

---

# CYPRUS PLATEAU MINING CORP.

STAR POINT MINE  
1995 HYDROLOGIC  
MONITORING REPORT

VOLUME 1 OF 2  
REPORT TEXT  
APPENDIX A

ANNUAL REPORT

April 1996

**HANSEN  
ALLEN  
& LUCE<sup>INC</sup>**  
SALT LAKE CITY, UTAH

---



SALT LAKE AREA OFFICE  
6771 South 900 East  
Midvale, Utah 84047  
Phone: (801) 566-5599

Mr. Johnny Pappas  
Cyprus Plateau Mining Company  
P.O. Drawer PMC  
Price, Utah 84501

May 14, 1996

RE: 1995 Annual Water Monitoring Report for the Star Point Mine.

Dear Johnny:

As per your request we have prepared the 1995 Annual Water Monitoring Report for the Star Point Mine. The Water Monitoring Report includes graphical time plots for flow; pH, TDS; major anions and cations including calcium, magnesium, chloride, bicarbonate and sulfate; and oil and grease for surface stations. The report also includes a station by station summary of data trends. As requested by DOGM, we have also included data disks at the back of the report containing all water quality data and data plots in Quattro Pro 6.0 for Windows format. The files have been compressed into three self-extracting executables using PKZIP software.

We appreciate the opportunity to assist you with this project. Please call should you have any questions.

Sincerely,

A handwritten signature in black ink, appearing to read 'David E. Hansen', written over a horizontal line.

David E. Hansen, Ph.D., P.E.  
Project Manager

cc: file

# TABLE OF CONTENTS

	PAGE
INTRODUCTION .....	1
GROUND WATER MONITORING .....	1
SPRINGS .....	1
Star Point Sandstone Formation Springs .....	2
Birch Spring .....	2
Big Bear .....	2
Blackhawk Formation Springs .....	3
530 .....	3
CVS6 .....	4
CVS7 .....	4
CVS9 .....	5
CVS10 .....	5
Castlegate Formation Springs .....	6
238 .....	6
492 .....	6
494 .....	7
Price River Formation Springs .....	7
S149 .....	7
S182 .....	8
229 .....	8
458 .....	9
500 .....	9
North Horn Formation Springs .....	10
S111 .....	10
232 .....	10
424 .....	11
429 .....	11
444 .....	11
450 .....	12
452 .....	12
518 .....	13
748 .....	13
749 .....	13
751 .....	14
753 .....	14
971 .....	14
978 .....	15
85261 .....	15
438 .....	15
486 .....	16

**TABLE OF CONTENTS - (Continued)**

	<b>PAGE</b>
Conclusions .....	17
<b>MONITORING WELLS</b> .....	17
<b>In-Mine Wells</b> .....	18
P8601TD .....	18
P8602HD .....	18
P8603WD .....	19
P9201AWD .....	19
P9201BWD .....	19
P9201CWD .....	19
P9202WD .....	20
P9203WD .....	20
P9204WD .....	20
P9301WD .....	20
P9301WD .....	21
<b>Surface Wells</b> .....	21
86266 .....	21
863523 .....	21
92101 .....	22
85351 .....	22
Conclusions .....	23
 <b>SURFACE WATER MONITORING</b> .....	 24
<b>SAGE BRUSH CANYON</b> .....	25
101 .....	25
<b>MUD WATER CREEK</b> .....	25
51 .....	25
<b>CORNER CANYON</b> .....	26
361 .....	26
<b>TIE FORK CANYON</b> .....	26
341 .....	26
342 .....	27
<b>RIGHT FORK, MILLER CREEK</b> .....	27
ST1 .....	28
ST2 .....	28
M8 .....	29
87101CV .....	29
87102CV .....	30
87103CV .....	30
93341CV .....	31
<b>CONCLUSIONS</b> .....	32

**TABLE OF CONTENTS - (Continued)**

	<b>PAGE</b>
<b>UNDERGROUND MINE FLOW MONITORING &amp; MUDWATER DISCHARGE</b> .....	<b>32</b>
1W4 .....	33
1WN6 .....	33
9L12 .....	34
Gentry Ridge .....	34
Mudwater Discharge .....	34
Conclusions .....	35
 <b>PRECIPITATION AND CLIMATOLOGICAL DATA</b> .....	 <b>36</b>
Appendix A - Springs	
Appendix B - Wells	
Appendix C - Surface Water	
Appendix D - In-Mine Stations	

## INTRODUCTION

The Star Point Mines, owned and operated by Cyprus Plateau Mining Corporation (CPMC), are located approximately 12 miles southwest of Price, Utah. The entries to underground workings are on the east face of the Wasatch Plateau. The surface facilities occupy 173 acres which drain into sedimentation ponds. The sedimentation ponds drain into Serviceberry Creek, an ephemeral channel. Water from underground workings is generally pumped into old workings, but has been discharged at Mudwater Canyon, an NPDES permitted discharge point. The surface over the mine is drained by streams including Tie Fork Canyon, Right Fork Miller Creek, Mud Water Canyon, and Corner Canyon and their tributaries. The locations of all monitoring stations are shown on Map 722.200a located at the end of this report.

Water samples collected during 1995 were analyzed by ACZ Laboratories, Steamboat Springs, Colorado.

Table 1 contains a list of water quality sampling parameters for springs, mine inflows, and surface and ground waters. Data and plots for each station are found in the Appendices.

## GROUND WATER MONITORING

### SPRINGS

Twenty nine springs were monitored by CPMC during 1995. Monitoring data are arranged according to formation in which the springs originate. The formations of interest, beginning with the lowest, are the Star Point Sandstone, the Blackhawk, the Castlegate Sandstone, the Price River, and the North Horn. The Castlegate is actually a member of the Price River Formation but is sampled separate from the Price River Formation because of its significance. A review of the surficial geology shows that two of the twenty nine springs identified issue from the Star Point Sandstone, three from the Blackhawk Formation, three issue from the Castlegate Sandstone, five from the rest of the Price River Formation, and sixteen from the North Horn Formation.

The stations have been sampled on a quarterly basis when accessible. Graphical time plots have been prepared for flow, pH, TDS, and major cations and anions including calcium, magnesium, chloride, bicarbonate and sulfate. The data have been plotted to show flow and water quality variations as sequential time plots. The plots were used in our analyses of flow and water quality changes over time. Plots were prepared for TDS and flow from all available sampling from 1977 through 1995. Plots were prepared for the other indicated water quality parameters for sampling from 1991 through 1995. Complete data sets of information prior to 1991 can be found in previous annual reports. Water quality data and the plots for each station are located in Appendix A.

Since it is likely that there is correlation between spring flows and precipitation, plots were also prepared which compare recorded flows to annual precipitation records for a local gaging station over the period of record. The National Weather Service rainfall gaging station closest to the Star Point mine area is located in Price which is about 12 miles northeast of the Star Point mine. Average annual precipitation for the Price station is 9.4 inches per year. Precipitation values recorded at the Price

weather station have been plotted for comparison with recorded spring flows at each water sampling station. It must be remembered that although data from the Price station provides an overall indication of precipitation patterns, they do not necessarily represent true local conditions.

A station by station summary of the 32 spring stations that were sampled is given below, organized according to the formation in which the springs originate. A discussion of any apparent data trends is included in the summary for each station.

### **Star Point Sandstone Formation Springs**

Two springs issuing from the Star Point Sandstone Formation were sampled during 1995, Birch Spring and Big Bear Spring. These springs were monitored as a part of the Gentry Ridge Impact evaluation involving the Castle Valley Special Service District and the Huntington Cleveland Irrigation Company. These water companies have concerns that mining may impact their water sources in the Huntington Canyon area. Birch and Big Bear springs are two of the larger springs down-gradient from mining and offer an opportunity to monitor ground water that may originate in the mining zone.

Since the early 1980's, the long term trend in flow at both Birch Springs and Big Bear has been downward. Plots of historic flow at these stations can be found in previous annual reports. The reason for this downward trend could be due to decreased precipitation or mining impacts created by another mine in close proximity to both springs. Recent data suggests flows have stabilized.

#### **Birch Spring**

**Flow.** From 1992 through 1995 the average measured flow was 0.058 cfs; the high was 0.07 cfs and the low was 0.011 cfs. There has been more variation in flow over the past few years. The data indicates there is some correlation between precipitation and flow when the delaying effects of snowmelt and recharge are considered.

**pH.** From 1992 through 1995 the average measured pH was 6.8; the high was 7.8 and the low was 6.1. Measurements in 1994 and 1995 were consistently higher than measurements in 1992 and 1993. Readings taken in 1995 were remarkably constant.

**TDS.** The average TDS concentration for the period of record is 451 mg/l with most values lying between 460 and 420 mg/l. Two samples taken in July and October of 1995 were higher than usual at 490 mg/l. No increasing or decreasing trends are apparent.

**Major Cations and Anions.** Levels of major cations and anions have varied during the period of record, however no general trends in the data are apparent.

#### **Big Bear**

**Flow.** From 1992 through 1995 the average measured flow was 0.23 cfs; and most values were between 0.3 and 0.17 cfs, although a flow of 0.0 was measured in October 1993. The data indicates there is some correlation between precipitation and flow when the delaying effects of snowmelt and recharge are considered.

**pH.** From 1992 through 1995 the average measured pH was 7.1; the high was 8.2 and the low was 6.5. Measurements in 1994 and 1995 were consistently higher than measurements in 1992 and 1993. Measurements taken in 1994 and 1995 have been relatively constant.

**TDS.** The average TDS concentration for the period of record is 328 mg/l with most values lying between 290 and 370 mg/l. One sample taken in October of 1995 was higher than usual at 426 mg/l. The data may indicate an increasing trend in TDS concentrations. Future data will be used to verify if this is the case.

**Major Cations and Anions.** Calcium, magnesium, chloride and sulphate levels all showed an increase in concentrations in 1995. Other than this 1995 increase, no other long term trends in the data are apparent.

A summary of the general trend for major water quality parameters for springs found within the Star Point Sandstone Formation is provided in the following table. Note that the table shows whether the general trend (as evidenced by the graphs provided in the Appendices) is "Down", "Stable", or "Up". For major cations and anions, there may be more than one category marked, indicating that there was variation found between parameters evaluated. The reader is referred to either the text or the graphs for further details when two or more categories are marked.

#### Summary for Star Point Sandstone Formation Springs

Station	Flow			pH			TDS			Major Cations/Anions		
	Down	Stable	Up	Down	Stable	Up	Down	Stable	Up	Down	Stable	Up
Birch		X			X			X			X	
Big Bear		X			X				X		X	X

#### Blackhawk Formation Springs

Five stations at springs issuing from the Blackhawk formation were sampled in 1995. These stations are: 520, CVS6, CVS7, CVS9 and CVS10. Two of the stations, CVS9 and CVS10, are new as of 1995.

##### 530

**Flow.** From 1986 through 1995 the average measured flow was 0.0086 cfs with a high of 0.02 and a low of 0.0. "Dry" measurements were recorded in August of 1990 and September of 1991. No increasing or decreasing trends in the data are apparent. Flows measured prior to 1992 were likely estimated as almost all measurements are consistently at 0.01 cfs. A correlation between precipitation and flow is not apparent from the data.

**pH.** From 1991 through 1995, pH measurements have varied between a high of 8.8 and a low of 6.4. The average measured pH for the period of record is 7.6. No increasing or decreasing trends in the data are apparent.

**TDS.** From 1986 to 1995 most TDS measurements have generally been between 300 mg/l and 325 mg/l, with the average TDS concentration being 307 mg/l. No increasing or decreasing trends are apparent.

**Major Cations and Anions.** Levels of major cations and anions have varied during the period of record, with calcium, magnesium levels following a possible slight increasing trend. Chloride values were also higher in 1995 but no trend has yet appeared. No other general trends in the data are apparent.

#### **CVS6**

**Flow.** Data at station CVS6 has only been recorded since 1993. All measured flows from 1993 to 1995 have been 0.0 with the exception of June 1993 when a flow of 0.002 cfs was recorded.

**pH.** The only pH measurement, taken in June 1993, was 6.2.

**TDS.** The only TDS measurement, taken in June 1993, was 240 mg/l.

**Major Cations and Anions.** The only measurement of major cations and anions, taken in June 1993, indicated normal concentrations of all measured parameters.

#### **CVS7**

**Flow.** From 1993 through 1995 the average measured flow was 0.0016 cfs with a high of 0.01 and a low of 0.0. Most measurements are at 0.001 cfs. "Dry" measurements were recorded in August and September of 1994. No increasing or decreasing trends in the data are apparent. A correlation between precipitation and flow is not apparent from the data.

**pH.** From 1993 through 1995, pH measurements have varied between a high of 8.1 and a low of 6.3. The average measured pH for the period of record is 7.1. The increase in 1995 pH values over historic values will be monitored to verify that the data is an anomaly and not a trend.

**TDS.** From 1993 to 1995 the average measured TDS concentration was 261 mg/l with a high of 310 and a low of 236 mg/l. TDS concentrations may be increasing, however, additional data is necessary before a firm trend can be verified.

**Major Cations and Anions.** Although only three years of data exist, the data appears to be indicating an increasing trend in concentrations of the major cations and anions, with the exception of bicarbonate which experienced a drop.

### CVS9

**Flow.** Only data for the year 1995 was available for this station. Flow measurements varied between 0.0 and 0.003 cfs during 1995. Insufficient data is available to identify any long term trends.

**pH.** pH measurements varied between 7.6 and 7.8 during 1995. Not enough data is available to identify long term trends.

**TDS.** Only two TDS measurements exist for this station and both were at 370 mg/l. Not enough data is available to identify long term trends.

**Major Cations and Anions.** Levels of major cations and anions has only been recorded twice for this station and there is not enough data to identify long term trends.

### CVS10

**Flow.** Only data for the year 1995 was available for this station. Three flow measurements were recorded during the year and each one indicated no flow at the spring. Insufficient data is available to identify any long term trends.

**pH.** No data exists on pH levels at this station.

**TDS.** No data exists on TDS levels at this station.

**Major Cations and Anions.** No data exists on levels of major cations and anions at this station.

A summary of the general trend for major water quality parameters for springs found within the Blackhawk Formation is provided in the following table. For major cations and anions, there may be more than one category marked, indicating that there was variation found between parameters evaluated. The reader is referred to either the text or the graphs for further details when two or more categories are marked. The question mark shown in the table indicates uncertainty regarding a trend. Additional data collected over time will help define a possible trend. N/A in the table indicates insufficient data exists to make a determination of a potential trend.

**Summary for Blackhawk Formation Springs**

Station	Flow			pH			TDS			Major Cations/Anions		
	Down	Stable	Up	Down	Stable	Up	Down	Stable	Up	Down	Stable	Up
530		X			X			X			X	X
CVS6		X			N/A			N/A			N/A	
CVS7		X			X				?	X		X

**Summary for Blackhawk Formation Springs - (Continued)**

CVS9		N/A			N/A			N/A			N/A	
CVS10		N/A			N/A			N/A			N/A	

**Castlegate Formation Springs**

238

**Flow.** From 1987 through 1995 the average measured flow was 0.02 cfs with a high of 0.11 and a low of 0.008. The data indicate increasing flows and a correlation between precipitation and flow when the delaying effects of snowmelt and recharge are considered.

**pH.** From 1991 through 1995, pH measurements have varied between a high of 8.1 and a low of 6.1. The average measured pH for the period of record is 7.1. No increasing or decreasing trends in the data are apparent.

**TDS.** From 1987 to 1995 most TDS measurements have generally been between 200 and 230 mg/l, with the average TDS concentration being 215 mg/l. No increasing or decreasing trends are apparent.

**Major Cations and Anions.** Levels of major cations and anions have varied during the period of record, however no general trends in the data are apparent.

492

**Flow.** From 1989 through 1995 the average measured flow was 0.0032 cfs with a high of 0.01 and a low of 0.0. Most measurements taken from 1989 through 1991 showed the spring as having no flow. From 1992 through 1995, however, measurements indicate some flow at the spring with most measurements in the range of 0.002 to 0.0045 cfs. The data indicates a correlation between precipitation and flow when the delaying effects of snowmelt and recharge are considered.

**pH.** From 1991 through 1995, pH measurements have varied between a high of 8.1 and a low of 5.3. The average measured pH for the period of record is 7.2. No increasing or decreasing trends in the data are apparent.

**TDS.** From 1989 to 1995 most TDS measurements have generally been between 190 and 230 mg/l, with the average TDS concentration being 209 mg/l. The data indicate a slight decreasing trend in TDS concentration.

**Major Cations and Anions.** Levels of major cations and anions have varied during the period of record, however no general trends in the data are apparent.

**Flow.** From 1987 through 1995 the average measured flow was 0.0024 cfs with a high of 0.02 and a low of 0.0. Most measurements taken from 1987 through 1991 showed the spring as having no flow. From 1992 through 1995, however, measurements indicate increasing flow at the spring with most measurements in the range of 0.001 to 0.005 cfs. The data indicate an increasing trend in flows and a correlation between precipitation and flow when the delaying effects of snowmelt and recharge are considered.

**pH.** From 1991 through 1995, pH measurements have generally varied between 6.4 and 8.4 with the average being 8.1. A very high value of 12.7 was recorded in July 1993. No increasing or decreasing trends are apparent in the data.

**TDS.** Only 5 TDS measurements have been recorded from 1987 through 1995; one in 1987, three in 1988 and one in 1995. The average recorded TDS concentration is 243 mg/l with the high at 270 mg/l and the low at 190 mg/l. The data is insufficient to indicate any increasing or decreasing trends.

**Major Cations and Anions.** Major cations and anions have only been sampled once during the period of record and are within expected ranges.

A summary of the general trend for major water quality parameters for springs found within the Castlegate Formation is provided in the following table. N/A in the table indicates insufficient data exists to make a determination of a potential trend.

**Summary for Castlegate Formation Springs**

Station	Flow			pH			TDS			Major Cations/Anions		
	Down	Stable	Up	Down	Stable	Up	Down	Stable	Up	Down	Stable	Up
238			X		X			X			X	
492			X		X		X				X	
494			X		X			N/A			N/A	

### Price River Formation Springs

#### S149

**Flow.** From 1985 through 1995 the average measured flow was 0.0538 cfs with most values between 0.0 and 0.15. A much higher than typical flow value of 0.57 cfs was recorded in June of 1995. Measurements indicate higher flows in the springtime and lower flows in the summer and fall. The data do not indicate an increasing or decreasing trend in flows but seasonal variations indicate flows increase during spring thaws.

**pH.** From 1991 through 1995, pH measurements have varied from a high of 8.2 to a low of 6, the average being 7.1. No increasing or decreasing trends are apparent in the data.

**TDS.** TDS measurements have been recorded from 1985 through 1995 with the exception of the years 1989 and 1990. Before 1989, TDS concentrations typically ranged between 250 and 300 mg/l. Between 1991 and 1995, however, TDS concentrations varied between 300 and 400 mg/l. Although there has obviously been an increasing trend in the past, recent data indicates that this trend now may have ceased.

**Major Cations and Anions.** Levels of major cations and anions have varied during the period of record, and increasing trends are apparent in calcium, magnesium, and bicarbonate. No trends are apparent in the other parameters.

## S182

**Flow.** Most of the flow measurements from 1979 through 1995 indicated no flow at the spring during the summer and autumn months and flows of 0.01 cfs during the springtime. A higher than typical flow value of 0.054 cfs was recorded in June of 1995. Measurements indicate higher flows in the springtime and lower flows in the summer and fall. The data do not indicate an increasing or decreasing trend in flows but seasonal variations indicate flows increase during spring thaws.

**pH.** Only two pH measurements have been taken at this spring. In June 1986 the pH was 6.9 and one in June 1995 the pH was 6.4.

**TDS.** TDS measurements have varied considerably between 1979 and 1995 between a low of 130 mg/l and a high of 260 mg/l. TDS measurements were not taken from 1991 through 1994. The data shows no significant long term trends.

**Major Cations and Anions.** Measurements of major cations and anions were not taken from 1991 through 1994. Data plotted for the prior period of record shows no significant trends over time.

## 229

**Flow.** Most of the flow measurements from 1979 through 1995 indicated no flow at the spring during the summer and autumn months and flows between 0.05 and 0.08 cfs during the springtime. A higher than typical flow value of 0.184 cfs was recorded in June of 1995. Measurements indicate higher flows in the springtime and lower flows in the summer and fall. The data do not indicate an increasing or decreasing trend in flows but seasonal variations indicate flows increase during spring thaws.

**pH.** Only four pH measurements have been taken at this spring since 1991. The high recorded value was 7.4 and the low was 6.2 with an average of 7. No trends are apparent in the data.

**TDS.** From 1986 through 1995 TDS measurements have varied between a low of 174 mg/l and a high of 220 mg/l. No trends are apparent in the data.

**Major Cations and Anions.** Although measurements of major cations and anions have varied over time, there is insufficient data to confirm the presence of long term trends.

458

**Flow.** Data from 1992 through 1995 indicate springtime flows between 0.02 and 0.1 cfs and summer and autumn flows between 0.0 and 0.01 cfs. This spring has been dry since August 1994 and did not show the typical high flow in June 1995 as it has in previous years. The cause of this station being dry is unknown at this time and it is uncertain if this represents a long term trend. It however should be stated that it is possible that mining may have had an impact upon this spring.

**pH.** From 1992 through 1995 pH has varied between 7.9 and 6.2, the average being 6.9. No trends are apparent in the data.

**TDS.** From 1986 through 1995 TDS measurements have varied between a low of 174 mg/l and a high of 220 mg/l. No trends are apparent in the data.

**Major Cations and Anions.** Levels of major cations and anions have varied during the period of record, however no general trends in the data are apparent. The variations appear to be random.

500

**Flow.** From 1987 through 1995 only two measurements have indicated any flow at this spring. Flows of 0.1 cfs were recorded both in May 1987 and July 1989. The data do not indicate an increasing or decreasing trend in flows and there is no indication that a correlation between precipitation and flow exists.

**pH.** Measurements of pH were recorded from 1987 through 1989 but pH has not been measured since then. pH ranged between 6.6 and 8.4 with the average being 7.8.

**TDS.** Data on TDS concentration only exists for the years 1987, 1988 and 1989. The high recorded value was 268, the low was 198, and the average was 243.

**Major Cations and Anions.** Levels of major cations and anions varied during the period of record (1987 - 1989), however no general trends in the data are apparent.

A summary of the general trend for major water quality parameters for springs found within the Price River Formation is provided in the following table. For major cations and anions there may be more than one category marked, indicating that there was variation found between parameters evaluated. The reader is referred to either the text or the graphs for further details when two or more categories are marked. N/A in the table indicates insufficient data exists to make a determination of a potential trend.

### Summary for Price River Formation Springs

Station	Flow			pH			TDS			Major Cations/Anions		
	Down	Stable	Up	Down	Stable	Up	Down	Stable	Up	Down	Stable	Up
S149		X			X			X			X	X
S182		X			N/A			X			X	
229		X			X			X			X	
458	X				X			X			X	
500		X			N/A			N/A			X	

#### North Horn Formation Springs

##### S111

**Flow.** From 1980 through 1991 only two measurements have indicated any flow at this spring. From 1992 through 1994 typical flows were 0.001 cfs, and in 1995 typical flows were 0.002 cfs. The data indicate an increasing trend in flows since 1992, but no correlation between precipitation and flow.

**pH.** From 1991 through 1995 pH has varied between a high of 7.7 and a low of 5.9, with the average being 6.8. No trends are apparent from the data.

**TDS.** From 1980 through 1995 most TDS measurements varied between 130 and 230 mg/l. An unusually high value of 688 mg/l was recorded in October 1984. No long term trends are indicated by the data.

**Major Cations and Anions.** Levels of major cations and anions varied during the period of record but no general trends in the data are apparent. Bicarbonate levels in 1995 are lower than they have been in previous years.

##### 232

**Flow.** From 1988 through 1991 springtime flows were recorded at 0.01 or 0.02 cfs and summer and autumn flows were always 0.0. From 1991 through 1995 the data is more variable but measurements are similar in magnitude to those recorded before 1991. An unusually high flow of 0.05 was recorded in June 1995. The data do not indicate any increasing or decreasing trends in flows but do indicate a correlation between precipitation and flow.

**pH.** From 1991 through 1995 pH has varied between a high of 7.8 and a low of 6.0, with the average being 6.9. No trends are apparent from the data.

**TDS.** From 1988 through 1995 most TDS measurements generally varied between 170 and 210 mg/l. No trends are apparent from the data.

**Major Cations and Anions.** Levels of major cations and anions varied during the period of record but no general trends in the data are apparent.

424

**Flow.** From 1991 through 1995 flow measurements typically varied between 0.0 and 0.3 cfs. A high flow of 0.45 was recorded in May 1992 but no other measurements have been taken in the month of May in other years to compare it to. The data do not indicate any increasing or decreasing trends in flows but do indicate a correlation between precipitation and flow.

**pH.** From 1991 through 1995 pH has varied between a high of 8.1 and a low of 6.3, with the average being 7.3. No trends are apparent from the data.

**TDS.** From 1991 through 1995 most TDS measurements generally varied between 250 and 325 mg/l. No trends are apparent from the data.

**Major Cations and Anions.** 1995 bicarbonate levels are lower than in 1992 and 1993 and sulphate levels may be increasing. Levels of other major cations and anions varied during the period of record but no general trends in the data are apparent.

429

**Flow.** From 1987 through 1995 springtime flows recorded at this station have generally varied between 0.01 and 0.05 cfs. Summer and fall flows are typically 0.0. The data do not indicate any increasing or decreasing trends in flows but seasonal variations indicate flows increase during spring thaws.

**pH.** From 1991 through 1995 pH has varied between a high of 8.4 and a low of 6.8, with the average being 7.8. No trends are apparent from the data.

**TDS.** From 1991 through 1995 most TDS measurements varied between a high of 272 and a low of 212 mg/l, with the average being 241 mg/l. No trends are apparent from the data.

**Major Cations and Anions.** Levels of major cations and anions have varied but no general trends are apparent from the data.

444

**Flow.** Flows recorded at this station from 1987 through 1995 have typically ranged between 0.01 and 0.05 cfs, although springtime flows have been as high as 0.17 cfs. The data do not indicate any increasing or decreasing trends in flows but seasonal variations indicate flows increase during spring thaws.

**pH.** From 1991 through 1995 pH has varied between a high of 8.3 and a low of 6.1, with the average being 7.2. 1995 measurements were all on the high end of the range and may indicate an increasing trend.

**TDS.** From 1991 through 1995 most TDS measurements generally ranged from 250 to 280 mg/l, with the average being 263 mg/l. No trends are apparent from the data.

**Major Cations and Anions.** Levels of major cations and anions varied during the period of record but no general long term trends in the data are apparent.

450

**Flow.** Springtime flows recorded at this station have been as high as 0.07 cfs but flows recorded during the summer or fall months are usually less than 0.01 cfs and are often 0.0. The data do not indicate any increasing or decreasing trends in flows but seasonal variations indicate flows increase during spring thaws.

**pH.** From 1991 through 1995 pH has varied between a high of 8.4 and a low of 6.2, with the average being 7.0. No trends are apparent from the data.

**TDS.** Only five TDS measurements have been recorded from 1991 through 1995. The high was 300 mg/l, the low 238 mg/l, and the average 268 mg/l. No trends are apparent from the data.

**Major Cations and Anions.** Levels of major cations and anions varied during the period of record but no general long term trends in the data are apparent.

452

**Flow.** Springtime flows recorded at this station have been as high as 0.11 cfs but flows recorded during the summer or fall months are usually between 0.01 and 0.04 cfs. The data do not indicate any increasing or decreasing trends in flows but seasonal variations indicate flows increase during spring thaws.

**pH.** From 1991 through 1995 pH has varied between a high of 8.3 and a low of 6.3, with the average being 7.4. No trends are apparent from the data.

**TDS.** TDS levels recorded from 1986 through 1995 have varied from a high of 260 mg/l to a low of 208 mg/l with the average at 237 mg/l. Levels reported in 1994 and 1995 have been on the high end of the data set. Additional data over time will help define whether the increases are random variation or represent a trend.

**Major Cations and Anions.** Levels of major cations and anions varied during the period of record but no general trends in the data are apparent.

518

**Flow.** Flows recorded at this station have been as high as 0.17 cfs in the springtime but are usually between 0.01 and 0.05 cfs in the summer and fall and have often been 0.0. The data do not indicate any increasing or decreasing trends in flows but seasonal variations indicate flows increase during spring thaws.

**pH.** From 1991 through 1995 pH has varied between a high of 8.0 and a low of 6.1, with the average being 7.2. No trends are apparent from the data.

**TDS.** TDS levels recorded from 1986 through 1995 have varied from a high of 306 mg/l to a low of 200 mg/l with the average at 258 mg/l. No trends are apparent from the data.

**Major Cations and Anions.** Levels of major cations and anions varied during the period of record but no general long term trends in the data are apparent.

748

**Flow.** From 1979 through 1991, flows recorded during the months of May and June have typically been 0.01 cfs, with occasional higher values of 0.04 cfs. From 1992 through 1995 the data shows more variability but is still usually less than 0.01 cfs except in the springtime. The data possible indicate an increasing trend from 1992 through 1995 and seasonal variations indicate flows increase during spring thaws.

**pH.** From 1991 through 1995 pH has varied between a high of 8.3 and a low of 6.3, with the average being 7.1. No trends are apparent from the data.

**TDS.** Most TDS levels recorded from 1979 through 1995 have been between 200 and 240 mg/l with the average at 215 mg/l. No trends are apparent from the data.

**Major Cations and Anions.** The data indicates magnesium levels may be following a slightly increasing trend. Levels of other major cations and anions varied during the period of record but no general trends in the data are apparent.

749

**Flow.** Springtime flows recorded from 1985 through 1995 have usually been between 0.01 and 0.02 cfs. Summer and autumn flows are usually less than 0.005 cfs and are often 0.0. The data possibly indicate an increasing trend from 1991 through 1995 and seasonal variations indicate flows increase during spring thaws.

**pH.** From 1991 through 1995 pH has varied between a high of 8.3 and a low of 6.2, with the average being 7.2. No trends are apparent from the data.

**TDS.** Most TDS levels recorded from 1979 through 1995 have generally been between 240 and 280 mg/l with the average at 258 mg/l. No trends are apparent from the data.

**Major Cations and Anions.** The data indicates magnesium levels may be following a slightly increasing trend. Levels of other major cations and anions varied during the period of record but no general trends in the data are apparent.

751

**Flow.** Springtime flows recorded from 1980 through 1995 have usually been about 0.01 cfs but have gotten as high as 0.03 cfs. Summer and autumn flows are usually less than 0.005 cfs and are often 0.0. The data possibly indicate an increasing trend from 1992 through 1995 and seasonal variations indicate flows increase during spring thaws.

**pH.** From 1991 through 1995 pH has varied between a high of 7.9 and a low of 6.2, with the average being 7.0. No trends are apparent from the data.

**TDS.** Most TDS levels recorded from 1980 through 1995 have generally been between 190 and 240 mg/l with the average at 218 mg/l. No trends are apparent from the data.

**Major Cations and Anions.** Levels of major cations and anions varied during the period of record but no general trends in the data are apparent.

753

**Flow.** Twenty five of the thirty one flow measurements made from 1979 through 1991 indicate no flow at this spring. From 1992 through 1995 recorded flows have generally been less than 0.005. Springtime flows have been recorded as high as 0.03 cfs. The data possibly indicate an increasing trend from 1992 through 1995 and seasonal variations indicate flows increase during spring thaws.

**pH.** From 1991 through 1995 pH has varied between a high of 8.0 and a low of 6.4, with the average being 7.4. No trends are apparent from the data.

**TDS.** Most TDS levels recorded from 1979 through 1995 have generally been between 190 and 280 mg/l with an average of 245 mg/l. No trends are apparent from the data.

**Major Cations and Anions.** Levels of major cations and anions varied during the period of record but no general trends in the data are apparent.

971

**Flow.** From 1989 through 1995, all measurements have shown no flow at this station.

**pH.** Only two pH measurements have been recorded at this station. In May 1990 the pH was 7.2 and in July 1991 the pH was 7.

**TDS.** Only two TDS measurements have been recorded at this station. In May 1990 the TDS concentration was 124 mg/l and in July 1991 the TDS concentration was 242 mg/l.

**Major Cations and Anions.** Insufficient data exists to identify possible trends in the data.

978

**Flow.** From 1984 through 1995 most flow measurements have been between 0.0 and 0.05 cfs, although springtime flows have been as high as 0.45 cfs. No trends in the data are apparent but seasonal variations indicate flows increase during spring thaws.

**pH.** From 1991 through 1995 pH values have varied between a high of 8.3 and a low of 6.2, with the average being 7.1. No trends are apparent in the data.

**TDS.** From 1984 through 1995 TDS values have generally varied between 220 and 260 mg/l, with the average being 239 mg/l. No trends are apparent in the data.

**Major Cations and Anions.** Levels of major cations and anions varied during the period of record but no general trends in the data are apparent.

85261

**Flow.** From 1985 through 1995 flow measurements have generally varied between 0.01 and 0.06 cfs, with the average being 0.038 cfs. A high value of 0.19 cfs was recorded in June 1995. No trends in the data are apparent but seasonal variations indicate flows increase during spring thaws.

**pH.** From 1991 through 1995 pH values have varied between a high of 8.2 and a low of 6.2, with the average being 7.2. No trends are apparent in the data.

**TDS.** From 1984 through 1995 TDS values have varied between a high of 314 and a low of 232 mg/l, with the average being 260 mg/l. No trends are apparent in the data.

**Major Cations and Anions.** Calcium levels were higher in 1995 than they have been in the past, although no trend is identified. Levels of other major cations and anions varied during the period of record but no general trends in the data are apparent.

438

**Flow.** From 1993 through 1995 summer and autumn flow measurements have generally varied between 0.01 and 0.002 cfs, but springtime flows have been as high as 0.038 cfs. No trends in the data are apparent but seasonal variations indicate flows increase during spring thaws.

**pH.** From 1993 through 1995 pH values have varied between a high of 7.9 and a low of 6.3, with the average being 7.3. No trends are apparent in the data.

**TDS.** From 1984 through 1995 TDS values have varied between a high of 290 and a low of 190 mg/l, with the average being 260 mg/l. No trends are apparent in the data.

**Major Cations and Anions.** Levels of major cations and anions varied during the period of record but no general trends in the data are apparent.

486

**Flow.** Only data for the year 1995 was available for this station. Flow measurements varied from a high of 0.056 cfs in June to a low of 0.001 cfs in September. Insufficient data is available to identify any long term trends. Seasonal variations indicate flows increase during spring thaws.

**pH.** pH measurements varied between 6.83 and 7.3 during 1995. Not enough data is available to identify long term trends.

**TDS.** TDS measurements varied between 300 and 320 mg/l during 1995. Not enough data is available to identify long term trends.

**Major Cations and Anions.** Calcium, bicarbonate and sulphate decreased during 1995 while magnesium increased and chloride was constant. Not enough data is available to identify long term trends.

A summary of the general trend for major water quality parameters for springs found within the North Horn Formation is provided in the following table. For major cations and anions there may be more than one category marked, indicating that there was variation found between parameters evaluated. The reader is referred to either the text or the graphs for further details when two or more categories are marked. N/A in the table indicates insufficient data exists to make a determination of a potential trend.

**Summary for North Horn Formation Springs**

Station	Flow			pH			TDS			Major Cations/Anions		
	Down	Stable	Up	Down	Stable	Up	Down	Stable	Up	Down	Stable	Up
S111			X		X			X		X	X	
232		X			X			X			X	
424		X			X			X		X	X	X
429		X			X			X			X	
444		X				?		X			X	
450		X			X			X			X	
452		X			X			X			X	
518		X			X			X			X	
748			X		X			X			X	X
749			X		X			X			X	X

### Summary for North Horn Formation Springs - (Continued)

751			X		X			X			X	
753			X		X			X			X	
971		N/A			N/A			N/A			N/A	
978		X			X			X			X	
85261		X			X			X			X	X
438		X			X			X			X	
486		N/A			N/A			N/A			N/A	

### Conclusions

Flows from springs are often high in the early part of the year, suggesting that flows increase due to the spring thaws. A number of the springs have shown increased flows in recent years which correlates with increased precipitation. Few trends in pH or TDS levels could be identified. Some trends in levels of major cations and anions were noted but no area-wide and uniform trend is evident. One spring however (# 458) did indicate a potential impact from mining in that flows have not been recorded since August of 1994. Data collected over the next few years will be critical in understanding the potential mining impacts to this spring.

### MONITORING WELLS

The well monitoring program consisted of monitoring twelve wells; eight within the mine (P86-01-TD, P86-02-HD & P86-03-WD, P92-01-WD, P92-02-WD, P92-03-WD, P92-04-WD, and P93-01-WD) and four located on the surface (86-26-6, 86-35-2-3, 92-10-1, & 85351). Well P-92-01-WD is a triple nested well with pipes labeled A, B and C, from shallowest to deepest respectively. Well P92-01C-WD was monitored for quality and water depth, P92-01A-WD and P92-01B-WD were monitored for water depth only. The eight in-mine wells were completed below the coal seams, and are intended to identify and monitor the ground water level below the mining zone. The surface wells are located south of current mining operations on Gentry Ridge, in Tie Fork Canyon, and northwest of current mining. The locations of all of these wells can be found on Map 722.200a.. Wells 86-35-2-3 are located in Tie Fork Canyon and consist of two artesian wells approximately 200 feet apart. Prior to 1988, the wells were sampled separately; however, due to accessibility problems, composite samples have been taken since 1988. Data and plots of the individual wells (86-35-2 and 86-35-3) can be found in prior annual hydrology reports. Since mining started in the Gentry Ridge area in 1992, the composite data presented in this report is adequate to monitor mining impacts. There could have been no mining impacts to 86-35-2-3 prior to 1992 since mining was not initiated within its hydrologic zone until that time. Data prior to 1988 represent additional background data for historic flows and quality.

These stations have been sampled on a quarterly basis when accessible. Graphical time plots have been prepared for water surface elevation, pH, TDS, major cations and anions including calcium, magnesium, chloride, bicarbonate and sulfate. The data have been plotted to show flow and water

quality variations as sequential time plots. The plots were used in our analyses of water surface elevation and water quality changes over time. Plots were prepared for TDS and flow from all available sampling from 1977 through 1995. Plots were prepared for the other indicated water quality parameters for sampling from 1991 through 1995. Complete data sets of information prior to 1991 can be found in previous annual reports. Water sampling data and the plots for each station are located in Appendix B.

Since it is likely that there is correlation between water surface elevation in the well and precipitation, plots were also prepared which compare recorded elevations to annual precipitation records for the local gaging station over the period of record. The National Weather Service rainfall gaging station closest to the Star Point mine area is located in Price which is about 12 miles northeast of the Star Point mine. Average annual precipitation for the Price station is 9.4 inches per year. Precipitation values recorded at the Price weather station have been plotted for comparison with recorded spring flows at each water sampling station. It must be remembered that although data from the Price station provides an overall indication of precipitation patterns they do not necessarily represent true local conditions.

A station by station summary of the 15 well stations that were sampled is given below. A discussion of any apparent data trends is included in the summary for each station.

### **In-Mine Wells**

#### **P8601TD**

**Elevation.** From 1986 through 1991 the elevation of the water surface in the well was constant at approximately 8350 feet. From 1991 through 1995 a steady increasing trend has raised the water level to a high of 8388.8 feet as measured in November 1995. There appears to be no correlation between precipitation and the elevation of the water surface in the well.

**pH.** Only one pH measurement, taken in September 1987, is recorded for this well. The pH was 7.6.

**TDS.** Only one TDS measurement, taken in September 1987, is recorded for this well. The TDS was 672 mg/l.

**Major Cations and Anions.** Only one sampling of major cations and anions is recorded for this well. The data is insufficient to identify any trends.

#### **P8602HD**

**Elevation.** From May 1986 through August 1987 the elevation of the water surface in the well varied between 8411 and 8413 feet. From October 1987 through April 1994 the water surface ranged between 8402 and 8404 feet. Measurements taken in 1995 are somewhat higher at almost 8405 feet. No general trends can be identified from the data.

**Water Quality.** This station monitors water level only.

#### **P8603WD**

**Elevation.** The water surface elevation in this well dropped steadily from 1986 through 1992 from a high of almost 8320 feet to a low of 8302 feet. In 1993 and 1994 the elevation rose to a high of 8308 feet and in 1995 dropped to a low of 8304 feet. No trends are defined for the period since the late 1980's.

**Water Quality.** This station monitors water level only.

#### **P9201AWD**

**Elevation.** The water surface elevation in this well dropped from a high of 8324.3 feet in 1992 to a low of 8292.9 feet in October 1994, and has stabilized near 8295 feet through 1995. This well is part of a nested piezometer system together with station P9201BWD and P9201CWD. Only water level data has been collected on this station and station P9201BWD. Refer to station P9201CWD for water quality data at this site.

**Water Quality.** This station monitors water level only.

#### **P9201BWD**

**Elevation.** The water surface elevation in this well dropped from a high of 8325.4 feet in 1992 to around 8280 feet in 1994, and has stabilized near 8280 feet through 1995. Data collected near the middle and end of 1995 seem to indicate that the well is beginning to rebound slightly. Samples taken in October 1993 and October 1994 were much lower at around 8250 feet. This well is part of a nested piezometer system together with station P9201AWD and P9201CWD. Only water level data has been collected on this station and station P9201AWD. Refer to station P9201CWD for water quality data at this site.

**Water Quality.** This station monitors water level only.

#### **P9201CWD**

**Elevation.** The water surface elevation in this well dropped from a high of 8306.3 feet in 1992 to around 8200 feet in 1994, and has returned to a level of 8200.6 feet in November of 1995. The well appears to be starting an upward climb after termination of long wall mining in south Gentry Ridge. This well is part of a nested piezometer system together with station P9201AWD and P9201BWD. Only water level data has been collected on station P9201AWD and station P9201BWD. Refer to this station for water quality data at this site.

**pH.** From 1992 through 1995 pH has generally varied between 6.5 and 8, with the average being 7.1. No trends are apparent from the data.

**TDS.** From 1992 through 1995 TDS has varied between a high of 430 mg/l and a low of 398 mg/l with the average being 411 mg/l. The data may indicate an increasing trend in TDS concentration.

**Major Cations and Anions.** Levels of major cations and anions varied during the period of record but no general trends in the data can be confirmed.

**P9202WD**

**Elevation.** The water surface elevation in this well dropped from a high of 8350.9 feet in 1992 to around 8225 feet in January 1995. The 1995 low was 8225.4 feet in August with the well rising 4.9 feet at the time of the November 1995 measurement. This well may be beginning its upward trend subsequent to termination of long wall mining in Gentry Ridge.

**pH.** From 1992 through 1995 pH has varied between 6.1 and 7.8, with the average being 7.0. The data indicates an increasing trend in pH.

**TDS.** From 1992 through 1995 TDS has varied between a low of 378 mg/l and a high of 400 mg/l with the average being 392 mg/l. The data indicate an increasing trend in TDS concentration.

**Major Cations and Anions.** Concentrations of bicarbonate and sulphate appear to be decreasing and may be correlated with decreasing water surface elevation in the well.

**P9203WD**

**Elevation.** The water surface elevation in this well has dropped steadily from 1992 through 1995 from a high of 8323.1 feet to a current low of 8258.9 feet.

**Water Quality.** This station monitors water level only.

**P9204WD**

**Elevation.** The water surface elevation in this well dropped steadily from 1992 through 1995 from a high of 8359.4 feet to a low of 8207 feet, but appears to have either stabilized near the 8210 foot level or begun a slight rebound.

**Water Quality.** This station monitors water level only.

**P9301WD**

**Elevation.** The water surface elevation in this well remained at 8338.7 feet from 1993 through 1994 and dropped to 8337.1 feet in 1995. It is anticipated that this slight decline is due to local dewatering efforts, which are temporary in nature..

**Water Quality.** This station monitors water level only.

## P9301WD

**Elevation.** The water surface elevation in this well remained at 8338.7 feet from 1993 through 1994 and dropped to 8337.1 feet in 1995. It is anticipated that this slight decline is due to local dewatering efforts, which are temporary in nature. Well levels stabilized at 8337.1 feet between April and November of 1995.

**Water Quality.** This station monitors water level only.

## Surface Wells

### 86266

**Elevation.** The water surface elevation in this well dropped in 1994 from a high of 8128.5 feet to a low of 8093.8 feet. The water surface remained at this elevation until September 1995 when it rose to 8113.5 feet.

**Water Quality.** This station monitors water level only.

### 863523

**Flow.** From 1988 through 1995 the average measured flow from this well was 0.17 cfs; the low was 0.086 cfs and the high 0.3 cfs. This well is actually a developed spring. A definite decreasing trend in flow from 1989 through June 1995 is evident from the data, with the exception of three measurements in the winter of 1993 and spring of 1994. The meter for these wells was moved during October 1993 by the Castle Valley Special Service District (CVSSD). It has come to our attention that the meter was improperly installed allowing a vacuum to build up inside the meter causing erroneous meter readings. According to Darrel Leamaster of the CVSSD, the meter was reworked and the flow in late May was 69 GPM or 0.154 cfs. This seems to indicate that the well flow continued to decline. Flow measurements reached a low in June 1995 but steadily increased through September 1995. The data indicates little if any correlation between precipitation and flow.

**pH.** From 1991 through 1995 pH measurements have generally varied between 6 and 8. However, four measurements taken in the first part of 1993 were much higher; between 12 and 13. Other than this, no anomalous conditions nor trends are apparent in the data.

**TDS.** From 1988 through 1995 TDS values have generally varied between 300 and 380 mg/l. However, four measurements taken in the first part of 1993 were much higher; between 580 and 680. As with pH, no long term trends are apparent in the data.

**Major Cations and Anions.** Bicarbonate and sulphate levels dropped in 1995 below previous levels but no long term trend is expected. Levels of other major cations and anions varied during the period of record but no general trends in the data are apparent.

92101

**Elevation.** The water surface elevation in this well has remained constant at 8571.5 from 1994 through 1995.

**Water Quality.** This station monitors water level only.

85351

**Flow.** Only data for the year 1995 was available for this station. Flow measurements varied from a high of 0.86 cfs in June to a low of 0.007 cfs in August. However, flows were back up to 0.013 cfs in November of 1995. Although the latest information indicates a reversal of the year long declines, it is felt that insufficient data is available to identify whether the changes are recording a long term trend, or if they are merely annual fluctuations. Until additional data show otherwise, the 1995 fluctuations will be assumed to be the result of natural annual variations.

**pH.** pH measurements varied from a low of 7.02 to a high of 7.3 during 1995. pH increased during 1995 but the increase was slight. Also, pH appears to be inversely related to flow but there is not enough data available to identify long term trends.

**TDS.** TDS measurements varied from a high of 360 mg/l to a low of 330 mg/l in 1995. There is not enough data available to identify long term trends.

**Major Cations and Anions.** Calcium, magnesium and chloride increased in through 1995 while bicarbonate and sulphate decreased. There is not enough data available to identify long term trends.

A summary of the general trend for major water quality parameters for wells is provided in the following table. For major cations and anions there may be more than one category marked, indicating that there was variation found between parameters evaluated. The reader is referred to either the text or the graphs for further details when two or more categories are marked. N/A in the table indicates insufficient data exists to make a determination of a potential trend. The majority of the wells monitor water level only, and therefore no water quality data is available.

Summary for Wells

Station	Water Level			pH			TDS			Major Cations/Anions		
	Down	Stable	Up	Down	Stable	Up	Down	Stable	Up	Down	Stable	Up
P8601TD			X		N/A			N/A			N/A	
P8602HD		X		Level Only								
P8603WD		X		Level Only								
P9201AWD		X		Level Only								

### Summary for Wells - (Continued)

P9201BWD			X	Level Only								
P9201CWD			X	Level Only								
P9202WD			X	Level Only								
P9203WD	X			Level Only								
P9204WD			X	Level Only								
P9301WD		X		Level Only								
86266			X	Level Only								
863523			X*		X			X		X	X	
92101		X		Level Only								
85351		X			N/A			N/A			N/A	

\* Water Level for this well indicates "Flow"

### Conclusions

A large increase in flow in 1988 at station 863523 was previously recorded and documented in prior annual reports. As indicated in those reports, the change in flow followed closely after a series of earthquakes in August. These earthquakes were recorded by the University of Utah Seismology Department as follows: August 14, 1 :07 PM, magnitude 3.8; August 14, 2:03 PM, magnitude 5.3; August 15, 8:50 AM, magnitude 3.0; and August 18, 6:57 AM, magnitude 4.4. The epicenters of all of these earthquakes were in approximately the same location, approximately 15 miles east of Ferron, Utah, approximately 29 miles southeast of wells 86-35-2-3. The 5.3 and 4.4 magnitude quakes were felt by residents in northern Emery county north of well 86-35-2-3. In addition, there were many smaller magnitude earthquakes during this same time period. It appears that the quakes may have loosened up or opened up the fractures and faults that are documented to be the source of water for these wells. As a result, the large increase in flow noted historically may have been caused by the loosening or opening up of the fractures or faults allowing more water to be discharged.

Until mining ceased in 1995, water was pumped to a location near well P86-01-TD. Data plots show increasing levels at P86-01-TD and P86-02-HD since mid 1993. It is possible that this discharged water has been charging the system in the general area and causing the water level in these wells to rise. These wells are located in the older mining areas. The water level in well P86-03-WD has gone up and down over the past few years. Since the area of well P86-03-WD is at the south end of longwall panels 1 through 7, it is possible that mining has impacted the water level in this location, however, there are extensive mine workings immediately south of this location in the US Fuel mining area. The impacts of mining by US Fuel for many years in the area makes it impossible to estimate any impact by CPMC. It is a possibility that the water level in this well could have reacted to the prolonged drought.

Monitoring wells P92-01A-WD, P92-01B-WD, P92-01C-WD, P92-02-WD, P92-03-WD, and P92-04-WD were placed in early 1992 in the current longwall mining area. The water levels of all of

these wells have exhibited a marked drop in elevation since their placement through mid 1995. The wells completed in the Blackhawk Formation below the seam being mined, (P92-01A-WD, P92- 01B-WD, and P92-03-WD), have dropped a net average of 44.8 feet through 1995, while the wells completed in the Spring Canyon Sandstone (P92-01C-WD, P92-02- WD, and P92-04-WD) have dropped a net average of 123.57 feet. The net decline for this later set of wells is 2.56 feet less than was reported one year ago.

As indicated, mining operations within the Gentry Ridge have now been completed and ground water is no longer being pumped out of the area. Water surface elevation graphs for some wells in the vicinity show a decrease in water elevation and/or flows during the mining and pumping operations, followed by a stabilization of the water level and or flow data. With the cessation of mining, natural recharge has been re-established wherein the water has returned to its natural southerly drainage course. Well data indicate that water levels and flow rates are beginning to rise again since longwall mining has ceased in the south Gentry Ridge area.

### **SURFACE WATER MONITORING**

There are twelve surface water monitoring locations. Mine surface facilities are located in Sage Brush Canyon, a tributary to Serviceberry Canyon, both of which are ephemeral drainages. Monitoring station 101 is located directly downstream from the facilities. Station 51 is located in Mud Water Creek below the mine discharge point. No water has been discharged from the mine at this location since 1987. The remaining surface water monitoring stations are located on streams which drain areas over and around mine workings. The locations of these monitoring stations are found on Map 722.200a.

These stations have been sampled on a quarterly basis when accessible. Graphical time plots have been prepared for flow, pH, TDS, oil and grease, major cations and anions including calcium, magnesium, chloride, bicarbonate and sulfate. The data have been plotted to show flow and water quality variations as sequential time plots. The plots were used in our analyses of flow and water quality changes over time. Plots were prepared for TDS and flow from all available sampling from 1977 through 1995. Plots were prepared for the other indicated water quality parameters for sampling from 1991 through 1995. Complete data sets of information prior to 1991 can be found in previous annual reports. Water sampling data and the plots for each station are located in Appendix C

Since it is likely that there is correlation between stream flows and precipitation, plots were also prepared which compare recorded flows to annual precipitation records for a local gaging station over the period of record. The National Weather Service rainfall gaging station closest to the Star Point mine area is located in Price which is about 12 miles northeast of the Star Point mine. Average annual precipitation for the Price station is 9.4 inches per year. Precipitation values recorded at the Price weather station have been plotted for comparison with recorded spring flows at each water sampling station. It must be remembered that although data from the Price station provides an overall indication of precipitation patterns they do not necessarily represent true local conditions.

A station by station summary of the 12 surface water stations that were sampled is given below. A discussion of any apparent data trends is included in the summary for each station.

### **SAGE BRUSH CANYON**

**Flow.** From 1980 through 1995 the measured flow at this station has varied from 0.0 to a maximum of 0.3 cfs. The data indicates some correlation with precipitation data in that, during the wetter years of 1980 through 1987, and again in 1993 and 1994 measured flows were higher. The drier years between 1988 and 1992 showed lower overall flow values.

**pH.** From 1991 through 1995, the measured pH varied from 8.4 to 9.0, with the exception of one measurement taken in June 1993 when the pH was 15.6. The 15.6 value is believed to be in error. No trends are apparent in the data.

**TDS.** TDS levels have generally varied from approximately 700 to 3,500 mg/l, with the average being 2,339 mg/l. One very high value was recorded at 5,824 mg/l in June 1993. No trends are apparent in the data.

**Oil and Grease.** Data on oil and grease exists for only two samples taken in 1995. Only one sample showed detectable quantities of oil and grease at 7 mg/l.

**Major Cations and Anions.** Levels of major cations and anions varied during the period of record but no general trends in the data are apparent.

## MUD WATER CREEK

There are two sampling locations in Mud Water Canyon, one is at the Mud Water discharge from the underground workings. Mud Water discharge is also designated as Station 001, NPDES Permit UT-0023736. There has been no flow from the discharge point since 1987. The discharges will be addressed in ????. The other location is Mud Water Creek which was sampled in 1992 at station 51.

51

**Flow.** From 1981 through 1995 the measured flow at this station has generally varied between 0.0 and 0.2 cfs. Springtime flows however are recorded as high as 0.89 cfs. From 1981 through 1988 flow measurements were high, as were precipitation values. During the dry years of 1989 through 1991, flows were lower. From 1992 and 1995 flow was back up in response to increased precipitation. The data indicates a correlation between flow and precipitation.

**pH.** From 1991 through 1995, the measured pH varied from 8.4 to 9.0, with the exception of one measurement taken in June 1993 when the pH was 15.6 (believed to be in error). No trends are apparent in the data.

**TDS.** TDS levels have generally varied from approximately 500 to 2,000 mg/l, with the average being 1,489 mg/l. One very high value was recorded at 4,531 mg/l in April 1993. No trends are apparent in the data.

**Oil and Grease.** Data on oil and grease exists for only two samples taken in 1995. Neither sample showed any detectable quantities of oil and grease.

**Major Cations and Anions.** Levels of major cations and anions have been fairly constant during the period of record and no general trends in the data are apparent.

## CORNER CANYON

361

**Flow.** From 1980 through 1995 the measured flow at this station has generally varied between 0.0 and 0.5 cfs. Springtime flows however are recorded as high as 3 cfs. Higher flows during the wet years from 1980 through 1987 and lower flows during the dry years of 1988 through 1991 indicate a correlation between flow and precipitation, although flows have remained low since 1988 even though precipitation increased from 1992 through 1994. This station should be reviewed carefully over the next few years to check for continued lower flows which in turn may indicate a change in flow regime.

**pH.** From 1991 through 1995, the measured pH varied from a low of 6.3 to a high of 13.2, the average being 8.7. No trends are apparent in the data.

**TDS.** TDS levels have generally varied from approximately 400 to 800 mg/l, with the average being 589 mg/l. One very high value was recorded at 1,400 mg/l in July 1981. TDS levels appear to have dropped steadily between 1983 and 1987 and then remained fairly constant after 1987.

**Oil and Grease.** Data on oil and grease exists for only two samples taken in 1995. Neither sample showed any detectable quantities of oil and grease.

**Major Cations and Anions.** From 1991 through 1995 a slightly increasing trend in major cations and anions is evident except in bicarbonate levels. Future measurements will help clarify whether there is a significant trend for these parameters.

## TIE FORK CANYON

341

**Flow.** From 1980 through 1995 the measured flow at this station has generally varied between 0.0 and 2 cfs. Springtime flows however are recorded as high as 8.4 cfs. Seasonal variations indicate flows increase during spring thaws.

**pH.** From 1991 through 1995, the measured pH has generally varied between 7 and 10, with the exception of one measurement taken in June 1993 when the pH was 14. The average was 8.6. No trends are apparent in the data.

**TDS.** TDS levels have generally varied from approximately 200 to 320 mg/l, with the average being 274 mg/l. One very high value was recorded at 540 mg/l in June 1981. No trends are apparent in the data.

**Oil and Grease.** Data on oil and grease exists for only two samples taken in 1995. Neither sample showed any detectable quantities of oil and grease.

**Major Cations and Anions.** Levels of major cations and anions have varied during the period of record but no general trends in the data are apparent.

342

**Flow.** From 1980 through 1995 the measured flow at this station has generally varied between 0.0 and 2 cfs. Springtime flows however are recorded as high as 12.7 cfs. Seasonal variations indicate flows increase during spring thaws.

**pH.** From 1991 through 1995, the measured pH has generally varied between 7 and 10, with the exception of one measurement taken in June 1993 when the pH was 14.1. The average was 8.5. No trends are apparent in the data.

**TDS.** TDS levels have generally varied from approximately 200 to 400 mg/l, with the average being 301 mg/l. High values were recorded at 760 mg/l and 586 mg/l in December 1980 and June 1981 respectively. No trends are apparent in the data.

**Oil and Grease.** Data on oil and grease exists for only two samples taken in 1995. Neither sample showed any detectable quantities of oil and grease.

**Major Cations and Anions.** Levels of major cations and anions have varied during the period of record but no general trends in the data are apparent.

## **RIGHT FORK, MILLER CREEK**

Samples were taken at three monitoring locations on the Right Fork of Miller Creek during 1995. These locations are ST1, ST2, and M8.

The flow of the North Fork, Right Fork of Miller Creek was diverted into the ground in 1989 just above monitoring point M-6 in the Southwest Quarter of the Northeast Quarter of Section 18, Township 15 South, Range 8 East when longwall mining caused subsidence of the stream channel. Base flow recharged the stream approximately 1000 feet below the place of water loss between monitoring points M-6 and M-8. The flow was still disappearing into the ground in 1992. In 1991, subsidence caused the stream to flow into the ground at about monitoring station M-4 but, in 1992, flow returned to the channel just below station M-4. The average flow at this location (20.9 GPM) is higher than the stream flow immediately above station M-4. Disruption of bedding planes in the stream channel may have caused the water loss from the stream, the return of flow to the stream channel may be a result of healing of the strata.

Four new stream monitoring stations were added in 1993 to monitor the Castle Valley Ridge area. These stations are 87101CV, Little Park Canyon; 87102CV, Nuck Woodward Stream above Little Park Canyon; 87103CV, Nuck Woodward Stream below Little Park Canyon; and 93341CV, Nuck

Woodward Stream above the mining zone. Station 93341CV was added as a monitoring site in 1993 at the request of the U.S. Forest Service.

## ST1

**Flow.** From 1980 through 1995 the measured flow at this station has generally varied between 0.0 and 0.5 cfs. Springtime flows however are recorded as high as 2 cfs. A visual review of the precipitation versus flow plot indicates that there has been a positive increase in flows at station ST1 since 1992. Seasonal variations indicate flows increase during spring thaws.

**pH.** From 1991 through 1995, the measured pH has generally varied between 6.5 and 8.5, with the exception of one measurement taken in June 1993 when the pH was 13.7. The average was 8. No trends are apparent in the data.

**TDS.** TDS levels have varied considerably from a pre-mining low of 240 mg/l in 1988 to a high of 2,884 mg/l in 1993. TDS levels appear to have followed an increasing trend from 1988 through 1994. 1995 data may indicate TDS levels are starting to decrease. The cause of the increased TDS levels is believed to be mining related.

**Oil and Grease.** Data on oil and grease exists for only two samples taken in 1995. Only one sample showed any detectable quantities of oil and grease at 5 mg/l.

**Major Cations and Anions.** Calcium and magnesium and sulphate have followed an increasing trend from 1991 through 1994, returning to previous levels in 1995. Bicarbonate appears to have followed a decreasing trend during this period.

## ST2

**Flow.** From 1981 through 1995 the measured flow at this station has generally varied between 0.0 and 0.5 cfs. Springtime flows however are recorded as high as 3.5 cfs. Seasonal variations indicate flows increase during spring thaws. A review of the flow versus precipitation plot also shows that there is an upward trend in flow since 1990.

**pH.** From 1991 through 1995, the measured pH has generally varied between 6.5 and 10, with the exception of one measurement taken in June 1993 when the pH was 14.7. The average was 8.3. No trends are apparent in the data.

**TDS.** TDS levels have varied considerably from a low of 241 mg/l to a high of 1,320 mg/l. Higher levels were reported in 1993, 1994 and 1995 indicating a possible increasing trend in TDS concentration.

**Oil and Grease.** Data on oil and grease exists for only two samples taken in 1995. Neither sample showed any detectable quantities of oil and grease.

**Major Cations and Anions.** A quick review of calcium, magnesium and sulphate graphs may show that the concentrations are increasing. However, the noted changes may be due simply to

increased variability of the measurements over the past couple of years. Increased variability makes it more difficult to identify long term trends.

#### **M8**

**Flow.** From 1988 through 1995 the measured flow at this station has generally varied between 0.0 and 0.2 cfs. Springtime flows however are recorded as high as 1.2 cfs. Data plots indicate that flows have begun to increase since 1991. Seasonal variations indicate flows increase during spring thaws.

**pH.** From 1991 through 1995, the measured pH has generally varied between 7 and 10, with the exception of one measurement taken in June 1993 when the pH was 13.9. The average was 8.4. No trends are apparent in the data.

**TDS.** TDS levels followed an increasing trend from 1988 through 1990, after which they appear to have dropped slightly. The maximum TDS concentration measured in 1988 was 310 mg/l and the maximum measured in 1990 was 1,602 mg/l. Higher than typical values were recorded in June and July 1993 at almost 3,000 mg/l. It is believed that the increase in TDS levels was mining related.

**Oil and Grease.** Data on oil and grease exists for only three samples taken in 1995. None of the samples showed any detectable quantities of oil and grease.

**Major Cations and Anions.** Calcium levels have been increasing since 1993. Magnesium, chloride and sulphate levels decreased in 1993 and 1994 and then increased again in 1995. No general long term trends are at this time apparent.

#### **87101CV**

**Flow.** From 1993 through 1995 the measured flow at this station has generally varied between 0.0 and 0.05 cfs. Springtime flows however are recorded as high as 0.2 cfs. Although one sample was taken in 1987, no data exists for the years 1988 through 1992. Flows recorded in 1995 show that flows have begun a slight upward trend. Seasonal variations indicate flows increase during spring thaws.

**pH.** Typical pH values at this station are between 8.5 and 9. However, a value of 14.8 was recorded in June 1993. No trends are apparent in the data.

**TDS.** TDS levels have varied between 190 and 432 mg/l, the average being 302 mg/l. No trends are apparent in the data.

**Oil and Grease.** Data on oil and grease exists for only four samples taken in 1995. None of the samples showed any detectable quantities of oil and grease.

**Major Cations and Anions.** Levels of major cations and anions have varied over the period of record but no general trends are apparent.

### 87102CV

**Flow.** From 1993 through 1995 the measured flow at this station has generally varied between 0.0 and 3 cfs. Springtime flows however are recorded as high as 8.7 cfs. Flows for this source were up in 1995. Seasonal variations indicate flows increase during spring thaws.

**pH.** From 1993 through 1995 pH measurements have varied between 6.9 and 8.9, the average being 8.2. Although 1993 levels were lower than 1994 and 1995 levels, the 1994 and 1995 values show a leveling of data. Additional data over time will help clarify local site conditions and the presence of a trend.

**TDS.** TDS levels have varied between 110 and 180 mg/l, the average being 144 mg/l. Not enough data exists to indicate any trends.

**Oil and Grease.** Data on oil and grease exists for only four samples taken in 1995. Only one sample showed detectable quantities of oil and grease at 4 mg/l.

**Major Cations and Anions.** Levels of major cations and anions have varied over the period of record but not enough data exists to indicate any trends.

### 87103CV

**Flow.** From 1993 through 1995 the measured flow at this station has generally varied between 0.0 and 3 cfs. Springtime flows however are recorded as high as 8.9 cfs. Flows were reported higher in 1995 than in 1994 at this source which might be indicating the beginnings of an upward trend. Seasonal variations indicate flows increase during spring thaws.

**pH.** From 1993 through 1995 pH measurements have varied between 6.9 and 9, the average being 8.2. Although 1993 levels were lower than 1994 and 1995 levels, the 1994 and 1995 values show a leveling of data. Additional data over time will help clarify local site conditions and the presence of a trend.

**TDS.** TDS levels have varied between 100 and 190 mg/l, the average being 151 mg/l. Not enough data exists to indicate any trends.

**Oil and Grease.** Data on oil and grease exists for only four samples taken in 1995. None of the samples showed any detectable quantities of oil and grease.

**Major Cations and Anions.** Levels of major cations and anions have varied over the period of record but not enough data exists to indicate any trends.

93341CV

**Flow.** From 1993 through 1995 the measured flow at this station has generally varied between 0.0 and 2 cfs. Springtime flows however are recorded as high as 4 cfs which is up substantially from flows of the previous year. Seasonal variations indicate flows increase during spring thaws.

**pH.** From 1993 through 1995 pH measurements have varied between 6.9 and 8.7, the average being 8.1. Although 1993 levels were lower than 1994 and 1995 levels, the 1994 and 1995 values show a leveling of data. Additional data over time will help clarify local site conditions and the presence of a trend.

**TDS.** TDS levels have varied between 96 and 170 mg/l, the average being 138 mg/l. Not enough data exists to indicate any trends.

**Oil and Grease.** Data on oil and grease exists for only four samples taken in 1995. Only one of the samples showed any detectable quantities of oil and grease at 3 mg/l.

**Major Cations and Anions.** Levels of major cations and anions have varied over the period of record but not enough data exists to indicate any trends.

A summary of the general trend for major water quality parameters for surface water is provided in the following table. For major cations and anions there may be more than one category marked, indicating that there was variation found between parameters evaluated. The reader is referred to either the text or the graphs for further details when two or more categories are marked. N/A in the table indicates insufficient data exists to make a determination of a potential trend.

Summary for Surface Water

Station	Flow			pH			TDS			Major Cations/Anions		
	Down	Stable	Up	Down	Stable	Up	Down	Stable	Up	Down	Stable	Up
101		X			X			X			X	
51		X			X			X			X	
361	?				X			X			X	X
341		X			X			X			X	
342		X			X			X			X	
ST1			X		X		X			X	X	X
ST2			X		X				X			X
M8			X		X			X		X	X	X
87101CV			X		X			X			X	
87102CV			X		X			N/A			N/A	

### Summary for Surface Water - (Continued)

87103CV			X		N/A			N/A			N/A	
93341CV			X		N/A			N/A			N/A	

## CONCLUSIONS

Flow measurements for surface waters generally show seasonal variations and increased flows during spring thaws. The data also indicates flows are higher during times of higher precipitation and lower during dry spells, indicating a correlation between flow and precipitation. The majority of surface stations monitored showed an upward trend in flow for 1995.

Water quality measurements taken in June 1993 were often very anomalous and are generally believed to be in error. TDS levels for surface waters are often much higher than TDS levels for springs or wells, and a few trends were identified. Surface water samples were analyzed for oil and grease but seldom was any detected. A few stations showed some increases in levels of major cations and anions.

## UNDERGROUND MINE FLOW MONITORING & MUDWATER DISCHARGE

There are five locations in the mine where underground waters are monitored. These locations are First West 4 (1W4), First West North 6 (1WN6), Ninth Left 12 (9L12), Gentry Ridge, and Mudwater Canyon discharge. Mud Water discharge is also designated as Station 001, NPDES Permit UT-0023736. Station First West North 6 was abandoned during 1994 because the location in the mine was sealed up preventing access. This station had not had a flow since 1988. The Gentry Ridge monitoring station measures waters intercepted in the Federal Coal Lease U-13097 beneath Gentry Ridge, the current longwall mining area. Most of the water intercepted in this lease is collected and discharged into an old area of the mine in Section 18, Township 15 South, Range 8 East.

The in-mine stations have been sampled on a quarterly basis when accessible. The locations of these stations is shown on Map 722.200a. Graphical time plots have been prepared for flow, pH, TDS, and major cations and anions including calcium, magnesium, chloride, bicarbonate and sulfate. The data have been plotted to show flow and water quality variations as sequential time plots. The plots were used in our analyses of flow and water quality changes over time as discussed herein. Plots were prepared for TDS and flow from all available sampling from 1977 through 1995. Plots were prepared for the other indicated water quality parameters for sampling from 1991 through 1995. Complete data sets of information prior to 1991 can be found in previous annual reports.

Since it is likely that there is correlation between in-mine flows and precipitation, plots were also prepared which compare recorded flows to annual precipitation records for a local gaging station over the period of record. The National Weather Service rainfall gaging station closest to the Star Point mine area is located in Price which is about 12 miles northeast of the Star Point mine. Average annual precipitation for the Price station is 9.4 inches per year. Precipitation values recorded at the Price weather station have been plotted for comparison with recorded spring flows at each water sampling

station. It must be remembered that although data from the Price station provides an overall indication of precipitation patterns they do not necessarily represent true local conditions.

A station by station summary of the 5 in-mine stations that were sampled is given below. Water quality data for samples obtained at each station are given in Appendix D. A discussion of any apparent data trends is included in the summary for each station.

#### 1W4

**Flow.** From 1992 through 1995 measured flows from this station have ranged from 0.0 to 0.03 cfs. No increasing or decreasing trends are apparent. The data indicates there is little if any correlation between flow and precipitation.

**pH.** From 1992 through 1995 the average measured pH was 7.4; the high was 8.1 and the low was 6.4. The data indicates that pH may be somewhat inversely related to flow.

**TDS.** TDS levels have risen steadily from 1987 through 1994. The maximum TDS concentration for the period of record is 1,118 mg/l; the minimum is 769 mg/l.

**Major Cations and Anions.** Sulphate and manganese levels have followed an increasing trend from 1990 through 1994, while chloride levels have followed a decreasing trend. Other major cations and anions have varied during the period of record, however no general trends are apparent.

#### 1WN6

**Flow.** From 1985 through 1995 measured flows from this station have ranged from 0.0 to 0.08 cfs. Recorded flows have been 0.0 since 1988. The 1994 Annual Report indicates that this station "was abandoned during 1994 because the location in the mine was sealed up preventing access".

**pH.** From 1985 through 1989 the average measured pH was 7.9; the high was 8.5 and the low as 7.2. pH has not been recorded since 1989 and no trends are apparent in the data.

**TDS.** The maximum TDS concentration for the period of record was 976 mg/l; the minimum is 572 mg/l. TDS levels followed an increasing trend from 1985 through 1989. TDS has not been measured since 1989.

**Major Cations and Anions.** Magnesium and sulphate levels followed an increasing trend from 1985 through 1989 while bicarbonate followed a decreasing trend during the same period. No further data has been recorded since 1989.

## 9L12

**Flow.** Measured flows have steadily dropped from 1985 through 1995. Flow measurements have ranged from a high of 0.4 cfs to a low of 0.0 cfs. The data indicates there is little if any correlation between flow and precipitation. The decreasing flows are believed to be the result of dewatering localized perched aquifers.

**pH.** pH levels were falling from 1991 through 1993 but have returned to pre-1992 levels in 1994 and 1995. The maximum pH for the period is 8.1 and the minimum is 6.1 while the average is 7.3.

**TDS.** From 1985 through 1995 TDS levels have fluctuated from a low of 717 mg/l to a high of 1,492 mg/l. TDS was increasing from 1985 through 1991 but then decreased in 1992 and 1993. Levels rose again in 1994 and 1995 and are currently at about the 1990-1995 average.

**Major Cations and Anions.** Calcium levels dropped in 1991 and 1992 and remained stable after 1993. Magnesium levels decreased in 1991, 1992 and 1993 and then increased in 1994 and 1995. Chloride levels increased in 1991 then fell in 1992 and have remained relatively stable since 1993. Bicarbonate and sulphate levels have decreased slightly from 1991 through 1995.

### Gentry Ridge

**Flow.** From 1992 through 1995 measured flows from this station have ranged from 0.0 to 3.6 cfs. The data indicate flows are following an increasing trend. The data indicates there is little if any correlation between flow and precipitation.

**pH.** From 1992 through 1995 the average measured pH was 7.4; the high was 8 and the low was 6.3. pH levels were increasing in 1992 and 1993 and have stabilized in 1994 and 1995.

**TDS.** From 1992 through 1995 the average measured TDS concentration was 441 mg/l, the high was 560 mg/l and the low was 366 mg/l. TDS levels showed an increasing trend in 1995.

**Major Cations and Anions.** Levels of major cations and anions have varied during the period of record however no general long term trends in the data are apparent.

### Mudwater Discharge

**Flow.** Flow measurements from 1983 through 1987 were all at 0.45 cfs except for one measurement of 1.11 cfs in August 1986. No discharges have been made since 1987. Because this is a pumped discharge, no correlation with precipitation would exist.

**pH.** From 1983 through 1987 the average measured pH was 7.5; the high was 8.2 and the low was 7. No trends are apparent in the data.

**TDS.** From 1983 through 1987 TDS concentration steadily increased. The data ranged from a low of 366 to a high of 1,330 mg/l.

**Major Cations and Anions.** Insufficient data exists to identify trends in levels of major cations and anions.

A summary of the general trend for major water quality parameters for underground mine flows and for the Mudwater Discharge is provided in the following table. For major cations and anions there may be more than one category marked, indicating that there was variation found between parameters evaluated. The reader is referred to either the text or the graphs for further details when two or more categories are marked. N/A in the table indicates insufficient data exists to make a determination of a potential trend.

**Summary for Underground Mine Flows and Mudwater Discharge Water**

Station	Flow			pH			TDS			Major Cations/Anions		
	Down	Stable	Up	Down	Stable	Up	Down	Stable	Up	Down	Stable	Up
1W4		X			X			X		X	X	X
1WN6	SITE ABANDONED IN 1994											
9L12	X				X			X		X	X	
Gentry Ridge			X		X				X		X	
Mudwater	NO DISCHARGES SINCE 1987											

**Conclusions**

Flow measurements from in-mine stations generally do not show much correlation with precipitation data. Noticeable trends in flows are at the Gentry Ridge station, where flows have been increasing, and at station 9L12 where flows have been steadily decreasing. pH levels have fluctuated but have not been extreme. Noticeable trends in TDS levels are apparent at station 1W4, where TDS has risen steadily, and at station 9L12, where TDS levels have fluctuated over the years. Some minor trends have been noted at selected stations regarding levels of major cations and anions, however, nothing was found which was believed to be of concern at the present time.

It appears that the TDS level increased at station 9L12 due to freshly broken rock in the subsided coal seam zone contributing dissolved minerals to a peak in 1991 and then started to decline. Mining was conducted in the drainage area for monitoring station 9L12 from 1984 to 1989. It appears that two years after mining ceased, the TDS levels started to decline. The initial high flow at the Gentry Ridge monitoring station was a result of dewatering ponded water in the longwall area. After the ponded water was pumped down, the flow leveled off at an average of 0.693 cfs for the remainder of 1992. The flow increased dramatically in 1993 and rose throughout the year and continued to increase through December 1994 at which time it started to decrease. Now that longwall mining has ceased in the Southern Gentry Ridge area, and no pumping is occurring, flows will return to their natural southerly flow direction.

Mitigation agreements were signed during 1993 with the Castle Valley Special Service District and the Huntington Cleveland Irrigation Company to resolve their concerns about possible mining impacts to their sources. Under the agreements, Cyprus Plateau will continue to monitor the quantity and quality of the water from 86-35-2-3, and other sources to determine if mining has any impact.

### **PRECIPITATION AND CLIMATOLOGICAL DATA**

Precipitation data for the Price weather station is shown on the surface and ground water data plots.

**TABLE 1**  
**Water Quality Analytical Schedule**

Field Parameters	Surface Water		Ground Water	
	Baseline	Operational	Baseline	Operational
<b>FIELD MEASUREMENTS</b>				
Water Level or Flow				
pH				
Specific Conductivity				
Water Temperature, °C				
<b>LABORATORY MEASUREMENTS</b>				
Anion - Cation Balance				
Bicarbonate				
Calcium, Diss				
Carbonate				
Chloride, Diss				
Iron, Dissolved				
Iron, Total				
Lead, Total <sup>++</sup>				
Magnesium, Diss				
Manganese, Total				
Nitrate, Diss <sup>+</sup>				
Nitrite, Diss <sup>+</sup>				
Oil & Grease				
Potassium, Diss				
Sodium, Diss				
Sulfate, Diss				
Sulfide, Diss <sup>++</sup>				
Total Dissolved Solids				
Total Suspended Solids				
Total Hardness				

+ Stations 51MW and ST-1 only.  
++ One year.

Revised: 6/1/92

---

**APPENDIX A**  
**SPRINGS**

---

Cyprus Plateau Mining Company - Water Quality Data

Print Date:

May 2, 1996

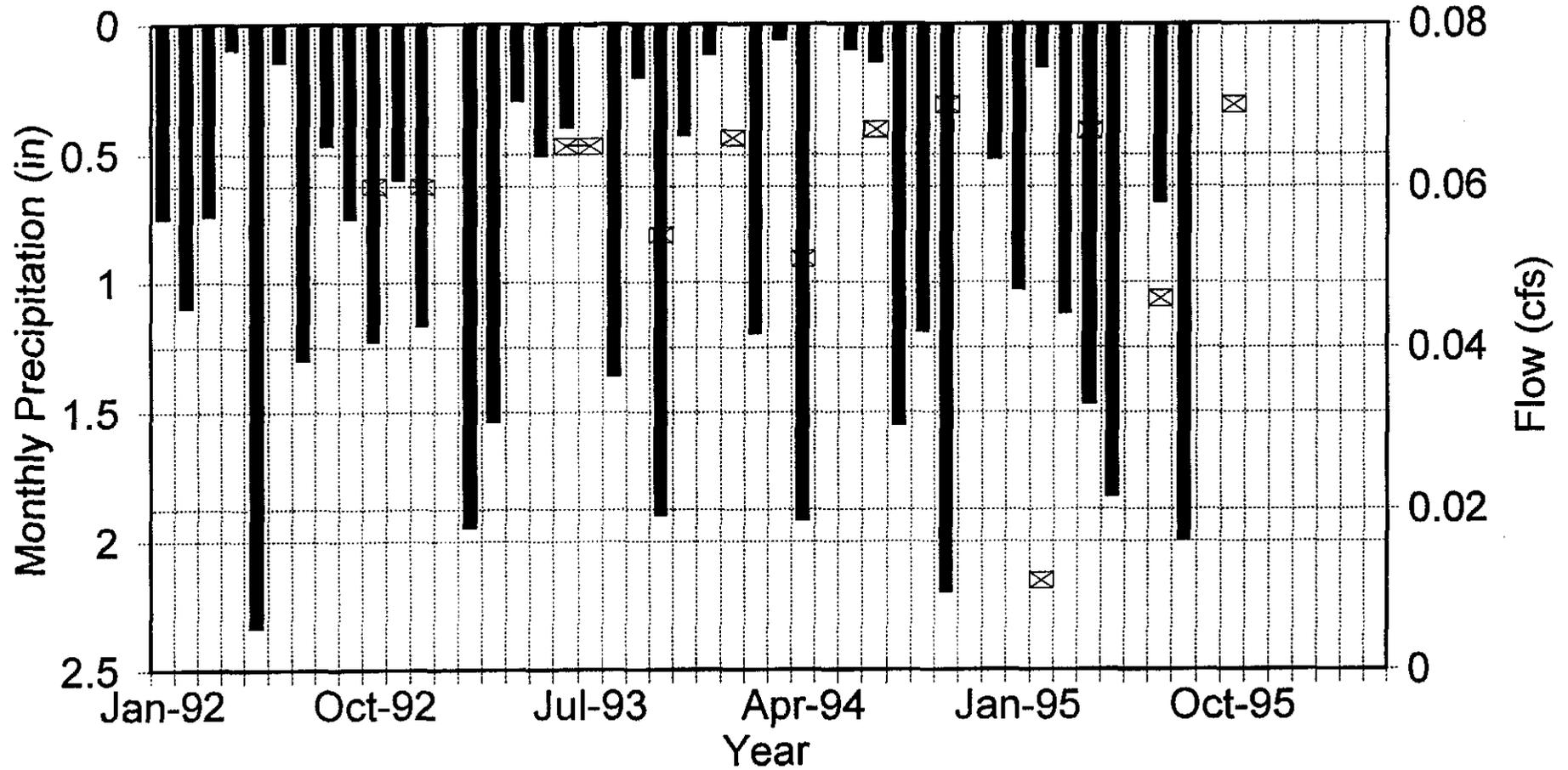
Station: BIRCHSP		Property: Star Point				Location: 1400' S 600' E of NW cor. Sec 26, T16S, R7E					Station Type: Spring		Sampling Frequency: Quarterly		Formation: Star Point Sandstone					Elevation:		Comments				
Date		Field Measurements				Laboratory Measurements																				
Mo-Yr	Sample Date	Flow (cfs)	Ph (units)	Sp. Cond. (ohms)	Temp. (C)	TDS (mg/l)	TSS (mg/l)	O&G (mg/l)	H4-CaCO3 (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (D) (mg/l)	SO4 (D) (mg/l)	Ca (D) (mg/l)	Mg (D) (mg/l)	K (D) (mg/l)		Na (D) (mg/l)	Ca/An Bal (%)	Fe (D) (mg/l)	Fe (T) (mg/l)		Mn (T) (mg/l)			
Jan-92																										
Feb-92																										
Mar-92																										
Apr-92																										
May-92																										
Jun-92																										
Jul-92																										
Aug-92																										
Sep-92																										
Oct-92	10/30/92	0.06	6.2	840	11.6				416	270	16	10	140	91	46	2	6		<	0						
Nov-92																										
Dec-92	12/21/92	0.06	6.3	777	10.6				465	310	0	6	134	104	50	2	7		<	0						
Jan-93																										
Feb-93																										
Mar-93																										
Apr-93																										
May-93																										
Jun-93	06/23/93	0.085	6.2	880	11.1	418			430	395	0	6	107	95	47	3	7		<	0.02	<	0.02	<	0.01		
Jul-93	07/22/93	0.065	6.1	704	11.8	454			415	327	12	5	109	92	45	3	7		<	0.02	<	0.02	<	0.01		
Aug-93																										
Sep-93																										
Oct-93	10/19/93	0.054	6.1	743	11	426			424	439	0	5	111	94	46	3	7		<	0.02		0.03		0.01		
Nov-93																										
Dec-93																										
Jan-94	01/25/94	0.066				454			446	403	0	6	95	96	49	2	7		<	0.02	<	0.02		0.01		
Feb-94																										
Mar-94																										
Apr-94	04/25/94	0.051	7	884	9.7	446			394	415	0	5	101	87	43	2	6		<	0.02		0.03	<	0.01		
May-94																										
Jun-94																										
Jul-94	07/21/94	0.067	7.5	607	15.2	446			405	381	5	5	103	90	44	2	6		<	0.02	<	0.02	<	0.01		
Aug-94																										
Sep-94																										
Oct-94	10/25/94	0.07	7.8	731	11	442			387	196	0	5	93	86	42	2	6		<	0.02		0.03	<	0.01		
Nov-94																										
Dec-94																										
Jan-95																										
Feb-95	02/20/95	0.011	7.2	791	11	430			412	331	<	2	5	100	90.6	45.4	2.3	6.3		-1.6	<	0.01		0.31	0.029	
Mar-95																										
Apr-95	04/26/95	0.0668	7.2	873	52.7	460			412	323	<	2	5	110	89.9	45.5	2.4	6.5		-1.9	<	0.01		0.06	0.01	
May-95																										
Jun-95																										
Jul-95	07/31/95	0.046	7.2	795	55.2	490			426	317	<	2	5	100	93.6	46.8	2.2	6.3		1.6	<	0.01		0.12	0.022	
Aug-95																										
Sep-95																										
Oct-95	10/19/95	0.07	7.21	769	53	490			471	337	<	2	6	126	99.9	53.8	2.7	7.6		1.3	<	0.01		0.11	0.011	
Nov-95																										
Dec-95																										
Jan-96																										
END DATA																										
Count		13	12	12	12	11	0	0	13	13	13	13	13	13	13	13	13	4	13	11	11					
Minimum		0.011	6.1	607	9.7	418	ERR	ERR	387	198	<	0	5	83	86	42	2	6		-1.9	<	0	<	0.02	<	0.01
Maximum		0.07	7.8	884	55.2	490	ERR	ERR	471	439	<	16	10	140	104	53.8	3	7.6		1.6	<	0.02	<	0.31	<	0.029
Average		0.0578	6.8342	749.5	21.992	450.73	ERR	ERR	423.31	342	<	3.1538	5.8923	109.92	93.154	46.423	2.3538	6.6923		-0.15	<	0.0138	<	0.07	<	0.0129
Standard Deviation		0.0153	0.5855	73.401	18.319	22.177	ERR	ERR	23.972	62.69	<	4.8966	1.3234	14.107	4.9071	2.9841	0.4069	0.5136		1.607	<	0.0074	<	0.0834	<	0.0061
Avg. +1 Std. Dev.		0.0426	6.2486	676.1	3.6722	428.55	ERR	ERR	399.34	279.31	<	-1.743	4.3689	95.817	88.247	43.439	1.947	6.0787		-1.757	<	0.0065	<	-0.013	<	0.0068
Avg. +1 Std. Dev.		0.0731	7.4197	822.9	40.311	472.9	ERR	ERR	447.28	404.69	<	8.0504	7.0157	124.03	98.061	49.407	2.7607	7.1059		1.457	<	0.0212	<	0.1534	<	0.019
Avg. -2 Std. Dev.		0.0273	5.6631	602.7	-14.65	406.37	ERR	ERR	375.36	218.62	<	-6.639	3.0454	81.71	83.34	40.455	1.5401	5.5651		-3.364	<	-0.001	<	-0.097	<	0.0007
Avg. +2 Std. Dev.		0.0884	8.0052	896.3	56.631	495.08	ERR	ERR	471.25	467.38	<	12.947	8.3392	138.14	102.97	52.391	3.1676	7.6195		3.064	<	0.0286	<	0.2369	<	0.0252

NOTE: The "<" symbol indicates that "Less Than" data was found in the data set; statistics are approximate.

\* Measurements taken for this month are extremely anomalous and judged to be in error and were not included in this table. See previous reports for actual data.

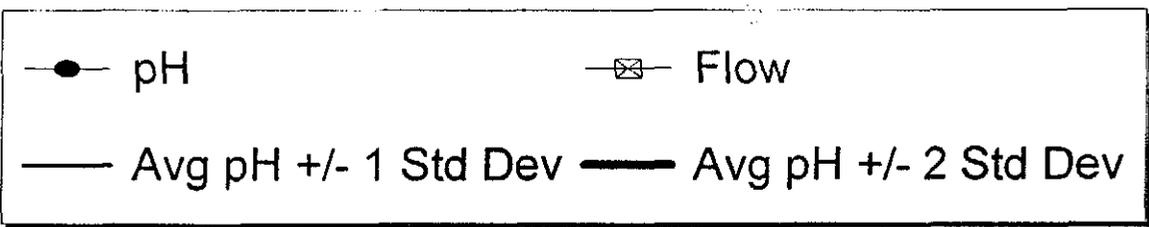
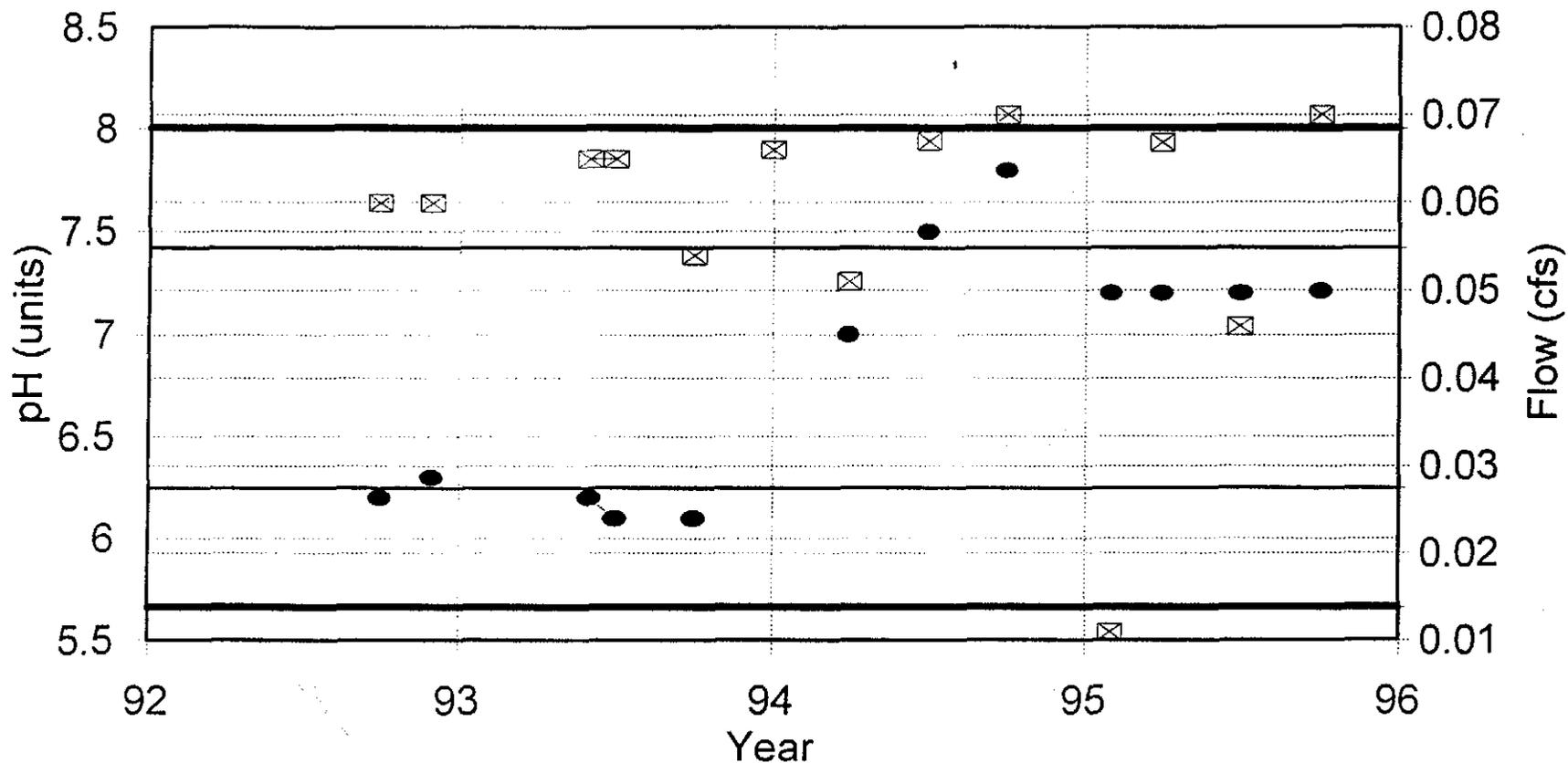
# Station Birch Springs

## Monthly Precipitation vs. Flow



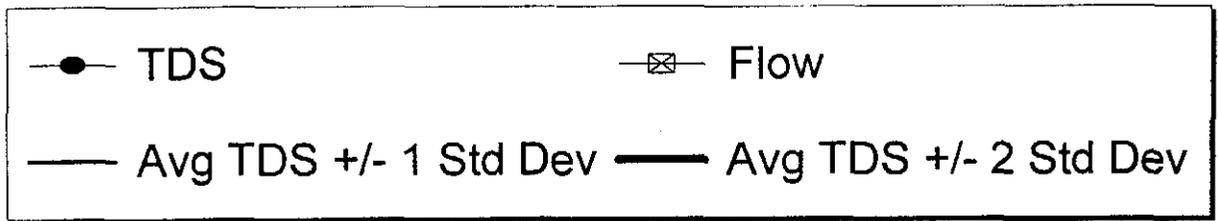
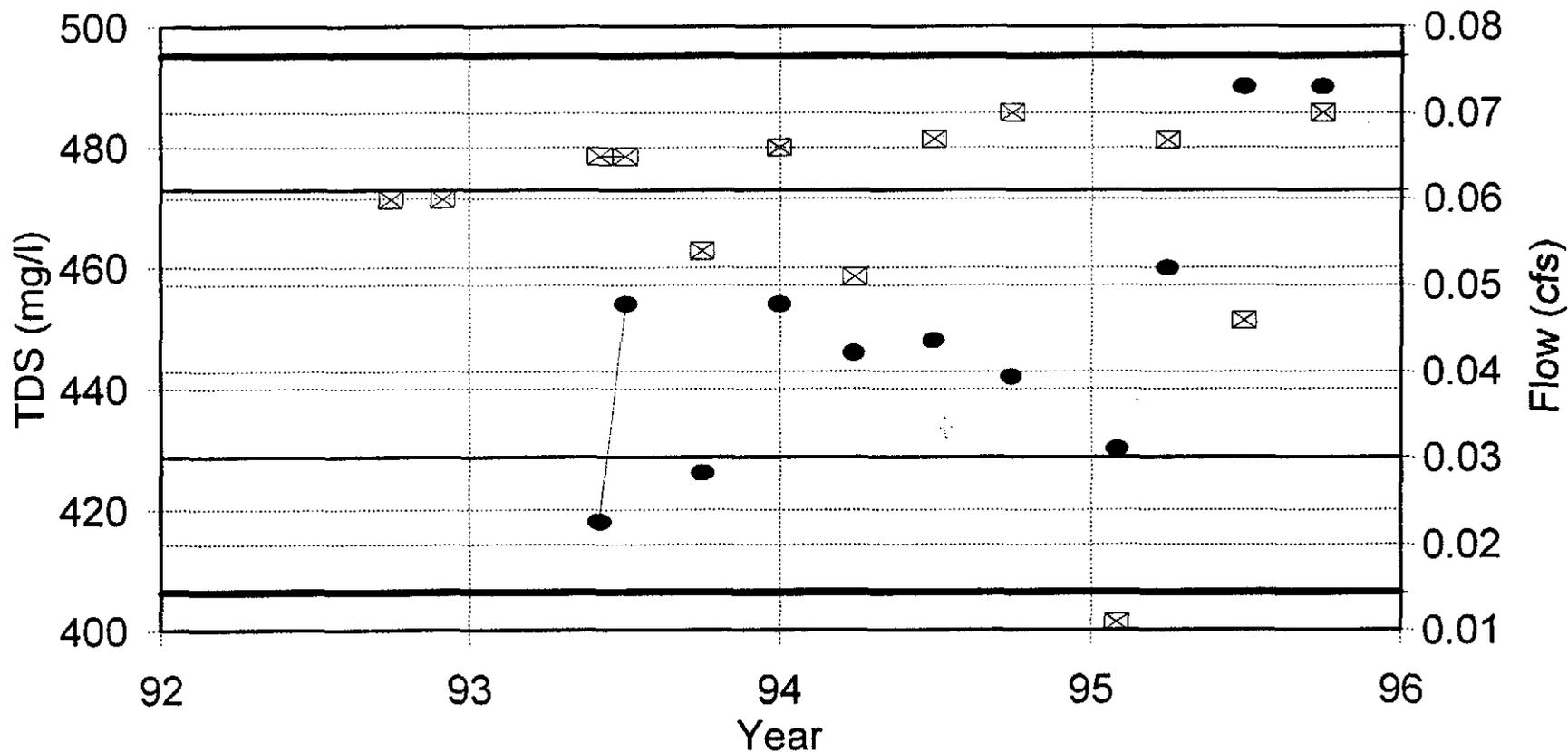
# Station Birch Spring

pH vs. Flow



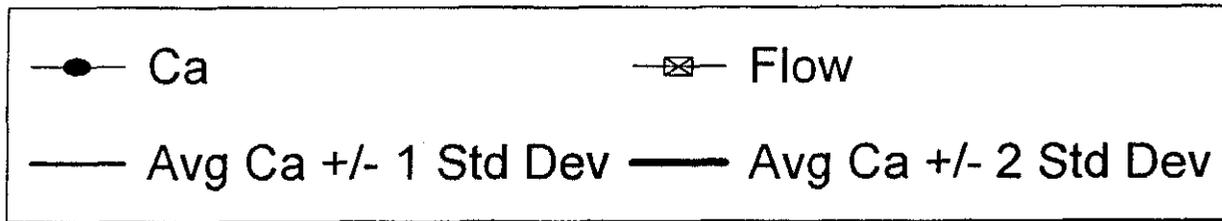
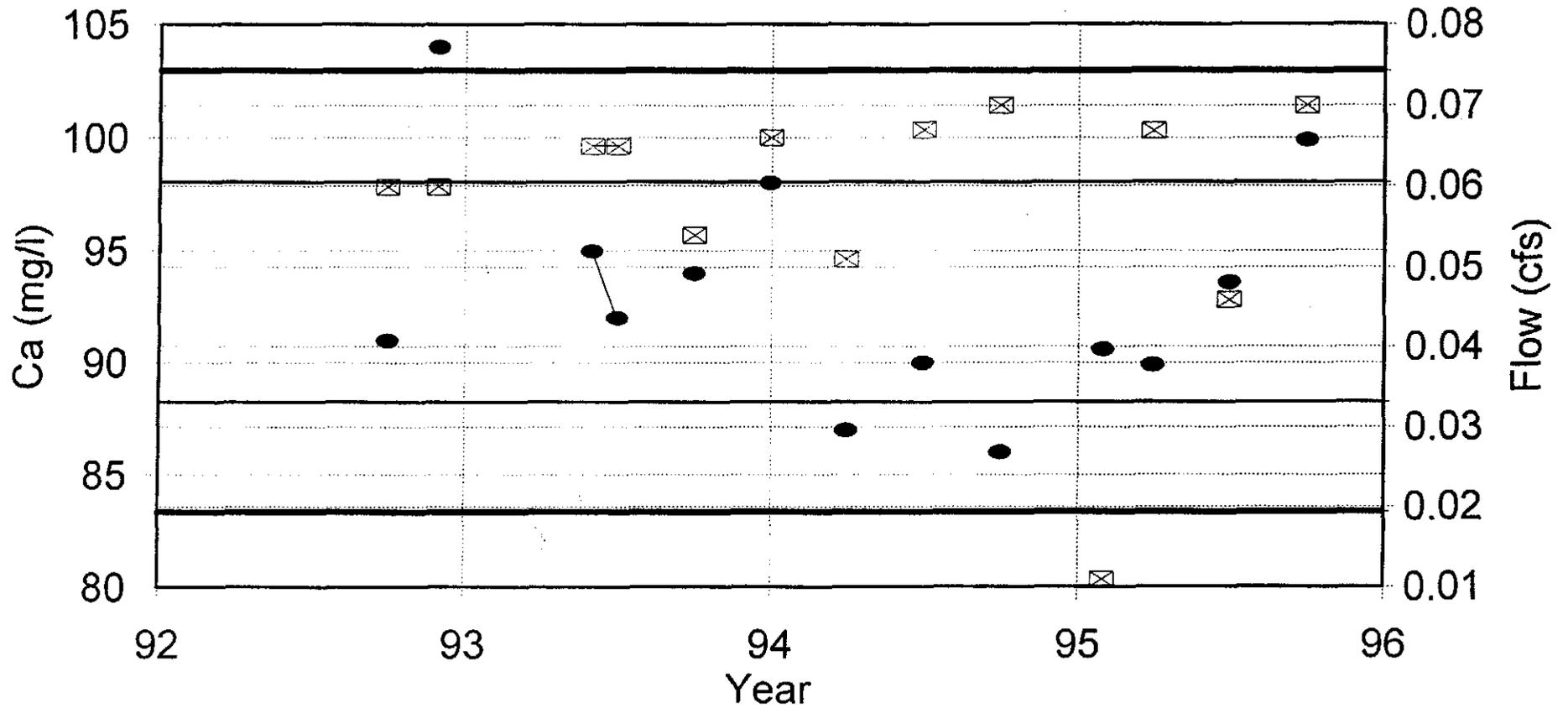
# Station Birch Spring

## TDS vs. Flow



# Station Birch Spring

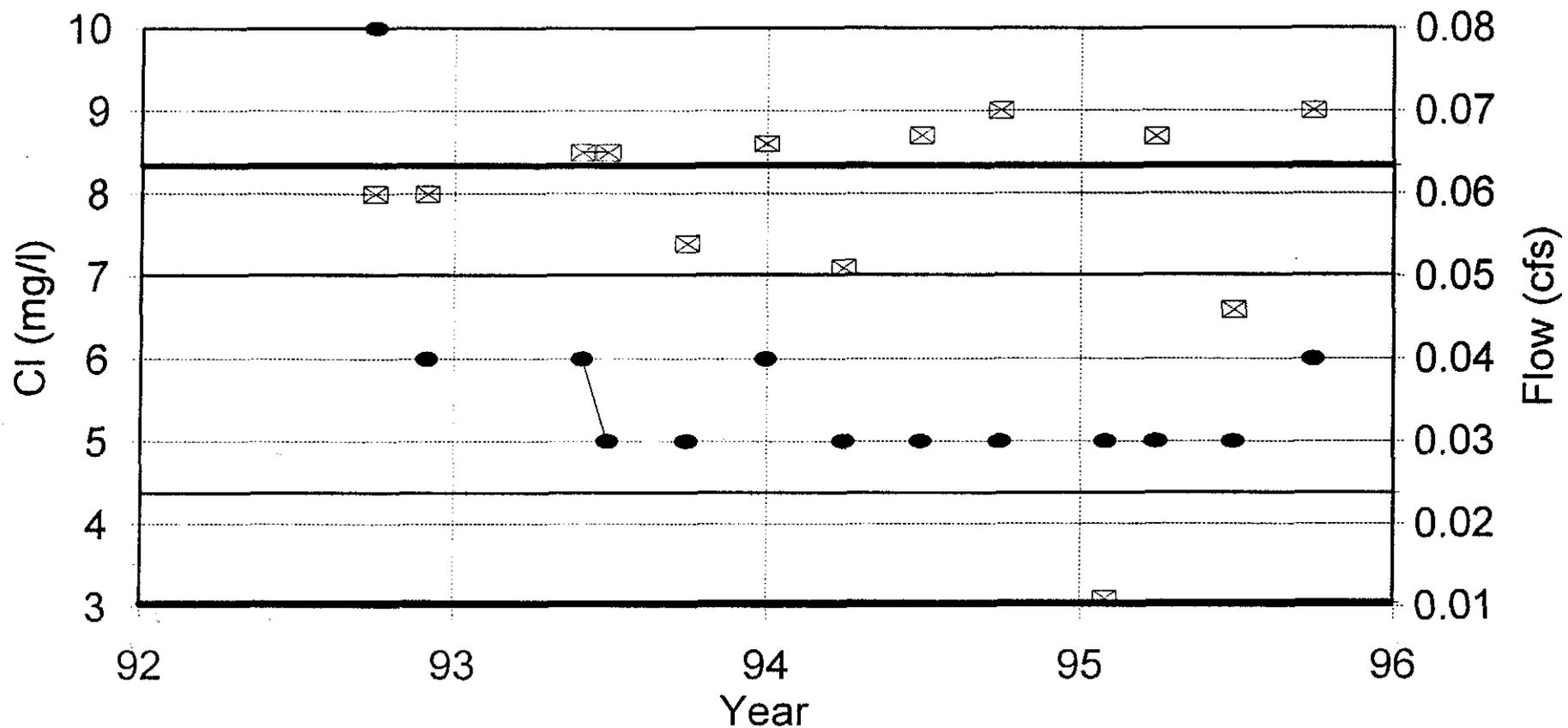
## Ca vs. Flow





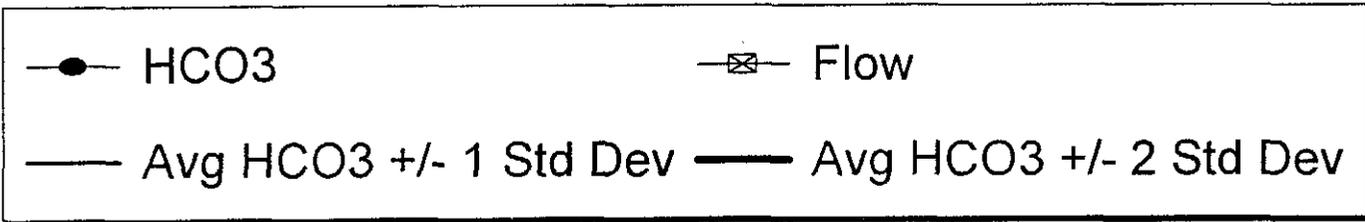
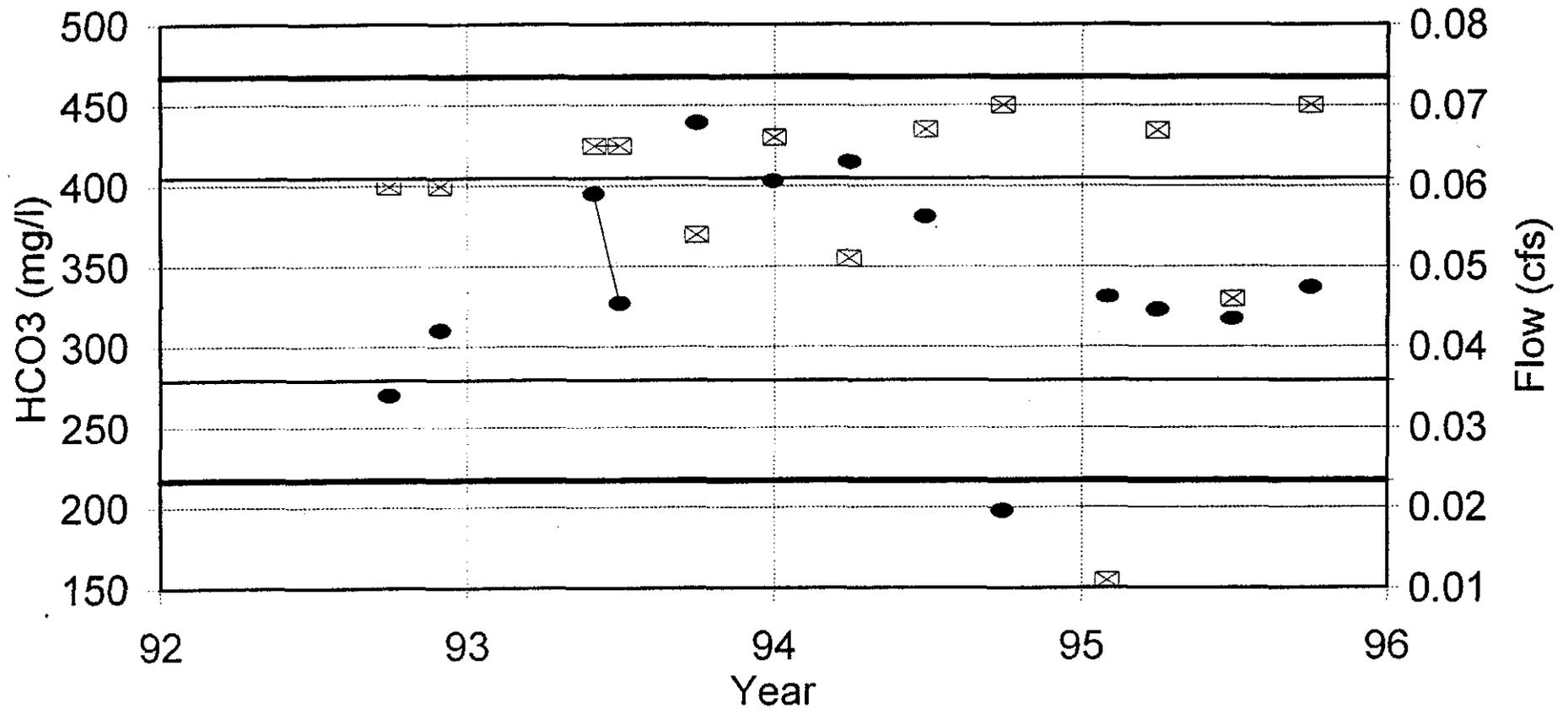
# Station Birch Spring

Cl vs. Flow



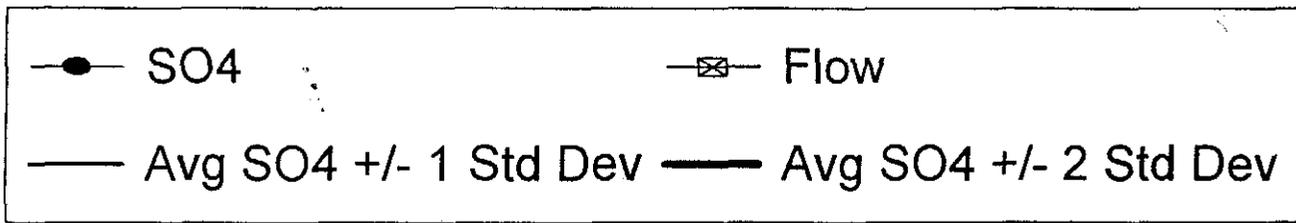
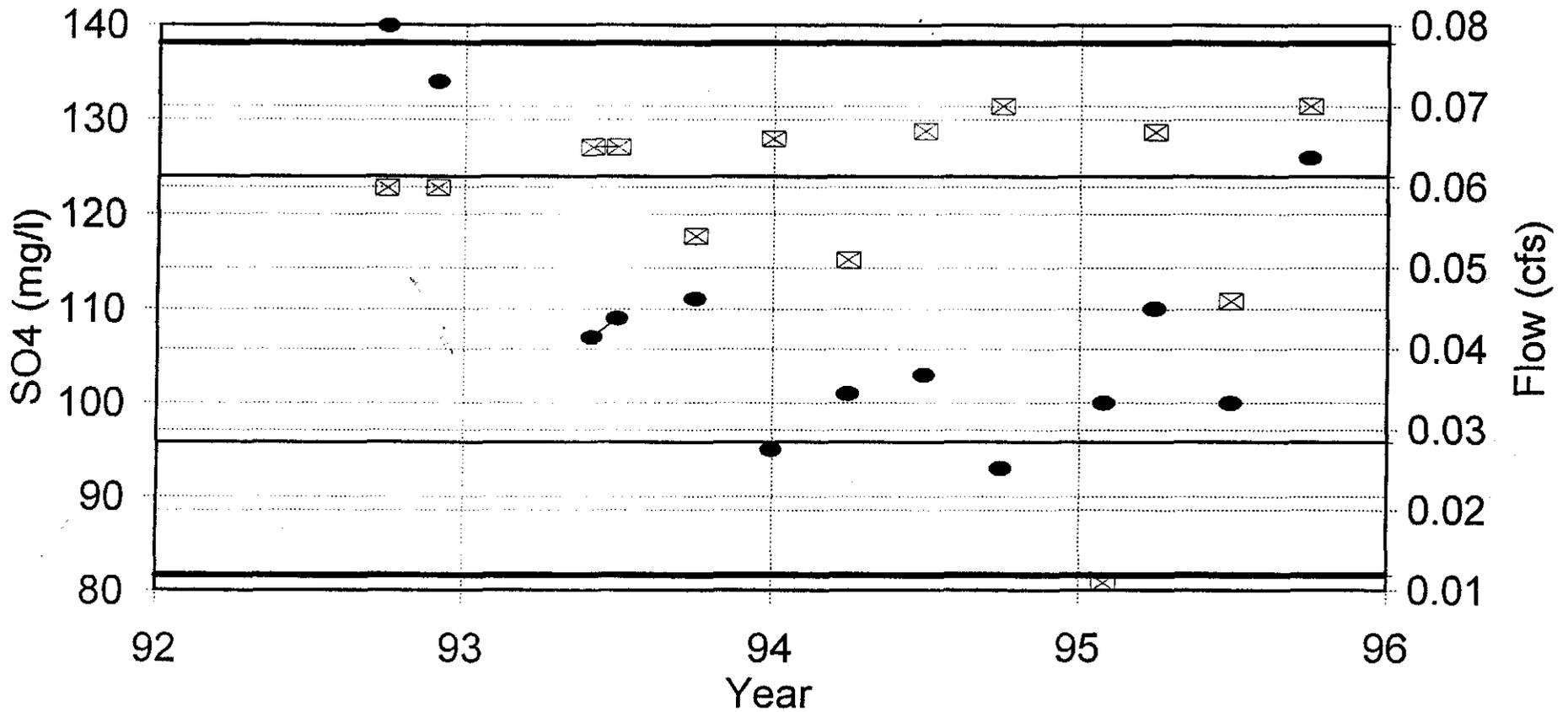
# Station Birch Spring

## HCO<sub>3</sub> vs. Flow



# Station Birch Spring

## SO4 vs. Flow



Cyprus Plateau Mining Company - Water Quality Data

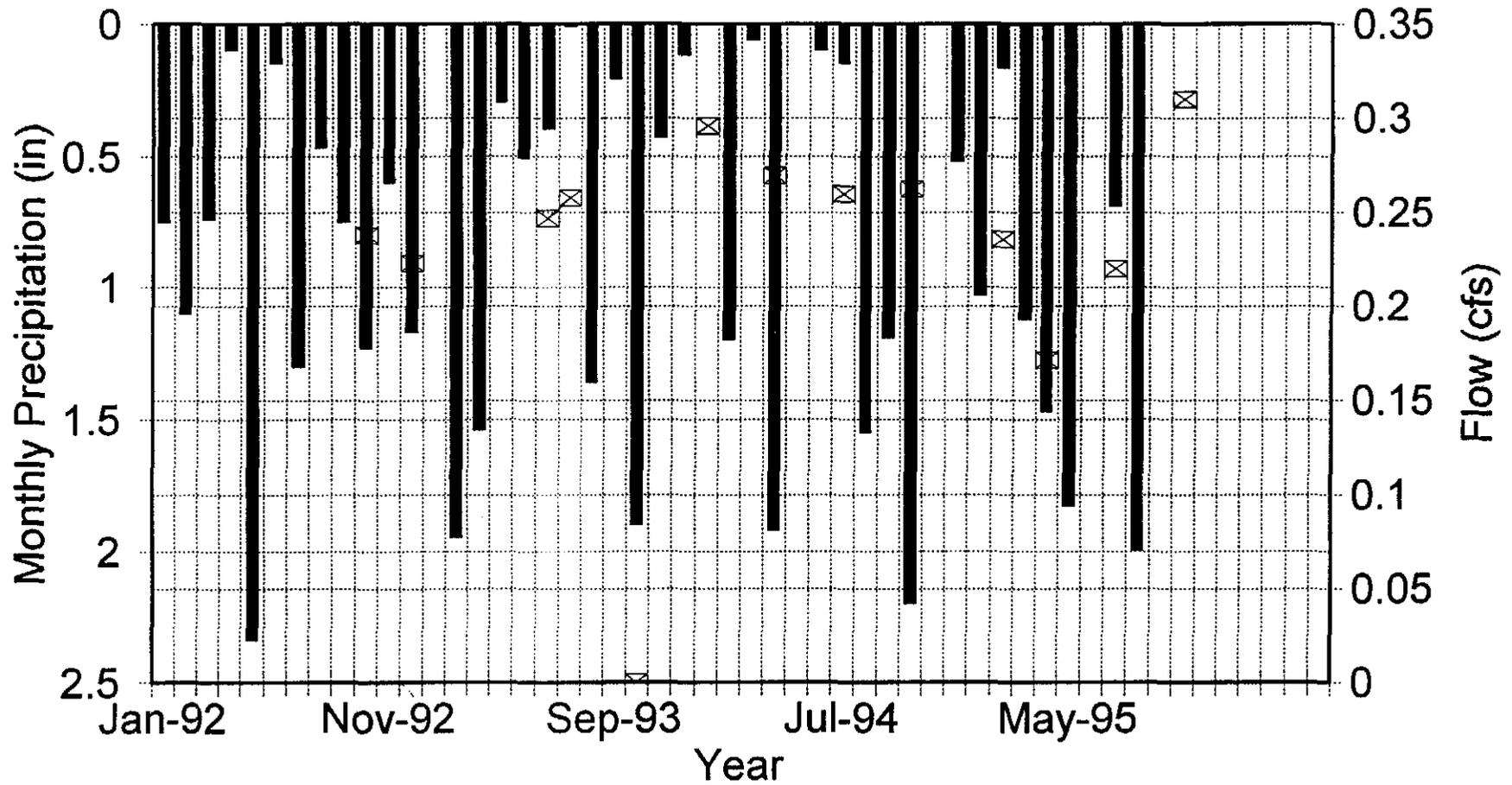
Print Date: May 2, 1996

Station: BIGBEAR		Property: Star Point				Location: Huntington Canyon				Station Type: Spring		Sampling Frequency: Quarterly		Formation: Star Point Sandstone				Elevation:		Comments						
Date		Field Measurements				Laboratory Measurements																				
Mo-Yr	Sample Date	Flow (cfs)	Ph (units)	Sp. Cond. (ohms)	Temp. (C)	TDS (mg/l)	TSS (mg/l)	O&G (mg/l)	Hd-CaCO3 (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (D) (mg/l)	SO4 (D) (mg/l)	Ca (D) (mg/l)	Mg (D) (mg/l)	K (D) (mg/l)	Na (D) (mg/l)	Ca/An Bal (%)	Fe (D) (mg/l)		Fe (T) (mg/l)	Mn (T) (mg/l)				
Jan-92																										
Feb-92																										
Mar-92																										
Apr-92																										
May-92																										
Jun-92																										
Jul-92																										
Aug-92																										
Sep-92																										
Oct-92	10/30/92	0.238	6.5	614	9.9				415	238	24	4	58	75	31	1	4	<	0	<	0					
Nov-92																										
Dec-92	12/21/92	0.223	6.5	600	9.5				340	272	0	3	72	82	33	1	4	<	0	<	0					
Jan-93																										
Feb-93																										
Mar-93																										
Apr-93																										
May-93																										
Jun-93	06/23/93	0.247	6.5	525	9.7	302			329	344	0	4	35	79	32	1	4	<	0.02	<	0.02	<	0.01			
Jul-93	07/22/93	0.258	6.5	532	9.9	320			278	298	12	3	37	67	27	1	4	<	0.02	<	0.02	<	0.01			
Aug-93																										
Sep-93																										
Oct-93	10/19/93	0	6.5	552	9.6	288			308	366	0	3	39	74	30	1	4	<	0.02	<	0.02	<	0.01			
Nov-93																										
Dec-93																										
Jan-94	01/25/94	0.296				310			317	329	0	4	35	76	31	<	1	4	<	0.02	<	0.02	<	0.01		
Feb-94																										
Mar-94																										
Apr-94	04/25/94	0.27	7.3	627	8.8	294			294	366	0	3	29	70	29	<	1	4	<	0.02	<	0.2	<	0.1		
May-94																										
Jun-94																										
Jul-94	07/21/94	0.26	7.7	501	16.8	296			273	320	7	3	27	65	27	1	4	<	0.02	<	0.02	<	0.01			
Aug-94																										
Sep-94																										
Oct-94	10/25/94	0.263	8.2	559	10	328			339	388	0	4	42	80	34	1	14	<	0.02	<	0.02	<	0.01			
Nov-94																										
Dec-94																										
Jan-95																										
Feb-95	02/20/95	0.236	7.17	621	10	310			312	286	<	2	4	40	74.2	31.4	1.2	4.3	-1.6	<	0.01	0.13	<	0.005		
Mar-95																										
Apr-95	04/26/95	0.1716	7.6	538	52.9	350			340	277	<	2	4	60	79.7	34.3	1.4	4.7	0.9	<	0.01	0.02	<	0.005		
May-95																										
Jun-95																										
Jul-95	07/31/95	0.22	7.7	652	13	370			341	281	<	2	4	60	79.4	34.7	1.3	4.6	0.4		0.01	0.13		0.021		
Aug-95																										
Sep-95																										
Oct-95	10/19/95	0.31	7.46	671	53	440			406	282	<	2	5	109	91.6	43.1	1.7	6.1	2.2	<	0.01	0.06		0.012		
Nov-95																										
Dec-95																										
Jan-96																										
END DATA																										
Count		13	12	12	12	11	0	0	13	13	13	13	13	13	13	13	13	4	13	11	13					
Minimum		0	6.5	501	8.8	288	ERR	ERR	273	238	<	0	3	27	65	27	<	1	4	-1.6	<	0	<	0.02	<	0
Maximum		0.31	8.2	671	53	440	ERR	ERR	415	388	<	24	5	109	91.6	43.1	<	1.7	14	2.2	<	0.02	<	0.2	<	0.1
Average		0.2302	7.1358	582.67	17.758	328	ERR	ERR	330.15	310.54	<	3.9231	3.6923	49.462	76.377	32.115	<	1.1231	5.0538	0.475	<	0.0138	<	0.06	<	0.0156
Standard Deviation		0.0744	0.5873	52.745	15.875	42.597	ERR	ERR	40.79	42.072	<	6.7078	0.6057	21.66	6.6449	3.9805	<	0.2118	2.6445	1.3663	<	0.0074	<	0.0608	<	0.0249
Avg. -1 Std. Dev.		0.1558	6.5485	529.92	1.883	285.4	ERR	ERR	289.36	268.47	<	-2.785	3.0866	27.801	69.732	28.135	<	0.9113	2.4094	-0.891	<	0.0065	<	-0.001	<	-0.009
Avg. +1 Std. Dev.		0.3046	7.7231	635.41	33.634	370.6	ERR	ERR	370.94	362.61	<	10.631	4.298	71.122	83.022	38.096	<	1.3349	7.6983	1.8413	<	0.0212	<	0.1208	<	0.0405
Avg. -2 Std. Dev.		0.0814	5.9612	477.18	-13.99	242.81	ERR	ERR	248.57	226.39	<	-8.492	2.4809	6.1408	63.087	24.154	<	0.6995	-0.235	-2.258	<	-0.001	<	-0.062	<	-0.034
Avg. +2 Std. Dev.		0.379	8.3104	688.16	49.509	413.19	ERR	ERR	411.73	394.68	<	17.339	4.9037	92.782	89.667	40.075	<	1.5466	10.343	3.2077	<	0.0286	<	0.1815	<	0.0654

NOTE: The "<" symbol indicates that "Less Than" data was found in the data set; statistics are approximate.  
 \* Measurements taken for this month are extremely anomalous and judged to be in error and were not included in this table. See previous reports for actual data.

