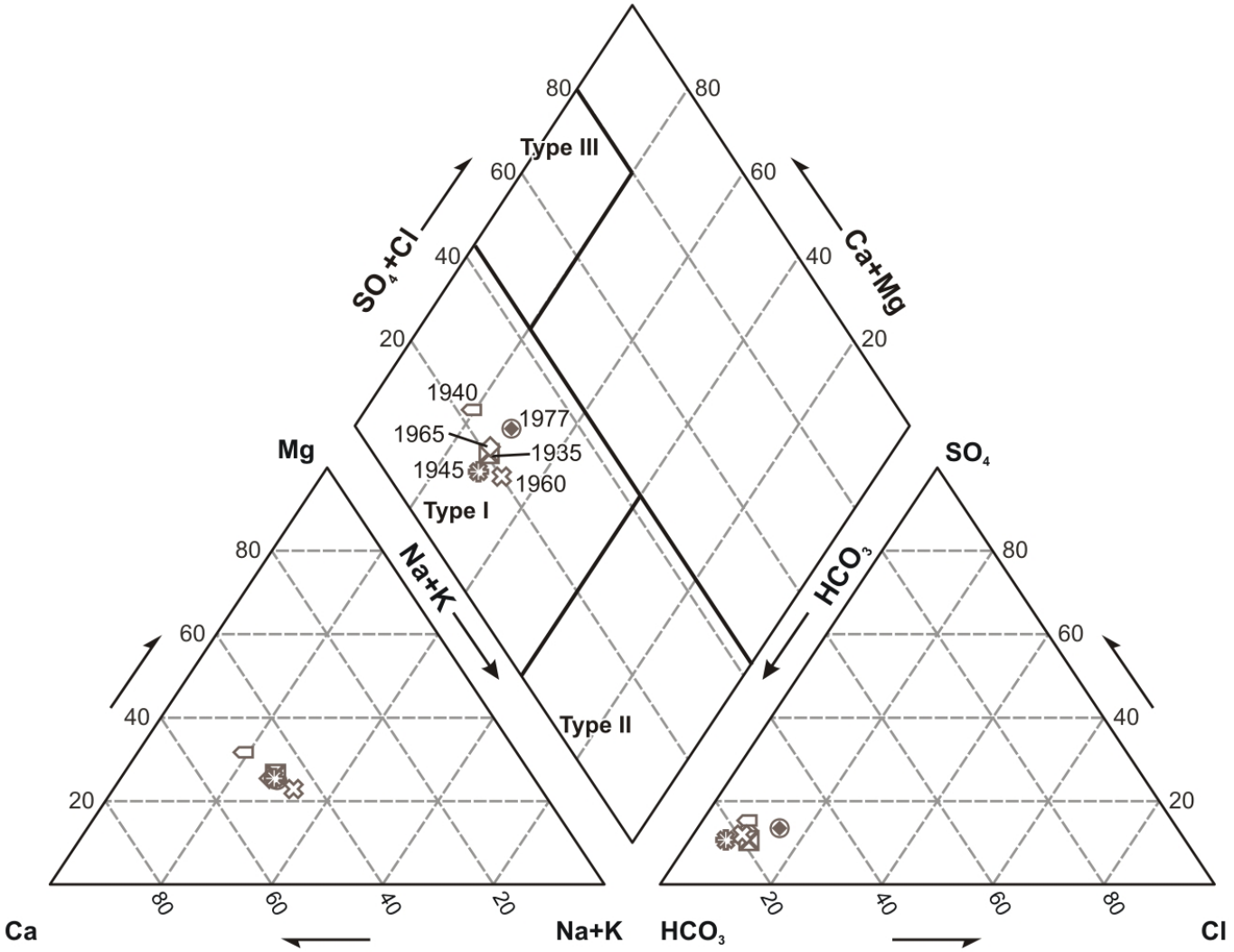
ATTACHMENT 2

PIPER DIAGRAMS FOR PRODUCTION WELLS IN THE RAYMOND BASIN

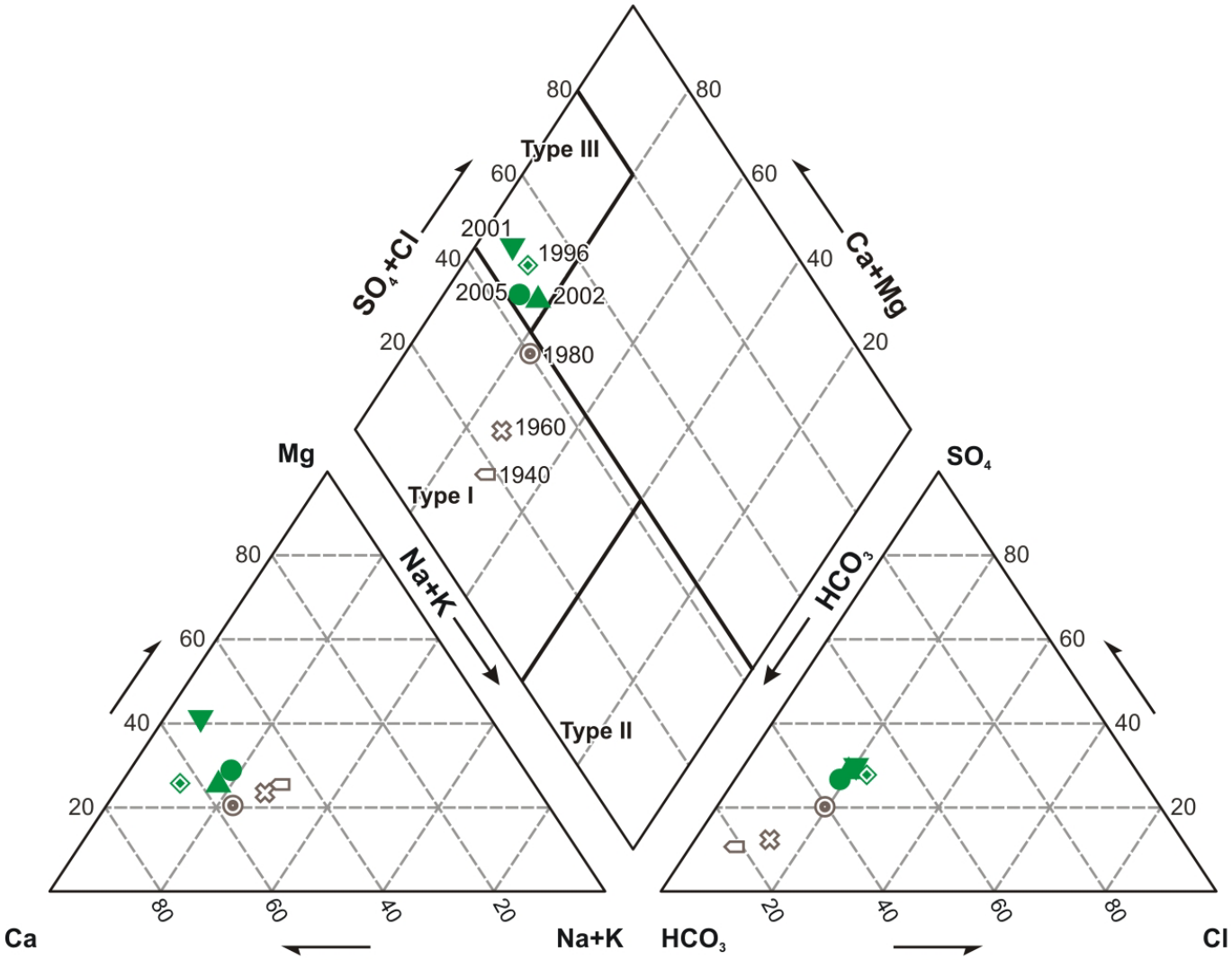
Arroyo Well Piper Diagram



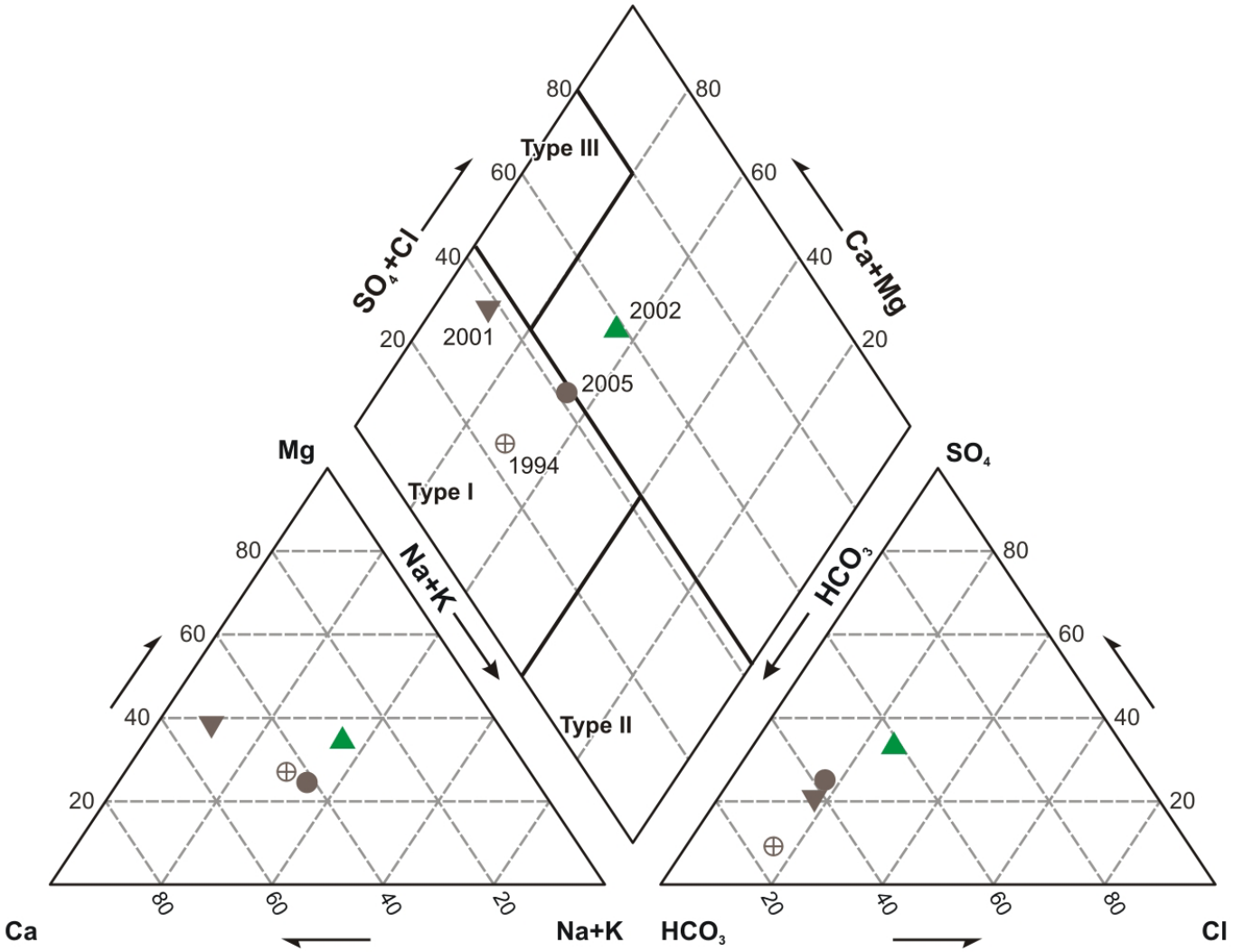
Note: Groundwater data for sampling events after 1977 was not available.

ARROYO_PIPER.CDR

Sunset Well Piper Diagram



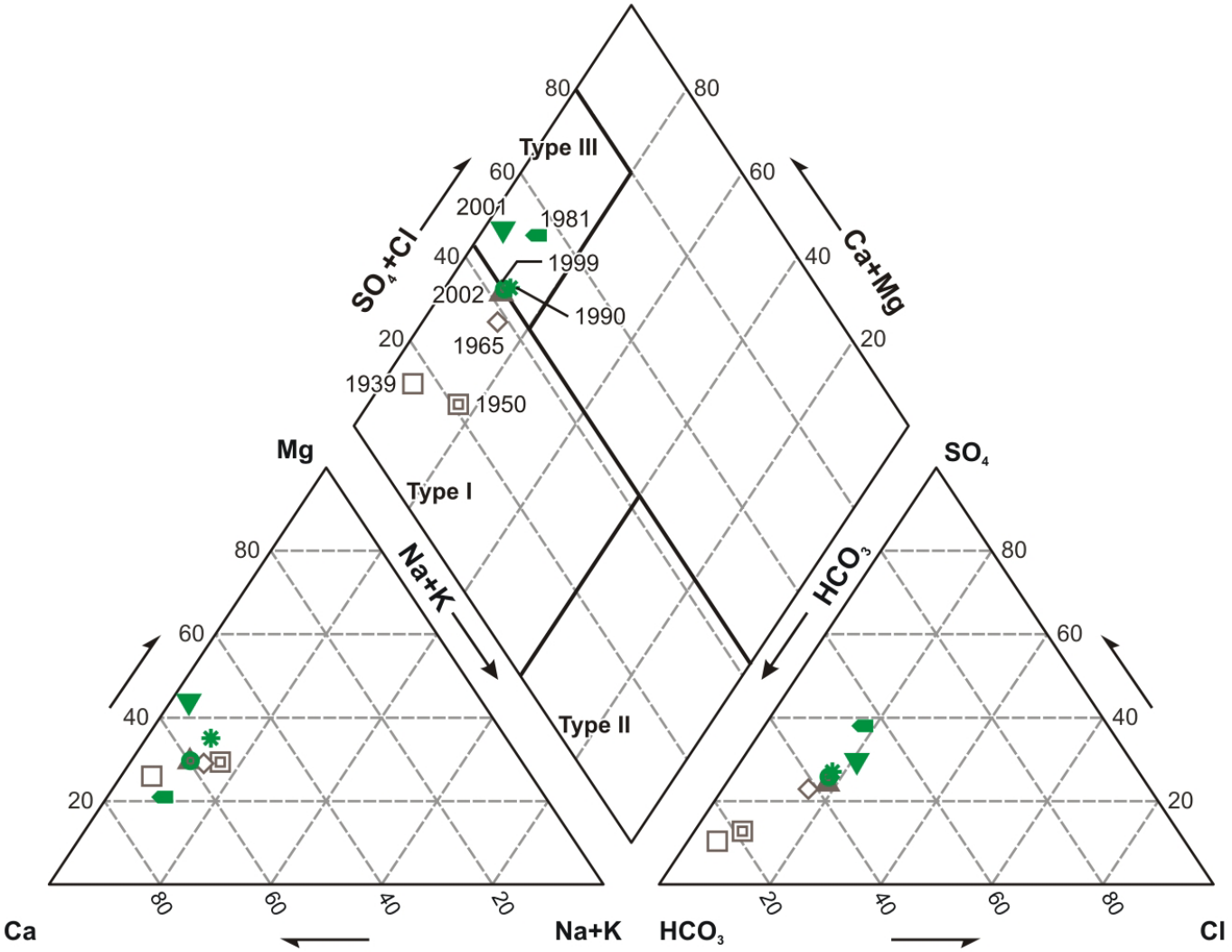
Bangham Well Piper Diagram



Note: Groundwater data for sampling events prior to 1994 was not available.

