



FLOW PROPORTIONAL COMPOSITE SAMPLE

DATA SUMMARY

PART 1

SUMMARY

FOR

DEPARTMENT of WATER, LAND and BIODIVERSITY
CONSERVATION

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APPENDICES

- Appendix 1** – Composite Sampling Monitoring Sites Map
Appendix 2 – Water Quality Variable Codes and Descriptions
Appendix 3 – CD-ROM containing data pertaining to this report.

1 WARNING

The data provided in this report has been collected under the framework of a Quality Management System (WDS – NATA AS / NZS ISO 9001/2000)

The South Australian Government and Water Data Services reserve the right to adjust this data based on new calibration data and/or new information that may become available.

2 DISCLAIMER

Neither the South Australian Government and its employees nor Water Data Services and its employees can be accountable in any way for the use of this data and/or any subsequent interpretation of the data.

3 INTRODUCTION

This report provides a summary of data collected using flow proportional composite sampling techniques to produce water quality load data. The report does not provide any interpretation of the data other than basic statistical information and standard HYDSYS generated reports.

Data from Department of Water, Land and Biodiversity Conservation (DWLBC) sites, used to collect nutrient load data, as part of the Nutrient Budget Study (NBS), is detailed in PART 2 of this report. In addition site summary information is provided in PART 3 of this report for other composite sampling sites not forming part of the NBS or not operated by DWLBC but which have employed composite sampling techniques. PART 4 of this report discusses specific technical data processing issues related to the composite sampling data set.

Appendix 1 shows the location of both DWLBC Nutrient Budget Study sites and other composite sampling sites.

The Nutrient Budget Study was established to determine total nutrients loads entering Adelaide's Metropolitan Reservoirs from selected streams. Existing hydrometric monitoring stations were used and additional equipment was installed for 'composite sampling'. For a detailed description of the composite sampling method refer to the report 'Nutrient Loads in the Onkaparinga River System', (BL Nicholson, RDS Clark, EWS, ISBN 0 7308 2370 9).

Nutrient Budget Study Composite Sampling Sites – Detailed data included in Part 2

Site No.	Description	Parameter	Period of Record
AW503502	Scott Creek at Scott Bottom	Water level/flow	27/03/1969 to 04/07/2002
		Rainfall	08/03/1991 to 04/07/2002
		Water Quality	23/08/1988 to 12/06/2002
AW503504	Onkaparinga River at Houlgrave	Water level/flow	17/04/1973 to 04/07/2002
		Rainfall	10/12/1991 to 04/07/2002
		Water Quality	25/08/1988 to 12/06/2002
AW503506	Echunga Creek upstream of Mt Bold Res.	Water level/flow	22/03/1973 to 04/07/2002
		Water Quality	26/08/1988 to 12/06/2002
AW503507	Lenswood Creek at Lenswood	Water level/flow	18/05/1972 to 04/07/2002
		Rainfall	05/09/1997 to 04/07/2002
		Water Quality	15/11/1994 to 12/06/2002
AW503509	Aldgate Creek at Aldgate Railway Station NB Continuous Rainfall data collected by BOM	Water level/flow	13/07/1972 to 04/07/2002
		Rainfall	Available from BOM
		Water Quality	27/09/1994 to 12/06/2002
AW503526	Cox Creek at Uraidla	Water level/flow	23/06/1976 to 04/07/2002
		Water Quality	18/10/1994 to 12/06/2002
AW504508	Millbrook Reservoir Intake upstream of Millbrook Reservoir	Water level/flow	02/12/1943 to 04/07/2002
		Water Quality	24/02/1992 to 12/06/2002
AW504525	Kersbrook Creek upstream of Millbrook Reservoir	Water level/flow	14/09/1989 to 04/07/2002
		Water Quality	08/04/1992 to 12/06/2002

NB Water Quality in the above table refers to the measured determinands: -

Electrical Conductivity @ 25°C (EC), Total Dissolved Solids (TDS), Suspended Solids (SS), Nox, TKN, Total P. Nox and TKN were combined, using HYDSYS to produce Total N. Total Dissolved Solids were measured direct from samples up to late 1996 after which TDS was calculated from EC results.

The water level and rainfall data are continuous time series and are archived in the HYDSYS TS hydrological database. Water level data at these sites can be used to produce stream flow data using a water level to flow relationship (rating) developed over a period of time, usually over several years, based on flow gaugings conducted at the site.

Water Quality data had originally been archived in the DWLBC HYDSYS WQ system but as a part of the process of producing this report all composite sample data was converted to HYDSYS TS forming part of the Surface Water Archive.

4 DATA SUMMARY

Detailed data for each NBS site is contained in *PART 2 – Data-NBS Sites*.

Summary statistics are provided for each NBS site together with background information about each site in this report.

The following tables provide a comparison of average annual loads for each NBS site.

Average Annual Total Catchment Load (tonnes)

Site	ID	Catchment Area	TDS	SS	P	Total N
Scott	AW503502	26.8	901	124	0.4	3.5
Houlgraves	AW503504	321.0	21,100	3,610	14.5	108.5
Echunga	AW503506	34.2	1,570	108	0.7	5.7
Lenswood	AW503507	16.5	577	800	0.5	5.3
Aldgate	AW503509	7.8	261	93	0.3	2.4
Cox	AW503526	4.3	234	498	1.5	7.5
Millbrook	AW504508	NA	7,150	738	3.5	25.7
Kersbrook	AW503525	23.0	764	185	0.3	4.8

Average Annual Load (tonnes/km²)

Site	ID	Catchment Area	TDS	SS	P	Total N
Scott	AW503502	26.8	33.6	4.6	0.0	0.1
Houlgraves	AW503504	321.0	65.8	11.2	0.0	0.3
Echunga	AW503506	34.2	45.9	3.1	0.0	0.2
Lenswood	AW503507	16.5	34.9	48.5	0.0	0.3
Aldgate	AW503509	7.8	33.5	11.9	0.0	0.3
Cox	AW503526	4.3	54.4	115.7	0.3	1.7
Kersbrook	AW503525	23.0	33.2	8.0	0.0	0.2

Ranked Average Annual TDS Load (tonnes/km²)

Site	ID	TDS
Houlgraves	AW503504	65.8
Cox	AW503526	54.4
Echunga	AW503506	45.9
Lenswood	AW503507	34.9
Scott	AW503502	33.6
Aldgate	AW503509	33.5
Kersbrook	AW503525	33.2

Ranked Average Annual SS Load (tonnes/km²)

Site	ID	SS
Cox	AW503502	115.7
Lenswood	AW503504	48.5
Aldgate	AW503506	11.9
Houlgraves	AW503507	11.2
Kersbrook	AW503509	8.0
Scott	AW503526	4.6
Echunga	AW503525	3.1

Ranked Average Annual P Load (tonnes/km²)

Site	ID	P
Cox	AW503504	0.3
Houlgraves	AW503526	0.0
Aldgate	AW503506	0.0
Lenswood	AW503507	0.0
Echunga	AW503502	0.0
Kersbrook	AW503509	0.0
Scott	AW503525	0.0

Ranked Average Annual Total N Load (tonnes/km²)

Site	ID	Total N
Cox	AW503502	1.7
Houlgraves	AW503504	0.3
Lenswood	AW503506	0.3
Aldgate	AW503507	0.3
Kersbrook	AW503509	0.2
Echunga	AW503526	0.2
Scott	AW503525	0.1

5 OTHER COMPOSITE SAMPLING SITES

Water Data Services maintain other composite sampling sites in addition to the DWLBC composite sampling sites. Water quality data for these sites, where client authorisation was granted, have been transferred to the DWLBC Surface Water Archive, HYDSYS/TS system.

The following table lists the additional composite sampling sites and their major stakeholder.

Other Composite Sampling Sites –summary information included in Part 3

DWLBC Site ID	AWQC Site No.	River	Location	Stakeholder
AW504518	3319	Sturt River	U/S Minno Creek	PCWMB
AW504549	3398	Sturt River	D/S Anzac Highway	PCWMB
AW504576	3463	Sturt River	D/S Sturt Rd	PCWMB
AW504580	3535	Brownhill Creek	U/S Keswick Creek	PCWMB
AW504581	3536	Morphett Pipe	Transfer Station	PCWMB
AW504582	3537	Adelaide Tce Pipe	D/S West Street	PCWMB
AW504583	3540	Brownhill Creek	Adelaide Airport	PCWMB
AW504901	3532	Brownhill Creek	Scotch College	PCWMB
AW504523	3324	Sixth Creek	Castambul	TCWMB
AW504529	3330	Torrens River	Holbrooks Road	TCWMB
AW504578	1900	First Creek	Botanic Gardens	TCWMB
AW504579	1898	Third Creek	Forsyth Grove	TCWMB
AW426658	4728	Dawesley Creek	U/S Brukunga	PIRSA
AW426659	4778	Dawesley Creek	D/S Brukunga	PIRSA
AW503546	3595	Field River	D/S of Main South Rd	OCWMB
AW503547	3596	Christie Creek	D/S of Galloway Rd	OCWMB

Legend

DWLBC Site No. – DWLBC surface water monitoring site identifier

AWQC Site No. – Australian Water Quality Centre (SA Water) site number

PCWMB – Patawalonga Catchment Water Management Board

TCWMB – Torrens Catchment Water Management Board

PIRSA – Primary Industries SA

OCWMB - Onkaparinga Catchment Water Management Board

U/S – up-stream

D/S – down-stream

The water quality determinands measured are too numerous to be detailed for each individual site but typically include a number of the following: -

800 TDS by EC	830 Calcium	841 Cadmium - Total
801 TDS measured	831 Magnesium	842 Chromium - Total
802 Suspended Solids	832 Potassium	843 Copper – Total
804 Turbidity	833 Sodium	844 Lead - Total
806 pH	834 Bicarbonate	845 Mercury – Total
821 EC @25C	834 Bicarbonate	846 Zinc – Total
824 Phosphorus -Total as P	835 Carbonate	845 Mercury – Total
826 TKN as N	836 Chloride	846 Zinc – Total
827 Nitrate +Nitrate as N	837 Sulphate	849 Aluminium - Total

6 REPORTS

For each NBS monitoring site, where appropriate data exists, the following HYDSYS generated reports are provided in PART 2 :-

- **Site and Data Information**

- Site Information Summary Report

Including:-

- Site Description
- Station Description
- Station History

- Data Period & Data Quality Summary Plot

A graphical representation of the period and quality for each determinand.

- **Rainfall Data**

- Rainfall Statistics Report
- Rainfall Monthly Total Plot
- Rainfall Monthly Total Report

- **Stream Flow Volume Data**

- Flow Volume Annual Total (Year Order) Report
- Flow Volume Annual Total (Size Order) Report
- Flow Volume Daily Max, Min, Mean by Calendar Month Plot
- Flow Volume Monthly Total Plot
- Flow Volume Monthly Total Report

- **Water Quality Results**

- TDS & SS Sample Results Plot
- Nutrient Sample Results Plot

- **Water Quality Loads**

- TDS & SS Monthly Load Plot
- Nutrient Monthly Load Plot
- TDS by EC Monthly Load Report
- TDS measured Monthly Load Report
- SS Monthly Load Report
- P Monthly Load Report
- TKN Monthly Load Report
- NOX Monthly Load Report

7 DATA COLLECTION

Within the NBS data collection program four types of site visits are conducted: -

1. Comprehensive Visits – A comprehensive visit is made every two months and the following work done: -

- Data download.
- Instrumentation check.
- Batteries checked.
- Functionality check - check that observed water levels matched recorded value.
- Minor maintenance checks.
- Automatic sampler checked including tygon tubing replacement if required.
- Clean and check sample intake if water level permits.
- Document site visits and repairs and maintenance required.
- Flow measurement if warranted.

2. Sample Visit

- Stirred Composite Sample Tub to mix sample.
- Removed sample (1 @ 1.25l and 1 @ 500ml bottles).
- Checked tub volume against the number of samples logged by the data logger. If these did not agree then diagnose and fix the problem.
- Check the tygon tubing – replaced if more than 800 samples had been taken (preventative maintenance).
- Clean the sample intake tube if water level permits.
- Document site visit.
- Send sample bottles to the Australian Water Quality Centre for analysis.

3. Maintenance Visits

- Instrument repairs when required eg logger breakdowns, sampler breakdowns, sensor faults.
- Weed control.
- Site repairs.

4. Annual Check Survey

- Comprehensive visit.
- Check survey all relevant datum's including staff, gauges, Cease To Flow (CTF), outside water level.
- Document site visit.
- Check station rating and adjust if required.
- Annual Check Survey Report.

8 DATA PROCESSING AND ARCHIVING

Every 2 months the data is retrieved from the field and processed and archived according to WDS's work instructions.

The processing consists of the following tasks:

- Data upload from the Laptop to the File Server.
- Data registration.
- Create HYDSYS work files.
- View data graphically – adjust if necessary. Comment Data Register and HYDSYS work file with relevant information.
- Adjust data Quality Tag if required.
- Check on/off times and values with the Site Inspection form.
- Archive work file (HYDSYS TS).
- Download water quality results from the Australian Water Quality Centre's database (WIB).
- Check water quality determinands sample date, time and values.
- Archive water quality data into HYDSYS WQ.
- Update the water quality and flow reports with the latest data.
- Post data to the WDS web page and email stakeholders to inform them that there is a data update.
- Each six months a CD-ROM is produced with NBS data and all other data relevant to the DWLBC. This is posted to the DWLBC.

9 DATA QUALITY

The data presented in this report has generally been collected to a 'good' standard. Up until 1996 the data was collected and processed by South Australian Government employees (hydrographers). Data was collected and processed to a set of in-house work instructions and procedures.

Since 1996 the data has been collected and processed by Water Data Services, a private hydrographic consultancy. Water Data Services are NATA accredited for AS/NZS ISO 9001/2000, and the data collected and processed has been in accordance with the requirements of the standards.

Data is archived in both the HYDSYS TS and WQ hydrological data systems. Attached to each data point in the archive is a 'quality tag'. This tag is a HYDSYS code that represents a qualitative quality statement. For each monitoring site a 'data quality report' is provided. Users of this data should check the 'Quality Report' so as to gain an appreciation of the quality of the data.

10 STAKEHOLDERS

The following stakeholders have an interest in the NBS program: -

1. Department of Water, Land and Biodiversity Conservation (DWLBC): - For water resources assessment and planning. The requirement of the NBS sites is currently under review. DWLBC finance the operation of the NBS sites.
2. Environmental Protection Agency: - For water quality assessment.
3. SA Water: - Millbrook and Mt Bold reservoir staff use the telemetry systems at Houlgraves, Scott Creek, Millbrook Intake and Kersbrook Creek for day to day operations. However, SA Water also uses their own telemetry equipment at some NBS sites for operational assessment.
4. Bureau of Meteorology: - For flood warning.
5. Hydrological Consultants: - For hydrological assessments and studies.

11 AW503502 - SCOTT CREEK AT SCOTT BOTTOM

11.1 Data Description and Period of Record

Continuous Water level	27/03/1969 to 04/07/2002 (33 yrs)
Rainfall	08/03/1991 to 04/07/2002 (11 yrs)
Water Quality.	23/08/1988 to 12/06/2002 (14 yrs)

Water level is monitored continuously and is of good quality with 0.0% of bad record.

Rainfall is of good quality (0.0% bad record) measured continuously in 0.2mm increments.

Water quality determinands measured are Electrical Conductivity @ 25°C, Total Dissolved Solids (calculated), Suspended Solids, Nox, TKN, Total P. The results for each sample were produced by the Australian Water Quality Centre (NATA accredited). Each result represents a flow proportional mean concentration.

11.2 Purpose

Scott Creek at Scott Bottom was installed as part of the National Water Resources Assessment Program (NWRAP) and classified as a secondary assessment station. The purpose for this site is to monitor flows for all ranges.

In 1988 composite sampling commenced so as to determine the quality of water, in particular, the nutrient and sediment load entering the Onkaparinga River just upstream of Clarendon Weir.

In 1991 an automatic rain gauge was installed and the site was upgraded to include telemetry for flood warning. The Bureau of Meteorology contributed to the cost of installation. SA Water uses the telemetry system as part of their day to day operations.

Currently Resource Assessment Division, DWLBC are undertaking a detailed study of Scott Creek. They are investigating the interaction of surface water runoff, rainfall and groundwater in respect to water quality and quantity.

11.3 Site Access

Refer to CD – Site Access and Photos

11.4 Flow Hydrology

The gauging station is located at Scott Bottom 1.6 km upstream of its confluence with the Onkaparinga River downstream of Mount Bold Reservoir and upstream of Clarendon Weir.

Land use consists mainly of cattle grazing, small mixed farms and open scrub reserves.

The geology is faulted siltstone and slate with minor sandstone.

The maximum instantaneous flow recorded to date is 18.34 m³/sec in June 1981.

In 1982 the accuracy of the flow data being measured was analyzed. It was found that for 50% of the time flow data was being measured at an accuracy of worse than 21%. In 1984 the low flow section of the weir was changed from a rectangular section to a 90° V section. This improved the sensitivity of flow measurement to: -

- For 60% of the time flows are measured at a sensitivity better than 1%/mm
- For 86% of the time flows are measured at a sensitivity better than 3%/mm

11.5 Statistics

AW503502 Scott Ck @ Scott Bottom

Catchment Area	26.8	km ²
Maximum instantaneous flow recorded to date	18.3	m ³ /s (Jun 1981)
Mean annual flow volume	3,390	ML
Mean annual rainfall	780	mm
1:5 year Annual Exceedence Probability	11.6	m ³ /s
Number of water quality composite samples	602	
Minimum EC	150	µs/cm ² @ 25°C
Maximum EC	2,260	µs/cm ² @ 25°C
Average Annual Total Catchment Load (tonnes)		
Total Dissolved Solids	901	tonnes
Suspended Solids	120	tonnes
Total Phosphorus	0.4	tonnes
Nutrients (Nox + TKN)	3.5	tonnes
Average Annual Load (tonnes/km ²)		
Total Dissolved Solids	33.6	tonnes/km ²
Suspended Solids	4.6	tonnes/km ²
Total Phosphorus	0.0	tonnes/km ²
Nutrients (Nox + TKN)	0.1	tonnes/km ²

Note - Figures are based on financial year periods.

12 AW503504 - ONKAPARINGA RIVER AT HOULGRAVE WEIR

12.1 Data Description and Period of Record

Continuous Water level	17/04/1973 to 04/07/2002 (29 yrs)
Rainfall	10/12/1991 to 04/07/2002 (10 yrs)
Water Quality.	23/08/1988 to 12/06/2002 (14 yrs)

Water level is monitored continuously and is of good quality with 0.0% of bad record.

Rainfall is of good quality (0.0% bad record) measured continuously in 0.2mm increments.

Water quality determinands measured are Electrical Conductivity @ 25°C, Total Dissolved Solids (calculated), Suspended Solids, Nox, TKN, Total P. The results for each sample were produced by the Australian Water Quality Centre (NATA accredited). Each result represents a flow proportional mean concentration.

12.2 Purpose

Onkaparinga River at Houlgrave was installed as part of the National Water Resources Assessment Program (NWRAP) and classified as a primary assessment station. The purpose for this site is to monitor flows for all ranges.

In 1988 composite sampling commenced so as to determine the quality of water, in particular, the nutrient and sediment load entering the Mount Bold Reservoir from the Onkaparinga River.

In 1991 an automatic raingauge was installed and the site was upgraded to include telemetry for flood warning. The Bureau of Meteorology contributed to the cost of installation. SA Water uses the telemetry system as part of their day to day operations.

This site is a key site for monitoring water volumes into the Mount Bold Reservoir.

12.3 Site Access

Refer to CD – Site Access and Photos

12.4 Flow Hydrology

Houlgrave weir is located just upstream of the Mount Bold Reservoir and has a catchment area of 321 km² which is 94% of the total reservoir catchment area. In addition it measures the quantity of water pumped from the River Murray at Murray Bridge which is discharged into the Onkaparinga River 14 km upstream of the gauging station (near Handorf).

The data recorded at this site includes a combination of natural stream flow and pumped flow from the Murray Bridge to Onkaparinga Pipeline. For the purpose of this report no attempt has been made to separate the different sources of flow or associated water quality. Generally, flow during the winter periods result from catchment runoff and flow during the summer periods are predominately pumped flows containing imported River Murray water.

Land use within the catchment consists of grazing, dairying, poultry farming, market gardening, orchards and forestation.

The geology is proterozoic siltstone and slate.

12.5 Statistics

AW503504 Onkaparinga River @ Houlgraves

Catchment Area	321	km ² (natural catchment)
Maximum instantaneous flow recorded to date	432	m ³ /s (Jun 1981)
Mean annual flow volume	73,000	ML
Mean annual rainfall	705	mm
1:5 year Annual Exceedence Probability	164	m ³ /s
Number of water quality composite samples	662	
Minimum EC	221	µs/cm ² @ 25°C
Maximum EC	1,240	µs/cm ² @ 25°C

Average Annual Total Catchment Load (tonnes)

Total Dissolved Solids	21,100	tonnes
Suspended Solids	3,610	tonnes
Total Phosphorus	14.5	tonnes
Nutrients (Nox + TKN)	108	tonnes

Average Annual Load (tonnes/km²)

Total Dissolved Solids	65.8	tonnes/km ²
Suspended Solids	11.2	tonnes/km ²
Total Phosphorus	0.0	tonnes/km ²
Nutrients (Nox + TKN)	0.3	tonnes/km ²

Notes - Figures are based on financial year periods.

Load figures include natural catchment runoff and imported River Murray water.

13 AW503506 - ECHUNGA CREEK UPSTREAM OF MT BOLD RESERVOIR

13.1 Data Description and Period of Record

Continuous Water level	22/03/1973 to 04/07/2002 (29 yrs)
Water Quality.	18/08/1988 to 12/06/2002 (14 yrs)

Water level is monitored continuously and 96.5% is good quality data.

Water quality determinands measured are Electrical Conductivity @ 25°C, Total Dissolved Solids (calculated), Suspended Solids, Nox, TKN, Total P. The results for each sample were produced by the Australian Water Quality Centre (NATA accredited). Each result represents a flow proportional mean concentration.

13.2 Purpose

Echunga Creek upstream of mount Bold Reservoir was installed as part of the National Water Resources Assessment Program (NWRAP) and classified as a secondary assessment station. The purpose for this site is to monitor flows for all ranges.

In 1988 composite sampling commenced so as to determine the quality of water, in particular, the nutrient load entering the Mount Bold Reservoir.

13.3 Site Access

Refer to CD – Site Access and Photos

13.4 Flow Hydrology

Echunga Creek is located just upstream of Mount Bold Reservoir and has a catchment area of 34.2 km²

Land use consists of mixed farming.

The geology of the area is proterozoic siltstone and slate with tertiary sands along the eastern and southern boundaries of its catchment.

The stream flows all year with a consistent baseflow during the summer. The stream can be dry 100m upstream of the site but approximately 4m upstream of the weir is a spring which provides flow over the weir during summer.

13.5 Statistics

AW503506 Echunga Creek @ UpStream of Mt Bold Reservoir

Catchment Area	34.2	km ²
Maximum instantaneous flow recorded to date	44	m ³ /s (Aug 1992)
Mean annual flow volume	3,160	ML
Mean annual rainfall	NA	
1:5 year Annual Exceedence Probability	24.4	m ³ /s
Number of water quality composite samples	585	
Minimum EC	376	µs/cm ² @ 25°C
Maximum EC	4,000	µs/cm ² @ 25°C

Average Annual Total Catchment Load (tonnes)

Total Dissolved Solids	1,570	tonnes
Suspended Solids	110	tonnes
Total Phosphorus	0.7	tonnes
Nutrients (Nox + TKN)	5.7	tonnes

Average Annual Load (tonnes/km²)

Total Dissolved Solids	45.9	tonnes/km ²
Suspended Solids	3.1	tonnes/km ²
Total Phosphorus	0.0	tonnes/km ²
Nutrients (Nox + TKN)	0.2	tonnes/km ²

Notes - Figures are based on financial year periods.

14 AW503507 - LENSWOOD CREEK AT LENSWOOD

14.1 Data Description and Period of Record

Continuous Water level	18/05/1972 to 04/07/2002 (30 yrs)
Continuous Rainfall	05/09/1997 to 04/07/2002 (5 yrs)
Water Quality.	15/11/1994 to 12/06/2002 (8 yrs)

Water level is monitored continuously and 81.9% of good quality data.

Water quality determinands measured are Electrical Conductivity @ 25°C, Total Dissolved Solids (calculated), Suspended Solids, Nox, TKN, Total P. The results for each sample were produced by the Australian Water Quality Centre (NATA accredited). Each result represents a flow proportional mean concentration.

The station was closed from July 1990 and reopened in November 1994 for the NBS study.

14.2 Purpose

Lenswood Creek was installed as part of the National Water Resources Assessment Program (NWRAP) and classified as a secondary assessment station. The purpose for this site is to monitor flows for all ranges.

In 1994 composite sampling commenced so as to determine the quality of water, in particular, the nutrient load entering the Onkaparinga River.

This site is used as a Flood Warning station by the Bureau of Meteorology and has both rain and waterlevel with telemetry access.

14.3 Site Access

Refer to CD – Site Access and Photos

14.4 Flow Hydrology

The Lenswood Creek hydrometric station is located at a river distance of 9 km upstream of the Cock Creek confluence. Cock Creek then flows into the Western Branch of the Onkaparinga River 3.7 km downstream of the Lenswood Creek – Cock Creek confluence.

The catchment area is 16.5 km² and the area is used for irrigated orchards and vineyards, grazing, irrigated market gardens and approximately 2 % Scrub. The Lenswood district is becoming well known for wine production with Henschke, Hillstowe and Knappstein Wineries being the most well known.

14.5 Statistics

AW503507 Lenswood Creek @ Lenswood

Catchment Area	16.5	km ²
Maximum instantaneous flow recorded to date	48.4	m ³ /s (Jun 1981)
Mean annual flow volume	2,700	MI
Mean annual rainfall	794	mm
1:5 year Annual Exceedence Probability	17.5	m ³ /s
Number of water quality composite samples	390	
Minimum EC	256	µs/cm ² @ 25°C
Maximum EC	1,400	µs/cm ² @ 25°C
Average Annual Total Catchment Load (tonnes)		
Total Dissolved Solids	577	tonnes
Suspended Solids	800	tonnes
Total Phosphorus	0.5	tonnes
Nutrients (Nox + TKN)	5.3	tonnes
Average Annual Load (tonnes/km ²)		
Total Dissolved Solids	34.9	tonnes/km ²
Suspended Solids	48.5	tonnes/km ²
Total Phosphorus	0.0	tonnes/km ²
Nutrients (Nox + TKN)	0.3	tonnes/km ²

Note - Figures are based on financial year periods.

15 AW503509 - ALDGATE CREEK UPSTREAM OF RAILWAY STATION

15.1 Data Description and Period of Record

Continuous Water level	13/07/1972 to 04/07/2002 (30 yrs)
Continuous Rainfall	28/07/1997 to 01/02/2002 (5 yrs)
Water Quality	15/11/1994 to 12/06/2002 (8 yrs)

Water level is monitored continuously and 82.5% is good quality data.

This station was closed in July 1989 and reopened in September 1994.

Rainfall is monitored via the Bureau of Meteorology (BOM) ERTS flood alert system. BOM provide regular data updates to the Department of Water, Land and Biodiversity Conservation.

Water quality determinands measured are Electrical Conductivity @ 25°C, Total Dissolved Solids (calculated), Suspended Solids, Nox, TKN, Total P. The results for each sample were produced by the Australian Water Quality Centre (NATA accredited). Each result represents a flow proportional mean concentration.

15.2 Purpose

Aldgate Creek was installed as part of the National Water Resources Assessment Program (NWRAP) and classified as a secondary assessment station. The purpose for this site is to monitor flows for all ranges.

In 1994 composite sampling commenced so as to determine the quality of water, in particular, the nutrient load entering the Onkaparinga River system.

The Bureau of Meteorology uses this site for Flood Warning and both rain and waterlevel are telemetered.

15.3 Site Access

Refer to CD – Site Access and Photos

15.4 Flow Hydrology

The Aldgate Creek hydrometric station is located at a river distance of 7 km upstream of its confluence with the Onkaparinga River.

The catchment area is 7.8 km² and the area is mostly urbanised particularly in the upper catchment around Stirling and Aldgate. Near the confluence with the Onkaparinga river the landuse consists of scrubland, grazing and hobby farms.

15.5 Statistics

AW503509 Aldgate Creek @ U/S Aldgate RS

Catchment Area	7.8	km ²
Maximum instantaneous flow recorded to date	22.9	m ³ /s (Jun 1981)
Mean annual flow volume	2,700	MI
Mean annual rainfall	752	mm
1:5 year Annual Exceedence Probability	10.5	m ³ /s
Number of water quality composite samples	381	
Minimum EC	174	µs/cm ² @ 25°C
Maximum EC	5,750	µs/cm ² @ 25°C

Average Annual Total Catchment Load (tonnes)

Total Dissolved Solids	261	tonnes
Suspended Solids	93.1	tonnes
Total Phosphorus	0.3	tonnes
Nutrients (Nox + TKN)	2.4	tonnes

Average Annual Load (tonnes/km²)

Total Dissolved Solids	33.5	tonnes/km ²
Suspended Solids	11.9	tonnes/km ²
Total Phosphorus	0.0	tonnes/km ²
Nutrients (Nox + TKN)	0.3	tonnes/km ²

Note - Figures are based on financial year periods.

16 AW503526 - COX CREEK NEAR URAIDLA

16.1 Data Description and Period of Record

Continuous Water level	23/06/1976 to 04/07/2002 (26 yrs)
Water Quality.	18/10/1994 to 12/06/2002 (8 yrs)

Water level is monitored continuously and 79.6% is of good quality data.

Water quality determinands measured are Electrical Conductivity @ 25°C, Total Dissolved Solids (calculated), Suspended Solids, Nox, TKN, Total P. The results for each sample were produced by the Australian Water Quality Centre (NATA accredited). Each result represents a flow proportional mean concentration.

16.2 Purpose

Cox Creek was installed as part of the National Water Resources Assessment Program (NWRAP) and classified as a secondary assessment station. The purpose for this site is to monitor flows for all ranges.

In 1994 composite sampling commenced so as to determine the quality of water, in particular, the nutrient and sediment load entering the Onkaparinga River system.

16.3 Site Access

Refer to CD – Site Access and Photos

16.4 Flow Hydrology

Cox Creek hydrometric station is located at a river distance of 7.4 km upstream of its confluence with Onkaparinga River.

The catchment area is 4.3 km² and the landuse has predominately been intensive horticulture. More recently some of the farms are converting to viticulture.

This is an important site for assessing the effects of intensive farming and poor farming practices in the Piccadilly Valley. High loads of fertilizer and sediment are detected at this site causing a negative impact on the Mt Bold Reservoir.

16.5 Statistics

AW503526 Cox Creek @ Uraidla

Catchment Area	4.3	km ²
Maximum instantaneous flow recorded to date	14.5	m ³ /s (Sep 1979)
Mean annual flow volume	1,180	ML
Mean annual rainfall	NA	
1:5 year Annual Exceedence Probability	6.2	m ³ /s
Number of water quality composite samples	468	
Minimum EC	188	µs/cm ² @ 25°C
Maximum EC	1,150	µs/cm ² @ 25°C

Average Annual Total Catchment Load (tonnes)

Total Dissolved Solids	234	tonnes
Suspended Solids	498	tonnes
Total Phosphorus	1.5	tonnes
Nutrients (Nox + TKN)	7.5	tonnes

Average Annual Load (tonnes/km²)

Total Dissolved Solids	54.4	tonnes/km ²
Suspended Solids	116	tonnes/km ²
Total Phosphorus	0.3	tonnes/km ²
Nutrients (Nox + TKN)	1.7	tonnes/km ²

Note - Figures are based on financial year periods.

17 AW504508 – MILLBROOK INTAKE UPSTREAM OF MILLBROOK RESERVOIR

17.1 Data Description and Period of Record

Continuous Water level	02/12/1943 to 04/07/2002 (59 yrs)
Water Quality.	24/02/1992 to 12/06/2002 (10 yrs)

Water level is monitored continuously and 86.8% is good quality data.

Water quality determinands measured are Electrical Conductivity @ 25°C, Total Dissolved Solids (calculated), Suspended Solids, Nox, TKN, Total P. The results for each sample were produced by the Australian Water Quality Centre (NATA accredited). Each result represents a flow proportional mean concentration.

17.2 Purpose

There is very little historical information for this site in the Departments 'history folders'. It is thought that the majority of historical information for this site would be filed in Engineering and Water Supply Departments (now SA Water) dockets.

It is believed that this site would have initially been installed in 1943 to acquire operational data for the EWS department for inflow volumes into Millbrook Reservoir. This site was also a chemical dosing station for the EWS Department. It is thought that the station closed as a dosing station in the early 70's.

The site is still an important operational site for SA Water and provides important information for the DWLBC for the calculation of flows diverted from the Torrens River at Gumeracha.

In 1992 composite sampling commenced so as to determine the quality of water, in particular, the nutrient and sediment load entering the Millbrook Reservoir.

17.3 Site Access

Refer to CD – Site Access and Photos

17.4 Flow Hydrology

Water from Millbrook Intake is regulated and released from Gumeracha Weir. From Gumeracha Weir the water is released into a closed aqueduct and flows 1.9 kms to monitoring site. From there water flows a further 250 metres into the Millbrook Reservoir via an open channel.

During the summer months water is predominately Murray River water pumped from Mannum. (Mannum to Adelaide pipeline) and discharged into the Torrens River at either Angas Creek pumping station or near Mount Pleasant upstream of Gumeracha Weir. During winter the flow is predominately natural runoff from the Torrens River catchment which has been diverted from Gumeracha Weir.

17.5 Statistics

AW504508 Millbrook Intake @ U/S Millbrook Reservoir

Catchment Area	Not Applicable	(water supply)
Maximum instantaneous flow recorded to date	13.2	m ³ /s (Jun 1987)
Mean annual flow volume	18,200	MI
Mean annual rainfall	NA	
1:5 year Annual Exceedence Probability	Not Applicable	(regulated flow)
Number of water quality composite samples	543	
Minimum EC	220	µs/cm ² @ 25°C
Maximum EC	1,720	µs/cm ² @ 25°C
Average Annual Total Load (tonnes)		
Total Dissolved Solids	7150	tonnes
Suspended Solids	738	tonnes
Total Phosphorus	3.5	tonnes
Nutrients (Nox + TKN)	25.7	tonnes

Note - Figures are based on financial year periods.

There is no 'natural' catchment for this site. Water supply system only.

18 AW504525 - KERSBROOK CREEK UPSTREAM OF MILLBROOK RESERVOIR

18.1 Data Description and Period of Record

Continuous Water level	14/09/1989 to 04/07/2002 (13 yrs)
Water Quality.	08/04/1992 to 12/06/2002 (10 yrs)

Water level is monitored continuously and is of 88.8% of good quality data.

Water quality determinands measured are Electrical Conductivity @ 25°C, Total Dissolved Solids (calculated), Suspended Solids, Nox, TKN, Total P. The results for each sample were produced by the Australian Water Quality Centre (NATA accredited). Each result represents a flow proportional mean concentration.

NB. Kersbrook Creek is also often referred to as Chain of Ponds Creek.

18.2 Purpose

Kersbrook Creek was installed as part of the National Water Resources Assessment Program (NWRAP) and classified as a secondary assessment station. The purpose for this site is to monitor flows for all ranges.

In 1992 composite sampling commenced so as to determine the quality of water, in particular, the nutrient and sediment load entering into the Millbrook Reservoir.

18.3 Site Access

Refer to CD – Site Access and Photos

18.4 Flow Hydrology

Kersbrook Creek hydrometric station is located at a river distance of approximately 200m upstream Millbrook Reservoir and besides Millbrook Intake is the most significant inflow into Millbrook Reservoir.

The catchment area is 23.0 km² and the landuse consists of grazing and significant forestation including Mt Crawford forest.

18.5 Statistics

AW504525 Kersbrook Creek @ U/S Millbrook Reservoir

Catchment Area	23.0	km ²
Maximum instantaneous flow recorded to date	39.2	m ³ /s (Aug 1992)
Mean annual flow volume	2,390	MI
Mean annual rainfall	NA	
1:5 year Annual Exceedence Probability	32.9	m ³ /s
Number of water quality composite samples	309	
Minimum EC	131	µs/cm ² @ 25°C
Maximum EC	3,800	µs/cm ² @ 25°C

Average Annual Total Catchment Load (tonnes)

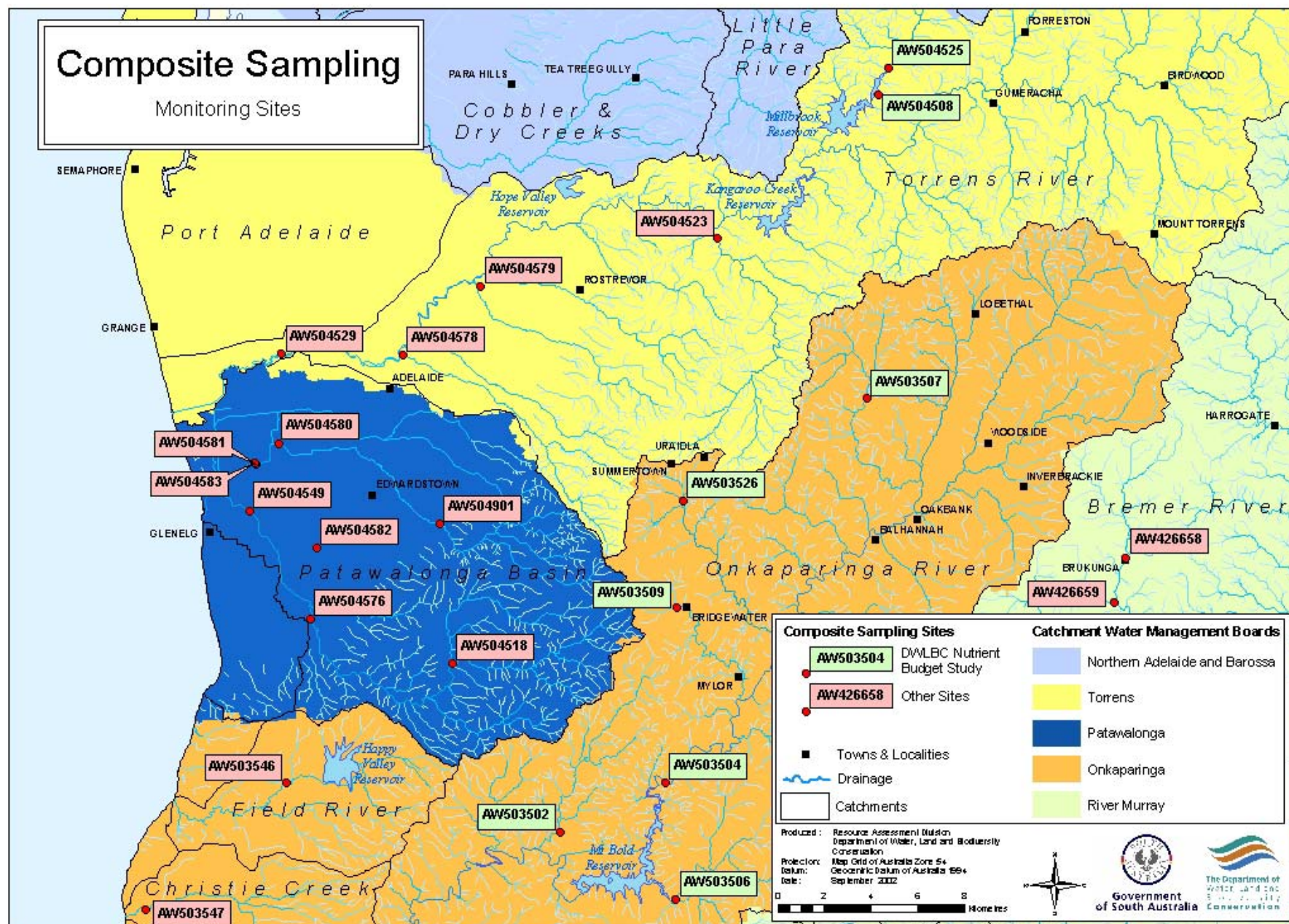
Total Dissolved Solids	764	tonnes
Suspended Solids	185	tonnes
Total Phosphorus	0.3	tonnes
Nutrients (Nox + TKN)	4.8	tonnes

Average Annual Load (tonnes/km²)

Total Dissolved Solids	33.2	tonnes/km ²
Suspended Solids	8.0	tonnes/km ²
Total Phosphorus	0.0	tonnes/km ²
Nutrients (Nox + TKN)	0.2	tonnes/km ²

Note - Figures are based on financial year periods.

Appendix 1 – Site Map



Appendix 2 – Water Quality Variable Codes

20:44:36_10/10/2002

Variable Description Report

Variable Name	Units	Precision
800 Total Dissolved Solids (by EC)	mg/L	0.001000
801 Total Dissolved Solids (Measured)	mg/L	0.001000
802 Suspended Solids	mg/L	0.001000
803 Turbidity (Un-corrected)	NTU	0.001000
804 Turbidity (Corrected)	NTU	0.001000
805 Colour - True (456nm)	HU	0.100000
806 pH	pH units	0.100000
816 Uncorrected Conductivity	MicroSeimens/cm	1.000000
820 Uncorrected Conductivity	MilliSeimens/m	1.000000
821 Conductivity (Corrected)	MicroSeimens/cm @25C	1.000000
822 Nitrate as nitrogen	mg/L	0.010000
823 Nitrite as nitrogen	mg/L	0.010000
824 Phosphorus - Total as P	mg/L	0.001000
825 Phosphorus - Soluble as P	mg/L	0.001000
826 TKN as N	mg/L	0.001000
827 Nitrate + Nitrite as N	mg/L	0.001000
828 Filtered Reactive Phosphorus as P	mg/L	0.001000
829 Total N	mg/L	0.001000
830 Calcium	mg/L	0.100000
831 Magnesium	mg/L	0.100000
832 Potassium	mg/L	0.100000
833 Sodium	mg/L	0.100000
834 Bicarbonate	mg/L	0.100000
835 Carbonate	mg/L	0.100000
836 Chloride	mg/L	0.100000
837 Sulphate	mg/L	0.100000
840 Asenic - Total	mg/L	0.000100
841 Cadmium - Total	mg/L	0.000100
842 Chromium - Total	mg/L	0.000100
843 Copper - Total	mg/L	0.000100
844 Lead - Total	mg/L	0.000100
845 Mercury - Total	mg/L	0.000100
846 Zinc - Total	mg/L	0.000100
847 Iron - Total	mg/L	0.000100
848 Nickel - Total	mg/L	0.000100
849 Aluminium - Total	mg/L	0.000100
850 Boron	mg/L	0.001000
851 Manganese	mg/L	0.000100
860 Ethyl Benzine	ug/L	0.010000
861 O-Xylene	ug/L	0.010000
862 M,P-Xylene	ug/L	0.010000
863 Toluene	ug/L	0.010000
864 Benzene	ug/L	0.010000
865 Hydrocarbons C06 - C09	mg/L	0.001000
866 Hydrocarbons C10-C14	mg/L	0.001000
867 Hydrocarbons C15-C28	mg/L	0.001000
868 Hydrocarbons C29-C40	mg/L	0.001000
869 Total Aromatic Hydrocarbons	mg/L	0.100000
870 Grease and Oil	mg/L	0.001000
871 Simazine	ug/L	0.001000
872 Atrazine	ug/L	0.001000
900 Total Disolved Solids (by EC)	Kilograms	0.100000
901 Total Disolved Solids (measured)	Kilograms	0.100000
902 Suspended Solids	Kilograms	0.100000
904 Suspended Solids from Turbidity	Kilograms	0.100000
921 Salt Load (by EC)	Kilograms	0.100000
922 Nitrate as nitrogen Load	Kilograms	0.100000
923 Nitrite as nitrogen Load	Kilograms	0.100000
924 Phosphorus - Total as P Load	Kilograms	0.100000
925 Phosphorus - Soluble as P Load	Kilograms	0.100000
926 TKN as N Load	Kilograms	0.100000
927 Nitrate + Nitrite as N Load	Kilograms	0.100000
928 Filtered Reactive Phosphorus as P Load	Kilograms	0.100000
929 Total N Load	Kilograms	0.100000
930 Calcium Load	Kilograms	0.100000

Variable Name	Units	Precision
931 Magnesium Load	Kilograms	0.100000
932 Potassium Load	Kilograms	0.100000
933 Sodium Load	Kilograms	0.100000
934 Bicarbonate Load	Kilograms	0.100000
935 Carbonate Load	Kilograms	0.100000
936 Chloride Load	Kilograms	0.100000
937 Sulphate Load	Kilograms	0.100000
940 Asenic Load	Kilograms	0.100000
941 Cadmium - Total Load	Kilograms	0.100000
942 Chromium - Total Load	Kilograms	0.100000
943 Copper - Total Load	Kilograms	0.100000
944 Lead - Total Load	Kilograms	0.100000
945 Mercury - Total Load	Kilograms	0.100000
946 Zinc - Total Load	Kilograms	0.100000
947 Iron - Total Load	Kilograms	0.100000
948 Nickel - Total Load	Kilograms	0.100000
949 Aluminium - Total Load	Kilograms	0.100000
950 Boron Load	Kilograms	0.100000
951 Manganese Load	Kilograms	0.100000
971 Quality	Quality (HYDSYS)	0.000010
972 Poll Frequency	Polls/Day	0.000010
975 Travel Time	Hours	0.000010
996 Date for Population Tables	YYYY.MMDD	0.000100
997 Population	People	1.000000
998 Catchment Area	Sq. Km.	0.001000
999 SS Comp Estimate	mg/L	0.000010
1000 Total Dissolved Solids (by EC)	Tonnes	0.100000
1001 Total Dissolved Solids (measured)	Tonnes	0.100000
1002 Suspended Solids	Tonnes	0.100000
1004 Suspended Solids from Turbidity	Tonnes	0.100000
1021 Salt Load (by EC)	Tonnes	0.100000
1022 Nitrate as nitrogen Load	Tonnes	0.100000
1023 Nitrite as nitrogen Load	Tonnes	0.100000
1024 Phosphorus - Total as P Load	Tonnes	0.100000
1025 Phosphorus - Soluble as P Load	Tonnes	0.100000
1026 TKN as N Load	Tonnes	0.100000
1027 Nitrate + Nitrite as N Load	Tonnes	0.100000
1028 Filtered Reactive Phosphorus as P Load	Tonnes	0.100000
1029 Total N Load	Tonnes	0.100000
1030 Calcium Load	Tonnes	0.100000
1031 Magnesium Load	Tonnes	0.100000
1032 Potassium Load	Tonnes	0.100000
1033 Sodium Load	Tonnes	0.100000
1034 Bicarbonate Load	Tonnes	0.100000
1035 Carbonate Load	Tonnes	0.100000
1036 Chloride Load	Tonnes	0.100000
1037 Sulphate Load	Tonnes	0.100000
1040 Asenic Load	Tonnes	0.100000
1041 Cadmium - Total Load	Tonnes	0.100000
1042 Chromium - Total Load	Tonnes	0.100000
1043 Copper - Total Load	Tonnes	0.100000
1044 Lead - Total Load	Tonnes	0.100000
1045 Mercury - Total Load	Tonnes	0.100000
1046 Zinc - Total Load	Tonnes	0.100000
1047 Iron - Total Load	Tonnes	0.100000
1048 Nickel - Total Load	Tonnes	0.100000
1049 Aluminium - Total Load	Tonnes	0.100000
1050 Boron Load	Tonnes	0.100000
1051 Manganese Load	Tonnes	0.100000

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1. AW503502 Site Information Summary Report

DWLBC, Surface Water Archive

13:16_12/11/2002 Page 1

HYSITREP - Site Summary Report
AW503502 - SCOTT CREEK @ Scott Bottom

SITE DESCRIPTION
Site Commenced: 28/05/1964
Site Ceased:
Map Name: 6627-4 (50k)
Local Map Reference:
Grid Reference: Zone - 54 Easting - 288033.0 Northing - 6113400.0
Latitude: 35: 5.59S
Longitude: 138:40:28E
Elevation: 205.448
Comment:

STATION DESCRIPTION
Stream Distance: 0.000
Gauge Zero: 204.448
Gauge Datum: AHD
Control: RECTANGULAR STEPPED WITH V, STEEL EDGE
Cease to Flow: 1.000
Max gauged stage (m.): 2.229 on 03/07/1981
OMIN: 1.000
TMIN: 4000
Catchment Area: 26.800

STATION HISTORY
28/05/1964 ALIAS AWQC Site No. 3203 + MS523733 + EPA-EDMS Site Nos. 2065+5235+8833
28/05/1964 CONTROL Concrete rectangular stepped weir with steel knife edge. (contains 4 rectangular sections).
Cease to flow datum 0.000 metres.
28/05/1964 DESCRIPT A natural stream forming a tributary of the Onkaparinga R. This site is 1.5 Km U/S of the
confluence with the Onkaparinga R.
28/05/1964 PURPOSE * Station was originally constructed to maintain the long term monitoring of flow characteristics
of the Onkaparinga River following the loss of Mt Bold spillway as a gauging control after the dam
wall was raised.
* Benchmark station for monitoring impact of climate variability and change.
* Flood Warning
* Water resource assessment
19/03/1974 CONTROL Concrete rectangular stepped weir with steel knife edge. (contains 4 rectangular sections)
06/04/1984 ACCURACY Cease to flow datum changed to 1.000 metres.
Rating index prior to installation of central V notch = 50%.
06/04/1984 CONTROL Rating Index after V notch = 15%.
Part of horizontal low flow section replaced by 90 degree V section to enhance low flow
08/03/1991 ACCURACY sensitivity. Remaining teirs left intact. Cease to flow datum 1.000 metres.
Rainfall recorded by tipping bucket raingauge with 0.2 millimeter bucket volume at 1 minutute time
01/01/1994 PURPOSE resolution.
Nutrient Budget Study - nutrient inflows into Happy Valley Reservoir to provide long term
01/01/2000 ACCURACY monitoring of catchment management performance. (Commenced 1994)
Control : Low flow sensitivity of weir improved in April 1984.
Rating : A series of stage-discharge ratings apply to the entire period of record, with changes
based on changes in cease to flow datum or weir profile modification. The most recent rating covers
the record since the addition of the 90 degree V notch section on 06/04/1984, comprising 13
gaugings with a maximum flow gauged being 2.378 cumecs. A theoretical extension has been made to
19.5 cumecs.
Rating Index for entire period of record 50%.

2. AW503502 Data Period & Data Quality Summary Plot

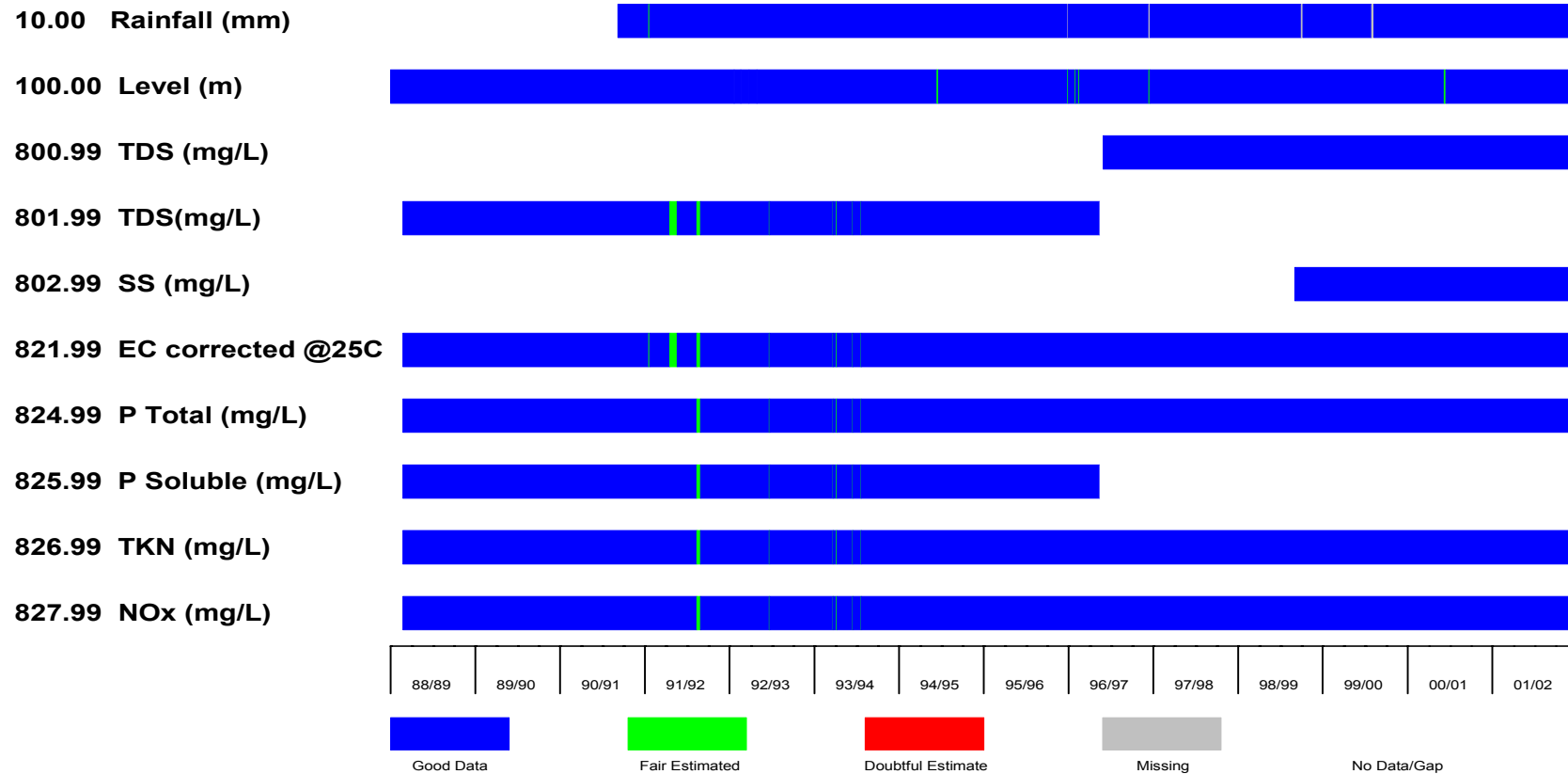
DWLBC, Surface Water Archive

HYQPLOT V53 Output 12/11/2002

Data Quality Plot

Period 00:00_01/07/1988 to 00:00_01/07/2002

AW503502 SCOTT CK/SCOTT BOTTM



DWLBC, Surface Water Archive
SCOTT CREEK @ Scott Bottom

Period of Record 01/01/1988 to 01/01/2003

```
HYSTATR V59  Output 12/11/2002
              Station  AW503502
```

Mean of Annual Rainfall	835	(Millimetres per Year)											
Standard Dev. of Annual Rainfall	204	(Millimetres per Year)											
Co. of Variation of Annual Rainfall	0.245	(Millimetres per Year)											
Maximum Daily Rainfall	65.6	(Millimetres per Day)											
Mean Wet Day Frequency	171	(Days per Year)											
Longest Dry Run	34	(Days)											
Serial Correlation Coeff. (lag 1)	0.489	(Millimetres per Month)											
Daily Rainfall	(Millimetres per Day)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean	0.801	0.711	1.19	1.68	2.70	3.81	3.62	3.49	3.45	2.29	1.37	1.28	
Standard Deviation	3.20	2.91	4.34	5.44	6.45	6.82	7.27	6.99	6.52	5.59	3.80	4.37	
Coeff. of Variation	4.00	4.09	3.64	3.25	2.39	1.79	2.01	2.00	1.89	2.43	2.78	3.42	
Monthly Rainfall	(Millimetres per Month)												
Mean	26.2	17.3	33.6	52.9	83.5	119	112	108	105	71.1	41.1	39.6	
Standard Deviation	20.3	9.95	30.3	45.0	40.7	19.8	49.1	56.7	37.8	36.5	25.9	38.7	
Coeff. of Variation	0.776	0.576	0.903	0.850	0.487	0.166	0.438	0.524	0.359	0.513	0.631	0.978	
Maximum Rainfall	(Millimetres per Day)												
Mean of Maximum	34.2	20.2	36.2	43.0	37.6	39.8	65.6	62.2	39.0	50.6	29.2	49.6	
	13.7	9.44	16.2	18.1	24.5	26.4	31.9	28.7	25.0	22.8	15.3	16.8	
Mean Wet Days	(Days per Month)												
	6.00	6.40	8.60	11.9	17.6	21.6	21.1	20.9	19.1	15.9	10.0	8.73	

4. AW503502 Rainfall Monthly Total Plot

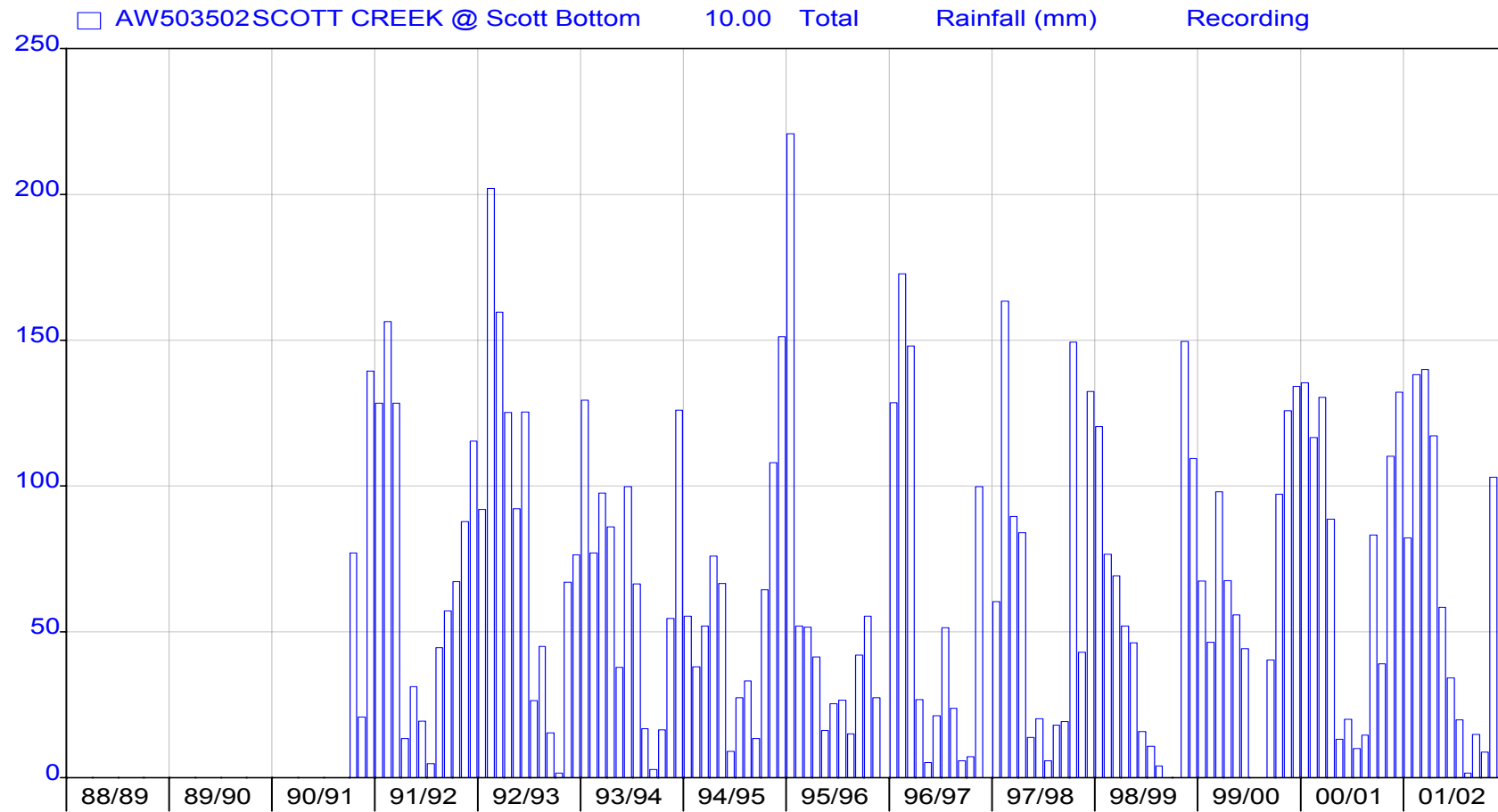
DWLBC, Surface Water Archive

HYPLOT V125 Output 12/11/2002

Period 14 Year Plot Start 00:00_01/07/1988

1988-02

Interval 1 Month Plot End 00:00_01/07/2002



5. AW503502 Rainfall Monthly Total Report

DWLBC, Surface Water Archive

HYMONTH V70 Output 12/11/2002

Station AW503502 SCOTT CREEK @ Scott Bottom
 Variable 10.00 Total Rainfall in Millimetres, Recording
 Figures are for period ending 900 hours.

Station AW503502

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean Monthly	Annual Total	Missing Days	Yr
1988	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	366	1988
1989	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365	1989
1990	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365	1990
1991	[4.8]	[15.0]	[11.2]	79.0	20.8	137.8	125.4A	161.0	128.4	13.4	31.2	19.4	[72.8]	[727.6]	68	1991
1992	4.8	15.0	86.8	67.2	87.8	115.0	92.4	192.2	169.2	124.4	93.2	125.4	[97.8]	[1173.4]	0	1992
1993	26.4	29.8	30.6	1.6	67.0	76.4	129.4	76.0	89.0	95.6	37.8	99.8	63.3	759.4	0	1993
1994	66.4	16.8	0.2	19.0	54.6	126.0	54.4	38.8	52.2	72.2	70.4	9.0	48.3	580.0	0	1994
1995	27.4	33.2	13.4	59.0	113.4	135.4	236.6	48.2	55.4	41.4	16.2	16.0	66.3	795.6	0	1995
1996	35.2	15.8	41.8	55.6	27.4	[99.2]	117.4	183.8	142.0	33.0	5.2	21.2	[64.8]	[777.6]	4	1996
1997	51.4	23.8	5.8	6.6	100.4	[40.8]	60.2	159.2	94.0	60.2	37.6	20.2	[65.0]	[660.2]	6	1997
1998	5.8	18.0	19.0	149.4	43.2	130.0	122.6	76.8	69.2	52.0	46.2	15.8	[62.3]	[748.0]	0	1998
1999	10.8	4.0	[85.0]	[7.4]	149.6	109.4	67.4	46.4	98.0	67.6	41.6	58.4	[62.1]	[745.6]	9	1999
2000	[9.0]	[43.4]	40.4	97.2	125.4	133.6	136.4	116.6	123.0	95.8	13.4	20.0	[79.5]	[954.2]	10	2000
2001	10.0	14.6	83.2	39.0	110.2	132.0	77.6	136.4	135.8	127.0	59.4	30.4	79.6	955.6	0	2001
2002	23.6	1.6	14.8	8.8	102.8	97.8	125.4	62.4	[47.2]	[]	[]	[]	[53.8]	[484.4]	103	2002
1296 Total																
Mean	[24.6]	[19.6]	[36.0]	[49.1]	83.5	[111.1]	112.1A	108.1	[100.3]	71.1	41.1	39.6	[67.1]	[780.1]		Mean
Med.	[23.6]	[16.8]	[24.8]	[47.3]	94.1	[120.5]	120.0A	96.7	[96.0]	67.6	37.8	20.2	[]	[]		Med.
Max	[66.4]	[43.4]	[86.8]	[149.4]	149.6	[137.8]	236.6A	192.2	[169.2]	127.0	93.2	125.4	[97.8]	[1173.4]		Max
Min	[4.8]	[1.6]	[0.2]	[1.6]	20.8	[40.8]	54.4A	38.8	[47.2]	13.4	5.2	9.0	[48.3]	[484.4]		Min
OK	99%	98%	97%	98%	100%	97%	100%	100%	97%	100%	100%	100%	99%	99%		OK
Cnt	11	11	12	12	12	12	12	12	12	11	11	11	12	12		Cnt

----- Notes -----
 All recorded data is continuous and reliable
 except where the following tags are used...
 Good Data - no quality flag printed
 A ... Accumulated Data
 [] Data Not processed

6. AW503502 Flow Volume Annual Total (Year Order) Report

DWLBC, Surface Water Archive

HYANN V45 Output 12/11/2002

Station AW503502 SCOTT CREEK @ Scott Bottom
 Variable 151.00 Stream Discharge Volume in Megalitres, Recording

Year Starting July	Annual Total (Megalitres)	Days Missing	Rank
1988/89	2895		8
1989/90	3774		7
1990/91	2497		10
1991/92	4184		5
1992/93	7586		1
1993/94	1953		13
1994/95	1323		14
1995/96	4350		4
1996/97	5017		3
1997/98	2157		12
1998/99	2848		9
1999/00	2401		11
2000/01	5068		2
2001/02	4043		6
2002/03	820.8	285	15
Total	50920	285	
Minimum	820.8		
Maximum	7586		
Mean	2394		
Median	2895		

7. AW503502 Flow Volume Annual Total (Size Order) Report

DWLBC, Surface Water Archive

HYANN V45 Output 12/11/2002

Station AW503502 SCOTT CREEK @ Scott Bottom
 Variable 151.00 Stream Discharge Volume in Megalitres, Recording

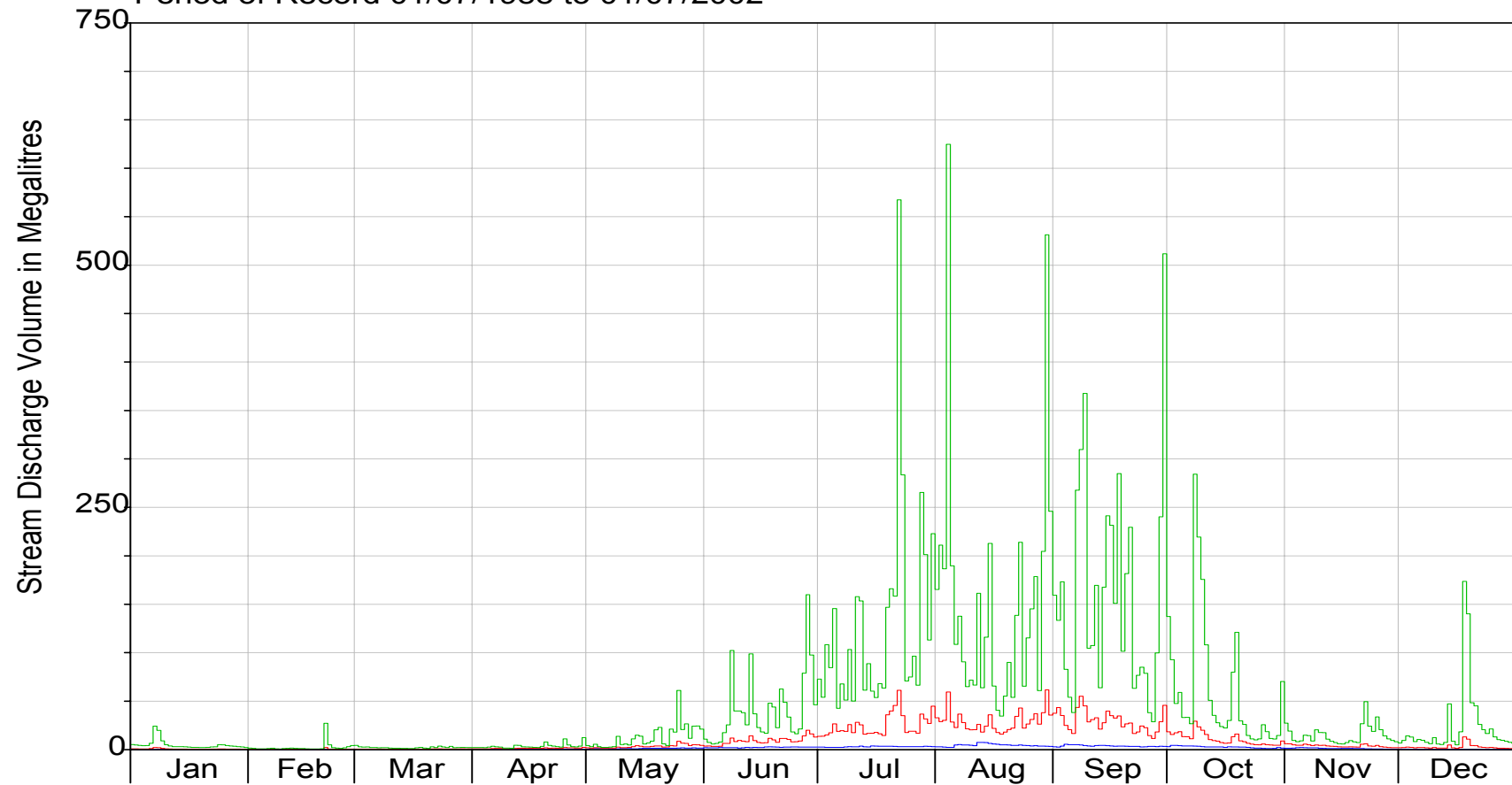
Year Starting July	Annual Total (Megalitres)	Days Missing	Rank
1992/93	7586		1
2000/1	5068		2
1996/97	5017		3
1995/96	4350		4
1991/92	4184		5
2001/2	4043		6
1989/90	3774		7
1988/89	2895		8
1998/99	2848		9
1990/91	2497		10
1999/0	2401		11
1997/98	2157		12
1993/94	1953		13
1994/95	1323		14
2002/3	820.8	285	15
Total	50920	285	
Minimum	820.8		
Maximum	7586		
Mean	2394		
Median	2895		

8. AW503502 Flow Volume Daily Max, Min, Mean by Calendar Month Plot

DWLBC, Surface Water Archive

HYMXMEAN V69 Output 12/11/2002

Plot of Daily Maximum, Minimum and Mean
Station AW503502 SCOTT CREEK @ Scott Bottom
Period of Record 01/07/1988 to 01/07/2002



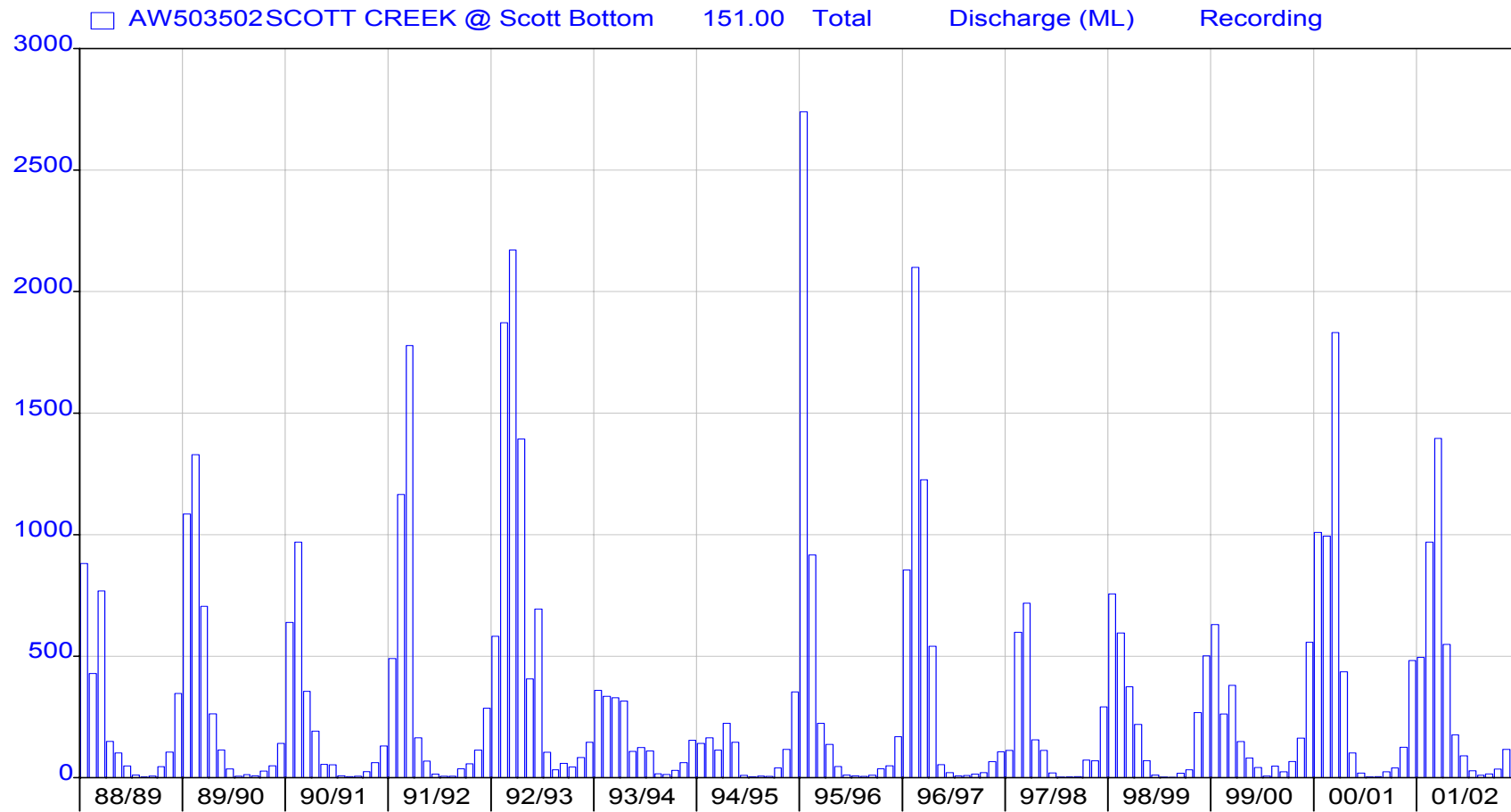
9. AW503502 Flow Volume Monthly Total Plot**DWLBC, Surface Water Archive**

HYPLOT V125 Output 12/11/2002

Period 14 Year Plot Start 00:00_01/07/1988

1988-02

Interval 1 Month Plot End 00:00_01/07/2002



10. AW503502 Flow Volume Monthly Total Report

DWLBC, Surface Water Archive

HYMONTH V70 Output 12/11/2002

Station AW503502 SCOTT CREEK @ Scott Bottom
 VarFrom 100.00 Water Level in Metres, Recording
 VarTo 151.00 Total Stream Discharge Volume in Megalitres, Recording
 Figures are for period ending 2400 hours.

Station AW503502

Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Mean Monthly	Annual Total	Missing Days
1988/89	881.4	E 429.0	E 768.6	E 148.9	101.9	48.11	10.90	3.02	6.16	45.13	105.7	346.3	241.2	E 2895	E 0
1989/90	1084.1	E 1329.0	E 704.4	E 262.5	113.9	36.14	5.82	12.64	7.68	27.03	48.69	141.2	314.5	E 3774	E 0
1990/91	639.2	E 969.1	E 354.8	192.0	54.60	52.40	7.68	4.43	6.00	24.83	61.16	130.4	208.0	E 2496	E 0
1991/92	490.0	E 1165	E 1777	E 163.8	68.27	14.49	5.93	5.68	36.26	56.79	113.6	286.1	348.6	E 4183	E 0
1992/93	581.6	E 1872	E 2171	E 1393.3	405.9	693.6	E 104.8	32.42	58.42	43.91	82.66	145.5	632.2	E 7586	E 0
1993/94	359.3	E 334.1	E 328.8	315.3	108.3	123.3	E 109.5	16.37	12.99	30.13	61.11	153.5	162.7	E 1952	E 0
1994/95	141.5	E 163.9	E 113.7	223.8	145.6	9.09	3.75	6.47	4.79	40.41	116.5	352.9	110.2	E 1322	E 0
1995/96	2740.1	E 916.2	E 224.1	E 136.8	46.35	10.56	7.19	4.73	10.08	36.65	48.87	168.3	362.5	E 4350	E 0
1996/97	854.5	E 2098	E 1225	E 540.9	53.35	20.59	7.51	8.60	14.61	20.40	65.95	105.8	418.0	E 5016	E 0
1997/98	112.2	E 597.9	E 718.0	E 155.6	111.9	19.33	2.38	2.92	4.07	72.06	69.30	291.0	179.7	E 2157	E 0
1998/99	755.6	E 594.9	E 373.8	E 219.2	70.55	11.00	1.92	1.62	18.09	32.11	268.0	501.1	237.3	E 2848	E 0
1999/00	630.1	E 261.7	E 380.0	E 148.4	81.44	41.86	6.61	41.52	23.92	66.36	162.2	556.6	200.0	E 2400	E 0
2000/01	1008	E 994.0	E 1830	E 435.0	102.0	18.90	3.07	4.28	23.99	40.36	124.8	481.5	422.3	E 5067	E 0
2001/02	494.3	E 968.4	E 1395	E 547.7	176.0	90.27	28.47	9.91	15.40	35.14	116.0	166.4	336.9	E 4043	E 0
2002/03	447.4	E 251.7	E 121.5	[]	[]	[]	[]	[]	[]	[]	[]	[]	[273.5]	[820.7]	E 285
															285 Tot
Mean	748.0	E 863.0	E 832.6	348.8	117.1	84.98	21.83	11.04	17.32	40.81	103.1	273.3	[296.5]	[3394]	Mean
Med.	630.1	E 916.2	E 704.4	221.5	102.0	28.36	6.90	6.08	13.80	38.50	94.20	227.2	[]	[]	Med.
Max	2740.1	E 2098	E 2171	405.9	693.6	109.5	41.52	58.42	72.06	268.0	556.6	110.2	[632.2]	[7586]	Max
Min	112.2	E 163.9	E 113.7	136.8	46.35	9.09	1.92	1.62	4.07	20.40	48.69	105.8	[110.2]	[820.7]	Min
OK	100%	100%	97%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	OK
Cnt	15	15	15	14	14	14	14	14	14	14	14	14	15	15	Cnt

----- Notes -----
 All recorded data is continuous and reliable
 except where the following tags are used...
 Good Data - no quality flag printed
 E ... Estimated
 [...] Data Not processed

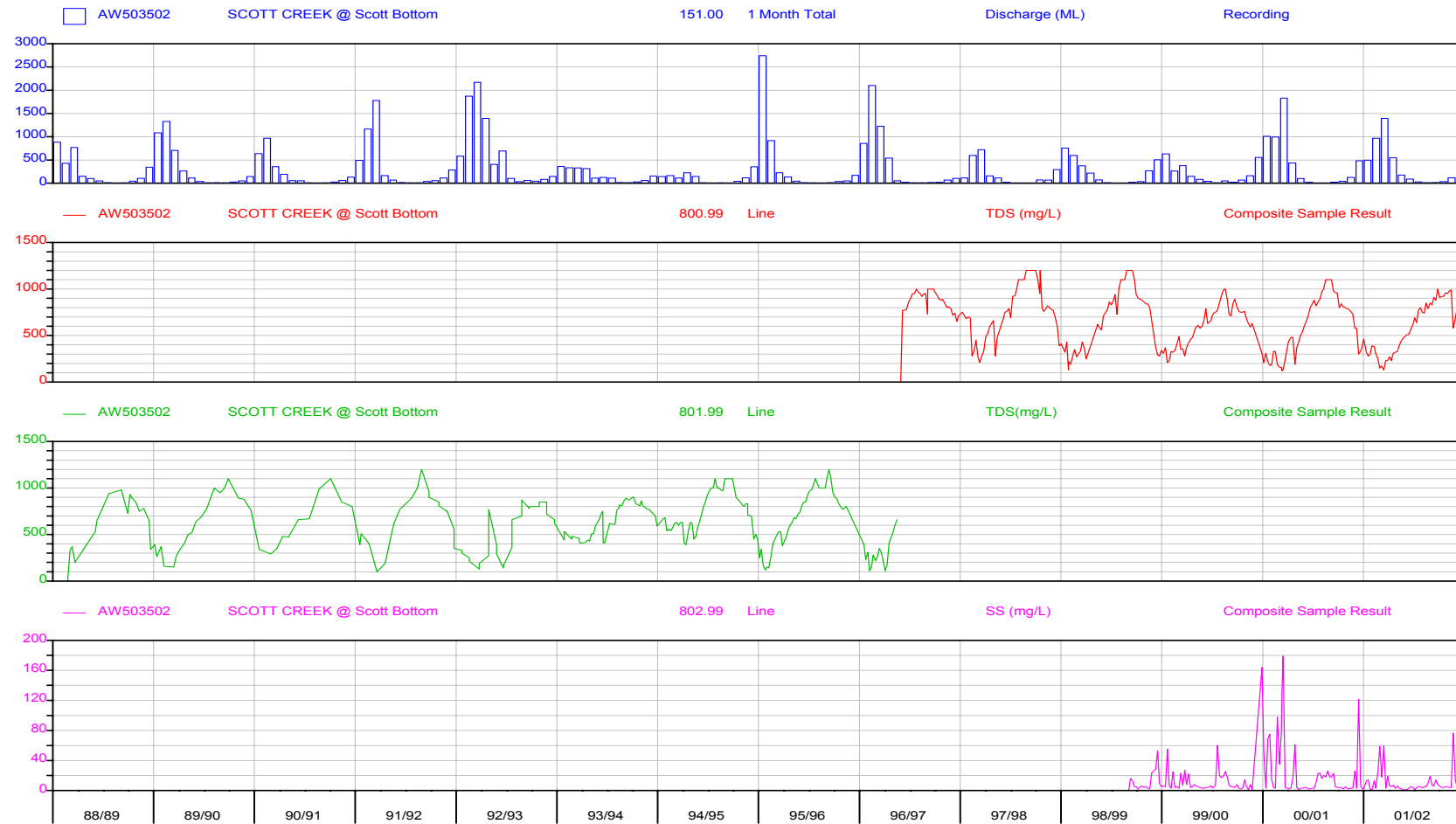
11. AW503502 TDS & SS Sample Results Plot

DWLBC, Surface Water Archive

HYPLOT V125 Output 12/11/2002

Period 14 Year 00:00_01/07/1988 to 00:00_01/07/2002

1988-02



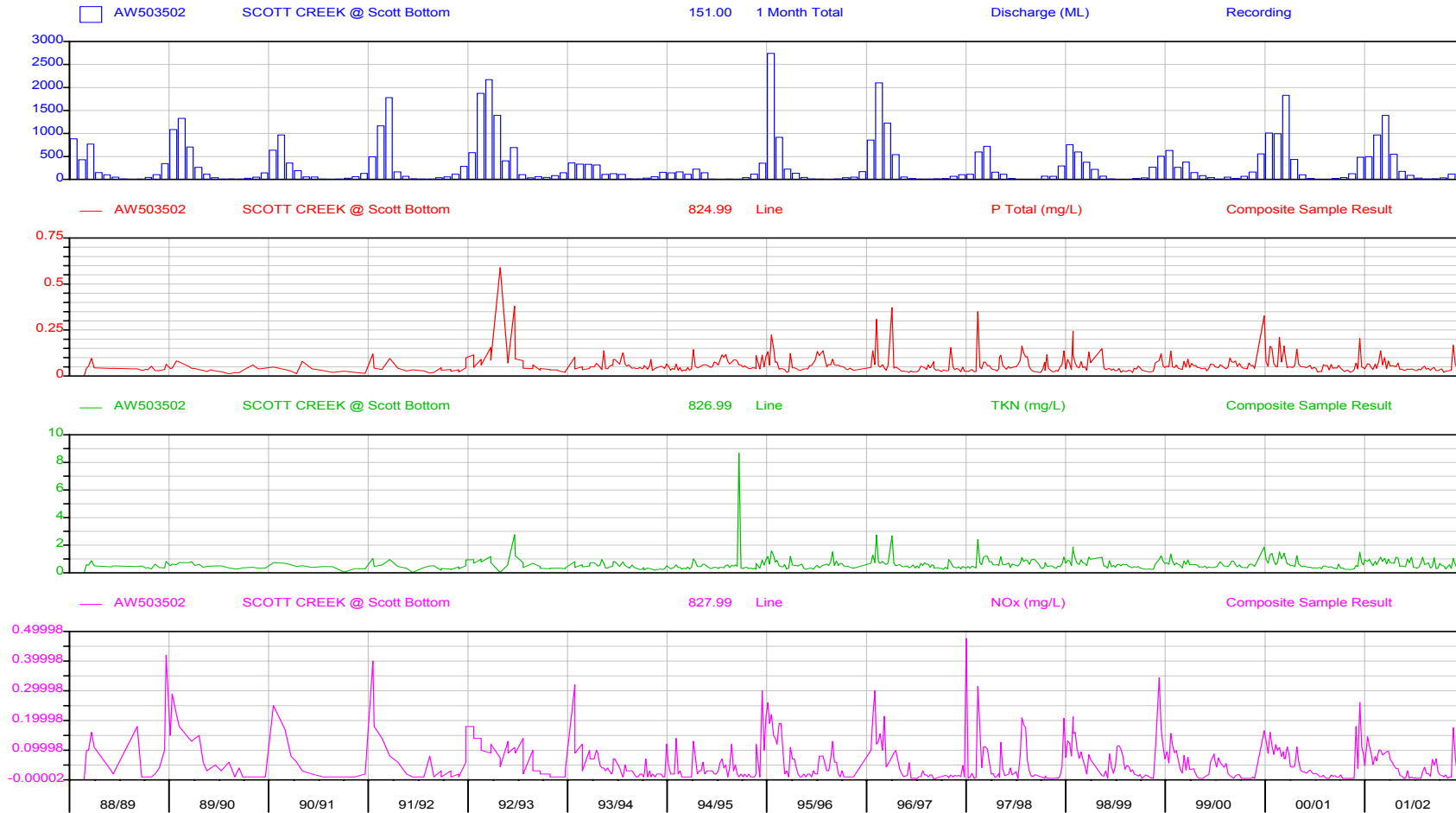
12. AW503502 Nutrients Sample Results Plot

DWLBC, Surface Water Archive

HYPLOT V125 Output 12/11/2002

Period 14 Year 00:00_01/07/1988 to 00:00_01/07/2002

1988-02

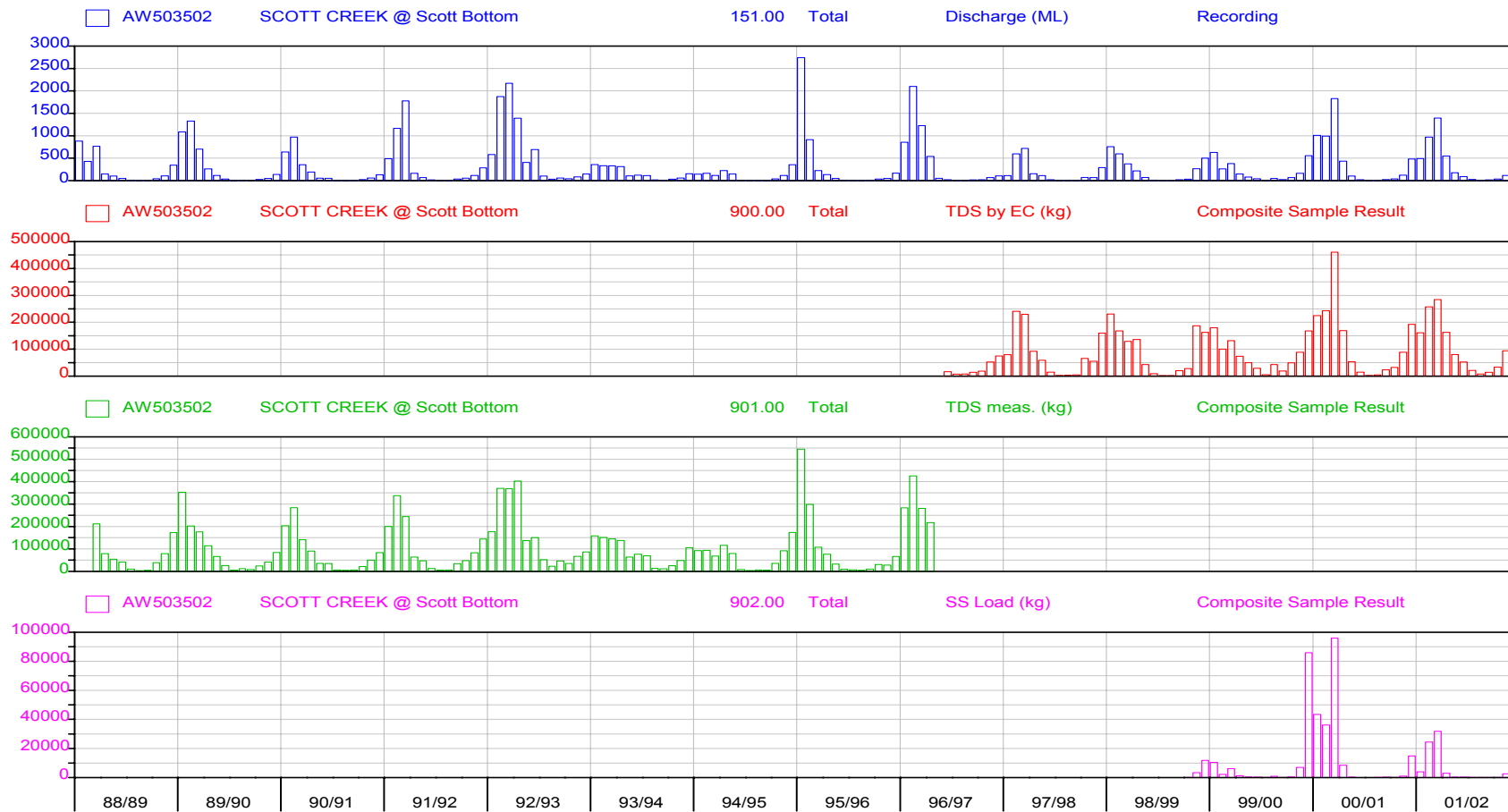


13. AW503502 TDS & SS Monthly Load Plot**DWLBC, Surface Water Archive**

HYPLOT V125 Output 12/11/2002

Period 14 Year Plot Start 00:00_01/07/1988
Interval 1 Month Plot End 00:00_01/07/2002

1988-02



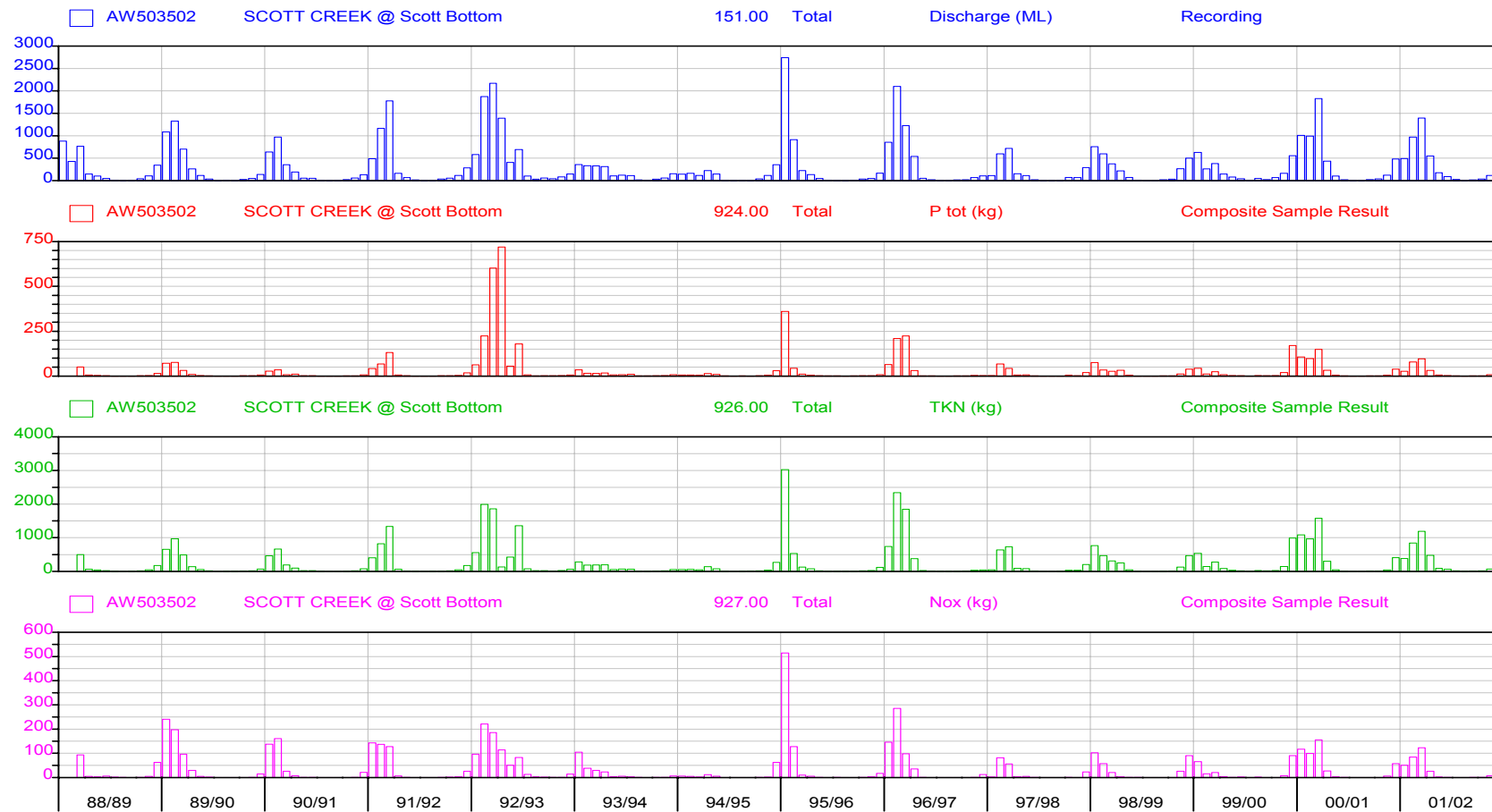
14. AW503502 Nutrients Monthly Load Plot

DWLBC, Surface Water Archive

HYPLOT V125 Output 12/11/2002

Period 14 Year Plot Start 00:00_01/07/1988
Interval 1 Month Plot End 00:00_01/07/2002

1988-02



15. AW503502 TDS by EC Monthly Load Report

DWLBC, Surface Water Archive

HYMONTH V70 Output 12/11/2002

Station AW503502 SCOTT CREEK @ Scott Bottom
 VarFrom 800.99 Total Dissolved Solids (by EC) in milligrams/Litre, Composite Sample Result
 VarTo 900.00 Total Total Dissolved Solids (by EC) in Kilograms, Recording
 Figures are for period ending 2400 hours.

