

**PESTICIDES IN ONTARIO
DRINKING WATER - 1987
GROUNDWATER SAMPLING PROGRAM**

JUNE 1990



Ontario

Environment
Environnement

Jim Bradley, Minister/ ministre

Copyright Provisions and Restrictions on Copying:

This Ontario Ministry of the Environment work is protected by Crown copyright (unless otherwise indicated), which is held by the Queen's Printer for Ontario. It may be reproduced for non-commercial purposes if credit is given and Crown copyright is acknowledged.

It may not be reproduced, in all or in part, part, for any commercial purpose except under a licence from the Queen's Printer for Ontario.

For information on reproducing Government of Ontario works, please contact Service Ontario Publications at copyright@ontario.ca

ISBN 0-7729-5948-X
PIBS 1017

**PESTICIDES IN ONTARIO DRINKING WATER - 1987
GROUNDWATER SAMPLING PROGRAM**

Report prepared by:
Water Resources Branch
Ontario Ministry of the Environment

JUNE 1990

Copyright: Queen's Printer for Ontario, 1990

This publication may be reproduced for non-commercial purposes with appropriate attribution.

EXECUTIVE SUMMARY

The 1987 pesticide monitoring program was a continuation of pesticide monitoring of domestic and municipal wells located in hydrogeological environments which are sensitive to groundwater contamination; namely shallow groundwater conditions in sandy permeable soils. Monitoring was conducted in predominantly corn growing areas since corn herbicides are the group of pesticides which are used in the greatest amount in Ontario. As well, an area of intense market gardening, the Thedford Marsh was also included in the 1987 survey.

A total of 41 domestic wells and 1 municipal well were sampled weekly for pesticides and bacteria and weekly or monthly for major ion chemistry in Southeastern, Central and Southwestern Regions of the province.

Pesticides of interest included the triazine group and the acetanilide group. In Southwestern Region organophosphate and chlorophenoxy group pesticides were analyzed in samples from Thedford Marsh area, and samples from the Bowmanville area of Central Region were also analysed for chlorophenoxy pesticides.

The results indicated that detectable levels of pesticides were found in 6 of 23 wells from Southwestern Region, none of 11 wells from Central Region and 8 of 8 wells from Southeastern Region.

Eighty-eight per cent of the 108 pesticide occurrences reported were for atrazine and/or d-ethyl atrazine, 7% for cyanazine, 4% for metolachlor and 1% for simazine.

Concentrations for atrazine were all below 1.5 ppb. which is considerably below the Interim Maximum Acceptable Concentration (IMAC) of 60 ppb set by the Federal-Provincial Subcommittee on Drinking Water and reported in the Guidelines for Canadian Drinking Water Quality. Concentrations of cyanazine, metolachlor and simazine were all below 1.0 ppb, and their respective IMAC's of 10, 50 and 10 ppb.

Persistent but low level pesticide occurrence in wells in the Frankford area of Southeastern Region, including the Frankford municipal well indicate the sensitivity of this aquifer to land use. Sixty-six percent of all the wells sampled also exceeded provincial drinking water quality objectives for nitrate-nitrogen and/or fecal coliform.

The results of this program indicate that shallow domestic wells and shallow groundwater are susceptible to contamination and underscore the importance of proper well installation and maintainance, and the protection of groundwater supplies.

TABLE OF CONTENTS

	Page
EXECUTIVE SUMMARY	i
1.0 INTRODUCTION	1
2.0 SAMPLING PROGRAM	2
2.1 Introduction	2
2.2 Site Selection	2
2.3 Site Descriptions	4
2.3.1 Southwestern Region	4
2.3.2 Central Region	7
2.3.3 Southeastern Region	10
2.4 Rainfall Data	14
2.5 Sampling Protocol	14
2.6 Sampling Parameters and Frequency of Sampling	15
3.0 ANALYTICAL METHODS	17
4.0 RESULTS	18
4.1 Introduction	18
4.2 Analysis of Duplicate Samples	18
4.3 Southwestern Region	19
4.4 Central Region	23
4.5 Southeastern Region	27
5.0 DISCUSSION	30
5.1 Southwestern Region	30
5.1.1 Thedford Marsh Area	30
5.1.2 Bothwell Sand Plain	30
5.2 Central Region	31
5.3 Southeastern Region	32
6.0 CONCLUSIONS	33
7.0 RECOMMENDATIONS	34
BIBLIOGRAPHY	35
APPENDIX	36

LIST OF FIGURES

		Page
FIGURE 1	Groundwater Sampling Locations: Southwestern Region	5
FIGURE 2	Groundwater Sampling Locations: Central Region	8
FIGURE 3	Groundwater Sampling Locations: Southeastern Region	11
FIGURE 4	Durov Plot for Major Ion Chemistry: Southwestern Region	21
FIGURE 5	Durov Plot for Major Ion Chemistry: Central Region	26
FIGURE 6	Durov Plot for Major Ion Chemistry: Southeastern Region	29

LIST OF TABLES

TABLE		Page
TABLE I	Breakdown of Sample Site by Region	3
TABLE II	Summary of Well Data for Southwestern Ontario	6
TABLE III	Summary of Well Data for Central Ontario	9
TABLE IV	Summary of Well Data for Southeastern Ontario	13
TABLE V	Availability of Rainfall Data for Selected Sites	14
TABLE VI	Chemical and Microbiological Sampling Parameters	16
TABLE VII	Number of Wells Reporting Occurrence of Pesticide by Region	19
TABLE VIII	Summary of Pesticide Occurrence in Domestic Wells - Southwestern Region	22
TABLE IX	Summary of Pesticide Occurrence in Domestic Wells - Central Region	25
TABLE X	Summary of Pesticide Occurrence in Domestic and Municipal Wells - Southeastern Region	28

LIST OF APPENDICES

		Page No.
APPENDIX 1	GROUNDWATER PROTOCOL AND WELL WATER SURVEY DATA SHEET	37
APPENDIX 2	PRECIPITATION DATA	43
APPENDIX 3	DESCRIPTION OF ANALYTICAL TECHNIQUES FOR PESTICIDE ANALYSIS BY OMAF LAB	46
APPENDIX 4	ANALYTICAL DETECTION LIMITS FOR PESTICIDES	50
APPENDIX 5	GEOCHEMICAL RESULTS FOR GROUNDWATER SAMPLES	53

1.0 INTRODUCTION

The 1987 Pesticide Monitoring Program is a continuation of groundwater monitoring of domestic and municipal groundwater supplies which evolved from the alachlor study in 1985. The 1987 program focussed on the triazine group of pesticides as well as metolachlor because of their widespread use as corn and soybean herbicides and because the results of the 1986 monitoring program indicated that atrazine was the most commonly found corn herbicide in groundwater supplies. In 1984, atrazine and alachlor were the herbicides used in the greatest quantities in Ontario (OMAF 1984), but alachlor was banned from the marketplace in 1986 by Agriculture Canada.

Depending on the cultivation history of the area, additional pesticides including chlorophenoxy, organophosphate and phenyl urea group pesticides were analysed at selected sites.

The purpose of the pesticide monitoring program is to examine the extent to which shallow groundwater drinking supplies are impacted by the use of agricultural chemicals. The program identifies those pesticides which occur in groundwater and prompts the setting of water quality guidelines for those pesticides which do not have a provincial drinking water objective.

The 1987 program was coordinated by Water Resources Branch staff and implemented by Regional Pesticide staff.

Analyses were conducted by the MOE laboratories in London, Rexdale and Kingston, and the Ontario Ministry of Agriculture and Food Pesticide Laboratory in Guelph.

2.0 SAMPLING PROGRAM

2.1 Introduction

The results of previous monitoring programs in 1985 and 1986 indicated that poor well construction, and lack of well maintenance along with improper handling of farm chemicals was a major contributor to the contamination of wells from pesticides. The program also implicated the leaching of pesticides to groundwater.

Stricter sample site selection criteria and sampling protocols developed for the 1986 monitoring program led to a decline in both the total number of pesticides and the maximum pesticide concentrations over the 1985 survey, and these same criteria were used in the 1987 program.

2.2 Site Selection

Site selection criteria used to assist staff in the choice of monitor sites are given in Appendix 1.

In some instances, strict adherence to the criteria was not possible due to the lack of a suitable number of wells in an area.

Forty domestic and one municipal groundwater supply wells were selected by Regional and District Pesticides officers in consultation with Regional Hydrogeologists, in areas of intense corn, soybean and vegetable production in southern Ontario.

Sites were chosen where hydrogeological conditions indicated a relatively high potential for groundwater contamination from the leaching of agricultural chemicals. These areas are characterized by sandy soils, thin soils overlying fractured bedrock and shallow groundwater conditions.

Wells were chosen such that they were located usually within 60 m of cultivated fields and downgradient from groundwater flow directions. In Central Region, however, some wells were located as much as 250 m from cultivated fields. An attempt was made to choose wells which were in a good state of repair, and where surface drainage was away from the well, in order to decrease the chance of

contamination by surface runoff. Wherever possible, wells were selected for which a drill contractor's log was available.

Wells sited near potential sources of contamination such as barnyards, or buildings where agricultural chemicals were stored or mixed were avoided.

Taps used for sampling were selected as close to the wellhead as possible and bypassed any water treatment or filtering devices. The same tap was used throughout the sampling program. A water well survey data sheet was completed at each site detailing sample location, well construction data, soil type and chemicals used in adjacent fields. A breakdown of sample sites by region is given in Table 1.

TABLE I. Breakdown Of Sample Sites By Region.

	Southwestern	Central	Southeastern	Total
DOMESTIC	24	10	7	41
MUNICIPAL	0	0	1	1
TOTAL	24	10	8	42

2.3 Site Descriptions

2.3.1 Southwestern Region

Sample sites in southwestern region are located on Figure 1 and summarized in Table II. Sample sites 87SW001-10 are located within the Thedford Marsh area of Bosanquet Township in Lambton County. Sites 87SW001, 1A, 2, 3, 7 and 9 lie within a clay plain while sites 87SW004, 5, 6, 6C, 6D, 8 and 10 lie within the peat and muck deposits of the Marsh proper where intensive market gardening is carried out. This area falls within the Huron Slope physiographic region as described by Chapman and Putnam (1984). Water bearing sand is found at relatively shallow depths, between 2-4 m. Many of the wells are sandpoints and so few water well records are available for this area. Those that are available indicate a thick sequence of blue clay below about 2-4 m of sand which is overlain in places by up to 1 m of clay. Well records indicate mostly unconfined conditions in the aquifer.

Sample sites 87SW011-20 are located within the Bothwell Sand Plain. These sands, up to 6 m thick, which were deposited as a deltaic sequence of the early Thames River in glacial Lake Warren, form a shallow unconfined aquifer in the area.

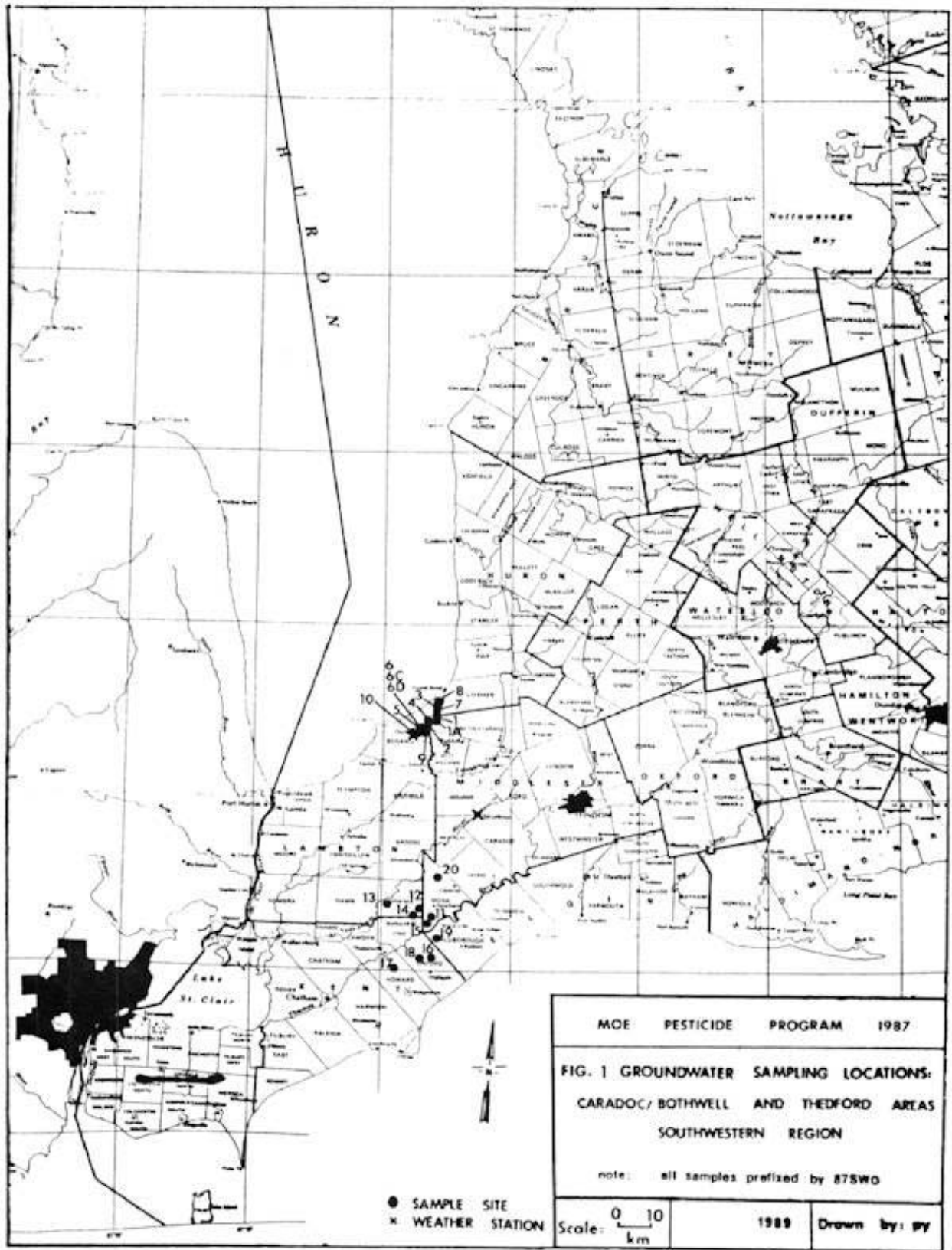


TABLE II. Summary Of Well Data For Southwestern Region.

SITE NO.	WELL RECORD	COUNTY	TOWNSHIP	LOT/CONC.	USE	DATE CONT.	WELL TYPE	DEPTH (m)	DIA (cm)	STATIC LEVEL (m)
87SW01	-	Lambton	Bosanquet	10/A	D	1962	Sandpoint	3.7	-	-
87SW01A	-	Lambton	Bosanquet	11/A	D	1971	Bored	-	91	-
87SW02	34-7390	Lambton	Bosanquet	23/A	D	8/86	Bored	15.2	91	3.7
87SW03	-	Lambton	Bosanquet	5/B	D	-	Bored	5.3	91	-
87SW04	34-4956	Lambton	Bosanquet	17/6	D	6/76	Bored	5.5	91	1.5
87SW05	-	Lambton	Bosanquet	23/B	O	1980	Drilled	5.5	-	-
87SW06	-	Lambton	Bosanquet	20/C	D	1984	Sandpoint	5.5	-	-
87SW06C	-	Lambton	Bosanquet	21/C	D	3/87	Sandpoint	3.7	-	-
87SW06D	-	Lambton	Bosanquet	21/C	D	3/87	Sandpoint	5.5	-	-
87SW07	-	Lambton	Bosanquet	7/B	D	1963	Sandpoint	-	-	-
87SW08	-	Lambton	Bosanquet	11/LRE	D	1956	Sandpoint	-	-	-
87SW09	34-4774	Lambton	Bosanquet	26/A	D	10/75	Drilled	12.2	91	2.1
87SW10	-	Lambton	Bosanquet	24/C	D	1974	Sandpoint	5.5	-	-
87SW11	41-9081	Middlesex	Mosa	17/2	D, S	8/79	Bored	15.2	91	2.0
87SW12	34-7157	Lambton	Euphemia	18/10	D, I	10/83	Bored	13.1	91	2.1
87SW13	34-6675	Lambton	Euphemia	24/3	D	10/79	Bored	7.6	76	2.0
87SW14	34-7075	Lambton	Euphemia	16/6	D,S	9/82	Bored	10.6	91	2.1
87SW15	41-759-9	Middlesex	Mosa	27/LRNR2	D, 1	6/76	Bored	18.3	76	3.0
87SW16	33-7245	Kent	Orford	13/10	D	9/79	Bored	9.8	91	1.0
87SW17	33-6789	Kent	Howard	13/3	S	5/78	Bored	6.4	76	1.5
87SW18	33-5294	Kent	Orford	1/12	D	6/71	Bored	12	76	4.3
87SW19	-	Elgin	Aldborough	3/3	D, S	1973	Bored	4	91	-
87SW20	-	Middlesex	Musa	10/5	D	<1940	Drilled	4	91	2

D - Domestic

S - Livestock

I - Irrigation

2.3.2 Central Region

Sample sites in central region are located on Figure 2 and summarized in Table III.

Samples 87CP001 to 87CP008, 87CP010 and 87CP011 are located along the margin where deposits of glacial Lake Iroquois onlap glacial tills of the drumlinized south slope (Chapman and Putnam 1984). Sample sites lie along Taunton Road between the villages of Mitchell Corners and the Town of Orono, a distance of about 16 kilometres.

Sample sites 87CP002, 4 and 6 contain mostly sand according to their well logs, and most likely lie within the beach deposits of the Lake Iroquois Plain. Ground elevations range from 156 to 174 m a.s.l. while depth to water found varies from 1.5 to 15 m. Wells were pump tested at the time of drilling at between 15 and 75 litres per minute (L/m).

Sample sites 87CP001, 3, 5, 7, 8, 10 and 11 contain variable amounts of clay, silt and sand as described in the well drillers' logs, and these wells most likely lie within tills of the South Slope, which Chapman and Putnam (1984) have described as sandy and calcareous. Ground elevations range from 166 to 181 m a.s.l. and depth to water found varies from 0.8 to 18.5 m. These wells were pump tested at between 10 and 50 L/m.

Sample 87CP009 is located within the drumlinized South Slope in Northumberland County, Brighton Township. It was monitored in 1987 because low levels of pesticide were detected in this well in 1986 (MOE 1987).

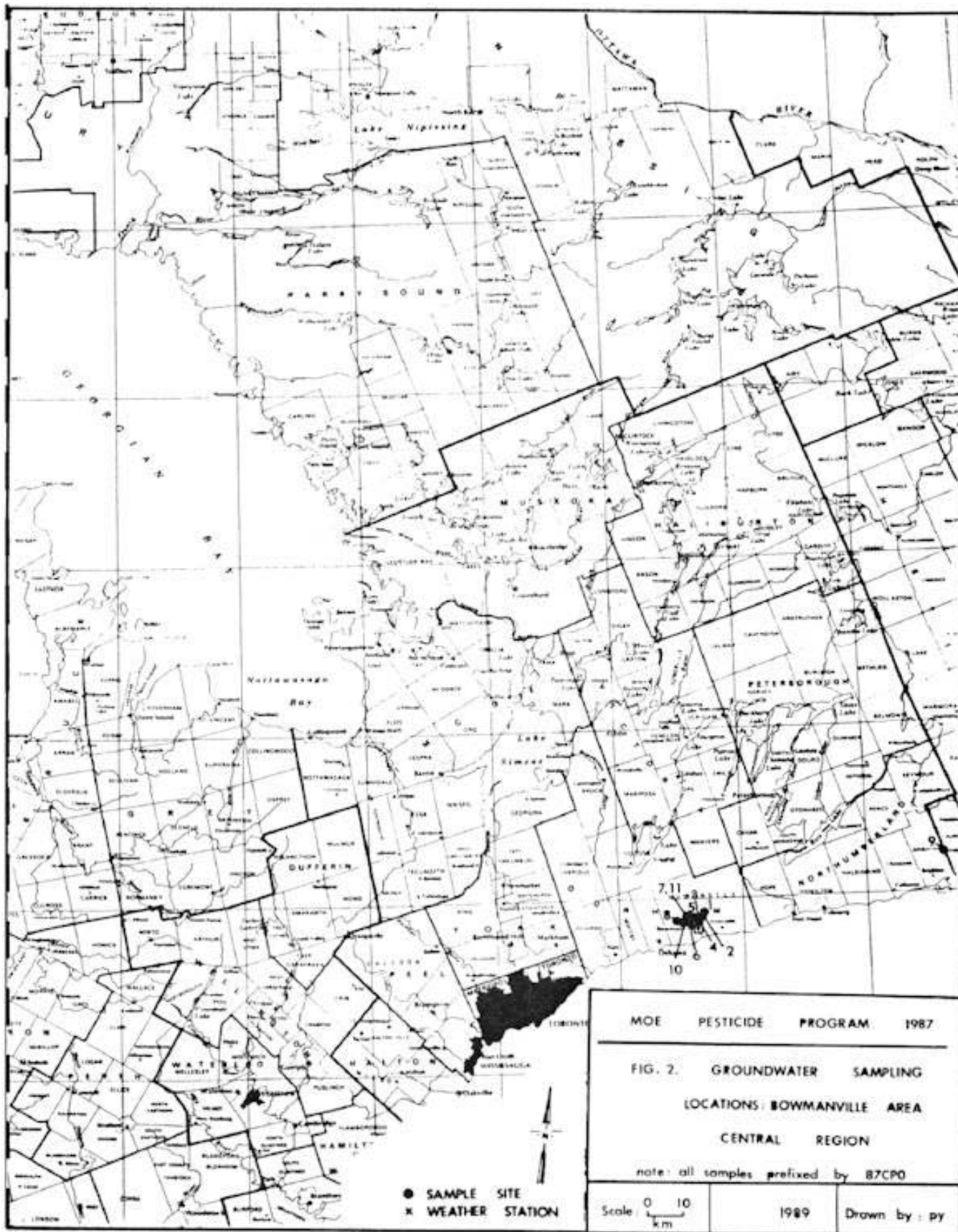


TABLE III. Summary Of Well Data For Central Region.

SITE NO.	WELL RECORD	COUNTY	TOWNSHIP	LOT/CON	USE	DATE CONT.	WELL TYPE	DEPTH (m)	DIA (cm)	STATIC LEVEL (m)
87CP001	19-2830	Durham	Darlington	7/4	D	02/70	BORED	16.8	91	8.5
87CP002	19-1492	Durham	Darlington	11/4	D	05/66	BORED	3.4	91	-
87CP003	19-3649	Durham	Darlington	13/4	D	06/73	BORED	9.8	76	7.6
87CP004	19-4358	Durham	Darlington	13/4	D	05/76	DRILLED	14.6	15	6.1
87CP005	19-1500	Durham	Darlington	15/4	D	04/64	DRILLED	19.2	15	-
87CP006	19-3719	Durham	Darlington	17/4	D	11/73	BORED	5.5	76	2.1
87CP007	19-3749	Durham	Darlington	25/4	D	06/73	DRILLED	18.0	15	9.1
87CP008	19-4011	Durham	Darlington	26/4	D	04/74	BORED	6.4	66	2.4
87CP009	45-2605	Northumberland	Brighton	23/03	D	01/69	DRILLED	59.8	15.2	45.7
87CP010	-	Durham	Darlington	22,23/4	D	-	DUG	4.0	91	2.7
87CP011	19-3599	Durham	Darlington	25/4	D	04/73	BORED	14.0	91	11.2

D - Domestic

2.3.3 Southeastern Region

Sample sites in southeastern region are numbered 87SE001, and 87SE003-9. Site summaries are given on Table IV and locations are shown on Figure 3.

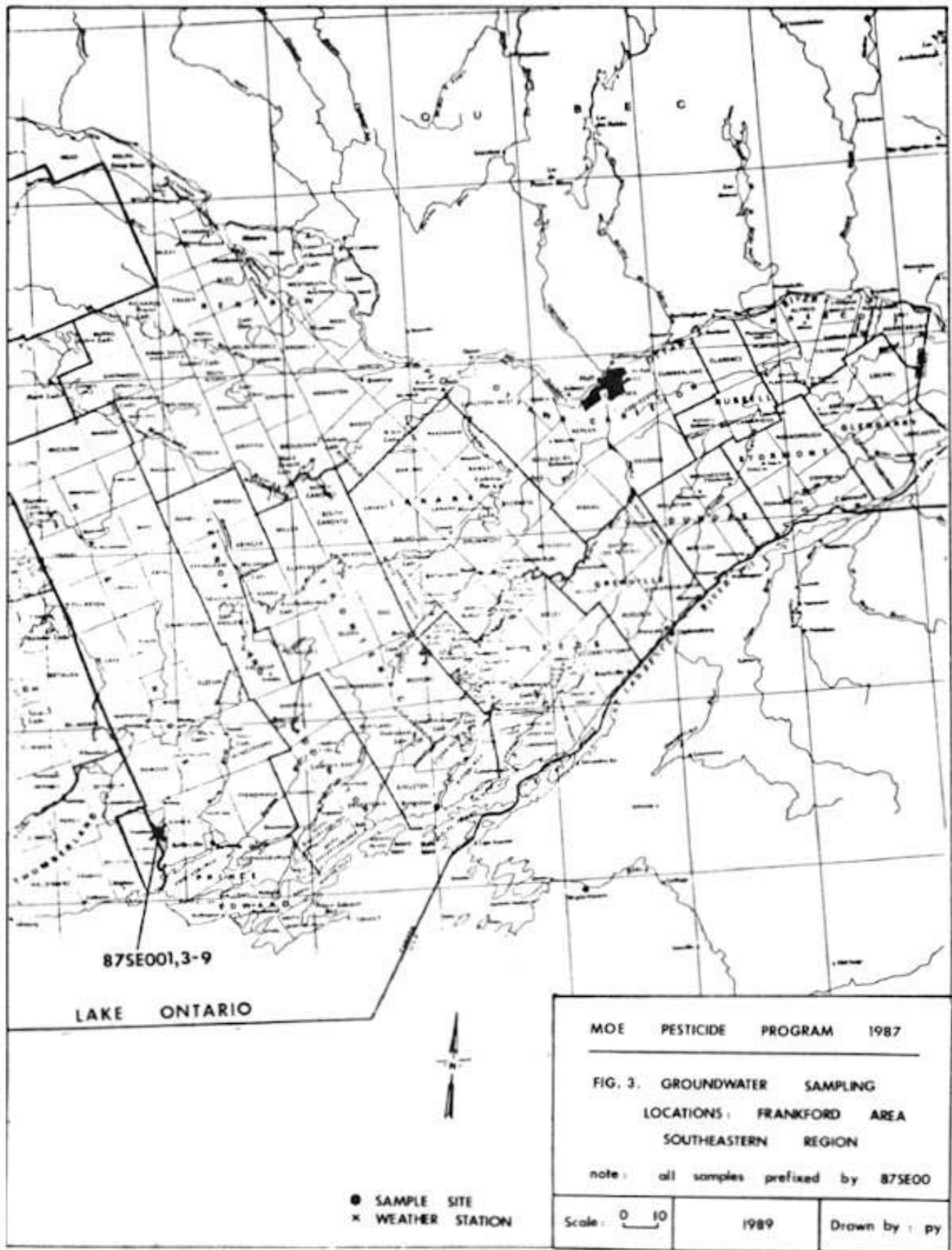
The aquifer is an east-west trending esker deposit and comprises sand and gravel overlying a depression in fractured Ordovician limestone of the Verulam Formation.

Regionally, this esker overlies sand plain deposits and reworked drumlinized till plain. These complex surficial deposits form part of the Trent Embayment and were deposited in a large bay during glacial Lake Iroquois time (Chapman and Putnam 1984).

Water level measurements taken during 1974-1976 in an observation well in the aquifer indicate yearly fluctuations of as much as 2.1 m (MOE 1977). Recharge to the aquifer was observed to begin sometime in the middle of February with water levels rising until about the middle of May and declining thereafter, until the following February (MOE 1977). During test drilling in the esker complex east of Frankford, it was reported that water levels in the aquifer responded rapidly to precipitation (Geo-Environ 1979).

All pesticide sample sites are located immediately to the west of the Town of Frankford. Site 87SE008 is the Frankford Municipal Well No. 2.

This area was chosen for sampling after persistent but low levels of pesticide were found in the municipal well No. 2 in 1986. This well was also shut down for a period of time in 1986 because of nitrate levels which approached or exceeded the MOE objective of 10 mg/L NO₃-N. Domestic wells within the same esker complex have also had nitrate problems in the past. Some of the domestic wells along the



Stockdale Road just west of Frankford have been deepened by drilling in an attempt to obtain water with lower nitrate levels.