BANGHAM_PIPER.CDR

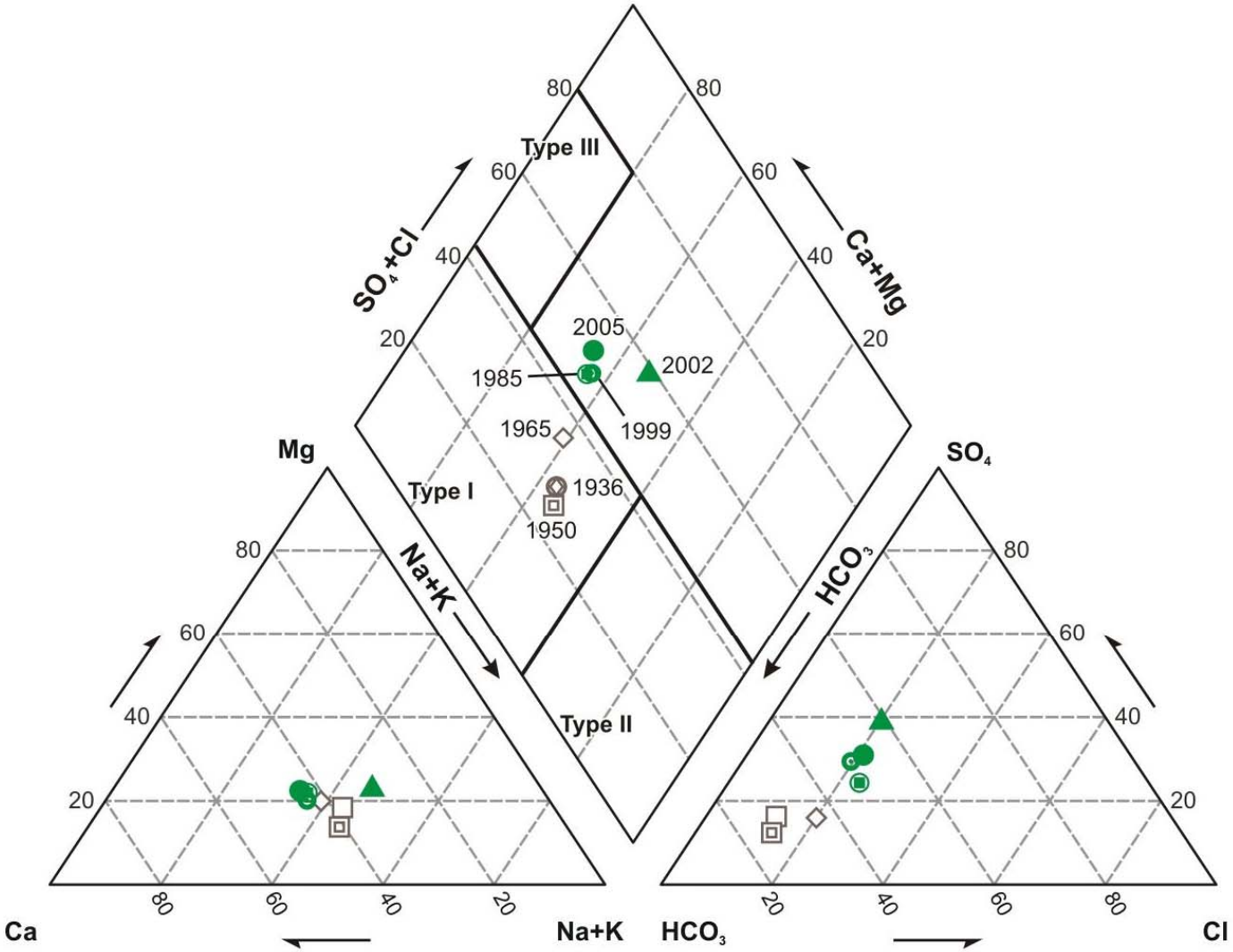
Copelin Well Piper Diagram



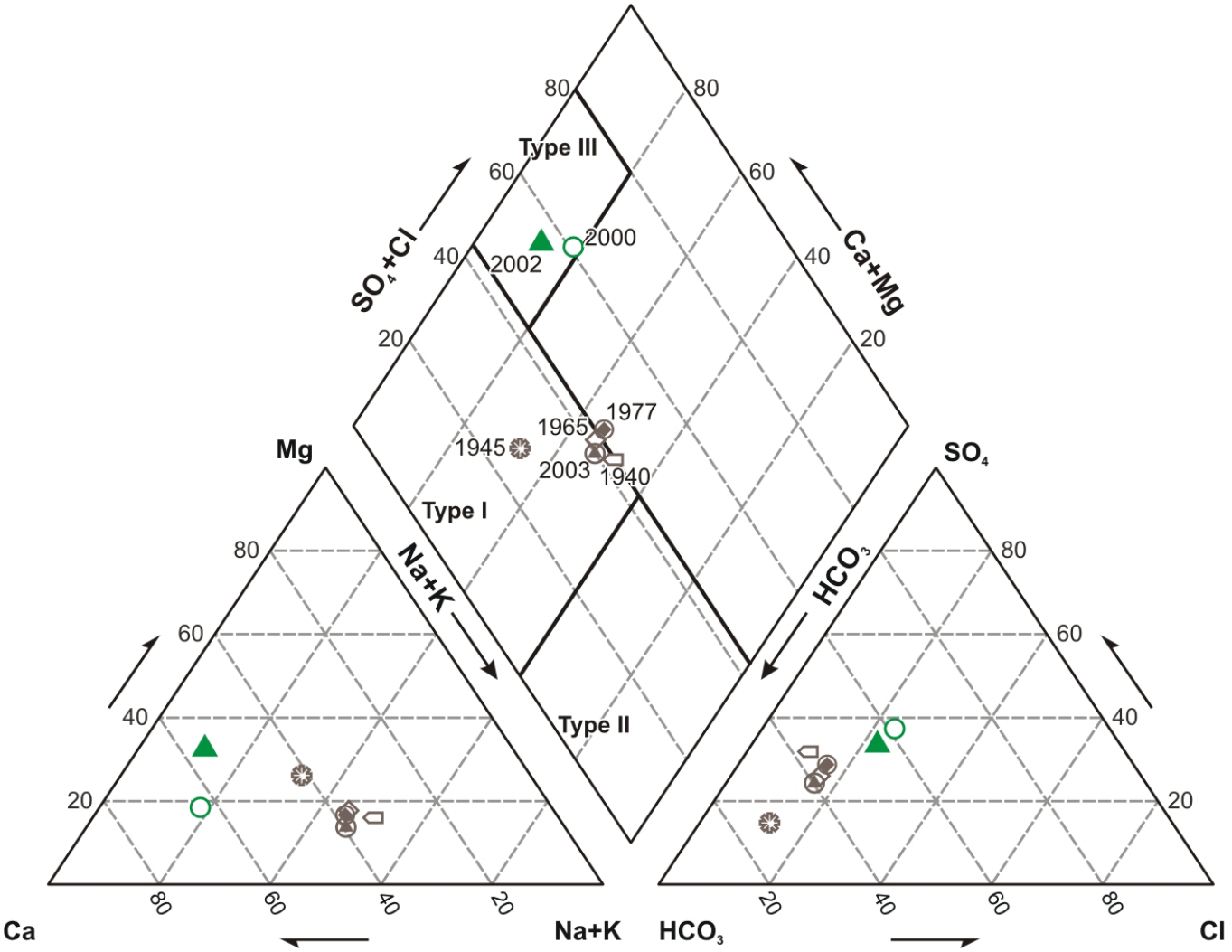
Note: Groundwater data for sampling events after 2002 was not available.

COPELIN_PIPER.CDR

Garfield Well Piper Diagram



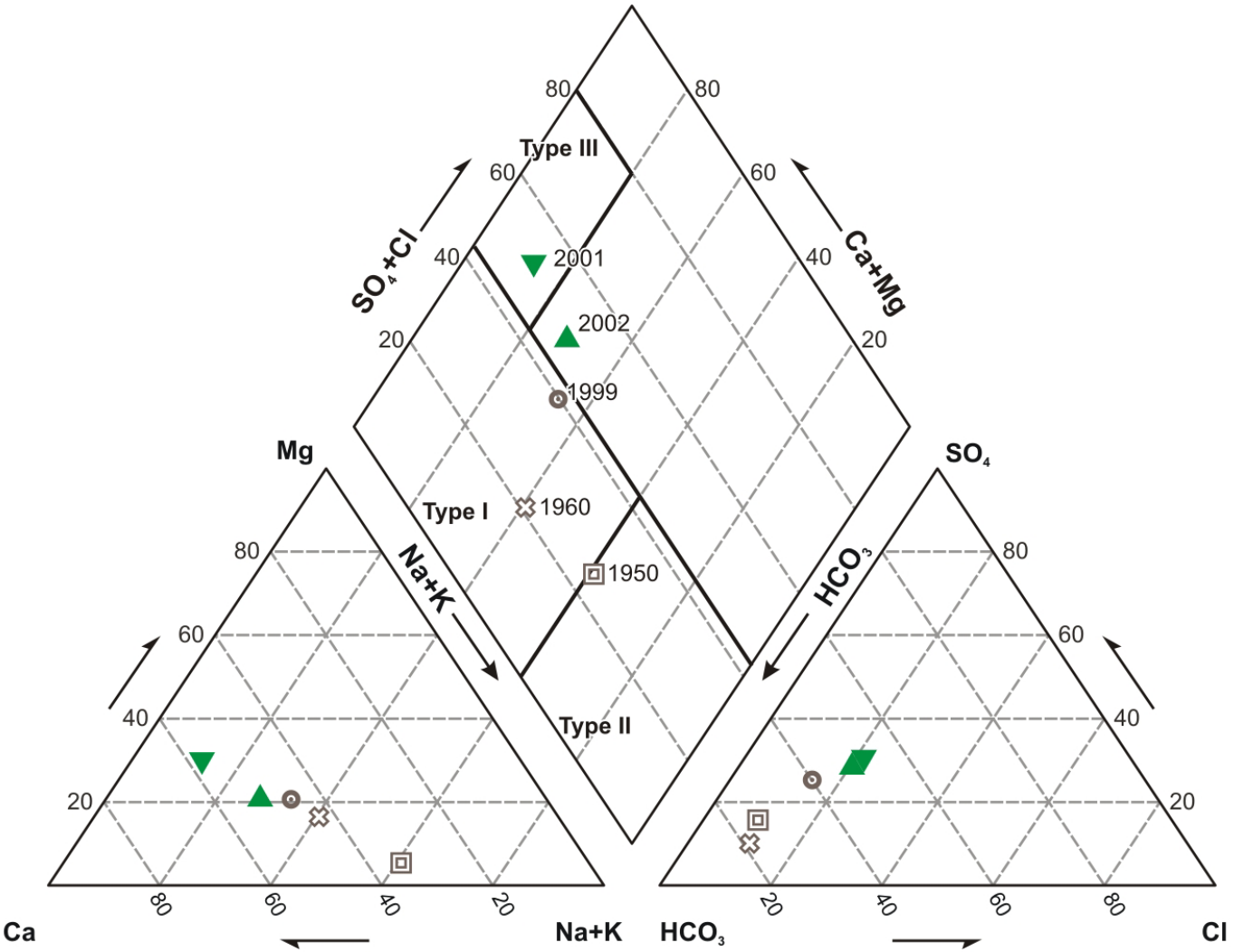
Villa Well Piper Diagram



Note: Groundwater data for sampling events after 2003 was not available.

VILLA_PIPER.CDR

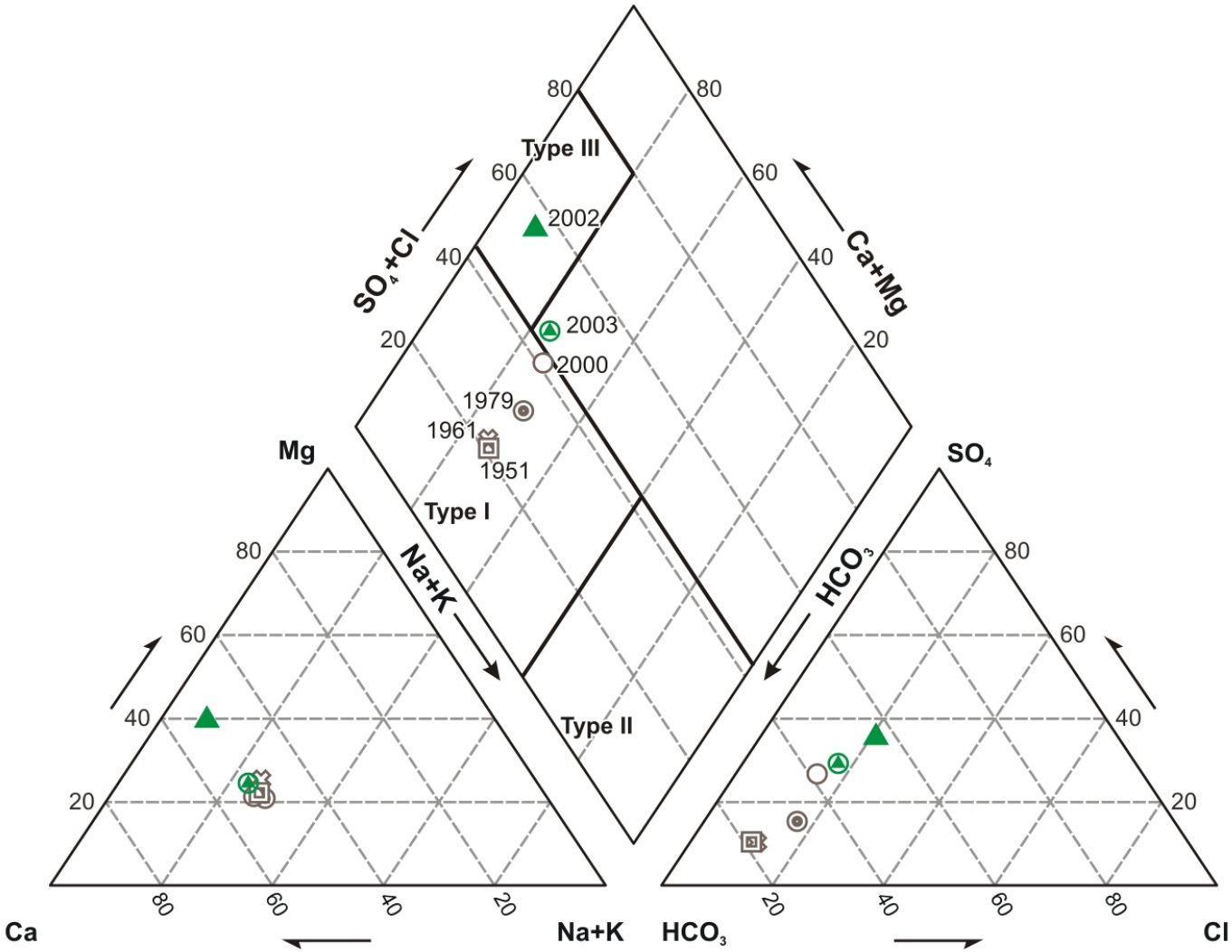
Monte Vista Well Piper Diagram



Note: Groundwater data for sampling events after 2002 was not available.