Station AW503502

Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Mean Monthly	Annual Total	Missing Days
1988/89	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1989/90	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1990/91	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1991/92	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	366
1992/93	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1993/94	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1994/95	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1995/96	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	366
1996/97	[79153]	[192516E]	[191587E]	[811139E]	[20351]	16298	7279	7957	14190	18327	52330	74017E	[24054]	[192433]	150
1997/98	180533E	159905	119757E	135920	46413	14475	2366	3326	4889	60279	54674	139449E	72522E	870266E	0
1998/99	157723E	94068	124443	70832	42594	8569	1780	1866	18500	27981	145282	153768E	83038E	996461E	0
1999/00	202256E	198774E	283692E	128007E	49325	29966	5307	35989	19219	48555	79235	149920E	72048E	864581E	0
2000/01	202256E	198774E	283692E	128007E	50144	14287E	2711	4654	22455	32587	81465	164351E	98782E	1185386E	0
2001/02	153110	207850E	235808E	156707	78522	50302	20212	8103	14089	32942	78832	109091	95464E	1145568E	0
2002/03	178973E	[100898]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[139936]	[279871]	308
															3380 Tot
Mean	158626E	[159002]	191057E	114521E	[44839]	22316E	6609	10316	15557	36778	81970	131766E	[83692]	[790652]	Mean
Med.	168348E	[176210]	191587E	128007E	[47869]	15387E	4009	6306	16345	32764	79033	144685E			Med.
Max	202256E	[207850]	283692E	156707E	[78522]	50302E	20212	35989	22455	60279	145282	164351E	[139936]	[1185386]	Max
Min	79153E	[94068]	119757E	70832E	[2035]	8569E	1780	1866	4889	18327	52330	74017E	[24054]	[192433]	Min
OK	100%	97%	100%	100%	85%	100%	100%	100%	100%	100%	100%	100%	98%	98%	OK
Cnt	6	6	5	5	6	6	6	6	6	6	6	6	7	7	Cnt

----- Notes -----
 All recorded data is continuous and reliable
 except where the following tags are used...
 Good Data - no quality flag printed
 E ... Estimated
 [...] Data Not processed

16. AW503502 TDS Measured Monthly Load Report

DWLBC, Surface Water Archive

HYMONTH V70 Output 12/11/2002

Station AW503502 SCOTT CREEK @ Scott Bottom
 VarFrom 801.99 Total Dissolved Solids (Measured) in milligrams/Litre, Composite Sample Result
 VarTo 901.00 Total Total Dissolved Solids (measured) in Kilograms, Recording
 Figures are for period ending 2400 hours.

Station AW503502

Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Mean Monthly	Annual Total	Missing Days
1988/89	[]	[48415]	179460E	78966	54051	40195	10306	2959	5124	38339	78150	149850	[62347]	[685813]	54
1989/90	258803E	202603E	170295E	110588	63420	24983	5454	12133	7847	24055	41185	68288	82471E	989654E	0
1990/91	208123E	282580E	135098	90824	35562	35061	6506	4500	6605	21341	50188	80900	79774E	957290E	0
1991/92	195228E	196879E	258566E	49491E	43976E	12245	5467	6134E	33955	47929	83305	140862	89503E	1074038E	0
1992/93	182103E	318751E	349625E	384811E	131817	140073E	51141	23651	45894	35251	65093	86662	151239E	1814874E	0
1993/94	158425E	150951	143013E	136147E	61095	63743E	67486E	13275	11467	25191	47987	101381	81680E	980160E	0
1994/95	88651	92501	68999	98838	73417	7254E	3828	6467	5199	35476	87154	146533E	59527E	714320E	0
1995/96	445704E	181102E	101145E	72792	32303	9118	7307	4760	10202	29843	26627	65656E	82213E	986559E	0
1996/97	249212E	318629E	190050E	122982E	[18698]	[]	[]	[]	[]	[]	[]	[]	[179914]	[899571]	230
1997/98	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1998/99	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1999/00	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
2000/01	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
2001/02	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
2002/03	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
															2475 Tot
Mean	223281E	[199157]	177361E	127271E	[57149]	41584E	19687E	9235E	15787	32178	59961	105016E	[96519]	[1011364]	Mean
Med.	201676E	[196879]	170295E	98838E	[54051]	30022E	6907E	6300E	9024	32547	57641	94021E			Med.
Max	445704E	[318751]	349625E	384811E	[31817]	140073E	67486E	23651E	45894	47929	87154	149850E	[179914]	[1814874]	Max
Min	88651E	[48415]	68999E	49491E	[18698]	7254E	3828E	2959E	5124	21341	26627	65656E	[59527]	[685813]	Min
OK	100%	92%	100%	100%	93%	100%	100%	100%	100%	100%	100%	100%	99%	99%	OK
Cnt	8	9	9	9	9	8	8	8	8	8	8	8	9	9	Cnt

----- Notes -----
 All recorded data is continuous and reliable
 except where the following tags are used...
 Good Data - no quality flag printed
 E ... Estimated
 [...] Data Not processed

17. AW503502 SS Monthly Load Report

DWLBC, Surface Water Archive

HYMONTH V70 Output 12/11/2002

Station AW503502 SCOTT CREEK @ Scott Bottom
 VarFrom 802.99 Suspended Solids in milligrams/Litre, Composite Sample Result
 VarTo 902.00 Total Suspended Solids in Kilograms, Recording
 Figures are for period ending 2400 hours.

Station AW503502

Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Mean Monthly	Annual Total	Missing Days
1988/89	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1989/90	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1990/91	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1991/92	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	366
1992/93	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1993/94	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1994/95	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1995/96	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	366
1996/97	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1997/98	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1998/99	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	246
1999/ 0	18047E	3126	7706	1471	334	182	111	677	[104]	133	5854	13363E	48631	194531	0
2000/ 1	51787E	48491E	225306E	17379E	242	56E	44	88	124	153	1841	32564E	31506E	378076E	0
2001/ 2	4864	36948	E51220	E 2992	322.6	275.0	111.2	85.1	118.4	162.6	5695	729.8	8627 E	103525E	0
2002/ 3	9964	E[1144	] []	] []	] []	] []	] []	] []	] []	] []	] []	] []	] [5554	] [11109]	308
															4206 Tot
Mean	21166	E22427	] 94743	E 7280	E 299.6	170.9E	88.9	283.6	[124.3]	205.7	6224	28090 E	[11933	] 124311	Mean
Med.	14006	E20036	] 51220	E 2992	322.6	182.1E	111.1	88.1	[121.4]	158.1	5774	22963 E	[11933	] 124311	Med.
Max	51787E	[48491	] 225306E	17379E	334	275E	111	677	[151]	374	11508	65705E	[31506]	[378076]	Max
Min	4864E	[1144]	] 7706E	1471E	242	56E	44	85	[104]	133	1841	730E	[4863]	[11109]	Min
OK	100%	[96%	] 100%	100%	100%	100%	100%	100%	98%	100%	100%	100%	[99%	] 99%	OK
Cnt	4	4	3	3	3	3	3	3	4	4	4	4	5	5	Cnt

----- Notes -----
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 except where the following tags are used...
 Good Data - no quality flag printed
 E ... Estimated
 [...] Data Not processed

18. AW503502 P Monthly Load Report

DWLBC, Surface Water Archive

HYMONTH V70 Output 12/11/2002

Station AW503502 SCOTT CREEK @ Scott Bottom
 VarFrom 824.99 Phosphorus - Total as P in milligrams/Litre, Composite Sample Result
 VarTo 924.00 Total Phosphorus - Total as P Load in Kilograms, Recording
 Figures are for period ending 2400 hours.

Station AW503502

Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Mean Monthly	Annual Total	Missing Days
1988/89	[]	[6.16]	62.67E	6.11	4.18	1.94	0.43	0.12	0.21	1.95	3.25	17.31	[9.48]	[104.3]	54
1989/90	72.58E	77.17E	31.80E	9.04	3.14	0.97	0.09	0.22	0.21	1.62	0.05	6.63	17.13E	205.5 E	0
1990/91	28.93E	34.66E	8.41	11.74	2.23	1.62	0.19	0.09	0.16	0.50	1.01	7.90	8.12E	97.43E	0
1991/92	51.01E	95.79E	123.0 E	6.36	1.92	0.44	0.14	0.14E	1.56	2.04	3.96	18.58	25.42E	305.0 E	0
1992/93	63.94E	251.2 E	544.5 E	797.1 E	61.15	162.6 E	7.01	1.20	1.93	1.57	2.37	6.46	158.4 E	1901. E	0
1993/94	35.38E	16.44	14.97E	17.27E	8.44	9.65E	11.05E	0.82	0.55	1.51	2.74	8.52	10.61E	127.3 E	0
1994/95	6.85	6.36	5.02	20.11	8.60	0.51E	0.38	0.50	0.33	1.87	4.66	37.34E	7.71E	92.53E	0
1995/96	399.7 E	60.65E	15.12E	5.40	1.74	0.75	0.64	0.30	0.56	1.51	2.01	7.91E	41.36E	496.3 E	0
1996/97	86.99E	426.3 E	365.7 E	84.07E	1.33	0.51	0.33	0.46	0.50	0.77	3.74	3.64E	81.20E	974.3 E	0
1997/98	3.25	131.8 E	48.50E	10.67E	9.01	0.93	0.23	0.17	0.09	5.10	1.91	25.69E	19.79E	237.4 E	0
1998/99	91.33E	36.67	28.36E	32.67	5.59	0.41	0.06	0.04	0.84	0.83	18.47	40.69E	21.33E	255.9 E	0
1999/00	56.83E	12.44	28.70	8.50	3.22	2.18	0.32	3.87	1.57	3.35	27.19	125.8 E	22.84E	274.0 E	0
2000/01	118.6 E	111.6 E	221.9 E	47.66E	5.16	0.94E	0.11	0.22	1.25	1.25	6.33	63.05E	48.19E	578.2 E	0
2001/02	29.30	99.72E	111.8 E	31.19	6.11	3.28	1.00	0.39	0.54	0.98	13.94	7.25	25.46E	305.5 E	0
2002/03	34.33E	[8.54]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[21.44]	[42.87]	308
															362 Tot
Mean	77.08E	[91.71]	115.0 E	77.71E	8.70	13.34E	1.57E	0.61E	0.74	1.78	6.69	26.92E	[34.57]	[399.8]	Mean
Med.	53.92E	[60.65]	40.15E	14.50E	4.67	0.95E	0.33E	0.26E	0.55	1.54	3.49	12.31E			Med.
Max	399.7 E	426.3 E	544.5 E	797.1 E	61.15	162.6 E	11.05E	3.87E	1.93	5.10	27.19	125.8 E	[158.4]	[1901. E]	Max
Min	3.25E	[6.16]	5.02E	5.40E	1.33	0.41E	0.06E	0.04E	0.09	0.50	1.01	3.64E	[7.71]	[42.87]	Min
OK	100%	94%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	99%	99%	OK
Cnt	14	15	14	14	14	14	14	14	14	14	14	14	15	15	Cnt

----- Notes -----
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 except where the following tags are used...
 Good Data - no quality flag printed
 E ... Estimated
 [...] Data Not processed

19. AW503502 TKN Monthly Load Report

DWLBC, Surface Water Archive

HYMONTH V70 Output 12/11/2002

Station AW503502 SCOTT CREEK @ Scott Bottom
 VarFrom 826.99 TKN as N in milligrams/Litre, Composite Sample Result
 VarTo 926.00 Total TKN as N Load in Kilograms, Recording
 Figures are for period ending 2400 hours.

Station AW503502

Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Mean Monthly	Annual Total	Missing Days
1988/89	[	[86.56]	584.7 E	62.58	42.83	22.70	5.02	1.38	2.65	16.41	46.93	212.0	[98.53]	[1083]	54
1989/90	724.6 E	973.5 E	508.7 E	142.1	52.74	17.74	2.27	3.64	2.51	10.81	16.19	84.72	211.6 E	2539 E	0
1990/91	463.8 E	665.7 E	193.0	95.26	21.60	23.29	3.42	1.54	0.30	7.21	17.99	80.82	131.1 E	1573 E	0
1991/92	461.0 E	1011	E1257	E	69.39	18.55	3.45	2.40	7.15	15.32	48.61	183.0	256.7 E	3080 E	0
1992/93	555.0 E	2077	E2009	E	48.24E	465.7	1304 E	74.49	19.31	23.70	26.19	64.41	556.7 E	6681 E	0
1993/94	283.8 E	188.3	199.0 E	201.1 E	59.67	81.11E	71.34E	7.38	3.77	9.43	13.81	58.57	98.13 E	1177 E	0
1994/95	60.90	60.97	44.48	183.7	83.11	3.07E	1.52	3.24	9.68	14.23	35.87	324.6 E	68.79E	825.4 E	0
1995/96	3280 E	715.7 E	165.9 E	73.06	18.63	3.73	3.93	3.42	6.50	16.58	26.92	116.1 E	369.2 E	4431 E	0
1996/97	899.7 E	4034	E2726	E	724.3 E	24.50	8.81	4.47	5.18	8.46	29.61	40.56E	709.2 E	8511 E	0
1997/98	46.55	1012	E800.0	E	116.5 E	98.08	10.80	1.76	2.30	33.28	28.21	245.0 E	199.8 E	2397 E	0
1998/99	923.2 E	498.0	323.7 E	247.7 E	48.65	6.75	1.13	0.75	7.13	8.89	195.4	485.7 E	229.4 E	2753 E	0
1999/00	647.2 E	157.1	307.6	85.44	33.59	16.72	3.54	26.45	13.34	28.73	177.3	638.3 E	194.6 E	2335 E	0
2000/01	1181 E	1101	E2134	E	413.4 E	48.70	7.15E	1.16	1.82	12.32	50.48	536.9 E	458.3 E	5500 E	0
2001/02	409.3	940.3	E1299	E	451.2	85.36	69.55	15.73	8.84	15.44	94.64	72.62	289.0 E	3468 E	0
2002/03	349.1 E	[116.8]	[	[	[	[	[	[	[	[	[	[	[233.0]	[466.0]	308
															362 Tot
Mean	734.7 E	[909.3]	897.2 E	208.1 E	78.69	112.8 E	13.73E	6.02E	7.53	14.92	57.73	238.8 E	[273.6]	[3121]	Mean
Med.	509.4 E	[715.7]	546.7 E	129.3 E	48.68	13.76E	3.48E	2.33E	6.81	13.53	32.74	149.6 E			Med.
Max	3280 E	4034	2726 E	724.3 E	465.7	1304 E	74.49	26.45E	23.70	33.28	195.4	485.7 E	[709.2]	[8511]	Max
Min	46.55E	[60.97]	44.48E	48.24E	18.55	3.07E	1.13E	0.75E	0.30	7.21	13.81	40.56E	[68.79]	[466.0]	Min
OK	100%	94%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	15%	15%	OK
Cnt	14	15	14	14	14	14	14	14	14	14	14	14	15	15	Cnt

----- Notes -----
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 except where the following tags are used...
 Good Data - no quality flag printed
 E ... Estimated
 [...] Data Not processed

20. AW503502 Nox Monthly Load Report

DWLBC, Surface Water Archive

HYMONTH V70 Output 12/11/2002

Station AW503502 SCOTT CREEK @ Scott Bottom
 VarFrom 827.99 Nitrate + Nitrite as N in milligrams/Litre, Composite Sample Result
 VarTo 927.00 Total Nitrate + Nitrite as N Load in Kilograms, Recording
 Figures are for period ending 2400 hours.

Station AW503502

Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Mean Monthly	Annual Total	Missing Days
1988/89	[]	[14.67]	109.2 E	4.47	3.06	4.94	1.59	0.49	0.17	0.53	5.14	89.16	[21.23]	[233.5]	54
1989/90	236.2 E	198.9 E	95.52E	32.50	3.98	1.67	0.30	0.23	0.20	0.27	0.49	23.73	49.51E	594.0 E	0
1990/91	145.0 E	162.4 E	26.71	7.39	1.12	0.57	0.08	0.04	0.06	0.25	0.97	24.38	30.76E	369.1 E	0
1991/92	172.4 E	109.2 E	124.2 E	8.12	1.26	0.14	0.18	0.22E	1.09	1.67	2.67	27.29	37.38E	448.6 E	0
1992/93	99.78E	199.8 E	187.8 E	105.8 E	50.62	77.47E	13.08	2.41	1.59	0.85	0.83	14.69	62.91E	754.8 E	0
1993/94	108.7 E	38.89	27.93E	23.48E	4.06	6.79E	2.52E	0.47	0.19	0.79	1.00	9.42	18.69E	224.2 E	0
1994/95	9.27	5.39	2.11	19.85	6.30	0.25E	0.19	0.26	0.11	0.57	1.27	84.79E	10.86E	130.3 E	0
1995/96	483.6 E	122.1 E	14.06E	6.32	0.69	0.19	0.36	0.25	0.24	0.39	3.22	16.83E	54.03E	648.3 E	0
1996/97	158.8 E	263.1 E	98.15E	43.46E	0.98	0.28	0.14	0.12	0.11	0.26	0.87	10.32E	48.06E	576.7 E	0
1997/98	1.90	134.0 E	70.68E	5.32E	8.22	0.49	0.27	0.12	0.05	0.41	0.40	35.05E	21.42E	256.9 E	0
1998/99	119.7 E	61.24	22.58E	3.07	1.08	0.58	0.18	0.06	0.28	0.32	56.38	77.46E	28.58E	242.9 E	0
1999/00	78.74E	18.56	24.52	3.88	0.62	1.89	0.35	0.55	0.33	0.33	11.84	84.48E	18.84E	226.0 E	0
2000/01	112.9 E	93.01E	146.2 E	37.54E	3.02	0.51E	0.05	0.03	0.26	0.24	12.12	87.30E	41.11E	493.3 E	0
2001/02	55.97	91.77E	123.0 E	27.34	1.98	1.05	0.31	0.24	0.59	0.41	14.11	6.39	26.94E	323.2 E	0
2002/03	80.11E	[9.00]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[44.56]	[89.11]	314
															368 Tot
Mean	133.1 E	[101.5]	76.64E	23.47E	6.21	6.92E	1.40E	0.39E	0.38	0.52	7.95	42.24E	[34.32]	[380.7]	Mean
Med.	110.8 E	[193.01]	83.10E	13.39E	2.50	0.58E	0.29E	0.23E	0.22	0.40	1.97	25.83E			Med.
Max	483.6 E	[263.1]	187.8 E	105.8 E	50.62	77.47E	13.08	2.41E	1.59	1.67	56.38	89.16E	[62.91]	[754.8]	Max
Min	1.90	[5.39]	2.11E	3.07E	0.62	0.14E	0.05E	0.03E	0.05	0.24	0.40	6.39E	[10.86]	[89.11]	Min
OK	100%	93%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	95%	95%	OK
Cnt	14	15	14	14	14	14	14	14	14	14	14	14	15	15	Cnt

----- Notes -----
 All recorded data is continuous and reliable
 except where the following tags are used...
 Good Data - no quality flag printed
 E ... Estimated
 [...] Data Not processed

21. AW503504 Site Information Summary Report

DWLBC, Surface Water Archive

HYSITREP - Site Summary Report
AW503504 - ONKAPARINGA RIVER @ Houlgrave

13:17_12/11/2002 Page 1

SITE DESCRIPTION
Site Commenced:
Site Ceased:
Map Name:
Local Map Reference:
Grid Reference:
Latitude:
Longitude:
Elevation:
Comment:

17/04/1973
6627-4 (50k)
Zone - 54 Easting - 292589.0 Northing - 6115458.0
35: 4:56S
138:43:30E
257.688

STATION DESCRIPTION

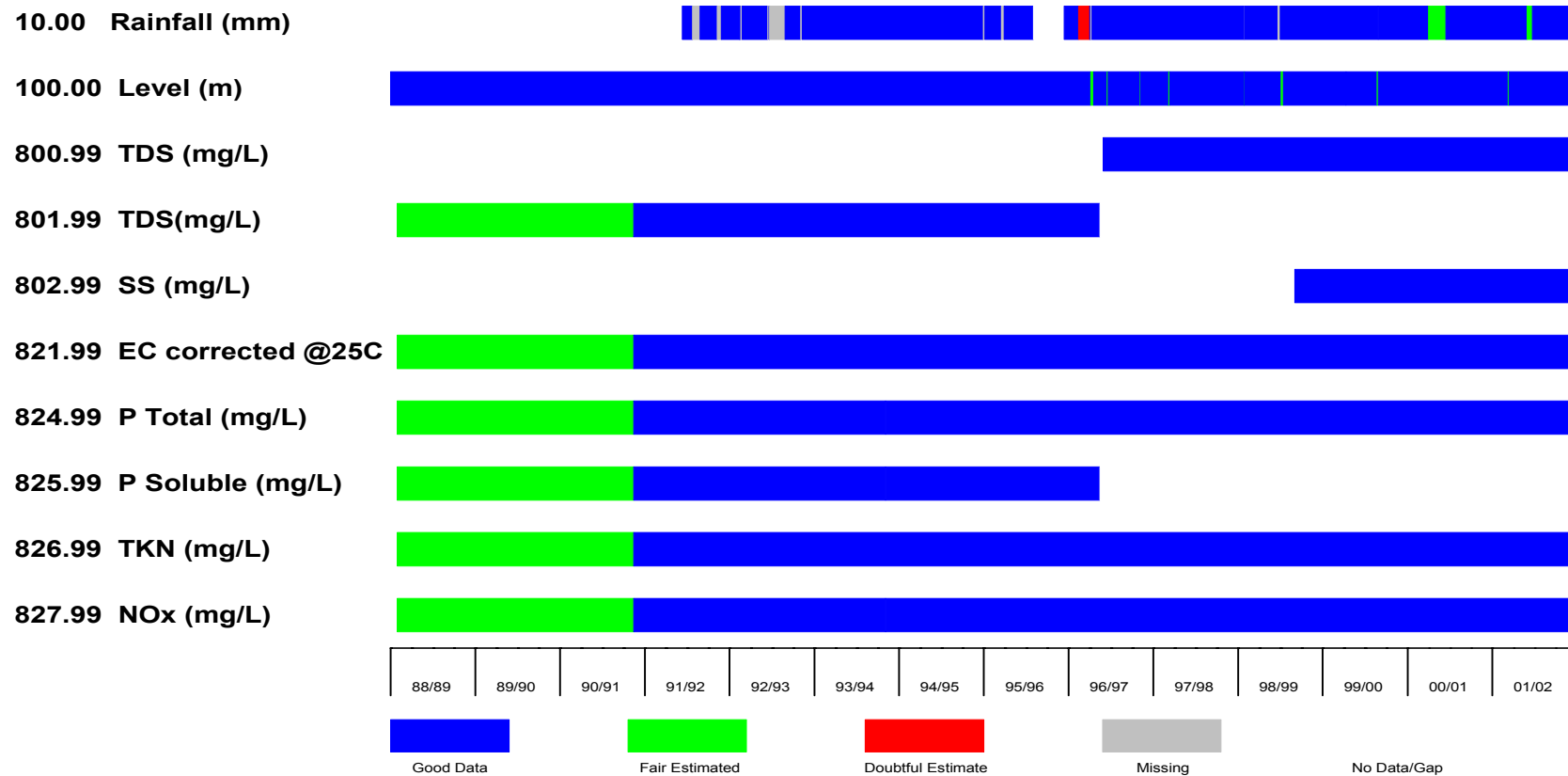
Stream Distance: 54.300
Gauge Zero: 254.765
Gauge Datum: AHD
Control: Concrete, Triangular V Weir
Cease to Flow: 2.923
Max gauged stage (m.): 7.662 on 30/08/1992
This station is downstream from a dam, and flows may be affected by releases from the dam
OMIN: 30.000
TMIN: 4500
Catchment Area: 321.000

STATION HISTORY

17/04/1973	ALIAS	AWQC Site No. 3205 + EPA-EDMS Site Nos. 6392-8835
17/04/1973	ACCURACY	This station is influenced by Inter-Basin water transfers.
17/04/1973	PURPOSE	* Study on factors influencing eutrophication in metropolitan reservoirs. * Measurement of inflows to Mount Bold Reservoir to assist reservoir management. * Flood Warning.
17/04/1973	XFACTOR	Interbasin transfers from the Murray River - Murray Bridge Onkaparinga Pipeline discharge U/S near Harndorf. Interbasin transfers from the Murray River - Mannum Adelaide pipeline near Verdun (rarely used since construction of Murray Bridge Onkaparinga pipeline). Discharges from Hahndorf Sewerage Treatment Works
26/06/1981	EVENTS	High flows were recorded and flood damage occurred to site.
01/01/1988	PURPOSE	Nutrient Budget Study - nutrient inflows to Mount Bold Reservoir to provide long term monitoring of catchment management performance. (commenced 1988)
25/08/1988	ACCURACY	Composite sampling (nutrient) results are influenced by the discharge of River Murray water upstream.
10/12/1989	ACCURACY	Water Temperature record may be influenced by River Murray water discharging upstream.
10/12/1991	ACCURACY	RAIN DATA : The raingauge was installed as a backup site to be used for operational flood warning purposes. The site was chosen for its close proximity with telemetry equipment and does not comply with Bureau of Meteorology installation guidelines. Calibration and maintenance to the gauge has been infrequent. Data from this site should be treated with extreme caution. The tipping bucket is installed in an elevated position (on the roof of gauging enclosure) and does not conform with Bureau of Meteorology installation guidelines.
01/01/2000	ACCURACY	Rainfall data is recorded with volume resolution of 0.2 millimetres and time resolution of 1 minute. Control : Stable, regular profile weir to gauge height 6.3m, 143 cumecs. Rating : One rating relationship exists covering the whole period of record comprising 89 gaugings to a flow of 326 cumecs. A theoretical extension has been made to 450 cumecs. Rating Index 75% .

22. AW503504 Data Period & Data Quality Summary Plot**DWLBC, Surface Water Archive**

HYQPLOT V53 Output 12/11/2002

Data Quality Plot**Period 00:00_01/07/1988 to 00:00_01/07/2002****AW503504 ONKA/HOULGRAVE WEIR**

DWLBC, Surface Water Archive
ONKAPARINGA RIVER @ Houlgrave

Period of Record 01/01/1988 to 01/01/2003

HYSTATR V59 Output 12/11/2002
 Station AW503504

Mean of Annual Rainfall	790	(Millimetres per Year)											
Standard Dev. of Annual Rainfall	150	(Millimetres per Year)											
Co. of Variation of Annual Rainfall	0.191	(Millimetres per Year)											
Maximum Daily Rainfall	62.8	(Millimetres per Day)											
Mean Wet Day Frequency	161	(Days per Year)											
Longest Dry Run	32	(Days)											
Serial Correlation Coeff. (lag 1)	0.431	(Millimetres per Month)											
Daily Rainfall	(Millimetres per Day)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean	0.858	0.776	1.15	1.57	3.23	4.02	3.69	3.51	3.43	2.35	1.47	1.12	
Standard Deviation	3.35	2.90	4.08	5.11	7.43	7.56	7.46	7.53	6.54	5.78	4.06	4.32	
Coeff. of Variation	3.90	3.73	3.54	3.26	2.30	1.88	2.02	2.15	1.91	2.46	2.76	3.87	
Monthly Rainfall	(Millimetres per Month)												
Mean	27.9	19.9	35.7	47.0	105	114	101	102	105	78.3	44.2	33.5	
Standard Deviation	19.0	12.7	33.2	49.6	105	114	101	102	105	78.3	44.2	33.5	
Coeff. of Variation	0.682	0.638	0.930	0.971	0.436	0.236	0.314	0.588	0.304	0.413	0.665	0.984	
Maximum Rainfall	(Millimetres per Day)												
Maximum	30.4	23.2	33.6	40.6	42.8	38.8	55.2	62.8	35.6	55.2	30.4	56.6	
Mean of Maximum	15.3	11.8	15.1	15.4	30.2	28.3	32.5	28.2	24.9	27.2	16.2	16.8	
Mean Wet Days	(Days per Month)												
	7.56	5.00	8.60	11.9	16.6	20.4	19.6	19.4	18.3	16.3	10.7	9.13	

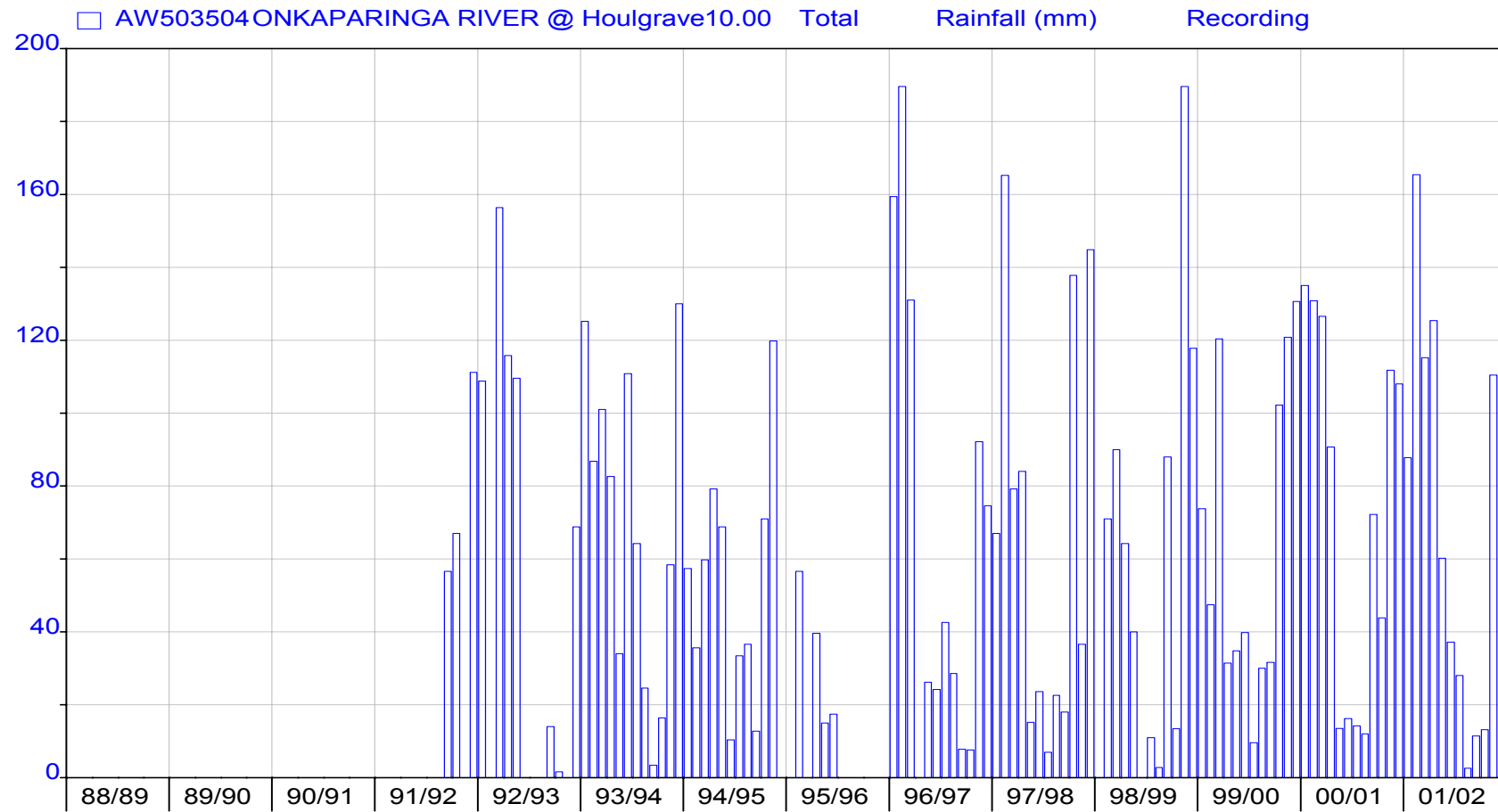
24. AW503504 Rainfall Monthly Total Plot**DWLBC, Surface Water Archive**

HYPLOT V125 Output 12/11/2002

Period 14 Year Plot Start 00:00_01/07/1988

1988-02

Interval 1 Month Plot End 00:00_01/07/2002



25. AW503504 Rainfall Monthly Total Report

DWLBC, Surface Water Archive

HYMONTH V70 Output 12/11/2002

Station AW503504 ONKAPARINGA RIVER @ Houlgrave
 Variable 10.00 Total Rainfall in Millimetres, Recording
 Figures are for period ending 900 hours.

Station AW503504

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean Monthly	Annual Total	Missing Days	Yr
1988	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	366	1988
1989	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365	1989
1990	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365	1990
1991	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	345	1991
1992	[7.2]	[1.0]	84.4	67.0	[13.6]	111.2	108.8	[41.8]	169.2	115.4	110.0	[16.8]	[16.8]	[16.8]	80	1992
1993	[]	[19.4]	31.4	1.6	[51.2]	69.0	125.2	86.2	95.4	88.8	34.0	[46.6]	[81.3]	[976.2]	64	1993
1994	64.2	24.6	0.0	19.8	58.4	130.0	56.4	36.6	59.6	76.4	71.8	10.4	[50.7]	608.2	0	1994
1995	33.4	36.4	13.0	64.2	126.6	152.8	[233.6]	52.8	[24.8]	39.6	15.0	9.8	[66.8]	[802.0]	21	1995
1996	37.0	[]	[]	[]	[]	[132.2]	138.4	210.6D	130.4D	[21.4]	26.2	24.2	[90.0]	[720.4]	141	1996
1997	42.6	28.6	7.8	6.2	93.6	74.6	67.0	165.2	79.2	64.2	35.0	23.6	[57.3]	687.6	0	1997
1998	7.0	22.6	18.0	137.8	36.6	143.0	[76.6]	71.2	90.0	64.2	40.0	[5.2]	[59.3]	[712.2]	13	1998
1999	11.0	2.8	87.8	13.6	189.4	118.0	[73.8]	47.4	120.4	31.2	35.0	39.6	[64.2]	776.0	0	1999
2000	9.8	30.0	31.6	102.2	120.2	130.4	135.8	130.8	119.0E	98.1E	13.7E	16.2E	78.2E	937.8E	0	2000
2001	14.2	12.0	72.2	43.8	111.8	108.0	82.4	163.2	120.6	127.0	60.8E	33.2E	79.1E	949.2E	0	2001
2002	32.0	2.6	11.2	13.4	109.4	106.4	126.2	62.8	75.6	[29.2]	[]E	[]E	[56.9]	[568.8]	74	2002
1834 Total																
Mean	[25.8]	[18.0]	35.7	47.0	[91.1]	[116.0]	[111.3]	[106.2]	[98.6]	[68.7]	44.2E	[30.6]	[63.8]	[705.2]		Mean
Med.	[23.1]	[21.0]	24.7	31.8	[101.5]	[118.0]	[108.8]	[86.2]	[95.4]	[64.2]	35.0E	[23.6]	[90.0]	[976.2]		Med.
Max	[64.2]	[36.4]	87.8	137.8	[189.4]	[152.8]	[233.6]	[210.6]	[169.2]	[127.0]	110.0E	[100.8]	[16.8]	[16.8]		Max
Min	[7.0]	[1.0]	0.0	1.6	[13.6]	[69.0]	[56.4]	[36.6]	[24.8]	[21.4]	13.7E	[5.2]	[59.3]	[712.2]		Min
OK	97%	82%	100%	100%	91%	96%	97%	98%	96%	94%	100%	88%	95%	95%		OK
Cnt	10	10	10	10	10	11	11	11	11	11	10	11	12	12		Cnt

----- Notes -----
 All recorded data is continuous and reliable
 except where the following tags are used...
 Good Data - no quality flag printed
 D ... Doubtful
 E ... Estimated
 [...] Data Not processed

26. AW503504 Flow Volume Annual Total (Year Order) Report

DWLBC, Surface Water Archive

HYANN V45 Output 12/11/2002

Station AW503504 ONKAPARINGA RIVER @ Houlgrave

Variable 151.00 Stream Discharge Volume in Megalitres, Recording

Year Starting July	Annual Total (Megalitres)	Days Missing	Rank
1988/89	50360		14
1989/90	63690		13
1990/91	74030		9
1991/92	78820		3
1992/93	124500		1
1993/94	70430		11
1994/95	74310		8
1995/96	76720		5
1996/97	85900		2
1997/98	76600		6
1998/99	77990		4
1999/00	72740		10
2000/01	75900		7
2001/02	66560		12
2002/03	25900	251	15
Total	1094000	251	
Minimum	25900		
Maximum	124500		
Mean	72960		
Median	74310		

27. AW503504 Flow Volume Annual Total (Size Order) Report

DWLBC, Surface Water Archive

HYANN V45 Output 12/11/2002

Station AW503504 ONKAPARINGA RIVER @ Houlgrave

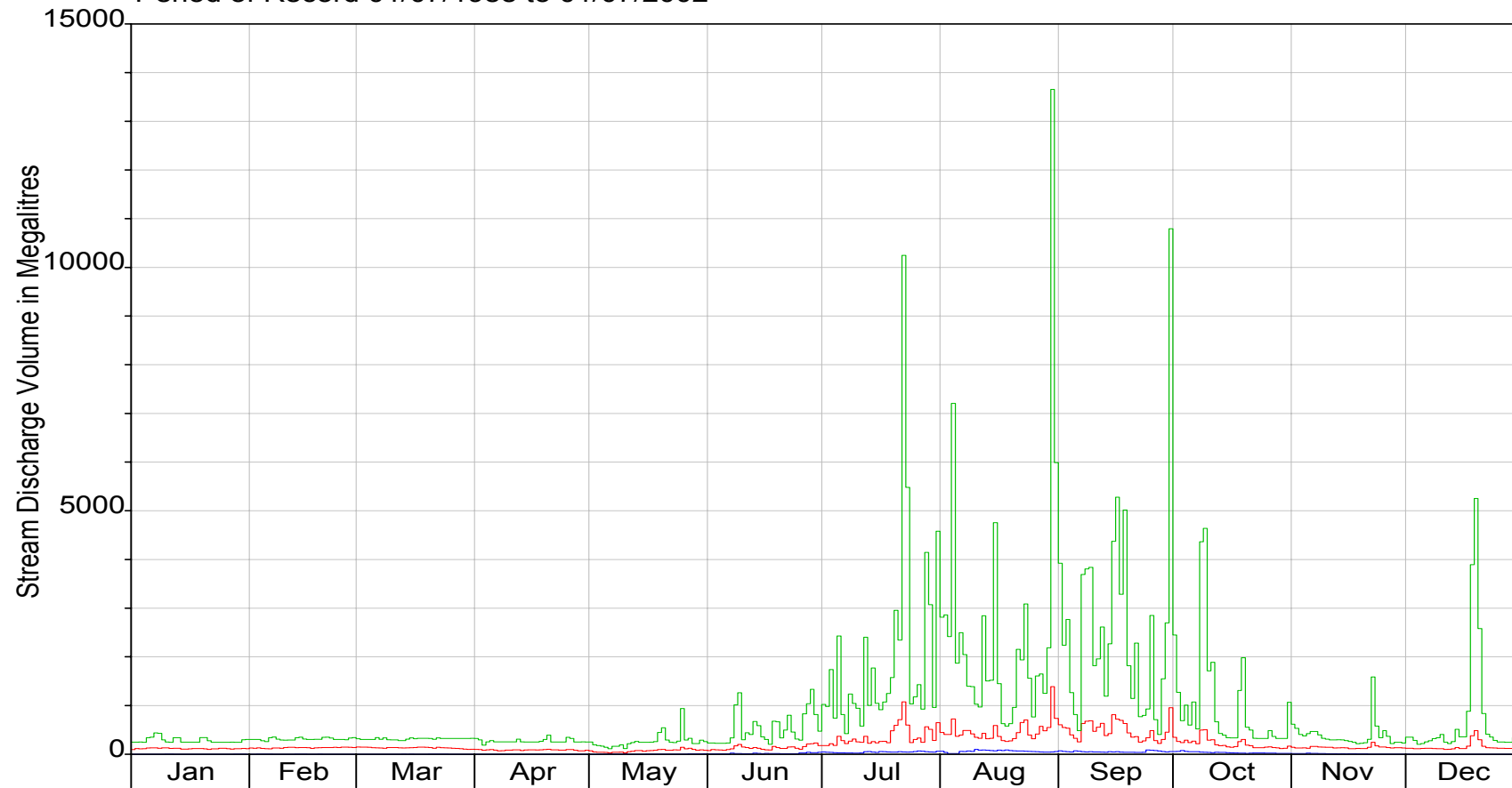
Variable 151.00 Stream Discharge Volume in Megalitres, Recording

Year Starting July	Annual Total (Megalitres)	Days Missing	Rank
1992/93	124500		1
1996/97	85900		2
1991/92	78820		3
1998/99	77990		4
1995/96	76720		5
1997/98	76600		6
2000/01	75900		7
1994/95	74310		8
1990/91	74030		9
1999/00	72740		10
1993/94	70430		11
2001/02	66560		12
1989/90	63690		13
1988/89	50360		14
2002/03	25900	251	15
Total	1094000	251	
Minimum	25900		
Maximum	124500		
Mean	72960		
Median	74310		

28. AW503504 Flow Volume Daily Max, Min, Mean by Calendar Month Plot**DWLBC, Surface Water Archive**

HYMXMEAN V69 Output 12/11/2002

Plot of Daily Maximum, Minimum and Mean
Station AW503504 ONKAPARINGA RIVER @ Houlgrave
Period of Record 01/07/1988 to 01/07/2002



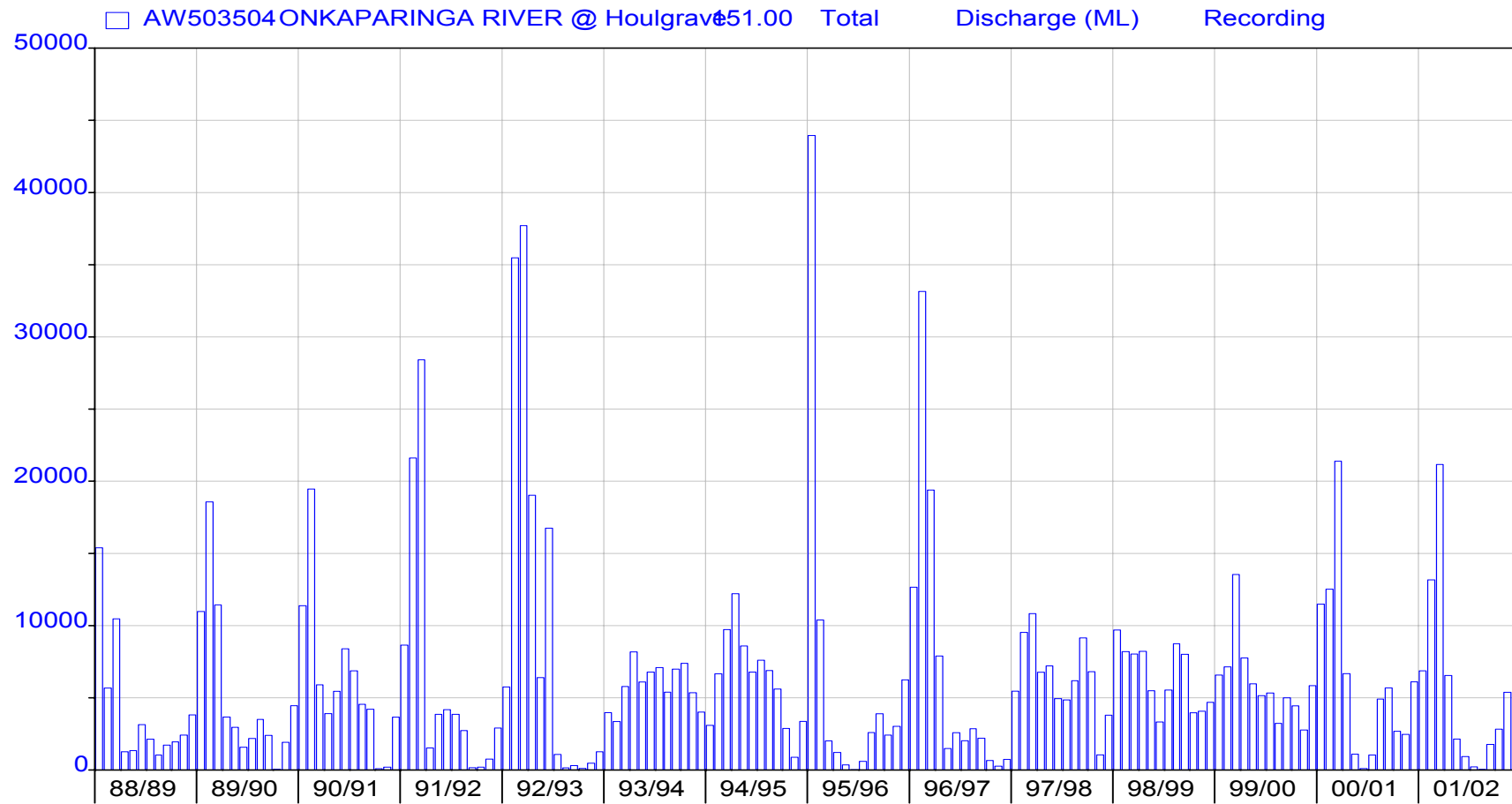
29. AW503504 Flow Volume Monthly Total Plot**DWLBC, Surface Water Archive**

HYPLOT V125 Output 12/11/2002

Period 14 Year Plot Start 00:00_01/07/1988

1988-02

Interval 1 Month Plot End 00:00_01/07/2002



30. AW503504 Flow Volume Monthly Total Report

DWLBC, Surface Water Archive

HYMONTH V70 Output 12/11/2002

Station AW503504 ONKAPARINGA RIVER @ Houlgrave
 VarFrom 100.00 Water Level in Metres, Recording
 VarTo 151.00 Total Stream Discharge Volume in Megalitres, Recording
 Figures are for period ending 2400 hours.

Station AW503504

Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Mean Monthly	Annual Total	Missing Days
1988/89	15392	5667	10462	1262	1342	3143	2134	1038	1723	1948	2416	3823	4196	50355	0
1989/90	10978	18570	11448	3674	2949	1567	2186	3503	2406	43.6	1915	4447	5307	63693	0
1990/91	11376	19457	5902	3898	5458	8386	6865	4547	4209	82.4	194.7	3655	6169	74034	0
1991/92	8653	21618	28405	1519	3852	4178	3857	2730	156.3	191.5	750.9	2908	6568	78822	0
1992/93	5754	35472	<37703	19034	6404	16742	1069	141.7	305.4	113.2	471.7	1263	10373	<124477	0
1993/94	3981	33358	5787	8185	6103	6778	7098	5392	6984	7392	5351	4015	5869	70428	0
1994/95	3098	6665	9716	12211	8589	6788	7606	6893	5607	2880	876.1	3371	6192	74305	0
1995/96	43949	10388	2010	1217	349.8	19.6	592.1	2602	3892	2416	3030	6251	6393	76722	0
1996/97	12666	33146	19387	7887	E 1489	2586	E 2025	2850	2207	653.7	269.3E	730.5	7158	E 85899	0
1997/98	5460	9529	10836	6775	7210	4942	4852	6186	9148	6807	1052	3799	6383	E 76603	0
1998/99	9695	E 8192	8039	8225	5484	3334	5539	E 8743	8011	3967	4068	4685	6499	E 77988	0
1999/00	6573	7151	13544	7750	E 5660	5143	5334	3226	E 4996	E 4439	2775	5840	6061	E 72735	0
2000/01	11494	12530	21381	6399	E 1099	97.7	1033	4919	E 5683	E 2690	2465	6107	6325	75901	0
2001/02	6864	13168	21165	E 6545	2149	926.0	222.4	35.1	1769	2824	5381	5510	5546	E 66562	0
2002/03	6995	5293	7936	[5613]	[]	[]	[]	[]	[]	[]	[]	[]	[6474]	[25899]	251
															251 Tot
Mean	10862	E14014	<14252	E[6679]	] 4174	4616	E 3601	E 3772	E 4078	E 2603	2215	E 4029	[6367]	[72961]	Mean
Med.	8653	E10388	<10836	E[6545]	] 4655	3756	E 3021	E 3364	E 4051	E 2553	2166	E 3919	[]	[]	Med.
Max	43949	E35472	<37703	E[69034]	] 8389	16742	E 7606	E 8743	E 9148	E 7392	5381	E 6251	[10373]	[124476]	Max
Min	3098	E 3358	< 2010	E[1217]	] 349.8	19.6	222.4	E 35.1	E 156.3	E 43.6	194.7	E 730.5	[4196]	[25899]	Min
OK	100%	100%	100%	98%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	OK
Cnt	15	15	15	15	15	14	14	14	14	14	14	14	15	15	Cnt

----- Notes -----
 All recorded data is continuous and reliable
 except where the following tags are used...
 Good Data - no quality flag printed
 < ... Caution - Rating Table Extrapolated
 E ... Estimated
 [] Data Not processed

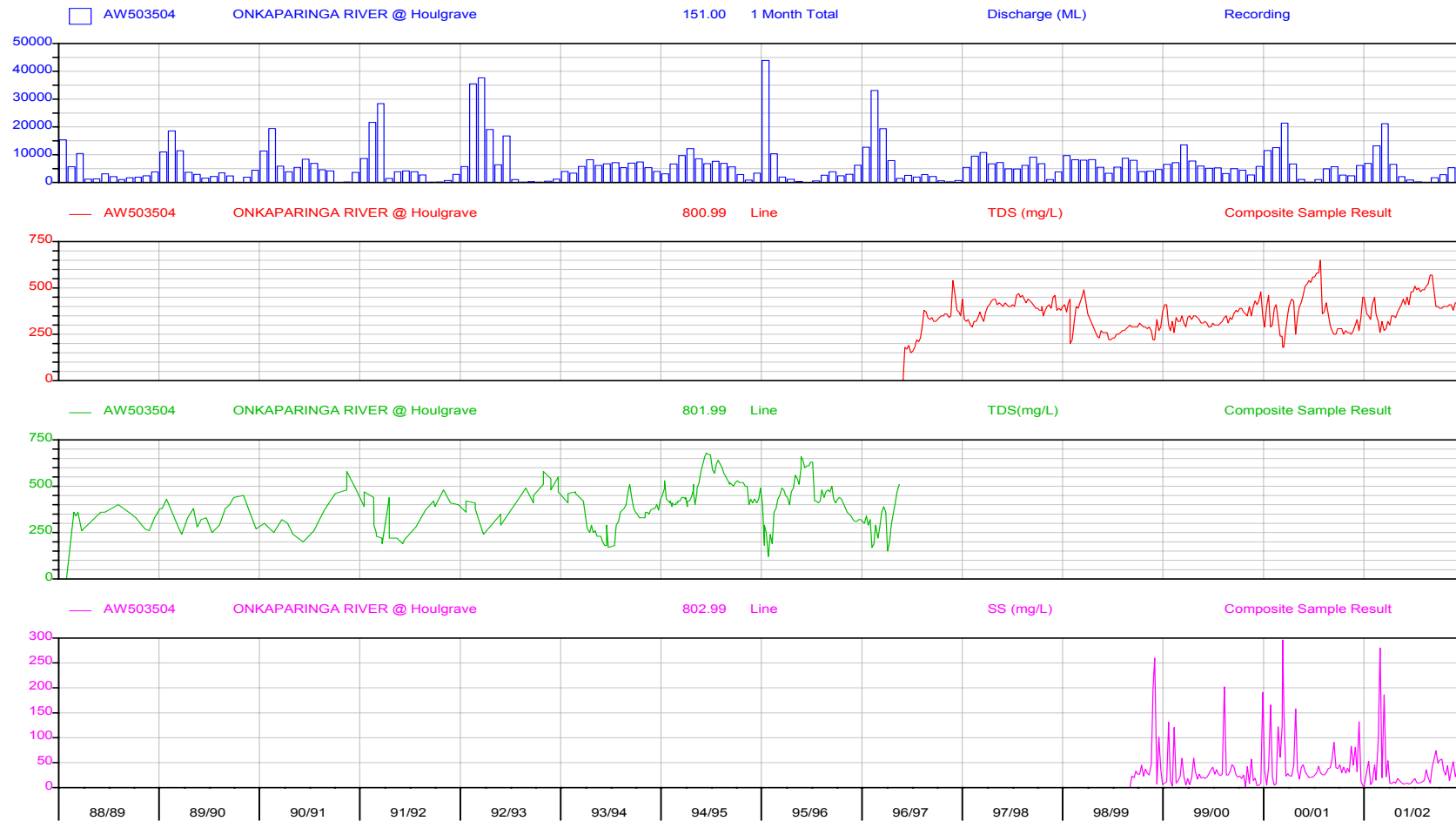
31. AW503504 TDS & SS Sample Results Plot

DWLBC, Surface Water Archive

HYPLOT V125 Output 12/11/2002

Period 14 Year 00:00_01/07/1988 to 00:00_01/07/2002

1988-02



32. AW503504 Nutrients Sample Results Plot

DWLBC, Surface Water Archive

HYPLOT V125 Output 12/11/2002

Period 14 Year 00:00_01/07/1988 to 00:00_01/07/2002

1988-02



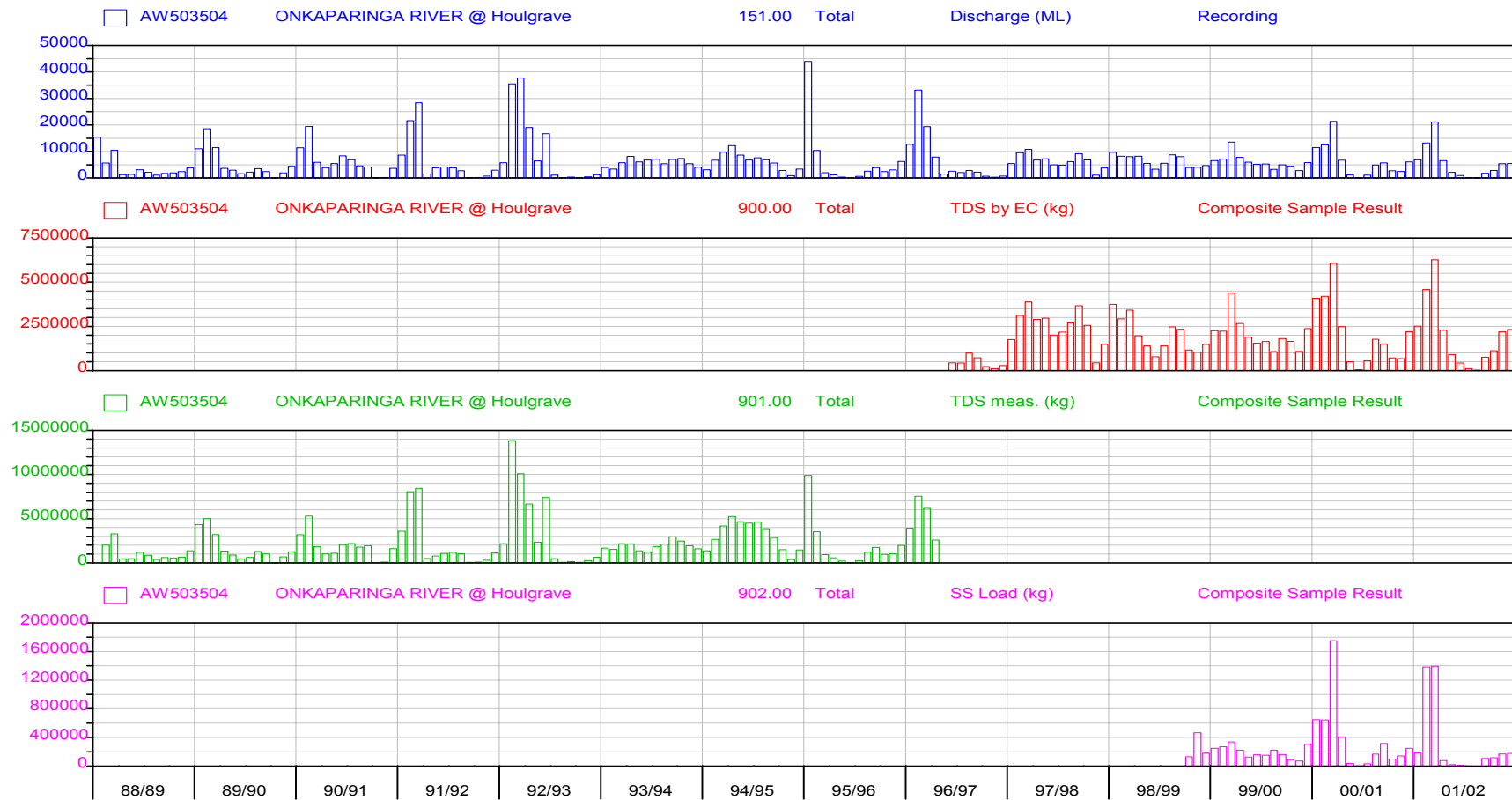
33. AW503504 TDS & SS Monthly Load Plot**DWLBC, Surface Water Archive**

HYPLOT V125 Output 12/11/2002

Period 14 Year Plot Start 00:00_01/07/1988

1988-02

Interval 1 Month Plot End 00:00_01/07/2002



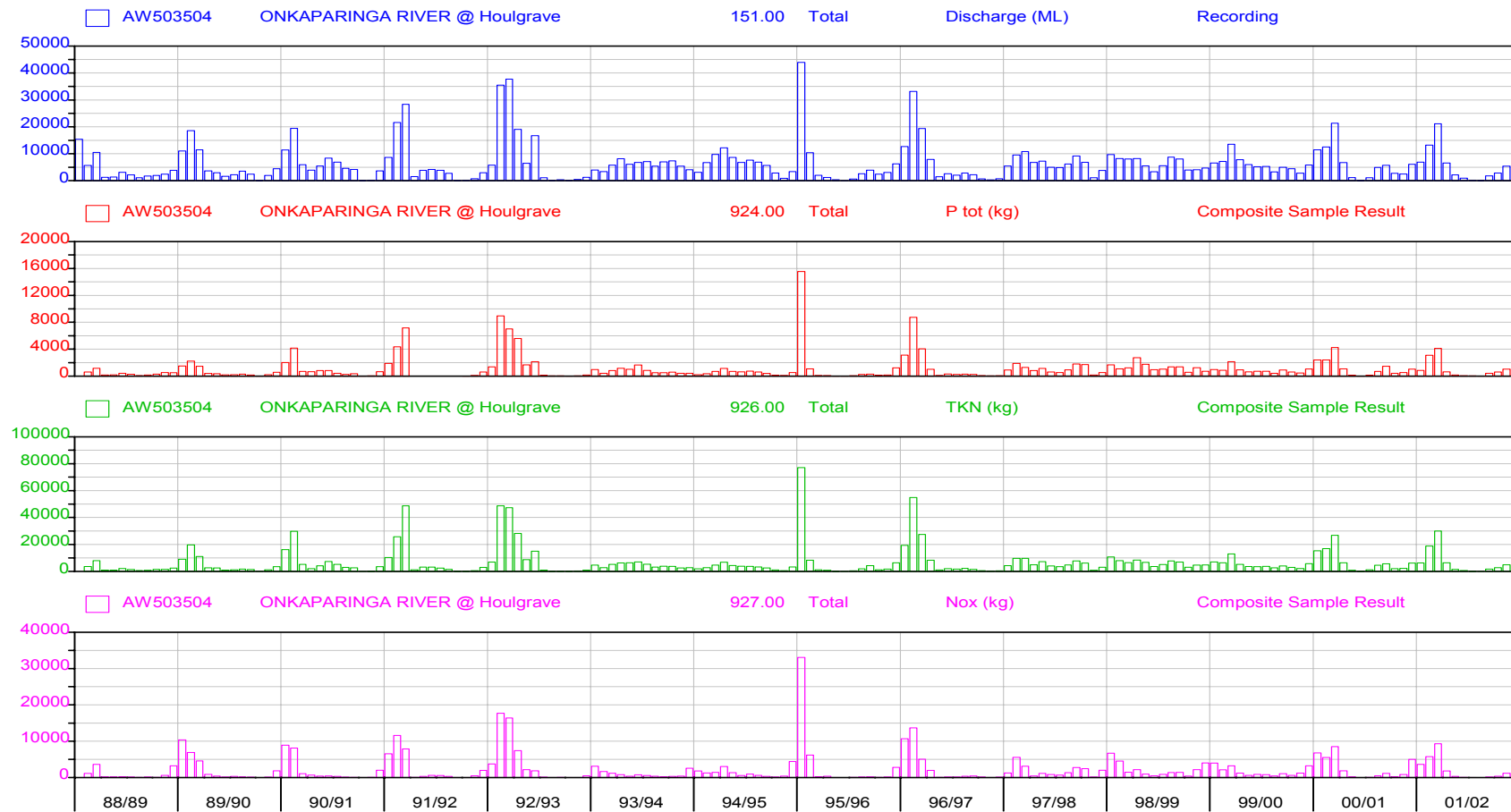
34. AW503504 Nutrients Monthly Load Plot

DWLBC, Surface Water Archive

HYPLOT V125 Output 12/11/2002

Period 14 Year Plot Start 00:00_01/07/1988
Interval 1 Month Plot End 00:00_01/07/2002

1988-02



35. AW503504 TDS by EC Monthly Load Report

DWLBC, Surface Water Archive

HYMONTH V70 Output 12/11/2002

Station AW503504 ONKAPARINGA RIVER @ Houlgrave
 VarFrom 800.99 Total Dissolved Solids (by EC) in milligrams/Litre, Composite Sample Result
 VarTo 900.00 Total Total Dissolved Solids (by EC) in Kilograms, Recording
 Figures are for period ending 2400 hours.

Station AW503504

Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Mean Monthly	Annual Total	Missing Days
1988/89	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1989/90	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1990/91	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1991/92	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	366
1992/93	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1993/94	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1994/95	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1995/96	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	366
1996/97	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	150
1997/98	1737255	3172233	3805869E	2879595	2967151	430929E	422545	1000286	725163	223132	123221E	295071	[409320]	[3274558]	0
1998/99	3187748E	2893583	3385624	1974133	1384937	782766	1397847E	2471992	2333011	1165041	968074	1412342	1946425E	23357099E	0
1999/00	2074559	2125417	4278410	2663606E	1898108	1542880	1641131	1077467E	1808801E	1663102	1078162	2044479	1991343E	233896122E	0
2000/01	3689211	3642090	4494771	1969339	471391	52285	387764	1780907	1497652	720217	676126	1902559	1773693	21284312	0
2001/02	2440725	4133995	6034449E	2298539	897050	414070	109544	18123	701722	1118966	2175071	2317828	1888340E	22660081E	0
2002/03	2812080	1945719	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[2378899]	[4757799]	308
3380 Tot															
Mean	2656929E	2985506	4399825E	2357042E	1278808	872302E	1022283E	1507632E	1787779E	1239760	908699E	1574159	[1835878]	[18398211]	Mean
Med.	2626402E	3032908	4278410E	2298539E	1140993	606848E	910196E	1429187E	1653226E	1142004	822100E	1687617	[2463125]	[29557504]	Med.
Max	3689211E	4133995	6034449E	2879595E	2967151	2010881E	2174866E	2697016E	3660327E	2548101	2175071E	2317828	[409320]	[3274558]	Max
Min	1737255E	1945719	3385624E	1969339E	[54212]	52285E	109544E	18123E	701722E	223132	123221E	295071	[409320]	[3274558]	Min
OK	100%	97%	100%	100%	85%	100%	100%	100%	100%	100%	100%	100%	98%	98%	OK
Cnt	6	6	5	5	6	6	6	6	6	6	6	6	7	7	Cnt

----- Notes -----
 All recorded data is continuous and reliable
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 Good Data - no quality flag printed
 E ... Estimated
 [...] Data Not processed

36. AW503504 TDS Measured Monthly Load Report

DWLBC, Surface Water Archive

HYMONTH V70 Output 12/11/2002

Station AW503504 ONKAPARINGA RIVER @ Houlgrave
 VarFrom 801.99 Total Dissolved Solids (Measured) in milligrams/Litre, Composite Sample Result
 VarTo 901.00 Total Total Dissolved Solids (measured) in Kilograms, Recording
 Figures are for period ending 2400 hours.

Station AW503504

Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Mean Monthly	Annual Total	Missing Days
1988/89	[147258]	1999568E	2921913E	453252E	482119E	1196221E	853974E	386442E	597763E	550476E	665042E	1415977E	[972500]	116700051	29
1989/90	3597423E	5014092E	3018505E	1318832E	875182E	447482E	608110E	1303814E	999688E	19603E	606558E	1262139E	1589286E	19071428E	0
1990/91	3236832E	5142093E	1848748E	1015123E	1091611E	2079049E	2193249E	1776272E	1936451E	39405E	93452E	1591757	1837004E	22044042E	0
1991/92	3523059	6669270	7482654	5872241	774523	1070647	1184133	1024813	65441	91675	306780	1141630	1993489	23921866	0
1992/93	2128793	1.17E07	<9992486	6662163	2358754	7407508	473293	65648	128206	58035	256114	639387	3485778	<41829330	0
1993/94	1647926	1553010	2028903	2164988	1370157	1209742	1789508	2133245	2898318	2463752	1942084	1598803	1900036	22800436	0
1994/95	1318447	2881671	4167382	5202655	4489858	4478917	4639340	3886158	2870172	1499484	374683	1412768	3085128	37021536	0
1995/96	8613830	2558464	926327	559452	191351	12019	248789	1217707	1791740	925348	1019963	1964619	1669134	20029610	0
1996/97	3792541	6558536	3918507	1678207E	[148222]	[]	[]	[]	[]	[]	[]	[]	[3219203]	16096013]	230
1997/98	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1998/99	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1999/00	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
2000/01	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
2001/02	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
2002/03	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
															2450 Tot
Mean	3111790]	4870627<	4033936E	2182435E	1309086]	2237698E	1498800E	1474263E	1410972E	705972E	658085E	1378385E	[2194617]	23831585]	Mean
Med.	3236832]	5014092<	3018505E	1318832E	875182]	1202981E	1019053E	1260761E	1395714E	321076E	490621E	1414372E	[3485778]	41829330]	Med.
Max	8613830]	1.17E07	<9992486E	6662163E	4489858]	7407508E	4639340E	3886158E	2898318E	2463752E	1942084E	1964619E	[3485778]	41829330]	Max
Min	[147258]	1553010<	926327E	453252E	[148222]	12019E	248789E	65648E	65441E	19603E	93452E	639387E	[972500]	116700051]	Min
OK	90%	100%	100%	100%	93%	100%	100%	100%	100%	100%	100%	100%	98%	98%	OK
Cnt	9	9	9	9	9	8	8	8	8	8	8	8	9	9	Cnt

----- Notes -----
 All recorded data is continuous and reliable
 except where the following tags are used...
 Good Data - no quality flag printed
 < ... Caution - Rating Table Extrapolated
 E ... Estimated
 [] Data Not processed

37. AW503504 SS Monthly Load Report

DWLBC, Surface Water Archive

HYMONTH V70 Output 12/11/2002

Station AW503504 ONKAPARINGA RIVER @ Houlgrave
 VarFrom 802.99 Suspended Solids in milligrams/Litre, Composite Sample Result
 VarTo 902.00 Total Suspended Solids in Kilograms, Recording
 Figures are for period ending 2400 hours.

Station AW503504

Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Mean Monthly	Annual Total	Missing Days
1988/89	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1989/90	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1990/91	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1991/92	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	366
1992/93	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1993/94	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1994/95	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1995/96	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	366
1996/97	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1997/98	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1998/99	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	246
1999/00	479432	443428	277361	213395E	127160	161530	151992	215880E	183098	125090	711354	252855	318099	1272398	0
2000/01	1091732	860271	3609079	727817	35205	2239	27133	166349	163332E	90430	86655	602570	251097E	3013164E	0
2001/02	231731	2070272	2671978E	77771	19276	8597	2379	751	105871	122049	182238	190755	473639E	5683669E	0
2002/03	393687	62478	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	228083	456166	308
4206 Tot															
Mean	549145	859112	2186139E	339661E	60547	57455	60501	127660E	194073	108278	286681	392744	381361	3611205	Mean
Med.	436559	651850	2671978E	213395E	35205	8597	27133	166349E	173215	108796	174358	388825			Med.
Max	1091732	2070272	3609079E	727817E	127160	161530	151992	215880E	323990	125090	711354	602570	635886	7630630	Max
Min	231731	62478	277361E	77771E	19276	2239	2379	751E	105871	90430	86655	190755	228083	456166	Min
OK	100%	96%	100%	100%	100%	100%	100%	100%	98%	100%	100%	100%	99%	99%	OK
Cnt	4	4	3	3	3	3	3	3	4	4	4	4	5	5	Cnt

----- Notes -----
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 except where the following tags are used...
 Good Data - no quality flag printed
 E ... Estimated
 [...] Data Not processed

38. AW503504 P Monthly Load Report

DWLBC, Surface Water Archive

HYMONTH V70 Output 12/11/2002

Station AW503504 ONKAPARINGA RIVER @ Houlgrave
 VarFrom 824.99 Phosphorus - Total as P in milligrams/Litre, Composite Sample Result
 VarTo 924.00 Total Phosphorus - Total as P Load in Kilograms, Recording
 Figures are for period ending 2400 hours.

Station AW503504

Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Mean Monthly	Annual Total	Missing Days
1988/89	[40.90]	627.6	E1141	E163.8	E174.2	E422.0	E256.1	E88.09	E150.4	E294.5	E535.3	E480.8	[364.6]	[4375]	29
1989/90	1436	E2228	E1621	E391.3	E370.3	E167.6	E216.6	E295.7	E175.7	E2.05	E239.7	E557.8	E641.9	E7703	0
1990/91	1858	E4463	E689.3	E655.6	E818.7	E815.9	E417.1	E231.2	E353.6	E6.32	E20.81	E691.6	E918.5	E11022	0
1991/92	1983	5029	8850	0.1	0.5	0.5	0.4	0.3	0.1	10.6	110.3	611.6	1383	16597	0
1992/93	1364	7842	< 6891	5596	1666	2136	136.5	15.6	21.7	5.1	28.6	159.0	2155	25864	< 0
1993/94	1021	422.4	789.1	1184	1031	1726	865.8	511.0	506.5	581.4	373.9	426.1	786.6	9439	0
1994/95	174.8	347.4	694.7	1150	701.9	633.3	733.3	599.3	398.0	145.6	168.0	674.9	535.1	6421	0
1995/96	20184	1578	112.6	73.1	12.1	0.8	50.2	226.0	296.5	112.1	185.0	1606	2036	24437	0
1996/97	4234	13300	10570	2726	128.7	332.2	225.4	282.2	242.5	94.1	22.6	49.9	2684	32210	0
1997/98	909.5	2235	1376	E927.7	1204	616.0	532.6	937.0	1828	1750	203.1	617.5	1094	13138	0
1998/99	2048	E1243	1247	2730	1747	1002	1020	1388	1385	562.0	1739	879.7	1416	16994	0
1999/00	1475	1212	2587	928.1	643.3	714.3	733.0	440.6	907.9	608.2	503.1	1811	1047	12564	0
2000/01	3150	2831	6903	1687	129.2	8.2	159.0	679.9	1490	419.6	538.0	1695	1641	19693	0
2001/02	943.7	4090	6165	E659.1	157.7	50.76	14.07	3.87	433.8	624.3	975.4	1086	1267	15205	0
2002/03	1351	[445.4]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[898.4]	[1797]	308
															337 Tot
Mean	2811	3193	3545	E1348	E627.6	E616.1	E382.8	E407.0	E585.1	E372.5	E403.1	E810.5	[1258]	[14497]	Mean
Med.	1436	2228	1499	E927.9	E506.8	E519.0	E240.7	E288.9	E375.8	E220.0	E221.4	E646.2	[]	[]	Med.
Max	20184	13300	10570	E5596	E1747	E2136	E1020	E1388	E1828	E1750	E1739	E1811	[]	[]	Max
Min	[40.9]	[347.4]	112.6	0.1	0.5	0.5	0.4	0.3	0.1	2.0	20.8	49.9	[364.6]	[1796]	Min
OK	94%	99%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	99%	99%	OK
Cnt	15	15	14	14	14	14	14	14	14	14	14	14	15	15	Cnt

----- Notes -----
 All recorded data is continuous and reliable
 except where the following tags are used...
 Good Data - no quality flag printed
 < ... Caution - Rating Table Extrapolated
 E ... Estimated
 [] Data Not processed

39. AW503504 TKN Monthly Load Report

DWLBC, Surface Water Archive

HYMONTH V70 Output 12/11/2002

Station AW503504 ONKAPARINGA RIVER @ Houlgrave
 VarFrom 826.99 TKN as N in milligrams/Litre, Composite Sample Result
 VarTo 926.00 Total TKN as N Load in Kilograms, Recording
 Figures are for period ending 2400 hours.

Station AW503504

Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Mean Monthly	Annual Total	Missing Days
1988/89	[229.1]	3844	E 8202	E 884.6E	940.9E	2123	E 1345	E 615.6E	809.0E	1424	E 1482	E 2323	E [2018]	[24224]	29
1989/90	10465	E19684	E11904	E 2627	E 2568	E 942.6E	E 1136	E 1723	E 1232	E 25.7E	E 1162	E 3698	E 4764	E 57172E	0
1990/91	15401	E31677	E 5138	E 2015	E 4148	E 7311	E 5176	E 2864	E 2652	E 45.1E	E 113.3E	E 3620	E 6680	E 80165E	0
1991/92	10822	30303	54963	1157	3251	3136	2396	1438	78.8	92.2	479.2	2925	9253	111044	0
1992/93	6707	47107	<47063	28171	8726	15050	961.6	112.7	195.2	69.6	222.3	941.6	12944	< 155329	0
1993/94	4813	2672	5091	6270	6429	7153	5316	3185	3831	3719	2293	2847	4468	53625	0
1994/95	1589	2727	4627	7068	4428	3791	3695	3365	2484	1081	765.8	3660	3273	39286	0
1995/96	93430	11252	1234	787.0	166.5	12.8	363.6	1864	4598	1111	1897	8104	10402	124823	0
1996/97	24310	70992	56530	15967	E 1039	1993	E 1624	2205	1497	491.0	190.6E	415.7	14771	E 177260E	0
1997/98	4221	11271	10113	E 5458	7272	4145	3483	4804	7706	6141	805.9	3111	5711	E 68537E	0
1998/99	12457	E 8583	6709	8307	6546	3727	5058	E 7755	6912	3040	5950	5456	6708	E 80505E	0
1999/00	9425	7789	15075	5274	E 3660	3432	3763	2657	E 3953	E 2888	2265	8354	5711	E 68541E	0
2000/01	19536	19656	38915	8433	E 845.6	75.0	1017	4468	E 5721	E 1943	2125	8292	9252	111032	0
2001/02	6868	22534	38908	E 6397	1456	666.7	133.1	28.7	1688	2804	4963	4294	7562	E 90743E	0
2002/03	7353	[2837]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[5095]	[10191]	308
337 Tot															
Mean	15175	]19528	]21748	E 7058	E 3677	E 3826	E 2533	E 2649	E 3097	E 1777	E 1765	E 4146	E [7241]	] [83498]	Mean
Med.	19425	]11271	]11008	E 5864	E 3456	E 3284	E 2010	E 2431	E 2568	E 1267	E 1322	E 3640	E [14771]	]177259	Med.
Max	93430	]70992	]56530	E 28171	E 8726	E 15050	E 5316	E 7755	E 7706	E 6141	E 5950	E 8354	E [2018]	]10190	Max
Min	[229.1]	[2672	]1234	E 787.0E	E 166.5E	E 12.8E	E 133.1E	E 28.7E	E 78.8E	E 25.7E	E 113.3E	E 415.7E	E [2018]	]99%	Min
OK	94%	99%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	99%	99%	OK
Cnt	15	15	14	14	14	14	14	14	14	14	14	14	15	15	Cnt

----- Notes -----
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 Good Data - no quality flag printed
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 E ... Estimated
 [] Data Not processed

40. AW503504 Nox Monthly Load Report

DWLBC, Surface Water Archive

HYMONTH V70 Output 12/11/2002

Station AW503504 ONKAPARINGA RIVER @ Houlgrave
 VarFrom 827.99 Nitrate + Nitrite as N in milligrams/Litre, Composite Sample Result
 VarTo 927.00 Total Nitrate + Nitrite as N Load in Kilograms, Recording
 Figures are for period ending 2400 hours.