Most of the water well records in this area are filed under building contractor's name and so a match of the record to the present owner could not be made in most cases.

TABLE IV. Summary Of Well Data For Southeastern Region.

SITE NO.	WELL RECORD	COUNTY	TOWNSHIP	LOT/CONC.	USE	DATE CONT.	WELL TYPE	DEPTH (m)	DIA. (cm)	STATIC LEVEL (m)
87SE001	-	Hastings	Sidney	A/5	D	-	DRILLED	11.59	15.2	-
87SE003	-	Hastings	Sidney	A/5	D	-	DRILLED	-	15.2	-
875E004	29-8293	Hastings	Sidney	A/5	D	-	DRILLED	9.76	15.2	8.93
						08/77	(EXTENDED)	24.39	15.2	-
87SE005	29-8293	Hastings	Sidney	A/6	D	06/86	DUG	4.6	122	3.1
875E006	-	Northumberland	Murray	1/7	D	1946	DUG	-	240	-
875E007	-	Hastings	Sidney	A/5	D	04/86	DRILLED	21.0	20.3	15.2
87SE008	29-06347	Hastings	Sidney	A/5	M	04/74	DRILLED	18.9	-	-
87SE009	-	Hastings	Sidney	A/5	D	1971	DRILLED	~27.4	15.2	-

D - Domestic M - Municipal

2.4 Rainfall Data

Rainfall data was obtained from the Atmospheric Environment Service of Environment Canada for sites located closest to the sampling areas. These sites are listed in Table V, and located on Figures 1 to 3.

Total monthly precipitation for 1986 and 1987 and 10-year precipitation totals for each station, are given in Tables A2-1 and A2-2 located in Appendix 2.

TABLE V. Availability Of Rainfall Data For Selected Sites.

REGION	WEATHER STATION
Southeastern	Frankford
Central	Bowmanville
Southwestern	StrathroyThedford

2.5 Sampling Protocol

The sampling protocol is described in Appendix 1. Essentially taps at sample sites were run for at least 3 minutes to flush the system.

Water samples for pesticide analysis were collected in clean 11 amber glass bottles without filtering or acidification and without prior rinsing of the sample bottle with sample.

Water samples collected for major ion chemistry and bacterial analysis followed the protocol described in MOE 1985.

Samples were returned to the lab on the same day of sampling where they were refrigerated until analyzed.

2.6 Sample Parameters and Frequency of Sampling

A list of sample parameters is given in Table VI. Samples for pesticide and bacterial analysis were collected weekly. Pesticide samples from Southeastern Region were sent to the Ontario Ministry of Agriculture and Food (OMAF) Pesticide Laboratory at Guelph for analysis of triazine group pesticides plus alachlor and metolachlor. Pesticide samples from Central Region and Southwestern Region were sent to the MOE laboratory in Rexdale for the analysis of triazine group pesticides plus alachlor and metolachlor, chlorophenoxy, phenyl urea, and organophosphate pesticides.

Samples for major ion chemistry were taken weekly in Southwestern Region, every two weeks in Central Region and monthly in Southeastern Region. The regional MOE labs in London and Kingston carried out the analyses for their respective regions while the MOE Rexdale lab conducted sampling for Central Region samples.

Bacterial analyses were conducted by the London and Kingston Labs of the MOE and the Peterborough District Health Unit.

Duplicate samples for major ion and pesticide analyses were taken in Southeastern and Central Regions as a check on sampling protocol and analytical precision.

TABLE VI. Chemical And Microbiological Sampling Parameters.

1. General Chemistry			
Calcium	Alkalinity		
Magnesium	Chloride		
Sodium	Sulphate		
Potassium	Nitrate		
Hardness	Nitrite		
Iron	Kjeldahl nitrogen		
pH	Ammonia		
Specific conductance	Phosphorous		
2. Pesticides			
Triazine Group	Chlorophenoxy Group		Organophosphates
Atrazine	2,4-D		Azinphosmethyl
D-ethyl atrazine	Dicamba		Chlorpyrifos
Cyanazine	Fenoprop		Diazinon
Metribuzin	2,4,5-T		Dichlorvos
Prometryne	2,4-DB		Ethion
Simazine	Picloram		Malathion
D-ethyl simazine			Methyl Parathion
Propazine	Phenyl Urea Group		Methyl Trithion
Prometone			Mevinphos
Ametryne	Metoxuron		Parathion
Acetanilide Group	Monuron		Phorate
	Chlortoluron		Reldan
Alachlor	Fluometuron		Ronnel
Metolachlor	Diuron		
	Difenoxuron		
	Monolinuron		
3. Microbiology			
Total Coliform	Linuron		
Fecal Coliform	Patoran		
Background Coliform	Metabromuron		
Standard Plate Count	Chlorbromuron		
	Siduron		
	Neburon		

3.0 ANALYTICAL METHODS

Samples for major ion chemistry were analyzed following MOE documented analytical procedures (MOE, 1983).

Samples for pesticides analyses were analyzed following the MOE and OMAF procedures outlined in MOE (1983) and Appendix 3 respectively.

A list of the detection limits for each pesticide is given in Appendix 4.

4.0 RESULTS

4.1 Introduction

Results of the geochemical analyses are given in Appendix 5. The number of wells reporting the occurrence of pesticides is broken down by region and is shown on Table VII.

Maximum Acceptable Concentrations (MACS) and Interim Maximum Acceptable Concentrations (IMACs) for triazine pesticides and metolachlor have been prepared by the Federal-Provincial Subcommittee on Drinking Water and are reported in Guidelines for Canadian Drinking Water Quality (Health and Welfare 1987).

		<u>Concentration (µg/L)</u>
Atrazine	IMAC	60
Cyanazine	IMAC	10
Simazine	IMAC	10
Metribuzin	MAC	80
Metolachlor	IMAC	50

The local Medical Officers of Health were kept informed of any well which exceeded provincial drinking water objectives and any detectable level of pesticide. Homeowners were sent a copy of all the results of the testing on their well along with an information package regarding well construction, maintenance and groundwater quality.

4.2 Analysis of Duplicate Samples

Sample duplicates are identified with an asterisk in Appendix 5. Duplicate samples were analysed graphically by plotting the concentrations of each duplicate set on log-log paper. 96% of the major ion data points plotted within $\pm 10\%$ of the 1:1 ratio line.

TABLE VII . Number Of Wells Reporting Occurrence Of Pesticide By Region.

	Southwestern	Central	Southeastern	Total
Total No. of Sample Sites	23	10	8	41
Atrazine	4	0	8	12
O-ethyl Atrazine	N.M.	N.M.	8	8
Metolachlor	0	0	4	4
Cyanazine	0	0	6	6
Simazine	1	0	0	1
Other Triazines	0	0	0	0
Chlorophenoxy Compounds	N.S.	0	N.S.	0
Organophosphate Compounds	0	N.S.	N.S.	0
Phenyl Urea Compounds	0	N.S.	N.S.	0
No. of Sites Exceeding IMAC or MAC	0	0	0	0

N.M.-Not Measured

N.S.-Not Sampled

Duplicate samples for pesticide analysis could only be evaluated for samples from Southeastern Region which were analysed by the OMAF lab, since samples from Central Region were found to be below detection for all pesticides. 96% of the duplicate samples from Southeastern Region were found to be within +60% of the 1:1 ratio line for atrazine, de-ethyl atrazine and metolachlor.

There are only two sets of duplicate samples for cyanazine and in both cases one of the duplicate samples was non detectable while the other was detectable.

4.3 Southwestern Region

- (a) In the Thedford Marsh area, where market gardening predominates, two wells were found to contain detectable levels of pesticide. Well 87SW001 contained a detectable atrazine concentration of 0.22 µg/L on one occasion

and well 87SW003 tested positive on one occasion for simazine with a level of 0.36 µg/L. A summary of pesticide occurrence for Southwestern Region is given on Table VIII.

Major ion analyses in the Thedford area show a wide variation in distribution. Representative samples are plotted on a Durov diagram on Figure 4. A Durov diagram is a plot of the anion and cation concentrations expressed in percent milliequivalents/litre. It provides a visual representation of water types in a large number of samples.

Analyses from wells 87SW004, 5 and 6 indicate that these samples were obtained through a water softener and are not plotted on the figure.

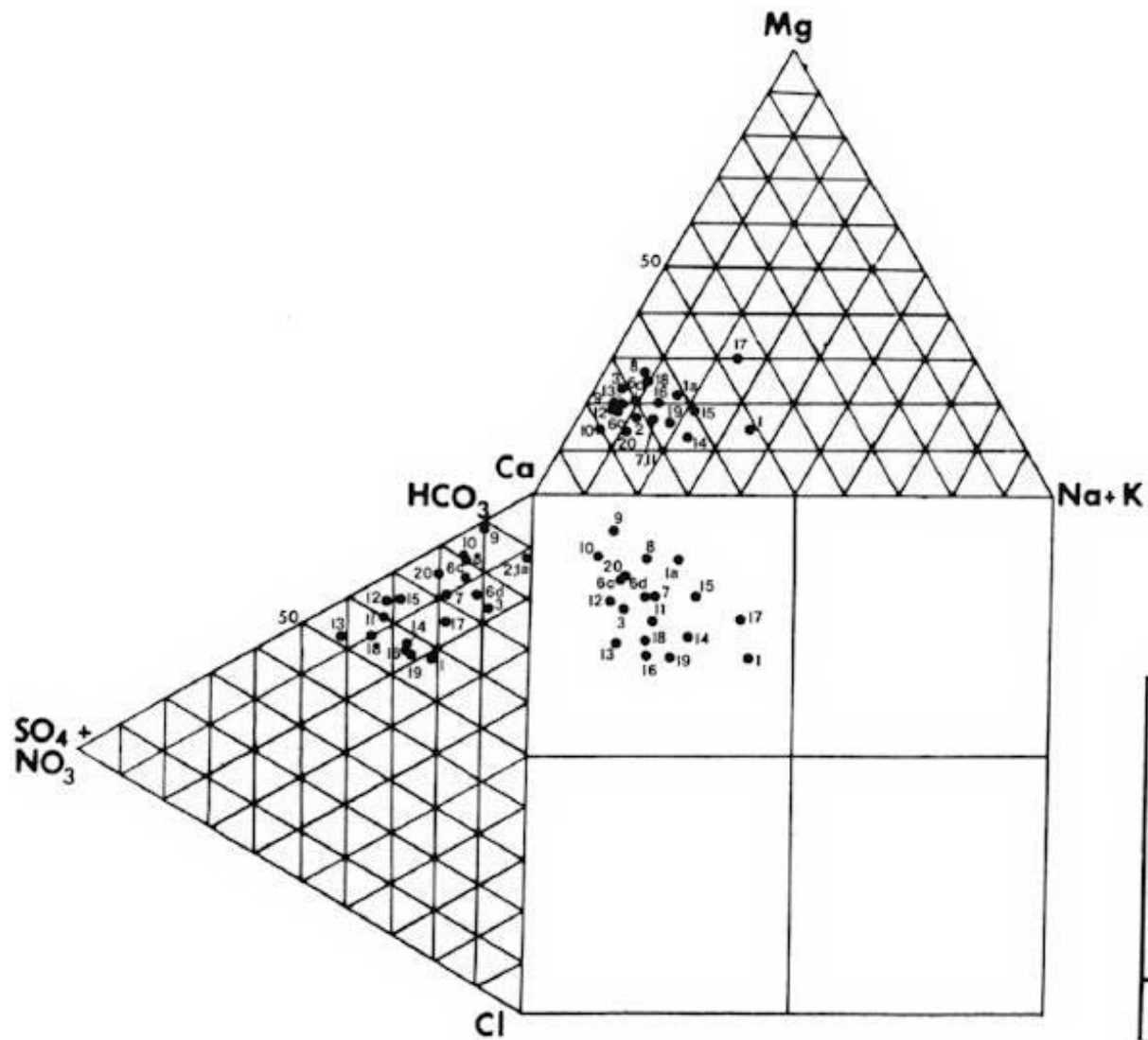
Major ion chemistry shows considerable variation and reflects land use, aquifer heterogeneity and variation in well depth. Samples at sites 87SW001, 5 and 7 exceed 10 mg/L nitrate-nitrogen (NO₃-N), but most of the remaining sample sites contain very low nitrate levels.

Sample sites 1A and 2 are characterized by elevated ammonia and Kjeldahl nitrogen but low levels of NO₃-N. This may indicate that denitrification is taking place under reducing conditions.

Reducing conditions are also suggested by the high levels of iron at each site and the elevated levels of phosphorus at site 1A.

Sample 1A is anomalous and contains considerably higher levels of major ions than most other samples. Potassium is elevated in Samples 1, 1A and 2.

Most wells reported at least one occurrence of total coliform at some time during the sampling program. Four wells, 87SW704, 5, 6, and 7 also reported fecal coliform.



- note: 1. all samples prefixed by 87SW7
 2. samples 1, 1a, 2, 6c - 10 collected 87/8/6
 3. sample 3 collected 87/8/13
 4. samples 11 - 13, 15 - 20 collected 87/8/4
 5. sample 14 collected 87/7/13

MOE	PESTICIDE	PROGRAM
FIG. 4. DUROV PLOT FOR MAJOR ION CHEMISTRY: CARADOC / BOTHWELL AND THEDFORD AREAS SOUTHWESTERN REGION		
1989	Drawn by: PY	

TABLE VIII. Summary Of Pesticide Occurrence In Domestic Wells - Southwestern Region.

SITE NO.	Atrazine # +ve	Range Of Concentration (µg/L)	Simazine # +ve	Range Of Concentration (µg/L)	Other Triazines # +ve	Metolachlor # +ve	Alachlor # +ve	Organophosphates # +ve
87SW01	1	0.22	0	-	0	0	0	0
87SW01A	0	-	0	-	0	0	0	0
87SW02	0	-	0	-	0	0	0	0
87SW03	0	-	1	0.36	0	0	0	0
87SW04	0	-	0	-	0	0	0	0
87SW05	0	-	0	-	0	0	0	0
87SW06	0	-	0	-	0	0	0	0
87SW06C	0	-	0	-	0	0	0	0
87SW06D	0	-	0	-	0	0	0	0
87SW07	0	-	0	-	0	0	0	0
87SW08	0	-	0	-	0	0	0	0
87SW09	0	-	0	-	0	0	0	0
87SW10	0	-	0	-	0	0	0	0
87SW11	0	-	0	-	0	0	0	0
87SW12	3	0.23-0.89	0	-	0	0	0	0
87SW13	0	-	0	-	0	0	0	0
87SW14	2	1.17-1.46	0	-	0	0	0	0
87SW15	0	-	0	-	0	0	0	0
B7SW16	0	-	0	-	0	0	0	0
87SW17	0	-	0	-	0	0	0	0
87SW18	0	-	0	-	0	0	0	0
87SW19	1	0.095	0	-	0	0	0	0
87SW20	1	0.10	0	-	0	0	0	0

- b) Samples from the Bothwell sand plain show some general differences from the Thedford samples. Four wells tested positive for atrazine. These included wells 87SW012, 14, 19 and 20. Samples from the Bothwell sand plain contained generally lower percentages of $\text{SO}_4 + \text{NO}_3$ as well as $\text{Na} + \text{K}$ than the Thedford samples, but still showed considerable variation in major ion chemistry. Samples 87SW011 and 14 exceeded 10 mg/L $\text{NO}_3\text{-N}$ and samples 14, 17 and 19 exceeded 20 mg/L sodium. Sample 87SW020 appears to be anomalous in this group in as much as it contains the lowest levels of most major ions.

All wells reported total coliform on several occasions during sampling. Eight of the ten wells sampled also reported fecal coliform at least once.

4.4 Central Region

Pesticide results from Central Region are summarized on Table IX. No pesticides were detected in any of the samples.

Major ion chemistry shows variation between sample sites reflecting land use. Representative analyses are shown on Figure 5. Sample sites 87CP003, 4, 7 and 9 exceeded 10 mg/L $\text{NO}_3\text{-N}$ at each sampling and site 87CP001 had $\text{NO}_3\text{-N}$ levels approaching 10 mg/L. These levels indicate contamination from septic systems, or agricultural or gardening activity.

Samples 87CP001 and 8 exceed 20 mg/L sodium and also contain elevated chloride and calcium, and indicate possible impact from road salt.

Most wells were found to contain some amount of total coliform at least once during the sampling program. Six of the nine wells had at least one occurrence of fecal coliform. Wells 87CP002 and 6 contained highest levels of fecal coliform counts.

Sample sites 1A and 2 are characterized by elevated ammonia and Kjeldahl nitrogen but low levels of $\text{NO}_3\text{-N}$. This may indicate that denitrification is taking

place under reducing conditions. Reducing conditions are also suggested by the high levels of iron at each site and the elevated levels of phosphorus at site 1A.

Sample 1A is anomalous and contains considerably higher levels of major ions than most other samples. Potassium is elevated in Samples 1, 1A and 2.

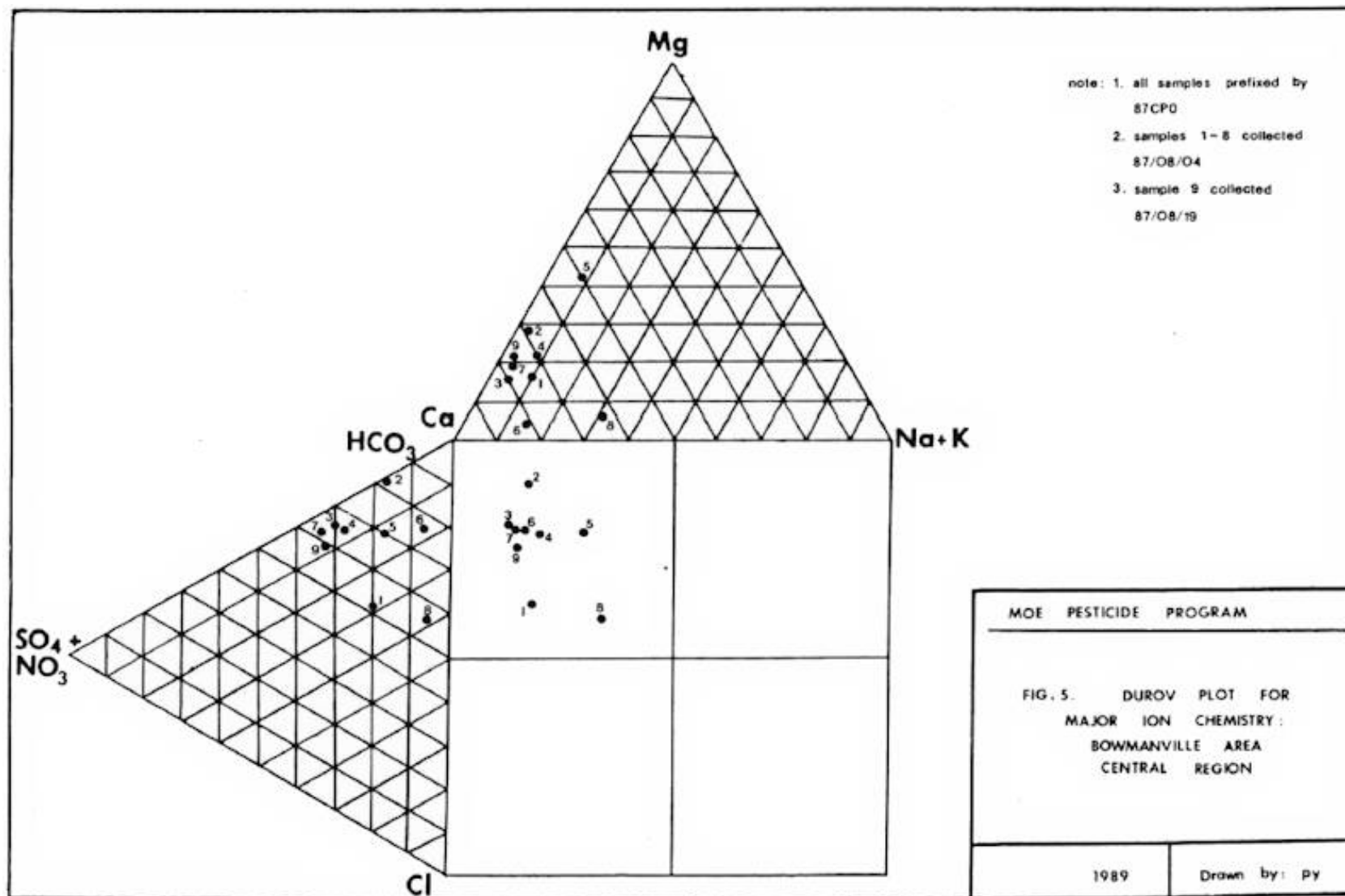
Most wells reported at least one occurrence of total coliform at some time during the sampling program. Four wells, 87SW704, 5, 6, and 7 also reported fecal coliform.

- b) Samples from the Bothwell sand plain show some general differences from the Thedford samples. Four wells tested positive for atrazine. These included wells 87SW012, 14, 19 and 20. Samples from the Bothwell sand plain contained generally lower percentages of $\text{SO}_4 + \text{NO}_3$ as well as $\text{Na} + \text{K}$ than the Thedford samples, but still showed considerable variation in major ion chemistry. Samples 87SW011 and 14 exceeded 10 mg/L $\text{NO}_3\text{-N}$ and samples 14, 17 and 19 exceeded 20 mg/L sodium. Sample 87SW020 appears to be anomalous in this group in as much as it contains the lowest levels of most major ions.

All wells reported total coliform on several occasions during sampling. Eight of the ten wells sampled also reported fecal coliform at least once.

TABLE IX. Summary Of Pesticide Occurrence in Domestic Wells — Central Region.

SITE NO.	Triazines # +ve	Metolachlor # +ve	Alachlor # +ve	Chlorophenoxy Acids # +ve
87CP001	0	0	0	0
87CP002	0	0	0	0
87CP003	0	0	0	0
87CP004	0	0	0	0
87CP005	0	0	0	0
87CP006	0	0	0	0
87CP007	0	0	0	0
87CP008	0	0	0	0
87CP009	0	0	0	0
87CP110	0	0	0	0
87CP011	0	0	0	0



4.5 Southeastern Region

Pesticide results for the Frankford area are given in Table X. Every well tested positive for atrazine and its metabolite de-ethyl atrazine on anywhere from 3 to 20 occasions during the testing period. Levels were low, and total atrazine (atrazine plus de-ethyl atrazine) did not exceed 1.6 µg/L. This level is well below the IMAC of 60 µg/L.

Six of the eight wells also tested positive for cyanazine on one or two occasions and 4 of the 8 wells tested positive for metolachlor on only one occasion. Maximum levels of cyanazine and metolachlor did not exceed 1 µg/L; well below the IMAC of 20 µg/L and 50 µg/L for each of these compounds respectively.

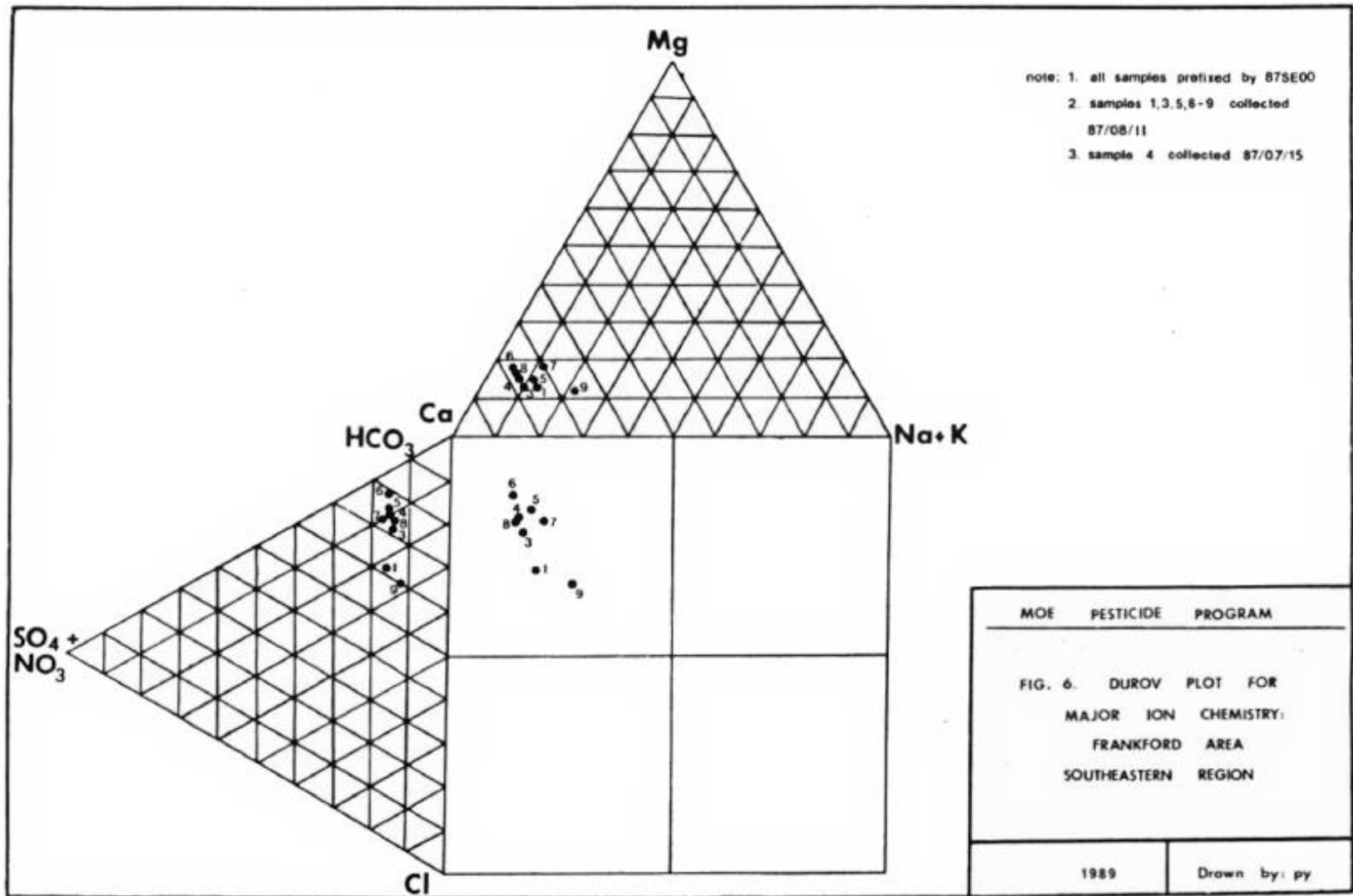
Major ion chemistry shows less variation than samples in the other areas and most samples plot in a fairly tight group within the cation and anion portions of the Durov diagram shown in Figure 6. Exceptions are samples 87SE001 and 9 which contain elevated sodium and chloride. While elevated sodium and chloride may indicate possible impact from road salt in sample 87SE001, it may in the case of 87SE009 reflect poorer water quality with depth because that well is the deepest of all the wells sampled and is drilled into bedrock.

Samples 87SE001 and 4 exceed 10 mg/L NO₃-N and samples 5 and 8 are elevated at concentrations of 9.0 and 9.4 mg/L NO₃-N respectively.

Five of the eight wells contained total coliforms and four of the eight wells contained fecal coliforms. Sample sites 87SE005 and 6 reported the highest counts of fecal coliform.

TABLE X. Summary Of Pesticide Occurrence In Domestic And Municipal Wells - Southeastern Region.

SITE NO.	Atrazine # +ve	Range Of Concentration (µg/L)	D-ethylatrazine # +ve	Range Of concentration (µg/L)	Cyanazine # +ve	Range Of Concentration (µg/L)	Metolachlor # +ve	Range Of Concentration (µg/L)	Alachlor # +ve	Other Triazines # +ve
87SE001	20	0.07-0.34	18	0.09-0.84	0	-	1	0.61	0	0
875E003	14	0.24-0.73	14	0.18-0.82	2	0.13-0.18	1	0.30	0	0
87SE004	9	0.16-0.71	9	0.17-0.53	1	0.12	0	-	0	0
875E005	6	0.04-0.25	5	0.03-0.70	1	0.21	0	-	0	0
875E006	3	0.20-0.26	4	0.11-0.67	0	-	0	-	0	0
875E007	5	0.03-0.25	5	0.13-0.52	1	0.46	1	0.72	0	0
875E008	19	0.18-0.61	18	0.21-0.86	2	0.11-0.59	1	0.05	0	0
87SE009	10	0.03-0.45	6	0.08-0.21	1	0.25	0	-	0	0



5.0 DISCUSSION

5.1 Southwestern Region

5.1.1 Theford Marsh Area

Two samples, 87SW001 and 87SW003, tested positive for pesticides in the Theford area. 87SW001 contained a low level of atrazine on one occasion in June while 87SW003 contained simazine on one occasion in late July. 87SW001 is a sandpoint completed at a depth of 3.7 m. The major chemistry indicates elevated levels of sodium, potassium, chloride, and phosphorus and consistently exceeded provincial objectives for nitrate-nitrogen. There is no well record available for 87SW003, but it is completed at a relatively shallow depth of about 5.3 m. Total coliform levels ranged between non-detectable and 158 cts/100 ml but fecal coliform were not detected. Major ion analysis does not show any unusual levels of ions and indicates acceptable water quality.

