STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
SAN JOAQUIN DISTRICT

SAN JOAQUIN VALLEY
DRAINAGE MONITORING PROGRAM
1986

DISTRICT REPORT
APRIL 1988

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THE RESOURCES AGENCY

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FOREWORD

This annual report presents statistical data concerning the quality and quantity of agricultural drainage water in the San Joaquin Valley. These data are collected and interpreted by the California Department of Water Resources' drainage monitoring staff, who use them to identify trends in agricultural drainage problem areas and plan reuse projects and disposal systems.

This year's report contains data collected for the 1986 calendar year and graphs showing trends indicated by these data. The report does not contain data on water within the U. S. Bureau of Reclamation's San Luis service area. Prior reports in this series chronicle similar information from 1963 through 1985.

This report is distributed to Federal, State, and County agencies; local water districts; universities inside and outside California; and various individuals. The Department invites comments or recommendations concerning either the report itself or the conduct of its monitoring program.

Louis A. Beck, Chief
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TABLE OF CONTENTS

Page

FOREWORD iii

ORGANIZATION ix

INTRODUCTION 1

BACKGROUND SUMMARY 5

The Drainage Problem 5

The Monitoring Program 6

DRAINAGE PROBLEM AREAS 9

TILE DRAIN SYSTEM STATISTICS 13

1986 MONITORING PROGRAM 15

Flows 15

Pesticides 15

Nutrients 16

Minerals 16

Trace Elements 16

- Arsenic 16
- Cadmium 18
- Chromium 18
- Copper 18
- Iron 18
- Lead 19
- Manganese 19
- Mercury 19
- Molybdenum 19
- Nickel 19
- Selenium 20
- Silver 20
- Strontium 20
- Zinc 20

STATION EVALUATIONS 21

Mineral Levels 21

- Central Area Surface Drains 21
- Central Area Subsurface Drains 26
- Southern Area Subsurface Drains 39

TABLE OF CONTENTS (continued)

Page

Arsenic Levels 52

Central Area Surface Drains. 52
Central Area Subsurface Drains 54
Southern Area Subsurface Drains 61

Selenium Levels 71

Central Area Surface Drains. 71
Central Area Subsurface Drains 74
Southern Area Subsurface Drains 83

1987 MONITORING PROGRAM 97

APPENDIX A. 1986 Monthly Drain Flows 99

APPENDIX B. 1986 Monitoring Station Data. 103

APPENDIX C. Works Consulted 143

Figures

Figure

1 Sampling Area Locations 2
2 Central Drain Locations 3
3 Southern Drain Locations 4
4 Present and Potential Drainage Problem Areas 11
5 CTL 4504 -- Boron Levels 22
6 DPS 3235 -- Boron Levels. 22
7 CTL 4504 -- Electrical Conductivity 23
8 DPS 3235 -- Electrical Conductivity. 23
9 CTL 4504 -- Sulfate vs. Electrical Conductivity 24
10 CTL 4504 -- Sodium vs. Electrical Conductivity. 24
11 DPS 3235 -- Sulfate vs. Electrical Conductivity. 25
12 DPS 3235 -- Sodium vs. Electrical Conductivity. 25
13 BVS 6016 -- Boron Levels. 27
14 BVS 8003 -- Boron Levels. 27
15 DPS 1367 -- Boron Levels. 28
16 DPS 4616 -- Boron Levels. 28
17 FBH 2016 -- Boron Levels. 29
18 FBH 8061 -- Boron Levels. 29
19 BVS 6016 -- Electrical Conductivity. 30
20 BVS 8003 -- Electrical Conductivity. 30
21 DPS 1367 -- Electrical Conductivity. 31
22 DPS 4616 -- Electrical Conductivity. 31
23 FBH 2016 -- Electrical Conductivity. 32
24 FBH 8061 -- Electrical Conductivity. 32
25 BVS 6016 -- Sulfate vs. Electrical Conductivity. 33
26 BVS 6016 -- Sodium vs. Electrical Conductivity 33

Figure | Figures (continued) | Page

27 BVS 8003 -- Sulfate vs. Electrical Conductivity . . . 34
28 BVS 8003 -- Sodium vs. Electrical Conductivity . . . 34
29 DPS 1367 -- Sulfate vs. Electrical Conductivity . . . 35
30 DPS 1367 -- Sodium vs. Electrical Conductivity . . . 35
31 DPS 4616 -- Sulfate vs. Electrical Conductivity . . . 36
32 DPS 4616 -- Sodium vs. Electrical Conductivity . . . 36
33 FBH 2016 -- Sulfate vs. Electrical Conductivity . . . 37
34 FBH 2016 -- Sodium vs. Electrical Conductivity . . . 37
35 FBH 8061 -- Sulfate vs. Electrical Conductivity . . . 38
36 FBH 8061 -- Sodium vs. Electrical Conductivity . . . 38
37 CCN 3550 -- Boron Levels . . . 40
38 ERR 8641 -- Boron Levels . . . 40
39 SFD 2727 -- Boron Levels . . . 41
40 SFD 6046 -- Boron Levels . . . 41
41 STC 3505 -- Boron Levels . . . 42
42 STC 6467 -- Boron Levels . . . 42
43 CCN 3550 -- Electrical Conductivity . . . 43
44 ERR 8641 -- Electrical Conductivity . . . 43
45 SFD 2727 -- Electrical Conductivity . . . 44
46 SFD 6046 -- Electrical Conductivity . . . 44
47 STC 3505 -- Electrical Conductivity . . . 45
48 STC 6467 -- Electrical Conductivity . . . 45
49 CCN 3550 -- Sulfate vs. Electrical Conductivity . . . 46
50 CCN 3550 -- Sodium vs. Electrical Conductivity . . . 46
51 ERR 8641 -- Sulfate vs. Electrical Conductivity . . . 47
52 ERR 8641 -- Sodium vs. Electrical Conductivity . . . 47
53 SFD 2727 -- Sulfate vs. Electrical Conductivity . . . 48
54 SFD 2727 -- Sodium vs. Electrical Conductivity . . . 48
55 SFD 6046 -- Sulfate vs. Electrical Conductivity . . . 49
56 SFD 6046 -- Sodium vs. Electrical Conductivity . . . 49
57 STC 3505 -- Sulfate vs. Electrical Conductivity . . . 50
58 STC 3505 -- Sodium vs. Electrical Conductivity . . . 50
59 STC 6467 -- Sulfate vs. Electrical Conductivity . . . 51
60 STC 6467 -- Sodium vs. Electrical Conductivity . . . 51
61 CTL 4504 -- Arsenic Levels . . . 53
62 DPS 3235 -- Arsenic Levels . . . 53
63 BVS 6016 -- Arsenic Levels . . . 55
64 BVS 8003 -- Arsenic Levels . . . 55
65 DPS 1367 -- Arsenic Levels . . . 56
66 DPS 4616 -- Arsenic Levels . . . 56
67 FBH 2016 -- Arsenic Levels . . . 57
68 FBH 8061 -- Arsenic Levels . . . 57
69 Arsenic Levels, 1985-1986, Central Area Stations . . . 59
70 CCN 3550 -- Arsenic Levels . . . 62
71 ERR 8641 -- Arsenic Levels . . . 62
72 SFD 2727 -- Arsenic Levels . . . 63
73 SFD 6046 -- Arsenic Levels . . . 63
74 STC 3505 -- Arsenic Levels . . . 64
75 STC 6467 -- Arsenic Levels . . . 64
76A Arsenic Levels, 1985-1986, Southern Area--Lemoore/Corcoran Stations . . . 65
76B Arsenic Levels, 1985-1986, Southern Area--Lost Hills/Semitropic Stations . . . 67
76C Arsenic Levels, 1985-1986, Southern Area--Kern Lake Bed Stations . . . 69

Figure | Figures (continued) | Page

77 CTL 4504 -- Average Selenium Levels 72
78 CTL 4504 -- Selenium Levels 72
79 DPS 3235 -- Average Selenium Levels 73
80 DPS 3235 -- Selenium Levels 73
81 BVS 6016 -- Average Selenium Levels 75
82 BVS 6016 -- Selenium Levels 75
83 BVS 8003 -- Average Selenium Levels 76
84 BVS 8003 -- Selenium Levels 76
85 DPS 1367 -- Average Selenium Levels 77
86 DPS 1367 -- Selenium Levels 77
87 DPS 4616 -- Average Selenium Levels 78
88 DPS 4616 -- Selenium Levels 78
89 FBH 2016 -- Average Selenium Levels 79
90 FBH 2016 -- Selenium Levels 79
91 FBH 8061 -- Average Selenium Levels 80
92 FBH 8061 -- Selenium Levels 80
93 Selenium Levels, 1985-1986, Central Area Stations 81
94 CCN 3550 -- Average Selenium Levels 84
95 CCN 3550 -- Selenium Levels 84
96 ERR 8641 -- Average Selenium Levels 85
97 ERR 8641 -- Selenium Levels 85
98 SFD 2727 -- Average Selenium Levels 86
99 SFD 2727 -- Selenium Levels 86
100 SFD 6046 -- Average Selenium Levels 87
101 SFD 6046 -- Selenium Levels 87
102 STC 3505 -- Average Selenium Levels 88
103 STC 3505 -- Selenium Levels 88
104 STC 6467 -- Average Selenium Levels 89
105 STC 6467 -- Selenium Levels 89
106A Selenium Levels, 1985-1986, Southern Area--Lemoore/Corcoran Stations 91
106B Selenium Levels, 1985-1986, Southern Area--Lost Hills/Semitropic Stations . . . 93
106C Selenium Levels, 1985-1986, Southern Area--Kern Lake Bed Stations. 95

Number | Tables

1 Drainage Problem Areas in San Joaquin Valley 10
2 Tile Drain System Statistics 14
3 Concentration Limitations 17

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INTRODUCTION

Monitoring of agricultural drainage water in the San Joaquin Valley began in 1959 as a cooperative effort between the Department of Water Resources (DWR) and the University of California. In 1963, this monitoring program became part of DWR's ongoing San Joaquin Drainage Investigation. Although the investigation ended in 1970, the monitoring program continued as a separate departmental activity until 1975, when DWR, the U. S. Bureau of Reclamation, and the State Water Resources Control Board formed the San Joaquin Valley Interagency Drainage Program (IDP). The monitoring program was continued from 1975 to 1979 to provide technical assistance to the IDP. When the IDP ended in June 1979, the DWR monitoring program was resumed as a separate activity under the San Joaquin Valley Drainage Program. A detailed history of the program is included in this report.

The northern, central, and southern drainage monitoring areas of the Valley are shown in Figure 1. The central and southern areas and the locations of the monitoring stations contained in these areas are displayed in Figures 2 and 3, respectively.

This report presents and evaluates data from 1980 through 1986 with special emphasis on 1985 and 1986. Data were evaluated for (1) patterns that may be indicative of future trends and (2) correlations between various chemical constituents (to better understand the chemistry of the drainage water and the factors affecting it). Trend analyses were performed for all stations; to keep this report fairly concise, however, only selected stations representative of areas or patterns are included here.

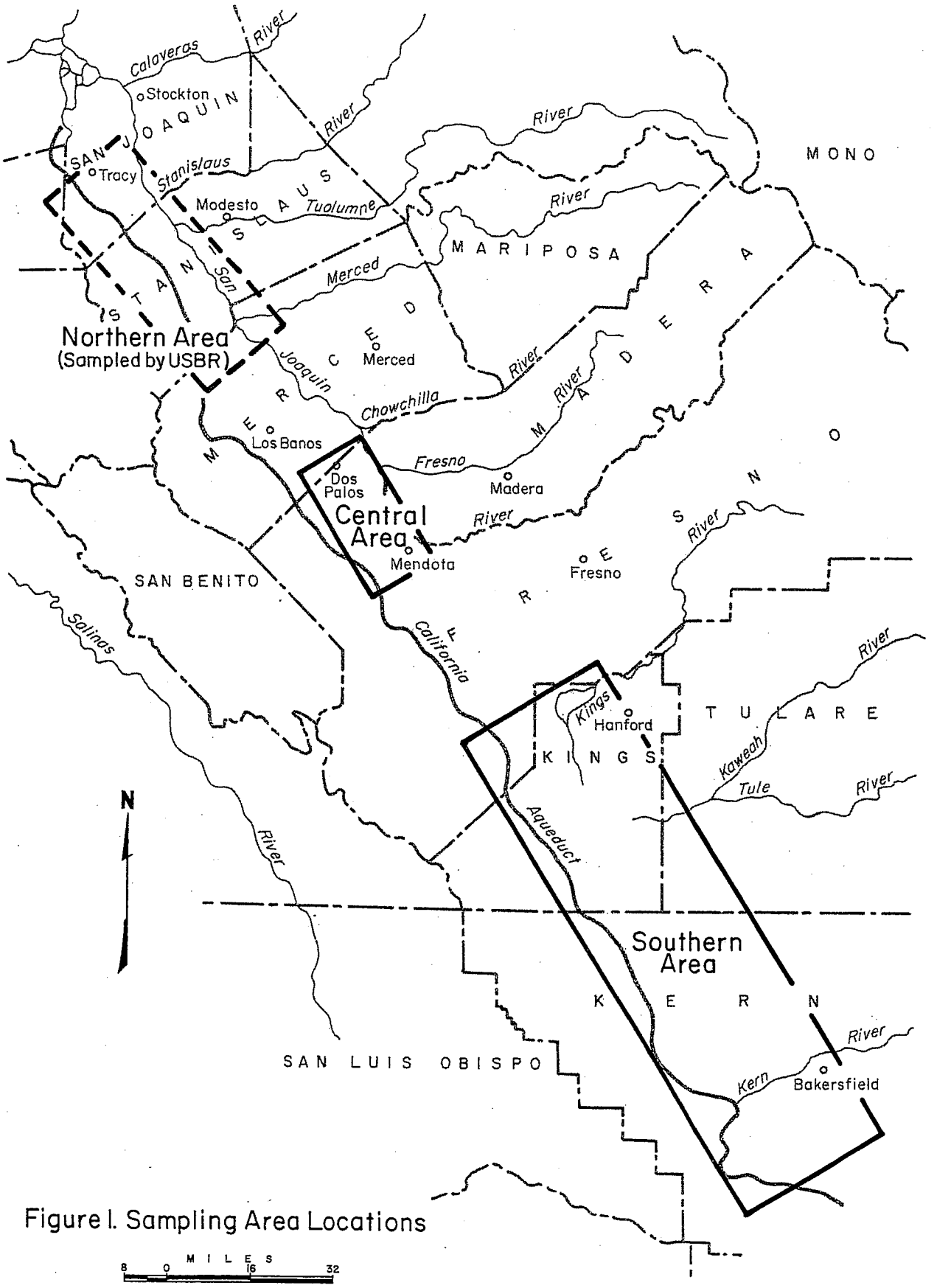


Figure I. Sampling Area Locations

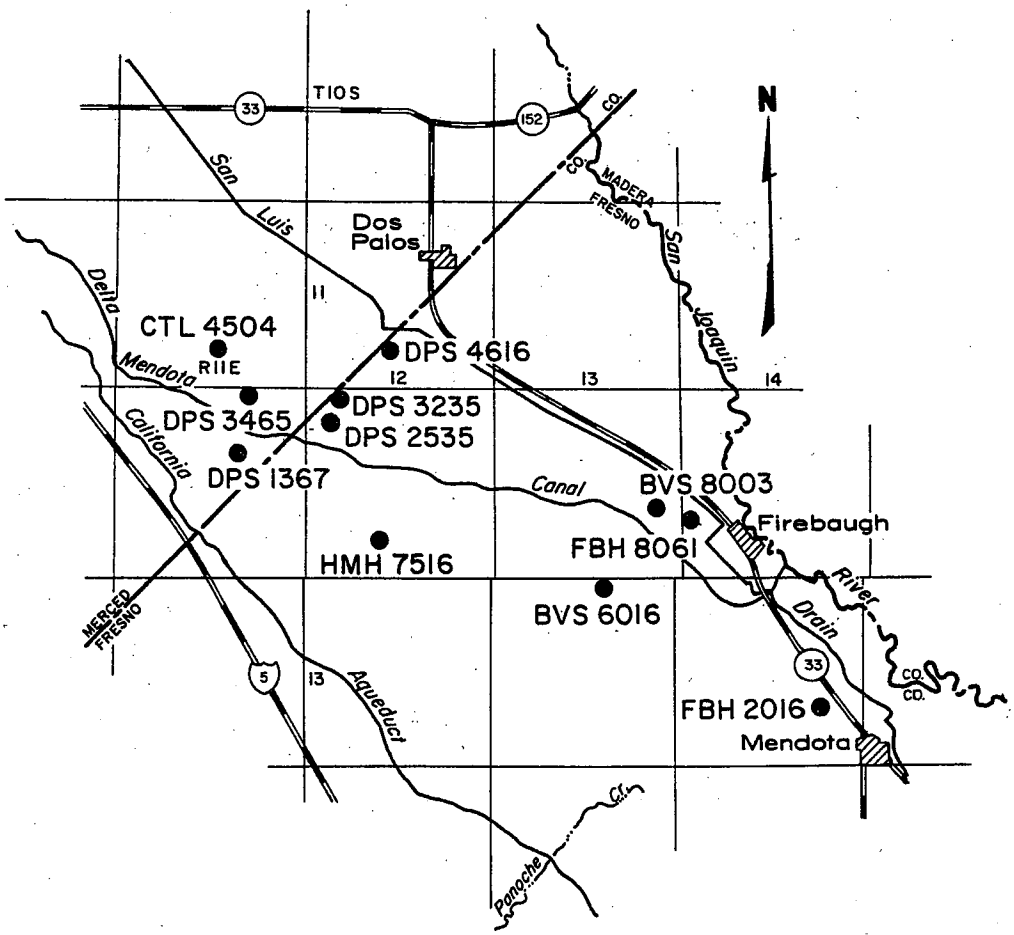
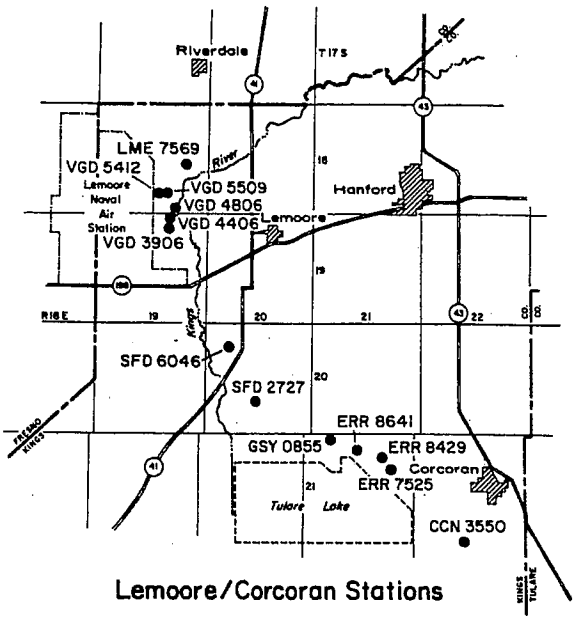
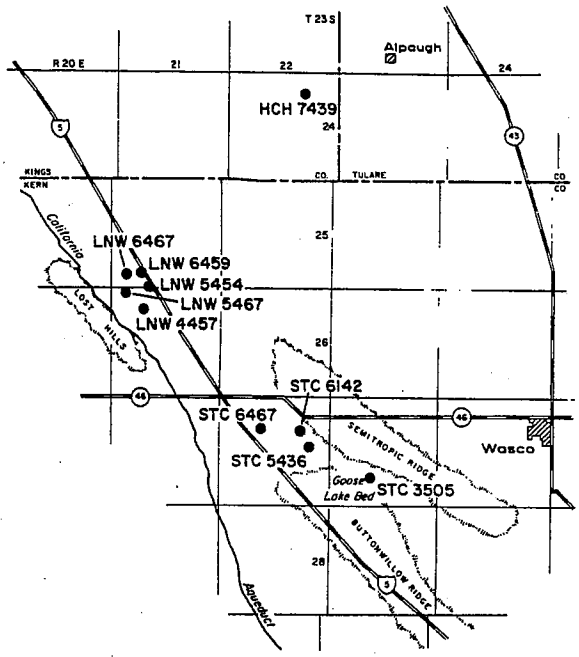


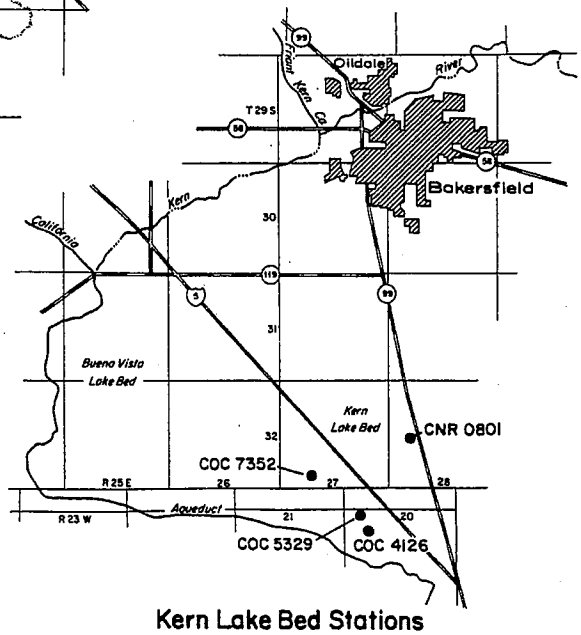
Figure 2. Central Drain Locations



Lemoore/Corcoran Stations



Lost Hills/Semitropic Stations



Kern Lake Bed Stations

Figure 3. Southern Drain Locations

BACKGROUND SUMMARY

The San Joaquin Valley, one of the world's most productive agricultural regions, has experienced mounting environmental problems as its irrigated acreage has increased. The most significant of these problems concerns disposal of agricultural drainage water.

The Drainage Problem

The drainage problem is an outgrowth of (1) naturally saline soils and water and (2) the Valley's distinctive geological makeup, which makes natural drainage ineffective in certain areas. Most soils on the Valley's west side have a naturally high saline content, and even more salt is added to them when they are irrigated with imported water. Since evaporation and plant transpiration extract essentially pure water, nearly all the salt in irrigation water remains in the soils. Furthermore, much of the Valley is underlain by a shallow, clay layer that obstructs vertical movement of irrigation water and results in perched water at depths as shallow as a few feet. As irrigation water percolates underground, leaching salts and minerals from surface soils, it sometimes has no place to drain off and the soils become saturated. Unless this water is removed, crops growing in these soils eventually die.

In the late 1940s, farmers began installing subsurface drains in fields with drainage problems. By 1965, 330 miles of subsurface drains and 750 miles of open ditch (tail water) drains were in operation in the Valley -- delivering drainage water to evaporation ponds and other discharge sites. With this drainage network in operation, the main problem became how to dispose of the salty drain water.

Many planners believed the best solution was to construct a master drain to collect the water, route it out of the Valley, and discharge it into the San Joaquin Delta. By 1973, an 87-mile-long section of a federal drainage canal was receiving irrigation runoff and discharging it into Kesterson Regulating Reservoir. The plan was to extend this section (called the San Luis Drain) north to a discharge site in the Delta. That way, the reservoir could be used to regulate discharges to the Delta, remove nutrients from drain water, and provide wetland wildlife habitat.

To date, the extension to the Delta has not been constructed, and drainage discharges have led to a selenium buildup in the reservoir. In 1982, federal studies reported high selenium levels in fish taken from Kesterson, and in 1983, it was determined that the bioaccumulation of selenium was causing deformities in embryos of waterfowl nesting at the reservoir.

In 1985, the U. S. Department of Interior ordered a halt to drainage water discharges into the reservoir, yet irrigation water deliveries to west side agricultural lands continued uninterrupted. Today, though more crucial than ever before, the futures of the San Luis and master drains remain in doubt, so alternative solutions to agricultural drainage discharges continue to be investigated. Federal and State officials are concerned that on-farm evaporation ponds throughout the Valley are still receiving drainage water discharges and that these ponds have the potential to develop problems similar to those at Kesterson.

The Monitoring Program

State monitoring of agricultural drainage has been conducted for more than 30 years to identify existing and potential drainage problem areas and monitor the chemical composition of agricultural drainage. The Budget Act of 1957 made funds available to DWR to conduct the San Joaquin Valley Drainage Investigation, an inquiry whose twofold purpose was to determine the magnitude of the drainage problem and develop solutions to it. The investigators' recommended solutions were (1) disposal of drainage water into a master drain or evaporation ponds and (2) reuse of drainage water whenever possible.

In 1963, besides continuing to monitor the Valley's drainage water quality conditions, DWR also began studying the benefits and hazards of perpetuating existing drainage conditions and drainage water disposal systems. At that time, salts and boron were considered the primary threats to agricultural production, and pesticides and nutrients the primary threats to the environment. Yet when pesticides were monitored extensively from 1963 through 1967, the resulting data indicated they did not pose a significant threat to the environment.

In the mid-1960s, testing was also conducted for the presence of detergents, grease, and oil in drainage water. However, the amounts detected were insignificant and testing was eventually discontinued.

In the early 1970s increased projected demands for (1) cooling water at proposed inland thermal-electrical and nuclear power plants and (2) irrigation supplies for expanding agricultural areas resulted in the establishment of tighter water quality and waste water management guidelines. Political measures such as the Porter-Cologne Water Quality Control Act and the Federal Water Pollution Control Act amendments of 1972 underscored governmental commitments to protecting the environment from drainage water pollution. By 1975 -- when the San Joaquin Valley Interagency Drainage Program (IDP) was formed by DWR, the U. S. Bureau of Reclamation, and the State Water Resources Control Board -- DWR's drainage monitoring program was providing water quality data to Federal, State, and local agencies as well as the IDP.

After the IDP ended, in 1980, DWR and the U. S. Bureau of Reclamation established the San Joaquin Valley Drainage Monitoring Program (SJVDMP) to analyze surface and subsurface drainage samples for nutrients, minerals, metals, pesticides, and miscellaneous constituents. In 1981, program technicians began testing for selenium; and in 1983, when selenium-related problems at Kesterson began receiving publicity, the focus on this aspect of the SJVDMP was greatly magnified.

Since 1985, with the help of new and sophisticated instrumentation, the SJVDMP has been expanded to include monthly monitoring of subsurface drainage sumps and two surface drains for selenium and other trace elements. Recent SJVDMP reports present summaries of these monthly data, along with seasonal inventories of nitrogen, electrical conductivity, and subsurface flow.

In 1985, the number of subsurface drains in the SJVDMP's southern area was increased, and the program's 1985 and 1986 reports use graphs, maps, and data to chart monthly selenium and arsenic levels at various locations. As more information becomes available on selenium and its distribution, researchers hope to learn more about how widespread this trace element is throughout the Valley, how it affects ground water, and whether it can be neutralized. Moreover, they also want to be able to predict how

agricultural production in the Valley will be impacted by measures designed to inhibit the spread of selenium.

Without question, there is much left to learn about drainage and its effects. Therefore, the comprehensive goal of future reports in this series is to continue presenting data on minerals, trace elements, nutrients, and pesticides to determine the present condition and refine estimates of the future quality of agricultural drainage water.

DRAINAGE PROBLEM AREAS

The San Joaquin Valley is a rich agricultural region that encompasses large areas with high water tables. The elevations of these tables are influenced by irrigation practices, cropping patterns, and unlined ditches or ponds. DWR defines "problem areas" to be locations where the perched water is within 5 feet of the ground surface any time during the year. Table 1 presents values for present and potential drainage problem areas in 1977, 1982, and 1986. Figure 4 geographically illustrates the Valley's drainage problem areas in 1986. The map shows areas considered to be "present problem areas" where perched water is within 5 feet of the soil surface. Areas where perched water is between 10 and 20 feet of the soil surface are considered to be "potential problem areas".

In preparing the map and table, items such as existing drainage systems, wildlife refuges, urban areas, pasture land, and native vegetation were not taken into account. These factors should be considered when making projections about areas that will require drainage systems in the future.

Significant changes in drainage acreage are shown on the table. Some changes in acreage reflect fluctuations in perched water volumes; however, some of the major changes are due to more complete data. Most of the data used to complete these statistics were obtained from local agencies; the remainder came from test-hole measurements made by DWR.

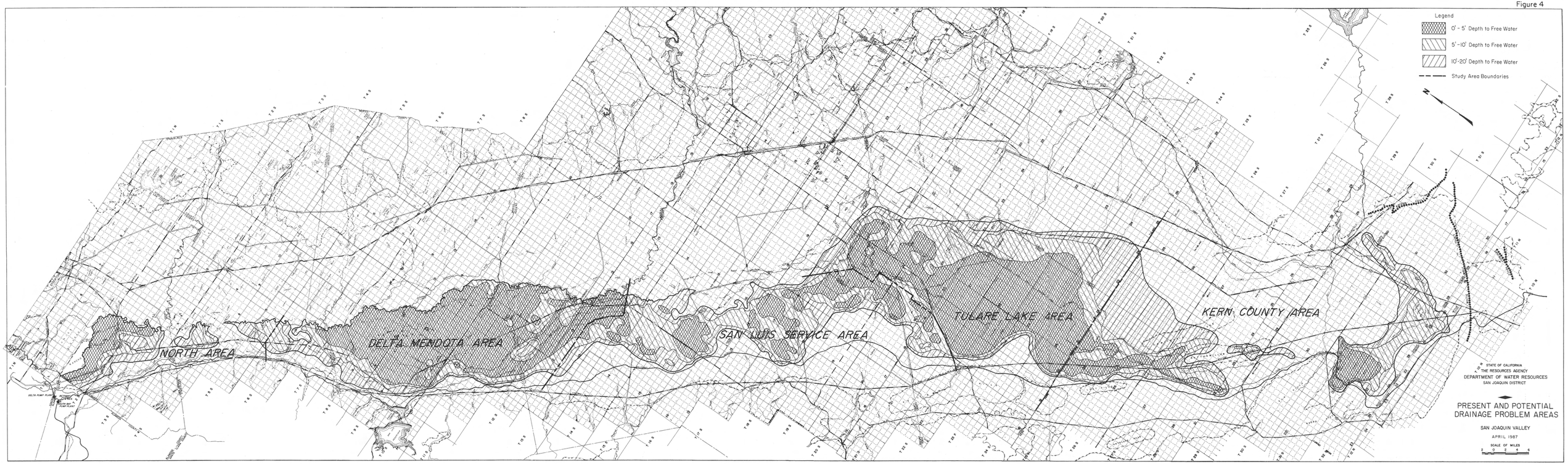
TABLE 1

Drainage Problem Areas in San Joaquin Valley

(acres)

Area	0- to 5-Foot Depth	5- to 10-Foot Depth	10- to 20-Foot Depth	Total
		1977		
Northern	41,000	65,000	--	106,000
Delta-Mendota	266,000	167,000	4,000	437,000
San Luis	55,000	126,000	124,000	305,000
Tulare Lake	156,000	171,000	81,000	408,000
Kern County	31,000	93,000	145,000	269,000
Total	549,000	622,000	354,000	1,525,000
		1982		
Northern	34,000	43,000	27,000	104,000
Delta-Mendota	213,000	127,000	92,000	432,000
San Luis	53,000	145,000	126,000	324,000
Tulare Lake	299,000	89,000	74,000	462,000
Kern County	52,000	81,000	126,000	259,000
Total	651,000	485,000	445,000	1,581,000
		1986		
Northern	34,000	31,000	33,000	98,000
Delta-Mendota	309,000	78,000	42,000	429,000
San Luis	111,000	137,000	86,000	334,000
Tulare Lake	322,000	135,000	92,000	549,000
Kern County	65,000	108,000	173,000	346,000
Total	841,000	489,000	426,000	1,756,000

Figure 4


Legend
0' - 5' Depth to Free Water
5' - 10' Depth to Free Water
10' - 20' Depth to Free Water
Study Area Boundaries
NORTH AREA
DELTA MENDOTA AREA
SAN LUIS SERVICE AREA
TULARE LAKE AREA
KERN COUNTY AREA
DELTA PUMP PLANT
TRACY PUMP PLANT
STATE OF CALIFORNIA
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SAN JOAQUIN DISTRICT
PRESENT AND POTENTIAL
DRAINAGE PROBLEM AREAS
SAN JOAQUIN VALLEY
APRIL 1987
SCALE OF MILES
2 0 2 4 6

TILE DRAIN SYSTEM STATISTICS

Currently, an effort is being made to complete statistics on tile drain systems that flow into the sumps monitored for this report. When compiled, these statistics will provide factors which may correlate with the efficiency of some systems and possibly help predict what to expect from newly installed or proposed systems.

For example, it appears that recently installed tile drain systems leach increasing amounts of monitored constituents from the soil. In older systems, however, the leaching rates tend to level off and stabilize after six to eight years. Other correlations yet to be studied include the effect of tile density or soil type on the tile drain system's effectiveness.

Table 2 presents the data collected to date. Additional data are forthcoming, though some landowners or operators are unwilling to release such data.

TABLE 2

Tile Drain System Statistics

SUMP NO.	LOCATION	COUNTY	YEAR INST	ACRES	FT OF TILE	AVG DEPTH	LATERAL SPACING	FT/AC[1]	SOIL TYPE	ALKALI[2]	DRAINAGE[3]
Central Area Stations											
BVS 6016	13S-13E-3A	FRESNO	1964	640	44,880			70	PANOCHE LOAM/FINE SANDY LOAM/CLAY LOAM/SILTY CLAY	S	G
BVS 8003	12S-13E-24N	FRESNO	1961	126	11,492	5.9-6.0	600	91	OXALIS/SILTY CLAY	S & A	I
CTL 4504	11S-11E-27P	MERCED							SURFACE DRAIN		
DPS 1367	12S-11E-15A	MERCED		125	18,000			144	PANHILL SILTY CLAY LOAM	O	O
DPS 2535	12S-12E-6R	FRESNO	1967	295	34,320		400	116	LOST HILLS CLAY LOAM/LETHENT SILTY CLAY	O-M-A	I-P-G
DPS 3235	12S-12E-5D	MERCED							SURFACE DRAIN		
DPS 3465	12S-11E-2D	MERCED	1963	160	11,560		800	72	LOST HILLS CLAY LOAM/LETHENT SILTY CLAY	O & A	P
DPS 4616	11S-12E-28R	FRESNO	1959	120	4,500	6.6	600		LETHENT SILTY CLAY/ORESTIMBA CLAY	S-M-MS	P
	ADDITION		1961	160	7,880	5.2	600				
	TOTAL			280	12,380			44			
FBH 2016	13S-14E-26A	FRESNO	1959	80	11,260	5.9	400	141	OXALIS SILTY CLAY	S & M	I
FBH 8061	12S-14E-30D	FRESNO	1955	240	28,950	5.7-5.9	400	121	OXALIS SILTY CLAY	M & S	I
Southern Area Stations											
CCN 3550	21S-22E-33R	KINGS	1957	560	33,100	6.6-6.7	650-800	59	TULARE LOAM/CLAY/FINE SANDY LOAM/HACIENDA LOAMY SAND	S	I-P
CNR 0801	32S-28E-20D	KERN	1978	68	9,100		400	134	SAND		
COC 4126	11N-20W-8B	KERN	1985	120	37,000	7.5-9.0	200	308	SAN EMIGDIO FINE SANDY LOAM		
COC 5329	11N-20W-6B	KERN	1981	300	36,790		260-500	123	SAN EMIGDIO SANDY CLAY LOAM/FINE SANDY LOAM	O	
ERR 7525	21S-21E-11Q	KINGS		265	27,034			102	TULARE CLAY/LOAM/CLAY LOAM/FOSTER SANDY LOAM	S	I-P
ERR 8429	21S-21E-11D	KINGS									
ERR 8641	21S-21E-4R	KINGS	1981	258	34,956			135	TULARE CLAY LOAM/TULARE CLAY	S & A	P
GSY 0855	21S-21E-5C	KINGS		55	6,300			115	TULARE CLAY LOAM	S & A	I-P
HCH 7439	24S-22E-11D	KINGS									
LME 7569	18S-19E-23A	KINGS									
LNW 5454	25S-21E-33N	KERN	1983	1513	48,070				NA		
	ADDITION		1984	320	17,900						
	TOTAL			1833	65,970			36			
LNW 5467	26S-21E-6A	KERN	1983	1480	81,262				NA		
	ADDITION		1984	290	49,763						
	TOTAL			1770	131,025			74			
LNW 6459	25S-21E-32A	KERN	1983	581	20,000				NA		
	ADDITION		1984	0	16,060						
	TOTAL			581	36,060			62			
LNW 6467	25S-21E-31A	KERN		1420	78924		800	56	NA		
SFD 2727	20S-20E-28A	KINGS									
SFD 6046	20S-20E-8D	KINGS									
STC 3505	27S-23E-28E	KERN	1965	140	14,000			100	MERCED CLAY LOAM/POND FINE/MILHAN SANDY LOAM	S,M,A	P
STC 5436	27S-22E-14J	KERN	1975	153	19,500			127	MERCED CLAY LOAM/TULARE CLAY LOAM	A	P
STC 6467	27S-22E-9M	KERN		124	25,100			202	MERCED CLAY LOAM	S & M	P
VGD 3906	19S-19E-3J	KINGS	1984	870	63,770			73	MERCED CLAY LOAM/LETHENT SILTY CLAY LOAM	S & A	I-P
VGD 4406	19S-19E-3A	KINGS	1984	310	25,000			81	MERCED CLAY LOAM/ADOBE CLAY/LETHENT SILTY CLAY LOAM	S & A	I-P
VGD 5412	18S-19E-27P	KINGS	1984	275	46,080			168	MERCED SILTY CLAY LOAM/LETHENT SILTY CLAY LOAM	S & A	I-P

[1]LINEAR FEET OF TILE DRAINS PER ACRE

[2]ALKALINITY
- O - free
- S - slight
- M - moderate
- MA -moderate to strong
- A - strong

[3]DRAINAGE
- R - good to excessive
- G - good
- I - imperfect
- F - fair
- P - poor
- O - subject to overflow

1986 MONITORING PROGRAM

DWR's 1986 San Joaquin Valley drainage monitoring activities consisted of collecting water samples from 36 subsurface drains and 2 surface drains in the area shown in Figure 1. DWR has not monitored the northern area since 1969 because the USBR assumed responsibility for sampling from Tracy to Gustine. The USBR also collects samples on various drainage systems in the central area and publishes these data as they become available.

In 1985, due to an expansion of the program in the southern area, specifically in Kings and Kern counties, the number of subsurface drains included in the monitoring program was increased from 16 to 36.

In 1986, the Department analyzed drainage water samples for nutrients, minerals, pesticides, trace elements (including selenium), and other miscellaneous constituents. Monthly flow volumes for subsurface drains were determined, when practical, on the basis of sump pump electrical energy usage records and flow meter charts when available. A discussion of data evaluated in 1986 follows.

Flows

The 1986 flow monitoring program involved collecting electric meter readings and calculating the approximate volume of drainage water pumped. Direct readings were recorded at agricultural drainage water sumps that had flow meters.

Flows for the majority of the stations in the central and southern areas remained consistent with 1985 volumes. Several southern area drains lack flow data. Flow data are tabulated in Appendix A.

Pesticides

Water samples were analyzed for two categories of pesticides: chlorinated hydrocarbons and organic phosphorus. The results are tabulated in Appendix B.

In 1986, chlorinated hydrocarbon pesticide compounds were not tested for at the monitoring sites in the southern areas due to past histories of extremely low concentrations. Pesticides previously identified in the southern area were atrazine/simazine, fenthion, and propanil. Pesticide compounds previously identified in the central area include atrazine/simazine, thiebencarb, dachthal, diazinon, bidrin, phorsulfon, chloropropham, and fenthion. The 1986 testing was conducted only at station DPS 3265, which had shown substantial concentrations of pesticides in the past. The 1986 maximum chlorinated hydrocarbon concentration recorded was 0.00016 milligrams per liter (mg/L) of an unidentified pesticide compound compared with a 1985 maximum chlorinated hydrocarbon concentration of 0.00150 mg/L of atrazine/simazine. The 1986 maximum organic phosphorous concentration was 0.00065 mg/L of an unidentified pesticide compound compared with a 1985 maximum organic phosphorous compound concentration of 0.00007 mg/l of an unidentified pesticide compound.

Nutrients

Sampling of ten southern area drains for nutrient concentrations was continued in 1986. The samples were analyzed for total ammonia, dissolved orthophosphate, and total phosphorus. Drains sampled prior to 1985, including all central area drains and 13 southern area drains, were analyzed for total phosphorus only. The 1986 data for these drains are included in Appendix B.

The correlation of nutrient values (for the determination of trends) versus sampling periods is difficult to evaluate due to such variables as:

-- Irrigation practices designed to force the salts out of the root zone
-- Application rates of commercial fertilizers
-- Yearly chemical-composition fluctuations
-- Varying soils types

Future sampling programs may include a controlled test area that would eliminate or minimize some of these variables and generate data that would better establish seasonal trends.

Minerals

In general, during 1986, subsurface drain effluent was of the sodium sulfate type, with sodium being the predominant cation and sulfate the predominant anion. These general conclusions were verified by the high correlation of these two mineral concentrations with electrical conductivity (EC). The EC in the central area ranged from 806 to 11,700 micromhos per centimeter (µmho/cm). Sodium and sulfate concentrations ranged from 85 to 2,000 mg/L and 161 to 4,780 mg/L, respectively. In the southern area, the EC ranged from 1,490 to 54,100 µmho/cm, and the sodium and sulfate ranged from 203 to 16,300 mg/L and 347 to 20,300 mg/L, respectively.

Though boron is an essential element for the growth of plants, a number of plants (such as citrus trees) are very sensitive and can only tolerate concentrations less than 1 mg/L. For the general cropping patterns in the Valley, the recommended maximum concentration of boron for irrigation is 2 mg/L. This limit was exceeded in 163 out of 178 samples (91.6 percent of the time) in 1986 compared with 227 out of 252 samples (90.1 percent of the time) in 1985. Boron concentrations ranged from 0.8 to 38.0 mg/L in the central area and from 0.5 to 68.0 mg/L in the southern area. The central area averaged 11.92 mg/L, and the southern area averaged 19.22 mg/L.

Trace Elements

The trace elements currently monitored are described in this section. Toxic effects, if any, are discussed and detected concentrations are compared to current standards. A summary of the standards for primary drinking water, livestock, irrigation, and aquatic life is given in Table 3.

Arsenic (As)

Arsenic toxicity to plants varies widely, ranging from 0.05 mg/l to 12 mg/L. Arsenic is widely distributed in natural waters and its toxic effects are somewhat erratic. To

TABLE 3

Concentration Limitations*

(mg/L)

Trace Element	Drinking Water Standard	Livestock Water Standard	Irrigation Water Standard	Aquatic Life Standard
Arsenic	0.05	0.20	0.10	0.05
Cadmium	0.01	0.05	0.01	0.01
Chromium	0.05	1.0	0.10	0.10
Copper	1.0	0.50	0.20	0.05
Iron	0.30	--	5.0	0.30
Lead	0.05	0.1	5.0	0.03
Manganese	0.05	--	0.20	0.10
Mercury	0.002	0.01	--	0.0001
Molybdenum	--	--	0.01	1.0
Nickel	--	--	0.20	0.10
Selenium	0.01	0.05	0.02	0.01
Silver	0.05	--	--	0.005
Strontium	--	--	--	--
Zinc	5.0	25.0	2.0	0.10

*U. S. Environmental Protection Agency. *"Water Quality Criteria, 1972"*

U. S. Geological Survey. *"Study and Interpretation of the Chemical Characteristics of Natural Water"* 1985.

unacclimated individuals, arsenic is quite toxic with doses of as little as 100 mg producing serious health problems. Arsenic has been found in all surface and subsurface drains in the central and southern areas, with concentrations ranging from 0.001 to 1.080 mg/L. The maximum recommended concentration for irrigation is 0.1 mg/L.

Cadmium (Cd)

At extreme levels, cadmium can cause a disease called "Itai-Itai", characterized by brittle bones and intense pain. At low levels of exposure over prolonged periods, cadmium can also cause high blood pressure, sterility among males, kidney damage, and flu-like disorders. Its usual effect on humans is cramping, nausea, vomiting, and diarrhea. Moreover, it is toxic to plants, fish, and other aquatic life forms. Like arsenic, cadmium accumulates in the body and can result in death. Cadmium was not detected in any of the southern or central stations. The maximum recommended concentration for irrigation is 0.01 mg/L.

Chromium (Cr)

In the aquatic environment, chromium exists primarily in the form of chromate. Chromate poisoning causes skin disorders and liver damage. There is some reason to believe that chromates are carcinogenic. For this reason, the permissible level of chromium in drinking waters has been restricted to 0.05 mg/L. In this study, chromium was detected in 102 out of 188 samples with a range of concentration from 0.001 mg/L to 0.14 mg/L. Nine samples exceeded the primary drinking water standard of 0.05 mg/L. The maximum recommended concentration for irrigation is 0.10 mg/L.

Copper (Cu)

Copper is toxic to a number of plants in concentrations ranging from 0.1 to 1.0 mg/L. It is especially toxic to aquatic plants at low concentrations and can be used to control algae in reservoirs. Copper occurs in trace quantities in surface water. Concentrations approaching 1.0 mg/L can be immediately toxic to some aquatic life; thus, the maximum ambient water quality limit is set at 1.0 mg/L. Copper was detected in concentrations ranging from 0.005 to 0.02 mg/L. The maximum recommended concentration for irrigation is 0.20 mg/L.

Iron (Fe)

Iron is nontoxic to plants in aerated soils but can contribute to soil acidification and loss of availability of essential phosphorus and molybdenum. No harmful effects from drinking water containing iron have been recorded, but exposure of water containing iron to air results in iron oxidization and turbidity. Iron also imparts a taste to water which is detectable at very low concentrations. Small quantities of iron are essential for plant growth, but toxicity occurs when levels exceed 5 mg/L. Iron was detected in concentrations ranging from 0.005 to 3.3 mg/L. The maximum recommended concentration for irrigation is 5.00 mg/L.

Lead (Pb)

Lead poisoning has been recognized for many years and is identified as a cause of brain and kidney damage. It can also inhibit plant cell growth at very high concentrations. Lead was detected in 10 out of 70 samples (14.3 percent of the time) in concentrations ranging from 0.004 to 0.016 mg/L, compared with only one detection in 148 samples (0.68 percent) in 1985 at a concentration of 0.01 mg/L. The maximum contaminant level for lead in drinking water is set at 0.05 mg/L. The maximum recommended concentration for irrigation is 5.0 mg/L.

Manganese (Mn)

Manganese is less common than iron in California water supplies, though it is often found with iron in ground waters. It can be leached from soil and frequently occurs in drainage waters in high concentrations. Concentrations of a few milligrams per liter can be toxic to a number of crops in acidic soils, but the application of proper quantities of ground limestone successfully eliminates this problem. Increasing the pH to the 5.5 to 6.0 range usually reduces the active manganese to below the toxic level. Manganese was detected in concentrations ranging from 0.005 to 7.52 mg/L. The recommended maximum concentration for irrigation is 0.2 mg/L.

Mercury (Hg)

California is the source of about 90 percent of the mercury mined in the United States; nearly all the deposits are located along the Coast Range in California. Biological processes, especially under anaerobic conditions, can convert metallic mercury to its toxic, water-soluble (methyl) form. Mercury has a tendency to accumulate in the food chain and is highly toxic to humans and animals. Its salts are used as fumigants to combat plant diseases and insects. Mercury was detected only twice, both times in the central area, at a concentration of 0.001 mg/L. Due to the extreme effects of toxicity, the primary drinking water standard is set at 0.002 mg/L. The maximum recommended concentration for irrigation has not been set.

Molybdenum (Mo)

Molybdenum presents no toxicity problems to plants at normal concentrations in soils and waters and is an essential element in animal nutrition. Through bioaccumulation in forage, soil concentrations of as little as 0.01 mg/L of molybdenum can be toxic to livestock. Molybdenum was detected in concentrations ranging from 0.005 to 6.005 mg/L. The recommended maximum concentration for irrigation is 0.01 mg/L.

Nickel (Ni)

Nickel is toxic to a number of plants at 0.5 to 1.0 mg/L. Toxicity is reduced by soils with neutral or alkaline pH or soils containing approximately 20 percent organic matter. Nickel was detected in concentrations ranging from 0.01 to 1.60 mg/L. Despite its limited dispersal in nature, nickel is a carcinogen so the recommended maximum concentration for irrigation is 0.2 mg/L.

Selenium (Se)

Selenium is toxic to plants at concentrations as low as 0.025 mg/L and toxic to livestock if forage is grown in soils with relatively high levels of selenium. In extremely low concentrations, however, it is an essential element to animal nutrition. Selenium was detected in concentrations ranging from 0.001 to 0.858 mg/L. The primary drinking water standard is set at 0.01 mg/L; the recommended maximum concentration for irrigation is 0.02 mg/L.

Silver (Ag)

Silver chloride and other silver salts are highly insoluble; thus, silver ions do not normally occur in significant concentrations in natural waters. Silver was detected only four times, all in the southern region, in concentrations ranging from 0.01 to 0.03 mg/L. The maximum contaminant level in drinking water for silver is 0.05 mg/L. The recommended maximum concentration for silver in irrigation water has not been set.

Strontium (Sr)

Strontium was detected in all surface and subsurface drains in concentrations ranging from 0.2 to 21.0 mg/L. No maximum contaminant levels have been set.

Zinc (Zn)

Zinc occurs abundantly in rocks and ores and is readily refinable. In mining areas, zinc has been found in natural waters in concentrations ranging up to 50 mg/L. In most areas, it is present only in trace amounts. Zinc is an essential and beneficial nutrient to humans and its salts have very low toxicity to animal life but are toxic to plants at widely varying concentrations. Reduced toxicity occurs at pH greater than 6 and in fine textured or organic soils. Zinc was detected in concentrations ranging from 0.002 to 0.101 mg/L. The drinking water standard of 5.0 mg/L is based primarily on taste considerations. The recommended maximum concentration for irrigation is 2.0 mg/L.

STATION EVALUATIONS

The water quality data collected in 1986 for the stations monitored are displayed in Appendix B. Linear and multiple regression analyses were performed on all 38 stations to identify relations between the different drainage water constituents. From the results of these analyses, the different characteristics of the central and southern stations could be compared and the possible reasons for their differences identified. Of the 36 subsurface drains sampled, 12 were selected for discussion in this report. Data from the two surface drains are also included for comparison to the subsurface stations.

The central region stations are generally ten to twenty years older than the southern region stations, though a few of the southern stations have existed nearly as long as stations in the central region. Since they have existed the longest, the central region stations should indicate any long-term leaching patterns that have developed over the years. Newer stations which have begun operation in the last three years are located mostly in Kings and Kern counties and should show any short-term leaching patterns.

The stations currently sampled, their locations, and all relevant data pertaining to the tile drain system in use are listed in Table 2.

Mineral Levels

Central Area Surface Drains

These two drains (see Figure 2) are situated approximately 6 miles from each other. DWR has been collecting data from these two surface drains for more than ten years.

It is difficult to determine which area the sample from the surface drain represents because surface drains collect water from large areas which may contain several different crops and soil types. Since the flow in the surface drains consists of a mixture of supply water, tail water, and subsurface drainage water, however, an analysis is presented here for comparison to the subsurface drains.

Figures 5 and 6 show the boron levels for the two stations. From the graphs, the mean levels appear to be diminishing from ranges established in the early 1980s. Boron levels are very closely correlated with electrical conductivity levels as indicated by inspection of Figures 7 and 8. As shown in Figures 9 through 12, sodium and sulfate are directly proportional to the electrical conductivity of both stations' levels; therefore, their respective concentrations dictate the resulting electrical conductivity of the drainage waters.

Though the drains are less than 6 miles apart, there are significant differences in the soil types surrounding the drains and the drainage facilities, as well as rates of reapplication of drainage waters. These differences become apparent when the magnitude of the electrical conductivity levels are compared.

Due perhaps to more adequate drainage facilities, less reapplication of drainage water, or less saline native soil, surface drainage waters at CTL 4504 display markedly lower electrical conductivity and boron levels than the surface drainage waters at DPS 3235. This difference, however, is most likely due to a higher percentage of saline subsurface waters present in the DPS 3235 surface drain than in CTL 4504.