Station AW503504

Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Mean Monthly	Annual Total	Missing Days
1988/89	[57.27]	1403	E4556	E180.5	E191.9	E242.9	E128.0	E71.89	E148.3	E55.25	E551.6	E3533	E[926.7]	E[11120]	29
1989/90	7465	E6871	E4919	E909.5	E387.6	E122.5	E285.2	E188.3	E139.3	E0.44	E145.4	E2175	E1967	E23610	0
1990/91	9371	E8768	E1082	E683.3	E382.0	E453.1	E269.0	E115.5	E42.10	E3.84	E39.79	E2215	E1952	E23426	0
1991/92	7029	11479	9636	30.8	290.1	603.1	548.0	296.4	26.0	5.9	494.5	1933	2697	32372	0
1992/93	3927	17382	<16451	7423	2143	1879	120.1	10.5	59.1	4.3	36.6	502.6	4161	49940	<0
1993/94	3159	1743	947.0	784.1	336.7	762.3	565.6	341.3	261.9	277.2	454.6	2328	996.8	11962	0
1994/95	1086	1254	1448	3282	1644	545.7	954.8	592.3	281.2	125.9	658.1	4050	1327	15924	0
1995/96	29740	6600	358.9	352.5	32.2	0.2	55.2	157.1	226.7	48.3	146.6	3857	3464	41576	0
1996/97	9301	14369	5869	2599	56.2	128.9	131.8	373.4	439.3	204.2	6.5	79.1	2796	33559	0
1997/98	1297	6131	3499	745.9	1287	828.1	670.5	1353	2754	2464	259.0	2281	1964	23573	0
1998/99	6782	E4336	1520	2155	936.0	524.2	890.8	1387	1378	397.4	3431	4061	2316	27801	0
1999/00	4075	2169	3642	1232	588.0	913.2	802.2	463.3	1087	577.0	1223	2714	1624	19490	0
2000/01	6224	4947	7967	2341	255.3	1.2	87.0	489.5	1166	219.9	1071	5613	2532	30385	0
2001/02	3682	6066	9112	E1804	307.1	42.16	2.67	0.29	188.6	337.6	1328	1681	2046	24554	0
2002/03	4323	[719.6]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[2521]	[5043]	314
343 Tot															
Mean	6501	[6282]	[5072]	E1751	E631.2	E503.3	E393.6	E417.2	E585.7	E337.2	E703.3	E2644	E[2219]	E[24955]	Mean
Med.	4323	[6066]	[4099]	E1071	E359.3	E488.6	E277.1	E318.8	E244.3	E165.0	E474.5	E2305	E[4161]	E[49940]	Med.
Max	29740	[17382]	[16451]	E7423	E2143	E1879	E954.8	E1387	E2754	E2464	E3431	E5613	E[926.7]	E[5043]	Max
Min	[57.3]	[719.6]	[358.9]	E30.8	E32.2	E0.2	E2.7	E0.3	E26.0	E0.4	E6.5	E79.1	E[926.7]	E[5043]	Min
OK	94%	98%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	99%	99%	OK
Cnt	15	15	14	14	14	14	14	14	14	14	14	14	15	15	Cnt

----- Notes -----
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 Good Data - no quality flag printed
 < ... Caution - Rating Table Extrapolated
 E ... Estimated
 [] Data Not processed

41. AW503506 Site Information Summary Report

DWLBC, Surface Water Archive

13:19_12/11/2002 Page 1

HYSITREP - Site Summary Report
AW503506 - ECHUNGA CK @ U/S Mt Bold Res.

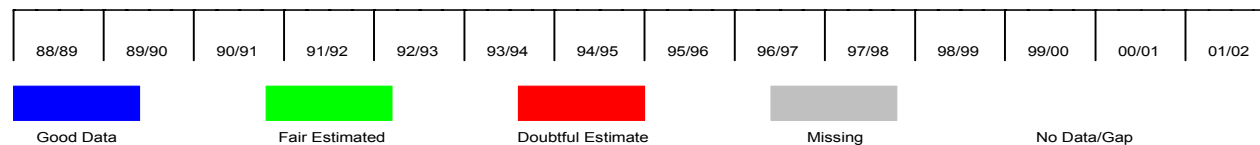
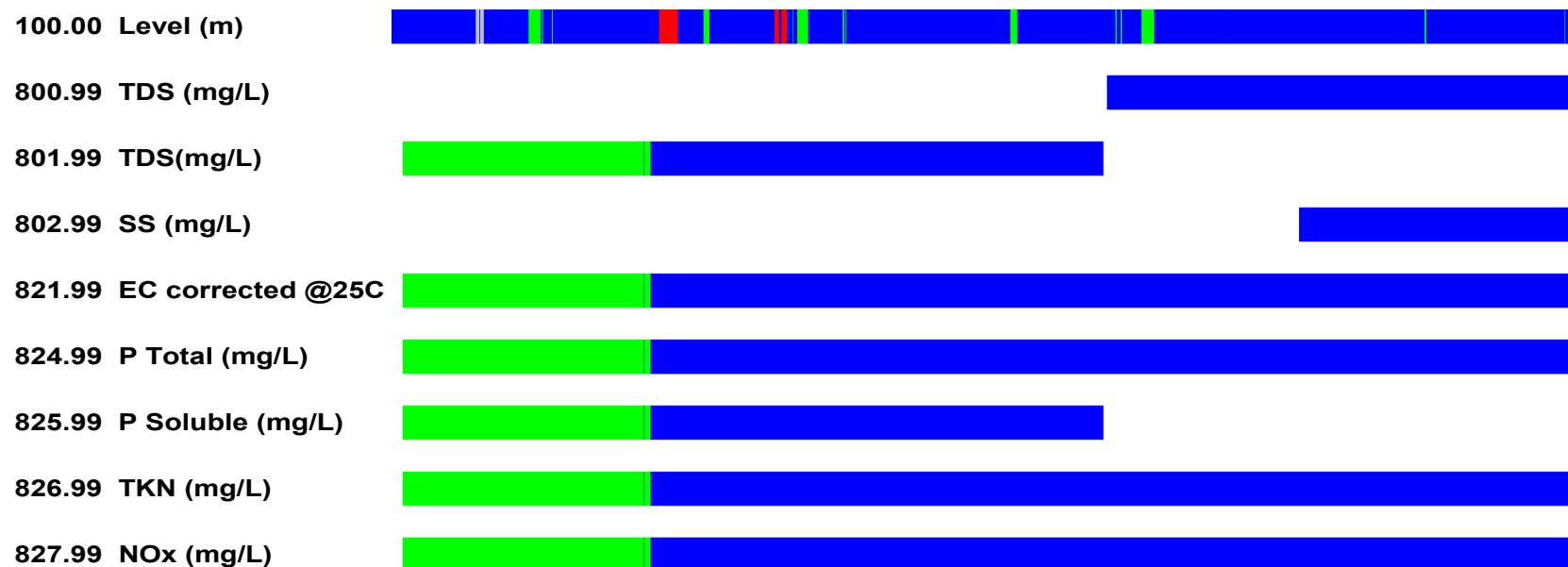
SITE DESCRIPTION
 Site Commenced: 22/03/1973
 Site Ceased:
 Map Name: 6627-4 (50k)
 Local Map Reference:
 Grid Reference: Zone - 54 Easting - 292958.0 Northing - 6110469.0
 Latitude: 35: 7:38S
 Longitude: 138:43:40E
 Elevation: 248.410
 Comment:

STATION DESCRIPTION
 Stream Distance: 50.000
 Gauge Zero: 247.410
 Gauge Datum: AHD
 Control: 90 deg V notch sharp edge concrete weir
 Cease to Flow: 1.000
 Max gauged stage (m.): 2.775 on 03/07/1981
 Catchment Area: 34.200

STATION HISTORY
 22/03/1973 ALIAS AWQC Site No. 3207 + EPA-EDMS Site Nos. 2235+2599+8837
 22/03/1973 ACCURACY Control: Stable, regular profile weir.
 Rating: One rating relationship exists covering the whole period of record comprising 85 gaugings
 to a flow of 18.82 cumecs.
 A theoretical extension has been made to 45.4 cumecs.
 Rating Index 43%
 22/03/1973 PURPOSE Water Resources assessment (established as part of National Water Resources Assessment program)
 01/01/1988 PURPOSE Nutrient Budget Study - nutrient inflows to Mount Bold Reservoir to provide long term monitoring of
 catchment management performance. (commenced 1988)

HYQPLOT V53 Output 12/11/2002

AW503506 ECHUNGA CK U/S RESR



43. AW503506 Flow Volume Annual Total (Year Order) Report

DWLBC, Surface Water Archive

HYANN V45 Output 12/11/2002

Station AW503506 ECHUNGA CK @ U/S Mt Bold Res.

Variable 151.00 Stream Discharge Volume in Megalitres, Recording

Year Starting July	Annual Total (Megalitres)	Days Missing	Rank
1988/89	2736	3	7
1989/90	2559	29	9
1990/91	2575		8
1991/92	5393		3
1992/93	8990		1
1993/94	1462		11
1994/95	694.8		14
1995/96	5118		4
1996/97	5515		2
1997/98	1385		12
1998/99	1771		10
1999/00	1363		13
2000/01	4499		5
2001/02	3374		6
2002/03	24.8	362	15
Total	47460	394	
Minimum	24.8		
Maximum	8990		
Mean	2164		
Median	2575		

44. AW503506 Flow Volume Annual Total (Size Order) Report

DWLBC, Surface Water Archive

HYANN V45 Output 12/11/2002

Station AW503506 ECHUNGA CK @ U/S Mt Bold Res.

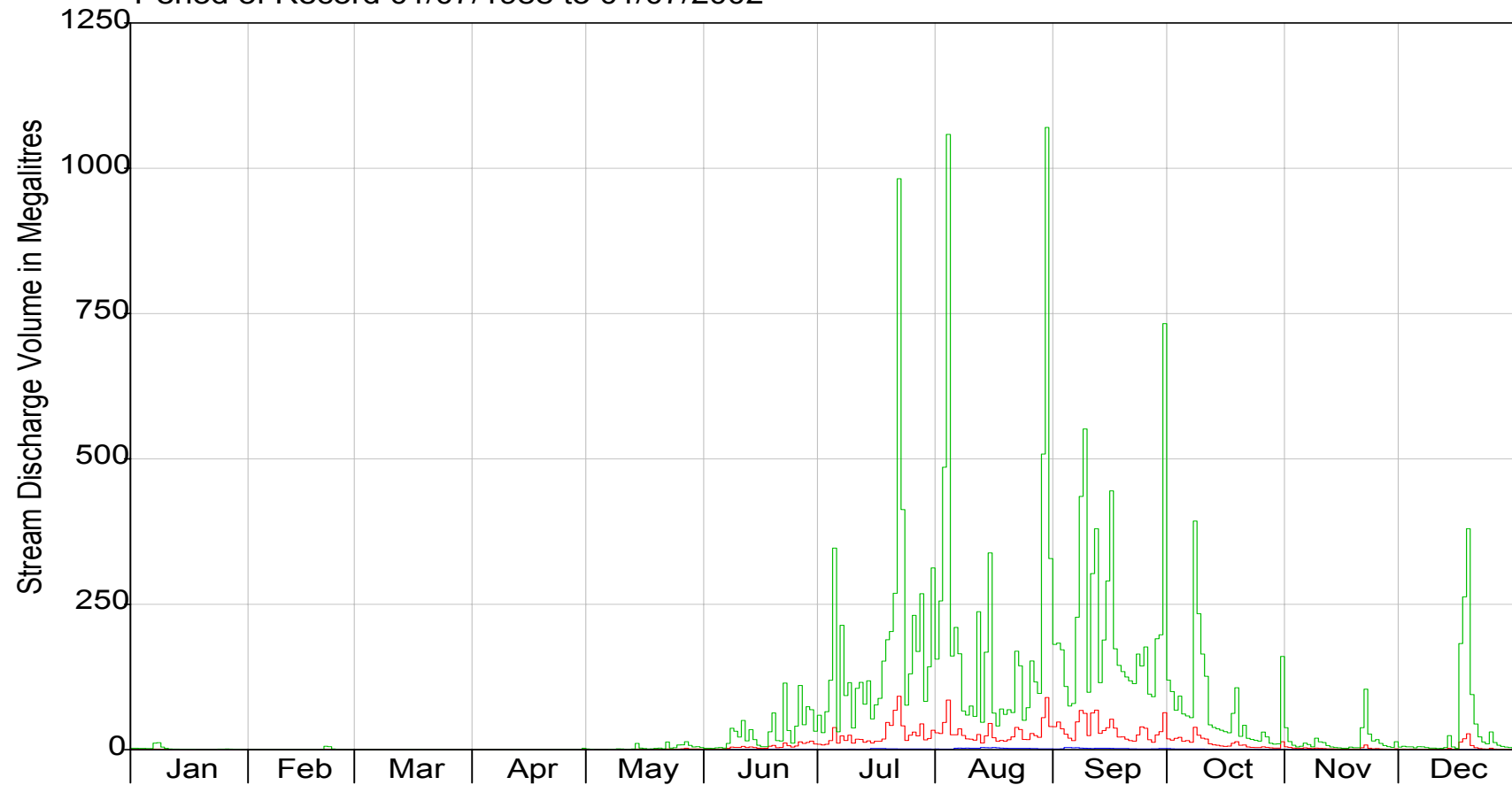
Variable 151.00 Stream Discharge Volume in Megalitres, Recording

Year Starting July	Annual Total (Megalitres)	Days Missing	Rank
1992/93	8990		1
1996/97	5515		2
1991/92	5393		3
1995/96	5118		4
2000/01	4499		5
2001/02	3374		6
1988/89	2736	3	7
1990/91	2575		8
1989/90	2559	29	9
1998/99	1771		10
1993/94	1462		11
1997/98	1385		12
1999/00	1363		13
1994/95	694.8		14
2002/03	24.8	362	15
Total	47460	394	
Minimum	24.8		
Maximum	8990		
Mean	2164		
Median	2575		

45. AW503506 Flow Volume Daily Max, Min, Mean by Calendar Month Plot**DWLBC, Surface Water Archive**

HYMXMEAN V69 Output 12/11/2002

Plot of Daily Maximum, Minimum and Mean
Station AW503506 ECHUNGA CK @ U/S Mt Bold Res.
Period of Record 01/07/1988 to 01/07/2002



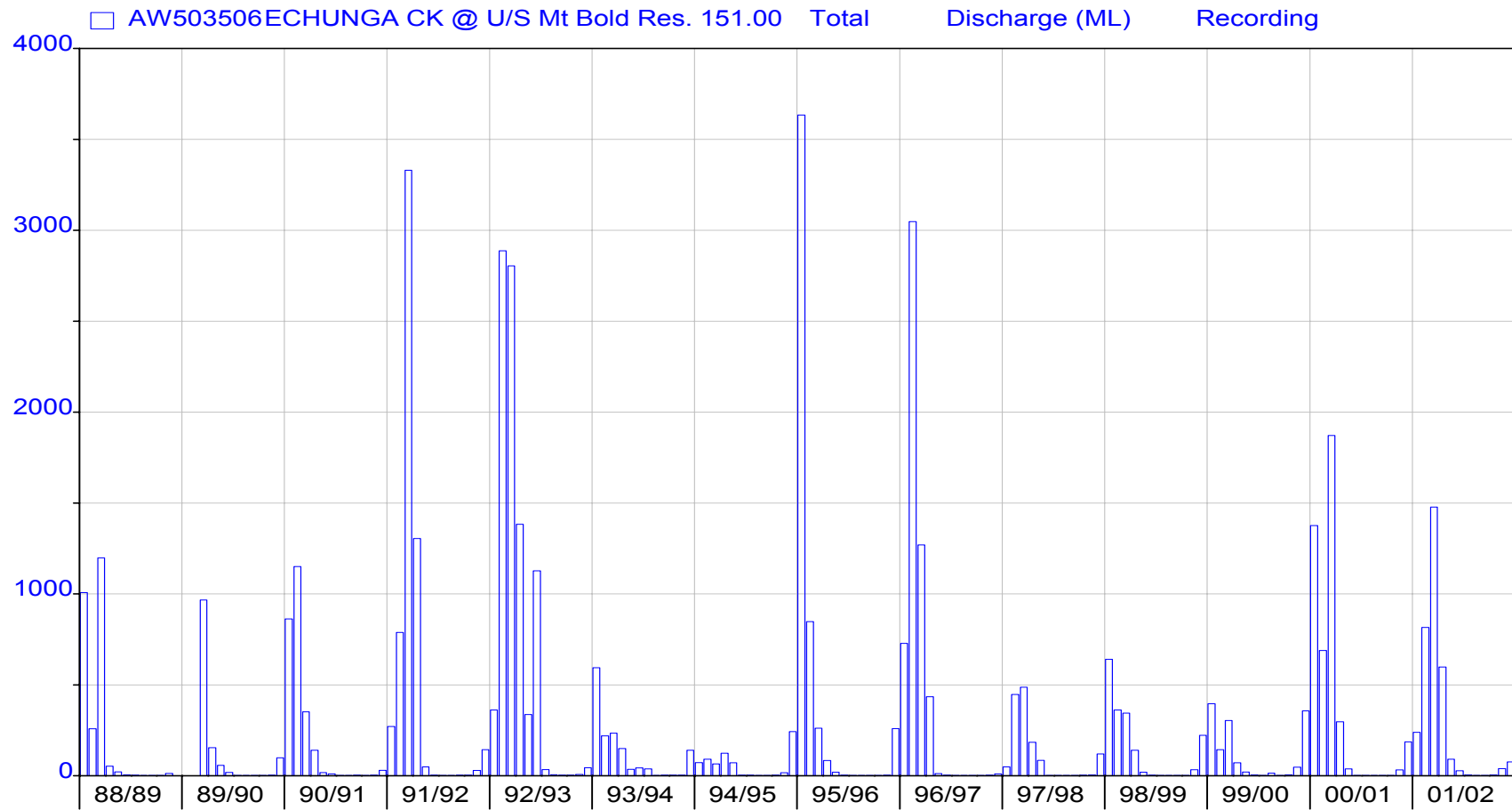
46. AW503506 Flow Volume Monthly Total Plot**DWLBC, Surface Water Archive**

HYPLOT V125 Output 12/11/2002

Period 14 Year Plot Start 00:00_01/07/1988

1988-02

Interval 1 Month Plot End 00:00_01/07/2002



47. AW503506 Flow Volume Monthly Total Report

DWLBC, Surface Water Archive

HYMONTH V70 Output 12/11/2002

Station AW503506 ECHUNGA CK @ U/S Mt Bold Res.
 VarFrom 100.00 Water Level in Metres, Recording
 VarTo 151.00 Total Stream Discharge Volume in Megalitres, Recording
 Figures are for period ending 2400 hours.

Station AW503506

Figures are for period ending 2400 hours.																
Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Mean Monthly	Annual Total	Missing Days	
1988/89	1006	258.3	1198	52.17	21.17	4.72	2.39	2.11	2.11	2.13	12.21	[173.4]	[228.0]	[2735]	3	
1989/90	[27.59]	[1223]	967.2	154.2	57.92	18.56	2.15	2.08E	2.24E	2.06E	2.37E	98.80	[213.2]	[2559]	29	
1990/91	862.6	<1151	351.2	140.9	17.69	10.43	2.28	1.99	2.43	2.24	2.46	29.71	214.6	<2575	<	0
1991/92	270.9	783.9	D3038	D1076	D	39.41D	2.34	2.07	2.90E	2.34	28.77	143.4	449.3	D 5392	D	0
1992/93	362.0	2887	<2804	1383	336.1	1126	D	29.72D	4.84D	2.63E	6.48E	43.91	749.1	<8990	<	0
1993/94	593.9	219.4	234.2	149.2	E	34.60E	42.40	38.17	2.26	2.33	2.82	140.6	121.8	E 1462	E	0
1994/95	71.77	90.76	64.90	124.1	71.35	2.81	2.37	2.16	2.18	2.35	16.96	242.9	57.90	694.7		0
1995/96	3633	<848.5	261.3	82.35E	18.59E	2.32	2.29	2.05	2.10	2.24	2.49	259.5	426.4	<5117	<	0
1996/97	727.7	3047	<1269	<434.1	11.89	2.39	2.18E	1.86	1.94	1.94E	2.35E	10.96E	459.5	<5514	<	0
1997/98	48.65	446.9	486.8	184.5	84.44	2.26	1.94	1.69	1.83	2.35	3.58	120.1	115.4	1385		0
1998/99	639.7	362.0	343.9	140.2	19.19	2.35	2.02	1.80	2.15	2.21	32.82	222.1	147.5	1770		0
1999/00	395.7	143.2	303.4	70.78	20.40	3.34	2.06	14.05	2.11	4.76	46.55E	356.9	113.6	E 1363	E	0
2000/01	1375	<688.7	E1871	<296.6	37.57	2.25	2.05	1.81	2.20	2.30	32.14	186.2	374.8	<4498	<	0
2001/02	238.6	815.9	1477	598.1	90.86	26.95	3.72	2.18	2.32	3.43E	38.57E	75.60E	281.1	E 3373	E	0
2002/03	[24.82]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[24.82]	[24.82]	362	
																394 Tot
Mean	[685.3]	[926.3]	1048	<349.0	D	61.51D	89.27D	6.82D	3.06D	2.25E	2.50E	16.47E	[150.3]	[265.1]	[3163]	Mean
Med.	[395.7]	[736.3]	727.0	<151.7	D	36.08D	3.08D	2.23D	2.07D	2.19E	2.31E	9.34E	[142.0]			Med.
Max	3633	3047	3038	<1383	D	336.1	D1126	D	38.17D	14.05D	2.90E	4.76E	46.55E	[356.9]		Max
Min	[24.82]	[90.76]	64.90	<52.17D		11.89D	2.25D	1.94D	1.69D	1.83E	1.94E	2.35E	[10.96]	[24.82]	[24.82]	Min
OK	88%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	99%	99%	99%	OK
Cnt	15	14	14	14	14	14	14	14	14	14	14	14	15	15	15	Cnt

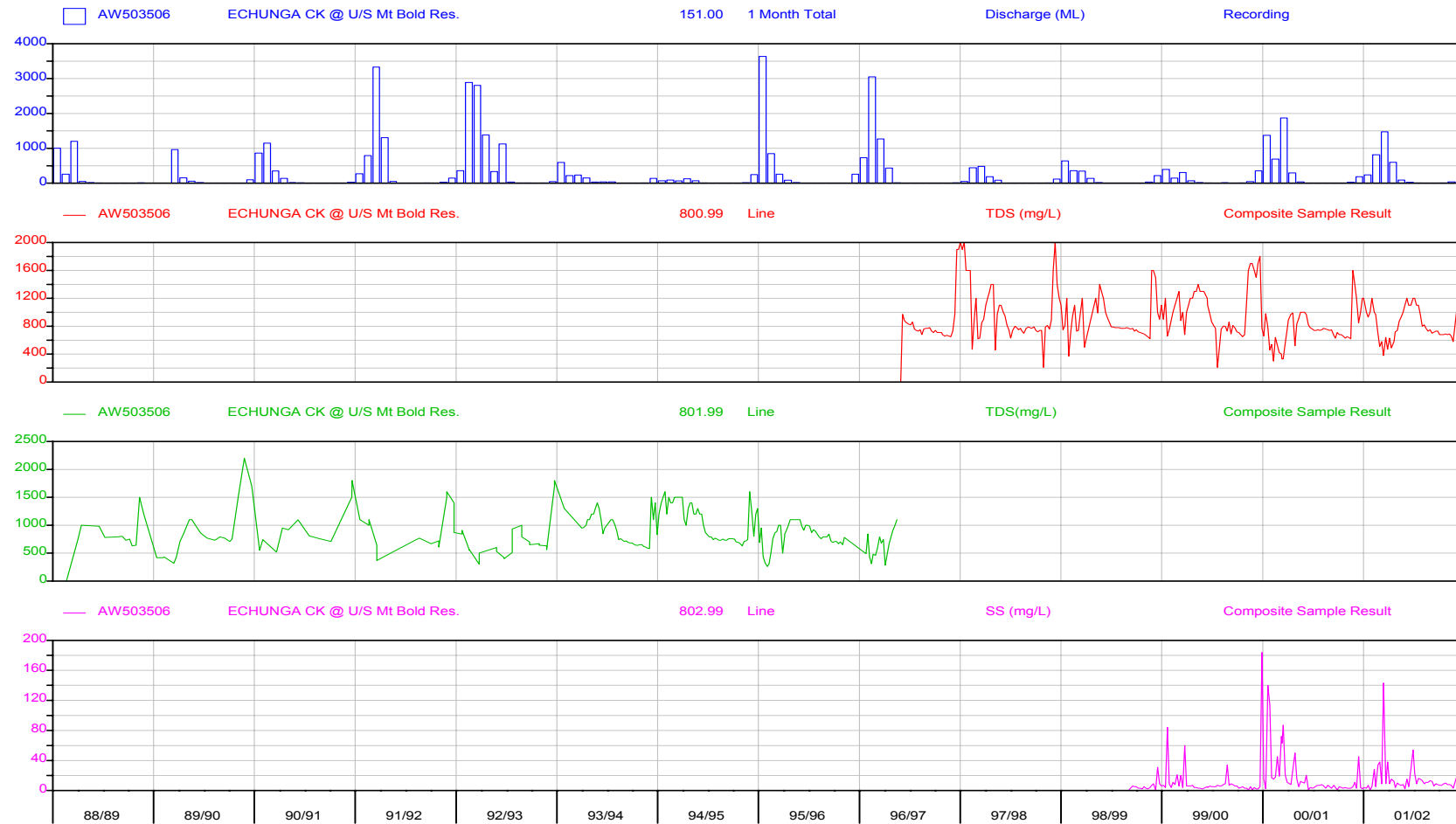
----- Notes -----
 All recorded data is continuous and reliable
 except where the following tags are used...
 Good Data - no quality flag printed
 < ... Caution - Rating Table Extrapolated
 D ... Doubtful
 E ... Estimated
 [...] Data Not processed

48. AW503506 TDS & SS Sample Results Plot**DWLBC, Surface Water Archive**

HYPLOT V125 Output 12/11/2002

Period 14 Year 00:00_01/07/1988 to 00:00_01/07/2002

1988-02

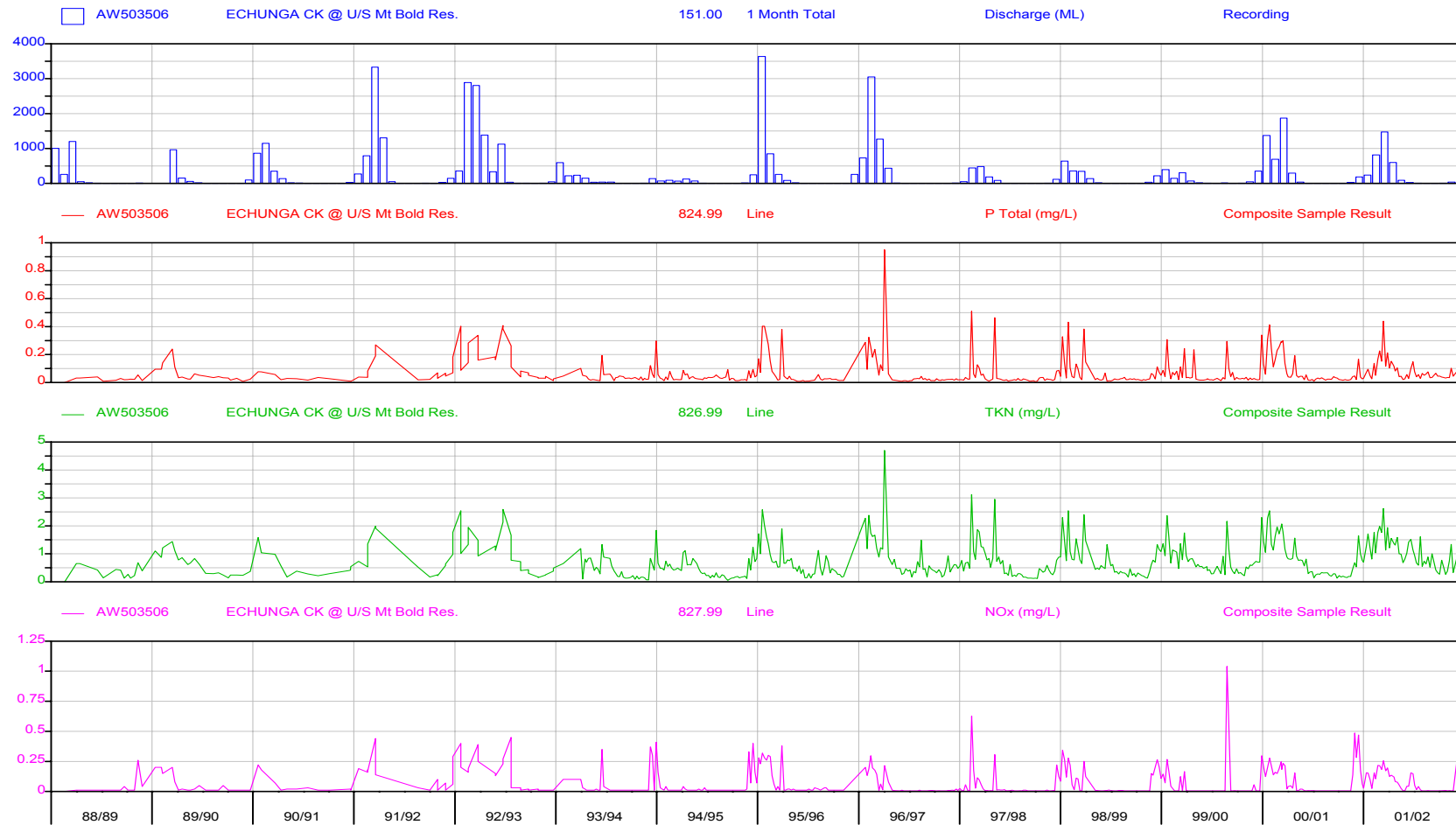


49. AW503506 Nutrients Sample Results Plot**DWLBC, Surface Water Archive**

HYPLOT V125 Output 12/11/2002

Period 14 Year 00:00_01/07/1988 to 00:00_01/07/2002

1988-02

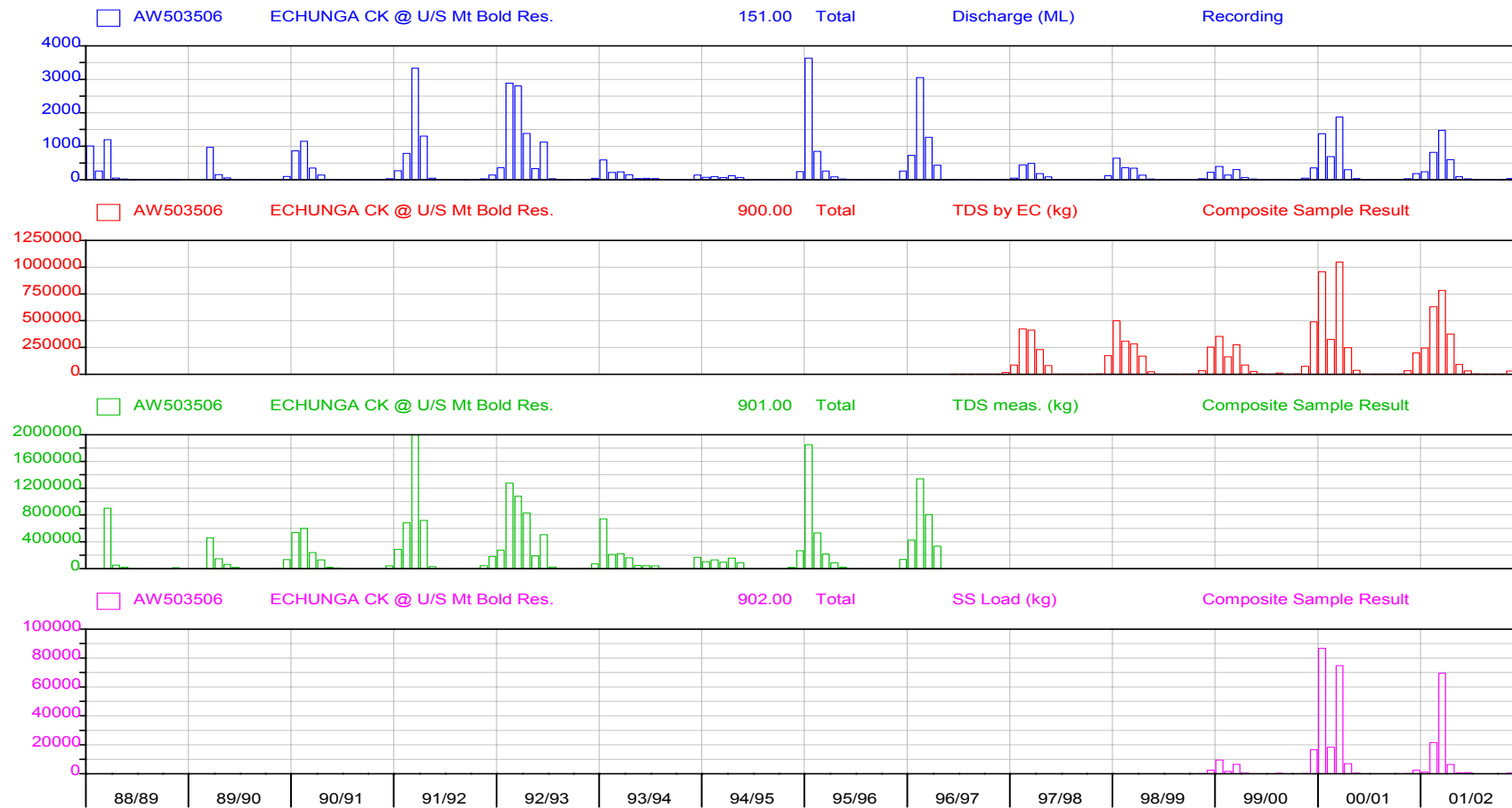


50. AW503506 TDS & SS Monthly Load Plot**DWLBC, Surface Water Archive**

HYPLOT V125 Output 12/11/2002

Period 14 Year Plot Start 00:00_01/07/1988
Interval 1 Month Plot End 00:00_01/07/2002

1988-02



51. AW503506 Nutrients Monthly Load Plot**DWLBC, Surface Water Archive**

HYPLOT V125 Output 12/11/2002

Period 14 Year Plot Start 00:00_01/07/1988
Interval 1 Month Plot End 00:00_01/07/2002

1988-02



52. AW503506 TDS by EC Monthly Load Report

DWLBC, Surface Water Archive

HYMONTH V70 Output 12/11/2002

Station AW503506 ECHUNGA CK @ U/S Mt Bold Res.
 VarFrom 800.99 Total Dissolved Solids (by EC) in milligrams/Litre, Composite Sample Result
 VarTo 900.00 Total Total Dissolved Solids (by EC) in Kilograms, Recording
 Figures are for period ending 2400 hours.

Station AW503506

Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Mean Monthly	Annual Total	Missing Days
1988/89	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1989/90	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1990/91	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1991/92	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	366
1992/93	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1993/94	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1994/95	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1995/96	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	366
1996/97	[82020]	[276148]	[338232]	[104347]	[50337]	[2061]	[1688E]	[1382]	[1445]	[1366E]	[1571E]	[19940E]	[3712]	[29698]	150
1997/98	[82020]	[276148]	[338232]	[104347]	[50337]	[2061]	[1688E]	[1382]	[1445]	[1366E]	[1571E]	[19940E]	[3712]	[29698]	0
1998/99	[370073]	[287086]	[214977]	[168233]	[24524]	[2125]	[1577]	[1389]	[1618]	[1547]	[51163]	[225263]	[112470]	[1349636]	0
1999/00	[304822]	[154934]	[241087]	[84545]	[27407]	[3616]	[1333]	[10528]	[1577]	[4426]	[73973E]	[298996]	[100604E]	[1207242E]	0
2000/01	[737564<]	[346230E]	[684931<]	[193466]	[35993]	[1833]	[1531]	[1363]	[1515]	[1512]	[44825]	[179697]	[185872<]	[2230460<]	0
2001/02	[236753]	[526361]	[656850]	[346328]	[87349]	[30699]	[3845]	[1664]	[1662]	[2341E]	[32408E]	[82982E]	[167437E]	[2009242E]	0
2002/03	[10672]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[10672]	[10672]	362
3434 Tot															
Mean	[290317]	[318152E]	[427215<]	[179396]	[37642]	[7029]	[1911E]	[2931]	[1539]	[2104E]	[34603E]	[160074E]	[95059]	[1121817]	Mean
Med.	[270787]	[287086E]	[338232<]	[168233]	[31700]	[2093]	[1554E]	[1385]	[1546]	[1530E]	[38617E]	[166631E]			Med.
Max	[737564]	[526361E]	[684931<]	[346328]	[87349]	[30699]	[3845E]	[10528]	[1662]	[4426E]	[73973E]	[298996E]	[185872]	[2230460]	Max
Min	[10672]	[154934E]	[214977<]	[84545]	[244]	[1833]	[1333E]	[1260]	[1415]	[1366E]	[1571E]	[19940E]	[3712]	[10672]	Min
OK	[85%]	[100%]	[100%]	[100%]	[85%]	[100%]	[100%]	[100%]	[100%]	[100%]	[100%]	[100%]	[97%]	[97%]	OK
Cnt	6	5	5	5	6	6	6	6	6	6	6	6	7	7	Cnt

----- Notes -----
 All recorded data is continuous and reliable
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 Good Data - no quality flag printed
 < ... Caution - Rating Table Extrapolated
 E ... Estimated
 [...] Data Not processed

53. AW503506 TDS Measured Monthly Load Report

DWLBC, Surface Water Archive

HYMONTH V70 Output 12/11/2002

Station AW503506 ECHUNGA CK @ U/S Mt Bold Res.
 VarFrom 801.99 Total Dissolved Solids (Measured) in milligrams/Litre, Composite Sample Result
 VarTo 901.00 Total Total Dissolved Solids (measured) in Kilograms, Recording
 Figures are for period ending 2400 hours.

Station AW503506

Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Mean Monthly	Annual Total	Missing Days
1988/89	[]	[86800]	899041E	51713E	20747E	4357E	1885E	1672E	1589E	1547E	11930E	[72854]	[104921]	[1154133]	52
1989/90	[11589]	[422161]	370802E	138679E	60870E	16185E	1597E	1607E	1655E	2582E	4830E	62898E	[91288]	[1095456]	29
1990/91	522061<	598537E	212039E	130396E	19259E	8599E	1786E	1493E	1722E	3034E	3529E	35538E	128166<	1537994<	0
1991/92	292870E	568380D	1813060D	592314D	21759D	1712	1510	1409	1946E	1771	42930	175374	292920D	3515035D	0
1992/93	290097	1049340<	1055976	829875	191555	484660D	18250D	4691D	1826E	1569E	8626E	67304	333647<	4003769<	0
1993/94	764253	208492	222700	154892E	43509E	38932	41766	1696	1613	1504	1701	134099	134596E	1615156E	0
1994/95	96492	127967	95398	136721	88105	2747	1816	1590	1640	1610	25079	219157	66527	798323	0
1995/96	1309066<	302840	164236	80454E	20421E	2259	1983	1606	1567	1529	1427	135627	168585<	2023015<	0
1996/97	390400	1291764<	476084<	226905	[7928]	[]	[]	[]	[]	[]	[]	[]	[478616]	[2393082]	230
1997/98	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1998/99	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1999/00	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
2000/01	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
2001/02	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
2002/03	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
2502 Tot															
Mean	[459604]	[517365]	589926<	260217D	[52684]	69931D	8824D	1970D	1695E	1893E	12506E	[112856]	[199919]	[2015107]	Mean
Med.	[341635]	[222161]	370802<	138679D	[21759]	6478D	1850D	1607D	1648E	1583E	6728E	[103477]			Med.
Max	1309066	1291764	1813060<	829875D	[191555]	484660D	41766D	4691D	1946E	3034E	42930E	[219157]	[478616]	[4003769]	Max
Min	[11589]	[86800]	95398<	51713D	[7928]	1712D	1510D	1409D	1567E	1504E	1427E	[35538]	[66527]	[798323]	Min
OK	89%	93%	100%	100%	93%	100%	100%	100%	100%	100%	100%	93%	98%	98%	OK
Cnt	8	9	9	9	9	8	8	8	8	8	8	8	9	9	Cnt

----- Notes -----
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 D ... Doubtful
 E ... Estimated
 [...] Data Not processed

54. AW503506 SS Monthly Load Report

DWLBC, Surface Water Archive

HYMONTH V70 Output 12/11/2002

Station AW503506 ECHUNGA CK @ U/S Mt Bold Res.
 VarFrom 802.99 Suspended Solids in milligrams/Litre, Composite Sample Result
 VarTo 902.00 Total Suspended Solids in Kilograms, Recording
 Figures are for period ending 2400 hours.

Station AW503506

Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Mean Monthly	Annual Total	Missing Days
1988/89	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1989/90	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1990/91	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1991/92	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	366
1992/93	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1993/94	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1994/95	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1995/96	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	366
1996/97	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1997/98	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1998/99	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	246
1999/ 0	19516	1505	11847	417	60	17	12	409	[9]	7	273	3149	[860]	[3438]	0
2000/ 1	106101<	20772E	137745<	11820	333	14	14	9	14	16	163E	39032	6084E	73006E	0
											294	4903	23502<	282023<	0
2001/ 2	1078	26680	141510	7351	637	452	47	24	19	29E	470E	866E	14930E	179164E	0
2002/ 3	[248]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[248]	[248]	362
4260 Tot															
Mean	31735	16319	97034	6529	343.3	160.9	24.2	147.3	[12.9]	15.1E	300.1E	11987	[9124]	[107575]	Mean
Med.	[10297]	20772E	137745<	7351	333	17	14	24	[12]	12E	284E	4026E			Med.
Max	[106101]	26680E	141510<	11820	637	452	47	409	[19]	29E	470E	39032E	[23502]	[282023]	Max
Min	[248]	1503E	11847<	417	60	14	12	9	[9]	7E	163E	866E	[248]	[248]	Min
OK	77%	100%	100%	100%	100%	100%	100%	100%	98%	100%	100%	100%	98%	98%	OK
Cnt	4	3	3	3	3	3	3	3	4	4	4	4	5	5	Cnt

----- Notes -----
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 Good Data - no quality flag printed
 < ... Caution - Rating Table Extrapolated
 E ... Estimated
 [] Data Not processed

55. AW503506 P Monthly Load Report

DWLBC, Surface Water Archive

HYMONTH V70 Output 12/11/2002

Station AW503506 ECHUNGA CK @ U/S Mt Bold Res.
 VarFrom 824.99 Phosphorus - Total as P in milligrams/Litre, Composite Sample Result
 VarTo 924.00 Total Phosphorus - Total as P Load in Kilograms, Recording
 Figures are for period ending 2400 hours.

Station AW503506

Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Mean Monthly	Annual Total	Missing Days
1988/89	[]	[3.82]	39.55E	1.88E	0.85E	0.15E	0.04E	0.04E	0.05E	0.05E	0.69E	[16.48]	[5.78]	[63.59]	52
1989/90	[2.62]	[264.2]	180.0 E	5.42E	2.30E	1.00E	0.08E	0.08E	0.08E	0.06E	0.03E	7.21E	[38.59]	[463.1]	29
1990/91	66.13<	65.61E	17.49E	3.88E	0.48E	0.19E	0.06E	0.07E	0.07E	0.03E	0.03E	0.94E	[12.91]	154.9 <	0
1991/92	10.52E	120.8 D	529.0 D	168.7 D	6.14D	0.10	0.09	0.04	0.07E	0.16	1.91	24.98	71.89D	862.6 D	0
1992/93	132.9	832.7 <	833.6	254.4	74.44	441.0 D	6.38D	0.21D	0.16E	0.08E	0.12E	1.16	215.1 <	2581.1 <	0
1993/94	28.57	22.17	22.68	6.29E	0.67E	6.06	2.18	0.10	0.07	0.07	0.07	34.33	10.27E	123.2 E	0
1994/95	2.48	4.30	1.71	8.40	2.70	0.08	0.10	0.07	0.10	0.04	1.25	24.23	3.79	45.45	0
1995/96	1329 <	224.1	72.36	3.26E	0.33E	0.02	0.06	0.06	0.05	0.04	0.52	66.51	141.3 <	1696 <	0
1996/97	187.8	889.0 <	964.7 <	186.5	0.17	0.03	0.05E	0.05	0.03	0.04E	0.05E	0.23E	185.7 <	2228 <	0
1997/98	1.39	165.7	47.84	75.04	30.52	0.03	0.04	0.03	0.02	0.07	0.07	8.41	27.43	329.2	0
1998/99	203.6	36.74	92.24	2.80	0.42	0.06	0.05	0.05	0.05	0.04	1.89	17.44	29.62	355.4	0
1999/00	81.26	8.67	51.62	4.06	0.39	0.07	0.04	3.56	0.09	0.16	1.30E	84.67	19.66E	235.8 E	0
2000/01	451.3 <	147.5 E	530.4 <	43.72	1.54	0.05	0.06	0.04	0.07	0.04	1.42	19.99	99.69<	1196 <	0
2001/02	17.56	151.8	493.1	76.12	3.42	1.64	0.18	0.12	0.12	0.12E	2.57E	3.96E	62.56E	750.7 E	0
2002/03	[1.12]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[1.12]	[1.12]	362
443 Tot															
Mean	[179.7]	[209.8]	277.1 <	60.05D	8.88D	32.18D	0.67D	0.32D	0.07E	0.07E	0.85E	[22.18]	[61.71]	[739.2]	Mean
Med.	[47.35]	[134.2]	82.30<	7.24D	1.19D	0.09D	0.06D	0.06D	0.07E	0.06E	0.60E	[16.39]	[]	[]	Med.
Max	1329	889.0	964.7 <	254.4 D	74.44D	441.0 D	6.38D	3.56D	0.16E	0.16E	2.57E	84.67	[215.1]	[2581.1]	Max
Min	[1.12]	[3.82]	1.71<	1.88D	0.17D	0.02D	0.04D	0.03D	0.02E	0.03E	0.03E	[0.23]	[1.12]	[1.12]	Min
OK	87%	96%	100%	100%	100%	100%	100%	100%	100%	100%	100%	99%	98%	98%	OK
Cnt	14	14	14	14	14	14	14	14	14	14	14	14	15	15	Cnt

----- Notes -----
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 except where the following tags are used...
 Good Data - no quality flag printed
 < ... Caution - Rating Table Extrapolated
 D ... Doubtful
 E ... Estimated
 [] Data Not processed

56. AW503506 TKN Monthly Load Report

DWLBC, Surface Water Archive

HYMONTH V70 Output 12/11/2002

Station AW503506 ECHUNGA CK @ U/S Mt Bold Res.
 VarFrom 826.99 TKN as N in milligrams/Litre, Composite Sample Result
 VarTo 926.00 Total TKN as N Load in Kilograms, Recording
 Figures are for period ending 2400 hours.

Station AW503506

Figures are for period ending 2400 hours.															
Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Mean Monthly	Annual Total	Missing Days
1988/89	[	[75.23]	778.9 E	28.62E	8.89E	1.61E	0.94E	0.91E	0.52E	0.51E	9.10E	[190.8]	[99.64]	[1096]	52
1989/90	[24.01]	1168.6	1249.7 E	122.2 E	41.60E	11.88E	0.63E	0.63E	0.42E	0.48E	0.62E	147.1 E	[273.8]	[3285]	29
1990/91	1226	<1128	E 315.5 E	33.10E	6.55E	2.97E	0.55E	0.45E	0.70E	0.87E	0.98E	19.23E	227.9 <	2735 <	0
1991/92	187.4 E	E1289	D5022	D1387 D	50.53D	1.54	1.36	0.73	0.49E	0.62	17.61	211.2	680.9 D	8171 D	0
1992/93	861.0	4164	<4007	1770	478.0	2340.7 D	43.39D	3.34D	0.97E	0.41E	2.15E	21.69	1141.6 <	<13693	< 0
1993/94	398.3	261.1	257.5	79.20E	20.59E	48.59	30.70	0.54	0.34	0.35	0.30	218.7	109.6 E	1316 E	0
1994/95	42.45	51.95	32.09	124.3	53.95	0.81	0.51	0.43	0.23	0.38	12.37	298.2	51.48	617.7	0
1995/96	7191	<1147	395.4	60.45E	8.91E	0.60	1.15	1.22	1.13	0.60	4.16	528.3	778.4 <	9340 <	0
1996/97	1520	6524	<4951	<1069	7.00	0.89	0.87E	1.24	0.80	0.62E	1.20E	5.96E	1173	<14084	< 0
1997/98	30.80	1121	812.0	492.8	206.1	0.92	0.46	0.32	0.23	0.82E	1.28	98.88	230.4	2765	0
1998/99	1346	451.1	652.5	61.71	9.01	1.85	0.78	0.51	0.60	0.50	23.42	262.0	234.1	2810	0
1999/00	751.8	145.6	450.9	54.08	11.65	1.53	0.77	27.16	0.87	2.03	29.58E	658.7	177.9 E	2134 E	0
2000/01	2807	<1195	E3457	< 395.6	28.61	0.89	0.55	0.53	0.49	0.41	19.71	240.9	678.9 <	8147 <	0
2001/02	331.3	1500	3342	877.1	83.05	34.73	2.99	1.55	1.09	1.50E	27.54E	72.48E	523.0 E	6276 E	0
2002/03	[27.80]	[	[	[	[	[	[	[	[	[	[	[	[27.80]	[27.80]	362
443 Tot															
Mean	1196	[1481	]1837	< 468.2 D	72.46D	174.9 D	6.12D	2.83D	0.63E	0.72E	10.72E	[212.4]	[427.2]	[5100]	Mean
Med.	1575.1	]1137	]795.4	< 123.2 D	24.60D	1.57D	0.82D	0.68D	0.56E	0.55E	6.63E	[201.0]			Med.
Max	7191	]6524	]5022	<1770	478.0	2340.7 D	43.39D	27.16D	1.13E	2.03E	29.58E	[658.7]	[1173	]14084	Max
Min	[24.01]	]51.95]	32.09<	28.62D	6.55D	0.60D	0.46D	0.32D	0.23E	0.35E	0.30E	[5.96]	[27.80]	[27.80]	Min
OK	87%	]96%	100%	100%	100%	100%	100%	100%	100%	100%	100%	99%	98%	98%	OK
Cnt	14	14	14	14	14	14	14	14	14	14	14	14	15	15	Cnt

----- Notes -----
 All recorded data is continuous and reliable
 except where the following tags are used...
 Good Data - no quality flag printed
 < ... Caution - Rating Table Extrapolated
 D ... Doubtful
 E ... Estimated
 [...] Data Not processed

57. AW503506 Nox Monthly Load Report

DWLBC, Surface Water Archive

HYMONTH V70 Output 12/11/2002

Station AW503506 ECHUNGA CK @ U/S Mt Bold Res.
 VarFrom 827.99 Nitrate + Nitrite as N in milligrams/Litre, Composite Sample Result
 VarTo 927.00 Total Nitrate + Nitrite as N Load in Kilograms, Recording
 Figures are for period ending 2400 hours.

Station AW503506

Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Mean Monthly	Annual Total	Missing Days
1988/89	[]	[1.16]	11.98E	0.52E	0.21E	0.05E	0.02E	0.02E	0.05E	0.07E	1.98E	[34.69]	[4.61]	[50.75]	52
1989/90	[5.52]	[232.4]	145.3 E	2.58E	0.82E	0.81E	0.02E	0.03E	0.06E	0.02E	0.02E	20.17E	[33.99]	[407.8]	29
1990/91	179.4 <	80.57E	20.49E	2.59E	0.35E	0.31E	0.04E	0.02E	0.02E	0.04E	0.05E	4.34E	24.02 <	288.2 <	0
1991/92	49.93E	293.1 D	826.0 D	97.29D	3.54D	0.10	0.08	0.04	0.03E	0.23	1.99	24.01	108.0 D	1296 D	0
1992/93	133.2	957.9 <	921.9	207.4	54.92	287.1 D	10.72D	0.14D	0.05E	0.05E	0.06E	2.10	214.6 <	2575 <	0
1993/94	59.40	21.95	22.06	2.89E	0.41E	9.71	0.38	0.02	0.02	0.02	0.03	51.63	14.04E	168.5 E	0
1994/95	3.42	1.25	0.80	3.39	0.74	0.04	0.02	0.02	0.02	0.02	4.72	69.44	6.99	83.89	0
1995/96	1021 <	225.2	71.27	1.51E	0.28E	0.03	0.04	0.04	0.03	0.02	0.36	46.36	113.8 <	1366 <	0
1996/97	135.9	610.1 <	225.8 <	57.04	0.07	0.01	0.01E	0.01	0.01	0.01E	0.02E	0.18E	85.77 <	1029 <	0
1997/98	1.48	206.8	42.31	49.39	20.03	0.02	0.01	0.01	0.01	0.01	0.02	15.46	27.97	335.6	0
1998/99	175.1	38.42	61.69	1.12	0.13	0.02	0.01	0.01	0.01	0.01	4.35	43.26	27.01	324.1	0
1999/00	81.53	1.06	38.63	0.35	0.10	0.02	0.01	11.91	0.01	0.02	1.92E	83.64	18.27E	219.2 E	0
2000/01	332.7 <	115.0 E	412.3 <	33.93	0.52	0.01	0.01	0.01	0.01	0.01	12.67	58.47	80.48 <	965.8 <	0
2001/02	31.97	166.1	335.1	70.28	2.73	1.93	0.08	0.01	0.01	0.02E	5.26E	8.46E	51.84E	622.0 E	0
2002/03	[1.79]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[1.79]	[1.79]	362
															443 Tot
Mean	[158.0]	[210.8]	224.0 <	37.88D	6.06D	21.44D	0.82D	0.88D	0.03E	0.04E	2.39E	[33.01]	[54.22]	[649.0]	Mean
Med.	[70.46]	[140.6]	66.48 <	3.14D	0.46D	0.04D	0.02D	0.02D	0.02E	0.02E	1.14E	[29.35]			Med.
Max	1021	957.9	921.9 <	207.4 D	54.92D	287.1 D	10.72D	11.91D	0.06E	0.23E	12.67E	[83.64]			Max
Min	[1.48]	[1.06]	0.80 <	0.35D	0.07D	0.01D	0.01D	0.01D	0.01E	0.01E	0.02E	[0.18]			Min
OK	87%	96%	100%	100%	100%	100%	100%	100%	100%	100%	100%	99%	98%	98%	OK
Cnt	14	14	14	14	14	14	14	14	14	14	14	14	15	15	Cnt

----- Notes -----
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 Good Data - no quality flag printed
 < ... Caution - Rating Table Extrapolated
 D ... Doubtful
 E ... Estimated
 [] Data Not processed

58. AW503507 Site Information Summary Report

DWLBC, Surface Water Archive

HYSITREP - Site Summary Report
AW503507 - LENSWOOD CREEK @ Lenswood

13:21_12/11/2002 Page 1

SITE DESCRIPTION

Site Commenced: 18/05/1972
 Site Ceased:
 Map Name: 6628-2 (50k)
 Local Map Reference:
 Grid Reference: Zone - 54 Easting - 301136.0 Northing - 6131963.0
 Latitude: 34:56: 7S
 Longitude: 138:49:21E
 Elevation: 394.539
 Comment:

STATION DESCRIPTION

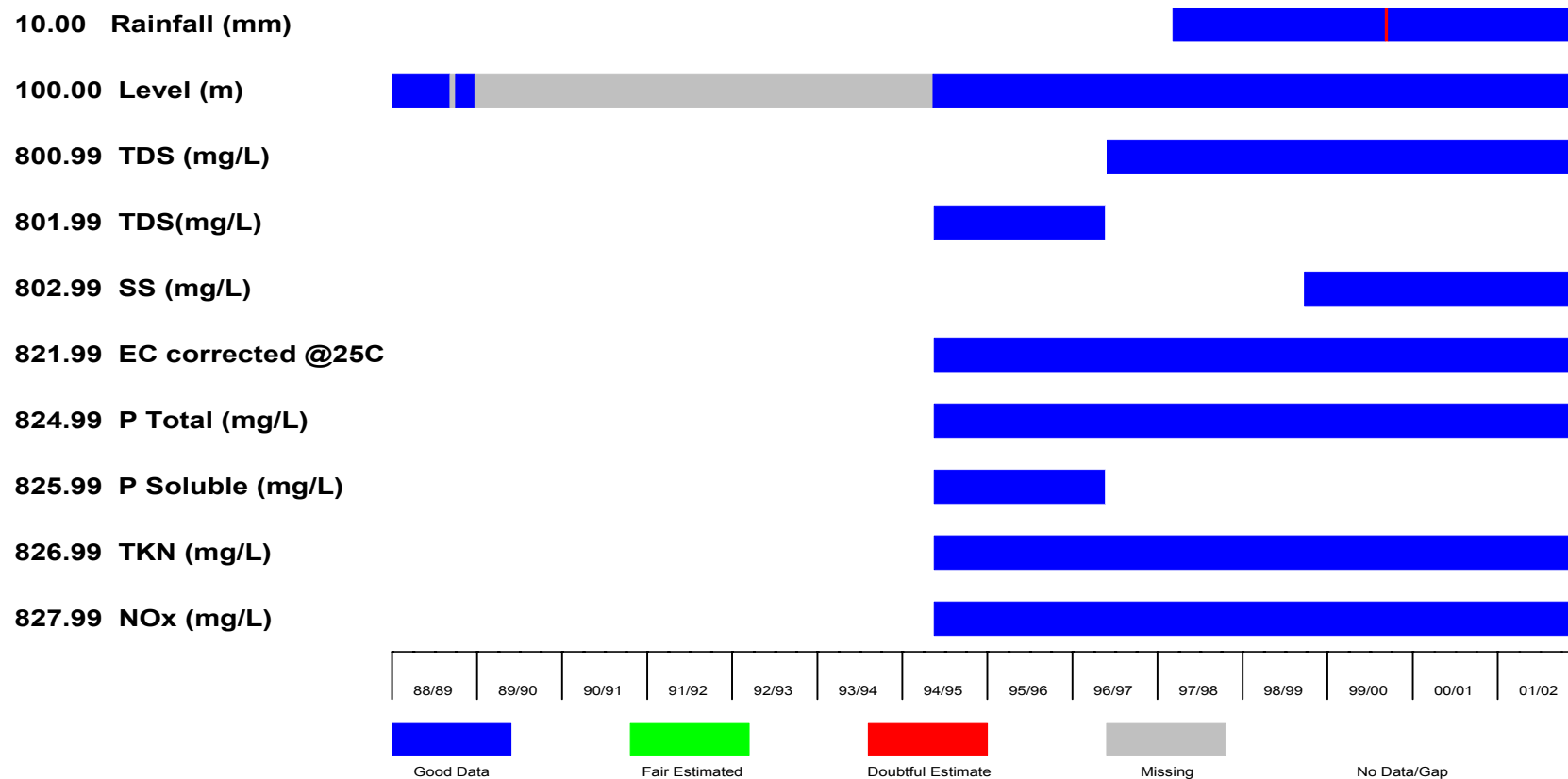
Stream Distance: 0.000
 Gauge Zero: 393.539
 Gauge Datum: AHD
 Control: Concrete crump V weir
 Cease to Flow: 1.000
 Max gauged stage (m.): 2.107 on 03/07/1981
 QMIN: 2.000
 TMIN: 3000
 Catchment Area: 16.500

STATION HISTORY

18/05/1972 ALIAS AWQC Site No. 3208 + EPA-EDMS Site Nos. 5231+6414+8839
 18/05/1972 PURPOSE Pollution study within the Onkaparinga Catchment of sub-catchment predominantly used for orchard cultivation. (1972)
 01/01/1975 PURPOSE Study - 'Water Balance of a small catchment in the Mount Lofty Ranges, South Australia' (1975)
 10/04/1978 CONTROL Concrete V crump weir installed to replace previous 'natural, control created by tree log in stream channel.
 26/06/1981 EVENTS Damage caused to station by flood event.
 10/11/1994 PURPOSE Nutrient Budget Study - nutrient inflows to Mount Bold Reservoir to provide long term monitoring of catchment management performance. (commenced 1994)
 05/09/1997 ACCURACY Rain Gauge
 Position : Tipping bucket installed on an elevated post adjacent an orchard where tree height may influence wind driven rain. The installation was primarily intended for flood warning purposes.
 Time/Data Resolution : Rainfall data is recorded with volume resolution of 0.2 millimetres and time resolution of 1 minute.
 01/01/2000 ACCURACY Control : Prior to April 1978 the control was formed by a log and proved unstable with suspected impact on flow data accuracy. A new concrete weir was established in April 1987, providing a stable control with improved sensitivity.
 Rating : Two rating relationships exist for the period of record when the controlling feature was a log in channel, due to a change in the adopted cease to flow value. (0.34 metres to 0.38 metres)
 One rating relationship exists for the record since installation of the V crump weir (1978), comprising 63 gaugings to a flow of 8.24 cumecs.
 A theoretical extension has been made to 50 cumecs.
 Rating Index 17%

DWLBC, Surface Water Archive

Data Quality Plot

Period 00:00_01/07/1988 to 00:00_01/07/2002**AW503507 LENSWOOD CREEK**

DWLBC, Surface Water Archive
LENSWOOD CREEK @ Lenswood

Period of Record 01/01/1988 to 01/01/2003

HYSTATR V59 Output 12/11/2002
 Station AW503507

Mean of Annual Rainfall	979	(Millimetres per Year)											
Standard Dev. of Annual Rainfall	125	(Millimetres per Year)											
Co. of Variation of Annual Rainfall	0.128	(Millimetres per Year)											
Maximum Daily Rainfall	81.6	(Millimetres per Day)											
Mean Wet Day Frequency	166	(Days per Year)											
Longest Dry Run	33	(Days)											
Serial Correlation Coeff. (lag 1)	0.411	(Millimetres per Month)											
Daily Rainfall	(Millimetres per Day)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean	0.524	0.922	1.33	2.12	4.05	4.66	3.96	3.52	4.19	2.67	1.22	0.805	
Standard Deviation	2.31	4.72	4.87	7.33	9.65	8.91	9.36	7.12	9.27	7.15	3.63	2.92	
Coeff. of Variation	4.40	5.12	3.67	3.46	2.38	1.91	2.36	2.02	2.21	2.68	2.98	3.62	
Monthly Rainfall	(Millimetres per Month)												
Mean	16.2	26.0	41.2	63.6	125	139	122	109	129	82.8	37.8	25.0	
Standard Deviation	13.7	33.6	43.2	59.3	71.9	21.4	35.4	48.8	43.2	38.0	12.0	14.2	
Coeff. of Variation	0.846	1.29	1.05	0.932	0.572	0.153	0.288	0.448	0.334	0.459	0.317	0.568	
Maximum Rainfall	(Millimetres per Day)												
Maximum	15.0	48.4	39.0	57.2	62.2	48.4	81.6	43.0	56.8	61.2	24.0	20.6	
Mean of Maximum	9.52	14.6	18.1	25.6	41.2	36.9	37.9	27.4	38.3	31.9	16.0	13.6	
Mean Wet Days	(Days per Month)												
	5.00	5.80	8.20	12.6	18.8	21.6	20.4	19.4	17.0	16.5	9.60	8.00	

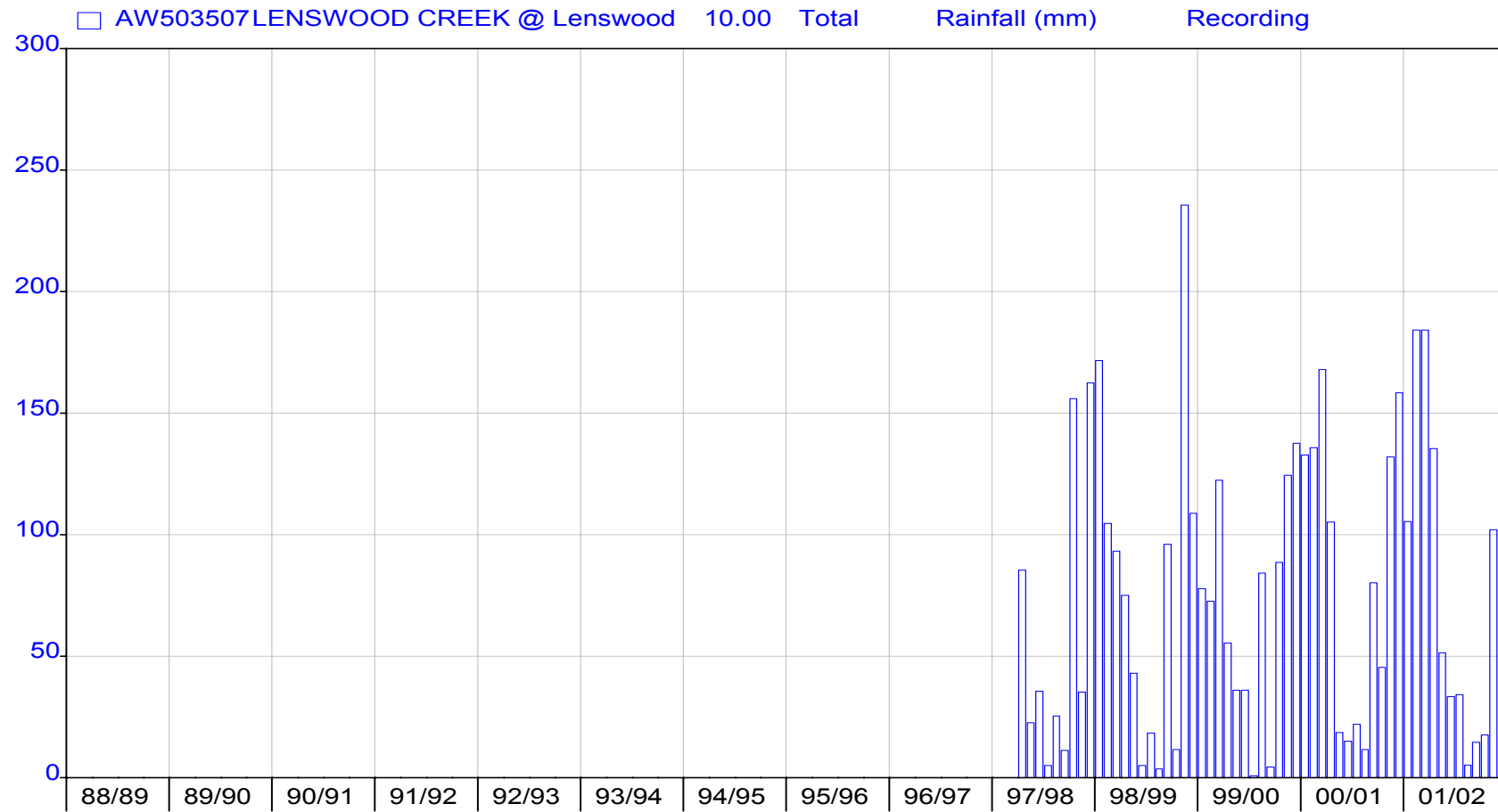
61. AW503507 Rainfall Monthly Total Plot**DWLBC, Surface Water Archive**

HYPLOT V125 Output 12/11/2002

Period 14 Year Plot Start 00:00_01/07/1988

1988-02

Interval 1 Month Plot End 00:00_01/07/2002



62. AW503507 Rainfall Monthly Total Report

DWLBC, Surface Water Archive

HYMONTH V70 Output 12/11/2002

Station AW503507 LENSWOOD CREEK @ Lenswood
 Variable 10.00 Total Rainfall in Millimetres, Recording
 Figures are for period ending 900 hours.

Station AW503507

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean Monthly	Annual Total	Missing Days	Yr
1988	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	366	1988
1989	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365	1989
1990	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365	1990
1991	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365	1991
1992	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	366	1992
1993	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365	1993
1994	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365	1994
1995	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365	1995
1996	[]	[]	[]	[]	[]	[]	[]	[]	[82.0]	[68.0]	[40.0]	[35.6]	[56.4]	[225.6]	366	1996
1997	[]	[]	[]	[]	[]	[]	[]	[]	[93.4]	[75.0]	[43.0]	[35.0]	[74.0]	[887.6]	249	1997
1998	5.0	25.4	11.0	154.6	36.8	161.2	172.8	104.4	122.4	55.4	35.4	36.6	72.8	874.2	0	1998
1999	18.4	3.6	96.0	11.6	235.6	108.4	78.2	72.6	122.4	55.4	35.4	36.6	72.8	874.2	0	1999
2000	0.8	84.2	4.4D	88.6	123.8	138.2	132.8	135.8	154.0	118.6	19.2	15.0	84.6D	1015.0	0	2000
2001	22.0	11.6	80.0	45.6	132.0	158.2	102.6	177.0	190.6	139.0	51.6	32.6	95.2	1142.0	0	2001
2002	35.0	5.2	14.6	17.6	100.0	133.4	127.8	155.6	87.2	41.0	[2.0]	[32.6]	[56.3]	[619.4]	54	2002
3591 Total																
Mean	16.2	26.0	41.2D	63.6	125.6	139.9	122.8	109.1	[121.6]	82.8	[31.9]	25.0	[73.2]	[794.2]		Mean
Med.	18.4	11.6	14.6D	45.6	123.8	138.2	127.8	104.4	[107.9]	71.5	[37.7]	32.6	[56.3]	[1142.0]		Med.
Max	35.0	84.2	96.0D	154.6	235.6	161.2	172.8	177.0	[190.6]	139.0	[51.6]	36.6	[95.2]	[225.6]		Max
Min	0.8	3.6	4.4D	11.6	36.8	108.4	78.2	55.6	[82.0]	41.0	[2.0]	19.2	[56.3]	[225.6]		Min
OK	100%	100%	100%	100%	100%	100%	100%	100%	97%	100%	100%	100%	98%	98%		OK
Cnt	5	5	5	5	5	5	5	5	6	6	6	5	6	6		Cnt

----- Notes -----
 All recorded data is continuous and reliable
 except where the following tags are used...
 Good Data - no quality flag printed
 D ... Doubtful
 [...] Data Not processed

63. AW503507 Flow Volume Annual Total (Year Order) Report

DWLBC, Surface Water Archive

HYANN V45 Output 12/11/2002

Station AW503507 LENSWOOD CREEK @ Lenswood
 Variable 151.00 Stream Discharge Volume in Megalitres, Recording

Year Starting July	Annual Total (Megalitres)	Days Missing	Rank
1988/89	2655	34	5
1989/90	0.0	365	15
1990/91	0.0	365	11
1991/92	0.0	366	12
1992/93	0.0	365	13
1993/94	0.0	365	14
1994/95	341.8	133	10
1995/96	442.0		2
1996/97	575.6		1
1997/98	1284		8
1998/99	2075		7
1999/00	2083		6
2000/01	2828		3
2001/02	3782		4
2002/03	763.2	236	9
Total	26990	2229	
Minimum	341.8		
Maximum	575.6		
Mean	2699		
Median	2369		

64. AW503507 Flow Volume Annual Total (Size Order) Report

DWLBC, Surface Water Archive

HYANN V45 Output 12/11/2002

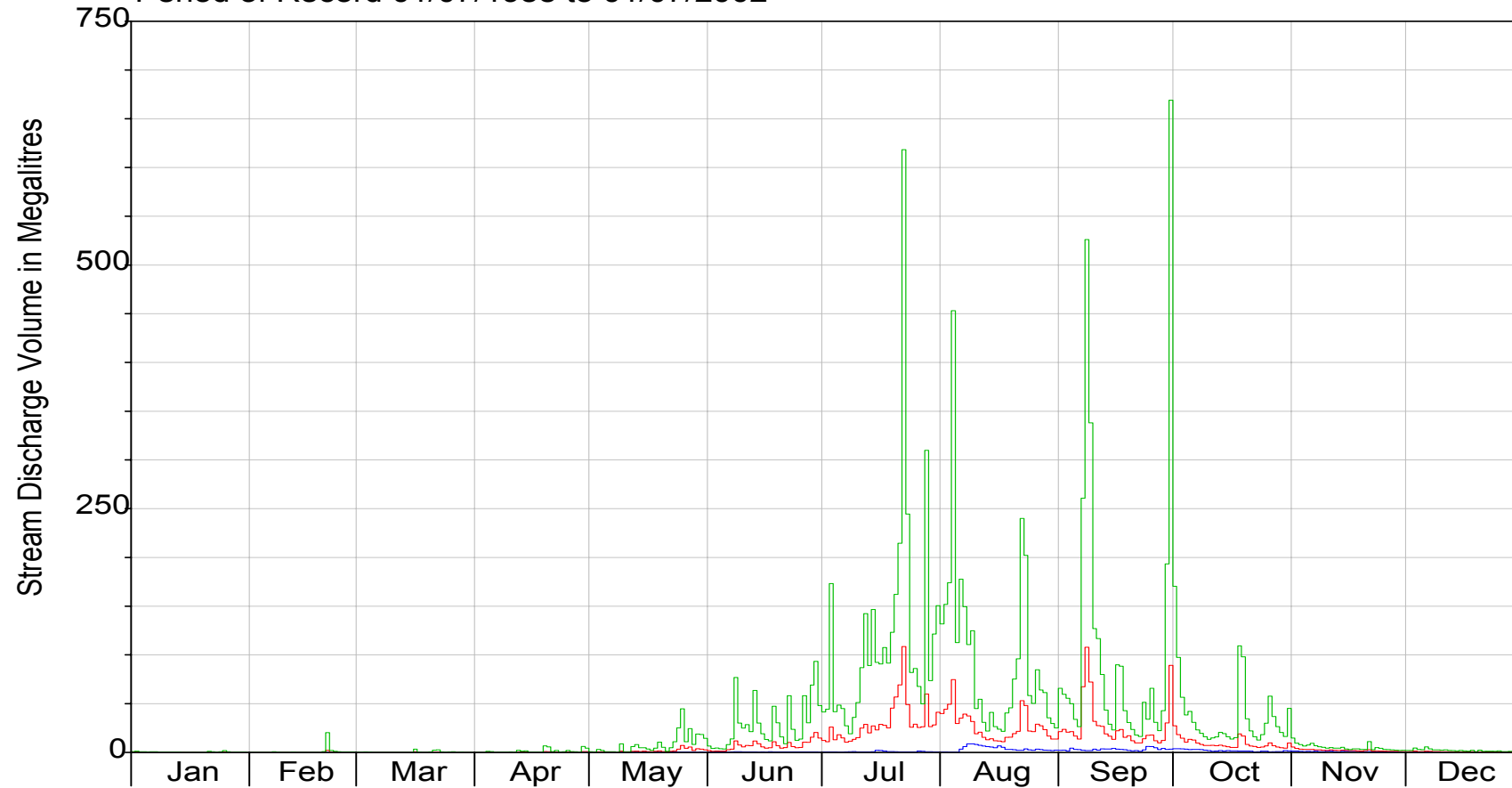
Station AW503507 LENSWOOD CREEK @ Lenswood
 Variable 151.00 Stream Discharge Volume in Megalitres, Recording

Year Starting July	Annual Total (Megalitres)	Days Missing	Rank
1996/97	5756		1
1995/96	4420		2
2000/01	3828		3
2001/02	3782		4
1988/89	2655	34	5
1999/00	2083		6
1998/99	2075		7
1997/98	1284		8
2002/03	763.2	236	9
1994/95	341.8	133	10
1990/91	0.0	365	11
1991/92	0.0	366	12
1992/93	0.0	365	13
1993/94	0.0	365	14
1989/90	0.0	365	15
Total	26990	2229	
Minimum	341.8		
Maximum	5756		
Mean	2699		
Median	2369		

65. AW503507 Flow Volume Daily Max, Min, Mean by Calendar Month Plot**DWLBC, Surface Water Archive**

HYMXMEAN V69 Output 12/11/2002

Plot of Daily Maximum, Minimum and Mean
Station AW503507 LENSWOOD CREEK @ Lenswood
Period of Record 01/07/1988 to 01/07/2002



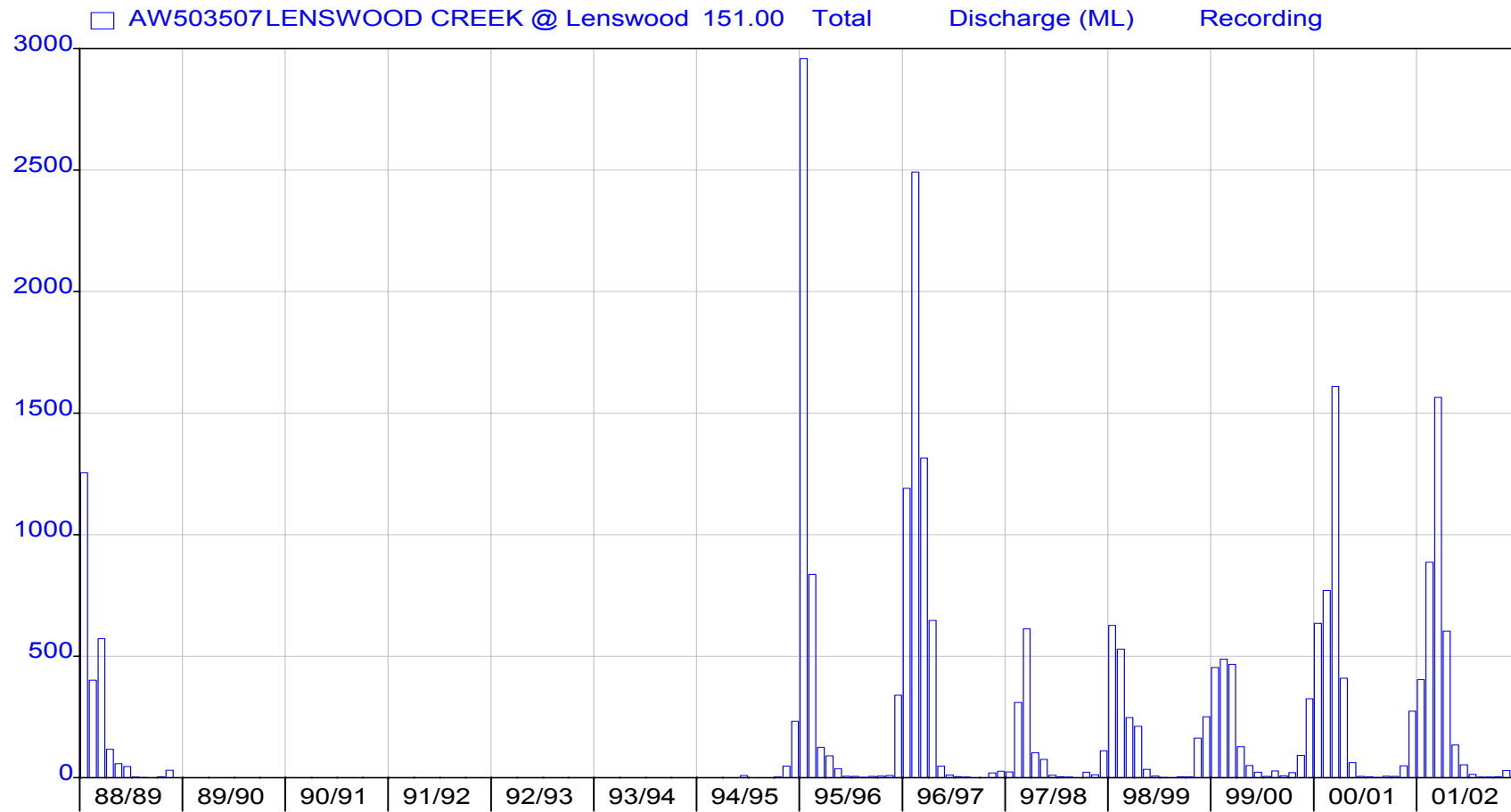
66. AW503507 Flow Volume Monthly Total Plot**DWLBC, Surface Water Archive**

HYPLOT V125 Output 12/11/2002

Period 14 Year Plot Start 00:00_01/07/1988

1988-02

Interval 1 Month Plot End 00:00_01/07/2002



67. AW503507 Flow Volume Monthly Total Report

DWLBC, Surface Water Archive

HYMONTH V70 Output 12/11/2002

Station AW503507 LENSWOOD CREEK @ Lenswood
 VarFrom 100.00 Water Level in Metres, Recording
 VarTo 151.00 Total Stream Discharge Volume in Megalitres, Recording
 Figures are for period ending 2400 hours.

