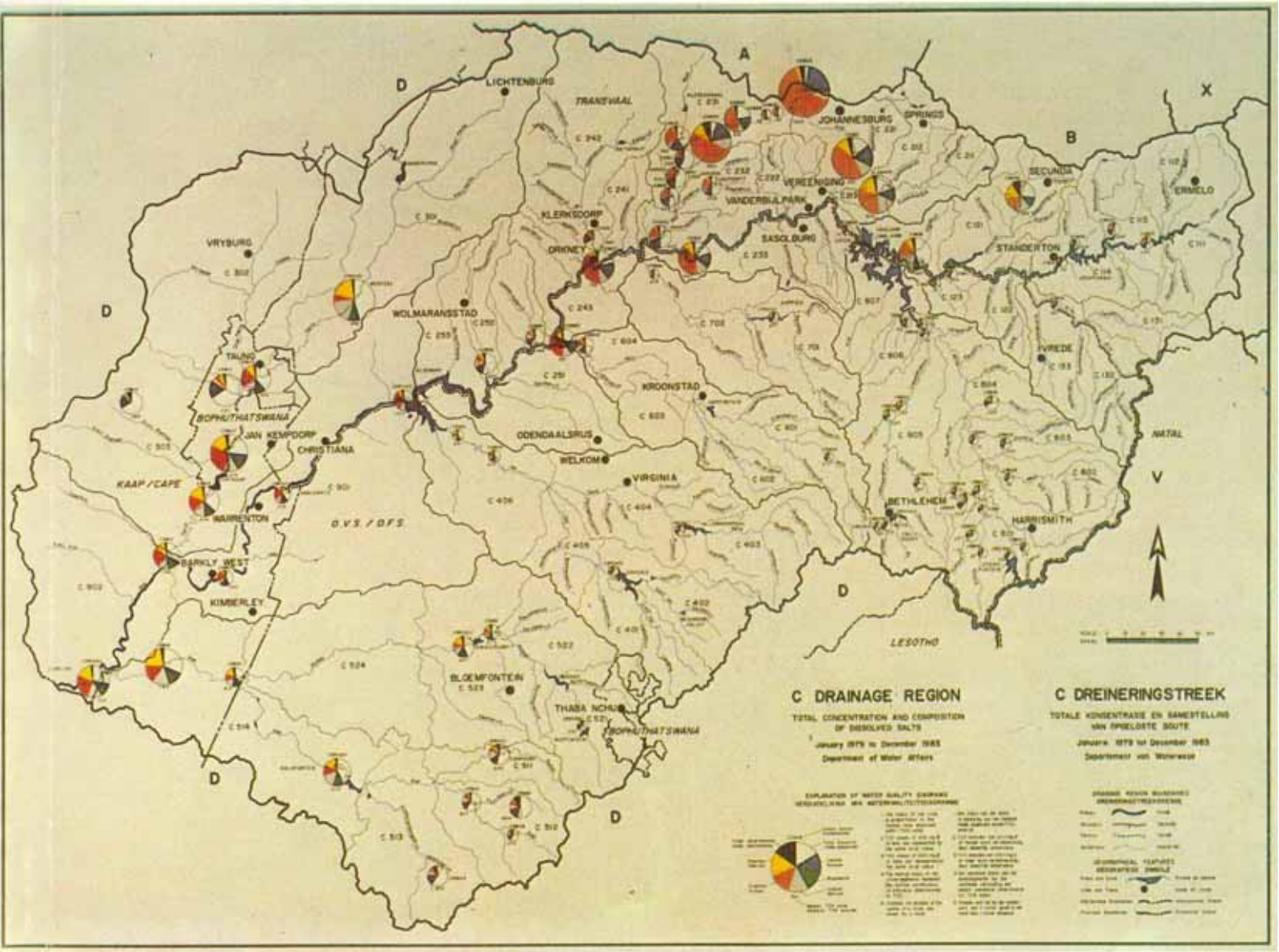
TR 131

REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF WATER AFFAIRS

Surface water quality of South Africa. The Vaal River catchment: 1979 to 1983

H R van Vliet U Nell



DEPARTMENT OF WATER AFFAIRS

HYDROLOGICAL RESEARCH INSTITUTE

TECHNICAL REPORT TR 131

SURFACE WATER QUALITY OF SOUTH AFRICA.

THE VAAL RIVER CATCHMENT: 1979 to 1983

by

H.R. van Vliet and U. Nell

December 1986

Department of Water Affairs
Private Bag X313
Pretoria
0001

CONTENTS

EXECUTIVE SUMMARY

The rivers, streams and impoundments in the Vaal River catchment are subjected to enormous pressures from industrial, agricultural, mining and urban activities, as well as a steadily growing population. With this growth and increasing use, water quality information, ranging from the major ion chemistry to nutrients, trace metals and organic contamination has emerged as a fundamental requirement for the development and management of the catchment's water resources.

This report is one in a series of similar summary reports being prepared as part of a project on the presentation of water quality data on a catchment basis. As such, the report should be treated as a pilot study and comments on the format and approach used for data presentation will be welcomed by the authors.

Data assembled from the Department of Water Affairs' water quality monitoring programme In the Vaal River catchment for the period 1979 to 1983 are presented in the form of statistical summaries for selected sampling stations. The purpose of the report is to provide an overview of the major ion chemical quality of the catchment. A synthesis of the data is also synoptically presented in the form of a water quality map. Some interpretation of data is Included in the report, which is primarily designed to provide an overall catchment perspective. In addition, potential users can be made aware of the type and the format in which data is available.

Most of the rivers of the Upper Vaal catchment are generally of a good mineral quality and the upper catchments are characterized by relatively low total dissolved solids (TDS), alkaline earth-bicarbonate type waters. Two tributaries, the Waterval River and the Molspruit, draining from the north are notable exceptions. Relatively high TDS concentrations, primarily due to increased contributions from sulphate, chloride and sodium occur in these tributaries. The impact however, of these sources of TDS on the mineral quality of the Vaal Dam is to a large extent ameliorated by the inflow of low TDS waters from the Wilge River catchment.

In the Middle Vaal region, the Vaal River and tributaries draining the southern Witwatersrand and West Rand areas are dominated by high TDS point and non-point sources, and mineral water quality conditions are the worst of the entire Vaal River catchment. These high TDS concentrations are caused in large part by the urban, mining and industrial activities in the areas north of the Vaal River which contribute varying loads of mineral salts to the water courses. Further downstream, the impact of these TDS sources is to some extent ameliorated by the inflow of lower TDS, alkaline earth-bicarbonate type waters from the east.

Water quality conditions in the Lower Vaal River are dominated primarily by agricultural activities which are the major cause of the increased sodium and chloride concentrations in the lower reach. Significant sources of high TDS, chloride and sodium contribution to the Vaal River are the inflows of the Harts River from the north which ls dominated by irrigation return flow from the Vaalharts Irrigation Scheme, the Riet River from the east and the Douglas Irrigation Scheme.

The report underlines the dramatic regional differences which exist in the catchment with respect to the mineral content of the waters and certain quality constituents such as sulphate, sodium and chloride.

van Vliet, H. R., & Nell, U. (1986). *Surface water quality of South Africa: the Vaal River catchment 1979 to 1983* (No. TR131) (pp. 1–208). Pretoria: Hydrological Research Institute, Department of Water Affairs and Forestry.

EXECUTIVE SUMMARY

The rivers, streams and impoundments in the Vaal River catchment are subjected to enormous pressures from industrial, agricultural, mining and urban activities, as well as a steadily growing population. With this growth and increasing use, water quality information, ranging from the major ion chemistry to nutrients, trace metals and organic contamination has emerged as a fundamental requirement for the development and management of the catchment's water resources.

This report is one in a series of similar summary reports being prepared as part of a project on the presentation of water quality data on a catchment basis. As such, the report should be treated as a pilot study and comments on the format and approach used for data presentation will be welcomed by the authors.

Data assembled from the Department of Water Affairs' water quality monitoring program in the Vaal River catchment for the period 1979 to 1983 are presented in the form of statistical summaries for selected sampling stations. The purpose of the report is to provide an overview of the major ion chemical quality of the catchment. A synthesis of the data is also synoptically presented in the form of a water quality map. Some interpretation of data is included in the report, which is primarily designed to provide an overall catchment perspective. In addition, potential users can be made aware of the type and the format in which data is available.

Most of the rivers of the Upper Vaal catchment are generally of a good mineral quality and the upper catchments are characterized by relatively low total dissolved solids (TDS), alkaline earth-bicarbonate type waters. Two tributaries, the Waterval River and the Molspruit, draining from the north are notable exceptions. Relatively high TDS concentrations,

primarily due to increased contributions from sulphate, chloride and sodium occur in these tributaries. The impact however, of these sources of TDS on the mineral quality of the Vaal Dam is to a large extent ameliorated by the inflow of low TDS waters from the Wilge River catchment.

In the Middle Vaal region, the Vaal River and tributaries draining the southern Witwatersrand and West Rand areas are dominated by high TDS point and non-point sources, and mineral water quality conditions are the worst of the entire Vaal River catchment. These high TDS concentrations are caused in large part by the urban, mining and industrial activities in the areas north of the Vaal River which contribute varying loads of mineral salts to the water courses. Further downstream, the impact of these TDS sources is to some extent ameliorated by the inflow of lower TDS, alkaline earth-bicarbonate type waters from the east.

Water quality conditions in the Lower Vaal River are dominated primarily by agricultural activities which are the major cause of the increased sodium and chloride concentrations in the lower reach. Significant sources of high TDS, chloride and sodium contribution to the Vaal River are the inflows of the Harts River from the north which is dominated by irrigation return flow from the Vaalharts Irrigation Scheme, the Riet River from the east and the Douglas Irrigation Scheme.

The report underlines the dramatic regional differences which exist in the catchment with respect to the mineral content of the waters and certain quality constituents such as sulphate, sodium and chloride.

ACKNOWLEDGEMENTS

Many individuals have made substantial contributions to the development of the Department of Water Affairs' water quality monitoring program and their efforts are gratefully acknowledged.

The authors are also indebted to the following individuals:

Mrs. A. Hanekom for the excellent preparation of the water quality map,

Messrs. E. Braune, C.A. Bruwer and J.M. Schutte for valuable discussions and comments during the project,

Mrs. A. Kolbe who drew the figures included in the text,

Dr. P. Adamson for the useful discussions during the initial stages of the project as well as providing programs for the calculation of the mixed log-normal distributions,

Mr. I.J. Schoonraad for the development of various data processing programs,

Messrs. D. P. Sartory and P.L. Kempster for many hours of technical discussions and editorial comments, and

Mrs. C Edwards for typing the manuscript.

1. INTRODUCTION

The Department of Water Affairs, through its Directorate of Hydrology and the Hydrological Research Institute monitors the quality of South Africa's surface water resources. The objectives of the national monitoring program are essentially to provide:

- ambient water quality data, and
- interpretive information for water resources planning, management and pollution control.

These objectives are very generalized and apply on an interim basis until sufficient data is available to establish specific objectives.

The Department's monitoring program has been underway since the late 1960's and at present encompasses most of the country's major surface waters. During the past decade an increase in the Institute's analytical laboratory capacity has led to an intensification of the monitoring program which has grown in size to include approximately 1000 sampling stations.

The water quality monitoring program includes a wide range of chemical constituents. Analyses are routinely carried out for determinands such as the major ions (calcium, magnesium, sodium, potassium, sulphate, chloride and alkalinity) and pH, conductivity and fluoride. Nutrients such as inorganic phosphorus, nitrate and ammonium are also measured routinely. In addition total phosphorus, organic nitrogen and trace metals are monitored at a number of selected sites. Sampling frequencies generally vary from weekly for river stations to monthly for impoundments.

A large amount of data on the major ion chemistry of surface waters in South Africa has been collected and stored in the Department's Water Quality Database located at Pretoria. For some time there has been the need for the presentation of this data. In addition, sufficient data now exists for many areas, enabling the presentation of statistically meaningful information of water quality on a catchment basis.

This document, presenting the data on the Vaal River catchment, is the first in a series of Summary Reports designed to fill the need for the presentation of water quality information. These reports contain little interpretation of data and are primarily designed to make water quality data available to users and interested groups. As such, it does not consider, in depth, local water quality but rather presents an overall catchment perspective. In addition potential users will be made aware of the type and the format in which data can be provided. Examples of the standard output formats available are given in Appendix D.

The specific purpose of this report is therefore to present an overview of the water quality data of the Vaal River catchment, obtainable from the Department's water quality monitoring program. To accomplish this a large volume of data has been statistically summarized and is presented in Appendix A at the end of this report. A synthesis of the data is visually depicted in the water quality map accompanying this document.

The text provides a general overview of the catchment water quality and highlights certain aspects. The focus is primarily on the inorganic chemical quality as reflected by the data on the National Water Quality Database and reference is only made to other quality aspects where these may be relevant. Ground water quality is not addressed in this report.

This then is the first report in a series for which data will be presented on a drainage region basis (Figure 1). The areas covered will either be complete drainage basins, or groups of basins as in some coastal regions. The Vaal River catchment is treated separately from the rest of the Orange River basin. The information presented in these reports will be updated and expanded in the future.

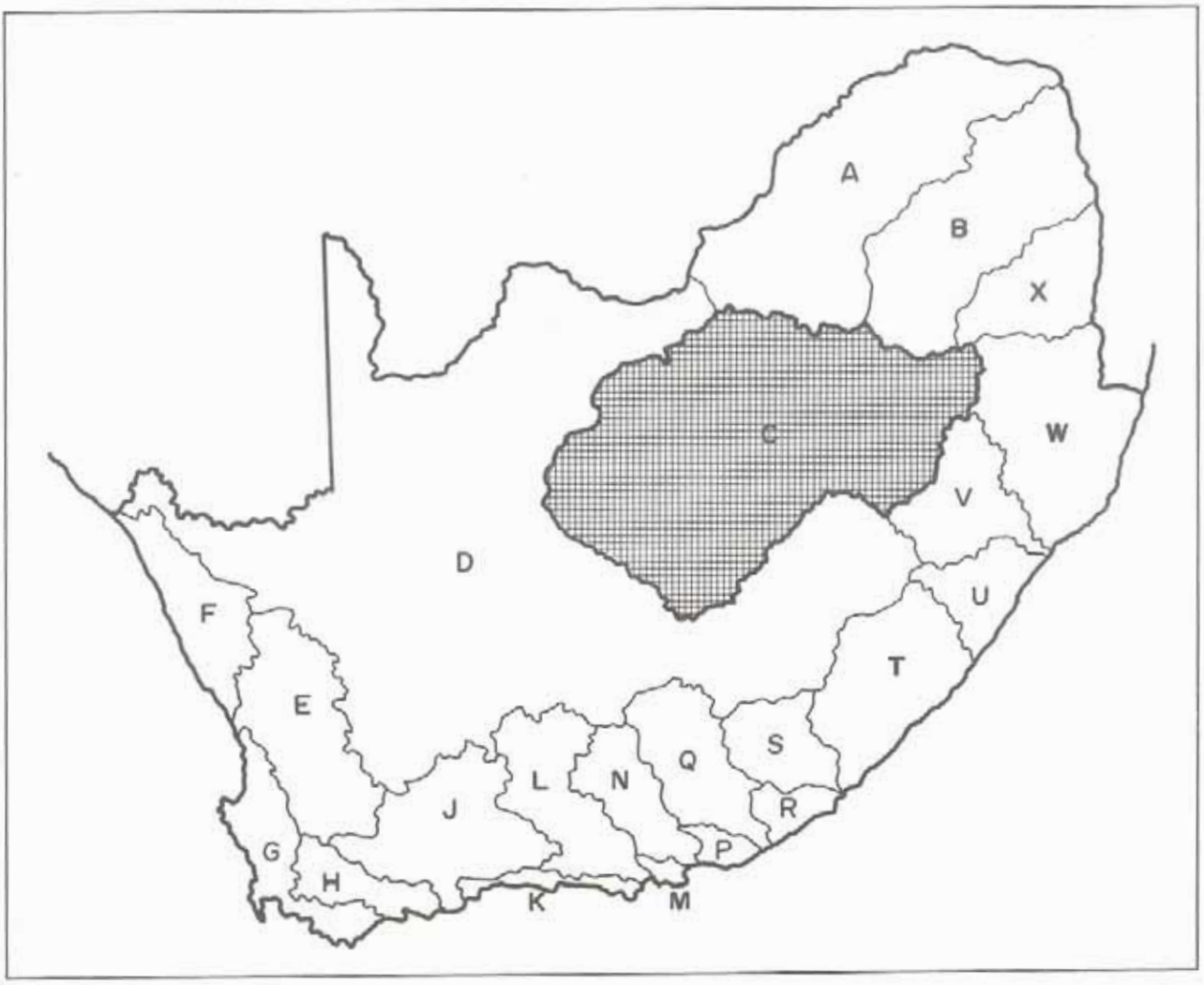


Figure 1: Drainage regions of South Africa.

2. THE VAAL RIVER CATCHMENT

The catchment being addressed in this report is only briefly described here. More detailed reports on various aspects concerning the catchment are listed in the Bibliography presented as Appendix B.

The Vaal River is arguably one of the most important rivers in South Africa, being the principal water source for the industrial heartland of the country. The catchment which covers most of the Orange Free State, the southern section of Transvaal and the eastern portion of the northern Cape is approximately 194 000 km^2 in area. The river and its tributaries contain several impoundments and the catchment is divided into three sections based upon the two principal impoundments on the Vaal River - Vaal Dam and Bloemhof Dam. The source river and its tributaries as far as Vaal Barrage below Vaal Dam is the Upper Vaal (Figure 2), from the Barrage to Bloemhof Dam is the Middle Vaal (Figure 3) and from Bloemhof Dam to the confluence with the Orange River at Douglas is the Lower Vaal (Figure 4).

The Upper and Middle Vaal are situated mainly in the Highveld which is predominantly flat and is characterized hydrologically by long run-off times (Bruwer, van Vliet, Sartory and Kempster, 1985) and geologically by the Transvaal System which consists mainly of shale, quartzite and dolomite (van Eeden, 1972). The Lower Vaal and the southern section of Middle Vaal are situated in the Upper Karoo which is characterized by shale and andesitic lavas (van Eeden, 1972). Runoff from the Lower Vaal is considerably less than that of the Upper Vaal, principally as it receives less than half the rainfall compared to the eastern regions (Bruwer *et al*, 1985).

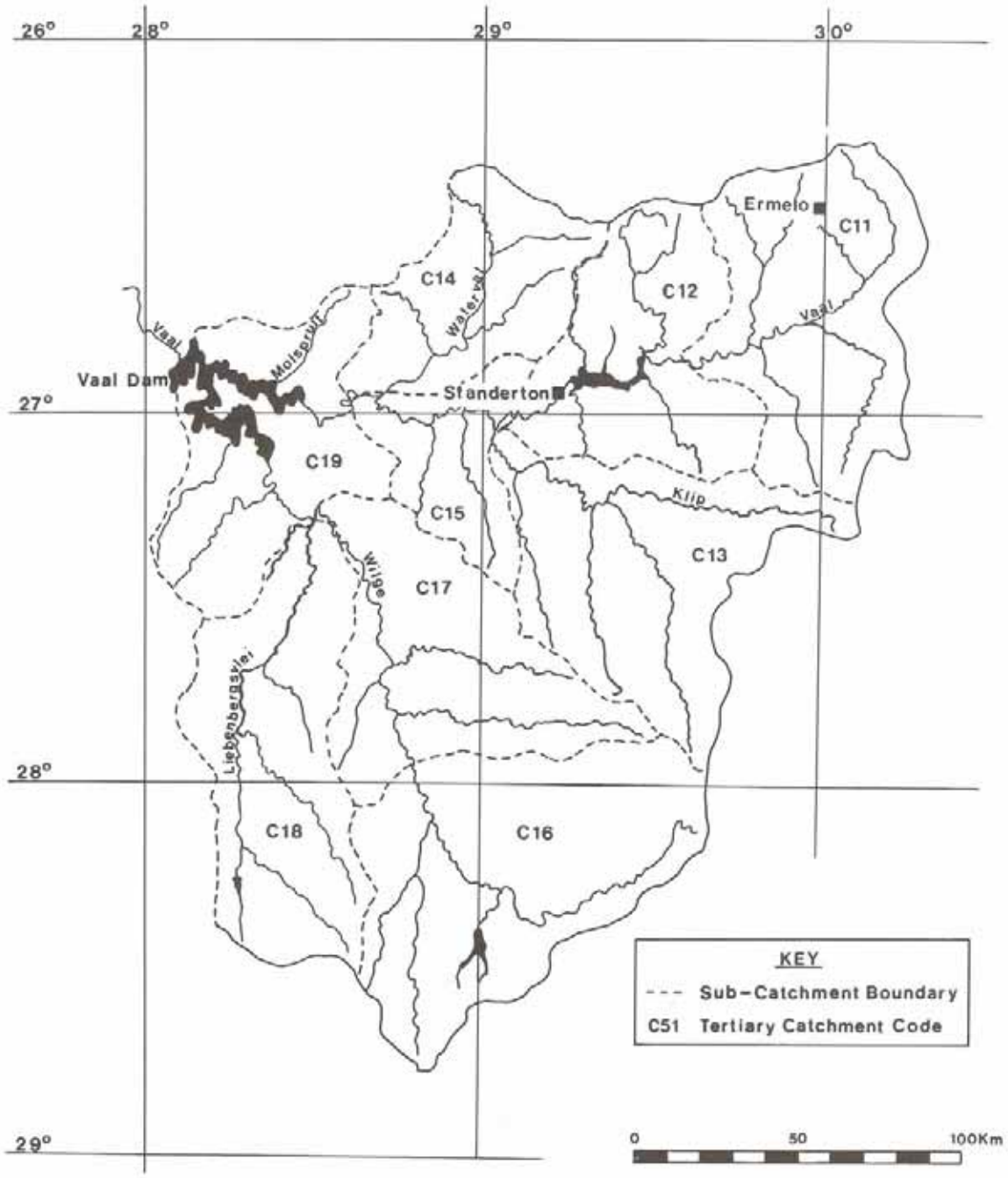


Figure 2: The Upper Vaal River Catchment.

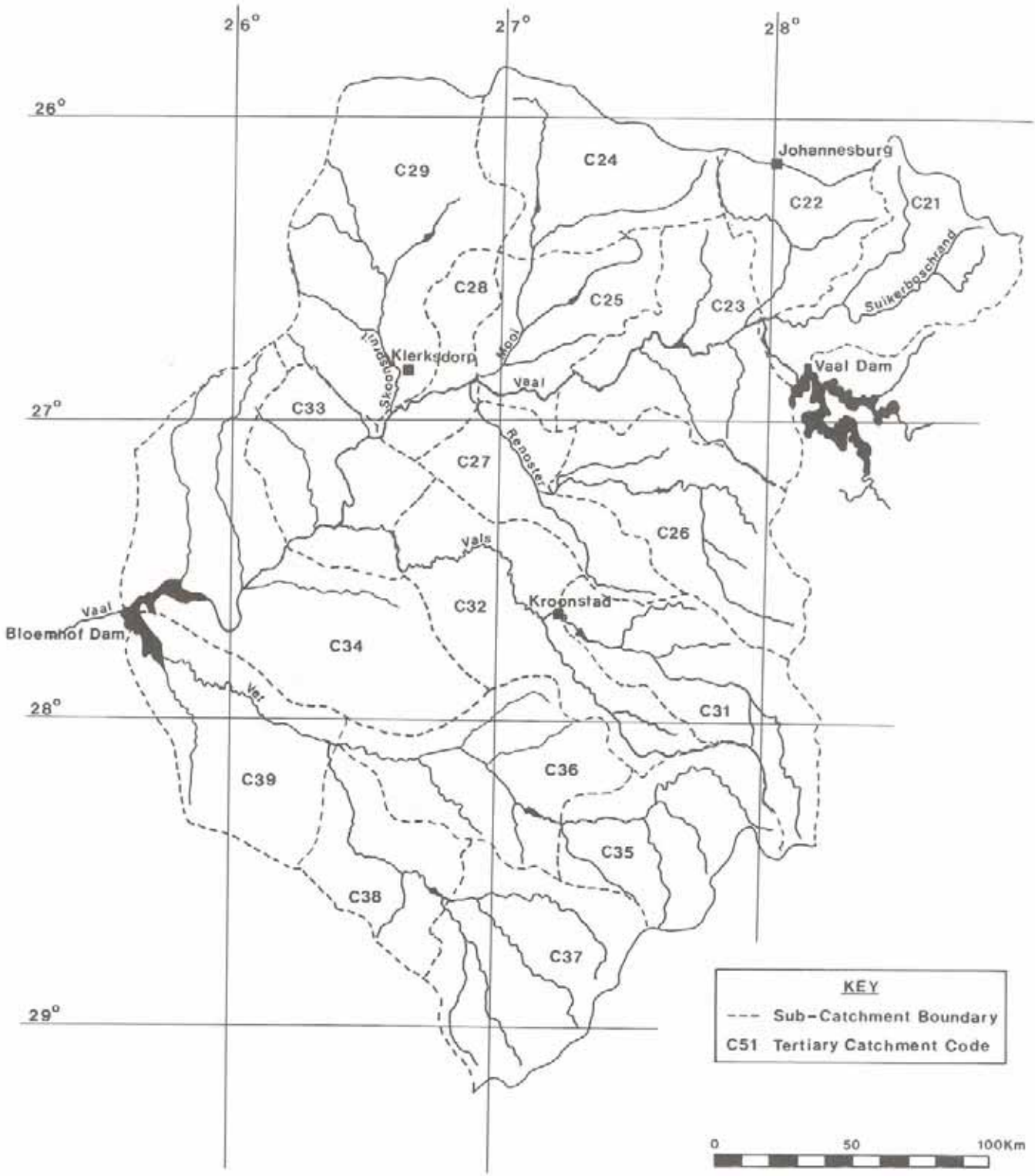


Figure 3: The Middle Vaal River Catchment.

Figure 4: The Lower Vaal River Catchment.

The catchment contains some of the most important agricultural and industrial areas in South Africa. The Middle Vaal catchment is a major source of maize and winter wheat production, while the Vaalharts Irrigation Scheme situated between the Vaal and Harts Rivers in the Lower Vaal is the largest scheme of its type in Southern Africa. Other areas of agricultural importance are the Riet and Modder River areas and the Douglas Irrigation area.

The industrial development of the catchment is dominated by the mining industry situated principally in the Witwatersrand in the northern section of the Middle Vaal. Gold and uranium are extensively mined and, because of the historical development of the country, many other major industries are also situated in this area. Gold and uranium mining also occurs in the mid-western section of the Middle Vaal. Several gold and coal mines as well as a number of coal related industries are located in the northern section of the Upper Vaal Catchment. The Lower Vaal catchment and the southern sections of the Upper and Middle Vaal catchment contain relatively little industrialization, being principally agricultural areas.

3. MONITORING NETWORK AND DATA CONSIDERATIONS OF THE VAAL RIVER CATCHMENT

The Department actively monitors some 130 flow gauging, dam and/or quality monitoring stations in the Vaal River catchment of which 81 have been selected for synthesis of data for this publication. A complete list of stations in the Vaal drainage region is given in Appendix C. In addition, the Rand Water Board (RWB) routinely monitors several stations in the Vaal Dam and Barrage area, including the tributaries of the Vaal River. The data collected by the RWB is presented in the Annual Reports of the Board.

The 81 stations for which data is presented in this report were selected on the basis of sufficient data in the period 1979 to 1983 to permit meaningful pictorial and statistical representation of the water quality with as small as possible bias to either the dry or wet seasons.

Additionally the stations selected are reasonably representative of the water quality conditions of the whole catchment. Many tributaries feeding into the Vaal River are either intermittent or have frequent periods of minimal flow. As a result sampling on these tributaries was irregular and these stations are not included in the report.

At many sites the amount of major ion chemical data is limited but is supported by a larger number of determinations of electrical conductivity (EC). In these cases use was made of the additional EC data by generating calculated total dissolved solids (TDS) concentrations through least square linear regression on EC and measured TDS data. For many stations therefore calculated TDS data exceeds the amount of data available for individual determinands. The determinands for which data are presented in Appendix A are listed in Table 1.

TABLE 1: CHEMICAL DETERMINANDS FOR WHICH DATA ARE PRESENTED

Cation	Reported as	Anion	Reported as
Sodium	Na	Sulphate	SO_4
Potassium	K	Chloride	Cl
Calcium	Ca	Fluoride	F
Magnesium	Mg	Nitrate + Nitrite	N
pH	pH	Ortho-phosphate	P
Conductivity	EC	Silica	Si
Total Dissolved Solids	TDS	Alkalinity (TAL)	HCO_3

4. PRESENTATION OF DATA

The data for the stations selected for this report are presented in four forms

- Statistical summaries for each station
- Time series plots of TDS and EC
- Non exceedence probability plots for calculated TDS
- A water quality map of the catchment.

4.1 Statistical summaries

The statistical summaries (Appendix A) present information on the sampling frequency and distributions in summer (Oct. to March) and winter (April to Sept.) periods, and the maximum, minimum, median and standard deviation of the major ion concentrations for the 5 year period 1979 to 1983. In addition the 25th and 90th percentile values of the data for each determinand are also given.

4.2 Time series plots of TDS and EC

Time series plots of the monthly mean TDS and EC are given for as long a period, but starting not before 1975, as the data allows. Where gaps in the data exist points are connected with a dotted line.

4.3 Non-exceedence probability plots for TDS

The non-exceedence probability plots for TDS were produced using calculated TDS data from the derived TDS and EC relationships (as described under Section 3) for the period 1979 to 1983.

The plots were produced using the mixed log-normal distribution model of Adamson and Dixon (1983)[1]. The model is defined by the following functions:

$$F(x) = \alpha F_1(x) + (1- \alpha) F_2(x)$$

where α is the proportionality factor for the two log-normal functions for each population $F_1(x)$ and $F_2(x)$ and x is the log transformed TDS data.

Details of the procedure and on how to derive the functions $F_1(x)$ and $F_2(x)$ can be found in Adamson and Dixon (1983). The calculated parameters needed to describe the mixed log-normal distribution for each station are given in tables in Appendix A.

4.4 Water quality map

The water quality of the catchment for the period 1979 to 1983 is reflected in terms of pie-diagrams for each station. The pie-diagrams are divided into 7 segments which reflect the percentage contribution of the major ions to the TDS of the waters. The seven segments are:

White - Total alkalinity expressed as bicarbonate
Blue - Calcium
Green - Magnesium
Grey - Sodium
Red - Sulphate
Yellow - Chloride
Black - Nitrate, nitrite, fluoride, phosphate, silica and potassium.

1) Adamson, P.T. and Dixon, M.J. (1983) On the application of two log-normal distributions to the analysis of water quality data. Water S.A., 9, 1-8.

The diameter of the circle is proportional to the TDS concentration which is given underneath each pie-diagram on the water quality map. A double log-normal distribution model was fitted to the calculated TDS data as described under Section 4.3. The TDS concentrations shown on the map are the estimated population medians obtained by using this procedure.

5. OVERVIEW OF THE WATER QUALITY

This section of the report provides a general overview of the major chemical quality of the Vaal River catchment based on data collected in the Department's water quality monitoring program from 1979 to 1983. Total dissolved solids and certain selected anions and cations such as calcium, magnesium, sodium, alkalinity, sulphate and chloride will, for most part form the basis of discussion throughout this section. The chemical data were extracted from the Water Quality Database representing approximately 30 to 300 samples collected at each sampling station during the five year period 1979 to 1983.

Figures 5 to 7 are schematic plots showing the range, median and the 25th and 90th percentiles for TDS at selected sampling stations in the Upper, Middle and Lower Vaal regions respectively. The relative composition, based on median concentrations (meq/ℓ) of the major anions and cations for some of these stations and the same periods are shown in Figures 8 to 10. The relative contribution of potassium is less than 5% for all the stations and is not included in the figures. These figures demonstrate the widely different characteristics of the catchment's surface water quality from region to region. Low TDS waters generally occur in the Upper Vaal region, whereas highly mineralized waters are predominant in the Middle and Lower Vaal River segments. In addition, ion dominance changes markedly from region to region.

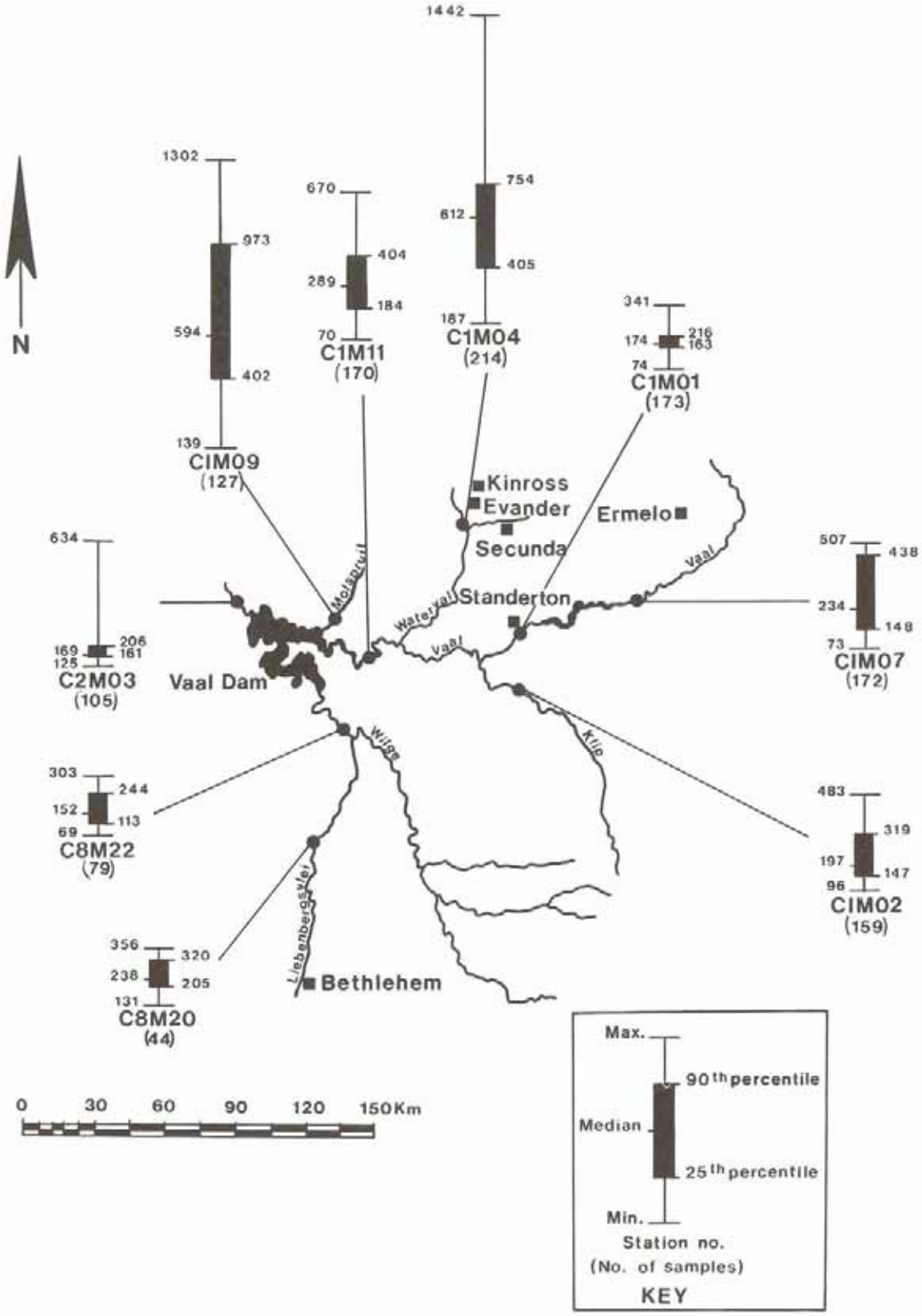


Figure 5: The median, range and the 25th and 90th percentiles of total dissolved solid concentrations at selected sampling stations in the Upper Vaal River catchment for the period 1979 to 1983.

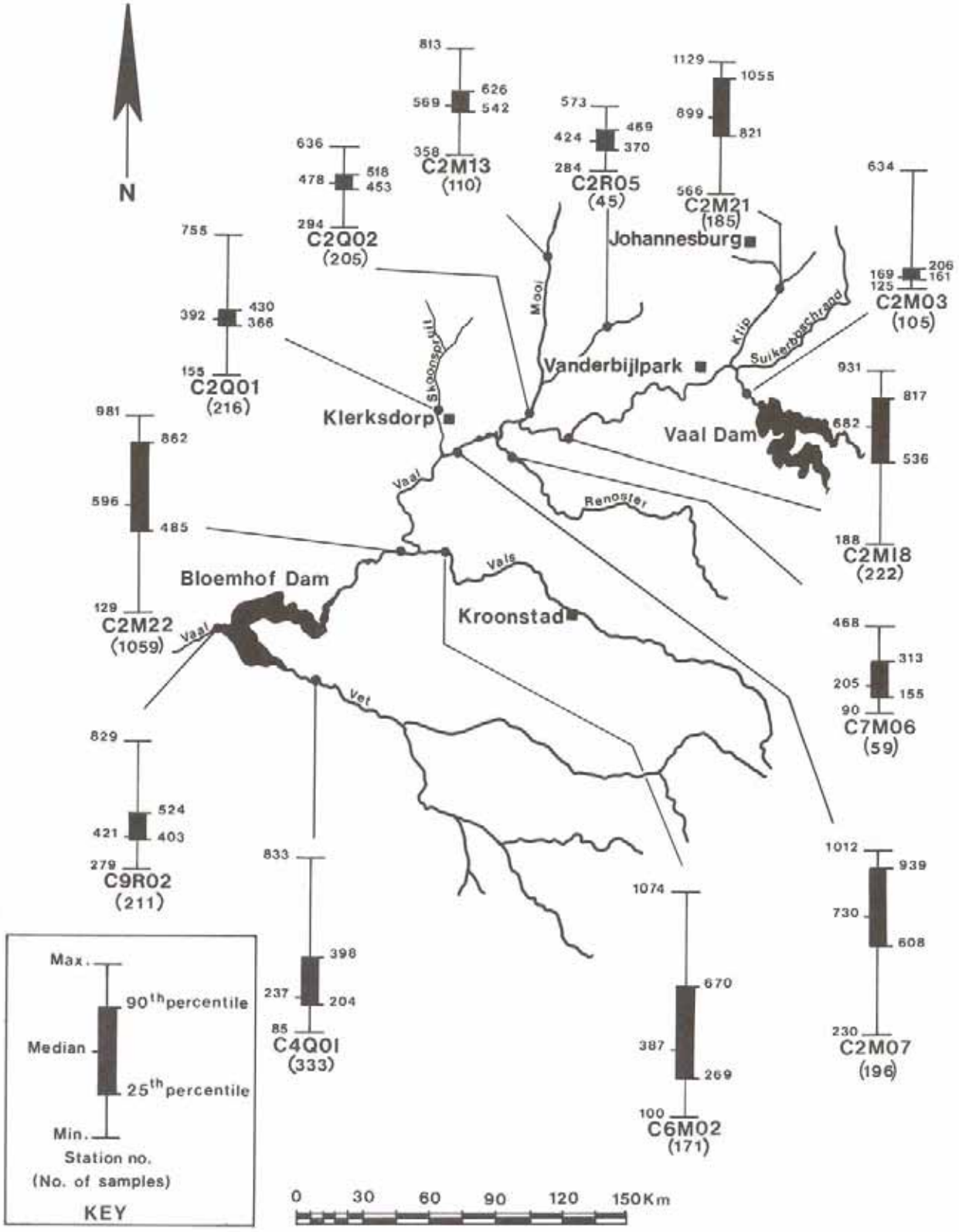


Figure 6: The median, range and the 25th and 90th percentiles of total dissolved solid concentrations at selected sampling stations in the Middle Vaal River catchment for the period 1979 to 1983.

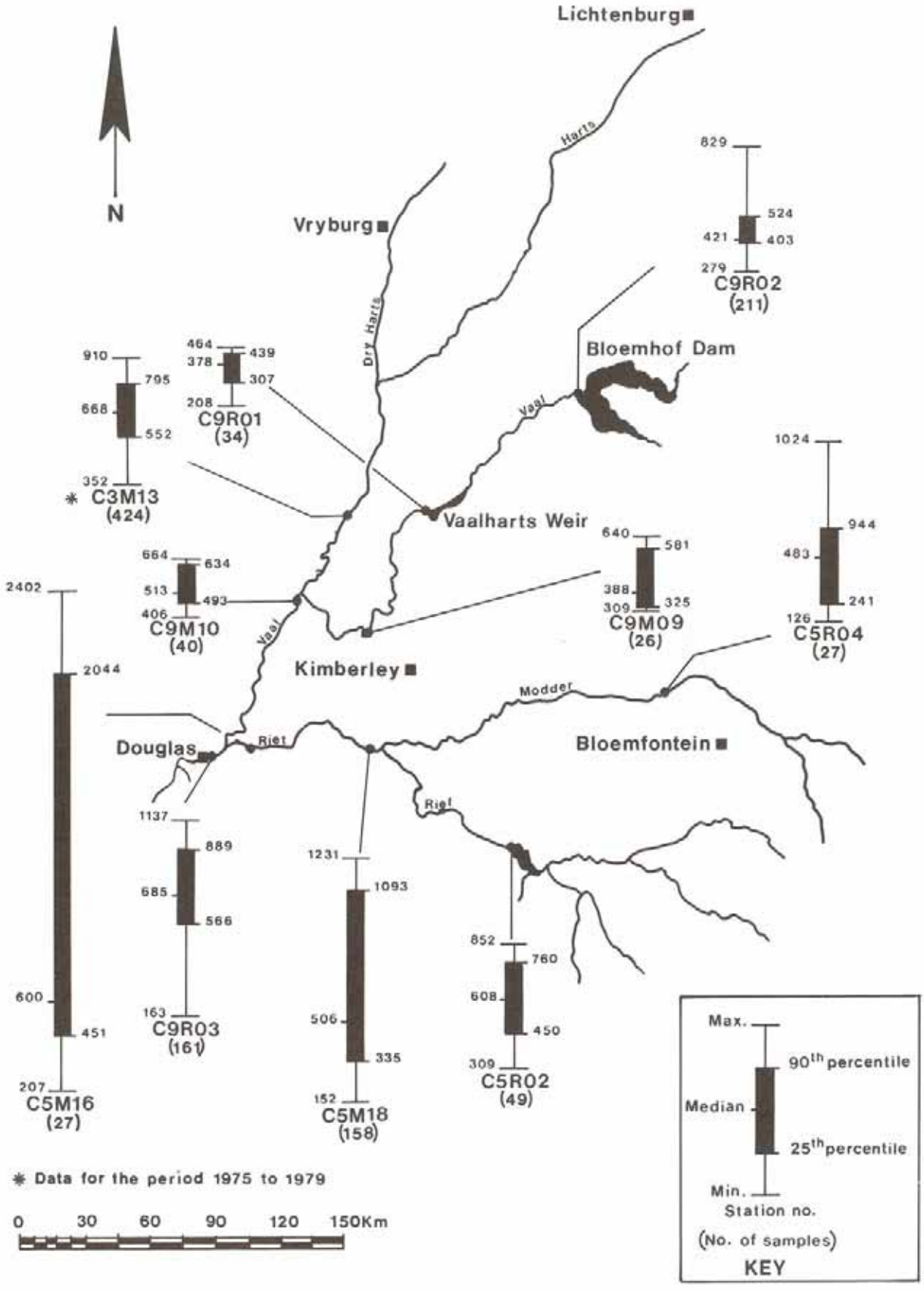


Figure 7: The median, range and the 25th and 90th percentiles of total dissolved solid concentrations at selected sampling stations in the Lower Vaal River catchment for the period 1979 to 1983.

Low levels of certain chlorinated pesticides and herbicides have been found in the surface waters of the catchment (Hassett, Viljoen and Liebenberg, 1987). A number of phenolic and other anthropogenic organic compounds have also been identified in the water immediately downstream of the Barrage (van Steenderen, Theron and Hassett, 1986). The significance of the occurrence of these organics and pesticides is not known at this time. In general, however, little information on trace metals and organic contaminants is available for the catchment apart from a study of the Vaal River between the Vaal Barrage and Douglas Weir undertaken in 1983 (Bruwer, et al 1985).

5.1 Upper Vaal catchment (W)

Most of the rivers in the Upper Vaal catchment are generally considered to be of a good mineral quality for the intended use of the water. Median TDS concentrations in the Vaal River and major tributaries range from approximately 150 mg/ℓ to 290 mg/ℓ (Figure 5) and based on the mineral content, the Wilge (C8M01), Klip (C1M11) and Vaal (C1M01 and C1M11) Rivers are typical of most of the surface waters in the region and have, for most part very similar ionic compositions. For all these waters calcium and magnesium are the predominant cations and bicarbonate is the predominant anion (Figure 8). Two exceptions are the Waterval River, draining the areas of Leslie, Evander, Kinross and Secunda and the Molspruit, draining the Grootvlei power station and coal mining areas. Median TDS concentrations for the Waterval River (C1M04) and Molspruit (C1M09) are 612 mg/ℓ and 594 mg/ℓ respectively. These waters contain a predominance of sodium and increased contributions from chloride and sulphate (Figure 8). The Vaal River reach between C1M01 at Standerton and the C1M11 station downstream of the Waterval River confluence shows an increase in median TDS concentration from 174 mg/ℓ to 289 mg/ℓ (Figure 5). The impact of these sources of TDS on the Vaal Dam mineral quality, is to a large extent ameliorated by the inflow of low TDS waters from the south (Wilge River and tributaries).

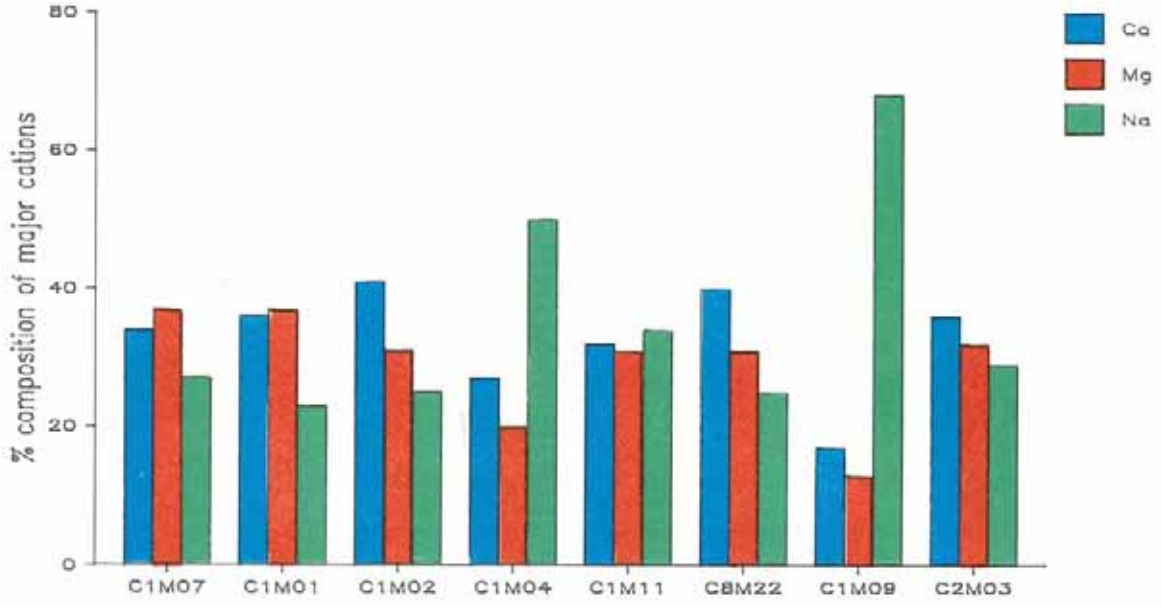


Figure 8a: The progression of major cation composition changes at selected sampling stations in the Upper Vaal River catchment.

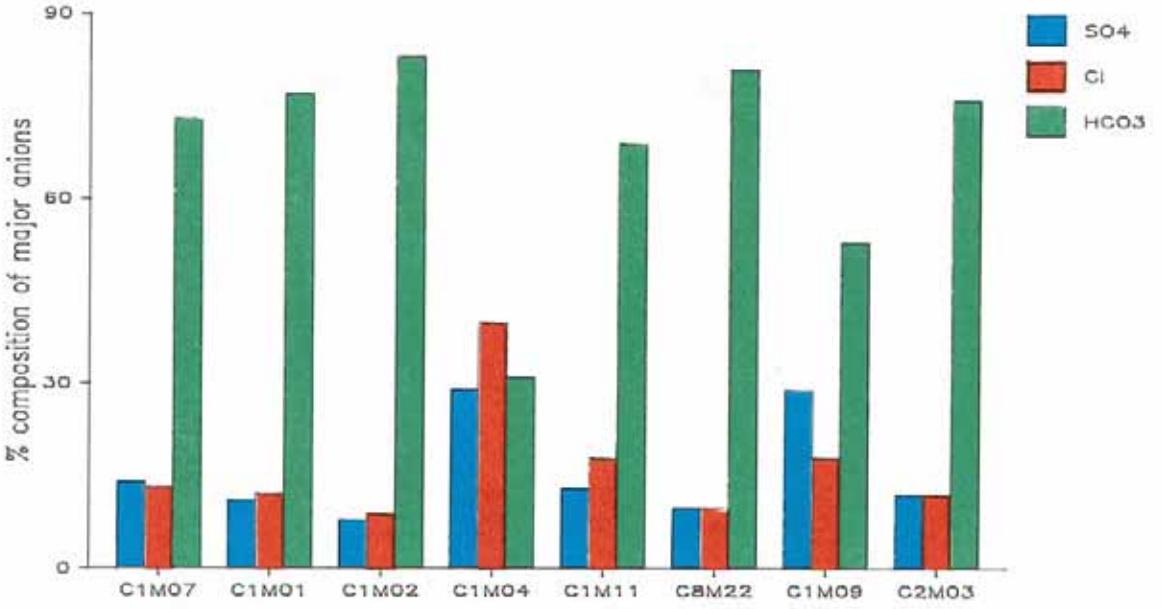


Figure 8b: The progression of major anion composition changes at selected sampling stations in the Upper Vaal River catchment.

A potential source of sulphate is atmospheric deposition caused by thermal power stations, burning coal heaps and other coal related industries. The significance of the latter sources of sulphate in this segment of the catchment is not known at this time.

5.2 Middle Vaal catchment (W)

Water quality in the Middle Vaal catchment varies substantially throughout the entire region. As shown in Figures 6 and 9 the TDS concentrations and ionic compositions of the Middle Vaal River and most tributaries are markedly different to those of the Upper Vaal region. The upper segment of the Middle Vaal River, between Vaal Dam (C2M03) and Orkney Weir (C2M07), draining the southern Witwatersrand and West Rand areas, are dominated by high TDS point and non-point sources. Mineral quality conditions in this river segment are the worst of the entire Vaal River catchment, due to industrial and municipal waste water discharges, urban run-off and point and non-point source loads from the extensive mining activities in the southern Witwatersrand and West Rand areas. The mining, industrial and urban dominated reach begins at the confluences of the Suikerboschrand and Klip Rivers and continues through the Barrage past the confluences of the Mooi River, Renoster River and Skoonspruit, and ends at the Orkney Weir.

Figure 9 shows the progression of major ion composition changes for the Middle Vaal River and selected tributaries. The Klip River (median TDS of 899 mg/ℓ) is predominantly a calcium-sulphate type water with nearly equal contributions from sodium and magnesium. Inflows from the Suikerboschrand tributary (median TDS 733 mg/ℓ) contain predominantly sodium and sulphate with some contribution from chloride.

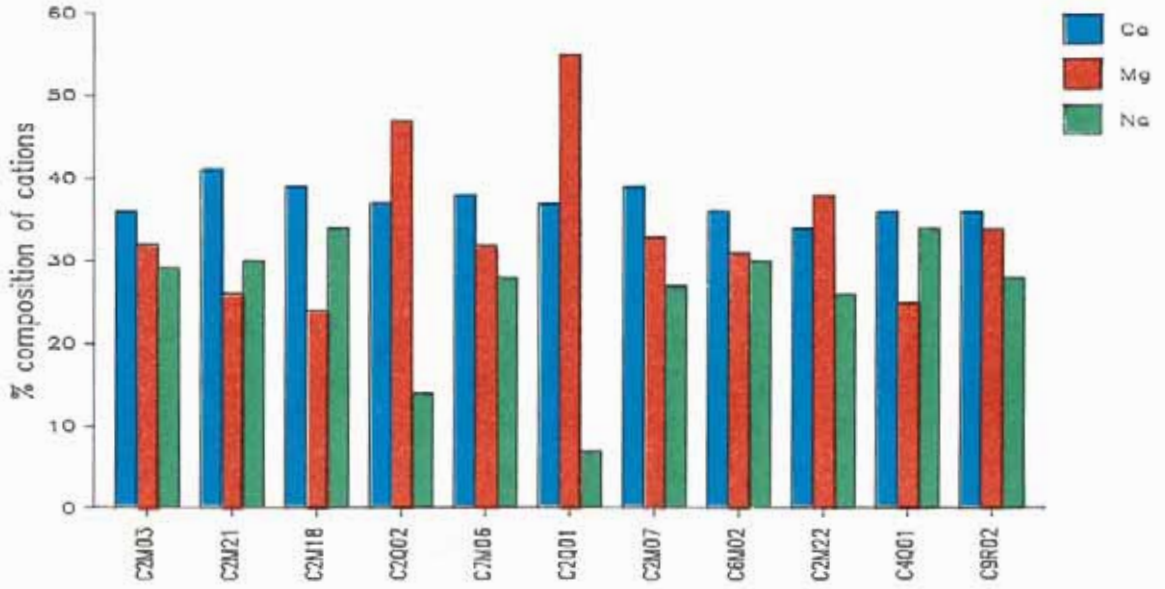


Figure 9a: The progression of major cation composition changes at selected sampling stations in the Middle Vaal River catchment.

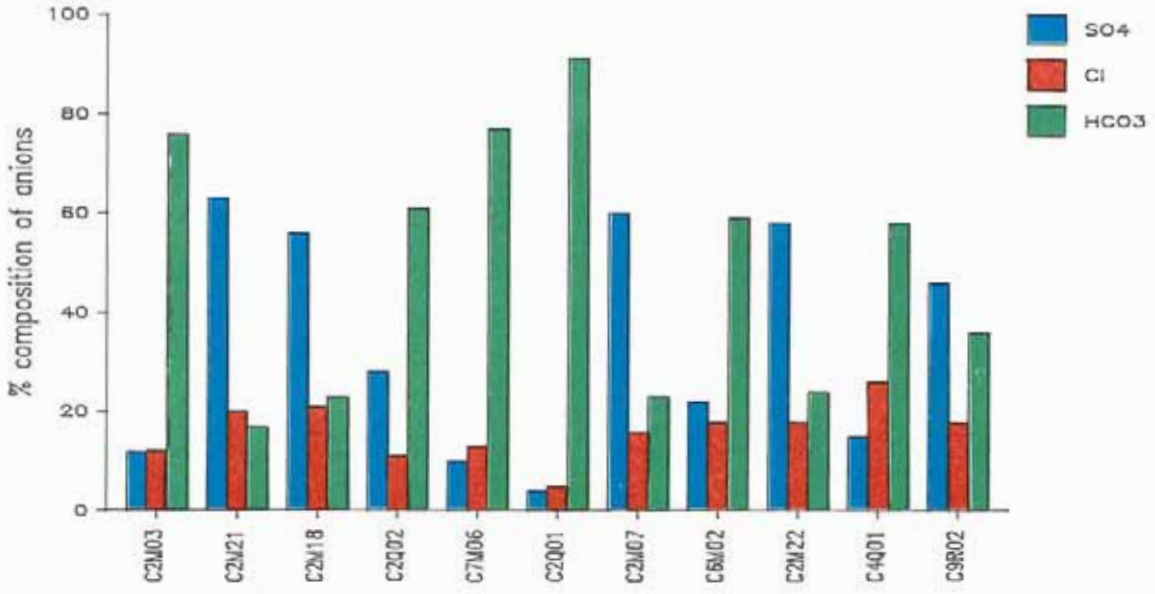


Figure 9b: The progression of major anion composition changes at selected sampling stations in the Middle Vaal River catchment.

Median TDS concentrations in the Vaal River (Figure 6) increase from 170 mg/ℓ at the Vaal Dam (C2M03) to 682 mg/ℓ at Schoemansdrif (C2M18) and 730 mg/ℓ at Orkney Weir (C2M07). This represents an increase in median TDS concentration of approximately four times that of the water released from Vaal Dam. In this segment of the Vaal River, waters tend to be of a calcium- sulphate type with substantial contributions from sodium and magnesium, the bicarbonate being considerably reduced. The lower reach of the Mooi River (C2Q02) is less mineralized (median TDS concentration of 478 mg/ℓ) than the upstream tributaries, the percentage cations being nearly equal for calcium and magnesium, while bicarbonate is the predominant anion with some contribution from sulphate. The Skoonspruit is an alkaline earth-bicarbonate water with a median TDS concentration of 392 mg/ℓ in the lower reach (C2Q01) The Renoster River (C7M06) to the east of this segment is a low TDS (median concentration of 205 mg/ℓ), calcium and magnesium-bicarbonate type water.

Between Orkney Weir (C2M07) and Bloemhof Dam (C9R02) the TDS concentration in the Vaal River gradually decreases (Figure 6). Sulphate however is the dominant anion throughout this segment (Figure 9), the percentage contributions of calcium, magnesium and sodium remaining relatively constant. The decreasing TDS in this reach is to some extent due to the inflow of lower TDS waters from the Vals and Vet Rivers to the east of the main water course. The Vals River (C6M02) is predominantly an alkaline earth-bicarbonate type water with median TDS concentrations ranging from approximately 200 mg/ℓ in the upper reaches (not shown) to 387 mg/ℓ at the confluence. Similarly, the upper reaches of the Vet River are alkaline earth-bicarbonate type waters with an increased contribution of sodium in the lower reach. Median TDS concentrations range from 170 mg/ℓ in the upper catchment (not shown) to 237 mg/ℓ near the confluence (C4Q01). However, the substantially lower TDS concentration (420 mg/ℓ) at Bloemhof Dam (C9R02) is for most part due to storage attenuation.

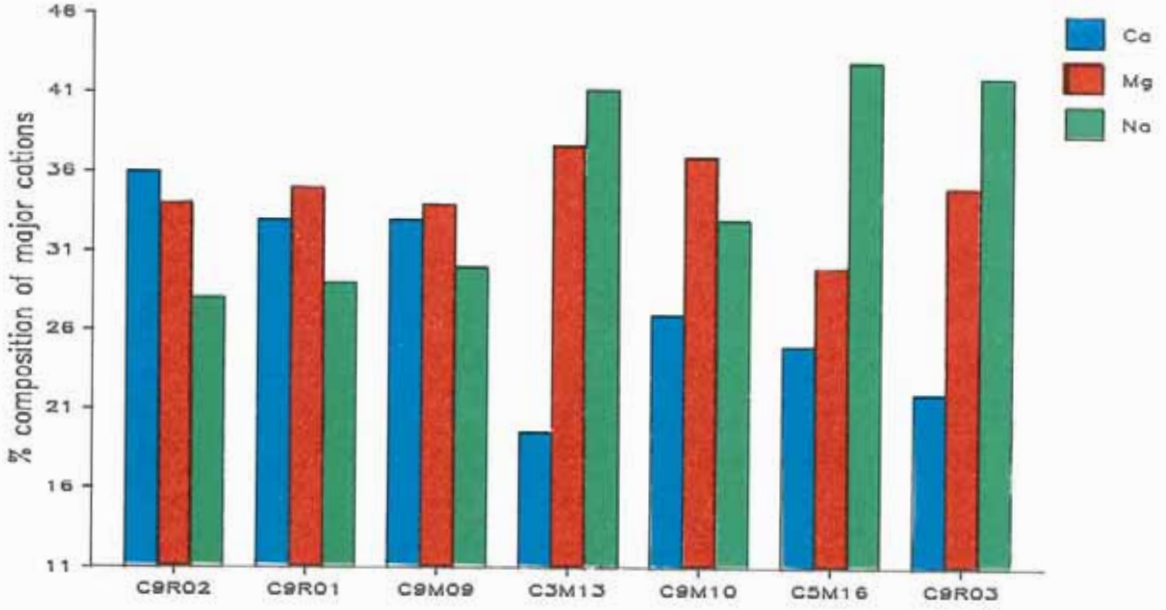


Figure 10a: The progression of major cation composition changes at selected sampling stations in the Lower Vaal River catchment.

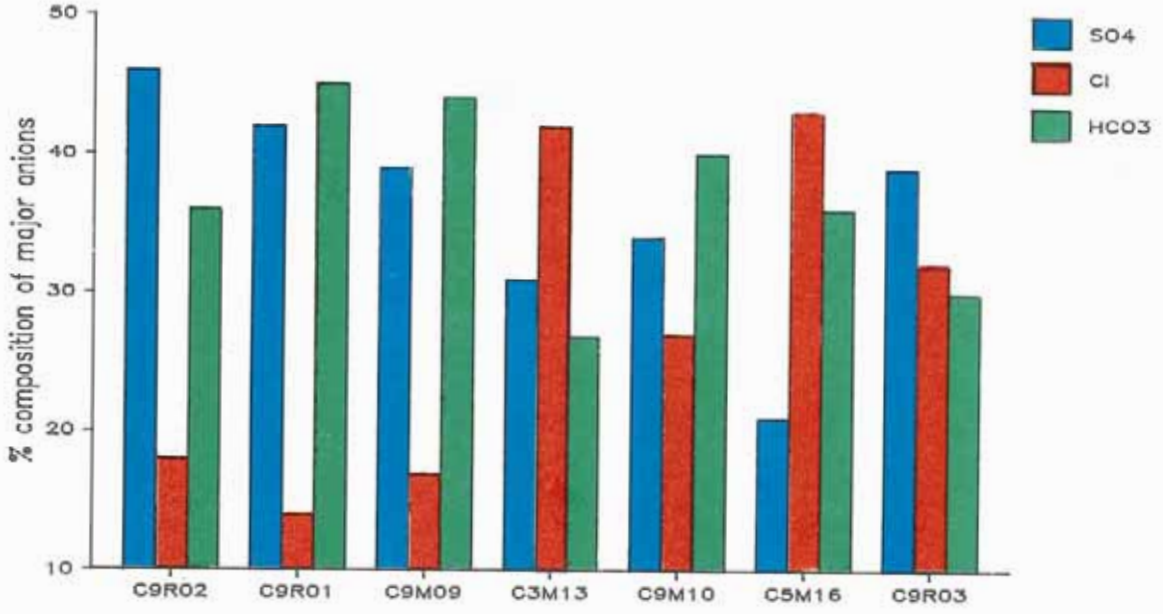


Figure 10b: The progression of major anion composition changes at selected sampling stations in the Lower Vaal River catchment.

5.3 Lower Vaal catchment (W)

Water quality conditions in the Lower Vaal River are dominated by extensive agricultural activities, the primary effects of this dominance are increasing TDS, sodium and chloride concentrations. Median TDS concentrations in the Vaal River decrease from 421 mg/ℓ at Bloemhof Dam (C9R02) to 378 mg/ℓ at Vaalharts Weir (C9R01) and 388 mg/ℓ at the C9M09-station upstream of the Harts/Vaal River confluence (Figure 7). After the confluence, TDS concentrations in the Vaal River increase from a median TDS of 513 mg/ℓ at the C9M10-station downstream of the Harts River confluence to 685 mg/ℓ at Douglas Weir (C9M03). In this segment, the Vaal River receives high TDS inflows (containing predominantly sodium and chloride) from the Harts River draining from the north, the Riet River from the east and the Douglas Irrigation Scheme.

Figure 10 shows the progression of major ion composition changes for the Lower Vaal River and selected stations on the Harts and Riet Rivers. Between Bloemhof Dam and the Harts River confluence the major ion composition of the Vaal River remains relatively constant. After the confluence, inflows from the Harts and Riet Rivers and the Douglas Irrigation scheme cause an increase in the percentage contributions of sodium and chloride. The upper reaches of the Harts River are high TDS (median concentrations ranging from approximately 750 mg/ℓ to 880 mg/ℓ) waters, while the percentage contributions of sodium and chloride increase in the lower reach due to the addition of irrigation return flow from the Vaalharts Irrigation Scheme. Median TDS concentrations in the lower reach of the Riet River increase from 508 mg/ℓ at the C5M18 station to 685 mg/ℓ near the Vaal River confluence. In this segment of the Riet River the ion dominance changes to sodium and chloride.

APPENDIX A: SUMMARIZED WATER QUALITY DATA FOR THE VAAL RIVER CATCHMENT

STATION NUMBER: C1M01
NAME: VAAL RIVER AT STANDERTON

LATITUDE: 26°56'30" S LONGITUDE 29°16'00" E
TYPE: GAUGING WEIR

SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING:		75/10/13 TO 86/10/07			
	TOTAL	1979-1983	SUMMER	WINTER	RATIO
SAMPLES	393	173	87	86	1.01

WATER QUALITY STATISTICS

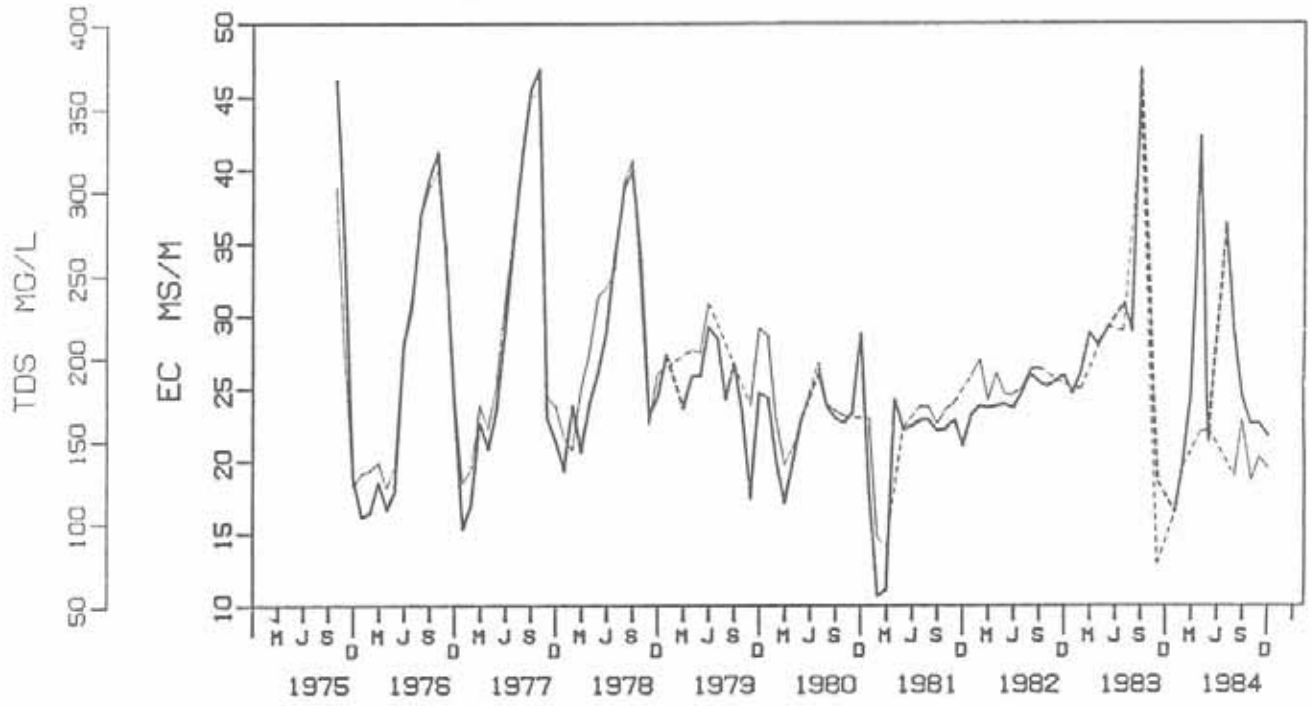
DETERMINAND		MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH	(PH UNITS)	7.1	5.9	7.8	0.5	6.7	7.6
EC	(MS/M)	23.5	8.8	46.9	4.5	21.9	28.5
TDS	(MG/L)	174	74	341	45	163	216
CA	(MG/L)	18	6	32	5	16	21
MG	(MG/L)	11	4	19	3	10	13
NA	(MG/L)	13	8	36	4	11	15
K	(MG/L)	3.7	3.1	6.0	0.7	3.4	4.5
TAL	(MG/L HCO_3)	104	29	185	26	91	128
CL	(MG/L)	9	4	32	5	7	15
SO_4	(MG/L)	12	2	27	5	9	17
F	(MG/L)	0.2	0.1	0.5	0.1	0.2	0.4
SI	(MG/L)	5.6	2.2	7.7	1.3	4.6	7.1
NO_3	(MG/L N)	0.15	<0.02	2.46	0.53	0.08	0.90
PO_4	(MG/L P)	0.022	<0.005	0.147	0.031	0.014	0.072

NON EXCEEDENCE PROBABILITY PLOT FOR TDS
MIXED LOG-NORMAL DISTRIBUTION PARAMETERS

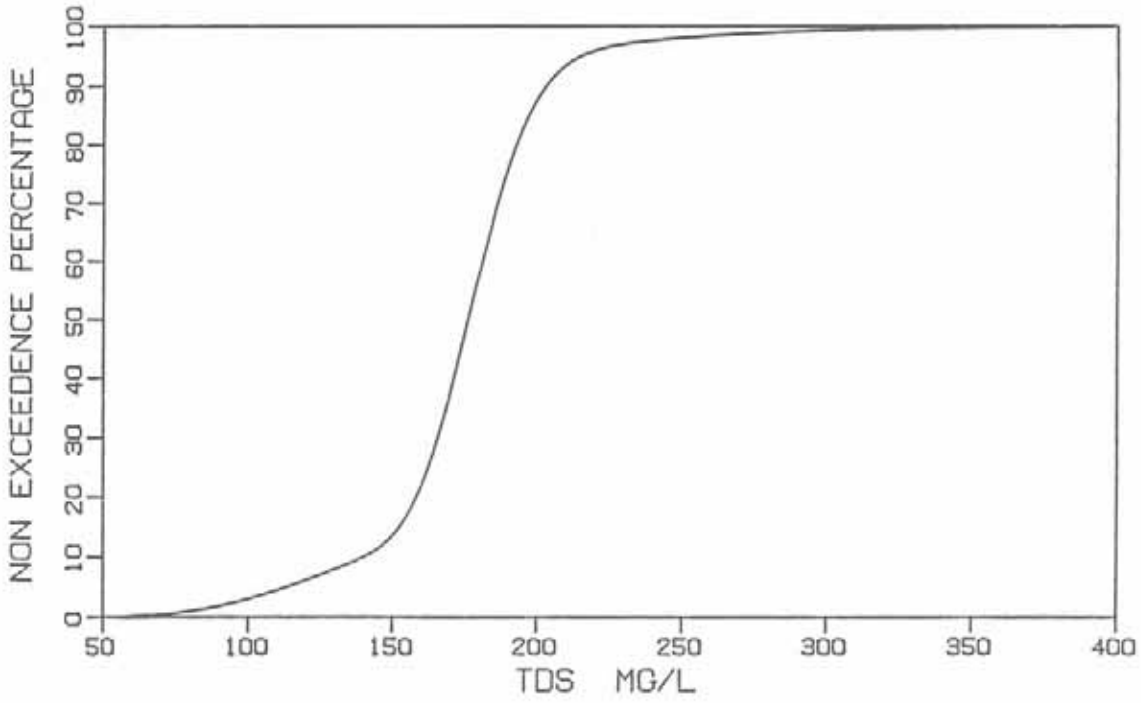
COMPONENT DISTRIBUTION	MEAN	STD DEV
1	(μ_1) 5.0104	(σ_1) 0.3617
2	(μ_2) 5.1819	(σ_2) 0.0883

PROPORTIONALITY FACTOR (α) = .2311

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C1M02
NAME: KLIP RIVER AT DELANGESDRIFT

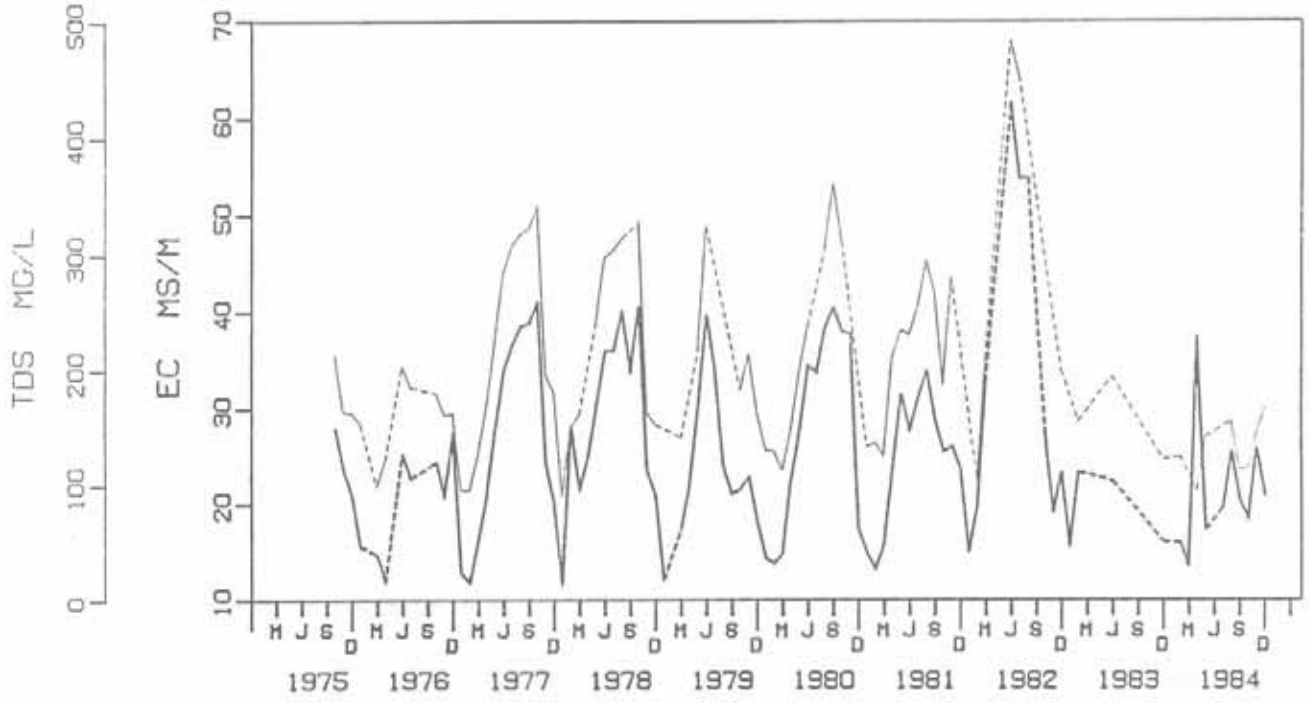
LATITUDE: 27°10'15" S LONGITUDE 29°14'00" E
TYPE: GAUGING WEIR

SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING: 74/01/06 TO 85/05/28					
	TOTAL	1979-1983	SUMMER	WINTER	RATIO
SAMPLES	331	159	92	67	1.37

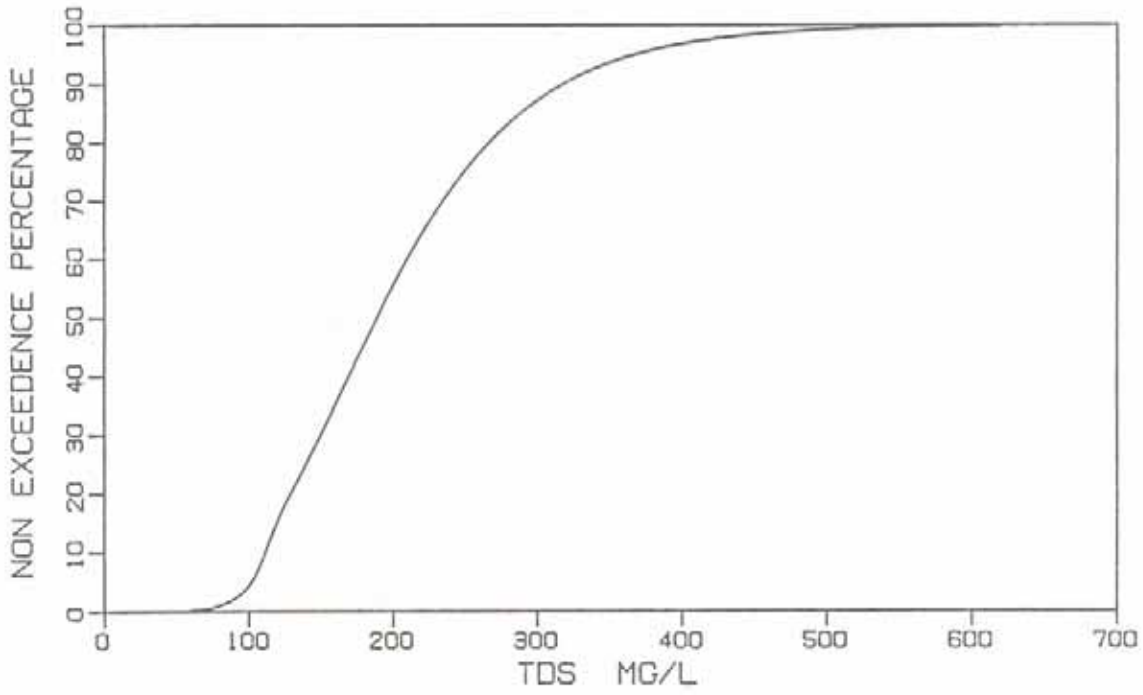
WATER QUALITY STATISTICS						
DETERMINAND	MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH (PH UNITS)	7.3	6.0	7.9	0.5	7.0	7.7
EC (MS/M)	23.4	10.9	61.5	10.4	17.0	38.8
TDS (MG/L)	197	96	483	90	147	319
CA (MG/L)	20	7	53	10	15	32
MG (MG/L)	9	5	27	6	7	20
NA (MG/L)	14	6	40	7	10	24
K (MG/L)	2.7	1.8	6.8	1.1	2.2	4.3
TAL (MG/L HCO_3)	111	47	340	69	77	220
CL (MG/L)	7	<3	18	4	5	14
SO_4 (MG/L)	8	<2	55	9	6	16
F (MG/L)	0.3	0.1	0.6	0.1	0.2	0.4
SI (MG/L)	6.6	2.5	9.3	1.5	5.4	7.7
NO_3 (MG/L N)	0.10	<0.02	3.92	0.73	0.02	0.62
PO_4 (MG/L P)	0.021	<0.005	0.212	0.037	0.009	0.053

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS		
COMPONENT DISTRIBUTION	MEAN	STD DEV
1	(μ_1) 5.2768	(σ_1) 0.3903
2	(μ_2) 4.7250	(σ_2) 0.0714
PROPORTIONALITY FACTOR (α) = .9320		

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C1M04
NAME: WATERVAL RIVER AT ROODEBANK

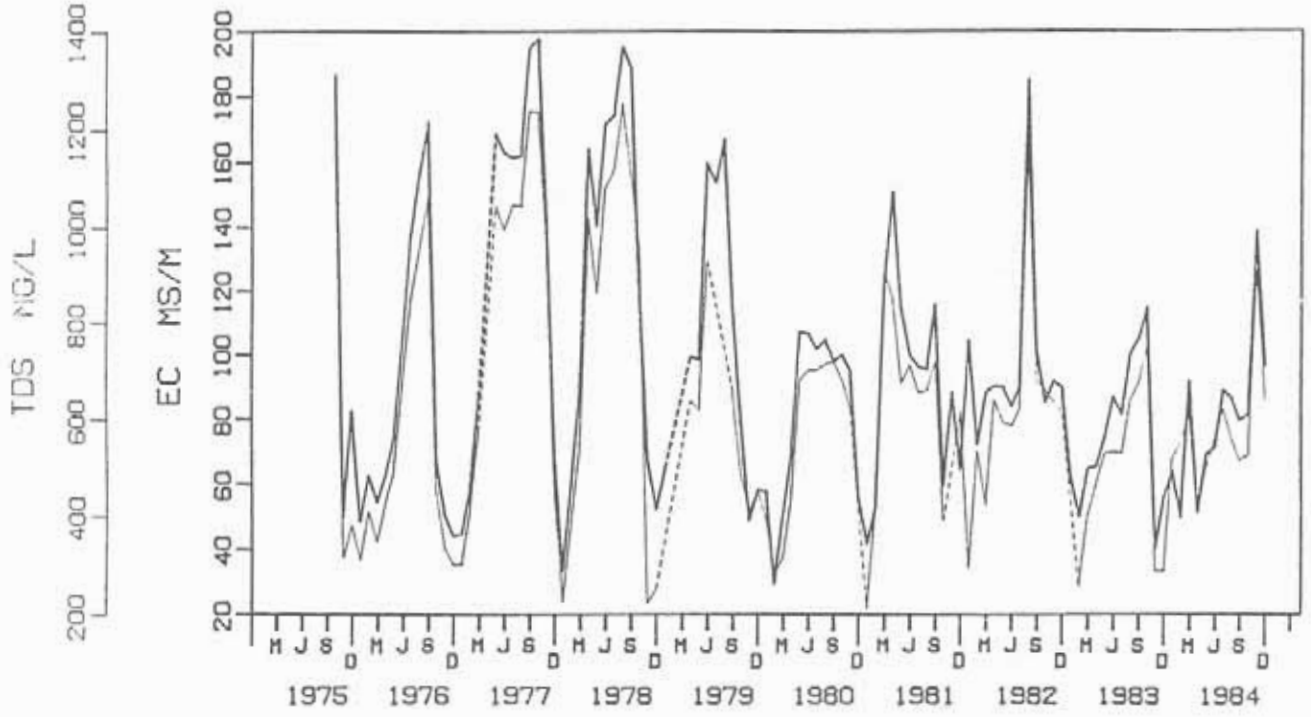
LATITUDE: 26°37'45" S LONGITUDE 29°01'30" E
TYPE: GAUGING WEIR

SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING: 75/10/02 TO 84/12/03					
	TOTAL	1979-1983	SUMMER	WINTER	RATIO
SAMPLES	493	214	103	111	0.93

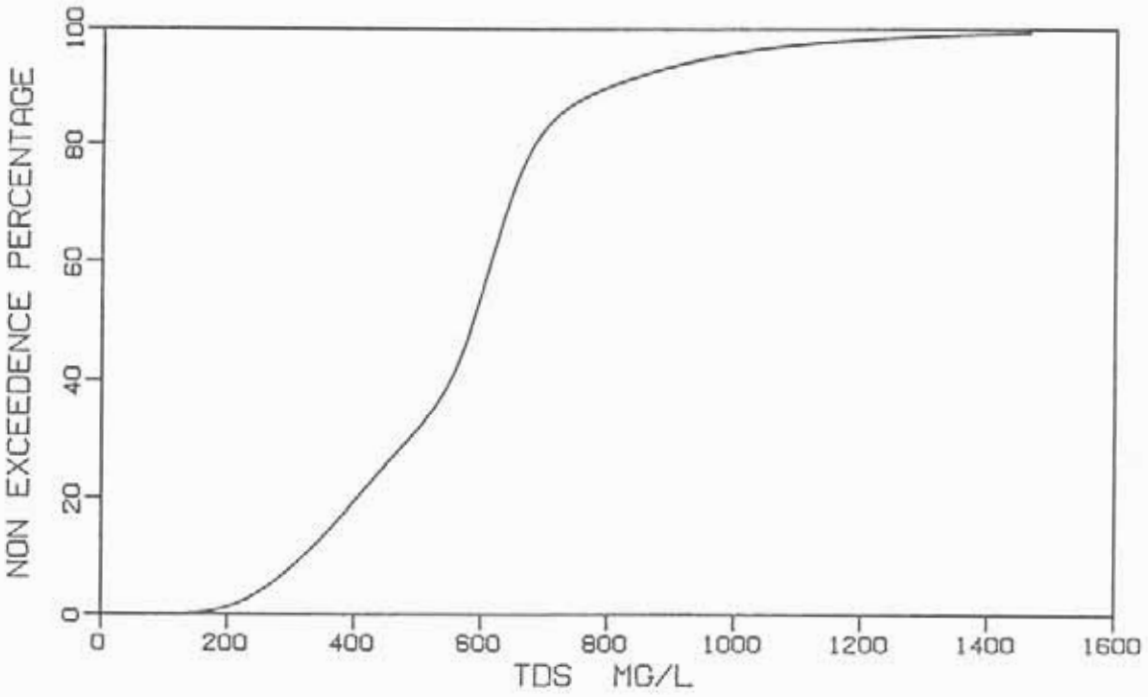
WATER QUALITY STATISTICS						
DETERMINAND	MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH (PH UNITS)	7.2	5.3	7.9	0.4	6.9	7.5
EC (MS/M)	89.3	15.3	243.2	35.3	65.7	124.6
TDS (MG/L)	612	187	1442	218	405	754
CA (MG/L)	47	15	77	15	34	62
MG (MG/L)	21	11	31	6	16	28
NA (MG/L)	102	16	335	55	64	145
K (MG/L)	11.1	3.4	19.6	4.0	7.1	15.6
TAL (MG/L HCO_3)	142	9	194	36	120	180
CL (MG/L)	104	16	538	79	71	172
SO_4 (MG/L)	103	14	269	48	73	160
F (MG/L)	0.9	0.2	17.4	2.2	0.7	2.6
SI (MG/L)	6.1	<0.4	11.2	2.1	4.8	8.2
NO_3 (MG/L N)	4.89	<0.02	24.74	5.27	2.13	10.88
PO_4 (MG/L P)	0.957	0.040	5.172	1.326	0.315	3.437

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS				
COMPONENT DISTRIBUTION	MEAN		STD DEV	
1	(μ_1)	6.2273	(σ_1)	0.4477
2	(μ_2)	6.4261	(σ_2)	0.0794
PROPORTIONALITY FACTOR (α) = .6480				

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C1M05
NAME: LEEU SPRUIT AT WELBEDACHT

LATITUDE: 26°51'15" S LONGITUDE 29°19'30" E
TYPE: GAUGING WEIR

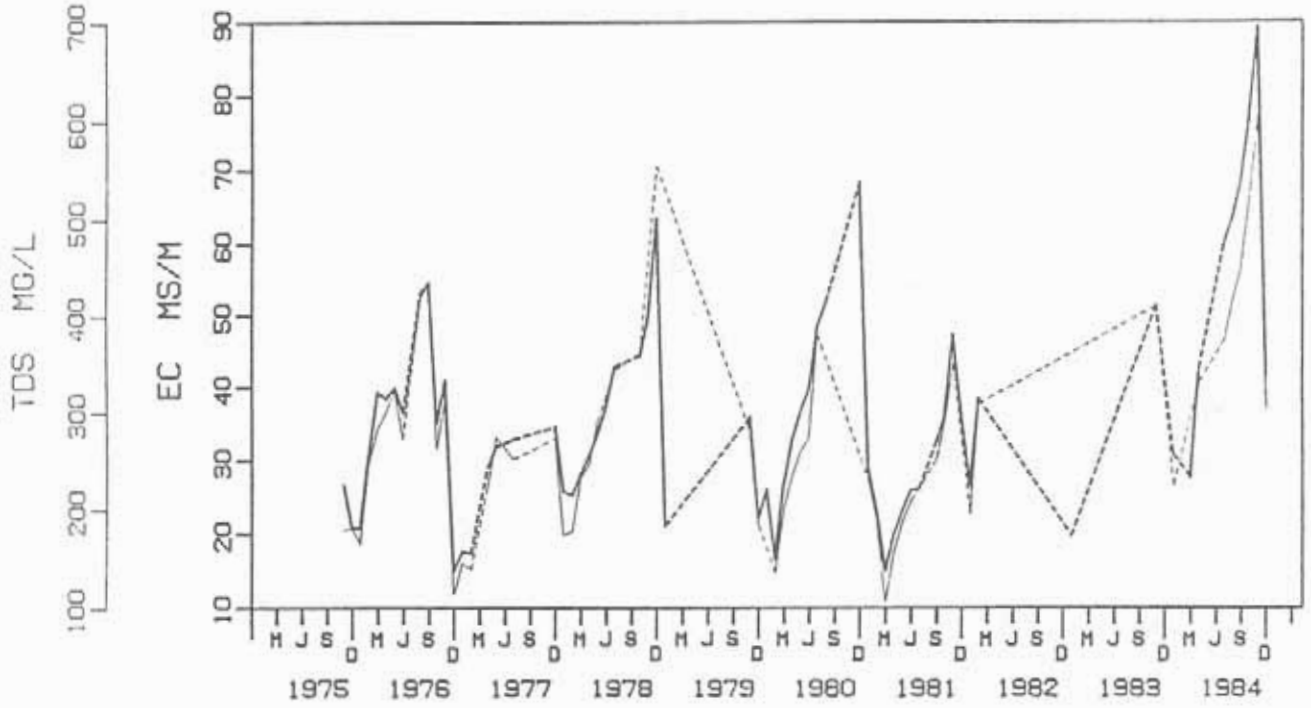
SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING: 74/01/17 TO 86/09/16					
	TOTAL	1979-1983	SUMMER	WINTER	RATIO
SAMPLES	305	76	48	28	1.71