5.1.2 Bothwell Sand Plain

Four wells tested positive for atrazine and its metabolite d-ethyl atrazine in the Bothwell Sand Plain.

Well 87SW012 had three occurrences of atrazine, all at concentrations of less than 1 µg/L and all occurring in early June. The well is 13.1 m deep and has a static level of 2.1 m. This well is also used for irrigating adjacent fields which would increase the likelihood of leaching pesticides to the water table. Major ion analyses indicate good quality water with somewhat elevated potassium levels which may reflect fertilizer application. One occurrence of fecal coliform was reported which suggests that the well may not be properly sealed or has been impacted by septic effluent.

Well 87SW014 reported 2 occurrences of atrazine in early June at levels of between 1 and 1.5 µg/L. This well is 10.6 m deep with a static level of 2.1 m. Major ion chemistry indicates this well has elevated levels of K, Na and NO₃-N.

Fecal coliforms were reported on two occasions during middle summer and suggests that the integrity of the well seal may be in doubt.

Well 87SW019 contained trace atrazine on one occasion in early June. This well is only 4 m deep and major ion analyses show that it contains elevated sodium, chloride and sulphate. Nitrate levels are very low in this well, however, it did contain low fecal coliform counts on one occasion. It is not certain whether the pesticide contamination is due to natural leaching or whether it occurred from surface runoff entering the well.

Well 87SW020 contained trace atrazine on one occasion in early June. This well is an old dug well 4 m deep and has a static water level of 2 m. Major ion chemistry shows that this well contains the lowest total dissolved solids of all the wells sampled but it also reported the highest number of occurrences of fecal coliform. This suggests that the well may not be properly sealed and that the contamination may be due to surface runoff entering the well.

The fewer number of pesticide occurrences in the 1987 survey compared with the 1986 survey may be due to drier conditions in 1987. Rainfall for May and June 1987 reported at Strathroy is about half the 1986 levels.

5.2 Central Region

Pesticides were not found in any of the wells sampled in Central Region in 1987. This is due to a number of factors. First, 1987 was a drier summer than 1986 so there was less tendency for pesticides to be leached. Second, compared to the area in Southwestern Region, farmers in this area rotate their crops more often so that there is less chance of pesticide buildup. Crops rotated with corn in the area include pumpkins, grain and beans. A third contributing factor is that most of the wells were located at a distance from fields ranging from 80-250 m. This is considerably further than sites in Southwestern Ontario and this increased distance would result in greater dilution of pesticides in the groundwater.

Despite the lack of reported pesticide levels, five of eleven wells contained concentrations of NO₃-N exceeding 10 mg/L. These included sample sites 87CP001, 3, 4, 7 and 9.

Six wells, 87CP002, 3, 5, 6, 8 and 9 contained fecal coliform on at least one occasion.

Two wells 87CP001 and 8 contain elevated sodium and chloride and may have been impacted by road salt.

5.3 Southeastern Region

All wells reported at least 3 occurrences of atrazine and 4 occurrences of d-ethyl atrazine during the sampling period. Sample sites 87SE001, 3, 8 and 9 reported 10 or more occurrences of atrazine.

Cyanazine was reported to occur once or twice in 6 of the 8 wells and metolachlor was reported in 4 of the 8 wells. Individual pesticide levels never exceeded 1 µg/L.

The sample sites range in depth from 4.6 m to about 27 m and include the Frankford Municipal Well #2.

In wells 87SE001, 3 and 4, atrazine and d-ethyl atrazine was detected starting on May 12, the first sampling date. In wells 87SE005-8, atrazine and its metabolite first appeared on May 19, and in well 875E009, the deepest well, atrazine was not detected until June 2.

Cyanazine and/or metolachlor was detected on the May 19 sampling date in wells 87SE001-4, 7 and 8 and cyanazine was detected in wells 87SE003, 5, 8 and 9 during the July 28 to August 4 sampling periods.

Nitrate-nitrogen levels approach the 10 mg/L level on a continual basis in wells 87SE001, 3, 4, 5 and 8. Wells 87SE001 and 9 exceed 20 mg/L sodium and also contain elevated levels of chloride relative to the other samples. Well 87SE005

contains potassium at concentrations between 10 and 20 mg/L compared to levels of <5 mg/L for other samples.

Four of eight wells reported fecal coliform and all occurrences were reported on and after July 22. The highest counts were found in wells 87SE005 and 6, both of which are dug wells.

Despite the occurrence of bacteria in some wells, the persistent levels of pesticide found in all wells suggests that the aquifer itself has been impacted by agricultural chemicals.

6.0 CONCLUSIONS

1. Two single occurrences of the triazine herbicides, atrazine and simazine, were detected in groundwaters in the Thedford Marsh area of Southwestern Ontario. Organophosphate pesticides were not detected at all in groundwater, since as a group, these pesticides are less persistent than triazine pesticides.
2. Fewer number of pesticide occurrences and lower concentrations of triazines and metolachlor were reported in the Bothwell Sand Plain in 1987 compared to 1986. This may be due to the lower total rainfall in the summer of 1987 which lessened the degree of leaching of triazines and facilitated their transformation in the soil.
3. No pesticides were reported from Central Region study area for several reasons:
 - (i) lower rainfall in 1987 compared to 1986 decreased the amount of pesticide leaching;
 - (ii) many of the wells were located at least 80 m from fields possibly allowing dilution to reduce pesticide levels; and,

- (iii) farmers in this area rotate their crops on a more regular basis thereby preventing the buildup of triazines which would occur if corn was grown continually.
- 4. Persistent but low levels of pesticides in Frankford wells in Southeastern Ontario indicate that the unconfined aquifer at Frankford has been impacted by the use of agricultural chemicals. However, levels of pesticide are well below the IMAC's established by the Federal-Provincial Subcommittee on Drinking Water.
- 5. A significant number of wells in the study areas exceed provincial drinking water quality guidelines for the health parameters, fecal coliform and/or nitrate-nitrogen: Thedford area (50%), Bothwell area (80%), Bowmanville area (100%) and Frankford area (50%).

7.0 RECOMMENDATIONS

- 1. Results of this and previous studies have shown that a significant percentage of domestic wells may be contaminated by bacteria, nitrates and pesticides. In many cases, this contamination may be caused by poor well siting, poor well installation techniques, improper maintenance of the well after installation or mishandling of chemicals. This underscores the need for:
 - (i) routine inspection on completion of new wells and the maintainance of the well licensing program.
 - (ii) continuing public education on the importance of homeowner well maintenance to protect drinking water quality.
- 2. The unconfined aquifer at Frankford has been shown to be sensitive to be impacted by agricultural activity. It would be useful to carry out a more detailed hydrogeological and land use investigation of this aquifer to establish cause, effect and trend relationships, including climatic conditions, on water quality.

BIBLIOGRAPHY

- Chapman, L.J., and
D. F. Putnam 1984 The Physiography of Southern Ontario; Ontario
Geological Survey, Special Volume 2,270p.
- GEO-ENVIRON 1979 Township of Sidney Test Drilling Program
MOE Project #5-0177,pp.10.
- HEALTH AND WELFARE
CANADA 1987 Guidelines for Canadian Drinking Water Quality.
prepared by the Federal-Provincial Subcommittee
Drinking Water, pp.20.
- MOE Water Well Interference
Frankford Municipal Well No. 2.
- MOE 1983 Handbook of Analytical Methods for Environmental
Samples. Lab Services and Applied Research Branch.
- MOE 1987 Pesticides in Ontario Drinking Water,1986.
- OMAF 1984 Survey of Pesticide Use in Ontario,1983
Economics Information Report No.84-05,pp.39.

APPENDIX 1

GROUNDWATER PROTOCOL

APPENDIX I
PESTICIDES MONITORING PROGRAM
1988
GROUND WATER PROTOCOL

Site Selection Criteria

1. Representative Areas.

The following criteria formed the basis for the selection of representative areas for the 1988 pesticides in ground water monitoring program.

- i) The area is subject to heavy applications of pesticides related to the cultivation of corn, soybean crops, or intensive cash cropping.
- ii) The area contains hydrogeological conditions that indicate a relatively high potential for the contamination of local ground water from pesticide application. This includes unconfined aquifers in sand plain or fractured bedrock areas and shallow confined aquifers in similar areas.

2. Specific Well Sites.

The following criteria should be applied in the selection of specific monitoring wells.

- i) Depending on availability, wells used for private and/or municipal drinking water purposes should be considered. A water well survey data sheet is to be completed for each well selected and permission obtained from the owner for sampling.
- ii) Well sites should be situated adjacent to and hydraulically downgradient from cultivated fields where pesticides are applied.
- iii) Only wells that appear to be properly constructed, sealed and maintained should be selected.
- iv) The land surface around the well should be graded such that surface

drainage is away from the well.

- v) Wells in well pits should be avoided.
- vi) The wells should be located away from potential sources of contamination such as barnyards or buildings where agricultural chemicals may be stored or mixed or where machinery is cleaned.
- vii) Each Region will assign a well code number to each well.

3. Sampling Points

The following criteria should be applied to the selection of specific sampling points or taps at each selected monitoring well site.

- i) Select a tap that is as close to the well or pressure system as possible and use the same tap throughout the sampling program. Report any changes.
- ii) Select a tap that by-passes any water treatment or filtering devices, and is free of a nozzle aerator or filter.
- iii) Make sure the tap is accessible for the duration of the program, especially if the owner is not home. Provide the owner with a proposed sampling schedule.
- iv) Do not sample from a hose.

Sampling Protocol

1. Pre-sampling Procedure

The following procedure should be followed at each site prior to the collection of a water sample.

- i) Let the tap run for at least 3 minutes to flush the system.
- ii) Continue running tap until well pump is activated or manually activate well

pump.

iii) Collect sample while well pump is operating.

2. General Chemistry Sampling

i) Use a one litre, clear glass bottle per sampling event.

ii) Label bottle with name of owner, well code and date sampled.

iii) Refer to Laboratory sample submission book for instructions on filling and storing.

iv) Ship bottles to local MOE Lab with proper submission forms.

3. Pesticides Sampling

i) Use a one litre clear glass or amber glass bottle per sampling event.

ii) Label bottle with name of owner, well code and date sampled.

iii) Fill bottle completely; do not rinse prior to taking sample.

iv) Ship all ground water samples, as soon as possible to OMAF Lab or MOE Lab with proper submission forms.

4. Microbiology Sampling

i) Use one glass, 250 ml, pre-sterilized bottle containing sodium thiosulphate per sampling event. Do not touch bottle top or cap.

ii) Label bottle with name of owner, well code and date sampled.

iii) Do not rinse bottle; fill to mark.

iv) Refrigerate and ship to local MOE Lab as soon as possible with proper submission forms.

Sampling Parameters and Frequency

Listed below are the specified parameters to be analyzed for each water sample collected and the frequency of sampling.

1. General Chemistry.

Calcium	Alkalinity
Magnesium	Sulphate
Sodium	Chloride
Potassium	Ammonia
pH	Nitrate Nitrogen
Fe	Kjeldahl Nitrogen
	Specific Conductance

Samples are to be taken and analyzed once per month for each sampling site.

2. Pesticides

- ▶ to be decided based on pesticide use in study area.

Samples are to be taken and analyzed once per week for each sampling site.

3. Microbiology.

Total Coliform
Fecal Coliform

Samples are to be taken and analyzed at the same frequency as the pesticide sample.

WELL WATER SURVEY DATA SHEET (1988)
GEOGRAPHIC LOCATION

Name: _____ Sample Site No.: _____
(pesticide monitoring well only)

Lot: _____ Conc.: _____ Township: _____ County: _____

Mailing Address: _____

Postal Code: _____ Telephone: _____

WELL DATA CONSTRUCTION

Date Constructed: _____ Well Record: Yes _____ No _____
Number _____

Type: Dug or Bored _____ Drilled _____ Sandpoint _____ Other _____

Casing Type: _____ Diameter _____ Depth _____ Sealing _____

Top _____ Static Level _____

Surface flow: Well Elevated Above Grade Yes _____ No _____ Ft. _____

Surface Water Directed Away from Well Yes _____ No _____

WELL LOCATION

From building: _____ From adjacent field: _____

From pond, stream: _____ From tile drains: _____

WATER SYSTEM

Sampling point (specific tap): _____

Water treatment type: _____ Sample tap before treatment:
Yes _____ No _____

Water usage: house _____ barn _____ house & barn _____ irrigation _____
Volume per day used: _____ (gal/day)

PESTICIDE USAGE

Spray tank filling: Yes _____ No _____ If yes, distance (ft.) from well
for filling _____ mixing _____

Has a spill occurred? What _____ When _____

Soil Type:

Clay _____ Sand _____ Loam _____ Clay loam _____ Sand loam _____ Other _____

Crops adjacent to well: Corn _____ Soys _____ Other _____

Closest distance from well to crop: _____

Chemicals used in fields adjacent to well: (application rate)

1988:	Lasso	_____	1987:	Lasso	_____
	Atrazine	_____		Atrazine	_____
	Dual	_____		Dual	_____
	Other	_____		Other	_____

Type of farm operation:

Dairy: _____ Beef _____ Hog _____ Poultry _____ Other _____
Mixed: _____ Cash Crop _____ Greenhouse _____ Other _____

Comments: (access problems)

Map (provide sketch on back). Photo: Yes _____ No _____

**APPENDIX 2
PRECIPITATION DATA**

TABLE A2-1. Total Monthly Precipitation for Stations in 1987 and (1986)

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
FRANKFORD	46.6 (73.0)	36.6E (47.4)	104.5E (90.5)	90.3 (M)	23.9E (M)	72.3E (M)	59.2 (M)	77.2E (108.5)	89.9 (197.0)	65.3E (92.1E)	136.3E (43.0E)	57.2E (107.0)	859.3
BOWMANVILLE	41.0E (28.0)	24.4 (28.8)	49.4 (70.8)	40.2 (50.0)	42.0 (61.0)	91.8 (116.8)	61.8 (71.4)	81.6 (187.8)	182.0 (203.3)	65.8 (54.4)	114.8E (34.8)	70.8 (109.0)	865.6 (1016.1)
THEDFORD	64.0 (M)	10.6 (M)	50.3 (M)	65.2 (M)	37.8 (M)	75.5 (M)	56.4 (101.5)	99.2 (142.2)	111.5 (230.6)	122.6 (75.5)	106.9E (33.3E)	75.2 (95.8)	875.2
STRATHROY	59.4 (54.2)	28.8 (71.1)	51.8 (73.2)	58.2 (79.6)	25.7 (58.0)	57.0 (104.8)	27.0 (107.0)	113.4 (67.4)	76.3 (203.4)	80.0 (87.2)	106.0 (51.8)	114.2 (118.6)	797.8 (1076.3)

M = MISSING

E = ESTIMATED

PRECIPITATION IN MM.

TABLE A2-2. Rainfall Data For Ten-year Period 1978-1987 For Stations.

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
FRANKFORD	M	M	M	M	M	1021.9	960.8	M	M	859.3
BOWMANVILLE	746.3	833.5E	885.2	826.4	861.9	845.0	727.2E	M	1016.1	865.6
THEDFORD	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	875.2
STRATHROY	765.8	894.0	802.6	1151.1	1080.2	966.3	964.1	1139.8	1076.3	797.8

M = MISSING

E = ESTIMATED

N/A = NOT AVAILABLE

APPENDIX 3
DESCRIPTION OF ANALYTICAL TECHNIQUE
FOR PESTICIDE ANALYSIS BY OMAF LAB



Ontario

AGRICULTURAL LABORATORY SERVICES BRANCH

Ministry of
Agriculture
and Food

Provincial Pesticide Residue Testing Laboratory
Building 43, McGilvray Street
c/o University of Guelph
Guelph, Ontario N1G 2W1
Telephone (519) 823-8800, ext. 4825/4830

87 02 06

The method used for our herbicide screen is that as described on the attached page. Gas chromatographic analysis was performed primarily on capillary machines with packed column machines used as alternates. Conditions are indicated on a separate page which is also enclosed.

The following indicates various recoveries for acetanilide and triazine herbicides routinely analyzed in our herbicide scan. The acetanilides which include alachlor and metolachlor have recoveries from 92 to 109% with standard deviations of 6.4 to 6.2 at fortification levels of 0.25 to 20 $\mu\text{g L}^{-1}$ (ppb). Triazines which include atrazine, d-atrazine, simazine, d-simazine prometryn and metribuzin show recoveries ranging from 72 to 112% with a maximum standard deviation of 12% over the fortification range of 0.125 to 10 $\mu\text{g L}^{-1}$ (ppb). Cyanazine is slightly more variable and ranges from 102 to 124% over the range of 0.25 to 20 $\mu\text{g L}^{-1}$ (ppb) with a standard deviation which ranges from 12 to 16%. Our detection limit for these herbicides in water is 0.1 ppb.



Ontario

AGRICULTURAL LABORATORY SERVICES BRANCH

Ministry of
Agriculture
and Food

Provincial Pesticide Residue Testing Laboratory
Building 43, McGilvray Street
c/o University of Guelph
Guelph, Ontario N1G 2W1
Telephone (519) 823-8800, ext. 4825/4830

EXTRACTION OF TRIAZINE RESIDUES IN WATER

1. Transfer a measured volume (approx 1000 mL) of sample water into a 2000 mL sep. funnel.
2. Adjust pH to 9 by adding a few drops of Ammonium hydroxide (dil 1:2.5).
3. Add 100 mL of chloroform (CHCl_3) and shake for 1 min.
4. Let layers separate, then drain the chloroform phase through a piece of CHCl_3 pre-washed and dried cotton into a 500 mL boiling flask.
5. Repeat extraction with 100 mL of CHCl_3 .
6. Evaporate the combined CHCl_3 extracts on a rotary evaporator (50-60°C water bath almost to dryness).
7. Add to the residue 10 mL of isooctane and continue evaporation to dryness.
8. Dissolve the triazine residue in 5 mL of methanol.
9. Use for GLC system to quantitate the residues.

Experimental Conditions and Equipment

Gas Chromatograph: Perkin-Elmer B320B Capillary
Detector: Nitrogen/Phosphorus
Column: J & W SE54
0.25 mm x15 m
0.25 μm film thickness
Chromatographic Specialties

Carrier Gas: He
20 psi head pressure
30 cm sec linear velocity

Oven Profile:

Temperature 1	60°C
Hold	1 minute
Ramp Rate 1	20° min ⁻¹
Temperature 2	150°C
Hold	0 minute
Ramp Rate 2	5°C min ⁻¹
Temperature 3	220°C
Hold	2 minutes

Injector Temperature: 225°C
Detector Temperature: 300°C

Injection: 2 μl , split 10:1

Alternate: Tracor 550 Gas Chromatograph
Hall Detector - Nitrogen Mode
Packed Column: 2.0 mm ID x 1.2 m
Carbowax 20 M @ 190°C isothermal.

**APPENDIX 4
ANALYTICAL DETECTION LIMITS
FOR PESTICIDES**

APPENDIX 4

ANALYTICAL DETECTION LIMITS FOR PESTICIDES

Triazine Pesticides

	MOE LAB (ppt)	OMAF LAB (ppb)
atrazine	50	0.10
d-ethyl atrazine	-	0.10
cyanazine	100	0.10
simazine	50	0.10
d-ethyl simazine	-	0.10
propazine	50	0.10
metribuzin	100	0.10
prometon	50	-
ametryne	50	-
prometryne	50	0.10

Acetanilide Pesticides

	MOE LAB (ppt)	OMAF LAB (ppb)
metolachlor	500	0.10
alachlor	500	0.10

Chlorophenoxy Pesticides

	MOE LAB (ppt)
dicamba	50
2,4-D	100
2,4-DB	200
2,4-DP	100
2,4,5-T	50
fenoprop	20
picloram	100

Phenyl Urea Pesticides

	MOE LAB (ppt)
metoxuron	2.0
monuron	2.0
chlortoluron	2.0
fluometuron	2.0
diuron	2.0
difenoxuron	2.0
monolinuron	2.0
linuron	2.0
patoran	2.0
metabromuron	2.0
chlorbromuron	2.0
siduron	2.0
neburon	2.0

Organo Phosphate Pesticides

	MOE LAB (ppt)
dichlorvos	20
phorate	20
mevinphos	20
diazinon	20
ronnel	20
parathion	20
methyl parathion	50
malathion	20
ethion	20
methyltrithion	20
chlorpyriphos	20
reldan	20
azinphos methyl	2000

APPENDIX 5

**GEOCHEMICAL RESULTS FOR
GROUNDWATER SAMPLES**

MAJOR ION CHEMISTRY - CENTRAL REGION 1987 DATA - Pg.1

SITE LOC.	Sample Number	Sample Date	Na (mg/L)	K (mg/L)	Ca (mg/L)	Mg (mg/L)	Hardness As CaCO ₃ (mg/L)	Alkalinity As CaCO ₃ (mg/L)	Cl (mg/L)	pH Lab	Cond. (µS, 25C)	Ammonium (mg/L)	Kjeldahl-N (mg/L)	Nitrite-N (mg/L)	Nitrate-N (mg/L)	Sulphate (mg/L)
87CP001	W22-0214	87-05-25	14.4	0.60	126.0	14.40	373.0	256.7	69.5	7.92	835	<.05<W	.40	NA	7.75	47.20
87CP001	W24-0177	87-06-08	16.8	0.85	129.0	17.90	397.0	243.0	89.5	8.05	900	.15<T	.30	<.005<W	8.80	56.20
87CP001	W26-0147	87-06-22	18.2	0.85	144.0	18.40	435.0	234.7	93.0	8.10	887	.05<T	<.05<W	.080	9.40	54.80
87CP001	W29-0138	87-07-06	20.4	1.00	137.0	17.50	415.0	244.2	92.5	7.98	900	.05<T	<.05<W	.005<T	9.60	55.50
87CP001	W30-0264	87-07-20	19.8	0.90	140.0	17.80	424.0	246.0	92.5	7.98	895	.05<T	.20<T	<.005<w	10.10	55.40
87CP001	W32-0175	87-08-04	21.0	1.05	138.0	18.70	422.0	242.8	96.5	7.83	910	<.05<W	<.05<W	<.005<W	10.20	55.60
87CP001	W34-0168	87-08-17	21.4	1.05	132.0	18.50	406.0	243.1	92.5	7.80	887	.05<T	.10<T	.005<T	9.80	60.40
87CP001	W40-0051	87-09-28	21.0	1.35	134.0	19.10	413.0	245.6	85.0	7.92	847	<.05<W	<.05<W	<.005<W	9.15	53.20
87CP002	W22-0215	87-05-25	3.2	1.15	69.4	10.40	216.0	NA	1.5<T	8.02	415	<.05<W	.20<T	.045	<.05<W	25.00
87CP002	W24-0178	87-06-08	3.4	1.70	67.2	19.50	248.0	215.7	2.5	8.23	476	.15<T	.20<T	<.005<W	0.15<T	45.30
87CP002	W26-0148	87-06-22	2.8	1.50	70.4	15.70	241.0	203.3	2.0<T	8.30	445	.05<T	<.05<W	.025	0.45	37.80
87CP002	W29-0139	87-07-06	2.8	1.40	64.0	10.50	203.0	187.4	1.5<T	7.97	394	.10<T	<.05<W	<.005<W	0.15<T	22.70
87CP002	W30-0265	87-07-20	3.0	1.50	70.2	16.50	243.0	210.8	2.5	8.09	464	.05<T	.20<T	.005<T	0.20<T	39.40
87CP002	W32-0176	87-08-04	3.2	1.60	72.2	17.70	253.0	208.1	2.5	7.97	463	<.05<W	<.05<W	<.005<W	0.15<T	42.50
87CP002	W34-0169	87-08-17	3.6	1.45	75.0	14.10	245.0	213.0	2.0<T	7.93	452	.05<T	.10<T	.005<T	0.20<T	38.60
87CP002	W40-0052	87-09-28	2.4	1.90	68.4	8.90	207.0	191.2	1.0<T	8.15	388	<.05<W	.10<T	<.005<W	0.15<T	22.40
87CP003	W22-0216	87-05-25	11.0	0.75	140.0	16.90	418.0	296.5	16.0	7.91	863	<.05<W	.80	.025	21.90	56.30
87CP003	W24-0179	87-06-08	9.0	0.85	137.0	17.70	414.0	289.7	15.5	7.98	836	.15<T	.20<T	<.005<W	21.50	55.90
87CP003*	W24-0186	87-06-08	8.4	0.90	124.0	17.50	381.0	263.1	15.5	7.76	794	<.05<W	.30	<.005<W	21.30	56.10
87CP003	W26-0149	87-06-22	9.4	0.80	144.0	18.20	436.0	276.3	15.5	7.96	803	.05<T	<.05<T	.090	21.70	55.80
87CP003	W29-0140	87-07-06	9.4	0.85	134.0	16.50	402.0	283.2	13.5	7.84	798	.10<T	<.05<W	.015<T	20.50	54.00
87CP003	W30-0266	87-07-20	8.8	0.65	133.0	16.70	400.0	278.9	13.0	7.95	776	.05<T	.30	.005<T	20.50	52.80
87CP003	W32-0177	87-08-04	7.2	0.85	130.0	15.90	390.0	268.2	12.0	7.80	742	<.05<9	<.05<W	<.005<W	19.00	51.60
87CP003	W34-0170	87-08-17	8.8	0.80	122.0	16.30	373.0	270.3	13.0	7.80	754	<.05<W	.20<T	.005<T	19.40	59.70
87CP003	W40-0053	87-09-28	9.2	1.00	128.0	16.70	389.0	268.3	12.5	7.90	712	<.05<W	.10<T	<.005<W	17.30	49.20
87CP004	W22-0217	87-05-25	8.4	16.30	89.0	18.20	297.0	231.1	16.0	8.01	659	<.05<W	.20<T	.005<T	10.80	44.20
87CP004	W24-0180	87-06-08	6.0	15.50	82.0	18.20	280.0	228.0	15.5	8.18	639	.10<T	.30	<.005<W	11.00	45.00
87CP004	W26-0150	87-06-22	6.2	17.70	93.6	18.50	310.0	226.2	16.5	8.22	637	.05<T	<.05<W	.090	10.90	45.50
87CP004	W29-0141	87-07-06	7.6	17.70	90.6	17.60	299.0	230.3	16.5	7.98	645	.10<T	<.05<W	.015<T	11.40	45.90

