 40 | 37 18 30 | | 21.80 | 78.480 | fresh | 63 | 12 | 7.4 |
| 331 | Talaswani Tributary | Timau | 107/4 | 0 3 50 | 37 15 30 | 2300 | 16.30 | 58.680 | fresh | 151 | 20 | 7.4 |
| 332 | Talaswani River | Timau | 107/4 | 0 3 35 | 37 15 25 | | 489.70 | 1762.920 | fresh | 77 | 15.5 | 7.7 |
| 333 | | Timau | 107/4 | 0 4 5 | 37 17 55 | 2480 | 28.80 | 103.680 | fresh | 48 | 14 | 7.5 |
| 334 | Timau river | Timau | 107/4 | 0 4 0 | 37 17 25 | 2420 | 143.00 | 514.800 | fresh | 59 | 14 | 7.7 |
| 335 | Kangume | Timau | 107/4 | 0 3 30 | 37 16 45 | 2420 | 90.10 | 324.360 | fresh | 90 | 14 | 7.4 |
| 336 | | Timau | 107/4 | 0 7 30 | 37 22 55 | 2420 | 1.90 | 6.840 | fresh | 100 | 18 | 6.6 |
| 337 | | Timau | 107/4 | 0 6 55 | 37 22 40 | 2460 | Non | Non | fresh | 117 | 20 | 6.9 |
| 338 | Mithatane A | Timau | 107/4 | 0 8 25 | 37 21 40 | 2320 | 2.50 | 9.000 | fresh | 124 | 18 | 6.9 |
| 339 | Mithatane B | Kisima | 107/4 | 0 8 40 | 37 21 30 | 2300 | 7.00 | 25.200 | fresh | 167 | 18 | 7.08 |
| 340 | Musomone | Kisima (Timau) | 107/4 | 0 8 45 | 37 21 45 | 2300 | 0.14 | 0.514 | fresh | 244 | 19 | 7.6 |
| 341 | | Kisima | 107/4 | 0 8 5 | 37 22 45 | 2360 | 0.33 | 1.200 | fresh | 127 | 17.5 | 6.7 |
| 342 | | Kisima | 107/4 | 0 6 55 | 37 24 40 | 2420 | 85.20 | 306.720 | fresh | 84 | 16 | 7.7 |
| 343 | Karobune | Kisima | 107/4 | 0 7 55 | 37 24 40 | 2300 | 0.63 | 2.250 | fresh | 107 | 17 | 7.8 |
| 344 | Karunkunku village | Kisima | 107/4 | 0 7 30 | 37 21 45 | 2380 | 0.03 | 0.120 | fresh | 138 | 18.5 | 6.6 |
| 345 | Karukungu | Kisima | 107/4 | 0 7 15 | 37 20 55 | 2380 | 0.34 | 1.241 | fresh | 189 | 18 | 7.2 |
| 346 | | Kisima | 107/4 | 0 7 30 | 37 20 30 | 2340 | 0.07 | 0.240 | fresh | 190 | 17.5 | 6.8 |
| 347 | | Timau | 107/4 | 0 4 40 | 37 17 30 | 2420 | 1.00 | 3.600 | fresh | 194 | 18 | 6.5 |
| 348 | | Timau | 107/3 | 0 3 40 | 37 14 15 | 2260 | 7.20 | 25.920 | fresh | 146 | 24.5 | 6.6 |
| 349 | | Timau | 107/3 | 0 3 25 | 37 13 25 | 2240 | 0.83 | 3.000 | fresh | 162 | 23.5 | 7 |
| 350 | | Timau | 107/3 | 0 2 40 | 37 13 30 | 2340 | 7.90 | 28.440 | fresh | 53 | 17 | 6.9 |

## Appendix 5.2

| SP. No | NAME OF SPRING | LOCATION | MAP SHEET NO 1:50.000 | CO-ORDINATES north o ' '' | CO-ORDINATES east o ' '' | ALTITUDE m | YIELD l/s | YIELD M^3/HR | QUALITY taste | E.C. nS/cm | T oC | pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 401 | Karuri | Muthara | 108/4 | 0 12 5 | 37 51 16 | 1935 | | | fresh | 40 | 16.5 | |
| 402 | Kamathinwa | Muthara | 108/4 | 0 13 14 | 37 46 57 | 1356 | 15.49 | 55.76 | fresh | 330 | 22 | |
| 403 | Mwera jwantito | Muthara | 108/4 | 0 13 50 | 37 46 51 | 1356 | 9.58 | 34.49 | fresh | 340 | 23 | |
| 404 | Gatuamuari | Muthara | 108/4 | 0 13 50 | 37 46 12 | 1341 | 2.50 | 9.00 | fresh | 375 | 24 | |
| 405 | Muthara Hospital | Muthara | 108/4 | 0 12 9 | 37 47 20 | 1478 | no d.d | | fresh | 150 | 23.5 | |
| 406 | Kamberia | Akithi | 108/4 | 0 12 12 | 37 46 25 | 1448 | 52.63 | 189.47 | fresh | 250 | 21.5 | |
| 407 | Kibiini | Akithi | 108/3 | 0 12 31 | 37 44 39 | 0 | 48.07 | 173.05 | fresh | 290 | 25.5 | |
| 408 | Munyereku | Muthara | 108/2 | 0 15 56 | 37 45 17 | 0 | 259.69 | 934.88 | fresh | 600 | 25 | |
| 409 | Kamiriru | Muthara | 108/2 | 0 16 0 | 37 45 21 | 0 | 3.36 | 12.10 | saline | 630 | 25.5 | |
| 410 | Kathima Njaingo | Muthara | 108/2 | 0 16 13 | 37 45 17 | 0 | 6.94 | 24.98 | fresh | 860 | 23 | |
| 411 | Akoro | Muthara | 108/4 | 0 14 38 | 37 47 17 | 1448 | 0.02 | 0.07 | fresh | 780 | 24.5 | |
| 412 | Lanyiru | Muthara | 108/2 | 0 16 26 | 37 46 38 | 0 | 41.55 | 149.58 | fresh | 700 | 27.5 | |
| 413 | Nchoro | Akithi | 108/4 | 0 10 57 | 37 48 9 | 1615 | 6.77 | 24.37 | fresh | 380 | 26.5 | |
| 414 | Thilitu * | Muthara | 108/4 | 0 10 57 | 37 49 13 | 1692 | 13.09 | 47.12 | fresh | 50 | 19 | |
| 415 | Mukumbu | Muthara | 108/4 | 0 9 36 | 37 49 16 | 1615 | 0.83 | 2.99 | fresh | 120 | 22.5 | |
| 416 | Kiamigwi | Muthara | 108/4 | 0 11 0 | 37 49 23 | 1692 | 11.04 | 39.74 | fresh | 25 | 20.5 | |
| 417 | Kamaroo | Akithi | 108/4 | 0 8 53 | 37 49 3 | 1402 | 62.40 | 224.64 | fresh | 180 | 23.5 | |
| 418 | Kiolu | Akithi | 108/4 | 0 7 42 | 37 48 34 | 1311 | 32.41 | 116.68 | fresh | 140 | 24 | |
| 419 | Kathima | Mikinduri | 108/4 | 0 9 49 | 37 50 34 | 1570 | 0.59 | 2.12 | fresh | 46 | 22.5 | |
| 420 | Kalinthathara | Muthara | 108/4 | 0 11 43 | 37 48 44 | 0 | 54.95 | 197.82 | whitish | 300 | 22 | |
| 421 | Thuria | Muthara | 108/4 | 0 11 43 | 37 50 14 | 1798 | 0.83 | 2.99 | fresh | 76 | 18.5 | |
| 422 | Nduluma | Muthara | 108/4 | 0 12 18 | 37 48 41 | 1676 | 0.45 | 1.62 | fresh | 320 | 19.5 | |
| 423 | Kariukoakuru | Muthara | 108/4 | 0 13 10 | 37 50 47 | 1823 | 1.06 | 3.82 | fresh | 60 | 16 | |
| 424 | Kanoo | Muthara | 108/4 | 0 13 50 | 37 50 5 | 1753 | 0.45 | 1.62 | fresh | 152 | 21 | |
| 425 | Karindi | Uringu | 108/3 | 0 7 55 | 37 43 53 | 0 | 0.08 | 0.29 | fresh | 440 | 23.5 | |
| 426 | Kunati | Uringu | 108/4 | 0 7 6 | 37 45 24 | 1326 | 0.17 | 0.61 | fresh | 190 | 22.5 | |
| 427 | Kalale | Uringu | 108/4 | 0 7 3 | 37 45 37 | 1326 | 0.08 | 0.29 | fresh | 160 | 22.5 | |
| 428 | Uringu | Uringu | 108/4 | 0 7 45 | 37 49 26 | 1478 | | | fresh | 96 | 21 | |
| 429 | Luuria | Mintuntu | 108/4 | 0 9 45 | 37 41 38 | 0 | 54.09 | 194.72 | fresh | 400 | 24.5 | |
| 430 | Kanamburi | Mintuntu | 108/3 | 0 10 28 | 37 40 49 | 0 | 0.29 | 1.04 | fresh | 820 | 22 | |
| 431 | Kamwere | Mikinduri | 108/4 | 0 11 4 | 37 52 20 | 1753 | 86.81 | 312.52 | fresh | 150 | 19 | |
| 432 | Kioru | Mikinduri | 108/4 | 0 10 15 | 37 52 7 | 1737 | 20.63 | 74.27 | fresh | 32 | 20.5 | |
| 433 | Kithio | Mikinduri | 108/4 | 0 9 29 | 37 51 25 | 1554 | 75.61 | 272.20 | fresh | 75 | 25 | |
| 434 | Thiti | Mikinduri | 108/4 | 0 9 26 | 37 51 9 | 1509 | 28.71 | 103.36 | fresh | 70 | 22 | |
| 435 | Baimau | Mikinduri | 108/4 | 0 8 47 | 37 51 3 | 1433 | 79.90 | 287.64 | fresh | 130 | 22 | |
| 436 | Karibu | Karama | 108/4 | 0 13 56 | 37 48 31 | 1600 | 0.63 | 2.27 | fresh | 340 | 22 | |
| 437 | M'mbirithi | Karama | 108/4 | 0 13 56 | 37 48 38 | 1615 | 0.60 | 2.16 | fresh | 360 | 20.5 | |
| 438 | M'mbigwika | Karama | 108/4 | 0 13 56 | 37 48 44 | 1631 | 0.42 | 1.51 | fresh | 295 | 22 | |
| 439 | Kamunyi | Karama | 108/4 | 0 13 53 | 37 48 0 | 1698 | 3.00 | 10.80 | fresh | 430 | 21 | |
| 440 | Gitundu | Karama | 108/2 | 0 15 17 | 37 50 18 | 1737 | | | fresh | 280 | 18.5 | |
| 441 | Liliaba | Liliaba | 108/4 | 0 14 45 | 37 52 40 | 2164 | 0.63 | 2.27 | fresh | 92 | 16 | |
| 442 | Kaboto | Liliaba | 108/4 | 0 14 45 | 37 51 29 | 2012 | 0.13 | 0.47 | fresh | 210 | 16 | |
| 443 | Kalibiori | Liliaba | 108/4 | 0 14 51 | 37 52 56 | 2103 | 18.52 | 66.67 | fresh | 170 | 16.5 | |
| 444 | Mwerumumba | Liliaba | 108/2 | 0 15 8 | 37 53 5 | 2042 | 1.20 | 4.32 | fresh | 150 | 19 | |
| 445 | Kathima Ka Kangeta | Liliaba | 108/2 | 0 16 23 | 37 52 53 | 1859 | 54.62 | 196.63 | fresh | 230 | 18 | |
| 446 | Mboone | Kiegoi | 108/4 | 0 14 25 | 37 55 18 | 1844 | 95.53 | 343.91 | fresh | 68 | 22.5 | |
| 447 | Kanjara | Kiegoi | 108/4 | 0 14 12 | 37 54 26 | 1905 | 0.21 | 0.76 | fresh | 90 | 18 | |
| 448 | Kaando | Kiegoi | 108/4 | 0 13 59 | 37 55 24 | 1996 | 1.25 | 4.50 | fresh | 18 | 21 | |
| 449 | Muthurano | Maua | 108/2 | 0 15 56 | 37 56 35 | 1631 | 58.12 | 209.23 | fresh | 120 | 21 | 7.4 |
| 450 | Kamaliu | Maua | 108/2 | 0 16 6 | 37 56 29 | 1646 | 17.60 | 63.36 | fresh | 170 | 21.5 | |

## Appendix 5.2

| SP. No | NAME OF SPRING | LOCATION | MAP SHEET NO 1:50,000 | CO-ORDINATES north o ' '' | CO-ORDINATES east o ' '' | ALTITUDE m | YIELD l/s | YIELD M^3/HR | QUALITY taste | E.C. nS/cm | T oC | pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 451 | Muuru | Maua | 108/2 | 0 0 0 | 37 *** 0 | 1554 | | | fresh | 380 | 18 | - |
| 452 | kalui | Maua | 109/1 | 0 12 12 | 38 0 50 | 1200 | | | fresh | 280 | 21.5 | - |
| 453 | Nthambiro | Maua | 109/3 | 0 14 22 | 38 2 21 | | 17.88 | 64.37 | fresh | 230 | 23.5 | - |
| 454 | Gitwe | Maua | 108/2 | 0 16 9 | 37 54 58 | 1829 | 0.69 | 2.48 | fresh | 110 | 21 | - |
| 455 | Buathonaro | Maua | 108/2 | 0 16 6 | 37 55 44 | 1676 | 14.25 | 51.30 | fresh | 110 | 21.5 | - |
| 456 | Kalui | Maua | 108/4 | 0 14 22 | 37 57 21 | 1600 | | | fresh | 84 | 19 | - |
| 457 | Mwentwa | Maua | 108/4 | 0 14 32 | 37 57 46 | 1478 | 0.13 | 0.47 | fresh | 230 | 19.5 | - |
| 458 | kandu | Maua | 108/4 | 0 14 6 | 37 55 57 | 1737 | 0.83 | 2.99 | fresh | 27 | 18.5 | - |
| 459 | Ikongolo | Karama | 108/4 | 0 13 27 | 37 50 47 | 1829 | 1.25 | 4.50 | fresh | 160 | 16.5 | - |
| 460 | Kamiluli | Karama | 108/4 | 0 13 23 | 37 50 47 | 1865 | 1.00 | 3.60 | fresh | 115 | 16.5 | - |
| 461 | Kaboto | Karama | 108/4 | 0 13 40 | 37 50 37 | 1829 | 0.15 | 0.54 | fresh | 200 | 17.5 | - |
| 462 | Thangatha | Mikinduri | 108/4 | 0 11 26 | 37 52 27 | 1707 | 50.00 | 180.00 | fresh | 96 | 18.5 | - |
| 463 | Saiboi | Kianjae | 108/4 | 0 9 29 | 37 46 12 | 1402 | | | fresh | 230 | 20 | - |
| 464 | Kanagea | Kianjae | 108/4 | 0 9 49 | 37 46 19 | 1417 | | | fresh | 270 | 23.5 | - |
| 465 | Mboya | Kianjae | 108/4 | 0 9 13 | 37 47 30 | 1402 | 45.66 | 164.38 | fresh | 145 | 23.5 | - |
| 466 | | Akithi | 108/4 | 0 9 6 | 37 47 39 | 1402 | 0.63 | 2.27 | fresh | 150 | 2.25 | - |
| 467 | Thawama | Mikinduri | 108/4 | 0 11 20 | 37 52 1 | 1829 | 0.28 | 1.01 | fresh | 140 | 18.5 | - |
| 468 | | Mikinduri | 108/4 | 0 11 20 | 37 52 17 | 1753 | 0.38 | 1.37 | fresh | 220 | 18.5 | - |
| 469 | Mpakani | Mikinduri | 108/4 | 0 11 26 | 37 52 36 | 1768 | | | fresh | 38 | 19 | - |
| 470 | Karumanthi | Mikinduri | 108/4 | 0 10 41 | 37 52 24 | 1722 | 11.96 | 43.06 | fresh | 125 | 18 | - |
| 471 | Thanga | Mikinduri | 108/4 | 0 10 28 | 37 52 43 | 1768 | 1.25 | 4.50 | fresh | 41 | 21 | 7.2 |
| 472 | Thanga 2 | Mikinduri | 108/4 | 0 10 18 | 37 52 53 | 1722 | 2.50 | 9.00 | fresh | | | - |
| 473 | Rwando | Mikinduri | 108/4 | 0 10 5 | 37 53 12 | 1692 | 0.13 | 0.47 | fresh | 34 | 19 | 6.7 |
| 474 | Rwando 2 | Mikinduri | 108/4 | 0 10 5 | 37 53 22 | 1692 | 0.63 | 2.27 | fresh | 28 | 18.5 | - |
| 475 | Kalimba | Mikinduri | 108/4 | 0 10 5 | 37 53 25 | 1692 | 0.14 | 0.50 | fresh | | | - |
| 476 | | Mikinduri | 108/4 | 0 10 2 | 37 53 28 | 1692 | 0.27 | 0.97 | fresh | 26 | 19 | - |
| 477 | Muumba | Mikinduri | 108/4 | 0 10 2 | 37 53 35 | 1692 | 1.25 | 4.50 | fresh | 40 | 19 | - |
| 478 | Mwankaria | Mikinduri | 108/4 | 0 9 55 | 37 53 38 | 1692 | 0.17 | 0.61 | fresh | 34 | 20.5 | - |
| 479 | Ciaroo | Mikinduri | 108/4 | 0 10 21 | 37 54 10 | 1692 | 12.73 | 45.83 | fresh | 62 | 15 | 7.6 |
| 480 | Ciamantha | Mikinduri | 108/4 | 0 10 28 | 37 54 13 | 1699 | 0.50 | 1.80 | fresh | 34 | 19 | - |
| 481 | Ciamantha 2 | Mikinduri | 108/4 | 0 10 28 | 37 54 17 | 1692 | 0.29 | 1.04 | fresh | 34 | 19.5 | - |
| 482 | Ciamantha 3 | Mikinduri | 108/4 | 0 10 28 | 37 54 26 | 1692 | 1.43 | 5.15 | fresh | 66 | 19 | - |
| 483 | Kirindini | Akachiu | 108/4 | 0 10 31 | 37 54 36 | 1692 | 27.26 | 98.14 | fresh | 52 | 23 | - |
| 484 | Kambakia | | 108/3 | 0 4 7 | 37 38 31 | 0 | | | fresh | - | - | - |
| 485 | Maitha | Akachiu | 108/4 | 0 10 15 | 37 55 11 | 1311 | 1.43 | 5.15 | fresh | 21 | 21.5 | - |
| 486 | Muringa | Akachiu | 108/4 | 0 10 24 | 37 55 31 | 1341 | 1.92 | 6.91 | fresh | 19.6 | 20.5 | - |
| 487 | Nkimene | Akachiu | 108/4 | 0 10 34 | 37 56 29 | 1539 | 1.00 | 3.60 | fresh | 22 | 23.5 | - |
| 488 | Akumbwe | Akachiu | 108/4 | 0 11 13 | 37 55 40 | 1494 | 41.87 | 150.73 | fresh | - | - | - |
| 489 | Choi | Akachiu | 108/4 | 0 11 17 | 37 55 34 | 1524 | 1.63 | 5.87 | fresh | 22 | 25 | - |
| 490 | kanoro | Akachiu | 108/4 | 0 11 20 | 37 55 37 | 1524 | 8.86 | 31.90 | fresh | - | - | - |
| 491 | Kiiji | Akachiu | 108/4 | 0 11 36 | 37 55 37 | 1524 | 0.17 | 0.61 | fresh | 45 | 26 | - |
| 492 | | Muthara | 108/4 | 0 11 49 | 37 51 3 | 1814 | 62.38 | 224.57 | fresh | 160 | 17 | - |
| 493 | | Muthara | 108/4 | 0 11 36 | 37 51 9 | 1798 | 2.50 | 9.00 | fresh | 80 | 17 | - |
| 494 | Thanantu | Muthara | 108/4 | 0 11 17 | 37 51 16 | 1844 | 28.77 | 103.57 | fresh | 56 | 18 | - |
| 495 | Nthungu | Akachiu | 108/4 | 0 11 59 | 37 55 40 | 1509 | 38.65 | 139.14 | fresh | 90 | 25 | - |
| 496 | Ngine | Akachiu | 108/4 | 0 12 38 | 37 55 44 | 1554 | 40.00 | 144.00 | fresh | - | 22.5 | - |
| 497 | Kaluuri | Akachiu | 108/4 | 0 11 59 | 37 57 24 | 1387 | 27.83 | 100.19 | fresh | - | 23 | - |
| 498 | Kauamwithu | Mikinduri | 108/4 | 0 10 51 | 37 52 40 | 1783 | 50.00 | 180.00 | fresh | - | 17.5 | - |
| 499 | Ura | Akachiu | 108/4 | 0 11 56 | 37 55 31 | 1494 | 150.00 | 540.00 | fresh | - | 23.5 | 8 |
| 500 | | Akachiu | 108/4 | 0 12 12 | 37 56 6 | 1494 | 0.69 | 2.48 | fresh | - | - | - |

## Appendix 5.2

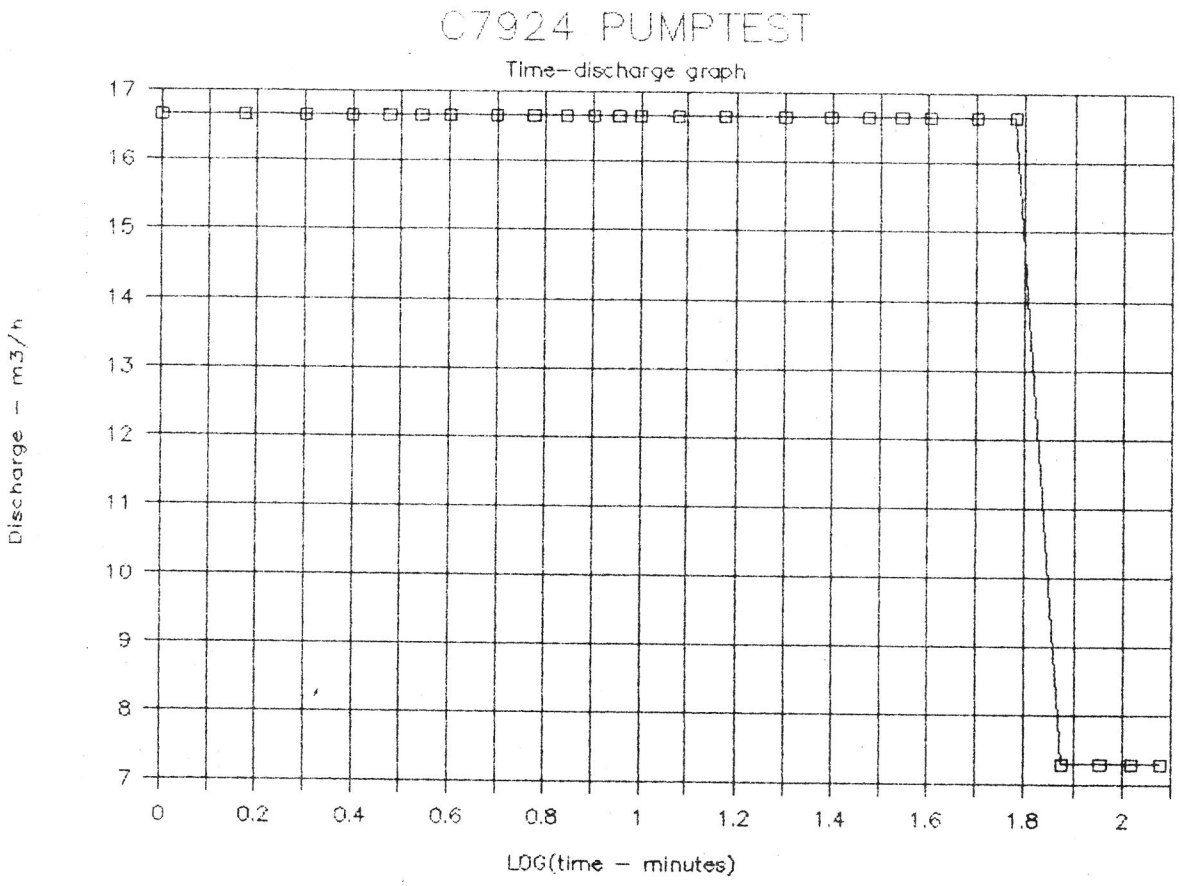
| SP. No | NAME OF SPRING | LOCATION | MAP SHEET NO 1:50.000 | CO-ORDINATES north o ' '' | CO-ORDINATES east o ' '' | ALTI-TUDE m | YIELD l/s | YIELD M^3/HR | QUALITY taste | E.C. nS/cm | T oC | pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 501 | Kuri | Akachiu | 108/4 | 0 0 0 | 37 *** 0 | 1425 | 0.28 | 1.01 | fresh | _ | 27 | _ |
| 502 | Kiriko | Akachiu | 108/4 | 0 0 0 | 37 *** 0 | 1387 | 40.00 | 144.00 | fresh | _ | _ | _ |
| 503 | Mboone 2 | Akachiu | 108/4 | 0 0 0 | 37 *** 0 | 1387 | 50.00 | 180.00 | fresh | _ | _ | _ |
| 504 | Mailiya | Akachiu | 108/4 | 0 0 0 | 37 *** 0 | 1341 | 1.25 | 4.50 | fresh | _ | 22 | _ |
| 505 | Mailiya 2 | Akachiu | 108/4 | 0 0 0 | 37 *** 0 | 1341 | 0.77 | 2.77 | fresh | _ | 22 | _ |
| 506 | | Akachiu | 108/4 | 0 0 0 | 37 *** 0 | 1332 | 0.38 | 1.37 | fresh | _ | 22 | _ |
| 507 | Mwenkumbie | Akachiu | 108/4 | 0 0 0 | 37 *** 0 | 1356 | 20.00 | 72.00 | fresh | 70 | 26 | 7.2 |
| 508 | Unguru | Akachiu | 108/4 | 0 10 34 | 37 57 14 | 1356 | 4.00 | 14.40 | fresh | 39 | 22.5 | 5.85 |
| 509 | Kutheo | Akachiu | 108/4 | 0 10 28 | 37 57 11 | 1356 | 0.56 | 2.02 | fresh | _ | _ | _ |
| 510 | Mugero | Akachiu | 108/4 | 0 9 0 | 37 56 45 | 1364 | 2.50 | 9.00 | fresh | _ | 23 | _ |
| 511 | Mwentangi | Akachiu | 108/4 | 0 9 13 | 37 56 39 | 1379 | 4.00 | 14.40 | fresh | _ | 22.5 | _ |
| 512 | Kilamba | Akachiu | 108/4 | 0 9 13 | 37 56 55 | 1356 | 1.25 | 4.50 | fresh | _ | 22 | _ |
| 513 | Nandeere | Akachiu | 108/4 | 0 9 29 | 37 57 17 | 1341 | 2.00 | 7.20 | fresh | _ | 24 | _ |
| 514 | Itumitu | | 108/4 | 0 10 37 | 37 57 27 | 1311 | 1.25 | 4.50 | fresh | _ | 22.5 | _ |
| 515 | | Akachiu | 108/4 | 0 11 17 | 37 57 30 | 1334 | 1.89 | 6.80 | fresh | _ | 21.5 | _ |
| 516 | Kaing'ori | Akachiu | 108/4 | 0 11 0 | 37 58 35 | 1295 | 0.05 | 0.18 | fresh | _ | 22 | _ |
| 517 | Amui | Akachiu | 108/4 | 0 12 2 | 37 57 46 | 1425 | 0.59 | 2.12 | fresh | 54 | 21.5 | _ |
| 518 | Kiiywe | Akachiu | 108/4 | 0 11 39 | 37 58 6 | 1417 | 0.23 | 0.83 | fresh | 43.8 | 22 | _ |
| 519 | Kongolo | Akachiu | 108/4 | 0 10 44 | 37 57 43 | 1341 | | | fresh | 130 | 24 | _ |
| 520 | Kioru | Akachiu | 108/4 | 0 10 8 | 37 59 49 | 1097 | 0.83 | 2.99 | fresh | 120 | 26 | _ |
| 521 | Mauteri | Akachiu | 108/4 | 0 11 0 | 37 58 48 | 1250 | 0.01 | 0.03 | fresh | 82.3 | 21.5 | _ |
| 522 | Kariru | Akachiu | 108/4 | 0 11 17 | 37 58 41 | 1301 | 0.20 | 0.72 | fresh | 87.7 | 23 | _ |
| 523 | Kionde | Uringu | 108/4 | 0 5 41 | 37 46 54 | 1372 | 20.00 | 72.00 | fresh | 330 | 22 | _ |
| 524 | Chiantiki | | 108/4 | 0 8 1 | 37 46 57 | 1372 | 0.06 | 0.22 | fresh | 210 | 23 | _ |
| 525 | Kanthongo | Mbeu | 108/4 | 0 5 58 | 37 47 7 | 1204 | 3.00 | 10.80 | fresh | 111 | 24 | _ |
| 526 | Kamwea | | 108/4 | 0 6 40 | 37 53 2 | 1173 | 20.00 | 72.00 | fresh | 39.6 | 24 | _ |
| 527 | Bwatherongi | Maua | 109/1 | 0 16 9 | 38 6 13 | 790 | 10.00 | 36.00 | fresh | 344 | 24 | _ |
| 528 | Merutano | Maua | 109/1 | 0 15 11 | 38 6 13 | 780 | 30.00 | 108.00 | fresh | 342 | 24.5 | 7.95 |
| 529 | | Maua | 109/3 | 0 14 38 | 38 5 41 | 760 | 30.00 | 108.00 | fresh | 475 | 25 | 7.8 |
| 530 | | Maua | 109/3 | 0 14 22 | 38 5 25 | 760 | 140.00 | 504.00 | fresh | 386 | 25 | _ |
| 531 | Kainu | Maua | 109/3 | 0 13 7 | 38 4 17 | 780 | 10.00 | 36.00 | fresh | 284 | 26 | _ |
| 532 | Rujeweru | Maua | 109/3 | 0 12 44 | 38 4 1 | 780 | 290.00 | 1044.00 | fresh | 238 | 26 | 7.95 |
| 533 | | Maua | 108/4 | 0 13 40 | 37 55 28 | 1798 | 0.38 | 1.37 | fresh | 27 | 20 | _ |
| 534 | Gathambi | Maua | 108/4 | 0 13 17 | 37 56 22 | 1615 | 1.56 | 5.62 | fresh | 20.6 | 19 | _ |
| 535 | Kalubacia | Maua | 108/4 | 0 13 4 | 37 56 26 | 1615 | 0.03 | 0.11 | fresh | 22.2 | 24.5 | _ |
| 536 | Kambui | Maua | 108/4 | 0 12 57 | 37 56 19 | 1646 | | | fresh | 27 | 21.5 | _ |
| 537 | Muura | Maua | 108/4 | 0 12 51 | 37 55 50 | 1631 | 50.00 | 180.00 | fresh | 90.2 | 19.5 | _ |
| 538 | Mwamba | Maua | 108/4 | 0 12 44 | 37 55 37 | 1570 | 20.00 | 72.00 | fresh | 58.5 | 21 | _ |
| 539 | Bwatho | Akachiu | 108/4 | 0 12 38 | 37 58 6 | 1387 | 10.00 | 36.00 | fresh | 127 | 21.5 | _ |
| 540 | Lare | Akachiu | 108/4 | 0 12 54 | 37 58 2 | 1372 | ERR | | fresh | 86 | 21 | _ |
| 541 | Akui | Akachiu | 108/4 | 0 12 28 | 37 58 32 | 1341 | 0.13 | 0.47 | fresh | 192 | 21.5 | _ |
| 542 | Chiaguma | Akachiu | 109/3 | 0 11 13 | 38 0 41 | 930 | 10.00 | 36.00 | fresh | 174 | 23 | _ |
| 543 | Kalimaria | Akachiu | 108/4 | 0 12 38 | 37 58 57 | 1250 | 0.78 | 2.81 | fresh | 244 | 22 | _ |
| 544 | Murera | Maua | 109/1 | 0 16 16 | 38 7 56 | 740 | 330.00 | 1188.00 | fresh | 370 | 25 | _ |
| 545 | Kanchoradi | [Isiolo] | 109/1 | 0 19 15 | 38 11 46 | 690 | 10.00 | 36.00 | fresh | 882 | 32 | _ |
| 546 | Njoro ya Kinna | [Isiolo] | 109/1 | 0 18 39 | 38 10 15 | 720 | 30.00 | 108.00 | fresh | 675 | 30 | _ |
| 547 | Bisanadi | Antubetwe | 109/1 | 0 17 34 | 38 9 24 | 720 | 210.00 | 756.00 | fresh | 530 | 26.5 | _ |
| 548 | Kantheleo | Njia | 108/2 | 0 17 5 | 37 56 22 | 1692 | 0.16 | 0.58 | fresh | 156 | 20 | _ |
| 549 | Kamwana | Akira | 108/2 | 0 16 42 | 37 56 26 | 1692 | | | fresh | 278 | 22 | _ |
| 550 | Kimikuu | Ithima | 108/2 | 0 19 22 | 37 55 24 | 1783 | | | fresh | 158 | 18.5 | _ |