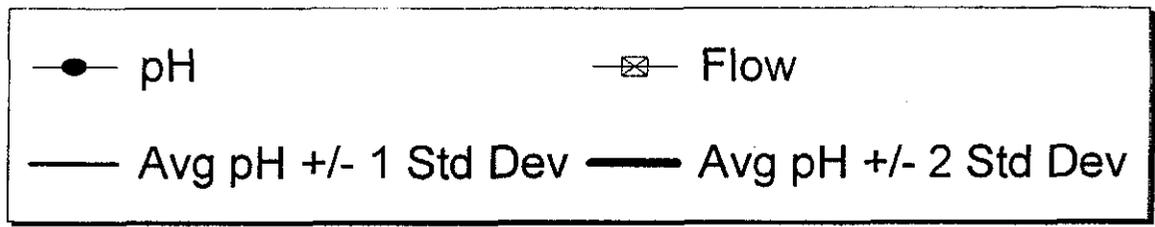
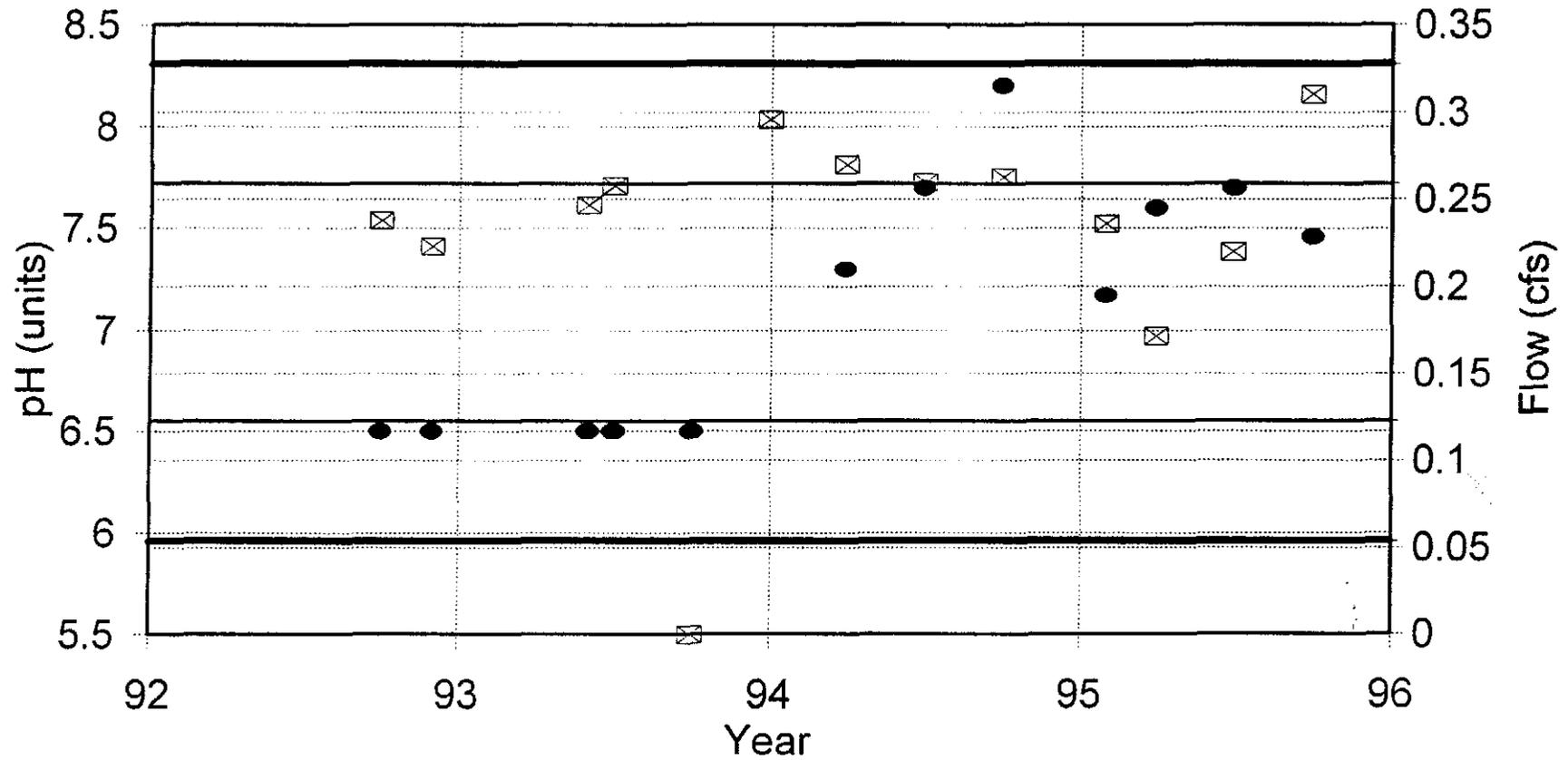
# Station Big Bear Spring

## Monthly Precipitation vs. Flow



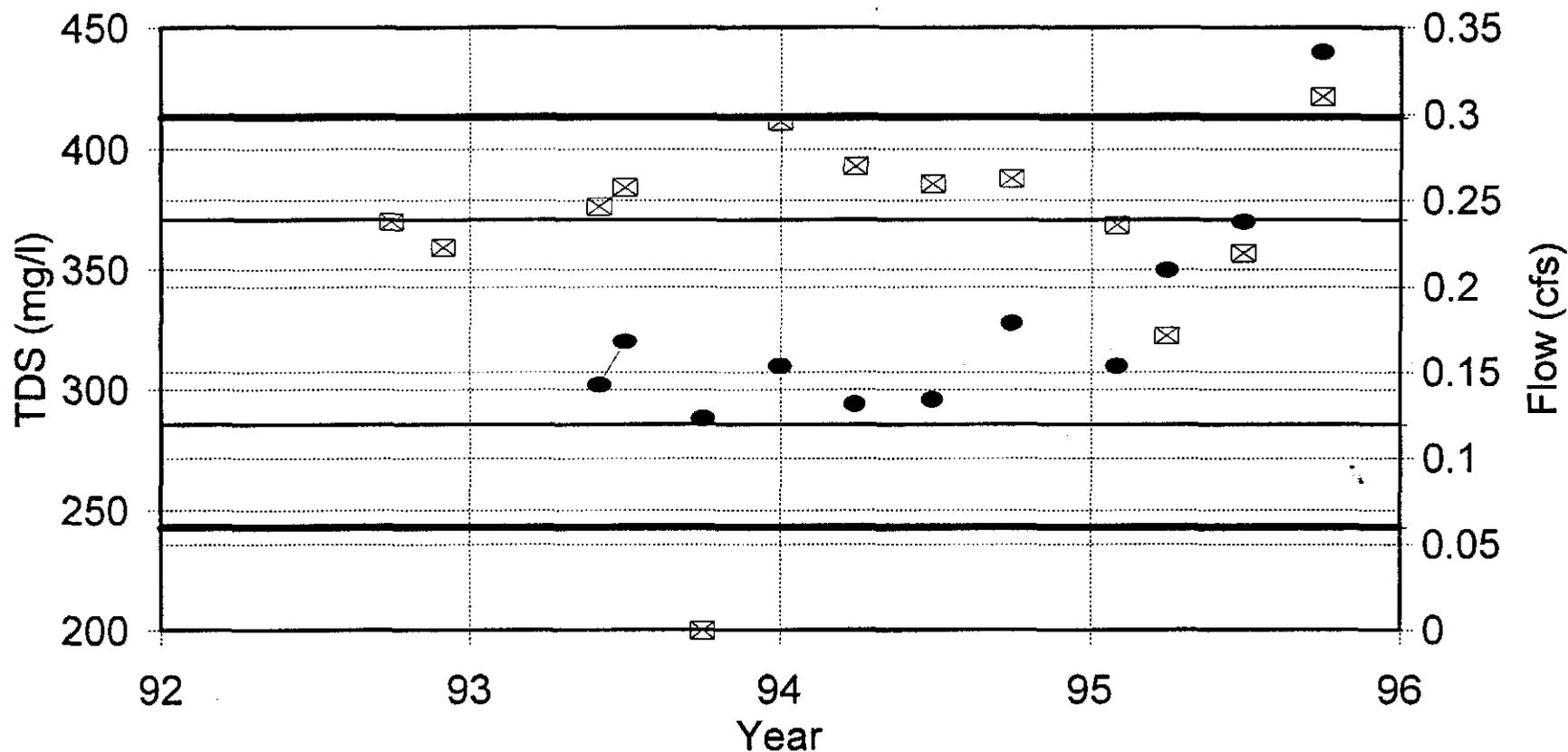
# Station Big Bear Spring

pH vs. Flow



# Station Big Bear Spring

## TDS vs. Flow



● TDS

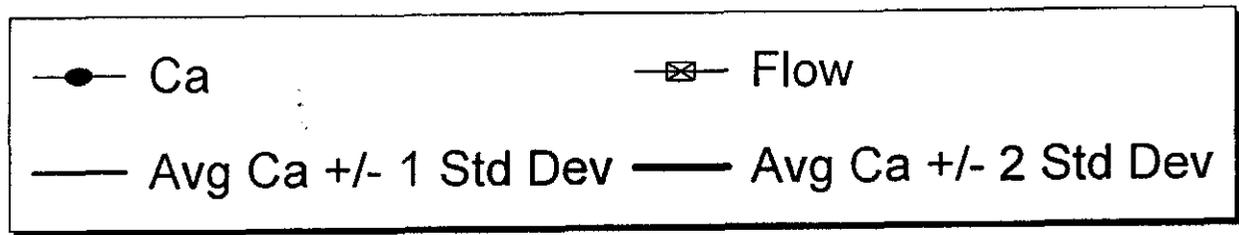
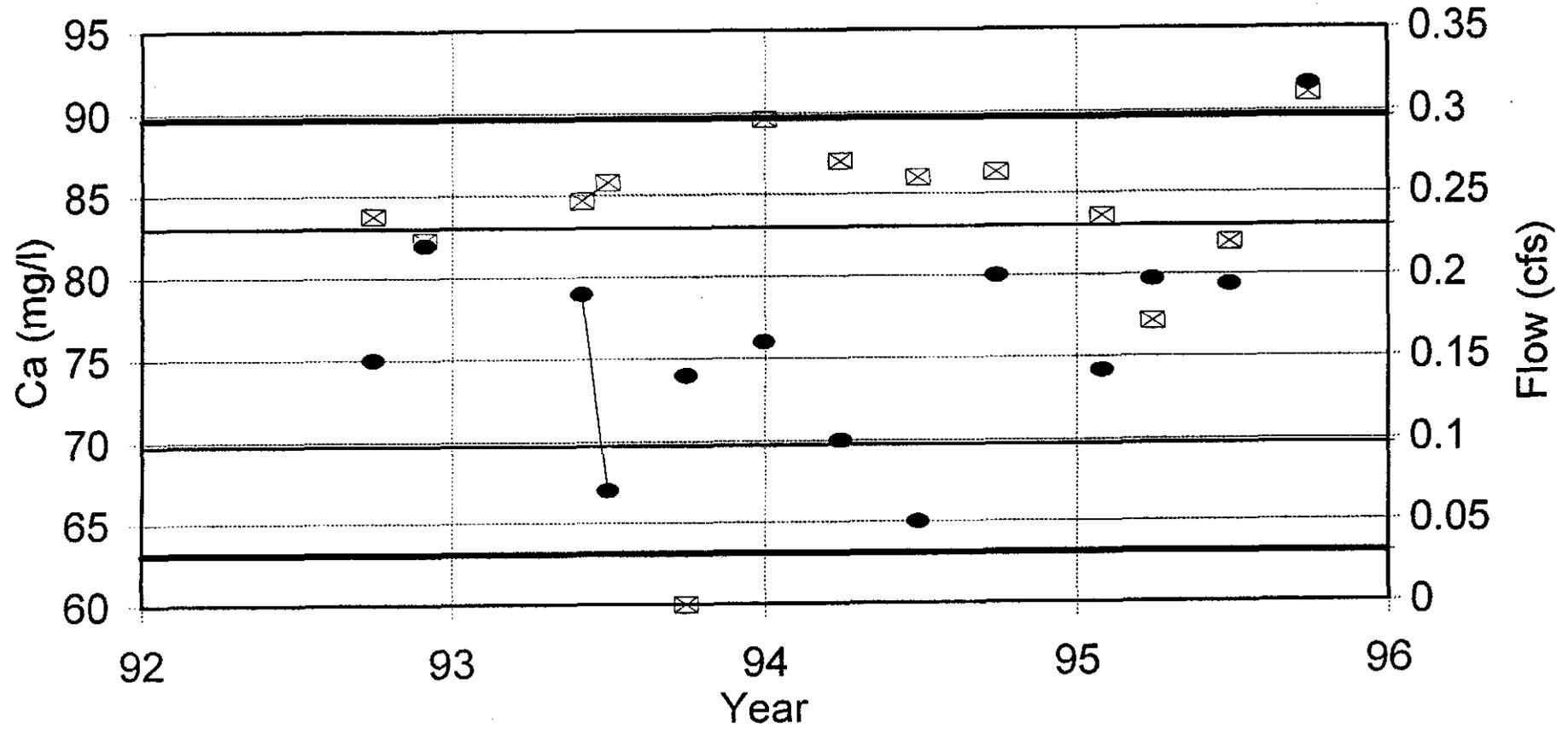
⊠ Flow

— Avg TDS +/- 1 Std Dev

— Avg TDS +/- 2 Std Dev

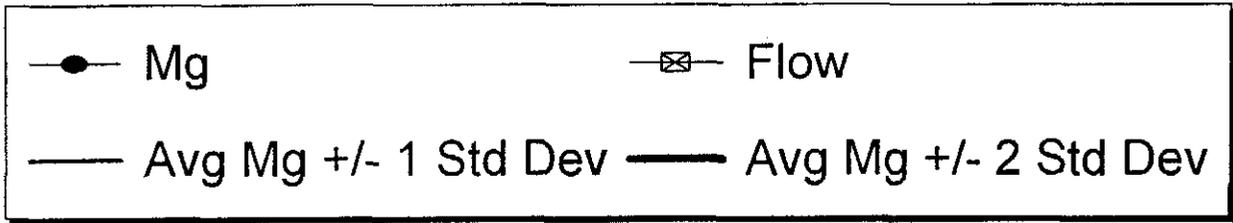
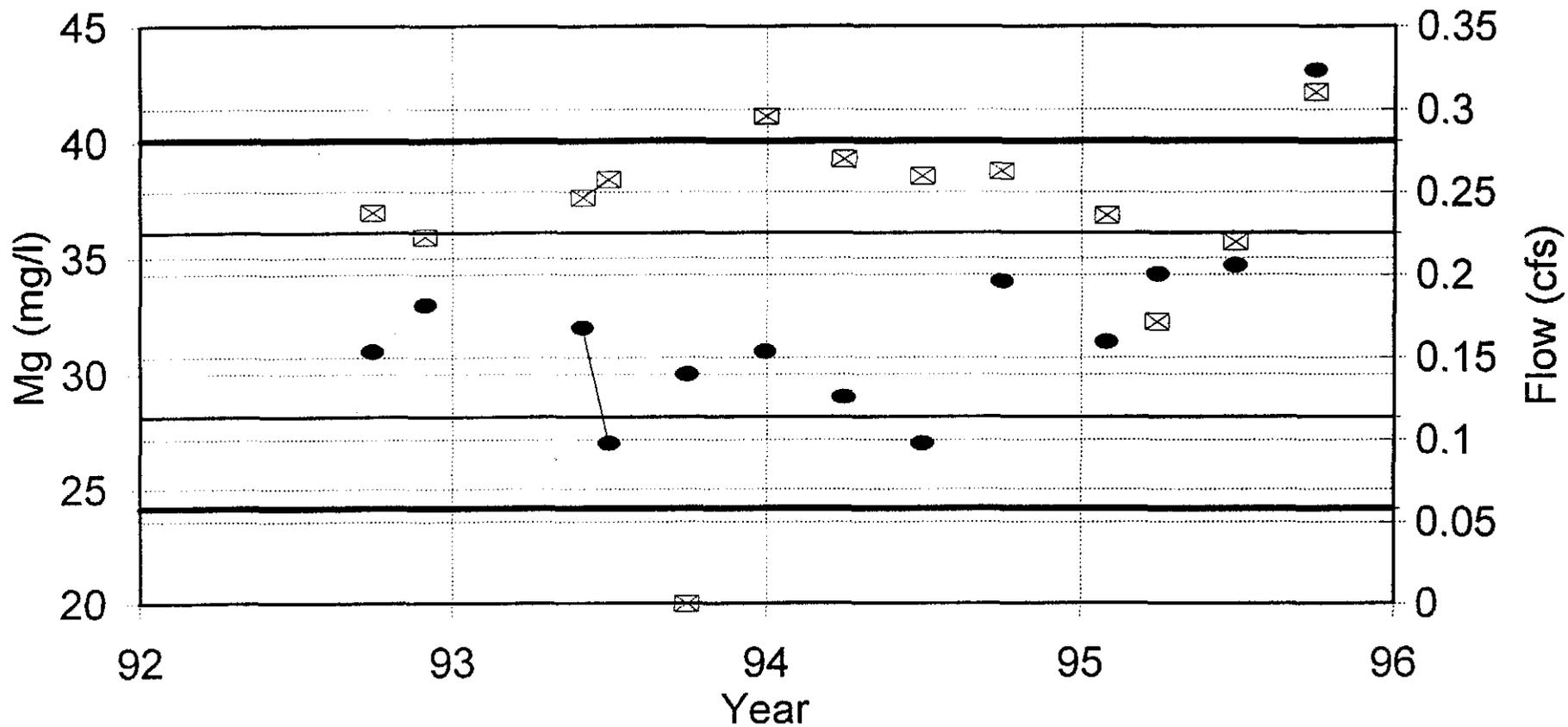
# Station Big Bear Spring

## Ca vs. Flow



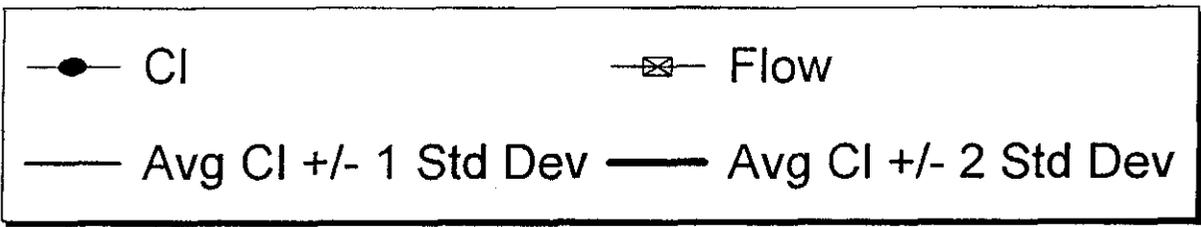
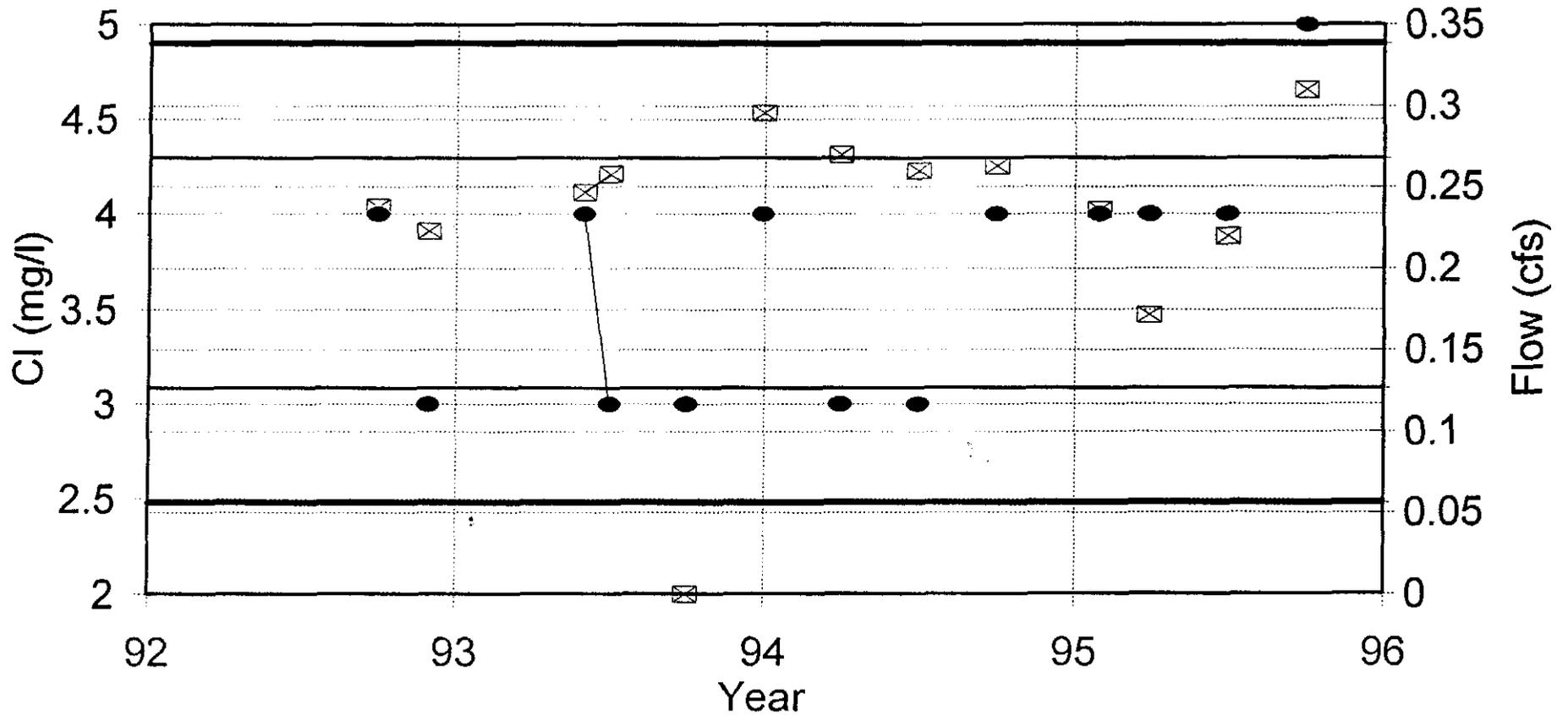
# Station Big Bear Spring

## Mg vs. Flow



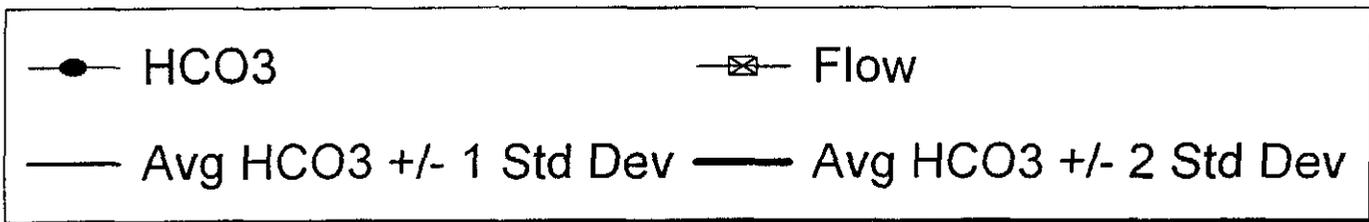
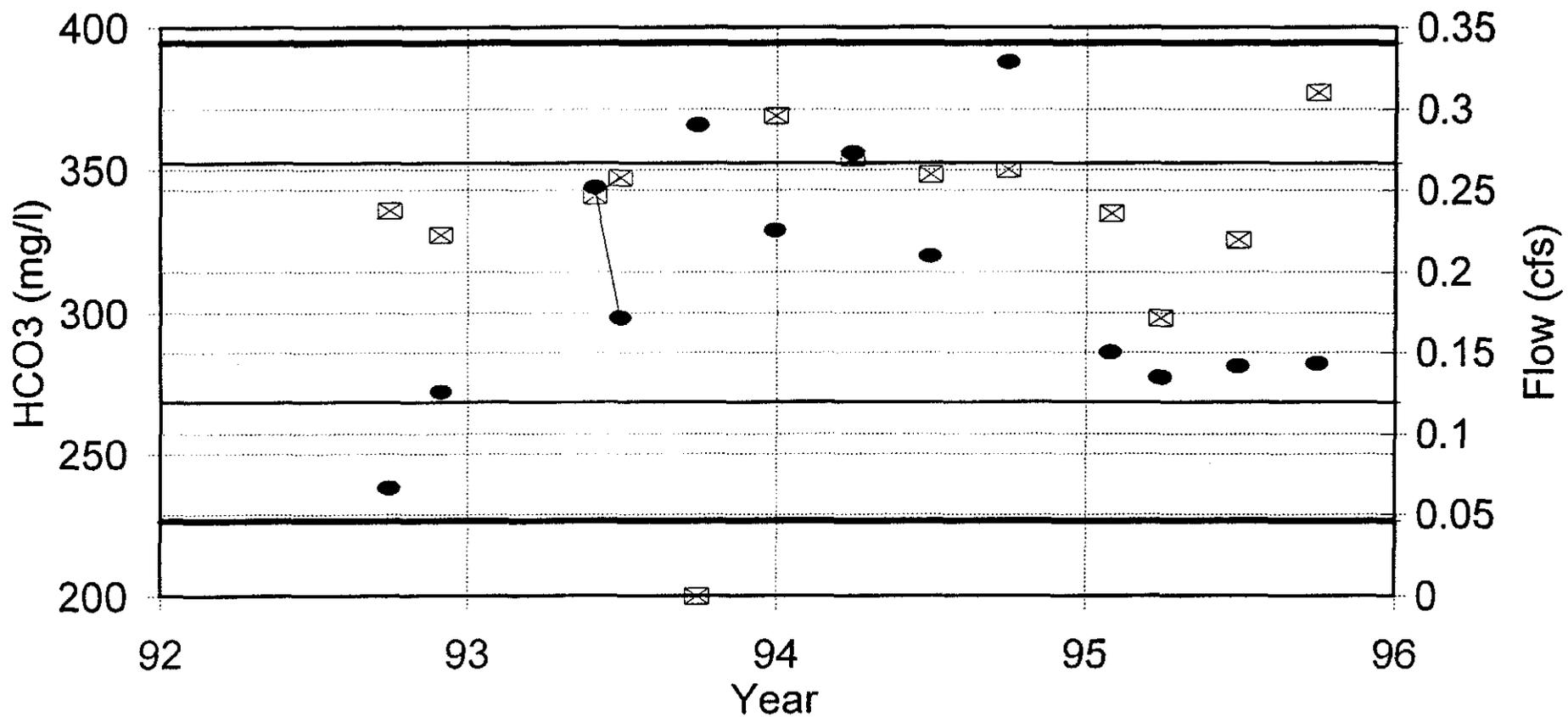
# Station Big Bear Spring

Cl vs. Flow



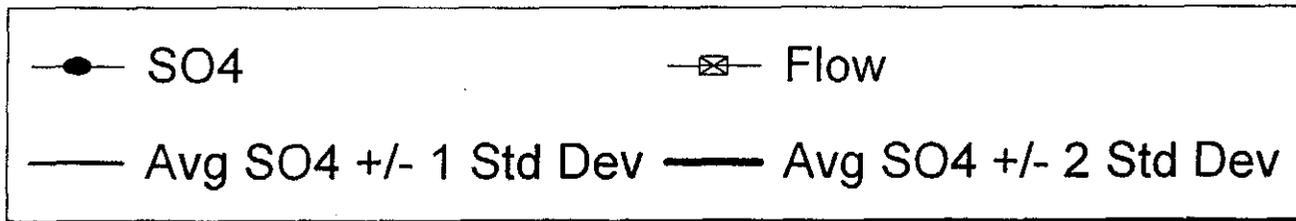
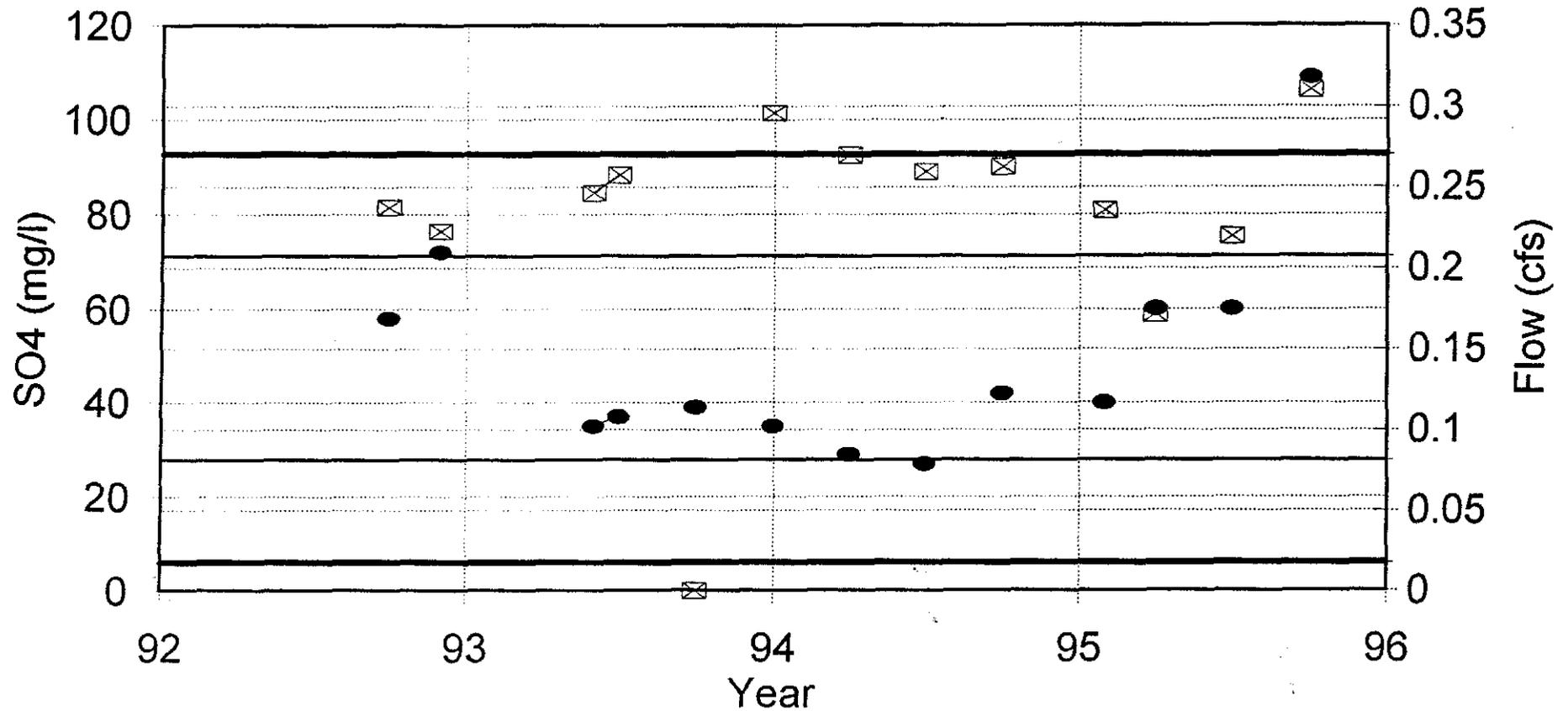
# Station Big Bear Spring

## HCO<sub>3</sub> vs. Flow



# Station Big Bear Spring

## SO4 vs. Flow



Cyprus Plateau Mining Company - Water Quality Data

Station: 530 Property: Star Point Location: 2375' S 800' E of NW cor. Sec 11, T15S, R7E Station Type: Spring Sampling Frequency: Quarterly Formation: Blackhawk Print Date: May 2, 1996 Elevation: 9160

Date	Field Measurements				Laboratory Measurements																Comments	
	Sample Date	Flow (cfs)	Ph (units)	Sp. Cond (ohms)	Temp. (C)	TDS (mg/l)	TSS (mg/l)	O&G (mg/l)	Hd-CaCO3 (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (D) (mg/l)	SO4 (D) (mg/l)	Ca (D) (mg/l)	Mg (D) (mg/l)	K (D) (mg/l)	Na (D) (mg/l)	Ca/An Bal (%)	Fe (D) (mg/l)	Fe (T) (mg/l)		Mn (T) (mg/l)
Jan-86 Feb-86 Mar-86 Apr-86 May-86 Jun-86 Jul-86 Aug-86 Sep-86 Oct-86 Nov-86 Dec-86	10/10/86	0.02				300																
Jan-87 Feb-87 Mar-87 Apr-87 May-87 Jun-87 Jul-87 Aug-87 Sep-87 Oct-87 Nov-87 Dec-87	05/23/87 07/19/87 08/12/87 09/22/87	0.01 0.02 0.02 0.02				304 294																
Jan-88 Feb-88 Mar-88 Apr-88 May-88 Jun-88 Jul-88 Aug-88 Sep-88 Oct-88 Nov-88 Dec-88	06/01/88 07/09/88 08/13/88 09/03/88	0.01 0.01 0.01 0.01				276 308																
Jan-89 Feb-89 Mar-89 Apr-89 May-89 Jun-89 Jul-89 Aug-89 Sep-89 Oct-89 Nov-89 Dec-89	06/06/89 07/11/89 08/22/89 09/14/89	0.01 0.01 0.01 0.01				298 328 294																
Jan-90 Feb-90 Mar-90 Apr-90 May-90 Jun-90 Jul-90 Aug-90 Sep-90 Oct-90 Nov-90 Dec-90	08/02/90 08/22/90 10/03/90	0.01 0 0.01				344 318																
Jan-91 Feb-91 Mar-91 Apr-91 May-91 Jun-91 Jul-91 Aug-91 Sep-91 Oct-91 Nov-91 Dec-91	06/11/91 07/16/91 09/17/91	0.01 0.01 0	7.2 8.8 8.2	540 510 530	6 12 10	320 308 300		267 288 287	271 322 325	12 0 0	3 5 3	43 23 21	64 71 69	26 27 29	1 1 1	4 6 4	< <	0.02 0.02 0.03	0.08 0.12 0.13	< <	0.01 0.01 0.01	

Cyprus Plateau Mining Company - Water Quality Data

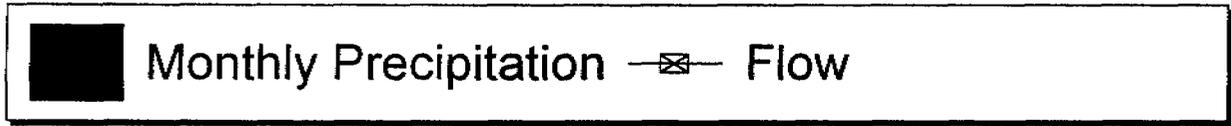
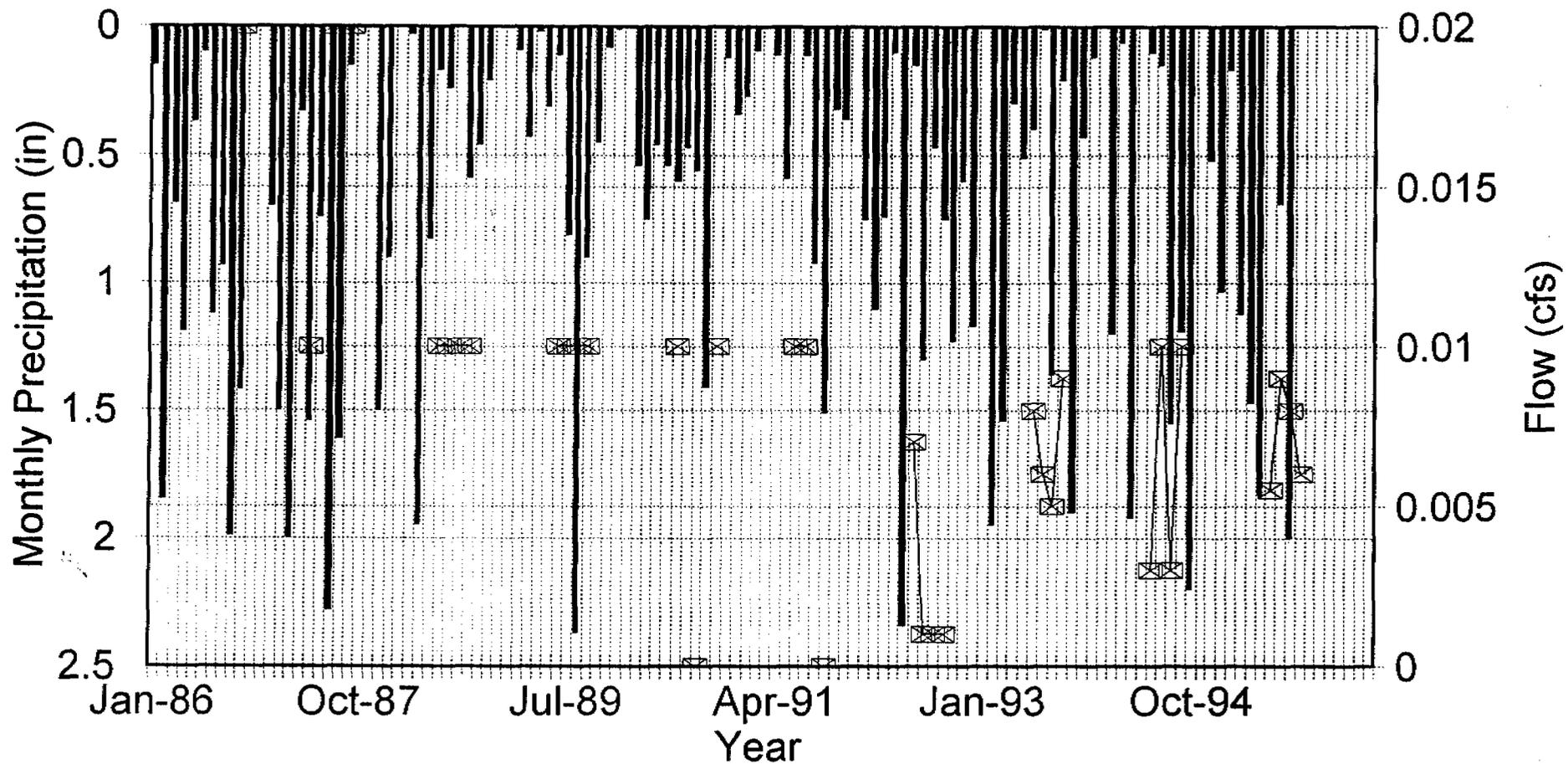
Print Date: May 2, 1996

Date		Field Measurements				Laboratory Measurements														Comments			
Mo-Yr	Sample Date	Flow (cfs)	Ph (units)	Sp. Cond. (ohms)	Temp. (C)	TDS (mg/l)	TSS (mg/l)	O&G (mg/l)	Hd-CaCO3 (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (D) (mg/l)	SO4 (D) (mg/l)	Ca (D) (mg/l)	Mg (D) (mg/l)	K (D) (mg/l)	Na (D) (mg/l)	Ca/An Bal (%)	Fe (D) (mg/l)		Fe (T) (mg/l)	Mn (T) (mg/l)	
Jan-92																							
Feb-92																							
Mar-92																							
Apr-92																							
May-92																							
Jun-92	06/17/92	0.007	8.1	568	8.3	304			268	256	0	4	56	63	27	1	5		<	0.02	0.03		
Jul-92	07/15/92	0.001	8.2	345	9.1	320			312	334	0	4	45	87	23 <	1	4		<	0.02	0.13		
Aug-92	08/26/92	0.001	7.2	354	9.2																		
Sep-92	09/22/92	0.001	6.4	529	9.9	298			310	273	0	4	80	70	33	3	6			0.02	0.95		
Oct-92																							
Nov-92																							
Dec-92																							
Jan-93																							
Feb-93																							
Mar-93																							
Apr-93																							
May-93																							
Jun-93	06/21/93	0.008	6.6	539	8.5	282			285	342	0	4	31	68	31 <	1	5		<	0.02	0.03 <	0.01	
Jul-93	07/26/93	0.006	6.9	521	10.2	302			271	305	10	4	2	64	30 <	1	5		<	0.02	0.03 <	0.01	
Aug-93	08/17/93	0.005	6.7	528	7.2																		
Sep-93	09/27/93	0.009	6.9	508	6.5	308			298	356	0	5	25	70	30 <	1	5		<	0.02	0.05 <	0.01	
Oct-93																							
Nov-93																							
Dec-93																							
Jan-94																							
Feb-94																							
Mar-94																							
Apr-94																							
May-94																							
Jun-94	06/08/94	0.003	8.3	607	9.9	278			282	342	0	4	25	67	28 <	1	5		<	0.02 <	0.02 <	0.01	
Jul-94	07/19/94	0.01	8.1	588	11.4	288			293	348	0	4	31	68	30 <	1	5		<	0.02	0.07 <	0.01	
Aug-94	08/31/94	0.003	7.8	471	10																		
Sep-94	09/21/94	0.01	8.1	565	9.5	318			321	329	0	4	25	76	32	1	5			0.04	0.22 <	0.01	
Oct-94																							
Nov-94																							
Dec-94																							
Jan-95																							
Feb-95																							
Mar-95																							
Apr-95																							
May-95																							
Jun-95	06/22/95	0.0055	7.9	541	5	320			321	291 <	2	5	20	75.4	32.3	1	5.5		2.3 <	0.01	0.02 <	0.005	
Jul-95	07/27/95	0.009	7.9	582	7	330			315	285 <	2	5	30	73.2	32.1	0.7	5.4		0.6	0.02 <	0.01 <	0.005	
Aug-95	08/23/95	0.008	8	515	11																		
Sep-95	09/27/95	0.008	8.1	614	7	340			322	273 <	2	5	318	76	32.1	1.1	5.3		2.8 <	0.01	0.4	0.074	
Oct-95																							
Nov-95																							
Dec-95																							
Jan-96																							
END DATA																							
Count		35	19	19	19	25	0	0	15	16	15	15	15	15	15	15	15	3	15	15	12		
Minimum		0	6.4	345	5	276	ERR	ERR	267	256 <	0	3	2	63	23 <	0.7	4	0.6 <	0.01 <	0.01 <	0.005		
Maximum		0.02	8.8	614	12	344	ERR	ERR	322	366 <	12	5	318	87	33 <	3	6	2.8 <	0.04 <	0.95 <	0.074		
Average		0.0086	7.6526	523.95	8.8263	307.2	ERR	ERR	296	310.13 <	1.8667	4.2	51.667	70.773	29.5 <	1.12	5.0133	1.9 <	0.0207 <	0.1527 <	0.0145		
Standard Deviation		0.0053	0.6899	69.284	1.8747	17.445	ERR	ERR	19.086	31.728 <	3.6854	0.6532	73.286	5.9522	2.7369 <	0.5089	0.6054	0.9416 <	0.0068 <	0.2348 <	0.018		
Aug. -1 Std. Dev.		0.0034	6.9827	454.66	6.9516	289.76	ERR	ERR	276.91	278.41 <	-1.819	3.5468	-21.62	64.821	26.763 <	0.6111	4.408	0.9584 <	0.0139 <	-0.082 <	-0.004		
Aug. +1 Std. Dev.		0.0139	8.3226	593.23	10.701	324.64	ERR	ERR	315.09	341.86 <	5.5521	4.8532	124.95	76.726	32.237 <	1.6289	5.8187	2.8416 <	0.0275 <	0.3875 <	0.0325		
Aug. -2 Std. Dev.		-0.002	6.3128	385.36	5.0789	272.31	ERR	ERR	257.83	246.68 <	-5.504	2.8936	-84.91	58.869	24.026 <	0.1023	3.8026	0.0167 <	0.0071 <	-0.317 <	-0.022		
Aug. +2 Std. Dev.		0.0192	8.9925	662.52	12.576	342.09	ERR	ERR	334.17	373.99 <	9.2376	5.5064	198.24	82.878	34.974 <	2.1377	6.2241	3.7833 <	0.0343 <	0.6222 <	0.0506		

NOTE: The "<" symbol indicates that "Less Than" data was found in the data set; statistics are approximate.

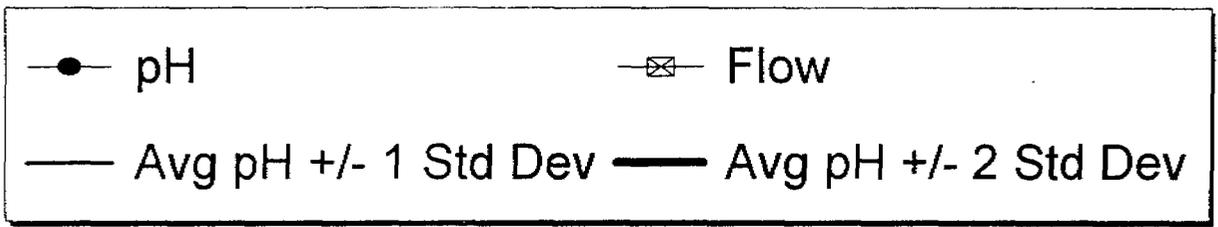
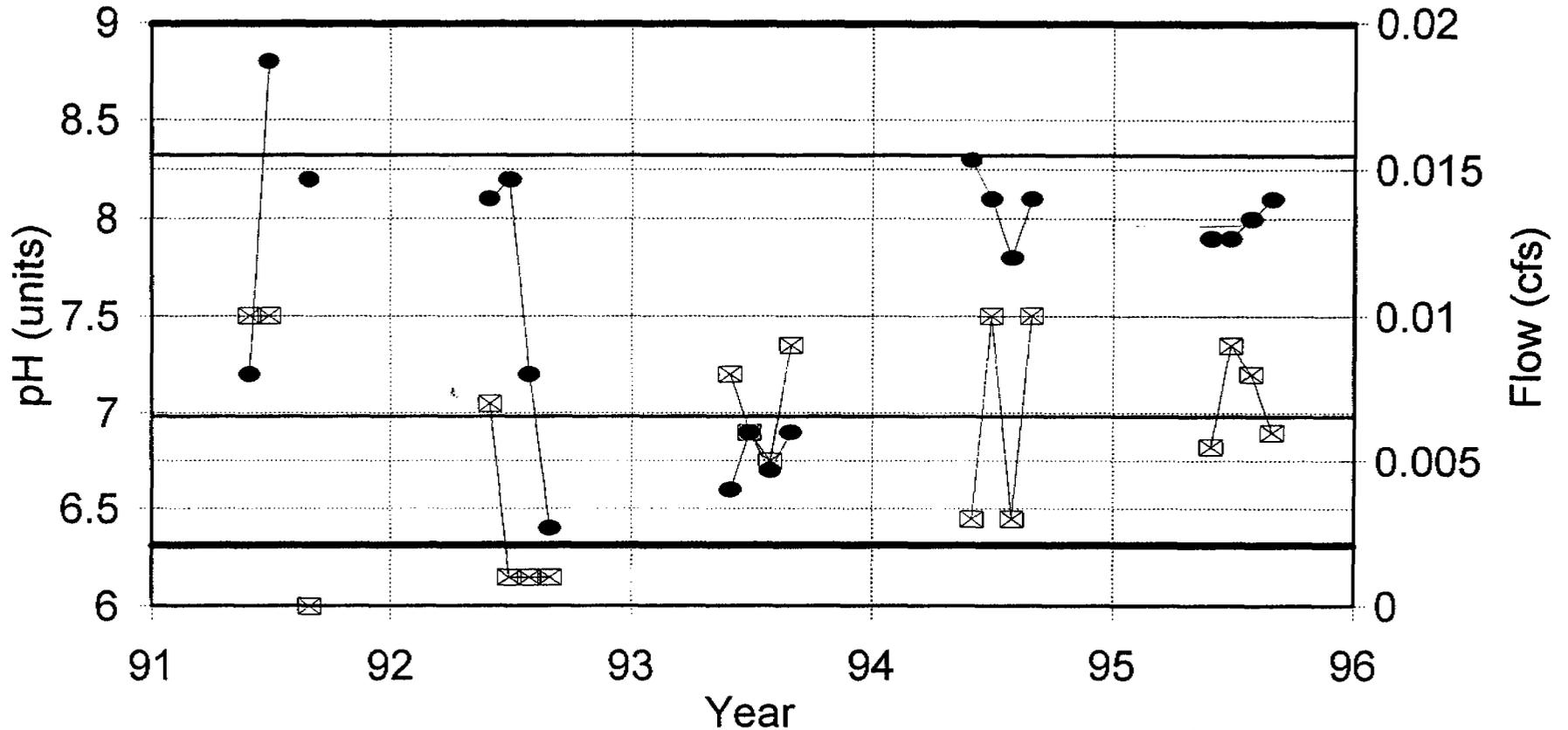
# Station 530

## Monthly Precipitation vs. Flow



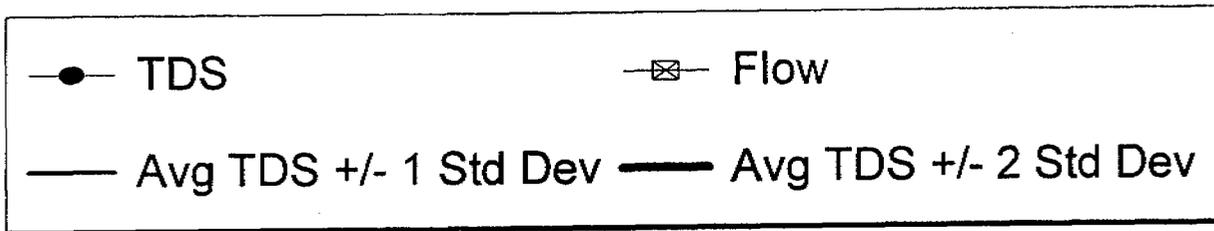
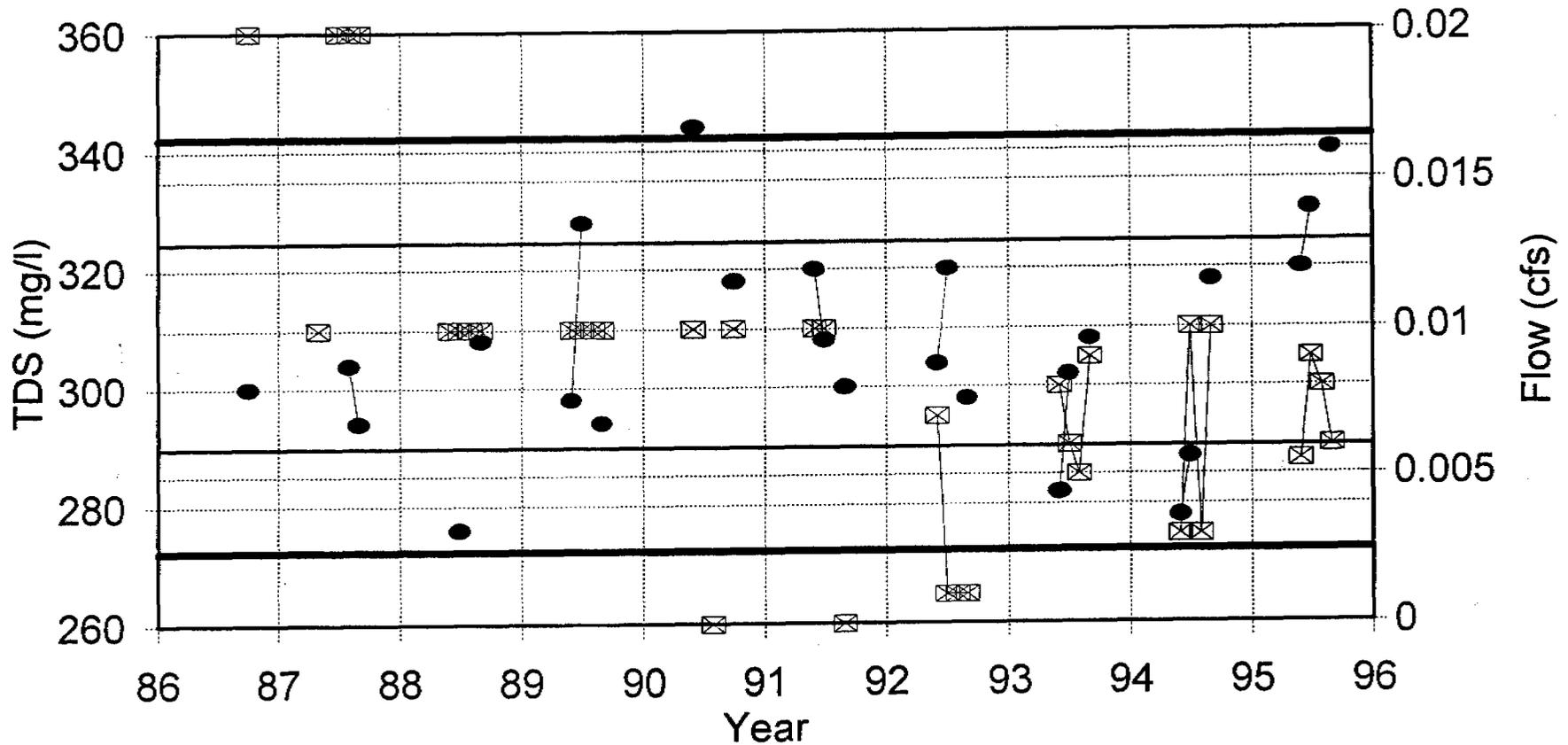
# Station 530

pH vs. Flow



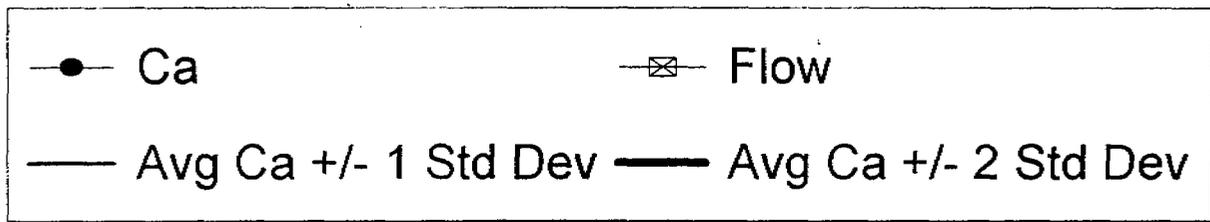
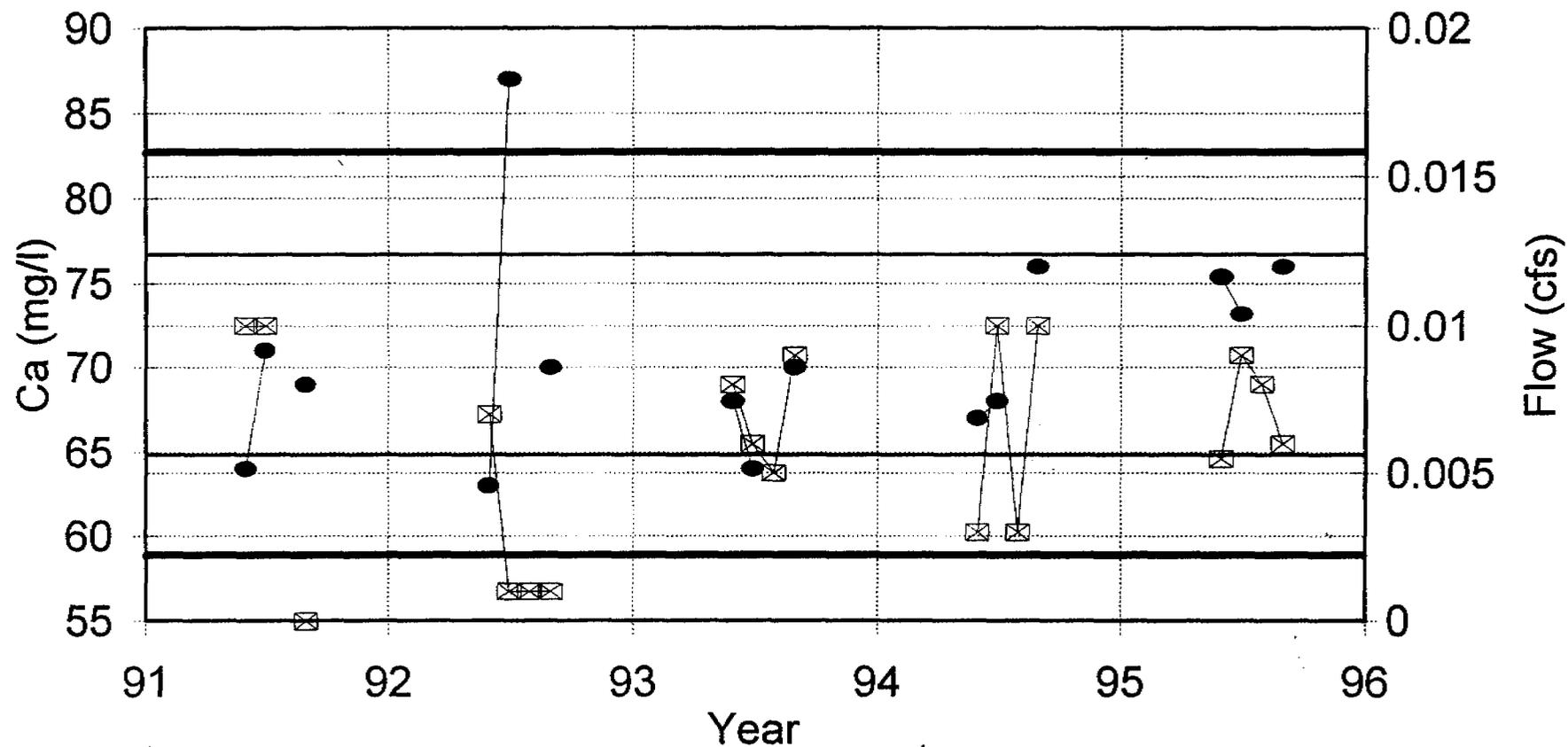
# Station 530

## TDS vs. Flow



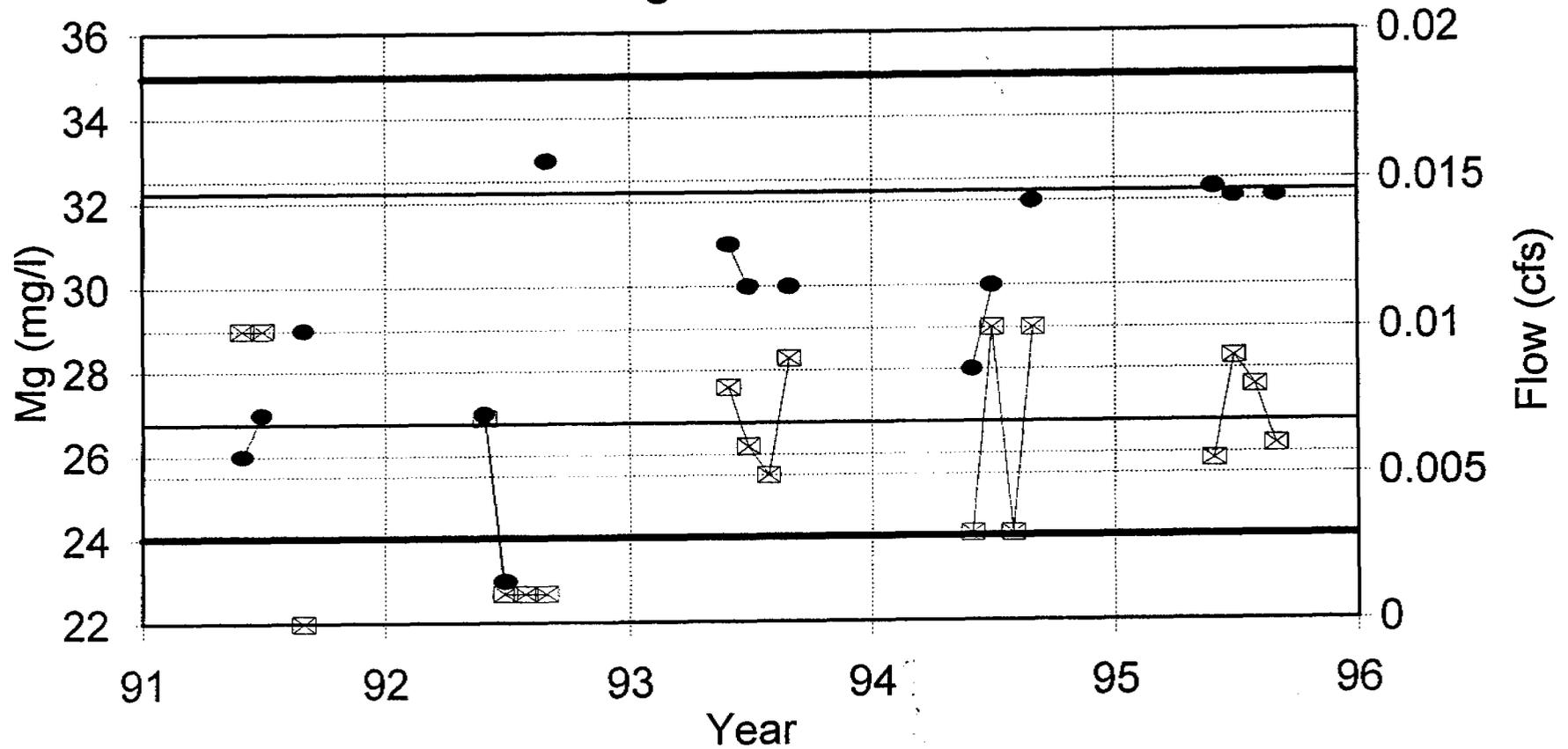
# Station 530

## Ca vs. Flow



# Station 530

## Mg vs. Flow



● Mg

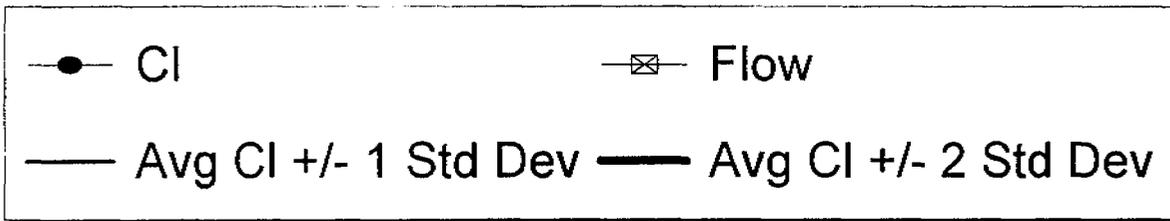
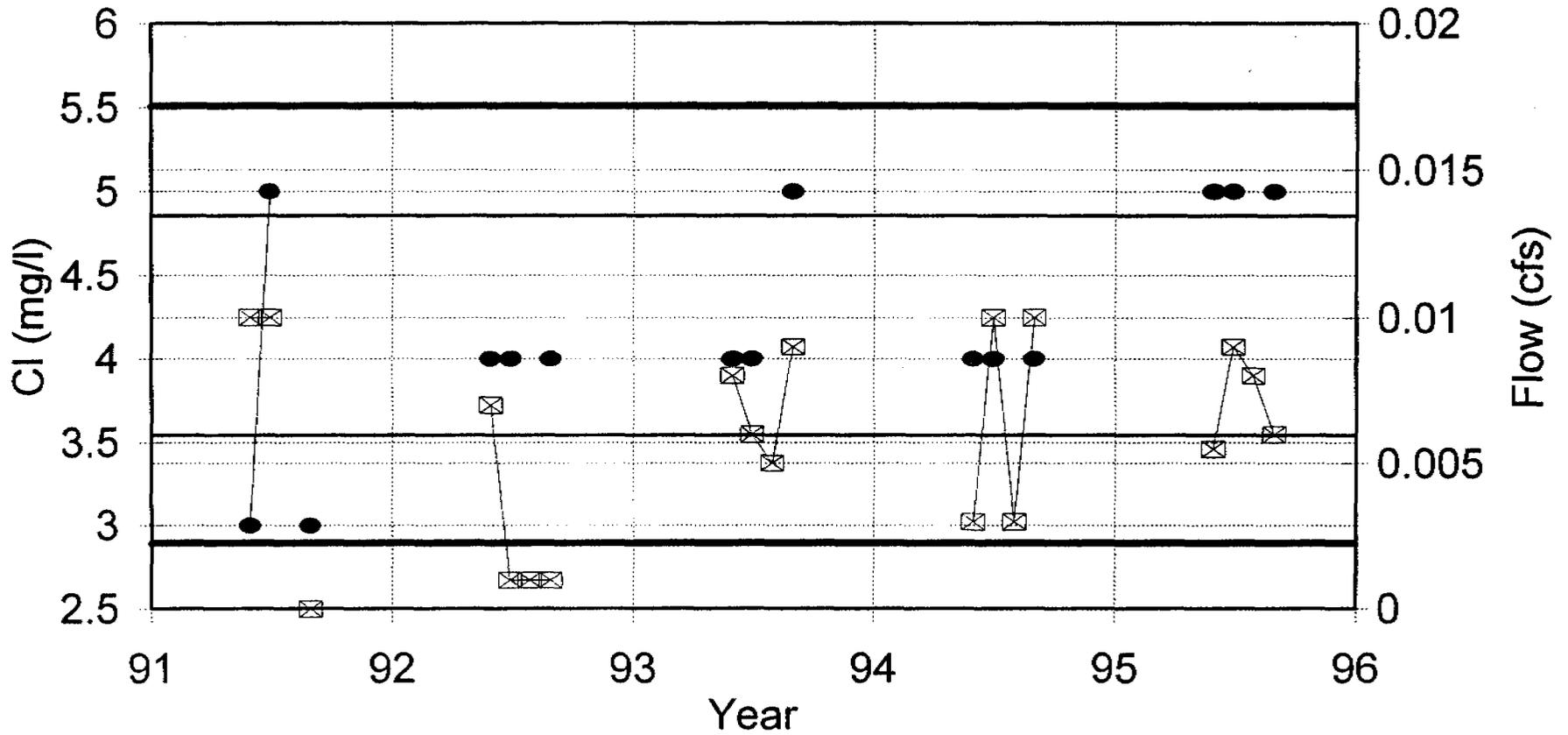
⊠ Flow

— Avg Mg +/- 1 Std Dev

— Avg Mg +/- 2 Std Dev

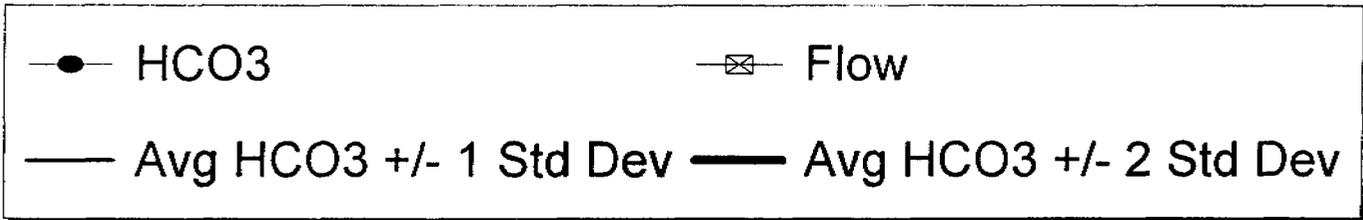
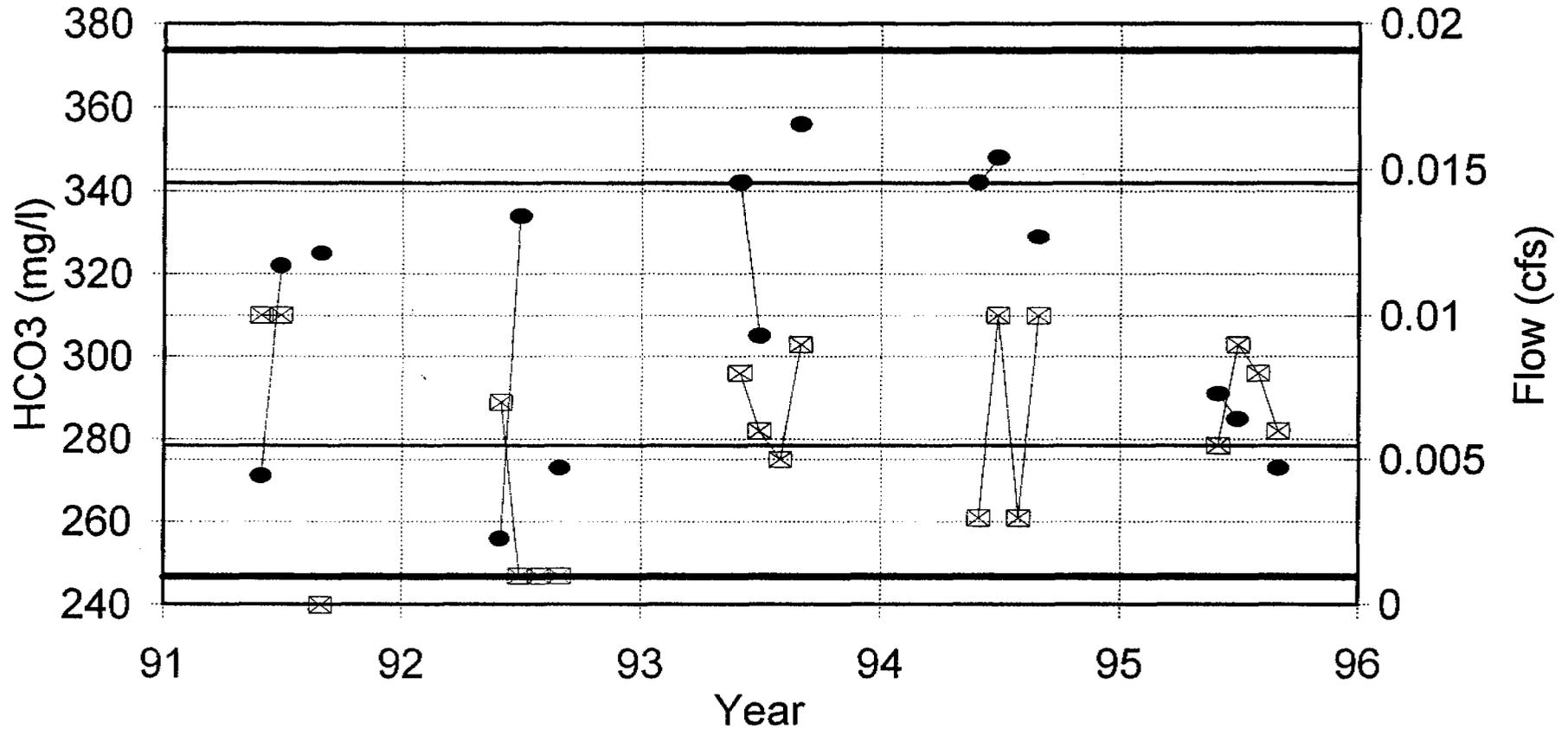
# Station 530

Cl vs. Flow



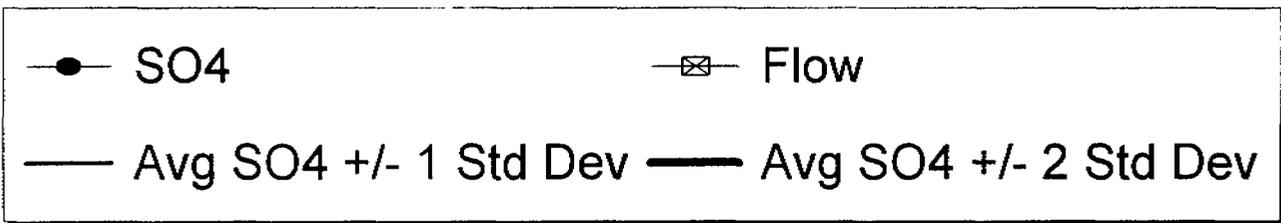
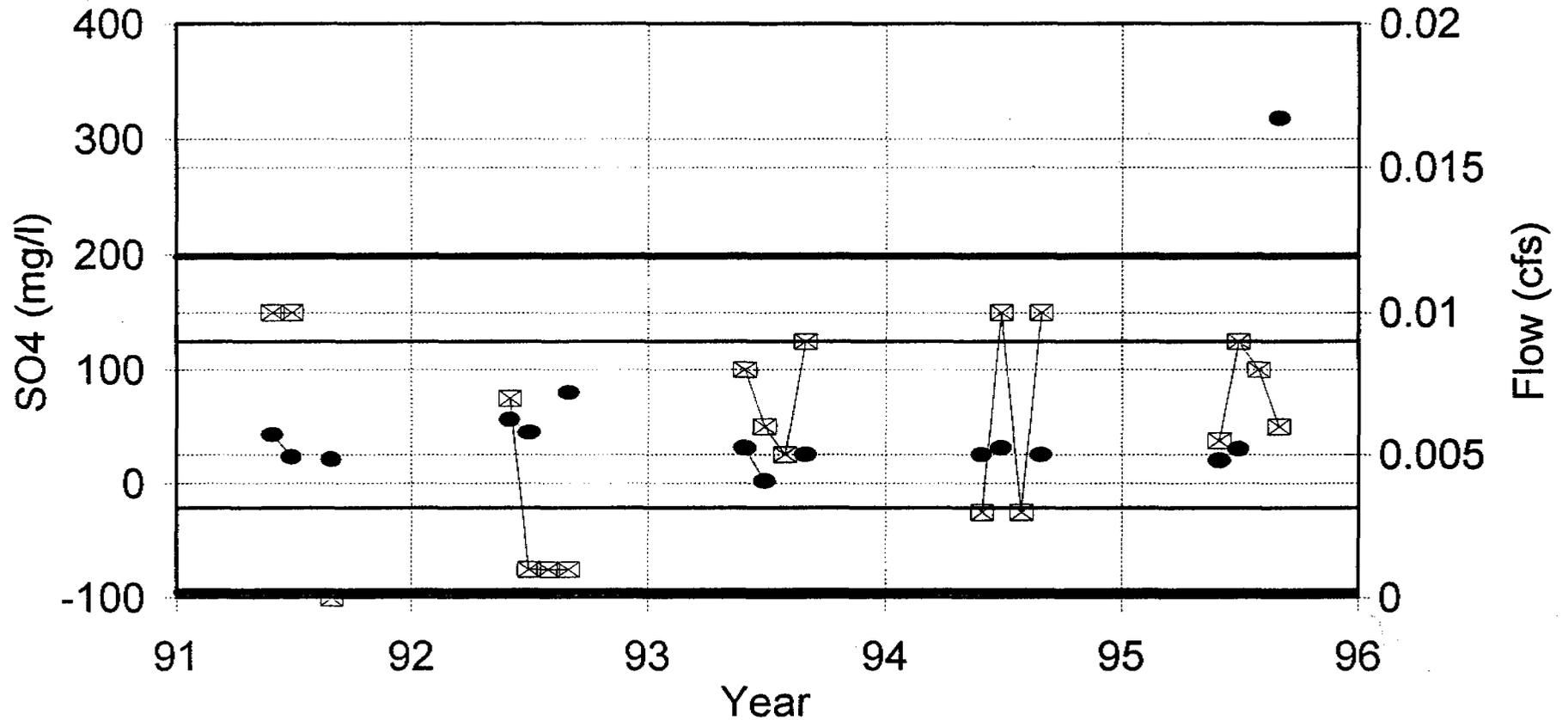
# Station 530

## HCO<sub>3</sub> vs. Flow



# Station 530

## SO4 vs. Flow



Cyprus Plateau Mining Company - Water Quality Data

Station: CV58 Property: Star Point

Location: 875' N 2300' E of SW cor. Sec 2, T15S, R7E

Station Type: Spring

Sampling Frequency: Quarterly

Formation: Blackhawk

Print Date: April 24, 1996

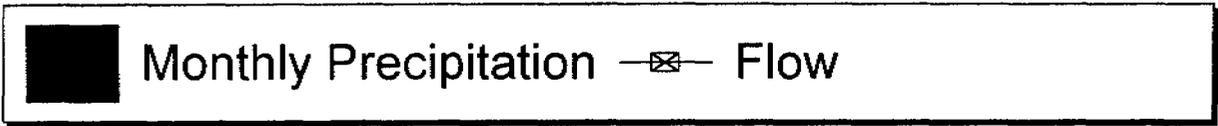
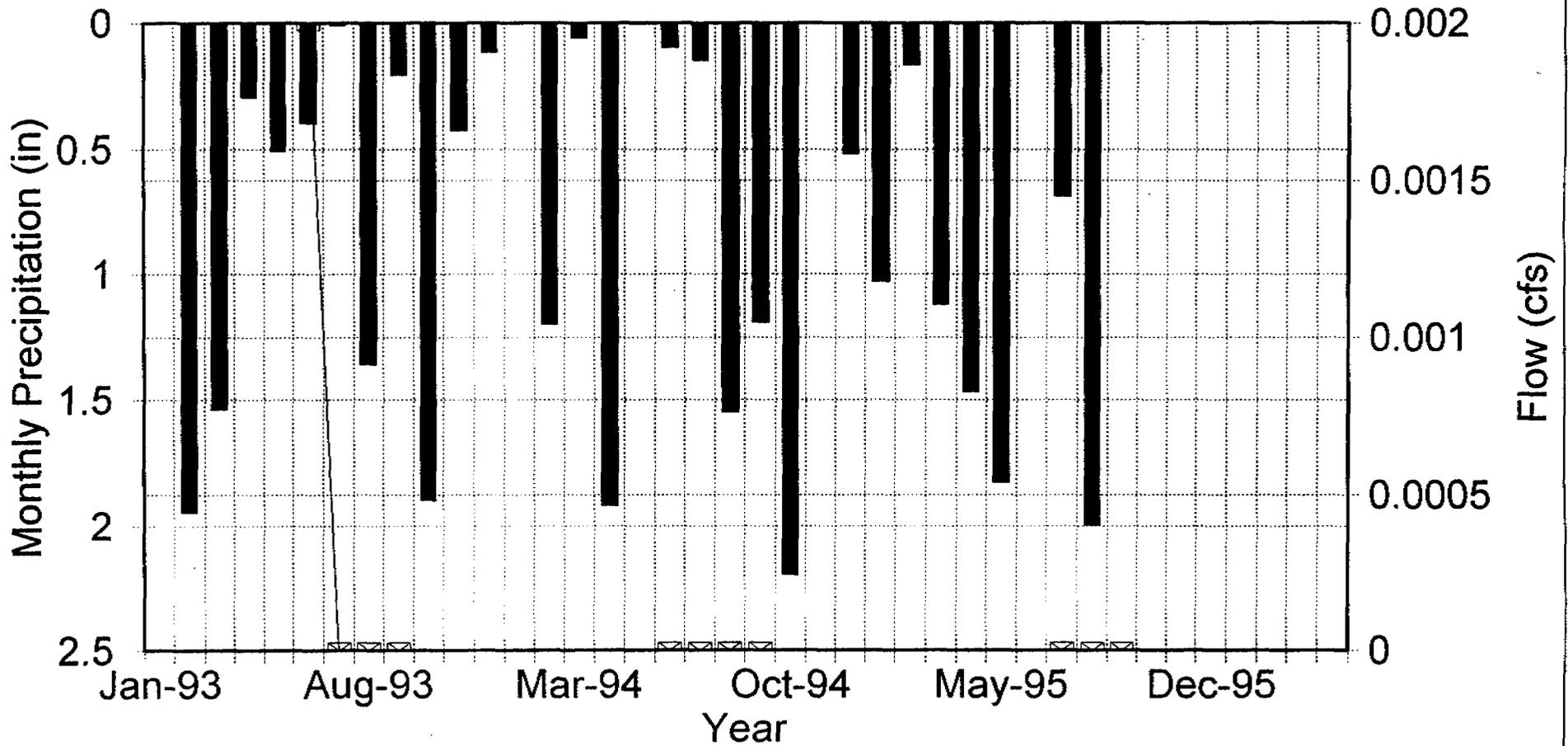
Elevation: 9350

Mo-Yr	Sample Date	Field Measurements				Laboratory Measurements																Comments
		Flow (cfs)	Ph (units)	Sp. Cond. (ohms)	Temp. (C)	TDS (mg/l)	TSS (mg/l)	O&G (mg/l)	H4-CaCO3 (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (D) (mg/l)	SO4 (D) (mg/l)	Ca (D) (mg/l)	Mg (D) (mg/l)	K (D) (mg/l)	Na (D) (mg/l)	Cat/An Bal (%)	Fe (D) (mg/l)	Fe (T) (mg/l)	Mn (T) (mg/l)	
Jan-93																						
Feb-93																						
Mar-93																						
Apr-93																						
May-93																						
Jun-93	06/23/93	0.002	6.2	478	9.2	240			268	290	0	3	25	63	27 <	1	3	<	0.02	0.08 <	0.01	
Jul-93	07/26/93	0																				NO FLOW
Aug-93	08/17/93	0																				NO FLOW
Sep-93	09/27/93	0																				NO FLOW
Oct-93																						
Nov-93																						
Dec-93																						
Jan-94																						
Feb-94																						
Mar-94																						
Apr-94																						
May-94																						
Jun-94	06/08/94	0																				NO FLOW
Jul-94	07/19/94	0																				NO FLOW
Aug-94	08/31/94	0																				NO FLOW
Sep-94	09/21/94	0																				NO FLOW
Oct-94																						
Nov-94																						
Dec-94																						
Jan-95																						
Feb-95																						
Mar-95																						
Apr-95																						
May-95																						
Jun-95																						
Jul-95	07/26/95	0																				damp - No sample possibl
Aug-95	08/23/95	0																				
Sep-95	09/27/95	0																				
Oct-95																						
Nov-95																						
Dec-95																						
Jan-96																						
END DATA																						
Count		11	1	1	1	1	0	0	1	1	1	1	1	1	1	1	1	0	1	1	1	
Minimum		0	6.2	478	9.2	240	ERR	ERR	268	290	0	3	25	63	27 <	1	3	ERR <	0.02	0.08 <	0.01	
Maximum		0.002	6.2	478	9.2	240	ERR	ERR	268	290	0	3	25	63	27 <	1	3	ERR <	0.02	0.08 <	0.01	
Average		0.0002	6.2	478	9.2	240	ERR	ERR	268	290	0	3	25	63	27 <	1	3	ERR <	0.02	0.08 <	0.01	
Standard Deviation		0.0006	0	0	0	0	ERR	ERR	0	0	0	0	0	0	0 <	0	0	ERR <	0	0 <	0	
Avg. -1 Std. Dev.		-0.000	6.2	478	9.2	240	ERR	ERR	268	290	0	3	25	63	27 <	1	3	ERR <	0.02	0.08 <	0.01	
Avg. +1 Std. Dev.		0.0008	6.2	478	9.2	240	ERR	ERR	268	290	0	3	25	63	27 <	1	3	ERR <	0.02	0.08 <	0.01	
Avg. -2 Std. Dev.		-0.001	6.2	478	9.2	240	ERR	ERR	268	290	0	3	25	63	27 <	1	3	ERR <	0.02	0.08 <	0.01	
Avg. +2 Std. Dev.		0.0013	6.2	478	9.2	240	ERR	ERR	268	290	0	3	25	63	27 <	1	3	ERR <	0.02	0.08 <	0.01	

NOTE: The "<" symbol indicates that "Less Than" data was found in the data set; statistics are approximate.

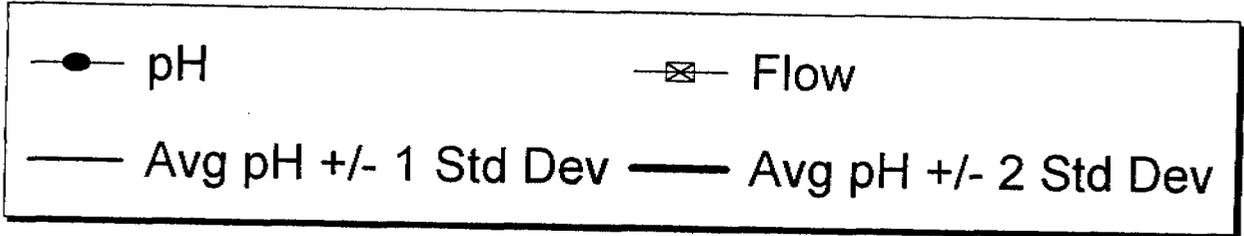
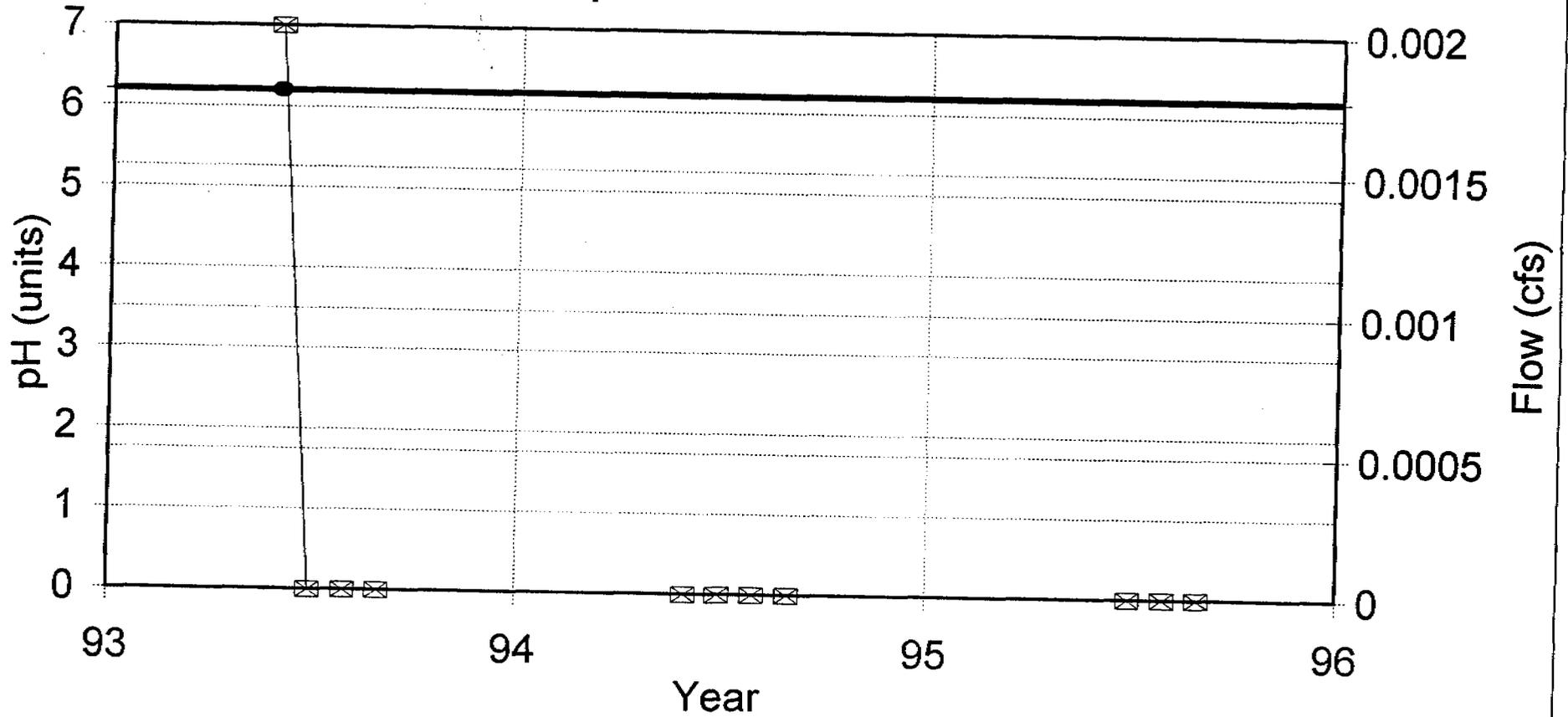
# Station CVS6

## Monthly Precipitation vs. Flow



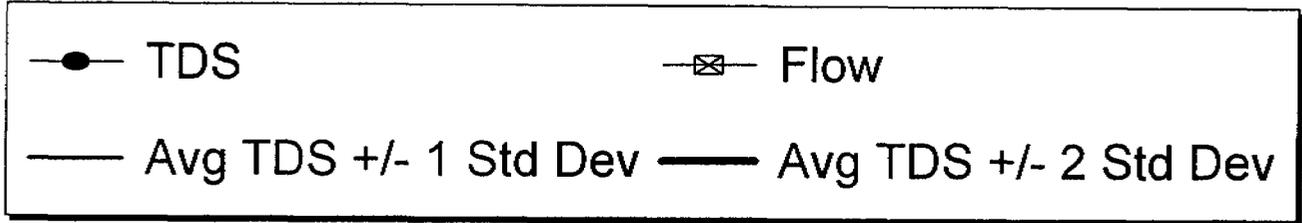
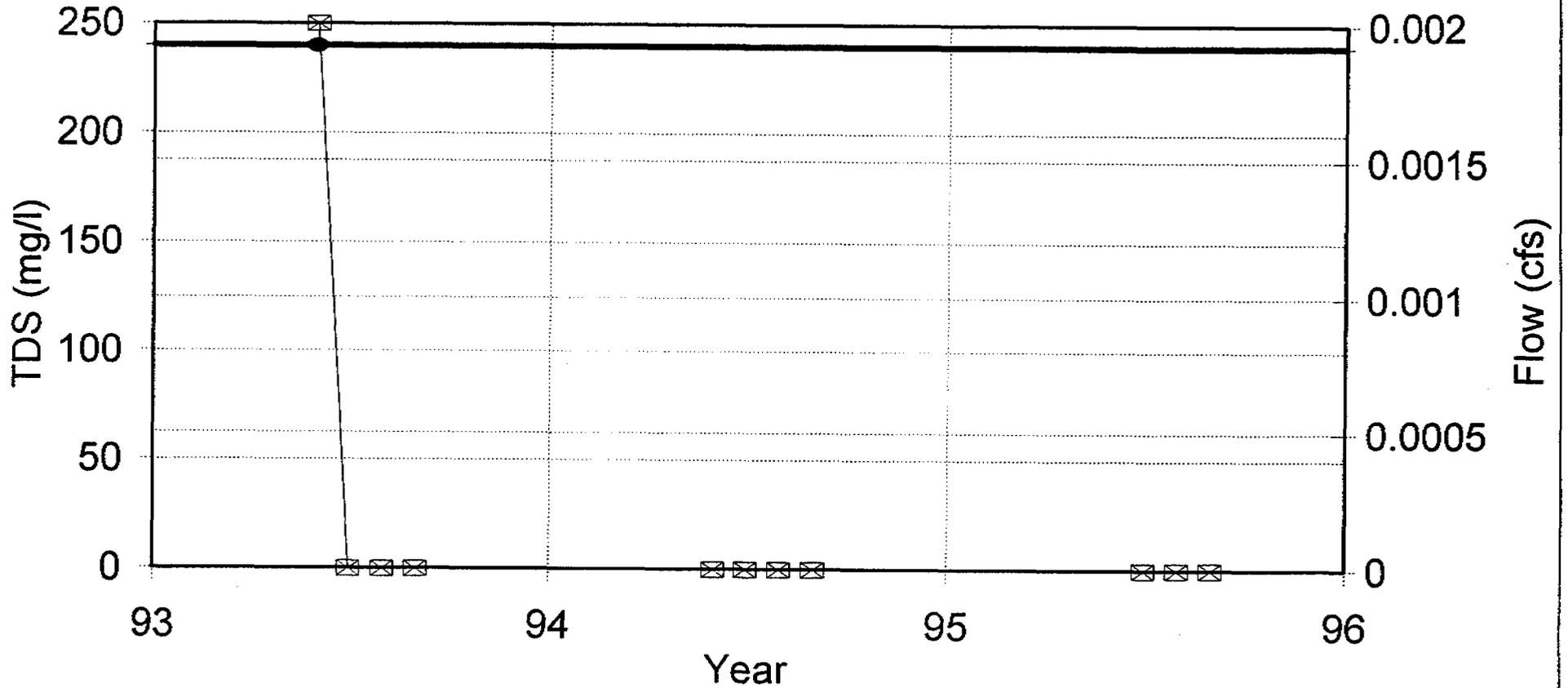
# Station CVS6

pH vs. Flow



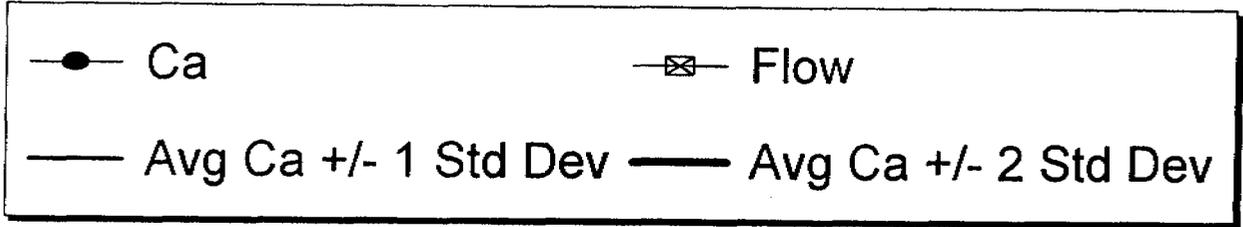
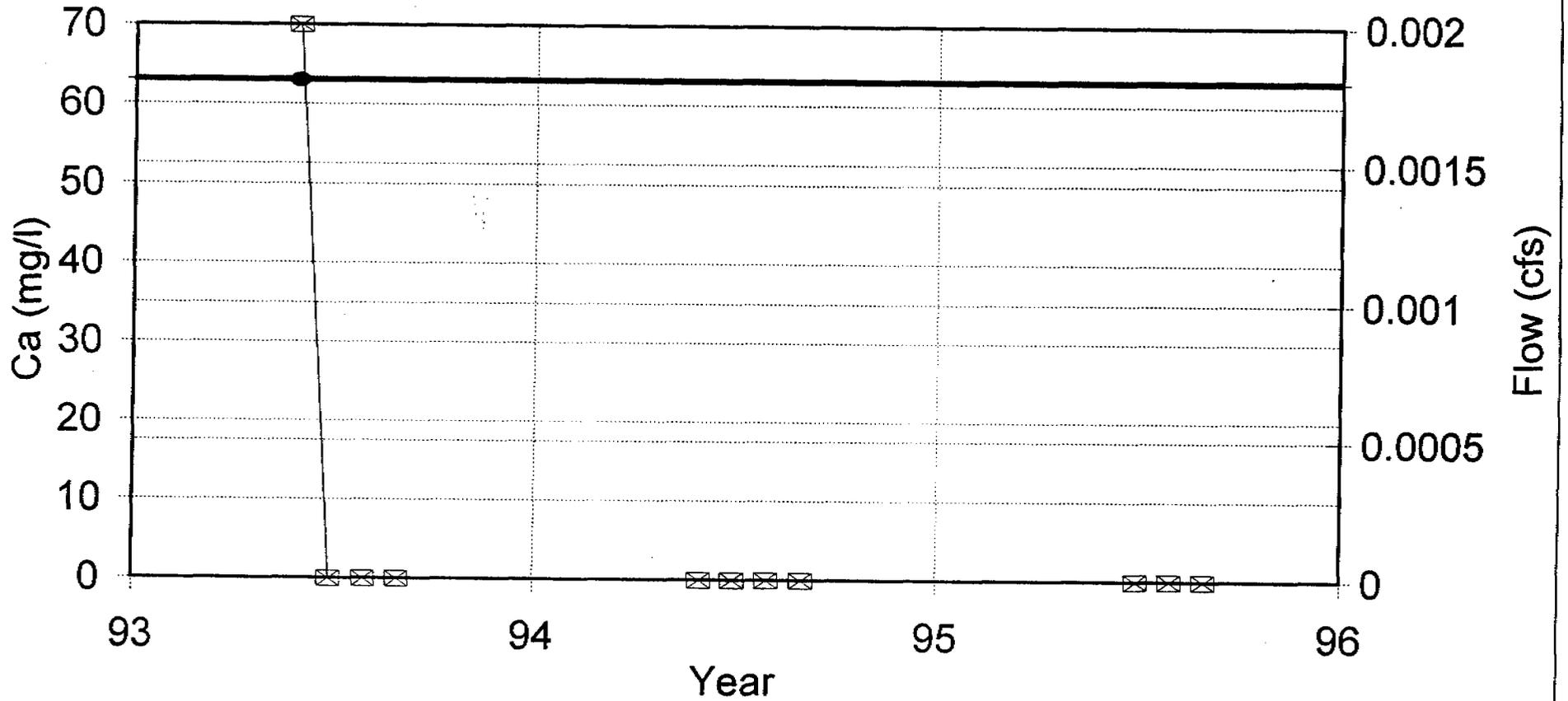
# Station CVS6

## TDS vs. Flow



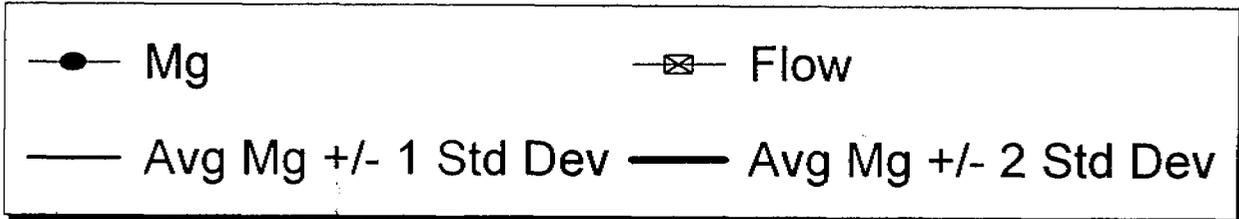
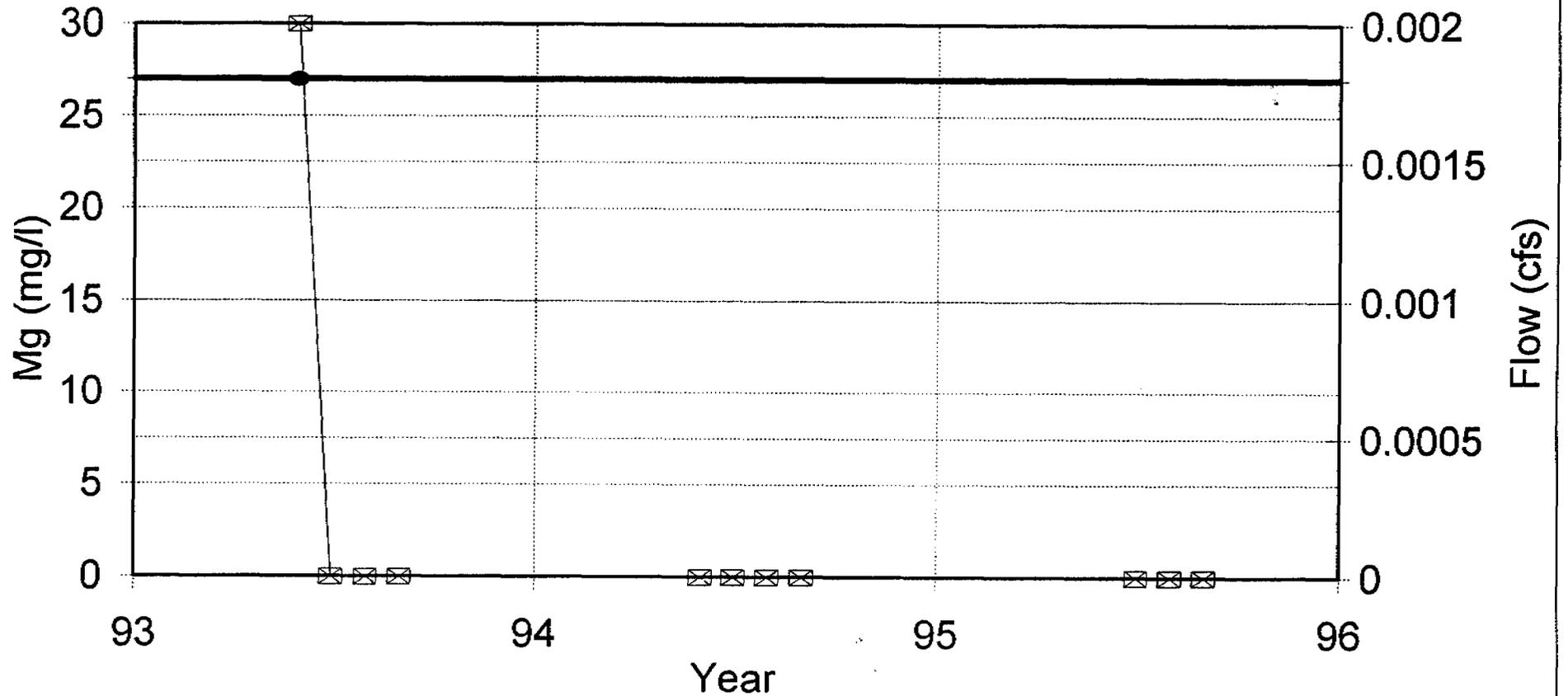
# Station CVS6

## Ca vs. Flow



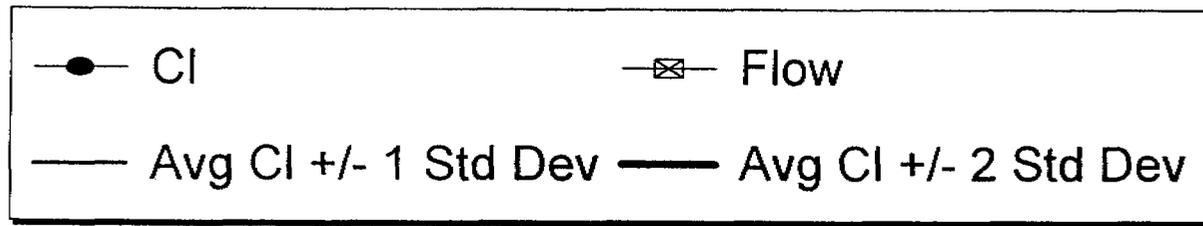
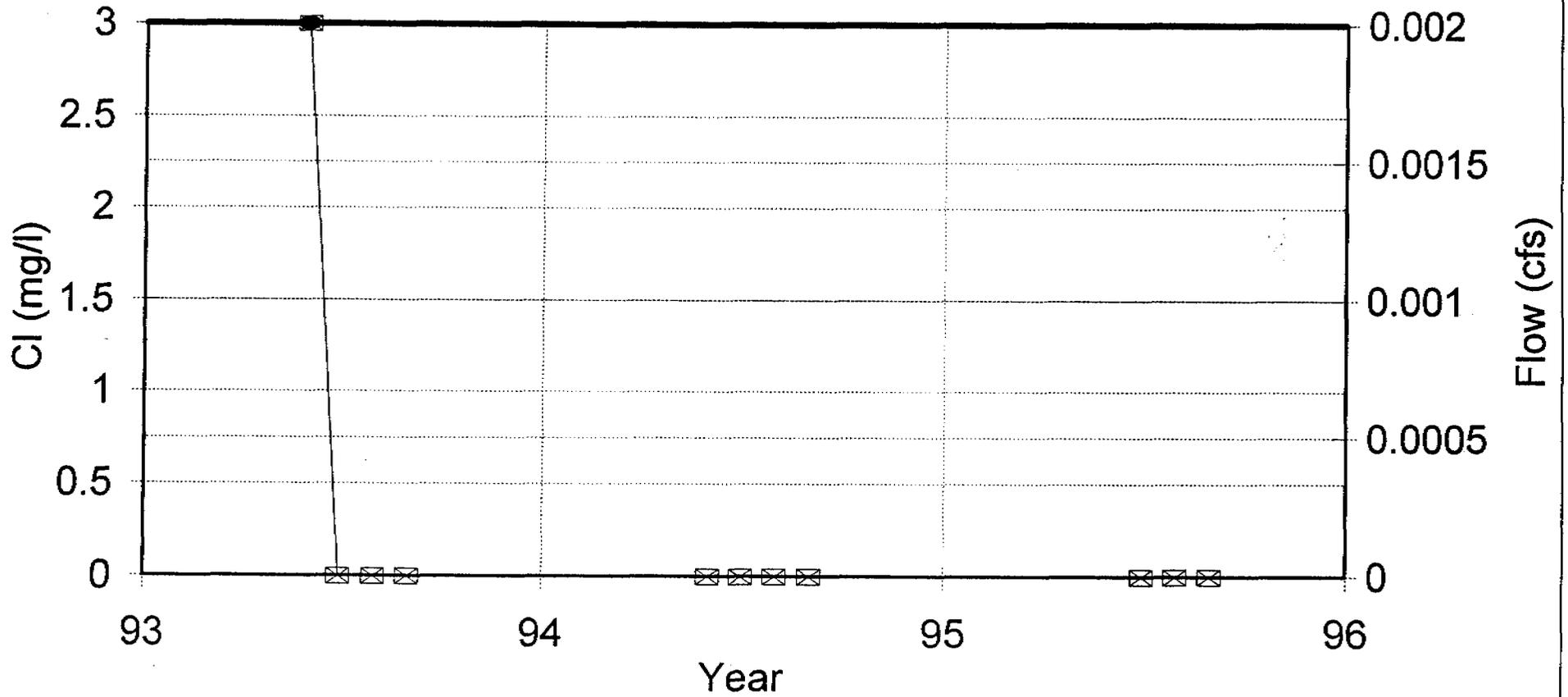
# Station CVS6

## Mg vs. Flow



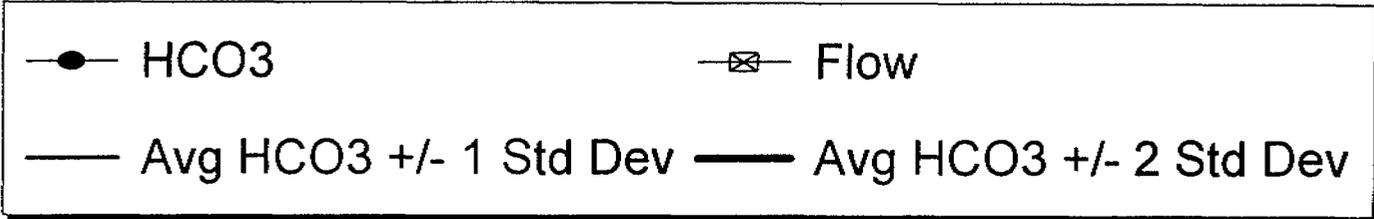
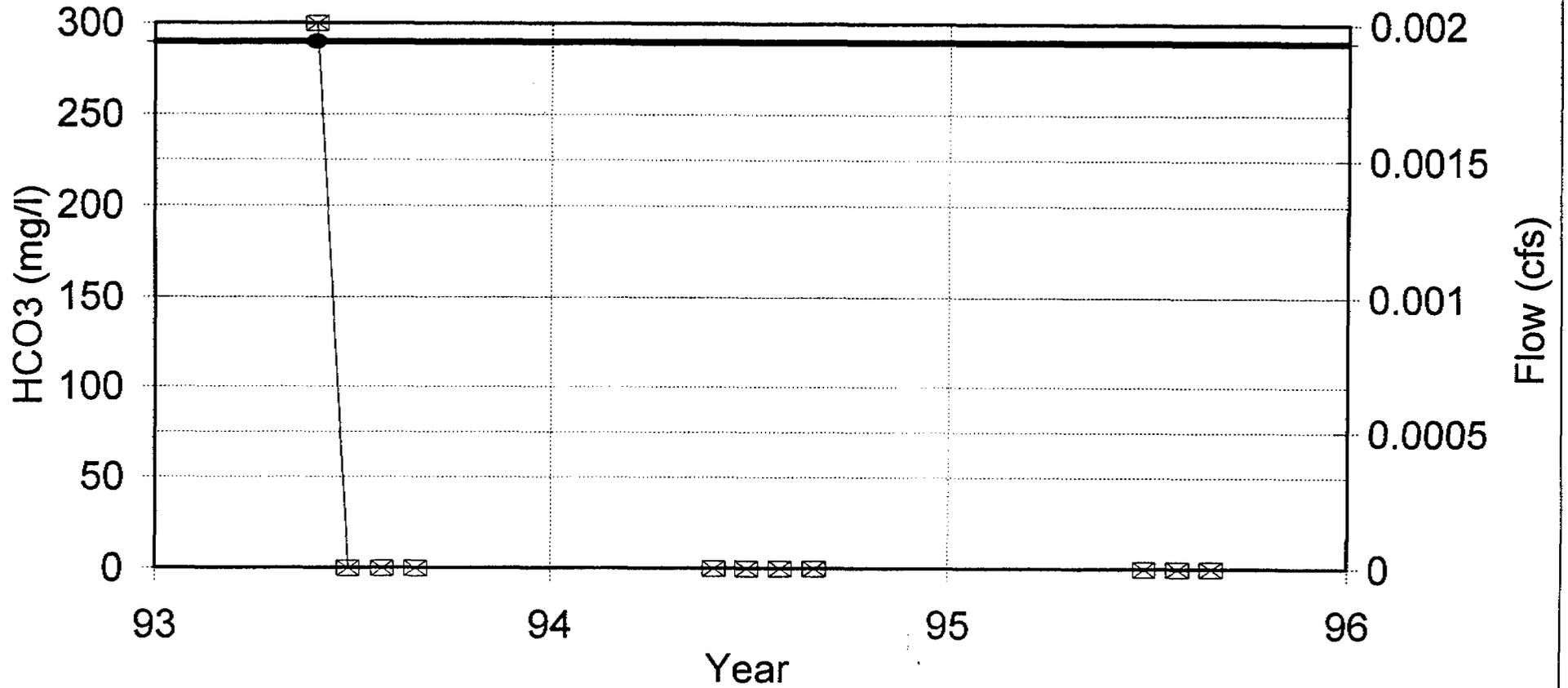
# Station CVS6

## Cl vs. Flow



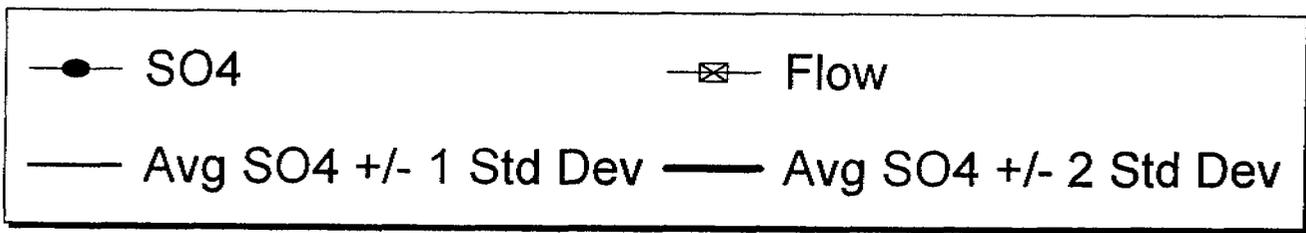
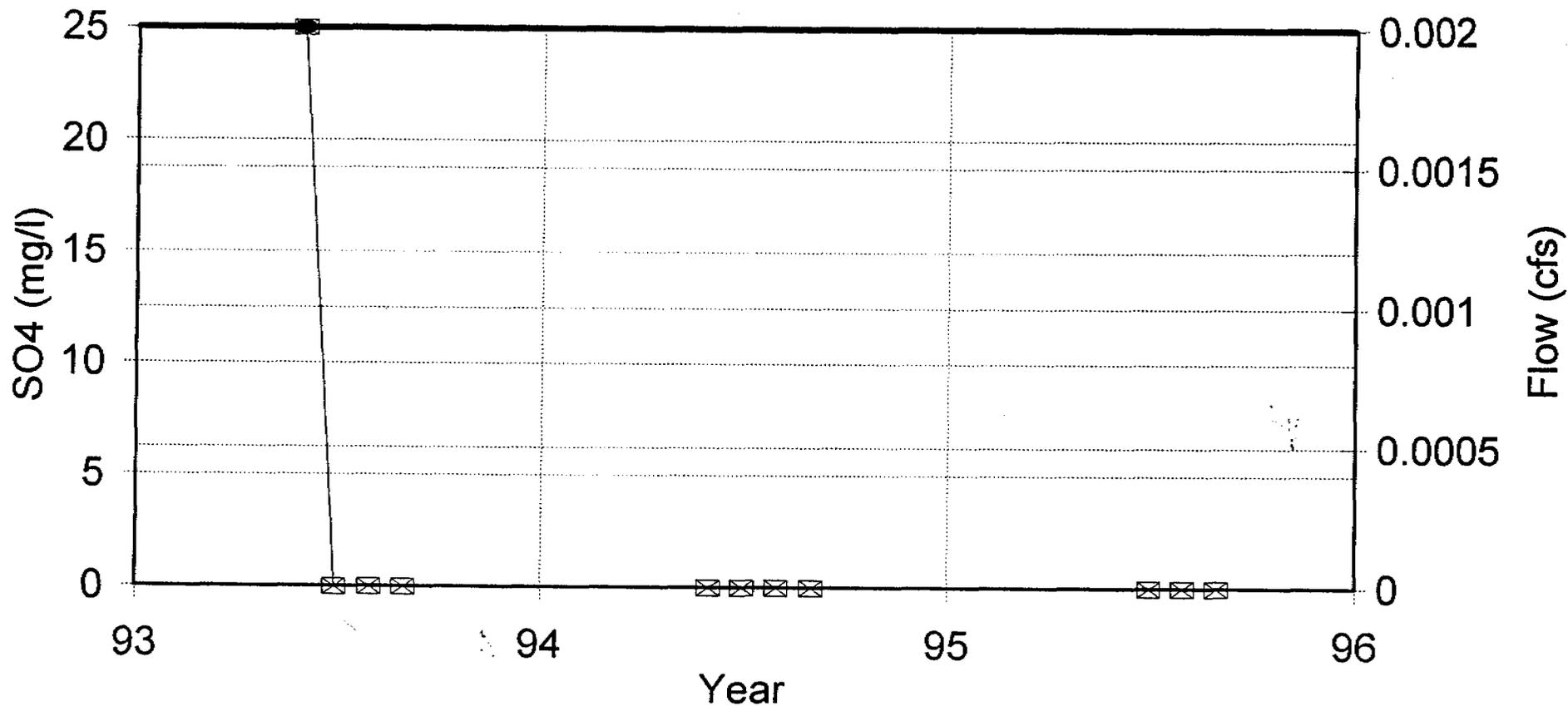
# Station CVS6

## HCO3 vs. Flow



# Station CVS6

## SO4 vs. Flow



Cyprus Plateau Mining Company - Water Quality Data

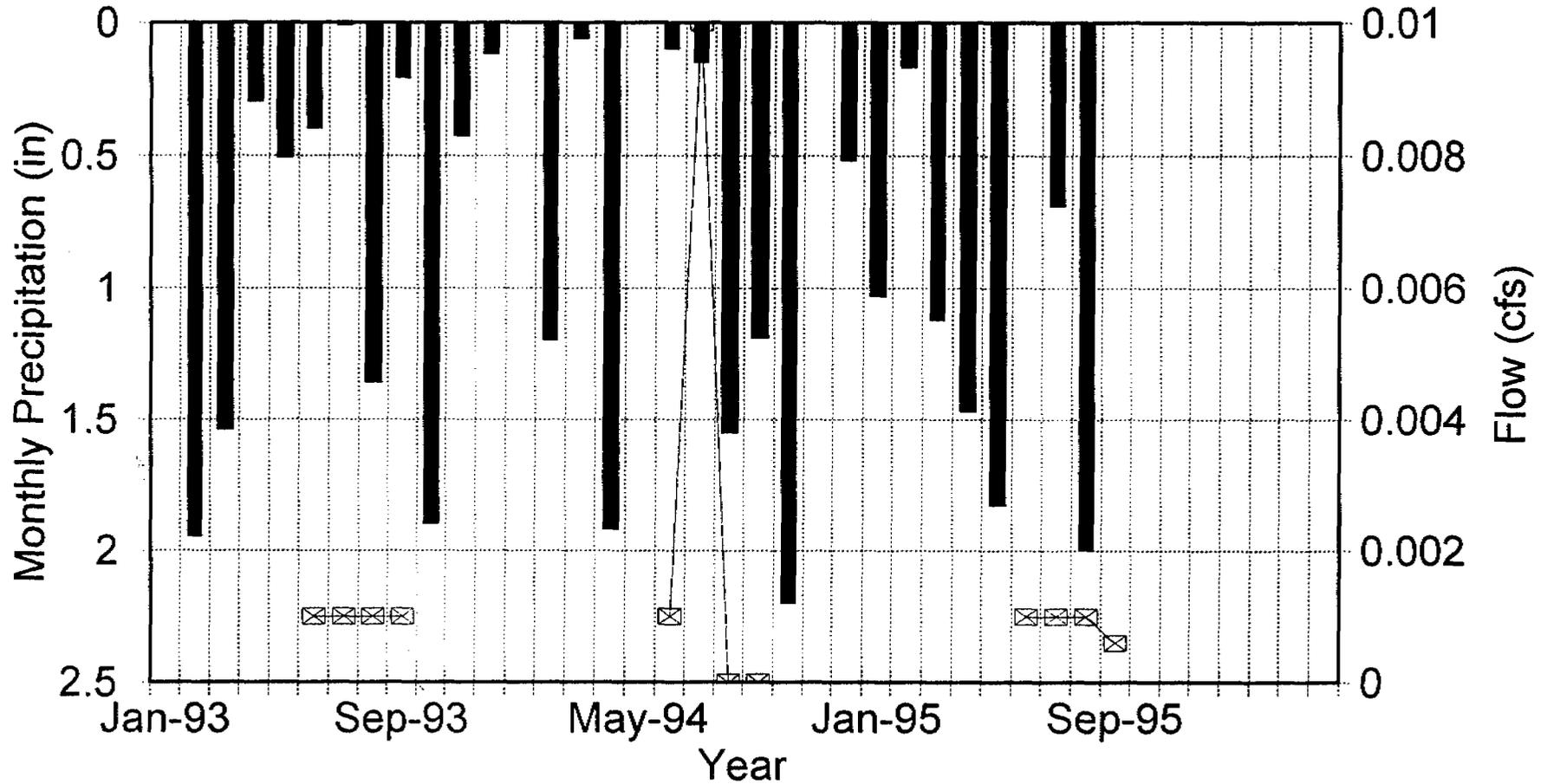
Station: CV57 Property: Star Point Location: 1300' N 1900' E of SW cor. Sec 2, T15S, R7E Station Type: Spring Sampling Frequency: Quarterly Formation: Blackhawk Print Date: May 2, 1996 Elevation: 9540

Mo-Yr	Sample Date	Field Measurements				Laboratory Measurements															Comments	
		Flow (cfs)	Ph (units)	Sp. Cond. (ohms)	Temp. (C)	TDS (mg/l)	TSS (mg/l)	O&G (mg/l)	Hd-CaCO3 (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (D) (mg/l)	SO4 (D) (mg/l)	Ca (D) (mg/l)	Mg (D) (mg/l)	K (D) (mg/l)	Na (D) (mg/l)	Cat/An Bal (%)	Fe (D) (mg/l)	Fe (T) (mg/l)		Mn (T) (mg/l)
Jan-93																						
Feb-93																						
Mar-93																						
Apr-93																						
May-93																						
Jun-93	06/21/93	0.001	6.3	453	8.5	236			253	290	0	3	10	62	24 <	1	3	<	0.02	0.27 <	0.01	
Jul-93	07/26/93	0.001	6.6	452	12.3	244			244	273	7	3	10	60	23 <	1	4	<	0.02 <	0.02 <	0.01	
Aug-93	08/17/93	0.001	6.4	462	8.4																	
Sep-93	09/27/93	0.001	6.5	470	5.2	250			219	283	0	4	2	53	21 <	1	4	<	0.02 <	0.02 <	0.01	
Oct-93																						
Nov-93																						
Dec-93																						
Jan-94																						
Feb-94																						
Mar-94																						
Apr-94																						
May-94																						
Jun-94	06/08/94	0.001	8.1	520	14.7	252			249	311	0	3	12	65	21 <	1	3	<	0.02 <	0.02 <	0.01	
Jul-94	07/19/94	0.01	7.8	475	17.2	258			272	323	0	4	14	66	26	1	5	<	0.02 <	0.02	0.03	
Aug-94	08/31/94	0																				NO FLOW
Sep-94	09/21/94	0																				NO FLOW
Oct-94																						
Nov-94																						
Dec-94																						
Jan-95																						
Feb-95																						
Mar-95																						
Apr-95																						
May-95																						
Jun-95	06/21/95	0.001	7.1	523	44.5	310			290	230 <	2	6	50	68	29.1	0.5	5.3	1.8 <	0.01	0.03 <	0.005	
Jul-95	07/26/95	0.001	7.5	539	11	280			306	255 <	2	6	20	73.4	29.9	0.7	4.8	5.5 <	0.01 <	0.01 <	0.005	
Aug-95	08/23/95	0.001	7.36	504	13																	
Sep-95	09/27/95	0.0006	7.45	583	8	260			279	239 <	2	6	17	67.9	26.5	0.6	4.6	4.4	0.06 <	0.01	0.006	
Oct-95																						
Nov-95																						
Dec-95																						
Jan-96																						
END DATA																						
Count		12	10	10	10	8	0	0	8	8	8	8	8	8	8	8	3	8	8	8	8	
Minimum	<	0	6.3	452	5.2	236	ERR	ERR	219	230 <	0	3	2	53	21 <	0.5	3	1.8 <	0.01 <	0.01 <	0.005	
Maximum	<	0.01	8.1	583	44.5	310	ERR	ERR	306	323 <	7	6	50	73.4	29.9 <	1	5.3	5.5 <	0.06 <	0.27 <	0.03	
Average	<	0.0016	7.111	498.1	14.28	261.25	ERR	ERR	264	275.5 <	1.625	4.375	16.875	64.413	25.063 <	0.85	4.2125	3.9 <	0.0225 <	0.05 <	0.0108	
Standard Deviation	<	0.0026	0.5982	40.989	10.621	22.044	ERR	ERR	26.22	30.846 <	2.2325	1.317	13.486	5.7468	3.1827 <	0.2	0.8161	1.5513 <	0.0148 <	0.0834 <	0.0076	
Avg. -1 Std. Dev.	<	-0.001	6.5128	457.11	3.6586	239.21	ERR	ERR	237.78	244.65 <	-0.608	3.058	3.3895	58.666	21.88 <	0.65	3.3964	2.3487 <	0.0077 <	-0.033 <	0.0032	
Avg. +1 Std. Dev.	<	0.0041	7.7092	539.09	24.901	283.29	ERR	ERR	290.22	308.35 <	3.8578	5.692	30.361	70.159	28.245 <	1.05	5.0286	5.4513 <	0.0373 <	0.1334 <	0.0183	
Avg. -2 Std. Dev.	<	-0.004	5.9145	416.12	-6.963	217.16	ERR	ERR	211.56	213.81 <	-2.84	1.7411	-10.1	52.919	18.697 <	0.45	2.5802	0.7973 <	-0.007 <	-0.117 <	-0.004	
Avg. +2 Std. Dev.	<	0.0067	8.3075	580.08	35.523	305.34	ERR	ERR	316.44	337.19 <	6.0901	7.0089	43.846	75.906	31.428 <	1.25	5.8448	7.0027 <	0.0521 <	0.2167 <	0.0259	

NOTE: The "<" symbol indicates that "Less Than" data was found in the data set; statistics are approximate.