Figure 5

CTL 4504 -- Boron Levels

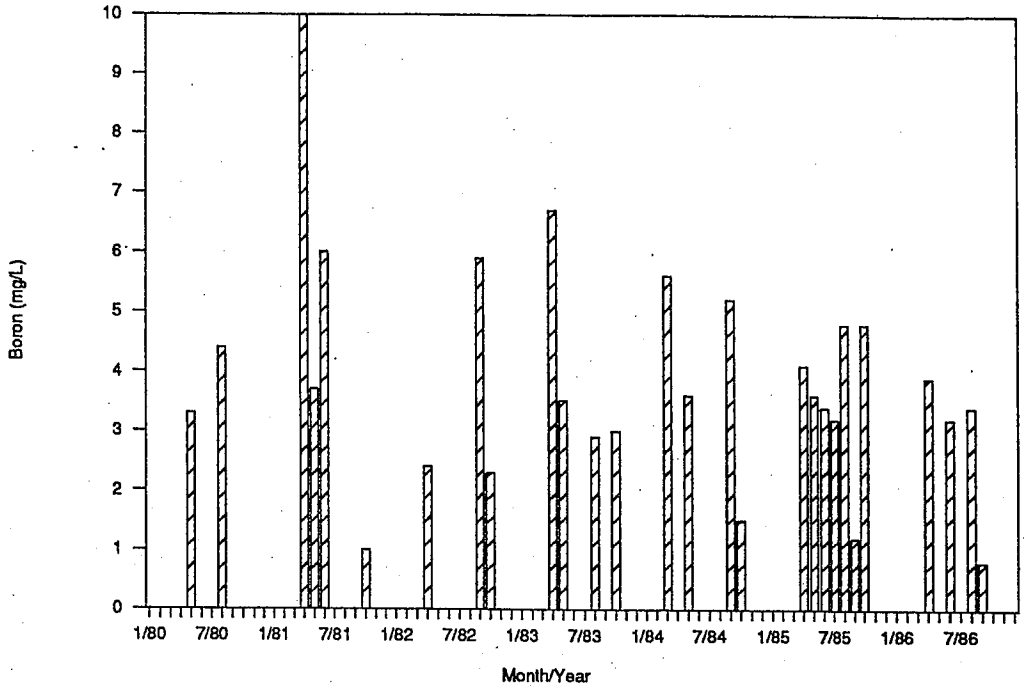


Figure 6

DPS 3235 -- Boron Levels

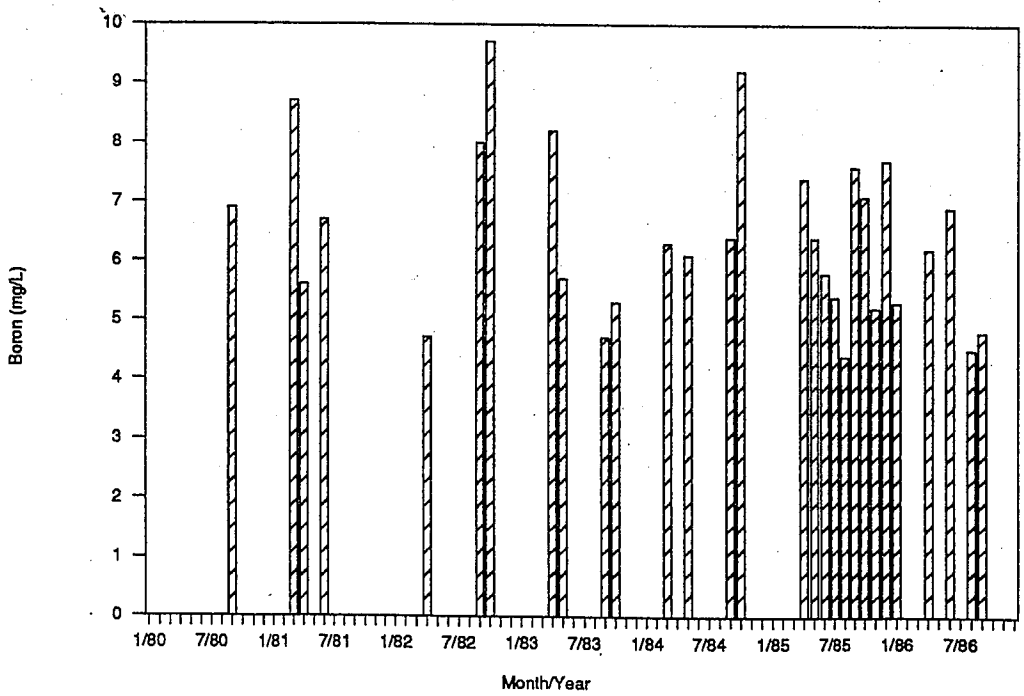


Figure 7

CTL 4504 -- Electrical Conductivity

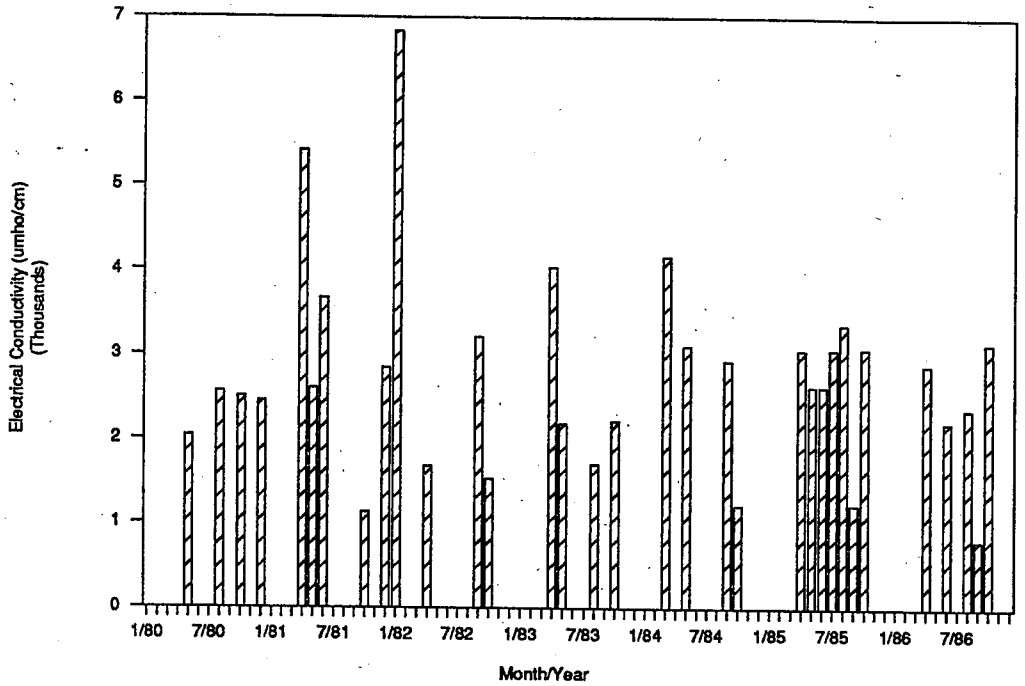


Figure 8

DPS 3235 -- Electrical Conductivity

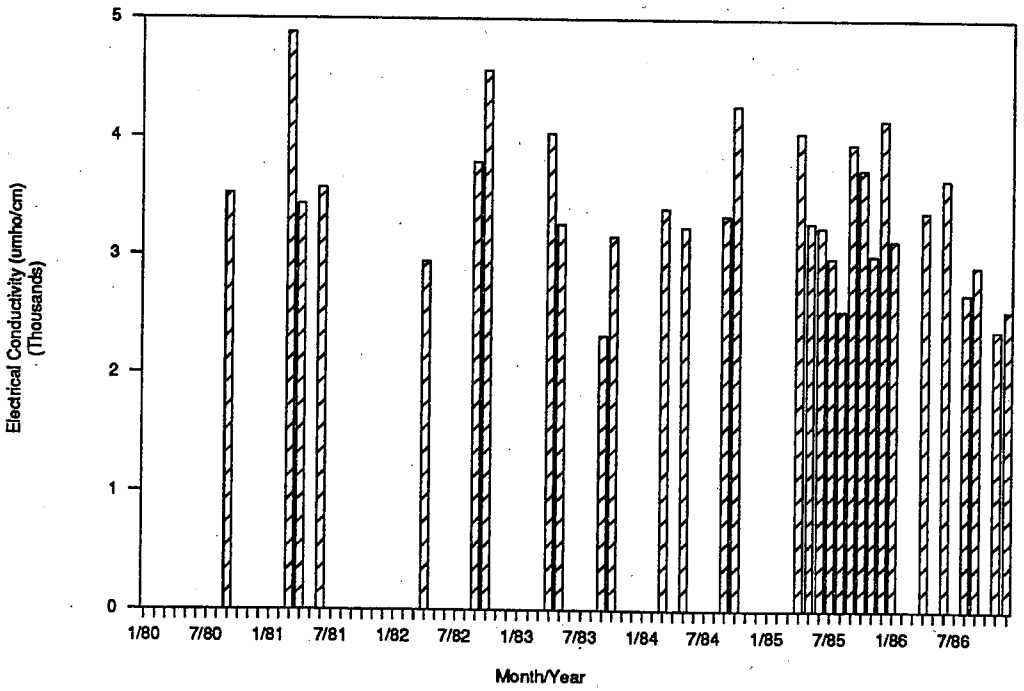


Figure 9

CTL 4504 -- Sulfate vs. E. C.

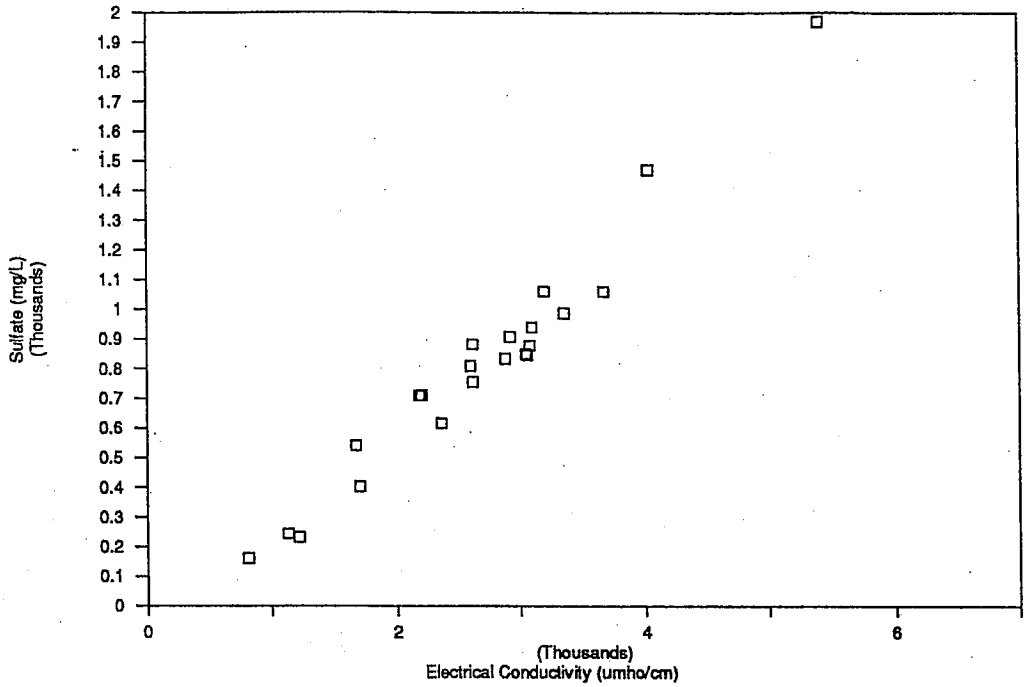


Figure 10

CTL 4504 -- Sodium vs. E. C.

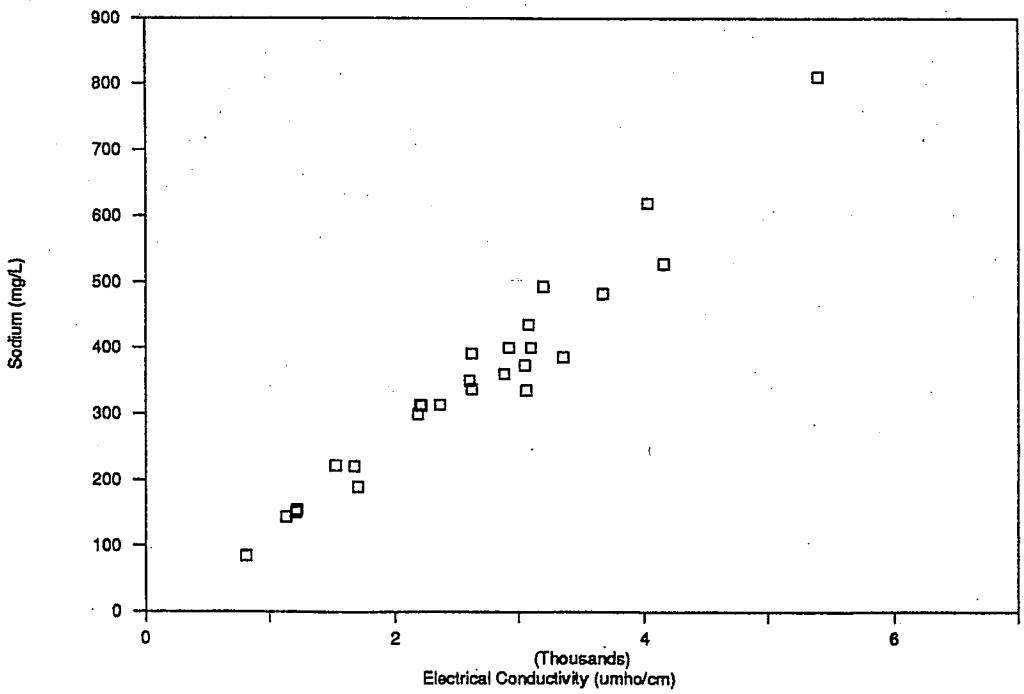


Figure 11

DPS 3235 -- Sulfate vs. E. C.

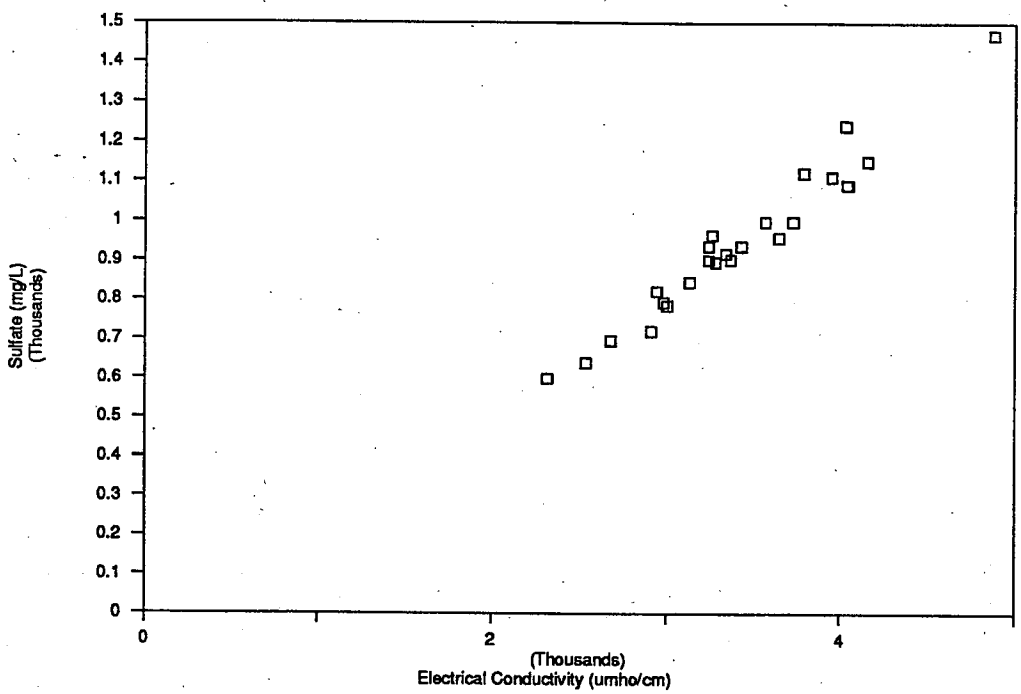
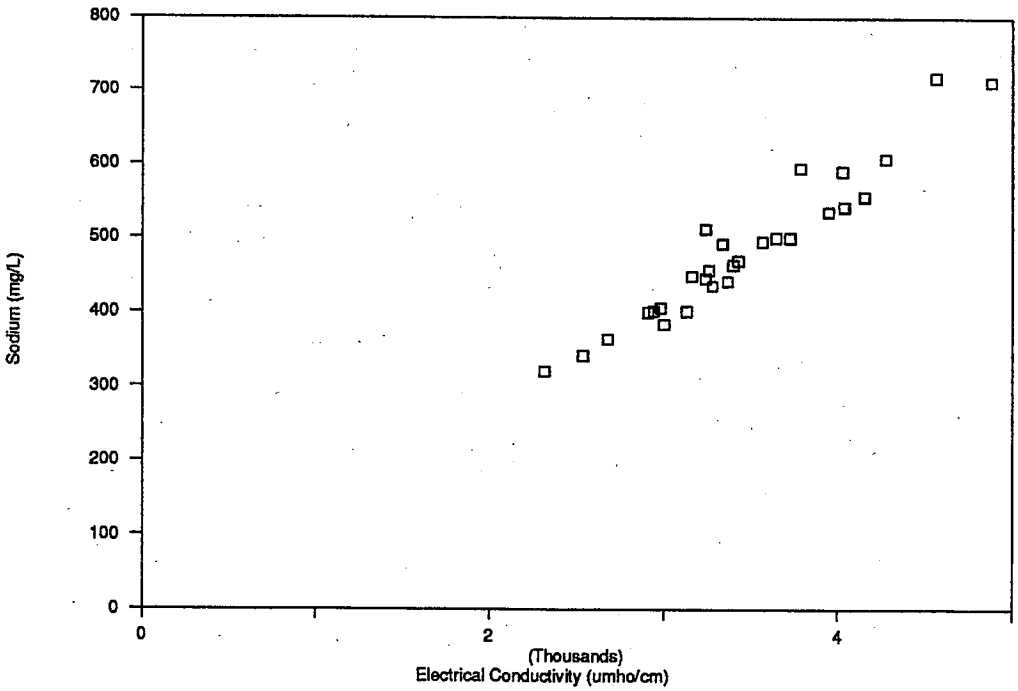


Figure 12

DPS 3235 -- Sodium vs. E. C.



Central Area Subsurface Drains

These drains, located roughly from Mendota to Dos Palos (Figure 2), collect subsurface agricultural water. Unlike surface drains, which collect waters from large and varied areas, subsurface drains serve a specific area and thus provide an accurate history of that particular locale. As a result, should any seasonal or historical patterns develop, they will be displayed by the graphical presentation of the station analyses.

The boron levels for six stations (BVS 6016, BVS 8003, DPS 1367, DPS 4616, FBH 2016, and FBH 8061) are presented in Figures 13 through 18. Boron concentrations correlate well with electrical conductivity levels, as Figures 19 through 24 confirm. Unlike conditions at the surface stations, however, both boron and electrical conductivity concentrations are not decreasing; rather, in most cases, they are increasing at significant rates. Since sodium and sulfate concentrations are highly correlated with electrical conductivity (Figures 25 through 28 and 31 through 36), the levels of these constituents must be increasing at an equal rate. An exception is Station DPS 1367, where the waters are not of the sodium sulfate type. This fact is identified by the lack of correlation between the constituents and electrical conductivity (Figures 29 and 30). In this situation, electrical conductivity levels are the result of ions such as calcium, chloride and nitrate, instead of the normally predominant sodium and sulfate.

The increasing levels of mineral concentrations and electrical conductivity may be attributable to inadequate or nonexistent drainage facilities, such as evaporation ponds, in the central area. The possible practice of reapplying drainage water to tile drained fields, combined with leaching effects on the native minerals in the soil, may result in increasing concentrations of these constituents in subsurface drainage water. Unless these salts are removed, salinity levels high enough to pose toxicity problems for crops may be reached. Even salt-resistant crops such as cotton will suffer yield reduction if the current trend is allowed to continue.

Figure 13

BVS 6016 -- Boron Levels

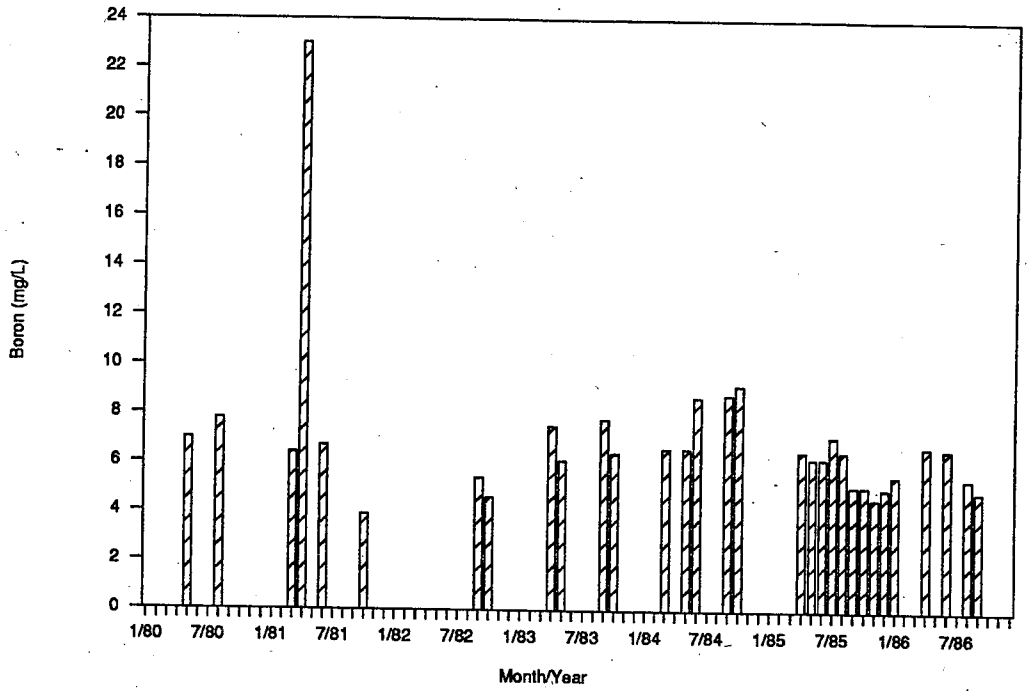


Figure 14

BVS 8003 -- Boron Levels

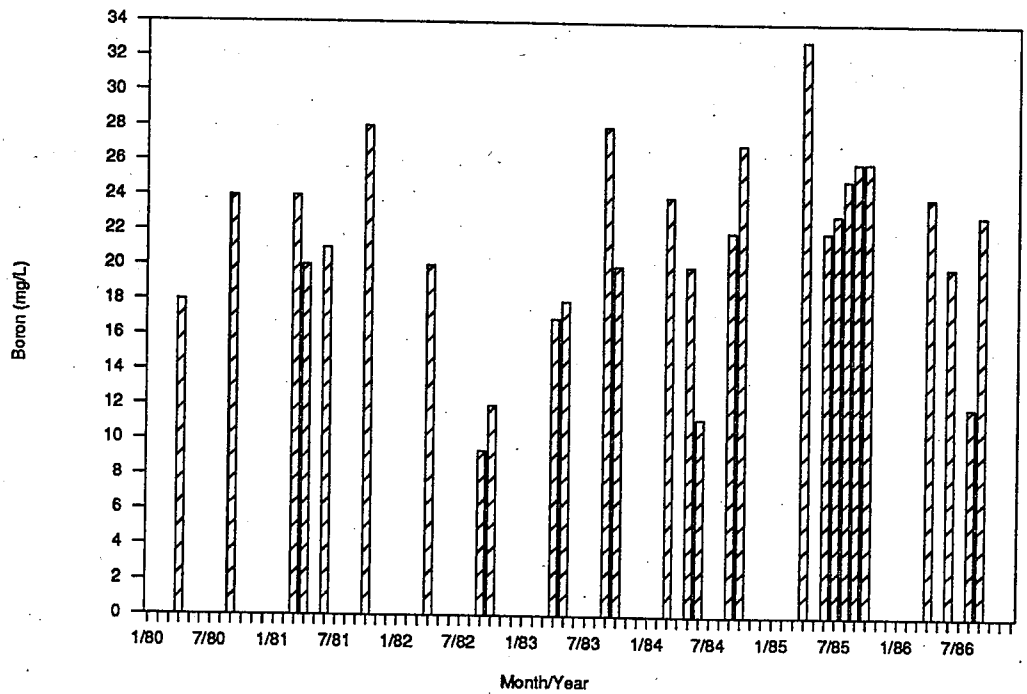


Figure 15

DPS 1367 -- Boron Levels

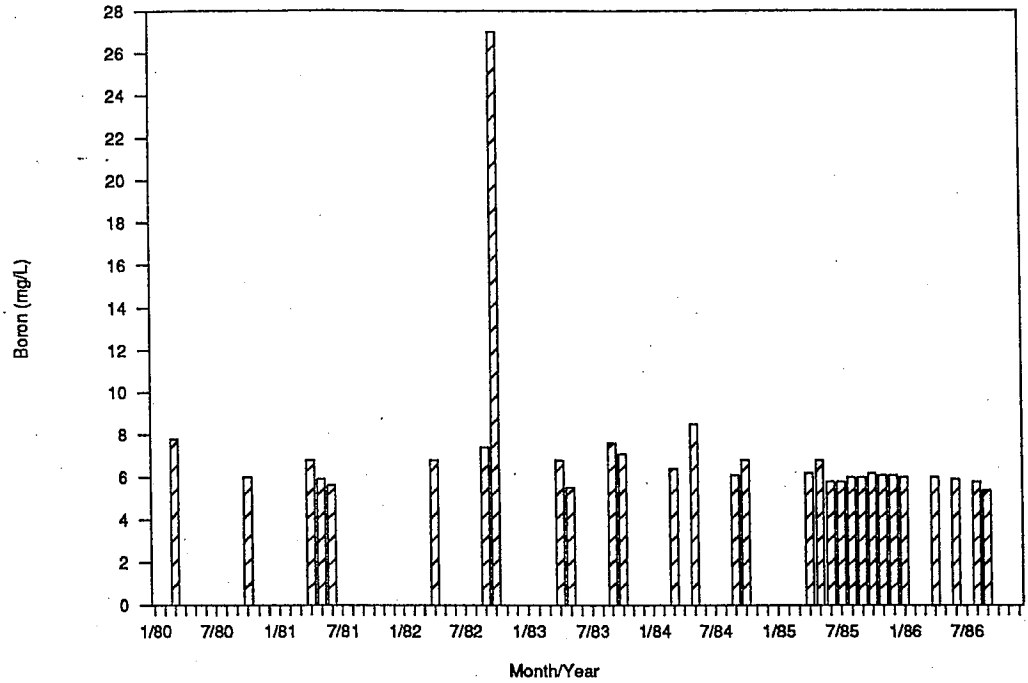


Figure 16

DPS 4616 -- Boron Levels

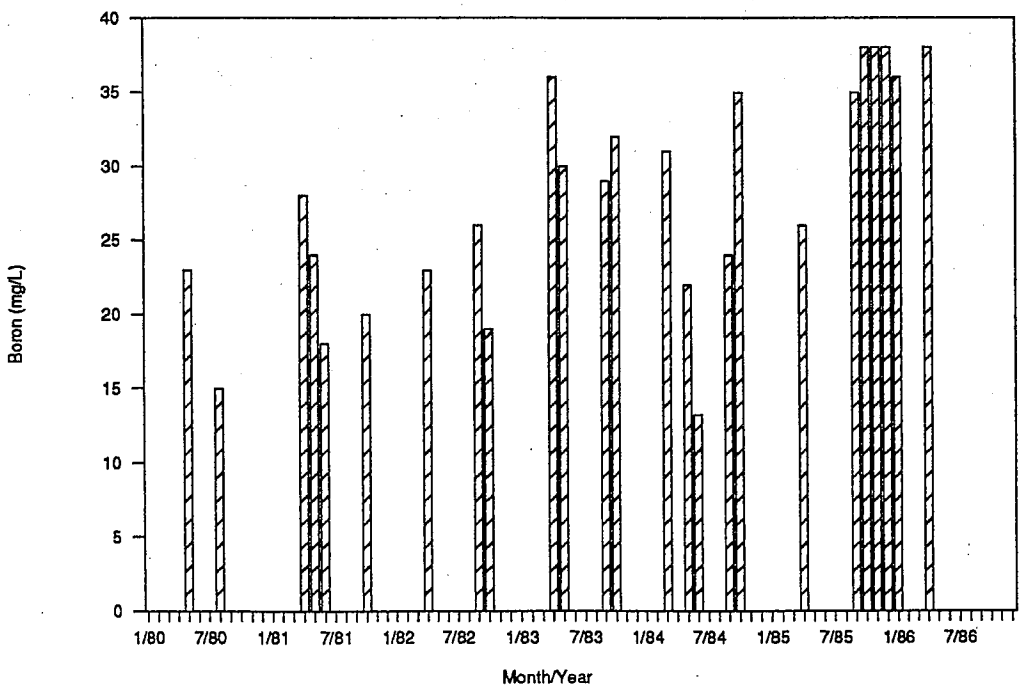


Figure 17

FBH 2016 -- Boron Levels

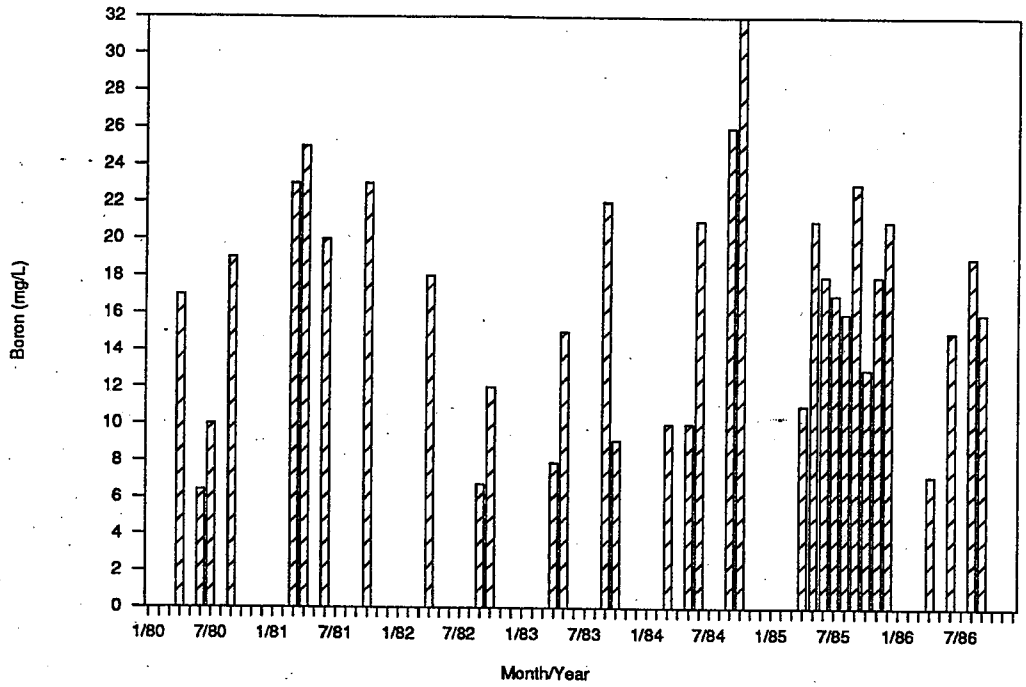


Figure 18

FBH 8061 -- Boron Levels

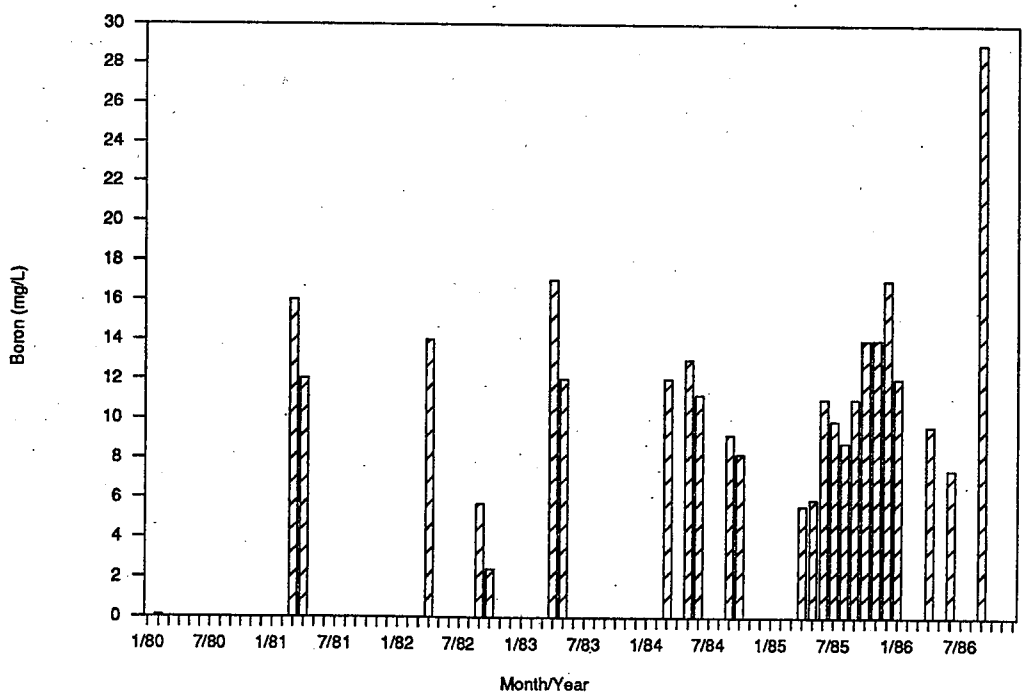


Figure 19

BVS 6016 -- Electrical Conductivity

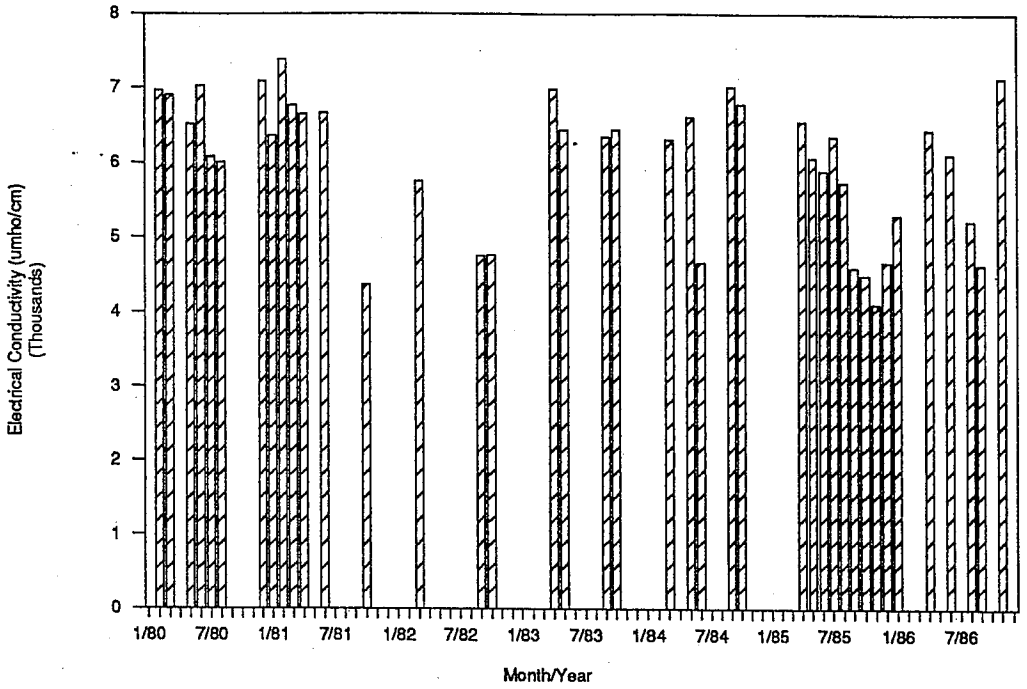


Figure 20

BVS 8003 -- Electrical Conductivity

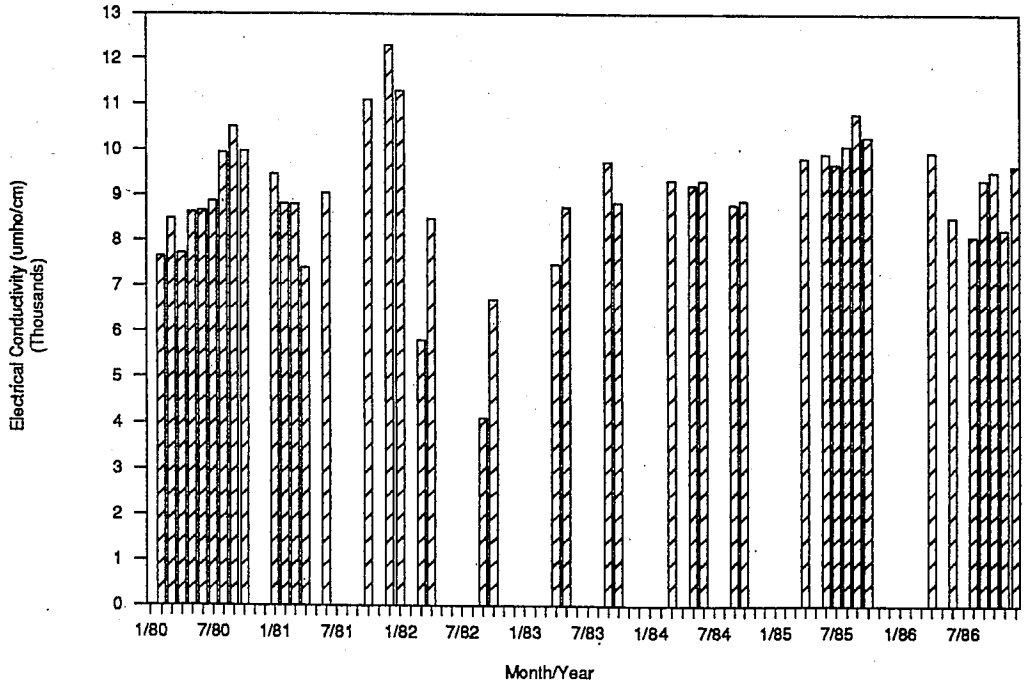


Figure 21

DPS 1367 -- Electrical Conductivity

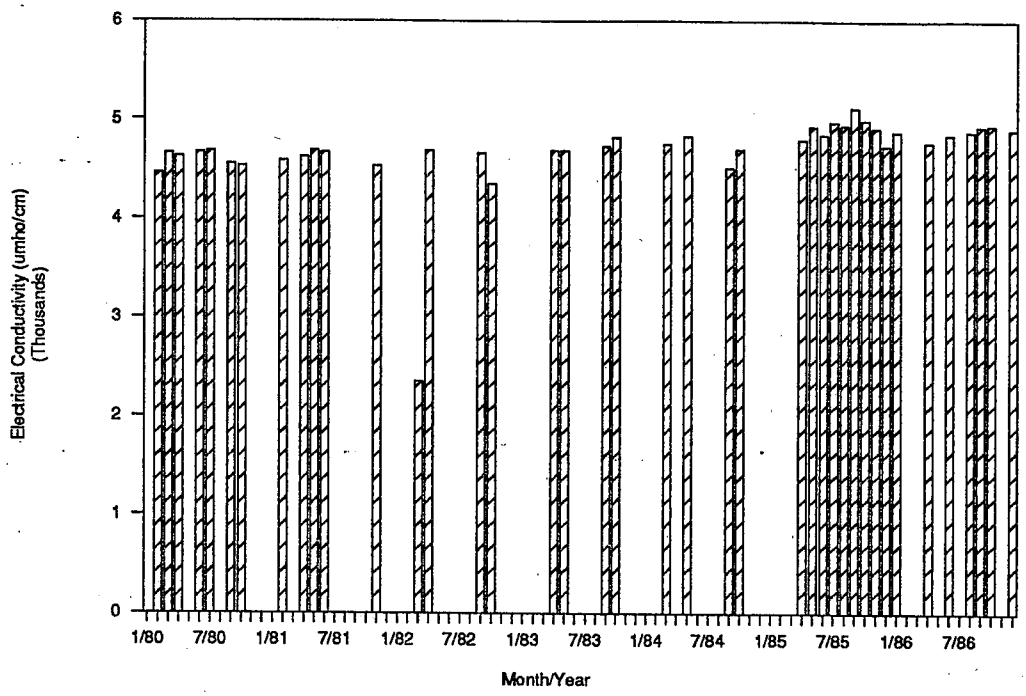


Figure 22

DPS 4616 -- Electrical Conductivity

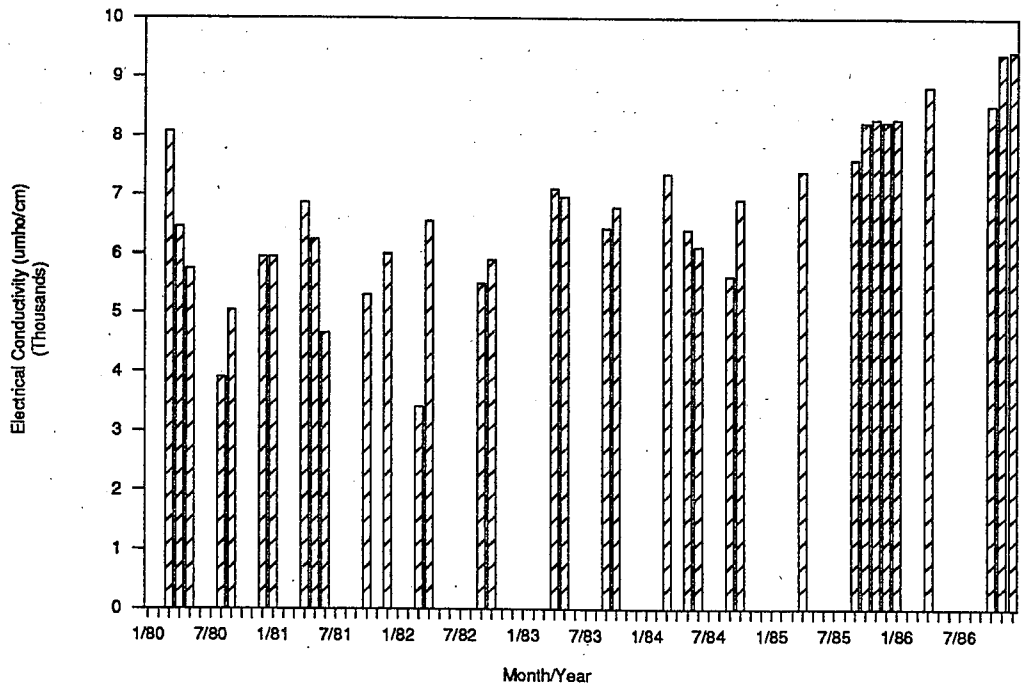


Figure 23

FBH 2016 -- Electrical Conductivity

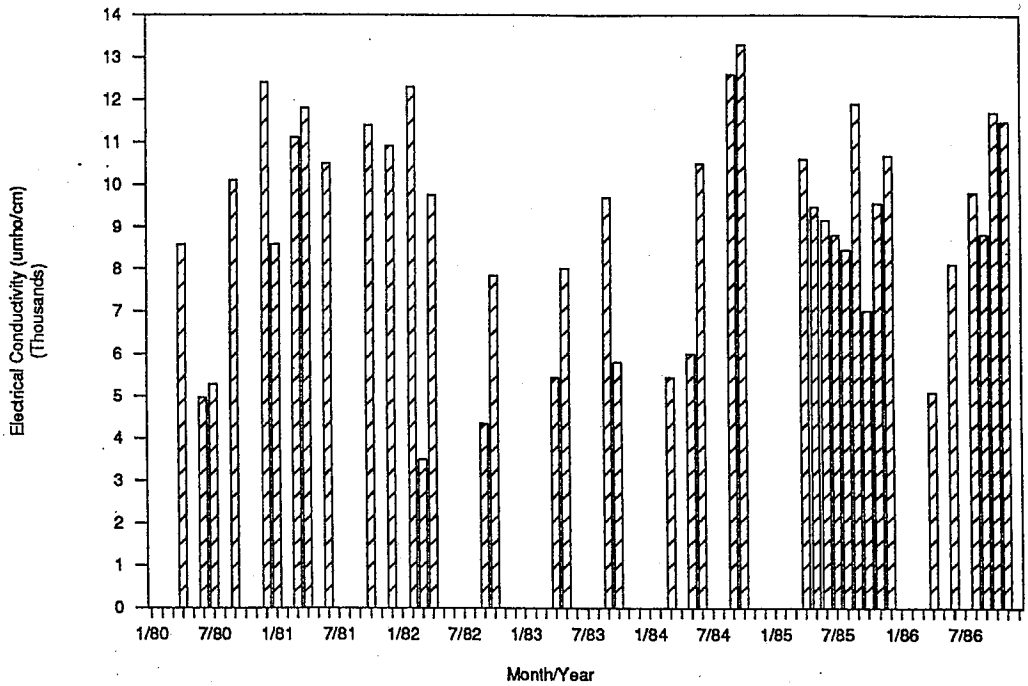


Figure 24

FBH 8061 -- Electrical Conductivity

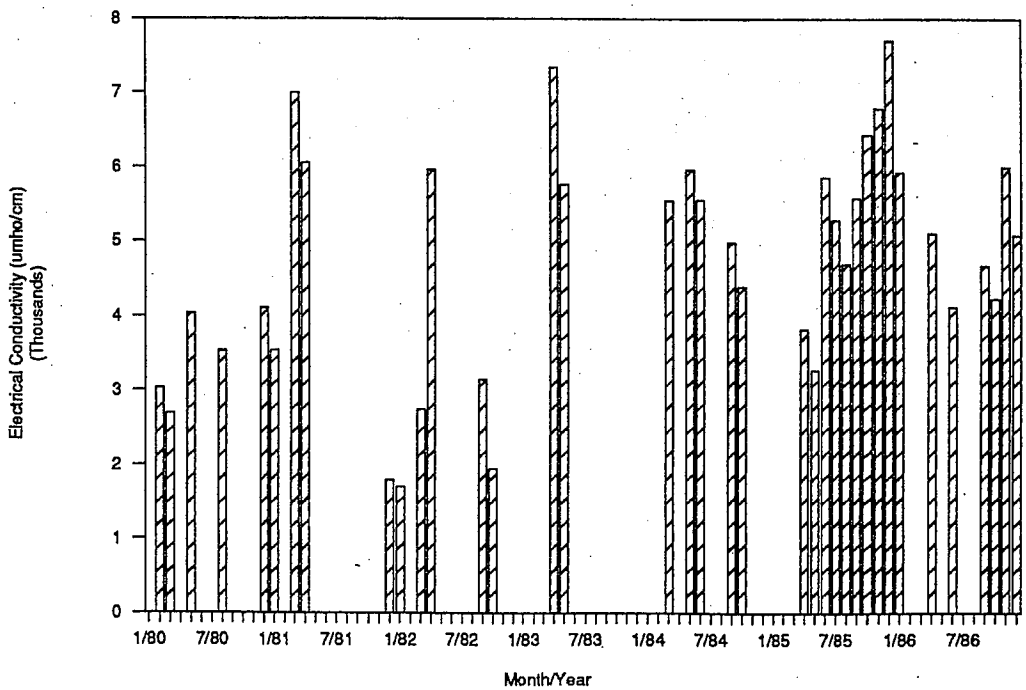


Figure 25

BVS 6016 -- Sulfate vs. E. C.

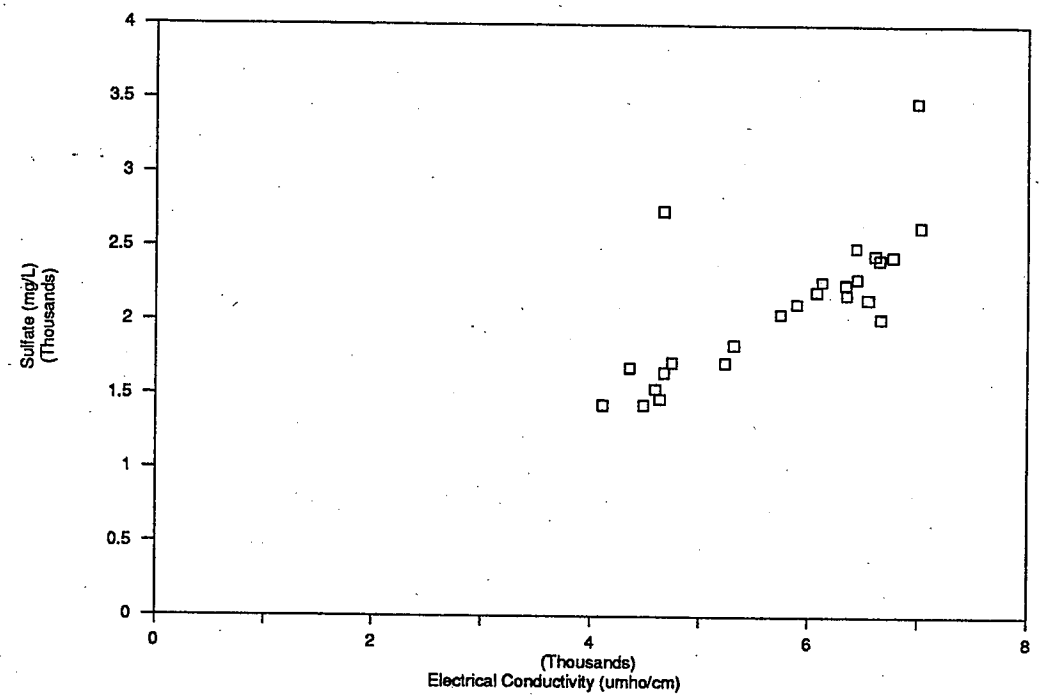


Figure 26

BVS 6016 -- Sodium vs. E. C.

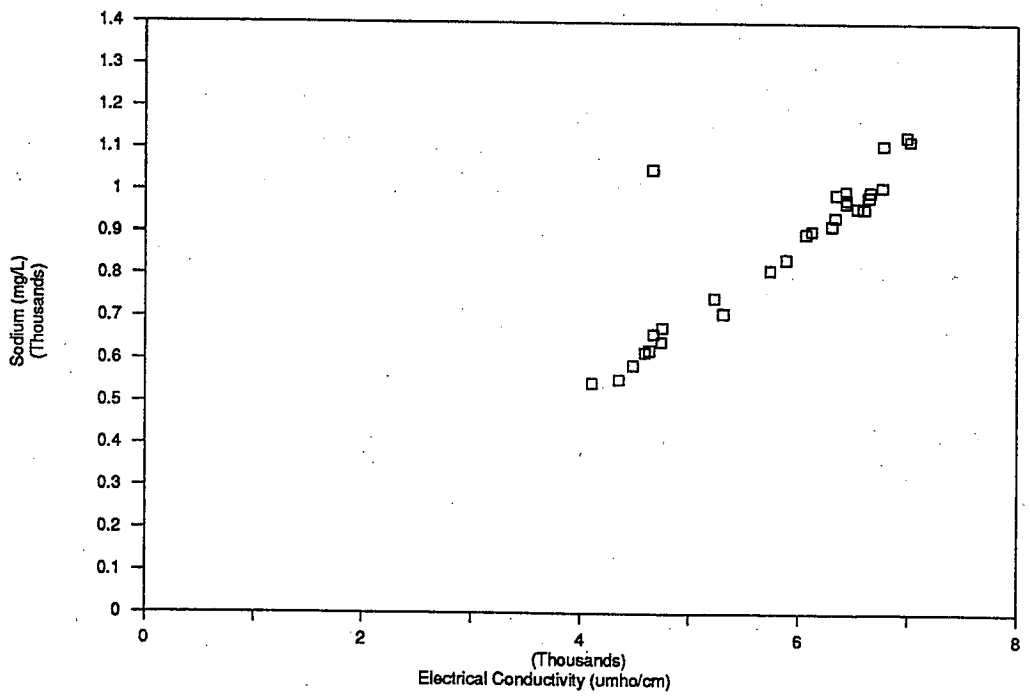


Figure 27

BVS 8003 -- Sulfate vs. E. C.

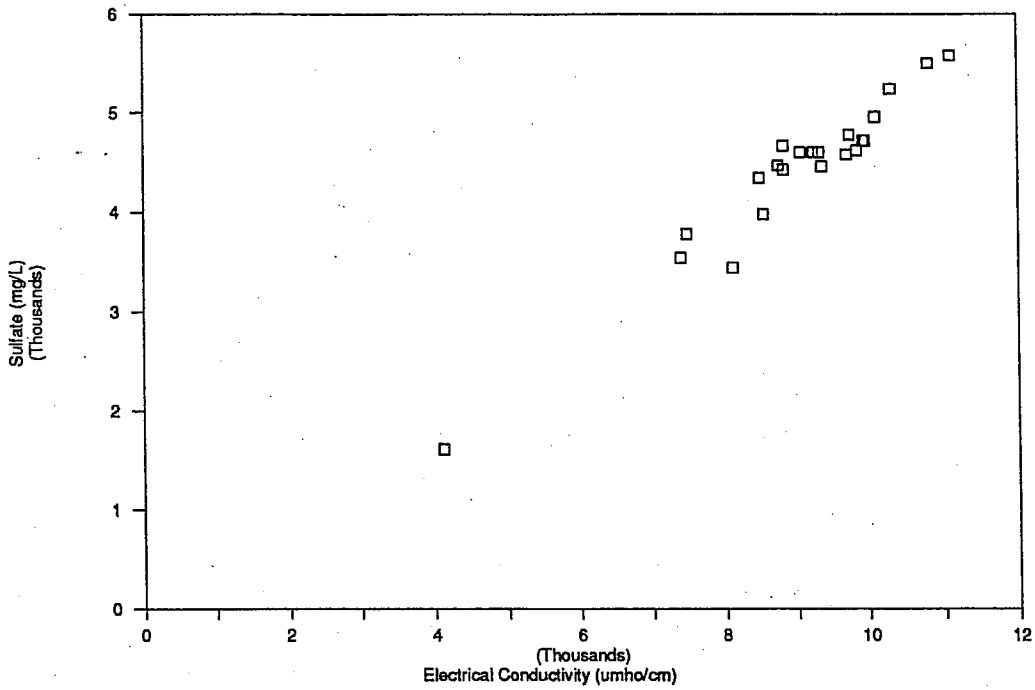


Figure 28

BVS 8003 -- Sodium vs. E. C.

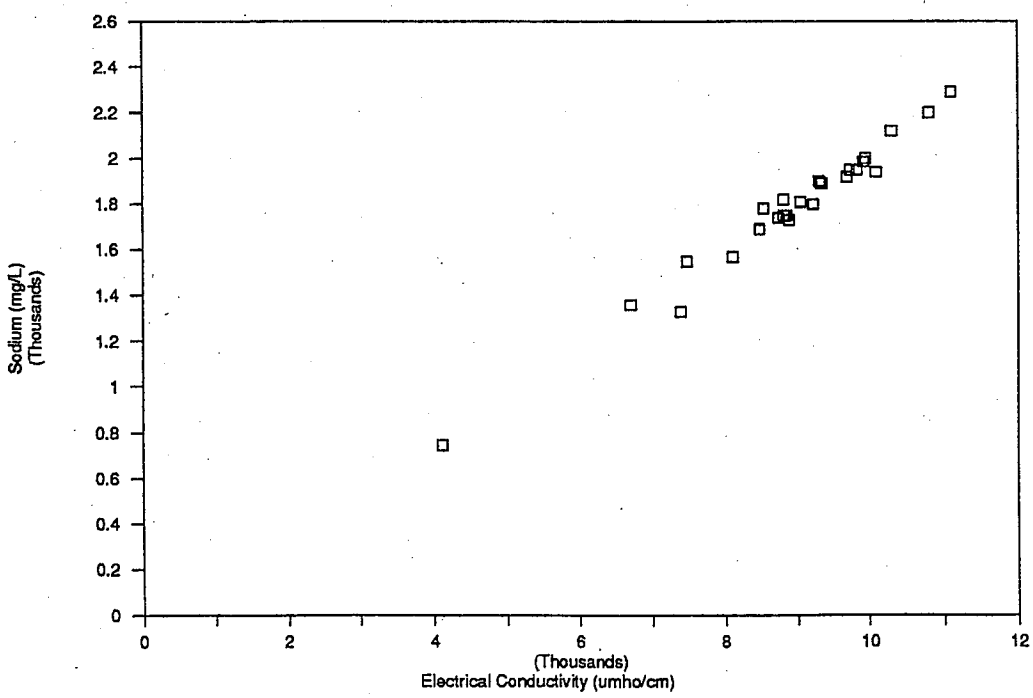


Figure 29

DPS 1367 -- Sulfate vs. E. C.

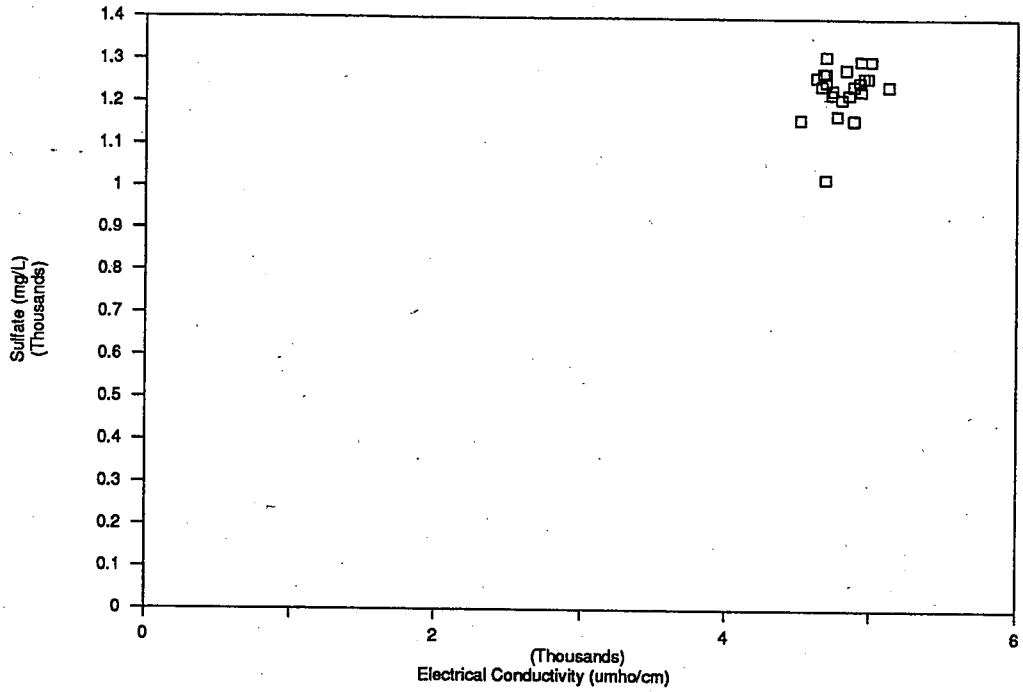


Figure 30

DPS 1367 -- Sodium vs. E. C.