Station AW503507

Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Mean Monthly	Annual Total	Missing Days
1988/89	1254	E 401.1	571.2	117.4 E	58.13E	45.72E	2.23E	0.72E	[0.00]	3.89E	30.76E	[169.2]	[221.2]	[2655]	34
1989/90	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1990/91	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1991/92	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	366
1992/93	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1993/94	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1994/95	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	133
1995/96	2959	< 836.6 E	124.9 E	89.93E	[51.51]	8.74E	0.09E	0.00E	0.00E	2.22E	47.21E	232.0 E	[42.73]	[341.8]	< 0
1996/97	1190	2492	<1315	< 647.2 E	47.33E	10.71E	4.46E	2.36E	0.00E	0.00E	19.46E	26.02E	479.6 <	5755	< 0
1997/98	23	57E	309.3	612.7 E	102.0 E	75.56E	10.23E	3.51E	1.99E	0.00E	11.34E	110.7 E	106.9 E	1283	0
1998/99	626.8	528.7	247.0	211.4 E	34.63E	6.17E	0.72E	0.00E	3.36E	22.73E	162.3 E	251.0 E	172.5 E	2075	0
1999/00	453.1	487.8	465.7	127.2 E	49.37E	22.53E	4.90E	27.97E	7.71E	20.64E	91.11E	324.7 E	173.5 E	2082	0
2000/01	635.5	769.3	1610	< 409.5 E	61.41E	5.00E	2.74E	0.63E	5.51E	5.28E	49.03E	273.3 E	318.9 <	3827	< 0
2001/02	403.3 E	886.2 E	1564 E	603.0 E	134.6 E	53.00E	13.82E	2.39E	1.81E	3.44E	29.19E	86.18E	315.1 E	3781 E	0
2002/03	316.2 E	168.5 E	160.2 E	115.1 E	[3.12]	[]	[]	[]	[]	[]	[]	[]	[152.6]	[763.2]	236
															2229 Tot
Mean	873.6 <	764.4 <	741.3 <	269.2 E	[55.30]	18.63E	4.16E	4.17E	[2.57]	7.51E	49.87E	[201.4]	[235.2]	[2698]	Mean
Med.	626.8 <	528.7 <	571.2 <	127.2 E	[50.44]	10.23E	3.51E	1.47E	[1.91]	3.89E	30.76E	[232.0]			Med.
Max	2959	<2492	<1610	647.2 E	[134.6]	53.00E	13.82E	27.97E	[7.71]	22.73E	162.3 E	[339.6]	[479.6]	[5755]	Max
Min	23	168.5	124.9	89.93E	[3.12]	5.00E	0.09E	0.00E	[0.00]	0.00E	8.37E	[26.02]	[42.73]	[341.8]	Min
OK	100%	100%	100%	100%	89%	100%	100%	100%	91%	100%	100%	97%	98%	98%	OK
Cnt	9	9	9	9	10	9	9	9	9	9	9	9	10	10	Cnt

----- Notes -----
 All recorded data is continuous and reliable
 except where the following tags are used...
 Good Data - no quality flag printed
 < ... Caution - Rating Table Extrapolated
 E ... Estimated
 [...] Data Not processed

68. AW503507 TDS & SS Sample Results Plot**DWLBC, Surface Water Archive**

HYPLOT V125 Output 12/11/2002

Period 14 Year 00:00_01/07/1988 to 00:00_01/07/2002

1988-02

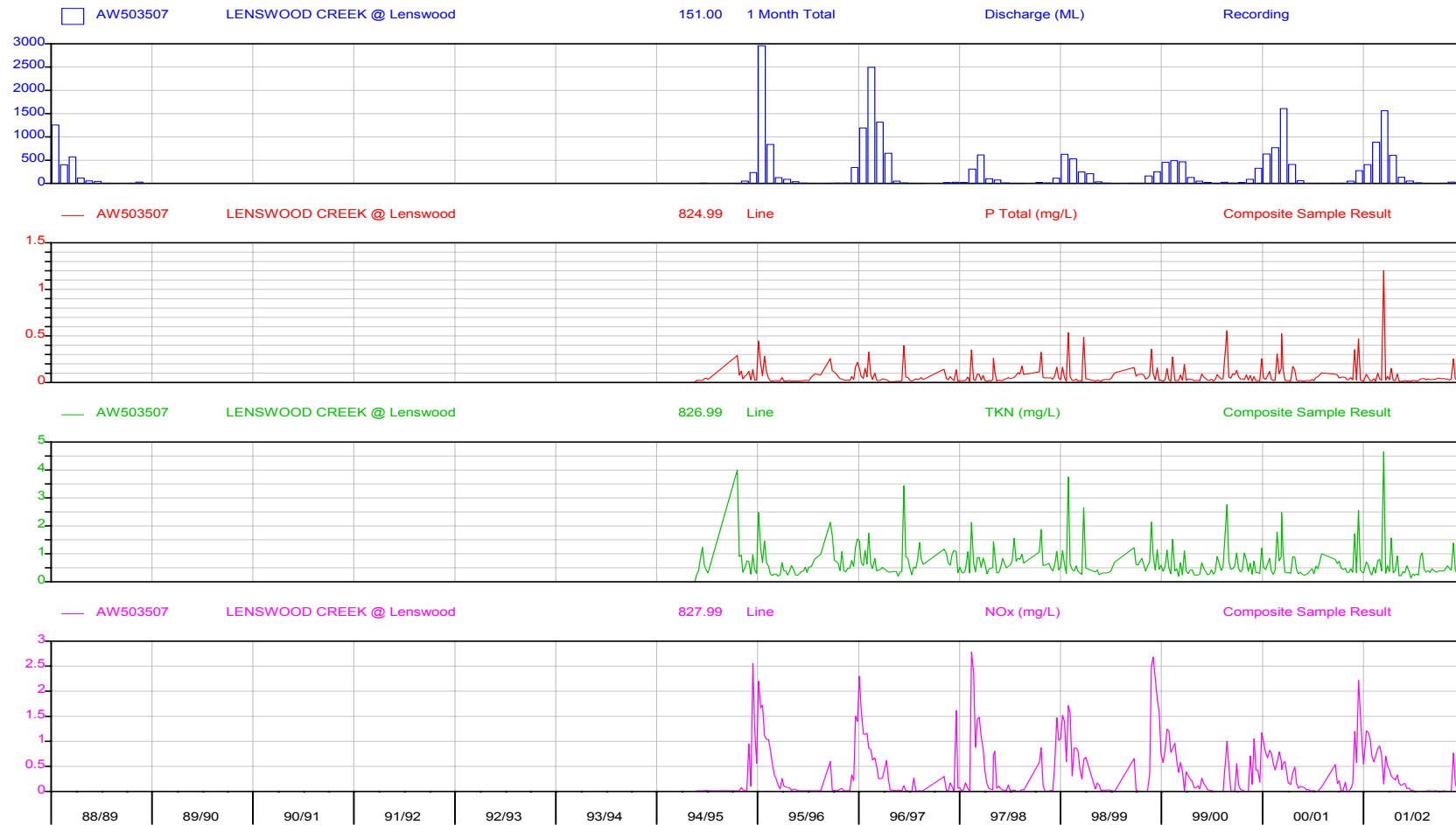


69. AW503507 Nutrients Sample Results Plot**DWLBC, Surface Water Archive**

HYPLOT V125 Output 12/11/2002

Period 14 Year 00:00_01/07/1988 to 00:00_01/07/2002

1988-02

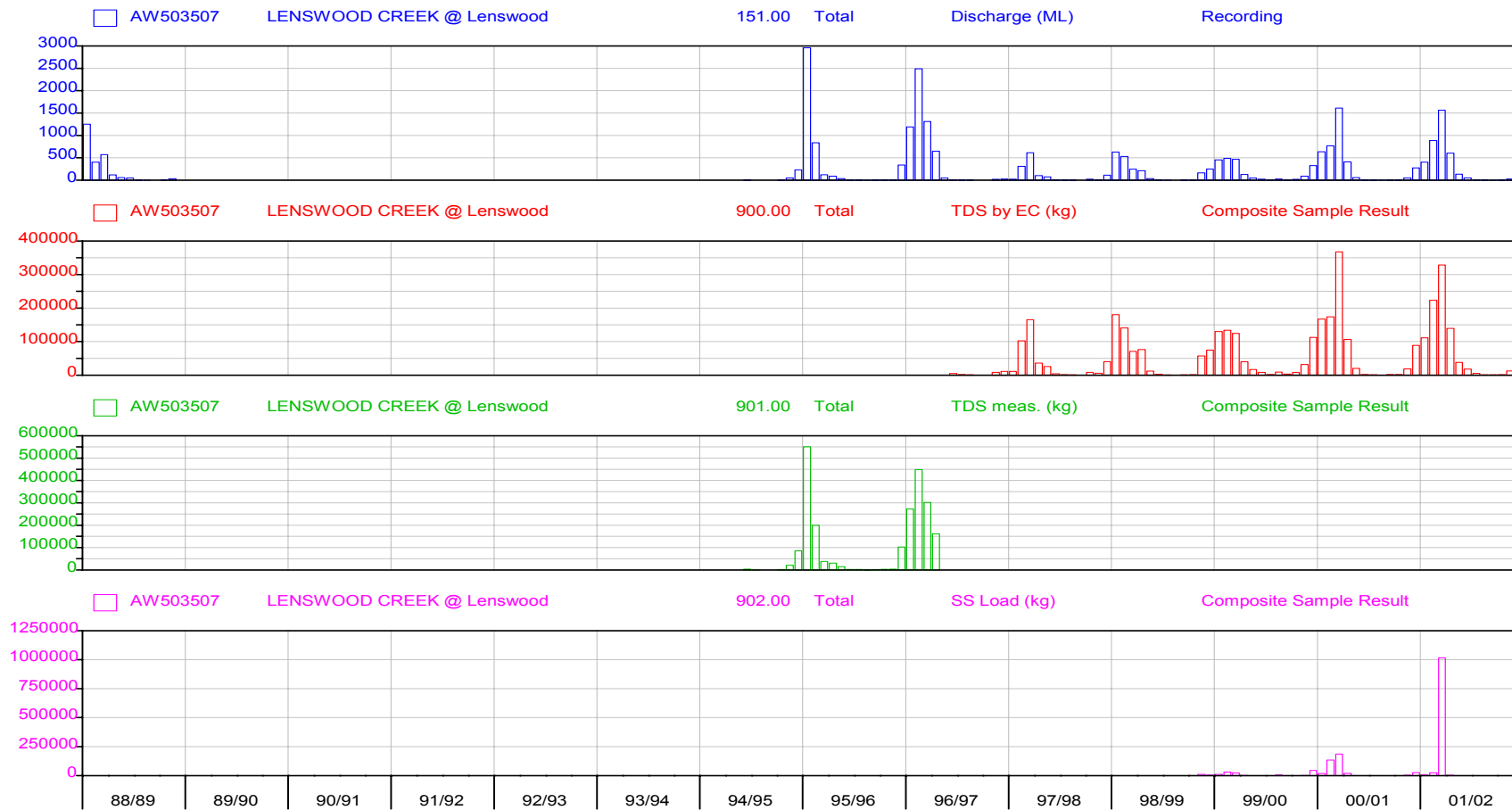


70. AW503507 TDS & SS Monthly Load Plot**DWLBC, Surface Water Archive**

HYPLOT V125 Output 12/11/2002

Period 14 Year Plot Start 00:00_01/07/1988
Interval 1 Month Plot End 00:00_01/07/2002

1988-02

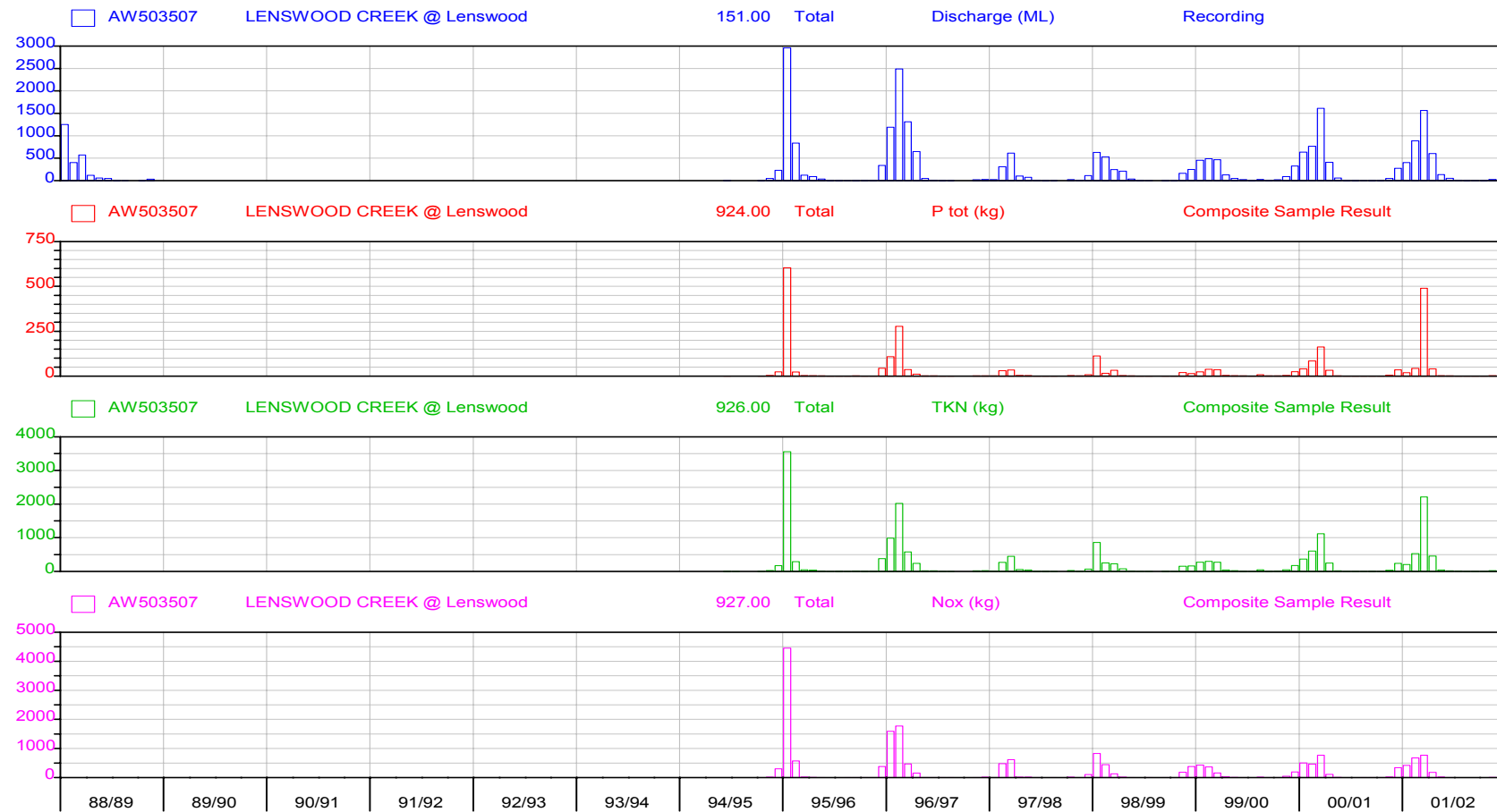


71. AW503507 Nutrients Monthly Load Plot**DWLBC, Surface Water Archive**

HYPLOT V125 Output 12/11/2002

Period 14 Year Plot Start 00:00_01/07/1988
Interval 1 Month Plot End 00:00_01/07/2002

1988-02



72. AW503507 TDS by EC Monthly Load Report

DWLBC, Surface Water Archive

HYMONTH V70 Output 12/11/2002

Station AW503507 LENSWOOD CREEK @ Lenswood
 VarFrom 800.99 Total Dissolved Solids (by EC) in milligrams/Litre, Composite Sample Result
 VarTo 900.00 Total Total Dissolved Solids (by EC) in Kilograms, Recording
 Figures are for period ending 2400 hours.

Station AW503507

Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Mean Monthly	Annual Total	Missing Days
1988/89	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1989/90	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1990/91	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1991/92	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	366
1992/93	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1993/94	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1994/95	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1995/96	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	366
1996/97	[10996E]	[83239E]	[154990E]	[30228E]	[23101E]	[4433E]	[2123E]	[1142E]	[0E]	[0E]	[8563E]	[10150E]	[3402]	[27217]	150
1997/98	[10996E]	[83239E]	[154990E]	[30228E]	[23101E]	[4433E]	[2123E]	[1142E]	[0E]	[0E]	[8563E]	[10150E]	[3402]	[27217]	0
1998/99	[138744E]	[133401E]	[67394E]	[76120E]	[11934E]	[2730E]	[34E]	[0E]	[1271E]	[1388E]	[41454E]	[67743E]	[45210E]	[542525E]	0
1999/00	[112577E]	[108397E]	[109763E]	[38431E]	[16615E]	[8188E]	[2117E]	[6120E]	[2976E]	[7133E]	[28813E]	[86038E]	[43931E]	[527169E]	0
2000/01	[159565]	[167140]	[291383<]	[91440E]	[19418E]	[1987E]	[1164E]	[228E]	[2018E]	[2183E]	[14751E]	[73307E]	[68715<]	[824585<]	0
2001/02	[106903E]	[200919E]	[312332E]	[137381]	[36979E]	[16931E]	[5146E]	[1040E]	[891E]	[1702E]	[8884E]	[28509E]	[71468E]	[857616E]	0
2002/03	[87751E]	[51793]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[69775]	[139550]	308
															3380 Tot
Mean	[102756E]	[124149]	[187172<]	[74720E]	[18142]	[6430E]	[2112E]	[1593E]	[1193E]	[3187E]	[18032E]	[50732E]	[47509]	[468488]	Mean
Med.	[109740E]	[120899]	[154990<]	[76120E]	[18017]	[4371E]	[1946E]	[1035E]	[1081E]	[1943E]	[11818E]	[53194E]			Med.
Max	[159565E]	[200919]	[312332<]	[137381E]	[36979]	[16931E]	[5146E]	[6120E]	[2976E]	[7133E]	[41454E]	[86038E]	[71468]	[857616]	Max
Min	[10996E]	[51793]	[67394<]	[30228E]	[806]	[1987E]	[34E]	[0E]	[0E]	[0E]	[5725E]	[10150E]	[3402]	[27217]	Min
OK	100%	97%	100%	100%	85%	100%	100%	100%	100%	100%	100%	100%	98%	98%	OK
Cnt	6	6	5	5	6	6	6	6	6	6	6	6	7	7	Cnt

----- Notes -----
 All recorded data is continuous and reliable
 except where the following tags are used...
 Good Data - no quality flag printed
 < ... Caution - Rating Table Extrapolated
 E ... Estimated
 [] Data Not processed

73. AW503507 TDS Measured Monthly Load Report

DWLBC, Surface Water Archive

HYMONTH V70 Output 12/11/2002

Station AW503507 LENSWOOD CREEK @ Lenswood
 VarFrom 801.99 Total Dissolved Solids (Measured) in milligrams/Litre, Composite Sample Result
 VarTo 901.00 Total Total Dissolved Solids (measured) in Kilograms, Recording
 Figures are for period ending 2400 hours.

Station AW503507

Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Mean Monthly	Annual Total	Missing Days
1988/89	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1989/90	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1990/91	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1991/92	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	366
1992/93	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1993/94	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1994/95	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	138
1995/96	512962<	161573E	37536E	29912E	[11177]	3832E	47E	0E	0E	1236E	17467E	69751E	[12939]	[103509]	0
					13723E	2560E	2416E	709E	1704E	3057E	3786E	91548E	71791<	861487<	
1996/97	258876	415920<	267121<	134513E	[12761]	[]	[]	[]	[]	[]	[]	[]	[217838]	[1089192]	223
1997/98	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1998/99	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1999/00	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	366
2000/01	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
2001/02	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
2002/03	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
4743 Tot															
Mean	385919<	288747<	152329<	82213E	[12554]	3196E	1231E	355E	852E	2146E	10627E	80649E	[100856]	[684729]	Mean
Med.	385919<	288747<	152329<	82213E	[12761]	3196E	1231E	355E	852E	2146E	10627E	80649E			Med.
Max	512962<	415920<	267121<	134513E	[13723]	3832E	2416E	709E	1704E	3057E	17467E	91548E	[217838]	[1089192]	Max
Min	258876<	161573<	37536<	29912E	[11177]	2560E	47E	0E	0E	1236E	3786E	69751E	[12939]	[103509]	Min
OK	100%	100%	100%	100%	71%	100%	100%	100%	100%	100%	100%	100%	97%	97%	OK
Cnt	2	2	2	2	3	2	2	2	2	2	2	2	3	3	Cnt

----- Notes -----
 All recorded data is continuous and reliable
 except where the following tags are used...
 Good Data - no quality flag printed
 < ... Caution - Rating Table Extrapolated
 E ... Estimated
 [...] Data Not processed

74. AW503507 SS Monthly Load Report

DWLBC, Surface Water Archive

HYMONTH V70 Output 12/11/2002

Station AW503507 LENSWOOD CREEK @ Lenswood
 VarFrom 802.99 Suspended Solids in milligrams/Litre, Composite Sample Result
 VarTo 902.00 Total Suspended Solids in Kilograms, Recording
 Figures are for period ending 2400 hours.

Station AW503507

Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Mean Monthly	Annual Total	Missing Days
1988/89	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1989/90	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1990/91	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1991/92	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	366
1992/93	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1993/94	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1994/95	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1995/96	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	366
1996/97	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1997/98	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1998/99	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	267
1999/ 0	20060E	80567E	50571E	1815E	695E	104E	34E	11598E	[7]	3E	18658E	8568E	68171	272701	0
2000/ 1	26971	170524	457574<	36597E	242E	24E	55E	3E	125E	248E	2036E	103063E	22576E	270917E	0
2001/ 2	7070E	33461E	2863315E	4127	262E	118E	66E	21E	11E	27E	1913E	1423E	242651E	2911815E	0
2002/ 3	15204E	[659]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[7931]	[15862]	308
4227 Tot															
Mean	17326E	[71303]	1123820<	14179E	400E	82E	52E	3874E	[45]	93E	7816E	47235E	[68939]	[800499]	Mean
Med.	17632E	[57014]	457574<	4127E	262E	104E	55E	21E	[24]	49E	5346E	42227E			Med.
Max	26971E	[170524]	2863315<	36597E	695E	118E	66E	11598E	[125]	248E	18658E	103063E	[242651]	[2911815]	Max
Min	7070E	[659]	50571<	1815E	242E	24E	34E	3E	[7]	27E	1913E	1423E	[6817]	[15862]	Min
OK	100%	96%	100%	100%	100%	100%	100%	100%	81%	100%	100%	100%	98%	98%	OK
Cnt	4	4	3	3	3	3	3	3	4	4	4	4	5	5	Cnt

----- Notes -----
 All recorded data is continuous and reliable
 except where the following tags are used...
 Good Data - no quality flag printed
 < ... Caution - Rating Table Extrapolated
 E ... Estimated
 [...] Data Not processed

75. AW503507 P Monthly Load Report

DWLBC, Surface Water Archive

HYMONTH V70 Output 12/11/2002

Station AW503507 LENSWOOD CREEK @ Lenswood
 VarFrom 824.99 Phosphorus - Total as P in milligrams/Litre, Composite Sample Result
 VarTo 924.00 Total Phosphorus - Total as P Load in Kilograms, Recording
 Figures are for period ending 2400 hours.

Station AW503507

Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Mean Monthly	Annual Total	Missing Days
1988/89	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1989/90	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1990/91	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1991/92	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	366
1992/93	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1993/94	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1994/95	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	138
1995/96	627.3 <	45.38E	3.51E	1.51E	0.74E	0.23E	0.00E	0.00E	0.00E	0.28E	5.02E	52.71E	17.37E	158.96E	0
					0.61E	0.12E	0.34E	0.13E	1.11E	0.35E	0.23E	55.59E	61.35E	736.2E	0
1996/97	138.3	456.0 <	39.16E	16.70E	0.60E	1.69E	0.14E	0.11E	0.00E	0.00E	1.26E	2.11E	54.68E	656.1E	0
1997/98	0.72E	70.89E	42.69E	10.33E	5.12E	0.46E	0.28E	0.31E	0.00E	5.17E	0.54E	9.87E	12.21E	146.4E	0
1998/99	231.5E	21.49E	35.78E	3.38E	0.68E	0.22E	0.08E	0.00E	0.48E	0.20E	32.33E	22.86E	29.09E	349.0E	0
1999/00	40.23E	89.89E	64.50E	4.04E	2.43E	0.76E	0.16E	13.52E	0.71E	1.30E	5.56E	51.14E	22.85E	274.2E	0
2000/01	48.41	108.3	353.1 <	49.83E	1.13E	0.12E	0.24E	0.06E	0.46E	0.27E	12.93E	88.76E	55.47E	665.6E	0
2001/02	21.33E	52.52E	1287E	43.85	1.95E	0.92E	0.36E	0.08E	0.07E	0.14E	5.84E	6.29E	118.4E	1421E	0
2002/03	33.64E	3.16E	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	118.40E	136.79E	308
2637 Tot															
Mean	142.6 <	105.9	261.2 <	18.52E	1.66E	0.56E	0.20E	1.78E	0.35E	0.96E	7.97E	36.18E	[42.21]	[482.7]	Mean
Med.	44.32E	161.71E	42.69E	10.33E	0.93E	0.35E	0.20E	0.09E	0.26E	0.26E	5.29E	37.00E			Med.
Max	627.3 <	456.0 <	1287E	49.83E	5.12E	1.69E	0.36E	13.52E	1.11E	5.17E	32.33E	88.76E	[118.4]	[1421.79]	Max
Min	0.72E	3.16E	3.51E	1.51E	0.60E	0.12E	0.00E	0.00E	0.00E	0.00E	0.23E	2.11E	[7.37]	[36.79]	Min
OK	100%	98%	100%	100%	94%	100%	100%	100%	100%	100%	100%	100%	99%	99%	OK
Cnt	8	8	7	7	8	8	8	8	8	8	8	8	9	9	Cnt

----- Notes -----
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 except where the following tags are used...
 Good Data - no quality flag printed
 < ... Caution - Rating Table Extrapolated
 E ... Estimated
 [...] Data Not processed

76. AW503507 TKN Monthly Load Report

DWLBC, Surface Water Archive

HYMONTH V70 Output 12/11/2002

Station AW503507 LENSWOOD CREEK @ Lenswood
 VarFrom 826.99 TKN as N in milligrams/Litre, Composite Sample Result
 VarTo 926.00 Total TKN as N Load in Kilograms, Recording
 Figures are for period ending 2400 hours.

Station AW503507

Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Mean Monthly	Annual Total	Missing Days
1988/89	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1989/90	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1990/91	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1991/92	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	366
1992/93	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1993/94	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1994/95	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	138
1995/96	3615	< 429.7 E	47.96E	34.22E	[10.64]	7.67E	0.03E	0.00E	0.00E	2.29E	32.11E	324.7 E	[47.19]	[377.5]	<
1996/97	1108	2798	< 544.7	< 250.9 E	15.46E	16.78E	2.28E	1.94E	0.00E	0.00E	16.38E	23.75E	398.2	< 4778	<
1997/98	13.32E	478.7	477.8 E	81.15E	50.87E	5.95E	3.34E	1.82E	0.00E	32.73E	6.30E	80.20E	102.6	< 1232	0
1998/99	1658	278.1	241.0 E	74.01E	10.99E	2.05E	0.53E	0.00E	3.67E	1.74E	228.9 E	206.6 E	225.5	< 2706	0
1999/00	362.6	539.6	404.0 E	45.75E	20.72E	7.27E	1.92E	68.92E	5.33E	13.52E	59.52E	280.3 E	150.8	< 1809	0
2000/01	394.5	738.7	2029	< 319.7 E	18.28E	1.77E	2.30E	0.51E	4.02E	2.51E	65.90E	506.9 E	340.4	< 4085	0
2001/02	218.6	626.8 E	5128	E 484.9	34.92E	19.28E	7.50E	0.88E	0.69E	1.62E	33.43E	45.19E	550.2	E 6602	0
2002/03	259.5	E [48.30]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[153.9]	[307.8]	308
															2637 Tot
Mean	953.8	< [742.3]	1267	< 184.4 E	[21.73]	7.89E	2.74E	9.45E	2.89E	7.46E	55.81E	243.0 E	[261.7]	[2949]	Mean
Med.	378.5	< [509.1]	477.8	< 81.15E	[16.87]	6.61E	2.29E	1.21E	2.18E	2.40E	32.77E	243.5 E	[]	[]	Med.
Max	3615	< 2798	5128	< 484.9 E	[10.64]	19.28E	7.50E	68.92E	9.44E	32.73E	228.9 E	506.9 E	[550.2]	[6602]	Max
Min	13.32	< [48.30]	47.96	< 34.22E	[10.64]	1.77E	0.03E	0.00E	0.00E	0.00E	3.84E	23.75E	[47.19]	[307.8]	Min
OK	100%	98%	100%	100%	94%	100%	100%	100%	100%	100%	100%	100%	99%	99%	OK
Cnt	8	8	7	7	8	8	8	8	8	8	8	8	9	9	Cnt

----- Notes -----
 All recorded data is continuous and reliable
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 Good Data - no quality flag printed
 < ... Caution - Rating Table Extrapolated
 E ... Estimated
 [...] Data Not processed

77. AW503507 Nox Monthly Load Report

DWLBC, Surface Water Archive

HYMONTH V70 Output 12/11/2002

Station AW503507 LENSWOOD CREEK @ Lenswood
 VarFrom 827.99 Nitrate + Nitrite as N in milligrams/Litre, Composite Sample Result
 VarTo 927.00 Total Nitrate + Nitrite as N Load in Kilograms, Recording
 Figures are for period ending 2400 hours.

Station AW503507

Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Mean Monthly	Annual Total	Missing Days
1988/89	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1989/90	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1990/91	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1991/92	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	366
1992/93	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1993/94	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1994/95	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	138
1995/96	4147	< 795.6 E	21.83E	6.80E	0.31E	0.10E	0.00E	0.00E	0.00E	0.13E	32.85E	486.5 E	64.99	519.8	<
1996/97	1494	1923	< 697.0	321.5 E	0.73E	0.48E	0.16E	0.03E	0.00E	0.00E	2.54E	22.40E	371.9	< 4462	<
1997/98	1.97E	745.6	< 753.9	42.15E	31.01E	0.82E	0.04E	0.07E	0.00E	14.61E	0.13E	126.1 E	143.0	< 1716	<
1998/99	1007.2	546.7	< 147.8	10.78E	3.55E	0.16E	0.04E	0.00E	0.01E	402.7 E	401.6 E	210.2	< 2522	<	
1999/00	512.2	444.0	< 87.02E	25.27E	7.67E	1.44E	0.02E	23.93E	1.56E	0.47E	72.61E	320.3 E	124.7	< 1496	<
2000/01	504.5	523.4	< 859.4	163.9 E	5.17E	0.10E	0.19E	0.34E	1.92E	0.64E	44.79E	511.9 E	218.0	< 2616	<
2001/02	448.9	749.3	< 471.2	181.5	19.68E	2.44E	0.07E	0.02E	0.01E	0.02E	17.39E	69.74E	163.3	< 1960	<
2002/03	405.7	66.55	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	236.1	472.2	314
															2643 Tot
Mean	1065	< 724.3	434.0	107.4 E	8.68	0.70E	0.07E	3.06E	0.95E	2.02E	71.67E	320.6 E	222.1	2374	Mean
Med.	508.4	< 646.1	471.2	42.15E	31.01	0.32E	0.04E	0.05E	0.78E	0.20E	25.12E	360.9 E	[]	[]	Med.
Max	4147	< 1923	859.4	321.5 E	31.01	2.44E	0.19E	23.93E	2.38E	14.61E	402.7 E	401.6 E	466.9	5602	Max
Min	1.97	< 66.55	21.83	6.80E	0.31	0.06E	0.00E	0.00E	0.00E	0.00E	0.13E	22.40E	64.99	472.2	Min
OK	100%	96%	100%	100%	94%	100%	100%	100%	100%	100%	100%	100%	99%	99%	OK
Cnt	8	8	7	7	8	8	8	8	8	8	8	8	9	9	Cnt

----- Notes -----
 All recorded data is continuous and reliable
 except where the following tags are used...
 Good Data - no quality flag printed
 < ... Caution - Rating Table Extrapolated
 E ... Estimated
 [] Data Not processed

78. AW503509 Site Information Summary Report

DWLBC, Surface Water Archive

13:22_12/11/2002 Page 1

HYSITREP - Site Summary Report
AW503509 - ALDGATE CK @ Aldgate Rly Station

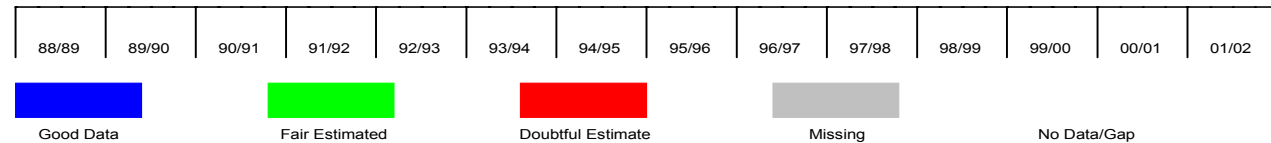
SITE DESCRIPTION
 Site Commenced: 13/07/1972
 Site Ceased:
 Map Name: 6627-4 (50k)
 Local Map Reference:
 Grid Reference: Zone - 54 Easting - 293041.0 Northing - 6122962.0
 Latitude: 35: 0:53S
 Longitude: 138:43:54E
 Elevation: 416.160
 Comment:

STATION DESCRIPTION
 Stream Distance: 0.000
 Gauge Zero: 414.952
 Gauge Datum: AHD
 Control: Natural rockbar, concrete improvement
 Cease to Flow: 1.210
 Max gauged stage (m.): 2.132 on 05/11/1980
 QMIN: 2.000
 TMIN: 3000
 Catchment Area: 7.800

STATION HISTORY
 13/07/1972 ALIAS AWQC Site No. 3210 + EPA-EDMS Site Nos. 2289+260+8841 + Met Station BM 523715
 13/07/1972 PURPOSE * Pollution study within the Onkaparinga Catchment from a sub-catchment which is predominantly residential (1972).
 13/07/1972 XFACTOR * Water Resouces assessment, as part of the National Water Resources Assessment program (1972)
 01/01/1981 PURPOSE Leakage from water supply main influenced base flow between 13/07/1972 to 22/06/1989.
 01/01/1994 PURPOSE Waite Institute project examining the influence of soils and landuse on clay movement and water quality. (1981)
 01/01/2000 ACCURACY Nutrient Budget Study - nutrient inflows to Mount Bold Reservoir to provide long term monitoring of catchment management performance. (commenced 1994)
 Control : Irregular control profile possibly contributes to some scatter in stage - discharge relationship between 0.4 and 4 cumecs.
 Rating : One rating relationship exists covering the whole period of record comprising 102 gaugings to a flow of 8.2 cumecs.
 A theoretical extension has been made to 26 cumecs.
 Rating Index 36%

79. AW503509 Data Period & Data Quality Summary Plot**DWLBC, Surface Water Archive**

HYQPLOT V53 Output 12/11/2002

Data Quality Plot**Period 00:00_01/07/1988 to 00:00_01/07/2002****AW503509 ALDGATE CK/ALDGATE****10.00 Rainfall (mm)****100.00 Level (m)****800.99 TDS (mg/L)****801.99 TDS(mg/L)****802.99 SS (mg/L)****821.99 EC corrected @25C****824.99 P Total (mg/L)****825.99 P Soluble (mg/L)****826.99 TKN (mg/L)****827.99 NOx (mg/L)**

DWLBC, Surface Water Archive
ALDGATE CK @ Aldgate Rly Station

Period of Record 01/01/1988 to 01/01/2003

HYSTATR V59 Output 12/11/2002
 Station AW503509

Mean of Annual Rainfall	934	(Millimetres per Year)											
Standard Dev. of Annual Rainfall	10.7	(Millimetres per Year)											
Co. of Variation of Annual Rainfall	0.011	(Millimetres per Year)											
Maximum Daily Rainfall	77.4	(Millimetres per Day)											
Mean Wet Day Frequency	131	(Days per Year)											
Longest Dry Run	34	(Days)											
Serial Correlation Coeff. (lag 1)	0.328	(Millimetres per Month)											
Daily Rainfall	(Millimetres per Day)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean	0.479	1.20	2.05	2.58	4.40	5.13	3.92	4.35	4.58	2.97	1.37	0.859	
Standard Deviation	2.14	5.27	6.67	9.08	10.4	9.61	8.80	9.24	9.38	7.08	3.77	2.96	
Coeff. of Variation	4.48	4.39	3.25	3.52	2.36	1.87	2.25	2.12	2.05	2.39	2.74	3.44	
Monthly Rainfall	(Millimetres per Month)												
Mean	14.8	33.9	63.5	77.3	144	153	124	134	137	110	42.5	26.6	
Standard Deviation	7.98	37.5	45.5	73.0	140	12.7	30.6	50.5	26.0	41.3	17.3	8.49	
Coeff. of Variation	0.538	1.11	0.716	0.943	0.968	0.083	0.246	0.374	0.189	0.373	0.406	0.319	
Maximum Rainfall	(Millimetres per Day)												
Maximum	16.4	45.6	44.0	58.6	65.8	40.4	53.6	77.4	50.8	52.2	28.6	21.0	
Mean of Maximum	10.6	19.3	27.9	31.4	42.4	36.8	38.8	39.8	40.1	32.2	14.9	15.3	
Mean Wet Days	(Days per Month)												
	6.20	6.00	8.50	9.00	13.5	17.3	16.0	16.8	14.2	16.8	9.75	7.40	

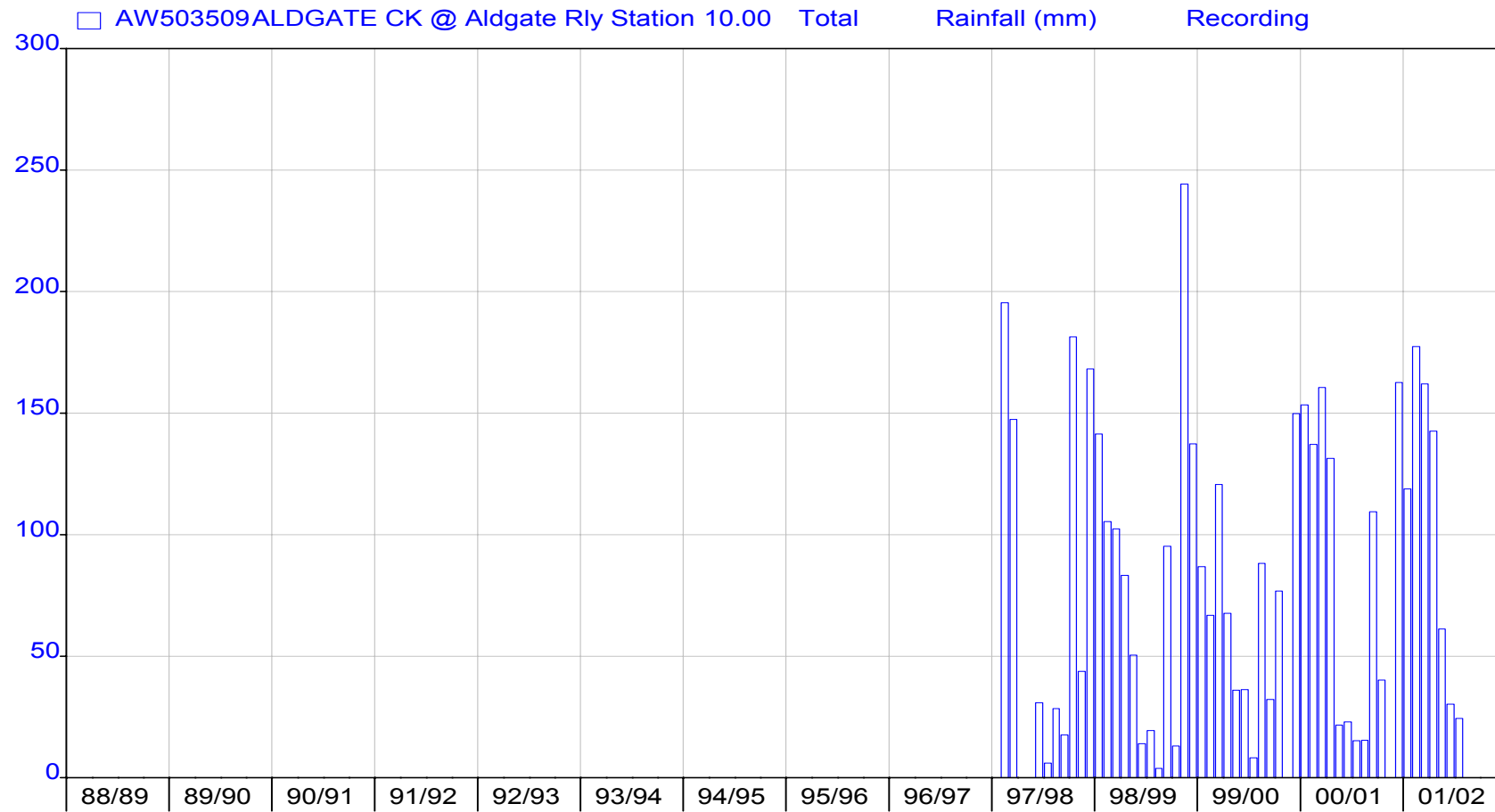
81. AW503509 Rainfall Monthly Total Plot**DWLBC, Surface Water Archive**

HYPLOT V125 Output 12/11/2002

Period 14 Year Plot Start 00:00_01/07/1988

1988-02

Interval 1 Month Plot End 00:00_01/07/2002



82. AW503509 Rainfall Monthly Total Report

DWLBC, Surface Water Archive

HYMONTH V70 Output 12/11/2002

Station AW503509 ALDGATE CK @ Aldgate Rly Station
 Variable 10.00 Total Rainfall in Millimetres, Recording
 Figures are for period ending 900 hours.

Station AW503509

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean Monthly	Annual Total	Missing Days	Yr
1988	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	366	1988
1989	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365	1989
1990	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365	1990
1991	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365	1991
1992	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	366	1992
1993	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365	1993
1994	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365	1994
1995	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365	1995
1996	[]	[]	[]	[]	[]	[]	[0.0]	[90.8A]	[52.0A]	[4.8]	[22.0]	[30.8A]	[66.7]	[400.4]	366	1996
1997	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	223	1997
1998	6.0A	28.4A	17.4A	179.6A	45.8A	165.2A	144.4A	105.4A	102.4A	83.2A	50.4A	14.0A	78.5A	942.2A	0	1998
1999	19.4A	3.8	95.2A	13.0A	244.2A	137.4A	86.8A	66.8A	120.6A	67.6A	36.0A	36.2A	77.2A	927.0A	0	1999
2000	8.2A	88.2A	32.2A	76.6A	[133.4]	150.6A	153.8A	137.2A	144.0A	147.6A	22.0A	23.0A	[93.1]	[1116.]	4	2000
2001	15.2A	15.4A	109.4A	40.2A	[65.2]	162.6A	113.0A	174.4A	168.2A	144.6A	61.8A	29.2	[91.6]	[1099.]	9	2001
2002	25.4A	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[25.4]	[25.4]	334	2002
3858 Total																
Mean	14.8A	33.9A	63.5A	77.3A	[122.1]	153.9A	[99.6]	134.9A	137.4A	[89.6]	[38.4]	26.6A	[72.1]	[751.8]		Mean
Med.	15.2A	21.9A	63.7A	58.4A	[99.3]	156.6A	[113.0]	137.2A	144.0A	[83.2]	[36.0]	29.2A	[]	[]		Med.
Max	25.4A	88.2A	109.4A	179.6A	[244.2]	165.2A	[153.8]	190.8A	168.2A	[147.6]	[61.8]	36.2A	[93.1]	[1116.]		Max
Min	6.0A	3.8A	17.4A	13.0A	[45.8]	137.4A	[0.0]	66.8A	102.4A	[4.8]	[22.0]	14.0A	[25.4]	[25.4]		Min
OK	100%	100%	100%	100%	90%	100%	82%	100%	100%	97%	93%	100%	97%	97%		OK
Cnt	5	4	4	4	4	4	5	5	5	5	5	5	6	6		Cnt

----- Notes -----
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 Good Data - no quality flag printed
 A ... Accumulated Data
 [] Data Not processed

83. AW503509 Flow Volume Annual Total (Year Order) Report

DWLBC, Surface Water Archive

HYANN V45 Output 12/11/2002

Station AW503509 ALDGATE CK @ Aldgate Rly Station
 Variable 151.00 Stream Discharge Volume in Megalitres, Recording

Year Starting July	Annual Total (Megalitres)	Days Missing	Rank
1988/89	1968	9	6
1989/90	0.0	365	15
1990/91	0.0	365	11
1991/92	0.0	366	12
1992/93	0.0	365	13
1993/94	0.0	365	14
1994/95	792.3	84	9
1995/96	2306		4
1996/97	2700		1
1997/98	1474		8
1998/99	1979		5
1999/00	1629		7
2000/01	2661		2
2001/02	2515		3
2002/03	46.0	362	10
Total	18070	2281	
Minimum	0.0		
Maximum	2700		
Mean	1807		
Median	1974		

84. AW503509 Flow Volume Annual Total (Size Order) Report

DWLBC, Surface Water Archive

HYANN V45 Output 12/11/2002

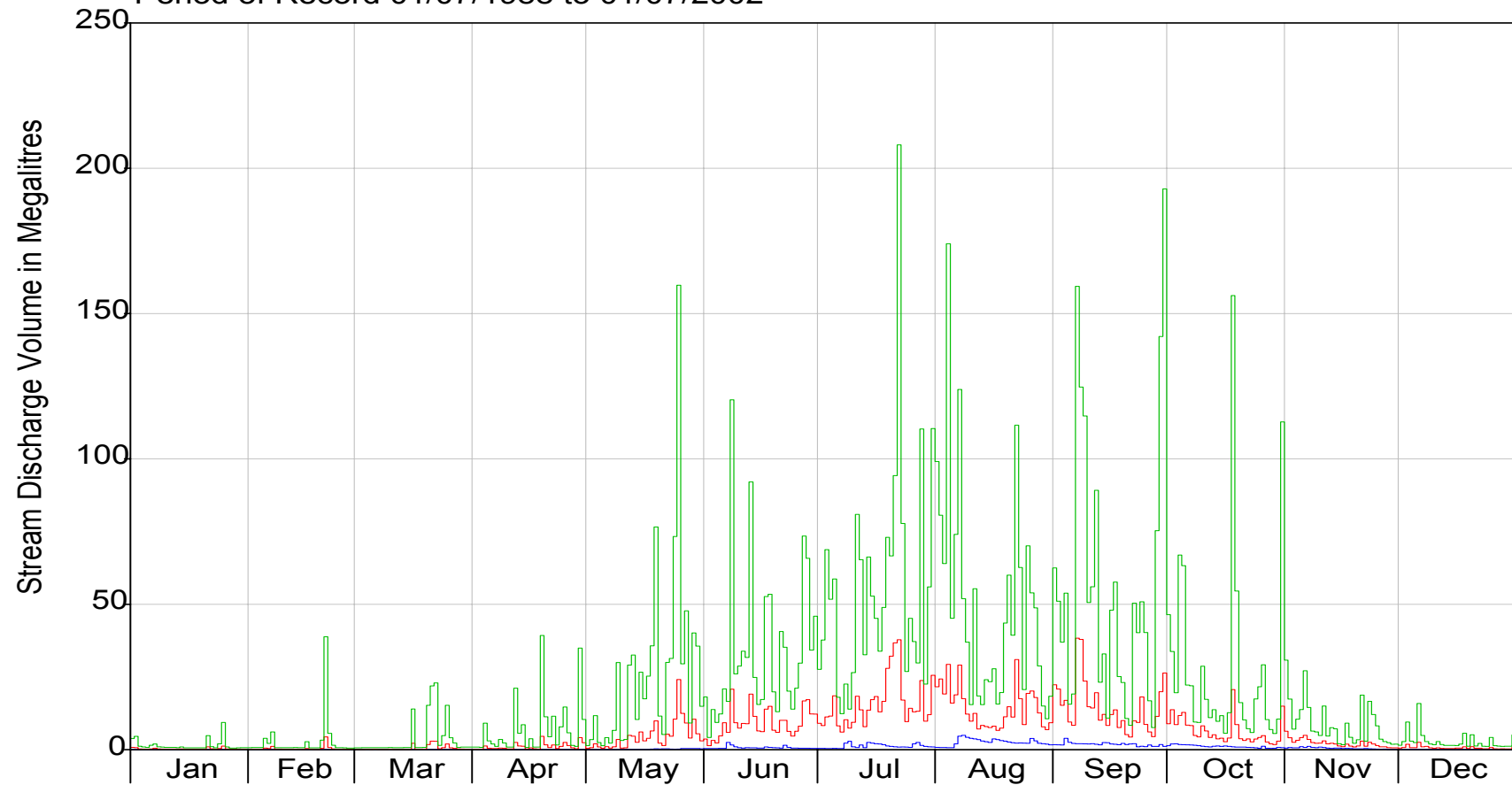
Station AW503509 ALDGATE CK @ Aldgate Rly Station
 Variable 151.00 Stream Discharge Volume in Megalitres, Recording

Year Starting July	Annual Total (Megalitres)	Days Missing	Rank
1996/97	2700		1
2000/1	2661		2
2001/2	2515		3
1995/96	2306		4
1998/99	1979		5
1988/89	1968	9	6
1999/0	1629		7
1997/98	1474		8
1994/95	792.3	84	9
2002/3	46.0	362	10
1990/91	0.0	65	11
1991/92	0.0	66	12
1992/93	0.0	65	13
1993/94	0.0	65	14
1989/90	0.0	65	15
Total	18070	2281	
Minimum	46.0		
Maximum	2700		
Mean	1807		
Median	1974		

85. AW503509 Flow Volume Daily Max, Min, Mean by Calendar Month Plot**DWLBC, Surface Water Archive**

HYMXMEAN V69 Output 12/11/2002

Plot of Daily Maximum, Minimum and Mean
Station AW503509 ALDGATE CK @ Aldgate Rly Station
Period of Record 01/07/1988 to 01/07/2002



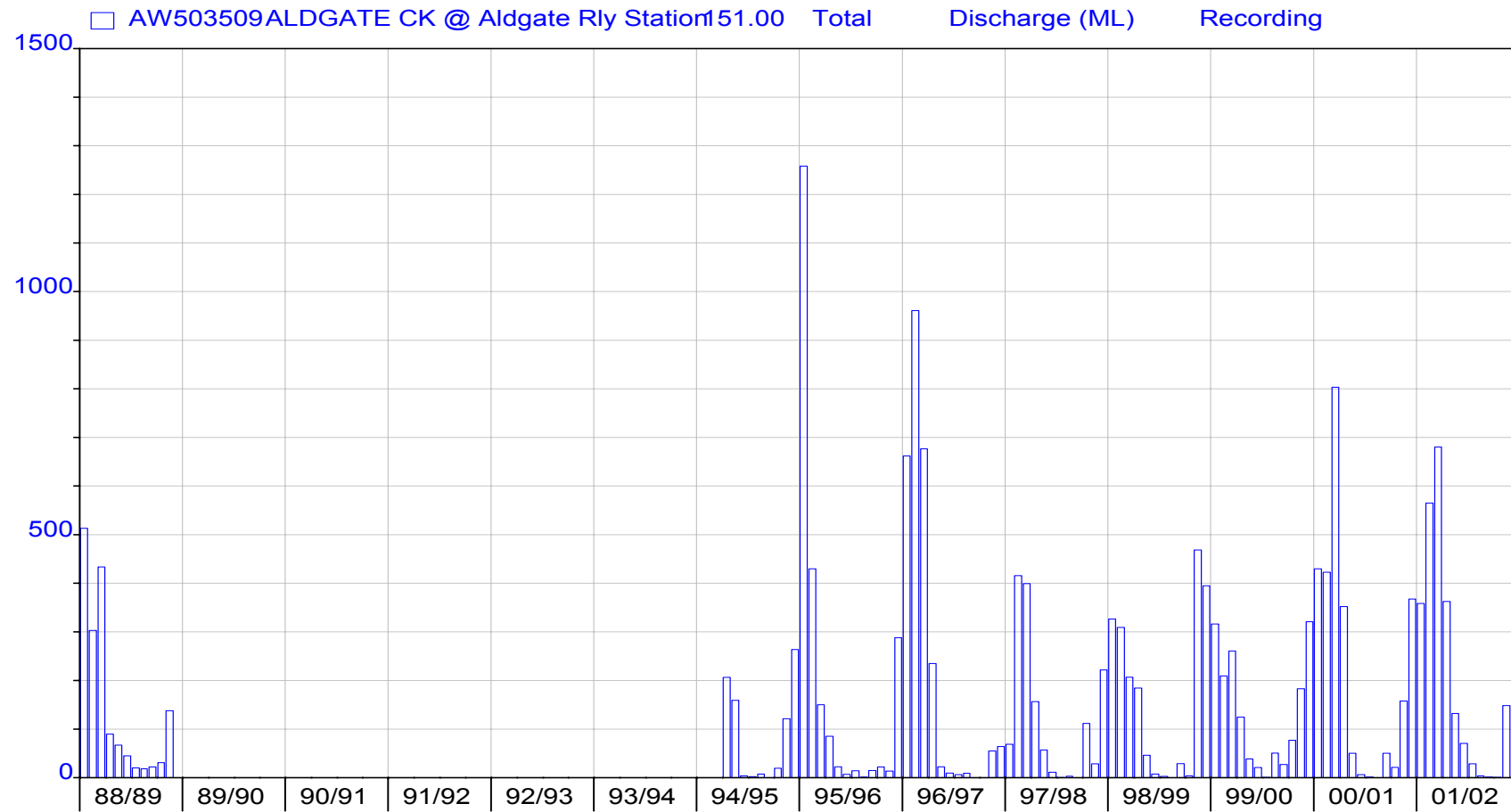
86. AW503509 Flow Volume Monthly Total Plot**DWLBC, Surface Water Archive**

HYPLOT V125 Output 12/11/2002

Period 14 Year Plot Start 00:00_01/07/1988

1988-02

Interval 1 Month Plot End 00:00_01/07/2002



87. AW503509 Flow Volume Monthly Total Report

DWLBC, Surface Water Archive

HYMONTH V70 Output 12/11/2002

Station AW503509 ALDGATE CK @ Aldgate Rly Station
 VarFrom 100.00 Water Level in Metres, Recording
 VarTo 151.00 Total Stream Discharge Volume in Megalitres, Recording
 Figures are for period ending 2400 hours.

Station AW503509

Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Mean Monthly	Annual Total	Missing Days
1988/89	512.9	302.9	433.6	89.85	66.82	44.97	20.03	18.35	22.06	30.56	137.4	[288.8]	[164.0]	[1968]	9
1989/90	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1990/91	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1991/92	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	366
1992/93	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1993/94	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1994/95	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	84
1995/96	1257	429.8	150.1	206.3	159.2	3.49	2.08	7.16	0.00	19.47	121.2	263.5	[79.23]	[792.2]	0
1996/97	661.8	961.0	676.7	234.9	22.23	9.32	6.19	8.96	0.00	0.00	54.75	63.92	225.0	2699	0
1997/98	68.64	415.6	399.2	156.7	56.99	11.32	0.15	2.94	0.00	111.5	28.59	221.8	122.8	1473	0
1998/99	326.4	309.2	206.8	184.3	46.24	7.15	2.38	0.00	28.91	4.08	468.3	394.6	164.8	1978	0
1999/00	316.0	209.2	260.3	124.5	38.45	20.98	0.72	50.67	27.02	76.72	182.8	320.9	135.7	1628	0
2000/01	429.6	422.6	803.2	351.9	50.28	6.32	1.21	0.00	50.20	21.03	157.5	367.2	221.7	2661	0
2001/02	358.1	565.1	680.2	362.5	131.9	70.63	28.44	3.57	1.16	0.53	148.2	164.8	209.6	2515	0
2002/03	[45.97]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[45.97]	[45.97]	362
2281 Tot															
Mean	[441.9]	451.9	[402.2]	199.6	66.06	20.14	8.40	10.32	15.98	31.75	145.8	[263.7]	[156.1]	[1807]	Mean
Med.	[358.1]	419.1	[399.2]	184.3	50.28	9.32	2.38	3.57	14.49	21.03	137.4	[287.8]	[]	[]	Med.
Max	1257	961.0	803.2	362.5	70.63	28.44	50.67	50.67	50.20	111.5	468.3	394.6	225.0	2699	Max
Min	[45.97]	209.2	[9.74]	85.32	22.23	3.49	0.15	0.00	0.00	0.00	13.48	[63.92]	[45.97]	[45.97]	Min
OK	90%	100%	92%	100%	100%	100%	100%	100%	100%	100%	100%	97%	98%	98%	OK
Cnt	9	8	9	9	9	9	9	9	9	9	9	9	10	10	Cnt

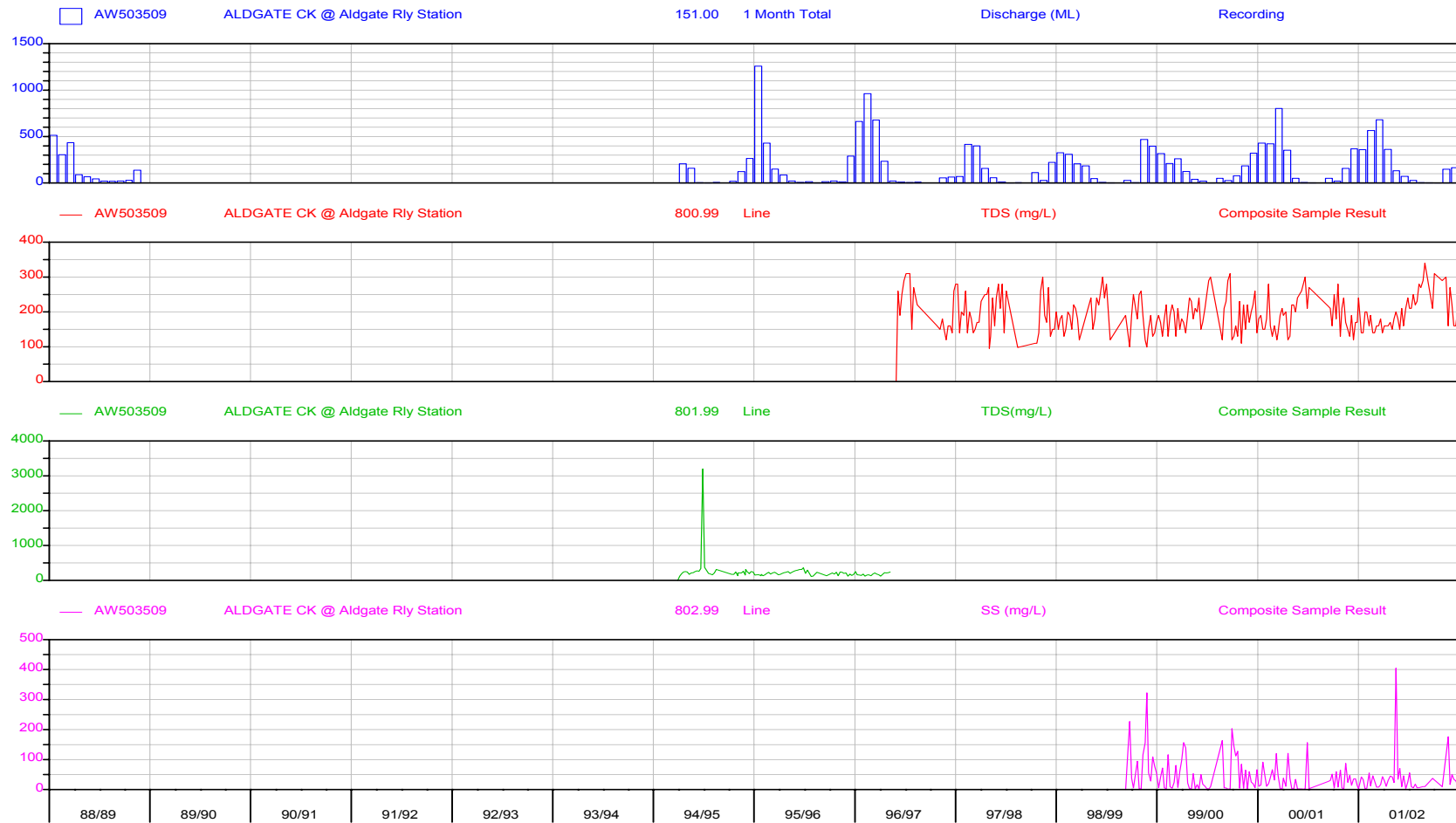
----- Notes -----
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88. AW503509 TDS & SS Sample Results Plot**DWLBC, Surface Water Archive**

HYPLOT V125 Output 12/11/2002

Period 14 Year 00:00_01/07/1988 to 00:00_01/07/2002

1988-02

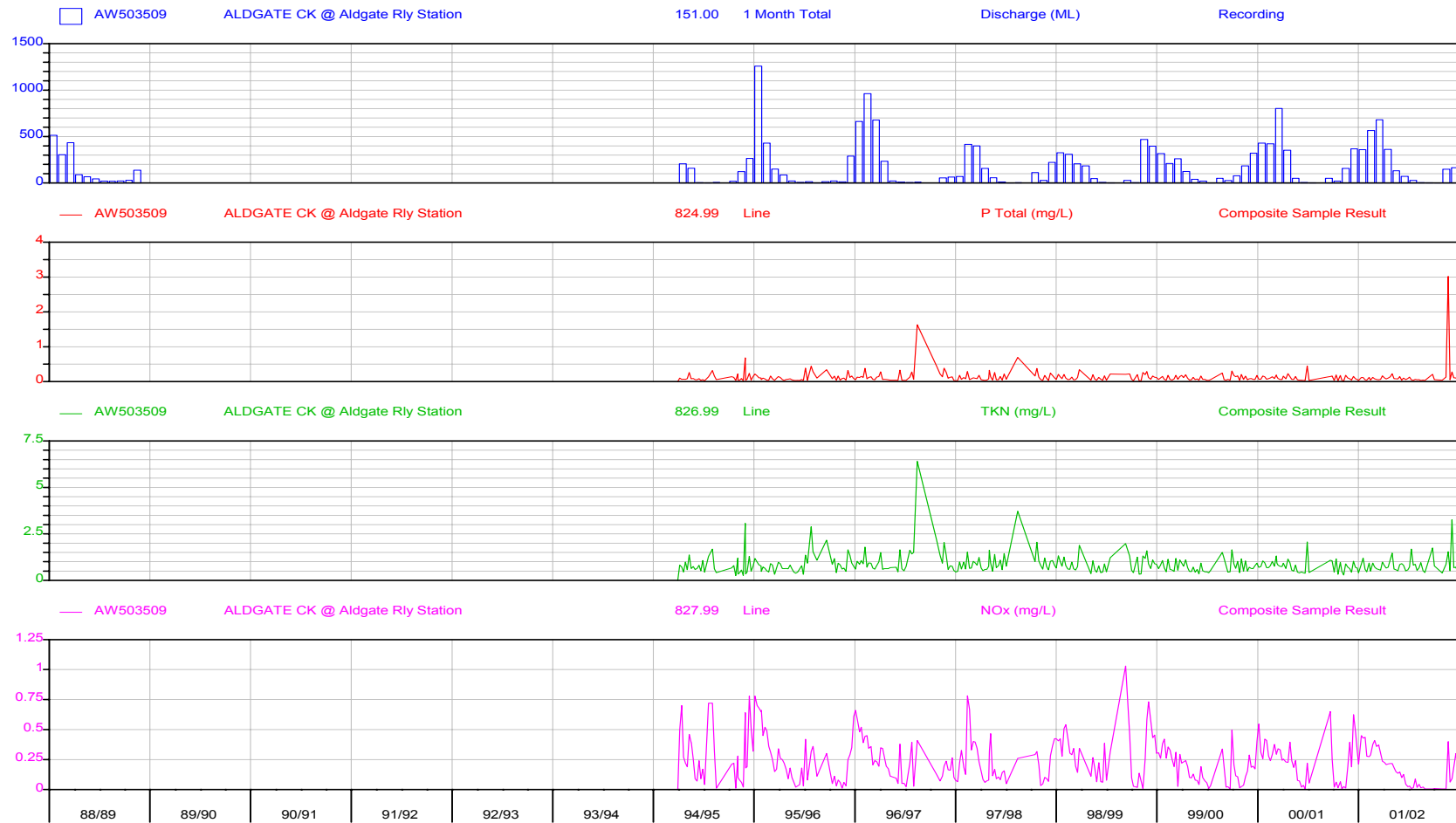


89. AW503509 Nutrients Sample Results Plot**DWLBC, Surface Water Archive**

HYPLOT V125 Output 12/11/2002

Period 14 Year 00:00_01/07/1988 to 00:00_01/07/2002

1988-02

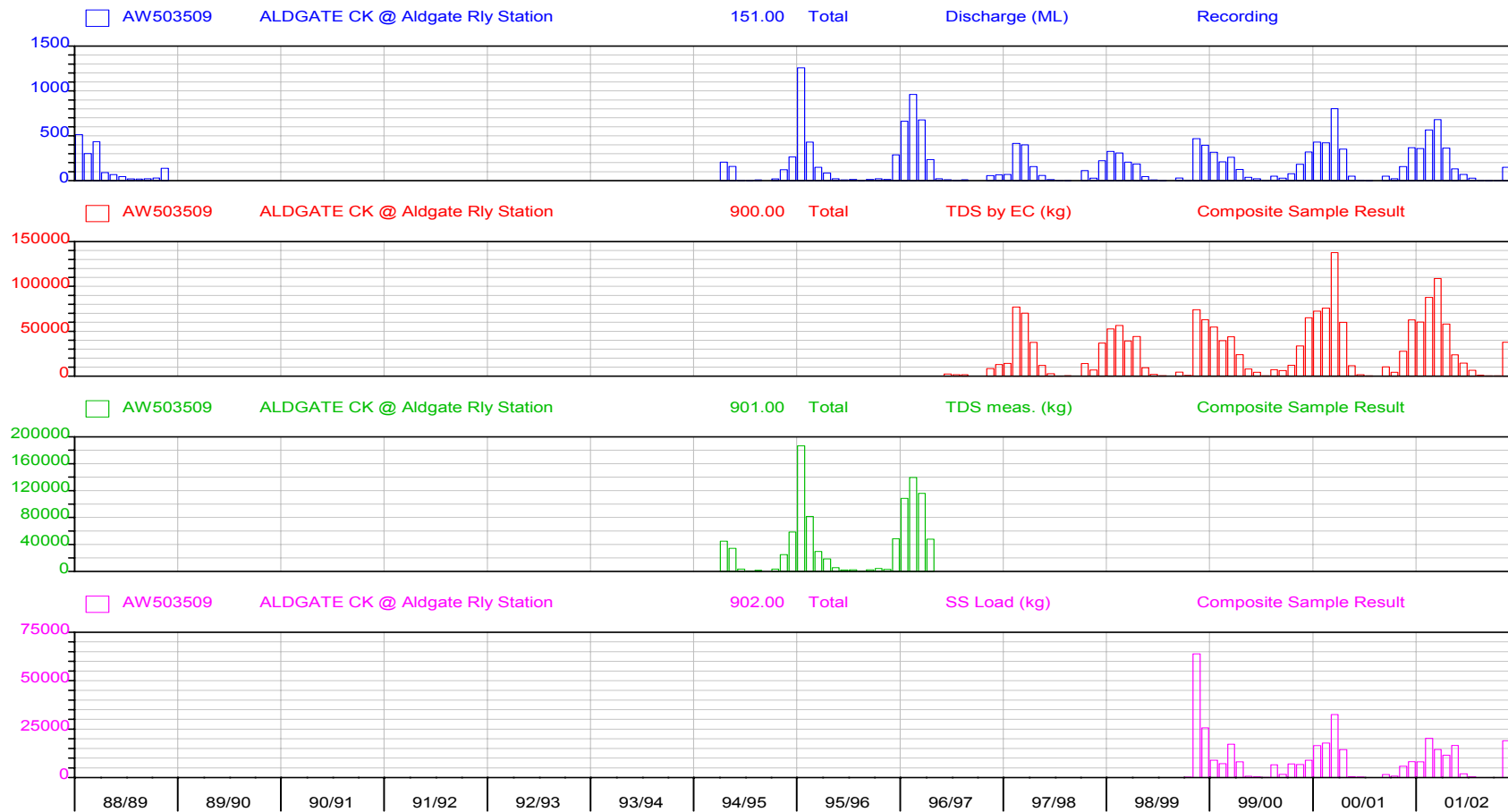


90. AW503509 TDS & SS Monthly Load Plot**DWLBC, Surface Water Archive**

HYPLOT V125 Output 12/11/2002

Period 14 Year Plot Start 00:00_01/07/1988
Interval 1 Month Plot End 00:00_01/07/2002

1988-02

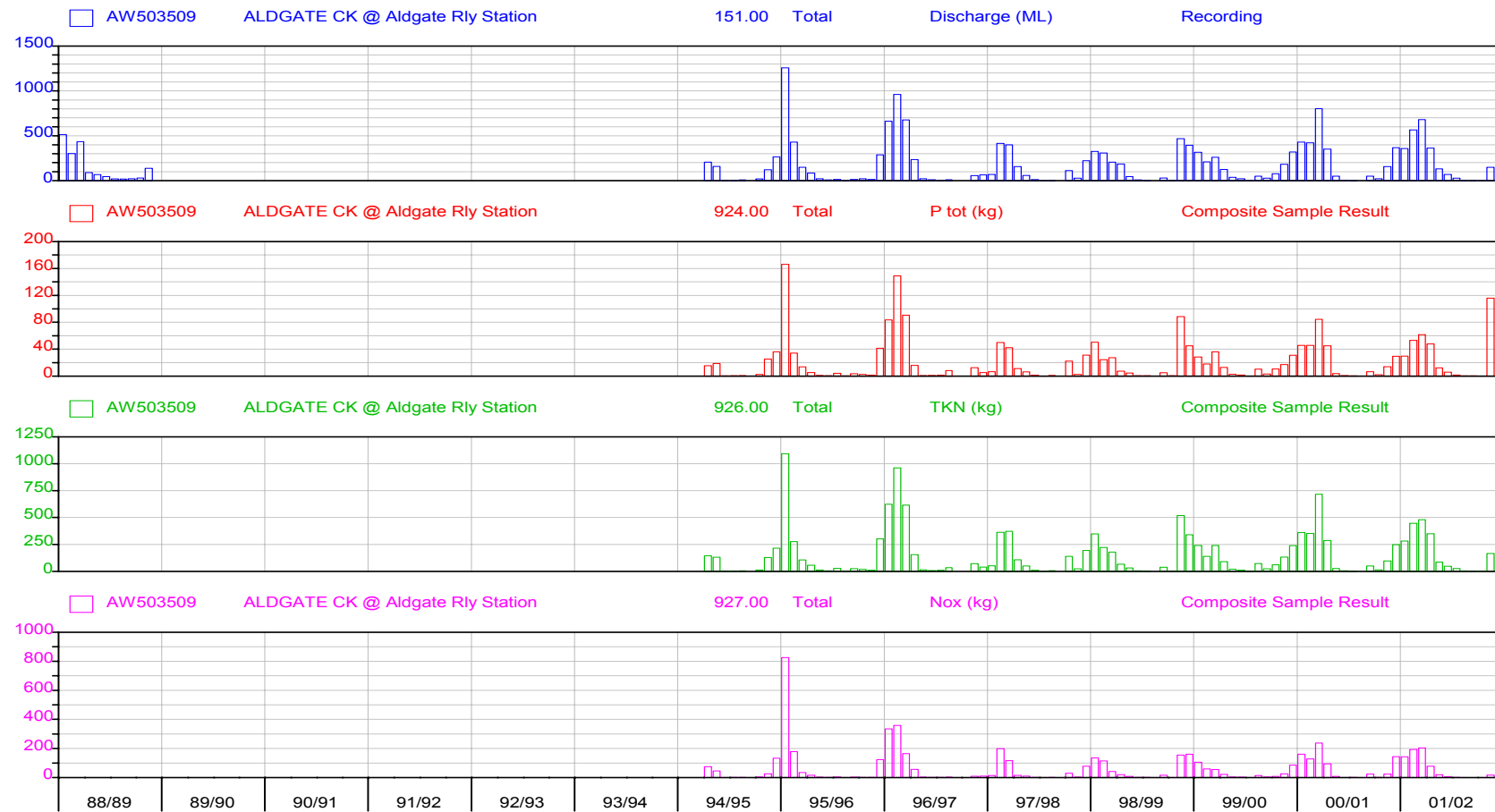


91. AW503509 Nutrients Monthly Load Plot**DWLBC, Surface Water Archive**

HYPLOT V125 Output 12/11/2002

Period 14 Year Plot Start 00:00_01/07/1988
Interval 1 Month Plot End 00:00_01/07/2002

1988-02



92. AW503509 TDS by EC Monthly Load Report

DWLBC, Surface Water Archive

HYMONTH V70 Output 12/11/2002

Station AW503509 ALDGATE CK @ Aldgate Rly Station
 VarFrom 800.99 Total Dissolved Solids (by EC) in milligrams/Litre, Composite Sample Result
 VarTo 900.00 Total Total Dissolved Solids (by EC) in Kilograms, Recording
 Figures are for period ending 2400 hours.

Station AW503509

Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Mean Monthly	Annual Total	Missing Days
1988/89	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1989/90	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1990/91	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1991/92	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	366
1992/93	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1993/94	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1994/95	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1995/96	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	366
1996/97	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	150
1997/98	12767	65559	63266	21758	9350	1936	967	1967	0	0	7542	10377	[2882]	[23055]	0
1998/99	47639	52082	36359	44252	8244	1985	18	288	0	13287	5600	34423	19025	228301	0
1999/00	49148	33341	40018	20995	7575	1776	287	0	3376	845	58259	58064	25932	311181	0
2000/01	69539	67245	112568	49201	10959	1466	202	6285	5221	9416	30265	53720	21637	259647	0
2001/02	54214	82237	107492	57821	22932	13544	6284	1014	264	154	25190	27506	33221	398652	0
2002/03	[7356]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[7356]	[7356]	362
															3434 Tot
Mean	40110	60092	71940	38805	[9887]	4028	1337	1592	3005	4484	24861	39230	[20450]	[232203]	Mean
Med.	48393	65558	63266	44251	[8796]	1960	277.8	650.9	1820	2025	23752	42857			Med.
Max	[69539]	82237	112568	57821	[22932]	13544	6284	6285	9172	13287	58259	58064	[33221]	[398652]	Max
Min	[7356]	33341	36359	20995	[266]	1466	18	0	0	0	3600	10377	[2882]	[7356]	Min
OK	85%	100%	100%	100%	85%	100%	100%	100%	100%	100%	100%	100%	97%	97%	OK
Cnt	6	5	5	5	6	6	6	6	6	6	6	6	7	7	Cnt

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93. AW503509 TDS Measured Monthly Load Report

DWLBC, Surface Water Archive

HYMONTH V70 Output 12/11/2002

Station AW503509 ALDGATE CK @ Aldgate Rly Station
 VarFrom 801.99 Total Dissolved Solids (Measured) in milligrams/Litre, Composite Sample Result
 VarTo 901.00 Total Total Dissolved Solids (measured) in Kilograms, Recording
 Figures are for period ending 2400 hours.

Station AW503509

Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Mean Monthly	Annual Total	Missing Days
1988/89	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1989/90	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1990/91	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1991/92	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	366
1992/93	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1993/94	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1994/95	[]	[]	[470]	34433	29346	1985	371	1398	0	3048	19452	48516	[13902]	[139019]	89
1995/96	181142	68774	26918	17353	4921	1631	1938	283	1898	3357	2834	52221	30273	363270	0
1996/97	102613	129031	95029	40461	[1436]	[]	[]	[]	[]	[]	[]	[]	[73714]	[368569]	237
1997/98	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1998/99	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1999/00	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
2000/01	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
2001/02	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
2002/03	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
4708 Tot															
Mean	141878	98903	[40806]	30749	[11901]	1808	1155	840	949	3203	11143	50368	[39296]	[290286]	Mean
Med.	141878	98903	[26918]	34433	[14921]	1808	1155	840	949	3203	11143	50368	[39296]	[290286]	Med.
Max	181142	129031	[95029]	40461	[29346]	1985	1938	1398	1898	3357	19452	52221	[73714]	[368569]	Max
Min	102613	68774	[470]	17353	[1436]	1631	371	283	0	3048	2834	48516	[13902]	[139019]	Min
OK	100%	100%	70%	100%	72%	100%	100%	100%	100%	100%	100%	100%	94%	94%	OK
Cnt	2	2	3	3	3	2	2	2	2	2	2	2	3	3	Cnt

----- Notes -----
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 [] Data Not processed

94. AW503509 SS Monthly Load Report

DWLBC, Surface Water Archive

HYMONTH V70 Output 12/11/2002

Station AW503509 ALDGATE CK @ Aldgate Rly Station
 VarFrom 802.99 Suspended Solids in milligrams/Litre, Composite Sample Result
 VarTo 902.00 Total Suspended Solids in Kilograms, Recording
 Figures are for period ending 2400 hours.

Station AW503509

Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Mean Monthly	Annual Total	Missing Days
1988/89	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1989/90	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1990/91	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1991/92	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	366
1992/93	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1993/94	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1994/95	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1995/96	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	366
1996/97	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1997/98	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1998/99	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1999/00	14041	15179	18062	12922	1135	800.5	13.4	7952	[5532]	243.3	87653	31082	[31127]	[124512]	233
2000/01	17447	19586	54661	20131	659.2	658.3	29.5	0.0	3314	7674	10210	13570	8739	104878	0
2001/02	11019	20652	10404	11337	13741	2204	578.9	29.9	41.7	5.0	24925	5112	8337	100053	0
2002/03	[1884]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[1884]	[1885]	362
															4267 Tot
Mean	11098	118472	27709	14797	5178	1221	207.3	2660	[2741]	2274	32367	15276	[12258]	[93154]	Mean
Med.	12530	119586	18062	12922	1135	800.5	29.5	29.9	[2696]	709.2	17567	12455			Med.
Max	17447	20652	54661	20131	13741	2204	578.9	7952	[5532]	7674	87653	31082	[31127]	134445	Max
Min	[1884]	15179	10404	11337	659.2	658.3	13.4	0.0	[41.7]	5.0	6678	5112	[1884]	[1884]	Min
OK	77%	100%	100%	100%	100%	100%	100%	100%	92%	100%	100%	100%	97%	97%	OK
Cnt	4	3	3	3	3	3	3	3	4	4	4	4	5	5	Cnt

----- Notes -----
 All recorded data is Continuous and reliable
 except where the following tags are used...
 Good Data - no quality flag printed
 [] Data Not processed

95. AW503509 P Monthly Load Report

DWLBC, Surface Water Archive

HYMONTH V70 Output 12/11/2002

Station AW503509 ALDGATE CK @ Aldgate Rly Station
 VarFrom 824.99 Phosphorus - Total as P in milligrams/Litre, Composite Sample Result
 VarTo 924.00 Total Phosphorus - Total as P Load in Kilograms, Recording
 Figures are for period ending 2400 hours.

Station AW503509

Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Mean Monthly	Annual Total	Missing Days
1988/89	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1989/90	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1990/91	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1991/92	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	366
1992/93	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1993/94	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1994/95	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	89
1995/96	156.8	36.26	17.35	16.75	33.58	0.23	0.48	1.09	0.00	3.21	65.03	53.10	[17.39]	[173.8]	0
				6.18	1.44	2.03	4.46	0.12	4.87	3.17	1.16	35.62	22.46	269.5	
1996/97	99.19	219.3	149.2	27.21	0.87	2.47	1.65	14.52	0.00	0.00	13.35	7.54	44.62	535.4	0
1997/98	7.37	86.09	42.43	32.01	9.38	2.00	0.09	2.05	0.00	29.05	32.98	32.15	20.47	245.6	0
1998/99	58.95	28.57	37.71	7.36	5.64	0.99	0.51	0.00	5.58	29.05	95.87	50.65	24.38	292.5	0
1999/00	35.53	27.33	39.03	17.35	3.40	2.68	0.05	11.99	5.38	14.15	20.88	41.27	18.25	219.0	0
2000/01	49.75	47.51	97.31	56.11	4.49	1.95	0.15	0.00	7.63	3.32	14.96	44.93	27.34	328.1	0
2001/02	36.53	55.55	51.42	48.38	13.47	5.95	1.96	0.15	0.21	0.02	408.4	17.31	53.28	639.4	0
2002/03	[5.24]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[5.24]	[5.24]	362
															2642 Tot
Mean	[56.18]	71.53	[54.37]	26.45	9.03	2.29	1.17	3.74	2.96	6.68	77.83	35.32	[25.94]	[300.9]	Mean
Med.	[43.14]	47.51	[40.73]	22.28	3.07	2.02	0.50	0.62	2.54	3.19	17.92	38.44			Med.
Max	[156.8]	219.3	[149.2]	56.11	9.38	2.00	0.51	14.52	7.63	29.05	408.4	53.10	[53.28]	[639.4]	Max
Min	[5.24]	27.33	[0.40]	6.18	0.87	0.23	0.05	0.00	0.00	0.00	1.16	7.54	[5.24]	[5.24]	Min
OK	89%	100%	89%	100%	100%	100%	100%	100%	100%	100%	100%	100%	98%	98%	OK
Cnt	8	7	8	8	8	8	8	8	8	8	8	8	9	9	Cnt

----- Notes -----
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 [] Data Not processed

96. AW503509 TKN Monthly Load Report

DWLBC, Surface Water Archive

HYMONTH V70 Output 12/11/2002

Station AW503509 ALDGATE CK @ Aldgate Rly Station
 VarFrom 826.99 TKN as N in milligrams/Litre, Composite Sample Result
 VarTo 926.00 Total TKN as N Load in Kilograms, Recording
 Figures are for period ending 2400 hours.

Station AW503509

Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Mean Monthly	Annual Total	Missing Days
1988/89	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1989/90	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1990/91	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1991/92	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	366
1992/93	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1993/94	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1994/95	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	89
1995/96	1061	288.6	125.3	154.6	186.6	2.65	3.10	4.57	0.00	17.73	298.9	296.0	196.75	1967.5	0
				60.66	15.57	8.02	23.05	1.33	31.21	20.34	8.94	261.9	158.9	1906	
1996/97	684.8	1200	847.0	195.0	15.14	12.97	8.82	57.05	0.00	0.00	71.02	46.67	261.6	3139	0
1997/98	555.40	505.1	384.0	184.7	58.80	14.18	0.50	10.93	0.00	170.9	24.00	200.2	134.0	1608	0
1998/99	382.9	242.7	227.5	66.38	35.09	5.63	2.91	0.00	34.27	3.74	579.0	367.4	162.3	1947	0
1999/00	279.2	186.3	268.6	108.1	22.77	16.51	0.40	75.29	31.71	79.37	154.8	259.7	123.5	1482	0
2000/01	374.7	364.5	758.6	337.1	30.17	9.49	1.14	0.00	53.12	19.63	106.2	327.6	198.5	2382	0
2001/02	340.6	459.8	451.2	349.9	89.46	52.25	30.19	2.68	1.80	0.21	226.6	122.4	177.2	2127	0
2002/03	41.37	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	41.37	41.37	362
															2642 Tot
Mean	402.6	464.0	383.2	182.0	56.70	15.21	8.76	18.98	19.01	39.00	183.7	235.2	150.4	1733	Mean
Med.	357.7	364.5	326.3	169.7	32.63	11.23	3.01	13.62	16.51	18.68	130.5	260.8	[]	[]	Med.
Max	1061	1200	847.0	349.9	186.6	52.25	30.19	75.29	53.12	170.9	579.0	367.4	261.6	3139	Max
Min	41.37	186.3	3.21	60.66	15.14	2.65	0.40	0.00	0.00	0.00	8.94	46.67	41.37	41.37	Min
OK	89%	100%	89%	100%	100%	100%	100%	100%	100%	100%	100%	100%	98%	98%	OK
Cnt	8	7	8	8	8	8	8	8	8	8	8	8	9	9	Cnt

----- Notes -----
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 [] Data Not processed

97. AW503509 Nox Monthly Load Report

DWLBC, Surface Water Archive

HYMONTH V70 Output 12/11/2002

Station AW503509 ALDGATE CK @ Aldgate Rly Station
 VarFrom 827.99 Nitrate + Nitrite as N in milligrams/Litre, Composite Sample Result
 VarTo 927.00 Total Nitrate + Nitrite as N Load in Kilograms, Recording
 Figures are for period ending 2400 hours.