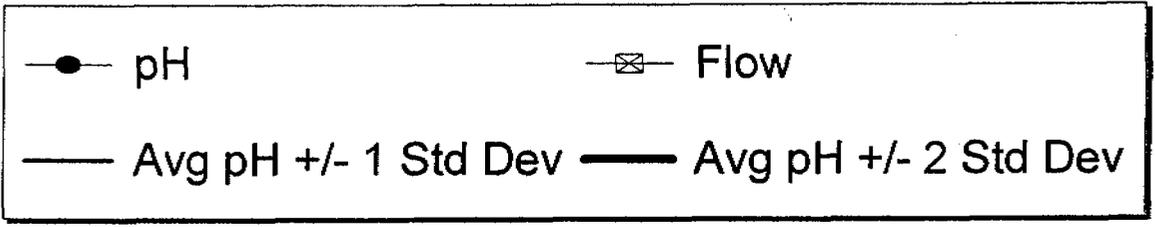
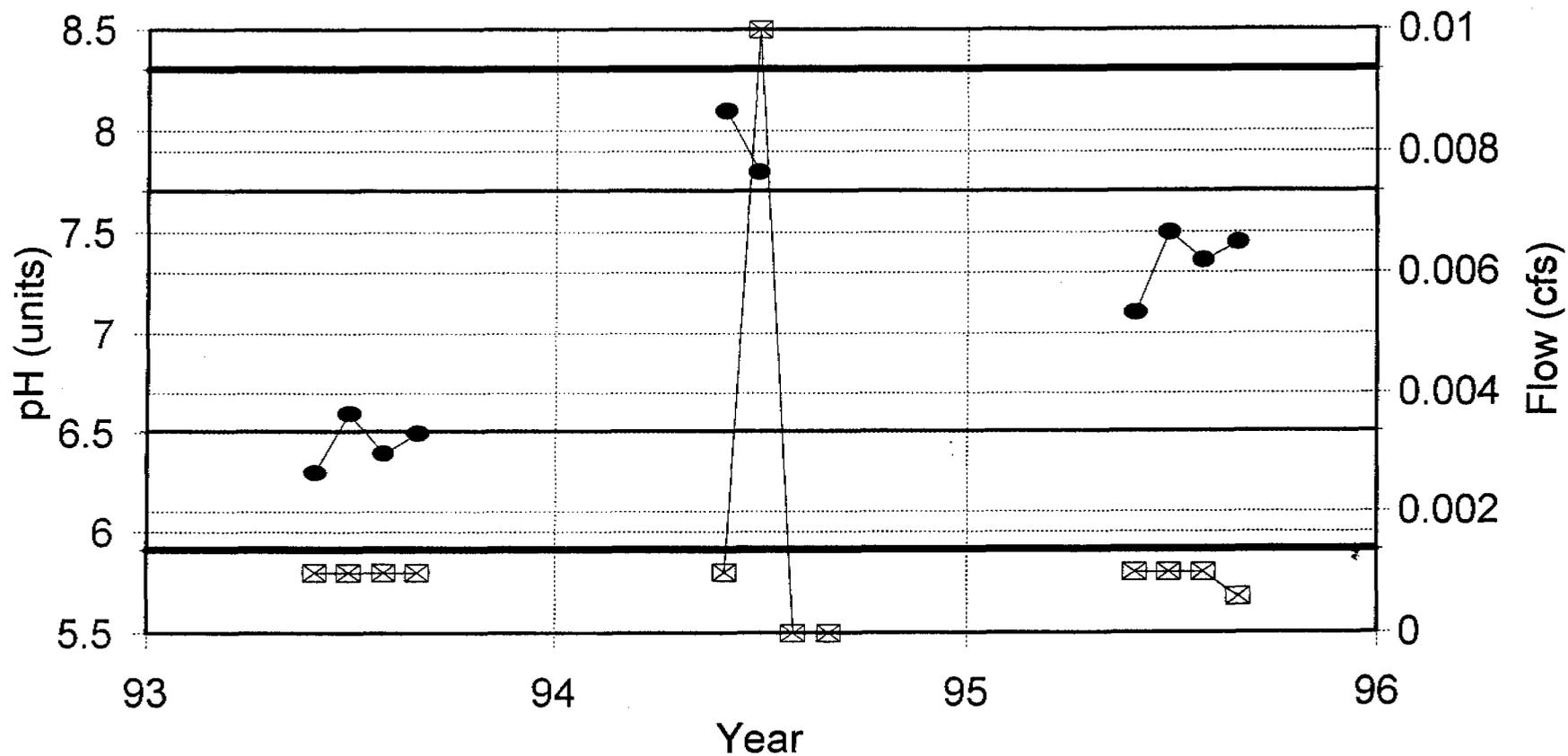
# Station CVS7

## Monthly Precipitation vs. Flow



# Station CVS7

pH vs. Flow



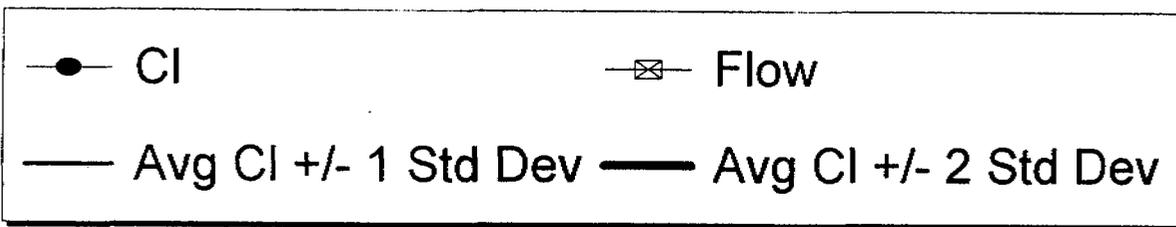
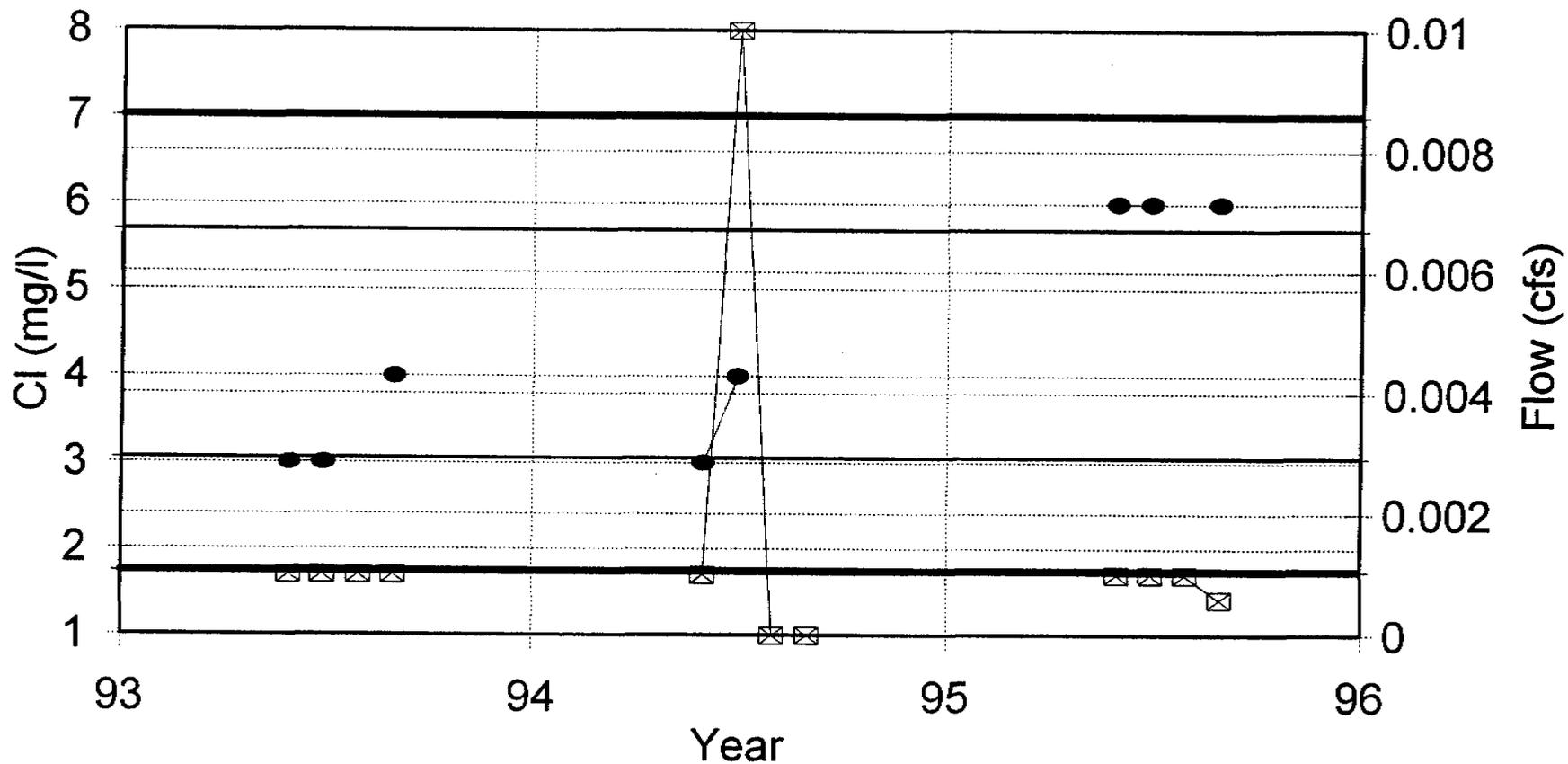






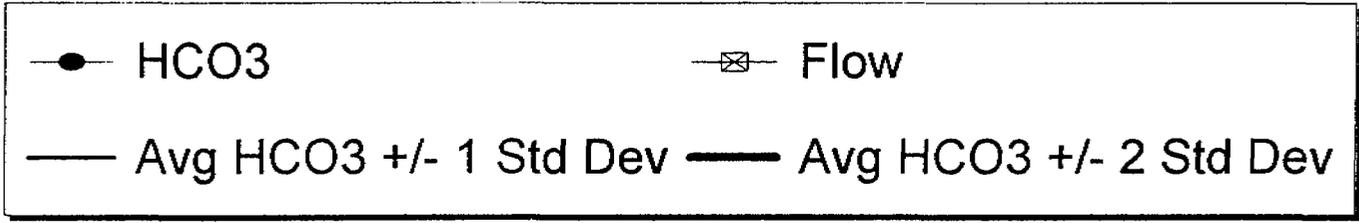
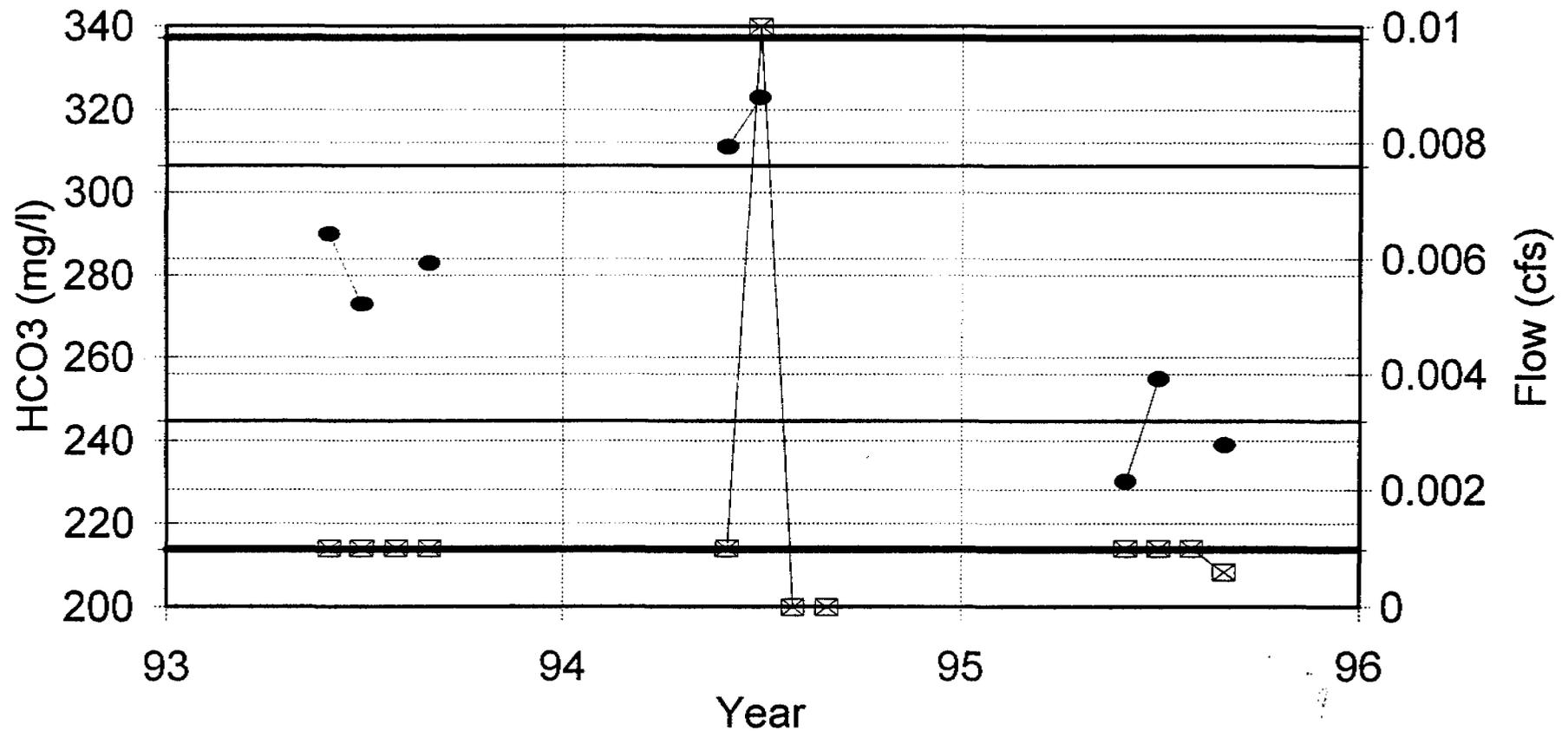
# Station CVS7

Cl vs. Flow



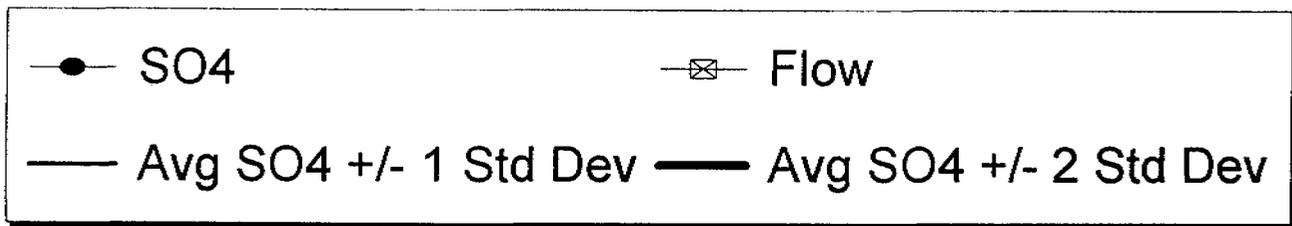
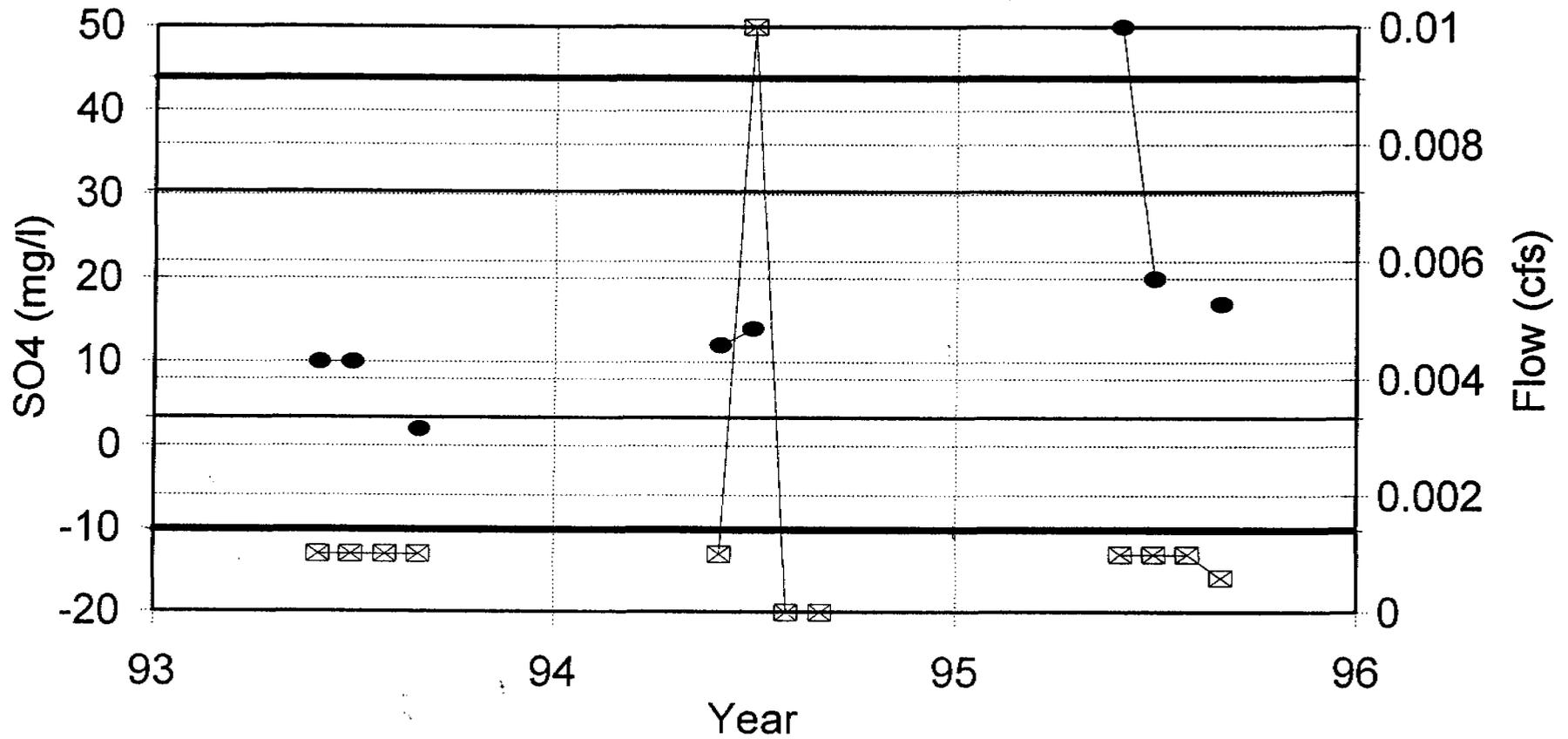
# Station CVS7

## HCO3 vs. Flow



# Station CVS7

## SO4 vs. Flow





Cyprus Plateau Mining Company - Water Quality Data

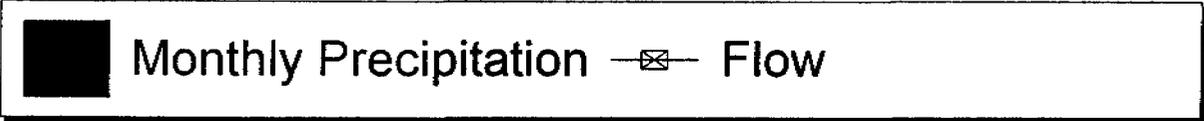
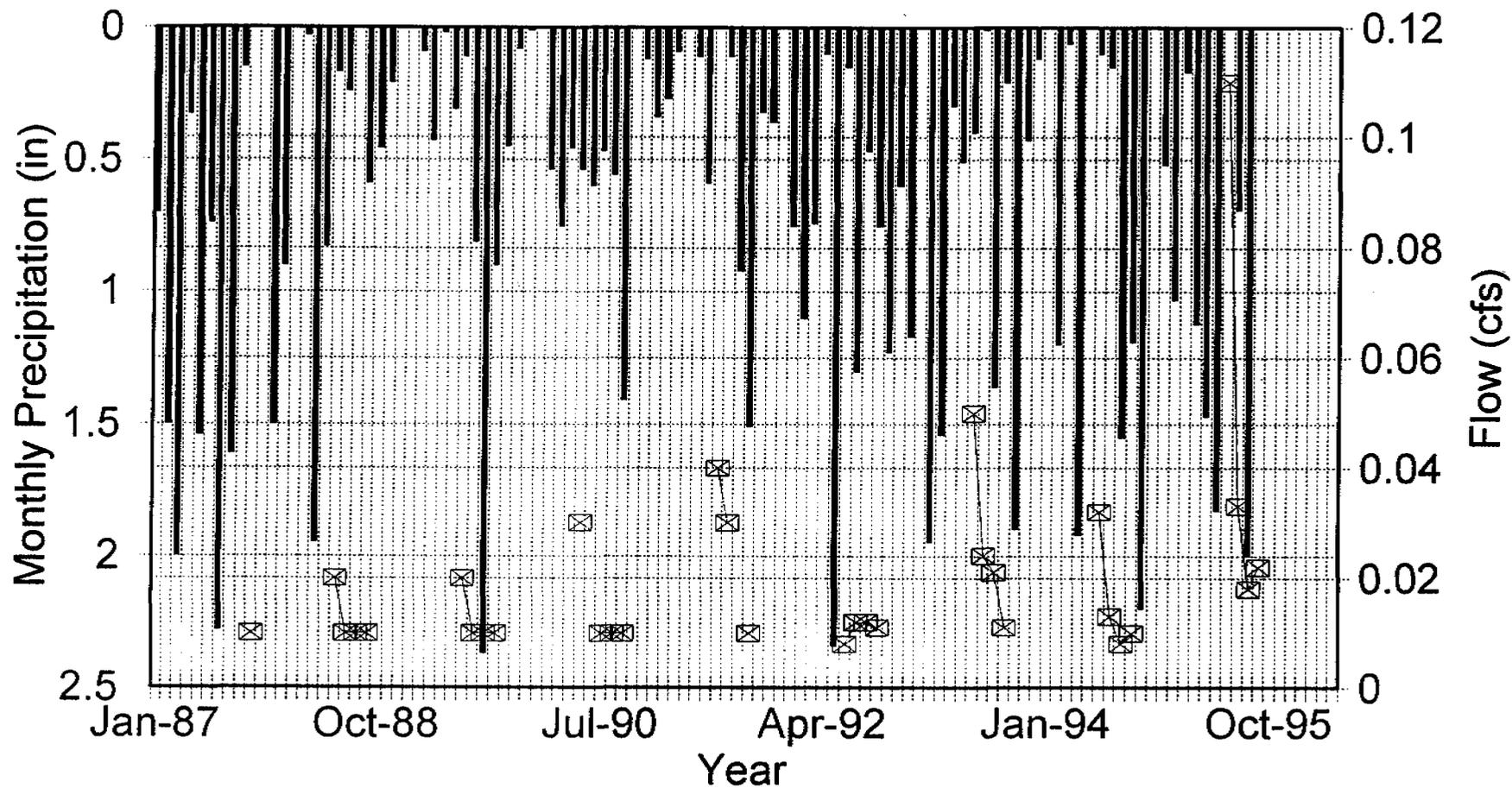
Print Date: May 2, 1996

Station: 238		Property: Star Point				Location: 1875' S 1750' E of NW cor. Sec 18, T15S, R7E					Station Type: Spring		Sampling Frequency: Quarterly				Formation: Castlegate			Elevation: 9150			
Date		Field Measurements				Laboratory Measurements														Comments			
Mo-Yr	Sample Date	Flow (cfs)	Ph (units)	Sp. Cond. (ohms)	Temp. (C)	TDS (mg/l)	TSS (mg/l)	O&G (mg/l)	Hd-CaCO3 (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (D) (mg/l)	SO4 (D) (mg/l)	Ca (D) (mg/l)	Mg (D) (mg/l)	K (D) (mg/l)	Na (D) (mg/l)	Ca/An Bal (%)	Fe (D) (mg/l)		Fe (T) (mg/l)	Mn (T) (mg/l)	
Jan-93																							
Feb-93																							
Mar-93																							
Apr-93																							
May-93																							
Jun-93	06/23/93	0.05	6.2	339	5.4	178			176	239	0	1	2	54	10 <	1	2	<	0.02	0.14 <	0.01		
Jul-93	07/22/93	0.024	6.3	373	4.8	210			209	227	0	1	10	64	12	1	2	<	0.02 <	0.02 <	0.01		
Aug-93	08/18/93	0.021	6.1	397	4.6																		
Sep-93	09/13/93	0.011	6.3	389	5.1	230			194	238	0	2	20	58	12	1	2	<	0.02 <	0.02 <	0.01		
Oct-93																							
Nov-93																							
Dec-93																							
Jan-94																							
Feb-94																							
Mar-94																							
Apr-94																							
May-94																							
Jun-94	06/28/94	0.032	7.1	438	3.1	238			214	220	0	2	17	66	12	1	1	<	0.02 <	0.02 <	0.01	LAB FILTRATION REQUI	
Jul-94	07/21/94	0.013	7.9	373	11.8	206			199	234	0	1	21	60	12	1	2	<	0.02 <	0.02 <	0.01	RAIN IN A.M. = ~.10"	
Aug-94	08/31/94	0.008	8.1	325	11.5																		
Sep-94	09/21/94	0.01	7.6	353	9.2	216			232	261	0	1	19	70	14	1	2		0.02	0.1 <	0.01		
Oct-94																							
Nov-94																							
Dec-94																							
Jan-95																							
Feb-95																							
Mar-95																							
Apr-95																							
May-95																							
Jun-95	06/22/95	0.11	7.6	410	6.2	210			213	199 <	2	1	10	66.3	11.6	0.9	1.5	1.6 <	0.01	0.06 <	0.005		
Jul-95	07/27/95	0.033	7.6	465	5	230			221	185 <	2	1	20	66.7	13.2	1.2	1.7	4.3 <	0.01	0.03 <	0.005		
Aug-95	08/23/95	0.018	6.4	357	6																		
Sep-95	09/28/95	0.022	7.6	252	5.167	230			224	190 <	2	1	22	67.1	13.7	1.2	1.8	3.4 <	0.01	0.06 <	0.005		
Oct-95																							
Nov-95																							
Dec-95																							
Jan-96																							
END DATA																							
Count		32	19	19	19	25	0	0	15	15	15	15	15	15	15	15	15	3	15	15	12		
Minimum		0.008	6.1	252	3.1	176	ERR	ERR	176	185 <	0	1	2	54	9 <	0.9	1	1.6 <	0.01 <	0.02 <	0.005		
Maximum		0.11	8.1	465	11.8	246	ERR	ERR	237	266 <	7	31	45	73	14 <	1.2	2	4.3 <	0.07 <	0.71 <	0.03		
Average		0.0202	7.1316	379.47	6.0351	214.96	ERR	ERR	210.07	221.67 <	1.4667	3.2	18	64.34	12.033 <	1.02	1.6667	3.1 <	0.0213 <	0.1393 <	0.0104		
Standard Deviation		0.0192	0.6657	44.319	2.221	16.435	ERR	ERR	15.964	23.197 <	2.3343	7.4404	11.713	5.1862	1.4253 <	0.0748	0.4253	1.1225 <	0.0136 <	0.1856 <	0.0063		
Avg. -1 Std. Dev.		0.001	6.4658	335.16	3.8141	198.52	ERR	ERR	194.1	198.47 <	-0.868	-4.24	6.2868	59.154	10.608 <	0.9452	1.2414	1.8775 <	0.0077 <	-0.046 <	0.0041		
Avg. +1 Std. Dev.		0.0393	7.7973	423.79	8.2561	231.4	ERR	ERR	226.03	244.86 <	3.801	10.64	29.713	69.526	13.459 <	1.0948	2.092	4.2225 <	0.0349 <	0.325 <	0.0167		
Avg. -2 Std. Dev.		-0.016	5.8001	290.84	1.5932	182.09	ERR	ERR	178.14	175.27 <	-3.202	-11.88	-5.426	53.968	9.1827 <	0.8703	0.816	0.855 <	-0.006 <	-0.232 <	-0.002		
Avg. +2 Std. Dev.		0.0585	8.4631	466.11	10.477	247.83	ERR	ERR	242	268.06 <	6.1352	18.081	41.426	74.712	14.884 <	1.1697	2.5173	5.345 <	0.0485 <	0.5106 <	0.023		

NOTE: The "<" symbol indicates that "Less Than" data was found in the data set; statistics are approximate.

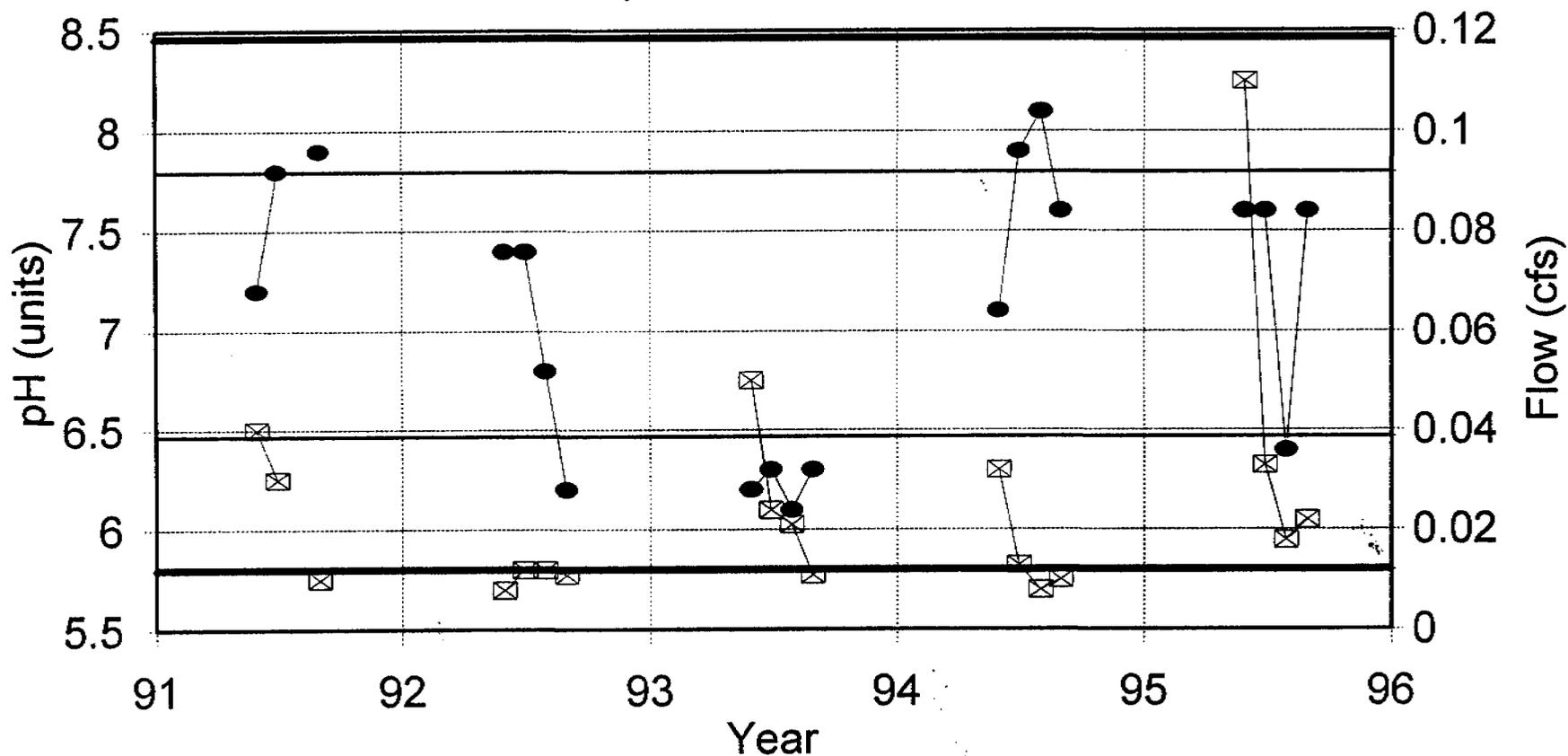
# Station 238

## Monthly Precipitation vs. Flow



# Station 238

pH vs. Flow



● pH

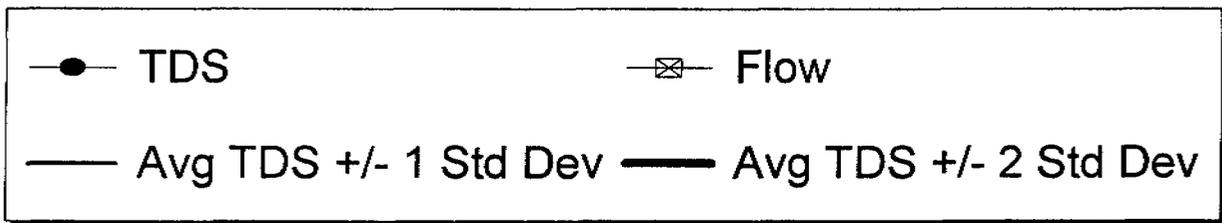
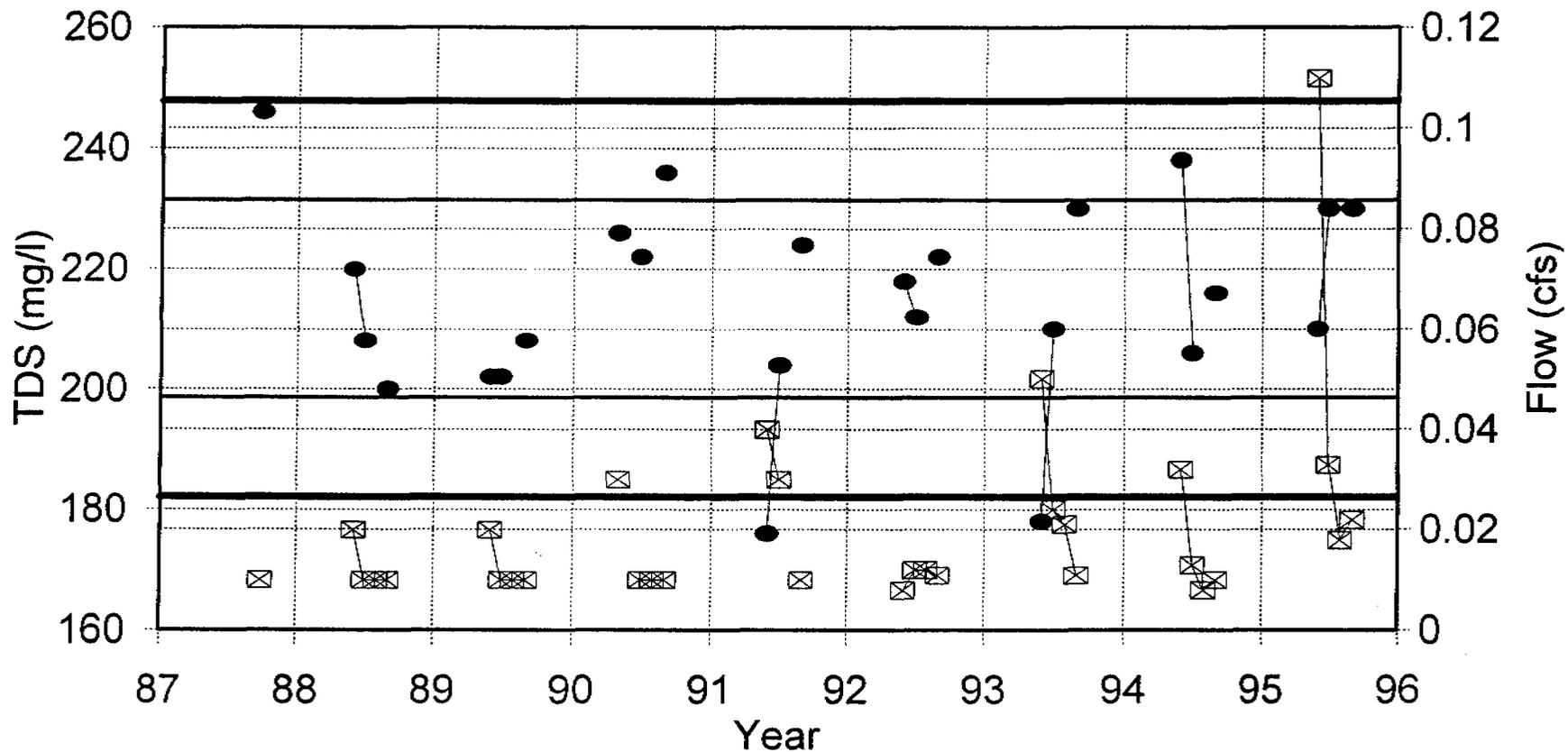
⊠ Flow

— Avg pH +/- 1 Std Dev

— Avg pH +/- 2 Std Dev

# Station 238

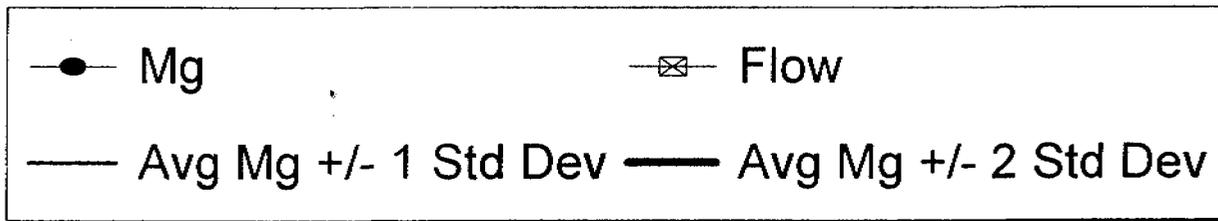
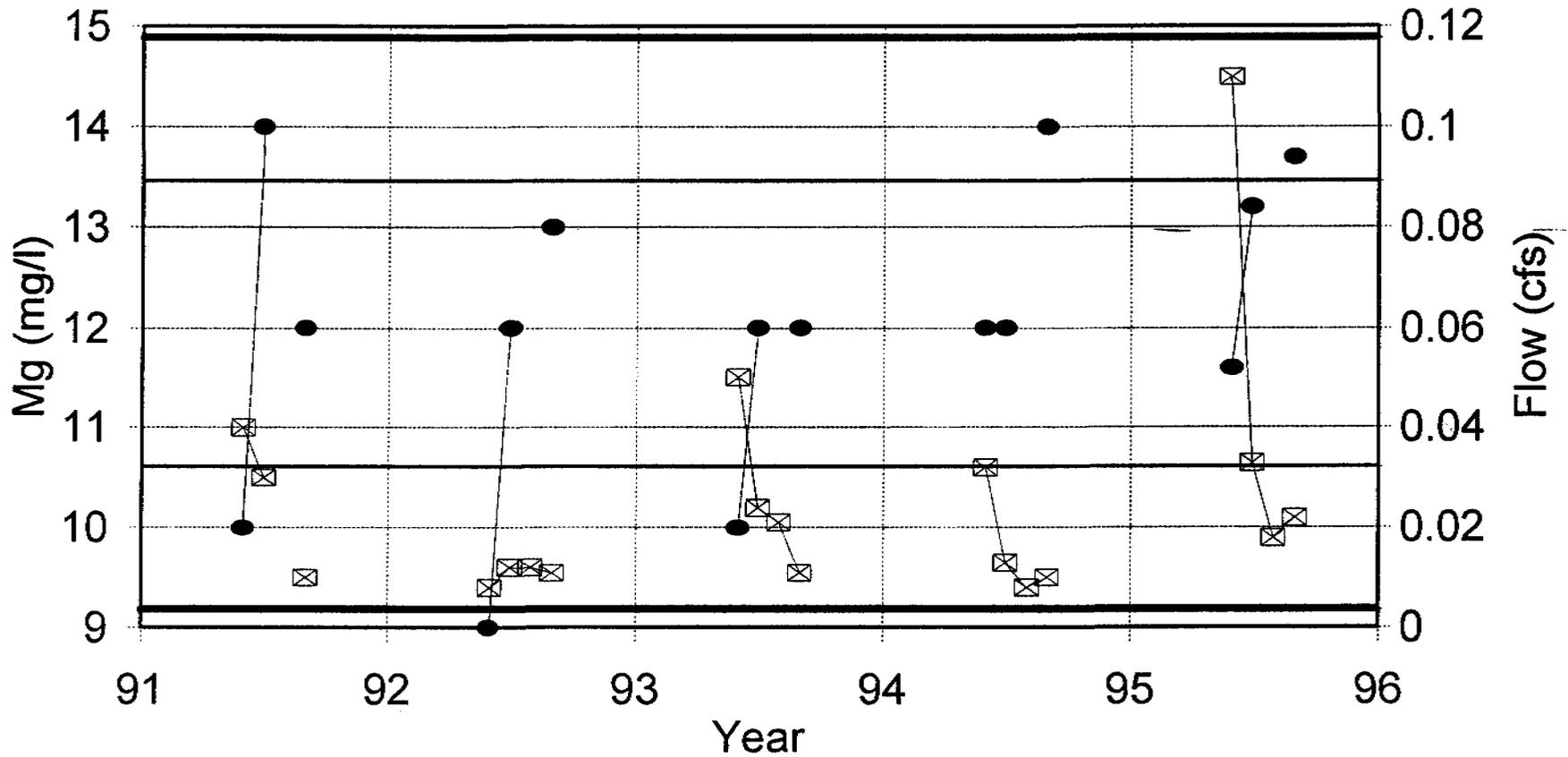
## TDS vs. Flow





# Station 238

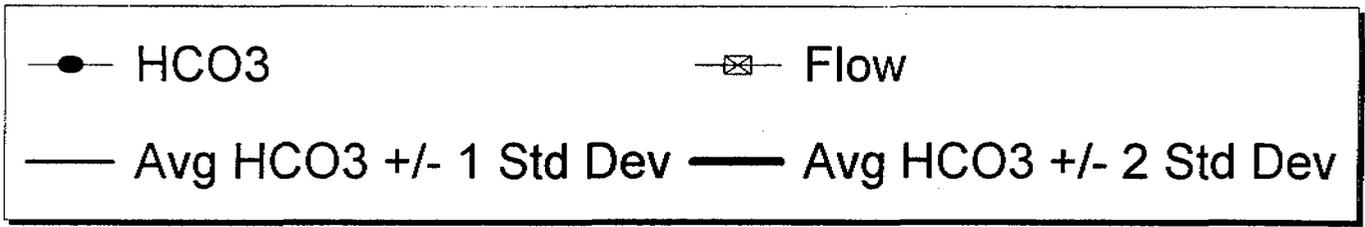
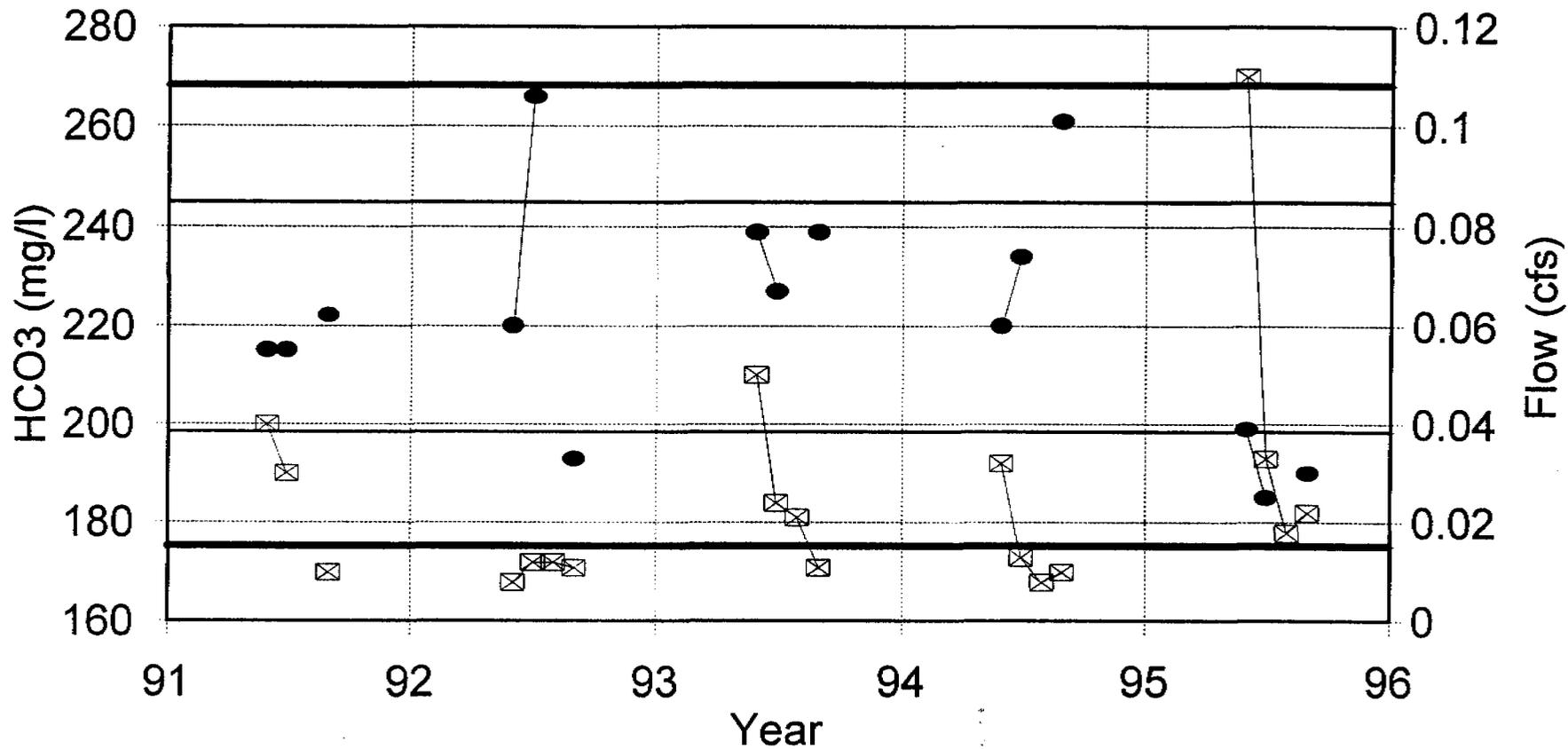
## Mg vs. Flow





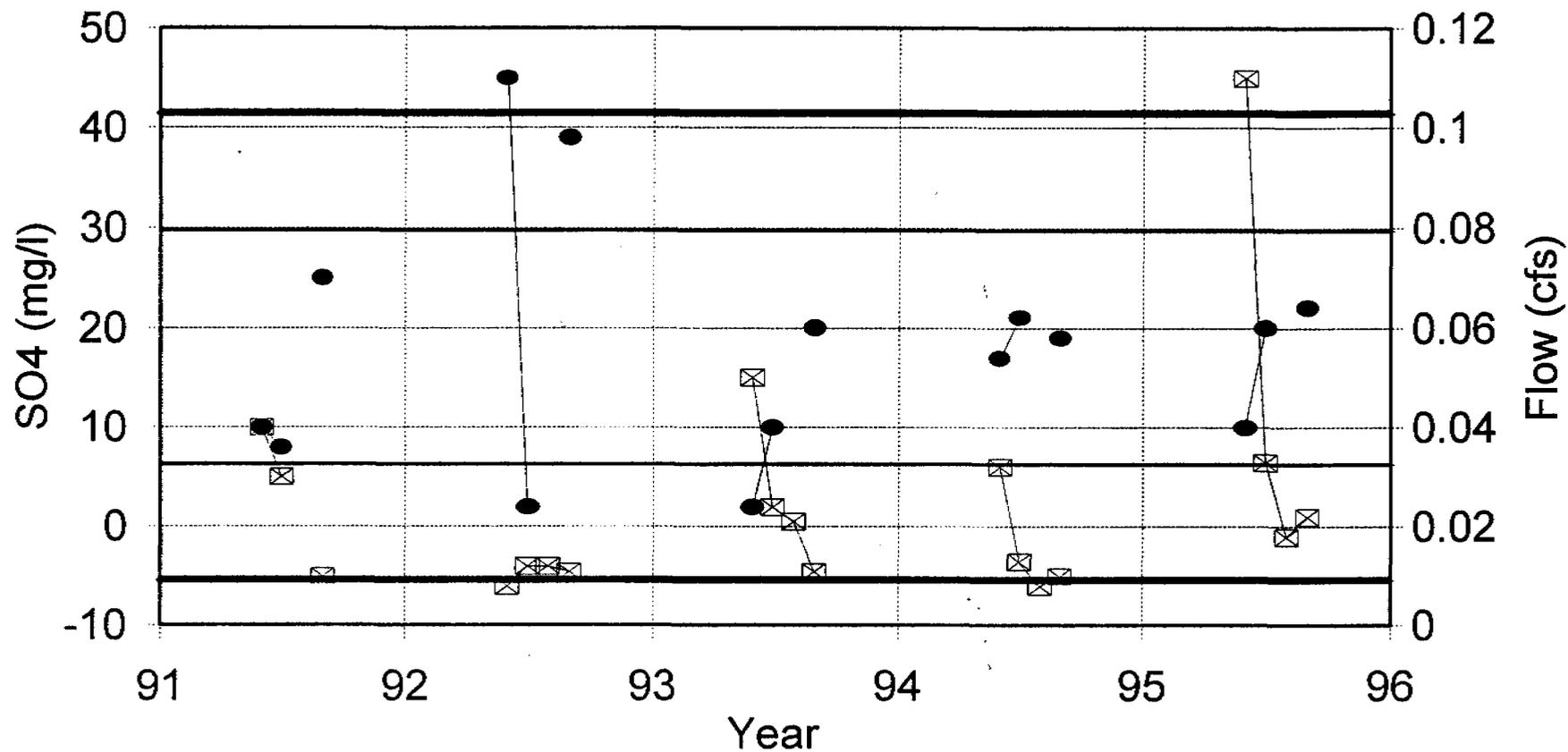
# Station 238

## HCO<sub>3</sub> vs. Flow



# Station 238

## SO4 vs. Flow



● SO4

⊠ Flow

— Avg SO4 +/- 1 Std Dev

— Avg SO4 +/- 2 Std Dev

Cyprus Plateau Mining Company - Water Quality Data

Print Date: May 2, 1998  
Elevation: 9445

Station: 492		Property: Star Point			Location: 100' N 1625' E OF SW cor. Sec 7, T15S, R8E					Station Type: Spring		Sampling Frequency: Quarterly			Formation: Castlegate					Elevation: 9445		
Mo-Yr	Date	Field Measurements				Laboratory Measurements																Comments
		Flow (cfs)	pH (units)	Sp. Cond. (ohms)	Temp. (C)	TDS (mg/l)	TSS (mg/l)	O&G (mg/l)	Hd-CaCO3 (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (D) (mg/l)	SO4 (D) (mg/l)	Ca (D) (mg/l)	Mg (D) (mg/l)	K (D) (mg/l)	Na (D) (mg/l)	Cat/An Bal (%)	Fe (D) (mg/l)	Fe (T) (mg/l)	Mn (T) (mg/l)	
Jan-89																						
Feb-89																						
Mar-89																						
Apr-89																						
May-89																						
Jun-89	06/05/89	0.01				220																
Jul-89	07/11/89	0				232																
Aug-89	08/22/89	0																				
Sep-89	09/15/89	0.01				204																
Oct-89																						
Nov-89																						
Dec-89																						
Jan-90																						
Feb-90																						
Mar-90																						
Apr-90																						
May-90																						
Jun-90	06/04/90	0				200																
Jul-90	07/07/90	0				226																
Aug-90	08/30/90	0																				
Sep-90	09/18/90	0				208																
Oct-90																						
Nov-90																						
Dec-90																						
Jan-91																						
Feb-91																						
Mar-91																						
Apr-91																						
May-91																						
Jun-91	06/13/91	0.01	7.3	390	4	250			207	217	10	1	27	50	20 <	1	7	<	0.02 <	0.02 <	0.01	
Jul-91	07/18/91	0	7.8	420	6	212			201	227	2	3	6	51	18	1	3	<	0.02	0.24 <	0.01	
Aug-91																						
Sep-91	09/18/91	0	8	420	7	224			199	227	0	2	12	50	18 <	1	2		0.16	0.46	0.02	
Oct-91																						
Nov-91																						
Dec-91																						
Jan-92																						
Feb-92																						
Mar-92																						
Apr-92																						
May-92																						
Jun-92	06/17/92	0.002	7.6	389	5.3	200			203	217	0	2	33	50	19	1	3	<	0.02	0.08		
Jul-92	07/19/92	0.002	7.6	391	5.5	220			212	229	0	2	23	62	14 <	1	2	<	0.02	0.09		
Aug-92	08/25/92	0.005	7	380	6																	
Sep-92	09/21/92	0.005	6.2	338	5.9	212			208	251	5	2	2	52	19	1	3	<	0.02	0.1		
Oct-92																						
Nov-92																						
Dec-92																						
Jan-93																						
Feb-93																						
Mar-93																						
Apr-93																						
May-93																						
Jun-93	06/25/93	0.007	6.3	852	5.9	148			145	159	0	3	2	40	11 <	1	2		0.06	0.15 <	0.01	
Jul-93	07/07/93	0.003	6.5	366	6	202			217	239	0	2	9	54	20 <	1	3	<	0.02 <	0.02 <	0.01	
Aug-93	08/18/93	0.002	6.4	365	6																	
Sep-93	09/27/93	0.002	5.3	394	5.3	214			194	239	0	3	6	48	18 <	1	2	<	0.02	0.31 <	0.01	
Oct-93																						
Nov-93																						
Dec-93																						
Jan-94																						
Feb-94																						
Mar-94																						
Apr-94																						
May-94																						
Jun-94	06/20/94	0.005	8	430	4.3	198			222	261	0	2	6	56	20 <	1	4		0.08	0.08 <	0.01	
Jul-94	06/20/94	0.003	8.1	368	13	218			194	242	0	2	2	48	18 <	1	2	<	0.02	0.1 <	0.01	
Aug-94	08/31/94	0.005	7.7	330	10.2																	
Sep-94	09/28/94	0.003	8	303	11.1	188			182	214	0	2	4	45	17 <	1	2	<	0.02	0.03 <	0.01	
Oct-94																						
Nov-94																						
Dec-94																						

LOTS OF COW ACTIVITY

Cyprus Plateau Mining Company - Water Quality Data

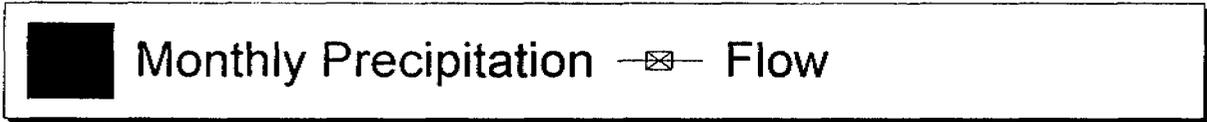
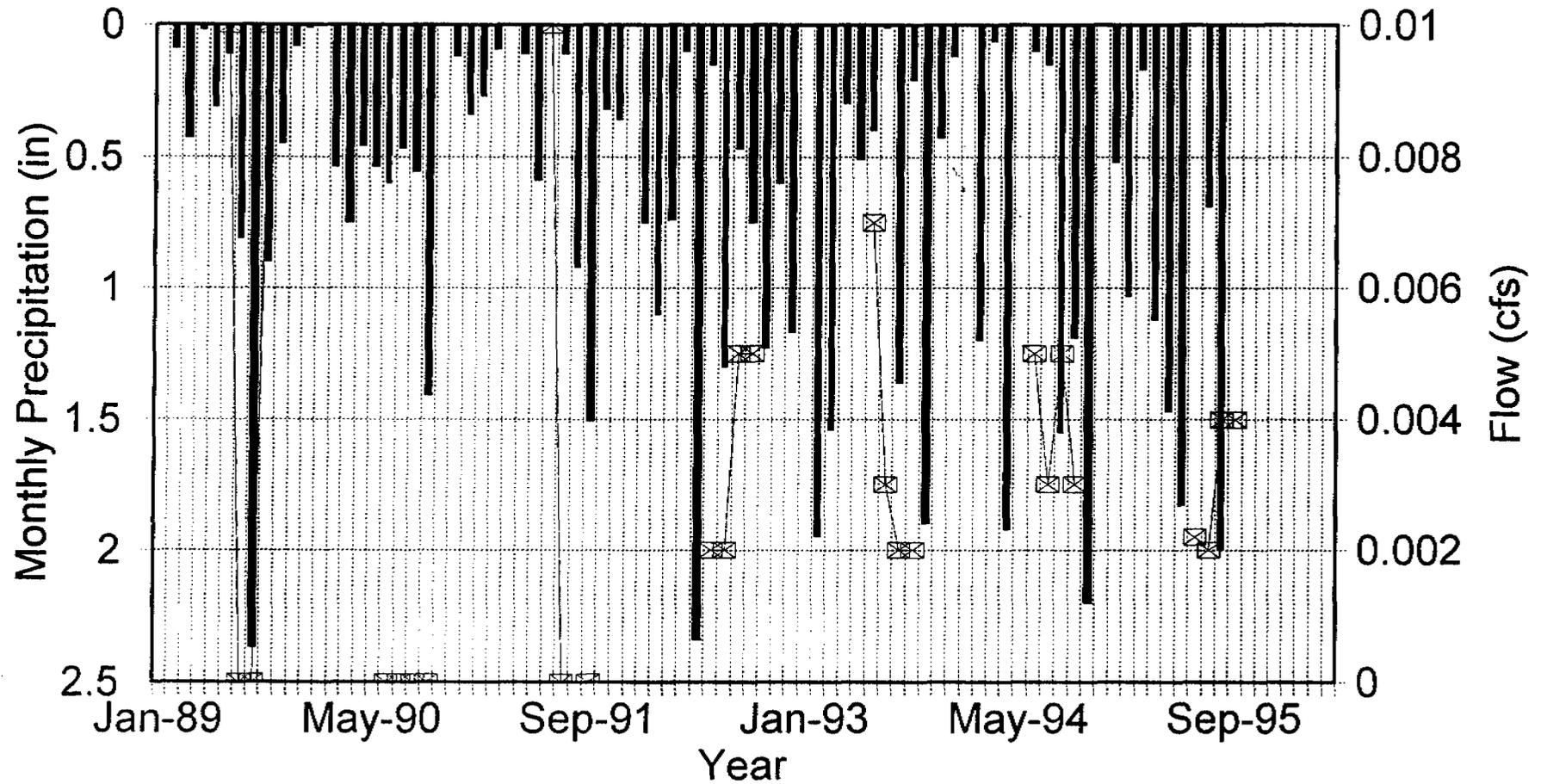
Print Date: May 2, 1996

Station: 492		Property: Star Point				Location: 100' N 1625' E OF SW cor. Sec 7, T15S, R8E					Station Type: Spring		Sampling Frequency: Quarterly				Formation: Castlegate			Elevation: 9445			
Date	Sample Date	Flow (cfs)	Ph (units)	Sp. Cond. (ohms)	Temp. (C)	Laboratory Measurements										Comments							
Mo-Yr						TDS (mg/l)	TSS (mg/l)	O&G (mg/l)	Hd-CaCO3 (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (D) (mg/l)	SO4 (D) (mg/l)	Ca (D) (mg/l)	Mg (D) (mg/l)	K (D) (mg/l)	Na (D) (mg/l)	Cat/An Bal (%)	Fe (D) (mg/l)	Fe (T) (mg/l)	Mn (T) (mg/l)		
Jan-95																							
Feb-95																							
Mar-95																							
Apr-95																							
May-95																							
Jun-95	06/22/95	0.0022	6.9	377	3.8	190			212	204 <	2	3 <	10	52	20	0.6	2.8	2.5 <	0.01 <	0.01 <	0.005		
Jul-95	07/27/95	0.002	7.98	327	7	220			215	195 <	2	2	10	52.9	20.2	0.7	2.8	3.2 <	0.01 <	0.01 <	0.005		
Aug-95	08/23/95	0.004	6.9	546	6																		
Sep-95	09/28/95	0.004	7.2	2560	6.67	210			225	193 <	2	3	11	55.5	21	0.6	2.8	5.2 <	0.01 <	0.01 <	0.005		
Oct-95																							
Nov-95																							
Dec-95																							
Jan-96																							
END DATA																							
Count		27	19	19	19	21	0	0	15	15	15	15	15	15	15	15	15	3	15	15	12		
Minimum		0	5.3	303	3.8	148	ERR	ERR	145	159 <	0	1 <	2	40	11 <	0.6	2	2.5 <	0.01 <	0.01 <	0.005		
Maximum		0.01	8.1	2560	13	250	ERR	ERR	225	261 <	10	3 <	33	62	21 <	1	7	5.2 <	0.18 <	0.46 <	0.02		
Average		0.0032	7.1989	523.47	6.5774	209.33	ERR	ERR	202.4	220.93 <	1.5333	2.2667 <	10.867	51.093	18.213 <	0.9267	2.8933	3.6333 <	0.0353 <	0.114 <	0.0095		
Standard Deviation		0.0031	0.7626	493.72	2.3141	19.628	ERR	ERR	18.92	25.032 <	2.655	0.5735 <	9.1569	4.8903	2.545 <	0.1482	1.2369	1.1441 <	0.0429 <	0.1254 <	0.0038		
Avg. +1 Std. Dev.		0.0001	6.4364	29.755	4.2633	189.71	ERR	ERR	183.48	195.9 <	-1.122	1.6932 <	1.7098	46.203	15.668 <	0.7785	1.6564	2.4893 <	-0.008 <	-0.011 <	0.0058		
Avg. +2 Std. Dev.		0.0063	7.9615	1017.2	8.8915	228.96	ERR	ERR	221.32	245.97 <	4.1883	2.8402 <	20.024	55.984	20.758 <	1.0748	4.1302	4.7774 <	0.0782 <	0.2394 <	0.0134		
Avg. -2 Std. Dev.		-0.003	5.6738	-464	1.9492	170.08	ERR	ERR	164.56	170.87 <	-3.777	1.1197 <	-7.447	41.313	13.123 <	0.6303	0.4195	1.3452 <	-0.05 <	-0.137 <	0.002		
Avg. +2 Std. Dev.		0.0094	8.7241	1510.9	11.206	248.59	ERR	ERR	240.24	271 <	6.8433	3.4136 <	29.18	60.874	23.303 <	1.223	5.3672	5.9215 <	0.1211 <	0.3647 <	0.0172		

NOTE: The "<" symbol indicates that "Less Than" data was found in the data set; statistics are approximate.

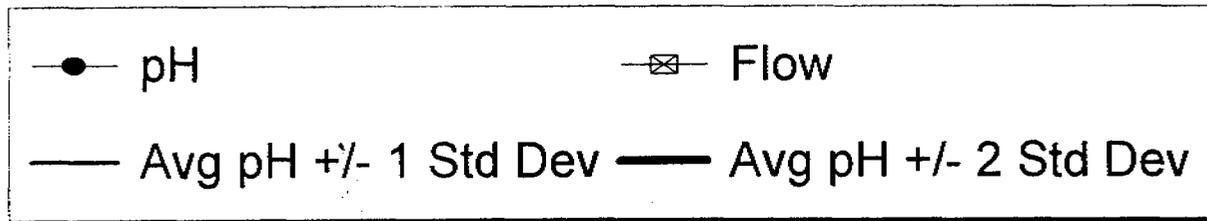
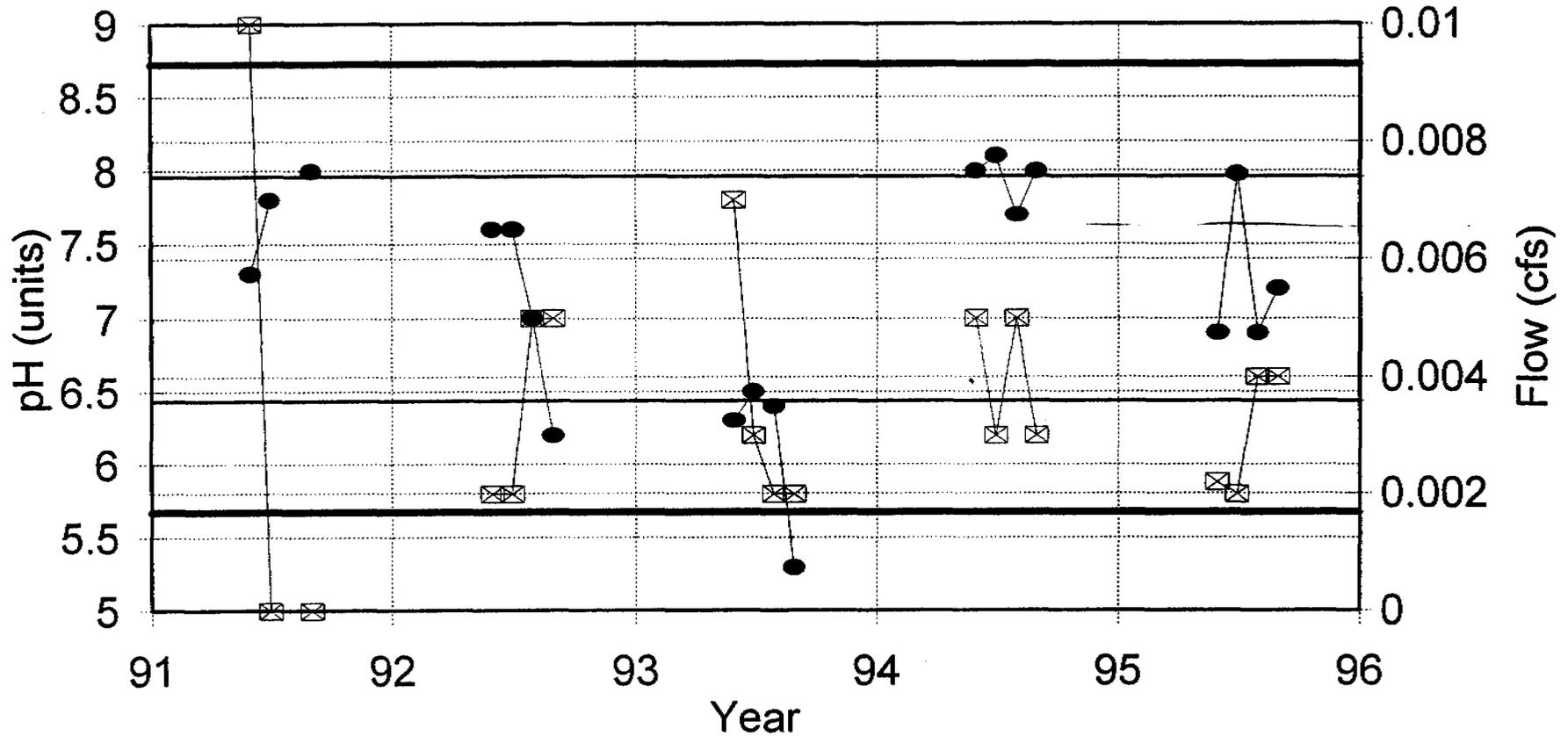
# Station 492

## Monthly Precipitation vs. Flow



# Station 492

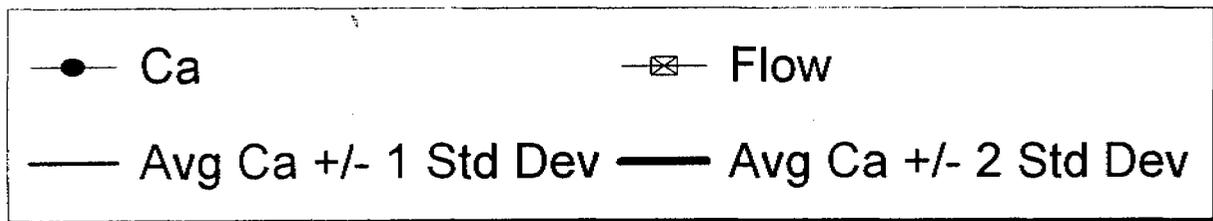
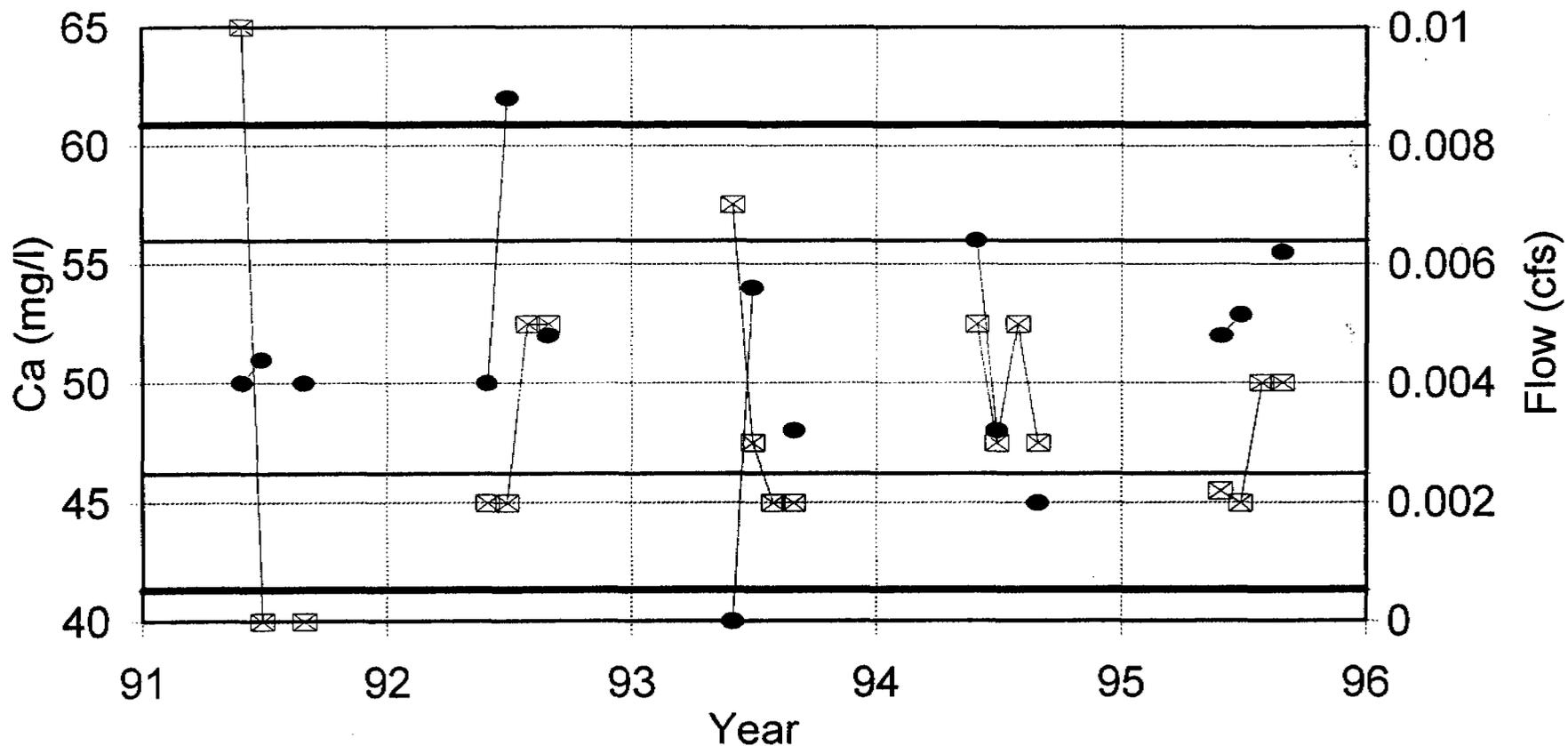
## pH vs. Flow





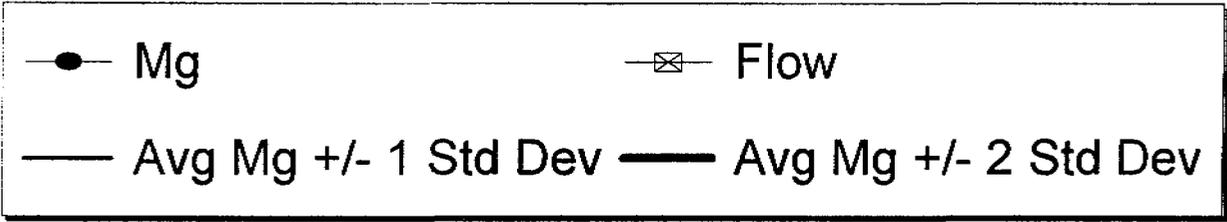
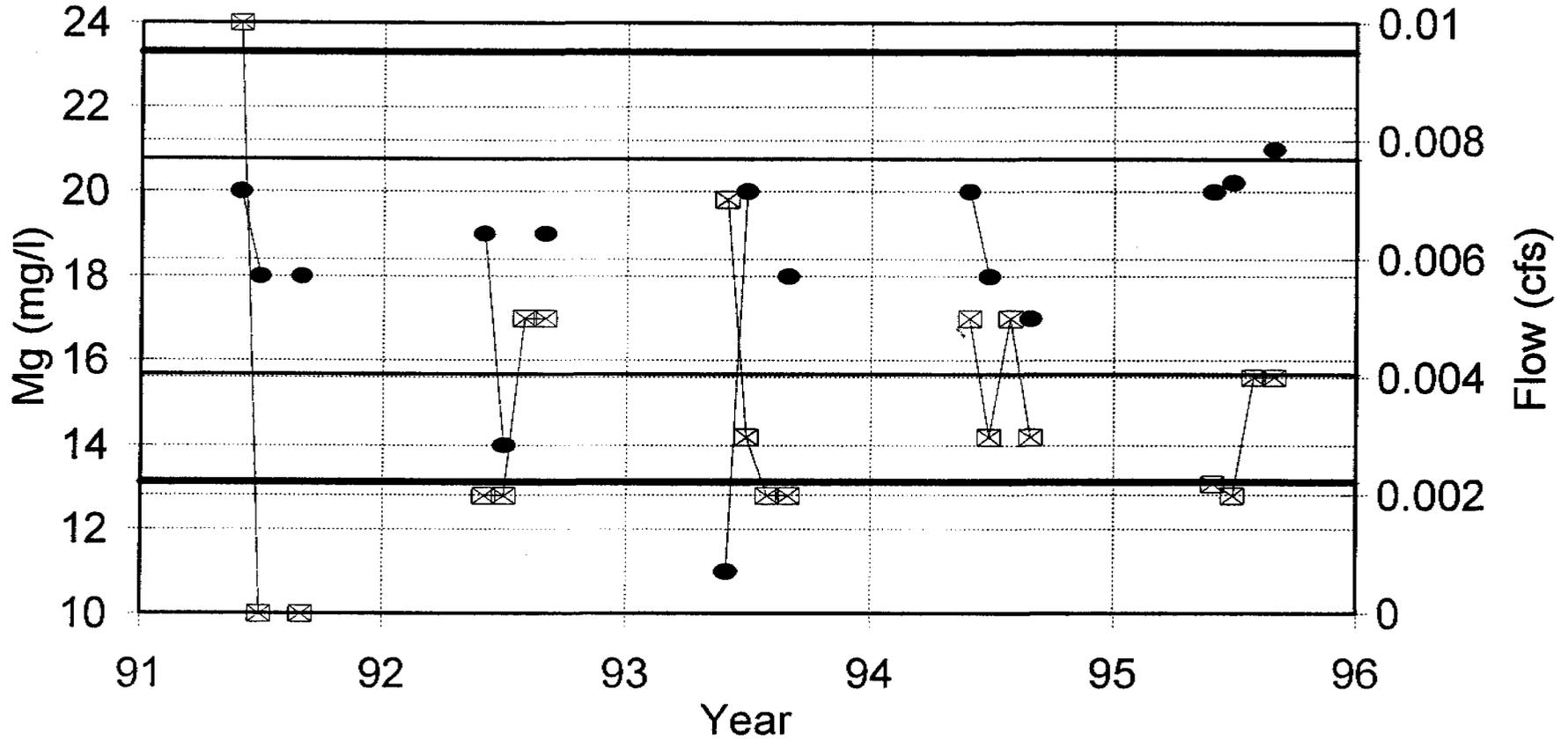
# Station 492

## Ca vs. Flow



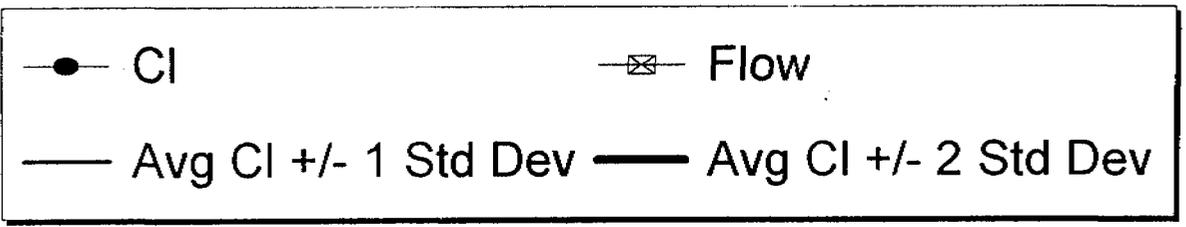
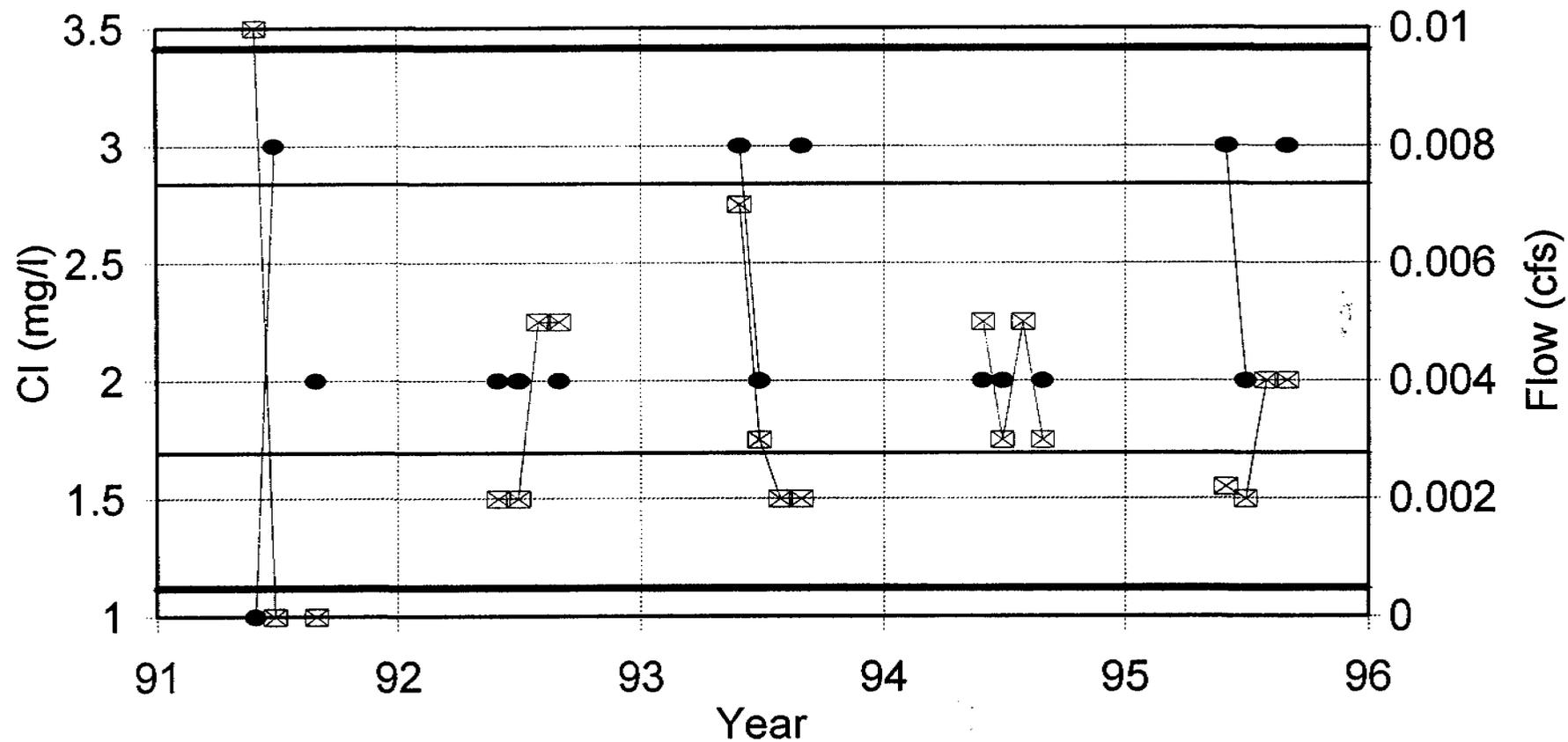
# Station 492

## Mg vs. Flow



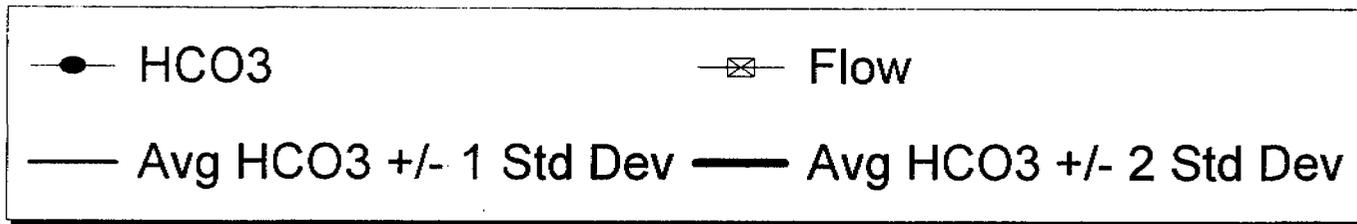
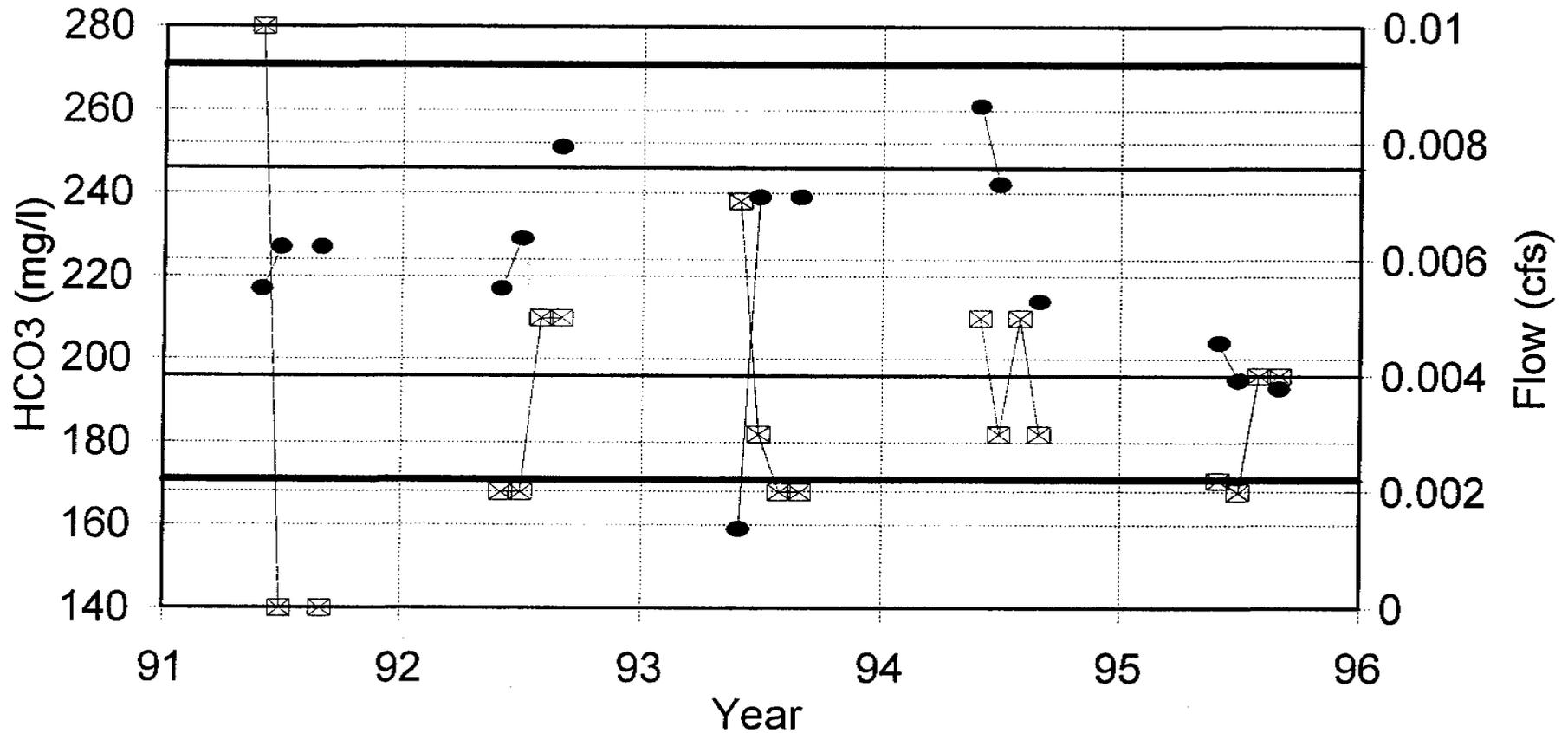
# Station 492

## Cl vs. Flow



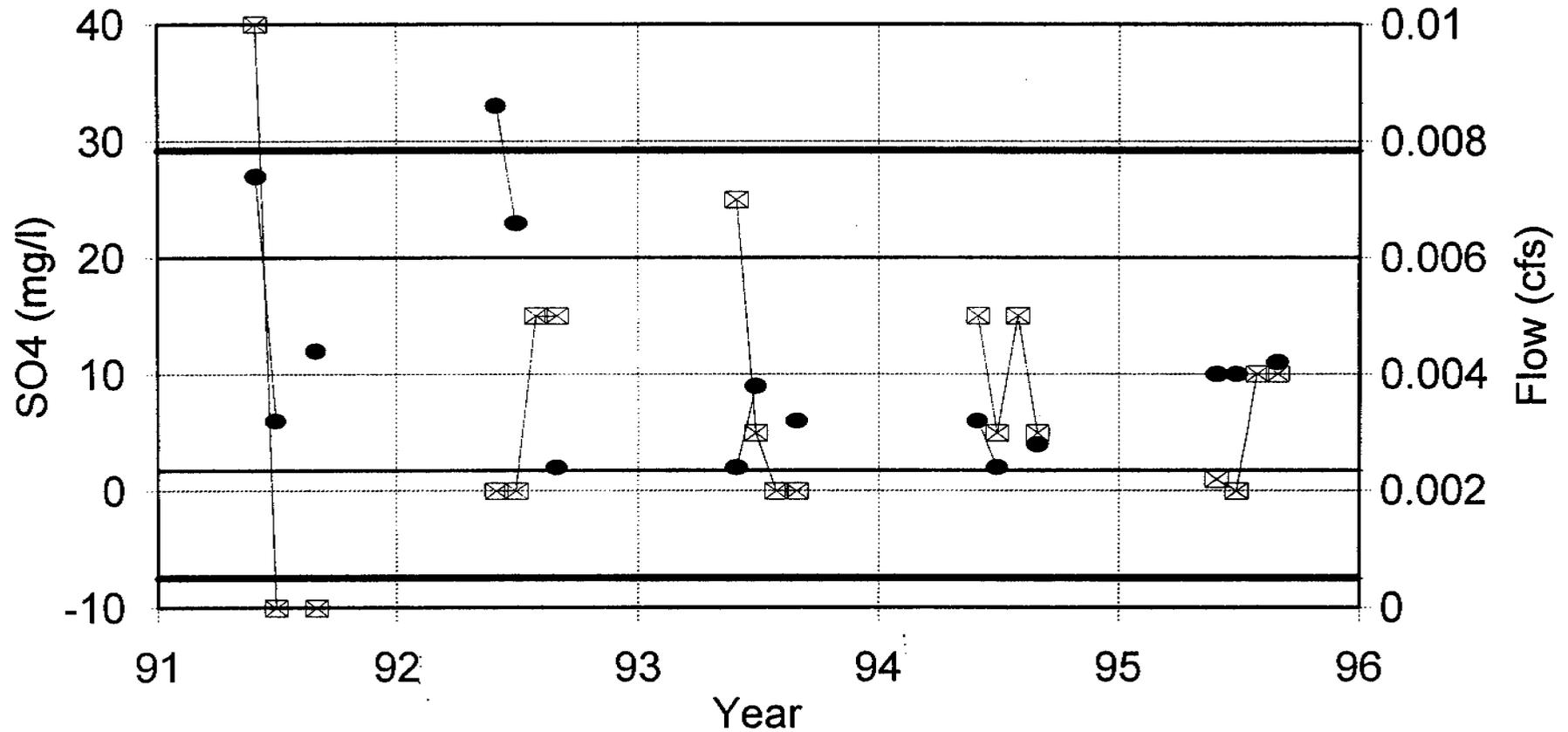
# Station 492

## HCO3 vs. Flow



# Station 492

## SO4 vs. Flow



● SO4

⊠ Flow

— Avg SO4 +/- 1 Std Dev

— Avg SO4 +/- 2 Std Dev



Cyprus Plateau Mining Company - Water Quality Data

Print Date: May 2, 1996

Station: 494 Property: Star Point Location: 375' S 2000' E of NW cor. Sec 18, T15S, R8E

Station Type: Spring Sampling Frequency: Quarterly

Formation: Castlegate

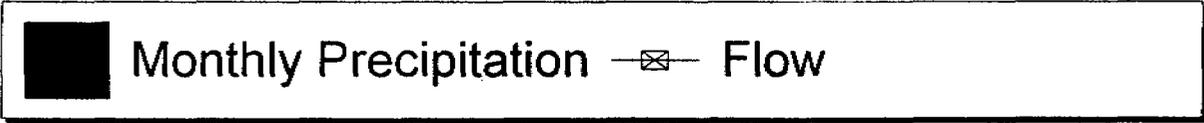
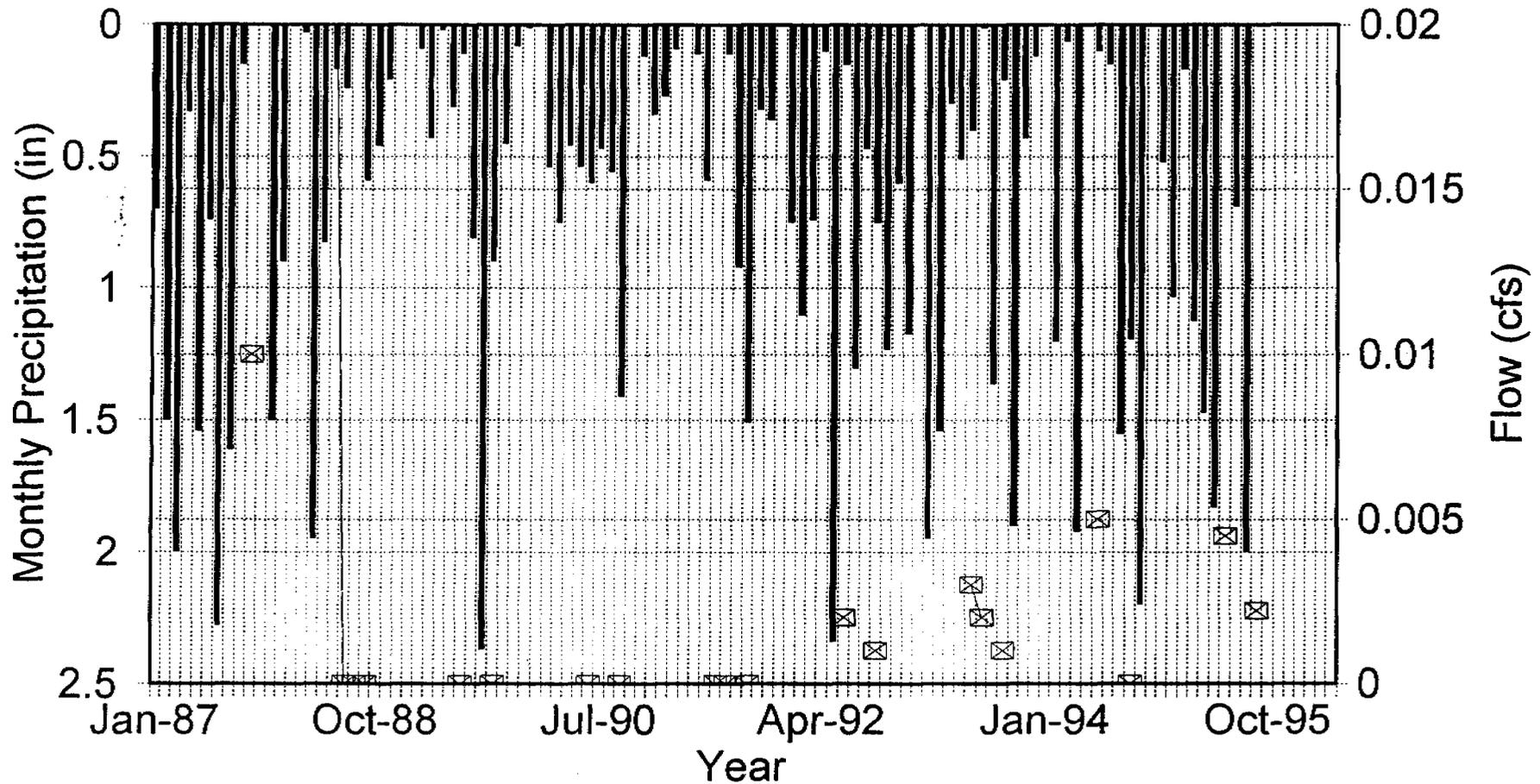
Elevation: 9395

Date		Field Measurements				Laboratory Measurements															Comments		
Mo-Yr	Sample Date	Flow (cfs)	Ph (units)	Sp. Cond. (ohms)	Temp (C)	TDS (mg/l)	TSS (mg/l)	O&G (mg/l)	Hd-CaCO3 (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (D) (mg/l)	SO4 (D) (mg/l)	Ca (D) (mg/l)	Mg (D) (mg/l)	K (D) (mg/l)	Na (D) (mg/l)	Ca/An Bal (%)	Fe (D) (mg/l)	Fe (T) (mg/l)		Mn (T) (mg/l)	
Jan-93																							
Feb-93																							
Mar-93																							
Apr-93																							
May-93																							
Jun-93	06/25/93	0.003	6.4	360	5.4																		
Jul-93	07/07/93	0.002	12.7	410	7.2																		
Aug-93																							
Sep-93	09/27/93	0.001	7.1	418	10.2																		
Oct-93																							
Nov-93																							
Dec-93																							
Jan-94																							
Feb-94																							
Mar-94																							
Apr-94																							
May-94																							
Jun-94	06/20/94	0.005	8.3	507	7.3																		LOTS OF COW ACTIVITY
Jul-94																							
Aug-94																							
Sep-94	09/26/94	0																					NO FLOW
Oct-94																							
Nov-94																							
Dec-94																							
Jan-95																							
Feb-95																							
Mar-95																							
Apr-95																							
May-95																							
Jun-95	06/22/95	0.0045	7.5	408	9	230			248	189 <	2	2	80	61.8	22.8 <	0.3	3.3	-3.9	0.02	0.1 <	0.005		
Jul-95																							
Aug-95																							
Sep-95	09/28/95	0.0022	7.96	420	7																		No Sample
Oct-95																							
Nov-95																							
Dec-95																							
Jan-96																							
END DATA																							
Count		21	10	10	10	5	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum		0	6.4	360	4	190	ERR	ERR	248	189 <	2	2	80	61.8	22.8 <	0.3	3.3	-3.9	0.02	0.1 <	0.005		
Maximum		0.02	12.7	507	10.2	270	ERR	ERR	248	189 <	2	2	80	61.8	22.8 <	0.3	3.3	-3.9	0.02	0.1 <	0.005		
Average		0.0024	8.148	439.6	7.13	243.2	ERR	ERR	248	189 <	2	2	80	61.8	22.8 <	0.3	3.3	-3.9	0.02	0.1 <	0.005		
Standard Deviation		0.0046	1.6449	46.652	1.6553	30.029	ERR	ERR	0	0 <	0	0	0	0	0 <	0	0	0	0	0 <	0		
Avg. -1 Std. Dev.		-0.002	6.5011	392.95	5.4747	213.17	ERR	ERR	248	189 <	2	2	80	61.8	22.8 <	0.3	3.3	-3.9	0.02	0.1 <	0.005		
Avg. +1 Std. Dev.		0.007	9.7909	486.25	8.7853	273.23	ERR	ERR	248	189 <	2	2	80	61.8	22.8 <	0.3	3.3	-3.9	0.02	0.1 <	0.005		
Avg. -2 Std. Dev.		-0.007	4.8561	346.3	3.8194	183.14	ERR	ERR	248	189 <	2	2	80	61.8	22.8 <	0.3	3.3	-3.9	0.02	0.1 <	0.005		
Avg. +2 Std. Dev.		0.0116	11.436	532.9	10.441	303.26	ERR	ERR	248	189 <	2	2	80	61.8	22.8 <	0.3	3.3	-3.9	0.02	0.1 <	0.005		

NOTE: The "<" symbol indicates that "Less Than" data was found in the data set; statistics are approximate.

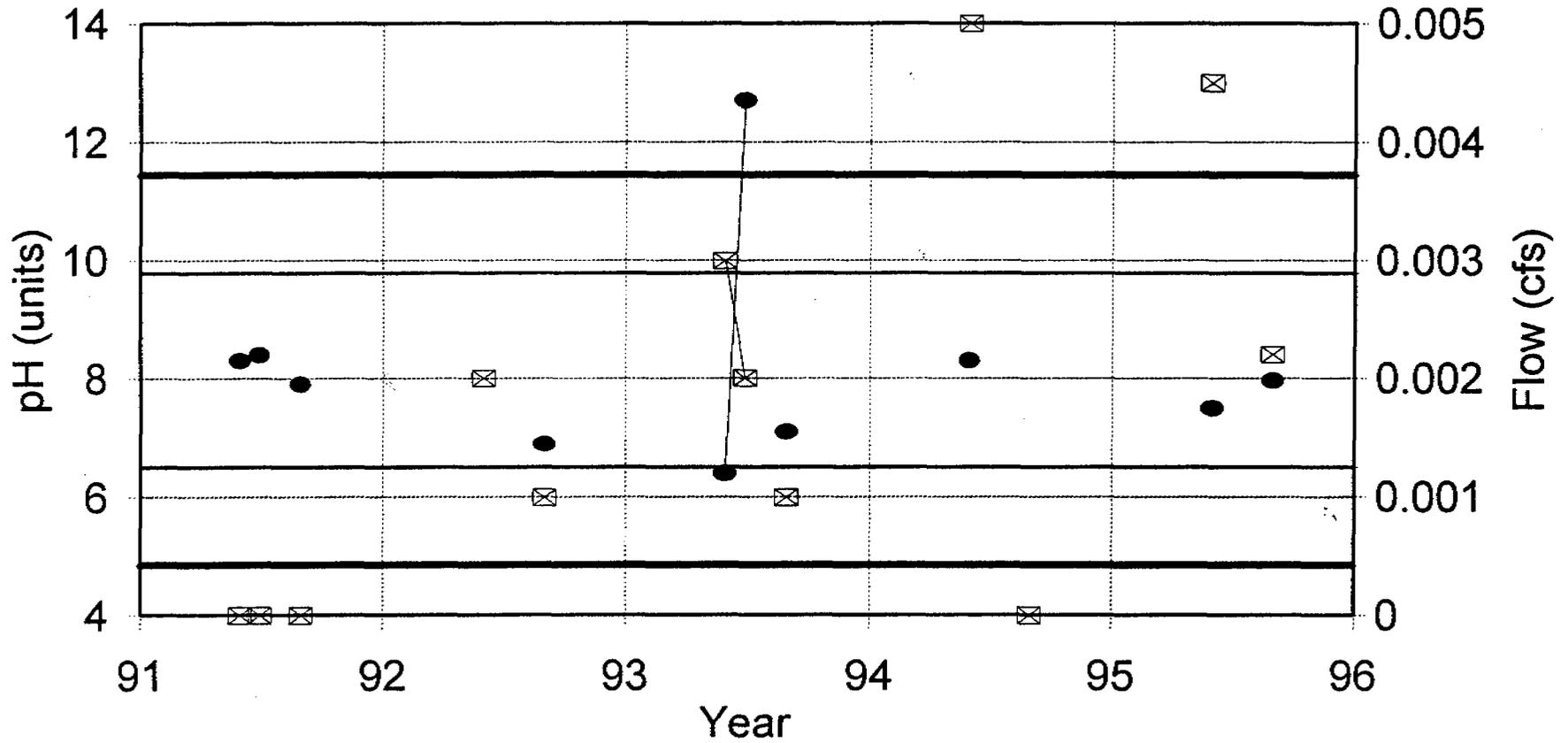
# Station 494

## Monthly Precipitation vs. Flow



# Station 494

pH vs. Flow



● pH

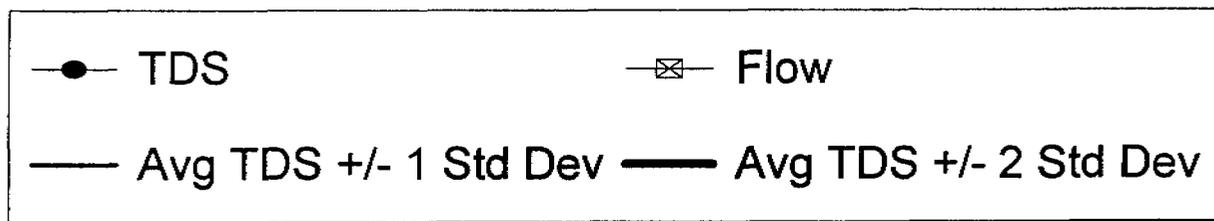
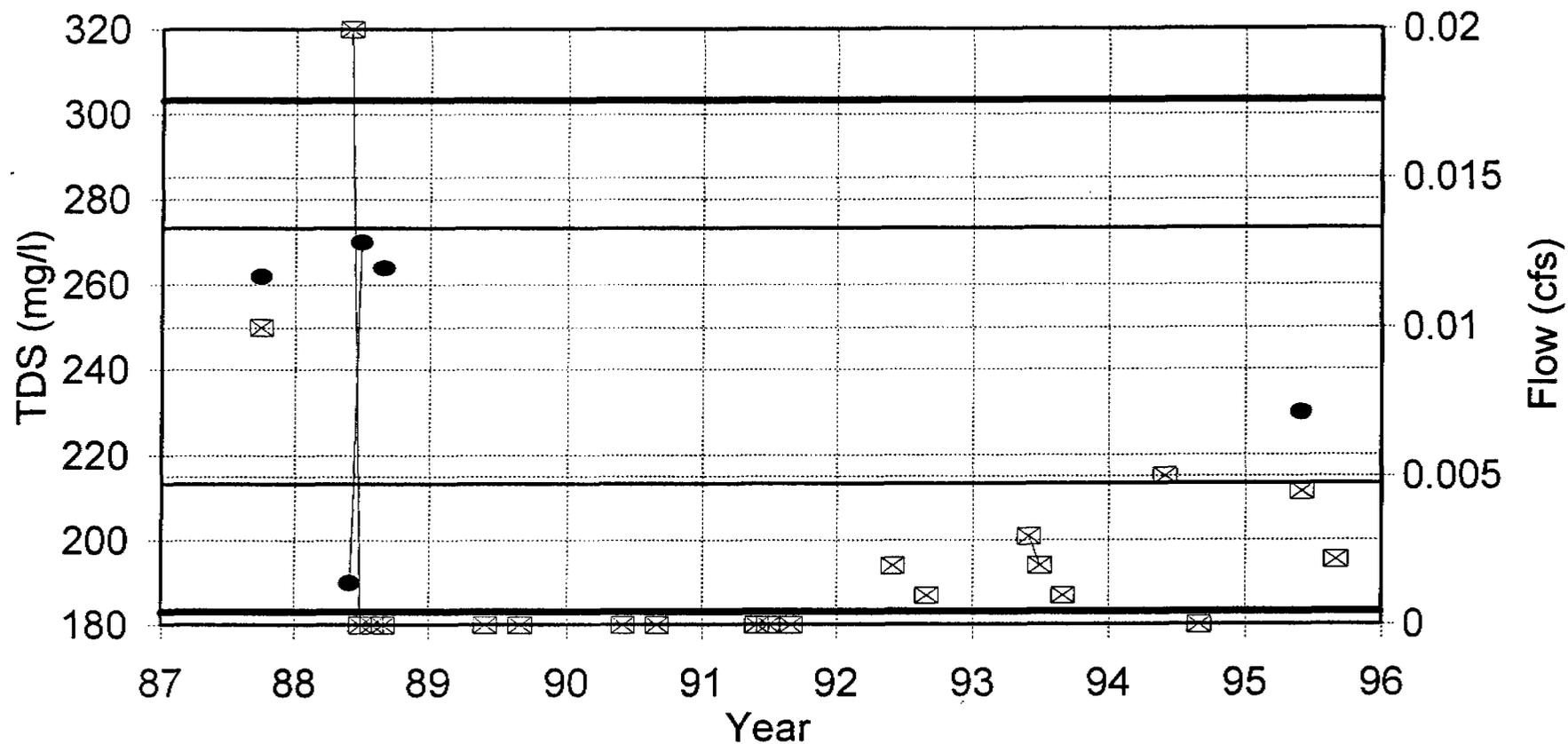
⊠ Flow

— Avg pH +/- 1 Std Dev

— Avg pH +/- 2 Std Dev

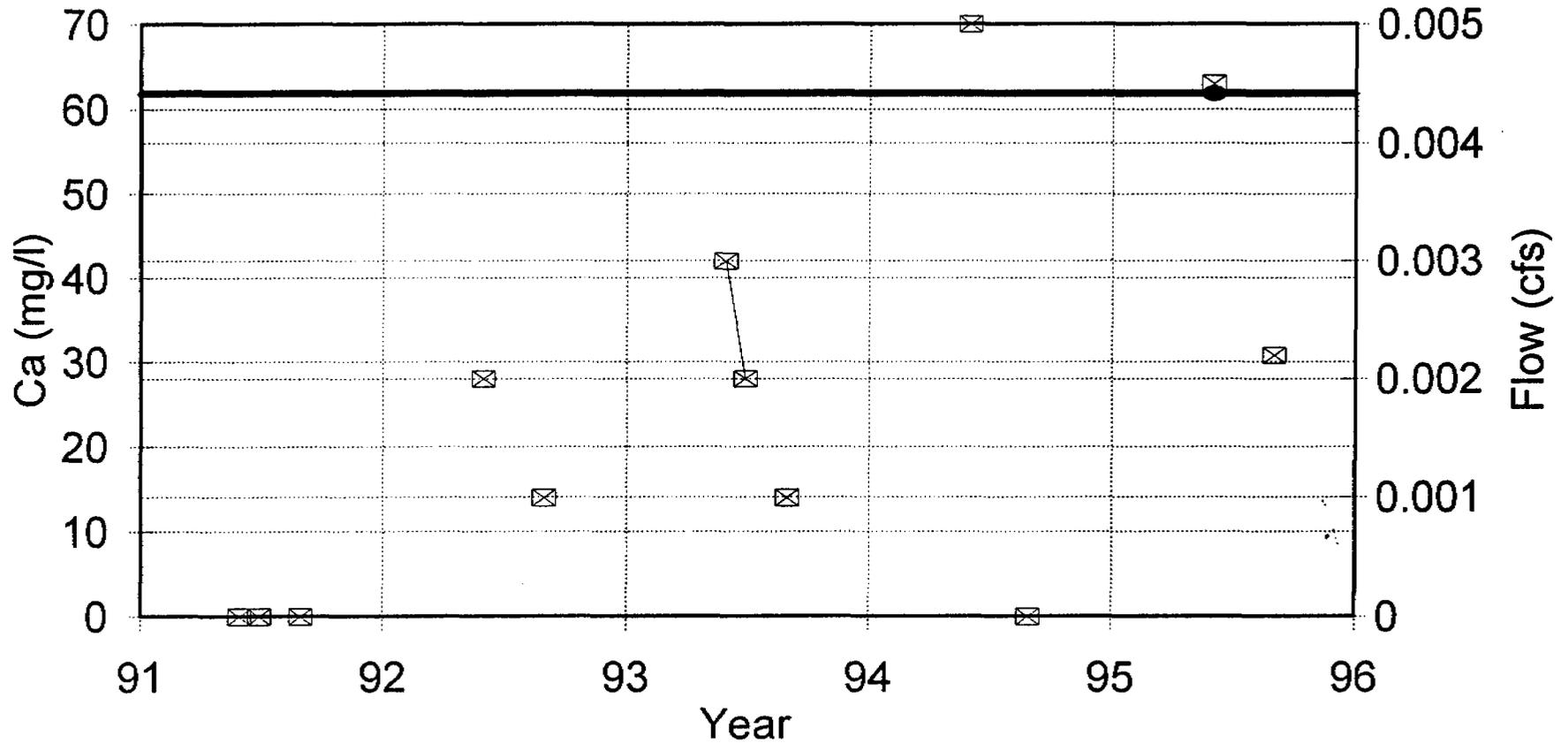
# Station 494

## TDS vs. Flow



# Station 494

Ca vs. Flow



● Ca

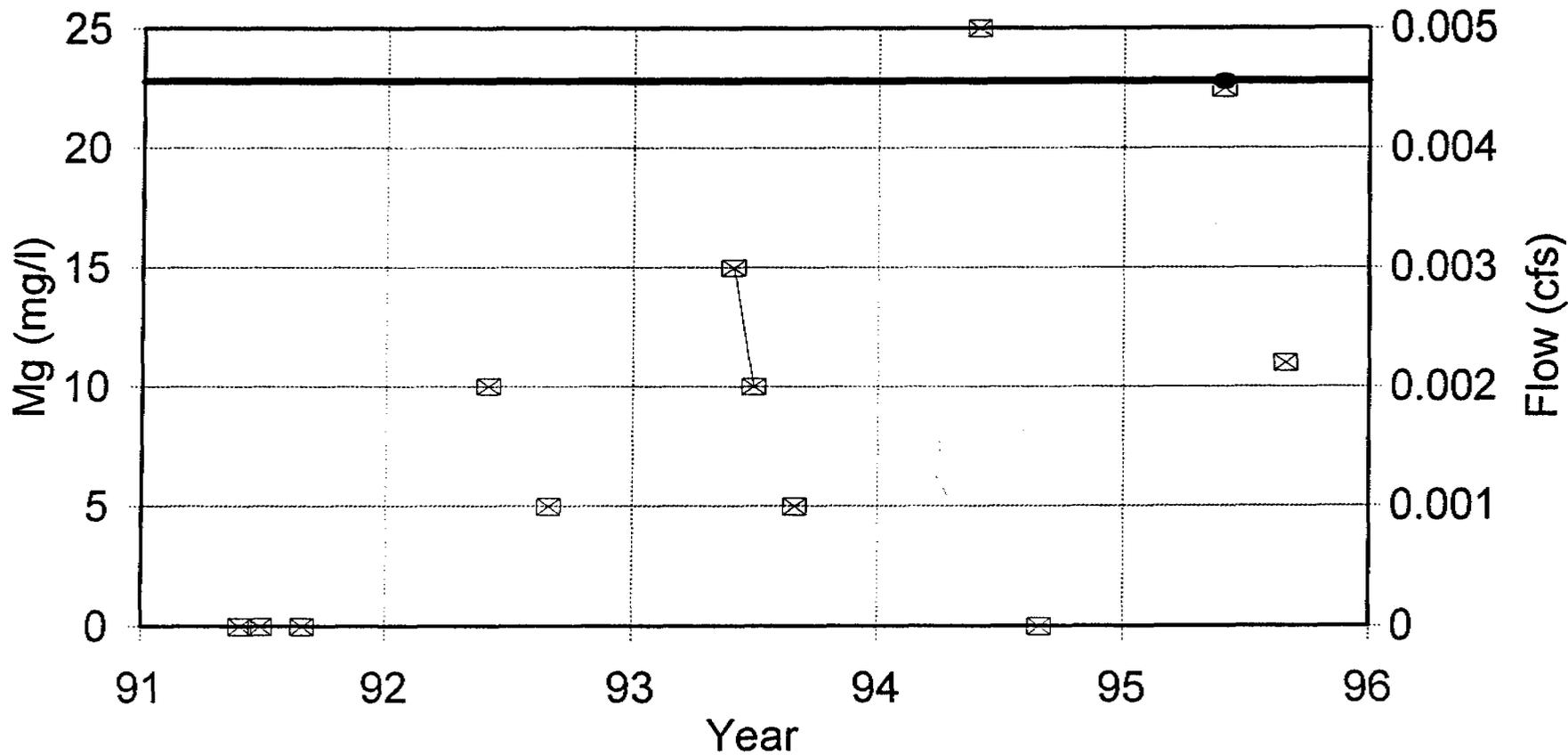
⊠ Flow

— Avg Ca +/- 1 Std Dev

— Avg Ca +/- 2 Std Dev

# Station 494

## Mg vs. Flow



● Mg

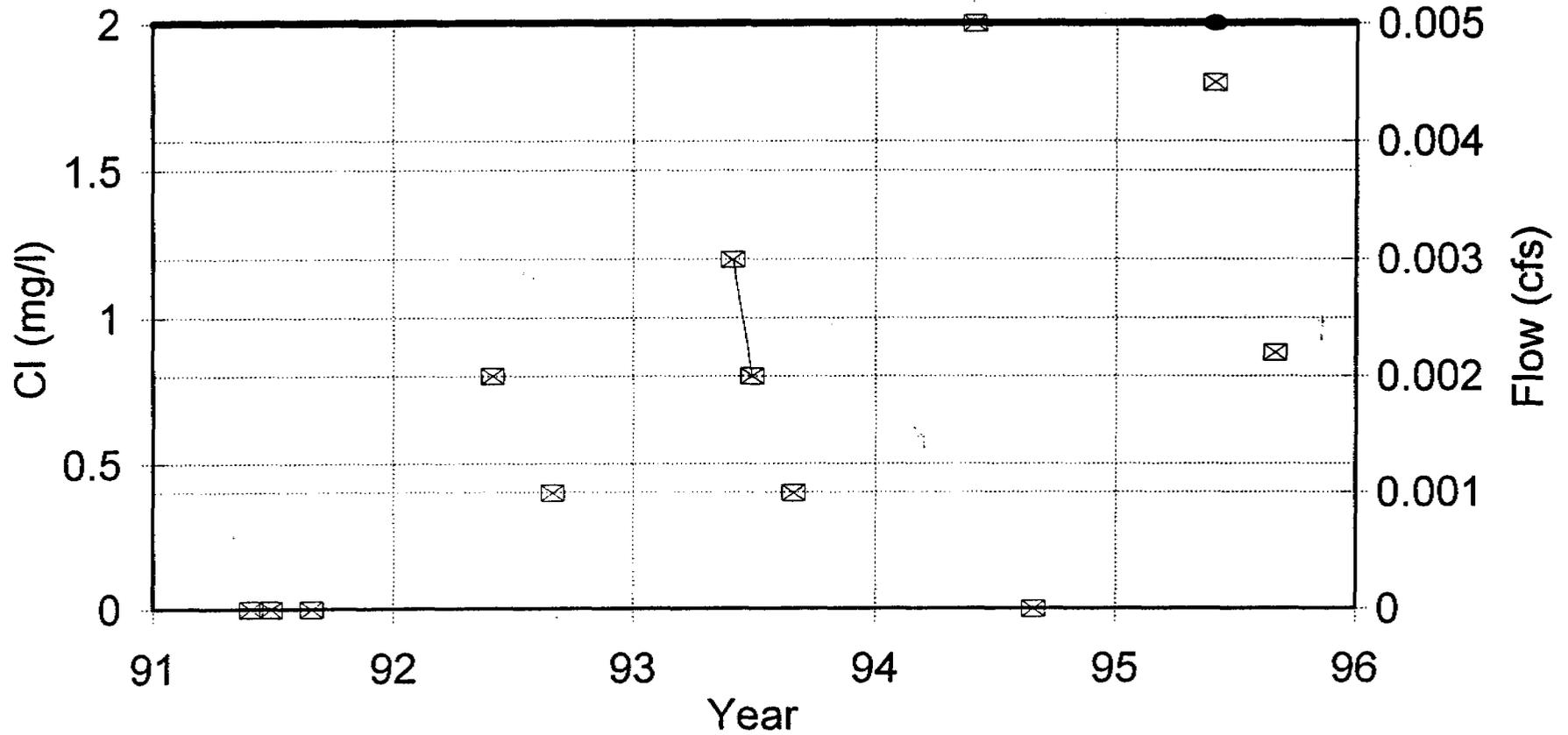
⊠ Flow

— Avg Mg +/- 1 Std Dev

— Avg Mg +/- 2 Std Dev

# Station 494

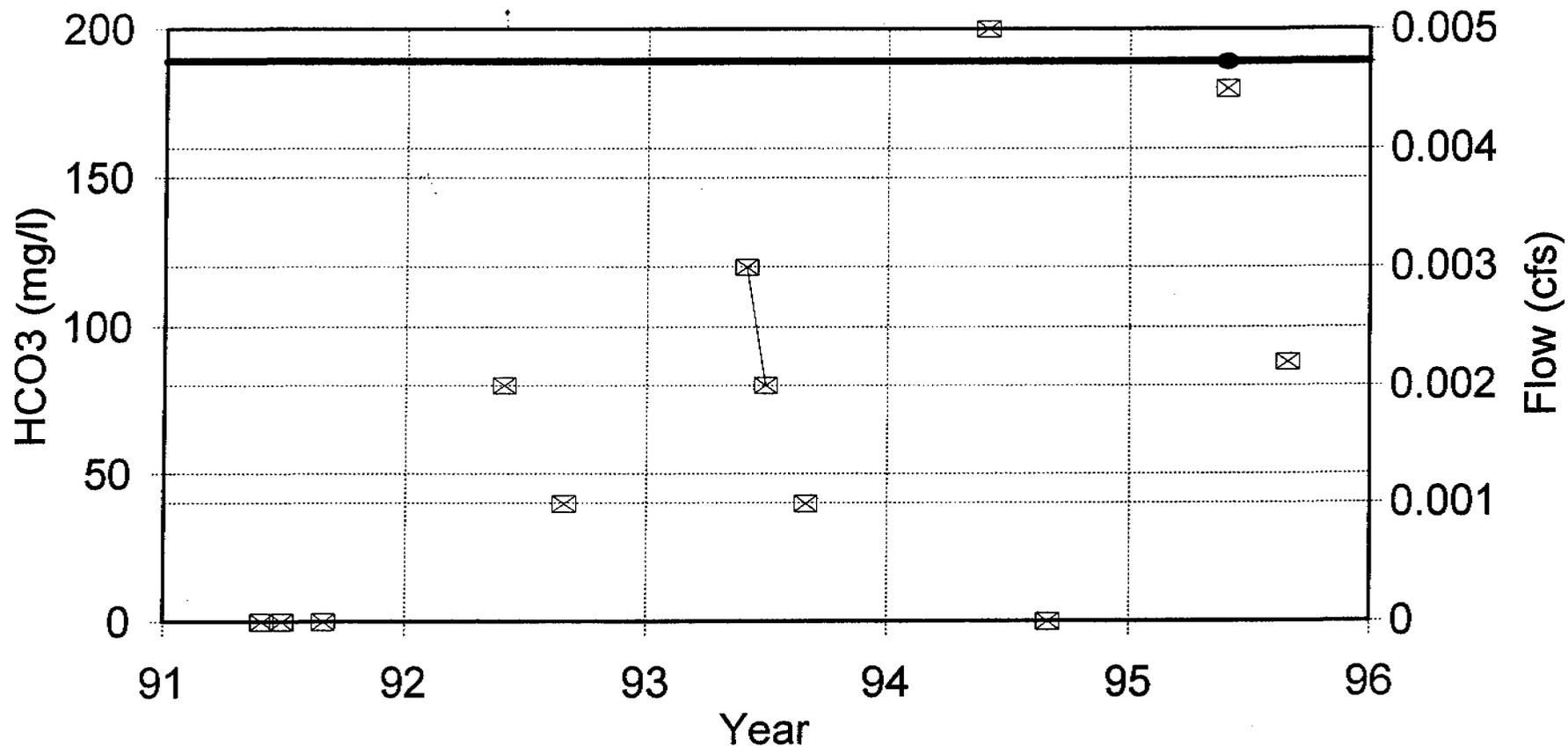
Cl vs. Flow



● Cl      ⊠ Flow  
— Avg Cl +/- 1 Std Dev      — Avg Cl +/- 2 Std Dev

# Station 494

## HCO<sub>3</sub> vs. Flow



● HCO<sub>3</sub>

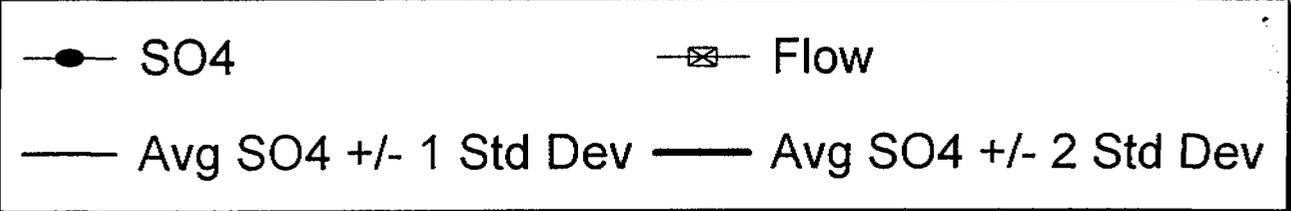
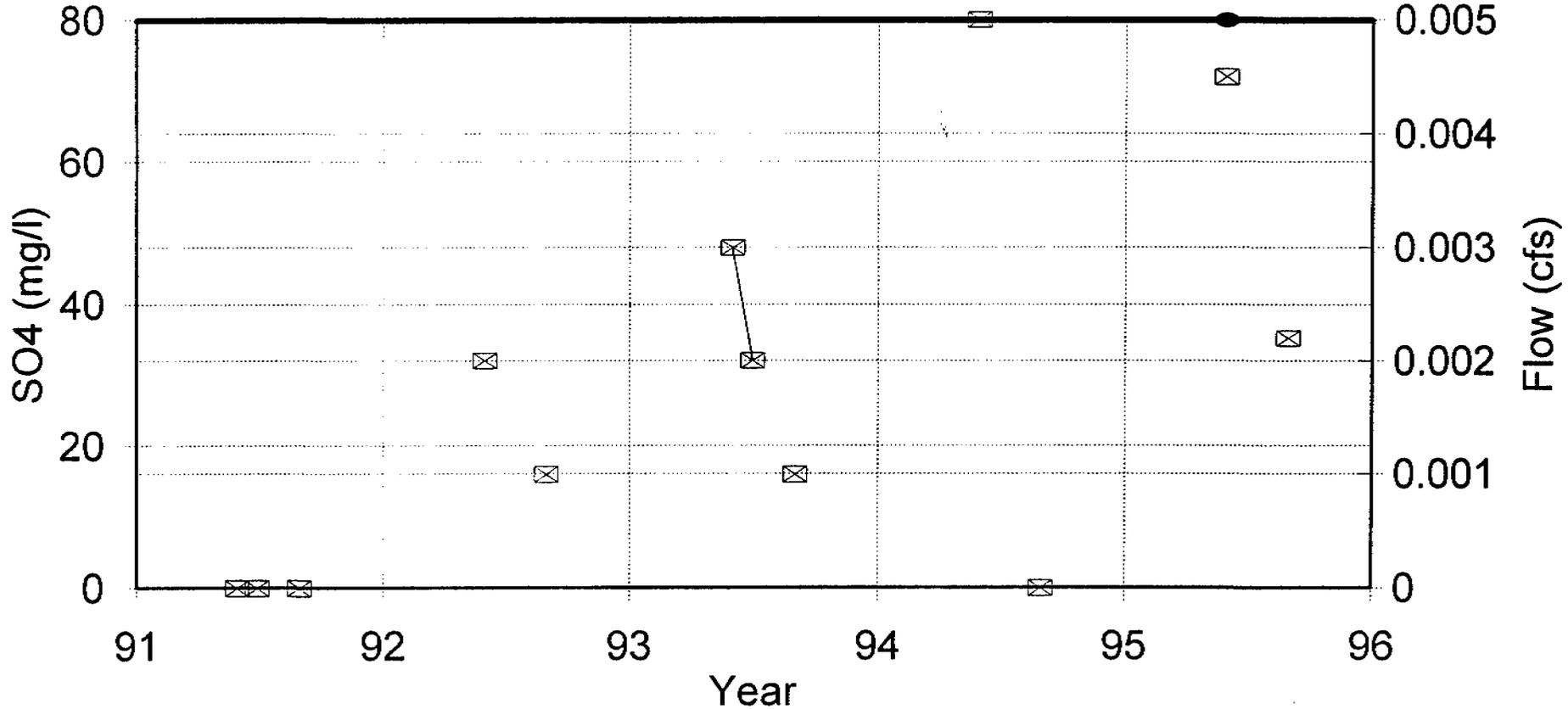
⊠ Flow

— Avg HCO<sub>3</sub> +/- 1 Std Dev

— Avg HCO<sub>3</sub> +/- 2 Std Dev

# Station 494

## SO4 vs. Flow





Cyprus Plateau Mining Company - Water Quality Data

Print Date: May 2, 1996

Station: S149		Property: Star Point				Location: 1000' N 100' W of SE com. Sec 15, T15S, R7E					Station Type: Spring		Sampling Frequency: Quarterly				Formation: Price River				Elevation: 9390		
Date		Field Measurements				Laboratory Measurements																	
Mo-Yr	Sample Date	Flow (cfs)	Ph (units)	Sp. Cond. (ohms)	Temp. (C)	TDS (mg/l)	TSS (mg/l)	O&G (mg/l)	Hd-CaCO3 (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (D) (mg/l)	SO4 (D) (mg/l)	Ca (D) (mg/l)	Mg (D) (mg/l)	K (D) (mg/l)	Na (D) (mg/l)	Cat/An Bal (%)	Fe (D) (mg/l)	Fe (T) (mg/l)	Mn (T) (mg/l)	Comments	
Jan-91																							
Feb-91																							
Mar-91																							
Apr-91																							
May-91																							
Jun-91	06/12/91	0.24	7.2	500	4	324			228	268	12	3	14	70	13	1	2	<	0.02 <	0.02 <	0.01		
Jul-91	07/15/91	0.05	7.5	430	6																		
Aug-91																							
Sep-91	08/17/91	0.01	8.2	490	7	298			263	300	0	1	19	79	16 <	1	3		0.06	0.31	0.01		
Oct-91																							
Nov-91																							
Dec-91																							
Jan-92																							
Feb-92																							
Mar-92																							
Apr-92																							
May-92	05/19/92	0.0847	7.6	552	5.1	322			303	310	0	1	54	90	19	1	3	<	0.02 <	0.02			
Jun-92	07/16/92	0.019	7.2	583	5.9																		
Jul-92	08/26/92	0.015	6.7	620	6.2																		
Aug-92	08/26/92	0.015	6.7	620	6.2																		
Sep-92	09/21/92	0.011	6.1	649	6.5	396			300	305	0	2	70	79	25	1	10		0.04	1.28			
Oct-92																							
Nov-92																							
Dec-92																							
Jan-93																							
Feb-93																							
Mar-93																							
Apr-93																							
May-93																							
Jun-93	06/21/93	0.125	6	533	5.4	302			310	317	0	2	70	88	22	1	3	<	0.02 <	0.02 <	0.01		
Jul-93	07/27/93	0.029	8.2	550	6	350			334	322	0	2	47	91	26	1	3	<	0.02	0.56 <	0.01		
Aug-93	08/17/93	0.021	8.1	557	6.8																		
Sep-93	09/27/93	0.012	6.2	610	6.3	382			320	332	0	2	77	87	25	1	3	<	0.02	1.72	0.02		
Oct-93																							
Nov-93																							
Dec-93																							
Jan-94																							
Feb-94																							
Mar-94																							
Apr-94																							
May-94																							
Jun-94	06/09/94	0.067	7.4	629	4.2	348			293	320	0	2	45	81	22	1	3	<	0.02 <	0.02 <	0.01		
Jul-94	07/19/94	0.02	7.8	604	12.8	328			327	361	14	2	8	88	26	2	4	<	0.02	0.13 <	0.01		
Aug-94	08/31/94	0.006																					
Sep-94	09/21/94	0.01	7.8	643	8.6	382			373	323	0	2	77	100	30	2	4		0.09	0.1 <	0.01	RAIN IN A.M. = -10". LO	
Oct-94																							
Nov-94																							
Dec-94																							
Jan-95																							
Feb-95																							
Mar-95																							
Apr-95																							
May-95																							
Jun-95	06/21/95	0.57	7.3	572	6	300			288	235 <	2 <	1	40	81.9	20.3	1.5	3.2	3.5 <	0.01 <	0.01 <	0.005		
Jul-95	07/28/95	0.033	7.3	554	7	320			322	255 <	2	2	50	88.2	24.6	1.4	3.5	3.2 <	0.01	0.19 <	0.005		
Aug-95	08/23/95	0.033	7.14	548	8																		
Sep-95	09/27/95	0.03	7.3	561	7	360			343	274 <	2	3	65	92.2	27.4	1.6	3.5	0.9	0.02	0.01 <	0.005		
Oct-95																							
Nov-95																							
Dec-95																							
Jan-96																							
END DATA																							
Count		38	18	18	18	22	0	0	13	13	13	13	13	13	13	13	13	3	13	13	11		
Minimum		0	6	430	4	256	ERR	ERR	226	235 <	0 <	1	8	70	13 <	1	2	0.9 <	0.01 <	0.01 <	0.005		
Maximum		0.57	8.2	649	12.8	396	ERR	ERR	373	361 <	14 <	3	77	100	30 <	2	10	3.5 <	0.09 <	1.72 <	0.02		
Average		0.0538	7.0578	565.83	6.6	313.68	ERR	ERR	308	301.89 <	2.4816 <	1.9231	48.923	85.792	22.792 <	1.2892	3.7077	2.5333 <	0.0285 <	0.3377 <	0.0095		
Standard Deviation		0.096	0.6578	54.849	1.8702	40.242	ERR	ERR	35.049	33.38 <	4.5845 <	0.6154	22.598	7.2565	4.6628 <	0.375	1.8817	1.1614 <	0.0218 <	0.5254 <	0.004		
Avg. -1 Std. Dev.		-0.044	6.3999	510.98	4.7298	273.44	ERR	ERR	272.95	268.31 <	-2.123 <	1.3077	26.325	78.536	18.23 <	0.8943	1.826	1.3719 <	0.0067 <	-0.188 <	0.0058		
Avg. +1 Std. Dev.		0.1519	7.7156	620.68	8.4702	353.92	ERR	ERR	343.05	335.07 <	7.0461 <	2.5385	71.521	93.049	27.355 <	1.6442	5.5894	3.8948 <	0.0502 <	0.8631 <	0.0135		

Cyprus Plateau Mining Company - Water Quality Data

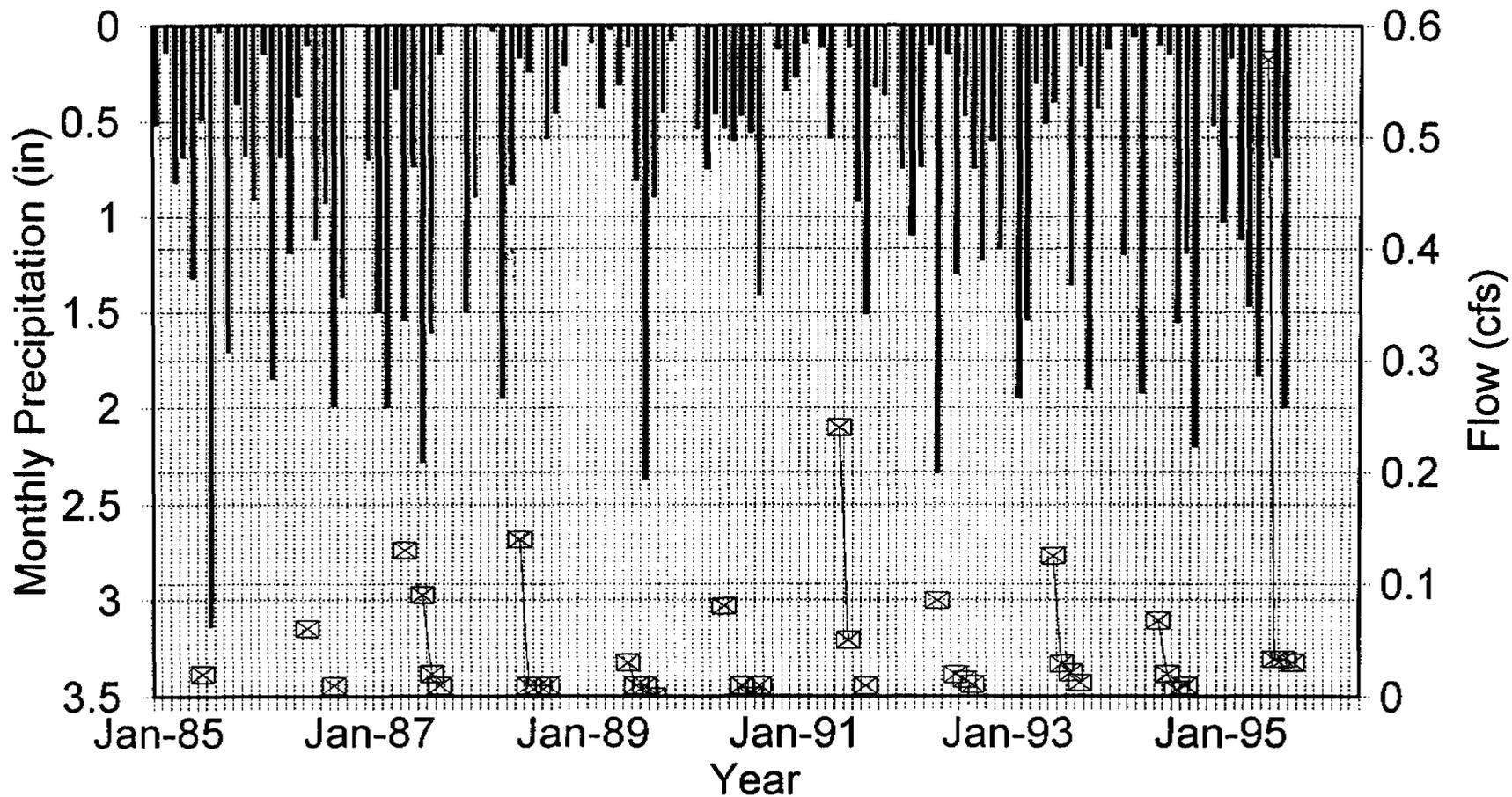
Print Date: May 2, 1996

Station: S149		Property: Star Point				Location: 1000' N 100' W of SE cor. Sec. 15, T15S, R7E				Station Type: Spring		Sampling Frequency: Quarterly				Formation: Price River				Elevation: 9390	
Date	Field Measurements				Laboratory Measurements																Comments
Mo-Yr	Sample Date	Flow (cfs)	Ph (units)	Sp. Cond. (ohms)	Temp. (C)	TDS (mg/l)	TSS (mg/l)	O&G (mg/l)	Hd-CaCO3 (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (D) (mg/l)	SO4 (D) (mg/l)	Ca (D) (mg/l)	Mg (D) (mg/l)	K (D) (mg/l)	Na (D) (mg/l)	Ca/An Bal (%)	Fe (D) (mg/l)	Fe (T) (mg/l)	
	Avg. -2 Std. Dev.	-0.142	5.7421	456.14	2.8595	233.2	ERR	ERR	237.9	234.93 <	-6.707 <	0.6923	3.7263	71.279	13.667 <	0.5193	-0.056	0.2105 <	-0.015 <	-0.713 <	0.0016
	Avg. +2 Std. Dev.	0.2499	8.3735	675.53	10.34	394.17	ERR	ERR	378.1	368.45 <	11.631 <	3.1538	94.12	100.31	31.918 <	2.0191	7.471	4.8562 <	0.072 <	1.3885 <	0.0175

NOTE: The "<" symbol indicates that "Less Than" data was found in the data set; statistics are approximate.