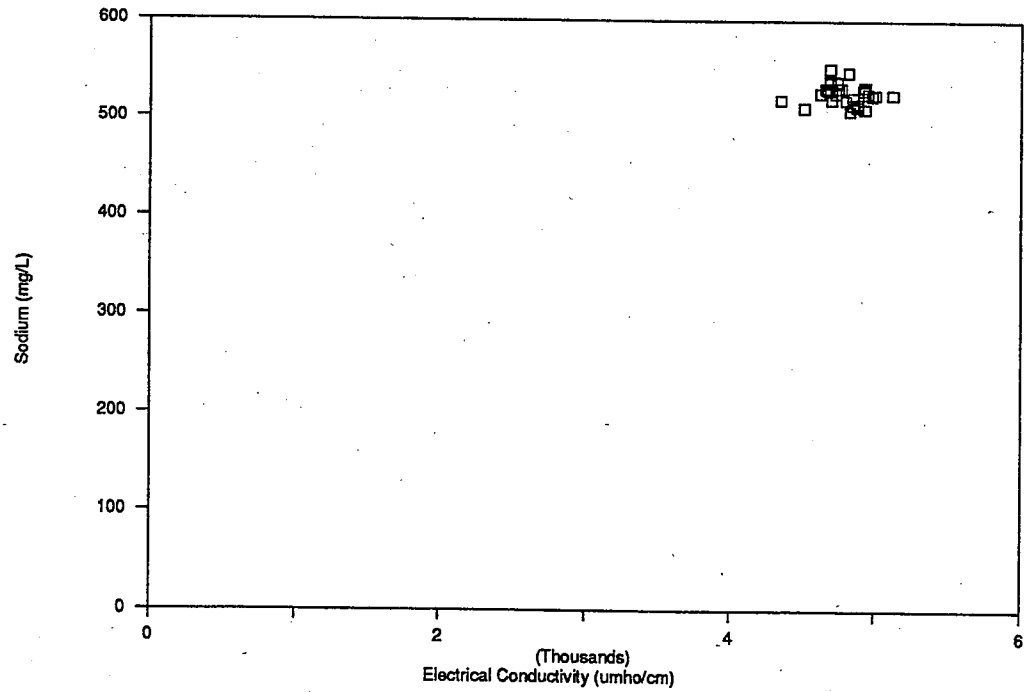


Figure 31

DPS 4616 -- Sulfate vs. E. C.

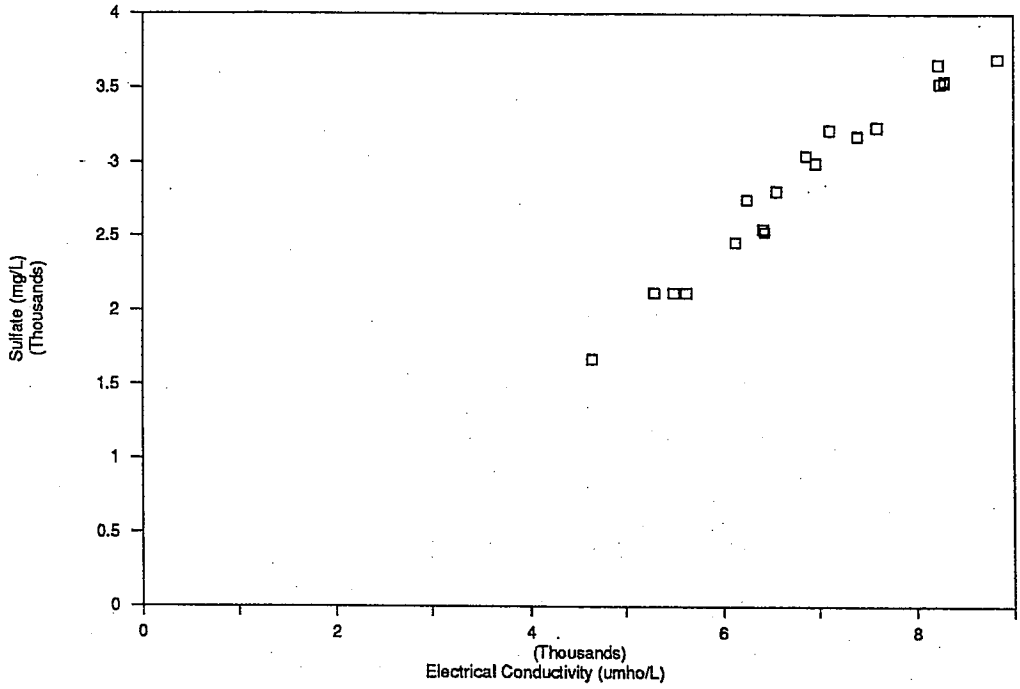


Figure 32

DPS 4616 -- Sodium vs. E. C.

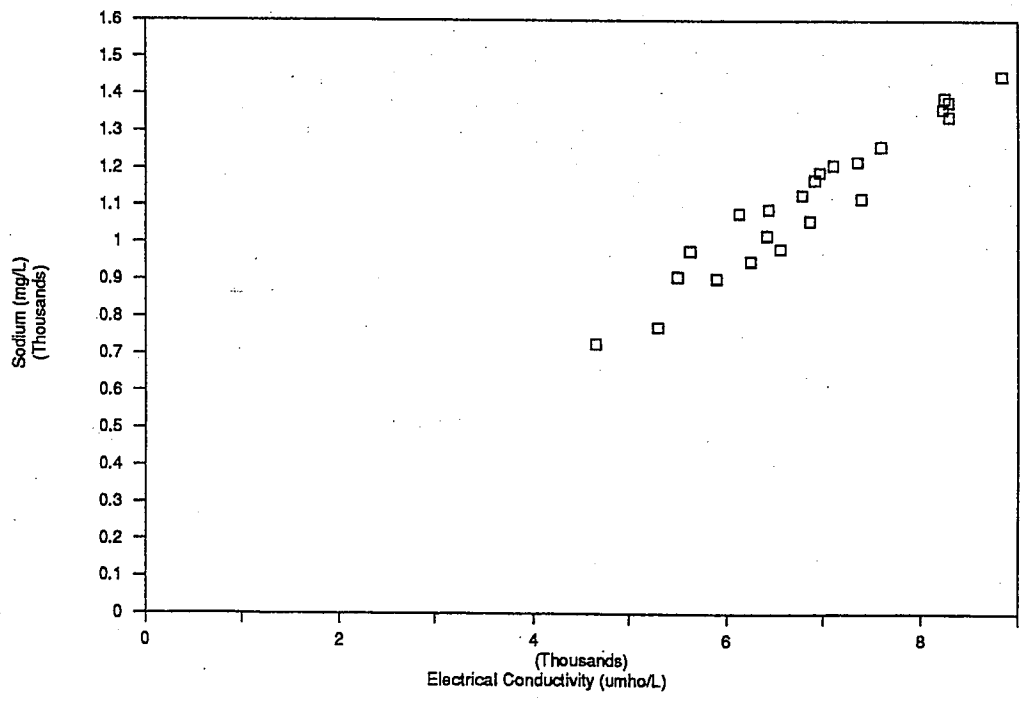


Figure 33

FBH 2016 -- Sulfate vs. E. C.

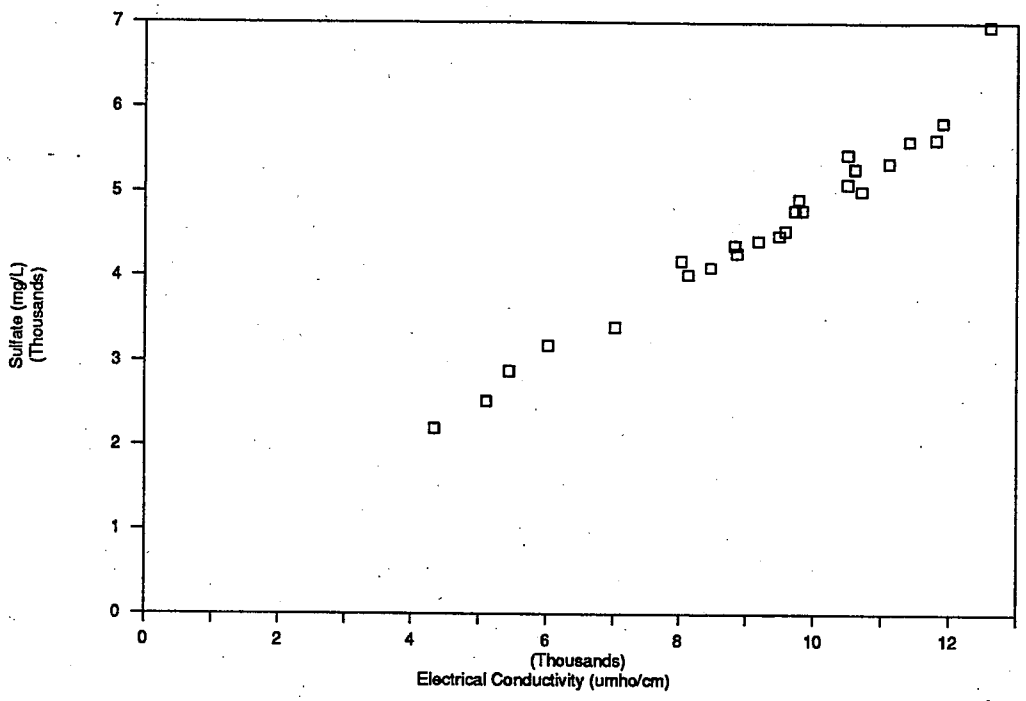


Figure 34

FBH 2016 -- Sodium vs. E. C.

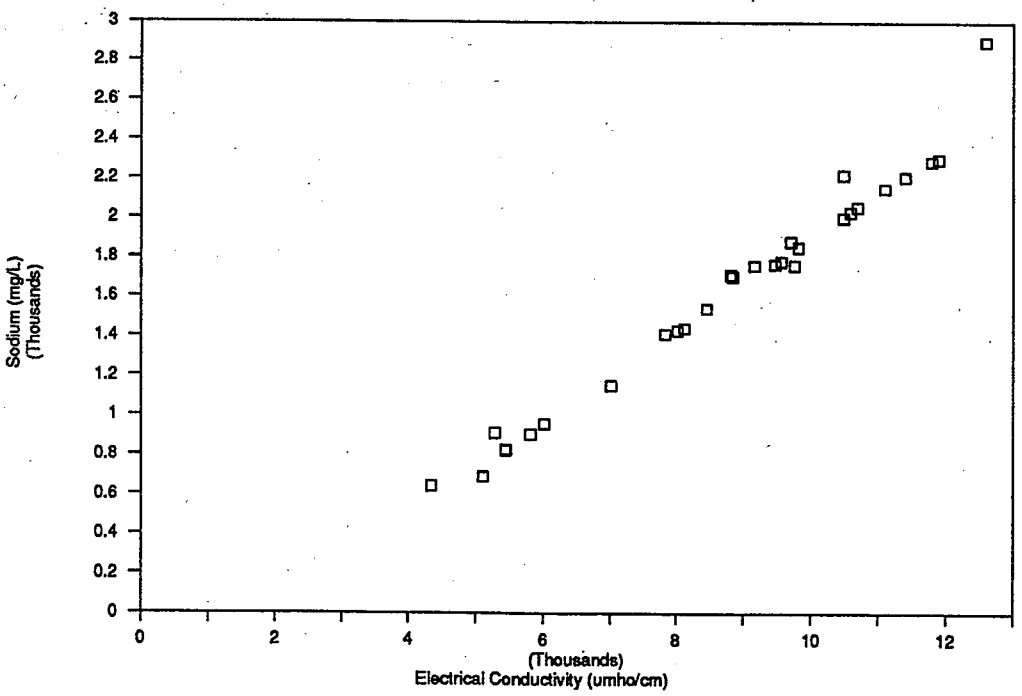


Figure 35

FBH 8061 -- Sulfate vs. E. C.

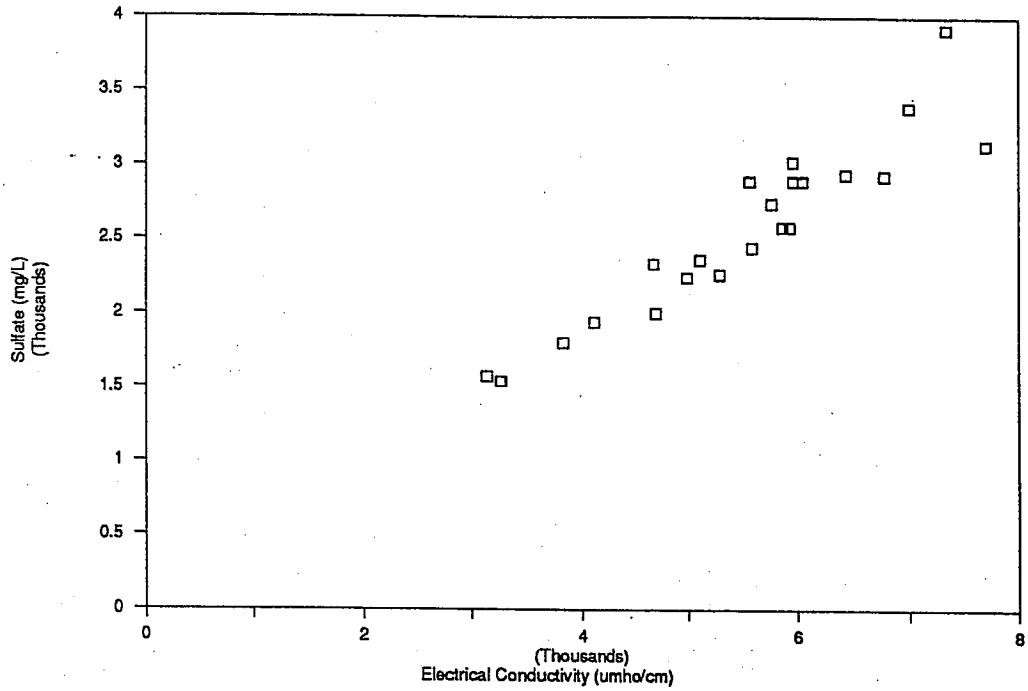
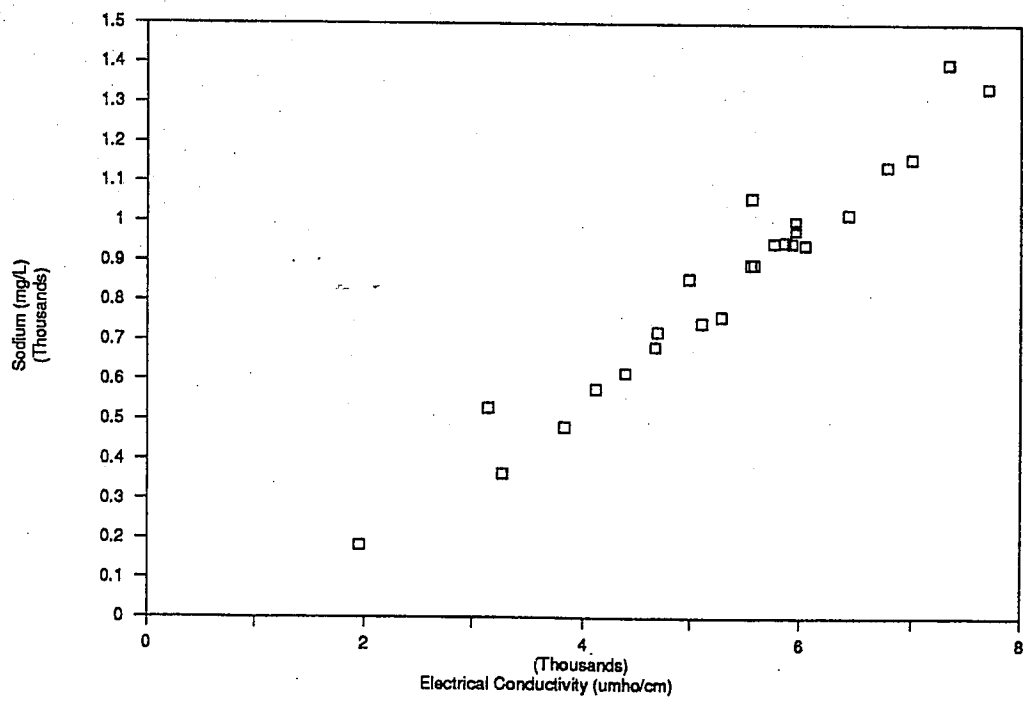


Figure 36

FBH 8061 -- Sodium vs. E. C.



Southern Area Subsurface Drains

Located within Kern County (Figure 3), the southern drains collect drainage water in the same manner as the central subsurface system. The southern region has employed considerably more drainage facilities, including evaporation ponds, than the central region. As a result, any leaching patterns present should be more pronounced.

The boron levels for Stations CCN 3550, ERR 8641, SFD 2727, SFD 6046, STC 3505, and STC 6467 are presented in Figures 37 through 42. Like the central surface stations, an extremely high correlation exists between boron concentrations and electrical conductivity levels (Figures 43 through 48). Unlike the central subsurface drains, however, the boron and electrical conductivity levels are remaining constant or decreasing. Since sodium and sulfate are the predominant ions and are highly correlated with electrical conductivity (Figures 49 through 60), their concentrations must also be decreasing.

Station ERR 8641 (Figures 38 and 44) may exemplify how indigenous soils leach after the installation of a tile drain system. The lands draining into this sump were initially tiled in 1981 and DWR commenced water quality sampling in 1985. The rapid reduction in mineral concentrations continues for approximately three to six years after installation of the system, depending upon quantity of irrigation and rainfall. After this, the levels appear to remain relatively constant with small reductions only over extended periods of time.

Comparing the southern stations to the central stations, the importance of evaporation ponds as drainage disposal facilities cannot be overemphasized. Existence of evaporation ponds for drainage disposal reduces or eliminates the practice of reapplying drainage water, thus removing a large source of salts and minerals which concentrate in the root zone of the crop.

Figure 37

CCN 3550 -- Boron Levels

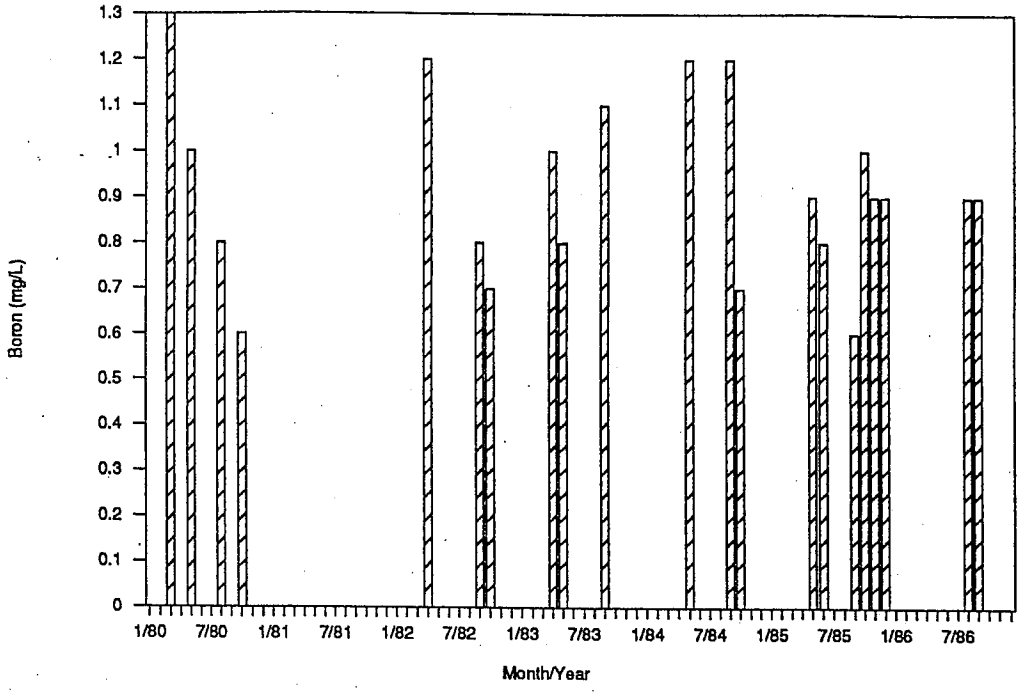


Figure 38

ERR 8641 -- Boron Levels

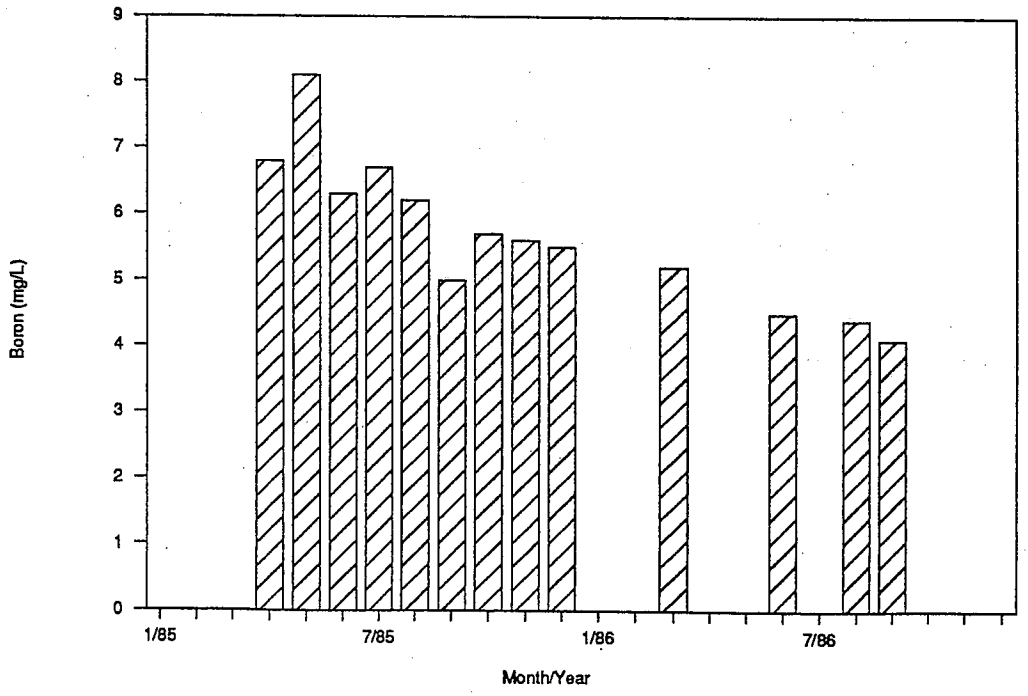


Figure 39

SFD 2727 -- Boron Levels

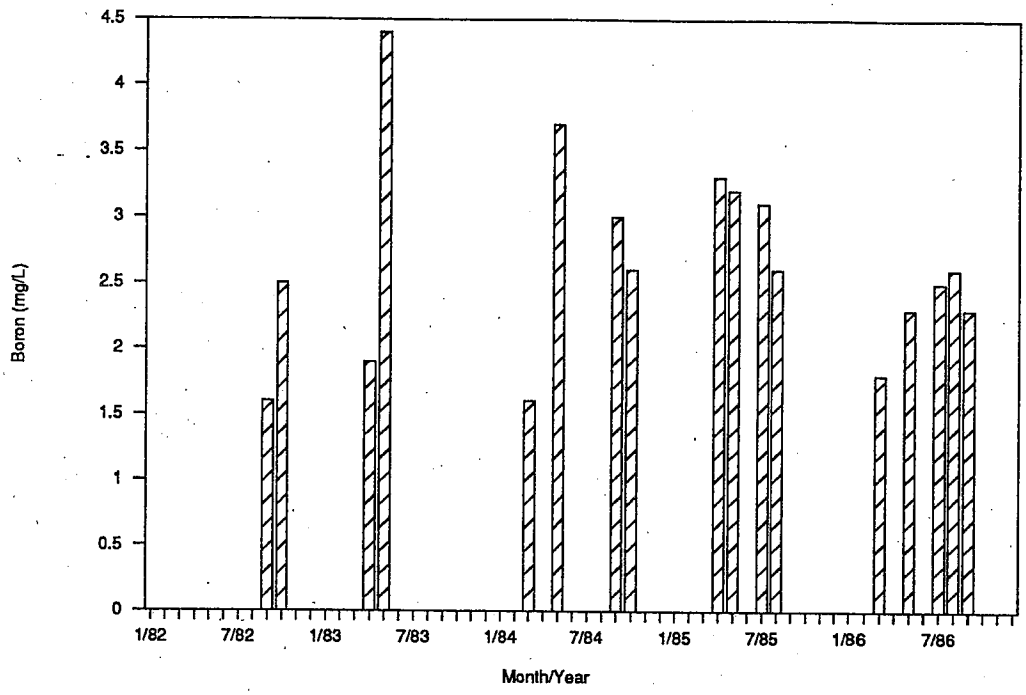


Figure 40

SFD 6046 -- Boron Levels

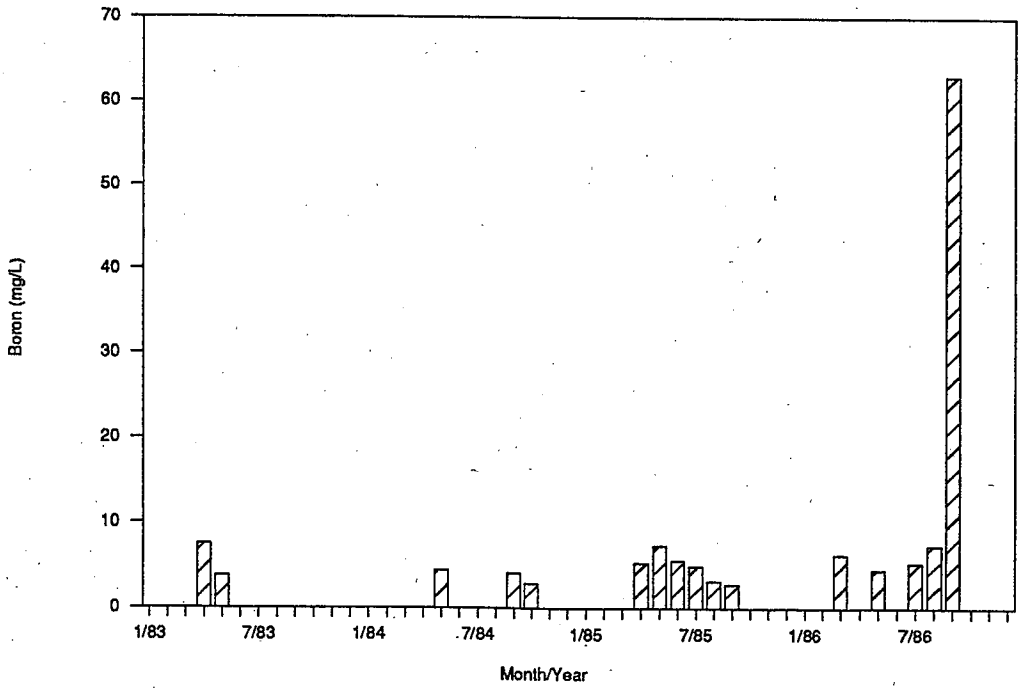


Figure 41

STC 3505 -- Boron Levels

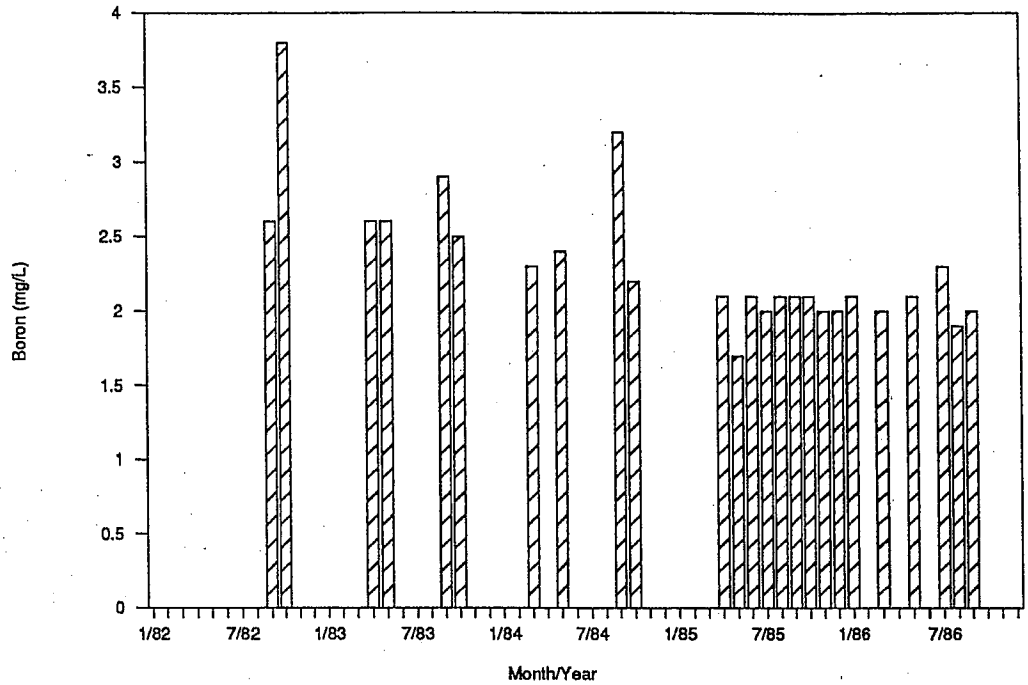


Figure 42

STC 6467 -- Boron Levels

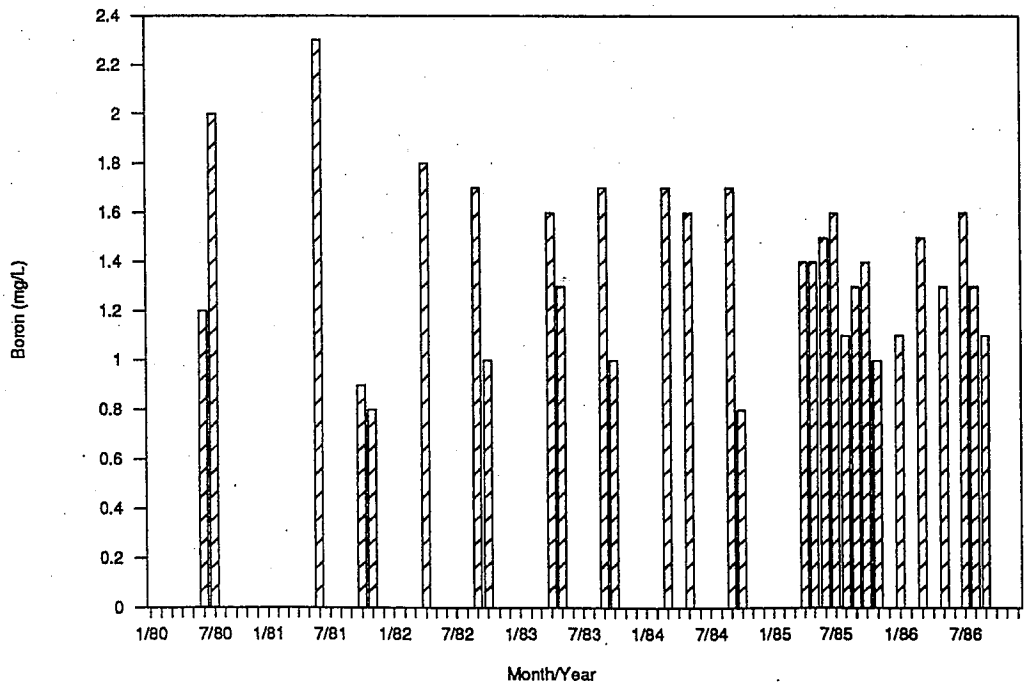


Figure 43

CCN 3550 -- Electrical Conductivity

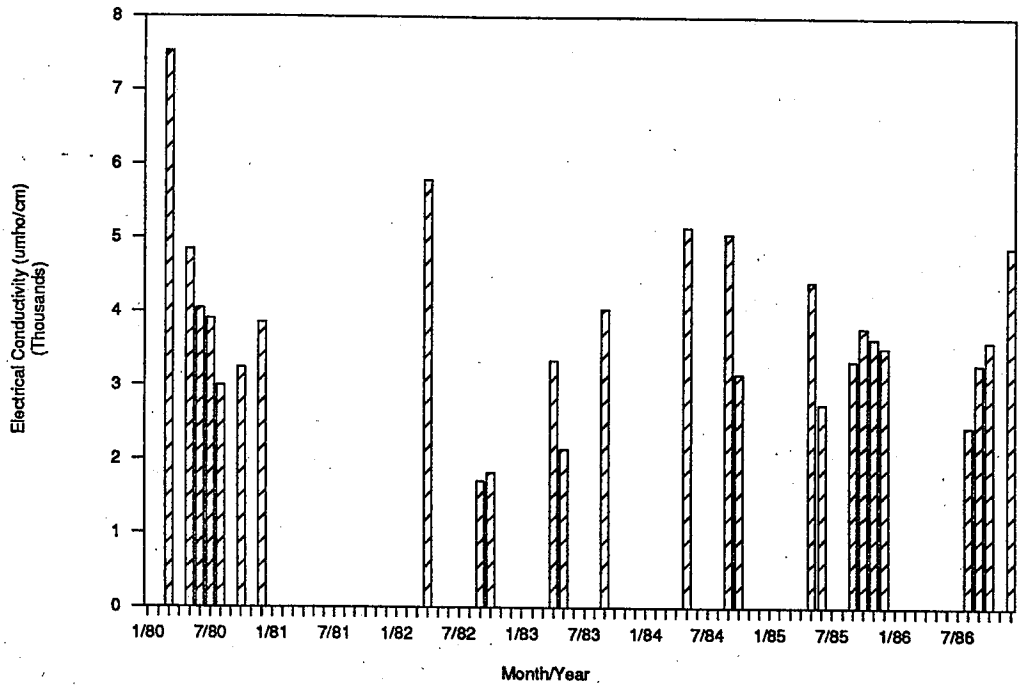


Figure 44

ERR 8641 -- Electrical Conductivity

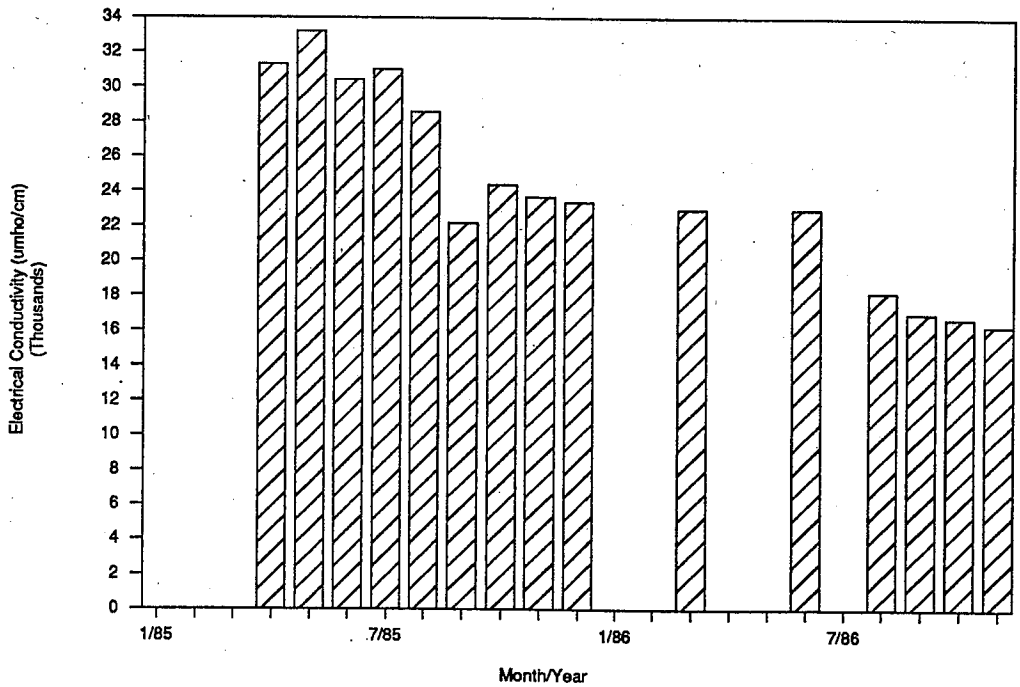


Figure 45

SFD 2727 -- Electrical Conductivity

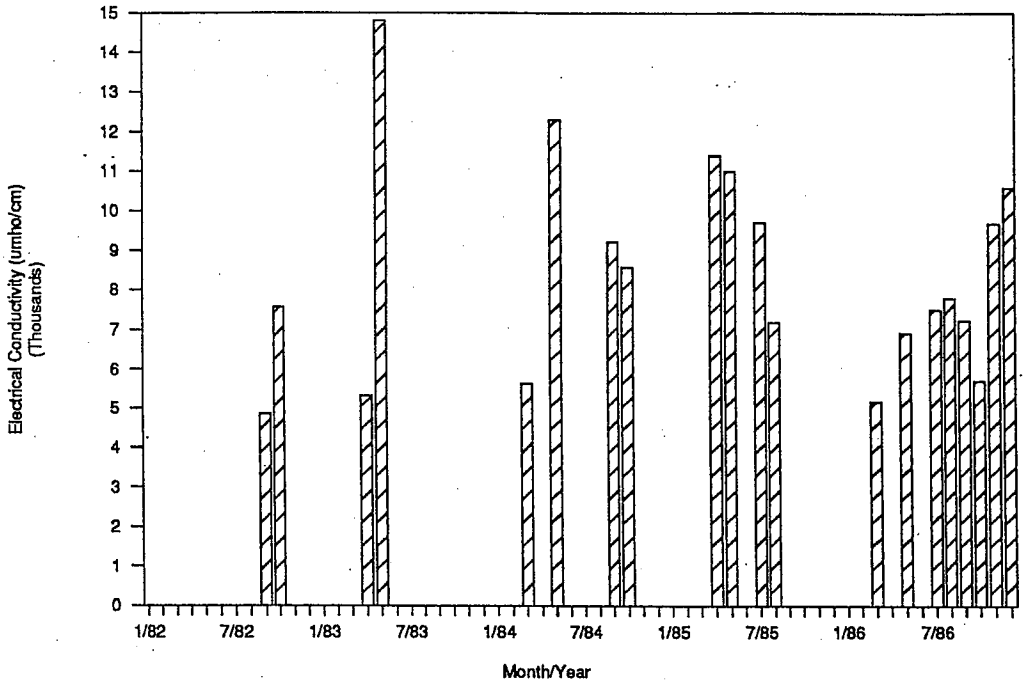


Figure 46

SFD 6046 -- Electrical Conductivity

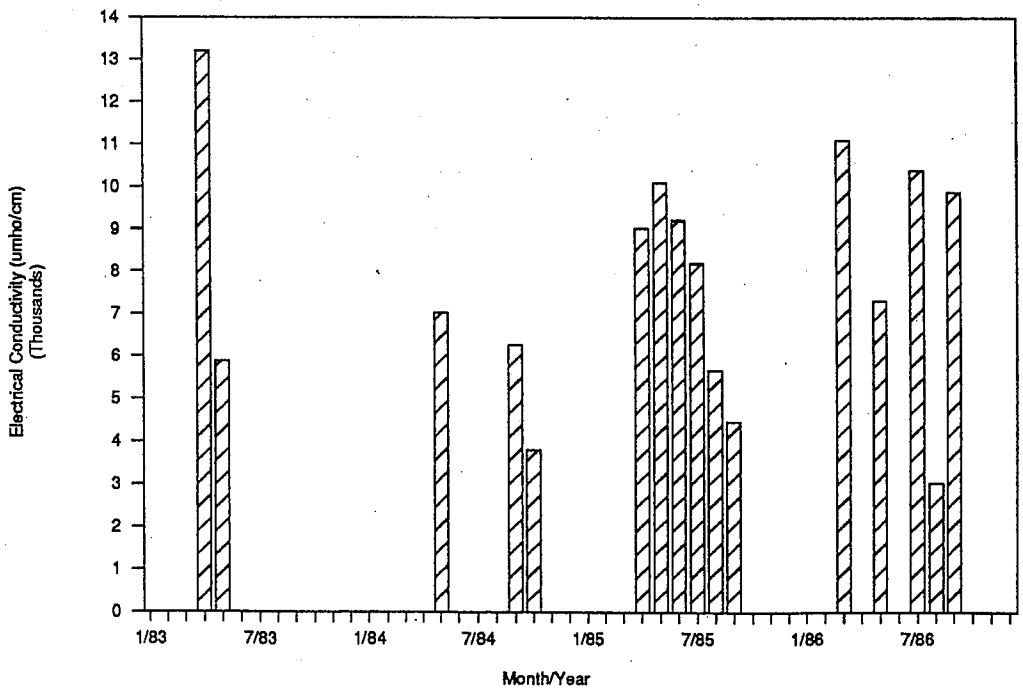


Figure 47

STC 3505 -- Electrical Conductivity

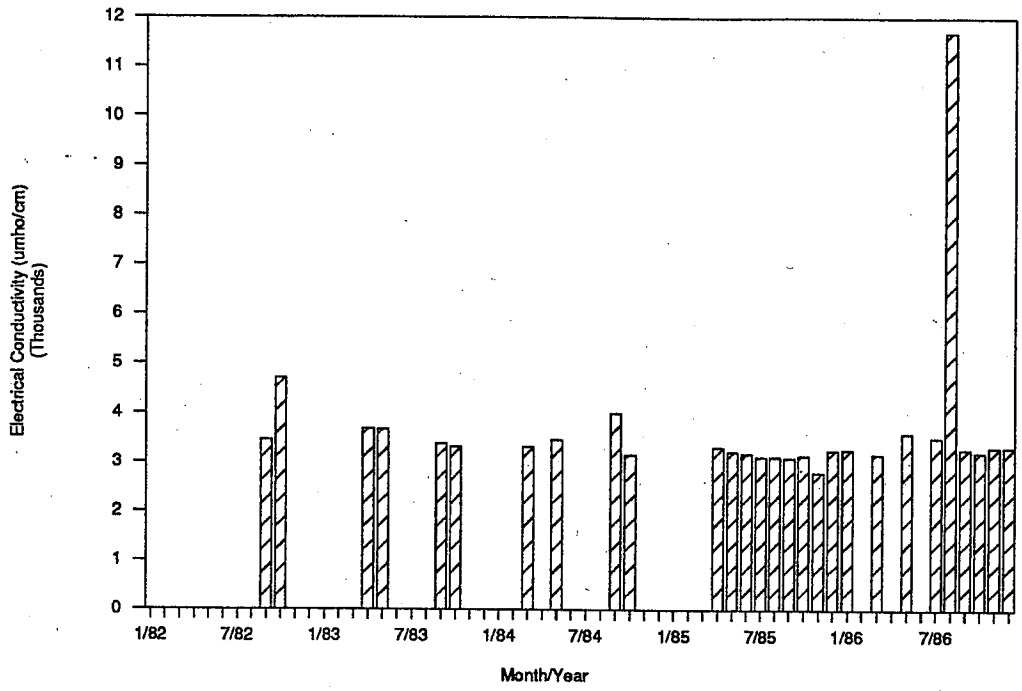


Figure 48

STC 6467 -- Electrical Conductivity

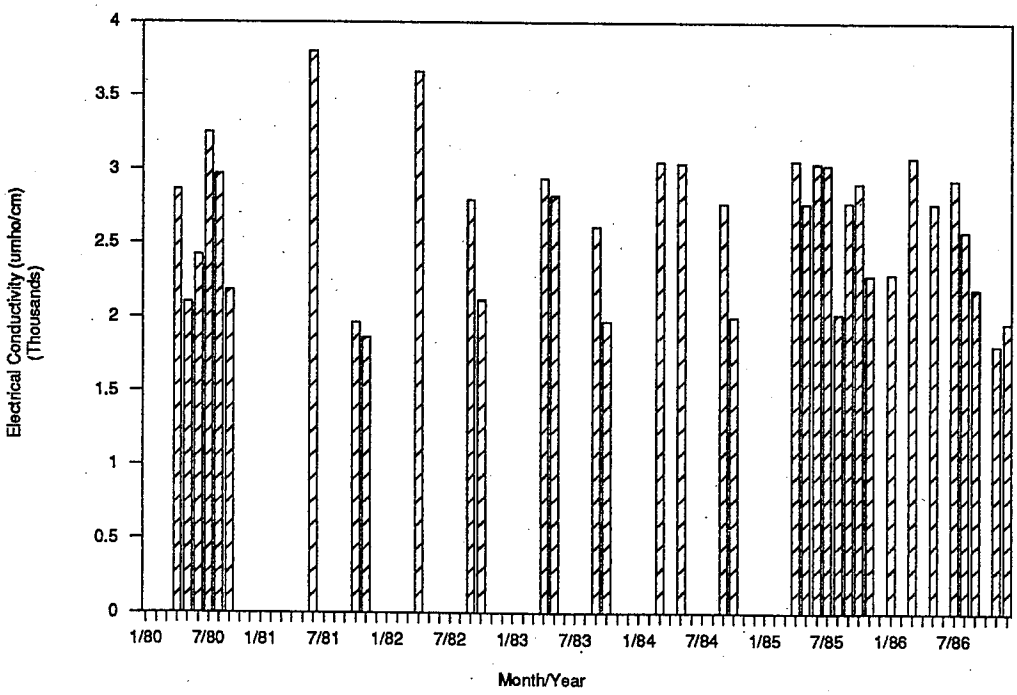


Figure 49

CCN 3550 -- Sulfate vs. E. C.

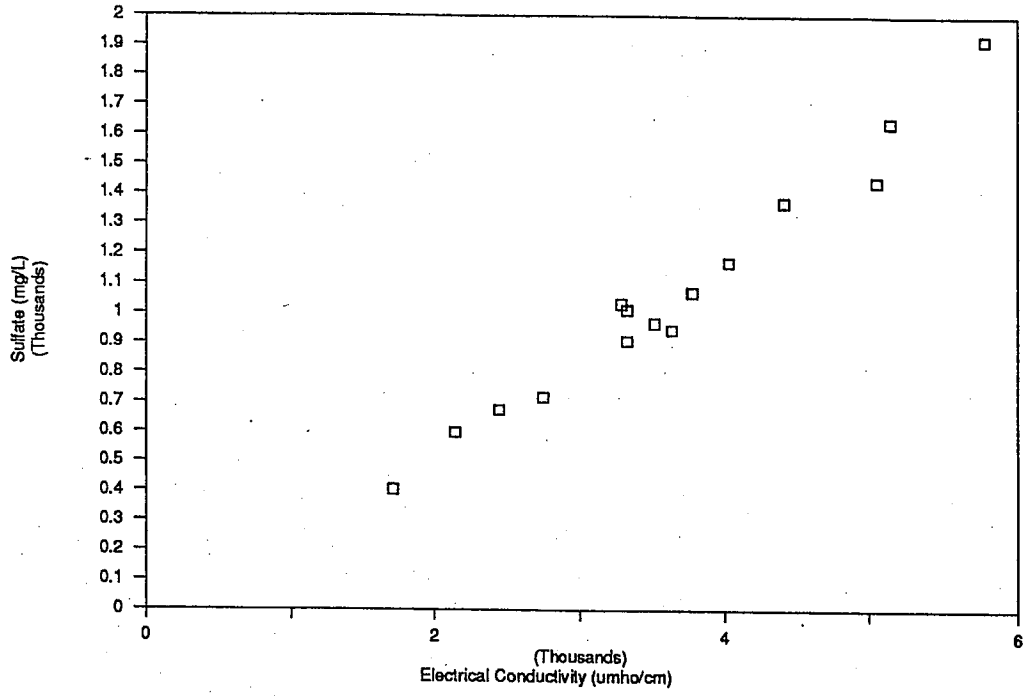


Figure 50

CCN 3550 -- Sodium vs. E. C.

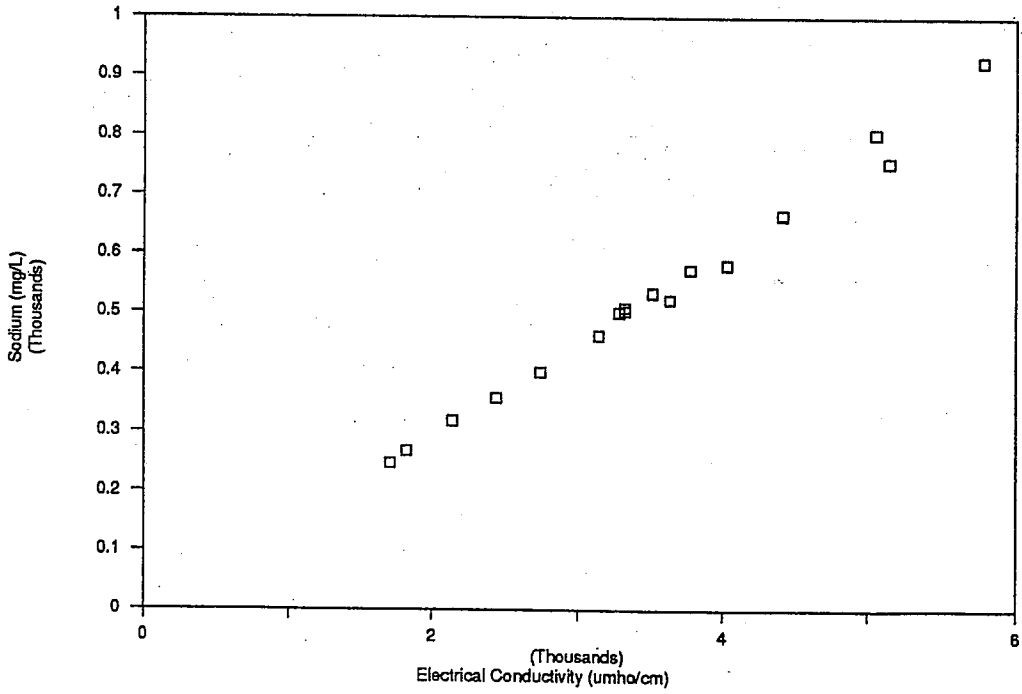


Figure 51

ERR 8641 -- Sulfate vs. E. C.

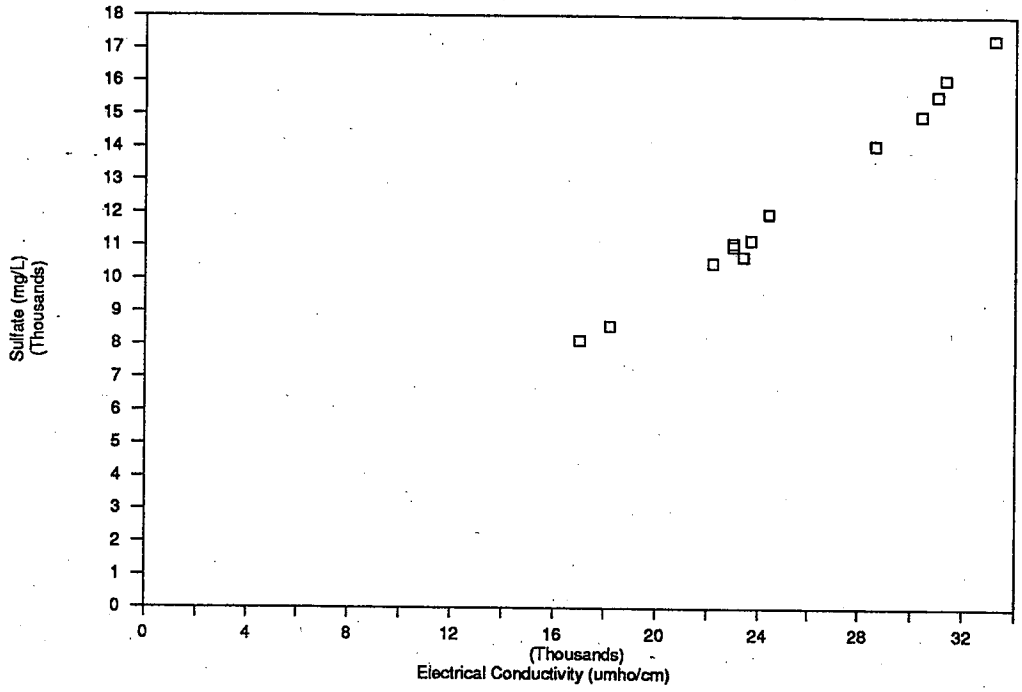


Figure 52

ERR 8641 -- Sodium vs. E. C.

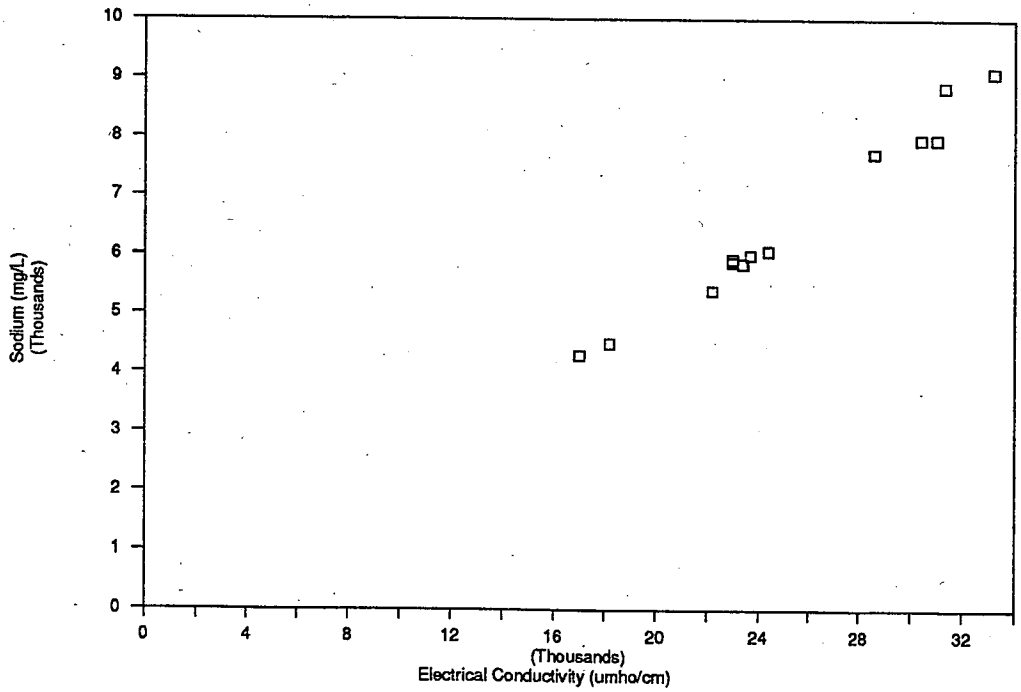


Figure 53

SFD 2727 -- Sulfate vs. E. C.

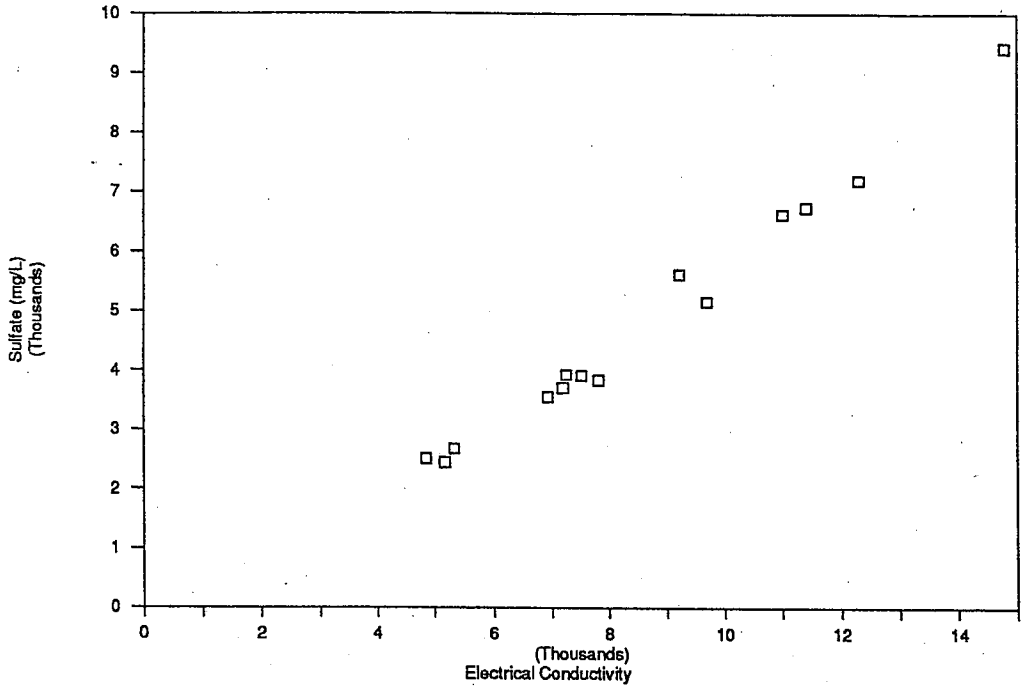


Figure 54

SFD 2727 -- Sodium vs. E. C.