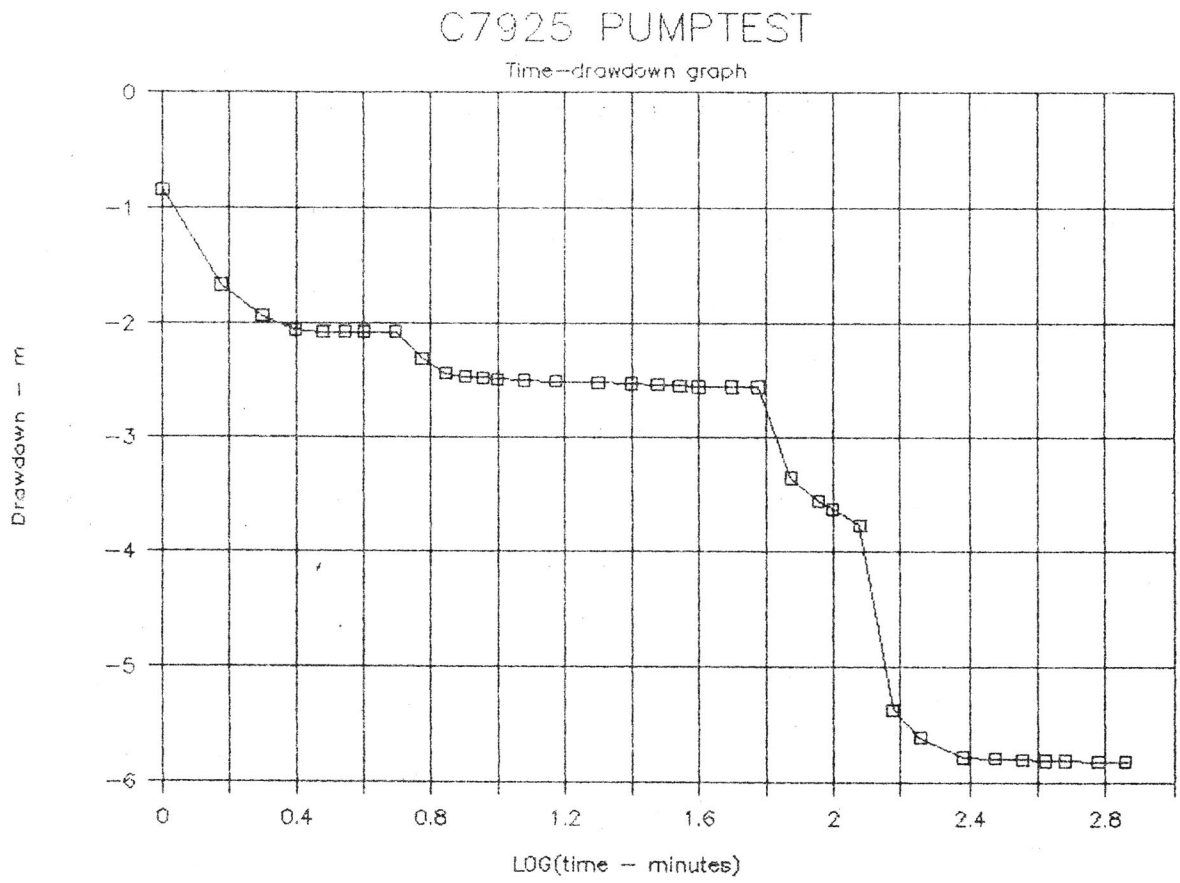
# Appendix 5.3

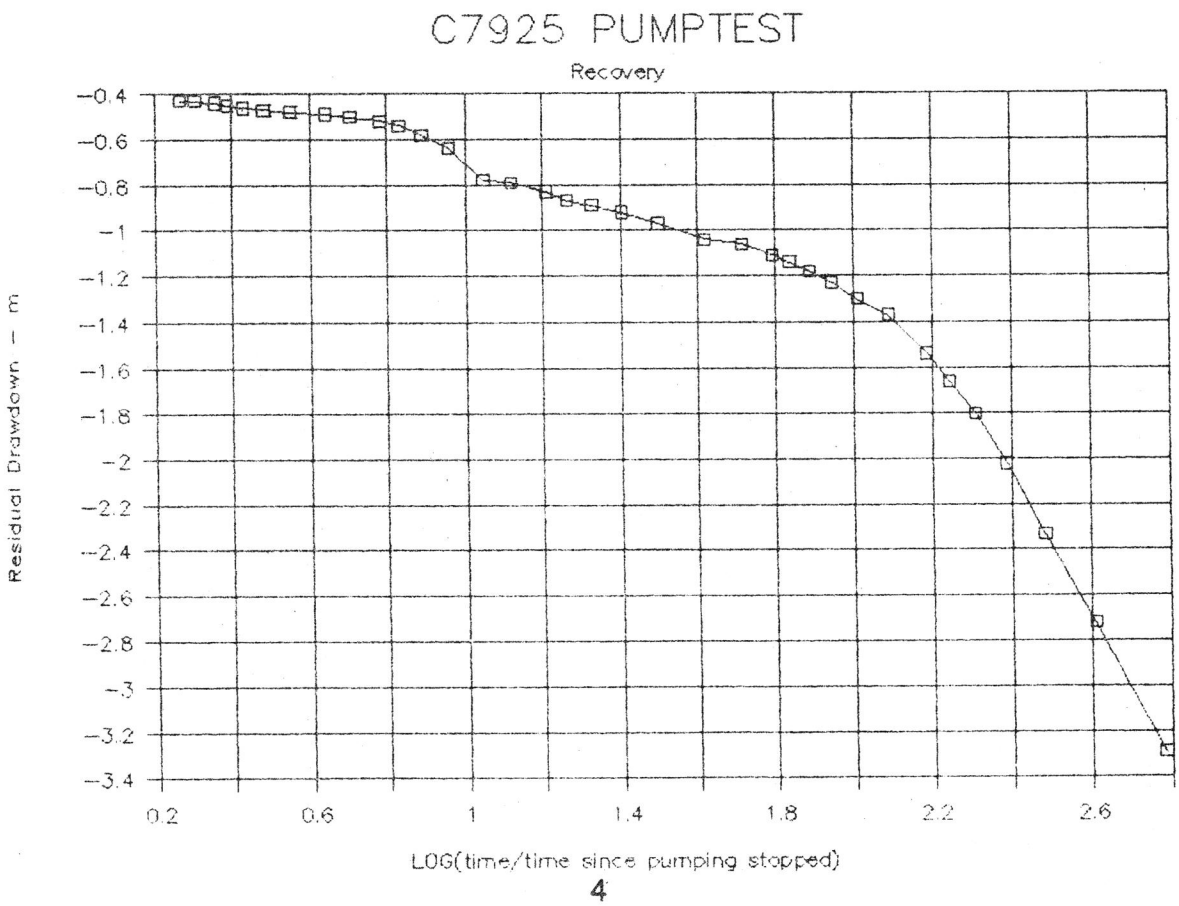
## Well Tests

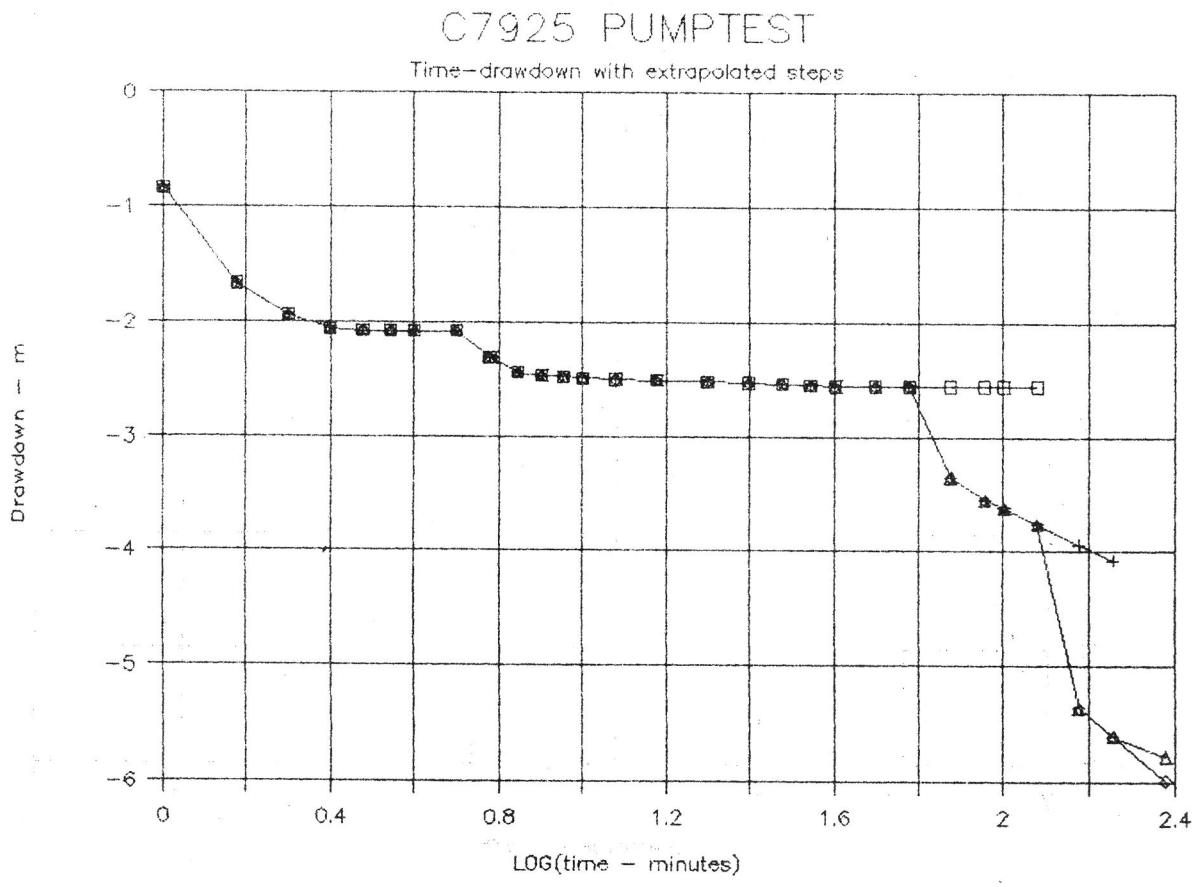
# Meru District, Borehole Tests

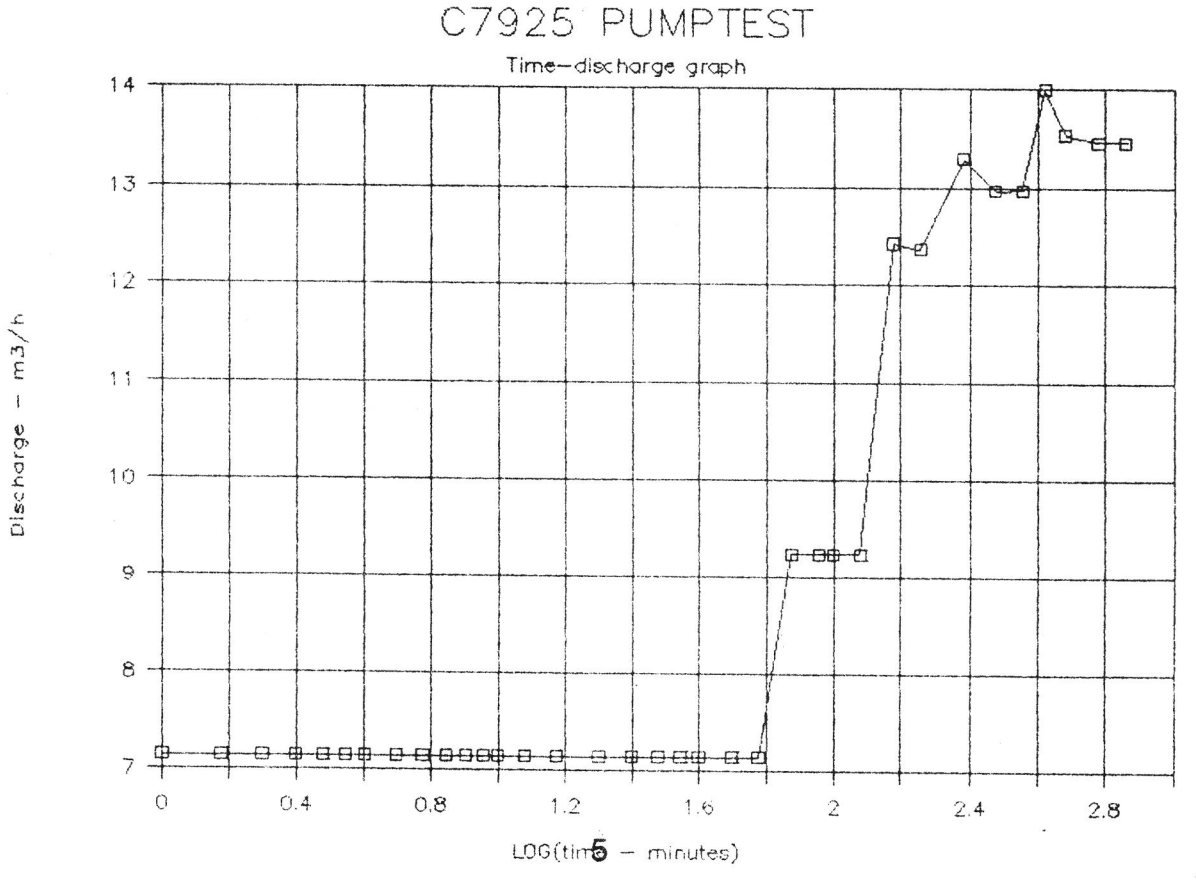
| BH No. | Location | Aquifer Lithology | Step-drawdoen Test | | | | Step-drawdown Equation $s = AQ + BQ^C$ | | | Tested Yield $m^3$/day | Pumping Time and Corrected Pumping Time Minutes | Transmissibility | | Estimated Sustained Yield $m^3$/day |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Q1<br>Ql/s1 | Q2<br>Q2/s2 | Q3<br>Q3/s3 | Mean Q<br>Q/s | A | B | C | | | Based on Recovery $m^2$/day | Based on Specified yield $m^2$/day | |
| C7924 | Isiolo Airstrip | Pyroclastic/<br>Weathered Basement | | | | 11.98<br>0.87 | | | | 21 | 120<br>120 | 3.1 | 25 | >500 |
| C7925 | Ngare Mara (Meru) | Fractured Basalts | 7.14<br>2.79 | 9.24<br>2.46 | 13.29<br>2.51 | 11.37<br>1.96 | 0.407 | -1.94 Exp+24 | -29 | 319 | 720<br>608 | 9.0 | 56 | >500 |
| C7926 | Bure Shilme River | Pyroclastics | | | | 10.78<br>120.48 | | | | 259 | 240<br>240 | 1774 | 3469 | >3000 |
| C7927 | Military Camp.<br>(Isiolo) | Fractured Basalts | 7.98<br>2.49 | 9.44<br>2.47 | 11.89<br>2.75 | 11.64<br>2.45 | 0.400 | 8.57 Exp-13 | 11 | 285 | 1560<br>1527 | 116 | 70 | >500 |
| C8974 | Ruiri | Fractured Basalts | 3.90<br>0.74 | 6.48<br>0.69 | 8.62<br>0.59 | 8.21<br>0.38 | 1.32 | 1.52 Exp-4 | 4.63 | 207 | 1080<br>1032 | 6.0 | 11 | 200 |
| C8975 | Magutuni | Weathered Tuff | | | | 0.26<br>0.01 | | | | 6.2 | 60<br>60 | | 0.29 | <1 |
| C8976 | Nare Mara (Isiolo) | Coarse Pyroclastic/<br>Weathered Basalts | 3.10<br>25.84 | 6.50<br>19.72 | 10.17<br>15.90 | 8.83<br>13.39 | 0.026 | 4.88 Exp-3 | 1.88 | 244 | 1080<br>1035 | | 386 | >1500 |
| C8977 | Birikine | Fractured Basalts | 11.47<br>12.47 | 12.53<br>13.87 | 12.72<br>13.93 | 13.26<br>13.00 | 0.071 | 1.05 Exp+24 | -23 | 305 | 1440<br>1324 | 253 | 374 | >1000 |
| C8978 | Donyo Sabu | Fractured Basalts | 5.40<br>4.12 | 7.43<br>3.26 | 9.69<br>2.34 | 9.19<br>2.04 | 0.20 | 3.58 Exp-4 | 3.84 | 233 | 1080<br>965 | | 59 | >500 |
| C9081 | Kianjai<br>V. Polytechnic | Weathered Basalts | 7.32<br>7.87 | 9.58<br>7.09 | 13.17<br>6.63 | 12.84<br>3.89 | 0.16 | -1.345 | -0.82 | 316 | 1440<br>1403 | | 112 | >1000 |
| C9082 | Liliaba | Medium Pyroclastics/<br>Weathered Basalts | | | | 8.85<br>50.51 | | | | 212 | 240<br>240 | | 1455 | >2000 |
| C9083 | Marithi Water Tank | Pyroclastics/Weathered<br>Basalts | | | | 9.35<br>62.34 | | | | 224 | 360<br>360 | 164 | 1796 | >2000 |
| C9084 | Maraeni | Weathered Basalts/<br>Pyroclastics | | | | 9.36<br>16.13 | | | | 225 | 1440<br>1440 | 1959 | 465 | >1500 |
| C9085 | Meru Show Ground | Coarse to Medium<br>Pyroclastics | | | | 8.72<br>51.28 | | | | 209 | 1440<br>1440 | 1277 | 1477 | >2000 |

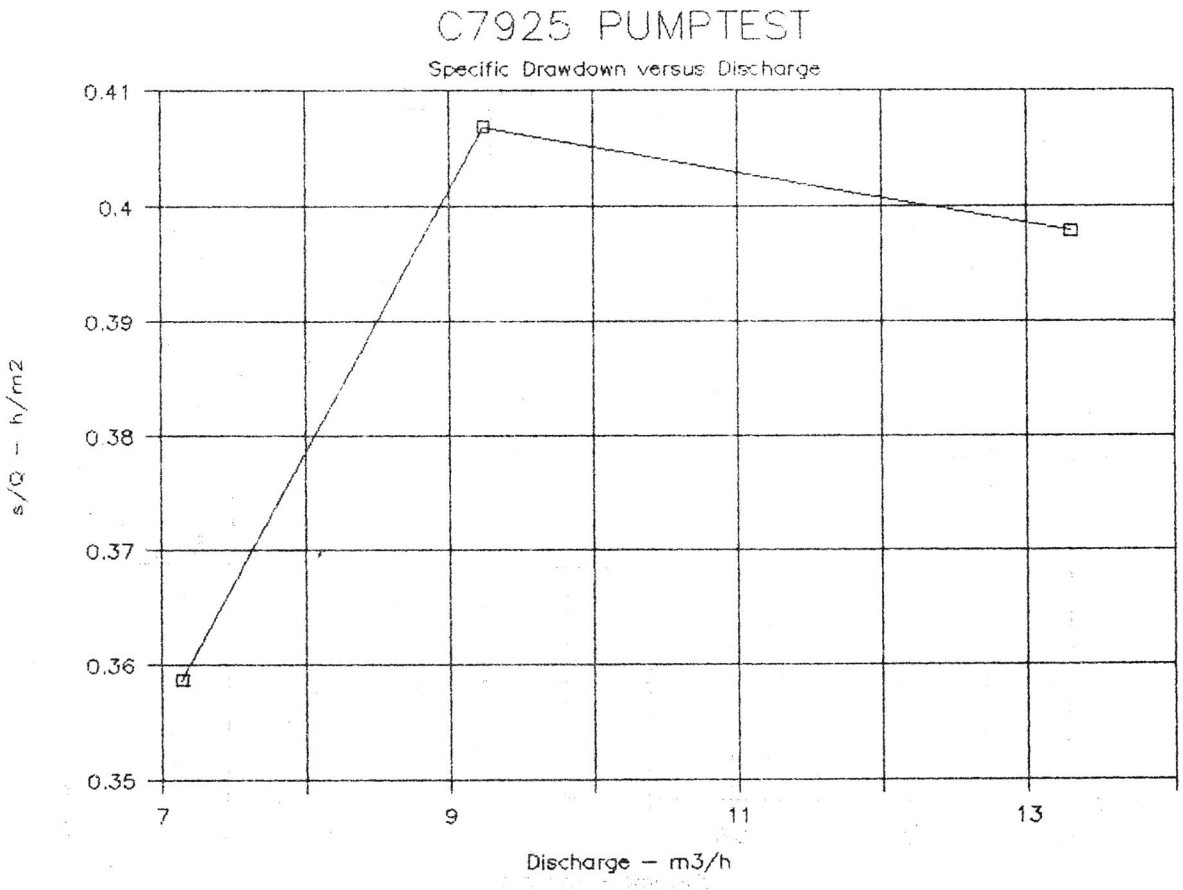

C7924 PUMPTEST
Time–discharge graph
Discharge – m3/h
17
16
15
14
13
12
11
10
9
8
7
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
LOG(time – minutes)

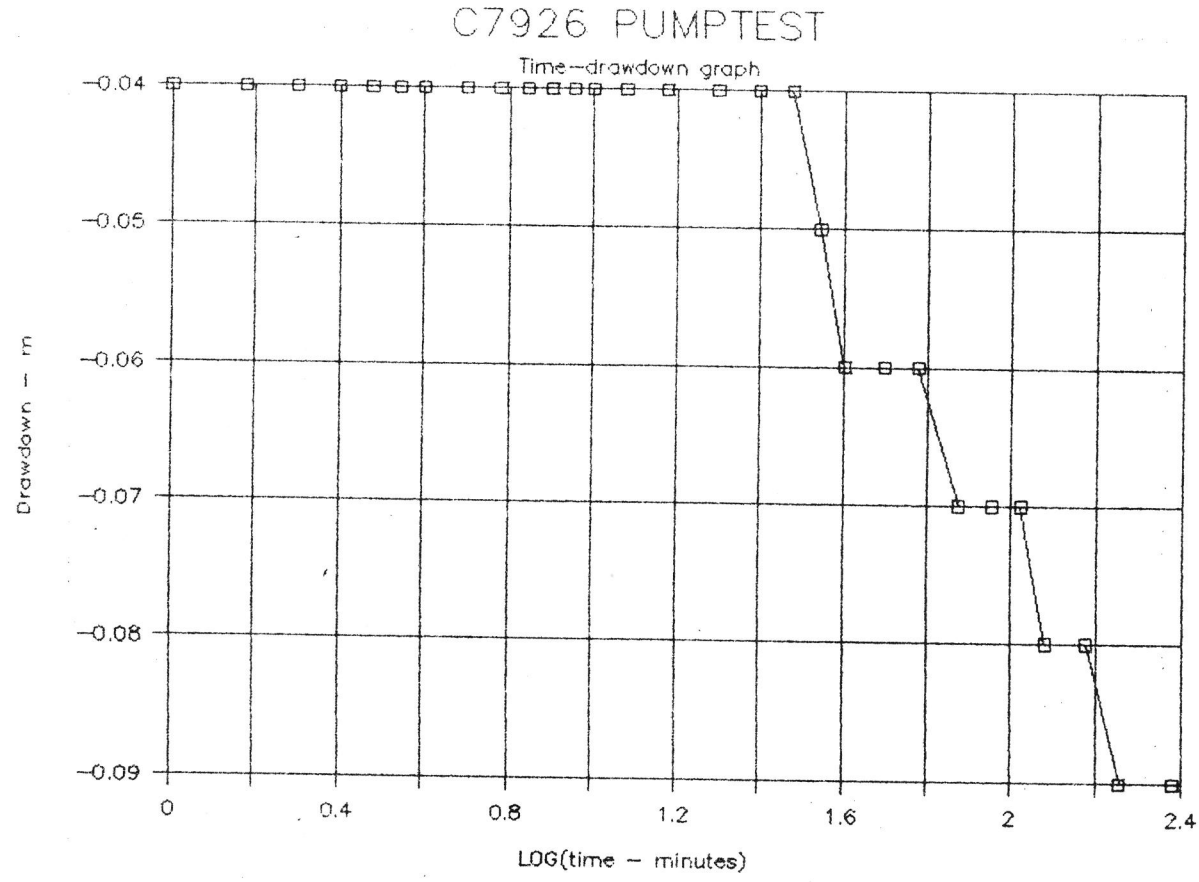

C7925 PUMPTEST
Time–drawdown graph
Drawdown – m
0
-1
-2
-3
-4
-5
-6
0
0.4
0.8
1.2
1.6
2
2.4
2.8
LOG(time – minutes)

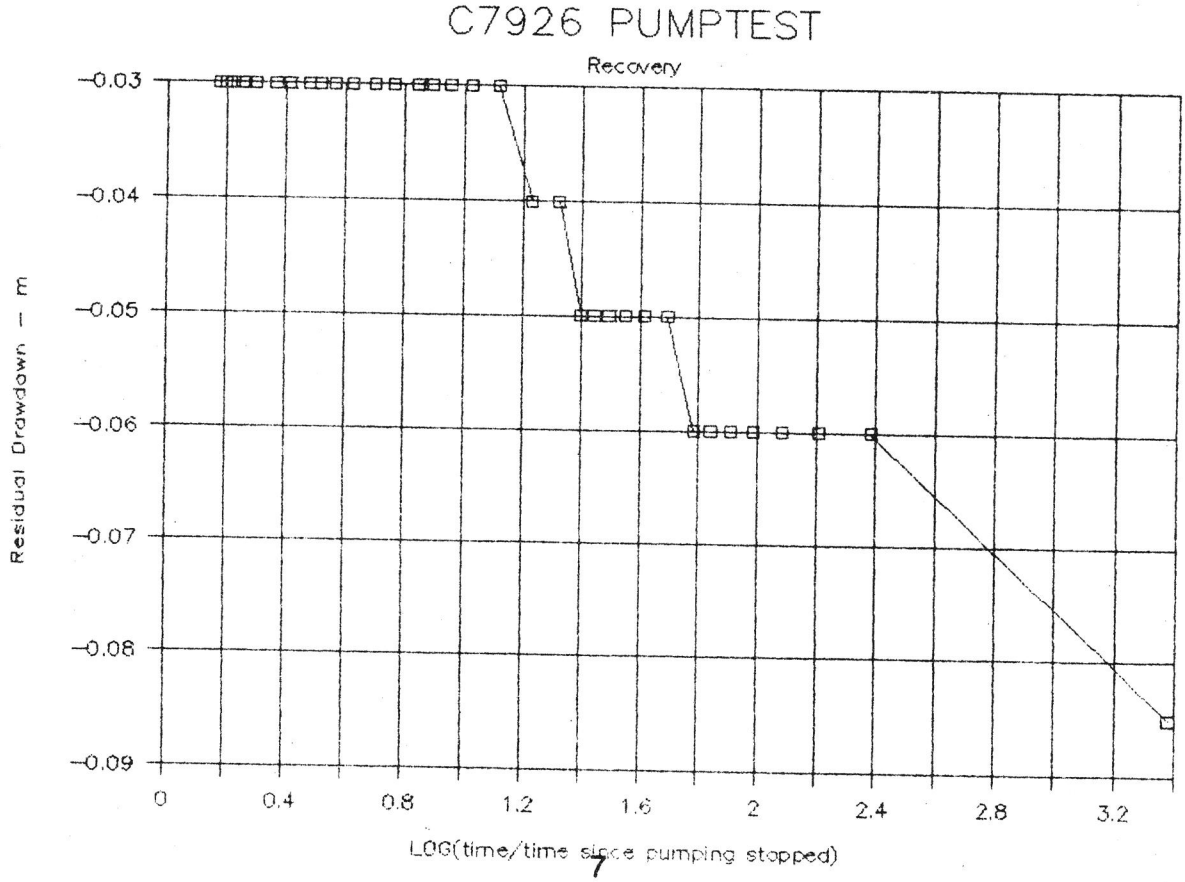

C7925 PUMPTEST
Recovery
Residual Drawdown – m
-0.4
-0.6
-0.8
-1
-1.2
-1.4
-1.6
-1.8
-2
-2.2
-2.4
-2.6
-2.8
-3
-3.2
-3.4
0.2
0.6
1
1.4
1.8
2.2
2.6
LOG(time/time since pumping stopped)

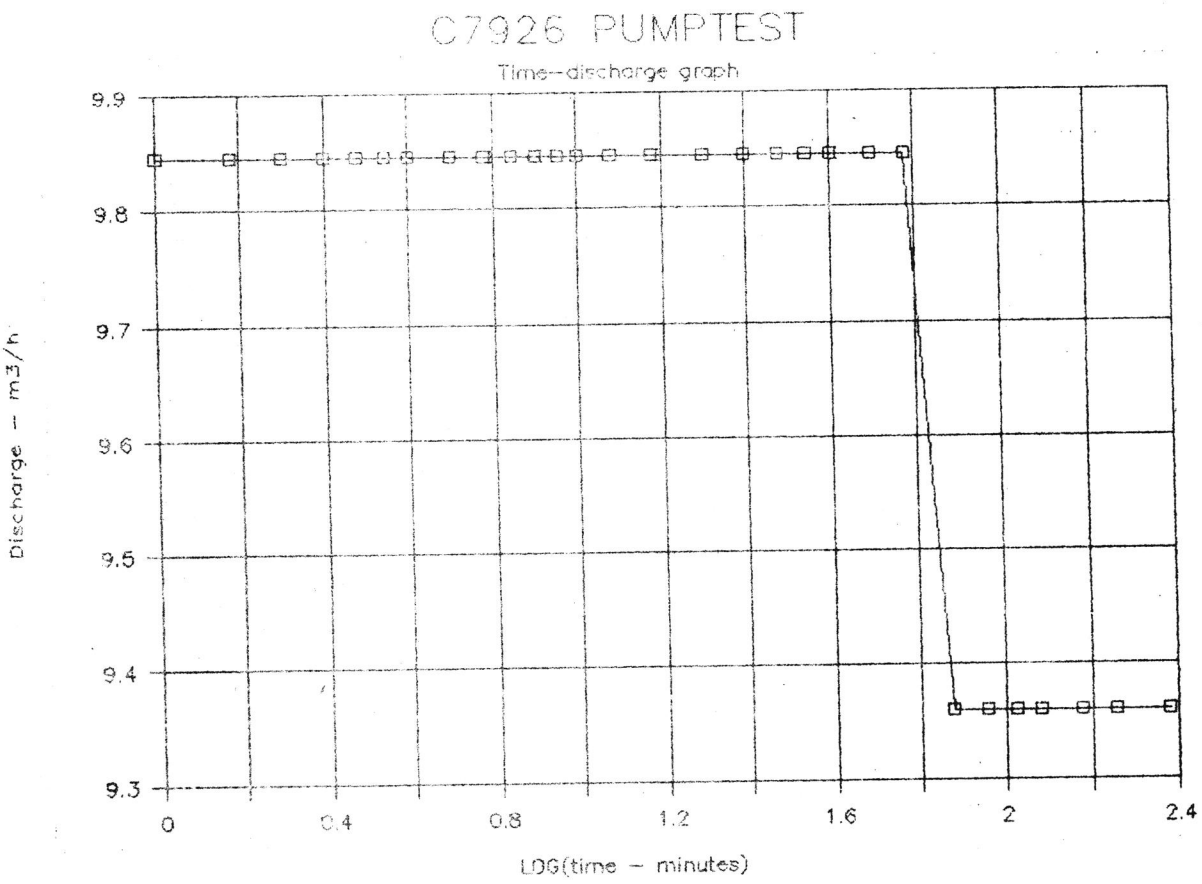

C7925 PUMPTEST
Time–drawdown with extrapolated steps
Drawdown – m
0
-1
-2
-3
-4
-5
-6
0
0.4
0.8
1.2
1.6
2
2.4
LOG(time – minutes)

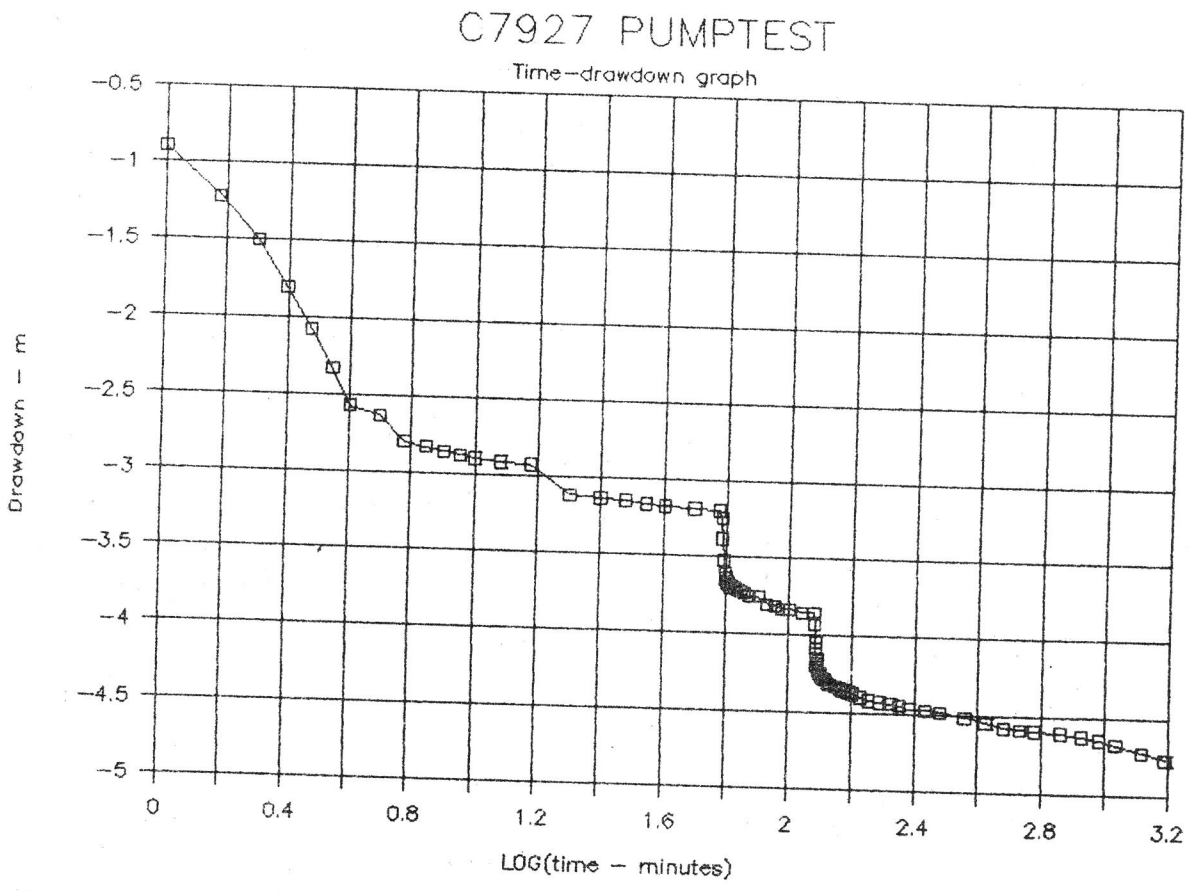

C7925 PUMPTEST
Time–discharge graph
Discharge – m3/h
14
13
12
11
10
9
8
7
0
0.4
0.8
1.2
1.6
2
2.4
2.8
LOG(time – minutes)

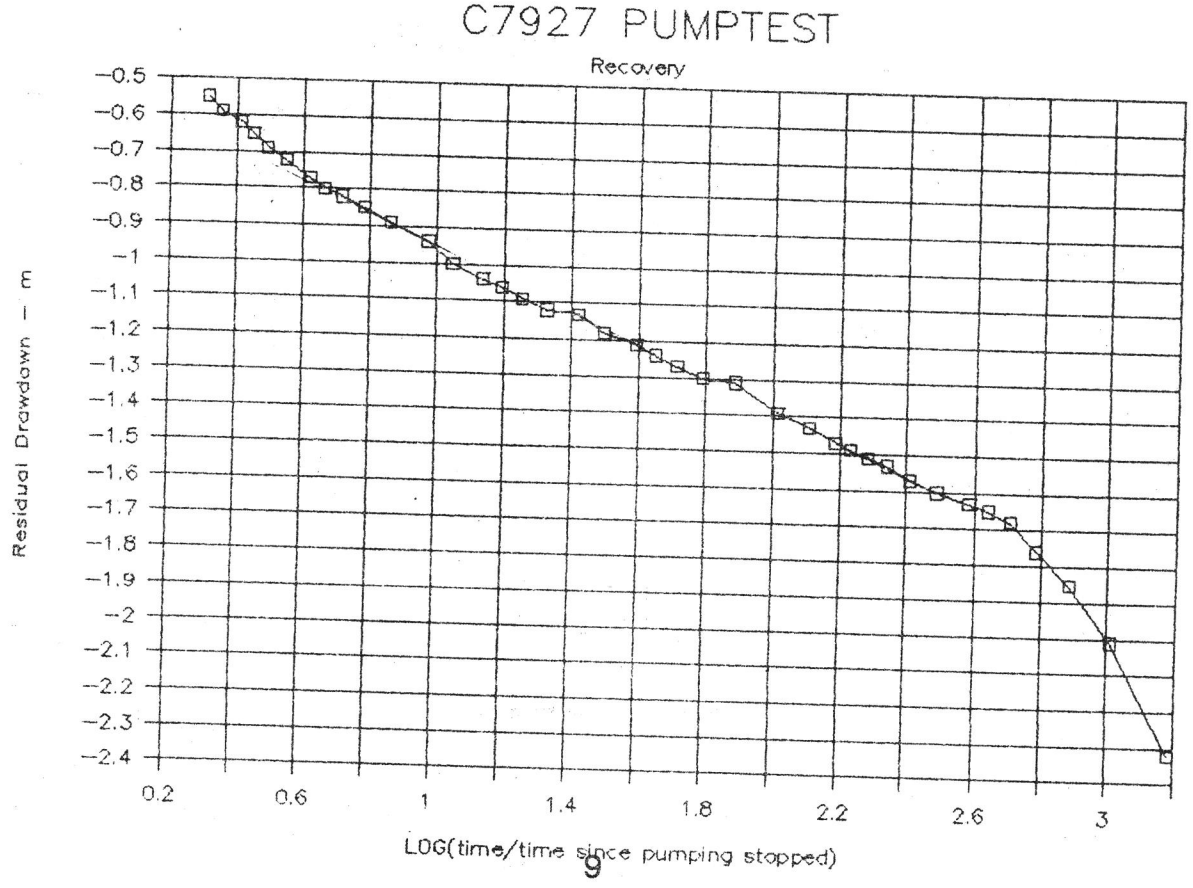

C7925 PUMPTEST
Specific Drawdown versus Discharge
0.41
0.4
0.39
0.38
0.37
0.36
0.35
s/Q - h/m2
7
9
11
13
Discharge - m3/h

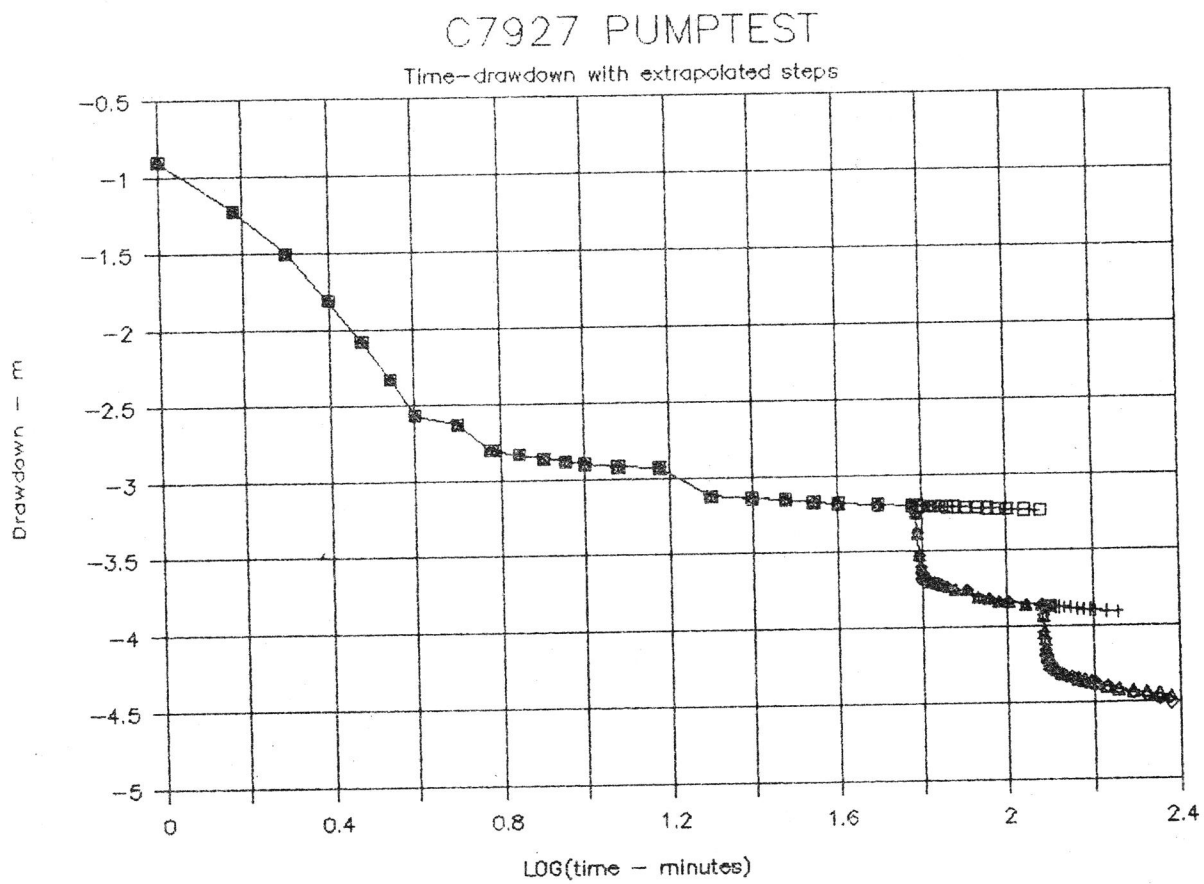

C7926 PUMPTEST
Time–drawdown graph
Drawdown – m
-0.04
-0.05
-0.06
-0.07
-0.08
-0.09
0
0.4
0.8
1.2
1.6
2
2.4
LOG(time – minutes)

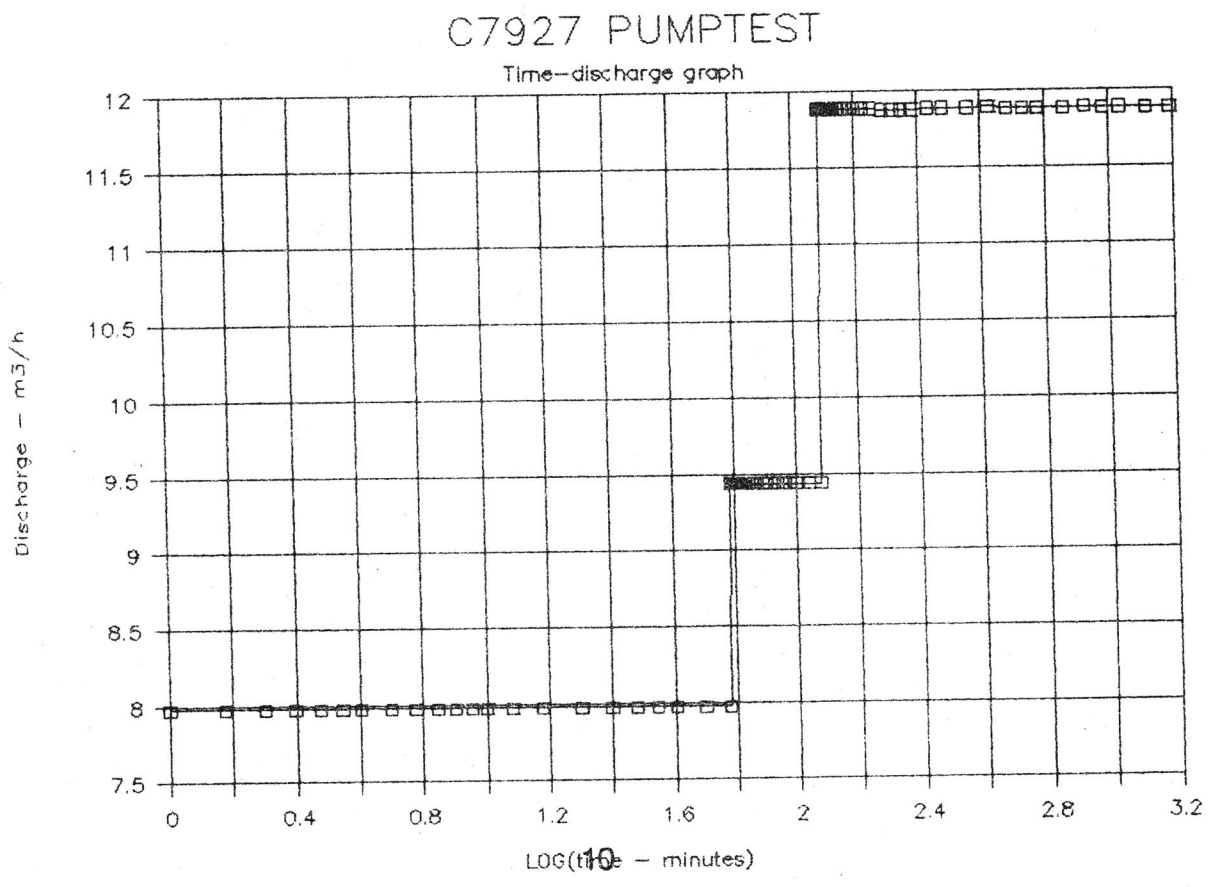

C7926 PUMPTEST
Recovery
Residual Drawdown – m
-0.03
-0.04
-0.05
-0.06
-0.07
-0.08
-0.09
0
0.4
0.8
1.2
1.6
2
2.4
2.8
3.2
LOG(time/time since pumping stopped)