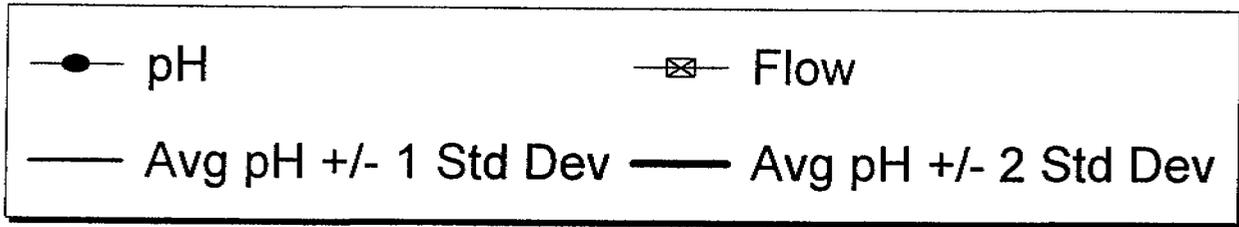
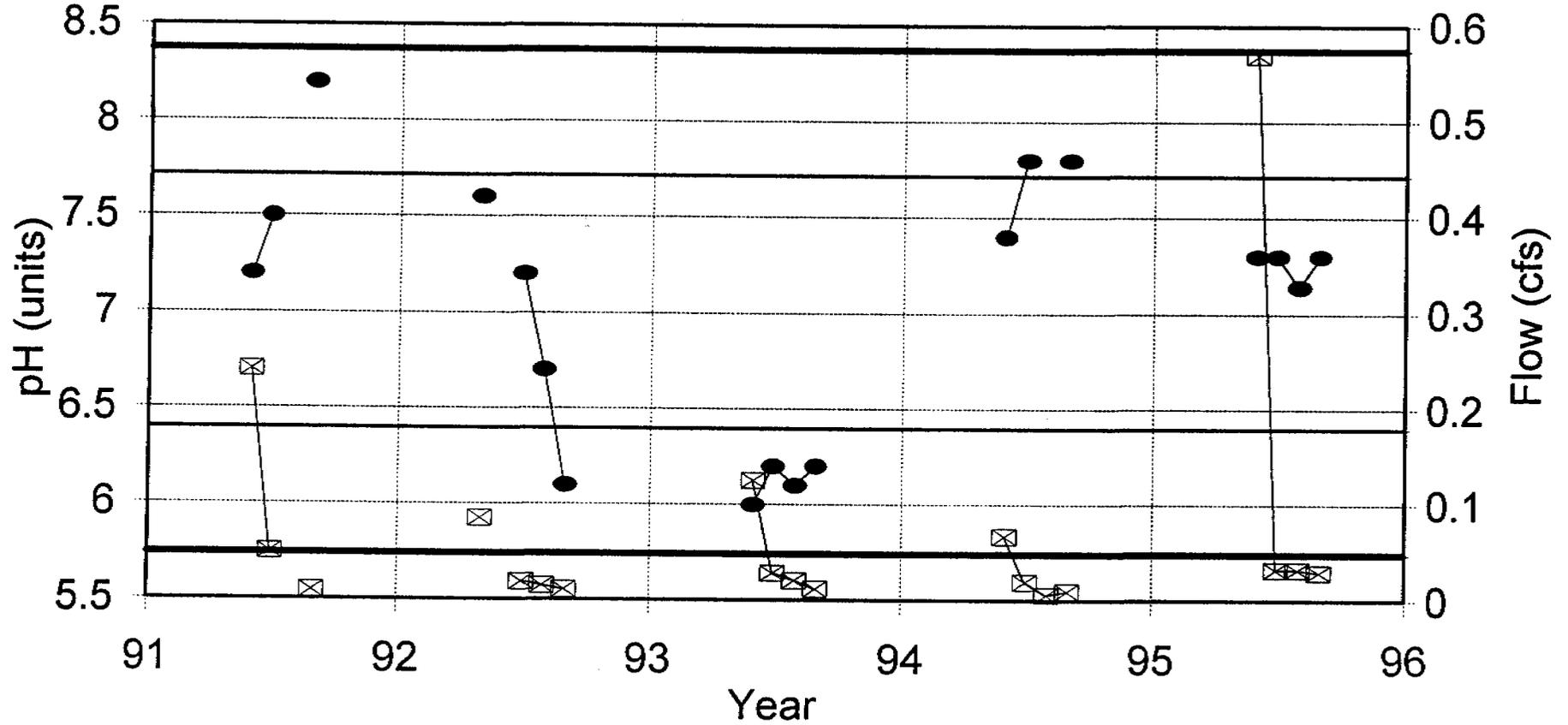
# Station S149

## Monthly Precipitation vs. Flow



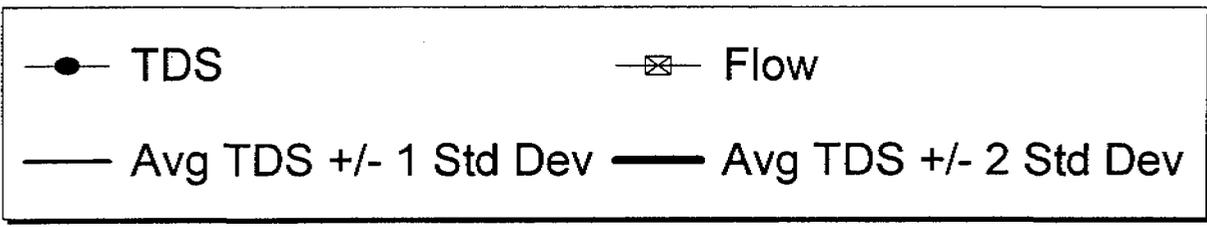
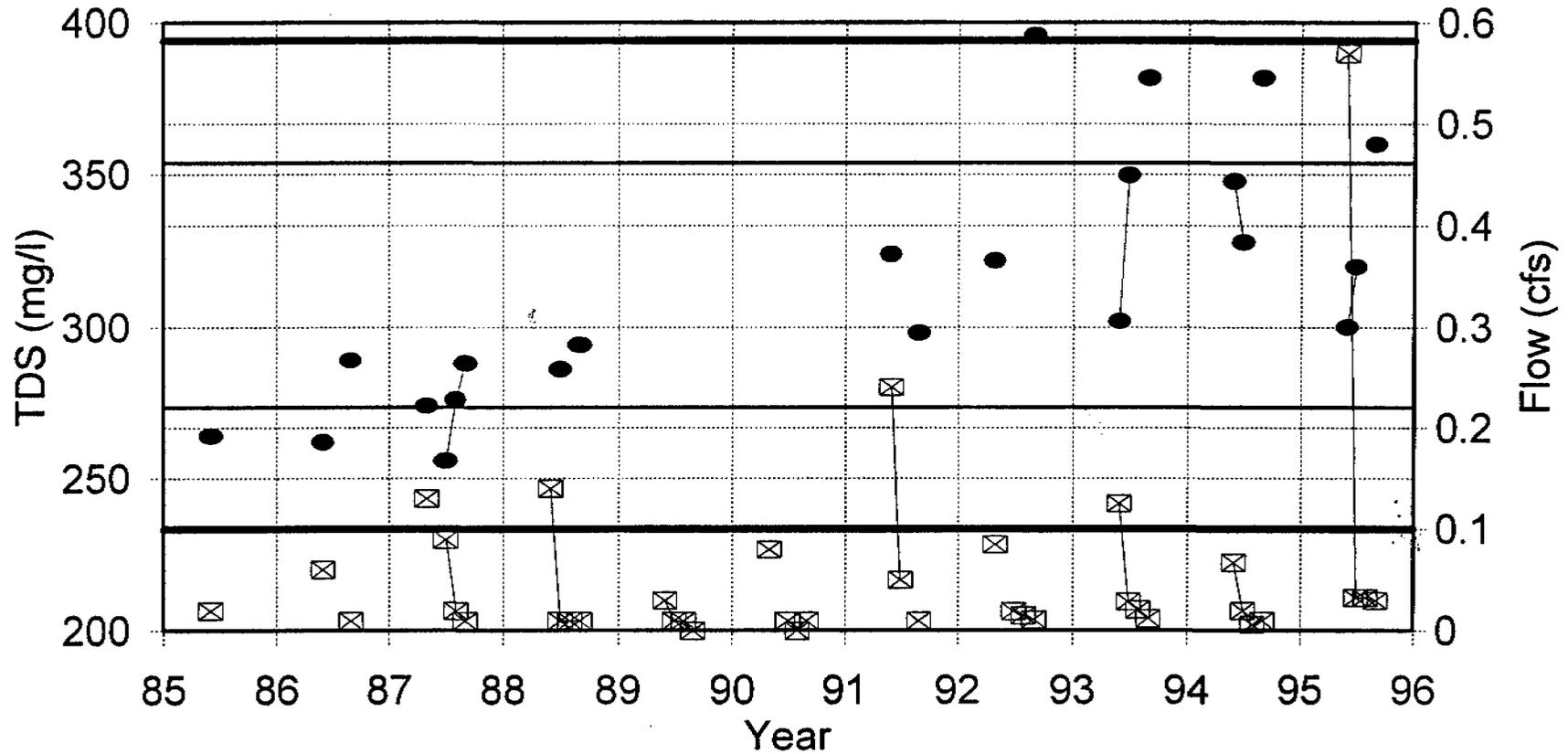
# Station S149

pH vs. Flow



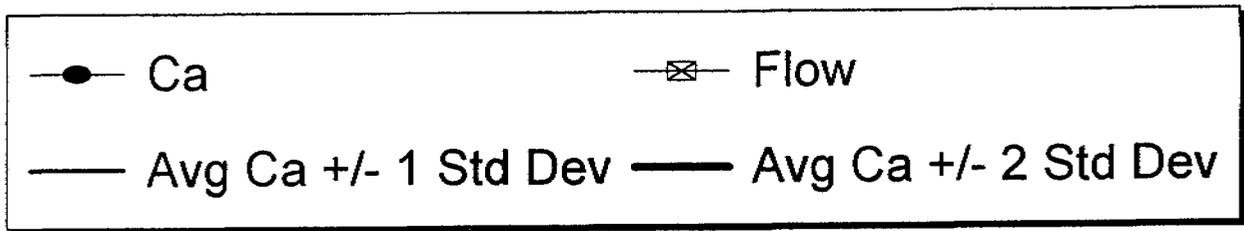
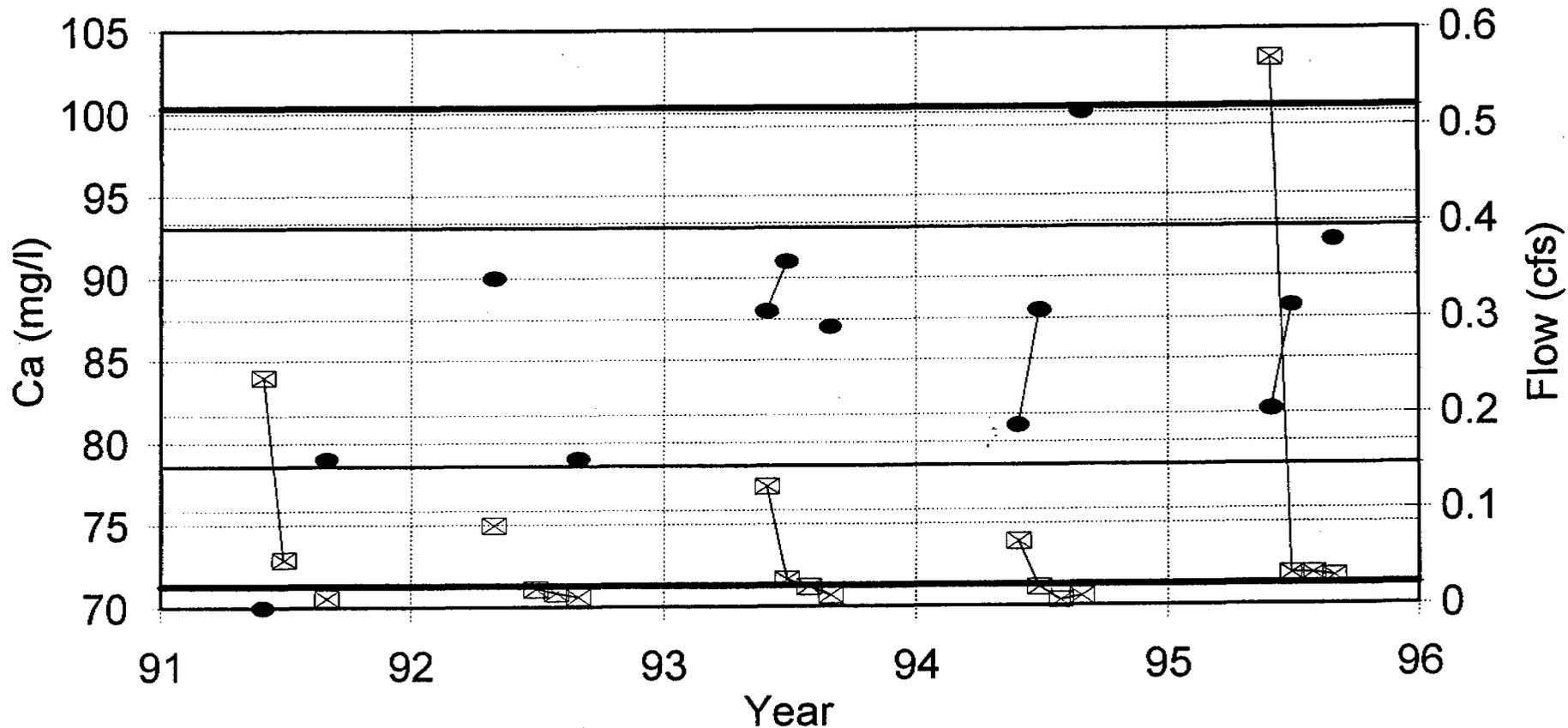
# Station S149

## TDS vs. Flow



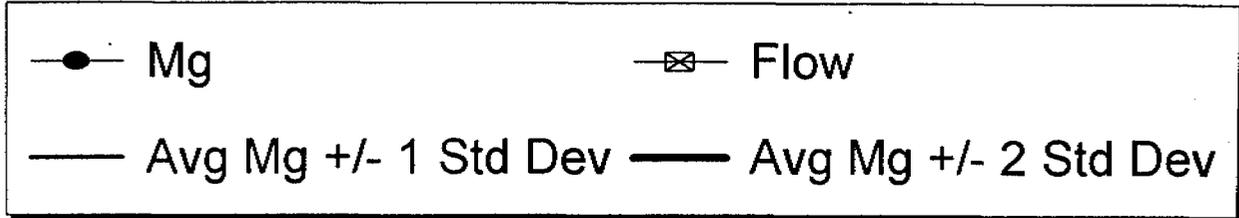
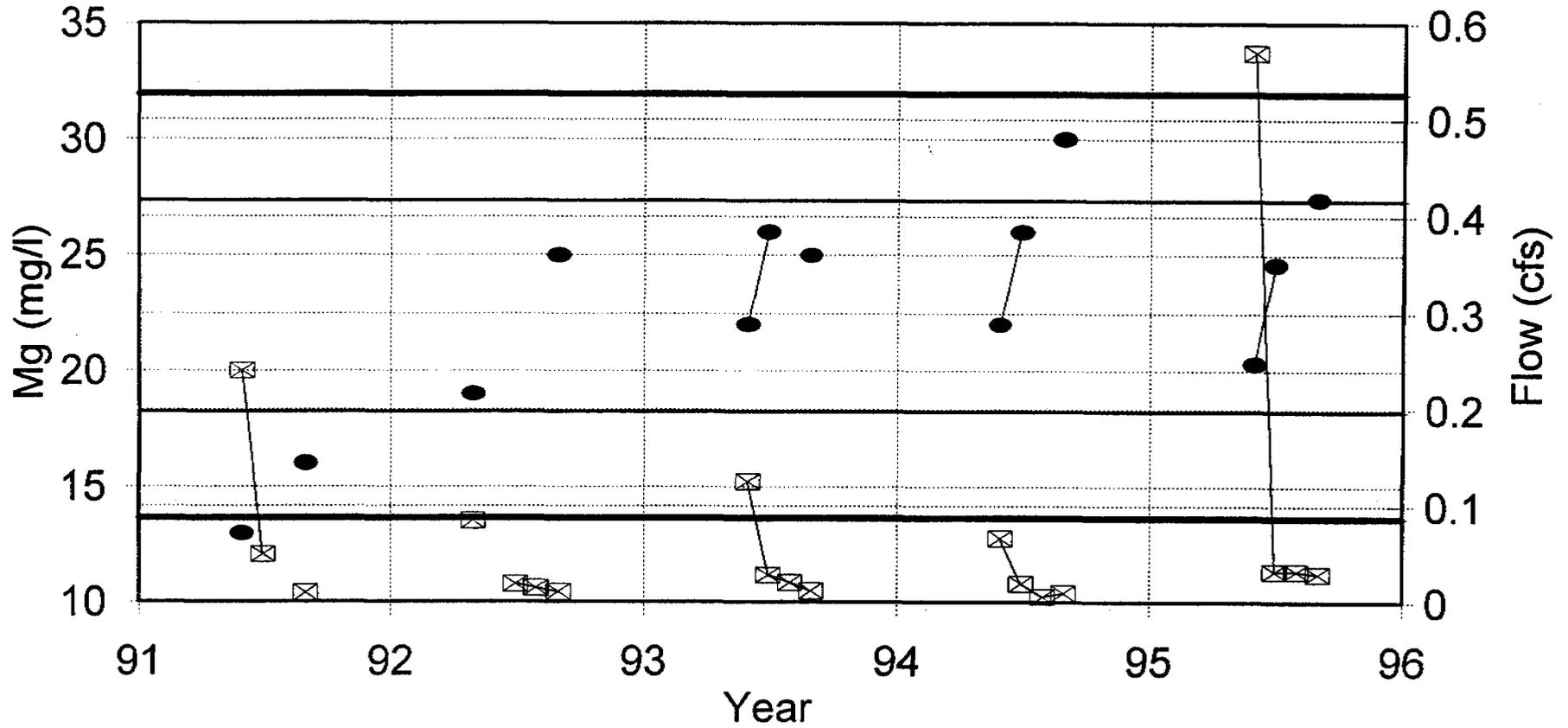
# Station S149

## Ca vs. Flow



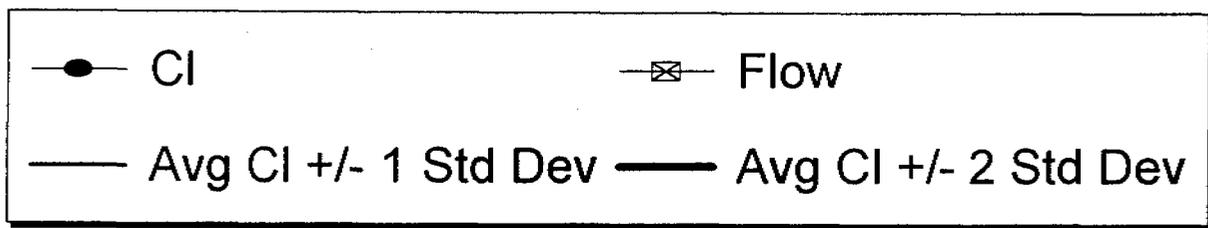
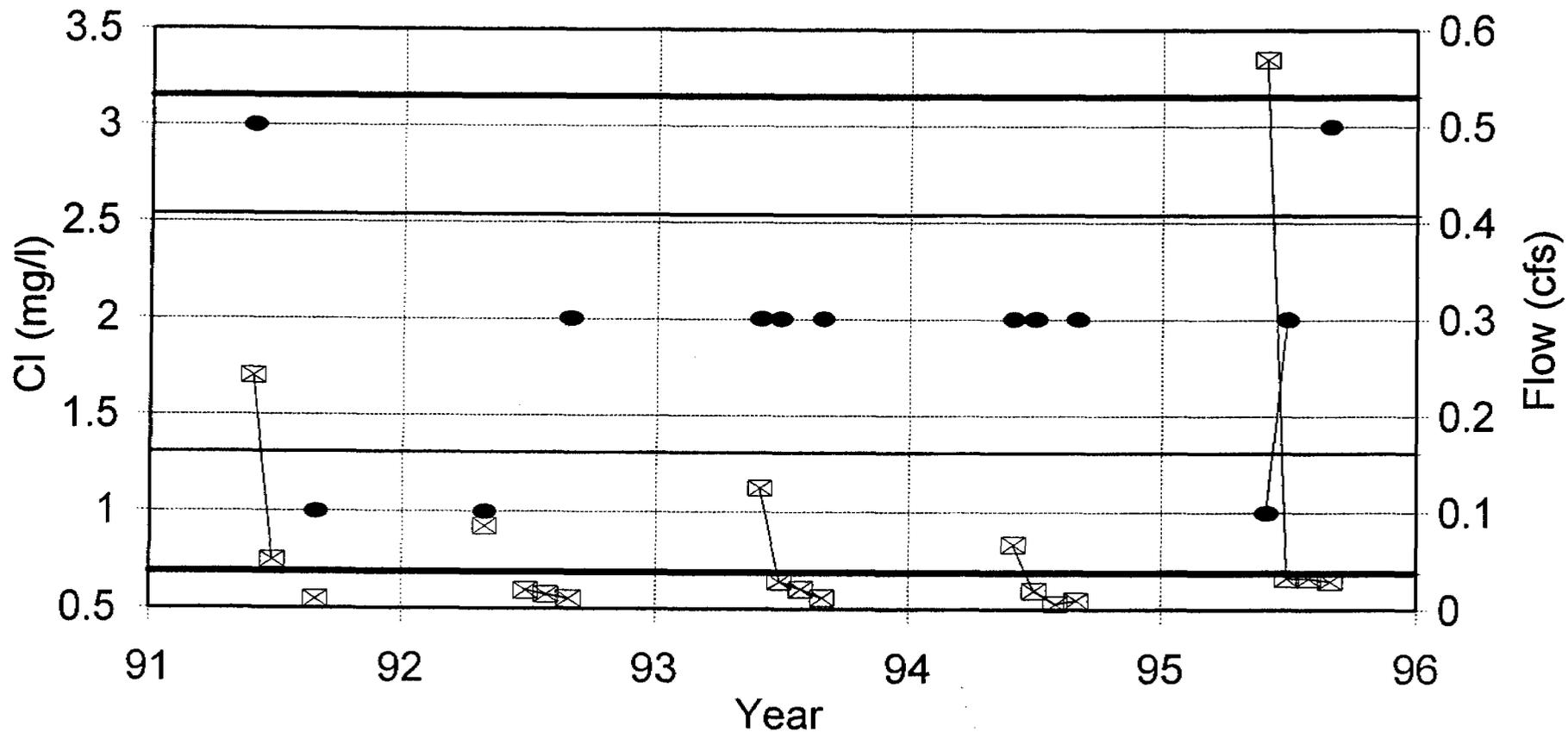
# Station S149

## Mg vs. Flow



# Station S149

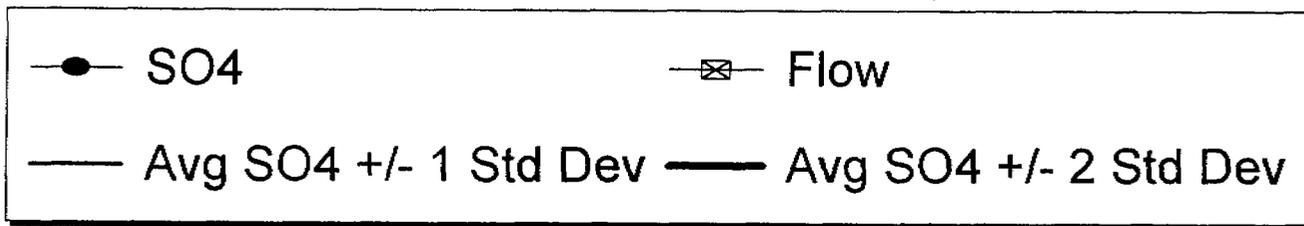
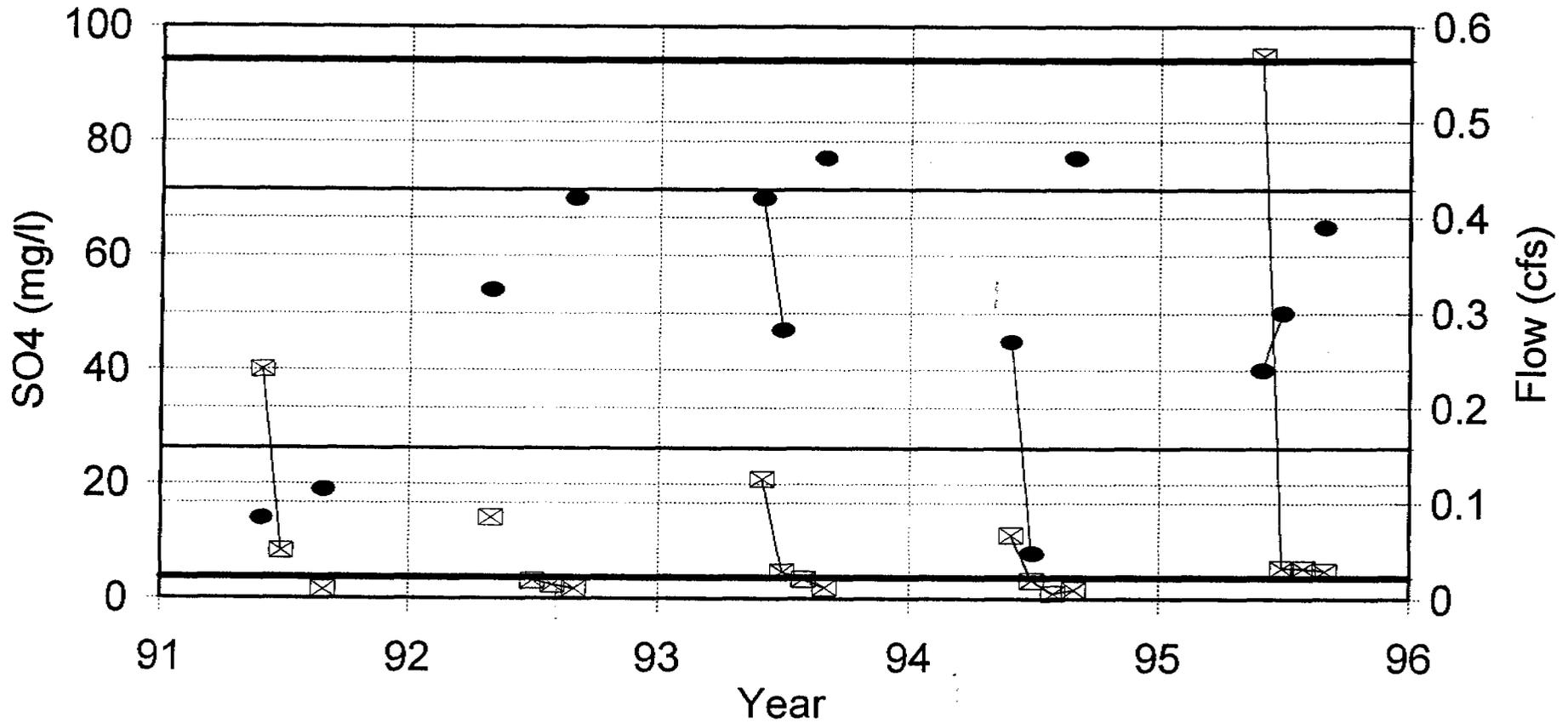
Cl vs. Flow





# Station S149

## SO4 vs. Flow



Cyprus Plateau Mining Company - Water Quality Data

Station: S182 Property: Star Point Location: 300' S 2125' W of NE cor. Sec 18, T15S, R8E Station Type: Spring Sampling Frequency: Quarterly Formation: Price River Elevation: 9630 Print Date: May 2, 1996

Mo-Yr	Sample Date	Field Measurements				Laboratory Measurements																Comments
		Flow (cfs)	Ph (units)	Sp. Cond. (ohms)	Temp. (C)	TDS (mg/l)	TSS (mg/l)	O&G (mg/l)	Hd-CaCO3 (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (D) (mg/l)	SO4 (D) (mg/l)	Ca (D) (mg/l)	Mg (D) (mg/l)	K (D) (mg/l)	Na (D) (mg/l)	Ca/An Bal (%)	Fe (D) (mg/l)	Fe (T) (mg/l)	Mn (T) (mg/l)	
Jan-79																						
Feb-79																						
Mar-79																						
Apr-79																						
May-79																						
Jun-79																						
Jul-79																						
Aug-79																						
Sep-79	09/12/79	0																				
Oct-79																						
Nov-79																						
Dec-79																						
Jan-80																						
Feb-80																						
Mar-80																						
Apr-80																						
May-80																						
Jun-80																						
Jul-80																						
Aug-80																						
Sep-80	09/30/80	0				205																
Oct-80	10/22/80	0				248																
Nov-80	11/10/80	0				220																
Dec-80	12/30/80	0				260																
Jan-81	01/06/81																					IN-ACCESSIBLE - SNOW
Feb-81	02/04/81																					IN-ACCESSIBLE - SNOW
Mar-81	03/25/81																					IN-ACCESSIBLE - SNOW
Apr-81	04/28/81																					IN-ACCESSIBLE - SNOW
May-81	05/28/81																					IN-ACCESSIBLE - SNOW
Jun-81	06/16/81	0				150																IN-ACCESSIBLE - RAIN
Jul-81	07/31/81					185																
Aug-81	08/29/81	0				210																
Sep-81	09/24/81					228																
Oct-81	10/07/81	0.01				233																
Nov-81	11/24/81																					IN-ACCESSIBLE
Dec-81	12/29/81																					IN-ACCESSIBLE
Jan-82																						
Feb-82																						
Mar-82																						
Apr-82																						
May-82																						
Jun-82																						
Jul-82																						
Aug-82																						
Sep-82																						
Oct-82																						
Nov-82																						
Dec-82																						
Jan-83																						
Feb-83																						
Mar-83	03/24/83																					IN-ACCESSIBLE
Apr-83																						IN-ACCESSIBLE
May-83	05/12/83																					
Jun-83	06/29/83	0.01				147																
Jul-83																						
Aug-83																						
Sep-83																						
Oct-83	10/05/83	0				183																
Nov-83																						
Dec-83																						
Jan-84	01/06/84																					COVERED W/SNOW NO
Feb-84																						COVERED W/SNOW NO
Mar-84	03/30/84																					
Apr-84																						
May-84																						
Jun-84	06/21/84	0.01				166																
Jul-84																						
Aug-84																						
Sep-84																						
Oct-84	10/25/84					255																
Nov-84																						
Dec-84	12/11/84																					IN-ACCESSIBLE - SNOW

Cyprus Plateau Mining Company - Water Quality Data

Print Date: May 2, 1996  
Elevation: 9630

Station: S182		Property: Star Point				Location: 300' S 2125' W of NE cor. Sec 18, T15S, R8E				Station Type: Spring		Sampling Frequency: Quarterly		Formation: Price River				Elevation: 9630		Comments				
Date		Field Measurements				Laboratory Measurements																		
Mo-Yr	Sample Date	Flow (cfs)	Ph (units)	Sp. Cond. (ohms)	Temp. (C)	TDS (mg/l)	TSS (mg/l)	O&G (mg/l)	Hd-CaCO3 (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (D) (mg/l)	SO4 (D) (mg/l)	Ca (D) (mg/l)	Mg (D) (mg/l)	K (D) (mg/l)	Na (D) (mg/l)	Cat/An Bal (%)	Fe (D) (mg/l)		Fe (T) (mg/l)	Mn (T) (mg/l)		
Jan-85	Feb-85	02/21/85																						IN-ACCESSIBLE - SNOW
Mar-85	Apr-85																							
May-85	Jun-85	06/13/85	0			163																		
Jul-85	Aug-85																							
Sep-85	Oct-85	09/24/85	0			235																		
Nov-85	Dec-85																							
Jan-86	Feb-86																							
Mar-86	Apr-86																							
May-86	Jun-86	07/11/86	0.03	6.9	253	7	170			159		3	25						0.14	0.14	<	0.01		
Jul-86	Aug-86																							
Sep-86	Oct-86	10/10/86	0				204			189		7	30						0.13	0.7		0.02		
Nov-86	Dec-86																							
Jan-87	Feb-87																							
Mar-87	Apr-87																							
May-87	Jun-87	05/22/87	0.06																					
Jul-87	Aug-87	07/19/87	0.01																					
Sep-87	Oct-87	08/12/87	0.01																					
Nov-87	Dec-87	09/22/87	0				206			206		3	16	64	13	1	5		0.08	<	0.02	<	0.01	
Jan-88	Feb-88																							
Mar-88	Apr-88																							
May-88	Jun-88	06/14/88	0.01				184			167		2	12	47	9	1	2		<	0.02	0.06	<	0.01	
Jul-88	Aug-88	07/15/88	0.01				206			195		4	19	53	11	<	1	6		0.02	<	0.02	<	0.01
Sep-88	Oct-88	08/19/88	0							206		4	23	57	13		1	3		0.03	0.03	<	0.01	
Nov-88	Dec-88	09/06/88	0																					
Jan-89	Feb-89																							
Mar-89	Apr-89																							
May-89	Jun-89	06/05/89	0				202			144		4	10	38	9	<	1	3		0.03	0.05	<	0.01	
Jul-89	Aug-89	07/11/89	0				222			190		3	21	57	12		2	4		<	0.02	0.03	<	0.01
Sep-89	Oct-89	08/22/89	0							200		2	21	56	13	<	1	4		<	0.02	0.04	<	0.01
Nov-89	Dec-89	09/15/89	0																					
Jan-90	Feb-90																							
Mar-90	Apr-90																							
May-90	Jun-90	06/04/90	0.01				226			177		3	14	50	10	<	1	4		0.03	0.13	<	0.01	
Jul-90	Aug-90	07/02/90	0				192			201		4	25	55	12		1	4		<	0.02	0.05	<	0.01
Sep-90	Oct-90	08/30/90	0																					
Nov-90	Dec-90	10/03/90	0				214			193		3	39	61	12	<	1	4		<	0.02	0.06	<	0.01

Cyprus Plateau Mining Company - Water Quality Data

Print Date: May 2, 1996

Station: S182 Property: Star Point Location: 300' S 2125' W of NE com. Sec 18, T15S, R8E Station Type: Spring Sampling Frequency: Quarterly Formation: Price River Elevation: 9630

Mo-Yr	Date	Field Measurements				Laboratory Measurements																Comments	
		Flow (cfs)	Ph (units)	Sp. Cond. (ohms)	Temp. (C)	TDS (mg/l)	TSS (mg/l)	O&G (mg/l)	Hd-CaCO3 (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (D) (mg/l)	SO4 (D) (mg/l)	Ca (D) (mg/l)	Mg (D) (mg/l)	K (D) (mg/l)	Na (D) (mg/l)	Cat/An Bal (%)	Fe (D) (mg/l)	Fe (T) (mg/l)	Mn (T) (mg/l)		
Jan-91																							
Feb-91																							
Mar-91																							
Apr-91																							
May-91																							
Jun-91	06/11/91	0																					NO FLOW
Jul-91	07/15/91	0																					
Aug-91																							
Sep-91																							
Oct-91																							
Nov-91																							
Dec-91																							
Jan-92																							
Feb-92																							
Mar-92																							
Apr-92																							
May-92																							
Jun-92																							
Jul-92																							
Aug-92																							
Sep-92																							
Oct-92																							
Nov-92																							
Dec-92																							
Jan-93																							
Feb-93																							
Mar-93																							
Apr-93																							
May-93																							
Jun-93	06/25/93	0																					NO FLOW
Jul-93	07/26/93	0																					NO FLOW
Aug-93	08/18/93	0																					NO FLOW
Sep-93	09/28/93	0																					NO FLOW
Oct-93																							
Nov-93																							
Dec-93																							
Jan-94																							
Feb-94																							
Mar-94																							
Apr-94																							
May-94																							
Jun-94	06/20/94	0																					NO FLOW
Jul-94	07/20/94	0																					NO FLOW
Aug-94	08/31/94	0																					NO FLOW
Sep-94	09/21/94	0																					NO FLOW
Oct-94																							
Nov-94																							
Dec-94																							
Jan-95																							
Feb-95																							
Mar-95																							
Apr-95																							
May-95																							
Jun-95	06/22/95	0.054	6.4	247	5	130			131	122 <	2	3	10	40.1	7.5	0.9	3.2	0.9	0.03	0.08 <	0.005		
Jul-95	07/27/95	0																					
Aug-95	08/23/95	0																					
Sep-95	09/28/95	0																					
Oct-95																							
Nov-95																							
Dec-95																							
Jan-96																							

END DATA																							
Count	45	2	2	2	28	0	0	1	13	1	13	13	11	11	11	11	1	13	13	13			
Minimum	0	6.4	247	5	130	ERR	ERR	131	122 <	2	2	10	38	7.5 <	0.9	2	0.9 <	0.02 <	0.02 <	0.005			
Maximum	0.06	6.9	263	7	260	ERR	ERR	131	206 <	2	7	39	64	13 <	2	8	0.9 <	0.14 <	0.7 <	0.02			
Average	0.006	6.65	256	6	202.07	ERR	ERR	131	180.89 <	2	3.4815	20.385	52.555	11.045 <	1.0818	3.8364	0.9 <	0.0454 <	0.1077 <	0.0104			
Standard Deviation	0.0126	0.25	6	1	31.875	ERR	ERR	0	24.87 <	0	1.2183	8.0244	7.7707	1.8148 <	0.2918	1.0156	0 <	0.0413 <	0.1748 <	0.0031			
Avg. -1 Std. Dev.	-0.008	6.4	247	5	170.2	ERR	ERR	131	155.82 <	2	2.2453	12.36	44.784	9.2307 <	0.7901	2.8208	0.9 <	0.0041 <	-0.067 <	0.0073			
Avg. +1 Std. Dev.	0.0176	6.9	263	7	233.95	ERR	ERR	131	205.96 <	2	4.6778	28.409	60.325	12.86 <	1.3736	4.8519	0.9 <	0.0868 <	0.2825 <	0.0135			

Cyprus Plateau Mining Company - Water Quality Data

Date		Field Measurements				Laboratory Measurements																Comments
Mo-Yr	Sample Date	Flow (cfs)	Ph (units)	Sp. Cond. (ohms)	Temp. (C)	TDS (mg/l)	TSS (mg/l)	O&G (mg/l)	Hd-CaCO3 (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (D) (mg/l)	SO4 (D) (mg/l)	Ca (D) (mg/l)	Mg (D) (mg/l)	K (D) (mg/l)	Na (D) (mg/l)	Cal/An Bal (%)	Fe (D) (mg/l)	Fe (T) (mg/l)	Mn (T) (mg/l)	
		-0.02	6.15	239	4	138.32	ERR	ERR	131	130.95 <	2	1.029	4.3359	37.013	7.4159 <	0.4983	1.8052	0.9 <	-0.037 <	-0.242 <	0.0042	
		0.0301	7.15	271	8	265.82	ERR	ERR	131	230.43 <	2	5.8941	36.433	68.096	14.675 <	1.6653	5.8675	0.9 <	0.1279 <	0.4574 <	0.0185	

NOTE: The "<" symbol indicates that "Less Than" data was found in the data set; statistics are approximate.

Print Date: May 2, 1996  
Elevation: 9630

Station: S182 Property: Star Point Location: 300' S 2125' W of NE cor. Sec 18, T15S, R8E

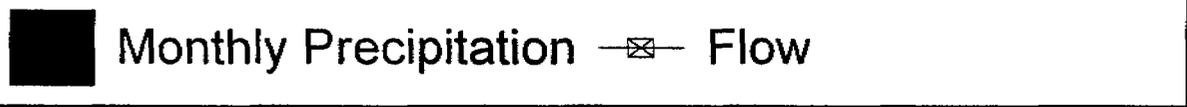
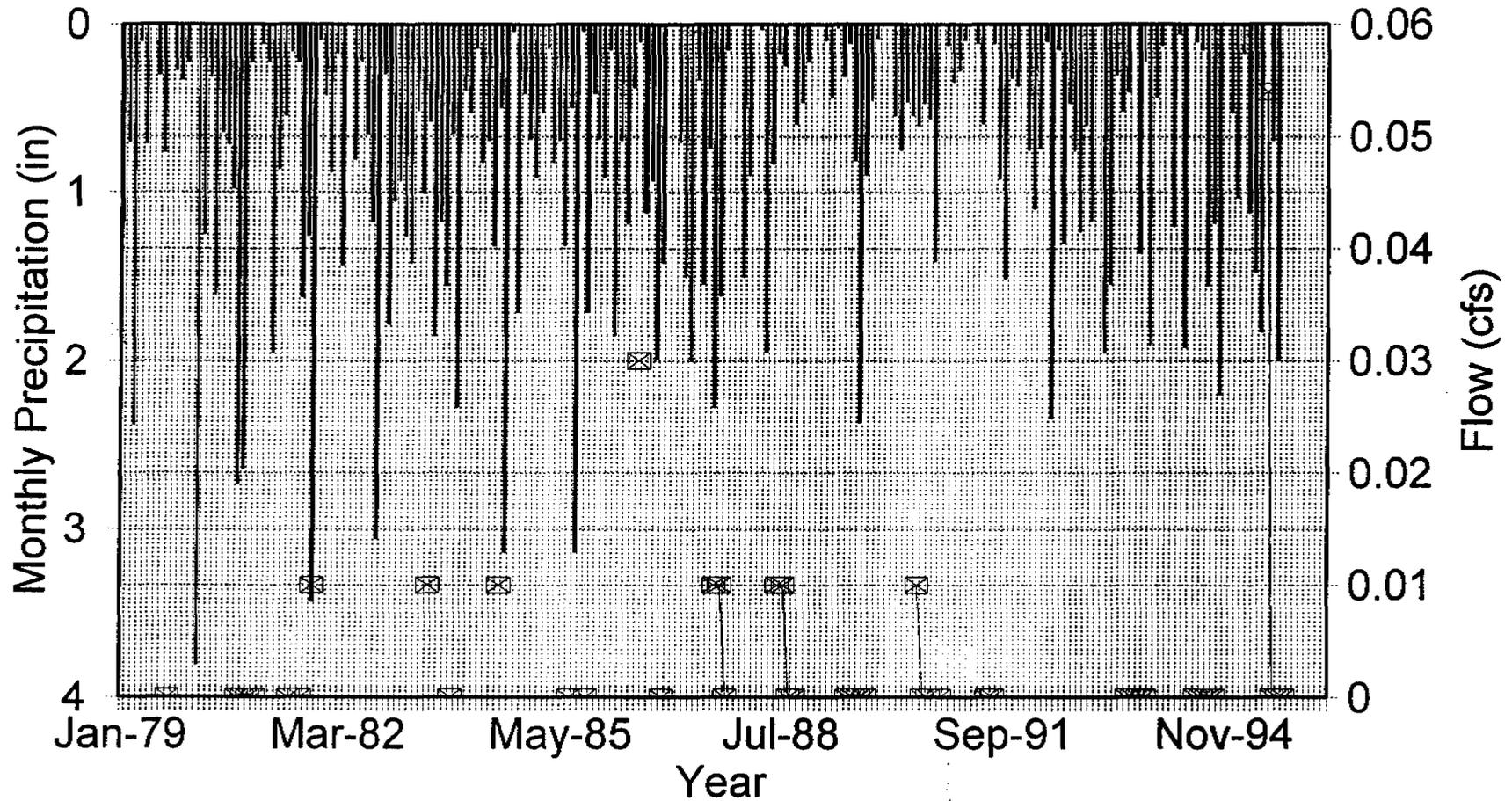
Station Type: Spring

Sampling Frequency: Quarterly

Formation: Price River

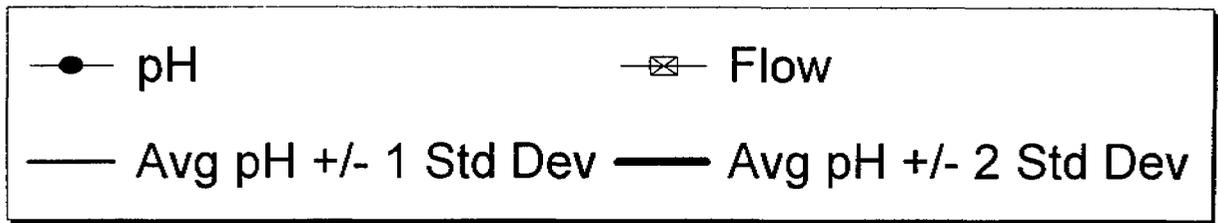
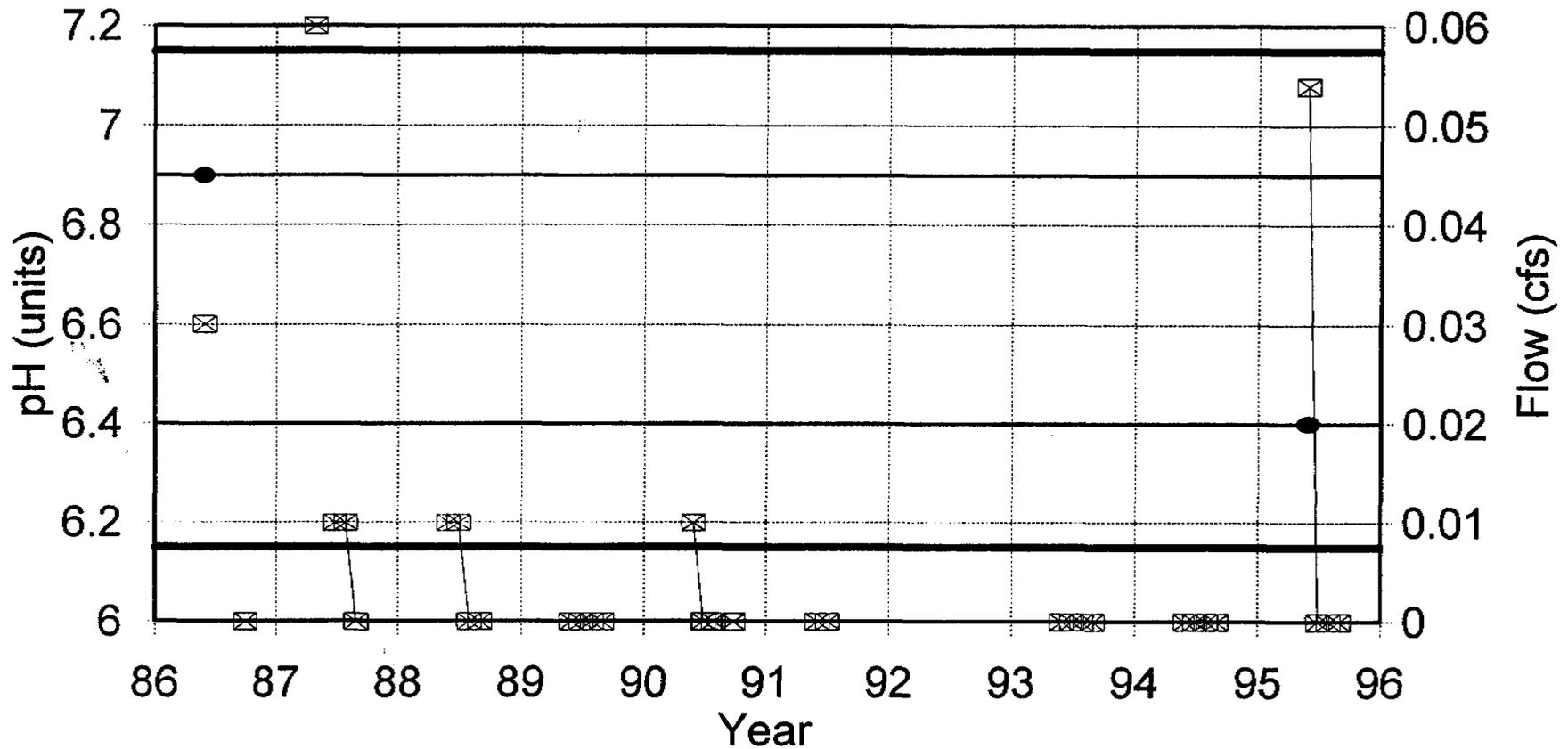
# Station S182

## Monthly Precipitation vs. Flow



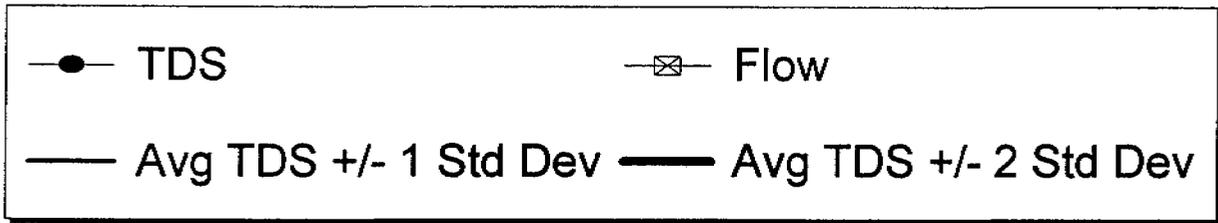
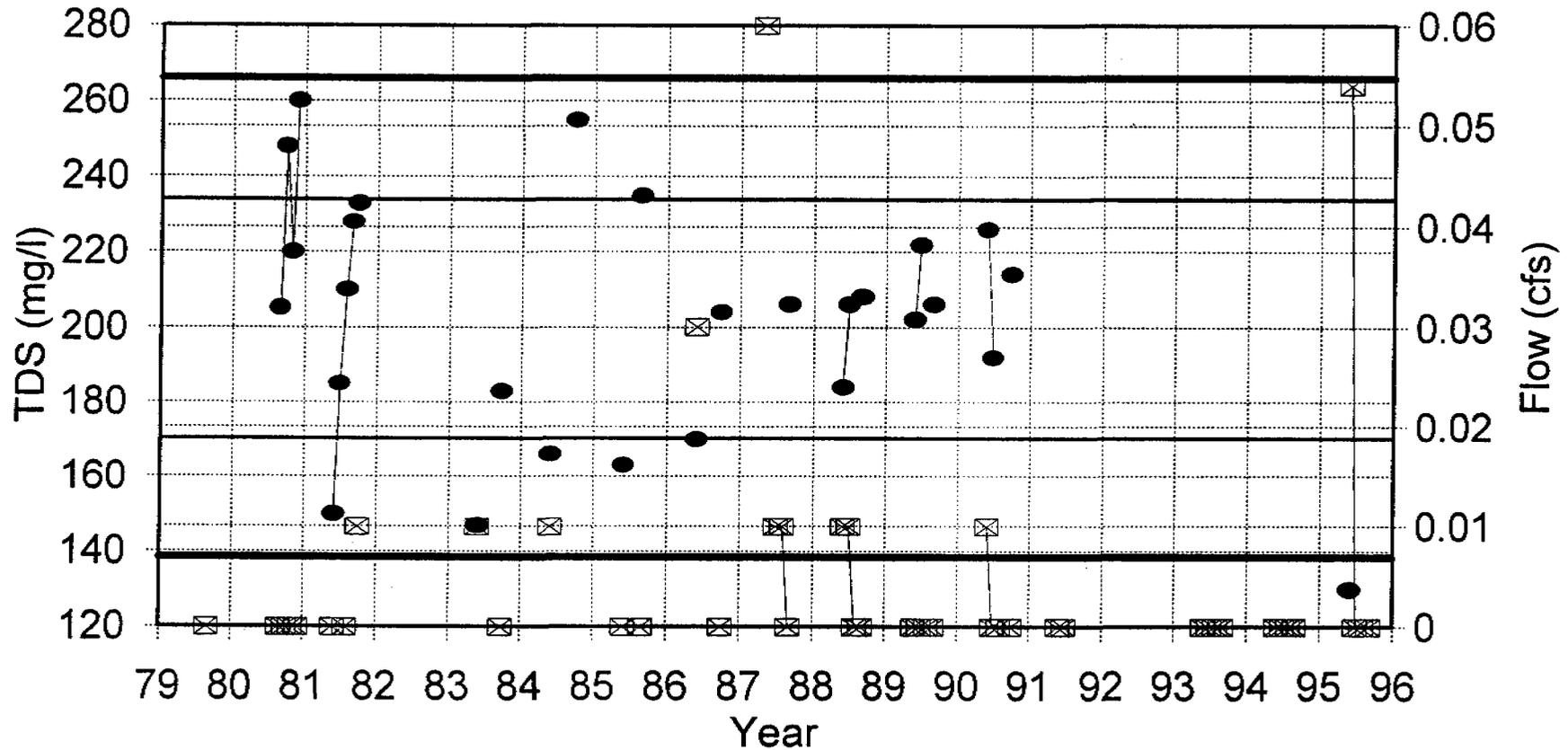
# Station S182

pH vs. Flow



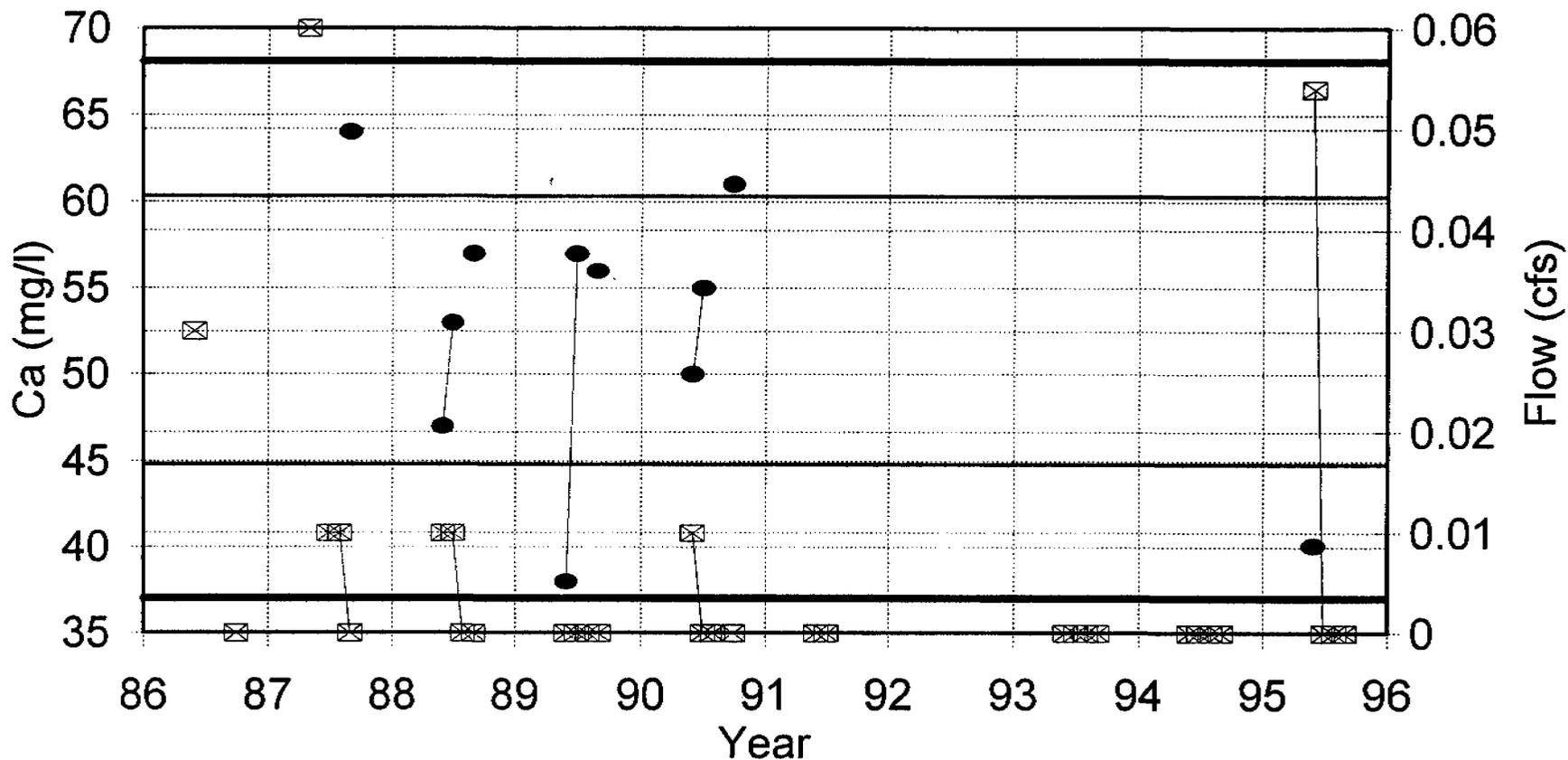
# Station S182

## TDS vs. Flow



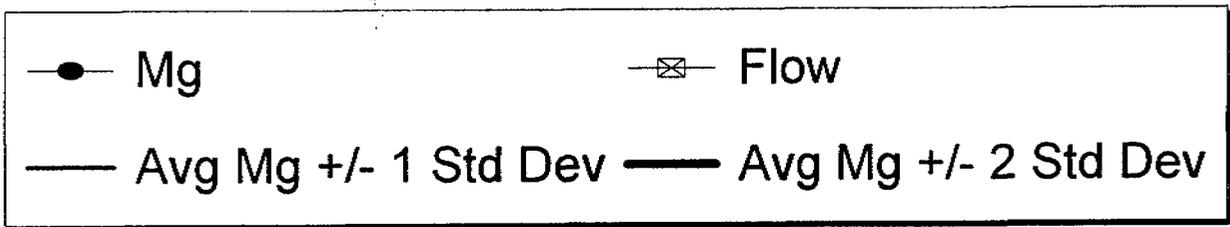
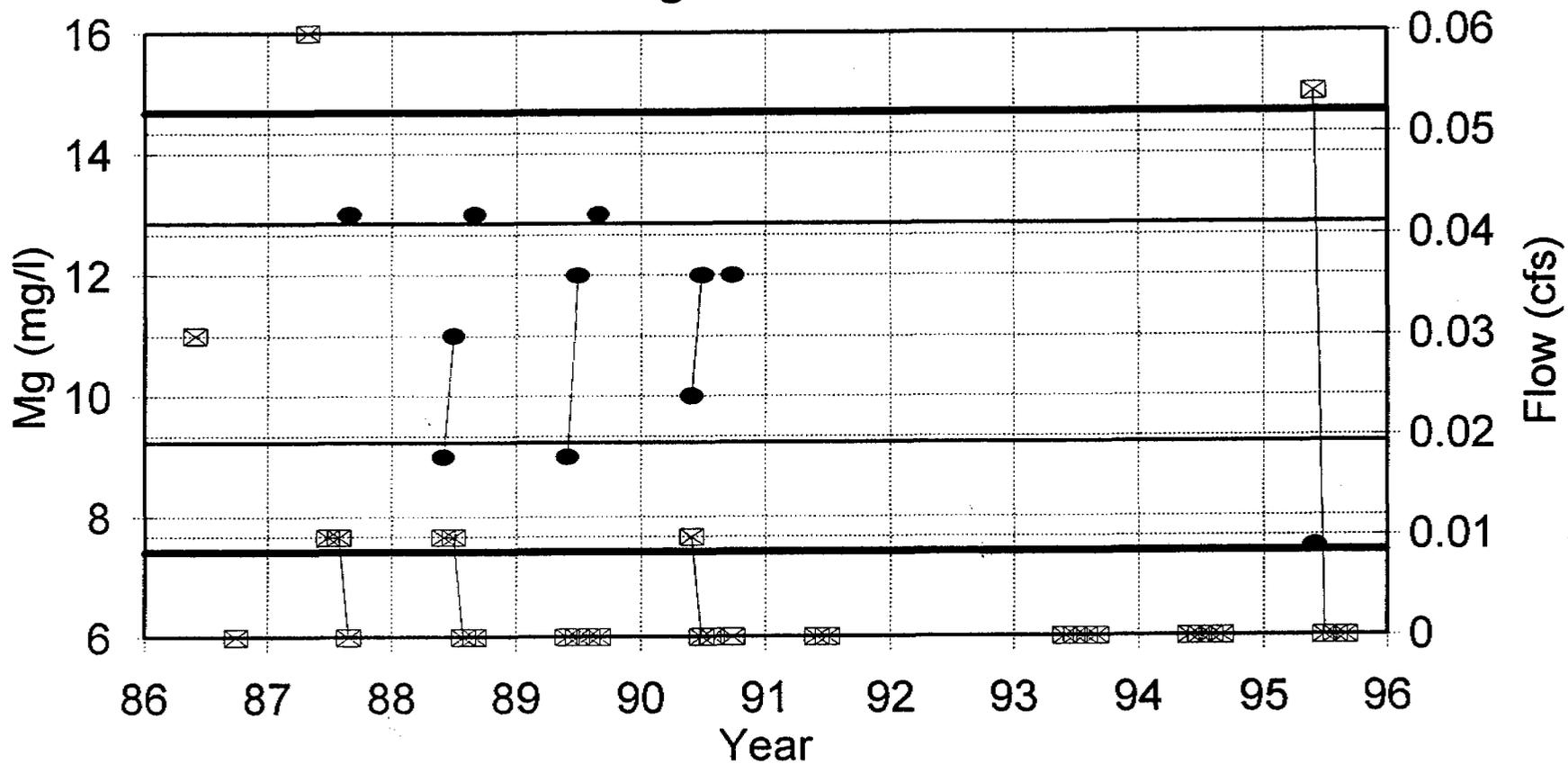
# Station S182

## Ca vs. Flow



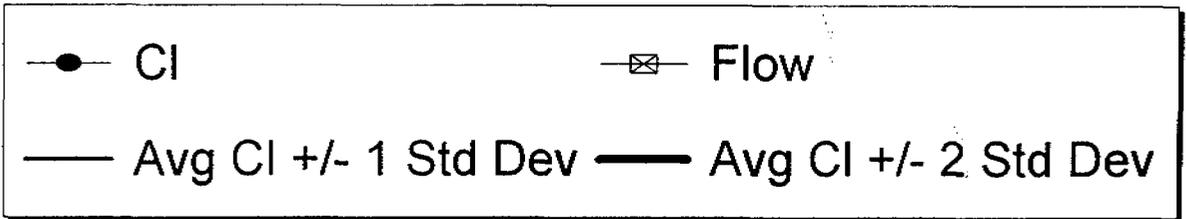
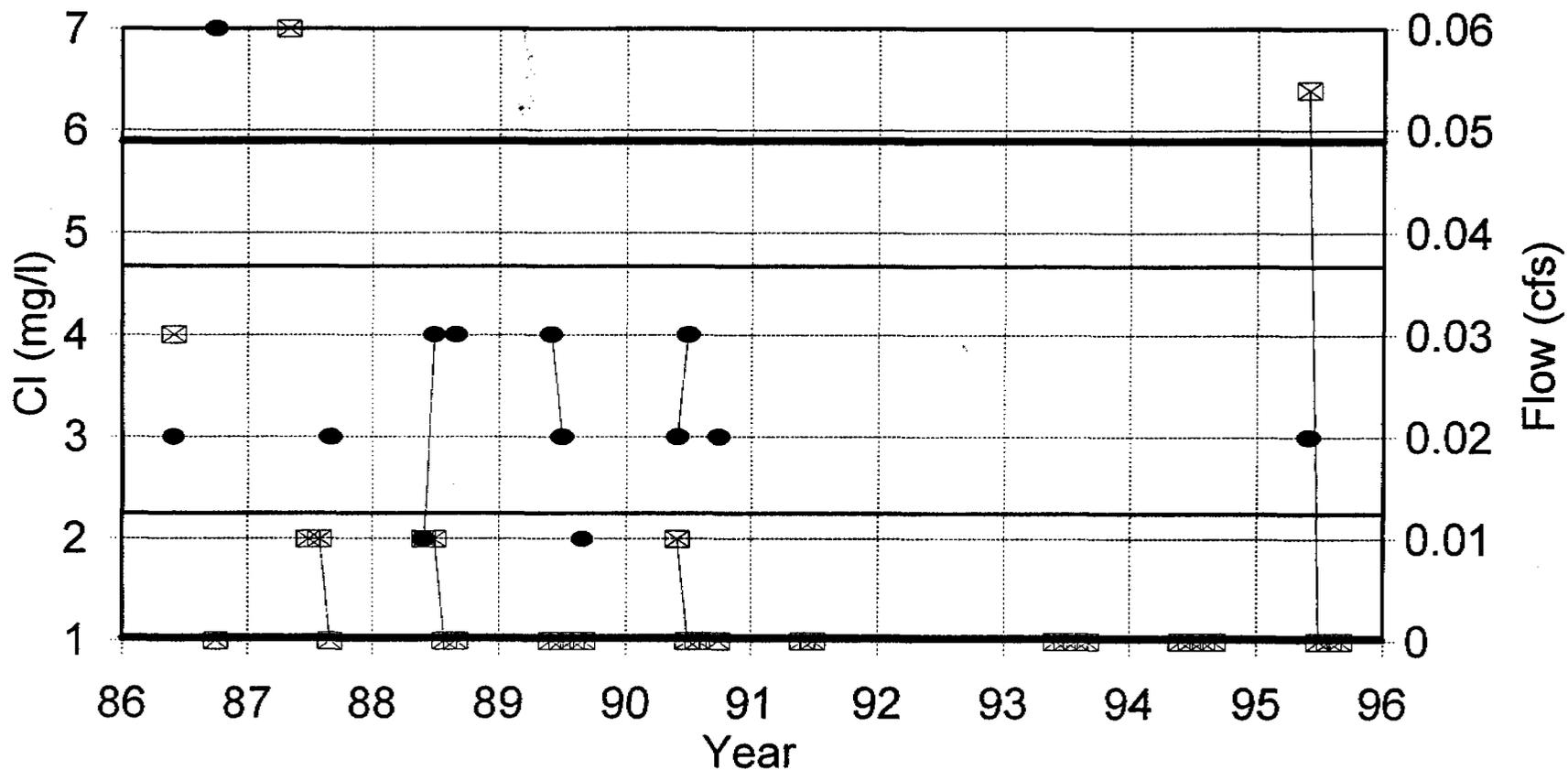
# Station S182

## Mg vs. Flow



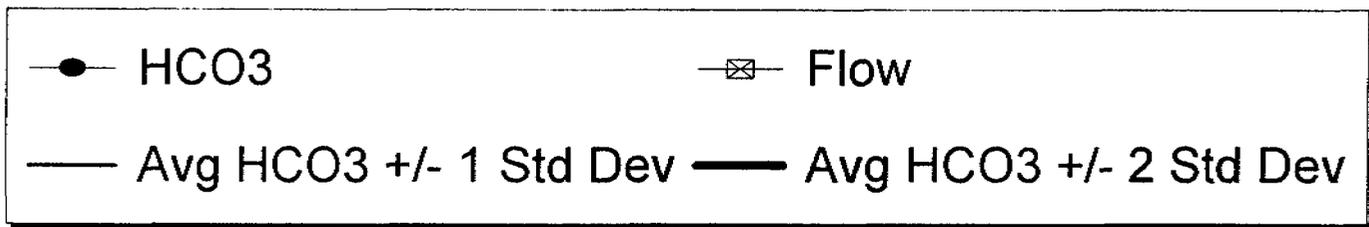
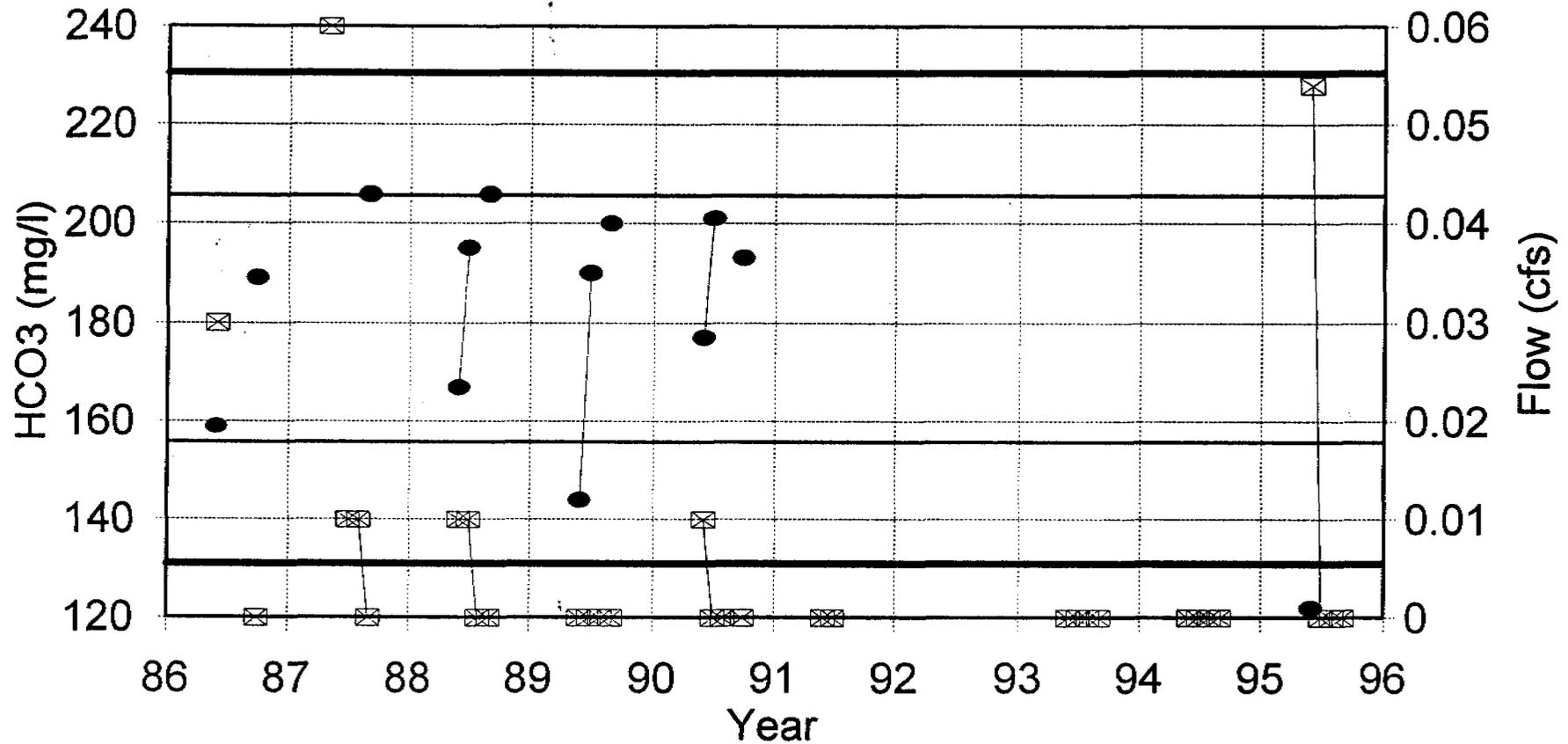
# Station S182

## Cl vs. Flow



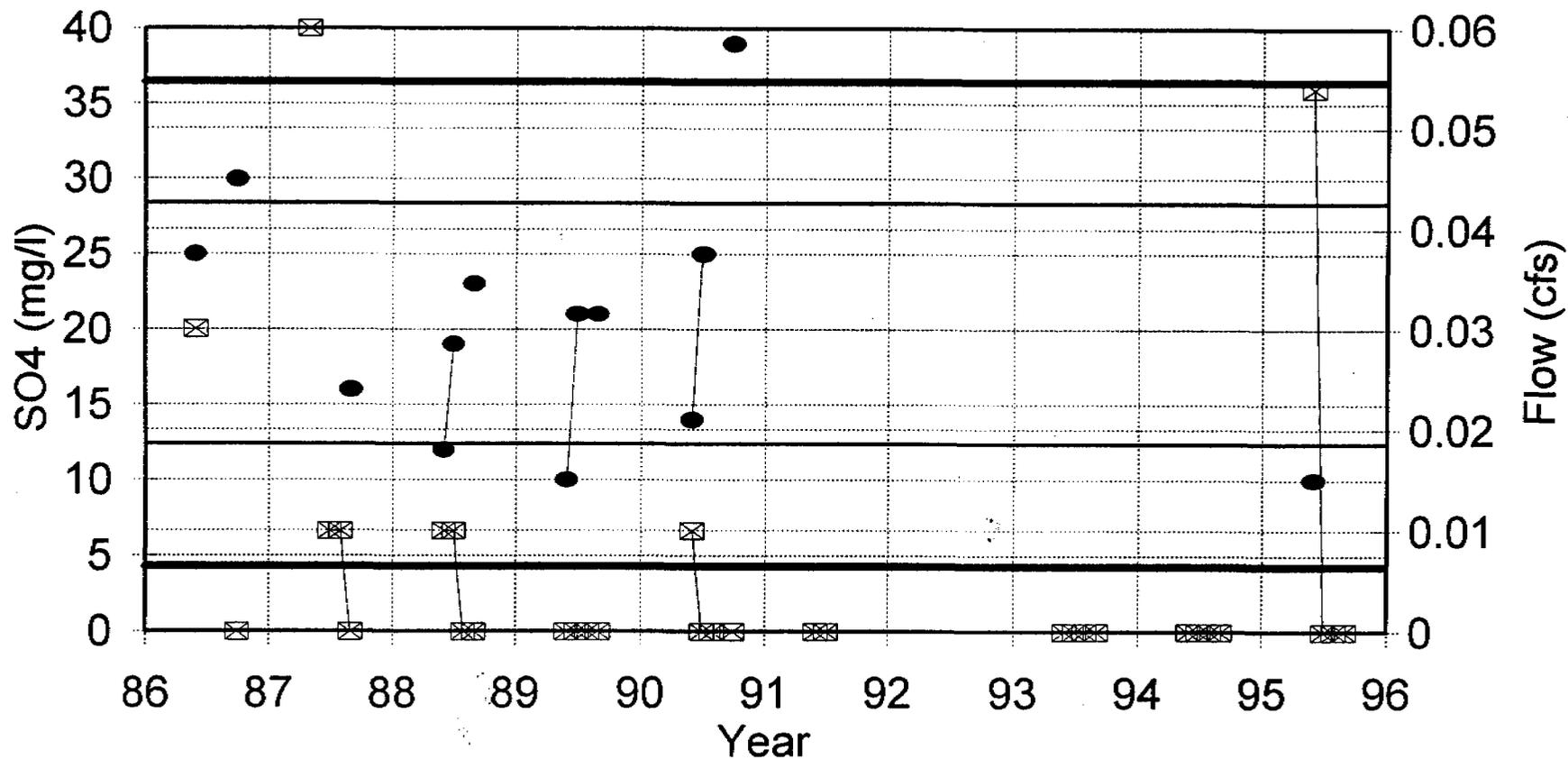
# Station S182

## HCO3 vs. Flow



# Station S182

## SO4 vs. Flow



● SO4

⊠ Flow

— Avg SO4 +/- 1 Std Dev

— Avg SO4 +/- 2 Std Dev



Cyprus Plateau Mining Company - Water Quality Data

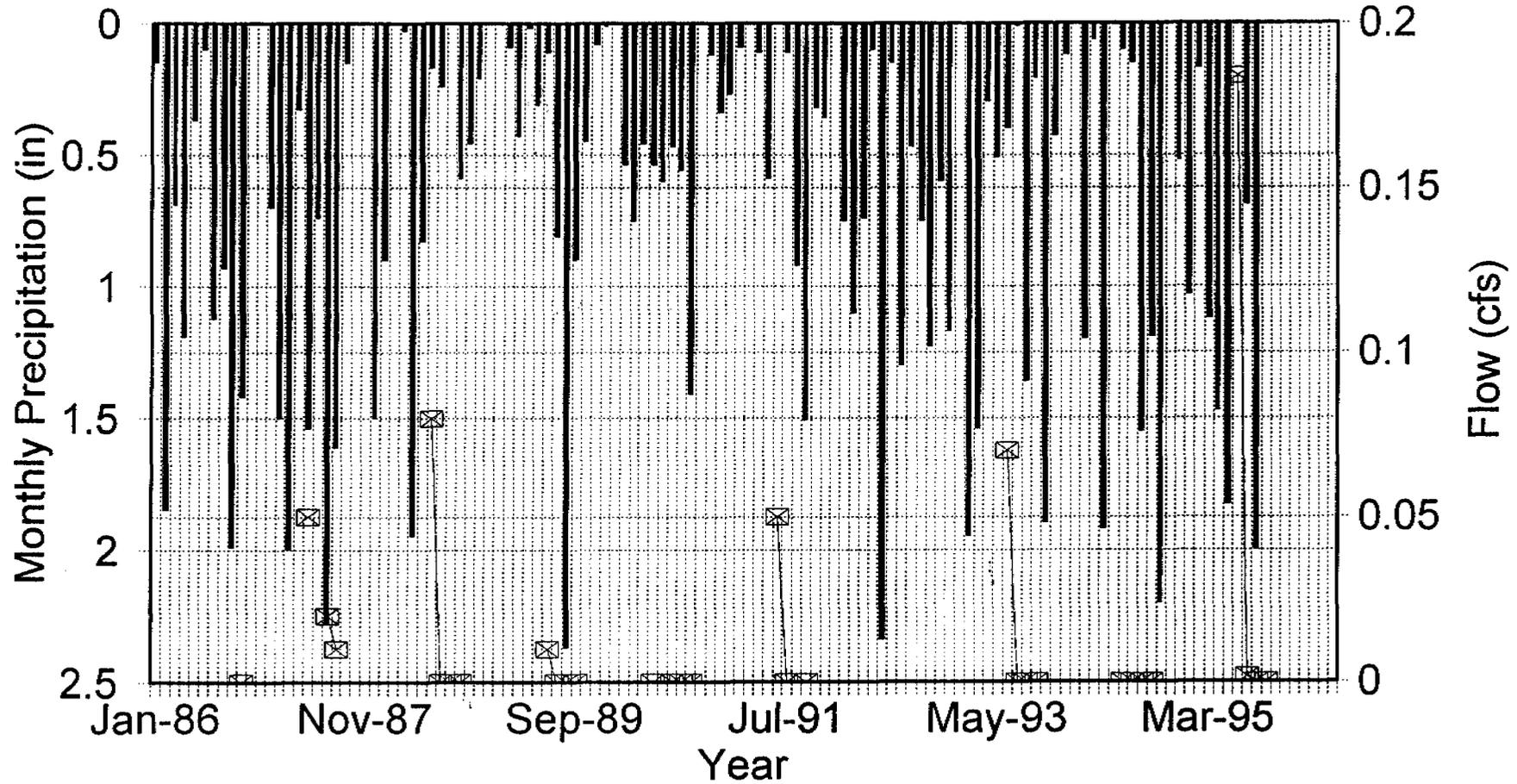
Print Date: May 2, 1996

Date		Field Measurements				Laboratory Measurements														Comments				
Mo-Yr	Sample Date	Flow (cfs)	Ph (units)	Sp. Cond. (ohms)	Temp. (C)	TDS (mg/l)	TSS (mg/l)	O&G (mg/l)	Hd-CaCO3 (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (D) (mg/l)	SO4 (D) (mg/l)	Ca (D) (mg/l)	Mg (D) (mg/l)	K (D) (mg/l)	Na (D) (mg/l)	Cat/An Bal (%)	Fe (D) (mg/l)		Fe (T) (mg/l)	Mn (T) (mg/l)		
Jan-92																								
Feb-92																								
Mar-92																								
Apr-92																								
May-92																								
Jun-92																								
Jul-92																								
Aug-92																								
Sep-92																								
Oct-92																								
Nov-92																								
Dec-92																								
Jan-93																								
Feb-93																								
Mar-93																								
Apr-93																								
May-93																								
Jun-93	06/22	0.07	6.2	312	3.9	174			173	222	0	1	8	56	8 <	1	1	<	0.02	0.02 <	0.01			
Jul-93	07/26	0																						NO FLOW
Aug-93	08/18	0																						NO FLOW
Sep-93	09/28	0																						NO FLOW
Oct-93																								
Nov-93																								
Dec-93																								
Jan-94																								
Feb-94																								
Mar-94																								
Apr-94																								
May-94																								
Jun-94	06/09	0																						NO FLOW
Jul-94	07/20	0																						NO FLOW
Aug-94	08/31	0																						NO FLOW
Sep-94	09/21	0																						NO FLOW
Oct-94																								
Nov-94																								
Dec-94																								
Jan-95																								
Feb-95																								
Mar-95																								
Apr-95																								
May-95																								
Jun-95	06/22	0.184	7.2	395	6	190			210	184		1 <	10	67.9	9.9	0.8	1.3	7.2 <	0.01 <	0.01 <	0.005			
Jul-95	07/27	0.0016	7.4	478	7	220			207	185		2	10	66.1	10.1	0.7	1.4	3	0.04 <	0.01 <	0.005			
Aug-95	08/23	0																						
Sep-95	09/28	0																						
Oct-95																								
Nov-95																								
Dec-95																								
Jan-96																								
END DATA																								
Count		31	4	4	4	9	0	0	4	4	2	4	4	4	4	4	4	2	4	3	4			
Minimum		0	6.2	312	3	174	ERR	ERR	170	184	0	1 <	6	55	8 <	0.7	1	3 <	0.01 <	0.01 <	0.005			
Maximum		0.184	7.4	478	7	220	ERR	ERR	210	222	5	2 <	10	67.9	10.1 <	1	1.4	7.2 <	0.04 <	0.02 <	0.01			
Average		0.0153	7	381.25	4.975	194.89	ERR	ERR	190	199.5	2.5	1.5 <	8.5	61.25	9 <	0.875	1.175	5.1 <	0.0225 <	0.0133 <	0.0075			
Standard Deviation		0.0374	0.469	83.338	1.6975	15.351	ERR	ERR	18.561	15.914	2.5	0.5 <	1.6583	5.7959	1.0025 <	0.1299	0.1785	2.1 <	0.0109 <	0.0047 <	0.0025			
Avg. -1 Std. Dev.		-0.022	6.531	317.91	3.3775	179.54	ERR	ERR	171.44	183.59	0	1 <	6.8417	55.454	7.9975 <	0.7451	0.9985	3 <	0.0116 <	0.0086 <	0.005			
Avg. +1 Std. Dev.		0.0528	7.469	444.59	6.5725	210.24	ERR	ERR	208.56	215.41	5	2 <	10.158	67.046	10.002 <	1.0049	1.3535	7.2 <	0.0334 <	0.018 <	0.01			
Avg. -2 Std. Dev.		-0.08	6.0619	254.57	1.7801	184.19	ERR	ERR	152.88	167.67	-2.5	0.5 <	5.1834	49.658	6.995 <	0.6152	0.8179	0.9 <	0.0007 <	0.0039 <	0.0025			
Avg. +2 Std. Dev.		0.0902	7.9381	507.93	8.1699	225.89	ERR	ERR	227.12	231.33	7.5	2.5 <	11.817	72.842	11.005 <	1.1348	1.5321	9.3 <	0.0443 <	0.0228 <	0.0125			

NOTE: The "<" symbol indicates that "Less Than" data was found in the data set; statistics are approximate.

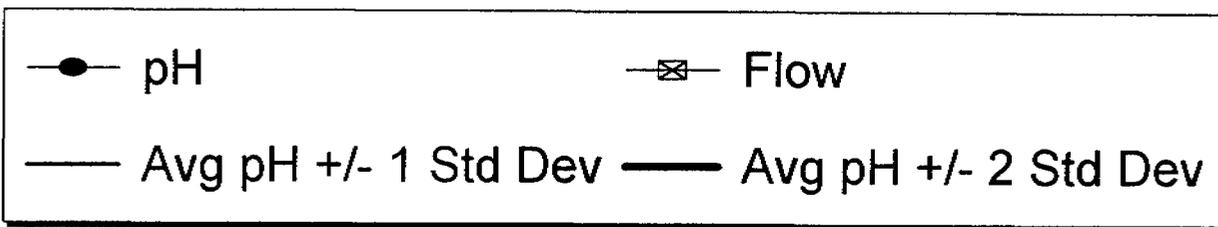
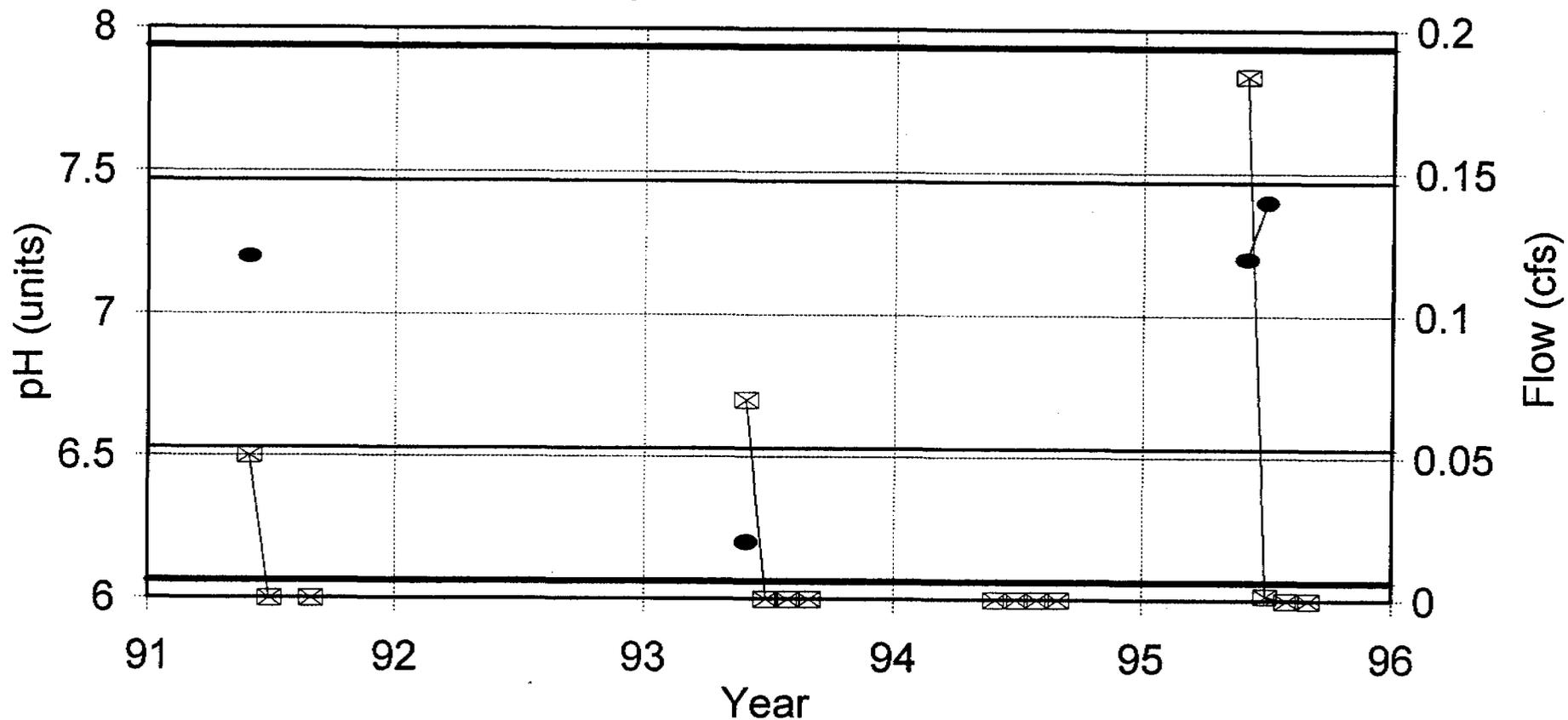
# Station 229

## Monthly Precipitation vs. Flow



# Station 229

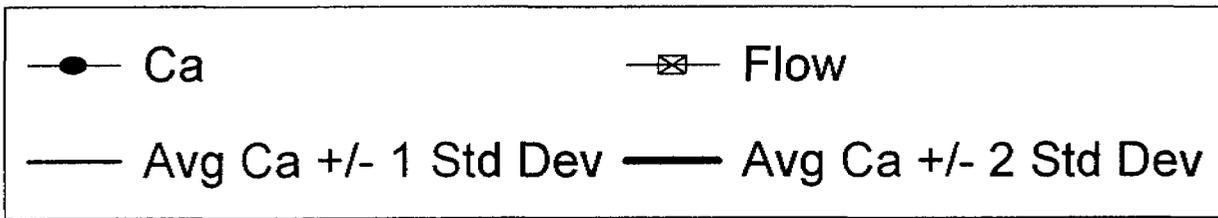
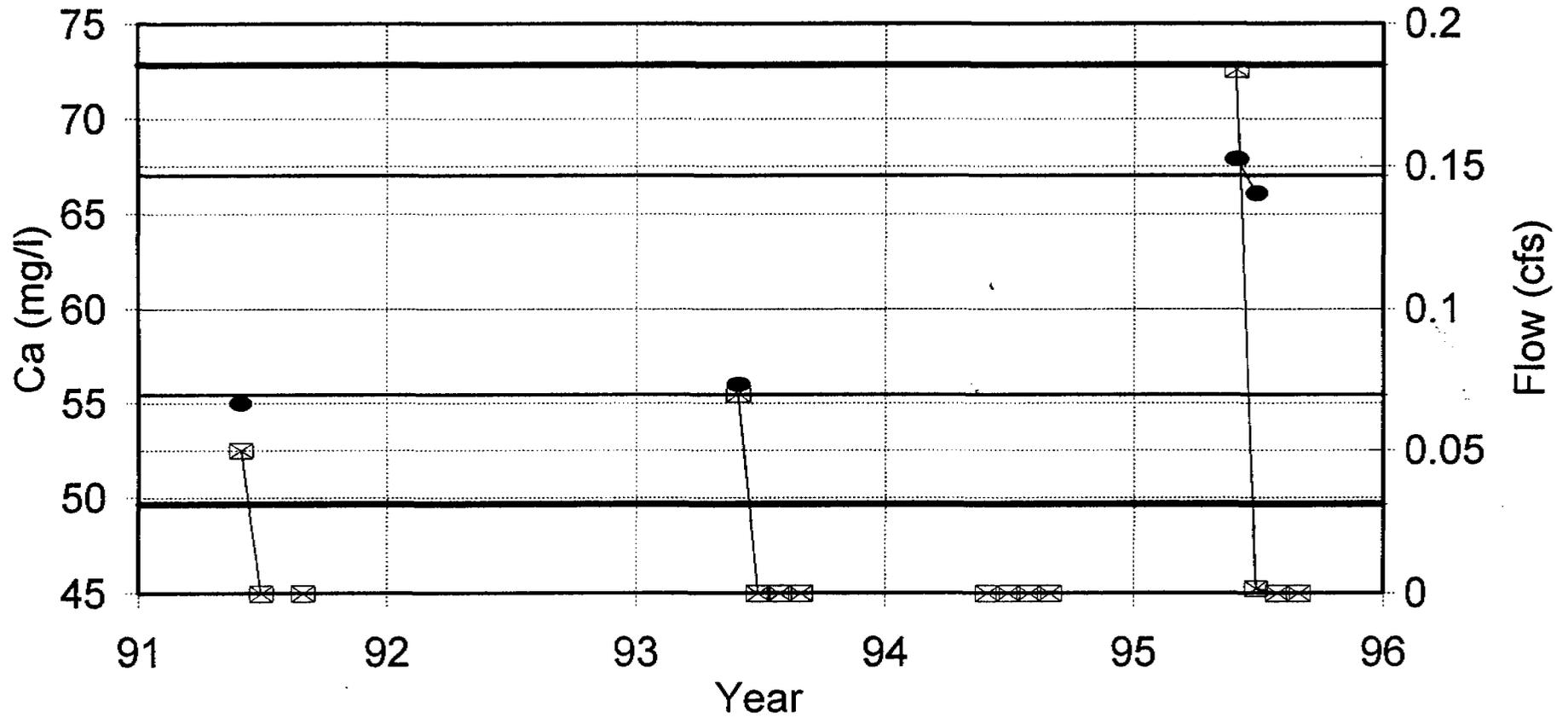
## pH vs. Flow





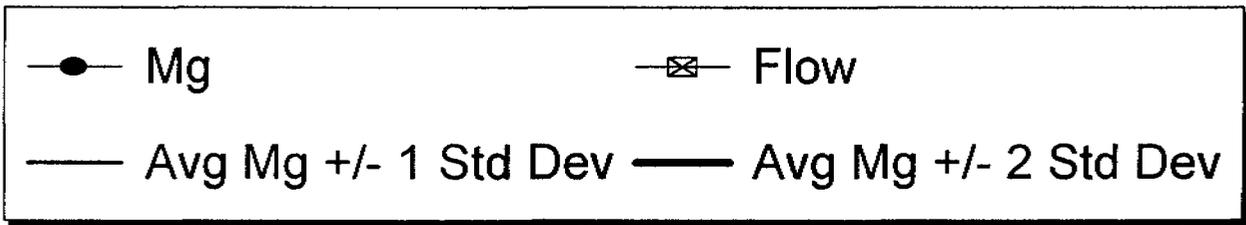
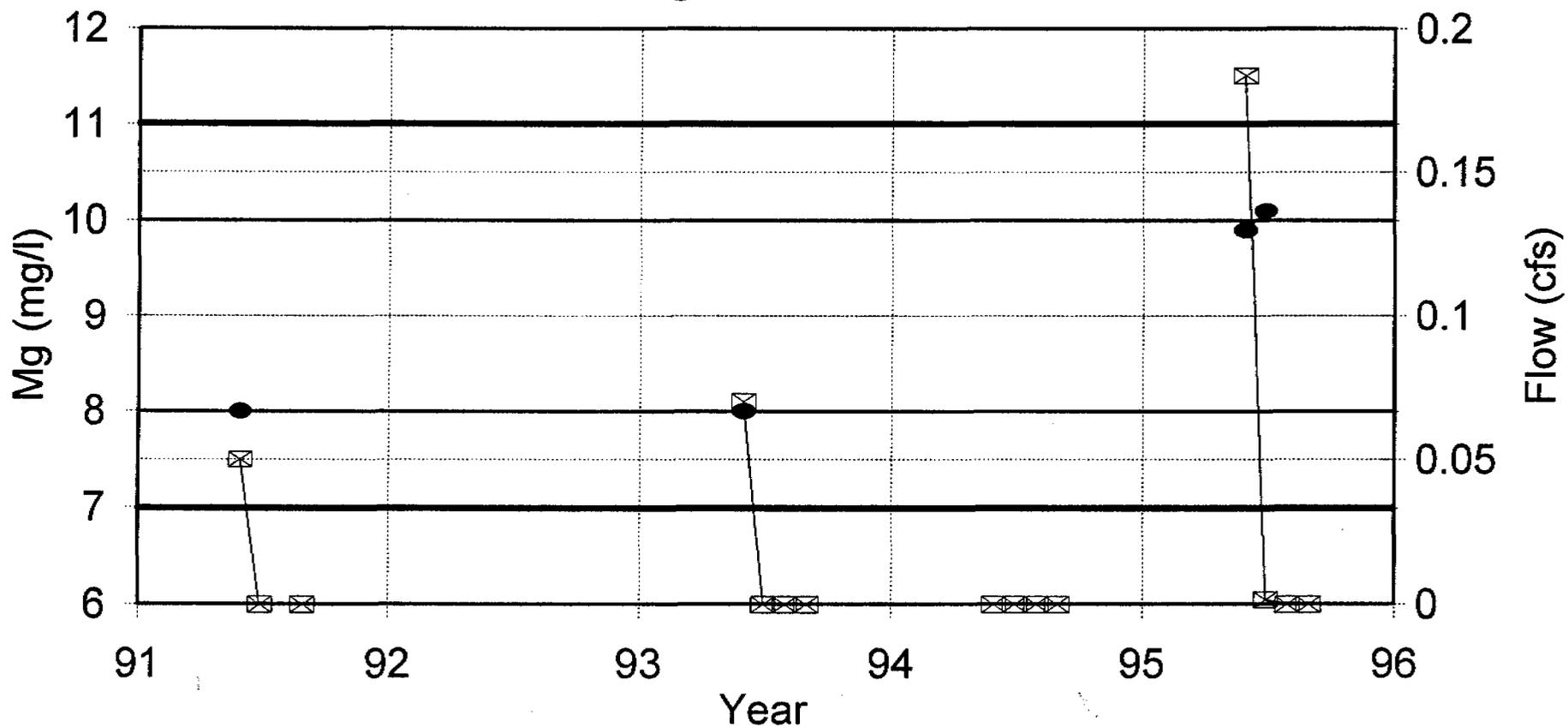
# Station 229

## Ca vs. Flow



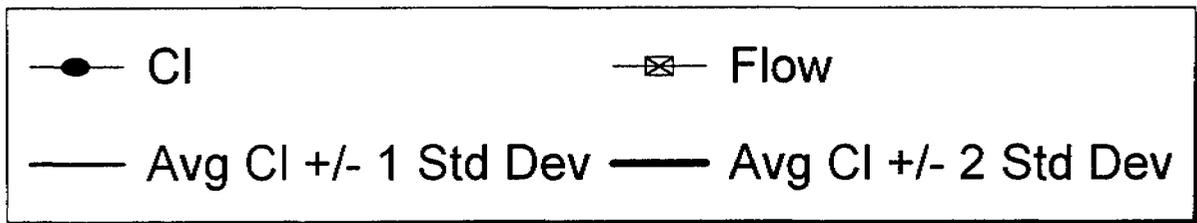
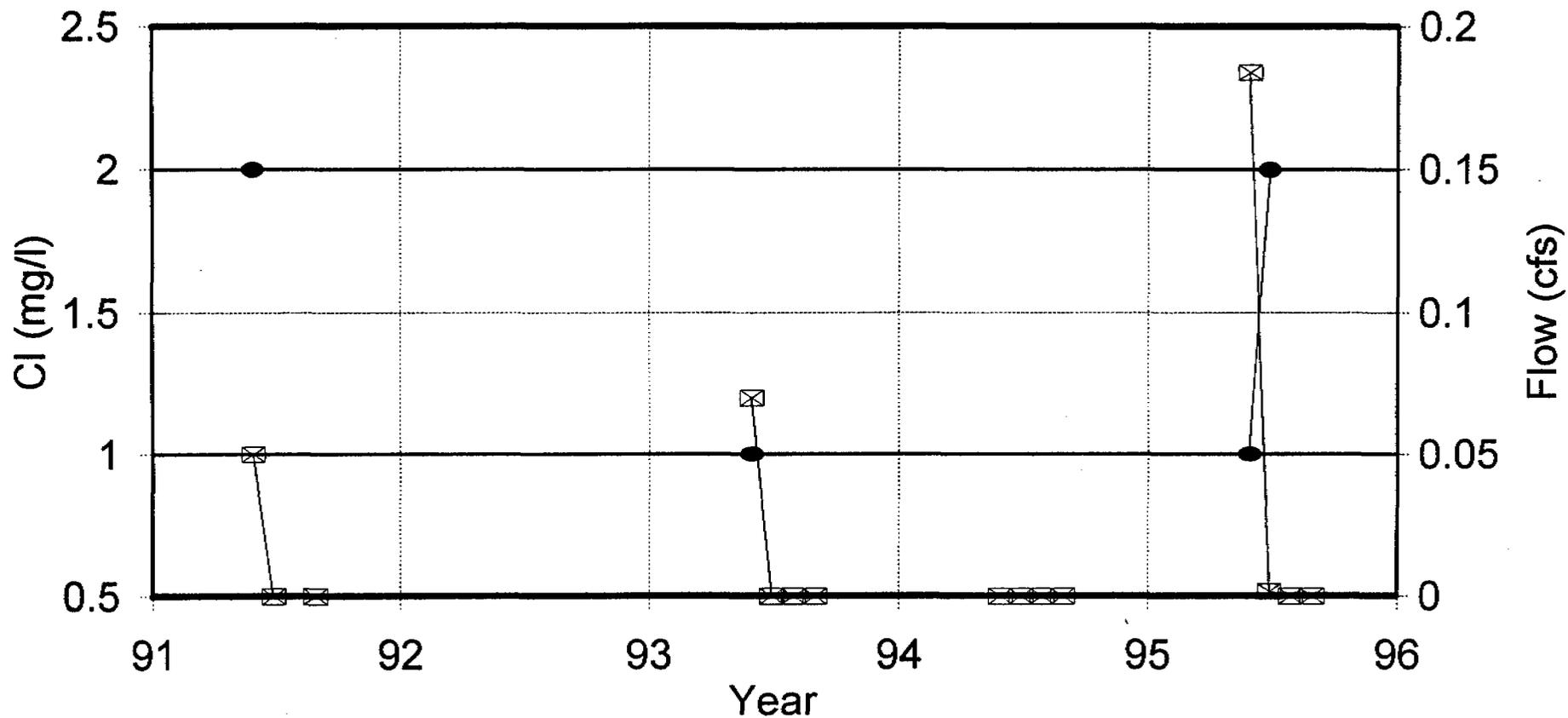
# Station 229

## Mg vs. Flow



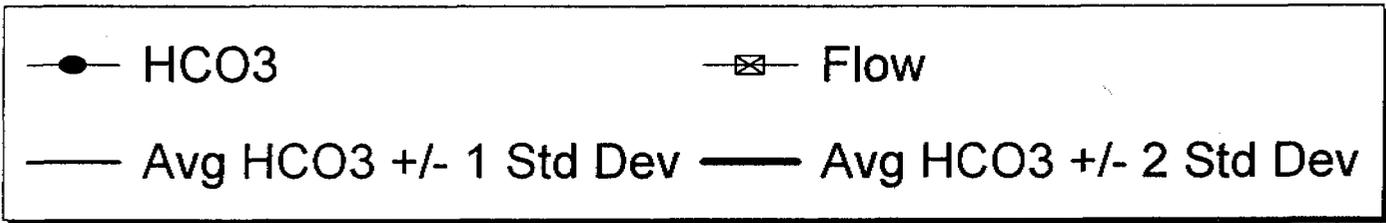
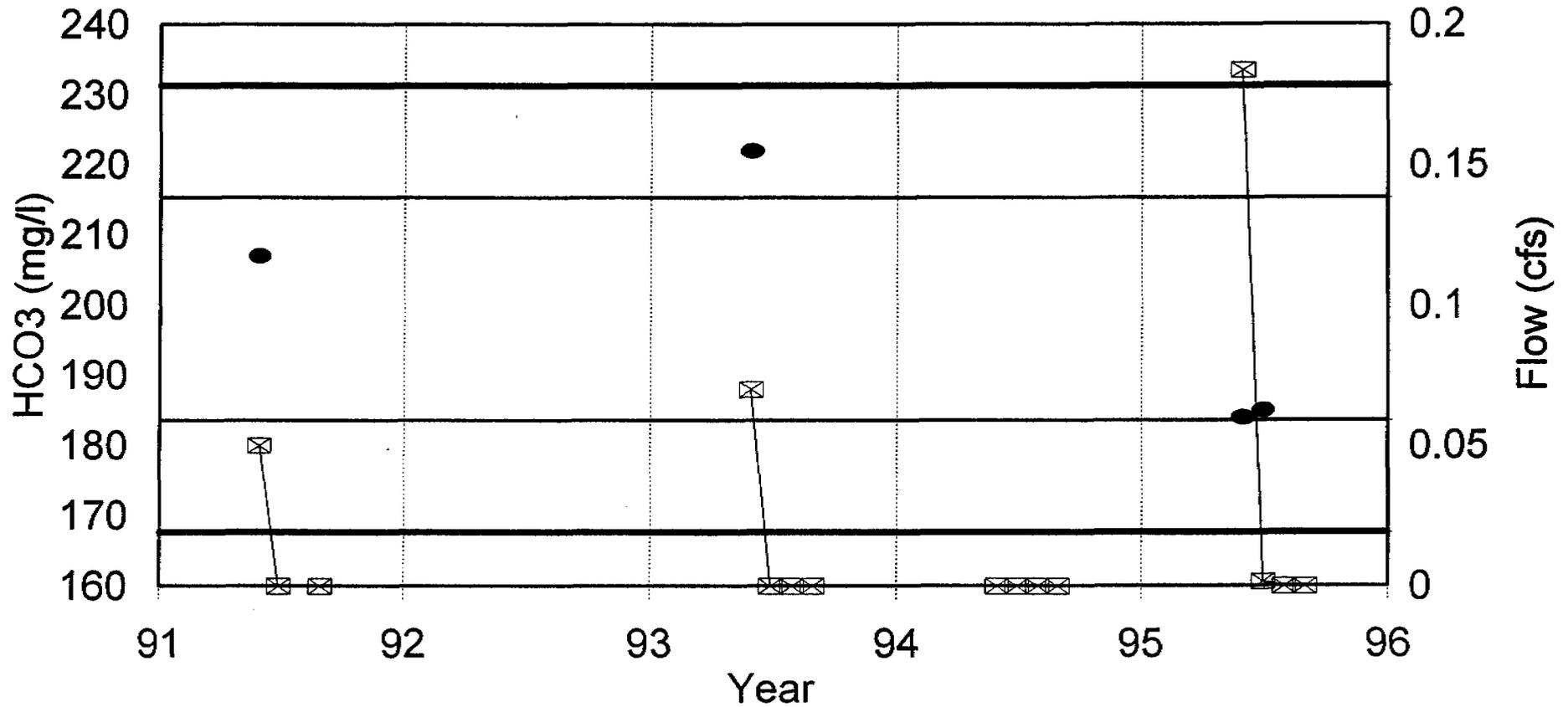
# Station 229

Cl vs. Flow



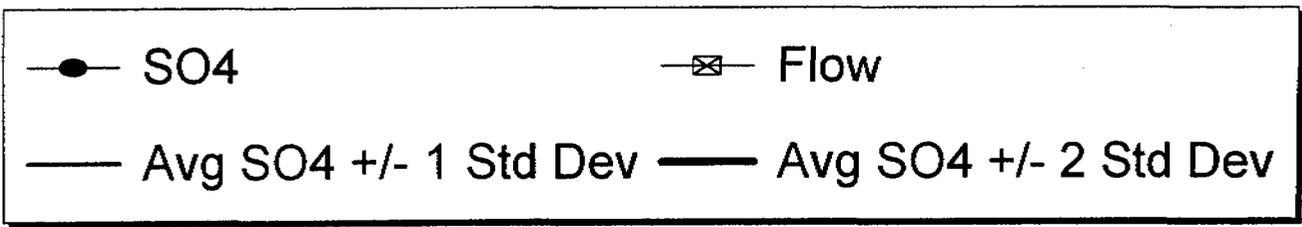
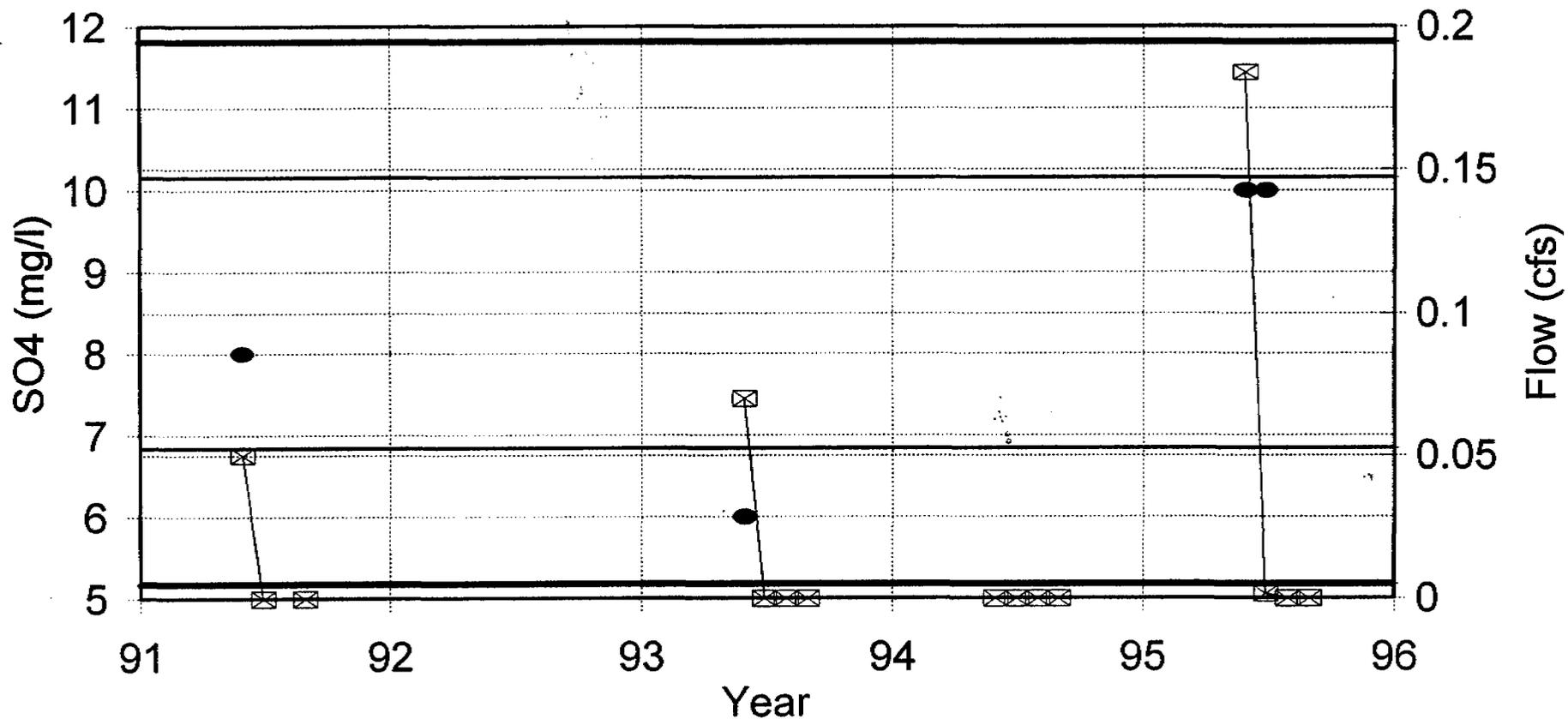
# Station 229

## HCO<sub>3</sub> vs. Flow



# Station 229

## SO4 vs. Flow



Cyprus Plateau Mining Company - Water Quality Data

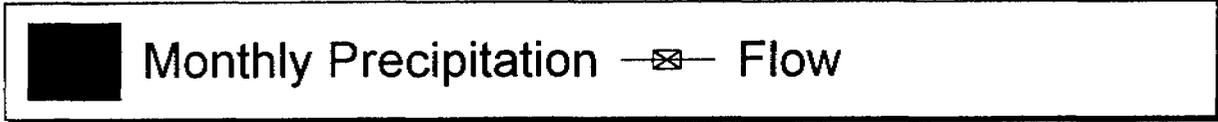
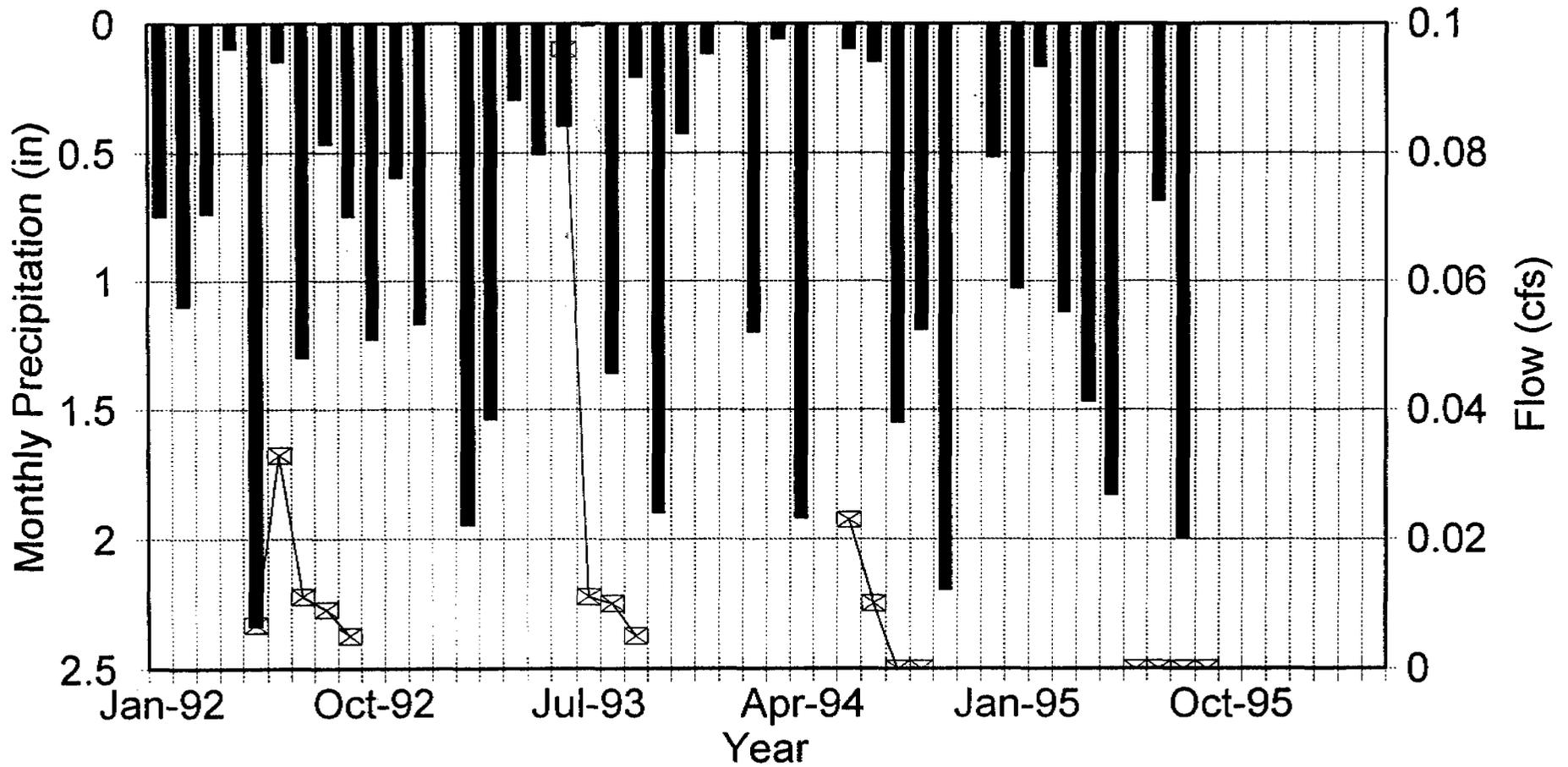
Station: 458 Property: Star Point Location: 2250' S 750' E of NW cor. Sec 23, T15S, R7E Station Type: Spring Sampling Frequency: Quarterly Formation: Price River Print Date: April 24, 1996  
Elevation: 9400

Date		Field Measurements				Laboratory Measurements															Comments		
Mo-Yr	Sample Date	Flow (cfs)	pH (units)	Sp. Cond. (ohms)	Temp. (C)	TDS (mg/l)	TSS (mg/l)	O&G (mg/l)	Hd-CaCO3 (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (D) (mg/l)	SO4 (D) (mg/l)	Ca (D) (mg/l)	Mg (D) (mg/l)	K (D) (mg/l)	Na (D) (mg/l)	Ca/An Bal (%)	Fe (D) (mg/l)	Fe (T) (mg/l)		Mn (T) (mg/l)	
Jan-92																							
Feb-92																							
Mar-92																							
Apr-92																							
May-92	5/20/92	0.0067	7.6	916	5.8	284			281	188	0	2	99	83	18	1	3	<	0				
Jun-92	6/17/92	0.033	7.4	538	6.2	296			299	270	0	2	37	85	21	1	3	<	0				
Jul-92	7/16/92	0.011	7	541	6.4																		
Aug-92	8/26/92	0.009	7.4	530	6.9																		
Sep-92	9/21/92	0.005	6.2	534	7				299	262	16	2	21	85	21	1	3	<	0				
Oct-92																							
Nov-92																							
Dec-92																							
Jan-93																							
Feb-93																							
Mar-93																							
Apr-93																							
May-93																							
Jun-93	6/22/93	0.096	6.4	485	6	284			285	342	0	2	4	81	20	1	3	<	0.02	0.02	<	0.01	
Jul-93	7/27/93	0.011	6.2	514	6.8	300			301	334	0	2	37	86	21	1	3	<	0.02	0.02	<	0.01	
Aug-93	8/17/93	0.01	6.3	518	6.4																		
Sep-93	9/27/93	0.005	6.2	513	6.6	302			268	303	0	2	27	76	19	1	3	<	0.02	0.02	<	0.01	
Oct-93																							
Nov-93																							
Dec-93																							
Jan-94																							
Feb-94																							
Mar-94																							
Apr-94																							
May-94																							
Jun-94	6/8/94	0.023	7.5	611	4.9	288			268	342	0	2	25	76	19	1	4	<	0.02	0.02	<	0.01	
Jul-94	7/19/94	0.01	7.9	548	15.8	298			275	300	10	2	39	77	20	1	3	<	0.02	0.9	<	0.01	
Aug-94	8/31/94	0																					
Sep-94	9/21/94	0																					
Oct-94																							
Nov-94																							
Dec-94																							
Jan-95																							
Feb-95																							
Mar-95																							
Apr-95																							
May-95																							
Jun-95	6/22/95	0																					
Jul-95	7/27/95	0																					
Aug-95	8/23/95	0																					
Sep-95	9/27/95	0																					
Oct-95																							
Nov-95																							
Dec-95																							
Jan-96																							
END DATA																							
Count	17	11	11	11	7	0	0	8	8	8	8	8	8	8	8	8	8	0	8	5	5		
Minimum	0	6.2	485	4.9	284	ERR	ERR	268	188	0	2	4	76	18	1	3	ERR	<	0	<	0.02	<	0.01
Maximum	0.096	7.9	916	15.8	302	ERR	ERR	301	342	16	2	99	86	21	1	4	ERR	<	0.02	<	0.9	<	0.01
Average	0.0129	6.9182	568	7.1636	293.14	ERR	ERR	284.5	292.63	3.25	2	36.125	81.125	19.875	1	3.125	ERR	<	0.0125	<	0.196	<	0.01
Standard Deviation	0.0225	0.6351	113.98	2.789	7.0797	ERR	ERR	12.942	48.921	5.8256	0	26.055	3.9824	1.0533	0	0.3307	ERR	<	0.0097	<	0.352	<	0
Avg. -1 Std. Dev.	-0.01	6.2831	454.02	4.3746	286.06	ERR	ERR	271.56	243.7	-2.576	2	10.07	77.143	18.822	1	2.7943	ERR	<	0.0028	<	-0.156	<	0.01
Avg. +1 Std. Dev.	0.0354	7.5532	681.98	9.9527	300.22	ERR	ERR	297.44	341.55	9.0756	2	62.18	85.107	20.928	1	3.4557	ERR	<	0.0222	<	0.548	<	0.01
Avg. -2 Std. Dev.	-0.032	5.6481	340.04	1.5856	278.98	ERR	ERR	258.62	194.78	-8.401	2	-15.98	73.16	17.768	1	2.4636	ERR	<	-0.007	<	-0.508	<	0.01
Avg. +2 Std. Dev.	0.0579	8.1863	795.96	12.742	307.3	ERR	ERR	310.38	390.47	14.901	2	88.235	89.09	21.982	1	3.7864	ERR	<	0.0319	<	0.9	<	0.01

NOTE: The "<" symbol indicates that "Less Than" data was found in the data set; statistics are approximate.