WATER QUALITY STATISTICS

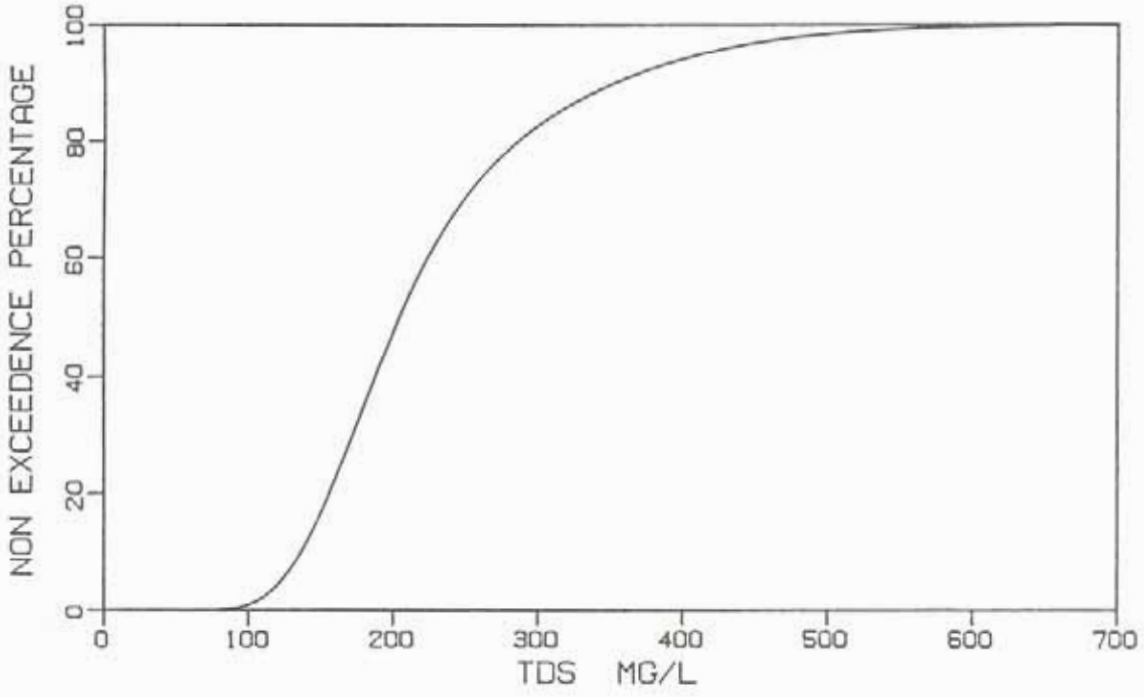
DETERMINAND	MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH (PH UNITS)	7.0	6.0	7.9	0.6	6.7	7.7
EC (MS/M)	26.0	10.8	71.7	12.0	21.4	47.2
TDS (MG/L)	221	89	411	87	187	369
CA (MG/L)	19	7	33	7	15	30
MG (MG/L)	16	6	30	7	11	27
NA (MG/L)	17	9	33	7	11	25
K (MG/L)	4.8	4.2	7.0	0.7	4.5	5.7
TAL (MG/L HCO_3)	132	40	257	61	96	233
CL (MG/L)	13	7	29	6	10	25
SO_4 (MG/L)	17	2	37	8	11	27
F (MG/L)	0.3	0.2	0.6	0.1	0.2	0.5
SI (MG/L)	8.1	1.9	11.7	2.7	6.3	11.2
NO_3 (MG/L N)	0.06	<0.02	0.85	0.18	0.03	0.27
PO_4 (MG/L P)	0.022	0.007	0.074	0.022	0.012	0.063

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS				
COMPONENT DISTRIBUTION	MEAN		STD DEV	
1	(μ_1)	5.8893	(σ_1)	0.2417
2	(μ_2)	5.2495	(σ_2)	0.2825
PROPORTIONALITY FACTOR (α) = .1669				

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C1M06
NAME: BLESBOK SPRUIT AT RIETVLEY

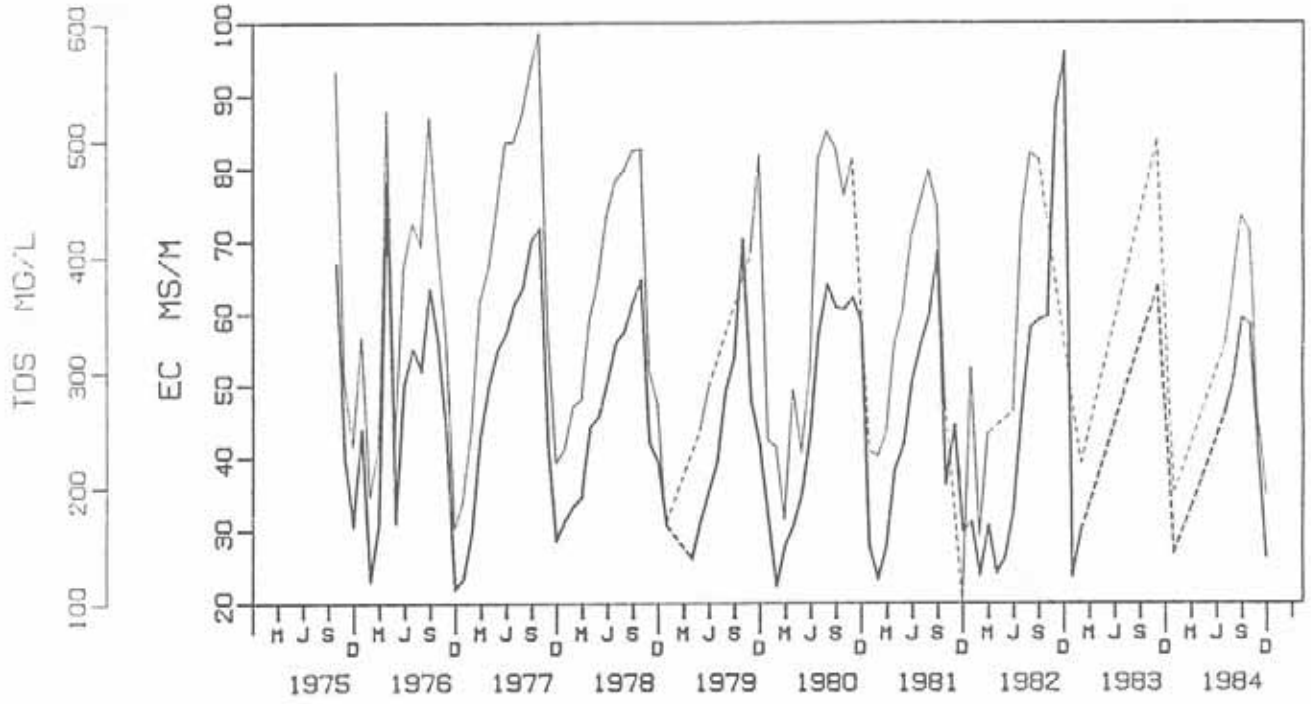
LATITUDE: 26°46'30" S LONGITUDE 29°32'30" E
TYPE: GAUGING WEIR

SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING:		74/01/17 TO 86/09/30			
	TOTAL	1979-1983	SUMMER	WINTER	RATIO
SAMPLES	434	170	90	80	1.13

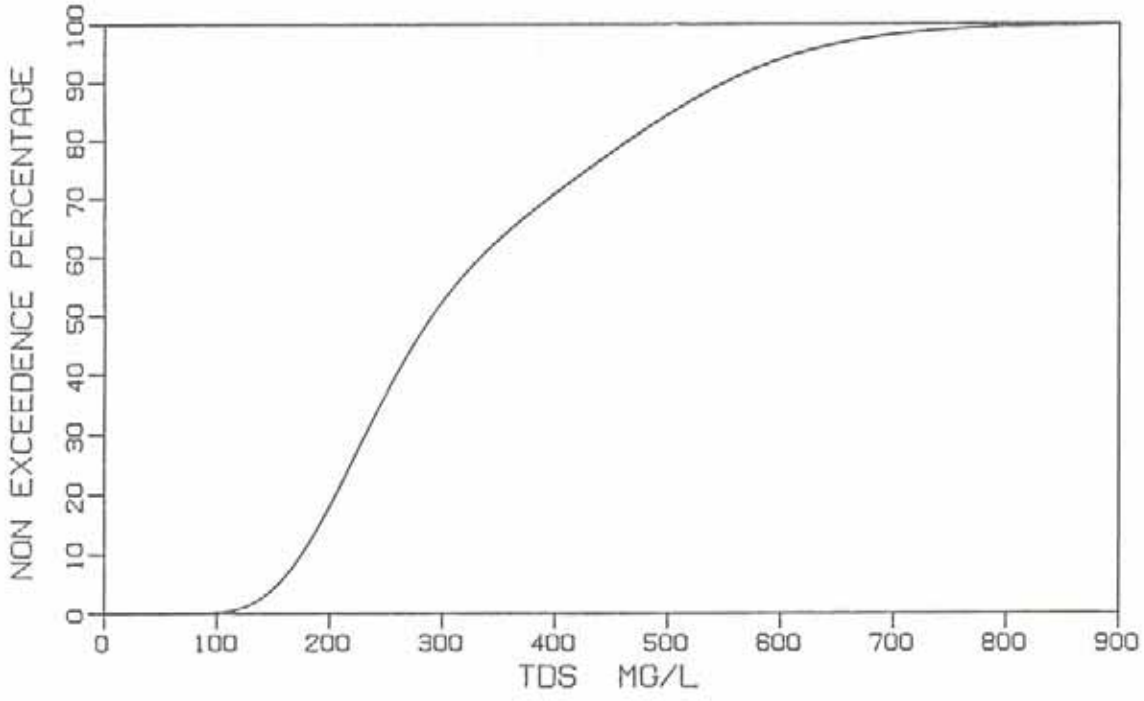
WATER QUALITY STATISTICS						
DETERMINAND	MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH (PH UNITS)	7.5	6.3	8.0	0.5	7.0	7.9
EC (MS/M)	37.6	9.7	103.0	18.5	29.9	63.9
TDS (MG/L)	300	100	524	123	234	489
CA (MG/L)	26	5	50	11	20	44
MG (MG/L)	20	4	37	9	15	33
NA (MG/L)	25	12	102	16	20	42
K (MG/L)	3.7	0.9	6.5	1.0	3.2	5.2
TAL (MG/L HCO_3)	171	23	352	86	128	305
CL (MG/L)	17	7	93	14	12	34
SO_4 (MG/L)	18	3	68	13	15	42
F (MG/L)	0.3	0.1	0.6	0.1	0.2	0.5
SI (MG/L)	7.9	1.5	11.9	2.5	6.3	10.5
NO_3 (MG/L N)	0.12	<0.02	3.66	0.66	0.03	0.75
PO_4 (MG/L P)	0.053	<0.005	0.409	0.069	0.032	0.120

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS		
COMPONENT DISTRIBUTION	MEAN	STD DEV
1	(μ_1) 6.2162	(σ_1) 0.2126
2	(μ_2) 5.5078	(σ_2) 0.3157
PROPORTIONALITY FACTOR (α) = .2875		

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C1M07
NAME: VAAL RIVER AT UITSPANNING

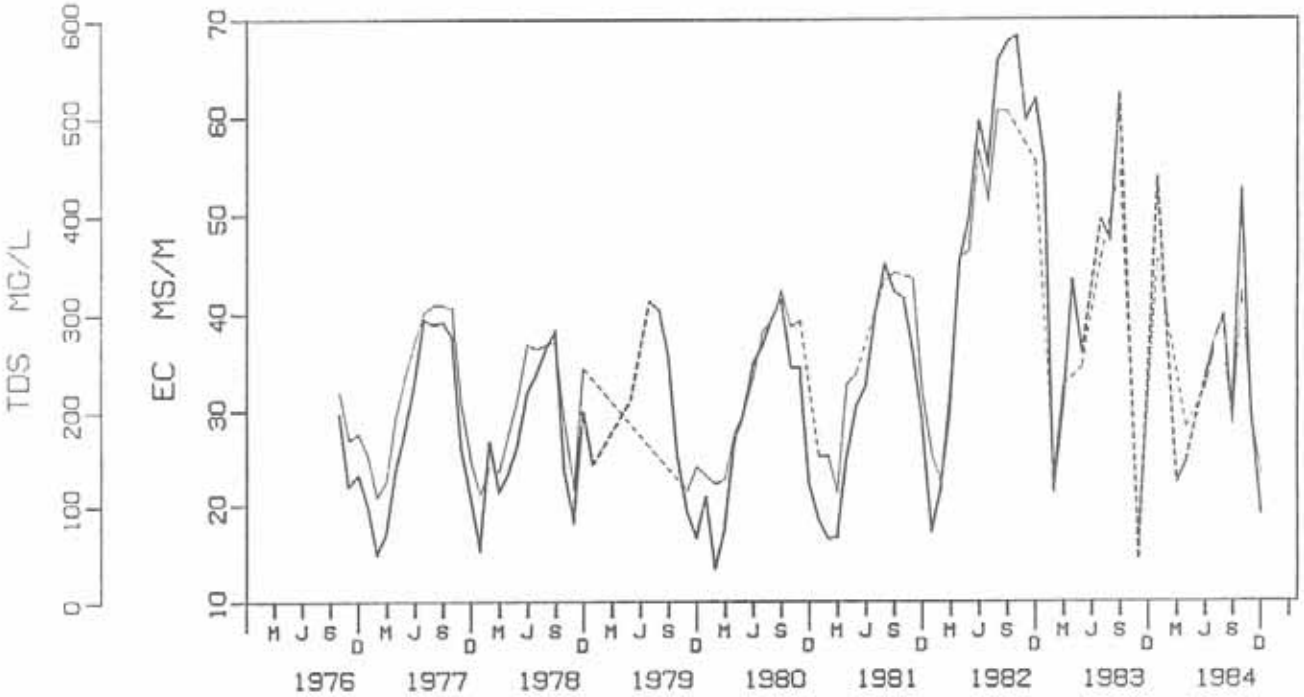
LATITUDE: 26°50'30" S LONGITUDE 29°43'15" E
TYPE: RIVER SECTION

SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING:		74/01/16 TO 84/12/04			
	TOTAL	1979-1983	SUMMER	WINTER	RATIO
SAMPLES	395	172	95	77	1.23

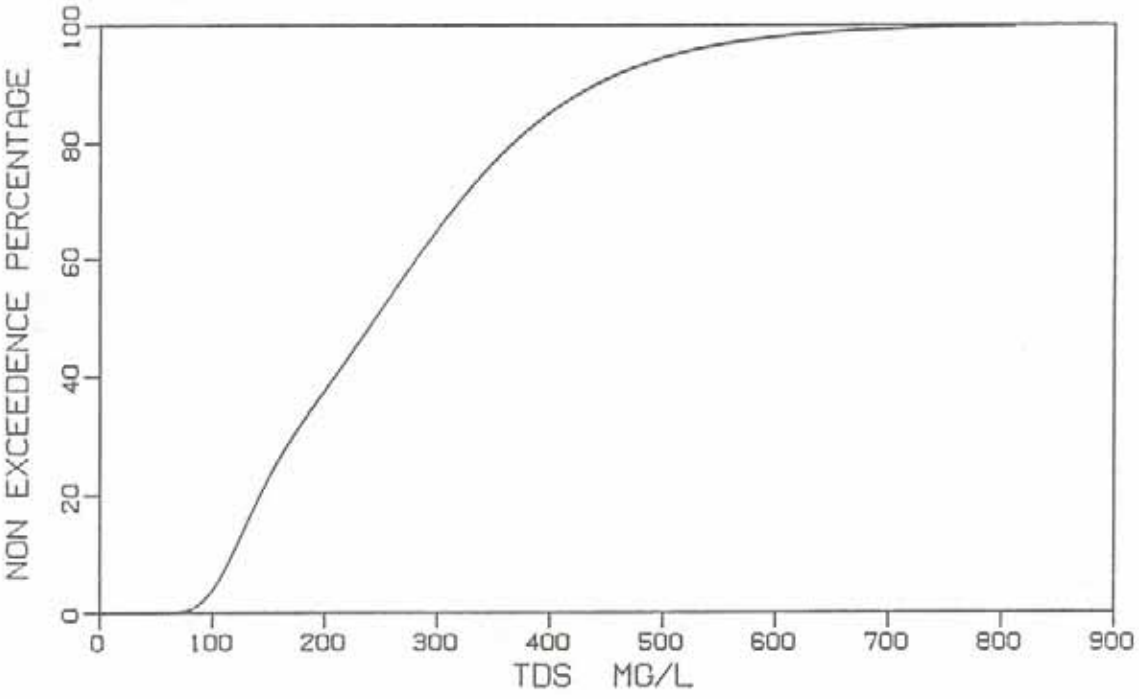
WATER QUALITY STATISTICS						
DETERMINAND	MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH (PH UNITS)	7.2	6.0	8.4	0.6	6.8	8.0
EC (MS/M)	33.5	8.0	93.6	16.8	21.3	62.2
TDS (MG/L)	234	73	507	120	148	438
CA (MG/L)	23	8	39	8	15	29
MG (MG/L)	15	5	29	7	8	23
NA (MG/L)	21	5	93	21	12	51
K (MG/L)	3.2	1.5	6.5	1.2	2.6	5.2
TAL (MG/L HCO_3)	140	<4	259	64	78	213
CL (MG/L)	14	3	50	12	9	32
SO_4 (MG/L)	21	5	94	21	13	46
F (MG/L)	0.3	0.1	0.9	0.2	0.2	0.5
SI (MG/L)	5.4	1.0	8.6	2.2	3.7	7.9
NO_3 (MG/L N)	0.11	<0.02	13.72	2.20	0.05	0.76
PO_4 (MG/L P)	0.015	<0.005	0.217	0.040	0.007	0.064

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS				
COMPONENT DISTRIBUTION	MEAN		STD DEV	
1	(μ_1)	4.8739	(σ_1)	0.2341
2	(μ_2)	5.6945	(σ_2)	0.3628
PROPORTIONALITY FACTOR (α) = .2884				

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C1M09
NAME: MOLSPRUIT AT LEEUFONTEIN

LATITUDE: 26°55'00" S LONGITUDE 28°26'15" E
TYPE: RIVER SECTION

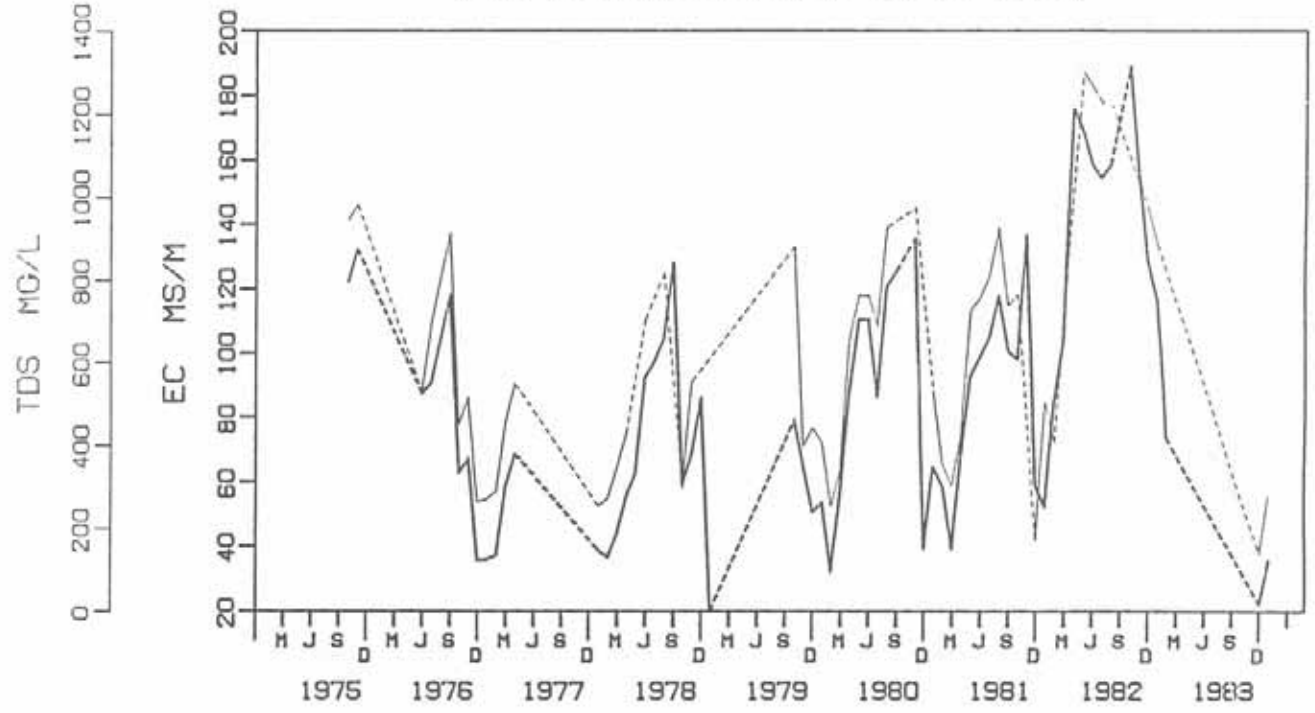
SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING: 75/10/20 TO 84/01/02					
	TOTAL	1979-1983	SUMMER	WINTER	RATIO
SAMPLES	210	127	69	58	1.19

WATER QUALITY STATISTICS

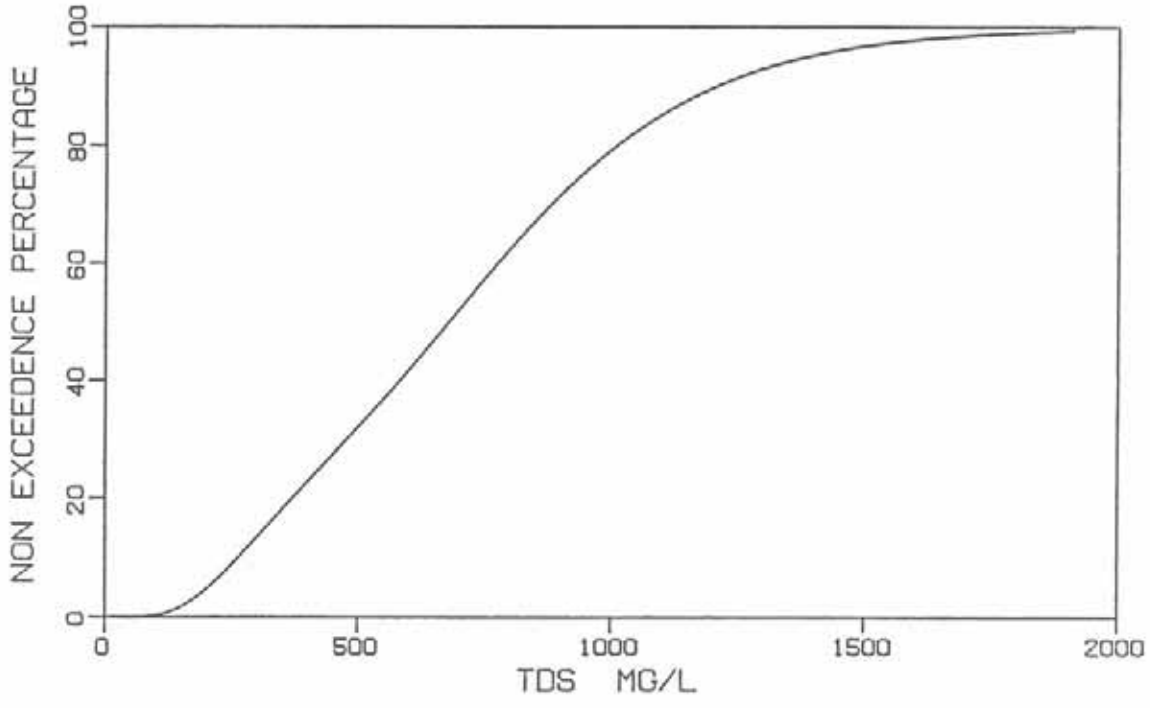
DETERMINAND	MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH (PH UNITS)	7.6	6.4	8.7	0.5	7.3	8.1
EC (MS/M)	94.7	18.1	188.9	44.1	59.8	159.2
TDS (MG/L)	594	139	1302	319	402	973
CA (MG/L)	28	10	57	9	22	39
MG (MG/L)	13	5	23	4	10	18
NA (MG/L)	128	18	309	87	68	239
K (MG/L)	5.8	1.7	14.7	2.4	4.8	9.3
TAL (MG/L HCO_3)	248	55	497	116	199	417
CL (MG/L)	49	6	157	30	31	89
SO_4 (MG/L)	109	8	332	85	41	232
F (MG/L)	1.8	0.2	4.5	1.1	1.2	3.4
SI (MG/L)	4.0	<0.4	8.5	2.5	2.2	7.1
NO_3 (MG/L N)	0.10	<0.02	3.68	0.61	0.04	0.47
PO_4 (MG/L P)	0.091	<0.005	0.419	0.091	0.070	0.249

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS		
COMPONENT DISTRIBUTION	MEAN	STD DEV
1	(μ_1) 6.0078	(σ_1) 0.5607
2	(μ_2) 6.7640	(σ_2) 0.3336
PROPORTIONALITY FACTOR (α) = .4545		

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C1M10
NAME: BANKPLAAS SPRUIT AT SWEET HOME

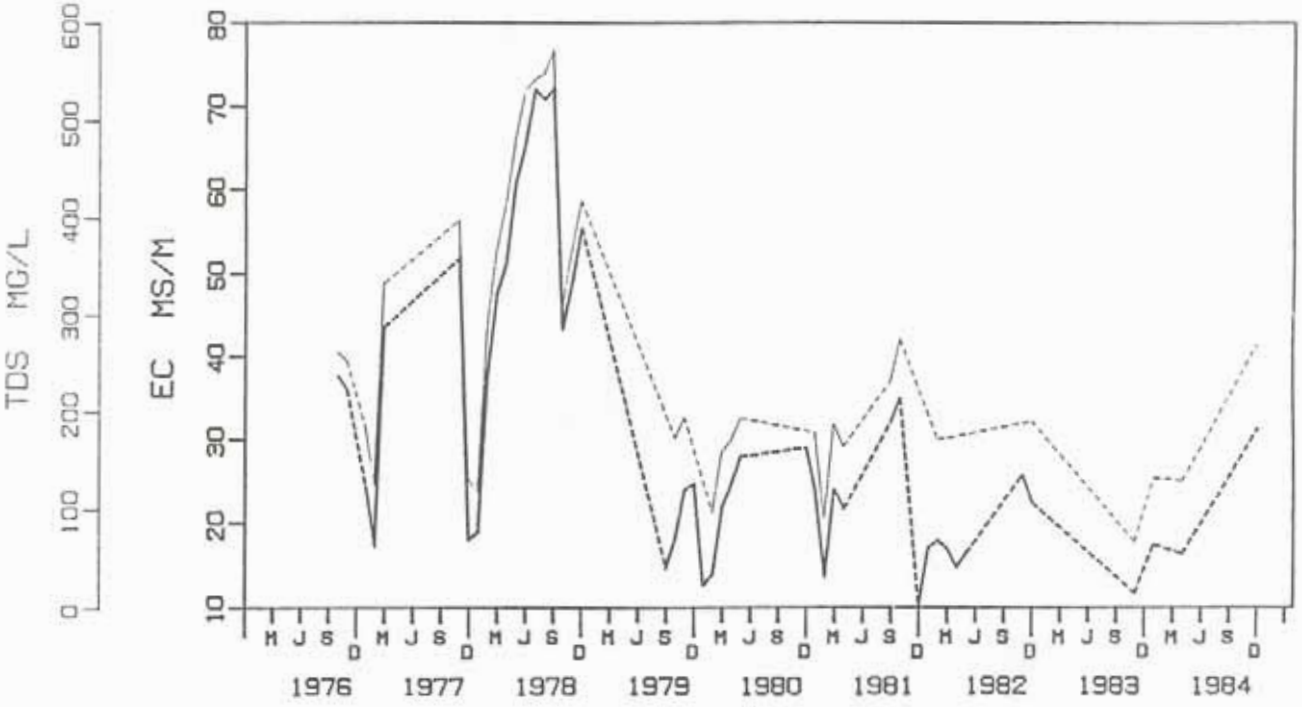
LATITUDE: 27°04'30" S LONGITUDE 28°34'00" E
TYPE: RIVER SECTION

SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING: 76/10/11 TO 86/03/10					
	TOTAL	1979-1983	SUMMER	WINTER	RATIO
SAMPLES	149	79	57	22	2.59

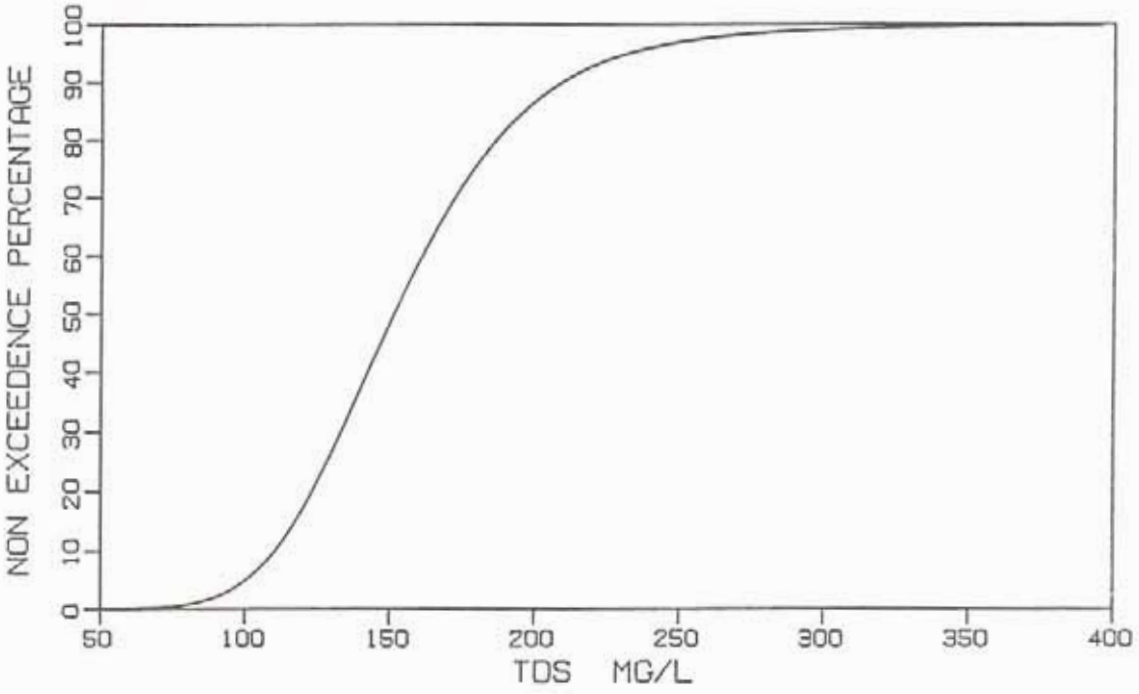
WATER QUALITY STATISTICS						
DETERMINAND	MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH (PH UNITS)	6.9	6.0	8.0	0.5	6.6	7.6
EC (MS/M)	19.5	6.1	49.8	7.3	15.1	28.9
TDS (MG/L)	172	67	296	57	148	241
CA (MG/L)	15	6	24	5	11	20
MG (MG/L)	8	4	17	3	7	12
NA (MG/L)	16	8	62	11	12	23
K (MG/L)	4.8	3.7	8.2	0.9	4.5	5.6
TAL (MG/L HCO_3)	94	13	168	33	76	126
CL (MG/L)	12	7	95	18	10	15
SO_4 (MG/L)	6	<2	22	6	5	16
F (MG/L)	0.4	0.1	0.8	0.2	0.3	0.6
SI (MG/L)	6.4	1.4	7.8	1.5	5.3	7.4
NO_3 (MG/L N)	0.25	0.02	1.74	0.38	0.05	0.65
PO_4 (MG/L P)	0.051	0.008	0.244	0.063	0.020	0.135

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS		
COMPONENT DISTRIBUTION	MEAN	STD DEV
1	(μ_1) 5.0689	(σ_1) 0.3700
2	(μ_2) 5.0140	(σ_2) 0.2293
PROPORTIONALITY FACTOR (α) = .1627		

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C1M11

NAME: VAAL RIVER AT VILLIERS (GROOT DRAAI)

LATITUDE: 27°01'00" S LONGITUDE 28°38'45" E

TYPE: RIVER SECTION

SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING:		76/09/27 TO 84/02/28			
	TOTAL	1979–1983	SUMMER	WINTER	RATIO
SAMPLES	266	170	81	89	0.91

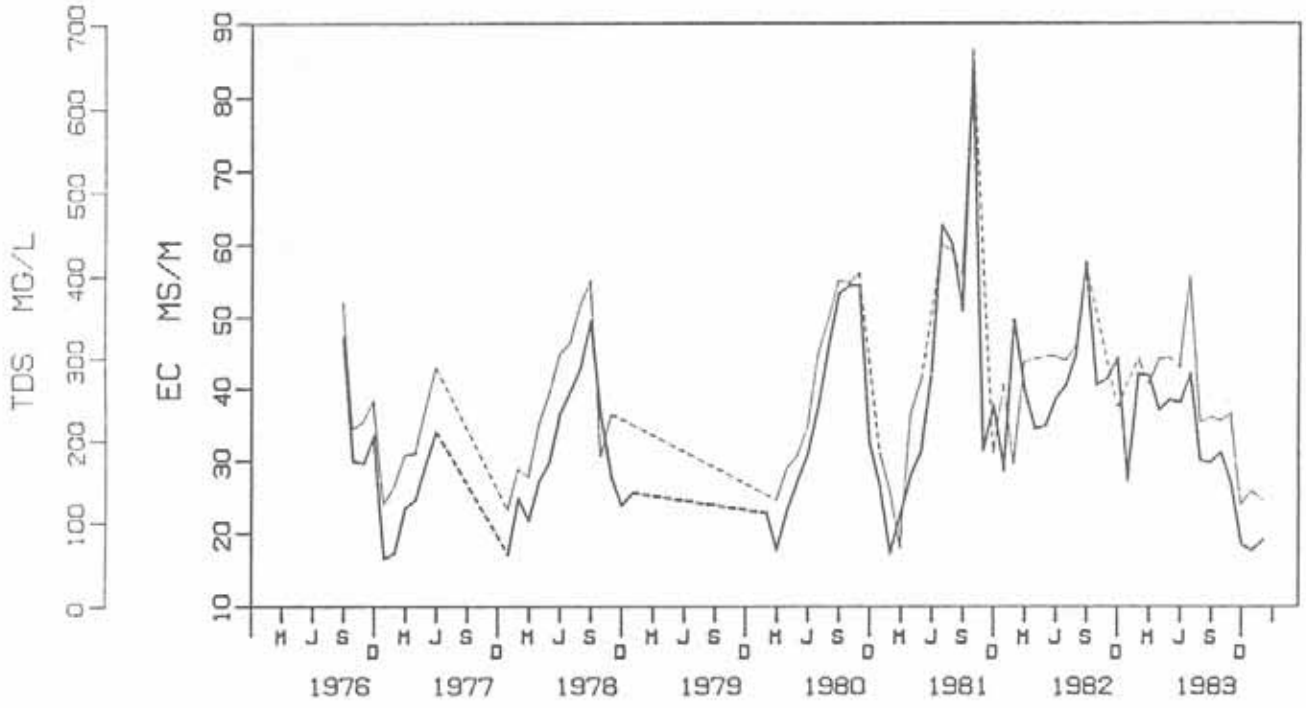
WATER QUALITY STATISTICS

DETERMINAND	MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH (PH UNITS)	7.5	5.9	8.1	0.5	7.0	7.8
EC (MS/M)	37.4	10.2	104.7	15.1	25.9	57.0
TDS (MG/L)	289	70	670	115	184	404
CA (MG/L)	24	6	56	9	20	36
MG (MG/L)	14	4	27	6	11	23
NA (MG/L)	29	7	113	20	21	58
K (MG/L)	4.4	2.6	10.6	1.4	3.6	5.9
TAL (MG/L HCO_3)	140	29	243	51	96	211
CL (MG/L)	21	<3	136	25	14	60
SO_4 (MG/L)	21	2	150	23	15	44
F (MG/L)	0.5	0.2	1.3	0.3	0.3	1.0
SI (MG/L)	4.8	1.2	8.2	2.1	2.4	7.4
NO_3 (MG/L N)	0.21	<0.02	5.85	0.93	0.04	0.67
PO_4 (MG/L P)	0.039	<0.005	0.445	0.068	0.020	0.082

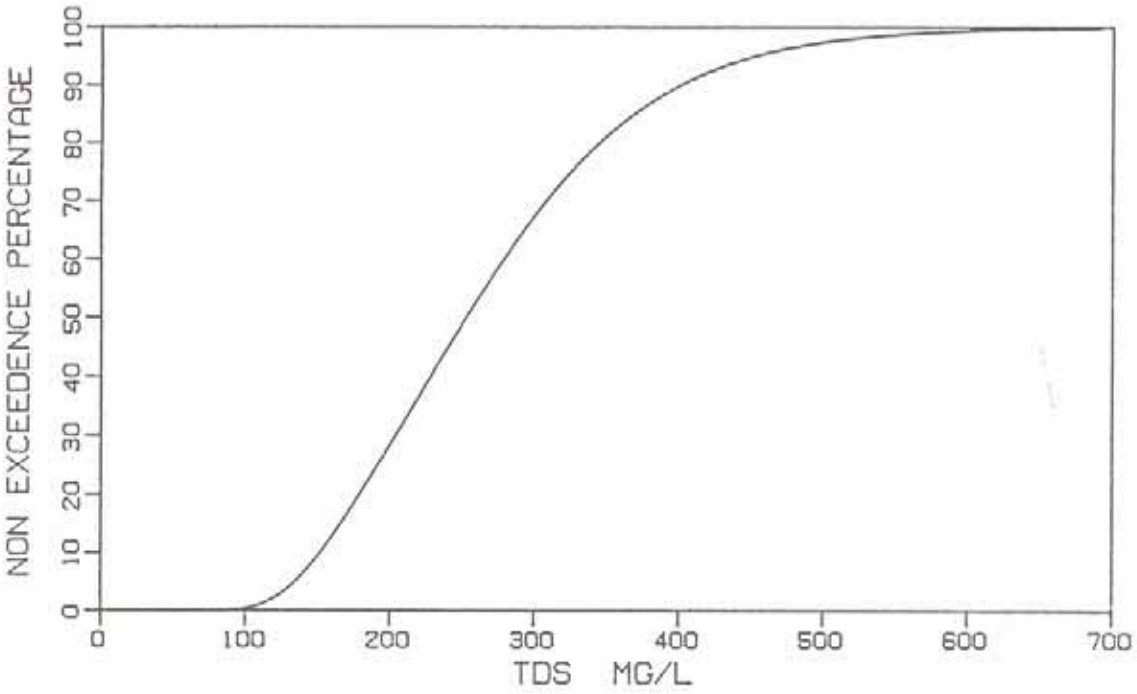
NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS

COMPONENT DISTRIBUTION	MEAN	STD DEV
1	(μ_1) 5.1125	(σ_1) 0.2383
2	(μ_2) 5.6442	(σ_2) 0.3094
PROPORTIONALITY FACTOR (α) = .2357		

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C1R0101
NAME: VAAL DAM:NEAR DAM WALL

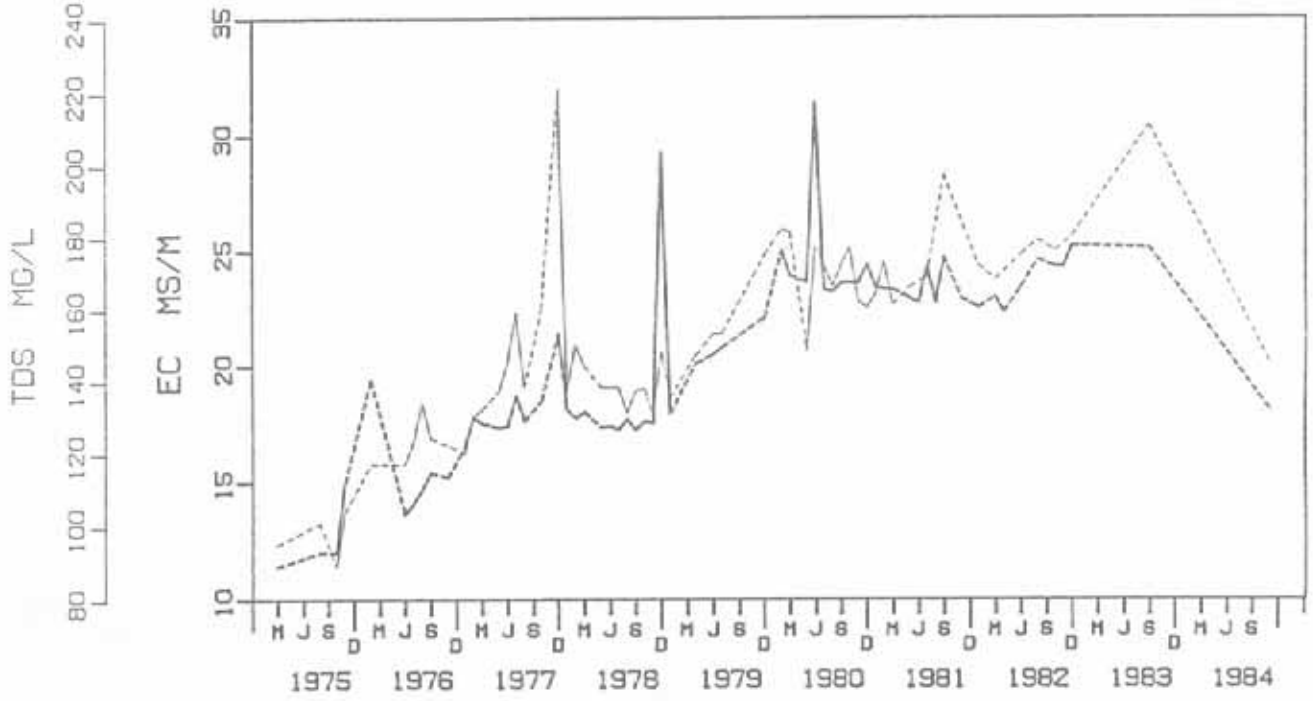
LATITUDE: 26°53'00" S LONGITUDE 28°07'00" E
TYPE: SAMPLING POINT IN DAM BASIN

SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING: 68/04/01 TO 86/09/30					
	TOTAL	1979-1983	SUMMER	WINTER	RATIO
SAMPLES	165	42	19	23	0.83

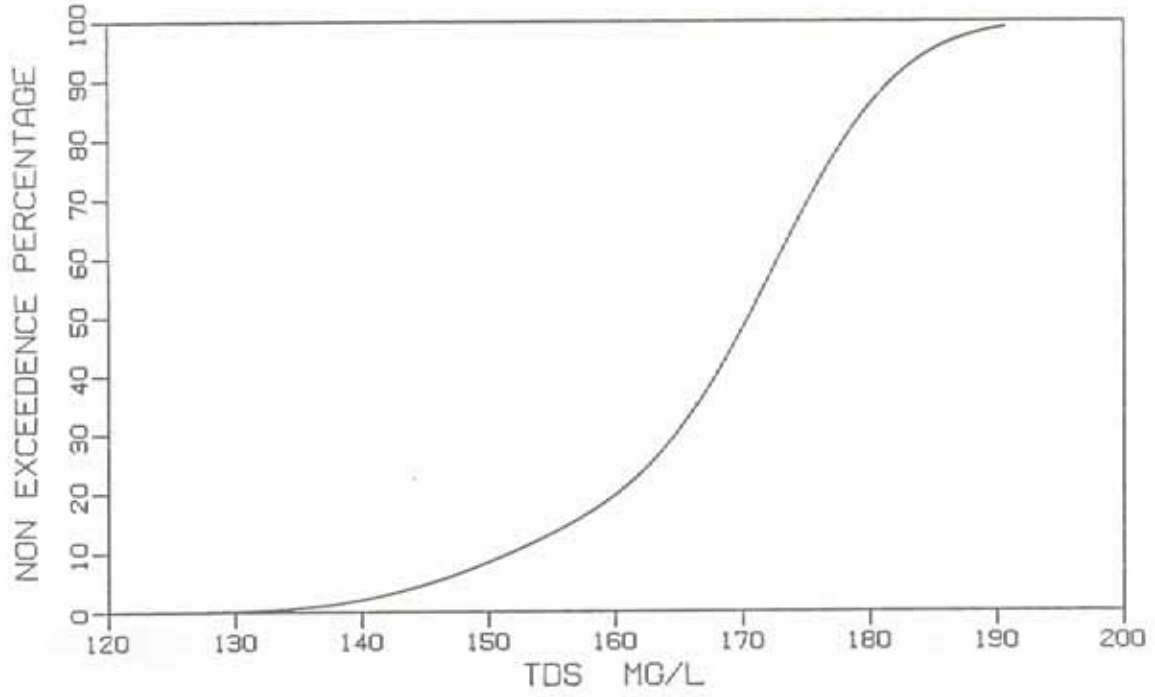
WATER QUALITY STATISTICS						
DETERMINAND	MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH (PH UNITS)	7.2	6.3	7.9	0.4	6.8	7.6
EC (MS/M)	23.4	17.9	31.4	2.0	22.6	24.9
TDS (MG/L)	172	135	211	14	161	182
CA (MG/L)	17	14	21	1	16	18
MG (MG/L)	9	7	12	1	9	10
NA (MG/L)	16	10	19	2	15	17
K (MG/L)	3.3	2.5	4.7	0.4	3.2	4.0
TAL (MG/L HCO_3)	96	81	112	7	93	106
CL (MG/L)	9	<3	19	3	9	11
SO_4 (MG/L)	12	5	34	6	9	17
F (MG/L)	0.3	0.2	0.6	0.1	0.3	0.5
SI (MG/L)	4.1	2.7	6.1	0.9	3.7	5.3
NO_3 (MG/L N)	0.04	<0.02	2.41	0.52	0.02	0.25
PO_4 (MG/L P)	0.008	<0.005	0.063	0.018	<0.005	0.050

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS		
COMPONENT DISTRIBUTION	MEAN	STD DEV
1	(μ_1) 5.0396	(σ_1) 0.0714
2	(μ_2) 5.1534	(σ_2) 0.0436
PROPORTIONALITY FACTOR (α) = .2448		

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C2M01
NAME: MOOI RIVER AT WITRAND

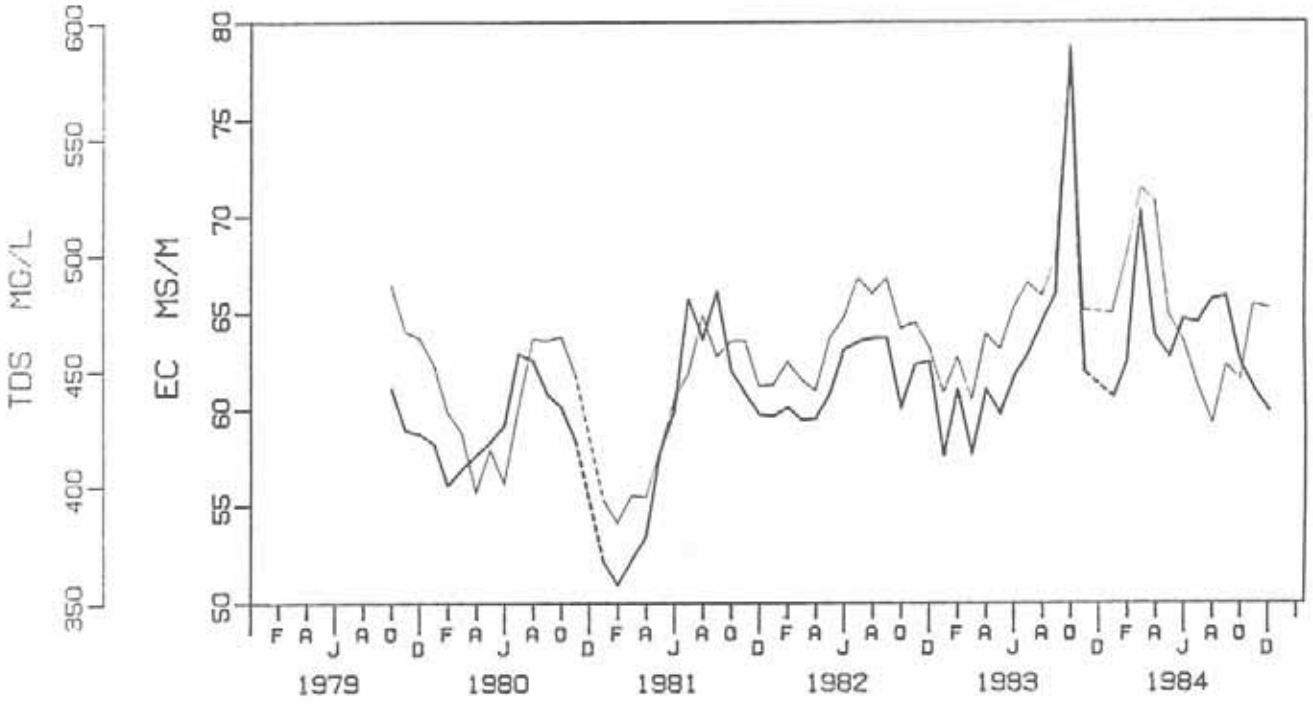
LATITUDE: 26°39'00" S LONGITUDE 27°05'15" E
TYPE: GAUGING WEIR

SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING:		79/10/01 TO 86/10/07			
	TOTAL	1979-1983	SUMMER	WINTER	RATIO
SAMPLES	333	189	96	93	1.03

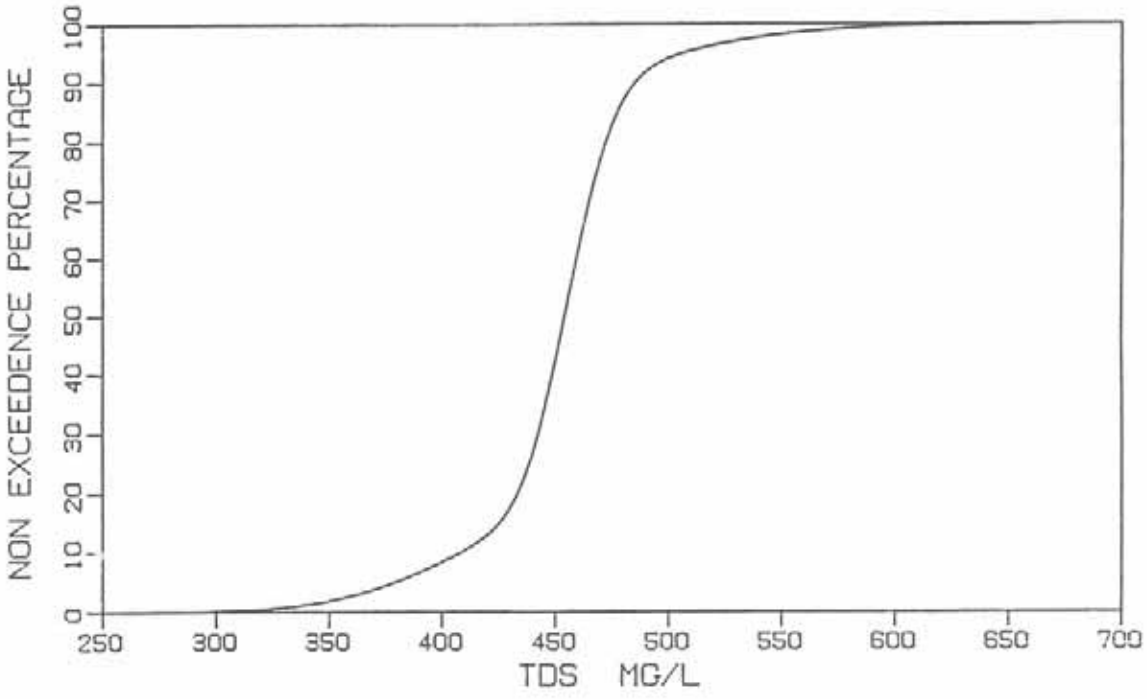
WATER QUALITY STATISTICS						
DETERMINAND	MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH (PH UNITS)	7.8	6.5	8.7	0.4	7.5	8.3
EC (MS/M)	60.1	37.9	122.2	5.9	58.6	64.7
TDS (MG/L)	453	279	891	46	441	488
CA (MG/L)	51	31	94	6	48	57
MG (MG/L)	38	23	59	3	36	40
NA (MG/L)	18	9	72	4	17	20
K (MG/L)	1.8	1.1	11.1	0.8	1.7	2.2
TAL (MG/L HCO_3)	238	157	304	22	228	266
CL (MG/L)	18	9	86	9	15	24
SO_4 (MG/L)	77	38	258	21	73	87
F (MG/L)	0.1	<0.1	0.5	0.1	0.1	0.2
SI (MG/L)	6.6	4.6	8.2	0.7	6.3	7.7
NO_3 (MG/L N)	0.55	<0.02	2.88	0.37	0.40	0.94
PO_4 (MG/L P)	0.011	<0.005	2.426	0.183	0.005	0.041

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS		
COMPONENT DISTRIBUTION	MEAN	STD DEV
1	(μ_1) 6.0799	(σ_1) 0.1421
2	(μ_2) 6.1226	(σ_2) 0.0346
PROPORTIONALITY FACTOR (α) = .3185		

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C2M03
NAME: VAAL RIVER AT ENGELBRECHTSDRIFT

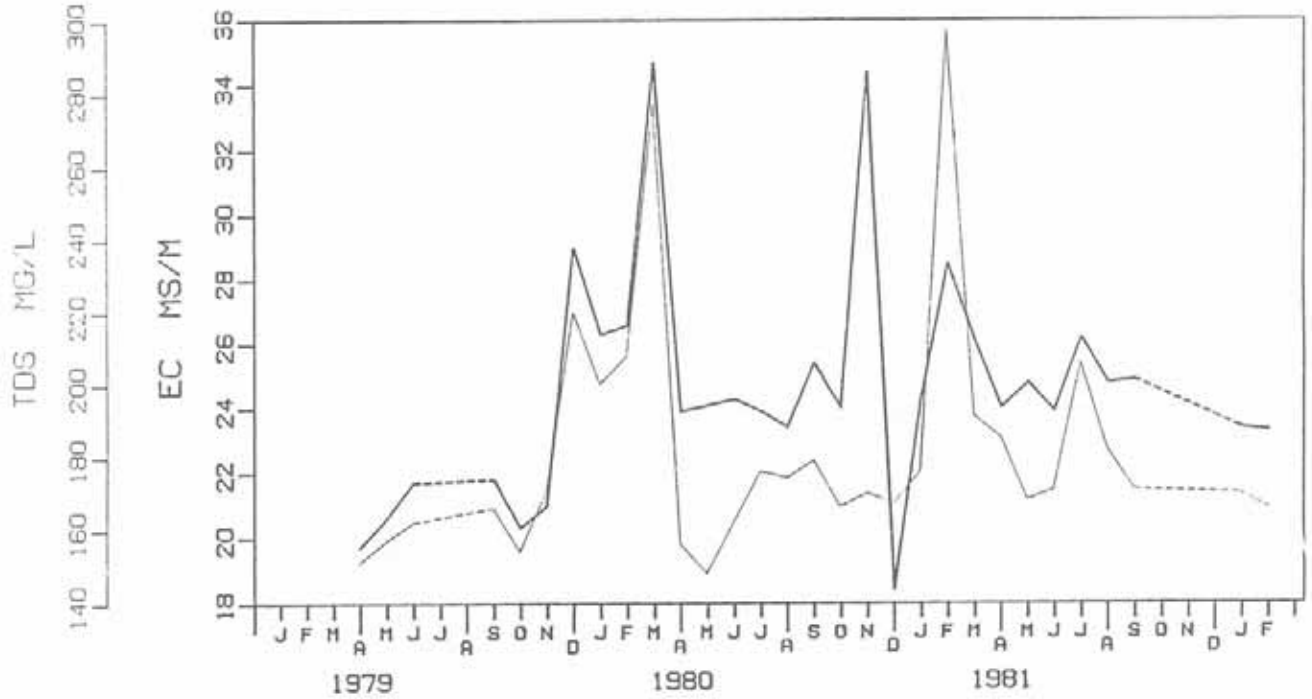
LATITUDE: 26°49'15" S LONGITUDE 28°03'45" E
TYPE: GAUGING WEIR

SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING:		79/04/30 TO 82/02/01			
	TOTAL	1979-1983	SUMMER	WINTER	RATIO
SAMPLES	105	105	52	53	0.98

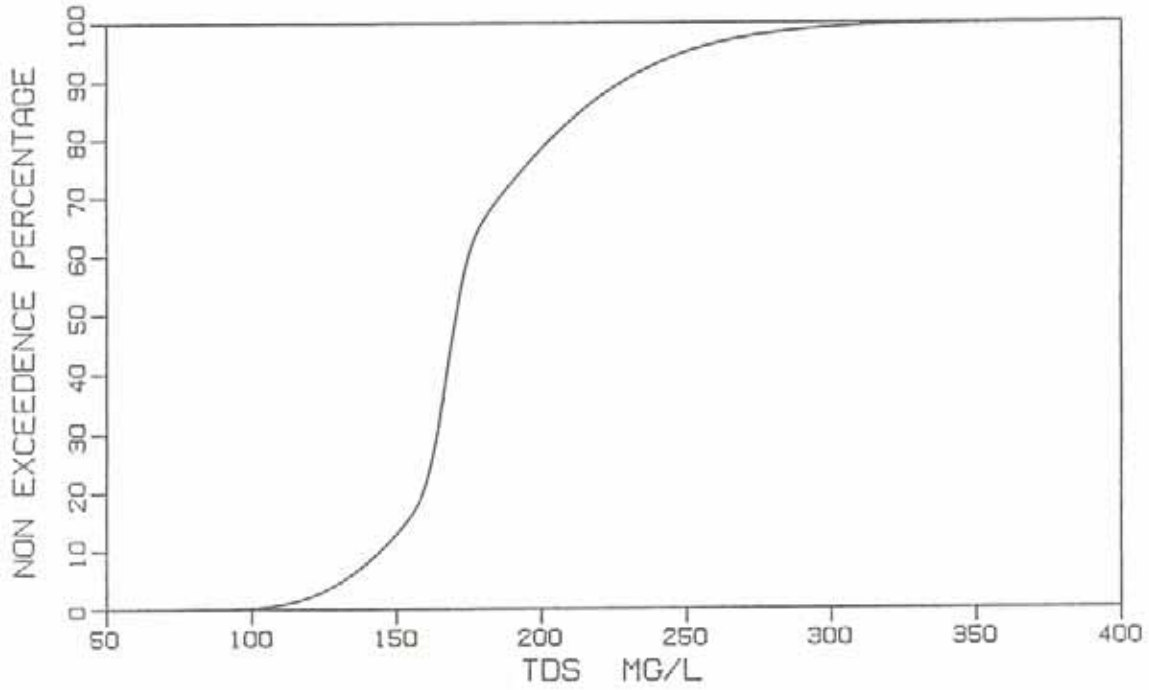
WATER QUALITY STATISTICS						
DETERMINAND	MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH (PH UNITS)	6.9	5.7	8.0	0.4	6.7	7.4
EC (MS/M)	23.9	9.8	73.0	7.4	23.0	27.7
TDS (MG/L)	169	125	634	56	161	206
CA (MG/L)	17	12	72	6	16	21
MG (MG/L)	9	7	43	4	9	12
NA (MG/L)	16	10	29	2	15	17
K (MG/L)	3.2	1.4	4.3	0.4	3.1	3.5
TAL (MG/L HCO_3)	99	77	398	35	92	122
CL (MG/L)	9	5	48	5	8	13
SO_4 (MG/L)	12	7	41	5	10	18
F (MG/L)	0.3	0.1	0.5	0.1	0.3	0.4
SI (MG/L)	4.4	3.0	16.1	2.0	4.2	6.4
NO_3 (MG/L N)	0.03	<0.02	7.62	0.92	<0.02	0.40
PO_4 (MG/L P)	0.009	<0.005	0.054	0.012	0.005	0.028

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS		
COMPONENT DISTRIBUTION	MEAN	STD DEV
1	(μ_1) 5.2004	(σ_1) 0.2232
2	(μ_2) 5.1221	(σ_2) 0.0316
PROPORTIONALITY FACTOR (α) = .6533		

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C2M07
NAME: VAAL RIVER AT PILGRIMS ESTATE

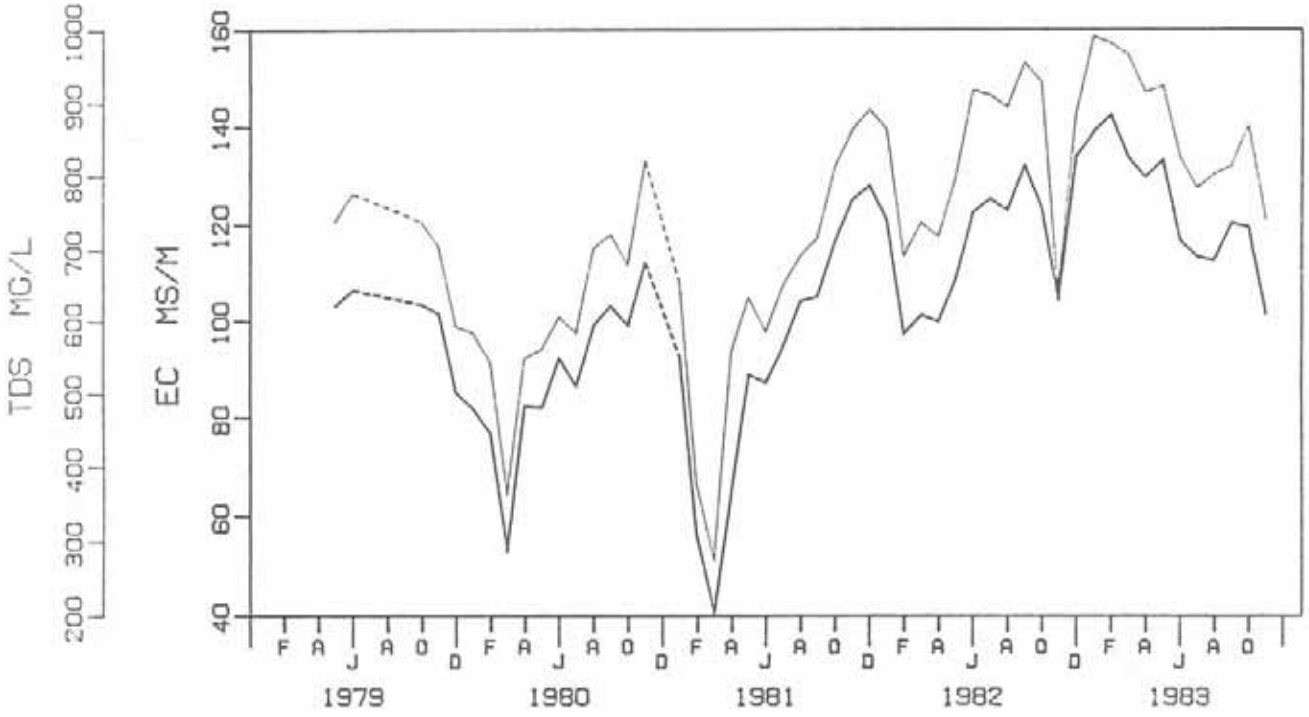
LATITUDE: 27°00'45" S LONGITUDE 26°42'00" E
TYPE: GAUGING WEIR

SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING:		79/05/29 TO 85/06/13			
	TOTAL	1979-1983	SUMMER	WINTER	RATIO
SAMPLES	332	196	105	91	1.15

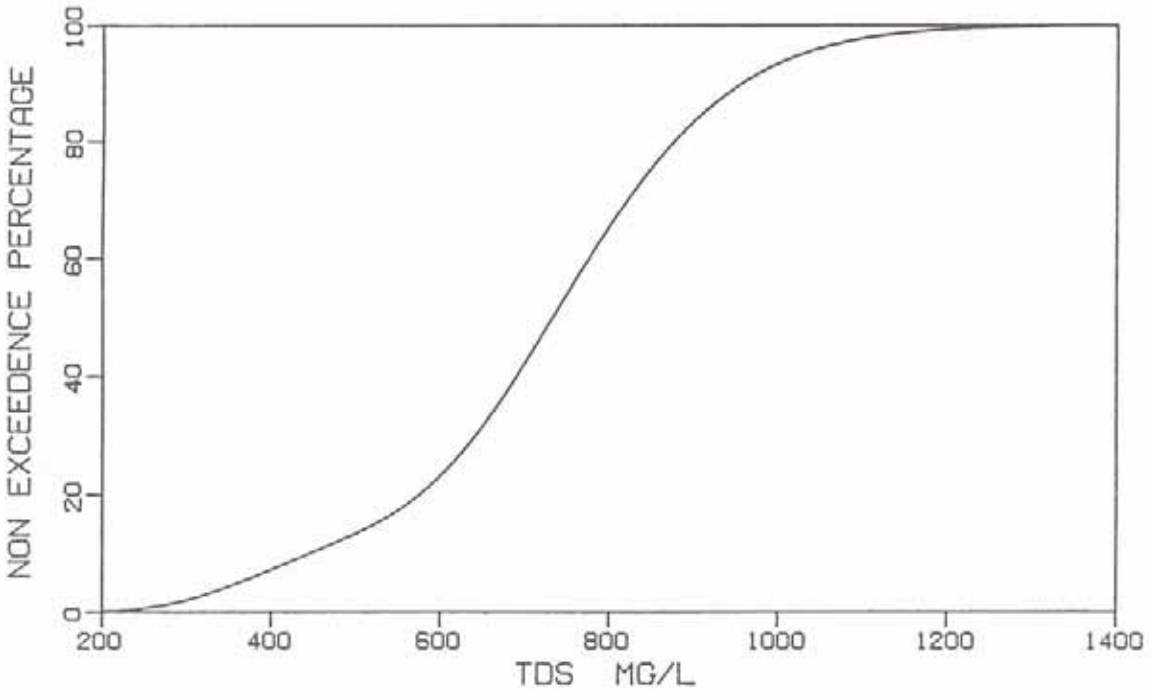
WATER QUALITY STATISTICS						
DETERMINAND	MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH (PH UNITS)	7.7	6.0	8.5	0.5	7.2	8.2
EC (MS/M)	104.9	33.6	151.0	24.7	89.5	132.7
TDS (MG/L)	730	230	1012	176	608	939
CA (MG/L)	85	30	132	22	75	117
MG (MG/L)	43	13	60	10	36	51
NA (MG/L)	67	19	117	22	51	98
K (MG/L)	9.2	0.3	18.4	3.0	7.7	13.3
TAL (MG/L HCO_3)	148	56	207	28	131	186
CL (MG/L)	60	16	150	24	42	91
SO_4 (MG/L)	304	39	485	95	242	420
F (MG/L)	0.6	0.2	1.2	0.2	0.5	0.9
SI (MG/L)	2.4	<0.4	6.1	1.4	1.4	4.7
NO_3 (MG/L N)	0.94	<0.02	10.64	1.15	0.46	1.56
PO_4 (MG/L P)	0.053	<0.005	0.306	0.055	0.030	0.142

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS		
COMPONENT DISTRIBUTION	MEAN	STD DEV
1	(μ_1) 6.0830	(σ_1) 0.3068
2	(μ_2) 6.6476	(σ_2) 0.1847
PROPORTIONALITY FACTOR (α) = .1900		

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C2M11

NAME: GERHARDMINNEBRON EYE AT GERHARDMINNEBRO

LATITUDE: 26°28'45" S LONGITUDE 27°09'00" E

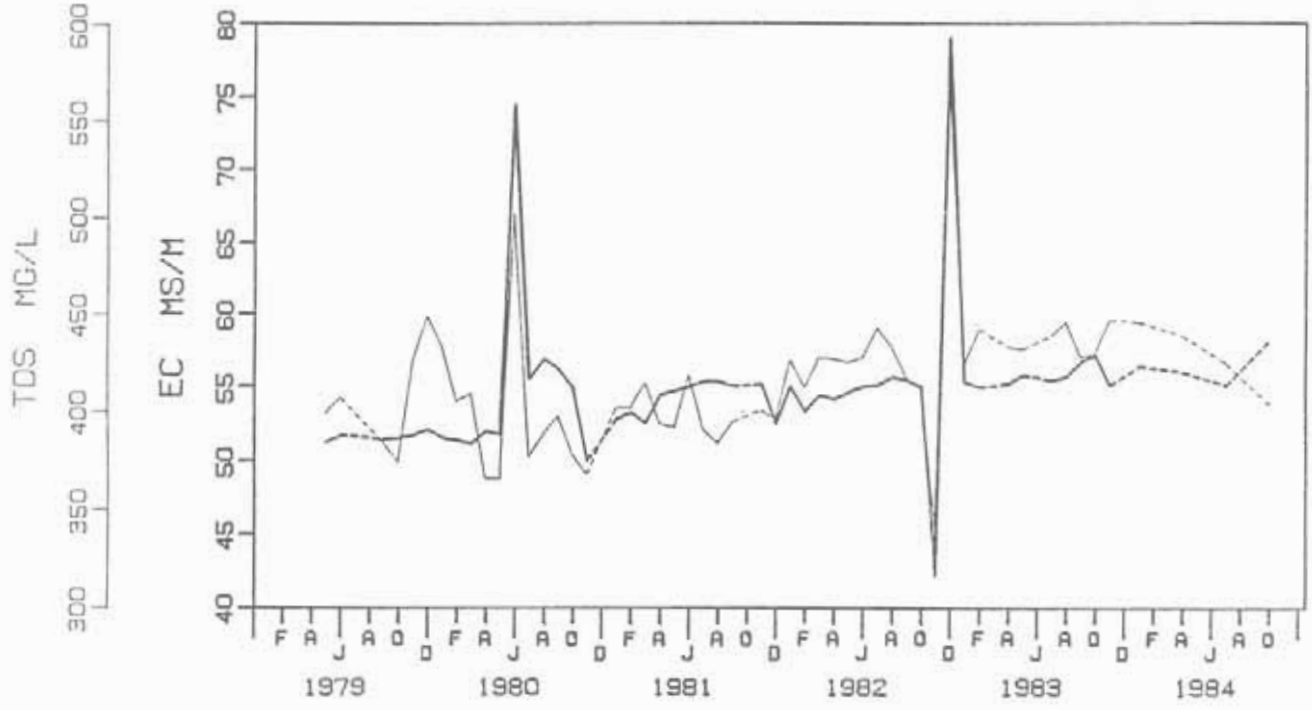
TYPE: GAUGING WEIR

SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING:		69/06/06 TO 86/09/24			
	TOTAL	1979-1983	SUMMER	WINTER	RATIO
SAMPLES	139	109	60	49	1.22

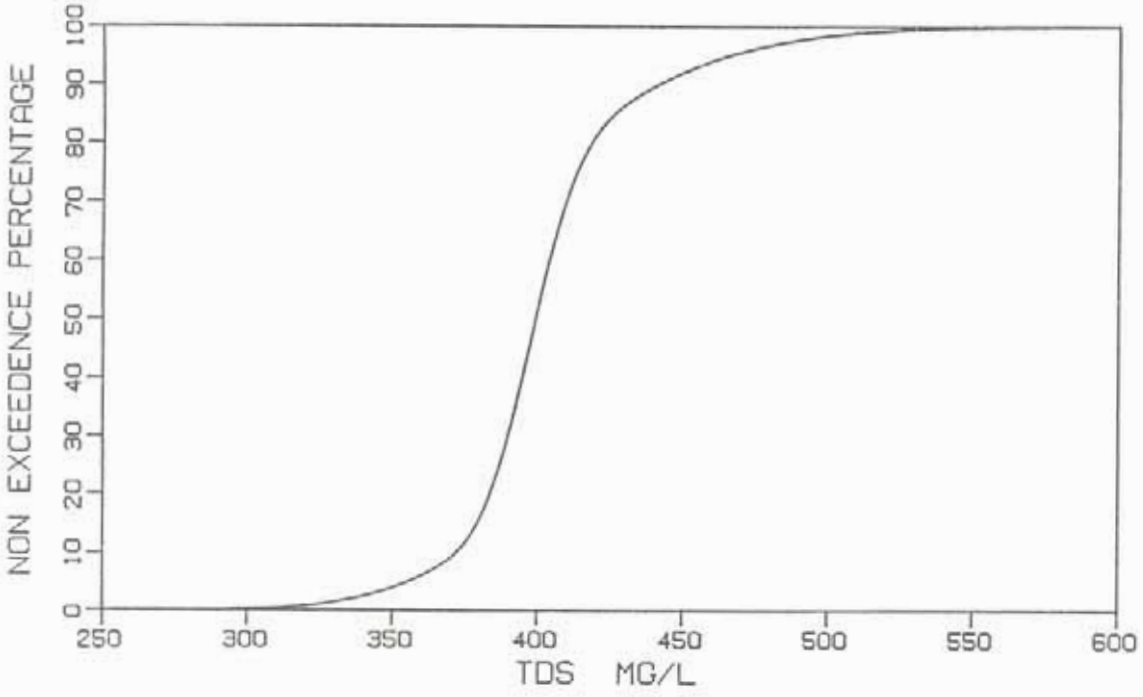
WATER QUALITY STATISTICS						
DETERMINAND	MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH (PH UNITS)	7.8	4.9	8.4	0.5	7.5	8.2
EC (MS/M)	53.8	36.1	79.0	4.2	51.7	55.9
TDS (MG/L)	404	288	571	36	389	439
CA (MG/L)	53	34	70	5	51	56
MG (MG/L)	33	17	43	3	32	35
NA (MG/L)	9	4	27	3	8	11
K (MG/L)	1.1	0.4	4.8	0.4	0.9	1.4
TAL (MG/L HCO_3)	230	172	297	17	218	244
CL (MG/L)	10	<3	24	4	8	15
SO_4 (MG/L)	52	<2	151	17	49	68
F (MG/L)	0.1	<0.1	0.4	0.1	0.1	0.3
SI (MG/L)	8.1	5.4	9.6	0.5	7.9	8.4
NO_3 (MG/L N)	2.26	0.07	12.40	1.51	2.10	2.51
PO_4 (MG/L P)	0.011	<0.005	0.263	0.031	0.005	0.053

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS				
COMPONENT DISTRIBUTION	MEAN		STD DEV	
1	(μ_1)	6.0097	(σ_1)	0.1158
2	(μ_2)	5.9861	(σ_2)	0.0316
PROPORTIONALITY FACTOR (α) = .4119				

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C2M13
NAME: TURFFONTEIN EYES AT TURFFONTEIN

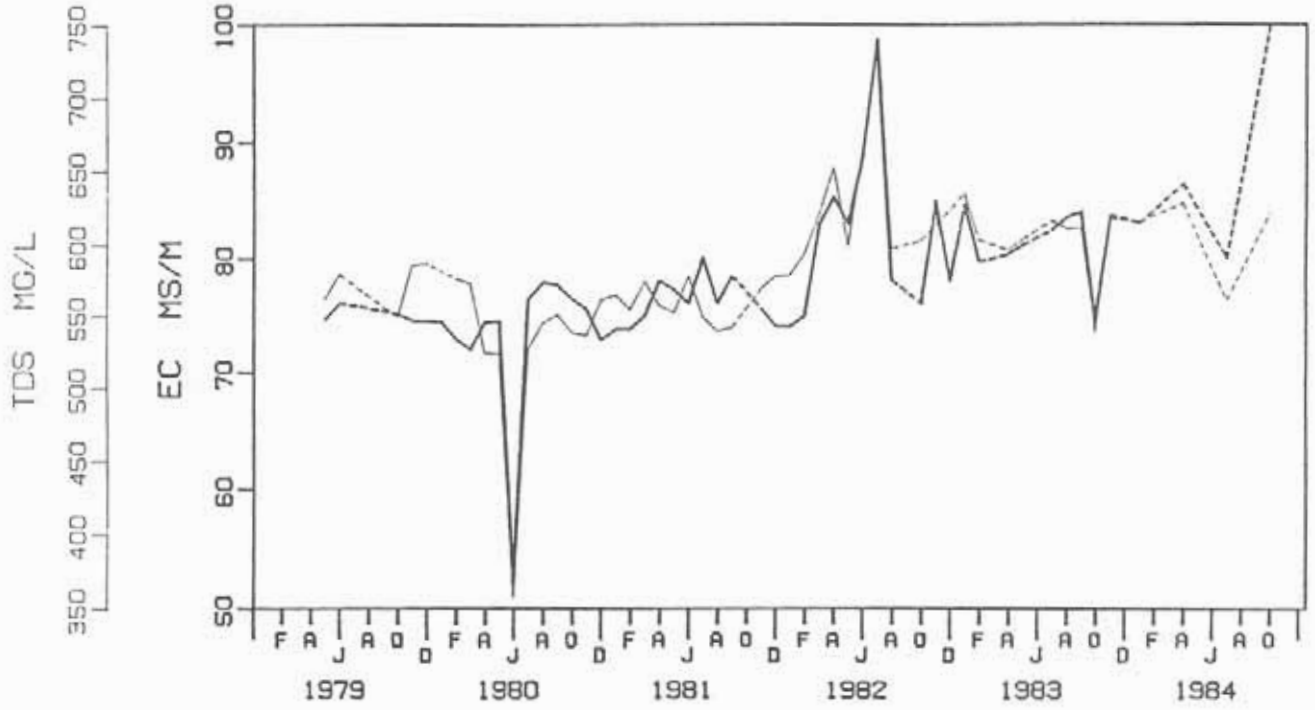
LATITUDE: 26°24'15" S LONGITUDE 27°10'30" E
TYPE: GAUGING WEIR

SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING:		69/06/06 TO 85/07/19			
	TOTAL	1979-1983	SUMMER	WINTER	RATIO
SAMPLES	134	110	60	50	1.20

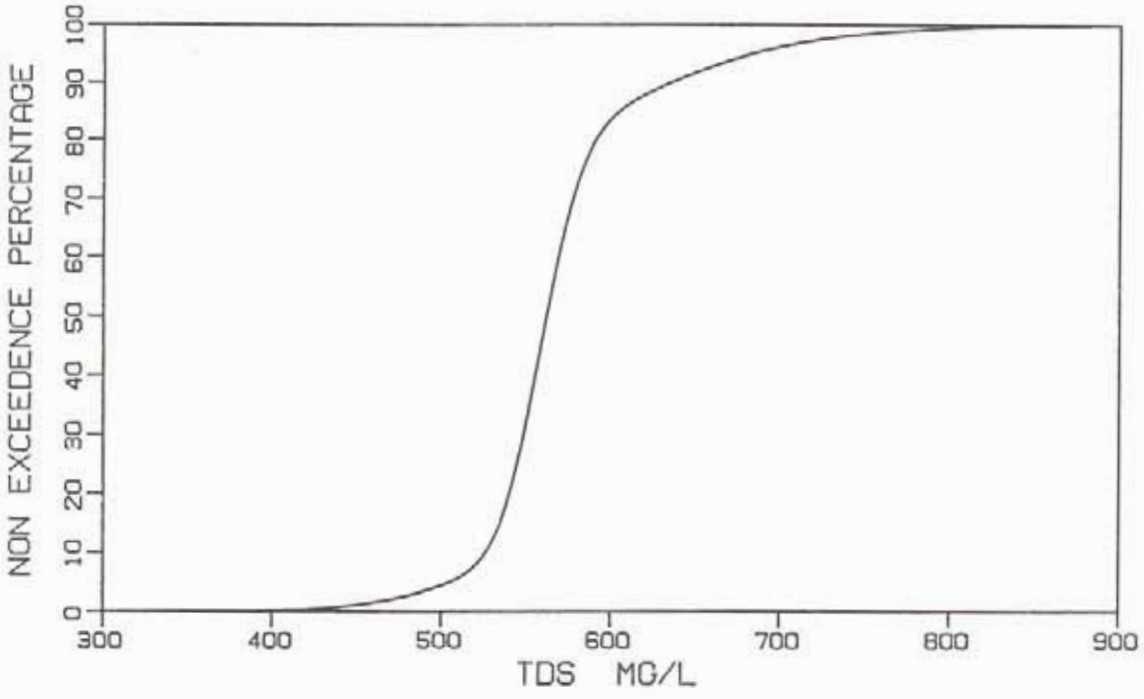
WATER QUALITY STATISTICS						
DETERMINAND	MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH (PH UNITS)	7.7	6.7	8.5	0.3	7.5	8.1
EC (MS/M)	75.4	52.0	99.5	6.1	74.0	83.6
TDS (MG/L)	569	358	813	60	542	626
CA (MG/L)	71	49	98	8	69	78
MG (MG/L)	42	31	47	2	41	44
NA (MG/L)	28	8	56	7	27	34
K (MG/L)	1.5	1.0	5.2	0.9	1.4	2.8
TAL (MG/L HCO_3)	231	172	263	18	215	250
CL (MG/L)	24	8	50	9	22	40
SO_4 (MG/L)	147	50	279	34	143	178
F (MG/L)	0.1	<0.1	0.6	0.1	0.1	0.3
SI (MG/L)	8.4	7.0	200.0	20.2	8.2	8.9
NO_3 (MG/L N)	2.29	0.49	11.08	1.60	2.16	2.69
PO_4 (MG/L P)	0.010	<0.005	0.979	0.106	0.006	0.052

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS		
COMPONENT DISTRIBUTION	MEAN	STD DEV
1	(μ_1) 6.3777	(σ_1) 0.1442
2	(μ_2) 6.3265	(σ_2) 0.0346
PROPORTIONALITY FACTOR (α) = .3340		

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C2M18
NAME: VAAL RIVER AT SCHOEMANSDRIF

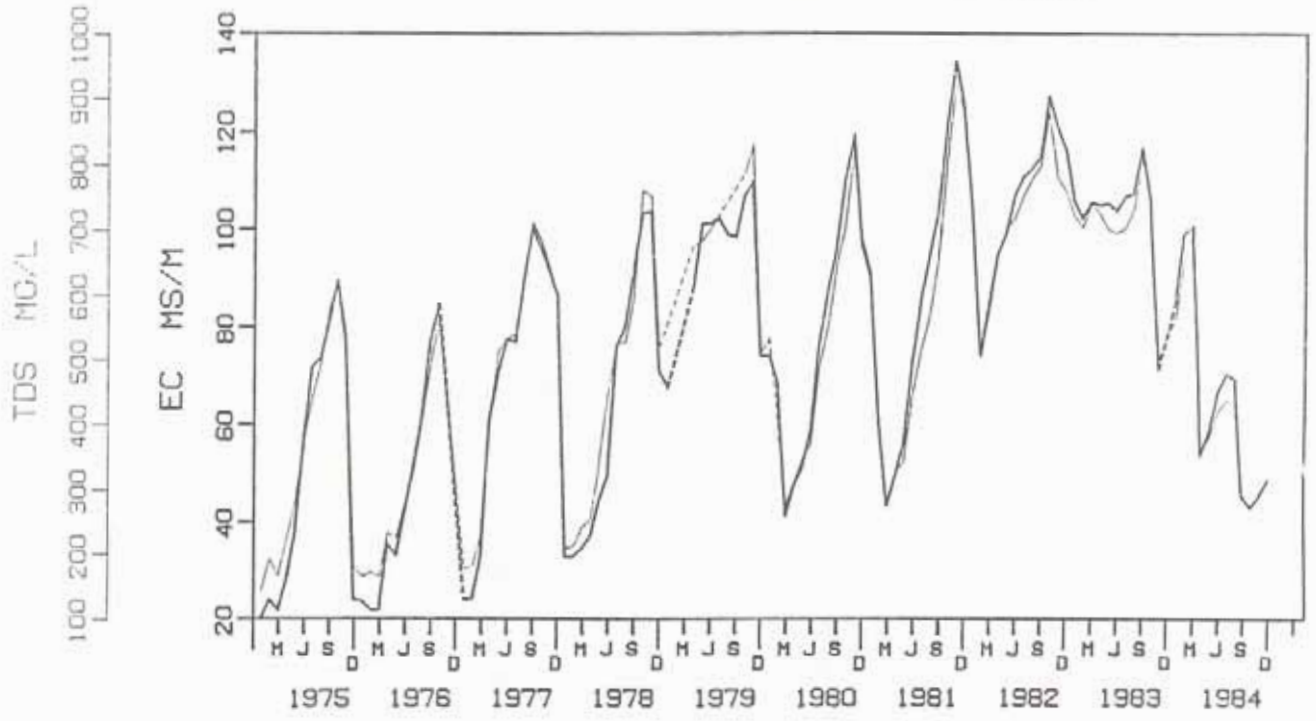
LATITUDE: 26°58'15" S LONGITUDE 27°12'45" E
TYPE: WEIR

SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING:		72/08/01 TO 84/12/04			
	TOTAL	1979-1983	SUMMER	WINTER	RATIO
SAMPLES	622	222	111	111	1.00

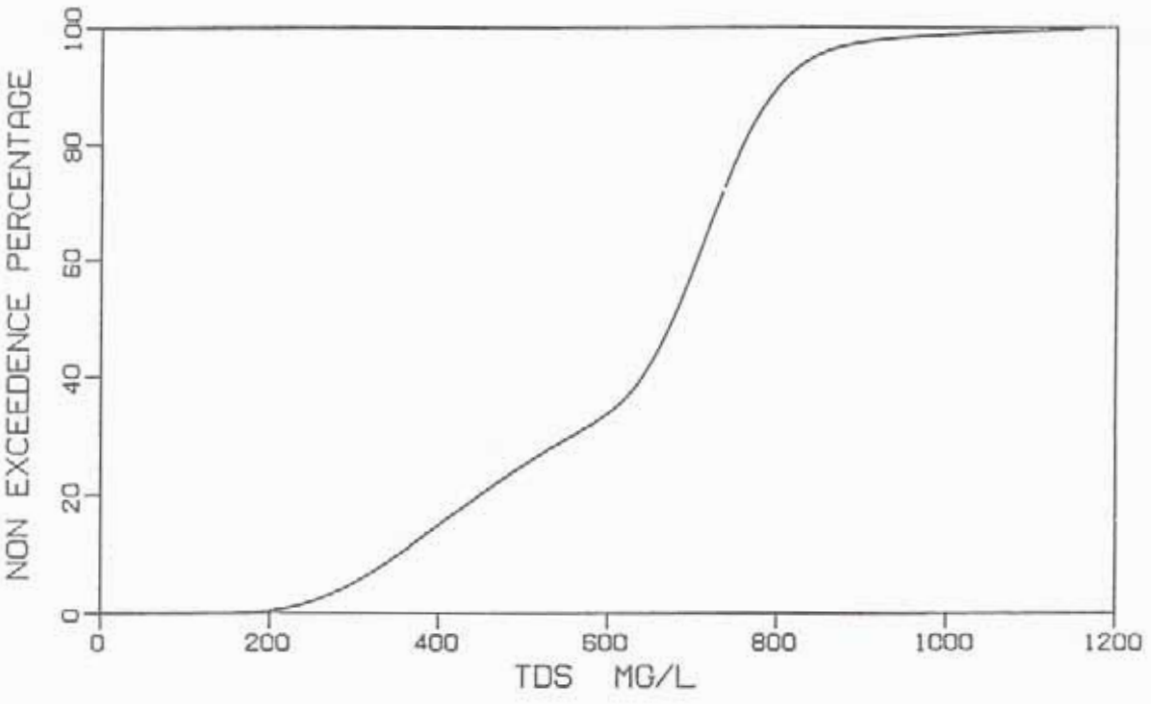
WATER QUALITY STATISTICS						
DETERMINAND	MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH (PH UNITS)	7.6	6.3	8.7	0.5	7.3	8.1
EC (MS/M)	100.0	27.7	136.8	23.9	75.6	117.5
TDS (MG/L)	682	188	931	163	536	817
CA (MG/L)	79	24	123	20	60	97
MG (MG/L)	29	10	42	7	23	35
NA (MG/L)	80	17	118	23	63	102
K (MG/L)	11.8	1.5	20.2	3.8	9.5	16.4
TAL (MG/L HCO_3)	130	50	198	34	107	170
CL (MG/L)	70	13	115	22	52	93
SO_4 (MG/L)	253	36	412	82	203	346
F (MG/L)	0.9	0.2	1.4	0.3	0.7	1.2
SI (MG/L)	0.8	<0.4	6.1	1.5	0.4	4.0
NO_3 (MG/L N)	0.04	<0.02	1.53	0.25	0.02	0.32
PO_4 (MG/L P)	0.084	<0.005	0.841	0.110	0.048	0.246