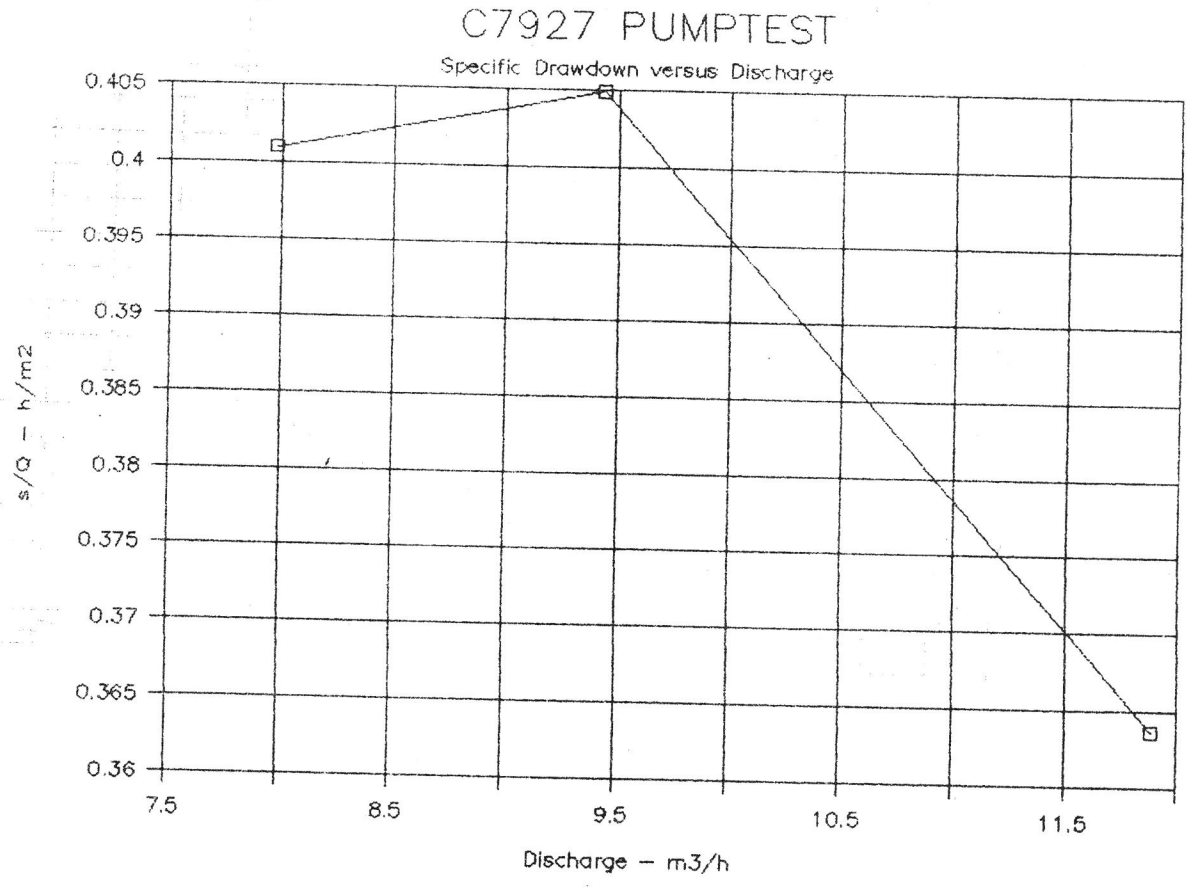

C7926 PUMPTEST
Time-discharge graph
Discharge - m3/h
9.9
9.8
9.7
9.6
9.5
9.4
9.3
0
0.4
0.8
1.2
1.6
2
2.4
LOG(time - minutes)

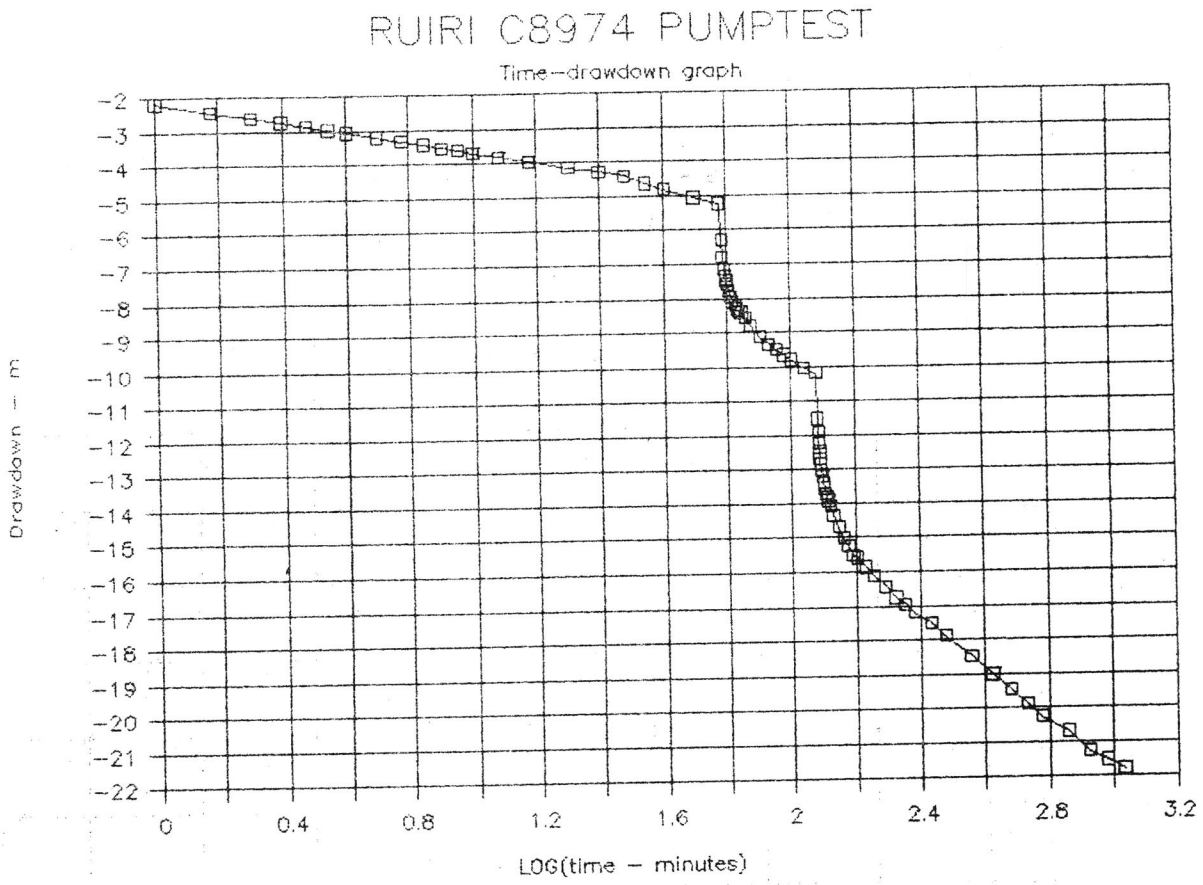

C7927 PUMPTEST
Time–drawdown graph
Drawdown – m
-0.5
-1
-1.5
-2
-2.5
-3
-3.5
-4
-4.5
-5
0
0.4
0.8
1.2
1.6
2
2.4
2.8
3.2
LOG(time – minutes)

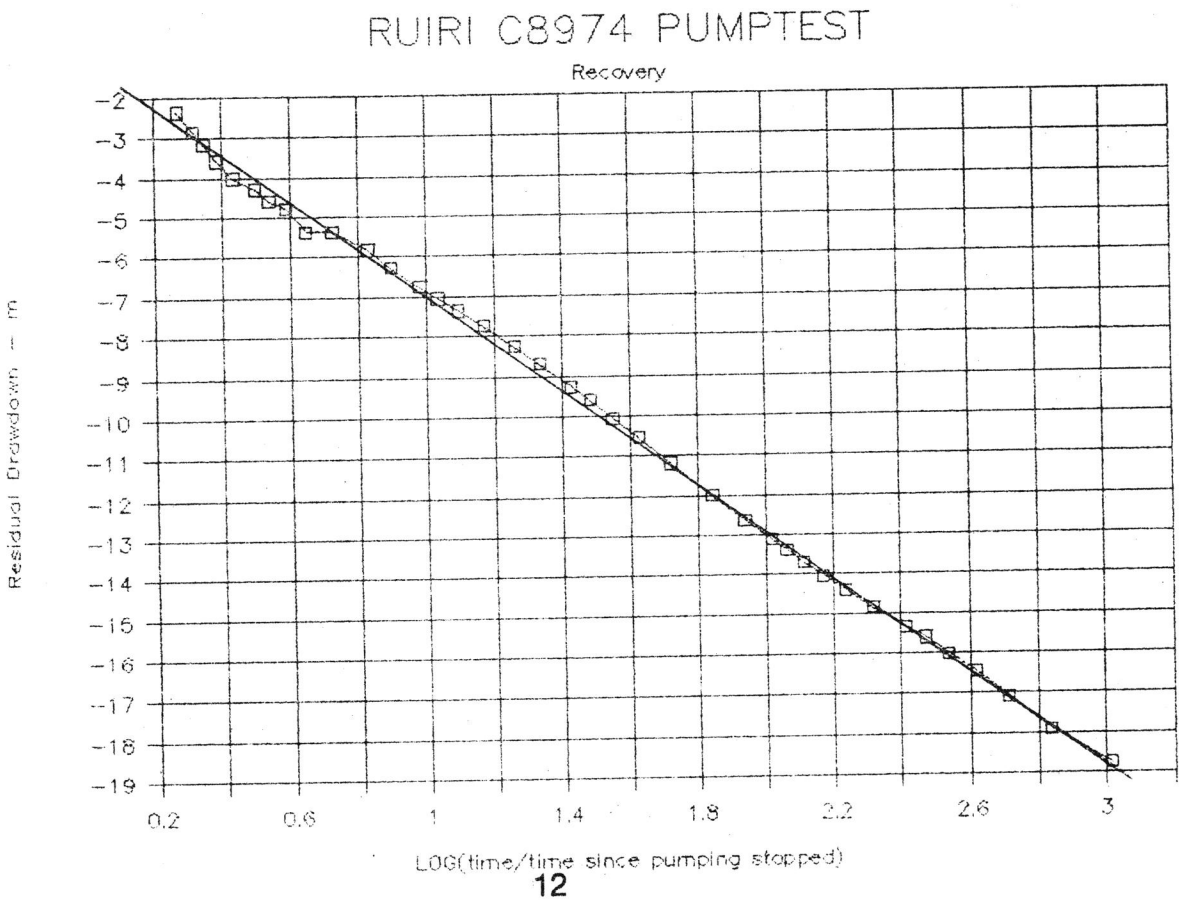

C7927 PUMPTEST
Recovery
Residual Drawdown – m
-0.5
-0.6
-0.7
-0.8
-0.9
-1
-1.1
-1.2
-1.3
-1.4
-1.5
-1.6
-1.7
-1.8
-1.9
-2
-2.1
-2.2
-2.3
-2.4
0.2
0.6
1
1.4
1.8
2.2
2.6
3
LOG(time/time since pumping stopped)

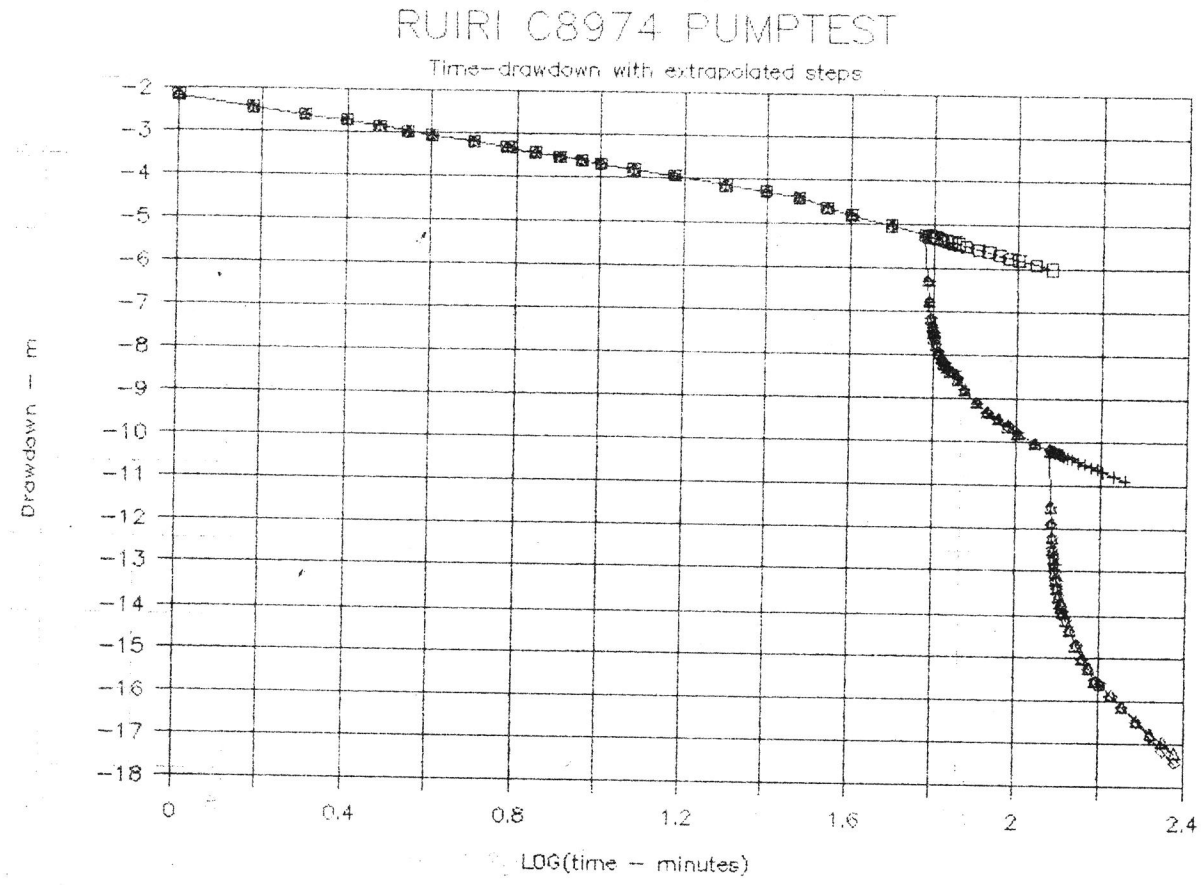

C7927 PUMPTEST
Time–drawdown with extrapolated steps
Drawdown – m
-0.5
-1
-1.5
-2
-2.5
-3
-3.5
-4
-4.5
-5
0
0.4
0.8
1.2
1.6
2
2.4
LOG(time – minutes)

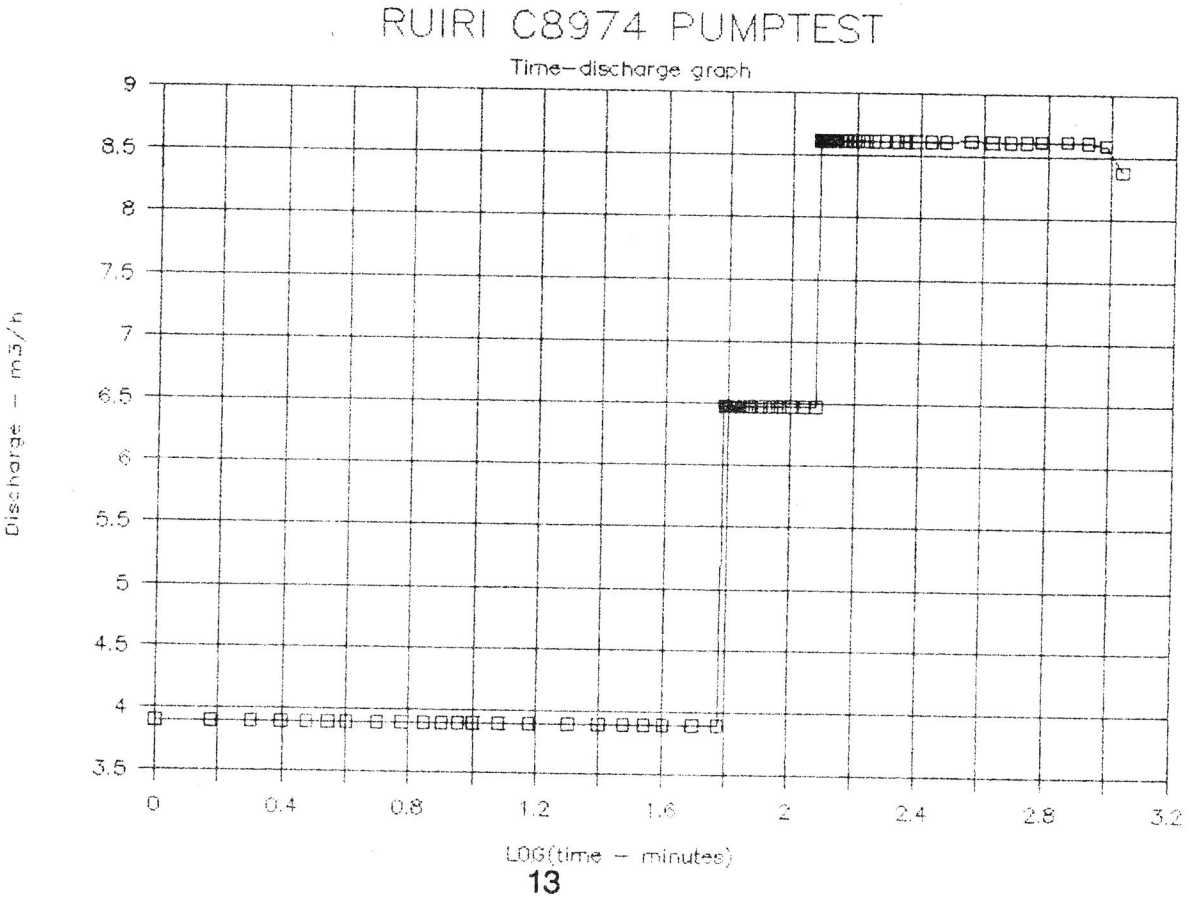

C7927 PUMPTEST
Time–discharge graph
Discharge – m3/h
12
11.5
11
10.5
10
9.5
9
8.5
8
7.5
0
0.4
0.8
1.2
1.6
2
2.4
2.8
3.2
LOG(time – minutes)

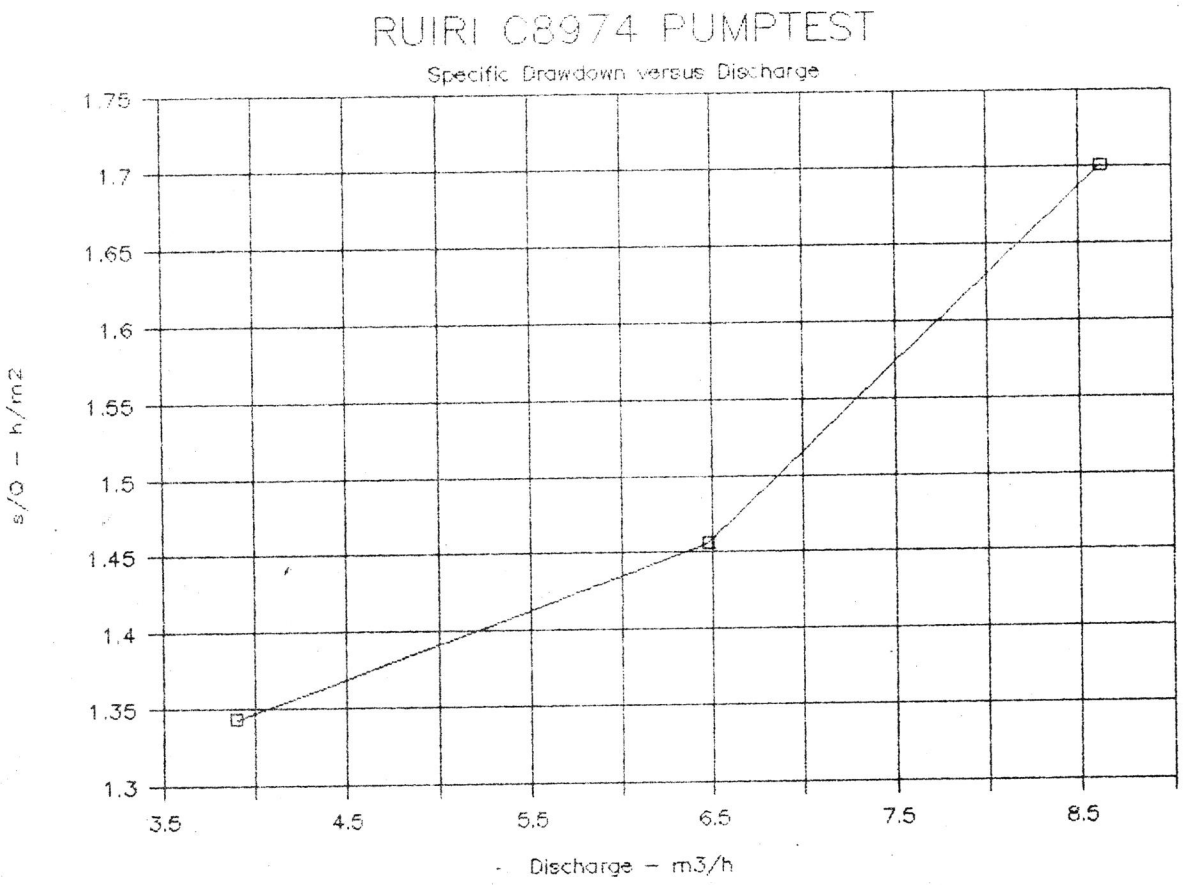

C7927 PUMPTEST
Specific Drawdown versus Discharge
0.405
0.4
0.395
0.39
0.385
0.38
0.375
0.37
0.365
0.36
s/Q - h/m2
7.5
8.5
9.5
10.5
11.5
Discharge - m3/h

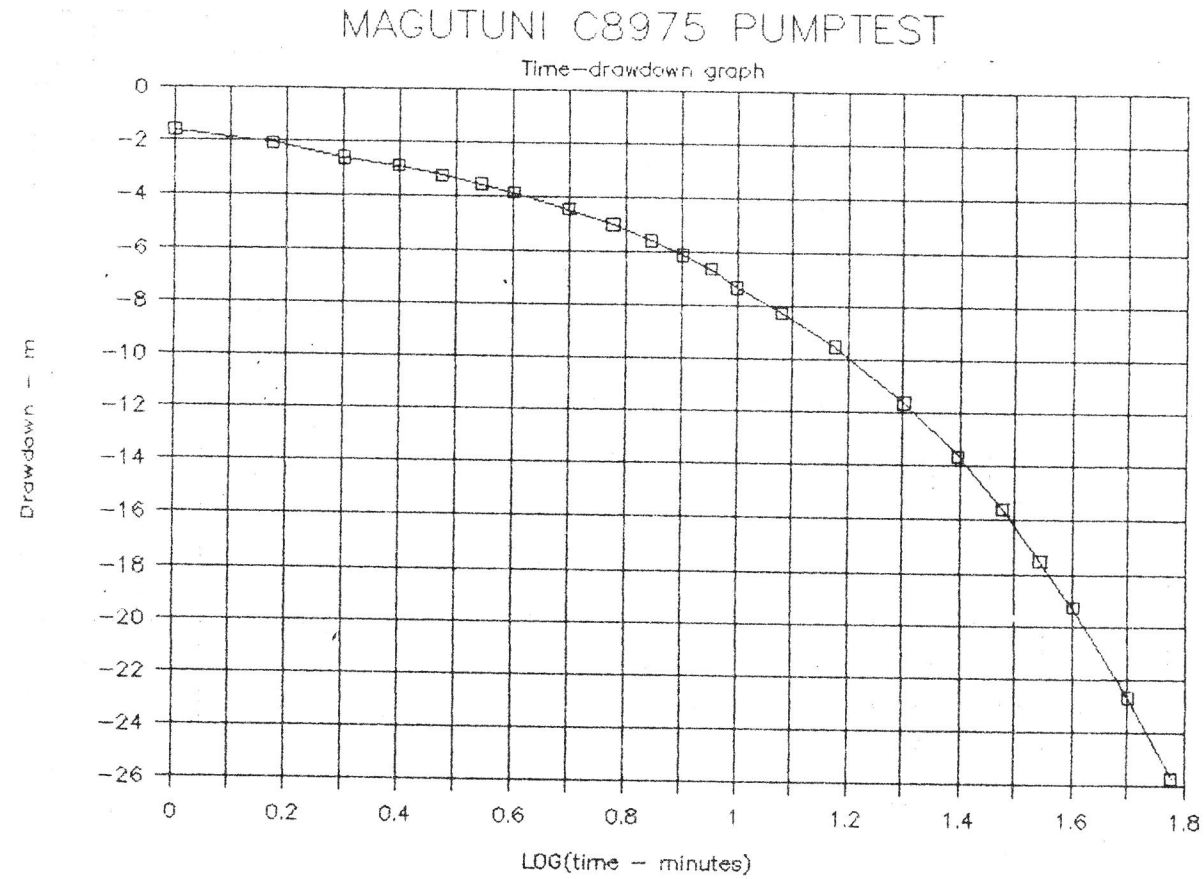

RUIRI C8974 PUMPTEST
Time–drawdown graph
Drawdown – m
-2
-3
-4
-5
-6
-7
-8
-9
-10
-11
-12
-13
-14
-15
-16
-17
-18
-19
-20
-21
-22
0
0.4
0.8
1.2
1.6
2
2.4
2.8
3.2
LOG(time – minutes)

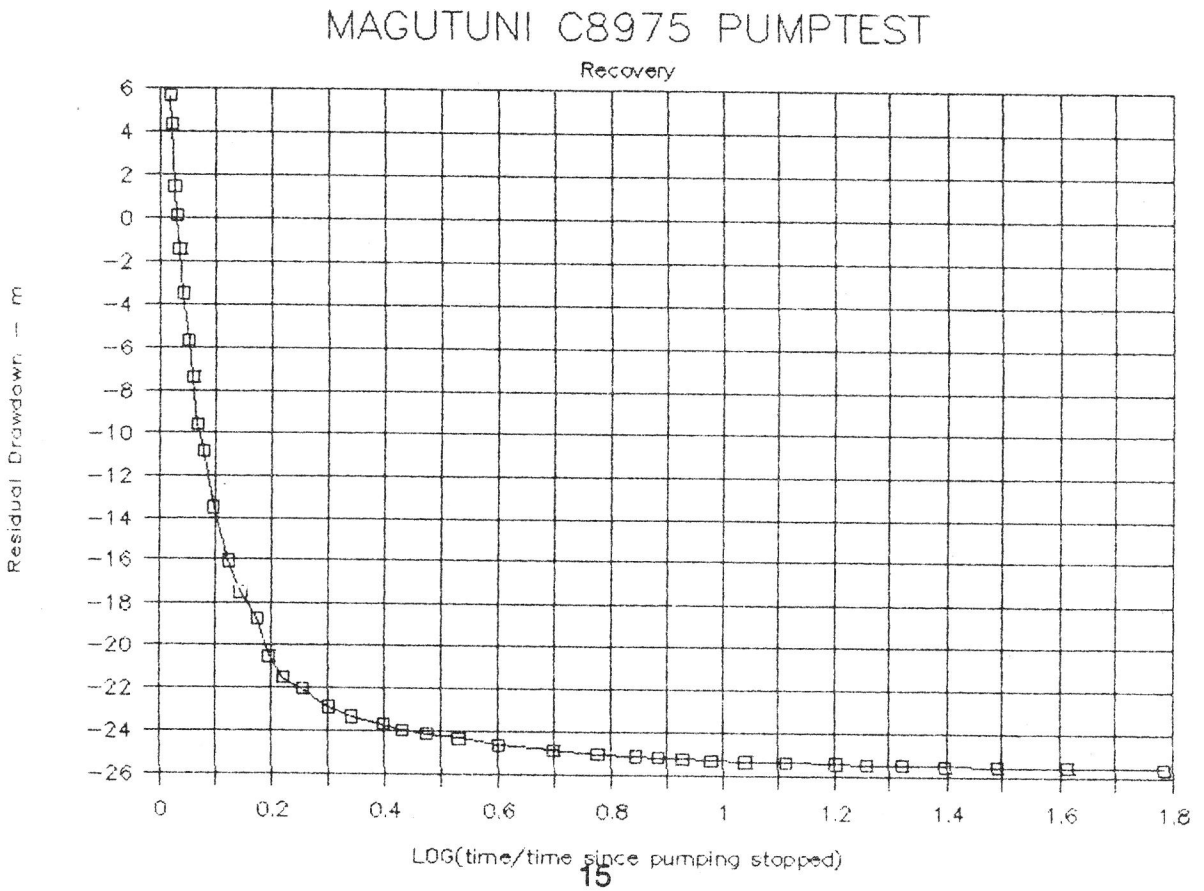

RUIRI C8974 PUMPTEST
Recovery
Residual Drawdown – m
-2
-3
-4
-5
-6
-7
-8
-9
-10
-11
-12
-13
-14
-15
-16
-17
-18
-19
0.2
0.6
1
1.4
1.8
2.2
2.6
3
LOG(time/time since pumping stopped)


RUIRI C8974 PUMPTEST
Time–drawdown with extrapolated steps
Drawdown – m
-2
-3
-4
-5
-6
-7
-8
-9
-10
-11
-12
-13
-14
-15
-16
-17
-18
0
0.4
0.8
1.2
1.6
2
2.4
LOG(time – minutes)

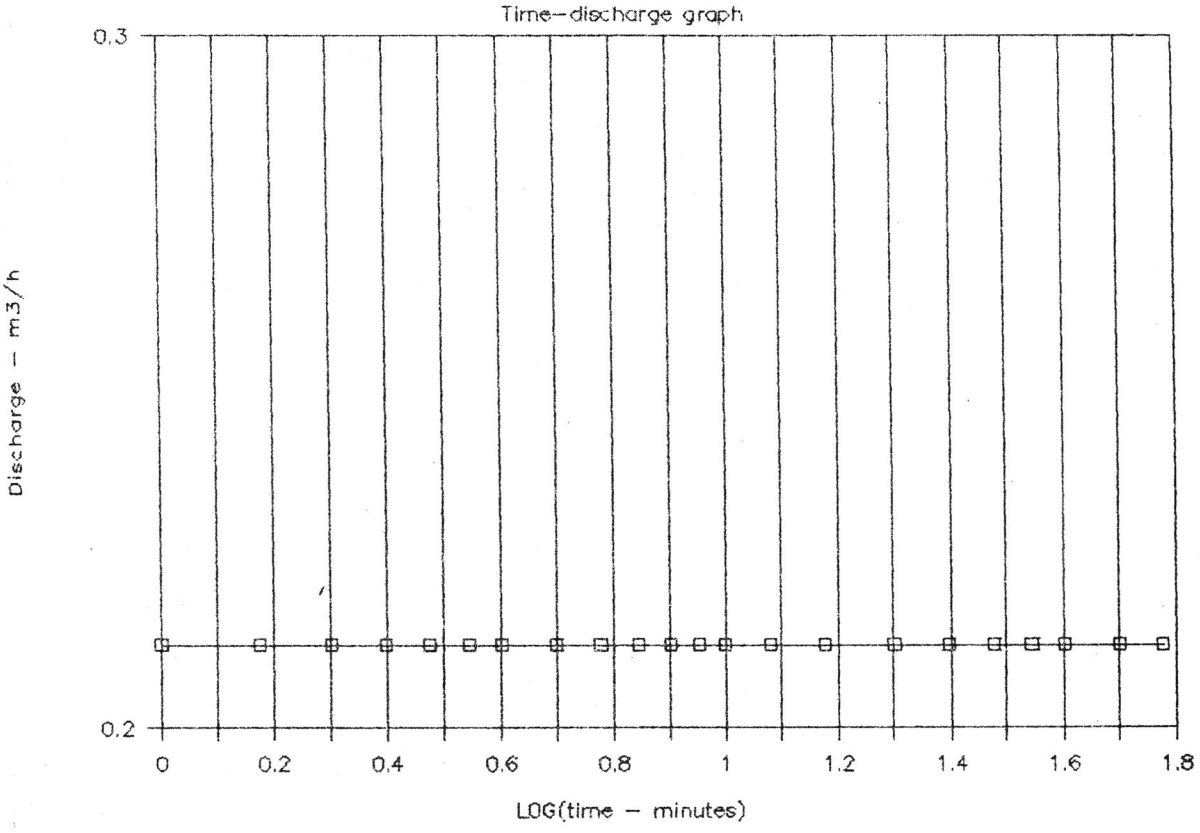

RUIRI C8974 PUMPTEST
Time–discharge graph
Discharge – m3/h
9
8.5
8
7.5
7
6.5
6
5.5
5
4.5
4
3.5
0
0.4
0.8
1.2
1.6
2
2.4
2.8
3.2
LOG(time – minutes)

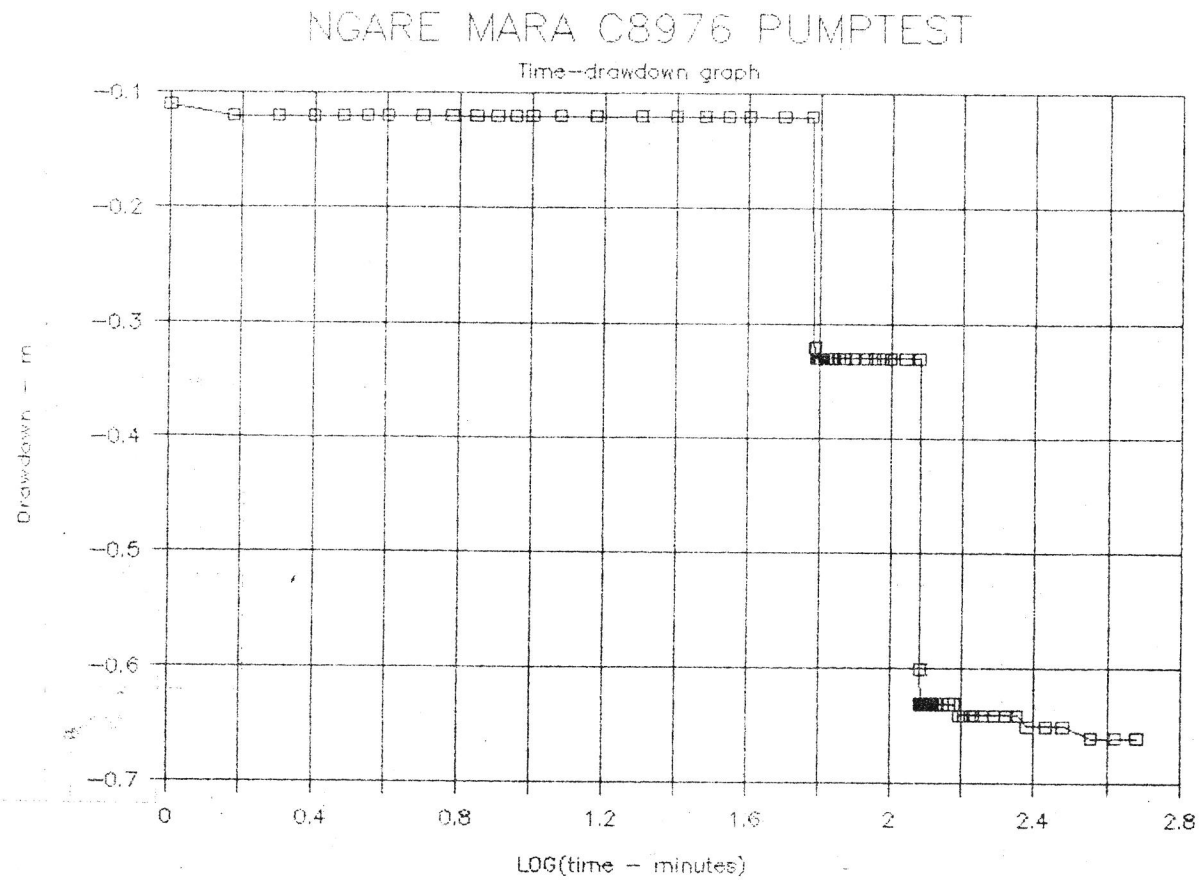

RUIRI C8974 PUMPTEST
Specific Drawdown versus Discharge
s/Q - h/m2
1.75
1.7
1.65
1.6
1.55
1.5
1.45
1.4
1.35
1.3
3.5
4.5
5.5
6.5
7.5
8.5
Discharge - m3/h