# Station 458

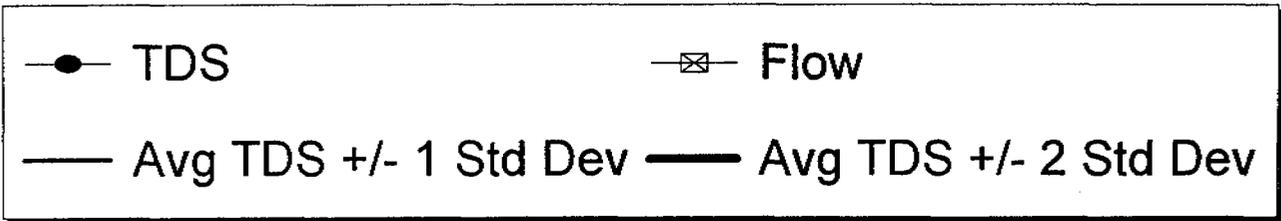
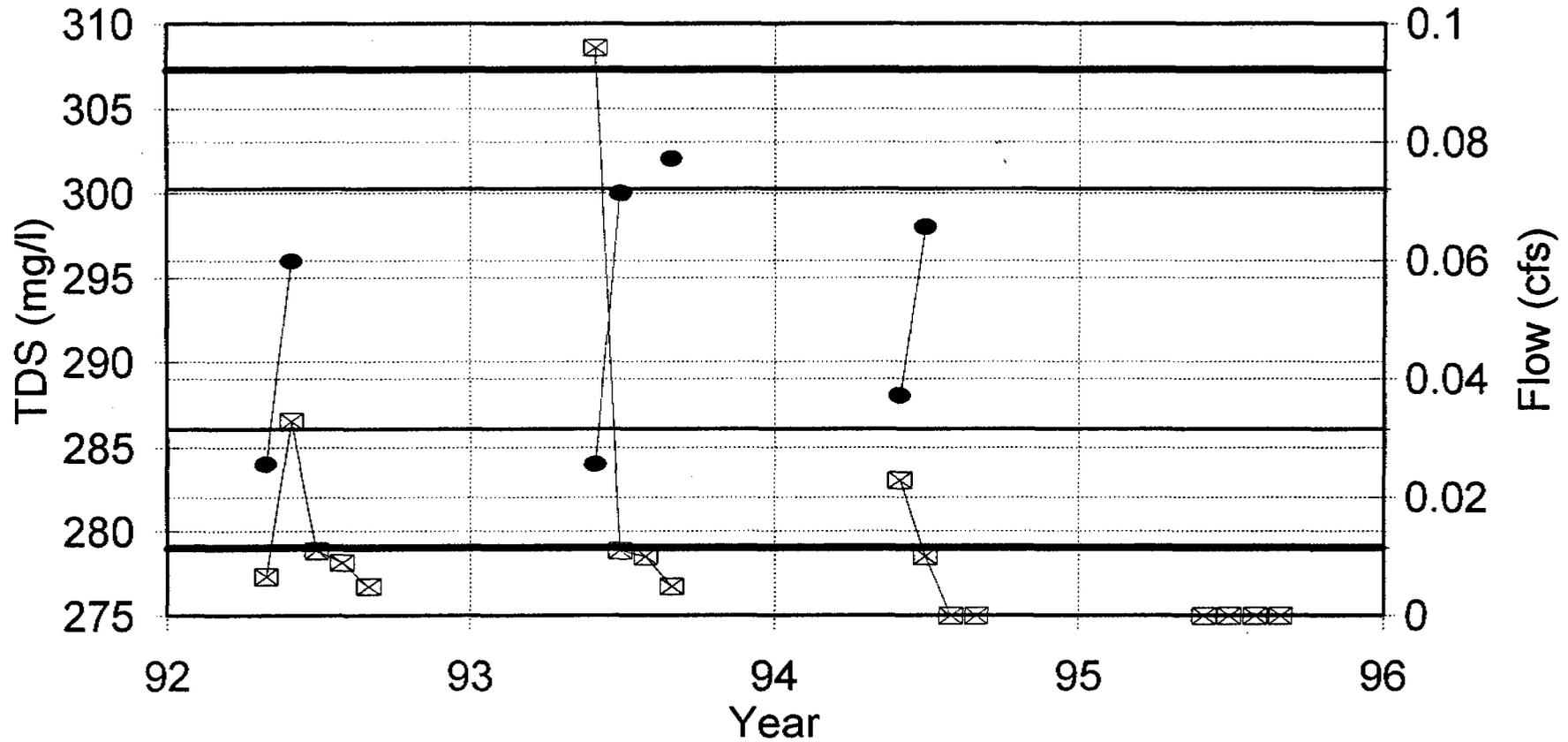
## Monthly Precipitation vs. Flow





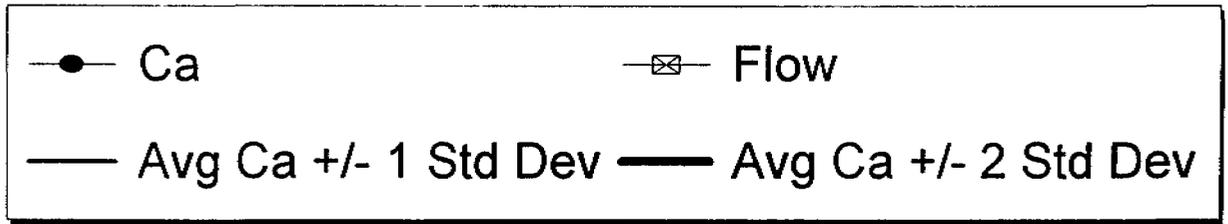
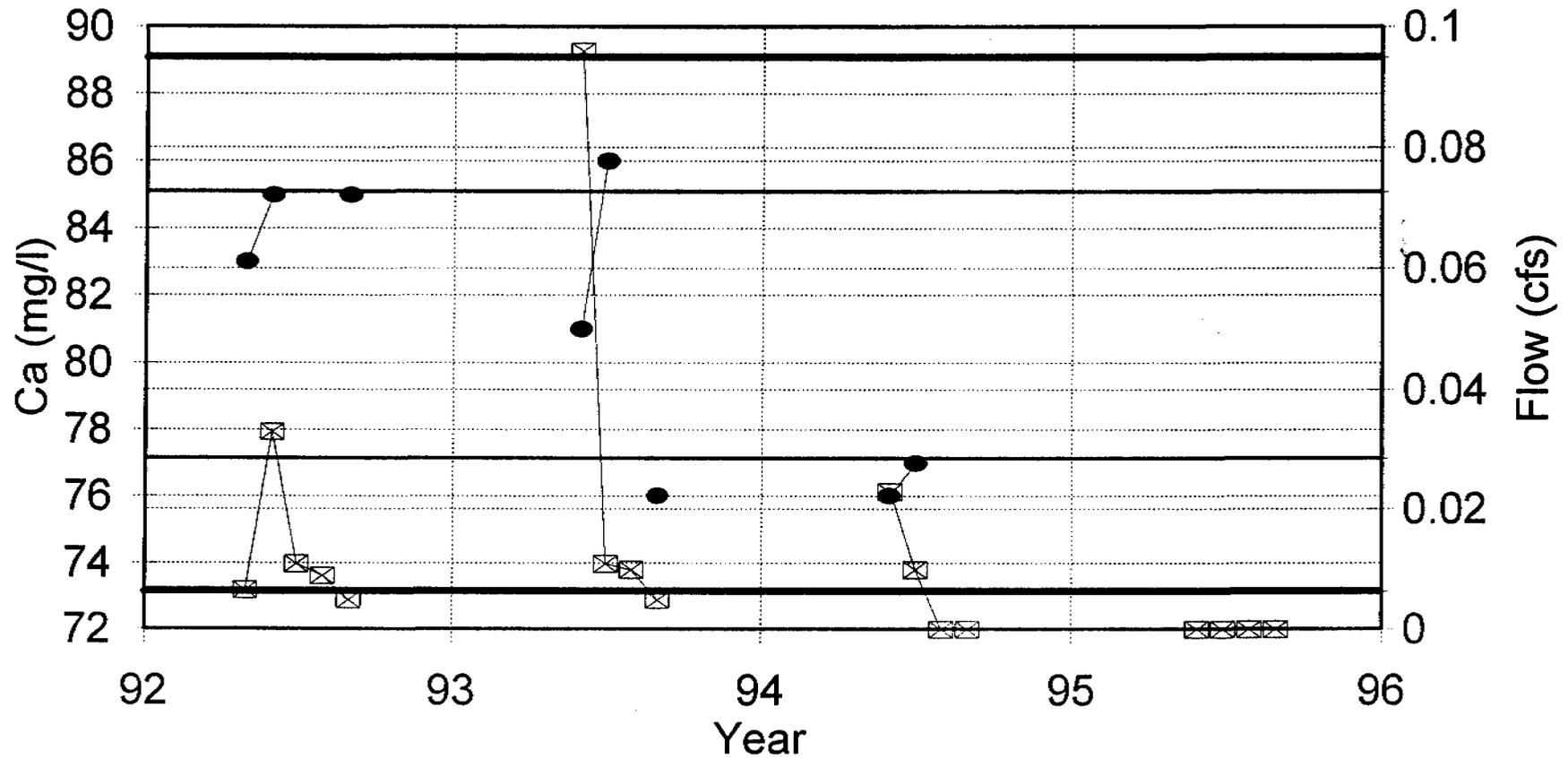
# Station 458

## TDS vs. Flow



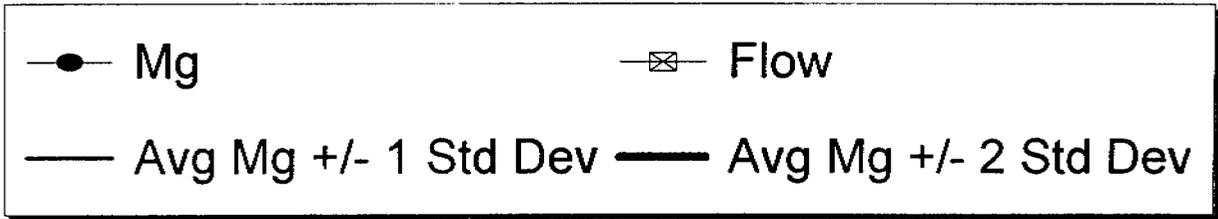
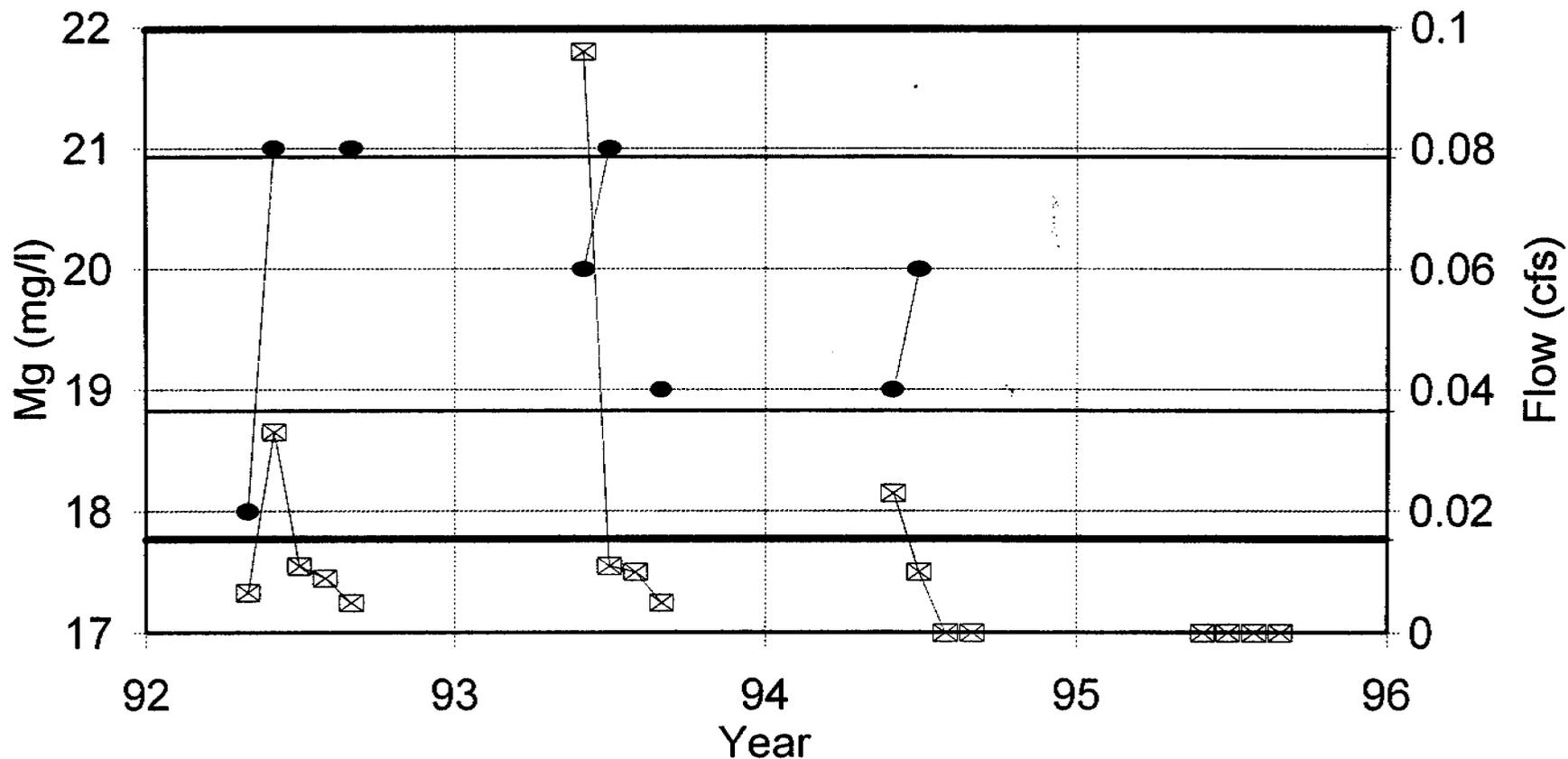
# Station 458

## Ca vs. Flow



# Station 458

## Mg vs. Flow











Cyprus Plateau Mining Company - Water Quality Data

Print Date: April 24, 1996

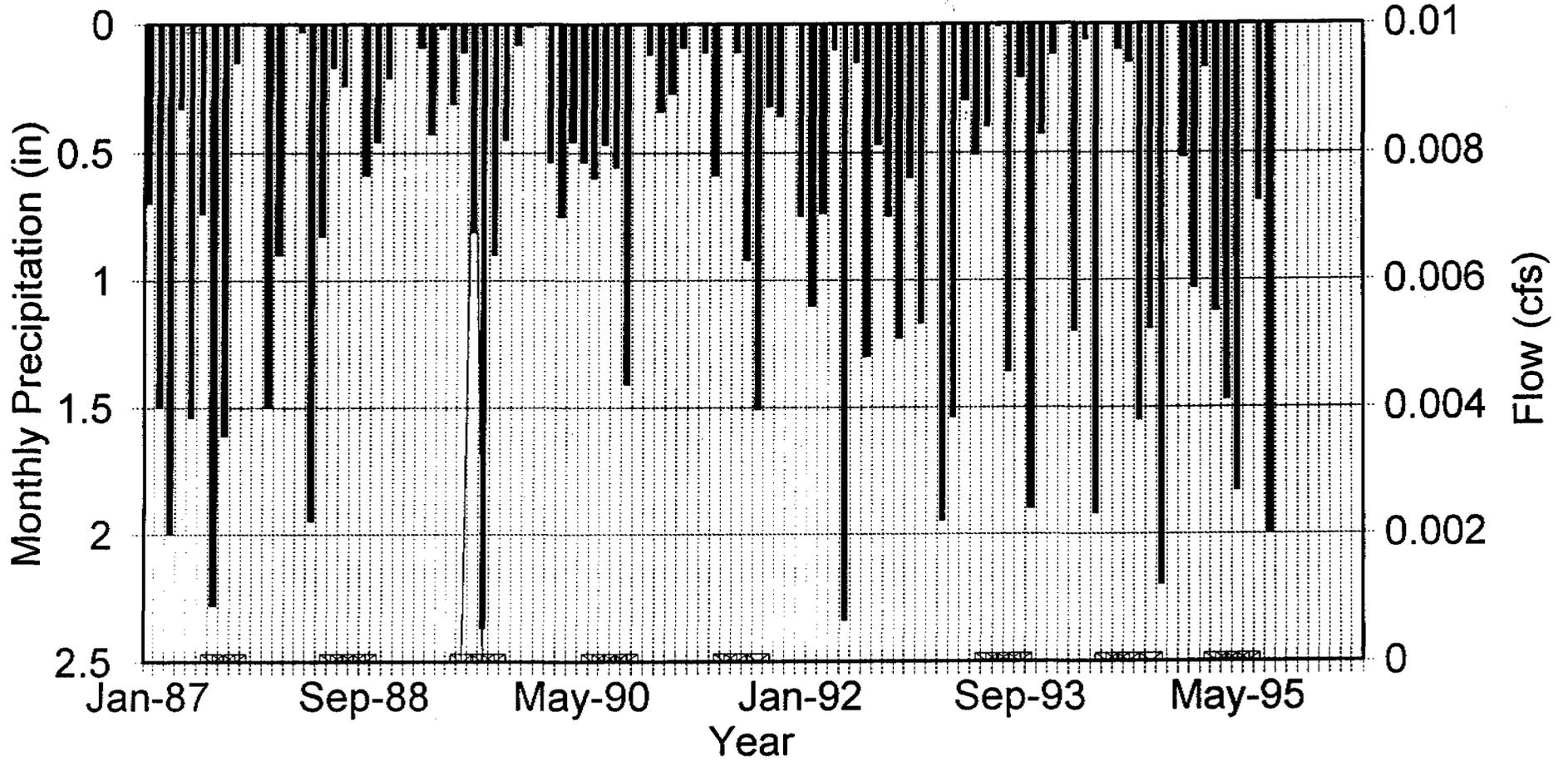
Station: 500 Property: Star Point Location: 100' S 1300' W of NE cor. Sec 18, T15S, R9E Station Type: Spring Sampling Frequency: Quarterly Formation: Price River Elevation: 9460

Date	Field Measurements				Laboratory Measurements																Comments	
	Flow (cfs)	Ph (units)	Sp. Cond. (ohms)	Temp. (C)	TDS (mg/l)	TSS (mg/l)	O&G (mg/l)	Hd-CaCO3 (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (D) (mg/l)	SO4 (D) (mg/l)	Ca (D) (mg/l)	Mg (D) (mg/l)	K (D) (mg/l)	Na (D) (mg/l)	Cat/An Bal (%)	Fe (D) (mg/l)	Fe (T) (mg/l)	Mn (T) (mg/l)		
Jan-93																						
Feb-93																						
Mar-93																						
Apr-93																						
May-93																						
Jun-93	06/25	0																				NO FLOW
Jul-93	07/27	0																				NO FLOW
Aug-93	08/18	0																				NO FLOW
Sep-93	09/28	0																				NO FLOW
Oct-93																						
Nov-93																						
Dec-93																						
Jan-94																						
Feb-94																						
Mar-94																						
Apr-94																						
May-94	06/20	0																				NO FLOW
Jun-94	07/20	0																				NO FLOW
Jul-94	08/31	0																				NO FLOW
Aug-94																						
Sep-94	09/21	0																				NO FLOW
Oct-94																						
Nov-94																						
Dec-94																						
Jan-95																						
Feb-95																						
Mar-95	06/22	0																				
Apr-95	07/27	0																				
May-95	08/23	0																				
Jun-95	09/28	0																				
Jul-95																						
Aug-95																						
Sep-95																						
Oct-95																						
Nov-95																						
Dec-95																						
Jan-96																						
END DATA																						
Count	31	11	11	11	9	0	0	7	9	0	9	9	9	8	9	9	0	9	9	9	9	
Minimum	0	6.6	280	5.4	198	ERR	ERR	218	232	ERR	2	2	34	19 <	1	2	ERR <	0.02 <	0.02 <	0.01		
Maximum	0.01	8.4	690	9.5	268	ERR	ERR	273	271	ERR	3	16	75	23 <	1	3	ERR <	0.02 <	1.44 <	0.06		
Average	0.0006	7.8	406.27	7.1818	243.33	ERR	ERR	239.29	259.56	ERR	2.5556	7.1111	60.444	20.75 <	1	2.3333	ERR <	0.02 <	0.2322 <	0.0156		
Standard Deviation	0.0025	0.471	127.6	1.542	19.956	ERR	ERR	20.401	11.354	ERR	0.4969	5.3426	11.955	1.479 <	0	0.4714	ERR <	0 <	0.4358 <	0.0157		
Avg. -1 Std. Dev.	-0.002	7.329	278.67	5.6398	223.38	ERR	ERR	218.88	248.2	ERR	2.0587	1.7685	48.49	19.271 <	1	1.8619	ERR <	0.02 <	-0.204 <	-0.000		
Avg. +1 Std. Dev.	0.0031	8.271	533.87	8.7238	263.29	ERR	ERR	259.69	270.91	ERR	3.0525	12.454	72.399	22.229 <	1	2.8047	ERR <	0.02 <	0.668 <	0.0313		
Avg. -2 Std. Dev.	-0.004	6.858	151.07	4.0878	203.42	ERR	ERR	198.48	236.85	ERR	1.5617	-3.574	36.535	17.792 <	1	1.3905	ERR <	0.02 <	-0.639 <	-0.016		
Avg. +2 Std. Dev.	0.0056	8.742	661.47	10.286	283.24	ERR	ERR	280.09	282.26	ERR	3.5494	17.796	84.354	23.708 <	1	3.2761	ERR <	0.02 <	1.1038 <	0.047		

NOTE: The "<" symbol indicates that "Less Than" data was found in the data set; statistics are approximate.

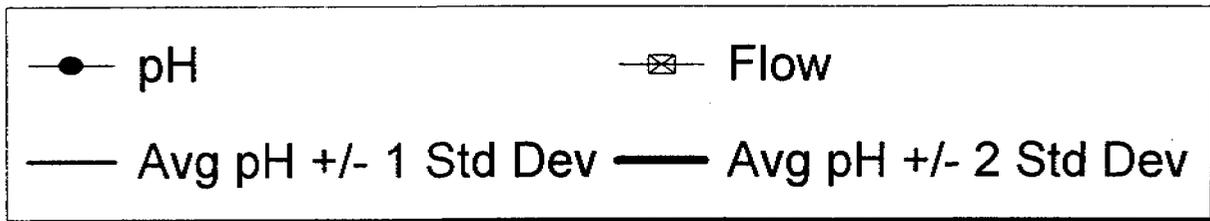
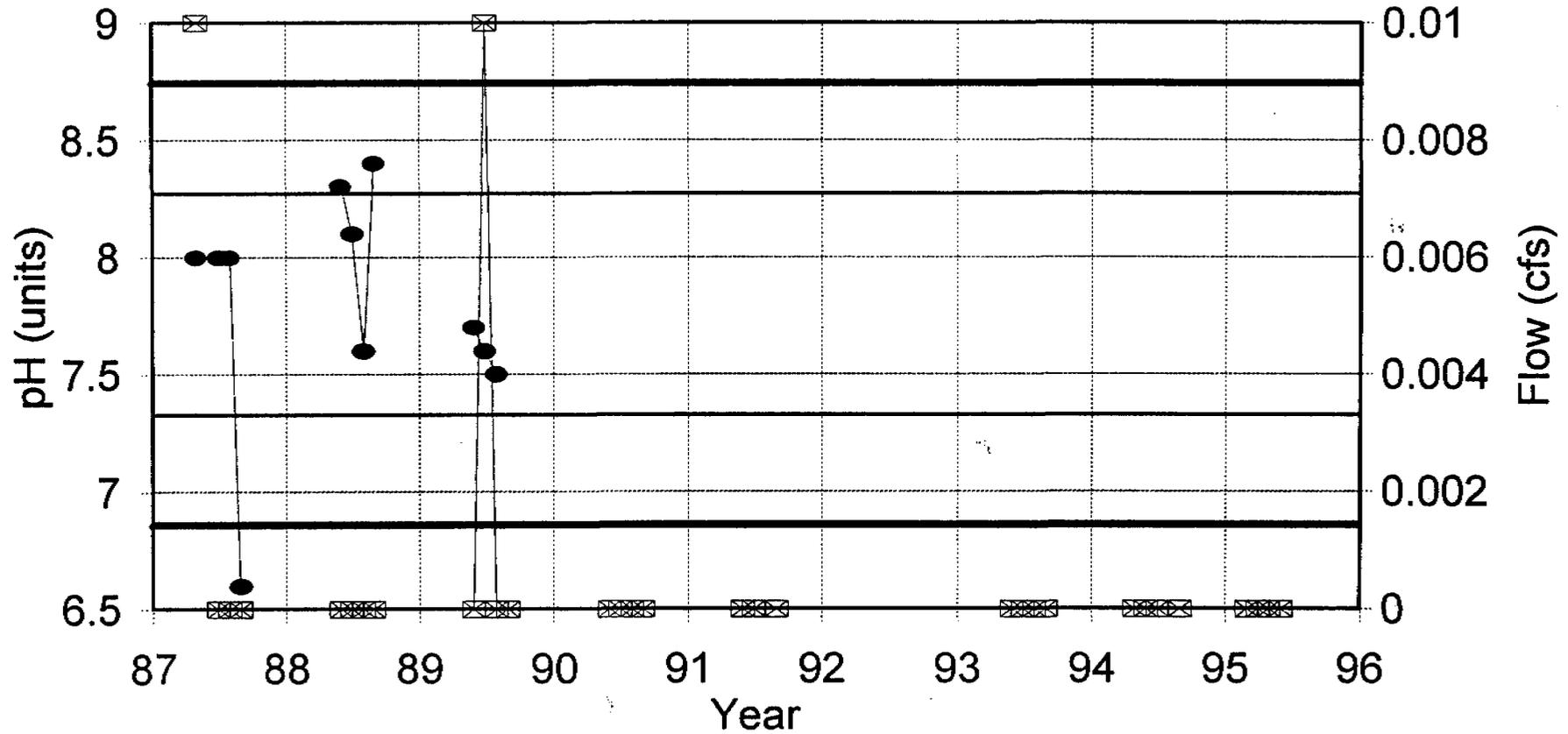
# Station 500

## Monthly Precipitation vs. Flow



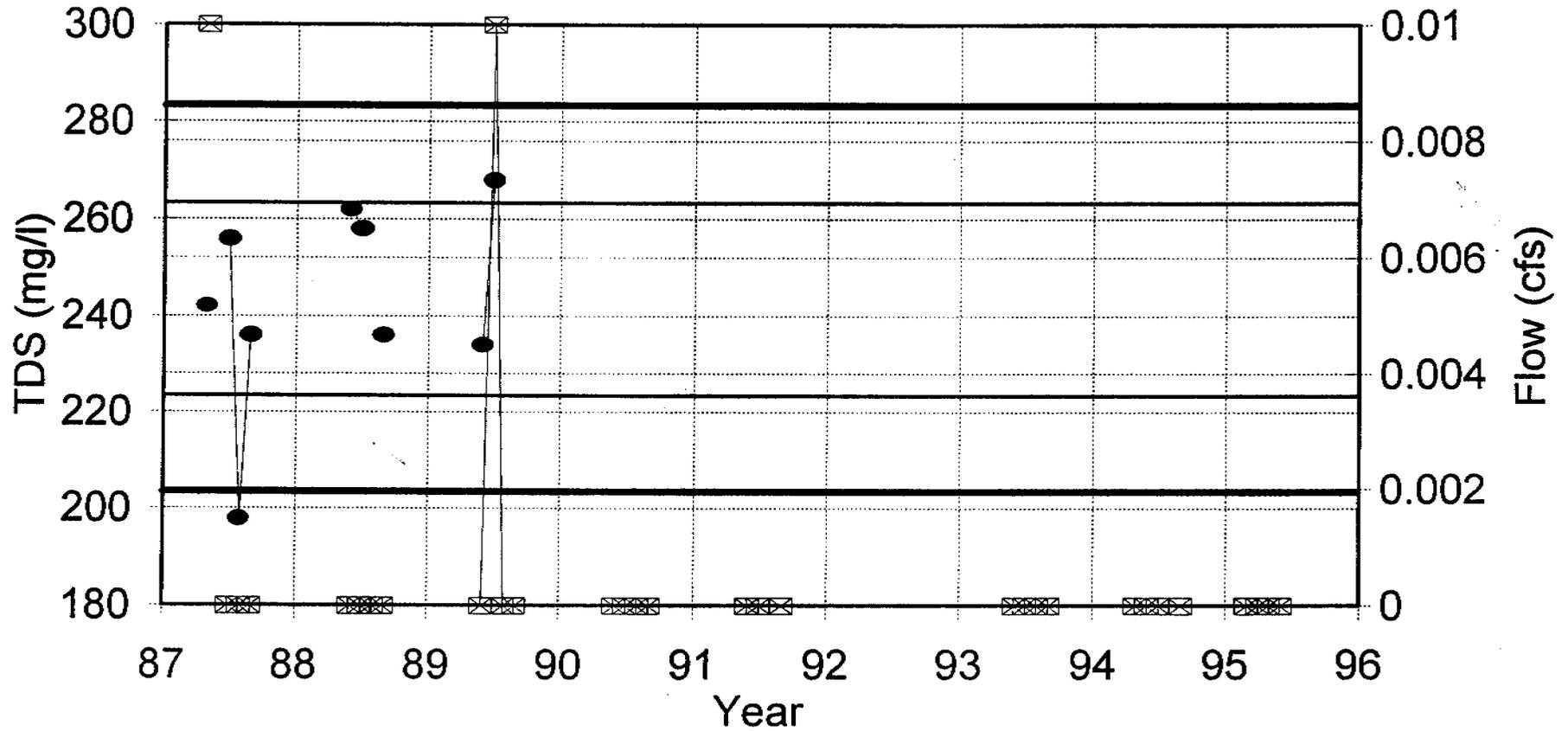
# Station 500

pH vs. Flow



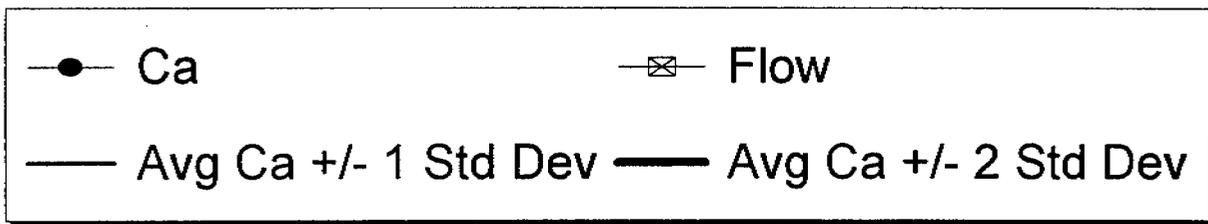
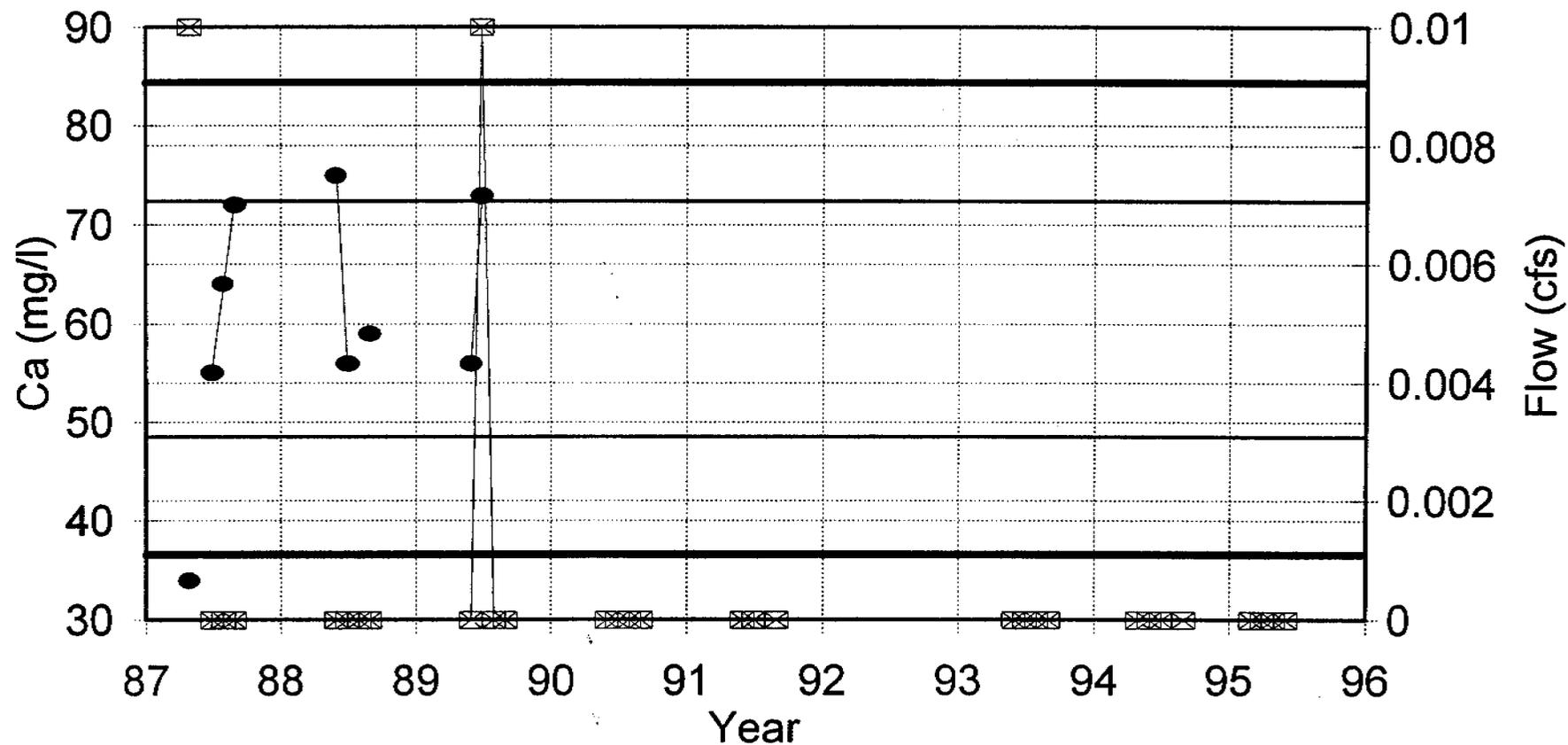
# Station 500

## TDS vs. Flow



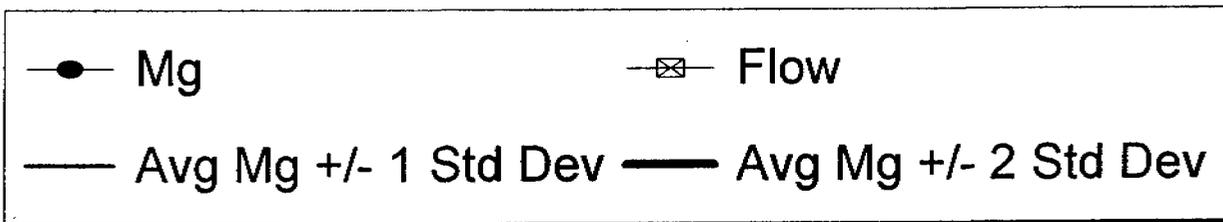
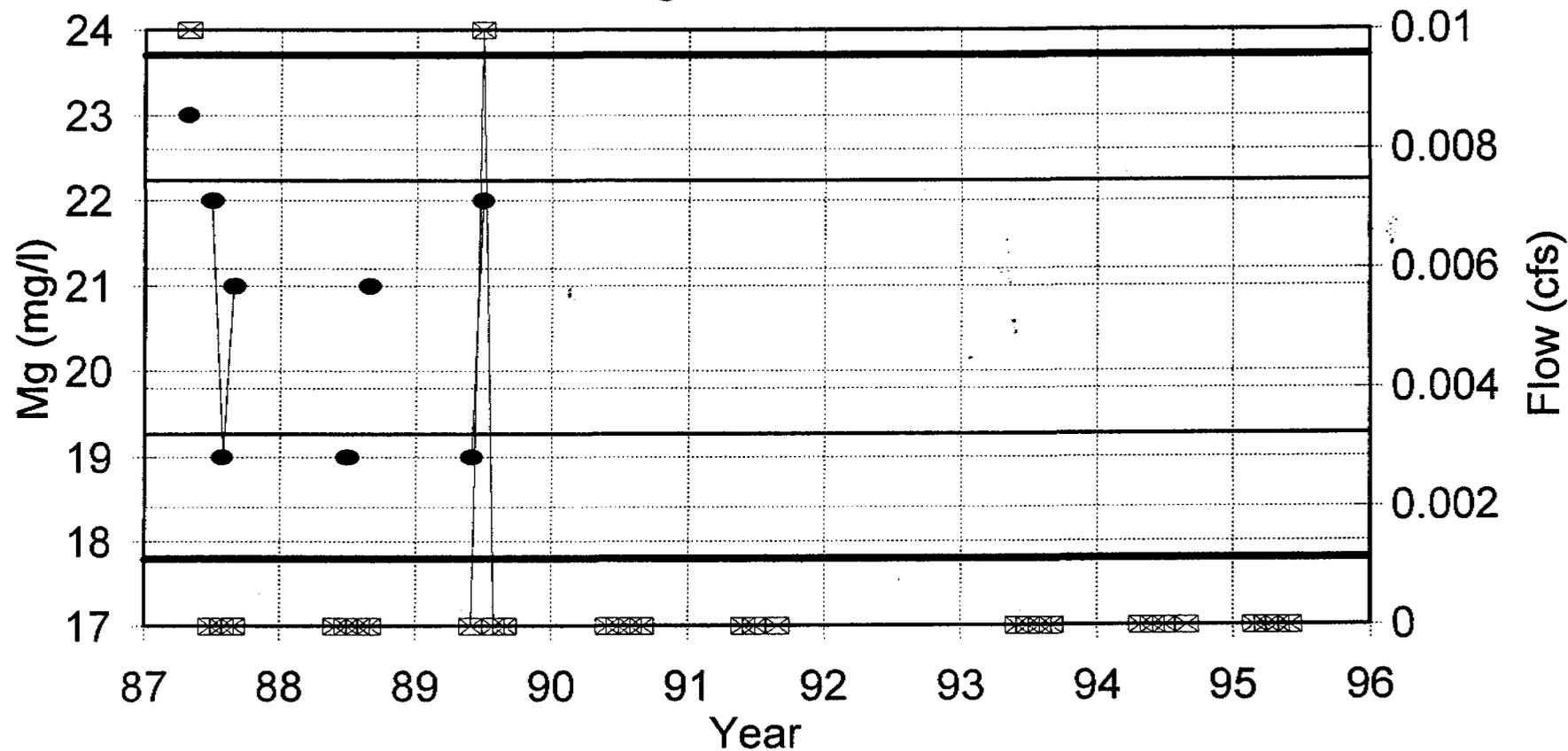
# Station 500

## Ca vs. Flow



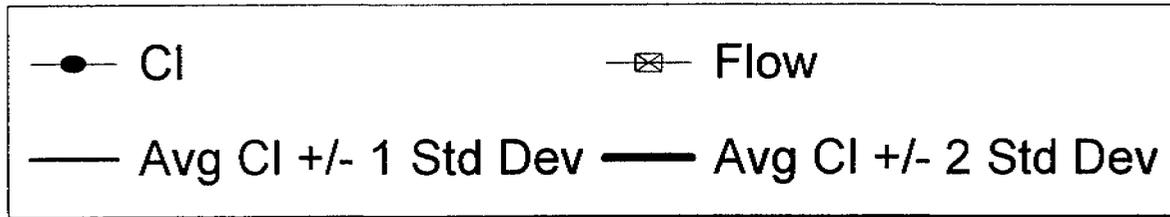
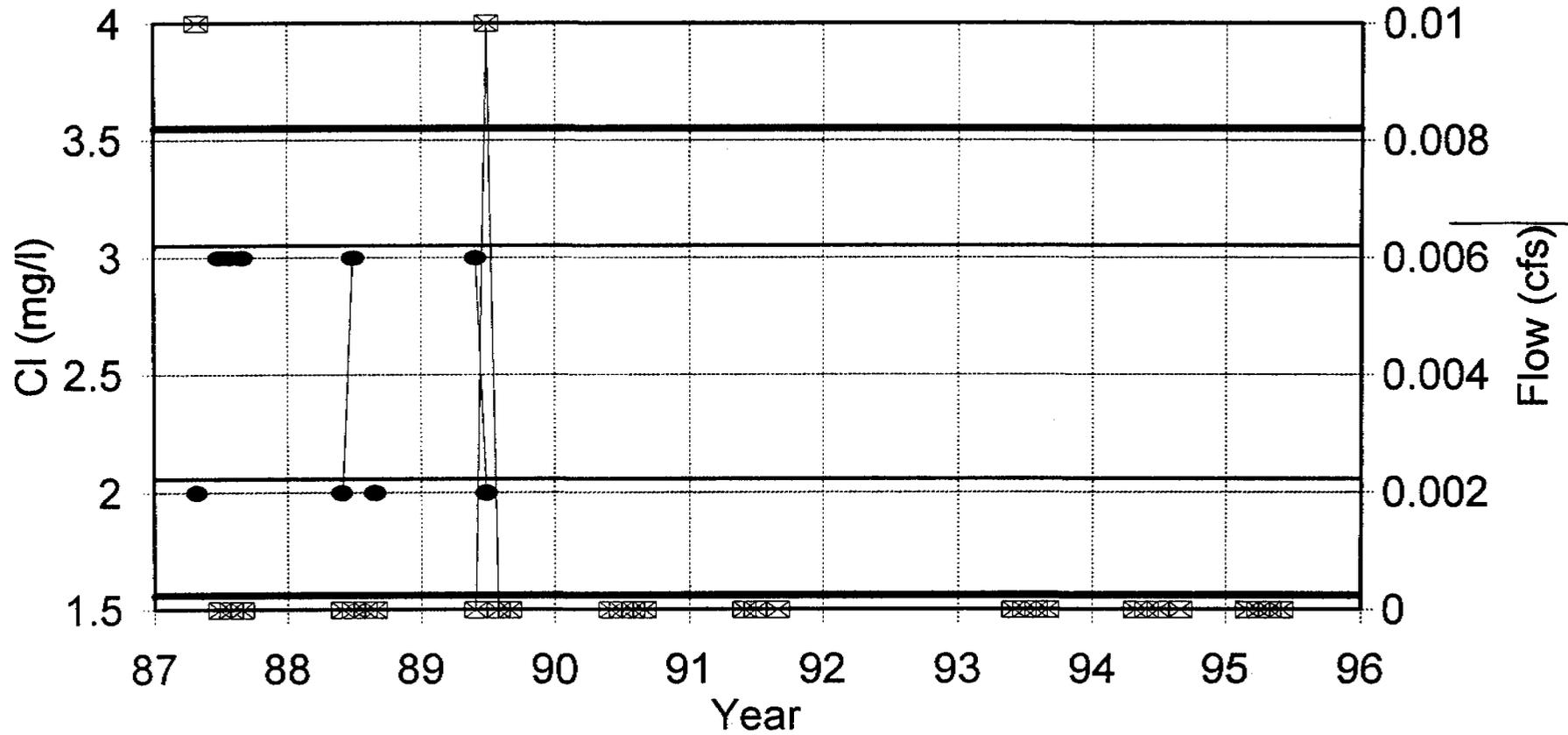
# Station 500

## Mg vs. Flow



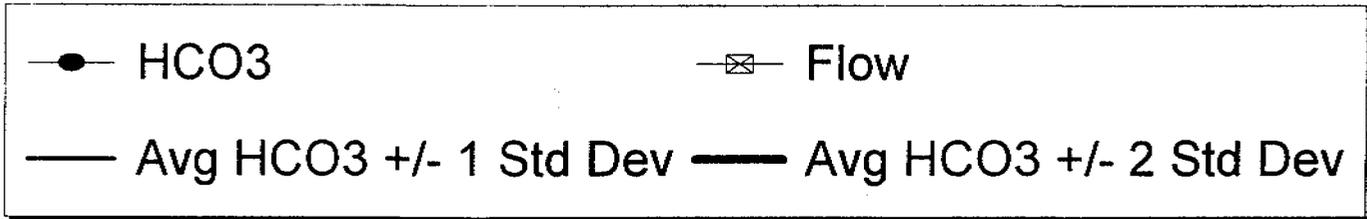
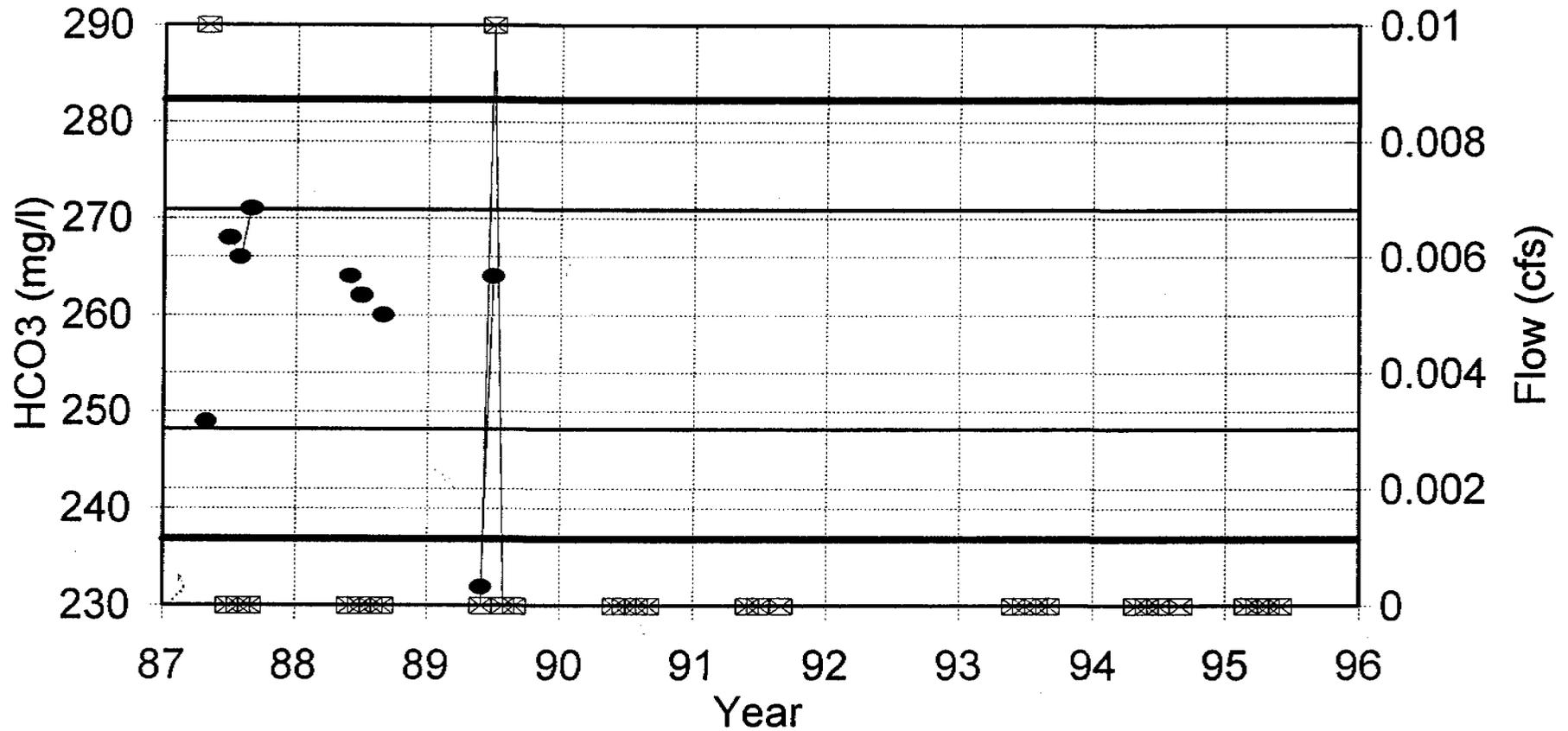
# Station 500

Cl vs. Flow



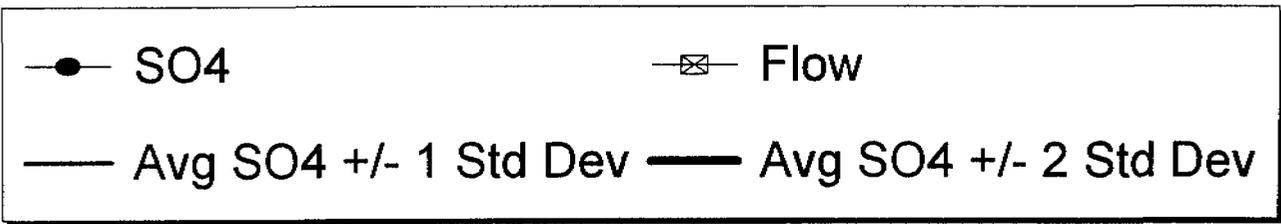
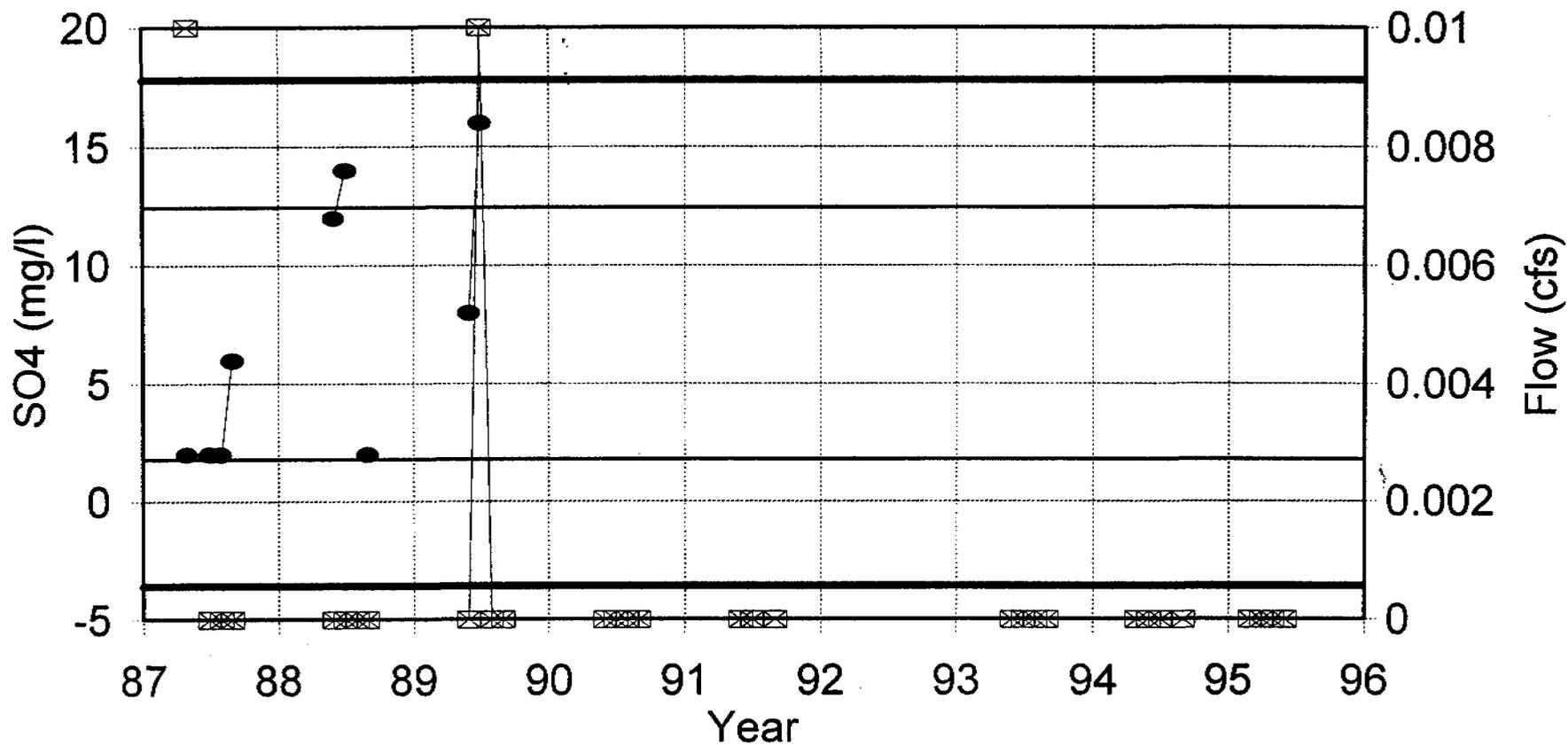
# Station 500

## HCO<sub>3</sub> vs. Flow



# Station 500

## SO4 vs. Flow







Cyprus Plateau Mining Company - Water Quality Data

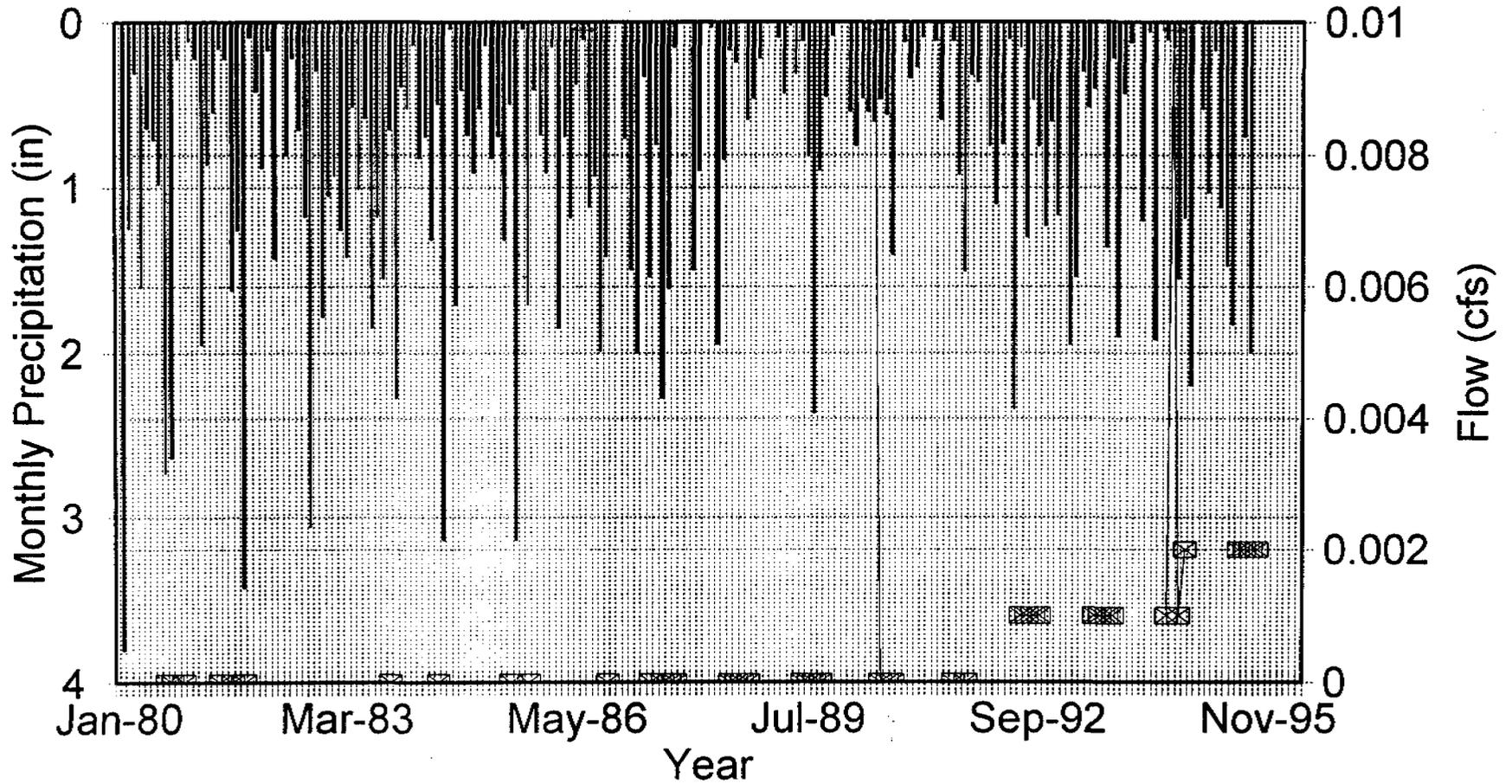
Print Date: May 2, 1996

Station: S111		Property: Star Point				Location: 2000' S 1875' W of NE cor. Sec 11, T15S, R7E				Station Type: Spring		Sampling Frequency: Quarterly				Formation: North Horn				Elevation: 9640				
Date		Field Measurements				Laboratory Measurements																Comments		
Mo-Yr	Sample Date	Flow (cfs)	Ph (units)	Sp. Cond. (ohms)	Temp. (C)	TDS (mg/l)	TSS (mg/l)	O&G (mg/l)	Hd-CaCO3 (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (D) (mg/l)	SO4 (D) (mg/l)	Ca (D) (mg/l)	Mg (D) (mg/l)	K (D) (mg/l)	Na (D) (mg/l)	Cat/An Bal (%)	Fe (D) (mg/l)	Fe (T) (mg/l)	Mn (T) (mg/l)			
Jan-92																								
Feb-92																								
Mar-92																								
Apr-92																								
May-92																								
Jun-92	06/17/92	0.001	7	343	9	178			167	195	0	1	29	42	15	1	2	<	0.02	0.02				
Jul-92	07/15/92	0.001	6.9	345	10.5	156			162	207	0	1	2	42	14 <	1	2	<	0.02	0.03				
Aug-92	08/26/92	0.001	6.9	350	9.7																			
Sep-92	08/22/92	0.001	6	4	9.5	186			192	188	5	1	16	49	17	1	2	<	0.02 <	0.02				
Oct-92																								
Nov-92																								
Dec-92																								
Jan-93																								
Feb-93																								
Mar-93																								
Apr-93																								
May-93																								
Jun-93	06/21/93	0.001	5.9	238	10.2	116			139	168	0	2	4	36	12 <	1	2	<	0.02	0.12 <	0.01			
Jul-93	07/28/93	0.001	6	323	11.1	168			177	207	0	2	4	46	15 <	1	2	<	0.02	0.03 <	0.01			
Aug-93	08/17/93	0.001	6	338	9																			
Sep-93	09/27/93	0.001	6.2	353	8.3	176			160	190	0	2	5	41	14 <	1	2	<	0.02	0.08 <	0.01			
Oct-93																								
Nov-93																								
Dec-93																								
Jan-94																								
Feb-94																								
Mar-94																								
Apr-94																								
May-94																								
Jun-94	06/20/94	0.001	7	360	8.6	178			172	200	0	2	2	44	15 <	1	2	<	0.02	0.1 <	0.01			
Jul-94	07/19/94	0.01	7.4	361	13.9	190			190	226	0	2	4	48	17	1	2	<	0.02	0.06 <	0.01			
Aug-94	08/31/94	0.001	7.7	318	13.1																			
Sep-94	09/21/94	0.002	7.5	412	10.9	192			220	207	0	48	2	55	20	2	3		0.03	0.05 <	0.01			
Oct-94																								
Nov-94																								
Dec-94																								
Jan-95																								
Feb-95																								
Mar-95																								
Apr-95																								
May-95																								
Jun-95	06/22/95	0.002	6.5	193	4.8	120			104	97 <	2	2 <	10	26.6	9.1	0.8	1.9	4.5	0.09	0.38 <	0.005			
Jul-95	07/27/95	0.002	7	313	9	190			174	165 <	2	3	10	44.4	15.3	0.6	2.2	-0.1	0.05	0.02 <	0.005			
Aug-95	08/23/95	0.002	6.42	314	10																			
Sep-95	09/27/95	0.002	6.9	504	8	190			196	172 <	2	5	8	50.3	17.1	0.7	2.2	3.7 <	0.01	0.02 <	0.005			calibrated ph meter
Oct-95																								
Nov-95																								
Dec-95																								
Jan-96																								
END DATA																								
Count		46	18	18	18	39	0	0	14	14	14	14	14	14	14	14	14	3	14	14	14	11		
Minimum	<	0	5.9	4	4.8	116	ERR	ERR	104	97 <	0	1 <	2	26.6	9.1 <	0.8	1.9	-0.1 <	0.01 <	0.02 <	0.02 <	0.005		
Maximum	<	0.01	7.7	504	15	688	ERR	ERR	220	226 <	5	48 <	29	55	20 <	2	3	4.5 <	0.09 <	0.38 <	0.01			
Average	<	0.0011	6.7789	321.06	9.9222	199.77	ERR	ERR	174.07	188.36 <	0.7857	7.2857 <	7.1429	44.45	15.321 <	1.0071	2.1643	2.7 <	0.0279 <	0.0707 <	0.0086			
Standard Deviation	<	0.0024	0.5665	98.419	2.3004	87.022	ERR	ERR	27.408	30.624 <	1.4232	13.274 <	7.2689	6.7864	2.5616 <	0.3035	0.3497	2.0067 <	0.0193 <	0.0913 <	0.0022			
Avg. -1 Std. Dev.	<	-0.001	6.2124	222.64	7.6218	112.75	ERR	ERR	146.66	157.73 <	-0.637	-5.988 <	-0.126	37.664	12.76 <	0.7037	1.8146	0.6933 <	0.0085 <	-0.021 <	0.0064			
Avg. +1 Std. Dev.	<	0.0035	7.3454	419.47	12.223	286.79	ERR	ERR	201.48	218.98 <	2.2089	20.56 <	14.412	51.236	17.883 <	1.3106	2.514	4.7087 <	0.0472 <	0.162 <	0.0109			
Avg. -2 Std. Dev.	<	-0.004	5.6459	124.22	5.3215	25.724	ERR	ERR	119.26	127.11 <	-2.061	-19.26 <	-7.395	30.877	10.198 <	0.4002	1.4649	-1.313 <	-0.011 <	-0.112 <	0.0042			
Avg. +2 Std. Dev.	<	0.006	7.9119	517.89	14.523	373.81	ERR	ERR	228.89	249.6 <	3.6321	33.834 <	21.881	58.023	20.445 <	1.6141	2.8637	6.7133 <	0.0665 <	0.2533 <	0.0131			

NOTE: The "<" symbol indicates that "Less Than" data was found in the data set; statistics are approximate.

# Station S111

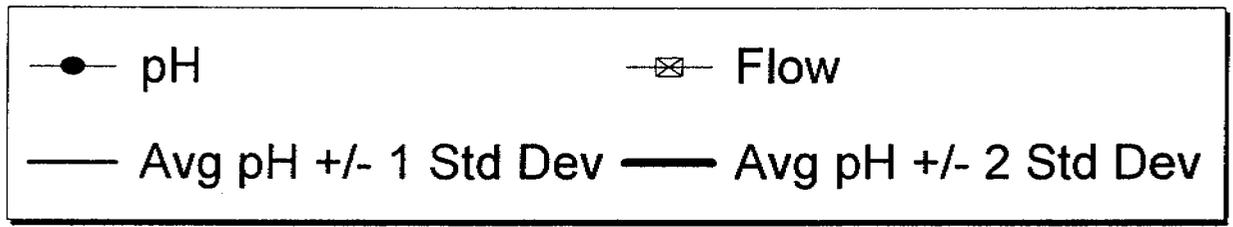
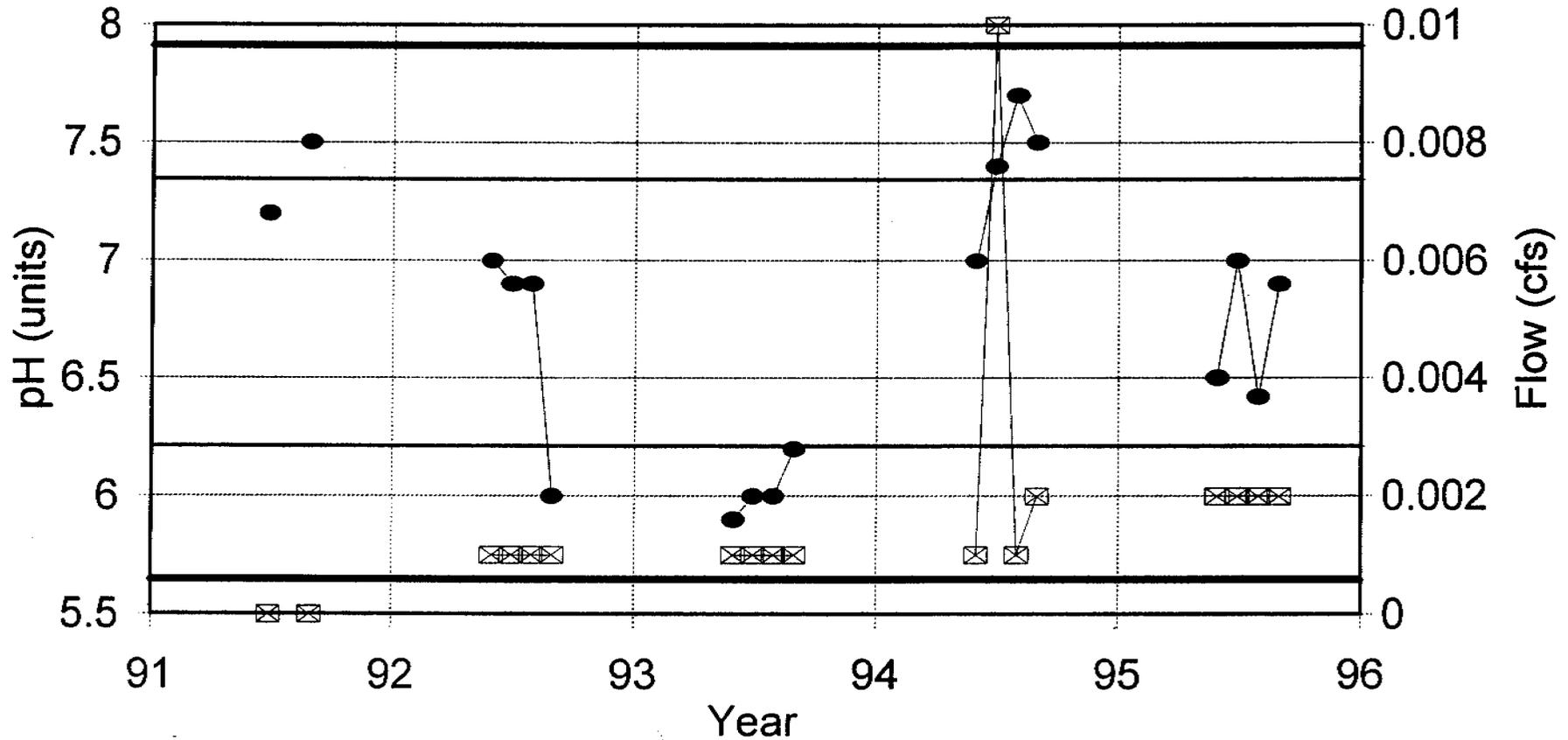
## Monthly Precipitation vs. Flow



■ Monthly Precipitation    ⊠ Flow

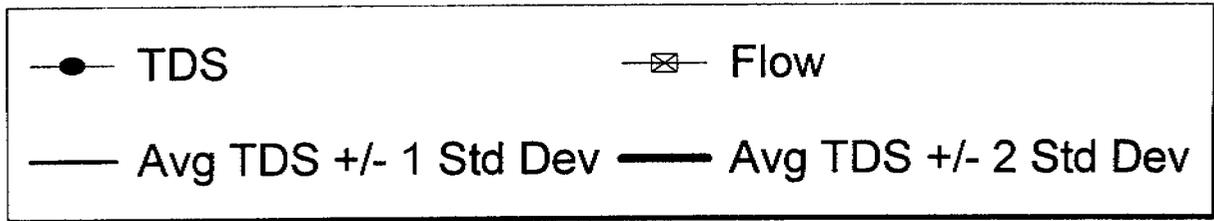
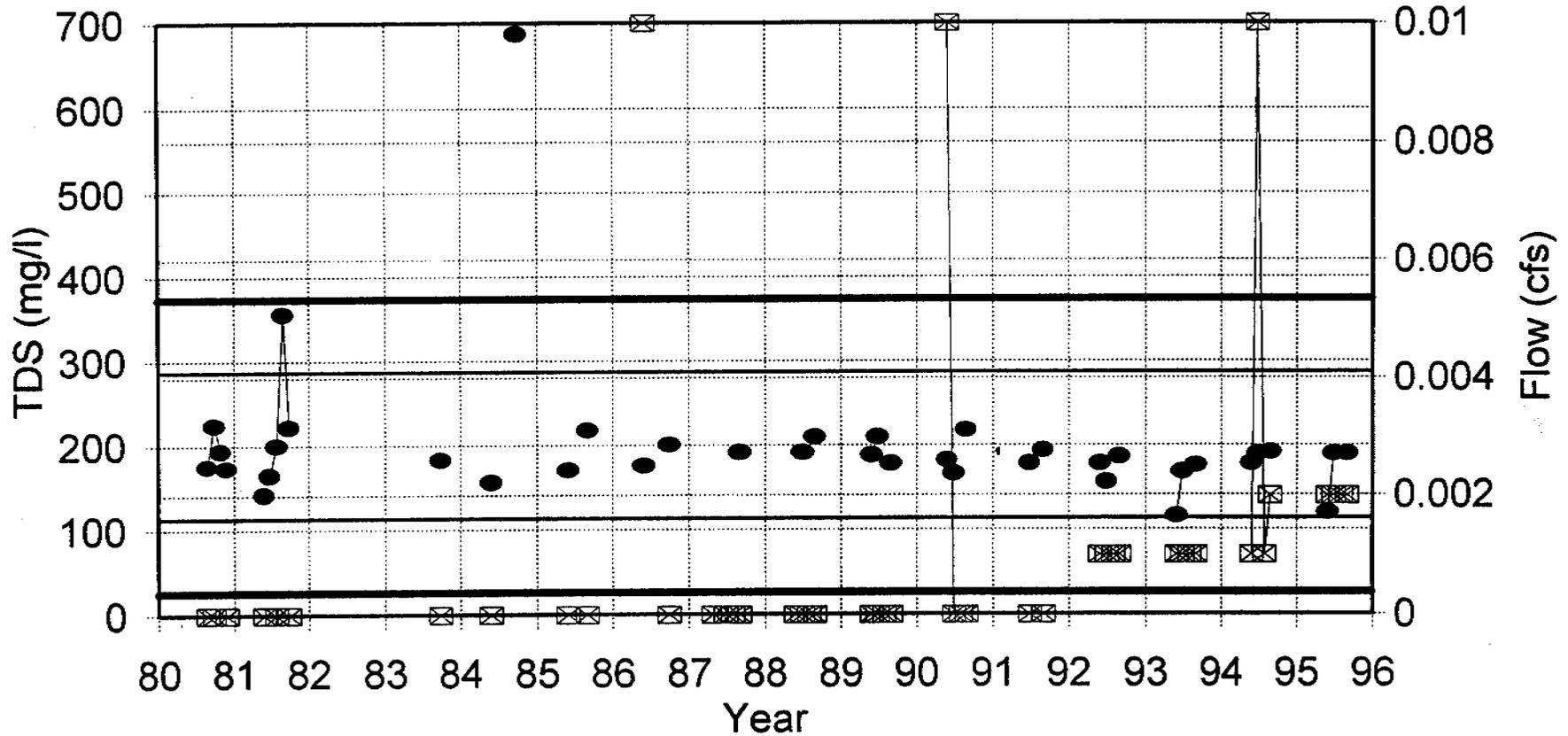
# Station S111

pH vs. Flow



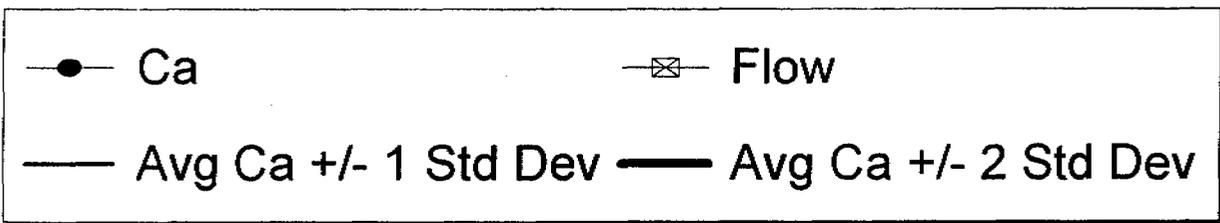
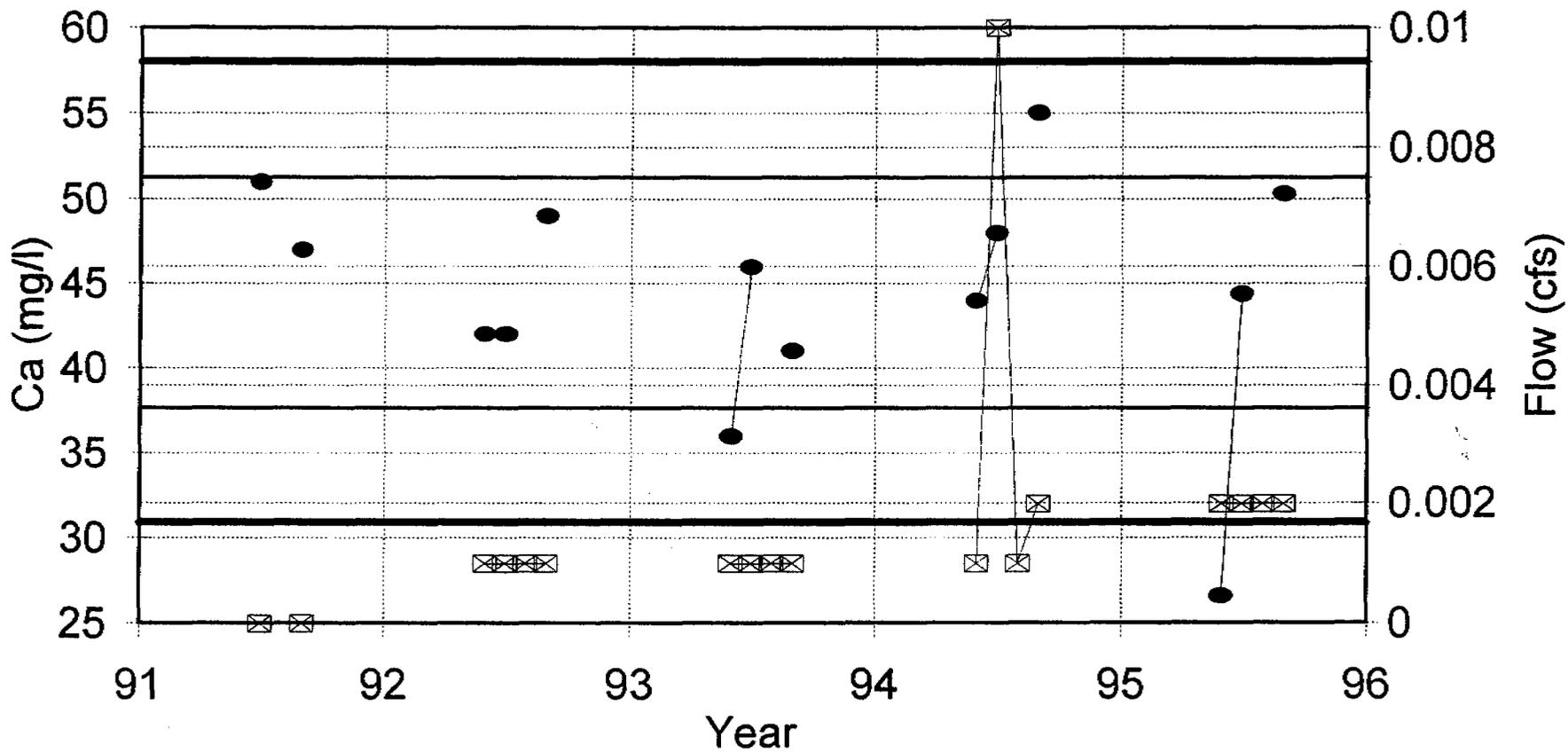
# Station S111

## TDS vs. Flow



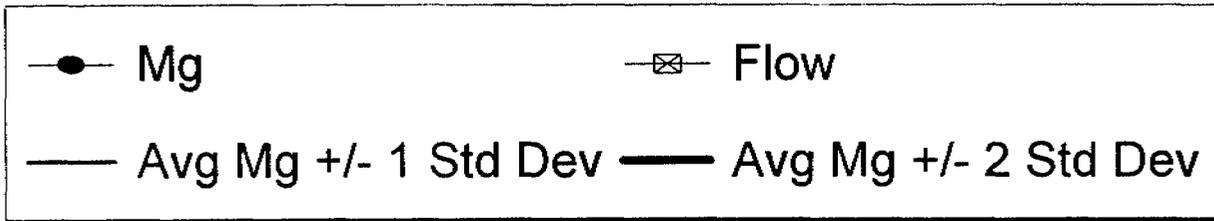
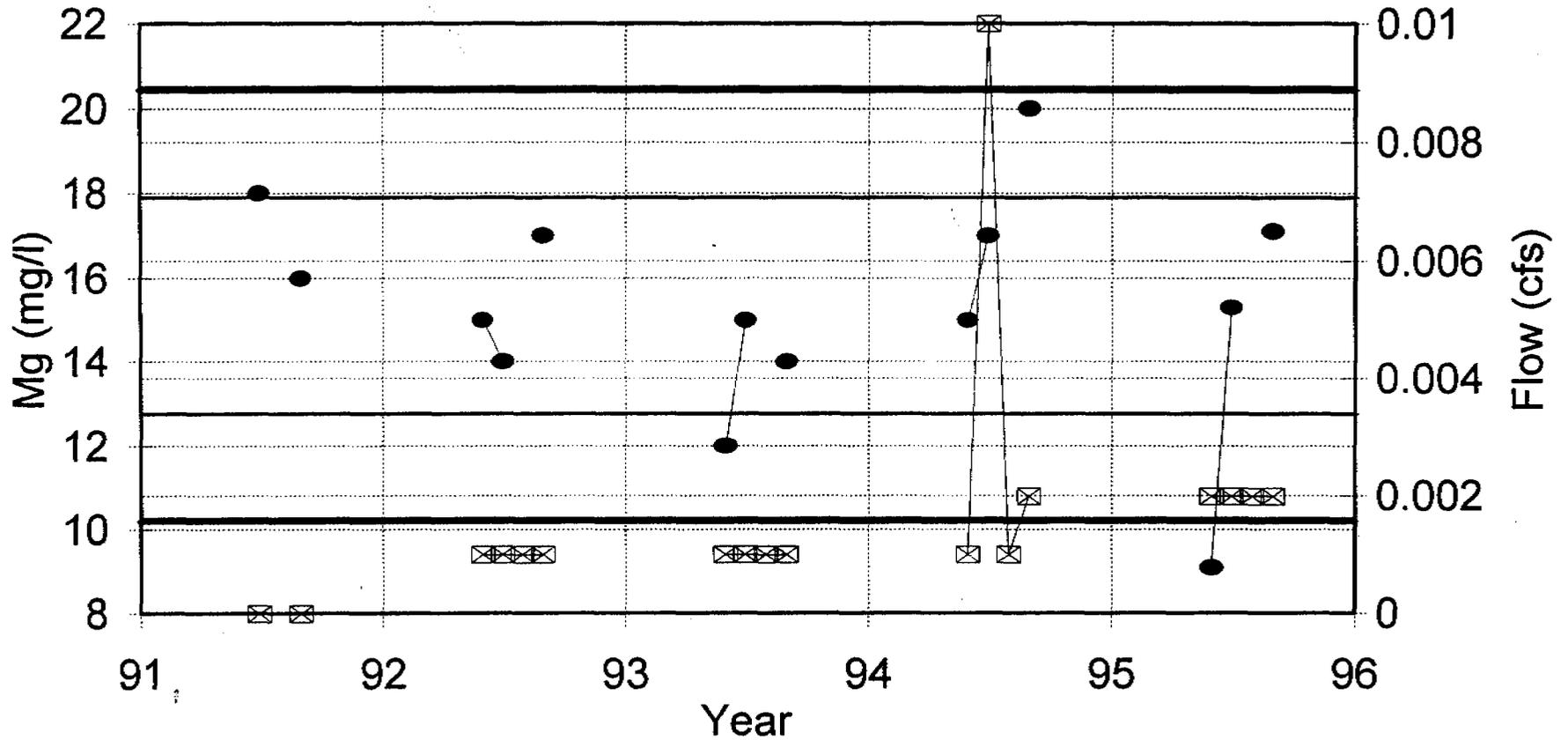
# Station S111

## Ca vs. Flow



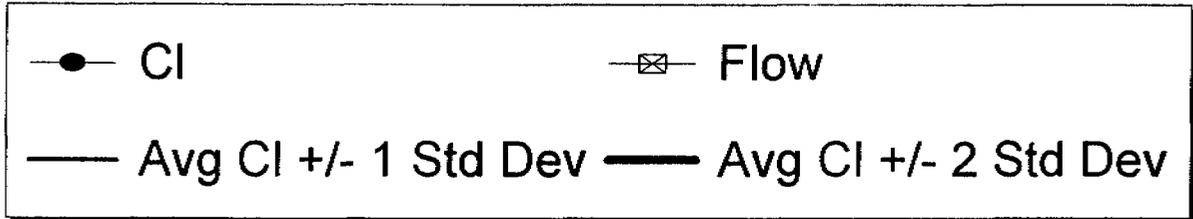
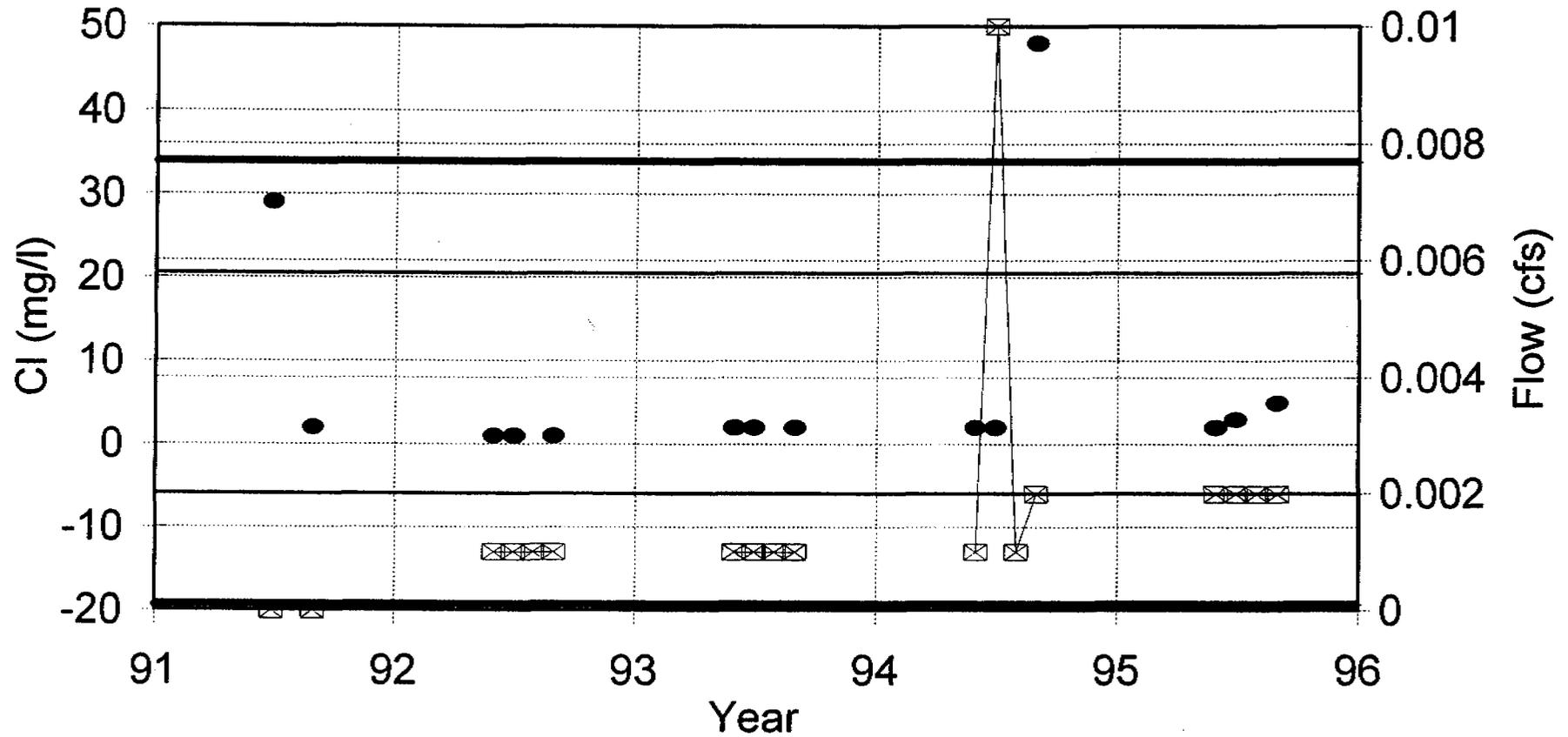
# Station S111

## Mg vs. Flow



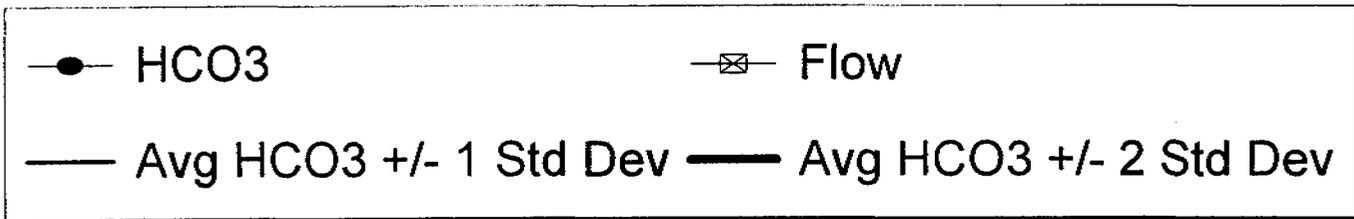
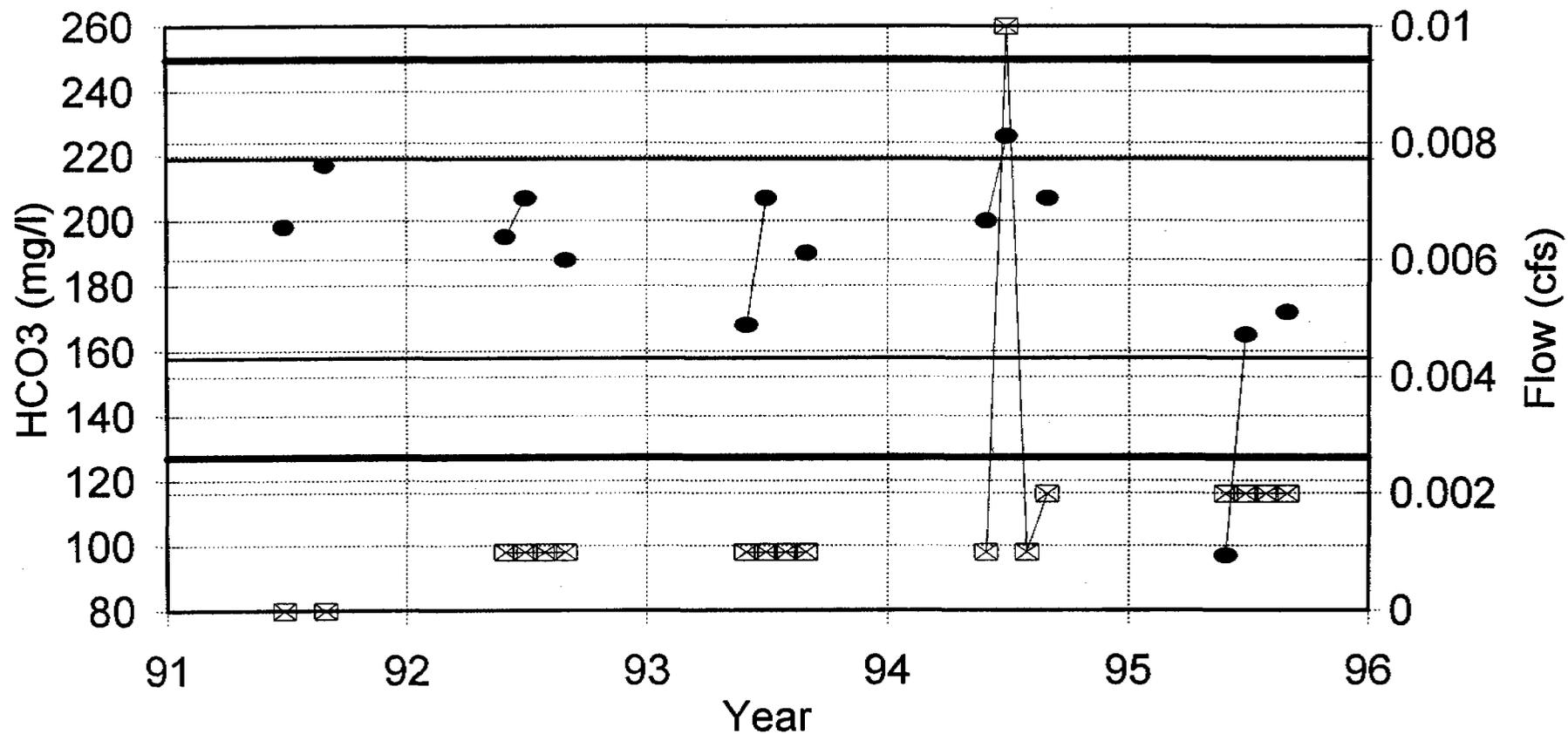
# Station S111

Cl vs. Flow



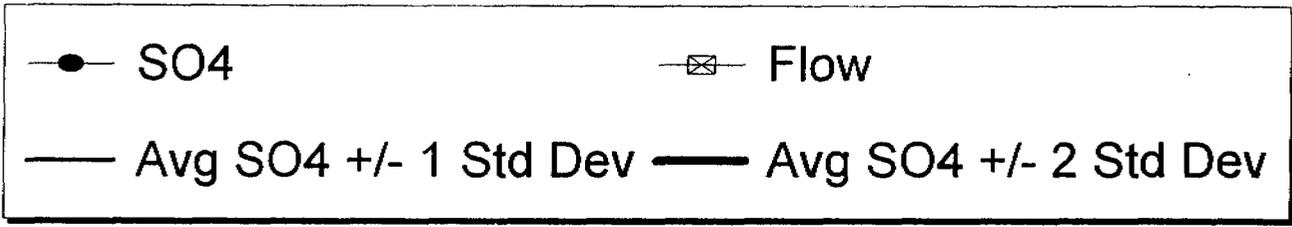
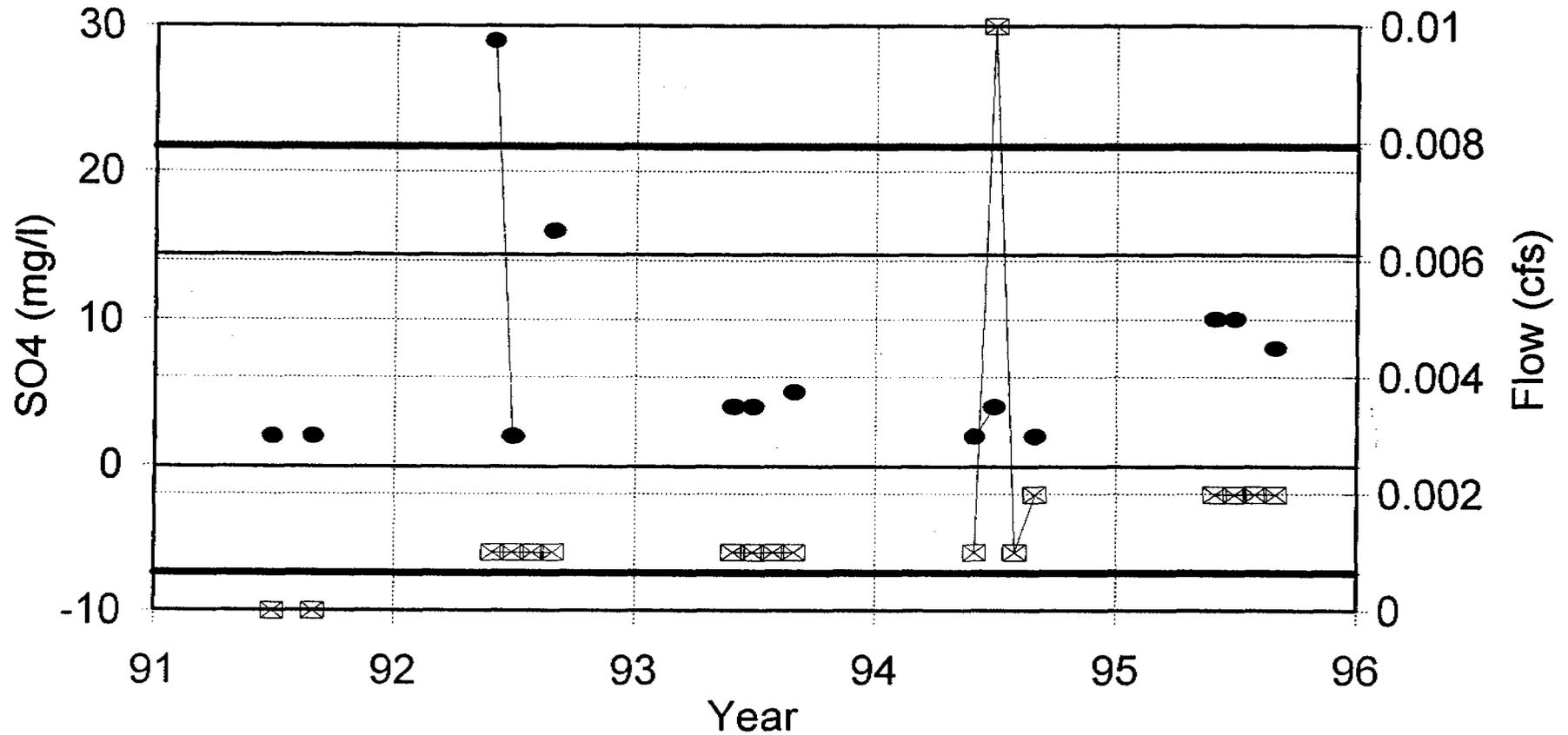
# Station S111

## HCO<sub>3</sub> vs. Flow



# Station S111

## SO4 vs. Flow





Cyprus Plateau Mining Company - Water Quality Data

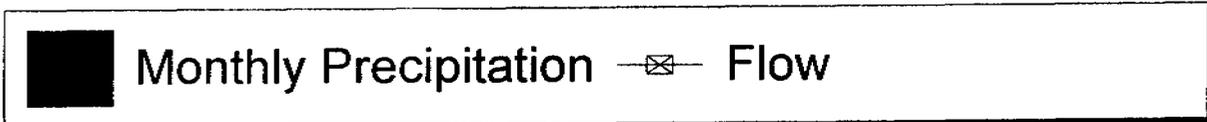
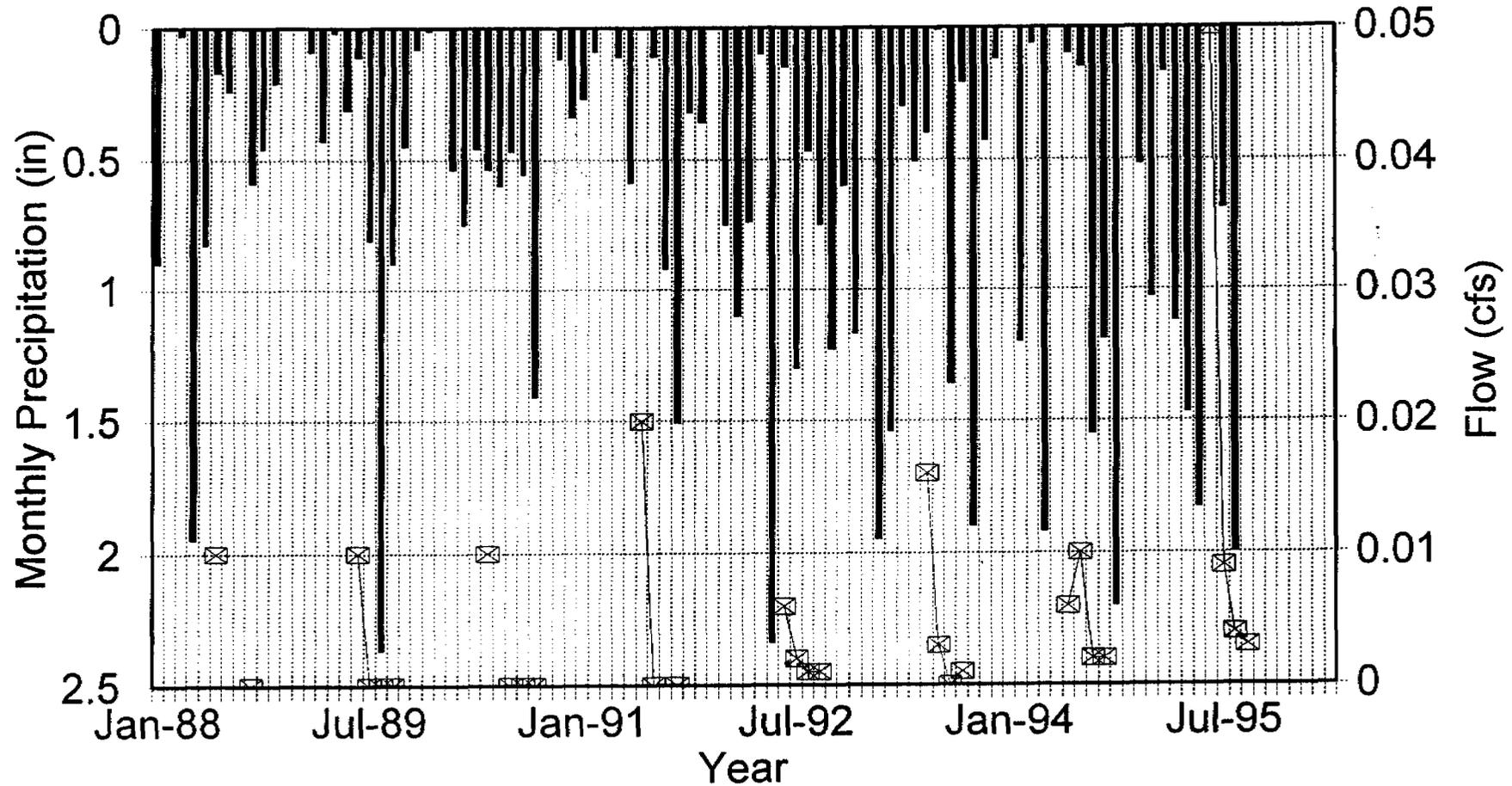
Station: 232 Property: Star Point Location: 340' N 60' W of SE cor. Sec 12, T15S, R7E Station Type: Spring Sampling Frequency: Quarterly Formation: North Horn Print Date: May 2, 1996 Elevation: 9775

Date		Field Measurements				Laboratory Measurements														Comments				
Mo-Yr	Sample Date	Flow (cfs)	Ph (units)	Sp. Cond. (ohms)	Temp. (C)	TDS (mg/l)	TSS (mg/l)	O&G (mg/l)	H4-CaCO3 (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (D) (mg/l)	SO4 (D) (mg/l)	Ca (D) (mg/l)	Mg (D) (mg/l)	K (D) (mg/l)	Na (D) (mg/l)	Ca/An Bal (%)	Fe (D) (mg/l)		Fe (T) (mg/l)	Mn (T) (mg/l)		
Jan-94																								
Feb-94																								
Mar-94																								
Apr-94																								
May-94																								
Jun-94	06/09/94	0.006	7	385	3	208			173	212	0	2	2	56	8 <	1	2	<	0.02	0.22 <	0.01			
Jul-94	07/19/94	0.01	7.8	340	12.9	180			163	214	0	2	6	52	8	1	2		0.04	0.16 <	0.01			
Aug-94	08/03/94	0.002																						
Sep-94	09/21/94	0.002	7.6	358	12.9	190			187	222	0	2	6	60	9	1	2		0.07	4.22	0.09		H2O CLEAR, HOWEVER	
Oct-94																								
Nov-94																								
Dec-94																								
Jan-95																								
Feb-95																								
Mar-95																								
Apr-95																								
May-95																								
Jun-95	06/22/95	0.05	7.4	262	5.2	140			145	128 <	2	2	30	46.8	6.8	1.2	1.8	-3.8	0.04	0.38	0.02			
Jul-95	07/27/95	0.009	7.3	398	6	200			186	170 <	2	2	10	59.6	9.1	1.2	2.2	2.5 <	0.01	0.13 <	0.005			
Aug-95	08/23/95	0.004	6.39	6																				
Sep-95	09/28/95	0.003	7.2	229	6.11	210			191	179 <	2	1	4	61.1	9.2	1.2	2.2	3.2 <	0.01	0.05 <	0.005			
Oct-95																								
Nov-95																								
Dec-95																								
Jan-96																								
END DATA																								
Count		29	16	16	15	17	0	0	14	14	14	14	14	14	14	14	14	3	14	14	11			
Minimum	<	0	6	6	3	140	ERR	ERR	145	128 <	0	1	2	46.8	5 <	1	1.8	-3.8 <	0.01	0.02 <	0.005			
Maximum	<	0.05	7.8	398	12.9	226	ERR	ERR	206	251 <	5	3	35	74	9.2 <	2	8	3.2 <	0.07	19.8 <	0.13			
Average	<	0.0057	6.8619	303.25	7.274	189.41	ERR	ERR	174.29	191.86 <	1.1429	1.8571	14	56.679	7.9357 <	1.1857	2.3	0.6333 <	0.0257	2.1464 <	0.0282			
Standard Deviation	<	0.0096	0.5504	92.032	2.9587	21.69	ERR	ERR	17.633	31.112 <	1.767	0.5151	10.556	7.1372	1.0701 <	0.342	1.0303	3.1478 <	0.015	5.0435 <	0.0397			
Avg. -1 Std. Dev.	<	-0.004	6.3115	211.22	4.3153	167.72	ERR	ERR	156.65	160.74 <	-0.624	1.3421	3.444	49.541	6.8656 <	0.8438	1.2697	-2.515 <	0.0107	-2.897 <	-0.011			
Avg. +1 Std. Dev.	<	0.0156	7.4123	395.26	10.233	211.1	ERR	ERR	191.92	222.97 <	2.9099	2.3722	24.556	63.816	9.0058 <	1.5277	3.3303	3.7812 <	0.0407	7.1889 <	0.0679			
Avg. -2 Std. Dev.	<	-0.014	5.7611	119.19	1.3567	148.03	ERR	ERR	139.02	129.63 <	-2.391	0.827	-7.112	42.404	5.7955 <	0.5018	0.2395	-5.662 <	-0.004	-7.94 <	-0.051			
Avg. +2 Std. Dev.	<	0.0254	7.9627	487.31	13.191	232.79	ERR	ERR	209.55	254.08 <	4.6769	2.8873	35.112	70.953	10.076 <	1.8696	4.3605	6.929 <	0.0557	12.233 <	0.1075			

NOTE: The "<" symbol indicates that "Less Than" data was found in the data set; statistics are approximate.

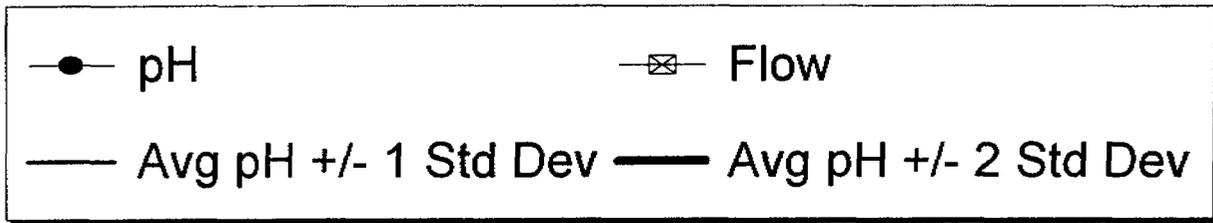
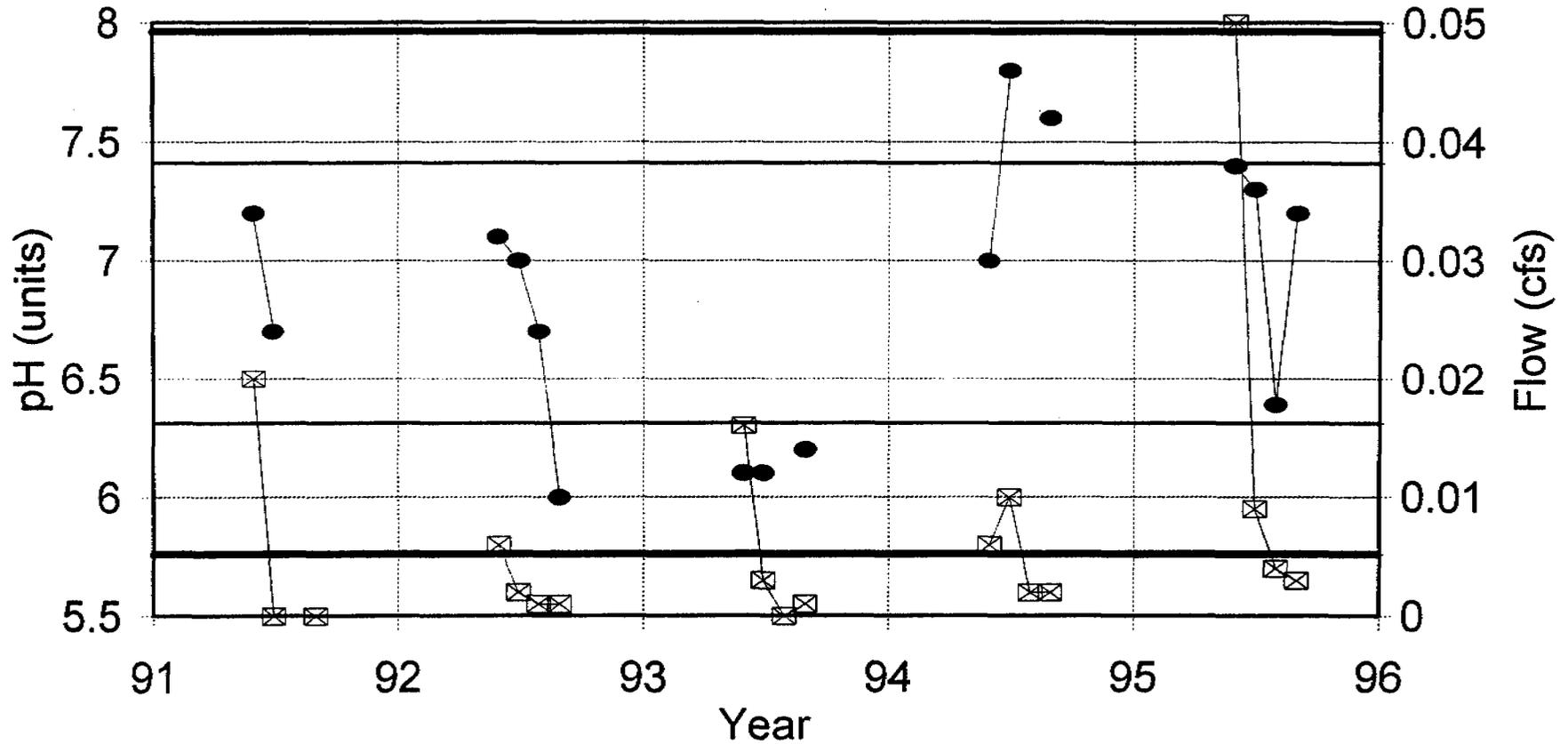
# Station 232

## Monthly Precipitation vs. Flow



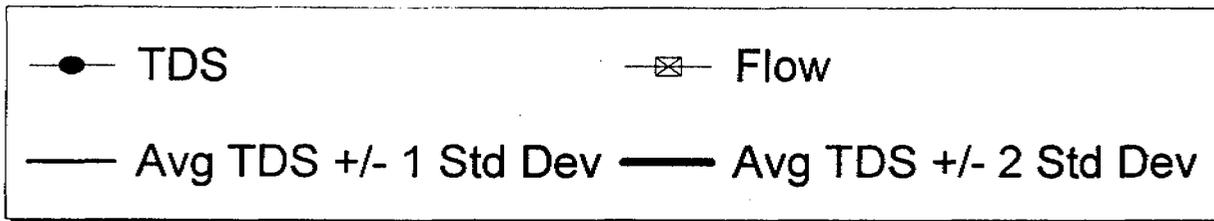
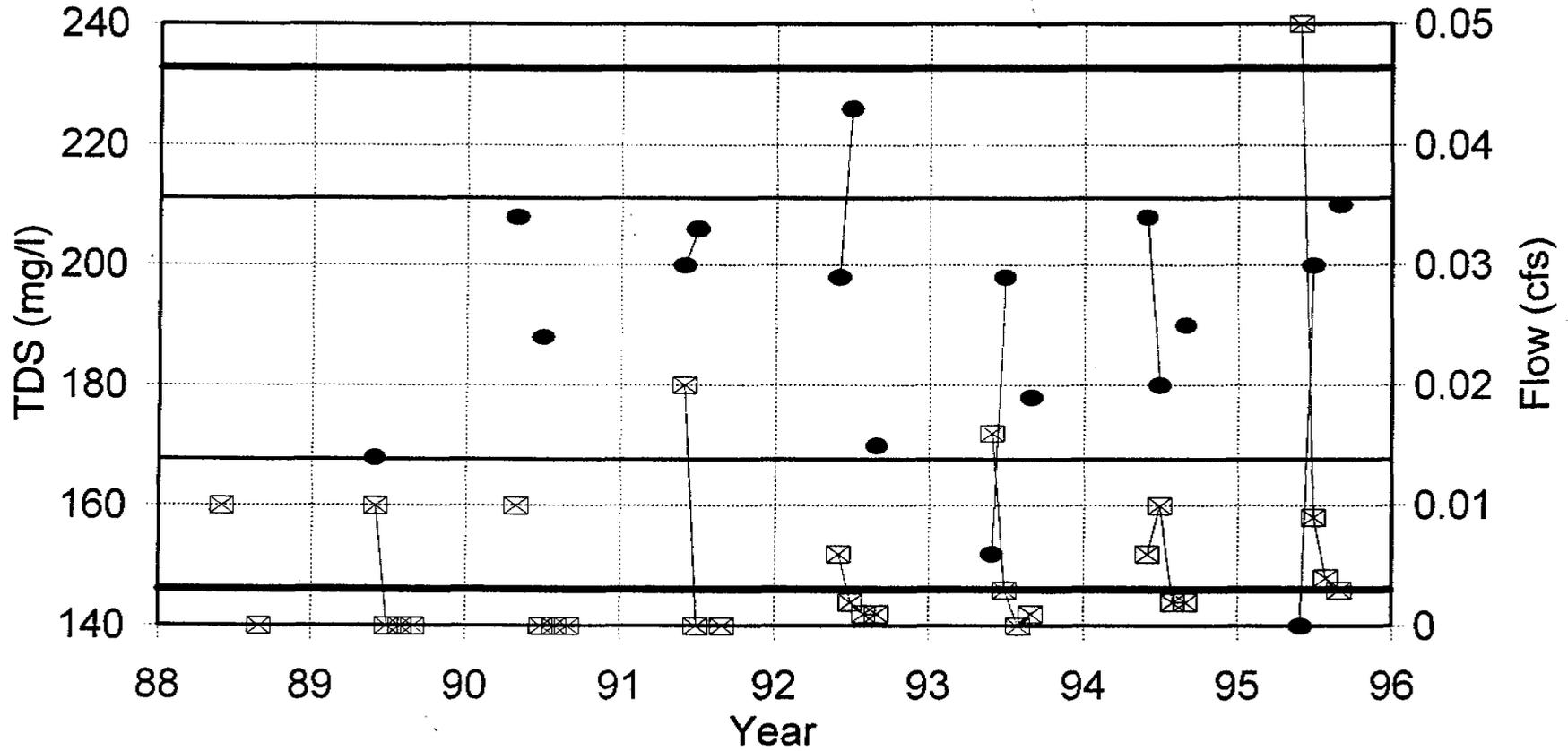
# Station 232

pH vs. Flow



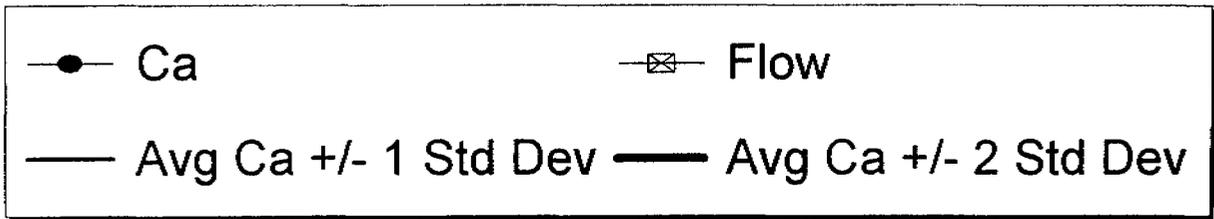
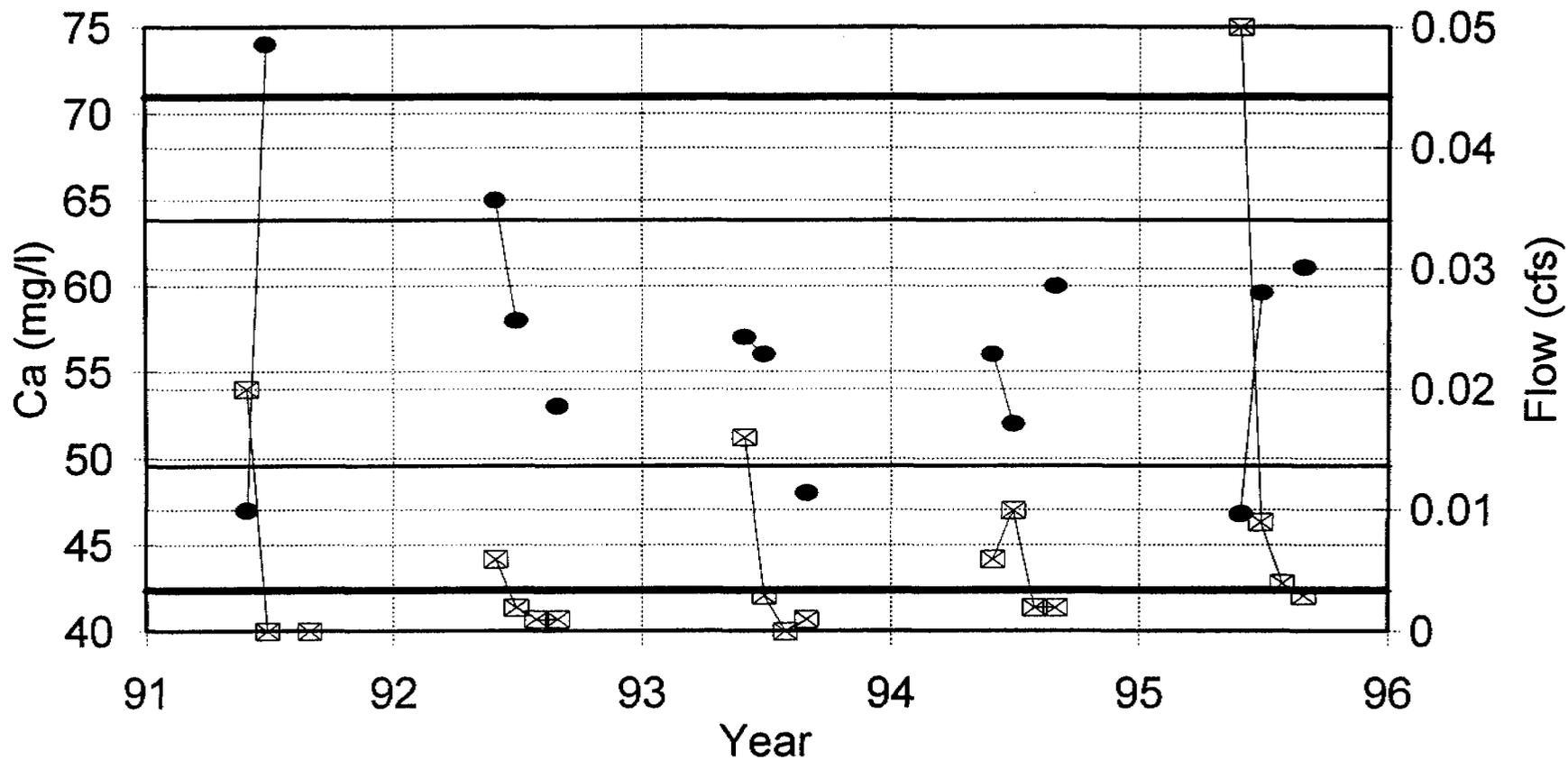
# Station 232

## TDS vs. Flow



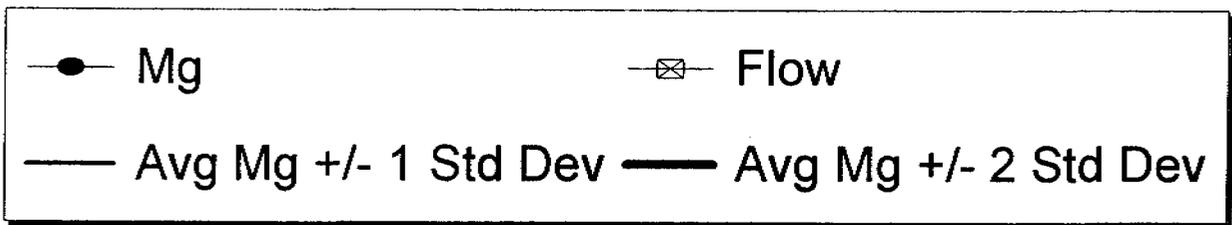
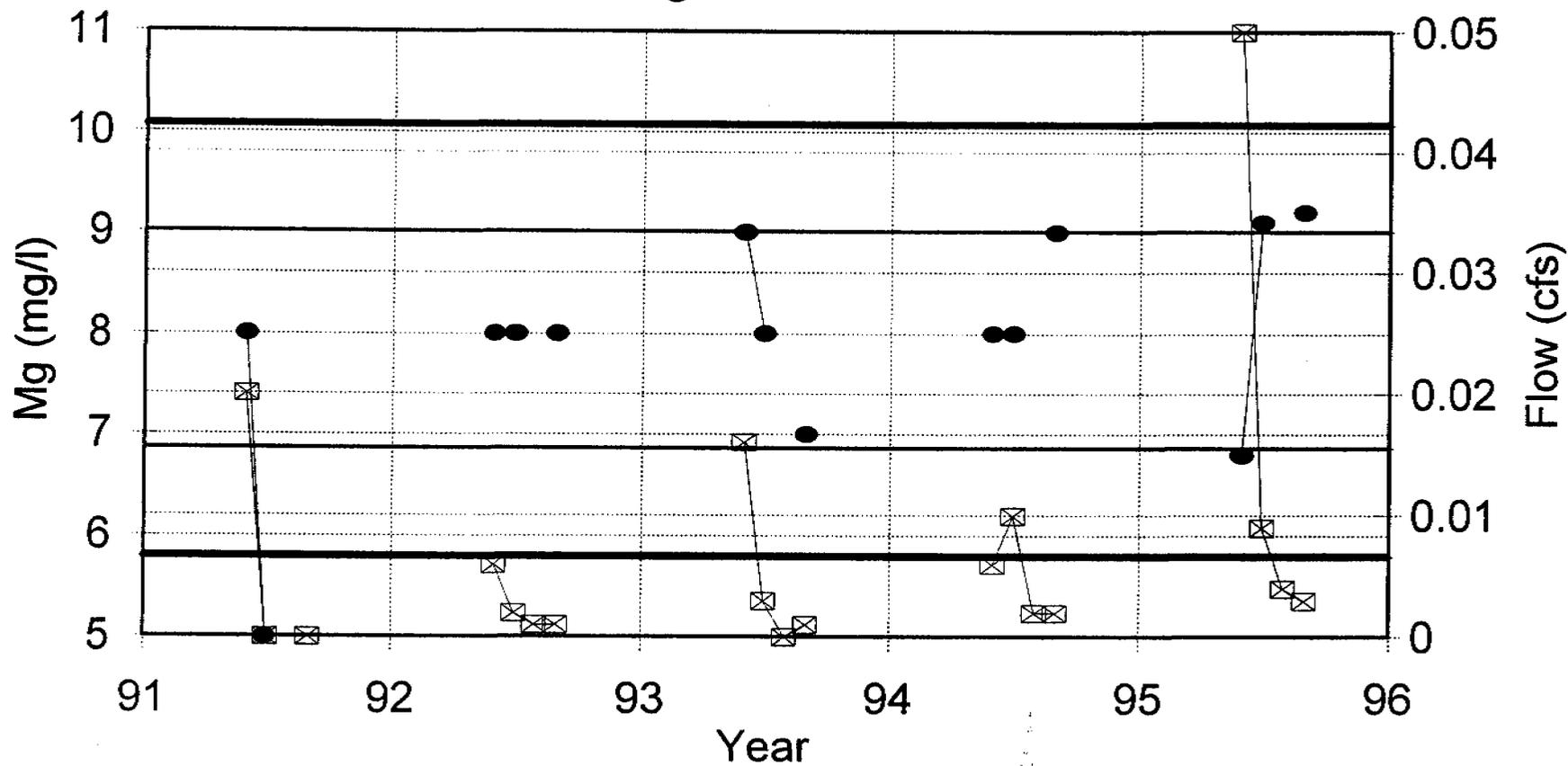
# Station 232

## Ca vs. Flow



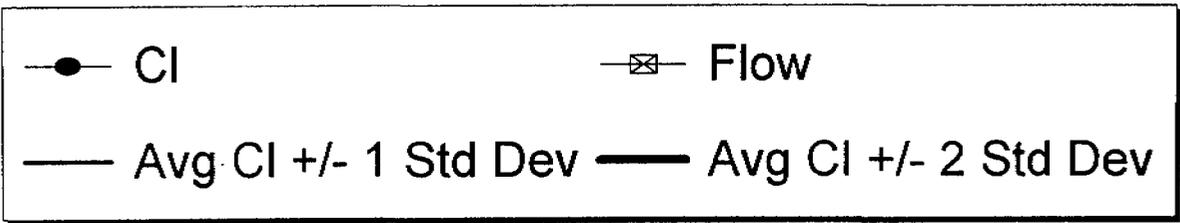
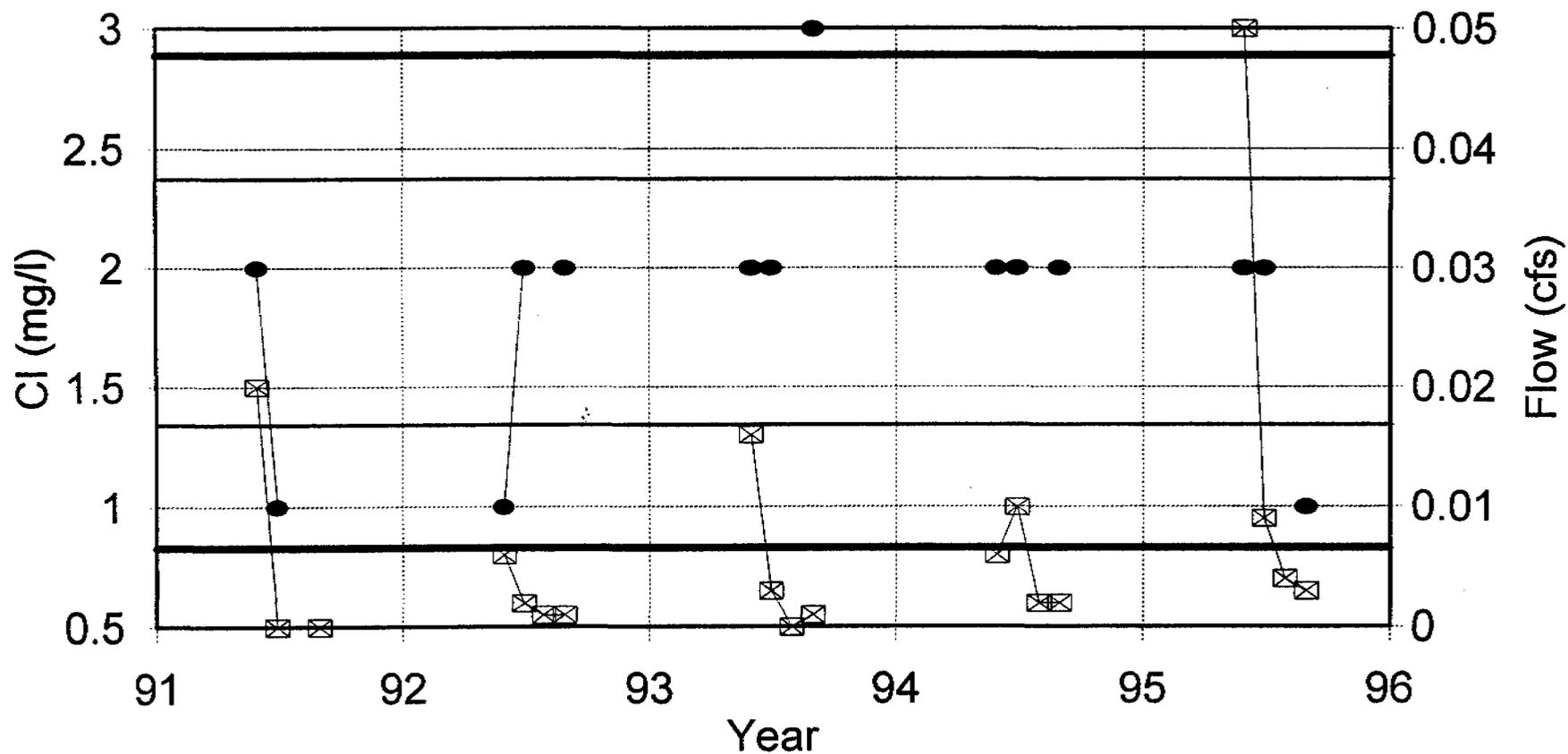
# Station 232

## Mg vs. Flow



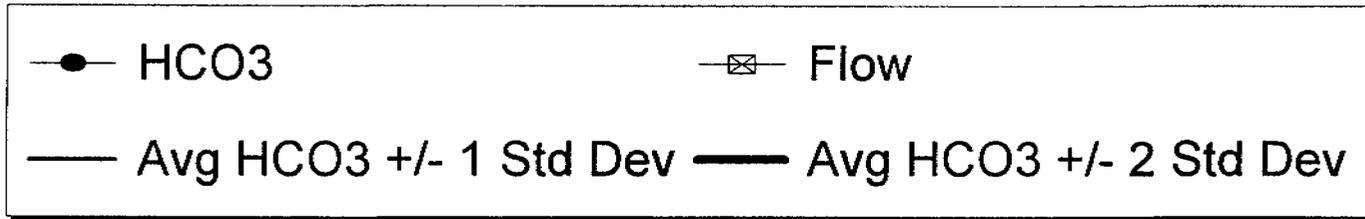
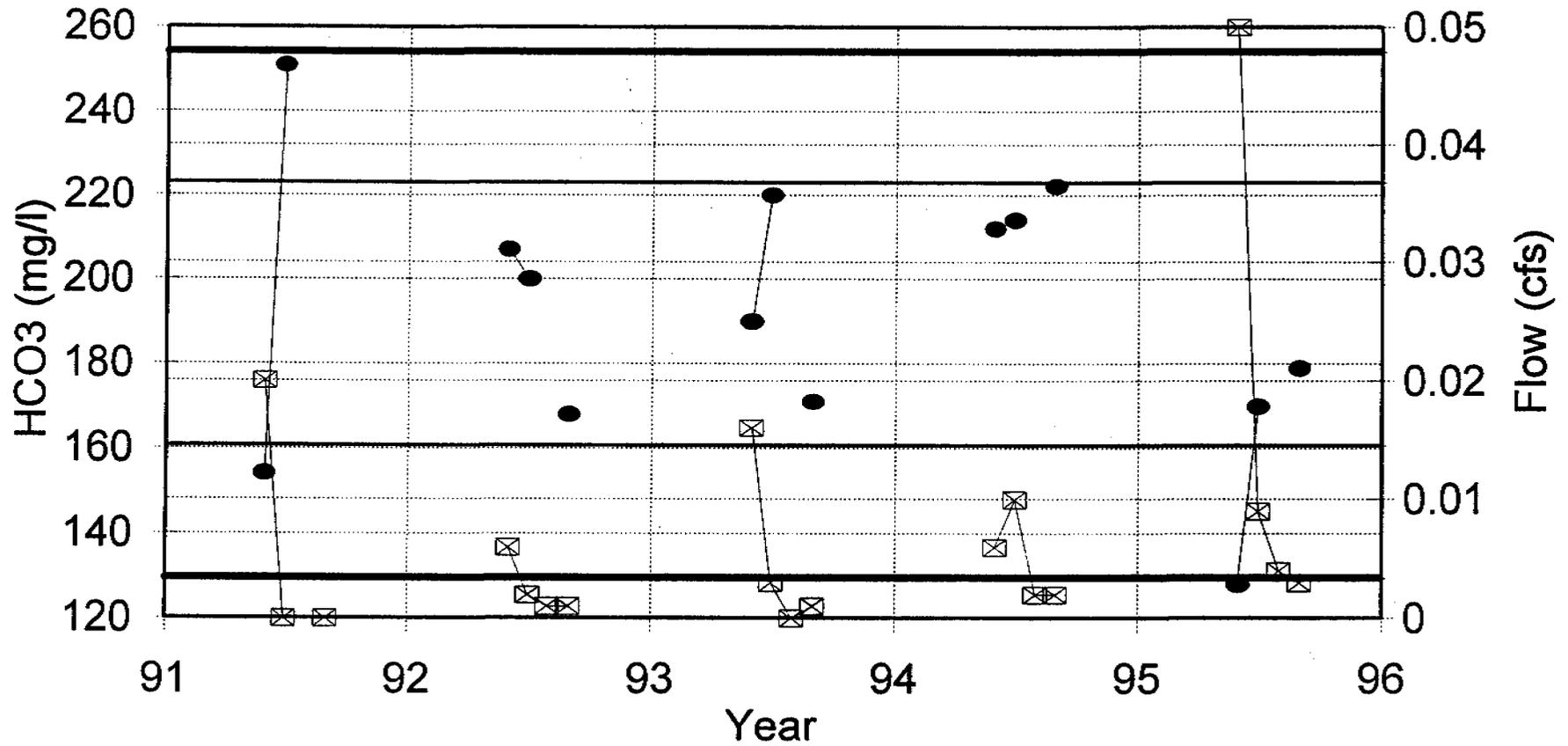
# Station 232

## Cl vs. Flow



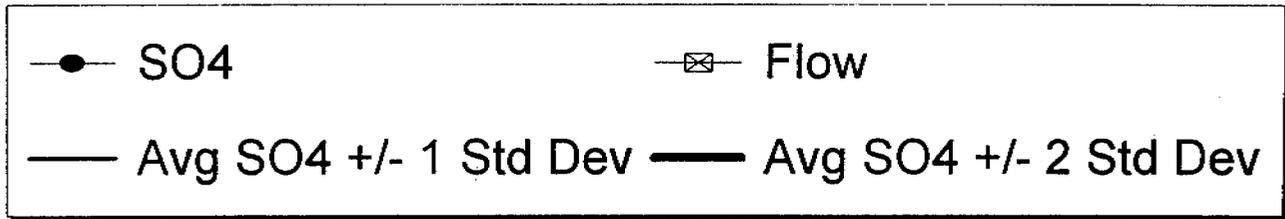
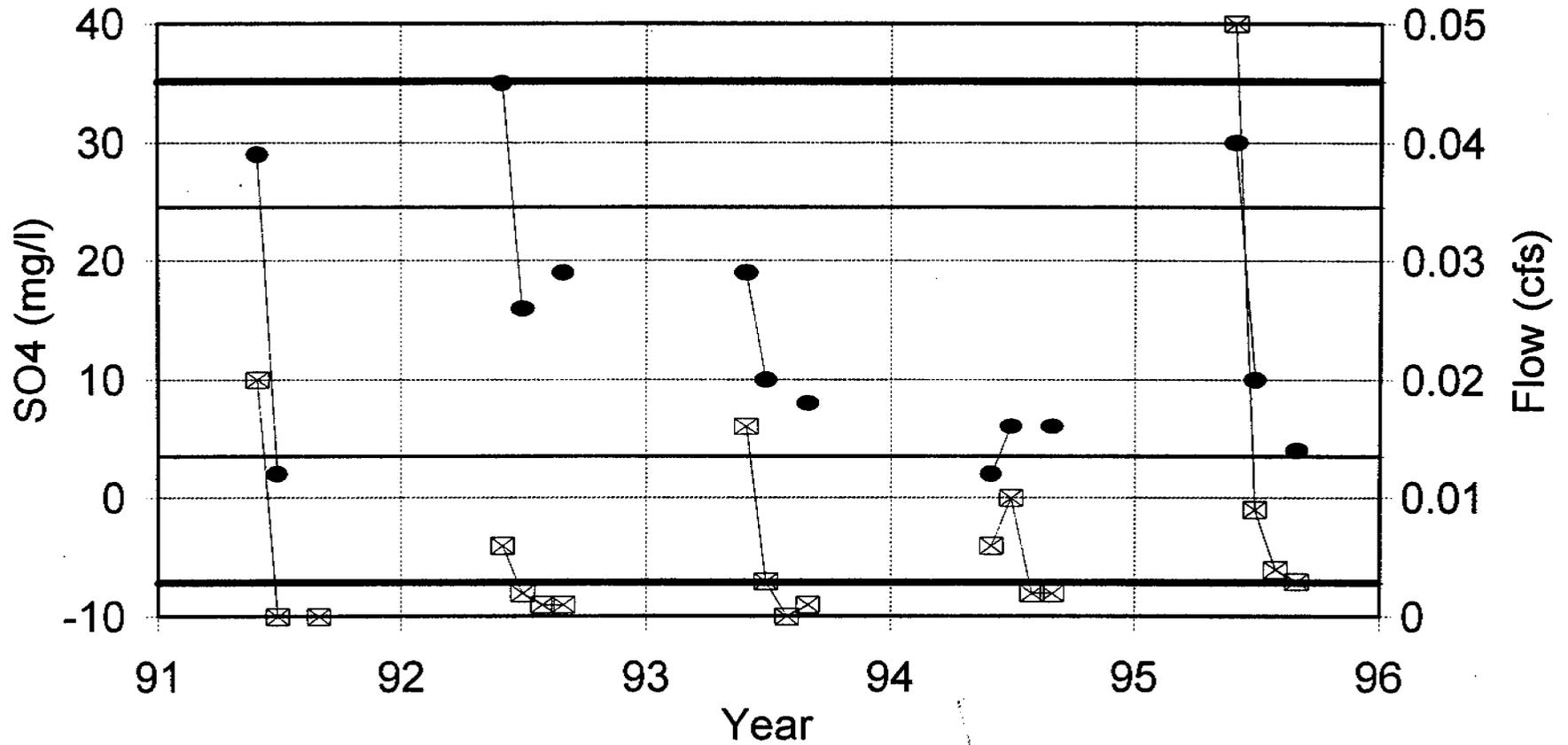
# Station 232

## HCO3 vs. Flow



# Station 232

## SO4 vs. Flow



Cyprus Plateau Mining Company - Water Quality Data

Station: 424 Property: Star Point Location: 625' S 1875' E of NW cor. Sec 23, T15S, R7E Station Type: Spring Sampling Frequency: Quarterly Formation: North Horn Print Date: May 2, 1996 Elevation: 9680

Date	Field Measurements					Laboratory Measurements															Comments					
	Sample Date	Flow (cfs)	pH (units)	Sp. Cond. (ohms)	Temp. (C)	TDS (mg/l)	TSS (mg/l)	O&G (mg/l)	Hd-CaCO3 (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (D) (mg/l)	SO4 (D) (mg/l)	Ca (D) (mg/l)	Mg (D) (mg/l)	K (D) (mg/l)	Na (D) (mg/l)	Ca/An Rat (%)	Fe (D) (mg/l)	Fe (T) (mg/l)		Mn (T) (mg/l)				
Jan-91																										
Feb-91																										
Mar-91																										
Apr-91																										
May-91																										
Jun-91																										
Jul-91	07/15/91	0	7.7	470	11																					
Aug-91																										
Sep-91	09/17/91	0																					NO FLOW			
Oct-91																										
Nov-91																										
Dec-91																										
Jan-92																										
Feb-92																										
Mar-92																										
Apr-92																										
May-92	05/21/92	0.446	7.4	466	4.5	286			277	266	0	1	29	83	17	1	2		<	0						
Jun-92																										
Jul-92	07/15/92	0.002	7	558	8.4																					
Aug-92	08/26/92	0.002	7.5	525	8.1																					
Sep-92	09/21/92	0.001	6.3	543	8.5				302	250	24	2	29	88	20	1	3		<	0						
Oct-92																										
Nov-92																										
Dec-92																										
Jan-93																										
Feb-93																										
Mar-93																										
Apr-93																										
May-93																										
Jun-93	06/22/93	0.022	6.3	455	15.56	254			270	317	0	2	4	80	17	1	3		<	0.02	0.53	<	0.01			
Jul-93	07/27/93	0.0042				278			284	312	0	2	23	84	18	1	3		<	0.02	<	0.02	<	0.01		
Aug-93	08/17/93	0.003	6.4	471	8																					
Sep-93	09/27/93	0																								
Oct-93																										
Nov-93																										
Dec-93																										
Jan-94																										
Feb-94																										
Mar-94																										
Apr-94																										
May-94																										
Jun-94	06/09/94	0.005	7.4	619	6.7	324			269	305	7	2	25	78	18	1	3			0.05	0.98	<	0.01			
Jul-94	07/19/94	< 0.01	8	485	19.4	302			266	303	12	3	33	77	18	2	5		<	0.02	0.71	0.03				
Aug-94	08/31/94	0																								
Sep-94	09/21/94	0																								
Oct-94																										
Nov-94																										
Dec-94																										
Jan-95																										
Feb-95																										
Mar-95																										
Apr-95																										
May-95																										
Jun-95	06/22/95	0.027	7.7	426	5.5	250			282	250	<	2	2	40	82.8	18.2	1.1	3.1		-0.8	<	0.01	0.03	<	0.005	
Jul-95	07/27/95	0.009	7.6	440	7	310			293	248	<	2	3	30	84	20.2	1.3	3.1		3	<	0.01	<	0.01	<	0.005
Aug-95	08/23/95																									
Sep-95	09/27/95	0.003	8.1	564	12	320			298	252	<	2	3	38	85.4	20.5	1.5	3.4		1.8	<	0.01	0.82	<	0.005	
Oct-95																										
Nov-95																										
Dec-95																										
Jan-96																										

END DATA

	Count	17	12	12	12	8	0	0	9	9	9	9	9	9	9	9	9	3	9	7	7					
Minimum	<	0	6.3	426	4.5	250	ERR	ERR	266	248	<	0	1	4	77	17	<	1	2	-0.8	<	0	<	0.01	<	0.005
Maximum	<	0.446	8.1	619	19.4	324	ERR	ERR	302	317	<	24	3	40	88	20.5	<	2	5	3	<	0.06	<	0.98	<	0.03
Average	<	0.0314	7.2833	501.83	9.555	290.5	ERR	ERR	282.33	278.11	<	5.4444	2.2222	27.889	82.467	18.544	<	1.2111	3.1776	1.3333	<	0.0156	<	0.4429	<	0.0107
Standard Deviation	<	0.1039	0.6121	56.478	4.1302	28.585	ERR	ERR	12.356	28.517	<	7.5588	0.6285	9.9157	3.3373	1.2676	<	0.3247	0.7375	1.5861	<	0.0142	<	0.3866	<	0.0082
Avg. -1 Std. Dev.	<	-0.072	6.6712	445.35	5.4248	263.92	ERR	ERR	269.98	249.59	<	-2.114	1.5937	17.973	79.129	17.277	<	0.8864	2.4402	-0.253	<	0.0013	<	0.0562	<	0.0025
Avg. +1 Std. Dev.	<	0.1353	7.8955	558.31	13.685	317.08	ERR	ERR	294.69	306.63	<	13.003	2.8508	37.805	85.804	19.812	<	1.5358	3.9153	2.9194	<	0.0298	<	0.8295	<	0.0189

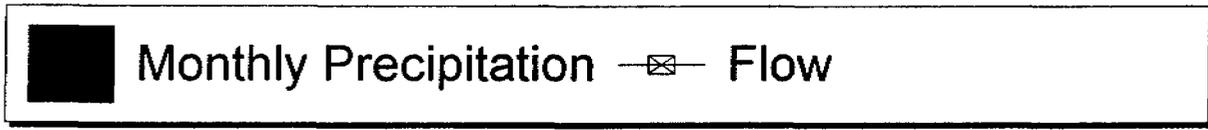
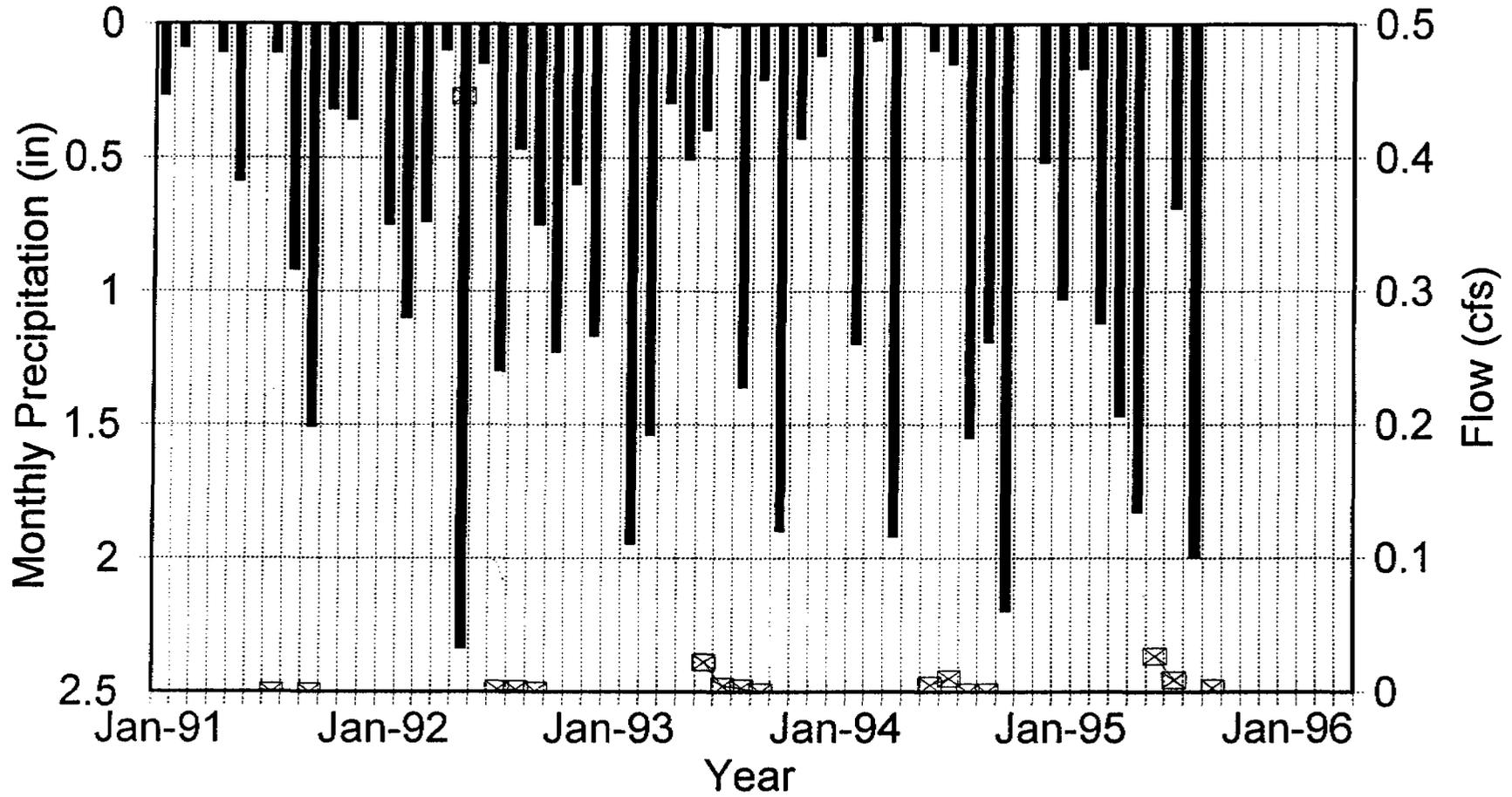
Cyprus Plateau Mining Company - Water Quality Data

Station: 424		Property: Star Point				Location: 625' S 1875' E of NW cor. Sec 23, T15S, R7E				Station Type: Spring		Sampling Frequency: Quarterly			Formation: North Horn				Print Date: May 3, 1998		Elevation: 9680		Comments
Date		Field Measurements				Laboratory Measurements																	
Mo-Yr	Sample Date	Flow (cfs)	Ph (units)	Sp. Cond. (ohms)	Temp. (C)	TDS (mg/l)	TSS (mg/l)	O&G (mg/l)	Hd-CaCO3 (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (D) (mg/l)	SO4 (D) (mg/l)	Ca (D) (mg/l)	Mg (D) (mg/l)	K (D) (mg/l)	Na (D) (mg/l)	Ca/An Bal. (%)	Fe (D) (mg/l)	Fe (T) (mg/l)	Mn (T) (mg/l)		
	Avg. -2 Std. Dev.	< -0.176	6.059	388.88	1.2945	237.33	ERR	ERR	257.62	221.08 <	-9.673	0.9651	8.0575	75.792	16.009 <	0.5617	1.7027	-1.839 <	-0.013 <	-0.33 <	-0.006		
	Avg. +2 Std. Dev.	< 0.2393	8.5076	614.79	17.815	343.67	ERR	ERR	307.05	335.14 <	20.562	3.4793	47.72	89.141	21.08 <	1.8605	4.6528	4.5054 <	0.044 <	1.2161 <	0.0271		

NOTE: The "<" symbol indicates that "Less Than" data was found in the data set; statistics are approximate.