MONTEVISTA_PIPER.CDR

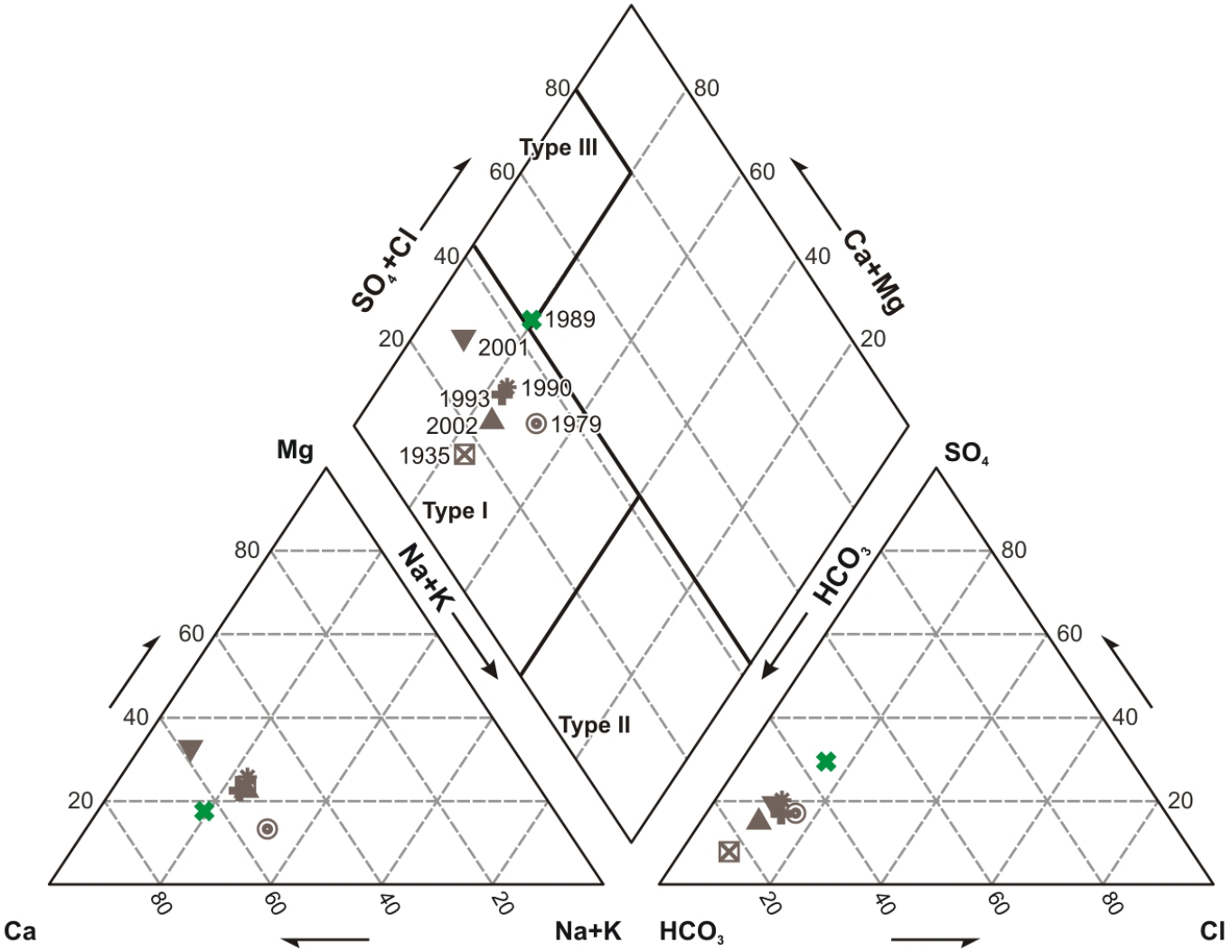
Craig Well Piper Diagram



Note: Groundwater data for sampling events after 2003 was not available.

CRAIG_PIPER.CDR

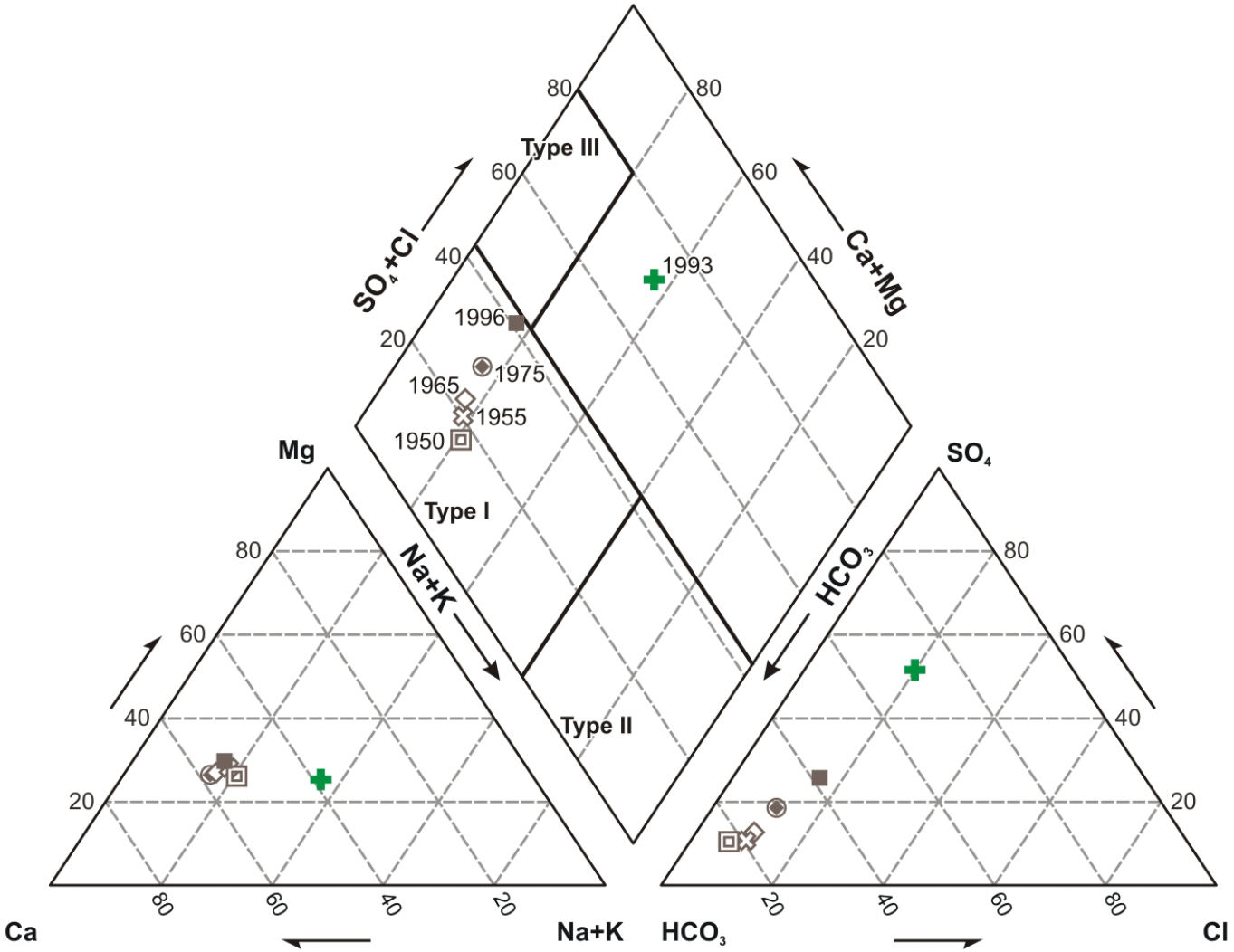
Chapman Well Piper Diagram



Note: Groundwater data for sampling events after 2002 was not available.

CHAPMAN_PIPER.CDR

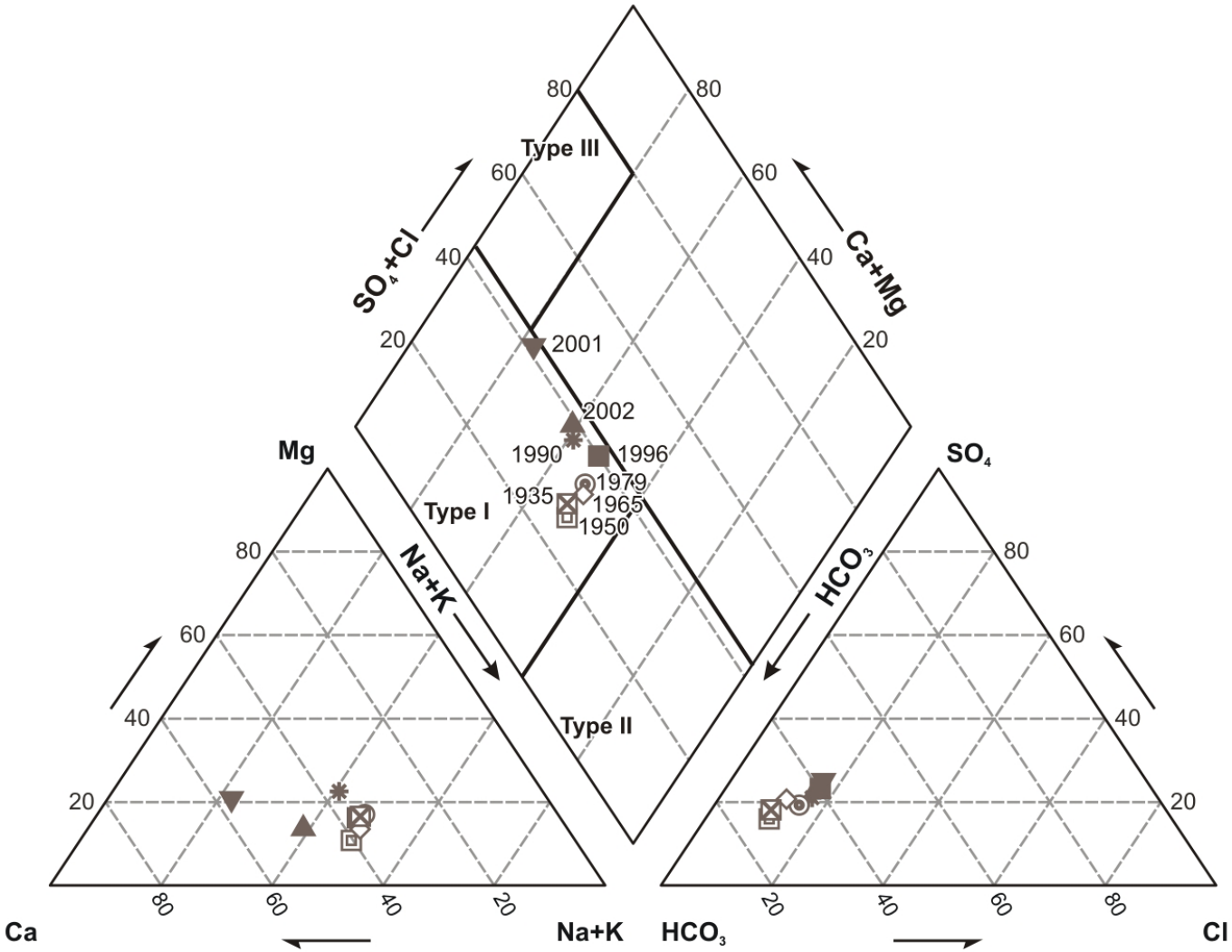
Jourdan Well Piper Diagram



Note: Groundwater data for sampling events after 1996 was not available.

JOURDAN_PIPER.CDR

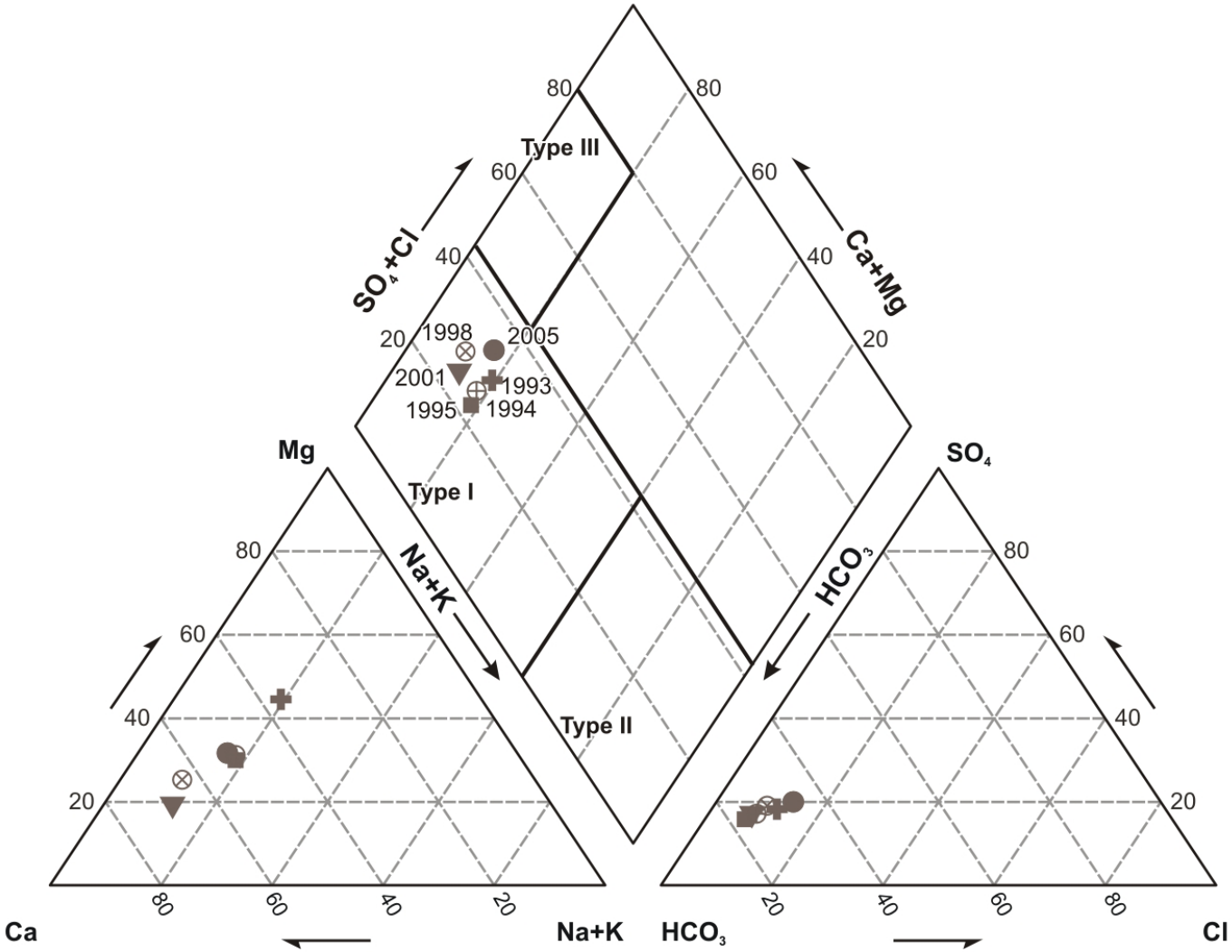
Woodbury Well Piper Diagram



Note: Groundwater data for sampling events after 2002 was not available.