Station AW503509

Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Mean Monthly	Annual Total	Missing Days
1988/89	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1989/90	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1990/91	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1991/92	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	366
1992/93	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1993/94	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1994/95	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	89
1995/96	814.2	200.4	41.83	114.8	65.74	0.59	1.49	1.96	0.00	4.49	62.54	186.8	[44.04]	[440.4]	0
				18.97	3.02	2.27	5.24	0.14	4.30	1.76	0.64	145.1	103.1	1237	
1996/97	334.6	385.6	204.6	72.18	2.16	2.84	2.36	3.65	0.00	0.00	10.50	13.37	86.00	1032	0
1997/98	16.70	269.3	140.6	49.53	16.06	1.45	0.03	0.76	0.00	31.20	2.44	84.34	51.04	612.5	0
1998/99	149.6	123.8	47.58	20.28	9.45	2.26	0.76	0.00	11.75	0.14	283.4	165.9	67.23	815.1	0
1999/00	114.2	67.62	67.46	26.59	3.85	3.26	0.03	16.46	8.07	5.91	32.55	125.3	39.28	471.4	0
2000/01	168.9	134.1	253.4	112.3	9.15	0.97	0.64	0.00	21.40	1.21	45.35	197.6	78.77	945.1	0
2001/02	152.7	210.6	227.2	77.51	20.17	6.13	0.90	0.08	0.01	0.00	54.47	41.66	65.96	791.5	0
2002/03	[13.98]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[13.98]	[13.98]	362
															2642 Tot
Mean	[220.6]	198.8	[123.1]	61.52	16.20	2.47	1.43	2.88	5.69	5.59	61.50	120.0	[61.13]	[706.6]	Mean
Med.	[151.5]	200.4	[104.0]	60.85	9.30	2.26	0.83	0.45	2.15	1.49	38.95	135.2			Med.
Max	[814.2]	385.6	[253.4]	114.8	65.74	6.13	5.24	16.46	21.40	31.20	283.4	197.6	[103.1]	[1237.98]	Max
Min	[13.98]	67.62	[1.96]	18.97	2.16	0.59	0.03	0.00	0.00	0.00	0.64	13.37	[13.98]	[13.98]	Min
OK	89%	100%	89%	100%	100%	100%	100%	100%	100%	100%	100%	100%	9%	9%	OK
Cnt	8	7	8	8	8	8	8	8	8	8	8	8	9	9	Cnt

----- Notes -----
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 Good Data - no quality flag printed
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98. AW503526 Site Information Summary Report

DWLBC, Surface Water Archive

HYSITREP - Site Summary Report
AW503526 - COX CREEK @ Uraidlā

13:24_12/11/2002 Page 1

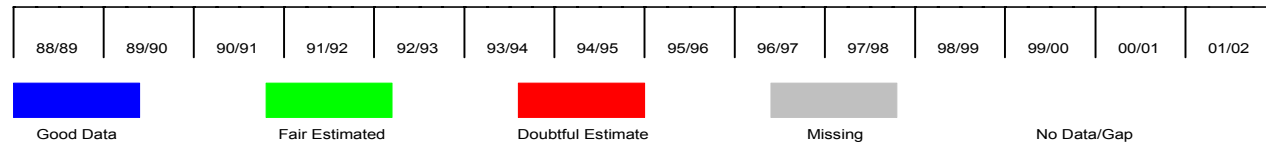
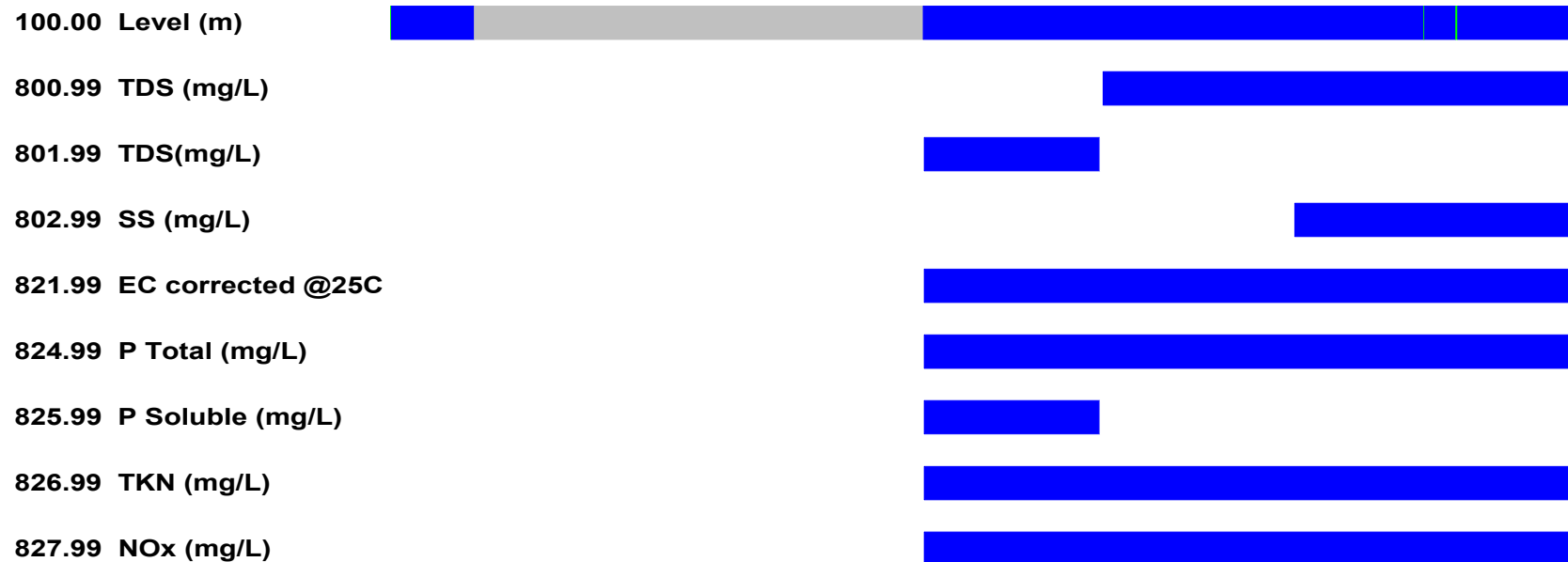
SITE DESCRIPTION
 Site Commenced: 23/06/1976
 Site Ceased:
 Map Name: 6628-3 (50k)
 Local Map Reference:
 Grid Reference: Zone - 54 Easting - 293264.0 Northing - 6127554.0
 Latitude: 34:58:24S
 Longitude: 138:44:7E
 Elevation: 450.780
 Comment:

STATION DESCRIPTION
 Stream Distance: 77.300
 Gauge Zero: 449.780
 Gauge Datum: AHD
 Control: Concrete triangular V weir
 Cease to Flow: 1.000
 Max gauged stage (m.): 1.619 on 03/07/1986
 QMIN: 1.500
 TMIN: 1440
 Catchment Area: 4.300

STATION HISTORY
 23/06/1976 ALIAS AWQC Site No. 3227 + EPA-EDMS Site Nos. 2846+6615+8843
 23/06/1976 DESCRIPT A hydrometric station on a small water course within the Cox Creek sub catchment of the Onkaparinga River system.
 23/06/1976 PURPOSE Water Resources assessment, as part of the National Water Resources Assessment program (1976)
 23/06/1976 XFACTOR Irrigation influences base flow during low flow periods, typically over summer and autumn.
 26/07/1978 EVENTS High flows occurred causing damage to gauge boards and erosion at various points along the bank.
 01/01/1981 PURPOSE Waite Institute project examining the influence of soils and land-use on clay movement and water quality. (1981)
 01/01/1994 PURPOSE Nutrient Budget Study - nutrient inflows to Mount Bold Reservoir to provide long term monitoring of catchment management performance. (commenced 1994)
 01/01/2000 ACCURACY Control : Stable, regular profile weir (using precast caps) to gauge height 1.62 metres, 3.24 cumeecs.
 Rating : One rating relationship exists covering the whole period of record comprising 56 gaugings to a flow of 2.97 cumeecs.
 A theoretical extension has been made to 14.3 cumeecs.
 Rating Index 21%

99. AW503526 Data Period & Data Quality Summary Plot**DWLBC, Surface Water Archive**

HYQPLOT V53 Output 12/11/2002

Data Quality Plot**Period 00:00_01/07/1988 to 00:00_01/07/2002****AW503526 COX CREEK/URAIDLA**

100. AW503526 Flow Volume Annual Total (Year Order) Report

DWLBC, Surface Water Archive

HYANN V45 Output 12/11/2002

Station AW503526 COX CREEK @ Uraidla
 Variable 151.00 Stream Discharge Volume in Megalitres, Recording

Year Starting July	Annual Total (Megalitres)	Days Missing	Rank
1988/89	1137	4	7
1989/90	0.0	365	15
1990/91	0.0	365	11
1991/92	0.0	366	12
1992/93	0.0	365	13
1993/94	0.0	365	14
1994/95	499.6	105	9
1995/96	1481		4
1996/97	1687		2
1997/98	939.7		8
1998/99	1298		6
1999/00	1362		5
2000/01	1761		1
2001/02	1557		3
2002/03	32.6	362	10
Total	11760	2297	
Minimum	0.0		
Maximum	1761		
Mean	1176		
Median	1330		

101. AW503526 Flow Volume Annual Total (Size Order) Report

DWLBC, Surface Water Archive

HYANN V45 Output 12/11/2002

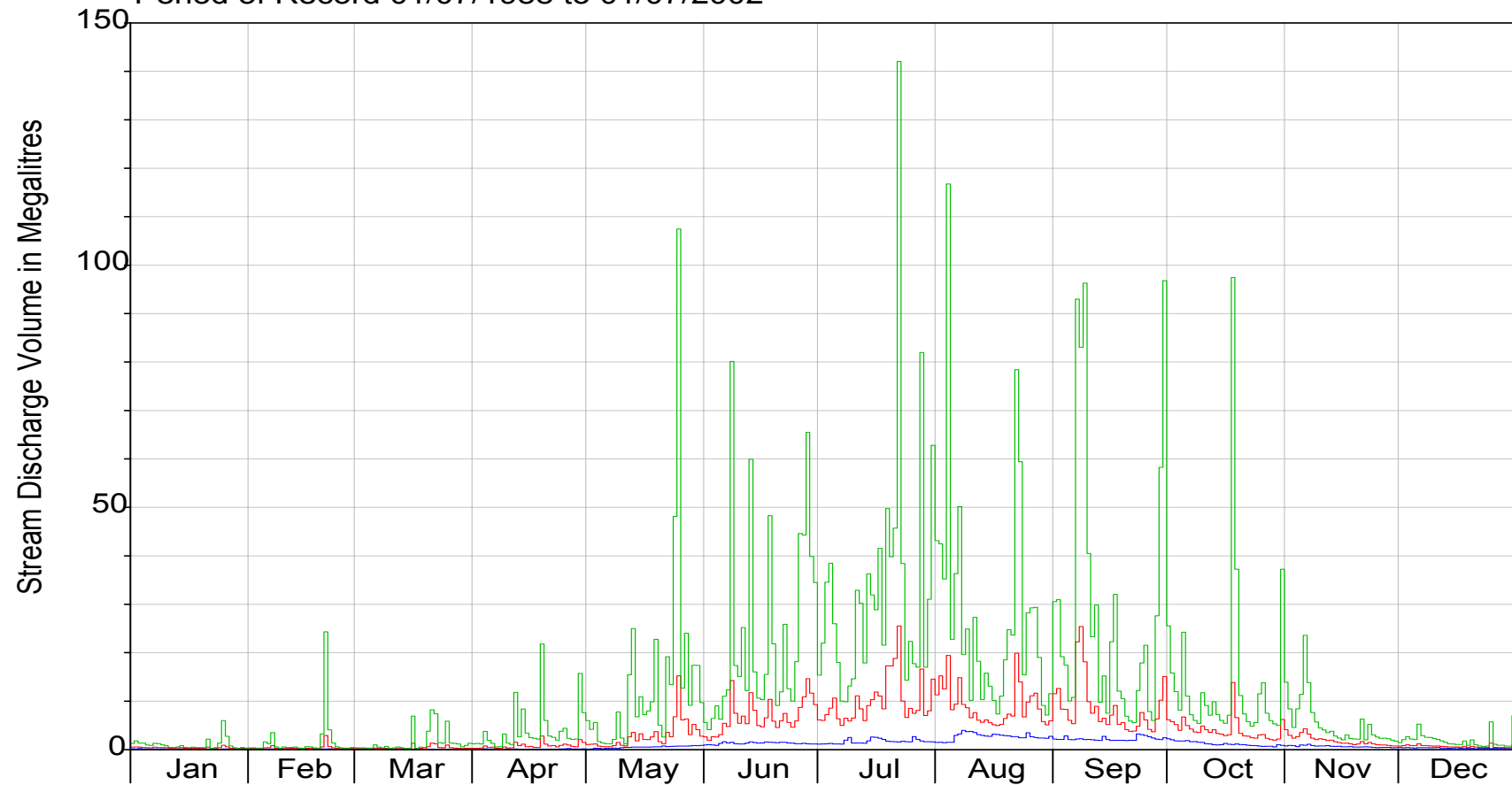
Station AW503526 COX CREEK @ Uraidla
 Variable 151.00 Stream Discharge Volume in Megalitres, Recording

Year Starting July	Annual Total (Megalitres)	Days Missing	Rank
2000/1	1761		1
1996/97	1687		2
2001/2	1557		3
1995/96	1481		4
1999/0	1362		5
1998/99	1298		6
1988/89	1137	4	7
1997/98	939.7		8
1994/95	489.6	105	9
2002/3	32.6		10
1990/91	0.0	65	11
1991/92	0.0	66	12
1992/93	0.0	65	13
1993/94	0.0	65	14
1989/90	0.0	65	15
Total	11760	2297	
Minimum	32.6		
Maximum	1761		
Mean	1176		
Median	1330		

102. AW503526 Flow Volume Daily Max, Min, Mean by Calendar Month Plot**DWLBC, Surface Water Archive**

HYMXMEAN V69 Output 12/11/2002

Plot of Daily Maximum, Minimum and Mean
Station AW503526 COX CREEK @ Uraidla
Period of Record 01/07/1988 to 01/07/2002



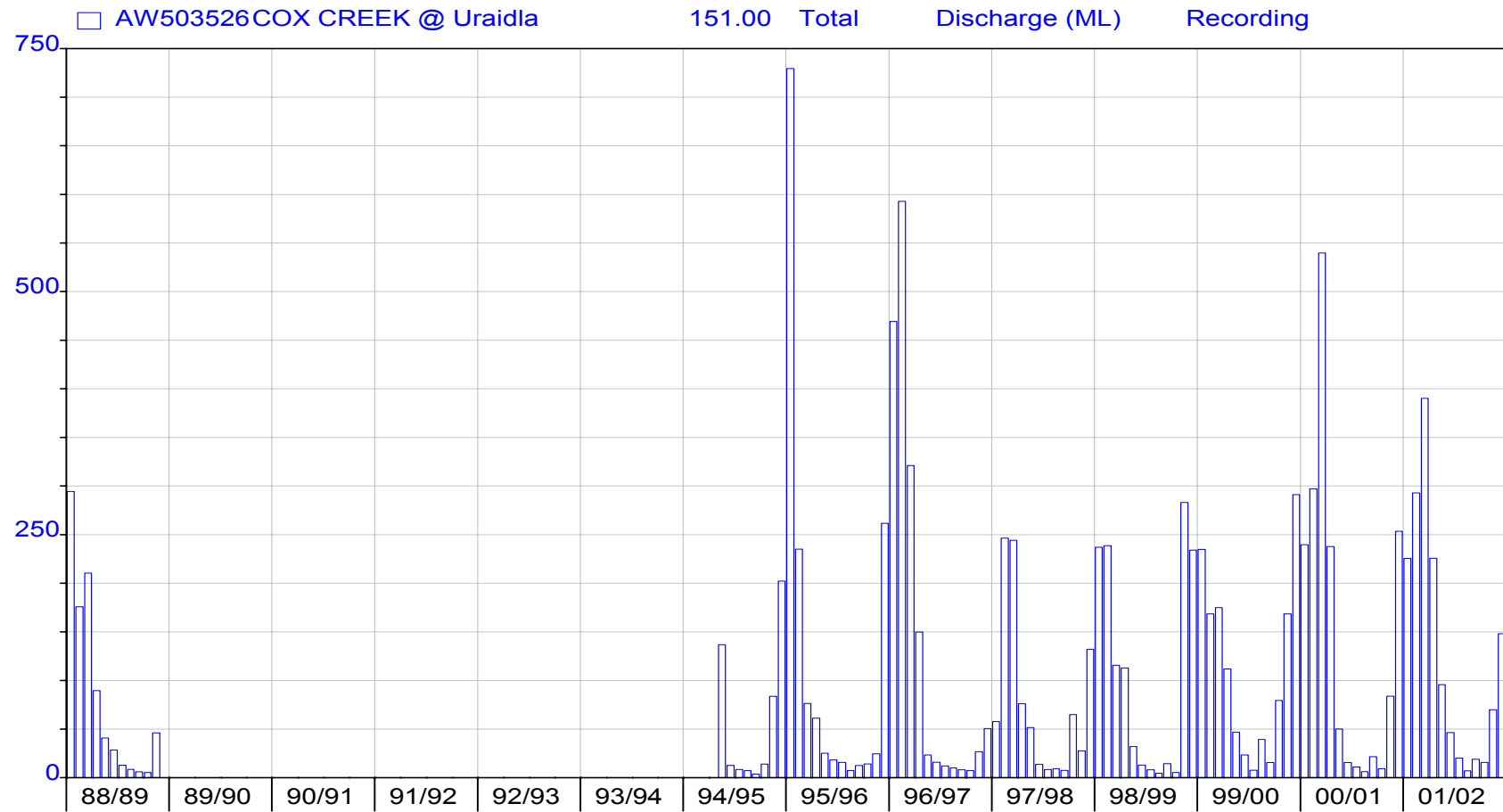
103. AW503526 Flow Volume Monthly Total Plot**DWLBC, Surface Water Archive**

HYPLOT V125 Output 12/11/2002

Period 14 Year Plot Start 00:00_01/07/1988

1988-02

Interval 1 Month Plot End 00:00_01/07/2002



104. AW503526 Flow Volume Monthly Total Report

DWLBC, Surface Water Archive

HYMONTH V70 Output 12/11/2002

Station AW503526 COX CREEK @ Uraidla
 VarFrom 100.00 Water Level in Metres, Recording
 VarTo 151.00 Total Stream Discharge Volume in Megalitres, Recording
 Figures are for period ending 2400 hours.

Station AW503526

Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Mean Monthly	Annual Total	Missing Days
1988/89	294.2 E	175.8	210.4	89.52	40.74	28.60	12.74	8.54	6.10	5.37	46.16	[218.8]	[94.77]	[1137]	4
1989/90	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1990/91	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1991/92	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	366
1992/93	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1993/94	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1994/95	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	105
1995/96	729.4	235.0	76.35	[31.29]	136.8	12.56	8.49	7.29	3.55	13.89	83.54	202.1	[55.51]	[499.6]	0
1996/97	469.2	592.7	321.1	149.7	23.41	15.96	12.11	10.03	7.97	7.38	26.73	50.45	140.5	1686	0
1997/98	57.61	246.5	244.3	76.17	51.64	13.72	8.31	9.36	7.41	64.89	27.63	132.1	78.31	939.7	0
1998/99	236.8	238.5	115.6	112.9	32.10	13.04	8.06	4.52	14.36	5.28	283.1	233.9	108.2	1298	0
1999/00	234.7	168.5	174.9	111.8	46.94	23.49	7.72	39.25	15.52	79.44	168.5	290.9	113.5	1361	0
2000/01	239.6	297.1	535.1 E	237.7	50.23	15.62	10.97E	6.26E	21.58	9.35	83.72	253.3	146.7 E	1760 E	0
2001/02	225.6	292.9	390.2	225.8	95.65	46.54	20.18	7.15	19.02	15.64	69.90	148.0	129.7	1556	0
2002/03	[32.56]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[32.56]	[32.56]	362
2297 Tot															
Mean	[280.0]	280.9	258.5 E	[121.8]	55.84	20.87	11.60E	11.07E	12.00	23.92	90.43	[199.0]	[102.3]	[1175]	Mean
Med.	[236.8]	242.5	227.4 E	[111.8]	46.94	15.96	10.97E	7.29E	12.51	13.89	69.90	[218.8]			Med.
Max	[729.4]	592.7	535.1 E	[237.7]	136.8	46.54	20.18E	39.25E	21.58	79.44	283.1	[290.9]			Max
Min	[32.56]	168.5	76.35E	[31.29]	23.41	12.56	7.72E	4.52E	3.55	5.28	24.47	[50.45]	[32.56]	[32.56]	Min
OK	90%	100%	100%	95%	100%	100%	100%	100%	100%	100%	100%	99%	99%	99%	OK
Cnt	9	8	8	9	9	9	9	9	9	9	9	9	10	10	Cnt

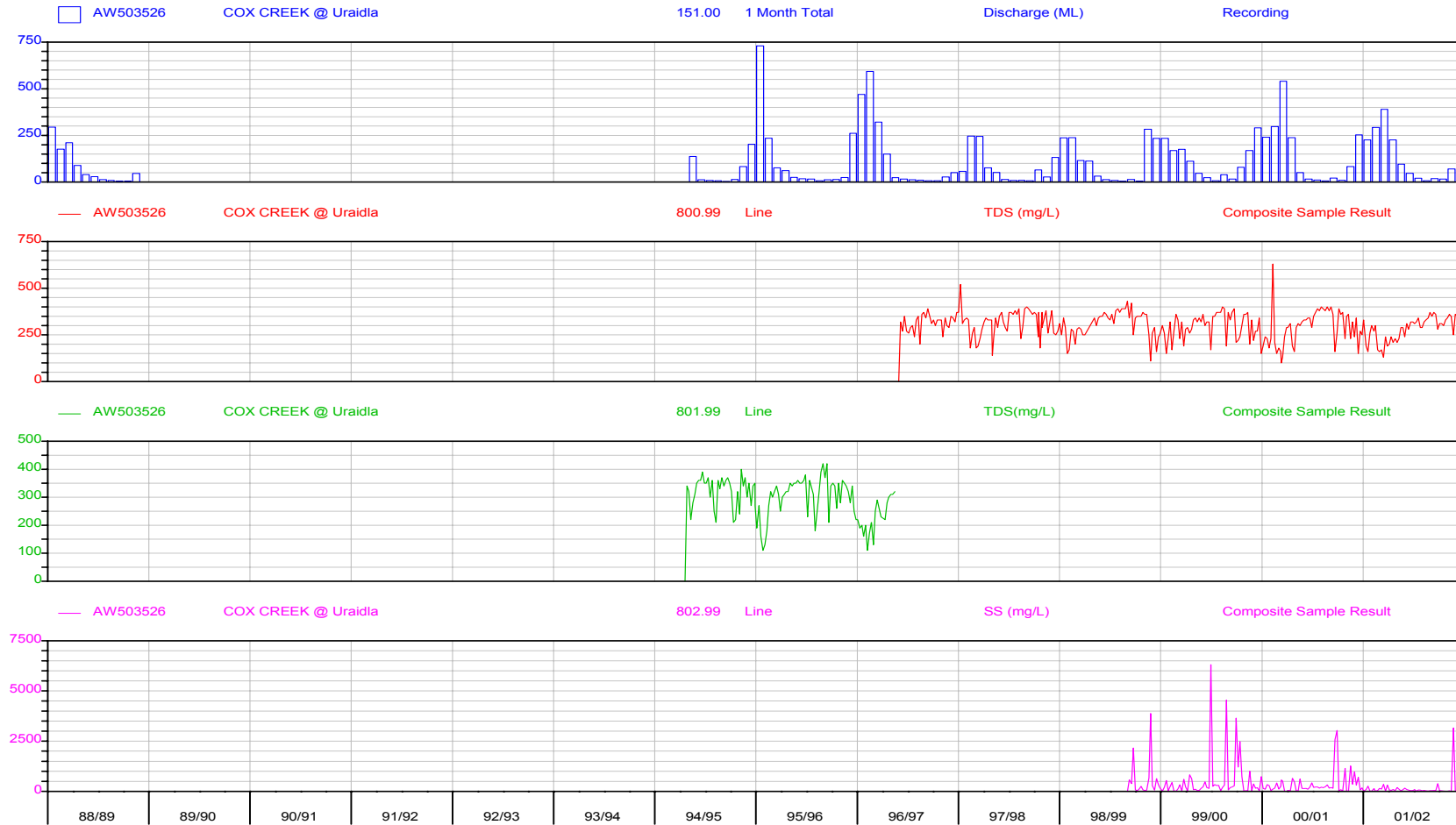
----- Notes -----
 All recorded data is continuous and reliable
 except where the following tags are used...
 Good Data - no quality flag printed
 E ... Estimated
 [...] Data Not processed

105. AW503526 TDS & SS Sample Results Plot**DWLBC, Surface Water Archive**

HYPLOT V125 Output 12/11/2002

Period 14 Year 00:00_01/07/1988 to 00:00_01/07/2002

1988-02

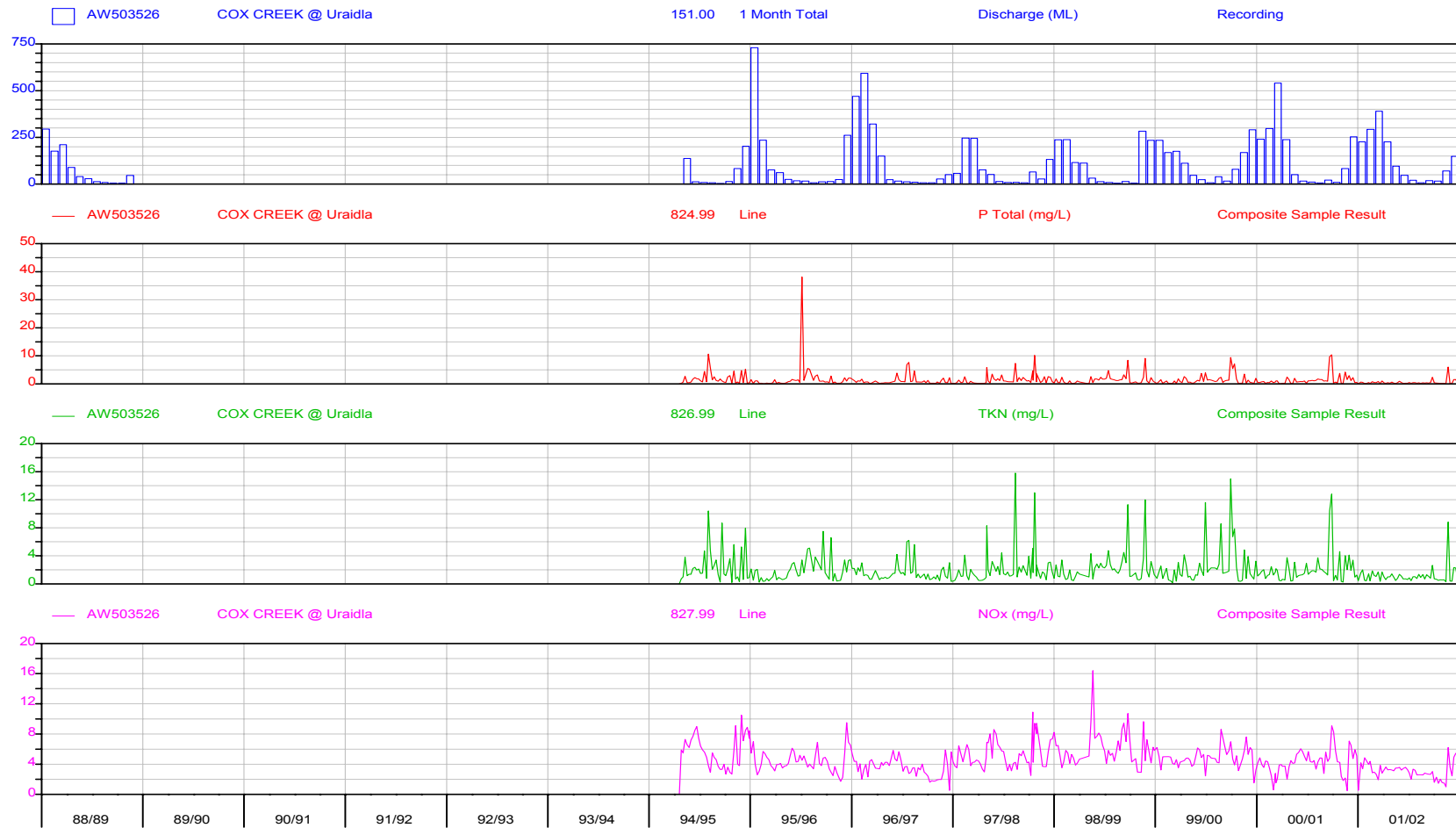


106. AW503526 Nutrients Sample Results Plot**DWLBC, Surface Water Archive**

HYPLOT V125 Output 12/11/2002

Period 14 Year 00:00_01/07/1988 to 00:00_01/07/2002

1988-02

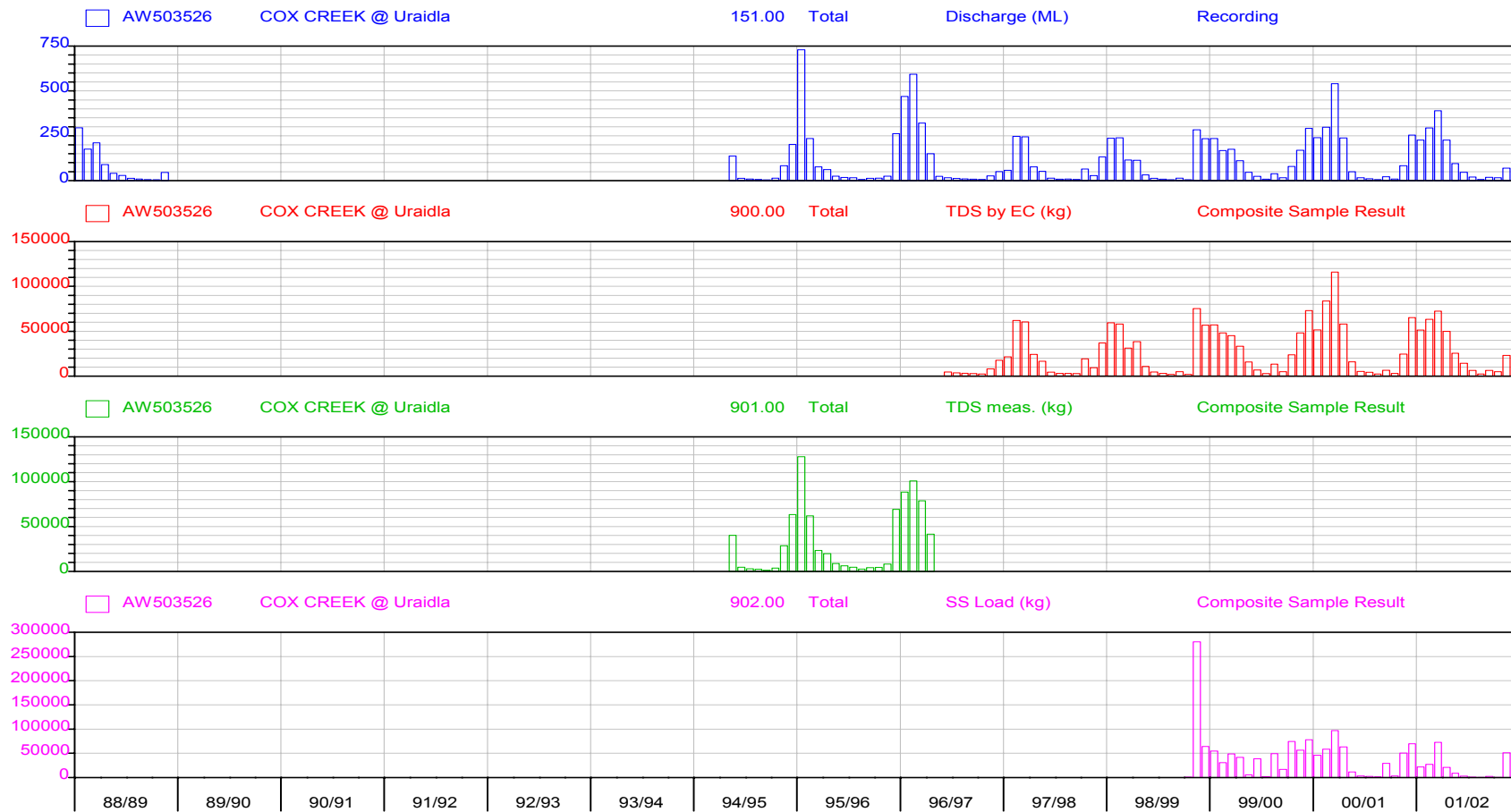


107. AW503526 TDS & SS Monthly Load Plot**DWLBC, Surface Water Archive**

HYPLOT V125 Output 12/11/2002

Period 14 Year Plot Start 00:00_01/07/1988
Interval 1 Month Plot End 00:00_01/07/2002

1988-02

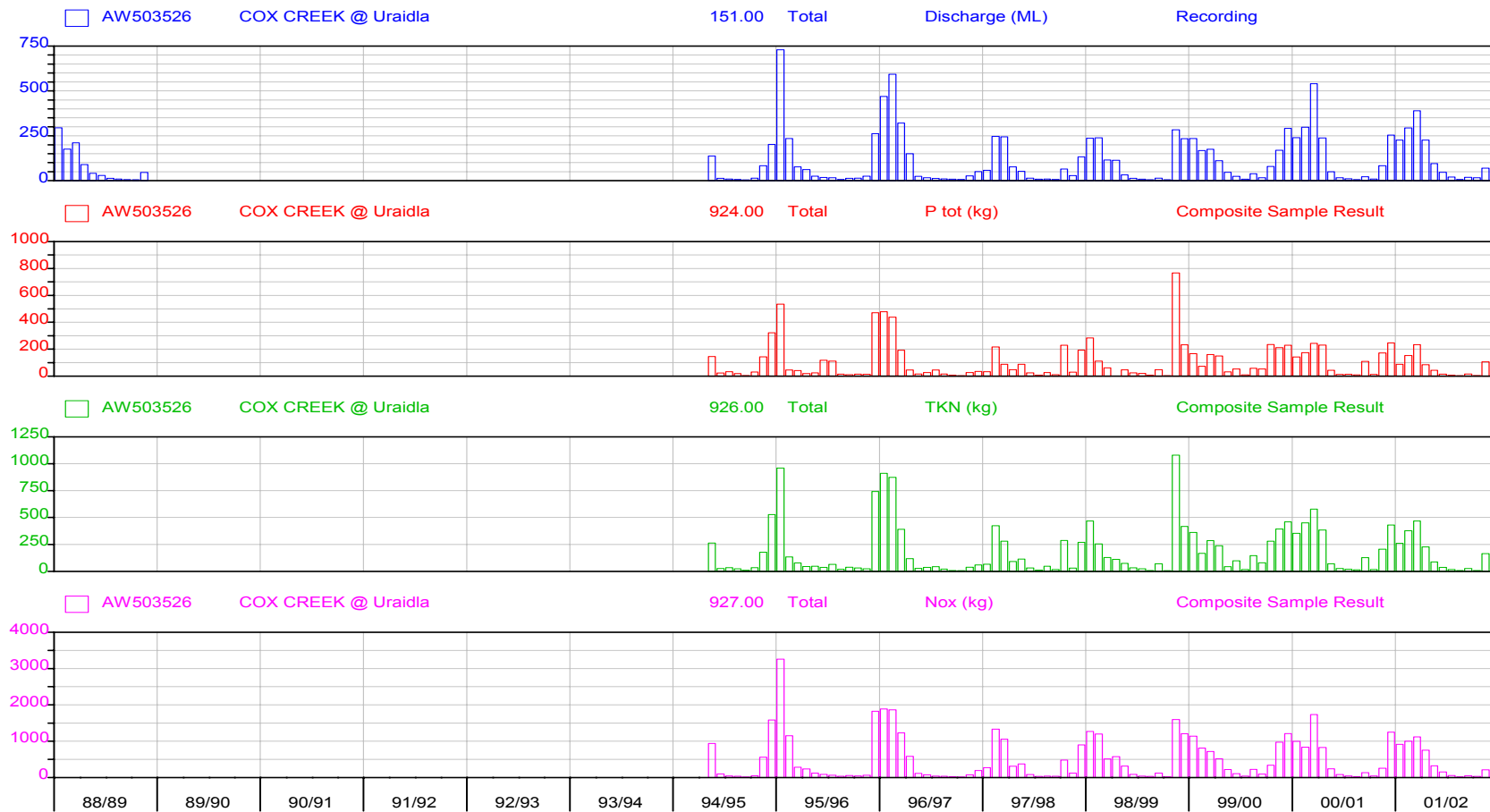


108. AW503526 Nutrients Monthly Load Plot**DWLBC, Surface Water Archive**

HYPLOT V125 Output 12/11/2002

Period 14 Year Plot Start 00:00_01/07/1988
Interval 1 Month Plot End 00:00_01/07/2002

1988-02



109. AW503526 TDS by EC Monthly Load Report

DWLBC, Surface Water Archive

HYMONTH V70 Output 12/11/2002

Station AW503526 COX CREEK @ Uraidla
 VarFrom 800.99 Total Dissolved Solids (by EC) in milligrams/Litre, Composite Sample Result
 VarTo 900.00 Total Total Dissolved Solids (by EC) in Kilograms, Recording
 Figures are for period ending 2400 hours.

Station AW503526

Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Mean Monthly	Annual Total	Missing Days
1988/89	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1989/90	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1990/91	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1991/92	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	366
1992/93	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1993/94	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1994/95	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1995/96	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	366
1996/97	[]	[]	[]	[]	[490.5]	4559	3428	3009	2771	2374	8179	17288	[5263]	[42101]	150
1997/98	20572	53972	52894	19117	14831	4318	3074	2763	2771	15775	9187	36117	19616	235397	0
1998/99	49183	52212	30635	38392	10605	4593	2857	1777	4112	1882	53443	50888	25049	300584	0
1999/00	49033	43218	42010	32295	15845	6535	2783	8690	4667	25547	41055	58571	27496	329954	0
2000/01	49755	65030	78481	E46536	15591	5133	4180	E 2423	E 5148	2851	22563	50245	28995E	347943E	0
2001/02	44926	54449	62875	49744	24878	13992	6348	2433	5855	4952	20088	39325	27489	329869	0
2002/03	[6512]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[6512]	[6512]	362
3434 Tot															
Mean	36664	53776	53379	E37217	13657	6522	3778	E 3516	E 4221	8897	25752	42072	[20060]	[227480]	Mean
Med.	46979	53972	52894	E38392	15888	4863	3251	E 2598	E 4390	3902	21325	44785			Med.
Max	49755	65030	78481	E49744	24878	13992	6348	E 8690	E 5855	25547	53443	58571	[28995]	[347942]	Max
Min	[6512]	43218	30635	E19117	[490.5]	4318	2783	E 1777	E 2771	1882	8179	17288	[5262]	[6512]	Min
OK	85%	100%	100%	100%	85%	100%	100%	100%	100%	100%	100%	100%	97%	97%	OK
Cnt	6	5	5	5	6	6	6	6	6	6	6	6	7	7	Cnt

----- Notes -----
 All recorded data is continuous and reliable
 except where the following tags are used...
 Good Data - no quality flag printed
 E ... Estimated
 [...] Data Not processed

110. AW503526 TDS Measured Monthly Load Report

DWLBC, Surface Water Archive

HYMONTH V70 Output 12/11/2002

Station AW503526 COX CREEK @ Uraidla
 VarFrom 801.99 Total Dissolved Solids (Measured) in milligrams/Litre, Composite Sample Result
 VarTo 901.00 Total Total Dissolved Solids (measured) in Kilograms, Recording
 Figures are for period ending 2400 hours.

Station AW503526

Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Mean Monthly	Annual Total	Missing Days
1988/89	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1989/90	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1990/91	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1991/92	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	366
1992/93	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1993/94	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1994/95	[]	[]	[]	[6669]	34439	4572	2512	2203	1246	3477	26613	53799	[15059]	[135530]	110
1995/96	111104	47778	22588	19455	8696	5536	3914	2608	3355	4179	8167	62704	25007	300083	0
1996/97	83945	84832	73898	37463	[4134]	[]	[]	[]	[]	[]	[]	[]	[56854]	[284272]	230
1997/98	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1998/99	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1999/00	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
2000/01	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
2001/02	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
2002/03	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
4722 Tot															
Mean	97524	66304	48242	21195	15756	5054	3213	2405	2300	3828	17389	58251	[32306]	[239961]	Mean
Med.	97524	66304	48242	19454	[8695]	5054	3213	2405	2300	3828	17389	58251			Med.
Max	111104	84832	73898	[37463]	[34439]	5536	3914	2608	3355	4179	26613	62704	[56854]	[300083]	Max
Min	83945	47778	22588	[6669]	[4134]	4572	2512	2203	1246	3477	8167	53799	[15059]	[135530]	Min
OK	100%	100%	100%	81%	80%	100%	100%	100%	100%	100%	100%	100%	95%	93%	OK
Cnt	2	2	2	3	3	2	2	2	2	2	2	2	3	3	Cnt

----- Notes -----
 All recorded data is continuous and reliable
 except where the following tags are used...
 Good Data - no quality flag printed
 [] Data Not processed

111. AW503526 SS Monthly Load Report

DWLBC, Surface Water Archive

HYMONTH V70 Output 12/11/2002

Station AW503526 COX CREEK @ Uraidla
 VarFrom 802.99 Suspended Solids in milligrams/Litre, Composite Sample Result
 VarTo 902.00 Total Suspended Solids in Kilograms, Recording
 Figures are for period ending 2400 hours.

Station AW503526

Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Mean Monthly	Annual Total	Missing Days
1988/89	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1989/90	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1990/91	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1991/92	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	366
1992/93	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1993/94	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1994/95	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1995/96	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	366
1996/97	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1997/98	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1998/99	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	246
1999/ 0	75435	39876	61873	49582	4337	41647	2121	150495	[22580]	581	577259	90527	[172737]	[690947]	0
2000/ 1	48303	63729	217933E	102392	13639	3364	2235E	1398E	51784	43914	91724	120378	58922	707065	0
2001/ 2	33780	28946	97108	21840	8938	2865	813	231	4075	334	142884	42728	32045	384542	0
2002/ 3	[8173]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[8173]	[8173]	362
															4260 Tot
Mean	[41423]	44184	125638E	57938	8971	15959	1723E	50708E	[26030]	12429	219059	94099	[65989]	[497505]	Mean
Med.	[41042]	39876	97108E	49582	8938	3364	2121E	1398E	[24131]	2735	117304	105453			Med.
Max	[75435]	63729	217933E	102392	13639	41647	2235E	150495E	[51784]	43914	577259	122762	[172737]	[707065]	Max
Min	[8173]	28946	61873E	21840	4337	2865	813E	231E	[4075]	334	64370	42728	[8173]	[8173]	Min
OK	77%	100%	100%	100%	100%	100%	100%	100%	98%	100%	100%	100%	98%	98%	OK
Cnt	4	3	3	3	3	3	3	3	4	4	4	4	5	5	Cnt

----- Notes -----
 All recorded data is continuous and reliable
 except where the following tags are used...
 Good Data - no quality flag printed
 E ... Estimated
 [...] Data Not processed

112. AW503526 P Monthly Load Report

DWLBC, Surface Water Archive

HYMONTH V70 Output 12/11/2002

Station AW503526 COX CREEK @ Uraidla
 VarFrom 824.99 Phosphorus - Total as P in milligrams/Litre, Composite Sample Result
 VarTo 924.00 Total Phosphorus - Total as P Load in Kilograms, Recording
 Figures are for period ending 2400 hours.

Station AW503526

Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Mean Monthly	Annual Total	Missing Days
1988/89	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1989/90	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1990/91	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1991/92	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	366
1992/93	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1993/94	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1994/95	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	110
1995/96	649.4	50.94	51.09	17.69	248.8	23.23	51.62	22.84	3.71	38.55	271.3	519.3	[131.9]	[1187]	0
1996/97	506.7	611.4	121.5	33.26	13.54	28.92	49.15	21.72	6.62	2.27	31.47	51.02	123.1	1477	0
1997/98	39.79	366.9	126.6	161.6	88.00	25.38	6.69	35.85	10.32	414.1	34.44	191.9	125.4	1505	0
1998/99	394.5	149.2	69.60	0.00	44.53	23.40	21.73	5.94	91.51	143.5	34.44	321.3	213.3	2559	0
1999/00	222.8	95.45	197.5	171.8	25.74	53.29	9.84	84.05	72.71	136.2	326.7	344.0	145.0	1740	0
2000/01	152.5	184.9	474.6	352.1	48.47	12.23	13.09	8.93	186.2	17.15	209.1	407.2	172.2	2066	0
2001/02	110.0	174.8	278.5	87.16	40.37	13.04	6.28	2.29	26.81	4.39	275.7	164.9	98.70	1184	0
2002/03	[27.81]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[27.81]	[27.81]	362
2663 Tot															
Mean	[262.9]	233.3	188.5	[104.1]	66.22	61.55	33.41	25.04	51.28	78.72	324.8	311.0	[131.5]	[1500]	Mean
Med.	[187.6]	174.8	126.6	[160.2]	42.45	24.39	17.41	18.19	19.52	15.77	240.2	332.7	[]	[]	Med.
Max	[649.4]	611.4	474.6	[352.1]	248.8	312.9	108.9	84.05	186.2	414.1	1435.2	519.3	[213.3]	[2559]	Max
Min	[27.81]	50.94	51.09	[0.00]	13.54	12.23	6.28	2.29	3.71	2.27	14.27	51.02	[27.81]	[27.81]	Min
OK	89%	100%	100%	93%	100%	100%	100%	100%	100%	100%	100%	100%	98%	98%	OK
Cnt	8	7	7	8	8	8	8	8	8	8	8	8	9	9	Cnt

----- Notes -----
 All recorded data is continuous and reliable
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 Good Data - no quality flag printed
 E ... Estimated
 [...] Data Not processed

113. AW503526 TKN Monthly Load Report

DWLBC, Surface Water Archive

HYMONTH V70 Output 12/11/2002

Station AW503526 COX CREEK @ Uraidla
 VarFrom 826.99 TKN as N in milligrams/Litre, Composite Sample Result
 VarTo 926.00 Total TKN as N Load in Kilograms, Recording
 Figures are for period ending 2400 hours.

Station AW503526

Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Mean Monthly	Annual Total	Missing Days
1988/89	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1989/90	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1990/91	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1991/92	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	366
1992/93	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1993/94	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1994/95	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	110
1995/96	1138	140.3	86.47	45.61	382.8	26.57	52.48	24.40	9.10	44.88	312.1	807.1	186.3	1676	0
					40.33	45.94	69.60	19.04	68.75	31.78	26.29	742.7	204.6	2455	
1996/97	971.9	1142	298.2	104.8	25.97	37.35	45.17	28.52	8.99	5.93	43.95	79.46	232.7	2793	0
1997/98	73.34	646.3	352.9	248.4	115.4	34.36	11.03	80.06	15.98	516.9	32.55	276.4	200.3	2403	0
1998/99	599.04	306.4	141.3	110.6	71.75	32.78	25.23	8.76	123.98	5.70	1940.1	521.4	323.9	3887	0
1999/00	428.6	211.5	345.8	271.5	38.48	105.8	16.06	294.4	112.7	168.8	581.3	611.4	265.5	3186	0
2000/01	371.8	477.2	940.1	545.5	78.38	26.38	18.89	14.58	216.3	22.33	274.5	643.4	302.4	3629	0
2001/02	333.8	412.7	551.1	228.8	87.40	36.61	15.12	7.75	33.77	9.48	407.9	262.5	198.9	2387	0
2002/03	[55.36]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[55.36]	[55.36]	362
															2663 Tot
Mean	[496.5]	476.7	388.0	[196.5]	105.0	43.23	31.70	59.70	73.70	100.7	452.4	493.1	[218.9]	[2497]	Mean
Med.	[400.2]	412.7	345.8	[169.7]	75.07	35.49	22.06	21.72	51.26	27.06	293.3	566.4			Med.
Max	1138	1142	940.1	545.5	382.8	105.8	69.60	294.4	216.3	516.9	1940.1	807.1	[323.9]	[3887]	Max
Min	[55.36]	140.3	86.47	[17.02]	25.97	26.38	11.03	7.75	8.99	5.70	26.29	79.46	[55.36]	[55.36]	Min
OK	89%	100%	100%	93%	100%	100%	100%	100%	100%	100%	100%	100%	98%	98%	OK
Cnt	8	7	7	8	8	8	8	8	8	8	8	8	9	9	Cnt

----- Notes -----
 All recorded data is continuous and reliable
 except where the following tags are used...
 Good Data - no quality flag printed
 E ... Estimated
 [...] Data Not processed

114. AW503526 Nox Monthly Load Report

DWLBC, Surface Water Archive

HYMONTH V70 Output 12/11/2002

Station AW503526 COX CREEK @ Uraidla
 VarFrom 827.99 Nitrate + Nitrite as N in milligrams/Litre, Composite Sample Result
 VarTo 927.00 Total Nitrate + Nitrite as N Load in Kilograms, Recording
 Figures are for period ending 2400 hours.

Station AW503526

Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Mean Monthly	Annual Total	Missing Days
1988/89	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1989/90	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1990/91	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1991/92	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	366
1992/93	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1993/94	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1994/95	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	110
1995/96	2796	986.1	278.7	[115.2]	955.9	101.1	40.45	31.09	12.33	56.39	715.9	1512	[393.4]	[3541]	0
				237.2	112.6	85.38	64.70	32.91	57.79	46.30	62.10	1676	536.3	6436	
1996/97	1762	1557	1142	550.1	109.9	70.77	39.11	33.20	24.82	13.17	85.68	154.5	461.9	5543	0
1997/98	286.2	1353	1023	412.4	348.3	85.92	30.63	40.80	35.00	601.2	118.7	949.7	440.5	5287	0
1998/99	1105	1125	510.7	572.5	339.0	91.53	40.68	28.50	141.5	20.77	1703.6	1165	572.1	6865	0
1999/00	1007	817.8	694.0	514.5	203.9	111.3	38.10	316.1	96.99	352.4	963.6	1160	523.0	6276	0
2000/01	969.1	631.8	1230	778.3	228.1	83.46	47.10E	26.07E	147.5	41.88	381.8	1238	483.7	5804	0
2001/02	880.4	909.5	957.4	752.4	321.1	155.7	52.32	18.89	49.18	28.66	341.8	620.4	424.0	5088	0
2002/03	[7.10]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[7.10]	[7.10]	362
															2663 Tot
Mean	1101	1054	833.9	[491.6]	329.8	98.15	44.14E	65.95E	70.65	145.1	546.6	1059	[426.9]	[4983]	Mean
Med.	1988.1	1986.1	957.4	[532.3]	274.6	88.72	40.56E	32.00E	53.49	44.09	361.8	1162			Med.
Max	2796	1357	1230	[778.3]	955.9	155.7	64.70E	18.1E	147.5	601.2	1703.8	1676			Max
Min	[7.10]	631.8	278.7	[115.2]	109.9	70.77	30.63E	18.89E	12.33	13.17	62.10	154.5	[572.1]	[6865]	Min
OK	89%	100%	100%	93%	100%	100%	100%	100%	100%	100%	100%	100%	[7.10]	[7.10]	OK
Cnt	8	7	7	8	8	8	8	8	8	8	8	8	9	9	Cnt

----- Notes -----
 All recorded data is continuous and reliable
 except where the following tags are used...
 Good Data - no quality flag printed
 E ... Estimated
 [...] Data Not processed

115. AW504508 Site Information Summary Report

DWLBC, Surface Water Archive

HYSITREP - Site Summary Report
AW504508 - MILLBROOK RES INTAKE CHANNEL @ U/S Millbrook Res.

13:26_12/11/2002 Page 1

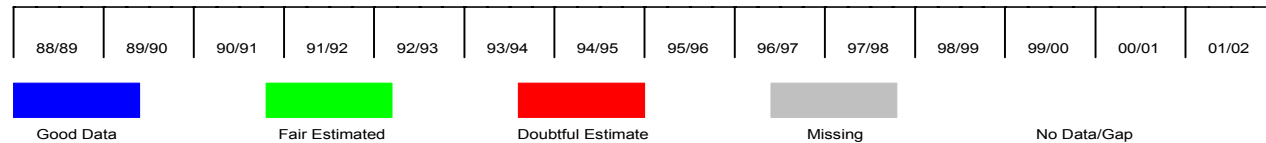
SITE DESCRIPTION
Site Commenced: 01/01/1927
Site Ceased:
Map Name: 6628-2 (50k)
Local Map Reference:
Grid Reference: Zone - 54 Easting - 301778.0 Northing - 6144880.0
Latitude: 34:49: 8S
Longitude: 138:49:58E
Elevation: 304.651
Comment:

STATION DESCRIPTION
Stream Distance: 0.000
Gauge Zero: 303.651
Gauge Datum: AHD
Control: Intake channel and flume
Cease to Flow: 1.000
Max gauged stage (m.): 1.493 on 20/07/1978
This station is downstream from a dam, and flows may be affected by releases from the dam

STATION HISTORY
01/01/1927 ALIAS AWQC Site No. 3309 + EPA-EDMS Site Nos. 6822+8845

116. AW504508 Data Period & Data Quality Summary Plot**DWLBC, Surface Water Archive**

HYQPLOT V53 Output 12/11/2002

Data Quality Plot**Period 00:00_01/07/1988 to 00:00_01/07/2002****AW504508 MILLBROOK RES INT CH**

117. AW504508 Flow Volume Annual Total (Year Order) Report

DWLBC, Surface Water Archive

HYANN V45 Output 12/11/2002

Station AW504508 MILLBROOK RES INTAKE CHANNEL @ U/S Millbrook Res.
 Variable 151.00 Stream Discharge Volume in Megalitres, Recording

Year Starting July	Annual Total (Megalitres)	Days Missing	Rank
1988/89	6186		14
1989/90	13690		11
1990/91	23010		6
1991/92	10790		12
1992/93	23770		4
1993/94	19780		7
1994/95	35760		1
1995/96	16360		10
1996/97	19190		8
1997/98	17760		9
1998/99	27710		3
1999/00	26690		5
2000/01	23260		13
2001/02	9097		15
2002/03	423.6	335	15
Total	273500	335	
Minimum	423.6		
Maximum	35760		
Mean	18230		
Median	19190		

118. AW504508 Flow Volume Annual Total (Size Order) Report

DWLBC, Surface Water Archive

HYANN V45 Output 12/11/2002

Station AW504508 MILLBROOK RES INTAKE CHANNEL @ U/S Millbrook Res.
 Variable 151.00 Stream Discharge Volume in Megalitres, Recording

Year Starting July	Annual Total (Megalitres)	Days Missing	Rank
1994/95	35760		1
1998/99	27710		2
1999/00	26690		3
1992/93	23770		4
2000/01	23260		5
1990/91	23010		6
1993/94	19780		7
1996/97	19190		8
1997/98	17760		9
1995/96	16360		10
1989/90	16690		11
1991/92	10790		12
2001/02	9097		13
1988/89	6186		14
2002/03	423.6	335	15
Total	273500	335	
Minimum	423.6		
Maximum	35760		
Mean	18230		
Median	19190		

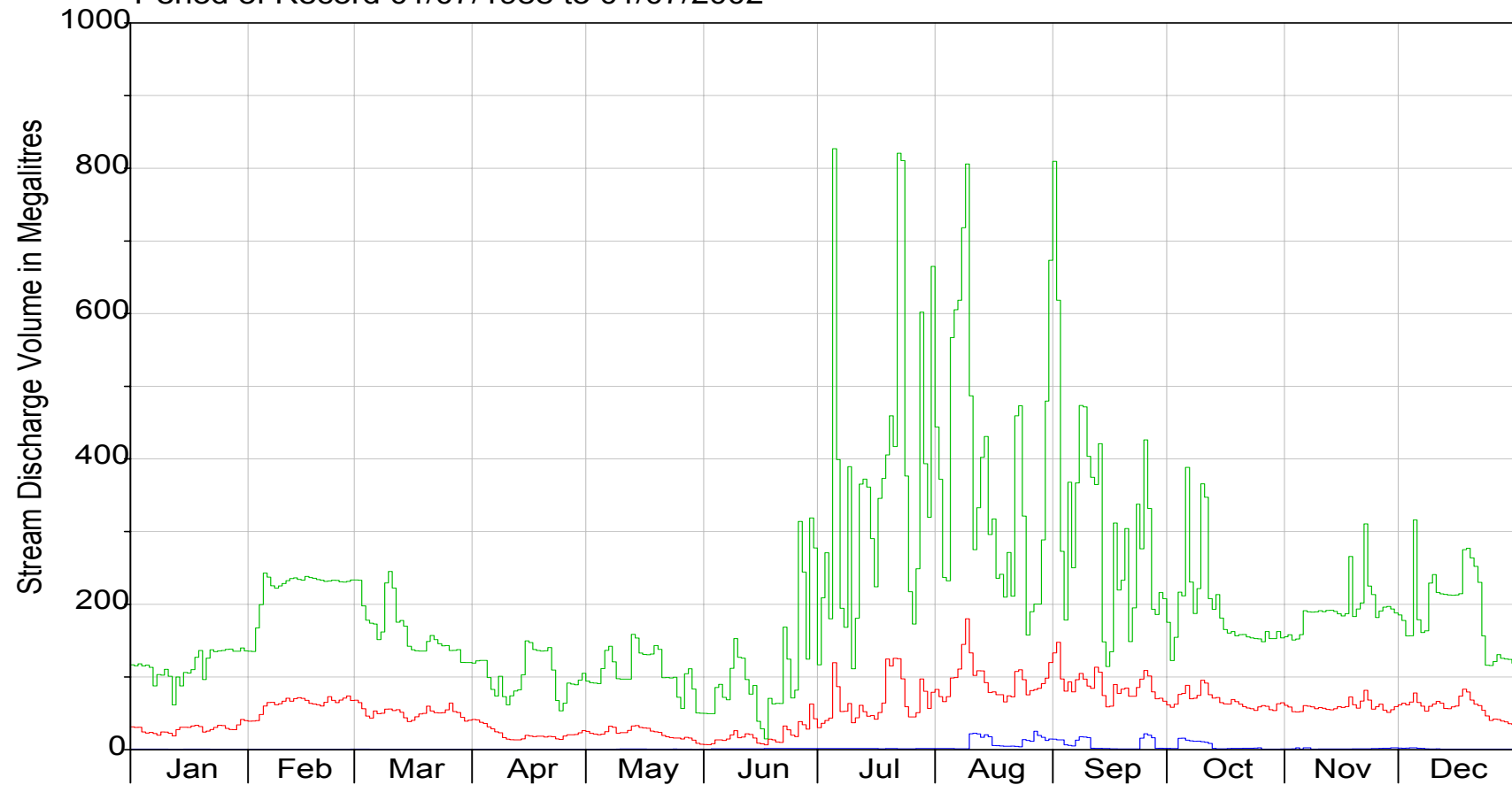
119. AW504508 Flow Volume Daily Max, Min, Mean by Calendar Month Plot**DWLBC, Surface Water Archive**

HYMXMEAN V69 Output 12/11/2002

Plot of Daily Maximum, Minimum and Mean

Station AW504508 MILLBROOK RES INTAKE CHANNEL @ U/S Millbrook Res.

Period of Record 01/07/1988 to 01/07/2002



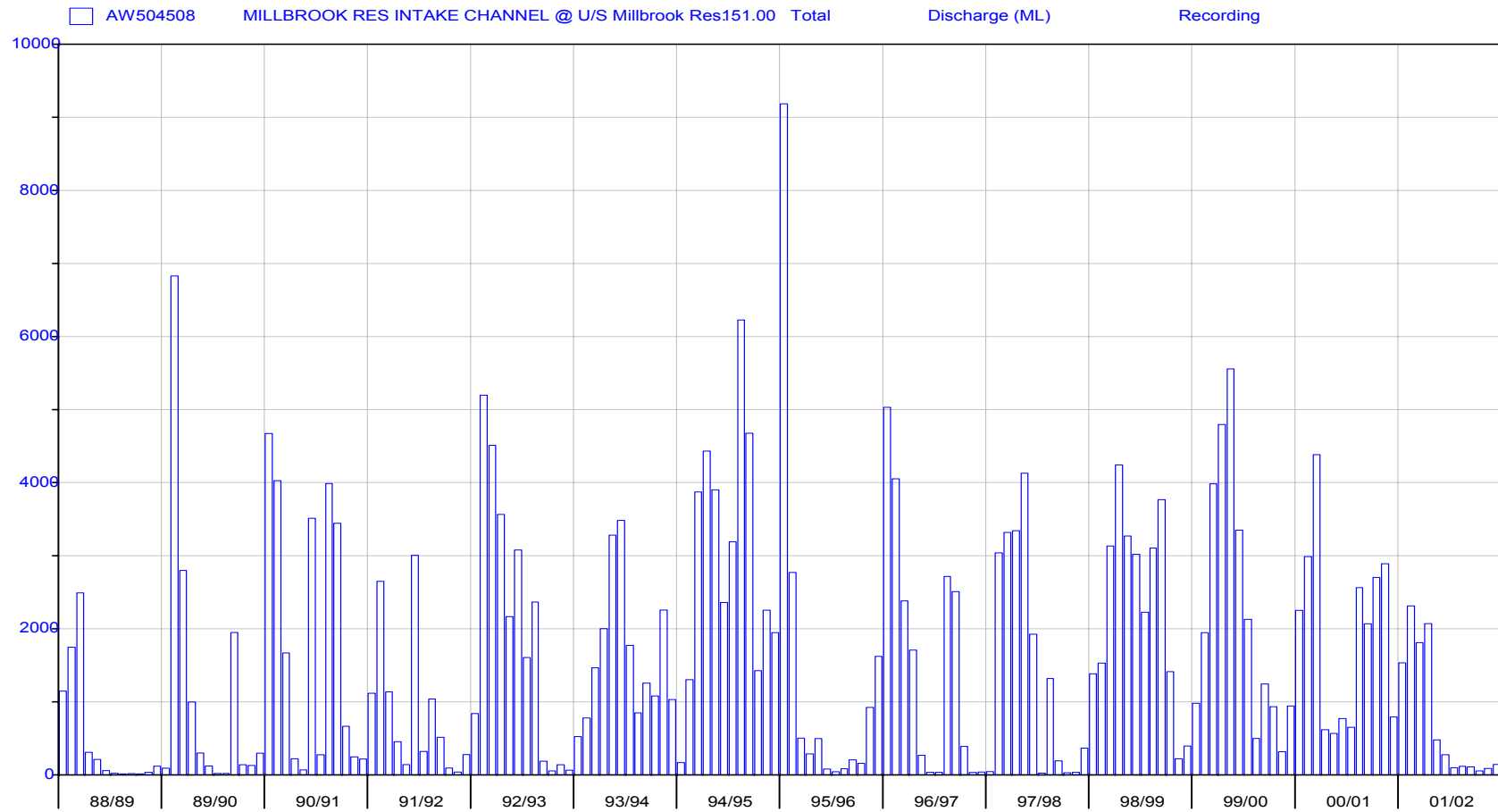
120. AW504508 Flow Volume Monthly Total Plot**DWLBC, Surface Water Archive**

HYPLOT V125 Output 12/11/2002

Period 14 Year Plot Start 00:00_01/07/1988

1988-02

Interval 1 Month Plot End 00:00_01/07/2002



121. AW504508 Flow Volume Monthly Total Report

DWLBC, Surface Water Archive

HYMONTH V70 Output 12/11/2002

Station AW504508 MILLBROOK RES INTAKE CHANNEL @ U/S Millbrook Res.
 VarFrom 100.00 Water Level in Metres, Recording
 VarTo 151.00 Total Stream Discharge Volume in Megalitres, Recording
 Figures are for period ending 2400 hours.

Station AW504508

Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Mean Monthly	Annual Total	Missing Days
1988/89	1145	1746	2489	309.1	212.5	59.31	21.95	13.92	16.23	14.79	35.98	119.9	515.4	6185	0
1989/90	91.40	6829	2798	997.7	299.5	120.9	19.37	20.35	1948	138.6	129.9	297.4	1141	13692	0
1990/91	4670	4027	1668	222.9	67.52	3512	275.5	3989	3444	665.5	246.3	215.9	1917	23006	0
1991/92	1116	2649	1136	452.6	142.2	3005	321.8	1038	515.5	94.36	138.07	277.6	899.1	10790	0
1992/93	838.0	5196	4511	3564	2166	3078	1606	2364	188.7	55.58	138.2	65.50	1981	23774	0
1993/94	523.5	776.7	1466	2003	3280	3484	1774	848.7	1255	1080	2256	1032	1648	19783	0
1994/95	167.8	1304	3872	4432	3901	2357	3190	6225	4676	1427	2255	1945	2979	35757	0
1995/96	9186	2770	502.9	287.8	497.6	79.53	43.24	85.80	205.0	158.9	923.5	1621	1363	16363	0
1996/97	5031	4053	2381	E1698	E268.3	E37.26E	35.19E	E2716	2506	390.4	33.25	39.81	1599	E19192E	0
1997/98	45.20	3039	E3317	3341	4128	1924	23.73	1319	192.8	27.81	35.35	365.8	1480	E17761E	0
1998/99	1384	1530	3132	4243	3270	3019	2226	3104	3766	1413	220.9	396.0	2309	27709	0
1999/00	981.7	1946	3982	4796	5556	3349	2129	501.0	1245	934.8	318.1	944.7	2223	26687	0
2000/01	2252	2989	4384	620.8	568.6	770.5	652.0	2563	2069	2702	2890.1	E792.2	1938	E23257E	0
2001/02	1533	2312	1810	2072	481.1	276.4	97.22	115.7	110.2	56.93	86.79	143.2	758.0	9096	0
2002/03	[423.5]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[423.5]	[423.5]	335
															335 Tot
Mean	1959	12940	E2675	E2074	E1774	E1791	E887.0	E1779	1581	654.4	686.3	E589.8	[1545	]18231	Mean
Med.	1116	12710	E2643	E1850	E533.1	E2140	E298.7	E1179	1250	274.6	179.6	E331.6			Med.
Max	9186	16829	E4511	E4796	E5556	E3512	E3190	E6225	4676	2702.6	2890.6	E1945			Max
Min	[45.20]	776.7	E502.9	E222.9	E67.52E	37.26E	19.37E	13.92	16.23	14.79	33.25E	39.81	[423.5]	]35757	Min
OK	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	OK
Cnt	15	14	14	14	14	14	14	14	14	14	14	14	15	15	Cnt

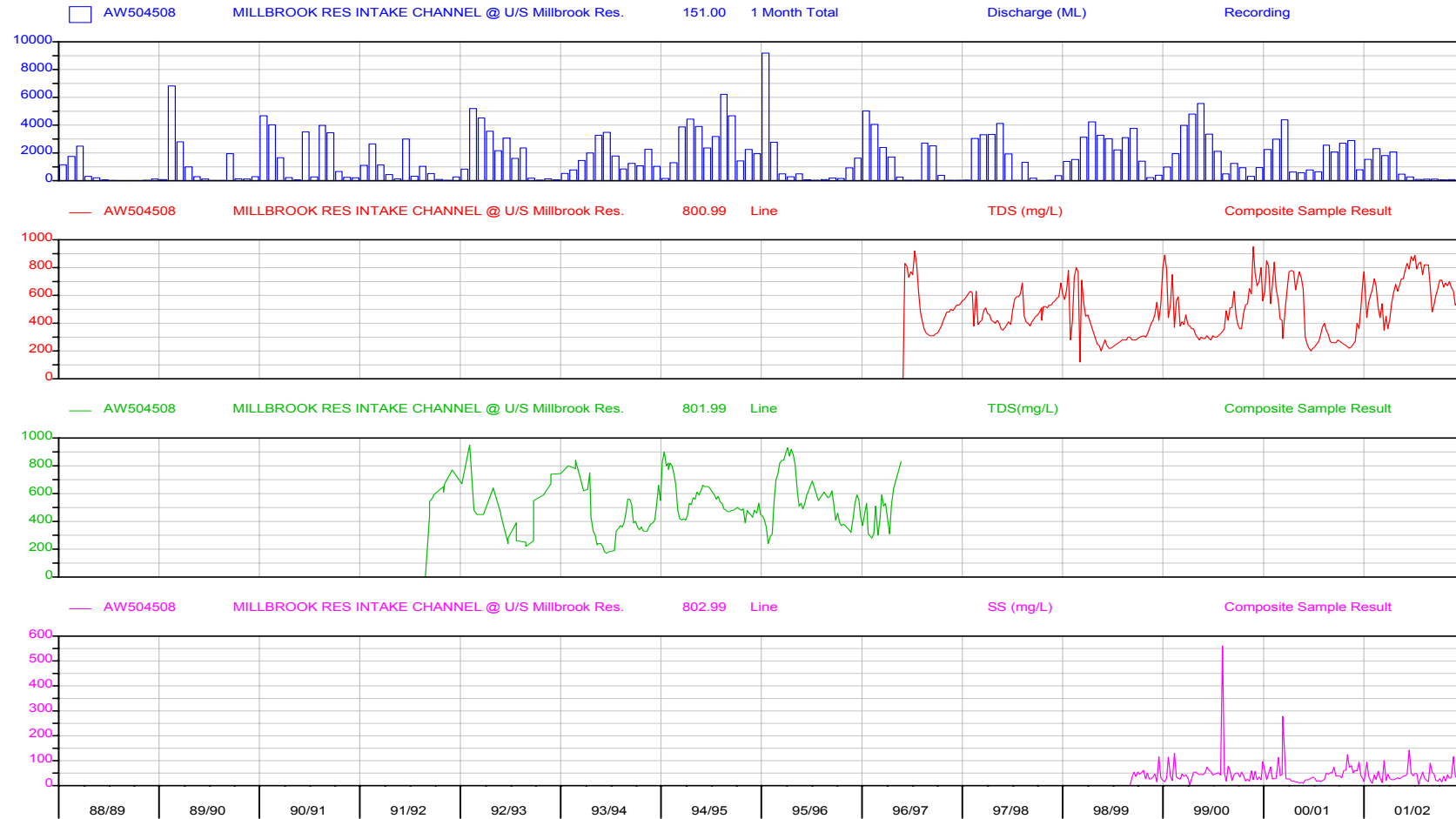
----- Notes -----
 All recorded data is continuous and reliable
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 Good Data - no quality flag printed
 E ... Estimated
 [...] Data Not processed

122. AW504508 TDS & SS Sample Results Plot**DWLBC, Surface Water Archive**

HYPLOT V125 Output 12/11/2002

Period 14 Year 00:00_01/07/1988 to 00:00_01/07/2002

1988-02

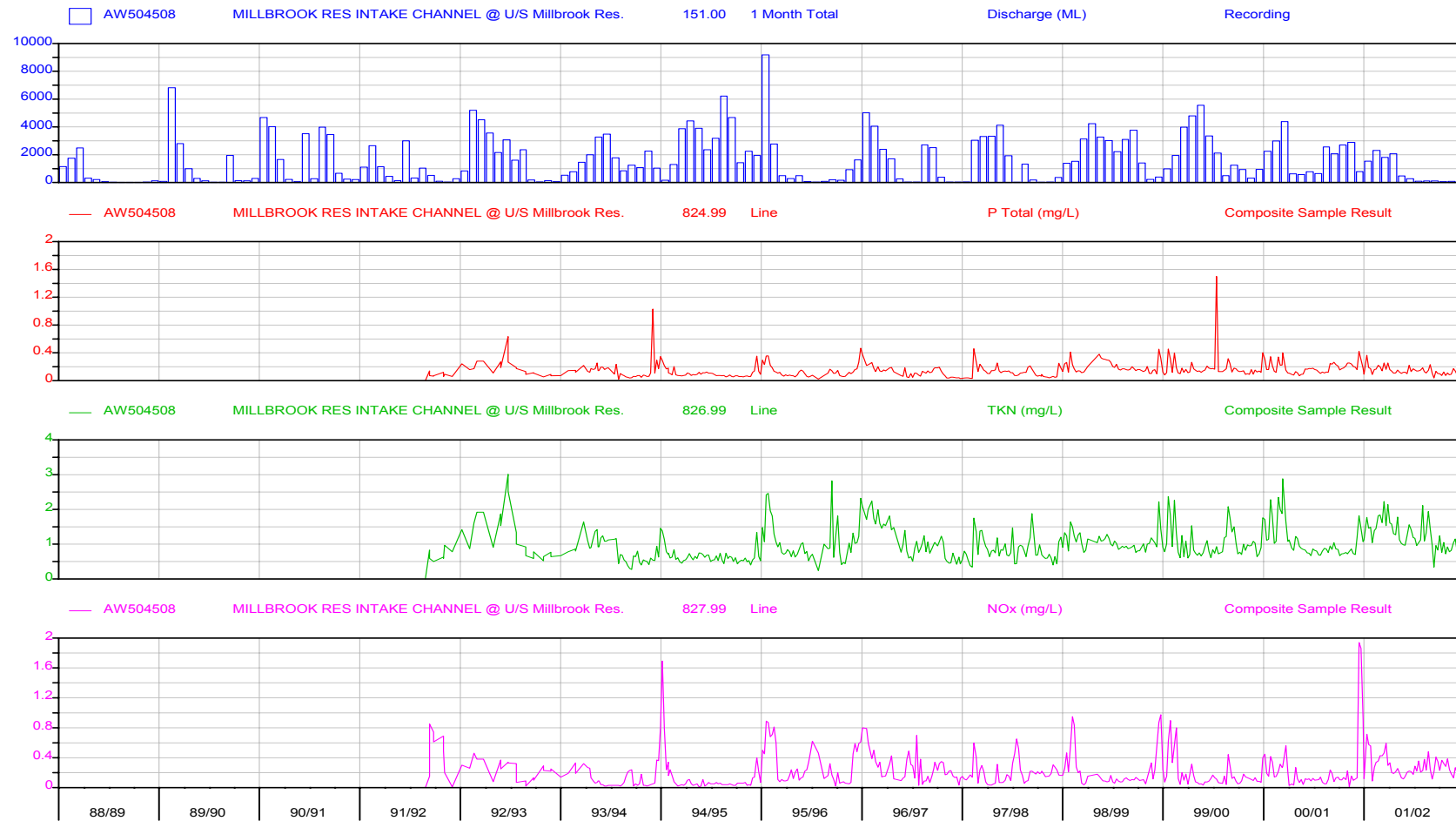


123. AW504508 Nutrients Sample Results Plot**DWLBC, Surface Water Archive**

HYPLOT V125 Output 12/11/2002

Period 14 Year 00:00_01/07/1988 to 00:00_01/07/2002

1988-02



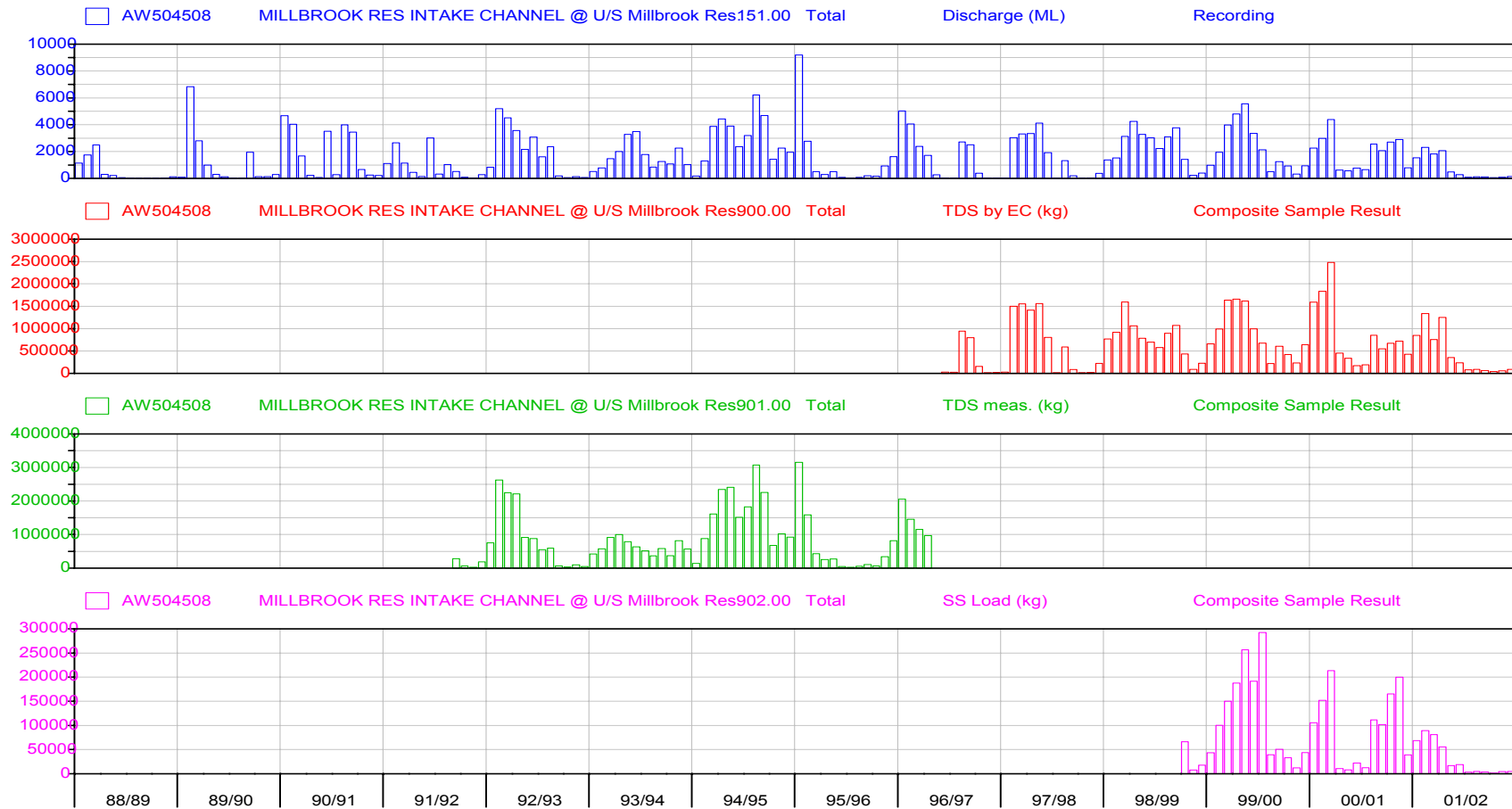
124. AW504508 TDS & SS Monthly Load Plot**DWLBC, Surface Water Archive**

HYPLOT V125 Output 12/11/2002

Period 14 Year Plot Start 00:00_01/07/1988

1988-02

Interval 1 Month Plot End 00:00_01/07/2002



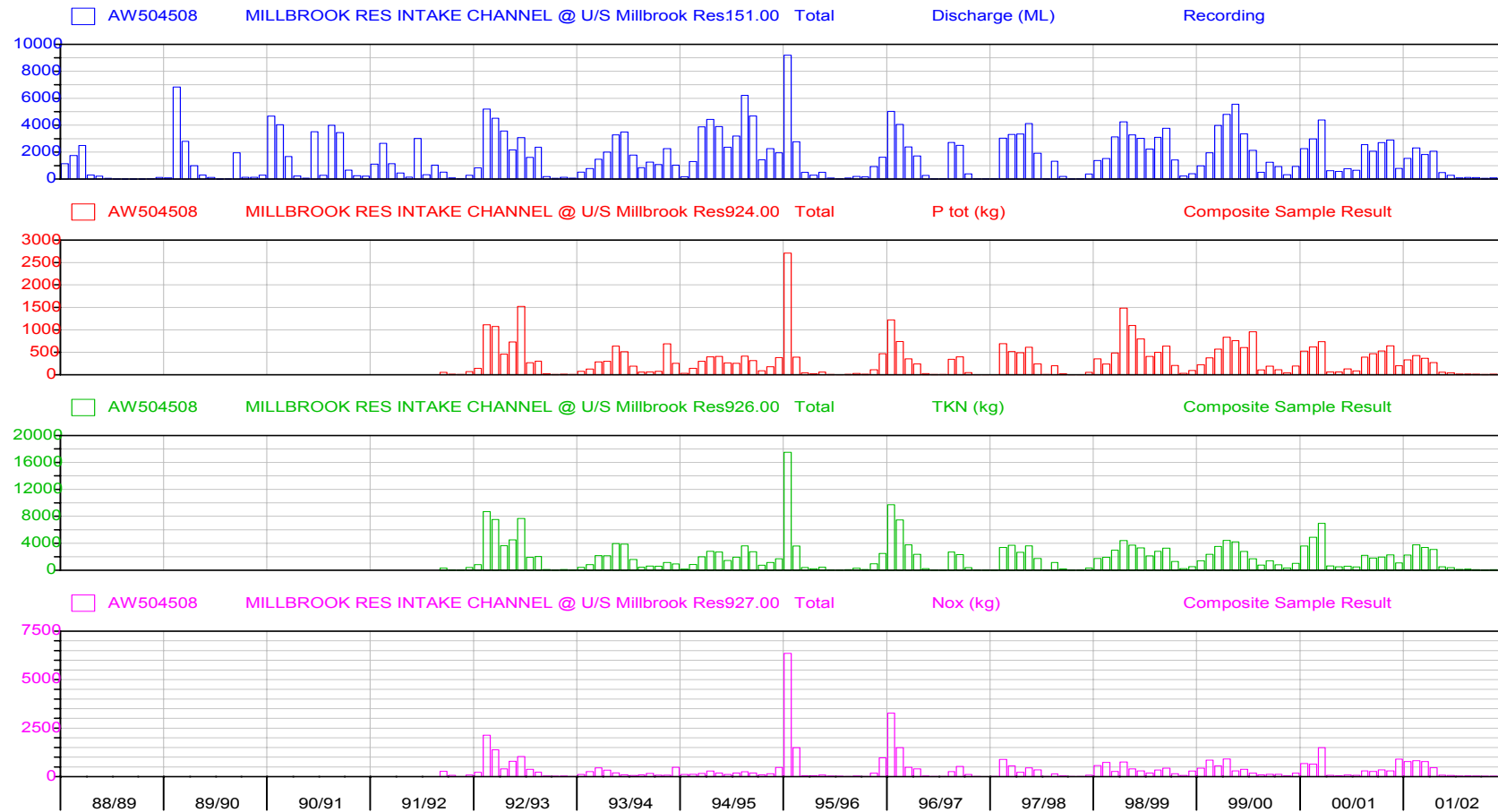
125. AW504508 Nutrients Monthly Load Plot**DWLBC, Surface Water Archive**

HYPLOT V125 Output 12/11/2002

Period 14 Year Plot Start 00:00_01/07/1988

1988-02

Interval 1 Month Plot End 00:00_01/07/2002



126. AW504508 TDS by EC Monthly Load Report

DWLBC, Surface Water Archive

HYMONTH V70 Output 12/11/2002

Station AW504508 MILLBROOK RES INTAKE CHANNEL @ U/S Millbrook Res.
 VarFrom 800.99 Total Dissolved Solids (by EC) in milligrams/Litre, Composite Sample Result
 VarTo 900.00 Total Total Dissolved Solids (by EC) in Kilograms, Recording
 Figures are for period ending 2400 hours.

Station AW504508

Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Mean Monthly	Annual Total	Missing Days
1988/89	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1989/90	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1990/91	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1991/92	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	366
1992/93	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1993/94	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1994/95	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1995/96	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	366
1996/97	[27176]	[1382965E]	[1502674]	[1409408]	[1552690]	[29349E]	[24430E]	[920701]	[789429]	[138687]	[16278]	[21388]	[243450]	[1947603]	150
1997/98	545749	892661	1525412	1060820	777412	699148	571566	895574	1068501	432395	858892	204674	729984	8759805	0
1998/99	537279	857693	1651345	1657251	1616073	999505	674830	202025	504665	349110	226423	574252	820871	9850451	0
1999/00	1420589	1588280	2099919	446684	337265	169781	190381	823507	551718	672872	694442E	345918	778446E	9341355E	0
2000/01	806279	1252826	710994	1208484	348013	231270	78395	84026	60880	39016	50756	86751	413141	4957690	0
2001/02	[301731]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[301731]	[301731]	335
															3407 Tot
Mean	[606467]	[1194885E]	[1498069]	[1156529]	[773132]	[479938E]	[258984E]	[577996]	[508446]	[274356]	[182118E]	[242635]	[559103]	[6095979]	Mean
Med.	[541514]	[1252826E]	[1525412]	[1208484]	[562712]	[465209E]	[134388E]	[682825]	[528191]	[243899]	[683324E]	[213751]			Med.
Max	1420589	1588280	2099919	1657251	1616073	999505	674830	920701	1068501	672872	694442E	574252	[820871]	[9850451]	Max
Min	[27176]	857693	710994	446684	[7342]	29349E	14303E	84026	60880	14057	16278E	21388	[243450]	[301731]	Min
OK	99%	100%	100%	100%	85%	100%	100%	100%	100%	100%	100%	100%	99%	99%	OK
Cnt	6	5	5	5	6	6	6	6	6	6	6	6	7	7	Cnt

----- Notes -----
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 E ... Estimated
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127. AW504508 TDS Measured Monthly Load Report

DWLBC, Surface Water Archive

HYMONTH V70 Output 12/11/2002

Station AW504508 MILLBROOK RES INTAKE CHANNEL @ U/S Millbrook Res.
 VarFrom 801.99 Total Dissolved Solids (Measured) in milligrams/Litre, Composite Sample Result
 VarTo 901.00 Total Total Dissolved Solids (measured) in Kilograms, Recording
 Figures are for period ending 2400 hours.

Station AW504508

Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Mean Monthly	Annual Total	Missing Days
1988/89	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1989/90	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1990/91	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1991/92	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	239
1992/93	770797	2420944	2321306	2224506	912959	852447	549929	594609	53929	61349	28749	186069	[159287]	[796433]	0
1993/94	418204	580038	911339	801375	788325	622802	609030	315560	494185	371691	803920	536169	604387	7252640	0
1994/95	140696	797495	1615154	2361594	2391218	1514225	1814649	3059684	2245675	681614	1024297	909494	1546316	18555795	0
1995/96	2862115	1128168	430402	256277	258370	47681	24834	50675	90866	60825	313230	661457	515408	6184899	0
1996/97	1989186	1388602	1144143E	811576E	[183360]	[]	[]	[]	[]	[]	[]	[]	[1103373]	[5516867]	223
1997/98	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1998/99	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1999/00	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
2000/01	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
2001/02	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
2002/03	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
															3748 Tot
Mean	1236199	1263049	1284469E	1291066E	[906847]	759289	749611	[862165]	622925	241700	452853	468397	[805869]	[8197324]	Mean
Med.	770797	1128168	1144143E	811576E	[788325]	737624	579480	[315560]	229969	61349	313230	536169			Med.
Max	2862115	2420944	2321306E	2361594E	2391218	1514225	1814649	3059684	2245675	681614	1024297	909494	[1546316]	[18555795]	Max
Min	140696	580038	430402E	256277E	[183360]	47681	24834	[50675]	53929	33020	28749	48795	[159287]	[796433]	Min
OK	100%	100%	100%	100%	93%	100%	100%	83%	100%	100%	100%	100%	98%	98%	OK
Cnt	5	5	5	5	5	4	4	5	5	5	5	5	6	6	Cnt

----- Notes -----
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 Good Data - no quality flag printed
 E ... Estimated
 [...] Data Not processed

128. AW504508 SS Monthly Load Report

DWLBC, Surface Water Archive

HYMONTH V70 Output 12/11/2002

Station AW504508 MILLBROOK RES INTAKE CHANNEL @ U/S Millbrook Res.
 VarFrom 802.99 Suspended Solids in milligrams/Litre, Composite Sample Result
 VarTo 902.00 Total Suspended Solids in Kilograms, Recording
 Figures are for period ending 2400 hours.

Station AW504508

Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Mean Monthly	Annual Total	Missing Days
1988/89	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1989/90	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1990/91	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1991/92	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	366
1992/93	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1993/94	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1994/95	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1995/96	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	366
1996/97	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1997/98	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1998/99	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	246
1999/ 0	64591	141563	156689	194575	256498	193150	280370	79028	[149977]	65027	9446	29376	[63457]	[253826]	0
2000/ 1	124259	155570	329146	10338	8300	22521	12751	122116	57364	37400	15033	69013	128773	1545273	0
2001/ 2	80966	103333	73670	55442	16304	21523	3550	5751	4553	1580	4418	4704	31316	375794	0
2002/ 3	[209109]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[209109]	[209109]	335
4233 Tot															
Mean	[119731]	133489	186502	86785	93701	79065	98890	68965	[77196]	66924	57691E	40329	[108292]	[737935]	Mean
Med.	[102612]	141563	156689	55442	16304	22521	12751	79028	[77127]	51214	12239E	43800			Med.
Max	[209109]	155570	329146	194575	256498	193150	280370	122116	[149977]	163688	201868E	69013	[209109]	[1545273]	Max
Min	[64591]	103333	73670	10338	8300	21523	3550	5751	[4553]	1580	4418E	4704	[31316]	[209109]	Min
OK	99%	100%	100%	100%	100%	100%	100%	100%	98%	100%	100%	100%	100%	100%	OK
Cnt	4	3	3	3	3	3	3	3	4	4	4	4	5	5	Cnt

----- Notes -----
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 [...] Data Not processed

129. AW504508 P Monthly Load Report

DWLBC, Surface Water Archive

HYMONTH V70 Output 12/11/2002

Station AW504508 MILLBROOK RES INTAKE CHANNEL @ U/S Millbrook Res.
 VarFrom 824.99 Phosphorus - Total as P in milligrams/Litre, Composite Sample Result
 VarTo 924.00 Total Phosphorus - Total as P Load in Kilograms, Recording
 Figures are for period ending 2400 hours.