12-Apr-89

MAJOR ION CHEMISTRY - CENTRAL REGION 1987 DATA Page -2-

SITE LOC.	Sample Number	Sample Date	Na (mg/L)	K (mg/L)	Ca (mg/L)	Mg (mg/L)	Hardness As CaCO ₃ (mg/L)	Alkalinity As CaCO ₃ (mg/L)	Cl (mg/L)	pH Lab	Cond. (µS, 25C)	Ammonium (mg/L)	Kjeldahl-N (mg/L)	Nitrite-N (mg/L)	Nitrate-N (mg/L)	Sulphate (mg/L)
87CP004	W30-0267	87-07-20	6.6	16.50	91.4	17.80	302.0	226.8	16.0	8.12	635	<.05 <W	.30	<.005 <W	11.90	43.70
87CP004	W32-0178	87-08-04	6.0	11.50	91.2	17.00	298.0	219.1	15.0	7.98	615	<.05 <W	<.05 <W	<.005 <W	11.80	43.90
87CP004	W34-0171	87-08-17	7.4	19.60	95.4	17.90	312.0	230.3	17.5	7.92	650	.05 <T	.20 <T	.005 <T	12.00	52.10
87CP004	W40-0054	87-09-28	7.8	20.10	93.0	18.40	308.0	233.7	15.5	8.01	640	.05 <T	.10 <T	<.005 <W	12.30	45.30
87CP005	W22-0223	87-05-25	11.0	1.60	54.8	27.20	249.0	190.5	23.0	8.10	514	.10 <T	.10 <T	.035	<.05 <W	47.40
87CP005*	W22-0218	87-05-25	11.6	1.25	55.8	26.80	249.0	190.2	24.0	8.09	513	<.05 <W	.10 <T	.050	<.05 <W	47.10
87CP005	W24-0181	87-06-08	8.6	1.70	53.8	28.50	252.0	193.2	22.5	8.26	511	.10 <T	.30	<.005 <W	.10 <T	46.90
87CP005	W26-0151	87-06-22	8.8	1.60	56.0	27.90	255.0	191.8	23.0	8.35	502	.05 <T	<.05 <W	.030	.10 <T	47.20
87CP005	W29-0142	87-07-06	10.0	1.70	55.0	27.30	250.0	190.4	23.5	8.07	508	.10 <T	<.05 <W	<.005 <W	.10 <T	46.90
87CP005	W30-0268	87-07-20	9.4	1.65	53.8	27.60	248.0	193.0	23.5	8.17	506	.05 <T	.20 <T	.005 <T	.15 <T	45.80
87CP005	W32-0179	87-08-04	9.4	1.75	54.6	27.50	250.0	191.5	23.5	8.10	508	<.05 <W	<.05 <W	.005 <T	.10 <T	48.70
87CP005	W34-0172	87-08-17	10.0	1.70	54.8	27.70	251.0	191.9	23.5	8.05	509	.10 <T	.10 <T	.015 <T	.20 <T	53.10
87CP005	W40-0055	87-09-28	9.6	1.90	56.2	27.80	255.0	195.1	22.5	8.14	507	.10 <T	<.05 <W	.005 <T	.15 <T	48.50
87CP006	W22-0219	87-05-25	14.8	0.45	75.0	2.60	198.0	175.3	25.0	8.06	442	<.05 <W	.20 <T	<.005 <W	0.85	11.50
87CP006	W24-0182	87-06-08	13.8	0.55	70.0	2.50	185.0	170.7	24.0	8.23	422	.10 <T	.20 <T	<.005 <W	0.95	9.50
87CP006	W26-0152	87-06-22	13.8	0.45	74.8	2.40	197.0	171.5	30.0	8.31	436	.05 <T	<.05 <W	.055	0.50	9.10
87CP006	W29-0143	87-07-06	11.2	0.60	60.0	2.10	159.0	141.7	19.0	8.03	356	.10 <T	<.05 <W	.010 <T	1.10	8.80
87CP006	W30-0269	87-07-20	10.6	0.35	61.0	2.20	162.0	144.9	20.0	8.23	358	<.05 <W	.20 <T	<.005 <W	1.20	6.00
87CP006	W32-0180	87-08-04	12.2	0.60	61.0	2.10	161.0	141.4	22.0	8.15	163	<.05 <W	<.05 <W	.005 <T	1.25	8.70
87CP006	W34-0173	87-08-17	14.0	0.60	63.0	2.30	167.0	146.3	24.0	8.11	378	.05 <T	.10 <T	<.005 <W	1.30	11.20
87CP006	W40-0056	87-09-28	17.6	0.95	66.0	2.70	176.0	159.6	25.0	8.15	402	.05 <T	.10 <T	<.005 <W	1.50	11.00
87CP007	W22-0220	87-05-25	8.8	3.60	124.0	17.70	383.0	267.2	11.5	7.91	768	.05 <T	.20 <T	<.005 <W	14.40	69.50
87CP007	W24-0183	87-06-08	6.4	3.50	113.0	18.30	357.0	266.6	11.5	8.12	759	.05 <T	.30	<.005 <W	14.30	74.60
87CP007	W26-0153	87-06-22	6.4	3.05	129.0	18.70	400.0	258.3	12.5	8.24	748	.05 <T	.10 <T	.090	15.10	76.70
87CP007	W29-0144	87-07-06	7.2	2.95	127.0	18.20	391.0	249.1	12.5	8.01	764	.10 <T	<.05 <W	.020 <T	15.50	30.80
87CP007	W30-0270	87-07-20	6.8	2.85	123.0	19.40	387.0	253.7	13.0	7.93	749	<.05 <W	<.05 <W	<.005 <W	16.30	79.40
87CP007	W32-0181	87-08-04	6.6	2.60	126.0	19.10	393.0	255.9	12.5	7.92	754	<.05 <W	<.05 <W	<.005 <W	16.10	80.00
87CP007	W34-0174	87-08-17	7.2	2.55	127.0	19.60	397.0	256.8	13.0	7.88	755	<.05 <W	.20 <T	<.005 <W	16.00	88.60
87CP007	W40-0057	87-09-28	7.4	2.40	129.0	20.80	409.0	268.6	12.0	7.97	744	<.05 <W	.10 <T	<.005 <W	16.40	74.40

12-Apr-89

SITE LOC.	Sample Number	Sample Date	Na (mg/L)	K (mg/L)	Ca (mg/L)	Mg (mg/L)	Hardness As CaCO ₃ (mg/L)	Alkalinity As CaCO ₃ (mg/L)	Cl (mg/L)	pH Lab	Cond. (μS, 25C)	Ammonium (mg/L)	Kjeldahl-N (mg/L)	Nitrite-N (mg/L)	Nitrate-N (mg/L)	Sulphate (mg/L)
87CP008	W22-0221	87-05-25	83.4	0.80	147.0	8.80	402.0	333.3	168.0	7.78	1183	.10<T	.20<T	<.005<W	0.50	25.20
87CP008	W24-0184	87-06-08	79.0	0.80	134.0	8.80	371.0	335.6	158.0	8.00	1167	.05<T	.20<T	<.005<W	0.55	25.30
87CP008	W26-0154	87-06-22	77.6	0.75	159.0	8.90	434.0	306.3	168.0	7.84	1111	.05<T	<.05<W	.040	0.40	24.80
87CP008	W26-0155	87-06-22	77.4	0.75	160.0	8.80	437.0	307.4	169.0	7.82	1103	.05<T	<.05<W	.040	0.50	25.10
87CP008	W29-0145	87-07-06	93.2	1.50	158.0	8.80	432.0	340.8	183.0	7.93	1217	.10<T	<.05<W	.005<T	0.70	27.40
87CP008	W30-0271	87-07-20	79.2	0.75	154.0	8.50	420.0	338.7	162.0	7.88	1145	<.05<W	.20<T	<.005<W	0.70	21.60
870P008	W32-0182	87-08-04	85.0	0.90	153.0	8.20	416.0	341.4	168.0	7.83	1166	<.05<W	<.05<W	.005<T	0.70	23.80
87CP008	W40-0058	87-09-28	76.6	1.20	143.0	7.70	388.0	343.1	137.0	7.84	1042	<.05<W	.10<T	<.005<W	0.70	24.00
87CP009	W22-0222	87-05-25	4.6	1.20	101.0	18.00	326.0	190.7	19.5	8.06	655	.10<T	.20<T	.050	20.40	37.80
87CP009	W24-0185	87-06-08	3.0	1.30	97.0	18.00	317.0	191.9	18.5	8.16	648	.05<T	.20<T	.050	20.10	38.10
87CP009	W26-0156	87-06-24	3.8	1.15	99.8	18.10	324.0	192.3	19.5	8.28	636	.05<T	<.05<W	.135	20.70	38.10
87CP009	W29-0147	87-07-06	4.4	1.25	100.0	17.50	323.0	191.8	20.0	8.01	647	.15<T	<.05<W	.045	20.40	39.10
87CP009	W30-0272	87-07-20	3.8	1.20	99.6	17.20	319.0	198.2	19.0	8.09	636	<.05<W	.10<T	<.005<W	20.30	32.60
87CP009	W34-0176	87-08-19	4.4	1.25	102.0	17.90	329.0	199.9	19.0	7.95	635	.05<T	.10<T	<.005<W	19.80	39.80
870P009	W40-0059	87-09-24	5.2	1.45	101.0	18.20	327.0	206.0	17.0	8.11	615	.05<T	<.05<W	.005<T	18.30	34.50
87CP010	W32-0183	87-08-04	5.0	1.35	87.8	22.20	311.0	228.0	19.0	7.97	580	<.05<W	<.05<W	<.005<W	1.85	52.80
87CP010	W34-0177	87-08-17	5.2	1.45	78.8	23.20	293.0	214.2	18.0	7.97	546	<.05<W	.10<T	<.005<W	1.00	60.70
87CP010	W40-0060	87-09-24	6.0	1.65	94.2	21.40	323.0	242.8	20.5	8.02	590	.05<T	.10<T	<.005<W	2.30	48.40
87CP011	W32-0185	87-08-04	5.2	0.55	99.8	11.90	298.0	265.6	8.0	8.05	556	<.05<W	<.05<W	.005<T	2.05	23.70
87CP011	W34-0178	87-08-17	6.2	0.55	104.0	12.60	312.0	266.9	8.5	7.93	557	.05<T	.10<T	<.005<W	1.95	27.90
87CP011	W40-0061	87-09-24	6.8	0.65	103.0	12.90	309.0	270.9	9.5	8.04	558	.05<T	.40	<.005<W	2.00	25.80

12-Apr-89

SITE LOC.	Lab #	Samp. Date	Tot Col ()	Fec Col ()	Atraz (ng/L)	Cyan (ng/L)	Sima (ng/L)	Prop (ng/L)	Meta (ng/L)	Prom (ng/L)	Meto (ng/L)	Ala (ng/L)	Dicam (ng/L)	2,4-D (ng/L)	2,4-DB (ng/L)	2,4D-P (ng/L)	2,4,5-T (ng/L)	Feno (ng/L)	Piclo (ng/L)	
87CP001	OW22-0330	87-05-25	16	0	ND	ND	ND	ND	ND	ND	ND	ND								
87CP001	OW23-0454	87-06-03	2	0									ND	ND	ND	ND	ND	ND	ND	ND
87CP001	OW24-0131	87-06-08	0	0	ND	ND	ND	ND	ND	ND	ND	ND								
87CP001	OW25-0314	87-06-15	4	0									ND	ND	ND	ND	ND	ND	ND	NA
87CP001	OW26-0208	87-06-22	0	0	ND	ND	ND	ND	ND	ND	ND	ND								
87CP001	OW27-0101	87-06-29	6	0									ND	ND	ND	ND	ND	ND	ND	NA
87CP001	OW29-0128	87-07-06	8	0	ND	ND	ND	ND	ND	ND	ND	ND								
87CP001	OW30-0302	87-07-20	0	0									ND	ND	ND	ND	ND	ND	ND	NA
87CP001	OW31-0408	87-07-27	2	0									ND	ND	ND	ND	ND	ND	ND	NA
87CP001	OW32-0171	87-08-04	6	0	ND	ND	ND	ND	ND	ND	ND	ND								
87CP001	OW33-0237	87-08-10	2	0									ND	ND	ND	ND	ND	ND	ND	WA
87CP001	OW34-0318	87-08-17	0	0	ND	ND	ND	ND	ND	ND	ND	ND								
87CP001	OW35-0285	87-08-25											ND	ND	ND	ND	ND	ND	ND	NA
87CP001	OW39-0274	87-09-14											ND	ND	ND	ND	ND	ND	ND	NA
87CP001	OW41-0273	87-10-06											ND	ND	ND	ND	ND	ND	ND	NA
87CP002	OW22-0331	87-05-25	0	0	ND	ND	ND	ND	ND	ND	ND	ND								
87CP002	OW23-0455	87-06-03	60	0									ND	ND	ND	ND	ND	ND	ND	WA
87CP002	OW24-0132	87-06-08	>160	2	ND	ND	ND	ND	ND	ND	ND	ND								
87CP002	OW25-0315	87-06-15	>160	2									ND	ND	ND	ND	ND	ND	ND	WA
87CP002	OW26-0209	87-06-22	>160	2	ND	ND	ND	ND	ND	ND	ND	ND								
87CP002	OW27-0102	87-06-29	>160	2									ND	ND	ND	ND	ND	ND	ND	NA
87CP002	NA	87-07-06	O/G	0	NA	NA	NA	NA	NA	NA	NA	NA								
87CP002	OW30-0303	87-07-20	32	18	ND	ND	ND	ND	ND	ND	ND	ND								
87CP002	OW31-0409	87-07-27	118	21									ND	ND	ND	ND	ND	ND	ND	NA
87CP002	OW32-0172	87-08-04	>160	5	ND	ND	ND	ND	ND	ND	ND	ND								
87CP002	OW33-0238	87-08-10	>160	5									ND	ND	ND	ND	ND	ND	ND	NA
87CP002	OW34-0319	17-08-17	>160	>60	ND	ND	ND	ND	ND	ND	ND	ND								
87CP002	OW35-0286	87-08-25											ND	ND	ND	ND	ND	ND	ND	NA
87CP002	OW39-0275	17-09-14											ND	ND	ND	ND	ND	ND	ND	NA
87CP002	OW41-0274	17-10-06											ND	ND	ND	ND	ND	ND	ND	NA
87CP003	OW22-0333	17-05-25	0	0	ND	ND	ND	ND	ND	ND	ND	ND								

17-Apr-89

SITE LOC.	Lab #	Samp. Date	Tot Col ()	Fec Col ()	Atraz (ng/L)	Cyan (ng/L)	Sima (ng/L)	Prop (ng/L)	Meta (ng/L)	Prom (ng/L)	Meto (ng/L)	Ala (ng/L)	Dicam (ng/L)	2,4-D (ng/L)	2,4-DB (ng/L)	2,4D-P (ng/L)	2,4,5-T (ng/L)	Feno (ng/L)	Piclo (ng/L)
87CP003	OW23-0456	87-06-03	0	0									ND	ND	ND	ND	ND	ND	NA
87CP003	OW24-0133	87-06-08	0	0	ND	ND	ND	ND	ND	ND	ND	ND							
87CP003*	OW24-0140	87-06-08	0	0	ND	ND	ND	ND	ND	ND	ND	ND							
87CP003	OW25-0316	87-06-15	0	0									ND	ND	ND	ND	ND	ND	NA
87CP003	OW26-0210	87-06-22	6	0	ND	ND	ND	ND	ND	ND	ND	ND							
87CP003	OW27-0103	87-06-29	4	0									ND	ND	ND	ND	ND	ND	NA
87CP003	NA	87-07-06	36	0	NA	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND	ND	NA
87CP003	OW30-0304	87-07-20	8	0	ND	ND	ND	ND	ND	ND	ND	ND							
87CP003	OW31-041D	87-07-27	16	0									ND	ND	ND	ND	ND	ND	NA
87CP003	OW32-0173	87-08-04	30	1	ND	ND	ND	No	ND	ND	ND	ND							
87CP003	OW33-0239	87-08-10	34	0									ND	ND	ND	ND	ND	ND	NA
87CP003	OW34-0320	87-08-17	14	0	ND	ND	ND	ND	ND	ND	ND	ND							
87CP003	OW35-0287	87-08-25											ND	ND	ND	ND	ND	ND	NA
87CP003	OW39-0276	87-09-14											ND	ND	ND	ND	ND	ND	NA
87CP003	OW41-0275	87-10-06											ND	ND	ND	ND	ND	ND	NA
87CP004	OW22-0333	87-05-25	0	0	ND	ND	ND	ND	ND	ND	ND	ND							
87CP004	OW23-0457	87-06-03	0	0									ND	ND	ND	ND	ND	ND	NA
87CP004	OW24-0134	87-06-08	0	0	ND	ND	ND	ND	ND	ND	ND	ND							
87CPD04	OW25-0317	87-06-15	0	0									ND	ND	ND	ND	ND	ND	NA
87CP004	OW26-0211	87-06-22	0	0	ND	ND	ND	ND	ND	ND	ND	ND							
87CP004	OW27-0104	87-06-29	0	0									ND	ND	ND	ND	ND	ND	WA
87CP004	NA	87-07-06	0	0	NA	NA	NA	NA	NA	NA	NA	NA							
87CP004	OW30-0305	87-07-20	0	0	ND	ND	ND	ND	ND	ND	ND	No							
87CP004	OW31-0411	87-07-27	0	0									ND	ND	ND	ND	ND	ND	NA
87CP004	OW32-0174	87-08-04	0	0	ND	ND	ND	ND	ND	ND	ND	ND							
87CP004	OW33-0240	87-08-10	0	0									ND	ND	ND	ND	ND	ND	NA
87CP004	OW34-0321	87-08-17	0	0	ND	ND	ND	ND	ND	ND	ND	ND							
87CP004	OW35-0288	87-08-25											ND	ND	ND	ND	ND	ND	NA
87CP004	OW39-0277	87-09-14											ND	ND	ND	ND	ND	ND	NA
87CP004	OW41-0276	87-10-06											ND	ND	ND	ND	ND	ND	NA
87CP005	OW22-0334	87-05-25	0	0	ND	ND	ND	ND	ND	ND	ND	ND							

17-Apr-89

SITE LOC.	Lab #	Samp. Date	Tot Col ()	Fec Col ()	Atraz (ng/L)	Cyan (ng/L)	Sima (ng/L)	Prop (ng/L)	Meta (ng/L)	Prom (ng/L)	Meto (ng/L)	Ala (ng/L)	Dicam (ng/L)	2,4-D (ng/L)	2,4-DB (ng/L)	2,4D-P (ng/L)	2,4,5-T (ng/L)	Feno (ng/L)	Piclo (ng/L)	
87CP005*	OW22-0339	87-05-25	0	0	ND	ND	ND	ND	ND	ND	ND	ND								
87CP005	OW23-0458	87-06-03	0	0									ND	ND	ND	ND	ND	ND	ND	ND
87CP005	OW24-0135	87-06-08	0	0	ND	ND	ND	ND	ND	ND	ND	ND								
87CP005	OW25-0318	87-06-15	0	0									ND	ND	ND	ND	ND	ND	ND	ND
87CP005	OW26-0212	87-06-22	0	0	ND	ND	ND	ND	ND	ND	ND	ND								
87CP005	OW27-D105	87-06-29	0	0									ND	ND	ND	ND	ND	ND	ND	NA
87CP005	NA	87-07-06	0	0	NA	NA	NA	NA	NA	NA	NA	NA								
87CP005	OW30-0306	87-07-20	0	0	ND	ND	ND	ND	ND	ND	ND	ND								
87CP005	OW31-0412	87-07-27	0	0									ND	ND	ND	ND	ND	ND	ND	ND
87CP005	OW32-0175	87-08-04	0	0	ND	ND	ND	ND	ND	ND	ND	ND								
87CP005	OW33-0241	87-08-10	0	0									ND	ND	ND	ND	ND	ND	ND	NA
87CP005	OW34-0322	87-08-17	20	16	ND	ND	ND	ND	ND	ND	ND	ND								
87CP005	OW35-0289	87-08-25											ND	ND	ND	ND	ND	ND	ND	NA
87CP005	OW39-0278	87-09-14											ND	ND	ND	ND	ND	ND	ND	NA
87CP005	OW41-0277	87-10-06											ND	ND	ND	ND	ND	ND	ND	NA
87CP006	OW22-0335	87-05-25	60	0	ND	ND	ND	ND	ND	ND	ND	ND								
87CP006	OW23-0459	87-06-03	>160	0									ND	ND	ND	ND	ND	ND	ND	NA
87CP006	OW24-0136	87-06-08	42	1	ND	ND	ND	ND	ND	ND	ND	ND								
87CP006	OW25-0319	87-06-15	>160	0									ND	ND	ND	ND	ND	ND	ND	NA
87CP006	OW26-0213	87-06-22	68	6	ND	ND	ND	ND	ND	ND	ND	ND								
87CP006	OW27-0106	87-06-29	>160	>60									ND	ND	ND	ND	ND	ND	ND	NA
87CP006	OW29-0129	87-07-06	88	0	ND	ND	ND	ND	ND	ND	ND	ND								
87CP006	OW30-0307	87-07-20	42	3	ND	ND	ND	ND	ND	ND	ND	ND								
87CP006	OW31-0413	87-07-27	48	1									ND	ND	ND	ND	ND	ND	ND	NA
87CP006	OW32-0176	87-08-04	>160	0	ND	ND	ND	ND	ND	ND	ND	ND								
87CP006	OW33-0242	87-08-10	>160	0									ND	ND	ND	ND	ND	ND	ND	ND
87CP006	OW34-0323	87-08-17	42	1	ND	ND	ND	ND	ND	ND	ND	ND								
87CP006	OW35-0290	87-08-25											ND	ND	ND	ND	ND	ND	ND	NA
87CP006	OW39-0279	87-09-14											ND	ND	ND	ND	ND	ND	ND	ND
87CP006	OW41-0278	87-10-06											ND	ND	ND	ND	ND	ND	ND	ND
87CP007	OW22-0336	87-05-25	0	0	ND	ND	ND	ND	ND	ND	ND	ND								

17-Apr-89

SITE LOC.	Lab #	Samp. Date	Tot Col ()	Fec Col ()	Atraz (ng/L)	Cyan (ng/L)	Sima (ng/L)	Prop (ng/L)	Meta (ng/L)	Prom (ng/L)	Meto (ng/L)	Ala (ng/L)	Dicam (ng/L)	2,4-D (ng/L)	2,4-DB (ng/L)	2,4D-P (ng/L)	2,4,5-T (ng/L)	Feno (ng/L)	Piclo (ng/L)
87CP007	OW23-0460	87-06-03	0	0									ND	ND	ND	ND	ND	ND	NA
87CP007	OW24-0137	87-06-08	2	0	ND	ND	ND	ND	ND	ND	ND	ND							
87CP007	OW25-0320	87-06-15	0	0									ND	ND	ND	ND	ND	ND	NA
87CP007	OW26-0214	87-06-22	0	0	ND	ND	ND	ND	ND	ND	ND	ND							
87CP007	OW27-0107	87-06-29	0	0									ND	ND	ND	ND	ND	ND	NA
87CP007	OW29-0130	87-07-06	0	0	ND	ND	ND	ND	ND	ND	ND	ND							
87CP007	OW30-0308	87-07-20	0	0	ND	ND	ND	ND	ND	ND	ND	ND							
87CP007*	OW30-0309	87-07-20	0	0	ND	ND	ND	ND	ND	ND	ND	ND							
87CP007	OW31-0414	87-07-27	0	0									ND	ND	ND	ND	ND	ND	WA
87CP007	OW32-0177	87-08-04	2	0	ND	ND	ND	ND	ND	ND	ND	ND							
87CP007	OW33-0243	87-08-10	0	0									ND	ND	ND	ND	ND	ND	NA
87CP007	OW34-0324	87-08-17	0	0	ND	MO	ND	ND	ND	ND	ND	ND							
87CP007	OW35-0291	87-08-25											ND	ND	ND	ND	ND	ND	NA
87CP007	OW39-0280	87-09-14											ND	ND	ND	ND	ND	ND	WA
87CP007	OW41-0279	87-10-06											ND	ND	ND	ND	ND	ND	NA
87CP008	OW22-0337	87-05-25	>160	1	ND	ND	ND	ND	ND	ND	ND	ND							
87CP008	OW23-0461	87-06-03	0	0									ND	ND	ND	ND	ND	ND	NA
87CP008	OW24-D138	87-06-08	74	0	ND	ND	ND	ND	ND	ND	ND	ND							
87CP008	OW25-0321	87-06-15	70	2									ND	ND	ND	ND	ND	ND	NA
87CP008	OW26-0215	87-06-22	12	4	ND	ND	ND	ND	ND	ND	ND	ND							
87CP008*	OW26-0216	87-06-22	8	7	ND	ND	ND	ND	ND	ND	ND	ND							
87CP008	OW27-0108	87-06-29	32	3									ND	ND	ND	ND	ND	ND	WA
87CP008	OW29-0131	87-07-06	0	0	ND	ND	ND	ND	ND	ND	ND	ND							
87CP008	NA	87-07-20	0	0	NA	NA	NA	NA	ND	NA	NA	NA							
87CP008	OW31-0415	87-07-27	6	0									ND	ND	ND	ND	ND	ND	NA
87CP008	OW32-0178	87-08-04	2	0	ND	ND	ND	ND	ND	ND	ND	ND							
87CP008	OW33-0244	87-08-10	2	0									ND	ND	ND	ND	ND	ND	NA
87CP008	NA	87-08-17	0	0									ND	ND	ND	ND	ND	ND	NA
87CP008	OW35-0292	87-08-25											ND	ND	ND	ND	ND	ND	NA
87CP008	OW39-0281	87-09-14											ND	ND	ND	ND	ND	ND	NA
87CP008	OW41-0280	87-10-06			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA

17-Apr 89

SITE LOC.	Lab #	Samp. Date	Tot Col (	Fec Col)	Atraz (ng/L)	Cyan (ng/L)	Sima (ng/L)	Prop (ng/L)	Meta (ng/L)	Prom (ng/L)	Meto (ng/L)	Ala (ng/L)	Dicam (ng/L)	2,4-D (ng/L)	2,4-DB (ng/L)	2,4D-P (ng/L)	2,4,5-T (ng/L)	Feno (ng/L)	Piclo (ng/L)	
87CP009	OW22-0338	87-05-27	0	0	ND	ND	ND	ND	ND	ND	ND	ND								
87CP009	OW23-0462	87-06-04	0	0									ND	ND	ND	ND	ND	ND	ND	NA
87CP009*	OW23-0463	87-06-04	NA	NA									ND	ND	ND	ND	ND	ND	ND	NA
87CP009	OW24-0139	87-06-10	0	0	ND	ND	ND	ND	ND	ND	ND	ND								
87CP009	OW25-0322	87-06-15	0	0									ND	ND	ND	ND	ND	ND	ND	NA
87CP009	OW26-0217	87-06-22			ND	ND	ND	ND	ND	ND	ND	ND								
87CP009	NA	87-06-24	0	0																
87CP009	OW27-0109	87-06-29	0	0									ND	ND	ND	ND	ND	ND	ND	NA
87CP009	OW29-0133	87-07-06	0	0	ND	ND	ND	ND	ND	ND	ND	ND								
87CP009	OW30-0310	87-07-20			ND	ND	ND	HD	ND	ND	ND	ND								
87CP009	NA	87-07-23	0	0																
87CP009	OW31-0416	87-07-28	0	0									ND	ND	ND	ND	ND	ND	ND	NA
87CP009	OW32-0179	87-08-04			ND	ND	ND	ND	ND	ND	ND	ND								
87CP009	NA	87-08-06	0	0																
87CP009	OW33-0245	87-08-10											ND	ND	ND	ND	ND	ND	ND	NA
87CP009	NA	87-08-12	0	0																
87CP009	OW35-0293	87-08-26											ND	ND	ND	ND	ND	ND	ND	ND
87CP009	OW41-D281	87-10-07											ND	ND	ND	ND	ND	ND	ND	NA
87CP010	OW31-D417	87-07-27	16	2									ND	ND	ND	ND	ND	ND	ND	NA
87CP010*	OW31-0419	87-07-27	4	4									ND	ND	ND	ND	ND	ND	ND	NA
87CP010	OW32-0180	87-08-04	4	3	ND	ND	ND	ND	ND	ND	ND	ND								
87CP010	OW33-0246	87-08-10	0	0									ND	ND	ND	ND	ND	ND	ND	NA
87CP010	OW34-0327	87-08-17	10	3	ND	ND	ND	ND	ND	ND	ND	ND								
87CP010	OW35-0294	87-08-25											ND	ND	ND	ND	ND	ND	ND	NA
87CP010	OW39-0282	87-09-14											ND	ND	ND	ND	ND	ND	ND	NA
87CP010	OW41-0282	87-10-06											ND	ND	ND	ND	ND	ND	ND	ND
87CP011	OW31-0418	87-07-27	>160	4									ND	ND	ND	ND	ND	ND	ND	NA
87CP011	OW32-0182	87-08-04	>160	5	ND	ND	ND	ND	ND	ND	ND	ND								
87CP011	OW33-0247	87-08-10	62	1									ND	ND	RD	ND	ND	ND	ND	NA
87CP011*	OW33-0248	87-08-10	62	0									ND	ND	ND	ND	ND	ND	ND	NA
87CP011	OW34-0328	87-08-17	36	5	HD	ND	ND	ND	ND	ND	ND	HO								

17-Apr-89

SITE LOC.	Lab #	Samp. Date	Tot Col ()	Fec Col ()	Atraz (ng/L)	Cyan (ng/L)	Sima (ng/L)	Prop (ng/L)	Meta (ng/L)	Prom (ng/L)	Meto (ng/L)	Ala (ng/L)	Dicam (ng/L)	2,4-D (ng/L)	2,4-DB (ng/L)	2,4D-P (ng/L)	2,4,5-T (ng/L)	Feno (ng/L)	Piclo (ng/L)
87CP011	OW35-0295	87-08-25											ND	ND	ND	ND	ND	ND	NA
87CP011	OW41-0283	87-10-06											ND	ND	ND	ND	ND	ND	NA
17-Apr-89																			