WOODBURRY PIPER.CDR

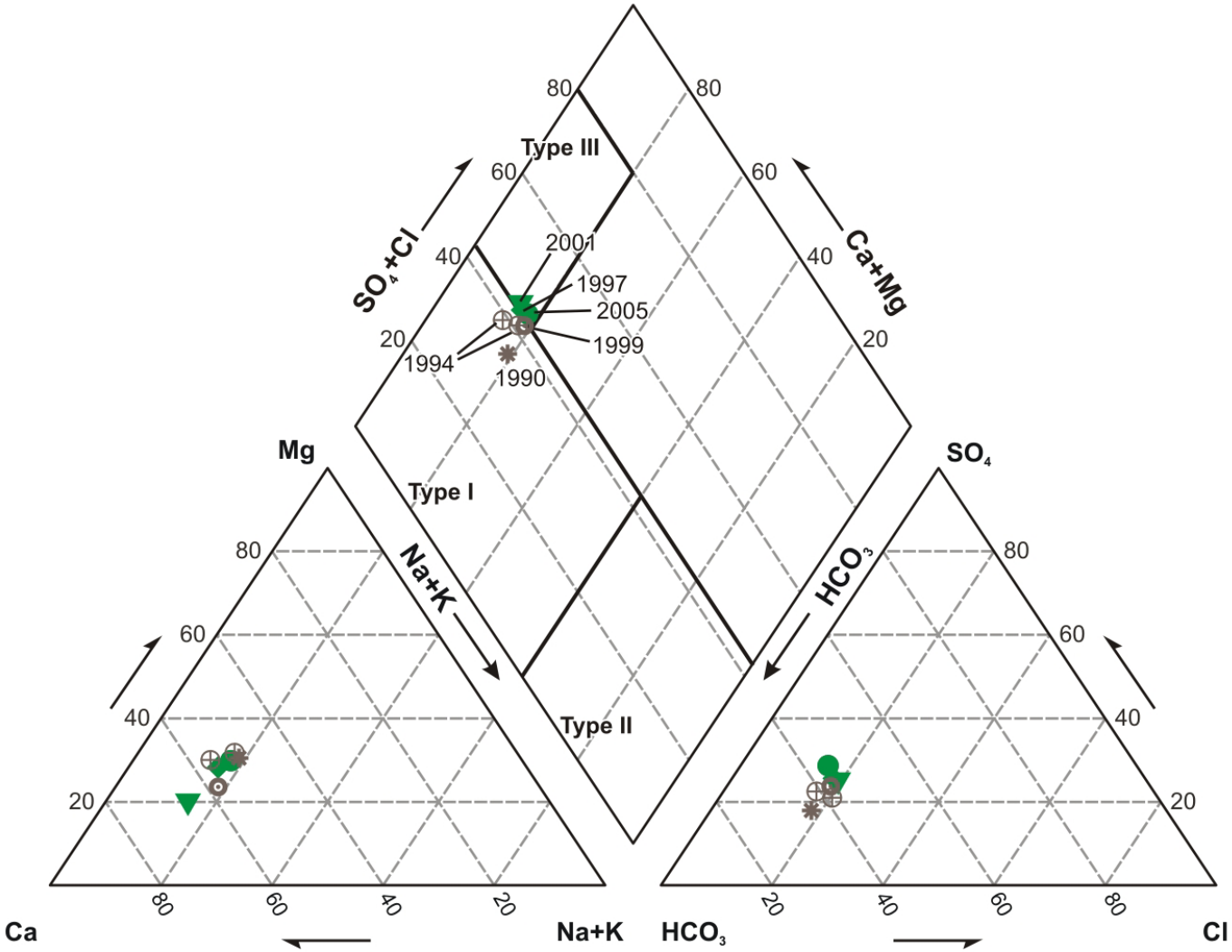
LAWC#3 Piper Diagram



Note: Groundwater data for sampling events prior to 1993 was not available.

LAWC3_PIPER.CDR

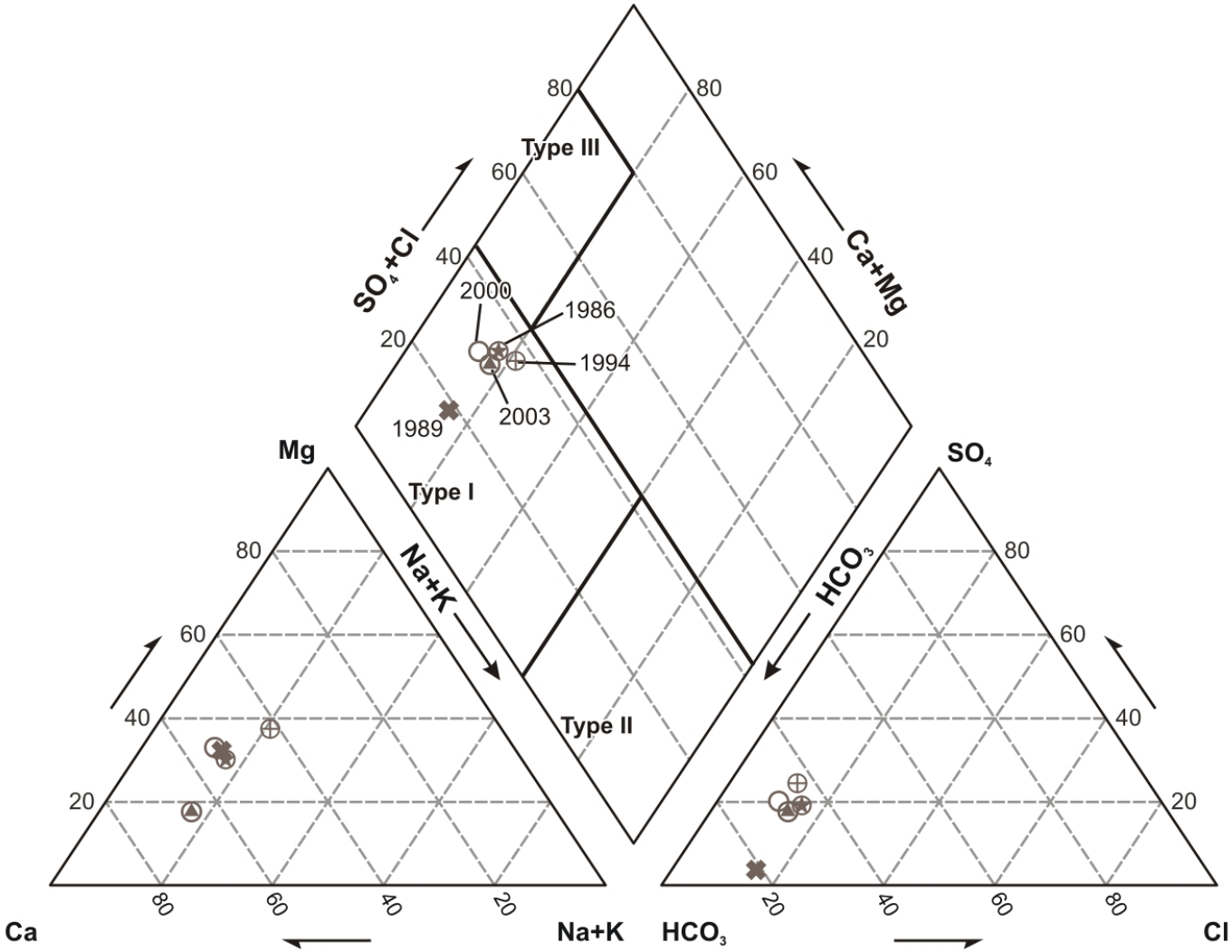
LFWC#2 Piper Diagram



Note: Groundwater data for sampling events prior to 1990 was not available.

LFWC2_PIPER.CDR

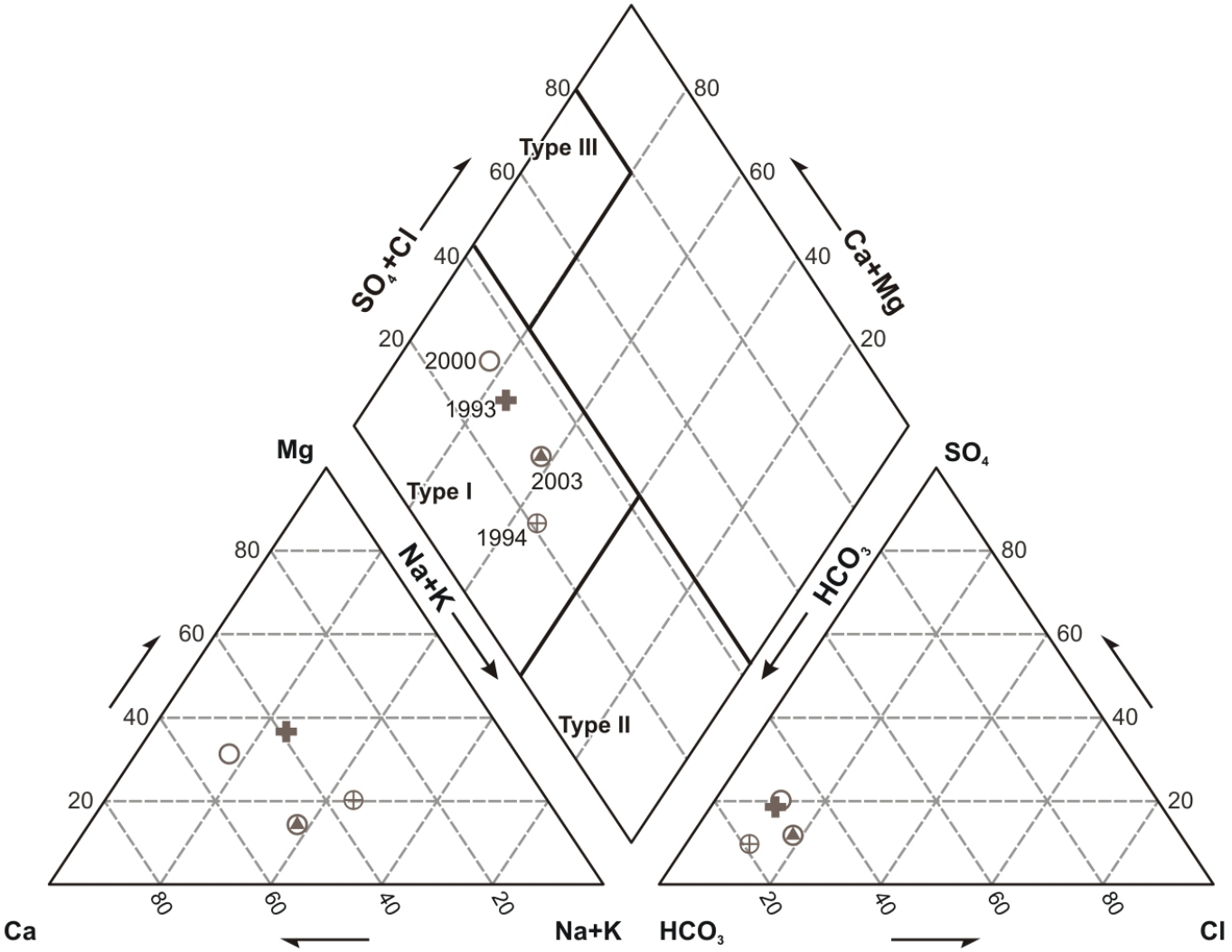
RCLWA#4 Piper Diagram



Note: Groundwater data for sampling events prior to 1986 and after 2003 was not available.

RCWLA4_PIPER.CDR

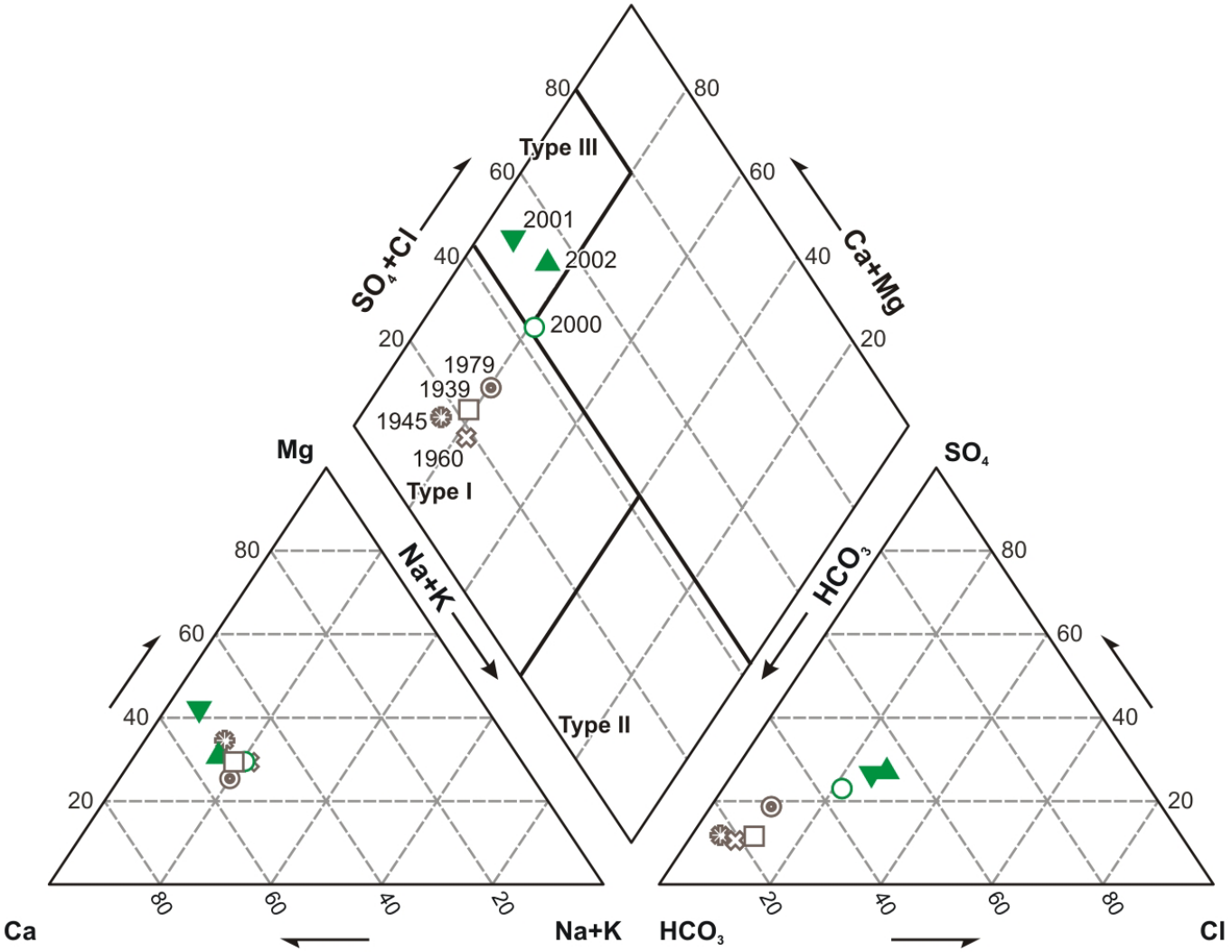
RCLWA#7 Piper Diagram



Note: Groundwater data for sampling events prior to 1993 and after 2003 was not available.