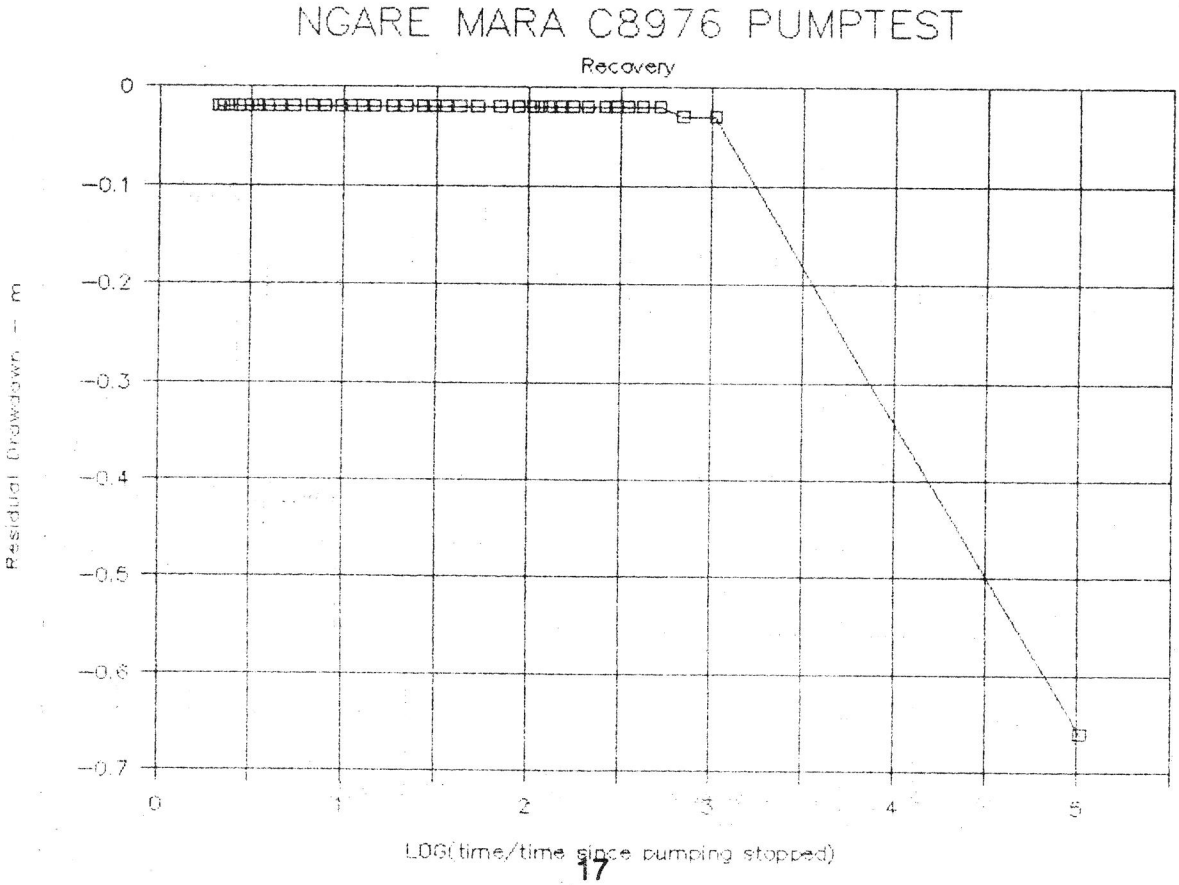

MAGUTUNI C8975 PUMPTEST
Time–drawdown graph
Drawdown – m
0
-2
-4
-6
-8
-10
-12
-14
-16
-18
-20
-22
-24
-26
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
LOG(time – minutes)

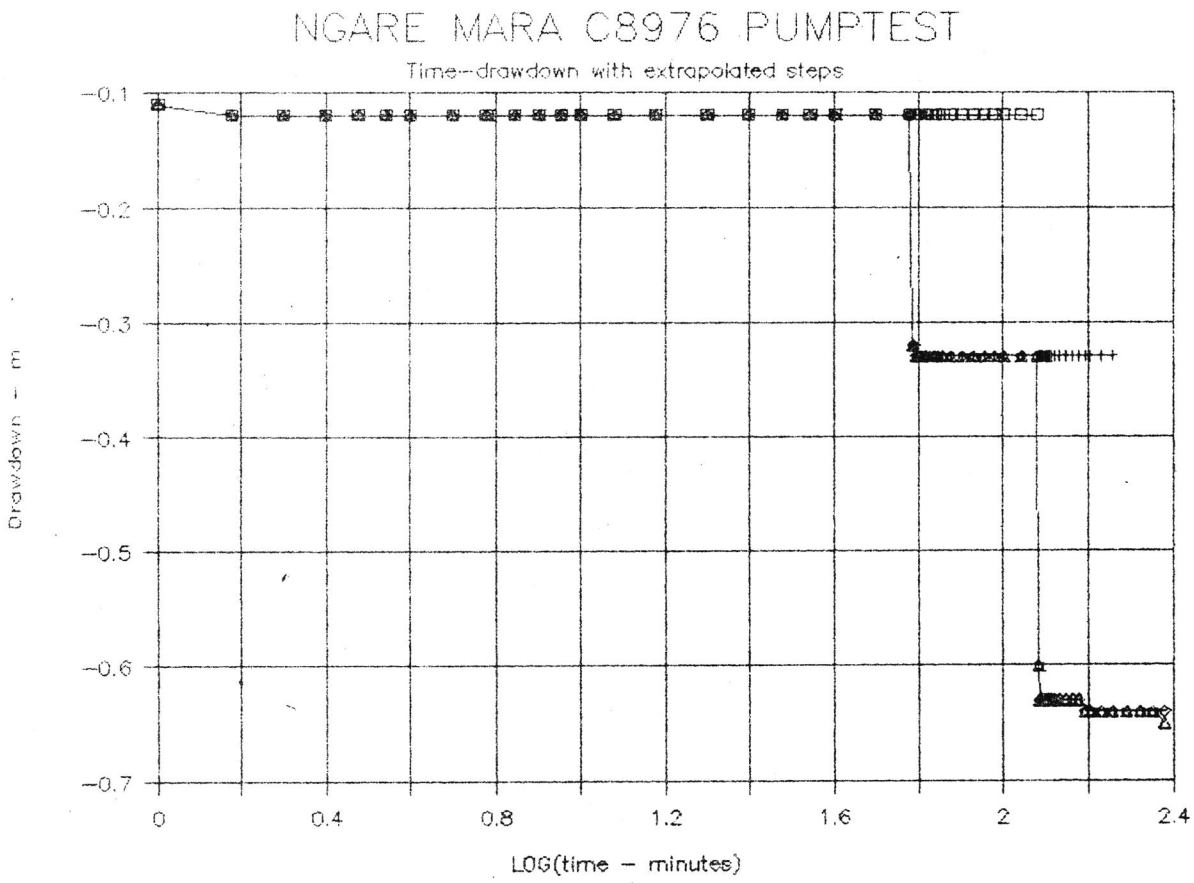

MAGUTUNI C8975 PUMPTEST
Recovery
Residual Drawdown – m
6
4
2
0
-2
-4
-6
-8
-10
-12
-14
-16
-18
-20
-22
-24
-26
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
LOG(time/time since pumping stopped)

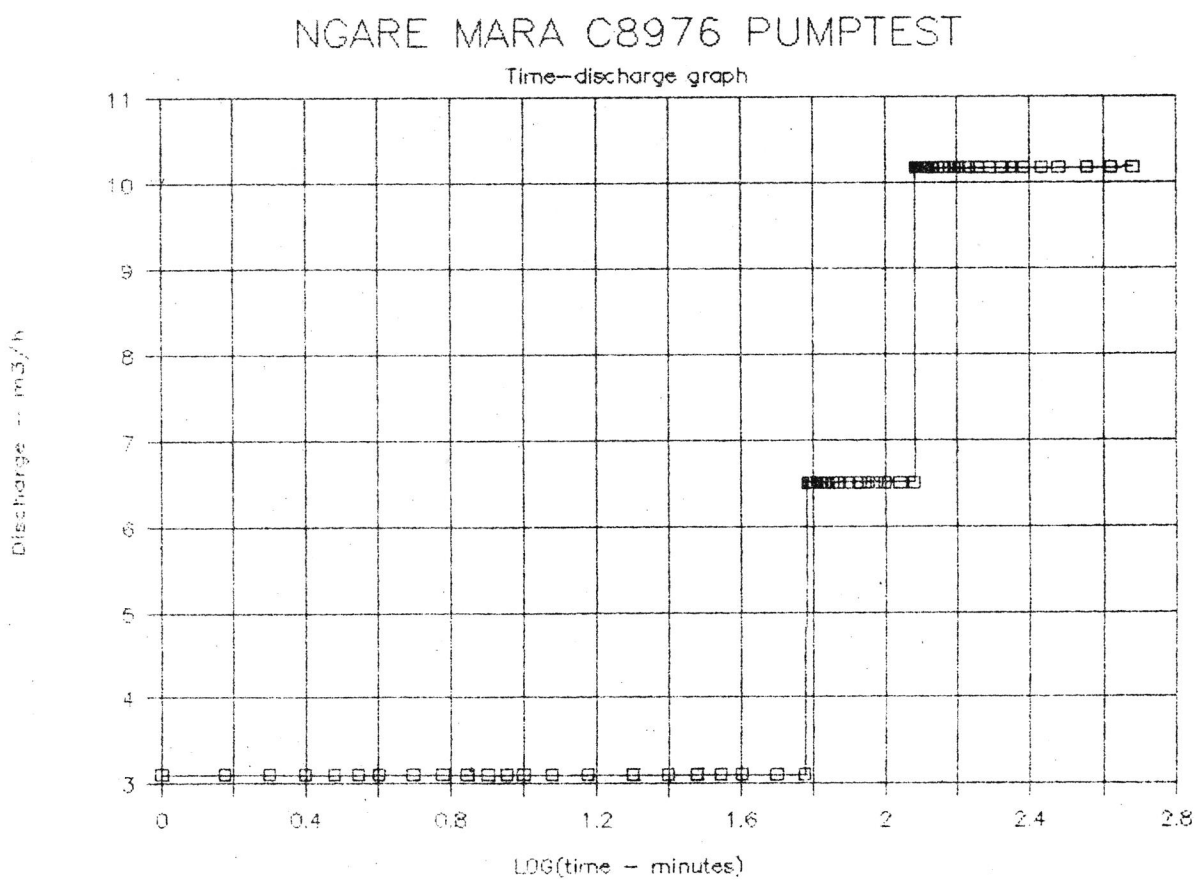
# MAGUTUNI C8975 PUMPTEST

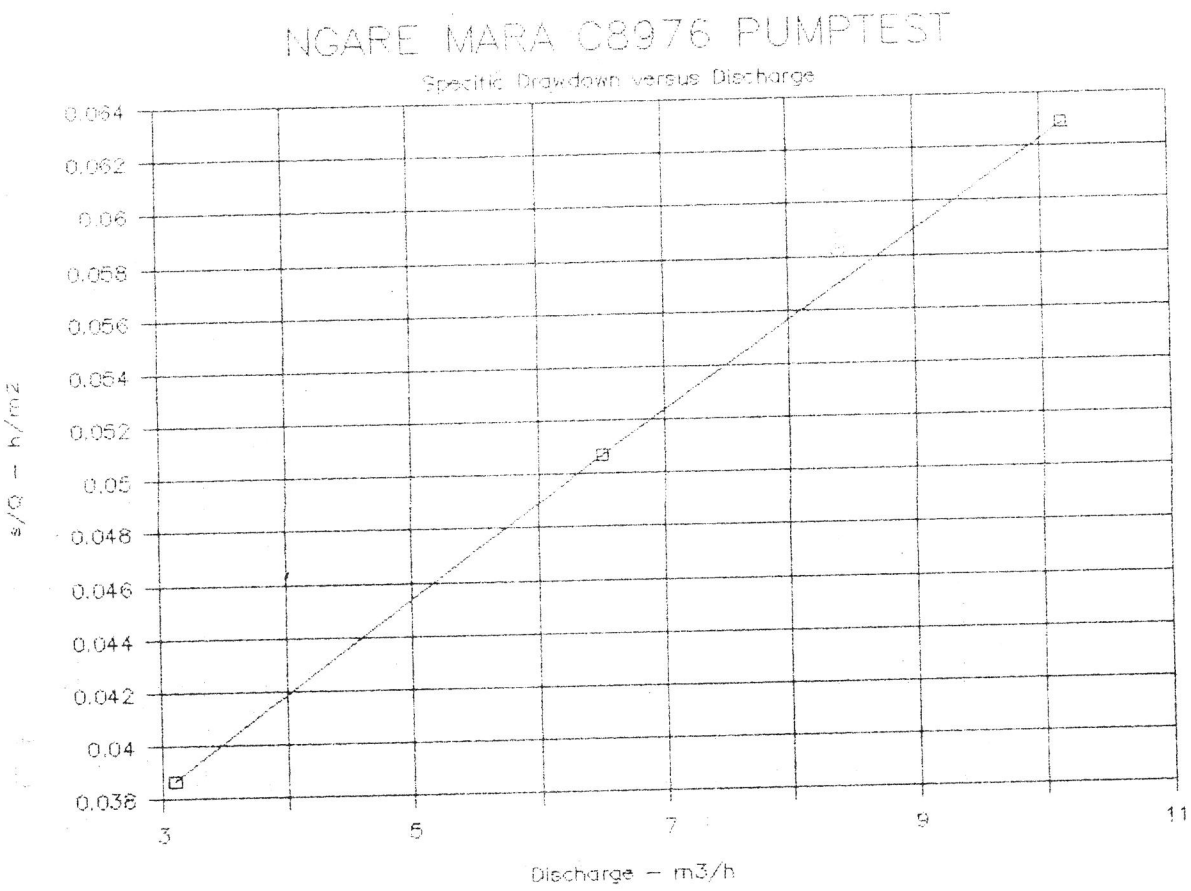


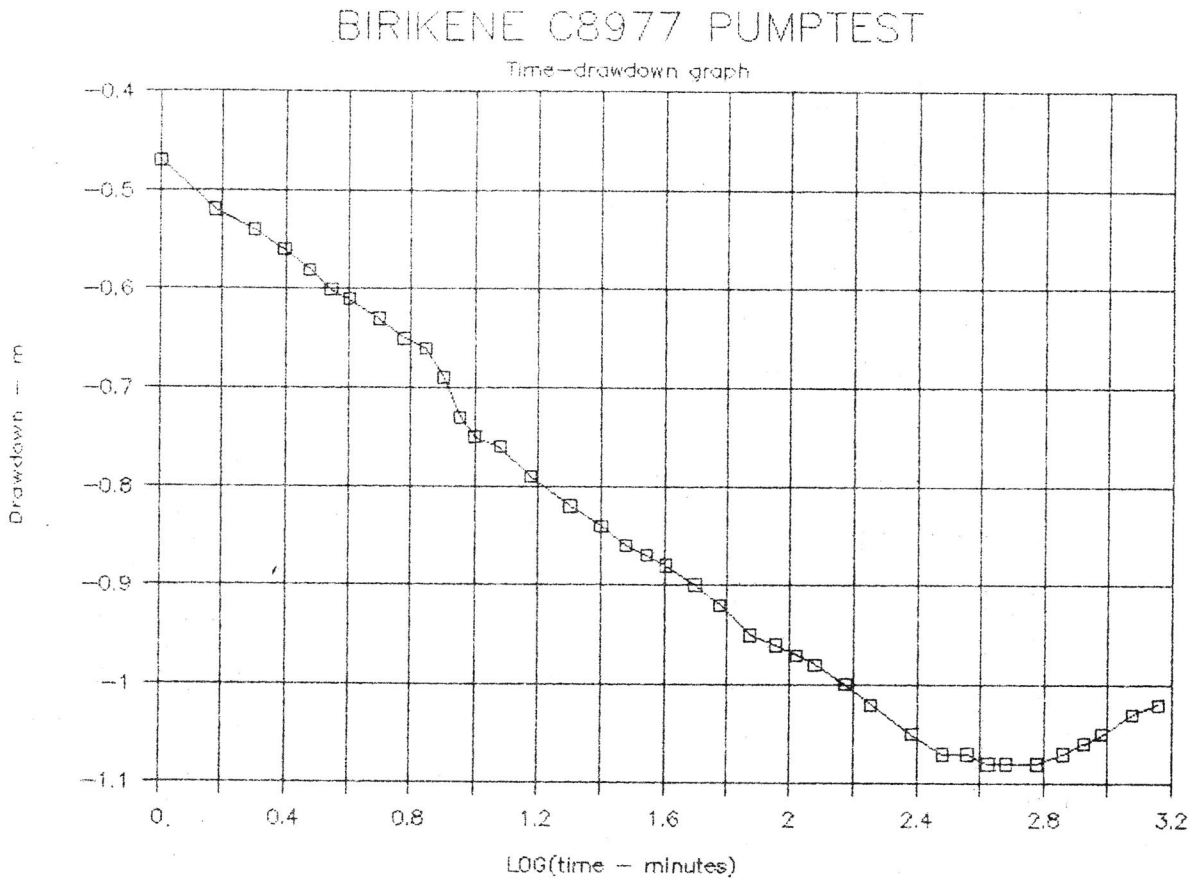

NGARE MARA C8976 PUMPTEST
Time-drawdown graph
Drawdown - m
-0.1
-0.2
-0.3
-0.4
-0.5
-0.6
-0.7
0
0.4
0.8
1.2
1.6
2
2.4
2.8
LOG(time - minutes)

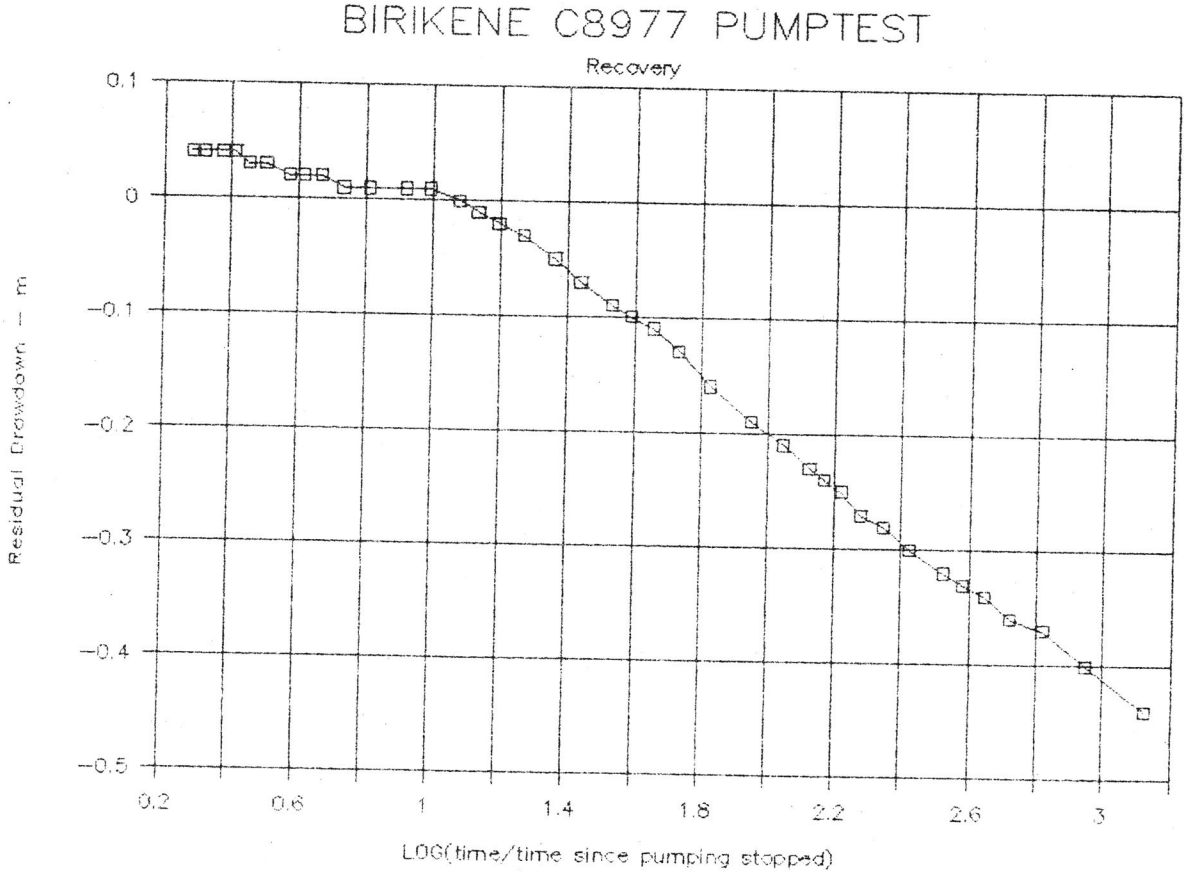

NGARE MARA C8976 PUMPTEST
Recovery
Residual Drawdown - m
0
-0.1
-0.2
-0.3
-0.4
-0.5
-0.6
-0.7
0
1
2
3
4
5
LOG(time/time since pumping stopped)

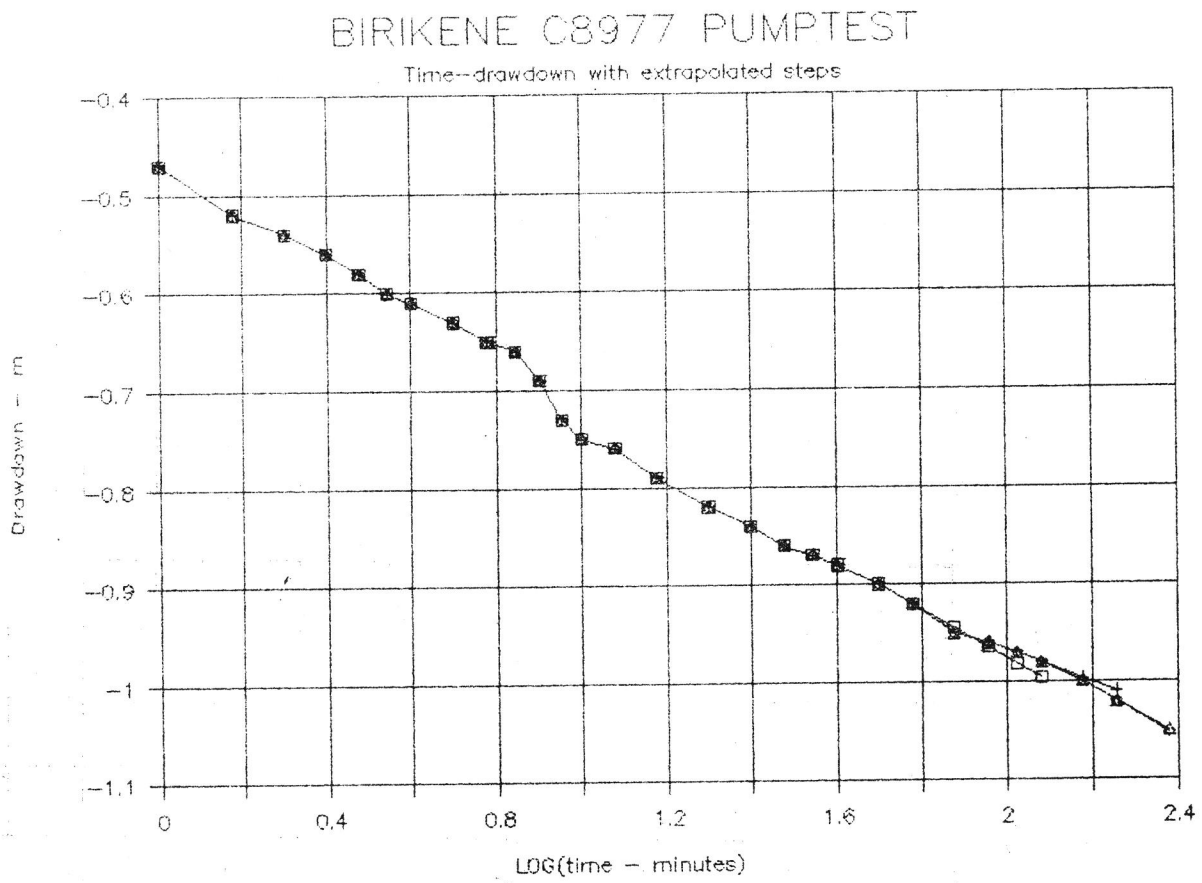

NGARE MARA C8976 PUMPTEST
Time-drawdown with extrapolated steps
Drawdown - m
-0.1
-0.2
-0.3
-0.4
-0.5
-0.6
-0.7
0
0.4
0.8
1.2
1.6
2
2.4
LOG(time - minutes)

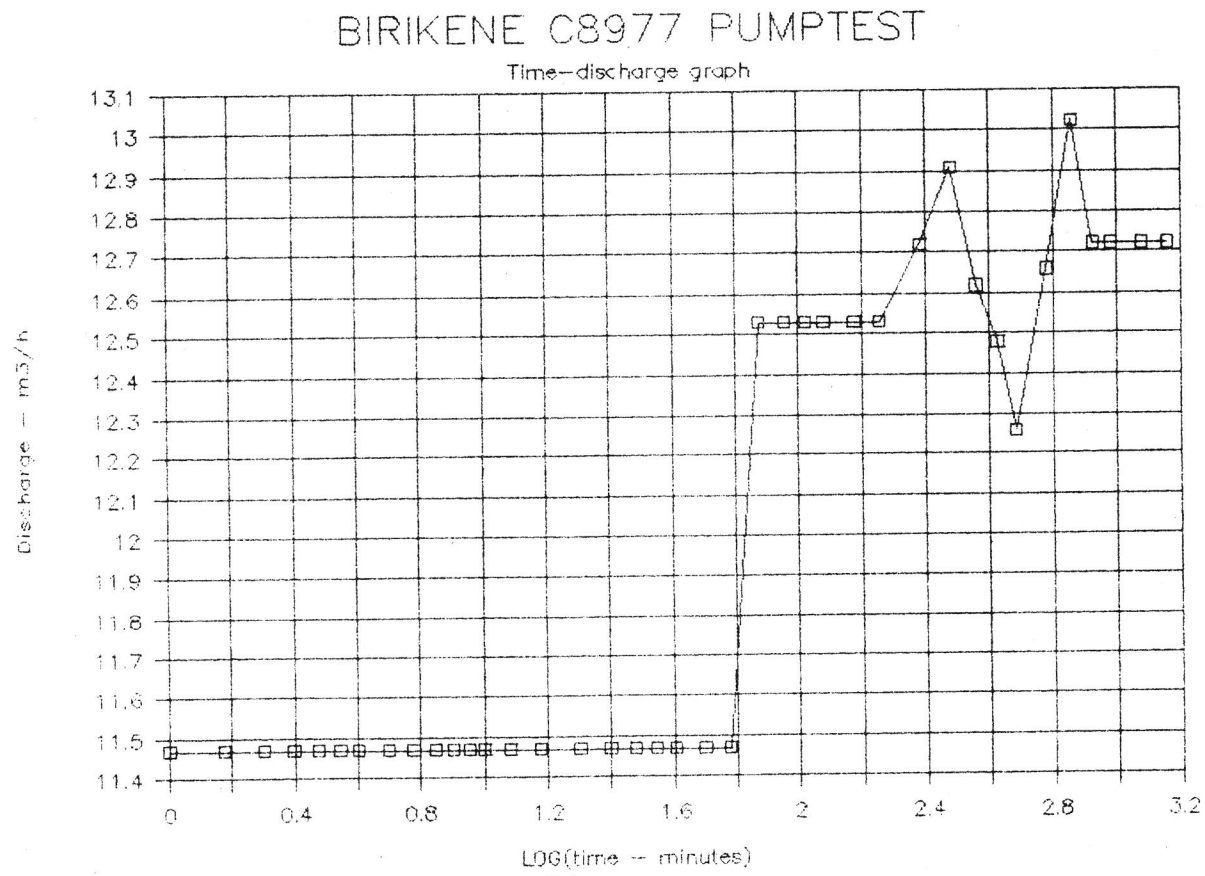

NGARE MARA C8976 PUMPTEST
Time-discharge graph
Discharge - m3/h
11
10
9
8
7
6
5
4
3
0
0.4
0.8
1.2
1.6
2
2.4
2.8
LOG(time - minutes)

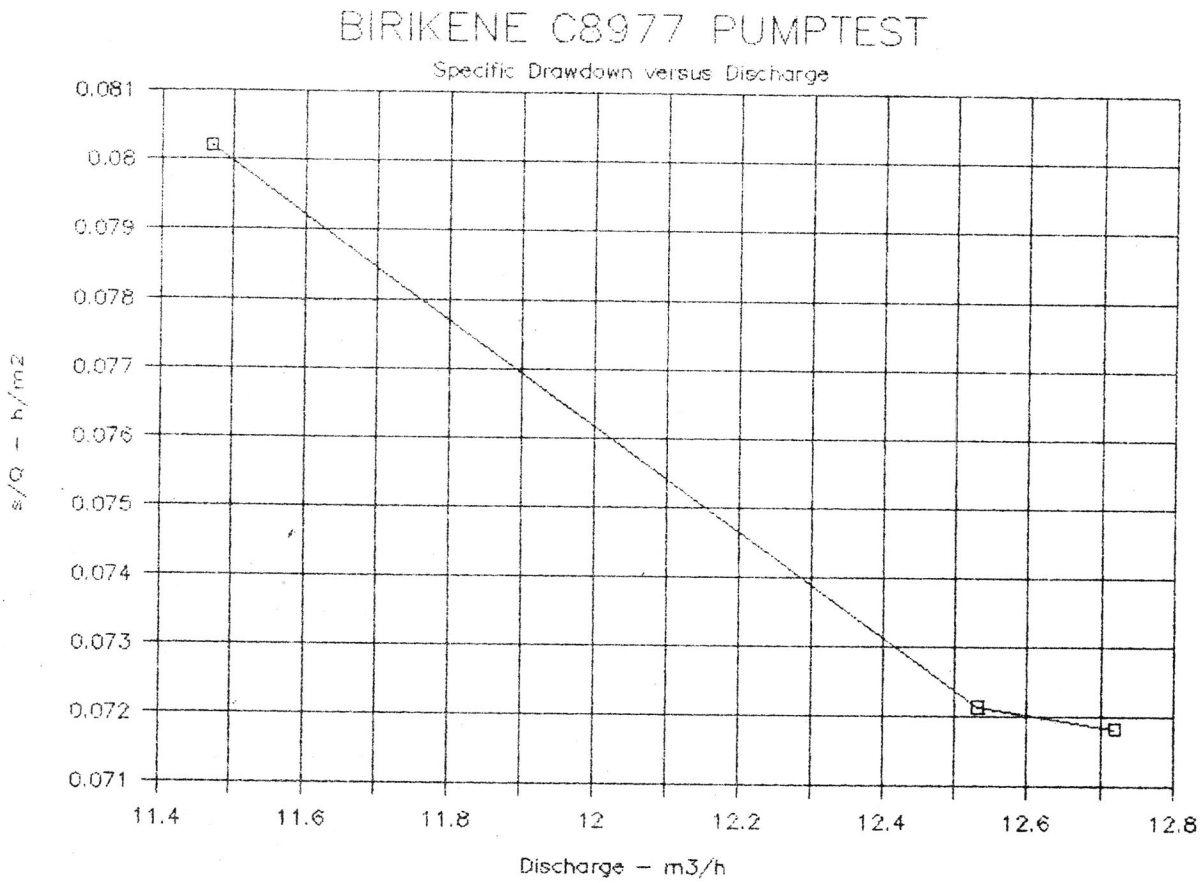

NGARE MARA C8976 PUMPTEST
Specific Drawdown versus Discharge
s/Q - h/m2
0.064
0.062
0.06
0.058
0.056
0.054
0.052
0.05
0.048
0.046
0.044
0.042
0.04
0.038
3
5
7
9
11
Discharge - m3/h


BIRIKENE C8977 PUMPTEST
Time-drawdown graph
Drawdown - m
-0.4
-0.5
-0.6
-0.7
-0.8
-0.9
-1
-1.1
0.
0.4
0.8
1.2
1.6
2
2.4
2.8
3.2
LOG(time - minutes)


BIRIKENE C8977 PUMPTEST
Recovery
Residual Drawdown - m
0.1
0
-0.1
-0.2
-0.3
-0.4
-0.5
0.2
0.6
1
1.4
1.8
2.2
2.6
3
LOG(time/time since pumping stopped)

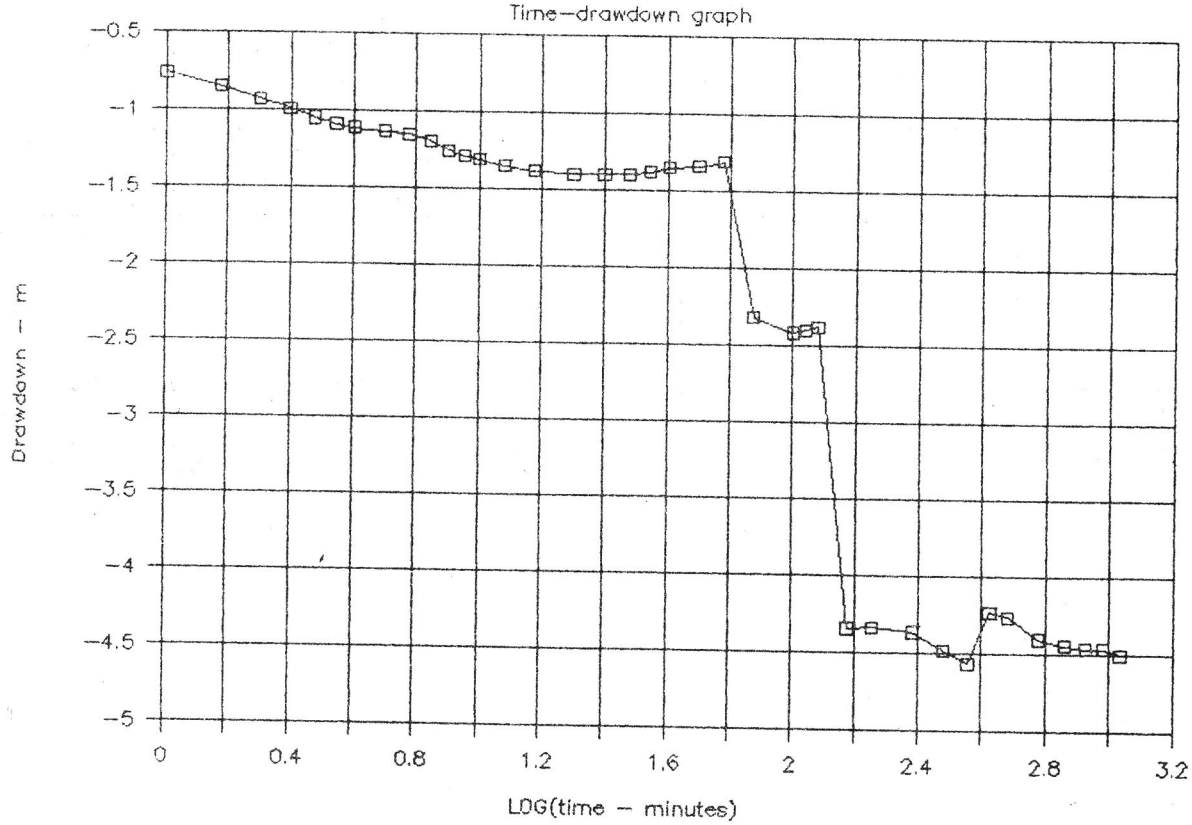

BIRIKENE C8977 PUMPTEST
Time–drawdown with extrapolated steps
Drawdown – m
−0.4
−0.5
−0.6
−0.7
−0.8
−0.9
−1
−1.1
0
0.4
0.8
1.2
1.6
2
2.4
LOG(time – minutes)


BIRIKENE C8977 PUMPTEST
Time–discharge graph
Discharge – m3/h
13.1
13
12.9
12.8
12.7
12.6
12.5
12.4
12.3
12.2
12.1
12
11.9
11.8
11.7
11.6
11.5
11.4
0
0.4
0.8
1.2
1.6
2
2.4
2.8
3.2
LOG(time – minutes)


BIRIKENE C8977 PUMPTEST
Specific Drawdown versus Discharge
s/Q - h/m2
0.081
0.08
0.079
0.078
0.077
0.076
0.075
0.074
0.073
0.072
0.071
11.4
11.6
11.8
12
12.2
12.4
12.6
12.8
Discharge - m3/h