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS		
COMPONENT DISTRIBUTION	MEAN	STD DEV
1	(μ_1) 6.1546	(σ_1) 0.3811
2	(μ_2) 6.5799	(σ_2) 0.0866
PROPORTIONALITY FACTOR (α) = .4455		

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C2M21
NAME: KLIP RIVER AT WITKOP

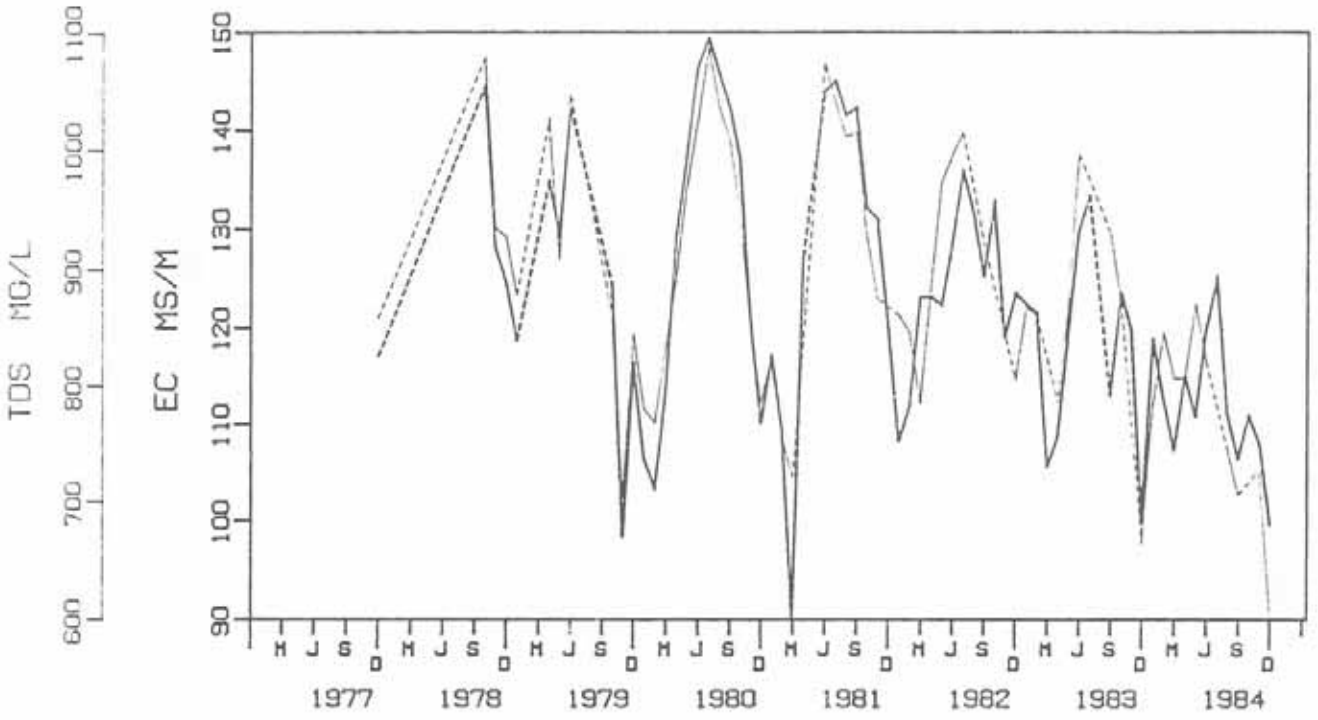
LATITUDE: 26°27'15" S LONGITUDE 28°05'15" E
TYPE: RIVER SECTION

SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING:		77/12/21 TO 86/10/27			
	TOTAL	1979-1983	SUMMER	WINTER	RATIO
SAMPLES	322	185	88	97	0.91

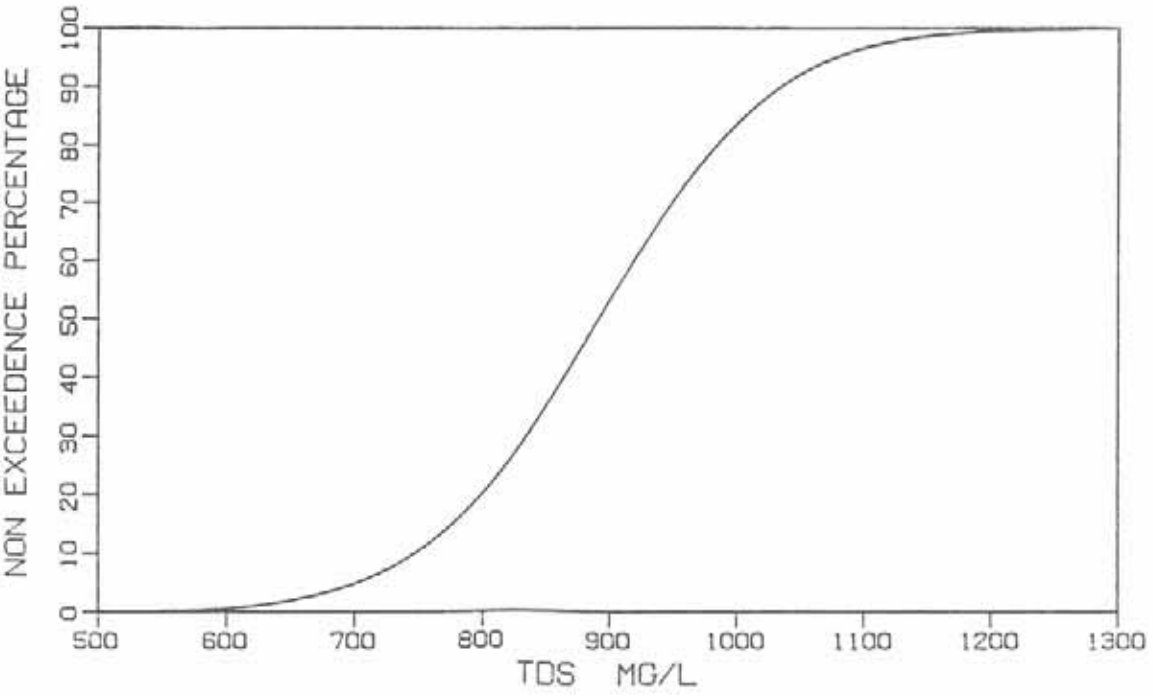
WATER QUALITY STATISTICS						
DETERMINAND	MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH (PH UNITS)	7.2	6.2	8.3	0.3	7.0	7.7
EC (MS/M)	125.5	76.0	157.2	15.6	116.0	144.6
TDS (MG/L)	899	566	1129	121	821	1055
CA (MG/L)	113	79	159	18	100	136
MG (MG/L)	42	28	55	6	38	50
NA (MG/L)	95	41	142	17	83	108
K (MG/L)	15.8	9.6	24.8	2.8	13.6	19.5
TAL (MG/L HCO_3)	130	45	199	25	112	155
CL (MG/L)	90	41	143	15	79	102
SO_4 (MG/L)	387	252	589	75	342	508
F (MG/L)	0.5	0.3	1.0	0.1	0.4	0.6
SI (MG/L)	6.1	2.2	8.0	1.5	5.3	7.4
NO_3 (MG/L N)	1.91	0.24	7.48	1.77	1.28	5.23
PO_4 (MG/L P)	1.616	0.011	6.648	0.795	1.164	2.127

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS		
COMPONENT DISTRIBUTION	MEAN	STD DEV
1	(μ_1) 6.6625	(σ_1) 0.1367
2	(μ_2) 6.8155	(σ_2) 0.1072
PROPORTIONALITY FACTOR (α) = .2048		

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C2M22
NAME: VAAL RIVER AT BALKFONTEIN

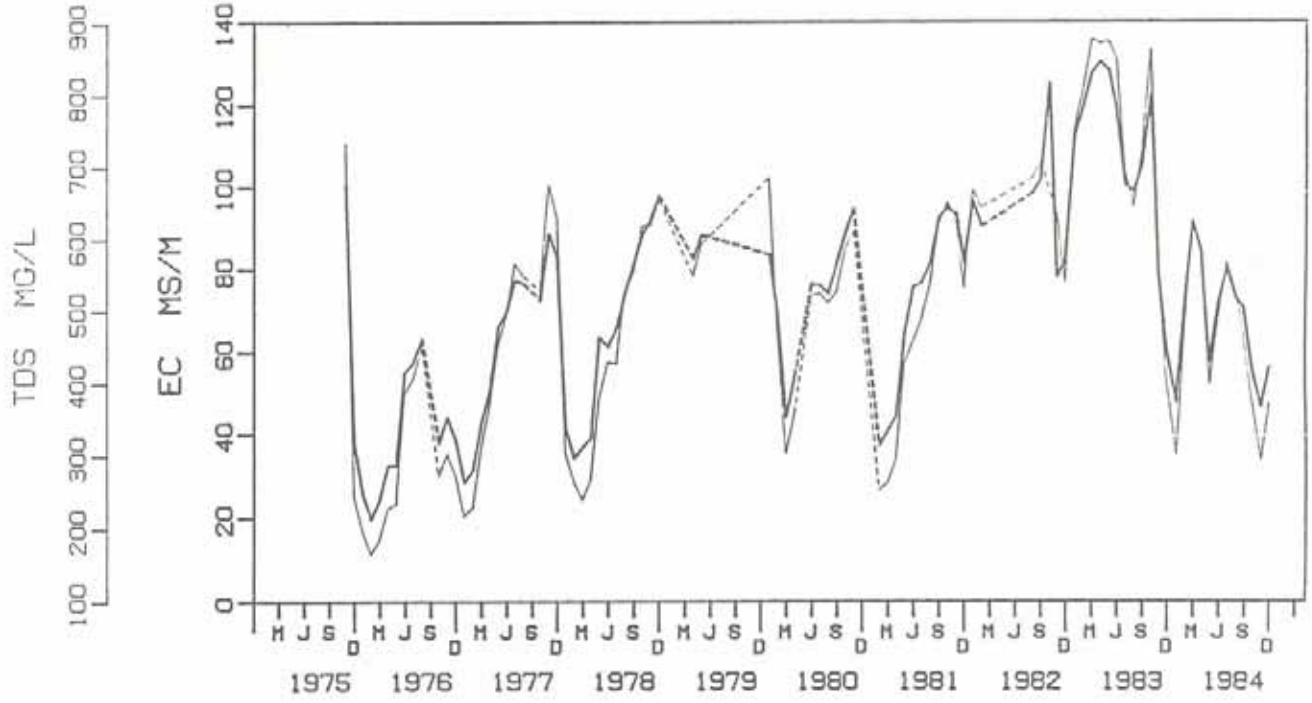
LATITUDE: 27°23'45" S LONGITUDE 26°30'30" E
TYPE: GAUGE PLATES IN POOL

SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING: 74/01/21 TO 85/02/19					
	TOTAL	1979-1983	SUMMER	WINTER	RATIO
SAMPLES	2355	1059	544	515	1.06

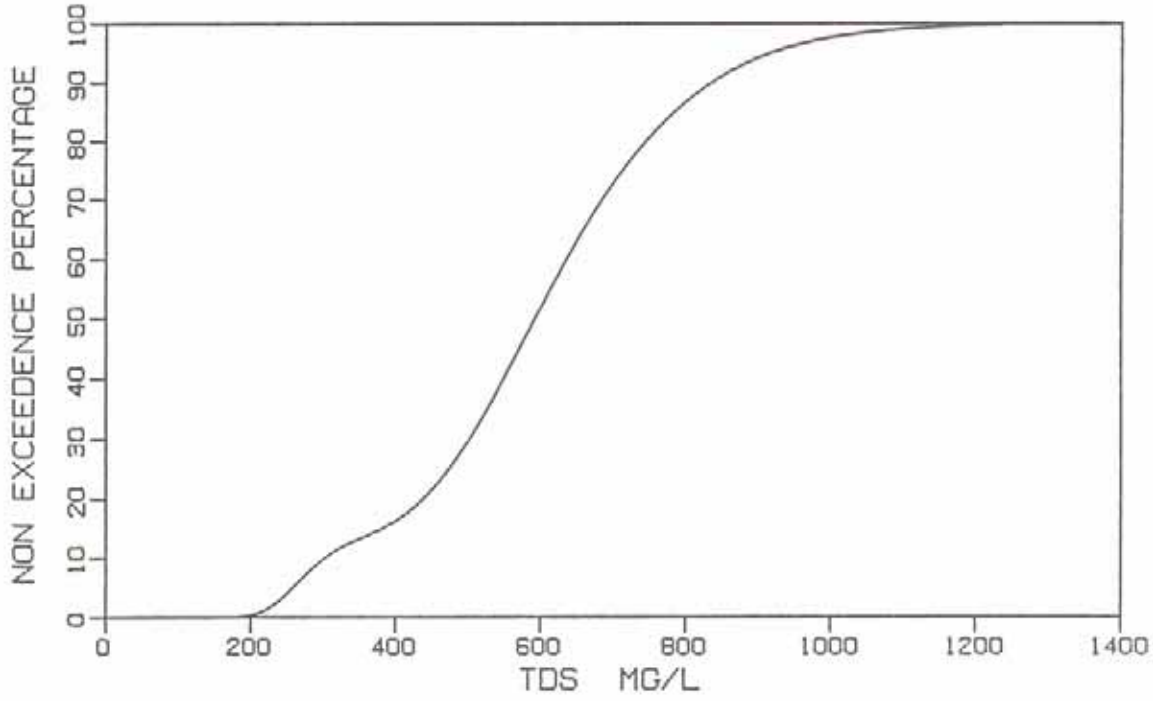
WATER QUALITY STATISTICS						
DETERMINAND	MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH (PH UNITS)	7.8	0.5	8.5	0.5	7.6	8.2
EC (MS/M)	88.5	21.1	140.0	26.5	74.0	123.7
TDS (MG/L)	596	129	981	188	485	862
CA (MG/L)	62	16	119	20	49	90
MG (MG/L)	42	7	59	13	31	53
NA (MG/L)	56	11	117	26	39	100
K (MG/L)	7.9	2.8	18.8	3.1	5.0	12.0
TAL (MG/L HCO_3)	124	6	257	29	108	172
CL (MG/L)	53	11	183	23	34	88
SO_4 (MG/L)	239	9	487	107	167	375
F (MG/L)	0.5	0.2	1.2	0.2	0.4	0.8
SI (MG/L)	1.2	<0.4	8.2	1.9	0.6	5.2
NO_3 (MG/L N)	0.03	<0.02	53.43	1.77	0.02	0.44
PO_4 (MG/L P)	0.042	<0.005	1.020	0.081	0.022	0.159

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS		
COMPONENT DISTRIBUTION	MEAN	STD DEV
1	(μ_1) 5.6014	(σ_1) 0.1567
2	(μ_2) 6.4301	(σ_2) 0.2470
PROPORTIONALITY FACTOR (α) = .1313		

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C2M23
NAME: WONDERFONTEIN SPRUIT AT LUIPAARDSVLEI

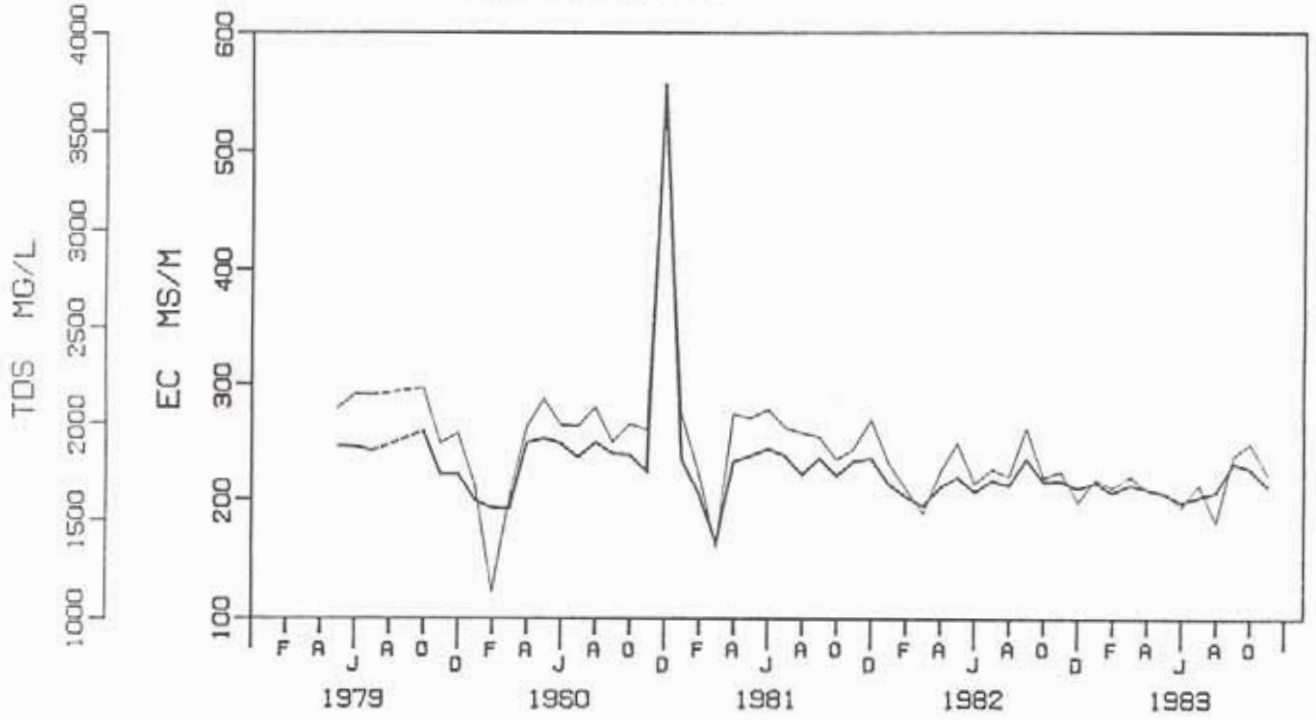
LATITUDE: 26°13'30" S LONGITUDE 27°44'30" E
TYPE: GAUGING WEIR

SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING:		79/05/09 TO 86/10/20			
	TOTAL	1979-1983	SUMMER	WINTER	RATIO
SAMPLES	321	194	97	97	1.00

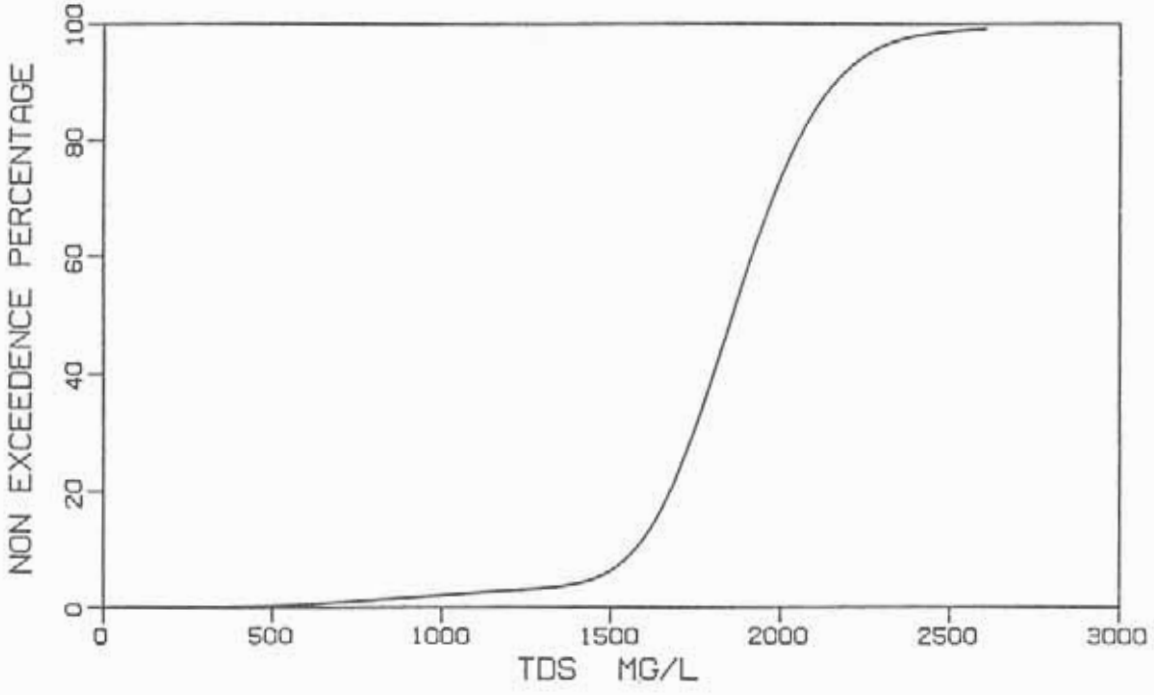
WATER QUALITY STATISTICS						
DETERMINAND	MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH (PH UNITS)	7.4	3.1	12.8	1.3	6.1	8.0
EC (MS/M)	224.0	66.9	887.8	54.0	208.0	249.6
TDS (MG/L)	1871	448	5243	368	1681	2121
CA (MG/L)	370	24	1277	99	328	440
MG (MG/L)	50	2	74	11	44	61
NA (MG/L)	102	17	142	19	93	122
K (MG/L)	13.2	2.6	44.9	4.7	10.3	17.8
TAL (MG/L HCO_3)	60	<4	2299	207	19	202
CL (MG/L)	68	<3	154	20	54	91
SO_4 (MG/L)	1168	301	1617	218	959	1391
F (MG/L)	0.5	0.2	1.1	0.2	0.4	0.7
SI (MG/L)	3.1	<0.4	13.5	1.5	2.5	4.6
NO_3 (MG/L N)	5.86	0.02	77.16	8.98	1.05	18.24
PO_4 (MG/L P)	0.011	<0.005	0.131	0.020	0.007	0.033

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS		
COMPONENT DISTRIBUTION	MEAN	STD DEV
1	(μ_1) 7.1869	(σ_1) 0.5737
2	(μ_2) 7.5316	(σ_2) 0.1118
PROPORTIONALITY FACTOR (α) = .0681		

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C2M26
NAME: MIDDELVLEI SPRUIT AT MIDDELVLEI

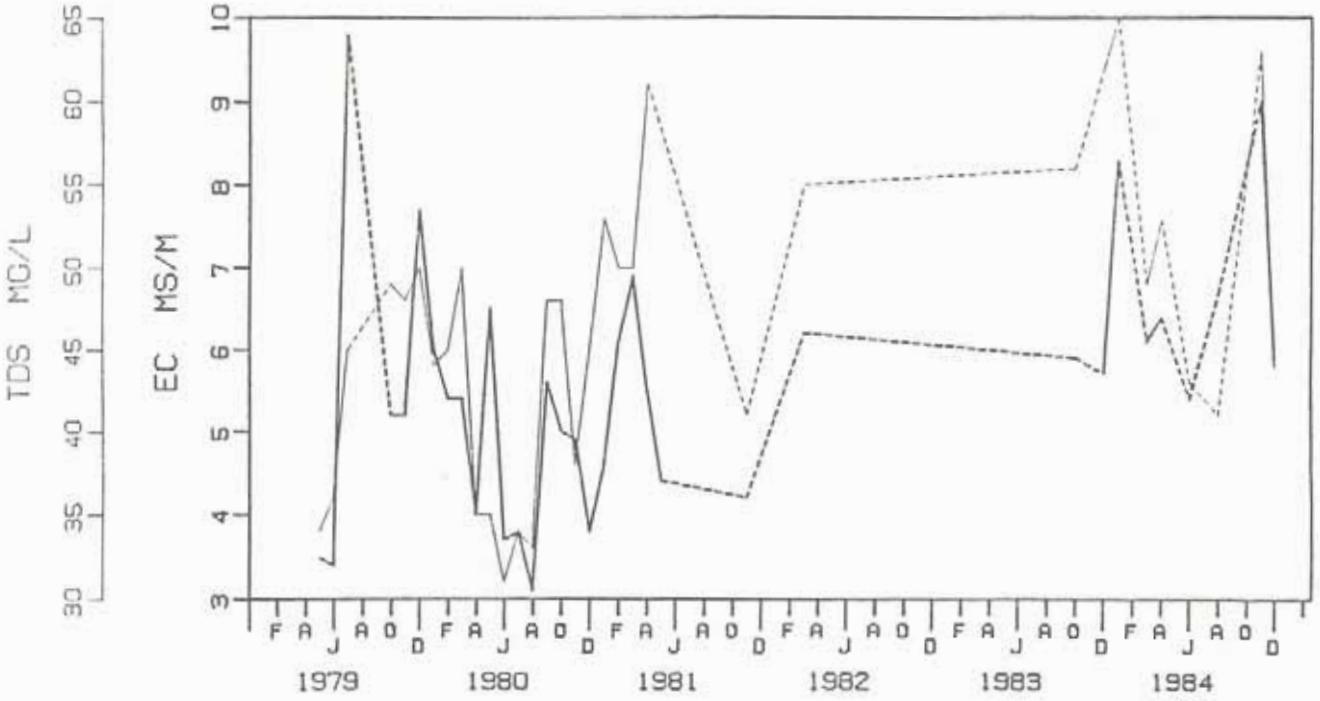
LATITUDE: 26°14'00" S LONGITUDE 27°40'00" E
TYPE: GAUGING WEIR

SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING:		79/05/02 TO 86/08/11			
	TOTAL	1979-1983	SUMMER	WINTER	RATIO
SAMPLES	107	79	44	35	1.26

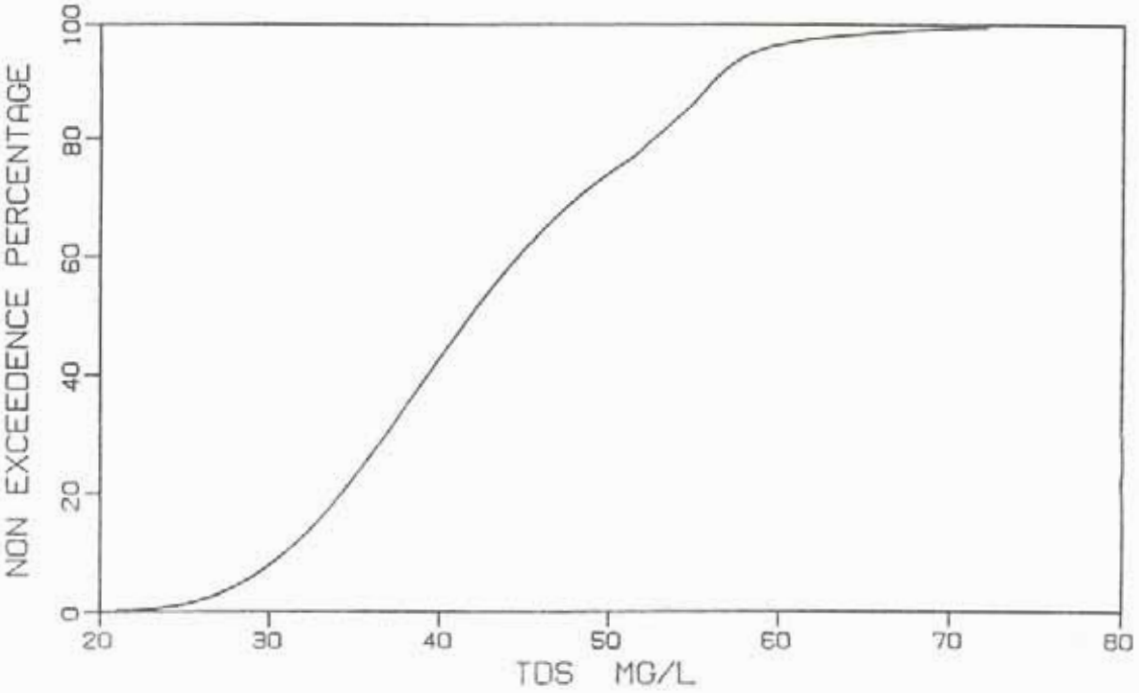
WATER QUALITY STATISTICS						
DETERMINAND	MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH (PH UNITS)	6.0	4.0	7.9	0.6	5.8	6.7
EC (MS/M)	4.2	2.7	14.8	2.2	3.7	6.9
TDS (MG/L)	43	25	62	10	35	56
CA (MG/L)	3	1	12	2	2	6
MG (MG/L)	2	<1	3	1	1	2
NA (MG/L)	3	<2	5	1	2	4
K (MG/L)	0.5	<0.3	4.8	0.7	0.4	1.2
TAL (MG/L HCO_3)	21	7	37	6	16	29
CL (MG/L)	<3	<3	7	2	<3	4
SO_4 (MG/L)	6	<2	20	5	4	15
F (MG/L)	0.1	<0.1	0.7	0.1	0.1	0.2
SI (MG/L)	4.1	2.4	6.0	0.9	3.4	5.1
NO_3 (MG/L N)	0.05	<0.02	0.81	0.14	0.02	0.23
PO_4 (MG/L P)	0.008	<0.005	0.110	0.019	<0.005	0.031

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS				
COMPONENT DISTRIBUTION	MEAN		STD DEV	
1	(μ_1)	3.7023	(σ_1)	0.2223
2	(μ_2)	4.0129	(σ_2)	0.0316
PROPORTIONALITY FACTOR (α) = .8969				

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C2M28
NAME: RIETFONTEIN SPRUIT AT RIETFONTEIN

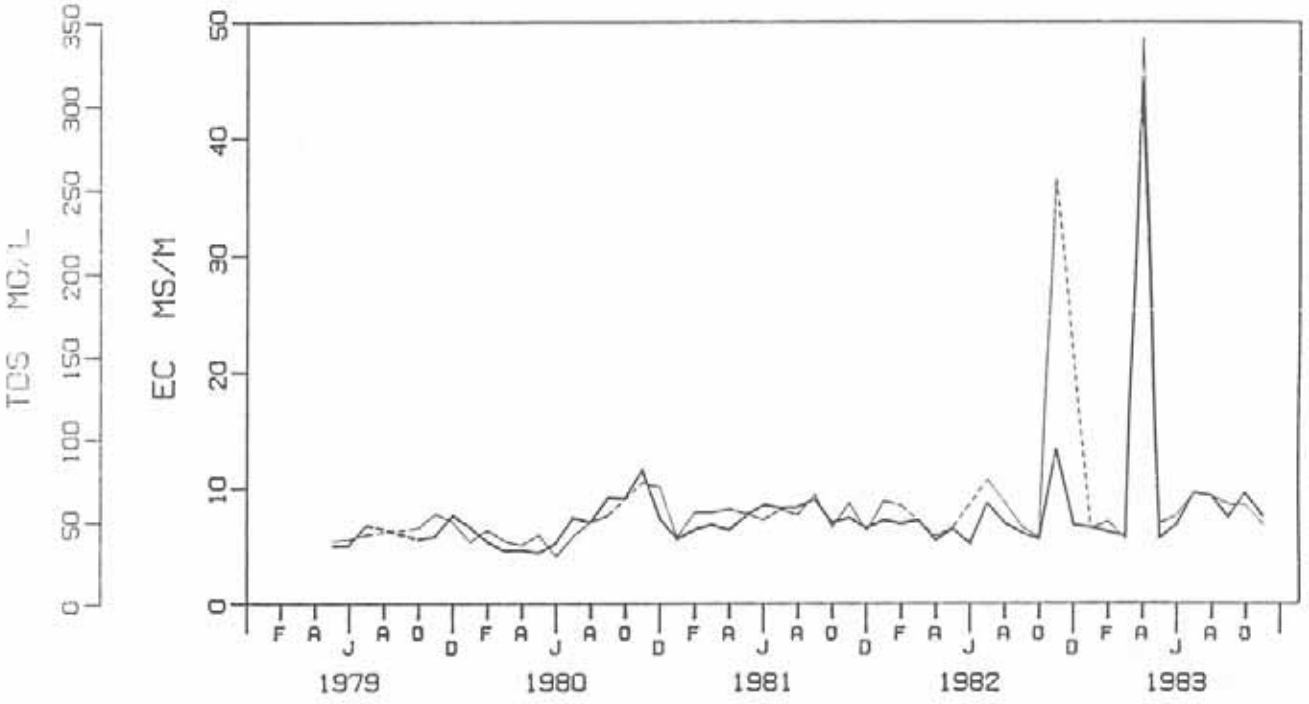
LATITUDE: 26°14'45" S LONGITUDE 27°35'30" E
TYPE: GAUGING WEIR

SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING:		79/05/03 TO 86/10/20			
	TOTAL	1979-1983	SUMMER	WINTER	RATIO
SAMPLES	245	200	90	110	0.82

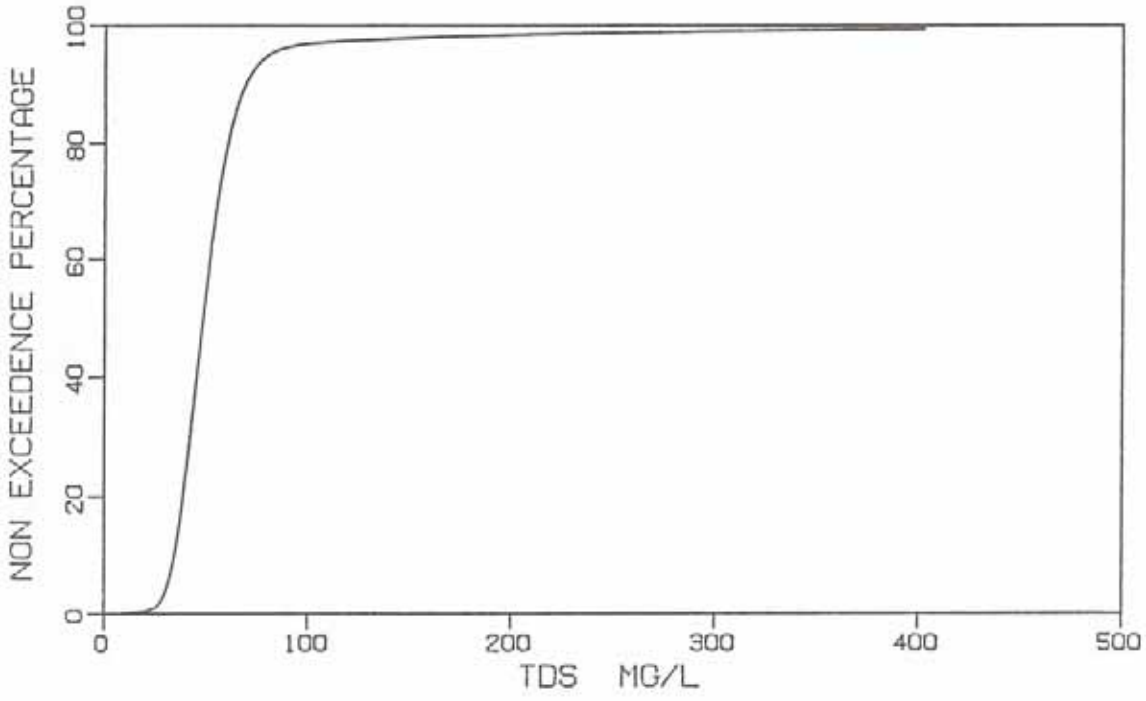
WATER QUALITY STATISTICS						
DETERMINAND	MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH (PH UNITS)	6.5	4.7	8.5	0.6	5.9	7.0
EC (MS/M)	6.7	3.7	196.8	13.8	5.5	9.7
TDS (MG/L)	50	23	1507	123	42	68
CA (MG/L)	4	<1	264	19	3	5
MG (MG/L)	3	<1	43	3	2	3
NA (MG/L)	4	<2	116	9	3	6
K (MG/L)	0.7	<0.3	18.8	1.5	0.4	1.5
TAL (MG/L HCO_3)	22	<4	235	20	18	32
CL (MG/L)	4	<3	92	8	<3	8
SO_4 (MG/L)	8	<2	782	61	4	18
F (MG/L)	0.1	<0.1	0.6	0.1	<0.1	0.3
SI (MG/L)	3.7	<0.4	6.9	0.8	3.3	4.4
NO_3 (MG/L N)	0.06	<0.02	5.47	0.44	0.02	0.26
PO_4 (MG/L P)	0.013	<0.005	19.652	1.452	0.007	0.033

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS				
COMPONENT DISTRIBUTION	MEAN		STD DEV	
1	(μ_1)	4.6064	(σ_1)	1.1077
2	(μ_2)	3.8742	(σ_2)	0.2425
PROPORTIONALITY FACTOR (α) = .0578				

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C2M32

NAME: MOOIRIVIERLOOP (RIVER) AT WONDERFONTEIN

LATITUDE: 26°19'00" S LONGITUDE 27°23'30" E

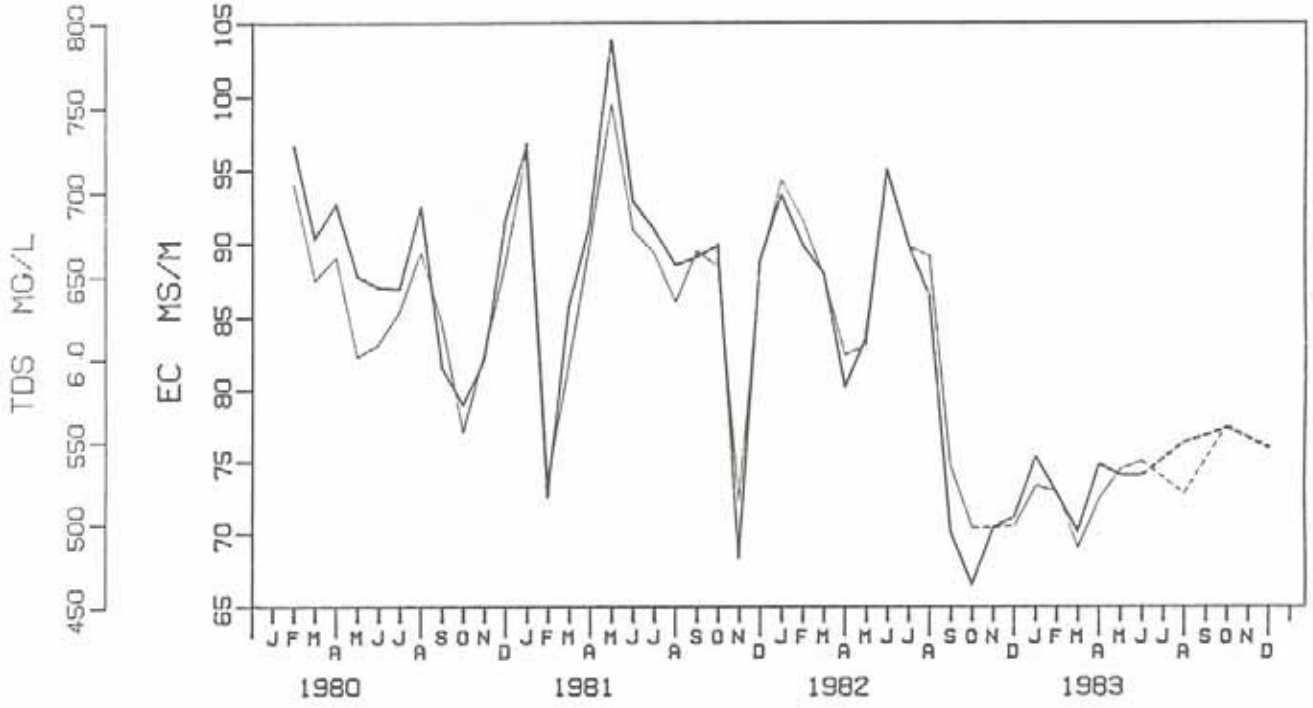
TYPE: GAUGING WEIR

SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING:		80/02/04 TO 86/09/24			
	TOTAL	1979-1983	SUMMER	WINTER	RATIO
SAMPLES	157	137	70	67	1.04

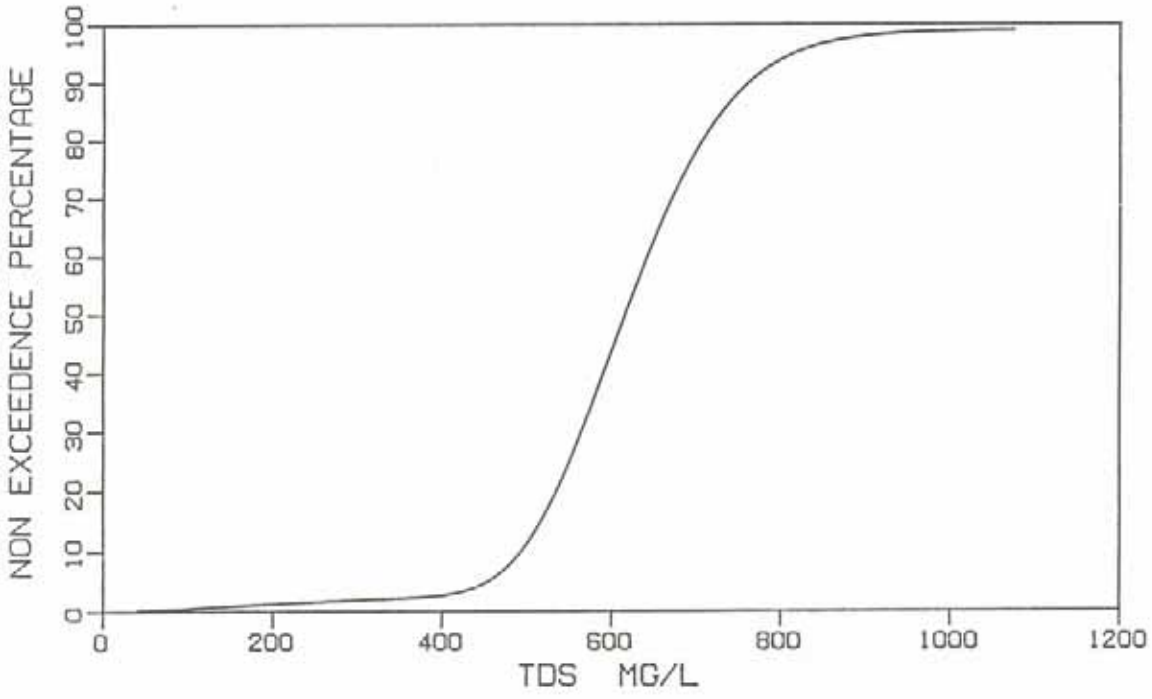
WATER QUALITY STATISTICS						
DETERMINAND	MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH (PH UNITS)	7.3	2.2	8.4	0.7	7.0	7.9
EC (MS/M)	86.0	5.0	123.6	15.6	74.0	104.0
TDS (MG/L)	632	32	983	119	550	775
CA (MG/L)	86	2	177	28	62	116
MG (MG/L)	37	2	45	4	35	39
NA (MG/L)	45	<2	61	6	43	54
K (MG/L)	3.6	<0.3	45.8	4.0	3.0	5.4
TAL (MG/L HCO_3)	134	12	469	53	115	159
CL (MG/L)	23	<3	46	6	20	31
SO_4 (MG/L)	279	13	571	94	209	387
F (MG/L)	0.4	0.1	0.7	0.1	0.3	0.5
SI (MG/L)	7.1	<0.4	15.2	1.3	6.6	7.8
NO_3 (MG/L N)	2.38	<0.02	39.60	3.98	1.60	4.27
PO_4 (MG/L P)	0.020	<0.005	2.816	0.252	0.009	0.115

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS		
COMPONENT DISTRIBUTION	MEAN	STD DEV
1	(μ_1) 6.0431	(σ_1) 1.1269
2	(μ_2) 6.4255	(σ_2) 0.1562
PROPORTIONALITY FACTOR (α) = .0492		

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C2M65
NAME: LEEUDORING SPRUIT AT KLIPSPRUIT

LATITUDE: 27°22'15" S LONGITUDE 26°21'00" E
TYPE: GAUGING WEIR

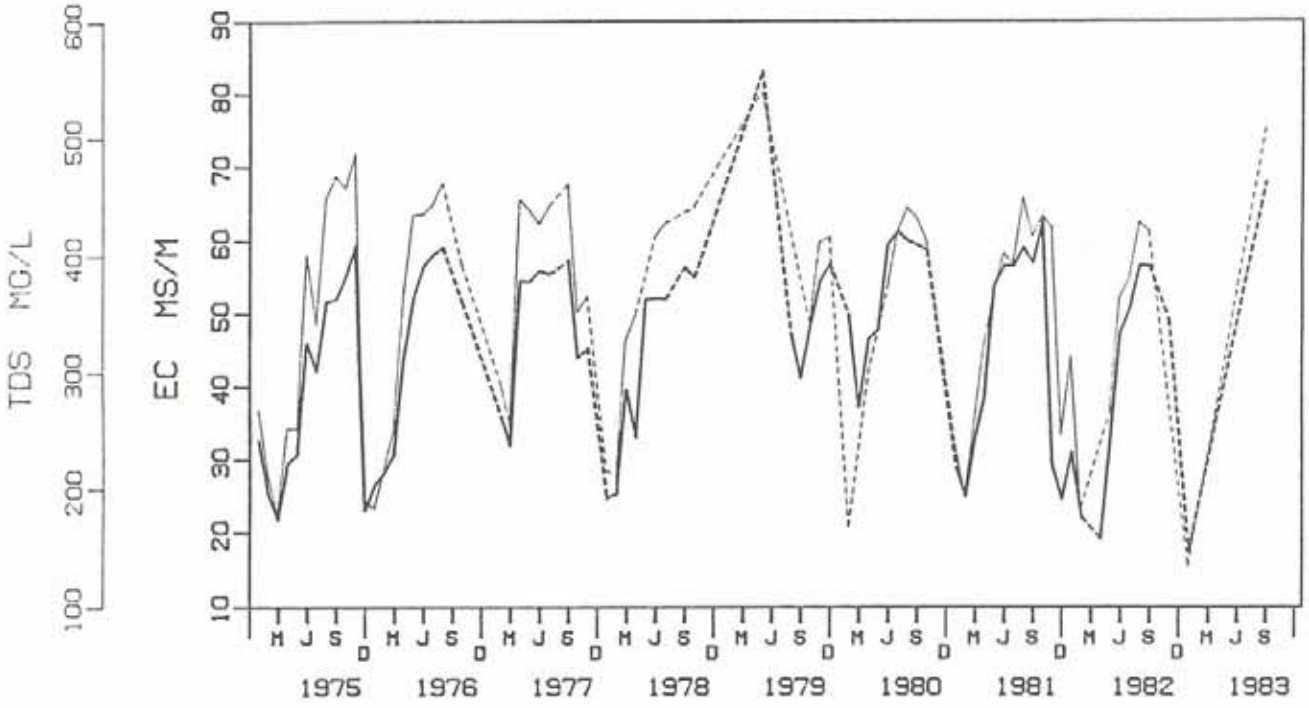
SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING:		72/02/23 TO 86/02/10			
	TOTAL	1979-1983	SUMMER	WINTER	RATIO
SAMPLES	330	120	46	74	0.62

WATER QUALITY STATISTICS

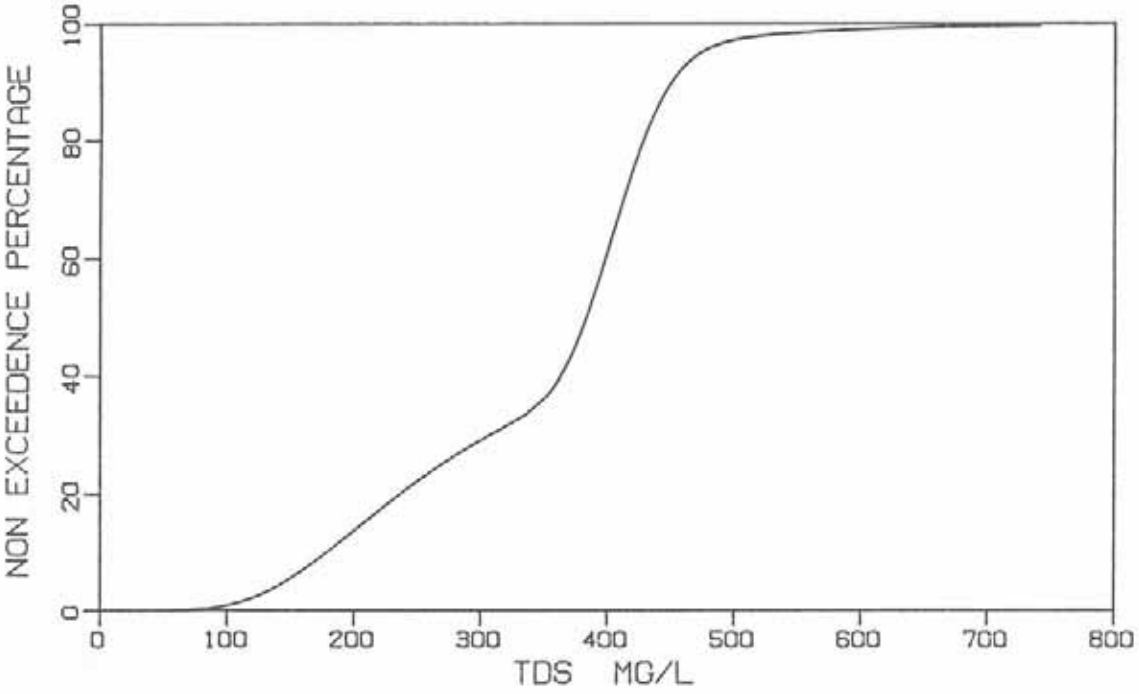
DETERMINAND		MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH	(PH UNITS)	7.6	4.5	9.6	0.7	7.2	8.3
EC	(MS/M)	53.4	12.6	86.2	15.2	38.3	62.1
TDS	(MG/L)	399	122	582	92	339	454
CA	(MG/L)	37	8	56	10	27	41
MG	(MG/L)	22	3	28	7	13	26
NA	(MG/L)	42	8	73	16	24	54
K	(MG/L)	2.6	1.4	9.1	1.2	2.2	3.8
TAL	(MG/L HCO_3)	232	42	298	67	164	264
CL	(MG/L)	27	4	76	15	19	48
SO_4	(MG/L)	12	2	166	25	9	33
F	(MG/L)	0.4	0.1	0.9	0.1	0.3	0.5
SI	(MG/L)	3.8	0.6	10.1	2.7	2.4	8.8
NO_3	(MG/L N)	0.33	<0.02	11.55	1.28	0.08	1.20
PO_4	(MG/L P)	0.025	<0.005	5.937	0.636	0.010	0.091

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS		
COMPONENT DISTRIBUTION	MEAN	STD DEV
1	(μ_1) 5.5107	(σ_1) 0.4393
2	(μ_2) 6.0089	(σ_2) 0.0825
PROPORTIONALITY FACTOR (α) = .4360		

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C2M66
NAME: MAKWASSIE SPRUIT AT VLIEGEKRAAL

LATITUDE: 27°29'30" S LONGITUDE 26°04'30" E
TYPE: GAUGING WEIR

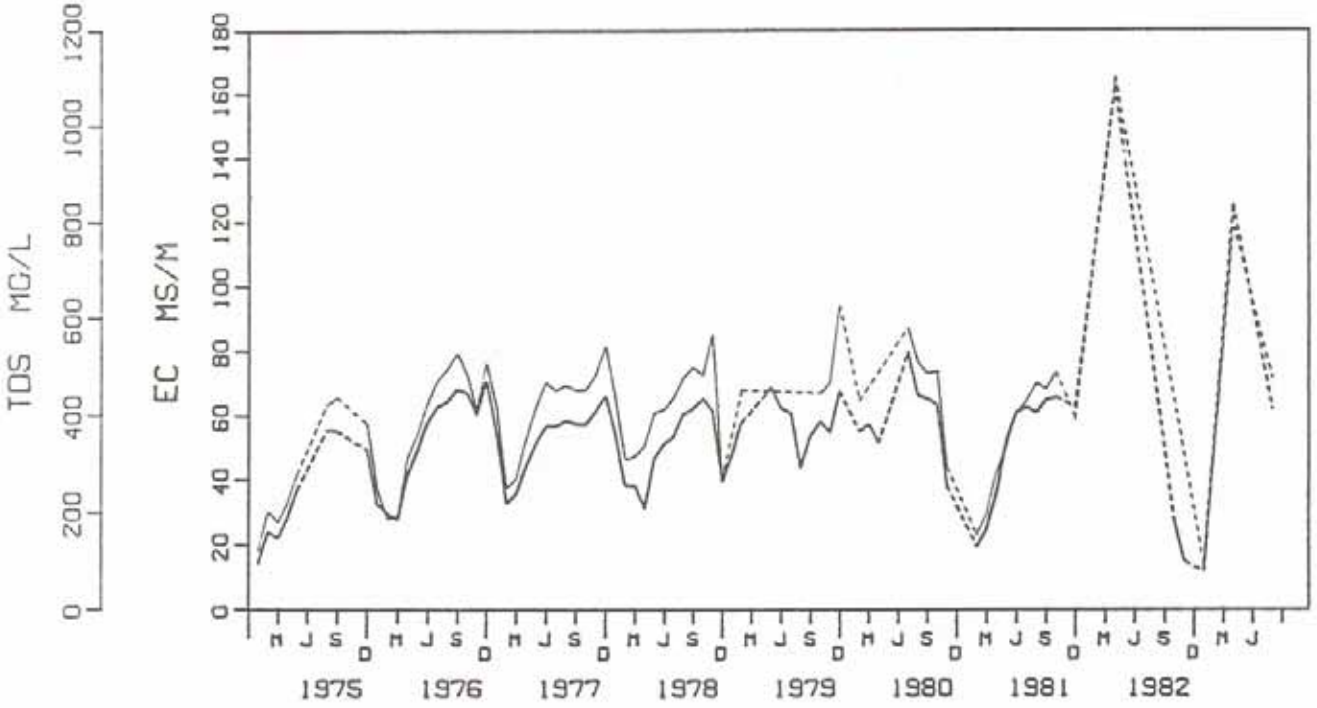
SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING:		72/08/02 TO 86/02/17			
	TOTAL	1979-1983	SUMMER	WINTER	RATIO
SAMPLES	302	82	32	50	0.64

WATER QUALITY STATISTICS

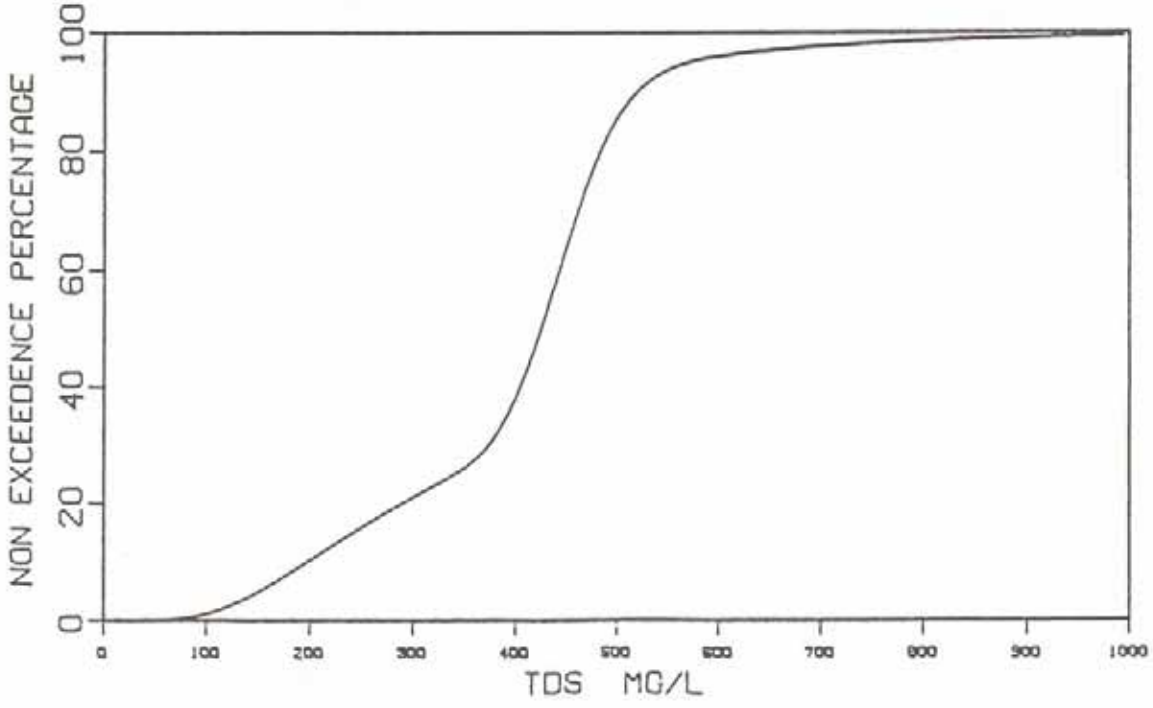
DETERMINAND	MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH (PH UNITS)	7.4	6.4	8.5	0.6	7.1	8.4
EC (MS/M)	59.3	12.0	162.0	22.2	48.8	67.4
TDS (MG/L)	451	86	1099	165	382	523
CA (MG/L)	37	9	148	19	31	46
MG (MG/L)	21	4	35	7	17	26
NA (MG/L)	55	8	133	26	40	77
K (MG/L)	4.1	2.8	15.8	2.2	3.6	6.4
TAL (MG/L HCO_3)	254	31	328	87	138	303
CL (MG/L)	34	5	214	31	24	52
SO_4 (MG/L)	18	2	518	88	12	59
F (MG/L)	0.5	0.3	0.8	0.1	0.4	0.7
SI (MG/L)	3.9	<0.4	10.2	3.0	0.7	7.7
NO_3 (MG/L N)	0.16	<0.02	11.42	1.53	0.06	0.91
PO_4 (MG/L P)	0.012	<0.005	0.877	0.121	0.006	0.056

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS				
COMPONENT DISTRIBUTION	MEAN		STD DEV	
1	(μ_1)	5.6625	(σ_1)	0.5609
2	(μ_2)	6.0983	(σ_2)	0.1039
PROPORTIONALITY FACTOR (α) = .4001				

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C2M69
NAME: MOOIRIVIERLOOP (RIVER) AT BLAAUWBANK

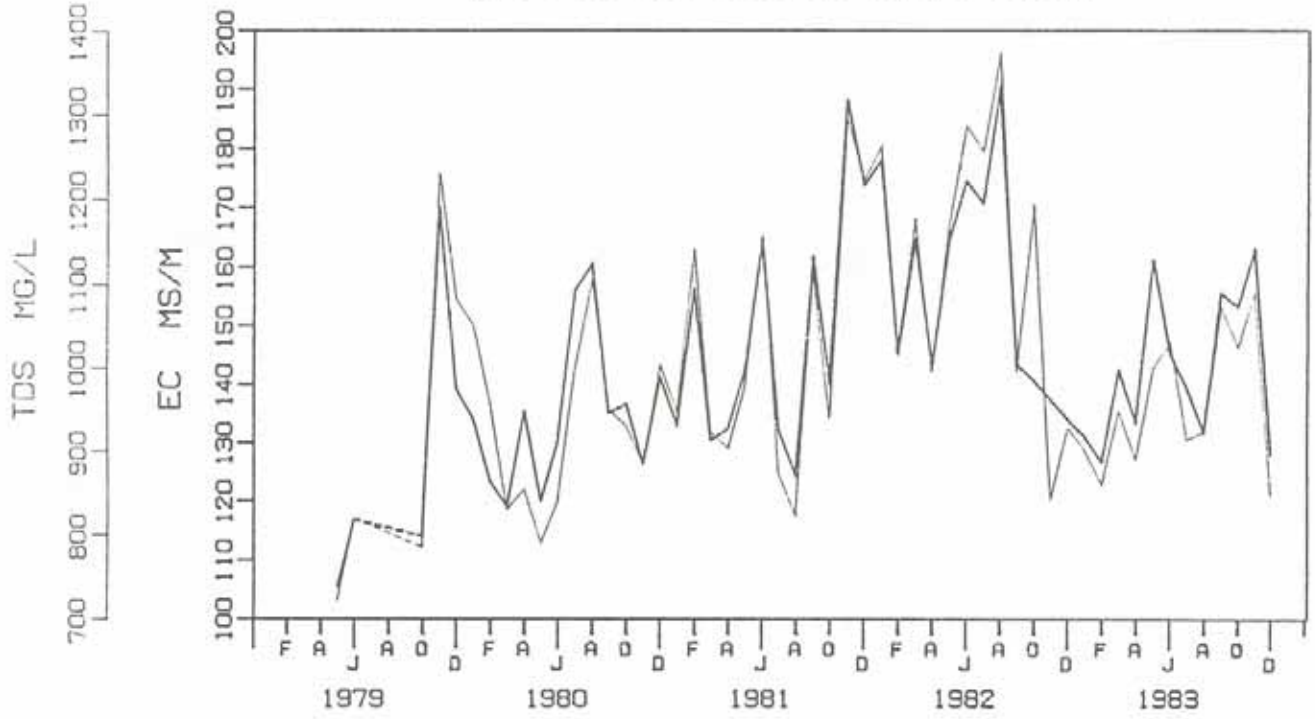
LATITUDE: 26°22'30" S LONGITUDE 27°13'45" E
TYPE: GAUGING WEIR

SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING:		79/05/03 TO 86/10/20			
	TOTAL	1979-1983	SUMMER	WINTER	RATIO
SAMPLES	391	232	118	114	1.04

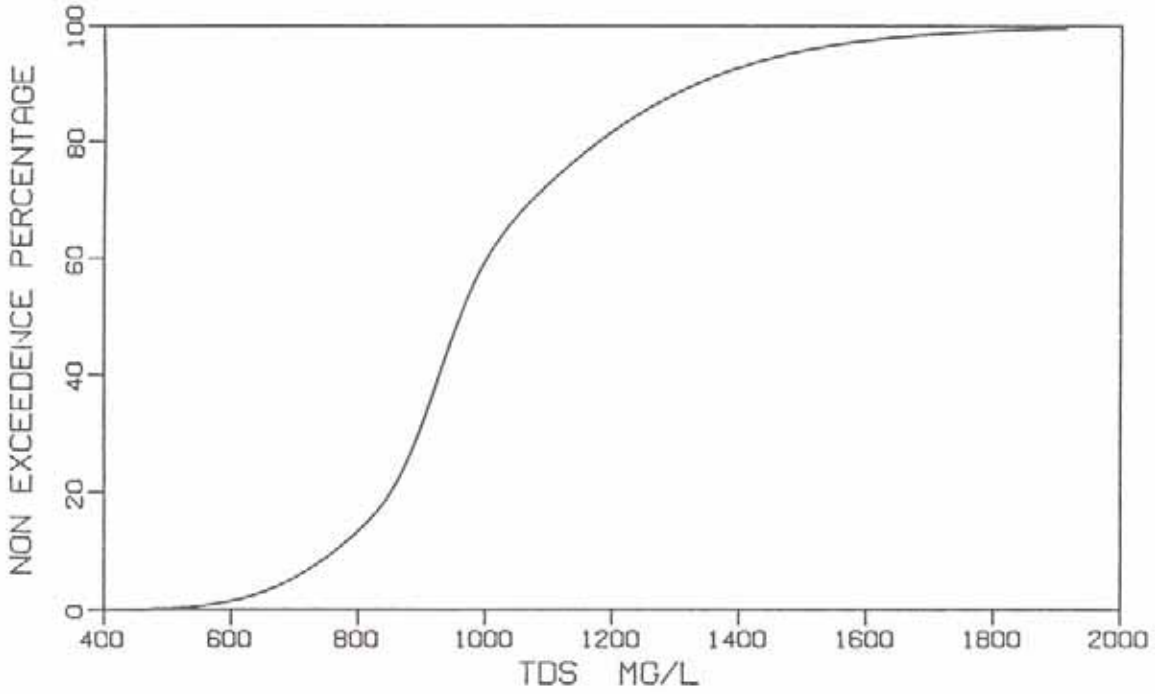
WATER QUALITY STATISTICS						
DETERMINAND	MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH (PH UNITS)	6.9	3.0	7.9	0.7	6.5	7.5
EC (MS/M)	139.9	44.8	275.2	27.6	128.0	182.7
TDS (MG/L)	964	302	1611	206	876	1283
CA (MG/L)	120	47	255	35	102	176
MG (MG/L)	40	15	71	7	36	48
NA (MG/L)	117	20	222	29	103	157
K (MG/L)	10.7	0.4	24.9	3.7	9.2	16.6
TAL (MG/L HCO_3)	50	<4	148	27	30	85
CL (MG/L)	98	11	568	56	83	171
SO_4 (MG/L)	475	137	966	125	411	667
F (MG/L)	0.4	0.2	0.8	0.1	0.4	0.6
SI (MG/L)	6.3	1.0	14.2	1.3	5.6	7.8
NO_3 (MG/L N)	9.75	0.36	73.61	8.23	6.94	16.97
PO_4 (MG/L P)	0.216	<0.005	1.556	0.274	0.097	0.677

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS		
COMPONENT DISTRIBUTION	MEAN	STD DEV
1	(μ_1) 6.9179	(σ_1) 0.2518
2	(μ_2) 6.8340	(σ_2) 0.0557
PROPORTIONALITY FACTOR (α) = .7393		

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C2M70
NAME: SUIKERBOSCHRAND RIVER AT PLATKOPPIE

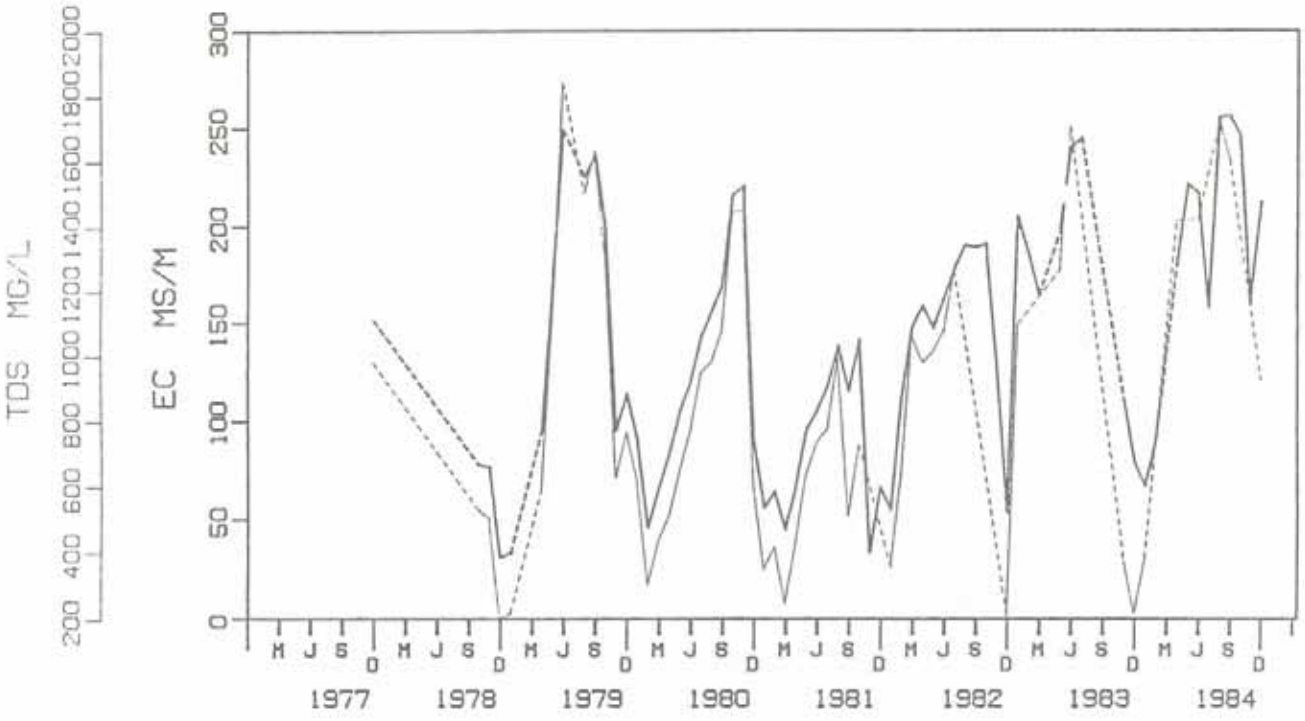
LATITUDE: 26°38'30" S LONGITUDE 28°13'45" E
TYPE: RIVER SECTION

SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING:		77/12/21 TO 85/07/08			
	TOTAL	1979-1983	SUMMER	WINTER	RATIO
SAMPLES	296	178	88	90	0.98

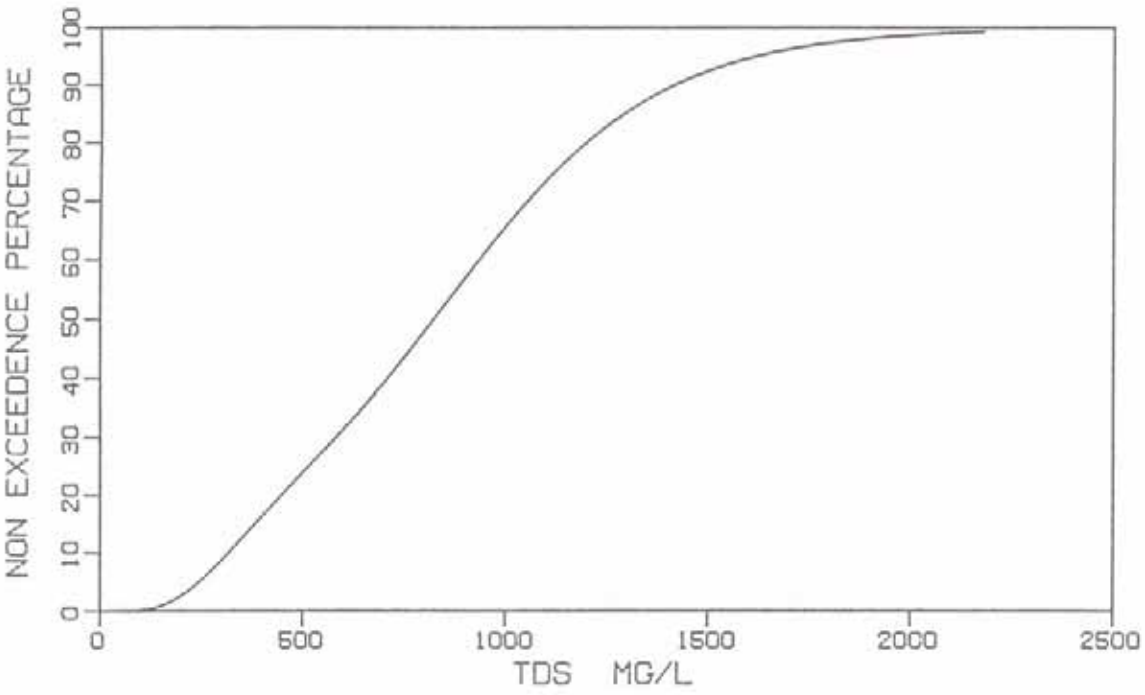
WATER QUALITY STATISTICS						
DETERMINAND	MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH (PH UNITS)	7.2	5.4	8.4	0.5	6.9	7.9
EC (MS/M)	120.9	23.8	280.0	61.4	78.0	215.9
TDS (MG/L)	733	192	1877	431	469	1451
CA (MG/L)	59	18	126	27	42	97
MG (MG/L)	34	5	79	17	21	62
NA (MG/L)	122	22	382	92	67	282
K (MG/L)	9.5	3.6	22.6	5.1	6.8	19.0
TAL (MG/L HCO_3)	130	35	247	52	103	224
CL (MG/L)	136	22	416	102	73	299
SO_4 (MG/L)	236	27	638	146	141	446
F (MG/L)	0.4	0.2	0.6	0.1	0.3	0.5
SI (MG/L)	2.3	<0.4	7.6	1.9	0.9	5.4
NO_3 (MG/L N)	0.33	<0.02	3.21	0.63	0.16	1.60
PO_4 (MG/L P)	0.020	<0.005	2.596	0.264	0.008	0.073

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS		
COMPONENT DISTRIBUTION	MEAN	STD DEV.
1	(μ_1) 6.2240	(σ_1) 0.5780
2	(μ_2) 6.9449	(σ_2) 0.3098
PROPORTIONALITY FACTOR (α) = .4763		

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C2R0501
NAME: KLIPDRIF DAM:NEAR DAM WALL

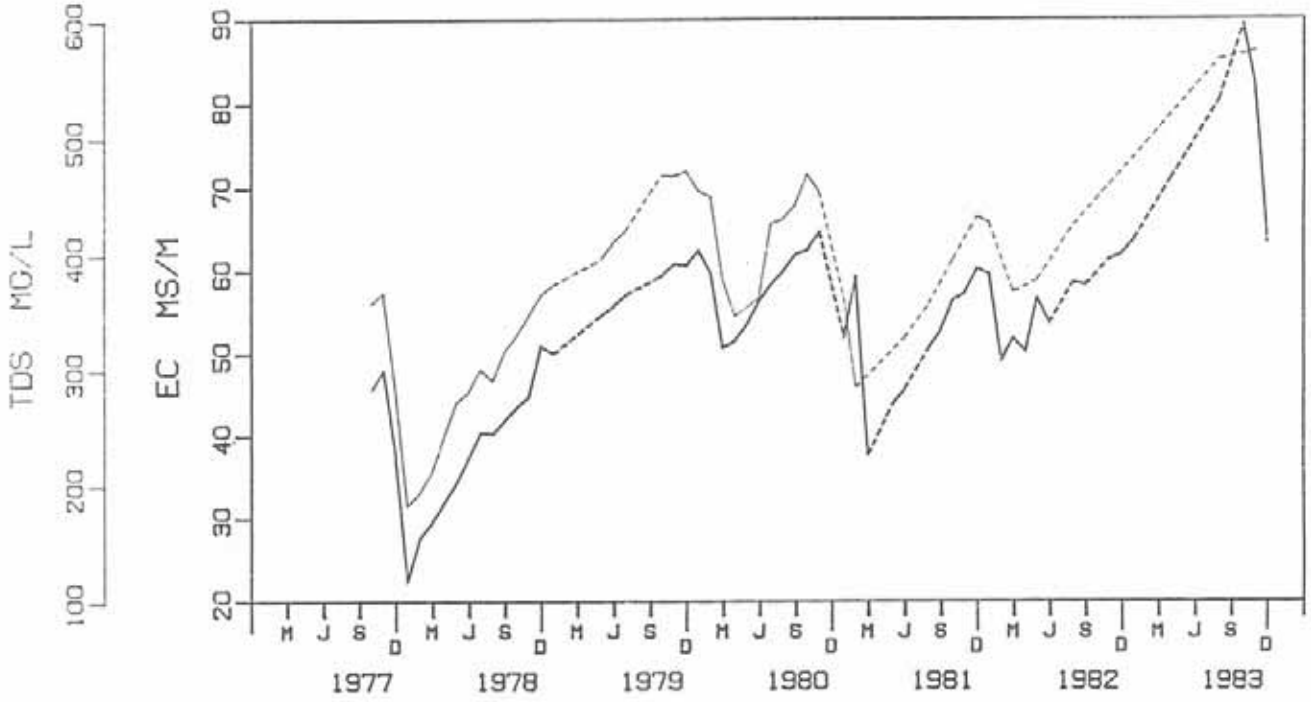
LATITUDE: 26°37'00" S LONGITUDE 27°18'00" E
TYPE: SAMPLING POINT IN BASIN

SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING:		77/10/22 TO 84/03/26			
	TOTAL	1979-1983	SUMMER	WINTER	RATIO
SAMPLES	75	45	25	20	1.25

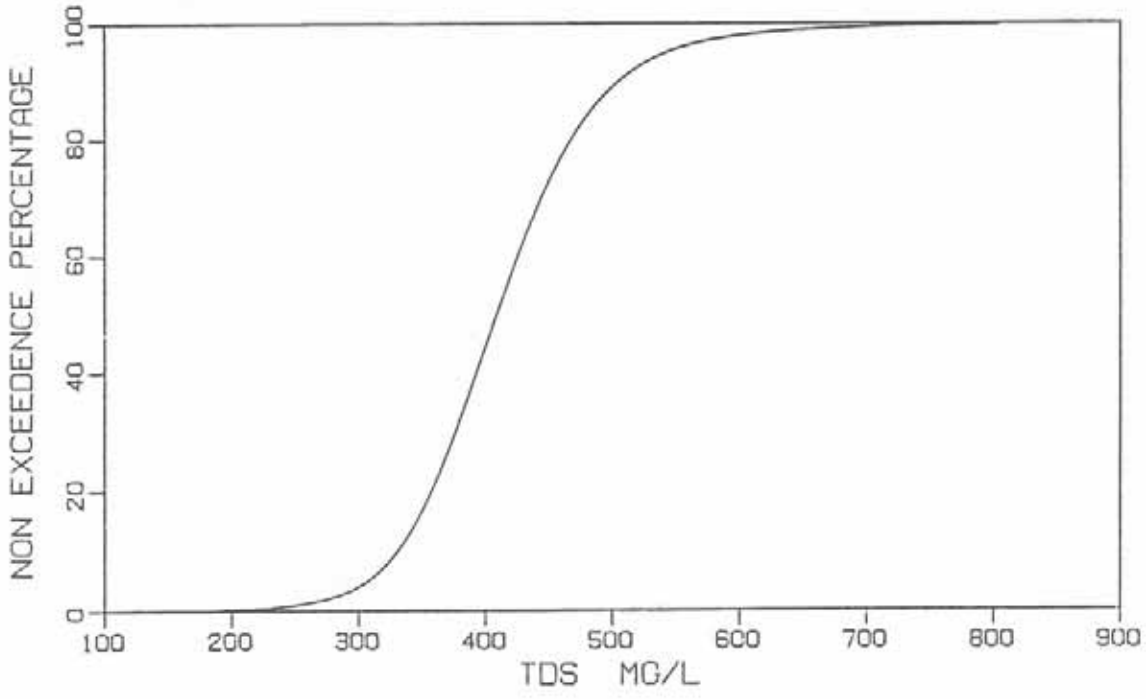
WATER QUALITY STATISTICS						
DETERMINAND	MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH (PH UNITS)	7.6	6.1	8.0	0.4	7.4	7.8
EC (MS/M)	58.4	37.6	89.3	9.3	52.7	64.2
TDS (MG/L)	424	284	573	62	370	469
CA (MG/L)	31	24	38	3	29	34
MG (MG/L)	26	17	36	4	24	31
NA (MG/L)	48	32	81	10	43	56
K (MG/L)	5.8	4.6	8.6	0.9	5.3	7.1
TAL (MG/L HCO_3)	209	137	254	27	182	231
CL (MG/L)	37	26	67	10	34	55
SO_4 (MG/L)	57	33	97	13	51	69
F (MG/L)	0.4	0.2	0.6	0.1	0.4	0.5
SI (MG/L)	0.9	<0.4	4.1	1.2	0.6	3.1
NO_3 (MG/L N)	0.21	<0.02	0.86	0.25	0.04	0.57
PO_4 (MG/L P)	0.006	<0.005	0.047	0.012	<0.005	0.027

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS		
COMPONENT DISTRIBUTION	MEAN	STD DEV
1	(μ_1) 6.0055	(σ_1) 0.2936
2	(μ_2) 6.0140	(σ_2) 0.1411
PROPORTIONALITY FACTOR (α) = .1897		

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C2Q01
NAME: SKOON SPRUIT AT KLERKSDORP WEIR

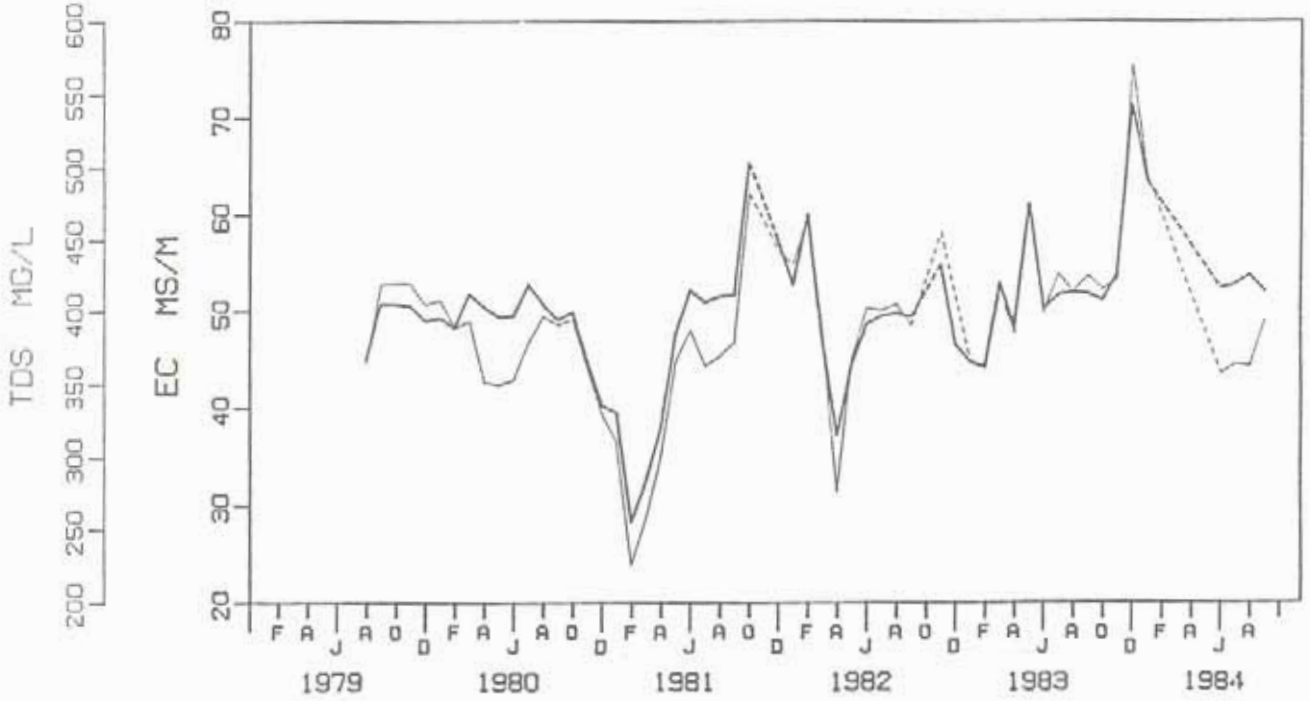
LATITUDE: 26°52'30" S LONGITUDE 26°39'30" E
TYPE: SAMPLING POINT

SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING:		79/08/20 TO 84/09/17			
	TOTAL	1979-1983	SUMMER	WINTER	RATIO
SAMPLES	248	216	106	110	0.96

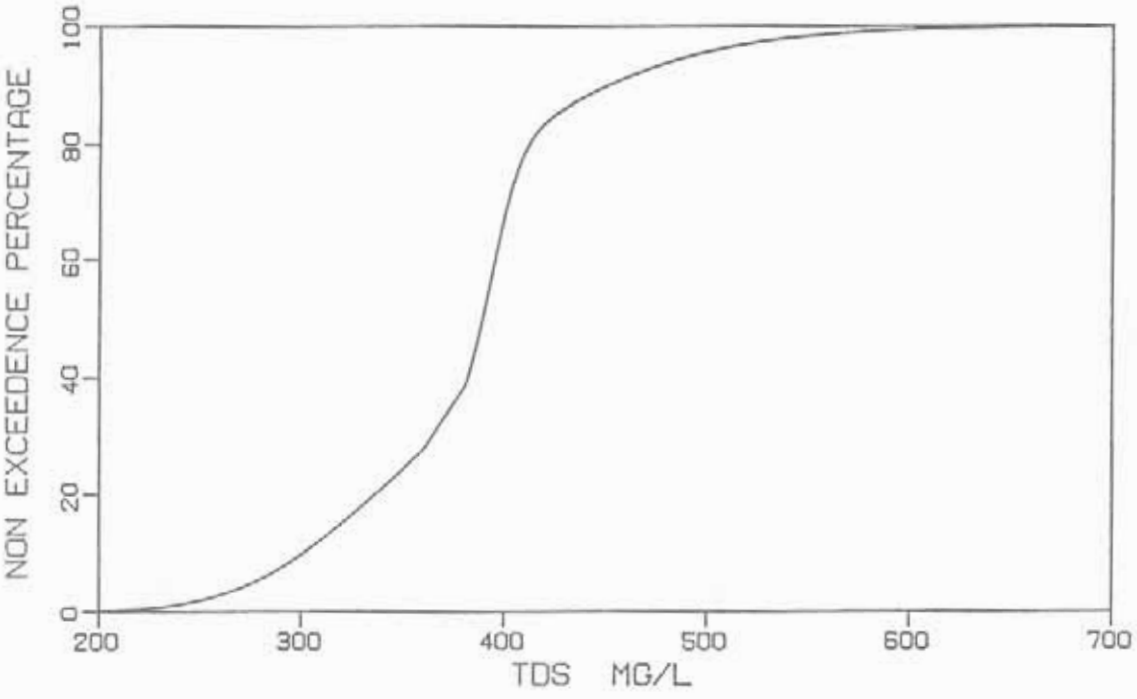
WATER QUALITY STATISTICS						
DETERMINAND	MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH (PH UNITS)	7.9	5.7	8.7	0.5	7.6	8.4
EC (MS/M)	49.3	21.6	98.0	9.3	47.1	55.0
TDS (MG/L)	392	155	755	72	366	430
CA (MG/L)	40	18	92	9	38	47
MG (MG/L)	36	11	57	7	32	40
NA (MG/L)	9	6	50	7	8	16
K (MG/L)	2.2	1.0	8.3	1.0	1.9	3.8
TAL (MG/L HCO_3)	275	58	325	42	248	302
CL (MG/L)	8	<3	56	8	7	18
SO_4 (MG/L)	10	<2	331	41	5	40
F (MG/L)	0.2	<0.1	0.9	0.1	0.2	0.3
SI (MG/L)	4.5	0.5	9.1	2.0	3.3	7.5
NO_3 (MG/L N)	0.06	<0.02	2.98	0.48	0.02	0.61
PO_4 (MG/L P)	0.019	<0.005	1.396	0.125	0.009	0.140

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS		
COMPONENT DISTRIBUTION	MEAN	STD DEV
1	(μ_1) 5.9093	(σ_1) 0.2074
2	(μ_2) 5.9768	(σ_2) 0.0283
PROPORTIONALITY FACTOR (α) = .6064		

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C2Q02
NAME: MOOI RIVER AT BRIDGE ON TAAIBOSCHBULT

LATITUDE: 26°52'00" S LONGITUDE 27°01'30" E
TYPE: SAMPLING POINT

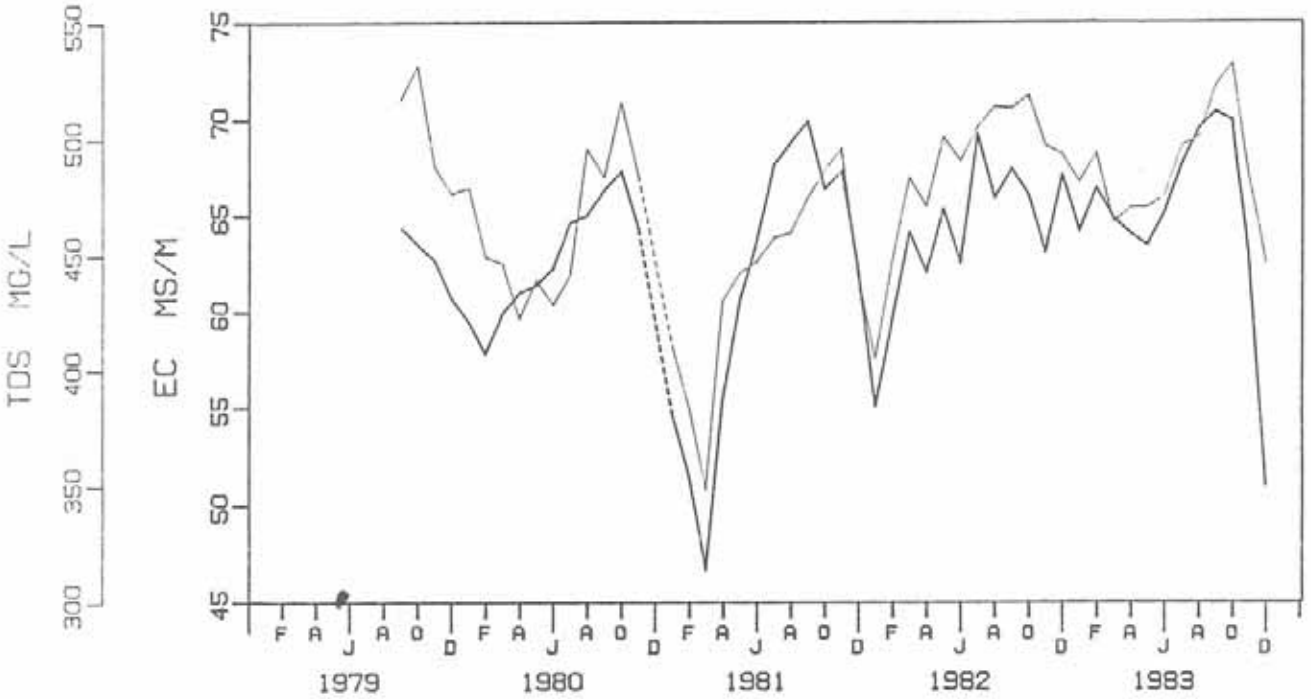
SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING:		79/09/28 TO 84/11/13			
	TOTAL	1979-1983	SUMMER	WINTER	RATIO
SAMPLES	313	205	107	98	1.09