RCWLA7_PIPER.CDR

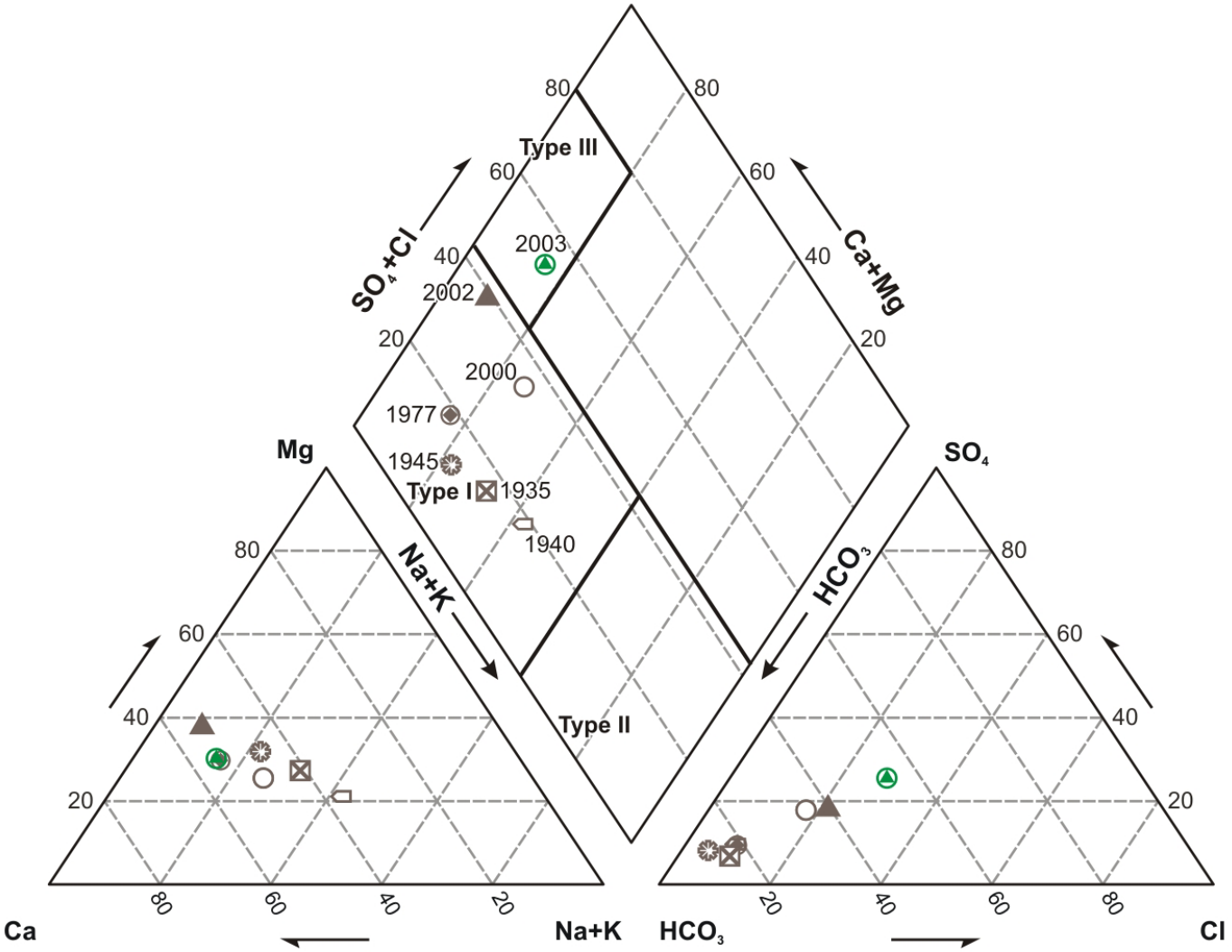
Ventura Well Piper Diagram



Note: Groundwater data for sampling events after 2002 was not available.

VENTURA_PIPER.CDR

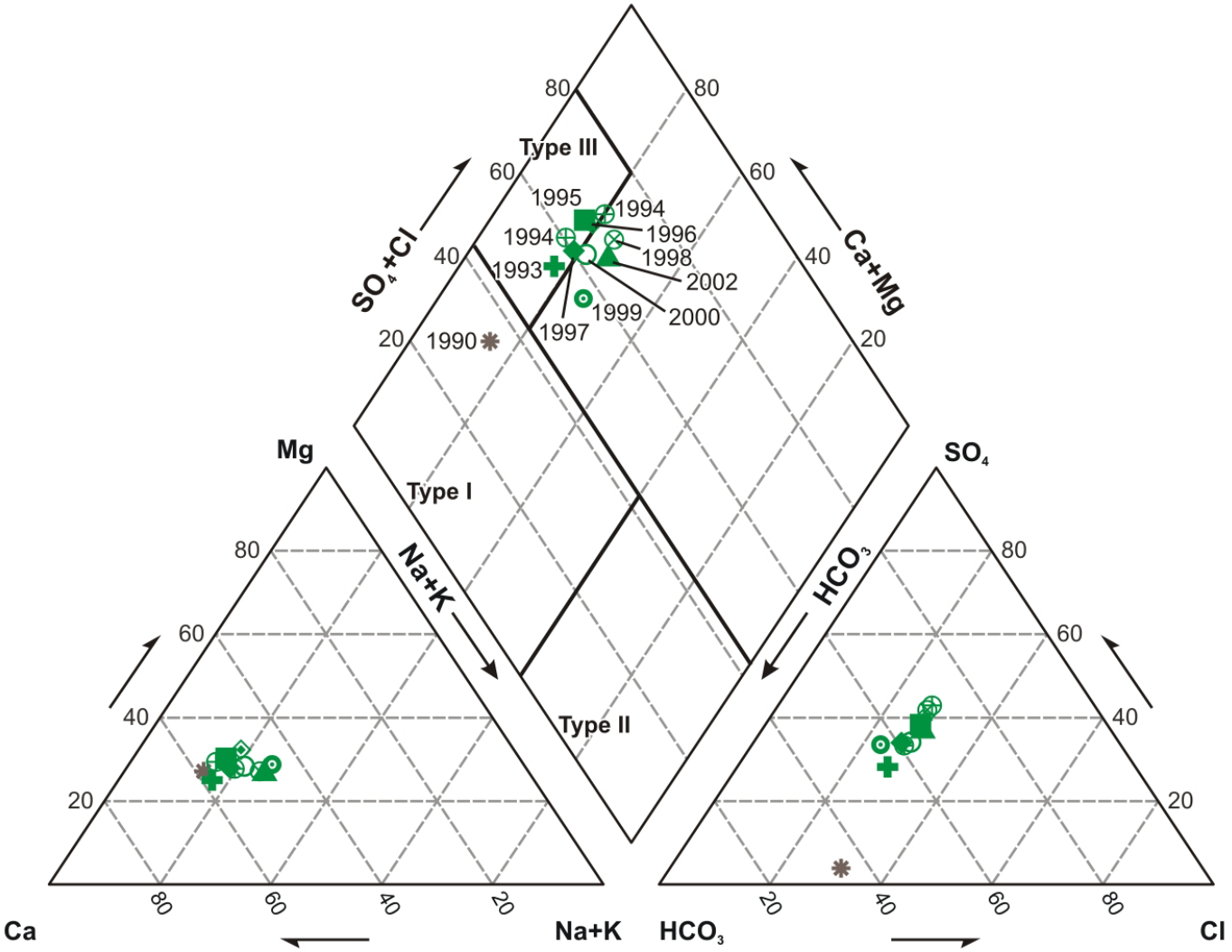
Windsor Well Piper Diagram



Note: Groundwater data for sampling events after 2003 was not available.

WINDSOR_PIPER.CDR

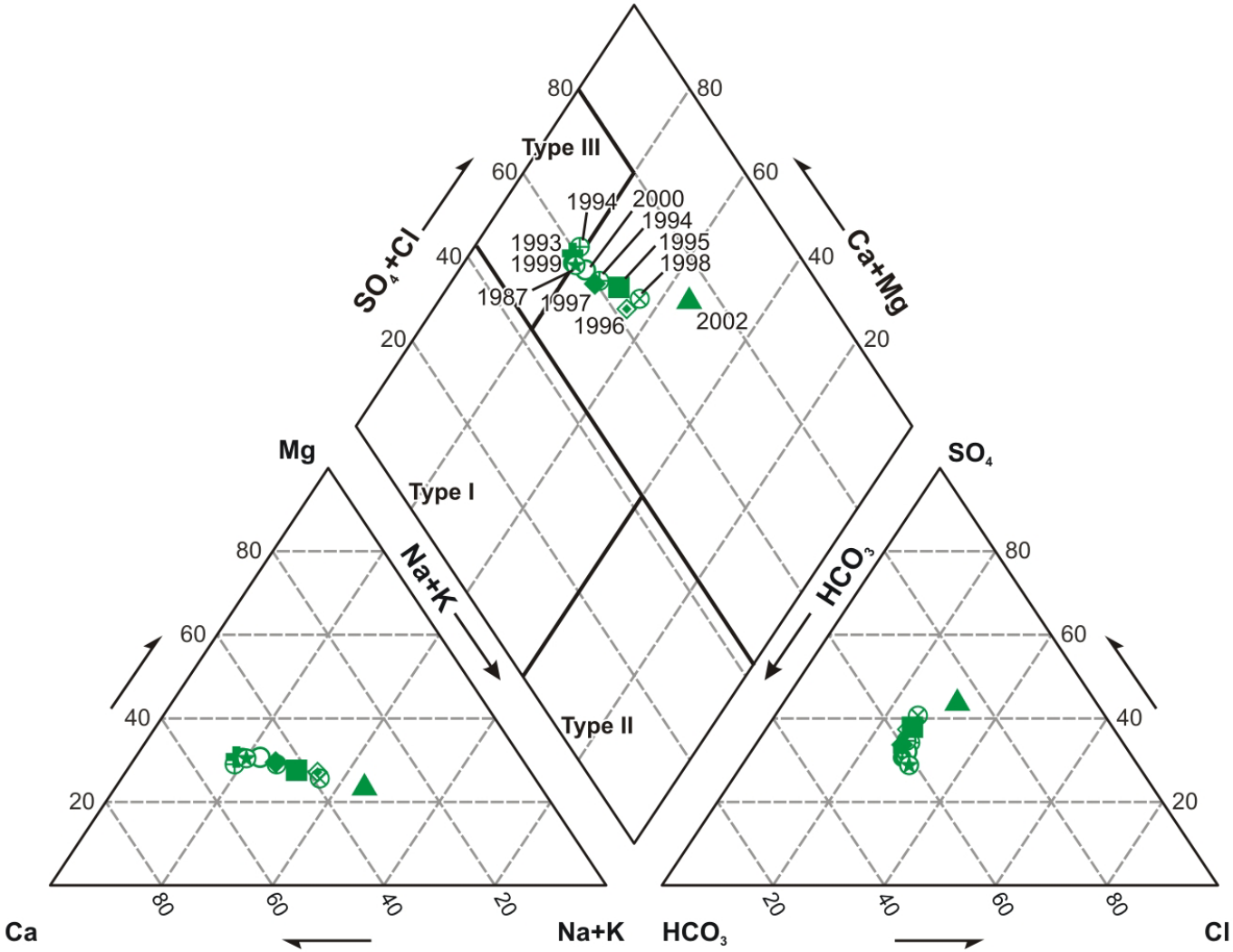
VWC#1 Piper Diagram



Note: Groundwater data for sampling events prior to 1990 and after 2002 was not available.

VWC_PIPER.CDR/VWC1

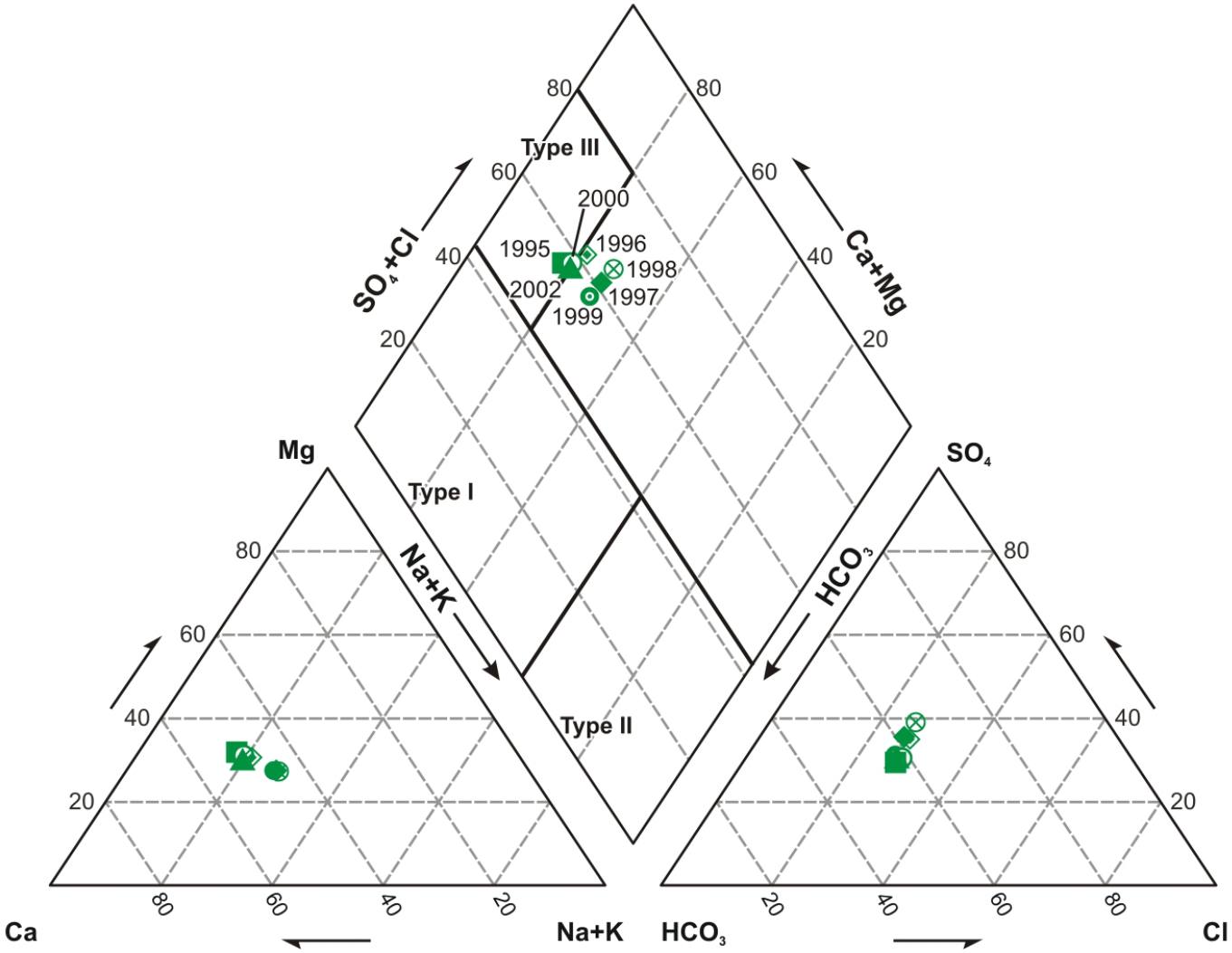
VWC#2 Piper Diagram



Note: Groundwater data for sampling events prior to 1987 and after 2002 was not available.