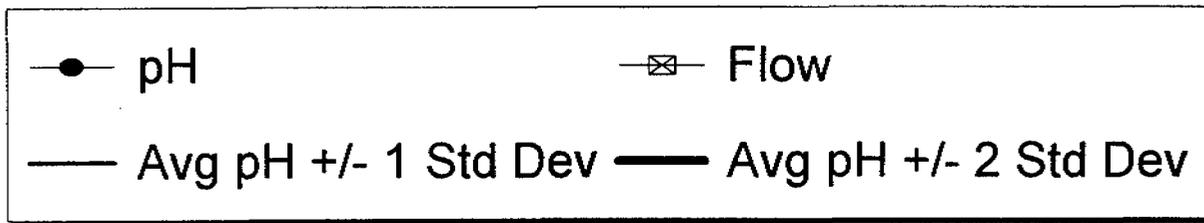
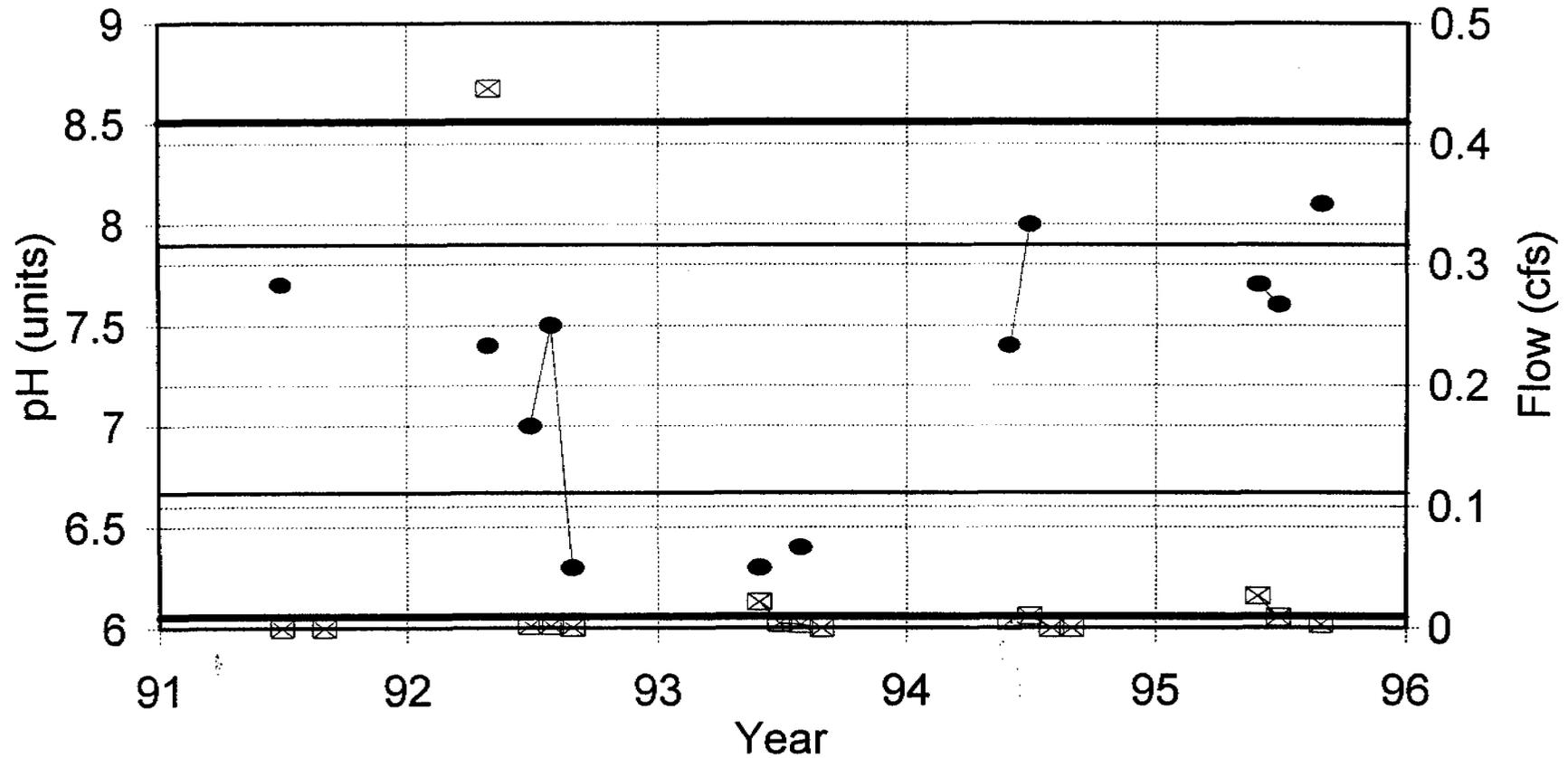
# Station 424

## Monthly Precipitation vs. Flow



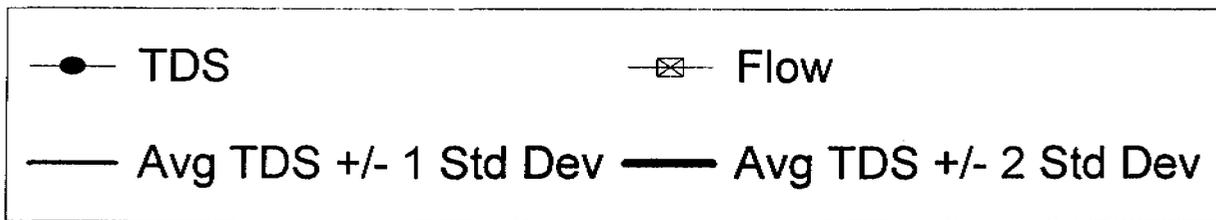
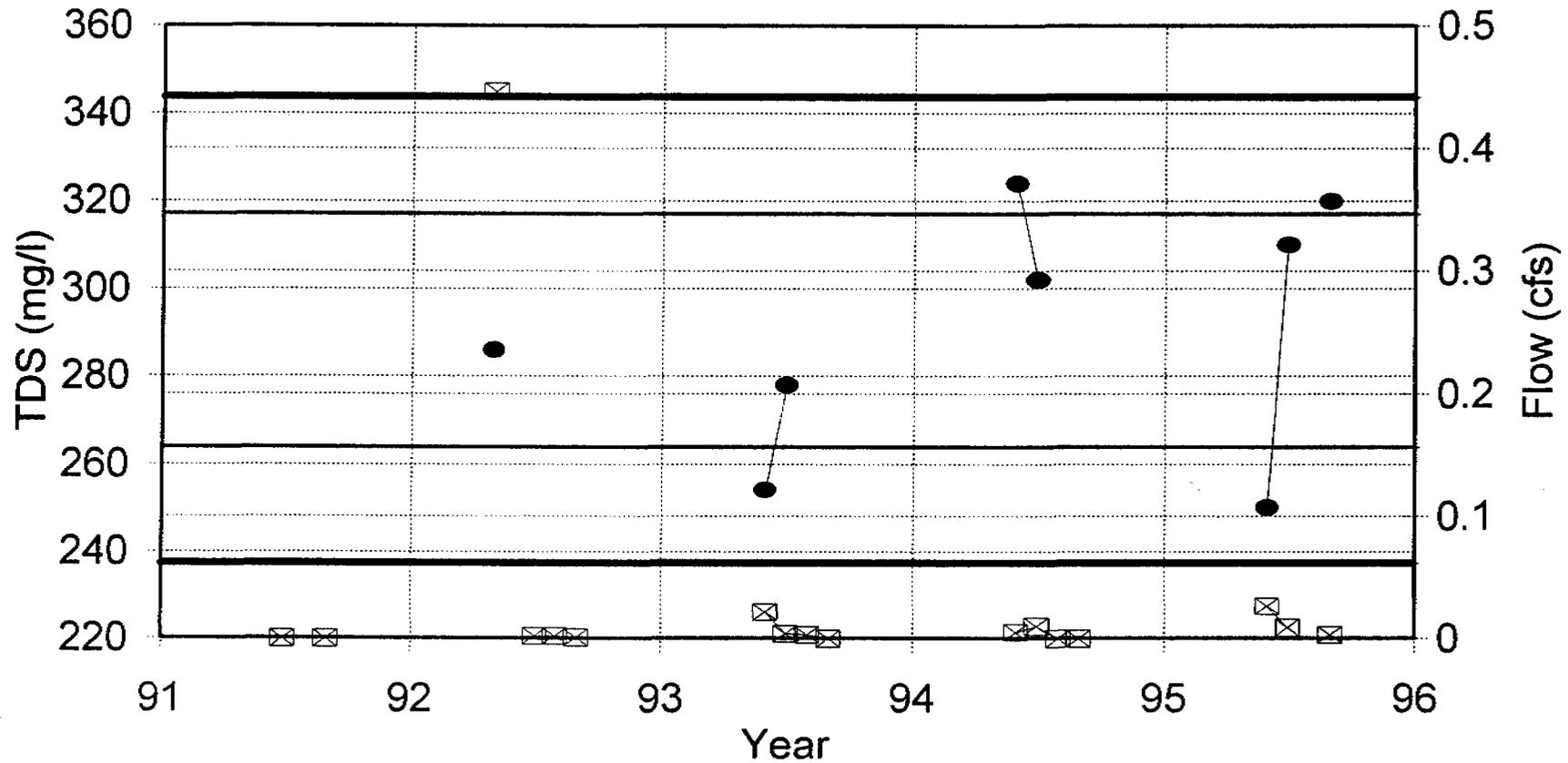
# Station 424

## pH vs. Flow



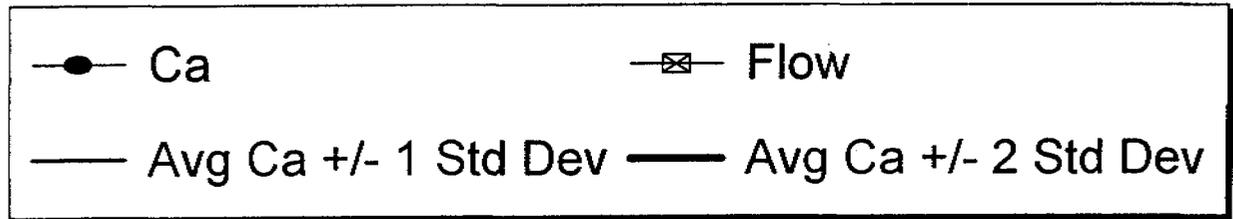
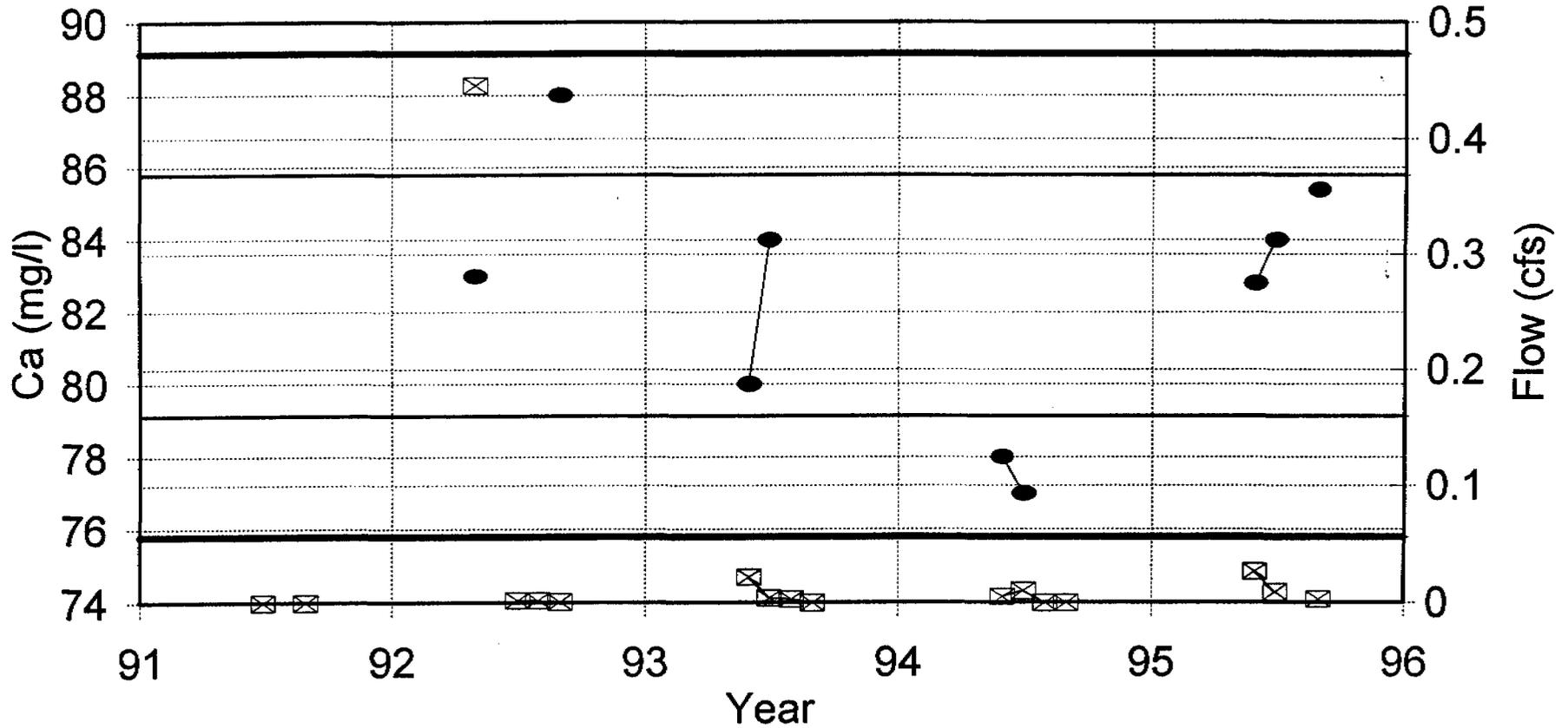
# Station 424

## TDS vs. Flow



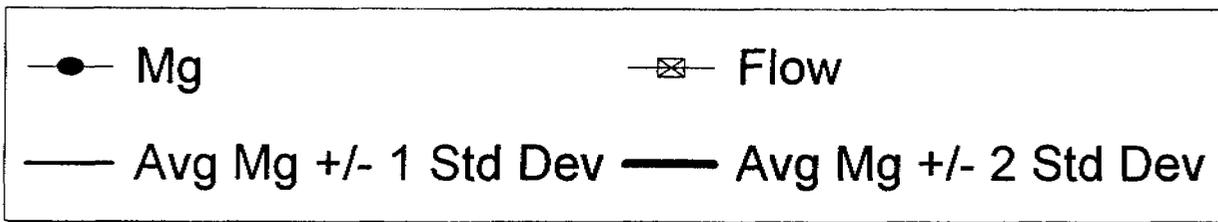
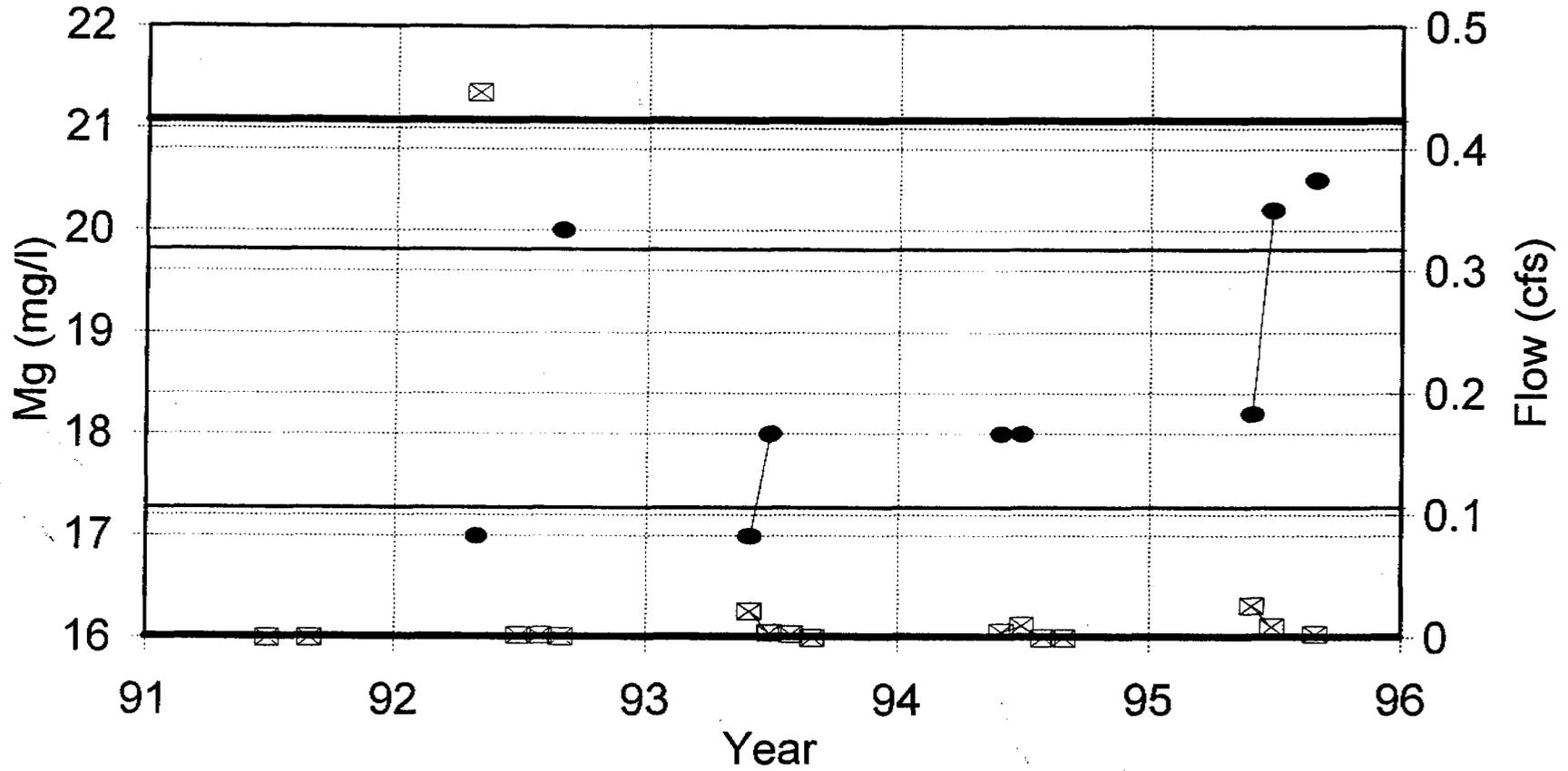
# Station 424

## Ca vs. Flow



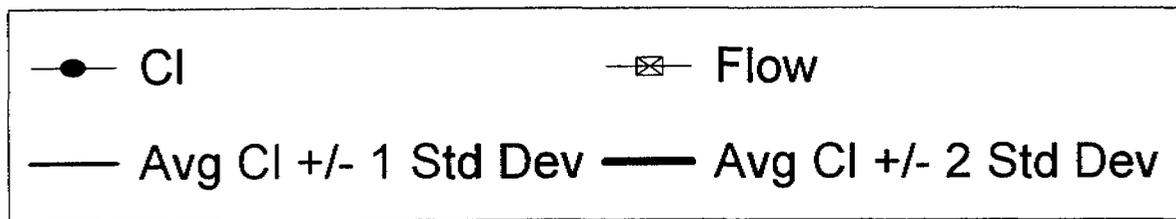
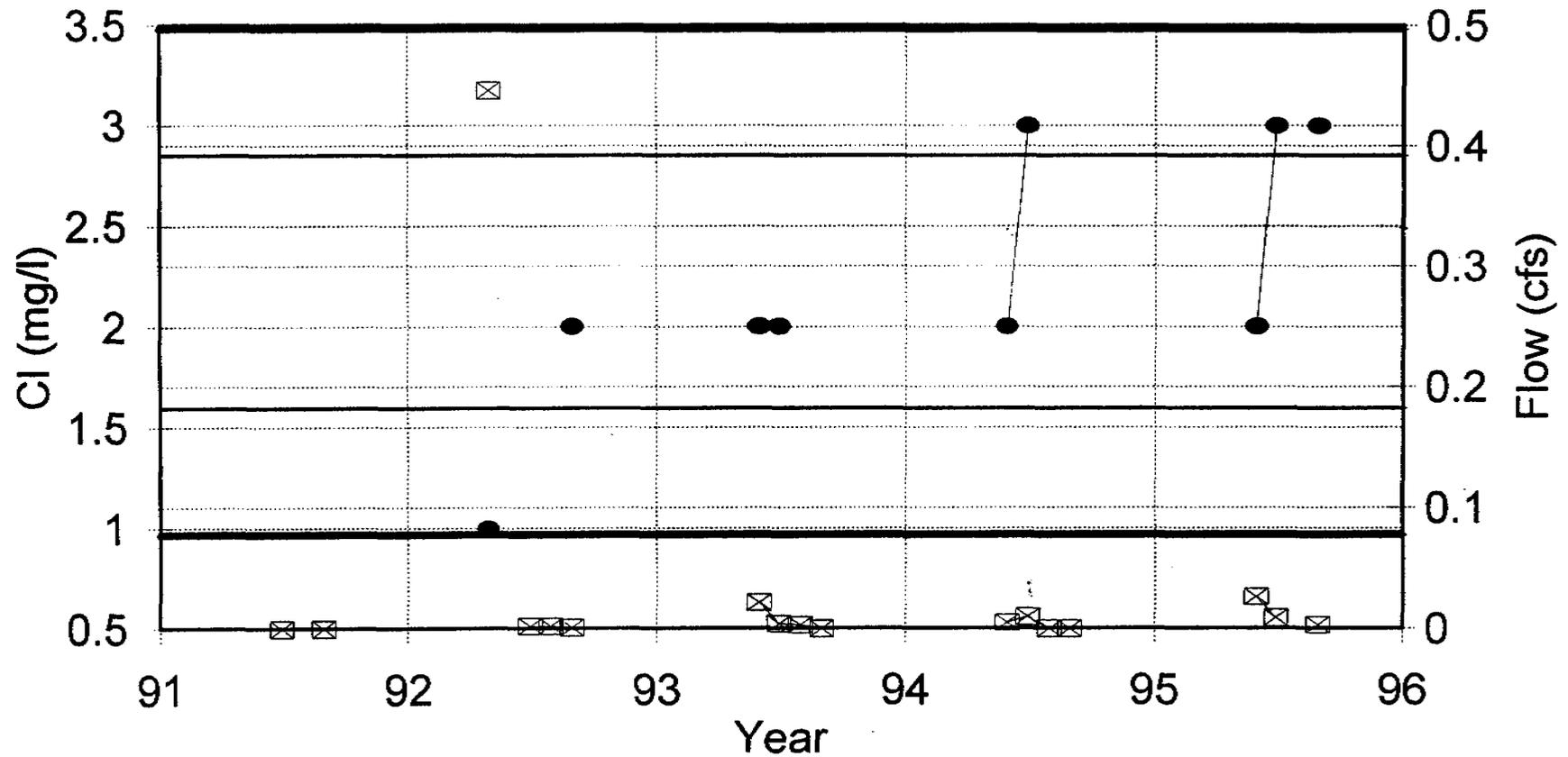
# Station 424

## Mg vs. Flow



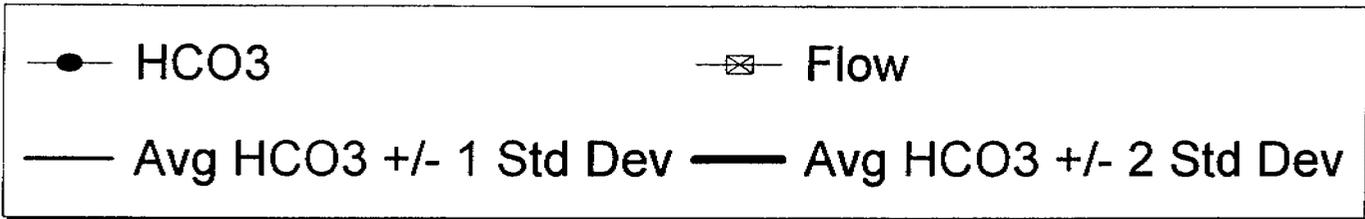
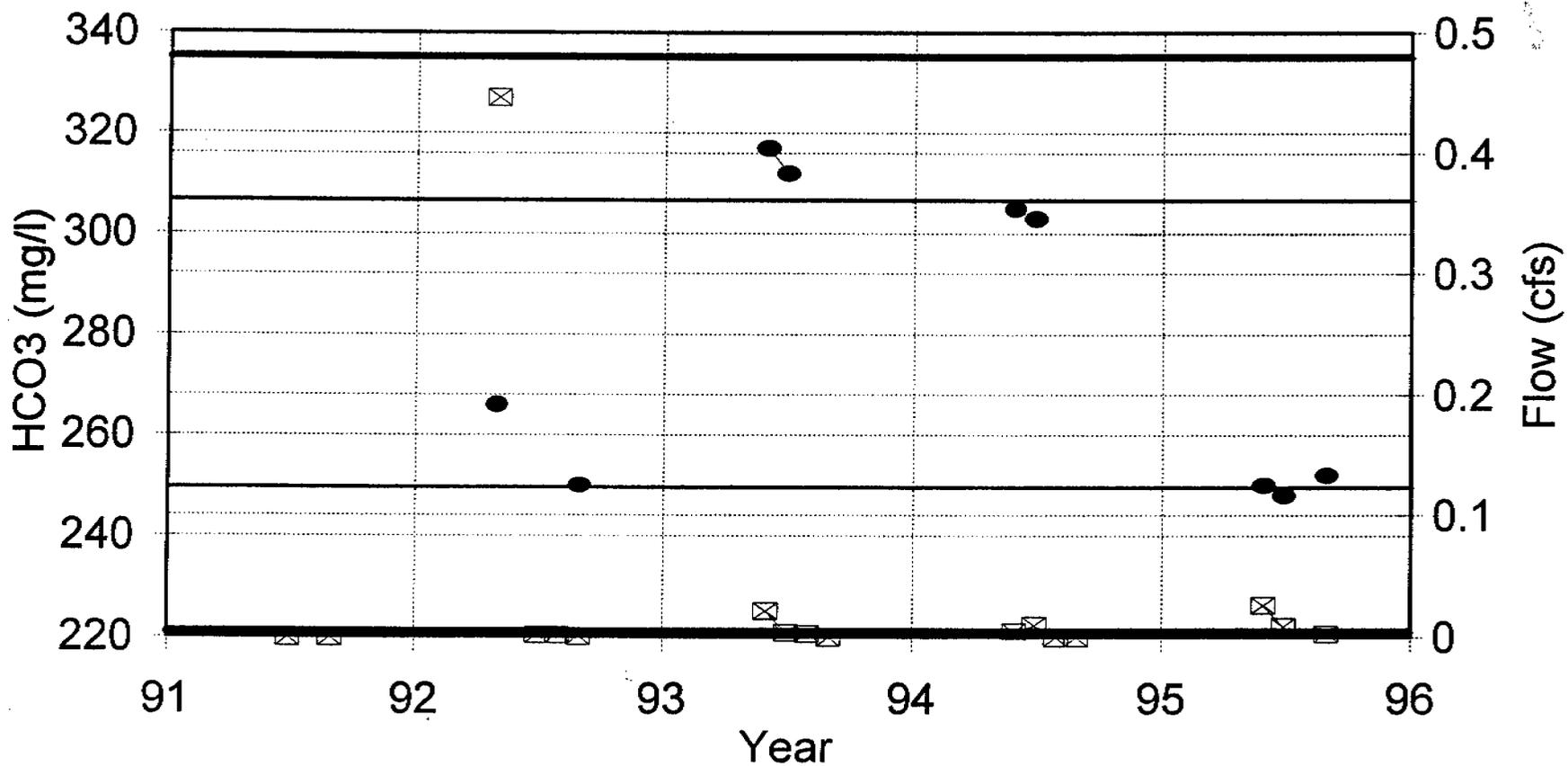
# Station 424

## Cl vs. Flow



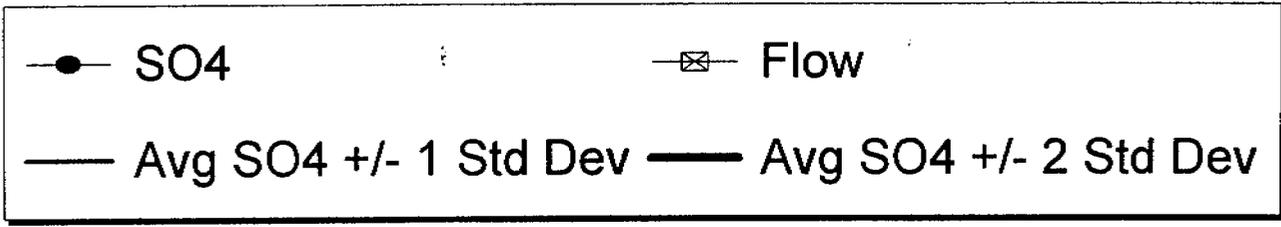
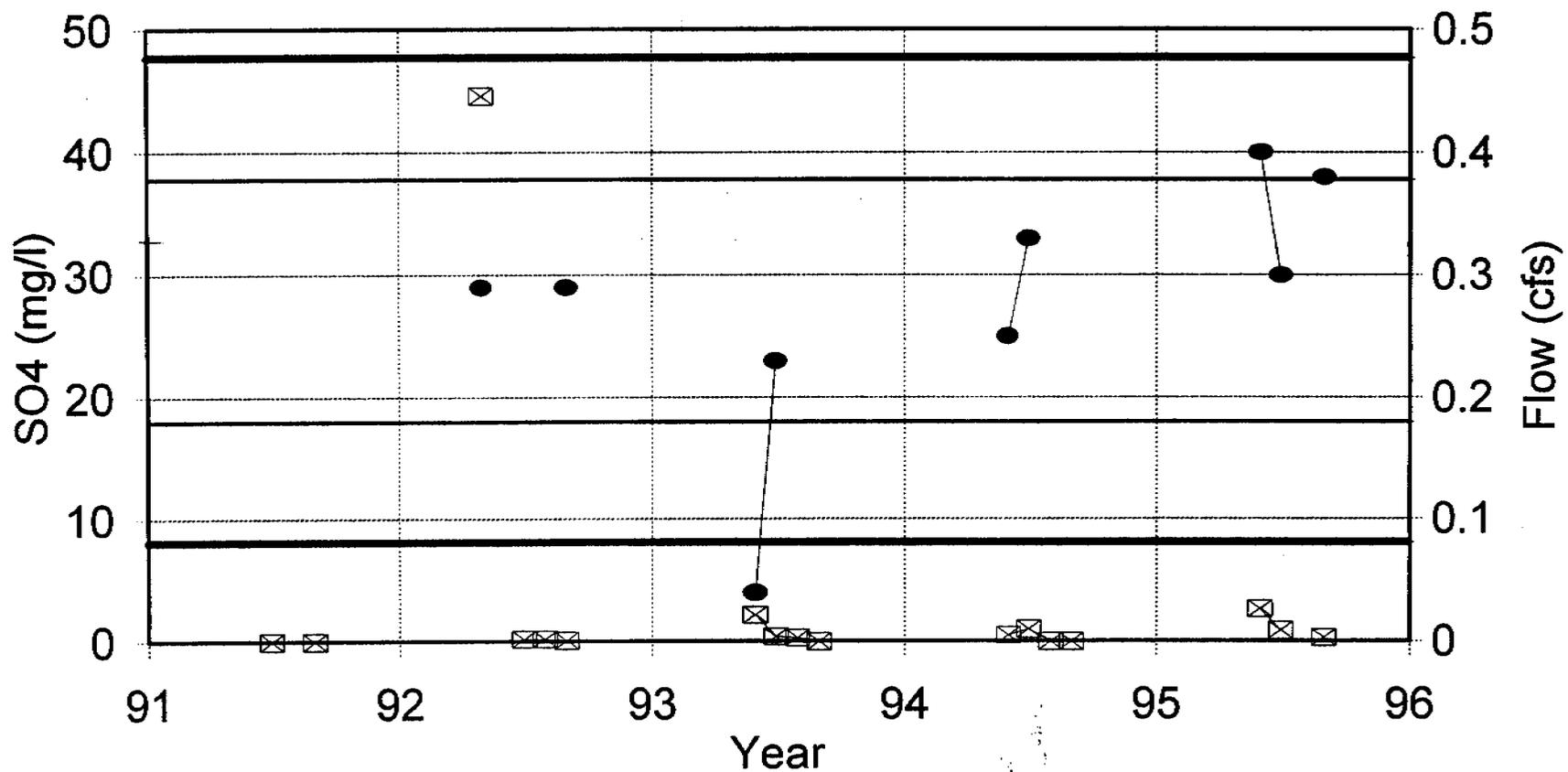
# Station 424

## HCO<sub>3</sub> vs. Flow



# Station 424

## SO4 vs. Flow





Cyprus Plateau Mining Company - Water Quality Data

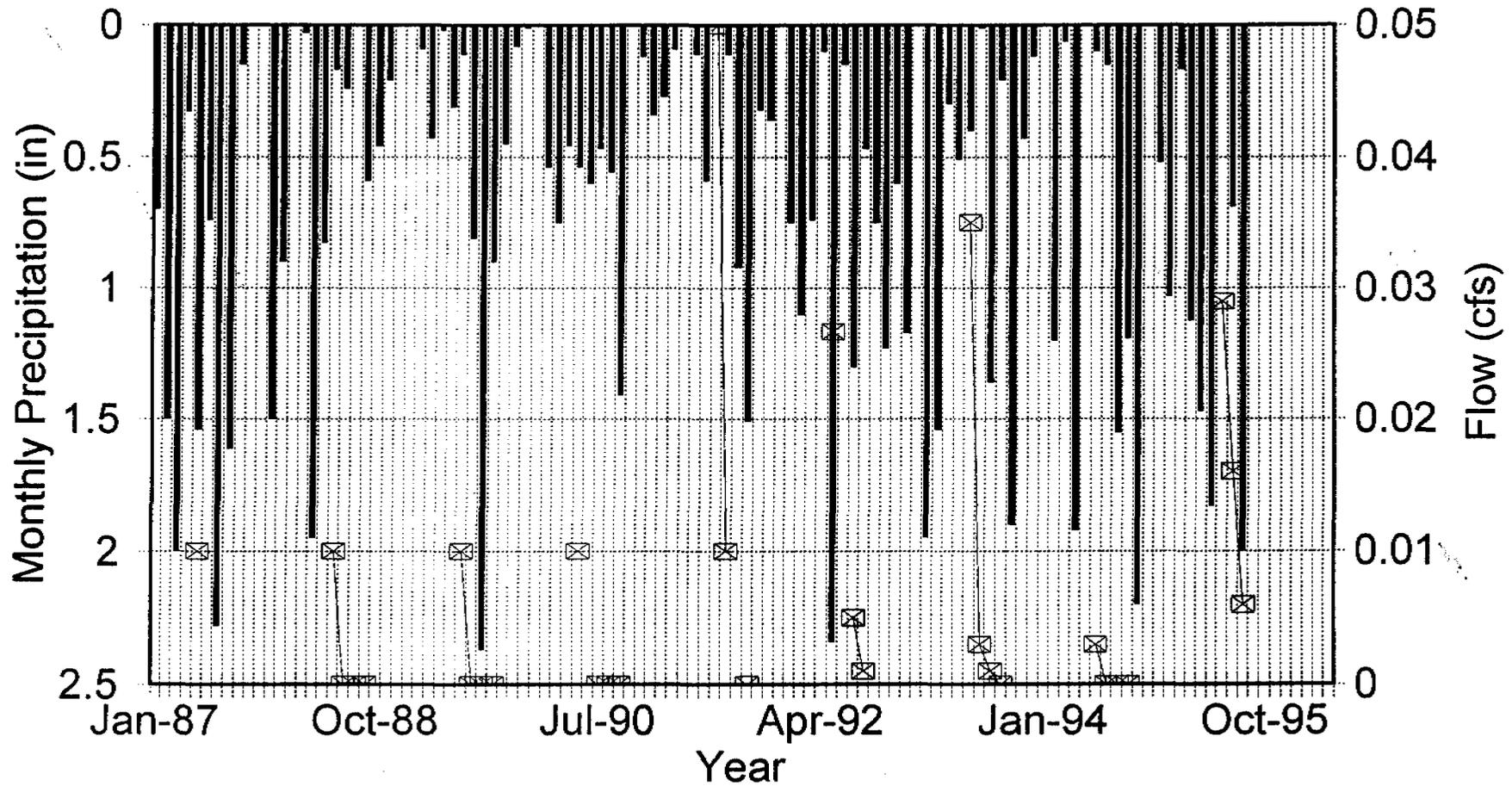
Print Date: May 2, 1996  
Elevation: 9800

Station: 429		Property: Star Point				Location: 2000' N 1000' E of SW com. Sec 15, T15S, R7E					Station Type: Spring		Sampling Frequency: Quarterly		Formation: North Horn								
Date		Field Measurements				Laboratory Measurements														Comments			
Mo-Yr	Sample Date	Flow (cfs)	Ph (units)	Sp. Cond. (ohms)	Temp. (C)	TDS (mg/l)	TSS (mg/l)	O&G (mg/l)	Hd-CaCO3 (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (D) (mg/l)	SO4 (D) (mg/l)	Ca (D) (mg/l)	Mg (D) (mg/l)	K (D) (mg/l)	Na (D) (mg/l)	Cat/An Bal (%)	Fe (D) (mg/l)		Fe (T) (mg/l)	Mn (T) (mg/l)	
Jan-93																							
Feb-93																							
Mar-93																							
Apr-93																							
May-93																							
Jun-93	06/21/93	0.035	6.8	370	7.9	218			231	261	0	1	41	71	13 <	1	3	<	0.02	0.02 <	0.01		
Jul-93	07/27/93	0.003	7.2	384	7.5	212			217	249	2	1	11	64	14 <	1	3	<	0.02 <	0.02 <	0.01		
Aug-93	08/17/93	0.001	7.3	373	15																		
Sep-93	09/27/93	0																					NO FLOW
Oct-93																							
Nov-93																							
Dec-93																							
Jan-94																							
Feb-94																							
Mar-94																							
Apr-94																							
May-94																							
Jun-94	06/09/94	0.003	8.2	478	4.8	246			228	261	7	2	4	70	13 <	1	3	<	0.02	0.11 <	0.01		NO FLOW
Jul-94	07/19/94	0																					NO FLOW
Aug-94	08/31/94	0																					NO FLOW
Sep-94	09/21/94	0																					NO FLOW
Oct-94																							
Nov-94																							
Dec-94																							
Jan-95																							
Feb-95																							
Mar-95																							
Apr-95																							
May-95																							
Jun-95	06/21/95	0.029	8.4	380	7.5	230			212	194 <	2 <	1	30	65.5	11.7	0.9	2.7	-1.5 <	0.01	0.08 <	0.005		
Jul-95	07/26/95	0.016	8.3	504	10	240			270	236 <	2	2	10	81.1	16.3	0.6	3	5.3	0.12	0.04 <	0.005		
Aug-95	08/23/95	0.006	8.25	447	12																		
Sep-95	09/27/95																						Damp - No Sample
Oct-95																							
Nov-95																							
Dec-95																							
Jan-96																							
END DATA																							
Count		30	12	12	12	10	0	0	8	8	8	8	8	8	8	8	8	2	8	8	8	8	
Minimum		0	6.8	370	4.8	212	ERR	ERR	204	194 <	0 <	1	4	62	11.7 <	0.6	2	-1.5 <	0.01 <	0.02 <	0.005		
Maximum		0.05	8.4	525	15	272	ERR	ERR	270	285 <	10 <	3	41	81.1	18 <	1	4	5.3 <	0.12 <	1.5 <	0.13		
Average		0.0075	7.8042	439	8.4667	240.6	ERR	ERR	232.5	249.5 <	3.75 <	1.75	16.875	69.825	14.125 <	0.9375	2.9625	1.9 <	0.0313 <	0.2313 <	0.0238		
Standard Deviation		0.0121	0.5293	54.906	2.8923	20.041	ERR	ERR	20.905	26.211 <	3.4911 <	0.8292	12.985	6.0952	2.045 <	0.1317	0.5097	3.4 <	0.0337 <	0.4805 <	0.0402		
Avg. -1 Std. Dev.		-0.005	7.2748	384.09	5.5743	220.56	ERR	ERR	211.6	223.29 <	0.2589 <	0.9208	3.89	63.73	12.08 <	0.8058	2.4528	-1.5 <	-0.002 <	-0.249 <	-0.016		
Avg. +1 Std. Dev.		0.0197	8.3335	493.91	11.359	260.64	ERR	ERR	253.4	275.71 <	7.2411 <	2.5792	29.86	75.92	16.17 <	1.0692	3.4722	5.3 <	0.065 <	0.7118 <	0.064		
Avg. -2 Std. Dev.		-0.017	6.7455	329.19	2.682	200.52	ERR	ERR	190.69	197.08 <	-3.232 <	0.0917	-9.095	57.635	10.035 <	0.6741	1.943	-4.9 <	-0.036 <	-0.73 <	-0.057		
Avg. +2 Std. Dev.		0.0318	8.8628	548.81	14.251	280.68	ERR	ERR	274.31	301.92 <	10.732 <	3.4083	42.845	82.015	18.215 <	1.2009	3.982	8.7 <	0.0987 <	1.1923 <	0.1042		

NOTE: The "<" symbol indicates that "Less Than" data was found in the data set. statistics are approximate.

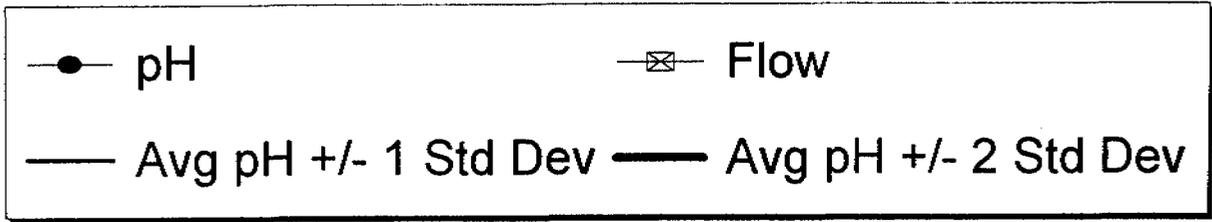
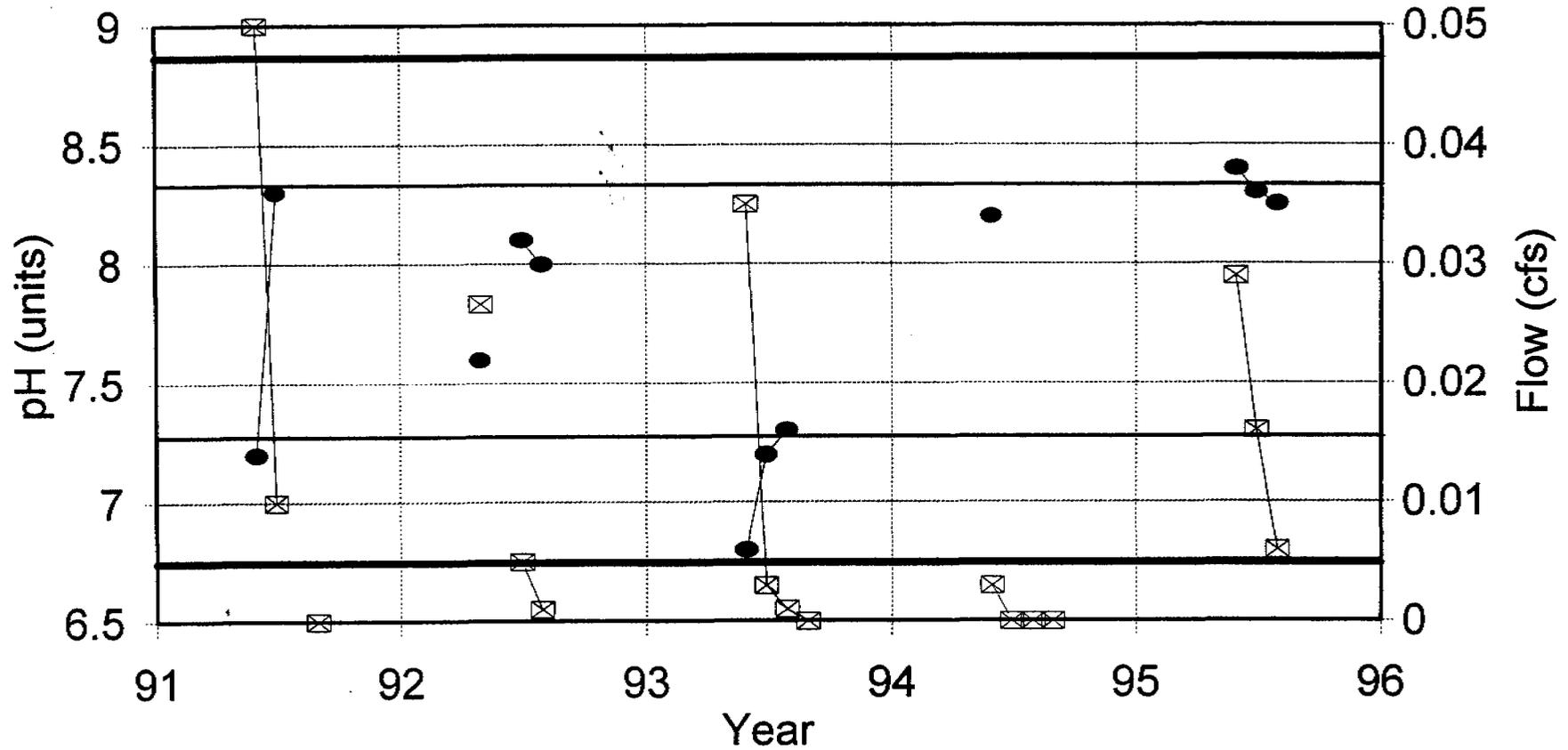
# Station 429

## Monthly Precipitation vs. Flow



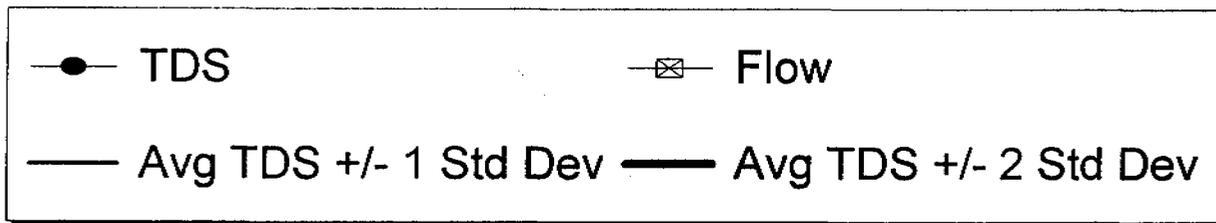
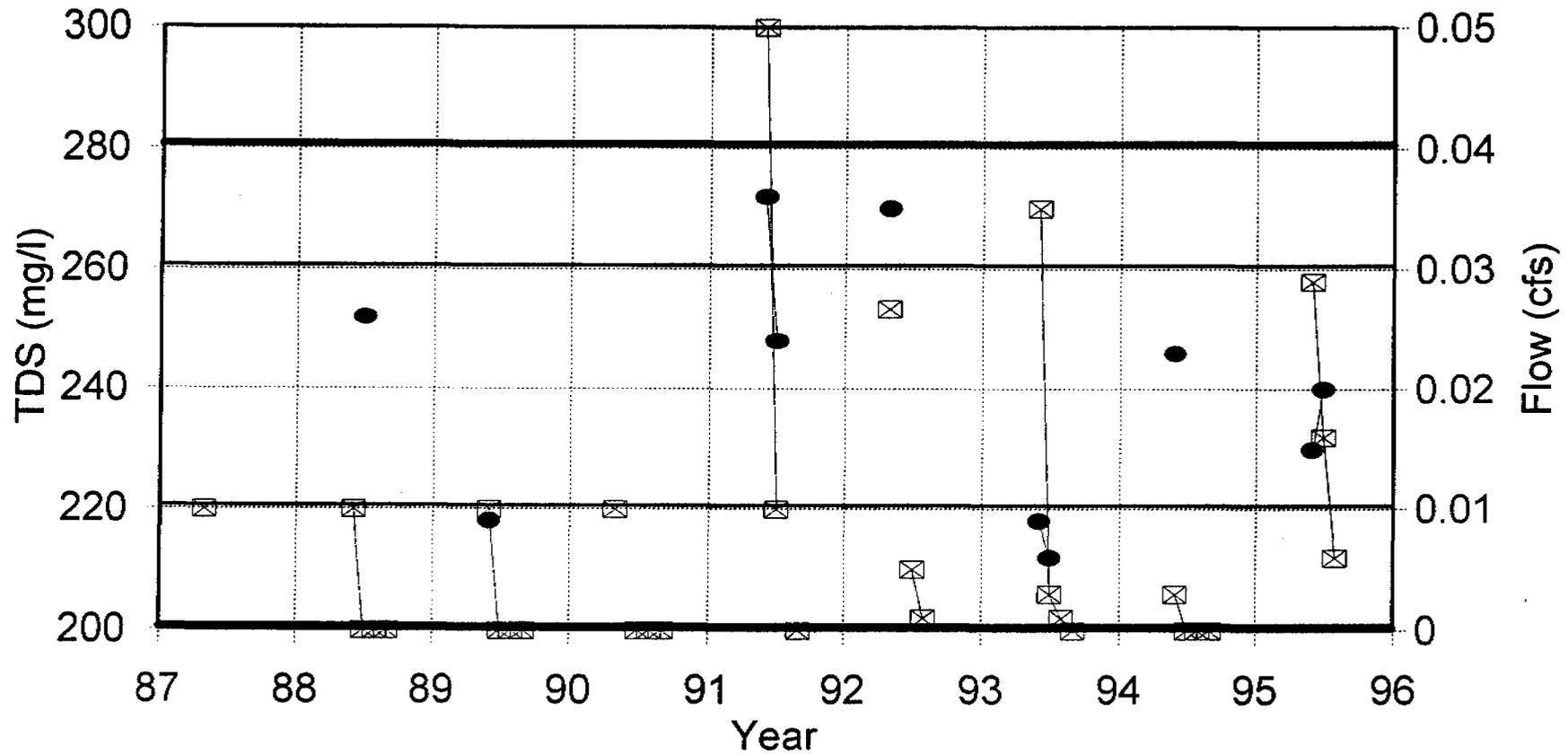
# Station 429

## pH vs. Flow



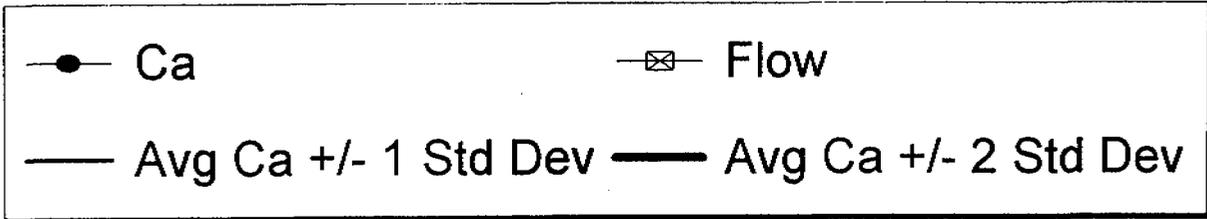
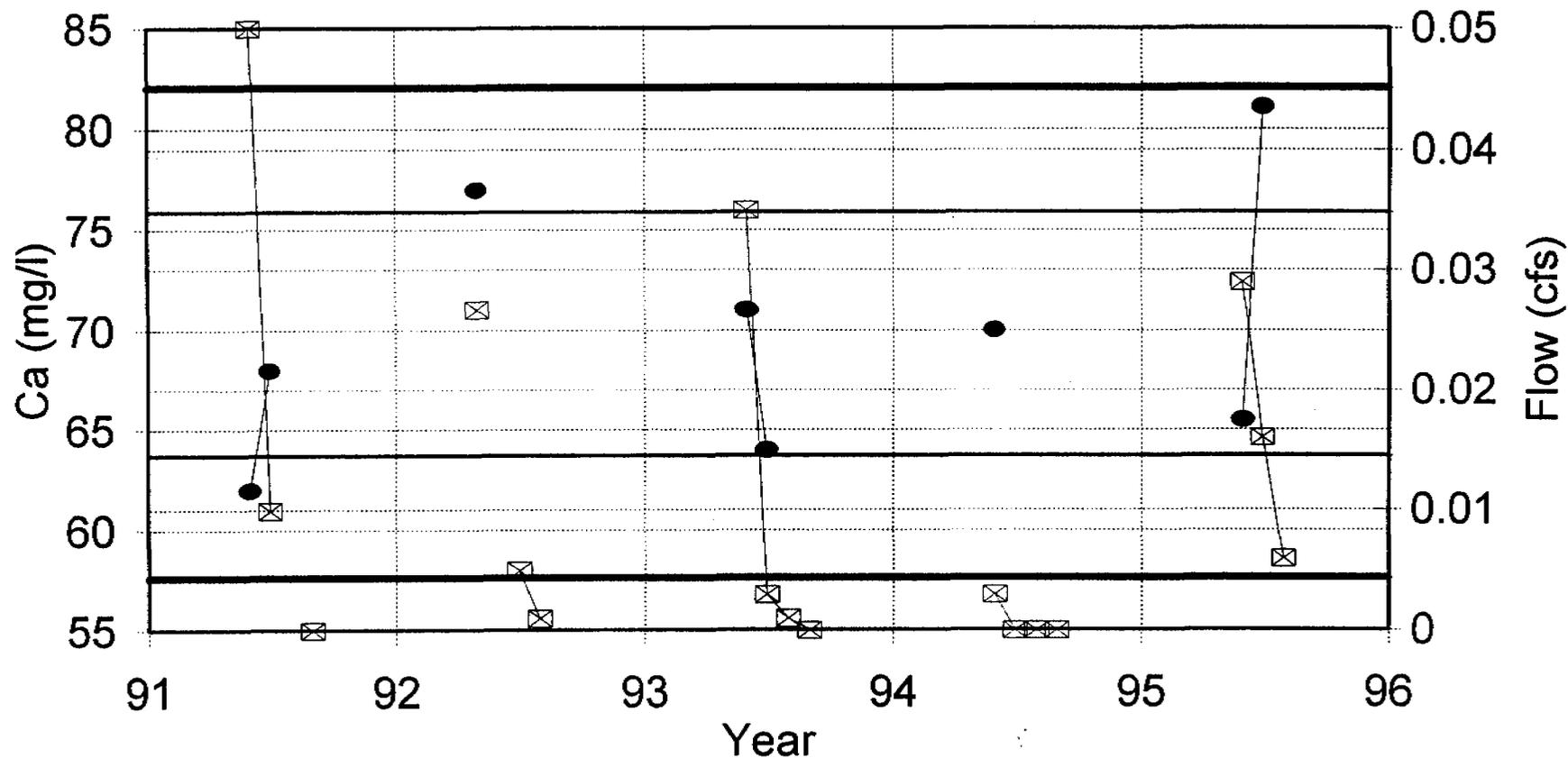
# Station 429

## TDS vs. Flow



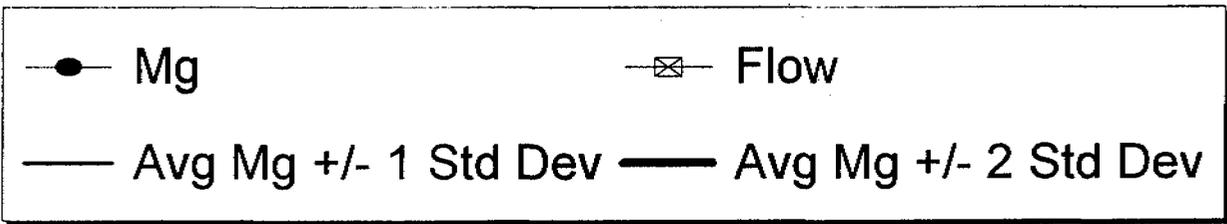
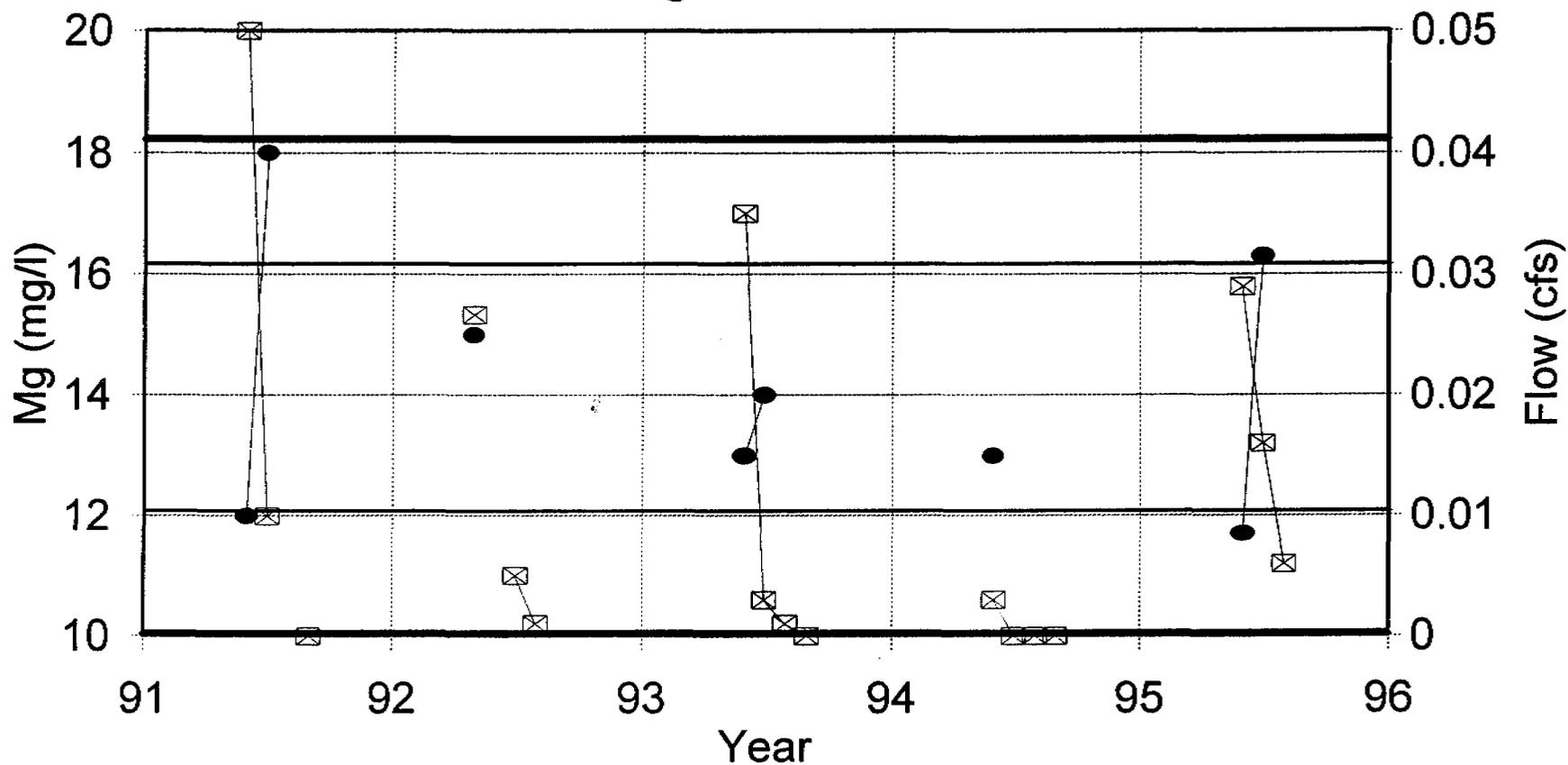
# Station 429

## Ca vs. Flow



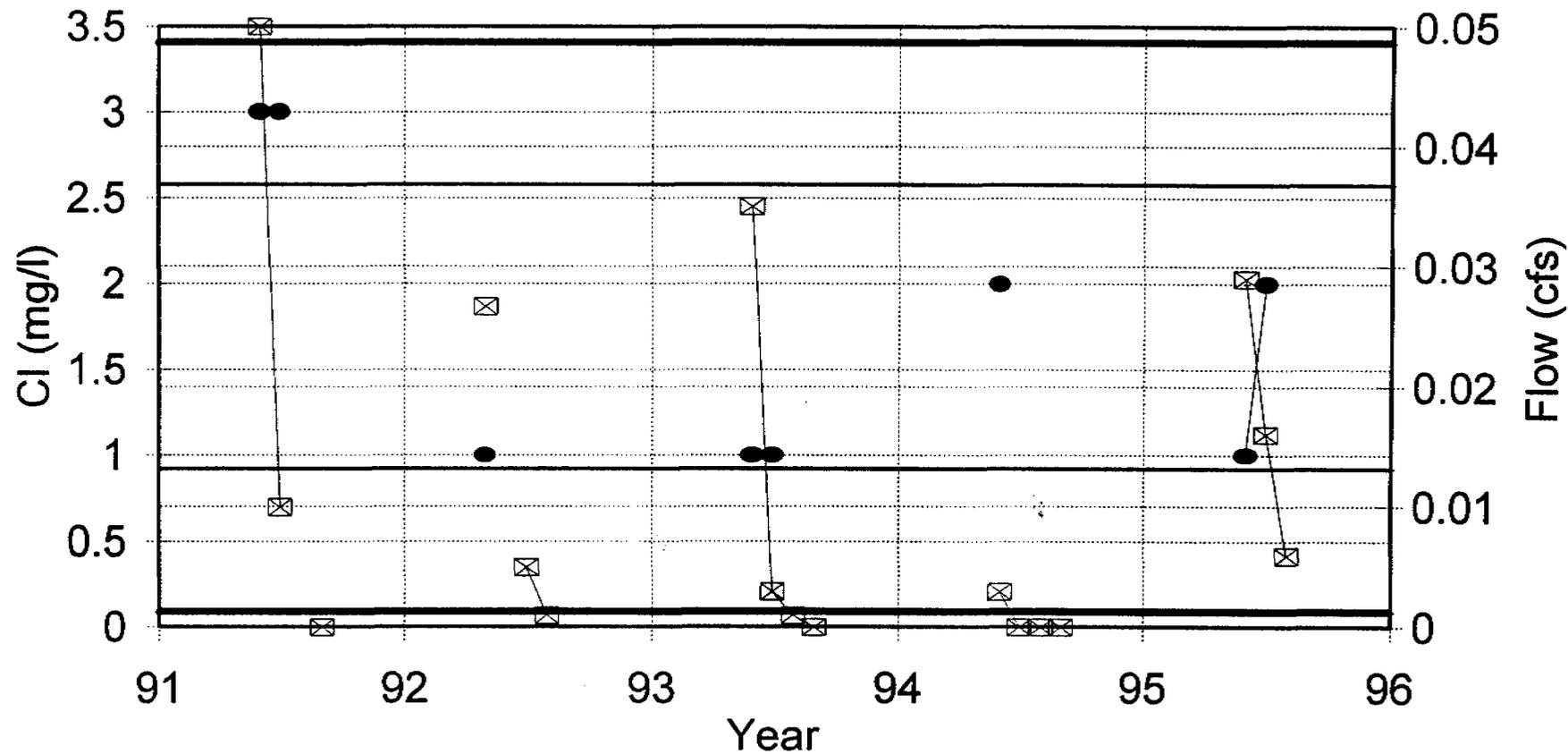
# Station 429

## Mg vs. Flow



# Station 429

## Cl vs. Flow



● Cl

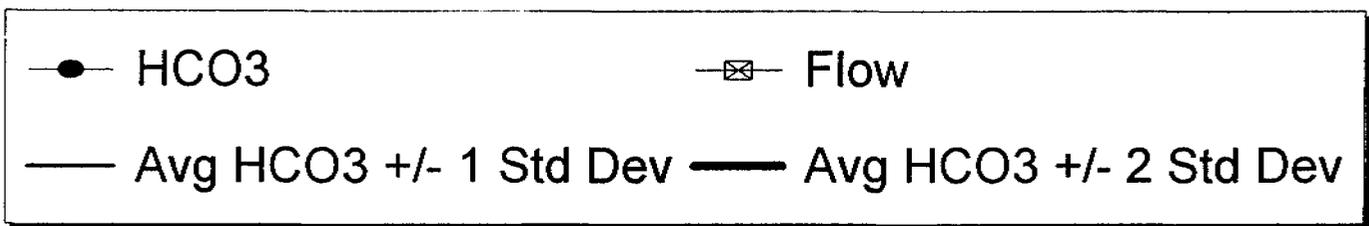
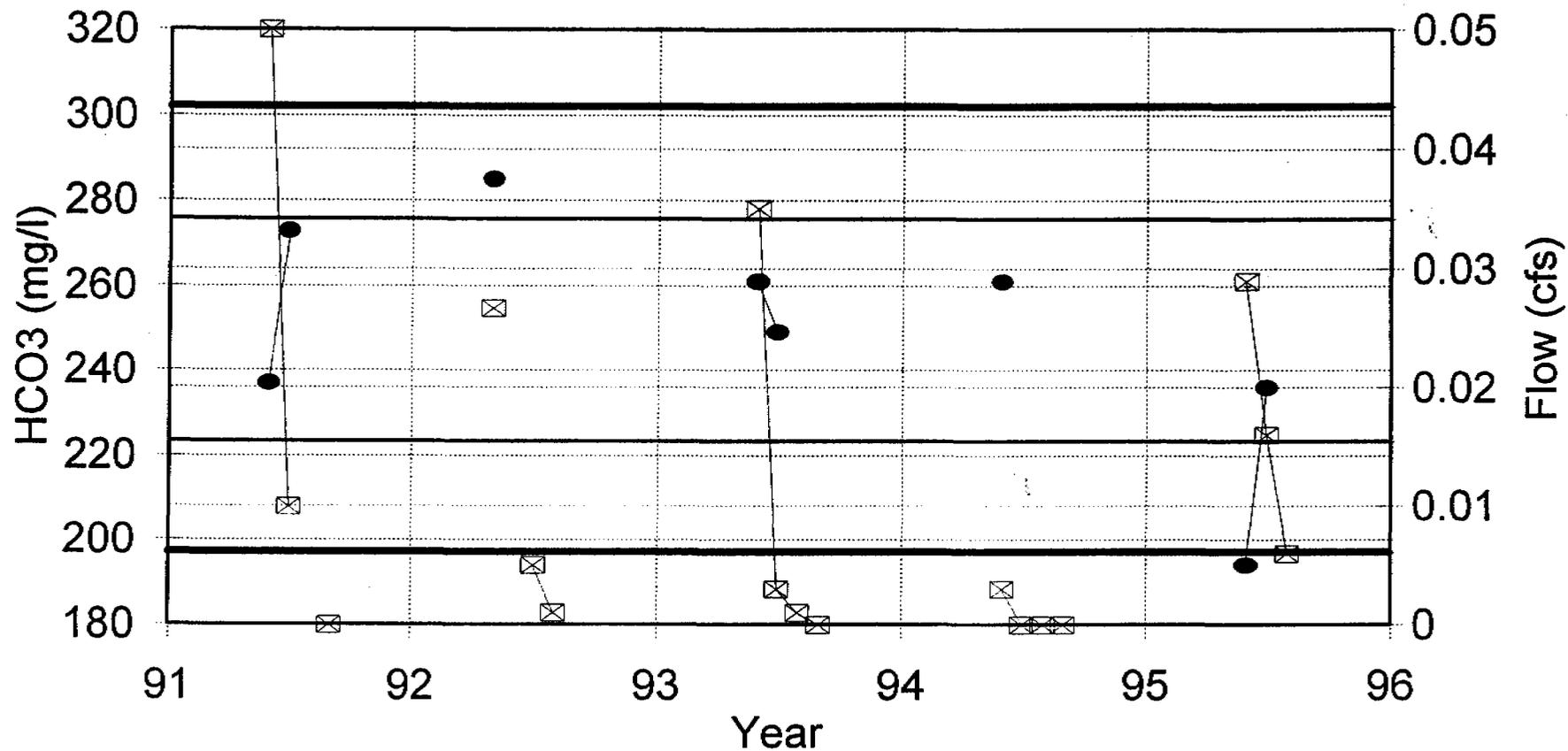
⊠ Flow

— Avg Cl +/- 1 Std Dev

— Avg Cl +/- 2 Std Dev

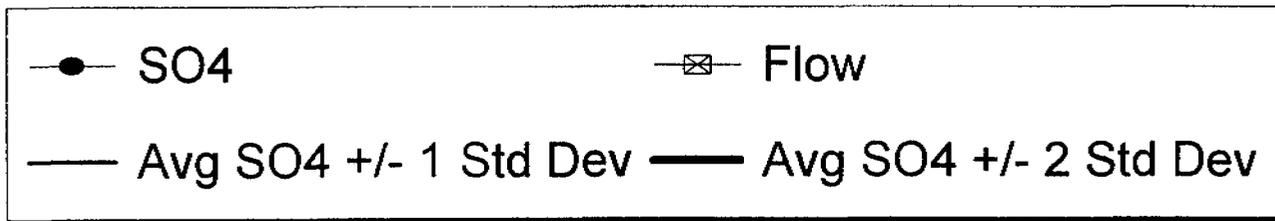
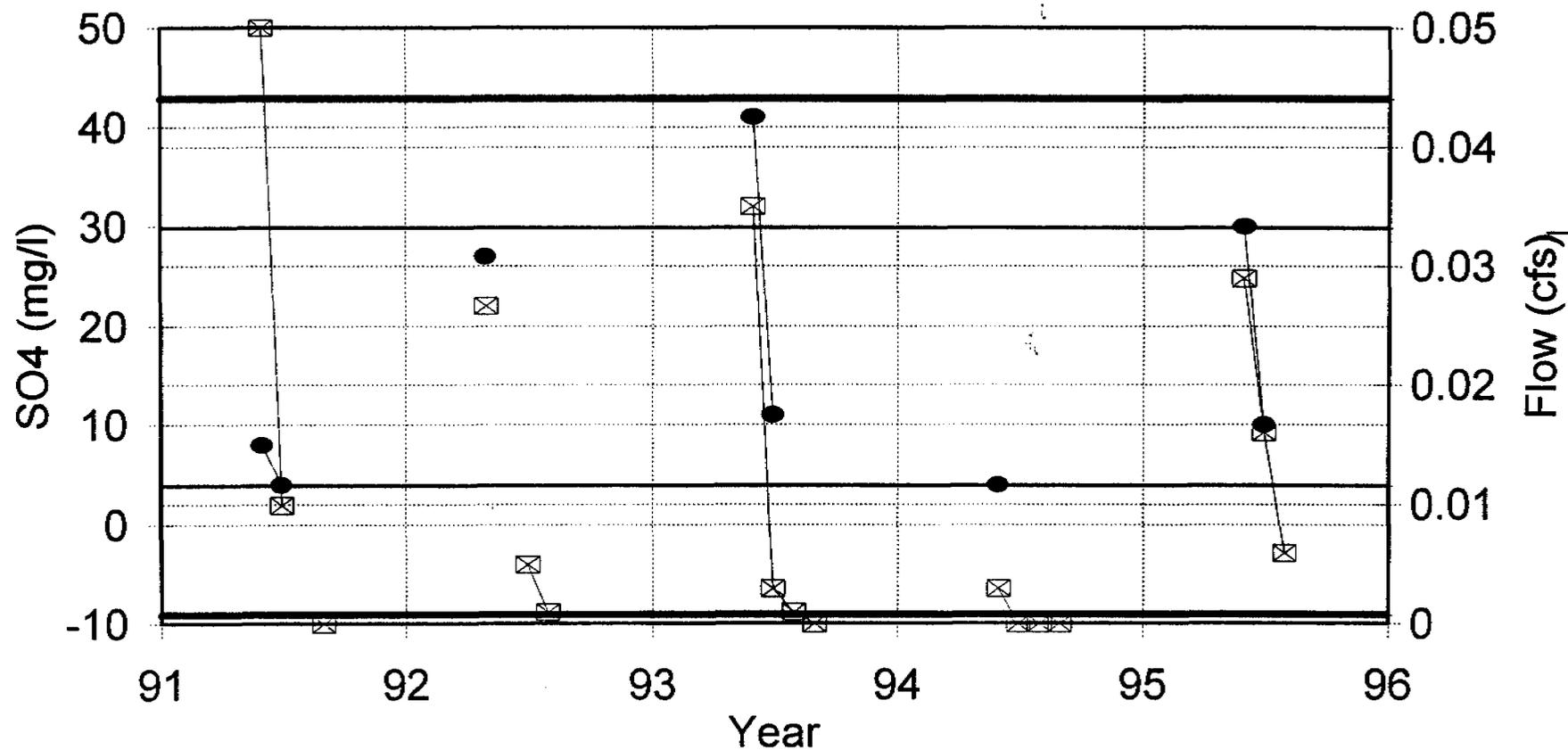
# Station 429

## HCO3 vs. Flow



# Station 429

## SO4 vs. Flow





Cyprus Plateau Mining Company - Water Quality Data

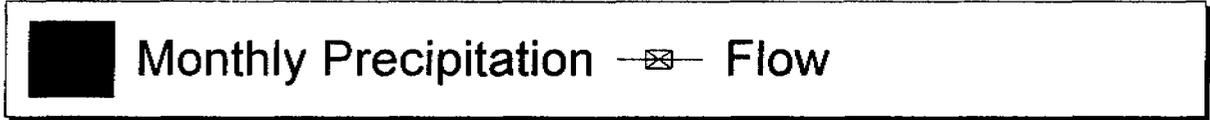
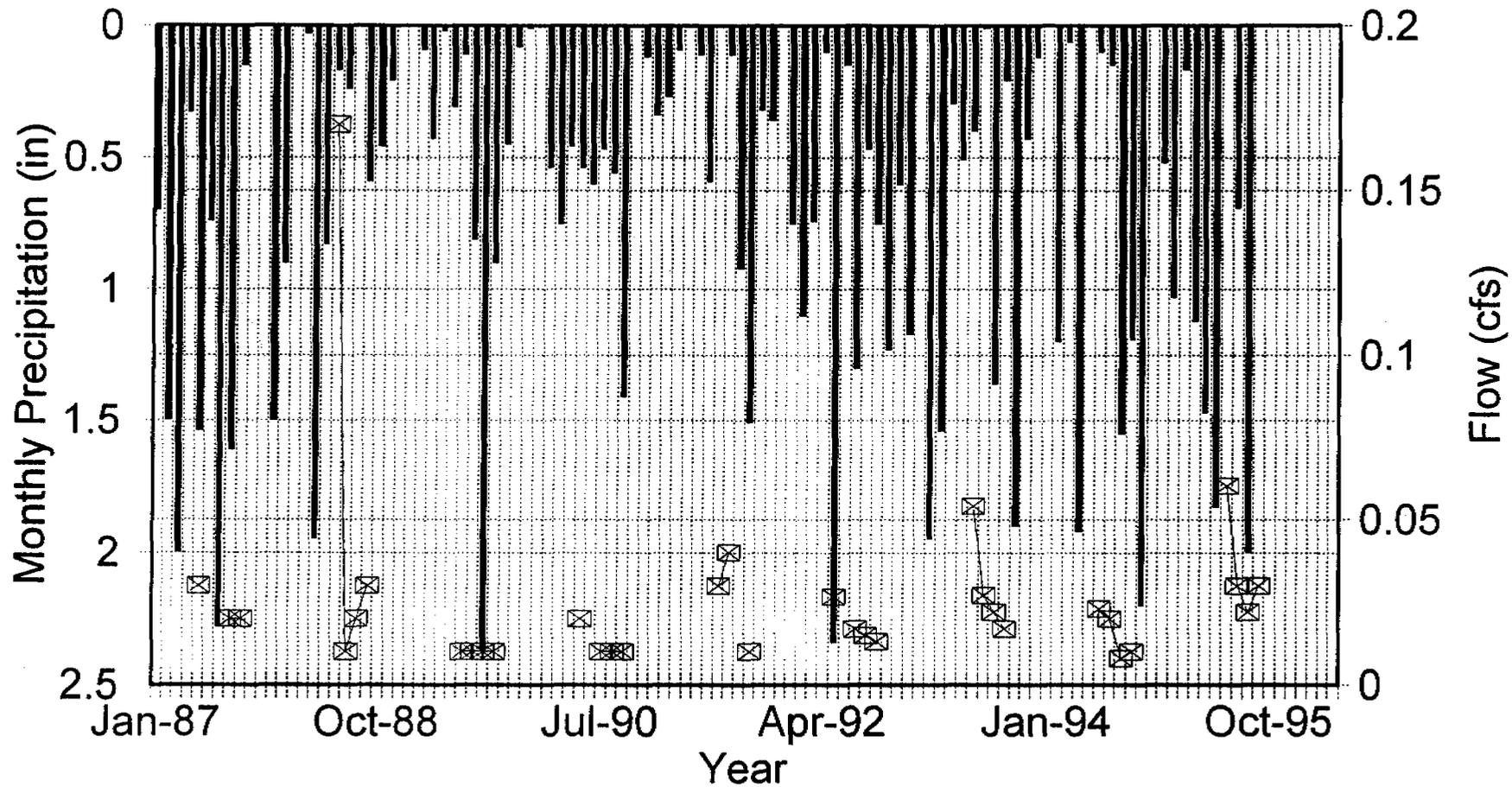
Station: 444 Property: Star Point Location: 1625' N 125' W of SE com. Sec. 15, T15S, R7E Station Type: Spring Sampling Frequency: Quarterly Formation: North Horn Print Date: May 2, 1996 Elevation: 9510

Date	Field Measurements				Laboratory Measurements																Comments	
	Sample Date	Flow (cfs)	Ph (units)	Sp. Cond. (ohms)	Temp. (C)	TDS (mg/l)	TSS (mg/l)	O&G (mg/l)	Hd-CaCO3 (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (D) (mg/l)	SO4 (D) (mg/l)	Ca (D) (mg/l)	Mg (D) (mg/l)	K (D) (mg/l)	Na (D) (mg/l)	Ca/An Bal (%)	Fe (D) (mg/l)	Fe (T) (mg/l)		Mn (T) (mg/l)
Jan-93																						
Feb-93																						
Mar-93																						
Apr-93																						
May-93																						
Jun-93	06/21/93	0.054	6.2	468	5.4	250			249	315	0	2	8	75	15	1	3	<	0.02	0.43	0.02	
Jul-93	07/27/93	0.027	6.3	449	5.8	256			252	305	0	2	10	76	15 <	1	3	<	0.02	0.18 <	0.01	
Aug-93	08/17/93	0.022	6.3	453	5.7																	
Sep-93	09/27/93	0.017	6.4	461	5.8	266			263	303	0	1	6	79	16	1	3	<	0.02	0.08 <	0.01	
Oct-93																						
Nov-93																						
Dec-93																						
Jan-94																						
Feb-94																						
Mar-94																						
Apr-94																						
May-94																						
Jun-94	06/09/94	0.023	7.3	526	4.4	284			249	312	0	2	2	75	15 <	1	3	<	0.02 <	0.02 <	0.01	
Jul-94	07/19/94	0.02	8	479	10.4	258			244	293	10	2	8	73	15	1	4	<	0.02	0.06 <	0.01	
Aug-94	08/31/94	0.008	7.8	402	10.7																	
Sep-94	09/21/94	0.01	7.8	487	8.8	270			277	332	0	2	7	83	17	1	3	<	0.02 <	0.02 <	0.01	RAIN IN A.M. = ~10". LO
Oct-94																						
Nov-94																						
Dec-94																						
Jan-95																						
Feb-95																						
Mar-95																						
Apr-95																						
May-95																						
Jun-95	06/21/95	0.06	7.5	516	5	280			266	235 <	2 <	1	20	81.5	15.2	0.9	3	3.4 <	0.01	0.02 <	0.005	
Jul-95	07/26/95	0.03	7.6	531	7	260			272	245 <	2	2	10	81.4	16.7	0.9	3.2	4.1 <	0.01 <	0.01 <	0.005	
Aug-95	08/23/95	0.022	7.52	459	7																	
Sep-95	09/27/95	0.03	7.5	463	43.5	270			261	242 <	2	2	12	78.9	15.6	0.9	2.9	2.2 <	0.01	0.02 <	0.005	
Oct-95																						
Nov-95																						
Dec-95																						
Jan-96																						
END DATA																						
Count	34	19	19	19	19	21	0	0	14	14	14	14	14	14	14	14	14	3	14	14	13	
Minimum	0.008	6.1	402	4	228	ERR	ERR	244	235 <	0 <	1	2	73	15 <	0.9	2.9	2.2 <	0.01 <	0.01 <	0.005		
Maximum	0.17	8.3	531	43.5	298	ERR	ERR	281	332 <	14 <	3	31	83	18 <	2	5	4.1 <	0.02 <	0.73 <	0.02		
Average	0.0254	7.2379	473.95	8.8842	263.05	ERR	ERR	258.71	286.86 <	3.3571 <	1.8571	10.786	77.629	15.75 <	1.05	3.2214	3.2333 <	0.0179 <	0.1507 <	0.0096		
Standard Deviation	0.0279	0.6503	30.313	8.4096	15.126	ERR	ERR	11.652	29.773 <	4.623 <	0.6389	8.0461	3.4402	0.903 <	0.2666	0.5583	0.7846 <	0.0041 <	0.2103 <	0.0036		
Avg. -1 Std. Dev.	-0.002	6.5876	443.63	0.4746	247.92	ERR	ERR	247.06	257.08 <	-1.266 <	1.2183	2.7396	74.188	14.847 <	0.7834	2.6631	2.4488 <	0.0138 <	-0.06 <	0.006		
Avg. +1 Std. Dev.	0.0534	7.8882	504.26	17.294	278.17	ERR	ERR	270.37	316.63 <	7.9802 <	2.496	18.832	81.069	16.653 <	1.3166	3.7797	4.0179 <	0.022 <	0.361 <	0.0133		
Avg. -2 Std. Dev.	-0.03	5.9373	413.32	-7.935	232.79	ERR	ERR	235.41	227.31 <	-5.889 <	0.6794	-5.306	70.748	13.944 <	0.5168	2.1049	1.6642 <	0.0087 <	-0.27 <	0.0023		
Avg. +2 Std. Dev.	0.0813	8.5385	534.57	25.703	293.3	ERR	ERR	282.02	346.4 <	12.603 <	3.1349	26.878	84.509	17.556 <	1.5832	4.338	4.8025 <	0.0261 <	0.5712 <	0.0169		

NOTE: The "<" symbol indicates that "Less Than" data was found in the data set; statistics are approximate.

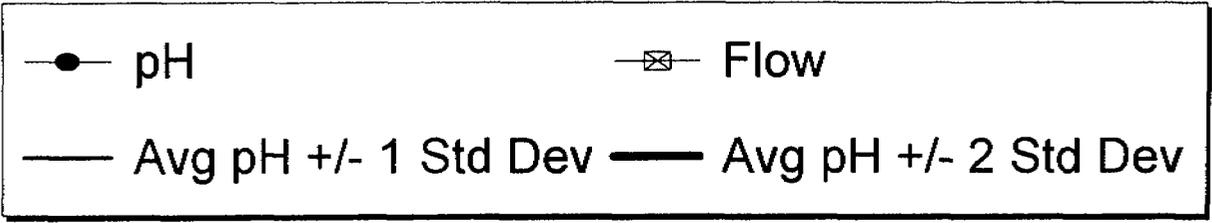
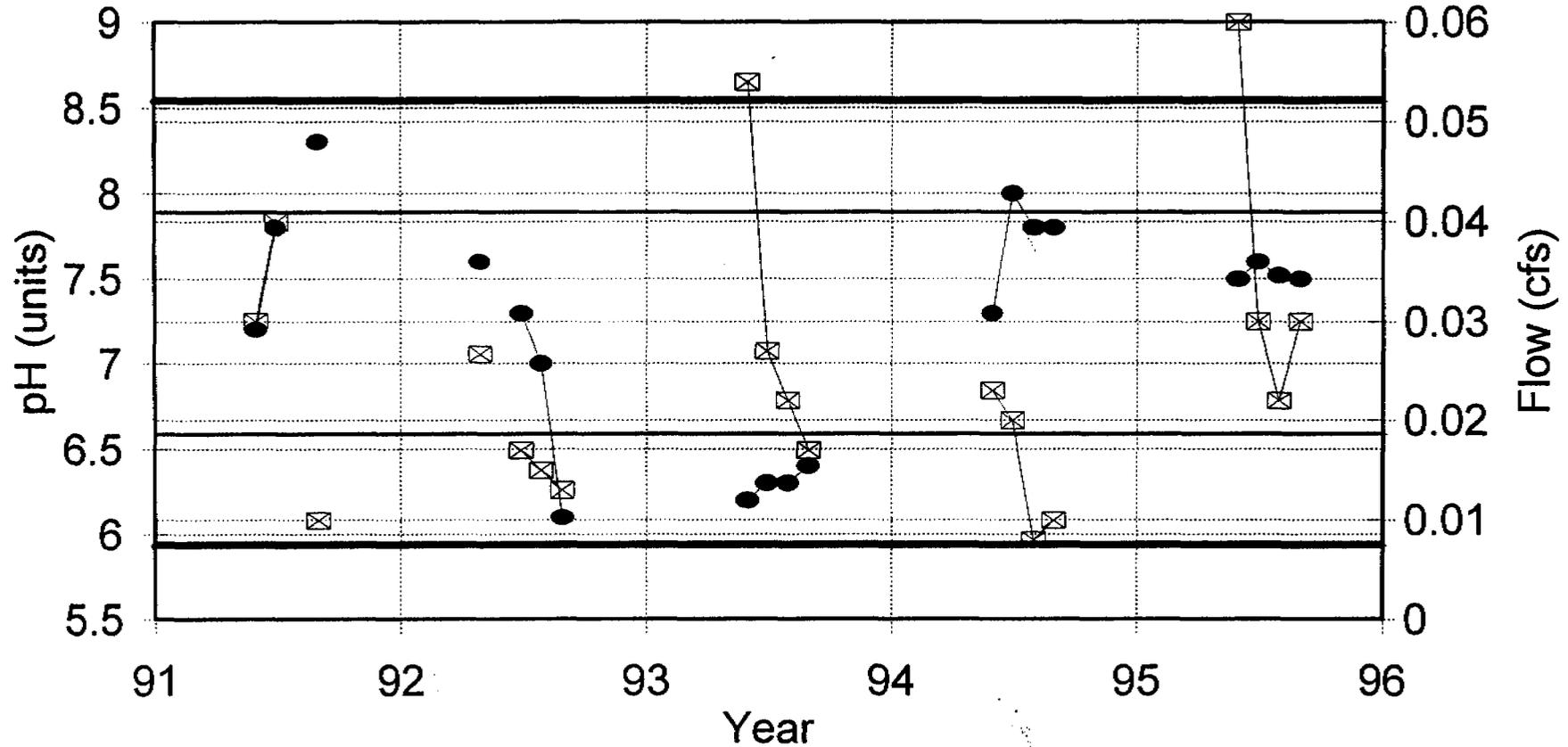
# Station 444

## Monthly Precipitation vs. Flow



# Station 444

pH vs. Flow

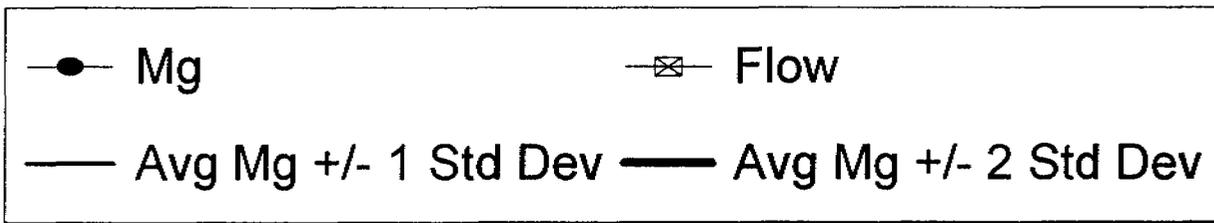
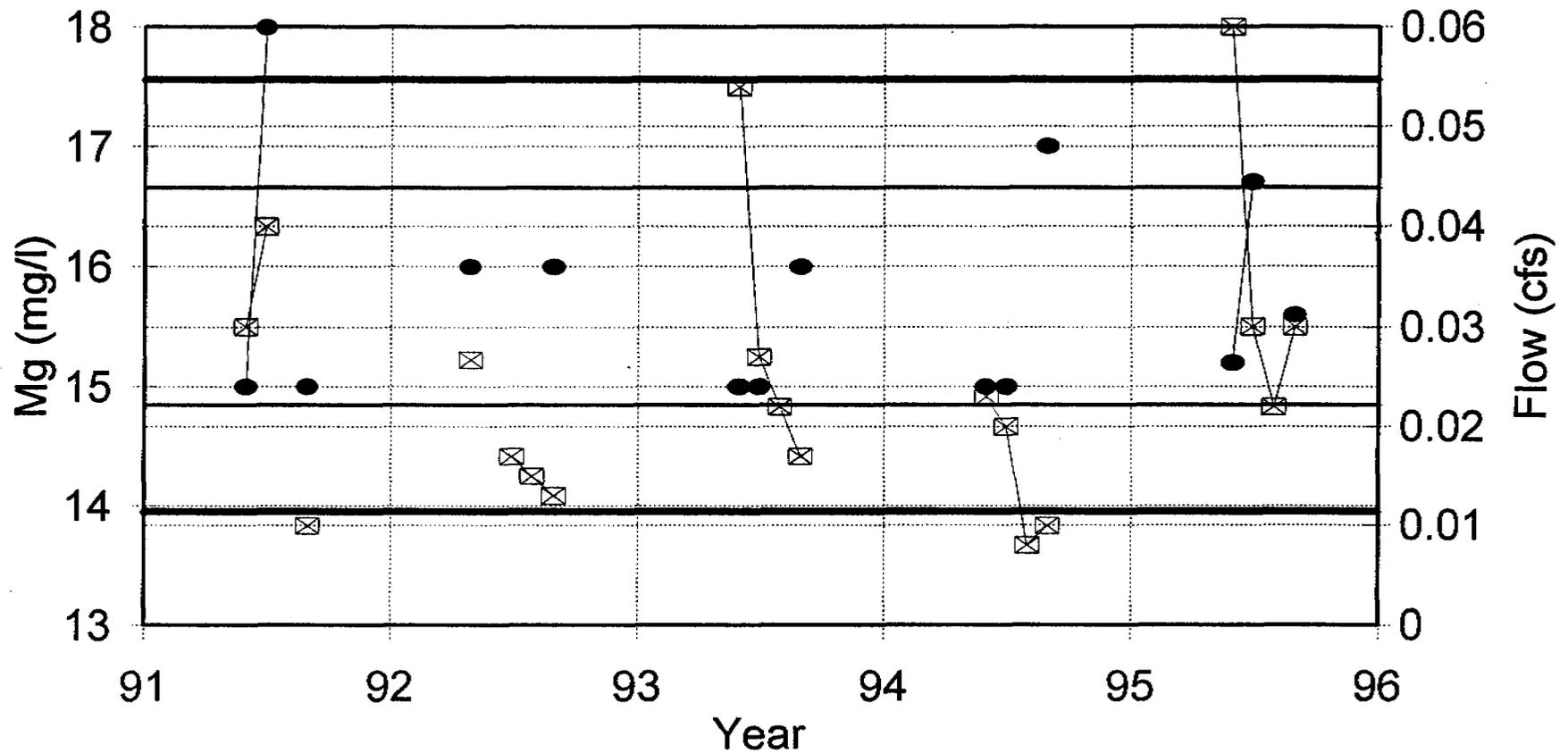






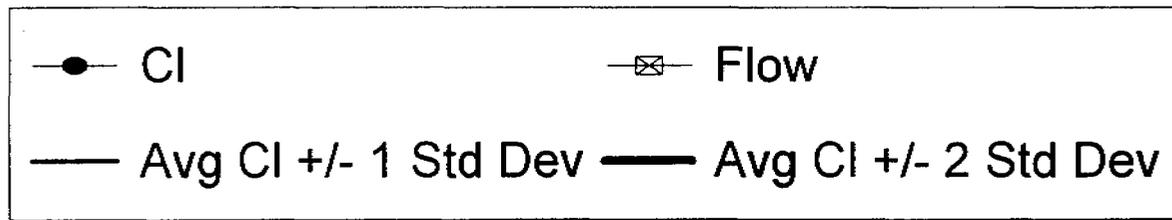
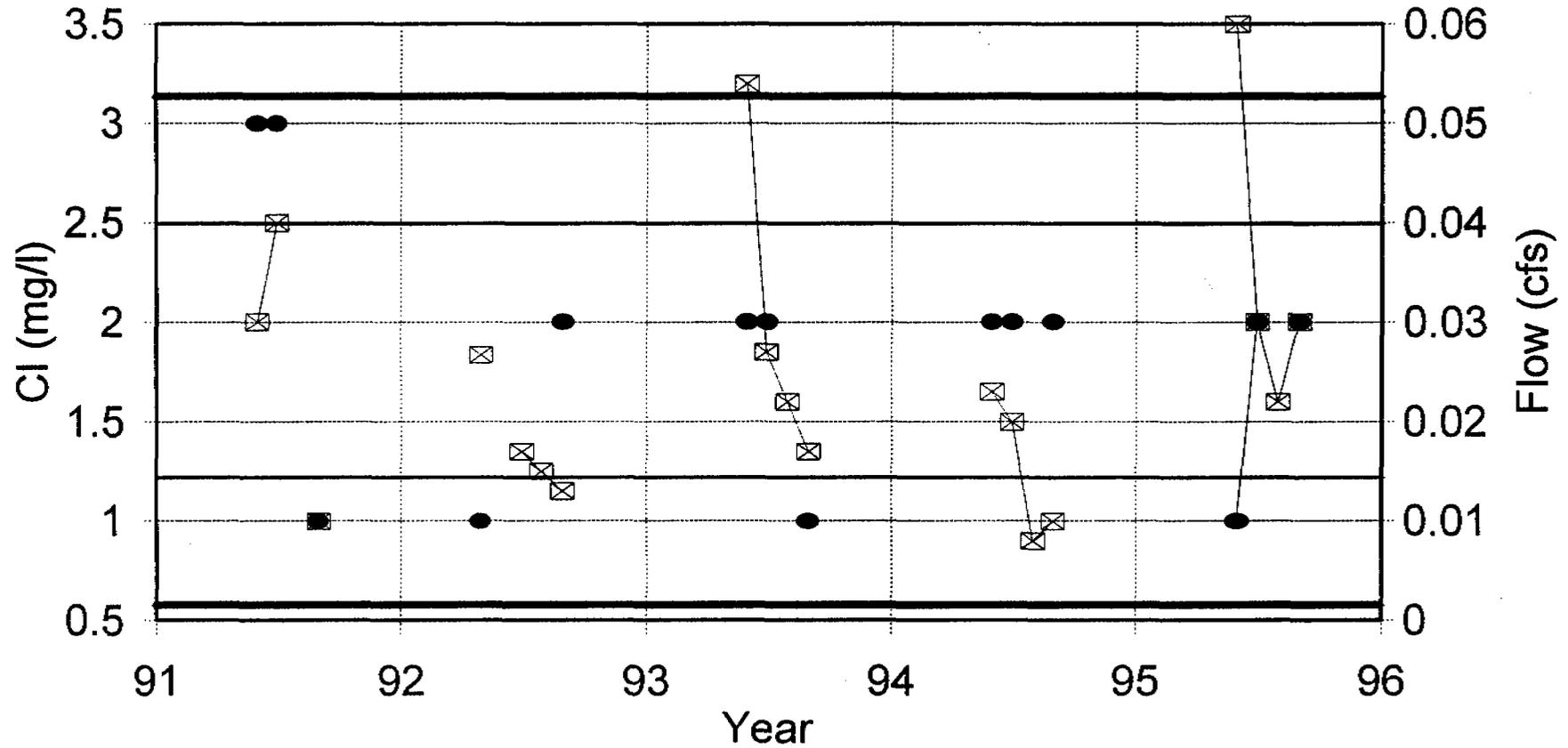
# Station 444

## Mg vs. Flow



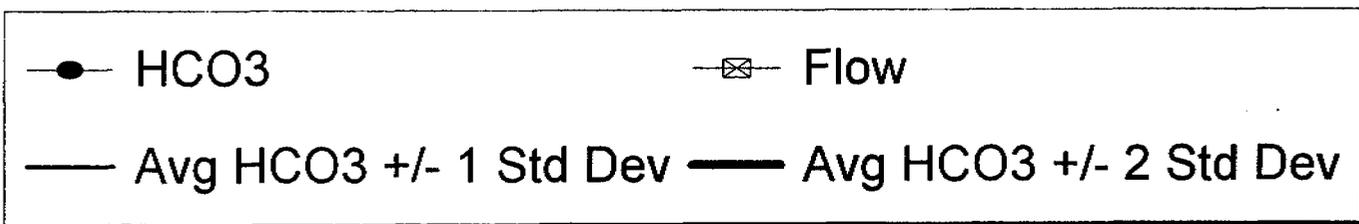
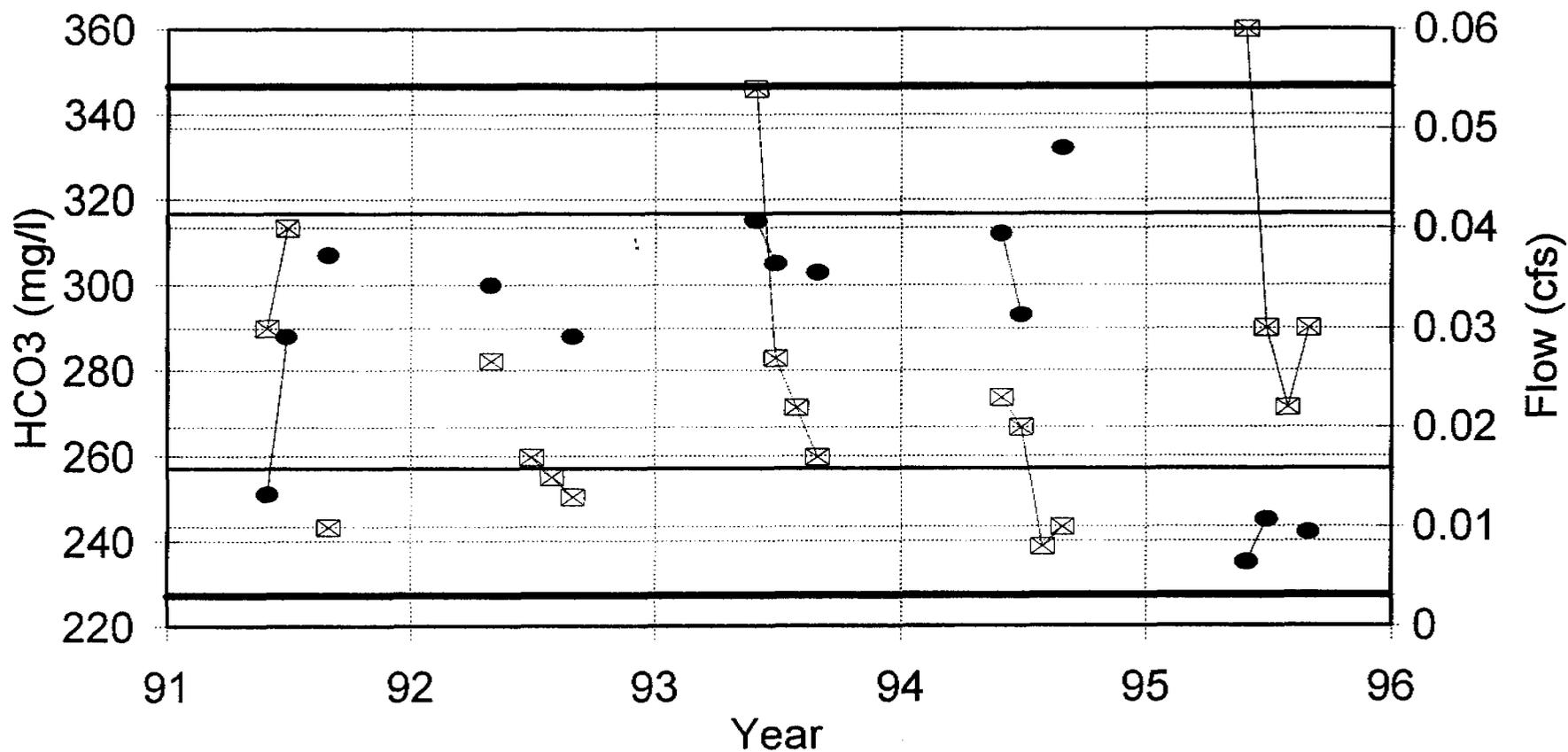
# Station 444

## Cl vs. Flow



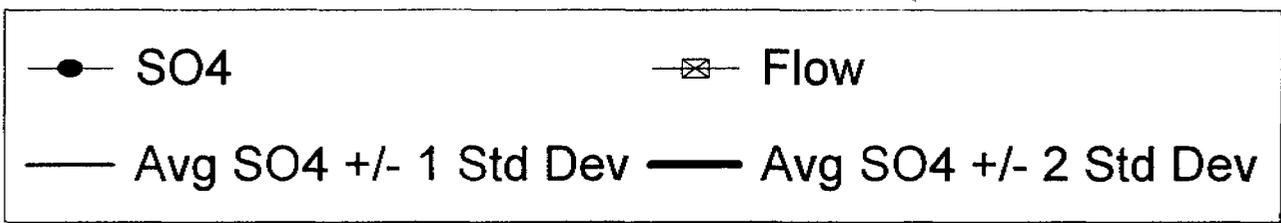
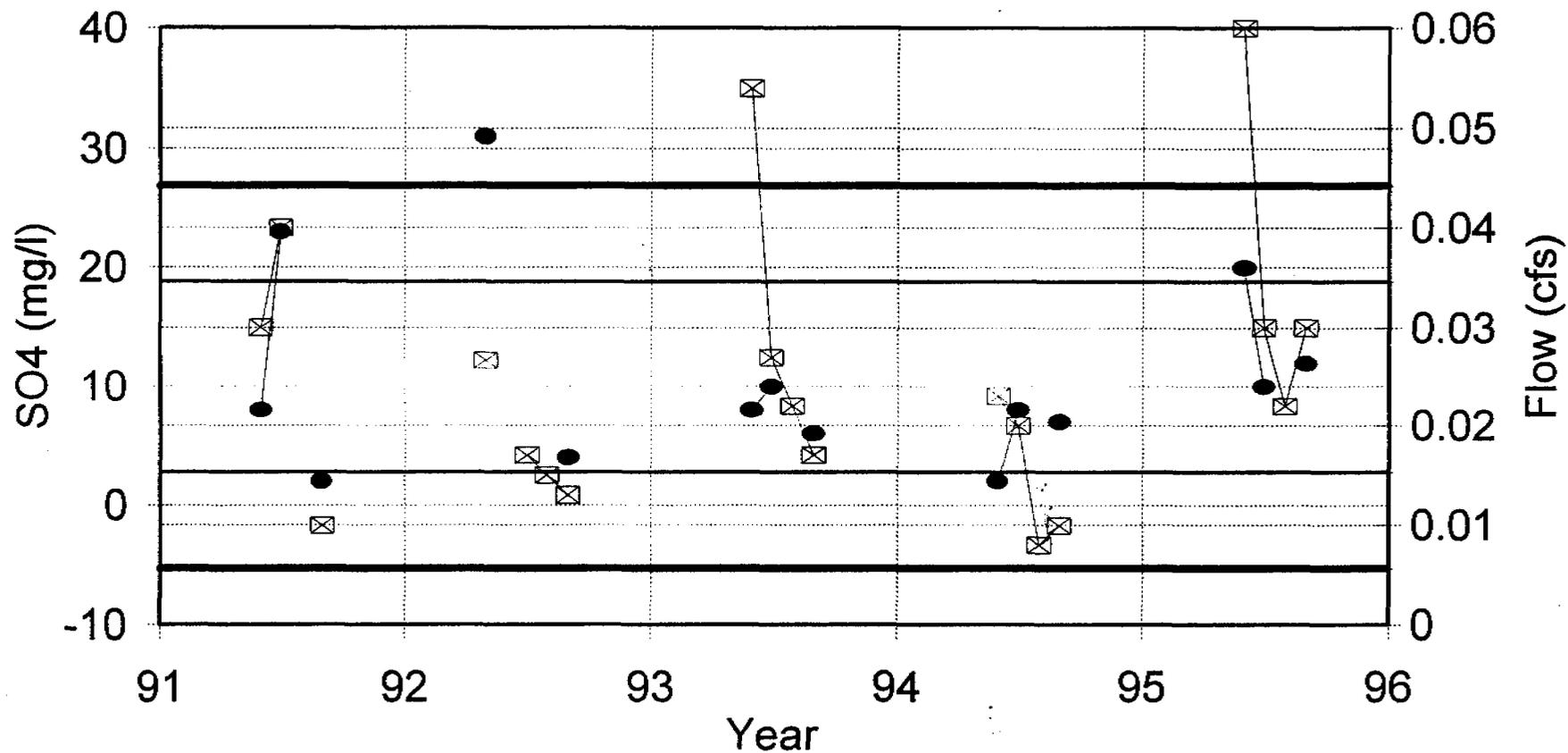
# Station 444

## HCO3 vs. Flow



# Station 444

## SO4 vs. Flow



Cyprus Plateau Mining Company - Water Quality Data

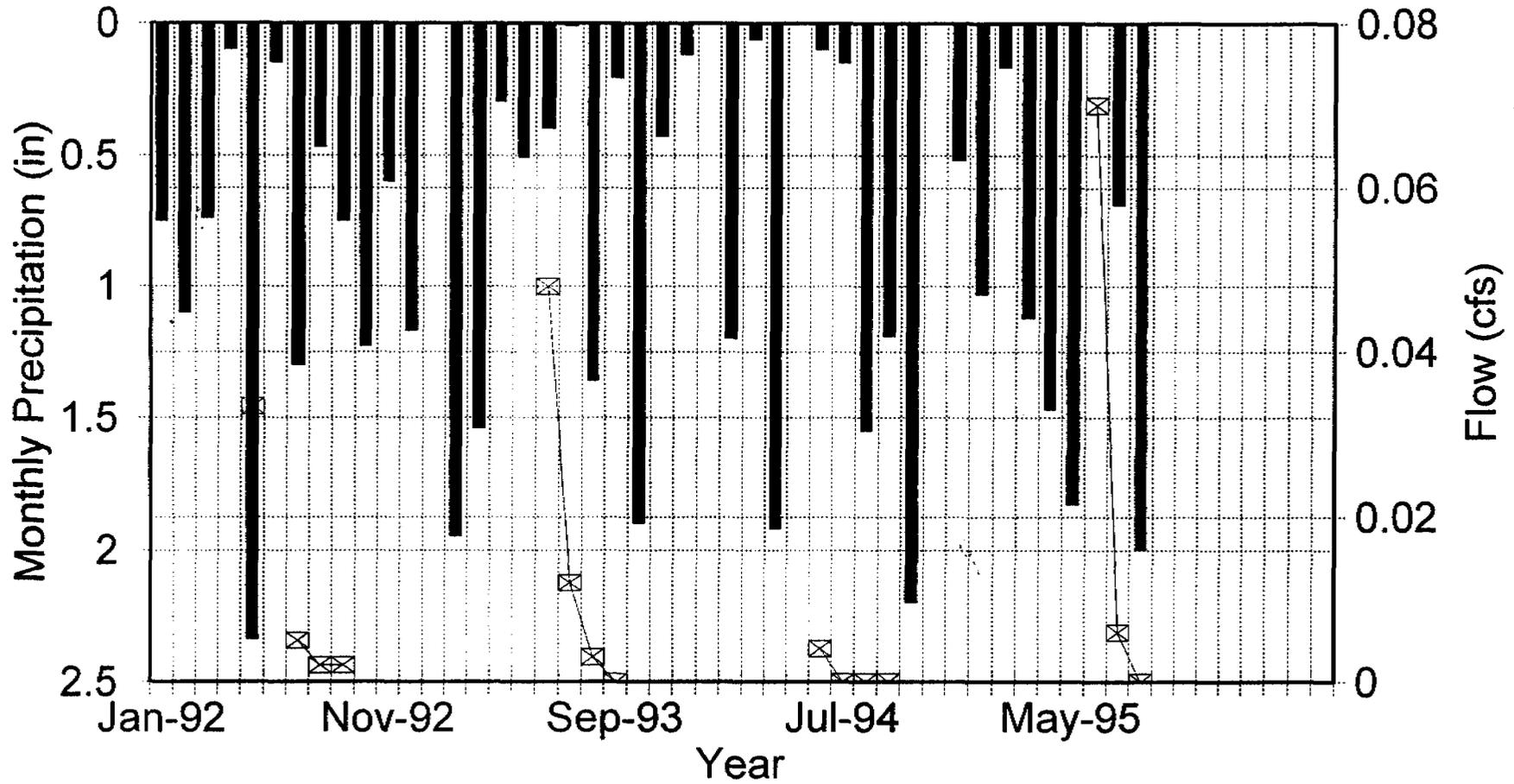
Station: 450 Property: Star Point Location: 2500' N 1875' E of SW cor. Sec 23, T15S, R7E Station Type: Spring Sampling Frequency: Quarterly Formation: North Horn Print Date: May 2, 1996 Elevation: 9710

Date	Field Measurements				Laboratory Measurements															Comments		
	Sample Date	Flow (cfs)	Ph (units)	Sp. Cond. (ohms)	Temp. (C)	TDS (mg/l)	TSS (mg/l)	O&G (mg/l)	Hd-CaCO3 (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (D) (mg/l)	SO4 (D) (mg/l)	Ca (D) (mg/l)	Mg (D) (mg/l)	K (D) (mg/l)	Na (D) (mg/l)	Cat/An Bal (%)	Fe (D) (mg/l)		Fe (T) (mg/l)	Mn (T) (mg/l)
Jan-92																						
Feb-92																						
Mar-92																						
Apr-92																						
May-92	05/19/92	0.0334	7.6	532	6.2				285	268	0	1	39	81	20	1	3	<	0			
Jun-92																						
Jul-92	07/15/92	0.005	7	507	5.9																	
Aug-92	08/26/92	0.002	8.4	519	8.1																	
Sep-92	09/21/92	0.002	6.4	519	7.2				287	248	24	3	12	82	20	1	2	<	0			
Oct-92																						
Nov-92																						
Dec-92																						
Jan-93																						
Feb-93																						
Mar-93																						
Apr-93																						
May-93																						
Jun-93	06/22/93	0.048	6.2	481	5	238			248	329	0	2	2	73	16 <	1	2	<	0.02	0.02 <	0.01	
Jul-93	07/27/93	0.012	6.3	484	5.6	292			283	325	0	2	27	82	19 <	1	3	<	0.02 <	0.02 <	0.01	
Aug-93	08/17/93	0.003	6.3	480	7																	
Sep-93	09/27/93	0																				
Oct-93																						
Nov-93																						
Dec-93																						
Jan-94																						
Feb-94																						
Mar-94																						
Apr-94																						
May-94																						
Jun-94	06/08/94	0.004	7.5	586	4	270			283	336	0	2	10	82	19 <	1	2	<	0.02	0.11 <	0.01	
Jul-94	07/19/94	0																				
Aug-94	08/31/94	0																				
Sep-94	09/21/94	0																				
Oct-94																						
Nov-94																						
Dec-94																						
Jan-95																						
Feb-95																						
Mar-95																						
Apr-95																						
May-95																						
Jun-95	06/22/95	0.07	7.5	520	5	240			281	255 <	2	3	10	81	19	0.9	2.7	3.2 <	0.01	0.02 <	0.005	
Jul-95	07/27/95	0.006	7.3	525	7	300			292	270 <	2	3	20	83.6	20.1	0.8	2.6	0.5	0.03	0.43	0.017	
Aug-95	08/23/95	0																				
Sep-95	09/27/95																					
Oct-95																						
Nov-95																						
Dec-95																						
Jan-96																						
END DATA																						
Count	15	10	10	10		5	0	0	7	7	7	7	7	7	7	7	2	7	5	5		
Minimum	0	6.2	480	4		238	ERR	ERR	248	248 <	0	1	2	73	16 <	0.8	2	0.5 <	0 <	0.02 <	0.005	
Maximum	0.07	8.4	586	8.1		300	ERR	ERR	292	336 <	24	3	39	83.6	20.1 <	1	3	3.2 <	0.03 <	0.43 <	0.017	
Average	0.0124	7.05	515.3	6.1		268	ERR	ERR	279.86	290.14 <	4	2.2857	17.143	80.657	19.014 <	0.9571	2.4714	1.85 <	0.0143 <	0.12 <	0.0104	
Standard Deviation	0.0204	0.6975	29.82	1.1815		25.644	ERR	ERR	13.421	35.325 <	8.2115	0.6999	11.593	3.2279	1.3206 <	0.0728	0.43	1.35 <	0.0105 <	0.1589 <	0.0038	
Avg. +1 Std. Dev.	-0.008	6.3525	485.48	4.9185		242.36	ERR	ERR	266.44	254.82 <	-4.211	1.5859	5.5494	77.429	17.694 <	0.8843	2.0414	0.5 <	0.0038 <	-0.039 <	0.0066	
Avg. -2 Std. Dev.	-0.028	7.7475	545.12	7.2815		293.64	ERR	ERR	293.28	325.47 <	12.211	2.9856	28.736	83.885	20.335 <	1.03	2.9014	3.2 <	0.0248 <	0.2789 <	0.0142	
Avg. +2 Std. Dev.	-0.029	5.655	455.66	3.737		216.71	ERR	ERR	253.02	219.49 <	-12.42	0.886	-8.044	74.201	16.373 <	0.8115	1.6114	-0.85 <	-0.007 <	-0.198 <	0.0027	
Avg. -2 Std. Dev.	0.0532	8.445	574.94	8.463		319.29	ERR	ERR	306.7	360.79 <	20.423	3.6854	40.33	87.113	21.656 <	1.1028	3.3314	4.55 <	0.0353 <	0.4377 <	0.0181	

NOTE: The "<" symbol indicates that "Less Than" data was found in the data set; statistics are approximate.