WATER QUALITY STATISTICS

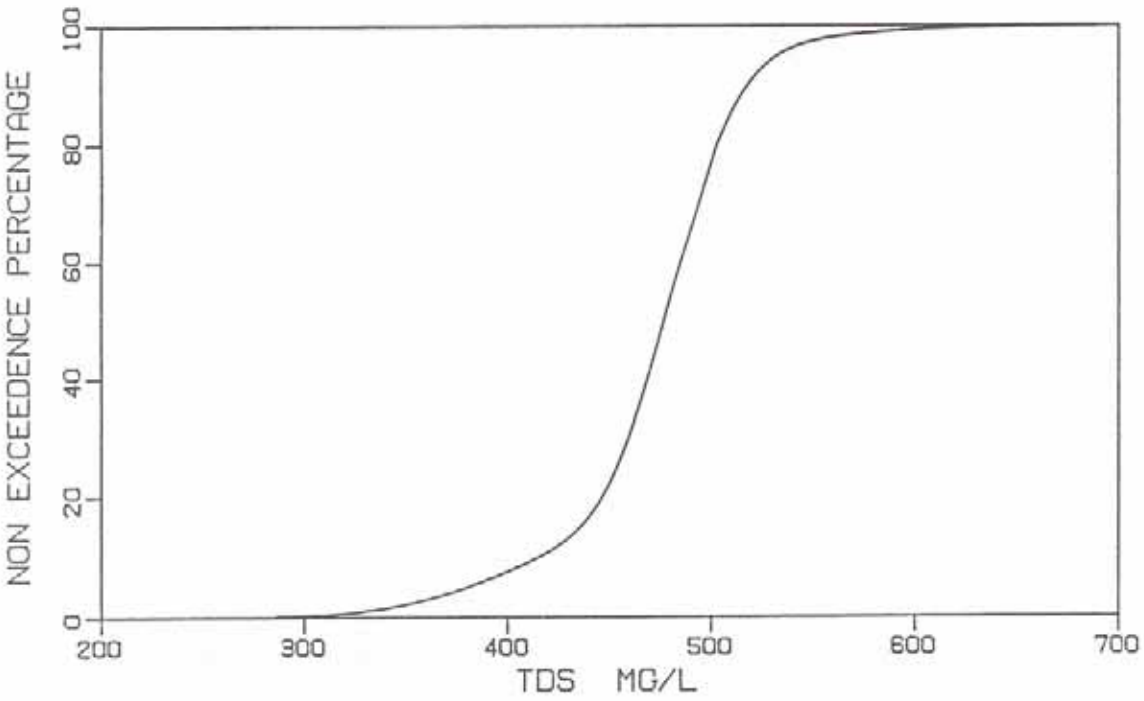
DETERMINAND		MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH	(PH UNITS)	7.8	6.5	8.8	0.4	7.5	8.3
EC	(MS/M)	64.0	39.4	84.0	5.9	61.2	69.1
TDS	(MG/L)	478	294	636	45	453	518
CA	(MG/L)	52	28	72	6	48	56
MG	(MG/L)	40	21	46	4	37	42
NA	(MG/L)	23	16	67	5	21	28
K	(MG/L)	3.3	1.5	19.7	1.5	2.9	4.9
TAL	(MG/L HCO_3)	236	96	292	24	226	260
CL	(MG/L)	24	10	70	8	19	32
SO_4	(MG/L)	85	8	167	16	78	96
F	(MG/L)	0.3	<0.1	4.0	0.5	0.2	0.9
SI	(MG/L)	6.2	3.3	9.0	1.1	5.3	7.5
NO_3	(MG/L N)	1.08	0.02	31.20	2.52	0.81	2.12
PO_4	(MG/L P)	0.498	<0.005	6.095	0.669	0.386	1.169

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS		
COMPONENT DISTRIBUTION	MEAN	STD DEV
1	(μ_1) 6.0843	(σ_1) 0.1612
2	(μ_2) 6.1765	(σ_2) 0.0520
PROPORTIONALITY FACTOR (α) = .2684		

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C2R0101
NAME: BOSKOP DAM:NEAR DAM WALL

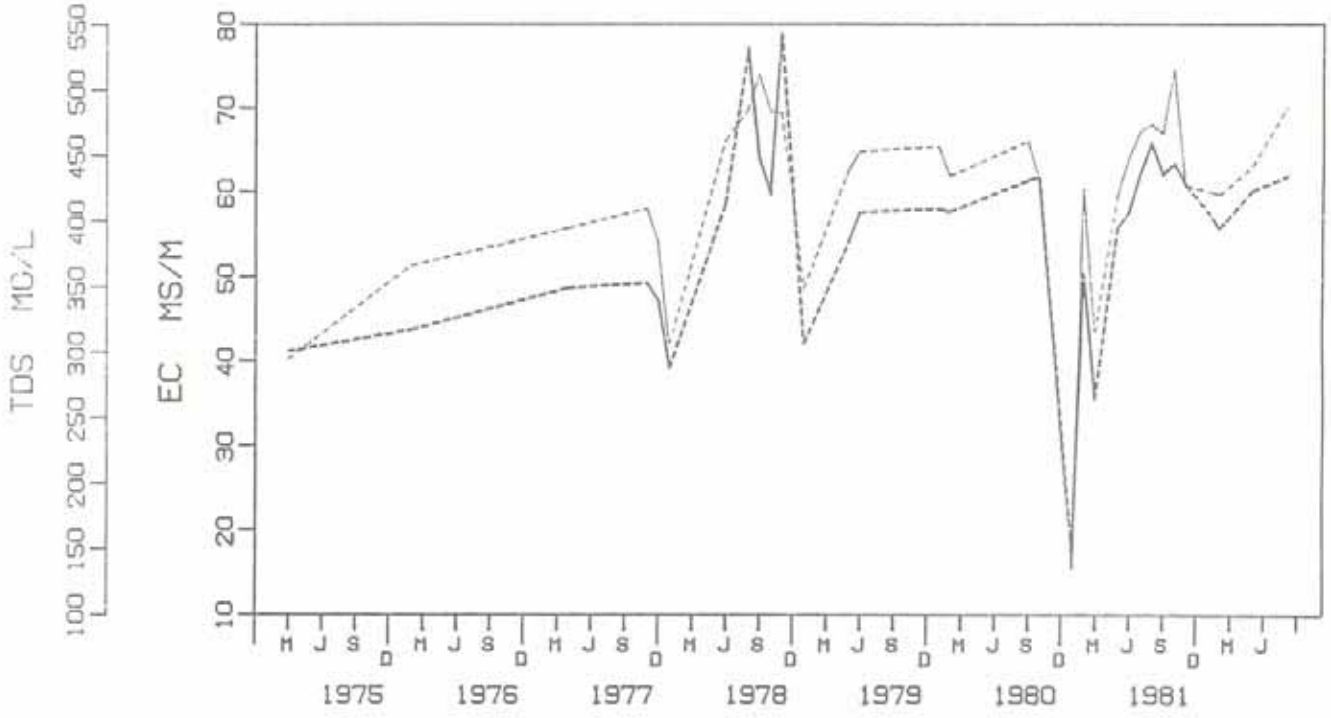
LATITUDE: 26°33'45" S LONGITUDE 27°06'30" E
TYPE: SAMPLING POINT IN DAM BASIN

SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING:		68/06/28 TO 86/10/09			
	TOTAL	1979-1983	SUMMER	WINTER	RATIO
SAMPLES	107	21	11	10	1.10

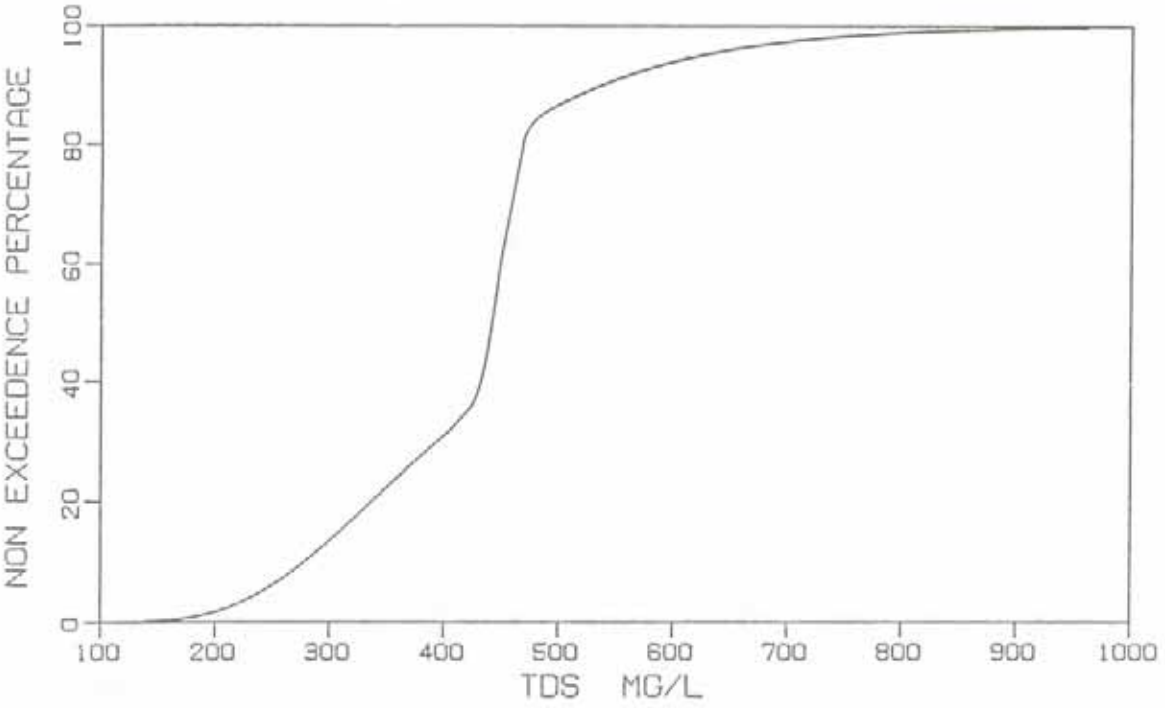
WATER QUALITY STATISTICS						
DETERMINAND	MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH (PH UNITS)	7.7	6.3	8.1	0.5	7.2	8.0
EC (MS/M)	57.6	17.1	65.8	11.2	55.6	62.2
TDS (MG/L)	438	135	516	79	422	474
CA (MG/L)	49	13	60	10	44	57
MG (MG/L)	37	7	39	7	35	38
NA (MG/L)	19	5	23	4	16	21
K (MG/L)	1.9	1.1	5.5	0.9	1.8	2.7
TAL (MG/L HCO_3)	227	82	275	38	213	249
CL (MG/L)	17	4	31	6	15	21
SO_4 (MG/L)	85	2	103	29	74	96
F (MG/L)	0.1	<0.1	0.6	0.1	0.1	0.2
SI (MG/L)	6.1	4.9	8.7	1.0	5.7	7.7
NO_3 (MG/L N)	0.51	<0.02	1.15	0.37	0.29	1.07
PO_4 (MG/L P)	0.006	<0.005	0.049	0.012	<0.005	0.026

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS		
COMPONENT DISTRIBUTION	MEAN	STD DEV
1	(μ_1) 5.9549	(σ_1) 0.3500
2	(μ_2) 6.1064	(σ_2) 0.0283
PROPORTIONALITY FACTOR (α) = .5746		

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C3M03
NAME: HARTS RIVER AT TAUNG

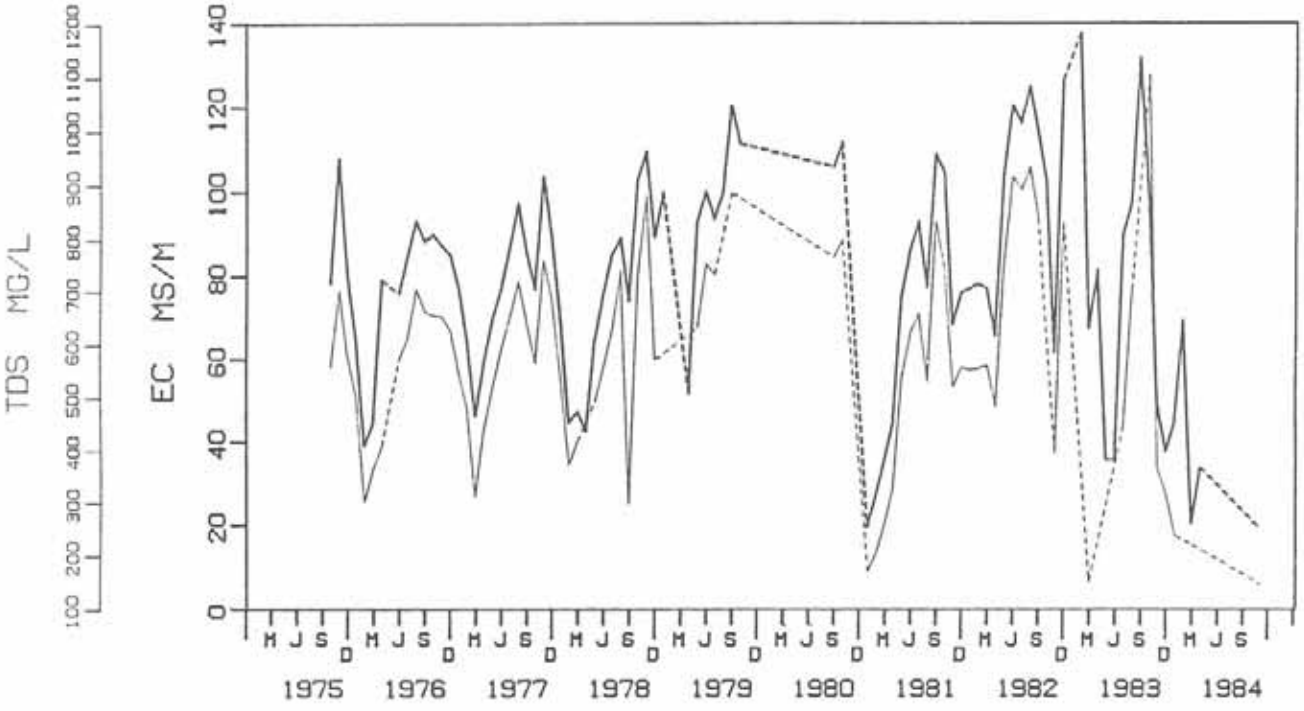
LATITUDE: 27°34'30" S LONGITUDE 24°44'45" E
TYPE: STORAGE WEIR

SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING:		71/08/05 TO 86/02/18			
	TOTAL	.1979-1983	SUMMER	WINTER	RATIO
SAMPLES	355	137	58	79	0.73

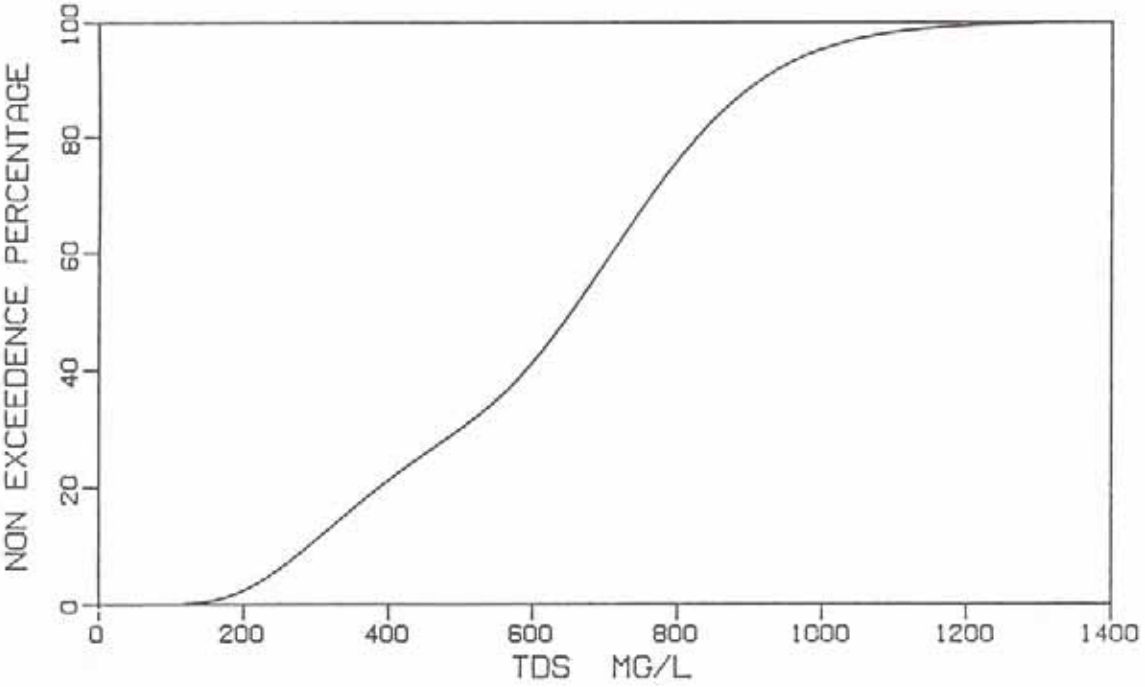
WATER QUALITY STATISTICS						
DETERMINAND	MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH (PH UNITS)	7.8	6.2	8.5	0.5	7.3	8.2
EC (MS/M)	89.9	18.6	150.0	32.0	62.0	125.0
TDS (MG/L)	657	154	1105	229	418	894
CA (MG/L)	44	15	64	11	34	51
MG (MG/L)	36	6	53	13	24	49
NA (MG/L)	98	10	249	47	49	147
K (MG/L)	5.9	1.5	9.5	1.7	4.3	7.4
TAL (MG/L HCO_3)	226	87	361	62	175	300
CL (MG/L)	69	6	148	32	37	103
SO_4 (MG/L)	155	6	296	83	82	258
F (MG/L)	0.7	0.1	1.1	0.2	0.5	0.9
SI (MG/L)	6.6	<0.4	11.4	2.7	5.5	9.8
NO_3 (MG/L N)	0.06	<0.02	2.54	0.35	0.02	0.51
PO_4 (MG/L P)	0.009	<0.005	0.455	0.049	<0.005	0.051

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS		
COMPONENT DISTRIBUTION	MEAN	STD DEV
1	(μ_1) 5.9443	(σ_1) 0.4181
2	(μ_2) 6.6191	(σ_2) 0.1949
PROPORTIONALITY FACTOR (α) = .3906		

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C3M07
NAME: HARTS RIVER AT ESPAGSDRIF

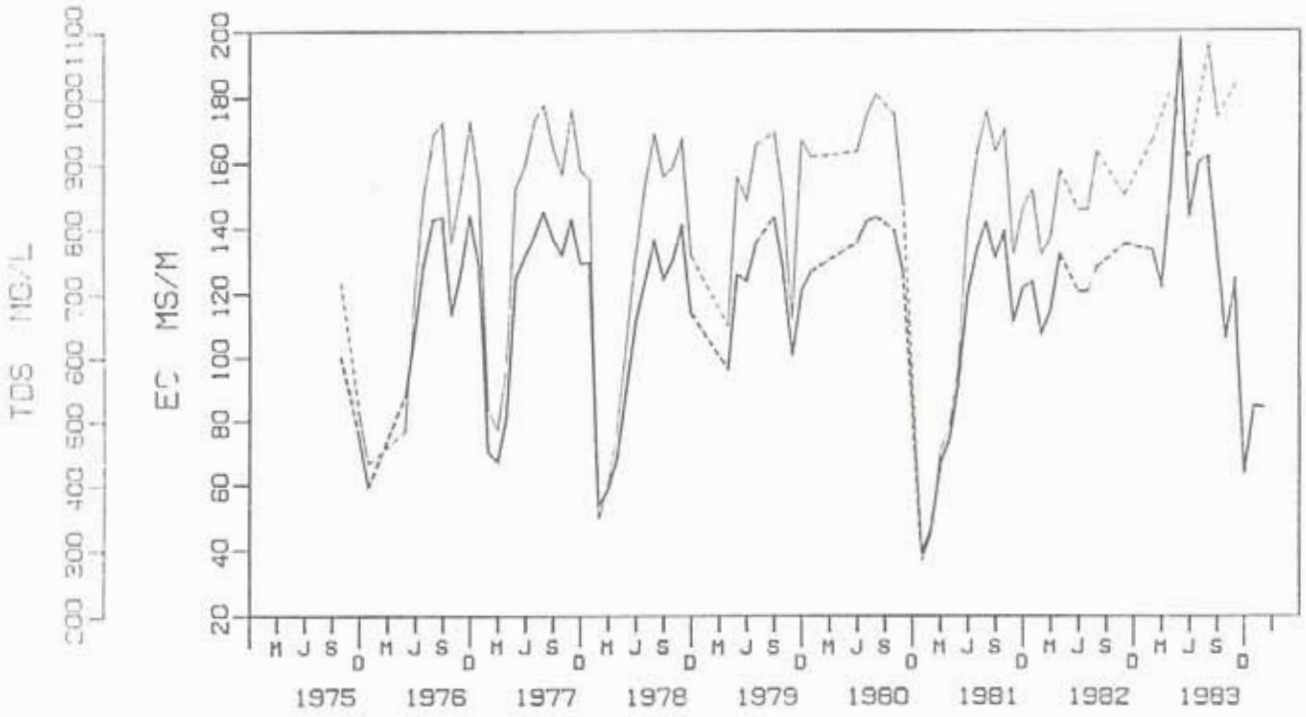
LATITUDE: 27°54'15" S LONGITUDE 24°37'00" E
TYPE: GAUGING WEIR

SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING: 67/12/11 TO 86/09/18					
	TOTAL	1979-1983	SUMMER	WINTER	RATIO
SAMPLES	344	136	62	74	0.84

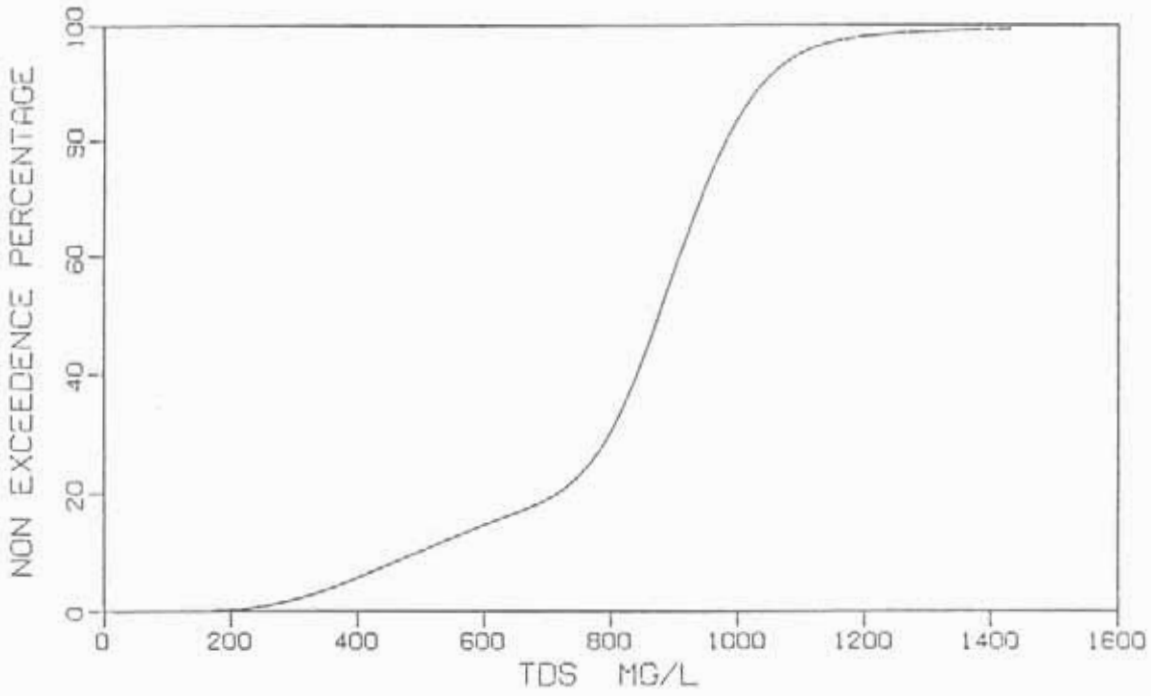
WATER QUALITY STATISTICS						
DETERMINAND	MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH (PH UNITS)	7.7	6.6	8.4	0.4	7.5	8.3
EC (MS/M)	128.2	32.4	263.0	31.1	112.0	147.5
TDS (MG/L)	884	283	1354	200	746	1004
CA (MG/L)	70	29	92	14	63	79
MG (MG/L)	59	15	78	15	48	71
NA (MG/L)	111	24	155	28	94	133
K (MG/L)	7.5	3.5	11.1	1.3	6.5	8.8
TAL (MG/L HCO_3)	207	103	248	27	187	232
CL (MG/L)	141	24	199	39	121	174
SO_4 (MG/L)	257	33	414	81	205	329
F (MG/L)	0.7	0.2	1.0	0.2	0.6	0.8
SI (MG/L)	5.9	3.2	10.4	1.5	5.0	7.9
NO_3 (MG/L N)	1.67	0.26	100.56	9.28	1.13	2.74
PO_4 (MG/L P)	0.013	<0.005	0.494	0.064	0.006	0.040

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS		
COMPONENT DISTRIBUTION	MEAN	STD DEV
1	(μ_1) 6.3601	(σ_1) 0.4537
2	(μ_2) 6.8085	(σ_2) 0.1095
PROPORTIONALITY FACTOR (α) = .2770		

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C3M10
NAME: THABASIKWA EYE AT BUXTON

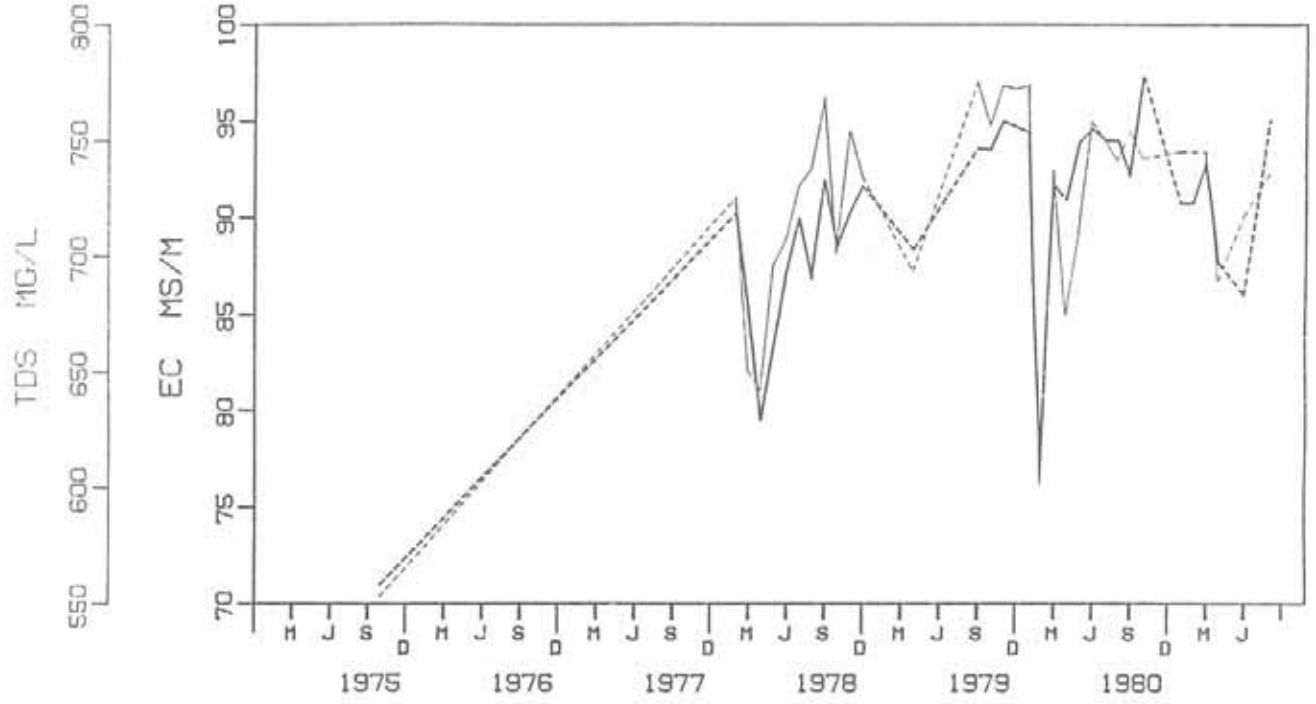
LATITUDE: 27°36'30" S LONGITUDE 24°36'45" E
TYPE: GAUGING WEIR

SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING:		75/10/23 TO 81/08/10			
	TOTAL	1979-1983	SUMMER	WINTER	RATIO
SAMPLES	108	67	33	34	0.97

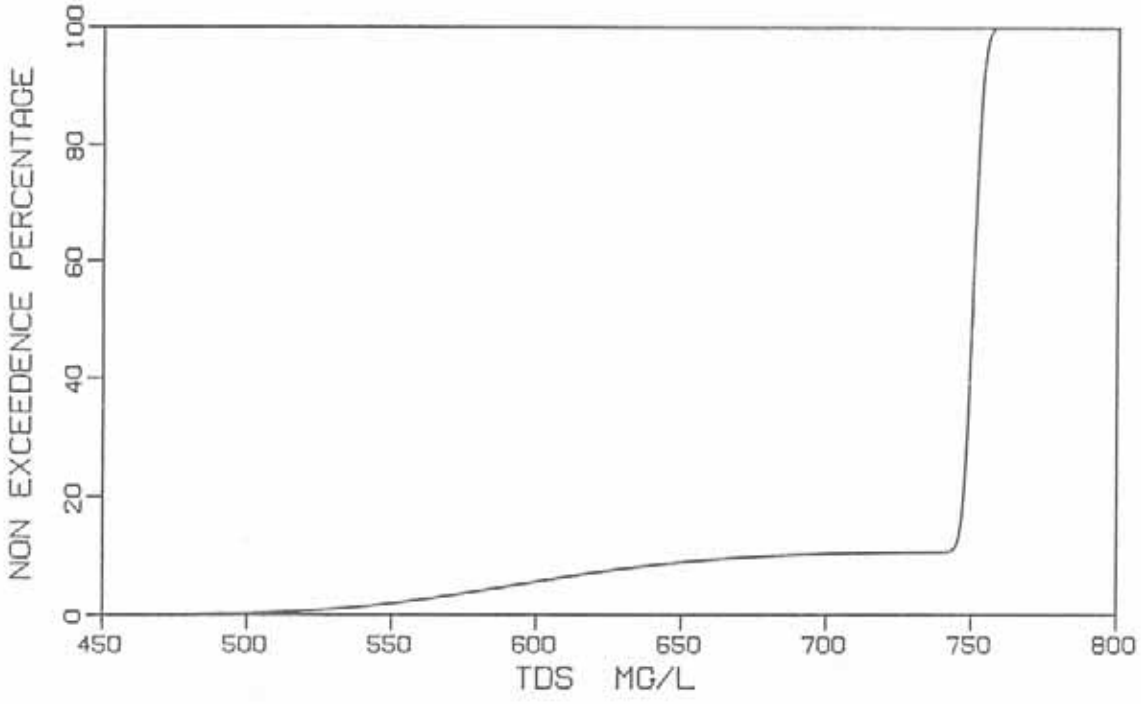
WATER QUALITY STATISTICS						
DETERMINAND	MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH (PH UNITS)	8.0	7.6	8.4	0.1	7.9	8.1
EC (MS/M)	94.0	70.3	98.0	5.5	92.0	95.8
TDS (MG/L)	746	537	780	52	734	774
CA (MG/L)	57	39	61	6	52	59
MG (MG/L)	85	60	91	6	82	89
NA (MG/L)	20	2	28	5	19	27
K (MG/L)	1.1	0.3	2.2	0.3	1.0	1.5
TAL (MG/L HCO_3)	501	331	516	40	481	511
CL (MG/L)	46	34	59	4	43	49
SO_4 (MG/L)	31	22	37	3	28	34
F (MG/L)	0.5	0.3	0.7	0.1	0.5	0.6
SI (MG/L)	10.7	8.5	12.9	1.1	10.1	12.8
NO_3 (MG/L N)	0.40	0.04	1.08	0.27	0.23	0.89
PO_4 (MG/L P)	0.005	<0.005	0.092	0.018	<0.005	0.019

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS				
COMPONENT DISTRIBUTION	MEAN		STD DEV	
1	(μ_1)	6.3917	(σ_1)	0.0894
2	(μ_2)	6.6208	(σ_2)	0.0034
PROPORTIONALITY FACTOR (α) = .1083				

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C3M12

NAME: VLAKFONTEIN EYE AT METSEMATSHWE RESERVE

LATITUDE: 27°39'45" S LONGITUDE 24°05'15" E

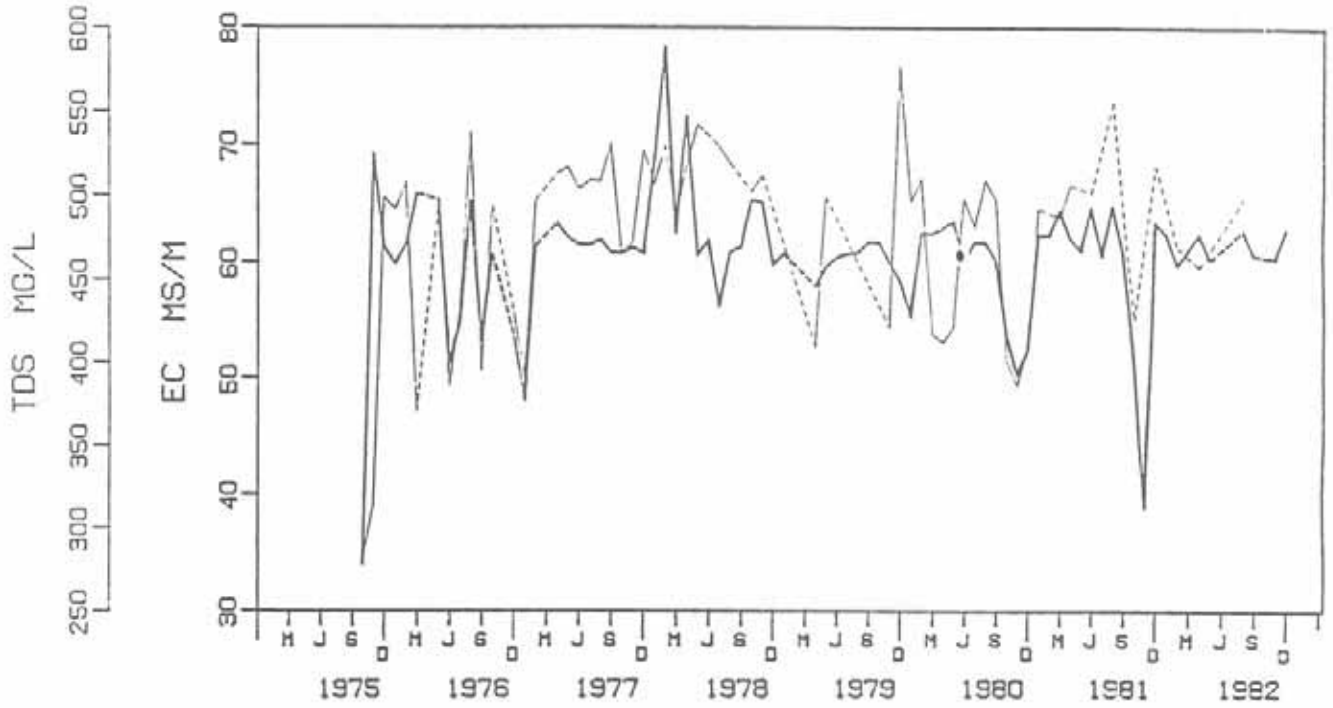
TYPE: GAUGING WEIR

SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING:		72/03/15 TO 82/12/31			
	TOTAL	1979-1983	SUMMER	WINTER	RATIO
SAMPLES	202	64	27	37	0.73

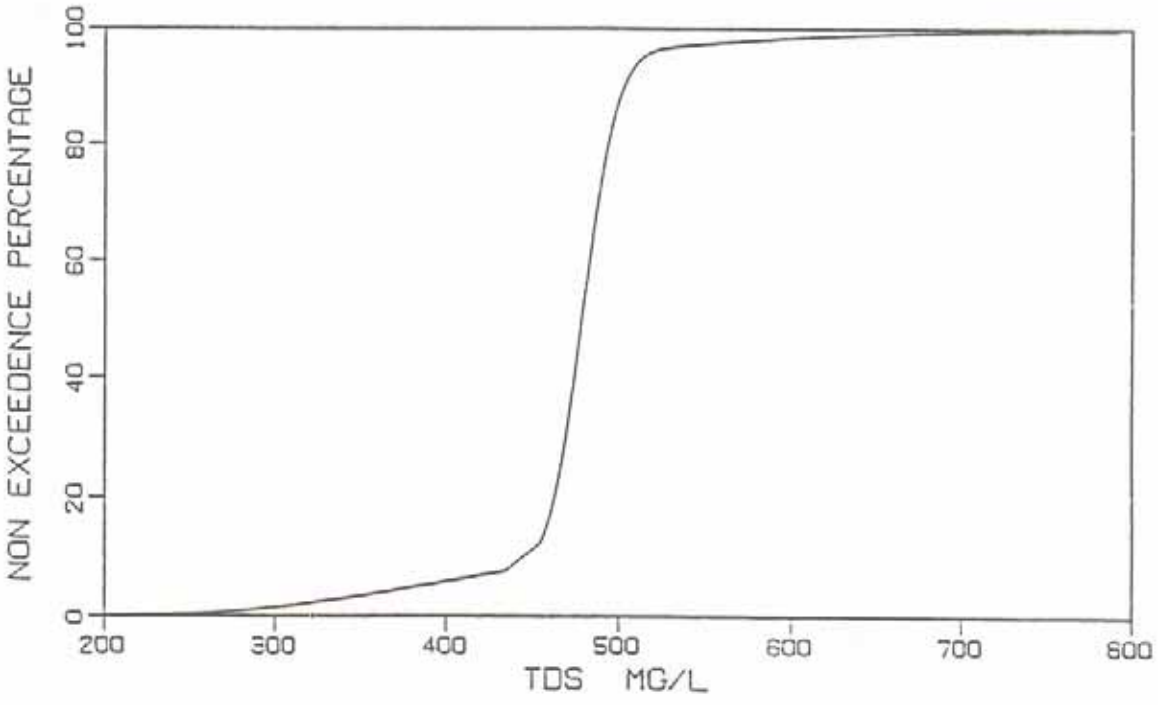
WATER QUALITY STATISTICS						
DETERMINAND	MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH (PH UNITS)	7.8	7.0	8.0	0.2	7.6	8.0
EC (MS/M)	60.8	38.8	64.8	4.0	59.9	62.8
TDS (MG/L)	492	385	577	50	420	513
CA (MG/L)	65	41	71	10	53	71
MG (MG/L)	40	37	43	1	39	42
NA (MG/L)	4	3	5	1	3	4
K (MG/L)	0.6	<0.3	1.1	0.2	0.5	0.9
TAL (MG/L HCO_3)	325	255	373	31	290	348
CL (MG/L)	12	10	35	5	11	17
SO_4 (MG/L)	6	2	61	11	4	13
F (MG/L)	0.1	<0.1	0.4	0.1	0.1	0.3
SI (MG/L)	7.7	7.3	8.8	0.4	7.5	8.4
NO_3 (MG/L N)	3.95	0.82	19.00	3.91	3.79	5.44
PO_4 (MG/L P)	0.006	<0.005	0.069	0.015	<0.005	0.018

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS		
COMPONENT DISTRIBUTION	MEAN	STD DEV
1	(μ_1) 6.0502	(σ_1) 0.2782
2	(μ_2) 6.1734	(σ_2) 0.0316
PROPORTIONALITY FACTOR (α) = .1441		

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C3M13
NAME: HARTS RIVER AT MOUNT RUPERT

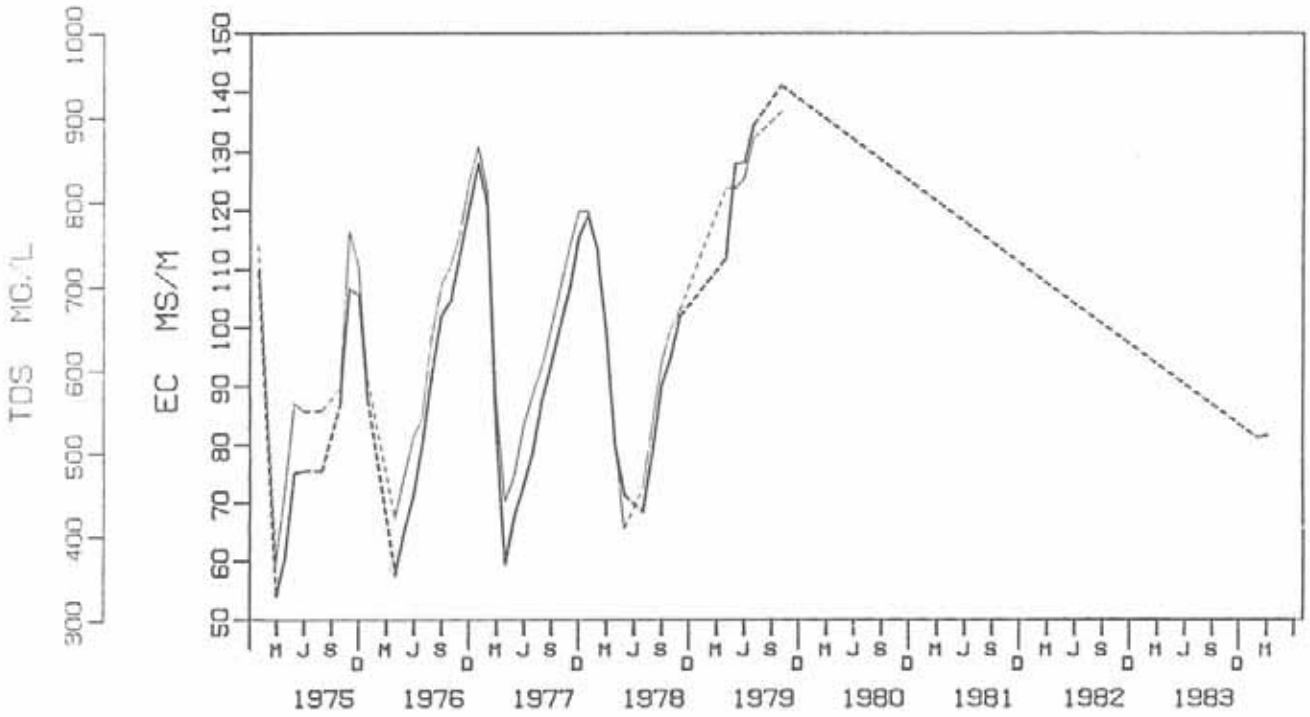
LATITUDE: 28°09'30" S LONGITUDE 24°28'30" E
TYPE: GAUGING WEIR

SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING:		71/08/05 TO 84/03/12			
	TOTAL	1975-1979	SUMMER	WINTER	RATIO
SAMPLES	548	424	245	179	1.37

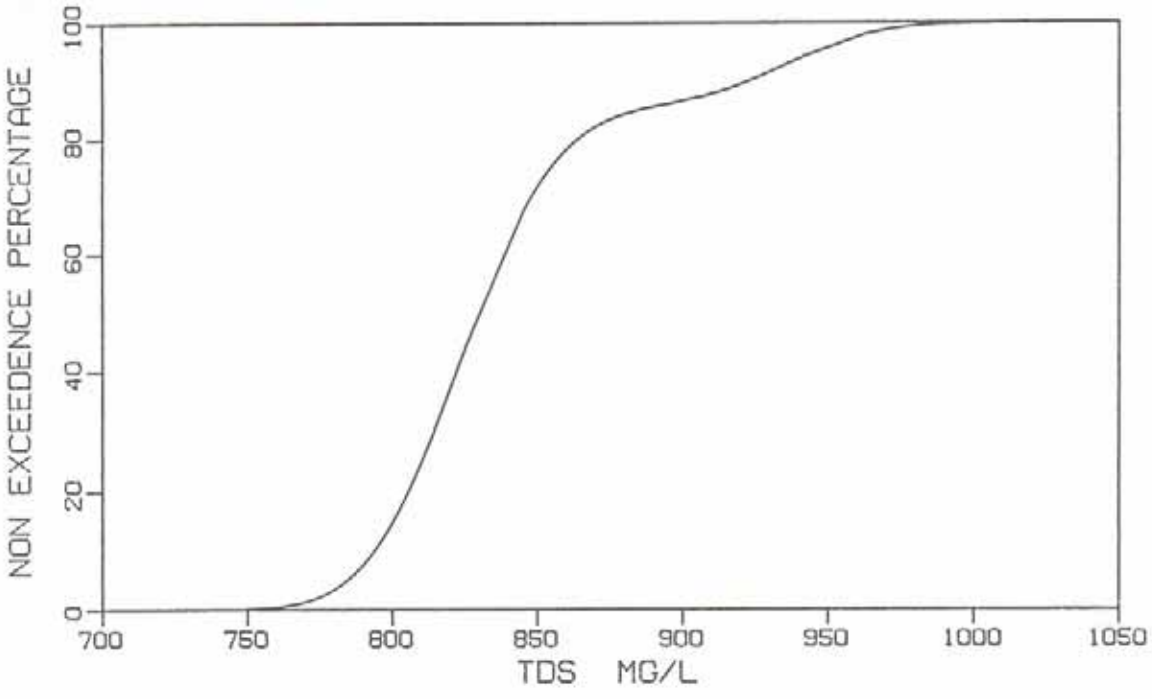
WATER QUALITY STATISTICS						
DETERMINAND	MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH (PH UNITS)	7.9	7.0	8.9	0.3	7.7	8.3
EC (MS/M)	98.2	45.8	141.6	18.8	80.7	119.7
TDS (MG/L)	668	352	910	128	552	795
CA (MG/L)	39	19	52	5	35	45
MG (MG/L)	45	22	67	10	37	55
NA (MG/L)	95	24	150	25	74	126
K (MG/L)	6.8	4.1	24.3	1.1	6.4	7.7
TAL (MG/L HCO_3)	234	165	311	31	209	267
CL (MG/L)	122	28	210	37	90	165
SO_4 (MG/L)	113	15	235	40	84	159
F (MG/L)	0.4	0.1	1.3	0.2	0.4	0.7
SI (MG/L)	1.1	<0.4	5.0	1.3	0.8	3.8
NO_3 (MG/L N)	0.05	<0.02	1.50	0.18	0.02	0.26
PO_4 (MG/L P)	0.018	<0.005	0.280	0.030	0.014	0.043

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS		
COMPONENT DISTRIBUTION	MEAN	STD DEV
1	(μ_1) 6.8412	(σ_1) 0.0265
2	(μ_2) 6.7145	(σ_2) 0.0316
PROPORTIONALITY FACTOR (α) = .1410		

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C3R0101
NAME: SCHWEIZER RENEKE DAM:NEAR DAM WALL

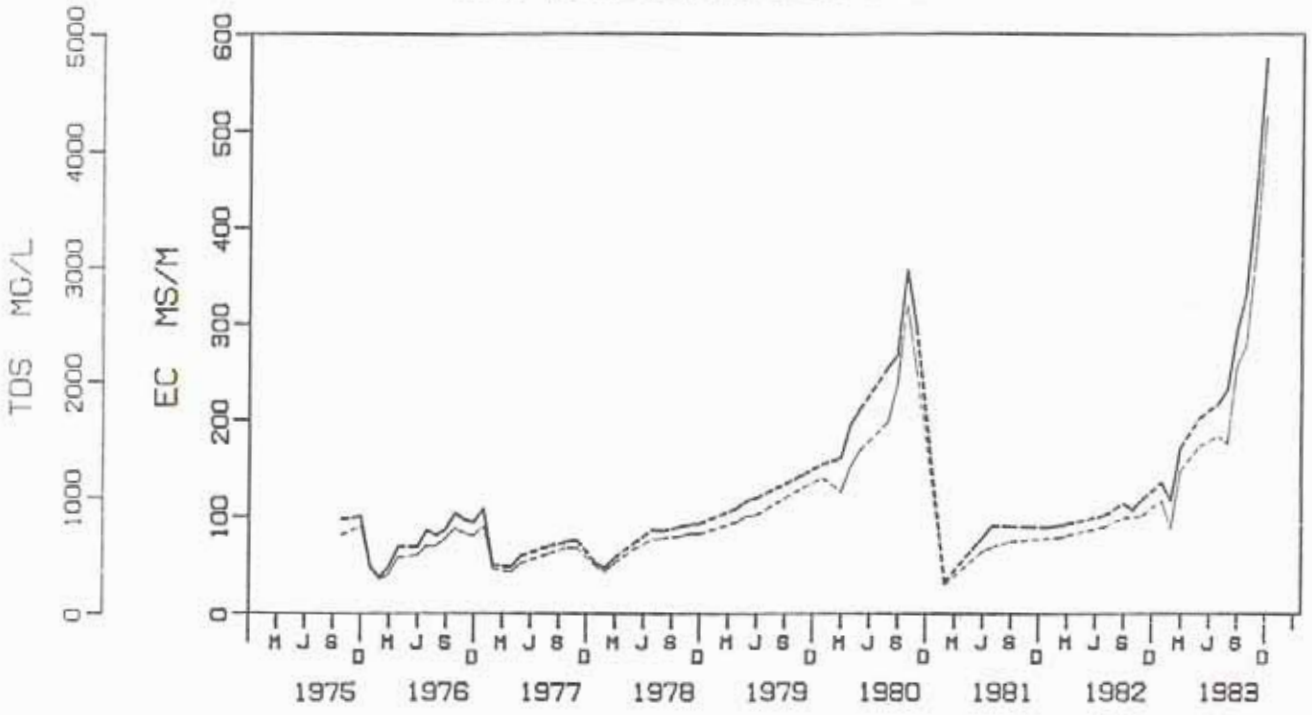
LATITUDE: 27°10'30" S LONGITUDE 25°20'15" E
TYPE: SAMPLING POINT IN DAM BASIN

SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING:		75/10/23 TO 86/10/07			
	TOTAL	1979-1983	SUMMER	WINTER	RATIO
SAMPLES	87	35	18	17	1.06

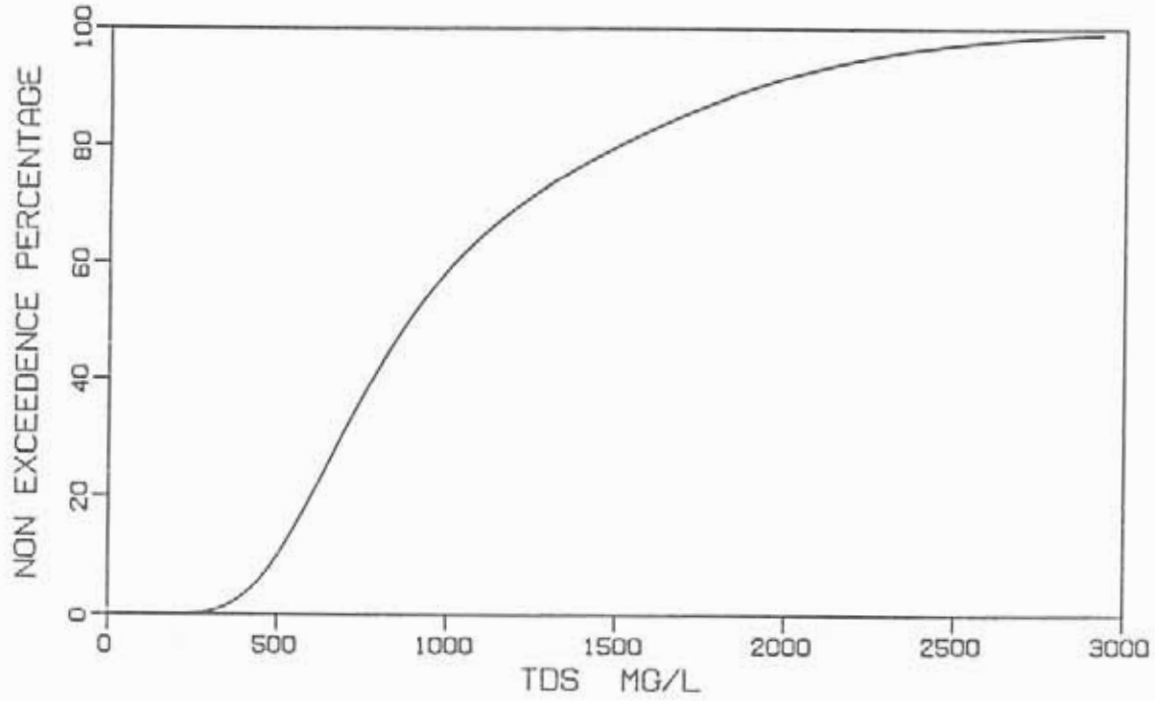
WATER QUALITY STATISTICS						
DETERMINAND	MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH (PH UNITS)	8.1	6.9	9.0	0.4	8.0	8.3
EC (MS/M)	135.6	31.7	574.5	115.7	97.0	318.5
TDS (MG/L)	1089	245	4297	871	768	2333
CA (MG/L)	22	16	39	5	20	31
MG (MG/L)	68	14	157	35	45	115
NA (MG/L)	214	15	1088	234	135	597
K (MG/L)	16.9	5.6	55.5	11.0	12.4	32.8
TAL (MG/L HCO_3)	453	75	1646	305	347	864
CL (MG/L)	208	13	1143	249	137	596
SO_4 (MG/L)	51	4	774	183	29	168
F (MG/L)	0.9	0.3	2.4	0.5	0.6	1.4
SI (MG/L)	1.3	<0.4	9.7	1.8	0.7	3.0
NO_3 (MG/L N)	0.73	<0.02	3.21	1.09	0.29	2.68
PO_4 (MG/L P)	0.097	0.006	0.435	0.142	0.027	0.316

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS		
COMPONENT DISTRIBUTION	MEAN	STD DEV
1	(μ_1) 7.4685	(σ_1) 0.2874
2	(μ_2) 6.6327	(σ_2) 0.3747
PROPORTIONALITY FACTOR (α) = .2447		

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C4M04
NAME: VET RIVER AT NOOITGEDACHT

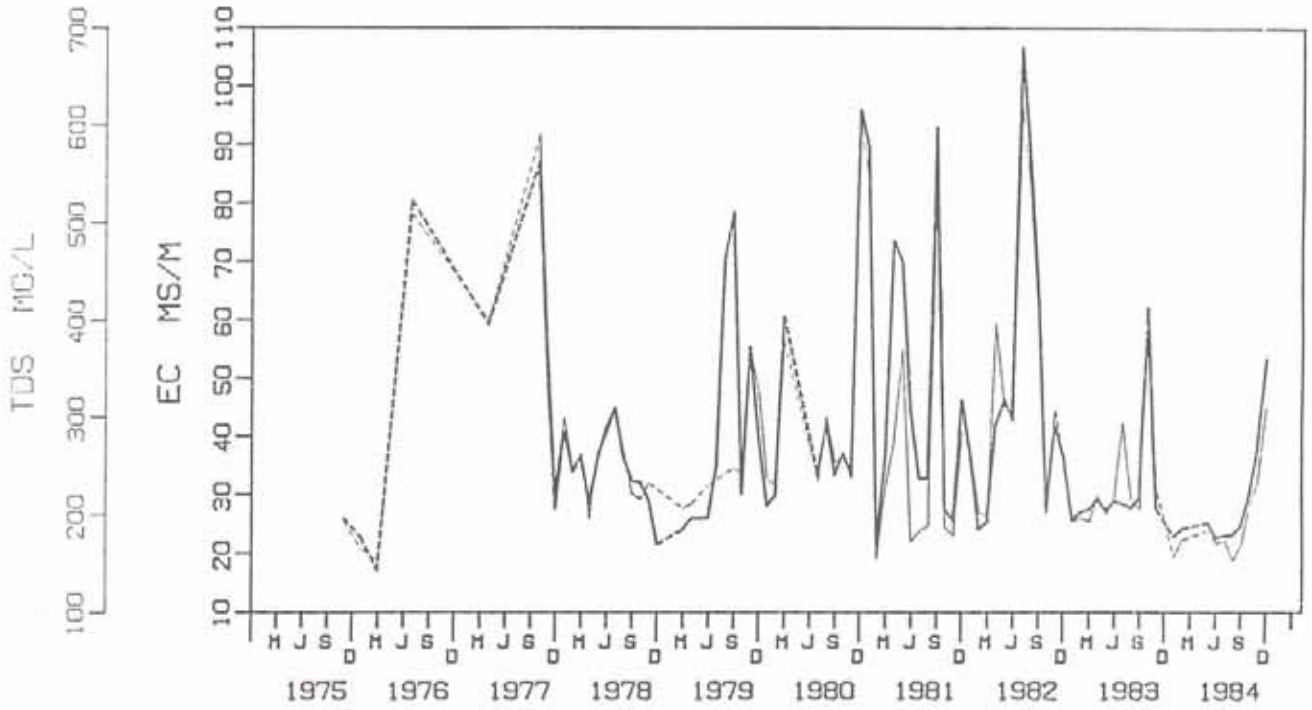
LATITUDE: 27°56'15" S LONGITUDE 26°07'30" E
TYPE: GAUGING WEIR

SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING:		72/08/03 TO 86/10/03			
	TOTAL	1979-1983	SUMMER	WINTER	RATIO
SAMPLES	405	204	101	103	0.98

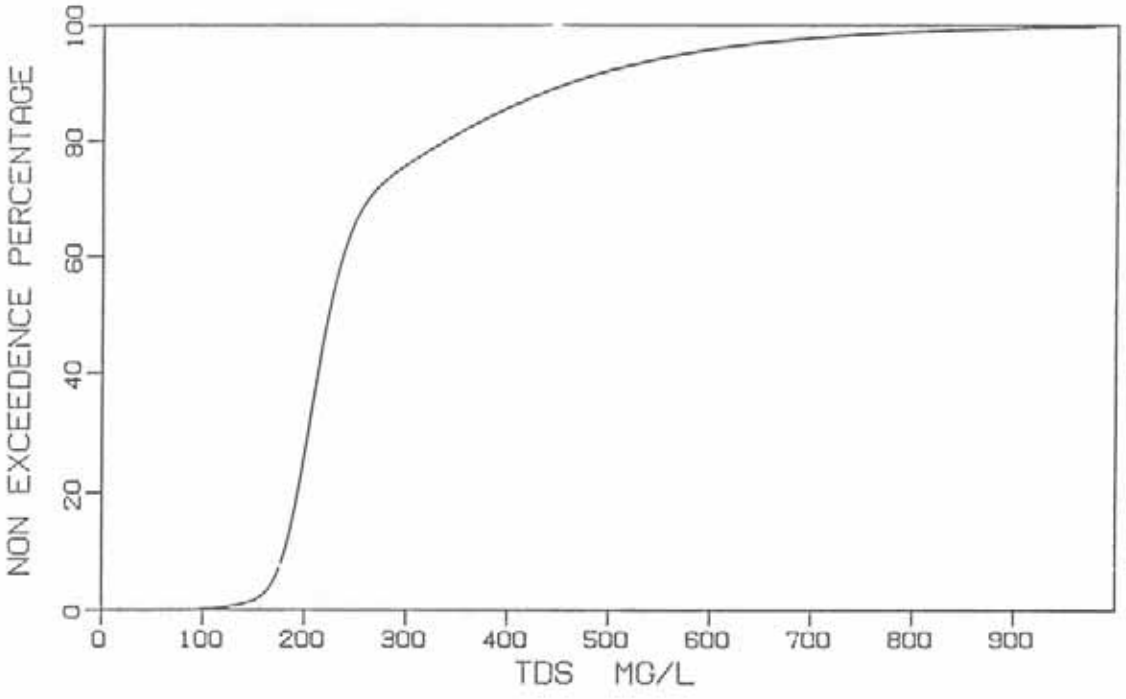
WATER QUALITY STATISTICS						
DETERMINAND	MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH (PH UNITS)	7.5	5.9	8.4	0.5	7.2	8.0
EC (MS/M)	30.7	12.1	173.3	26.7	27.3	79.3
TDS (MG/L)	229	114	1032	143	200	487
CA (MG/L)	22	8	103	14	20	44
MG (MG/L)	10	4	53	7	8	23
NA (MG/L)	25	6	162	25	21	69
K (MG/L)	5.7	3.5	10.5	1.1	5.1	7.2
TAL (MG/L HCO_3)	110	12	256	31	89	145
CL (MG/L)	19	5	427	62	13	111
SO_4 (MG/L)	21	3	304	42	14	89
F (MG/L)	0.5	0.2	1.0	0.1	0.4	0.6
SI (MG/L)	3.3	0.5	6.5	1.3	2.1	5.1
NO_3 (MG/L N)	0.10	<0.02	1.78	0.23	0.03	0.44
PO_4 (MG/L P)	0.052	0.005	0.398	0.062	0.029	0.121

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS		
COMPONENT DISTRIBUTION	MEAN	STD DEV
1	(μ_1) 5.8245	(σ_1) 0.4530
2	(μ_2) 5.3421	(σ_2) 0.1208
PROPORTIONALITY FACTOR (α) = .3975		

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C4Q01
NAME: VET RIVER AT HOOPSTAD

LATITUDE: 27°50'30" S LONGITUDE 25°54'00" E

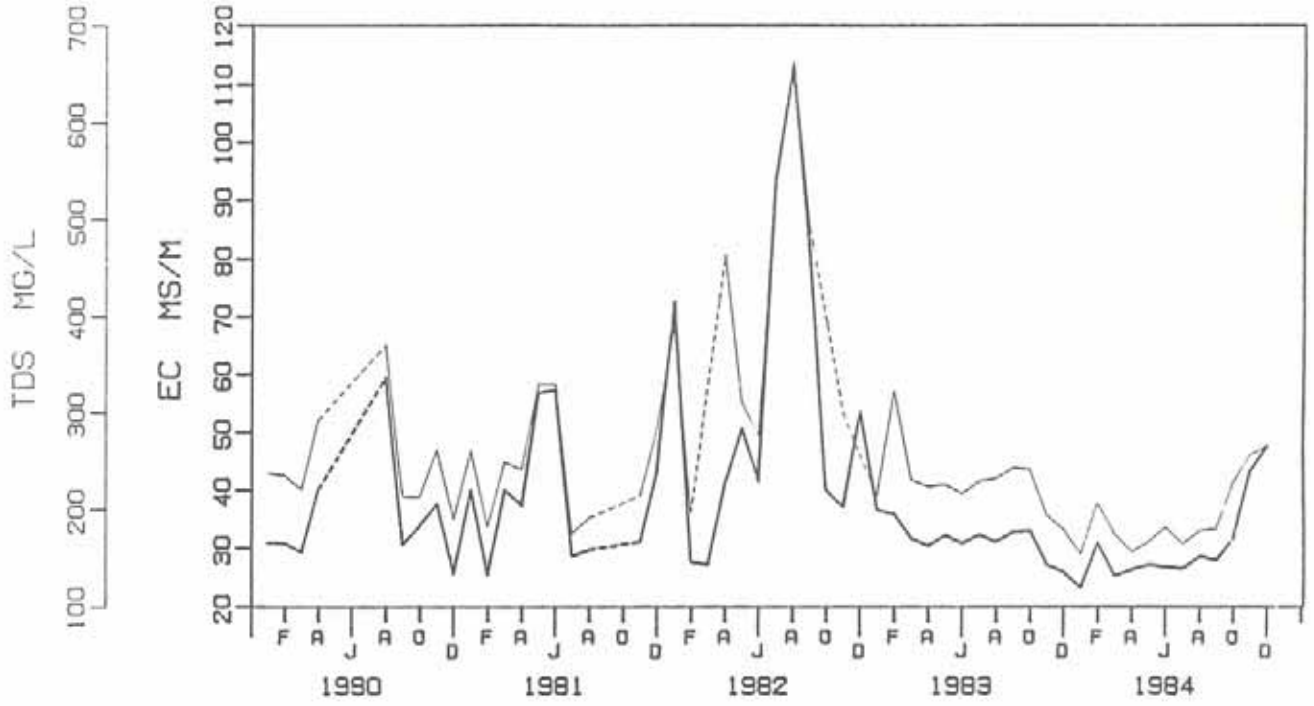
TYPE: SAMPLING POINT

SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING:		80/01/29 TO 85/03/11			
	TOTAL	1979-1983	SUMMER	WINTER	RATIO
SAMPLES	536	333	184	149	1.23

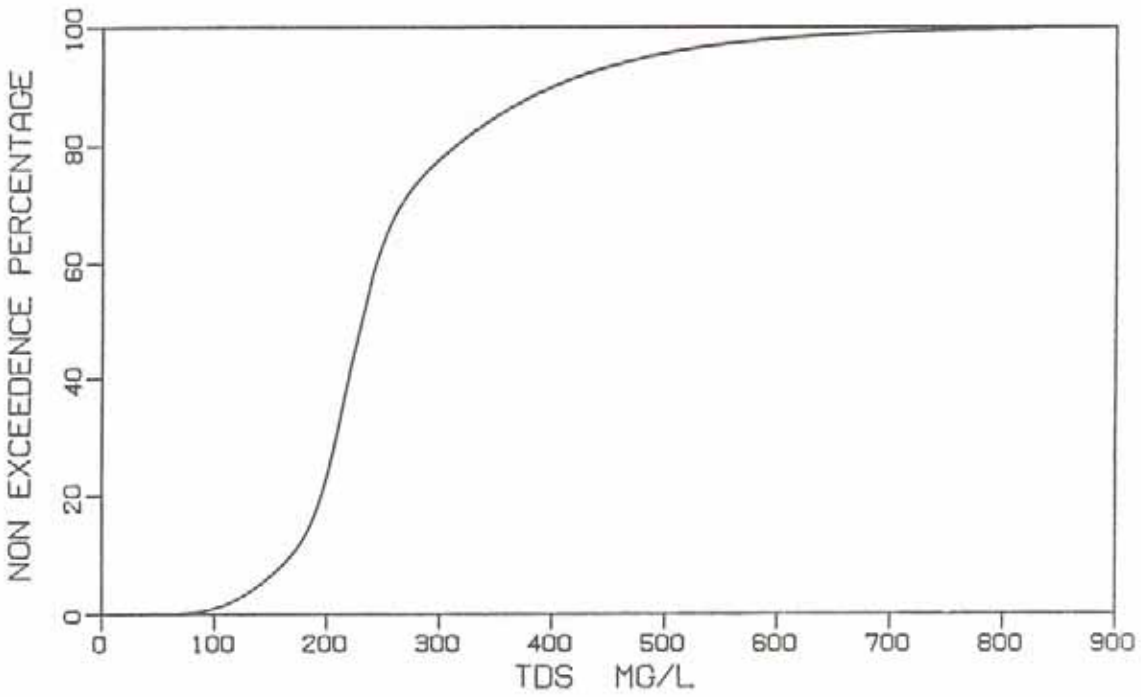
WATER QUALITY STATISTICS							
DETERMINAND		MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH	(PH UNITS)	7.6	0.5	8.4	0.6	7.2	8.0
EC	(MS/M)	32.7	12.3	144.5	21.1	28.8	67.7
TDS	(MG/L)	237	85	833	118	204	398
CA	(MG/L)	24	7	87	13	20	44
MG	(MG/L)	10	4	43	5	9	17
NA	(MG/L)	26	8	137	20	22	55
K	(MG/L)	5.5	3.4	11.5	1.1	5.1	7.0
TAL	(MG/L HCO_3)	101	10	165	29	82	142
CL	(MG/L)	26	6	300	46	19	102
SO_4	(MG/L)	21	<2	187	33	14	76
F	(MG/L)	0.5	0.1	0.8	0.1	0.4	0.6
SI	(MG/L)	3.3	<0.4	7.2	1.7	1.8	5.6
NO_3	(MG/L N)	0.09	<0.02	0.90	0.19	0.05	0.45
PO_4	(MG/L P)	0.057	<0.005	2.207	0.140	0.032	0.144

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS				
COMPONENT DISTRIBUTION	MEAN		STD DEV	
1	(μ_1)	5.5629	(σ_1)	0.4496
2	(μ_2)	5.3981	(σ_2)	0.1044
PROPORTIONALITY FACTOR (α) = .5851				

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C4R0101
NAME: ALLEMANSKRAAL DAM:NEAR DAM WALL

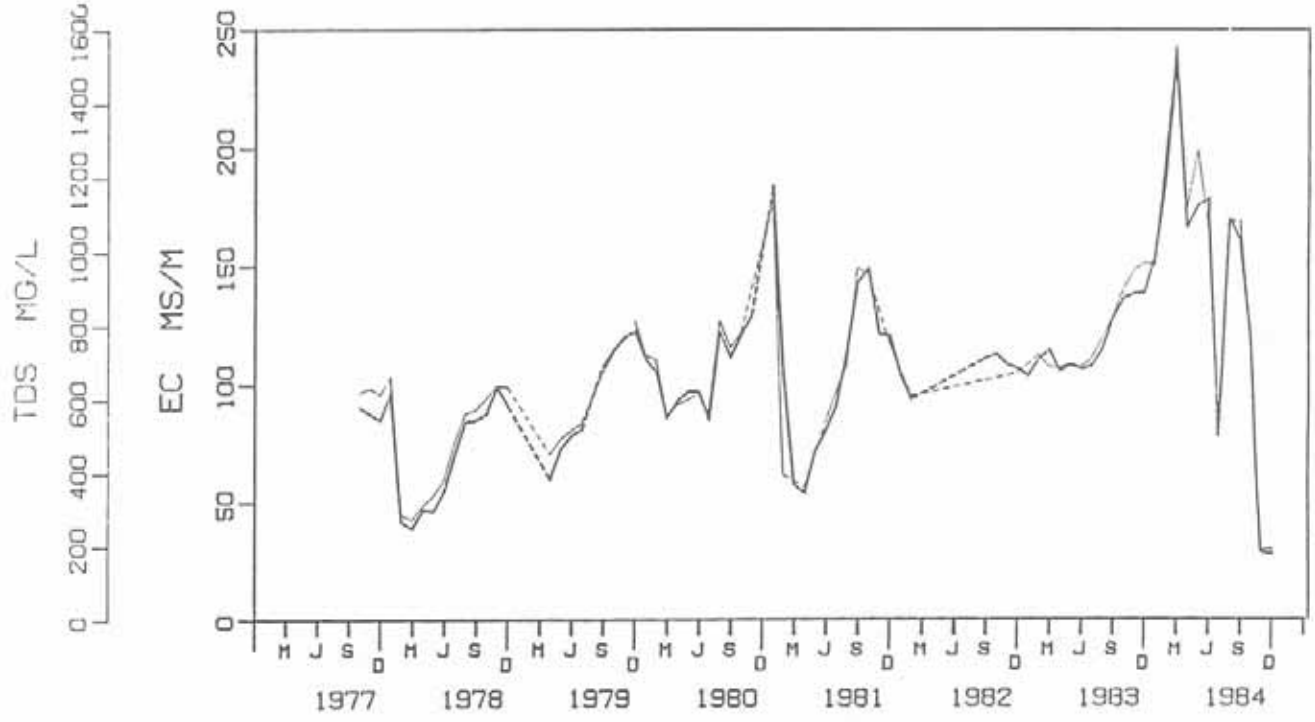
LATITUDE: 28°17'15" S LONGITUDE 27°09'00" E
TYPE: SAMPLING POINT IN DAM BASIN

SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING:		68/04/01 TO 86/07/14			
	TOTAL	1979-1983	SUMMER	WINTER	RATIO
SAMPLES	110	25	13	12	1.08

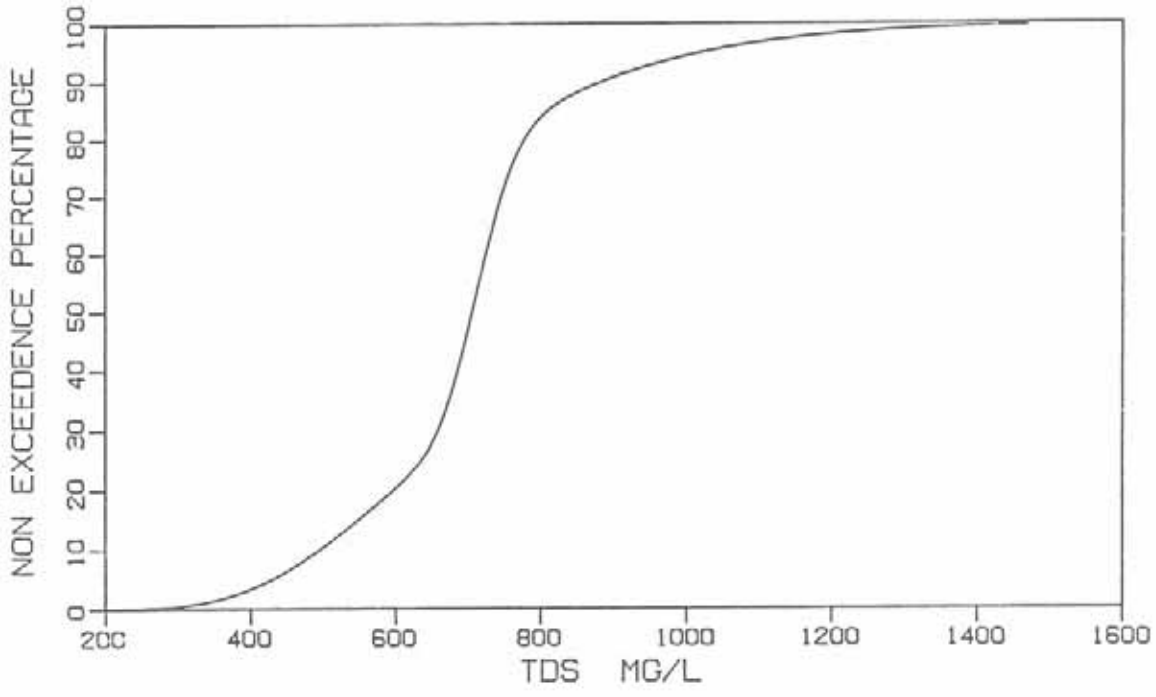
WATER QUALITY STATISTICS						
DETERMINAND	MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH (PH UNITS)	7.1	6.6	8.2	0.4	7.0	7.7
EC (MS/M)	30.1	19.9	35.1	4.9	24.8	34.1
TDS (MG/L)	240	154	264	36	225	260
CA (MG/L)	22	14	26	3	19	25
MG (MG/L)	8	6	10	1	8	10
NA (MG/L)	30	20	35	5	27	35
K (MG/L)	4.5	4.1	7.6	1.0	4.3	5.7
TAL (MG/L HCO_3)	148	81	166	27	130	162
CL (MG/L)	9	7	14	2	9	13
SO_4 (MG/L)	12	2	17	4	10	16
F (MG/L)	0.5	0.4	0.8	0.1	0.5	0.7
SI (MG/L)	3.6	1.9	5.5	0.9	2.8	4.5
NO_3 (MG/L N)	0.05	<0.02	1.77	0.41	0.02	0.34
PO_4 (MG/L P)	0.012	<0.005	0.122	0.036	0.005	0.071

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS		
COMPONENT DISTRIBUTION	MEAN	STD DEV
1	(μ_1) 5.4910	(σ_1) 0.0663
2	(μ_2) 5.0669	(σ_2) 0.0316
PROPORTIONALITY FACTOR (α) = .6663		

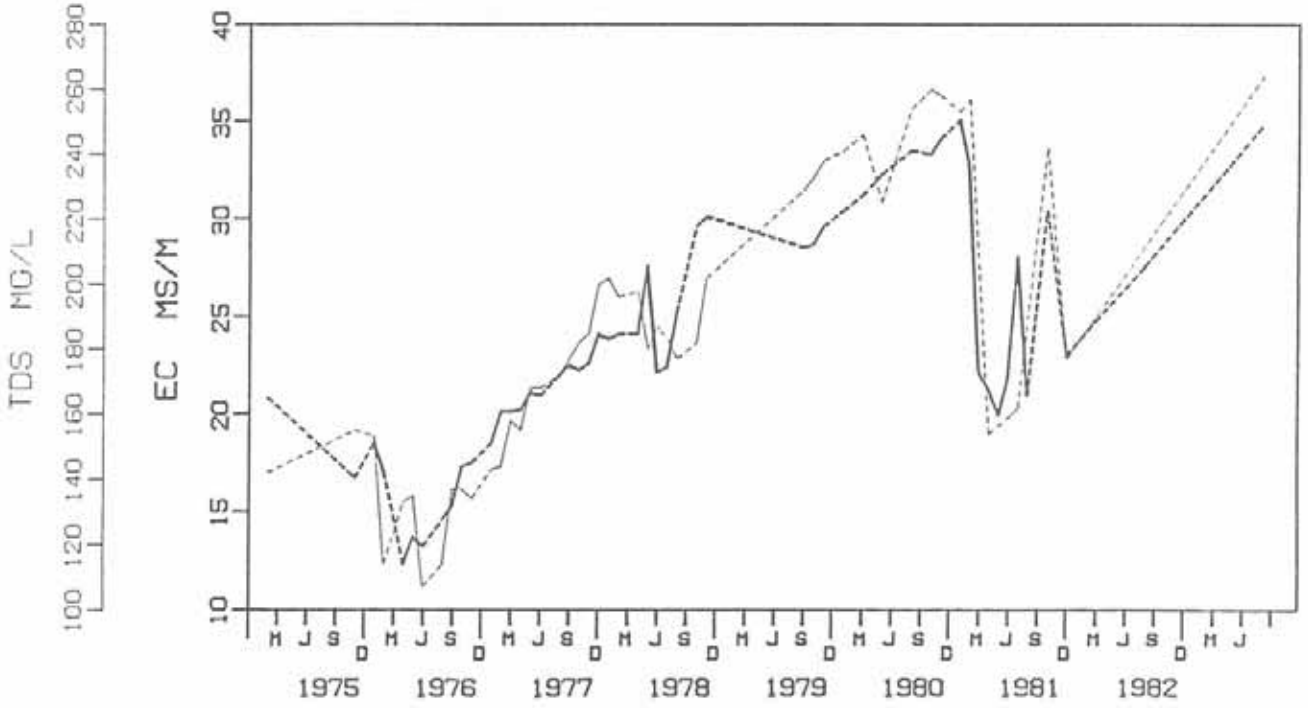
TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



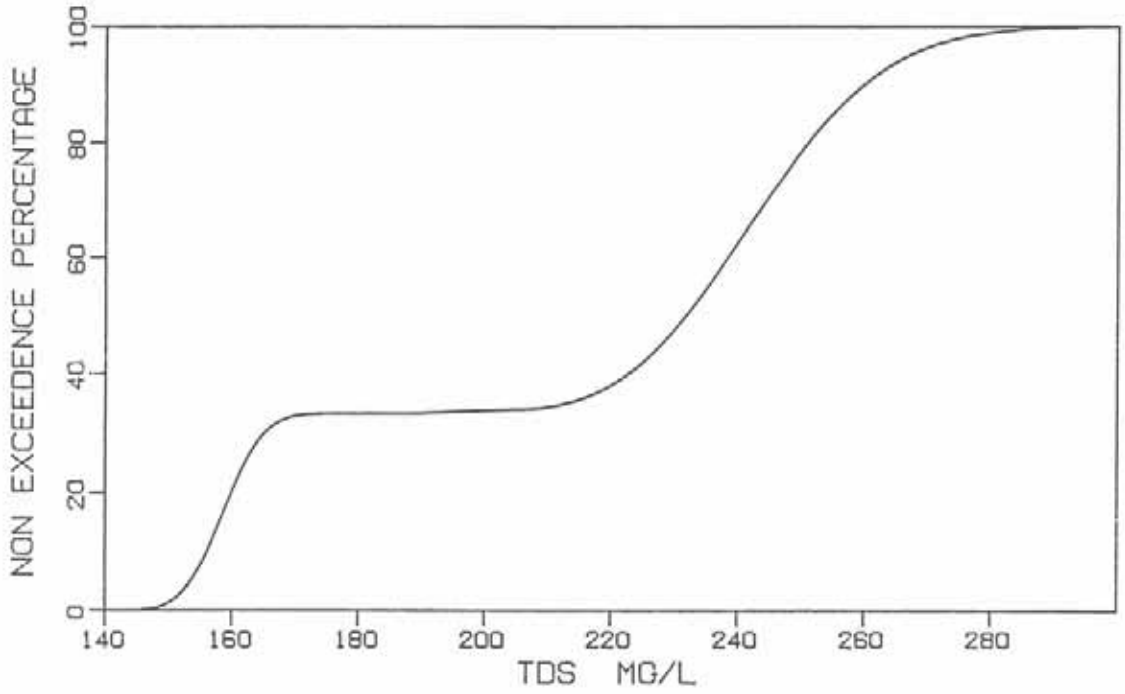
NON EXCEEDENCE PROBABILITY PLOT FOR TDS



TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C4R0201
NAME: ERFENIS DAM:NEAR DAM WALL

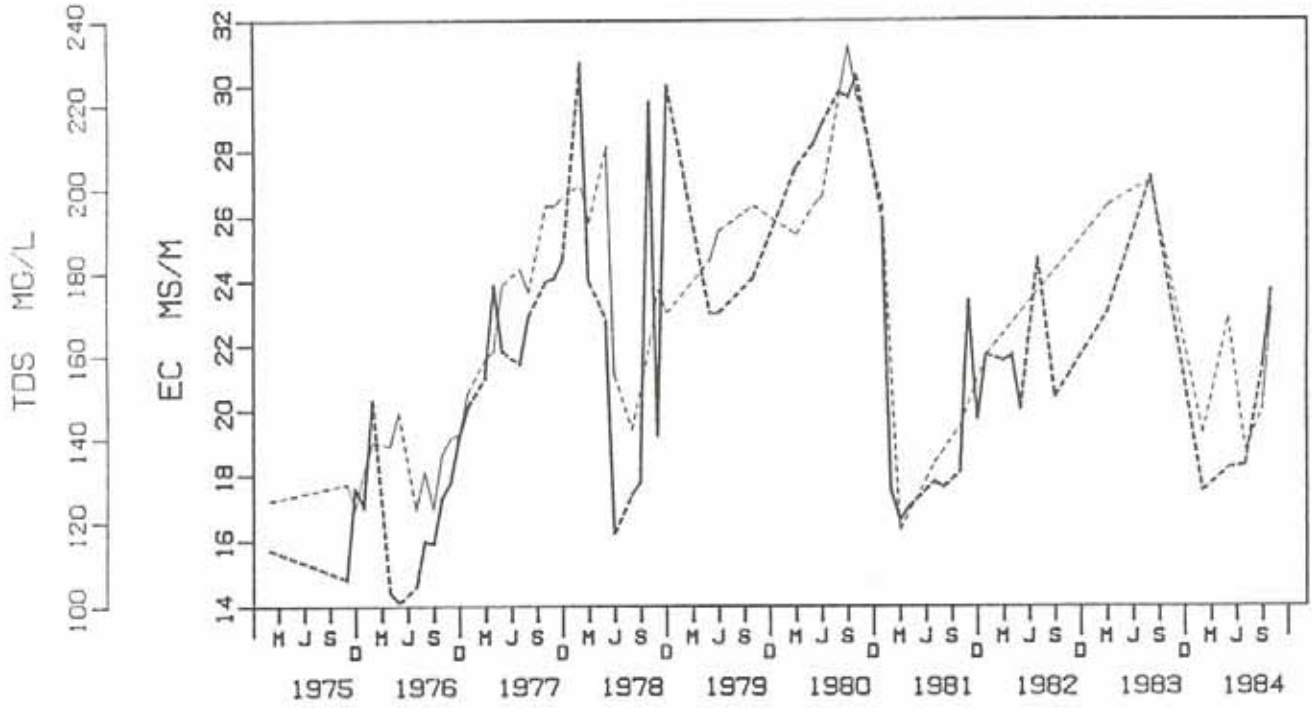
LATITUDE: 28°30'30" S LONGITUDE 26°46'45" E
TYPE: SAMPLING POINT IN DAM BASIN

SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING:		68/04/01 TO 86/07/14			
	TOTAL	1979-1983	SUMMER	WINTER	RATIO
SAMPLES	141	29	13	16	0.81

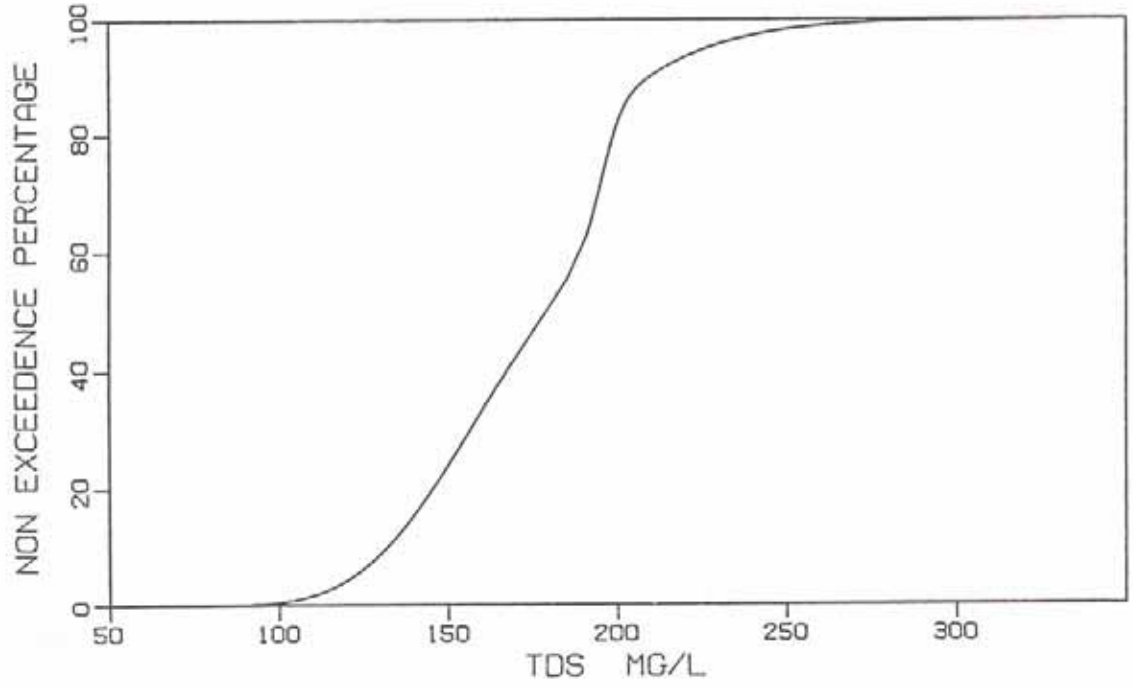
WATER QUALITY STATISTICS						
DETERMINAND	MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH (PH UNITS)	7.1	5.9	7.8	0.5	6.8	7.6
EC (MS/M)	23.0	16.6	30.5	4.3	20.0	29.2
TDS (MG/L)	196	118	234	31	185	223
CA (MG/L)	19	12	24	3	16	23
MG (MG/L)	8	5	10	1	7	10
NA (MG/L)	18	12	25	4	16	23
K (MG/L)	4.8	4.1	5.8	0.4	4.5	5.0
TAL (MG/L HCO_3)	115	59	148	24	100	140
CL (MG/L)	7	6	18	2	7	10
SO_4 (MG/L)	10	3	21	4	8	13
F (MG/L)	0.4	0.2	0.8	0.1	0.4	0.5
SI (MG/L)	4.6	1.0	6.1	1.2	3.5	5.8
NO_3 (MG/L N)	0.06	<0.02	0.45	0.14	0.02	0.37
PO_4 (MG/L P)	0.020	<0.005	0.225	0.048	0.012	0.079

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS		
COMPONENT DISTRIBUTION	MEAN	STD DEV
1	(μ_1) 5.1135	(σ_1) 0.2032
2	(μ_2) 5.2761	(σ_2) 0.0245
PROPORTIONALITY FACTOR (α) = .7840		

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C5M08
NAME: RIET RIVER AT RIVIERA