Station AW504508

Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Mean Monthly	Annual Total	Missing Days
1988/89	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1989/90	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1990/91	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1991/92	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	239
1992/93	139.3	1200	1004	445.8	722.2	1608	270.2	302.6	71.00	11.30	2.47	67.33	[48.89]	[244.4]	0
1993/94	76.42	126.2	300.2	321.0	655.5	578.2	199.1	71.98	77.06	80.94	526.5	273.5	273.9	3286	0
1994/95	36.65	150.9	302.2	393.4	399.7	265.5	250.2	413.5	317.8	86.49	158.1	445.2	268.3	3220	0
1995/96	2825	479.5	43.39	21.25	70.00	5.65	1.67	7.89	23.75	11.14	107.8	620.2	351.4	4217	0
1996/97	1174	781.1	354.4	277.6	20.54	3.38	3.17	335.1	373.4	69.38	1.45	1.51	282.9	3395	0
1997/98	1.69	923.8	572.9	497.1	612.2	252.8	2.10	207.0	37.00	1.74	1.76	77.92	265.6	3188	0
1998/99	447.7	254.1	536.4	1485	1094	801.7	411.0	495.5	635.5	211.1	35.92	134.2	545.5	6547	0
1999/00	324.5	473.1	593.9	862.3	761.4	609.3	942.6	111.6	180.4	122.4	43.55	308.3	444.4	5333	0
2000/01	620.6	667.4	927.1	65.74	62.29	131.8	86.02	398.8	462.2	524.1	658.4	283.7	407.3	4888	0
2001/02	370.3	460.2	393.3	278.2	56.41	45.43	14.63	18.72	9.94	5.57	10.99	29.11	141.0	1692	0
2002/03	[372.4]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[372.4]	[372.4]	335
1669 Tot															
Mean	[580.8]	551.6	502.8	464.7	445.4	430.3	218.0	[223.5]	200.8	102.5	141.7	204.1	[323.3]	[3510]	Mean
Med.	[370.3]	476.3	464.9	357.2	505.9	259.1	142.5	[207.0]	77.86	69.38	35.92	134.2	[545.5]	[6547]	Med.
Max	2825	1200	1004	1485	1094	1608	942.6	[495.5]	635.5	524.1	658.4	620.2	[545.5]	[6547]	Max
Min	[1.69]	126.2	43.39	21.25	20.54	3.38	1.67	[7.89]	9.94	1.74	1.45	1.51	[48.89]	[244.4]	Min
OK	100%	100%	100%	100%	100%	100%	100%	92%	100%	100%	100%	100%	99%	99%	OK
Cnt	11	10	10	10	10	10	10	11	11	11	11	11	12	12	Cnt

----- Notes -----
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 Good Data - no quality flag printed
 E ... Estimated
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130. AW504508 TKN Monthly Load Report

DWLBC, Surface Water Archive

HYMONTH V70 Output 12/11/2002

Station AW504508 MILLBROOK RES. INTAKE CHANNEL @ U/S Millbrook Res.
 VarFrom 826.99 TKN as N in milligrams/Litre, Composite Sample Result
 VarTo 926.00 Total TKN as N Load in Kilograms, Recording
 Figures are for period ending 2400 hours.

Station AW504508

Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Mean Monthly	Annual Total	Missing Days
1988/89	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1989/90	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1990/91	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1991/92	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	239
1992/93	778.9	9227	7113	3546	4483	8000	1922	547.6	422.1	59.7	30.8	393.8	[290.8]	[1454]	0
1993/94	410.6	794.0	2279	2282	4066	3842	1349	2063	110.3	29.6	104.5	43.9	3118	37426	0
1994/95	176.7	862.1	2014	2800	2688	1451	1973	554.4	828.8	694.2	1130	1054	1607	19287	0
1995/96	19635	4515	408.3	216.6	485.2	54.7	19.8	3614	2789	730.3	1098	1908	1842	22108	0
								80.3	270.1	95.2	902.1	3300	2498	29985	0
1996/97	9672	7658	3781	E2614	E221.0	E31.15E	31.25E	2661	2255	411.0	18.24	20.62	2448	E29376E	0
1997/98	26.52	4142	E3975	2680	3611	1538	17.30	1124	226.6	20.08	21.00	382.1	1480	E17766E	0
1998/99	2087	1999	3034	4412	3639	3353	2168	2807	3261	1268	229.5	682.0	2416	29004	0
1999/00	1838	2831	3779	4591	4239	2828	1687	763.4	1033	713.9	317.4	1487	2175	26112	0
2000/01	4311	5492	8284	651.0	496.7	590.9	492.6	2185	1801	1969	2243	E1300	2484	E29819E	0
2001/02	2371	3973	3494	3183	505.1	379.4	120.9	163.8	88.48	52.06	86.72	132.0	1212	14551	0
2002/03	1802	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[1802]	[1802]	335
1669 Tot															
Mean	3919	4149	E3816	E2698	E2449	E2207	E978.3	E1505	1189	549.4	562.0	E973.2	[1948]	121557	Mean
Med.	1838	4057	E3637	E2740	E3150	E1495	E920.9	E1124	828.8	411.0	229.5	E682.0	[]	[]	Med.
Max	19635	9227	E8284	E4591	E4483	E8000	E2168	E3614	3261	1969	2243	E3300	[3118]	37425	Max
Min	[26.52]	793.9	E408.3	E216.6	E221.0	E31.15E	17.30E	[80.34]	88.48	20.08	18.24E	20.62	[290.8]	[1454]	Min
OK	100%	100%	100%	100%	100%	100%	100%	100%	92%	100%	100%	100%	99%	99%	OK
Cnt	11	10	10	10	10	10	10	11	11	11	11	11	12	12	Cnt

----- Notes -----
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131. AW504508 Nox Monthly Load Report

DWLBC, Surface Water Archive

HYMONTH V70 Output 12/11/2002

Station AW504508 MILLBROOK RES INTAKE CHANNEL @ U/S Millbrook Res.
 VarFrom 827.99 Nitrate + Nitrite as N in milligrams/Litre, Composite Sample Result
 VarTo 927.00 Total Nitrate + Nitrite as N Load in Kilograms, Recording
 Figures are for period ending 2400 hours.

Station AW504508

Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Mean Monthly	Annual Total	Missing Days
1988/89	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1989/90	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1990/91	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1991/92	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	239
1992/93	221.5	215.7	125.4	376.7	790.0	1031.1	388.3	226.3	88.60	64.71	1.46	83.08	[67.36]	[336.8]	0
1993/94	103.5	254.7	457.6	241.4	196.0	83.57	48.77	38.72	26.88	15.92	28.85	9.17	543.9	652.7	0
1994/95	142.5	64.75	174.1	272.3	156.8	101.6	180.4	248.8	47.31	36.63	72.90	544.8	177.1	212.6	0
1995/96	7029	1867	47.20	47.32	67.14	25.60	16.78	12.39	184.6	87.34	110.0	538.5	188.5	226.3	0
1996/97	3269	1516	490.8	488.8	26.51	11.91	10.38	271.4	471.1	118.1	6.25	4.58	557.2	6686	0
1997/98	5.93	1141	674.2	232.3	449.2	255.0	9.92	137.9	41.41	4.97	7.42	61.80	251.8	3021	0
1998/99	857.6	761.5	303.4	759.5	394.6	291.9	179.8	345.3	434.0	145.9	50.32	308.7	402.7	483.2	0
1999/00	634.4	959.6	602.3	911.1	282.8	376.3	180.6	118.5	78.64	71.71	37.39	341.5	383.7	460.5	0
2000/01	796.7	755.9	1773	79.15	49.38	83.20	67.06	305.5	253.0	344.7	289.8	1361	513.3	6160	0
2001/02	900.6	833.3	639.0	472.0	75.36	58.78	25.37	33.16	23.47	18.22	18.90	24.74	260.2	3123	0
2002/03	[169.6]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[169.6]	[169.6]	335
1669 Tot															
Mean	1284	1031	641.7	388.0	249.8	231.9	110.7	167.1	151.1	83.68	62.41	404.5	[365.0]	[4185]	Mean
Med.	1634.4	896.5	546.5	324.5	176.4	92.61	57.91	137.9	78.64	64.71	37.39	308.7	[864.4]	[10373]	Med.
Max	7029	2157	1773	911.1	790.0	1031.1	388.3	226.3	471.1	344.7	289.8	1361	[864.4]	[10373]	Max
Min	[5.93]	64.75	47.20	47.32	26.51	11.91	9.92	12.39	13.65	4.97	1.46	4.58	[67.36]	[169.6]	Min
OK	100%	100%	100%	100%	100%	100%	100%	92%	100%	100%	100%	100%	99%	99%	OK
Cnt	11	10	10	10	10	10	10	11	11	11	11	11	12	12	Cnt

----- Notes -----
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132. AW504525 Site Information Summary Report

DWLBC, Surface Water Archive

HYSITREP - Site Summary Report
AW504525 - KERSBROOK CK @ U/S Millbrook Res.

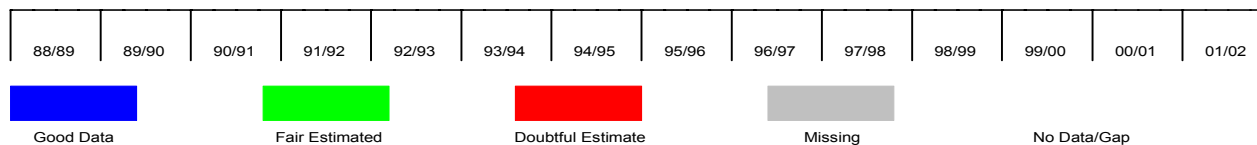
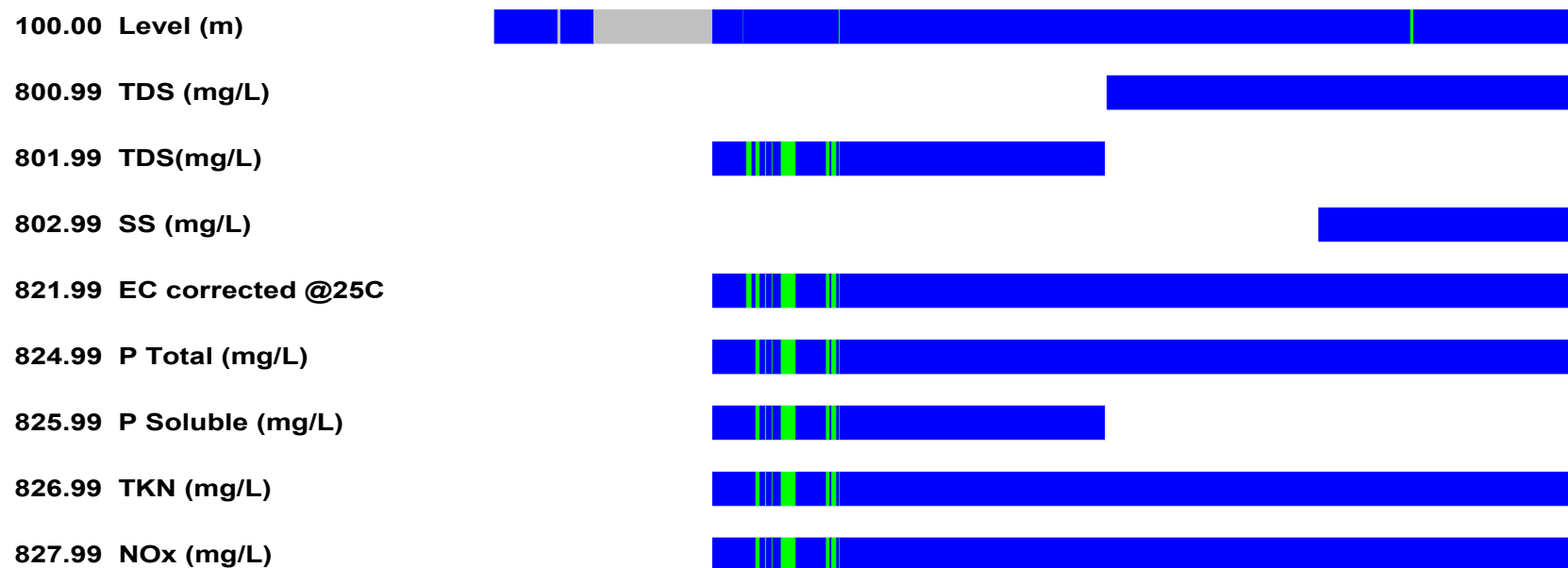
13:27_12/11/2002 Page 1

SITE DESCRIPTION
Site Commenced: 01/01/1976
Site Ceased:
Map Name: 6628-2 (50k)
Local Map Reference:
Grid Reference: Zone - 54 Easting - 302052.0 Northing - 6145960.0
Latitude: 34:48:33S
Longitude: 138:50: 9E
Elevation: 303.101
Comment:

STATION DESCRIPTION
Stream Distance: 0.000
Gauge Zero: 302.101
Gauge Datum: AHD
Control: Triangular V weir
Cease to Flow: 1.000
Max gauged stage (m.): 3.000 on 06/04/1992
This station is downstream from a dam, and flows may be affected by releases from the dam
Catchment Area: 23.000

STATION HISTORY
01/01/1976 ALIAS AWQC Site No. 3326 + EPA-EDMS Site Nos. 5244+6772+8847

HYQPLOT V53 Output 12/11/2002

AW504525 KERSBROOK/MILLBR RES

134. AW504525 Flow Volume Annual Total (Year Order) Report

DWLBC, Surface Water Archive

HYANN V45 Output 12/11/2002

Station AW504525 KERSBROOK CK @ U/S Millbrook Res.
 Variable 151.00 Stream Discharge Volume in Megalitres, Recording

Year Starting July	Annual Total (Megalitres)	Days Missing	Rank
1989/90	486.4	90	12
1990/91	223.2	228	6
1991/92	55.6	284	14
1992/93	898.4		1
1993/94	822.9		9
1994/95	270.7		13
1995/96	384.2		4
1996/97	493.7		2
1997/98	634.3		10
1998/99	162.7		8
1999/00	193.8		7
2000/01	297.2		5
2001/02	414.2		3
2002/03	498.7	285	11
Total	3344.0	887	
Minimum	55.6		
Maximum	898.4		
Mean	238.9		
Median	178.3		

135. AW504525 Flow Volume Annual Total (Size Order) Report

DWLBC, Surface Water Archive

HYANN V45 Output 12/11/2002

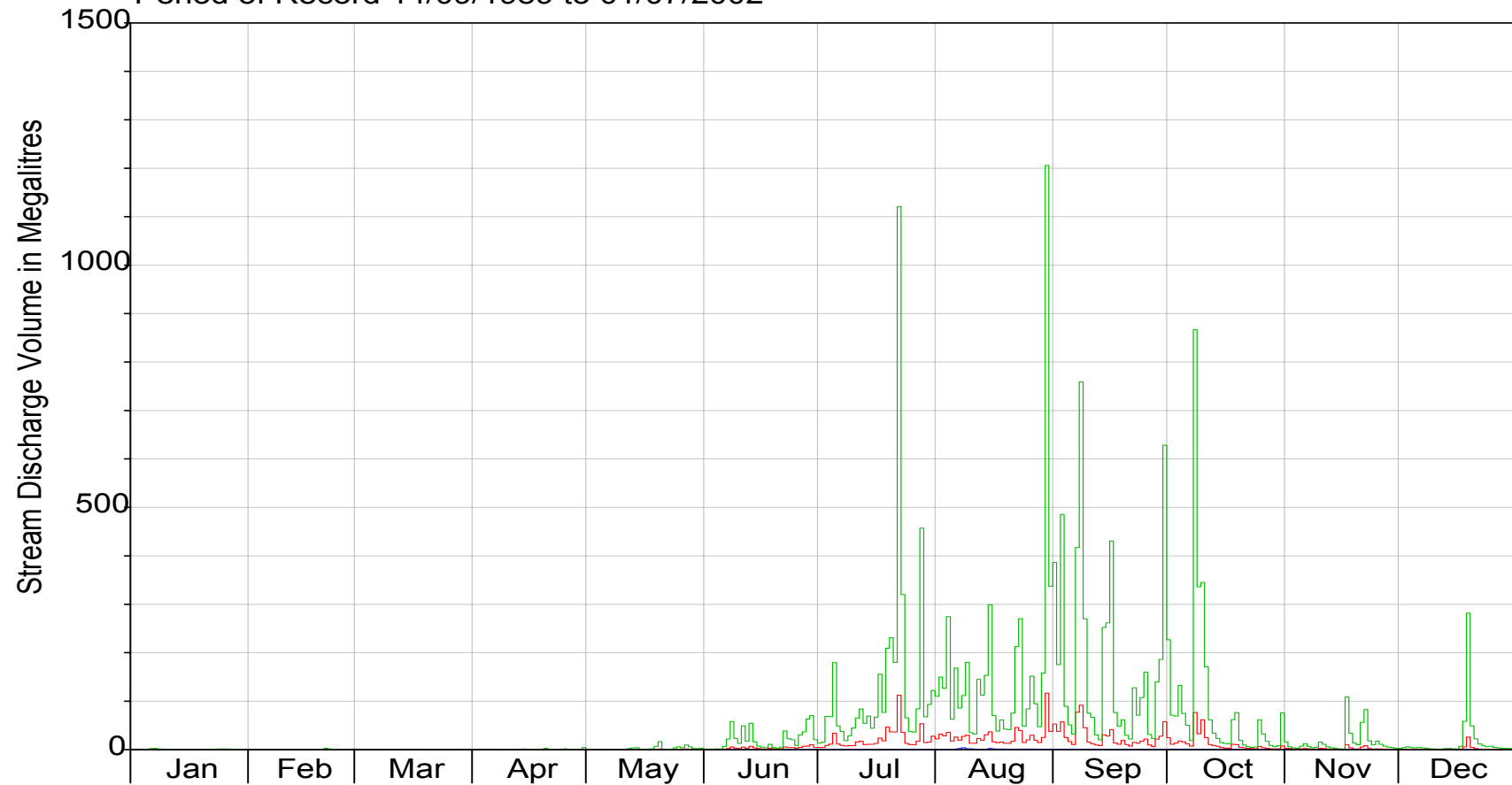
Station AW504525 KERSBROOK CK @ U/S Millbrook Res.
 Variable 151.00 Stream Discharge Volume in Megalitres, Recording

Year Starting July	Annual Total (Megalitres)	Days Missing	Rank
1992/93	8984		1
1996/97	4937		2
2001/2	4142		3
1995/96	3842		4
2000/1	2972		5
1990/91	2232	228	6
1999/0	1938		7
1998/99	1627		8
1993/94	822.9		9
1997/98	634.3		10
2002/3	498.7	285	11
1989/90	486.4	90	12
1994/95	270.7		13
1991/92	55.6	284	14
Total	33440	887	
Minumum	55.6		
Maximum	8984		
Mean	2389		
Median	1783		

136. AW504525 Flow Volume Daily Max, Min, Mean by Calendar Month Plot**DWLBC, Surface Water Archive**

HYMXMEAN V69 Output 12/11/2002

Plot of Daily Maximum, Minimum and Mean
Station AW504525 KERSBROOK CK @ U/S Millbrook Res.
Period of Record 14/09/1989 to 01/07/2002



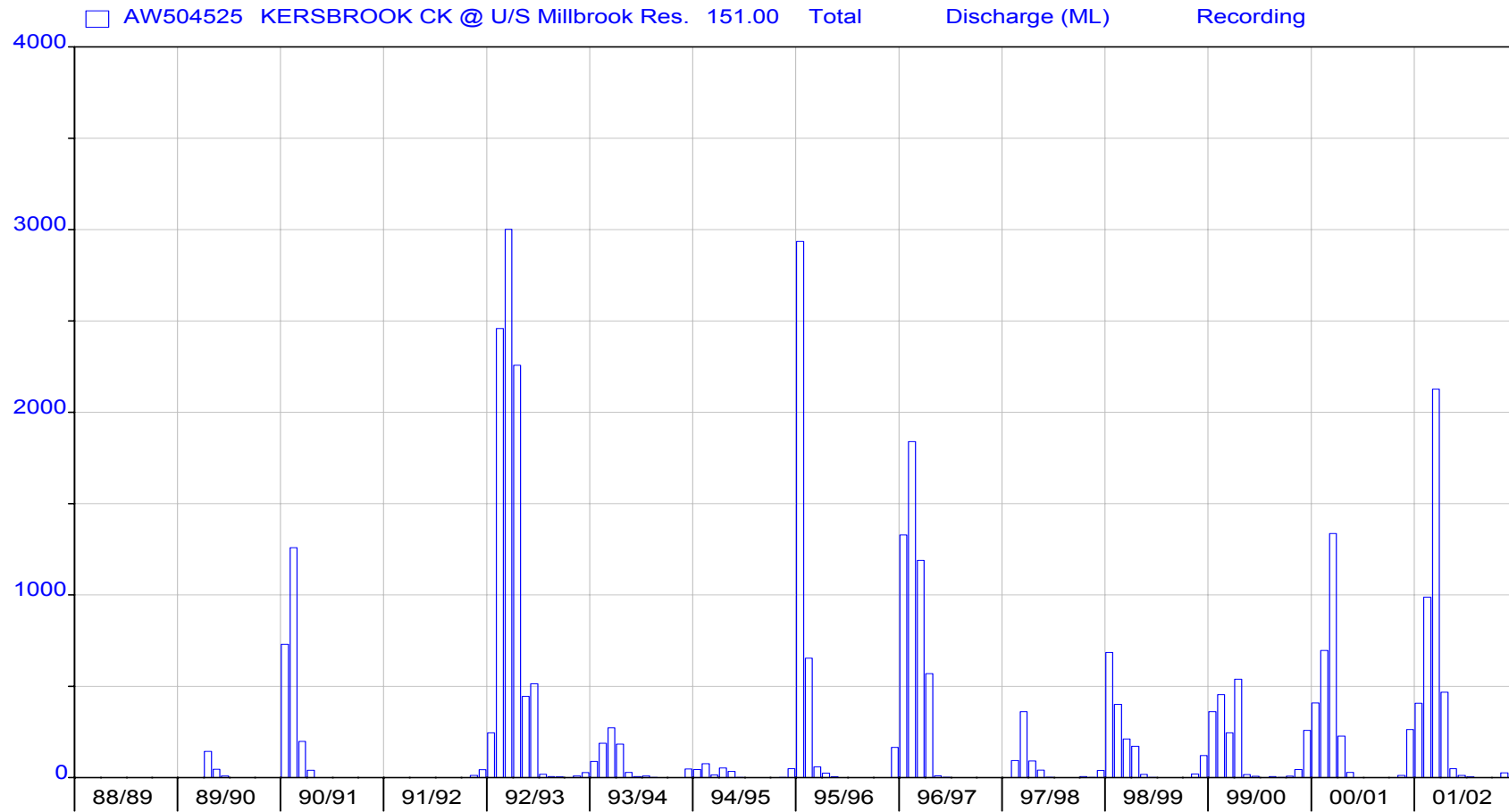
137. AW504525 Flow Volume Monthly Total Plot**DWLBC, Surface Water Archive**

HYPLOT V125 Output 12/11/2002

Period 14 Year Plot Start 00:00_01/07/1988

1988-02

Interval 1 Month Plot End 00:00_01/07/2002



138. AW504525 Flow Volume Monthly Total Report

DWLBC, Surface Water Archive

HYMONTH V70 Output 12/11/2002

Station AW504525 KERSBROOK CK @ U/S Millbrook Res.
 VarFrom 100.00 Water Level in Metres, Recording
 VarTo 151.00 Total Stream Discharge Volume in Megalitres, Recording
 Figures are for period ending 2400 hours.

Station AW504525

Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Mean Monthly	Annual Total	Missing Days
1988/89	[]	[]	[245.6]	[142.9]	[45.92]	[8.51]	[0.02]	[0.00]	[0.00]	[0.00]	[0.00]	[43.34]	[48.64]	[486.4]	365
1989/90	729.6	D1259	D198.1	D40.28	[5.13]	[]	[]	[0.00]	[0.00]	[0.00]	[0.00]	[]	[446.4]	[2232.4]	228
1991/92	244.6	D2458	<3002	D2256	<444.7	D513.0	D18.90	[5.84]	[3.63]	[0.68]	11.98	42.98	[18.55]	[55.64]	284
1992/93	89.01	D188.4	D271.8	D183.1	D28.15	6.15	8.78	0.82	0.00	0.36	8.90	26.74	748.6	8984.9	<0
1993/94	89.01	D188.4	D271.8	D183.1	D28.15	6.15	8.78	0.82	0.00	0.36	8.90	26.74	748.6	8984.9	<0
1994/95	43.90	75.69	D14.81	52.16	34.01	0.45	0.00	0.00	0.00	0.00	1.22	48.47	22.56	270.7	<0
1995/96	2935	<653.5	D58.47	24.45	4.83	0.10	0.00	0.00	0.00	0.00	0.00	165.1	320.1	<3842	<0
1996/97	1328	D1839	D1188	D568.8	D9.95	1.76	0.00	0.00	0.00	0.00	0.00	0.00	411.3	D4936	<0
1997/98	0.00	93.60	D360.6	D90.98	41.32	2.28	0.00	0.00	0.00	6.21	0.52	38.78	52.86	D634.3	<0
1998/99	685.3	D400.9	D211.4	D171.3	D17.38	0.66	0.00	0.00	0.00	0.00	19.30	120.5	135.5	D1627	<0
1999/00	360.9	D453.8	D244.7	D539.1	<16.52	6.51	0.16	5.91	0.96	7.94	43.33	258.2	161.5	<1938	<0
2000/01	409.0	D696.0	D1336	<227.5	D28.11	0.08	0.00	0.00	0.00	0.00	11.42	263.6	247.6	<2971	<0
2001/02	407.0	D987.0	D2126	<467.7	D49.02	11.36	3.84	0.01	0.00	0.00	26.25	63.31	345.2	<4142	<0
2002/03	280.3	D154.9	D63.39	[]	[]	[]	[]	[]	[]	[]	[]	[]	[166.2]	[498.6]	285
															1252 Tot
Mean	626.1	<771.7	<[717.1]	397.1	<[60.42]	50.08	2.88	1.14	0.42	[1.27]	10.24	[93.15]	[228.1]	[2388]	Mean
Med.	383.9	<553.6	<[245.6]	177.2	<[428.13]	2.28	0.00	0.00	0.00	[0.00]	5.06	[47.55]	[]	[]	Med.
Max	2935	<2458	<3002	2256	<[444.7]	513.0	18.90	5.91	3.63	[7.94]	43.33	[263.6]	[748.6]	[8984.9]	Max
Min	0.00	<75.69	<[14.81]	24.45	<[4.83]	0.08	0.00	0.00	0.00	[0.00]	0.00	[0.00]	[18.55]	[55.64]	Min
OK	100%	100%	93%	100%	96%	100%	100%	100%	100%	98%	100%	96%	98%	98%	OK
Cnt	12	12	13	12	12	11	11	11	11	12	12	12	14	14	Cnt

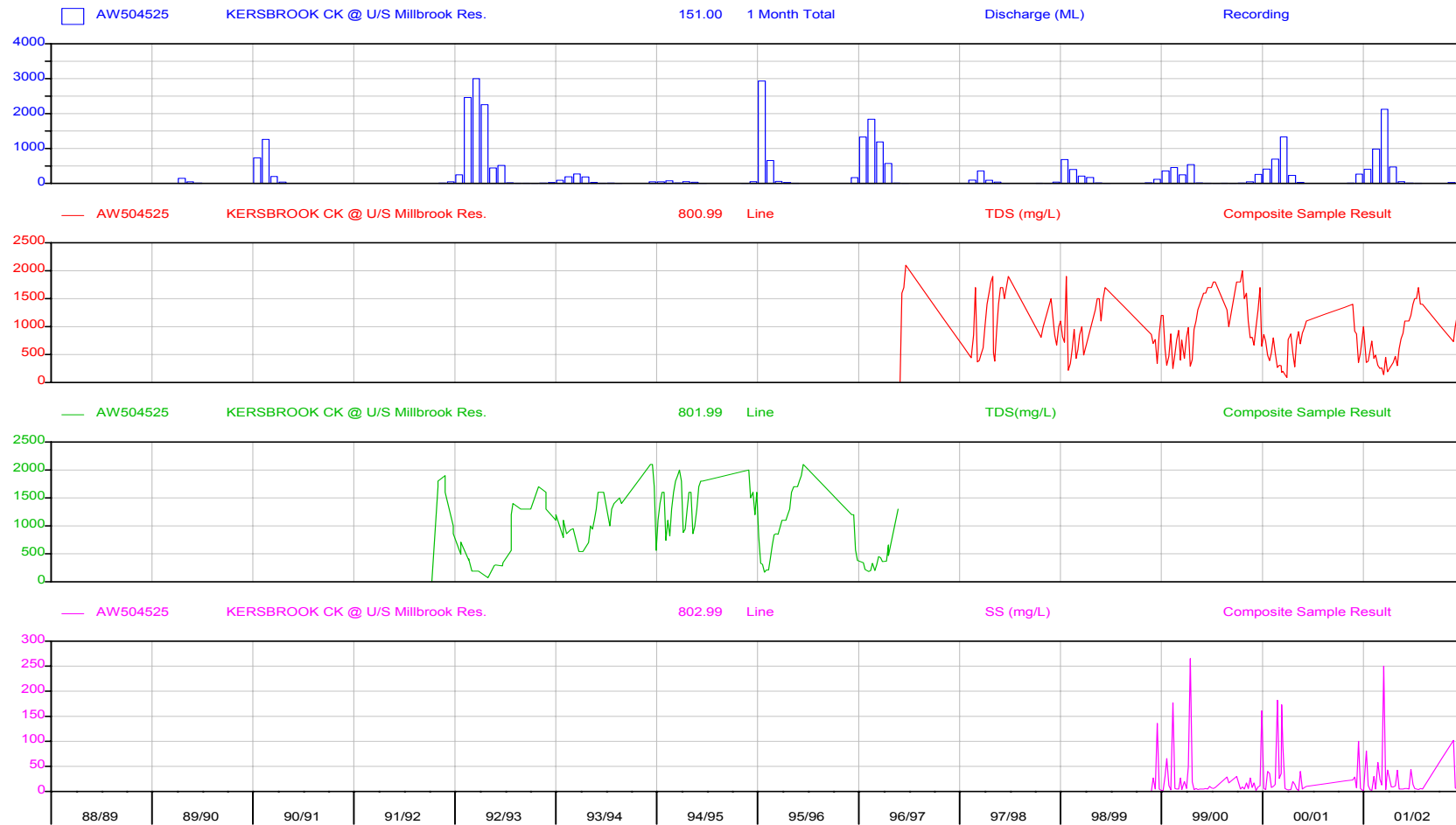
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139. AW504525 TDS & SS Sample Results Plot**DWLBC, Surface Water Archive**

HYPLOT V125 Output 12/11/2002

Period 14 Year 00:00_01/07/1988 to 00:00_01/07/2002

1988-02

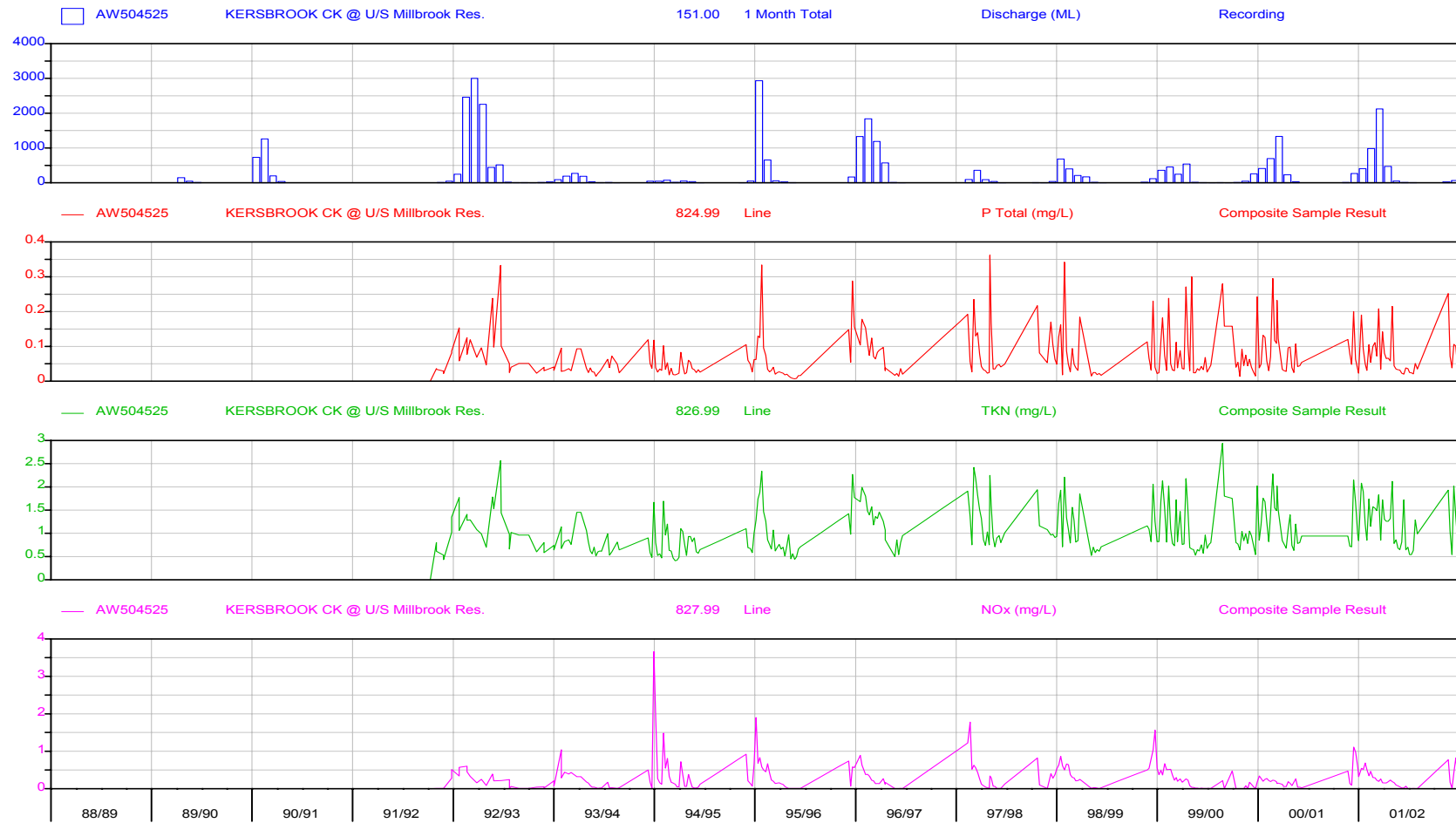


140. AW504525 Nutrients Sample Results Plot**DWLBC, Surface Water Archive**

HYPLOT V125 Output 12/11/2002

Period 14 Year 00:00_01/07/1988 to 00:00_01/07/2002

1988-02



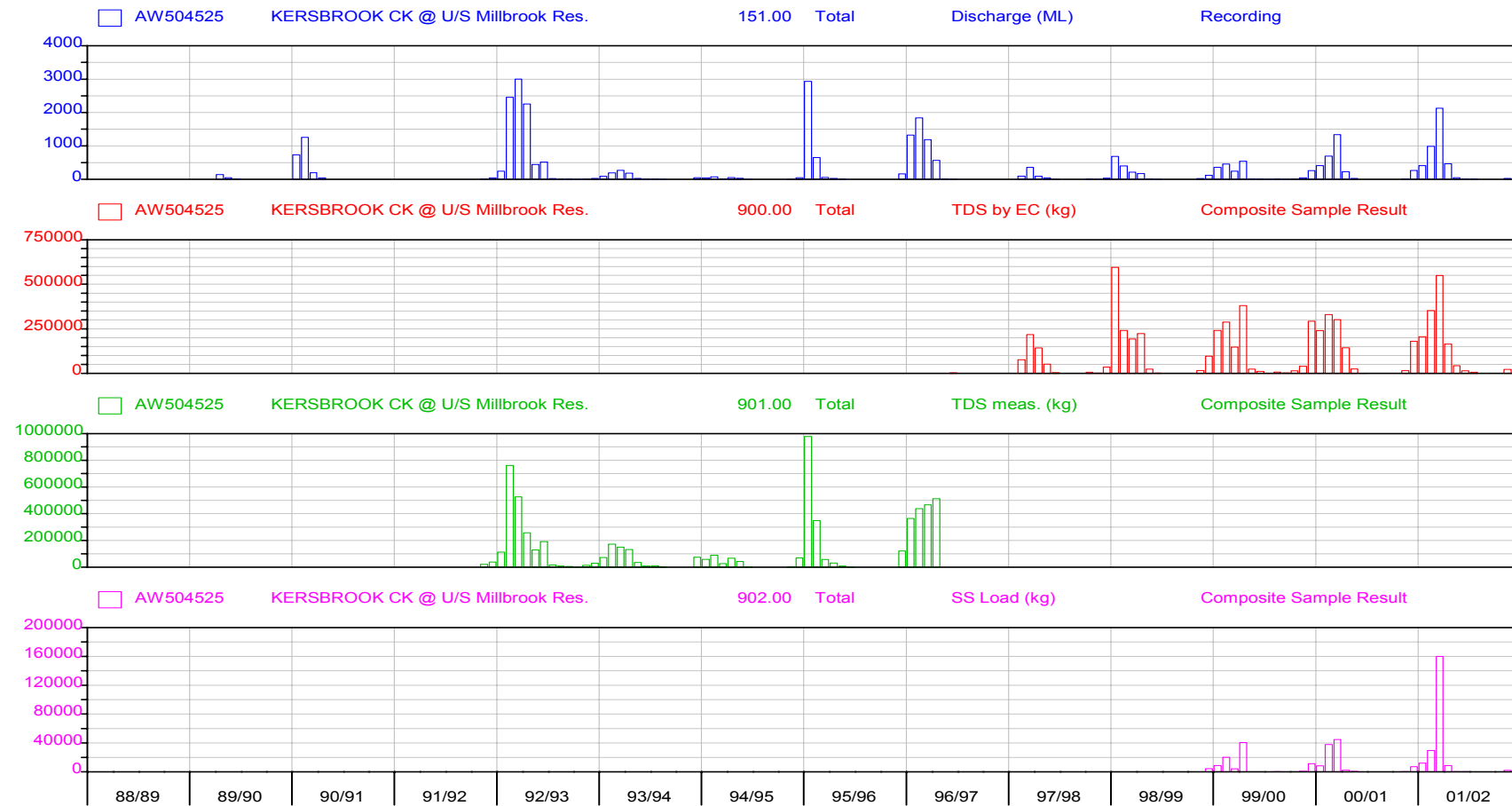
141. AW504525 TDS & SS Monthly Load Plot**DWLBC, Surface Water Archive**

HYPLOT V125 Output 12/11/2002

Period 14 Year Plot Start 00:00_01/07/1988

1988-02

Interval 1 Month Plot End 00:00_01/07/2002



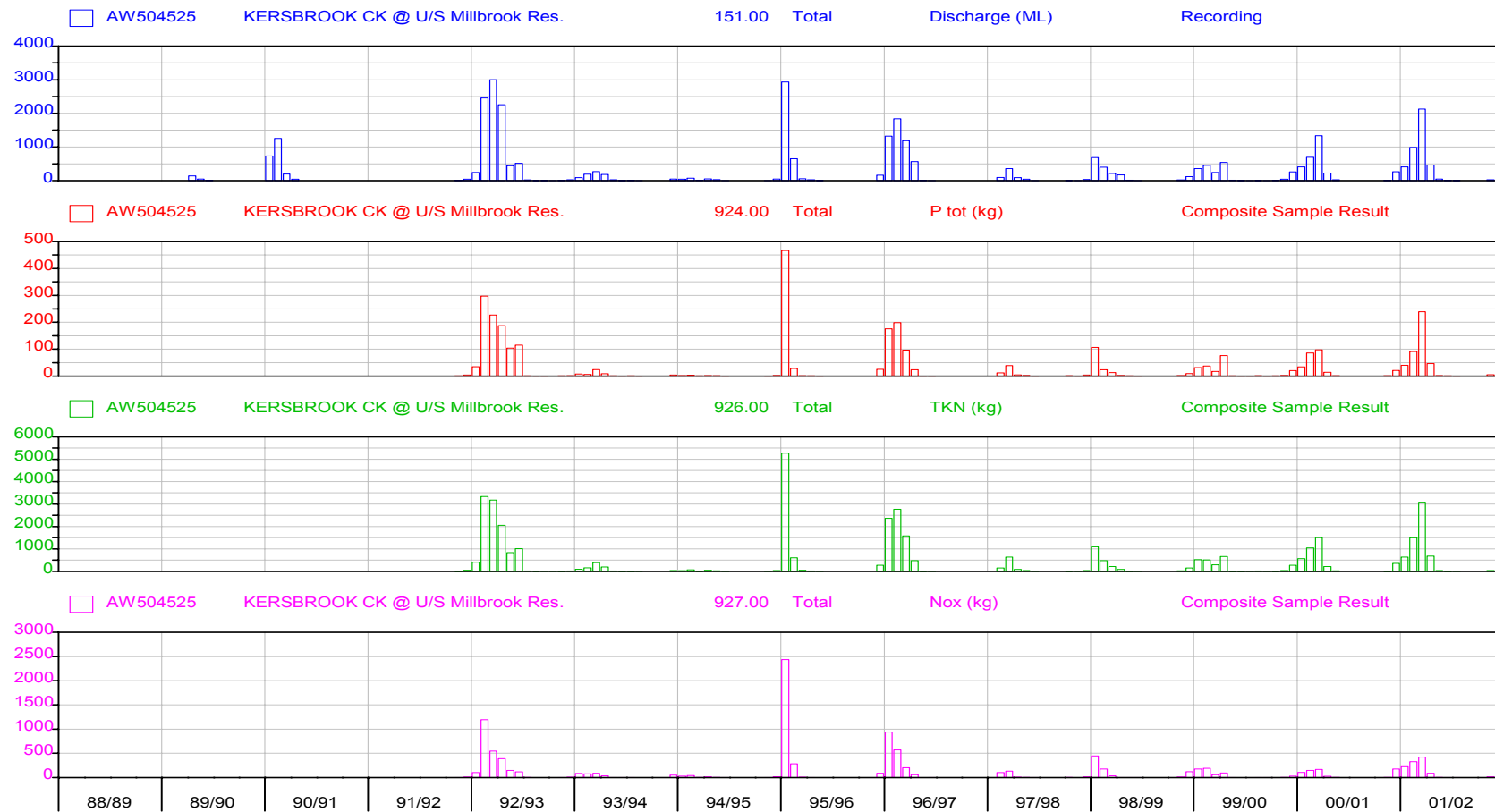
142. AW504525 Nutrients Monthly Load Plot**DWLBC, Surface Water Archive**

HYPLOT V125 Output 12/11/2002

Period 14 Year Plot Start 00:00_01/07/1988

1988-02

Interval 1 Month Plot End 00:00_01/07/2002



143. AW504525 TDS by EC Monthly Load Report

DWLBC, Surface Water Archive

HYMONTH V70 Output 12/11/2002

Station AW504525 KERSBROOK CK @ U/S Millbrook Res.
 VarFrom 800.99 Total Dissolved Solids (by EC) in milligrams/Litre, Composite Sample Result
 VarTo 900.00 Total Total Dissolved Solids (by EC) in Kilograms, Recording
 Figures are for period ending 2400 hours.

Station AW504525

Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Mean Monthly	Annual Total	Missing Days
1988/89	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1989/90	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1990/91	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1991/92	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	366
1992/93	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1993/94	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1994/95	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1995/96	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	366
1996/97	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	150
1997/98	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	0
1998/99	197773D	196849D	220994D	222755D	24335	1060	0	0	0	5535	727	34691	29786D	357430D	0
1999/0	166018D	159372D	117638D	180918<	22839	10744	287	7512	1720	13871	14788	70186D	79062D	948740D	0
2000/1	208160D	221546D	270945<	93251D	21473D	84	0	0	0	0	32600	198318D	75986<	911837<	0
2001/2	169706D	305279D	376969<	150089D	37282	13577	5733	8	0	0	19742D	42923D	93442<	1121308<	0
2002/3	148763D	[99048]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[123905]	[247811]	308
															3380 Tot
Mean	148403D	[173655]	231089<	140869<	[22184]	5428	1003	1253	287	3234	13331D	77552D	[68795]	[648253]	Mean
Med.	167862D	[178111]	220994<	150089<	[23587]	3551	0	0	0	0	13457D	56534D			Med.
Max	208160D	[305279]	376969<	222755<	[37282]	13577	5733	7512	1720	13871	32600D	198318D	[123905]	[1121308]	Max
Min	0D	[59836]	117638<	57330<	[856]	84	0	0	0	0	0D	0D	[483]	[3866]	Min
OK	100%	97%	100%	100%	85%	100%	100%	100%	100%	100%	100%	100%	98%	98%	OK
Cnt	6	6	5	5	6	6	6	6	6	6	6	6	7	7	Cnt

----- Notes -----
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 D ... Doubtful
 [...] Data Not processed

144. AW504525 TDS Measured Monthly Load Report

DWLBC, Surface Water Archive

HYMONTH V70 Output 12/11/2002

Station AW504525 KERSBROOK CK @ U/S Millbrook Res.
 VarFrom 801.99 Total Dissolved Solids (Measured) in milligrams/Litre, Composite Sample Result
 VarTo 901.00 Total Total Dissolved Solids (measured) in Kilograms, Recording
 Figures are for period ending 2400 hours.

Station AW504525

Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Mean Monthly	Annual Total	Missing Days
1988/89	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1989/90	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1990/91	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1991/92	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	284
1992/93	115201D	595217<	547836D	270388<	130354D	166905D	17085E	7597E	4725E	1162E	21338	37602D	[20034]	[60101]	0
1993/94	71058D	172896D	150060D	121862D	30106	7956	9106	1223	0	610E	12656	29415	158166<	1897988<	0
1994/95	44917	77688D	26632	52828D	35377	810	0	0	0	0	0	33240D	49792D	597509D	0
1995/96	664579<	173581D	55224	29327	8240	184	0	0	0	0	2424	65467D	25512D	306144D	0
1996/97	339530D	379324D	444374D	248126D	[10575]	[]	[]	[]	[]	[]	[]	[]	[284386]	[1421930]	223
1997/98	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1998/99	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1999/00	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
2000/01	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
2001/02	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
2002/03	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
3793 Tot															
Mean	247057<	279741<	244825D	144506<	[42931]	43964D	6548E	2205E	1181E	[354]	7283	45974D	[103472]	[879825]	Mean
Med.	115201<	173581<	150060D	121862<	[30106]	4383D	4553E	612E	0E	[0]	2424	37602D	[]	[]	Med.
Max	664579<	595217<	150060D	270388<	[130354]	166905D	17085E	7597E	4725E	[1162]	21338	65467D	[284386]	[1897988]	Max
Min	44917<	77688<	547836D	29327<	[8240]	184D	0E	0E	0E	[0]	0	29415D	[20034]	[60101]	Min
OK	100%	100%	100%	100%	93%	100%	100%	100%	100%	94%	100%	100%	99%	99%	OK
Cnt	5	5	5	5	5	4	4	4	4	5	5	5	6	6	Cnt

----- Notes -----
 All recorded data is continuous and reliable
 except where the following tags are used...
 Good Data - no quality flag printed
 < ... Caution - Rating Table Extrapolated
 D ... Doubtful
 E ... Estimated
 [...] Data Not processed

145. AW504525 SS Monthly Load Report

DWLBC, Surface Water Archive

HYMONTH V70 Output 12/11/2002

Station AW504525 KERSBROOK CK @ U/S Millbrook Res.
 VarFrom 802.99 Suspended Solids in milligrams/Litre, Composite Sample Result
 VarTo 902.00 Total Suspended Solids in Kilograms, Recording
 Figures are for period ending 2400 hours.

Station AW504525

Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Mean Monthly	Annual Total	Missing Days
1988/89	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1989/90	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1990/91	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1991/92	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	366
1992/93	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1993/94	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1994/95	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1995/96	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	366
1996/97	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1997/98	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1998/99	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1999/ 0	13327D	60185D	5034D	123604<	79	41	1	165	29	104	[239]	10319D	52791	1105581	329
2000/ 1	10631D	64397D	140479<	3141D	757D	1	0	0	0	0	303	26228D	19135<	229616<	0
2001/ 2	15745D	33224D	370549<	9929D	253	150	21	1	0	0	2508D	1588D	36164<	433969<	0
2002/ 3	9966D	[1457]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[5711]	[11423]	308
															4289 Tot
Mean	12417D	[39816]	172021<	45558<	363D	64	7	55	10	35	[967]	14290D	[17237]	[184860]	Mean
Med.	11979D	[46705]	140479<	9929<	253D	41	1	1	0	0	[561]	14672D			Med.
Max	15745D	[64397]	370549<	123604<	757D	150	21	165	29	104	[2508]	26228D	[36164]	[433969]	Max
Min	9966D	[1457]	5034<	3141<	79D	1	0	0	0	0	[239]	1588D	[5279]	[105581]	Min
OK	100%	96%	100%	100%	100%	100%	100%	100%	100%	100%	80%	100%	98%	98%	OK
Cnt	4	4	3	3	3	3	3	3	3	3	4	4	5	5	Cnt

----- Notes -----
 All recorded data is continuous and reliable
 except where the following tags are used...
 Good Data - no quality flag printed
 < ... Caution - Rating Table Extrapolated
 D ... Doubtful
 [...] Data Not processed

146. AW504525 P Monthly Load Report

DWLBC, Surface Water Archive

HYMONTH V70 Output 12/11/2002

Station AW504525 KERSBROOK CK @ U/S Millbrook Res.
 VarFrom 824.99 Phosphorus - Total as P in milligrams/Litre, Composite Sample Result
 VarTo 924.00 Total Phosphorus - Total as P Load in Kilograms, Recording
 Figures are for period ending 2400 hours.

Station AW504525

Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Mean Monthly	Annual Total	Missing Days
1988/89	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1989/90	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1990/91	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1991/92	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	284
1992/93	36.12D	277.7<	217.3 D	197.3<	84.82D	117.1 D	0.8E	0.30E	0.19E	0.02E	0.43	4.24D	1.56E	4.69E	0
1993/94	7.88D	6.43D	24.78D	9.80D	0.85	0.28	0.54	0.04	0.00	0.00	0.00	5.04D	4.64D	55.63D	0
1994/95	3.25	3.53D	0.36	2.92D	1.61	0.01	0.00	0.00	0.00	0.00	0.13	2.55D	1.20D	14.36D	0
1995/96	721.9<	47.19D	1.67	0.52	0.04	0.00	0.00	0.00	0.00	0.00	0.00	21.47D	66.07<	792.8<	0
1996/97	196.3 D	233.4 D	110.5 D	50.34D	0.17	0.06	0.00	0.00	0.00	0.00	0.00	0.00	49.24D	590.9 D	0
1997/98	0.00	14.27D	52.33D	20.28D	5.26D	0.11	0.00	0.00	0.00	0.99	0.04	3.73	8.08D	97.00D	0
1998/99	203.2 D	29.62D	11.44D	2.57D	0.39	0.02	0.00	0.00	0.00	0.00	1.65	18.67D	22.30D	267.6 D	0
1999/00	44.13D	85.00D	21.66D	132.1<	0.92	0.27	0.01	1.59	0.15	0.58	2.83	42.02D	27.61<	331.2<	0
2000/01	40.80D	131.3 D	203.8<	20.01D	2.25D	0.00	0.00	0.00	0.00	0.00	1.02	41.27D	36.72<	440.5<	0
2001/02	50.47D	99.18D	363.4<	51.71D	1.88	0.30	0.12	0.00	0.00	0.00	6.28D	10.17D	48.63<	583.5<	0
2002/03	36.72D	6.62E	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	21.67E	43.34E	308
1687 Tot															
Mean	121.9<	84.94E	100.7<	48.76<	9.82D	11.82D	0.16E	0.19E	0.03E	0.15E	1.16D	13.66D	30.46E	346.2 E	Mean
Med.	40.80<	147.19E	33.56<	20.15<	1.27D	0.08D	0.00E	0.00E	0.00E	0.00E	0.36D	5.04D	[]	[]	Med.
Max	721.9<	277.7<	363.4<	197.3<	84.82D	117.1 D	0.8E	0.30E	0.19E	0.02E	6.28D	42.02D	77.77E	933.2 E	Max
Min	0.00<	3.53E	0.36<	0.52<	0.04D	0.00D	0.00E	0.00E	0.00E	0.00E	0.00D	0.00D	1.20E	4.69E	Min
OK	100%	99%	100%	100%	100%	100%	100%	100%	100%	97%	100%	100%	100%	100%	OK
Cnt	11	11	10	10	10	10	10	10	10	11	11	11	12	12	Cnt

----- Notes -----
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 Good Data - no quality flag printed
 < ... Caution - Rating Table Extrapolated
 D ... Doubtful
 E ... Estimated
 [...] Data Not processed

147. AW504525 TKN Monthly Load Report

DWLBC, Surface Water Archive

HYMONTH V70 Output 12/11/2002

Station AW504525 KERSBROOK CK @ U/S Millbrook Res.
 VarFrom 826.99 TKN as N in milligrams/Litre, Composite Sample Result
 VarTo 926.00 Total TKN as N Load in Kilograms, Recording
 Figures are for period ending 2400 hours.

Station AW504525

Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Mean Monthly	Annual Total	Missing Days	
1988/89	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365	
1989/90	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365	
1990/91	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365	
1991/92	[]	[]	[]	[]	[]	[]	[]	[]	[]	[0.54]	7.12	51.75D	[19.80]	[59.41]	284	
1992/93	416.1]	D3169	<3208	D2119	<778.2	D1047]	D	18.71E	[5.61E	[3.49E	0.22E	6.93	10.79	899.4 <	10793 <	0
1993/94	98.57D	158.4 D	D388.7	D213.7	D18.35	4.94	8.25	0.65	0.00	0.00	0.00	70.92D	80.21D	962.5 D	0	
1994/95	54.57	79.78D	7.32	52.22D	30.14	0.27	0.00	0.00	0.00	0.00	1.33	42.06D	22.31D	267.6 D	0	
1995/96	6085	<807.1	D46.59	16.84	2.40	0.06	0.00	0.00	0.00	0.00	0.00	286.3 D	603.7 <	7244 <	0	
1996/97	2456	D2972	D1524	D687.7	D5.38	1.35	0.00	0.00	0.00	0.00	0.00	0.00	637.4 D	7648	D	0
1997/98	0.00	163.0	D734.9	D158.9	D56.81	2.20	0.00	0.00	0.00	9.99	0.55	36.71	96.93D	1163	D	0
1998/99	1415	D526.2	D183.8	D89.10D	10.80	0.46	0.00	0.00	0.00	0.00	21.60	202.6 D	204.1 D	2450	D	0
1999/00	635.6 D	792.1	D354.9	D1100	10.24	4.67	0.12	16.73	1.67	7.32	43.73	403.2 D	280.9	<3371	<	0
2000/01	610.7	D1274	D2181	<280.6	D28.60	0.07	0.00	0.00	0.00	0.00	8.97	506.6 D	407.6	<4891	<	0
2001/02	743.8	D1521	D3657	<711.6	D37.62	12.12	3.05	0.01	0.00	0.00	48.83D	91.73D	568.9	<6827	<	0
2002/03	420.8	D153.4	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	287.1	[]	574.2	308
1687 Tot																
Mean	1176	<1056	1228	<543.0	<97.86	107.3 D	3.01E	2.30E	0.52E	1.64E	12.64D	155.6 D	342.3	[]	3854	Mean
Med.	610.7	<1792.1	561.8	<247.2	<23.48	D1.77D	0.00E	0.00E	0.00E	0.00E	6.93D	70.92D	899.4	[]	10793	Med.
Max	6085	<3169	3657	<2119	<778.2	D1047.7	18.71E	16.73E	3.49E	9.99E	48.83D	506.6 D	899.4	[]	10793	Max
Min	0.00	<79.78	7.32	<16.84	<2.40	0.06D	0.00E	0.00E	0.00E	0.00E	0.00D	0.00D	19.80	[]	59.41	Min
OK	100%	99%	100%	100%	100%	100%	100%	100%	100%	97%	100%	100%	100%	100%	100%	OK
Cnt	11	11	10	10	10	10	10	10	10	11	11	11	12	12		Cnt

----- Notes -----
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 Good Data - no quality flag printed
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 D ... Doubtful
 E ... Estimated
 [...] Data Not processed

148. AW504525 Nox Monthly Load Report

DWLBC, Surface Water Archive

HYMONTH V70 Output 12/11/2002

Station AW504525 KERSBROOK CK @ U/S Millbrook Res.
 VarFrom 827.99 Nitrate + Nitrite as N in milligrams/Litre, Composite Sample Result
 VarTo 927.00 Total Nitrate + Nitrite as N Load in Kilograms, Recording
 Figures are for period ending 2400 hours.

Station AW504525

Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Mean Monthly	Annual Total	Missing Days
1988/89	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1989/90	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1990/91	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	365
1991/92	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	284
1992/93	95.32D	920.6 <	514.2 D	495.2 <	135.0 D	113.7 D	2.99E	0.06E	0.04E	0.01E	0.55	12.67D	4.41	13.22	0
1993/94	87.09D	76.25D	87.87D	40.52D	2.23	0.58	1.34	0.01	0.00	0.00	0.00	150.1 D	190.3 <	2283.3 <	0
1994/95	48.19	52.02D	2.16	23.32D	5.16	0.03	0.00	0.00	0.00	0.00	1.10	32.92D	37.17D	445.9 D	0
1995/96	1932 <	309.0 D	9.51	2.05	0.05	0.00	0.00	0.00	0.00	0.00	0.00	128.4 D	13.74D	164.9 D	0
1996/97	903.0 D	592.2 D	282.7 D	137.5 D	0.06	0.02	0.00	0.00	0.00	0.00	0.00	0.00	159.6 D	1915 D	0
1997/98	0.00	112.7 D	176.8 D	24.87D	9.14D	0.22	0.00	0.00	0.00	3.19	0.03	15.18	28.52D	342.2 D	0
1998/99	366.3 D	191.1 D	22.17D	1.20D	0.33	0.09	0.00	0.00	0.00	0.00	10.17	129.6 D	60.09D	721.0 D	0
1999/00	179.8 D	227.4 D	63.94D	135.3 <	0.35	0.08	0.00	1.15	0.45	0.04	5.53	56.26D	55.87 <	670.4 <	0
2000/01	104.8 D	153.9 D	196.7 <	32.35D	6.44D	0.00	0.00	0.00	0.00	0.00	2.67	266.8 D	63.66 <	763.8 <	0
2001/02	221.1 D	304.9 D	412.6 <	82.68D	5.69	0.26	0.03	0.00	0.00	0.00	19.11D	39.07D	90.46 <	1085 <	0
2002/03	282.5 D	71.34	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	176.9	353.8	314
1693 Tot															
Mean	383.7 <	[273.7]	176.8 <	97.52 <	16.45D	11.50D	0.44E	0.12E	0.05E	[0.30]	3.65D	76.07D	[89.94]	[928.5]	Mean
Med.	179.8 <	[191.1]	132.3 <	36.34 <	3.69D	0.09D	0.00E	0.00E	0.00E	[0.00]	0.95D	39.07D			Med.
Max	1932 <	[920.6]	514.2 <	495.2 <	135.0 D	113.7 D	2.99E	1.15E	0.45E	[3.19]	19.11D	266.8 D	[198.5]	[2381]	Max
Min	0.00 <	[52.02]	2.16 <	1.20 <	0.05D	0.00D	0.00E	0.00E	0.00E	[0.00]	0.00D	0.00D	[4.41]	[13.22]	Min
OK	100%	97%	100%	100%	100%	100%	100%	100%	100%	97%	100%	100%	99%	99%	OK
Cnt	11	11	10	10	10	10	10	10	10	11	11	11	12	12	Cnt

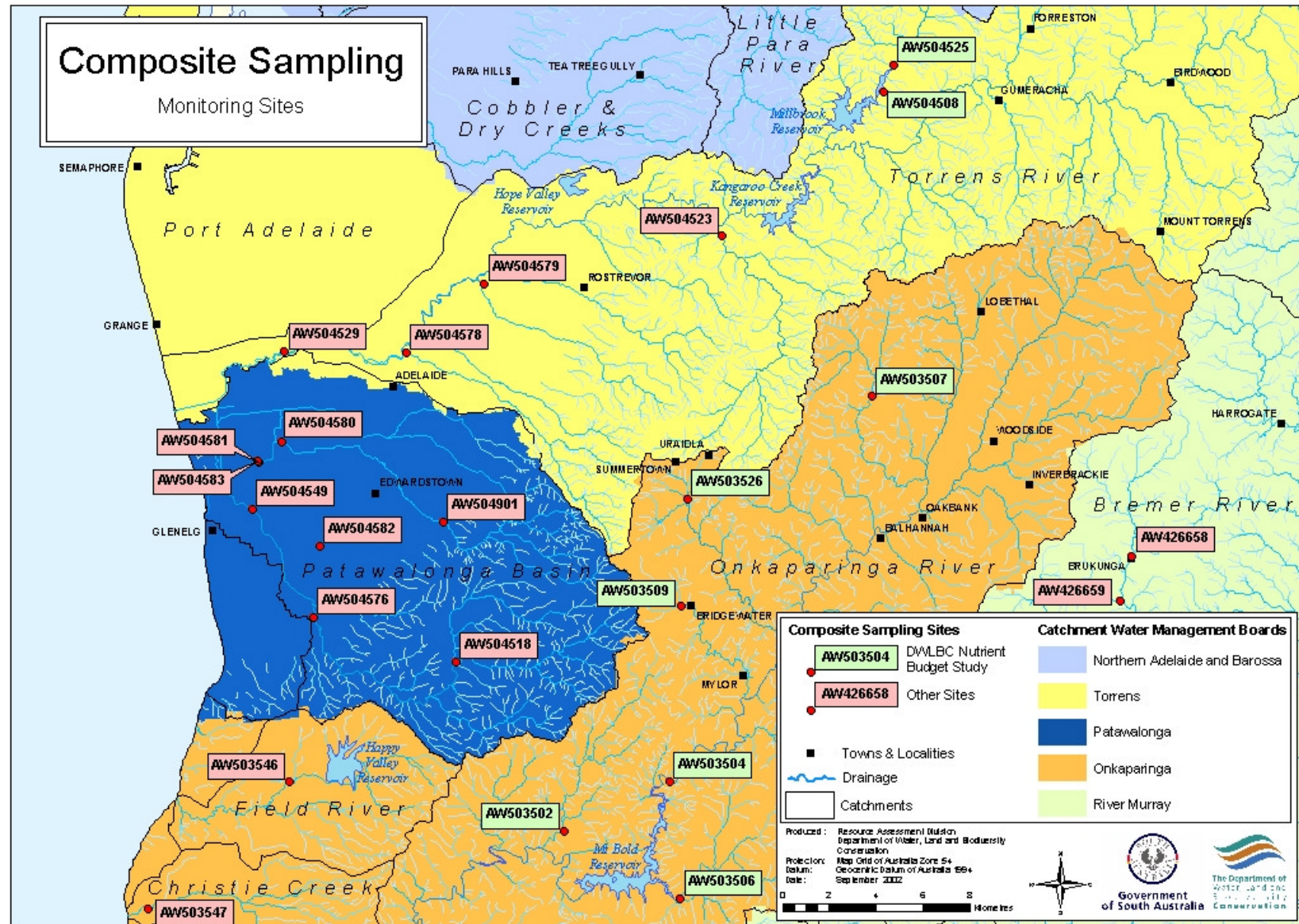
----- Notes -----
 All recorded data is continuous and reliable
 except where the following tags are used...
 Good Data - no quality flag printed
 < ... Caution - Rating Table Extrapolated
 D ... Doubtful
 E ... Estimated
 [...] Data Not processed

Appendix 1

Site Locations – Map

Composite Sampling

Monitoring Sites



Appendix 2 -

Appendix 2

WQSTAT Plus Mathematical Procedures

Procedures contained within this appendix were copied from the WQStat Plus User Guide (Intelligent Decision Technologies, Ltd)

Correcting for Seasonality Procedure:

When seasonality is known to exist in a Time Series of concentrations, then the data can be deseasonalized prior to running further statistical analyses.

Using the method described by the EPA (U.S. EPA, April 1989), the average concentration for season i over the sampling period, $\bar{X}_i$, is calculated as follows:

$$\bar{X}_i = \frac{(X_{ij} + \dots + X_{iN})}{N}$$

Where:

X_{ij} = The unadjusted observation for the i th season during the j th year; and

N = The number of years of sampling.

The grand mean, $\bar{X}$, of all the observations is then calculated as:

$$\bar{X} = \sum_{i=1}^n \sum_{j=1}^N \frac{\bar{X}_{ij}}{Nn} = \sum_{i=1}^n \frac{\bar{X}_i}{n}$$

Where:

n = The number of seasons per year.

The adjusted concentrations, Z_{ij} , are then computed as:

$$Z_{ij} = X_{ij} - \bar{X}_i + \bar{X}$$

Flow Adjustment Procedure:

For simplicity, the following log-log relationship between water quality and flow is assumed.

$$\text{Log concentration} = b(\log \text{ flow}) + a$$

Many other types of relationships occur, however. Therefore the flow-adjustment procedure used by WQStat Plus should be regarded as a first approximation only. Additional information may be found in Helsel and Hirsch (1992).

WQStat Plus uses linear regression to estimate the slope and intercept of the line above. Then from each water quality observation (log concentration), the corresponding prediction based on flow, $b(\log \text{ flow}) + a$, is subtracted, producing a series of residuals with a mean of zero. To each residual, the mean of the original log concentration series is added, producing a flow-adjusted series of log concentrations which has the same mean as the original. Next, the antilogs of the log concentrations are found, and a final correction is made so that the resulting series, in original concentration units, will have the same mean as the original series of observations.

Sen's Slope/Mann-Kendall Trend Analysis

Description:

A temporal trend is the general increase or decrease in observed values of some random variable over time. Trend analysis can be used to determine the significance of an apparent trend and to estimate the magnitude of that trend. The Mann-Kendall test for temporal trend (Hollander & Wolfe, 1973) and Sen's slope estimate (Gilbert, 1987) can help to evaluate the correlation of selected constituent concentrations with time.

The Mann-Kendall test for temporal trend is nonparametric, meaning that it does not depend on an assumption of a particular underlying distribution. The test uses only the relative magnitude of data rather than actual values; therefore, missing values are allowed, and

constituents that are not detected by laboratory methods can still be used in the statistical analysis by assigning values equal to half their detection limits (Gilbert, 1987).

The null hypothesis to be tested is:

H₀: No trend of a constituent exists over time.

The alternative hypothesis is:

H_A: A significant upward (or downward) trend of a constituent concentration exists over time.

For stations having fewer than 41 data points, an exact test is performed. If 41 or more data points are available, the normal approximation test is used (Gilbert, 1987).

Exact Test (n < 41) Procedure:

The Mann-Kendall method assigns a positive or negative score based on the differences between the data points. The first step is to list the data in the order in which they were collected over time, and then determine the sign of all possible differences $x_j - x_k$, where $j > k$:

$$\begin{aligned}\text{sgn}(x_j - x_k) &= 1 \text{ if } x_j - x_k > 0 \\ &= 0 \text{ if } x_j - x_k = 0 \\ &= -1 \text{ if } x_j - x_k < 0\end{aligned}$$

Where:

$j = k + 1$;
 x_j = The value of the j th observation; and

x_k = The value of the k th observation.

The Mann-Kendall statistic, S , is then computed, which is the number of positive differences minus the number of negative differences.

$$S = \sum_{k=1}^{n-1} \sum_{j=k+1}^n \text{sgn}(x_j - x_k)$$

Where:

n = The total number of observations.

If S is a large positive number, measurements taken later in time tend to be larger than those taken earlier, i.e., an upward trend. Similarly, if S is a large negative number, measurements taken later in time tend to be smaller, i.e., a downward trend.

For a two-tailed test to detect either an upward or downward trend, the tabulated probability level corresponding to the absolute value of S (Gilbert, 1987) is doubled and H_0 is rejected if that doubled value is less than the *a priori* α significance level of the test.

Normal Approximation Test ($n > 41$) Procedure:

The Mann-Kendall test statistic, S , is calculated using the same method as the exact test. When there are no tied values, the variance of S , or $\text{VAR}(S)$ is computed:

$$\text{VAR}(S) = \frac{n(n-1)(2n+5)}{18}$$

S and $\text{VAR}(S)$ are then used to compute the test statistic, Z , as follows:

$$\begin{aligned} Z &= \frac{S - 1}{[\text{VAR}(S)]^{1/2}} && \text{if } S > 0 \\ Z &= 0 && \text{if } S = 0 \\ Z &= \frac{S + 1}{[\text{VAR}(S)]^{1/2}} && \text{if } S < 0 \end{aligned}$$

When tied values (data points having equal values) are present, the variance of S is computed:

$$\text{VAR}(S) = \frac{1}{18} \left[n(n-1)(2n+5) - \sum_{p=1}^g t_p(t_p-1)(2t_p+5) \right]$$

Where:

- g = The number of tied groups; and
- t_p = The number of observations in the p th group.

If the null hypothesis of no trend is true, the test statistic, Z , has a standard normal distribution.

To test for either an upward or downward trend (a 2-tailed test), an α -level of significance must first be chosen. WQStat Plus tests for trends at the confidence levels 80%, 90% and 95%. For a two tailed test, we reject H_0 of no trend if the absolute value of Z is greater than $Z_{1-\alpha/2}$.

For example, the **Z-value** associated with the 0.05 significance level is 1.96, from Table A-1 (Hollander and Wolfe, 1973). The area under the normal curve lies between $-Z_{\alpha} = -1.96$ and $Z_{\alpha} = 1.96$.

A positive (negative) value of **Z** can indicate an upward (downward) trend. At a confidence level of 95%, any **Z-value** above 1.96 signifies an upward trend, and any value below -1.96 signifies a downward trend. In such cases, H_0 of no trend would be rejected. For values that fall between -1.96 and 1.96, it cannot be determined with statistical significance that a trend exists.

Sen's Slope Estimator Procedure:

This simple nonparametric procedure was developed by Sen (1968) and presented in Gilbert (1987) to estimate the true slope. The advantage of this method over linear regression is that it is not greatly affected by gross data errors or outliers, and can be computed when data are missing.

The N' individual slope estimates, Q , are computed for each time period:

$$Q = \frac{x_{i'} - x_i}{i' - i}$$

Where:

$x_{i'}$ and x_i = The data values at time i' and i (in days), respectively, $i' > i$; and

N' = The number of data pairs for which $i' > i$.

A value of one half of the detection limit will be substituted for X_i values below the detection limit.

Sen's Slope estimator is the median slope, obtained by ranking the N' values of Q from smallest to largest, and choosing the middle-ranked slope as follows.

$$Q_{[N'=(n-1)/2]} \quad \text{if } N' \text{ is odd}$$

$$\frac{1}{2}(Q_{[N'/2]} + Q_{[N'=(n+2)/2]}) \quad \text{if } N' \text{ is even}$$

Where:

n =The number of time periods.

This value is multiplied by 365 to give the yearly slope value.

Seasonal Kendall Test

Description:

The Seasonal Kendall Test is an extension of the Mann-Kendall test that removes seasonal cycles and tests for trend.

Seasonal Kendall Procedure:

Compute the Mann-Kendall statistic, S , for each season. Let S_i denote this statistic for the i th season, that is:

$$S_i = \sum_{k=1}^{n_i-1} \sum_{l=k+1}^{n_i} \text{sgn}(x_{il} - x_{ik})$$

Where $l > k$, n_i is the number of data for season i , and:

$$\begin{aligned}\text{sgn}(x_{il} - x_{ik}) &= 1 && \text{if } x_{il} - x_{ik} > 0 \\ &= 0 && \text{if } x_{il} - x_{ik} = 0 \\ &= -1 && \text{if } x_{il} - x_{ik} < 0\end{aligned}$$

$\text{VAR}(S_i)$ is computed as follows:

$$\begin{aligned}\text{VAR}(S_i) &= \frac{1}{18} \left[n_i(n_i - 1)(2n_i + 5) - \sum_{p=1}^{g_i} t_{ip}(t_{ip} - 1)(2t_{ip} + 5) - \sum_{q=1}^{h_i} u_{iq}(u_{iq} - 1)(2u_{iq} + 5) \right] \\ &+ \frac{\sum_{p=1}^{g_i} t_{ip}(t_{ip} - 1)(t_{ip} - 2) \sum_{q=1}^{h_i} u_{iq}(u_{iq} - 1)(u_{iq} - 2)}{9n_i(n_i - 1)(n_i - 2)} + \frac{\sum_{p=1}^{g_i} t_{ip}(t_{ip} - 1) \sum_{q=1}^{h_i} u_{iq}(u_{iq} - 1)}{2n_i(n_i - 1)}\end{aligned}$$

Where:

- g_i = The number of groups of tied data in season i ;
- t_{ip} = The number of tied data in the p th group for season i ;
- h_i = The number of sampling times(or time periods) in season i that contain multiple data; and
- u_{iq} = The number of multiple data in the q th time period in season i .

After S_i and $\text{VAR}(S_i)$ are computed, we pool across the K seasons:

$$S' = \sum_{i=1}^K S_i$$

and

$$\text{VAR}(S') = \sum_{i=1}^K \text{VAR}(S_i)$$

Next compute:

$$\begin{aligned} Z &= \frac{(S'-1)}{[\text{VAR}(S')]^{1/2}} && \text{if } S' > 0 \\ Z &= 0 && \text{if } S' = 0 \\ Z &= \frac{(S'+1)}{[\text{VAR}(S')]^{1/2}} && \text{if } S' < 0 \end{aligned}$$

For a two tailed test, we reject H_0 of no trend if the absolute value of Z is greater than $Z_{1-\alpha/2}$. WQStat Plus tests at the 80%, 90% and 95% confidence levels.

Seasonal Kendall Slope Estimator Procedure:

First compute individual N_i slope estimates for the i th season:

$$Q_i = \frac{x_{il} - x_{ik}}{l - k}$$

Where:

x_{il} = the datum for the i th season of the l th year; and

x_{ik} = the datum for the i th season of the k th year, where $l > k$.

Do this for each of the K seasons. Then rank the $N'_1 + N'_2 + \dots + N'_K = N'$ individual slope estimates and find their median. This median is the seasonal Kendall slope estimator.

Nonparametric ANOVA

Description:

This statistical procedure compares the median values of background data to the median values of compliance data and determines whether a significant difference exists among the groups. It will be discussed in terms of an inter-station approach, but an intra-station version is also available.

Assumptions:

The standard assumption in one-way nonparametric ANOVA is that the data from each station come from the same continuous distribution, and therefore have the same median concentrations of chemical constituents. This ANOVA test does not require a distribution that is normal.

Procedure:

The Kruskal-Wallis test procedure (see Seasonality test for method description) is used to evaluate the data sets at the $\alpha = 0.05$ significance

level when there are two or more stations being compared. The null hypothesis to be tested is:

H_0 : The populations from which the quarterly data sets have been drawn have the same median concentrations.

The alternative hypothesis to be tested is:

H_A : At least one population has a median larger or smaller than the background population.

The calculated value, H (or H' , if ties are present) is compared to the tabulated chi-squared value with $(k-1)$ degrees of freedom (U.S. EPA, April 1989) where k is the number of groups. The null hypothesis is rejected if the calculated value exceeds the tabulated critical value. Application of the Kruskal-Wallis test requires a minimum sample size of four data points for each station.

Censored Data:

Censored data include data that are less than the detection limit. These data will be replaced with one half of the method detection limit prior to running the analysis (U.S. EPA, 1992).

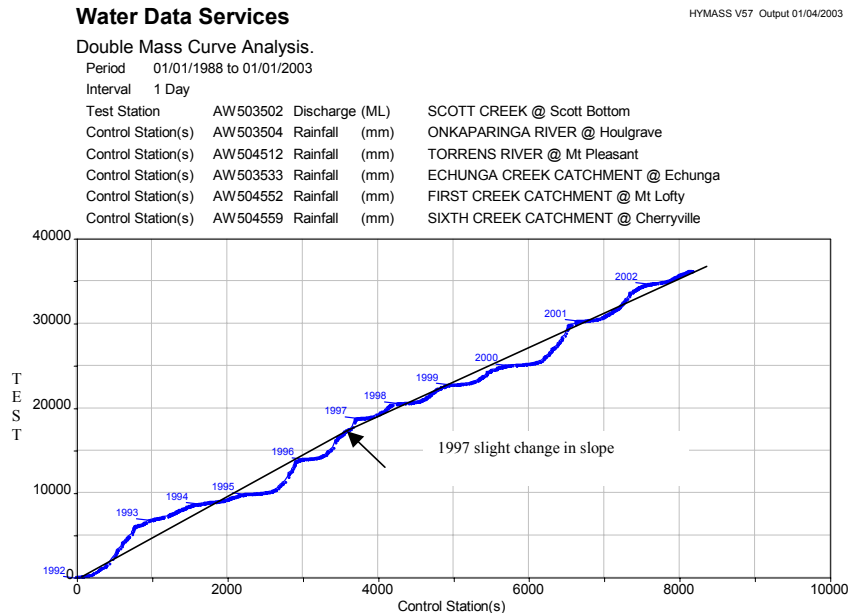
Appendix 3

Homogeneity Analysis Results – WQSTAT Plus outputs

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1.1.1 AW503502 – Scott Creek



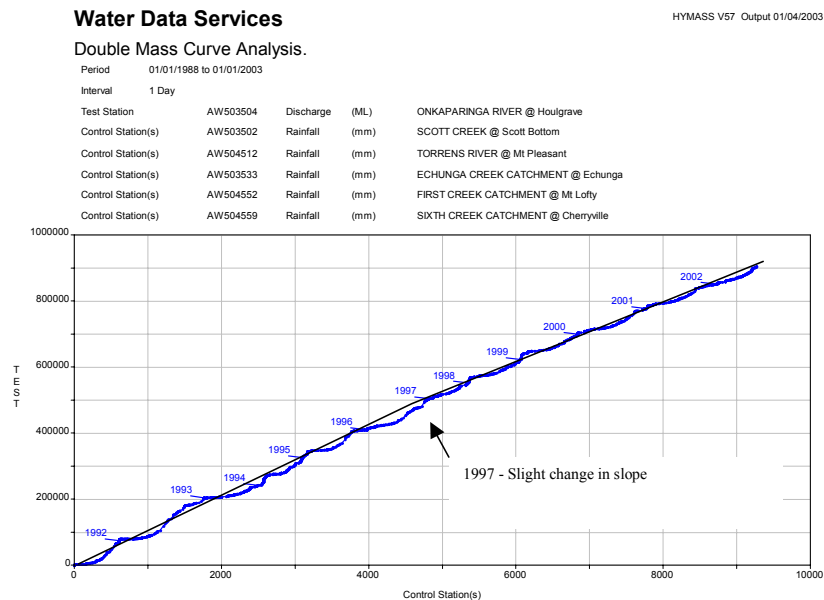
The DMCA indicates that the data is homogeneous with a slight possible change in 1997. Because of this suspected change WQSTAT was used to compare the means before and after 1997 to test for significantly different means. The results of this test are:

WQStat output of ANOVA test for Scott Creek

NON-PARAMETRIC ANOVA - AW503502		
Constituent: Flow (m3/s)	Facility: NBS Trends	Data File: AW503502
Date: 4/1/03	Time: 8:26 PM	View: Flow
For observations made between 10/01/1988 and 08/01/2002 the nonparametric analysis of variance test indicates NO DIFFERENCE between the medians of the background and compliance data at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no station has a significantly different median concentration of this constituent when compared to another station. Calculated Kruskal-Wallis statistic = 0.166 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level. There were 30 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal. Kruskal-Wallis statistic (H) = 0.166 Adjusted Kruskal-Wallis statistic (H') = 0.166 The contrast test was performed to determine if the compliance group concentration was significantly higher than the background concentration. The contrast test found NO statistically significant difference: difference=-3.101, contrast=12.527. The critical (contrast) value was computed with 1 degree(s) of freedom and a 5% error level.		

Conclusion: Data is homogeneous and data partitioning is not required.

1.1.2 AW503504 – Onkaparinga River at Houlgraves



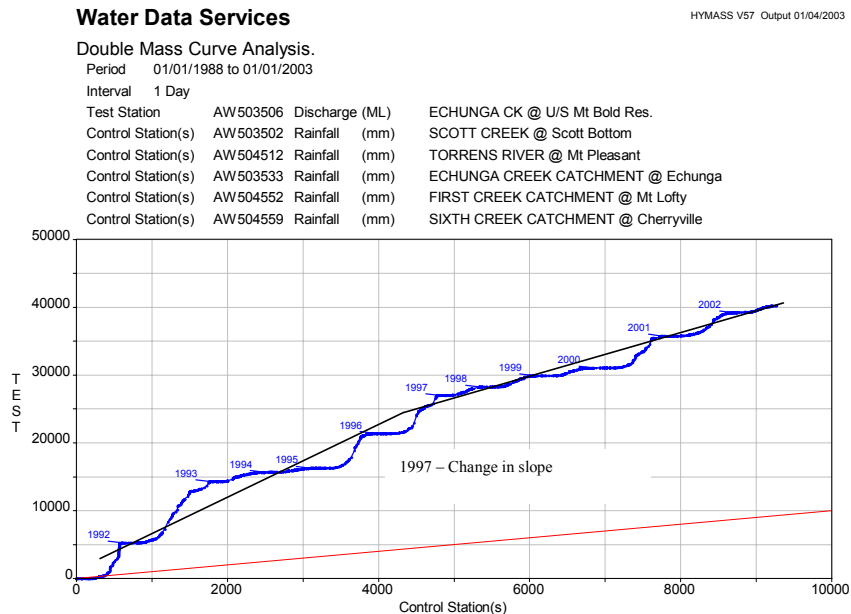
The DMCA indicates that there is a slight possible change in 1997. Because of this suspected change WQSTAT was used to compare the means before and after 1997 to test for significantly different means. The results of this test are:

WQStat output of ANOVA test for Houlgraves:

NON-PARAMETRIC ANOVA - AW503504		
Constituent: Flow (m3/s)	Facility: NBS Trends	Data File: AW503504
Date: 4/1/03	Time: 10:25 PM	View: Flow
For observations made between 09/01/1988 and 08/01/2002 the nonparametric analysis of variance test indicates NO DIFFERENCE between the medians of the background and compliance data at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no station has a significantly different median concentration of this constituent when compared to another station. Calculated Kruskal-Wallis statistic = 0.731 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level. There were 4 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H_{adj}) was utilized to determine if the medians were equal. Kruskal-Wallis statistic (H) = 0.731 Adjusted Kruskal-Wallis statistic (H_{adj}) = 0.731 The contrast test was performed to determine if the compliance group concentration was significantly higher than the background concentration. The contrast test found NO statistically significant difference: difference=6.535, contrast=12.576. The critical (contrast) value was computed with 1 degree(s) of freedom and a 5% error level.		

Conclusion: Data is homogeneous and data partitioning is not required.

1.1.3 AW503506 – Echunga Creek upstream of Mt Bold Res.



The DMCA indicates that there is a possible change in 1997 as shown by the change in slope. Because of this suspected change WQSTAT was used to compare the means before and after 1997 to test for significantly different means. The results of this test are:

WQStat output of ANOVA test for Echunga Creek:

NON-PARAMETRIC ANOVA - AW503506		
Constituent: Flow (m3/s)	Facility: NBS Trends	Data File: AW503506
Date: 4/1/03	Time: 9:04 PM	View: Flow
For observations made between 10/01/1988 and 08/01/2002 the nonparametric analysis of variance test indicates NO DIFFERENCE between the medians of the background and compliance data at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no station has a significantly different median concentration of this constituent when compared to another station. Calculated Kruskal-Wallis statistic = 0.368 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level. There were 17 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal. Kruskal-Wallis statistic (H) = 0.345 Adjusted Kruskal-Wallis statistic (H') = 0.368 The contrast test was performed to determine if the compliance group concentration was significantly higher than the background concentration. The contrast test found NO statistically significant difference: difference=-4.422, contrast=12.381. The critical (contrast) value was computed with 1 degree(s) of freedom and a 5% error level.		

Conclusion: Data is homogeneous and data partitioning is not required.

1.1.4 AW503507 Lenswood Creek at Lenswood

Water Data Services

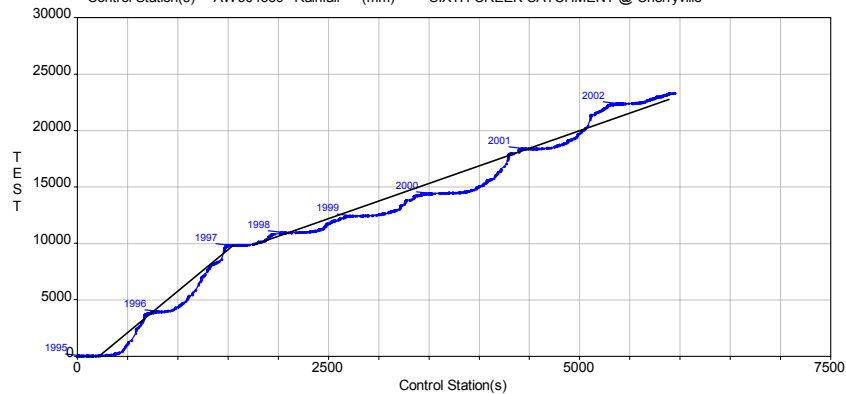
HYMASS V57 Output 01/04/2003

Double Mass Curve Analysis.