VWC_PIPER.CDR/VWC2

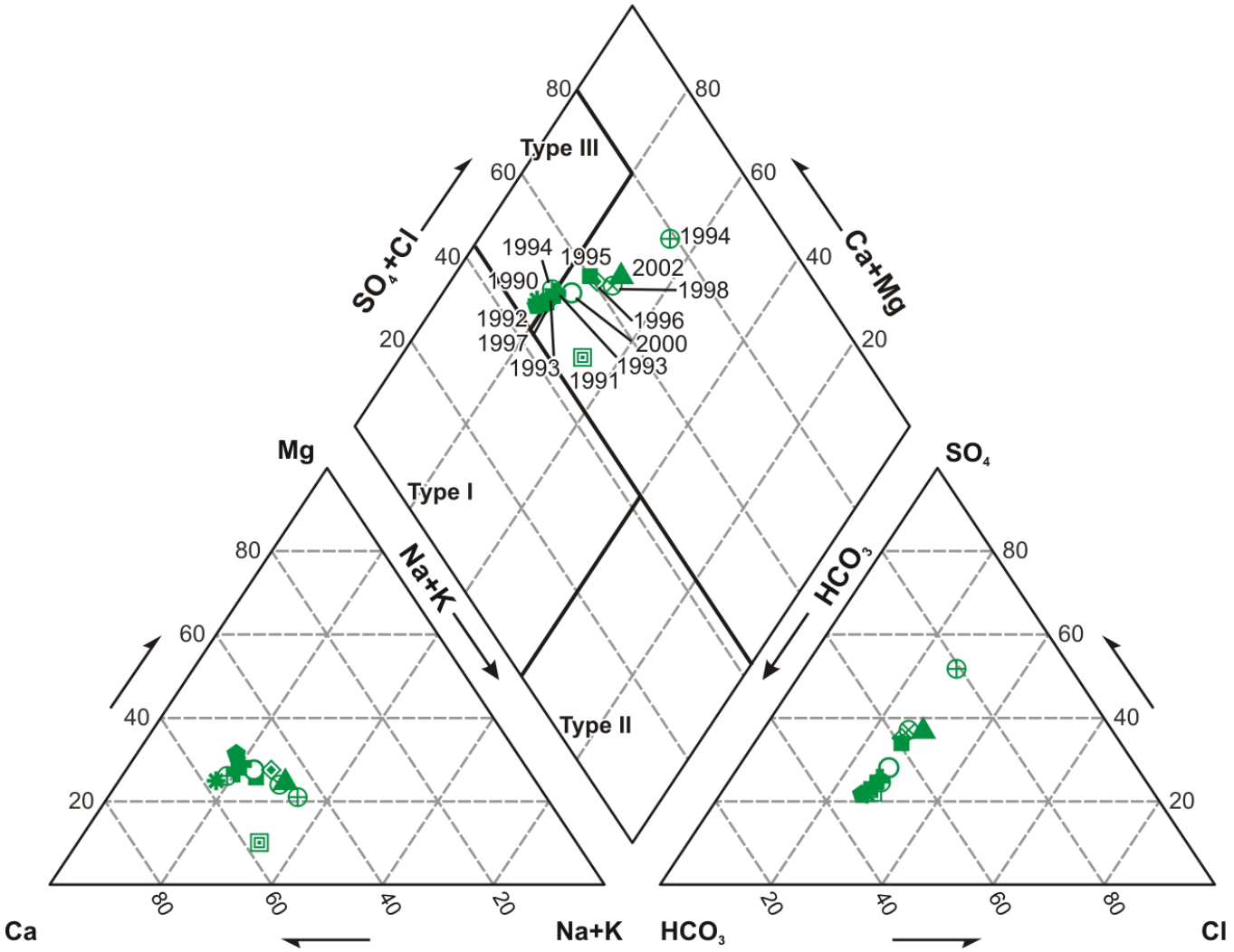
VWC#3 Piper Diagram



Note: Groundwater data for sampling events prior to 1995 and after 2002 was not available.

VWC_PIPER.CDR/VWC3

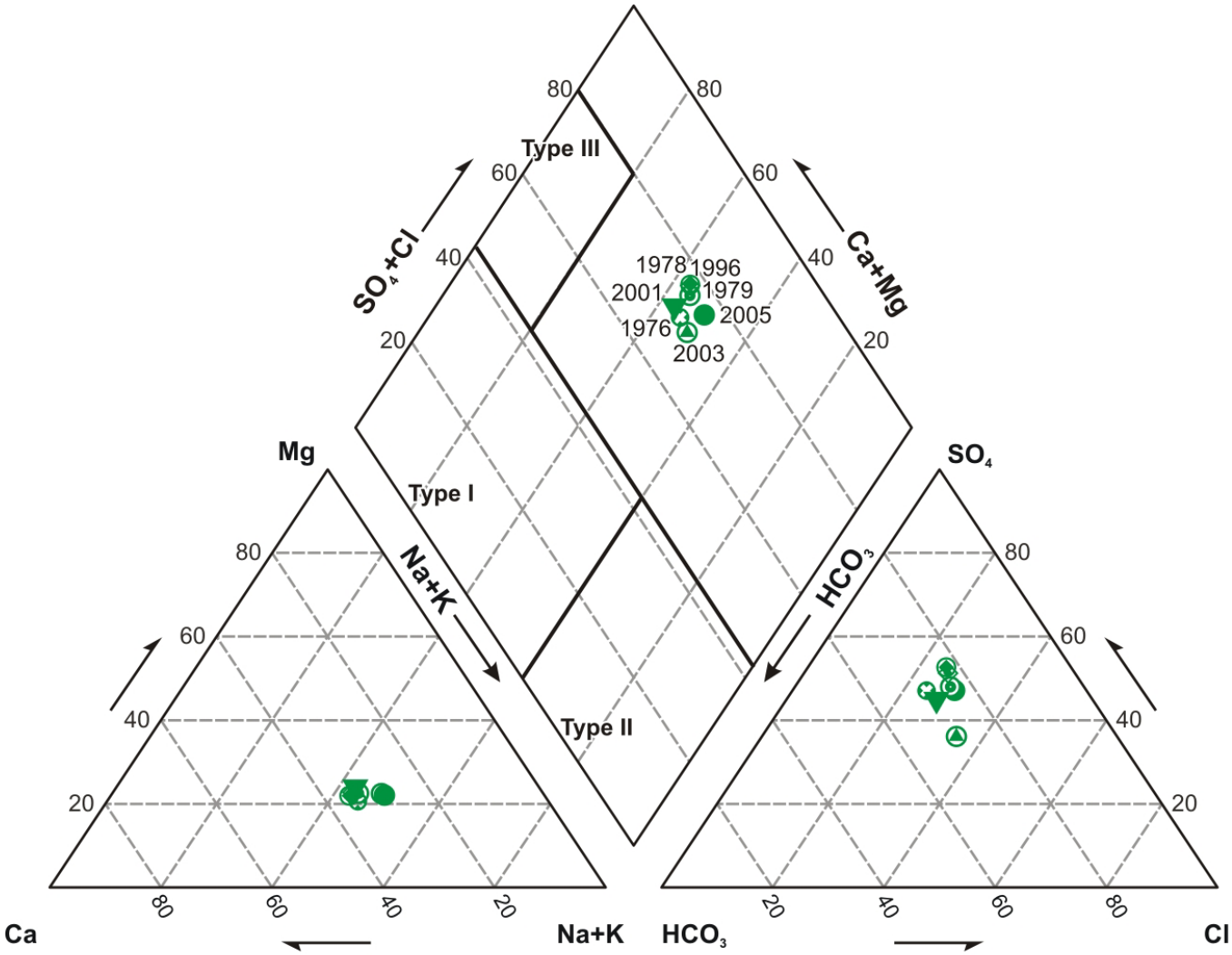
VWC#4 Piper Diagram



Note: Groundwater data for sampling events prior to 1990 and after 2002 was not available.

VWC_PIPER.CDR/VWC4

MWD (Weymouth Plant) Piper Diagram

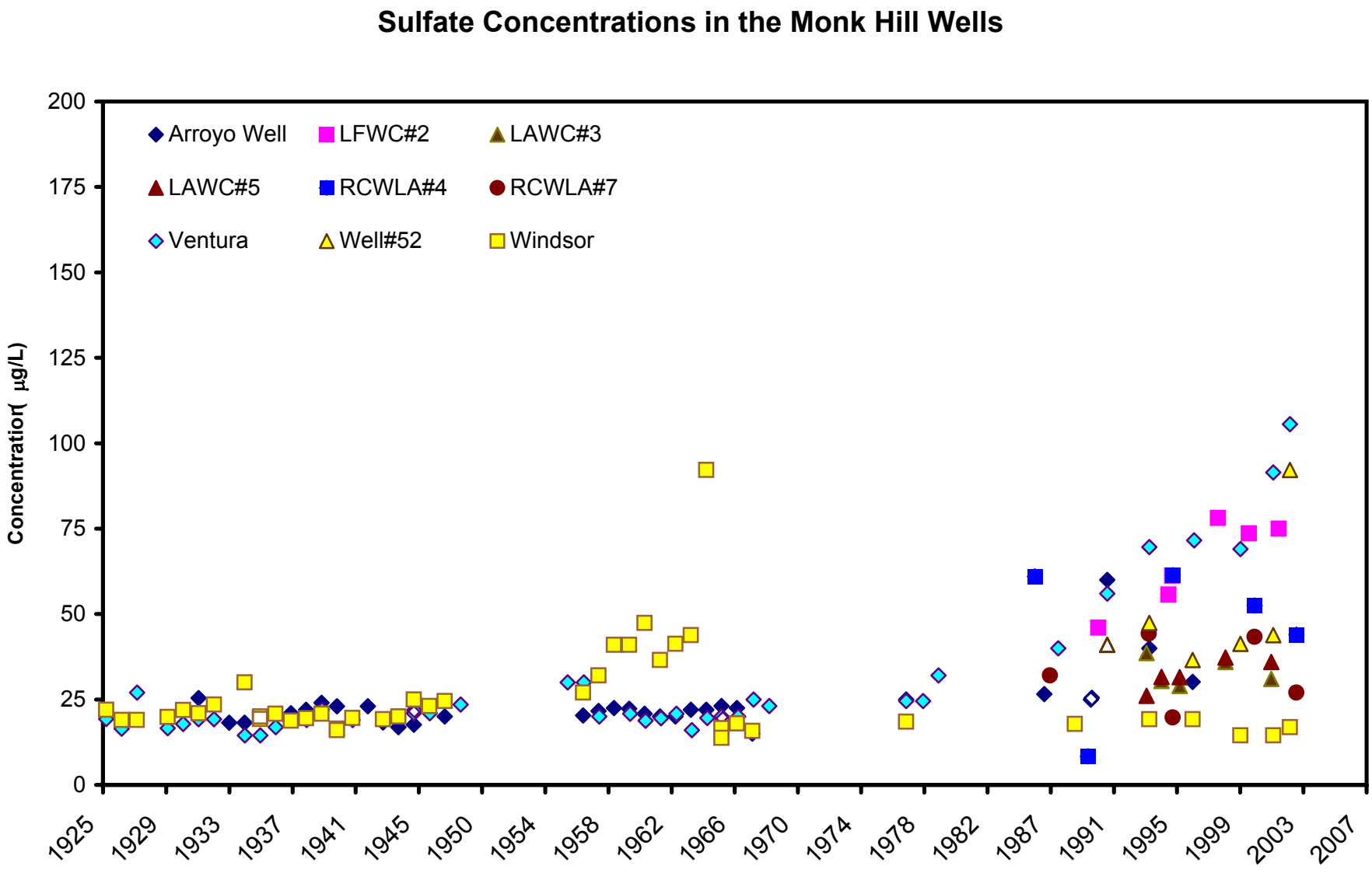


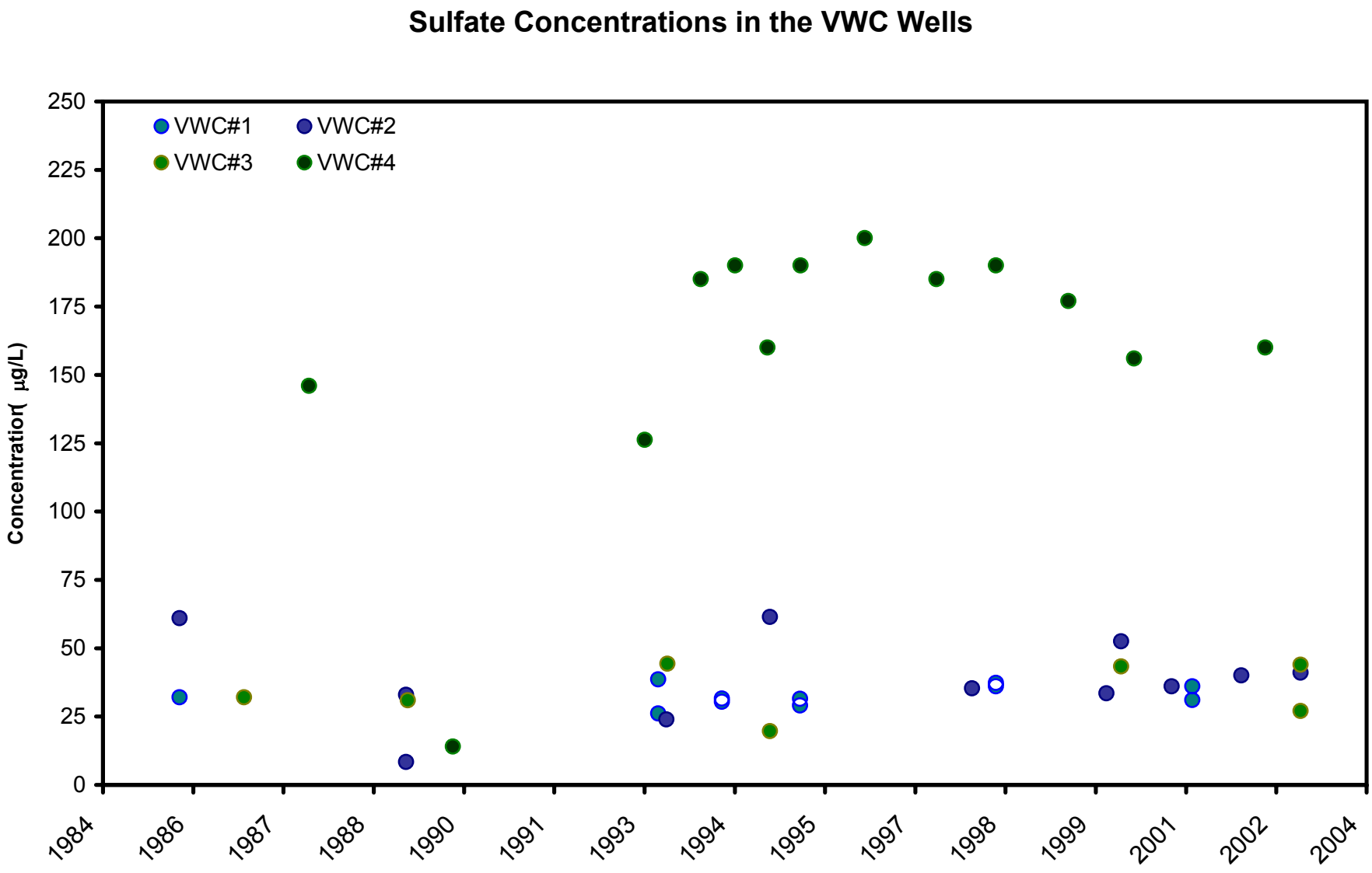
Note: Groundwater data for sampling events prior to 1976 was not available.