LATITUDE: 29°48'45" S LONGITUDE 26°12'45" E
TYPE: STORAGE WEIR

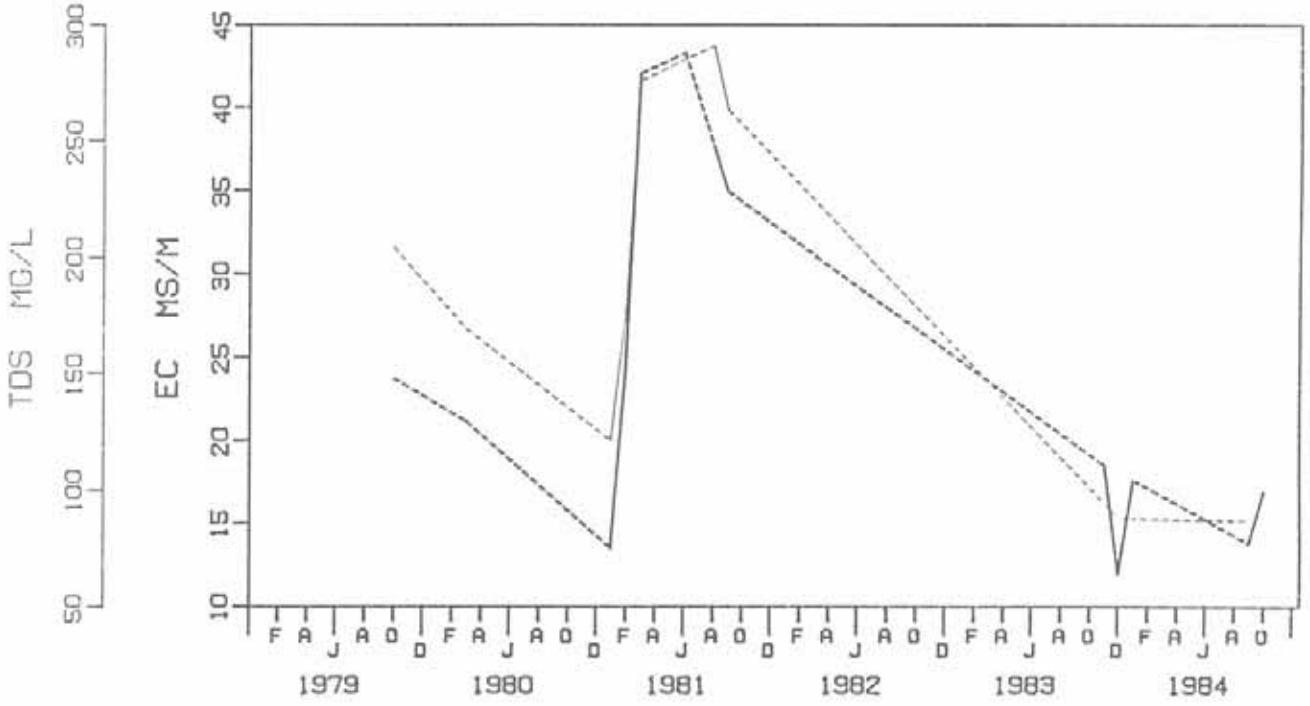
SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING: 72/03/18 TO 85/12/10					
	TOTAL	1979-1983	SUMMER	WINTER	RATIO
SAMPLES	19	13	9	4	2.25

WATER QUALITY STATISTICS

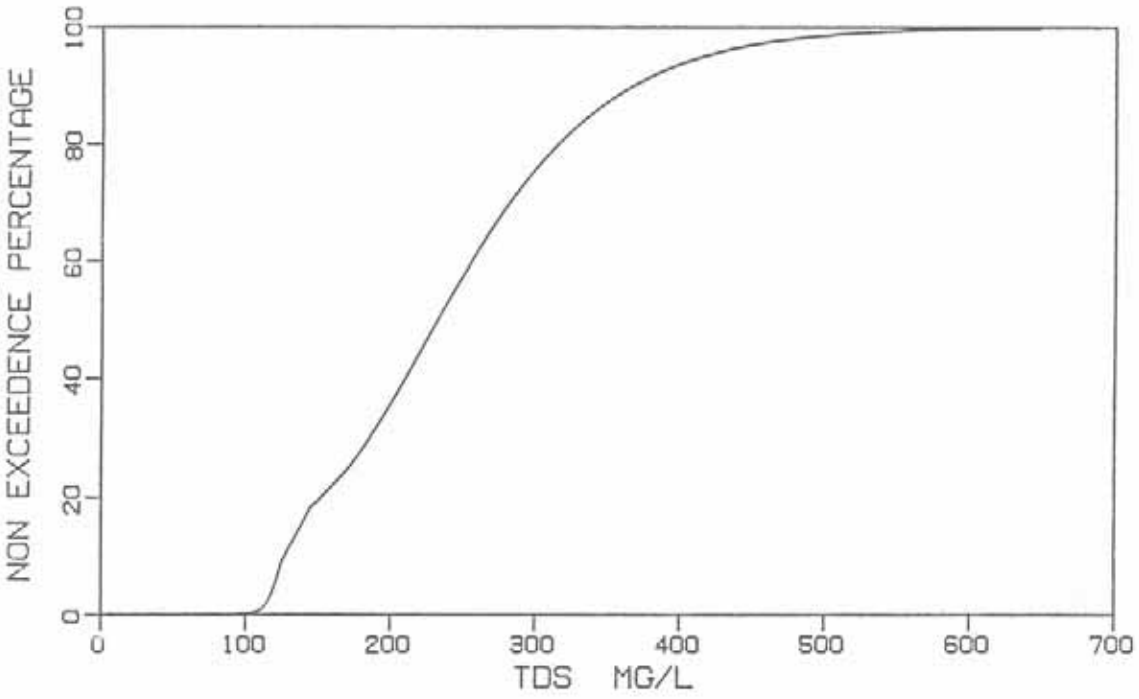
DETERMINAND		MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH	(PH UNITS)	6.7	6.3	7.7	0.4	6.5	7.3
EC	(MS/M)	29.7	11.9	54.6	12.6	18.5	42.2
TDS	(MG/L)	219	88	333	76	150	291
CA	(MG/L)	21	10	30	6	17	26
MG	(MG/L)	10	4	13	3	6	12
NA	(MG/L)	23	<2	44	13	13	34
K	(MG/L)	4.2	2.9	6.3	1.1	3.6	5.7
TAL	(MG/L HCO_3)	115	38	180	43	86	159
CL	(MG/L)	12	3	41	11	10	28
SO_4	(MG/L)	10	8	18	3	8	13
F	(MG/L)	0.4	0.1	1.1	0.3	0.3	0.5
SI	(MG/L)	5.1	4.3	7.3	1.0	4.8	7.3
NO_3	(MG/L N)	0.12	0.03	9.36	2.76	0.07	1.03
PO_4	(MG/L P)	0.168	0.073	1.632	0.448	0.131	0.246

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS		
COMPONENT DISTRIBUTION	MEAN	STD DEV
1	(μ_1) 4.8253	(σ_1) 0.0616
2	(μ_2) 5.5184	(σ_2) 0.3236
PROPORTIONALITY FACTOR (α) = .1449		

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C5M12
NAME: RIET RIVER AT RIETWATER

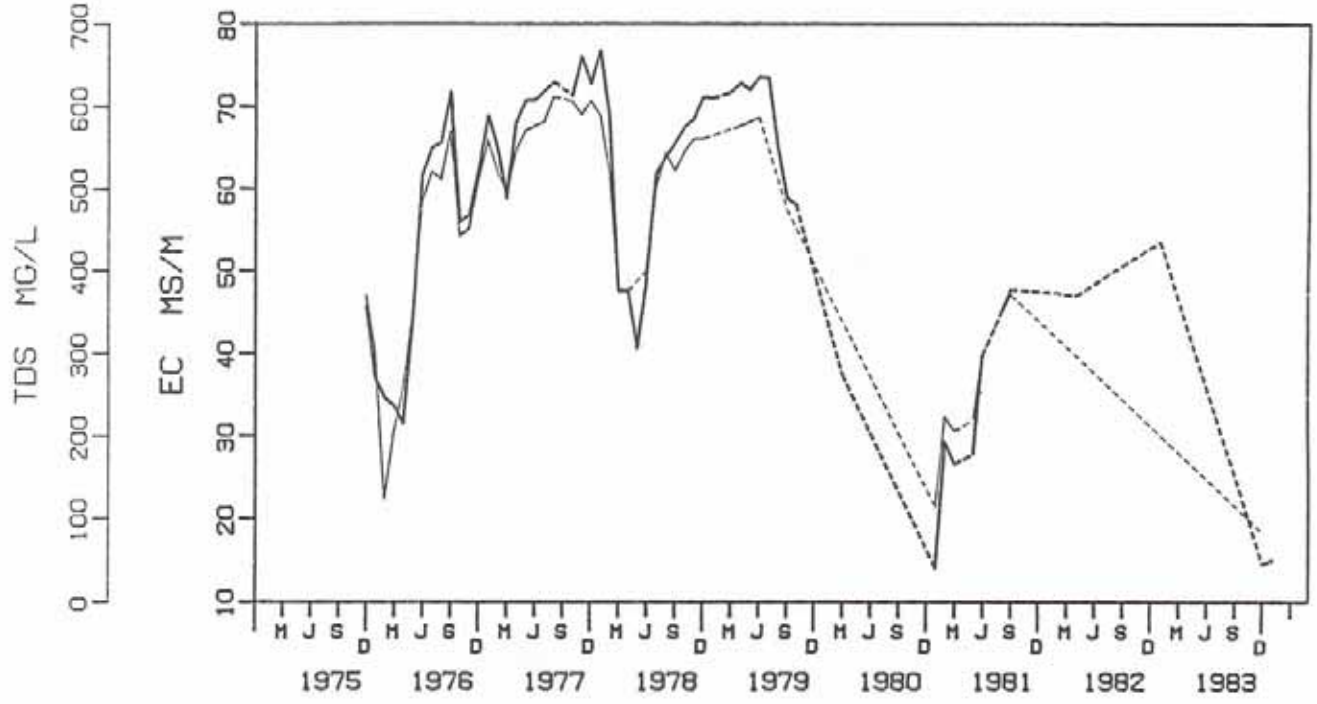
LATITUDE: 29°39'30" S LONGITUDE 25°58'30" E
TYPE: STORAGE WEIR

SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING: 75/12/21 TO 84/01/04					
	TOTAL	1979-1983	SUMMER	WINTER	RATIO
SAMPLES	178	47	15	32	0.47

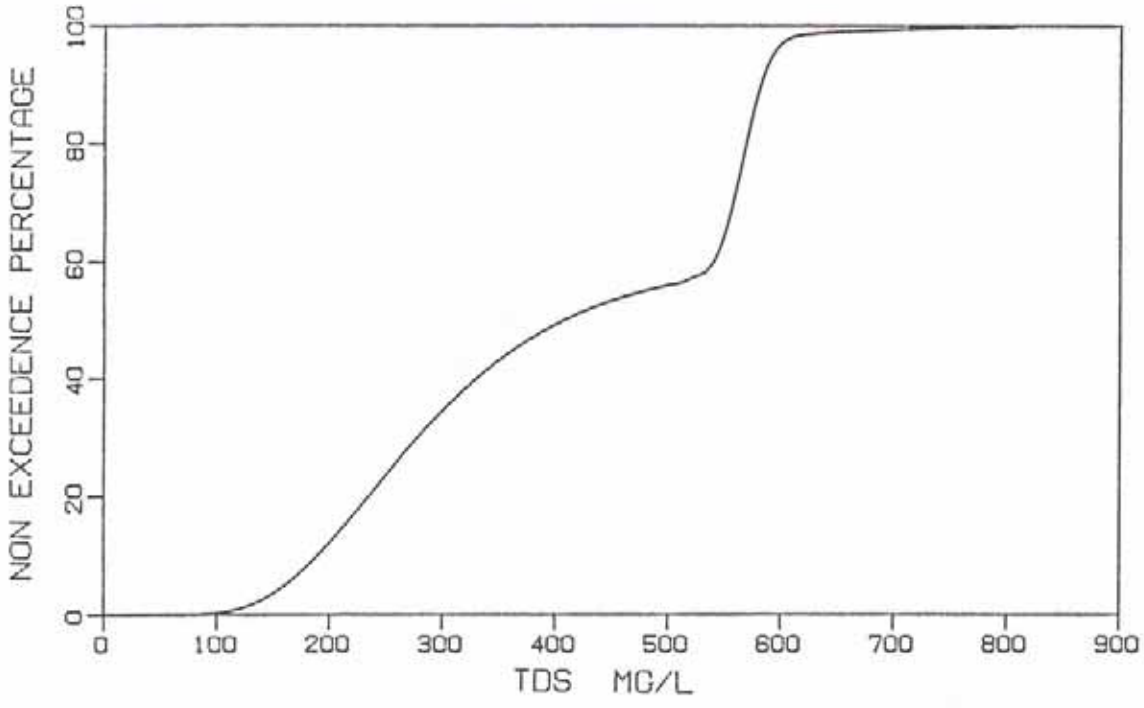
WATER QUALITY STATISTICS						
DETERMINAND	MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH (PH UNITS)	7.1	6.3	8.3	0.6	6.7	8.1
EC (MS/M)	53.5	14.0	74.8	19.8	31.6	73.5
TDS (MG/L)	249	83	587	157	212	579
CA (MG/L)	27	10	40	9	22	38
MG (MG/L)	12	5	33	9	10	32
NA (MG/L)	24	8	93	29	20	92
K (MG/L)	3.7	3.1	7.7	1.1	3.3	4.7
TAL (MG/L HCO_3)	154	26	345	96	124	340
CL (MG/L)	16	7	50	14	12	49
SO_4 (MG/L)	16	6	34	9	12	33
F (MG/L)	0.5	0.2	1.0	0.2	0.4	1.0
SI (MG/L)	5.4	1.5	6.7	2.0	3.0	6.7
NO_3 (MG/L N)	0.06	<0.02	0.45	0.13	0.02	0.30
PO_4 (MG/L P)	0.034	<0.005	0.338	0.083	0.012	0.123

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS		
COMPONENT DISTRIBUTION	MEAN	STD DEV
1	(μ_1) 5.6333	(σ_1) 0.3982
2	(μ_2) 6.3392	(σ_2) 0.0316
PROPORTIONALITY FACTOR (α) = .6050		

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C5M15
NAME: MODDER RIVER AT STOOMHOEK

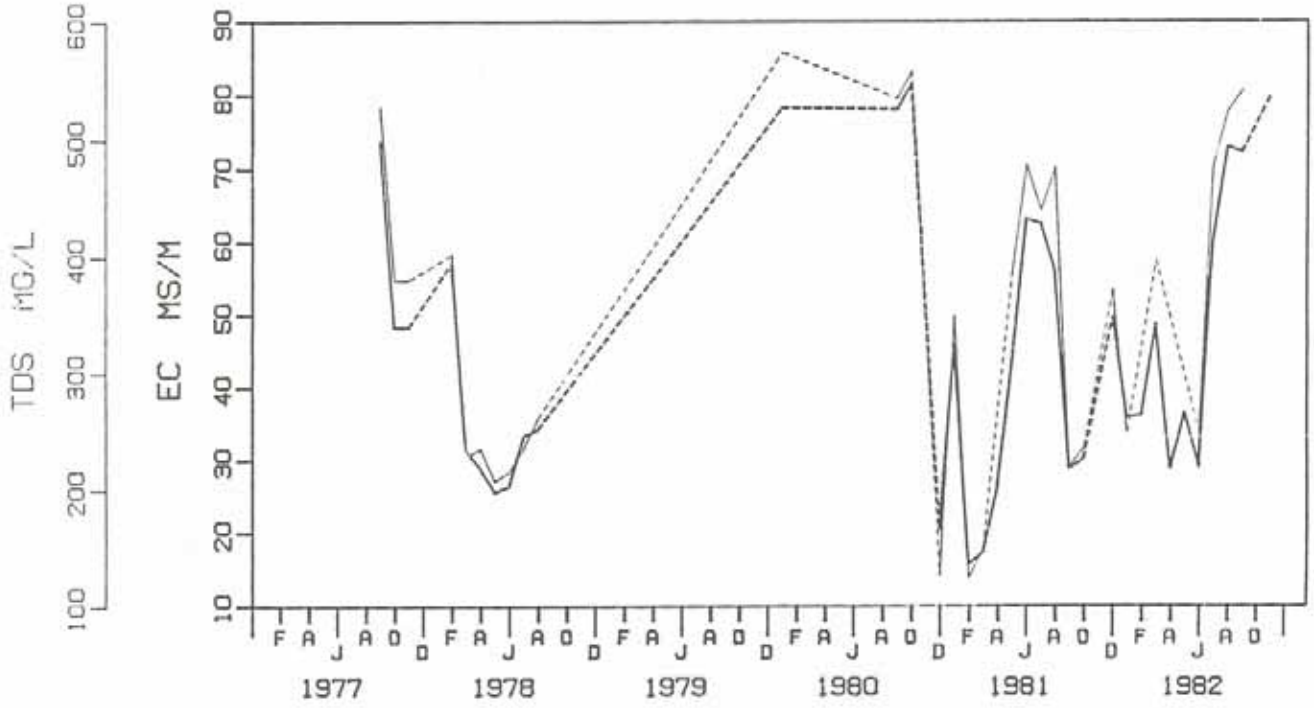
LATITUDE: 28°48'30" S LONGITUDE 26°06'45" E
TYPE: STORAGE WEIR

SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING:		67/01/22 TO 82/11/18			
	TOTAL	1979-1983	SUMMER	WINTER	RATIO
SAMPLES	117	79	32	47	0.68

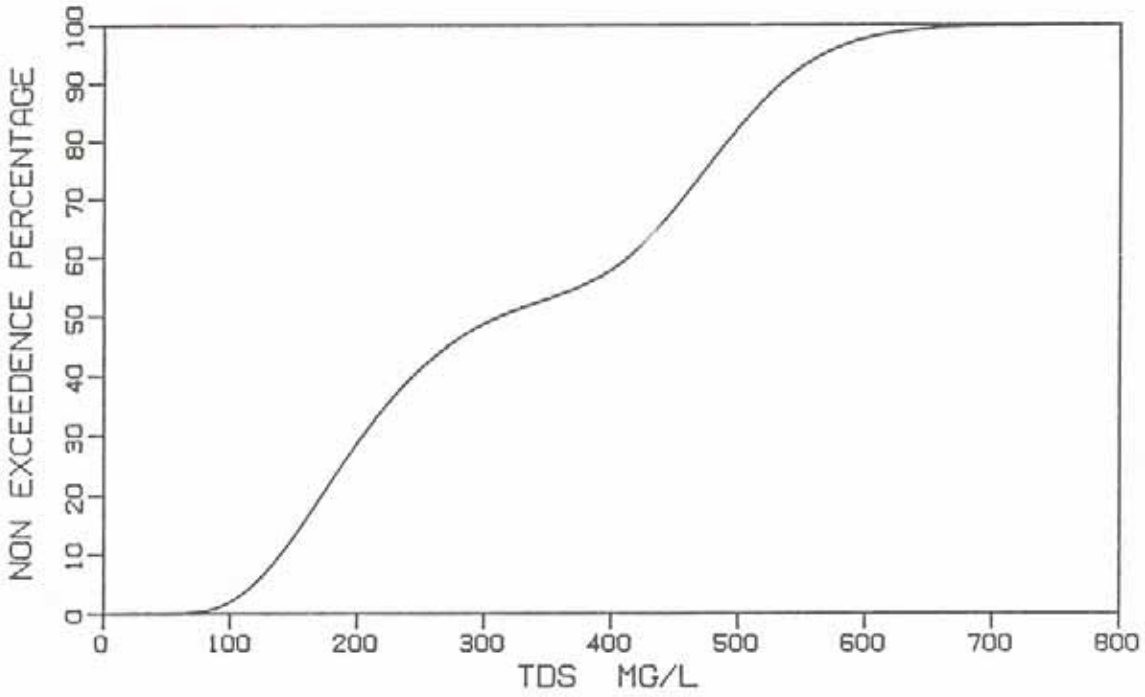
WATER QUALITY STATISTICS						
DETERMINAND	MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH (PH UNITS)	7.3	6.1	8.7	0.6	6.8	7.8
EC (MS/M)	45.8	12.5	83.1	22.4	25.0	74.5
TDS (MG/L)	383	111	618	171	227	558
CA (MG/L)	35	13	52	13	21	47
MG (MG/L)	16	5	38	9	8	27
NA (MG/L)	41	7	86	26	13	77
K (MG/L)	6.4	3.8	11.1	2.0	5.1	9.4
TAL (MG/L HCO_3)	167	57	335	77	92	251
CL (MG/L)	49	6	92	31	17	89
SO_4 (MG/L)	36	5	66	22	16	63
F (MG/L)	0.4	0.2	0.7	0.2	0.3	0.6
SI (MG/L)	5.2	<0.4	6.7	2.0	2.0	6.0
NO_3 (MG/L N)	0.44	0.04	4.65	0.99	0.30	1.71
PO_4 (MG/L P)	0.220	<0.005	1.472	0.362	0.101	0.900

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS		
COMPONENT DISTRIBUTION	MEAN	STD DEV
1	(μ_1) 5.2893	(σ_1) 0.3774
2	(μ_2) 6.1790	(σ_2) 0.1311
PROPORTIONALITY FACTOR (α) = .5646		

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C5M16
NAME: RIET RIVER AT AUCAMPSHOOP

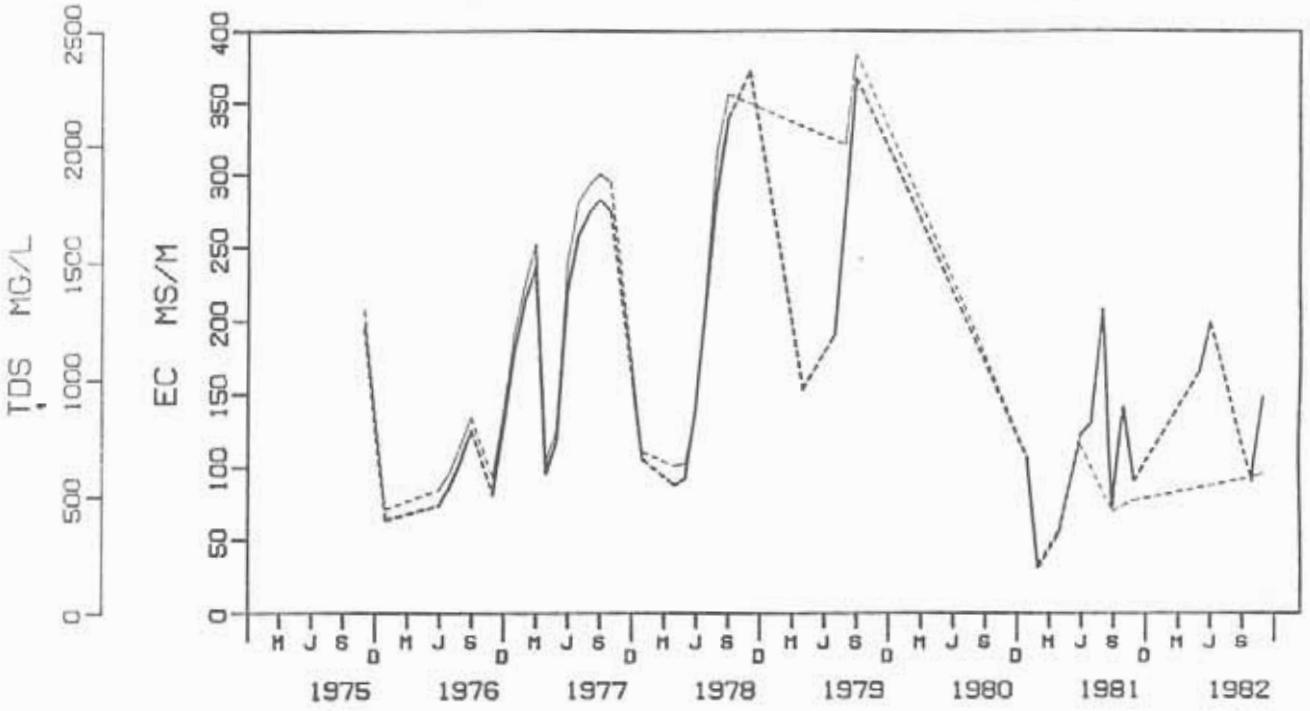
LATITUDE: 28°57'30" S LONGITUDE 24°14'30" E
TYPE: STORAGE WEIR

SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING:		70/06/08 TO 82/11/07			
	TOTAL	1979-1983	SUMMER	WINTER	RATIO
SAMPLES	109	27	11	16	0.69

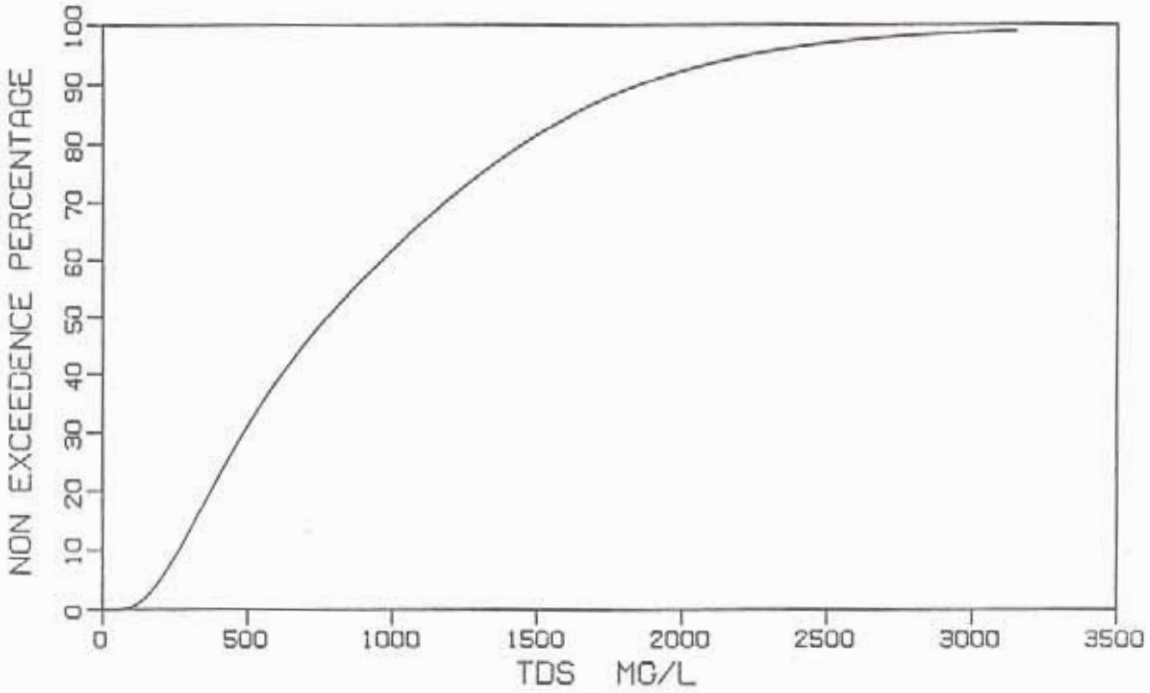
WATER QUALITY STATISTICS						
DETERMINAND	MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH (PH UNITS)	7.6	6.6	7.7	0.4	7.3	7.7
EC (MS/M)	123.2	28.0	371.2	99.2	71.2	290.6
TDS (MG/L)	600	207	2402	735	451	2044
CA (MG/L)	45	23	96	24	39	92
MG (MG/L)	32	10	150	47	26	125
NA (MG/L)	89	18	501	163	63	408
K (MG/L)	5.8	4.5	7.1	0.9	5.3	7.0
TAL (MG/L HCO_3)	188	107	366	82	154	338
CL (MG/L)	126	18	733	243	92	620
SO_4 (MG/L)	84	14	546	181	64	449
F (MG/L)	0.5	0.3	0.9	0.2	0.4	0.8
SI (MG/L)	5.0	3.3	5.8	0.9	4.4	5.8
NO_3 (MG/L N)	0.09	<0.02	1.06	0.32	0.03	0.34
PO_4 (MG/L P)	0.009	0.006	0.089	0.027	0.007	0.051

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS		
COMPONENT DISTRIBUTION	MEAN	STD DEV
1	(μ_1) 6.3576	(σ_1) 0.7092
2	(μ_2) 7.2667	(σ_2) 0.3648
PROPORTIONALITY FACTOR (α) = .7349		

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C5M18
NAME: MODDER RIVER AT TWEERIVIER

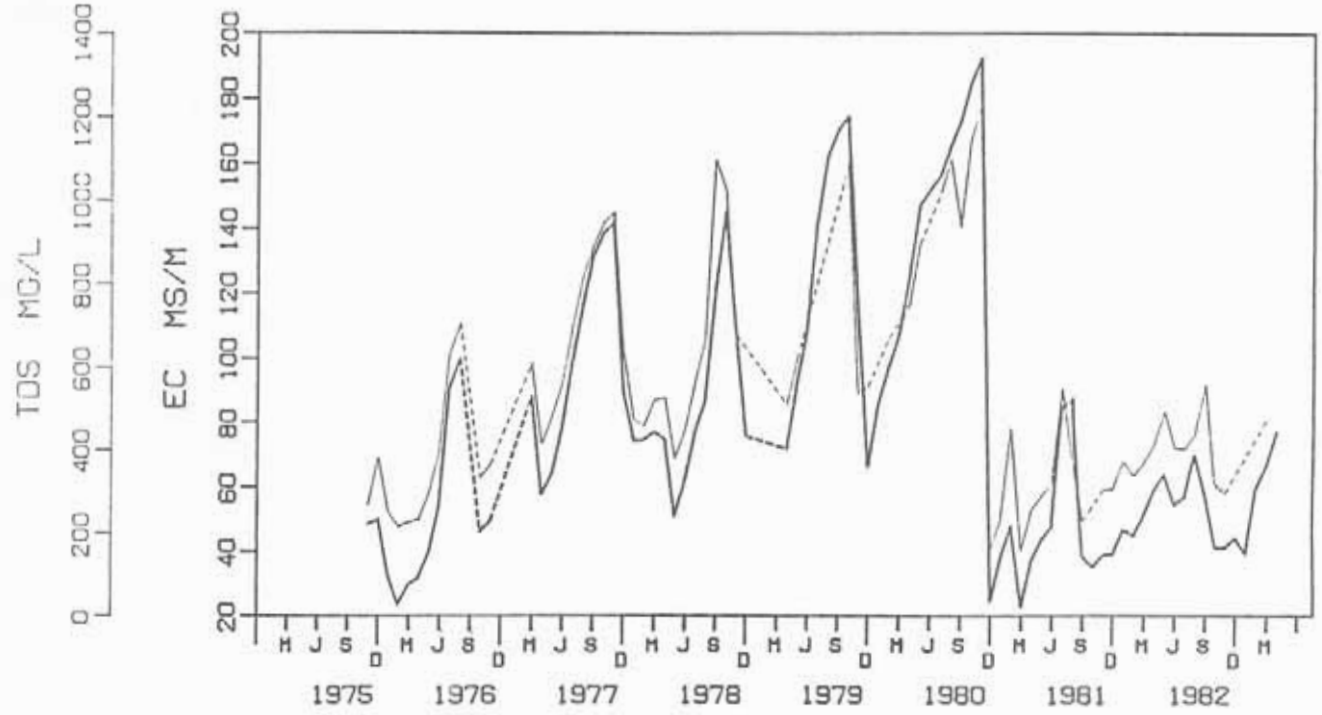
LATITUDE: 29°01'30" S LONGITUDE 24°38'30" E
TYPE: STORAGE WEIR

SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING:		71/05/03 TO 83/04/08			
	TOTAL	1979-1983	SUMMER	WINTER	RATIO
SAMPLES	283	158	85	73	1.16

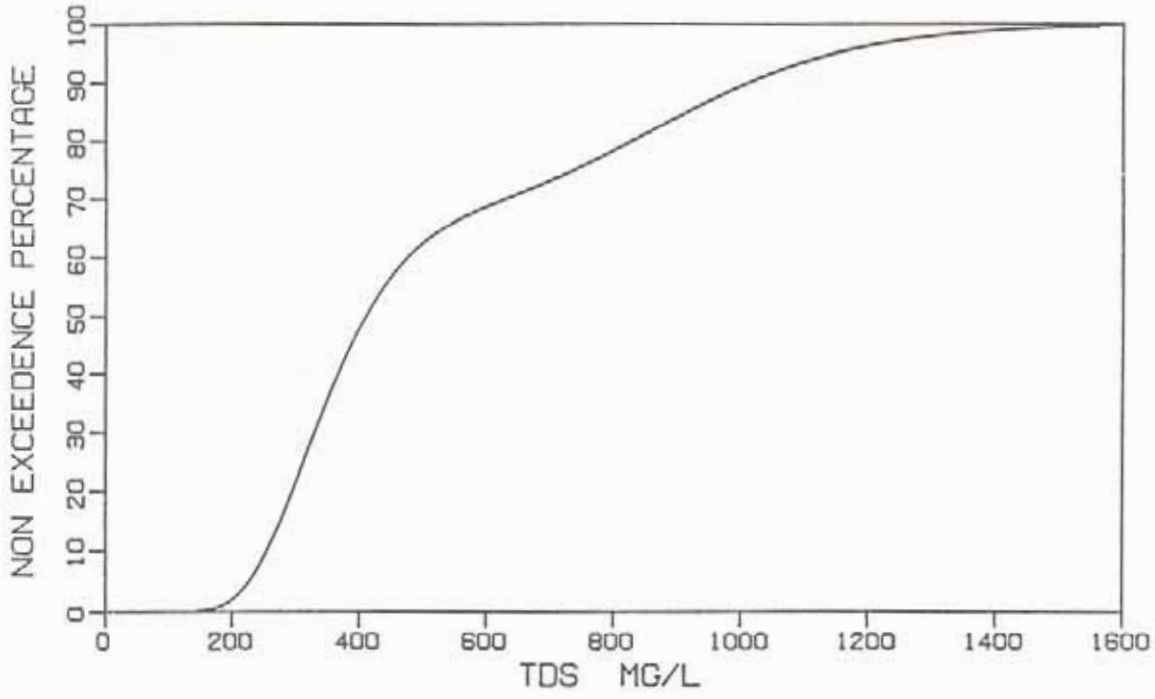
WATER QUALITY STATISTICS						
DETERMINAND	MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH (PH UNITS)	7.6	6.1	7.9	0.5	7.3	7.7
EC (MS/M)	60.6	22.5	196.0	49.8	42.4	168.9
TDS (MG/L)	506	152	1231	328	335	1093
CA (MG/L)	41	19	89	20	34	80
MG (MG/L)	25	6	91	25	16	73
NA (MG/L)	60	12	197	59	37	171
K (MG/L)	5.7	3.3	8.6	1.1	5.3	7.3
TAL (MG/L HCO_3)	199	65	330	67	158	304
CL (MG/L)	84	10	389	112	52	297
SO_4 (MG/L)	49	9	216	66	25	175
F (MG/L)	0.5	0.2	0.8	0.2	0.4	0.8
SI (MG/L)	4.5	2.5	6.5	0.9	3.8	5.5
NO_3 (MG/L N)	0.16	<0.02	3.24	0.52	0.04	0.60
PO_4 (MG/L P)	0.017	<0.005	0.175	0.028	0.008	0.046

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS		
COMPONENT DISTRIBUTION	MEAN	STD DEV
1	(μ_1) 6.8130	(σ_1) 0.2369
2	(μ_2) 5.8496	(σ_2) 0.2914
PROPORTIONALITY FACTOR (α) = .3037		

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C5M20

NAME: TROMPSBURG EYE AT TROMPSBURG TOWNLANDS

LATITUDE: 30°02'30" S LONGITUDE 25°46'45" E

TYPE: GAUGING WEIR

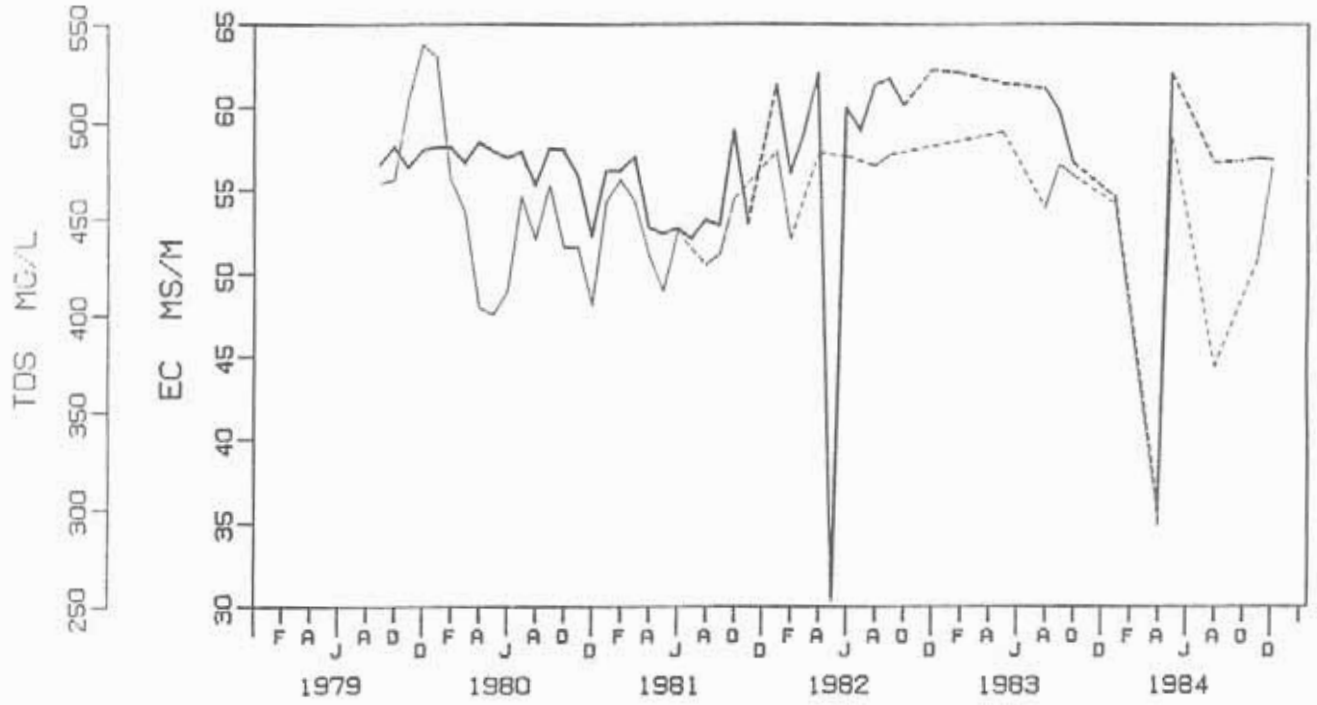
SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING:		79/09/25 TO 86/10/07			
	TOTAL	1979-1983	SUMMER	WINTER	RATIO
SAMPLES	118	94	48	46	1.04

WATER QUALITY STATISTICS

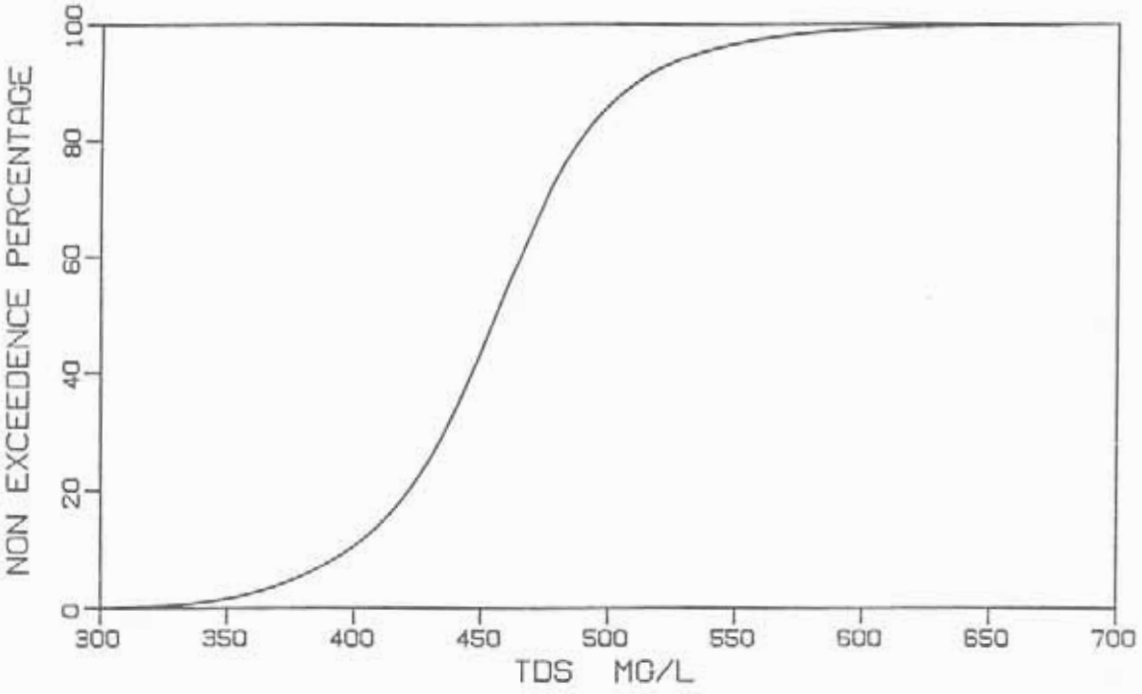
DETERMINAND		MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH	(PH UNITS)	7.6	6.5	8.5	0.3	7.5	7.9
EC	(MS/M)	57.0	30.3	62.3	3.8	56.1	59.9
TDS	(MG/L)	460	373	600	44	432	518
CA	(MG/L)	54	33	58	4	52	56
MG	(MG/L)	25	21	29	2	24	27
NA	(MG/L)	31	28	42	3	30	38
K	(MG/L)	1.1	0.8	4.9	0.7	1.0	2.6
TAL	(MG/L HCO_3)	274	208	375	27	257	298
CL	(MG/L)	22	6	38	5	20	25
SO_4	(MG/L)	14	8	70	9	12	24
F	(MG/L)	0.7	0.5	1.3	0.2	0.6	1.0
SI	(MG/L)	16.1	10.4	20.0	2.0	15.0	18.5
NO_3	(MG/L N)	3.23	0.66	16.67	3.83	2.70	11.80
PO_4	(MG/L P)	0.008	<0.005	0.272	0.038	<0.005	0.018

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS				
COMPONENT DISTRIBUTION	MEAN		STD DEV	
1	(μ_1)	6.1047	(σ_1)	0.1319
2	(μ_2)	6.1309	(σ_2)	0.0548
PROPORTIONALITY FACTOR (α) = .5379				

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C5R0101
NAME: TIERPOORT DAM:NEAR DAM WALL

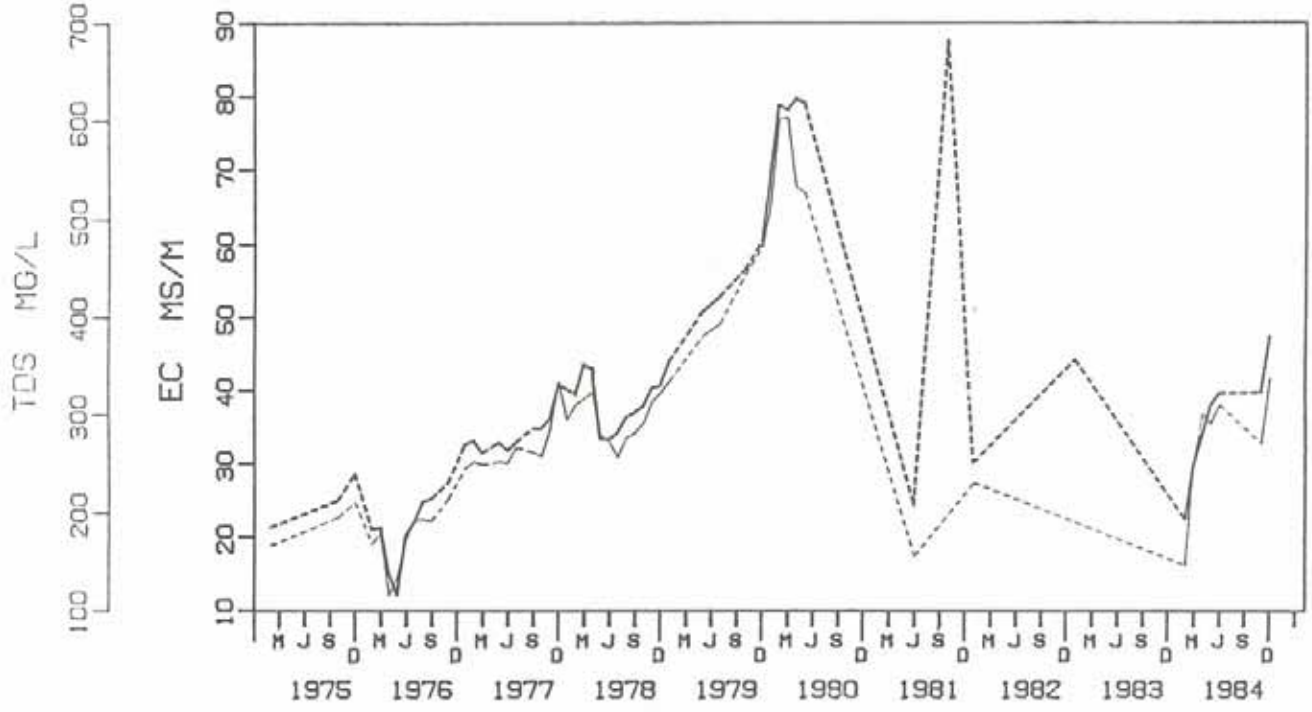
LATITUDE: 29°25'15" S LONGITUDE 26°08'15" E
TYPE: SAMPLING POINT IN DAM BASIN

SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING: 72/10/27 TO 86/10/07					
	TOTAL	1979-1983	SUMMER	WINTER	RATIO
SAMPLES	85	15	9	6	1.50

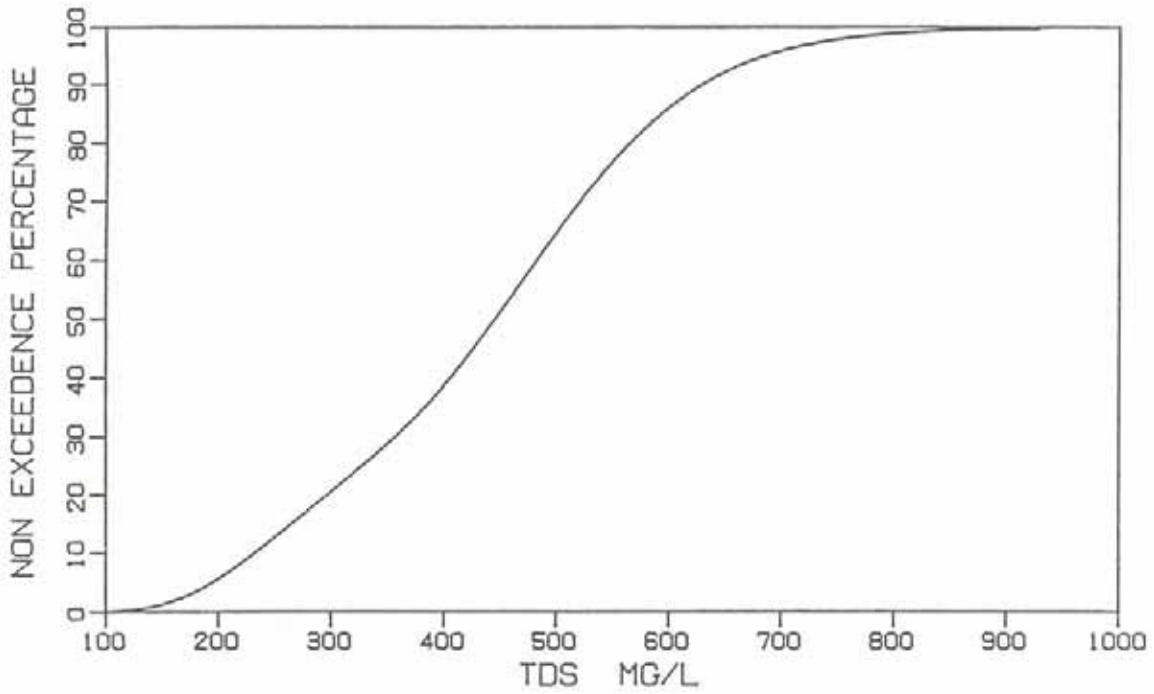
WATER QUALITY STATISTICS						
DETERMINAND	MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH (PH UNITS)	7.5	7.2	8.1	0.3	7.3	7.8
EC (MS/M)	56.6	24.3	87.5	19.2	47.5	79.4
TDS (MG/L)	444	155	602	135	381	588
CA (MG/L)	33	16	38	6	31	37
MG (MG/L)	18	6	22	5	14	22
NA (MG/L)	55	16	104	31	48	104
K (MG/L)	8.1	5.7	11.8	2.0	7.8	11.4
TAL (MG/L HCO_3)	239	81	313	64	208	304
CL (MG/L)	38	9	75	22	29	73
SO_4 (MG/L)	28	6	43	13	16	41
F (MG/L)	0.7	0.3	1.1	0.2	0.5	1.0
SI (MG/L)	2.8	<0.4	7.2	1.9	1.8	4.3
NO_3 (MG/L N)	0.12	<0.02	1.28	0.39	0.03	0.73
PO_4 (MG/L P)	0.062	0.011	0.198	0.059	0.031	0.146

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS		
COMPONENT DISTRIBUTION	MEAN	STD DEV
1	(μ_1) 5.6936	(σ_1) 0.3681
2	(μ_2) 6.2324	(σ_2) 0.2057
PROPORTIONALITY FACTOR (α) = .3979		

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C5M21
NAME: MOSTERS HOEK EYE AT MOSTERS HOEK

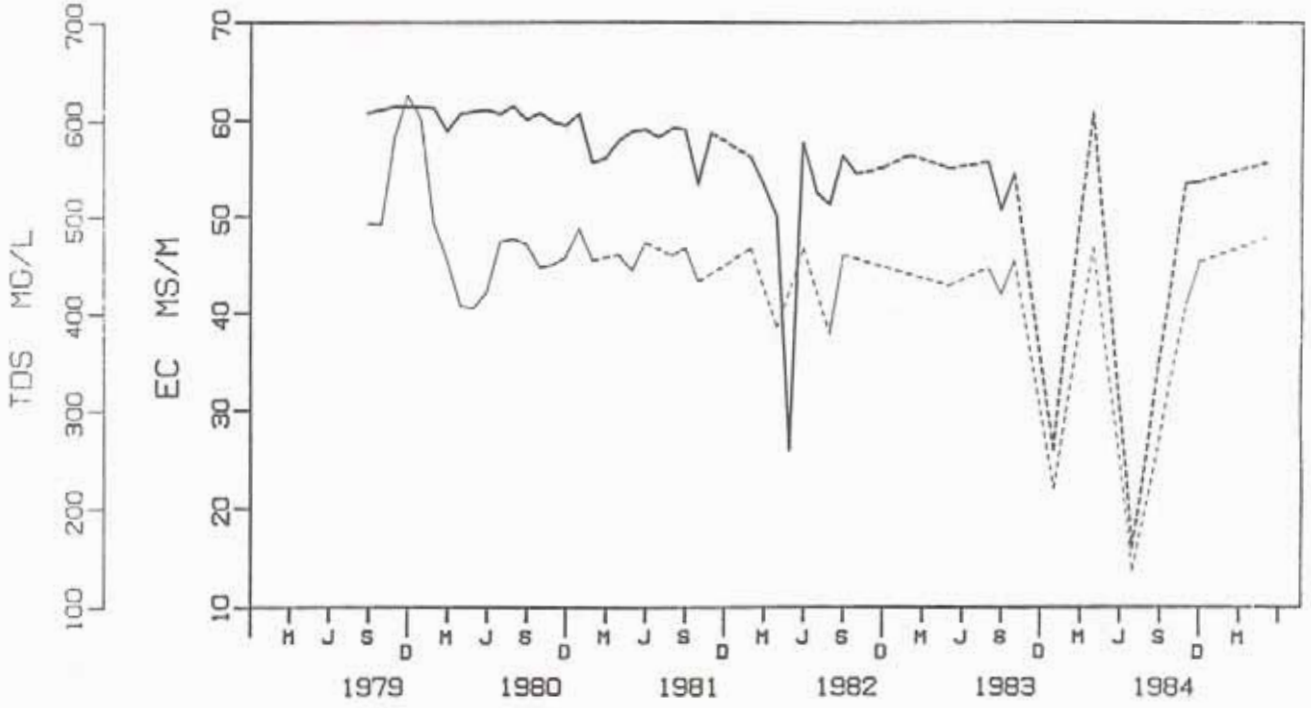
LATITUDE: 29°40'00" S LONGITUDE 26°14'45" E
TYPE: GAUGING WEIR

SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING:		75/10/29 TO 86/09/02			
	TOTAL	1979-1983	SUMMER	WINTER	RATIO
SAMPLES	114	92	47	45	1.04

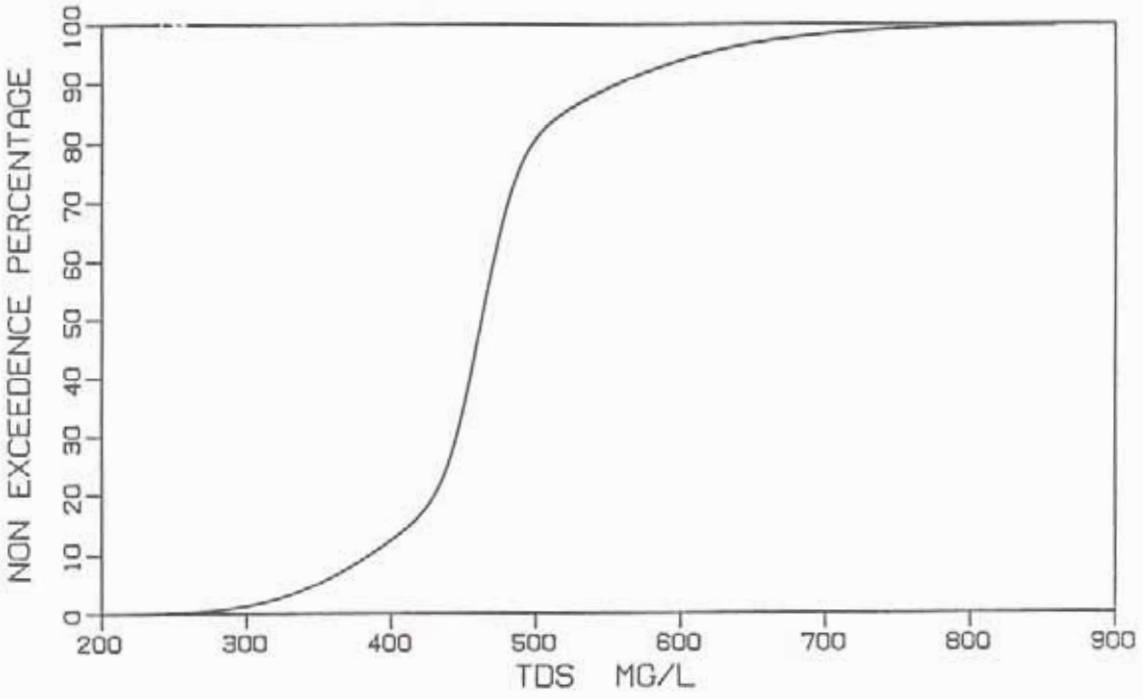
WATER QUALITY STATISTICS						
DETERMINAND	MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH (PH UNITS)	7.6	5.5	8.4	0.4	7.4	7.9
EC (MS/M)	60.3	26.0	62.4	4.5	57.7	61.5
TDS (MG/L)	468	379	667	63	442	581
CA (MG/L)	55	33	65	4	54	58
MG (MG/L)	23	17	27	2	22	24
NA (MG/L)	39	29	43	3	38	41
K (MG/L)	2.7	0.6	3.7	0.6	2.6	3.1
TAL (MG/L HCO_3)	262	211	346	27	242	278
CL (MG/L)	26	13	42	4	25	30
SO_4 (MG/L)	23	11	75	10	20	28
F (MG/L)	1.0	0.5	1.2	0.1	1.0	1.1
SI (MG/L)	12.4	7.6	17.0	1.4	12.1	14.4
NO_3 (MG/L N)	6.06	1.28	32.68	8.41	3.33	25.81
PO_4 (MG/L P)	0.006	<0.005	0.098	0.018	<0.005	0.021

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS				
COMPONENT DISTRIBUTION	MEAN		STD DEV	
1	(μ_1)	6.1385	(σ_1)	0.2241
2	(μ_2)	6.1369	(σ_2)	0.0412
PROPORTIONALITY FACTOR (α) = .4864				

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C5R0201
NAME: KALKFONTEIN DAM:NEAR DAM WALL

LATITUDE: 29°29'45" S LONGITUDE 25°13'15" E
TYPE: SAMPLING POINT IN DAM BASIN

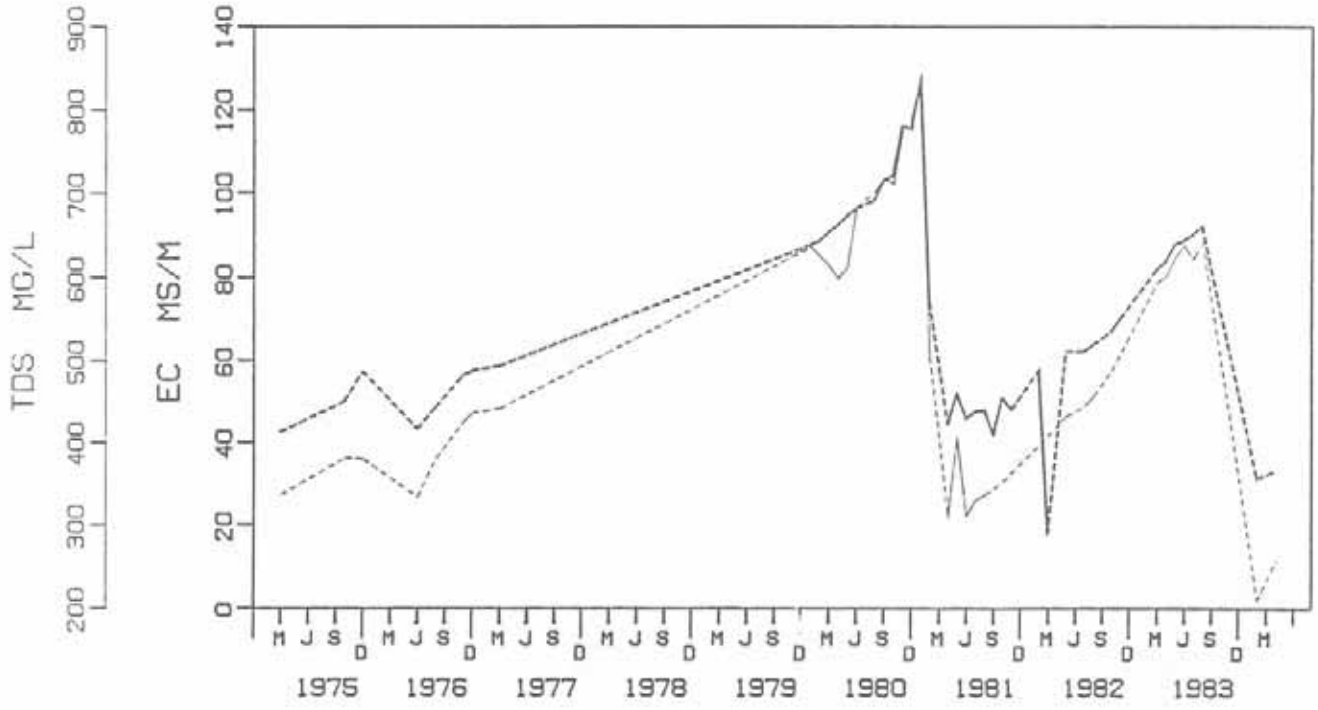
SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING:		68/04/02 TO 84/04/02			
	TOTAL	1979-1983	SUMMER	WINTER	RATIO
SAMPLES	87	49	23	26	0.88

WATER QUALITY STATISTICS

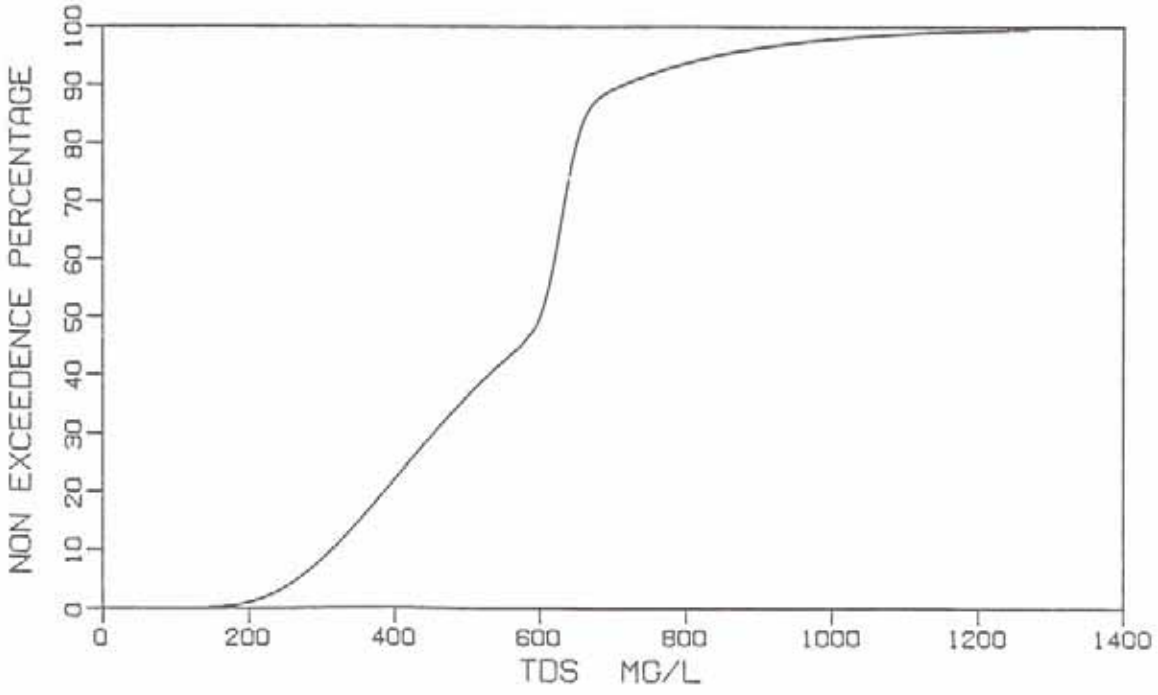
DETERMINAND		MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH	(PH UNITS)	7.7	5.5	8.4	0.6	7.3	8.1
EC	(MS/M)	87.8	17.8	128.0	24.6	62.1	106.0
TDS	(MG/L)	608	309	852	147	450	760
CA	(MG/L)	30	24	46	6	26	41
MG	(MG/L)	40	17	54	11	26	50
NA	(MG/L)	97	42	156	33	58	131
K	(MG/L)	6.3	4.2	9.0	1.2	5.3	7.7
TAL	(MG/L HCO_3)	263	125	320	54	217	307
CL	(MG/L)	101	32	163	34	59	130
SO_4	(MG/L)	74	32	129	24	50	102
F	(MG/L)	0.9	0.5	1.2	0.2	0.6	1.0
SI	(MG/L)	0.6	<0.4	6.9	1.4	0.5	3.3
NO_3	(MG/L N)	0.10	<0.02	3.36	0.54	0.02	0.50
PO_4	(MG/L P)	0.012	<0.005	0.074	0.019	0.005	0.048

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS		
COMPONENT DISTRIBUTION	MEAN	STD DEV
1	(μ_1) 6.1571	(σ_1) 0.4010
2	(μ_2) 6.4457	(σ_2) 0.0332
PROPORTIONALITY FACTOR (α) = .6535		

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C5R0301
NAME: RUSTFONTEIN DAM:NEAR DAM WALL

LATITUDE: 29°16'15" S LONGITUDE 26°37'00" E
TYPE: SAMPLING POINT IN DAM BASIN

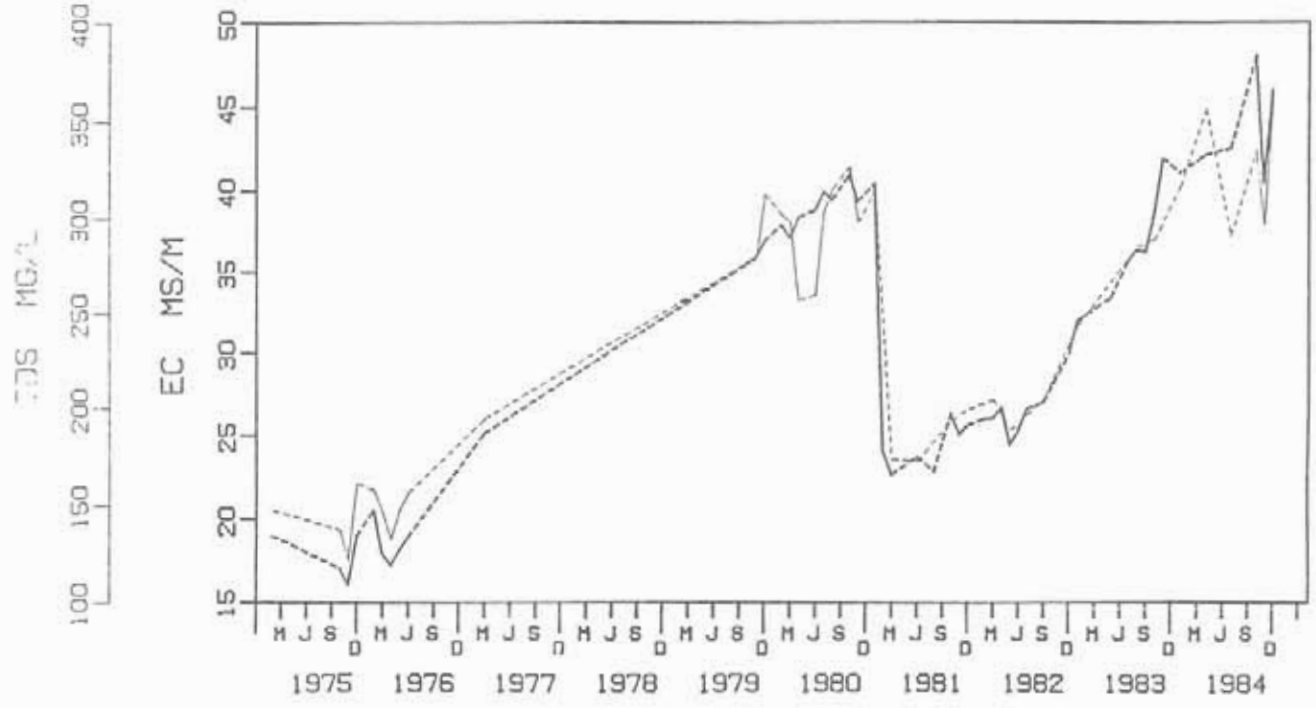
SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING:		68/05/19 TO 86/08/01			
	TOTAL	1979-1983	SUMMER	WINTER	RATIO
SAMPLES	101	36	20	16	1.25

WATER QUALITY STATISTICS

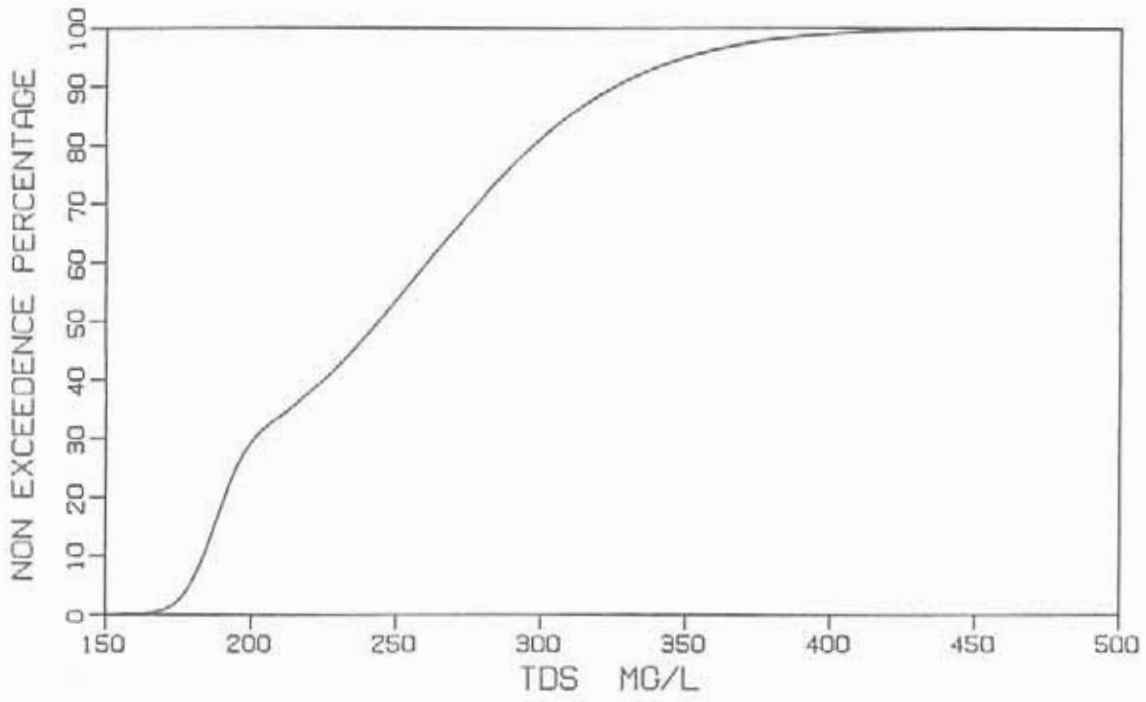
DETERMINAND		MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH	(PH UNITS)	7.5	6.3	8.2	0.4	7.2	7.9
EC	(MS/M)	34.5	22.6	41.9	6.4	26.0	39.7
TDS	(MG/L)	283	172	341	53	204	315
CA	(MG/L)	26	17	32	4	20	29
MG	(MG/L)	14	8	19	3	10	16
NA	(MG/L)	26	15	34	6	20	32
K	(MG/L)	5.4	3.9	7.5	0.7	5.1	6.1
TAL	(MG/L HCO_3)	184	102	234	39	128	206
CL	(MG/L)	12	6	25	4	10	16
SO_4	(MG/L)	10	4	16	3	7	13
F	(MG/L)	0.4	0.3	0.6	0.1	0.4	0.6
SI	(MG/L)	0.7	<0.4	3.2	0.9	0.5	2.5
NO_3	(MG/L N)	0.14	<0.02	2.58	0.54	0.03	0.52
PO_4	(MG/L P)	0.008	<0.005	0.138	0.031	<0.005	0.046

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS				
COMPONENT DISTRIBUTION	MEAN		STD DEV	
1	(μ_1)	5.5844	(σ_1)	0.1825
2	(μ_2)	5.2350	(σ_2)	0.0436
PROPORTIONALITY FACTOR (α) = .7316				

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C5R0401
NAME: KRUGERSDRIFT DAM:NEAR DAM WALL

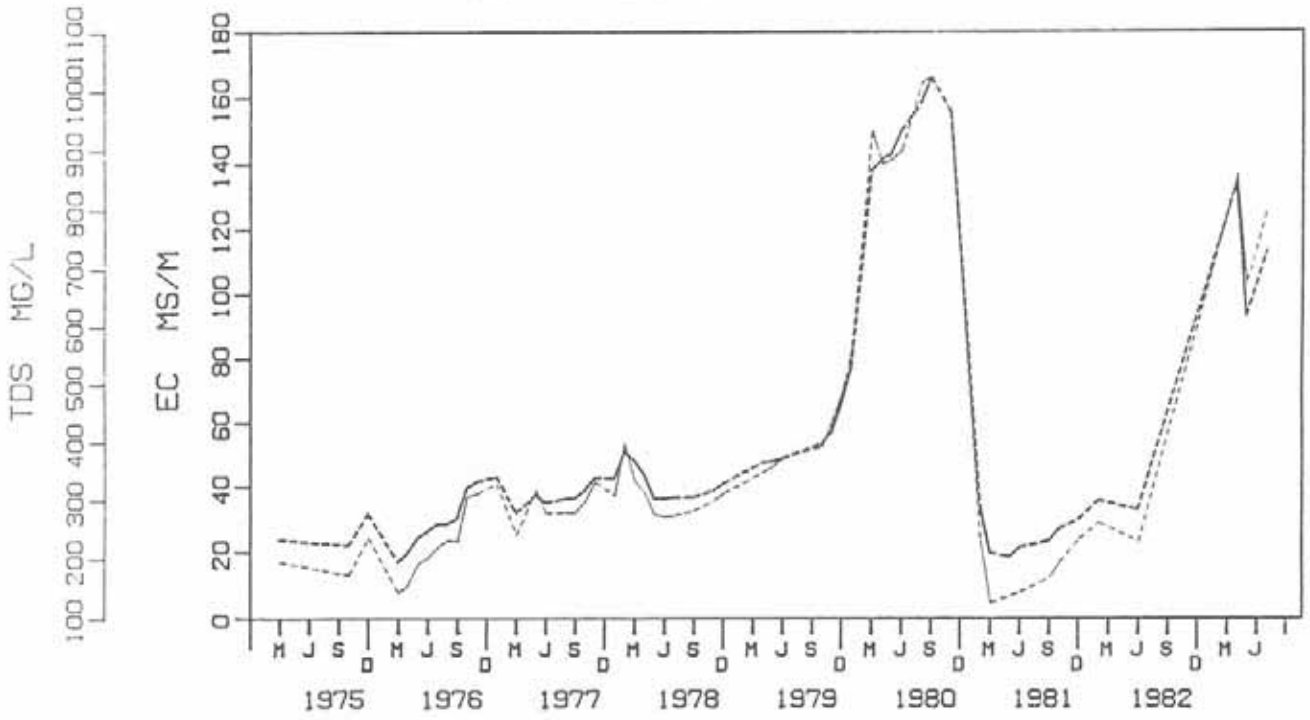
LATITUDE: 28°53'00" S LONGITUDE 25°57'30" E
TYPE: SAMPLING POINT IN DAM BASIN

SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING:		75/03/10 TO 83/07/07			
	TOTAL	1979-1983	SUMMER	WINTER	RATIO
SAMPLES	85	27	12	15	0.80

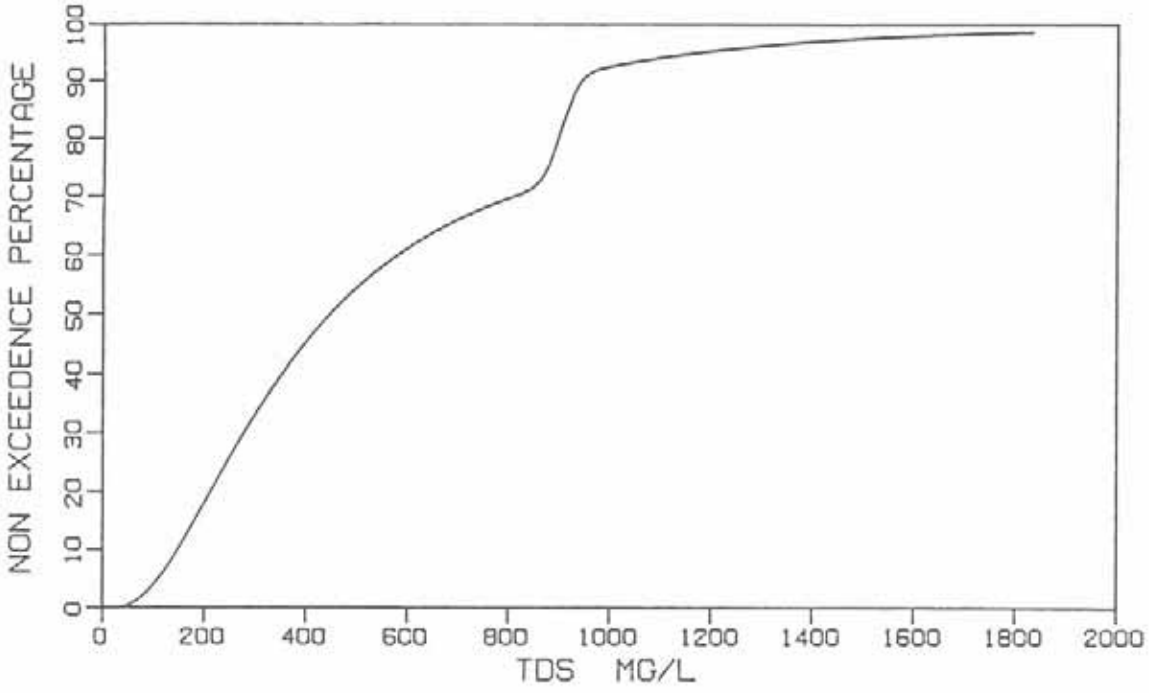
WATER QUALITY STATISTICS						
DETERMINAND	MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH (PH UNITS)	7.6	6.3	8.0	0.5	7.2	7.8
EC (MS/M)	57.0	18.6	166.0	51.7	33.7	152.1
TDS (MG/L)	458	126	1024	311	241	944
CA (MG/L)	39	17	90	24	26	81
MG (MG/L)	22	7	77	26	11	72
NA (MG/L)	51	10	171	47	23	130
K (MG/L)	6.7	5.8	13.8	1.7	6.3	8.0
TAL (MG/L HCO_3)	233	69	355	89	123	329
CL (MG/L)	52	7	324	113	26	278
SO_4 (MG/L)	31	<2	113	37	20	104
F (MG/L)	0.4	0.2	1.6	0.3	0.3	0.5
SI (MG/L)	2.1	<0.4	5.8	2.0	0.9	5.5
NO_3 (MG/L N)	0.09	<0.02	2.93	0.74	0.03	0.98
PO_4 (MG/L P)	0.029	<0.005	0.271	0.072	0.014	0.147

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS		
COMPONENT DISTRIBUTION	MEAN	STD DEV
1	(μ_1) 5.8891	(σ_1) 0.7631
2	(μ_2) 6.8047	(σ_2) 0.0316
PROPORTIONALITY FACTOR (α) = .8195		

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C6M02
NAME: VALS RIVER AT BOTHAVILLE

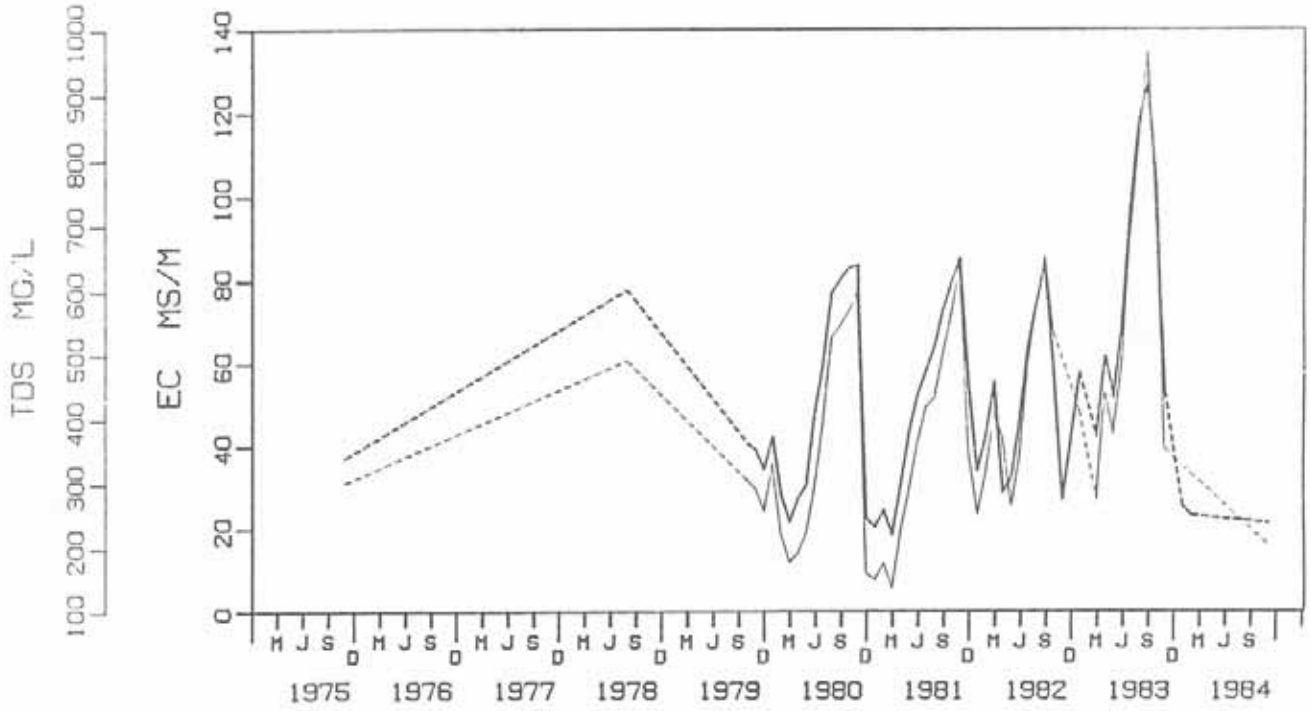
LATITUDE: 27°24'00" S LONGITUDE 26°37'00" E
TYPE: GAUGING WEIR

SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING: 72/08/01 TO 84/11/12					
	TOTAL	1979-1983	SUMMER	WINTER	RATIO
SAMPLES	222	171	79	92	0.86

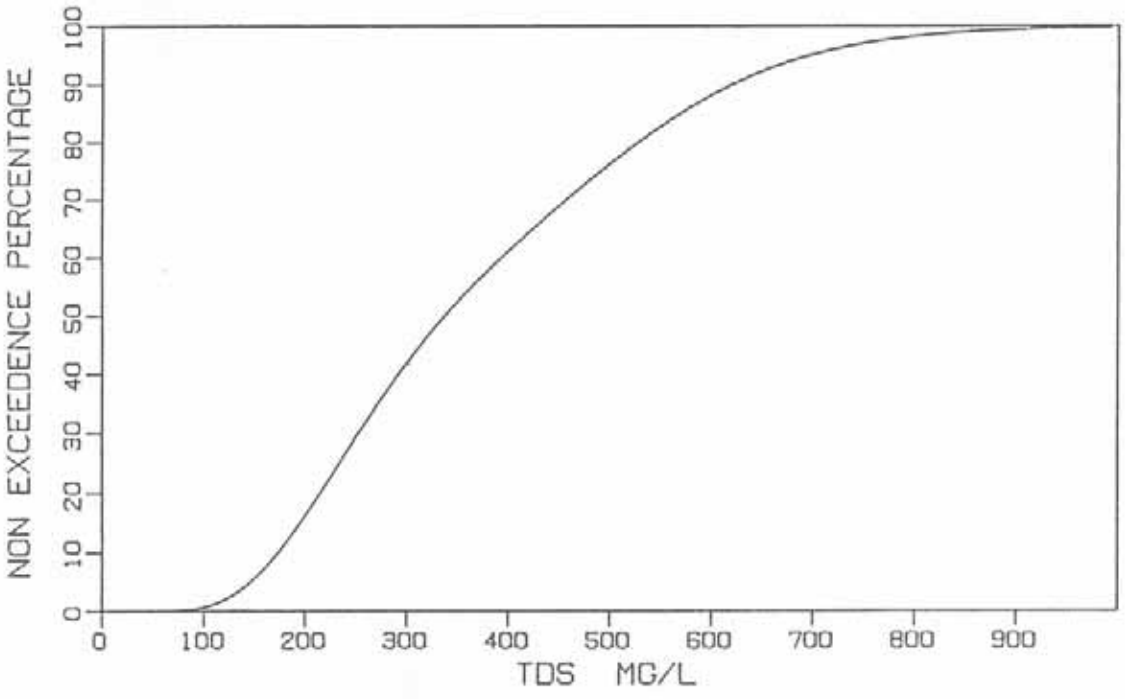
WATER QUALITY STATISTICS						
DETERMINAND	MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH (PH UNITS)	7.6	5.3	9.4	0.7	7.3	8.4
EC (MS/M)	49.5	14.1	139.5	27.0	32.6	87.3
TDS (MG/L)	387	100	1074	192	269	670
CA (MG/L)	37	11	89	13	24	50
MG (MG/L)	19	6	57	13	12	42
NA (MG/L)	36	10	204	32	25	84
K (MG/L)	6.5	1.8	22.0	3.2	5.2	10.3
TAL (MG/L HCO_3)	163	44	363	71	121	270
CL (MG/L)	29	5	189	30	19	73
SO_4 (MG/L)	48	<2	468	82	29	136
F (MG/L)	0.4	0.2	0.7	0.1	0.3	0.5
SI (MG/L)	4.4	<0.4	8.4	2.5	0.9	6.8
NO_3 (MG/L N)	0.21	<0.02	7.47	0.88	0.05	1.48
PO_4 (MG/L P)	0.113	<0.005	3.727	0.593	0.062	0.844

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS		
COMPONENT DISTRIBUTION	MEAN	STD DEV
1	(μ_1) 5.6433	(σ_1) 0.4969
2	(μ_2) 6.3120	(σ_2) 0.2182
PROPORTIONALITY FACTOR (α) = .7548		

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C6M04
NAME: VALS RIVER AT KLIPFONTEIN

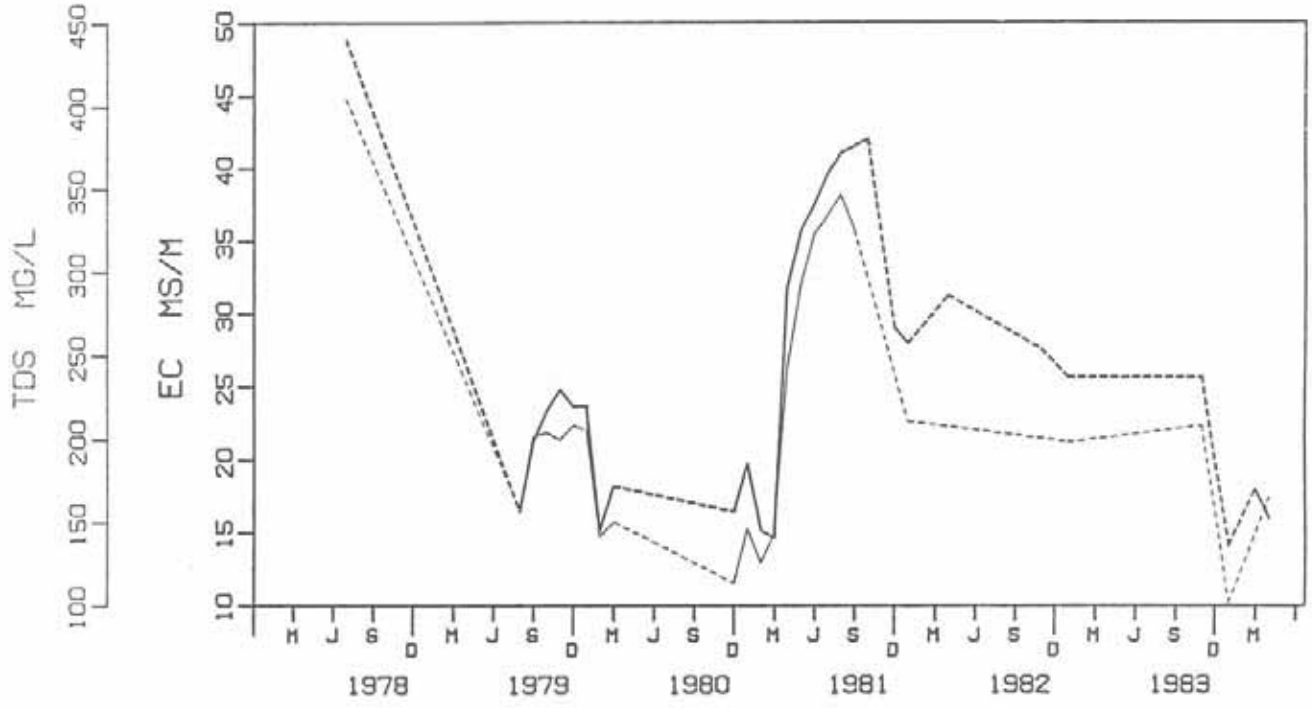
LATITUDE: 27°56'15" S LONGITUDE 27°59'30" E
TYPE: STORAGE WEIR

SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING: 78/07/05 TO 86/03/30					
	TOTAL	1979-1983	SUMMER	WINTER	RATIO
SAMPLES	87	75	48	27	1.78