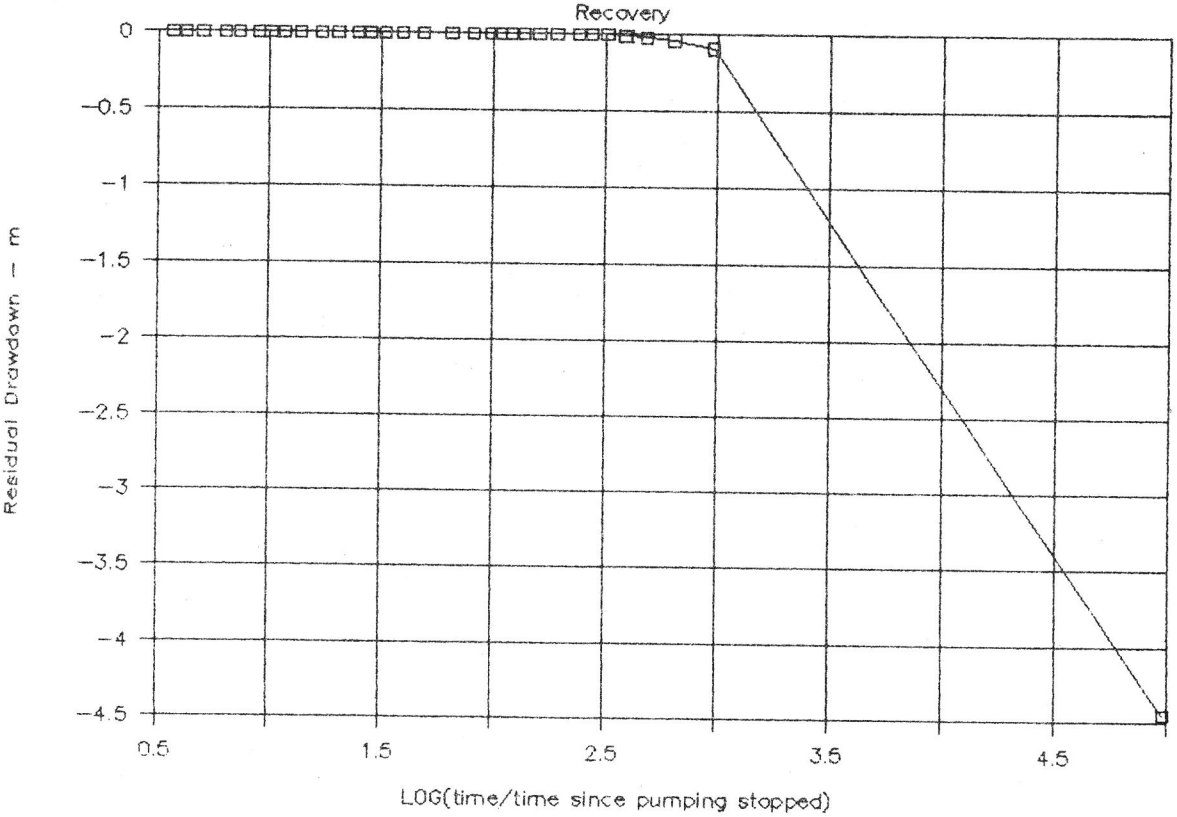
## DONYO SABU C8978 PUMPTEST

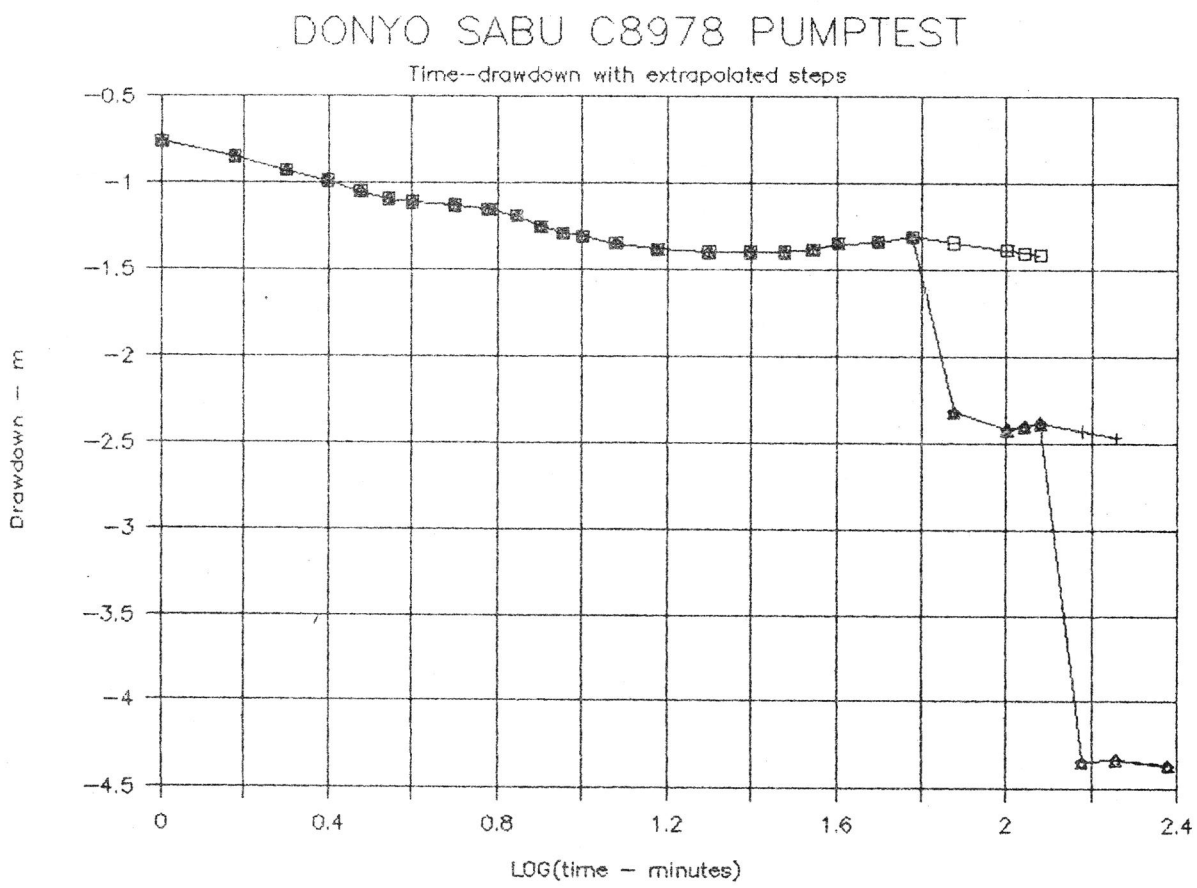
Time–drawdown graph

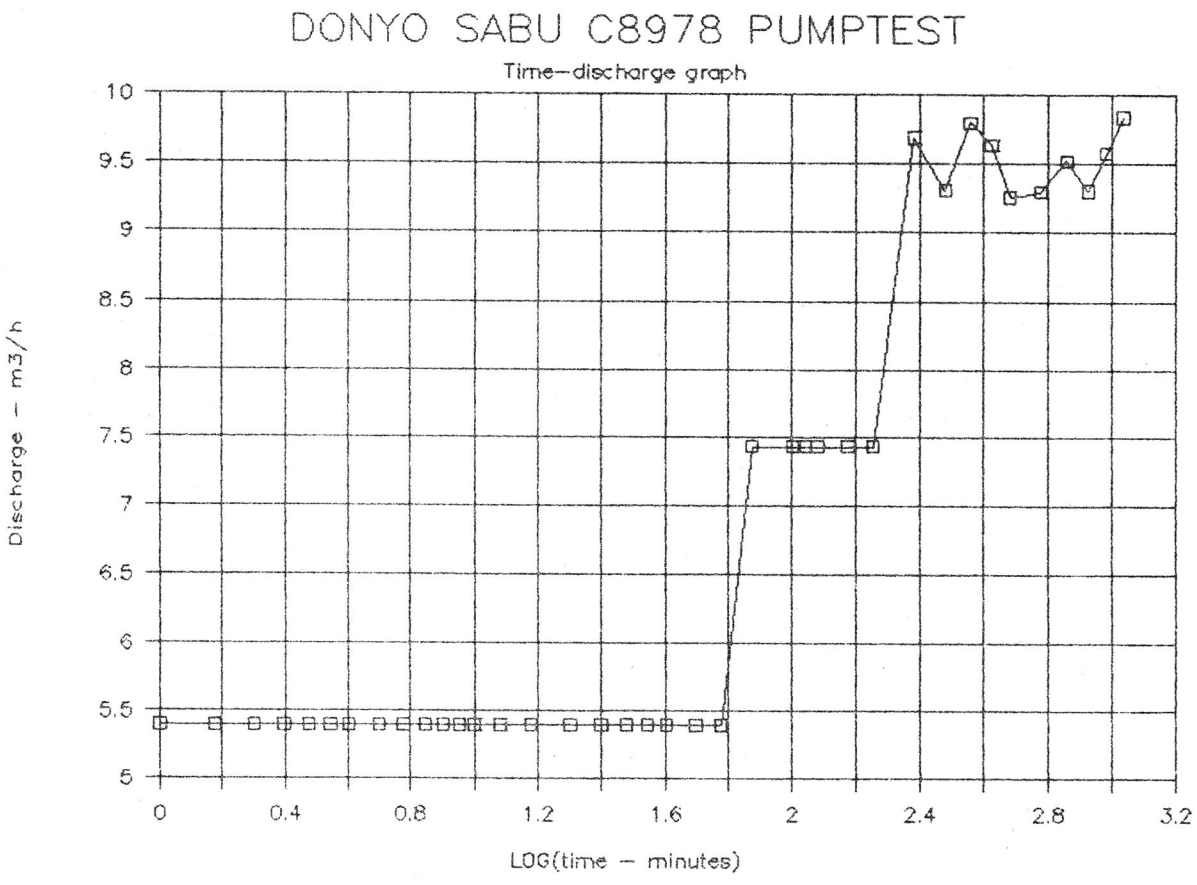


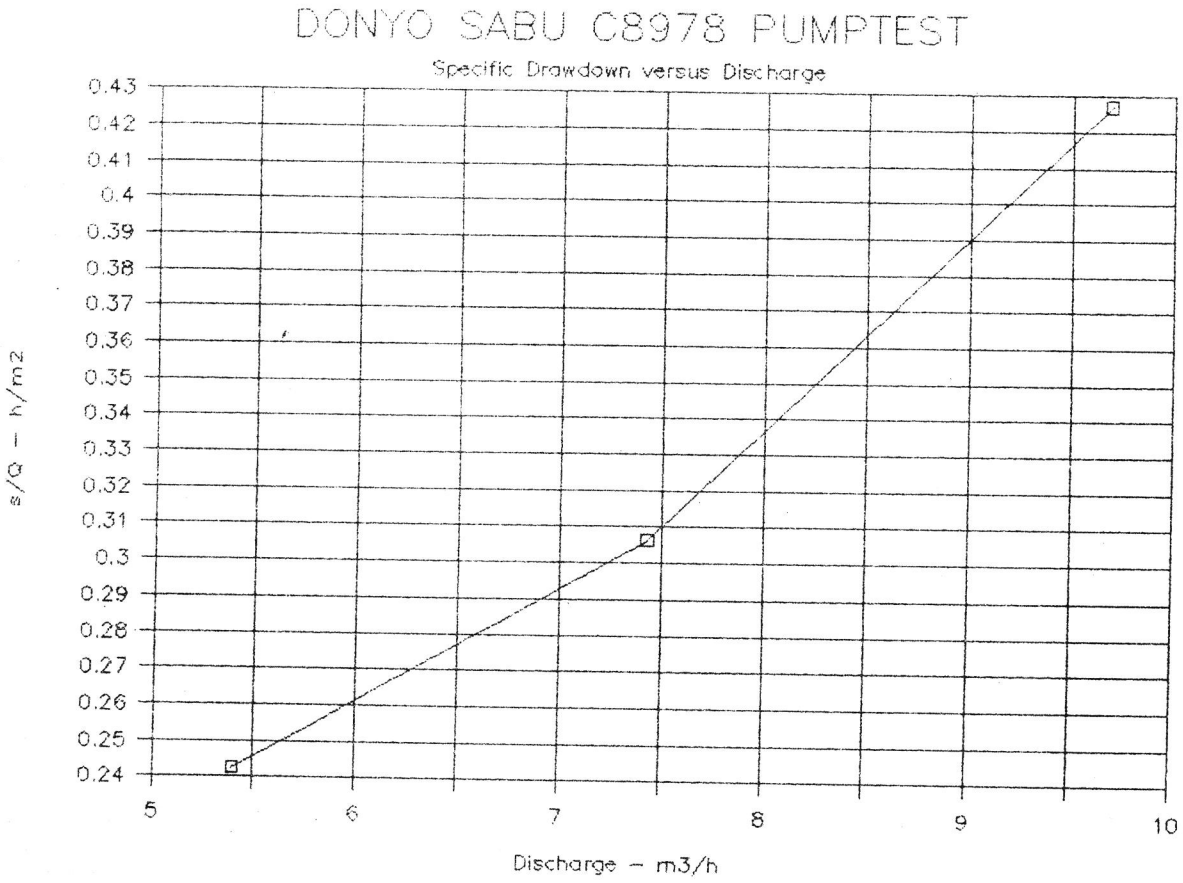

## DONYO SABU C8978 PUMPTEST

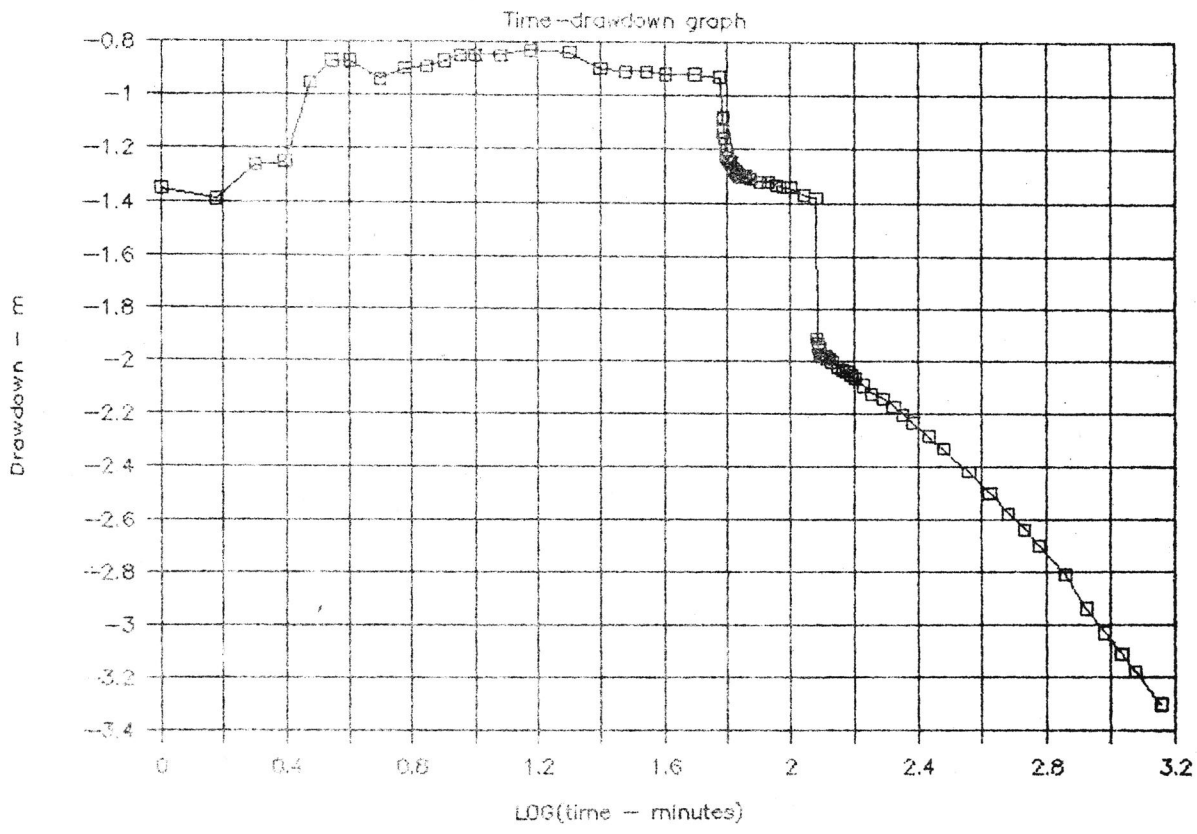
Recovery

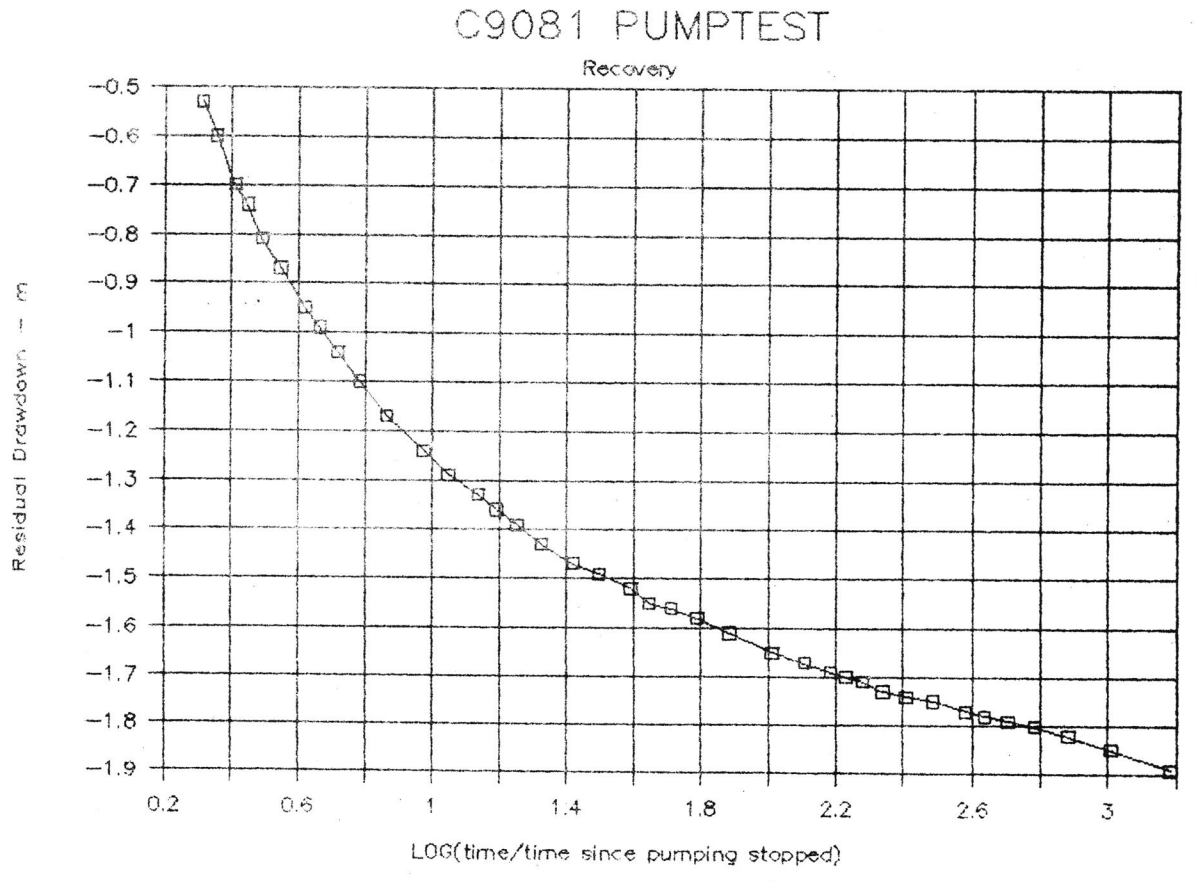


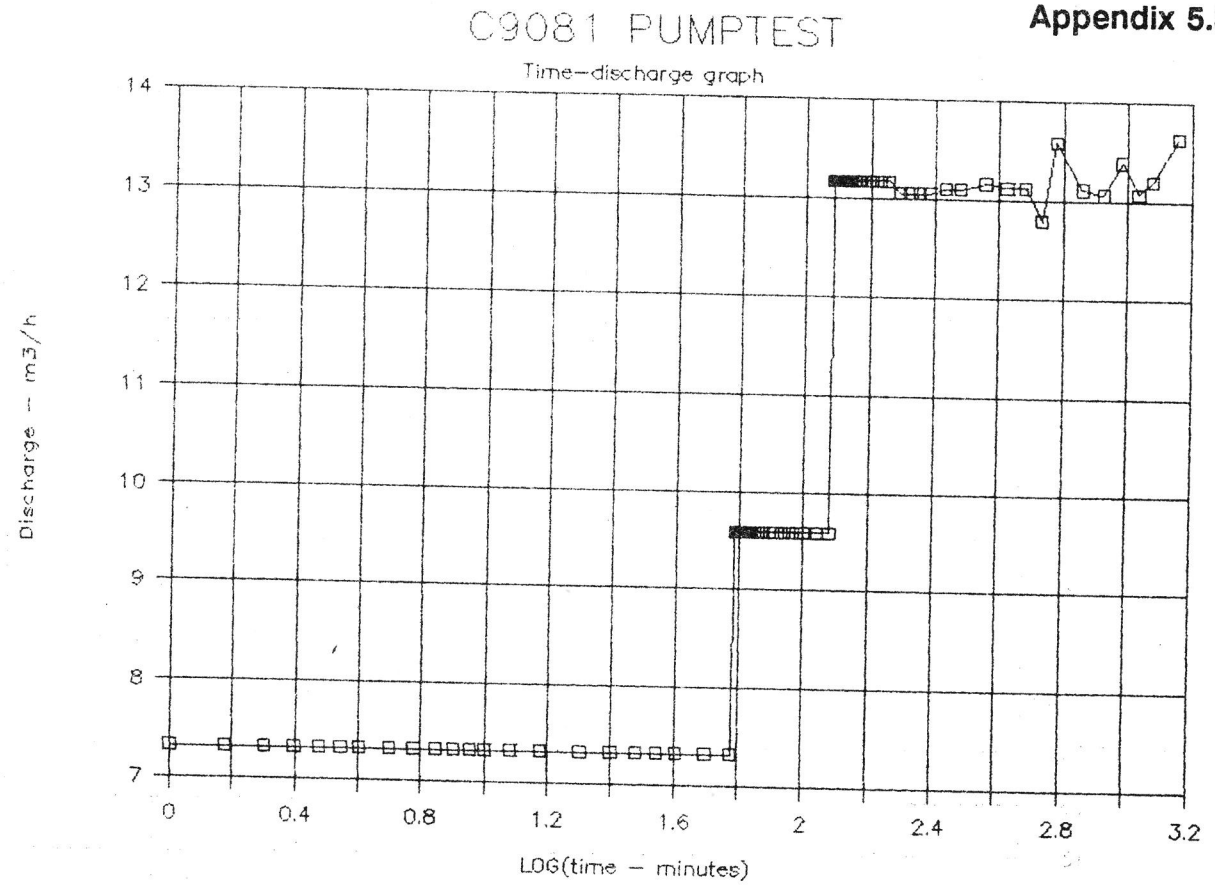

DONYO SABU C8978 PUMPTEST
Time--drawdown with extrapolated steps
Drawdown - m
-0.5
-1
-1.5
-2
-2.5
-3
-3.5
-4
-4.5
0
0.4
0.8
1.2
1.6
2
2.4
LOG(time - minutes)

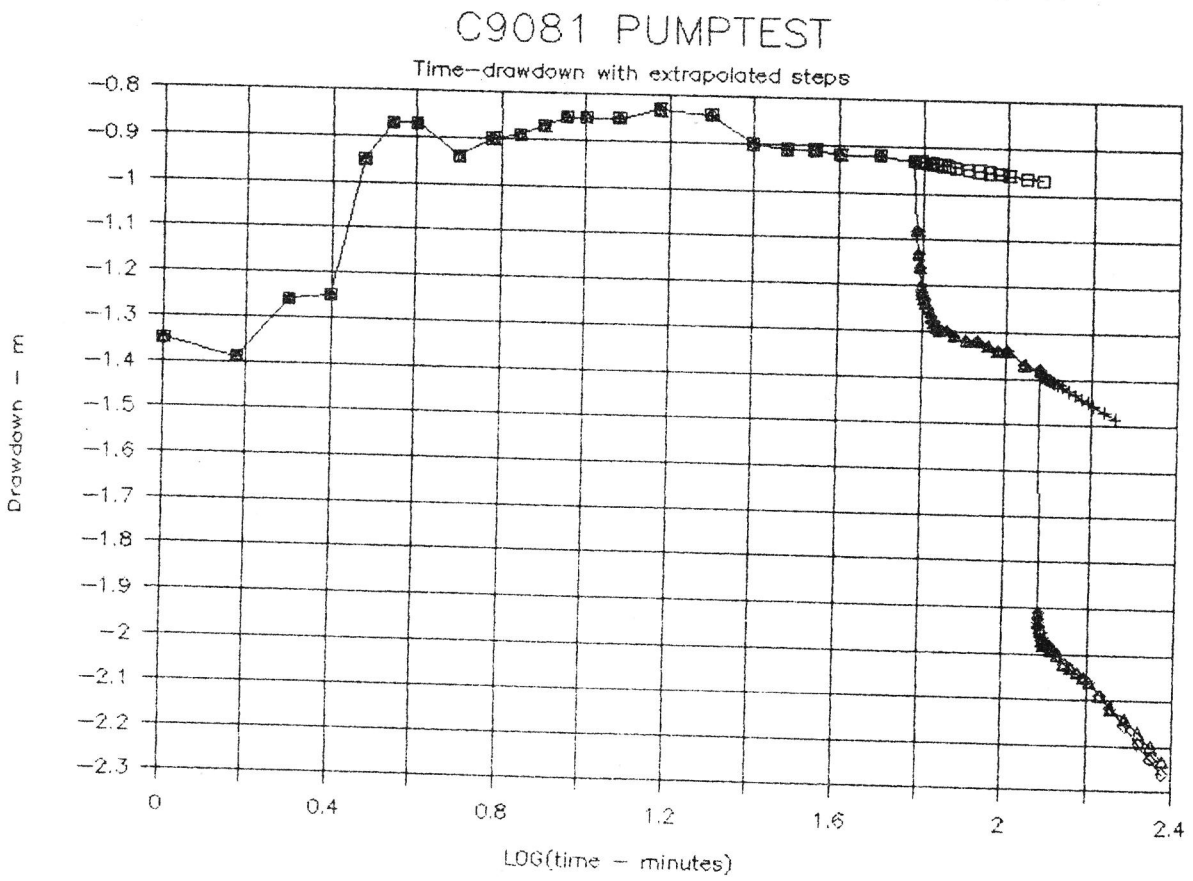

DONYO SABU C8978 PUMPTEST
Time-discharge graph
Discharge - m3/h
10
9.5
9
8.5
8
7.5
7
6.5
6
5.5
5
0
0.4
0.8
1.2
1.6
2
2.4
2.8
3.2
LOG(time - minutes)

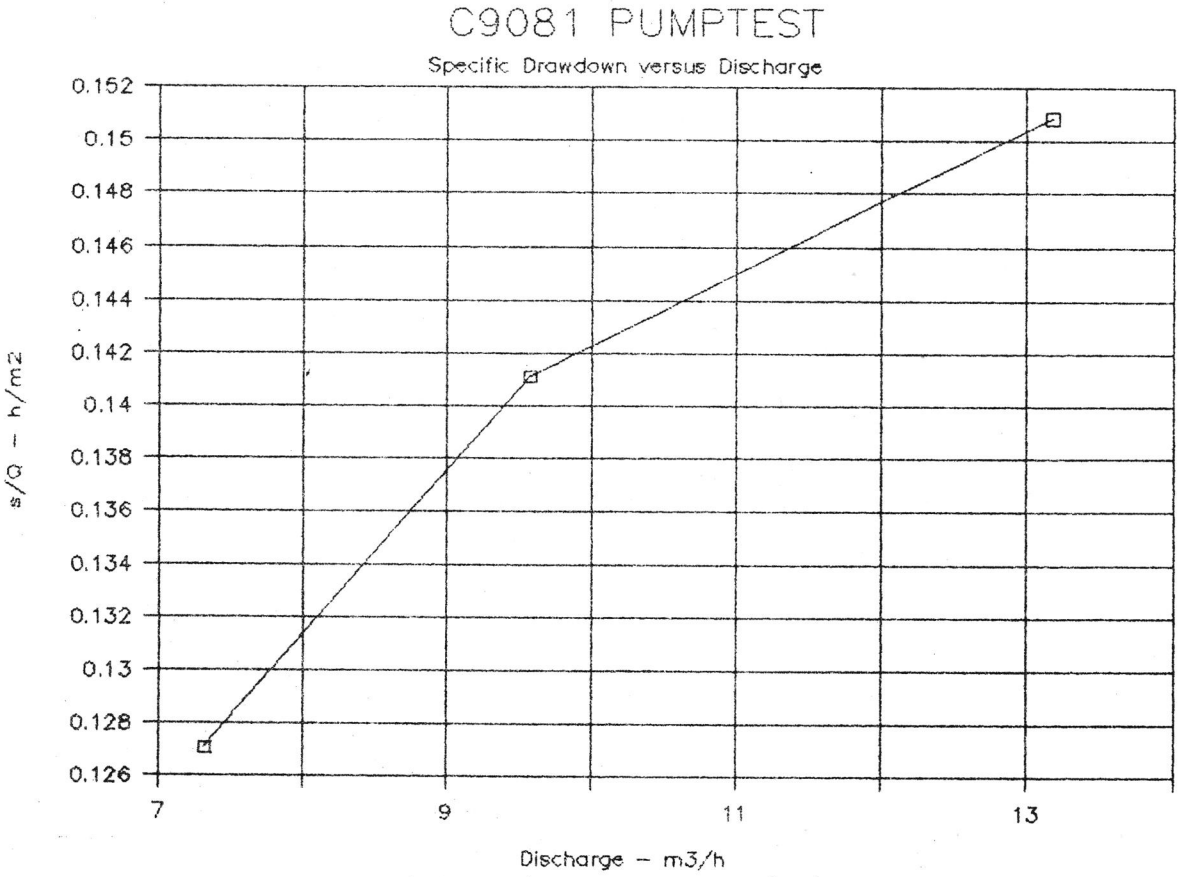

DONYO SABU C8978 PUMPTEST
Specific Drawdown versus Discharge
s/Q - h/m2
0.43
0.42
0.41
0.4
0.39
0.38
0.37
0.36
0.35
0.34
0.33
0.32
0.31
0.3
0.29
0.28
0.27
0.26
0.25
0.24
5
6
7
8
9
10
Discharge - m3/h

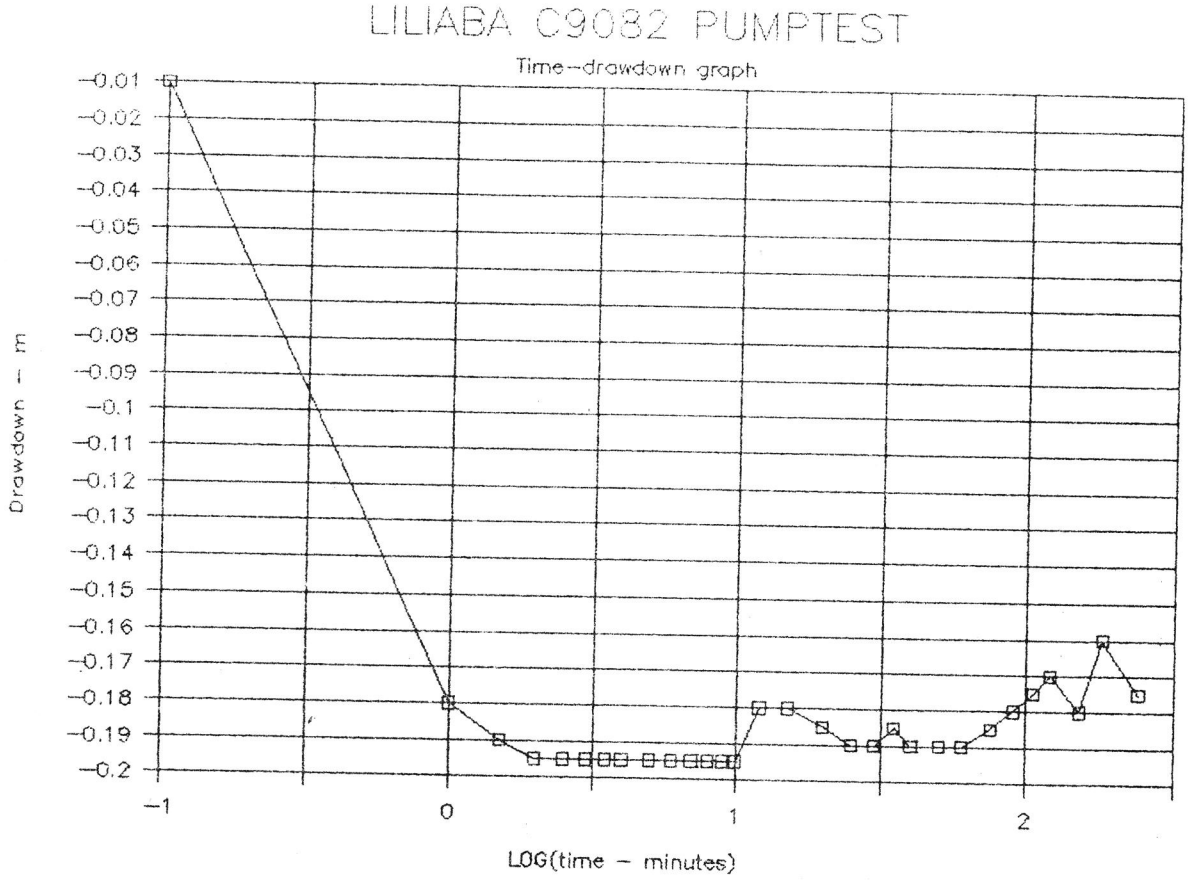

C9081 PUMPTEST
Time-drawdown graph
Drawdown - m
-0.8
-1
-1.2
-1.4
-1.6
-1.8
-2
-2.2
-2.4
-2.6
-2.8
-3
-3.2
-3.4
0
0.4
0.8
1.2
1.6
2
2.4
2.8
3.2
LOG(time - minutes)

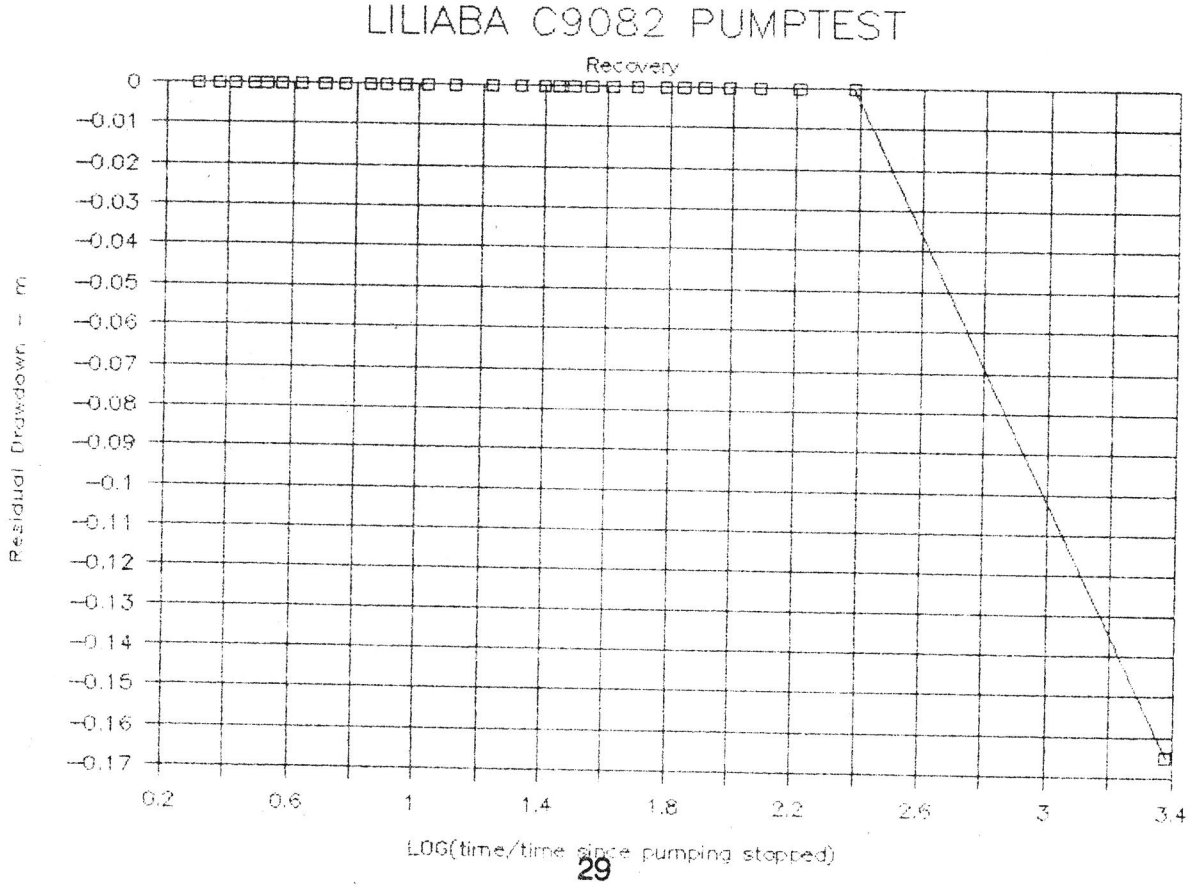

C9081 PUMPTEST
Recovery
Residual Drawdown - m
-0.5
-0.6
-0.7
-0.8
-0.9
-1
-1.1
-1.2
-1.3
-1.4
-1.5
-1.6
-1.7
-1.8
-1.9
0.2
0.6
1
1.4
1.8
2.2
2.6
3
LOG(time/time since pumping stopped)

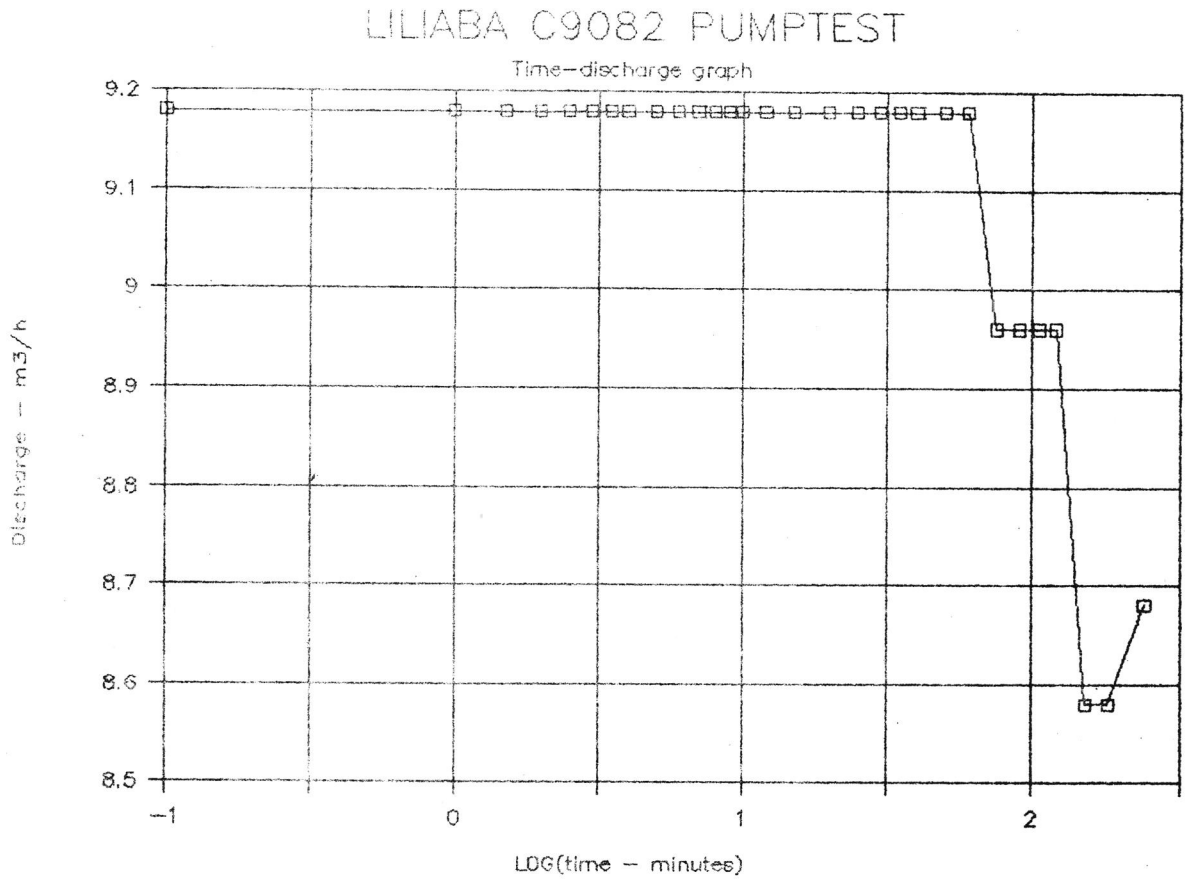

C9081 PUMPTEST
Time–discharge graph
Discharge – m3/h
14
13
12
11
10
9
8
7
0
0.4
0.8
1.2
1.6
2
2.4
2.8
3.2
LOG(time – minutes)