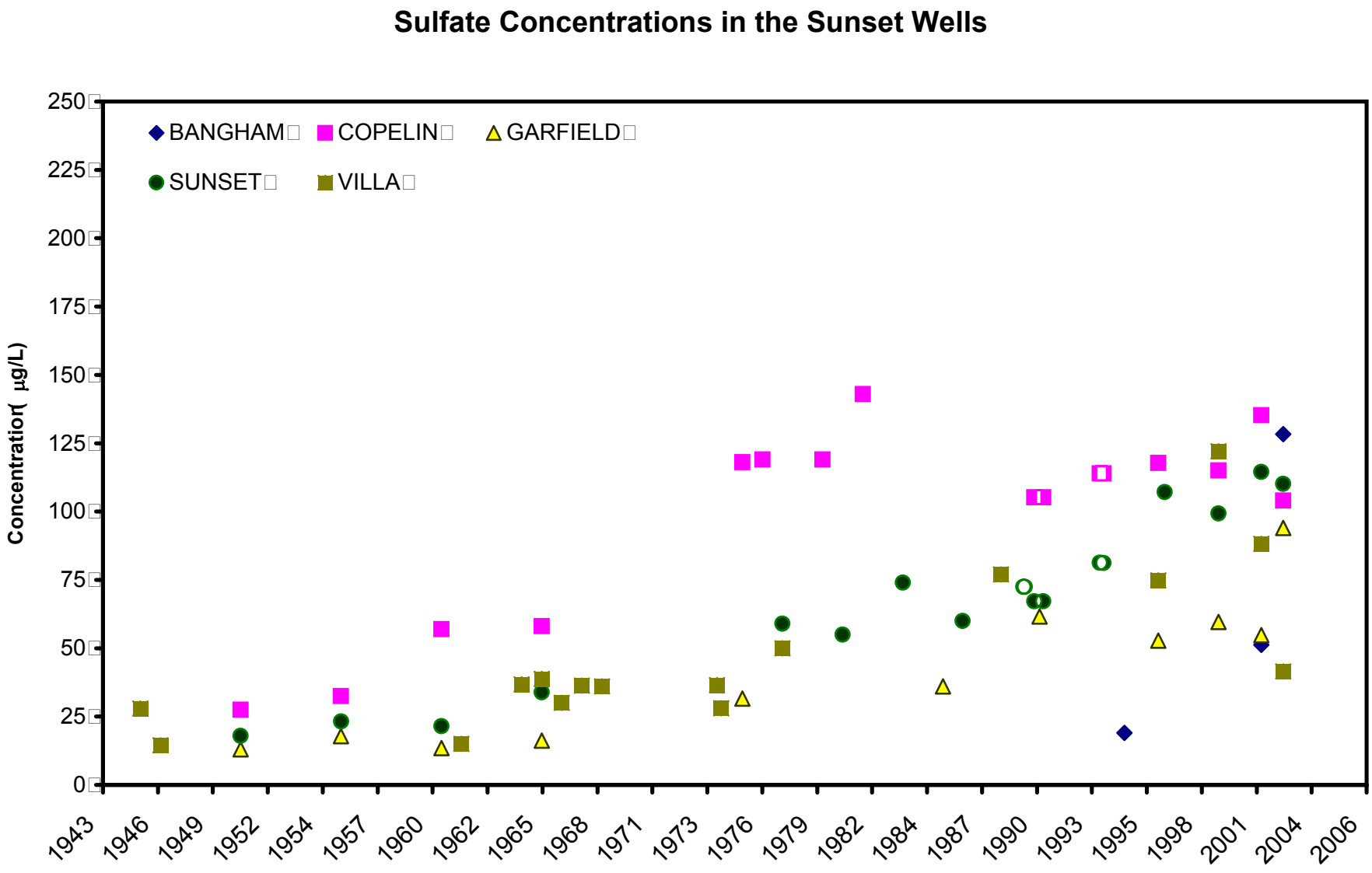
MWD_PIPER.CDR

ATTACHMENT 3

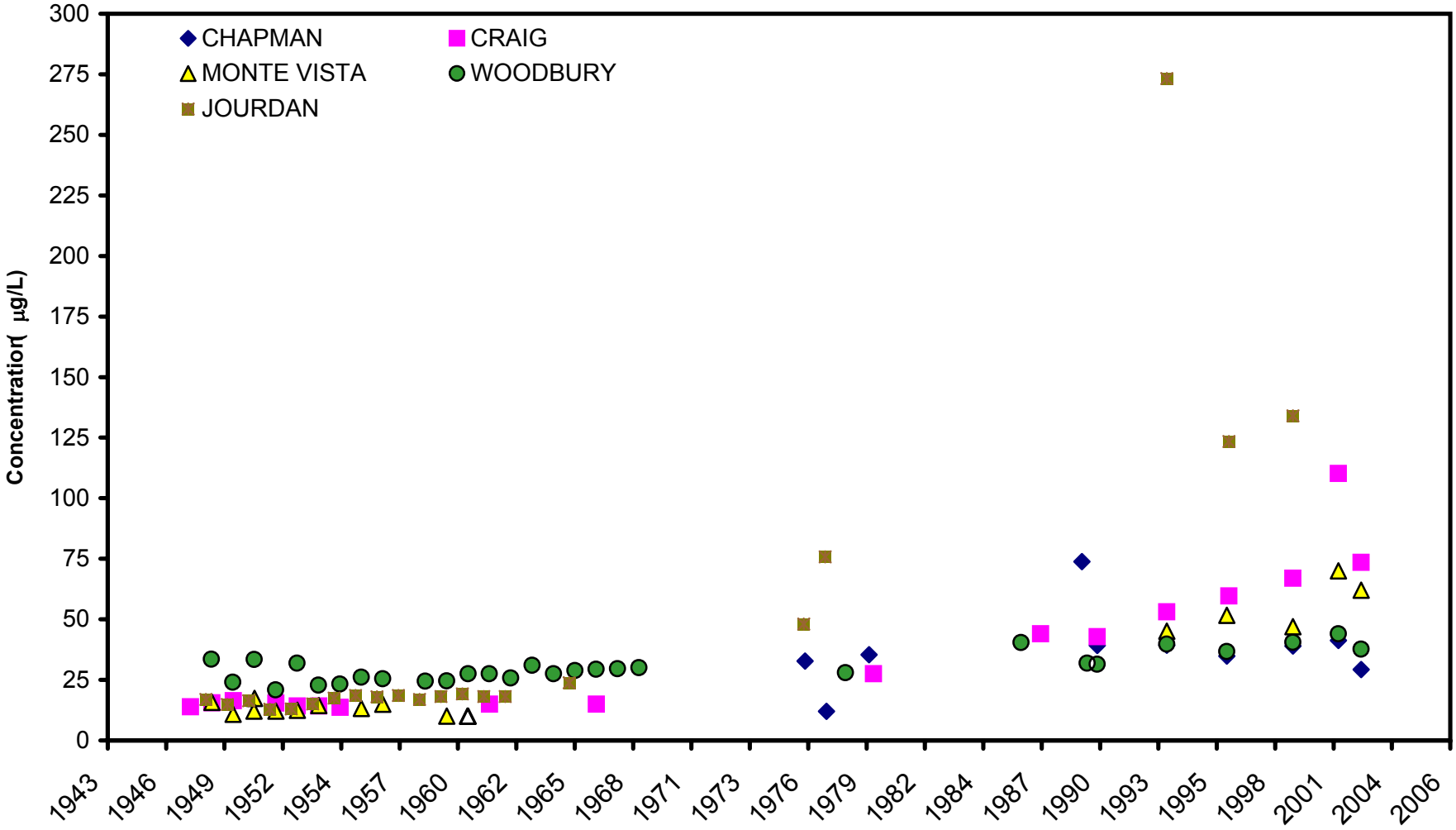
SULFATE CONCENTRATIONS OVER TIME FOR PRODUCTION WELLS IN THE RAYMOND BASIN


Sulfate Concentrations in the Monk Hill Wells
Arroyo Well
LFWC#2
LAWC#3
LAWC#5
RCWLA#4
RCWLA#7
Ventura
Well#52
Windsor
Concentration(µg/L)
200
175
150
125
100
75
50
25
0
1925
1929
1933
1937
1941
1945
1950
1954
1958
1962
1966
1970
1974
1978
1982
1987
1991
1995
1999
2003
2007


Sulfate Concentrations in the VWC Wells
VWC#1
VWC#2
VWC#3
VWC#4
Concentration(µg/L)
250
225
200
175
150
125
100
75
50
25
0
1984
1986
1987
1988
1990
1991
1993
1994
1995
1997
1998
1999
2001
2002
2004

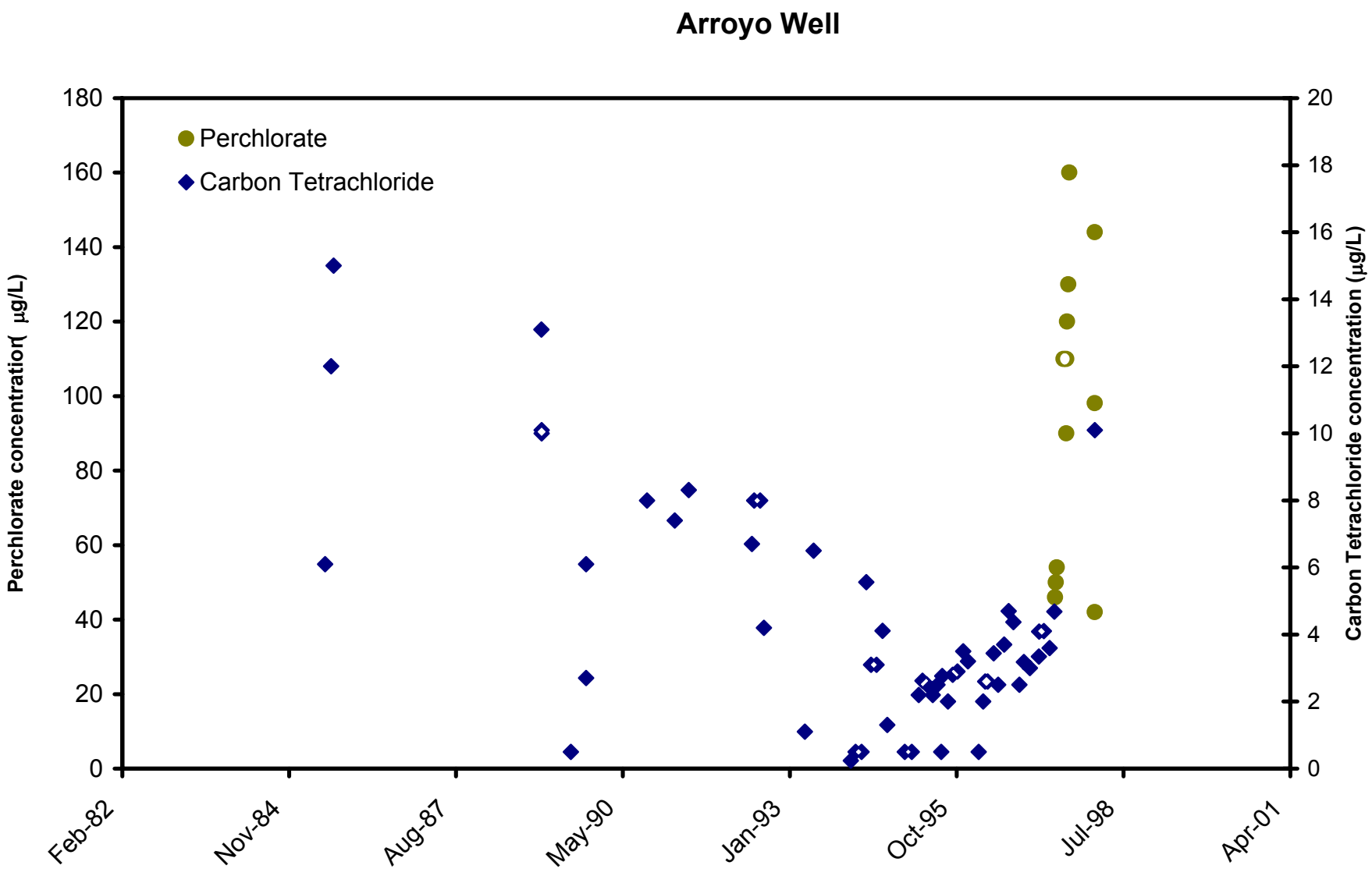

Sulfate Concentrations in the Sunset Wells
BANGHAM
COPELIN
GARFIELD
SUNSET
VILLA
Concentration(µg/L)
250
225
200
175
150
125
100
75
50
25
0
1943
1946
1949
1952
1954
1957
1960
1962
1965
1968
1971
1973
1976
1979
1982
1984
1987
1990
1993
1995
1998
2001
2004
2006