Period 01/01/1988 to 01/01/2003

Interval 1 Day

Test Station	AW503507	Discharge (ML)	LENSWOOD CREEK @ Lenswood
Control Station(s)	AW503504	Rainfall (mm)	ONKAPARINGA RIVER @ Houlgrave
Control Station(s)	AW504512	Rainfall (mm)	TORRENS RIVER @ Mt Pleasant
Control Station(s)	AW503533	Rainfall (mm)	ECHUNGA CREEK CATCHMENT @ Echunga
Control Station(s)	AW504552	Rainfall (mm)	FIRST CREEK CATCHMENT @ Mt Lofty
Control Station(s)	AW504559	Rainfall (mm)	SIXTH CREEK CATCHMENT @ Cherryville



The DMCA indicates that there is a possible change in 1997 as shown by the change in slope. Because of this suspected change WQSTAT was used to compare the means before and after 1997 to test for significantly different means. The results of this test are:

WQStat output of ANOVA test for Lenswood Creek:

NON-PARAMETRIC ANOVA - AW503507		
Constituent: Flow (m3/s)	Facility: NBS Trends	Data File: AW503507
Date: 4/1/03	Time: 9:16 PM	View: Flow
For observations made between 10/01/1988 and 08/01/2002 the nonparametric analysis of variance test indicates NO DIFFERENCE between the medians of the background and compliance data at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no station has a significantly different median concentration of this constituent when compared to another station. Calculated Kruskal-Wallis statistic = 0.368 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level. There were 17 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal. Kruskal-Wallis statistic (H) = 0.345 Adjusted Kruskal-Wallis statistic (H') = 0.368 The contrast test was performed to determine if the compliance group concentration was significantly higher than the background concentration. The contrast test found NO statistically significant difference: difference=-4.422, contrast=12.381. The critical (contrast) value was computed with 1 degree(s) of freedom and a 5% error level.		

Conclusion: Data is homogeneous and data partitioning is not required.

1.1.5 AW503509 Aldgate Creek near Aldgate Railway Station

Water Data Services

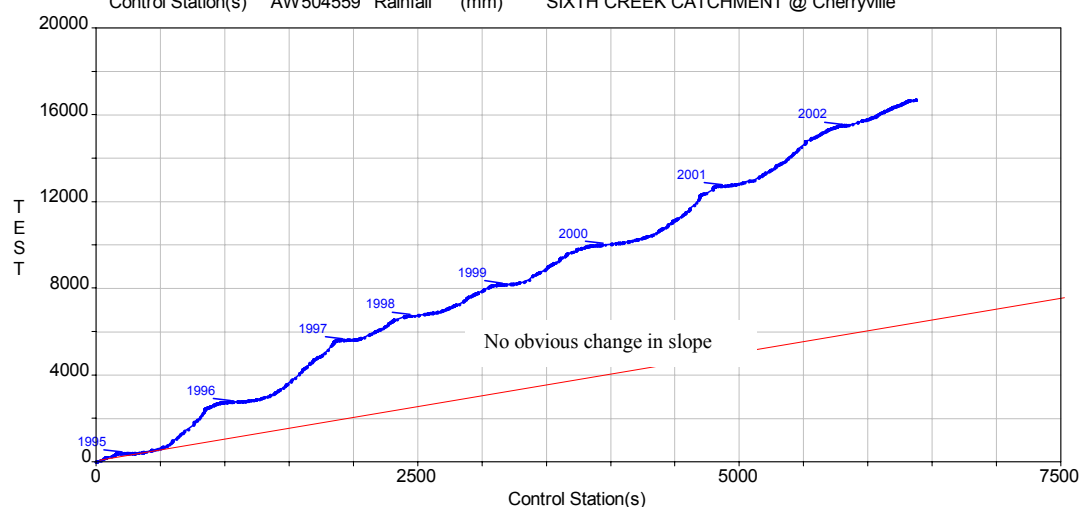
HYMASS V57 Output 01/04/2003

Double Mass Curve Analysis.

Period 01/01/1988 to 01/01/2003

Interval 1 Day

Test Station	AW503509	Discharge (ML)	ALDGATE CK @ Aldgate Rly Station
Control Station(s)	AW503502	Rainfall (mm)	SCOTT CREEK @ Scott Bottom
Control Station(s)	AW504512	Rainfall (mm)	TORRENS RIVER @ Mt Pleasant
Control Station(s)	AW503533	Rainfall (mm)	ECHUNGA CREEK CATCHMENT @ Echunga
Control Station(s)	AW504552	Rainfall (mm)	FIRST CREEK CATCHMENT @ Mt Lofty
Control Station(s)	AW504559	Rainfall (mm)	SIXTH CREEK CATCHMENT @ Cherryville



The DMCA shows that the data is homogeneous for the period of record and therefore the ANOVA test is not required.

1.1.6 AW503526 Cox Creek at Uraidla**Water Data Services**

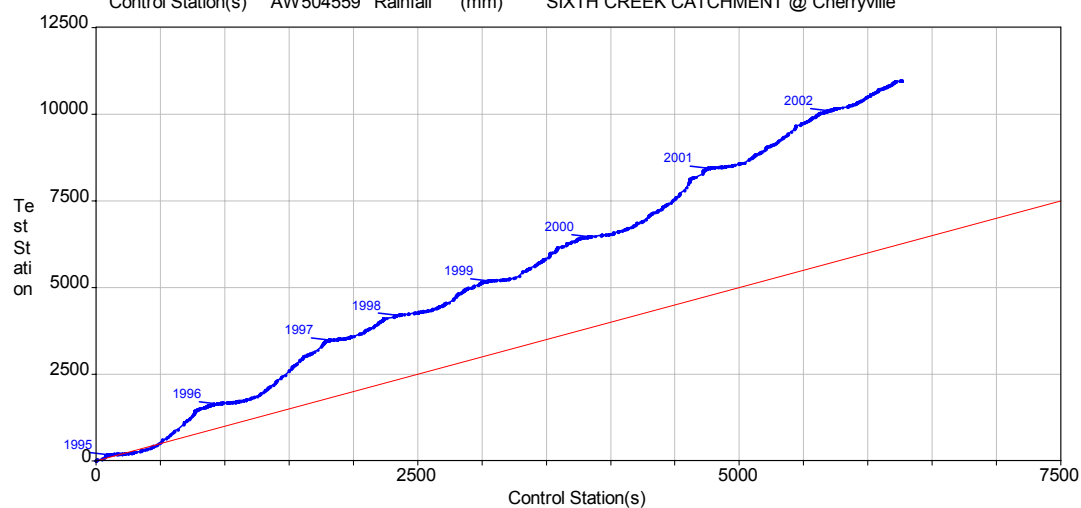
HYMASS V57 Output 01/04/2003

Double Mass Curve Analysis.

Period 01/01/1988 to 01/01/2003

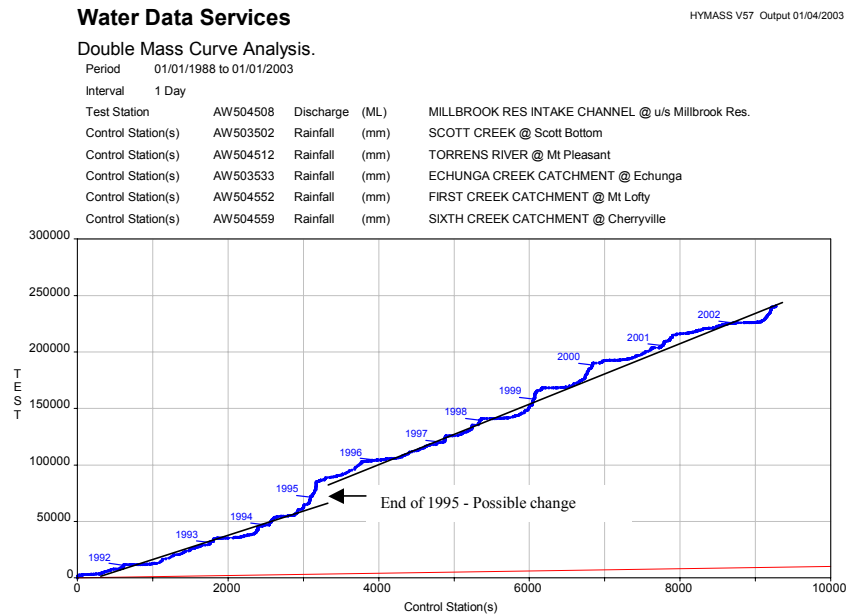
Interval 1 Day

Test Station	AW503526	Discharge (ML)	COX CREEK @ Uraidla
Control Station(s)	AW503502	Rainfall (mm)	SCOTT CREEK @ Scott Bottom
Control Station(s)	AW504512	Rainfall (mm)	TORRENS RIVER @ Mt Pleasant
Control Station(s)	AW503533	Rainfall (mm)	ECHUNGA CREEK CATCHMENT @ Echunga
Control Station(s)	AW504552	Rainfall (mm)	FIRST CREEK CATCHMENT @ Mt Lofty
Control Station(s)	AW504559	Rainfall (mm)	SIXTH CREEK CATCHMENT @ Cherryville



The DMCA shows that the data is homogeneous for the period of record and therefore the ANOVA test is not required.

1.1.7 AW504508 Milbrook Reservoir Intake Channel



The DMCA indicates that there is a possible change in 1995 as shown by the change in slope. Because of this suspected change WQSTAT was used to compare the means before and after 1997 to test for significantly different means. The results of this test are:

WQStat output of ANOVA test for Lenswood Creek:

NON-PARAMETRIC ANOVA - AW504508		
Constituent: Flow (m3/s)	Facility: NBS Trends	Data File: AW504508
Date: 4/1/03	Time: 9:44 PM	View: Flow
For observations made between 10/01/1988 and 08/01/2002 the nonparametric analysis of variance test indicates NO DIFFERENCE between the medians of the background and compliance data at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no station has a significantly different median concentration of this constituent when compared to another station. Calculated Kruskal-Wallis statistic = 0.368 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level. There were 17 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal. Kruskal-Wallis statistic (H) = 0.345 Adjusted Kruskal-Wallis statistic (H') = 0.368 The contrast test was performed to determine if the compliance group concentration was significantly higher than the background concentration. The contrast test found NO statistically significant difference: difference=-4.422, contrast=12.381. The critical (contrast) value was computed with 1 degree(s) of freedom and a 5% error level.		

Conclusion: Data is homogeneous and data partitioning is not required.

1.1.8 AW504525 Kersbrook Creek upstream of Milbrook Reservoir

Water Data Services

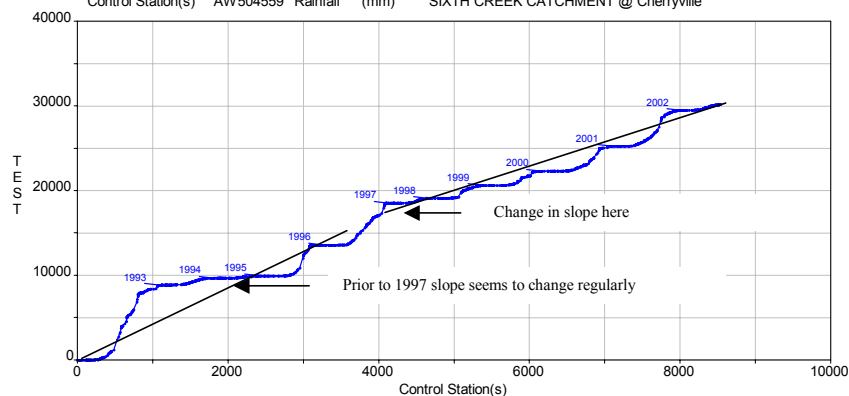
HYMASS V57 Output 01/04/2003

Double Mass Curve Analysis.

Period 01/01/1988 to 01/01/2003

Interval 1 Day

Test Station	AW504525	Discharge (ML)	KERSBROOK CK @ u/s Milbrook Res.
Control Station(s)	AW503502	Rainfall (mm)	SCOTT CREEK @ Scott Bottom
Control Station(s)	AW504512	Rainfall (mm)	TORRENS RIVER @ Mt Pleasant
Control Station(s)	AW503533	Rainfall (mm)	ECHUNGA CREEK CATCHMENT @ Echunga
Control Station(s)	AW504552	Rainfall (mm)	FIRST CREEK CATCHMENT @ Mt Lofty
Control Station(s)	AW504559	Rainfall (mm)	SIXTH CREEK CATCHMENT @ Cherryville



The DMCA shows a change of slope from 1997. Prior to 1997 the Double Mass Curve shows a different cyclic pattern. Kersbrook Creek stops flowing each year and generally commences flowing again later than most streams in surrounding catchments. The Period 1993 to the middle of 1995 was a dry period. WQSTAT was used to compare the means before and after 1997 to test for significantly different means. The results of this test are:

WQStat output of ANOVA test for Kersbrook Creek:

NON-PARAMETRIC ANOVA - AW504525		
Constituent: Flow (m3/s)	Facility: NBS Trends	Data File: AW504525
Date: 4/1/03	Time: 9:57 PM	View: Flow
For observations made between 10/01/1988 and 08/01/2002 the nonparametric analysis of variance test indicates NO DIFFERENCE between the medians of the background and compliance data at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no station has a significantly different median concentration of this constituent when compared to another station. Calculated Kruskal-Wallis statistic = 0.368 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level. There were 17 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal. Kruskal-Wallis statistic (H) = 0.345 Adjusted Kruskal-Wallis statistic (H') = 0.368 The contrast test was performed to determine if the compliance group concentration was significantly higher than the background concentration. The contrast test found NO statistically significant difference: difference=-4.422, contrast=12.381. The critical (contrast) value was computed with 1 degree(s) of freedom and a 5% error level.		

Conclusion: Data is homogeneous and data partitioning is not required.

Appendix 4

Trend Results – WQSTAT Plus trend plots

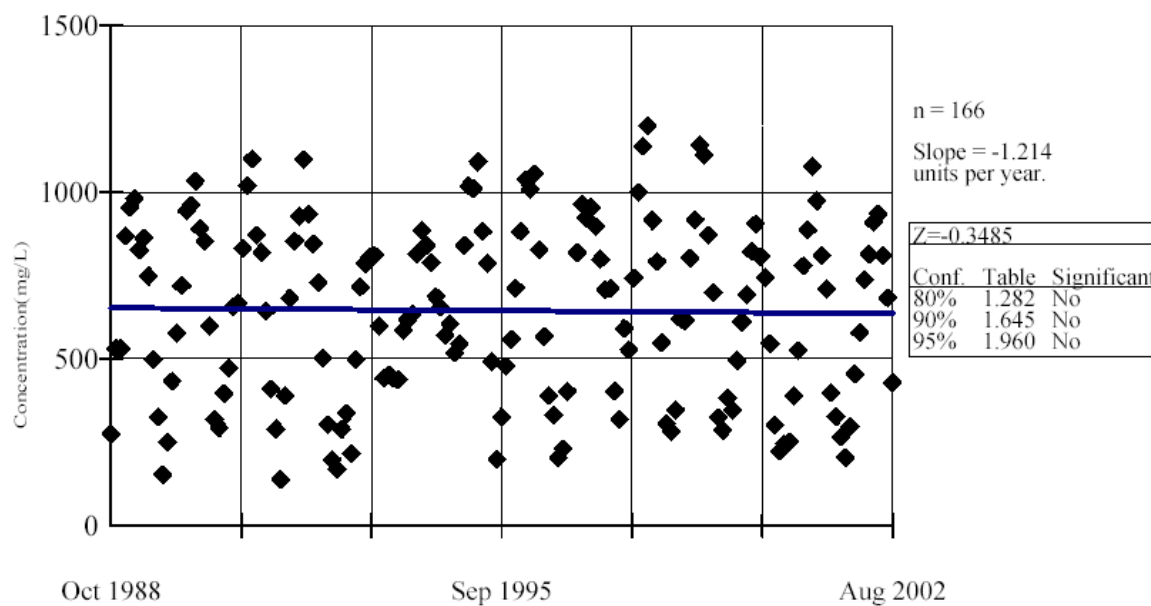
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1.1 AW503502 – Scott Creek**1.1.1 TDS**

v.1.56. CAS# n/a

WQStat Plus™

**SEASONAL KENDALL SLOPE ESTIMATOR
AW503502**

Constituent: TDS (mg/L)

Facility: NBS Trends

Data File: AW503502

Date: 4/4/03

Time: 12:22 PM

View: TDS

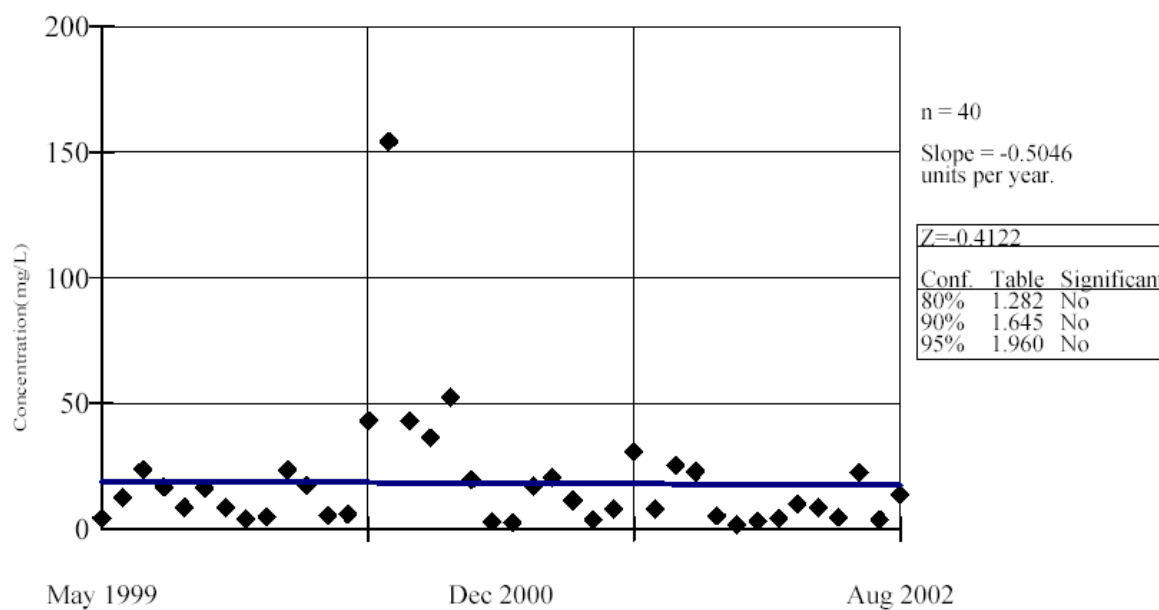
EXPLANATION: TDS is increasing at 2.4 mg/l per year but this increasing trend is not statistically significant at the 80% confidence level.

1.1.2 Suspended Solids

v.1.56. CAS# n/a

WQStat Plus™

SEASONAL KENDALL SLOPE ESTIMATOR AW503502



Constituent: SS (mg/L)

Facility: NBS Trends

Data File: AW503502

Date: 4/4/03

Time: 12:24 PM

View: SS

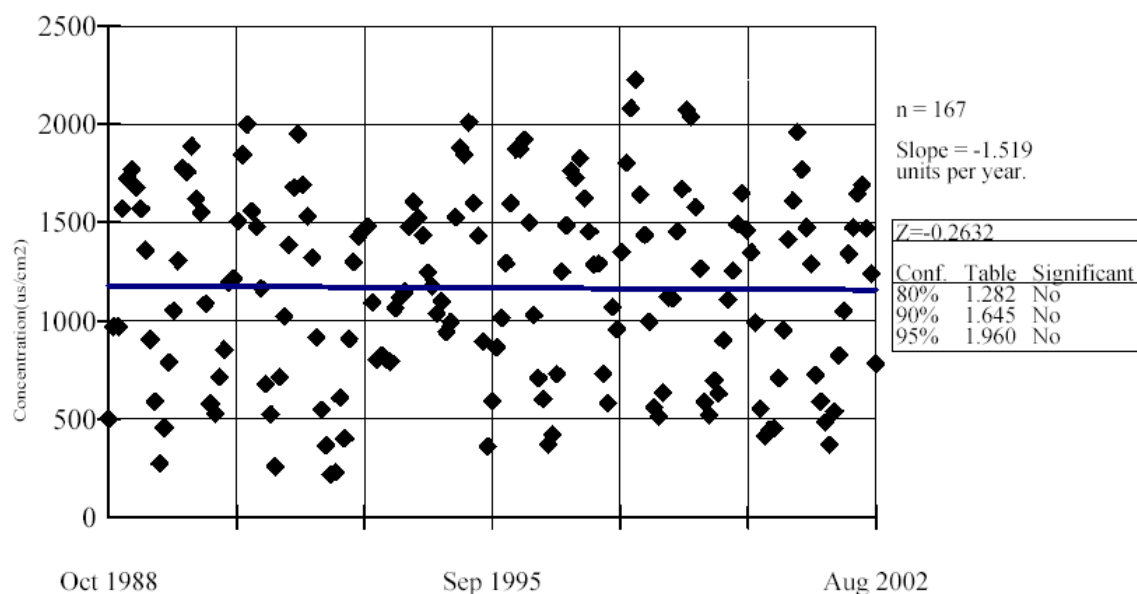
EXPLANATION: SS is decreasing at 1.6 mg/l per year but this decreasing trend is not statistically significant at the 80% confidence level.

1.1.3 Electrical Conductivity

v.1.56. CAS# n/a

WQStat Plus™

SEASONAL KENDALL SLOPE ESTIMATOR AW503502



Constituent: EC (us/cm2)

Facility: NBS Trends

Data File: AW503502

Date: 4/4/03

Time: 12:25 PM

View: EC

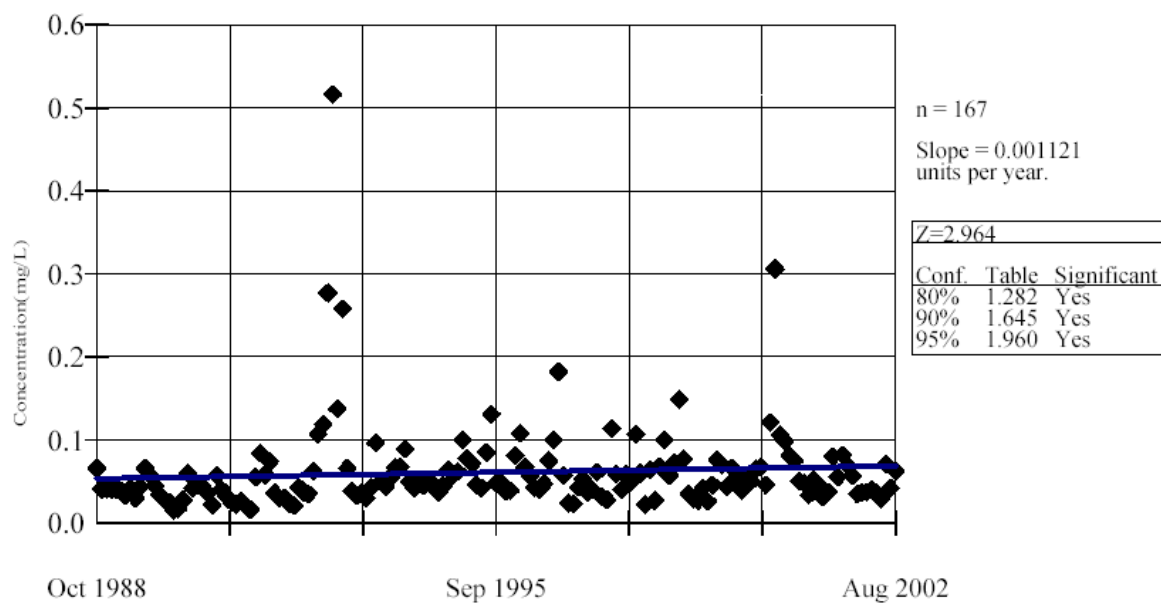
EXPLANATION: SS is increasing at 4.7 us/cm² per year but this increasing trend is not statistically significant at the 80% confidence level.

1.1.4 Total Phosphorus

v.1.56 CAS# n/a

WQStat Plus™

SEASONAL KENDALL SLOPE ESTIMATOR AW503502



Constituent: Ptot (mg/L)

Facility: NBS Trends

Data File: AW503502

Date: 4/4/03

Time: 12:26 PM

View: Ptot

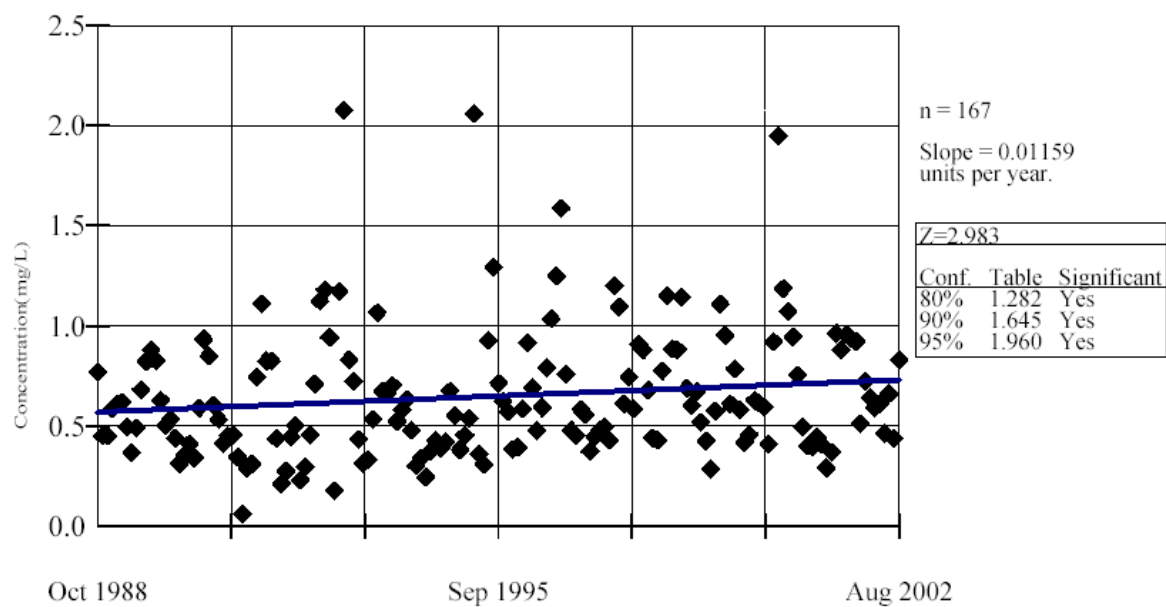
EXPLANATION: SS is increasing at 0.001 mg/L per year and this increasing trend is **statistically significant at the 95% confidence level**.

1.1.5 Total Nitrogen

v.1.56 CAS# n/a

WQStat Plus™

SEASONAL KENDALL SLOPE ESTIMATOR AW503502



Constituent: Ntot (mg/L)

Facility: NBS Trends

Data File: AW503502

Date: 4/4/03

Time: 12:27 PM

View: Ntot

EXPLANATION: SS is increasing at 0.01 mg/L per year and this increasing trend is **statistically significant at the 95% confidence level**.

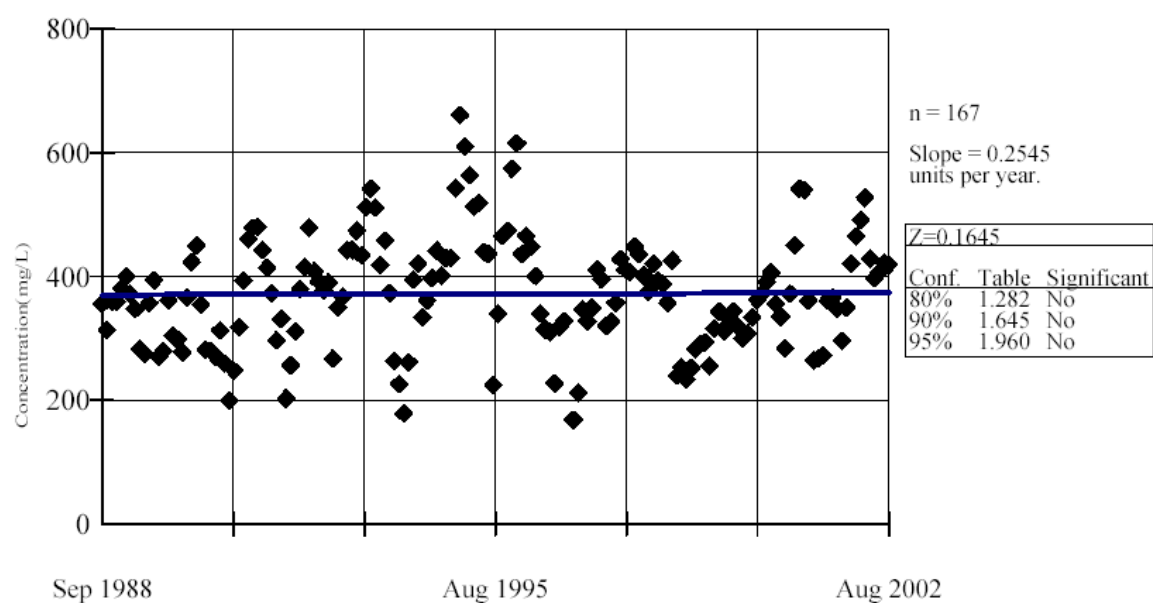
1.2 AW503504 – Onkaparinga River at Houlgraves

1.2.1 TDS

v.1.56. CAS# n/a

WQStat Plus™

SEASONAL KENDALL SLOPE ESTIMATOR AW503504



Constituent: TDS (mg/L)

Date: 4/4/03

Facility: NBS Trends

Time: 12:28 PM

Data File: AW503504

View: TDS

EXPLANATION:

A significant trend was not detected

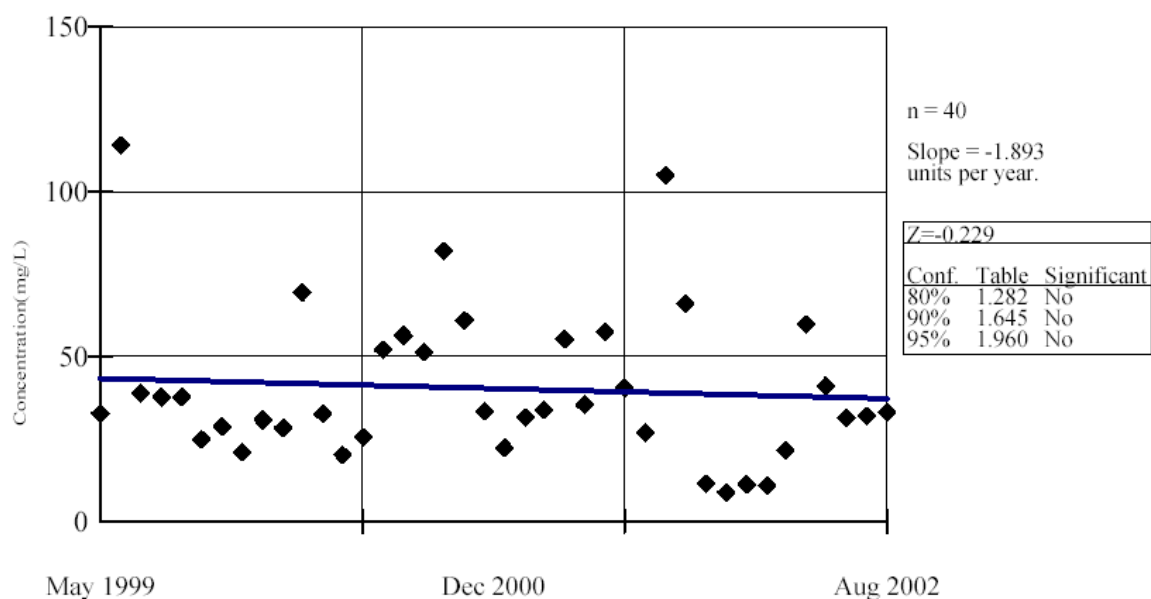
1.2.2 Suspended Solids

(NB: no data until 1999)

v.1.56. CAS# n/a

WQStat Plus™

SEASONAL KENDALL SLOPE ESTIMATOR AW503504



Constituent: SS (mg/L)

Facility: NBS Trends

Data File: AW503504

Date: 4/4/03

Time: 12:31 PM

View: SS

EXPLANATION:

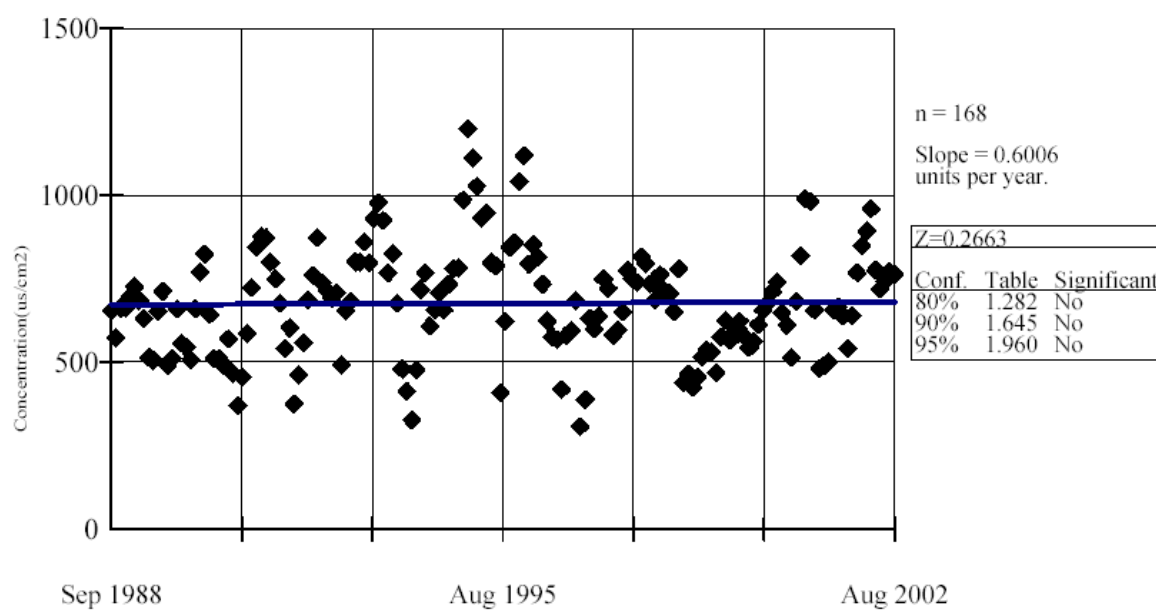
SS is decreasing at 2.0 mg/l per year but this decreasing trend is **not statistically significant** at the 80% confidence level.

1.2.3 Electrical Conductivity

v.1.56. CAS# n/a

WQStat Plus™

SEASONAL KENDALL SLOPE ESTIMATOR AW503504



Constituent: EC (us/cm2)

Facility: NBS Trends

Data File: AW503504

Date: 4/4/03

Time: 12:33 PM

View: EC

EXPLANATION:

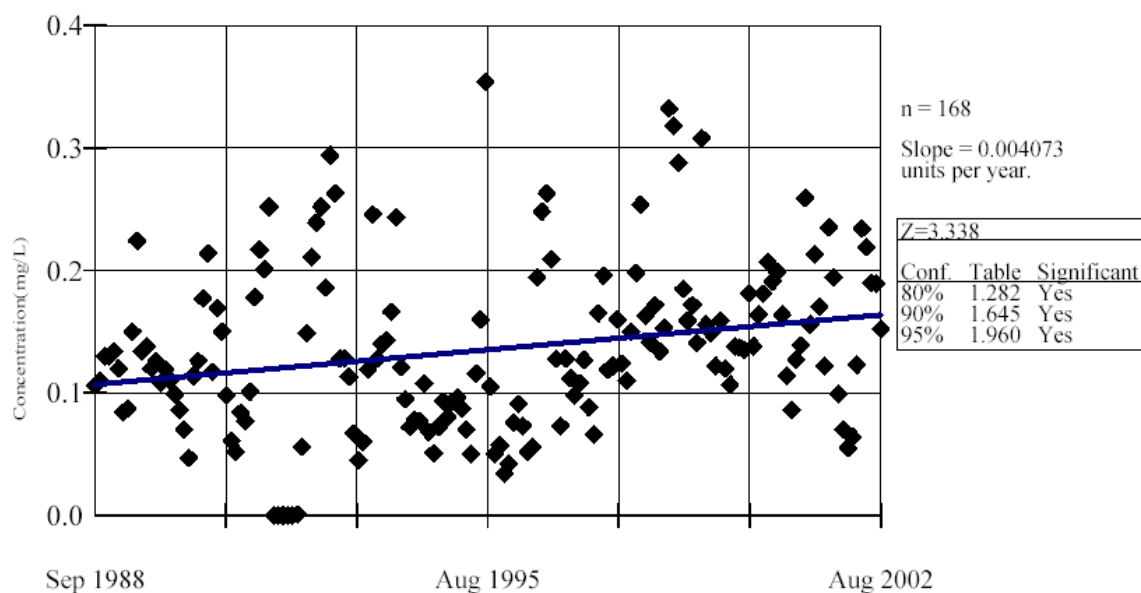
A significant trend was not detected

1.2.4 Total Phosphorus

v.1.56. CAS# n/a

WQStat Plus™

SEASONAL KENDALL SLOPE ESTIMATOR AW503504



Constituent: Ptot (mg/L)

Facility: NBS Trends

Data File: AW503504

Date: 4/4/03

Time: 12:35 PM

View: Ptot

EXPLANATION:

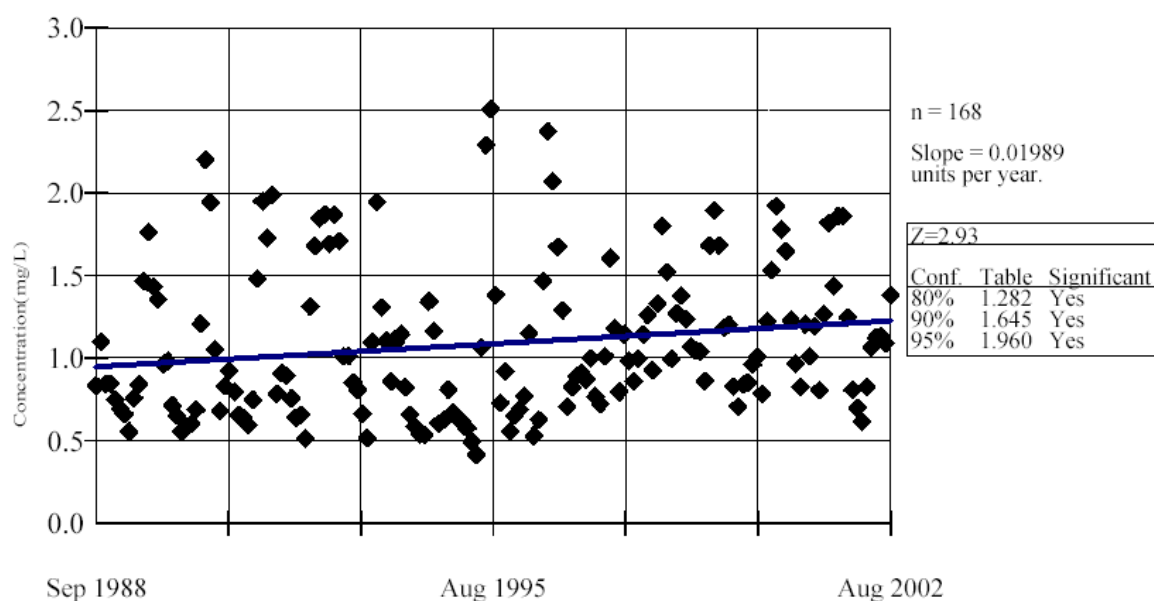
For the **total period** of record the trend shows that TP is increasing 0.004mg/L per year and this trend statistically significant at the 95% Confidence Level.

1.2.5 Total Nitrogen

v.1.56. CAS# n/a

WQStat Plus™

SEASONAL KENDALL SLOPE ESTIMATOR AW503504



Constituent: Ntot (mg/L)

Facility: NBS Trends

Data File: AW503504

Date: 4/4/03

Time: 12:37 PM

View: Ntot

EXPLANATION:

For the total period of record TN is increasing at 0.020 mg/L per year and this increasing trend is significant at the 95% confidence level.

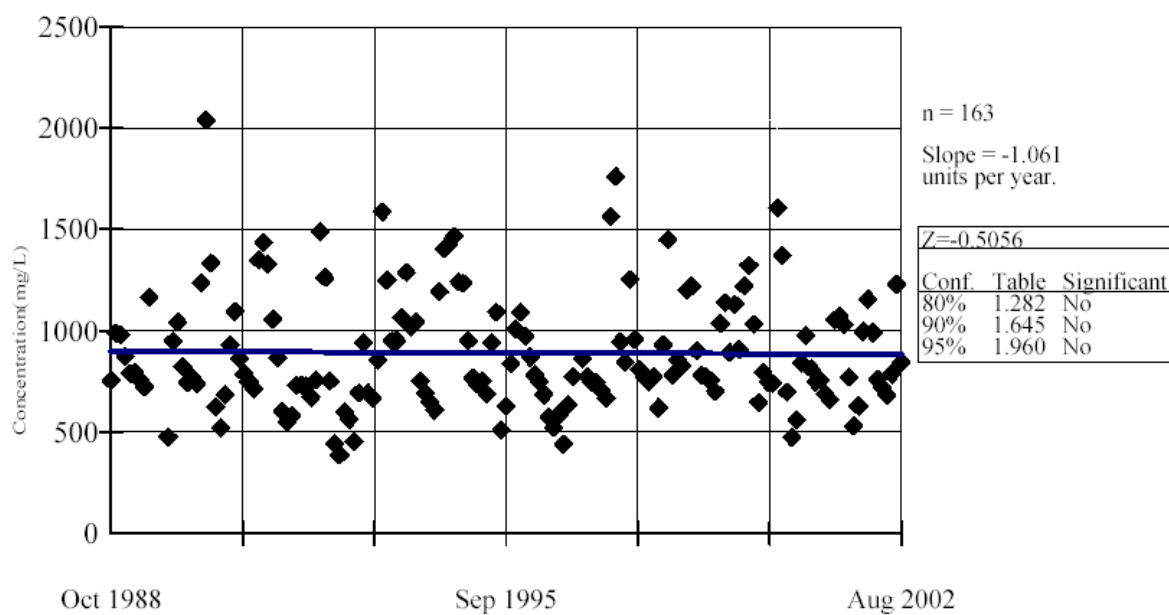
1.3 AW503506 – Echunga Creek

1.3.1 TDS

v.1.56. CAS# n/a

WQStat Plus™

SEASONAL KENDALL SLOPE ESTIMATOR AW503506



Constituent: TDS (mg/L)

Date: 4/4/03

Facility: NBS Trends

Time: 12:40 PM

Data File: AW503506

View: TDS

EXPLANATION:

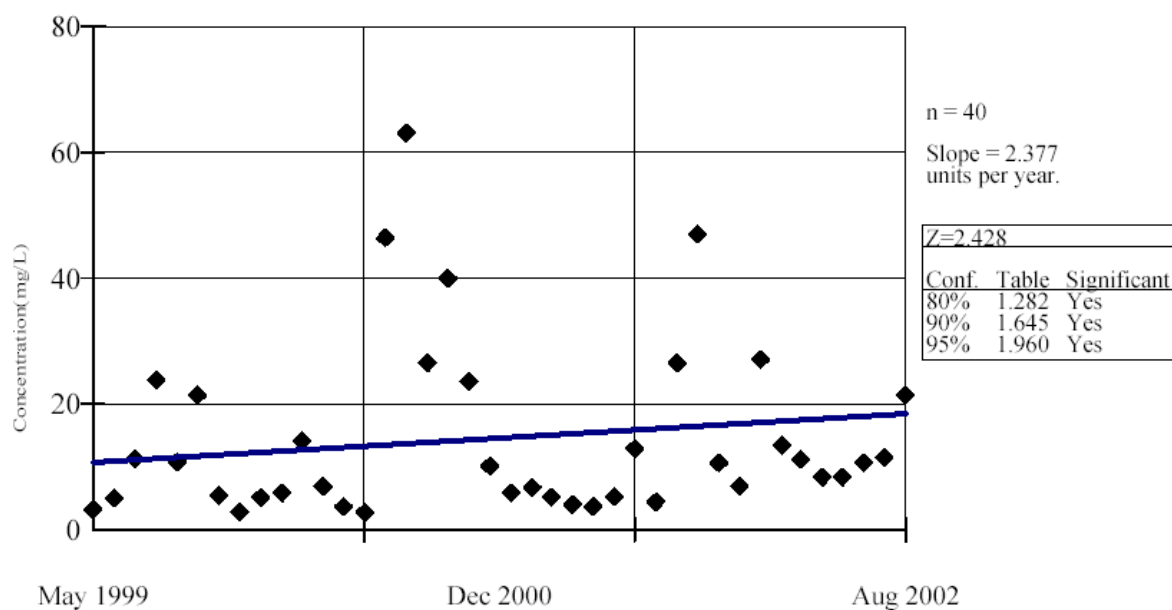
A significant trend could not be detected for TDS.

1.3.2 Suspended Solids

v.1.56. CAS# n/a

WQStat Plus™

SEASONAL KENDALL SLOPE ESTIMATOR AW503506



Constituent: SS (mg/L)

Facility: NBS Trends

Data File: AW503506

Date: 4/4/03

Time: 12:43 PM

View: SS

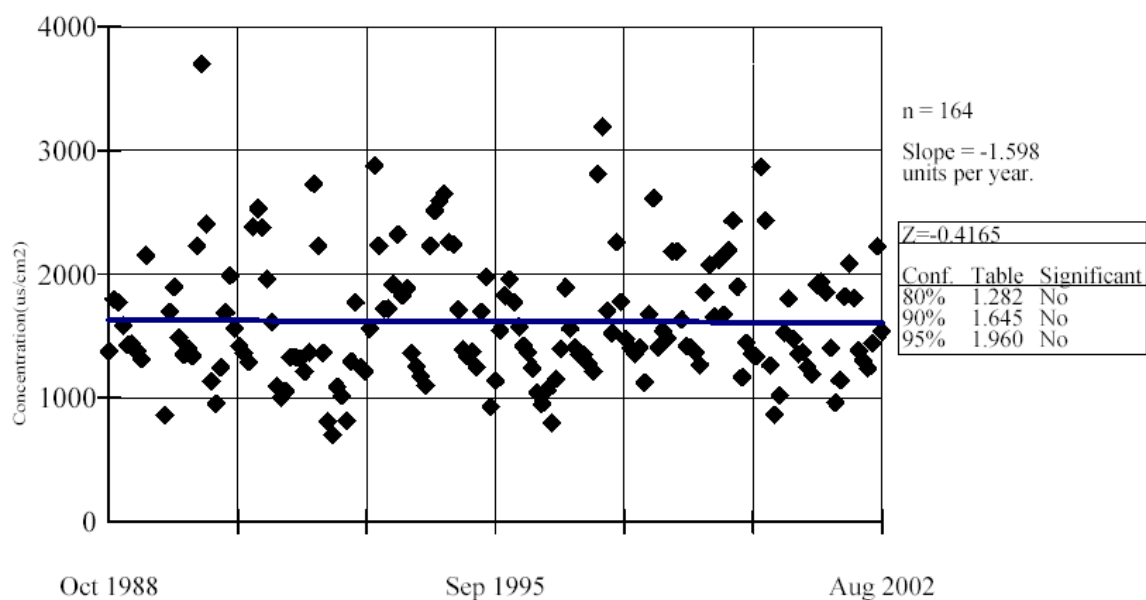
EXPLANATION: SS concentration is increasing at 2.4 mg/l per year and this increasing trend is statistically significant at the 95% confidence level.

1.3.3 Electrical Conductivity

v.1.56. CAS# n/a

WQStat Plus™

SEASONAL KENDALL SLOPE ESTIMATOR AW503506



Constituent: EC (us/cm2)

Facility: NBS Trends

Data File: AW503506

Date: 4/4/03

Time: 12:44 PM

View: EC

EXPLANATION:

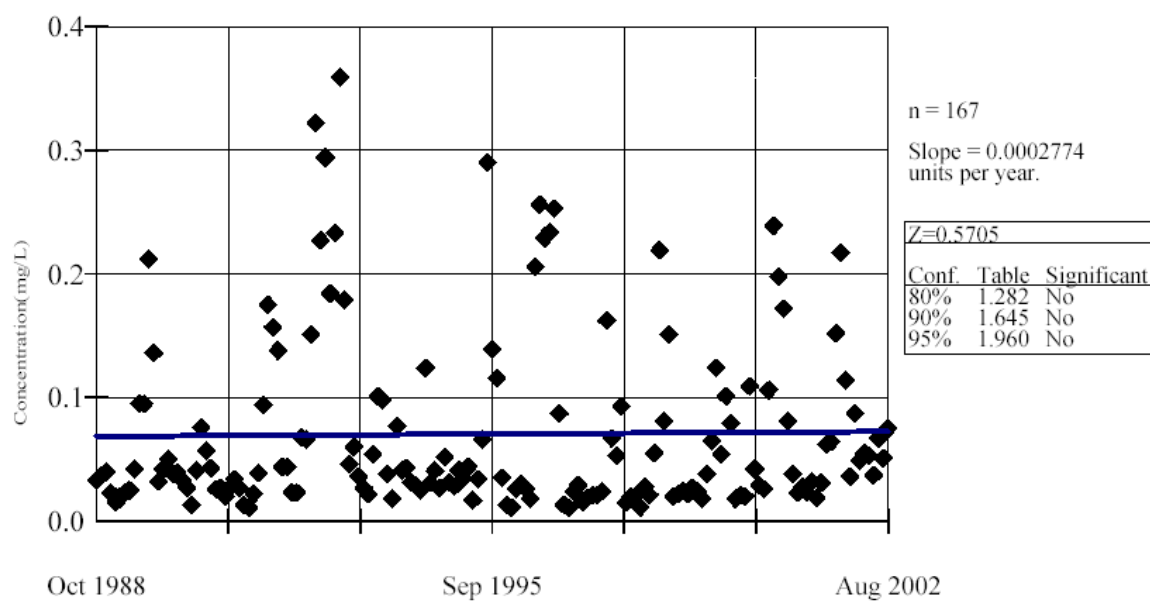
A significant trend for EC could not be detected.

1.3.4 Total Phosphorus

v.1.56. CAS# n/a

WQStat Plus™

SEASONAL KENDALL SLOPE ESTIMATOR AW503506



Constituent: Ptot (mg/L)

Date: 4/4/03

Facility: NBS Trends

Time: 12:46 PM

Data File: AW503506

View: Ptot

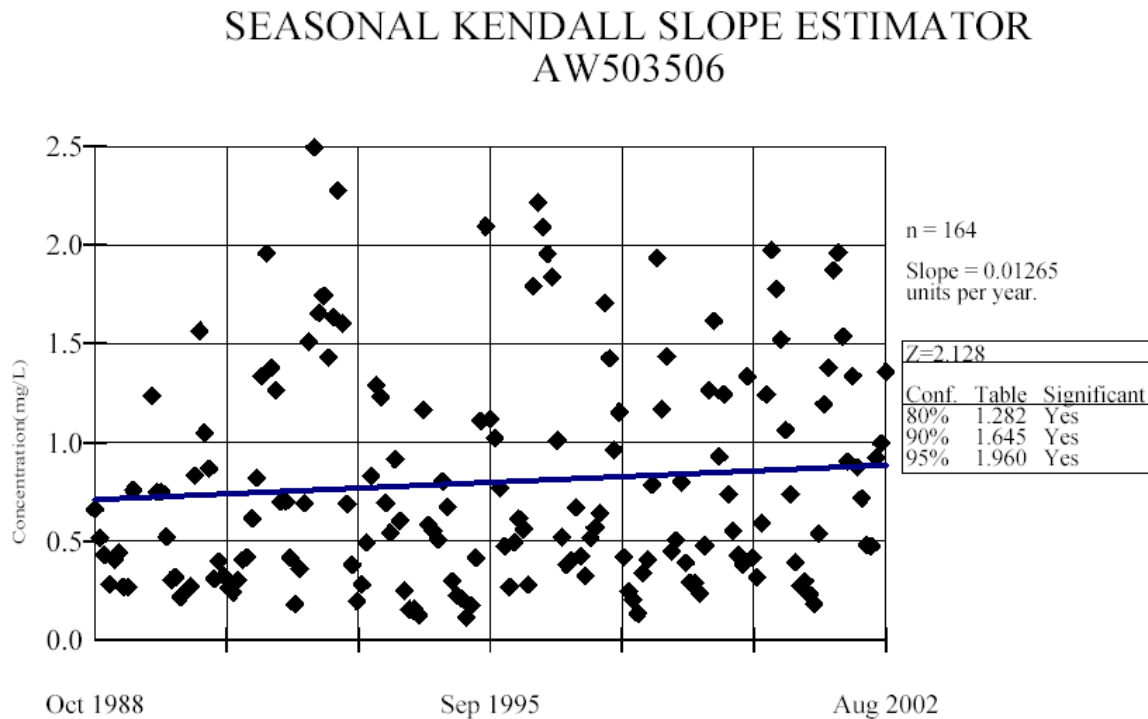
EXPLANATION:

A significant trend could not be detected for TP

1.3.5 Total Nitrogen

v.1.56. CAS# n/a

WQStat Plus™



Constituent: Ntot (mg/L)

Facility: NBS Trends

Data File: AW503506

Date: 4/4/03

Time: 12:48 PM

View: Ntot

EXPLANATION: Total Nitrogen is increasing at 0.013 mg/L per year and this increasing trend is **statistically significant at the 95% confidence level**.

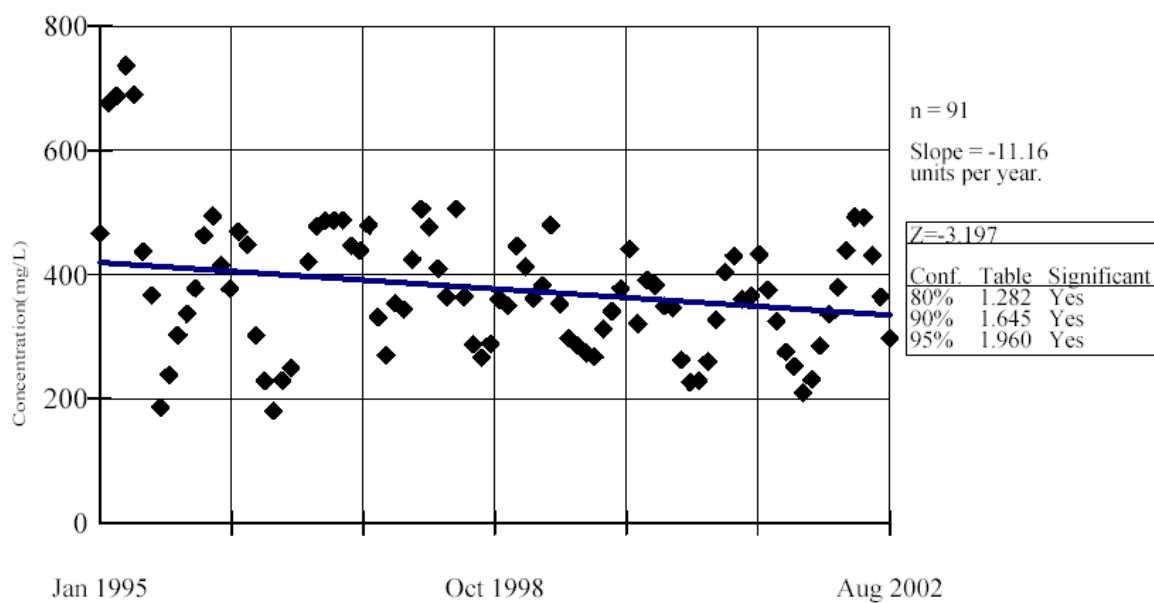
1.4 AW503507 – Lenswood Creek

1.4.1 TDS

v.1.56. CAS# n/a

WQStat Plus™

SEASONAL KENDALL SLOPE ESTIMATOR AW503507



Constituent: TDS (mg/L)

Facility: NBS Trends

Data File: AW503507

Date: 4/4/03

Time: 12:49 PM

View: TDS

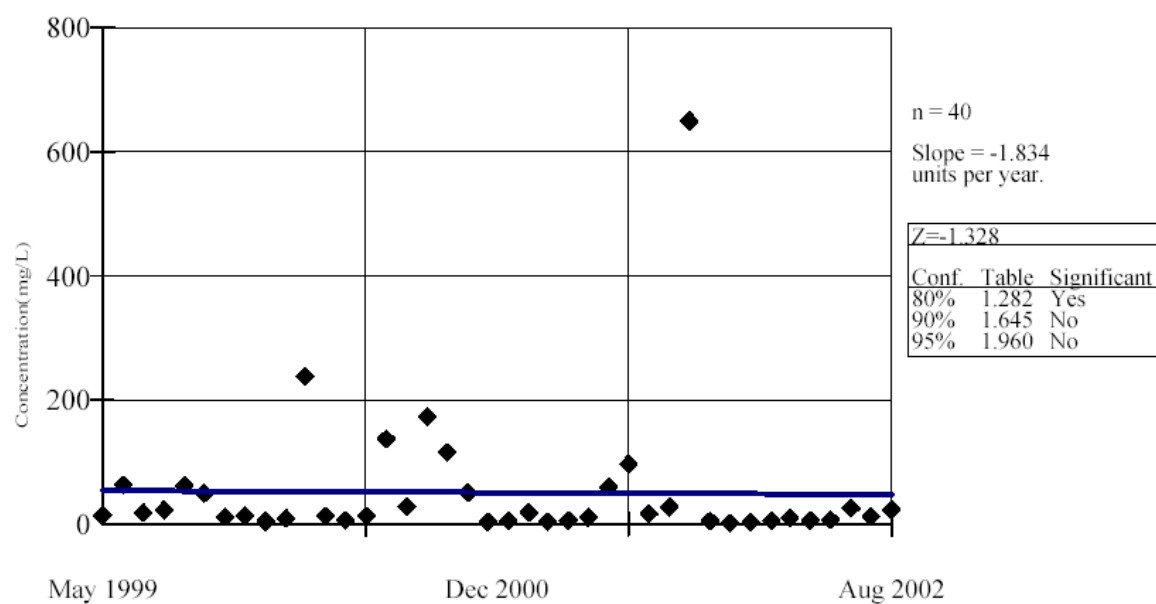
EXPLANATION: TDS is decreasing at 11.2 mg/l per year and this decreasing trend statistically significant at the 95% confidence level.

1.4.2 Suspended Solids

v.1.56. CAS# n/a

WQStat Plus™

SEASONAL KENDALL SLOPE ESTIMATOR AW503507



Constituent: SS (mg/L)

Facility: NBS Trends

Data File: AW503507

Date: 4/4/03

Time: 12:51 PM

View: SS

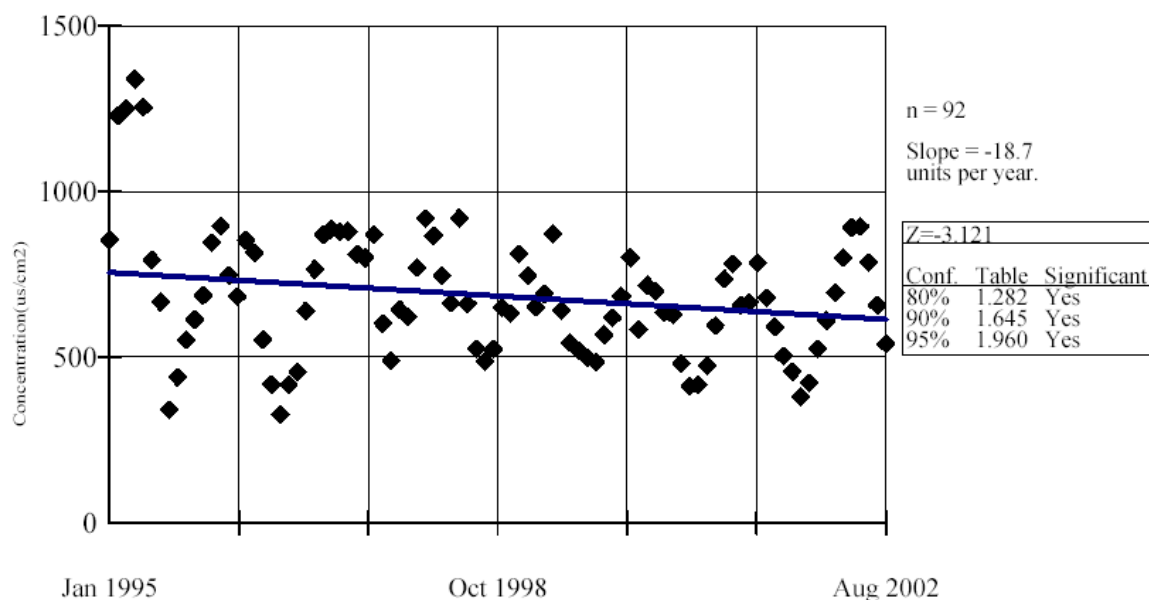
EXPLANATION: SS is decreasing at 1.834 mg/l per year and this decreasing trend is statistically significant at the 80% confidence level.

1.4.3 Electrical Conductivity

v.1.56 CAS# n/a

WQStat Plus™

SEASONAL KENDALL SLOPE ESTIMATOR (Alt. Values) AW503507



Constituent: EC (us/cm2)

Facility: NBS Trends

Data File: AW503507

Date: 4/4/03

Time: 12:52 PM

View: EC

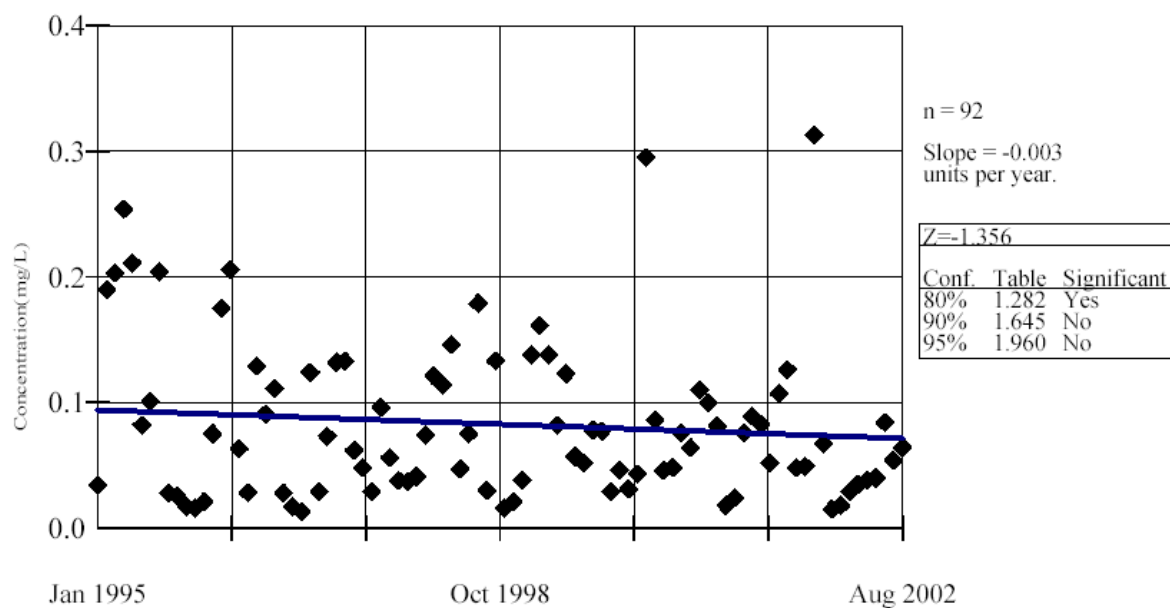
EXPLANATION: EC is decreasing at 18.7 us/cm² per year and this decreasing trend is statistically significant at the 95% confidence level.

1.4.4 Total Phosphorus

v.1.56. CAS# n/a

WQStat Plus™

SEASONAL KENDALL SLOPE ESTIMATOR AW503507



Constituent: Ptot (mg/L)

Facility: NBS Trends

Data File: AW503507

Date: 4/4/03

Time: 12:53 PM

View: Ptot

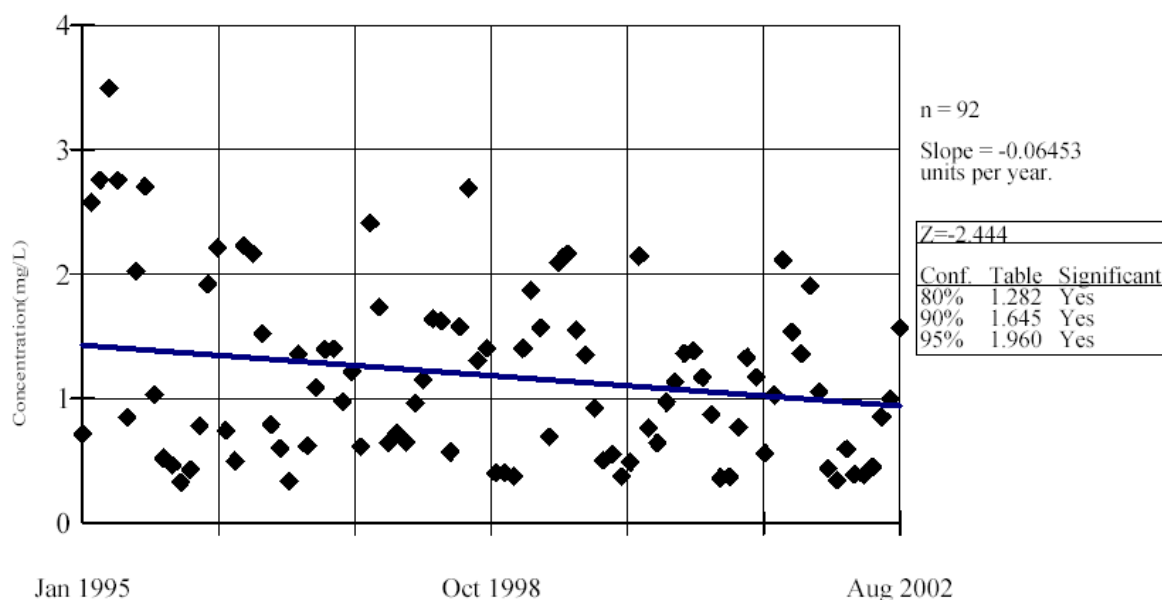
EXPLANATION: Total Phosphorus is decreasing with a slope of 0.003 mg/L per year and this trend is statistically significant at the 80% confidence level.

1.4.5 Total Nitrogen

v.1.56. CAS# n/a

WQStat Plus™

SEASONAL KENDALL SLOPE ESTIMATOR AW503507



Constituent: Ntot (mg/L)

Facility: NBS Trends

Data File: AW503507

Date: 4/4/03

Time: 12:53 PM

View: Ntot

EXPLANATION: Total Nitrogen is decreasing at 0.064 mg/L per year and this trend is **statistically significant at the 95% confidence level.**

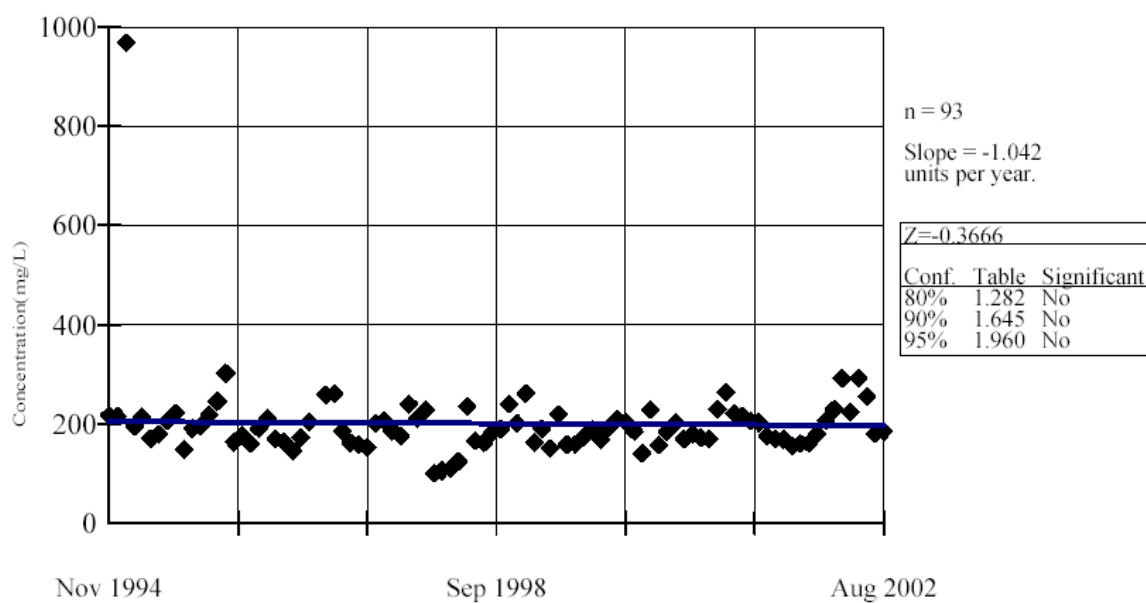
1.5 AW503509 – Aldgate Creek

1.5.1 TDS

v.1.56 CAS# n/a

WQStat Plus™

SEASONAL KENDALL SLOPE ESTIMATOR AW503509



Constituent: TDS (mg/L)
Date: 4/4/03

Facility: NBS Trends
Time: 12:55 PM

Data File: AW503509
View: TDS

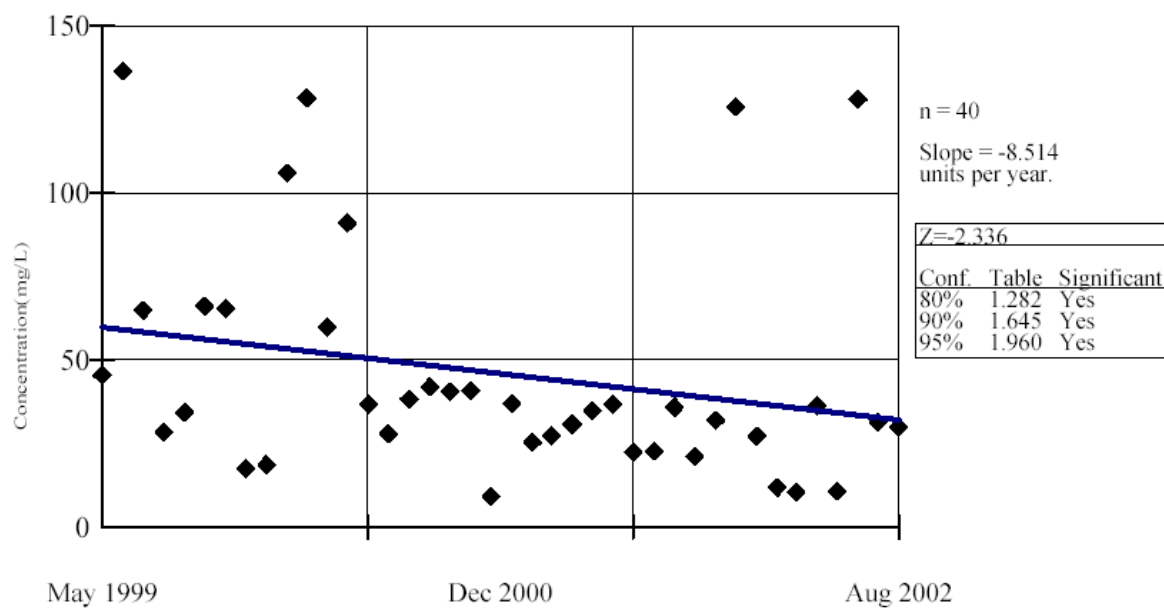
EXPLANATION: A statistically significant trend was not detected.

1.5.2 Suspended Solids

v.1.56. CAS# n/a

WQStat Plus™

SEASONAL KENDALL SLOPE ESTIMATOR AW503509



Constituent: SS (mg/L)

Facility: NBS Trends

Data File: AW503509

Date: 4/4/03

Time: 12:57 PM

View: SS

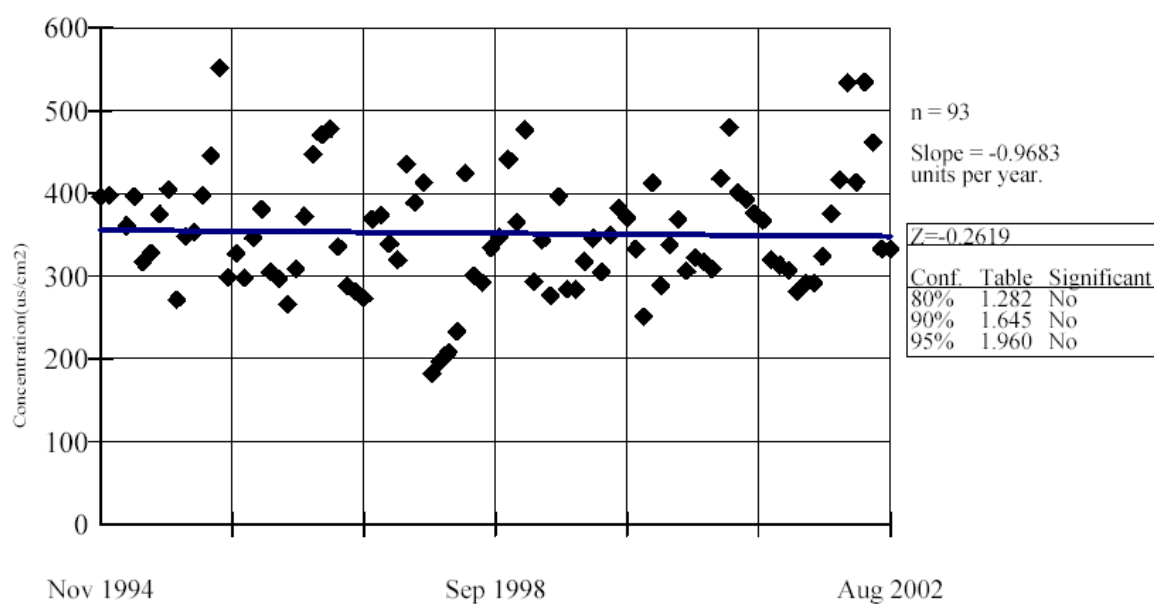
EXPLANATION: SS is decreasing at 8.5 mg/l per year and this decreasing trend is statistically significant at the 95% confidence level.

1.5.3 Electrical Conductivity

v.1.56. CAS# n/a

WQStat Plus™

SEASONAL KENDALL SLOPE ESTIMATOR AW503509



Constituent: EC (us/cm2)

Facility: NBS Trends

Data File: AW503509

Date: 4/4/03

Time: 12:58 PM

View: EC

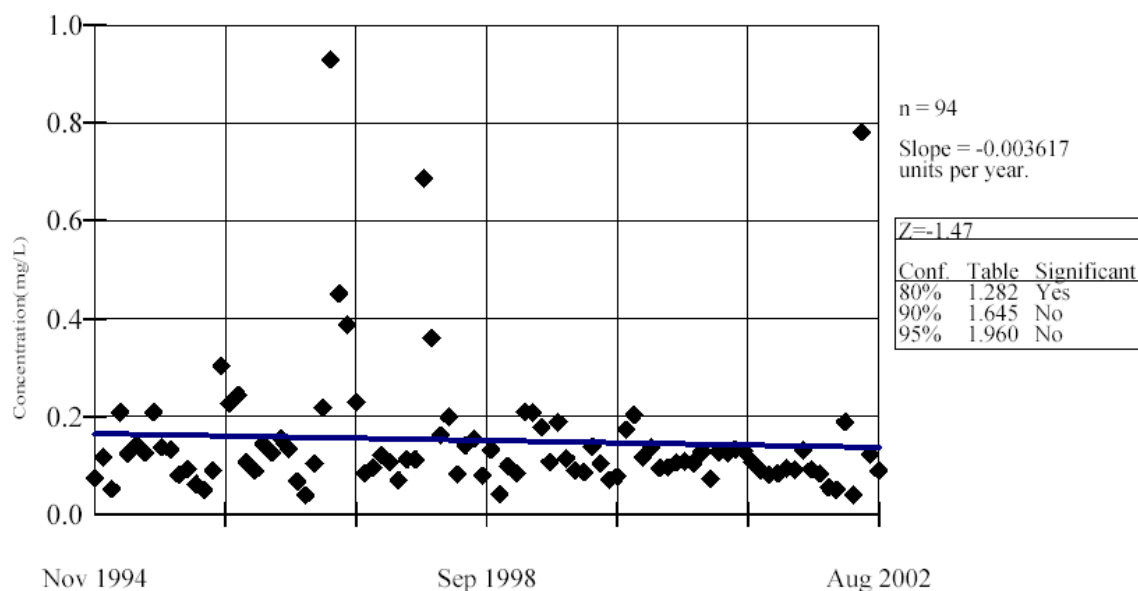
EXPLANATION: A statistically significant trend was not detected for EC.

1.5.4 Total Phosphorus

v.1.56. CAS# n/a

WQStat Plus™

SEASONAL KENDALL SLOPE ESTIMATOR AW503509



Constituent: Ptot (mg/L)

Facility: NBS Trends

Data File: AW503509

Date: 4/4/03

Time: 12:59 PM

View: Ptot

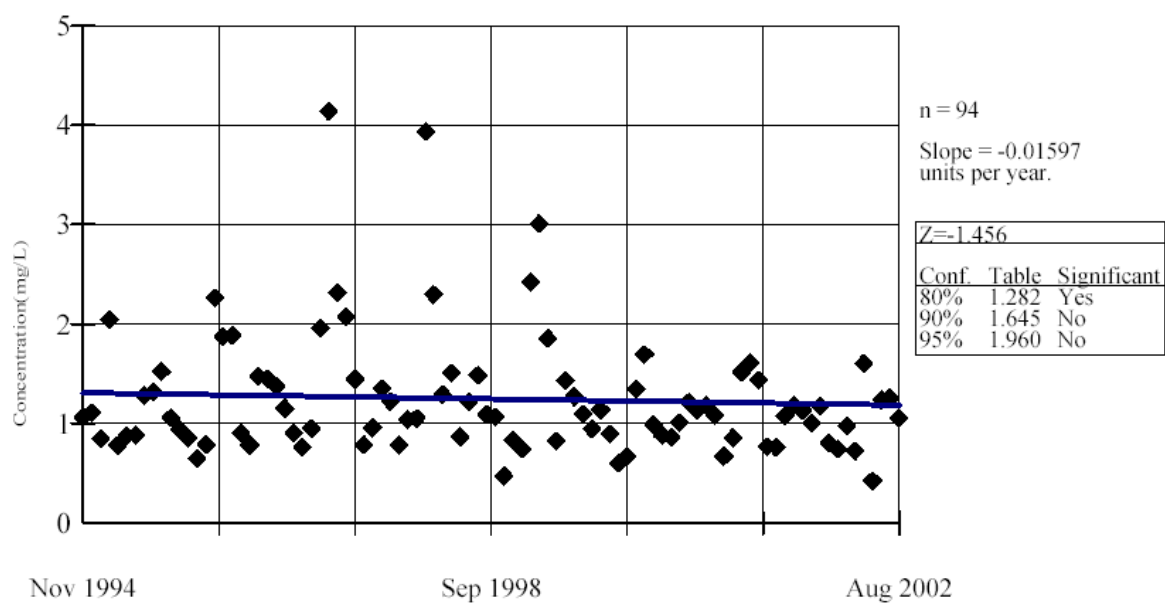
EXPLANATION: Total Phosphorus is decreasing with a slope of 0.004 mg/L per year and this trend is statistically significant at the 80% confidence level.

1.5.5 Total Nitrogen

v.1.56. CAS# n/a

WQStat Plus™

SEASONAL KENDALL SLOPE ESTIMATOR AW503509



Constituent: Ntot (mg/L)

Facility: NBS Trends

Data File: AW503509

Date: 4/4/03

Time: 1:01 PM

View: Ntot

EXPLANATION: Total Nitrogen is decreasing at 0.016 mg/L per year and this trend is statistically significant at the 80% Confidence Limit.

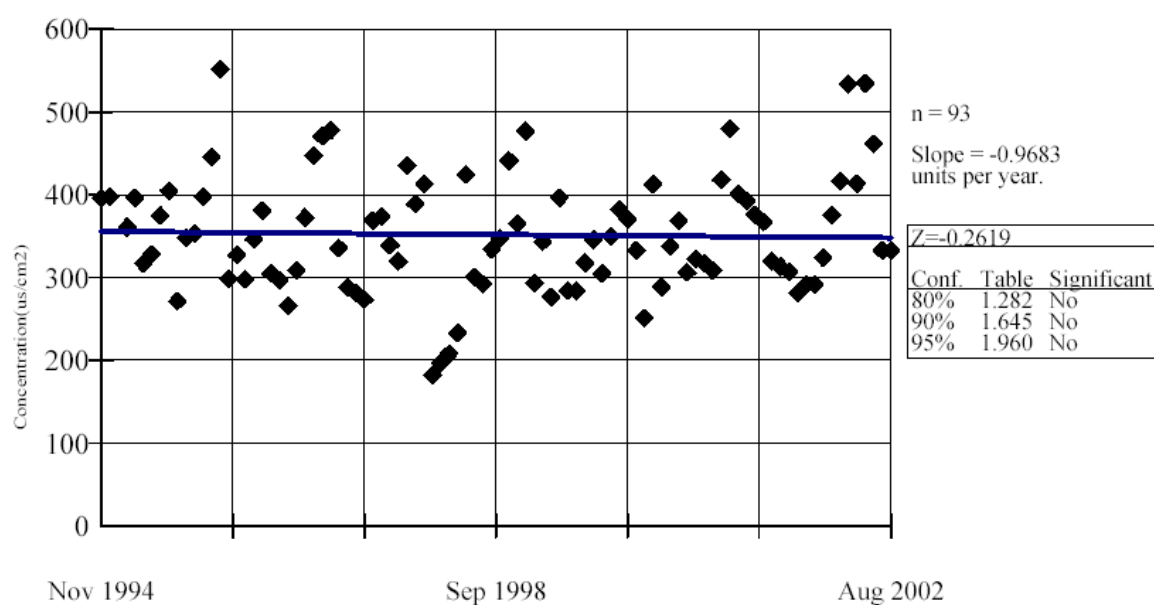
1.6 AW503526 – Cox Creek

1.6.1 TDS

v.1.56. CAS# n/a

WQStat Plus™

SEASONAL KENDALL SLOPE ESTIMATOR AW503526



Constituent: EC (us/cm2)

Facility: NBS Trends

Data File: AW503526

Date: 4/4/03

Time: 1:02 PM

View: TDS

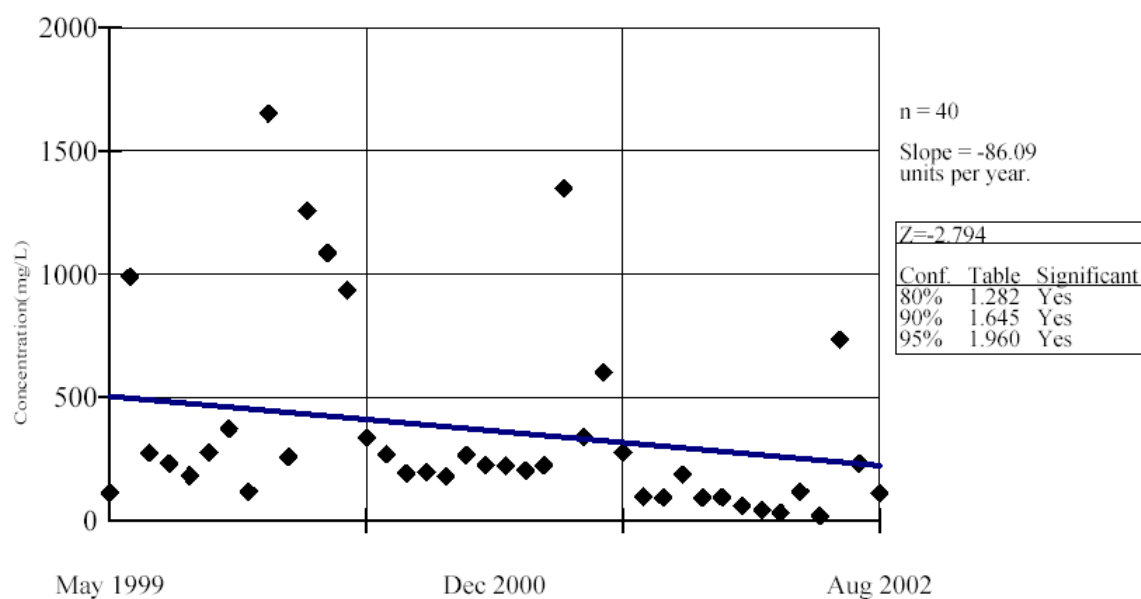
EXPLANATION: A statistically significant trend was not found for EC.