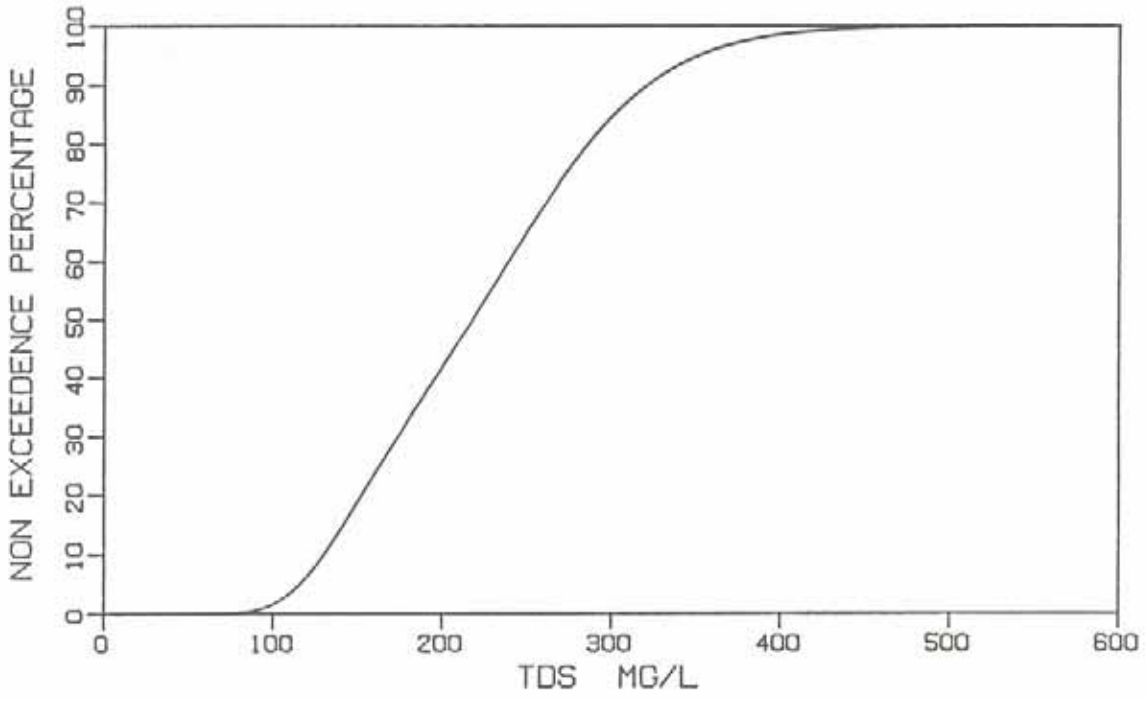
WATER QUALITY STATISTICS						
DETERMINAND	MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH (PH UNITS)	7.0	5.4	7.8	0.5	6.5	7.4
EC (MS/M)	25.6	10.6	44.6	9.3	19.0	40.2
TDS (MG/L)	198	87	346	62	150	287
CA (MG/L)	16	9	37	7	12	31
MG (MG/L)	8	5	17	3	6	14
NA (MG/L)	17	7	27	5	13	24
K (MG/L)	5.6	4.1	9.3	1.4	4.6	7.6
TAL (MG/L HCO_3)	112	40	231	47	81	190
CL (MG/L)	7	4	19	3	6	12
SO_4 (MG/L)	13	2	40	9	8	28
F (MG/L)	0.3	0.1	0.6	0.1	0.2	0.5
SI (MG/L)	6.6	3.7	8.6	1.1	5.9	7.9
NO_3 (MG/L N)	0.15	0.02	3.63	0.68	0.06	1.06
PO_4 (MG/L P)	0.045	<0.005	0.244	0.051	0.034	0.121

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS		
COMPONENT DISTRIBUTION	MEAN	STD DEV
1	(μ_1) 5.0578	(σ_1) 0.2512
2	(μ_2) 5.5727	(σ_2) 0.2128
PROPORTIONALITY FACTOR (α) = .4367		

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C7M06
NAME: RENOSTER RIVER AT ARRIESRUST

LATITUDE: 27°02'45" S LONGITUDE 27°00'15" E

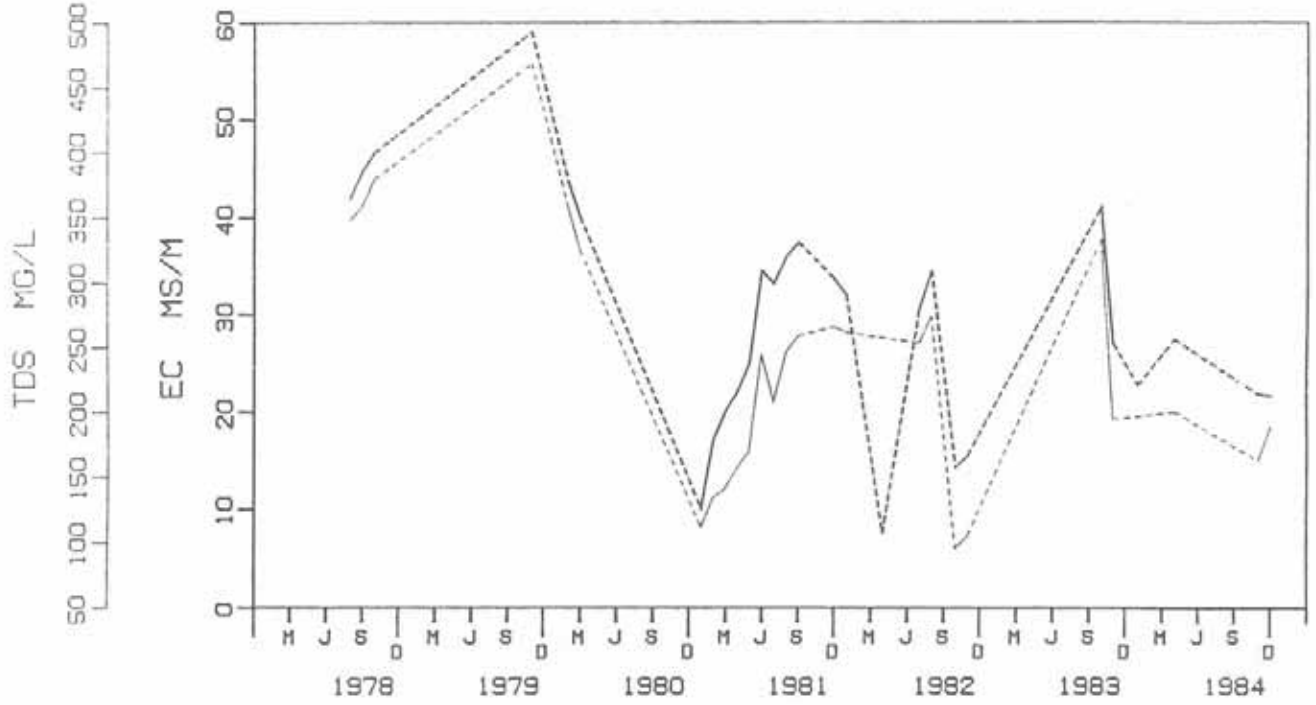
TYPE: STORAGE WEIR

SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING: 78/08/07 TO 84/12/04					
	TOTAL	1979-1983	SUMMER	WINTER	RATIO
SAMPLES	96	59	29	30	0.97

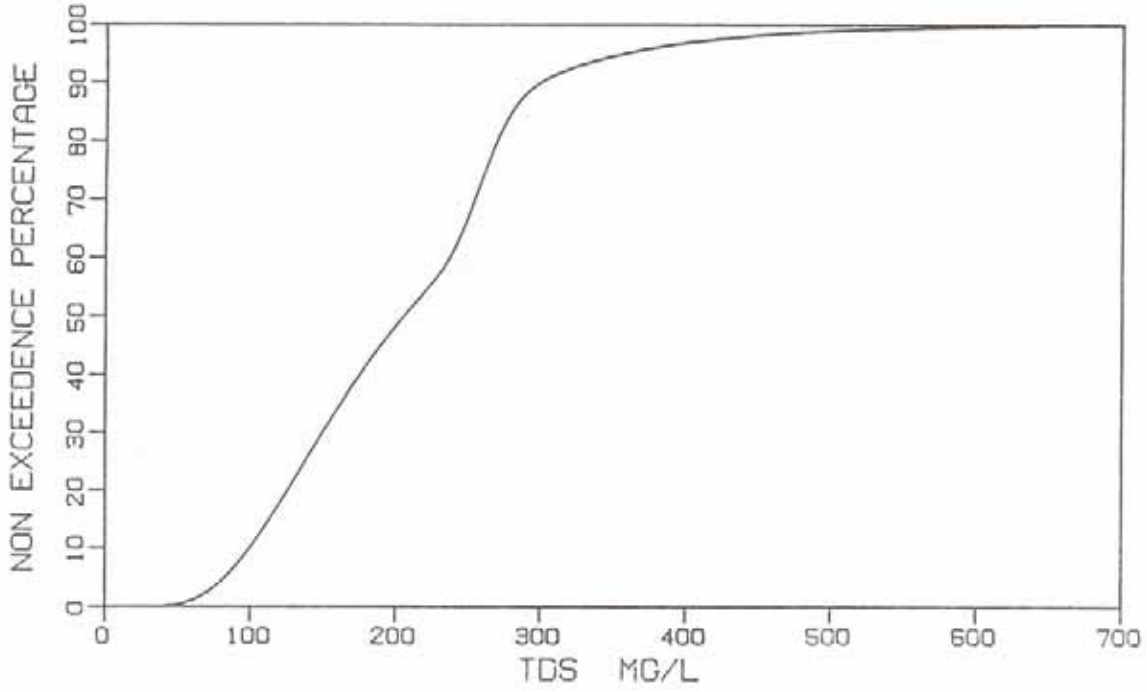
WATER QUALITY STATISTICS						
DETERMINAND	MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH (PH UNITS)	7.0	6.0	8.2	0.6	6.8	7.8
EC (MS/M)	27.6	6.9	59.0	10.1	22.0	38.7
TDS (MG/L)	205	90	468	78	155	313
CA (MG/L)	22	4	53	10	14	32
MG (MG/L)	11	3	38	6	7	16
NA (MG/L)	18	4	33	6	14	21
K (MG/L)	4.5	1.8	6.3	0.9	4.1	5.5
TAL (MG/L HCO_3)	119	16	256	58	73	191
CL (MG/L)	12	5	38	6	10	19
SO_4 (MG/L)	12	<2	75	11	9	21
F (MG/L)	0.3	0.1	0.6	0.1	0.3	0.4
SI (MG/L)	7.4	4.1	9.8	1.3	6.3	8.5
NO_3 (MG/L N)	0.16	<0.02	0.53	0.13	0.11	0.41
PO_4 (MG/L P)	0.039	<0.005	0.880	0.140	0.026	0.150

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS		
COMPONENT DISTRIBUTION	MEAN	STD DEV
1	(μ_1) 5.1467	(σ_1) 0.4817
2	(μ_2) 5.5592	(σ_2) 0.0678
PROPORTIONALITY FACTOR (α) = .7739		

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C7R0101
NAME: KOPPIES DAM:NEAR DAM WALL

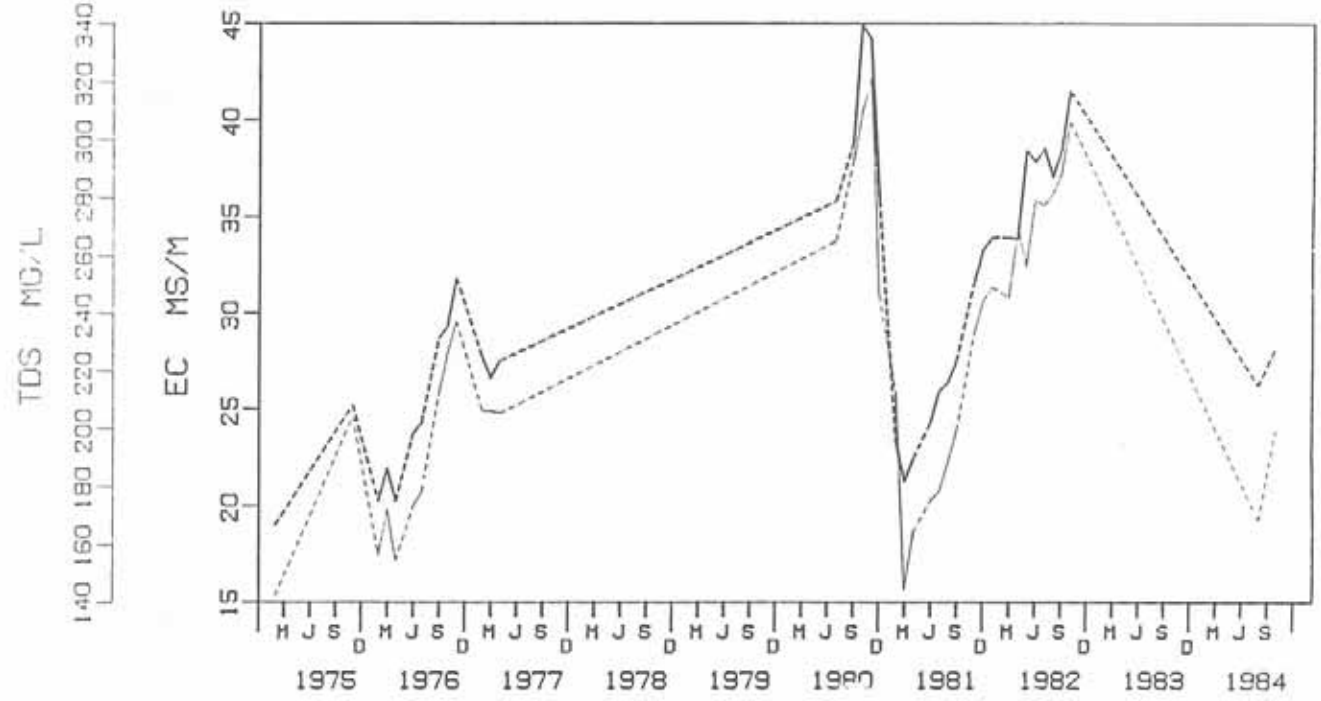
LATITUDE: 27°15'30" S LONGITUDE 27°40'30" E
TYPE: SAMPLING POINT IN DAM BASIN

SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING:		72/06/12 TO 86/07/17			
	TOTAL	1979-1983	SUMMER	WINTER	RATIO
SAMPLES	58	24	10	14	0.71

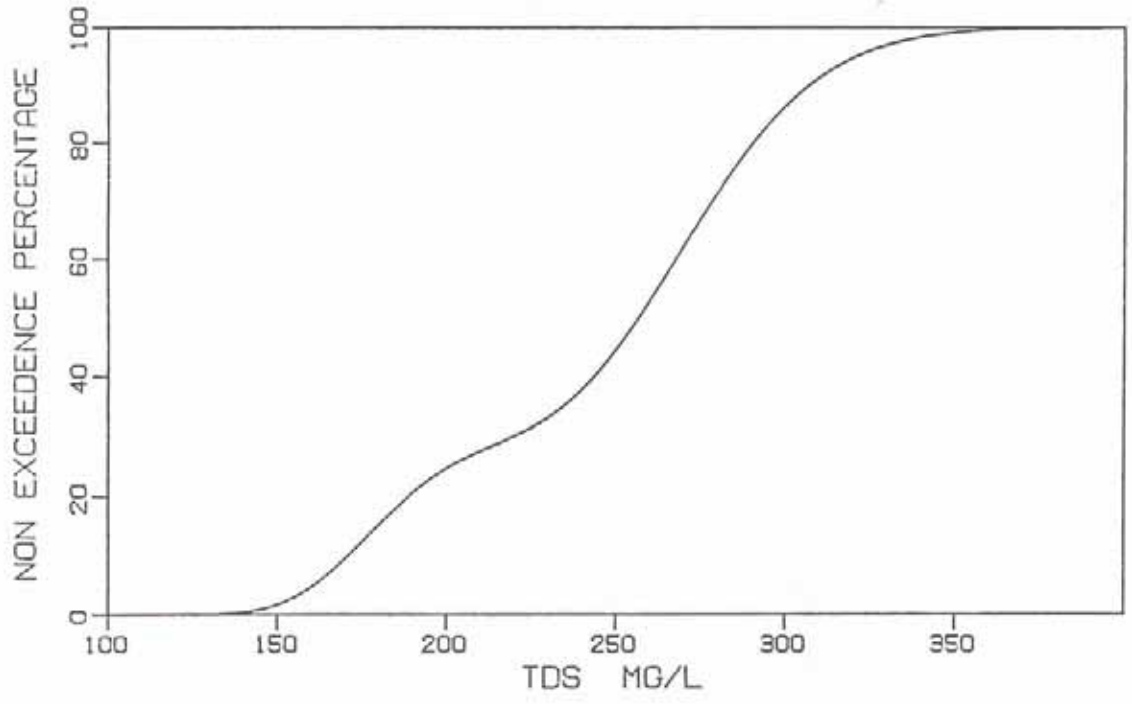
WATER QUALITY STATISTICS						
DETERMINAND	MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH (PH UNITS)	7.2	6.3	8.0	0.5	6.8	7.7
EC (MS/M)	34.9	21.2	44.9	6.9	27.2	40.7
TDS (MG/L)	253	144	321	50	208	305
CA (MG/L)	25	15	31	5	21	30
MG (MG/L)	13	8	18	3	11	17
NA (MG/L)	22	13	33	6	16	29
K (MG/L)	5.9	5.0	7.0	0.5	5.8	6.6
TAL (MG/L HCO_3)	149	75	182	31	132	178
CL (MG/L)	18	8	32	6	13	24
SO_4 (MG/L)	14	2	28	6	13	22
F (MG/L)	0.4	0.2	0.6	0.1	0.4	0.6
SI (MG/L)	2.4	0.7	6.7	2.0	1.2	6.5
NO_3 (MG/L N)	0.21	<0.02	0.75	0.17	0.06	0.37
PO_4 (MG/L P)	0.010	<0.005	0.184	0.042	0.007	0.042

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS		
COMPONENT DISTRIBUTION	MEAN	STD DEV
1	(μ_1) 5.1851	(σ_1) 0.1114
2	(μ_2) 5.6077	(σ_2) 0.1105
PROPORTIONALITY FACTOR (α) = .2905		

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C8M01
NAME: WILGE RIVER AT FRANKFORT

LATITUDE: 27°16'00" S LONGITUDE 28°29'00" E
TYPE: GAUGING WEIR

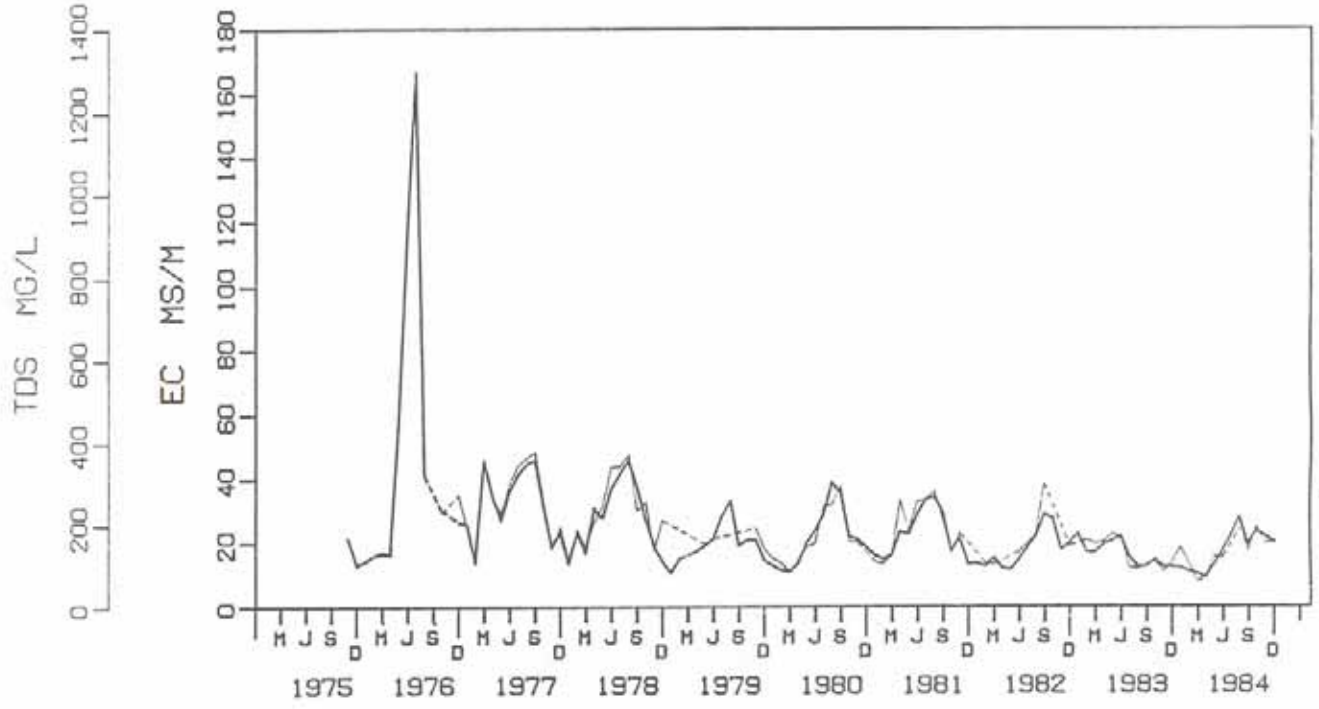
SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING:		71/12/06 TO 86/10/09			
	TOTAL	1979-1983	SUMMER	WINTER	RATIO
SAMPLES	484	224	106	118	0.90

WATER QUALITY STATISTICS

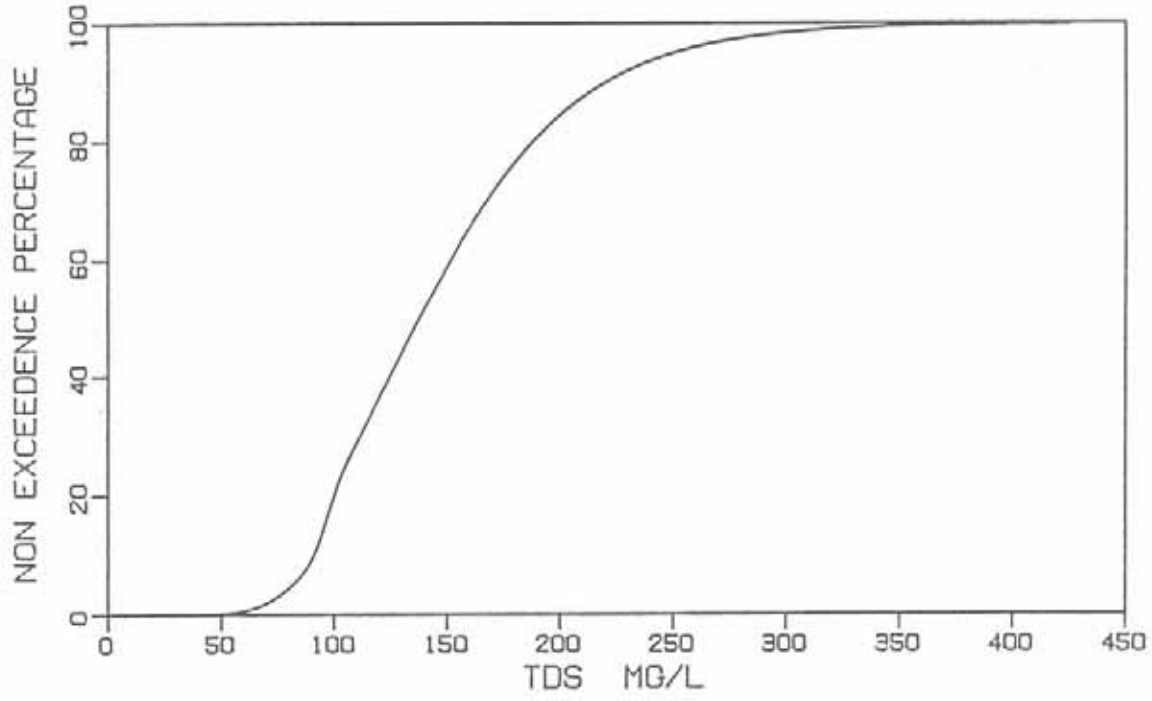
DETERMINAND		MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH	(PH UNITS)	7.1	5.7	7.7	0.4	6.7	7.4
EC	(MS/M)	17.2	6.7	51.3	7.3	13.0	31.5
TDS	(MG/L)	145	68	300	60	102	254
CA	(MG/L)	13	5	36	7	11	28
MG	(MG/L)	6	3	18	3	4	13
NA	(MG/L)	9	4	24	4	7	17
K	(MG/L)	3.1	2.0	7.2	1.1	2.5	5.1
TAL	(MG/L HCO_3)	64	13	202	43	51	156
CL	(MG/L)	7	<3	18	3	5	12
SO_4	(MG/L)	11	<2	32	7	6	20
F	(MG/L)	0.3	0.1	0.7	0.1	0.2	0.4
SI	(MG/L)	5.5	3.1	7.9	0.9	5.2	6.6
NO_3	(MG/L N)	0.18	<0.02	3.49	0.53	0.08	0.69
PO_4	(MG/L P)	0.029	<0.005	0.213	0.045	0.009	0.100

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS		
COMPONENT DISTRIBUTION	MEAN	STD DEV
1	(μ_1) 4.9614	(σ_1) 0.3489
2	(μ_2) 4.5754	(σ_2) 0.0490
PROPORTIONALITY FACTOR (α) = .9208		

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C8M003
NAME: CORNELIS RIVER AT WARDEN

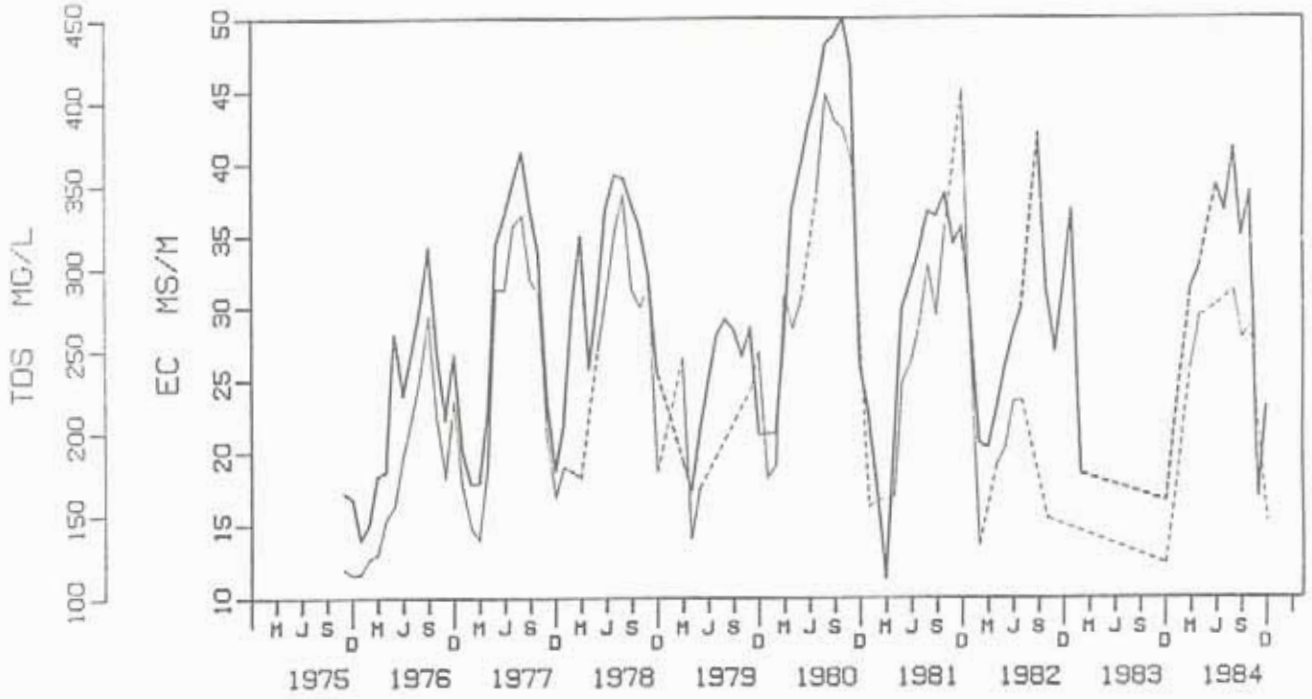
LATITUDE: 27°50'30" S LONGITUDE 28°57'45" E
TYPE: STORAGE WEIR

SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING: 71/09/13 TO 86/04/22					
	TOTAL	1979-1983	SUMMER	WINTER	RATIO
SAMPLES	327	168	88	80	1.10

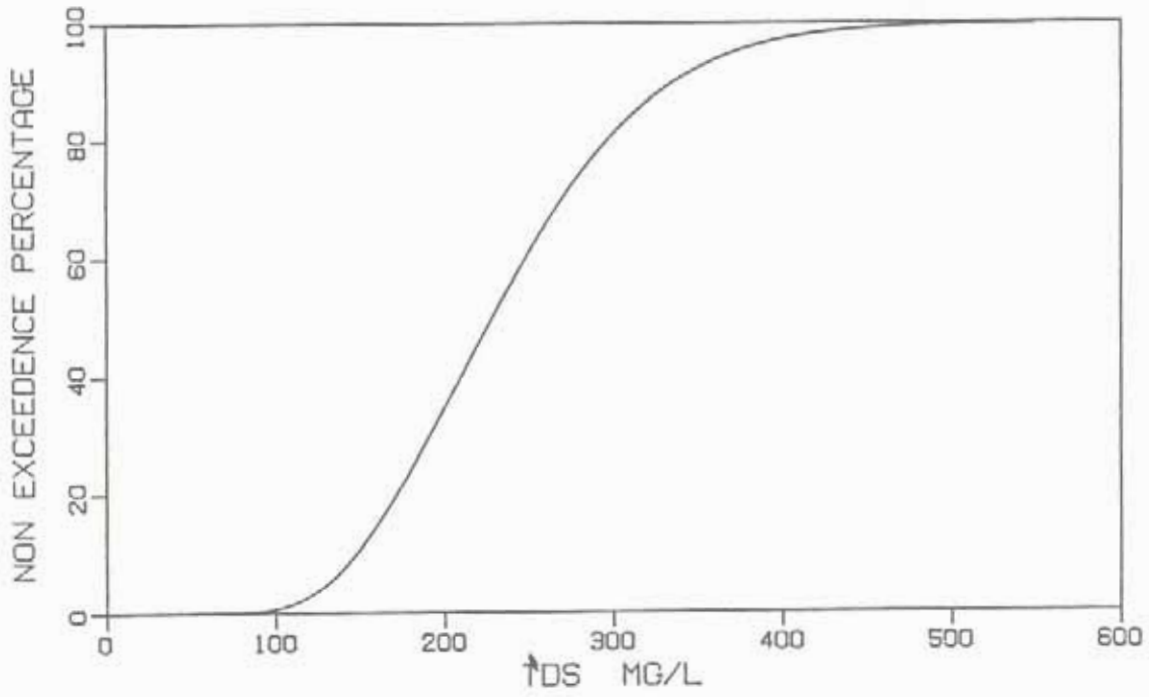
WATER QUALITY STATISTICS						
DETERMINAND	MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH (PH UNITS)	7.0	6.2	8.0	0.4	6.8	7.6
EC (MS/M)	29.4	8.2	63.0	10.1	22.7	46.5
TDS (MG/L)	244	120	407	83	180	371
CA (MG/L)	23	9	42	10	17	40
MG (MG/L)	10	5	21	5	7	19
NA (MG/L)	20	11	87	13	14	32
K (MG/L)	4.4	3.2	8.2	1.2	3.9	6.4
TAL (MG/L HCO_3)	122	55	265	59	95	234
CL (MG/L)	9	5	131	20	8	16
SO_4 (MG/L)	12	6	29	6	9	23
F (MG/L)	0.4	0.2	0.7	0.1	0.4	0.6
SI (MG/L)	5.9	0.8	8.5	2.1	3.7	7.5
NO_3 (MG/L N)	0.73	0.02	9.67	1.59	0.48	1.61
PO_4 (MG/L P)	0.023	<0.005	0.178	0.040	0.008	0.076

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS		
COMPONENT DISTRIBUTION	MEAN	STD DEV
1	(μ_1) 5.3334	(σ_1) 0.3108
2	(μ_2) 5.6296	(σ_2) 0.2232
PROPORTIONALITY FACTOR (α) = .7204		

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C8M04
NAME: LIEBENBERGSVLEI RIVER AT DE WELKOM

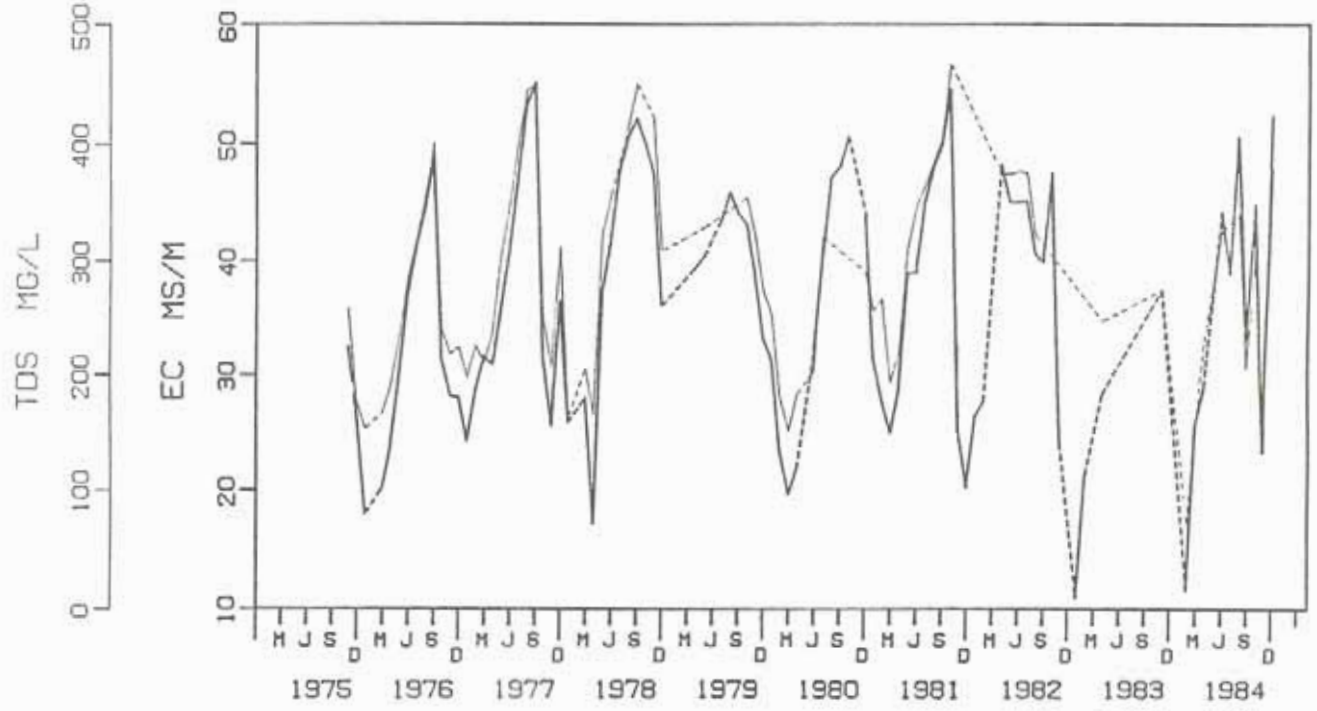
LATITUDE: 27°42'00" S LONGITUDE 28°19'30" E
TYPE: GAUGING WEIR

SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING:		75/11/20 TO 86/10/23			
	TOTAL	1979-1983	SUMMER	WINTER	RATIO
SAMPLES	297	135	68	67	1.01

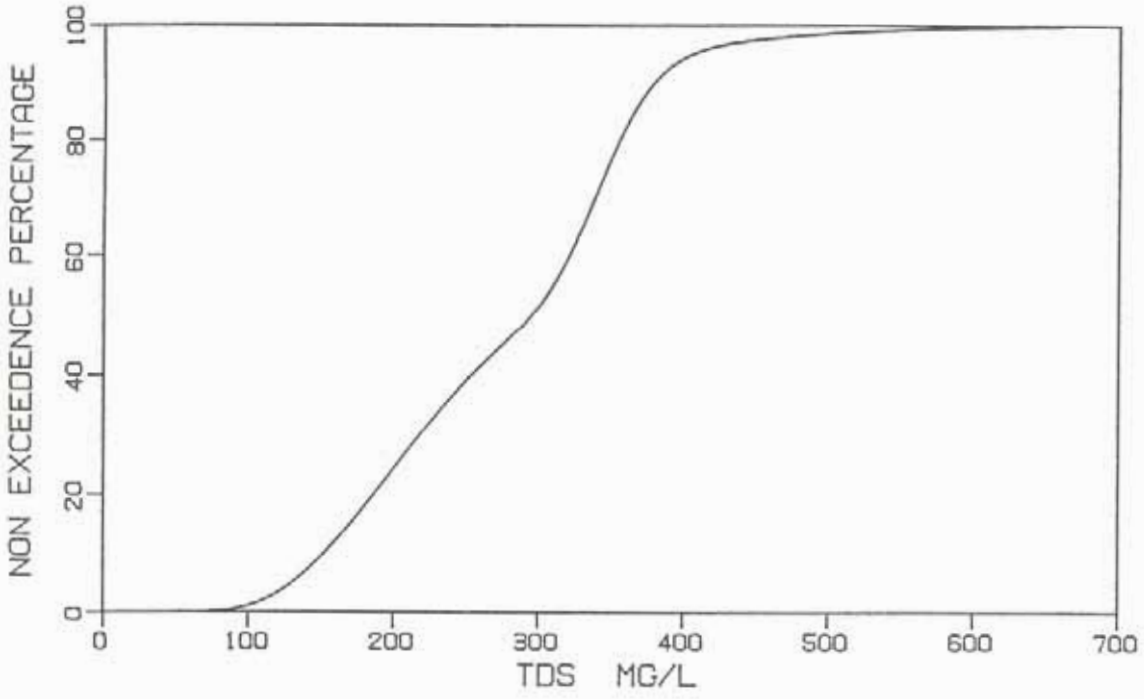
WATER QUALITY STATISTICS						
DETERMINAND	MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH (PH UNITS)	7.3	5.7	8.1	0.5	6.8	7.7
EC (MS/M)	37.4	10.9	56.6	10.6	27.2	47.4
TDS (MG/L)	291	151	467	77	247	377
CA (MG/L)	27	7	47	9	22	38
MG (MG/L)	11	5	18	3	10	15
NA (MG/L)	32	13	57	11	24	46
K (MG/L)	6.2	5.0	7.5	0.6	5.7	7.1
TAL (MG/L HCO_3)	161	20	281	56	130	236
CL (MG/L)	17	5	30	6	14	26
SO_4 (MG/L)	15	6	28	5	11	20
F (MG/L)	0.4	0.2	0.9	0.1	0.4	0.6
SI (MG/L)	4.9	1.6	6.4	1.3	3.6	6.0
NO_3 (MG/L N)	0.10	<0.02	1.17	0.28	0.04	0.67
PO_4 (MG/L P)	0.025	<0.005	0.162	0.035	0.012	0.075

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS				
COMPONENT DISTRIBUTION	MEAN		STD DEV	
1	(μ_1)	5.4206	(σ_1)	0.3878
2	(μ_2)	5.8415	(σ_2)	0.0819
PROPORTIONALITY FACTOR (α) = .6499				

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C8M05
NAME: ELANDS RIVER AT ELANDS RIVER DRIFT

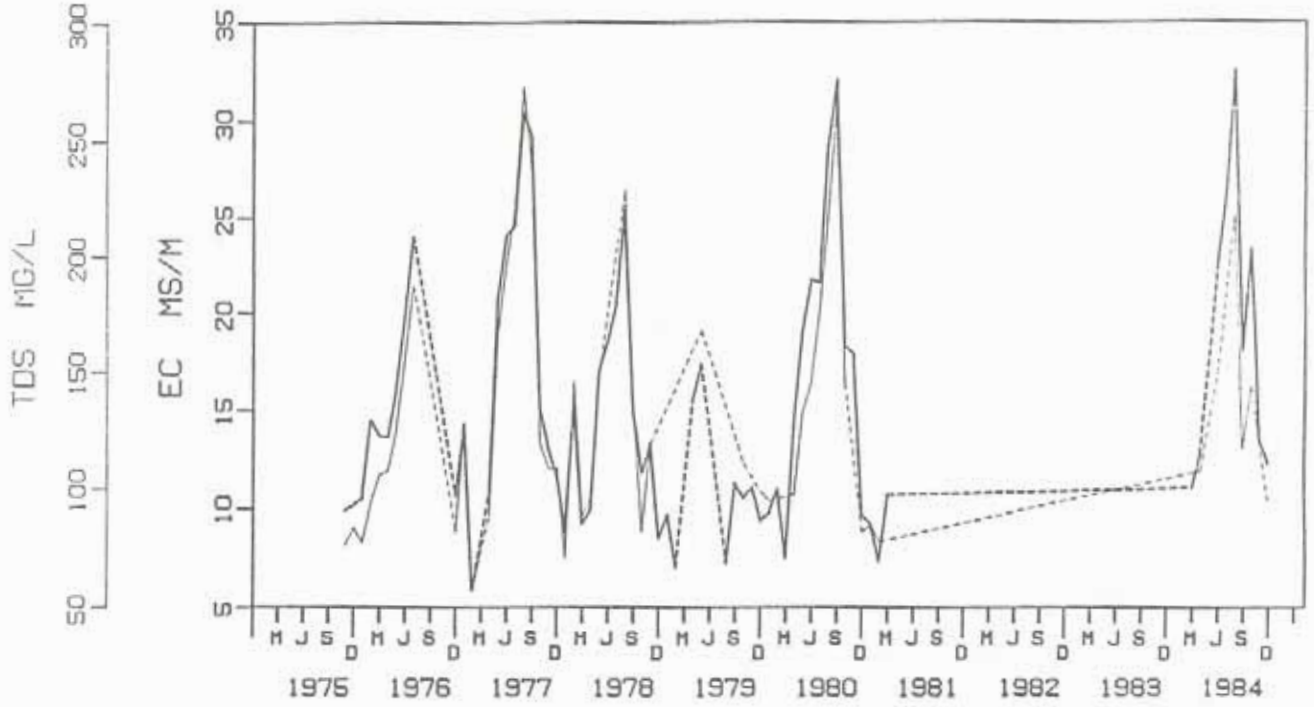
LATITUDE: 28°22'45" S LONGITUDE 28°51'45" E
TYPE: GAUGING WEIR

SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING:		66/02/17 TO 86/10/08			
	TOTAL	1979-1983	SUMMER	WINTER	RATIO
SAMPLES	215	77	48	29	1.66

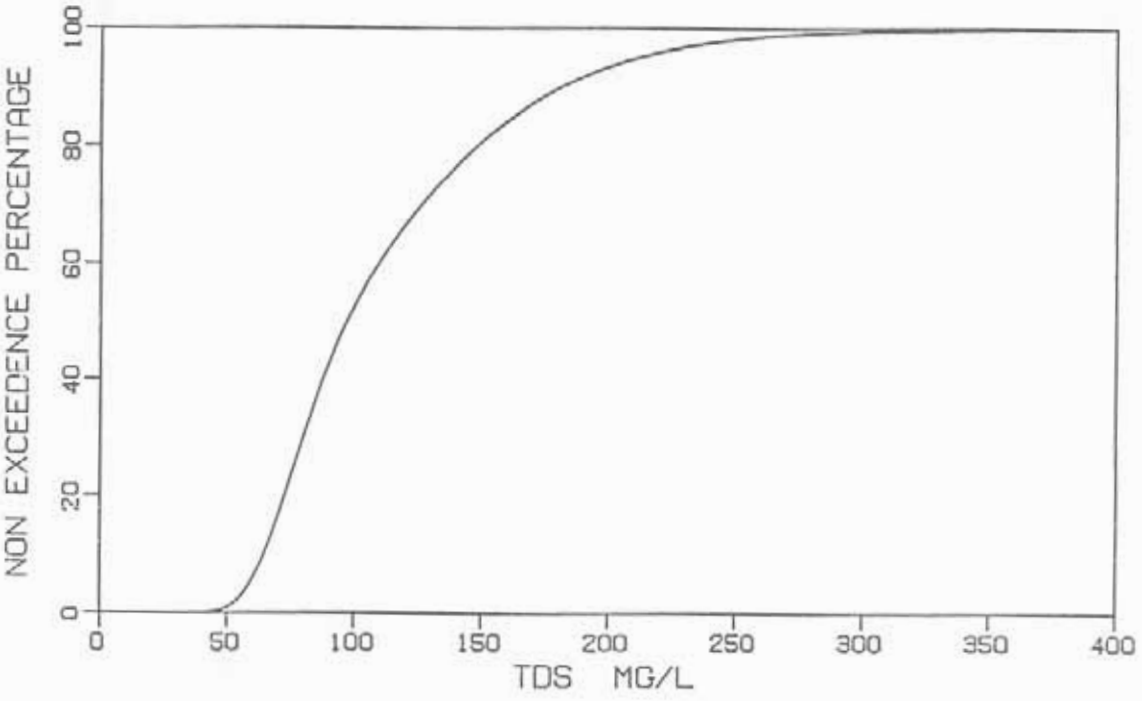
WATER QUALITY STATISTICS						
DETERMINAND	MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH (PH UNITS)	6.8	5.3	7.5	0.6	6.2	7.2
EC (MS/M)	12.2	5.2	33.2	7.1	9.0	24.2
TDS (MG/L)	116	56	266	54	92	194
CA (MG/L)	14	5	31	7	10	24
MG (MG/L)	5	3	14	3	4	11
NA (MG/L)	7	4	20	4	5	13
K (MG/L)	1.8	1.0	3.8	0.8	1.2	2.8
TAL (MG/L HCO_3)	69	25	180	39	50	132
CL (MG/L)	4	<3	14	3	3	7
SO_4 (MG/L)	7	3	18	4	5	13
F (MG/L)	0.1	0.1	0.3	0.1	0.1	0.2
SI (MG/L)	6.9	2.4	10.6	2.0	6.2	8.1
NO_3 (MG/L N)	0.07	<0.02	1.23	0.30	0.02	0.16
PO_4 (MG/L P)	0.017	<0.005	0.127	0.031	0.007	0.053

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS		
COMPONENT DISTRIBUTION	MEAN	STD DEV
1	(μ_1) 4.8882	(σ_1) 0.3513
2	(μ_2) 4.3514	(σ_2) 0.2100
PROPORTIONALITY FACTOR (α) = .5317		

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C8M06
NAME: KLERK SPRUIT AT GEDULD

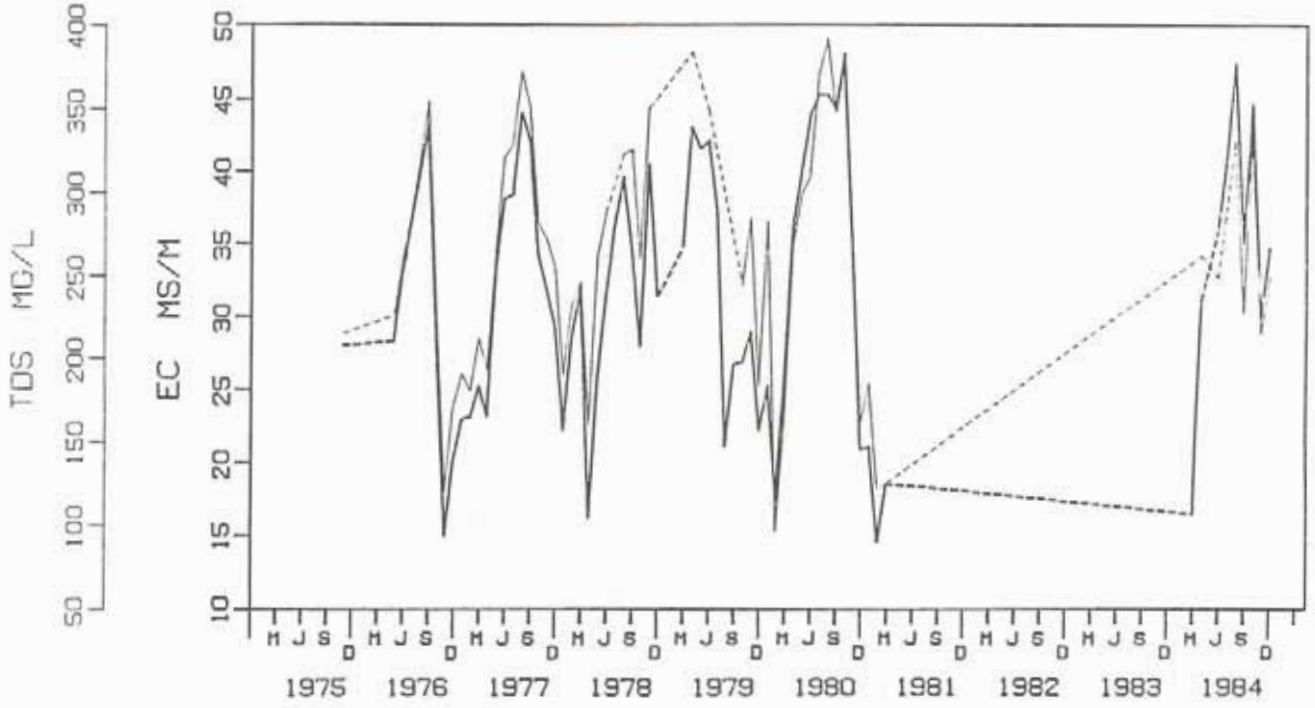
LATITUDE: 28°17'45" S LONGITUDE 28°48'30" E
TYPE: GAUGING WEIR

SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING:		66/02/17 TO 85/11/06			
	TOTAL	1979-1983	SUMMER	WINTER	RATIO
SAMPLES	226	83	48	35	1.37

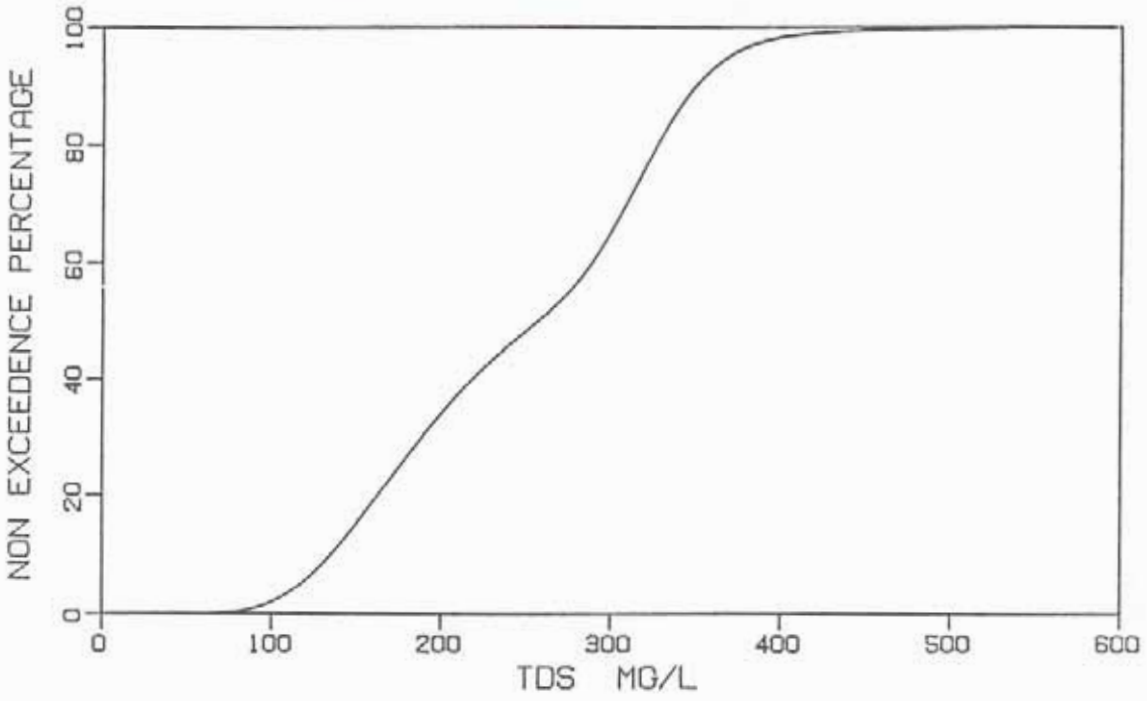
WATER QUALITY STATISTICS							
DETERMINAND		MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH	(PH UNITS)	7.6	6.2	8.0	0.5	7.2	7.8
EC	(MS/M)	31.1	8.3	51.0	11.4	20.9	44.6
TDS	(MG/L)	284	96	392	94	184	378
CA	(MG/L)	29	11	42	9	20	36
MG	(MG/L)	15	5	22	5	8	19
NA	(MG/L)	21	7	52	14	13	41
K	(MG/L)	2.5	1.9	4.0	0.6	2.3	3.5
TAL	(MG/L HCO_3)	197	53	276	71	119	261
CL	(MG/L)	7	<3	13	3	4	10
SO_4	(MG/L)	6	<2	38	8	5	13
F	(MG/L)	0.4	0.2	0.5	0.1	0.3	0.5
SI	(MG/L)	5.4	2.2	8.3	1.9	4.1	7.6
NO_3	(MG/L N)	0.04	<0.02	0.76	0.25	0.02	0.57
PO_4	(MG/L P)	0.011	<0.005	0.060	0.016	0.009	0.036

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS		
COMPONENT DISTRIBUTION	MEAN	STD DEV
1	(μ_1) 5.2544	(σ_1) 0.3540
2	(μ_2) 5.7679	(σ_2) 0.0995
PROPORTIONALITY FACTOR (α) = .6196		

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C8M09
NAME: TIER RIVER AT TYGER HOEK

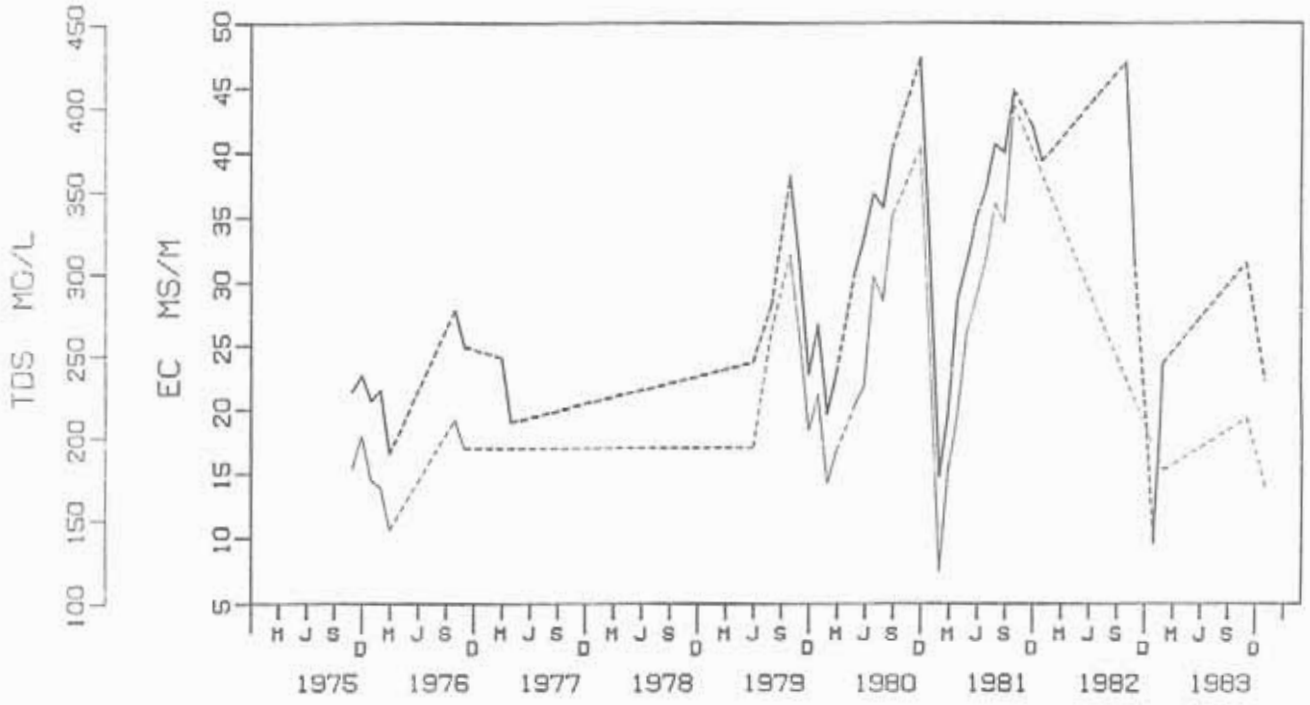
LATITUDE: 28°03'15" S LONGITUDE 28°29'30" E
TYPE: GAUGING WEIR

SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING:		75/11/19 TO 86/10/08			
	TOTAL	1979-1983	SUMMER	WINTER	RATIO
SAMPLES	106	81	48	33	1.45

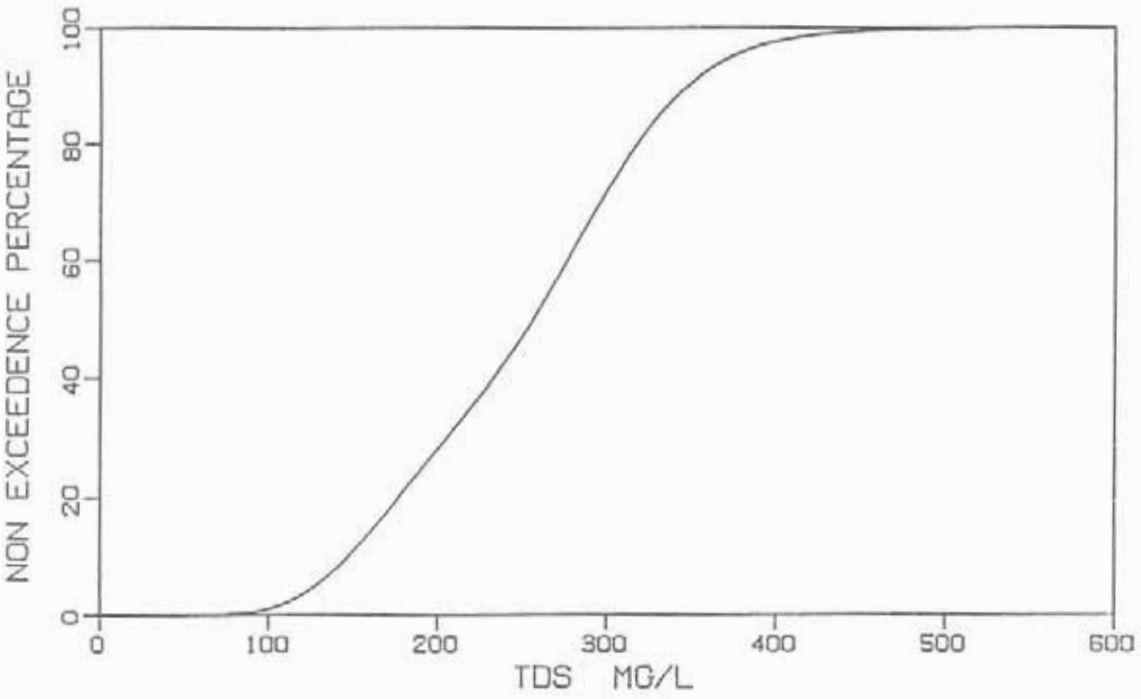
WATER QUALITY STATISTICS						
DETERMINAND	MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH (PH UNITS)	7.1	5.9	7.8	0.4	6.8	7.6
EC (MS/M)	32.2	9.7	51.1	9.8	23.6	42.9
TDS (MG/L)	219	87	401	70	188	327
CA (MG/L)	23	7	40	7	16	31
MG (MG/L)	10	4	17	3	7	13
NA (MG/L)	24	8	47	10	18	40
K (MG/L)	5.5	2.6	11.1	1.6	4.7	7.7
TAL (MG/L HCO_3)	135	15	252	56	109	213
CL (MG/L)	8	3	27	6	6	19
SO_4 (MG/L)	11	2	81	13	6	28
F (MG/L)	0.4	0.1	0.8	0.1	0.4	0.7
SI (MG/L)	5.5	1.4	8.8	2.0	4.3	8.0
NO_3 (MG/L N)	0.21	<0.02	1.59	0.40	0.06	0.93
PO_4 (MG/L P)	0.028	<0.005	0.730	0.108	0.012	0.106

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS		
COMPONENT DISTRIBUTION	MEAN	STD DEV
1	(μ_1) 5.2829	(σ_1) 0.3285
2	(μ_2) 5.7006	(σ_2) 0.1552
PROPORTIONALITY FACTOR (α) = .5383		

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C8M10

NAME: OUBERG SPRUIT AT FRASER SPRUIT

LATITUDE: 28°21'00" S LONGITUDE 29°05'30" E

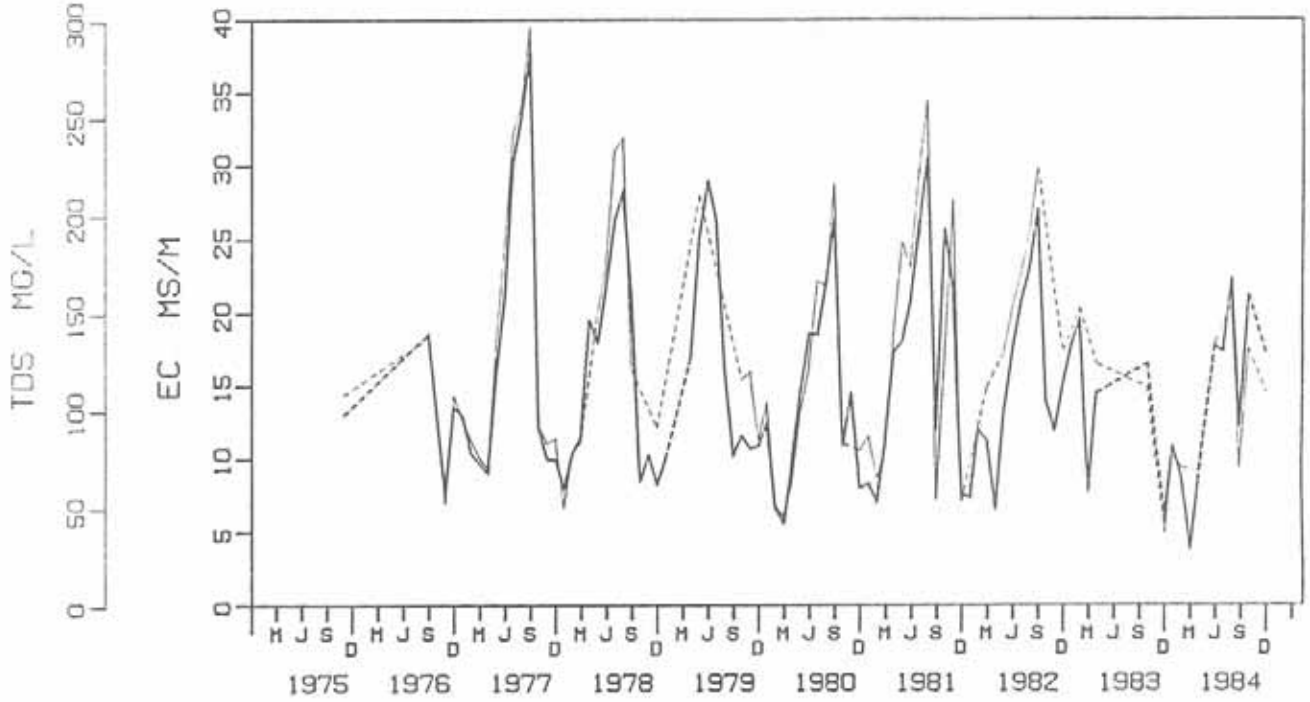
TYPE: GAUGING WEIR

SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING:		75/11/21 TO 86/10/01			
	TOTAL	1979-1983	SUMMER	WINTER	RATIO
SAMPLES	311	177	89	88	1.01

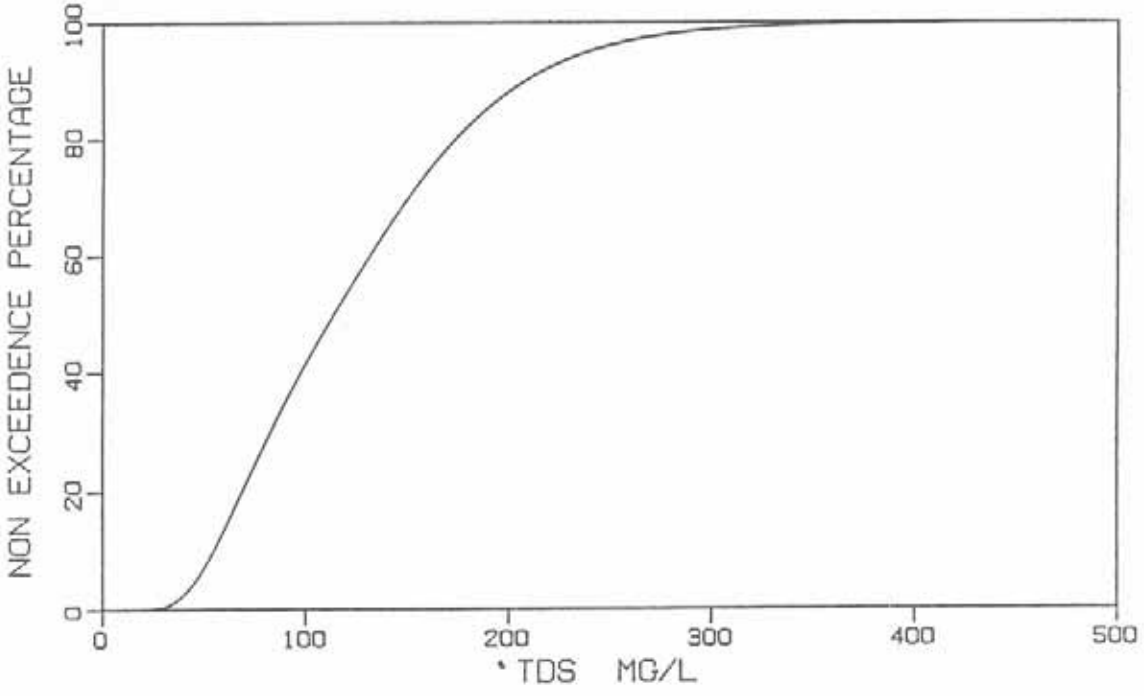
WATER QUALITY STATISTICS						
DETERMINAND	MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH (PH UNITS)	6.8	5.7	8.0	0.5	6.5	7.5
EC (MS/M)	14.4	4.1	49.1	7.6	9.4	26.1
TDS (MG/L)	118	37	258	56	84	209
CA (MG/L)	12	3	28	7	7	23
MG (MG/L)	4	1	11	2	3	9
NA (MG/L)	10	4	23	5	7	18
K (MG/L)	2.3	1.0	6.0	0.9	1.9	3.3
TAL (MG/L HCO_3)	67	11	167	40	43	128
CL (MG/L)	6	<3	16	3	4	11
SO_4 (MG/L)	6	<2	32	5	4	12
F (MG/L)	0.2	0.1	0.5	0.1	0.1	0.4
SI (MG/L)	4.1	2.2	5.9	1.1	3.3	5.4
NO_3 (MG/L N)	0.06	<0.02	0.93	0.20	0.03	0.26
PO_4 (MG/L P)	0.015	<0.005	0.112	0.025	0.007	0.047

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS		
COMPONENT DISTRIBUTION	MEAN	STD DEV
1	(μ_1) 4.3233	(σ_1) 0.3874
2	(μ_2) 5.0535	(σ_2) 0.3192
PROPORTIONALITY FACTOR (α) = .4865		

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C8M11
NAME: ELANDS RIVER AT KILLARNEY

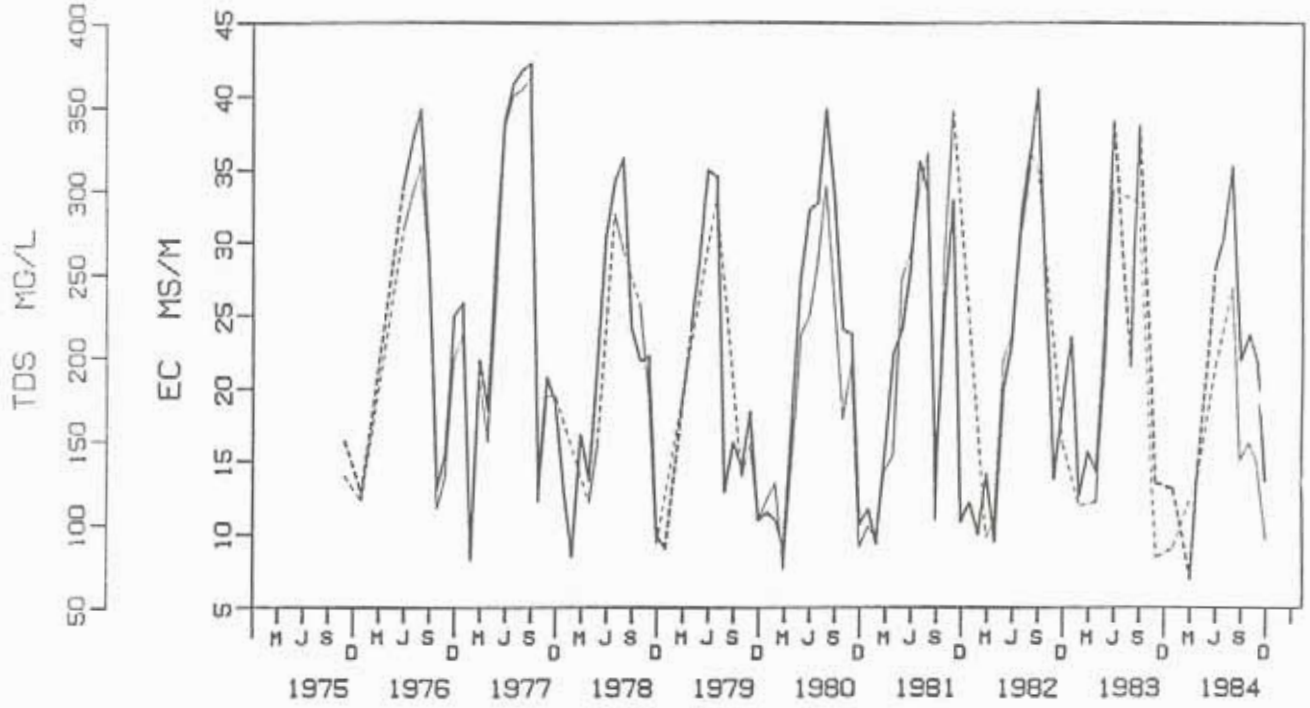
LATITUDE: 28°09'30" S LONGITUDE 28°52'30" E
TYPE: GAUGING WEIR

SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING:		75/11/21 TO 86/10/22			
	TOTAL	1979-1983	SUMMER	WINTER	RATIO
SAMPLES	312	181	92	89	1.03

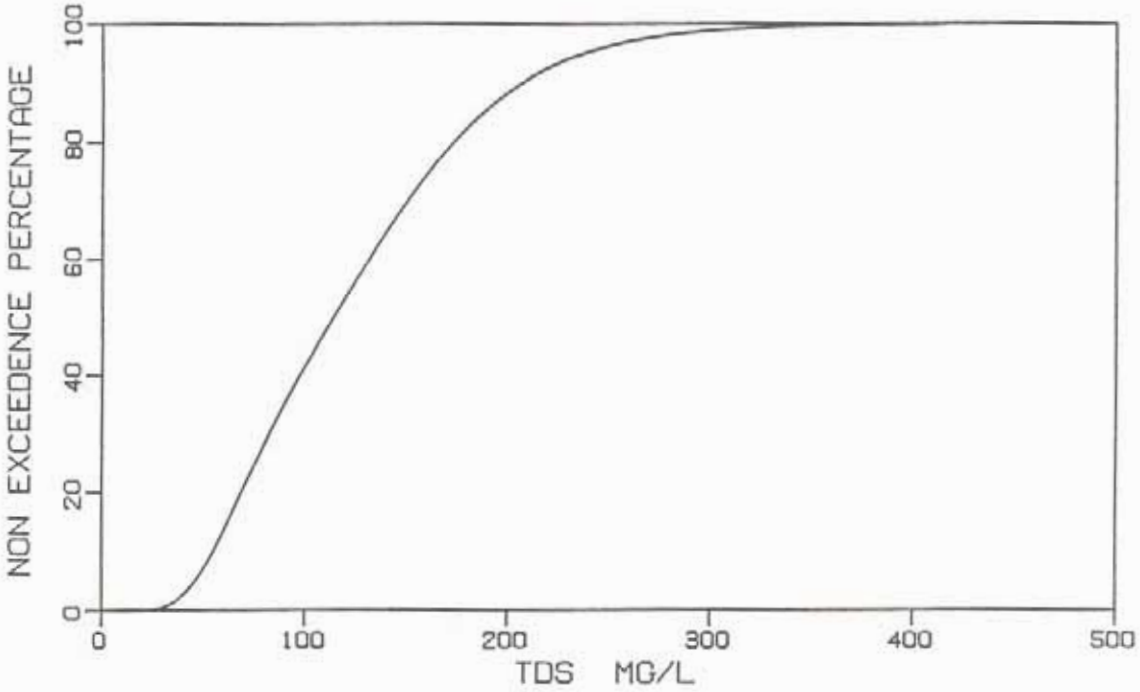
WATER QUALITY STATISTICS						
DETERMINAND	MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH (PH UNITS)	7.1	5.9	8.1	0.6	6.6	7.7
EC (MS/M)	19.3	5.6	44.9	10.6	12.2	37.7
TDS (MG/L)	162	55	354	85	106	301
CA (MG/L)	18	5	42	11	11	37
MG (MG/L)	7	2	22	5	4	17
NA (MG/L)	10	3	24	5	6	18
K (MG/L)	2.2	1.1	8.7	1.4	1.8	4.3
TAL (MG/L HCO_3)	94	17	243	64	56	206
CL (MG/L)	5	<3	22	4	4	11
SO_4 (MG/L)	7	<2	26	5	5	13
F (MG/L)	0.1	<0.1	0.6	0.1	0.1	0.3
SI (MG/L)	6.6	1.4	10.0	1.7	5.1	8.0
NO_3 (MG/L N)	0.14	<0.02	1.25	0.29	0.02	0.55
PO_4 (MG/L P)	0.017	<0.005	0.273	0.044	0.005	0.054

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS		
COMPONENT DISTRIBUTION	MEAN	STD DEV
1	(μ_1) 4.6637	(σ_1) 0.3688
2	(μ_2) 5.4758	(σ_2) 0.2415
PROPORTIONALITY FACTOR (α) = .5881		

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C8M12
NAME: VAALBANK SPRUIT AT VOORSPOED

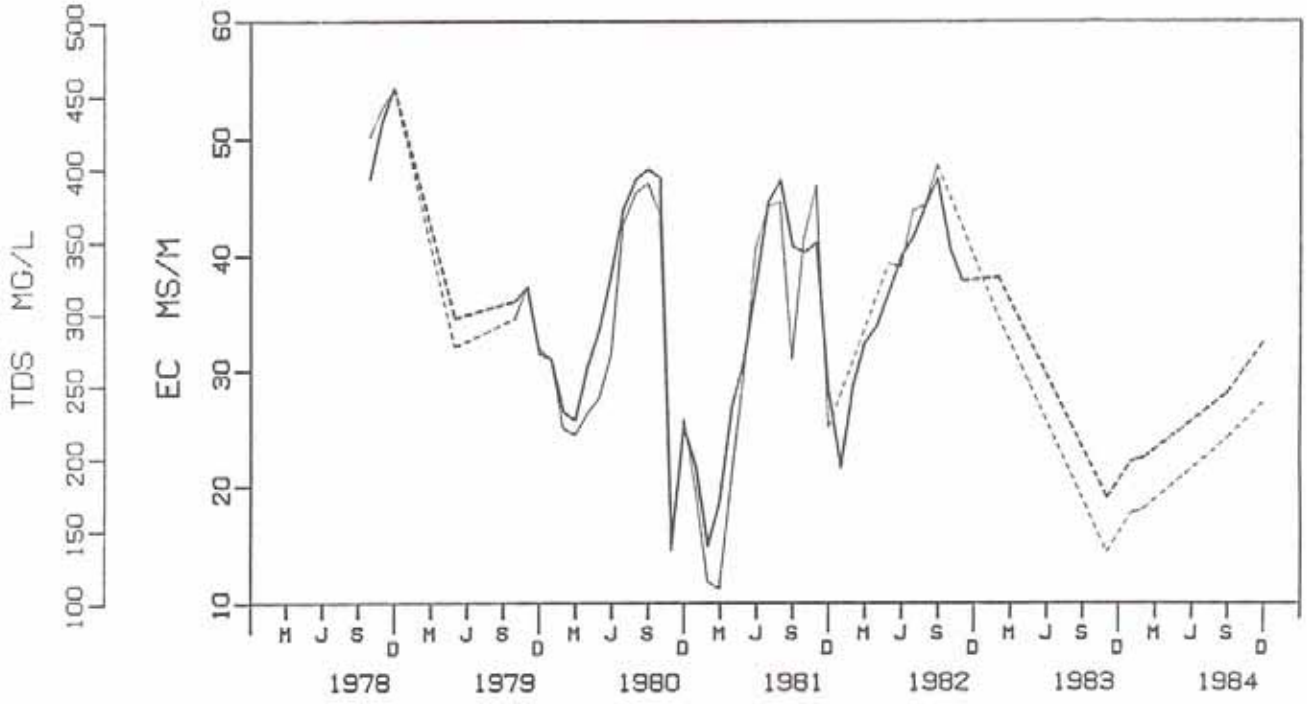
LATITUDE: 28°05'00" S LONGITUDE 28°50'15" E
TYPE: GAUGING WEIR

SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING:		78/10/12 TO 86/10/08			
	TOTAL	1979-1983	SUMMER	WINTER	RATIO
SAMPLES	168	144	67	77	0.87

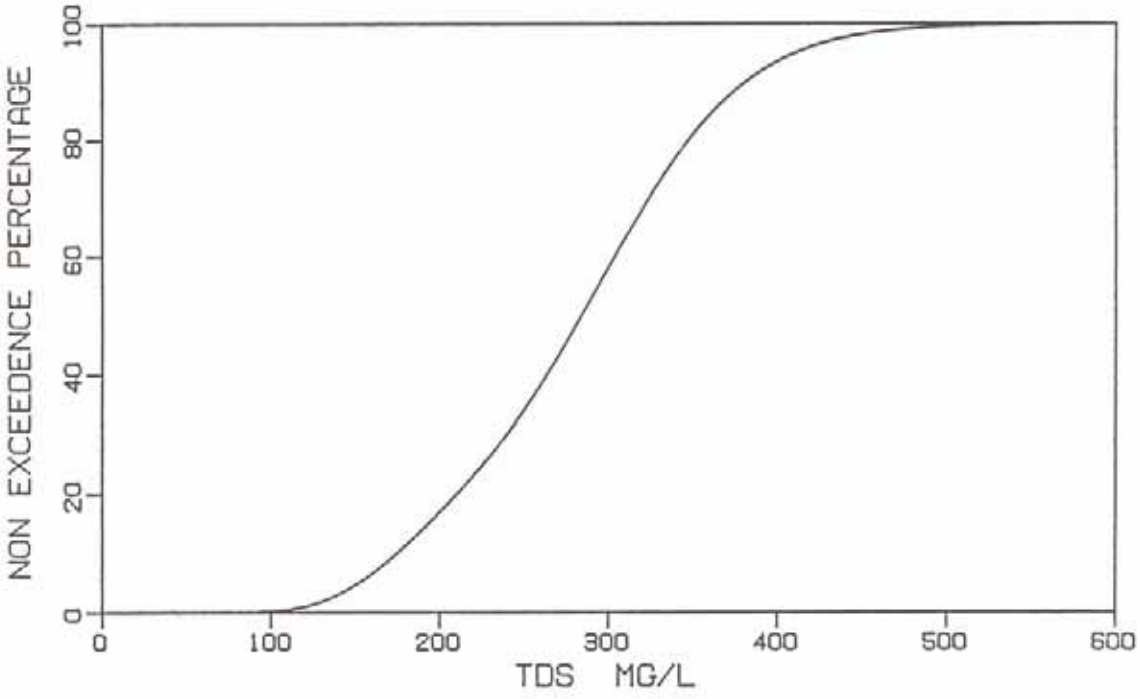
WATER QUALITY STATISTICS						
DETERMINAND	MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH (PH UNITS)	7.3	6.0	8.4	0.5	7.0	7.8
EC (MS/M)	35.5	11.3	49.3	9.2	28.6	46.1
TDS (MG/L)	272	98	404	80	225	377
CA (MG/L)	23	6	35	8	17	32
MG (MG/L)	10	3	15	3	8	13
NA (MG/L)	35	9	57	12	29	51
K (MG/L)	5.8	4.3	10.6	1.3	5.3	8.3
TAL (MG/L HCO_3)	168	52	279	63	135	257
CL (MG/L)	10	6	32	4	9	16
SO_4 (MG/L)	9	<2	56	9	6	20
F (MG/L)	0.5	0.2	1.0	0.1	0.4	0.6
SI (MG/L)	5.0	<0.4	8.2	1.9	2.6	6.6
NO_3 (MG/L N)	0.15	<0.02	2.36	0.43	0.06	0.70
PO_4 (MG/L P)	0.025	<0.005	0.127	0.031	0.012	0.073

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS		
COMPONENT DISTRIBUTION	MEAN	STD DEV
1	(μ_1) 5.3752	(σ_1) 0.2992
2	(μ_2) 5.7583	(σ_2) 0.1778
PROPORTIONALITY FACTOR (α) = .4193		

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C8M14
NAME: WILGE RIVER AT BAVARIA

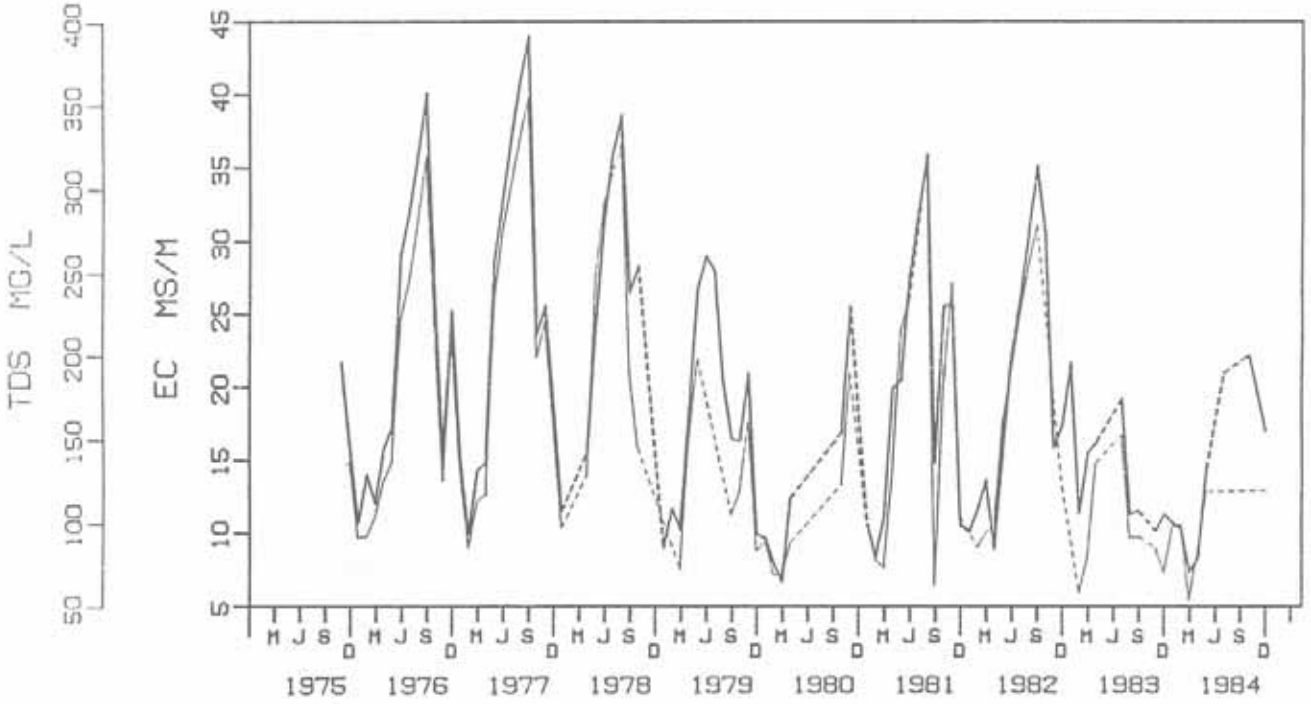
LATITUDE: 27°49'00" S LONGITUDE 28°47'00" E
TYPE: RIVER SECTION

SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING:		75/11/20 TO 86/10/28			
	TOTAL	1979-1983	SUMMER	WINTER	RATIO
SAMPLES	397	178	101	77	1.31

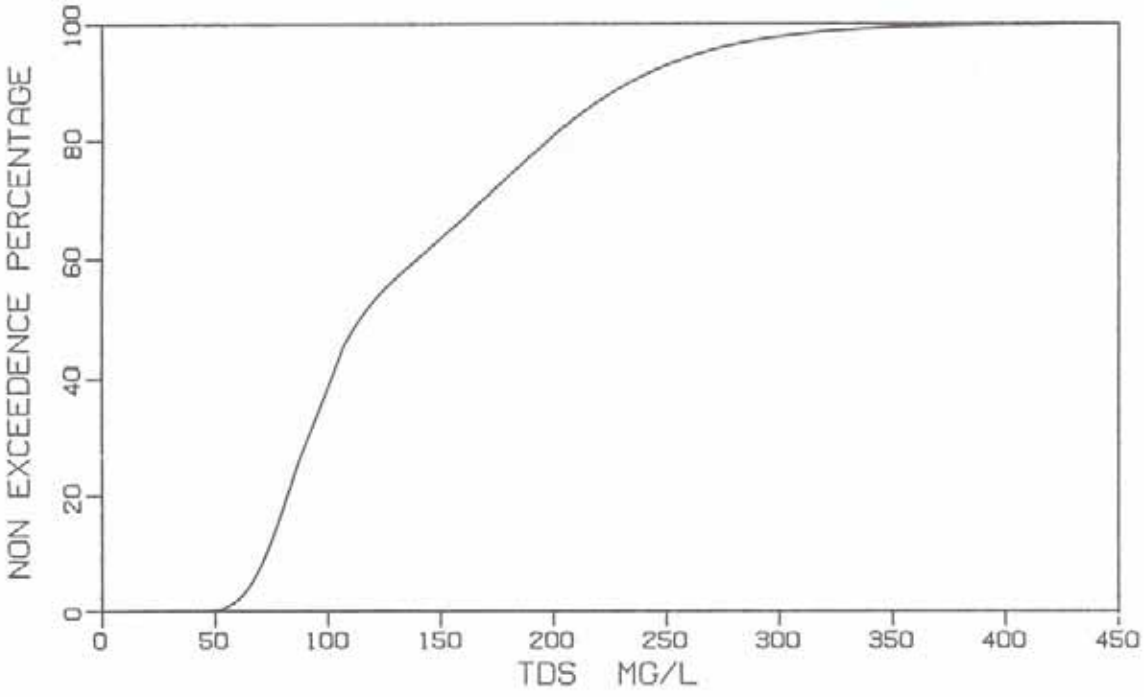
WATER QUALITY STATISTICS						
DETERMINAND	MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH (PH UNITS)	6.9	5.8	7.8	0.5	6.3	7.3
EC (MS/M)	14.9	5.7	42.7	8.7	10.5	30.0
TDS (MG/L)	103	58	318	60	85	220
CA (MG/L)	11	4	36	7	8	25
MG (MG/L)	4	2	16	3	3	10
NA (MG/L)	9	4	26	5	7	18
K (MG/L)	2.9	1.5	9.1	1.4	2.3	4.5
TAL (MG/L HCO_3)	55	<4	210	44	42	141
CL (MG/L)	5	<3	22	4	4	11
SO_4 (MG/L)	9	<2	33	6	4	17
F (MG/L)	0.2	<0.1	0.5	0.1	0.2	0.4
SI (MG/L)	5.3	<0.4	6.7	1.4	4.7	6.2
NO_3 (MG/L N)	0.13	<0.02	2.49	0.45	0.05	0.50
PO_4 (MG/L P)	0.024	<0.005	0.292	0.052	0.014	0.068

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS				
COMPONENT DISTRIBUTION	MEAN		STD DEV	
1	(μ_1)	5.2456	(σ_1)	0.2733
2	(μ_2)	4.4855	(σ_2)	0.2166
PROPORTIONALITY FACTOR (α) = .4488				

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C8M16
NAME: KROM SPRUIT AT COSMOS