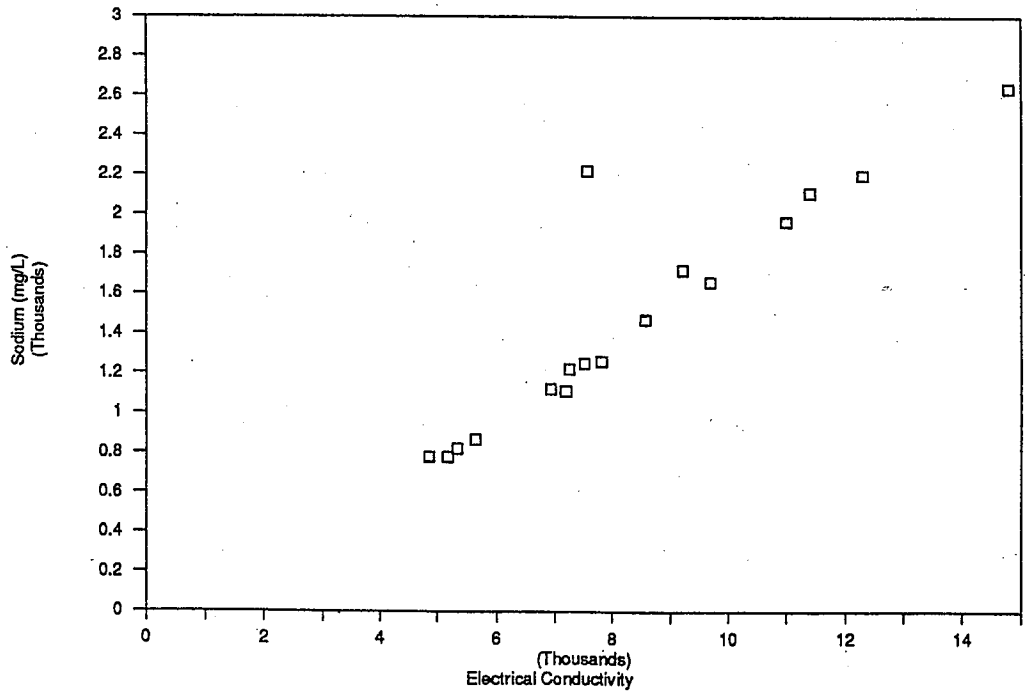


Figure 55

SFD 6046 -- Sulfate vs. E. C.

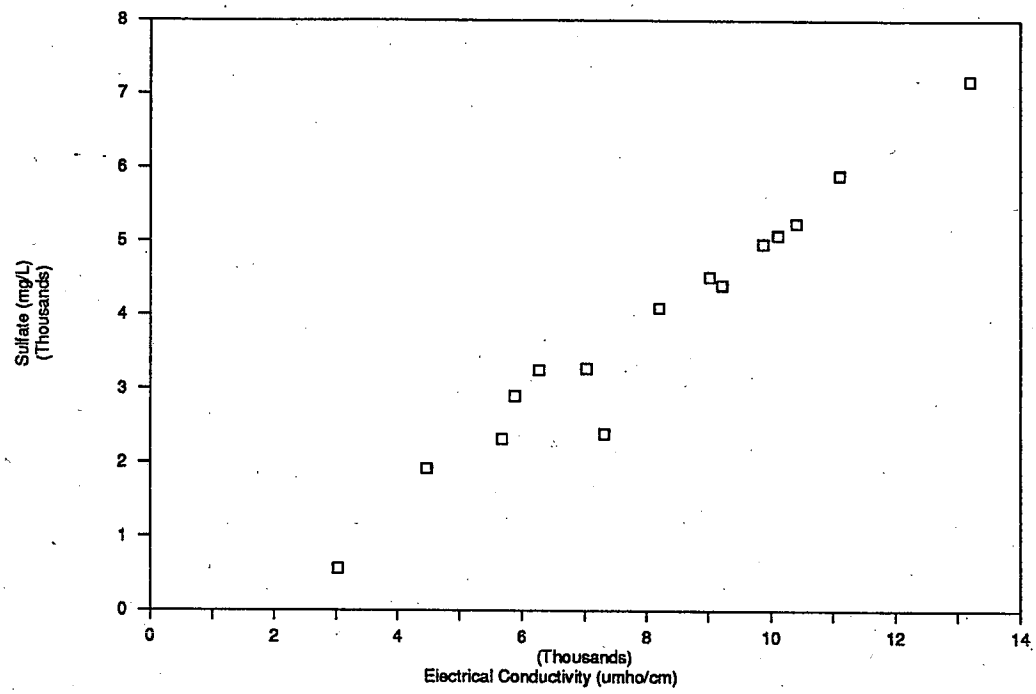


Figure 56

SFD 6046 -- Sodium vs. E. C.

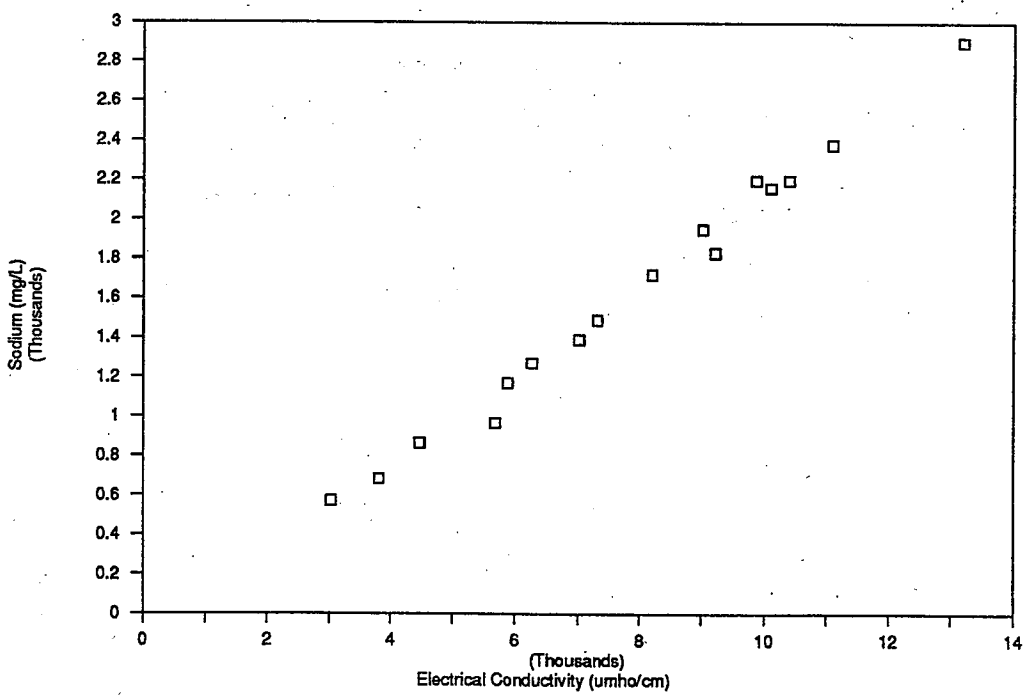


Figure 57

STC 3505 -- Sulfate vs. E. C.

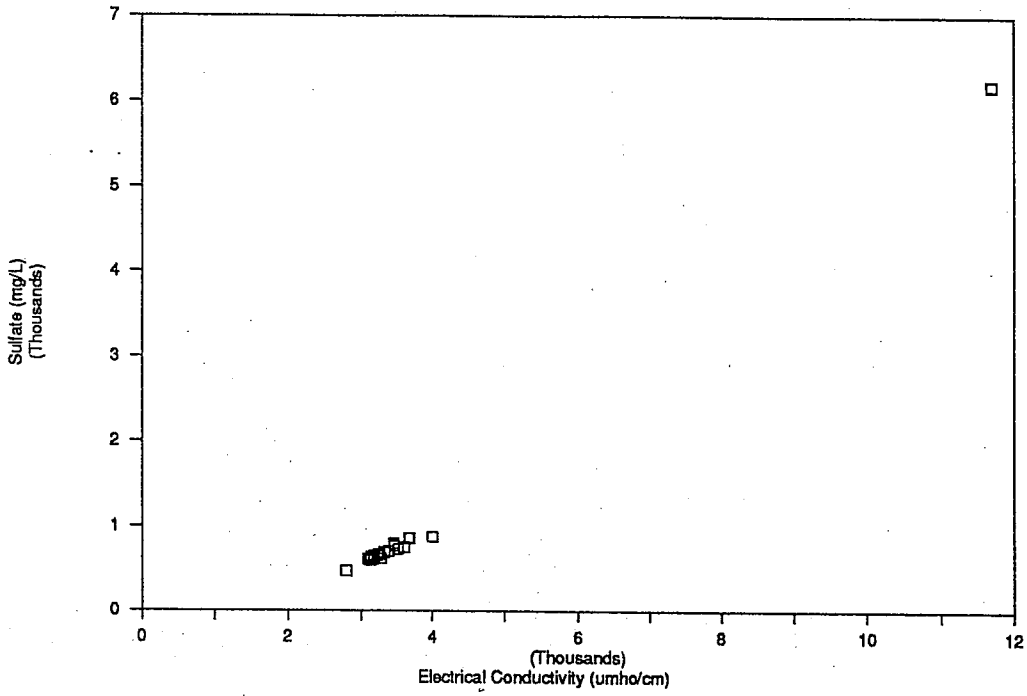


Figure 58

STC 3505 -- Sodium vs. E. C.

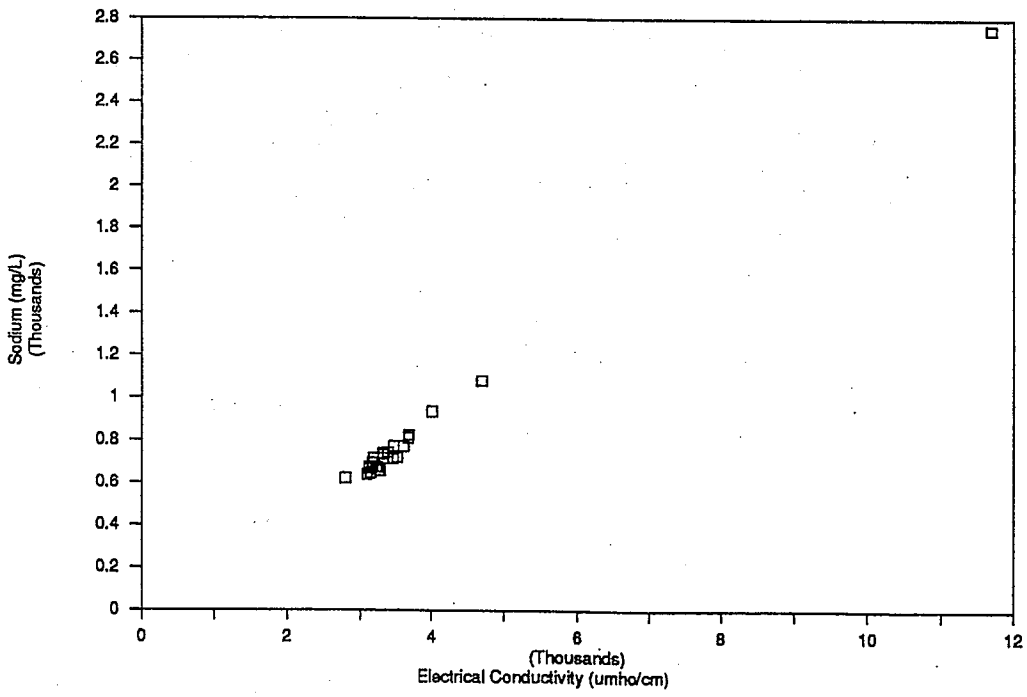


Figure 59

STC 6467 -- Sulfate vs. E. C.

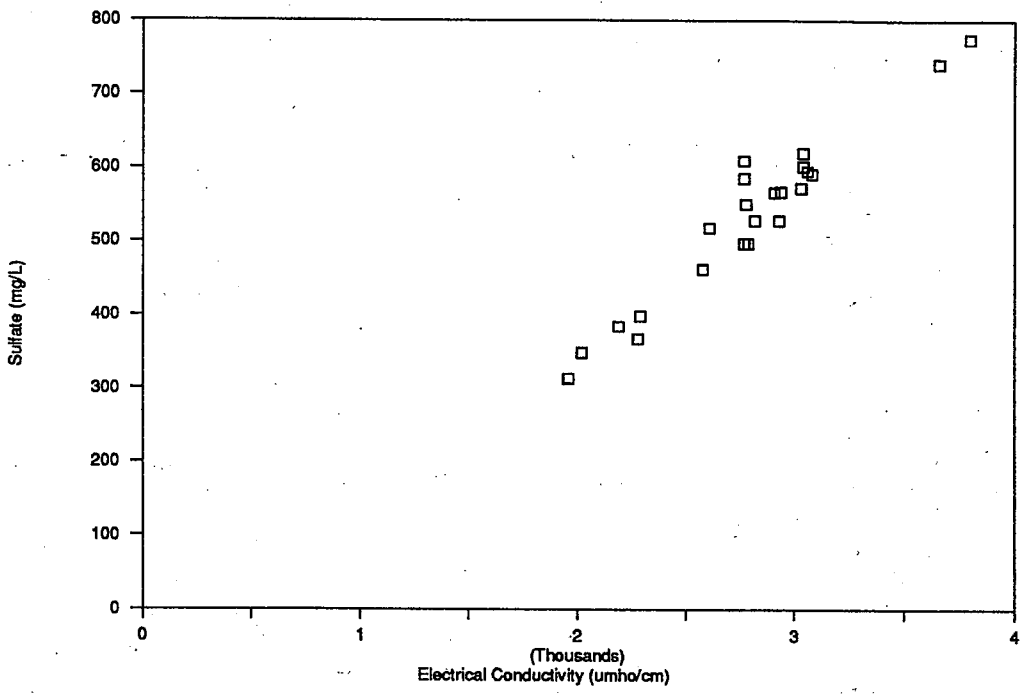
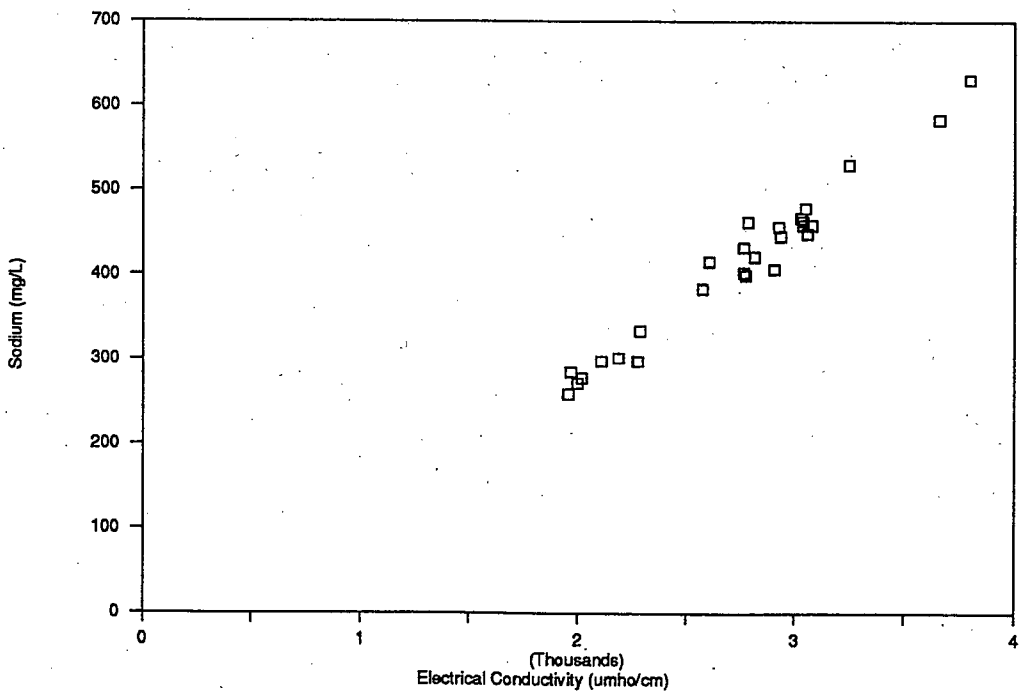


Figure 60

STC 6467 -- Sodium vs. E. C.



Arsenic Levels

In 1986, arsenic was detected in drainage water at more Valley locations and in generally higher concentrations than in 1985. This fact may be misleading, however, since in 1986 new and more sophisticated lab equipment allowed arsenic to be detected in smaller quantities than in the past (as low as 0.001 mg/L in 1986 compared to 0.01 mg/L in 1985). Most likely, some drainage water samples thought to be arsenic-free prior to 1986 actually contained minute quantities of arsenic below the detection limit. Nevertheless, arsenic concentrations in all water samples in 1986 were significantly lower than the 0.1 mg/L recommended maximum level for irrigation water.

Sampling stations with histories of high arsenic concentrations showed little or no concentration reductions in 1986, and in some cases, such as Station ERR 8641, arsenic levels appeared to be increasing. Peak values were most commonly obtained during summer months, particularly June and August.

Central Area Surface Drains

Both central surface drains were found to contain arsenic during 1986 (Figures 61 and 62). Station CTL 4504 has no history of recorded arsenic levels since 1980. This is most likely due to the lower detection limit described above. In 1986, arsenic levels ranging from 0.001 mg/L to 0.004 mg/L were detected.

Station DPS 3235 showed a significant reduction in arsenic concentrations from pre-1986 levels. Since 1981, peak values of 0.01 mg/L have been periodically recorded, usually during summer months. Concentrations less than 0.01 mg/L were recorded as zero. In 1986, the peak concentration was 0.003 mg/L, a substantial reduction from prior levels. None of the 11 samples analyzed for arsenic exceeded the irrigation standard of 0.1 mg/L or the primary drinking water standard of 0.05 mg/L.

Figure 61

CTL 4504 -- Arsenic Levels

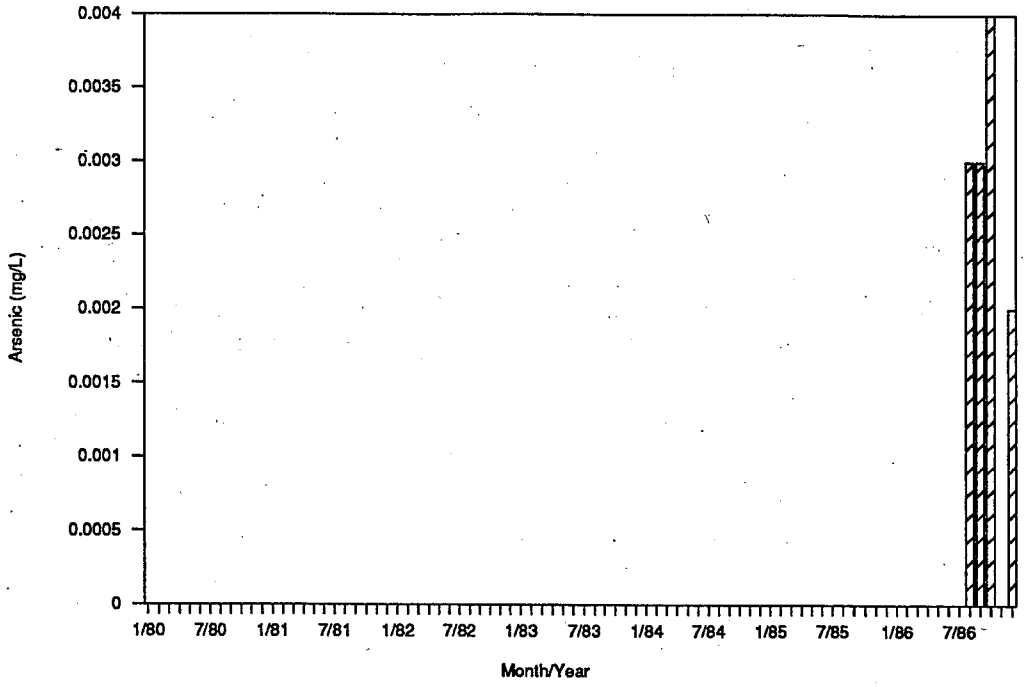
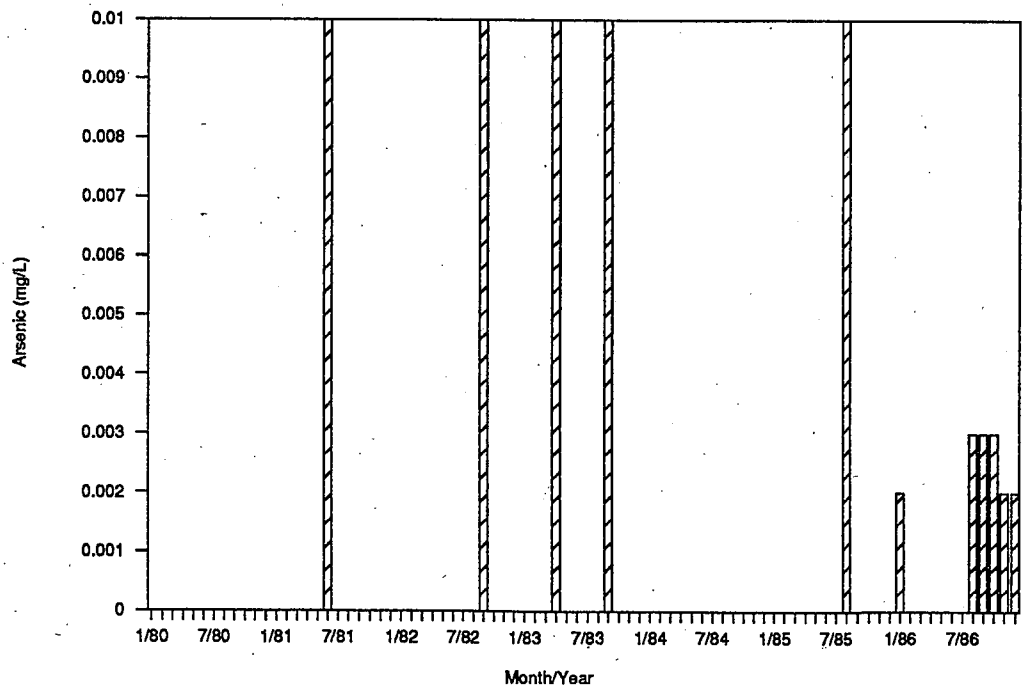


Figure 62

DPS 3235 -- Arsenic Levels



Central Area Subsurface Drains

Arsenic was detected in all of the central subsurface drains in concentrations ranging from 0.001 to 0.02 mg/L (Figures 63 through 68). Of the six peak values, five were detected during October. None of the 40 samples analyzed for arsenic exceeded the primary drinking water standard of 0.05 mg/L.

As was true for central surface stations, zero values prior to 1986 are most likely concentrations less than 0.01 mg/L and thus are recorded as zero.

There does not appear to be any correlation between arsenic levels and rainfall, flow rates, or any other constituent concentrations.

Figure 69 graphically illustrates arsenic concentrations in the central area's surface and subsurface stations for 1986. The 1985 values are presented for comparison purposes.

Figure 63

BVS 6016 -- Arsenic Levels

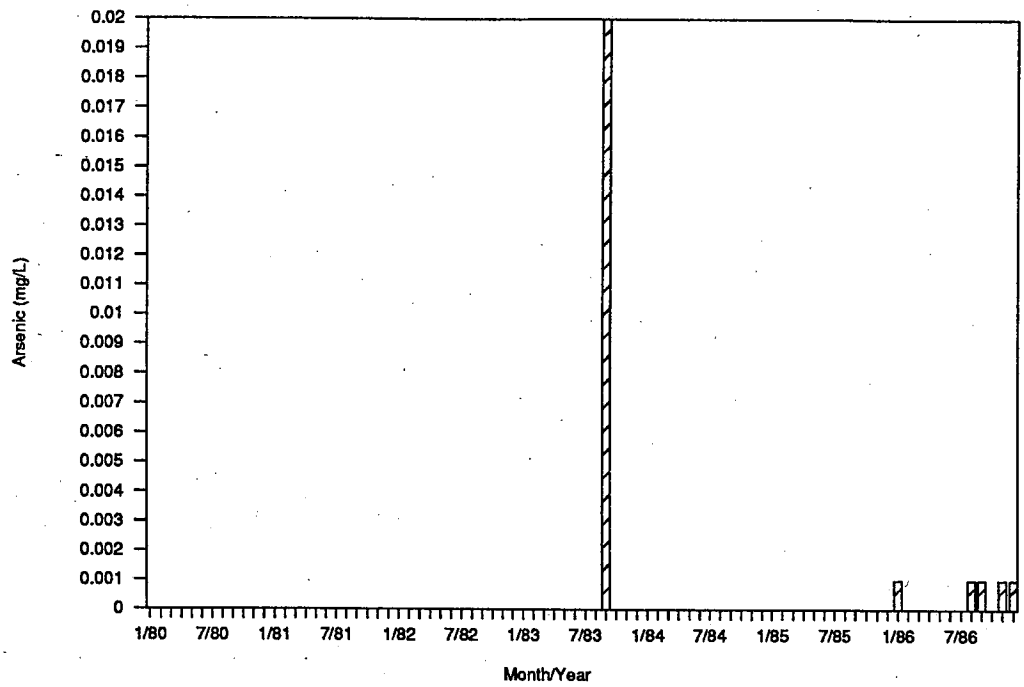


Figure 64

BVS 8003 -- Arsenic Levels

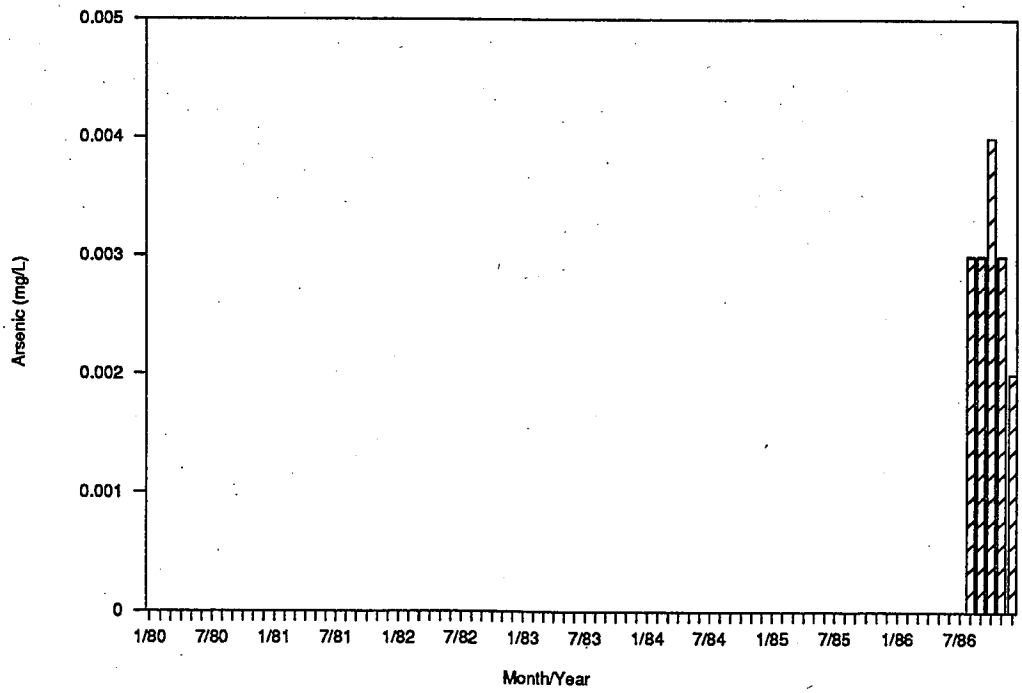


Figure 65

DPS 1367 -- Arsenic Levels

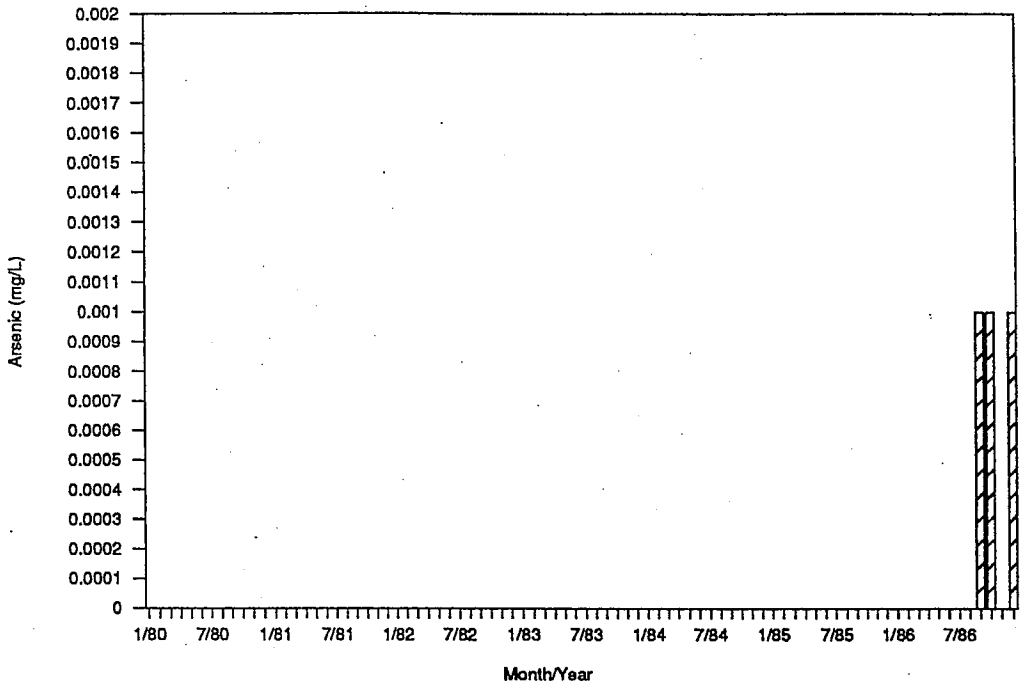


Figure 66

DPS 4616 -- Arsenic Levels

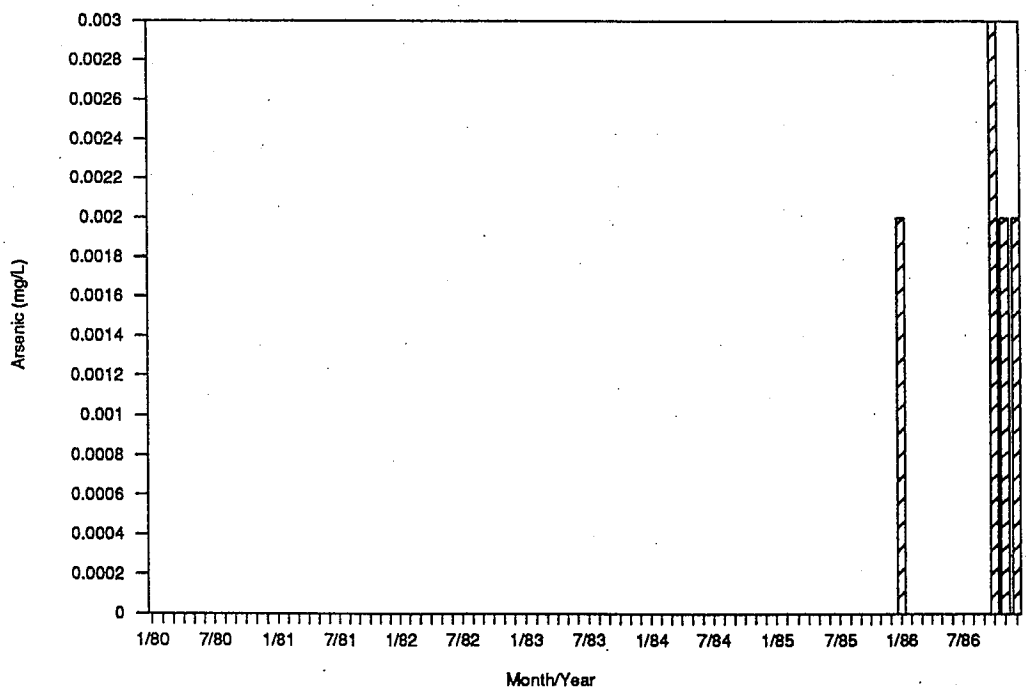


Figure 67

FBH 2016 -- Arsenic Levels

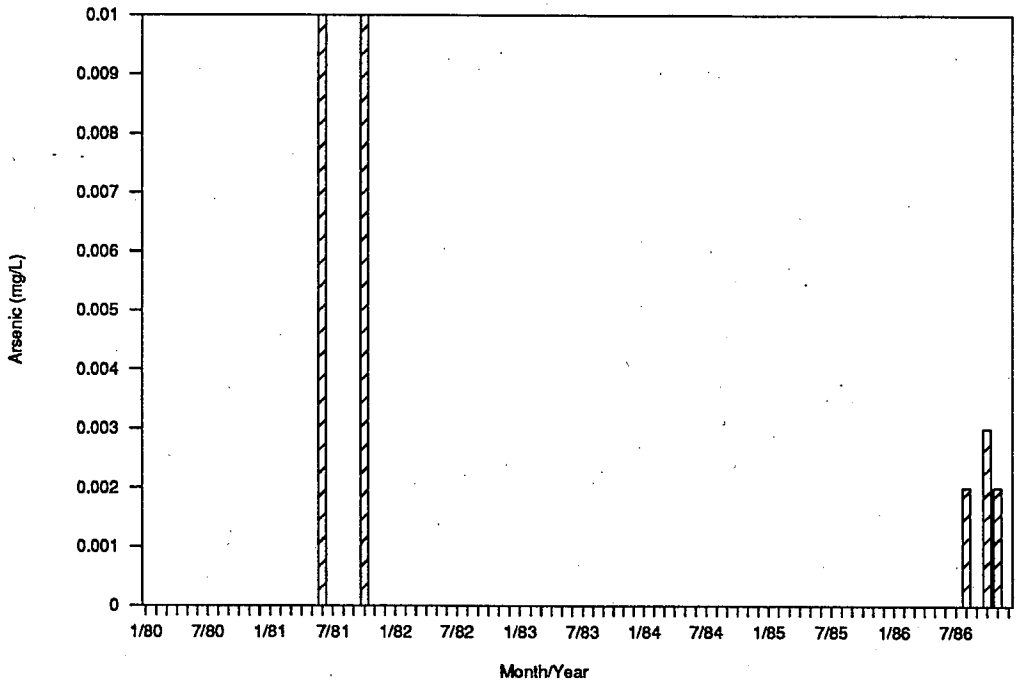
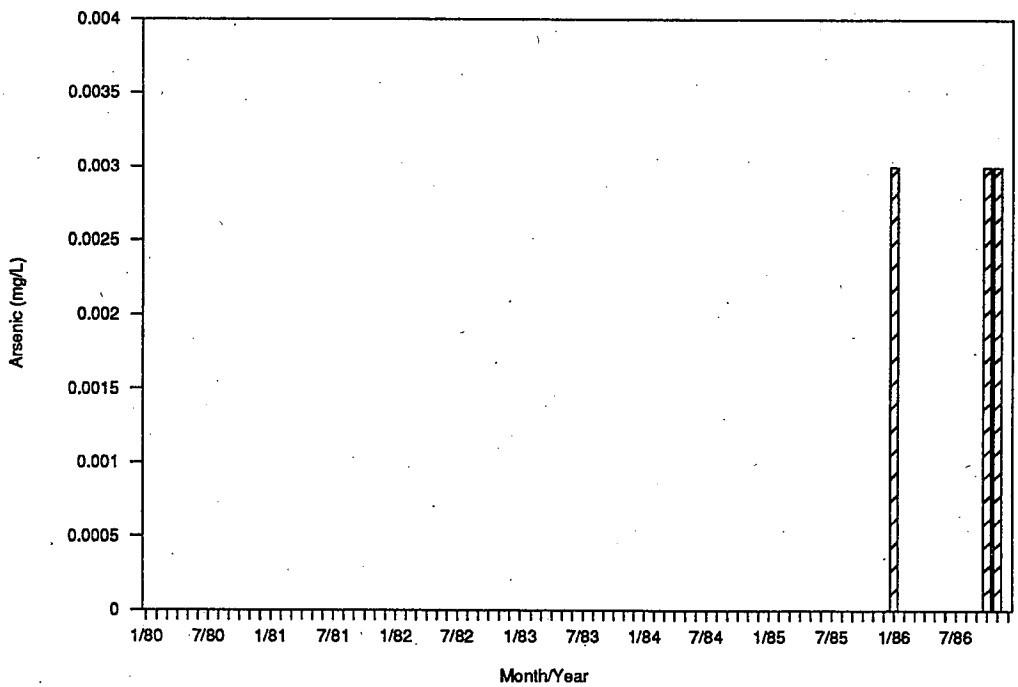


Figure 68

FBH 8061 -- Arsenic Levels



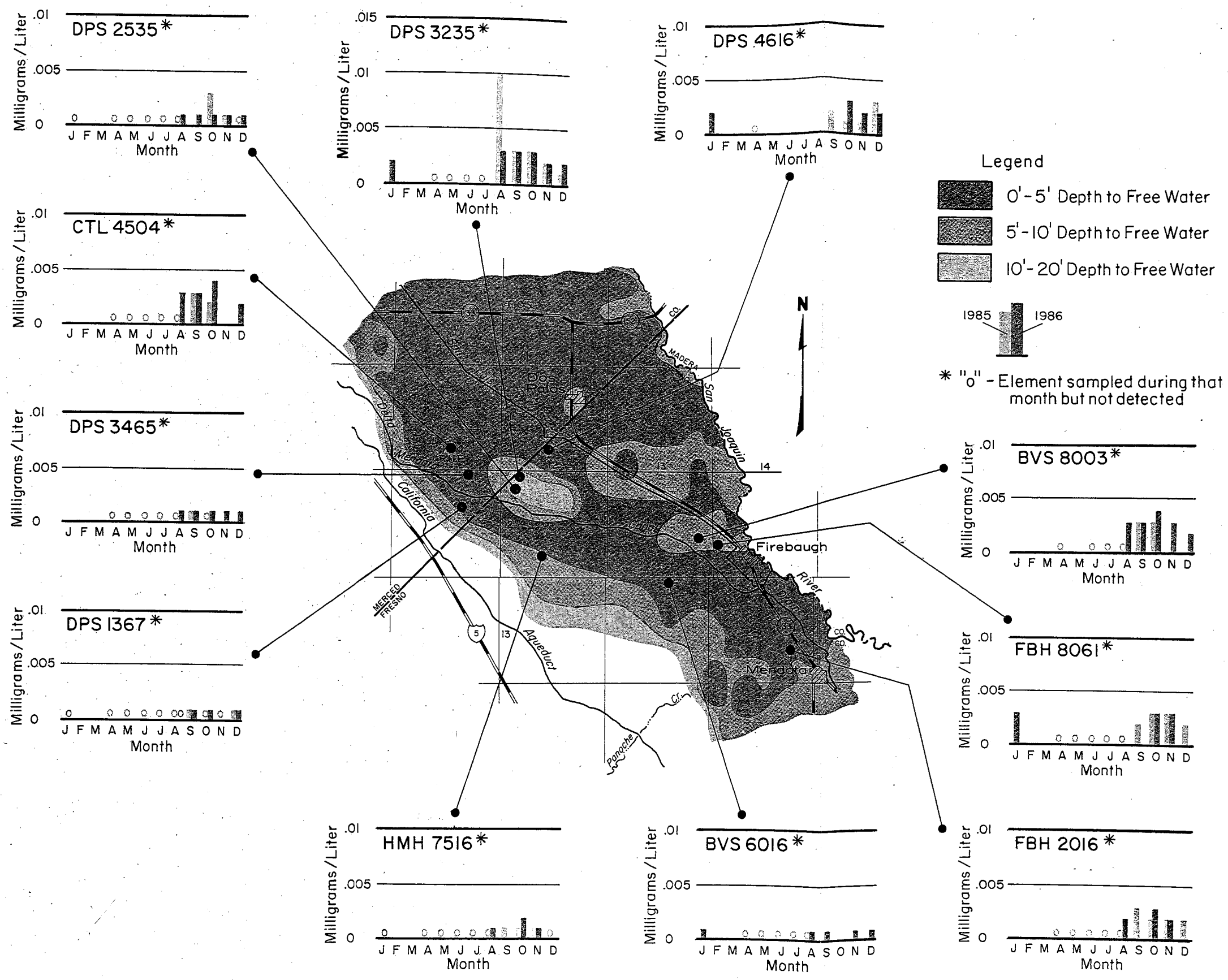


Figure 69. Arsenic Levels, 1985-1986 for San Joaquin Valley, Central Area Stations

Southern Area Subsurface Drains

Arsenic was detected in all of the southern subsurface drains in concentrations ranging from 0.002 to 1.08 mg/L (Figures 70 through 75). Though no correlations between arsenic levels and rainfall, flow data, or any other constituent concentrations have been determined, the majority of peak values recorded in the southern region occurred between August and November.

Unlike the central region, where arsenic levels have been extremely low, the southern region had arsenic concentrations that exceeded the primary drinking water standard of 0.05 mg/L in 36 out of 56 samples (64.3 percent of the time). As yet, no leaching patterns, characterized by reductions in detected concentrations, have been identified.

Figures 76A, 76B, and 76C present 1985 and 1986 arsenic concentrations for the southern area stations. From these figures, arsenic concentrations do not appear to be decreasing.

Figure 70

CCN 3550 -- Arsenic Levels

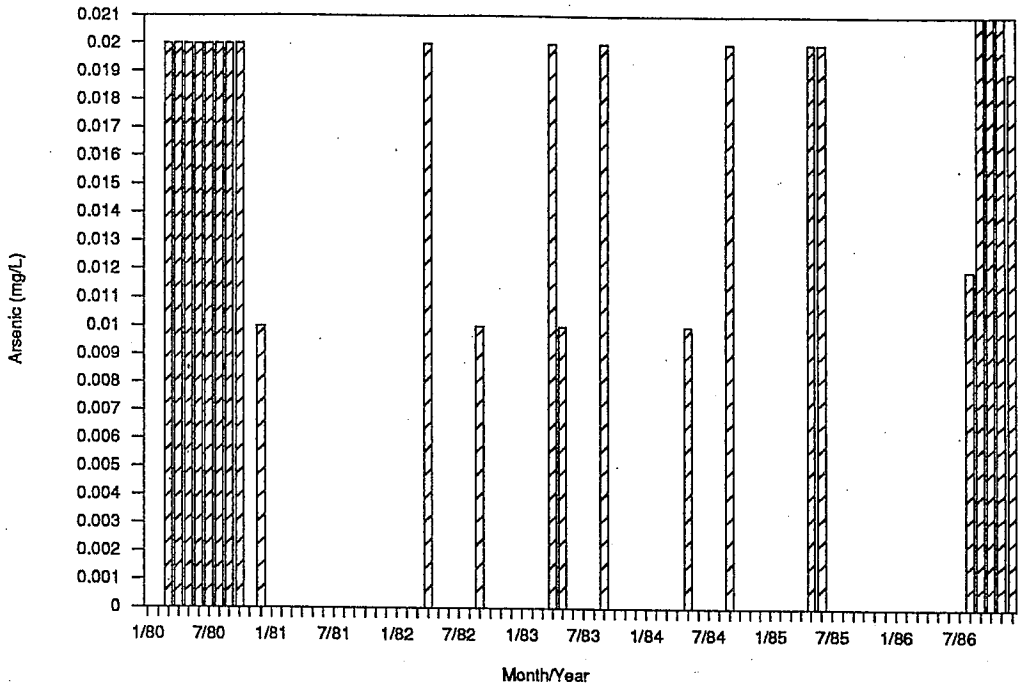


Figure 71

ERR 8641 -- Arsenic Levels

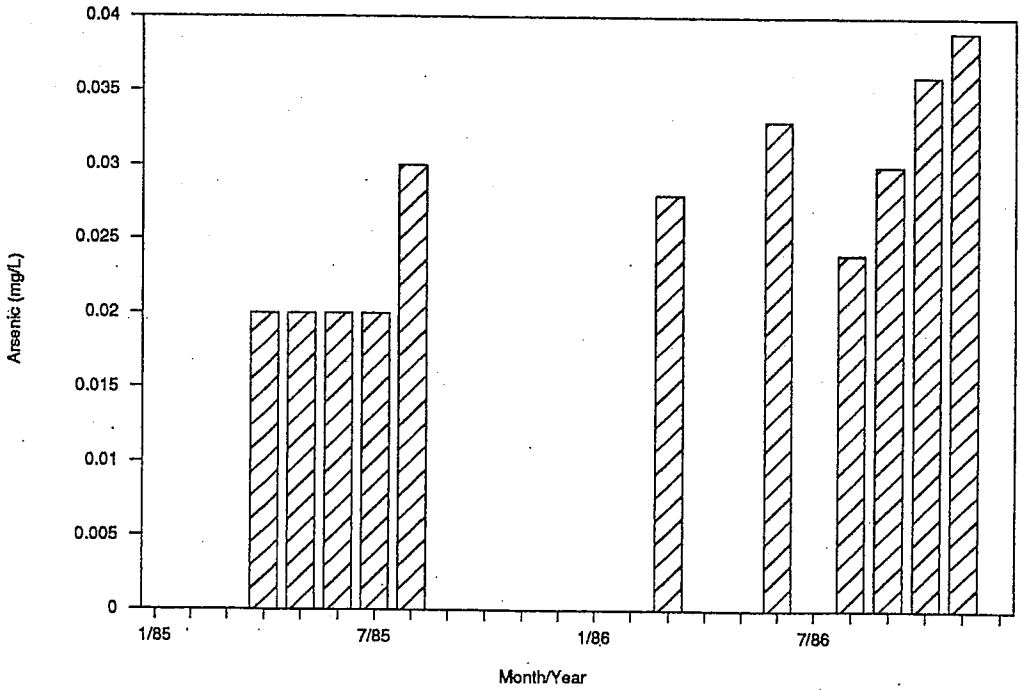


Figure 72

SFD 2727 -- Arsenic Levels

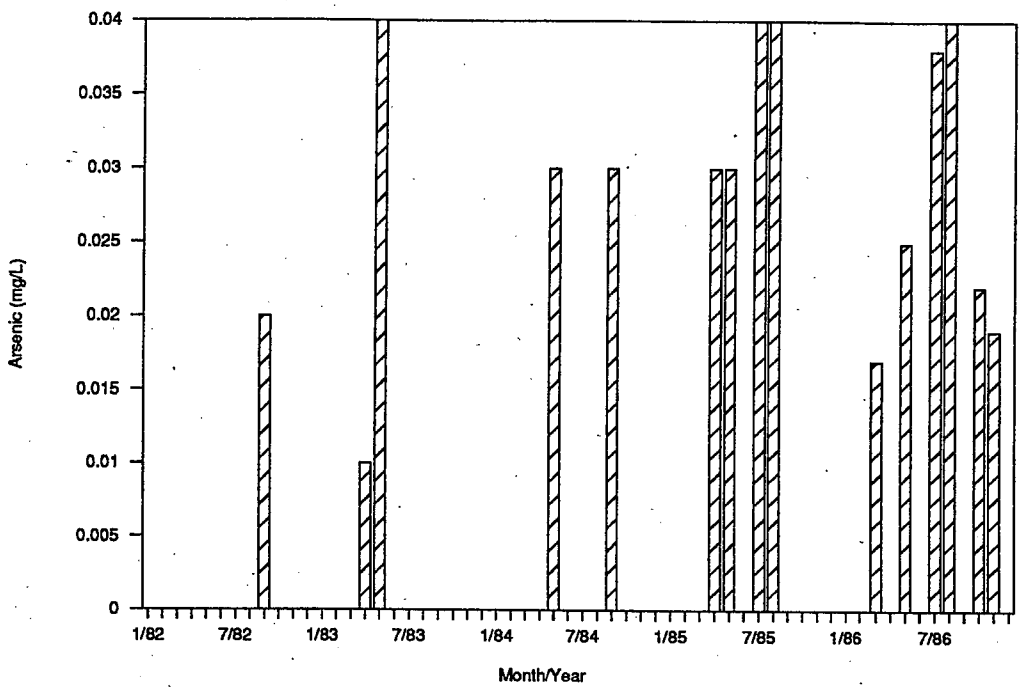


Figure 73

SFD 6046 -- Arsenic Levels

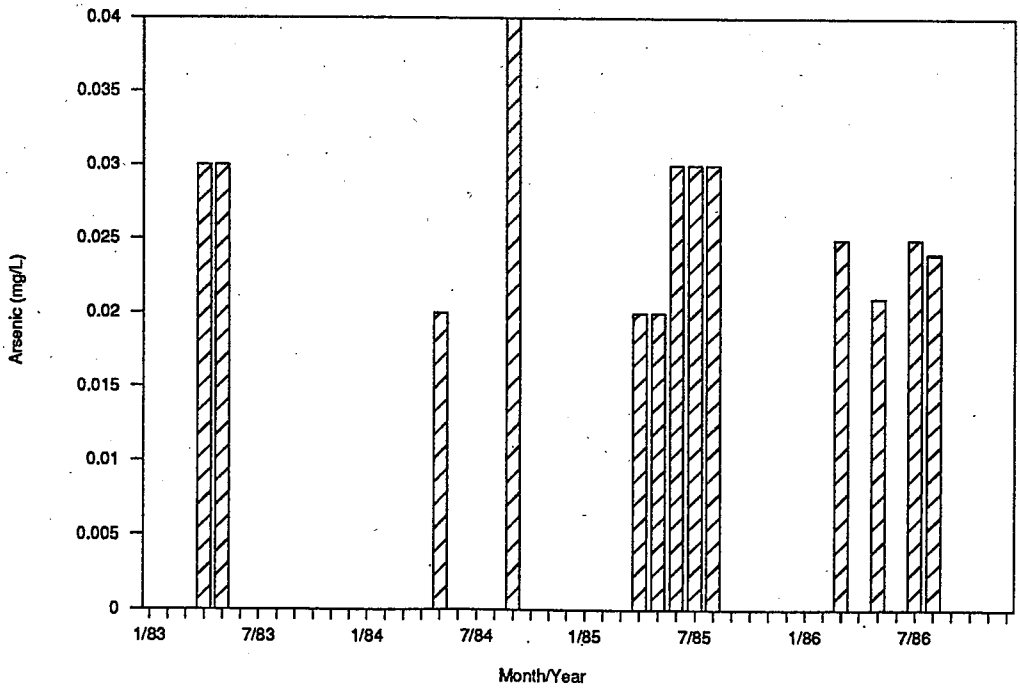


Figure 74

STC 3505 -- Arsenic Levels

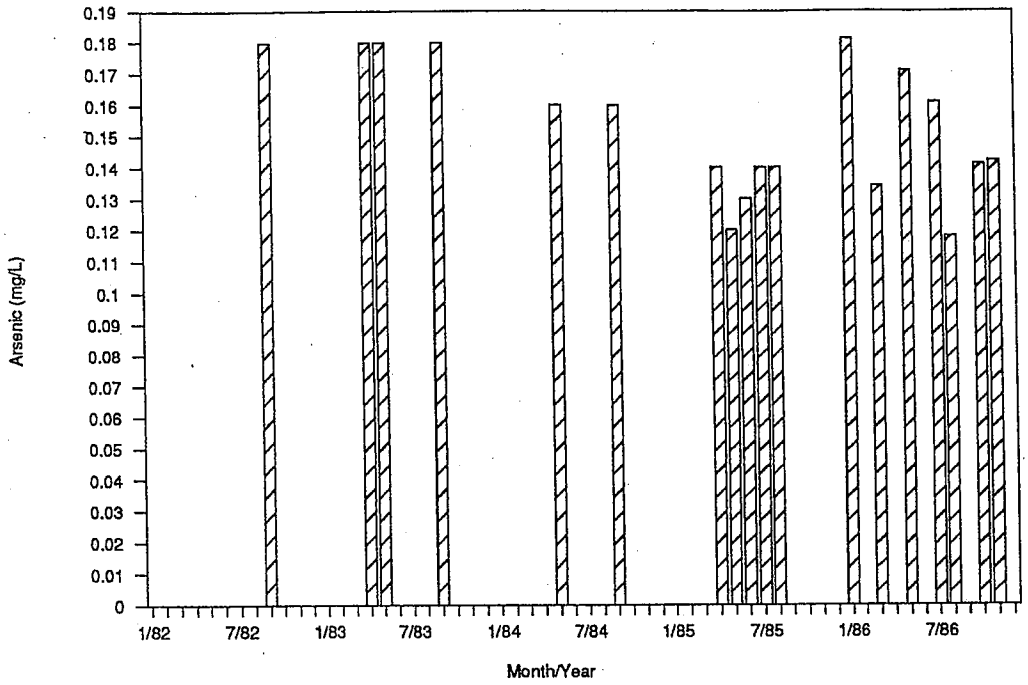
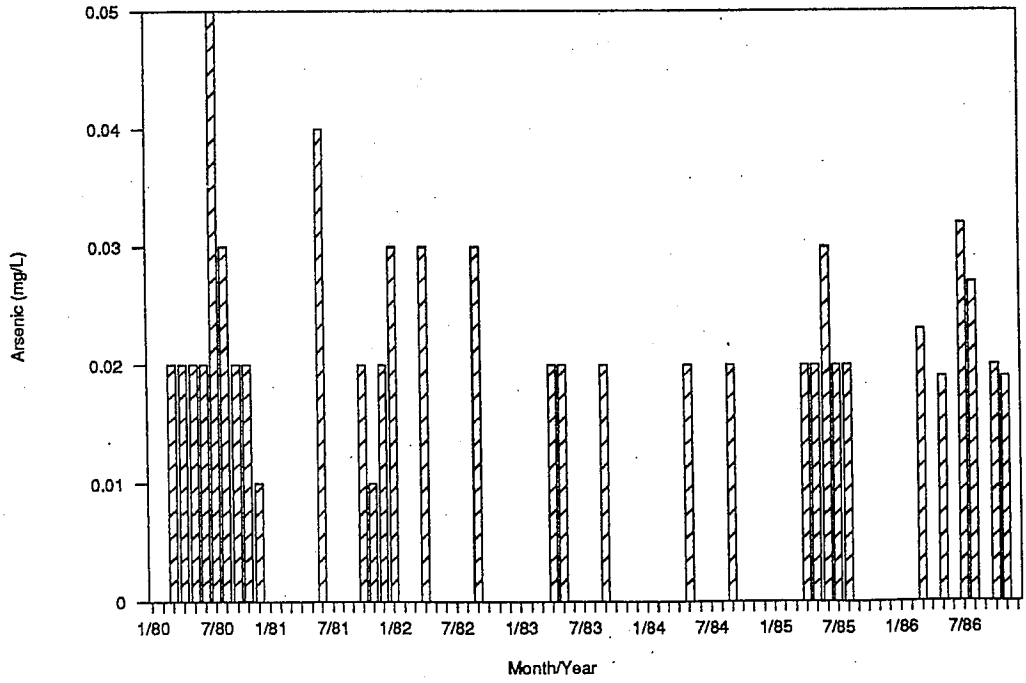