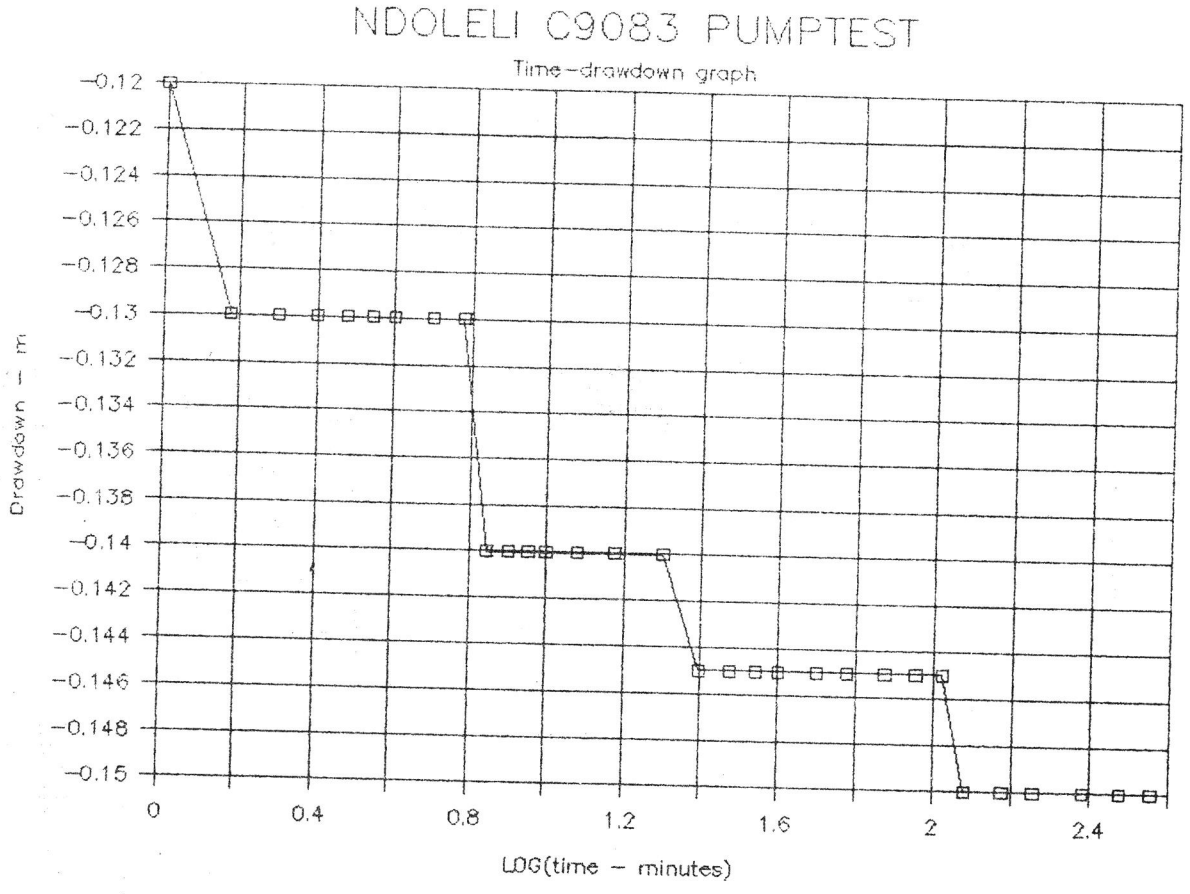

C9081 PUMPTEST
Time–drawdown with extrapolated steps
Drawdown – m
−0.8
−0.9
−1
−1.1
−1.2
−1.3
−1.4
−1.5
−1.6
−1.7
−1.8
−1.9
−2
−2.1
−2.2
−2.3
0
0.4
0.8
1.2
1.6
2
2.4
LOG(time – minutes)

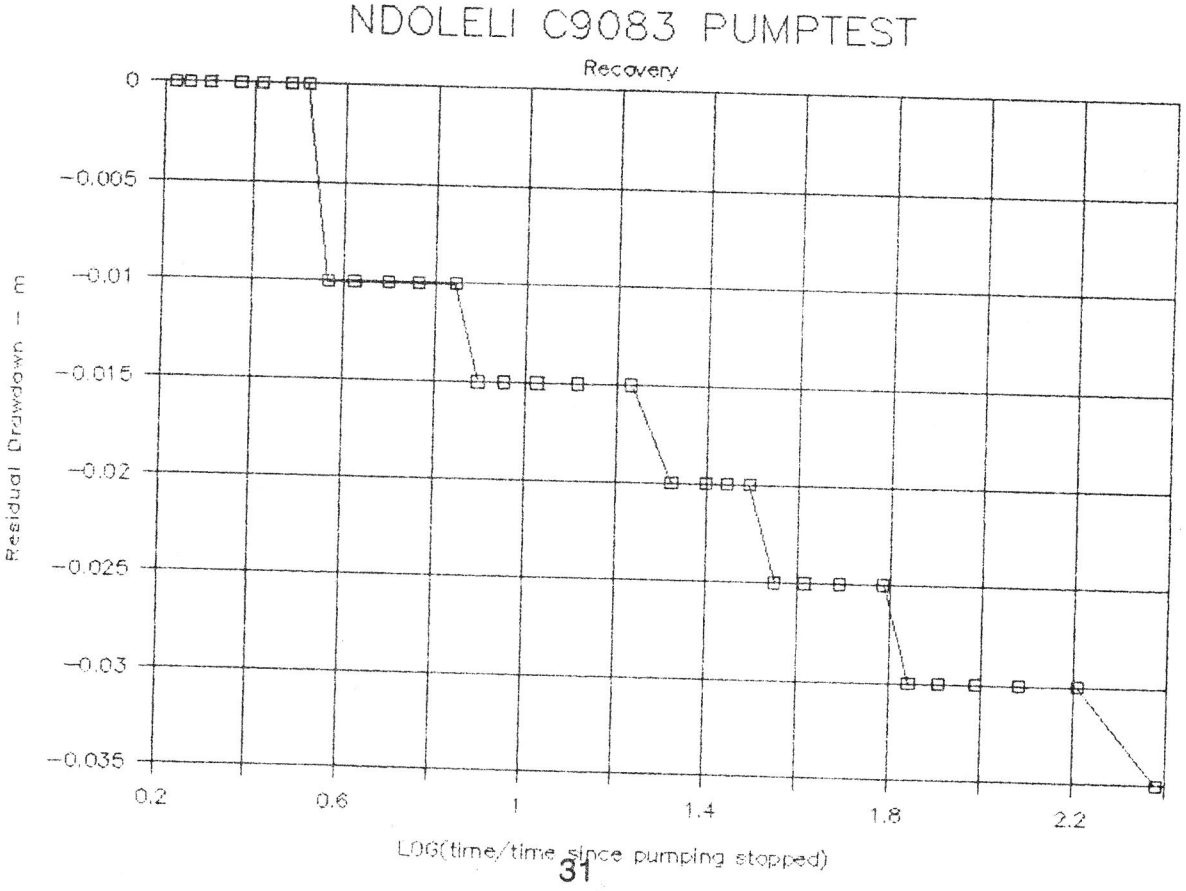

C9081 PUMPTEST
Specific Drawdown versus Discharge
s/Q - h/m2
0.152
0.15
0.148
0.146
0.144
0.142
0.14
0.138
0.136
0.134
0.132
0.13
0.128
0.126
7
9
11
13
Discharge - m3/h

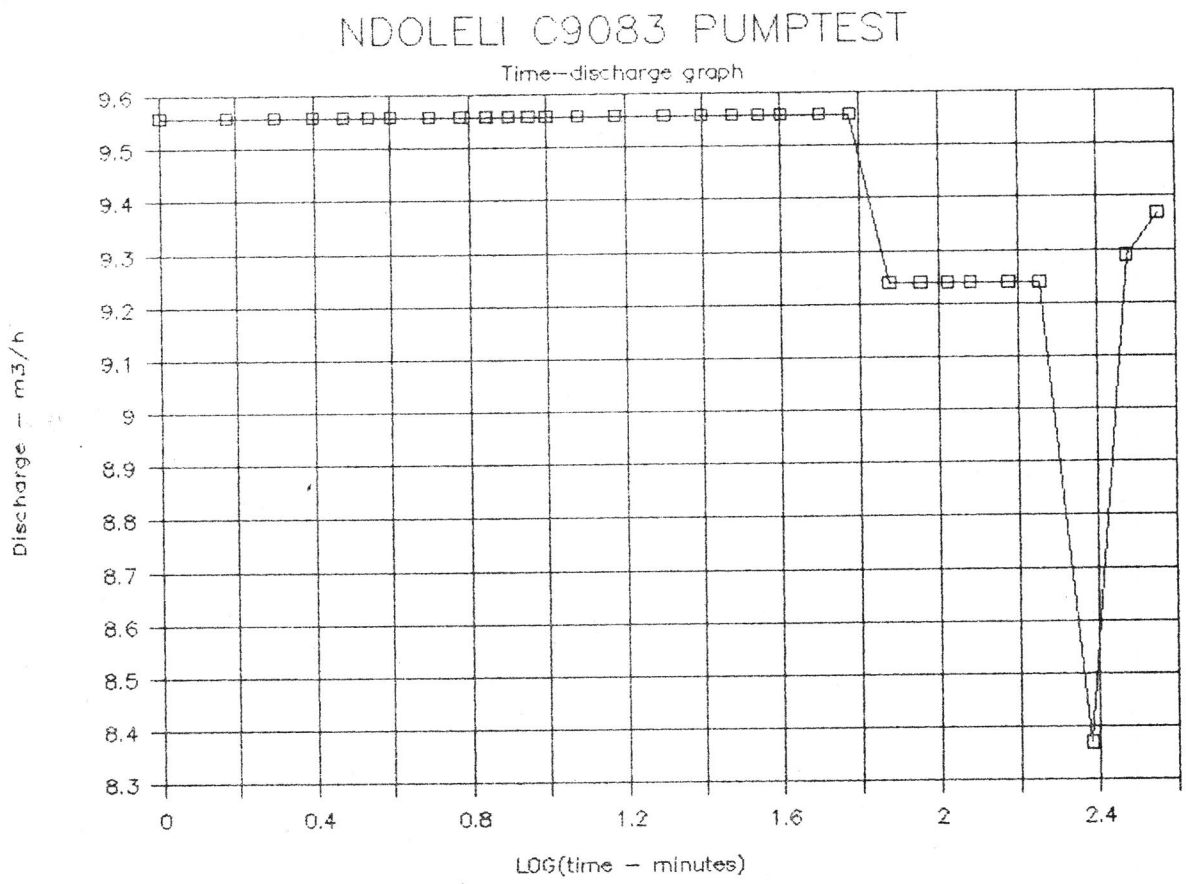

LILIABA C9082 PUMPTEST
Time-drawdown graph
Drawdown - m
-0.01
-0.02
-0.03
-0.04
-0.05
-0.06
-0.07
-0.08
-0.09
-0.1
-0.11
-0.12
-0.13
-0.14
-0.15
-0.16
-0.17
-0.18
-0.19
-0.2
-1
0
1
2
LOG(time - minutes)

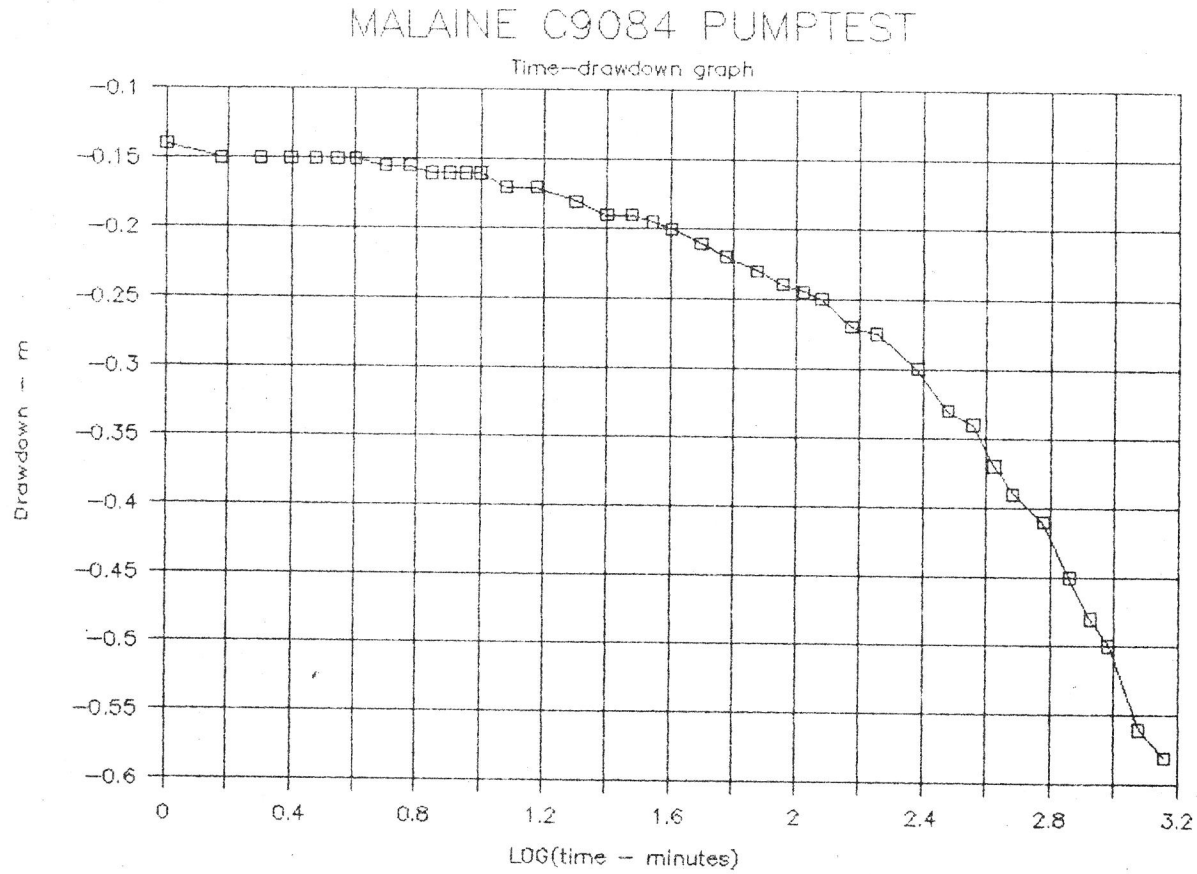

LILIABA C9082 PUMPTEST
Recovery
Residual Drawdown - m
0
-0.01
-0.02
-0.03
-0.04
-0.05
-0.06
-0.07
-0.08
-0.09
-0.1
-0.11
-0.12
-0.13
-0.14
-0.15
-0.16
-0.17
0.2
0.6
1
1.4
1.8
2.2
2.6
3
3.4
LOG(time/time since pumping stopped)

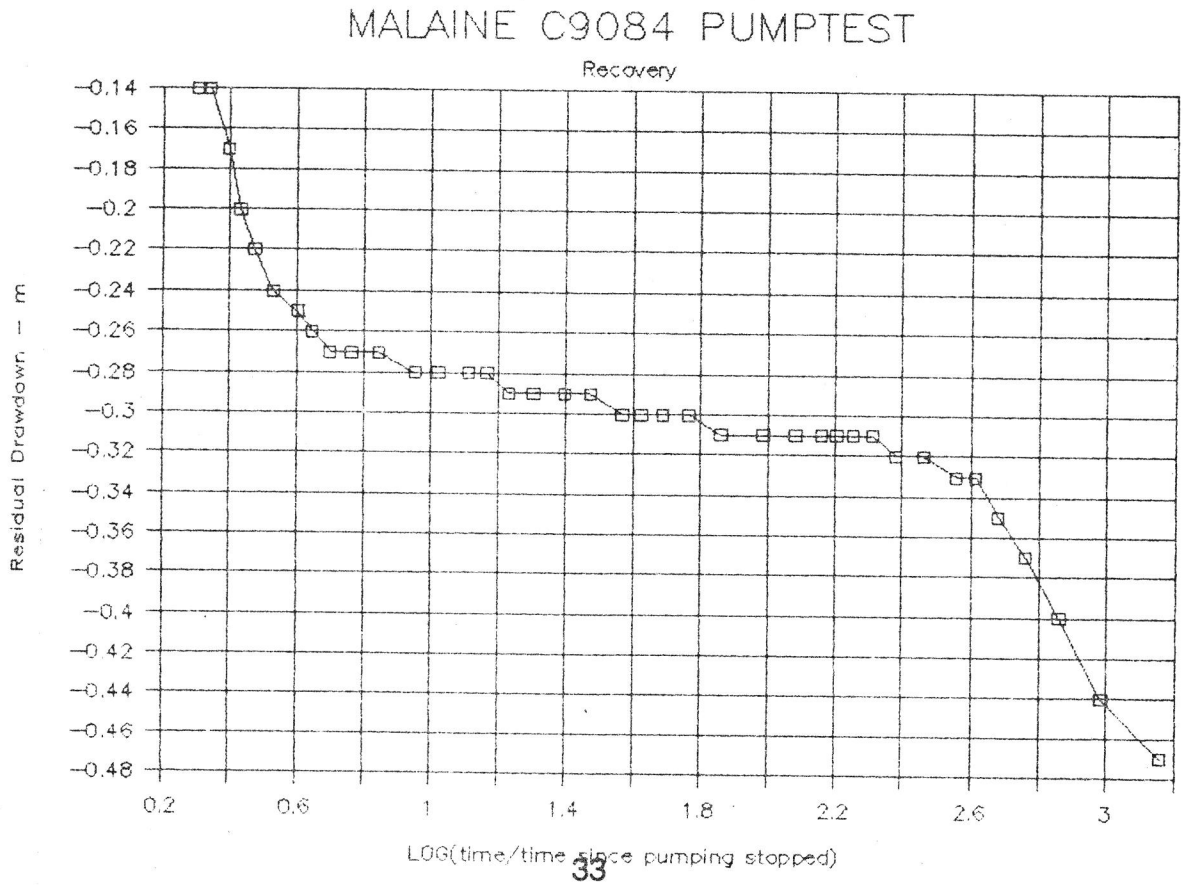

LILIABA C9082 PUMPTEST
Time–discharge graph
9.2
9.1
9
8.9
8.8
8.7
8.6
8.5
Discharge – m3/h
–1
0
1
2
LOG(time – minutes)

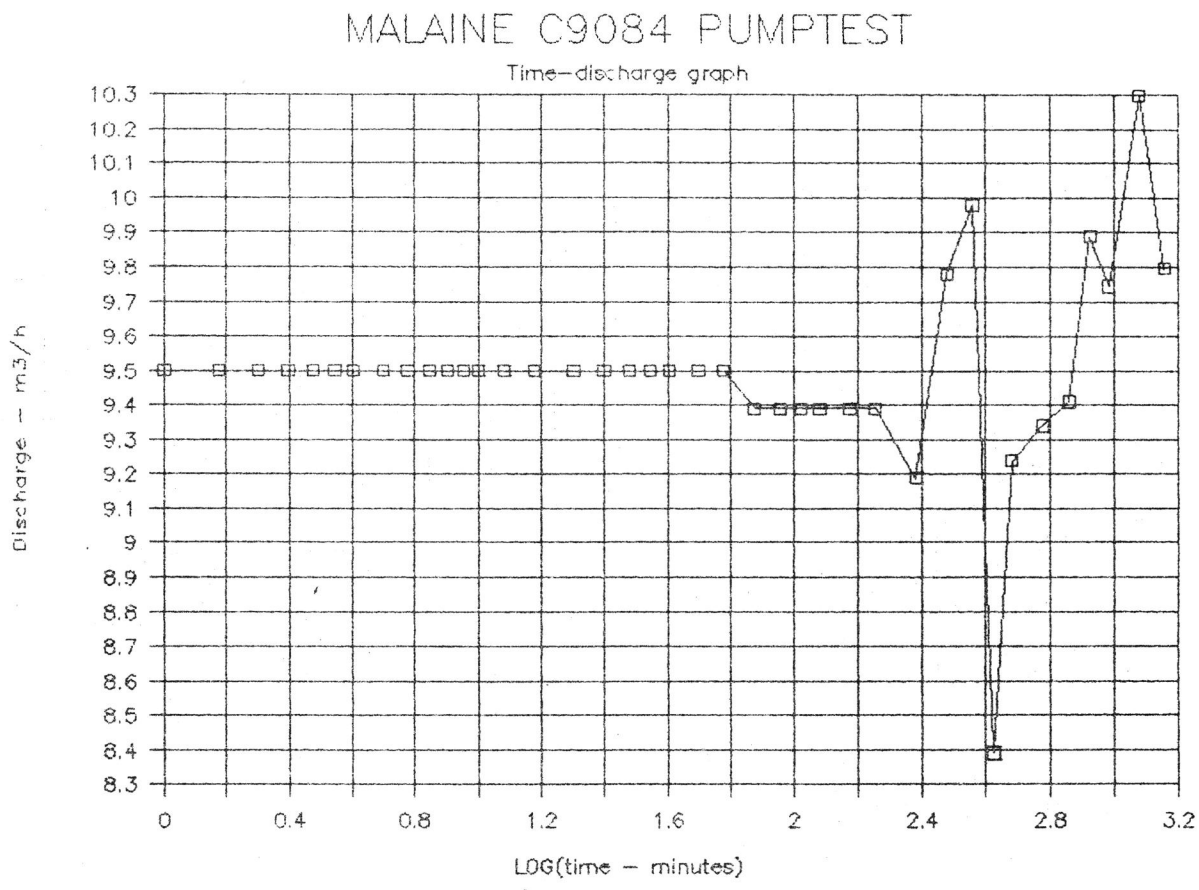

NDOLELI C9083 PUMPTEST
Time-drawdown graph
Drawdown - m
-0.12
-0.122
-0.124
-0.126
-0.128
-0.13
-0.132
-0.134
-0.136
-0.138
-0.14
-0.142
-0.144
-0.146
-0.148
-0.15
0
0.4
0.8
1.2
1.6
2
2.4
LOG(time - minutes)

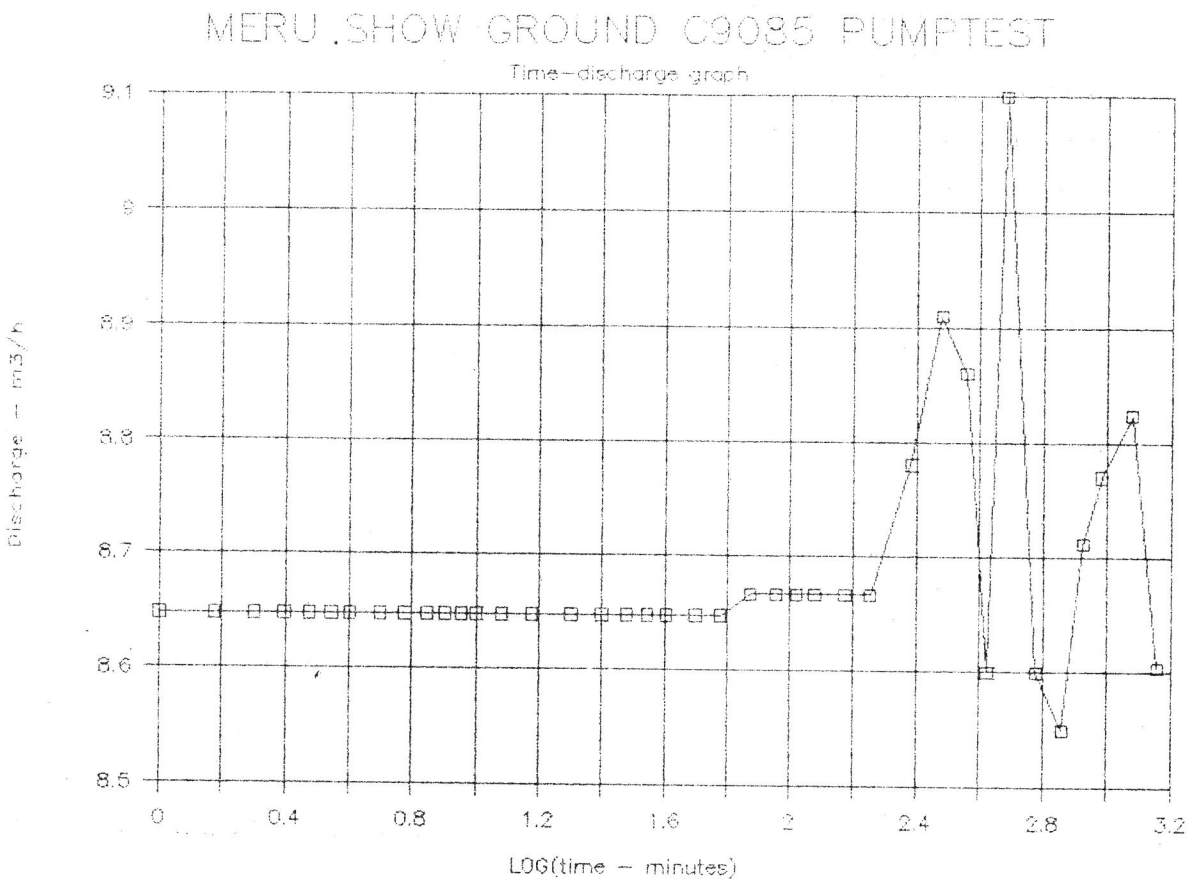

NDOLELI C9083 PUMPTEST
Recovery
Residual Drawdown - m
0
-0.005
-0.01
-0.015
-0.02
-0.025
-0.03
-0.035
0.2
0.6
1
1.4
1.8
2.2
LOG(time/time since pumping stopped)


NDOLELI C9083 PUMPTEST
Time-discharge graph
Discharge - m3/h
9.6
9.5
9.4
9.3
9.2
9.1
9
8.9
8.8
8.7
8.6
8.5
8.4
8.3
0
0.4
0.8
1.2
1.6
2
2.4
LOG(time - minutes)

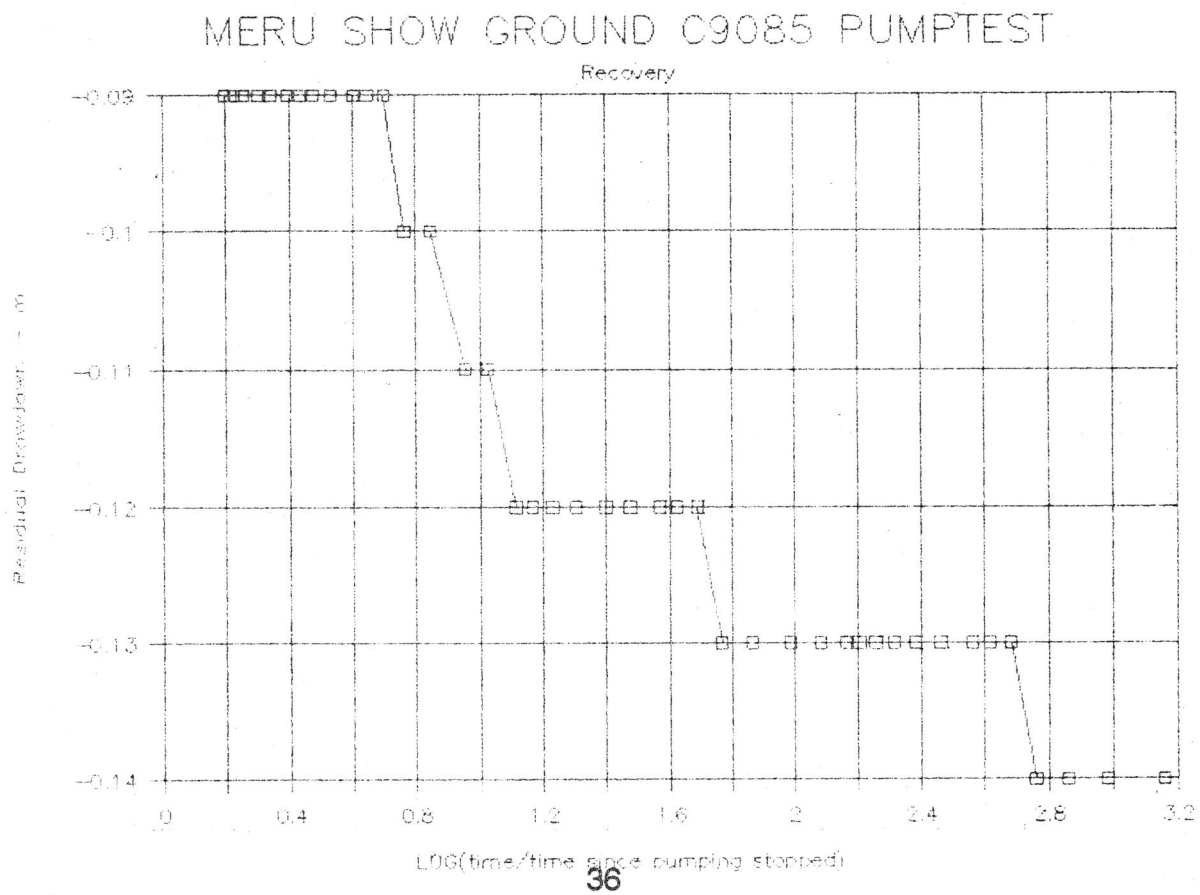

MALAINE C9084 PUMPTEST
Time–drawdown graph
Drawdown – m
-0.1
-0.15
-0.2
-0.25
-0.3
-0.35
-0.4
-0.45
-0.5
-0.55
-0.6
0
0.4
0.8
1.2
1.6
2
2.4
2.8
3.2
LOG(time – minutes)


MALAINE C9084 PUMPTEST
Recovery
Residual Drawdown – m
-0.14
-0.16
-0.18
-0.2
-0.22
-0.24
-0.26
-0.28
-0.3
-0.32
-0.34
-0.36
-0.38
-0.4
-0.42
-0.44
-0.46
-0.48
0.2
0.6
1
1.4
1.8
2.2
2.6
3
LOG(time/time since pumping stopped)


MALAINE C9084 PUMPTEST
Time–discharge graph
Discharge – m3/h
10.3
10.2
10.1
10
9.9
9.8
9.7
9.6
9.5
9.4
9.3
9.2
9.1
9
8.9
8.8
8.7
8.6
8.5
8.4
8.3
0
0.4
0.8
1.2
1.6
2
2.4
2.8
3.2
LOG(time – minutes)


MERU .SHOW GROUND C9085 PUMPTEST
Time-discharge graph
Discharge - m3/h
9.1
9
8.9
8.8
8.7
8.6
8.5
0
0.4
0.8
1.2
1.6
2
2.4
2.8
3.2
LOG(time - minutes)


MERU SHOW GROUND C9085 PUMPTEST
Time-drawdown graph
Drawdown - m
-0.02
-0.03
-0.04
-0.05
-0.06
-0.07
-0.08
-0.09
-0.1
-0.11
-0.12
-0.13
-0.14
-0.15
-0.16
-0.17
0
0.4
0.8
1.2
1.6
2
2.4
2.8
3.2
LOG(time - minutes)


MERU SHOW GROUND C9085 PUMPTEST
Recovery
Residual Drawdown - m
-0.09
-0.1
-0.11
-0.12
-0.13
-0.14
0
0.4
0.8
1.2
1.6
2
2.4
2.8
3.2
LOG(time/time since pumping stopped)

# Appendix 5.4

## Chemical Data Springs, Boreholes, Wells and Water Supplies

MERU DISTRICT

Chemical Data - Springs

| SP.No. | LOCATION | DATES | pH | col | Turb | KMnO | E.C. | Fe | Mn | Ca | Mg | Na | K | Tol Hard | Tol Alk | Cl | HCO3 | F | NO3 | NO2 | SO4 | Free CO2 | TDS | SiO | SUM CATIAN | SUM IONIC | BALANC | SAR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | F.T.U | value | uS/cm | mg/l | | | | | | | | | | | | | | | | | meq/l | | % | |
| | Kaugongodo | 16.07.85 | 8.2 | < 5.0 | 5.7 | 1.80 | 255 | 0.9 | 0.10 | 48.0 | 1.9 | 34.0 | | 114 | 138.0 | 5.0 | 2.8 | 0.5 | | | | | 153 | | 4.0 | 2.9 | 16.3 | 2.3 |
| | Korey | 18.07.85 | 7.0 | 5.0 | 6.5 | 0.60 | < 0 | 0.1 | 3.40 | 1.0 | 34.0 | | | 34 | 30.0 | 5.0 | 0.6 | 0.30 | | | 0.6 | | 53 | | 2.8 | 0.8 | 58.2 | 0.0 |
| | Kengu Maua | 17.03.86 | 6.5 | 70 | 34 | 4.40 | 84 | 1.1* | 0.03 | 0.2 | 0.2 | 15.0 | 4.1 | 14 | 44.0 | 5.8 | 0.9 | 0.43 | 0.03 | (0.01 | 0.3 | 1.0 | 50 | 31 | 0.8 | 1.0 | -14.5 | 1.1 |
| | Athiru Gaiti | 18.03.86 | 7.8 | 5.0 | 5.8 | 0.71 | 157 | 0.1 | 0.04 | 3.7 | 2.6 | 29.0 | 5.9 | 18 | 66.0 | 7.3 | 1.3 | 0.75 | (0.01 | (0.01 | 1.1 | 1.0 | 94 | 37 | 1.8 | 1.5 | 7.8 | 1.9 |
| | Ntuti Pr. Sch. Maua | 20.03.86 | 7.6 | 150 | 54 | 5.60 | 160 | 4.5 | 0.07 | 1.4 | 4.4 | 22.0 | 6.5 | 44 | 86.0 | 4.9 | 1.7 | 0.59 | (0.01 | (0.01 | 0.3 | 1.0 | 96 | | 1.6 | 1.9 | -9.0 | 1.3 |
| | Mwamwele | 13.10.86 | 9.0 | < 5.0 | 1.6 | 2.40 | 345 | 0.6 | 0.05 | 11.0 | 12.0 | 28.0 | 9.4 | 134 | 192.0 | 5.0 | 3.8 | 0.26 | 0.37 | | 1.4 | nil | 207 | | 3.0 | 4.0 | -14.5 | 1.3 |
| | Murera | 13.10.86 | 7.6 | 7.6 | 70 | 28.00 | 565 | 1.8 | 0.05 | 3.9 | 16.0 | 42.0 | 26.0 | 92 | 293.0 | 12.0 | 5.9 | 0.33 | 0.06 | | 4.0 | 60.0 | 338 | | 4.0 | 6.3 | -22.1 | 1.8 |
| | Kalimaliu | 18.03.85 | 6.9 | < 5.0 | 1.7 | 8.80 | 190 | 0.1 | (0.10 | 5.3 | 3.0 | 72.0 | 9.0 | 42 | 96.0 | 7.0 | 1.9 | 0.40 | | | 1.3 | | 114 | | 3.9 | 2.1 | 28.8 | 4.6 |
| | Kathima | 18.03.85 | 6.9 | 15.0 | 8.0 | 2.20 | 160 | 0.2 | (0.10 | 1.4 | 0.9 | 88.0 | 6.2 | 18 | 80.0 | 7.0 | 1.6 | 0.50 | 0.50 | | 1.3 | | 96 | | 4.1 | 1.8 | 38.8 | 6.2 |
| | Water point Akechiu | 19.03.86 | 8.2 | < 5.0 | 1.1 | 3.20 | 144 | < 0.1 | 0.04 | 5.6 | 2.6 | 15.0 | 4.2 | 46 | 70.0 | 5.8 | 1.4 | 0.65 | 0.01 | < | 1.7 | nil | 86 | 28 | 1.3 | 1.6 | -12.1 | 1.0 |
| | Logilado | 04.11.87 | 6.3 | < 5.0 | 5.2 | 4.7 | 65 | 4.0 | 0.3 | 1.6 | 0.54 | 8.3 | 3.0 | 6.2 | 20.0 | 4.0 | 0.0 | 0.16 | | (0.01 | 0.3 | 4.0 | 39 | | 0.5 | 0.0 | 97.5 | 0.6 |
| | Nthambiro | 04.11.87 | 7.4 | < 5.0 | 0.6 | 0.39 | 247 | 0.1 | (0.3 | 15 | 9.9 | 18.0 | 6.3 | 78 | 92.0 | 7.0 | 1.8 | 0.14 | | (0.01 | 2.0 | 6.0 | 148 | | 2.5 | 2.1 | 9.4 | 0.9 |
| | Matiandui | 04.11.87 | 6.6 | < 5.0 | 1.9 | 1.40 | 227 | (0.1 | (0.1 | 8.8 | 4.2 | 25.0 | 5.7 | 39 | 78.0 | 8.0 | 1.6 | 0.31 | | (0.01 | 1.2 | 16.0 | 136 | | 2.0 | 1.8 | 5.5 | 1.5 |
| | Mutanthi | 04.11.87 | 6.2 | 10.0 | 1.0 | 12.00 | 149 | (0.1 | (0.1 | 5.6 | 3.1 | 16.0 | 5.0 | 26 | 52.0 | 7.0 | 1.0 | 0.19 | 0.01 | | 1.0 | 10.0 | 89 | | 1.4 | 1.3 | 3.8 | 1.0 |
| | Kathima | 04.11.87 | 6.3 | < 5.0 | 3.2 | 2.40 | 163 | (0.1 | 0.40 | 12.0 | 8.3 | | | 64 | 20.0 | 6.0 | 0.4 | 0.10 | | 0.5 | 1.7 | 34.0 | 98 | | 1.3 | 0.6 | 35.9 | 0.0 |
| | Kiriko | 04.11.87 | 6.8 | < 5.0 | 0.9 | 1.80 | 150 | 0.1 | (0.1 | 5.6 | 3.6 | | | 29 | 48.0 | 7.0 | 1.0 | 0.18 | 0.04 | | 0.9 | 4.0 | 90 | | 0.6 | 1.2 | -34.3 | 0.0 |
| | Iriri | 04.11.87 | 5.3 | 5.0 | 6.6 | 0.86 | 15 | 0.1 | (0.1 | 1.6 | 0.5 | 2.1 | 0.6 | 6.1 | 2.0 | 6.0 | 0.0 | 0.10 | | 0.01 | 0.3 | 4.0 | 10 | | 0.2 | 0.2 | 2.8 | 0.2 |
| 17 | Karumathi | 02.02.88 | 5.5 | 5.0 | 2.0 | 1.20 | 114 | 0.1 | (0.1 | 7.1 | 5.1 | 11.0 | 3.8 | 39 | 28.0 | 5.0 | 0.6 | 0.10 | | 0.01 | 1.2 | 34.0 | 69 | | 1.3 | 0.7 | 30.1 | 0.6 |
| 19 | Mariara | 05.02.88 | 6.7 | < 5.0 | 4.6 | 0.40 | 130 | 1.0 | (0.1 | 2.7 | 6.5 | 18.0 | 3.1 | 33 | 40.0 | 7.0 | 0.8 | 0.14 | 0.01 | 0.01 | 3.1 | 6.0 | 78 | | 1.5 | 1.1 | 18.1 | 1.0 |
| 41 | Kathambara | 09.02.88 | 6.2 | < 5.0 | 3.2 | 0.40 | 227 | 0.1 | (0.1 | 3.5 | 6.4 | 13.0 | 3.7 | 35 | 36.0 | 5.0 | 0.7 | 0.23 | | 0.01 | 0.9 | 6.0 | 70 | | 1.4 | 0.9 | 21.5 | 0.7 |
| 59 | Rumuiko | 12.2.88 | 7.5 | < 5.0 | 1.5 | 2.00 | 117 | 0.2 | (0.1 | 11.0 | 6.8 | 9.4 | 4.0 | 46 | 40.0 | 3.0 | 0.8 | 0.24 | | 0.01 | 1.3 | 2.0 | 70 | | 1.6 | 0.9 | 28.0 | 0.5 |
| 73 | Muuro Cronkere | 04.03.88 | 6.3 | < 5.0 | 23.0 | 4.70 | 41 | 0.8 | (0.1 | 4.8 | 0.5 | 7.0 | 2.0 | 14 | 14.0 | 9.0 | 0.3 | 0.21 | | 0.01 | 0.3 | 6.0 | 25 | | 0.6 | 0.5 | 8.1 | 0.5 |
| 83 | Rai | 08.03.88 | 4.2 | 5.0 | 3.0 | 2.40 | 19 | 0.2 | (0.1 | 2.4 | | 2.5 | 0.7 | 6 | | 9.0 | 0.0 | 0.10 | | 0.01 | 1.2 | 8.0 | 11 | | 0.2 | 0.3 | -6.2 | 0.2 |
| 88 | Kathigiro | 09.03.88 | 4.0 | 5.0 | 1.2 | 0.79 | 12 | 0.1 | (0.1 | 0.8 | 1.0 | 1.5 | 0.3 | 6 | | 7.0 | 0.0 | 0.10 | | 0.01 | 1.8 | 12.0 | 7.2 | | 0.2 | 0.2 | -10.1 | 0.1 |
| 89 | Kathenje | 09.03.88 | 4.0 | < 5.0 | 85.0 | | 42 | 0.9 | (0.1 | 2.9 | | 5.0 | 4.0 | 6 | | 12.0 | 0.0 | 0.10 | | 0.01 | 3.8 | 14.0 | 25 | | 0.5 | 0.4 | 5.3 | 0.4 |
| 155 | Kamukwa | 16.09.88 | 5.7 | 5.0 | 3.0 | | 44 | 0.3 | 0.20 | 4.0 | 3.4 | 5.0 | 1.1 | 24 | 8.0 | 5.0 | 0.2 | 0.04 | | | 2.0 | 16.0 | 48 | | 0.7 | 0.3 | 35.8 | 0.3 |
| 158 | Kinoru | 17.09.88 | 6.6 | < 5.0 | 4.4 | | 18 | 0.1 | 0.10 | 4.0 | 0.5 | 2.4 | 0.4 | 12 | 2.0 | 3.0 | 0.0 | 0.01 | | | 1.7 | 6.0 | 19 | | 0.4 | 0.2 | 37.7 | 0.2 |
| 174 | Bwee | 20.09.88 | 6.4 | 40* | 17.0 | | 26 | 0.6 | 0.10 | 1.6 | 1.5 | 4.0 | 0.9 | 10 | 2.0 | 3.0 | 0.0 | 0.33 | | | 0.3 | 4.0 | 22 | | 0.4 | 0.1 | 50.7 | 0.3 |
| 177 | Gatogo | 20.09.88 | 6.0 | 50.0 | 20.0 | | 30 | 0.8 | 0.10 | 1.6 | 2.9 | 4.0 | 0.8 | 16 | 4.0 | 5.0 | 0.1 | 0.36 | | | 0.3 | 4.0 | 21 | | 0.5 | 0.2 | 38.6 | 0.3 |
| 199 | Gacangaga | 26.09.88 | 6.7 | 70 | 28.0 | | 44 | 1.5* | 0.10 | 11.0 | 2.9 | 7.3 | 1.3 | 40 | 10.0 | 9.0 | 0.2 | 0.95 | | | 0.3 | 4.0 | 63 | | 1.1 | 0.5 | 42.4 | 0.5 |
| 223 | Kigogo | 30.09.88 | 6.0 | < 5.0 | 0.7 | | 29 | 0.1 | 0.10 | 2.4 | 1.5 | 3.0 | 0.2 | 12 | 1.0 | 1.0 | 0.0 | 0.70 | | | 1.5 | 8.0 | 18 | | 0.4 | 0.1 | 65.3 | 0.2 |