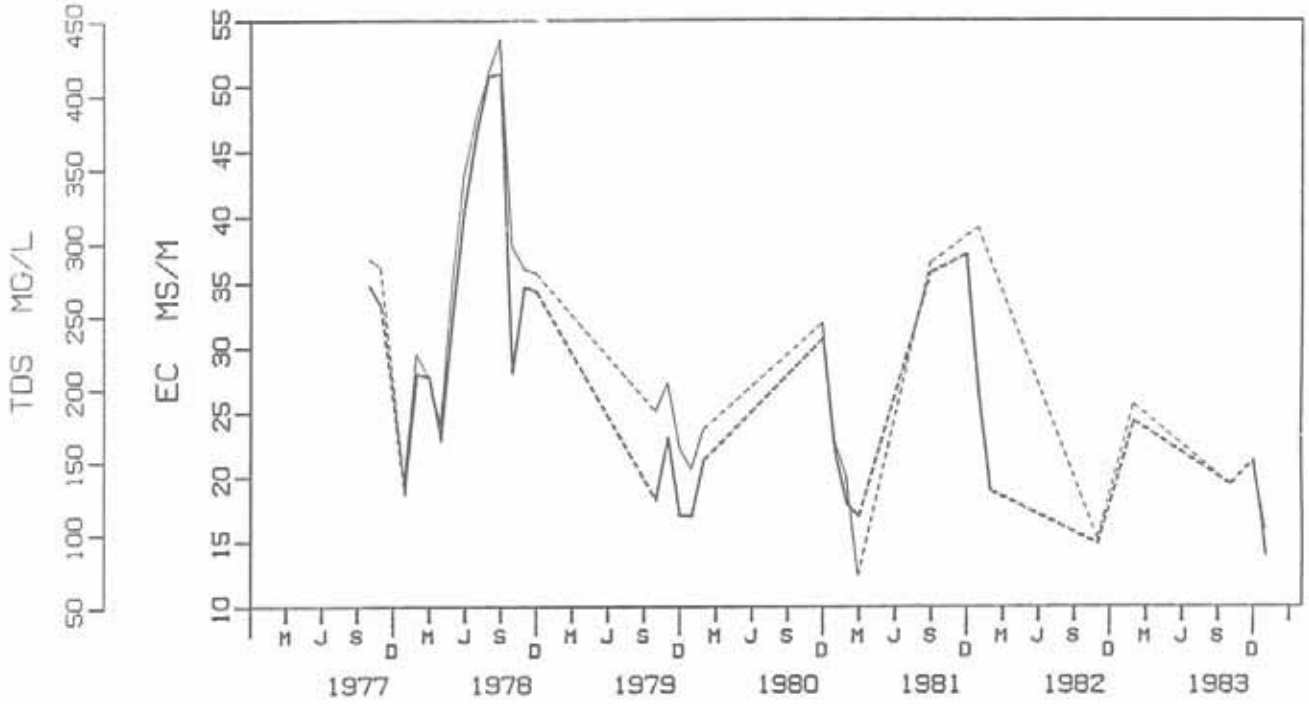
LATITUDE: 27°15'30" S LONGITUDE 28°24'15" E
TYPE: RIVER SECTION

SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING:		77/10/25 TO 86/02/06			
	TOTAL	1979-1983	SUMMER	WINTER	RATIO
SAMPLES	83	33	32	1	> 10

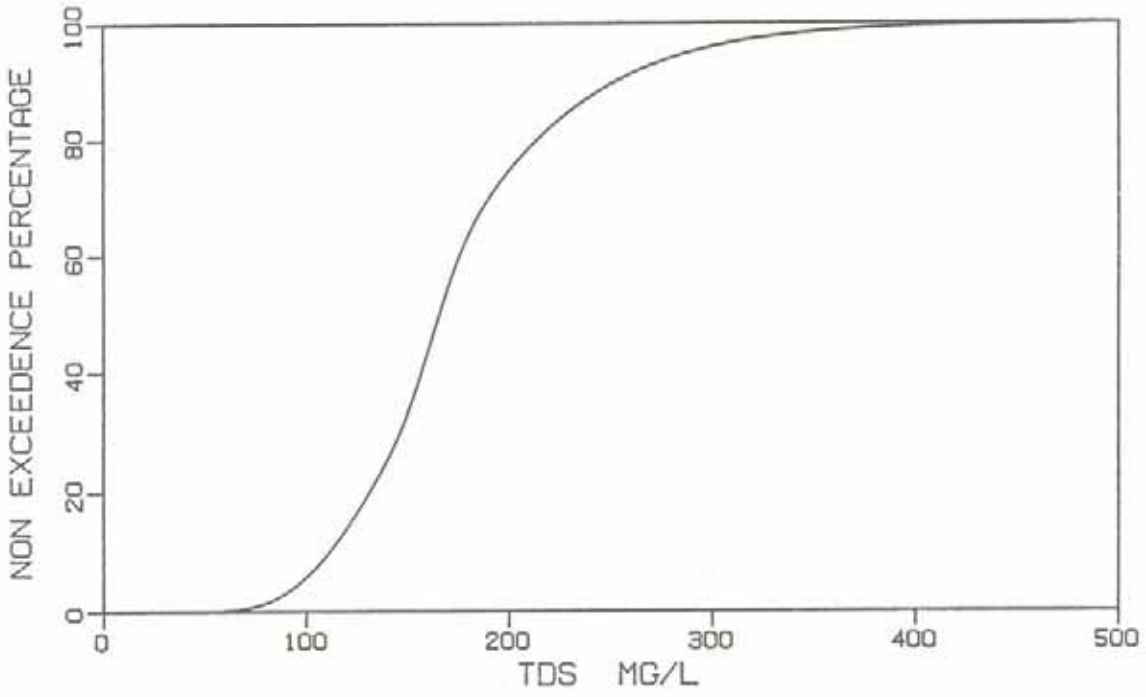
WATER QUALITY STATISTICS						
DETERMINAND	MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH (PH UNITS)	7.0	5.9	7.7	0.5	6.7	7.4
EC (MS/M)	19.7	10.0	39.3	7.1	16.6	29.8
TDS (MG/L)	169	71	310	57	140	242
CA (MG/L)	14	7	28	5	11	21
MG (MG/L)	9	5	18	3	7	13
NA (MG/L)	13	7	30	6	10	21
K (MG/L)	4.1	2.8	6.8	1.0	3.4	5.6
TAL (MG/L HCO_3)	106	31	203	42	73	149
CL (MG/L)	6	4	21	4	5	10
SO_4 (MG/L)	12	<2	63	14	9	29
F (MG/L)	0.3	0.1	0.5	0.1	0.2	0.4
SI (MG/L)	8.0	6.0	9.5	1.0	7.3	9.1
NO_3 (MG/L N)	0.27	<0.02	3.29	0.73	0.03	1.04
PO_4 (MG/L P)	0.043	0.006	0.307	0.071	0.015	0.129

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS		
COMPONENT DISTRIBUTION	MEAN	STD DEV
1	(μ_1) 5.0982	(σ_1) 0.0755
2	(μ_2) 5.1210	(σ_2) 0.3486
PROPORTIONALITY FACTOR (α) = .1713		

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C8M18
NAME: HOL SPRUIT AT DAVIDSDALE

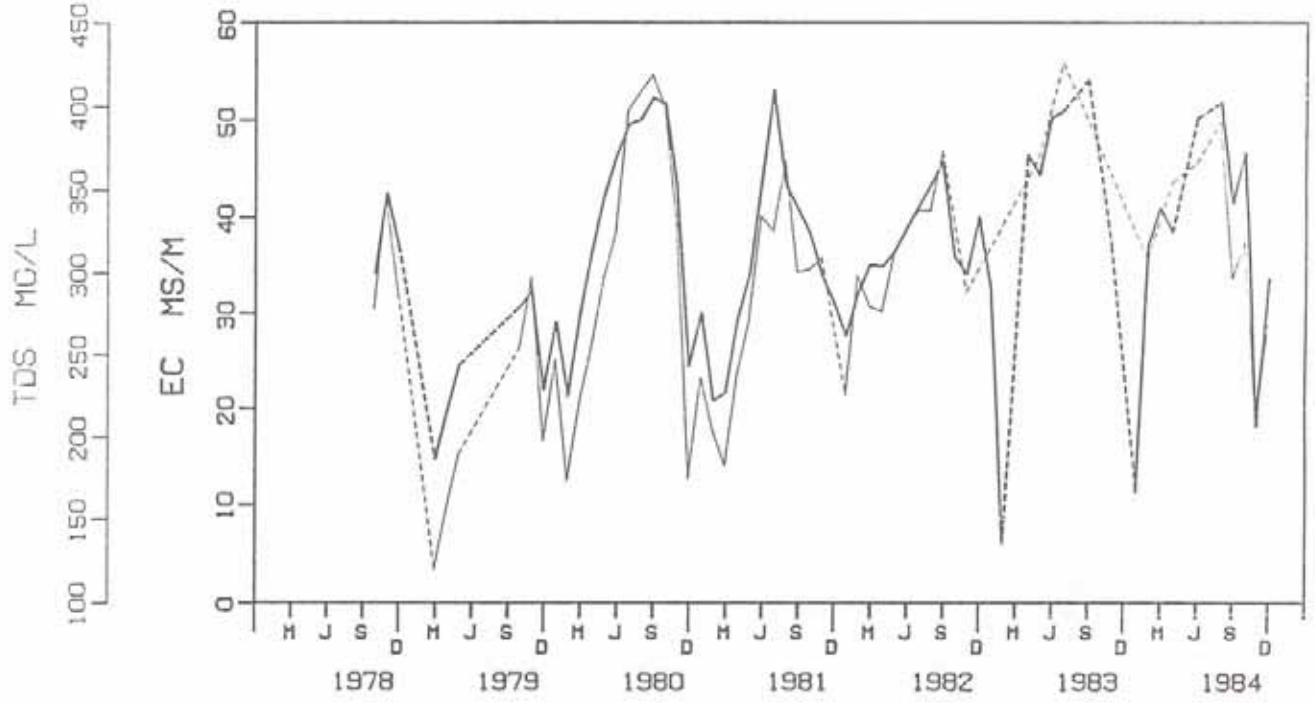
LATITUDE: 27°39'00" S LONGITUDE 28°52'00" E
TYPE: RIVER SECTION

SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING:		78/10/25 TO 86/09/16			
	TOTAL	1979-1983	SUMMER	WINTER	RATIO
SAMPLES	190	161	87	74	1.18

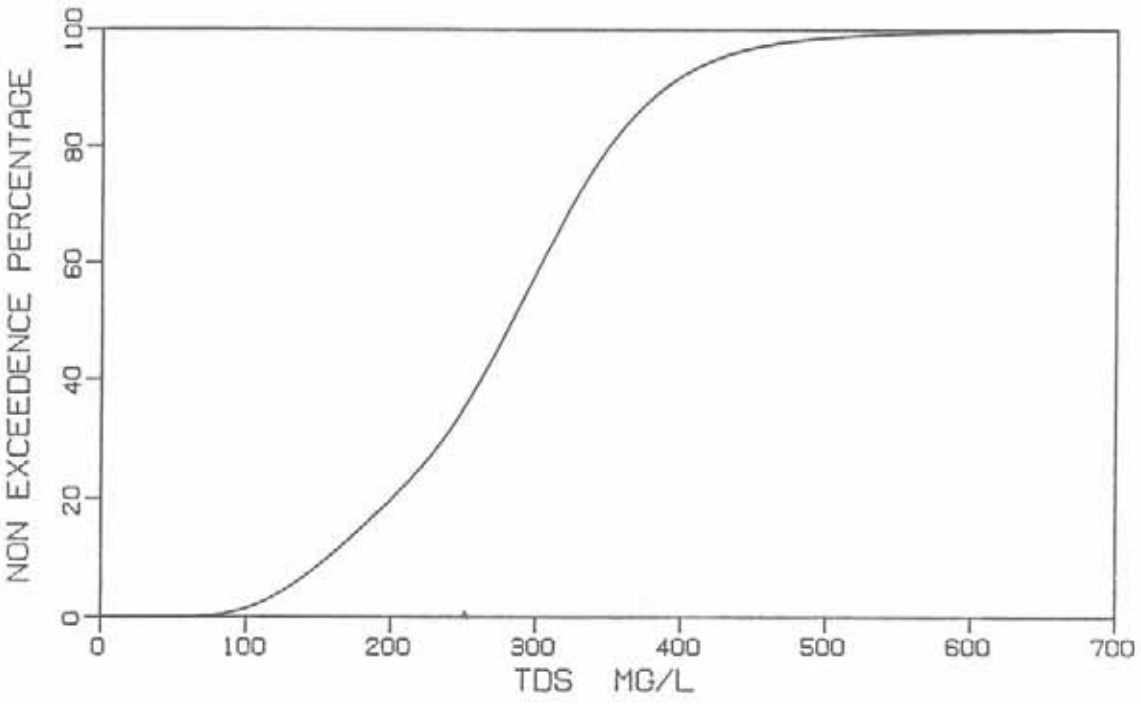
WATER QUALITY STATISTICS						
DETERMINAND	MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH (PH UNITS)	7.4	6.4	8.0	0.4	7.0	7.7
EC (MS/M)	35.9	6.0	90.6	11.6	28.0	49.8
TDS (MG/L)	279	114	491	92	214	410
CA (MG/L)	28	11	46	9	22	41
MG (MG/L)	13	6	26	6	10	24
NA (MG/L)	25	8	46	9	18	37
K (MG/L)	3.4	2.6	6.6	0.8	3.1	4.5
TAL (MG/L HCO_3)	183	26	328	70	132	278
CL (MG/L)	8	4	26	4	6	13
SO_4 (MG/L)	9	<2	23	4	7	15
F (MG/L)	0.5	0.2	0.7	0.1	0.4	0.6
SI (MG/L)	7.0	1.0	10.5	2.4	4.3	9.2
NO_3 (MG/L N)	0.08	<0.02	2.34	0.34	0.02	0.46
PO_4 (MG/L P)	0.010	<0.005	0.074	0.017	<0.005	0.039

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS		
COMPONENT DISTRIBUTION	MEAN	STD DEV
1	(μ_1) 5.3767	(σ_1) 0.4194
2	(μ_2) 5.7428	(σ_2) 0.1803
PROPORTIONALITY FACTOR (α) = .4591		

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C8M20
NAME: LIEBENBERGSVLEI RIVER AT ROODEKRAAL

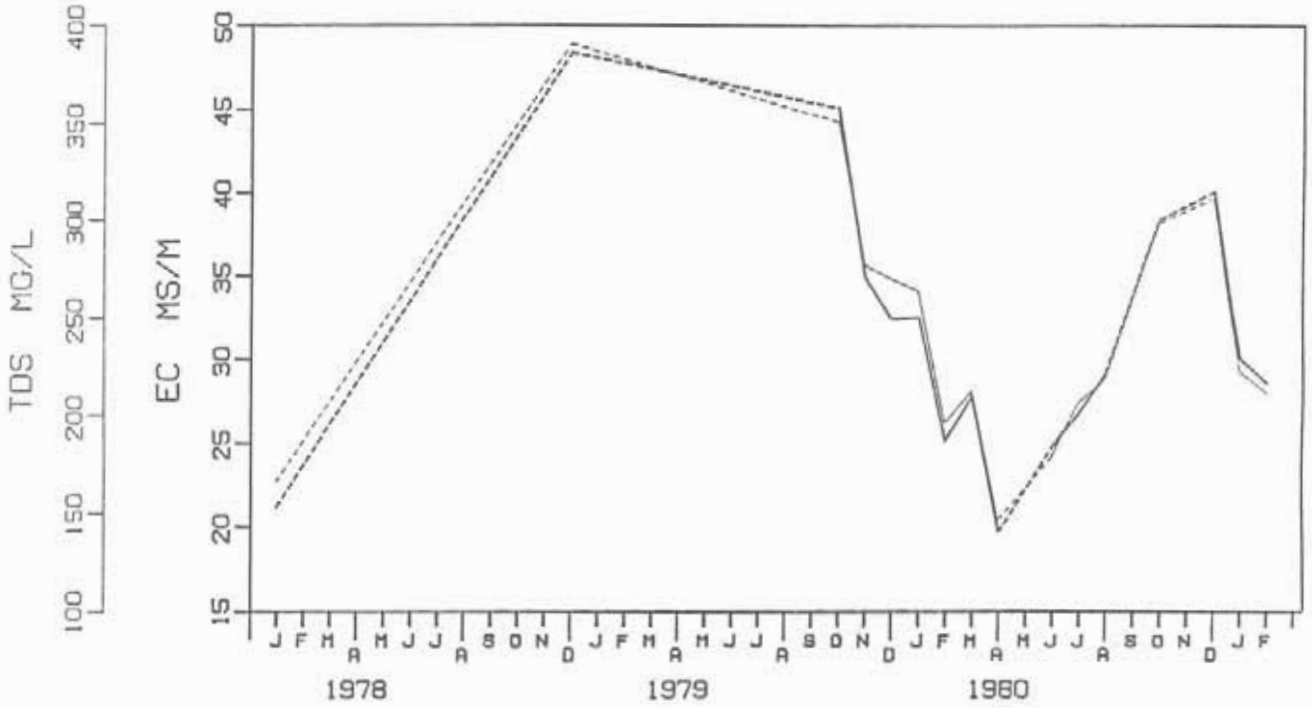
LATITUDE: 27°41'15" S LONGITUDE 28°22'45" E
TYPE: STORAGE WEIR

SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING:		78/01/01 TO 81/02/19			
	TOTAL	1979-1983	SUMMER	WINTER	RATIO
SAMPLES	47	44	34	10	3.40

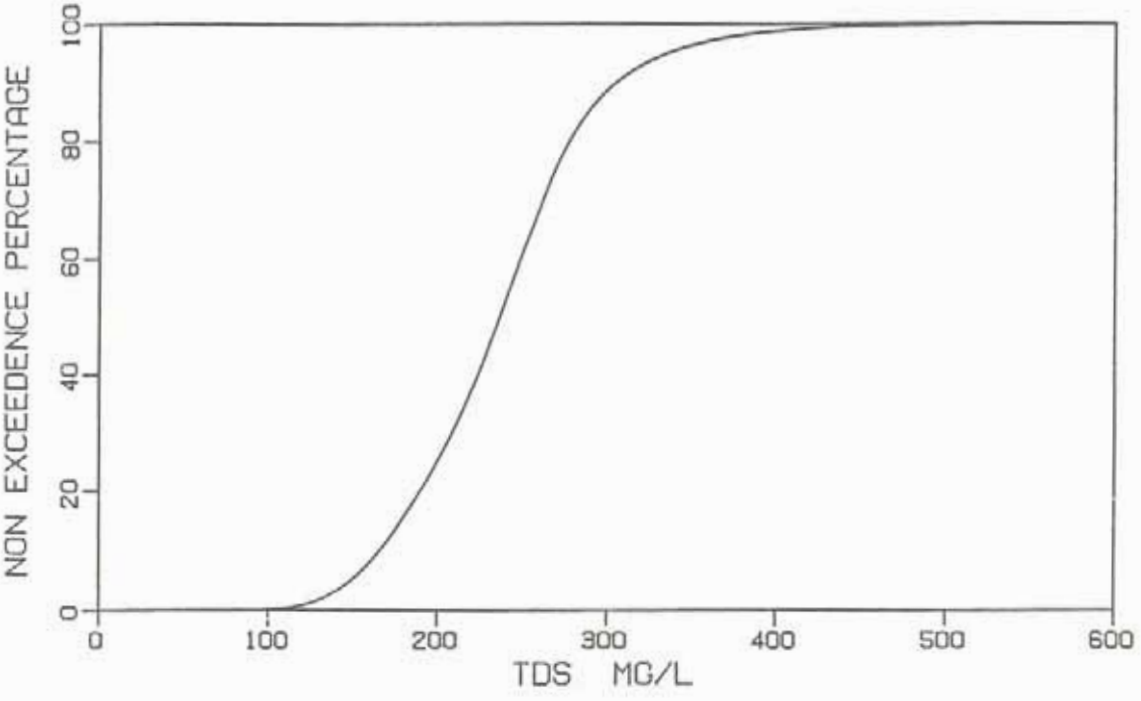
WATER QUALITY STATISTICS						
DETERMINAND	MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH (PH UNITS)	7.0	5.5	7.7	0.5	6.7	7.4
EC (MS/M)	30.1	19.1	45.7	6.5	26.2	37.5
TDS (MG/L)	237	131	356	55	205	311
CA (MG/L)	23	14	36	5	20	28
MG (MG/L)	9	6	16	2	8	13
NA (MG/L)	24	15	42	7	19	35
K (MG/L)	6.0	4.9	8.0	0.8	5.5	7.1
TAL (MG/L HCO_3)	142	62	221	37	121	194
CL (MG/L)	11	5	26	5	8	18
SO_4 (MG/L)	13	<2	27	6	11	22
F (MG/L)	0.4	0.2	0.5	0.1	0.3	0.5
SI (MG/L)	5.1	2.6	6.8	0.9	4.6	5.8
NO_3 (MG/L N)	0.11	<0.02	0.84	0.18	0.04	0.39
PO_4 (MG/L P)	0.025	<0.005	0.094	0.020	0.011	0.058

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS				
COMPONENT DISTRIBUTION	MEAN		STD DEV	
1	(μ_1)	5.4058	(σ_1)	0.2739
2	(μ_2)	5.5272	(σ_2)	0.1044
PROPORTIONALITY FACTOR (α) = .7104				

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C8M22
NAME: WILGE RIVER AT KIMBERLEY

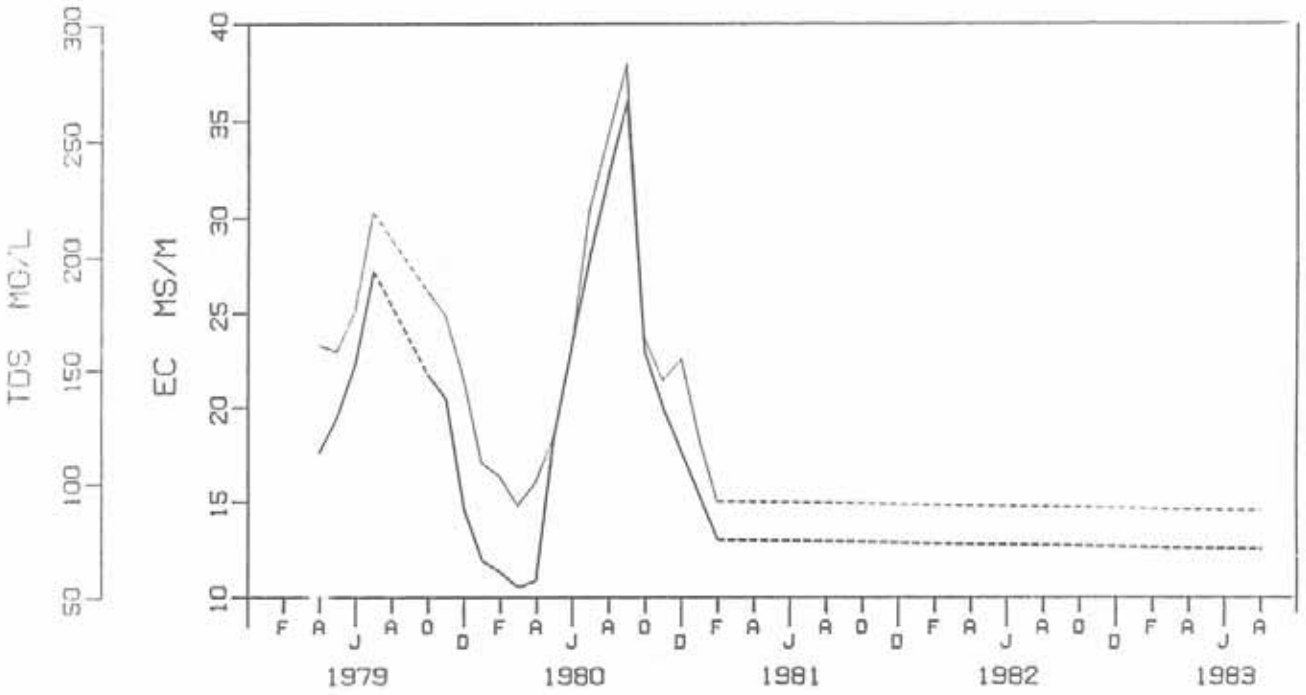
LATITUDE: 27°18'00" S LONGITUDE 28°29'45" E
TYPE: GAUGING WEIR

SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING:		79/04/30 TO 83/08/23			
	TOTAL	1979-1983	SUMMER	WINTER	RATIO
SAMPLES	79	79	39	40	0.98

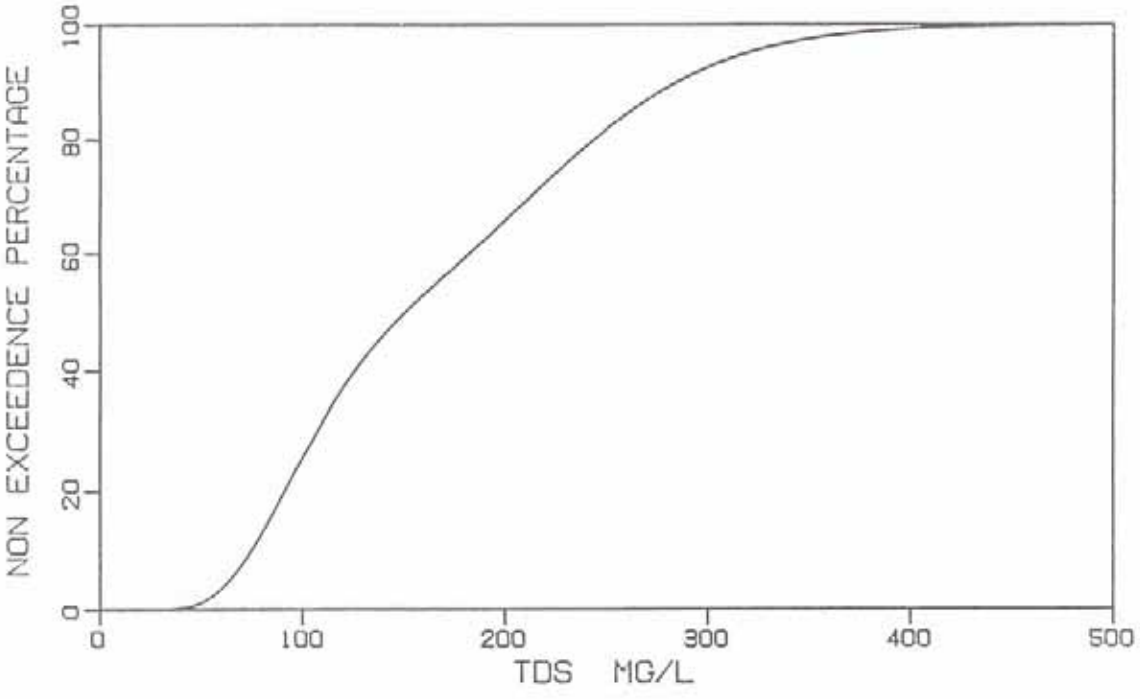
WATER QUALITY STATISTICS						
DETERMINAND	MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH (PH UNITS)	6.9	5.5	7.8	0.5	6.6	7.4
EC (MS/M)	18.8	2.3	38.6	7.7	13.8	30.9
TDS (MG/L)	152	69	303	56	113	244
CA (MG/L)	15	5	35	8	10	30
MG (MG/L)	7	2	17	3	5	13
NA (MG/L)	11	4	23	4	9	17
K (MG/L)	3.1	2.1	6.6	1.0	2.6	4.7
TAL (MG/L HCO_3)	88	30	206	44	56	163
CL (MG/L)	6	<3	16	3	4	9
SO_4 (MG/L)	8	<2	37	7	6	21
F (MG/L)	0.2	0.1	0.4	0.1	0.2	0.3
SI (MG/L)	5.6	1.9	6.9	1.0	5.0	6.4
NO_3 (MG/L N)	0.08	<0.02	3.75	0.66	0.03	0.87
PO_4 (MG/L P)	0.024	<0.005	0.136	0.033	0.010	0.076

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS		
COMPONENT DISTRIBUTION	MEAN	STD DEV
1	(μ_1) 5.0137	(σ_1) 0.3763
2	(μ_2) 4.6640	(σ_2) 0.0316
PROPORTIONALITY FACTOR (α) = .9293		

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C8M23
NAME: MEUL RIVER AT KAFFERSTAD

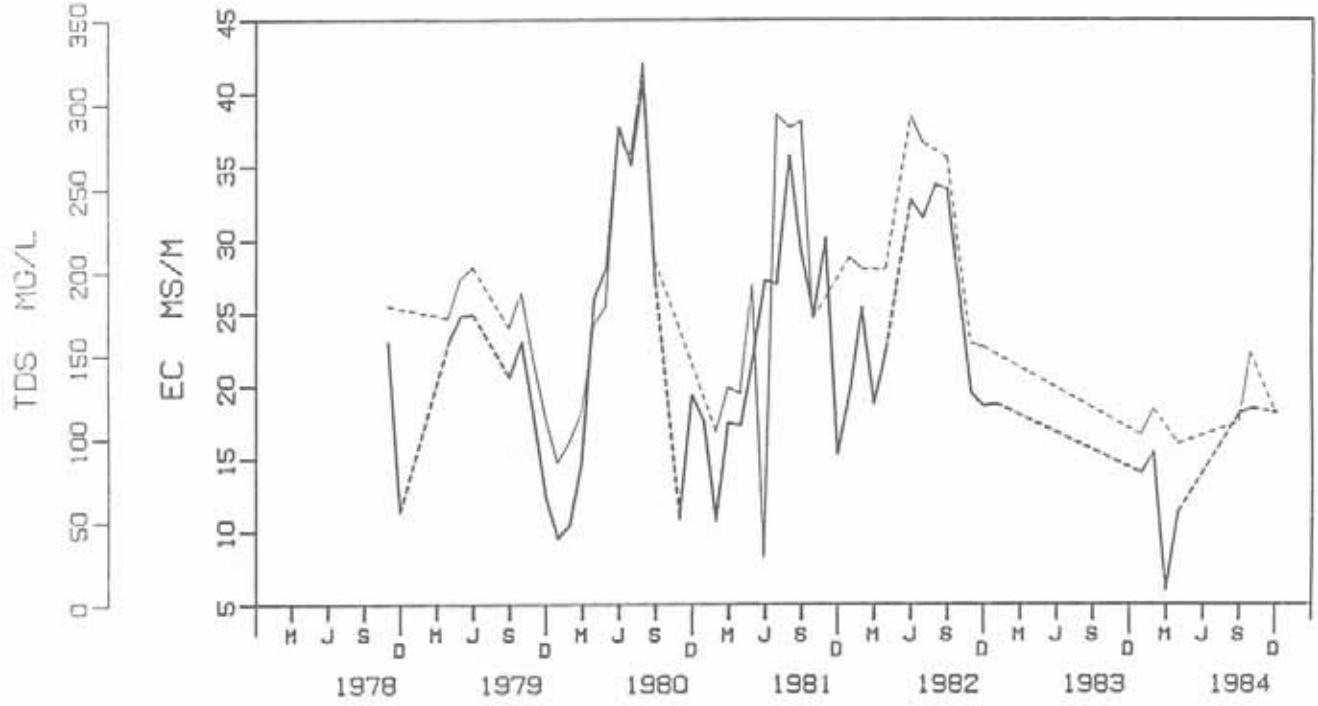
LATITUDE: 28°01'30" S LONGITUDE 28°59'45" E
TYPE: RIVER SECTION

SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING:		78/11/02 TO 86/10/21			
	TOTAL	1979-1983	SUMMER	WINTER	RATIO
SAMPLES	181	141	67	74	0.91

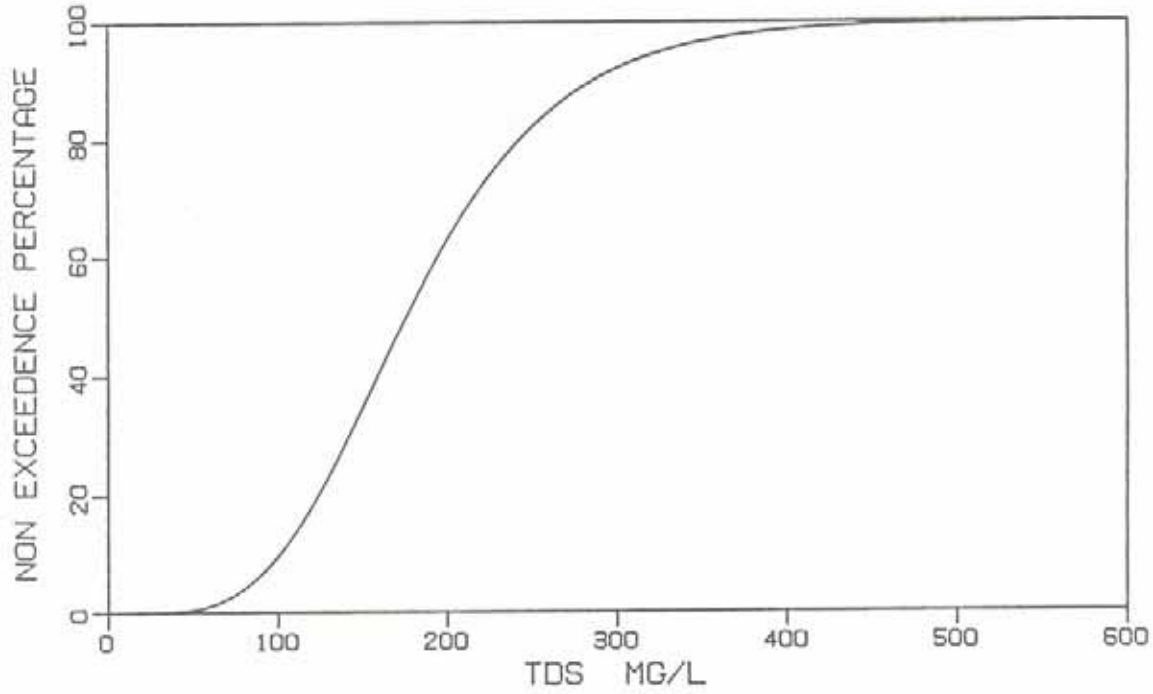
WATER QUALITY STATISTICS						
DETERMINAND	MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH (PH UNITS)	7.2	4.3	8.0	0.5	6.8	7.6
EC (MS/M)	23.9	3.1	51.3	9.4	17.6	35.6
TDS (MG/L)	182	28	339	72	131	288
CA (MG/L)	18	<1	33	8	12	30
MG (MG/L)	7	<1	15	3	5	12
NA (MG/L)	17	5	54	11	13	30
K (MG/L)	3.0	<0.3	6.4	1.1	2.8	5.0
TAL (MG/L HCO_3)	103	9	214	52	75	188
CL (MG/L)	8	<3	25	5	5	15
SO_4 (MG/L)	7	3	36	7	6	17
F (MG/L)	0.3	0.1	0.7	0.1	0.2	0.4
SI (MG/L)	4.5	1.4	9.0	1.8	3.1	6.4
NO_3 (MG/L N)	0.07	<0.02	5.65	0.69	0.02	0.63
PO_4 (MG/L P)	0.025	<0.005	0.207	0.037	0.013	0.087

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS		
COMPONENT DISTRIBUTION	MEAN	STD DEV
1	(μ_1) 4.7971	(σ_1) 0.4294
2	(μ_2) 5.2422	(σ_2) 0.3514
PROPORTIONALITY FACTOR (α) = .2065		

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C8M24
NAME: MIDDEL SPRUIT AT MIDDELSPRUIT

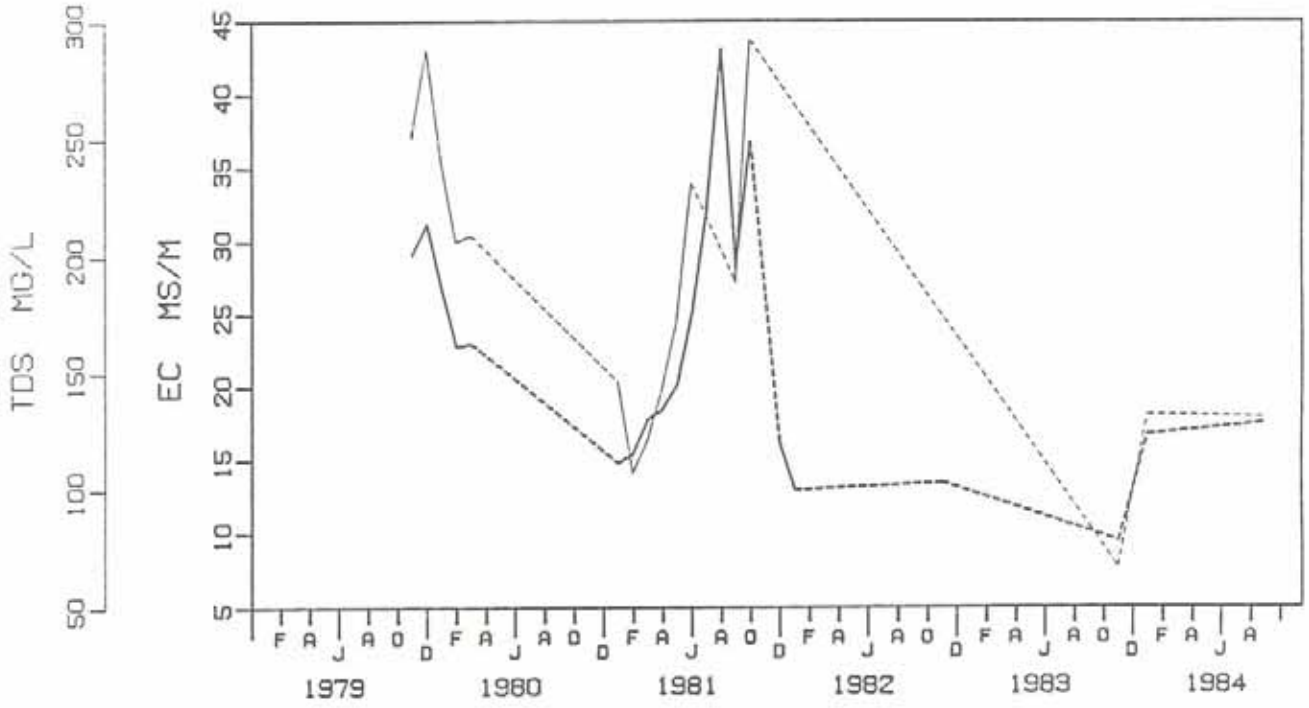
LATITUDE: 28°04'30" S LONGITUDE 28°42'00" E
TYPE: GAUGING WEIR

SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING:		79/11/29 TO 84/09/19			
	TOTAL	1979-1983	SUMMER	WINTER	RATIO
SAMPLES	46	44	26	18	1.44

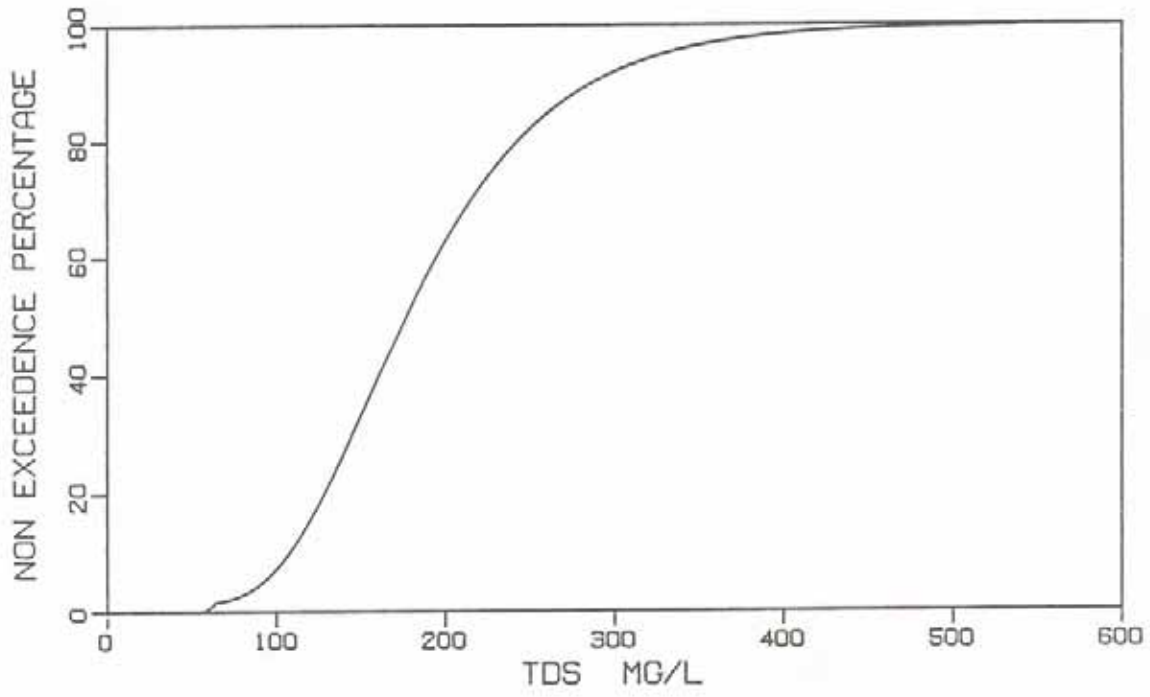
WATER QUALITY STATISTICS						
DETERMINAND	MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH (PH UNITS)	6.7	6.0	7.4	0.4	6.5	7.2
EC (MS/M)	19.9	8.2	43.1	8.2	17.6	33.9
TDS (MG/L)	192	67	329	70	142	263
CA (MG/L)	13	3	23	5	9	18
MG (MG/L)	5	2	10	2	4	8
NA (MG/L)	23	12	51	12	16	44
K (MG/L)	7.3	2.8	19.9	3.7	5.0	9.7
TAL (MG/L HCO_3)	78	18	200	47	59	148
CL (MG/L)	10	6	25	5	8	18
SO_4 (MG/L)	14	<2	83	18	8	31
F (MG/L)	0.3	0.1	0.7	0.1	0.2	0.5
SI (MG/L)	6.3	2.0	10.4	2.2	4.3	8.4
NO_3 (MG/L N)	0.18	<0.02	4.11	0.94	0.05	0.79
PO_4 (MG/L P)	0.065	0.013	0.456	0.105	0.033	0.226

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS		
COMPONENT DISTRIBUTION	MEAN	STD DEV
1	(μ_1) 4.1290	(σ_1) 0.0173
2	(μ_2) 5.1816	(σ_2) 0.3716
PROPORTIONALITY FACTOR (α) = .0133		

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C8M25
NAME: VAALBANK SPRUIT AT RUSTKOP

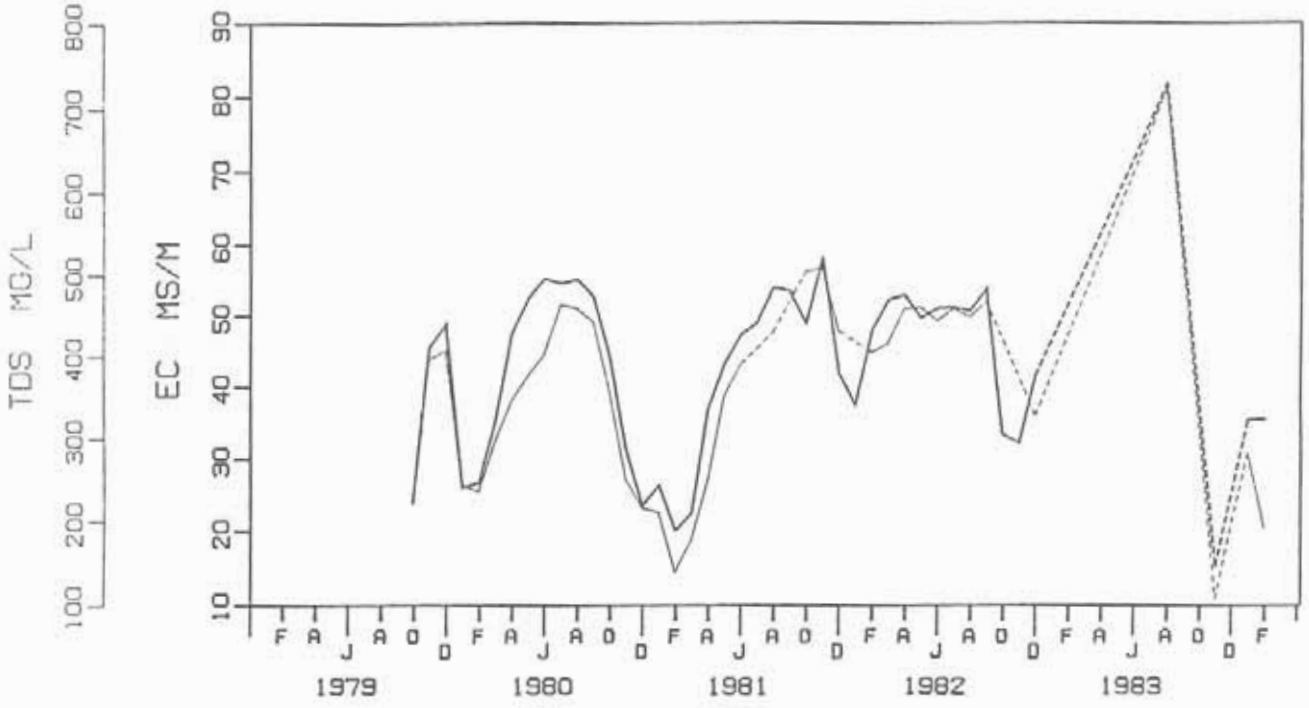
LATITUDE: 28°08'00" S LONGITUDE 28°45'45" E
TYPE: GAUGING WEIR

SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING:		79/10/24 TO 85/01/29			
	TOTAL	1979-1983	SUMMER	WINTER	RATIO
SAMPLES	134	130	57	73	0.78

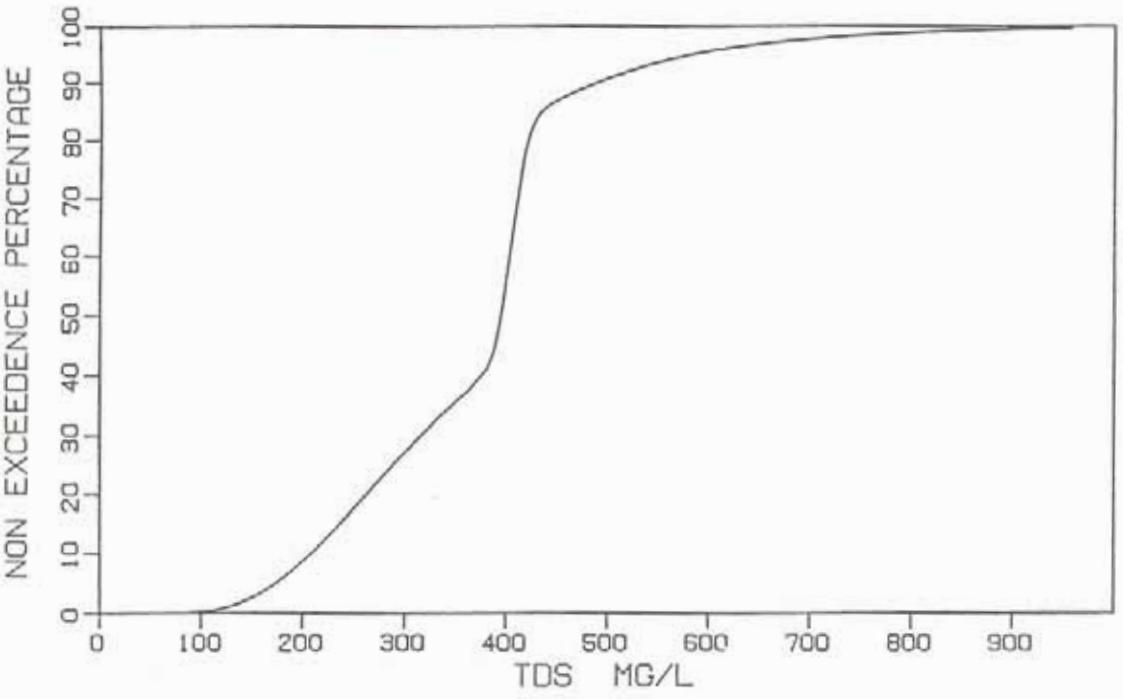
WATER QUALITY STATISTICS						
DETERMINAND	MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH (PH UNITS)	7.5	6.2	8.5	0.5	7.0	8.0
EC (MS/M)	49.0	13.2	82.0	12.4	36.8	56.2
TDS (MG/L)	382	108	724	119	277	470
CA (MG/L)	22	6	33	6	17	27
MG (MG/L)	11	3	15	3	8	12
NA (MG/L)	70	12	154	29	37	92
K (MG/L)	5.3	2.6	13.3	1.9	3.7	7.2
TAL (MG/L HCO_3)	233	21	480	88	164	318
CL (MG/L)	13	5	29	5	11	21
SO_4 (MG/L)	9	<2	43	8	7	22
F (MG/L)	0.6	0.2	1.5	0.2	0.4	0.8
SI (MG/L)	2.7	<0.4	8.4	2.7	0.7	7.2
NO_3 (MG/L N)	0.06	<0.02	2.14	0.41	0.03	0.76
PO_4 (MG/L P)	0.016	<0.005	0.157	0.034	0.006	0.069

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS		
COMPONENT DISTRIBUTION	MEAN	STD DEV
1	(μ_1) 5.7613	(σ_1) 0.4366
2	(μ_2) 6.0045	(σ_2) 0.0316
PROPORTIONALITY FACTOR (α) = .6065		

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C8R0301
NAME: STERKFONTEIN DAM:NEAR DAM WALL

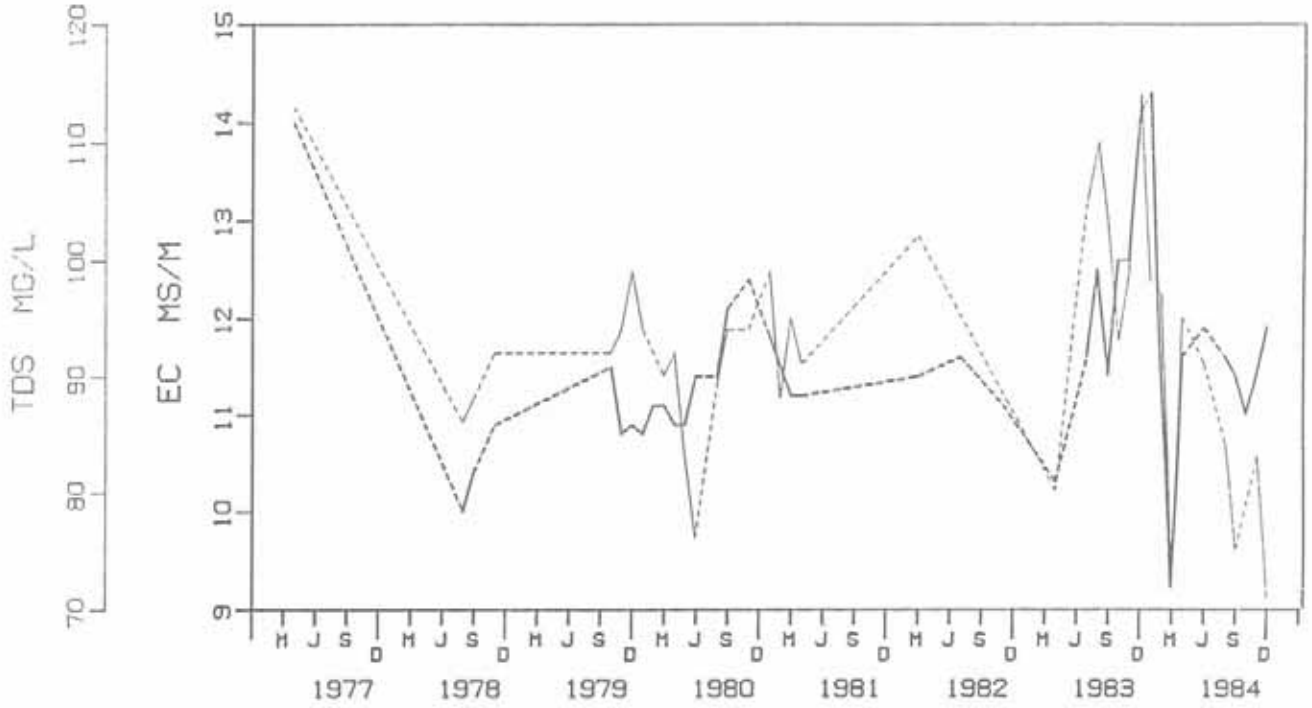
LATITUDE: 28°23'15" S LONGITUDE 29°01'00" E
TYPE: SAMPLING POINT IN DAM BASIN

SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING: 77/04/25 TO 86/08/13					
	TOTAL	1979-1983	SUMMER	WINTER	RATIO
SAMPLES	69	26	15	11	1.36

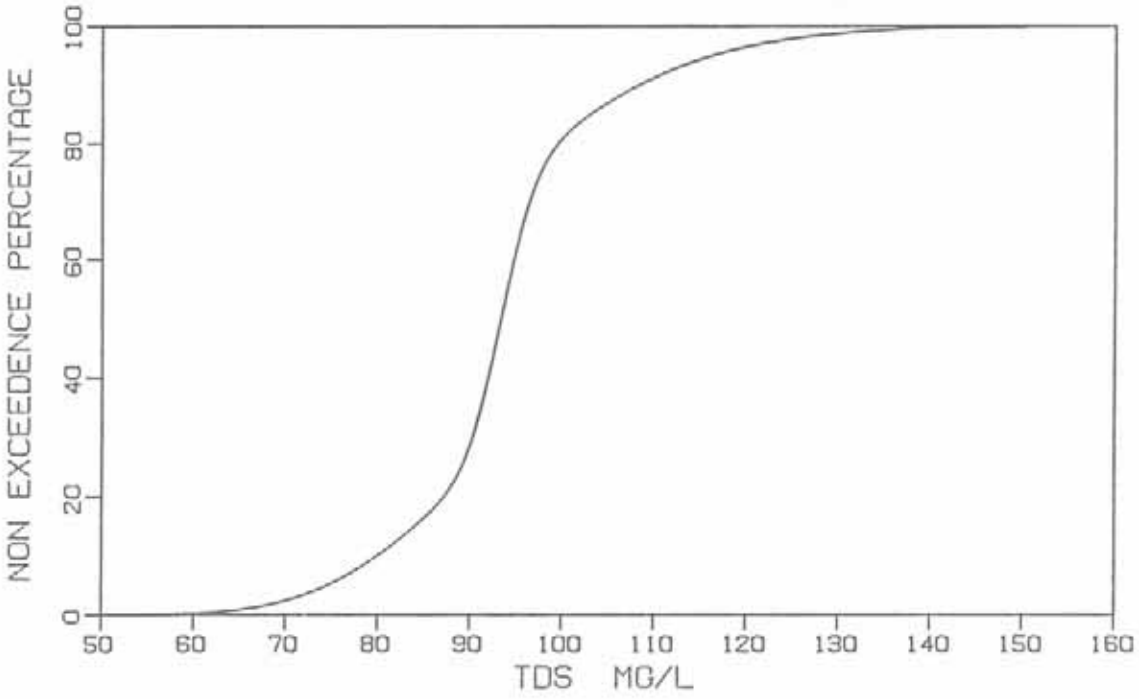
WATER QUALITY STATISTICS						
DETERMINAND	MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH (PH UNITS)	6.9	6.0	7.6	0.5	6.4	7.4
EC (MS/M)	11.4	10.3	14.1	0.8	11.1	12.6
TDS (MG/L)	94	76	114	9	90	105
CA (MG/L)	10	3	14	2	10	12
MG (MG/L)	4	3	5	0	4	5
NA (MG/L)	5	3	8	1	5	7
K (MG/L)	2.0	1.2	3.0	0.4	1.9	2.4
TAL (MG/L HCO_3)	58	38	66	7	55	64
CL (MG/L)	3	<3	11	2	<3	6
SO_4 (MG/L)	5	<2	14	3	3	10
F (MG/L)	0.2	0.1	0.3	0.0	0.1	0.2
SI (MG/L)	5.0	4.0	8.6	0.9	4.7	5.7
NO_3 (MG/L N)	0.08	<0.02	0.75	0.20	0.04	0.46
PO_4 (MG/L P)	0.009	<0.005	0.030	0.008	0.005	0.021

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS		
COMPONENT DISTRIBUTION	MEAN	STD DEV
1	(μ_1) 4.5324	(σ_1) 0.1653
2	(μ_2) 4.5381	(σ_2) 0.0316
PROPORTIONALITY FACTOR (α) = .5569		

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C8R0401
NAME: SAULSPOORT DAM:NEAR DAM WALL

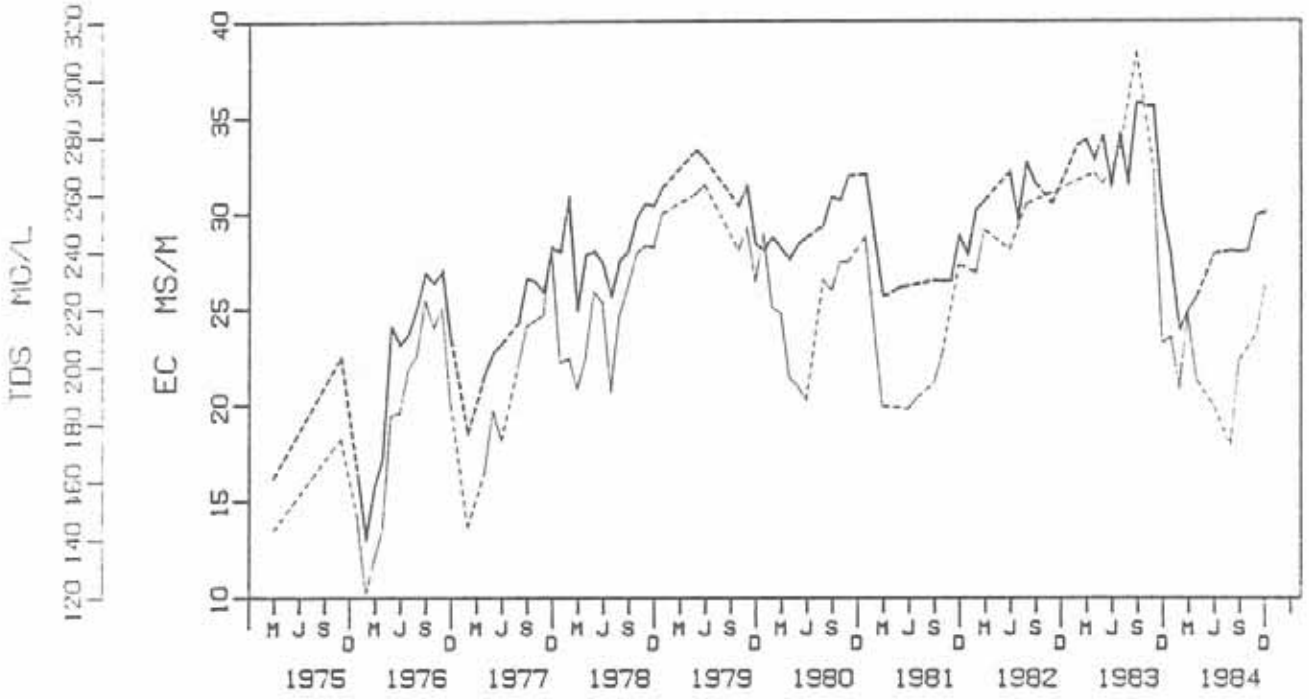
LATITUDE: 28°13'00" S LONGITUDE 28°21'45" E
TYPE: SAMPLING POINT IN DAM BASIN

SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING:		75/03/20 TO 86/10/08			
	TOTAL	1979-1983	SUMMER	WINTER	RATIO
SAMPLES	123	46	24	22	1.09

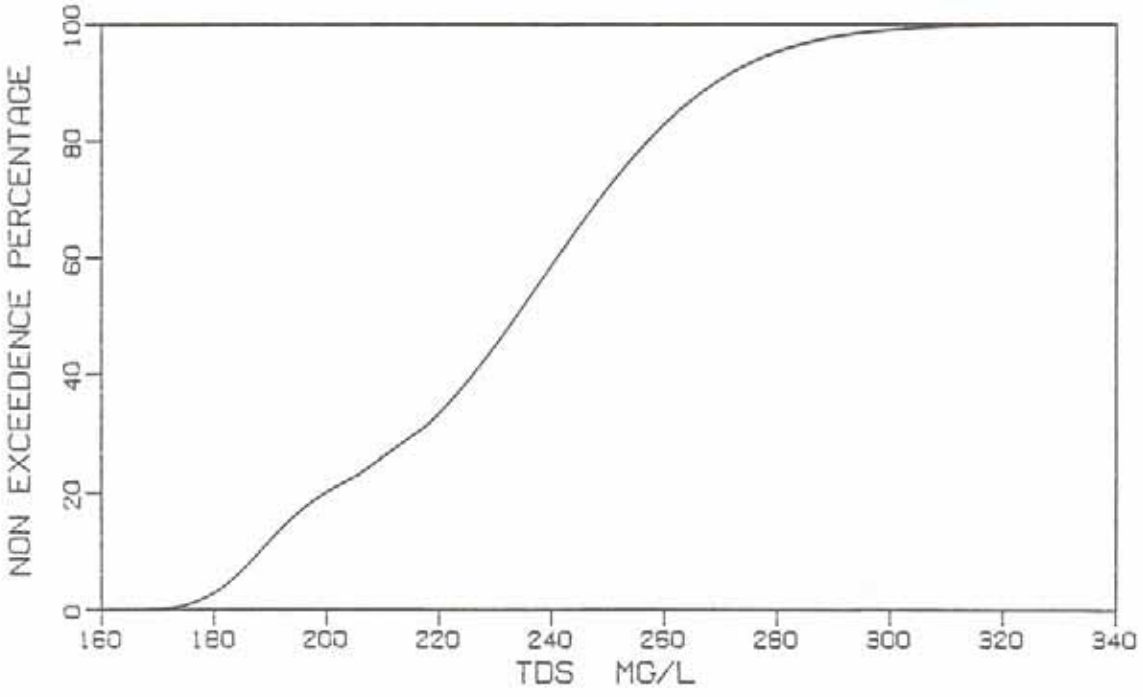
WATER QUALITY STATISTICS						
DETERMINAND	MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH (PH UNITS)	7.4	5.4	8.0	0.5	7.0	7.8
EC (MS/M)	30.4	23.1	35.7	2.7	28.4	33.7
TDS (MG/L)	235	185	309	30	212	267
CA (MG/L)	29	24	34	3	26	32
MG (MG/L)	10	8	13	1	9	12
NA (MG/L)	18	13	24	2	16	20
K (MG/L)	4.1	3.5	5.5	0.5	3.9	5.1
TAL (MG/L HCO_3)	153	109	191	23	135	176
CL (MG/L)	6	3	16	3	5	10
SO_4 (MG/L)	11	3	38	6	8	15
F (MG/L)	0.4	0.2	0.6	0.1	0.4	0.6
SI (MG/L)	1.8	<0.4	4.8	1.2	0.9	3.5
NO_3 (MG/L N)	0.09	<0.02	6.50	1.31	0.02	0.75
PO_4 (MG/L P)	0.010	<0.005	0.213	0.044	0.006	0.066

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS		
COMPONENT DISTRIBUTION	MEAN	STD DEV
1	(μ_1) 5.2376	(σ_1) 0.0420
2	(μ_2) 5.4836	(σ_2) 0.0958
PROPORTIONALITY FACTOR (α) = .1939		

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C8R0501
NAME: LOCH ATHLONE DAM:NEAR DAM WALL

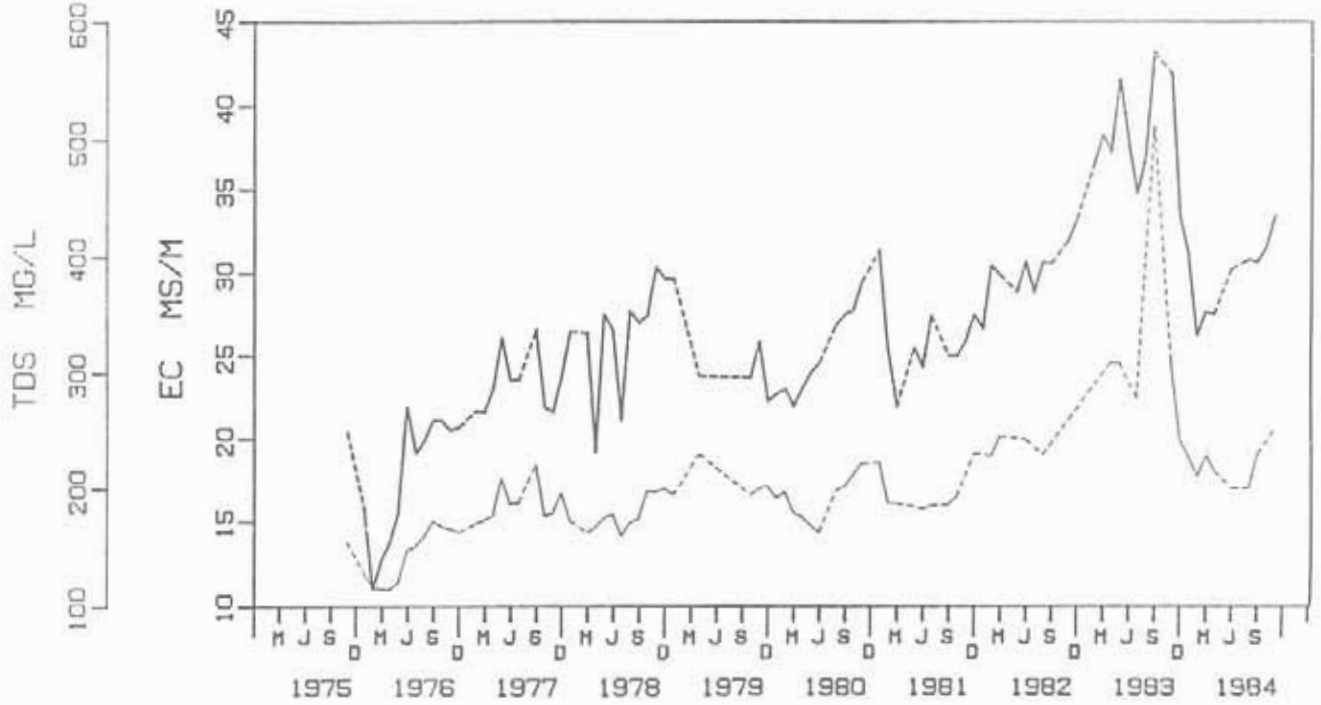
LATITUDE: 28°15'00" S LONGITUDE 28°18'30" E
TYPE: SAMPLING POINT IN DAM BASIN

SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING:		75/11/19 TO 86/10/08			
	TOTAL	1979-1983	SUMMER	WINTER	RATIO
SAMPLES	120	47	25	22	1.14

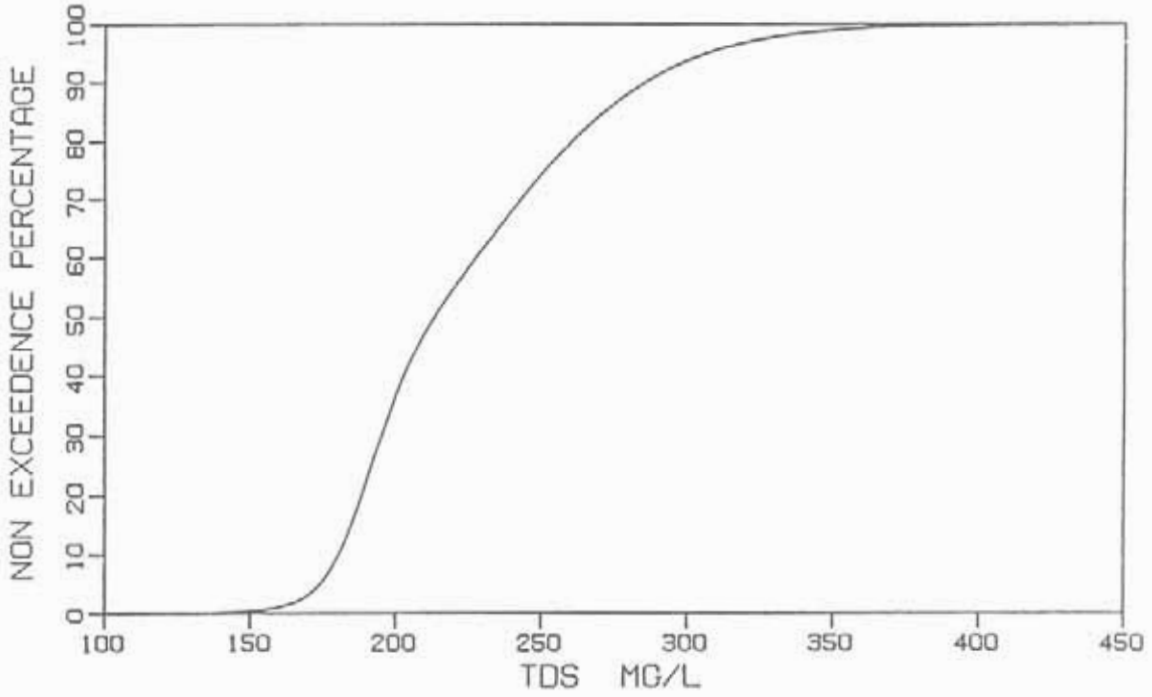
WATER QUALITY STATISTICS						
DETERMINAND	MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH (PH UNITS)	7.3	6.4	8.0	0.4	7.0	7.5
EC (MS/M)	28.8	21.9	43.2	5.7	24.8	37.4
TDS (MG/L)	202	162	512	64	188	299
CA (MG/L)	19	16	29	3	18	25
MG (MG/L)	8	6	15	2	8	12
NA (MG/L)	21	16	43	6	19	35
K (MG/L)	6.1	3.7	8.1	1.1	5.1	7.7
TAL (MG/L HCO_3)	129	95	226	33	112	192
CL (MG/L)	9	4	21	4	7	16
SO_4 (MG/L)	10	2	174	29	7	19
F (MG/L)	0.4	0.2	0.6	0.1	0.3	0.5
SI (MG/L)	4.1	<0.4	7.1	1.9	2.8	6.4
NO_3 (MG/L N)	0.20	<0.02	4.49	1.00	0.04	1.60
PO_4 (MG/L P)	0.027	0.006	0.200	0.044	0.019	0.107

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS		
COMPONENT DISTRIBUTION	MEAN	STD DEV
1	(μ_1) 5.4632	(σ_1) 0.1792
2	(μ_2) 5.2520	(σ_2) 0.0592
PROPORTIONALITY FACTOR (α) = .6893		

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C8R0601
NAME: GERRANDS DAM:NEAR DAM WALL

LATITUDE: 28°17'00" S LONGITUDE 28°17'30" E
TYPE: SAMPLING POINT IN DAM BASIN

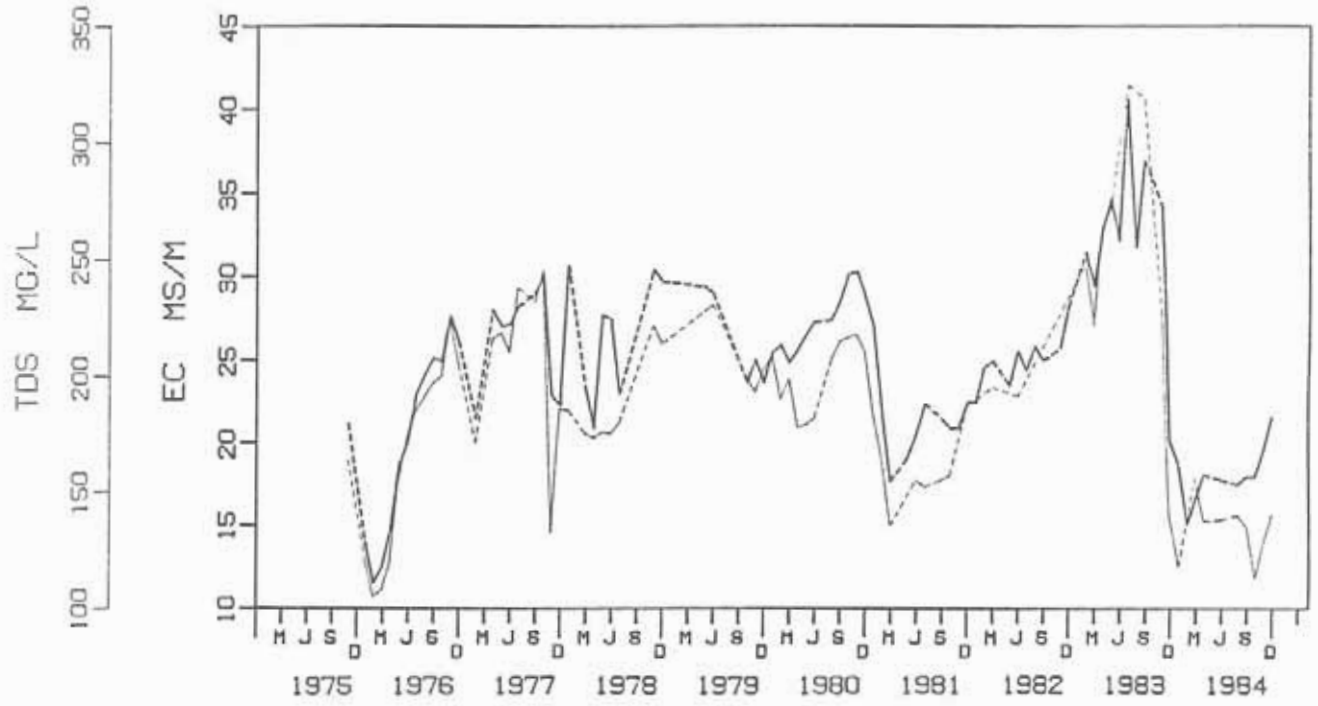
SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING:		75/11/19 TO 86/10/08			
	TOTAL	1979-1983	SUMMER	WINTER	RATIO
SAMPLES	115	47	25	22	1.14

WATER QUALITY STATISTICS

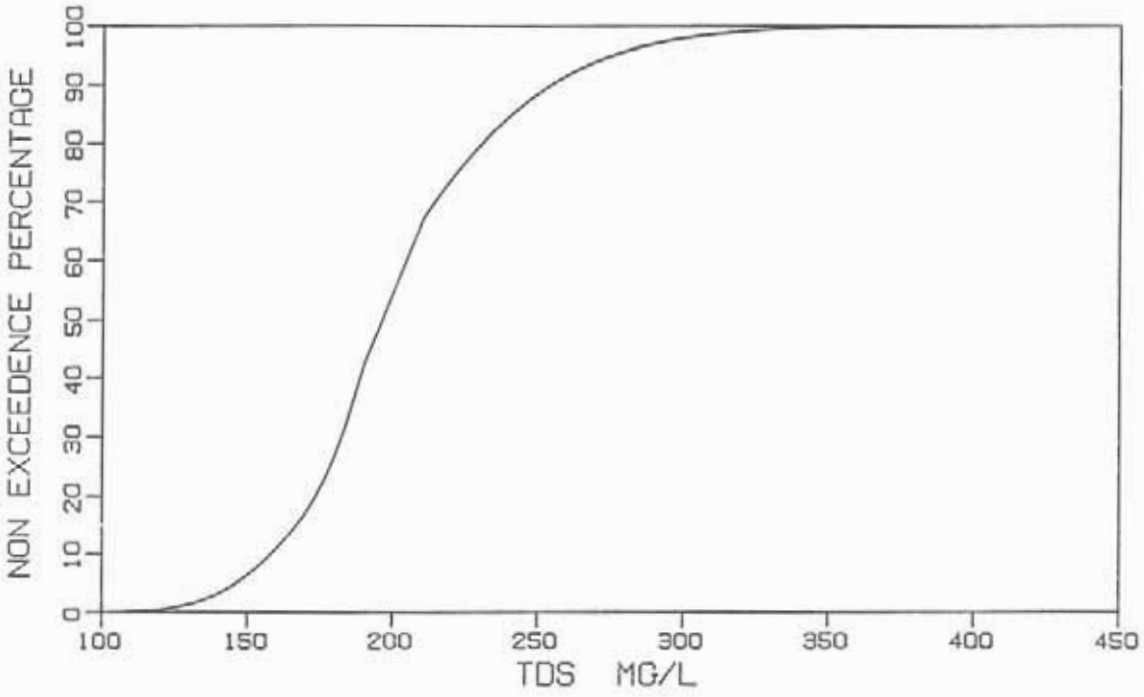
DETERMINAND	MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH (PH UNITS)	7.3	6.4	7.8	0.3	7.0	7.5
EC (MS/M)	25.6	17.6	40.5	4.8	23.5	32.3
TDS (MG/L)	199	135	324	43	180	258
CA (MG/L)	20	14	28	3	18	25
MG (MG/L)	8	5	13	1	7	10
NA (MG/L)	21	13	40	5	18	26
K (MG/L)	6.6	5.5	8.6	0.9	6.0	7.9
TAL (MG/L HCO_3)	120	72	209	28	104	157
CL (MG/L)	7	5	16	3	7	14
SO_4 (MG/L)	12	<2	44	7	10	19
F (MG/L)	0.4	0.3	0.6	0.1	0.3	0.6
SI (MG/L)	2.6	<0.4	7.0	1.2	2.0	3.7
NO_3 (MG/L N)	0.20	<0.02	2.31	0.42	0.09	0.60
PO_4 (MG/L P)	0.026	<0.005	0.139	0.027	0.015	0.060

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS		
COMPONENT DISTRIBUTION	MEAN	STD DEV
1	(μ_1) 5.3012	(σ_1) 0.2057
2	(μ_2) 5.2447	(σ_2) 0.0469
PROPORTIONALITY FACTOR (α) = .7995		

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C9M09
NAME: VAAL RIVER AT DE HOOP

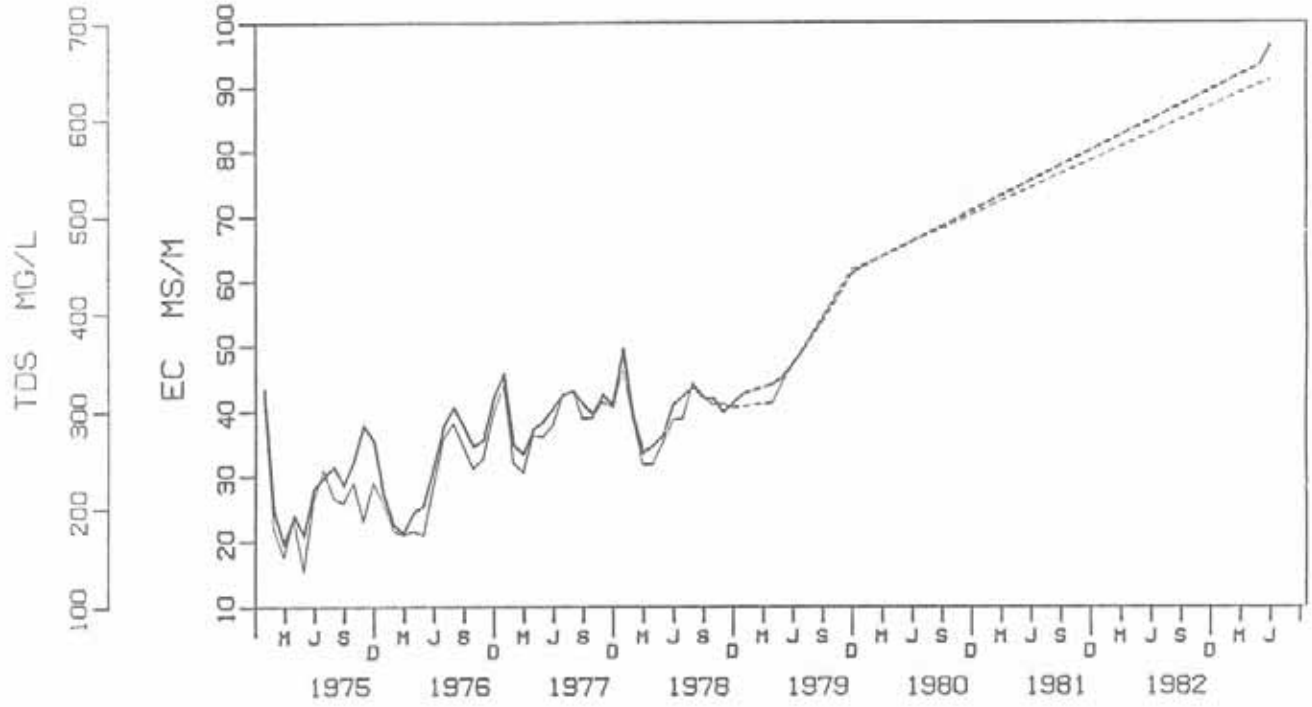
LATITUDE: 28°31'00" S LONGITUDE 24°36'00" E
TYPE: GAUGING WEIR

SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING:		71/12/09 TO 83/06/14			
	TOTAL	1979-1983	SUMMER	WINTER	RATIO
SAMPLES	337	26	9	17	0.53

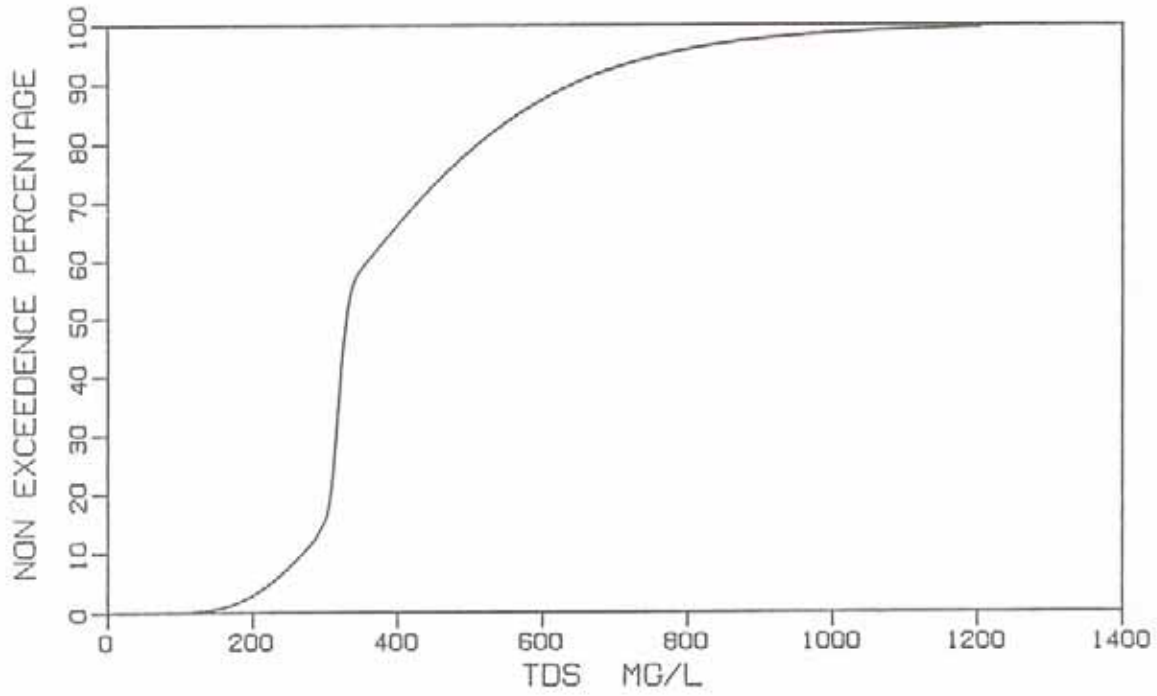
WATER QUALITY STATISTICS						
DETERMINAND	MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH (PH UNITS)	7.4	7.3	7.5	0.1	7.4	7.5
EC (MS/M)	47.9	42.0	97.4	17.8	45.2	93.3
TDS (MG/L)	388	309	640	152	325	581
CA (MG/L)	37	32	53	9	34	49
MG (MG/L)	23	17	45	13	18	40
NA (MG/L)	39	29	78	23	30	69
K (MG/L)	7.8	5.3	10.6	2.9	5.4	10.5
TAL (MG/L HCO_3)	145	131	148	8	139	148
CL (MG/L)	32	22	69	22	23	60
SO_4 (MG/L)	99	61	252	89	66	216
F (MG/L)	0.5	0.4	0.6	0.1	0.5	0.6
SI (MG/L)	1.1	<0.4	1.3	0.4	0.8	1.3
NO_3 (MG/L N)	0.05	<0.02	0.08	0.03	0.04	0.07
PO_4 (MG/L P)	0.013	<0.005	0.022	0.011	0.007	0.020

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS		
COMPONENT DISTRIBUTION	MEAN	STD DEV
1	(μ_1) 6.0289	(σ_1) 0.4317
2	(μ_2) 5.7662	(σ_2) 0.0316
PROPORTIONALITY FACTOR (α) = .6328		

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C9M10
NAME: VAAL RIVER AT MOZIB (GAMAGARA)

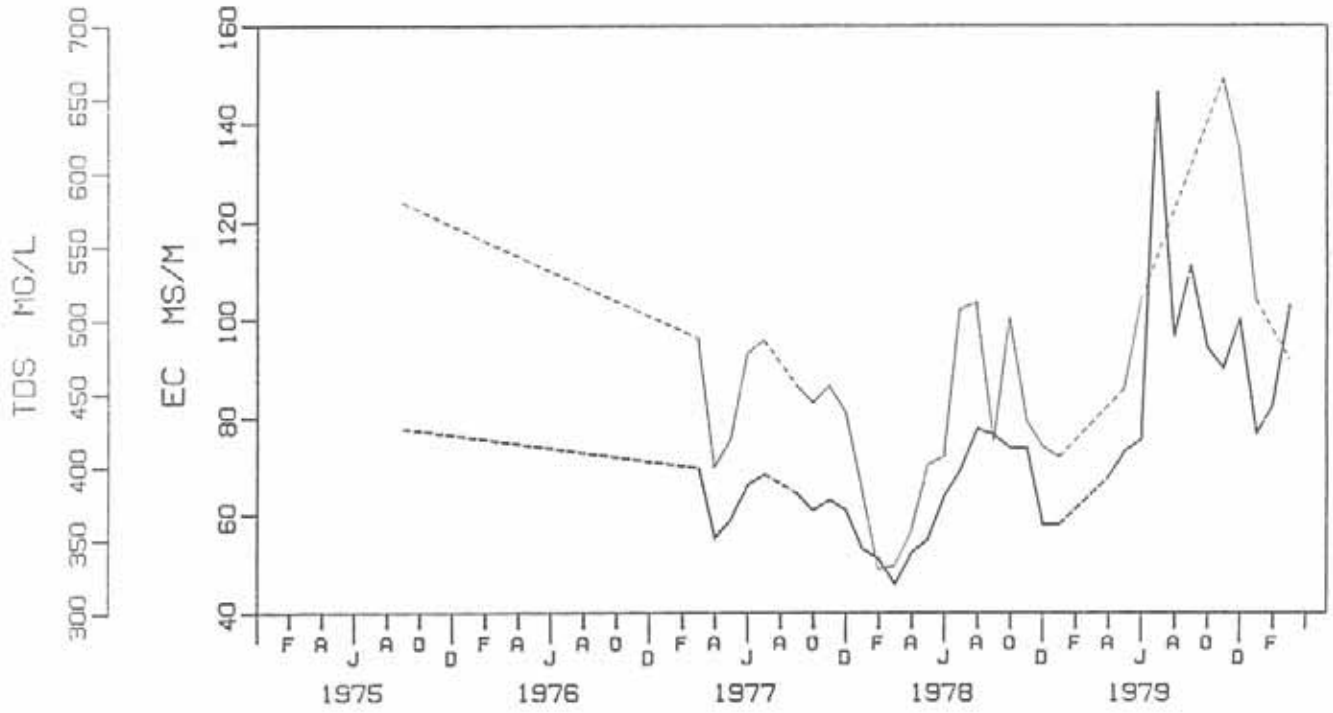
LATITUDE: 28°24'15" S LONGITUDE 24°16'15" E
TYPE: RIVER SECTION

SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING:		75/09/08 TO 80/03/31			
	TOTAL	1979-1983	SUMMER	WINTER	RATIO
SAMPLES	280	40	26	14	1.86