Figure 75

STC 6467 -- Arsenic Levels



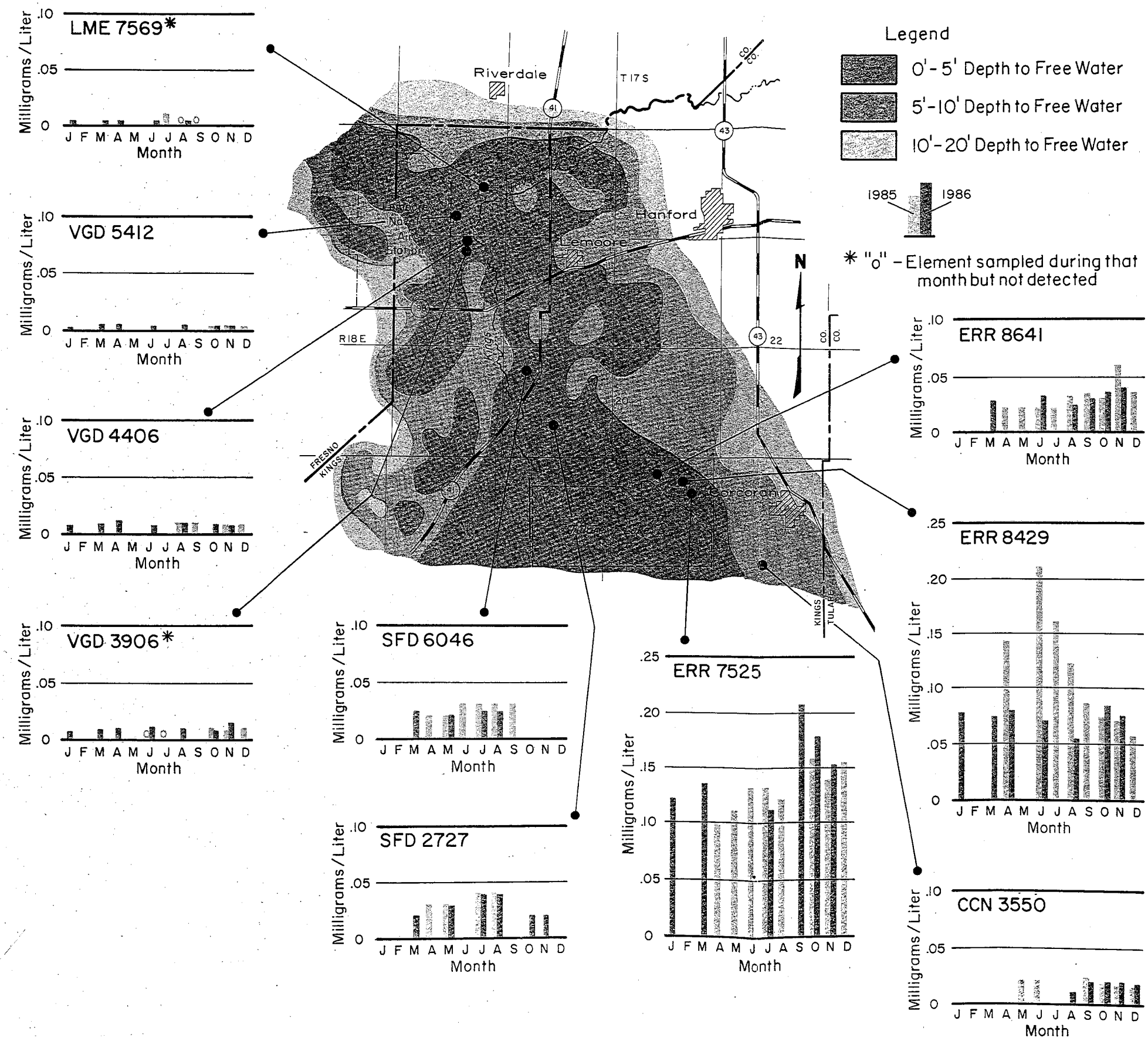


Figure 76A. Arsenic Levels, 1985-1986 for San Joaquin Valley, Southern Area--
Lemoore/Corcoran Stations

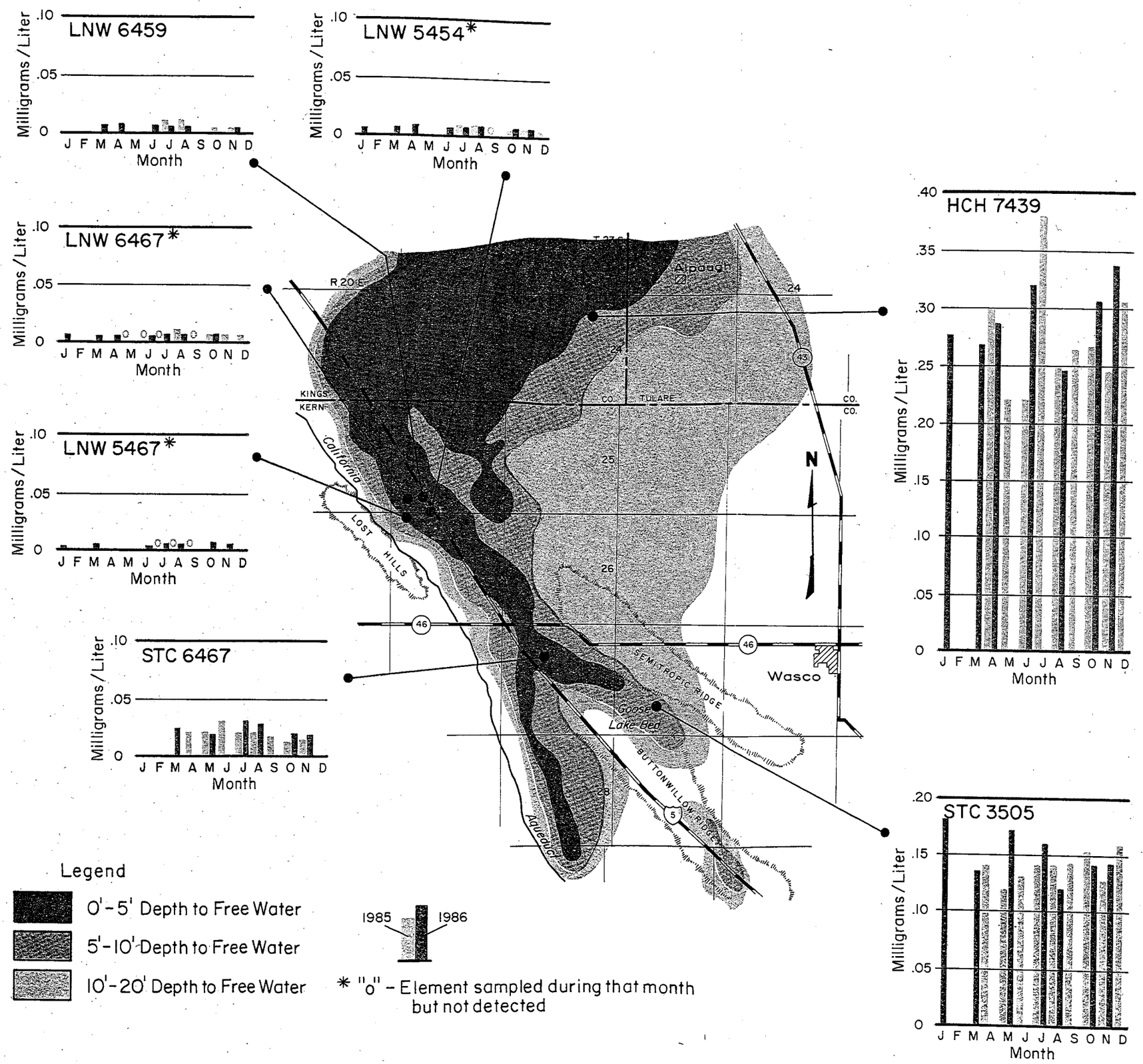


Figure 76B. Arsenic Levels, 1985-1986 for San Joaquin Valley, Southern Area -- Lost Hills / Semitropic Stations

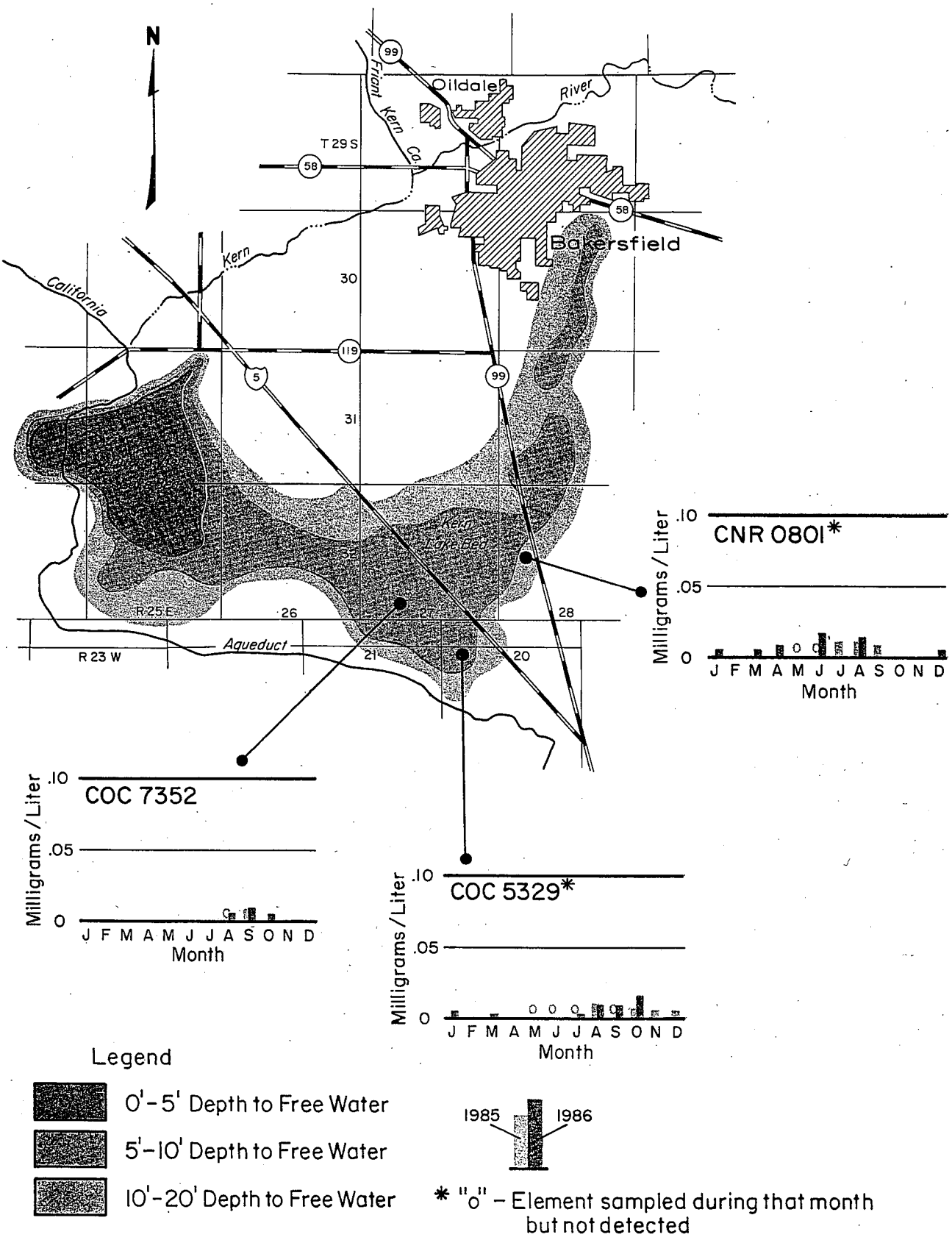


Figure 76C. Arsenic Levels, 1985-1986 for San Joaquin Valley, Southern Area--Kern Lake Bed Stations

Selenium Levels

Selenium occurs naturally in soils and is a vital nutrient for animals and people in trace amounts, yet it can also be toxic in certain forms at high concentrations.

People consume selenium regularly in vitamin supplements and it is added to cattle feed in areas with selenium-deficient soils. In parts of China, a form of congestive heart failure in children and young women has been associated with selenium deficiency.

Selenium is not unique as a vital nutrient in small amounts and a toxin in high concentrations: many elements share that distinction. However, with selenium, the difference between deficiency and toxicity is very small, making it essential that enough is known about the element to set rational environmental standards regarding safe exposure to it.

In the San Joaquin Valley, selenium levels do not appear to be influenced by drainage flow or rainfall, though some instances of high drainage flows have been associated with high selenium concentrations. The Valley's southern area has relatively few sampling stations recording selenium level increases. If selenium concentrations in the Valley's central area continue to increase at the current rate, toxic levels could be reached or surpassed by 1990 -- which could result in taking agricultural land out of production.

Central Area Surface Drains

Both of the central surface drains have shown increasing annual average selenium levels (Figures 77 and 79) over the last four years. Prior to 1983, analytic methods with disputable results were in use; thus, these values are shown for speculative purposes only. The monthly selenium levels from which the annual averages were derived are shown in Figures 78 and 80.

As was the case with arsenic, peak selenium values are usually detected during October. The selenium levels have not been found to correlate to either rainfall, flow rates, or any other constituent concentrations.

The increasing annual averages are most likely due to higher reapplication rates of drainage water.

Figure 77

CTL 4504 -- Average Selenium Levels

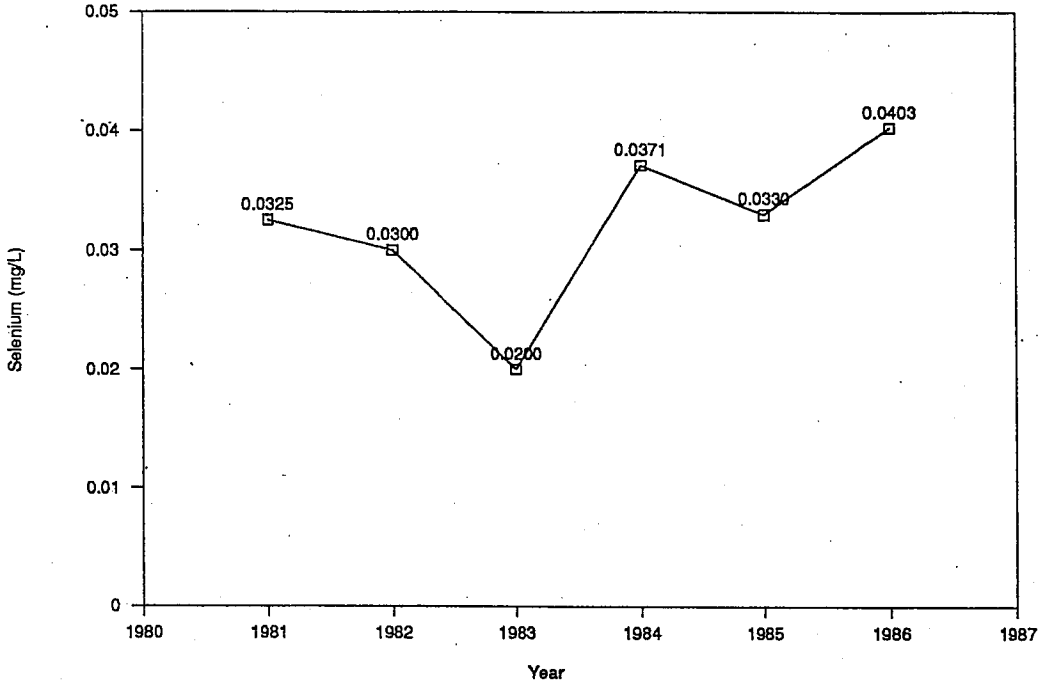


Figure 78

CTL 4504 -- Selenium Levels

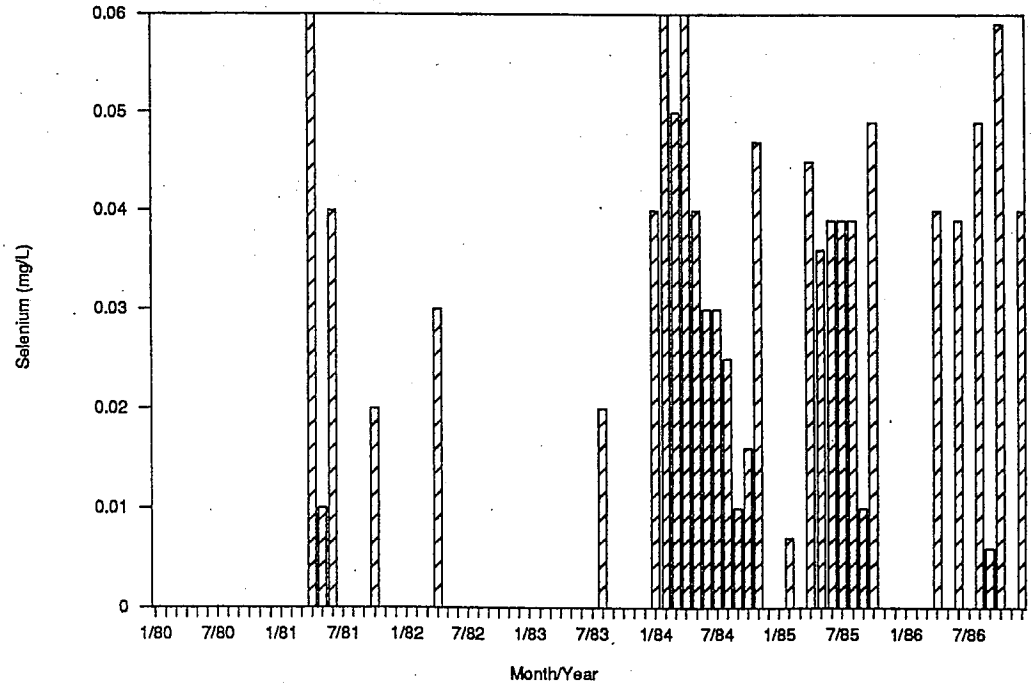


Figure 79

DPS 3235 -- Average Selenium Levels

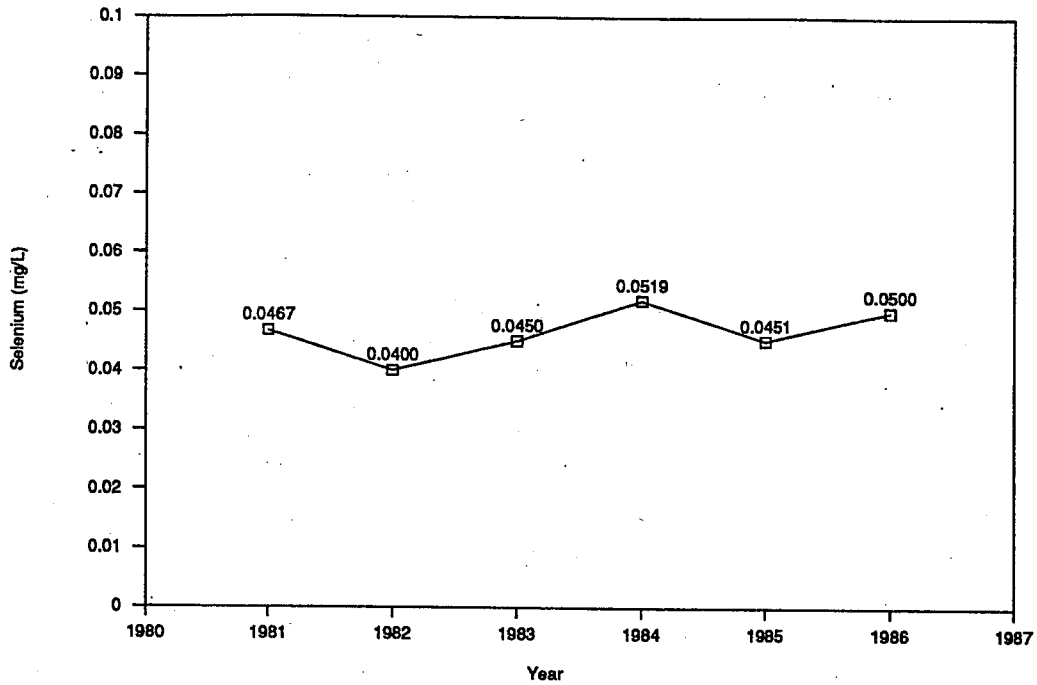
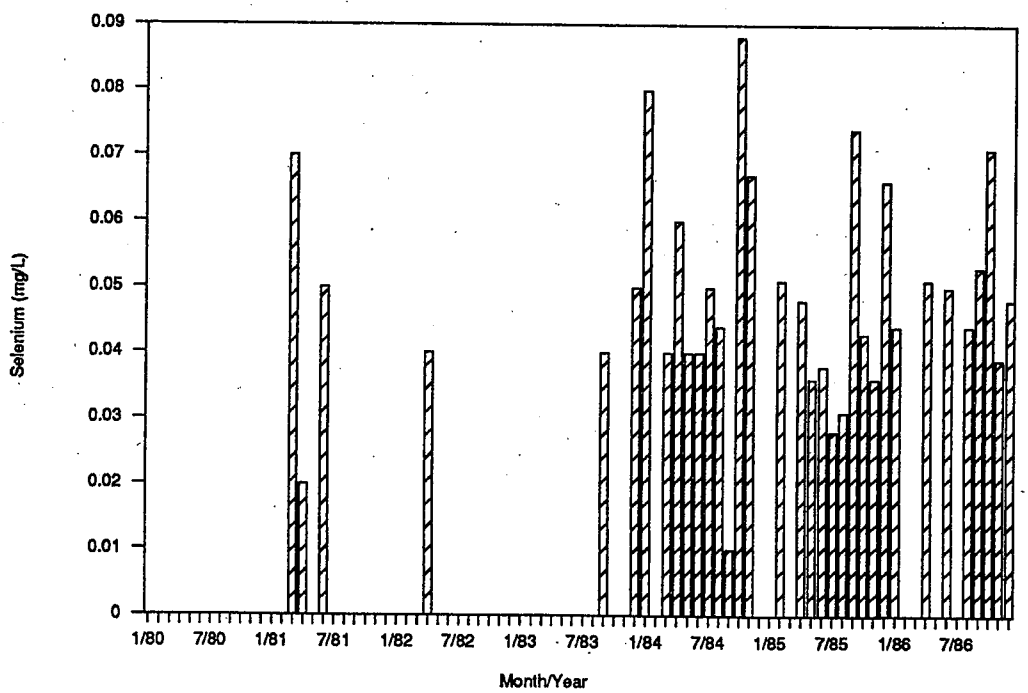


Figure 80

DPS 3235 -- Selenium Levels



Central Area Subsurface Drains

The majority of central subsurface stations have shown steady increases in annual average selenium concentrations (Figures 81, 83, 85, and 87), with the exception of the stations near Firebaugh (Figures 89 and 91), which have displayed significant decreases in 1986 from 1985 levels. The monthly selenium levels from which the annual averages were derived are displayed in Figures 82, 84, 86, 88, 90, and 92.

Unlike conditions at the central surface stations, peak selenium values recorded at central subsurface drainage monitoring stations do not appear to be restricted to certain months of the year. The selenium levels have not been found to correlate with either rainfall, flow rates, or any other constituent concentrations.

As was the case at central surface stations, the increasing annual selenium averages are possibly due to higher reapplication rates of drainage water.

Figure 93 graphically illustrates selenium concentrations for central area surface and subsurface stations for 1985 and 1986. Although there is no clear correlation between the data for the two years, subsurface station DPS 2535 appears to show similar monthly trends between 1985 and 1986 selenium concentrations. As yet, the reasons for this pattern have not been identified.

Figure 81

BVS 6016 -- Average Selenium Levels

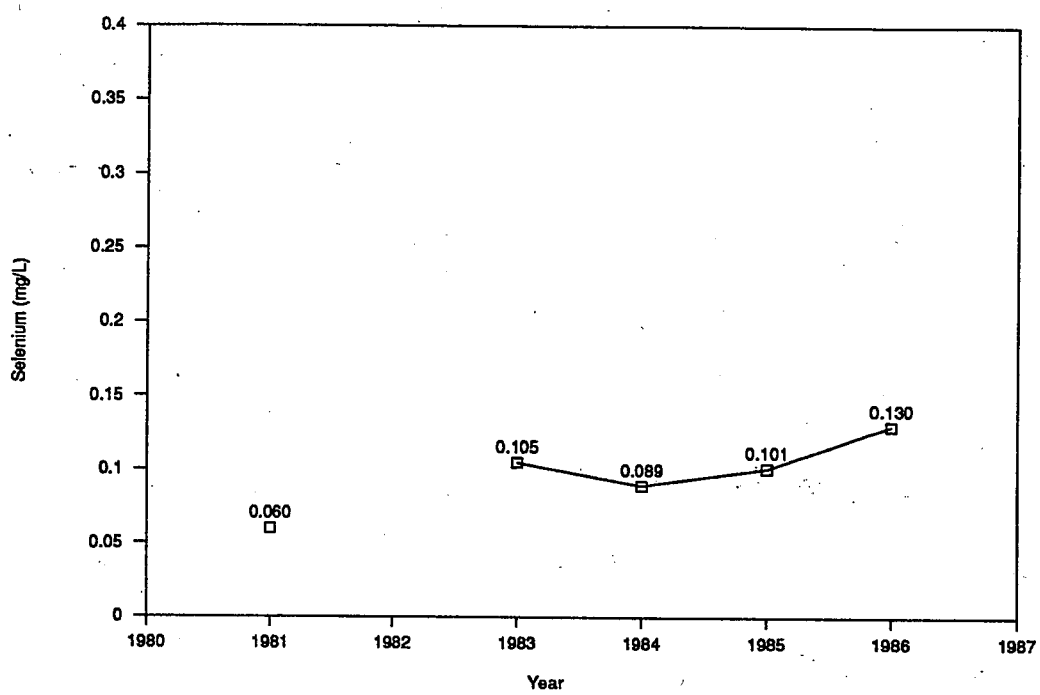


Figure 82

BVS 6016 -- Selenium Levels

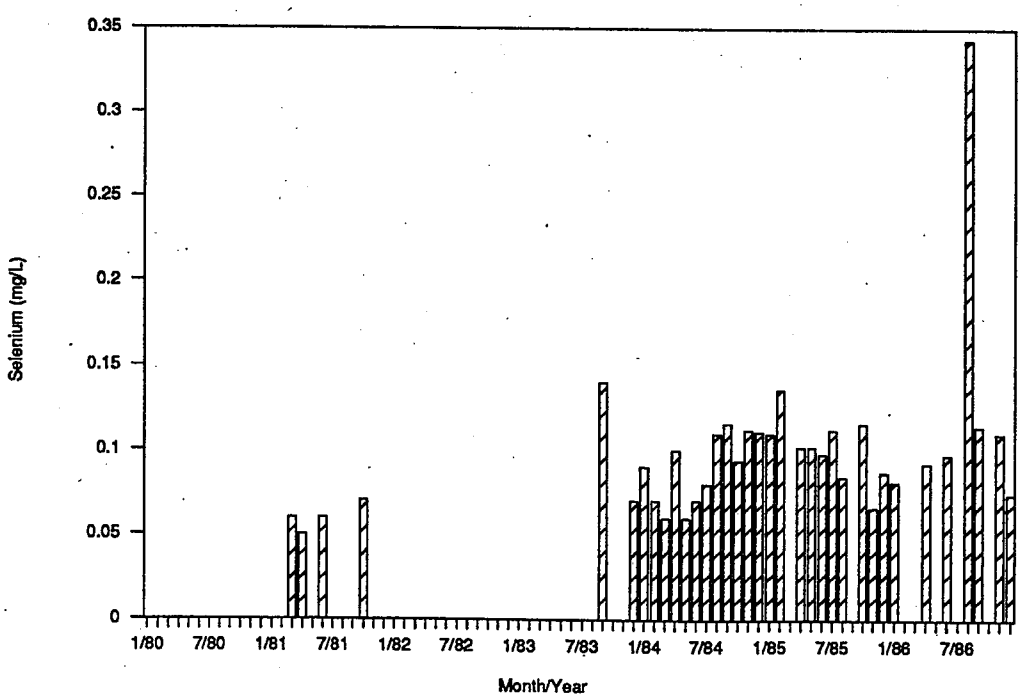


Figure 83

BVS 8003 -- Average Selenium Levels

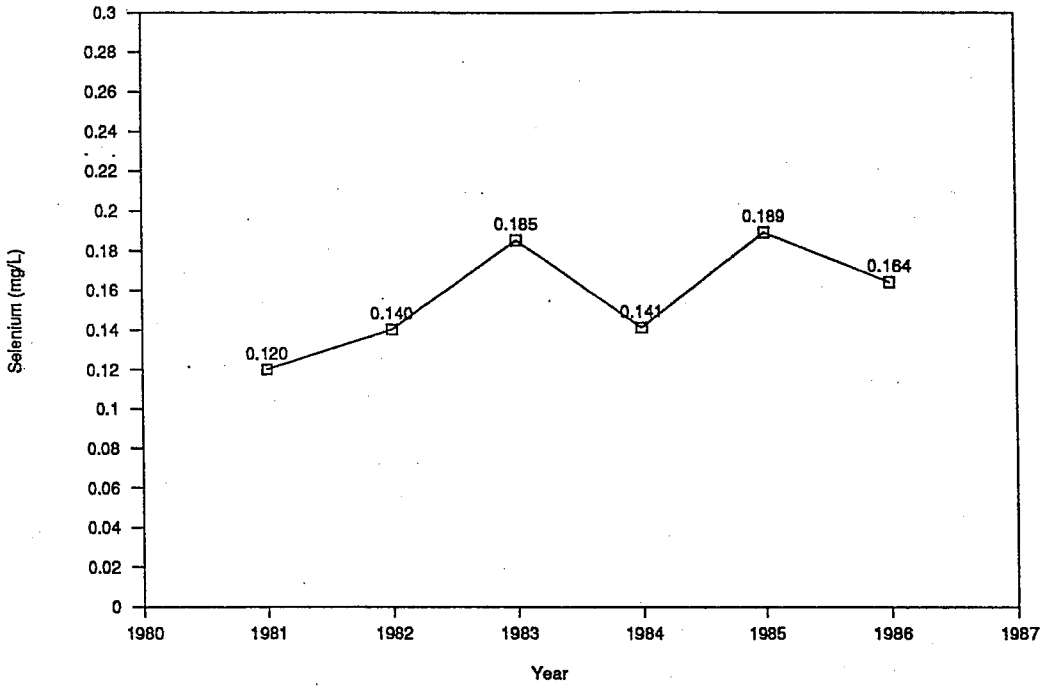


Figure 84

BVS 8003 -- Selenium Levels

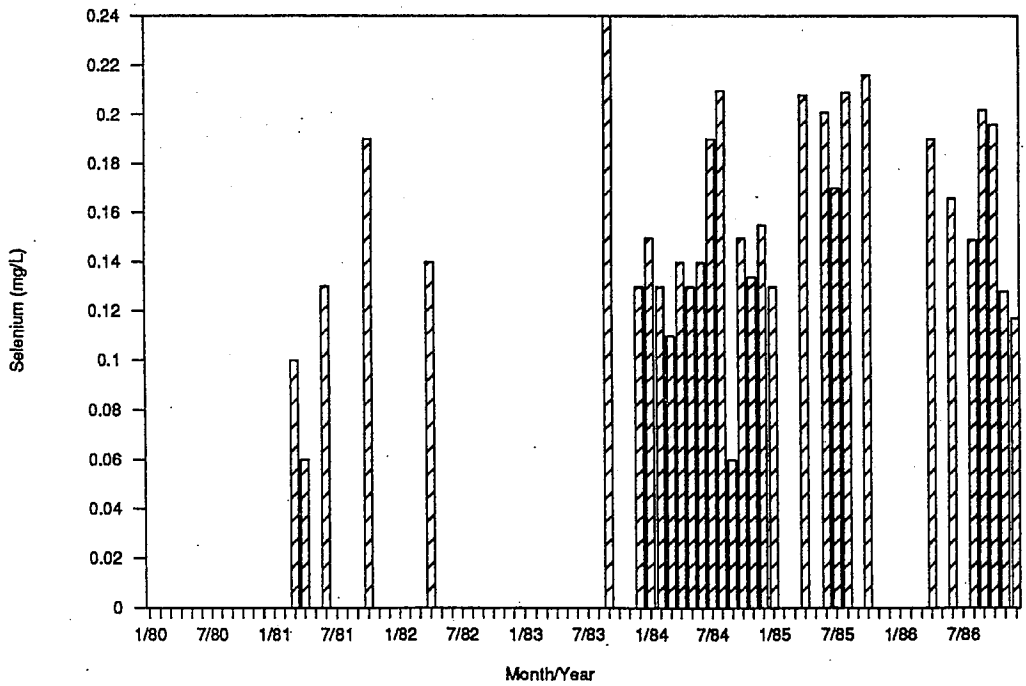


Figure 85

DPS 1367 -- Average Selenium Levels

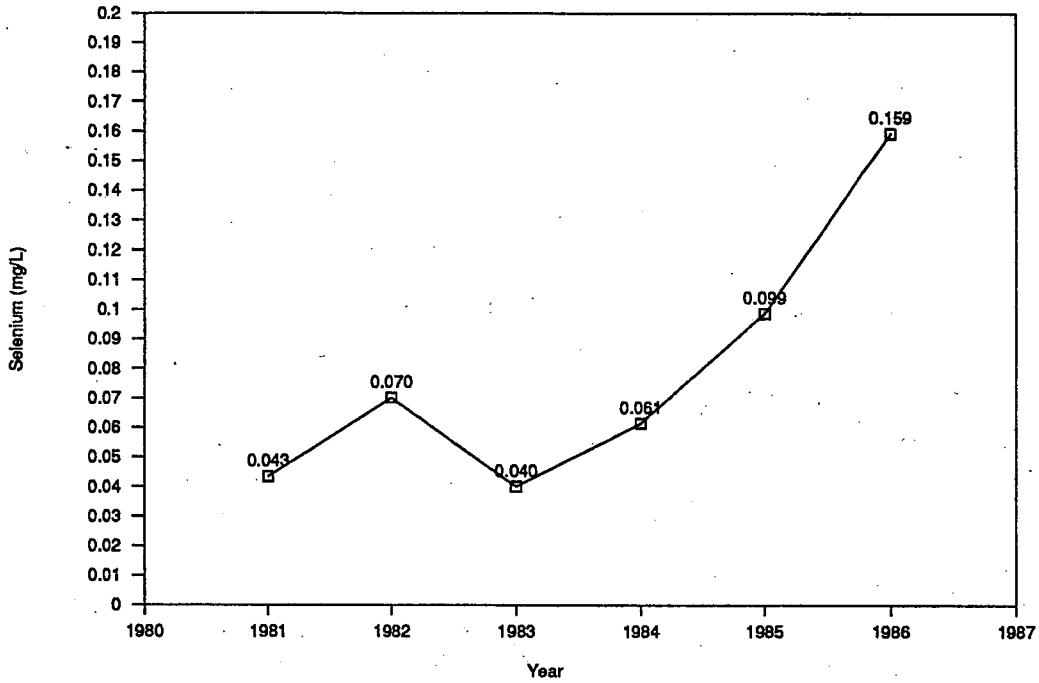


Figure 86

DPS 1367 -- Selenium Levels

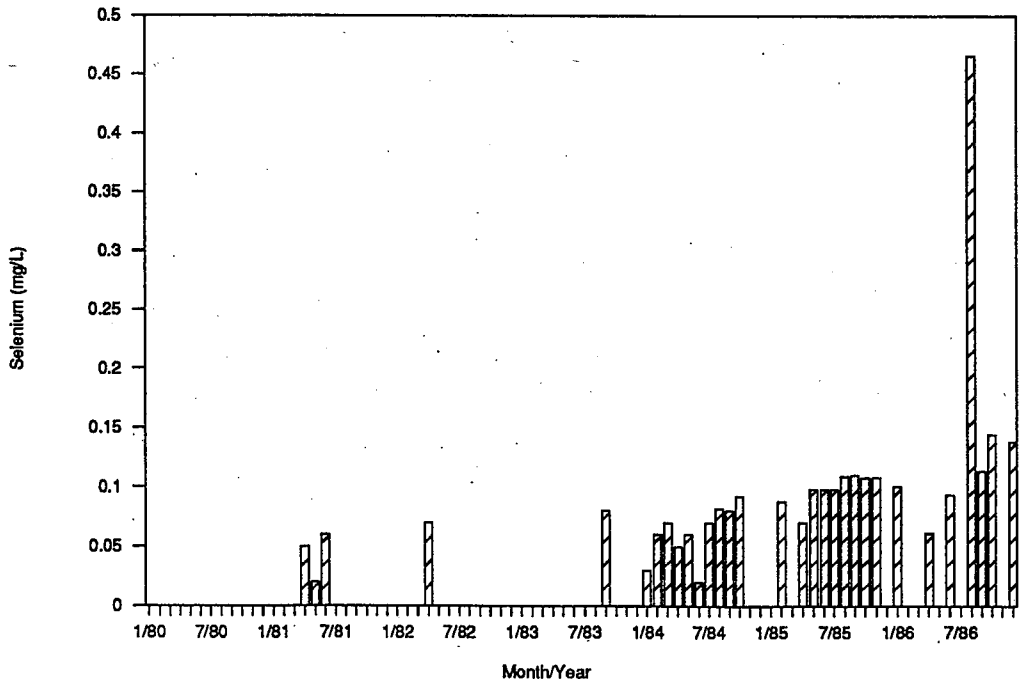


Figure 87

DPS 4616 -- Average Selenium Levels

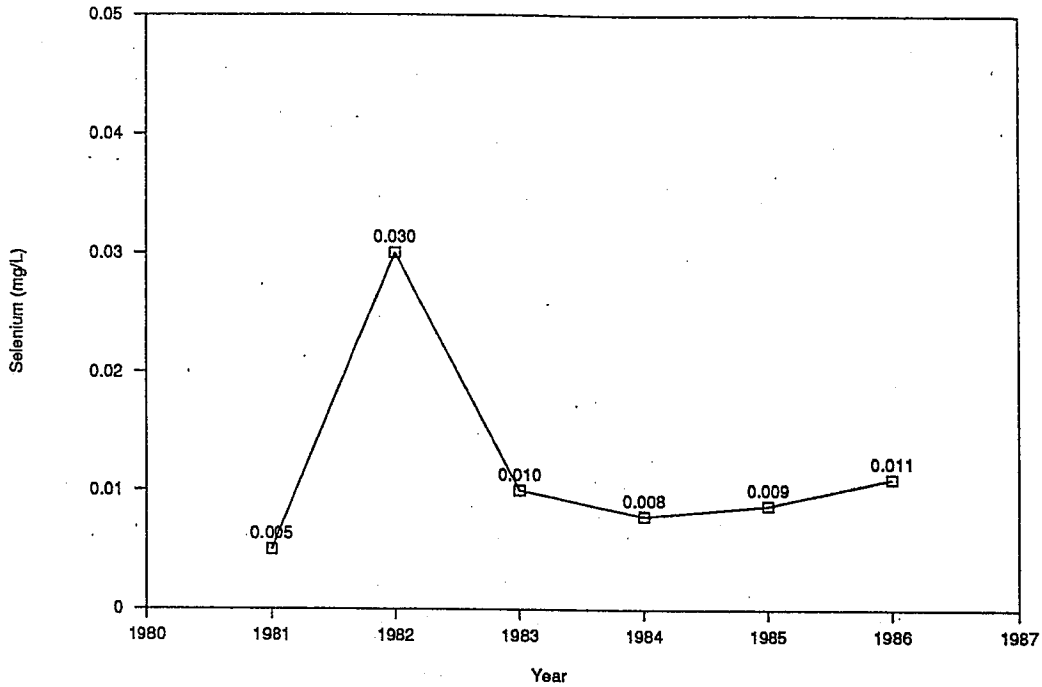


Figure 88

DPS 4616 -- Selenium Levels

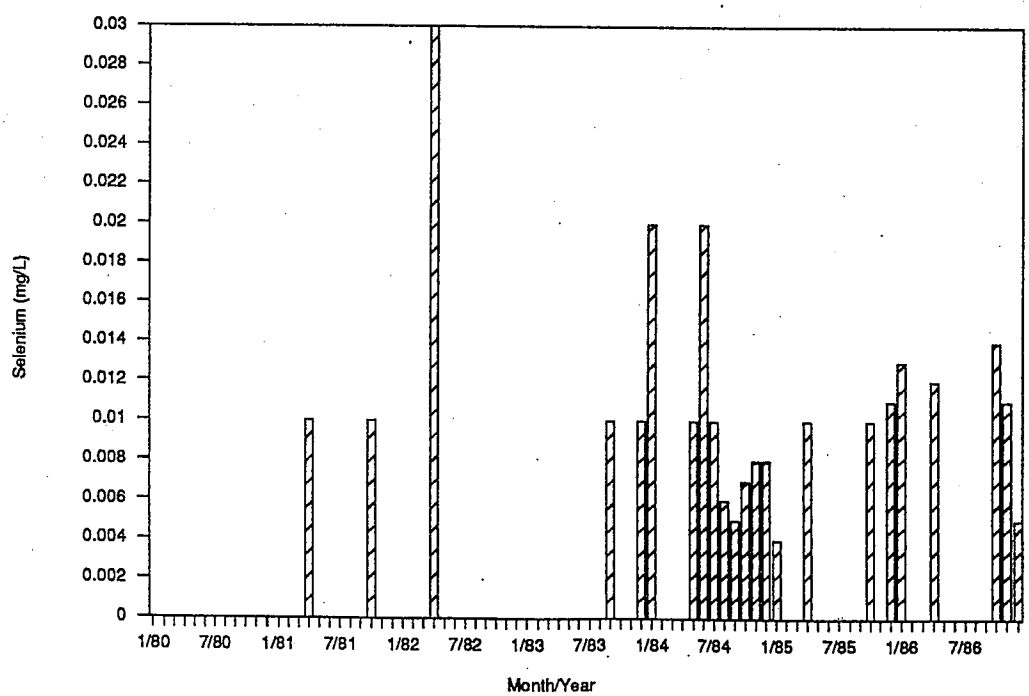


Figure 89

FBH 2016 -- Average Selenium Levels

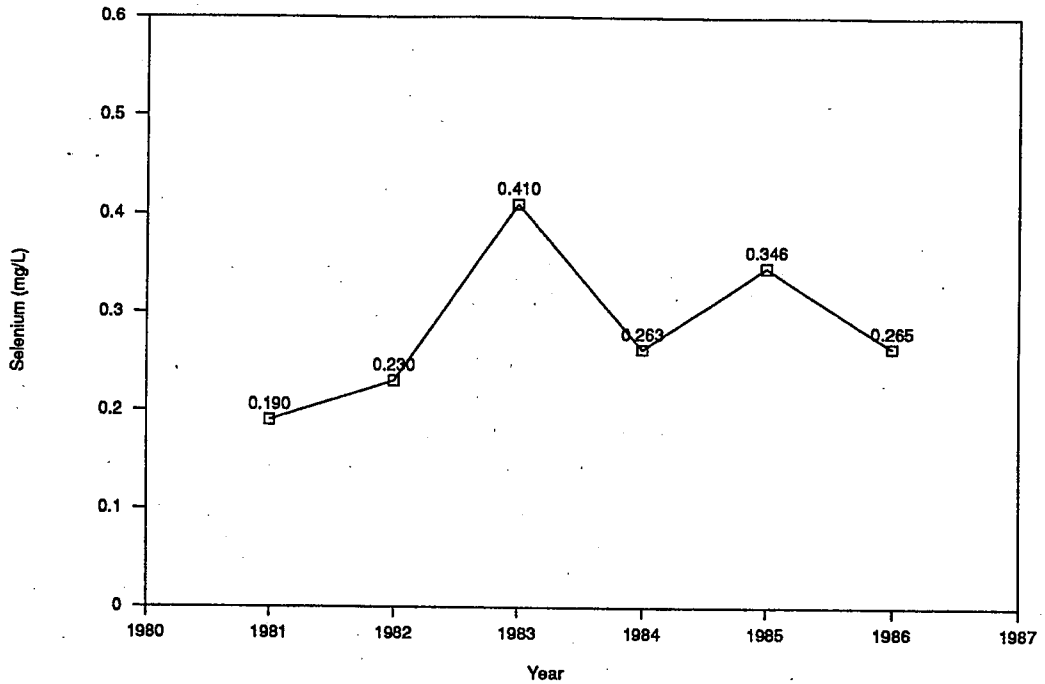


Figure 90

FBH 2016 -- Selenium Levels

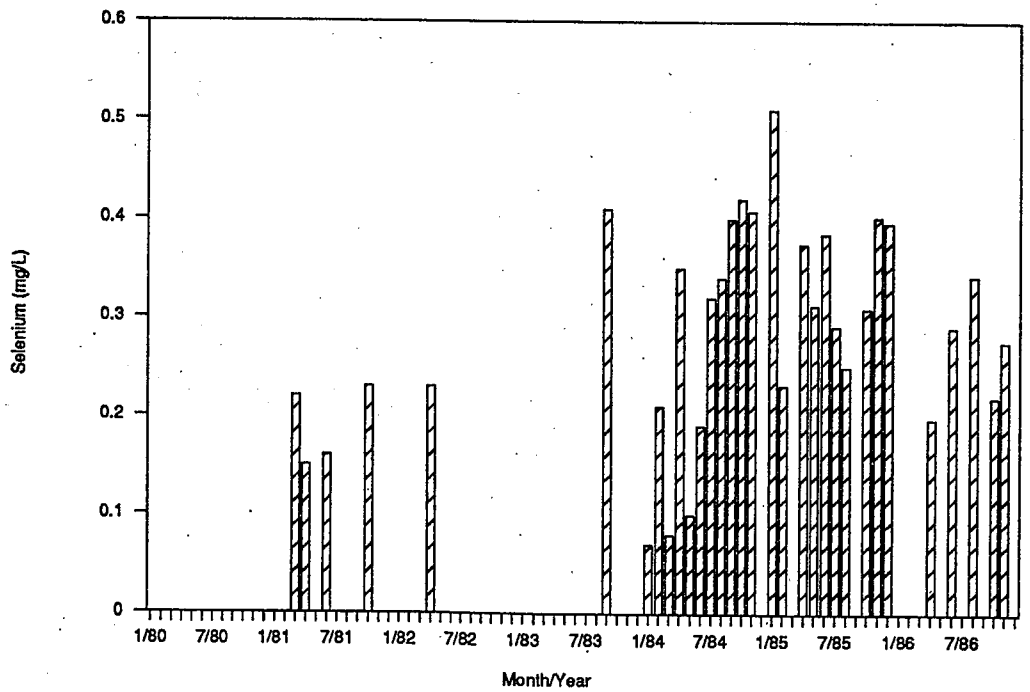


Figure 91

FBH 8061 -- Average Selenium Levels

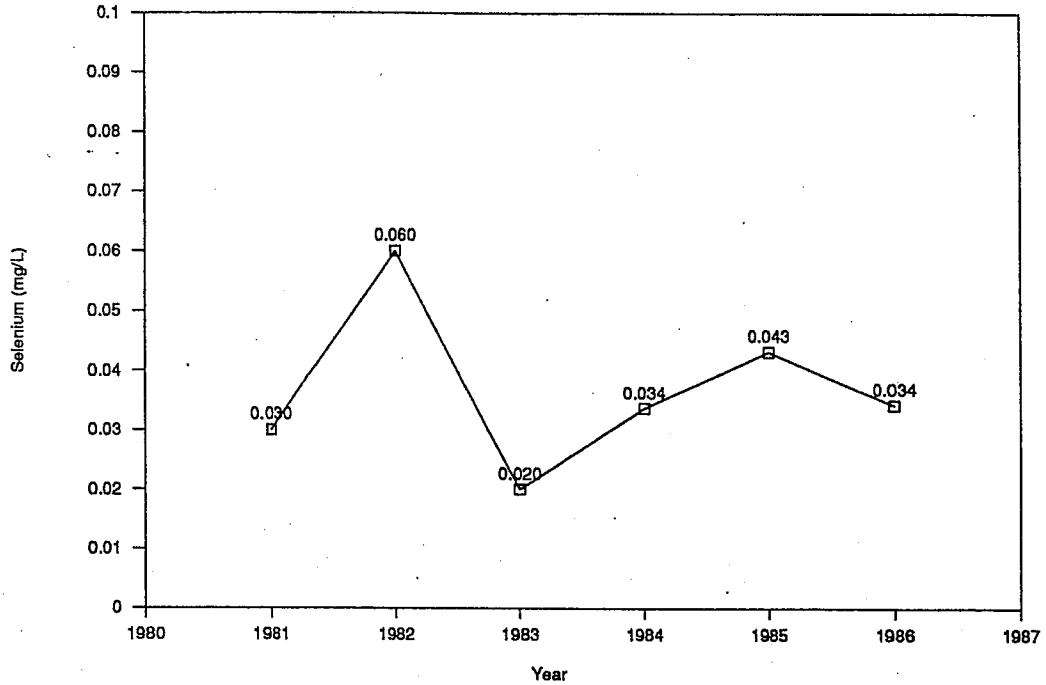
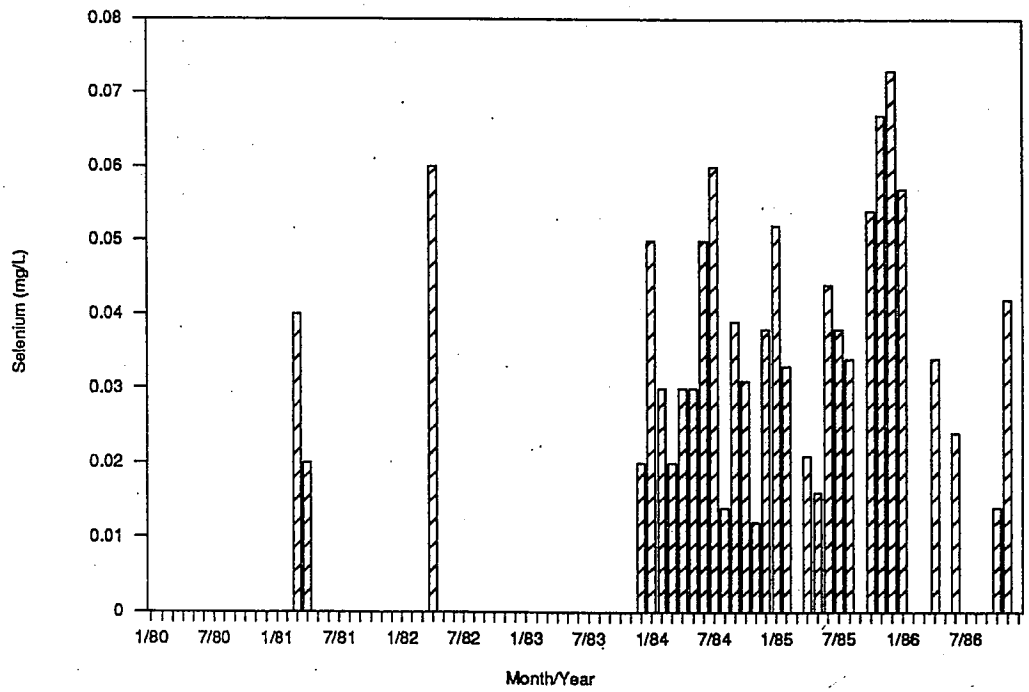


Figure 92

FBH 8061 -- Selenium Levels



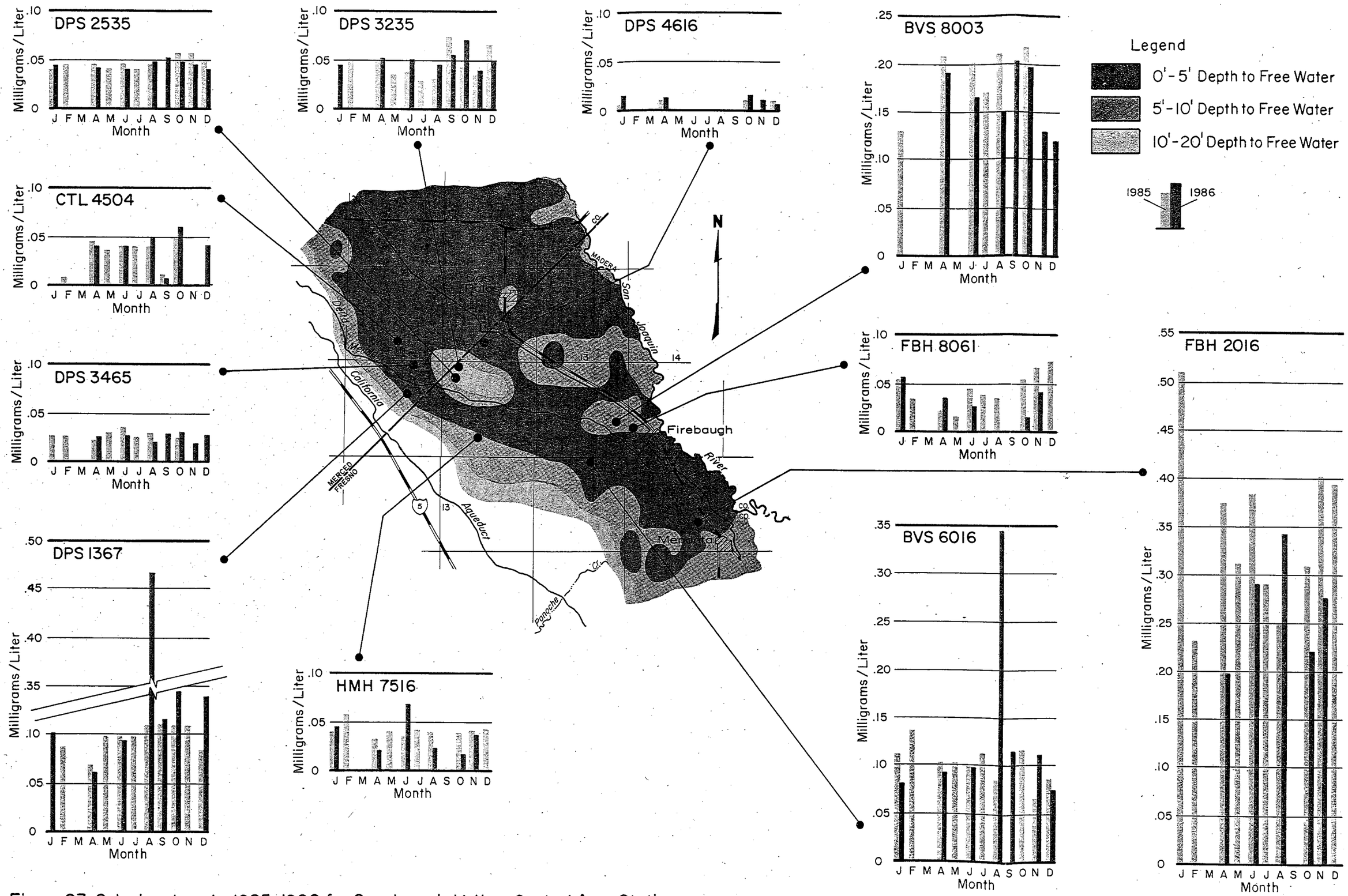


Figure 93. Selenium Levels, 1985-1986 for San Joaquin Valley, Central Area Stations

Southern Area Subsurface Drains

Most of the southern drainage monitoring stations are relatively new (Table 2); thus less data are available to identify trends. Widespread use of evaporation ponds, however, has minimized the practice of drainage water reapplication. Without this source of salts and minerals, leaching patterns become readily apparent.

The annual selenium averages at the majority of southern stations have steadily decreased (Figures 94, 96, 98, 100, and 102). The monthly selenium levels from which the annual averages were derived are displayed in Figures 95, 97, 99, 101, and 103. In instances where annual averages have increased (Figure 104), increases are invariably due to one high month (Figure 105) which raises the annual average for that particular year.

Peak values do not appear to be restricted to certain months of the year but are more commonly (though not necessarily) recorded during early summer. The selenium levels have not been found to correlate with either rainfall, flow rates, or any other constituent concentrations.