MERU DISTRICT

Chemical Data - Springs

| SP.No. | LOCATION | DATES | pH | col | Turb | KMnO | E.C. | Fe | Mn | Ca | Mg | Na | K | Tot | Tot | Cl | HCO3 | F | NO3 | NO2 | SO4 | Free | TDS | SiO | SUM | SUM | IONIC | | SAR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | F.T.U | value | uS/cm | | | | | | | Hard | Alk | | | | | | | CO2 | | | CATI | ANION | BALANC | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | mg/l | | | | | | | | | | | meq/l | | % | | |
| 226 | Kiabakie | 03.10.88 | 6.7 | < | 5.0 | 4.0 | 1.00 | 45 | 0.1 | 2.50 | 1.6 | 4.4 | 5.2 | 1.1 | 22 | 6.0 | 2.0 | 0.1 | 0.80 | | | 1.6 | 8.0 | 37 | 0.7 | 0.2 | 53.7 | | 0.3 |
| 231 | Gakobe | 03.10.88 | 5.5 | < | 5.0 | 3.6 | 0.71 | 40 | 0.1 | 0.10 | 2.4 | 19.0 | 5.2 | 1.1 | 86 | 4.0 | 4.0 | 0.1 | 0.70 | | | 2.4 | 12.0 | 30 | 1.9 | 0.2 | 77.7 | | 0.2 |
| 238 | Uri | 04.10.88 | 6.9 | | 50.0 | 22.0 | 0.95 | 44 | 1.0 | 0.50 | 4.0 | 4.3 | 5.0 | 0.7 | 28 | 6.0 | 2.0 | 0.1 | 0.90 | | | 0.3 | 4.0 | 42 | 0.8 | 0.2 | 62.4 | | 0.3 |
| 245 | Gakui | 05.10.88 | 7.2 | | 5.0 | 3.0 | 0.10 | 56 | 0.1 | 0.20 | 4.0 | 3.4 | 6.3 | 0.3 | 24 | 10.0 | 2.0 | 0.2 | 0.95 | | | 2.0 | 4.0 | 43 | 0.8 | 0.3 | 45.7 | | 0.4 |
| 255 | Kiroro | 13.10.88 | | | 8.0 | 50 | | 25 | 180 | 0.9 | 0.2 | 18.0 | 4.6 | 7.4 | 64 | 74.0 | 3.0 | 1.5 | 0.15 | | | 0.3 | 8.0 | 108 | 1.9 | 1.6 | 9.0 | | 0.2 |
| 256 | Kaguru | 14.10.88 | 7.4 | | 60 | 30 | | 86 | 1.0 | 0.10 | 5.6 | 5.3 | 10.5 | 2.5 | 36 | 32.0 | 5.0 | 0.6 | 0.19 | | | 0.3 | 8.0 | 51 | 1.2 | 0.8 | 22.2 | | 0.6 |
| 265 | Gakui | 15.10.88 | 7.0 | | 20.0 | 20.0 | | 98 | 0.7 | 0.10 | 3.2 | 2.4 | 8.4 | 3.9 | 18 | 36.0 | 4.0 | 0.7 | 0.55 | | | 1.0 | 30.0 | 59 | 0.8 | 0.9 | -1.8 | | 0.5 |
| 277 | Kauga | 18.10.88 | 6.8 | | 10.0 | 7.5 | | 57 | 0.4 | 0.20 | 4.0 | 2.4 | 3.2 | 2.3 | 20 | 18.0 | 4.0 | 0.4 | 0.11 | | | 1.9 | 26.0 | 34 | 0.6 | 0.5 | 7.7 | | 0.2 |
| 287 | Karigu | 21.10.88 | 6.7 | | 50.0 | 16.0 | | 24 | 1.0 | 0.10 | 6.4 | | 2.0 | 0.8 | 10 | 12.0 | | 0.2 | 0.10 | | | 0.3 | 2.0 | 15 | 0.4 | 0.2 | 26.9 | | 0.1 |
| 298 | Karuma Nyethu | 22.10.88 | 7.7 | | 40.0 | 0.3 | | 84 | 0.1 | 0.10 | 5.6 | 1.5 | 0.4 | 4.2 | 20 | 34.0 | 2.0 | 0.7 | 0.16 | | | 1.7 | 8.0 | 50 | 0.5 | 0.8 | -18.7 | | 0.0 |
| 306 | Marania | 30.09.88 | 7.2 | | 20.0 | 6.3 | | 31 | 0.2 | 0.1 | 2.0 | 0.7 | 2.4 | 0.8 | 8 | 20.0 | 0.5 | 0.4 | 0.10 | | | 6.5 | 10.0 | 19 | 0.3 | 0.5 | -31.8 | | 0.2 |
| 320 | Lewa | 11.10.88 | 7.2 | < | 5.0 | 7.6 | | 144 | 0.1 | 0.1 | 10.4 | 4.4 | 10.5 | 3.3 | 44 | 60.0 | 1.5 | 1.2 | 0.20 | | | 1.5 | 24.0 | 86 | 1.4 | 1.3 | 5.5 | | 0.6 |
| 343 | Timau Karebune | 18.10.88 | 8.8 | < | 5.0 | 1.1 | | 132 | 0.1 | 0.1 | 8.8 | 63.0 | 11.5 | 3.2 | 48 | 56.0 | 1.0 | 1.1 | 0.95 | | | 3.1 | 4.0 | 79 | 6.2 | 1.2 | 67.3 | | 0.3 |
| 42 | Mariamba | 09.02.88 | 6.1 | < | 5.0 | 1.2 | 2.80 | 156 | 0.1 | 0.1 | 5.3 | 7.6 | 13.0 | 4.4 | 44 | 42.0 | 5.0 | 0.8 | 0.38 | | 0.01 | 2.0 | 14.0 | 94 | 1.6 | 1.0 | 21.1 | | 0.7 |
| 395 | Buathomala | 22.01.88 | 7.3 | < | 5.0 | 6.0 | 4.70 | 252 | 0.1 | 0.1 | 5.2 | 5.2 | 39.0 | 3.9 | 34 | 98.0 | 7.0 | 2.0 | 0.14 | | 0.01 | 2.5 | 2.0 | 151 | 2.5 | 2.2 | 7.1 | | 2.3 |
| 402 | Kamathinwa | 25.01.88 | 7.3 | < | 5.0 | 7.3 | 1.60 | 396 | 0.1 | 0.1 | 3.1 | 25.0 | 31.0 | 11.0 | 109 | 138.0 | 8.0 | 2.8 | 0.23 | | 0.01 | 3.7 | 4.0 | 237 | 3.8 | 3.0 | 12.6 | | 1.1 |
| 413 | Nchora | 27.01.88 | 7.1 | | 60 | 51* | 3.20 | 390 | 1.0 | 0.6 | 13 | 25.0 | 23.0 | 11.0 | 138 | 166.0 | 7.0 | 3.3 | 0.24 | | 0.01 | 0.3 | 14.0 | 234 | 4.0 | 3.5 | 6.3 | | 0.9 |
| 412 | Lanyiru | 27.01.88 | 7.6 | < | 5.0 | 1.5 | 0.01 | 840 | 0.1 | 0.1 | 3.5 | 0.8 | 176 | 11.0 | 12 | 282.0 | 22.0 | 5.6 | 3.20 | | 0.01 | 3.3 | - | 504 | 0.5 | 6.3 | -84.6 | ** | 0.0 |
| 443 | Kalibrori | 08.02.88 | 7.2 | < | 5.0 | 34 | 1.50 | 180 | 2.5 | 0.3 | 6.0 | 17.0 | 13.0 | 3.7 | 83 | 62.0 | 5.0 | 1.2 | 0.11 | | 0.01 | 0.3 | 2.0 | 108 | 2.1 | 1.4 | 19.7 | | 0.6 |
| 449 | Mothurano | 09.02.88 | 7.3 | < | 5.0 | 7.2 | 2.40 | 168 | 0.9 | 0.1 | 7.7 | 2.7 | 22.0 | 8.5 | 30 | 64.0 | 6.0 | 1.3 | 0.26 | | 0.01 | 1.8 | 2.0 | 101 | 1.8 | 1.4 | 10.3 | | 1.4 |
| | Mwankambi | 22.09.87 | 7.1 | | 5.0 | 11.0 | 13.00 | 130 | 1.2 | 0.1 | 6.4 | 3.1 | 12.0 | | 28 | 45.0 | 4.5 | 0.9 | 0.10 | | 0.01 | 0.4 | 2.0 | 78 | 1.1 | 1.0 | 3.3 | | 0.8 |
| | Kamurujia(Kibirichia) | 12.11.87 | 6.8 | | 70 | 60 | 10.00 | 390 | | | 29.0 | 17.0 | 15.0 | 5.0 | 130 | 76.0 | 14.0 | 1.5 | 0.19 | | 0.8 | 16 | 12.0 | 234 | 2.1 | 1.9 | 3.5 | | 0.6 |
| | Nkunga croter | 12.11.87 | 7.5 | < | 5.0 | 0.5 | 2.40 | 390 | | | 24.0 | 20.0 | 20.3 | 4.7 | 128 | 144.0 | 9.0 | 2.9 | | | 0.01 | 1.8 | 8.0 | 234 | 2.6 | 3.1 | -8.3 | | 0.8 |
| | Kiloone | 13.11.87 | 6.7 | < | 5.0 | 1.1 | 3.50 | 240 | | | 4.0 | 4.1 | 48.0 | 11 | 27 | 77.0 | 11.0 | 1.5 | 0.30 | | 0.01 | 3.9 | 10.0 | 144 | 2.7 | 1.8 | 18.8 | | 2.9 |
| | Tingania | 11.02.88 | 6.7 | < | 5.0 | 14.0 | 7.10 | 118 | 0.1 | 0.1 | 2.3 | 3.5 | 11.0 | 3.7 | 20 | 34.0 | 9.0 | 0.7 | 0.10 | | 0.01 | 0.93 | 4.0 | 71 | 1.0 | 0.9 | 2.2 | | 0.7 |
| | Ruamaria | 29.09.88 | 7.6 | | 5.0 | 21.0 | | 67 | 0.3 | 0.1 | 4 | 2.9 | 5.3 | 0.7 | 22 | 36.0 | 0.5 | 0.7 | 0.12 | | | | 6.0 | 40 | 0.7 | 0.7 | -3.3 | | 0.3 |
| | Kaugongogo | 17.07.85 | 8.2 | < | 5.0 | 5.7 | 1.80 | 255 | 0.9 | 0.1 | 48 | 1.9 | 34 | | 114 | 138.0 | 5.0 | 2.8 | 0.50 | | | 1.9 | | 153 | 4.0 | 2.9 | 16.3 | | 2.3 |
| | Mwankumbii | 22.09.87 | 7.1 | | 5.0 | 11.0 | 13.00 | 130 | 1.2 | 0.1 | 6.4 | 3.1 | 12 | | 28 | 45.0 | 5.5 | 0.9 | 0.10 | | 0.01 | 0.4 | 2.0 | 78 | 1.1 | 1.1 | 2.0 | | 0.8 |
| 412 | Lanyiru sp, Meru | 24.11.88 | 7.5 | | 5.0 | 1.2 | 0.80 | 762 | 0.1 | 0.1 | 3.2 | 1 | 150 | 7 | 12 | 320.0 | 22.0 | | | | 0.1 | 3.30 | 10.0 | 457 | 6.9 | 7.1 | -1.0 | | 10.4 |
| 354 | Mt. Kenya Spring | 26.01.89 | 5.5 | | 5 | 6.0 | 0.10 | 36 | 0.2 | 0.1 | 4 | 0.1 | 8.4 | 0.5 | 10 | 6.0 | 3.0 | | | | 0.05 | 2.60 | 6.0 | 22 | 0.6 | 0.3 | 38.8 | | 0.6 |

** only one sample was used -more should be analysed to confirm concentration.

MERU DISTRICT

Chemical Data - Boreholes

| B/H NO | LOCATION | DATES | pH | col | Turb F.T.U | KMnO value | E.C. uS/cm | Fe | Mn | Ca | Mg | Na | K | Tol Hard | Tol Alk | Cl | HCO3 | F | NO3 | NO2 | SO4 | Free CO2 | TDS | SUM CATION | SUM ANION | IONIC BALANCE | SAR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | mg/l | | | | | | | | | | meq/l | meq/l | % | |
| C 6967 | Maua Stadium | 13.05.87 | 6.0 | 30.0 | 56.0 | 2.10 | 66 | 7.6 | 0.70 | 8.0 | 3.4 | - | - | 34 | 32.0 | 4.8 | 39.0 | 0.10 | 0.22 | (0.01 | ( 0.3 | 48 | 40 | 0.7 | 0.8 | -7.0 | 0.3 |
| C 6967 | Maua Stadium | 06.01.87 | 6.6 | cloudy | 260.0 | 1.90 | 650 | 15.1 | 1.20 | ( 0.1 | 0.1 | 6 | 2.9 | 18 | 34.0 | 4.0 | 41.4 | 0.24 | 0.53 | (0.01 | 7.1 | 4 | 390 | 0.3 | 0.9 | -46.0 | 0.1 |
| C 6967 | Maua Stadium | 07.04.87 | 6.0 | ( 5.0 | 80.0 | 2.10 | 51 | 12.0 | 0.72 | ( 0.1 | 0.1 | 1 | 1.2 | 28 | 60.0 | 5.0 | 73.1 | 0.10 | 0.01 | (0.01 | 0.3 | 20 | 30 | 0.1 | 1.3 | -87.8 | 0.1 |
| C 6967 | Maua Stadium | 12.11.87 | 5.7 | 5.0 | 36 | 4.10 | 247 | - | | 8.8 | 3.4 | 8.3 | 5.8 | 36 | 36 | 8 | 43.9 | 0.11 | | 0.01 | 0.3 | 46 | 148 | 1.2 | 1.0 | 12.7 | 0.2 |
| C 6967 | Maua Stadium | 21.09.87 | 6.8 | ( 5.0 | 90.0 | 13.00 | 117 | 16.0 | 1.50 | 1.0 | 0.9 | 6 | - | 14 | 7.0 | 0.1 | 8.5 | - | 0.01 | - | ( 0.0 | - | 70 | 0.4 | 0.1 | 45.9 | 0.2 |
| C 6967 | Maua Stadium | 13.11.87 | 6.4 | muddy | 79 | 3.90 | 124 | | | | | 7.5 | 6.0 | 42 | 46 | 8 | 56.1 | 0.12 | | 0.02 | 0.3 | 26 | 74 | 0.3 | 1.2 | -55.8 | |
| C 6967 | Maua Stadium | 06.01.87 | 6.6 | Cloudy | 260 | 1.90 | 650 | 15.5 | 1.2 | 0.1 | 0.1 | 6 | 2.9 | 18 | 34 | 4 | 41.4 | 0.24 | 0.53 | 0.01 | 7.1 | 4 | 390 | 0.3 | 0.9 | -46.0 | 0.1 |
| C 7126 | Kiiji River (Tharaka) | 21.02.89 | 7.8 | ( 5 | 2.2 | 1.60 | 1611 | 0.1 | 0.1 | 39 | 92 | 162 | 2 | 478 | 734 | 82 | 894.7 | 1.7 | | (0.01 | 54 | 50 | 967 | 16.6 | 18.1 | -4.3 | 3.2 |
| C 7127 | Marigoni River (Tharaka) | 16.02.89 | 8.8 | 70 | 27 | 0.80 | 1745 | 3.3 | 0.2 | 25 | 104 | 208 | 4.6 | 452 | 812 | 208 | 989.8 | 6.5 | | 0.01 | 40 | | 1047 | 19.0 | 22.9 | -9.4 | 4.5 |
| C 7130 | Karani Pr. Sch. | 04.05.89 | 7.2 | 10 | 58 | 0.80 | 360 | ( 0.1 | 0.1 | 20 | 11 | 55 | 1.8 | 94 | 152 | 16 | 185.3 | 0.7 | | (0.01 | 4 | 8 | 216 | 4.3 | 3.6 | 9.7 | 0.5 |
| C 7130 | Kaarani Pri. Sch. | 11.01.87 | 8.3 | ( 5.0 | 6.3 | 0.10 | 1147 | 2.7 | 0.08 | 10.0 | 15.0 | 190 | 4.0 | 136 | 208.0 | 76.0 | 253.6 | 2.20 | 0.02 | 0.01 | 72.5 | nil | 688 | 10.1 | 7.8 | 12.8 | 1.0 |
| C 7130 | Karani Pr. Sch. | 06.04.89 | 7.8 | 70 | 31 | 4.70 | 1342 | 1.7 | 0.6 | 16 | 63 | 89 | 6.5 | 300 | 42 | 88 | 51.2 | 1 | | (0.01 | 63 | 14 | 805 | 10.0 | 4.6 | 36.8 | 3.4 |
| C 7131 | Tharaka W/Project (Kaguma) | 16.10.89 | 6.8 | 5 | 0.8 | 0.80 | 297 | ( 0.1 | ( 0.1 | 17 | 8.7 | 21 | 8 | 78 | 114 | 7 | 139.0 | 0.1 | | (0.01 | 9.4 | 50 | 176 | 2.7 | 2.7 | 0.2 | 0.5 |
| C 7131 | Kaguma | 16.01.87 | 8.5 | 5.0 | 13.0 | 5.00 | 4758 | 5.1 | 0.09 | 6.0 | 36.0 | 1100 | 16.0 | 206 | 1618.0 | 317.0 | 1972.3 | 12.00 | 0.04 | 0.01 | 583.0 | nil | 285 | 51.5 | 53.4 | -1.8 | 3.2 |
| C 7135 | Tharaka(Kabunga) | 05.02.87 | 7.9 | 5.0 | 5.7 | 1.00 | 970 | 1.4 | 0.16 | 59.0 | 46.0 | 60 | 3.6 | 400 | 394.0 | 31.0 | 480.3 | 0.38 | 0.02 | 0.01 | 123.0 | 20 | 582 | 9.4 | 11.3 | -9.0 | 1.3 |
| C 7136 | Marimanti Health Centre | 13.02.87 | 7.8 | 5.0 | 11.0 | 0.10 | 2350 | 0.8 | 0.50 | 134.0 | 107.0 | 165 | 140.0 | 850 | 566.0 | 309.0 | 690.0 | 0.65 | - | - | 203.0 | 48 | 1410 | 26.3 | 24.3 | 4.0 | 2.0 |
| C 7138 | Gatunga Market Tharaka | 15.06.87 | 7.8 | ( 5.0 | 10.0 | 1.30 | 1365 | 1.7 | 0.11 | 49.0 | 81.0 | 97 | - | 494 | 384.0 | 156.0 | 468.1 | 0.45 | 0.01 | (0.01 | 66.0 | 44 | 819 | 13.3 | 13.4 | -0.4 | 2.5 |
| C 7139 | Gatunga | 04.07.89 | 7.3 | ( 5 | 3 | 3.20 | 848 | 2.2 | 0.2 | 42 | 53 | 42 | 3.5 | 324 | 252 | 93 | 307.2 | 0.5 | | (0.01 | 15 | 18 | 509 | 8.4 | 8.0 | 2.5 | 1.8 |
| C 7142 | Nkondi Pr. Sch. | 21.07.89 | 7.5 | ( 5 | 0.5 | 0.80 | 407 | ( 0.1 | ( 0.1 | 64 | 7.8 | 24 | 1.6 | 192 | 202 | 2 | 246.2 | 0.9 | | (0.01 | 7.5 | 6 | 244 | 4.9 | 4.2 | 7.3 | 0.2 |
| C 7143 | Tharaka W/Project | 19.09.89 | 8.4 | 250 | 74 | 6.70 | 367 | 3.2 | ( 0.1 | 23 | 18 | 24 | 3.2 | 132 | 182 | 7 | 221.9 | 0.3 | | (0.01 | ( 0.3 | | 220 | 3.8 | 3.8 | -1.1 | 0.8 |
| C 7143 | Mwanyani Pr. Sch. | 12.03.87 | 8.0 | ( 5 | 0.4 | 1.30 | 396 | 0.4 | 0.02 | 24 | 22 | 26 | 5 | 172 | 214 | 9 | 260.9 | 0.54 | (0.01 | (0.01 | 2.4 | 2 | 238 | 4.3 | 4.6 | -3.5 | 1.0 |
| C 7235 | Maua Hospital | 22.09.87 | 6.5 | sam.fin. | | 14.00 | 29 | sample finished | | | | | - | 57 | 40.0 | 25.0 | 48.8 | 0.10 | - | 0.40 | sam.fin | 16 | 17 | 0.0 | 1.5 | -100.0 | |
| C 7235 | Maua Hospital | 19.05.87 | 7.8 | ( 5.0 | 0.9 | 2.10 | 234 | 1.3 | 0.33 | 16.0 | 5.4 | 20 | - | 72 | 90.0 | 8.0 | 109.7 | 0.10 | 0.90 | 0.01 | 4.2 | 38 | 140 | 2.1 | 2.1 | 0.0 | 0.3 |
| C 7235 | Maua Hospital | 13.05.87 | 7.2 | ( 5.0 | 17.0 | 1.82 | 220 | 4.1 | 0.13 | 8.5 | 4.7 | 19 | - | 42 | 74.0 | 19.0 | 90.2 | 0.10 | 2.10 | 0.25 | ( 0.3 | 4 | 132 | 1.6 | 2.0 | -10.5 | 0.3 |
| C 7235 | Maua Hospital | 09.01.87 | 6.7 | cloudy | 155.0 | 1.47 | 280 | 7.9 | 0.49 | 2.7 | 4.4 | 26 | 8.2 | 58 | 24.0 | 28.0 | 29.3 | 0.27 | 2.68 | (0.01 | 1.8 | 4 | 168 | 1.8 | 1.3 | 16.9 | 0.6 |
| C 7238 | Athiru Gaiti Pr Sch. | 13.11.87 | 5.9 | ( 5.0 | 4.7 | 3.10 | 156 | - | - | 4.8 | 11.0 | 10 | 6.6 | 57 | 46.0 | 9.0 | 56.1 | 0.18 | - | 0.01 | 1.0 | 20 | 94 | 1.7 | 1.2 | 18.4 | 1.1 |
| C 7238 | Athiru Gaiti Pr Sch. | 22.09.87 | 6.7 | 5.0 | 13.0 | 13.00 | 156 | 0.6 | 0.10 | 1.8 | 2.0 | 16 | - | 26 | 45.0 | 8.5 | 54.9 | 0.25 | - | (0.01 | 0.8 | 22 | 94 | 1.0 | 1.2 | -9.7 | 0.3 |
| C 7239 | Athiru Gaiti Junction | 13.05.87 | 6.4 | 20 | 17.0 | 2.40 | 297 | 1.7 | 0.6 | 5.6 | 2 | | | 22 | 240 | 7.7 | 292.6 | 0.14 | 0.46 | 0.02 | 9.2 | 42 | 178 | 0.4 | 5.2 | -84.3 | 0.2 |
| C 7240 | Karurune Sch. | 19.05.87 | 7.4 | ( 5.0 | 1.8 | 2.50 | 202 | ( 0.1 | 0.05 | 7.1 | 4.7 | 14 | - | 74 | 94.0 | 6.0 | 114.6 | 0.30 | 1.10 | 0.01 | 1.4 | 26 | 121 | 1.4 | 2.1 | -21.2 | 0.4 |

MERU DISTRICT

Chemical Data - Boreholes

| B/H NO | LOCATION | DATES | pH | col | Turb F.T.U | KMnO value | E.C. uS/cm | Fe | Mn | Ca | Mg | Na | K | Tol Hard | Tol Alk | Cl | HCO3 | F | NO3 | NO2 | SO4 | Free CO2 | TDS | SUM CATION | SUM ANION | IONIC BALANCE | SAR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | mg/l | | | | | | | | | | meq/l | meq/l | % | |
| C 7243 | Kianda Pr. Sch. | 19.08.87 | 6.9 | < | 5 | 1.6 | 7.60 | 630 | 0.5 | < 0.1 | 27 | 34 | 28 | | 195 | 234 | 9 | 285.2 | 0.23 | | 0.04 | 1.77 | 71.0 | 378 | 5.4 | 5.0 | 3.8 | 1.4 |
| C 7244 | Thaicu Market | 29.06.87 | 6.6 | | 70.0 | 20.0 | 1.50 | 338 | 2.2 | 0.88 | 6.8 | 8.3 | 34 | - | 96 | 186.0 | 90.0 | 226.7 | 0.30 | 0.53 | (0.01 | 1.6 | 108 | 203 | 2.5 | 6.3 | -43.1 | 0.7 |
| C 7245 | Kariene Market | 29.06.87 | 6.8 | < | 5.0 | 0.8 | 0.08 | 429 | 0.3 | 0.05 | 15.0 | 26.0 | 36 | - | 146 | 242.0 | 8.0 | 295.0 | 0.20 | 0.58 | (0.01 | 2.4 | 24 | 257 | 4.5 | 5.1 | -6.9 | 1.4 |
| C 7246 | Thaicu Pri. Sch. | 29.06.87 | 6.6 | | 20.0 | 15.0 | 0.24 | 273 | 0.6 | 0.15 | 3.0 | 8.8 | 21 | - | 79 | 162.0 | 7.0 | 197.5 | 0.25 | 0.55 | (0.01 | 0.3 | 92 | 164 | 1.8 | 3.4 | -31.6 | 1.1 |
| C 7246 | Thaicu Pri. Sch. | 04.01.87 | 7.2 | cloudy | | 76.0 | 1.03 | 350 | 0.9 | 0.20 | 7.2 | 7.9 | 42 | 11.9 | 134 | 202.0 | 10.0 | 246.2 | 0.35 | 0.98 | 0.06 | < 0.3 | 24 | 210 | 3.1 | 4.3 | -15.9 | 0.6 |
| C 7247 | Kibangua Pri. Sch. | 29.06.87 | 6.4 | < | 5.0 | 8.1 | 0.79 | 481 | 1.6 | 0.28 | 5.9 | 3.4 | 68 | - | 86 | 264.0 | 12.0 | 321.8 | 0.52 | 0.14 | (0.01 | 0.1 | 68 | 289 | 3.5 | 5.6 | -22.8 | 0.3 |
| C 7248 | Tumtumu Market | 29.06.87 | 6.8 | < | 5.0 | 5.4 | 0.71 | 455 | 0.6 | 0.04 | 14.0 | 25.0 | 22 | - | 190 | 270.0 | 7.0 | 329.1 | 0.20 | 0.61 | (0.01 | 1.0 | 118 | 273 | 3.7 | 5.6 | -20.4 | 1.4 |
| C 7249 | Mangala | 14.05.87 | 6.2 | | 5.0 | 5.2 | 2.30 | 418 | 0.9 | 0.02 | 13.0 | 27.0 | - | - | 154 | 24.0 | 8.0 | 29.3 | 0.12 | 1.40 | 0.08 | < 0.3 | 68 | 250 | 2.9 | 0.7 | 60.3 | 1.6 |
| C 7249 | Mangala | 19.05.87 | 7.2 | < | 5.0 | 7.8 | 3.60 | 416 | 0.3 | 0.02 | 15.0 | 16.0 | 35 | - | 178 | 214.0 | 6.0 | 260.9 | 0.16 | 0.84 | 0.05 | < 0.3 | 40 | 250 | 3.6 | 4.5 | -10.7 | 0.9 |
| C 7250 | Matyandui | 13.11.87 | 7.1 | < | 5.0 | 1.4 | 2.70 | 247 | | | 14.0 | 75.0 | 26 | 8.2 | 65 | 84 | 6.0 | 102.4 | 0.17 | | 0.01 | 3.6 | 8 | 148 | 8.2 | 1.8 | 64.8 | 4.3 |
| C 7250 | Matyandui sch. | 19.05.87 | 7.0 | < | 5.0 | 4.4 | 4.40 | 247 | 0.9 | 0.04 | 5.7 | 7.2 | 19 | - | - | 110.0 | 114.0 | 134.1 | 0.70 | 0.12 | 0.92 | 1.3 | 38 | 148 | 1.7 | 5.4 | -52.3 | 0.6 |
| C 7251 | Lakathi Igembe | 14.08.87 | 6.1 | < | 5.0 | 1.3 | 1.11 | 1300 | 0.3 | (0.01 | 6.0 | 6.9 | 34 | - | 70 | 12.4 | 10.0 | 15.1 | 0.42 | - | 0.04 | 1.9 | 68 | 780 | 2.3 | 0.6 | 60.9 | 0.6 |
| C 7251 | Lakathi Sch. | 19.05.87 | 7.0 | < | 5.0 | 2.6 | 4.00 | 286 | 0.4 | 0.06 | 2.9 | 6.0 | 41 | - | 66 | 144.0 | 8.0 | 175.5 | 0.35 | 0.92 | 0.04 | 1.4 | 62 | 172 | 2.4 | 3.1 | -12.8 | 0.8 |
| C 7252 | Muthucine sch. | 19.05.87 | 7.0 | < | 5.0 | 9.1 | 4.20 | 676 | 0.6 | 0.10 | 6.3 | 5.3 | 102 | - | 116 | 396.0 | 12.0 | 482.7 | 0.31 | 0.17 | 0.05 | < 0.3 | 38 | 406 | 5.2 | 8.3 | -22.8 | 0.5 |
| C 7255 | Kibangua Dip | 29.06.87 | 6.7 | < | 5.0 | 55.0 | 1.80 | 1950 | 18.0 | 0.86 | 62.0 | 44.0 | 350 | - | 404 | 1100.0 | 35.0 | 1340.9 | 0.50 | 0.04 | (0.01 | < 0.3 | 650 | 1170 | 21.9 | 23.0 | -2.3 | 1.2 |
| C 7256 | Kuruiro | 22.06.88 | 7.8 | | 5 | 13.0 | 10.00 | 1120 | 0.6 | 0.2 | 4 | 20 | 231 | 25 | 94 | 450 | 27 | 548.6 | 1.5 | | (0.01 | 73.00 | | 672 | 12.5 | 11.3 | 5.3 | 2.1 |
| C 7256 | Kiruiro Market | 29.06.87 | 7.6 | | 85.0 | 36.0 | 1.20 | 1157 | 4.1 | 0.35 | 4.5 | 7.0 | 240 | - | 39 | 788.0 | 26.0 | 960.6 | 1.20 | 0.42 | (0.01 | 13.0 | 46 | 694 | 11.2 | 16.8 | -19.7 | 0.7 |
| C 7257 | Kiraone Mkt | 29.06.88 | 6.0 | < | 5 | 0.7 | < 0.10 | 280 | 0.1 | < 0.1 | 4 | 15 | 30 | 7.3 | 72 | 62 | 8 | 75.6 | 0.24 | | (0.01 | 1.70 | 20.0 | 168 | 2.9 | 1.5 | 32.2 | 1.6 |
| C 7259 | Baithubuku | 17.08.87 | 6.5 | < | 5 | 0.6 | 8.20 | 151 | 0.2 | 0.1 | 11 | 7.1 | 22 | | 94 | 110 | 5 | 134.1 | 0.22 | | (0.01 | 3.10 | 34.0 | 90 | 2.1 | 2.4 | -7.0 | 0.5 |
| C 7309 | Kanaguna Pr. Sch. | 30.03.87 | 8.4 | < | 5 | 0.3 | 2.00 | 726 | 0.2 | 0.01 | 1.6 | 8.6 | 138 | 6.2 | 84 | 350 | 14 | 426.7 | 3.4 | 0.01 | (0.01 | 16.00 | | 436 | 6.9 | 7.7 | -5.3 | 1.5 |
| C 7310 | Marimanti Market | 01.04.87 | 8.2 | < | 5.0 | 0.5 | 1.80 | 990 | 0.4 | 0.05 | 47.0 | 62.0 | 75 | 13.0 | 414 | 382.0 | 85.0 | 465.7 | 0.70 | (0.01 | (0.01 | 151.0 | 2 | 594 | 11.0 | 13.2 | -9.0 | 1.9 |
| C 7314 | Materi Girls Centre | 27.05.87 | 7.8 | | 5.0 | 2.3 | 0.32 | 280 | 0.9 | 0.08 | 3.3 | 5.0 | 24 | | 70 | 180 | 11 | 219.4 | 0.8 | 0.82 | 0.01 | 2.0 | 72 | 156 | 1.6 | 3.9 | -41.8 | 0.6 |
| C 7409 | Maliala | 16.06.88 | 7.3 | < | 5 | 5.0 | 11.00 | 910 | 2.6 | < 0.1 | 27 | 20 | 92 | 25 | 148 | 360 | 21 | 438.8 | 1.5 | | (0.01 | 30.00 | 22.0 | 546 | 7.6 | 8.4 | -4.8 | 0.8 |
| C 7410 | Ogoti Pr. Sch. | 22.06.88 | 6.1 | < | 5 | 5.4 | 7.10 | 420 | 0.7 | < 0.1 | 8.8 | 13 | 48 | 10 | 76 | 102 | 19 | 124.3 | 0.39 | | (0.01 | 32.00 | 52.0 | 252 | 3.9 | 3.2 | 8.6 | 0.9 |
| C 7412 | Kiamathingira | 23.01.89 | 5.8 | brown | | 90.0 | | 163 | 14.7 | 0.2 | 6.4 | 1.5 | 21 | 5 | 22 | 70 | 12 | 85.3 | | | | < 0.30 | 46.0 | 98 | 1.5 | 1.7 | -8.0 | 0.1 |
| C 7413 | Gakunji | 22.06.88 | 6.3 | brown | | 110.0 | 11.00 | 182 | 15.0 | 0.1 | 2.4 | 10 | 28 | 7.5 | 50 | 46 | 10 | 56.1 | 0.15 | | (0.01 | < 0.30 | 10.0 | 109 | 2.4 | 1.2 | 32.2 | 1.4 |
| C 7414 | Kathangacwe | 23.01.89 | 8.5 | < | 5 | 6.0 | | 4030 | 0.3 | < 0.1 | 2.4 | 6.3 | 1008 | 11 | 32 | 900 | 670 | 1097.1 | | 0.01 | | 164 | | 2418 | 44.8 | 40.3 | 5.2 | 0.9 |
| C 7415 | Liamikuu pr. sch. | 14.08.87 | 7.1 | < | 5 | 2.1 | 8.20 | 952 | 1.0 | 0.1 | 43 | 10 | 97 | | 171 | 552 | 35 | 672.9 | 1.5 | | (0.01 | 25.00 | 78.0 | 571 | 7.2 | 12.5 | -27.1 | 0.3 |
| C 7417 | Ntuene | 21.04.88 | 6.2 | < | 5 | 17.0 | 1.60 | 168 | 2.7 | 0.1 | 5.5 | 2.9 | 17 | 3.7 | 66 | 94 | 7 | 114.6 | 0.12 | | 5 | 0.30 | 28.0 | 100 | 1.3 | 2.1 | -21.4 | 0.3 |
| C 7418 | Kiliai Kuu | 23.06.88 | 7.3 | , | 5 | 0.8 | 0.10 | 560 | 0.1 | < 0.1 | 37 | 25 | 33 | 14 | 196 | 242 | 8 | 295.0 | 0.16 | | (0.01 | 1.80 | 18.0 | 336 | 5.7 | 5.1 | 5.5 | 0.9 |