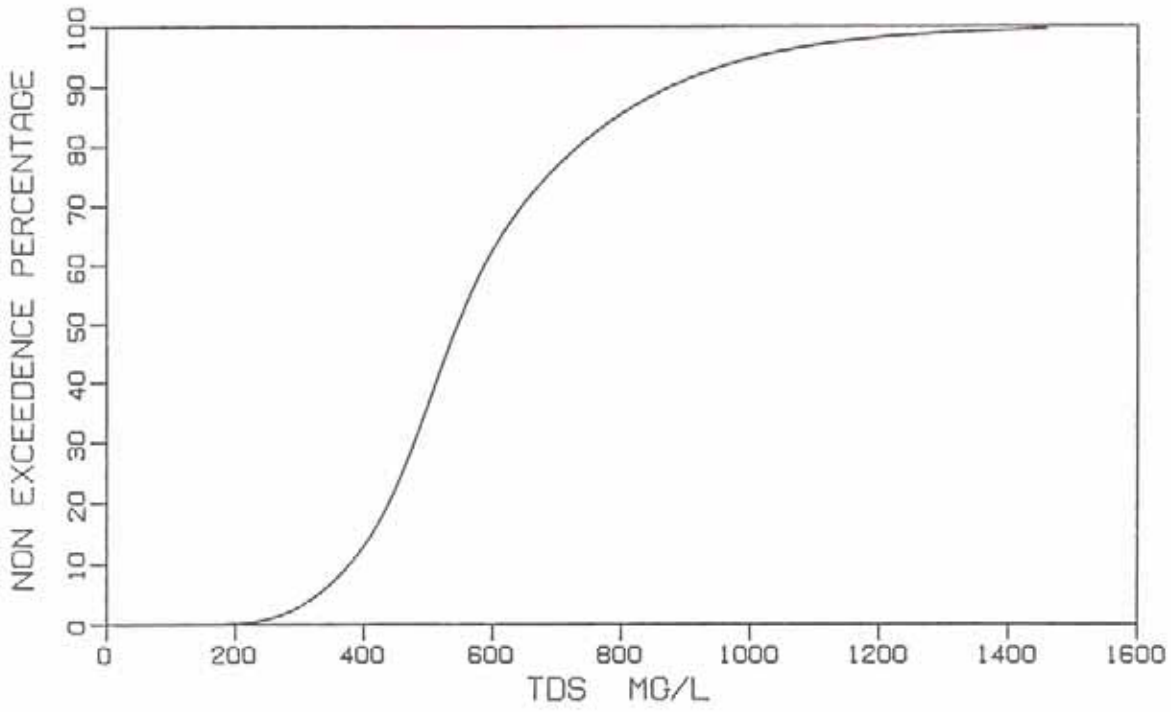
WATER QUALITY STATISTICS						
DETERMINAND	MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH (PH UNITS)	7.6	7.4	7.9	0.2	7.5	7.8
EC (MS/M)	82.5	45.0	146.5	23.5	72.5	120.3
TDS (MG/L)	513	406	664	91	463	634
CA (MG/L)	42	35	45	4	38	44
MG (MG/L)	34	25	43	6	32	40
NA (MG/L)	59	45	84	13	55	76
K (MG/L)	6.9	6.2	10.1	1.4	6.2	8.5
TAL (MG/L HCO_3)	164	112	270	48	158	218
CL (MG/L)	64	47	110	21	58	91
SO_4 (MG/L)	110	80	194	41	100	173
F (MG/L)	0.6	0.5	0.6	0.0	0.5	0.6
SI (MG/L)	1.3	0.8	1.8	0.3	1.2	1.7
NO_3 (MG/L N)	0.03	<0.02	0.06	0.02	0.02	0.05
PO_4 (MG/L P)	0.005	<0.005	0.011	0.003	<0.005	0.010

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS		
COMPONENT DISTRIBUTION	MEAN	STD DEV
1	(μ_1) 6.3570	(σ_1) 0.3703
2	(μ_2) 6.2423	(σ_2) 0.1196
PROPORTIONALITY FACTOR (α) = .7715		

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C9R0101
NAME: VAALHARTS DAM:NEAR DAM WALL

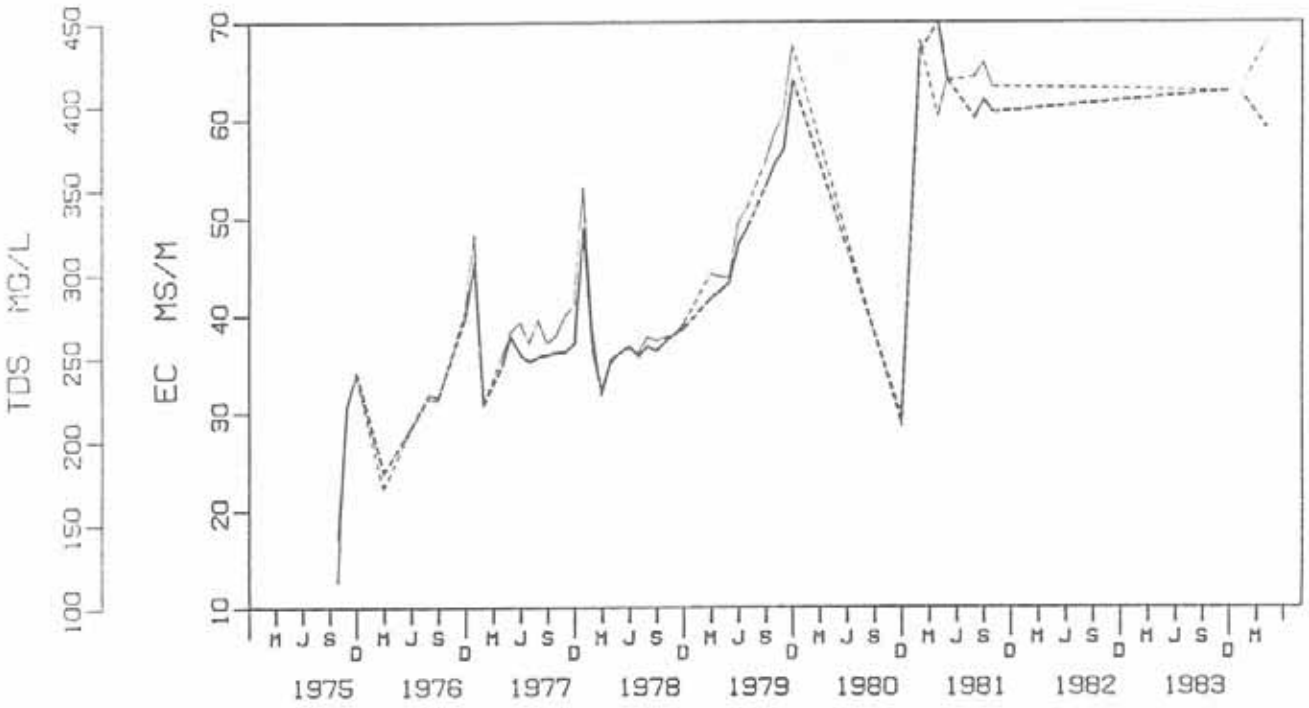
LATITUDE: 28°07'00" S LONGITUDE 24°55'45" E
TYPE: SAMPLING POINT IN DAM BASIN

SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING:		75/10/27 TO 84/04/02			
	TOTAL	1979-1983	SUMMER	WINTER	RATIO
SAMPLES	463	34	16	18	0.89

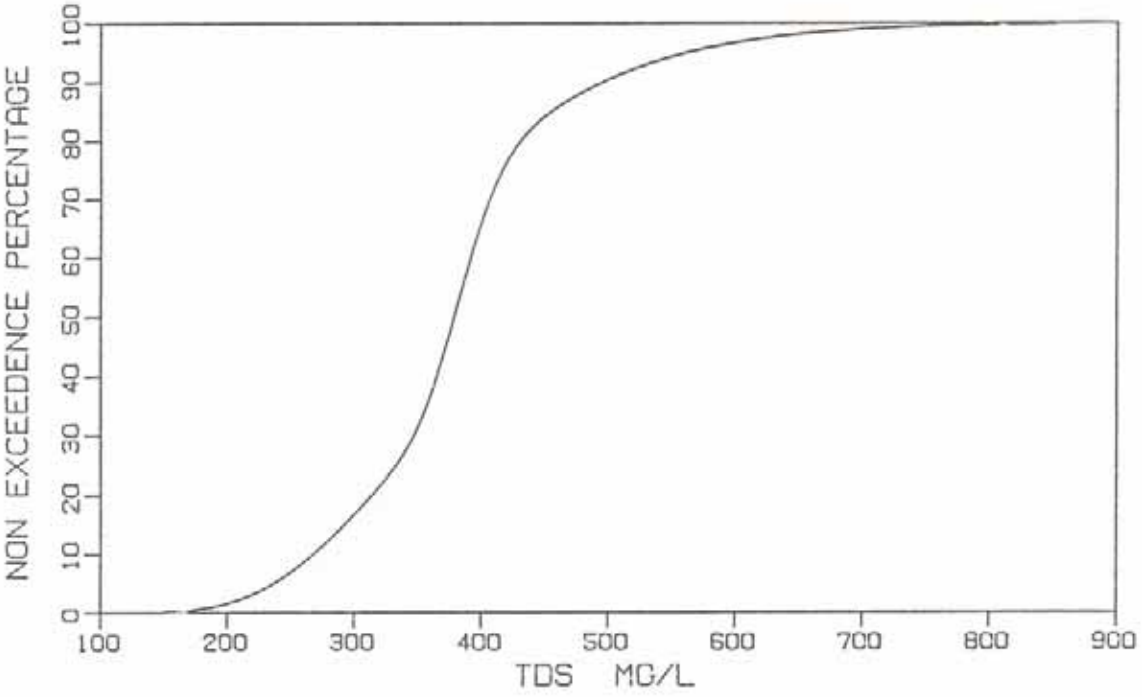
WATER QUALITY STATISTICS						
DETERMINAND	MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH (PH UNITS)	8.0	6.3	8.2	0.6	7.7	8.1
EC (MS/M)	54.6	29.4	70.0	9.7	44.3	66.4
TDS (MG/L)	378	208	464	59	307	439
CA (MG/L)	37	17	49	6	32	43
MG (MG/L)	23	10	29	4	19	28
NA (MG/L)	37	27	49	6	29	43
K (MG/L)	6.4	5.3	9.2	1.1	5.7	8.1
TAL (MG/L HCO_3)	139	105	166	14	128	147
CL (MG/L)	24	16	44	8	21	35
SO_4 (MG/L)	102	4	164	33	73	137
F (MG/L)	0.5	0.3	0.6	0.1	0.4	0.5
SI (MG/L)	0.5	<0.4	7.1	1.2	<0.4	0.8
NO_3 (MG/L N)	0.03	<0.02	0.09	0.03	0.02	0.09
PO_4 (MG/L P)	0.008	<0.005	0.047	0.008	0.006	0.017

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS		
COMPONENT DISTRIBUTION	MEAN	STD DEV
1	(μ_1) 5.9526	(σ_1) 0.0656
2	(μ_2) 5.8983	(σ_2) 0.3045
PROPORTIONALITY FACTOR (α) = .3633		

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C9R0201
NAME: BLOEMHOF DAM:NEAR DAM WALL

LATITUDE: 27°40'15" S LONGITUDE 25°37'00" E
TYPE: SAMPLING POINT IN DAM BASIN

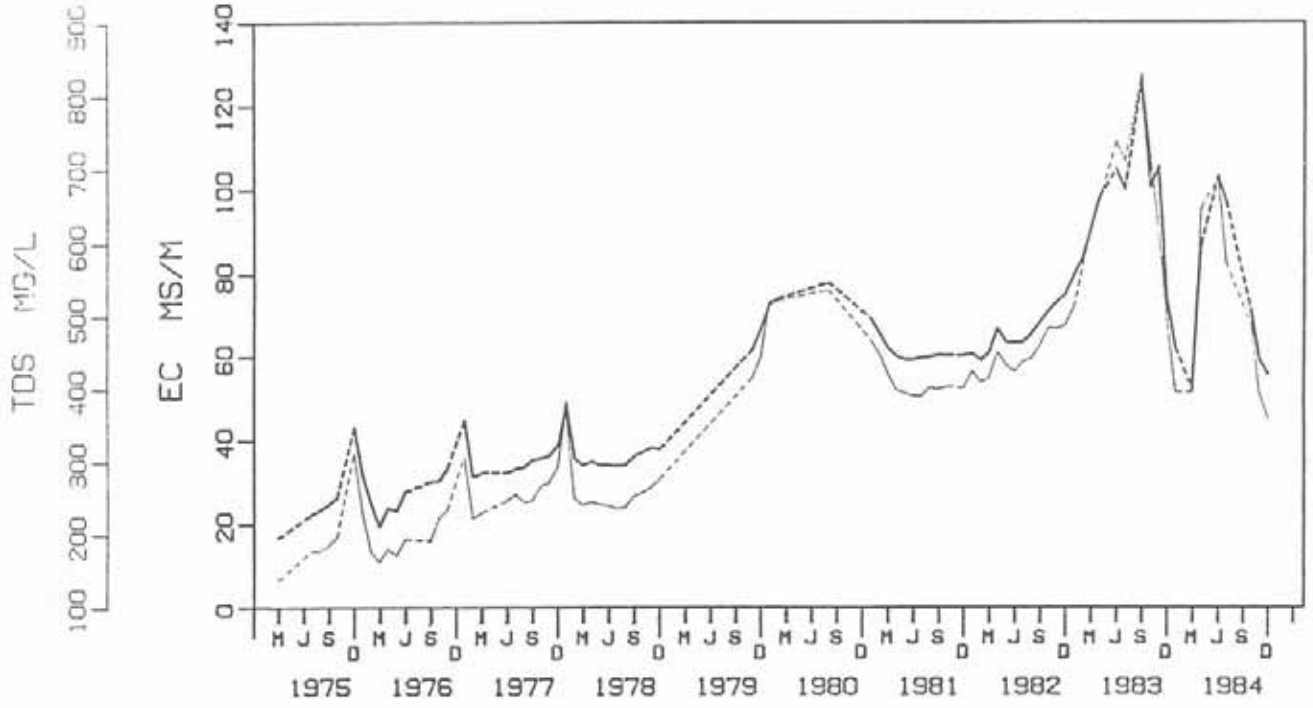
SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING:		71/03/03 TO 84/12/19			
	TOTAL	1979-1983	SUMMER	WINTER	RATIO
SAMPLES	451	211	111	100	1.11

WATER QUALITY STATISTICS

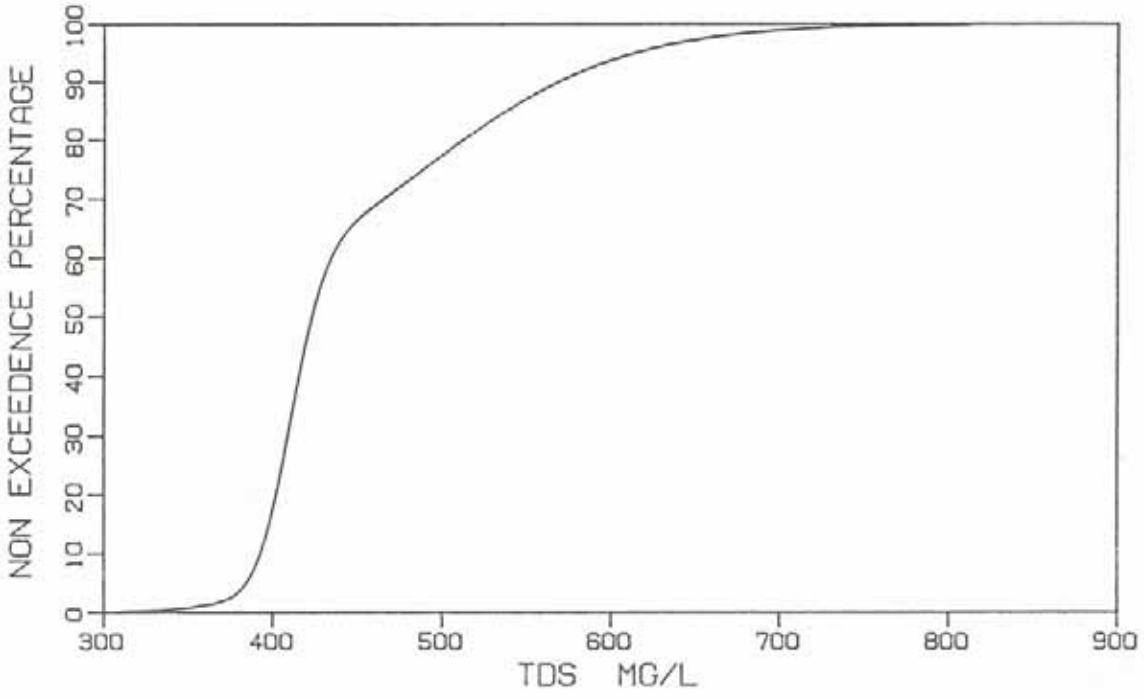
DETERMINAND		MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH	(PH UNITS)	7.8	6.6	9.9	0.4	7.6	8.2
EC	(MS/M)	62.6	57.8	126.6	10.9	60.2	81.0
TDS	(MG/L)	421	279	829	75	403	524
CA	(MG/L)	46	23	88	6	44	54
MG	(MG/L)	26	21	56	6	24	34
NA	(MG/L)	41	36	124	11	39	53
K	(MG/L)	7.8	6.5	13.8	1.2	7.1	8.9
TAL	(MG/L HCO_3)	131	90	327	19	120	147
CL	(MG/L)	37	17	122	14	34	62
SO_4	(MG/L)	129	25	385	44	122	194
F	(MG/L)	0.6	0.3	0.9	0.1	0.5	0.7
SI	(MG/L)	<0.4	<0.4	1.9	0.4	<0.4	1.1
NO_3	(MG/L N)	0.02	<0.02	0.85	0.09	<0.02	0.10
PO_4	(MG/L P)	0.016	<0.005	0.094	0.013	0.011	0.030

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS		
COMPONENT DISTRIBUTION	MEAN	STD DEV
1	(μ_1) 6.2142	(σ_1) 0.1679
2	(μ_2) 6.0183	(σ_2) 0.0387
PROPORTIONALITY FACTOR (α) = .4497		

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



STATION NUMBER: C9R0301
NAME: DOUGLAS DAM:NEAR DAM WALL

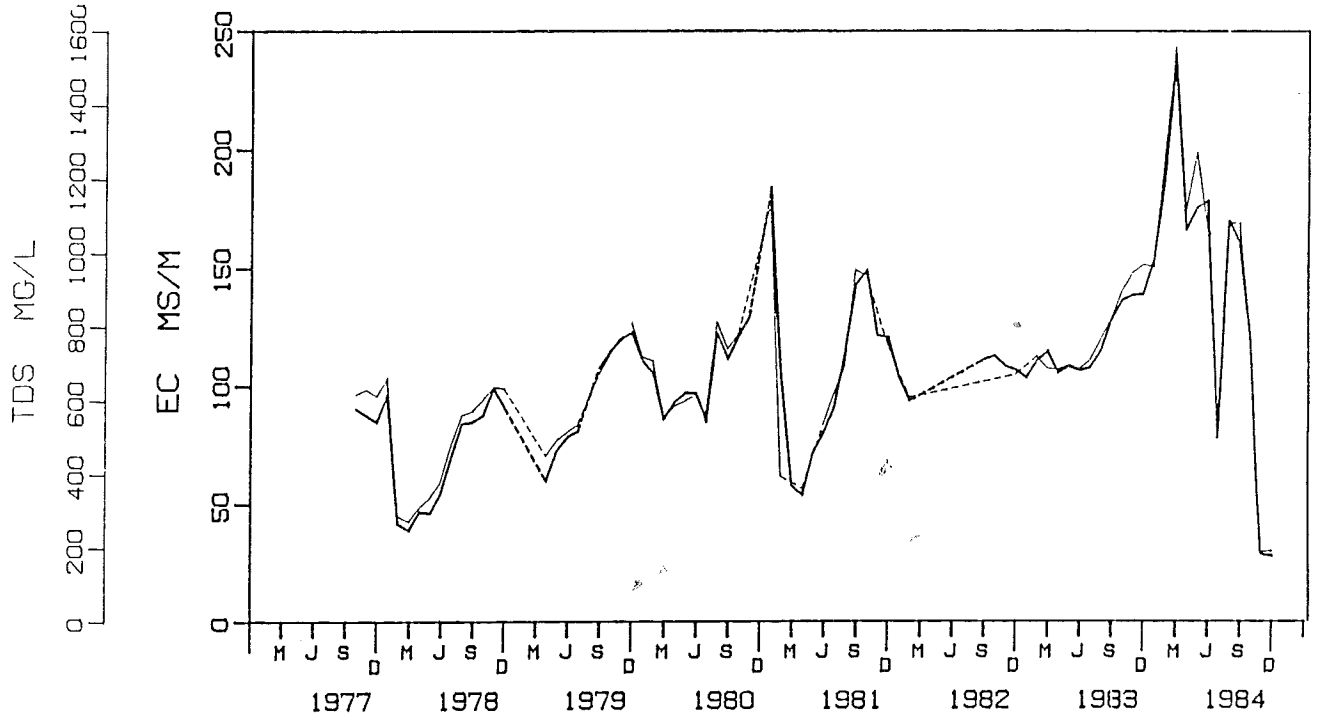
LATITUDE: 29°02'30" S LONGITUDE 23°50'15" E
TYPE: SAMPLING POINT IN DAM BASIN

SAMPLING INFORMATION					
TOTAL PERIOD OF SAMPLING:		77/10/03 TO 84/12/03			
	TOTAL	1979-1983	SUMMER	WINTER	RATIO
SAMPLES	320	161	87	74	1.18

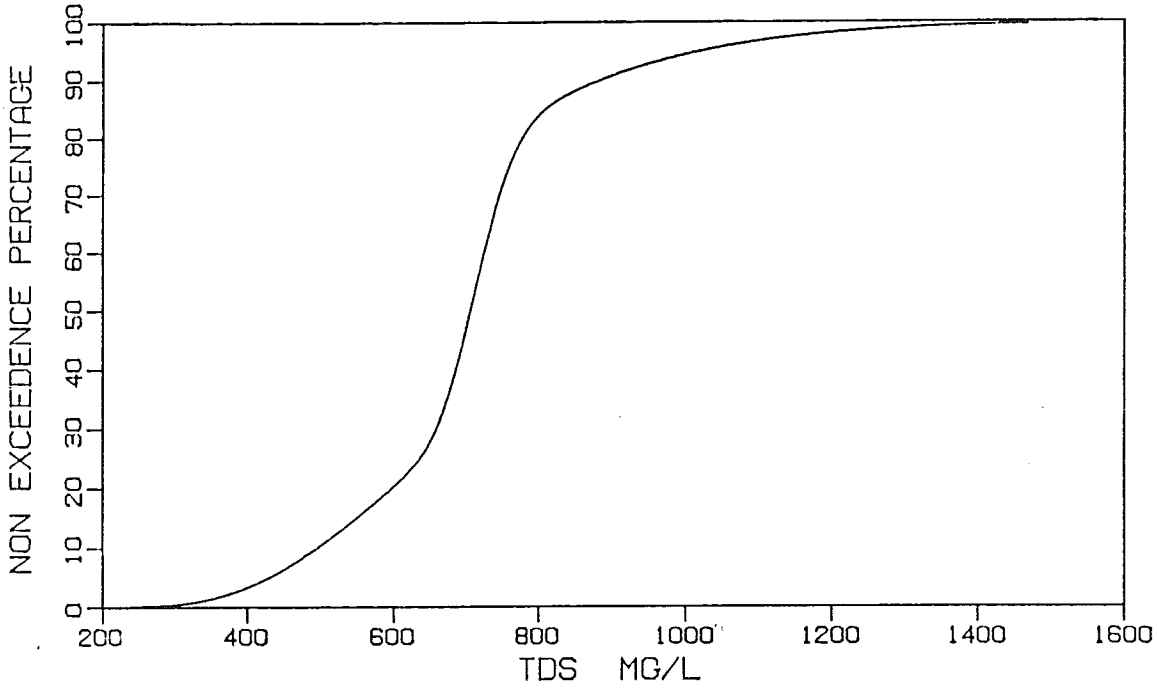
WATER QUALITY STATISTICS						
DETERMINAND	MEDIAN	MIN	MAX	STD DEV	25 PERCENTILE	90 PERCENTILE
PH (PH UNITS)	7.6	6.5	8.1	0.4	7.3	7.9
EC (MS/M)	109.0	22.8	194.7	24.9	99.8	138.5
TDS (MG/L)	685	163	1137	155	566	889
CA (MG/L)	45	19	69	8	41	54
MG (MG/L)	43	9	77	11	38	58
NA (MG/L)	99	11	185	29	78	128
K (MG/L)	7.5	0.9	12.0	1.9	6.4	11.2
TAL (MG/L HCO_3)	169	93	265	30	153	208
CL (MG/L)	110	8	257	44	88	170
SO_4 (MG/L)	183	15	371	63	140	247
F (MG/L)	0.6	0.2	0.8	0.1	0.5	0.7
SI (MG/L)	1.2	<0.4	8.3	1.1	0.8	2.0
NO_3 (MG/L N)	0.05	<0.02	1.00	0.21	<0.02	0.31
PO_4 (MG/L P)	0.006	<0.005	0.116	0.015	<0.005	0.017

NON EXCEEDENCE PROBABILITY PLOT FOR TDS MIXED LOG-NORMAL DISTRIBUTION PARAMETERS		
COMPONENT DISTRIBUTION	MEAN	STD DEV
1	(μ_1) 6.4931	(σ_1) 0.3295
2	(μ_2) 6.5721	(σ_2) 0.0592
PROPORTIONALITY FACTOR (α) = .5256		

TEMPORAL VARIATION OF ELECTRICAL CONDUCTIVITY (EC)
AND TOTAL DISSOLVED SALTS (TDS)



NON EXCEEDENCE PROBABILITY PLOT FOR TDS



APPENDIX B: BIBLIOGRAPHY OF MAJOR LITERATURE PERTAINING TO THE VAAL RIVER CATCHMENT.

BIBLIOGRAPHY

BRUWER, C.A., VAN VLIET, H.R., SARTORY, D.P. and KEMPSTER, P.L. (1985) An assessment of water related problems of the Vaal River between Barrage and Douglas Weir. Technical Report TR 121. Department of Water Affairs, Pretoria.

CHUTTER, F.M. (1967) Hydrobiological studies of the Vaal River. NIWR, CSIR Special Report WAT 38 (in two parts). Council for Scientific and Industrial Research, Pretoria.

DEPARTMENT OF WATER AFFAIRS (1982) Industriele en huishoudelike wateronttrekking uit die Vaalrivier tot die jaar 2030. Report No. VW 010. Department of Water Affairs, Pretoria.

DEPARTMENT OF WATER AFFAIRS (1987) Report on the Management of South African Water Resources. Department of Water Affairs, Pretoria, (in press).

HASSETT, A.J., VILJOEN, P.T. and LIEBENBERG, J.J.E. (1987) An assessment of chlorinated pesticides in the major surface water resources of the Orange Free State during the period September 1984 to September 1985. Water SA, (in press).

MIDDLETON, B.E., PITMAN, W.V. and MIDGLEY, D.C. (1981) Surface Water Resources of South Africa, Vol. II. Drainage region C. The Vaal Basin. Report No. 8/81. Hydrological Research Unit, University of the Witwatersrand, Johannesburg.

RAND WATER BOARD. (1970-1984) Annual Reports. RWB, Johannesburg.

STANDER, G.L. MALAN, W.C. and HENZEN, M.R. (1962) The chemical quality of the water of the Vaal River between the Barrage and Kimberley, NIWR, CSIR Report W 14. Council for Scientific and Industrial Research, Pretoria.

VAN EEDEN, O.R. (1972) Geology of the Republic of South Africa. An explanation of the 1:2000000 map, 1970 edition. Special Publication 18, Department of Mines, Geological Survey, Pretoria.

VAN STEENDEREN, R.A., THERON, S.J. and HASSETT, A.J. (1986) Organic micropollutants in the Vaal River. Paper presented at the Symposium on: The Vaal River Ecosystem: Status and Problems. March 1986. CSIR, Pretoria.

APPENDIX C: STATIONS IN THE VAAL RIVER CATCHMENT.

CHEMICAL ANALYSES AVAILABLE FOR HYDROLOGICAL GAUGING STATIONS IN DRAINAGE REGION C11 (D311)

STATION NO.	STATION NAME	LATITUDE	LONGITUDE	NO. OF ANALYSES	FIRST-	LATEST SAMPLE
C1H01	VAAL RIVER AT STANDERTON	26-56-30	29-16-00	398	75-10-13	86-12-31
C1H05	LEEU SPRUIT AT WELBEDACHT	26-51-15	29-19-30	323	74-01-17	86-17-19
C1H06	BLESBOK SPRUIT AT RIETVLEY	26-46-30	29-32-30	447	74-01-17	86-12-31
C1H07	VAAL RIVER AT UITSPANNING	26-50-30	29-43-15	407	74-01-16	86-12-31
C1Q01A	RAINGAUGE AT LEEUKOP (BULK PRECIPITATION	26-29-50	29-29-47	50	85-09-28	86-10-07
C1Q01B	RAINGAUGE AT LEEUKOP (WET ONLY PRECIPTN)	26-29-50	29-29-47	0		
C1Q02A	RAINGAUGE AT HENDRIKSPAN (BULK PRECIPTN)	26-38-50	29-31-25	41	85-09-01	86-10-07
C1Q02B	RAINGAUGE AT HENDRIKSPAN (WET ONLY PPTN)	26-38-50	29-31-25	1	86-06-01	86-06-01
C1Q03A	RAINGAUGE AT TOPFONTEIN (BULK PRECIPTN)	26-38-55	29-19-56	57	85-09-03	86-10-08
C1Q03B	RAINGAUGE AT TOPFONTEIN (WET ONLY PPTN)	26-38-55	29-19-56	19	85-11-10	86-09-11
C1Q05A	RAINGAUGE AT WITBANK (BULK PRECIPITATION	26-47-09	29-29-40	53	85-08-31	86-10-07
C1Q05B	RAINGAUGE AT WITBANK (WET ONLY PRECIPTN)	26-47-09	29-29-40	0		
C1Q08A	RAINGAUGE AT LANGSPRUIT (BULK PRECIPITN)	27-00-38	29-26-13	44	85-08-31	86-08-05
C1R02T	GROOTDRAAI DAM:SASOL CANAL	26-25-00	29-17-45	42	79-04-18	81-05-05
C1R02W	GROOTDRAAI DAM:DOWN STREAM WEIR	26-25-00	29-17-45	39	79-10-23	85-11-27
C1R02D1	GROOTDRAAI DAM:NEAR DAM WALL	26-55-00	29-17-45	46	82-11-18	86-11-26
C1R02D5	GROOTDRAAI DAM : POINT IN DAM	26-55-00	29-17-45	1	86-04-09	86-04-09

CHEMICAL ANALYSES AVAILABLE FOR HYDROLOGICAL GAUGING STATIONS IN DRAINAGE REGION C12 (D312)

STATION NO.	STATION NAME	LATITUDE	LONGITUDE	NO. OF ANALYSES	FIRST-	LATEST SAMPLE
C1H03	VAAL RIVER AT VILLIERS	27-00-30	28-37-30	62	75-11-16	86-03-03
C1H03F	VAAL RIVER AT VILLIERS	27-01-00	28-36-00	91	84-11-12	86-12-29
C1H04	WATERVAL RIVER AT ROODEBANK	26-37-45	29-01-30	501	75-10-02	86-12-31
C1H08	WATERVAL RIVER AT ELANDSLAAGTE	26-51-45	28-53-00	183	75-11-24	86-12-31
C1H09	MOLSPRUIT AT LEEUFONTEIN	26-55-00	28-26-15	216	75-10-20	86-12-29
C1H10	BANKPLAAS SPRUIT AT SWEET HOME	27-04-30	28-34-00	157	76-10-11	86-12-29
C1H11	VAAL RIVER AT VILLIERS (GROOT DRAAI)	27-01-00	28-38-45	266	76-09-27	84-02-28
C1H12	VAAL RIVER AT NOOITGEDACHT(GLADDEDRIF)	27-00-05	28-45-58	52	85-11-04	86-12-31
C1Q04A	RAINGAUGE AT CHARL CILLIERS (BULK PPTN)	26-39-33	29-11-19	59	85-09-01	86-10-07
C1Q04B	RAINGAUGE AT CHARL CILLIERS (WET ONLY PN	26-39-33	29-11-19	0		
C1R01L	VAAL DAM:WATER LEVEL OF VAAL RIVER	26-53-00	28-07-00	84	78-09-06	86-12-29
C1R01U	VAAL DAM : OUTLET TUNNEL	26-53-00	28-07-00	16	86-06-06	86-11-05
C1R01V	VAAL DAM:RWB CANAL	26-53-00	28-07-00	4	86-11-07	86-12-15
C1R01W	VAAL DAM:DOWN STREAM WEIR	26-53-00	28-07-00	68	82-05-03	86-11-05
C1R0101	VAAL DAM:NEAR DAM WALL	26-53-00	28-07-00	170	68-04-01	86-12-08
C1R0102	VAAL DAM:POINT IN DAM	26-53-00	28-07-00	95	66-11-24	68-05-15
C1R0103	VAAL DAM:POINT IN DAM	26-53-00	28-07-00	110	66-11-24	86-06-24
C1R0104	VAAL DAM:POINT IN DAM	26-53-00	28-07-00	86	66-11-21	68-05-14
C1R0105	VAAL DAM:POINT IN DAM	26-53-00	28-07-00	16	84-10-12	86-06-26
C1R0106	VAAL DAM:POINT IN DAM	26-53-00	28-07-00	15	84-10-12	86-06-26
C1R0107	VAAL DAM:POINT IN DAM	26-53-00	28-07-00	14	84-10-12	86-06-26
C1W01 R	VAALDAM PURIFICATION WORKS	26-53-00	28-07-00	69	79-06-15	86-10-28
C1W01 S	VAALDAM PURIFICATION WORKS	26-53-00	28-07-00	66	79-06-15	86-10-28

CHEMICAL ANALYSES AVAILABLE FOR HYDROLOGICAL GAUGING STATIONS IN DRAINAGE REGION C13 (D313)

STATION NO.	STATION NAME	LATITUDE	LONGITUDE	NO. OF ANALYSES	FIRST-	LATEST SAMPLE
C1E16B	RAIN GAUGE (BULK PRECIPIT.) AT ERFDEEL	27-43-43	29-30-07	0		
C1H02	KLIP RIVER AT DELANGESDRIFT	27-10-15	29-14-00	342	74-01-06	86-12-31
C1Q06A	RAINGAUGE AT SPRINGBOK (BULK PRECIPTN)	27-29-30	29-28-48	70	85-09-01	86-10-06

STATION NO.	STATION NAME	LATITUDE	LONGITUDE	NO. OF ANALYSES	FIRST-	LATEST SAMPLE
C1Q068	RAINGAUGE AT SPRINGBOK (WET ONLY PPTN)	27-29-30	29-28-48	0		
C1Q07A	RAINGAUGE AT SWARTKOP (BULK PRECIPITN)	27-14-35	29-28-52	72	85-09-01	86-10-06

CHEMICAL ANALYSES AVAILABLE FOR HYDROLOGICAL GAUGING STATIONS IN DRAINAGE REGION C21 (D321)

STATION NO.	STATION NAME	LATITUDE	LONGITUDE	NO. OF ANALYSES	FIRST-	LATEST SAMPLE
C2M04	ZUIKERBOSCHRAND RIVER AT UITVLUGT	26-40-15	28-01-45	88	84-03-22	86-12-22
C2M70	SUIKERBOSCHRAND RIVER AT PLATKOPPIE	26-38-30	28-13-45	306	77-12-21	86-12-29

CHEMICAL ANALYSES AVAILABLE FOR HYDROLOGICAL GAUGING STATIONS IN DRAINAGE REGION C22 (D322)

STATION NO.	STATION NAME	LATITUDE	LONGITUDE	NO. OF ANALYSES	FIRST-	LATEST SAMPLE
C2M03	VAAL RIVER AT ENGELBRECHTSDRIFT	26-49-15	28-03-45	105	79-04-30	82-02-01
C2M05	RIETSPRUIT AT KAALPLAATS	26-43-45	27-43-00	117	84-03-08	86-12-18
C2M14	TAAIBOS SPRUIT AT VERDUN	26-49-30	27-55-30	37	84-11-29	86-12-24
C2M15	KLIP RIVER AT WALDRIFT	26-38-30	27-57-45	97	84-03-08	86-12-24
C2M21	KLIP RIVER AT WITKOP	26-27-15	28-05-15	332	77-12-21	86-12-29
C2M62	LITTLE RIETSPRUIT AT RIETFONTEIN 349	26-24-15	27-36-00	115	84-08-20	86-12-29
C2R0801	VAAL BARRAGE : AT BARRAGE	26-46-00	27-41-00	15	80-06-06	86-11-11

CHEMICAL ANALYSES AVAILABLE FOR HYDROLOGICAL GAUGING STATIONS IN DRAINAGE REGION C23 (0323)

STATION NO.	STATION NAME	LATITUDE	LONGITUDE	NO. OF ANALYSES	FIRST-	LATEST SAMPLE
C2M01	MOOI RIVER AT WITRAND	26-39-00	27-05-15	343	79-10-01	86-12-30
C2M08	VAAL RIVER AT LINDEQUESDRIFT	26-44-30	27-35-15	111	75-08-20	86-12-24
C2M11	GERHARDMINNEBRON EYE AT GERHARDMINNEBRON	26-28-45	27-09-00	140	69-06-06	86-12-01
C2M13	TURFFONTEIN EYES AT TURFFONTEIN	26-24-15	27-10-30	135	69-06-06	86-12-01
C2M18	VAAL RIVER AT SCHOEMANSDRIF	26-58-15	27-12-45	632	72-08-01	86-12-30
C2M23	WONDERFONTEIN SPRUIT AT LUIPAARDSVLEI	26-13-30	27-44-30	338	79-05-09	86-12-29
C2M24	WONDERFONTEIN SPRUIT AT GEMSBOKFONTEIN	26-17-00	27-40-45	143	80-01-09	86-02-06
C2M25	WONDERFONTEIN SPRUIT AT GEMSBOKFONTEIN	26-17-15	27-40-00	98	80-01-10	83-12-29
C2M26	MIDDELVLEI SPRUIT AT MIDDELVLEI	26-14-00	27-40-00	109	79-05-02	86-12-01
C2M27	KOCKSOORD SPRUIT AT MIDDELVLEI	26-14-00	27-39-00	13	80-01-24	86-12-18
C2M28	RIETFONTEIN SPRUIT AT RIETFONTEIN	26-14-45	27-35-30	253	79-05-03	86-12-29
C2M30	WONDERFONTEIN EYE AT WONDERFONTEIN EYE	26-18-45	27-29-15	133	78-12-29	86-12-15
C2M32	MOOIRIVIERLOOP (RIVER) AT WONDERFONTEIN	26-19-00	27-23-30	157	80-02-04	86-10-23
C2M44	OBERHOLZER CANAL(SOUTH) AT WONDERFONTEIN	26-20-00	27-23-15	398	79-05-10	86-12-29
C2M45	WEST DRIEFONTEIN CANAL SOUTH AT VLAKPLAA	26-20-45	27-25-45	3	80-04-14	80-05-05
C2M51	KRAALKOP SPRUIT AT KRAALKOP	26-26-15	27-28-45	132	84-04-09	86-12-29
C2M57	WEST DRIEFONTEIN CANAL AT WONDERFONTEIN	26-19-00	27-23-15	186	80-02-04	86-12-15
C2M57K	WEST DRIEFONTEIN CANAL SPILL AT WONDERFO	26-19-00	27-23-15	40	80-02-04	86-09-18
C2M60	DOORNFONTEIN CANAL AT BLAAWBANK	26-22-15	27-15-15	380	69-11-01	86-12-29
C2M63	WEST DRIEFONTEIN CANAL AT ROOIPOORT	26-20-30	27-25-30	156	80-02-04	86-12-15
C2M69	MOOIRIVIERLOOP (RIVER) AT BLAAUWBANK	26-22-30	27-13-45	403	79-05-03	86-12-29
C2Q02	MOOI RIVER AT BRIDGE ON TAAIBOSCHBULT	26-52-00	27-01-30	314	79-09-28	86-08-19
C2Q04	FURROW AT TARRED RD NORTH OF WELVERDIEND	26-21-47	27-16-02	22	81-12-10	86-10-23
C2Q05	MOOIRIVIERLOOP AT RAIL BR WELVERDIEND	26-22-08	27-15-10	46	81-12-10	86-10-23
C2Q06	VENTERSPOST BOREHOLE NO 16	26-17-43	27-39-27	21	81-12-08	85-10-09
C2Q07	VENTERSPOST BOREHOLE JR 4	26-17-30	27-39-07	18	81-12-08	83-10-20
C2Q08	VENTERSPOST WELL NO 1	26-17-22	27-40-15	9	81-12-08	85-08-27
C2Q09	VENTERSPOST WELL NO 4	26-17-30	27-37-00	30	81-12-08	85-04-03
C2Q10	VENTERSPOST SHAFT NO 1	26-16-22	27-38-40	18	81-12-08	84-02-20

STATION NO.	STATION NAME	LATITUDE	LONGITUDE	NO. OF ANALYSES	FIRST-	LATEST SAMPLE
C2Q11	VENTERSPOST SHAFT NO 2	26-17-05	27-38-11	34	81-12-08	85-04-03
C2Q12	WESTONARIA GOLD MINE RECHARGE DAM	26-21-35	27-42-05	36	81-12-09	86-04-03
C2Q13	CONFLUENT PT= WEST & EAST DRIEFT. CANALS	26-19-32	27-24-12	61	81-12-09	86-10-23
C2Q14	CONFLUENT PT: CANAL FROM VENTERSPOST G M	26-19-32	27-24-12	48	81-12-09	86-10-23
C2Q15	MIXED WATER OF CANALS C2Q13&14 CONFL PT.	26-19-32	27-24-12	46	81-12-09	86-10-23
C2Q16	END OF 1M PIPE FROM VENTERSPOST G M	26-19-35	27-24-38	42	81-12-09	86-10-23
C2Q17	CANAL INTO WHICH 1M PIPE (C2Q16) DRAINS	26-19-35	27-24-38	44	81-12-09	86-10-23
C2Q18	CANAL AT INLET TO NAT RES WONDERFONTEIN	26-19-21	27-21-14	47	81-12-10	86-10-23
C2Q19	OUTFLOW FROM NATURE RESERVE (CANAL)	26-20-08	27-19-44	45	81-12-10	86-10-23
C2R01D1	BOSKOP DAM:NEAR DAM WALL	26-33-45	27-06-30	111	68-06-28	86-11-06
C2R03D	KLERKSKRAAL DAM:RIGHT BANK CAN	26-15-15	27-09-30	3	86-06-30	86-10-22
C2R0301	KLERKSKRAAL DAM:NEAR DAM WALL	26-15-15	27-09-30	15	72-01-12	86-03-31
C2R04C	POTCHEFSTROOM DAM:LEFT BANK CANAL	26-40-15	27-06-00	55	79-08-20	81-03-16
C2R0401	POTCHEFSTROOM DAM:NEAR DAM WALL	26-40-15	27-06-00	75	79-10-01	86-11-04
C2R05C	KLIPDRIF DAM:LEFT BANK CANAL	26-37-00	27-18-00	3	79-12-24	83-02-16
C2R0501	KLIPDRIF DAM:NEAR DAM WALL	26-37-00	27-18-00	78	77-10-22	86-12-08

CHEMICAL ANALYSES AVAILABLE FOR HYDROLOGICAL GAUGING STATIONS IN DRAINAGE REGION C24 (0324)

STATION NO.	STATION NAME	LATITUDE	LONGITUDE	NO. OF ANALYSES	FIRST-	LATEST SAMPLE
C2M07	VAAL RIVER AT PILGRIMS ESTATE	27-00-45	26-42-00	342	79-05-29	86-12-29
C2M64	SKOON SPRUIT AT EYE OF SCHOONSPRUIT	26-17-00	26-51-30	62	81-06-11	86-04-17
C2M71	KLIP RIVER AT KOOKFONTEIN	26-37-09	27-58-51	65	85-08-08	86-12-24
C2Q01	SKOON SPRUIT AT KLERKSDORP WEIR	26-52-30	26-39-30	251	79-08-20	86-12-22
C2Q03	SKOON SPRUIT AT ORKNEY BRIDGE	26-57-30	26-39-00	180	80-03-31	86-08-18
C2R0201	JOHAN NESSER DAM:NEAR DAM WALL	26-49-00	26-36-30	3	77-04-17	77-04-17
C2R06D	ELANDSKUIL DAM:RIGHT BANK CANAL	26-21-00	26-46-45	5	83-03-11	86-01-22
C2R06W	ELANDSKUIL DAM:DOWN STREAM WEIR	26-21-00	26-46-45	0		
C2R0601	ELANDSKUIL DAM:NEAR DAM WALL	26-21-00	26-46-45	13	81-06-11	86-12-03
C2R07C	RIETSPRUIT DAM:LEFT BANK CANAL	26-24-45	26-48-00	2	83-02-16	83-05-11
C2R0701	RIETSPRUIT DAM:NEAR DAM WALL	26-24-45	26-48-00	25	81-06-11	86-12-03

CHEMICAL ANALYSES AVAILABLE FOR HYDROLOGICAL GAUGING STATIONS IN DRAINAGE REGION C25 (0325)

STATION NO.	STATION NAME	LATITUDE	LONGITUDE	NO. OF ANALYSES	FIRST-	LATEST SAMPLE
C2M17	VAAL RIVER AT COMMANDODRIF	27-28-45	26-13-30	1	74-01-21	74-01-21
C2M22	VAAL RIVER AT BALKFONTEIN	27-23-45	26-30-30	2384	74-01-21	86-11-05
C2M61	VAAL RIVER AT KLIPPLAATDRIFT	27-23-15	26-27-45	495	72-05-14	86-12-29
C2M65	LEEUDORING SPRUIT AT KLIPSPRUIT	27-22-15	26-21-00	334	72-02-23	86-12-08
C2M66	MAKWASSIE SPRUIT AT VLIEGEKRAAL	27-29-30	26-04-30	306	72-08-02	86-12-15
C2M67	SAND SPRUIT AT LEEGTE	27-33-45	26-14-00	22	74-01-21	86-11-10
C2W01 R	OFS GOLDFIELDS PURIFICATION WORKS	27-24-00	26-30-30	67	79-10-29	86-10-27
C2W01 S	OFS GOLDFIELDS PURIFICATION WORKS	27-24-00	26-30-30	39	79-10-29	86-10-27

CHEMICAL ANALYSES AVAILABLE FOR HYDROLOGICAL GAUGING STATIONS IN DRAINAGE REGION C30 (0330)

STATION NO.	STATION NAME	LATITUDE	LONGITUDE	NO. OF ANALYSES	FIRST-	LATEST SAMPLE
C3M03	HARTS RIVER AT TAUNG	27-34-30	24-44-45	355	71-08-05	86-02-18
C3M07	HARTS RIVER AT ESPAGSDRIF	27-54-15	24-37-00	344	67-12-11	86-09-18
C3M09	GREAT BOETSAP EYE AT BOETSAP RESERVE	27-56-15	24-24-15	53	72-03-15	85-05-14
C3M10	THABASIKWA EYE AT BUXTON	27-36-30	24-36-45	108	75-10-23	81-08-10
C3M12	VLAKFONTEIN EYE AT METSEMATSHWE RESERVE	27-39-45	24-05-15	202	72-03-15	82-12-31

STATION NO.	STATION NAME	LATITUDE	LONGITUDE	NO. OF ANALYSES	FIRST-	LATEST SAMPLE
C3M13	HARTS RIVER AT MOUNT RUPERT	28-09-30	24-28-30	548	71-08-05	84-03-12
C3R0101	SCHWEIZER RENEKE DAM:NEAR DAM WALL	27-10-30	25-20-15	90	75-10-23	86-12-09
C3R0201	SPITSKOP DAM:NEAR DAM WALL	28-07-30	24-30-15	187	75-10-24	85-07-26
C3R0203	SPITSKOP DAM:POINT IN DAM	28-07-30	24-30-15	39	77-08-14	79-11-14
C3R0301	BARBERS PAN AT ZANDVLEI (C3L0101)	26-33-15	25-35-30	35	72-03-14	86-10-26

CHEMICAL ANALYSES AVAILABLE FOR HYDROLOGICAL GAUGING STATIONS IN DRAINAGE REGION C40 (0340)

STATION NO.	STATION NAME	LATITUDE	LONGITUDE	NO. OF ANALYSES	FIRST-	LATEST SAMPLE
C4M04	VET RIVER AT NOOITGEDACHT	27-56-15	26-07-30	419	72-08-03	86-12-31
C4Q01	VET RIVER AT HOOPSTAD	27-50-30	25-54-00	537	80-01-29	86-08-11
C4R01C	ALLEMANSKRAAL DAM:LEFT BANK CANAL	28-17-15	27-09-00	2	72-10-26	72-10-26
C4R0101	ALLEMANSKRAAL DAM:NEAR DAM WALL	28-17-15	27-09-00	118	68-04-01	86-07-22
C4R02C	ERFENIS DAM : LEFT BANK CANAL	28-30-30	26-46-45	8	86-06-16	86-10-27
C4R02W	ERFENIS DAM : DOWN STREAM WEIR	28-30-30	26-46-45	2	86-07-14	86-10-31
C4R0201	ERFENIS DAM:NEAR DAM WALL	28-30-30	26-46-45	164	68-04-01	86-12-15

CHEMICAL ANALYSES AVAILABLE FOR HYDROLOGICAL GAUGING STATIONS IN DRAINAGE REGION C51 (0351)

STATION NO.	STATION NAME	LATITUDE	LONGITUDE	NO. OF ANALYSES	FIRST-	LATEST SAMPLE
C5M08	RIET RIVER AT RIVIERA	29-48-45	26-12-45	19	72-03-18	85-12-10
C5M09	OSPOORT SPRUIT AT OS POORT	29-54-15	26-13-00	11	72-03-18	85-12-08
C5M12	RIET RIVER AT RIETWATER	29-39-30	25-58-30	178	75-12-21	84-01-04
C5M16	RIET RIVER AT AUCAMPSHOOP	28-57-30	24-14-30	109	70-06-08	85-11-18
C5M20	TROMPSBURG EYE AT TROMPSBURG TOWNLANDS	30-02-30	25-46-45	120	79-09-25	86-12-02
C5M21	MOSTERS HOEK EYE AT MOSTERS HOEK	29-40-00	26-14-45	116	75-10-29	86-12-02
C5R0101	TIERPOORT DAM:NEAR DAM WALL	29-25-15	26-08-15	87	72-10-27	86-12-02
C5R02C	KALKFONTEIN DAM:LEFT BANK CANAL	29-29-45	25-13-15	5	83-01-03	83-11-01
C5R0201	KALKFONTEIN DAM:NEAR DAM WALL	29-29-45	25-13-15	87	68-04-02	85-05-14

CHEMICAL ANALYSES AVAILABLE FOR HYDROLOGICAL GAUGING STATIONS IN DRAINAGE REGION C52 (0352)

STATION NO.	STATION NAME	LATITUDE	LONGITUDE	NO. OF ANALYSES	FIRST-	LATEST SAMPLE
C5M07	RENOSTER RIVER AT SHANNON	29-08-45	26-19-00	21	72-06-13	84-01-11
C5M15	MODDER RIVER AT STOOMHOEK	28-48-30	26-06-45	117	67-01-22	82-11-18
C5M18	MODDER RIVER AT TWEERIVIER	29-01-30	24-38-30	283	71-05-03	83-04-08
C5M22	KGABANYANE RIVER AT BEDFORD	29-17-14	26-55-15	1	86-06-10	86-06-10
C5M23	KGABANYANE RIVER AT BEDFORD	29-17-15	26-55-15	6	83-07-27	86-12-02
C5R03W	RUSTFONTEIN DAM:DOWN STREAM WEIR	29-16-15	26-37-00	2	83-02-28	83-06-01
C5R0301	RUSTFONTEIN DAM:NEAR DAM WALL	29-16-15	26-37-00	101	68-05-19	86-08-01
C5R04W	KRUGERSDRIFT DAM:DOWN STREAM WEIR	28-53-00	25-57-30	106	79-08-21	86-12-01
C5R0401	KRUGERSDRIFT DAM:NEAR DAM WALL	28-53-00	25-57-30	87	75-03-10	86-11-03
C5R0501	GROOTHOEK DAM:NEAR DAM WALL	29-18-00	26-51-00	16	81-03-03	86-12-08

CHEMICAL ANALYSES AVAILABLE FOR HYDROLOGICAL GAUGING STATIONS IN DRAINAGE REGION C60 (0360)

STATION NO.	STATION NAME	LATITUDE	LONGITUDE	NO. OF ANALYSES	FIRST-	LATEST SAMPLE
C6M01	VALS RIVER AT ROODEWAL	27-26-30	26-59-15	15	80-01-07	81-04-01
C6M02	VALS RIVER AT BOTHAVILLE	27-24-00	26-37-00	231	72-08-01	86-12-29
C6M03	VALS RIVER AT BOTHAVILLE	27-24-00	26-37-30	106	74-01-21	90-01-07
C6M04	VALS RIVER AT KLIPFONTEIN	27-56-15	27-59-30	89	78-07-05	86-11-04

CHEMICAL ANALYSES AVAILABLE FOR HYDROLOGICAL GAUGING STATIONS IN DRAINAGE REGION C70 (0370)

STATION NO.	STATION NAME	LATITUDE	LONGITUDE	NO. OF ANALYSES	FIRST-	LATEST SAMPLE
C7M03	HEUNING SPRUIT AT MIZPAH	27-21-30	27-17-15	37	72-03-19	86-11-25
C7M05	RENOSTER RIVER AT SPES BONA	27-07-30	27-06-30	10	80-04-04	81-02-20
C7M06	RENOSTER RIVER AT ARRIESRUST	27-02-45	27-00-15	103	78-08-07	86-12-30
C7R01D	KOPPIES DAM:RIGHT BANK CANAL	27-15-30	27-40-30	41	72-06-12	86-10-16
C7R0101	KOPPIES DAM:NEAR DAM WALL	27-15-30	27-40-30	68	72-06-12	86-12-19
C7R0201	ROODEPOORT DAM:NEAR DAM WALL	27-13-30	27-31-00	22	75-11-25	86-11-06
C7R0301	WELTEVREDE DAM:NEAR DAM WALL	27-13-15	27-34-15	11	75-11-25	77-03-07

CHEMICAL ANALYSES AVAILABLE FOR HYDROLOGICAL GAUGING STATIONS IN DRAINAGE REGION C80 (0380)

STATION NO.	STATION NAME	LATITUDE	LONGITUDE	NO. OF ANALYSES	FIRST-	LATEST SAMPLE
C8E14B	RAIN GAUGE (BULK PRECIPIT.) AT LEIDEN	29-57-10	29-29-25	0		
C8M01	WILGE RIVER AT FRANKFORT	27-16-00	28-29-00	498	71-12-06	86-12-24
C8M02	WILGE RIVER AT HARRISMITH	28-16-15	29-06-45	12	77-01-01	77-03-19
C8M03	CORNELIS RIVER AT WARDEN	27-50-30	29-57-45	329	71-09-13	86-11-25
C8M04	LIEBENBERGSVLEI RIVER AT DE WELKOM	27-42-00	28-19-30	306	75-11-20	86-12-23
C8M05	ELANDS RIVER AT ELANDS RIVER DRIFT	28-22-45	28-51-45	217	66-02-17	86-12-03
C8M06	KLERK SPRUIT AT GEDULD	28-17-45	28-48-30	226	66-02-17	85-11-06
C8M07	LIEBENBERGSVLEI RIVER AT VOGELFONTEIN 69	28-11-30	28-20-45	118	75-11-19	78-03-17
C8M08	TUGELA-VAAL CANAL AT METZ	28-32-30	29-05-00	26	78-08-11	79-11-12
C8M09	TIER RIVER AT TYGER HOEK	28-03-15	28-29-30	108	75-11-19	86-12-03
C8M10	OUBERG SPRUIT AT FRASER SPRUIT	28-21-00	29-05-30	313	75-11-21	86-12-02
C8M11	ELANDS RIVER AT KILLARNEY	28-09-30	28-52-30	324	75-11-21	86-12-23
C8M12	VAALBANK SPRUIT AT VOORSPOED	28-05-00	28-50-15	170	78-10-12	86-12-03
C8M13	VAALBANK SPRUIT WEST AT VAALBANK 327	28-06-30	28-47-00	47	79-10-04	86-12-03
C8M14	WILGE RIVER AT BAVARIA	27-49-00	28-47-00	405	75-11-20	86-12-31
C8M15	WILGE RIVER AT HARRISMITH TOWN LANDS	28-18-30	29-08-00	59	75-12-08	77-08-06
C8M16	KROM SPRUIT AT COSMOS	27-15-30	28-24-15	87	77-10-25	86-12-18
C8M17	KLIP SPRUIT AT KLIPOOG	27-07-45	28-17-00	29	80-02-11	82-10-20
C8M18	HOL SPRUIT AT DAVIDSDALE	27-39-00	28-52-00	192	78-10-25	86-12-02
C8M20	LIEBENBERGSVLEI RIVER AT ROODEKRAAL	27-41-15	28-22-45	47	78-01-01	81-02-19
C8M21	SKULP SPRUIT AT KALKOEN	27-18-30	28-29-00	7	80-12-15	85-02-14
C8M22	WILGE RIVER AT KIMBERLEY	27-18-00	28-29-45	79	79-04-30	83-08-23
C8M23	MEUL RIVER AT KAFFERSTAD	28-01-30	28-59-45	188	78-11-02	86-12-31
C8M24	MIDDEL SPRUIT AT MIDDELSPRUIT	28-04-30	28-42-00	46	79-11-29	84-09-19
C8M25	VAALBANK SPRUIT AT RUSTKOP	28-08-00	28-45-45	134	79-10-24	85-01-29
C8M26	LIEBENBERGSVLEI RIVER AT FREDERIKSDAL	27-25-39	28-31-29	52	85-03-21	86-12-24
C8M27	WILGE RIVER AT BALLINGTOMP	27-18-00	28-35-08	78	85-03-21	86-12-24
C8Q01A	RAINGAUGE AT UITVLUGT (BULK PREC)	28-09-30	28-48-06	64	83-10-01	85-09-14
C8Q02A	RAINGAUGE AT DAVIDSVLEI (BULK PREC)	27-30-11	28-58-18	0		
C8Q02B	RAINGAUGE AT DAVIDSVLEI (WET ONLY PREC)	27-30-11	28-58-18	0		
C8Q03A	RAINGAUGE AT KRANSPUNT (BULK PRECIPITATI	27-30-11	28-29-48	0		
C8Q03B	RAINGAUGE AT KRANSPUNT (WET ONLY PRECIPI	27-30-11	28-29-48	0		
C8R03W	STERKFONTEIN DAM:DOWN STREAM WEIR	28-23-15	29-01-00	47	80-10-08	86-10-23

C8R0301	STERKFONTEIN DAM:NEAR DAM WALL	28-23-15	29-01-00	74	77-04-25	86-12-03
C8R0302	STERKFONTEIN DAM:POINT IN DAM	28-23-15	29-01-00	21	84-02-20	85-02-11
C8R0303	STERKFONTEIN DAM:POINT IN DAM	28-23-15	29-01-00	14	84-02-20	85-02-07
C8R0304	STERKFONTEIN DAM:POINT IN DAM	28-23-15	29-01-00	20	84-02-20	85-02-07
C8R0305	STERKFONTEIN DAM:POINT IN DAM	28-23-15	29-01-00	16	84-02-20	85-02-07
C8R0401	SAULSPOORT DAM:NEAR DAM WALL	28-13-00	28-21-45	126	75-03-20	86-12-03
C8R0501	LOCH ATHLONE DAM:NEAR DAM WALL	28-15-00	28-18-30	123	75-11-19	86-12-03
C8R0601	GERRANDS DAM:NEAR DAM WALL	28-17-00	28-17-30	117	75-11-19	86-12-03

CHEMICAL ANALYSES AVAILABLE FOR HYDROLOGICAL GAUGING STATIONS IN DRAINAGE REGION C9D (0390)

STATION NO.	STATION NAME	LATITUDE	LONGITUDE	NO. OF ANALYSES	FIRST-	LATEST SAMPLE
C9M03	VAAL RIVER AT RIVERTON	28-30-45	24-41-45	3	72-03-16	77-04-23
C9M07	VAAL RIVER AT ST. CLAIRE	29-02-30	23-50-15	128	66-03-29	77-09-12
C9M08	VAAL RIVER AT SCHOOLPLAATS	28-06-45	24-55-00	161	72-03-15	82-07-30
C9M09	VAAL RIVER AT DE HOOP	28-31-00	24-36-00	340	71-12-09	86-12-18
C9M10	VAAL RIVER AT MOZIB (GAMAGARA)	28-24-15	24-16-15	288	75-09-08	86-11-24
C9Q01	VAAL RIVER AT DOUGLAS BRIDGE	29-03-00	23-46-15	71	79-10-22	81-12-21
C9R01D	VAALHARTS DAM:RIGHT BANK CANAL	28-07-00	24-55-45	23	71-10-07	74-03-28
C9R01W	VAALHARTS DAM:DOWN STREAM WEIR	28-07-00	24-55-45	3	85-06-15	85-11-21
C9R0101	VAALHARTS DAM:NEAR DAM WALL	28-07-00	24-55-45	463	75-10-27	84-04-02
C9R0103	VAALHARTS DAM:POINT IN DAM	28-07-00	24-55-45	3	81-07-13	84-11-25
C9R02W	BLOEMHOF DAM:DOWN STREAM WEIR	27-40-15	25-37-00	734	72-11-23	86-11-05
C9R0201	BLOEMHOF DAM:NEAR DAM WALL	27-40-15	25-37-00	464	71-03-03	86-12-17
C9R0202	BLOEMHOF DAM:POINT IN DAM	27-40-15	25-37-00	204	77-08-12	86-08-14
C9R0203	BLOEMHOF DAM:POINT IN DAM	27-40-15	25-37-00	290	77-08-17	86-08-14
C9R0204	BLOEMHOF DAM:POINT IN DAM	27-40-15	25-37-00	60	77-09-20	78-12-05
C9R0205	BLOEMHOF DAM:POINT IN DAM	27-40-15	25-37-00	39	77-08-11	78-12-04
C9R0206	BLOEMHOF DAM:POINT IN DAM	27-40-15	25-37-00	132	77-08-11	86-08-14
C9R0207	BLOEMHOF DAM : POINT IN DAM	27-40-15	25-37-00	6	86-03-04	86-08-14
C9R0208	BLOEMHOF DAM:POINT IN DAM	27-40-15	25-37-00	270	80-03-17	86-08-14
C9R0209	BLOEMHOF DAM:POINT IN DAM	27-40-15	25-37-00	309	77-10-19	86-08-14
C9R0211	BLOEMHOF DAM:POINT IN DAM	27-40-15	25-37-00	82	77-08-12	79-11-13
C9R0213	BLOEMHOF DAM:POINT IN DAM	27-40-15	25-37-00	100	77-08-11	79-11-12
C9R0214	BLOEMHOF DAM:POINT IN DAM	27-40-15	25-37-00	104	77-08-10	79-11-12
C9R0215	BLOEMHOF DAM:POINT IN DAM	27-40-15	25-37-00	63	77-08-16	86-08-14
C9R0301	DOUGLAS DAM:NEAR DAM WALL	29-02-30	23-50-15	332	77-10-03	86-11-07
C9W01 R	VAAL GAMAGARA PURIFICATION WORKS	28-24-45	24-16-00	73	79-06-25	86-10-03
C9W01 S	VAAL GAMAGARA PURIFICATION WORKS	28-24-45	24-16-00	73	79-06-13	86-10-03

APPENDIX D: EXAMPLES OF STANDARD OUTPUT FORMATS AVAILABLE FROM THE WATER QUALITY DATABASE.

STATION - SUIKERBOSCHRAND RIVER AT PLATKOPPIE STATION NO. C2M70
LOCATION - LAT. 26/38/30 LONG. 28/13/45 TYPE RIVER

MINIMUM DATA INTERVALS ARE 0 DAYS

DATE YR-MO-DY	TIME	GAUGE M	DEPTH SAMPLED(M)	10202 ELEC COND MS/M	01201 PH PH UNITS	10204 TDS MG/L	20201 CA DISS MG/L CA	12201 MG DISS MG/L MG	19201 K DISS MG/L K
79- 1- 3	0808	0.110	--	31.9	7.1	211	18	11	3.7
79- 1-10	0850	0.007	--	34.5	7.2	226	20	12	3.7
79- 4-25	0915	0.152	--	96.0	7.3	597	48	27	7.2
79- 5- 2	1234	0.123	--	120.4	7.5	776	59	34	8.2
79- 5- 9	1154	0.122	--	135.3	7.4	837	64	37	8.7
79- 5-16	1254	0.122	--	166.2	7.4	1090	77	47	9.8
79- 5-23	0900	0.123	--	195.4	7.6	1312	88	54	10.9
79- 5-30	1200	0.140	--	232.4	7.6	1519	96	67	13.6
79- 6- 6	1253	0.149	--	263.0	8.4	1945	112	75	15.5
79- 6-14	1235	0.153	--	268.8	7.3	1877	125	79	16.0
79- 6-20	1315	0.151	--	262.4	7.9	1839	122	78	16.7
79- 6-27	1253	0.153	--	203.0	8.0	1802	125	72	17.1
79- 8-22	1925	0.486	--	225.1	7.0	1503	120	64	19.5
79- 9-19	1325	0.115	--	236.2	7.8	1633	126	65	5.8
79-10- 3	1230	0.160	--	206.1	7.6	1316	94	43	19.1
79-10-10	1420	0.135	--	198.9	7.6	1264	89	44	18.9
79-10-17	1100	0.080	--	190.9	7.7	1304	100	58	17.8
79-11- 7	1430	0.120	--	88.0	7.3	583	41	24	8.4
79-11-14	1300	0.360	0.0	111.4	7.2	702	50	30	10.2
79-11-21	1345	0.300	0.2	110.0	7.4	753	51	30	8.3
79-11-28	1350	1.540	--	70.9	6.9	464	35	21	7.2
79-12- 5	1350	0.890	--	103.8	7.2	674	66	31	3.6
79-12-12	1350	0.550	--	132.7	7.0	914	79	41	11.6
79-12-19	1345	0.580	--	113.4	6.6	774	72	38	11.4
79-12-25	1310	0.710	--	106.4	7.1	716	58	30	12.2
80- 1- 2	1240	0.310	--	141.4	7.6	948	82	41	15.9
80- 1- 9	1425	1.070	--	57.3	7.1	387	33	17	6.9
80- 1-16	1410	1.110	--	106.7	7.2	720	69	31	10.6
80- 1-23	1225	0.920	--	96.5	7.2	547	55	26	8.2
80- 1-30	1250	1.000	--	50.4	7.2	504	50	21	7.4
80- 2- 6	1235	1.065	--	62.7	7.0	433	42	18	6.2
80- 2-13	1145	2.300	--	35.2	6.8	223	23	10	4.9
80- 2-20	1325	1.860	--	31.5	6.9	213	21	10	4.7
80- 2-27	1230	0.950	--	53.4	7.1	351	36	17	6.0
80- 3- 5	1145	0.825	--	63.0	6.9	425	42	20	6.5
80- 3-12	1027	0.505	--	66.4	7.0	451	44	22	6.6
80- 3-19	1115	0.450	--	71.6	7.1	491	48	23	6.8
80- 3-25	1019	0.450	--	61.7	6.9	385	40	19	7.9
80- 4- 2	1210	0.370	0.0	91.7	7.4	632	54	22	8.7
80- 4- 9	1110	0.460	0.1	99.9	7.1	615	59	26	8.8
80- 4-16	1150	0.280	0.0	60.9	7.1	379	36	19	6.0
80- 4-23	1130	0.170	0.0	77.1	7.4	486	45	24	6.7
80- 4-30	1105	0.190	0.0	89.3	7.1	554	52	26	8.2
80- 5- 7	1135	0.135	0.1	97.7	7.4	595	54	29	8.6
80- 5-14	1355	0.210	0.1	103.4	7.4	647	57	29	8.9
80- 5-21	1340	0.220	0.1	109.1	7.3	676	58	32	9.0
80- 5-28	1100	0.210	0.0	110.3	7.1	674	59	30	9.2
80- 6- 4	1110	0.235	0.0	114.6	7.2	698	60	35	9.7
80- 6-11	0950	0.260	0.0	98.5	7.0	738	59	34	9.2
80- 6-18	1045	0.280	0.1	128.5	7.2	790	62	35	10.3
80- 6-25	1105	0.270	0.1	139.0	7.1	864	66	38	11.0
80- 7- 9	1145	0.260	0.0	139.1	7.4	930	68	39	9.5

SUMMER SEASON(1ST OCTOBER - 30TH MARCH)

STATION - VAAL RIVER AT SCHOEMANSDRIF — STATION NO. C2M18
LOCATION - LAT. 26/58/15 LONG. 27/12/45 — TYPE RIVER
PERIOD FROM 85-10- 1 TO 86- 9-30

MINIMUM DATA INTERVALS ARE 0 DAYS

DETERMINAND	UNITS	CODE	MEAN	MEDIAN	MIN	MAX	STANDARD DEVIATION	COEFF OF VARIATION(%)
TEMP	DEG C	10203	**	**	**	**	**	**
ELEC COND	MS/M	10202	60.8	69.0	25.6	95.6	21.2	34.9
PH	PH UNITS	01201	7.4	7.6	6.2	7.9	0.5	6.5
TDS	MG/L	10204	397	415	166	661	144	36.2
HARDNESS TOT	MG/L CACO3	10205	191	204	80	293	71	37.1
CA DISS	MG/L CA	20201	48	50	20	76	19	38.8
MG DISS	MG/L MG	12201	17	17	7	36	7	41.4
K DISS	MG/L K	19201	6.2	5.0	0.4	31.0	5.9	95.8
NA DISS	MG/L NA	11201	44	46	16	73	17	39.4
ALK TOT	MG/L CACO3	10201	78	69	50	171	30	38.5
CL DISS	MG/L CL	17201	45	44	17	95	19	42.1
F DISS	MG/L F	09201	0.4	0.4	0.2	0.8	0.2	39.3
SI	MG/L SI	14201	4.8	5.6	0.4	6.8	1.8	37.3
SO4 DISS	MG/L SO4	16201	135	161	29	271	73	53.7
NH4	MG/L N	07201	0.07	0.07	0.04	0.10	0.02	23.9
NO3+NO2 - N	MG/L N	07202	0.20	0.06	0.02	0.93	0.27	135.1
N KJEL	MG/L N	07203	--	--	--	--	--	--
P INORG TOT	MG/L P	15201	0.074	0.013	0.005	0.855	0.204	273.6
P TOTAL	MG/L P	15202	--	--	--	--	--	--
DOC	MG/L C	06201	--	--	--	--	--	--

DETERMINAND	NO. OF VALUES	PERCENTILES 10%	50%	90%
TEMP	12	**	**	**
ELEC COND	26	29.1	68.0	84.0
PH	26	6.2	7.6	7.8
TDS	26	202	409	570
HARDNESS TOT	26	100	197	265
CA DISS	26	26	49	70
MG DISS	26	8	17	23
K DISS	26	0.6	5.0	9.2
NA DISS	26	21	46	64
ALK TOT	26	56	69	90
CL DISS	26	22	44	65
F DISS	26	0.2	0.4	0.6
SI	26	2.4	5.6	6.5
SO4 DISS	26	38	157	208
NH4	26	0.04	0.07	0.08
NO3+NO2 - N	26	0.02	0.05	0.62
N KJEL	0	--	--	--
P INORG TOT	26	0.005	0.013	0.058
P TOTAL	0	--	--	--
DOC	0	--	--	--

** INSUFFICIENT VALUES; STATISTICS NOT CALCULATED

WINTER SEASON(1ST APRIL - 30TH SEPTEMBER)

STATION - VAAL RIVER AT SCHOEMANSDRIF STATION NO. C2M18
LOCATION - LAT. 26/58/15 LONG. 27/12/45 TYPE RIVER
PERIOD FROM 85-10- 1 TO 86- 9-30

MINIMUM DATA INTERVALS ARE 0 DAYS

DETERMINAND	UNITS	CODE	MEAN	MEDIAN	MIN	MAX	STANDARD DEVIATION	COEFF OF VARIATION(%)
TEMP	DEG C	10203	16.1	15.0	10.0	25.5	4.1	25.4
ELEC COND	MS/M	10202	70.0	69.0	46.0	91.9	13.3	19.0
PH	PH UNITS	01201	7.6	7.6	7.4	8.2	0.2	2.1
TDS	MG/L	10204	458	444	298	633	92	20.1
HARDNESS TOT	MG/L CACO3	10205	212	205	134	310	45	21.1
CA DISS	MG/L CA	20201	56	54	34	81	12	21.2
MG DISS	MG/L MG	12201	18	17	12	27	4	21.2
K DISS	MG/L K	19201	8.5	9.4	2.5	14.4	3.5	41.3
NA DISS	MG/L NA	11201	54	53	32	84	13	23.6
ALK TOT	MG/L CACO3	10201	76	76	64	91	7	8.6
CL DISS	MG/L CL	17201	49	47	27	69	12	24.5
F DISS	MG/L F	09201	0.4	0.4	0.3	0.7	0.1	22.1
SI	MG/L SI	14201	4.2	4.5	1.7	6.3	1.4	33.5
SO4 DISS	MG/L SO4	16201	171	169	88	268	47	27.6
NH4	MG/L N	07201	0.07	0.07	0.02	0.13	0.03	38.6
NO3+NO2 - N	MG/L N	07202	1.14	1.57	0.02	2.19	0.86	75.8
N KJEL	MG/L N	07203	--	--	--	--	--	--
P INORG TOT	MG/L P	15201	0.024	0.013	0.005	0.156	0.031	125.9
P TOTAL	MG/L P	15202	--	--	--	--	--	--
DOC	MG/L C	06201	--	--	--	--	--	--

DETERMINAND	NO. OF VALUES	PERCENTILES 10%	50%	90%
TEMP	25	11.0	15.0	22.0
ELEC COND	27	50.6	69.0	85.0
PH	27	7.4	7.6	7.7
TDS	27	327	444	572
HARDNESS TOT	27	141	205	254
CA DISS	27	36	54	67
MG DISS	27	12	17	21
K DISS	27	3.0	9.4	12.1
NA DISS	27	36	53	67
ALK TOT	27	68	76	83
CL DISS	27	32	47	66
F DISS	27	0.3	0.4	0.5
SI	27	2.0	4.5	5.7
SO4 DISS	27	99	169	219
NH4	27	0.03	0.07	0.08
NO3+NO2 - N	27	0.02	1.57	2.09
N KJEL	0	--	--	--
P INORG TOT	27	0.006	0.013	0.049
P TOTAL	0	--	--	--
DOC	0	--	--	--

DEPARTMENT OF WATER AFFAIRS WATER QUALITY MONITORING - STATS SUMMARY DATE 01/06/87

TOTAL PERIOD

STATION - VAAL RIVER AT SCHOEMANSDRIF STATION NO. C2H018
LOCATION - LAT. 26/58/15 LONG. 27/12/45 TYPE RIVER
PERIOD FROM 85-10- 1 TO 86- 9-30

MINIMUM DATA INTERVALS ARE 0 DAYS

DETERMINAND	UNITS	CODE	MEAN	MEDIAN	MIN	MAX	STANDARD DEVIATION	COEFF OF VARIATION(%)
TEMP	DEG C	10203	18.8	18.0	10.0	30.0	5.4	28.9
ELEC COND	MS/M	10202	65.5	69.0	25.6	95.6	18.1	27.6
PH	PH UNITS	01201	7.5	7.6	6.2	8.2	0.4	4.8
TDS	MG/L	10204	428	430	166	661	123	28.8
HARDNESS TOT	MG/L CACO3	10205	201	205	80	310	59	29.4
CA DISS	MG/L CA	20201	52	54	20	81	16	30.5
MG DISS	MG/L MG	12201	17	17	7	36	6	32.1
K DISS	MG/L K	19201	7.4	7.5	0.4	31.0	4.9	67.1
NA DISS	MG/L NA	11201	49	50	16	84	16	32.2
ALK TOT	MG/L CACO3	10201	77	75	50	171	21	27.7
CL DISS	MG/L CL	17201	47	47	17	95	16	33.5
F DISS	MG/L F	09201	0.4	0.4	0.2	0.8	0.1	31.1
SI	MG/L SI	14201	4.5	4.6	0.4	6.8	1.6	36.2
SO4 DISS	MG/L SO4	16201	153	166	29	271	63	41.1
NH4	MG/L N	07201	0.07	0.07	0.02	0.13	0.02	32.0
NO3+NO2 - N	MG/L N	07202	0.68	0.20	0.02	2.19	0.79	116.9
N KJEL	MG/L N	07203	--	--	--	--	--	--
P INORG TOT	MG/L P	15201	0.049	0.013	0.005	0.855	0.145	296.6
P TOTAL	MG/L P	15202	--	--	--	--	--	--
DOC	MG/L C	06201	--	--	--	--	--	--

DETERMINAND	NO. OF VALUES	PERCENTILES 10%	50%	90%
TEMP	37	13.0	18.0	26.0
ELEC COND	53	34.5	69.0	86.0
PH	53	7.2	7.6	7.8
TDS	53	226	430	584
HARDNESS TOT	53	103	205	265
CA DISS	53	27	54	70
MG DISS	53	9	17	23
K DISS	53	1.1	7.5	11.8
NA DISS	53	26	50	67
ALK TOT	53	58	75	90
CL DISS	53	26	47	68
F DISS	53	0.3	0.4	0.6
SI	53	2.0	4.6	6.4
SO4 DISS	53	48	166	219
NH4	53	0.04	0.07	0.08
NO3+NO2 - N	53	0.02	0.20	1.90
N KJEL	0	--	--	--
P INORG TOT	53	<0.005	0.013	0.058
P TOTAL	0	--	--	--
DOC	0	--	--	--

STATION - VAAL RIVER AT SCHOEMANSDRIF STATION NO. C2M18
LOCATION - LAT. 26/58/15 LONG. 27/12/45 TYPE RIVER

CODE	DETERMINAND	1984												1985									
		J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
01201	PH	4	4	3	4	5	2	4	3	4	5	4	4	5	3	4	5	4	4	5	5	3	5	4	5
06201	DOC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07201	NH4	4	4	3	4	5	2	4	3	4	5	4	4	5	3	4	5	4	4	5	5	3	5	4	5
07202	NO3+NO2 - N	4	4	3	4	5	2	4	3	4	5	4	4	5	3	4	5	4	4	5	5	3	5	4	5
07203	N KJEL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09201	F DISS	4	4	3	4	5	2	4	3	4	5	4	4	5	3	4	5	4	4	5	5	3	5	4	5
10201	ALK TOT	4	4	3	4	5	2	4	3	4	5	4	4	5	3	4	5	4	4	5	5	3	5	4	5
10202	ELEC COND	4	4	3	4	5	2	4	3	4	5	4	4	5	3	4	5	4	4	5	5	3	5	4	5
10203	TEMP	4	3	3	4	5	2	4	3	4	4	4	4	5	3	4	5	4	4	5	5	1	2	1	1
10204	TDS	4	4	3	4	5	2	4	3	4	5	4	4	5	3	4	5	4	4	5	5	3	5	4	5
10205	HARDNESS TOT	4	4	3	4	5	2	4	3	4	5	4	4	5	3	4	5	4	4	5	5	3	5	4	5
11201	NA DISS	4	4	3	4	5	2	4	3	4	5	4	4	5	3	4	5	4	4	5	5	3	5	4	5
12101	MG DISS FILT	4	4	3	4	5	2	4	3	4	5	4	4	5	3	4	5	4	4	5	5	3	5	4	5
14201	SI	4	4	3	4	5	2	4	3	4	5	4	4	5	3	4	5	4	4	5	5	3	5	4	5
15201	P INORG TOT	4	4	3	4	5	2	4	3	4	5	4	4	5	3	4	5	4	4	5	5	3	5	4	5
15202	P TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16201	SO4 DISS	4	4	3	4	5	2	4	3	4	5	4	4	5	3	4	5	4	4	5	5	3	5	4	5
17201	CL DISS	4	4	3	4	5	2	4	3	4	5	4	4	5	3	4	5	4	4	5	5	3	5	4	5
19201	K DISS	4	4	3	4	5	2	4	3	4	5	4	4	5	3	4	5	4	4	5	5	3	5	4	5
20101	CA DISS FILT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

STATION - VAAL RIVER AT SCHOEMANSDRIF STATION NO. C2M18
LOCATION - LAT. 26/58/15 LONG. 27/12/45 TYPE RIVER

CODE	DETERMINAND	1986											
		J	F	M	A	M	J	J	A	S	O	N	D
01201	PH	4	4	4	5	4	4	5	4	5	3	0	0
06201	DOC	0	0	0	0	0	0	0	0	0	0	0	0
07201	NH4	4	4	4	5	4	4	5	4	5	3	0	0
07202	NO3+NO2 - N	4	4	4	5	4	4	5	4	5	3	0	0
07203	N KJEL	0	0	0	0	0	0	0	0	0	0	0	0
09201	F DISS	4	4	4	5	4	4	5	4	5	3	0	0
10201	ALK TOT	4	4	4	5	4	4	5	4	5	3	0	0
10202	ELEC COND	4	4	4	5	4	4	5	4	5	3	0	0
10203	TEMP	0	4	4	5	4	4	5	3	4	3	0	0
10204	TDS	4	4	4	5	4	4	5	4	5	3	0	0
10205	HARDNESS TOT	4	4	4	5	4	4	5	4	5	3	0	0
11201	NA DISS	4	4	4	5	4	4	5	4	5	3	0	0
12101	MG DISS FILT	4	4	4	5	4	4	5	4	5	3	0	0
14201	SI	4	4	4	5	4	4	5	4	5	3	0	0
15201	P INORG TOT	4	4	4	5	4	4	5	4	5	3	0	0
15202	P TOTAL	0	0	0	0	0	0	0	0	0	0	0	0
16201	SO4 DISS	4	4	4	5	4	4	5	4	5	3	0	0
17201	CL DISS	4	4	4	5	4	4	5	4	5	3	0	0
19201	K DISS	4	4	4	5	4	4	5	4	5	3	0	0
20101	CA DISS FILT	0	0	0	0	0	0	0	0	0	0	0	0

VERSLAG/REPORT

TR. NO.	TITEL/TITLE	OUTEUR(S)/AUTHOR(S)	PRYS/PRICE (AVB uitgesluit) (GST excluded)
62	Open Channel Fluid Mechanics (i) Open channel flow resistance (ii) Sediment transport in terms of power concepts.	A. ROOSEBOOM (1974)	R 7,39
65	The influence of changing landuse of inflow to reservoirs.	J.S. WHITMORE (1975) P.C. REID	R 1,70
66	Remote sensing techniques applied to salinity problems of part of the Pongola Government Water Scheme.	M.P. MULDER (1975) P.C. REID	R 1,50
67	Water use efficiency of a winter wheat crop.	P.C. MacREID (1976)	R11,30
72	The radiation balance over natural surfaces.	H. MAAREN (1977)	R 9,20
73	Prediction of potential evaporation losses from a natural surface area.	H. MAAREN (1977)	R 5,30
74	Some applications of energy exchange principles in hydrology.	H. MAAREN (1977)	R 4,60
*77	Quantitative estimation of groundwater recharge with special reference to the use of natural radioactive isotopes and hydrological simulation.	D.B. BREDENKAMP (1978)	R37,40
78	Proposed mathematical model for the estimation of the areal properties of high-intensity short-duration storms.	M.J. DIXON (1977)	R 5,99
79	Die beplanning van 'n optimale riviervloeimeetstasienetwerk vir S.A.	A.M.M. MULLER (1977)	R 6,47
80	Long range prediction of river flow: A preliminary assessment.	W.J.R. ALEXANDER (1978)	R 2,67
81	An investigation into possible changes in the water balance of the Pongola River catchment induced by land management.	WENDY ELIZABETH REDMAN (1974)	R 7,50

VERSLAG/REPORT

TR. NO.	TITEL/TITLE	OUTEUR(S)/AUTHOR(S)	PRYS/PRICE (AVB uitgesluit) (GST excluded)
82	The analysis of areal rainfall using multi-quadric surfaces.	P.T. ADAMSON (1978)	R 1,90
83	Estimation potential total evapo-transpiration with the Penman-equation for different vegetation covers for use in catchment management models.	H. MAAREN (1978)	R 2,70
84	Bekamping van die invloed van veroudering van watermonsters.	D.C. GROBLER (1978) C.A. BRUWER H. VAN VLIET	R 2,70
85	The chemical composition of water and the analytical chemist - A challenge.	W.H.J. HATTINGH (1979)	R 1,10
86	The statistics of extreme values and the analysis of floods in S.A.	P.T. ADAMSON (1978)	8,08
88	Documentation of the Jan. 1978 floods in Pretoria and in the Crocodile River catchment.	Z.P. KOVACS (1978)	R 3,05
89	Notes on some unsolved problems in river flow.	W.J.R. ALEXANDER (1979)	R 4,02
90	Numerical techniques for function minimisation.	B.H. GILDING (1979) J.S. DU TOIT	R 2,72
91	The finite element method and an appraisal of a mathematical model of the Rawsonville-Goudini aquifer.	B.H. GILDING (1978) W.R.G. ORPEN	R 3,98
92	Waterverbruik deur water hiasinte (Eichhornia Crassipes).	A. GERBER (1979)	R 1,61
94	The economic impact of eutrophication in S.A.	C.A. BRUWER (1979)	R 2,91
95	Guide to the use of herbicides on aquatic plants	D.J. STEYN W.E. SCOTT P.J. ASHTON (1979) F.S. VIVIER	R 4,30

VERSLAG/REPORT

TR. NO.	TITEL/TITLE	OUTEUR(S)/AUTHOR(S)	PRYS/PRICE (AVB uitgesluit) (GST excluded)
96	Soil survey of the experimental catchments near Bethlehem.	H. MAAREN (1979)	R 3,46
97	Operation of the storage reservoirs in the Pietermaritzburg-Durban region to reduce eutrophication	I. PEARSON	R 7,49
98	Model Flexifit : A conceptual rainfall runoff model for the extension of monthly runoff records.	P.J.T. ROBERTS (1979)	R 2,29
99	Pumping test analysis when the pumped well intercepts a vertical fracture.	B.H.T. GILDING (1979)	R 2,46
100	The toxicology of silver iodide in relation to its use as a cloud seeding agent.	P.L. KEMPSTER (1979)	R 1,10
101	Health implications of using bitumen, coal-tar, asbestos and plastic materials in water distribution systems.	P.L. KEMPSTER (1979)	R 1,78
102	Southern African storm rainfall	P.T. ADAMSON	R31,73
104	'n Identifikasiemetode vir die identifisering van dispersiewe gronde.	F.A. GERBER (1980) D.S. GROBLER	R 1,30
105	Maximum flood peak discharge in South Africa. An empirical approach.	Z.P. KOVACS (1980)	R 2,90
106	Common algae found in South African impoundments.	S.N. SHILLINGLAW (1980)	R 2,80
107	Bacteriological quality of the river waters of the Roodeplaat Dam catchment.	D.P. SARTORY (1980)	R 1,76
108	Summarized water quality criteria.	P.L. KEMPSTER (1980) W.H.J. HATTINGH H.R. VAN VLIET	R 1,76
111	Energy aspects of water use efficiency.	P.C. McROBERT-REID	R14,50
113	Workshop on the effect of rural land-use and catchment management on water resources.	EDITED BY H. MAAREN JULY 1981	R 9,20
114	Water year + 10 and then?	EDITED BY W.H.J. HATTINGH (1981)	R 9,38

VERSLAG/REPORT

TR.NO.	TITEL/TITLE	OUTEUR(S)/AUTHOR(S)	PRYS/PRICE (AVB uitgesluit) (CST excluded)
115	Spectrophotometric analysis of chlorophyll a in freshwater phytoplankton.	D.P. SARTORY (1982)	R 8,00
116	Documentation of the January 1981 floods in the South Western Cape.	Z.P. KOVACS (1983)	R22,63
117	Point and diffuse source phosphorus loading of rivers and impoundments in the Durban-Pietermaritzburg Region.	DALLAS ANNE KRÖGER (1981)	R10,15
118	The Bethlehem run-off augmentation research project: Past, present and future.	S. MASON-WILLIAMS (1984)	R23,86
119	South African National Hydrological Symposium - Proceedings.	H. MAAREN (ED) (1984)	R90,09
120	Documentation of the March-May 1981 floods in the South Eastern Cape.	D.B. DU PLESSIS	R14,84
121	An Assessment of Water Related Problems of the Vaal River between Barrage and Douglas Weir.	C.A. BRUWER H.R. VAN VLIET D.P. SARTORY P.L. KEMPSTER	R14,84
122	Documentation of the 1984 Domoina Floods.	Z.P. KOVACS D.P. DU PLESSIS P.R. BRACHER P. DUNN C.C.L. MALLORY	R29,29
123	'n Evaluering van die fisies-chemiese eienskappe van dispersiewe grond en die metodes vir identifisering van dispersiewe grond.	F.A. GERBER	R 9,57
124	A comparison of methods to determine nutrient limitation in impoundments.	L. ROSSOUW	R18,60
125	The estimation of phytoplankton biomass in freshwater.	S.G. YOUNG	R14,45
126	Manual for the planning, design and operation of river gauging stations.	J.J. VAN HEERDEN D. VAN DER SPUY P.J. LE ROUX	R 7,77
127	'n Ondersoek na die Rol van Soöplankton in Roodeplaatdam. (Nog nie gedruk - Not yet printed)	C.E. VAN GINKEL	
128	Landsat water quality surveillance - development of the model CALMCAT	A.H. HOWMAN P.L. KEMPSTER	R21,99
129	Estuarine and lake freshwater requirements	W.A. JEZEWSKI DR. C.P. ROBERTS	R 5,60