1.6.2 Suspended Solids

v.1.56. CAS# n/a

WQStat Plus™

SEASONAL KENDALL SLOPE ESTIMATOR AW503526



Constituent: SS (mg/L)

Facility: NBS Trends

Data File: AW503526

Date: 4/4/03

Time: 1:04 PM

View: SS

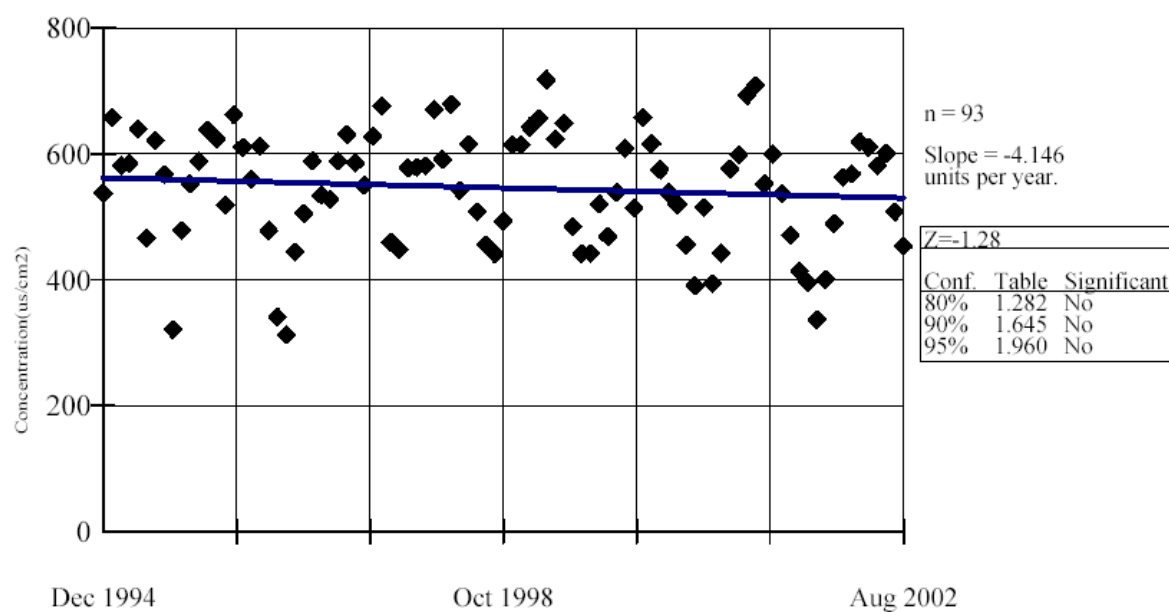
EXPLANATION: SS is decreasing at 86.0 mg/l per year and this decreasing trend is statistically significant at the 95% confidence level.

1.6.3 Electrical Conductivity

v.1.56. CAS# n/a

WQStat Plus™

SEASONAL KENDALL SLOPE ESTIMATOR AW503526



Constituent: EC (us/cm2)

Facility: NBS Trends

Data File: AW503526

Date: 4/4/03

Time: 1:05 PM

View: EC

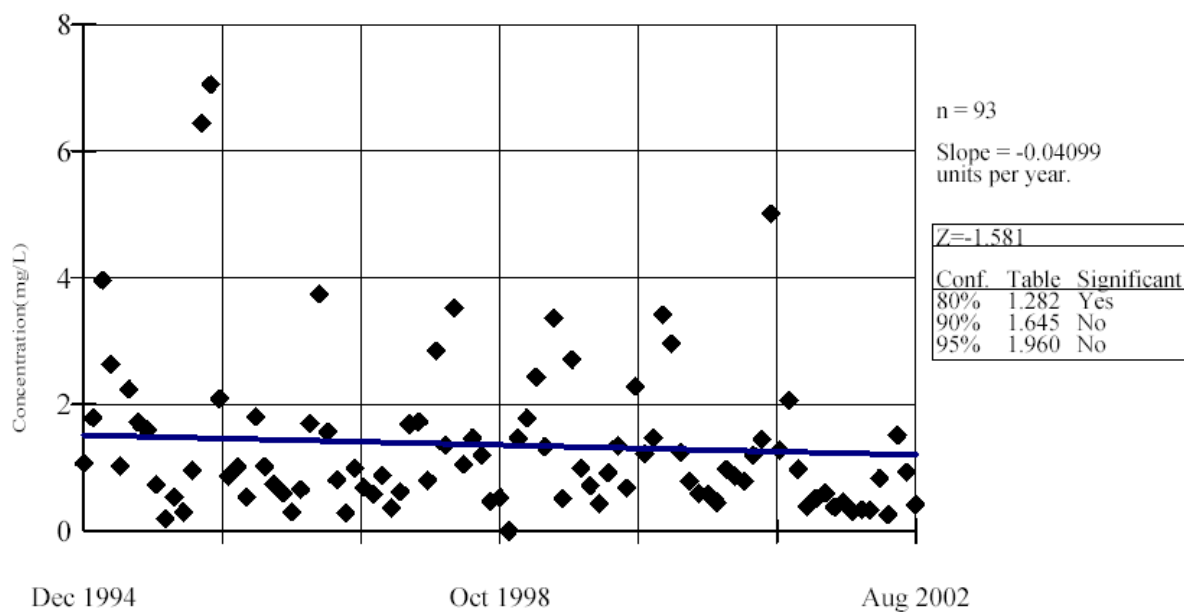
EXPLANATION: A statistically significant trend was not found for EC.

1.6.4 Total Phosphorus

v.1.56. CAS# n/a

WQStat Plus™

SEASONAL KENDALL SLOPE ESTIMATOR AW503526



Constituent: Ptot (mg/L)

Facility: NBS Trends

Data File: AW503526

Date: 4/4/03

Time: 1:06 PM

View: Ptot

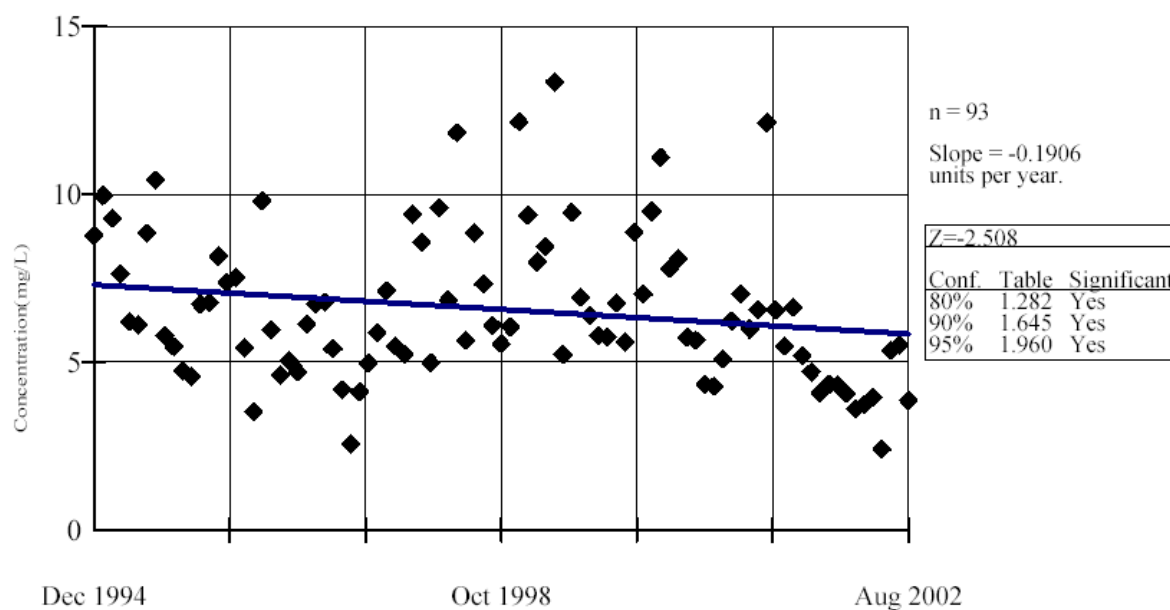
EXPLANATION: Total Phosphorus is decreasing with a slope of 0.041 mg/L per year and this trend is statistically significant at the 80% confidence level.

1.6.5 Total Nitrogen

v.1.56 CAS# n/a

WQStat Plus™

SEASONAL KENDALL SLOPE ESTIMATOR AW503526



Constituent: Ntot (mg/L)

Date: 4/4/03

Facility: NBS Trends

Time: 1:07 PM

Data File: AW503526

View: Ntot

EXPLANATION: Total Nitrogen is decreasing at 0.191 mg/L per year and this trend is statistically significant at 95% Confidence Level.

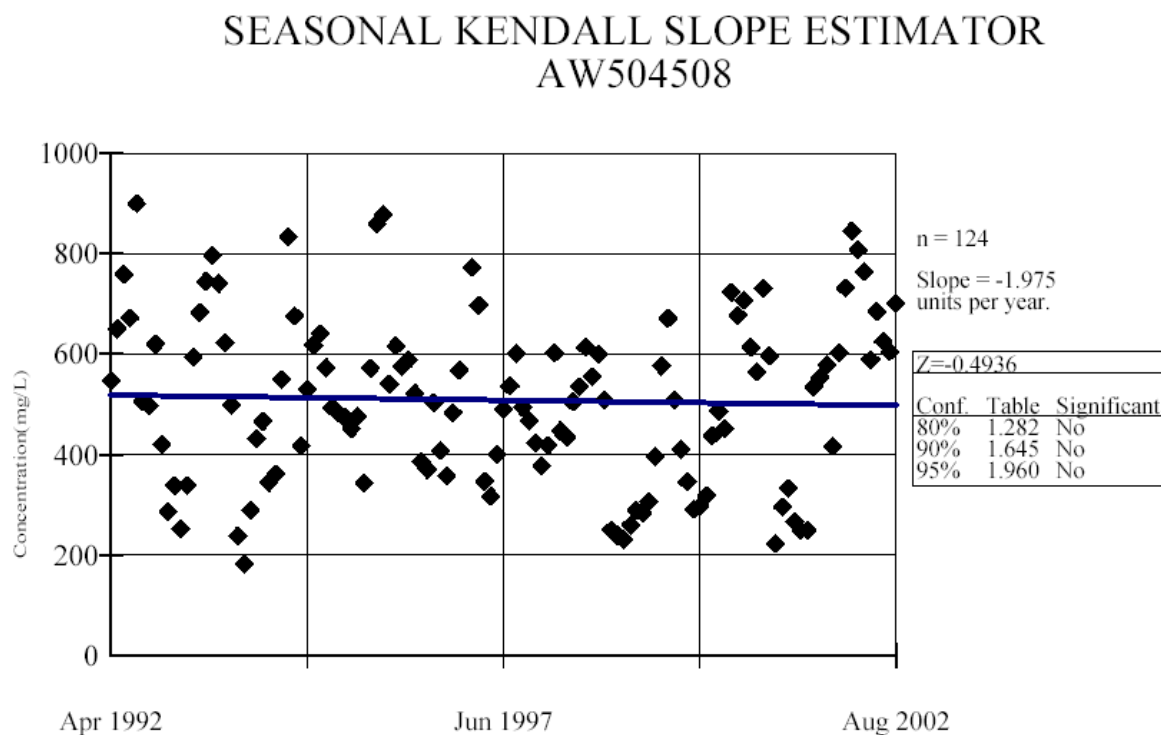
Appendix 4

1.7 AW504508 – Milbrook Intake

1.7.1 TDS

v.1.56. CAS# n/a

WQStat Plus™



Constituent: TDS (mg/L)

Date: 4/4/03

Facility: NBS Trends

Time: 1:09 PM

Data File: AW504508

View: TDS

EXPLANATION: A statistically significant trend was not found

1.7.2 Suspended Solids

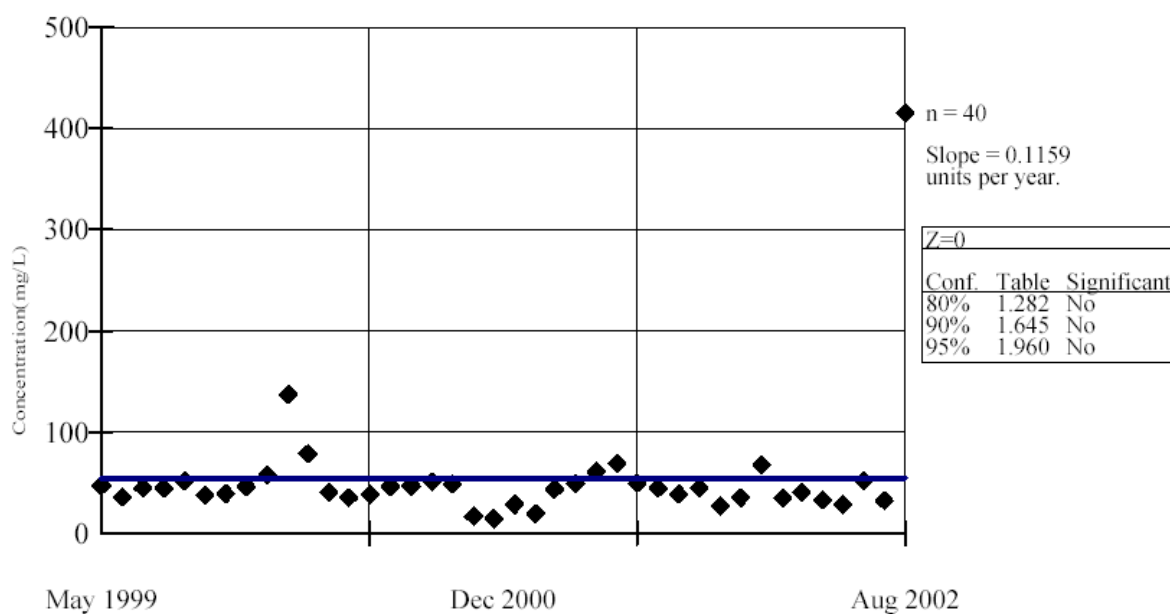
Period: All

(NB: No data until 1999)

v.1.56. CAS# n/a

WQStat Plus™

SEASONAL KENDALL SLOPE ESTIMATOR AW504508



Constituent: SS (mg/L)

Date: 4/4/03

Facility: NBS Trends

Time: 1:11 PM

Data File: AW504508

View: SS

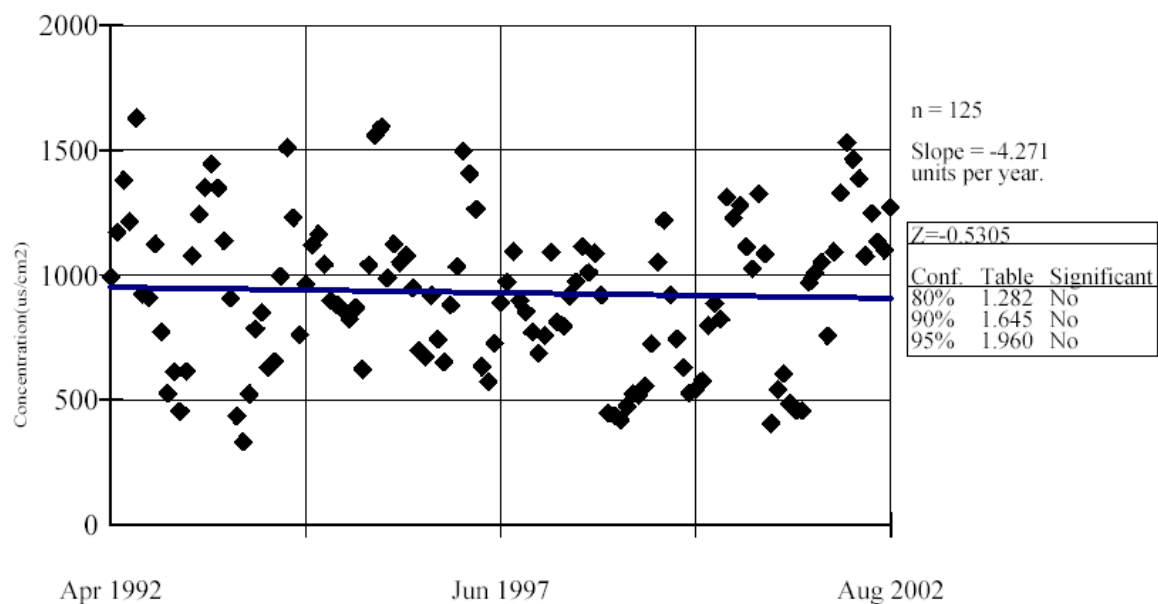
EXPLANATION: A statistically significant trend was not found.

NB. The outlier at 410mg/L is a valid observed value.

1.7.3 Electrical Conductivity**Period: All**

v.1.56. CAS# n/a

WQStat Plus™

**SEASONAL KENDALL SLOPE ESTIMATOR
AW504508**

Constituent: EC (us/cm2)

Facility: NBS Trends

Data File: AW504508

Date: 4/4/03

Time: 1:12 PM

View: EC

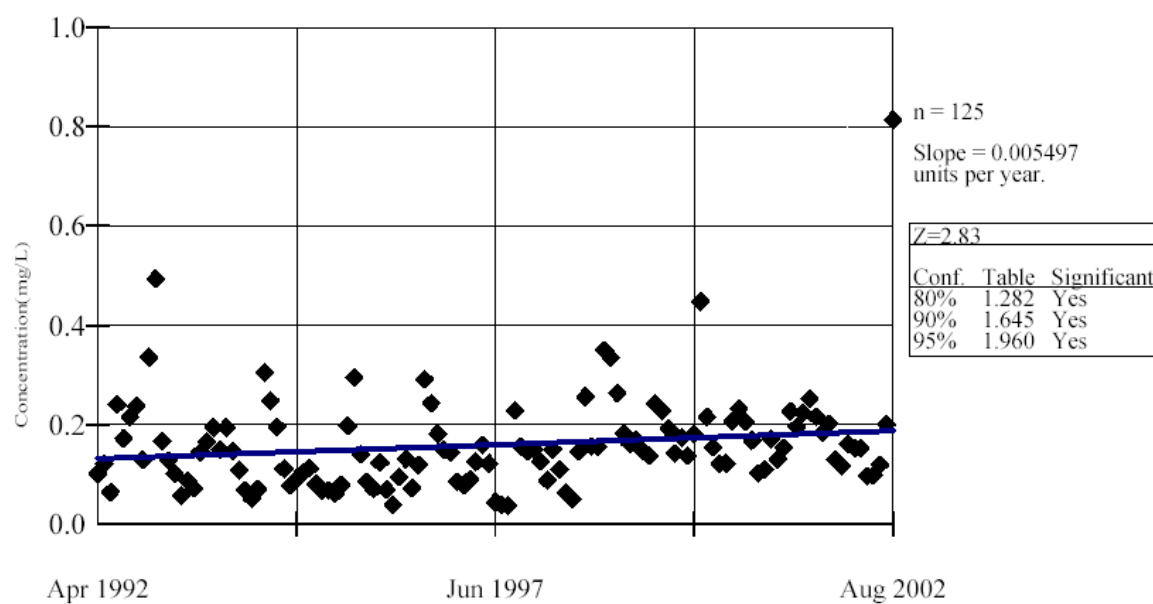
EXPLANATION: A statistically significant trend was not found.

1.7.4 Total Phosphorus

v.1.56. CAS# n/a

WQStat Plus™

SEASONAL KENDALL SLOPE ESTIMATOR AW504508



Constituent: Ptot (mg/L)

Facility: NBS Trends

Data File: AW504508

Date: 4/4/03

Time: 1:14 PM

View: Ptot

EXPLANATION:

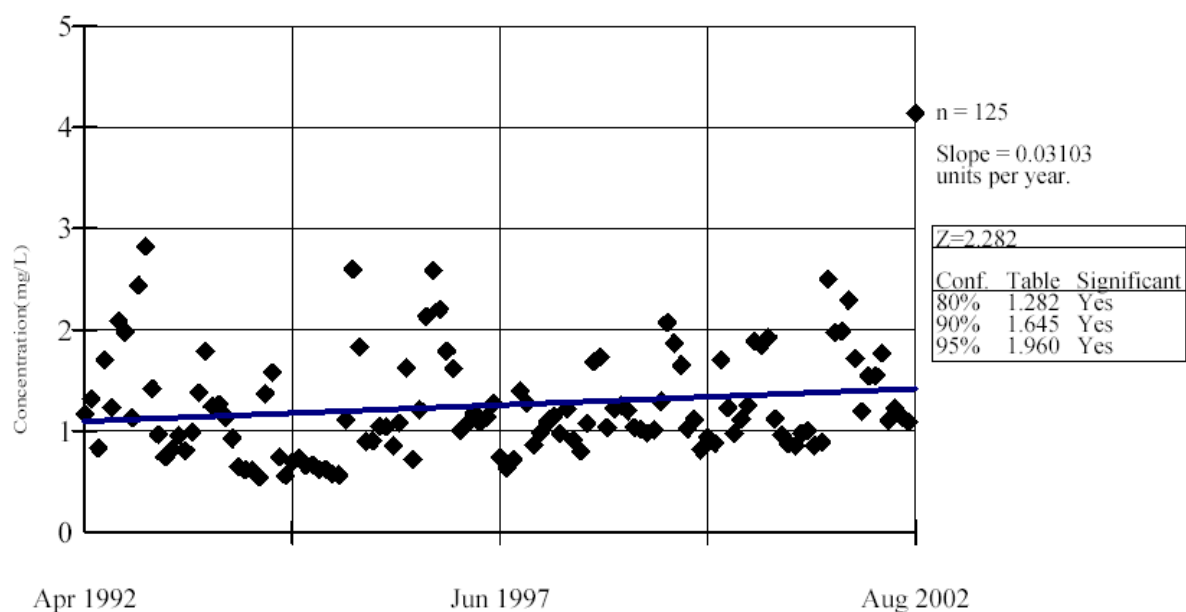
For the total period of record the Total Phosphorus is increasing at 0.005 mg/L per year and this trend is statistically significant at the 95% confidence level.

1.7.5 Total Nitrogen

v.1.56. CAS# n/a

WQStat Plus™

SEASONAL KENDALL SLOPE ESTIMATOR AW504508



Constituent: Ntot (mg/L)

Date: 4/4/03

Facility: NBS Trends

Time: 1:15 PM

Data File: AW504508

View: Ntot

EXPLANATION:

For the total period of record the Total Nitrogen is increasing at 0.027 mg/L per year and this trend is statistically significant at the 95% confidence level.

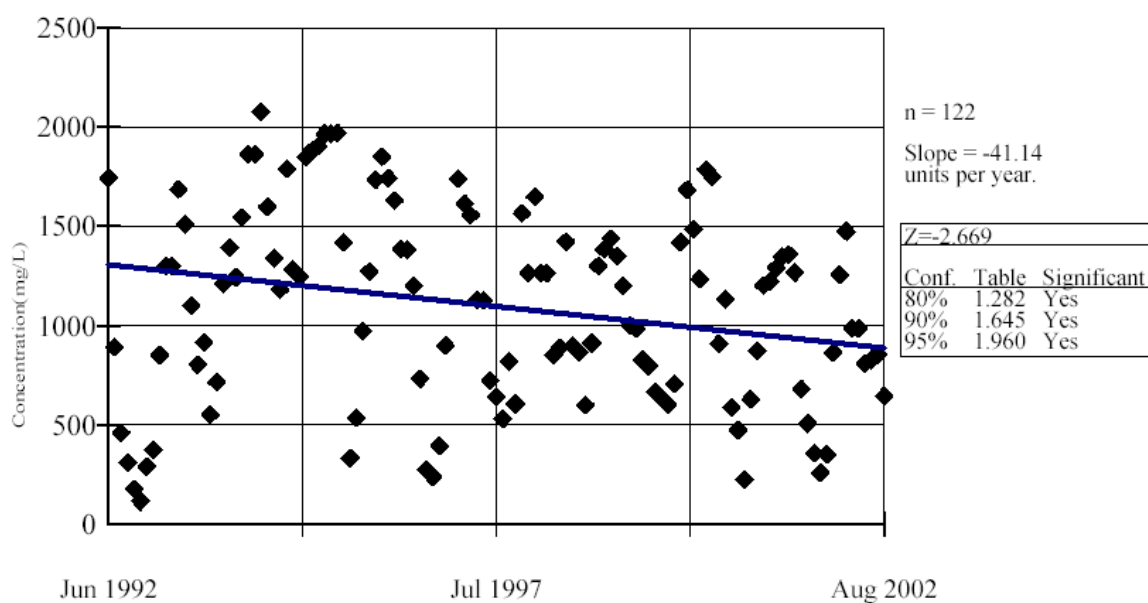
1.8 AW504525 – Kersbrook Creek

1.8.1 TDS

v.1.56. CAS# n/a

WQStat Plus™

SEASONAL KENDALL SLOPE ESTIMATOR AW504525



Constituent: TDS (mg/L)
Date: 4/4/03

Facility: NBS Trends
Time: 1:17 PM

Data File: AW504525
View: TDS

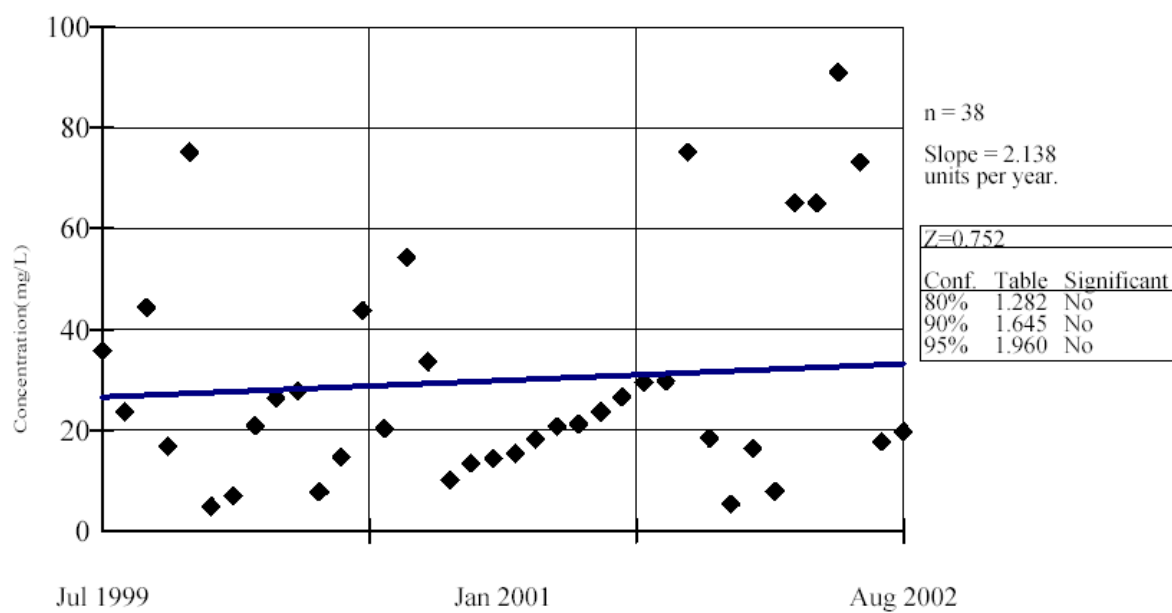
EXPLANATION: TDS is decreasing at 41 mg/l per year and this trend is statistically significant at the 95% confidence limit.

1.8.2 Suspended Solids

v.1.56. CAS# n/a

WQStat Plus™

SEASONAL KENDALL SLOPE ESTIMATOR AW504525



Constituent: SS (mg/L)

Date: 4/4/03

Facility: NBS Trends

Time: 1:18 PM

Data File: AW504525

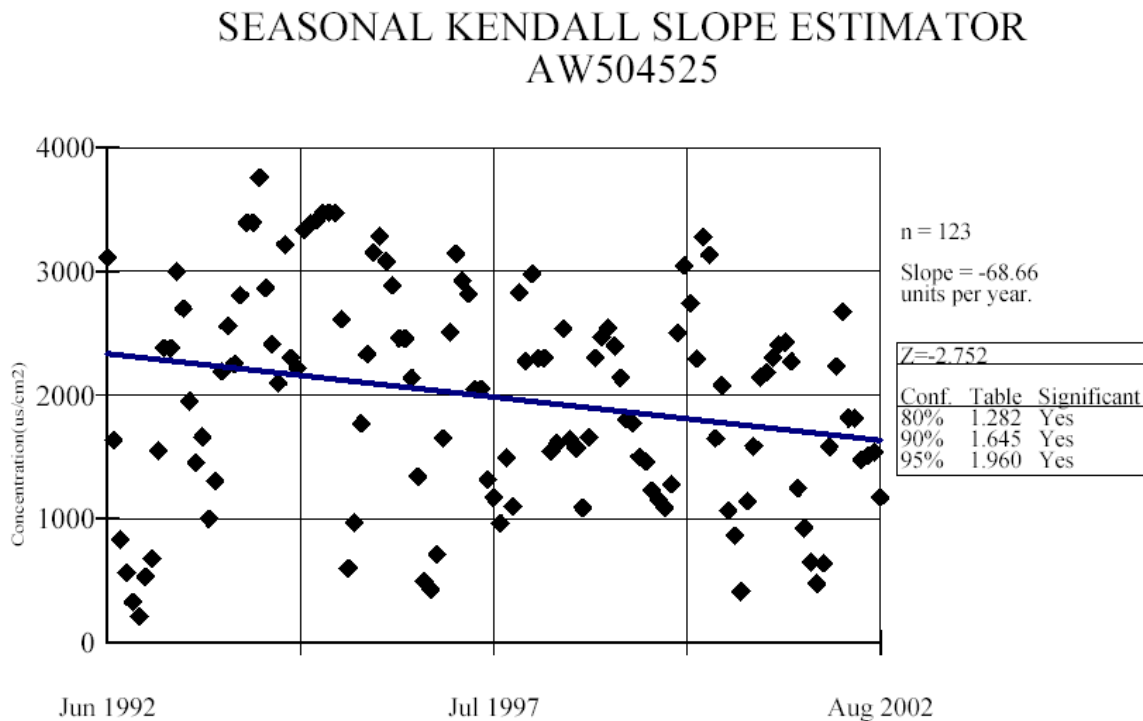
View: SS

EXPLANATION: A statistically significant trend was not found.

1.8.3 Electrical Conductivity

v.1.56 CAS# n/a

WQStat Plus™



Constituent: EC (us/cm2)

Facility: NBS Trends

Data File: AW504525

Date: 4/4/03

Time: 1:19 PM

View: EC

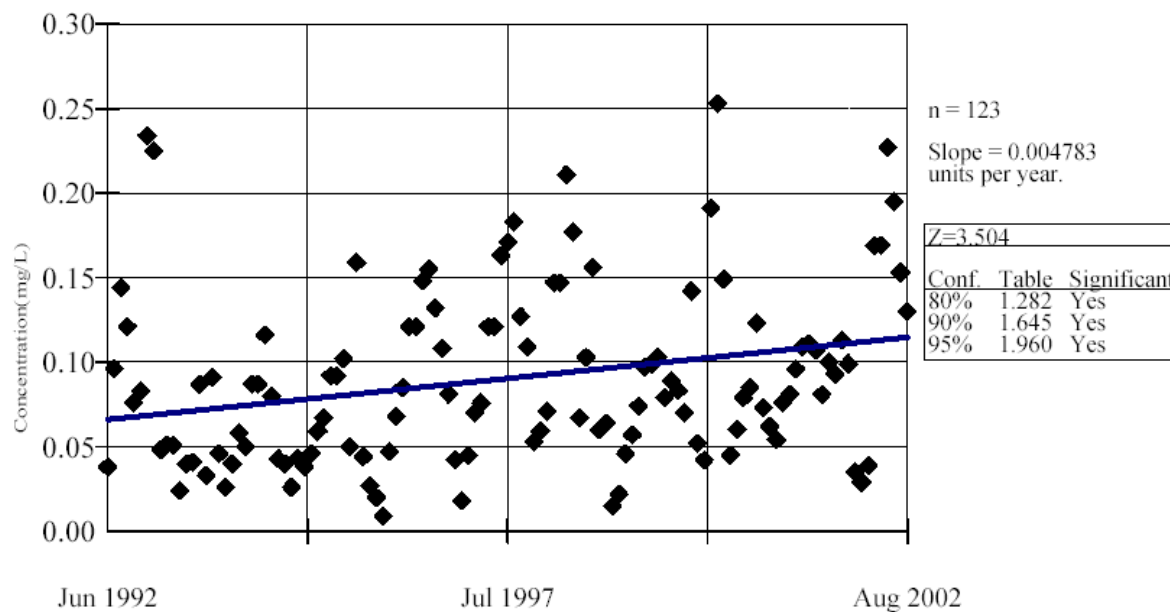
EXPLANATION: EC is decreasing at 68.66 us/cm² per year and this trend is statistically significant at the 95% confidence level.

1.8.4 Total Phosphorus

v.1.56. CAS# n/a

WQStat Plus™

SEASONAL KENDALL SLOPE ESTIMATOR AW504525



Constituent: Ptot (mg/L)

Facility: NBS Trends

Data File: AW504525

Date: 4/4/03

Time: 1:20 PM

View: Ptot

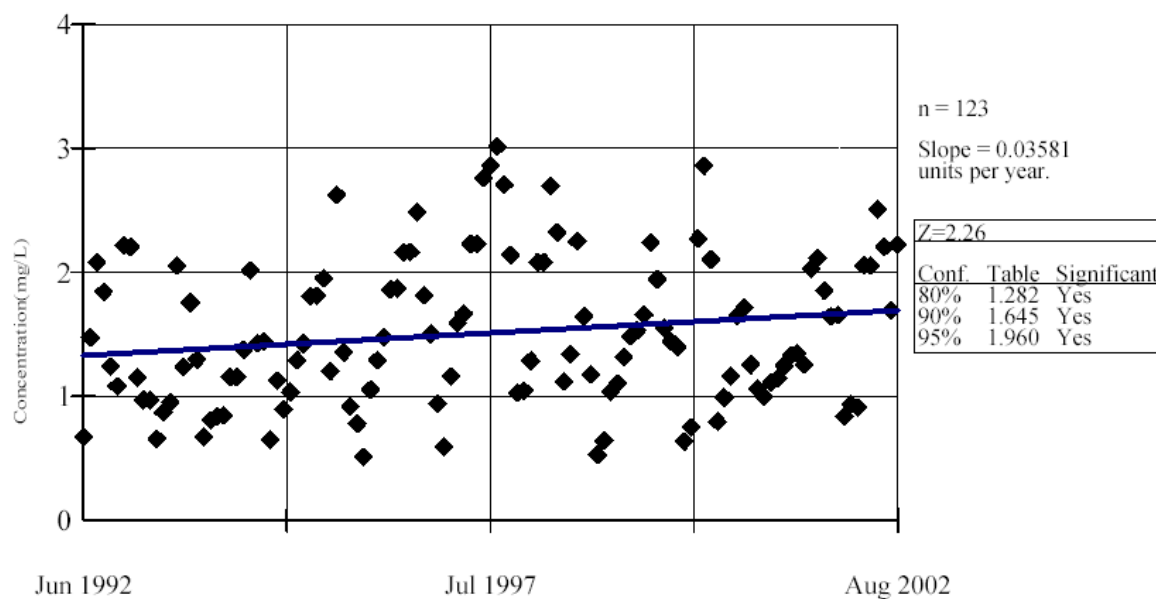
EXPLANATION: Total Phosphorus is increasing with a slope of 0.005 mg/L per year and this trend is statistically significant at the 95% confidence level.

1.8.5 Total Nitrogen

v.1.56. CAS# n/a

WQStat Plus™

SEASONAL KENDALL SLOPE ESTIMATOR AW504525



Constituent: Ntot (mg/L)

Facility: NBS Trends

Data File: AW504525

Date: 4/4/03

Time: 1:21 PM

View: Ntot

EXPLANATION: Total Nitrogen is increasing at 0.036 mg/L per year and this trend is statistically significant at 95% Confidence Level.

Appendix 5

Excursion Analysis Results – WQSTAT Plus outputs

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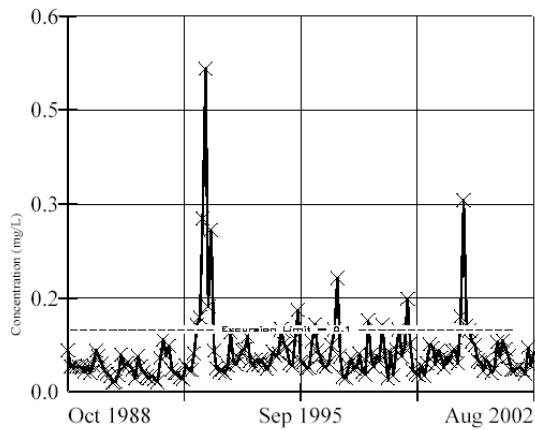
1.1 AW503502 – Scott River at Scott Bottom

Total Phosphorus

v.1.56 CAS# n/a

WQStat Plus™

PROPORTION ESTIMATE AW503502



Conf	Season	N	Prop.	Low-High
95%*	All	167	0.09	0.05-0.13
99%*	All	167	0.09	0.03-0.15
95%*	3/1	42	0	0-0
99%*	3/1	42	0	0-0
95%*	6/1	42	0.119	0.02-0.22
99%*	6/1	42	0.119	0-0.25
95%*	9/1	41	0.146	0.04-0.25
99%*	9/1	41	0.146	0.00-0.29
95%*	12/1	42	0.095	0.01-0.18
99%*	12/1	42	0.095	0-0.21

* normal approximation (n>20)

Constituent: Ptot (mg/L)

Facility: NBS Trends

Data File: AW503502

Date: 4/9/03

Time: 6:23 PM

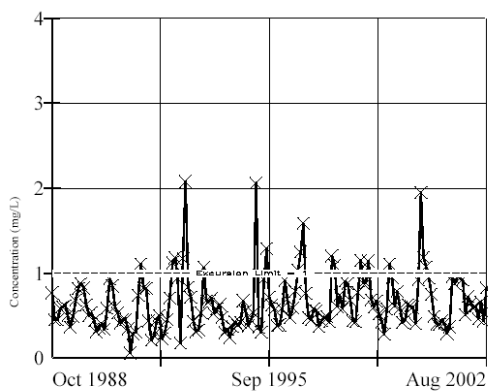
View: Ptot

Total Nitrogen

v.1.56 CAS# n/a

WQStat Plus™

PROPORTION ESTIMATE AW503502



Conf	Season	N	Prop.	Low-High
95%*	All	167	0.114	0.07-0.16
99%*	All	167	0.114	0.05-0.18
95%*	3/1	42	0.024	0-0.07
99%*	3/1	42	0.024	0-0.08
95%*	6/1	42	0.214	0.09-0.34
99%*	6/1	42	0.214	0.05-0.38
95%*	9/1	41	0.171	0.06-0.29
99%*	9/1	41	0.171	0.02-0.32
95%*	12/1	42	0.048	0-0.11
99%*	12/1	42	0.048	0-0.13

* normal approximation (n>20)

Constituent: Ntot (mg/L)

Facility: NBS Trends

Data File: AW503502

Date: 4/9/03

Time: 6:26 PM

View: Ntot

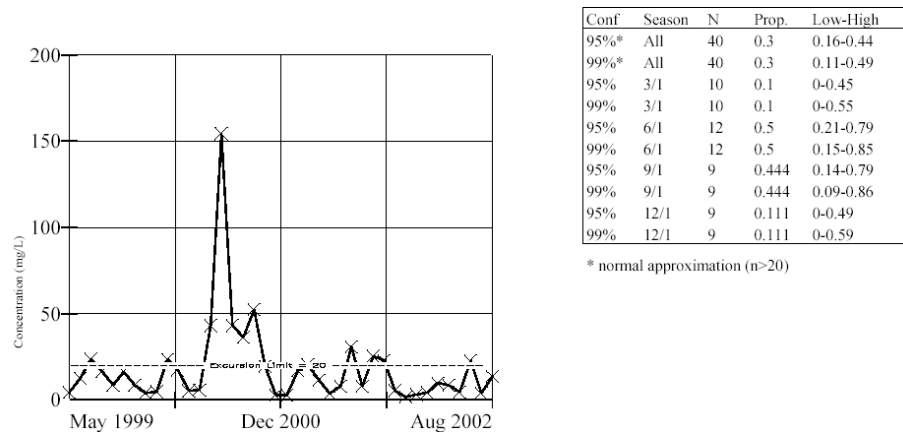
Appendix 5

Suspended Solids

v.1.56 CAS# n/a

WQStat Plus™

PROPORTION ESTIMATE
AW503502



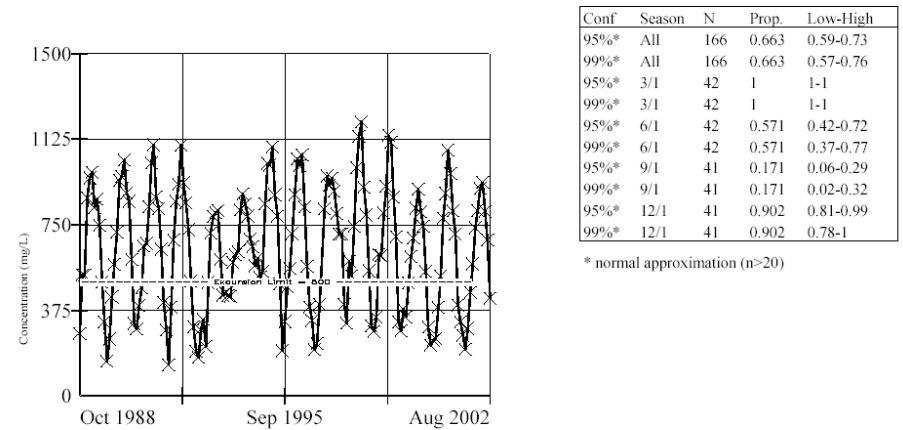
Constituent: SS (mg/L) Facility: NBS Trends Data File: AW503502
Date: 4/9/03 Time: 6:28 PM View: SS

Total Dissolved Solids

v.1.56 CAS# n/a

WQStat Plus™

PROPORTION ESTIMATE
AW503502



Constituent: TDS (mg/L) Facility: NBS Trends Data File: AW503502
Date: 4/9/03 Time: 6:31 PM View: TDS

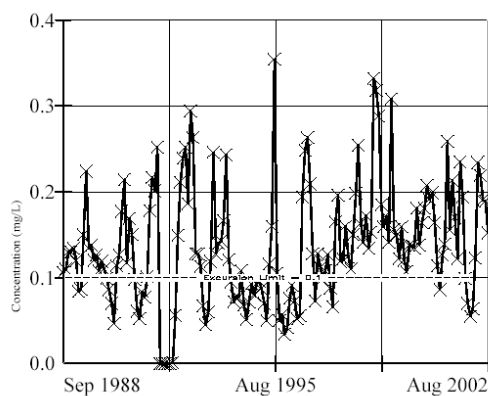
1.2 AW503504 – Onkaparinga River at Houlgraves

Total Phosphorus

v.1.56 CAS# n/a

WQStat Plus™

PROPORTION ESTIMATE AW503504



Conf	Season	N	Prop.	Low-High
95%*	All	168	0.685	0.61-0.75
99%*	All	168	0.685	0.59-0.78
95%*	3/1	42	0.452	0.3-0.6
99%*	3/1	42	0.452	0.25-0.65
95%*	6/1	42	0.857	0.75-0.96
99%*	6/1	42	0.857	0.72-1
95%*	9/1	42	0.833	0.72-0.95
99%*	9/1	42	0.833	0.69-0.98
95%*	12/1	42	0.595	0.45-0.74
99%*	12/1	42	0.595	0.4-0.79

* normal approximation (n>20)

Constituent: Ptot (mg/L)

Facility: NBS Trends

Data File: AW503504

Date: 1/21/03

Time: 8:31 PM

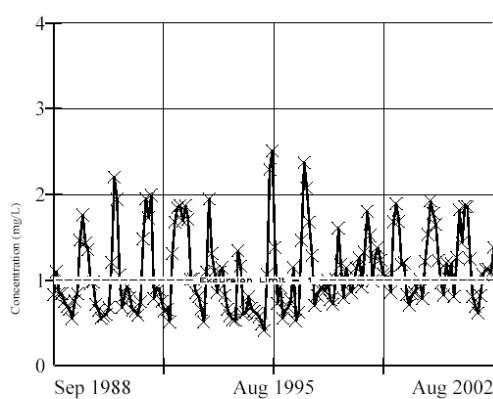
View: Ptot

Total Nitrogen

v.1.56 CAS# n/a

WQStat Plus™

PROPORTION ESTIMATE AW503504



Conf	Season	N	Prop.	Low-High
95%*	All	168	0.482	0.41-0.56
99%*	All	168	0.482	0.38-0.58
95%*	3/1	42	0.238	0.11-0.37
99%*	3/1	42	0.238	0.07-0.41
95%*	6/1	42	0.786	0.66-0.91
99%*	6/1	42	0.786	0.62-0.95
95%*	9/1	42	0.667	0.52-0.81
99%*	9/1	42	0.667	0.48-0.85
95%*	12/1	42	0.238	0.11-0.37
99%*	12/1	42	0.238	0.07-0.41

* normal approximation (n>20)

Constituent: Ntot (mg/L)

Facility: NBS Trends

Data File: AW503504

Date: 1/21/03

Time: 8:34 PM

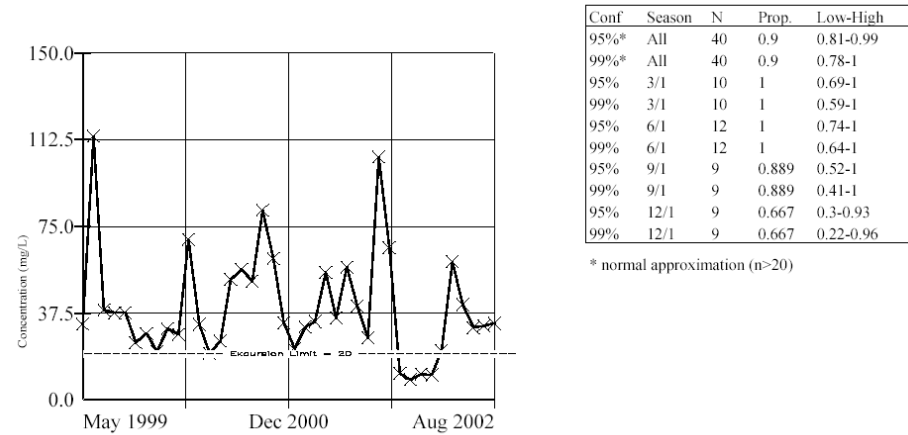
View: Ntot

Suspended Solids

v.1.56 CAS# n/a

WQStat Plus™

PROPORTION ESTIMATE
AW503504



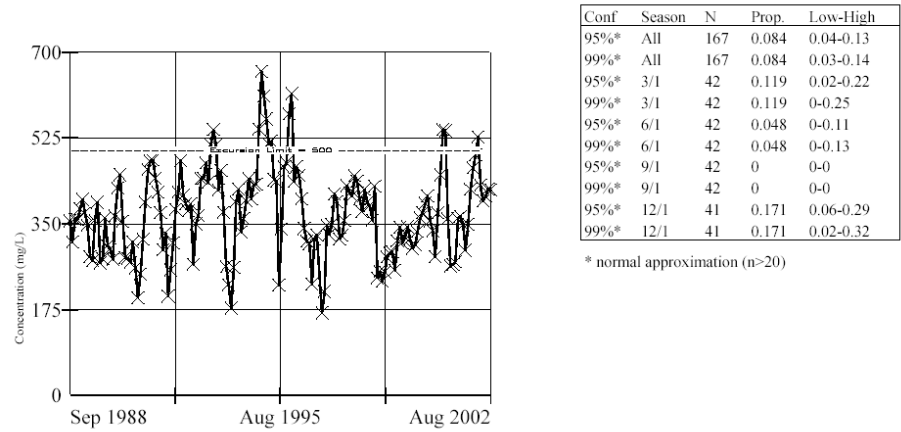
Constituent: SS (mg/L) Facility: NBS Trends Data File: AW503504
Date: 4/9/03 Time: 6:36 PM View: SS

Total Dissolved Solids

v.1.56 CAS# n/a

WQStat Plus™

PROPORTION ESTIMATE
AW503504



Constituent: TDS (mg/L) Facility: NBS Trends Data File: AW503504
Date: 4/9/03 Time: 6:39 PM View: TDS

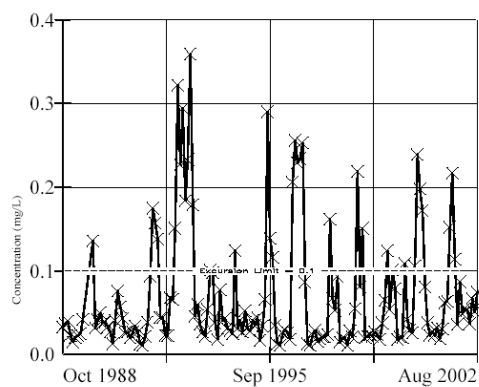
1.3 AW503506 – Echunga Creek

Total Phosphorus

v.1.56 CAS# n/a

WQStat Plus™

PROPORTION ESTIMATE AW503506



Conf	Season	N	Prop.	Low-High
95%*	All	164	0.213	0.15-0.28
99%*	All	164	0.213	0.13-0.3
95%*	3/1	42	0.024	0-0.07
99%*	3/1	42	0.024	0-0.08
95%*	6/1	40	0.275	0.14-0.41
99%*	6/1	40	0.275	0.09-0.46
95%*	9/1	40	0.475	0.32-0.63
99%*	9/1	40	0.475	0.27-0.68
95%*	12/1	42	0.095	0.01-0.18
99%*	12/1	42	0.095	0-0.21

* normal approximation (n>20)

Constituent: Ptot (mg/L)

Facility: NBS Trends

Data File: AW503506

Date: 1/21/03

Time: 8:41 PM

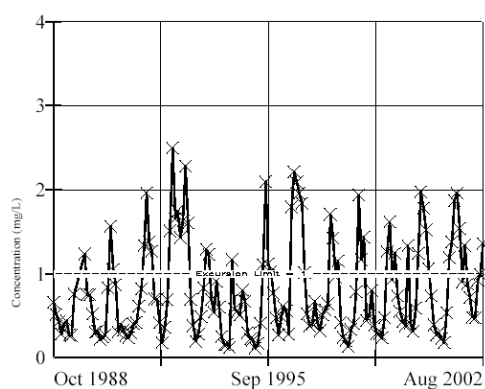
View: Ptot

Total Nitrogen

v.1.56 CAS# n/a

WQStat Plus™

PROPORTION ESTIMATE AW503506



Conf	Season	N	Prop.	Low-High
95%*	All	164	0.305	0.23-0.38
99%*	All	164	0.305	0.21-0.4
95%*	3/1	42	0.024	0-0.07
99%*	3/1	42	0.024	0-0.08
95%*	6/1	40	0.425	0.27-0.58
99%*	6/1	40	0.425	0.22-0.63
95%*	9/1	40	0.65	0.5-0.8
99%*	9/1	40	0.65	0.46-0.84
95%*	12/1	42	0.143	0.04-0.25
99%*	12/1	42	0.143	0.00-0.28

* normal approximation (n>20)

Constituent: Ntot (mg/L)

Facility: NBS Trends

Data File: AW503506

Date: 1/21/03

Time: 8:43 PM

View: Ntot

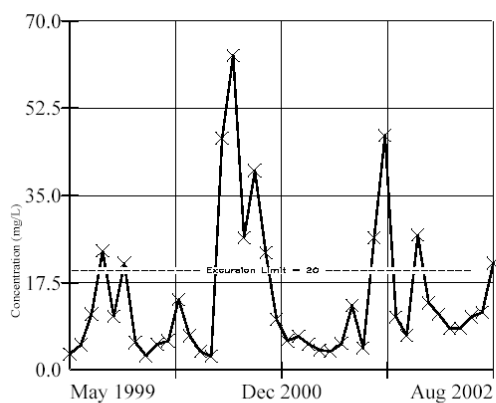
Appendix 5

Suspended Solids

v.1.56 CAS# n/a

WQStat Plus™

PROPORTION ESTIMATE AW503506



Conf	Season	N	Prop.	Low-High
95%*	All	40	0.275	0.14-0.41
99%*	All	40	0.275	0.09-0.46
95%*	3/1	10	0	0-0.31
99%*	3/1	10	0	0-0.41
95%*	6/1	12	0.333	0.1-0.66
99%*	6/1	12	0.333	0.06-0.73
95%*	9/1	9	0.667	0.3-0.93
99%*	9/1	9	0.667	0.22-0.96
95%*	12/1	9	0.111	0-0.49
99%*	12/1	9	0.111	0-0.59

* normal approximation (n>20)

Constituent: SS (mg/L)

Facility: NBS Trends

Data File: AW503506

Date: 4/9/03

Time: 6:42 PM

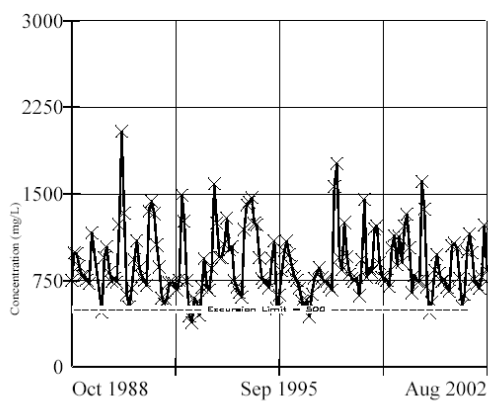
View: SS

Total Dissolved Solids

v.1.56 CAS# n/a

WQStat Plus™

PROPORTION ESTIMATE AW503506



Conf	Season	N	Prop.	Low-High
95%*	All	163	0.963	0.93-0.99
99%*	All	163	0.963	0.93-1
95%*	3/1	42	1	1-1
99%*	3/1	42	1	1-1
95%*	6/1	40	1	1-1
99%*	6/1	40	1	1-1
95%*	9/1	40	0.875	0.77-0.98
99%*	9/1	40	0.875	0.74-1
95%*	12/1	41	0.976	0.93-1
99%*	12/1	41	0.976	0.91-1

* normal approximation (n>20)

Constituent: TDS (mg/L)

Facility: NBS Trends

Data File: AW503506

Date: 4/9/03

Time: 6:44 PM

View: TDS

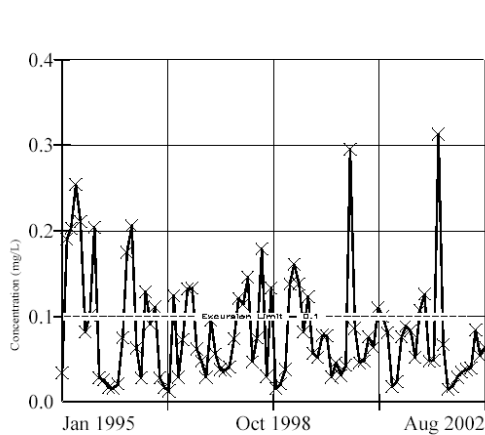
1.4 AW503507 Lenswood Creek

Total Phosphorus

v.1.56 CAS# n/a

WQStat Plus™

PROPORTION ESTIMATE AW503507



Conf	Season	N	Prop.	Low-High
95%*	All	92	0.293	0.2-0.39
99%*	All	92	0.293	0.17-0.42
95%*	3/1	24	0.542	0.34-0.74
99%*	3/1	24	0.542	0.28-0.8
95%*	6/1	24	0.292	0.11-0.47
99%*	6/1	24	0.292	0.05-0.53
95%*	9/1	21	0.19	0.02-0.36
99%*	9/1	21	0.19	0-0.41
95%*	12/1	23	0.13	0-0.27
99%*	12/1	23	0.13	0-0.31

* normal approximation (n>20)

Constituent: Ptot (mg/L)

Facility: NBS Trends

Data File: AW503507

Date: 1/21/03

Time: 8:50 PM

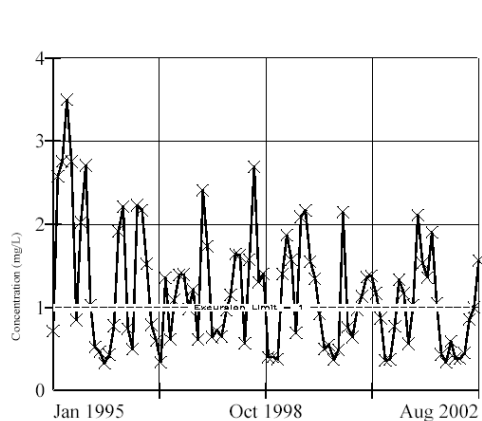
View: Ptot

Total Nitrogen

v.1.56 CAS# n/a

WQStat Plus™

PROPORTION ESTIMATE AW503507



Conf	Season	N	Prop.	Low-High
95%*	All	92	0.511	0.41-0.61
99%*	All	92	0.511	0.38-0.65
95%*	3/1	24	0.667	0.48-0.86
99%*	3/1	24	0.667	0.42-0.91
95%*	6/1	24	0.667	0.48-0.86
99%*	6/1	24	0.667	0.42-0.91
95%*	9/1	21	0.571	0.36-0.78
99%*	9/1	21	0.571	0.29-0.85
95%*	12/1	23	0.13	0-0.27
99%*	12/1	23	0.13	0-0.31

* normal approximation (n>20)

Constituent: Ntot (mg/L)

Facility: NBS Trends

Data File: AW503507

Date: 1/21/03

Time: 8:53 PM

View: Ntot

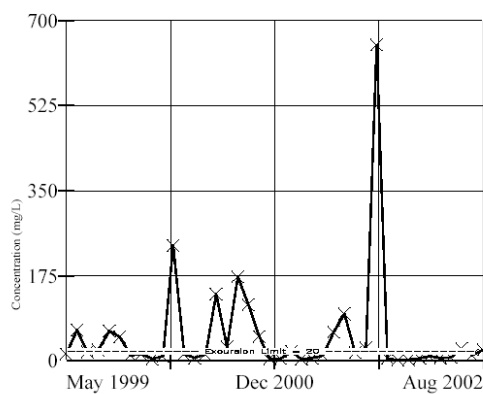
Appendix 5

Suspended Solids

v.1.56 CAS# n/a

WQStat Plus™

PROPORTION ESTIMATE AW503507



Conf	Season	N	Prop.	Low-High
95%*	All	40	0.4	0.25-0.55
99%*	All	40	0.4	0.2-0.6
95%*	3/1	10	0.1	0-0.45
99%*	3/1	10	0.1	0-0.55
95%*	6/1	12	0.667	0.35-0.91
99%*	6/1	12	0.667	0.27-0.94
95%*	9/1	9	0.778	0.4-0.98
99%*	9/1	9	0.778	0.31-0.99
95%*	12/1	9	0	0-0.34
99%*	12/1	9	0	0-0.45

* normal approximation (n>20)

Constituent: SS (mg/L)

Facility: NBS Trends

Data File: AW503507

Date: 4/9/03

Time: 6:48 PM

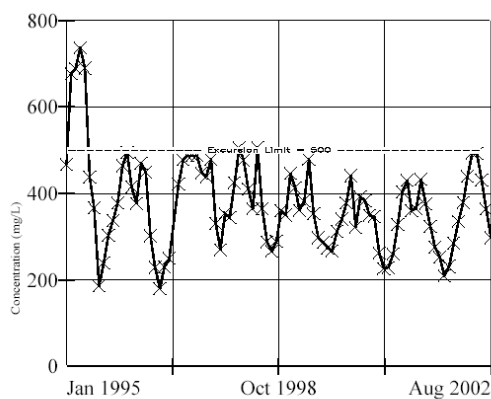
View: SS

Total Dissolved Solids

v.1.56 CAS# n/a

WQStat Plus™

PROPORTION ESTIMATE AW503507



Conf	Season	N	Prop.	Low-High
95%*	All	91	0.066	0.01-0.12
99%*	All	91	0.066	0-0.13
95%*	3/1	24	0.125	0-0.26
99%*	3/1	24	0.125	0-0.3
95%*	6/1	24	0.042	0-0.12
99%*	6/1	24	0.042	0-0.15
95%*	9/1	21	0	0-0
99%*	9/1	21	0	0-0
95%*	12/1	22	0.091	0-0.21
99%*	12/1	22	0.091	0-0.25

* normal approximation (n>20)

Constituent: TDS (mg/L)

Facility: NBS Trends

Data File: AW503507

Date: 4/9/03

Time: 6:50 PM

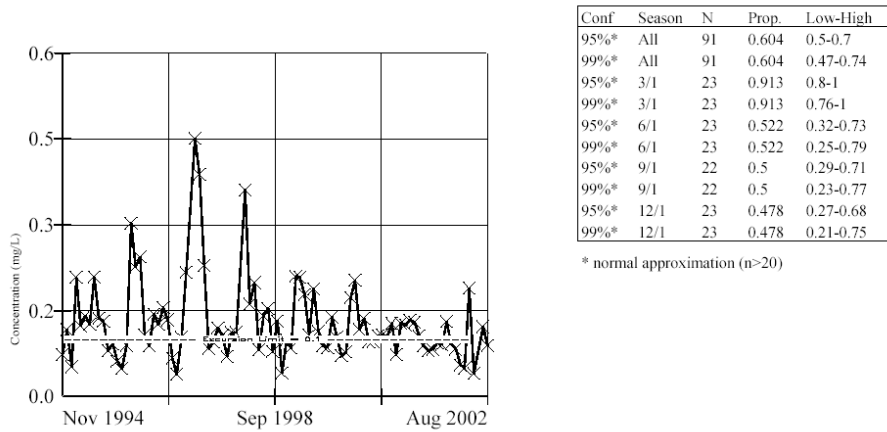
View: TDS

1.5 AW503509 Aldgate Creek

Total Phosphorus

v.1.56 CAS# n/a

WQStat Plus™

PROPORTION ESTIMATE
AW503509

Constituent: Ptot (mg/L)

Facility: NBS Trends

Data File: AW503509

Date: 1/21/03

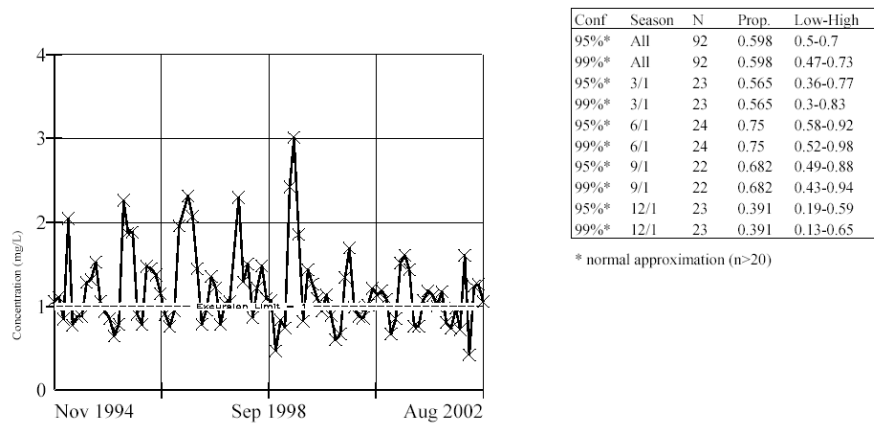
Time: 8:58 PM

View: Ptot

Total Nitrogen

v.1.56 CAS# n/a

WQStat Plus™

PROPORTION ESTIMATE
AW503509

Constituent: Ntot (mg/L)

Facility: NBS Trends

Data File: AW503509

Date: 1/21/03

Time: 8:59 PM

View: Ntot

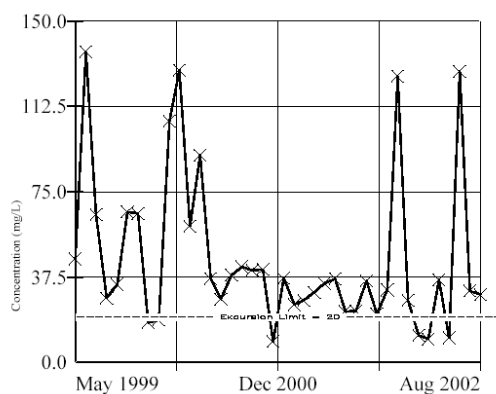
Appendix 5

Suspended Solids

v.1.56 CAS# n/a

WQStat Plus™

PROPORTION ESTIMATE AW503509



Conf	Season	N	Prop.	Low-High
95%*	All	40	0.85	0.74-0.96
99%*	All	40	0.85	0.7-1
95%*	3/1	10	0.8	0.44-0.98
99%*	3/1	10	0.8	0.35-0.99
95%*	6/1	12	1	0.74-1
99%*	6/1	12	1	0.64-1
95%*	9/1	9	1	0.66-1
99%*	9/1	9	1	0.56-1
95%*	12/1	9	0.556	0.21-0.87
99%*	12/1	9	0.556	0.15-0.92

* normal approximation (n>20)

Constituent: SS (mg/L)

Facility: NBS Trends

Data File: AW503509

Date: 4/9/03

Time: 6:53 PM

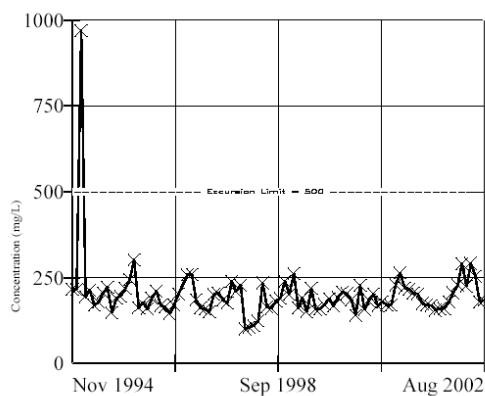
View: SS

Total Dissolved Solids

v.1.56 CAS# n/a

WQStat Plus™

PROPORTION ESTIMATE AW503509



Conf	Season	N	Prop.	Low-High
95%*	All	93	0.011	0-0.03
99%*	All	93	0.011	0-0.04
95%*	3/1	24	0	0-0
99%*	3/1	24	0	0-0
95%*	6/1	24	0	0-0
99%*	6/1	24	0	0-0
95%*	9/1	22	0	0-0
99%*	9/1	22	0	0-0
95%*	12/1	23	0.043	0-0.13
99%*	12/1	23	0.043	0-0.15

* normal approximation (n>20)

Constituent: TDS (mg/L)

Facility: NBS Trends

Data File: AW503509

Date: 4/9/03

Time: 6:55 PM

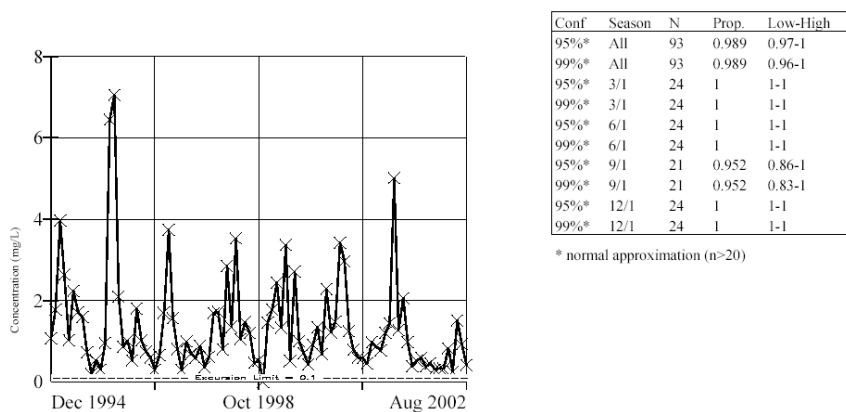
View: TDS

1.6 AW503526 Cox Creek

Total Phosphorus

v.1.56 CAS# n/a

WQStat Plus™

PROPORTION ESTIMATE
AW503526

Constituent: Ptot (mg/L)

Facility: NBS Trends

Data File: AW503526

Date: 1/22/03

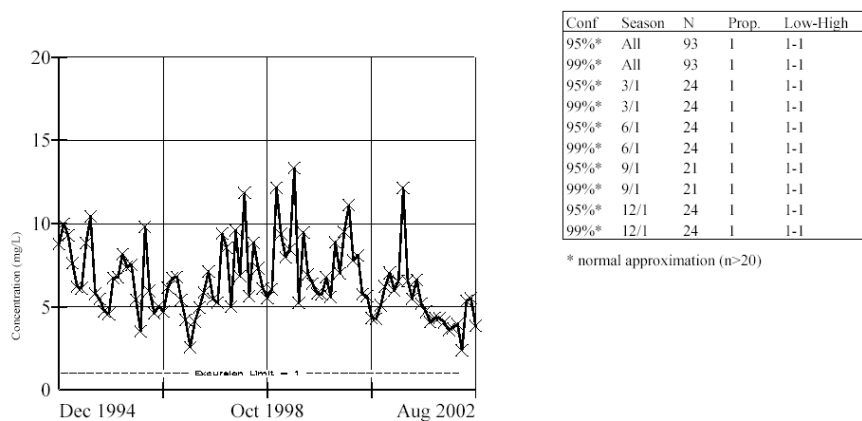
Time: 10:07 AM

View: Ptot

Total Nitrogen

v.1.56 CAS# n/a

WQStat Plus™

PROPORTION ESTIMATE
AW503526

Constituent: Ntot (mg/L)

Facility: NBS Trends

Data File: AW503526

Date: 1/22/03

Time: 10:11 AM

View: Ntot

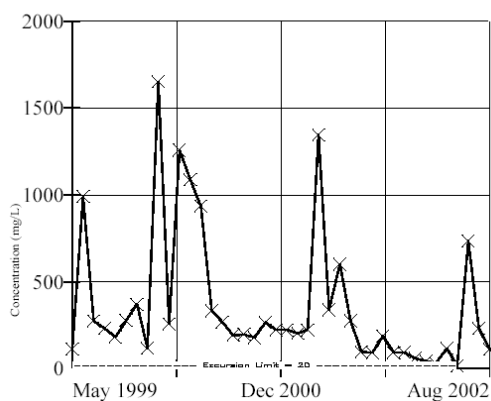
Appendix 5

Suspended Solids

v.1.56 CAS# n/a

WQStat Plus™

PROPORTION ESTIMATE AW503526



Conf	Season	N	Prop.	Low-High
95%*	All	40	0.975	0.93-1
99%*	All	40	0.975	0.91-1
95%*	3/1	10	0.9	0.55-1
99%*	3/1	10	0.9	0.46-1
95%*	6/1	12	1	0.74-1
99%*	6/1	12	1	0.64-1
95%*	9/1	9	1	0.66-1
99%*	9/1	9	1	0.56-1
95%*	12/1	9	1	0.66-1
99%*	12/1	9	1	0.56-1

* normal approximation (n>20)

Constituent: SS (mg/L)

Facility: NBS Trends

Data File: AW503526

Date: 4/9/03

Time: 6:57 PM

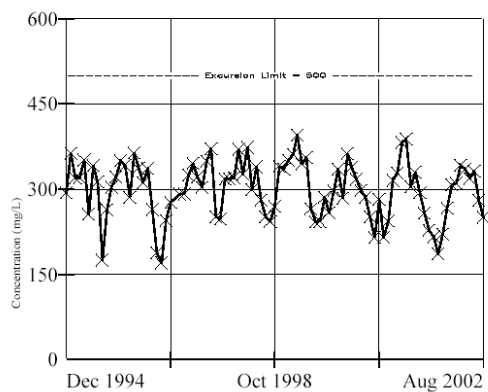
View: SS

Total Dissolved Solids

v.1.56 CAS# n/a

WQStat Plus™

PROPORTION ESTIMATE AW503526



Conf	Season	N	Prop.	Low-High
95%*	All	92	0	0-0
99%*	All	92	0	0-0
95%*	3/1	24	0	0-0
99%*	3/1	24	0	0-0
95%*	6/1	24	0	0-0
99%*	6/1	24	0	0-0
95%*	9/1	21	0	0-0
99%*	9/1	21	0	0-0
95%*	12/1	23	0	0-0
99%*	12/1	23	0	0-0

* normal approximation (n>20)

Constituent: TDS (mg/L)

Facility: NBS Trends

Data File: AW503526

Date: 4/9/03

Time: 7:00 PM

View: TDS

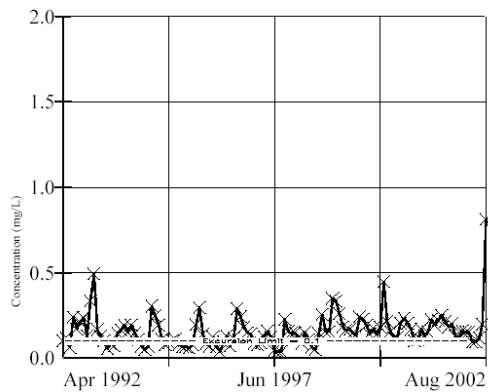
1.7 AW504508 Milbrook Intake

Total Phosphorus

v.1.56 CAS# n/a

WQStat Plus™

PROPORTION ESTIMATE AW504508



Conf	Season	N	Prop.	Low-High
95%*	All	125	0.752	0.68-0.83
99%*	All	125	0.752	0.65-0.85
95%*	3/1	32	0.625	0.46-0.79
99%*	3/1	32	0.625	0.4-0.85
95%*	6/1	33	0.758	0.61-0.9
99%*	6/1	33	0.758	0.57-0.95
95%*	9/1	30	0.867	0.75-0.99
99%*	9/1	30	0.867	0.71-1
95%*	12/1	30	0.767	0.62-0.92
99%*	12/1	30	0.767	0.57-0.97

* normal approximation (n>20)

Constituent: Ptot (mg/L)

Facility: NBS Trends

Data File: AW504508

Date: 1/22/03

Time: 10:16 AM

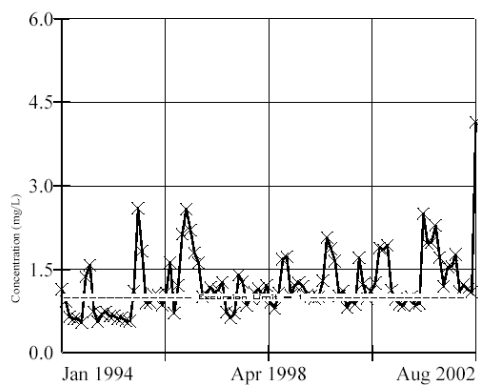
View: Ptot

Total Nitrogen

v.1.56 CAS# n/a

WQStat Plus™

PROPORTION ESTIMATE AW504508



Conf	Season	N	Prop.	Low-High
95%*	All	104	0.635	0.54-0.73
99%*	All	104	0.635	0.51-0.76
95%*	3/1	27	0.519	0.33-0.71
99%*	3/1	27	0.519	0.27-0.77
95%*	6/1	27	0.741	0.58-0.91
99%*	6/1	27	0.741	0.52-0.96
95%*	9/1	24	0.75	0.58-0.92
99%*	9/1	24	0.75	0.52-0.98
95%*	12/1	26	0.538	0.35-0.73
99%*	12/1	26	0.538	0.29-0.79

* normal approximation (n>20)

Constituent: Ntot (mg/L)

Facility: NBS Trends

Data File: AW504508

Date: 1/22/03

Time: 10:18 AM

View: Ntot

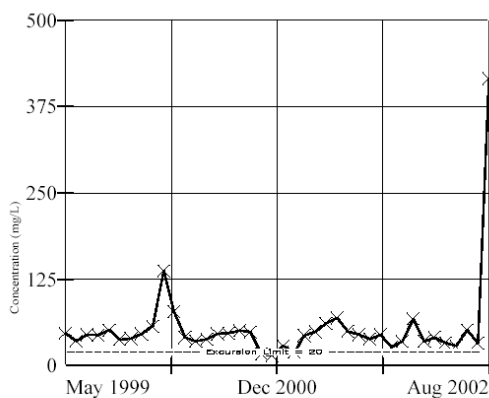
Appendix 5

Suspended Solids

v.1.56 CAS# n/a

WQStat Plus™

PROPORTION ESTIMATE AW504508



Conf	Season	N	Prop.	Low-High
95%*	All	40	0.925	0.84-1
99%*	All	40	0.925	0.82-1
95%*	3/1	10	1	0.69-1
99%*	3/1	10	1	0.59-1
95%*	6/1	12	1	0.74-1
99%*	6/1	12	1	0.64-1
95%*	9/1	9	0.889	0.52-1
99%*	9/1	9	0.889	0.41-1
95%*	12/1	9	0.778	0.4-0.98
99%*	12/1	9	0.778	0.31-0.99

* normal approximation (n>20)

Constituent: SS (mg/L)

Facility: NBS Trends

Data File: AW504508

Date: 4/9/03

Time: 7:03 PM

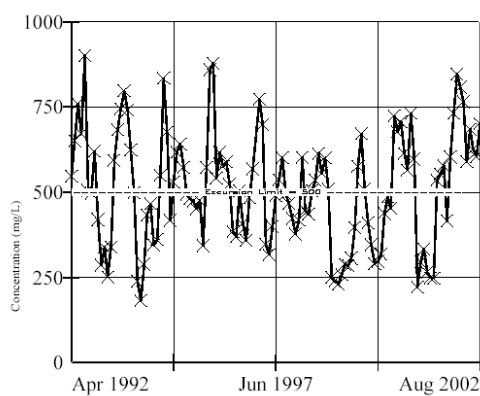
View: SS

Total Dissolved Solids

v.1.56 CAS# n/a

WQStat Plus™

PROPORTION ESTIMATE AW504508



Conf	Season	N	Prop.	Low-High
95%*	All	124	0.516	0.43-0.6
99%*	All	124	0.516	0.4-0.63
95%*	3/1	32	0.281	0.13-0.44
99%*	3/1	32	0.281	0.08-0.49
95%*	6/1	33	0.727	0.58-0.88
99%*	6/1	33	0.727	0.53-0.93
95%*	9/1	30	0.6	0.42-0.78
99%*	9/1	30	0.6	0.37-0.83
95%*	12/1	29	0.448	0.27-0.63
99%*	12/1	29	0.448	0.21-0.69

* normal approximation (n>20)

Constituent: TDS (mg/L)

Facility: NBS Trends

Data File: AW504508

Date: 4/9/03

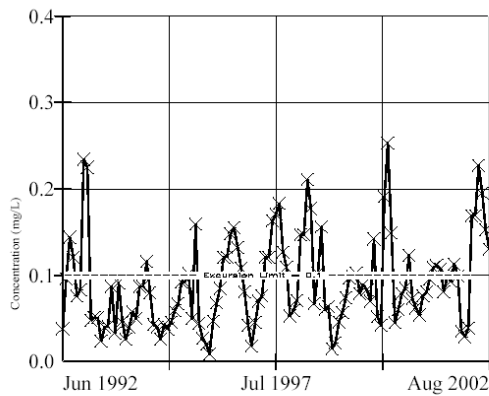
Time: 7:05 PM

View: TDS

1.8 AW504525 Kersbrook Creek**Total Phosphorus**

v.1.56 CAS# n/a

WQStat Plus™

**PROPORTION ESTIMATE
AW504525**

Conf	Season	N	Prop.	Low-High
95%*	All	123	0.341	0.26-0.43
99%*	All	123	0.341	0.23-0.45
95%*	3/1	30	0.467	0.29-0.65
99%*	3/1	30	0.467	0.23-0.7
95%*	6/1	33	0.515	0.34-0.69
99%*	6/1	33	0.515	0.29-0.74
95%*	9/1	30	0.233	0.08-0.38
99%*	9/1	30	0.233	0.03-0.43
95%*	12/1	30	0.133	0.01-0.25
99%*	12/1	30	0.133	0-0.29

* normal approximation (n>20)

Constituent: Ptot (mg/L)

Facility: NBS Trends

Data File: AW504525

Date: 1/22/03

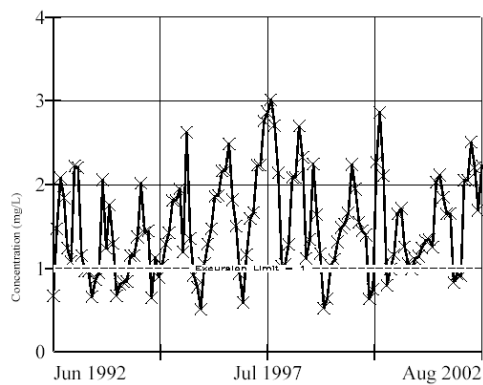
Time: 10:39 AM

View: Ptot

Total Nitrogen

v.1.56 CAS# n/a

WQStat Plus™

**PROPORTION ESTIMATE
AW504525**

Conf	Season	N	Prop.	Low-High
95%*	All	123	0.78	0.71-0.85
99%*	All	123	0.78	0.68-0.88
95%*	3/1	30	0.833	0.7-0.97
99%*	3/1	30	0.833	0.66-1
95%*	6/1	33	0.879	0.77-0.99
99%*	6/1	33	0.879	0.73-1
95%*	9/1	30	0.833	0.7-0.97
99%*	9/1	30	0.833	0.66-1
95%*	12/1	30	0.567	0.39-0.74
99%*	12/1	30	0.567	0.33-0.8

* normal approximation (n>20)

Constituent: Ntot (mg/L)

Facility: NBS Trends

Data File: AW504525

Date: 1/22/03

Time: 10:47 AM

View: Ntot

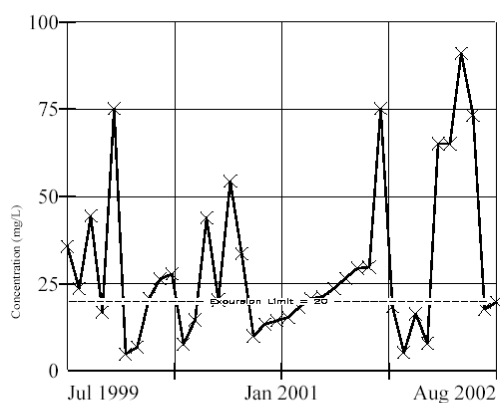
Appendix 5

Suspended Solids

v.1.56 CAS# n/a

WQStat Plus™

PROPORTION ESTIMATE AW504525



Conf	Season	N	Prop.	Low-High
95%*	All	38	0.579	0.42-0.74
99%*	All	38	0.579	0.37-0.79
95%*	3/1	9	0.778	0.4-0.98
99%*	3/1	9	0.778	0.31-0.99
95%*	6/1	11	0.727	0.39-0.94
99%*	6/1	11	0.727	0.31-0.97
95%*	9/1	9	0.667	0.3-0.93
99%*	9/1	9	0.667	0.22-0.96
95%*	12/1	9	0.111	0-0.49
99%*	12/1	9	0.111	0-0.59

* normal approximation (n>20)

Constituent: SS (mg/L)

Facility: NBS Trends

Data File: AW504525

Date: 4/9/03

Time: 7:07 PM

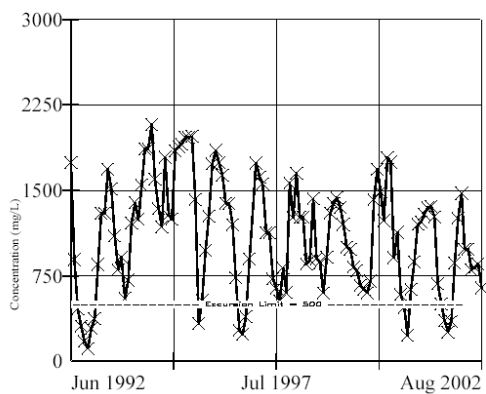
View: SS

Total Dissolved Solids

v.1.56 CAS# n/a

WQStat Plus™

PROPORTION ESTIMATE AW504525



Conf	Season	N	Prop.	Low-High
95%*	All	122	0.877	0.82-0.94
99%*	All	122	0.877	0.8-0.95
95%*	3/1	30	1	1-1
99%*	3/1	30	1	1-1
95%*	6/1	33	0.909	0.81-1
99%*	6/1	33	0.909	0.78-1
95%*	9/1	30	0.667	0.5-0.84
99%*	9/1	30	0.667	0.45-0.89
95%*	12/1	29	0.931	0.84-1
99%*	12/1	29	0.931	0.81-1

* normal approximation (n>20)

Constituent: TDS (mg/L)

Facility: NBS Trends

Data File: AW504525

Date: 4/9/03

Time: 7:09 PM

View: TDS

Appendix 6

Glossary of Terms

Term	Description
AWQC	Australian Water Quality Centre
BOM	Bureau of Meteorology
Control	Flow control structure such as a weir
DMCA	Double mass curve analysis. Accumulates total type data (eg rain, flow volume) for a control station and plots this data against accumulated data for a test station.
DWLBC	Department of Water, Land and Biodiversity Conservation
EC	Electrical Conductivity
EPA	Environmental Protection Agency
Gauging	Flow measurement
Homogeneity	In terms of this report: Each concentration value is an independent value and is part of the same population
HYDSYS TS	Hydrological software package – Time Series component - Trademark and copyright HYDSYS Pty Ltd
HYDSYS WQ	Hydrological software package – Water Quality component - Trademark and copyright HYDSYS Pty Ltd
NATA	National Accreditation Testing Authority
NBS	Nutrient Budget Study
Nox	Oxidised Nitrogen
Rating	Water level versus flow relationship
SS	Suspended Solids
TDS	Total Dissolved Solids
TKN	Organic Nitrogen
TP	Total Phosphorus
Water Quality or WQ	In terms of this report it refers to the determinands TDS, EC, TP, TKN, Nox, and the derived value TN
WDS	Water Data Services
WQSTAT Plus	Water quality statistical analysis package. Copyright Intelligent Decision Technologies LTD

Appendix 7

References

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