Chemical Data - Boreholes

| B/H NO | LOCATION | DATES | pH | col | Turb F.T.U | KMnO value | E.C. uS/cm | Fe | Mn | Ca | Mg | Na | K | Tot Hard | Tot Alk | Cl | HCO3 | F | NO3 | NO2 | SO4 | Free CO2 | TDS | SUM CATION | SUM ANION | IONIC BALANCE | SAR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | mg/l | | | | | | | | | | meq/l | meq/l | % | |
| C 7420 | Nkungi | 21.04.88 | 6.6 | < | 5 | 0.5 | 1.60 | 308 | < 0.1 | < 0.1 | 30 | 12 | 23 | 9 | 122 | 152 | 9 | 185.3 | 0.18 | | <0.01 | 2.10 | 28.0 | 184 | 3.7 | 3.3 | 5.4 | 0.5 |
| C 7420 | Nkungi | 22.06.88 | 6.4 | < | 5 | 25.0 | 11.00 | 336 | < 0.1 | < 0.1 | 19 | 24 | 48 | 9 | 148 | 128 | 7 | 156.0 | 0.16 | | <0.01 | 9.40 | 34.0 | 202 | 5.2 | 3.0 | 28.0 | 1.2 |
| C 7421 | Muribariu | 22.06.88 | 7.0 | | 10 | 21.0 | 8.70 | 420 | 0.1 | < 0.1 | 18 | 28 | 25 | 9.4 | 160 | 148 | 7 | 180.4 | 0.2 | | 0.01 | 0.30 | 20.0 | 252 | 4.5 | 3.2 | 17.8 | 1.4 |
| C 7422 | Kabukuro akt | 22.06.88 | 6.3 | < | 5 | 3.6 | 9.50 | 420 | 0.5 | < 0.1 | 18 | 7.2 | 24 | 8.6 | 144 | 118 | 9 | 143.8 | 0.16 | | <0.01 | 8.50 | 34.0 | 252 | 2.8 | 2.8 | -0.6 | 0.4 |
| C 7423 | Mwomwene | 23.06.88 | 6.6 | < | 5 | 0.5 | < 0.10 | 470 | 0.1 | < 0.1 | 22 | 24 | 24 | 8.8 | 154 | 142 | 6 | 173.1 | 0.50 | | <0.01 | 1.70 | 50.0 | 252 | 4.3 | 3.0 | 17.6 | 1.1 |
| C 7700 | Tharaka T/S. | 19.04.89 | 8.3 | > | 200 | 80.0 | 12.00 | 3462 | 0.2 | 0.1 | 118 | 21 | 50 | 5.9 | 380 | 1530 | 25 | 1865.1 | 3.40 | | <0.01 | 67.00 | 24.0 | 2077 | 9.9 | 32.7 | -53.3 | 0.4 |
| C 7701 | Tharaka W/Project | 05.04.89 | 7.6 | | 5 | 15.0 | 3.20 | 1355 | < 0.1 | 2.1 | 29 | 43 | 82 | 10 | 248 | 564 | 137 | 687.5 | 3.40 | | <0.01 | 90.00 | 12.0 | 614 | 8.8 | 17.0 | -31.8 | 1.7 |
| C 7704 | Muguku | 06.07.89 | 8.4 | < | 5 | 9.0 | 32.00 | 2826 | 1.8 | < 0.1 | 7.2 | 17 | 536 | 6 | 86 | 1174 | 77 | 1431.1 | 14.00 | | <0.01 | 128 | | 1696 | 25.2 | 28.3 | -5.7 | 1.4 |
| C 7708 | Igumo | 05.07.89 | 7.9 | < | 5 | 160.0 | 6.30 | 1978 | 5.2 | 0.1 | 7.2 | 6.3 | 368 | 1.8 | 44 | 830 | 33 | 1011.8 | 17.00 | | 0.25 | < 0.30 | 6.0 | 1178 | 16.9 | 17.5 | -1.7 | 0.5 |
| C 7710 | Kagongoni | 05.07.89 | 7.6 | < | 5 | 1.6 | 1.60 | 1978 | 1.8 | 0.3 | 40 | 53 | 284 | 3.3 | 320 | 158 | 81 | 192.6 | 5.00 | | <0.01 | 190 | 28.0 | 1178 | 18.8 | 9.4 | 33.3 | 1.8 |
| C 7742 | Mutuati Pr. Sch. | 16.06.88 | 6.7 | < | 5 | 0.5 | 14.00 | 360 | 0.3 | < 0.1 | 14 | 21 | 17 | 8 | 124 | 80 | 8 | 97.5 | 0.10 | | <0.01 | 28.00 | 8.0 | 216 | 3.4 | 2.4 | 16.7 | 1.2 |
| C 7750 | Ndoleli II Demonistration Farm | 21.04.88 | 6.8 | < | 5 | 11.0 | 0.76 | 308 | < 0.1 | < 0.1 | 26 | 12 | 23 | 10 | 96 | 164 | 9 | 199.9 | 0.23 | | <0.01 | 0.30 | 24.0 | 184 | 3.5 | 3.5 | 0.1 | 0.5 |
| C 7751 | Murera | 11.03.88 | 6.9 | < | 5 | 19.0 | 0.79 | 306 | 0.4 | < 0.1 | 19 | 17 | 36 | 14 | 116 | 172 | 8 | 209.7 | 0.28 | | <0.01 | 1.60 | 14.0 | 183 | 4.3 | 3.7 | 7.2 | 0.8 |
| C 7751 | Muruwai Kanga | 21.04.88 | 6.8 | < | 5 | 0.9 | 0.76 | 322 | < 0.1 | < 0.1 | 13 | 14 | 23 | 15 | 116 | 174 | 8 | 212.1 | 0.25 | | 0.02 | 2.30 | 36.0 | 193 | 3.2 | 3.8 | -8.2 | 0.8 |
| C 7752 | Makutano | 21.04.88 | 6.4 | < | 5 | 0.2 | 0.76 | 420 | < 0.1 | < 0.1 | 20 | 14 | 28 | 10 | 126 | 166 | 8.0 | 202.4 | 0.85 | | <0.01 | 2.00 | 22.0 | 252 | 3.6 | 3.6 | 0.5 | 0.7 |
| C 7753 | Gachugu | 22.06.88 | 7.7 | < | 5 | 3.1 | 11.00 | 420 | 0.3 | < 0.1 | 22 | 23 | 54 | 12 | 150 | 152 | 9.0 | 185.3 | 0.24 | | <0.01 | 10.00 | 2.0 | 252 | 5.6 | 3.5 | 23.5 | 1.1 |
| C 7754 | Baibario pr. sch. | 22.06.88 | 6.6 | | 5 | 8.5 | 17.00 | 420 | 0.3 | < 0.1 | 15 | 33 | 26 | 10 | 172 | 144.0 | 8.0 | 175.5 | 0.19 | | <0.01 | < 0.30 | 32.0 | 252 | 4.9 | 3.1 | 21.9 | 1.8 |
| C 7755 | Kinna police post | 31.07.89 | 7.2 | < | 5 | 2.0 | 7.10 | 799 | < 0.1 | < 0.1 | 16 | 65 | 52 | 19 | 308 | 400.0 | 11.0 | 487.6 | 0.30 | | <0.01 | 6.30 | 2.0 | 480 | 8.9 | 8.4 | 2.7 | 3.5 |
| C 7755 | Kina Police Post | 31.07.89 | 7.2 | | 5.0 | 2.0 | 7.10 | 799 | 0.1 | 0.10 | 16.0 | 65.0 | 52 | 19 | 308 | 400 | 11 | 487.6 | 0.3 | | 0.01 | 6.3 | 24 | 480 | 8.9 | 8.4 | 2.7 | 3.5 |
| C 7756 | Mbuvini | 21.04.88 | 6.6 | < | 5 | 18.0 | 0.10 | 420 | 2.0 | 0.1 | 31 | 18 | 23 | 9.7 | 150 | 210.0 | 10.0 | 256.0 | 0.25 | | <0.01 | 0.30 | 32.0 | 252 | 4.3 | 4.5 | -2.4 | 0.7 |
| C 7757 | Kabwitu | 25.01.89 | 7.0 | < | 5 | 1.1 | | 442 | 0.1 | 0.3 | 22 | 12 | 46 | 11 | 102 | 198.0 | 10.0 | 241.4 | | | <0.01 | 3.30 | 28.0 | 265 | 4.4 | 4.3 | 0.7 | 0.5 |
| C 7758 | Maarena | 02.02.88 | 7.6 | < | 5 | 18.0 | 2.40 | 1920 | 0.3 | 0.1 | 104 | 55 | 413 | 49 | 490 | 1182.0 | 8.0 | 1440.9 | 0.60 | | <0.01 | 15.00 | 44.0 | 1152 | 28.9 | 24.2 | 9.0 | 1.2 |
| C 7760 | Kiria | 16.02.88 | 7.9 | < | 5 | 26.0 | 0.79 | 624 | 0.6 | 0.1 | 47 | 44 | 63.0 | 20 | 292 | 386.0 | 6.0 | 470.5 | 0.34 | | <0.01 | 1.90 | 6.0 | 374 | 9.2 | 7.9 | 7.6 | 1.4 |
| C 7760 | Kinna Market | 21.04.88 | 7.0 | < | 5 | 4.6 | < 0.10 | 700 | < 0.1 | 0.1 | 45 | 44 | 63.0 | 21 | 310 | 408.0 | 17.0 | 497.4 | 0.31 | | <0.01 | 2.00 | 30.0 | 420 | 9.1 | 8.7 | 2.6 | 1.4 |
| C 7849 | Isaael Kinna | 21.04.88 | 6.6 | < | 5 | 7.5 | 0.76 | 588 | < 0.1 | 0.1 | 28 | 33.0 | 42.0 | 19 | 268 | 340.0 | 14.0 | 414.5 | 0.25 | | 0.05 | 2.00 | 56.0 | 352 | 6.4 | 7.2 | -5.9 | 1.3 |
| C 7849 | Isaael Kinna | 23.06.88 | 7.2 | < | 5 | 11.0 | 1.80 | 700 | 1.0 | < 0.1 | 34 | 51.0 | 48.0 | 19 | 292 | 310.0 | 14.0 | 377.9 | 0.20 | | 0.03 | 1.70 | 36.0 | 420 | 8.5 | 6.6 | 12.2 | 1.9 |
| C 7850 | Enono Market | 23.06.88 | 6.7 | < | 5 | 7.0 | < 0.10 | 420 | 0.1 | < 0.1 | 21 | 24.0 | 26.0 | 14 | 150 | 138.0 | 9.0 | 168.2 | 0.10 | | 0.08 | 2.70 | 46.0 | 252 | 4.5 | 3.1 | 19.1 | 1.1 |
| C 7851 | Ndoleli I | 16.03.88 | 7.0 | < | 5 | 13.0 | 0.79 | 264 | 0.2 | < 0.1 | 15 | 12.0 | 31.0 | 12.0 | 86 | 130.0 | 8.0 | 158.5 | 0.26 | | 0.01 | 1.60 | 6.0 | 158 | 3.4 | 2.9 | 8.6 | 0.7 |
| C 7852 | Murere Njuu | 21.04.88 | 6.4 | < | 5 | 15.0 | 2.40 | 336 | 4.0 | 0.5 | 13 | 18.0 | 32.0 | 15.0 | 120 | 172.0 | 9.0 | 209.7 | 0.21 | | 0.05 | 2.00 | 32.0 | 201 | 3.9 | 3.7 | 2.3 | 1.1 |
| C 7853 | Gatwe | 21.04.88 | 6.8 | < | 5 | 23.0 | < 0.10 | 420 | 0.1 | 0.1 | 16.0 | 19.0 | 27.0 | 15.0 | 150 | 234.0 | 9.0 | 285.2 | 0.21 | | <0.01 | 4.70 | 38.0 | 352 | 3.9 | 5.0 | -12.4 | 1.0 |

MERU DISTRICT

Chemical Data - Boreholes

| B/H NO | LOCATION | DATES | pH | col | Turb F.T.U | KMnO value | E.C. uS/cm | Fe | Mn | Ca | Mg | Na | K | Tol Hard | Tol Alk | Cl | HCO3 | F | NO3 | NO2 | SO4 | Free CO2 | TDS | SUM CATION | SUM ANION | IONIC BALANCE | SAR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | mg/l | | | | | | | | | | | | | | | | meq/l | meq/l | % | |
| C 7853 | Gature | 05.03.88 | 6.6 | < | 5 | 2.9 | 1.60 | 348 | 0.2 | < 0.1 | 22 | 22.0 | 36.2 | 14.3 | 144 | 196.0 | 9.0 | 238.9 | 0.25 | | 0.01 | 3.10 | 28.0 | 206 | 4.8 | 4.2 | 6.8 | 1.0 |
| C 7854 | Kinanduba 2 | 25.02.88 | 7.5 | < | 5.0 | 20.0 | 1.60 | 528 | 0.4 | (0.10 | 33.0 | 37.0 | 51 | 18 | 238 | 306.0 | 12.0 | 373.0 | 0.28 | | < 0.0 | 1.6 | 10 | 317 | 7.4 | 6.5 | 6.3 | 1.4 |
| C 7855 | Kinanduba 1 | 18.02.88 | 7.8 | < | 5.0 | 4.7 | 0.79 | 504 | 0.4 | 0.10 | 37.0 | 35.0 | 51 | 18 | 238 | 204.0 | 13.0 | 248.7 | 0.28 | | (0.01 | 3.8 | 2 | 302 | 7.4 | 4.5 | 24.2 | 1.2 |
| C 7856 | Murera Mkunguruno | 22.06.88 | 6.7 | | 15 | 46 | 10 | 360 | 2 | < 0.1 | 20 | 28 | 36 | 14 | 164 | 172 | 8 | 209.7 | 0.24 | | 0.03 | < 0.3 | 24 | 216 | 5.2 | 3.7 | 17.5 | 1.3 |
| C 7857 | Murera NJuu | 22.06.88 | 6.3 | | 5 | 3.2 | 10 | 420 | 0.1 | < 0.1 | 20 | 29 | 34 | 14 | 168 | 168 | 11 | 204.8 | 0.22 | | 0.01 | 16 | 44 | 252 | 5.2 | 4.0 | 13.2 | 1.4 |
| C 7859 | Kinaanduba | 21.04.88 | 6.6 | < | 5 | 7 | 3.2 | 532 | 0.2 | 0.2 | 31 | 31 | 25 | 17 | 224 | 284 | 13 | 346.2 | 0.29 | | (0.01 | 5.4 | 66 | 319 | 5.6 | 6.2 | -4.5 | 1.2 |
| C 7924 | Isiolo Airstrip | 28.07.89 | 7.4 | < | 5.0 | 36.0 | 0.80 | 7278 | 0.2 | 2.50 | | | 1323 | 82 | 468 | 442 | 176 | 538.8 | 0.1 | | 0.01 | 288.0 | 460 | 4367 | 59.6 | 19.8 | 50.2 | |
| C 7926 | Near Bule Shime River | 30.08.89 | 7.6 | < | 5 | 11 | 0.8 | 855 | < 0.1 | < 0.1 | 25 | 80 | 116 | 27 | 392 | 352 | 22 | 429.1 | 1.2 | | (0.01 | 11 | 22 | 513 | 13.6 | 7.9 | 26.5 | 3.4 |
| C 7927 | Near' 78 barracks | 07.11.89 | 7.1 | < | 5 | 0.5 | 0.8 | 1696 | 0.7 | < 0.1 | 90 | 81 | 168 | 13 | 558 | 860 | 22 | 1048.3 | 0.4 | | (0.01 | 17 | 398 | 1017 | 18.8 | 18.2 | 1.7 | 1.8 |
| C 8172 | Sh meru | 12.11.89 | 7.7 | < | 5 | 1.3 | 0.8 | 1201 | 0.5 | < 0.1 | 95 | 49 | 83 | 3.7 | 436 | 188 | 155 | | 1 | | (0.01 | 23 | 14 | 721 | 12.5 | 8.6 | | |
| C 8172 | Meru | 12.11.89 | 7.7 | < | 5 | 1.3 | 0.8 | 1201 | 0.5 | 0.1 | 95 | 49 | 83 | 3.7 | 436 | 188 | 155 | 229.2 | 1 | | (0.01 | 23 | 14 | 721 | 12.5 | 8.6 | 18.4 | 1.1 |
| C 8923 | Chiokariga W/Project | 23.10.89 | 7.5 | | brown | 160 | 7.1 | 1215 | 1.5 | 2.5 | 42 | 38 | 179 | 6.7 | 262 | 50 | 100 | 61.0 | 0.1 | | (0.01 | 4.7 | 70 | 729 | 13.2 | 3.9 | 54.2 | 1.3 |
| C 8923 | Chiokariga W/project | 23.10.89 | 7.5 | | brown | 160 | 7.1 | 1215 | 1.5 | 2.5 | 42 | 38 | 179 | 6.7 | 262 | 50 | 100 | | 0.1 | | (0.01 | 4.7 | 70 | 729 | 13.2 | 3.9 | | |
| C 8974 | Ruiri Coffee Factory | 13.01.90 | 7.9 | < | 5.0 | 0.5 | 0.80 | 1243 | 0.1 | (0.10 | 39.0 | 92.0 | 62 | 8.7 | 474 | 552 | 18 | 672.9 | 0.1 | 0.01 | | 4.6 | 48 | 746 | 12.4 | 11.6 | 3.3 | 3.2 |
| C 8975 | Magutuni | 12.03.90 | 6.7 | | 100.0 | 50.0 | 1.60 | 410 | 1.8 | (0.10 | 0.8 | 2.4 | 97 | 3.3 | 12 | 160 | 3 | 195.0 | 0.1 | | 0.01 | 0.3 | 66 | 246 | 4.5 | 3.3 | 16.0 | 0.6 |
| C 8976 | Ngare Mara Village | 19.01.90 | 7.1 | < | 5.0 | 1.5 | 0.80 | 1696 | 0.1 | (0.10 | 205.0 | 33.0 | 126 | 15 | 650 | 834 | 38 | 1016.6 | 0.8 | | 0.01 | 15.0 | 208 | 1017 | 18.8 | 18.1 | 2.1 | 0.5 |
| C 8977 | Biiken C. pr. Sch. | 24.02.90 | 6.8 | | 5.0 | 1.2 | 0.10 | 268 | 0.3 | (0.10 | 14.0 | 12.0 | 7.4 | 5.4 | 84 | 94 | 2 | 114.6 | 0.1 | | 0.01 | 0.4 | 48 | 161 | 2.1 | 1.9 | 5.0 | 0.7 |
| C 8978 | Donyo Sabu(Ruiri) | 09.03.90 | 6.5 | < | 5.0 | 2.4 | 0.80 | 1272 | 0.6 | (0.10 | 73.0 | 84.0 | 49 | 11 | 528 | 604 | 7 | 736.3 | 0.2 | | (0.01 | 3.6 | 698 | 763 | 13.0 | 12.3 | 2.5 | 2.1 |
| C 9081 | Kiajai Y. Poly. | 27.02.90 | 7.1 | | 10.0 | 1.8 | 6.30 | 523 | 0.1 | (0.10 | 7.0 | 8.0 | 78 | 17 | 50 | 218 | 8 | 265.7 | 0.7 | | 0.01 | 2.0 | 34 | 314 | 4.8 | 4.6 | 2.2 | 0.6 |
| C 9082 | Liliaba (Meru) | 06.06.90 | 7.4 | | 20.0 | 19.0 | 16.00 | 459 | 0.1 | 0.10 | 20.0 | 12.0 | 50 | 17 | 100 | 218 | 12 | 265.7 | 0.2 | | (0.01 | 0.5 | 16 | 276 | 4.6 | 4.7 | -1.2 | 0.6 |
| C 9083 | Ndoleli (Meru) | 04.06.90 | 7.2 | | 10.0 | 0.8 | 0.80 | 328 | 0.2 | (0.10 | 24.0 | 3.9 | 27 | 9.4 | 76 | 156 | 6 | 190.2 | 0.2 | | (0.01 | 3.0 | 26 | 197 | 2.9 | 3.3 | -6.6 | 0.2 |
| C 9084 | Maraine (Meru) | 28.05.90 | 7.3 | | 5.0 | 8.0 | 0.80 | 522 | 0.1 | (0.10 | 28.0 | 21.0 | 36 | 13 | 156 | 254 | 8 | 309.6 | 0.3 | | (0.01 | 4.0 | 42 | 314 | 5.0 | 5.4 | -3.5 | 0.9 |

MERU DISTRICT

Chemical Data - Wells

| LOCATION | DATES | pH | col | Turb F.T.U | KMnO value | E.C. uS/cm | Fe | Mn | Ca | Mg | Na | K | Tol Hard | Tol Alk | Cl | HCO3 | F | NO3 | NO2 | SO4 | Free CO2 | TDS | SiO2 | SUM CATIONS | SUM ANIONS | IONIC BALANCE | SAR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | mg/l | | | | | | | | | | | | | | | | | meq/l | meq/l | % | |
| Geoffrey Murerwa | 12.02.87 | 7.3 | < 5.0 | 3.1 | < 0.10 | 450.0 | 0.8 | 0.01 | 26.0 | 29.0 | 15.0 | 2.4 | 198 | 140.0 | 23.0 | 2.8 | 0.32 | 0.86 | 0.04 | 2.46 | 12.0 | 270 | 46.0 | 4.4 | 3.5 | 11.4 | 0.5 |
| Samuel Mutuma | 12.02.87 | 7.6 | < 5.0 | 2.8 | < 0.10 | 290.0 | 0.6 | 0.02 | 8.5 | 13.6 | 11.0 | 1.6 | 122 | 120.0 | 9.0 | 2.4 | 0.27 | 0.37 | 0.01 | 2.21 | 4.0 | 174 | 23.5 | 2.1 | 2.7 | -13.3 | 0.5 |
| James Muriuki | 12.06.87 | 6.0 | 5.0 | 8.1 | 1.20 | 64.0 | 0.3 | 0.13 | 0.1 | 0.3 | 7.0 | | 8 | 36.0 | 5.0 | 0.7 | 0.20 | 0.55 | <0.01 | 2.20 | 74.0 | 38 | | 0.3 | 0.9 | -46.1 | 2.5 |
| Muriuki M'Ibaya | 29.06.87 | 6.0 | < 5.0 | 8.2 | 1.80 | 65.0 | 0.7 | 0.13 | 0.1 | 0.2 | 5.0 | | 8 | 40.0 | 5.0 | 0.8 | 0.12 | 0.54 | <0.01 | 1.50 | 84.0 | 39 | | 0.2 | 1.0 | -60.5 | 2.1 |
| Kanavai Kibirichia | 12.11.87 | 6.8 | 250 | 190 | 11.00 | 208.0 | | | 13.0 | 11.0 | 10.0 | 3.5 | 76 | 60.0 | 11.0 | 1.2 | 0.23 | | <0.01 | 0.30 | 8.0 | | | 2.1 | 1.5 | 15.7 | 0.5 |
| Regional w HQs | 15.4.86 | 8.5 | < 5.0 | 0.9 | 1.90 | 940.0 | 1.8 | 0.39 | 42.0 | 82.0 | 130 | 32.0 | 406 | 630.0 | 38.0 | 12.6 | 2.00 | 0.03 | <0.01 | 5.50 | | 564 | 51.0 | 9.7 | 13.8 | -17.5 | 0.0 |
| Gaitu | 31.7.86 | 7.4 | 10 | 13.0 | 5.10 | 435.0 | 1.3 | 0.03 | 5.9 | 6.4 | 73.0 | 18.0 | 77 | 216.0 | 14.0 | 4.3 | 1.30 | 0.05 | 0.01 | | 10.0 | 261 | | 4.5 | 4.7 | -2.8 | 5.0 |
| SH Com Engineers | 15.4.86 | 8.3 | < 5.0 | 0.5 | 4.00 | 1000 | 5.2 | 0.16 | 41.0 | 38.0 | 70.0 | 11.0 | 502 | 660.0 | 49.0 | 13.2 | 1.20 | 0.01 | 0.01 | 7.3 | 26.0 | 606 | 53.0 | 8.5 | 14.7 | -26.8 | 1.9 |
| James Murioki | 29.6.87 | 6.0 | 5.0 | 8.1 | 1.20 | 64.0 | 0.3 | 0.13 | 0.1 | 0.3 | 7.0 | | 8 | 36.0 | 5.0 | 0.7 | 0.20 | 0.55 | <0.01 | 2.2 | 74.0 | 38 | | 0.3 | 0.9 | -46.1 | 2.5 |
| G.Igweta hoome | 26.02.90 | 7.9 | 5.0 | 1.5 | 3.60 | 2260.0 | 0.5 | 0.10 | 153 | 128 | 315.0 | 19.0 | 908 | 36.0 | 175.0 | | 0.10 | | 0.20 | 5.8 | 28.0 | 1356 | | 32.4 | 5.8 | 69.7 | 4.5 |
| I.C.Hugo - Chuka | 31.07.89 | 5.6 | 300.0 | 93.0 | 1.60 | 41.0 | 1.2 | 0.1 | 0.8 | 1.9 | 4.2 | 2.6 | 10 | 8 | 1.0 | | 0.2 | | <0.01 | 3.0 | 2.0 | 24 | | 0.4 | 0.3 | 28.0 | 0.6 |
| Well-Muku | 25.07.89 | 7.1 | 10.0 | 5.3 | 3.20 | 26.0 | 0.1 | 0.30 | 1.6 | 1.9 | 3.4 | 1.9 | 12 | 12.0 | 1.0 | | 0.1 | | <0.01 | 3.0 | 60.0 | 21 | | 0.4 | 0.3 | 13.4 | 0.4 |
| Mungai'Well(Gachuka) | 29.09.89 | 7.6 | 5.0 | 19.0 | 3.60 | 353.0 | 0.5 | 0.10 | 8.8 | 4.9 | 54.0 | 13.0 | 42 | 114.0 | 29.0 | | 0.70 | | <0.10 | < 3.0 | 12.0 | 12 | | 3.5 | 3.2 | 5.5 | 3.6 |
| Sh/Well-Turima | 19.06.89 | 8.6 | < 5.0 | 16.0 | 9.50 | 2250.0 | 0.3 | 0.20 | 115.0 | 30.0 | 441.0 | 11.0 | 410 | 892.0 | 115.0 | | 1.20 | | <0.01 | 105.0 | | 1350 | | 27.7 | 23.3 | 8.7 | 9.5 |
| Eugeni Njagi Michael | 23.12.89 | 4.8 | <5.0 | 2.5 | | 37.0 | 0.1 | <0.10 | 3.2 | 1.0 | 2.9 | 1.7 | 12 | 4.0 | 8.0 | | | | 0.01 | 1.3 | 108.0 | 22 | | 0.4 | 0.3 | 10.6 | 0.4 |

Chemical Data - Water Supply

| LOCATION | DATES | pH | col | Turb | KMnO | E.C. | Fe | Mn | Ca | Mg | Na | K | Tol | Tol | Cl | HCO3 | F | NO3 | NO2 | SO4 | Free | TDS | SiO2 | SUM | SUM | IONIC | SAR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | F.T.U | value | uS/cm | | | | | | | Hard | Alk | | | | | | | CO2 | | | CATION | ANION | BALANC | |
| | | | | | | | | | | | | | mg/l | | | | | | | | | | | meq/l | | % | |
| Maua | 17.12.85 | 8.1 | | 5.0 | 10.0 | 1.30 | 100.0 | 0.4 | (0.01 | 3.2 | 1.5 | | 2.0 | 14.0 | 30.0 | 5.0 | 0.6 | 0.1 | | | 13.00 | 0.01 | 60.0 | | 0.3 | 1.0 | -50.3 | 0.0 |
| Chongoria | 27.01.86 | 6.7 | | 30.0 | 11.0 | 2.80 | 20.0 | 1.2 | (0.10 | 0.3 | 0.1 | 3.0 | 0.9 | 2 | 4.0 | 2.0 | 0.1 | 0.10 | 0.21 | | 0.29 | | 13.0 | | 0.2 | 0.1 | 10.8 | 1.2 |
| Kiberera | 22.02.86 | 7.7 | ( | 5.0 | 3.1 | 67.00 | 100.0 | 0.6 | 0.10 | 0.8 | 0.8 | 18.0 | 37.0 | 14 | 146.0 | 5.0 | 2.9 | 0.25 | 0.04 | (0.01 | | 40.00 | 58.8 | 32.0 | 1.8 | 3.1 | -25.0 | 3.4 |
| Kieni Thuci Intake | 26.02.86 | 7.6 | ( | 5.0 | 2.1 | 3.90 | 70.0 | 0.2 | 0.10 | 1.1 | 0.5 | 7.0 | 1.0 | 26 | 20.0 | 4.0 | 0.4 | 0.10 | 0.01 | (0.01 | 0.58 | 1.10 | 408.0 | 2.4 | 0.4 | 0.5 | -10.4 | 1.4 |
| Kitheru | 06.10.86 | 7.4 | | 5.0 | 4.1 | 4.70 | 100.0 | (0.1 | (0.01 | 9.3 | 2.8 | 12.0 | 2.0 | 34 | 44.0 | 4.0 | 0.9 | 0.11 | 0.56 | | 1.10 | 2.00 | 60.0 | | 1.3 | 1.0 | 11.1 | 0.9 |
| Nkabune | 21.11.86 | 4.6 | | 5.0 | 66 | 2.80 | 135.0 | 7.9 | 0.20 | (0.1 | 0.8 | 11.0 | 322.0 | 18 | 10.0 | 5.0 | 0.2 | 0.54 | 0.46 | (0.01 | 45.00 | 26.00 | 81.0 | | 8.8 | 1.3 | 74.6 | 2.5 |
| Kanyakine | 10.01.87 | 6.9 | | 50.0 | 19.0 | 0.95 | 50.0 | 1.7 | 0.15 | 0.3 | 0.4 | 6.0 | 1.2 | 10 | 22.0 | 4.0 | 0.4 | 0.14 | 0.14 | (0.01 | 0.33 | 2.00 | 30.0 | 20.0 | 0.3 | 0.6 | -24.4 | 1.7 |
| Chuka | 20.01.87 | 7.0 | ( | 5.0 | 4.8 | 3.00 | 55.0 | 0.5 | 0.04 | 0.9 | 0.6 | 9.0 | 21.1 | 12 | 22.0 | 4.0 | 0.4 | 0.14 | 0.32 | (0.01 | 0.79 | 4.00 | 32.0 | | 1.0 | 0.6 | 28.6 | 1.8 |
| Nkubu | 23.01.87 | 7.5 | ( | 5.0 | 13.0 | 0.24 | 95.0 | 2.4 | 0.13 | 0.1 | 0.4 | 14.0 | 38.0 | 18 | 40.0 | 4.0 | 0.8 | 0.22 | 0.47 | 0.01 | 0.01 | 3.00 | 58.0 | 29.0 | 1.6 | 0.9 | 27.9 | 4.4 |
| Mitungu | 25.02.87 | 7.5 | | 40.0 | 26 | 1.58 | 93.0 | 3.7 | 0.18 | 0.2 | 0.8 | 15.0 | 4.0 | 14 | 38.0 | 6.0 | 0.8 | 0.55 | 0.07 | 0.01 | 0.30 | 2.00 | 56.0 | 30.5 | 0.8 | 0.9 | -5.9 | 3.4 |
| Meru | 08.04.87 | 6.8 | | 5.0 | 1.9 | 6.00 | 90.0 | 1.2 | 0.05 | 0.9 | 0.8 | 12.0 | 3.9 | 18 | 40.0 | 5.0 | 0.8 | 0.52 | 0.18 | (0.01 | 0.04 | 2.00 | 54.0 | | 0.7 | 0.9 | -12.5 | 2.2 |
| Mutunguu | 11.08.87 | 6.1 | | 5.0 | 12.0 | 2.05 | 105.0 | 1.8 | 0.09 | 0.5 | 0.8 | 11.0 | 22.0 | 14 | 30.0 | 6.0 | 0.6 | 0.23 | | (0.01 | 1.10 | 4.00 | 63.0 | | 1.1 | 0.8 | 17.7 | 2.2 |
| Ndarugu D. System | 21.08.87 | 5.8 | | 5.0 | 2.5 | 11.00 | 42.0 | (0.1 | (0.10 | 0.8 | 0.5 | 0.1 | | 12 | 10.0 | 6.0 | 0.2 | 0.21 | | 0.01 | 2.70 | 3.00 | 25.0 | | 0.1 | 0.4 | -66.5 | 0.0 |
| Ruiru | 24.08.87 | 6.0 | ( | 5.0 | 1.0 | 9.00 | 90.0 | (0.1 | (0.10 | 2.2 | 1.1 | 8.0 | | 16 | 10.0 | 10.0 | 0.2 | 0.32 | | 0.01 | 9.00 | 4.00 | 54.0 | | 0.5 | 0.7 | -9.9 | 1.1 |
| Amugenti w.project | 22.9.87 | 6.5 | ( | 5.0 | 1.3 | 13.00 | 150 | 0.3 | (0.10 | 2.2 | 2.2 | 15 | | 26.0 | 45 | 6.5 | 0.9 | 0.15 | | 0.01 | 1.4 | 8.00 | 90.0 | | 0.9 | 1.1 | -8.2 | 1.7 |
| Kaweru w project | 22.9.87 | 6.3 | ( | 5.0 | 0.8 | 14.00 | 156.0 | 0.1 | (0.10 | 6.8 | 6.1 | 8.0 | | 53.0 | 51.0 | 6.5 | 1.0 | (0.1 | | 0.01 | 2.40 | 44.00 | 94.0 | | 1.2 | 1.3 | -2.6 | 0.5 |
| Raw w. Maua wsp. | 22.9.87 | 6.1 | ( | 5.0 | 1.0 | 14.00 | 73.0 | 1.5 | 0.20 | 0.9 | 2.1 | 6.0 | | 20.0 | 22.0 | 6.0 | 0.4 | (0.1 | | (0.01 | 0.90 | 4.00 | 44.0 | | 0.5 | 0.6 | -13.5 | 0.8 |
| Amwamba w/project | 22.9.87 | 6.7 | ( | 5.0 | 1.0 | 13.00 | 85.0 | 0.3 | (0.1 | 2.3 | 2.7 | 7.0 | | | 29.0 | 6.0 | 0.6 | (0.1 | | (0.01 | 1.60 | 4.00 | 51.0 | | 0.6 | 0.8 | -9.9 | 0.7 |
| VOK Mavania st. | 22.11.87 | 6.4 | | 5.0 | 2.1 | 7.70 | 117.0 | | | 7.2 | 2.6 | 7.5 | 4.4 | 29.0 | 36.0 | 7.0 | 0.7 | 0.18 | | (0.01 | 1.20 | 6.00 | 70.0 | | 1.0 | 0.9 | 3.6 | 0.6 |
| Kilili pr. school | 13.11.87 | 6.5 | ( | 5.0 | 1.4 | 2.30 | 247.0 | | | 6.0 | 4.2 | 33.0 | 9.4 | 32.0 | 76.0 | 9.0 | 1.5 | 0.42 | | (0.01 | 1.60 | 10.00 | 148.0 | | 2.3 | 1.8 | 12.5 | 2.5 |
| Mtumbuli w/project | 20.11.87 | 6.2 | | 100 | 62 | 6.20 | 104.0 | | | | | 13.5 | 3.7 | 24.0 | 38.0 | 6.0 | 0.8 | 0.26 | | (0.01 | (0.3 | 6.00 | 62.0 | | 0.7 | 0.9 | -15.3 | |
| Nyambeni Tea Est. | 22.1.88 | 5.9 | ( | 5.0 | 24.0 | 7.10 | 60.0 | 0.9 | (0.1 | 1.5 | 1.1 | 5.1 | 4.1 | 8.1 | 10.0 | 8.0 | 0.2 | (0.1 | | (0.01 | (0.3 | 4.00 | 36.0 | | 0.5 | 0.4 | 7.3 | 0.8 |
| Lailoba w/project | 22.1.88 | 7.6 | | (5.0 | 1.1 | 1.60 | 456.0 | (0.1 | (0.1 | 17 | 18 | 34.0 | 9.2 | 113 | 148.0 | 9.0 | 3.0 | 0.04 | | (0.01 | 3.70 | 2.00 | 274.0 | | 1.7 | 3.3 | -31.5 | |

# Appendix 5.5

# Drinking Water Standards for Kenya

# Appendix 5.5 Drinking Water Standards for Kenya

| Parameter | Unit *mg/l | Acceptable Range | Permissible Range |
|---|---|---|---|
| pH | pH scale | 6.5-8.5 | 6.5-9.2 |
| Colour | mg pt/l | <15 | <50 |
| Turbidity | NTU | <5 | <25 |
| Iron | | <0.3 | <1.0 |
| Manganese | | <0.1 | <0.5 |
| Sodium | | <200 | <200 |
| Aluminium | | <0.2 | <0.2 |
| Total Hardness | mg CaCO3/l | <500 | <500 |
| Chloride | | <250 | <600 |
| Fluoride | | <1.5 | <3 |
| Nitrate | | <10 | <10 |
| Sulphate | | <400 | <400 |
| Total Susp. Solids | | None | none |
| TDS | | <1000 | <1500 |
| Copper | | <1.0 | <1.5 |
| Zinc | | <5.0 | <15 |
| **BOD | | | <5 |
| **COD | | | <30 |

After Design Manual for Water Supply in Kenya, MoWD, 1986
* Unless stated otherwise
** Communication with the Head of the Pollution Control Laboratory, MoWD, 1990