Figures 106A, 106B, and 106C present the 1985 and 1986 selenium concentrations for the southern area subsurface stations. Like the central subsurface stations, there are no apparent correlations between the two years for these stations. A few stations, however, such as ERR 8641 and SFD 2727 (Figure 106A) and STC 3505 (Figure 106B), show possible trends. Stations SFD 2727 and STC 3505 seem to indicate more low, consistent monthly levels found in older systems. Station ERR 8641, however, indicates an overall decrease in selenium levels from 1985 values -- a decrease commonly associated with the rapid initial leaching which occurs in newly installed drains.

Figure 94

CCN 3550 -- Average Selenium Levels

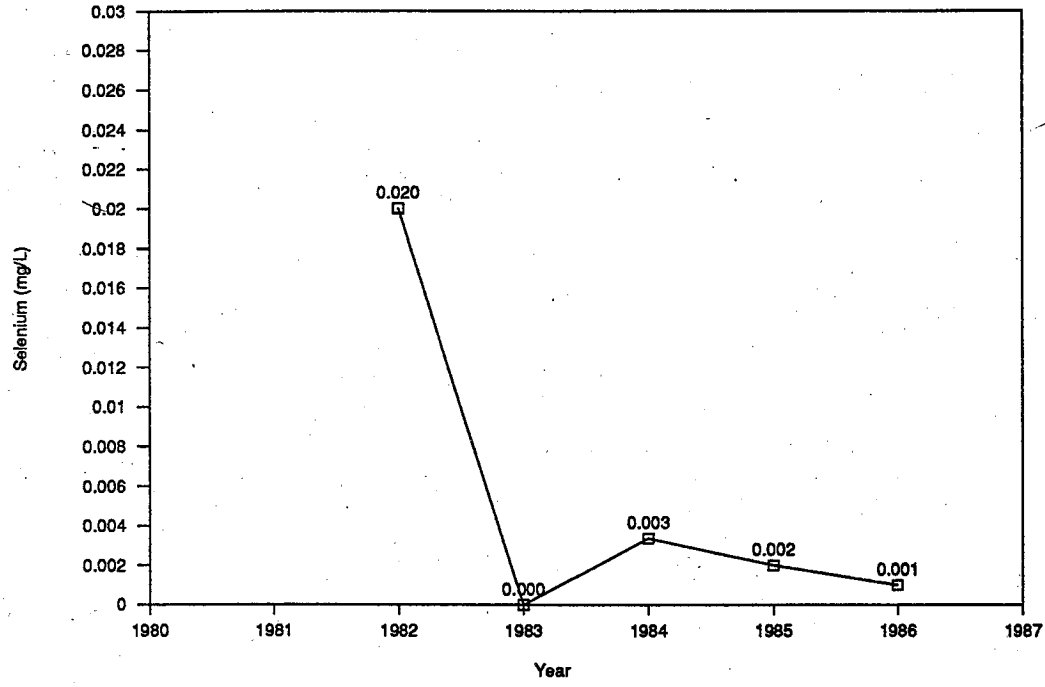


Figure 95

CCN 3550 -- Selenium Levels

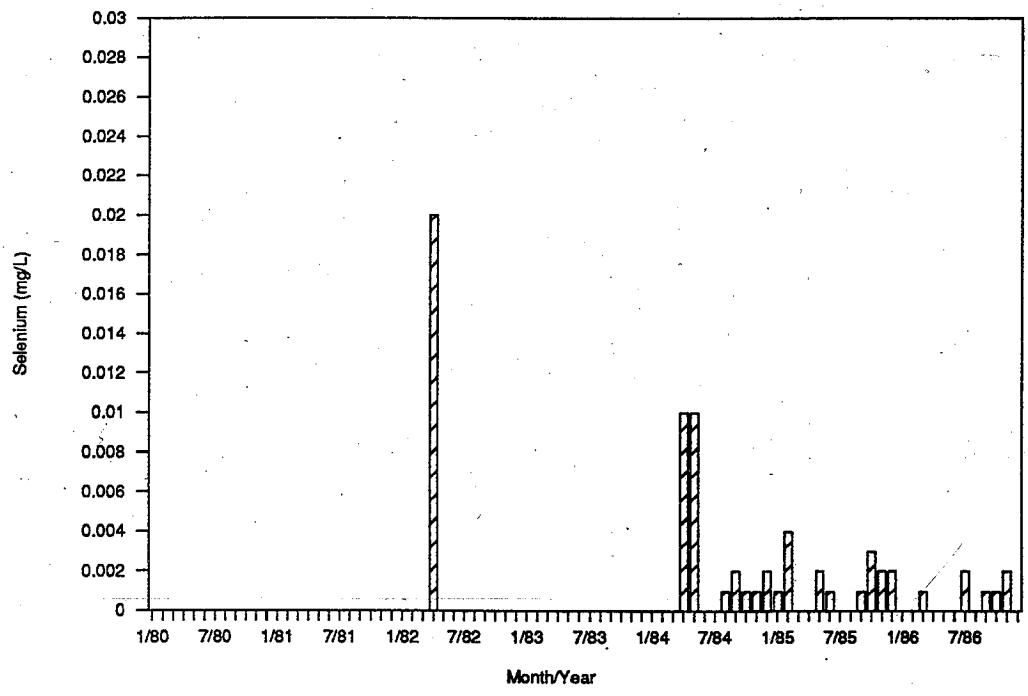


Figure 96

ERR 8641 -- Average Selenium Levels

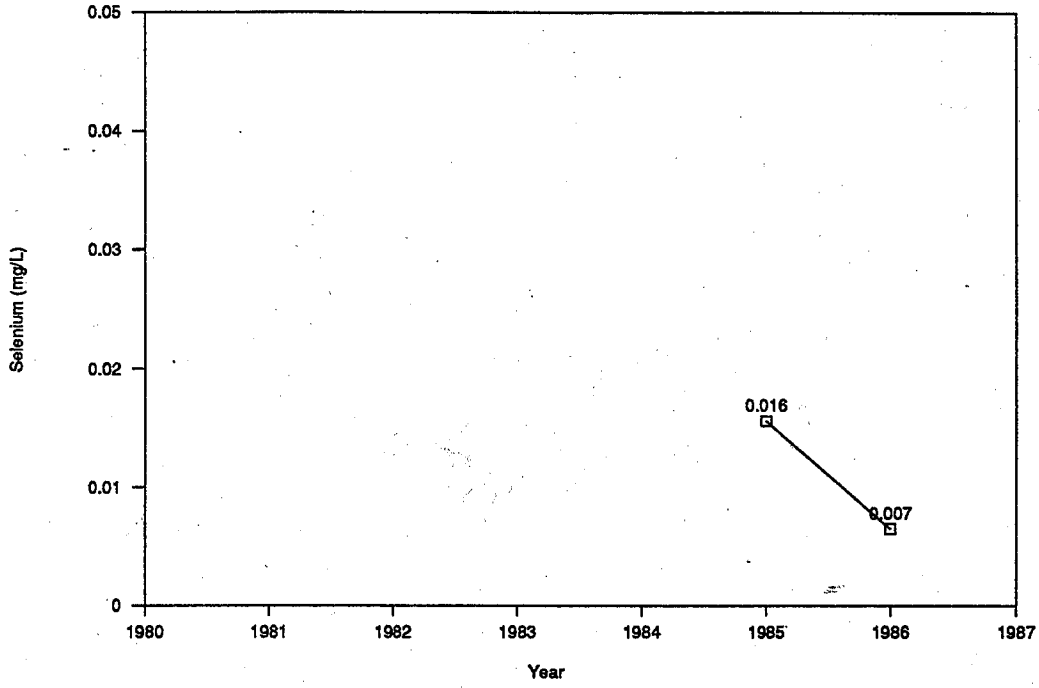


Figure 97

ERR 8641 -- Selenium Levels

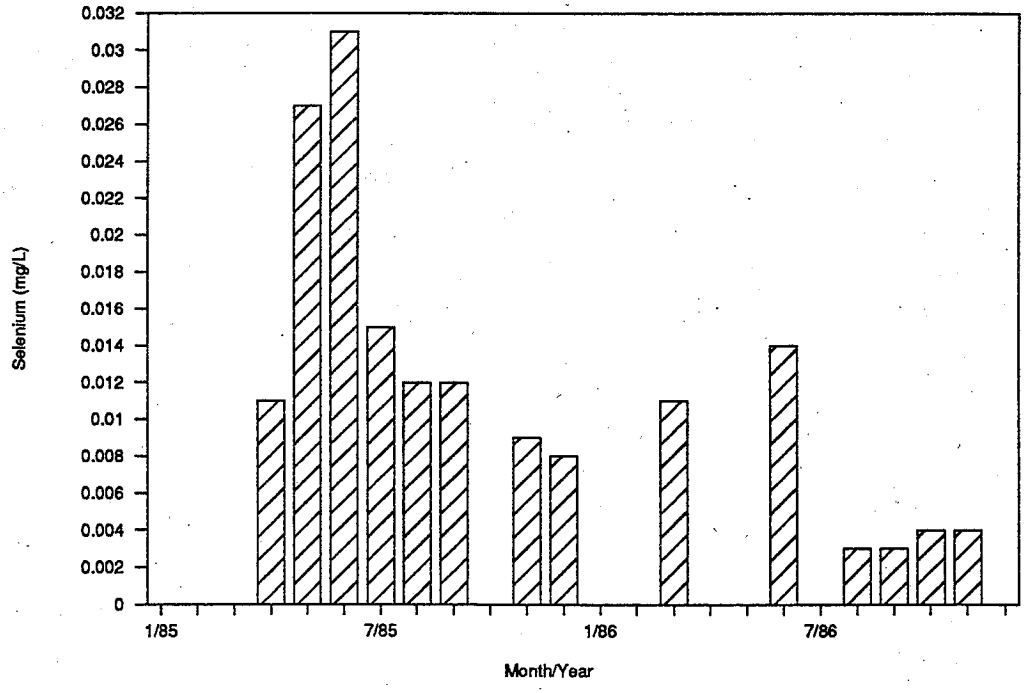


Figure 98

SFD 2727 -- Average Selenium Levels

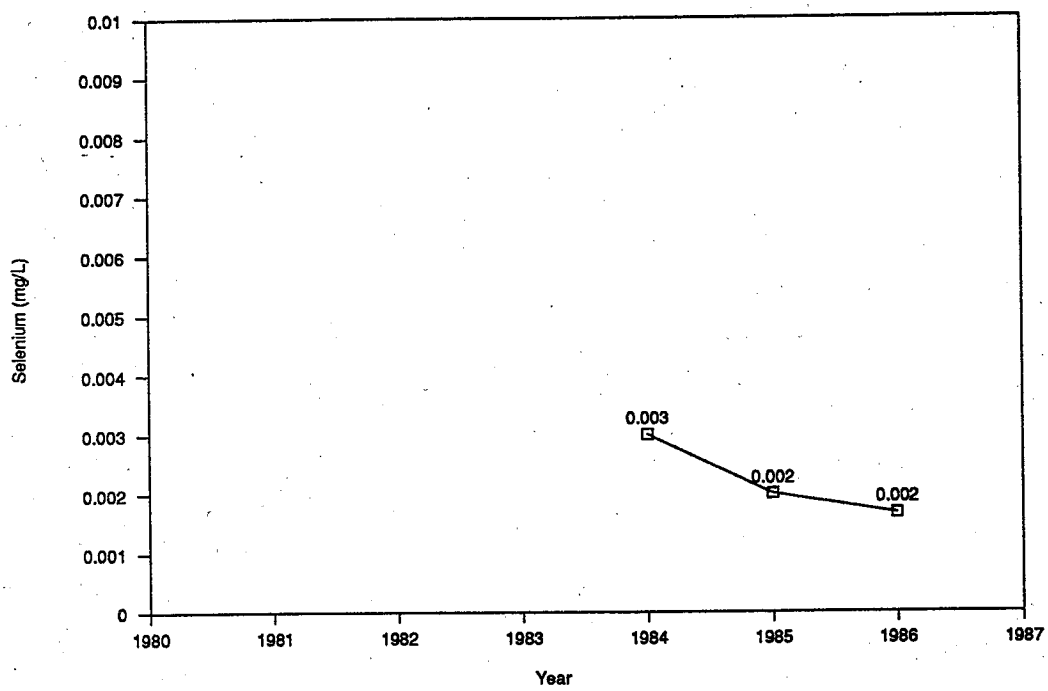


Figure 99

SFD 2727 -- Selenium Levels

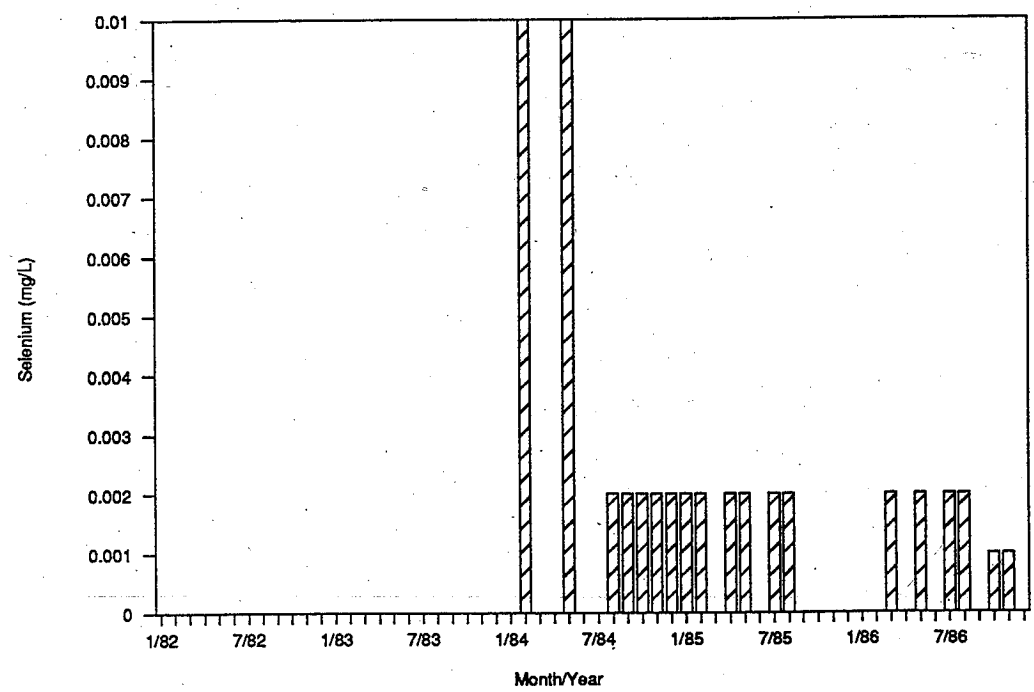


Figure 100

SFD 6046 -- Average Selenium Levels

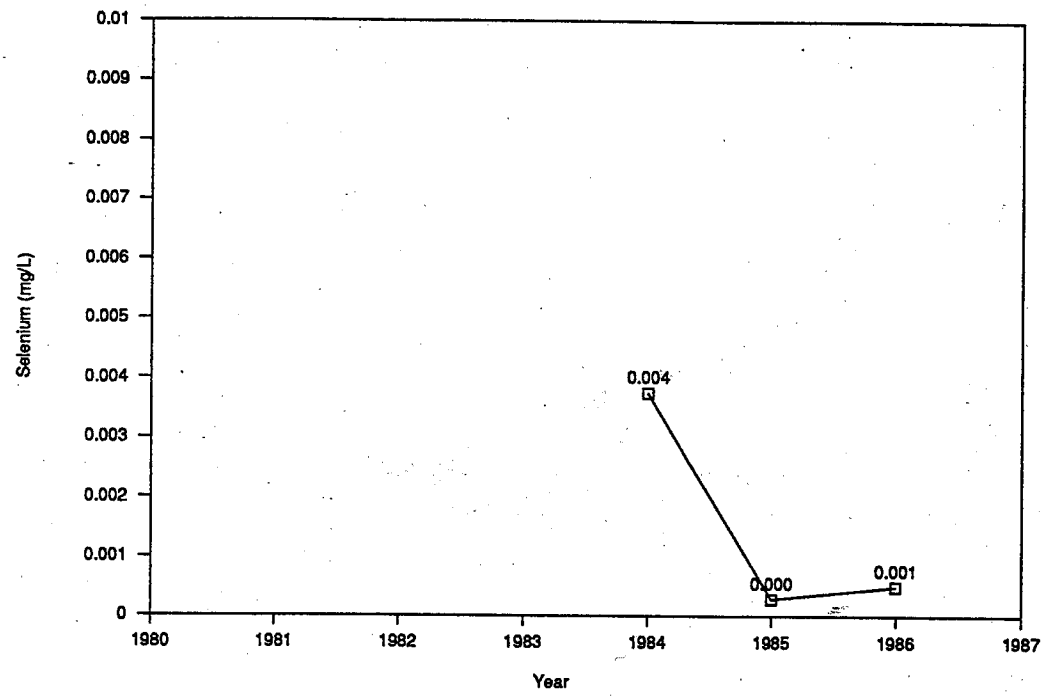


Figure 101

SFD 6046 -- Selenium Levels

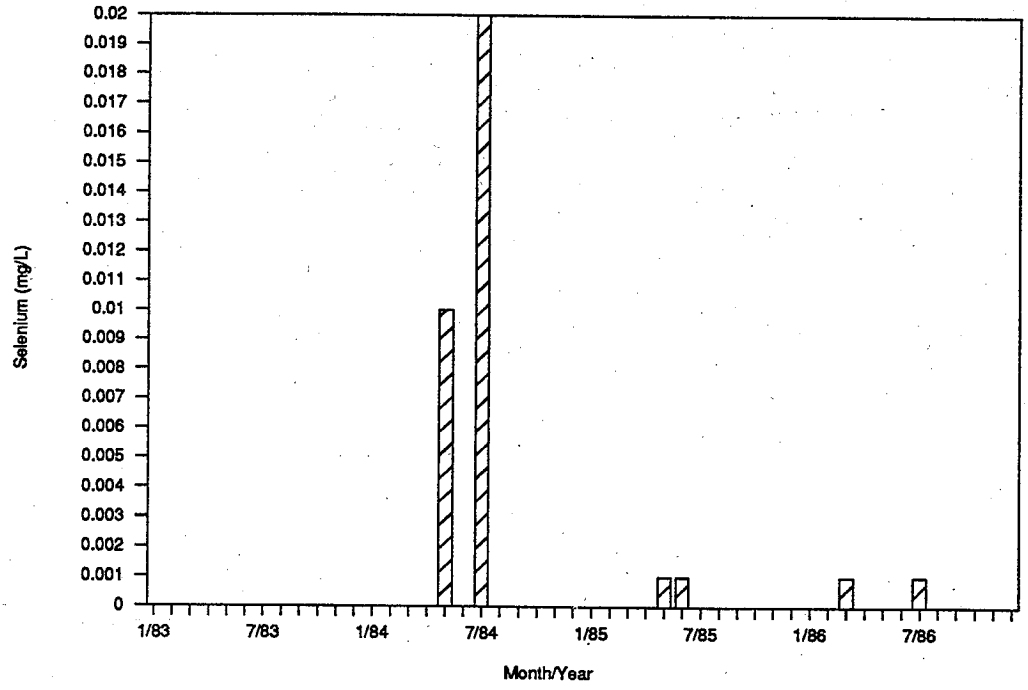


Figure 102

STC 3505 -- Average Selenium Levels

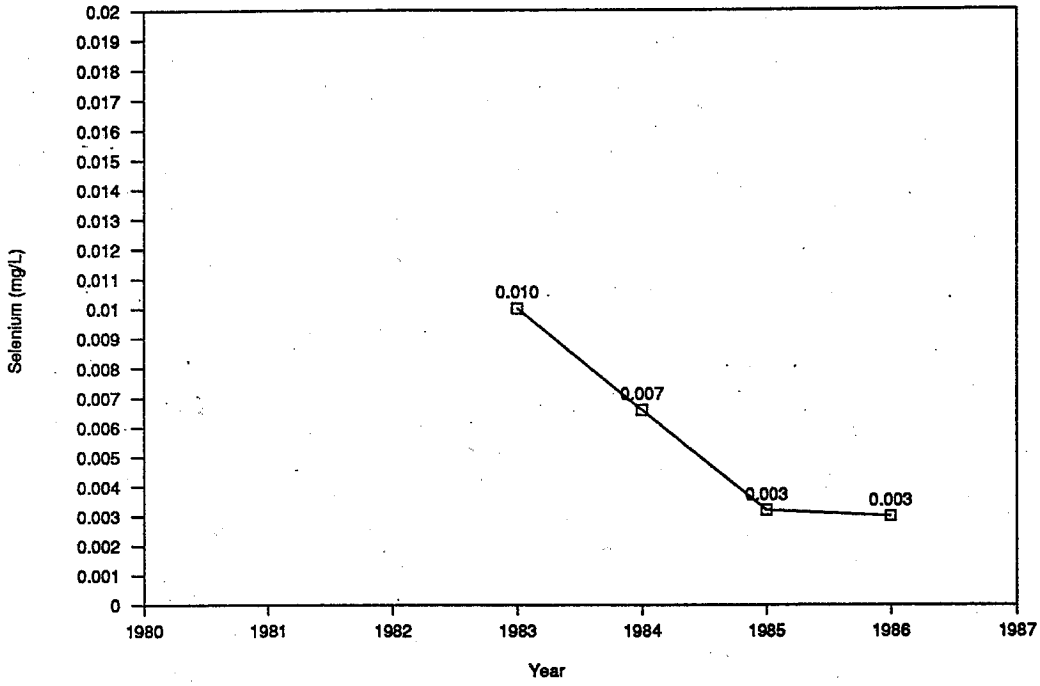


Figure 103

STC 3505 -- Selenium Levels

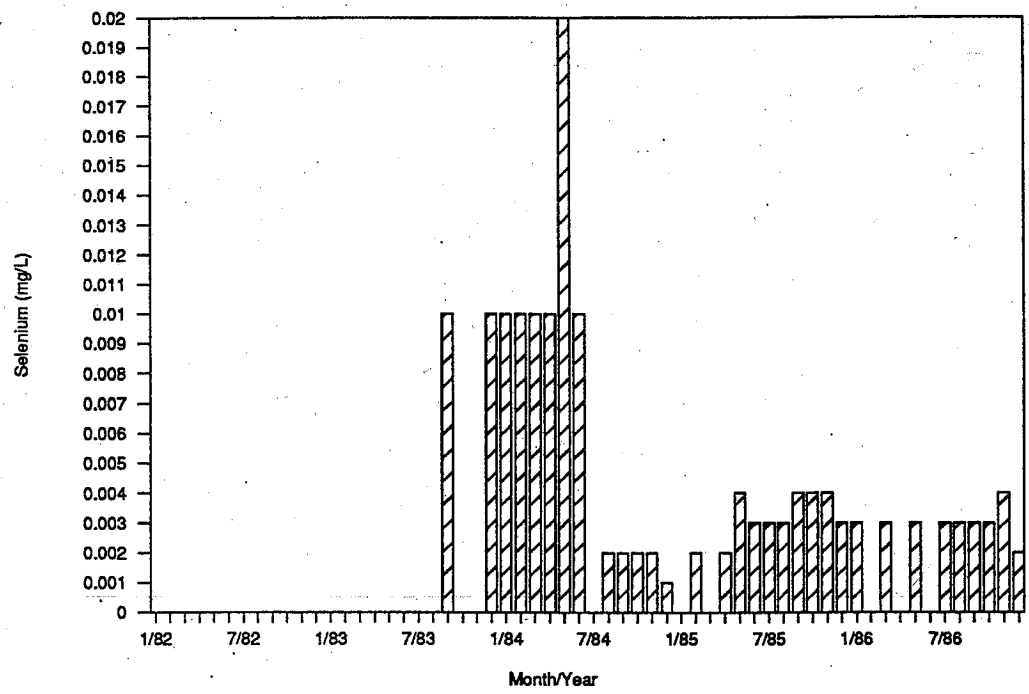


Figure 104

STC 6467 -- Average Selenium Levels

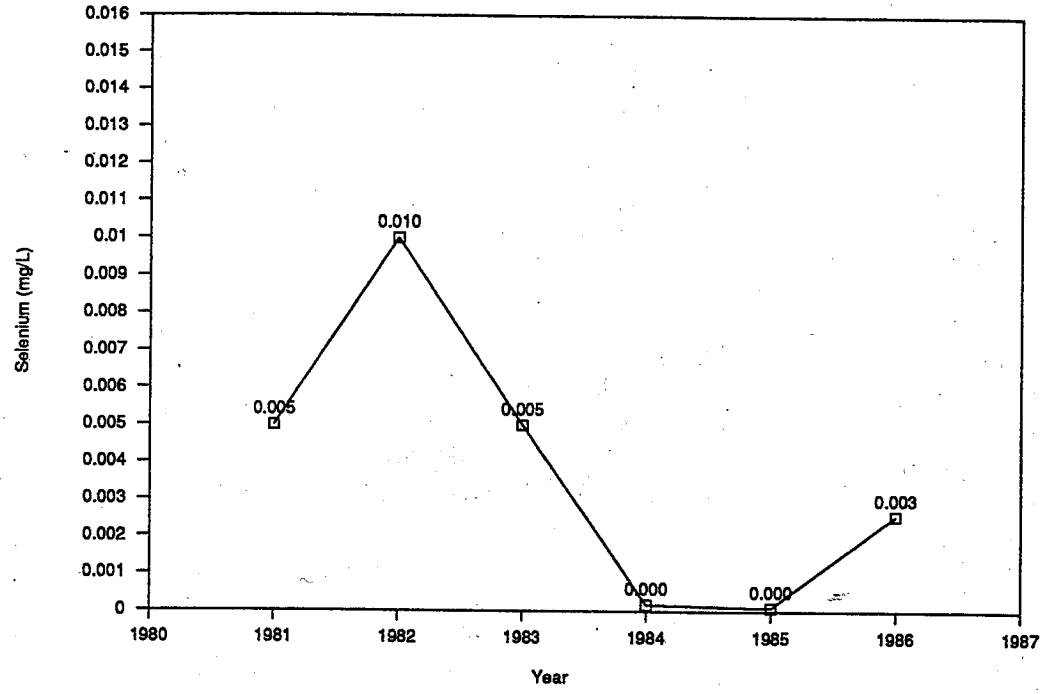
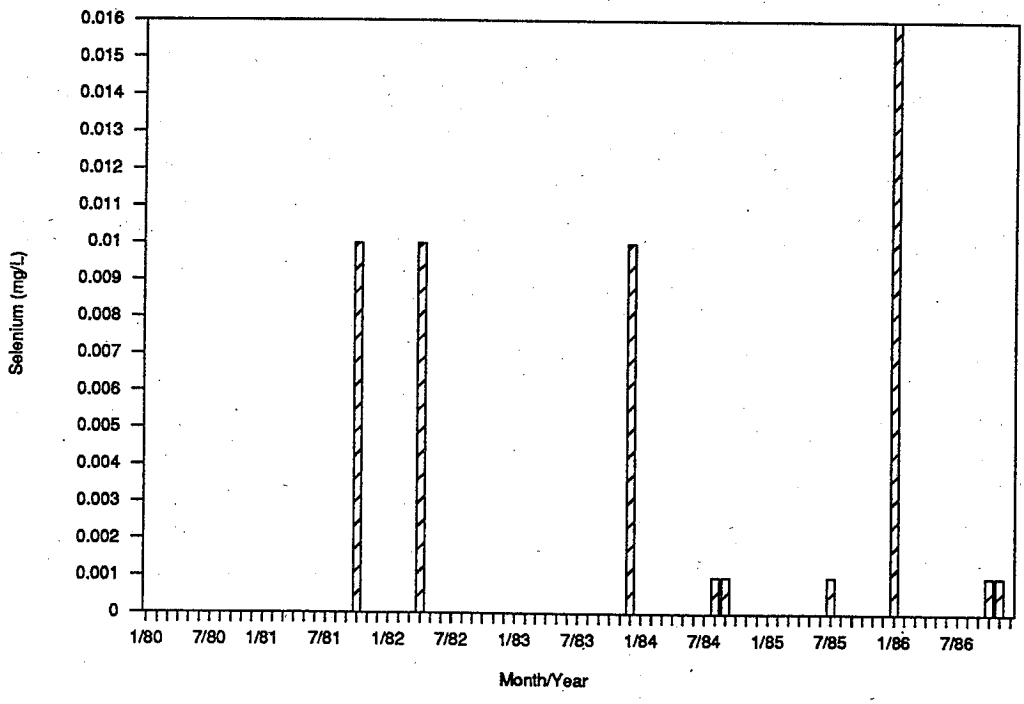


Figure 105

STC 6467 -- Selenium Levels



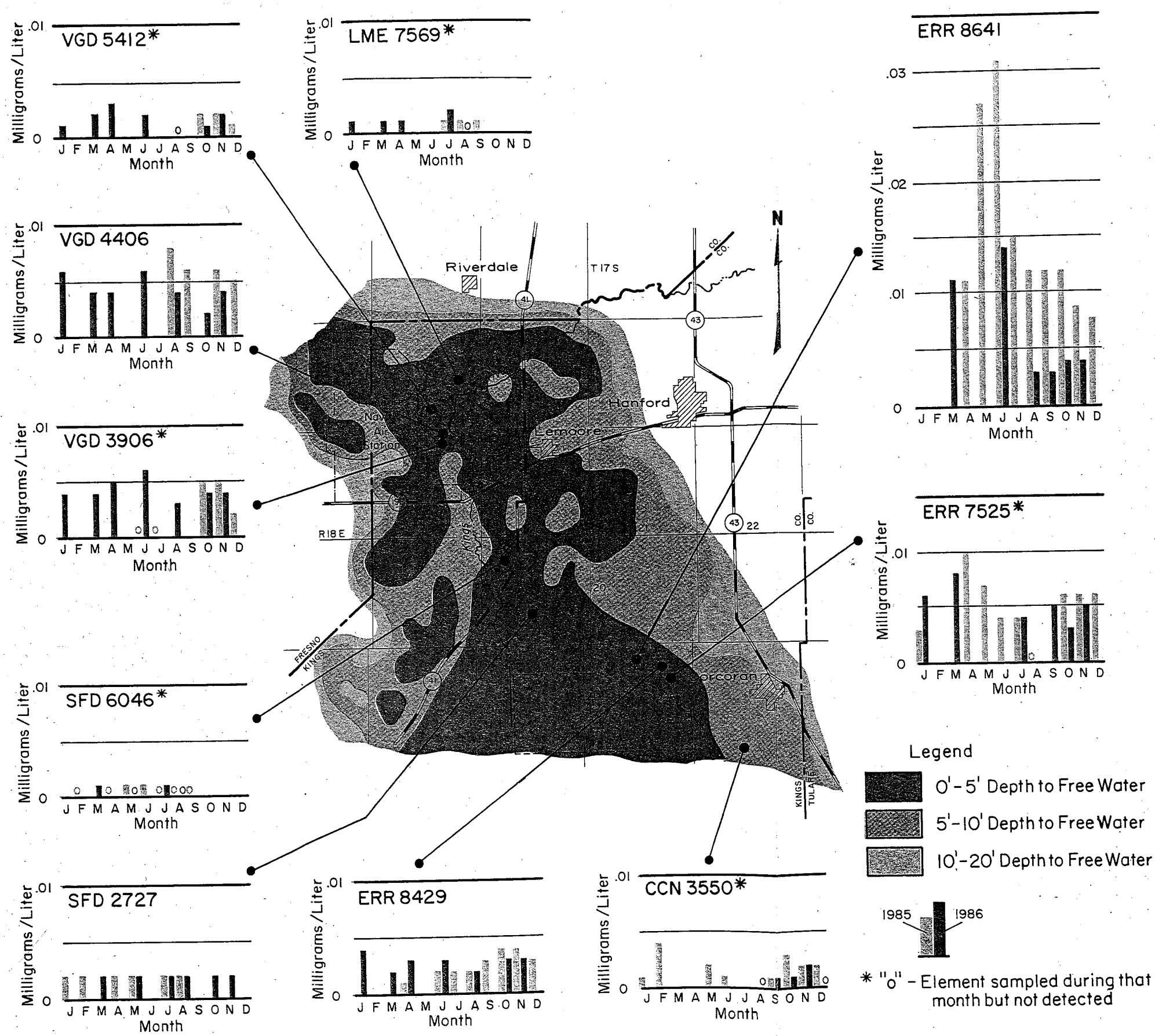


Figure 106A. Selenium Levels, 1985-1986 for San Joaquin Valley, Southern Area--Lemoore/Corcoran Stations

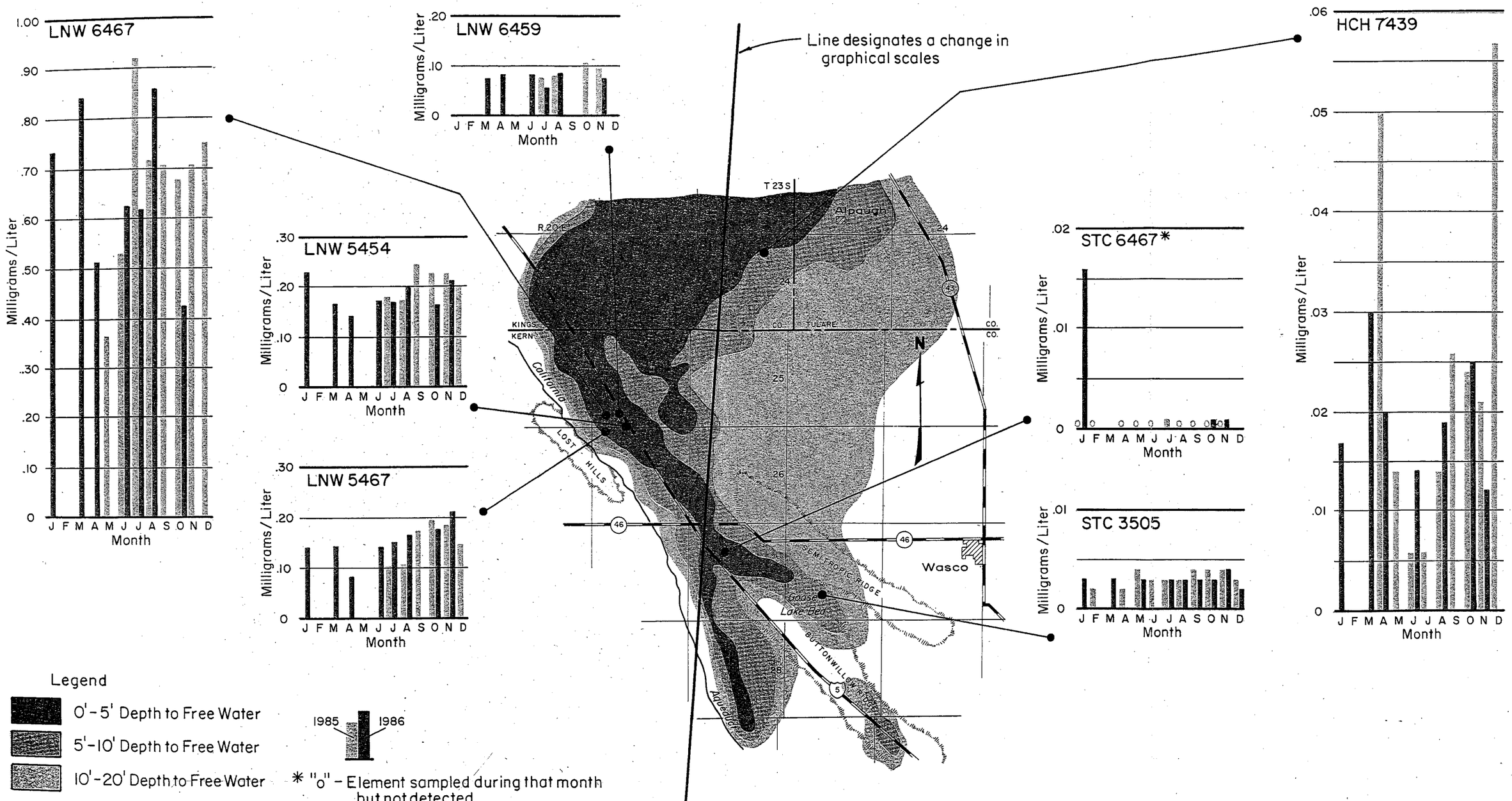


Figure 106B. Selenium Levels, 1985-1986 for San Joaquin Valley, Southern Area -- Lost Hills/Semitropic Stations

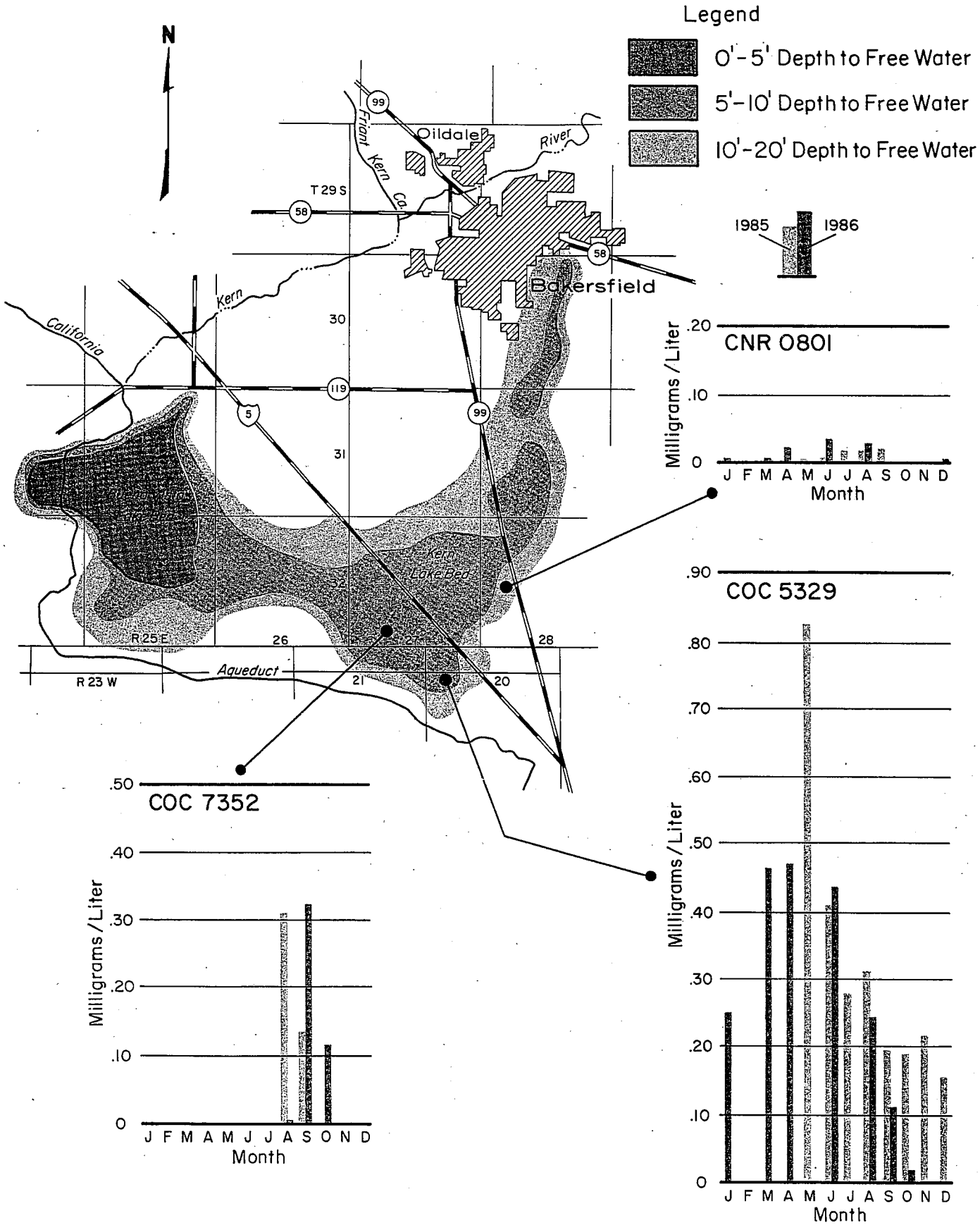


Figure 106C. Selenium Levels, 1985-1986 for San Joaquin Valley, Southern Area--Kern Lake Bed Stations

1987 MONITORING PROGRAM

The 1987 program will be a continuation of the existing program. Pesticide analysis will be performed on a quarterly basis to provide a view of current pesticide use and residue concentrations. Besides placing special emphasis on arsenic and selenium, the monitoring program will attempt to produce complete monthly analyses of all minerals and trace elements of concern.

An evaluation of the 1986 analyses of the 36 sumps and 2 surface drains indicated that the trace elements cadmium, copper, iron, lead, mercury, silver, and zinc were either not present in the drainage water or that their concentrations were well below drinking water, aquatic life, irrigation, and livestock standards. Consequently, these elements will be deleted from the analysis schedule. In addition, analysis will no longer be performed for nutrients. Due to cropping patterns, some stations may be dropped from the 1986 schedule and new stations added.

Nitrate (NO_3), if not already analyzed for at each site, will be added to the list of monthly analyses. Standard mineral analyses will continue on the current monthly schedule.

Additional efforts will be spent on analysis and data evaluation. Furthermore, historical sump information, physical characteristics of the drainage systems, flows, cropping patterns, and rainfall will be examined in detail to determine what role, if any, these factors play in the chemical composition of agricultural drainage waters.

APPENDIX A

1986 Monthly Drain Flows

1986 MONTHLY DRAIN FLOWS

(acre-feet)

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
Central Surface Stations													
CTL 4504	1188	--	--	1188	--	1188	--	5940	1782	1188	2673	297	15444
DPS 3235	1478	2233	2594	3618	3852	4225	4378	3973	2079	1210	1993	1624	33257
Central Subsurface Stations													
BVS 6016	8.3	--	--	350	--	82.5	--	167	22.8	--	26.6	58.8	716
BVS 8003	2.1	--	--	10.5	--	15.1	--	18.3	7.5	5.1	14.1	2.8	75.5
DPS 1367	16.8	--	--	60.5	--	68.0	--	52.8	15.1	8.8	14.0	11.8	247.8
DPS 2535	9.0	--	--	47.4	--	54.4	--	102.3	28.7	15.0	43.3	9.5	309.6
DPS 3465	0.0	--	--	21.3	--	30.1	--	33.3	11.9	8.7	6.9	1.6	113.8
DPS 4616	3.6	--	--	13.0	--	2.5	--	0.0	0.0	9.9	7.3	0.4	36.7
FBH 2016	1.2	--	--	11.0	--	23.6	--	39.7	10.3	10.9	7.5	2.1	106.3
FBH 8061	8.5	--	--	81.0	--	16.4	--	33.1	11.7	8.9	37.0	4.2	200.8
Southern Subsurface Stations													
CCN 3350	3.7	--	28.8	--	9.4	--	25.2	11.0	7.4	2.9	11.3	3.6	103.0
CNR 0801						no flow data available							
COC 4126	--	--	7.1	2.6	--	6.6	--	3.2	0.7	0.5	0.7	0.4	21.8
COC 5329	7.9	--	23.9	3.7	--	14.3	--	11.6	1.8	0.2	0.1	0.2	63.7
ERR 7525	13.2	--	--	--	44.1	--	92.2	11.4	14.2	3.4	8.7	5.0	186.2
ERR 8429						no flow data available							
ERR 8641	8.4	--	23.4	2.4	--	30.3	--	15.6	3.9	4.4	9.1	4.4	101.9
GSY 0855	0.0	0.0	0.0	--	1.8	0.0	0.0	0.0	0.0	1.3	0.0	0.0	3.1
HCH 7439	0.5	--	5.0	17.9	--	22.4	--	30.4	10.0	19.3	25.4	9.4	134.8
LME 7569						no flow data available							
LNW 5454	10.7	--	73.3	14.1	--	95.4	81.0	26.3	55.2	36.6	29.3	12	433.9
LNW 5467						no flow data avaliable							
LNW 6459	7.9	--	77.3	26.7	--	84.0	88.0	28.2	47.6	30.7	32.4	5.0	427.8
LNW 6467	2.3	--	42.7	18.4	--	87.3	--	118	30.3	7.4	1.9	11.8	320.1
SFD 2727	0.0	--	6.4	--	10.6	--	20.6	15.4	9.1	3.2	1.9	0.8	68.0
SFD 6046	0.0	--	22.9	--	16.2	--	22.7	16.7	13.4	4.9	0.0	0.0	96.8
STC 3505	133	--	174	--	177	--	252	102	123	101	154	51.5	1267.5
STC 5436	7.0	--	65.5	--	24.0	--	55.4	43.9	27.9	6.2	7.1	--	237.0
STC 6467	9.2	--	78.9	--	45.6	--	98.4	45.9	36.9	12.7	15.1	1.8	344.5
VGD 3906	5.9	--	49.0	9.2	--	33.1	--	28.3	14.9	12.6	11.8	--	164.8
VGD 4406	5.1	--	62.0	12.4	--	49.0	--	55.5	18.8	11.6	14.0	16.6	245.0
VGD 5412	10.8	--	84.4	20.8	--	59.1	--	55.1	18.8	16.2	24.6	10.2	300.0

APPENDIX B

1986 Monitoring Station Data

DEFINITIONS OF ABBREVIATIONS AND UNITS USED IN APPENDIX B

Location and Identification

CO - county

10 - Fresno
15 - Kern
16 - Kings
24 - Merced
39 - San Joaquin
50 - Stanislaus

LN - laboratory number

DATE - sampling date

TIME - time sampled

Constituents (in milligrams per liter unless otherwise noted)

Ag - silver
Al - aluminum
As - arsenic
B - boron
Ba - barium
Ca - calcium
Cd - cadmium
Cl - chloride
Co - cobalt
COD - chemical oxygen demand
Cr - chromium (all valences)
Cu - copper
D-NH3 - dissolved ammonia
D-ORTHO - dissolved orthophosphate
Fe - iron
FEC - field electrical conductivity (micromhos per centimeter)
FpH - field pH (pH units)
HARD - total hardness
Hg - mercury
K - potassium
LEC - laboratory electrical conductivity (micromhos per centimeter)
LpH - laboratory pH (pH units)
Mg - magnesium
Mn - manganese
Mo - molybdenum
Na - sodium
NH3-ORG - total ammonia and organic nitrogen as nitrogen
Ni - nickel
NO3 - dissolved nitrate as nitrogen
NO3+NO2 - dissolved nitrate and dissolved nitrite as nitrogen
Pb - lead
Se - selenium
SO4 - sulfate
Sr - strontium
SS - suspended solids
TALK - total alkalinity (as CaCO3)
TDS - total dissolved solids
Temp - temperature (degrees Celsius)
T-P - total phosphorus
V - vanadium
Zn - zinc

Pesticides (in milligrams per liter)

Type1 and Type2 - types of pesticides

A - no sample taken
C - chlorinated hydrocarbon
P - organic phosphorus
X - combinations of chlorinated hydrocarbon, organic phosphorus, and organic nitrogen

Name1 and Name2 - names of pesticides

Unknown - unidentified pesticide
NA - not applicable

Conc1 and Conc2 - concentrations of pesticides

Central Surface Stations

1986 Monitoring Station Data

Central Surface Stations

STATION	LN	DATE	TIME	CO	TEMP	FEC	FpH	HARD	Ca	Mg	Na	K	TALK	LpH	SO4	Cl	NO3	B
Central Surface Stations																		
DPS 3235	2284	14-Jan-86	1145	10	9	--	8	791	226	55	402	6.1	132	8	844	404	114	5.3
	2466	09-Apr-86	1130	10	17	--	8	793	220	59	442	4.5	148	8	901	445	108	6.2
	2613	11-Jun-86	1000	10	20	--	7.9	887	238	71	501	4	164	8.1	956	481	90	6.9
	2699	12-Aug-86	1100	10	24	--	7.8	600	158	50	364	5.5	151	7.9	694	317	--	4.5
	2783	09-Sep-86	1115	10	20	--	8.1	675	168	62	400	3.5	216	8.2	719	377	--	4.8
	2897	06-Oct-86	1045	10	19	--	8	--	--	--	--	--	--	8	--	--	--	--
	2935	12-Nov-86	1220	10	14	--	7.7	--	--	--	--	--	--	8	--	--	--	--
	3025	01-Dec-86	1230	10	9	--	7.8	--	--	--	--	--	--	--	--	--	--	--
CTL 4505	2283	14-Jan-86	930	24	9	--	8.2	759	215	54	405	5	132	8	829	412	88	5.1
	2463	09-Apr-86	935	24	17	--	7.9	684	180	57	361	5.2	112	7.9	834	354	58	3.9
	2610	11-Jun-86	835	24	22	--	7.9	471	116	44	314	4.4	112	8	710	187	37	3.2
	2696	12-Aug-86	845	24	25	--	7.8	529	131	49	314	4.9	138	8.2	616	254	--	3.4
	2780	09-Sep-86	845	24	21	--	8.4	195	47	19	85	2.7	84	8.4	161	96	--	0.8
	2894	06-Oct-86	815	24	23	--	8	--	--	--	--	--	--	8	--	--	--	--
	2932	12-Nov-86	945	24	11	--	8	--	--	--	--	--	--	8	--	--	--	--
	3022	01-Dec-86	1030	24	8	--	7.8	--	--	--	--	--	--	--	--	--	--	--

1986 Monitoring Station Data

Central Surface Stations (continued)

STATION	LN	DATE	Fe	Pb	Mn	Hg	Se	Ag	Zn	Al	Co	Mo	Ni	Sr	V	SS
Central Surface Stations																
DPS 3235	2284	14-Jan-86	0.03	0	0.02	--	0.044	--	--	--	0	--	--	2.7	--	--
	2466	09-Apr-86	--	--	--	--	0.051	--	--	--	--	--	--	--	--	--
	2613	11-Jun-86	--	--	--	--	0.05	--	--	--	--	--	--	--	--	--
	2699	12-Aug-86	0.01	0	0.08	0	0.044	0	0	0	0	--	0	2.4	--	--
	2783	09-Sep-86	0.02	--	0.08	--	0.053	--	0.01	--	--	--	--	2.6	--	--
	2897	06-Oct-86	0.03	--	0.13	--	0.071	--	0	--	--	0.007	--	5.1	--	--
	2935	12-Nov-86	0.516	--	0.089	--	0.039	--	0.002	--	--	0.005	--	1.4	--	--
	3025	01-Dec-86	0.005	--	0.027	--	0.048	--	0.005	--	--	0.006	--	1.5	--	--
CTL 4505	2283	14-Jan-86	0.04	0	0.1	--	0.046	--	--	--	--	--	--	2.7	--	--
	2463	09-Apr-86	--	--	--	--	0.041	--	--	--	--	--	--	--	--	--
	2610	11-Jun-86	--	--	--	--	0.039	--	--	--	--	--	--	--	--	--
	2696	12-Aug-86	0.01	0	0.04	0	0.049	0	0	0	0	--	0	1.9	--	--
	2780	09-Sep-86	0.01	--	0.01	--	0.006	--	0	--	--	--	--	0.6	--	--
	2894	06-Oct-86	0.1	--	0.1	--	0.059	--	0	--	--	0.017	--	2.9	--	--
	2932	12-Nov-86	2.13	--	0.095	--	0.032	--	0.014	--	--	0.01	--	1.6	--	--
	3022	01-Dec-86	0.005	--	0.19	--	0.04	--	0.005	--	--	0.01	--	1.5	--	--

1986 Monitoring Station Data

Central Surface Stations (continued)

STATION	LN	DATE	TDS	LEC	COD	NH3-ORG	NO3+NO2	D-NH3	D-ORTHO	T-P	As	Ba	Cd	Cr	Cu
Central Surface Stations															
DPS 3235	2284	14-Jan-86	2220	3130	--	--	--	--	--	0.3	0.002	0	--	0.02	0
	2466	09-Apr-86	2420	3370	--	--	--	--	--	--	--	--	--	--	--
	2613	11-Jun-86	2650	3650	--	--	--	--	--	--	--	--	--	--	--
	2699	12-Aug-86	1810	2680	--	2.1	13	0.26	0.04	0.51	0.003	0	0	0	0
	2783	09-Sep-86	2110	2910	--	3	13	0.41	0.01	0.17	0.003	--	--	0.008	0
	2897	06-Oct-86	3420	4460	--	1	23	0.03	0	0.08	0.003	--	--	0.014	0
	2935	12-Nov-86	1620	2370	--	--	--	--	--	--	0.002	--	--	0.005	0.005
	3025	01-Dec-86	--	2540	--	--	--	--	--	--	0.002	--	--	0.015	0.005
CTL 4505	2283	14-Jan-86	2200	3160	--	--	--	--	--	0.51	0.002	0	--	0	0.01
	2463	09-Apr-86	2060	2880	--	--	--	--	--	--	--	--	--	--	--
	2610	11-Jun-86	1550	2200	--	--	--	--	--	--	--	--	--	--	--
	2696	12-Aug-86	1620	2360	--	1.1	9.1	0.07	0.06	0.16	0.003	0	0	0	0
	2780	09-Sep-86	527	806	--	1.1	2.3	0.01	0.04	0.2	0.003	--	--	0.005	0
	2894	06-Oct-86	2340	3140	--	1.5	11	0.07	0.02	0.15	0.004	--	--	0.005	0
	2932	12-Nov-86	1670	2410	--	--	--	--	--	--	0.003	--	--	0.01	0.006
	3022	01-Dec-86	--	2740	--	--	--	--	--	--	0.002	--	--	0.009	0.005

1986 Monitoring Station Data

Central Surface Stations (continued)

STATION	LN	DATE	TYPE1	NAME1	CONC1	TYPE2	NAME2	CONC2
Central Surface Stations								
DPS 3235	2284	14-Jan-86	C	UNKNOWNS	0.00016	P	UNKNOWNS	0.00065
	2466	09-Apr-86	A	NA	--	A	NA	--
	2613	11-Jun-86	A	NA	--	A	NA	--
	2699	12-Aug-86	A	NA	--	A	NA	--
	2783	09-Sep-86	A	NA	--	A	NA	--
	2897	06-Oct-86	A	NA	--	A	NA	--
	2935	12-Nov-86	A	NA	--	A	NA	--
	3025	01-Dec-86	A	NA	--	A	NA	--
CTL 4505	2283	14-Jan-86	X	ATRAZSIMAZ	0.00016	P	UNKNOWNS	0.00043
	2463	09-Apr-86	A	NA	--	A	NA	--
	2610	11-Jun-86	A	NA	--	A	NA	--
	2696	12-Aug-86	A	NA	--	A	NA	--
	2780	09-Sep-86	A	NA	--	A	NA	--
	2894	06-Oct-86	A	NA	--	A	NA	--
	2932	12-Nov-86	A	NA	--	A	NA	--
	3022	01-Dec-86	A	NA	--	A	NA	--