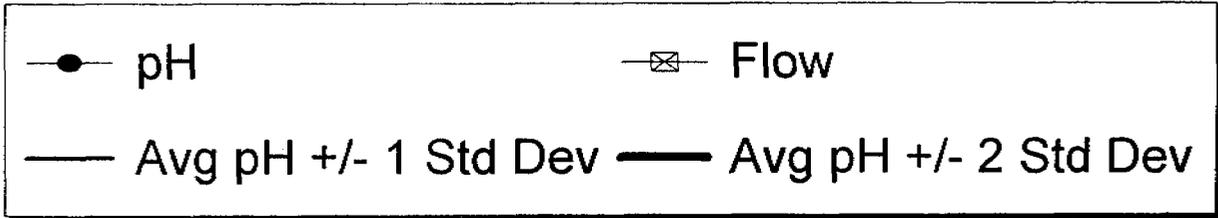
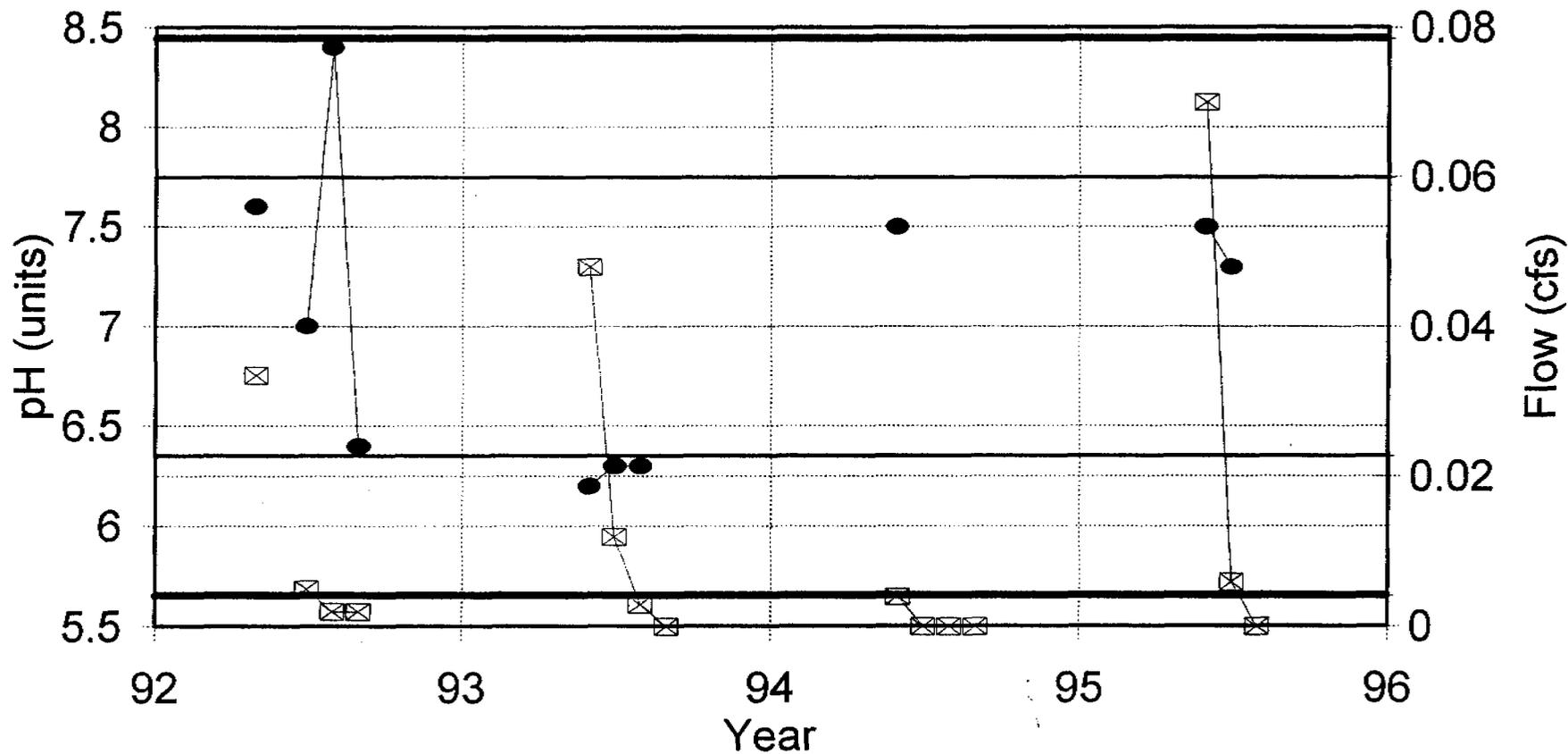
# Station 450

## Monthly Precipitation vs. Flow



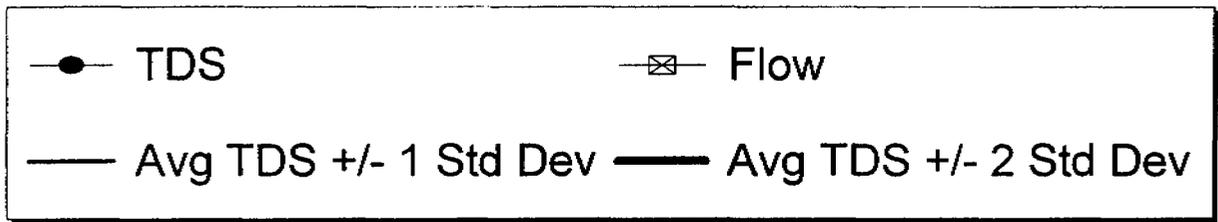
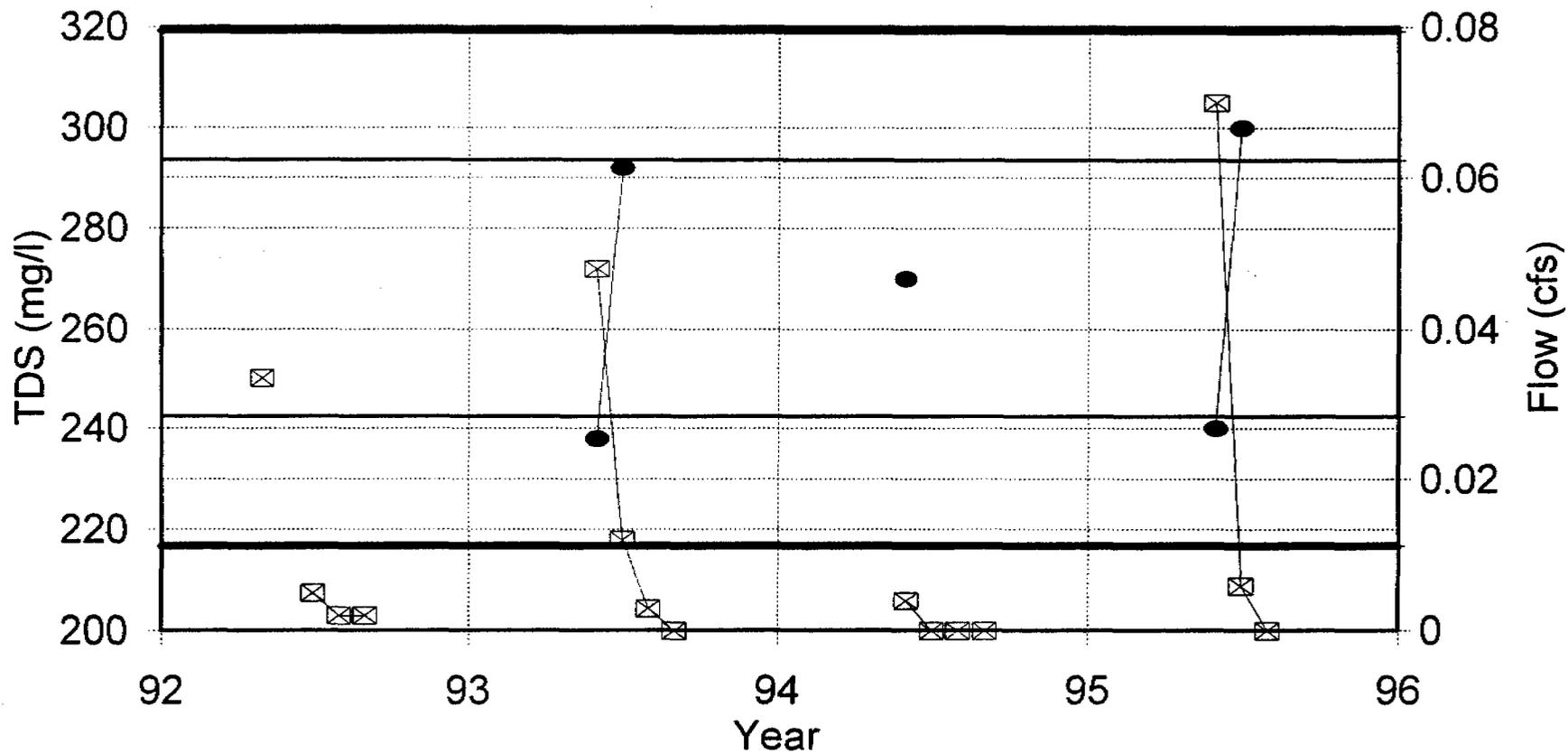
# Station 450

## pH vs. Flow



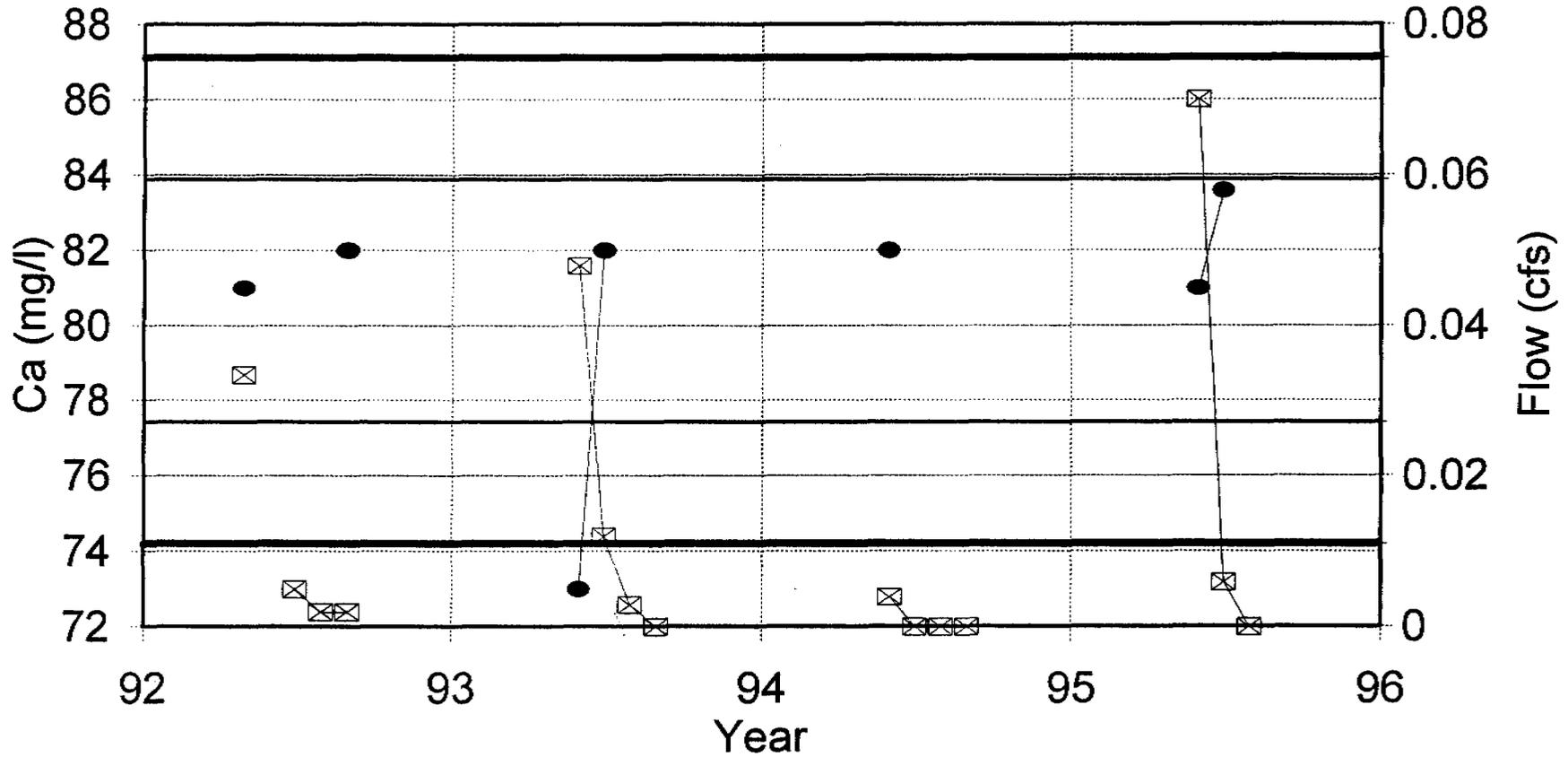
# Station 450

## TDS vs. Flow



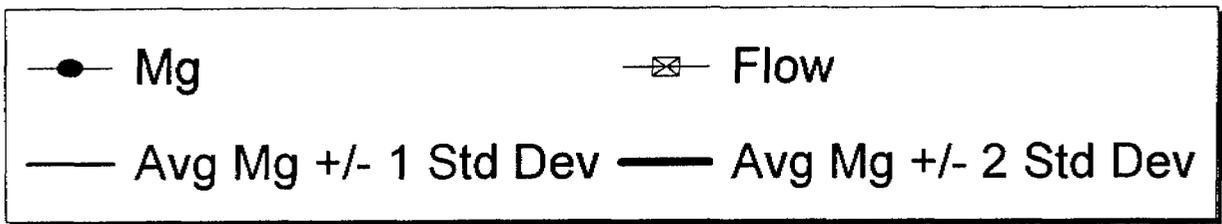
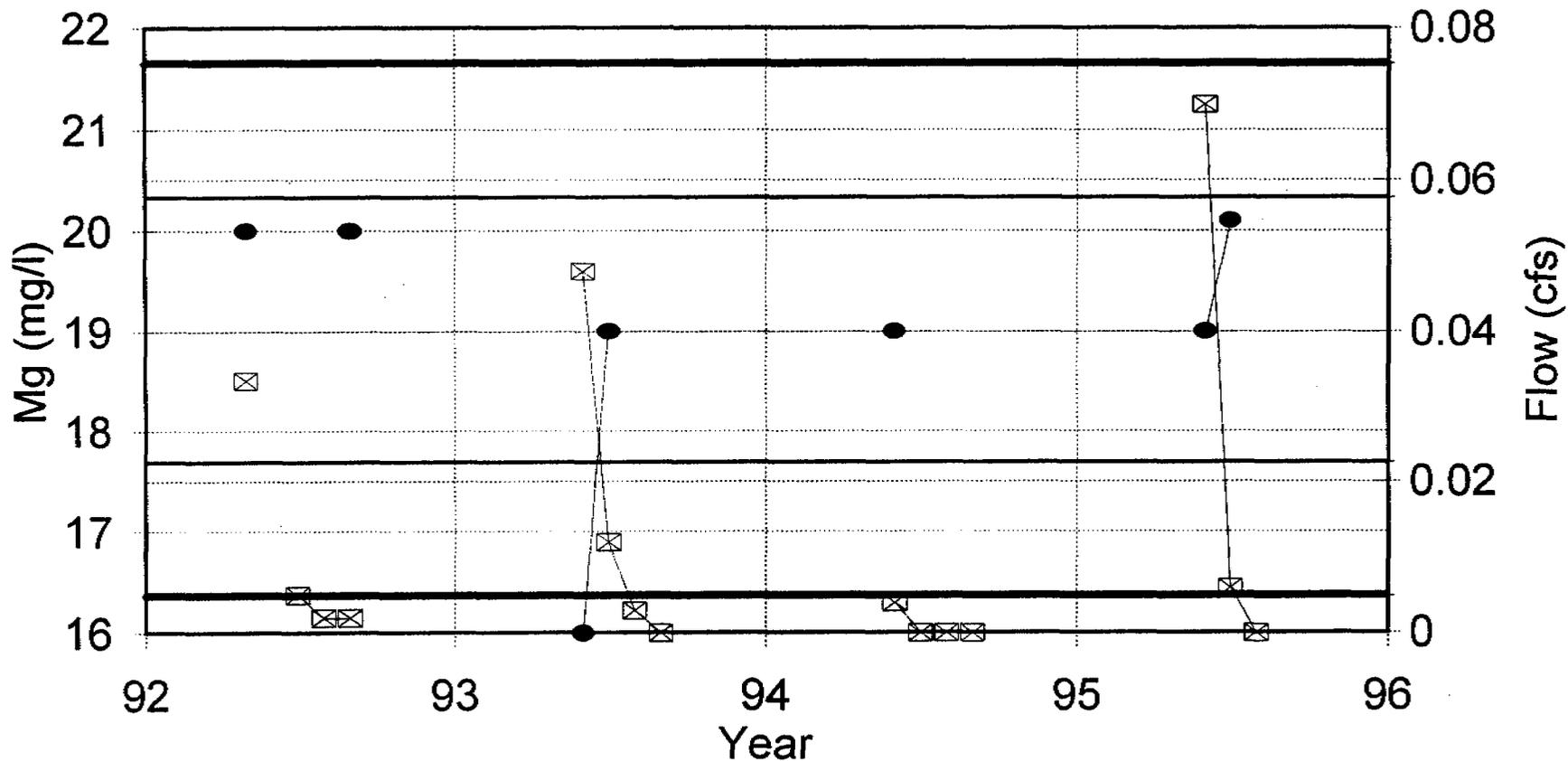
# Station 450

## Ca vs. Flow



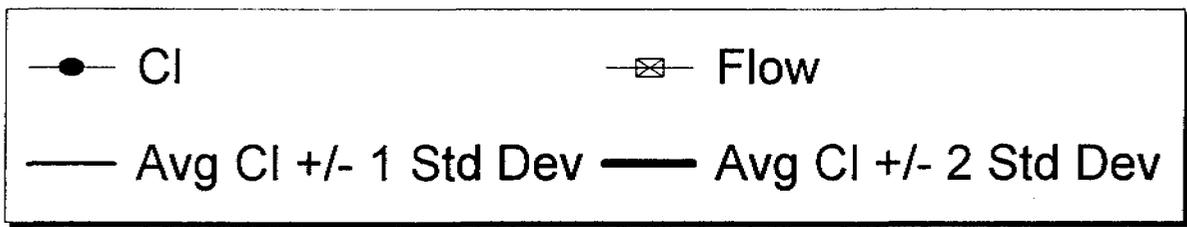
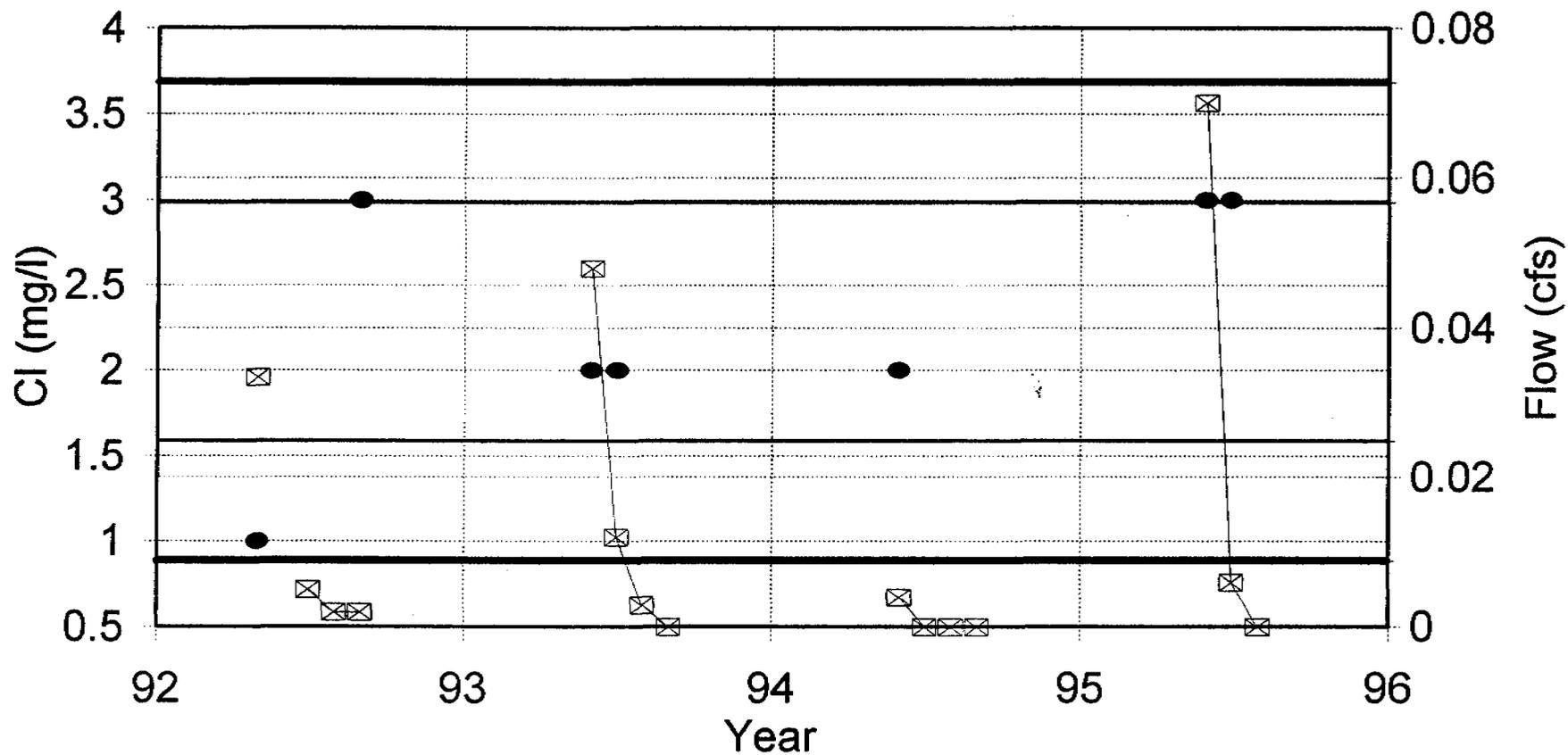
# Station 450

## Mg vs. Flow



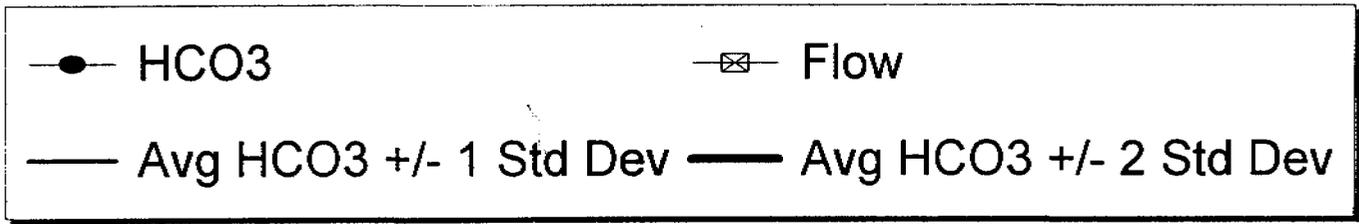
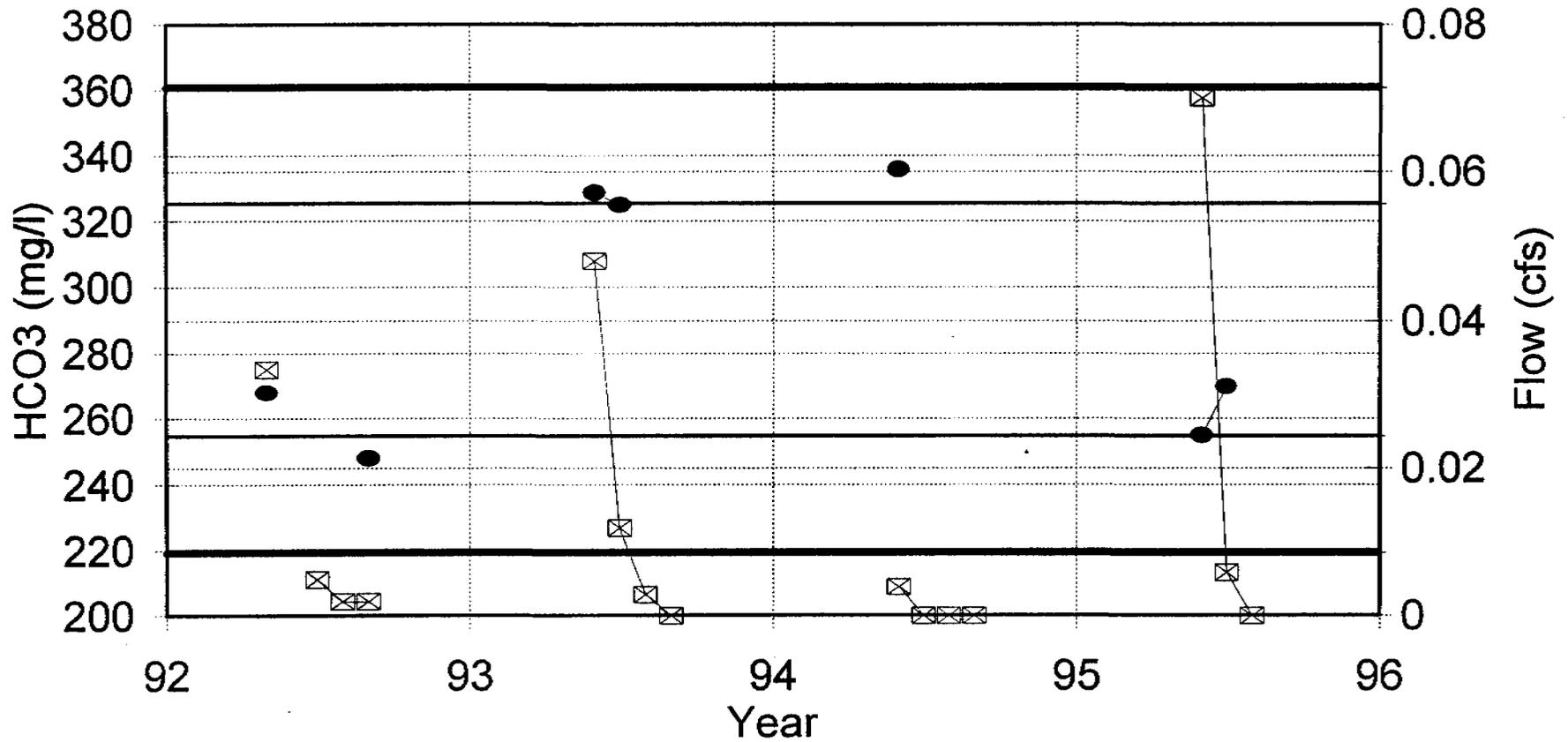
# Station 450

## Cl vs. Flow



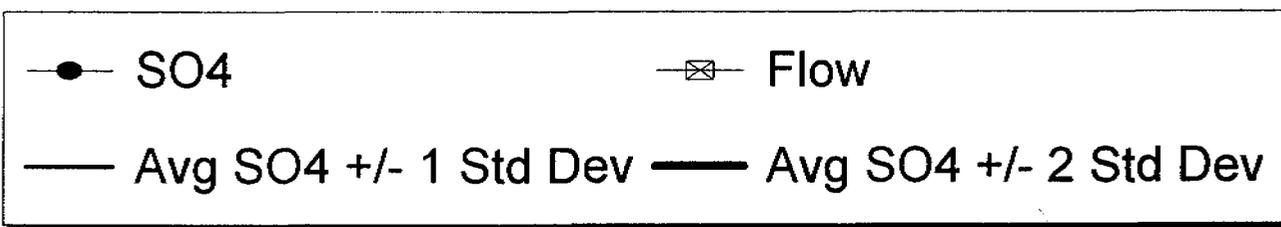
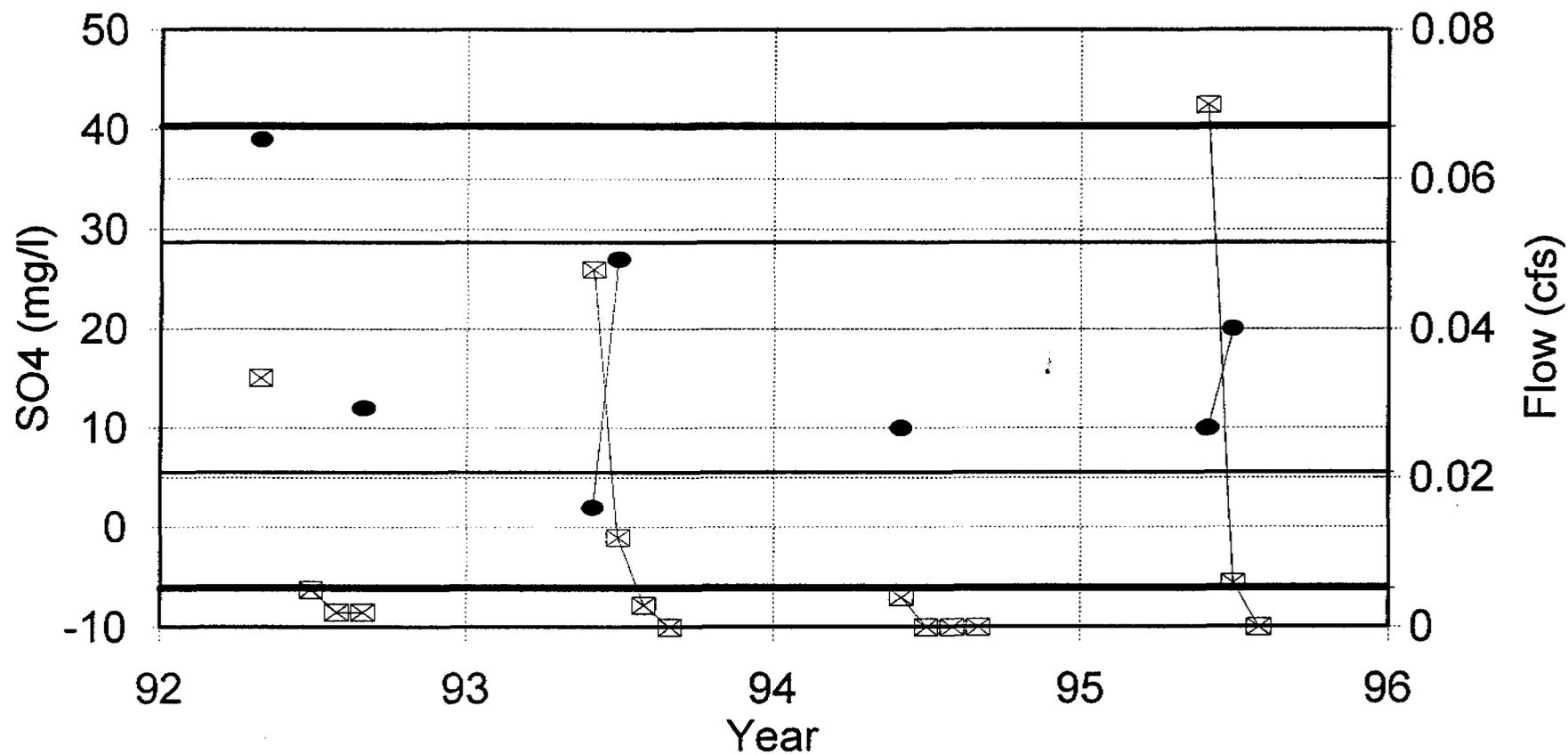
# Station 450

## HCO3 vs. Flow



# Station 450

## SO4 vs. Flow





Cyprus Plateau Mining Company - Water Quality Data

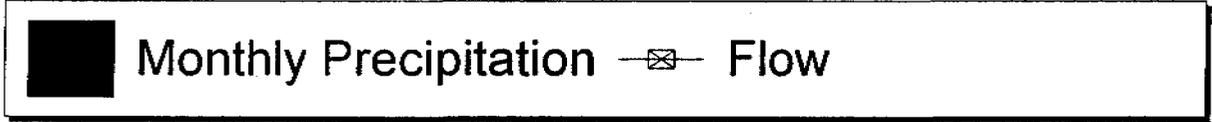
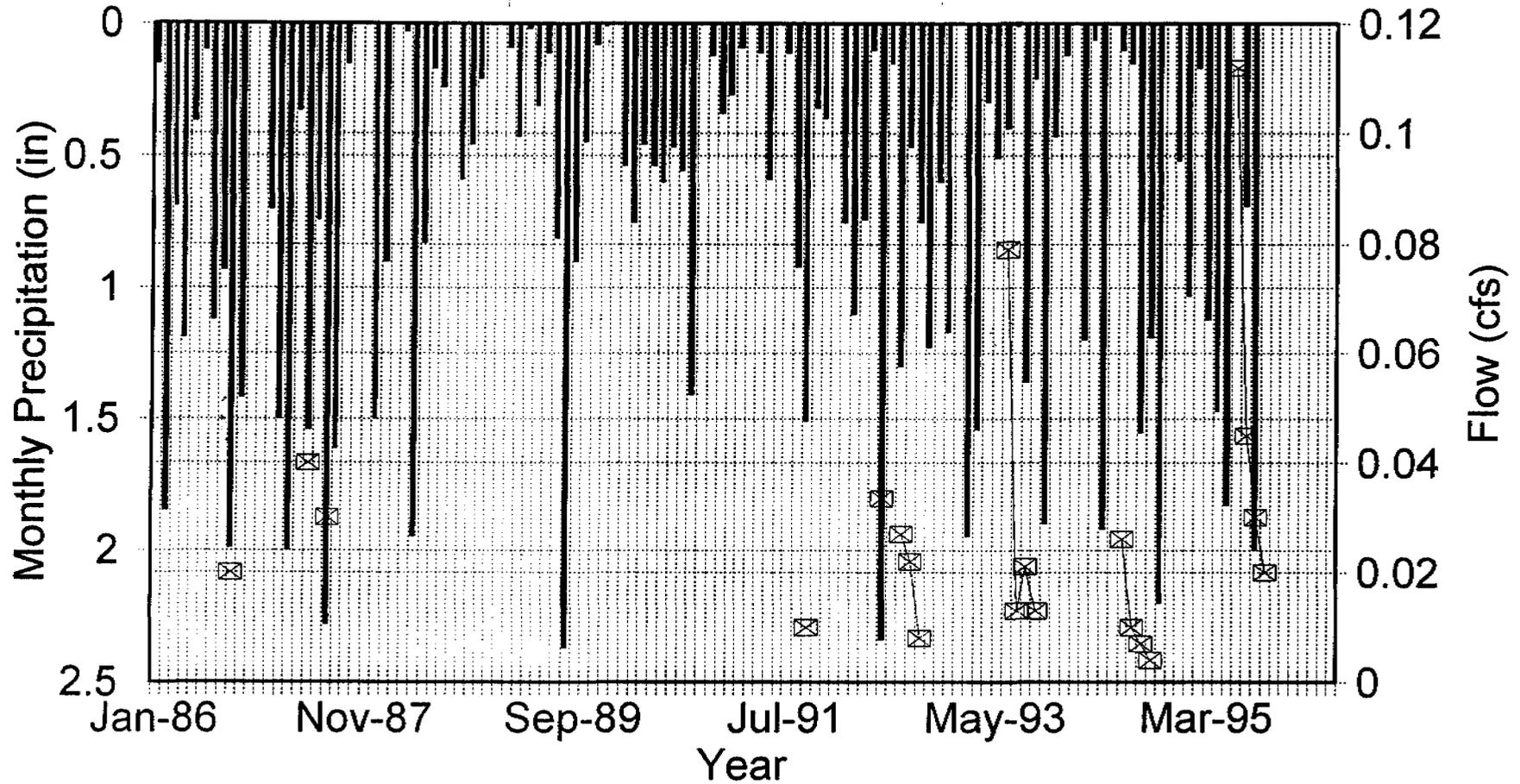
Station: 452		Property: Star Point				Location: 2000' N 2250' W of SE cor. Sec 23, T15S, R7E				Station Type:		Sampling Frequency: Quarterly				Formation: North Horn				Print Date: May 2, 1996 Elevation: 9830							
Date		Field Measurements				Laboratory Measurements														Comments							
Mo-Yr	Sample Date	Flow (cfs)	Ph (units)	Sp. Cond. (ohms)	Temp. (C)	TDS (mg/l)	TSS (mg/l)	O&G (mg/l)	Hd-CaCO3 (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (D) (mg/l)	SO4 (D) (mg/l)	Ca (D) (mg/l)	Mg (D) (mg/l)	K (D) (mg/l)	Na (D) (mg/l)	Cat/An Bal (%)	Fe (D) (mg/l)		Fe (T) (mg/l)	Mn (T) (mg/l)					
Jan-92																											
Feb-92																											
Mar-92																											
Apr-92																											
May-92	05/19/92	0.0334	8	466	4.8	242			237	264	0	1	8	62	20	1	2		<	0.02	<	0.02					
Jun-92																											
Jul-92	07/15/92	0.027	8.2	448	4.7																						
Aug-92	08/28/92	0.022	7.9	433	5.1																						
Sep-92	09/21/92	0.008	6.5	429	5.2	232			235	220	7	21	16	61	20	1	2		<	0.02		0.13	<	0.01			
Oct-92																											
Nov-92																											
Dec-92																											
Jan-93																											
Feb-93																											
Mar-93																											
Apr-93																											
May-93																											
Jun-93	06/22/93	0.079	6.3	421	4.4	208			235	281	0	1	2	61	20	<	1	2		<	0.02		0.02	<	0.01		
Jul-93	07/27/93	0.013	6.4	415	4.6	232			239	239	0	2	16	61	21	<	1	3		<	0.02	<	0.02	<	0.01		
Aug-93	08/17/93	0.021	6.4	425	4.8																						
Sep-93	09/27/93	0.013	6.3	417	4.8	220			227	273	0	2	8	58	20	<	1	2		<	0.02	<	0.02	<	0.01		
Oct-93																											
Nov-93																											
Dec-93																											
Jan-94																											
Feb-94																											
Mar-94																											
Apr-94																											
May-94																											
Jun-94	06/08/94	0.026	7.7	506	3.3	224			202	262	0	2	2	53	17	<	1	2		<	0.02		0.04	<	0.01		
Jul-94	07/19/94	0.01	8	429	14.6	240			236	291	10	2	21	60	21		1	3		<	0.02		0.67	<	0.01		
Aug-94	08/31/94	0.007	8.3	386	11.1																						
Sep-94	09/21/94	0.004	8.2	495	8.8	252			213	262	0	2	14	54	19	<	1	2			0.02		0.13	<	0.01		
Oct-94																											
Nov-94																											
Dec-94																											
Jan-95																											
Feb-95																											
Mar-95																											
Apr-95																											
May-95																											
Jun-95	06/22/95	0.112	7.5	499	4.8	240			253	230	<	2	<	10	66.5	21.2	0.7	2.2		5.3	<	0.01	<	0.01	<	0.005	
Jul-95	07/27/95	0.045	7.6	459	5	260			246	225	<	2	2	20	62.7	21.7	0.6	2.3		0.3		9.05	<	0.01	<	0.005	
Aug-95	08/23/95	0.03	7.57	406	6																						
Sep-95	09/27/95	0.02	7.7	542	5	250			254	214	<	2	2	21	62.7	23.6	0.7	2.5		4.2	<	0.01	<	0.01	<	0.005	
Oct-95																											
Nov-95																											
Dec-95																											
Jan-96																											
END DATA																											
Count		20	17	17	17		0	0	12	12	12	12	12	12	12	12	12	12	3	12	12		11				
Minimum	<	0.004	6.3	386	3.3	208	ERR	ERR	202	214	<	0	1	2	53	17	<	0.6	2	0.3	<	0.01	<	0.01	<	0.005	
Maximum	<	0.112	8.3	542	14.6	260	ERR	ERR	254	281	<	10	21	35	66.5	23.6	<	1	3	5.3	<	0.05	<	0.67	<	0.02	
Average	<	0.0285	7.4453	448.59	6	236.54	ERR	ERR	233.75	248.92	<	1.9167	3.3333	<	14.25	60.158	20.292	<	0.9167	2.25	3.2667	<	0.0233	<	0.0958	<	0.0095
Standard Deviation	<	0.0254	0.7225	40.085	2.7815	14.211	ERR	ERR	14.417	21.523	<	3.1214	5.3437	<	9.0657	3.5652	1.5618	<	0.1462	0.3686	2.1453	<	0.0125	<	0.1782	<	0.004
Avg. -1 Std. Dev.	<	0.0032	6.7228	408.5	3.2185	222.33	ERR	ERR	219.33	227.39	<	-1.205	-2.01	<	5.1843	56.593	18.73	<	0.7704	1.8814	1.1214	<	0.0109	<	-0.082	<	0.0056
Avg. +1 Std. Dev.	<	0.0538	8.1678	488.67	8.7815	250.75	ERR	ERR	248.17	270.44	<	5.0381	8.6771	<	23.316	63.724	21.853	<	1.0629	2.6186	5.4119	<	0.0358	<	0.274	<	0.0135
Avg. -2 Std. Dev.	<	-0.022	6.0003	368.42	0.4371	208.12	ERR	ERR	204.92	205.87	<	-4.326	-7.354	<	-3.861	53.028	17.168	<	0.5242	1.5129	-1.024	<	-0.002	<	-0.26	<	0.0016
Avg. +2 Std. Dev.	<	0.0792	8.8903	528.76	11.563	264.96	ERR	ERR	262.58	291.96	<	8.1594	14.021	<	32.381	67.289	23.415	<	1.2092	2.9871	7.5572	<	0.0483	<	0.4522	<	0.0175

RAIN IN A.M. = ~.10". LO

NOTE: The "<" symbol indicates that "Less Than" data was found in the data set; statistics are approximate.

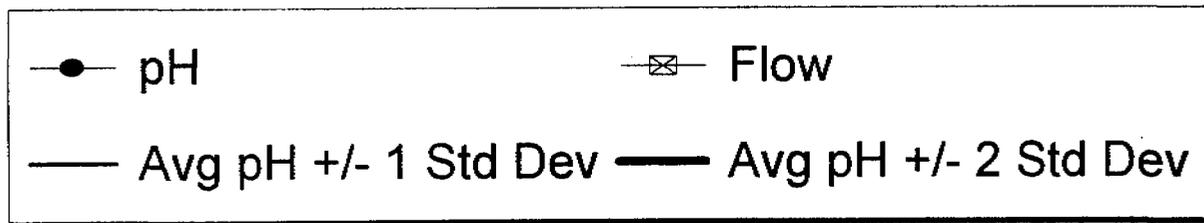
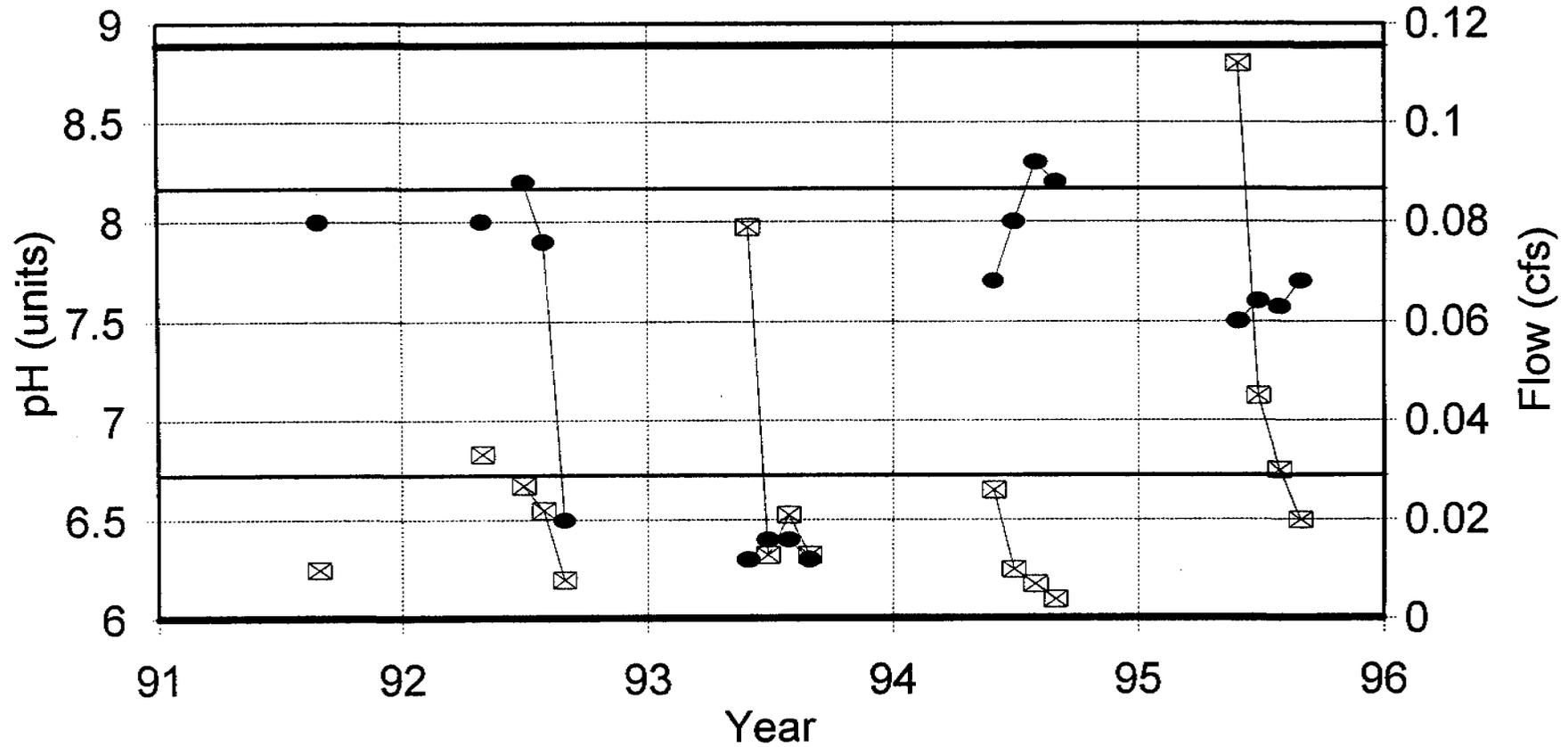
# Station 452

## Monthly Precipitation vs. Flow



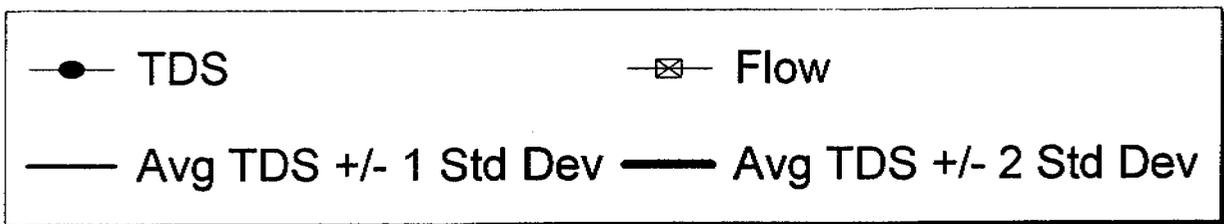
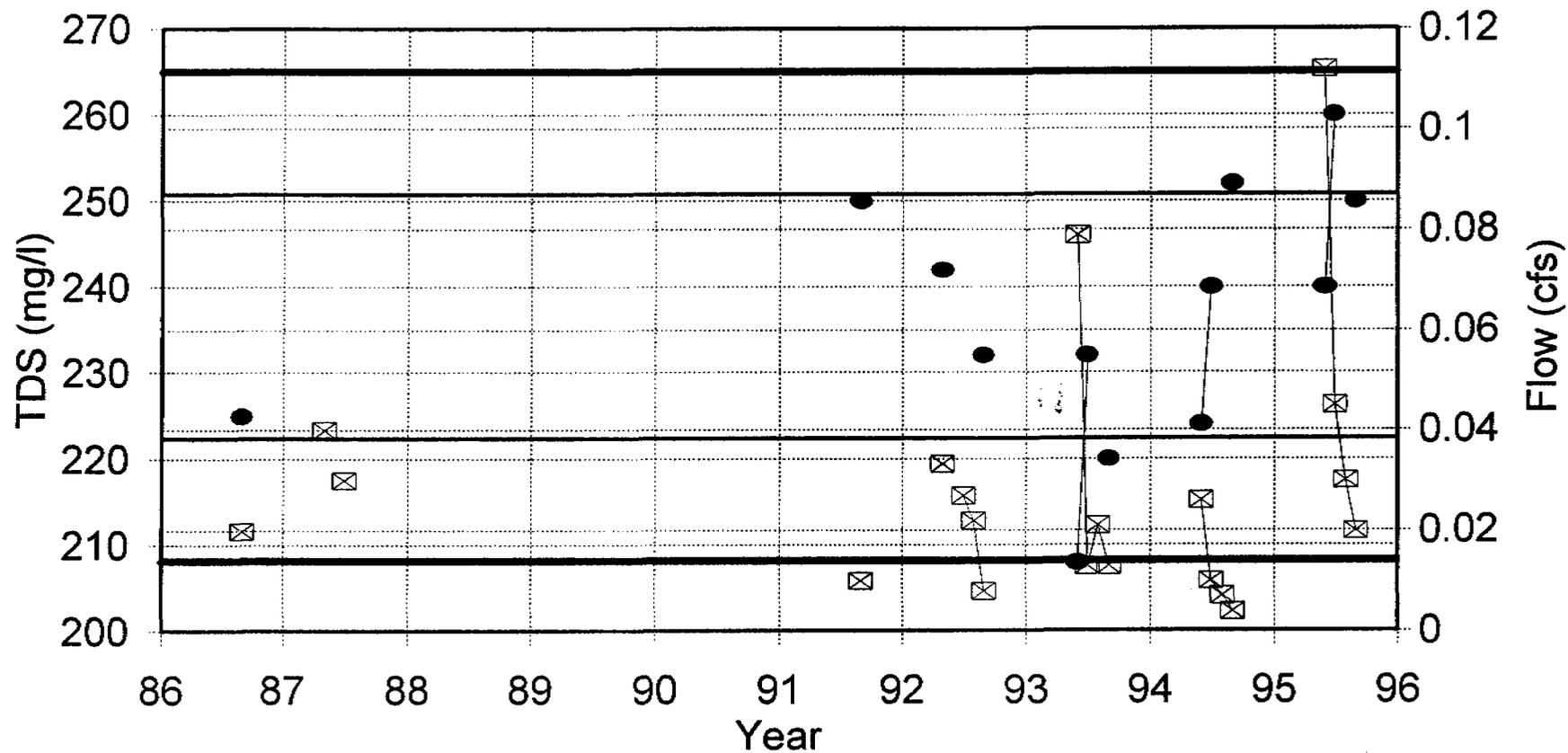
# Station 452

## pH vs. Flow



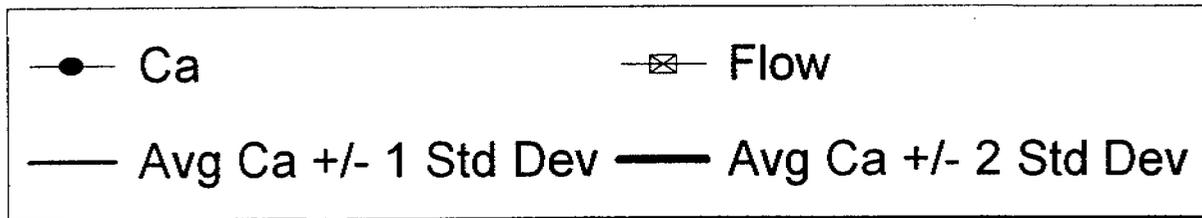
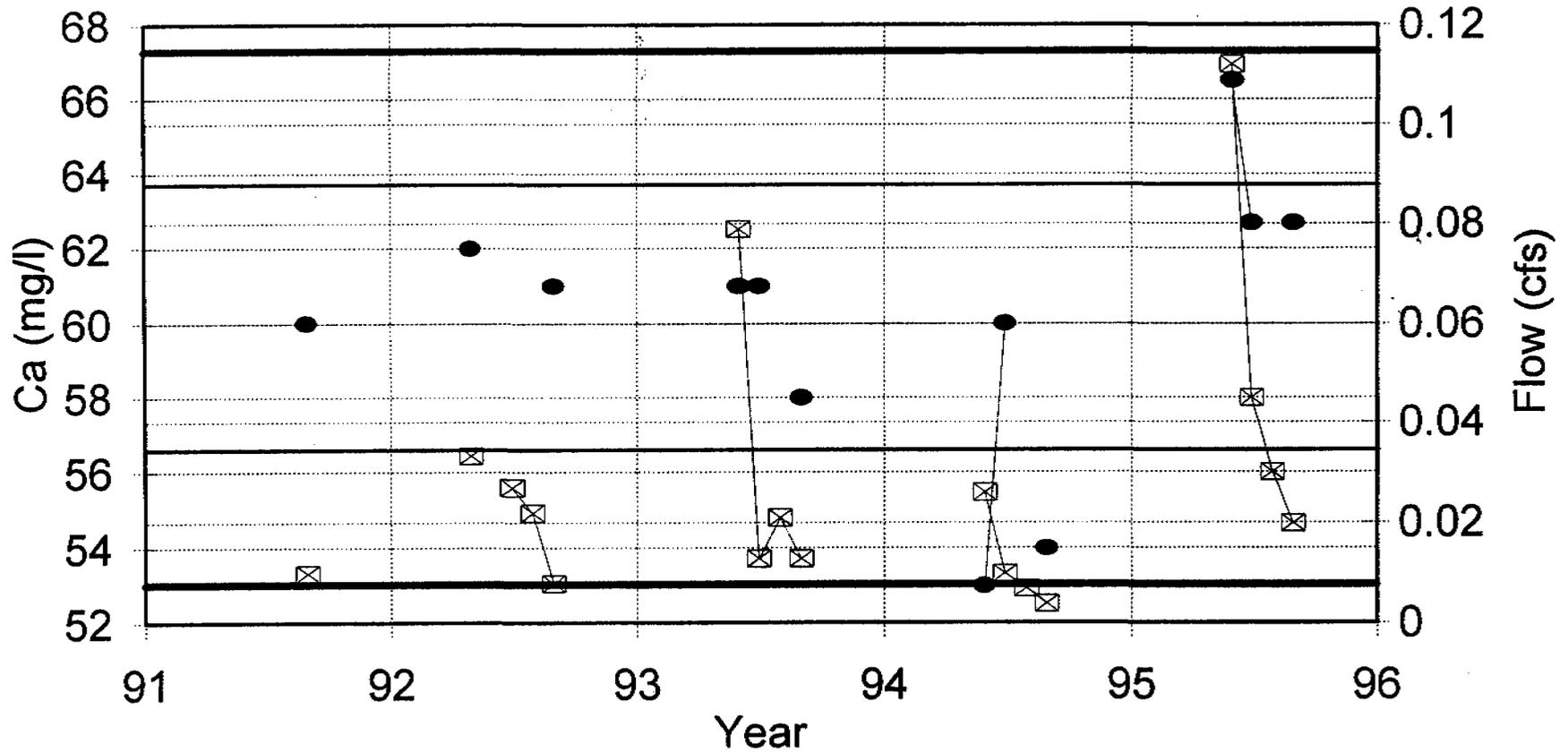
# Station 452

## TDS vs. Flow



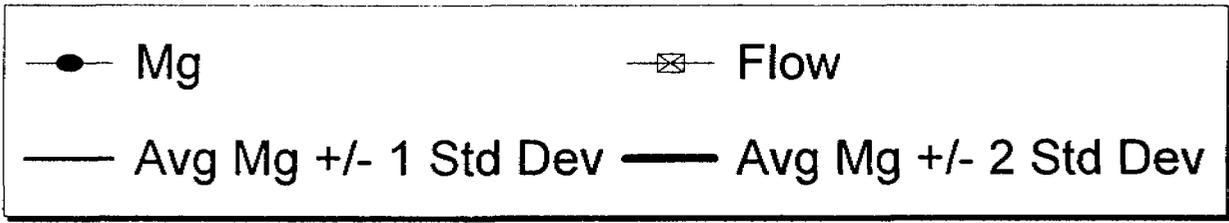
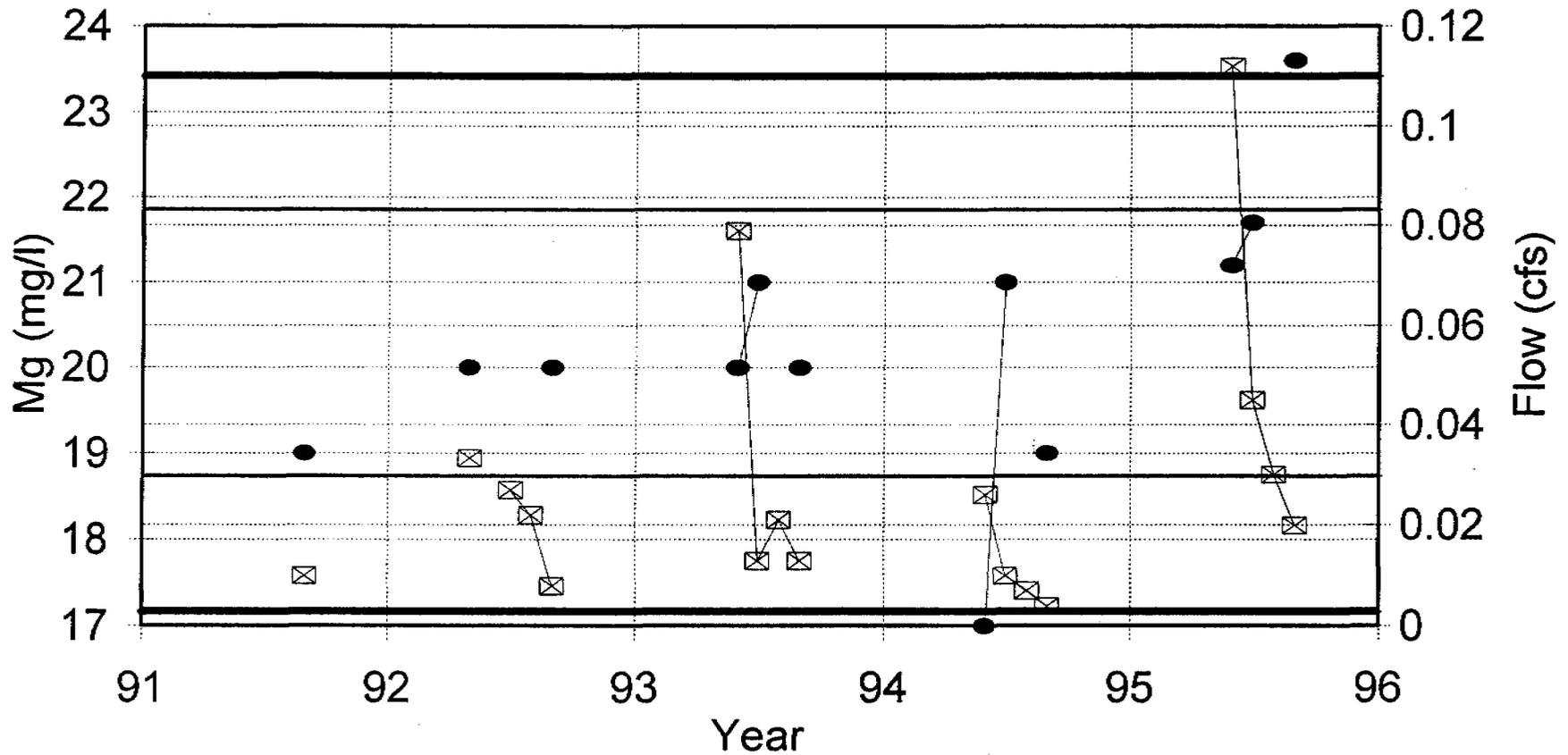
# Station 452

## Ca vs. Flow



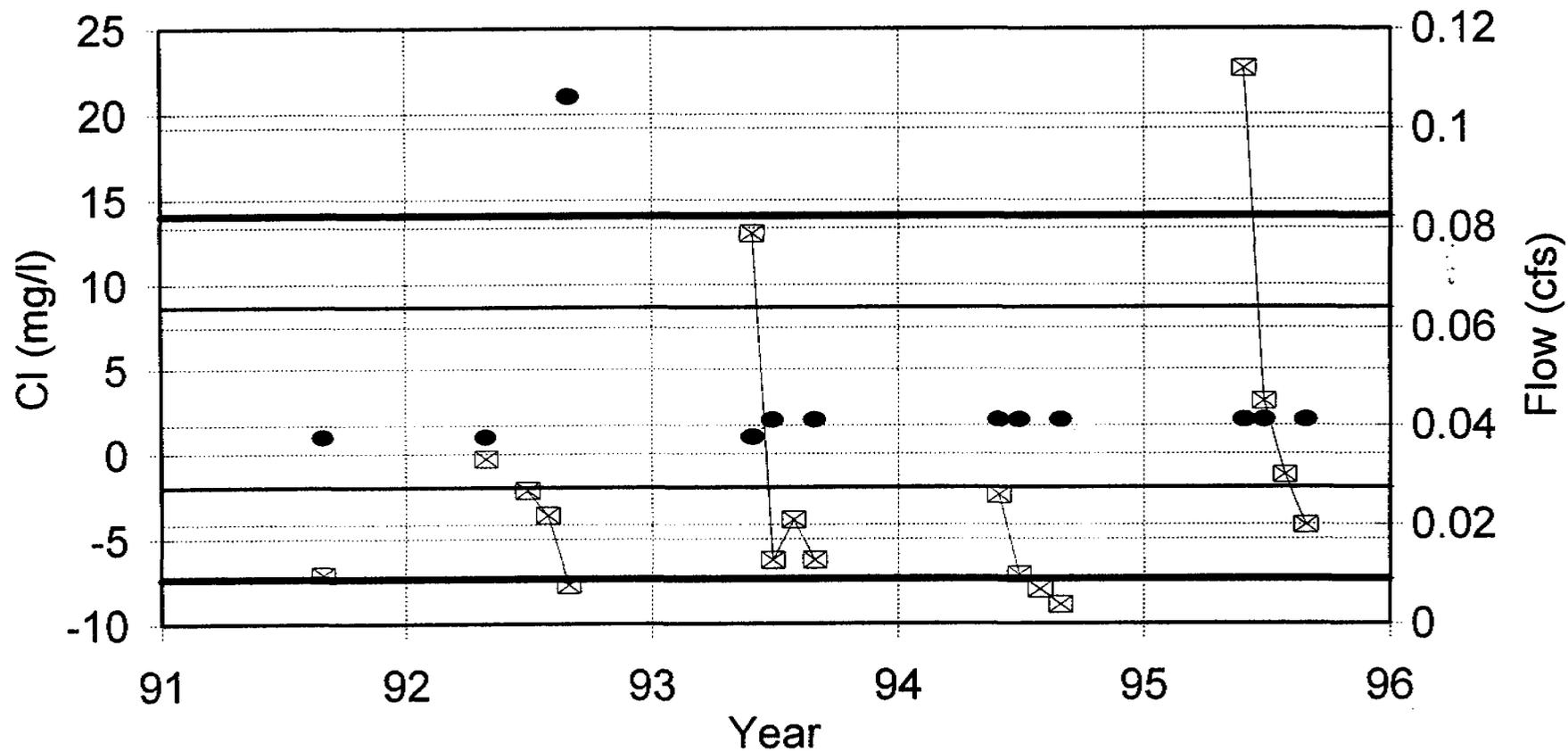
# Station 452

## Mg vs. Flow



# Station 452

## Cl vs. Flow



● Cl

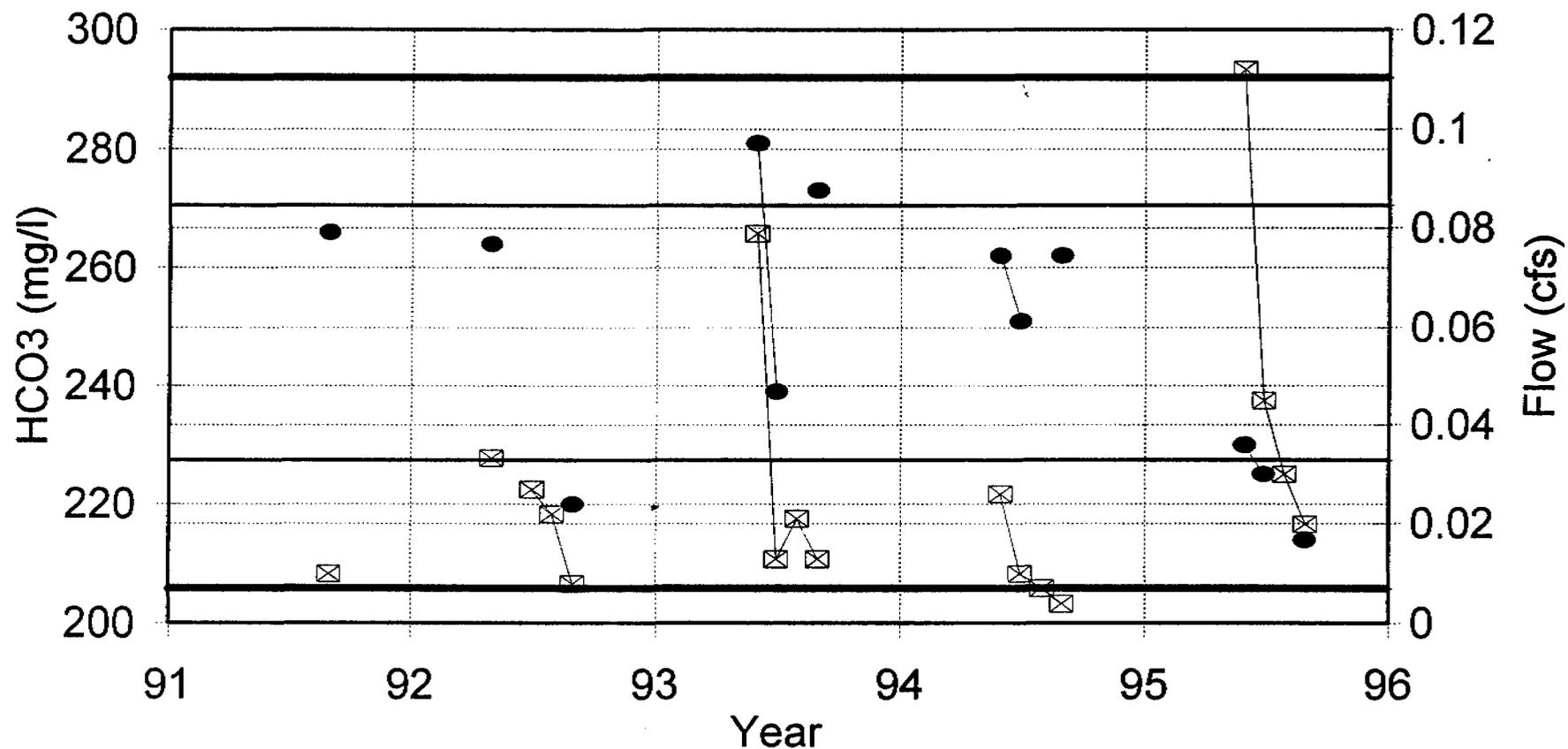
⊠ Flow

— Avg Cl +/- 1 Std Dev

— Avg Cl +/- 2 Std Dev

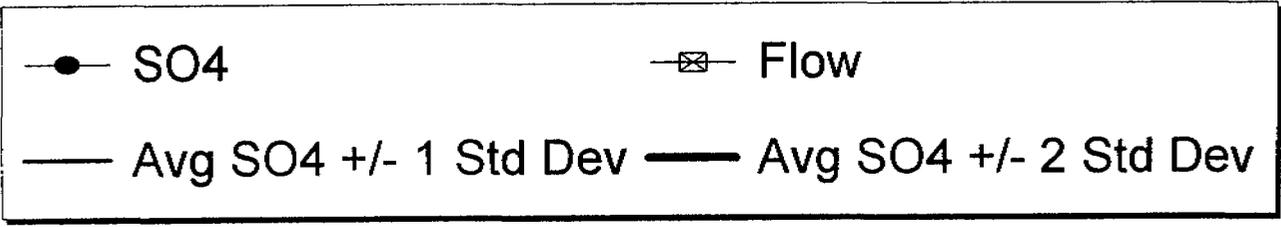
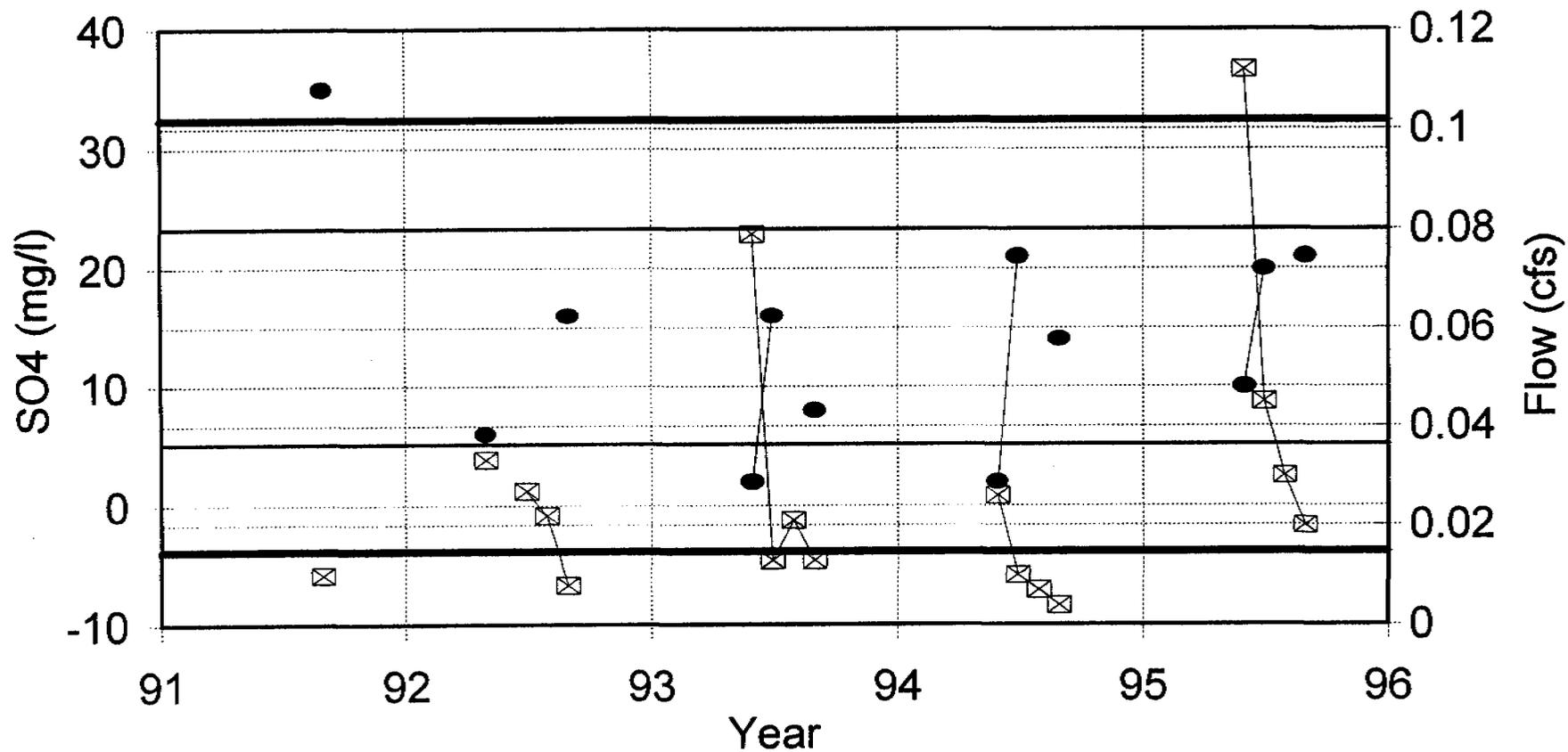
# Station 452

## HCO3 vs. Flow



# Station 452

## SO4 vs. Flow





Cyprus Plateau Mining Company - Water Quality Data

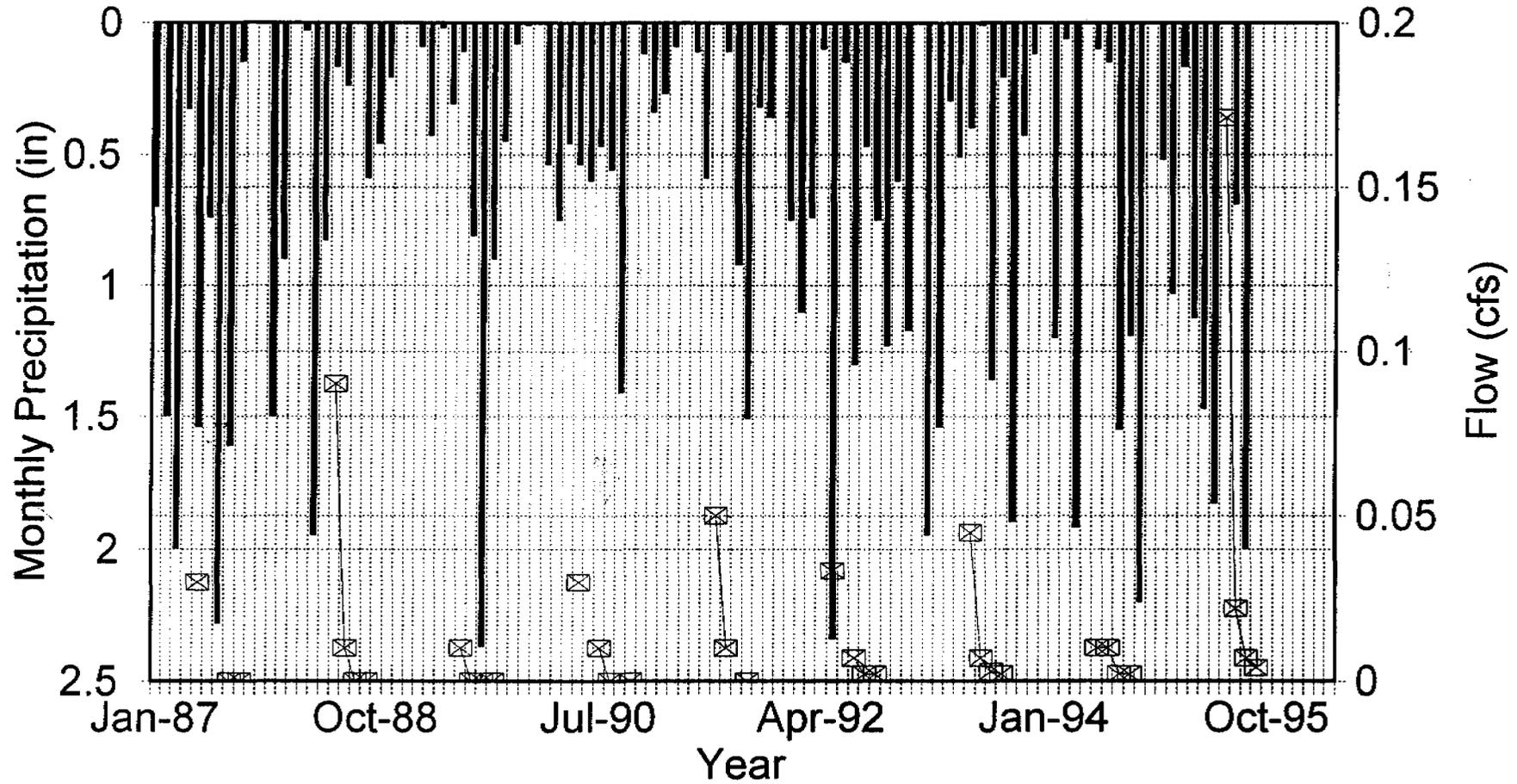
Station: 519 Property: Star Point Location: 2375' S 125' W of NE com. Sec 14, T15S, R7E Station Type: Spring Sampling Frequency: Quarterly Formation: North Horn Print Date: May 2, 1996 Elevation: 9700

Date		Field Measurements				Laboratory Measurements														Comments				
Mo-Yr	Sample Date	Flow (cfs)	Ph (units)	Sp. Cond. (ohms)	Temp. (C)	TDS (mg/l)	TSS (mg/l)	O&G (mg/l)	Hd-CaCO3 (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (D) (mg/l)	SO4 (D) (mg/l)	Ca (D) (mg/l)	Mg (D) (mg/l)	K (D) (mg/l)	Na (D) (mg/l)	Cat/An Bal (%)	Fe (D) (mg/l)		Fe (T) (mg/l)	Mn (T) (mg/l)		
Jan-93																								
Feb-93																								
Mar-93																								
Apr-93																								
May-93																								
Jun-93	06/24/93	0.045	7.4	525	5.5	218			257	298	0	2	2	78	15 <	1	2	<	0.02 <	0.02 <	0.01			
Jul-93	07/26/93	0.007	6.3	439	7.4	250			240	278	5	1	2	73	14 <	1	2	<	0.02	0.04 <	0.01			
Aug-93	08/17/93	0.003	6.1	418	8																			
Sep-93	08/28/93	0.002	6.3	435	8.9	200			216	259	0	2	8	65	13 <	1	2	<	0.02	0.08 <	0.01			
Oct-93																								
Nov-93																								
Dec-93																								
Jan-94																								
Feb-94																								
Mar-94																								
Apr-94																								
May-94																								
Jun-94	06/20/94	0.01	7.5	520	4.8	276			279	327	0	1	2	82	18 <	1	2	<	0.02	0.12 <	0.01			
Jul-94	07/19/94	< 0.01	7.9	513	12.8	244			244	278	10	2	2	73	15	1	2	<	0.02	0.1 <	0.01			
Aug-94	08/31/94	0.002	8	400	11.6																			
Sep-94	09/21/94	0.002	7.9	541	11.6	224			204	281	0	1	2	62	12 <	1	2	<	0.02	1.17	0.02	RAIN IN A.M. = -.10". LO		
Oct-94																								
Nov-94																								
Dec-94																								
Jan-95																								
Feb-95																								
Mar-95																								
Apr-95																								
May-95																								
Jun-95	06/22/95	0.1711	7.2	467	4.8	230			241	212 <	2	2	30	73.2	14	0.6	1.6	-0.3 <	0.01	0.01 <	0.005			
Jul-95	07/27/95	0.022	7.2	511	6	270			262	245 <	2	1 <	10	78.9	15.7	0.6	1.7	3.9	0.02	0.04 <	0.005			
Aug-95	08/23/95	0.007	6.42	457	8																			
Sep-95	09/28/95	0.004	7.7	294	7.22	270			274	247 <	2	4	10	83.6	15.7	0.7	1.7	2.8 <	0.01	0.07 <	0.005			
Oct-95																								
Nov-95																								
Dec-95																								
Jan-96																								
END DATA																								
Count		34	19	19	19	26	0	0	15	15	15	15	15	15	15	15	15	3	15	15	13			
Minimum	<	0	6.1	294	4.8	200	ERR	ERR	204	212 <	0	1 <	2	60	11 <	0.6	1	-0.3 <	0.01 <	0.01 <	0.005			
Maximum	<	0.1711	8	541	12.8	306	ERR	ERR	327	400 <	10	4 <	30	98	20 <	1	13	3.9 <	0.71 <	3.82 <	0.04			
Average	<	0.0168	7.1747	463.89	7.9379	257.85	ERR	ERR	251.8	287.53 <	2.4	1.6 <	7.4	75.98	15.027 <	0.9267	2.6	2.1333 <	0.0647 <	0.496 <	0.0119			
Standard Deviation	<	0.0328	0.6116	54.666	2.4829	26.011	ERR	ERR	29.593	42.13 <	3.4215	0.8 <	8.6856	9.4375	2.1904 <	0.1482	2.7921	1.7783 <	0.1725 <	0.957 <	0.0089			
Avg. -1 Std. Dev.	<	-0.016	6.5632	409.23	5.455	231.83	ERR	ERR	222.21	245.4 <	-1.022	0.8 <	-1.286	66.542	12.836 <	0.7785	-0.192	0.3551 <	-0.108 <	-0.461 <	0.003			
Avg. +1 Std. Dev.	<	0.0495	7.7863	518.56	10.421	283.86	ERR	ERR	281.39	329.66 <	5.8215	2.4 <	16.086	85.418	17.217 <	1.0748	5.3921	3.9116 <	0.2372 <	1.453 <	0.0208			
Avg. -2 Std. Dev.	<	-0.049	5.9516	354.56	2.972	205.82	ERR	ERR	192.61	203.27 <	-4.443	0 <	-9.971	57.105	10.646 <	0.6303	-2.984	-1.423 <	-0.28 <	-1.418 <	-0.006			
Avg. +2 Std. Dev.	<	0.0823	8.3979	573.23	12.904	309.87	ERR	ERR	310.99	371.79 <	9.243	3.2 <	24.771	94.855	19.408 <	1.223	8.1843	5.6899 <	0.4097 <	2.41 <	0.0297			

NOTE: The "<" symbol indicates that "Less Than" data was found in the data set; statistics are approximate.

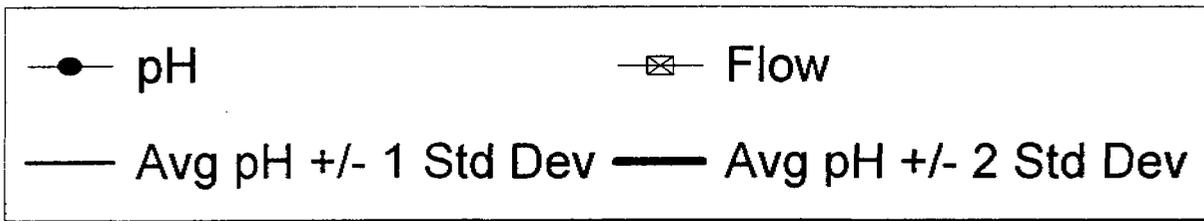
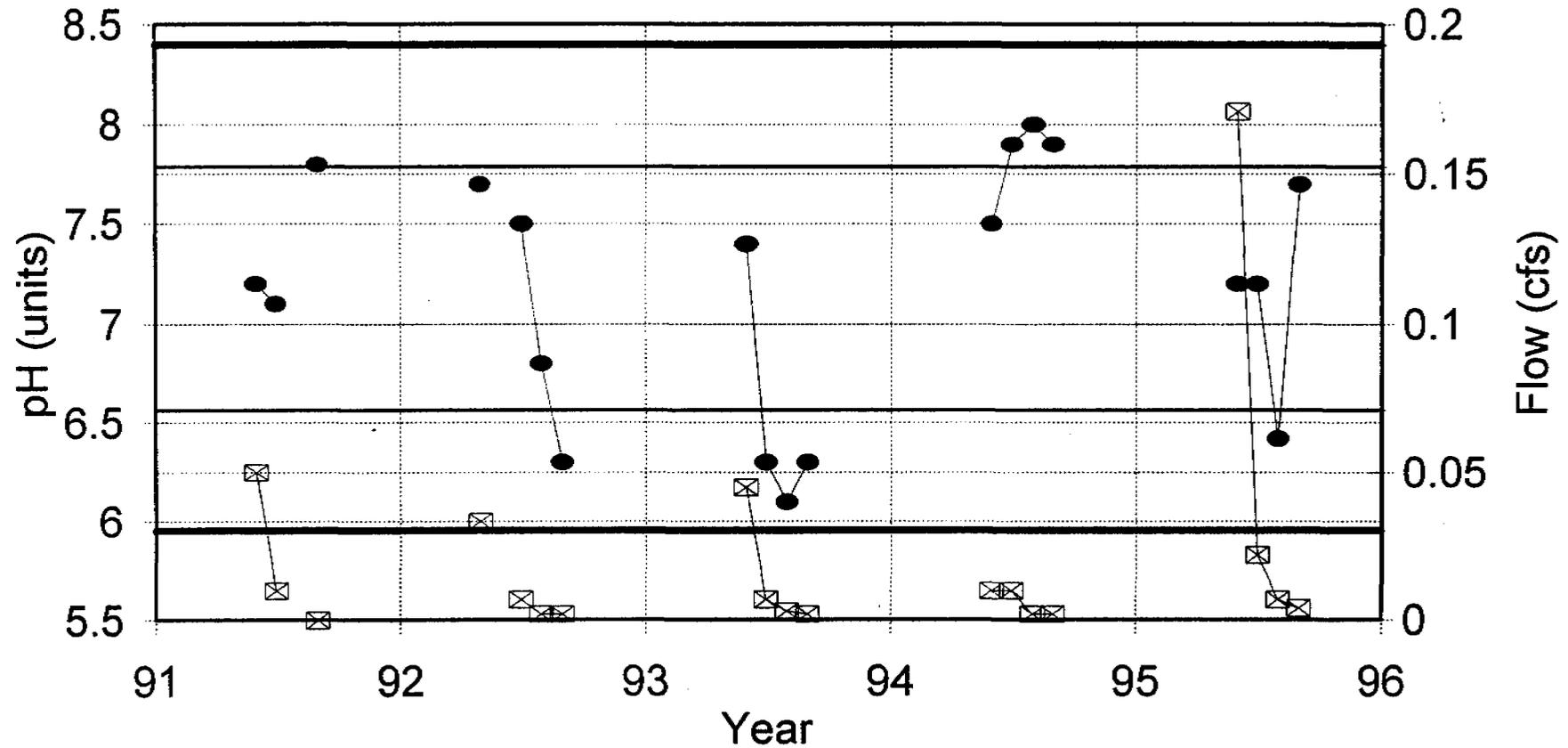
# Station 518

## Monthly Precipitation vs. Flow



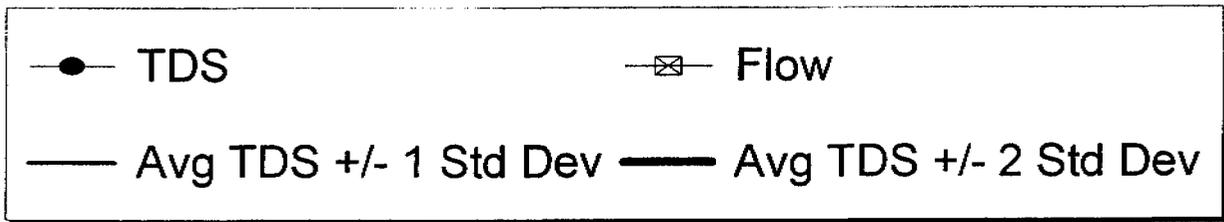
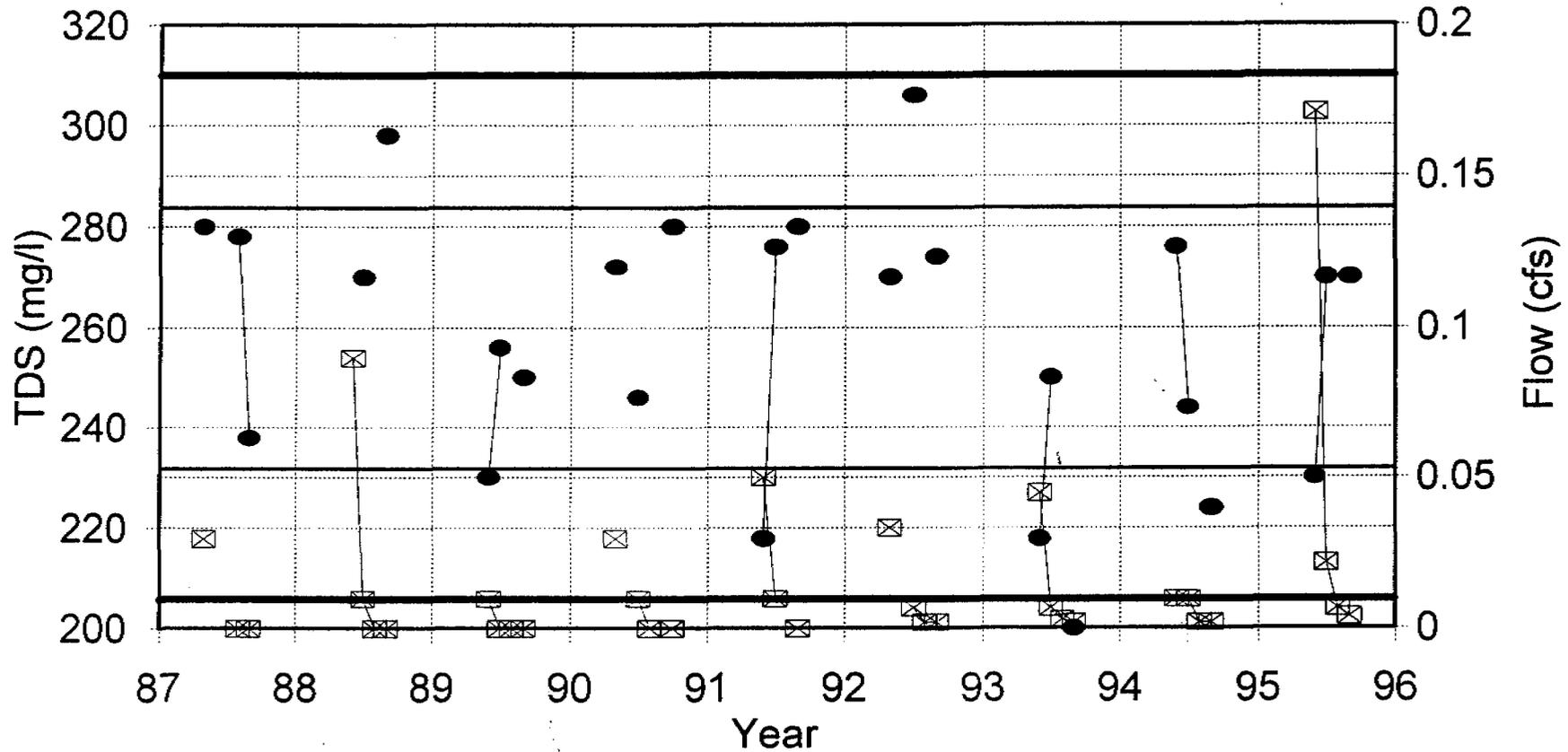
# Station 518

## pH vs. Flow



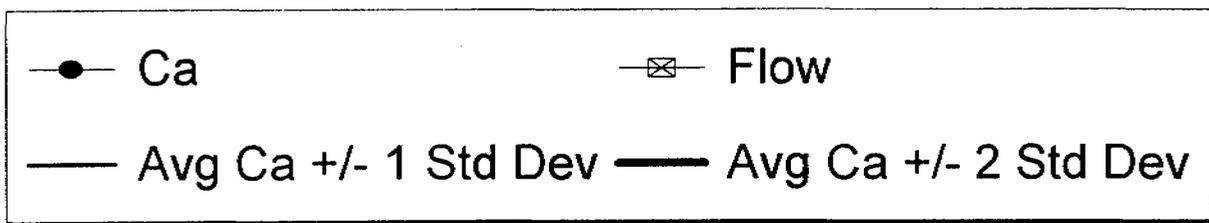
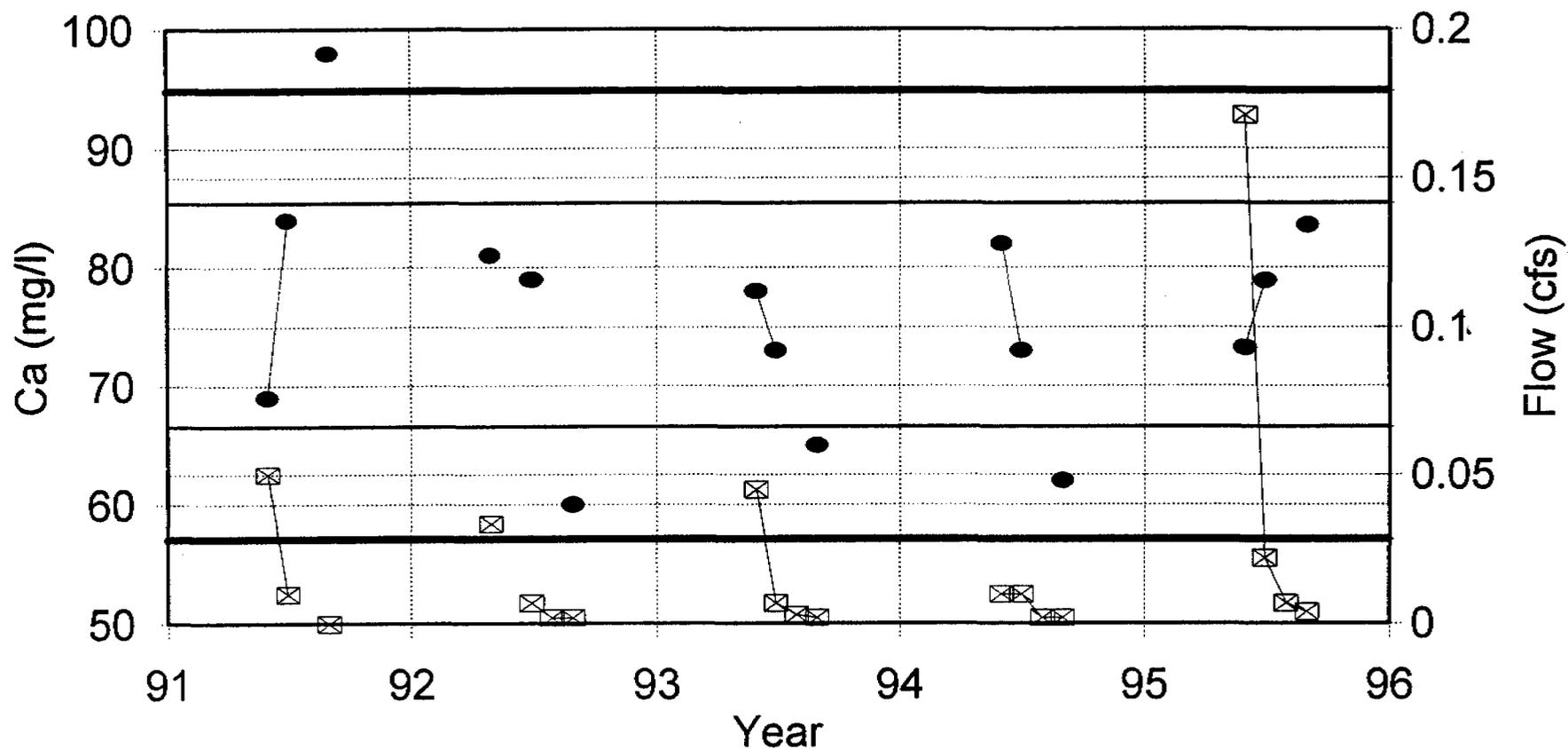
# Station 518

## TDS vs. Flow



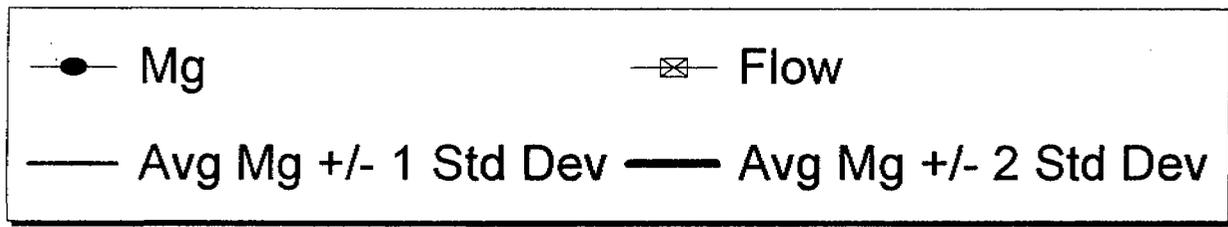
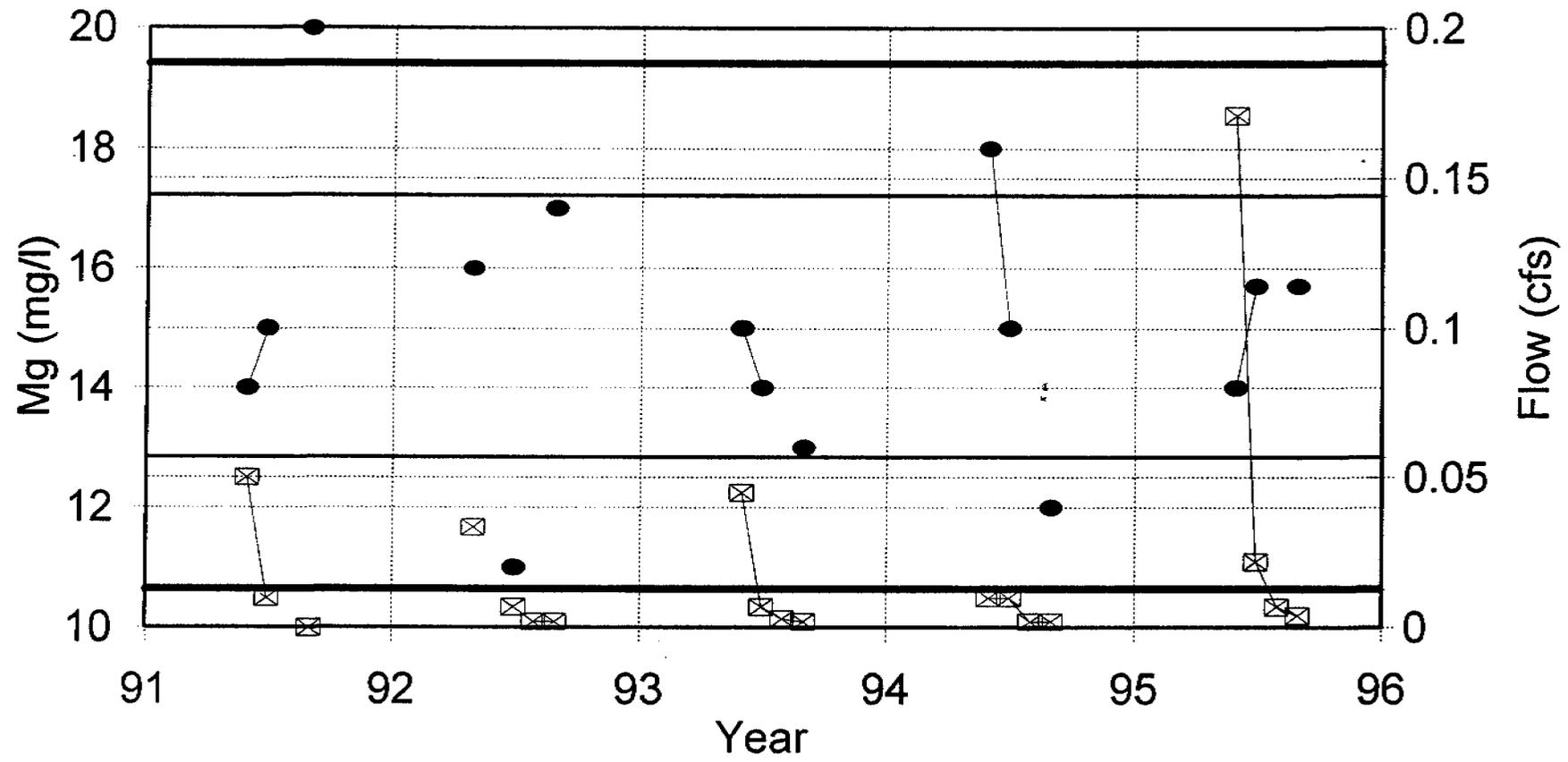
# Station 518

## Ca vs. Flow



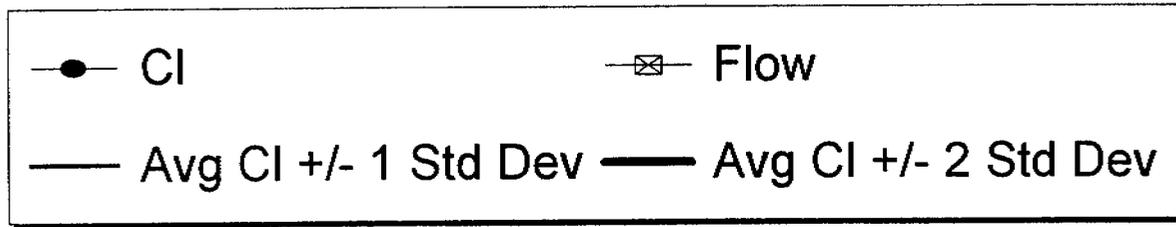
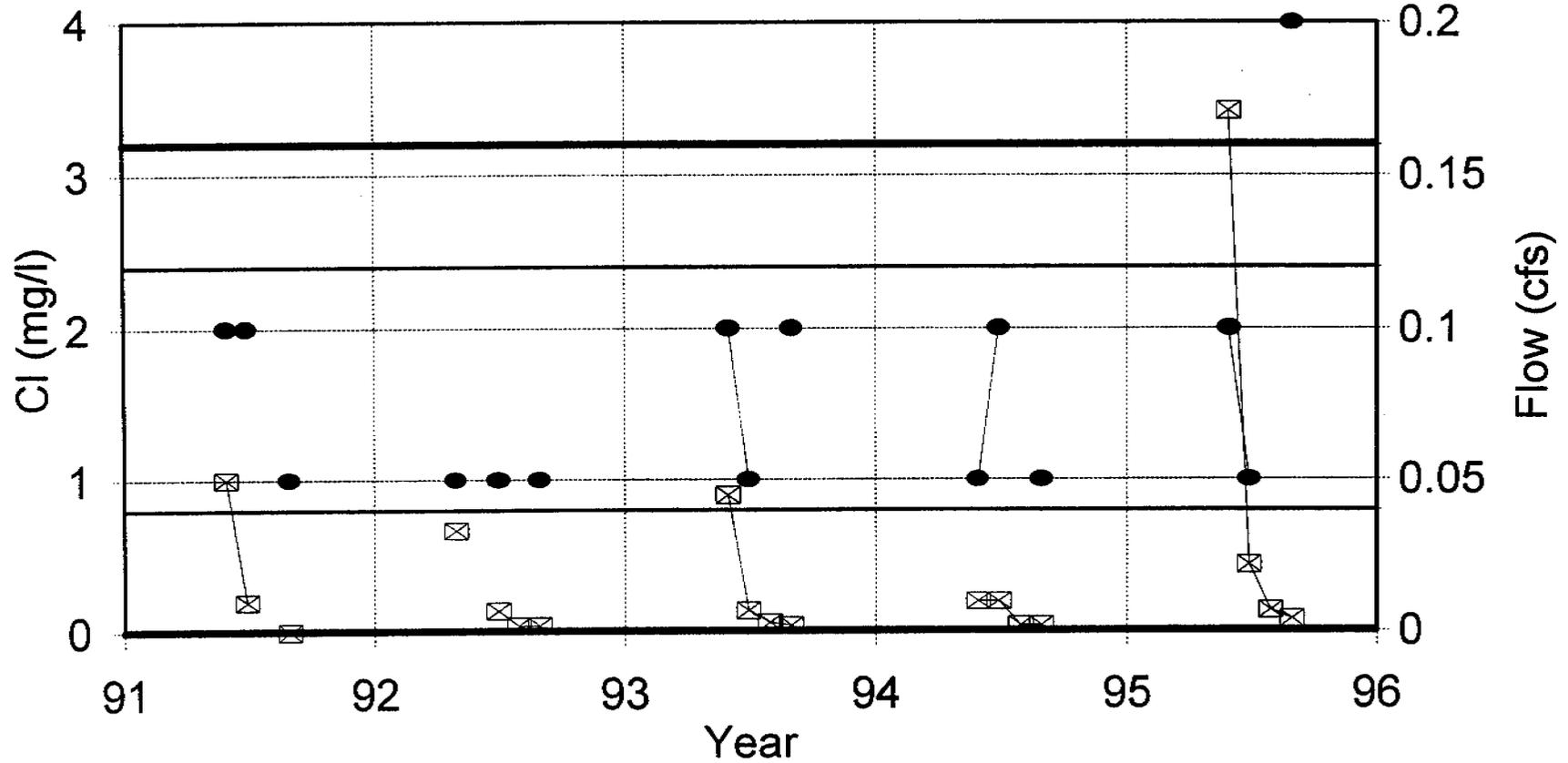
# Station 518

## Mg vs. Flow



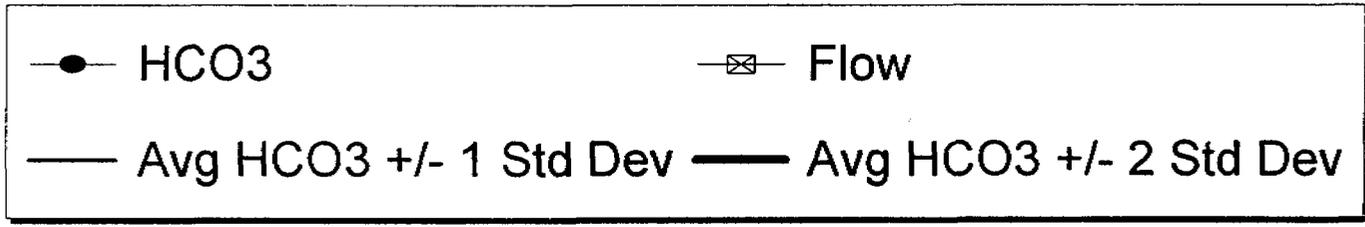
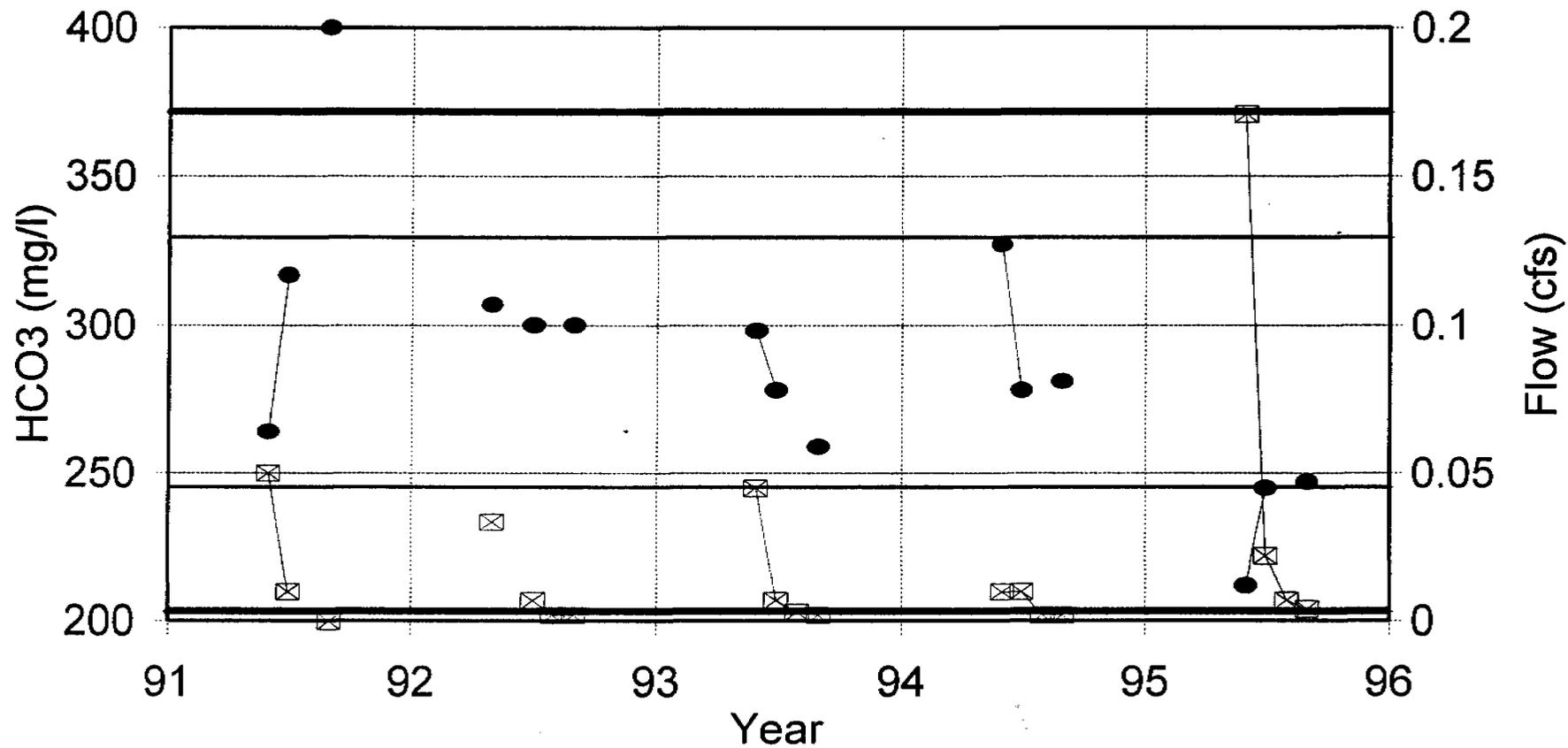
# Station 518

## Cl vs. Flow



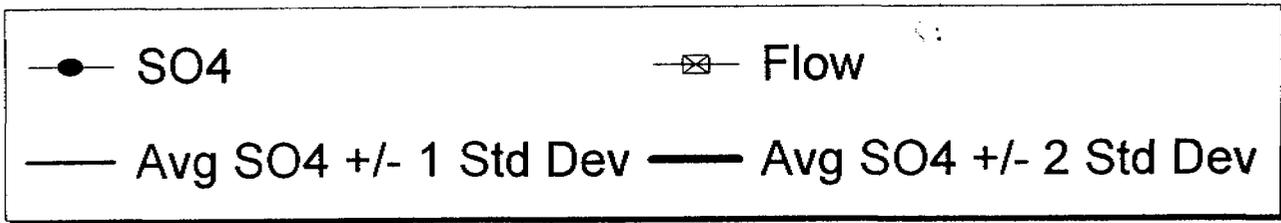
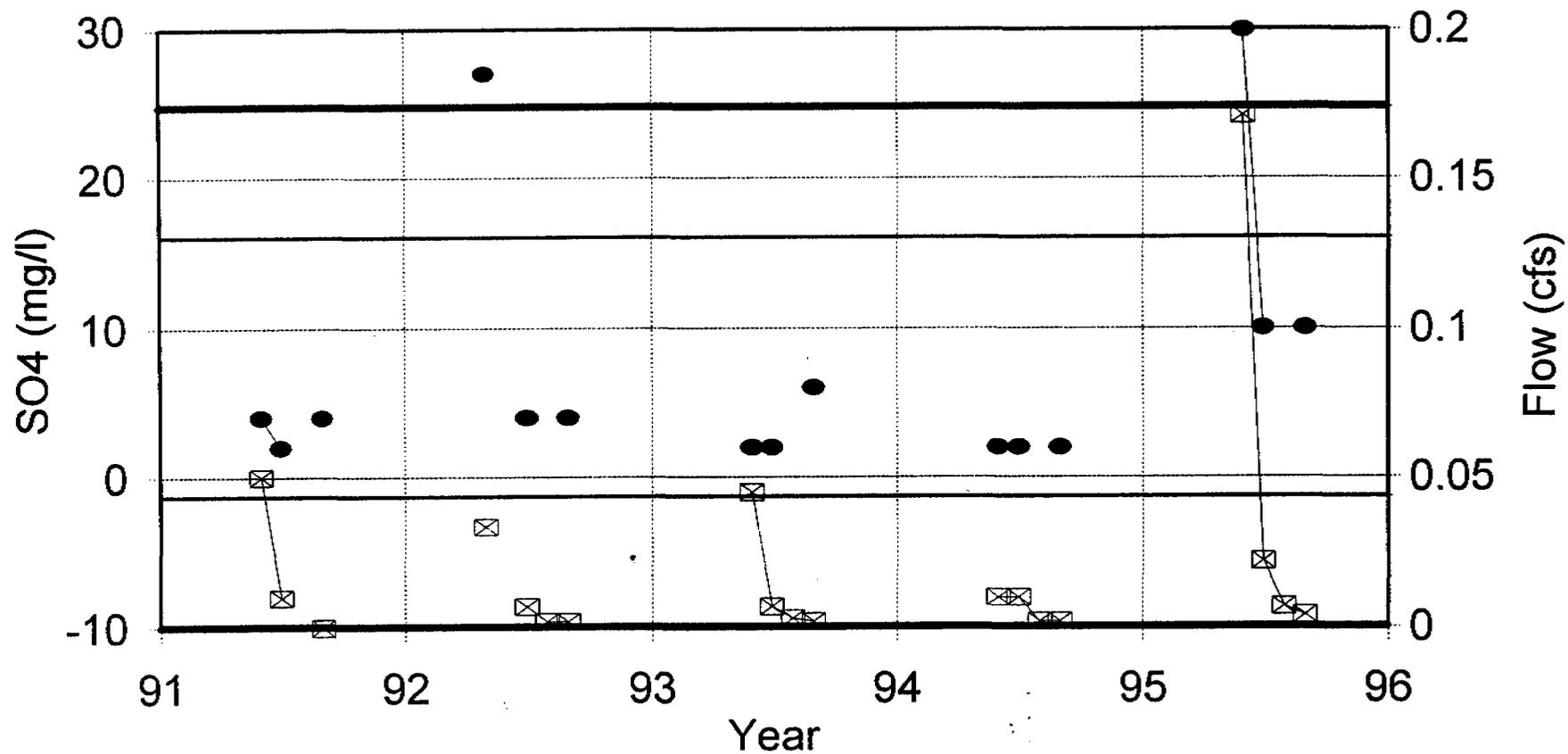
# Station 518

## HCO<sub>3</sub> vs. Flow



# Station 518

## SO4 vs. Flow







Cyprus Plateau Mining Company - Water Quality Data

Station: 748		Property: Star Point				Location: 2500' S 1300' W of NE cor. Sec 14, T15S, R7E					Station Type: Spring		Sampling Frequency: Quarterly			Formation: North Horn					Comments		
Date	Field Measurements				Laboratory Measurements												Comments						
Mo-Yr	Flow (cfs)	pH (units)	Sp. Cond. (ohms)	Temp. (C)	TDS (mg/l)	TSS (mg/l)	O&G (mg/l)	Hd-CaCO3 (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (D) (mg/l)	SO4 (D) (mg/l)	Ca (D) (mg/l)	Mg (D) (mg/l)	K (D) (mg/l)	Na (D) (mg/l)		Ca/An Bal (%)	Fe (D) (mg/l)	Fe (T) (mg/l)	Mn (T) (mg/l)		
Jan-91																							
Feb-91																							
Mar-91																							
Apr-91																							
May-91																							
Jun-91	06/11/91	0.03	7.2	380	4	182		201	242	7	2	2	46	21 <	1	1	<	0.02 <	0.02 <	0.01			
Jul-91	07/15/91	0	7.1	430	5	230		222	264	0	2	2	51	23 <	1	2	<	0.02 <	0.02 <	0.1			
Aug-91																							
Sep-91	08/18/91	0	7.7	440	8	218		222	264	0	1	4	51	23 <	1	1	<	0.05	0.05	0.02			
Oct-91																							
Nov-91																							
Dec-91																							
Jan-92																							
Feb-92																							
Mar-92																							
Apr-92																							
May-92	05/19/92	0.0205	7.7	388	4.2	212		230	249	0	1	31	56	22 <	1	1	<	0.02 <	0.02				
Jun-92																							
Jul-92	07/15/92	0.005	7.7	415	5.2	208		220	264	0	1	6	55	20 <	1	1	<	0.02	0.36				
Aug-92	08/25/92	0.001																					
Sep-92	09/21/92	0.002	6.3	454	6.8	210		228	217	10	1	29	51	24	1	1	<	0.02	0.42				
Oct-92																							
Nov-92																							
Dec-92																							
Jan-93																							
Feb-93																							
Mar-93																							
Apr-93																							
May-93																							
Jun-93	06/24/93	0.039	6.6	366	6.9	202		238	276	0	1	2	56	24 <	1	1	<	0.02	0.03	0.01			
Jul-93	07/26/93	0.007	6.4	392	4.9	214		222	264	2	1	16	51	23 <	1	1	<	0.02 <	0.02 <	0.01			
Aug-93	08/17/93	0.005	6.3	400	5.4																		
Sep-93	09/28/93	0.002	6.4	405	6.8	220		208	268	0	1	4	47	22 <	1	1	<	0.02	0.15 <	0.01			
Oct-93																							
Nov-93																							
Dec-93																							
Jan-94																							
Feb-94																							
Mar-94																							
Apr-94																							
May-94																							
Jun-94	06/20/94	0.01	7.6	467	3.3	216		243	268	0	1	3	56	25 <	1	2	<	0.02 <	0.02 <	0.01			
Jul-94	07/19/94	0.01	7.9	430	10.2	206		217	281	0	2	2	49	23 <	1	1	<	0.02	0.09 <	0.01			
Aug-94	08/31/94	0.006	7.9	353	10.6																		
Sep-94	09/21/94	0.003	8.3	448	9.3	210		242	290	0	1	2	54	26 <	1	1	<	0.02	0.03 <	0.01			RAIN IN A.M. = ~.10". LO
Oct-94																							
Nov-94																							
Dec-94																							
Jan-95																							
Feb-95																							
Mar-95																							
Apr-95																							
May-95																							
Jun-95	06/22/95		6.7	392	4.8	190		239	214 <	2	1	20	54.6	24.9	0.5	1.3	1.2 <	0.01	0.14 <	0.005			SNOW DRIFT IN SPRIN
Jul-95	07/27/95	0.014	7.2	428	5	230		241	220 <	2	1 <	10	54.8	25.3	6	1.4	5	0.04 <	0.01 <	0.005			
Aug-95	08/23/95	0.008	6.59	395	6																		
Sep-95	09/28/95	0.002	7.1	244	43.6	210		236	218 <	2 <	1 <	4	52.7	25.3	0.6	1.3	4.6 <	0.01 <	0.01 <	0.005			
Oct-95																							
Nov-95																							
Dec-95																							
Jan-96																							
END DATA																							
Count	46	18	18	18	39	0	0	15	15	15	15	15	15	15	15	15	3	15	15	12			
Minimum	0	6.3	244	3.3	182	ERR	ERR	201	214 <	0 <	1 <	2	46	20 <	0.5	1	1.2 <	0.01 <	0.01 <	0.005			
Maximum	0.04	8.3	467	43.6	265	ERR	ERR	243	290 <	10 <	2 <	31	56	26 <	6	2	5 <	0.05 <	0.42 <	0.1			
Average	0.0088	7.1494	401.5	8.3333	215.33	ERR	ERR	227.13	253.27 <	1.8687 <	1.2 <	9.1333	52.34	23.433 <	1.2733	1.2	3.6 <	0.022 <	0.0927 <	0.0171			
Standard Deviation	0.0119	0.6217	48.592	8.7931	14.531	ERR	ERR	12.366	24.335 <	2.8674 <	0.4 <	9.7288	3.1449	1.6608 <	1.2725	0.3408	1.7049 <	0.0088 <	0.1249 <	0.0253			
Avg. -1 Std. Dev.	-0.003	6.5278	352.91	-0.46	200.8	ERR	ERR	214.77	228.93 <	-1.201 <	0.8 <	-0.595	49.195	21.773 <	0.0008	0.8594	1.8951 <	0.0122 <	-0.032 <	-0.008			
Avg. +1 Std. Dev.	0.0207	7.7711	450.09	17.126	229.86	ERR	ERR	239.5	277.6 <	4.5341 <	1.6 <	18.862	55.485	25.094 <	2.5458	1.5406	5.3049 <	0.0318 <	0.2175 <	0.0424			

Cyprus Plateau Mining Company - Water Quality Data

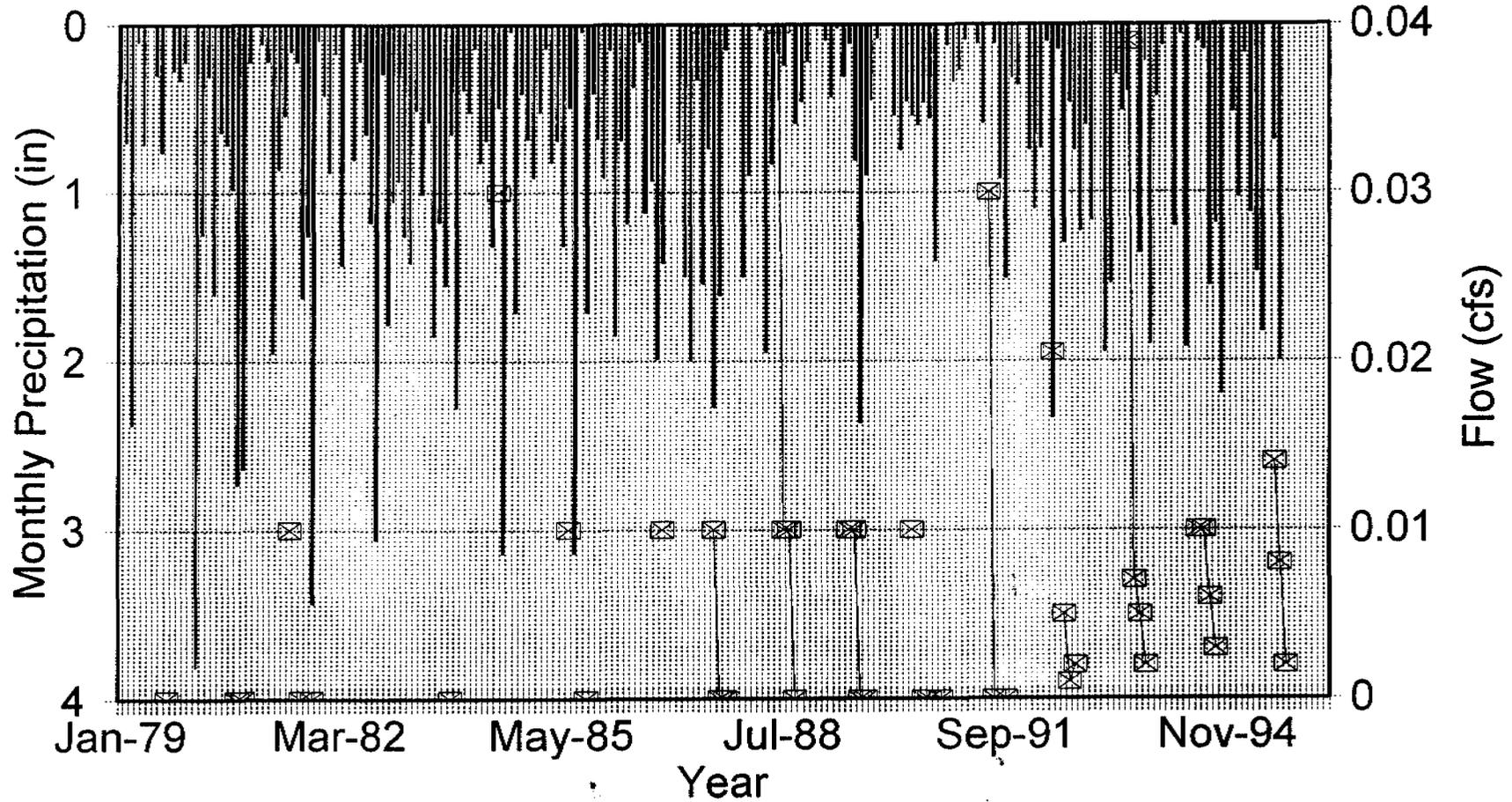
Print Date: May 2, 1998

Date		Field Measurements				Laboratory Measurements													Comments				
Mo-Yr	Sample Date	Flow (cfs)	Ph (units)	Sp. Cond. (ohms)	Temp. (C)	TDS (mg/l)	TSS (mg/l)	O&G (mg/l)	Hd-CaCO3 (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (D) (mg/l)	SO4 (D) (mg/l)	Ca (D) (mg/l)	Mg (D) (mg/l)	K (D) (mg/l)	Na (D) (mg/l)	Cat/An Bal (%)		Fe (D) (mg/l)	Fe (T) (mg/l)	Mn (T) (mg/l)	
	Avg. -2 Std. Dev.	-0.015	5.9061	304.32	-9.253	186.27	ERR	ERR	202.4	204.6 <	-4.068 <	0.4 <	-10.32	46.05	20.112 <	-1.272	0.5188	0.1902 <	0.0024 <	-0.157 <	-0.033		
	Avg. +2 Std. Dev.	0.0326	8.3927	498.68	25.919	244.4	ERR	ERR	251.87	301.94 <	7.4016 <	2 <	28.591	58.83	26.755 <	3.8184	1.8812	7.0098 <	0.0416 <	0.3424 <	0.0677		

NOTE: The "<" symbol indicates that "Less Than" data was found in the data set; statistics are approximate.