MAJOR ION CHEMISTRY - SOUTHEASTERN REGION 1987 DATA PAGE -1-

SITE LOC.	Sample Number	Sample Date	Na (mg/L)	K (mg/L)	Ca (mg/L)	Mg (mg/L)	Hardness		Fe (mg/L)	Cl (mg/L)	pH Lab	Cond. (µS, 25C)	Ammonium (mg/L)	Kjeldahl-N (mg/L)	Nitrite-N (mg/L)	Nitrate-N (mg/L)	Sulphate (mg/L)
							As CaCO ₃ (mg/L)	Alkalinity As CaCO ₃ (mg/L)									
87SE001	KW19-58	87-05-12	NA	NA	NA	NA	NA	NA	0.05	42.9	NA	600	<.01	NA	<.002	10.0	NA
87SE001	KW23-79	87-06-10	20.4	8.4	99.7	10.1	290.7	219.7	<.05	41.2	7.79	623	0.01	0.34	<.002	9.20	27
87SE001	KW23-87	87-07-03	13.2	10.4	135.1	75.4	648.0	336.2	<-.05	28.6	7.57	763	0.01	0.24	<.002	3.20	25
87SE001	KW28-82	87-07-15	21.0	1.8	96.1	10.4	282.0	221.0	<.05	43.5	8.03	660	<.01	NA	<.002	9.60	24
87SE001	KW32-50	87-08-11	22.8	1.9	109.0	11.5	318.0	228.0	0.10	57.9	8.04	699	<.01	0.29	<.002	10.4	24
87SE001	KW38-96	87-09-22	29.0	2.0	NA	NA	NA	NA	NA	NA	NA	760	0.03	NA	0.002	9.00	NA
87SE001	KW43-58	87-10-28	28.1	2.1	99.4	10.2	290.0	233.0	0.08	62.0	7.70	765	0.02	NA	<.002	9.60	23
87SE001*	KW43-63	87-10-28	29.4	2.1	97.2	10.3	285.0	234.0	0.07	62.6	7.80	740	0.05	0.36	<-.002	9.00	24
87SE003	KW19-60	87-05-12	NA	NA	NA	NA	NA	NA	0.10	34.3	NA	638	<.01	NA	<.002	12.4	NA
87SE003	KW23-80	87-06-10	15.9	3.1	103.9	11.2	305.4	238.4	0.10	31.6	7.74	622	0.01	0.37	<.002	7.60	28
87SE003	KW28-83	87-07-15	15.3	2.9	97.3	11.3	289.0	229.0	3.90	33.2	7.97	605	<.01	NA	0.002	7.00	23
87SE003	KW32-51	87-08-11	13.8	2.2	97.4	9.60	282.0	238.0	0.05	28.3	7.83	590	<.01	0.30	0.002	7.20	21
87SE004	KW19-61	87-05-12	NA	NA	NA	NA	NA	NA	<.05	28.7	NA	643	<.01	NA	<.002	13.2	NA
87SE004	KW23-81	87-06-10	12.2	4.2	117.8	11.8	342.7	259.9	<.05	26.3	8.01	661	0.01	0.39	<.002	6.00	32
87SE004	KW28-84	87-07-15	13.0	3.6	110.0	11.8	324.0	262.0	0.10	27.6	7.88	680	<.01	NA	<-.002	10.8	26
87SE005	KW19-62	87-05-12	NA	NA	NA	NA	NA	NA	<.05	18.4	NA	710	<.01	NA	<.002	5.80	NA
87SE005	KW23-82	87-06-10	13.2	11.1	136.2	14.4	399.6	336.1	<.05	27.9	7.81	754	<.01	0.31	<.002	7.40	38
87SE005*	KW23-87	87-06-10	13.2	10.4	135.1	75.4	648.0	336.2	<.05	28.6	7.57	763	0.01	0.24	<.002	3.20	25
87SE005	KW28-85	87-07-15	16.5	13.3	123.0	14.9	369.0	329.0	<.05	28.6	7.97	800	<.01	NA	0.002	8.40	38
87SE005*	KW28-89	87-07-15	16.7	13.2	116.0	15.6	354.0	330.0	<.05	28.8	7.86	800	<.01	NA	<.002	8.20	37
87SE005	KW32-52	87-08-11	14.3	16.2	121.0	15.1	365.0	320.0	1.40	23.2	8.18	760	<.01	0.35	<.002	9.00	39
87SE005	KW38-97	87-09-22	15.0	17.5	NA	NA	NA	NA	NA	NA	NA	775	0.03	NA	0.002	8.40	NA
87SE005*	KW38-102	87-09-22	15.2	17.8	NA	NA	NA	NA	NA	NA	NA	750	0.04	NA	0-002	8.60	NA
87SE006	KW19-63	87-05-12	NA	NA	NA	NA	NA	NA	<.05	8.00	NA	571	<.01	NA	<.002	6.80	NA
87SE006	KW23-83	87-06-10	6.80	4.9	98.1	14.9	306.4	261.4	<.05	8.50	7.91	568	<.01	0.04	<.002	5.80	32
87SE006	KW28-86	87-07-15	7.10	4.9	92.9	14.9	293.0	263.0	<.05	9.05	8.06	590	<.01	NA	<.002	6.00	27
87SE006	KW32-53	87-08-11	4.90	4.9	97.4	13.1	297.0	265.0	<.05	9.44	8.34	590	<.01	0.27	<.002	7.60	28
87SE006	KW38-98	87-09-22	11.3	4.4	NA	NA	NA	NA	NA	NA	NA	630	0.11	NA	0.008	7.40	NA

12-Apr-89

SITE LOC.	Sample Number	Sample Date	Na (mg/L)	K (mg/L)	Ca (mg/L)	Mg (mg/L)	Hardness As CaCO ₃ (mg/L)	Alkalinity As CaCO ₃ (mg/L)	Fe (mg/L)	Cl (mg/L)	pH Lab	Cond. (µS, 25C)	Ammonium (mg/L)	Kjeldahl-N (mg/L)	Nitrite-N (mg/L)	Nitrate-N (mg/L)	Sulphate (mg/L)
87SE006	KW43-59	87-10-28	6.9	4.0	91.4	13.1	282.0	270.0	0.01	10.2	7.60	610	0.05	0.28	0.060	7.74	30
87SE007	KW19-64	87-05-12	NA	NA	NA	NA	NA	NA	0.15	37.3	NA	572	<.01	NA	0.002	4.20	NA
87SE007	KW23-84	87-06-10	16.5	1.5	86.2	15.2	279.6	222.9	0-05	35.2	7.81	575	0.01	0.18	<.002	3.00	33
87SE007	KW28-87	87-07-15	18.2	1.8	83.8	15.2	272.0	219.0	<.05	36.3	8.10	585	<.01	NA	<.002	3.60	27
87SE007	KW32-54	87-08-11	15.0	1.8	86.0	13.9	292.0	223.0	<.05	33.7	8.13	575	<.01	0.20	0.002	4.60	28
87SE007	KW38-99	87-09-22	16.4	2.4	NA	NA	NA	NA	NA	NA	NA	600	0.05	NA	0.004	4.80	NA
87SE007	KW43-60	87-10-28	15.9	2.3	89.7	13.0	277.0	221.0	0.08	30.7	7.80	585	0.02	0.25	0.006	5.40	29
87SE008	KW23-85	87-06-10	11.4	2.0	104.3	60.2	508.1	240.6	<.05	26.4	7.94	610	0.01	0.35	<.002	8.00	27
87SE008	KW32-55	87-08-11	9.80	2.0	101.0	12.7	305.0	251.0	<.05	23.3	7.81	600	<.01	0.26	<.002	9.40	25
87SE008*	KW32-57	87-08-11	11.8	2.0	104.0	12.0	311.0	251.0	0.05	24.3	7.72	620	0.04	0.32	<.002	9.40	25
87SE008	KW34-30	87-08-25	11.3	2.6	100.0	11.3	297.0	252.0	0.10	22.0	7.76	630	<.01	0.26	<.002	8.60	24
87SE008	KW38-100	87-09-22	12.9	2.1	NA	NA	NA	NA	NA	NA	NA	640	0.03	NA	0.002	9.40	NA
87SE008	KW43-61	87-10-28	12.6	2.5	97.1	11.0	288.0	247.0	<.01	24.5	7.50	640	0.02	0.26	<.002	9.00	24
87SE009	KW23-86	87-06-10	44.0	1.8	117.8	59.5	539.2	248.4	<.05	105.4	7.73	828	0.02	0.20	<.002	3.60	20
87SE009	KW28-88	87-07-15	36.8	2.0	105.0	12.4	312.0	245.0	<.05	82.6	7.78	785	<.01	NA	<.002	8-00	25
87SE009	KW32-56	87-08-11	38.9	1.9	109.0	10.9	318.0	249.0	0.15	80.4	7.69	760	<.01	0.22	0.002	5.90	27
87SE009	KW38-101	87-09-22	38.2	1.9	NA	NA	NA	NA	NA	NA	NA	810	0.03	NA	0.002	5.60	NA
87SE009	KW43-62	87-10-28	42.1	2.2	100.4	11.3	297.0	256.0	<.01	84.6	7.60	820	0.03	0.34	<.002	5.00	25

12-Apr-89

Site Loc.	Lab #	Samp. Date	Tot Col [	Background Counts/100 ml	Fec Col]	Atraz (µg/L)	D-E Atraz (µg/L)	Cyan (µg/L)	Meto (µg/L)	Ala (µg/L)
87SE001	06870	87-05-12	18	43000	0	0.10	0.16	HR	ND	ND
87SE001	07235	87-05-19	6	9400	0	0.32	0.60	ND	0.61	ND
87SE001*	07244	87-05-19	8	174	0	0.41	0.70	0.40	0.56	ND
87SE001	07799	87-05-26	4	640	0	0.20	0.84	ND	ND	ND
87SE001	07886	87-06-02	8	90000	0	0.13	0.42	ND	ND	ND
87SE001	08350	87-06-10	184	45000	0	0.14	0.21	ND	ND	ND
87SE001	08615	87-06-16	22	50000	0	0.16	0.30	ND	ND	ND
87SE001*	08623	87-06-16	36	16000	0	0.13	0.25	ND	ND	ND
87SE001	09226	87-06-23	200	110000	0	0.12	0.22	ND	ND	ND
87SE001	09729	87-06-30	24	45000	0	0.22	0.12	ND	ND	ND
87SE001	12589	87-07-07	12	10300	0					
87SE001	10477	87-07-15				0.09	0.15	HD	ND	ND
87SE001	11713	87-07-21	14	1440	1	0.13	0.44	ND	ND	ND
87SE001	11063	87-07-28	6	7900	0	0.13	0.37	ND	ND	ND
87SE001	11312	87-08-04	6	3300	0	0.34	0.31	ND	ND	ND
87SE001	11721	87-08-11	<2	4500	0	0.11	ND	ND	ND	ND
87SE001	12175	87-08-18	O/G	>150	0	0.21	ND	ND	ND	ND
87SE001	12545	87-08-25	NS	NS	N5	0.25	0.25	ND	ND	ND
87SE001	12945	87-09-01	<2	1000	0	0.27	0.27	ND	ND	ND
87SE001	13190	87-09-08	<2	760	0	ND	ND	ND	ND	ND
87SE001	13364	87-09-16	NS	NS	N5	ND	ND	ND	ND	ND
87SE001	13637	87-09-22	8	40	0	0.16	0.30	ND	ND	ND
87SE001	13954	87-09-29				0.24	0.43	ND	ND	ND
87SE001	15348	87-10-06				0.19	0.25	ND	ND	ND
87SE001*	15353	87-10-06				0.13	0.26	ND	ND	ND
87SE001	15354	87-10-22				0.07	0.09	ND	ND	ND
87SE001*	15359	87-10-22				0.09	0.15	ND	ND	ND
87SE001	15360	87-10-28				0.09	0.15	ND	ND	ND
87SE001*	15365	87-10-28				0.17	0.29	ND	ND	ND
87SE003	06872	87-05-12	<2	22	0	0.30	0.24		ND	ND
87SE003*	06873	87-05-12	<2	8	0	0.24	0.18		ND	ND
87SE003	07237	87-05-19	<2	<2	0	0.74	0.82	0.18	0.30	ND

12-Apr-89

Site Loc.	Lab #	Samp. Date	Tot Col [	Background Counts/100 ml	Fec Col]	Atraz (µg/L)	D-E Atraz (µg/L)	Cyan (µg/L)	Meto (µg/L)	Ala (µg/L)
87SE003	07801	87-05-26	<2	<2	0	0.29	0.33	ND	ND	ND
87SE003	07887	87-06-02	<2	<2	0	0.23	0.40	ND	ND	ND
87SE003	08351	87-06-10	<2	<2	0	0.36	0.25	ND	ND	ND
87SE003	08616	87-06-16	<2	<2	0	0.39	0.32	ND	ND	ND
87SE003	09227	87-06-23	6	80	0	0.34	0.26	ND	ND	ND
87SE003	09730	87-06-30	2	242	0	0.42	0.46	ND	ND	ND
87SE003	12590	87-07-07	2	54	0					
87SE003	10478	87-07-15				0.29	0.27	ND	ND	ND
87SE003	11714	87-07-21	11	68	11	0.31	0.42	ND	ND	ND
87SE003	11064	87-07-28	2	16	0	0.29	0.37	ND	ND	ND
87SE003*	11070	87-07-28	10	14	0	0.33	0.25	ND	ND	ND
87SE003	11313	87-08-04	2	10	0	0.44	0.32	0.13	ND	ND
87SE003	15777	87-08-11	<2	104	0	NS	NS	NS	NS	NS
87SE003	12176	87-08-18	4	26	0	0.48	0.18	ND	ND	ND
87SE004	06874	87-05-12	2	<2	0	0.41	0.28	NR	ND	ND
87SE004	07238	87-05-19	<2	<2	0	0.71	0.49	0.12	ND	ND
87SE004	07802	87-05-26	<2	<2	0	0.37	0.43	ND	ND	ND
87SE004	07888	87-06-02	<2	<2	0	0.39	0.53	ND	ND	ND
87SE004	08352	87-06-10	<2	<2	0	0.45	0.33	ND	ND	ND
87SE004	08617	87-06-16	<2	<2	0	0.58	0.48	ND	ND	ND
87SE004	09228	87-06-23	<2	<2	0	0.39	0.28	ND	ND	ND
87SE004	09731	87-06-30	6	14	0	0.42	0.47	ND	ND	ND
87SE004*	09737	87-06-30	8	4	0	0.25	0.22	ND	ND	ND
87SE004	12591	87-07-07	2	<2	0					
87SE004	10479	87-07-15				0.16	0.17	ND	ND	ND
87SE005	06875	87-05-12	2	108	0	ND	ND	ND	ND	ND
87SE005	07239	87-05-19	4	320	0	0.07	0.27	ND	ND	ND
87SE005	07803	87-05-26	14	1440	0	0.04	0.16	ND	ND	ND
87SE005	07889	87-06-02	128	20	0	0.25	0.70	ND	ND	ND
87SE005*	07894	87-06-02	14	4	0	0.23	0.65	ND	ND	ND
87SE005	08353	87-06-10	18	3800	0	ND	ND	ND	ND	ND

12-Apr-89

Site Loc.	Lab #	Samp. Date	Tot Col [	Background Counts/100 ml	Fec Col]	Atraz (µg/L)	D-E Atraz (µg/L)	Cyan (µg/L)	Meto (µg/L)	Ala (µg/L)
87SE005*	08358	87-06-10	24	182	0	ND	ND	ND	ND	ND
87SE005	08618	87-06-16	16	56	0	ND	ND	ND	ND	ND
87SE005	09229	87-06-23	16	1140	0	ND	ND	ND	ND	ND
87SE005	09732	87-06-30	30	1100	0	ND	ND	ND	ND	ND
87SE005	12592	87-07-07	680	2300	0					
87SE005*	12597	87-07-07	640	2800	0					
87SE005	10480	87-07-15				0.08	0.30	ND	ND	ND
87SE005*	10484	87-07-15				0.03	ND	ND	ND	ND
87SE005	11715	87-07-21	92	600	30	0.04	ND	ND	ND	ND
87SE005	11065	87-07-28	200	3600	3	ND	ND	ND	ND	ND
87SE005	11314	87-08-04	48	520	1	0.14	0.10	0.21	ND	ND
87SE005*	11319	87-08-04	26	740	0	0.06	0.15	ND	ND	ND
87SE005	11722	87-08-11	28	760	0	ND	ND	ND	ND	ND
87SE005	12177	87-08-18	290	9200	1	ND	ND	ND	ND	ND
87SE005	12542	87-08-25	NS	NS	NS	ND	ND	ND	ND	ND
87SE005	12946	87-09-01	36	50	0	ND	ND	ND	ND	ND
87SE005*	12951	87-09-01	32	520	1	ND	ND	ND	ND	ND
87SE005	13110	87-09-08	30	100	0	ND	ND	ND	ND	ND
87SE005*	13115	87-09-08	18	280	0	ND	ND	ND	ND	ND
87SE005	13365	87-09-16	N5	NS	NS	ND	ND	ND	ND	ND
87SE005	13638	87-09-22	600	7100	16	ND	ND	ND	ND	ND
87SE005*	13643	87-09-22	600	4600	19	ND	ND	ND	ND	ND
87SE005	13955	87-09-29				0.10	0.11	ND	ND	ND
87SE006	06876	87-05-12	4	4	0	ND	ND		ND	ND
87SE006	07240	87-05-19	2	16	0	0.25	0.54	ND	ND	ND
87SE006	07804	87-05-26	<2	<2	0	ND	0.17	ND	ND	ND
87SE006*	07807	87-05-26	<2	<2	0	ND	0.14	ND	ND	ND
87SE006	07890	87-06-02	<2	2	0	0.26	0.67	ND	ND	ND
87SE006	08354	87-06-10	4	172	0	ND	ND	ND	ND	ND
87SE006*	09234	87-06-10				ND	ND	ND	ND	ND
87SE006	08619	87-06-16	66	162	0	ND	ND	ND	ND	ND
87SE006	09230	87-06-23	12	152	0	ND	ND	ND	ND	ND

12-Apr-89

Site Loc.	Lab #	Samp. Date	Tot Col [	Background Counts/100 ml	Fec Col]	Atraz (µg/L)	D-E Atraz (µg/L)	Cyan (µg/L)	Meto (µg/L)	Ala (µg/L)
87SE006	09733	87-06-30	8	26	0	ND	ND	ND	ND	ND
87SE006	12593	87-07-07	76	640	0					
87SE006	10481	87-07-15				ND	ND	ND	ND	ND
87SE006	11716	87-07-21	300	4800	27	ND	ND	ND	ND	ND
87SE006*	13953	87-07-21	38	1500	12					
87SE006	11066	87-07-28	900	5400	24	ND	ND	ND	ND	ND
87SE006	11315	87-08-04	30	380	0	0.20	0.11	ND	ND	ND
87SE006	11723	87-08-11	220	4000	11	ND	ND	ND	ND	ND
87SE006	12178	87-08-18	218	4100	0	ND	ND	ND	ND	ND
87SE006*	12182	87-08-18	292	4600	2	ND	ND	ND	ND	ND
87SE006	12543	87-08-25	NS	NS	NS	ND	ND	ND	ND	ND
87SE006	12947	87-09-01	400	320	0	ND	ND	ND	ND	ND
87SE006	13111	87-09-08	320	1060	0	ND	ND	ND	ND	ND
87SE006	13366	87-09-16	NS	NS	NS	ND	ND	ND	ND	ND
87SE006	13639	87-09-22	14	74	1	ND	ND	ND	ND	ND
87SE006	13956	87-09-29				ND	ND	ND	ND	ND
87SE006*	13960	87-09-29				ND	ND	ND	ND	ND
87SE006	15349	87-10-06				ND	ND	ND	ND	ND
87SE006	15355	87-10-22				ND	ND	ND	ND	ND
87SE006	15361	87-10-28				ND	ND	ND	ND	ND
87SE007	06877	87-05-12	<2	<2	0	ND	ND	NR	ND	ND
87SE007	07241	87-05-19	<2	<2	0	0.25	0.52	0.46	0.72	ND
87SE007	07805	87-05-26	<2	<2	0	0.03	0.14	ND	ND	ND
87SE007	07891	87-06-02	<2	<2	0	0.11	0.41	ND	ND	ND
87SE007	08355	87-06-10	<2	<2	0	ND	ND	ND	ND	ND
87SE007	08620	87-06-16	<2	<2	0	ND	ND	ND	ND	ND
87SE007	09231	87-06-23	<2	4	0	ND	ND	ND	ND	ND
87SE007	09734	87-06-30	<2	<2	0	ND	ND	ND	ND	ND
87SE007	12594	87-07-07	<2	<2	0					
87SE007	10482	87-07-15				0.06	0.15	ND	ND	ND
87SE007	11717	87-07-21	<2	<2	0	ND	ND	ND	ND	ND
87SE007	11067	87-07-28	<2	<2	0	ND	ND	ND	ND	ND

12-Apr-89

Site Loc.	Lab #	Samp. Date	Tot Col [	Background Counts/100 ml	Fec Col]	Atraz (µg/L)	D-E Atraz (µg/L)	Cyan (µg/L)	Meto (µg/L)	Ala (µg/L)
87SE007	11316	87-08-04	<2	<2	0	0.07	0.13	ND	ND	ND
87SE007	11724	87-08-11	<2	<2	0	ND	ND	ND	ND	ND
87SE007	12179	87-08-18	<2	<2	0	ND	ND	ND	ND	ND
87SE007	12948	87-09-01	<2	<2	0	ND	ND	ND	ND	ND
87SE007	13112	87-09-08	<2	<2	0	ND	ND	ND	ND	ND
87SE007	13367	87-09-16	NS	NS	NS	ND	ND	ND	ND	ND
87SE007	13640	87-09-22	<2	<2	0	ND	ND	ND	ND	ND
87SE007	13957	87-09-29				ND	ND	ND	ND	ND
87SE007	15350	87-10-06				ND	ND	ND	ND	ND
87SE007	15356	87-10-22				ND	ND	ND	ND	ND
87SE007	15362	87-10-28				ND	ND	ND	ND	ND
87SE008	07242	87-05-19	<2	2	0	0.38	0.54	0.11	0.05	ND
87SE008	07806	87-05-26	<2	<2	0	0.32	0.35	ND	ND	ND
87SE008	07892	87-06-02	<2	<2	0	0.61	0.86	ND	ND	ND
87SE008	08356	87-06-10	<2	<2	0	0.23	0.21	ND	ND	ND
87SE008	08621	87-06-16	<2	<2	0	0.25	0.28	ND	ND	ND
87SE008	09232	87-06-23	<2	<2	0	0.32	0.29	ND	ND	ND
87SE008	09735	87-06-30	<2	8	0	0.18	0.23	ND	ND	ND
87SE008	12595	87-07-07	<2	<2	0					
87SE008	11718	87-07-21	<2	<2	0	0.38	0.63	ND	ND	ND
87SE008	11068	87-07-28	<2	14	0	0.38	0.47	ND	ND	ND
87SE008	11317	87-08-04	<2	24	0	0.24	0.34	0.59	ND	ND
87SE008	11725	87-08-11	<2	<2	0	0.20	0.33	ND	ND	ND
87SE008*	11727	87-08-11	<2	<2	0	0.26	0.40	ND	ND	ND
87SE008	12180	87-08-18	<2	10	0	0.54	0.42	ND	ND	ND
87SE008	12949	87-09-01	<2	<2	0	0.47	0.27	ND	ND	ND
87SE008	13113	87-09-08	<2	6	0	0.27	0.23	ND	ND	ND
87SE008	13368	87-09-16				0.45	ND	ND	ND	ND
87SE008*	13370	87-09-16				0.42	ND	ND	ND	ND
87SE008	13641	87-09-22	<2	2	0	ND	ND	ND	ND	ND
87SE008	13958	87-09-29				0.46	0.41	ND	ND	ND
87SE008	15351	87-10-06				0.24	0.22	ND	ND	ND

12-Apr-89

Site Loc.	Lab #	Samp. Date	Tot Col [	Background Counts/100 ml	Fec Col]	Atraz (µg/L)	D-E Atraz (µg/L)	Cyan (µg/L)	Meto (µg/L)	Ala (µg/L)
87SE008	15357	87-10-22				0.35	0.29	ND	ND	ND
87SE008	15363	87-10-28				0.47	0.29	ND	ND	ND
87SE009	07893	87-06-02	<2	<2	0	0.18	0.54	ND	ND	ND
87SE009	08357	87-06-10	<2	<2	0	ND	ND	ND	ND	ND
87SE009	08622	87-06-16	<2	52	0	ND	ND	ND	ND	ND
87SE009	09233	87-06-23	<2	22	0	ND	ND	ND	ND	ND
87SE009	09736	87-06-30	<2	90	0	ND	ND	ND	ND	ND
87SE009	12596	87-07-07	<2	760	0					
87SE009	10483	87-07-15				0.03	ND	ND	ND	ND
87SE009	11719	87-07-21	<2	480	0	0.03	ND	ND	ND	ND
87SE009	11069	87-07-28	<2	78	0	0.16	0.17	0.25	ND	ND
87SE009	11318	87-08-04	<2	60	0	0.10	0.16	ND	ND	ND
87SE009	11726	87-08-11	<2	8	0	ND	ND	ND	ND	ND
87SE009	12181	87-08-18	<2	106	0	ND	ND	ND	ND	ND
87SE009	12544	87-08-25	NS	NS	NS	ND	ND	ND	ND	ND
87SE009	12950	87-09-01	<2	24	0	ND	ND	ND	ND	ND
87SE009	13114	87-09-08	<2	100	0	ND	ND	ND	ND	ND
87SE009	13369	87-09-16				ND	ND	ND	ND	ND
87SE009	13642	87-09-22	<2	14	0	0.45	ND	ND	ND	ND
87SE009	13959	87-09-29				0.11	0.21	ND	ND	ND
87SE009	15352	87-10-06				0.13	0.18	ND	ND	ND
87SE009	15358	87-10-22				0.09	0.10	ND	ND	ND
87SE009	15364	87-10-08				0.06	0.08	ND	ND	ND