Central Subsurface Stations

1986 Monitoring Station Data

Central Subsurface Stations

STATION	LN	DATE	TIME	CO	TEMP	FEC	FpH	HARD	Ca	Mg	Na	K	TALK	LpH	SO4	Cl	NO3	B
Central Subsurface Stations																		
BVS 6016	2285	14-Jan-86	1300	10	16	--	7	1550	374	149	709	4.5	168	7.8	1840	646	103	5.5
	2461	02-Apr-86	1210	10	17	--	7.3	1870	449	183	980	6	186	7.8	2290	825	134	6.7
	2608	11-Jun-86	1040	10	19	--	7.3	1780	432	171	905	6.1	187	7.9	2270	778	121	6.6
	2725	12-Aug-86	1215	10	22	--	8	1370	322	137	746	5.2	207	8	1720	593	--	5.4
	2778	09-Sep-86	1230	10	20	--	7	1240	306	115	621	4.6	169	8	1470	583	--	4.9
	2930	12-Nov-86	1330	10	18	--	7.3	--	--	--	--	--	--	8	--	--	--	--
	3020	01-Dec-86	1330	10	18	--	7.2	--	--	--	--	--	--	--	--	--	--	--
BVS 8003	2462	09-Apr-86	1230	10	16	--	7.4	2090	368	285	2000	3.1	243	7.8	4720	745	24	24
	2609	11-Jun-86	1100	10	19	--	7.4	1640	309	212	1780	3	277	7.9	3980	642	26	20
	2695	12-Aug-86	1245	10	23	--	7.2	1160	310	214	1570	3.1	281	8.1	3440	598	--	12
	2779	09-Sep-86	1300	10	23	--	7.3	1840	348	237	1890	2.9	287	8	4460	703	--	23
	2893	06-Oct-86	1130	10	21	--	7.3	--	--	--	--	--	--	8	--	--	--	--
	2931	12-Nov-86	1350	10	18	--	7.2	--	--	--	--	--	--	8	--	--	--	--
	3021	01-Dec-86	1400	10	17	--	7.3	--	--	--	--	--	--	--	--	--	--	--
DPS 1367	2288	14-Jan-86	1015	24	16	--	7.3	1580	468	101	515	2	122	7.9	1240	838	185	6
	2464	09-Apr-86	1015	24	17.4	--	7.2	1460	417	101	531	2.2	144	7.8	1170	804	186	6
	2611	11-Jun-86	905	24	19	--	7.4	1650	476	113	514	2.4	127	7.9	1220	829	174	5.9
	2697	12-Aug-86	930	24	22	--	7.2	1570	444	112	512	2.5	122	8.1	1160	848	--	5.8
	2781	09-Sep-86	935	24	20	--	7.3	1660	477	114	510	2.1	118	8	1230	875	--	5.4
	2895	06-Oct-86	845	24	20	--	7.4	--	--	--	--	--	--	8	--	--	--	--
	3023	01-Dec-86	1000	24	18	--	7.7	--	--	--	--	--	--	--	--	--	--	--
DPS 2535	2289	14-Jan-86	1100	10	15	--	7	1940	444	202	1670	2	210	7.7	2750	1760	85	21
	2465	09-Apr-86	1055	10	16	--	7.2	2170	472	240	1760	2.4	206	7.6	2850	1900	90	21
	2612	11-Jun-86	935	10	18	--	7.2	2230	508	233	1800	3	216	7.8	3050	1860	88	23
	2698	12-Aug-86	1030	10	21	--	7.1	2140	465	238	1780	2.9	207	8	2810	1900	--	22
	2782	09-Sep-86	1030	10	20	--	7.3	2150	465	240	1780	2.5	197	8	2990	1950	--	23
	2896	06-Oct-86	945	10	21	--	7.2	--	--	--	--	--	--	7.9	--	--	--	--
	2934	12-Nov-86	1130	10	18	--	7.3	--	--	--	--	--	--	7.8	--	--	--	--
	3024	01-Dec-86	1130	10	18	--	7.2	--	--	--	--	--	--	--	--	--	--	--
DPS 3465	2467	09-Apr-86	1035	10	16	--	7	2100	508	202	1180	2.8	240	7.5	2160	1410	108	16
	2614	11-Jun-86	920	10	18	--	7	2100	519	196	1170	3.4	303	7.8	2110	1410	99	17
	2700	12-Aug-86	1000	10	21	--	7	1740	394	183	1140	3.3	359	7.9	1940	1260	--	17
	2784	09-Sep-86	1000	10	20	--	7.3	--	463	197	1180	3.1	242	7.8	1180	1440	--	17
	2898	06-Oct-86	915	10	21	--	7.2	--	--	--	--	--	--	7.9	--	--	--	--
	2936	12-Nov-86	1100	10	18	--	7.2	--	--	--	--	--	--	7.9	--	--	--	--
	3026	01-Dec-86	1100	10	18	--	7.2	--	--	--	--	--	--	--	--	--	--	--
DPS 4616	2291	14-Jan-86	1115	10	14	--	7.2	2280	454	278	1340	2.8	312	7.9	3550	859	30	36
	2468	09-Apr-86	1115	10	15	--	7.2	2350	415	318	1450	3.2	306	7.7	3700	1070	29	38
	2899	06-Oct-86	1015	10	20	--	7.2	--	--	--	--	--	--	8	--	--	--	--
	2937	12-Nov-86	1200	10	16	--	7.5	--	--	--	--	--	--	7.9	--	--	--	--
	3027	01-Dec-86	1200	10	16	--	7.2	--	--	--	--	--	--	--	--	--	--	--

1986 Monitoring Station Data

Central Subsurface Stations (continued)

STATION	LN	DATE	TDS	LEC	COD	NH3-ORG	NO3+NO2	D-NH3	D-ORTHO	T-P	As	Ba	Cd	Cr	Cu
Central Subsurface Stations															
BVS 6016	2285	14-Jan-86	4220	5310	--	--	--	--	--	0.04	0.001	0	--	0.01	0
	2461	02-Apr-86	5270	6450	--	--	--	--	--	--	--	--	--	--	--
	2608	11-Jun-86	5020	6120	--	--	--	--	--	--	--	--	--	--	--
	2725	12-Aug-86	4110	5230	--	0.7	24	0	0.02	0.02	0.001	0	0	0	0
	2778	09-Sep-86	3760	4640	--	0.5	34	0	0.03	0.04	0.001	--	--	0.012	0
	2930	12-Nov-86	5900	7140	--	--	--	--	--	--	0.001	--	--	0.005	0.005
	3020	01-Dec-86	--	5730	--	--	--	--	--	--	0.001	--	--	0.024	0.005
BVS 8003	2462	09-Apr-86	8970	9960	--	--	--	--	--	--	--	--	--	--	--
	2609	11-Jun-86	7440	8530	--	--	--	--	--	--	--	--	--	--	--
	2695	12-Aug-86	7020	8110	--	0.6	7.6	0	0.06	--	0.003	0	0	0.01	0
	2779	09-Sep-86	8490	9350	--	0.6	7.4	0	0.07	0.08	0.003	--	--	0.02	0
	2893	06-Oct-86	8710	9540	--	0.6	2	0.01	0.07	0.08	0.004	--	--	0.017	0
	2931	12-Nov-86	7050	8250	--	--	--	--	--	--	0.003	--	0	0.021	0.005
	3021	01-Dec-86	--	9660	--	--	--	--	--	--	0.002	--	--	0.022	0.005
DPS 1367	2288	14-Jan-86	3600	4880	--	--	--	--	--	0.02	0	0	--	0.02	0
	2464	09-Apr-86	3600	4770	--	--	--	--	--	--	--	--	--	--	--
	2611	11-Jun-86	3690	4850	--	--	--	--	--	--	--	--	--	--	--
	2697	12-Aug-86	3680	4880	--	0.2	41	0	0.01	0.01	0	0	0	0.01	0
	2781	09-Sep-86	3930	4930	--	0.4	43	0	0.02	0.02	0.001	--	--	0.025	0
	2895	06-Oct-86	3870	4950	--	0.4	38	0	0.01	0.02	0.001	--	--	0.023	0
	3023	01-Dec-86	--	4900	--	--	--	--	--	--	0.001	--	--	0.027	0.005
DPS 2535	2289	14-Jan-86	7480	9660	--	--	--	--	--	0.02	0	0	--	0.08	0
	2465	09-Apr-86	7840	9860	--	--	--	--	--	--	--	--	--	--	--
	2612	11-Jun-86	8220	10100	--	--	--	--	--	--	--	--	--	--	--
	2698	12-Aug-86	8030	10200	--	0.4	23	0	0.02	0.02	0.001	0	0	0.08	0
	2782	09-Sep-86	8410	10100	--	0.4	23	0	0.02	0.02	0.001	--	--	0.128	0
	2896	06-Oct-86	8430	10200	--	0.5	19	0.01	0.02	0.02	0.001	--	--	0.13	0
	2934	12-Nov-86	8090	10100	--	--	--	--	--	--	0.001	--	--	0.122	0.005
	3024	01-Dec-86	--	9790	--	--	--	--	--	--	0.001	--	--	0.14	0.005
DPS 3465	2467	09-Apr-86	6100	7740	--	--	--	--	--	--	--	--	--	--	--
	2614	11-Jun-86	6080	7910	--	--	--	--	--	--	--	--	--	--	--
	2700	12-Aug-86	5600	7340	--	0.8	24	0	0	0.04	0.001	0	0	0.03	0
	2784	09-Sep-86	6360	7880	--	0.8	25	0	0.02	0.03	0.001	--	--	0.027	0
	2898	06-Oct-86	6810	8340	--	0.8	24	0.2	0.02	0.02	0.001	--	--	0.063	0
	2936	12-Nov-86	6560	8260	--	--	--	--	--	--	0.001	--	--	0.058	0.005
	3026	01-Dec-86	--	7430	--	--	--	--	--	--	0.001	--	--	0.049	0.005
DPS 4616	2291	14-Jan-86	7320	8290	--	--	--	--	--	0.08	0.002	0	--	0.01	0
	2468	09-Apr-86	7920	8840	--	--	--	--	--	--	--	--	--	--	--
	2899	06-Oct-86	7900	8530	--	0.5	7.6	0.02	--	0.08	0.003	--	--	0.017	0
	2937	12-Nov-86	8520	9390	--	--	--	--	--	--	0.002	--	--	0.018	0.005
	3027	01-Dec-86	--	9440	--	--	--	--	--	--	0.002	--	--	0.019	0.005

1986 Monitoring Station Data

Central Subsurface Stations (continued)

STATION	LN	DATE	Fe	Pb	Mn	Hg	Se	Ag	Zn	Al	Co	Mo	Ni	Sr	V	SS
Central Subsurface Stations																
BVS 6016	2285	14-Jan-86	0.02	0	0	--	0.081	--	--	--	0	--	--	3.9	--	--
	2461	02-Apr-86	--	--	--	--	0.092	--	--	--	--	--	--	--	--	--
	2608	11-Jun-86	--	--	--	--	0.097	--	--	--	--	--	--	--	--	--
	2725	12-Aug-86	0	0	0.01	0	0.343	0	0	0	0	--	0	3.9	--	--
	2778	09-Sep-86	0.01	--	0	--	0.114	--	0	--	--	--	--	3.2	--	--
	2930	12-Nov-86	0.035	--	0.016	--	0.11	--	0.005	--	--	0.018	--	4.4	--	--
	3020	01-Dec-86	0.006	--	0.005	--	0.074	--	0.005	--	--	0.019	--	2.8	--	--
BVS 8003	2462	09-Apr-86	--	--	--	--	0.19	--	--	--	--	--	--	--	--	--
	2609	11-Jun-86	--	--	--	--	0.166	--	--	--	--	--	--	--	--	--
	2695	12-Aug-86	0	0	0.02	0	0.149	0	0	0	0	--	0	4.5	--	--
	2779	09-Sep-86	0	--	0	--	0.202	--	0	--	--	--	--	4.4	--	--
	2893	06-Oct-86	0	--	0	--	0.196	--	0	--	--	0.078	--	5.2	--	--
	2931	12-Nov-86	0.006	--	0.005	--	0.128	--	0.005	--	--	0.021	--	3.5	--	--
	3021	01-Dec-86	0.005	--	0.005	--	0.117	--	0.005	--	--	0.13	--	3.4	--	--
DPS 1367	2288	14-Jan-86	0.02	0	0	--	0.1	--	--	--	0	0	--	5.4	--	--
	2464	09-Apr-86	--	--	--	--	0.061	--	--	--	--	--	--	--	--	--
	2611	11-Jun-86	--	--	--	--	0.093	--	--	--	--	--	--	--	--	--
	2697	12-Aug-86	0	0	0	0	0.466	0	0	0	0	--	0	5.7	--	--
	2781	09-Sep-86	0.01	--	0	--	0.113	--	0	--	--	--	--	6.2	--	--
	2895	06-Oct-86	0.01	--	0	--	0.144	--	0.01	--	--	0.008	--	6.1	--	--
	3023	01-Dec-86	0.005	--	0.005	--	0.138	--	0.005	--	--	0.005	--	4.2	--	--
DPS 2535	2289	14-Jan-86	0.02	0	0	--	0.043	--	--	--	0	--	0	9.9	--	--
	2465	09-Apr-86	--	--	--	--	0.04	--	--	--	--	--	--	--	--	--
	2612	11-Jun-86	--	--	--	--	0.04	--	--	--	--	--	--	--	--	--
	2698	12-Aug-86	0	0	0	0.001	0.048	0	0	0	0	--	0	12	--	--
	2782	09-Sep-86	0	--	0	--	0.051	--	0	--	--	--	--	11	--	--
	2896	06-Oct-86	0.03	--	0	--	0.048	--	0	--	--	0.015	--	12	--	--
	2934	12-Nov-86	0.005	--	0.005	--	0.044	--	0.005	--	--	0.022	--	11	--	--
	3024	01-Dec-86	0.0005	--	0.005	--	0.04	--	0.005	--	--	0.011	--	7.9	--	--
DPS 3465	2467	09-Apr-86	--	--	--	--	0.025	--	--	--	--	--	--	--	--	--
	2614	11-Jun-86	--	--	--	--	0.026	--	--	--	--	--	--	--	--	--
	2700	12-Aug-86	0	0	0.06	0.001	0.02	0	0	0	0	--	0	9.5	--	--
	2784	09-Sep-86	0	--	0.08	--	0.028	--	0	--	--	--	--	11	--	--
	2898	06-Oct-86	0.02	--	0.07	--	0.029	--	0	--	--	0.008	--	13	--	--
	2936	12-Nov-86	0.005	--	0.102	--	0.018	--	0.005	--	--	0.005	--	11	--	--
	3026	01-Dec-86	0.005	--	0.185	--	0.026	--	0.005	--	--	0.006	--	7.2	--	--
DPS 4616	2291	14-Jan-86	0.01	0	0.03	--	0.013	--	--	--	0	--	--	5.4	--	--
	2468	09-Apr-86	--	--	--	--	0.012	--	--	--	--	--	--	--	--	--
	2899	06-Oct-86	0.02	--	0.07	--	0.014	--	0	--	--	0.046	--	5.6	--	--
	2937	12-Nov-86	0.005	--	0.054	--	0.011	--	0.005	--	--	0.014	--	4.4	--	--
	3027	01-Dec-86	0.005	--	0.061	--	0.005	--	0.005	--	--	0.045	--	3.8	--	--

1986 Monitoring Station Data

Central Subsurface Stations (continued)

STATION	LN	DATE	TYPE1	NAME1	CONC1	TYPE2	NAME2	CONC2
Central Subsurface Stations								
BVS 6016	2285	14-Jan-86	A	NA	--	A	NA	--
	2461	02-Apr-86	A	NA	--	A	NA	--
	2608	11-Jun-86	A	NA	--	A	NA	--
	2725	12-Aug-86	A	NA	--	A	NA	--
	2778	09-Sep-86	A	NA	--	A	NA	--
	2930	12-Nov-86	A	NA	--	A	NA	--
	3020	01-Dec-86	A	NA	--	A	NA	--
BVS 8003	2462	09-Apr-86	A	NA	--	A	NA	--
	2609	11-Jun-86	A	NA	--	A	NA	--
	2695	12-Aug-86	A	NA	--	A	NA	--
	2779	09-Sep-86	A	NA	--	A	NA	--
	2893	06-Oct-86	A	NA	--	A	NA	--
	2931	12-Nov-86	A	NA	--	A	NA	--
	3021	01-Dec-86	A	NA	--	A	NA	--
DPS 1367	2288	14-Jan-86	A	NA	--	A	NA	--
	2464	09-Apr-86	A	NA	--	A	NA	--
	2611	11-Jun-86	A	NA	--	A	NA	--
	2697	12-Aug-86	A	NA	--	A	NA	--
	2781	09-Sep-86	A	NA	--	A	NA	--
	2895	06-Oct-86	A	NA	--	A	NA	--
	3023	01-Dec-86	A	NA	--	A	NA	--
DPS 2535	2289	14-Jan-86	A	NA	--	A	NA	--
	2465	09-Apr-86	A	NA	--	A	NA	--
	2612	11-Jun-86	A	NA	--	A	NA	--
	2698	12-Aug-86	A	NA	--	A	NA	--
	2782	09-Sep-86	A	NA	--	A	NA	--
	2896	06-Oct-86	A	NA	--	A	NA	--
	2934	12-Nov-86	A	NA	--	A	NA	--
	3024	01-Dec-86	A	NA	--	A	NA	--
DPS 3465	2467	09-Apr-86	A	NA	--	A	NA	--
	2614	11-Jun-86	A	NA	--	A	NA	--
	2700	12-Aug-86	A	NA	--	A	NA	--
	2784	09-Sep-86	A	NA	--	A	NA	--
	2898	06-Oct-86	A	NA	--	A	NA	--
	2936	12-Nov-86	A	NA	--	A	NA	--
	3026	01-Dec-86	A	NA	--	A	NA	--
DPS 4616	2291	14-Jan-86	A	NA	--	A	NA	--
	2468	09-Apr-86	A	NA	--	A	NA	--
	2899	06-Oct-86	A	NA	--	A	NA	--
	2937	12-Nov-86	A	NA	--	A	NA	--
	3027	01-Dec-86	A	NA	--	A	NA	--

1986 Monitoring Station Data

Central Subsurface Stations (continued)

STATION	LN	DATE	TIME	CO	TEMP	FEC	FpH	HARD	Ca	Mg	Na	K	TALK	LpH	SO4	Cl	NO3	B
Central Subsurface Stations																		
FBH 2016	2469	09-Apr-86	1320	10	16	--	7.5	1700	405	168	688	2.3	134	7.9	2520	349	39	7.2
	2616	11-Jun-86	1145	10	18	--	7.5	2130	428	258	1440	2.7	143	8	4020	637	59	15
	2702	12-Aug-86	1330	10	23	--	7.4	2300	379	328	1850	3.2	169	8.1	4780	862	--	19
	2786	09-Sep-86	1400	10	20	--	7.4	1970	357	262	1700	2.7	202	8.2	4270	739	--	16
	2900	06-Oct-86	1230	10	21	--	7.4	--	--	--	--	--	--	7.9	--	--	--	--
	2938	12-Nov-86	1510	10	18	--	7.9	--	--	--	--	--	--	8	--	--	--	--
FBH 8061	2297	14-Jan-86	1330	10	14	--	7.4	1560	364	158	947	2	249	7.9	2580	444	30	12
	2470	09-Apr-86	1245	10	16	--	7.3	1420	324	149	745	1.2	222	7.7	2360	258	23	9.6
	2617	11-Jun-86	1115	10	18	--	7.3	1360	342	123	578	1.7	165	8.1	1940	264	16	7.4
	2787	09-Sep-86	1320	10	20	--	7.3	1440	361	130	684	1.8	160	8.2	2330	220	--	29
	2901	06-Oct-86	1200	10	22	--	7.2	--	--	--	--	--	--	8.1	--	--	--	--
	2939	12-Nov-86	1430	10	18	--	7.3	--	--	--	--	--	--	8	--	--	--	--
	3029	01-Dec-86	1415	10	17	--	7.3	--	--	--	--	--	--	--	--	--	--	--
HMH 7516	2300	14-Jan-86	1215	10	17	--	7.2	996	300	60	501	3.6	151	7.9	971	502	172	7.2
	2471	09-Apr-86	1150	10	17	--	7.3	721	213	46	372	3.2	156	7.8	689	383	129	5.5
	2618	11-Jun-86	1020	10	19	--	7.2	1740	526	104	610	3.2	154	8	1760	673	170	9
	2704	12-Aug-86	1145	10	21	--	7	1040	312	63	447	4.2	161	8.1	1070	476	--	6.9
	2788	09-Sep-86	1155	10	21	--	7.4	696	206	44	311	13	117	8	680	322	--	4.4
	2902	06-Oct-86	1100	10	20	--	7.2	--	--	--	--	--	--	8	--	--	--	--
	2940	12-Nov-86	1300	10	19	--	7.3	--	--	--	--	--	--	8	--	--	--	--
	3030	01-Dec-86	1300	10	18	--	7.3	--	--	--	--	--	--	--	--	--	--	--

1986 Monitoring Station Data

Central Subsurface Stations (continued)

STATION	LN	DATE	TDS	LEC	COD	NH3-ORG	NO3+NO2	D-NH3	D-ORTHO	T-P	As	Ba	Cd	Cr	Cu
Central Subsurface Stations															
FBH 2016	2469	09-Apr-86	4520	5110	--	--	--	--	--	--	--	--	--	--	--
	2616	11-Jun-86	7140	8130	--	--	--	--	--	--	--	--	--	--	--
	2702	12-Aug-86	8840	9820	--	0.6	18	0.01	0.05	0.05	0.002	0	0	0	0
	2786	09-Sep-86	7870	8850	--	0.6	15	0.15	0.05	0.06	0.002	--	--	0.006	0
	2900	06-Oct-86	11200	11700	--	0.7	15	0.02	0.05	0.05	0.003	--	--	0.006	0
	2938	12-Nov-86	10800	11500	--	--	--	--	--	--	0.002	--	--	0.01	0.005
FBH 8061	2297	14-Jan-86	5070	5930	--	--	--	--	--	0.07	0.003	0	--	0.01	0
	2470	09-Apr-86	4390	5110	--	--	--	--	--	--	--	--	--	--	--
	2617	11-Jun-86	3670	4120	--	--	--	--	--	--	--	--	--	--	--
	2787	09-Sep-86	4150	4680	--	0.3	4	0	0.04	0.04	0.002	--	--	0.012	0
	2901	06-Oct-86	3760	4230	--	0.3	2.4	0.04	0.03	0.04	0.003	--	--	0.007	0
	2939	12-Nov-86	5230	6000	--	--	--	--	--	--	0.003	--	--	0.023	0.005
	3029	01-Dec-86	--	5080	--	--	--	--	--	--	0.003	--	--	0.015	0.005
HMH 7516	2300	14-Jan-86	2680	3700	--	--	--	--	--	0.02	0	0	--	0.05	0
	2471	09-Apr-86	2050	2890	--	--	--	--	--	--	--	--	--	--	--
	2618	11-Jun-86	4180	5110	--	--	--	--	--	--	--	--	--	--	--
	2704	12-Aug-86	2730	3710	--	0.6	30	0.02	0.04	0.14	0.001	0	0	0.02	0
	2788	09-Sep-86	1880	2660	--	11	24	2.4	0.12	0.32	0.002	--	--	0.034	0
	2902	06-Oct-86	1720	2380	--	1.2	23	0.06	0.07	0.17	0.002	--	--	0.035	0.005
	2940	12-Nov-86	2590	3500	--	--	--	--	--	--	0.001	--	--	0.074	0.005
	3030	01-Dec-86	--	3400	--	--	--	--	--	--	0	--	--	0.069	0.005

1986 Monitoring Station Data

Central Subsurface Stations (continued)

STATION	LN	DATE	Fe	Pb	Mn	Hg	Se	Ag	Zn	Al	Co	Mo	Ni	Sr	V	SS
Central Subsurface Stations																
FBH 2016	2469	09-Apr-86	--	--	--	--	0.197	--	--	--	--	--	--	--	--	--
	2616	11-Jun-86	--	--	--	--	0.29	--	--	--	--	--	--	--	--	--
	2702	12-Aug-86	0	0	0	0	0.342	0	0	0	0	--	0	5.9	--	--
	2786	09-Sep-86	0	--	0	--	0.275	--	--	--	--	--	--	5.4	--	--
	2900	06-Oct-86	0	--	0	--	0.219	--	0.01	--	--	0.191	--	6.3	--	--
	2938	12-Nov-86	0.005	--	0.005	--	0.275	--	0.005	--	--	0.043	--	5.6	--	--
FBH 8061	2297	14-Jan-86	0.01	0	0	--	0.057	--	--	--	0	--	--	4.8	--	--
	2470	09-Apr-86	--	--	--	--	0.034	--	--	--	--	--	--	--	--	--
	2617	11-Jun-86	--	--	--	--	0.024	--	--	--	--	--	--	--	--	--
	2787	09-Sep-86	0	--	0	--	0.027	--	0	--	--	--	--	4	--	--
	2901	06-Oct-86	0	--	0	--	0.014	--	0.01	--	--	0.096	--	3.9	--	--
	2939	12-Nov-86	0.005	--	0.006	--	0.042	--	0.005	--	--	0.043	--	3.9	--	--
	3029	01-Dec-86	0.005	--	0.005	--	0.032	--	0.005	--	--	0.07	--	3	--	--
HMH 7516	2300	14-Jan-86	0.01	0	0	--	0.045	--	--	--	0	--	--	4.1	--	--
	2471	09-Apr-86	--	--	--	--	0.02	--	--	--	--	--	--	--	--	--
	2618	11-Jun-86	--	--	--	--	0.068	--	--	--	--	--	--	--	--	--
	2704	12-Aug-86	0	0	0	0	0.022	0	0	0	0	--	0	4	--	--
	2788	09-Sep-86	0.01	--	0.01	--	0.022	--	0	--	--	--	--	2.7	--	--
	2902	06-Oct-86	0.03	--	0.008	--	0.016	--	0.007	--	--	0.005	--	2	--	--
	2940	12-Nov-86	0.005	--	0.005	--	0.036	--	0.005	--	--	0.005	--	3.4	--	--
	3030	01-Dec-86	0.008	--	0.005	--	0.033	--	0.005	--	--	0.005	--	2.4	--	--

1986 Monitoring Station Data

Central Subsurface Stations (continued)

STATION	LN	DATE	TYPE1	NAME1	CONC1	TYPE2	NAME2	CONC2
Central Subsurface Stations								
FBH 2016	2469	09-Apr-86	A	NA	--	A	NA	--
	2616	11-Jun-86	A	NA	--	A	NA	--
	2702	12-Aug-86	A	NA	--	A	NA	--
	2786	09-Sep-86	A	NA	--	A	NA	--
	2900	06-Oct-86	A	NA	--	A	NA	--
	2938	12-Nov-86	A	NA	--	A	NA	--
FBH 8061	2297	14-Jan-86	A	NA	--	A	NA	--
	2470	09-Apr-86	A	NA	--	A	NA	--
	2617	11-Jun-86	A	NA	--	A	NA	--
	2787	09-Sep-86	A	NA	--	A	NA	--
	2901	06-Oct-86	A	NA	--	A	NA	--
	2939	12-Nov-86	A	NA	--	A	NA	--
	3029	01-Dec-86	A	NA	--	A	NA	--
HMH 7516	2300	14-Jan-86	A	NA	--	A	NA	--
	2471	09-Apr-86	A	NA	--	A	NA	--
	2618	11-Jun-86	A	NA	--	A	NA	--
	2704	12-Aug-86	A	NA	--	A	NA	--
	2788	09-Sep-86	A	NA	--	A	NA	--
	2902	06-Oct-86	A	NA	--	A	NA	--
	2940	12-Nov-86	A	NA	--	A	NA	--
	3030	01-Dec-86	A	NA	--	A	NA	--

Southern Subsurface Stations

1986 Monitoring Station Data

Southern Subsurface Stations

STATION	LN	DATE	TIME	CO	TEMP	FEC	FpH	HARD	Ca	Mg	Na	K	TALK	LpH	SO4	Cl	NO3	B
Southern Subsurface Stations																		
CCN 3550	2377	26-Mar-86	1230	16	17	--	7.1	892	207	91	561	5.8	358	7.6	1060	368	89	1
	2650	09-Jul-86	900	16	21	--	7	1070	223	125	743	6.6	374	8.3	1440	609	25	1.2
	2705	13-Aug-86	1015	16	23	--	7.3	487	116	48	357	11	338	8.3	672	174	--	0.9
	2789	10-Sep-86	1000	16	21	--	7.1	769	181	77	501	9.8	331	8.4	1030	310	--	0.9
	2903	08-Oct-86	845	16	22	--	7.2	--	--	--	--	--	--	8.2	--	--	--	--
	2941	13-Nov-86	945	16	19	--	6.9	--	--	--	--	--	--	8	--	--	--	--
	3031	02-Dec-86	920	16	19	--	7.1	--	--	--	--	--	--	--	--	--	--	--
CNR 0801	2265	14-Jan-86	1240	15	17	--	7.6	1800	307	252	2660	67	395	7.9	6250	466	37	34
	2378	25-Mar-86	1230	15	17	--	7.3	2400	358	365	2600	72	382	7.6	6520	498	23	31
	2445	08-Apr-86	830	15	17	--	7.6	2530	355	400	2880	70	397	7.8	7160	496	100	31
	2592	10-Jun-86	720	15	20	--	7.6	2670	365	427	3020	70	407	8	7250	571	136	38
	2706	12-Aug-86	1415	15	22	--	7.4	2260	264	388	2680	65	434	8.1	6690	410	--	2
	3032	01-Dec-86	1350	15	21	--	7.7	2330	372	340	3080	67	402	8	7380	541	--	36
COC 4126	2262	14-Jan-86	1410	15	15	--	7.8	1960	568	132	438	7.7	173	7.8	2030	194	303	2.7
	2379	25-Mar-86	1315	15	18	--	7.2	1940	520	155	662	7.7	186	7.6	2290	290	543	3.2
	2446	08-Apr-86	905	15	17	--	7.3	1990	528	164	662	7.7	228	7.7	2310	288	540	3
	2593	10-Jun-86	750	15	20	--	7.2	2140	598	158	637	7.7	286	7.8	2290	259	464	3.2
	2707	12-Aug-86	1215	15	23	--	7	1890	501	155	505	7	282	8.2	2180	207	--	2.9
	2791	09-Sep-86	1300	15	23	--	7.2	1980	546	149	480	7	158	7.9	2290	207	--	2.8
	2905	07-Oct-86	1330	15	23	--	7.3	1990	549	151	467	6.3	128	7.9	2280	269	--	2.9
	3033	01-Dec-86	1520	15	20	--	8.1	2000	563	145	412	6.6	192	7.8	2090	175	--	2.4
COC 5329	2263	14-Jan-86	1205	15	14	--	7.3	1870	531	131	882	5.6	192	8	2610	454	236	4.5
	2380	25-Mar-86	1345	15	17	--	7.2	2050	505	192	1240	5.4	211	7.6	3330	544	223	6.9
	2447	08-Apr-86	930	15	17	--	7.3	1860	475	165	1120	5.4	234	7.7	3310	280	216	6.5
	2594	10-Jun-86	815	15	21	--	7.3	2060	559	161	1130	5.7	283	7.9	3350	498	249	6.8
	2708	12-Aug-86	1320	15	24	--	7.2	1790	478	144	882	5.5	300	8.1	2700	393	--	5.1
	2792	09-Sep-86	1230	15	23	--	6.8	1390	399	95	484	4.7	165	8.2	1910	205	--	3
	2906	07-Oct-86	1300	15	23	--	6.8	865	254	56	203	3.8	146	8.2	960	99	--	1.4
	3034	01-Dec-86	1500	15	20	--	7.1	1980	566	137	726	3.5	191	7.9	2960	142	--	3.4
COC 7352	2730	12-Aug-86	1345	15	24	--	7.3	2470	425	342	3890	14	322	8.1	8900	989	--	28
	2793	09-Sep-86	1200	15	24	--	7.4	3430	387	599	7100	23	333	8.1	15300	1660	--	40
	2907	07-Oct-86	1230	15	25	--	8.1	4040	464	700	8170	34	399	8.1	17100	2050	--	53
ERR 7525	2292	15-Jan-86	1000	16	16	--	7.5	1080	200	142	1730	12	659	8	3160	693	18	4.8
	2381	24-Mar-86	1230	16	17	--	7.4	1280	215	180	1800	13	655	7.8	3420	668	34	4.8
	2651	09-Jul-86	1015	16	20	--	7.4	775	152	96	1040	8.2	553	8.4	1800	417	35	2.9
	2709	13-Aug-86	1125	16	21	--	7.5	951	173	126	1300	10	513	8.3	2450	548	--	3.4
	2794	10-Sep-86	1030	16	21	--	7.4	1010	174	139	1580	12	561	8.4	2920	505	--	4.2
	2908	08-Oct-86	930	16	21	--	7.4	--	--	--	--	--	--	8.3	--	--	--	--
	2946	13-Nov-86	1030	16	20	--	6.8	--	--	--	--	--	--	8.2	--	--	--	--
	3036	02-Dec-86	1015	16	19	--	7.7	--	--	--	--	--	--	--	--	--	--	--

1986 Monitoring Station Data

Southern Subsurface Stations (continued)

STATION	LN	DATE	TDS	LEC	COD	NH3-ORG	NO3+NO2	D-NH3	D-ORTHO	T-P	As	Ba	Cd	Cr	Cu
Southern Subsurface Stations															
CCN 3550	2377	26-Mar-86	2730	3710	--	--	--	--	--	--	0.015	--	--	0	0.01
	2650	09-Jul-86	3780	4980	--	--	--	--	--	--	0.018	--	--	--	--
	2705	13-Aug-86	1720	2440	--	0.8	27	0	--	0.21	0.012	0	0	0	0
	2789	10-Sep-86	2410	3290	--	0.8	20	0.02	0.31	0.36	0.021	--	--	0.005	0
	2903	08-Oct-86	2690	3600	--	1.1	16	0.1	0.4	0.42	0.021	--	--	0.005	0.005
	2941	13-Nov-86	3560	4660	--	--	--	--	--	--	0.021	--	--	0.005	0.005
	3031	02-Dec-86	--	4880	--	--	--	--	--	--	0.019	--	--	0.005	0.005
CNR 0801	2265	14-Jan-86	10700	11900	--	--	--	--	--	--	0.004	0	0	0	0
	2378	25-Mar-86	11200	12000	--	--	--	--	--	--	0.004	--	--	0	0.01
	2445	08-Apr-86	11900	13100	--	--	--	--	--	--	0.007	--	--	0	0.01
	2592	10-Jun-86	12800	13200	--	--	--	--	--	--	0.017	--	--	0	0.01
	2706	12-Aug-86	11500	12000	--	0.7	21	0.02	0.01	0.02	0.013	0	0	0	0.01
	3032	01-Dec-86	12300	12700	--	0.8	5.4	0	0	0.02	0.004	--	--	0.005	0.005
COC 4126	2262	14-Jan-86	4160	4490	--	--	--	--	--	--	0.003	0	0	0	0
	2379	25-Mar-86	5190	5610	--	--	--	--	--	--	0.004	--	--	0	0.01
	2446	08-Apr-86	5180	5600	--	--	--	--	--	--	0.004	--	--	0	0
	2593	10-Jun-86	4890	5350	--	--	--	--	--	--	0.004	--	--	0	0.01
	2707	12-Aug-86	4380	4870	--	1.2	80	0.02	0	0.03	0.003	0	0	0	0
	2791	09-Sep-86	4430	4630	--	0.9	69	0.02	0.02	0.04	0.004	--	--	0	0
	2905	07-Oct-86	4200	4380	--	0.8	56	0.02	0.02	0.02	0.003	--	--	0.005	0.005
	3033	01-Dec-86	4070	4240	--	0.5	46	0.01	0	0.02	0.002	--	--	0.005	0.005
COC 5329	2263	14-Jan-86	5330	6040	--	--	--	--	--	--	0.004	0	0	0	0
	2380	25-Mar-86	6600	7380	--	--	--	--	--	--	0.002	--	--	0	0.01
	2447	08-Apr-86	6476	7220	--	--	--	--	--	--	0.004	--	--	0	0
	2594	10-Jun-86	6160	7020	--	--	--	--	--	--	0.003	--	--	0	0.01
	2708	12-Aug-86	5230	5980	--	1.1	45	0	0	0.04	0.01	0	0	0	0.01
	2792	09-Sep-86	3380	3900	--	0.6	19	0.01	0.04	0.06	0.009	--	--	0.005	0
	2906	07-Oct-86	1770	2130	--	0.6	5.4	0.02	0.07	0.08	0.016	--	--	0.005	0.005
	3034	01-Dec-86	4970	5100	--	0.3	5.8	0	0.01	0.04	0.003	--	--	0.005	0.005
COC 7352	2730	12-Aug-86	16000	16400	--	0.8	26	0	0.05	0.05	0.006	0	0	0.007	0.01
	2793	09-Sep-86	26600	25100	--	1.5	31	0.02	0.06	0.08	0.009	--	--	0.007	0.02
	2907	07-Oct-86	29300	26900	--	2.1	17	0.02	0.09	0.1	0.005	--	--	0.005	0.006
ERR 7525	2292	15-Jan-86	6540	8290	--	--	--	--	--	2.5	0.122	0	--	0	0.02
	2381	24-Mar-86	6770	8390	--	--	--	--	--	--	0.134	--	--	0	0.01
	2651	09-Jul-86	4050	5300	--	--	--	--	--	--	0.112	--	--	--	--
	2709	13-Aug-86	5060	6480	--	1.4	4.2	0.15	1.8	2	0.1	0	0	0	0.01
	2794	10-Sep-86	5920	7330	--	1	5.6	0.13	2.2	2.3	0.208	--	--	0.005	0.01
	2908	08-Oct-86	3620	4690	--	1.3	6.4	0.08	2.7	2.8	0.18	--	--	0.005	0.008
	2946	13-Nov-86	4890	6110	--	--	--	--	--	--	0.153	--	--	0.005	0.008
	3036	02-Dec-86	--	6370	--	--	--	--	--	--	0.126	--	--	0.005	0.007

1986 Monitoring Station Data

Southern Subsurface Stations (continued)

STATION	LN	DATE	Fe	Pb	Mn	Hg	Se	Ag	Zn	Al	Co	Mo	Ni	Sr	V	SS
Southern Subsurface Stations																
CCN 3550	2377	26-Mar-86	0.01	--	0.4	--	0.001	--	0	--	--	--	0	1.6	--	--
	2650	09-Jul-86	--	--	--	--	0.002	--	--	--	--	--	--	--	--	--
	2705	13-Aug-86	--	0	0.05	0	0	0	0	0	0	--	0	1.4	--	--
	2789	10-Sep-86	0.02	--	0.57	--	0.001	--	0	--	--	--	--	1.4	--	--
	2903	08-Oct-86	0.013	--	0.552	--	0.001	--	--	--	--	0.168	--	1.2	--	--
	2941	13-Nov-86	0.012	--	1	--	0.002	--	0.005	--	--	0.168	--	1.6	--	--
	3031	02-Dec-86	0.007	--	1.38	--	0	--	0	--	--	0.144	--	1.7	--	--
CNR 0801	2265	14-Jan-86	0	0	0	--	0.006	0	0	0	0	--	0	6.5	--	--
	2378	25-Mar-86	0.01	0	0.18	--	0.004	--	0	--	--	--	0	8.6	--	--
	2445	08-Apr-86	0.03	--	0.11	--	0.022	--	0.01	0	--	--	0.01	8	--	--
	2592	10-Jun-86	0.02	0	0.01	--	0.033	--	0.01	--	--	--	0	8	--	--
	2706	12-Aug-86	0.01	0	0.01	0	0.028	0	0	0	0	--	0	6.6	--	--
	3032	01-Dec-86	0.005	--	0.048	--	0.003	--	0.005	--	--	0.9	--	6.8	--	--
COC 4126	2262	14-Jan-86	0.04	0.01	0.09	--	0.018	0	0.03	0	0	--	0	4.8	--	--
	2379	25-Mar-86	0.01	--	0.04	--	0.031	--	0.01	--	--	--	0	5.9	--	--
	2446	08-Apr-86	0.01	--	0.03	--	0.029	--	0.01	--	--	--	0	5.9	--	--
	2593	10-Jun-86	0.01	0	0.04	--	0.032	--	0.01	--	--	--	0	5.8	--	--
	2707	12-Aug-86	0	0	0.06	0	0.022	0	0.02	0	0	--	0	5.2	--	--
	2791	09-Sep-86	0.01	--	0.02	--	0.021	--	0	--	--	--	--	5	--	--
	2905	07-Oct-86	0.013	--	0.074	--	0.014	--	0.008	--	--	0.137	--	3.8	--	--
	3033	01-Dec-86	0.005	--	0.145	--	0.002	--	0.005	--	--	0.086	--	4.1	--	--
COC 5329	2263	14-Jan-86	0	0	0.05	--	0.248	0	0.01	0	0	--	0	21	--	--
	2380	25-Mar-86	0.01	--	0	--	0.466	--	0	--	--	--	0	5.6	--	--
	2447	08-Apr-86	0.01	--	0	--	0.473	--	--	--	--	--	0	5.3	--	--
	2594	10-Jun-86	0.02	--	0	--	0.438	--	0.01	--	--	--	0	5.4	--	--
	2708	12-Aug-86	0.02	0	0	0	0.246	0	0	0	0	--	0	4.9	--	--
	2792	09-Sep-86	0.05	--	0	--	0.112	--	0	--	--	--	--	3.3	--	--
	2906	07-Oct-86	0.008	--	0.009	--	0.017	--	0.013	--	--	0.08	--	1.4	--	--
	3034	01-Dec-86	0.005	--	0.005	--	0.045	--	0.005	--	--	0.201	--	4.7	--	--
COC 7352	2730	12-Aug-86	0.01	0	0.01	0	0.006	0	0.04	0	0	--	0	6.7	--	--
	2793	09-Sep-86	0.01	--	0	--	0.323	--	0.04	--	--	--	--	8.7	--	--
	2907	07-Oct-86	0.038	--	0.005	--	0.115	--	0.101	--	--	0.324	--	10	--	--
ERR 7525	2292	15-Jan-86	0.03	0	0.51	--	0.006	--	--	--	0	--	--	1.8	--	--
	2381	24-Mar-86	0.01	--	0.25	--	0.008	--	0	--	--	--	0.01	2	--	--
	2651	09-Jul-86	--	--	--	--	0.004	--	--	--	--	--	--	--	--	--
	2709	13-Aug-86	0.01	0	0.23	0	0.004	0	0	0	0.02	--	0.02	1.5	--	--
	2794	10-Sep-86	0.02	--	0.17	--	0.005	--	0	--	--	--	--	1.6	--	--
	2908	08-Oct-86	0.013	--	0.22	--	0.003	--	0.005	--	--	0.62	--	0.9	--	--
	2946	13-Nov-86	0.014	--	0.338	--	0.005	--	0.005	--	--	0.304	--	1.2	--	--
	3036	02-Dec-86	0.012	--	0.426	--	0.003	--	0.005	--	--	0.565	--	1.2	--	--

1986 Monitoring Station Data

Southern Subsurface Stations (continued)

STATION	LN	DATE	TYPE1	NAME1	CONC1	TYPE2	NAME2	CONC2
Southern Subsurface Stations								
CCN 3550	2377	26-Mar-86	A	NA	--	A	NA	--
	2650	09-Jul-86	A	NA	--	A	NA	--
	2705	13-Aug-86	A	NA	--	A	NA	--
	2789	10-Sep-86	A	NA	--	A	NA	--
	2903	08-Oct-86	A	NA	--	A	NA	--
	2941	13-Nov-86	A	NA	--	A	NA	--
	3031	02-Dec-86	A	NA	--	A	NA	--
CNR 0801	2265	14-Jan-86	A	NA	--	A	NA	--
	2378	25-Mar-86	A	NA	--	A	NA	--
	2445	08-Apr-86	A	NA	--	A	NA	--
	2592	10-Jun-86	A	NA	--	A	NA	--
	2706	12-Aug-86	A	NA	--	A	NA	--
	3032	01-Dec-86	A	NA	--	A	NA	--
COC 4126	2262	14-Jan-86	A	NA	--	A	NA	--
	2379	25-Mar-86	A	NA	--	A	NA	--
	2446	08-Apr-86	A	NA	--	A	NA	--
	2593	10-Jun-86	A	NA	--	A	NA	--
	2707	12-Aug-86	A	NA	--	A	NA	--
	2791	09-Sep-86	A	NA	--	A	NA	--
	2905	07-Oct-86	A	NA	--	A	NA	--
	3033	01-Dec-86	A	NA	--	A	NA	--
COC 5329	2263	14-Jan-86	A	NA	--	A	NA	--
	2380	25-Mar-86	A	NA	--	A	NA	--
	2447	08-Apr-86	A	NA	--	A	NA	--
	2594	10-Jun-86	A	NA	--	A	NA	--
	2708	12-Aug-86	A	NA	--	A	NA	--
	2792	09-Sep-86	A	NA	--	A	NA	--
	2906	07-Oct-86	A	NA	--	A	NA	--
	3034	01-Dec-86	A	NA	--	A	NA	--
COC 7352	2730	12-Aug-86	A	NA	--	A	NA	--
	2793	09-Sep-86	A	NA	--	A	NA	--
	2907	07-Oct-86	A	NA	--	A	NA	--
ERR 7525	2292	15-Jan-86	A	NA	--	A	NA	--
	2381	24-Mar-86	A	NA	--	A	NA	--
	2651	09-Jul-86	A	NA	--	A	NA	--
	2709	13-Aug-86	A	NA	--	A	NA	--
	2794	10-Sep-86	A	NA	--	A	NA	--
	2908	08-Oct-86	A	NA	--	A	NA	--
	2946	13-Nov-86	A	NA	--	A	NA	--
	3036	02-Dec-86	A	NA	--	A	NA	--

1986 Monitoring Station Data

Southern Subsurface Stations (continued)

STATION	LN	DATE	TIME	CO	TEMP	FEC	FpH	HARD	Ca	Mg	Na	K	TALK	LpH	SO4	Cl	NO3	B
Southern Subsurface Stations																		
ERR 8429	2293	15-Jan-86	1015	16	17	--	7.4	461	84	61	1120	3.8	755	8.1	1370	550	38	2.5
	2382	24-Mar-86	1200	16	17	--	7.4	789	103	129	1910	6	804	7.8	2510	1010	42	3.2
	2448	07-Apr-86	1145	16	17	--	7.6	734	106	114	1940	6.2	794	7.8	2500	1010	45	3.4
	2595	10-Jun-86	1045	16	19	--	7.5	607	98	88	1500	5	720	8.1	1900	737	41	2.7
	2710	13-Aug-86	1145	16	22	--	7.4	490	84	68	1020	4.3	687	8.3	1200	536	--	2.2
	2795	10-Sep-86	1045	16	22	--	7.3	537	88	77	1250	4.6	697	8.6	1550	643	--	2.3
	2909	08-Oct-86	1000	16	21	--	7.4	--	--	--	--	--	--	8.3	--	--	--	--
	2947	13-Nov-86	1100	16	21	--	7.4	--	--	--	--	--	--	8.2	--	--	--	--
	3037	02-Dec-86	1045	16	20	--	7.7	--	--	--	--	--	--	--	--	--	--	--
ERR 8641	2383	24-Mar-86	1130	16	17	--	7.2	3960	335	758	5870	38	626	7.3	11000	2760	43	5.2
	2449	07-Apr-86	1130	16	16	--	7.3	4160	372	785	6890	42	701	7.4	12500	3200	53	5.8
	2596	10-Jun-86	1105	16	18	--	7.3	3610	338	671	5920	36	659	7.4	11100	2770	14	4.5
	2711	13-Aug-86	1205	16	20	--	7.2	2930	260	555	4480	30	537	7.6	8580	2210	--	4.4
	2796	10-Sep-86	1100	16	21	--	7.3	2690	234	512	4280	29	471	8.2	8130	2120	--	4.1
	2910	08-Oct-86	1015	16	20	--	7.4	--	--	--	--	--	--	7.9	--	--	--	--
	2948	13-Nov-86	1130	16	20	--	7.3	--	--	--	--	--	--	7.8	--	--	--	--
	3038	02-Dec-86	1100	16	19	--	7.4	--	--	--	--	--	--	--	--	--	--	--
GSY 0855	2911	08-Oct-86	1030	16	20	--	7	--	--	--	--	--	--	8	--	--	--	--
HCH 7439	2299	15-Jan-86	900	16	17	--	8.2	2050	207	373	6640	12	525	8.2	9330	4300	9.7	13
	2385	26-Mar-86	1130	16	18	--	8.1	2380	230	438	7380	14	507	8	10400	4840	9.3	14
	2450	07-Apr-86	1235	16	17	--	8.1	2560	242	474	7980	15	526	8.1	11000	5260	9.1	15
	2597	10-Jun-86	1000	16	19	--	8.2	2110	220	380	6340	12	475	8.1	9190	4090	18	12
	2713	13-Aug-86	935	16	21	--	8.1	--	186	385	6060	14	481	8.3	7720	4330	--	12
	2798	10-Sep-86	915	16	21	--	8.1	1830	181	334	5570	12	466	8.3	7530	3630	--	22
	2912	08-Oct-86	745	16	22	--	8.2	--	--	--	--	--	--	8.3	--	--	--	--
	2950	13-Nov-86	845	16	20	--	8.2	--	--	--	--	--	--	8.2	--	--	--	--
	3040	02-Dec-86	825	16	20	--	8.1	--	--	--	--	--	--	--	--	--	--	--
LME 7569	2266	13-Jan-86	1110	16	16	--	7	541	139	47	547	2.2	487	7.7	969	173	16	0.7
	2386	24-Mar-86	830	16	16	--	7	382	92	37	391	3.5	316	7.8	700	84	73	0.6
	2451	08-Apr-86	1520	16	17	--	7.1	370	92	34	387	3.6	325	7.8	665	81	74	0.6
	2598	09-Jun-86	820	16	19	--	7.1	293	76	25	309	2.6	296	8	504	64	53	0.5
	2714	13-Aug-86	800	16	24	--	7	204	52	18	238	2.2	223	8.4	347	37	--	0.5
	2799	10-Sep-86	800	16	22	--	7.1	259	66	23	290	2.5	281	8.6	463	51	--	0.6
	2914	07-Oct-86	845	15	21	--	7.8	--	--	--	--	--	--	--	--	--	--	--
	2952	12-Nov-86	950	15	20	--	7.7	--	--	--	--	--	--	--	--	--	--	--
LNW 4457	2682	30-Jul-86	1115	15	21	--	--	2080	615	132	2920	2.1	150	8	4030	2710	--	21
LNW 5454	2269	13-Jan-86	1605	15	18	--	7.6	2590	486	334	8290	5.5	191	7.7	11200	6460	84	58
	2412	07-Mar-86	1140	15	18	24000	--	--	--	--	--	--	--	--	--	--	--	--
	2387	25-Mar-86	1000	15	17	--	8	2600	480	340	8290	6.5	221	7.8	11500	5420	142	65
	2452	08-Apr-86	1145	15	18	--	8	2520	490	315	8250	6.7	222	7.9	11400	5650	135	65
	2599	09-Jun-86	1210	15	20	--	7.9	2530	492	317	8540	5.7	199	7.8	12000	6050	120	65
	2678	30-Jul-86	1030	15	21	--	--	2690	508	345	8190	4.5	205	8	11400	6000	--	68
	2715	12-Aug-86	1000	15	21	--	7	2440	443	320	8300	5.4	204	7.9	10800	5980	--	68
	2800	09-Sep-86	900	15	22	--	7.8	2500	473	321	8278	5.7	201	7.9	11000	6250	--	63
	2914	07-Oct-86	845	15	21	--	7.8	2820	546	354	8360	3.6	197	7.8	11800	6060	--	63
	2952	12-Nov-86	950	15	20	--	7.7	2960	554	382	8950	3.5	198	7.8	12300	6790	--	56
	3042	01-Dec-86	1000	15	20	--	7.7	2940	546	384	8910	2.8	199	7.8	11800	6570	--	60

1986 Monitoring Station Data

Southern Subsurface Stations (continued)

STATION	LN	DATE	TDS	LEC	COD	NH3-ORG	NO3+NO2	D-NH3	D-ORTHO	T-P	As	Ba	Cd	Cr	Cu
Southern Subsurface Stations															
ERR 8429	2293	15-Jan-86	3810	5290	--	--	--	--	--	2.7	0.078	0	--	0	0.01
	2382	24-Mar-86	6280	8430	--	--	--	--	--	--	0.074	--	--	0	0.01
	2448	07-Apr-86	6330	8420	--	--	--	--	--	--	0.08	--	--	0	0.02
	2595	10-Jun-86	4870	6790	--	--	--	--	--	--	0.071	--	--	0	0.01
	2710	13-Aug-86	3660	5180	--	2.3	10	0.18	1.9	2.3	0.055	0	0	0.005	0.01
	2795	10-Sep-86	4270	5910	--	1.2	9.4	0.36	2.2	2.3	0.062	--	--	0.005	0.01
	2909	08-Oct-86	4350	5910	--	2.2	11	0.31	2.2	2.4	0.084	--	--	0.005	0.008
	2947	13-Nov-86	5020	6890	--	--	--	--	--	--	0.075	--	--	0.005	0.01
	3037	02-Dec-86	--	9260	--	--	--	--	--	--	0.07	--	--	0.005	0.009
ERR 8641	2383	24-Mar-86	21800	23000	--	--	--	--	--	--	0.028	--	--	0	0.01
	2449	07-Apr-86	25300	25900	--	--	--	--	--	--	0.035	--	--	0	0.02
	2596	10-Jun-86	21700	23000	--	--	--	--	--	--	0.033	--	--	0	0.02
	2711	13-Aug-86	16800	18200	--	15	2.2	1.7	1.5	2.5	0.024	0	0	0.005	0.01
	2796	10-Sep-86	15700	17000	--	10	1.1	6.6	1.7	1.9	0.03	--	--	0.005	0.01
	2910	08-Oct-86	15500	16700	--	10	2.6	5.7	1.7	2.1	0.036	--	--	0.005	0.005
	2948	13-Nov-86	14600	16300	--	--	--	--	--	--	0.039	--	--	0.005	0.007
	3038	02-Dec-86	--	15900	--	--	--	--	--	--	0.047	--	--	0.05	0.007
GSY 0855	2911	08-Oct-86	17000	17200	--	7.3	2.2	2.8	1	1.1	0.039	--	--	0.005	0.007
HCH 7439	2299	15-Jan-86	21700	25500	--	--	--	--	--	0.7	0.276	0	--	0	0.01
	2385	26-Mar-86	24100	27500	--	--	--	--	--	--	0.267	--	--	0	0.01
	2450	07-Apr-86	26200	28900	--	--	--	--	--	--	0.286	--	--	0	0.01
	2597	10-Jun-86	21000	24300	--	--	--	--	--	--	0.319	--	--	0	0.01
	2713	13-Aug-86	20400	23400	--	1.9	9.7	0	0.52	0.56	0.247	0	0	0.005	0.01
	2798	10-Sep-86	18300	21100	--	1.9	3.8	0.01	0.6	0.62	0.336	--	--	0.005	0.01
	2912	08-Oct-86	19300	21800	--	2.9	5.5	0.02	0.6	0.62	0.306	--	--	0.005	0.005
	2950	13-Nov-86	17400	20700	--	--	--	--	--	--	0.337	--	--	0.005	0.006
	3040	02-Dec-86	--	19200	--	--	--	--	--	--	0.284	--	--	0.005	0.007
LME 7569	2266	13-Jan-86	2230	3110	--	--	--	--	--	--	0.003	0	0	0	0
	2386	24-Mar-86	1580	2260	--	--	--	--	--	--	0.003	--	--	0	0
	2451	08-Apr-86	1560	2220	--	--	--	--	--	--	0.003	--	--	0	0.01
	2598	09-Jun-86	1270	1820	--	--	--	--	--	--	0.003	--	--	0	0
	2714	13-Aug-86	947	1490	--	0.8	19	0.02	0.31	0.36	0.003	0	0	0.005	0.01
	2799	10-Sep-86	1200	1730	--	0.7	16	0	0.33	0.4	0.003	--	--	0.005	0
	2914	07-Oct-86	--	--	--	--	--	--	--	--	0.007	--	--	0.011	0.005
	2952	12-Nov-86	--	--	--	--	--	--	--	--	0.006	--	--	0.011	0.007
LNW 4457	2682	30-Jul-86	11000	14000	--	0.7	38	0	0.02	0.02	0.006	--	--	0	0
LNW 5454	2269	13-Jan-86	28000	32200	--	--	--	--	--	--	0.006	0	0	0	0.01
	2412	07-Mar-86	--	--	--	--	22	--	--	--	--	--	--	--	--
	2387	25-Mar-86	27000	29900	--	--	--	--	--	--	0.007	--	--	0	0.01
	2452	08-Apr-86	27200	30000	--	--	--	--	--	--	0.008	--	--	0	0.01
	2599	09-Jun-86	28100	30100	--	--	--	--	--	--	0.007	--	--	0	0.01
	2678	30-Jul-86	27600	30100	--	1.4	30	0	--	0.08	0.008	--	--	0	0.01
	2715	12-Aug-86	28000	30100	--	1.2	27	0.01	0.08	0.09	0.009	0	0	0.013	0.01
	2800	09-Sep-86	27400	29300	--	1.3	28	0.01	0.07	0.1	0.008	--	--	0.011	0.01
	2914	07-Oct-86	28400	30200	--	1.2	24	0.01	0.08	0.08	0.007	--	--	0.011	0.005
	2952	12-Nov-86	29400	32000	--	1.2	26	0.02	0.09	0.09	0.006	--	--	0.011	0.007
	3042	01-Dec-86	28800	30900	--	1.2	22	0	0.02	0.14	0.002	--	--	0.01	0.007