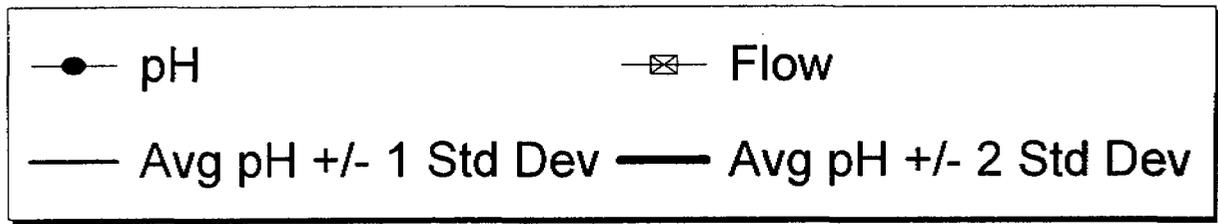
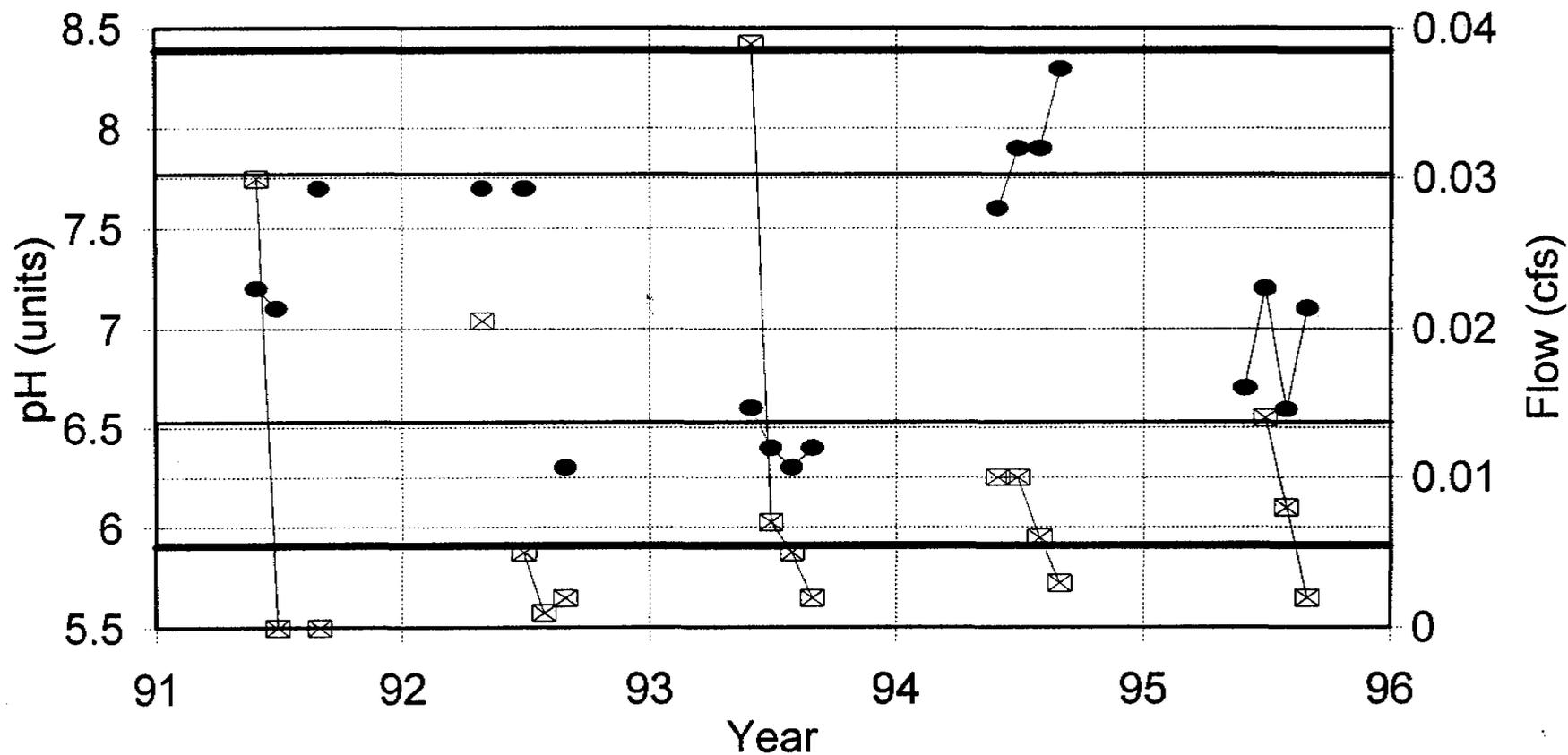
# Station 748

## Monthly Precipitation vs. Flow



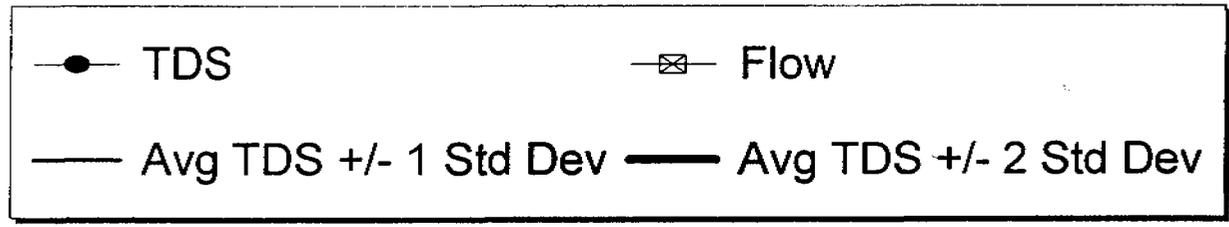
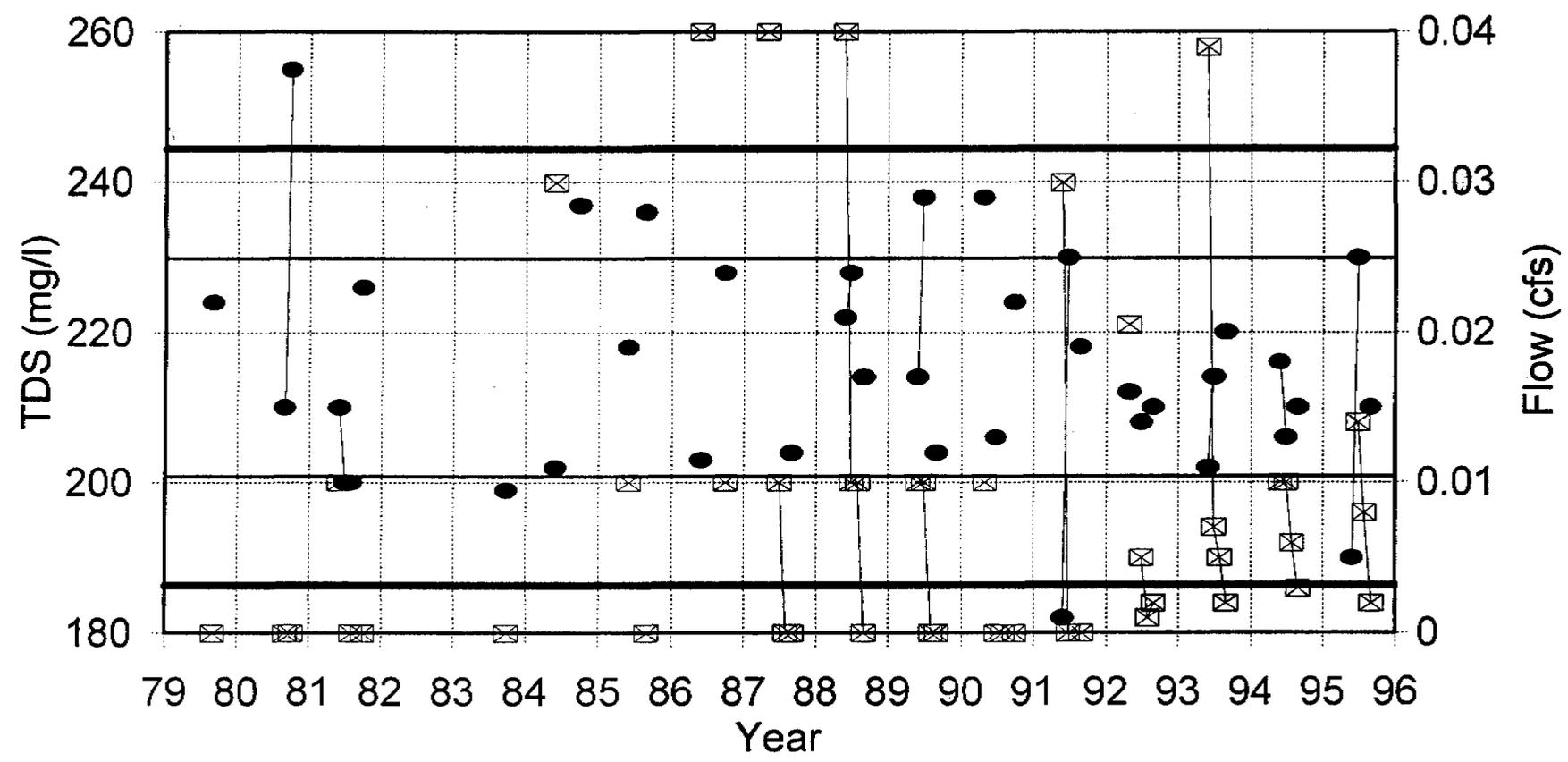
# Station 748

pH vs. Flow



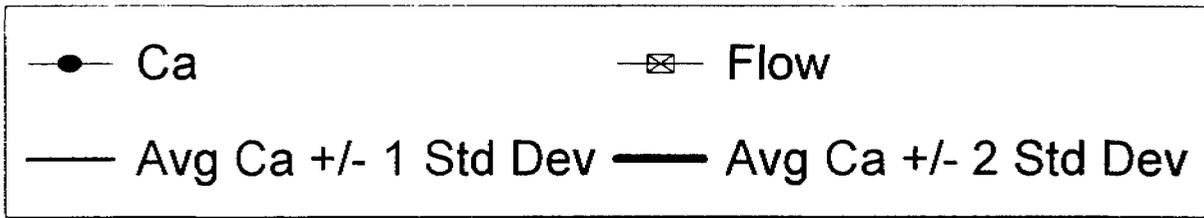
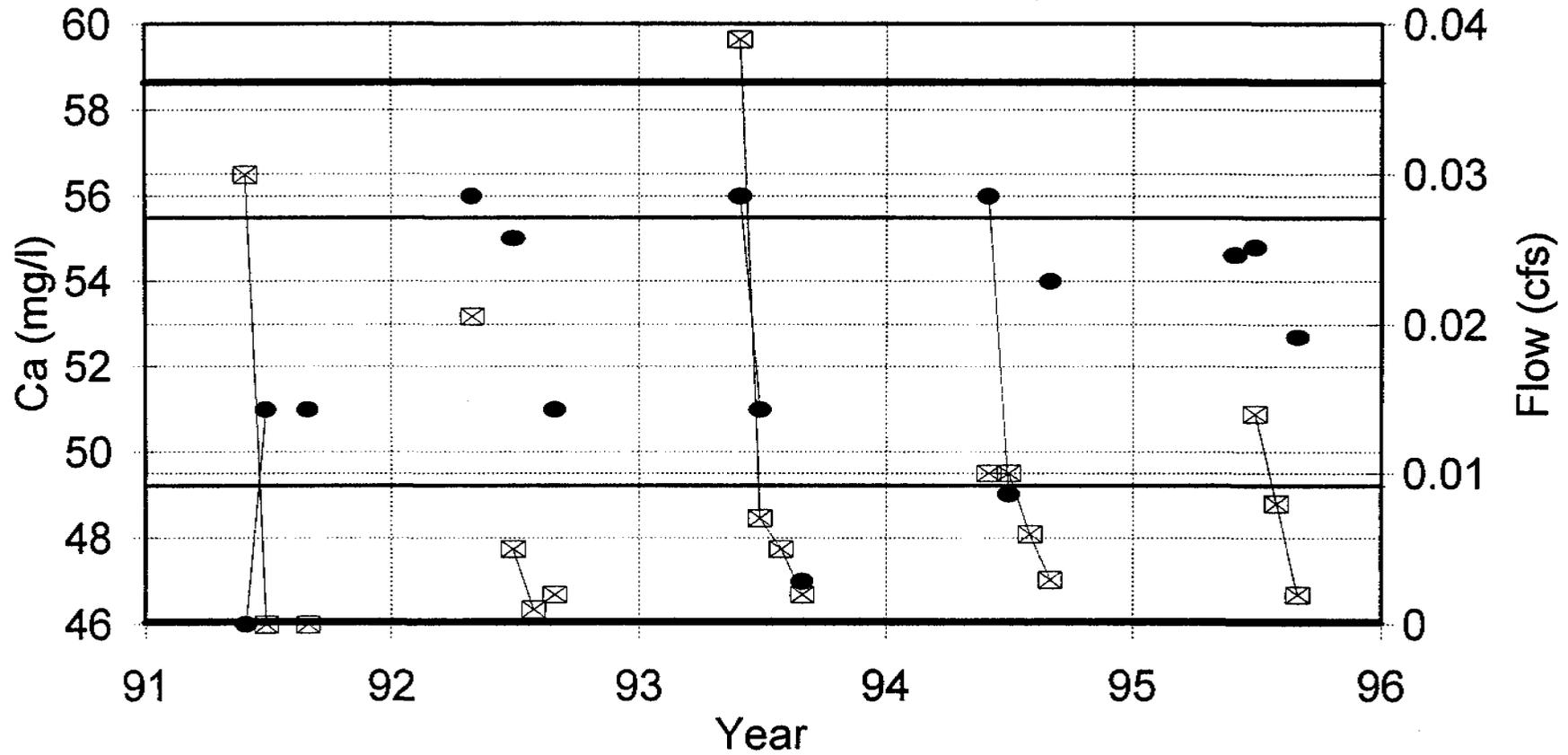
# Station 748

## TDS vs. Flow



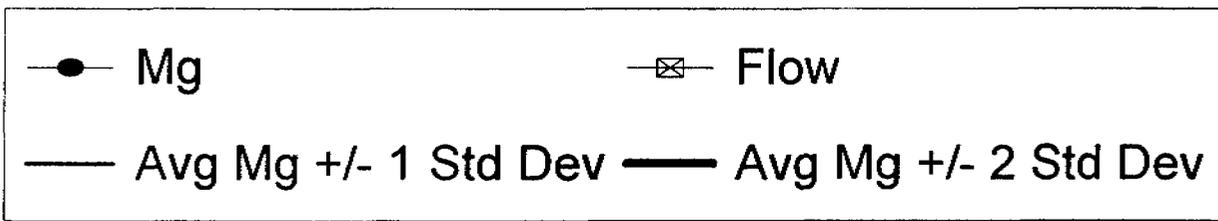
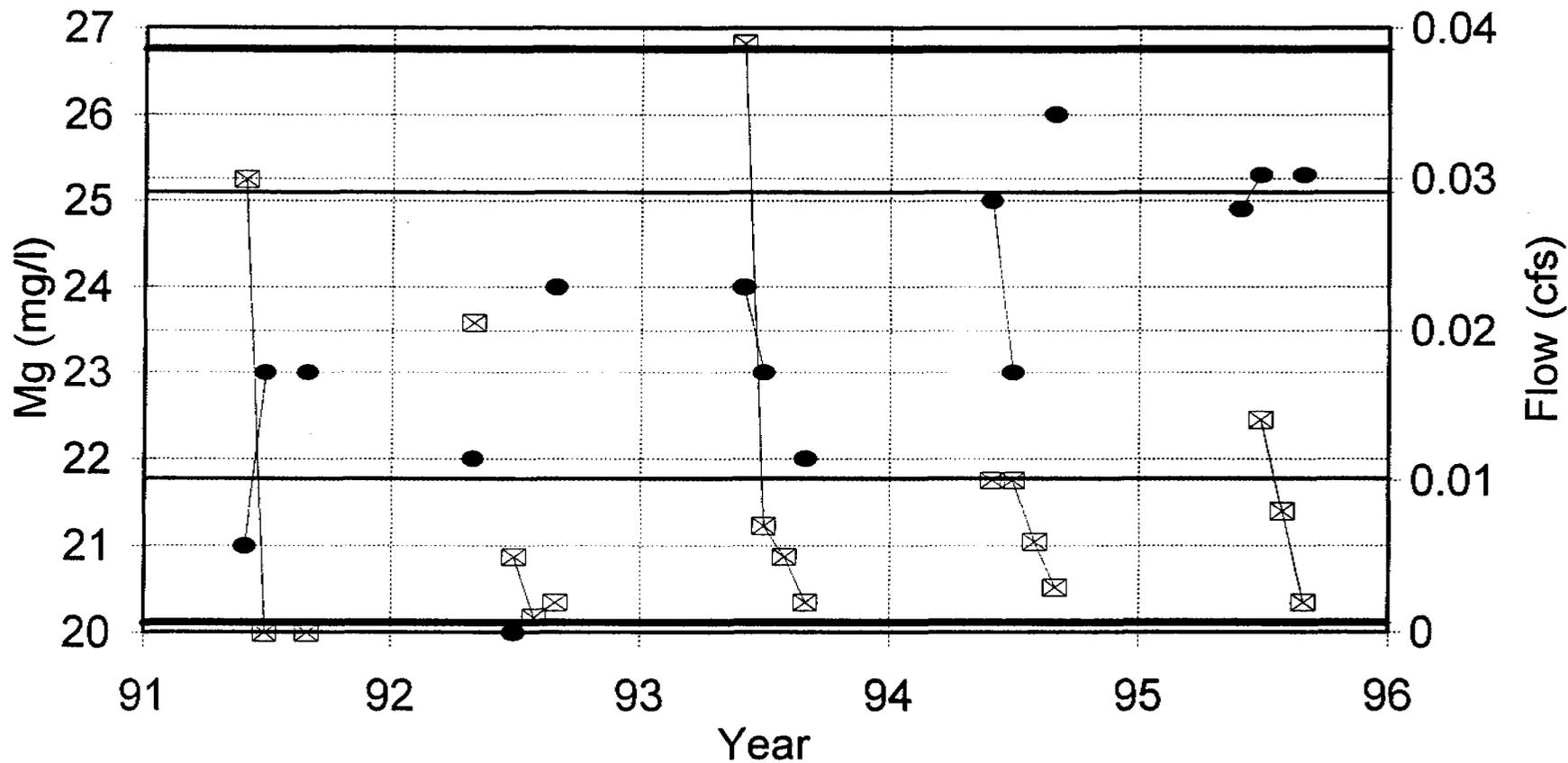
# Station 748

## Ca vs. Flow



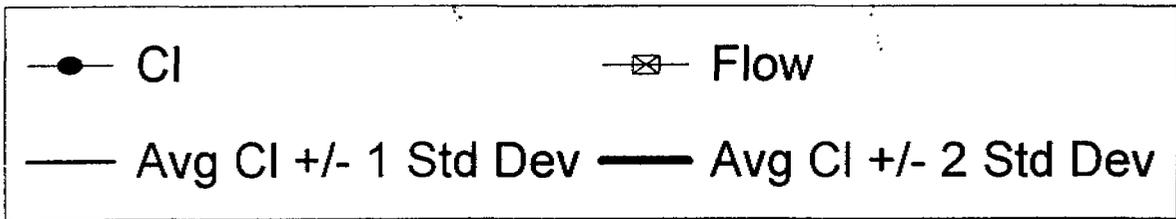
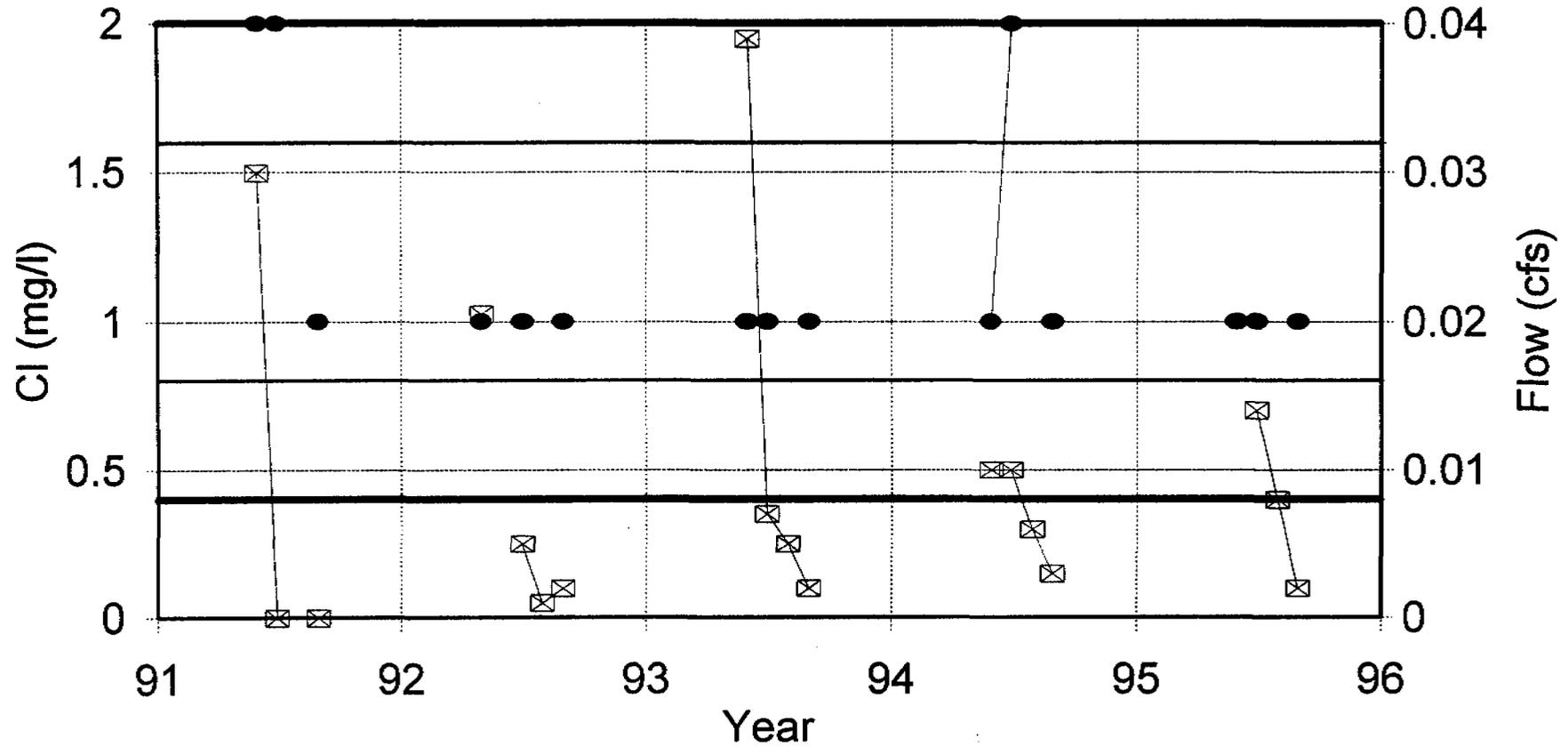
# Station 748

## Mg vs. Flow



# Station 748

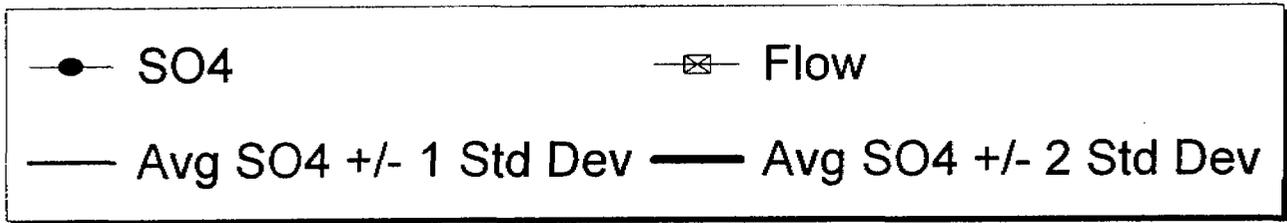
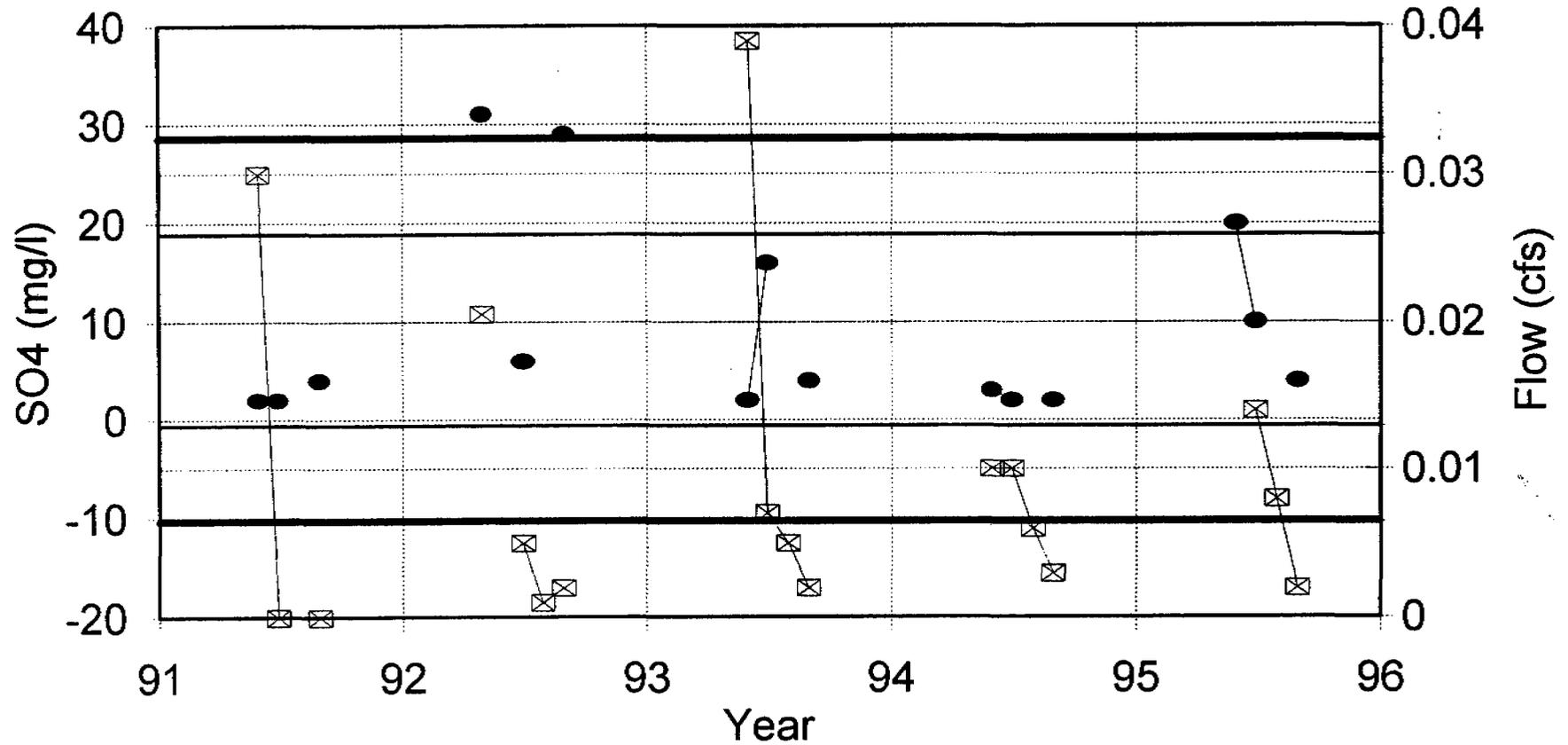
Cl vs. Flow





# Station 748

## SO4 vs. Flow





Cyprus Plateau Mining Company - Water Quality Data

Print Date: May 2, 1996

Station: 749		Property: Star Point				Location: 2250' N 100' E of SW cor. Sec 14, T15S, R7 E					Station Type: Spring					Sampling Frequency: Quarterly					Formation: North Horn					Elevation: 9715		
Date		Field Measurements				Laboratory Measurements																Comments						
Mo-Yr	Sample Date	Flow (cfs)	Ph (units)	Sp. Cond. (ohms)	Temp. (C)	TDS (mg/l)	TSS (mg/l)	O&G (mg/l)	Hd-CaCO3 (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (D) (mg/l)	SO4 (D) (mg/l)	Ca (D) (mg/l)	Mg (D) (mg/l)	K (D) (mg/l)	Na (D) (mg/l)	Cat/An Bal (%)	Fe (D) (mg/l)	Fe (T) (mg/l)	Mn (T) (mg/l)	Comments						
Jan-91																												
Feb-91																												
Mar-91																												
Apr-91																												
May-91																												
Jun-91	05/12/91	0.02	7.2	540	5	204			236	254	10	3	2	68	16	1	3	<	0.02	<	0.02	<	0.01					
Jul-91	07/15/91	0.01	7.9	460	6																							
Aug-91																												
Sep-91	08/17/91	0	8.3	470	10	272			255	317	0	1	16	74	17	1	3	<	0.02	<	0.02	<	0.01					
Oct-91																												
Nov-91																												
Dec-91																												
Jan-92																												
Feb-92																												
Mar-92																												
Apr-92																												
May-92	05/19/92	0.0118	7.5	485	4.2	272			262	307	0	1	39	77	17	1	3	<	0.02	<	0.02							
Jun-92																												
Jul-92	07/16/92	0.006	7.5	492	5.4																							
Aug-92	08/26/92	0.004	7.2	505	6.3																							
Sep-92	09/21/92	0.002	6.2	508	7.9	260			220	281	0	2	10	60	17	1	10	<	0.02	<	0.02							
Oct-92																												
Nov-92																												
Dec-92																												
Jan-93																												
Feb-93																												
Mar-93																												
Apr-93																												
May-93																												
Jun-93	06/21/93	0.018	6.2	420	5	248			241	315	0	2	5	70	16	<	1	3	<	0.02	<	0.02	<	0.01				
Jul-93	07/27/93	0.004	6.2	449	8.1	260			261	307	0	2	9	75	18	1	3	<	0.02	<	0.02	<	0.01					
Aug-93	07/17/93	0.002	6.2	466	6.7																							
Sep-93	09/27/93	0.001	6.4	461	8.6	264	260	233		317	0	1	2	67	16	1	3	<	0.02	<	0.02	<	0.01					
Oct-93																												
Nov-93																												
Dec-93																												
Jan-94																												
Feb-94																												
Mar-94																												
Apr-94																												
May-94																												
Jun-94	06/09/94	0.008	7.2	543	4.1	280			266	312	0	2	2	77	18	1	3	<	0.02	<	0.02	<	0.01					
Jul-94	07/19/94	0.01	7.6	482	12.7	258			245	300	10	2	6	70	17	1	3	<	0.02	<	0.02	<	0.01					
Aug-94	08/31/94	0.001	7.8	429	13.1																							
Sep-94	09/21/94	0	7.7	502	9.3	258			278	311	0	2	5	80	19	1	3	<	0.02	<	0.02	<	0.01					
Oct-94																												
Nov-94																												
Dec-94																												
Jan-95																												
Feb-95																												
Mar-95																												
Apr-95																												
May-95																												
Jun-95	06/21/95	0.029	7.3	530	5	270			269	250	<	2	<	1	<	10	78	18	1.1	4.4	5.6	<	0.01	<	0.01	<	0.005	
Jul-95	07/26/95	0.012	7.5	458	5.5	260			266	260	<	2	2	10	76.2	18.3	1	3.5	0.2	0.05	<	0.01	<	0.01	<	0.005		
Aug-95	08/23/95	0.003	7.21	466	8																							
Sep-95	09/27/95	0.001	7.4	534	11.06	260			269	251	<	2	3	14	77.2	18.5	1.1	3.3	1.4	<	0.01	<	0.01	<	0.005			
Oct-95																												
Nov-95																												
Dec-95																												
Jan-96																												
END DATA																												
Count		37	19	19	19	20	1	1	12	13	13	13	13	13	13	13	13	3	13	13	11							
Minimum	<	0	6.2	420	4.1	204	260	233	220	250	<	0	<	1	<	2	60	16	<	1	3	0.2	<	0.01	<	0.01	<	0.005
Maximum	<	0.04	8.3	543	13.1	280	260	233	278	317	<	10	<	3	<	39	80	19	<	1.1	10	5.6	<	0.05	<	0.02	<	0.01
Average	<	0.0063	7.1847	485.26	7.4716	257.7	260	233	255.67	290.92	<	2	<	1.8462	<	10	73.031	17.369	<	1.0154	3.7077	2.4	<	0.0208	<	0.0177	<	0.0086
Standard Deviation	<	0.0088	0.6252	34.841	2.68	20.662	0	0	16.137	26.418	<	3.5082	<	0.6617	<	9.4136	5.4552	0.9675	<	0.0361	1.8562	2.3152	<	0.0092	<	0.0042	<	0.0022
Avg. -1 Std. Dev.	<	-0.002	6.5596	450.42	4.7916	237.04	260	233	239.53	264.5	<	-1.508	<	1.1844	<	0.5864	67.578	16.402	<	0.9793	1.8515	0.0848	<	0.0118	<	0.0135	<	0.0064
Avg. +1 Std. Dev.	<	0.0151	7.8099	520.1	10.152	278.36	260	233	271.8	317.34	<	5.5082	<	2.5078	<	19.414	78.486	18.337	<	1.0515	5.5639	4.7152	<	0.0299	<	0.0219	<	0.0109

RAIN IN A.M. = ~10". LO

Cyprus Plateau Mining Company - Water Quality Data

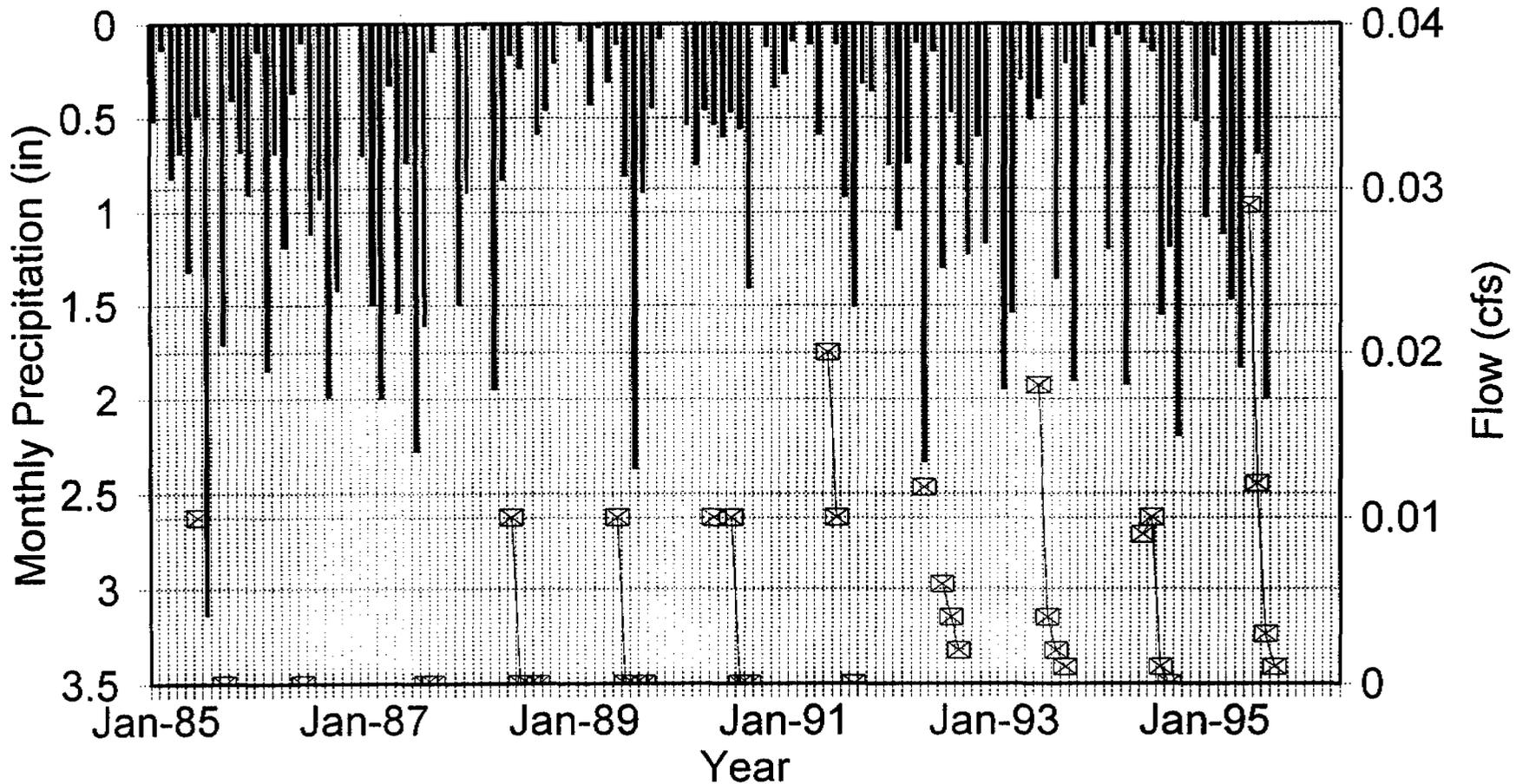
Print Date: May 2, 1996

Station: 749		Property: Star Point				Location: 2250' N 100' E of SW cor. Sec 14, T15S, R7 E				Station Type: Spring		Sampling Frequency: Quarterly			Formation: North Horn			Elevation: 9715			Comments	
Date	Sample	Field Measurements				Laboratory Measurements																
Mo-Yr	Date	Flow (cfs)	Ph (units)	Sp. Cond. (ohms)	Temp. (C)	TDS (mg/l)	TSS (mg/l)	O&G (mg/l)	Hd-CaCO3 (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (D) (mg/l)	SO4 (D) (mg/l)	Ca (D) (mg/l)	Mg (D) (mg/l)	K (D) (mg/l)	Na (D) (mg/l)	Ca/An Bal (%)	Fe (D) (mg/l)	Fe (T) (mg/l)		Mn (T) (mg/l)
	Avg. -2 Std. Dev.	< -0.011	5.9344	415.58	2.1115	216.38	260	233	223.39	238.09	< -6.016	< 0.5227	< -8.827	62.12	15.434	< 0.9432	-0.005	-2.23	< 0.0024	< 0.0093	< 0.0042	
	Avg. +2 Std. Dev.	< 0.0238	8.4351	554.94	12.832	299.02	260	233	287.94	343.76	< 9.0185	< 3.1696	< 28.827	83.941	19.304	< 1.0875	7.42	7.0303	< 0.0391	< 0.0261	< 0.0131	

NOTE: The "<" symbol indicates that "Less Than" data was found in the data set; statistics are approximate.

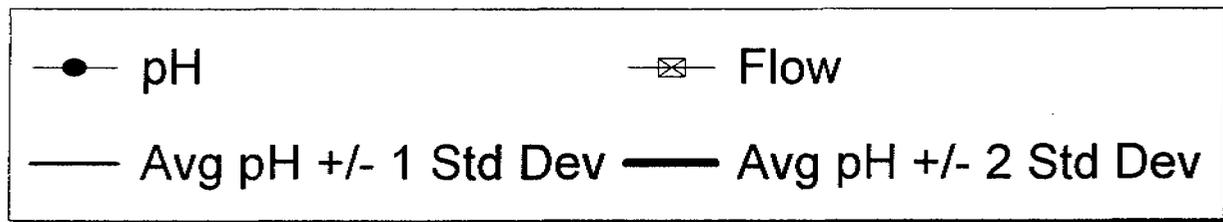
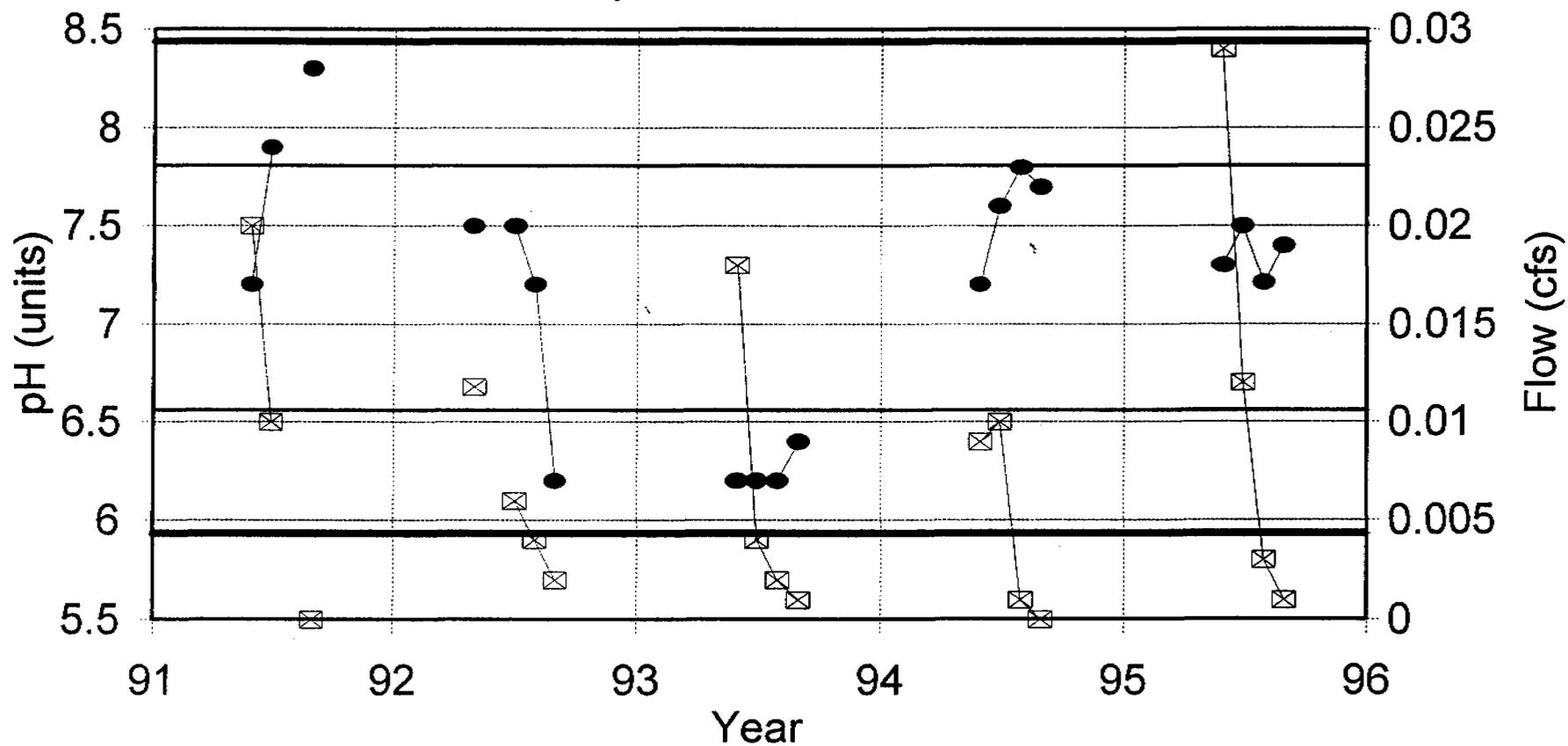
# Station 749

## Monthly Precipitation vs. Flow



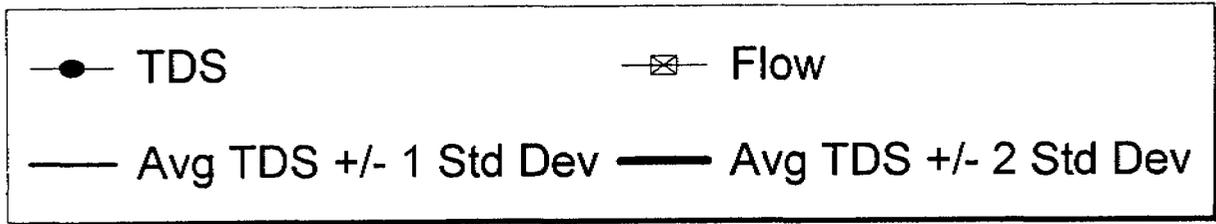
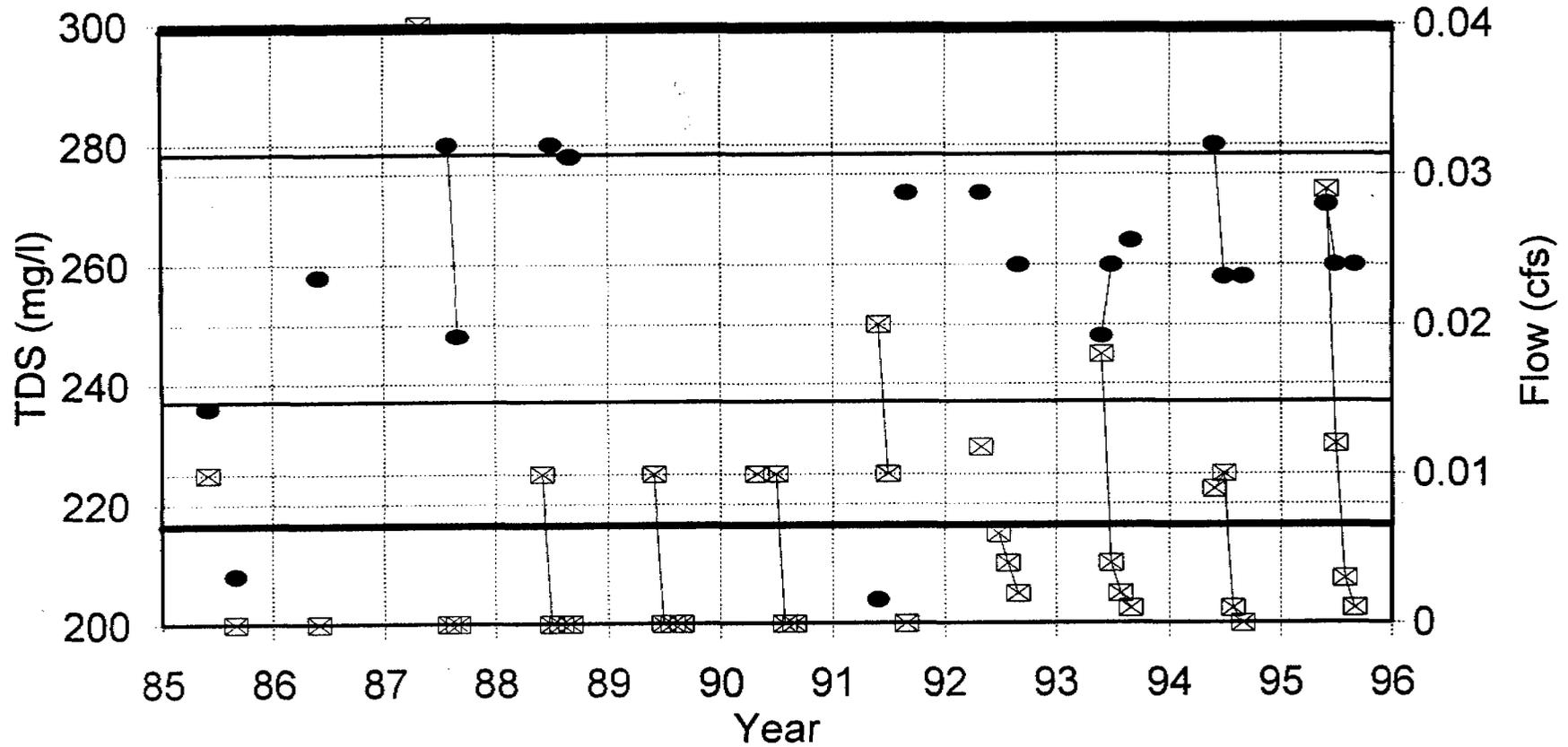
# Station 749

## pH vs. Flow



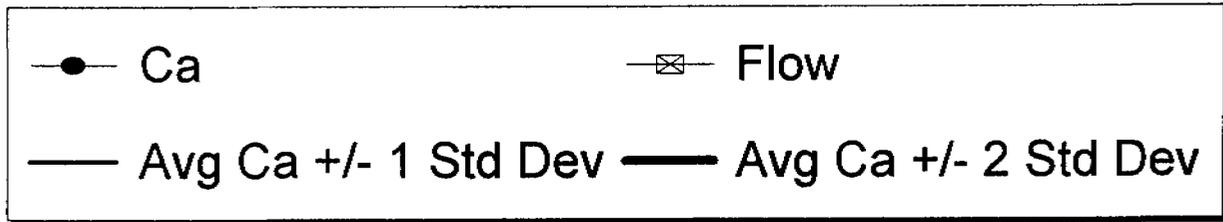
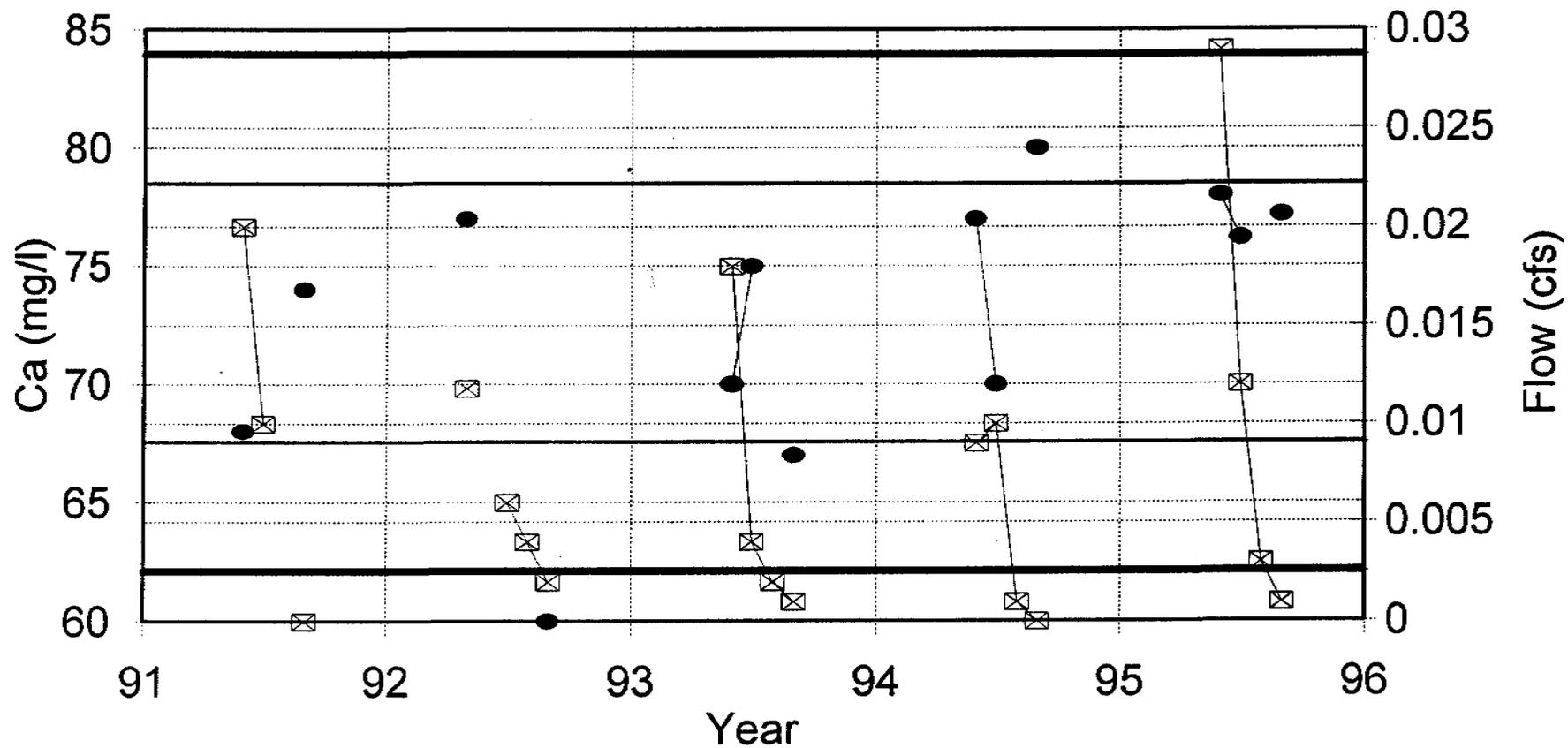
# Station 749

## TDS vs. Flow



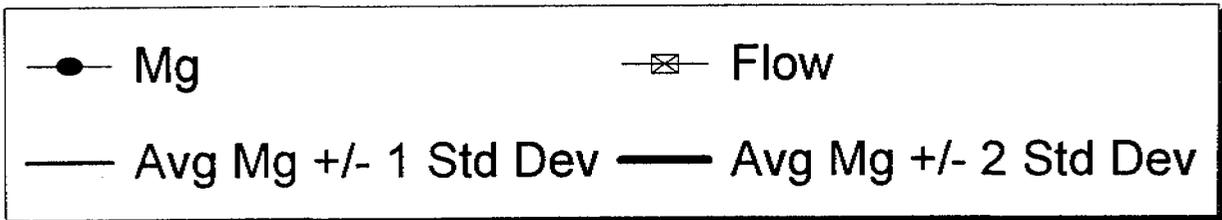
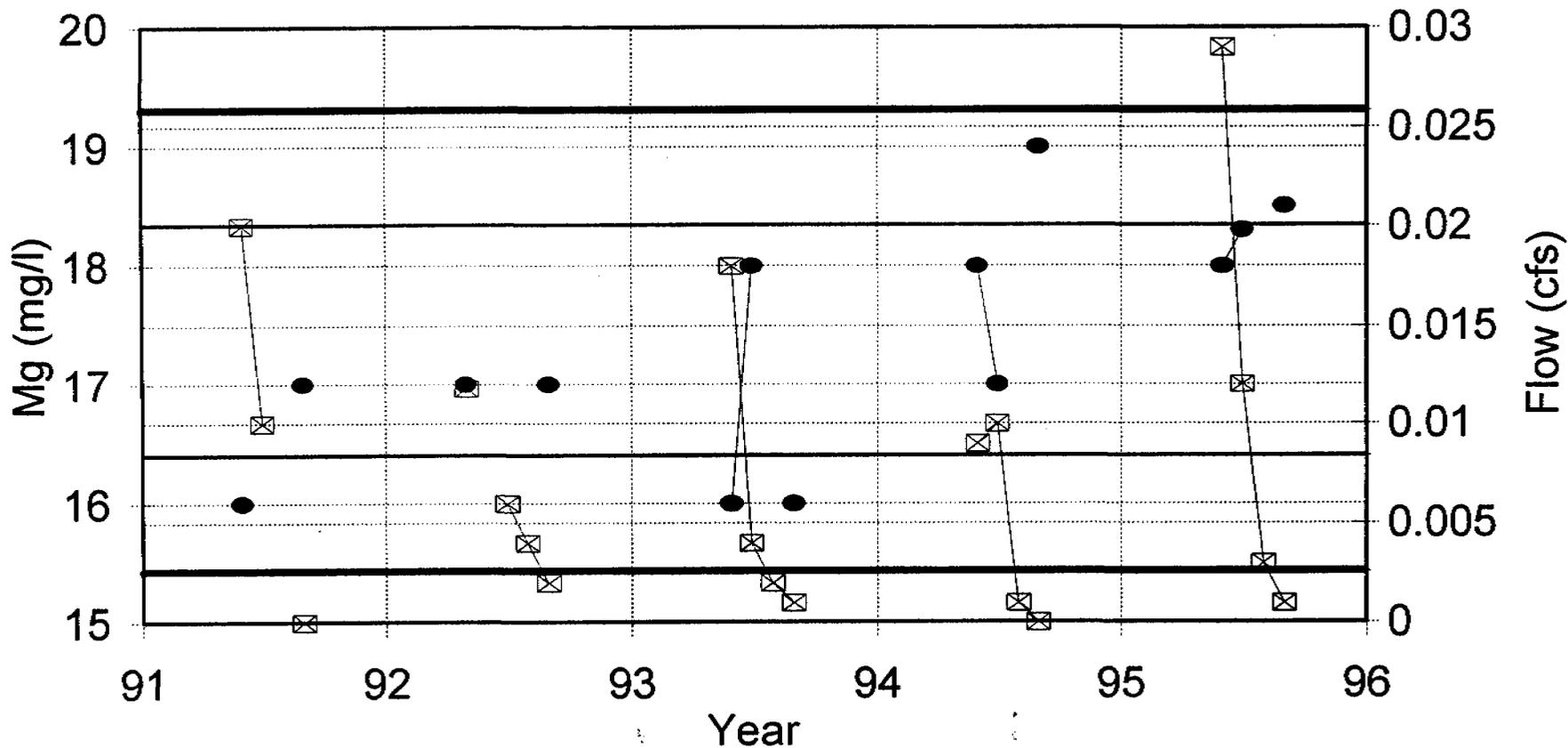
# Station 749

## Ca vs. Flow



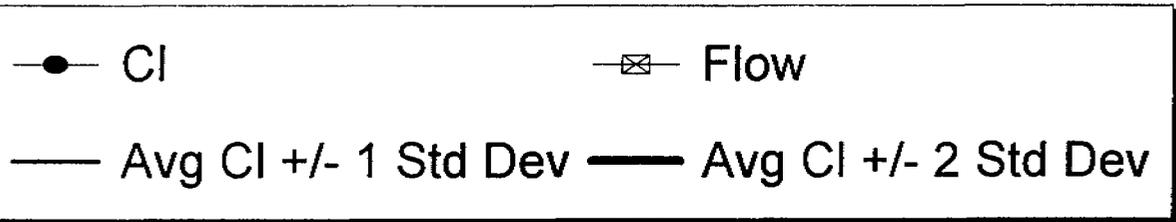
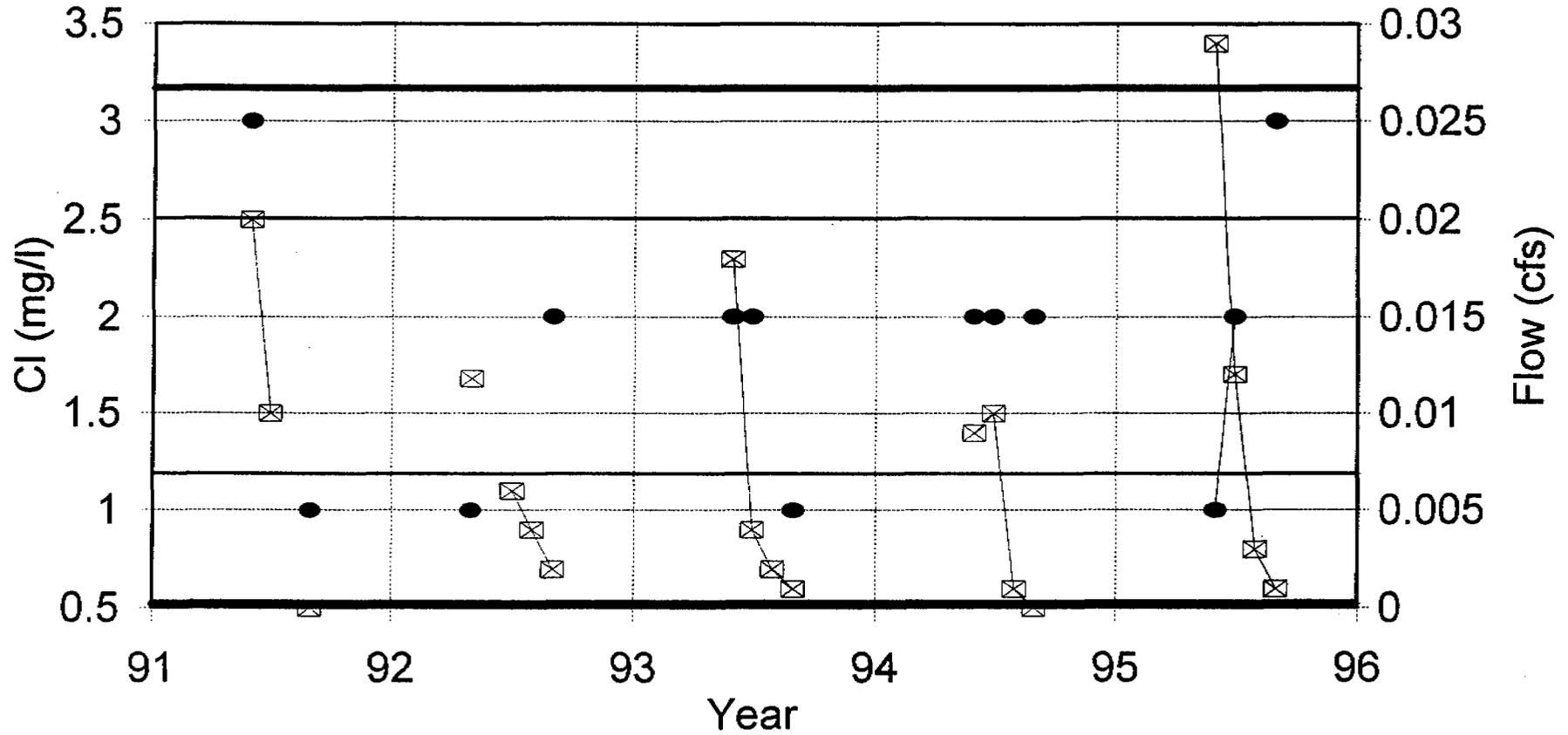
# Station 749

## Mg vs. Flow



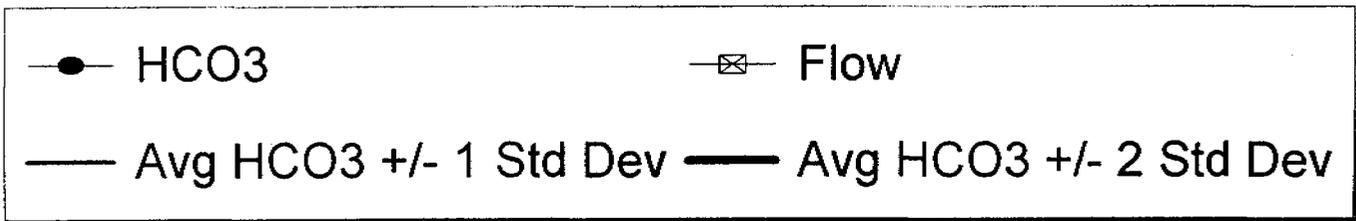
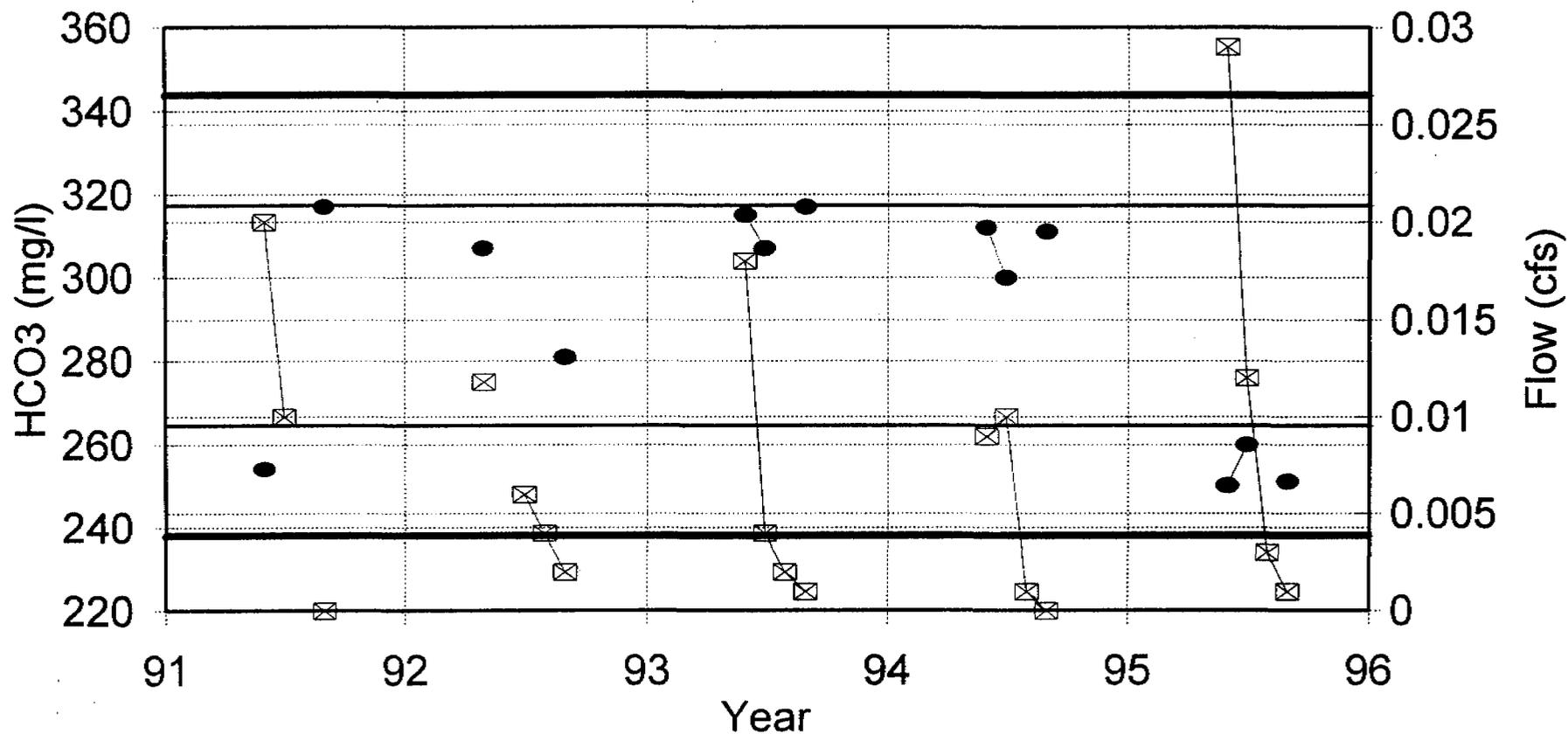
# Station 749

## Cl vs. Flow



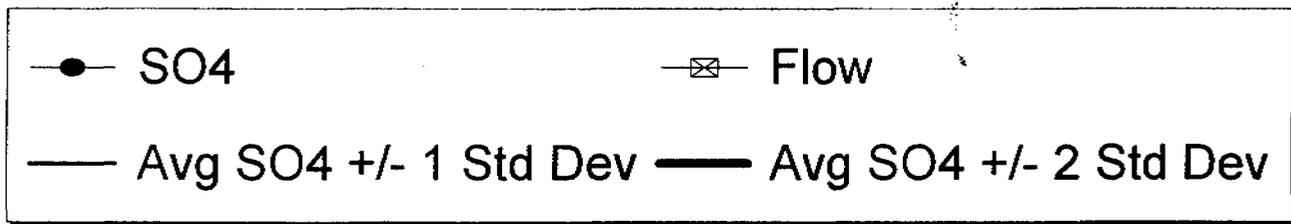
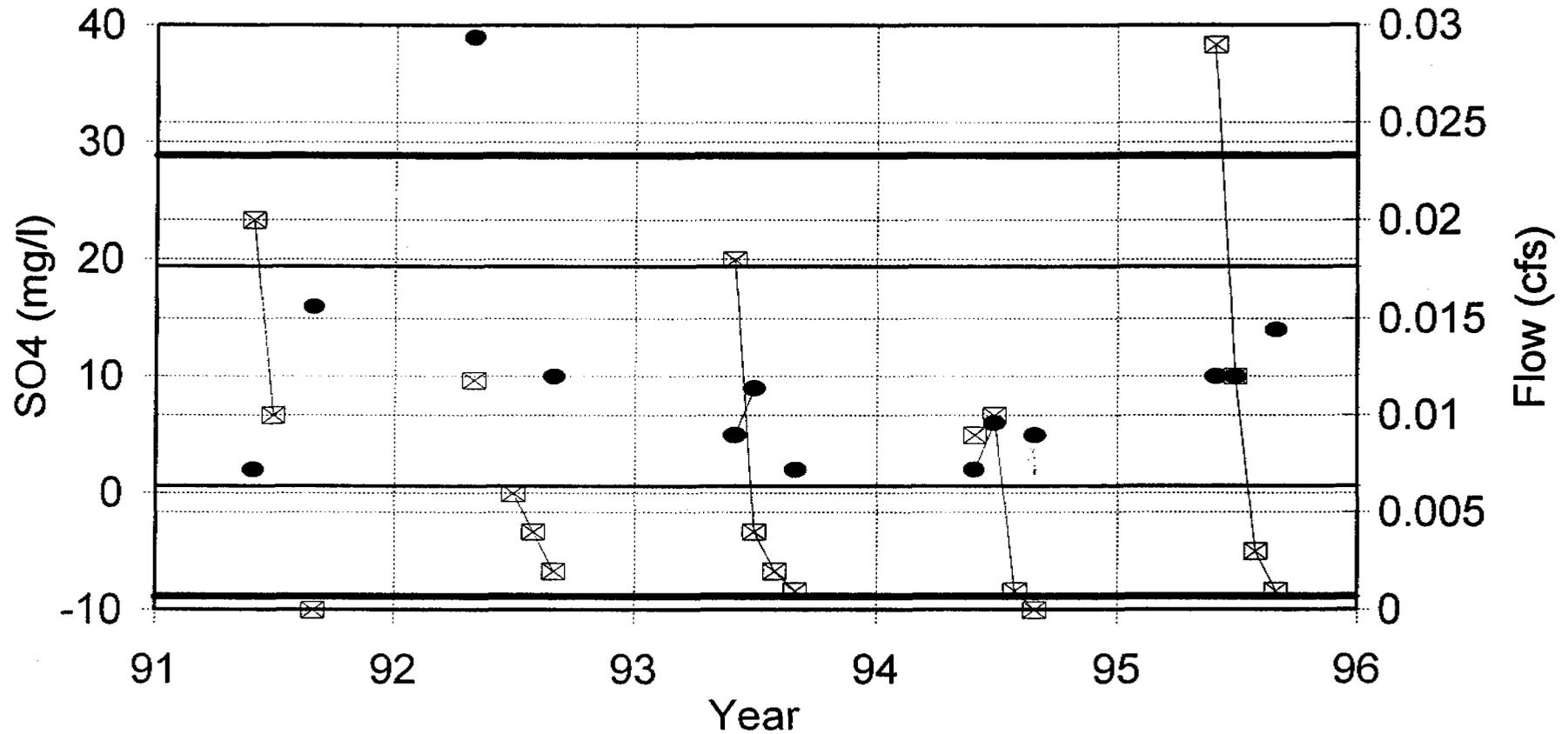
# Station 749

## HCO<sub>3</sub> vs. Flow



# Station 749

## SO4 vs. Flow







Cyprus Plateau Mining Company - Water Quality Data

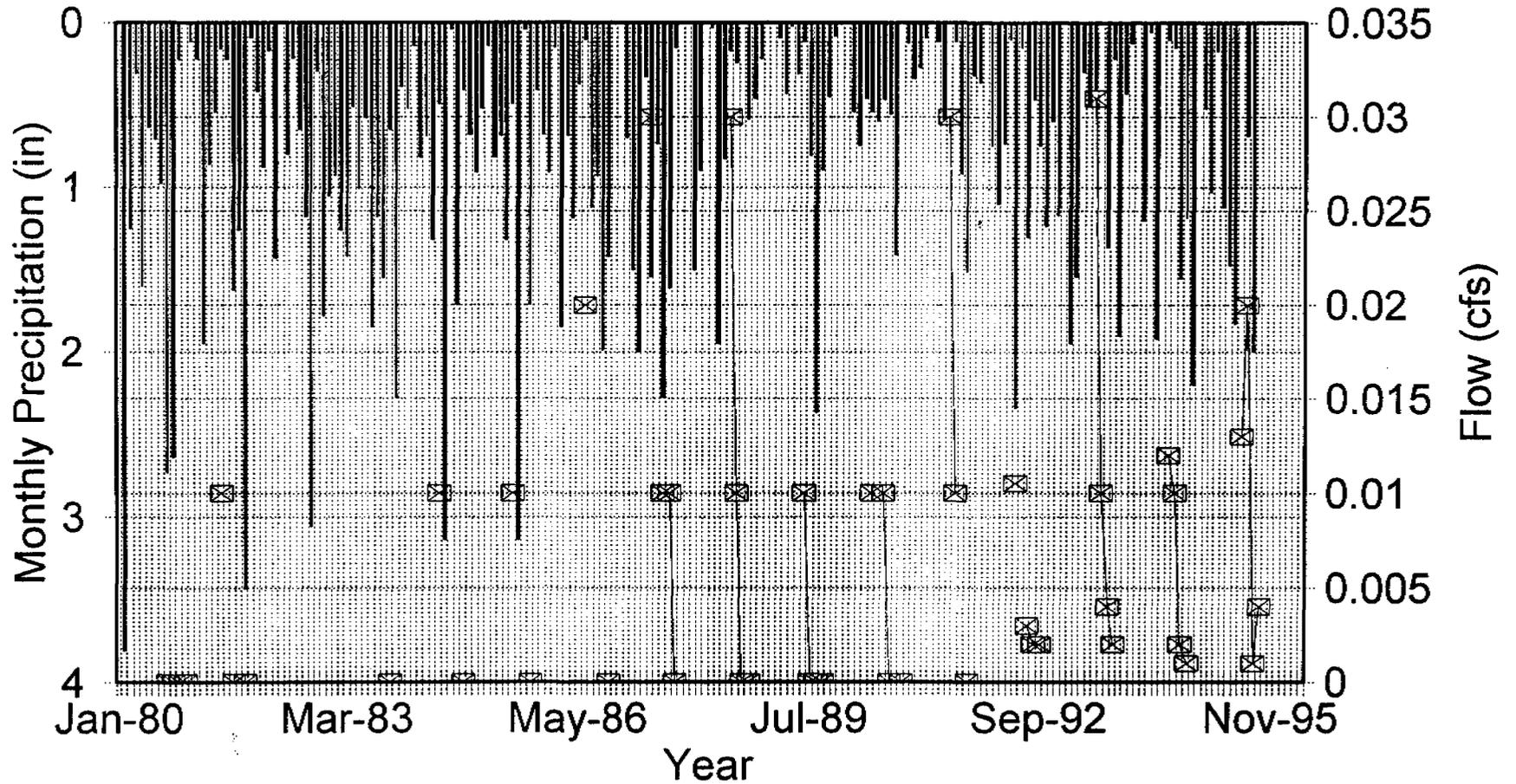
Print Date: May 2, 1996  
Elevation: 8890

Station: 751		Property: Star Point				Location: 700' S 375' W of NE cor. Sec 14, T15S, R7E					Station Type: Spring		Sampling Frequency: Quarterly					Formation: North Horn					Elevation: 8890					
Date		Field Measurements				Laboratory Measurements															Comments							
Mo-Yr	Sample Date	Flow (cfs)	Ph (units)	Sp. Cond. (ohms)	Temp. (C)	TDS (mg/l)	TSS (mg/l)	O&G (mg/l)	Hd-CaCO3 (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (D) (mg/l)	SO4 (D) (mg/l)	Ca (D) (mg/l)	Mg (D) (mg/l)	K (D) (mg/l)	Na (D) (mg/l)	Cat/An Bal (%)	Fe (D) (mg/l)	Fe (T) (mg/l)	Mn (T) (mg/l)	Comments						
Jan-92																												
Feb-92																												
Mar-92																												
Apr-92																												
May-92	05/19/92	0.0105	7.4	456	4	246			236	271	0	1	41	68	16	1	2	<	0.02	<	0.02							
Jun-92																												
Jul-92	07/15/92	0.003	7	425	5.9	228			202	266	0	1	6	58	14	<	1	1	<	0.02	0.03							
Aug-92	08/26/92	0.002	6.9	420	5.8																							
Sep-92	09/21/92	0.002	6.3	415	10.4	220			217	220	10	1	8	62	15	<	1	1	<	0.02	0.11							
Oct-92																												
Nov-92																												
Dec-92																												
Jan-93																												
Feb-93																												
Mar-93																												
Apr-93																												
May-93																												
Jun-93	06/24/93	0.031	6.5	359	5.7	186			168	195	0	2	4	49	11	<	1	1	<	0.02	<	0.02	<	0.01				
Jul-93	07/26/93	0.01	6.2	381	6.1	200			210	259	0	1	2	61	14	<	1	2	<	0.02	<	0.02	<	0.01				
Aug-93	08/17/93	0.004	6.3	401	7.7																							
Sep-93	09/28/93	0.002	6.5	428	9.1	160			158	190	0	2	4	45	11	<	1	2	<	0.02	0.03	<	0.01					
Oct-93																												
Nov-93																												
Dec-93																												
Jan-94																												
Feb-94																												
Mar-94																												
Apr-94																												
May-94																												
Jun-94	06/20/94	0.012	7.4	471	5	226			236	268	0	1	2	68	16	<	1	2	<	0.02	<	0.02	<	0.01				
Jul-94	07/19/94	0.01	7.6	450	11.9	222			197	256	7	2	2	56	14	<	1	2	<	0.02	<	0.02	<	0.01				
Aug-94	08/31/94	0.002	6.3	366	10.9																							
Sep-94	09/21/94	0.001	7.9	476	10.4	236			242	290	0	3	4	69	17	<	1	3		0.05	0.07	0.04	RAIN IN A.M. = -10". LO					
Oct-94																												
Nov-94																												
Dec-94																												
Jan-95																												
Feb-95																												
Mar-95																												
Apr-95																												
May-95																												
Jun-95	06/22/95	0.013	6.6	332	4	180			194	179	<	2	<	1	30	58.7	11.4	0.6	1.5	-3.2	<	0.01	0.1	<	0.005			
Jul-95	07/27/95	0.02	7.4	389	6	220			216	205	<	2	1	<	10	62.5	14.5	0.4	1.6	3.1	0.02	<	0.01	<	0.005			
Aug-95	08/23/95	0.001	6.47	373	9																							
Sep-95	09/28/95	0.004	7.3	238	6.39	220			225	212	<	2	<	1	<	4	64.3	15.6	0.6	1.5	3.8	<	0.01	<	0.01	<	0.005	
Oct-95																												
Nov-95																												
Dec-95																												
Jan-96																												
END DATA																												
Count		49	19	19	19	41	0	0	15	15	15	15	15	15	15	15	15	3	15	15	12							
Minimum	<	0	6.2	238	4	160	ERR	ERR	158	179	<	0	<	1	<	2	45	11	<	0.4	1	-3.2	<	0.01	<	0.01	<	0.005
Maximum	<	0.031	7.9	476	11.9	255	ERR	ERR	242	290	<	12	<	3	<	41	69	17	<	1	3	3.8	<	0.12	<	0.18	<	0.07
Average	<	0.0069	6.9984	407.37	7.3837	218.1	ERR	ERR	206.53	236.33	<	2.4867	<	1.4	<	9.6	60.567	13.9	<	0.9067	1.64	1.2333	<	0.0273	<	0.054	<	0.0163
Standard Deviation	<	0.0088	0.5625	57.019	2.4705	20.012	ERR	ERR	23.082	33.204	<	3.8099	<	0.611	<	11.58	6.6263	1.8334	<	0.1914	0.5607	3.1478	<	0.0262	<	0.0533	<	0.0185
Avg. -1 Std. Dev.	<	-0.002	6.436	350.35	4.9132	198.09	ERR	ERR	185.45	203.13	<	-1.343	<	0.789	<	-1.98	53.94	12.067	<	0.7153	1.0793	-1.915	<	0.0011	<	0.0007	<	-0.002
Avg. +1 Std. Dev.	<	0.0157	7.5609	464.39	9.8542	238.11	ERR	ERR	231.62	269.54	<	6.2766	<	2.011	<	21.18	67.193	15.733	<	1.098	2.2007	4.3812	<	0.0536	<	0.1073	<	0.0347
Avg. -2 Std. Dev.	<	-0.011	5.8735	293.33	2.4427	178.07	ERR	ERR	162.37	189.93	<	-5.153	<	0.178	<	-13.56	47.314	10.233	<	0.5239	0.5186	-5.062	<	-0.025	<	-0.053	<	-0.021
Avg. +2 Std. Dev.	<	0.0245	8.1233	521.41	12.325	258.12	ERR	ERR	254.7	302.74	<	10.087	<	2.622	<	32.761	73.819	17.567	<	1.2894	2.7614	7.529	<	0.0797	<	0.1605	<	0.0532

NOTE: The "<" symbol indicates that "Less Than" data was found in the data set; statistics are approximate.

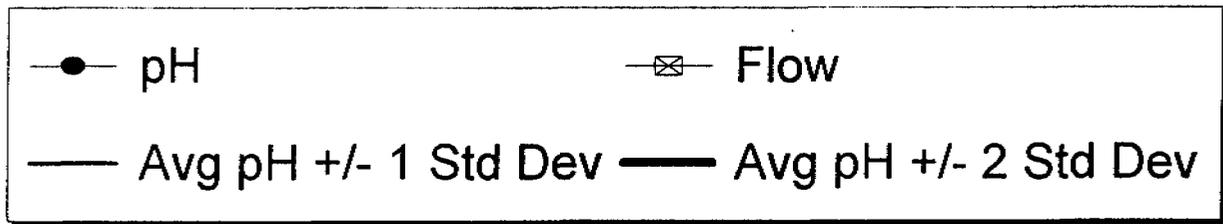
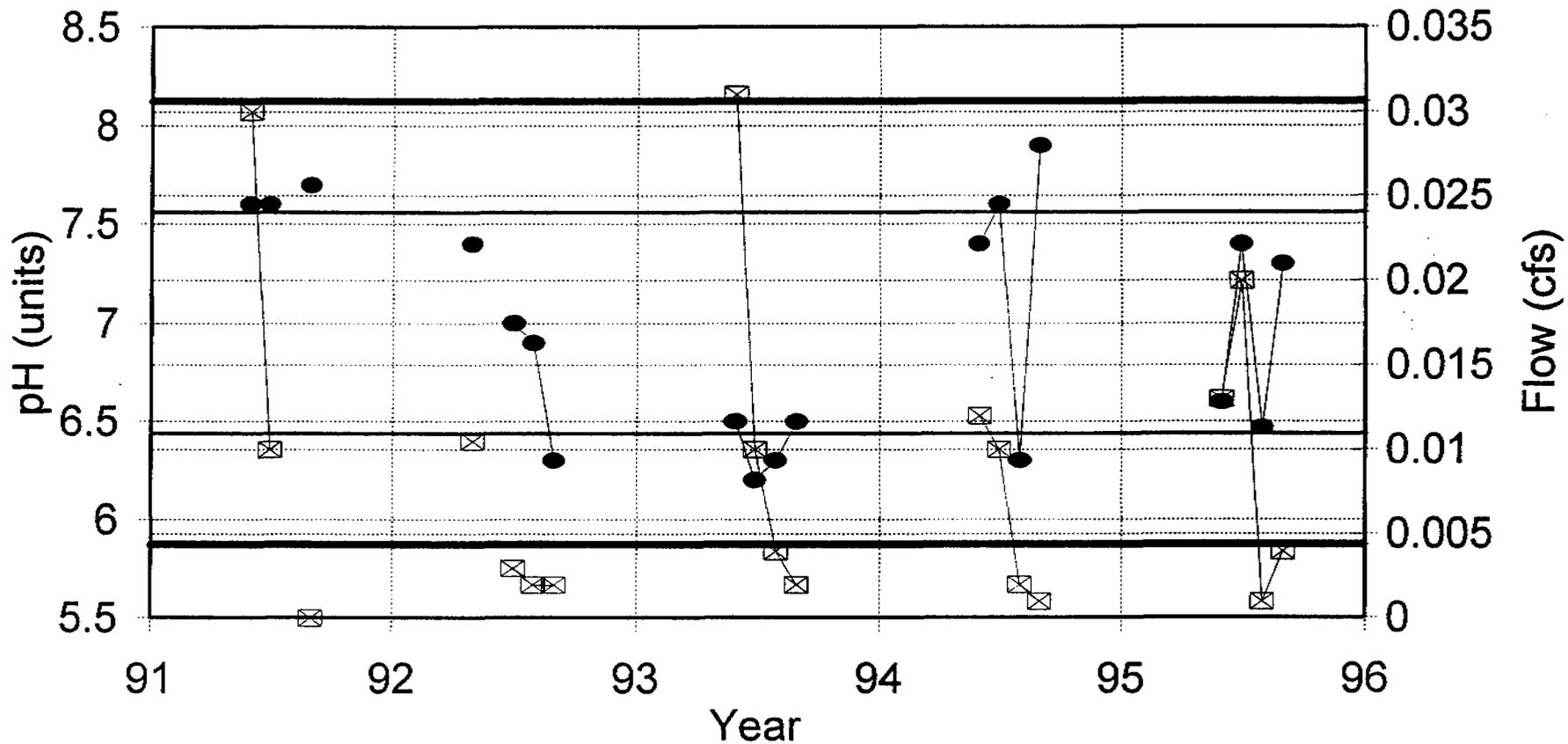
# Station 751

## Monthly Precipitation vs. Flow



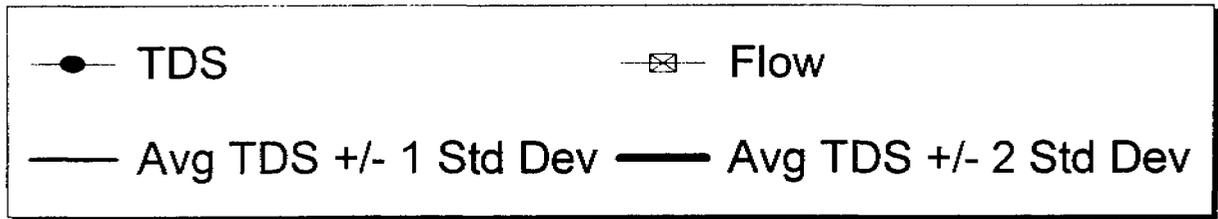
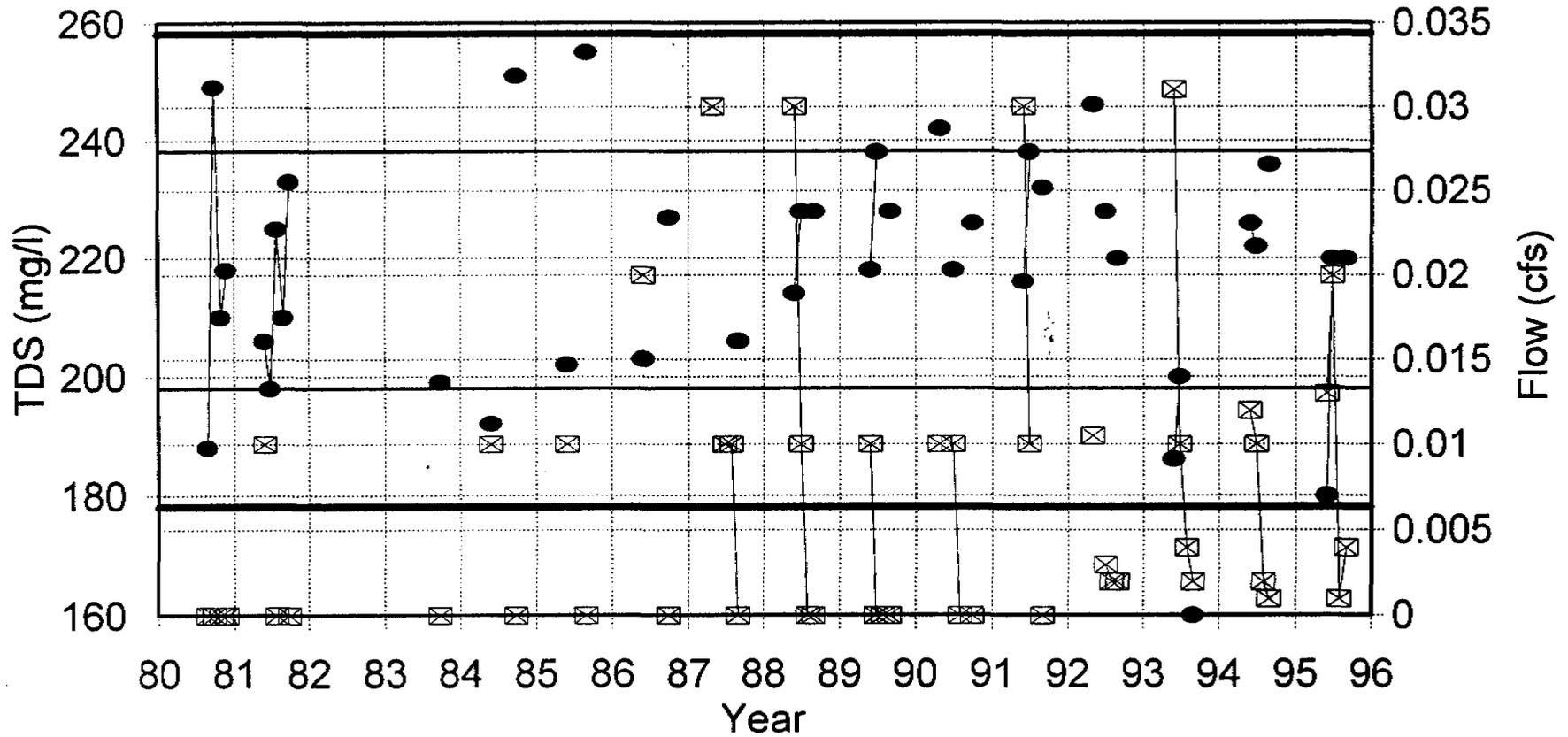
# Station 751

## pH vs. Flow



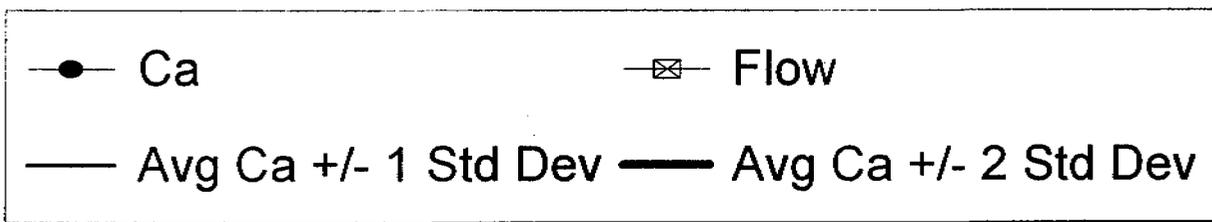
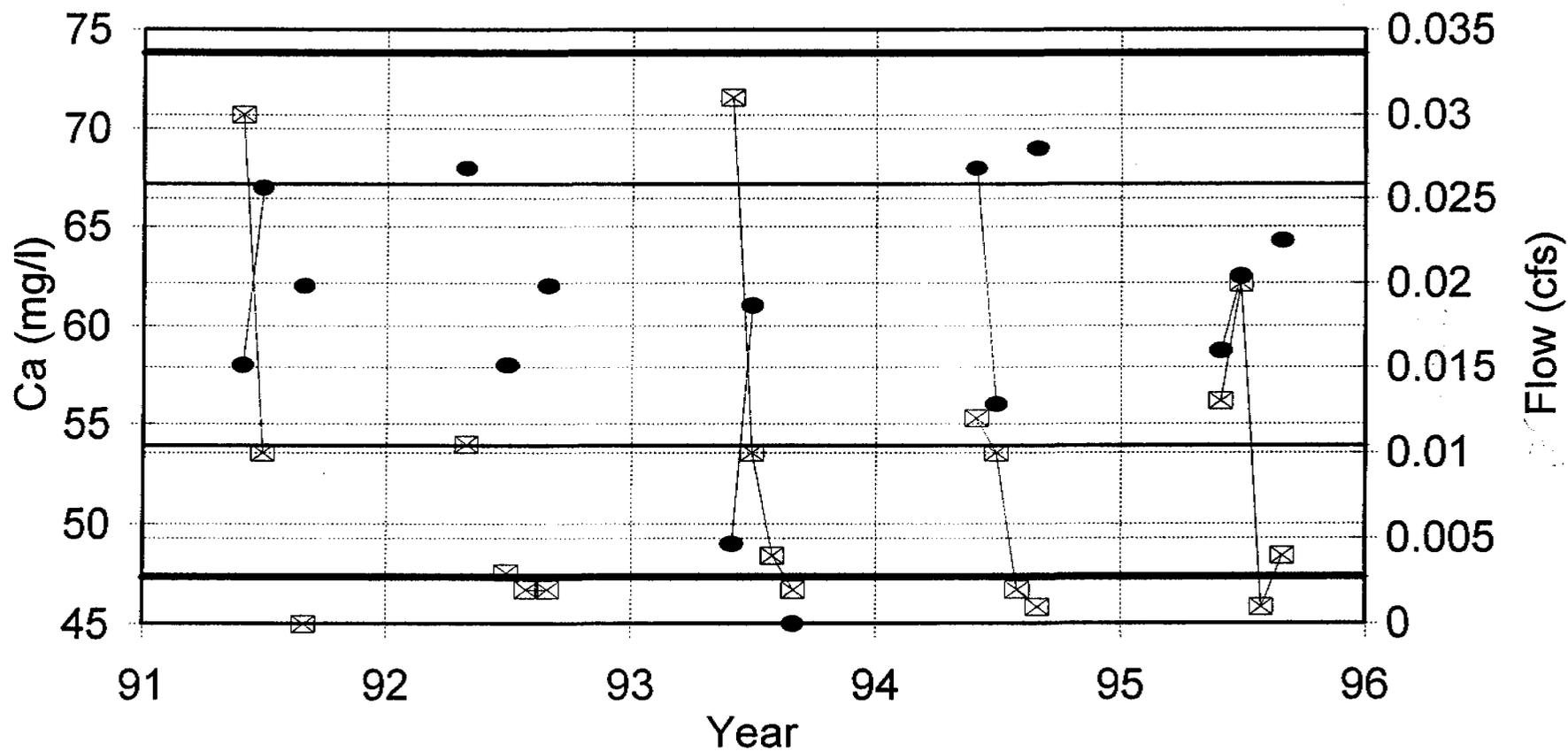
# Station 751

## TDS vs. Flow



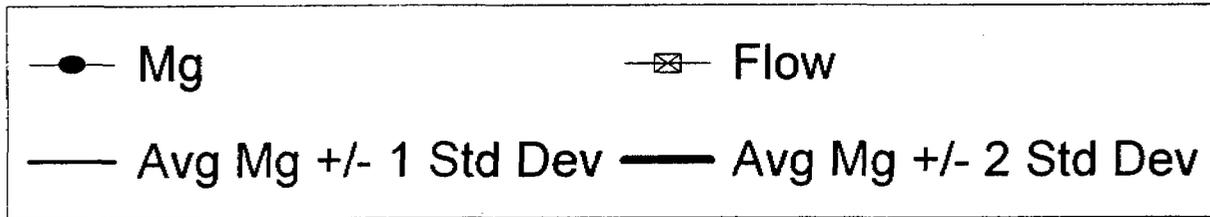
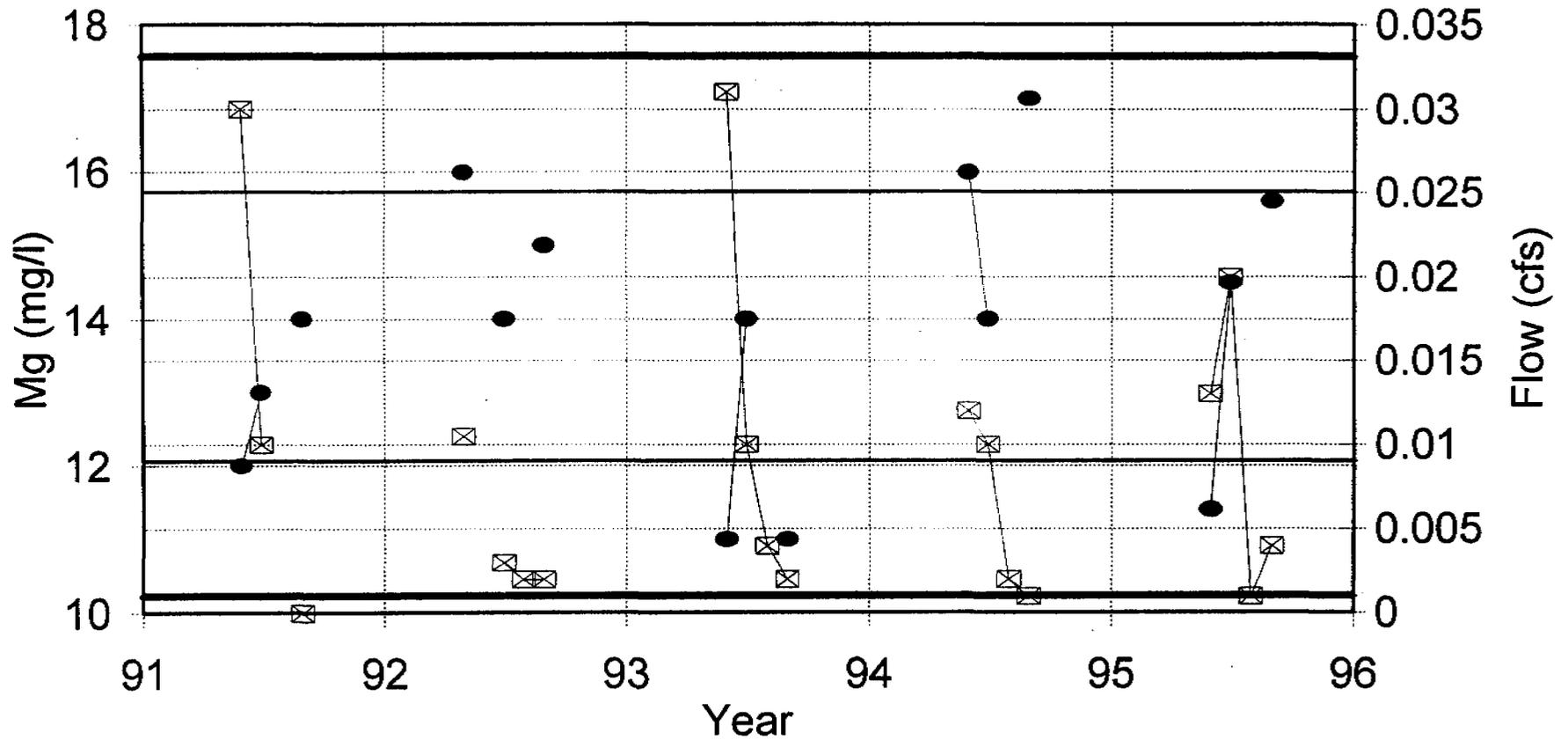
# Station 751

## Ca vs. Flow



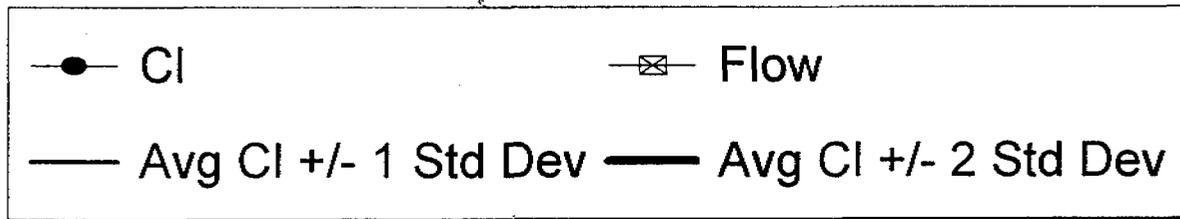
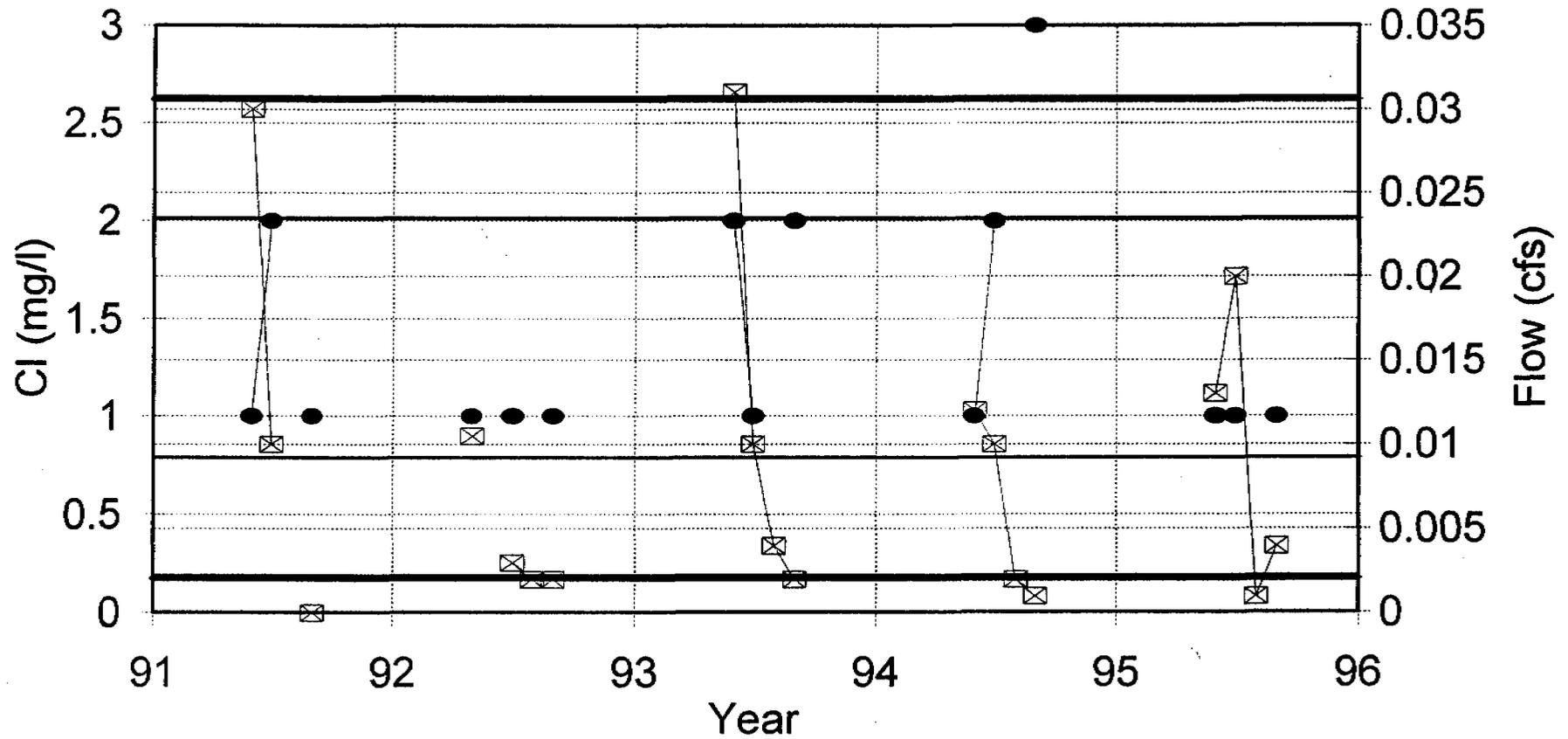
# Station 751

## Mg vs. Flow



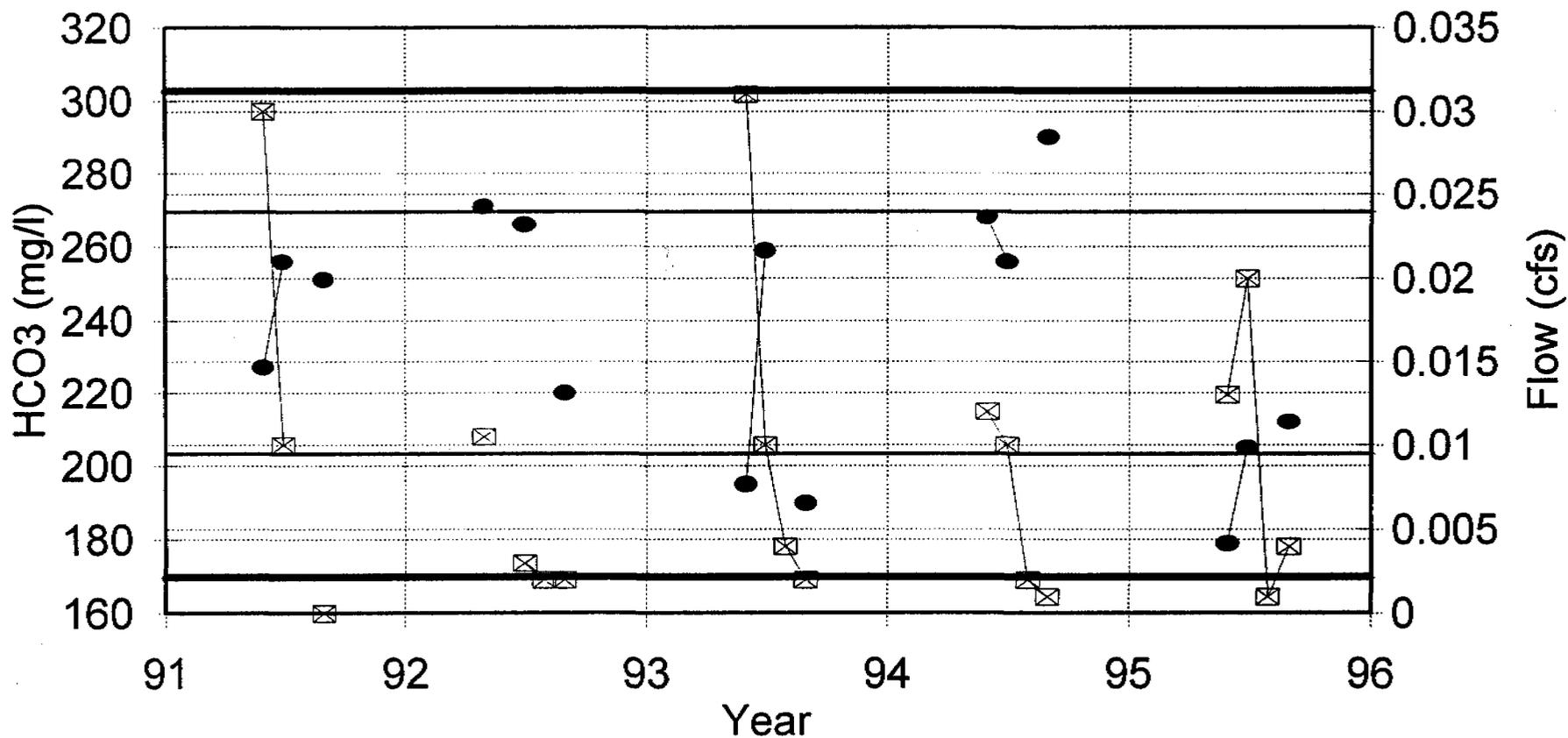
# Station 751

## Cl vs. Flow



# Station 751

## HCO3 vs. Flow



● HCO3

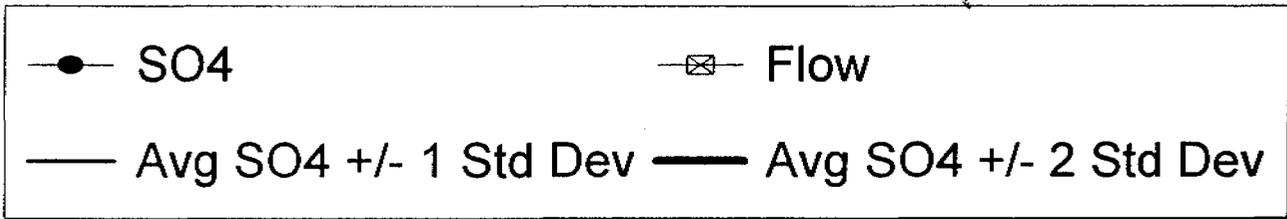
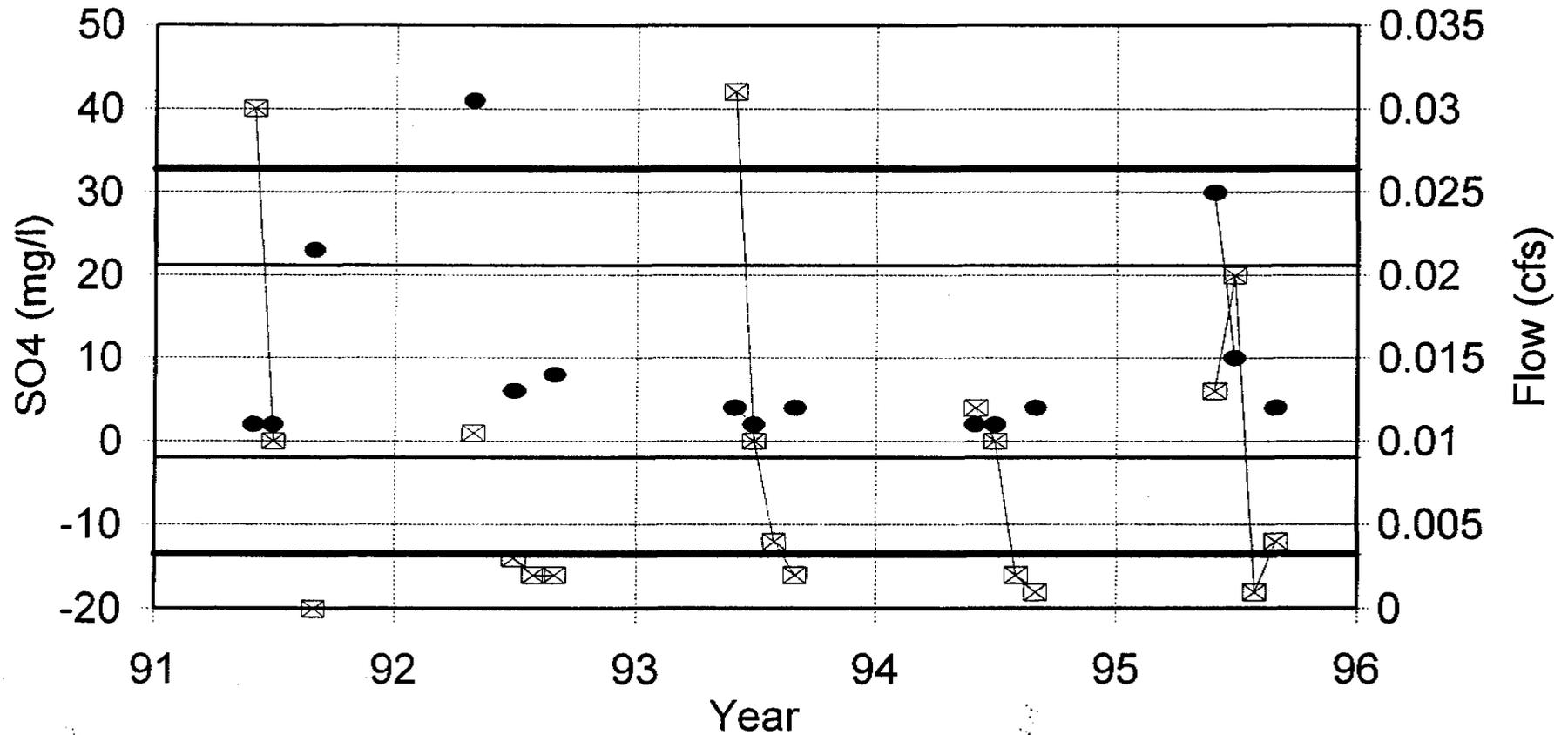
⊠ Flow

— Avg HCO3 +/- 1 Std Dev

— Avg HCO3 +/- 2 Std Dev

# Station 751

## SO4 vs. Flow



Cyprus Plateau Mining Company - Water Quality Data

Station: 753		Property: Star Point				Location: 700' S 1500' W of NE com. Sec 13, T15S, R7E				Station Type: Spring		Sampling Frequency: Quarterly		Formation: North Horn				Comments					
Mo-Yr	Date	Field Measurements				Laboratory Measurements											Comments						
		Flow (cfs)	Ph (units)	Sp. Cond. (ohms)	Temp. (C)	TDS (mg/l)	TSS (mg/l)	O&G (mg/l)	Hd-CaCO3 (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (D) (mg/l)	SO4 (D) (mg/l)	Ca (D) (mg/l)	Mg (D) (mg/l)	K (D) (mg/l)		Na (D) (mg/l)	Cat/An Bal (%)	Fe (D) (mg/l)	Fe (T) (mg/l)	Mn (T) (mg/l)	
Jan-79																							
Feb-79																							
Mar-79																							
Apr-79																							
May-79																							
Jun-79																							
Jul-79																							
Aug-79																							
Sep-79	09/11/79	0				270																	
Oct-79																							
Nov-79																							
Dec-79																							
Jan-80																							
Feb-80																							
Mar-80																							
Apr-80																							
May-80																							
Jun-80																							
Jul-80																							
Aug-80																							
Sep-80	09/30/80	0				255																	
Oct-80	10/22/80	0				292																	
Nov-80	11/10/80	0				262																	
Dec-80	12/30/80	0																					SNOW
Jan-81	01/06/81																						IN-ACCESSIBLE - SNOW
Feb-81	02/04/81																						IN-ACCESSIBLE - SNOW
Mar-81	03/25/81																						IN-ACCESSIBLE - SNOW
Apr-81	04/28/81																						IN-ACCESSIBLE - SNOW
May-81	05/28/81																						IN-ACCESSIBLE - SNOW
Jun-81	06/16/81	0				235																	
Jul-81						270																	
Aug-81	08/29/81	0																					DRY
Sep-81																							IN-ACCESSIBLE
Oct-81	10/07/81																						IN-ACCESSIBLE
Nov-81	11/24/81																						
Dec-81	12/29/81																						
Jan-82																							
Feb-82																							
Mar-82																							
Apr-82																							
May-82																							
Jun-82																							
Jul-82																							
Aug-82																							
Sep-82																							
Oct-82																							
Nov-82																							
Dec-82																							
Jan-83																							IN-ACCESSIBLE
Feb-83																							
Mar-83	03/24/83																						IN-ACCESSIBLE - SNOW
Apr-83																							IN-ACCESSIBLE - SNOW
May-83	05/12/83																						
Jun-83	06/29/83																						
Jul-83																							
Aug-83																							
Sep-83																							
Oct-83	10/05/83	0				231																	
Nov-83																							
Dec-83																							
Jan-84	01/06/84																						COVERED BY SNOW NO
Feb-84																							COVERED BY SNOW NO
Mar-84	03/30/84																						
Apr-84																							
May-84																							
Jun-84	06/21/84	0.02				203																	
Jul-84																							
Aug-84																							
Sep-84	09/21/84	0				265																	
Oct-84																							
Nov-84																							
Dec-84	12/11/84																						IN-ACCESSIBLE - SNOW



Cyprus Plateau Mining Company - Water Quality Data

Station: 753 Property: Star Point Location: 700' S 1500' W of NE cor. Sec 13, T15S, R7E Station Type: Spring Sampling Frequency: Quarterly Formation: North Horn Print Date: May 2, 1996 Elevation: 10050

Date	Field Measurements				Laboratory Measurements																Comments	
	Sample Date	Flow (cfs)	pH (units)	Sp. Cond. (ohms)	Temp. (C)	TDS (mg/l)	TSS (mg/l)	O&G (mg/l)	Hd-CaCO3 (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (D) (mg/l)	SO4 (D) (mg/l)	Ca (D) (mg/l)	Mg (D) (mg/l)	K (D) (mg/l)	Na (D) (mg/l)	Cat/An Bal (%)	Fe (D) (mg/l)	Fe (T) (mg/l)		Mn (T) (mg/l)
Jan-91																						
Feb-91																						
Mar-91																						
Apr-91																						
May-91																						
Jun-91	06/12/91	0.03	7.2	390	4	192			178	207	10	3	10	58	8	2	1	<	0.02 <	0.02 <	0.01	
Jul-91	07/15/91	0																				
Aug-91																						
Sep-91	09/18/91	0	7.9	500	6	282			254	310	0	2	2	82	12	1	2		0.3	0.31	0.19	
Oct-91																						
Nov-91																						
Dec-91																						
Jan-92																						
Feb-92																						
Mar-92																						
Apr-92																						
May-92	05/19/92	0.0045	7.7	425	7.1	230			229	264	0	1	37	75	10	1	1	<	0.02 <	0.02		
Jun-92																						
Jul-92	07/15/92	0.001	8	458	7.6	336			262	283	0	1	31	90	9 <	1	1	<	0.02	1.51		
Aug-92	08/25/92	0.0001																				
Sep-92																						
Oct-92																						
Nov-92																						
Dec-92																						
Jan-93																						
Feb-93																						
Mar-93																						
Apr-93																						
May-93																						
Jun-93	06/24/93	0.024	6.4	347	4.7	198			221	256	0	2	2	72	10 <	1	2	<	0.02 <	0.02 <	0.01	
Jul-93	07/26/93	0.004	6.5	436	7.3	250			235	283	7	1	2	76	11 <	1	2	<	0.02	0.03	0.02	
Aug-93	08/17/93	0																				
Sep-93	09/28/93	0.002																				
Oct-93																						
Nov-93																						
Dec-93																						
Jan-94																						
Feb-94																						
Mar-94																						
Apr-94																						
May-94																						
Jun-94	06/09/94	0.004	7.3	477	2.2	252			221	254	0	2	5	72	10 <	1	1	<	0.02 <	0.02 <	0.01	
Jul-94	07/19/94	0																				
Aug-94	08/31/94	0																				
Sep-94	09/21/94	0																				
Oct-94																						
Nov-94																						
Dec-94																						
Jan-95																						
Feb-95																						
Mar-95																						
Apr-95																						
May-95																						
Jun-95	06/22/95	0.0067	7.4	382	5.5	190			197	173 <	2	2	30	64.3	8.7	1.3	1.8	-1.3 <	0.01 <	0.01 <	0.005	
Jul-95	07/27/95	0.009	7.7	489	8	250			251	232 <	2	1 <	10	81.6	11.4	0.8	1.8	4.6 <	0.01	0.05	0.005	
Aug-95	08/23/95	0.004	7.06	403	8																	
Sep-95	09/28/95	0.001	7.7	285	7.89	260			264	245 <	2	1	4	85.2	12.5	1.1	1.7	3.6	0.02	0.14	0.027	
Oct-95																						
Nov-95																						
Dec-95																						
Jan-96																						
END DATA																						
Count	46	11	11	11	11	27	0	0	10	10	10	10	10	10	10	10	10	3	10	10	8	
Minimum	0	6.4	285	2.2	190	ERR	ERR	178	173 <	0	1 <	2	58	8 <	0.8	1	1	-1.3 <	0.01 <	0.01 <	0.005	
Maximum	0.03	8	500	8	336	ERR	ERR	264	310 <	10	3 <	37	90	12.5 <	2	2	2	4.6 <	0.3 <	1.51 <	0.19	
Average	0.0048	7.3509	417.45	6.2082	245.04	ERR	ERR	231.2	250.7 <	2.3	1.6 <	13.3	75.61	10.26 <	1.12	1.53	2.3 <	0.046 <	0.213 <	0.0346		
Standard Deviation	0.0095	0.5071	61.976	1.8324	33.713	ERR	ERR	26.765	37.614 <	3.2879	0.6633 <	13.092	9.1672	1.3865 <	0.3156	0.4428	2.5781 <	0.0848 <	0.4413 <	0.0591		
Avg. -1 Std. Dev.	-0.005	6.8438	355.48	4.3758	211.32	ERR	ERR	204.44	213.09 <	-0.988	0.9367 <	0.2076	66.443	8.8735 <	0.8044	1.0872	-0.278 <	-0.039 <	-0.228 <	-0.025		
Avg. +1 Std. Dev.	0.0143	7.858	479.43	8.0406	278.75	ERR	ERR	257.96	288.31 <	5.5879	2.2633 <	26.392	84.777	11.647 <	1.4356	1.9728	4.8781 <	0.1308 <	0.6543 <	0.0938		

WORK ON SPRING HAD COWS HAD TOO MUDD

NO FLOW  
NO FLOW  
NO FLOW

Cyprus Plateau Mining Company - Water Quality Data

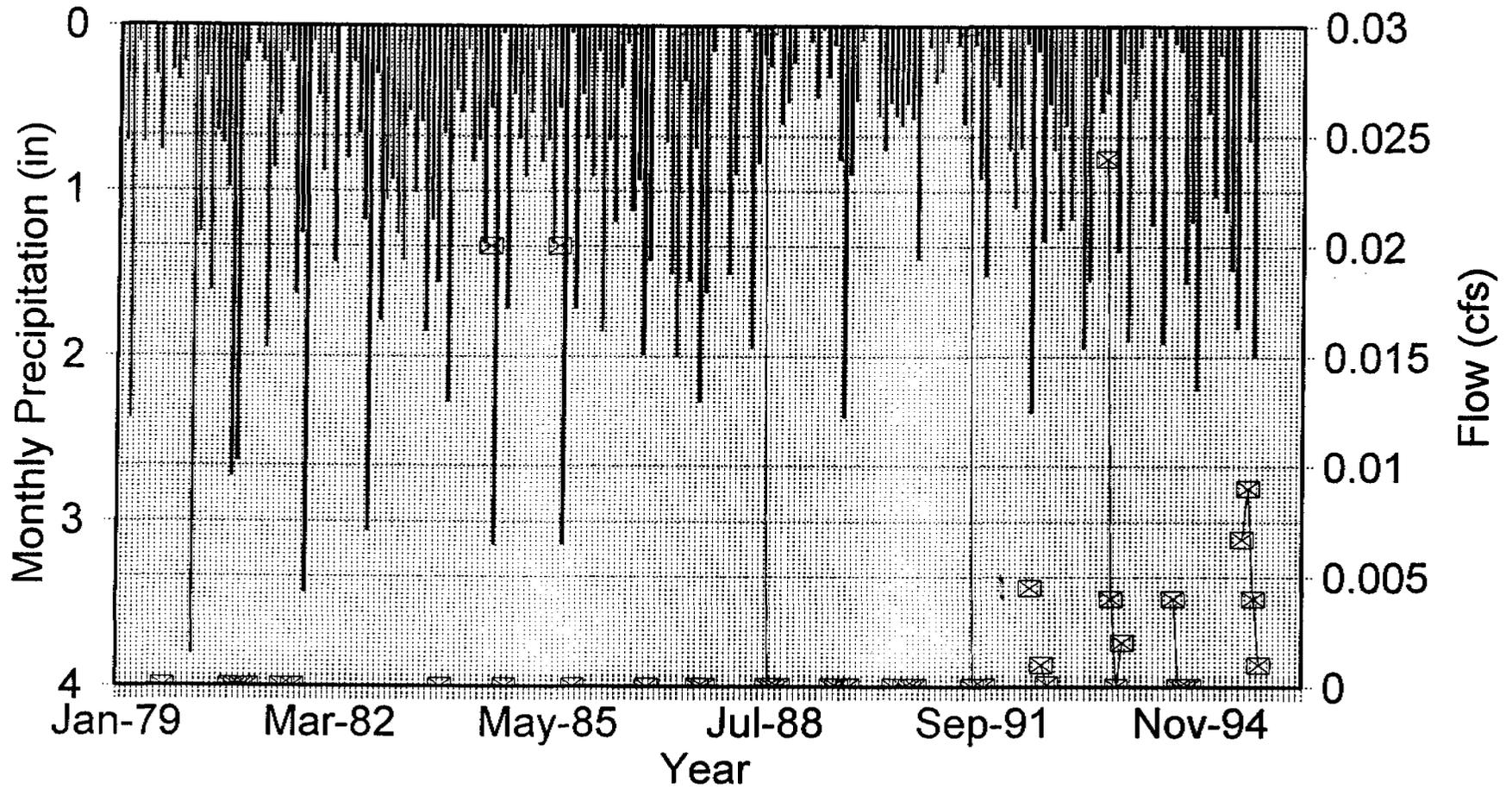
Print Date: May 3, 1996  
Elevation: 10050

Date		Property: Star Point				Location: 700' S 1500' W of NE cor. Sec 13, T15S, R7E				Station Type: Spring				Sampling Frequency: Quarterly				Formation: North Horn				Elevation: 10050		Comments
Mo-Yr	Sample Date	Flow (cfs)	Ph (units)	Sp. Cond. (ohms)	Temp. (C)	TDS (mg/l)	TSS (mg/l)	O&G (mg/l)	H <sub>2</sub> -CaCO <sub>3</sub> (mg/l)	HCO <sub>3</sub> (mg/l)	CO <sub>3</sub> (mg/l)	Cl (D) (mg/l)	SO <sub>4</sub> (D) (mg/l)	Ca (D) (mg/l)	Mg (D) (mg/l)	K (D) (mg/l)	Na (D) (mg/l)	Cat/An Bal (%)	Fe (D) (mg/l)	Fe (T) (mg/l)	Mn (T) (mg/l)			
		Avg. -2 Std. Dev.	-0.014	6.3366	293.5	2.5433	177.61	ERR	ERR	177.67	175.47 <	-4.276	0.2734 <	-12.88	57.276	7.487 <	0.4888	0.6443	-2.856 <	-0.124 <	-0.67 <	-0.084		
		Avg. +2 Std. Dev.	0.0237	8.3652	541.41	9.873	312.46	ERR	ERR	284.73	325.93 <	8.8757	2.9266 <	39.485	93.944	13.033 <	1.7512	2.4157	7.4562 <	0.2155 <	1.0955 <	0.1529		

NOTE: The "<" symbol indicates that "Less Than" data was found in the data set; statistics are approximate.

# Station 753

## Monthly Precipitation vs. Flow



# Station 753

## pH vs. Flow