12-Apr-89

MAJOR ION CHEMISTRY - SOUTHWESTERN REGION 1987 DATA Page -1-

SITE LOC.	SAMPLE DATE	Na (mg/L)	K (mg/L)	Ca (mg/L)	Mg (mg/L)	Hardness as CaCO ₃ (mg/L)	Alkalinity as CaCO ₃ (mg/L)	Fe (mg/L)	Cl (mg/L)	pH Lab	COND. (µS, 25C)	Ammonium (mg/L)	Kjeldahl-N (mg/L)	NITRITE-N (mg/L)	Nitrate-N (mg/L)	Sulphate (mg/L)	Phosphorous	
																	Total	React
87SW701	87-05-15	71.0	13.20	108.0	18.60	347.0	330.0	0.04	72.0	7.05	1030	0.020	0.73	0.04	12.80	52.50	0.065	0.060
87SW701	87-05-28	69.0	14.50	112.0	20.40	364.0	324.0	0.05	80.0	7.11	1050	0.020	0.76	0.04	14.40	49.00	0.069	0.058
87SW701	87-06-04	81.0	14.80	118.0	20.60	380.0	320.0	0.04	86.5	7.12	920	0.015	0.69	0.03	14.80	48.00	0.073	0.065
87SW701	87-06-10	72.0	15.00	118.0	21.00	382.0	327.0	0.10	80.0	7.13	1080	0.015	0.65	0.05	16.50	52.50	0.072	0.067
87SW701	87-06-18	75.0	14.80	108.0	19.80	352.0	326.0	0.06	85.0	7.03	1090	0.015	0.73	0.04	15.70	55.00	0.075	0.070
87SW701	87-06-25	84.0	14.50	116.0	20.60	375.0	325.0	0.12	80.0	7.71	1070	0.010	0.98	0.71	15.60	52.50	0.072	0.067
87SW701	87-07-09	70.0	16.00	113.0	19.80	364.0	317.0	0.05	83.0	7.21	1060	0.010	0.80	0.04	15.70	49.00	0.091	0.087
87SW701	87-07-16	72.0	14.00	108.0	20.40	354.0	320.0	0.06	82.5	7.05	1040	0.015	0.64	0.03	16.10	50.50	0.091	0.088
87SW701	87-07-22	69.0	15.00	120.0	21.60	389.0	323.0	0.07	84.5	7.22	1170	0.025	0.69	0.02	17.20	53.50	0.094	0.084
87SW701	87-08-06	76.0	15.50	114.0	20.40	369.0	326.0	0.01	85.0	7.06	1080	0.015	0.82	0.02	17.50	54.00	0.097	0.095
87SW701	87-08-13	74.0	16.00	112.0	20.40	364.0	323.0	0.04	82.5	7.08	1020	0.015	0.85	0.06	16.60	54.50	0.120	0.102
87SW701	87-08-20	70.0	15.80	122.0	19.80	387.0	321.0	0.03	78.5	7.15	1030	0.015	0.72	0.04	15.50	55.00	0.130	0.121
87SW701	87-08-27	74.0	15.20	108.0	19.40	350.0	324.0	0.14	82.0	7.16	1060	0.020	0.77	0.04	16.20	54.00	0.110	0.101
87SW701A	87-06-10	32.0	47.00	230.0	54.00	797.0	853.0	1.70	81.5	6-98	1710	2.510	2.78	0.02	0.10	12.50	0.100	0.028
87SW701A	87-06-18	33.8	48.50	225.0	55.00	789.0	815.0	18.00	92.5	5.89	1760	25.200	29.00	0.01	0.10	6.00	0.138	0.001
87SW701A	87-06-25	38.0	49.50	120.0	54.00	522.0	846.0	16.00	90.0	7.30	1690	25.200	29.00	0.01	0.10	8.00	0.215	0.003
87SW701A	87-07-01	46.0	48.50	220.0	60.00	797.0	851.0	28.60	102.0	6.98	1750	28.600	34.80	0.02	0.30	9.00	0.450	0.670
87SW701A	87-07-09	35.2	52.00	228.0	57.00	805.0	821.0	11.60	91.5	7.00	1810	27.000	31.00	0.02	0.10	8.00	0.180	0.082
87SW701A	87-07-16	34.0	50.00	215.0	56.00	768.0	858.0	13.00	86.5	6.96	1720	27.400	30.20	0.01	<0.10	7.50	0.135	0.065
87SW701A	87-07-22	34.0	52.00	230.0	52.00	789.0	860.0	12.50	89.5	7.01	1830	29.000	29.60	0.01	0.30	8.00	0.114	<0.001
87SW701A	87-07-29	36.0	56.00	195.0	50.00	694.0	736.0	13.60	86.5	6.85	1680	30.400	32.00	0.01	0.10	7.00	0.130	0.006
87SW701A	87-08-06	34.6	58.50	230.0	51.00	785.0	858.0	19.50	87.0	6.89	1710	31.000	31.50	0.01	0.40	6.50	0.102	0.016
87SW701A	87-08-13	33.4	55.50	195.0	48.00	685.0	871.0	16.00	86.5	7.02	700	28.200	34.00	0.08	0.10	6.00	0.194	0.097
87SW701A	87-08-20	38.0	56.00	240.0	56.00	831.0	906.0	12.30	88.5	6.88	1830	31.000	32.50	0.01	0.10	8-00	0.102	<0.001
87SW702	87-05-15	13.0	10.00	175.0	22.80	531.0	480.0	0.75	48-5	6.78	1010	0.735	1.17	0.01	0.10	13.50	0.014	0.005
87SW702	87-05-28	11.0	8.10	169.0	24.40	523.0	491.0	3.70	51.5	6.82	1050	0.810	1.22	0.01	0.10	11.00	0.018	0.006
87SW702	87-06-04	21.0	8.20	168.0	23.60	517.0	488.0	5.70	54.5	6.80	870	1.000	1.46	0.01	0.30	9.00	0.031	0.005
87SW702	87-06-10	10.0	8.40	175.0	24.80	540.0	505.0	7.40	52.5	6.83	1060	1.200	1.90	0.01	0.10	8.50	0.040	0.021
87SW702	87-06-18	14.0	10.00	165.0	22.60	506.0	506.0	19.00	51.5	6.69	1055	0.170	2.02	0.01	0.60	5.50	0.046	0.001
87SW702	87-06-25	15.0	10.00	170.0	24.40	526.0	510.0	1.02	50.0	7.23	1060	1.900	2.16	0.01	0.10	5.50	0.046	0.002
87SW702	87-07-01	14.0	10.00	168.0	24.80	522.0	517.0	13.20	51.5	6.76	1030	2.700	2.80	0.01	0.10	5.00	0.047	0.017

12-Apr-59

SITE LOC.	SAMPLE DATE	Na (mg/L)	K (mg/L)	Ca (mg/L)	Mg (mg/L)	Hardness as CaCO ₃ (mg/L)	Alkalinity as CaCO ₃ (mg/L)	Fe (mg/L)	Cl (mg/L)	pH Lab	COND. (µS, 25C)	Ammonium (mg/L)	Kjeldahl-N (mg/L)	Nitrite-N (mg/L)	Nitrate-N (mg/L)	Sulphate (mg/L)	Phosphorous	
																	Total	React
87SW702	87-07-09	13.0	10.80	165.0	23.60	510.0	505.0	14.80	51.5	6.74	1050	2.200	2.78	0.03	0.40	5.00	0.082	0.035
87SW702	87-07-16	16.0	10.80	160.0	23.80	498.0	514.0	14.50	50.5	6.67	1010	2.500	2.82	0.01	0.30	6.00	0.070	0.015
87SW702	87-07-22	15.0	13.50	160.0	24.00	499.0	516.0	13.00	50.0	6.83	1140	3.400	3.62	0.01	17.70	3.50	0.046	<0.001
87SW702	87-07-29	16.2	16.80	145.0	23.40	459.0	449.0	5.50	48.5	6.74	1080	4.100	4.20	0.01	0.10	5.50	0.024	<0.001
87SW702	87-08-06	18.0	15.30	160.0	23.60	497.0	518.0	13.80	50.5	6.66	1010	3.950	4.40	0.01	0.40	3.50	0.028	0.007
87SW702	87-08-13	17.0	14.30	170.0	23.20	520.0	523.0	18.50	50.5	6.76	1010	4.300	4.30	0.08	0.70	4.00	0.044	0.024
87SW702	87-08-20	19.0	16.20	165.0	22.80	506.0	528.0	4.75	49.0	6.77	1040	5.100	5.40	0.01	0.10	5.50	0.044	0.019
87SW703	87-05-20	6.6	2.95	88.5	15.20	284.0	217.0	0.02	34.5	7.43	570	0.020	0.27	0.01	2.30	18.00	0.003	0.003
87SW703	87-05-28	4.0	2.95	81.5	16.00	270.0	212.0	0.01	36.0	7.51	570	0.005	0.25	0.01	2.20	15.50	0.005	0.001
87SW703	87-06-04	4.8	3.05	85.5	15.40	277.0	211.0	0.01	38.5	7.43	468	0.015	0.24	0.01	2.40	13.00	0.004	0.001
87SW703	87-06-10	4.2	2.75	86.0	16.20	282.0	216.0	0.02	38.0	7-53	565	0.015	0.22	0.01	2.50	16.50	0.002	0.001
87SW703	87-06-18	5.6	3.10	82.0	14.60	265.0	214.0	0.02	36.5	7.44	565	0.015	0.26	0.01	2.60	15.00	0.004	0.001
87SW703	87-06-25	6.0	2.80	76.0	16.00	256.0	216.0	0.02	31.0	7.95	560	0.015	0.23	0.01	2.60	15.50	0.005	0.001
87SW703	87-07-01	5.4	2.70	85.5	16.00	280.0	214.0	4.00	36.5	7.47	565	0.020	0.24	0.01	2.60	16.00	0.005	0.004
87SW703	87-07-09	4.6	2.90	82.5	15.40	270.0	212.0	<0.01	36.5	7.48	540	0.005	0.27	0.01	2.50	15.00	0.007	0.006
87SW703	87-07-16	4.6	3.75	83.5	15.20	271.0	211.0	0.01	32.0	7.44	535	0.030	0.24	<0.01	2.70	15.00	0.008	0.004
87SW703	87-07-22	4.6	3.60	82.0	15.80	270.0	210.0	0.02	33.0	7.65	560	0.025	0.24	0.01	2.80	14.50	0.004	<0.001
87SW703	87-07-29	4.4	3.35	82.5	14.80	267.0	210.0	0.01	32.0	7.51	565	0.025	0.25	0.01	2.70	15.50	0.003	<0.001
87SW703	87-08-13	5.2	3.30	77.5	15.40	257.0	213.0	0.02	35.5	7.59	540	0.010	0.27	0.04	2.40	16.50	0.008	<0.001
87SW703	87-08-20	5.8	3.20	84.0	15.20	273.0	215.0	0.01	35.5	7.54	550	0.015	0.25	0.01	2.10	16.50	0.017	0.008
87SW703	87-08-27	6.6	3.20	83.0	14.60	268.0	212.0	0.08	36.0	7.44	550	0.010	0.26	0.01	2.30	15.50	0.015	0.009
87SW704	87-05-20	346.0	0.65	4.0	0.40	12.0	412.0	0.20	24.5	6.80	1480	0.065	0.97	0.02	0.10	335.00	0.029	0.019
87SW704	87-05-28	374.0	0.50	2.0	0.60	7.0	424.0	0.40	28.5	7.05	16T0	0.055	0.82	0.02	0.10	330.00	0.043	0.037
87SW704	87-06-04	356.0	0.55	3.5	0.60	11.0	415.0	0.22	29.0	7.14	1260	0.755	1.75	0.01	0.20	345.00	0.025	0.014
87SW704	87-06-10	322.0	0.55	2.5	0.60	9.0	392.0	0.65	24.0	7.16	1400	0.080	0.94	0.02	0.20	315.00	0.038	0.031
87SW704	87-06-18	334.0	10.70	11.5	4.00	45.0	431.0	0.55	26.5	6.88	1570	7.900	9.10	0.01	0.20	355.00	0.018	0.004
87SW704	87-06-25	390.0	0.40	2.5	0.20	7.0	436.0	0.48	27.5	7.70	1580	0.070	1.02	0.01	0.10	350.00	0.058	0.040
87SW704	87-07-01	180.0	0.30	0.5	0.20	2.0	275.0	0.56	9.0	7.67	775	0.002	1.00	0.03	1.30	96.00	0.060	0.052
87SW704	87-07-09	332.0	0.70	1.5	0.20	5.0	405.0	0.45	23.5	7.32	1420	0.060	1.12	0.02	0.10	270.00	0.050	0.040
87SW705	67-05-20	260.0	1.00	1.0	0.20	3.0	381.0	0.14	4.5	6.98	1090	0-015	1.30	0.11	28.80	73.00	0.010	0.006

12-Apr-69

SITE LOC.	SAMPLE DATE	Na (mg/L)	K (mg/L)	Ca (mg/L)	Mg (mg/L)	Hardness as CaCO ₃ (mg/L)	Alkalinity as CaCO ₃ (mg/L)	Fe (mg/L)	Cl (mg/L)	pH Lab	COND. (µS, 25C)	Ammonium (mg/L)	Kjeldahl-N (mg/L)	Nitrite-N (mg/L)	Nitrate-N (mg/L)	Sulphate (mg/L)	Phosphorous	
																	Total	React
87SW705	87-05-28	250.0	1.20	0.5	0.20	2.0	363.0	0.09	5.5	7.12	1090	0.005	1.14	0.05	31.20	68.50	0.007	0.002
87SW705	87-06-04	9.0	1.50	188.0	21.60	559.0	361.0	0.26	5.0	6.95	830	0.045	1.21	0.03	29.10	69.50	0.014	0.004
87SW705	87-06-10	245.0	0.95	1.5	0.20	5.0	354.0	0.06	6.0	7.16	1080	0.010	1.21	0.04	32.60	82.50	0.008	0.001
87SW705	87-06-18	285.0	0.40	1.0	0.20	2.0	358.0	0.06	5.5	7.16	1110	0.025	1.31	0.02	27.80	78.00	0.006	0.001
87SW705	87-06-25	63.0	2.45	112.0	36.60	431.0	346.0	0.04	6.5	7.42	1040	0.045	1.44	0.04	36.70	81.50	0.006	0.002
87SW705	87-07-01	250.0	0.10	0.5	0.00	0.0	348.0	0.05	4.5	7.34	1030	0.005	1.17	0.03	31.30	68.50	0.007	0.007
87SW705	87-07-09	5.0	1.70	135.0	21.60	426.0	341.0	0.07	5.0	7.07	970	0.025	1.13	0.05	34.00	67.50	0.008	0.005
87SW705	87-07-16	270.0	0.25	1.5	0.40	5.0	333.0	0.10	8.0	7.40	1110	0.015	1.20	0.04	37.10	86.00	0.008	0.003
87SW705	87-07-22	260.0	0.35	1.5	0.40	5.0	338.0	0.08	8.0	7.25	1140	0.025	1.09	0.02	34.00	82.50	0.023	0.002
87SW705	87-07-29	250.0	0.15	1.0	<0.20	<3.00	332.0	0.08	10.0	7.30	1190	0.020	1.33	0-04	33.50	112.00	0.008	0.004
87SW705	87-08-06	255.0	0.25	1.5	0.20	5.0	346.0	0.03	5.5	7.15	1050	0.015	1.17	0.02	3.21	68.50	0.011	0.007
87SW705	87-08-13	245.0	0.30	1.0	0.20	3.0	342.0	0.02	4.5	7.29	980	0.005	0.99	0.05	29.10	67.00	0.012	0.011
87SW705	87-08-20	240.0	0.15	1.0	<0.20	<3.00	337.0	0.02	6.0	7.36	1040	0.015	1.10	0.01	31.30	77.00	0.010	0.008
87SW705	87-08-27	250.0	0.15	<0.5	<0.20	<2.00	342.0	0.10	6.0	7.25	1020	0.020	1.21	0.04	26.00	68.00	0.008	0.007
87SW706	87-05-20	160.0	0.30	0.5	0.20	2.0	267.0	0.02	18.5	7.25	670	0.015	0.46	0.02	1.30	48.00	0.005	0.003
87SW706	87-05-28	148.0	0.15	0.5	0.20	2.0	251.0	0.01	661.0	7.30	635	0.005	0.46	0.03	1.30	39.50	0.006	0.006
87SW706	87-06-04	164.0	0.30	2.0	0.20	6.0	274.0	0.03	22.0	7.50	525	0.015	0.35	0.01	1.30	37.50	0.005	0.001
87SW706	87-06-10	5.8	2.50	92.0	12.60	282.0	243.0	0.46	13.0	7.36	565	0.045	0.47	0.01	1.20	38.00	0.006	0.001
87SW706	87-06-18	6.0	2.20	89.5	11.60	272.0	244.0	0.52	10.0	7.04	560	0.020	0.50	0.01	1.20	35.50	0.006	0.001
87SW706C	87-06-25	10.5	0.80	113.0	18.20	357.0	295.0	0.58	24.5	7.57	715	0.025	0.44	0.01	1.00	61.50	0.008	0.003
87SW706C	87-07-01	12.5	0.95	114.0	18.00	359.0	295.0	0.61	25.5	6.89	710	0.015	0.42	0.02	0.20	62.50	0.008	0.005
87SW706C	87-07-09	9.0	0.90	115.0	17.60	360.0	298.0	0.61	25.0	7.17	720	0.005	0.43	0.02	1.10	56.00	0.002	0.002
87SW706C	87-07-16	23.0	0.90	108.0	19.20	349.0	300.0	1.10	25.5	7.04	700	0.020	0.40	0.01	0.90	55.00	0.006	<0.001
87SW706C	87-07-22	13.0	0.95	120.0	18.20	375.0	304.0	0.70	26.0	7.21	730	0.030	0.35	0.01	0.70	54.00	0.002	<0.001
87SW706C	87-07-29	12.5	0.95	112.0	17.40	352.0	306.0	0.52	25.0	7.05	730	0.015	0.45	0.02	0.30	52.00	0.125	<0.001
87SW706C	87-08-06	12.0	1.00	120.0	17.60	373.0	313.0	1.36	26.0	6.93	705	0.090	0.34	0.01	0.30	51.00	0.002	<0.001
87SW706C	87-08-13	13.0	1.00	113.0	17.40	354.0	306.0	1.07	26.5	7.07	700	0.010	0.35	0.04	0.60	50.50	0.008	0.005
87SW706C	87-08-20	12.5	0.95	125.0	16.60	381.0	301.0	1.18	25.5	7.08	690	0.100	0.38	0.02	0.20	52.00	0.012	0.004
87SW706C	87-08-27	11.5	0.95	105.0	16.60	331.0	278.0	1.35	25.5	6.94	695	0.030	0.33	0.02	0.40	47.50	0.005	0.004
87SW706C	87-06-25	15.5	2.35	117.0	20.00	375.0	307.0	1.36	41.0	7.62	760	0.900	0.17	0.01	0.10	44.00	0.004	0.001

12-Apr-89

SITE LOC.	SAMPLE DATE	Na (mg/L)	K (mg/L)	Ca (mg/L)	Mg (mg/L)	Hardness as CaCO ₃ (mg/L)	Alkalinity as CaCO ₃ (mg/L)	Fe (mg/L)	Cl (mg/L)	pH Lab	COND. (µS, 25C)	Ammonium (mg/L)	Kjeldahl-N (mg/L)	Nitrite-N (mg/L)	Nitrate-N (mg/L)	Sulphate (mg/L)	Phosphorous	
																	Total	React
87SW7060	87-07-01	16.5	1.80	108.0	19.60	351.0	301.0	1.34	43.0	8.24	750	0.030	0.22	0.01	0.00	45.00	0.002	0.001
87SW7060	87-07-09	13.0	1.80	113.0	18.80	360.0	306.0	1.38	42.0	7.27	760	0.025	0.17	0.01	0.10	41.00	0.002	<0.001
87SW7060	87-07-16	16.0	2.30	110.0	19.40	355.0	309.0	1.30	42.5	7.25	785	0.075	0.16	0.01	<0.10	43.50	0.003	<0.001
87SW7060	87-07-22	15.5	2.30	116.0	20.20	373.0	306.0	0.80	43.0	7.32	780	0.110	0.23	0.01	0.30	43.50	0.005	<0.001
87SW7060	87-07-29	14.0	1.80	108.0	18-80	347.0	301.0	1.16	39.0	7.29	750	0.035	0.17	0.01	0.20	42.50	0.002	<0.001
87SW7060	87-08-06	15.8	2.15	112.0	19.40	360.0	305.0	1.13	41.0	7.18	730	0.070	0.29	0.01	0.40	42.00	0.002	<0.001
87SW7060	87-08-13	15.9	2.30	109.0	19.40	352.0	304.0	1.16	41.0	7.31	650	0.050	0.29	0.03	<0.10	42.00	0.008	0.006
87SW7060	87-08-20	15.5	1.85	112.0	19.00	358.0	310.0	1.00	39.5	7.24	730	0.065	0.18	0.01	0.10	42.00	0.010	<0.001
87SW707	87-05-20	7.2	0.50	105.0	11.40	309.0	268.0	0.08	12.0	7.22	620	0.025	1.18	0.03	0.80	43.00	0.006	0.002
87SW707	87-05-28	17.4	8.45	105.0	16.40	330.0	269.0	0.15	22.5	7.25	750	0.015	0.38	0.02	13.10	32.50	0.009	0.004
87SW707	87-06-04	21.0	13.20	118.0	17.20	366.0	285.0	0.09	29.5	7.15	645	0.015	0.42	0.01	15.70	31.00	0.011	0.009
87SW707	87-06-10	17.0	10.00	112.0	17.20	351.0	289.0	0.27	26.0	7.30	775	0.030	0.41	0.01	14.00	38.00	0.005	0.001
87SW707	87-06-18	33.0	4.75	130.0	18.60	402.0	348.0	3.10	35.5	7.04	915	0.240	0.76	0.02	10.90	34.00	0.004	0.001
87SW707	87-06-25	28.0	5.70	131.0	19.20	407.0	332.0	1.70	33.5	7.56	850	0.155	0.70	0.03	12.30	51.00	0.004	0.001
87SW707	87-07-01	29.5	4.30	128.0	19.40	400.0	341.0	1.36	35.5	7.03	870	0.160	0.78	0.08	10.00	31.00	0.002	0.002
87SW707	87-07-09	24.0	5.50	127.0	18.40	393.0	321.0	1.46	33.0	7.24	870	0.135	0.76	0.05	12.50	46.00	0.004	0.002
87SW707	87-07-16	32.0	4.95	125.0	19.00	391.0	328.0	1.24	33.0	7.21	830	0.150	0.64	0.08	11.10	48.00	0.016	0.001
87Sw707	87-07-22	30.0	4.55	128.0	18.80	397.0	318.0	1.30	30.5	7.30	850	0.125	0.48	0.04	11.50	47.00	0.016	<0.001
87SW707	87-07-29	32.0	3.95	118.0	18.20	370.0	329.0	1.38	30.5	7.21	860	0.120	0.58	0.07	10.40	49.50	0.002	<0.001
87SW707	87-08-06	30.0	3.55	130.0	18.80	402.0	327.0	1.34	31.5	7.09	835	0.145	0.47	0.05	10.60	49.00	0.003	<0.001
87SW707	87-08-13	30.0	3.55	110.0	18.60	352.0	321.0	1.27	31.0	7.25	830	0.120	0.46	0.08	10.20	48.00	0.007	0.003
87SW707	87-08-20	19.5	6.00	112.0	16.60	348.0	267.0	0.92	24.0	7.36	700	0.015	0.35	0.03	14.80	36.00	0.015	0.006
87SW707	87-08-27	26.5	4.70	102.0	18.20	330.0	281.0	0.15	27.5	7.21	765	0.010	0.38	0.03	12.70	40.00	0.005	0.003
87SW708	87-05-21	18.0	2.00	88.5	19.80	303.0	266.0	0.16	14.0	7.44	610	0.020	0.21	0.01	3.30	38.50	0.014	0.008
87SW708	87-05-28	18.8	19.50	80.0	20.40	284.0	264.0	0.07	14.0	7.55	605	0.005	0.19	0.02	2.70	34.50	0.015	0.011
87SW708	87-06-04	16.8	2.05	88.5	20-00	291.0	264.0	0.01	14.0	7.44	491	0.010	0.17	0.02	2.80	30.50	0.017	0.013
87SW708	87-06-10	15.0	2.05	85.5	20.40	298.0	269.0	0.03	12.5	7.54	595	0.010	0.19	0.03	2.80	37.00	0.011	0.007
87SW708	87-06-18	16.0	2.00	81.5	19.40	284.0	268.0	0.02	12.0	7.53	610	0.010	0.19	0.01	3.40	34.00	0.032	0.008
87SW70B	87-06-25	14.2	1.80	82.5	20.80	292.0	270.0	0.01	12.0	7.89	570	0.010	0.10	0.03	2.30	36.50	0.016	0.010
87SW708	87-07-01	13.2	1.90	85.0	20.40	297.0	267.0	0.04	12.0	7.48	600	<0.005	0.22	0.03	3.00	34.00	0.285	0.022
87SW708	87-07-01	13.2	1.90	86.0	20.40	297.0	267.0	0.04	12.0	7.48	600	0.000	0.22	0.03	3.00	34.00	0.285	0.022

12-Apr-89

SITE LOC.	SAMPLE DATE	Na (mg/L)	K (mg/L)	Ca (mg/L)	Mg (mg/L)	Hardness as CaCO ₃ (mg/L)	Alkalinity as CaCO ₃ (mg/L)	Fe (mg/L)	Cl (mg/L)	pH Lab	COND. (µS, 25C)	Ammonium (mg/L)	Kjeldahl-N (mg/L)	Nitrite-N (mg/L)	Nitrate-N (mg/L)	Sulphate (mg/L)	Phosphorous	
																	Total	React
87SW708	87-07-09	17.2	2.00	88.5	19.80	290.0	262.0	0.01	11.5	7.59	600	0.005	0.21	0.02	3.30	32.00	0.016	0.012
87SW708	87-07-16	13.2	1.85	84.5	20.00	294.0	260.0	0.02	13.0	7.49	585	0.015	0.18	0.01	3.10	32.50	0.015	0.011
87SW708	87-07-22	12.4	1.95	84.0	20.40	294.0	263.0	0.03	12.5	7.67	615	0.015	0.20	0.02	3.50	33.00	0.016	0.003
87SW708	87-07-29	11.2	1.85	85.0	19.60	293.0	263.0	3.01	12.0	7.49	595	0.010	0.18	0.02	3.60	32.30	0.012	0.010
87SW708	87-08-06	12.0	2.00	82.0	20.00	287.0	260.0	0.05	13.5	7.50	570	0.005	0.22	0.01	3.80	30.50	0.015	0.008
87SW708	87-08-13	11.6	1.95	87.0	19.40	297.0	254.0	0.07	14.5	7.64	580	0.005	0.22	0.04	3.80	32.00	0.021	0.011
87SW708	87-08-20	12.2	1.95	87.0	19.50	297.0	254.0	0.03	14.5	7.68	580	0.005	0.21	0.02	3.80	34.00	0.043	0.015
87SW708	87-08-27	11.8	2.00	86.5	20.20	299.0	262.0	0.08	14.5	7.49	595	0.010	0.21	0.01	3.60	32.00	0.012	0.010
87SW709	87-05-21	6.5	8.00	130.0	18.80	402.0	384.0	0.38	6.5	7.16	770	0.020	0.45	0.01	0.60	38.50	0.003	0.002
87SW709	87-05-28	6.0	0.75	130.0	19.40	405.0	382.0	0.49	7.0	7.24	775	0.005	0.47	0.01	0.50	31.50	0.005	0.005
87SW709	87-06-04	7.4	0.85	138.0	18.60	422.0	378.0	0.84	7.5	7.17	615	0.025	0.46	0.01	0.70	27.00	0.008	0.005
87SW709	87-06-10	5.5	0.85	135.0	21.20	425.0	388.0	0.74	7.0	7.25	760	0.015	0.46	0.01	0.60	35.00	0.004	0.001
87SW709	87-06-18	6.0	0.80	149.0	18.20	447.0	396.0	0.98	6.5	7.20	775	0.010	0.46	0.01	0.80	34.50	0.013	0.001
87SW709	87-06-25	6.5	0.75	130.0	19.40	405.0	385.0	0.80	6.5	7.65	770	0.015	0.38	0.01	0.70	34.50	0.008	0.002
87SW709	87-07-01	7.0	0.90	128.0	19.20	399.0	384.0	0.84	6.5	7.19	755	0.010	0.50	0.01	0.70	35.00	0.010	0.004
87SW709	87-07-09	5.0	0.85	134.0	19.00	413.0	382.0	1.26	5.0	7.27	760	0.020	0.50	0.01	0.80	33.00	0.008	0.008
87SW709	87-07-16	6.0	0.80	128.0	19.40	400.0	283.0	1.20	5.5	7.28	740	0.035	0.46	0.01	0.60	36.00	0.008	0.002
87SW709	87-07-22	6.0	0.85	138.0	19.20	424.0	388.0	0.98	6.0	7.37	775	0.020	0.48	0.01	0.70	35.00	0.009	<0.001
87SW709	87-07-29	5.5	1.00	128.0	19.40	400.0	381.0	1.46	5.5	7.25	770	0.015	0.45	0.01	0.70	38.00	0.009	0.001
87SW709	87-08-06	6.5	0.90	125.0	19.80	394.0	377.0	1.24	6.5	7.25	720	0.010	0.40	0.01	0.70	38.00	0.010	<0.001
87SW709	87-08-13	7.3	0.95	138.0	19.20	412.0	374.0	1.03	6.5	7.32	740	0.010	0.47	0.03	0.70	41.50	0.015	0.007
87SW709	87-08-20	6.5	1.00	125.0	19.00	391.0	373.0	0.89	7.0	7.26	740	0.005	0.48	0.01	0.60	42.50	0.012	0.001
87SW710	86-08-20	9.0	0.70	110.0	13.60	331.0	305.0	0.15	13.0	7.33	680	0.025	1.00	0.02	0.80	48.50	0.003	<0.001
87SW710	87-05-21	24.0	7.65	102.0	16.80	324.0	274.0	0.05	22.5	7.26	755	0.010	0.40	0.01	14.10	40.50	0.011	0.007
87SW710	87-05-28	7.2	0.50	109.0	11.80	321.0	273.0	0.10	13.5	7.28	635	0.010	1.10	0.03	0.80	39.00	0.004	0.004
87SW710	87-06-04	8.2	0.70	122.0	12.20	355.0	280.0	0.15	14.0	7.35	520	0.015	1.14	0.02	1.00	37.50	0.004	0.001
87SW710	87-06-10	7.0	0.55	122.0	12.40	356.0	287.0	0.25	14.5	7.39	635	0.020	1.10	0.02	0.80	46.50	0.002	0.001
87SW710	87-06-18	7.5	0.55	112.0	12.20	330.0	290.0	0.15	13.5	7.30	665	0.020	1.08	0.02	0.90	45.00	0.034	0.001
87SW710	87-06-25	8.0	0.55	112.0	13.00	334.0	291.0	1.94	13.0	7.81	625	0.055	1.00	0.02	0.90	46.50	0.005	0.001
87SW710	87-07-01	7.6	0.60	115.0	13.20	342.0	290.0	0.08	14.0	7.36	650	0.010	1.14	0.03	0.90	48.50	0.004	0.001
87SW710	87-07-09	7.5	0.65	117.0	12.60	344.0	293.0	0.10	13.0	7.33	665	0.015	1.12	0.03	0.80	45.00	0.004	0.002