1986 Monitoring Station Data

Southern Subsurface Stations (continued)

STATION	LN	DATE	Fe	Pb	Mn	Hg	Se	Ag	Zn	Al	Co	Mo	Ni	Sr	V	SS
Southern Subsurface Stations																
ERR 8429	2293	15-Jan-86	0.09	0	0.22	--	0.004	--	--	--	0	--	--	1	--	--
	2382	24-Mar-86	0.05	--	0.26	--	0.002	--	0	--	--	--	0.01	1	--	--
	2448	07-Apr-86	0.1	--	0.41	--	0.003	--	0	--	--	--	0.01	1.3	--	--
	2595	10-Jun-86	0.03	--	0.26	--	0.003	--	0.01	--	--	--	0.01	1.2	--	--
	2710	13-Aug-86	0.02	0.005	0.13	0	0.002	0	0	0	0	--	0.01	0.9	--	--
	2795	10-Sep-86	0.06	3	0.27	--	0.02	--	0	--	--	--	--	0.9	--	--
	2909	08-Oct-86	0.01	--	0.182	--	0.003	--	0.005	--	--	0.276	--	0.5	--	--
	2947	13-Nov-86	0.169	--	0.388	--	0.003	--	0.006	--	--	0.37	--	0.8	--	--
	3037	02-Dec-86	0.056	--	0.253	--	0.002	--	0.005	--	--	0.47	--	1.1	--	--
ERR 8641	2383	24-Mar-86	0.84	--	3	--	0.011	--	0	--	--	--	0.02	4.5	--	--
	2449	07-Apr-86	0.45	--	3	--	0.015	--	0.01	--	--	--	0.02	5.4	--	--
	2596	10-Jun-86	0.8	--	2.9	--	0.014	--	0.01	--	--	--	0.02	4.7	--	--
	2711	13-Aug-86	0.83	0.005	2.2	0	0.003	0	0.01	0	0	--	0.01	3.4	--	--
	2796	10-Sep-86	0.62	--	2	--	0.003	--	0	--	--	--	--	3.1	--	--
	2910	08-Oct-86	0.041	--	2.11	--	0.004	--	0.005	--	--	0.376	--	2.3	--	--
	2948	13-Nov-86	0.36	--	1.86	--	0.004	--	0.005	--	--	0.358	--	2.7	--	--
	3038	02-Dec-86	0.912	--	1.98	--	0.003	--	0.005	--	--	0.525	--	2.7	--	--
GSY 0855	2911	08-Oct-86	0.011	--	7.52	--	0.011	--	0.005	--	--	0.366	--	2.4	--	--
HCH 7439	2299	15-Jan-86	0.07	0	0	--	0.017	--	--	--	0	--	--	5.6	--	--
	2385	26-Mar-86	0.06	--	0.01	--	0.03	--	0	--	--	--	0	6.5	--	--
	2450	07-Apr-86	0.13	--	0.01	--	0.02	--	0	--	--	--	0	5.9	--	--
	2597	10-Jun-86	0.04	--	0.01	0	0.014	--	0.01	--	--	--	0	5.2	--	--
	2713	13-Aug-86	0.01	0.005	0.02	0	0.019	0	0	0	0	--	0	5.3	--	--
	2798	10-Sep-86	0.04	--	0.01	--	0.017	--	0	--	--	--	--	4.5	--	--
	2912	08-Oct-86	0.011	--	0.018	--	0.025	--	0.005	--	--	6.05	--	4.4	--	--
	2950	13-Nov-86	0.005	--	0.018	--	0.012	--	0.005	--	--	4.06	--	4.2	--	--
	3040	02-Dec-86	0.009	--	0.011	--	0.003	--	0.005	--	--	3.95	--	4	--	--
LME 7569	2266	13-Jan-86	0.04	0	0.01	--	0.001	0	0.04	0	0	--	0	0.8	--	--
	2386	24-Mar-86	0.02	--	0.02	--	0.001	--	0	--	--	--	0	0.7	--	--
	2451	08-Apr-86	0.02	--	0.02	--	0.001	--	0	--	--	--	0	0.7	--	--
	2598	09-Jun-86	0.02	--	0.02	--	0.002	--	0.01	--	--	--	0	0.5	--	--
	2714	13-Aug-86	0.01	0.005	0	0	0	0	0	0	0	--	0	0.4	--	--
	2799	10-Sep-86	0	--	0.01	--	0.002	--	0	--	--	--	--	0.5	--	--
	2914	07-Oct-86	0.006	--	0.005	--	0.163	--	0.005	--	--	0.94	--	9.7	--	--
	2952	12-Nov-86	0.005	--	0.005	--	0.21	--	0.005	--	--	1.71	--	10	--	--
LNW 4457	2682	30-Jul-86	0.01	0	--	--	0.133	--	0.01	--	--	--	--	7.2	--	--
LNW 5454	2269	13-Jan-86	0.01	0	0	--	0.228	0	0	0	0	--	0	10	--	--
	2412	07-Mar-86	--	--	--	--	0.169	--	--	--	--	--	--	--	--	--
	2387	25-Mar-86	0	--	0	--	0.168	--	0	--	--	--	0	9.1	--	--
	2452	08-Apr-86	0.01	--	0	--	0.142	--	0	--	--	--	0	9	--	--
	2599	09-Jun-86	0.01	--	0	--	0.172	--	--	--	--	--	0	9.4	--	--
	2678	30-Jul-86	0	0	--	--	0.168	--	0.01	--	--	--	--	8.6	--	--
	2715	12-Aug-86	0.04	0.005	0	0	0.199	0.01	0.01	0	0	--	0	11	--	--
	2800	09-Sep-86	0.01	--	0	--	0.206	--	0	--	--	--	--	9.7	--	--
	2914	07-Oct-86	0.006	--	0.005	--	0.163	--	0.005	--	--	0.94	--	9.7	--	--
	2952	12-Nov-86	0.005	--	0.005	--	0.21	--	0.005	--	--	1.71	--	10	--	--
	3042	01-Dec-86	0.012	--	0.005	--	0.194	--	0.005	--	--	1.64	--	10	--	--

1986 Monitoring Station Data

Southern Subsurface Stations (continued)

STATION	LN	DATE	TYPE1	NAME1	CONC1	TYPE2	NAME2	CONC2
Southern Subsurface Stations								
ERR 8429	2293	15-Jan-86	A	NA	--	A	NA	--
	2382	24-Mar-86	A	NA	--	A	NA	--
	2448	07-Apr-86	A	NA	--	A	NA	--
	2595	10-Jun-86	A	NA	--	A	NA	--
	2710	13-Aug-86	A	NA	--	A	NA	--
	2795	10-Sep-86	A	NA	--	A	NA	--
	2909	08-Oct-86	A	NA	--	A	NA	--
	2947	13-Nov-86	A	NA	--	A	NA	--
	3037	02-Dec-86	A	NA	--	A	NA	--
ERR 8641	2383	24-Mar-86	A	NA	--	A	NA	--
	2449	07-Apr-86	A	NA	--	A	NA	--
	2596	10-Jun-86	A	NA	--	A	NA	--
	2711	13-Aug-86	A	NA	--	A	NA	--
	2796	10-Sep-86	A	NA	--	A	NA	--
	2910	08-Oct-86	A	NA	--	A	NA	--
	2948	13-Nov-86	A	NA	--	A	NA	--
	3038	02-Dec-86	A	NA	--	A	NA	--
GSY 0855	2911	08-Oct-86	A	NA	--	A	NA	--
HCH 7439	2299	15-Jan-86	A	NA	--	A	NA	--
	2385	26-Mar-86	A	NA	--	A	NA	--
	2450	07-Apr-86	A	NA	--	A	NA	--
	2597	10-Jun-86	A	NA	--	A	NA	--
	2713	13-Aug-86	A	NA	--	A	NA	--
	2798	10-Sep-86	A	NA	--	A	NA	--
	2912	08-Oct-86	A	NA	--	A	NA	--
	2950	13-Nov-86	A	NA	--	A	NA	--
	3040	02-Dec-86	A	NA	--	A	NA	--
LME 7569	2266	13-Jan-86	A	NA	--	A	NA	--
	2386	24-Mar-86	A	NA	--	A	NA	--
	2451	08-Apr-86	A	NA	--	A	NA	--
	2598	09-Jun-86	A	NA	--	A	NA	--
	2714	13-Aug-86	A	NA	--	A	NA	--
	2799	10-Sep-86	A	NA	--	A	NA	--
	2914	07-Oct-86	A	NA	--	A	NA	--
	2952	12-Nov-86	A	NA	--	A	NA	--
LNW 4457	2682	30-Jul-86	A	NA	--	A	NA	--
LNW 5454	2269	13-Jan-86	A	NA	--	A	NA	--
	2412	07-Mar-86	A	NA	--	A	NA	--
	2387	25-Mar-86	A	NA	--	A	NA	--
	2452	08-Apr-86	A	NA	--	A	NA	--
	2599	09-Jun-86	A	NA	--	A	NA	--
	2678	30-Jul-86	A	NA	--	A	NA	--
	2715	12-Aug-86	A	NA	--	A	NA	--
	2800	09-Sep-86	A	NA	--	A	NA	--
	2914	07-Oct-86	A	NA	--	A	NA	--
	2952	12-Nov-86	A	NA	--	A	NA	--
	3042	01-Dec-86	A	NA	--	A	NA	--

1986 Monitoring Station Data

Southern Subsurface Stations (continued)

STATION	LN	DATE	TIME	CO	TEMP	FEC	FpH	HARD	Ca	Mg	Na	K	TALK	LpH	SO4	Cl	NO3	B
Southern Subsurface Stations																		
LNW 5467	2270	13-Jan-86	1520	15	17	--	7.5	1910	568	120	2340	1.8	154	7.7	4110	1770	206	19
	2416	07-Mar-86	1220	15	17.8	7000	--	--	--	--	--	--	--	--	--	--	--	--
	2388	25-Mar-86	1030	15	18	--	7.3	1960	562	134	2380	2.2	175	7.7	3980	1710	210	17
	2453	08-Apr-86	1210	15	18	--	7.3	1780	575	84	1420	2.1	157	7.7	3160	901	161	11
	2600	09-Jun-86	1220	15	20	--	7.3	2110	572	165	3020	2.4	164	7.8	4640	2710	212	22
	2683	30-Jul-86	1430	15	22	--	--	2140	583	166	3070	2.2	160	8.1	4610	2440	--	22
	2716	12-Aug-86	1020	15	22	--	7.3	2020	525	171	3130	2.3	163	8	4400	2460	--	35
	2801	09-Sep-86	945	15	23	--	7.2	2050	554	162	2940	2.2	162	8.1	4600	2390	--	22
	2915	07-Oct-86	900	15	22	--	7.3	2300	608	190	3360	1.4	165	7.9	5420	2470	--	28
	2953	12-Nov-86	1020	15	21	--	7.4	2210	574	188	3500	1.5	160	7.9	5350	2670	--	25
	3043	01-Dec-86	1020	15	19	--	7.7	2230	580	189	3340	1.1	163	8	5220	2600	--	25
LNW 6459	2403	07-Mar-86	1000	15	17.8	42000	--	--	--	--	--	--	--	--	--	--	--	--
	2389	25-Mar-86	930	15	17	--	8	3610	588	520	14900	8.8	232	7.7	12700	15600	109	56
	2454	08-Apr-86	1130	15	18	--	7.9	3780	600	555	15500	8.4	218	7.7	12800	16900	128	59
	2601	09-Jun-86	1155	15	19	--	7.9	3580	588	512	15000	8	221	7.8	12900	16300	145	60
	2668	30-Jul-86	830	15	21	--	--	3710	575	552	15100	7.2	210	7.8	11900	17000	--	55
	2717	12-Aug-86	930	15	21	--	7.9	3350	507	506	14300	7.8	204	7.9	11300	15800	--	53
	2802	09-Sep-86	845	15	20	--	7.8	3460	531	517	16300	7.3	210	7.8	12500	16800	--	58
	2917	07-Oct-86	815	15	21	--	7.2	--	--	--	--	--	--	--	--	--	--	--
	2954	12-Nov-86	915	15	20	--	7.6	4190	634	632	20900	4.3	199	7.7	12600	21200	--	51
	3044	01-Dec-86	935	15	21	--	7.8	3920	608	582	16200	2.4	196	7.8	11800	19100	--	50
LNW 6467	2272	13-Jan-86	1630	15	18	--	7.6	3470	618	468	10700	4.2	180	7.7	10600	11200	343	58
	2402	07-Mar-86	915	15	18	14200	--	--	--	--	--	--	--	--	--	--	--	--
	2390	25-Mar-86	900	15	17	--	7.5	2860	630	313	5980	3.7	212	7.7	6790	5770	246	38
	2455	08-Apr-86	1230	15	17	--	7.4	2770	600	308	5500	3.3	209	7.8	6740	5670	227	39
	2602	09-Jun-86	1140	15	20	--	7.5	2670	589	292	5590	4.6	218	7.7	6860	5400	215	40
	2665	23-Jul-86	940	15	22	--	--	2810	550	350	7610	4.4	225	7.8	10300	6570	--	56
	2718	12-Aug-86	905	15	22	--	7.5	2460	523	279	5430	3.7	216	8	7190	5010	--	44
	2803	09-Sep-86	815	15	21	--	7.4	2950	612	346	7130	4.2	201	7.9	8480	6350	--	48
	2917	07-Oct-86	815	15	21	--	7.2	3260	684	378	7450	2.5	198	7.9	8970	7330	--	49
SFD 2727	2391	24-Mar-86	1045	16	17	--	7	1630	207	271	778	4.6	311	7.6	2440	229	62	1.8
	2517	07-May-86	1200	16	18	--	7	2280	240	409	1120	3.8	338	7.4	3550	295	63	2.3
	2653	09-Jul-86	1130	16	21	--	7.1	2480	222	468	1250	3.4	316	8.2	3910	370	49	2.5
	2719	13-Aug-86	1245	16	22	--	7.1	2510	205	486	1260	3.6	307	8.1	3830	350	--	2.6
	2804	10-Sep-86	1145	16	21	--	7	2360	193	455	1220	3.7	289	8.2	3920	342	--	2.3
	2918	08-Oct-86	1100	16	21	--	6.9	--	--	--	--	--	--	8	--	--	--	--
	2956	13-Nov-86	1200	16	20	--	7	--	--	--	--	--	--	7.8	--	--	--	--
	3046	02-Dec-86	1200	16	20	--	7.1	--	--	--	--	--	--	--	--	--	--	--
SFD 6046	2392	24-Mar-86	1015	16	17	--	7.2	2000	218	354	2380	3.9	286	7.6	5890	580	50	6.3
	2518	07-May-86	1230	16	19	--	7.2	1180	132	207	1490	2.7	246	7.5	2390	337	32	4.5
	2654	09-Jul-86	1200	16	22	--	7.1	1910	204	340	2200	3.5	277	8.2	5240	574	49	5.3
	2720	13-Aug-86	1310	16	23	--	7.2	2120	219	381	2750	4.2	302	8.2	6190	672	--	1.9
	2805	10-Sep-86	1215	16	22	--	7	1670	188	291	2200	4.8	296	8.2	4960	532	--	63

1986 Monitoring Station Data

Southern Subsurface Stations (continued)

STATION	LN	DATE	TDS	LEC	COD	NH3-ORG	NO3+NO2	D-NH3	D-ORTHO	T-P	As	Ba	Cd	Cr	Cu
Southern Subsurface Stations															
LNW 5467	2270	13-Jan-86	9560	11800	--	--	--	--	--	--	0.003	0	0	0	0.01
	2416	07-Mar-86	--	--	--	--	40	--	--	--	--	--	0	--	--
	2388	25-Mar-86	9390	11400	--	--	--	--	--	--	0.004	--	--	0	0
	2453	08-Apr-86	6730	7970	--	--	--	--	--	--	0.003	--	--	0	0
	2600	09-Jun-86	11300	13000	--	--	--	--	--	--	0.003	--	--	0	0.01
	2683	30-Jul-86	11200	13500	--	0.8	52	0	0.01	0.01	0.004	--	--	0	0
	2716	12-Aug-86	11400	13800	--	0.8	55	0	0.02	0.02	0.004	0	0	0.005	0.01
	2801	09-Sep-86	11000	13200	--	0	51	0.02	0.01	0.02	0.004	--	--	0.005	0
	2915	07-Oct-86	12400	14400	--	0.8	57	0	0.02	0.02	0.006	--	--	0.005	0.005
	2953	12-Nov-86	12600	15000	--	0.8	59	0.01	0.02	0.02	0.005	--	--	0.005	0.005
	3043	01-Dec-86	12600	14700	--	0.4	60	0	0.01	0.02	0.004	--	--	0.005	0.005
LNW 6459	2403	07-Mar-86	--	--	--	--	23.1	--	--	--	--	--	--	--	--
	2389	25-Mar-86	45100	52200	--	--	--	--	--	--	0.007	--	--	0	0.01
	2454	08-Apr-86	47500	54100	--	--	--	--	--	--	0.008	--	--	0	0.01
	2601	09-Jun-86	45900	51100	--	--	--	--	--	--	0.007	--	--	0	0
	2668	30-Jul-86	46900	52000	--	0.6	31.1	0	--	0.06	0.006	--	--	0	0.01
	2717	12-Aug-86	44400	49300	--	0.3	31	0.01	0.07	0.07	0.006	0	0	0.007	0.01
	2802	09-Sep-86	47900	52000	--	0.6	32	0.01	0.06	0.07	0.007	--	--	0.008	0.01
	2917	07-Oct-86	--	--	--	--	--	--	--	--	0.006	--	--	0.011	0.005
	2954	12-Nov-86	54000	60400	--	0.2	31	0.02	0.09	0.13	0.005	--	--	0.008	0.008
	3044	01-Dec-86	49200	55100	--	0.4	32	0	0.03	0.06	0.004	--	--	0.006	0.005
LNW 6467	2272	13-Jan-86	35000	41700	--	--	--	--	--	--	0.006	0	0	0	0.01
	2402	07-Mar-86	--	--	--	--	23	--	--	--	--	--	--	--	--
	2390	25-Mar-86	20100	24600	--	--	--	--	--	--	0.004	--	--	0	0.01
	2455	08-Apr-86	19600	23800	--	--	--	--	--	--	0.004	--	--	0.01	0.01
	2602	09-Jun-86	19700	23000	--	--	--	--	--	--	0.004	--	--	0.01	0.01
	2665	23-Jul-86	25600	29000	--	1.4	63	0	--	0.07	0.006	--	--	0	0.01
	2718	12-Aug-86	20000	23400	--	1	58	0	--	0.06	0.006	0	0	0.012	0.01
	2803	09-Sep-86	24400	27600	--	1.1	63	0.01	0.04	0.05	0.004	--	--	0.011	0.01
	2917	07-Oct-86	25000	28100	--	1.3	66	0	0.06	0.06	0.006	--	--	0.011	0.005
SFD 2727	2391	24-Mar-86	4540	5170	--	--	--	--	--	--	0.017	--	--	0	0
	2517	07-May-86	6500	6930	--	--	--	--	--	--	0.025	--	--	--	--
	2653	09-Jul-86	7140	7520	--	--	--	--	--	--	0.038	--	--	--	--
	2719	13-Aug-86	7300	7810	--	1	15	0.05	0.88	0.88	0.04	0	0	0.005	0.01
	2804	10-Sep-86	6830	7250	--	0.9	19	0.13	0.83	0.88	0.031	--	--	0.005	0.01
	2918	08-Oct-86	5310	5720	--	2	9.7	0.26	1.1	1.1	0.022	--	--	0.005	0.005
	2956	13-Nov-86	9550	9690	--	--	--	--	--	--	0.019	--	--	0.005	0.005
	3046	02-Dec-86	--	10600	--	--	--	--	--	--	0.018	--	--	0.005	0.005
SFD 6046	2392	24-Mar-86	9980	11100	--	--	--	--	--	--	0.025	--	--	0	0.01
	2518	07-May-86	6020	7320	--	--	--	--	--	--	0.021	--	--	--	--
	2654	09-Jul-86	9460	10400	--	--	--	--	--	--	0.025	--	--	--	--
	2720	13-Aug-86	10700	11700	--	0.9	12	0.13	0.45	0.45	0.024	0	0	0.005	0
	2805	10-Sep-86	8710	9870	--	0.9	9.7	0.05	0.48	0.5	0.026	--	--	0.039	0.01

1986 Monitoring Station Data

Southern Subsurface Stations (continued)

STATION	LN	DATE	Fe	Pb	Mn	Hg	Se	Ag	Zn	Al	Co	Mo	Ni	Sr	V	SS
Southern Subsurface Stations																
LNW 5467	2270	13-Jan-86	0.04	0	0	--	0.141	0	0.01	0	0	--	0	8.4	--	--
	2416	07-Mar-86	--	--	--	--	0.08	--	--	--	--	--	--	--	--	--
	2388	25-Mar-86	0	--	0	--	0.144	--	0	--	--	--	0	8.4	--	--
	2453	08-Apr-86	0.01	--	0	--	0.08	--	0	--	--	--	0	7.2	--	--
	2600	09-Jun-86	0	--	0	--	0.144	--	0.01	--	--	--	0	8.4	--	--
	2683	30-Jul-86	0	0	--	--	0.151	--	0.01	--	--	--	--	7.7	--	--
	2716	12-Aug-86	0	0.005	0	0	0.167	0	0.01	0	0	--	0	10	--	--
	2801	09-Sep-86	0	--	0	--	0.167	--	0	--	--	--	--	8.4	--	--
	2915	07-Oct-86	0.014	--	0.005	--	0.178	--	0.005	--	--	0.772	--	8.2	--	--
	2953	12-Nov-86	0.005	--	0.005	--	0.211	--	0.005	--	--	0.785	--	9.2	--	--
	3043	01-Dec-86	0.005	--	0.005	--	0.19	--	0.005	--	--	0.69	--	8.8	--	--
LNW 6459	2403	07-Mar-86	--	--	--	--	0.074	--	--	--	--	--	--	--	--	--
	2389	25-Mar-86	0.01	--	0	--	0.075	--	0	--	--	--	0	12	--	--
	2454	08-Apr-86	0.01	--	0	--	0.08	--	0	--	--	--	0	12	--	--
	2601	09-Jun-86	0.02	--	0	--	0.08	--	0.01	--	--	--	0	12	--	--
	2668	30-Jul-86	0.01	0	--	--	0.055	--	--	--	--	--	--	13	--	--
	2717	12-Aug-86	0	0.005	0	0	0.086	0.01	0	0	--	--	0.02	14	--	--
	2802	09-Sep-86	0.01	--	0	--	0.08	--	0	--	--	--	--	12	--	--
	2917	07-Oct-86	0.005	--	0.005	--	0.425	--	0.005	--	--	1.07	--	12	--	--
	2954	12-Nov-86	0.014	--	0.008	--	0.074	--	0.009	--	--	0.93	--	14	--	--
	3044	01-Dec-86	0.018	--	0.005	--	0.076	--	0.005	--	--	1.1	--	13	--	--
LNW 6467	2272	13-Jan-86	0.01	0	0	--	0.735	0.03	0.01	0	0	--	0	13	--	--
	2402	07-Mar-86	--	--	--	--	0.226	--	--	--	--	--	--	--	--	--
	2390	25-Mar-86	0.01	--	0	--	0.842	--	0	--	--	--	0	12	--	--
	2455	08-Apr-86	0	--	0	--	0.512	--	0	--	--	--	0	9.9	--	--
	2602	09-Jun-86	0.01	--	0	--	0.625	--	0.02	--	--	--	0	10	--	--
	2665	23-Jul-86	0.01	0	--	--	0.615	--	0	--	--	--	--	11	--	--
	2718	12-Aug-86	0.02	0	0	0	0.858	0.01	0.01	0	0	--	0	11	--	--
	2803	09-Sep-86	0.01	--	0	--	0.72	--	--	--	--	--	--	11	--	--
	2917	07-Oct-86	0.005	--	0.005	--	0.425	--	0.005	--	--	1.07	--	12	--	--
SFD 2727	2391	24-Mar-86	0.31	--	0.26	--	0.002	--	0	--	--	--	0.02	1.4	--	--
	2517	07-May-86	--	--	--	--	0.002	--	--	--	--	--	--	--	--	--
	2653	09-Jul-86	--	--	--	--	0.002	--	--	--	--	--	--	--	--	--
	2719	13-Aug-86	0.15	0	0.38	0	0.002	0	0	0	0	--	0.03	1.8	--	--
	2804	10-Sep-86	0.28	--	0.3	--	0.002	--	0.02	--	--	--	--	1.5	--	--
	2918	08-Oct-86	0.556	--	0.3	--	0.001	--	0.007	--	--	0.105	--	1	--	--
	2956	13-Nov-86	0.708	--	0.38	--	0.001	--	0.008	--	--	0.085	--	1.8	--	--
	3046	02-Dec-86	1.29	--	0.552	--	0.002	--	0.005	--	--	0.169	--	2.1	--	--
SFD 6046	2392	24-Mar-86	0.02	--	0.63	--	0.001	--	0.01	--	--	--	0.01	3.2	--	--
	2518	07-May-86	--	--	--	--	0	--	--	--	--	--	--	--	--	--
	2654	09-Jul-86	--	--	--	--	0.001	--	--	--	--	--	--	--	--	--
	2720	13-Aug-86	0.05	0	0.88	0	0	0	0	0	0	--	0.02	3	--	--
	2805	10-Sep-86	0.03	--	0.71	--	0	--	0.01	--	--	--	--	2.2	--	--

1986 Monitoring Station Data

Southern Subsurface Stations (continued)

STATION	LN	DATE	TYPE1	NAME1	CONC1	TYPE2	NAME2	CONC2
Southern Subsurface Stations								
LNW 5467	2270	13-Jan-86	A	NA	--	A	NA	--
	2416	07-Mar-86	A	NA	--	A	NA	--
	2388	25-Mar-86	A	NA	--	A	NA	--
	2453	08-Apr-86	A	NA	--	A	NA	--
	2600	09-Jun-86	A	NA	--	A	NA	--
	2683	30-Jul-86	A	NA	--	A	NA	--
	2716	12-Aug-86	A	NA	--	A	NA	--
	2801	09-Sep-86	A	NA	--	A	NA	--
	2915	07-Oct-86	A	NA	--	A	NA	--
	2953	12-Nov-86	A	NA	--	A	NA	--
	3043	01-Dec-86	A	NA	--	A	NA	--
LNW 6459	2403	07-Mar-86	A	NA	--	A	NA	--
	2389	25-Mar-86	A	NA	--	A	NA	--
	2454	08-Apr-86	A	NA	--	A	NA	--
	2601	09-Jun-86	A	NA	--	A	NA	--
	2668	30-Jul-86	A	NA	--	A	NA	--
	2717	12-Aug-86	A	NA	--	A	NA	--
	2802	09-Sep-86	A	NA	--	A	NA	--
	2917	07-Oct-86	A	NA	--	A	NA	--
	2954	12-Nov-86	A	NA	--	A	NA	--
	3044	01-Dec-86	A	NA	--	A	NA	--
LNW 6467	2272	13-Jan-86	A	NA	--	A	NA	--
	2402	07-Mar-86	A	NA	--	A	NA	--
	2390	25-Mar-86	A	NA	--	A	NA	--
	2455	08-Apr-86	A	NA	--	A	NA	--
	2602	09-Jun-86	A	NA	--	A	NA	--
	2665	23-Jul-86	A	NA	--	A	NA	--
	2718	12-Aug-86	A	NA	--	A	NA	--
	2803	09-Sep-86	A	NA	--	A	NA	--
	2917	07-Oct-86	A	NA	--	A	NA	--
SFD 2727	2391	24-Mar-86	A	NA	--	A	NA	--
	2517	07-May-86	A	NA	--	A	NA	--
	2653	09-Jul-86	A	NA	--	A	NA	--
	2719	13-Aug-86	A	NA	--	A	NA	--
	2804	10-Sep-86	A	NA	--	A	NA	--
	2918	08-Oct-86	A	NA	--	A	NA	--
	2956	13-Nov-86	A	NA	--	A	NA	--
	3046	02-Dec-86	A	NA	--	A	NA	--
SFD 6046	2392	24-Mar-86	A	NA	--	A	NA	--
	2518	07-May-86	A	NA	--	A	NA	--
	2654	09-Jul-86	A	NA	--	A	NA	--
	2720	13-Aug-86	A	NA	--	A	NA	--
	2805	10-Sep-86	A	NA	--	A	NA	--

1986 Monitoring Station Data

Southern Subsurface Stations (continued)

STATION	LN	DATE	TIME	CO	TEMP	FEC	FpH	HARD	Ca	Mg	Na	K	TALK	LpH	SO4	Cl	NO3	B
Southern Subsurface Stations																		
STC 3505	2303	14-Jan-86	955	15	16	--	7.8	159	52	7	658	0.5	390	8.3	666	341	84	2.1
	2393	26-Mar-86	830	15	17	--	7.8	141	45	7	677	0.6	373	8.1	607	337	84	2
	2519	07-May-86	800	15	18	--	7.8	182	58	9	773	0.6	391	8	751	390	89	2.1
	2655	09-Jul-86	600	15	20	--	7.8	123	56	8	721	0.7	433	8.6	726	399	80	2.3
	2721	13-Aug-86	740	15	21	--	7.9	154	50	7	571	0.5	398	8.5	566	324	--	7.4
	2806	10-Sep-86	730	15	22	--	7.8	136	43	7	657	0.5	378	8.6	617	345	--	2
	2920	07-Oct-86	1000	15	22	--	7.7	--	--	--	--	--	--	8.4	--	--	--	--
	2958	12-Nov-86	1115	15	21	--	7.7	--	--	--	--	--	--	8.4	--	--	--	--
	3048	01-Dec-86	1120	15	19	--	7.9	--	--	--	--	--	--	--	--	--	--	--
STC 5436	2304	14-Jan-86	925	15	16	--	8	298	70	30	3980	12	572	8.1	4680	2650	35	16
	2394	26-Mar-86	930	15	17	--	8	598	142	59	4030	12	593	8	4570	2870	45	15
	2520	07-May-86	830	15	17	--	8	662	163	62	5300	12	656	7.9	5910	3740	37	20
	2656	09-Jul-86	645	15	21	--	8	538	100	70	4390	9.8	696	8.4	4770	3330	58	17
	2722	13-Aug-86	825	15	21	--	8.1	467	62	76	2820	8.2	637	8.3	2840	1940	--	10
	2807	10-Sep-86	800	15	21	--	8.2	436	69	64	3680	8.7	612	8.4	3840	2690	--	15
	2921	07-Oct-86	1030	15	22	--	8.2	--	--	--	--	--	--	8.2	--	--	--	--
	2959	12-Nov-86	1145	15	20	--	8.2	--	--	--	--	--	--	8.3	--	--	--	--
	3049	01-Dec-86	1155	15	19	--	8.1	--	--	--	--	--	--	--	--	--	--	--
STC 6142	2305	14-Jan-86	900	15	16	--	7.3	482	147	28	3080	2	343	7.8	3270	2320	84	10
STC 6467	2306	14-Jan-86	835	15	18	--	7	474	144	28	334	4.7	207	7.7	398	372	9.7	1.1
	2396	26-Mar-86	1030	15	17	--	6.9	590	159	47	459	5.8	270	7.5	591	484	16	1.5
	2522	07-May-86	900	15	18	--	7	473	125	39	403	4.8	248	7.4	497	439	13	1.3
	2658	09-Jul-86	745	15	21	--	7	536	144	43	457	4.4	264	8.3	528	461	25	1.6
	2724	13-Aug-86	900	15	22	--	7.1	477	130	37	384	4.1	241	8.3	462	397	--	1.3
	2809	10-Sep-86	830	15	21	--	6.8	418	118	30	302	4	208	8.4	384	333	--	1.1
	2923	07-Oct-86	1100	15	22	--	7	334	99	21	224	4.2	177	8.2	258	237	--	0.8
	2961	12-Nov-86	1215	15	22	--	6.9	--	--	--	--	--	--	8	--	--	--	--
	3051	01-Dec-86	1230	15	19	--	6.9	--	--	--	--	--	--	--	--	--	--	--
VGD 3906	2276	13-Jan-86	1220	16	17	--	7.3	5370	418	1050	8420	8.5	404	7.6	19300	2330	27	31
	2397	24-Mar-86	1000	16	17	--	7.4	5870	405	1180	9390	11	399	7.6	20300	2490	36	34
	2456	08-Apr-86	1450	16	17	--	7.5	5230	412	1020	8780	7.4	402	7.8	19200	2210	26	30
	2603	09-Jun-86	915	16	19	--	7.4	5470	410	1080	8560	7.4	389	7.7	19700	2240	31	33
	2725	13-Aug-86	900	16	21	--	7.4	5330	388	1060	8480	7.2	377	8.1	18900	2870	--	36
	2810	10-Sep-86	900	16	19	--	7.5	4900	282	1020	7990	6.2	368	8	18700	1300	--	34
	2924	08-Oct-86	900	16	19	--	7.7	3480	297	665	5330	4.5	318	8	12300	1310	--	22
	2962	13-Nov-86	950	16	17	--	7.5	5650	366	1150	9080	4.2	377	7.8	26600	2360	--	33
	3052	02-Dec-86	1130	16	19	--	7.3	6390	416	1300	9950	3.1	383	7.9	23400	2580	--	36

1986 Monitoring Station Data

Southern Subsurface Stations (continued)

STATION	LN	DATE	TDS	LEC	COD	NH3-ORG	NO3+NO2	D-NH3	D-ORTHO	T-P	As	Ba	Cd	Cr	Cu
Southern Subsurface Stations															
STC 3505	2303	14-Jan-86	2140	3260	--	--	--	--	--	0.25	0.181	0	--	0	0.01
	2393	26-Mar-86	2070	3170	--	--	--	--	--	--	0.134	--	--	0	0
	2519	07-May-86	2360	3600	--	--	--	--	--	--	0.171	--	--	--	--
	2655	09-Jul-86	2370	3510	--	--	--	--	--	--	0.161	--	--	--	--
	2721	13-Aug-86	1960	3030	--	--	16	0.02	--	0.24	0.118	0	0	0.005	0
	2806	10-Sep-86	2110	3270	--	0.3	16	0	0.18	0.22	0.126	--	--	0.005	0.01
	2920	07-Oct-86	2160	3210	--	0.5	17	0.01	--	0.24	0.141	--	--	0.005	0.005
	2958	12-Nov-86	2180	3310	--	--	--	--	--	--	0.142	--	--	0.005	0.005
	3048	01-Dec-86	--	3310	--	--	--	--	--	--	0.13	--	--	0.005	0.005
STC 5436	2304	14-Jan-86	12100	16200	--	--	--	--	--	0.19	0.85	0	--	0	0.01
	2394	26-Mar-86	12400	16400	--	--	--	--	--	--	0.715	--	--	0	0.01
	2520	07-May-86	15900	20300	--	--	--	--	--	--	0.79	--	--	--	--
	2656	09-Jul-86	13700	17400	--	--	--	--	--	--	0.81	--	--	--	--
	2722	13-Aug-86	8580	11600	--	0.7	14	0.04	--	0.17	0.945	0	0	0.005	0.01
	2807	10-Sep-86	10800	14500	--	0.8	10	0.04	--	0.17	0.825	--	--	0.005	0.01
	2921	07-Oct-86	11600	15300	--	1.1	5.8	0.1	--	0.23	0.772	--	--	0.005	0.005
	2959	12-Nov-86	11900	16000	--	1.1	7.5	0.05	--	0.23	1.08	--	--	0.005	0.005
	3049	01-Dec-86	--	28700	--	--	--	--	--	--	1.1	--	--	0.005	0.007
STC 6142	2305	14-Jan-86	9420	12800	--	--	--	--	--	0.05	0.302	0	0	0	0.01
STC 6467	2306	14-Jan-86	1480	2290	--	--	--	--	--	0.19	--	0.1	--	0	0
	2396	26-Mar-86	2040	3080	--	--	--	--	--	--	0.023	--	--	0	0
	2522	07-May-86	1790	2770	--	--	--	--	--	--	0.019	--	--	--	--
	2658	09-Jul-86	1930	2930	--	--	--	--	--	--	0.032	--	--	--	--
	2724	13-Aug-86	1660	2580	--	0.3	2.8	0.02	0.2	0.2	0.027	0	0	0.005	0
	2809	10-Sep-86	1390	2190	--	0.3	2.3	0.06	0.2	0.22	0.028	--	--	0.005	0
	2923	07-Oct-86	1010	1590	--	0.5	2.5	0.04	0.24	0.26	0.02	--	--	0.005	0.005
	2961	12-Nov-86	1130	1810	--	--	--	--	--	--	0.019	--	--	0.005	0.005
	3051	01-Dec-86	--	1960	--	--	--	--	--	--	0.019	--	--	0.005	0.005
VGD 3906	2276	13-Jan-86	33800	31200	--	--	--	--	--	--	0.007	0	0	0	0
	2397	24-Mar-86	35500	32100	--	--	--	--	--	--	0.009	--	--	0	0
	2456	08-Apr-86	33800	30600	--	--	--	--	--	--	0.01	--	--	0.01	0
	2603	09-Jun-86	33400	29600	--	--	--	--	--	--	0.012	--	--	0	0
	2725	13-Aug-86	33000	29200	--	0.4	8.4	0.26	0.09	0.2	0.01	0	0	0.007	0
	2810	10-Sep-86	32200	28400	--	0.6	7.4	0.24	0.12	0.3	0.011	--	--	0.005	0
	2924	08-Oct-86	20500	19600	--	0.6	4.6	0.15	0.17	0.27	0.008	--	--	0.005	0.005
	2962	13-Nov-86	34900	30900	--	0.9	6.1	0.42	0.08	0.26	0.014	--	--	0.005	0.005
	3052	02-Dec-86	38800	32900	--	1.1	3.9	0.54	0.06	0.3	0.008	--	--	0.005	0.005

1986 Monitoring Station Data

Southern Subsurface Stations (continued)

STATION	LN	DATE	Fe	Pb	Mn	Hg	Se	Ag	Zn	Al	Co	Mo	Ni	Sr	V	SS
Southern Subsurface Stations																
STC 3505	2303	14-Jan-86	--	0	0	--	0.003	--	--	--	0	--	--	0.5	--	--
	2393	26-Mar-86	0.01	--	0	--	0.003	--	0.01	--	--	--	0	0.2	--	--
	2519	07-May-86	--	--	--	--	0.003	--	--	--	--	--	--	--	--	--
	2655	09-Jul-86	--	--	--	--	0.003	--	--	--	--	--	--	--	--	--
	2721	13-Aug-86	0.01	0	0.01	0	0.003	0	0	0	0	--	0	0.5	--	--
	2806	10-Sep-86	0.02	--	0	--	0.003	--	0	--	--	--	--	0.4	--	--
	2920	07-Oct-86	0.006	--	0.005	--	0.003	--	0.005	--	--	0.216	--	0.3	--	--
	2958	12-Nov-86	0.005	--	0.005	--	0.004	--	0.035	--	--	0.131	--	0.3	--	--
	3048	01-Dec-86	0.005	--	0.005	--	0.002	--	0.005	--	--	0.14	--	0.4	--	--
STC 5436	2304	14-Jan-86	0.04	0	0.45	--	0	0	--	--	0	--	--	3.3	--	--
	2394	26-Mar-86	0.02	--	0.31	--	0	--	0.01	--	--	--	0.01	3.4	--	--
	2520	07-May-86	--	--	--	--	0.001	--	--	--	--	--	--	--	--	--
	2656	09-Jul-86	--	--	--	--	0.001	--	--	--	--	--	--	--	--	--
	2722	13-Aug-86	0.03	0	0.32	0	0	0	0	0	0	--	0	4.2	--	--
	2807	10-Sep-86	0.03	--	0.36	--	0.001	--	0	--	--	--	--	3.1	--	--
	2921	07-Oct-86	0.039	--	0.752	--	0.001	--	0.005	--	--	0.584	--	2.2	--	--
	2959	12-Nov-86	0.018	--	0.576	--	0.001	--	0.006	--	--	1.63	--	1.8	--	--
	3049	01-Dec-86	0.028	--	0.656	--	0.001	--	0.005	--	--	1.99	--	4.4	--	--
STC 6142	2305	14-Jan-86	0.03	0	0	--	0.001	--	--	--	0	--	--	3.4	--	--
STC 6467	2306	14-Jan-86	0.03	0	0.27	--	0.016	--	--	--	0	--	0	1.1	--	--
	2396	26-Mar-86	0.02	--	0.22	--	0	--	0	--	--	--	0	1.7	--	--
	2522	07-May-86	--	--	--	--	0	--	--	--	--	--	--	--	--	--
	2658	09-Jul-86	--	--	--	--	0	--	--	--	--	--	--	--	--	--
	2724	13-Aug-86	0.01	0	0.18	0	0	0	0.01	0	0	--	0	1.3	--	--
	2809	10-Sep-86	0.02	--	0.21	--	0.001	--	0	--	--	--	--	1	--	--
	2923	07-Oct-86	0.008	--	0.15	--	0.001	--	0.005	--	--	0.105	--	0.5	--	--
	2961	12-Nov-86	0.006	--	0.154	--	0.001	--	0.005	--	--	0.097	--	0.6	--	--
	3051	01-Dec-86	0.007	--	0.254	--	0.001	--	0.005	--	--	0.104	--	0.8	--	--
VGD 3906	2276	13-Jan-86	3.3	0	1.6	--	0.004	0	0	0	0	--	0	9.1	--	--
	2397	24-Mar-86	1.7	0	1.4	--	0.004	--	0.01	--	--	--	0	9	--	--
	2456	08-Apr-86	1.6	--	1	--	0.005	--	0	--	--	--	0	7.5	--	--
	2603	09-Jun-86	1.4	--	0.92	--	0.006	--	0.01	--	--	--	0	8.3	--	--
	2725	13-Aug-86	1.1	0	0.76	0	0.003	0	0	0	0	--	0	8.8	--	--
	2810	10-Sep-86	0.94	--	0.8	--	0.004	--	0	--	--	--	--	7.3	--	--
	2924	08-Oct-86	0.256	--	0.9	--	0.004	--	0.02	--	--	0.047	--	5	--	--
	2962	13-Nov-86	2.02	--	1.2	--	0.004	--	0.005	--	--	0.67	--	7.2	--	--
	3052	02-Dec-86	3.25	--	0.035	--	0.002	--	0.006	--	--	0.67	--	8.2	--	--

1986 Monitoring Station Data

Southern Subsurface Stations (continued)

STATION	LN	DATE	TYPE1	NAME1	CONC1	TYPE2	NAME2	CONC2
Southern Subsurface Stations								
STC 3505	2303	14-Jan-86	A	NA	--	A	NA	--
	2393	26-Mar-86	A	NA	--	A	NA	--
	2519	07-May-86	A	NA	--	A	NA	--
	2655	09-Jul-86	A	NA	--	A	NA	--
	2721	13-Aug-86	A	NA	--	A	NA	--
	2806	10-Sep-86	A	NA	--	A	NA	--
	2920	07-Oct-86	A	NA	--	A	NA	--
	2958	12-Nov-86	A	NA	--	A	NA	--
	3048	01-Dec-86	A	NA	--	A	NA	--
STC 5436	2304	14-Jan-86	A	NA	--	A	NA	--
	2394	26-Mar-86	A	NA	--	A	NA	--
	2520	07-May-86	A	NA	--	A	NA	--
	2656	09-Jul-86	A	NA	--	A	NA	--
	2722	13-Aug-86	A	NA	--	A	NA	--
	2807	10-Sep-86	A	NA	--	A	NA	--
	2921	07-Oct-86	A	NA	--	A	NA	--
	2959	12-Nov-86	A	NA	--	A	NA	--
	3049	01-Dec-86	A	NA	--	A	NA	--
STC 6142	2305	14-Jan-86	A	NA	--	A	NA	--
STC 6467	2306	14-Jan-86	A	NA	--	A	NA	--
	2396	26-Mar-86	A	NA	--	A	NA	--
	2522	07-May-86	A	NA	--	A	NA	--
	2658	09-Jul-86	A	NA	--	A	NA	--
	2724	13-Aug-86	A	NA	--	A	NA	--
	2809	10-Sep-86	A	NA	--	A	NA	--
	2923	07-Oct-86	A	NA	--	A	NA	--
	2961	12-Nov-86	A	NA	--	A	NA	--
	3051	01-Dec-86	A	NA	--	A	NA	--
VGD 3906	2276	13-Jan-86	A	NA	--	A	NA	--
	2397	24-Mar-86	A	NA	--	A	NA	--
	2456	08-Apr-86	A	NA	--	A	NA	--
	2603	09-Jun-86	A	NA	--	A	NA	--
	2725	13-Aug-86	A	NA	--	A	NA	--
	2810	10-Sep-86	A	NA	--	A	NA	--
	2924	08-Oct-86	A	NA	--	A	NA	--
	2962	13-Nov-86	A	NA	--	A	NA	--
	3052	02-Dec-86	A	NA	--	A	NA	--

1986 Monitoring Station Data

Southern Subsurface Stations (continued)

STATION	LN	DATE	TIME	CO	TEMP	FEC	FpH	HARD	Ca	Mg	Na	K	TALK	LpH	SO4	Cl	NO3	B
Southern Subsurface Stations																		
VGD 4406	2277	13-Jan-86	1210	16	17	--	7.4	4340	448	782	6480	5.2	449	7.9	15100	1720	24	25
	2398	24-Mar-86	930	16	17	--	7.5	4000	438	705	6360	7.1	413	7.8	14500	1420	50	36
	2457	08-Apr-86	1425	16	17	--	7.3	3620	415	628	5640	4.8	384	7.8	12800	1120	27	26
	2604	09-Jun-86	900	16	18	--	7.4	4490	364	870	6930	6.9	421	7.8	16000	1710	34	28
	2726	13-Aug-86	845	16	21	--	7.4	4570	408	862	6930	6.3	421	8	16500	1620	--	35
	2811	10-Sep-86	845	16	20	--	7.4	4270	334	835	7130	5.9	404	8	16200	1690	--	37
	2925	08-Oct-86	840	16	20	--	7.4	4960	444	934	7900	3.9	409	8	17300	2160	--	32
	2963	13-Nov-86	925	16	17	--	7.5	4810	446	898	7430	2.3	416	7.9	17100	1750	--	30
	3053	02-Dec-86	1045	16	19	--	7.4	4680	430	875	7380	3.5	420	8	15900	1770	--	28
VGD 4806	2278	13-Jan-86	1200	16	16	--	7.2	4530	338	895	6710	8.1	409	7.5	15800	1820	4.9	24
VGD 5412	2279	13-Jan-86	1145	16	17	--	7.3	3140	392	525	3080	5.2	455	7.7	7800	943	13	12
	2399	24-Mar-86	900	16	17	--	7.6	3110	375	528	3760	7.5	464	7.7	9020	908	30	20
	2458	08-Apr-86	1405	16	17	--	7.3	2900	362	485	3600	6.5	479	7.8	8300	849	24	20
	2605	09-Jun-86	845	16	18	--	7.3	3460	398	598	4010	7	451	7.9	9810	1000	24	19
	2727	13-Aug-86	830	16	20	--	7.3	3390	380	592	4410	6.7	457	8	10100	1020	--	22
	2812	10-Sep-86	825	16	20	--	7.4	3330	378	579	4040	6.7	442	8.2	9860	1020	--	21
	2926	08-Oct-86	820	16	20	--	7.3	3570	400	624	4470	4.4	389	8.1	10700	1220	--	19
	2964	12-Nov-86	900	16	17	--	7.5	3840	430	672	4280	3.2	450	7.8	9700	1110	--	17
	3054	02-Dec-86	1000	16	19	--	7.3	3690	401	650	3980	4.4	457	7.9	9750	1140	--	16
VGD 5509	2280	13-Jan-86	1130	16	16	--	7	1590	257	231	610	3.9	267	8.1	2150	274	3.1	2.3

1986 Monitoring Station Data

Southern Subsurface Stations (continued)

STATION	LN	DATE	TDS	LEC	COD	NH3-ORG	NO3+NO2	D-NH3	D-ORTHO	T-P	As	Ba	Cd	Cr	Cu
Southern Subsurface Stations															
VGD 4406	2277	13-Jan-86	25900	25200	--	--	--	--	--	--	0.007	0	0	0	0
	2398	24-Mar-86	25200	24100	--	--	--	--	--	--	0.01	--	--	0	0
	2457	08-Apr-86	21900	21300	--	--	--	--	--	--	0.012	--	--	0	0
	2604	09-Jun-86	27900	25500	--	--	--	--	--	--	0.008	--	--	0	0
	2726	13-Aug-86	28700	26100	--	0.4	8.3	0.23	0.06	0.14	0.01	0	0	0.005	0
	2811	10-Sep-86	29000	26300	--	0.5	8	0.24	0.07	0.15	0.008	--	--	0.005	0
	2925	08-Oct-86	29900	26700	--	0.8	6.9	0.26	0.1	0.13	0.008	--	--	0.005	0.005
	2963	13-Nov-86	28400	26400	--	0.7	6.7	0.17	0.06	0.15	0.007	--	--	0.005	0.005
	3053	02-Dec-86	28300	25500	--	0.7	5.7	0.18	0.05	0.12	0.005	--	--	0.005	0.005
VGD 4806	2278	13-Jan-86	27100	26000	--	--	--	--	--	--	0.002	0	0	0	0
VGD 5412	2279	13-Jan-86	13800	14400	--	--	--	--	--	--	0.002	0	0	0	0
	2399	24-Mar-86	15800	16200	--	--	--	--	--	--	0.004	--	--	0	0
	2458	08-Apr-86	14600	15000	--	--	--	--	--	--	0.006	--	--	0	0
	2605	09-Jun-86	16600	16800	--	--	--	--	--	--	0.003	--	--	0	0
	2727	13-Aug-86	17500	17300	--	0.1	6.5	0.14	0.02	0.1	0.004	0	0	0.005	0
	2812	10-Sep-86	17100	16900	--	0.4	6.1	0.14	0.03	0.1	0.003	--	--	0.005	0
	2926	08-Oct-86	17240	16800	--	0.7	6.1	0.16	0.06	0.09	0.003	--	--	0.005	0.006
	2964	12-Nov-86	17200	17100	--	0.7	4.4	0.2	0.03	0.11	0.003	--	--	0.005	0.005
	3054	02-Dec-86	17400	16800	--	0.6	4.3	0.16	0.01	0.08	0.003	--	--	0.005	0.005
VGD 5509	2280	13-Jan-86	4130	4650	--	--	--	--	--	--	0.003	0	0	0	0

1986 Monitoring Station Data

Southern Subsurface Stations (continued)

STATION	LN	DATE	Fe	Pb	Mn	Hg	Se	Ag	Zn	Al	Co	Mo	Ni	Sr	V	SS
Southern Subsurface Stations																
VGD 4406	2277	13-Jan-86	0.73	0	1.2	--	0.006	0	0.01	0	0	--	0	8.2	--	--
	2398	24-Mar-86	0.8	--	0.53	--	0.004	--	0	--	--	--	0	8	--	--
	2457	08-Apr-86	0.71	--	0.48	--	0.004	--	0	--	--	--	0	6	--	--
	2604	09-Jun-86	1.4	--	0.91	--	0.006	--	0.01	--	--	--	0	7.9	--	--
	2726	13-Aug-86	1.3	0	0.8	0	0.004	0	0	0	0	--	0	9.1	--	--
	2811	10-Sep-86	1.2	--	0.89	--	0.007	--	0	--	--	--	--	2	--	--
	2925	08-Oct-86	1.17	--	1.01	--	0.002	--	0.005	--	--	0.048	--	7.2	--	--
	2963	13-Nov-86	0.74	--	0.82	--	0.004	--	0.005	--	--	0.74	--	6.8	--	--
	3053	02-Dec-86	0.832	--	1.01	--	0.004	--	0.005	--	--	0.705	--	8.1	--	--
VGD 4806	2278	13-Jan-86	1.8	0	2.9	--	0	0	0	0	0	--	0.01	6.2	--	--
VGD 5412	2279	13-Jan-86	2.3	0	1.4	--	0.001	0	0.01	0	0	--	0	18	--	--
	2399	24-Mar-86	0.86	--	0.76	--	0.002	--	0.01	--	--	--	0	6.1	--	--
	2458	08-Apr-86	0.4	--	0.71	--	0.003	--	0	--	--	--	0.01	4.8	--	--
	2605	09-Jun-86	1.6	--	1.2	--	0.002	--	0.01	--	--	--	0.01	5.7	--	--
	2727	13-Aug-86	1.3	0	0.97	0	0	0	0	0	0	--	0	6.3	--	--
	2812	10-Sep-86	1	0	1	--	0.001	--	0	--	--	--	--	6.3	--	--
	2926	08-Oct-86	1.11	--	1.29	--	0.001	--	0.005	--	--	0.043	--	4.6	--	--
	2964	12-Nov-86	1.29	--	1.42	--	0.002	--	0.005	--	--	0.266	--	4.7	--	--
	3054	02-Dec-86	0.808	--	1.29	--	0.001	--	0.005	--	--	0.21	--	5.2	--	--
VGD 5509	2280	13-Jan-86	0.91	0	4.2	--	0	0	0	0	0	--	0.01	2.2	--	--

1986 Monitoring Station Data

Southern Subsurface Stations (continued)

STATION	LN	DATE	TYPE1	NAME1	CONC1	TYPE2	NAME2	CONC2
Southern Subsurface Stations								
VGD 4406	2277	13-Jan-86	A	NA	--	A	NA	--
	2398	24-Mar-86	A	NA	--	A	NA	--
	2457	08-Apr-86	A	NA	--	A	NA	--
	2604	09-Jun-86	A	NA	--	A	NA	--
	2726	13-Aug-86	A	NA	--	A	NA	--
	2811	10-Sep-86	A	NA	--	A	NA	--
	2925	08-Oct-86	A	NA	--	A	NA	--
	2963	13-Nov-86	A	NA	--	A	NA	--
	3053	02-Dec-86	A	NA	--	A	NA	--
VGD 4806	2278	13-Jan-86	A	NA	--	A	NA	--
VGD 5412	2279	13-Jan-86	A	NA	--	A	NA	--
	2399	24-Mar-86	A	NA	--	A	NA	--
	2458	08-Apr-86	A	NA	--	A	NA	--
	2605	09-Jun-86	A	NA	--	A	NA	--
	2727	13-Aug-86	A	NA	--	A	NA	--
	2812	10-Sep-86	A	NA	--	A	NA	--
	2926	08-Oct-86	A	NA	--	A	NA	--
	2964	12-Nov-86	A	NA	--	A	NA	--
	3054	02-Dec-86	A	NA	--	A	NA	--
VGD 5509	2280	13-Jan-86	A	NA	--	A	NA	--

APPENDIX C

Works Consulted

WORKS CONSULTED

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