12-Apr-89

SITE LOC.	SAMPLE DATE	Na (mg/L)	K (mg/L)	Ca (mg/L)	Mg (mg/L)	Hardness as CaCO ₃ (mg/L)	Alkalinity as CaCO ₃ (mg/L)	Fe (mg/L)	Cl (mg/L)	pH Lab	COND. (µS, 25C)	Ammonium (mg/L)	Kjeldahl-N (mg/L)	Nitrite-N (mg/L)	Nitrate-N (mg/L)	Sulphate (mg/L)	Phosphorous	
																	Total	React
87SW710	87-07-16	7.6	0.55	110.0	13.00	329.0	293.0	0.08	12.5	7.33	645	0.020	1.04	0.02	0.70	47.00	0.004	<0.001
87SW710	87-07-22	7.5	0.65	122.0	13.80	362.0	294.0	0.15	13.0	7.96	680	0.030	1.02	0.02	0.70	47.00	0.003	<0.001
87SW710	87-07-29	6.5	0.70	112.0	12.60	332.0	295.0	0.15	12.0	7.35	675	0.045	0.99	0.03	0.70	49.00	0.002	<0.001
87SW710	87-08-06	7.0	0.65	115.0	13.20	342.0	299.0	0.16	13.0	7.34	635	0.020	1.05	0.02	0.70	48.00	0.002	<0.001
87SW710	87-08-13	8.1	0.75	121.0	13.60	358.0	300.0	0.40	13.0	7.42	680	0.010	1.00	0.04	0.30	47.50	0.014	0.002
87SW710	87-08-20	6.5	0.65	128.0	13.20	374.0	300.0	0.18	12.5	7.34	670	0.020	1.08	0.02	0.60	52.00	0.010	<0.001
87SW710	87-05-25	15.0	10.10	100.0	14.40	309.0	241.0	0.04	14.0	7.06	700	0.005	0.46	0.01	11.00	71.00	0.029	0.022
87SW711	87-06-01	15.5	9.60	105.0	15.00	324.0	244.0	0.13	15.0	7.38	720	0.005	0.48	0.01	11.00	63.50	0.017	0.015
87SW711	87-06-08	18.0	10.30	105.0	15.60	327.0	245.0	0.05	11.5	7.48	720	0.025	0.40	0.01	10.70	72.00	0.021	0.012
87SW711	87-06-15	18.0	10.50	108.0	14.80	318.0	249.0	0.09	16.0	7.43	730	0.010	0.41	0.01	11.20	71.00	0.014	0.013
87SW711	87-06-22	21.0	10.80	85.0	14.40	272.0	217.0	0.06	15.5	7.47	735	0.005	0.42	0.01	10.40	64.50	0.010	0.008
87SW711	87-06-29	19.0	10.80	98.0	15.40	308.0	246.0	0.70	17.5	7.46	695	0.015	0.35	0.01	11.30	64.50	0.019	0.010
87SW711	87-07-05	20.5	10.00	100.0	15.00	312.0	243.0	0.05	17.0	7.42	700	0.010	0.35	0.01	11.30	66.00	0.009	0.005
87SW711	87-07-13	22.5	11.00	99.5	14.40	308.0	244.0	0.03	19.0	7.48	695	0.005	0.35	0.01	11.90	65.00	0.033	<0.001
87SW711	87-07-20	21.5	10.00	100.0	15.40	313.0	242.0	0.05	20.0	7.56	760	0.025	0.36	0.01	13.10	64.50	0.011	0.006
87SW711	87-07-27	22.0	10.20	102.0	15.00	317.0	247.0	0.04	22.0	7.54	750	<0.005	0.38	0.01	14.00	68.50	0.009	0.005
87SW711	87-08-04	22.5	9.75	110.0	15.00	337.0	247.0	0.08	23.0	7.44	770	0.005	0.38	0.01	16.10	70.50	0.012	<0.001
87SW711	87-08-17	27.5	11.50	99.5	14.80	310.0	242.0	0.03	26.0	7.45	760	0.010	0.36	0.01	17.90	62.00	0.013	<0.001
87SW711	87-08-24	26.5	10.20	102.0	14.40	314.0	239.0	0.02	26.5	7.43	755	0.010	0.36	0.01	18.80	62.00	0.009	<0.001
87SW712	87-05-25	2.8	8.40	78.0	12.40	246.0	162.0	0.03	12.0	7.41	515	0.005	0.23	0.01	6.50	66.50	0.037	0.028
87SW712	87-06-01	2.2	8.85	76.0	12.40	241.0	162.0	0.02	11.5	7.65	520	0.005	0.19	0.02	6.80	55.50	0.024	0.024
87SW712	87-06-08	2.6	8.50	79.0	12.60	249.0	165.0	0.04	11.5	7.61	530	0.015	0.29	0.01	6.20	63.50	0.018	0.018
87SW712	87-06-15	2.2	7.15	78.5	12.20	247.0	167.0	0.04	10.5	7.70	535	0.010	0.29	0.01	6.00	67.00	0.016	0.014
87SW712	87-06-22	3.4	9.20	79.0	12.20	248.0	168.0	0.04	10.5	7.67	535	0.005	0.19	0.01	6.20	58.50	0.021	0.021
87SW712	87-06-29	2.0	9.05	74.5	12.40	236.0	166.0	0.04	10.5	7.68	505	0.010	0.28	0.01	6.30	60.50	0.023	0.019
87SW712	87-07-05	2.8	8.85	79.5	12.00	248.0	163.0	0.06	10.0	7.64	495	<0.005	0.28	0.01	6.10	61.00	0.024	0.014
87SW712	87-07-13	2.6	9.35	74.0	11.40	232.0	164.0	0.06	9.5	7.75	490	<0.005	0.19	0.01	6.20	59.00	0.017	0.010
87SW712	87-07-20	2.2	8.90	73.5	12.00	233.0	162.0	0.04	9.0	7.77	515	0.020	0.22	0.02	5.50	59.00	0.022	0.018
87SW712	87-07-27	2.9	9.15	76.5	12.00	241.0	166.0	0.03	9.0	7.66	472	<0.005	0.26	0.01	5.70	64.50	0.021	0.016
87SW712	87-08-04	2.4	8.10	75.0	11.80	236.0	167.0	0.04	9.0	7.66	495	0.005	0.21	0.01	5.20	66.00	0.022	0.011
87SW712	87-08-17	2.9	6.35	74.0	12.60	237.0	170.0	0.04	9.5	7.66	256	0.020	0.23	0.01	4.50	67.00	0.023	0.010

12-Apr-89

SITE LOC.	SAMPLE DATE	Na (mg/L)	K (mg/L)	Ca (mg/L)	Mg (mg/L)	Hardness as CaCO ₃ (mg/L)	Alkalinity as CaCO ₃ (mg/L)	Fe (mg/L)	Cl (mg/L)	pH Lab	COND. (µS, 25C)	Ammonium (mg/L)	Kjeldahl-N (mg/L)	Nitrite-N (mg/L)	Nitrate-N (mg/L)	Sulphate (mg/L)	Phosphorous	
																	Total	React
87SW712	87-08-24	5.6	9.75	77.5	12.00	243.0	160.0	0.03	9.0	7.58	505	0.010	0.25	0.01	5.50	64.00	0.029	0.016
87SW713	87-05-25	6.3	0.85	72.5	12.20	232.0	137.0	0.02	12.5	7.29	467	0.015	0.26	0.04	8.00	67.50	0.007	0.007
87SW713	87-06-01	5.0	0.95	69.5	12.20	224.0	137.0	0.02	12.0	7.60	500	0.005	0.28	0.07	8.10	57.50	0.003	0.002
87SW713	87-06-08	6.0	0.90	72.0	11.20	230.0	136.0	0.04	12.0	7.62	493	0.015	0.26	0.07	8.10	63.00	0.001	0.001
87SW713	87-06-22	6.7	0.95	72.5	12.00	231.0	141.0	0.04	11.5	7.59	498	0.005	0.31	0.03	8.10	57.00	0.005	0.003
87SW713	87-06-29	6.7	1.05	68.0	12.40	221.0	142.0	0.30	12.0	7.57	478	0.015	0.30	0.03	8.50	64.00	0.006	0.002
87SW713	87-07-13	10.3	1.05	70.0	11.80	224.0	142.0	0.04	16.0	7.69	495	<0.005	0.27	0.01	9.30	57.50	0.003	<0.001
87SW713	87-07-20	7.2	1.00	69.0	12.40	224.0	139.0	0.13	12.0	7.64	498	0.020	0.33	0.13	9.50	57.50	0.009	0.003
87SW713	87-07-27	7.0	1.10	73.5	12.20	234.0	137.0	0.04	13.0	7.52	500	<0.005	0.31	0.15	9.30	66.00	0.022	<0.001
87SW713	87-08-04	7.4	1.20	72.0	12.20	230.0	136.0	0.04	13.0	7.60	482	0.005	0.27	0.14	9.40	70.50	0.003	<0.001
87SW713	87-08-17	6.8	1.15	71.0	12.00	227.0	135.0	0.03	14.0	7.50	510	0.025	0.26	0.02	9.60	71.00	0.020	<0.001
87SW713	87-08-24	8.2	1.20	76.5	12.20	242.0	134.0	0.04	14.0	7.50	505	0.010	0.25	0.01	9.40	78.00	0.003	<0.001
87SW714	87-05-25	17.0	13.20	125.0	15.40	376.0	248.0	0.02	42.5	7.29	840	0.010	0.48	0.01	23.40	50.00	0.002	0.001
87SW714	87-06-01	16.0	19.50	130.0	15.60	389.0	245.0	0.02	42.0	7.36	900	0.010	0.47	0.02	25.80	43.00	0.004	0.004
87SW714	87-06-08	18.0	16.50	125.0	15.40	376.0	245.0	0.01	42.0	7.47	885	0.015	0.43	0.01	25.00	47.00	0.003	0.001
87SW714	87-06-15	16.0	13.50	122.0	14.00	363.0	249.0	0.02	40.0	7.41	895	0.015	0.50	0.01	19.10	50.00	0.002	0.001
87SW714	87-06-22	27.0	16.80	105.0	13.80	319.0	236.0	0.02	48.5	7.49	865	0.005	0.48	0.02	21.80	42.50	0.006	0.001
87SW714	87-06-29	39.0	16.00	111.0	13.80	334.0	243.0	0.04	57.0	7.52	865	0.015	0.40	0.01	20.70	43.00	0.006	0.001
87SW714	87-07-05	136.0	8.70	61.5	9.00	191.0	229.0	0.11	140.0	7.55	975	0.025	0.28	0.03	10.70	21.00	0.004	0.003
87SW714	87-07-13	33.0	17.50	115.0	13.80	344.0	246.0	0.03	46.0	7.56	835	0.010	0.50	0.01	19.60	45.00	0.104	<0.001
87SW714	87-07-20	102.0	13.80	71.5	10.60	222.0	252.0	3.65	112.0	7.67	950	0.055	0.62	0.02	12.30	31.00	0.064	0.005
87SW714A	87-06-28	198.0	2.00	8.5	5.00	42.0	216.0	0.29	220.0	8.24	1030	0.200	0.38	0.01	0.10	1.00	0.006	0.001
87SW715	87-05-25	5.0	51.00	90.5	16.00	292.0	258.0	0.10	13.0	7.25	700	0.005	0.88	0.01	4.00	76.50	0.005	0.005
87SW715	87-06-01	3.0	54.50	87.5	16.60	287.0	257.0	0.04	12.5	7.43	730	0.005	0.62	0.02	4.10	76.00	0.007	0.006
87SW715	87-06-08	5.5	48.00	90.0	16.80	294.0	253.0	0.04	13.0	7.52	740	0.010	0.65	0.01	4.30	85.50	0.004	0.001
87SW715	87-06-15	4.0	57.50	89.0	15.60	287.0	259.0	0.24	12.0	7.45	735	0.010	0.72	0.01	4.20	81.50	0.021	0.003
87SW715	87-06-22	5.0	57.00	90.5	16.40	294.0	258.0	0.08	12.0	7.42	740	0.005	0.73	0.01	4.70	86.50	0.006	0.002
87SW715	87-06-29	4.0	51.50	87.5	16.20	285.0	254.0	0.08	13.0	7.39	720	0.100	0.69	0.01	4.20	880.00	0.008	0.002
87SW715	87-07-05	5.5	54.00	89.5	16.40	291.0	256.0	0.08	12.5	7.41	725	<0.005	0.76	0.01	4.20	90.00	0.006	0.004
87SW715	87-07-13	4.0	52.50	87.5	16.00	285.0	252.0	0.04	12.5	7.53	705	0.005	0.72	0.01	4.40	88.00	0.008	<0.001

12-Apr-89

SITE LOC.	SAMPLE DATE	Na (mg/L)	K (mg/L)	Ca (mg/L)	Mg (mg/L)	Hardness as CaCO ₃ (mg/L)	Alkalinity as CaCO ₃ (mg/L)	Fe (mg/L)	Cl (mg/L)	pH Lab	COND. (µS, 25C)	Ammonium (mg/L)	Kjeldahl-N (mg/L)	Nitrite-N (mg/L)	Nitrate-N (mg/L)	Sulphate (mg/L)	Phosphorous	
																	Total	React
87SW715	87-07-20	4.0	51.00	85.0	16-20	279.0	248.0	0.11	12.5	7.54	710	0.015	0.76	0.01	3.60	82.50	0.007	<0.001
87SW715	87-07-27	4.5	69.00	89.5	16.20	290.0	252.0	0.06	12.5	7.36	685	<0.005	0.62	0.01	3.80	87.50	0.008	<0.001
87SW715	87-08-04	4-5	50.50	87.0	16.60	286.0	250.0	0.04	13.5	7.45	720	<0.005	0.63	0.01	3.90	92.00	0.005	<0.001
87SW715	87-08-17	5.8	46.30	86.0	16.00	281.0	247.0	0.03	13.5	7.37	630	0.015	0.57	0.01	4.00	83.50	0.006	<0.001
87SW715	87-08-24	5.0	54.00	93.5	15.40	297.0	NA	0.08	14.0	7.41	695	0.015	0.58	0.01	4.00	96.00	0.005	<0.001
87SW716	87-05-25	20.0	7.75	107.0	20.20	351.0	262.0	0.01	42-5	7.35	780	0.010	0.39	0.01	6.80	71.50	0.016	0.008
87SW716	87-06-01	19.0	8.80	101.0	20.00	335.0	255.0	0.01	42.5	7.32	790	0.005	0.36	0.02	6.80	62.00	0.005	0.004
87SW716	87-06-08	20.5	9.50	108.0	19.80	352.0	252.0	0.01	43.0	7.50	790	0.010	0.39	0.01	6.80	68.00	0.003	0.001
87SW716	87-06-15	20.0	10.70	113.0	18.60	359.0	250.0	0.01	43.0	7.38	790	0.005	0.41	0.01	7.30	69.50	0.005	0.002
87SW716	87-06-22	19.0	11.20	85.0	18.80	290.0	239.0	0.01	44.0	7.49	770	0.005	0.35	0.02	7.00	62.00	0.071	0.002
87SW716	87-06-29	17.0	11.00	98.0	19.20	324.0	236.0	0.10	43.5	7.53	735	0.020	0.37	0.01	7.40	65.50	0.007	0.003
87SW716	87-07-05	18.0	10.00	97.5	19.00	322.0	229.0	0.01	46.0	7.40	745	<0.005	0.39	0.01	7.80	65.50	0.003	0.003
87SW716	87-07-13	16.0	10.30	97.5	18.40	320.0	236.0	<0.01	15.5	7.50	720	<0.005	0.33	0.01	7.60	67.00	0.006	<0.001
87SW716	87-07-20	15.5	10.80	97.0	18.80	320.0	222.0	<0.01	45.0	7.58	760	0.015	0.38	0.01	7.40	65.00	0.004	<0.001
87SW716	87-07-27	18.5	9.75	95.0	18.60	314.0	218.0	0.01	47.0	7.49	705	<0.005	0.35	0.01	7.60	69.00	0.003	<0.001
87SW716	87-08-04	17.5	9.00	94.5	17.80	310.0	217.0	<0.01	47.0	7.50	725	<0.005	0.33	0.01	7.90	68.50	0.003	<0.001
87SW716	87-08-17	18.5	9.65	92.5	18.20	306.0	225.0	0.01	43.5	7.53	710	0.015	0.37	0.01	7.50	68.00	0.003	<0.001
87SW716	87-08-24	20.4	9.75	101.0	18.40	328.0	247.0	<0.01	45.5	7.52	730	0.005	0.39	0.01	7.70	75.50	0.004	<0.001
87SW717	87-05-25	51.0	7.85	95.0	36.00	386.0	338.0	4.10	54.0	7.53	900	0.700	1.50	0.01	0.60	128.00	0.135	0.028
87SW717	87-06-01	49.0	8.05	103.0	40.40	424.0	365.0	3.90	59.0	7.36	1040	1.100	1.46	0.02	0.10	93.00	0.104	0.012
87SW717	87-06-08	55.0	7.65	100.0	40.00	415.0	364.0	4.20	56.0	7.45	1000	1.000	1.51	0.01	0.10	97.50	0.102	0.051
87SW717	87-06-15	53.0	7.35	99.0	37.20	401.0	363.0	3.65	55.5	7.40	990	1.200	1.60	0.01	0.20	89.00	0.120	0.020
87SW717	87-06-22	50.0	7.70	92.5	33.80	391.0	371.0	4.20	54.0	7.50	1030	1.000	1.54	0.01	0.10	115.00	0.114	0.020
87SW717	87-06-29	51.0	8.50	99.0	41.60	419.0	363.0	28.60	56.0	7.52	970	1.200	1.80	0.01	0.20	125.00	1.550	0.049
87SW717	87-07-05	55.0	7.65	108.0	41.60	441.0	366.0	4.15	55.5	7.39	995	1.200	1.54	0.01	<0.10	105.00	0.112	0.043
87SW717	87-07-13	50.0	6.75	89.5	35.80	371.0	348.0	2.93	50.0	7.55	910	1.000	1.42	0.01	0.20	90.00	0.108	0.002
87SW717	87-07-20	52.0	6.85	85.5	16.60	365.0	347.0	3.75	54.0	7.62	970	1.260	1.48	0.01	<0.10	89.50	0.122	0.078
87SW717	87-07-27	56.0	6.85	90.0	36.20	374.0	351.0	3.20	53.5	7.52	950	1.200	1.46	0.01	0.10	103.00	0.102	0.038
87SW717	87-08-04	50.0	6.60	90.5	36.60	377.0	350.0	2.60	54.0	7.52	935	1.200	1.43	0.01	0.30	93.50	0.103	0.047
87SW717	87-08-17	55.0	6.80	84.5	36.40	361.0	339.0	3.55	54.0	7.51	935	1.300	1.42	0.01	0.20	90.00	0.120	0.007
87SW717	87-08-24	54.0	7.80	102.0	39.80	418.0	NA	4.80	58.5	7.50	985	1.400	1.54	0.01	<0.10	120.00	0.128	0.012

12-Apr-89

SITE LOC.	SAMPLE DATE	Na (mg/L)	K (mg/L)	Ca (mg/L)	Mg (mg/L)	Hardness as CaCO ₃ (mg/L)	Alkalinity as CaCO ₃ (mg/L)	Fe (mg/L)	Cl (mg/L)	pH Lab	COND. (µS, 25C)	Ammonium (mg/L)	Kjeldahl-N (mg/L)	Nitrite-N (mg/L)	Nitrate-N (mg/L)	Sulphate (mg/L)	Phosphorous	
																	Total	React
87SW718	87-05-26	7.0	21.30	94.5	20.20	319.0	211.0	0.20	30.0	7.33	695	0.015	0.37	0.01	3.60	105.00	0.004	0.004
87SW718	87-06-01	6.5	22.20	90.5	20.40	310.0	211.0	0.20	29.5	7.43	715	0.010	0.34	0.01	3.40	86.00	0.003	0.001
87SW718	87-06-08	7.0	20.80	9.5	20.40	322.0	210.0	0.21	29.5	7.46	710	0.015	0.34	0.01	3.10	108.00	0.002	0.001
87SW718	87-06-15	6.5	20.00	94.5	20.00	319.0	210.0	0.29	28.5	7.43	720	0.015	0.36	0.01	3.10	89.00	0.115	0.001
87SW718	87-06-22	7.5	21.50	82.5	21.00	293.0	209.0	0.22	28.0	7.48	710	0.020	0.36	0.01	2.90	85.00	0.006	0.001
87SW718	87-06-29	6.5	18.30	93.5	22.20	325.0	210.0	0.27	29.5	7.47	705	0.030	0.34	0.01	3.10	122.00	0.008	0.002
87SW718	87-07-05	6.5	19.80	96.0	21.60	329.0	212.0	0.29	28.0	7.39	710	0.010	0.35	0.01	3.20	108.00	0.003	0.003
87SW718	87-07-13	4.5	22.00	94.5	21.00	323.0	210.0	0.24	27.5	7.50	700	0.020	0.35	0.01	3.50	108.00	0.002	<0.001
87SW718	87-07-20	6.5	20.80	95.0	21.20	325.0	208.0	0.25	27.5	7.56	730	0.035	0.34	0.01	3.30	84.00	0.003	<0.001
87SW718	87-07-27	6.5	21.50	92.0	20.80	316.0	201.0	0.22	26.5	7.46	715	0.015	0.33	0.01	3.70	118.00	0.003	<0.001
87SW718	87-08-04	5.5	20.00	96.5	21.20	329.0	209.0	0.29	27.0	7.43	720	0.015	0.32	0.01	3.30	118.00	0.003	<0.001
87SW718	87-08-17	7.5	24.00	89.5	20.20	307.0	208.0	0.27	26.5	7.51	690	0.025	0.34	0.01	4.00	105.00	0.003	<0.001
87SW718	87-08-24	12.6	22.00	97.0	20.40	327.0	NA	0.25	27.0	7.48	705	0.020	0.25	0.01	3.90	134.00	0.003	<0.001
87SW719	87-05-26	53.0	3.80	4.5	21.60	484.0	378.0	0.25	67.0	7.12	1110	0.250	0.55	0.01	0.90	155.00	0.003	0.003
87SW719	87-06-01	50.0	3.60	168.0	22.80	514.0	372.0	0.35	87.-5	7.14	1210	0.235	0.57	0.02	0.70	145.00	0.003	0.001
87SW719	87-06-08	54.0	3-60	165.0	23.20	508.0	368.0	0.31	90.0	7.29	1235	0.255	0.56	0.01	0.60	140.00	0.008	0.005
87SW719	87-06-15	54.0	3.45	168.0	22.60	513.0	384.0	1.36	81.5	7.18	1220	0.245	0.61	0.01	0.70	160.00	0.004	0.001
87SW719	87-06-22	58.0	3.75	160.0	22.80	494.0	382.0	0.84	80.0	7.19	1120	0.280	0.60	0.01	0.50	91.50	0.005	0.001
87SW719	87-06-29	51.0	3.80	178.0	24.60	546.0	380.0	0.10	81.0	7.27	1180	0.130	0.42	0.01	0.80	155.00	0.007	0.001
87SW719	87-07-05	52.0	3.75	165.0	23.80	511.0	382.0	0.24	84.0	7.39	1220	0.245	0.51	0.01	0.50	160.00	0.003	0.002
87SW719	87-07-13	50.0	4.05	165.0	23.80	511.0	367.0	0.27	78.5	7.27	1190	0.285	0.55	0.01	0.50	170.00	0.003	<0.001
87SW719	87-07-20	46.0	3.80	178.0	24.00	544.0	382.0	0.48	80.5	7.-27	1250	0.320	0.58	0.01	0.30	155.00	0.009	<0.001
87SW719	87-07-27	50.0	3.90	180.0	24.20	550.0	383.0	0.54	82.0	7.19	1180	0.320	0.63	0.01	0.30	185.00	0.002	<0.001
87SW719	87-08-04	52.5	3.95	175.0	24.00	539.0	372.0	0.52	88.0	7.15	1220	0.330	0.60	0.01	0.50	175.00	0.002	<0.001
87SW719	87-08-10	46.0	4-25	185.0	24.00	561.0	398.0	0.41	72.0	7.19	1200	0.300	0.63	0.01	0.50	175.00	0.008	<0.001
87SW719	87-08-17	61.0	4.15	152.0	24.40	481.0	279.0	0.45	102.0	7.25	1200	0.300	0.54	0.01	0.30	160.00	0.002	<0.001
87SW719	87-08-24	51.0	12.16	165.0	23.60	510.0	NA	0.58	85.5	7.33	1190	0.295	0.56	0.02	0.40	160.00	0.002	<0.001
87SW720	87-06-01	2.6	4.20	66.0	8.00	198.0	163.0	0.06	6.5	7.45	425	0.005	0.33	0.02	6.20	20.50	0.007	0.001
87SW720	87-06-08	0.6	1.55	35.5	3.40	103.0	78.5	0.05	6.0	7.77	226	0.010	0.15	0.01	1.50	17.00	0.022	0.012
87SW720	87-06-15	1.2	1.75	35.5	3.60	104.0	84.1	0.23	5.0	7.85	233	0.005	0.23	0.01	1.50	15.50	0.080	0.006

12-Apr-89

SITE LOC.	SAMPLE DATE	Na (mg/L)	K (mg/L)	Ca (mg/L)	Mg (mg/L)	Hardness as CaCO ₃ (mg/L)	Alkalinity as CaCO ₃ (mg/L)	Fe (mg/L)	Cl (mg/L)	pH Lab	COND. (µS, 25C)	Ammonium (mg/L)	Kjeldahl-N (mg/L)	Nitrite-N (mg/L)	Nitrate-N (mg/L)	Sulphate (mg/L)	Phosphorous	
																	Total	React
87SW720	87-06-22	1.0	2.00	39.0	4.00	114.0	93.7	0.03	5.5	7.73	251	0.030	0.50	0.02	1.40	14.50	0.026	0.005
87SW720	87-06-29	1.0	2.20	39.5	4.40	117.0	110.0	0.05	5.0	7.81	256	0.020	0.25	0.01	1.60	14.50	0.020	0.008
87SW720	87-07-05	4.4	6.20	78.5	11.60	244.0	192.0	0.37	9.0	7.12	515	<0.005	0.34	0.01	10.10	26.00	0.016	0.005
87SW720	87-07-13	5.4	6.90	81.0	11.80	251.0	201.0	0.13	9.5	7.59	530	<0.005	0.33	0.01	11.10	23.50	0.011	<0.001
87SW720	87-07-20	2.0	4.30	56.5	6.80	169.0	144.0	0.29	4.5	7.73	377	0.045	0.31	0.02	4.40	16.00	0.033	0.014
87SW720	87-07-27	2.9	4.90	60.5	7.00	180.0	152.0	0.05	5.0	7.61	357	0.290	0.68	0.03	4.50	19.00	0.078	0.028
87SW720	87-08-04	2.2	4.65	31.0	3.60	92.0	79.5	0.45	3.5	7.67	222	0.023	0.50	0.02	3.00	10.00	0.104	0.005
87SW720	87-08-10	2.0	4.20	33.0	3.80	98.0	85.0	0.41	3.0	7.73	225	0.005	0.61	0.17	2.70	10.50	0.089	0.027
87SW720	87-08-17	3.6	5.35	48.5	7.00	150.0	132.0	0.65	5.0	7.74	336	0.015	0.43	0.01	5.40	17.50	0.064	0.015
87SW720	87-08-24	9.0	8.50	77.5	12.40	245.0	197.0	0.72	9.5	7.53	525	0.055	0.47	0.04	11.00	28.00	0.059	0.017

12-Apr-89

Site Loc.	Lab. #	Samp. Date	Tot Col [	Background Counts /100ml	Fec Col]	Atraz (ng/L)	Cyan (ng/L)	Sima (ng/L)	Prop (ng/L)	Metr (ng/L)	Prom (ng/L)	Amet (ng/L)	Pryne (ng/L)	Met0 (ng/L)	Ala (ng/L)	Phenyl Ureas (ng/L)	Organo-phosphates (ng/L)
87SW001	OW22-0054	87-05-14	<2	<2	<2											ND	ND
87SW001	OW22-0443	87-05-25														ND	ND
87SW001	OW23-0255	87-05-28	2	2	<2												ND
87SW001	OW24-0101	87-06-04															ND
87SW001	OW25-0323	87-06-10	<2	<2	<2	220<T	ND	ND	ND	ND	ND	ND	ND	ND	ND		
87SW001	OW26-0313	87-06-18	<2	<2	<2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW001	OW27-0110	87-06-25	<2	<2	<2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW001	OW29-0233	87-07-09				ND	ND	ND	ND	ND	ND	ND	ND				
87SW001	OW30-0179	87-07-16	<2	<2	<2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW001	OW31-0378	87-07-22				ND	ND	ND	ND	ND	ND	ND	ND				
87SW001	OW32-0185	87-07-29	<2	1420	<2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW001	OW33-0215	87-08-06				ND	ND	ND	ND	ND	ND	ND	ND				
87SW001	OW34-0297	87-08-13	<2	<2	<2	NO	ND	ND	ND	ND	ND	ND	ND				
87SW001	OW35-0119	87-08-20				ND	ND	ND	ND	ND	ND	ND	ND				
87SW001	OW36-0059	87-08-27				ND	ND	ND	ND	ND	ND	ND	ND				
87SW001A		87-06-10	<4	52	<2												
87SW001AW26-0333		87-06-18	8	84	<4	ND	ND	ND	ND	ND	ND	ND	ND				
87SW001AW27-0130		87-06-25	<2	378	<2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW001AW28-0084		87-07-01	2	56	<2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW001AW29-0254		87-07-09				ND	ND	ND	ND	ND	ND	ND	ND				
87SW001A		87-07-16	26	560	<2												
87SW001AOW31-0393		87-07-28				ND	ND	ND	ND	ND	ND	ND	ND				
87SW001AOW33-0232		87-08-10	<28	G4800	<2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW001AOW34-0315		87-08-13				ND	ND	ND	ND	ND	ND	ND	ND				
87SW001AOW35-0137		87-08-20				ND	ND	ND	ND	ND	ND	ND	ND				
87SW001AOW31-0060		87-08-27				ND	ND	ND	ND	ND	ND	ND	ND				
87SW002	OW22-0055	87-05-15	<2	4	<2												
87SW002	OW22-0444	87-05-25															
87SW002	OW23-0256	87-05-28	<2	4	<2												ND
87SW002	OW24-0102	87-06-24															ND
87SW002	OW25-0324	87-06-10	<2	<2	<2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		
87SW002	OW26-0314	87-06-18	<2	<2	<2	ND	ND	ND	ND	ND	ND	ND	ND				

12-Apr-89

Site Loc.	Lab. #	Samp. Date	Tot Col [	Background Counts /100ml	Fec Col]	Atraz (ng/L)	Cyan (ng/L)	Sima (ng/L)	Prop (ng/L)	Metr (ng/L)	Prom (ng/L)	Amet (ng/L)	Pryne (ng/L)	Met0 (ng/L)	Ala (ng/L)	Phenyl Ureas (ng/L)	Organo-phosphates (ng/L)
87SW002	OW27-0111	87-06-25	<2	<2	<2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW002	OW28-0085	87-07-01	C98	634	<2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW002	OW29-0234	87-07-09				ND	ND	ND	ND	ND	ND	ND	ND				
87SW002	OW30-0180	87-07-16	<2	38	<2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW002	OW31-0379	87-07-22				ND	ND	ND	ND	ND	ND	ND	ND				
87SW002	OW32-0186	87-07-29	30	340	<2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW002	OW33-0216	87-08-06				ND	ND	ND	ND	ND	ND	ND	ND				
87SW002	OW34-0298	87-08-13	C4	G4800	<2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW002	OW35-0120	87-08-20				ND	ND	ND	ND	ND	ND	ND	ND				
87SW003	OW22-0056	87-05-20	2	106	<2											ND	ND
87SW003	OW22-0445	87-05-25														ND	ND
87SW003	OW23-0257	87-05-28	<2	<2	<2												ND
87SW003	OW24-0103	87-06-04															ND
87SW003	OW25-0325	87-06-10	<2	<2	<2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		
87SW003	OW26-0315	87-06-18	C54	1120	<2											ND	
87SW003	OW27-0112	87-06-25	C122	800	<2											ND	
87SW003	OW28-0086	87-07-01	<2	<2	<2											ND	
87SW003	OW29-0235	87-07-09				ND	ND	ND	ND	ND	ND	ND	ND				
87SW003	OW30-0181	87-07-16	158	500	<2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW003	OW31-0380	87-07-22				ND	ND	ND	ND	ND	ND	ND	ND				
87SW003	OW32-0187	87-07-29	C78	1320	<2	ND	ND	360	ND	ND	ND	ND	ND				
87SW003	OW34-0299	87-08-13	C114	G4800	<2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW003	OW35-0121	87-08-20				ND	ND	ND	ND	ND	ND	ND	ND				
87SW003	OW36-0061	87-08-27				ND	ND	ND	ND	ND	ND	ND	ND				
87SW004	OW22-0058	87-05-20	C16	980	<2											ND	ND
87SW004	OW22-0446	87-05-25														ND	ND
87SW004	OW23-0258	87-05-28	<2	G4800	<2												ND
87SW004	OW29-0236	87-05-25				ND	ND	ND	ND	ND	ND	ND	ND				
87SW004	OW24-0104	87-06-04															ND
87SW004	OW25-0326	87-06-10	C5700	58000	G300	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		
87SW004	OW26-0316	87-06-18	C400	4900	A50	ND	ND	ND	ND	ND	ND	ND	ND				

12-Apr-89

Site Loc.	Lab. #	Samp. Date	Tot Col [	Background Counts /100ml	Fec Col]	Atraz (ng/L)	Cyan (ng/L)	Sima (ng/L)	Prop (ng/L)	Metr (ng/L)	Prom (ng/L)	Amet (ng/L)	Pryne (ng/L)	Met0 (ng/L)	Ala (ng/L)	Phenyl Ureas (ng/L)	Organo-phosphates (ng/L)
87SW004	OW27-0113	87-06-25	C132	1920	42	ND	ND	ND	ND	ND	ND	ND	ND				
87SW004	OW28-0087	87-07-01	C14900	100000	132											ND	
87SW004	OW29-0236	87-07-09				ND	ND	ND	ND	ND	ND	ND	ND				
87SW005	OW22-0058	87-05-20	2	456	<2											ND	ND
87SW005	OW22-0447	87-05-25														ND	ND
87SW005	OW23-0259	87-05-28	<2	<2	<2												ND
87SW005	OW24-0105	87-06-04															ND
87SW005	OW25-0327	87-06-10	<2	G4800	<2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		
87SW005	OW26-0317	87-06-18	C56	3040	<4	ND	ND	ND	ND	ND	ND	ND	ND				
87SW005	OW27-0114	87-06-25	C16	1360	<2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW005	OW28-0088	87-07-01	C52	1440	<2	ND	ND	ND	NO	ND	ND	NO	ND				
87SW005	OW29-0237	87-07-09				ND	ND	ND	ND	ND	ND	ND	ND				
87SW005	OW30-0182	87-07-16	274	130	2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW005	OW31-0381	87-07-22				NA	NA	NA	NA	NA	NA	NA	NA				
87SW005	OW32-0188	87-07-29	G300	G4800	20	ND	ND	ND	ND	ND	ND	ND	ND				
87SW005	OW33-0217	87-08-06				ND	ND	ND	ND	ND	ND	ND	ND				
87SW005	OW34-0300	87-08-13	1000	2000	<2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW005	OW35-0122	87-08-20				ND	ND	ND	ND	ND	ND	ND	ND				
87SW005	OW36-0063	87-08-27				ND	ND	ND	ND	ND	ND	ND	ND				
87SW006	OW22-0059	87-05-20	<2	<2	<2											ND	ND
87SW006	OW22-0448	87-05-25												ND		ND	ND
87SW006	OW23-0260	87-05-28	<2	<2	<2												ND
87SW006	OW24-0106	87-06-04															ND
87SW006	OW23-0328	87-06-10	6	82	<2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		
87SW006	OW26-0318	87-06-18	<2	<2	<2											ND	
87SW006	OW29-0238	87-07-09														ND	
87SW006	COW27-0115	87-06-25	<2	12	<2											ND	
87SW006	COW28-0089	87-07-01	<2	<2	<2											ND	
87SW006	COW30-0183	87-07-16	<2	6	<2											ND	
87SW006	COW31-0382	87-07-22														ND	
87SW006	COW32-0189	87-07-29	<2	<2	<2											ND	

12-Apr-89

Site Loc.	Lab. #	Samp. Date	Tot Col [	Background Counts /100ml	Fec Col]	Atraz (ng/L)	Cyan (ng/L)	Sima (ng/L)	Prop (ng/L)	Metr (ng/L)	Prom (ng/L)	Amet (ng/L)	Pryne (ng/L)	MetO (ng/L)	Ala (ng/L)	Phenyl Ureas (ng/L)	Organo-phosphates (ng/L)
87SW006	COW33-0218	87-08-06														ND	
87SW006	COW34-0301	87-08-13	<2	<2	<2											ND	
87SW006	COW35-0123	87-08-20														ND	
87SW006	COW36-0064	87-08-27														ND	
87SW006	DOW27-0131	87-06-25				ND	ND	ND	ND	ND	ND	ND	ND				
87SW006	DOW28-0103	87-07-01														ND	
87SW006	DOW29-0253	87-07-09														ND	
87SW006	DOW31-0394	87-07-28				ND	ND	ND	ND	ND	ND	ND	ND			ND	
87SW006	DOW32-0203	87-07-29														ND	
87SW006	DOW33-0233	87-08-10														ND	
87SW006	DOW34-0316	87-08-13														ND	
87SW006	DOW35-0138	87-08-20														ND	
87SW006	DOW36-0062	87-08-27														ND	
87SW007	OW22-0449	87-05-26														ND	ND
87SW007	OW22-0060	87-05-20	<2	<2	<2											ND	ND
87SW007	OW23-0261	87-05-28	C22	2800	4												ND
87SW007	OW24-0107	87-06-04															ND
87SW007	OW25-0329	87-06-10	<2	112	<2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		
87SW007	OW26-0319	87-06-18	<2	242	<2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW007	OW27-0116	87-06-25	<2	260	<2											ND	
87SW007	OW28-0090	87-07-01	<2	52	<2											ND	
87SW007	OW29-0239	87-07-09				ND	NO	ND	ND	ND	ND	ND	ND				
87SW007	OW30-0184	87-07-16	<2	<2	<2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW007	OW31-0383	87-07-22				ND	ND	ND	ND	ND	ND	ND	ND				
87SW007	OW32-0190	87-07-29	<2	<2	<2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW007	OW33-0219	87-08-06				ND	ND	ND	ND	ND	ND	ND	ND				
87SW007	OW34-0302	87-08-13	<2	<2	<2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW007	OW35-0124	87-08-20				ND	ND	ND	ND	ND	ND	ND	ND				
87SW007	OW36-0065	87-08-27				ND	ND	ND	ND	ND	ND	ND	ND				
87SW008	OW22-0061	87-05-21	<2	<2	<2											ND	ND
87SW008	OW22-0450	87-05-26														ND	ND

12-Apr-89

Site Loc.	Lab. #	Samp. Date	Tot Col [	Background Counts /100ml	Fec Col]	Atraz (ng/L)	Cyan (ng/L)	Sima (ng/L)	Prop (ng/L)	Metr (ng/L)	Prom (ng/L)	Amet (ng/L)	Pryne (ng/L)	Met0 (ng/L)	Ala (ng/L)	Phenyl Ureas (ng/L)	Organo-phosphates (ng/L)
87SW008	OW23-0262	87-05-28	<2	<2	<2												ND
87SW008	OW24-0108	87-06-04															ND
87SW008	OW25-0330	87-06-10	28	176	<2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		
87SW008	OW26-0320	87-06-18	<2	<2	<2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW008	OW27-0117	87-06-25	<2	<2	<2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW008	OW28-0091	87-07-01	<2	<2	<2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW008	OW29-0240	87-07-09				ND	ND	ND	ND	ND	ND	ND	ND				
87SW008	OW30-0185	87-07-16	<2	<2	<2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW008	OW31-0384	87-07-22				ND	ND	ND	ND	ND	ND	ND	ND				
87SW008	OW32-0191	87-07-29	<2	<2	<2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW008	OW33-0220	87-08-06				ND	ND	ND	ND	ND	ND	ND	ND				
87SW008	OW34-0303	87-08-13	<2	<2	<2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW008	OW35-0125	87-08-20				ND	ND	ND	ND	ND	ND	ND	ND				
87SW008	OW36-0066	87-08-27				ND	ND	ND	ND	ND	ND	ND	ND				
87SW009	OW22-0062	87-05-21	<2	14	<2											ND	ND
87SW009	OW22-0451	87-05-26														ND	ND
87SW009	OW23-0263	87-05-28	<2	<2	<2												ND
87SW009	OW24-0109	87-06-04															ND
87SW009	OW25-0331	87-06-10	<2	4	<2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		
87SW009	OW26-0321	87-06-18	<2	40	<2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW009	OW27-0118	87-06-25	18	28	<2											ND	
87SW009	OW28-0092	87-07-01	4	36	<2											ND	
87SW009	OW29-0241	87-07-09														ND	
87SW009	OW30-0186	87-07-16	C18	640	<2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW009	OW31-0385	87-07-22				ND	ND	ND	ND	ND	ND	ND	ND				
87SW009	OW32-0192	87-07-29	C4	740	<2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW009	OW33-0221	87-08-06				ND	ND	ND	ND	ND	ND	ND	ND				
87SW009	OW34-0304	87-08-13	<2	480	<2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW009	OW36-0126	87-08-20				ND	ND	ND	ND	ND	ND	ND	ND				
87SW009	OW31-0385	87-08-27				ND	ND	ND	ND	ND	ND	ND	ND				
87SW010	OW22-0063	87-05-21	54	148	<2											ND	ND

12-Apr-89

Site Loc.	Lab. #	Samp. Date	Tot Col [	Background Counts /100ml	Fec Col]	Atraz (ng/L)	Cyan (ng/L)	Sima (ng/L)	Prop (ng/L)	Metr (ng/L)	Prom (ng/L)	Amet (ng/L)	Pryne (ng/L)	Met0 (ng/L)	Ala (ng/L)	Phenyl Ureas (ng/L)	Organo-phosphates (ng/L)
87SW010	OW23-0264	87-05-28	<2	<2	<2												ND
87SW010	OW24-0L10	87-06-04															ND
87SW010	OW25-0332	87-06-10	<2	<2	<2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		
87SW010	OW25-0322	87-06-18	<2	<2	<2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW010	OW27-0119	87-06-25	<2	<2	<2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW010	OW28-0093	87-07-01	<2	<2	<2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW010	OW29-0242	87-07-09				ND	ND	ND	ND	ND	ND	ND	ND				
87SW010	OW30-0187	87-07-16	<2	<2	<2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW010	OW31-0386	87-07-22				ND	ND	ND	ND	ND	ND	ND	ND				
87SW010	OW32-0193	87-07-29	<2	<2	<2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW010	OW33-0222	87-08-06				ND	ND	ND	ND	ND	ND	ND	ND				
87SW010	OW34-0305	87-08-13	<2	<2	<2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW010	OW35-0127	87-08-20				ND	ND	ND	ND	ND	ND	ND	ND				
87SW010	OW36-0068	87-08-27				ND	ND	ND	ND	ND	ND	ND	ND				
87SW011	OW22-0443	87-05-25	<2	220	<2											ND	ND
87SW011	OW23-0265	87-06-01	<2	140	<2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW011	OW24-0111	87-06-08				ND	ND	ND	ND	ND	ND	ND	ND				
87SW011	OW25-0333	87-06-10				ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		
87SW011		87-06-15	<2	1440	<2												
87SW011	OW26-0323	87-06-22				ND	ND	ND	ND	ND	ND	ND	ND				
87SW011	OW27-0120	87-06-29	<2	166	<2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW011	OW28-0094	87-07-05	<2	1240	<2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW011	OW30-0243	87-07-12				ND	ND	ND	ND	ND	ND	ND	ND				
87SW011	OW30-0188	87-07-20	C4	820	<2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW011	OW31-0387	87-07-28				ND	ND	ND	ND	ND	ND	ND	ND				
87SW011	OW32-0194	87-08-04	C18	940	8	ND	ND	ND	ND	ND	ND	ND	ND				
87SW011	OW33-0223	87-08-10				ND	ND	ND	ND	ND	ND	ND	ND				
87SW011	OW34-0306	87-08-17	6	<2	<2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW011	OW35-0128	87-08-24				ND	ND	ND	ND	ND	ND	ND	ND				
87SW012	OW22-0444	87-05-25	<2	2	<2											ND	ND
87SW012	OW23-0266	87-06-01	<2	234	<2	850	ND	ND	ND	ND	ND	ND	ND				

Site Loc.	Lab. #	Samp. Date	Tot Col [	Background Counts /100ml	Fec Col]	Atraz (ng/L)	Cyan (ng/L)	Sima (ng/L)	Prop (ng/L)	Metr (ng/L)	Prom (ng/L)	Amet (ng/L)	Pryne (ng/L)	MetO (ng/L)	Ala (ng/L)	Phenyl Ureas (ng/L)	Organo-phosphates (ng/L)
87SW012	OW24-0112	87-06-08				890	ND	ND	ND	ND	ND	ND	ND				
87SW012	OW25-0334	87-06-15	6	4	<2	230<T	ND	ND	ND	ND	ND	ND	ND	ND	ND		
87SW012	OW26-0324	87-06-22				ND	ND	ND	ND	ND	ND	ND	ND				
87SW012	OW27-0121	87-06-29	<2	12	<2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW012	OW28-0095	87-07-05	2	8	<2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW012	OW29-0244	87-07-13				ND	ND	ND	ND	ND	ND	ND	ND				
87SW012	OW30-0189	87-07-20	18	260	<2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW012	OW31'0388	87-07-28				ND	ND	ND	ND	ND	ND	ND	ND				
87SW012	OW32-0195	87-08-04	<2	62	<2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW012	OW33-0224	87-08-10				ND	ND	ND	ND	ND	ND	ND	ND				
87SW012	OW34-0307	87-08-17	36	108	16	ND	ND	ND	ND	ND	ND	ND	ND				
87SW012	OW35-0129	87-08-24				ND	ND	ND	ND	ND	ND	ND	ND				
87SW013	OW22-0445	87-05-25	<2	<2	<2											ND	ND
87SW013	OW23-0267	87-06-01	<2	<2	<2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW013	OW24-0113	87-06-08				ND	ND	ND	ND	ND	ND	ND	ND				
87SW013	OW25-0335	87-06-15	<2	30	<2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		
87SW013	OW26-0325	87-06-22				ND	ND	ND	ND	ND	ND	ND	ND				
87SW013	OW27-0122	87-06-29	<2	<2	<2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW013	OW29-0245	87-07-13				ND	ND	ND	ND	ND	ND	ND	ND				
87SW013	OW30-0190	87-07-20	<2	<2	<2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW013	OW22-0196	87-08-04	<2	2	<2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW013	OW33-0225	87-08-10				ND	ND	ND	ND	ND	ND	ND	ND				
87SW013	OW34-0303	87-08-17	<2	4	<2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW013	OW35-0130	87-08-24				ND	ND	ND	ND	ND	ND	ND	ND				
87SW014	OW22-0446	87-05-25	<2	14	<2											ND	ND
87SW014	OW23'0263	87-06-01	10	184	<2	400<T	ND	ND	ND	ND	ND	ND	ND				
87SW014	OW24-0114	87-06-08				ND	ND	ND	ND	ND	ND	ND	ND				
87SW014	OW2-5-0336	87-06-15	10	42	<2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		
87SW014	OW26-0326	87-06-22				ND	ND	ND	ND	ND	ND	ND	ND				
87SW014	OW27-0123	87-06-29	C162	G4800	18	ND	ND	ND	ND	ND	ND	ND	ND				
87SW014	OW28-0096	87-07-05	118	360	<2	ND	ND	ND	ND	ND	ND	ND	ND				

12-Apr-89

Site Loc.	Lab. #	Samp. Date	Tot Col [	Background Counts /100ml	Fec Col]	Atraz (ng/L)	Cyan (ng/L)	Sima (ng/L)	Prop (ng/L)	Metr (ng/L)	Prom (ng/L)	Amet (ng/L)	Pryne (ng/L)	MetO (ng/L)	Ala (ng/L)	Phenyl Ureas (ng/L)	Organo-phosphates (ng/L)
87SW014	OW29-0246	87-07-13				ND	ND	ND	ND	ND	ND	ND	ND				
87SW014	OW30-0191	87-07-20	C3300	G240000	60	ND	ND	ND	ND	ND	ND	ND	ND				
87S4015	OW22-0447	87-05-25	<2	2	<2											ND	ND
87SW015	OW23-0269	87-06-01	<2	<2	<2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW015	OW24-0115	87-06-08				ND	ND	ND	ND	ND	ND	ND	ND				
87SW015	OW25-0337	87-06-15	C124	G4800	80	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		
87SW015	OW26-0327	87-06-22				ND	ND	ND	ND	ND	ND	ND	ND				
87SW015	OW27-0124	87-06-29	4	2	<2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW015	OW28-0097	87-07-05	2	4	<2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW015	OW29-0247	87-07-13				ND	ND	ND	ND	ND	ND	ND	ND				
87SW015	OW30-0192	87-07-20	30	260	<2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW015	OW33-0213	87-08-04	<2	246	<2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW015	OW33-0226	87-08-10				ND	ND	ND	ND	ND	ND	ND	ND				
87SW015	OW34-0309	87-08-17	22	86	<2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW015	OW35-0131	87-08-24				ND	ND	ND	ND	ND	ND	ND	ND				
87SW016	OW22-0448	87-05-25	4	108	<2											ND	ND
87SW016	OW23-0270	87-06-01	4	24	<2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW016	OW24-0116	87-06-08				ND	ND	ND	ND	ND	ND	ND	ND				
87SW016	OW25-0338	87-06-15	30	16	<2	ND	ND	NO	ND	ND	ND	ND	ND	ND	ND		
87SW016	OW26-0328	87-06-22				ND	ND	ND	ND	ND	ND	ND	ND				
87SW016	OW27-0125	87-06-29	6	26	<2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW016	OW28-0098	87-07-05	134	128	<2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW016	OW29-0248	87-07-13				ND	ND	ND	ND	ND	ND	ND	ND				
87SW016	OW30-0193	87-07-20	130	320	<2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW016	OW31-0389	87-07-28				ND	ND	ND	ND	ND	ND	ND	ND				
87SW016	OW33-0214	87-08-04	8	82	2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW016	OW33-0227	87-08-10				ND	ND	ND	ND	ND	ND	ND	ND				
87SW016	OW34-0310	87-08-17	8	46	2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW016	OW34-0132	87-08-24				ND	ND	ND	ND	ND	ND	ND	ND				
87SW017	OW22-0449	87-05-25	<2	G4800	<2											ND	ND

12-Apr-89

Site Loc.	Lab. #	Samp. Date	Tot Col [	Background Counts /100ml	Fec Col]	Atraz (ng/L)	Cyan (ng/L)	Sima (ng/L)	Prop (ng/L)	Metr (ng/L)	Prom (ng/L)	Amet (ng/L)	Pryne (ng/L)	Met0 (ng/L)	Ala (ng/L)	Phenyl Ureas (ng/L)	Organo-phosphates (ng/L)
87SW017	OW23-0271	87-06-01	12	120	<2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW017	OW24-0117	87-06-08				ND	ND	ND	ND	ND	ND	ND	ND				
87SW017	OW22-0339	87-06-15	<2	<2	<2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		
87SW017	OW26-0329	87-06-22				ND	ND	ND	ND	ND	ND	ND	ND				
87SW017	OW27-0126	87-06-29	<2	760	<2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW017	OW28-0099	87-07-05	<2	560	<2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW017	OW29-0249	87-07-13				ND	ND	ND	ND	ND	ND	ND	ND				
87SW017	OW30-0194	87-07-20	2	114	<2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW017	OW31-0390	87-07-28				ND	ND	ND	ND	ND	ND	ND	ND				
87SW017		87-08-04	<2	160	<2												
87SW017	OW33-0228	87-08-10				ND	ND	ND	ND	ND	ND	ND	ND				
87SW017	OW34-0311	87-08-17	<2	78	<2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW017	OW35-0133	87-08-24				ND	ND	ND	ND	ND	ND	ND	ND				
87SW018	OW22-0450	87-05-26	<2	<2	<2											ND	ND
87SW018	OW23-0272	87-06-01	<2	<2	<2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW018	OW24-0118	87-06-08				ND	ND	ND	ND	ND	ND	ND	ND				
87SW018	OW25-0340	87-06-15	<2	184	<2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		
87SW018	OW26-0330	87-06-22				ND	ND	ND	ND	ND	ND	ND	ND				
87SW018	OW27-0127	87-06-29	<2	<2	<2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW018	OW28-0100	87-07-05	<2	<2	<2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW018	OW29-0250	87-07-13				ND	ND	ND	ND	ND	ND	ND	ND				
87SW018	OW30-0195	87-07-20	30	22	<2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW018	OW32-0391	87-07-28				ND	ND	ND	ND	ND	ND	ND	ND				
87SW018		87-08-04	184	46	2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW018	OW33-0222	87-08-10				ND	ND	ND	ND	ND	ND	ND	ND				
87SW018	OW34-0312	87-08-17	42	<2	<2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW018	OW35-0134	87-08-24				ND	ND	ND	ND	ND	ND	ND	ND				
87SW019	OW22-0451	87-05-26	<2	30	<2											ND	ND
87SW019	OW23-0273	87-06-01	4	12	<2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW019	OW24-0119	87-06-08				ND	ND	ND	ND	ND	ND	ND	ND				
87SW019	OW25-0341	87-06-15	<2	2	<2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		

12-Apr-89

Site Loc.	Lab. #	Samp. Date	Tot Col [	Background Counts /100ml	Fec Col]	Atraz (ng/L)	Cyan (ng/L)	Sima (ng/L)	Prop (ng/L)	Metr (ng/L)	Prom (ng/L)	Amet (ng/L)	Pryne (ng/L)	Met0 (ng/L)	Ala (ng/L)	Phenyl Ureas (ng/L)	Organo-phosphates (ng/L)
87SW019	OW26-0331	87-06-22				ND	ND	ND	ND	ND	ND	ND	ND				
87SW019	OW27-0128	87-06-29	<2	126	<2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW019	OW28-0101	87-07-05	6	136	2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW019	OW29-0251	87-07-13				ND	ND	ND	ND	ND	ND	ND	ND				
87SW019		87-07-20	42	108	<2												
87SW019	OW32-0201	87-08-04	58	416	<2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW019	OW33-0230	87-08-10				ND	NO	ND	ND	ND	ND	ND	ND				
87SW019	OW34-0313	87-08-17	49	360	<2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW019	OW35-0135	87-08-24				ND	ND	ND	ND	ND	ND	ND	ND				
87SW020	OW23-0274	87-06-01	32	252	<2	ND	ND	ND	ND	ND	ND	ND	ND				
87SW020	OW24-0120	87-06-08				ND	ND	ND	ND	ND	ND	ND	ND				
87SW020	OW25-0342	87-06-15	<2	80	<2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		
87SW020	OW26-0332	87-06-22				ND	ND	ND	ND	ND	ND	ND	ND				
87SW020	OW27-0129	87-06-29	C118	G4800	62	ND	ND	ND	ND	ND	ND	ND	ND				
87SW020	OW28-0102	87-07-05	1500	8100	266	ND	ND	ND	ND	ND	ND	ND	ND				
87SW020	OW29-0252	87-07-13				ND	ND	ND	ND	ND	ND	ND	ND				
87SW020		87-07-20	C3400	G240000	20	ND	ND	ND	ND	ND	ND	ND	ND				
87SW020	OW31-0392	87-07-28				ND	ND	ND	ND	ND	ND	ND	ND				
87SW020	OW32-0202	87-08-04	1300	105000	12	ND	ND	ND	ND	ND	ND	ND	ND				
87SW020	OW33-0231	87-08-10				ND	ND	ND	ND	ND	ND	ND	ND				
87SW020	OW34-0314	87-08-17	C9200	66000	26	ND	ND	ND	ND	ND	ND	ND	ND				
87SW020	OW35-0136	87-08-24				ND	ND	ND	ND	ND	ND	ND	ND				

12-Apr-89