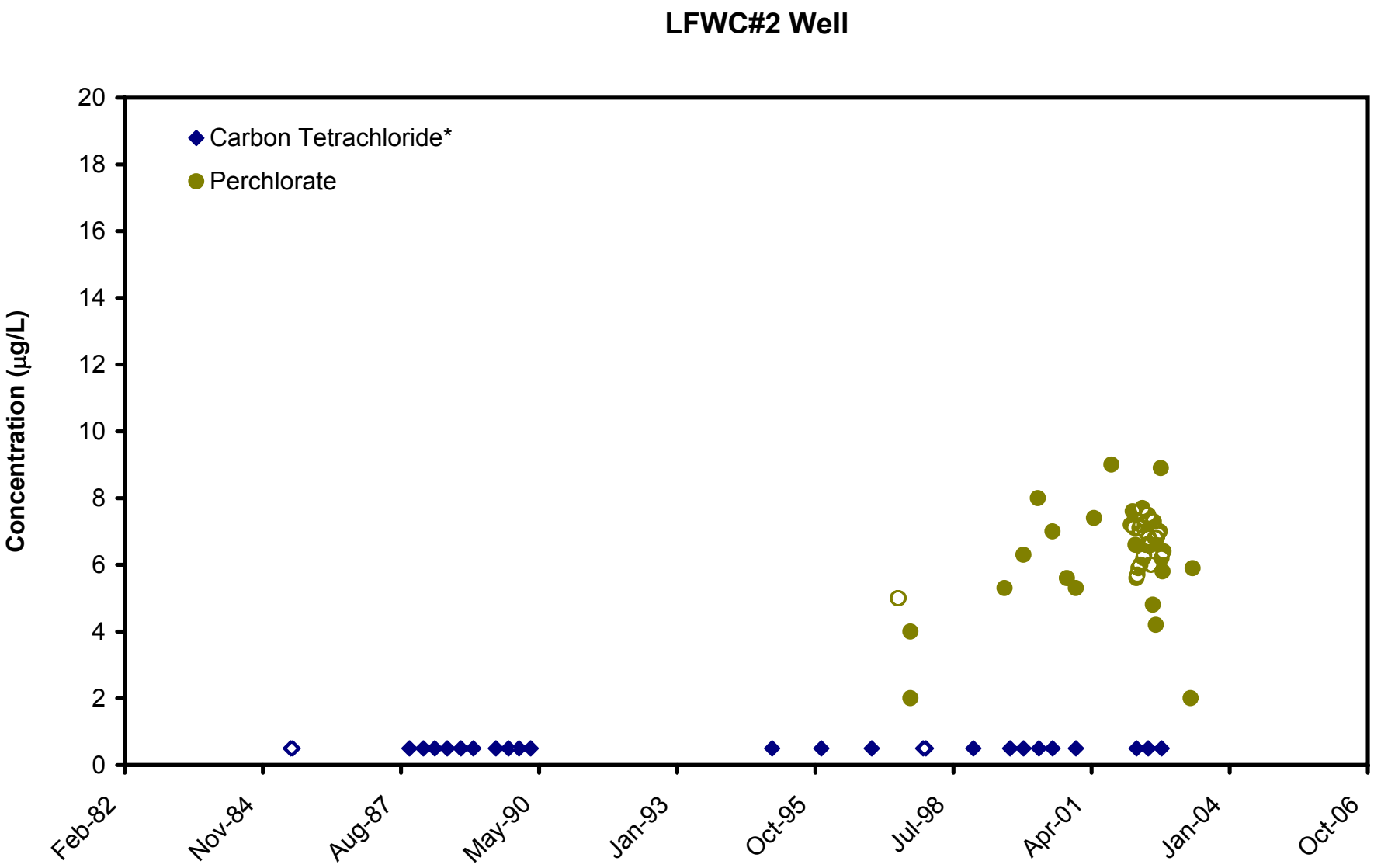
Sulfate Concentrations in the City of Pasadena East Side Wells



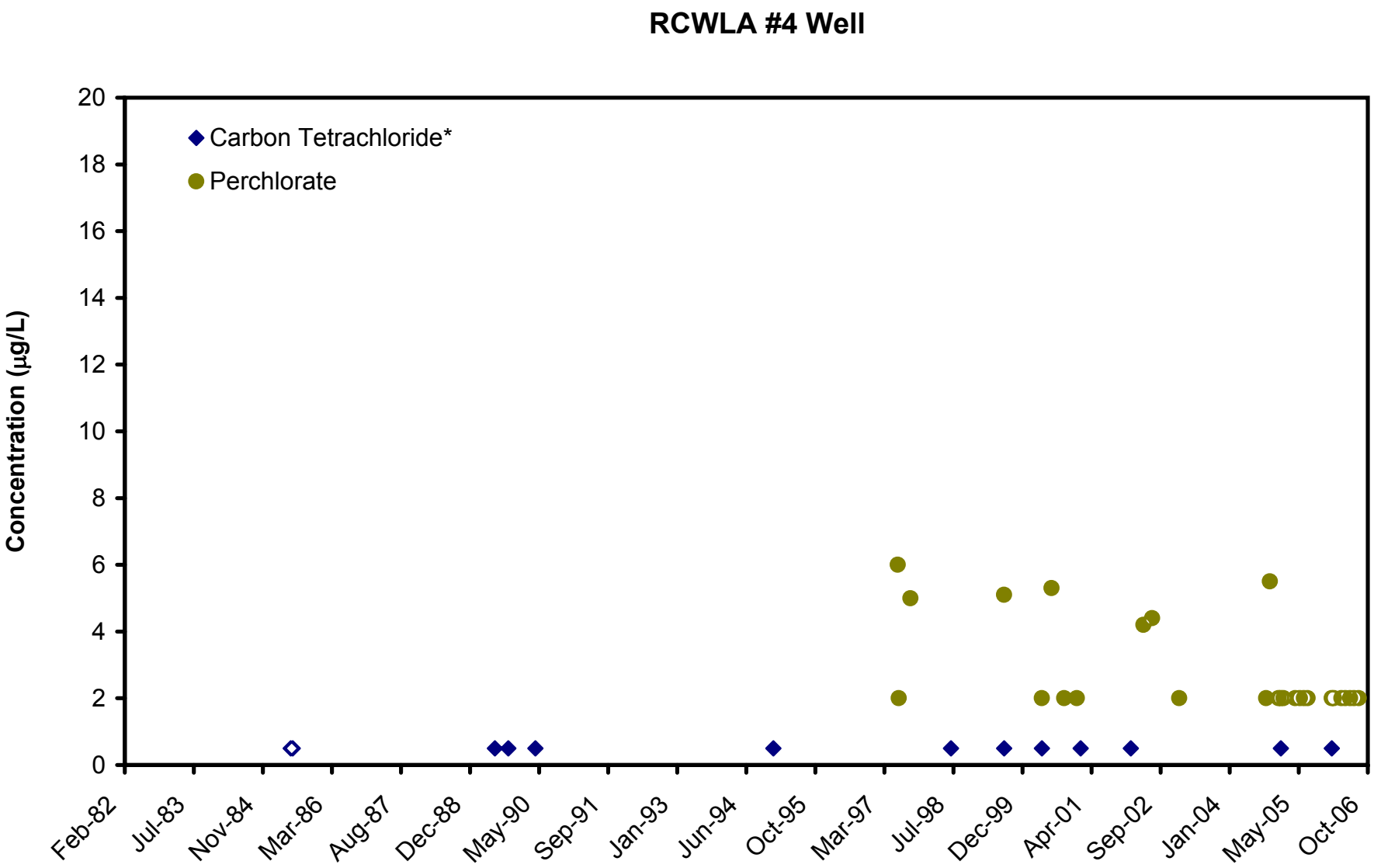
ATTACHMENT 4

PERCHLORATE AND CARBON TETRACHLORIDE CONCENTRATIONS OVER TIME FOR PRODUCTION WELLS IN THE RAYMOND BASIN AND FOR JPL MONITORING WELLS


Arroyo Well
Perchlorate
Carbon Tetrachloride
Perchlorate concentration(µg/L)
Carbon Tetrachloride concentration (µg/L)
180
160
140
120
100
80
60
40
20
0
20
18
16
14
12
10
8
6
4
2
0
Feb-82
Nov-84
Aug-87
May-90
Jan-93
Oct-95
Jul-98
Apr-01

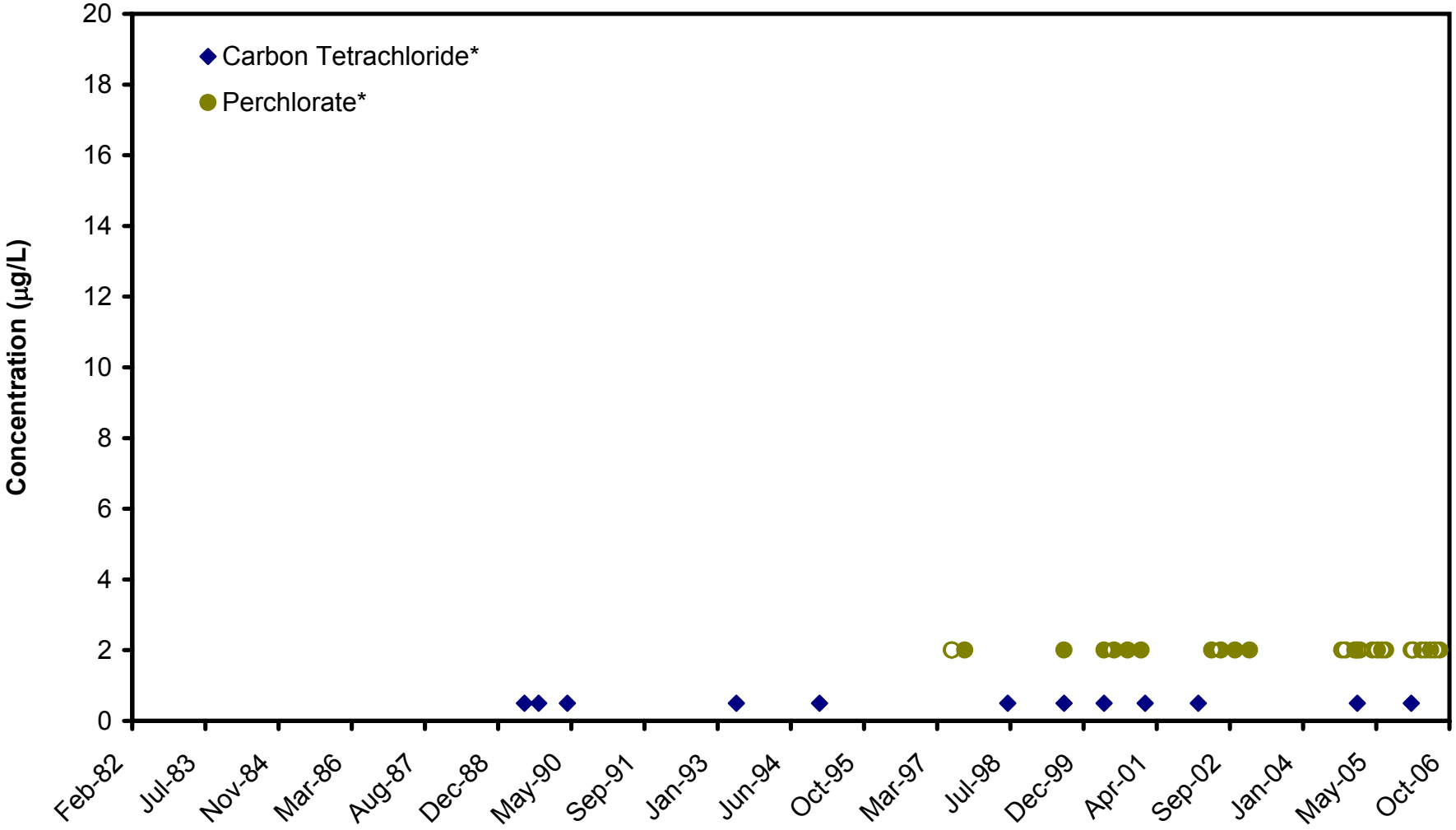


** Carbon tetrachloride has not been detected in samples collected at LFWC#2*

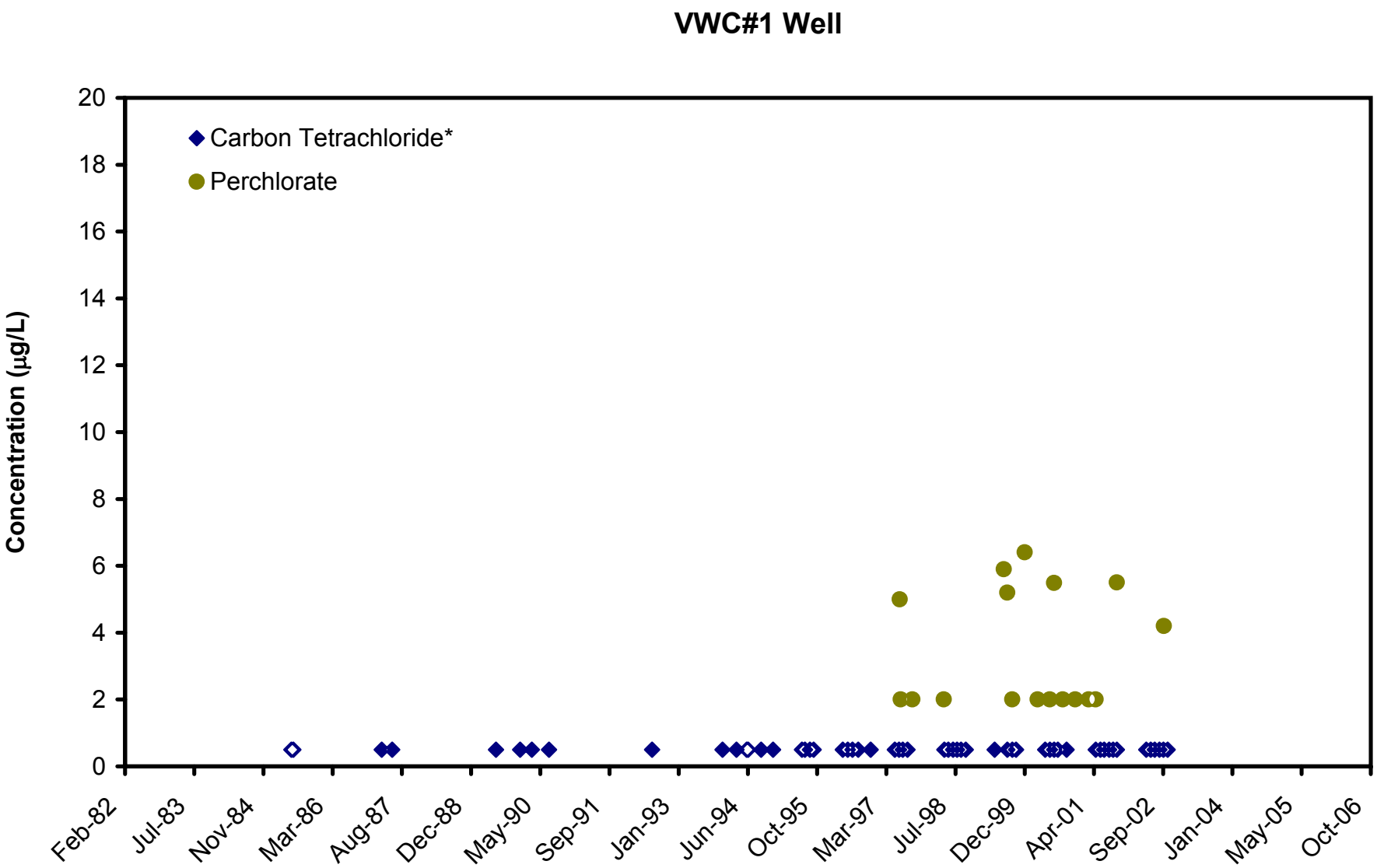


** Carbon tetrachloride has not been detected in samples collected at RCWLA#4*

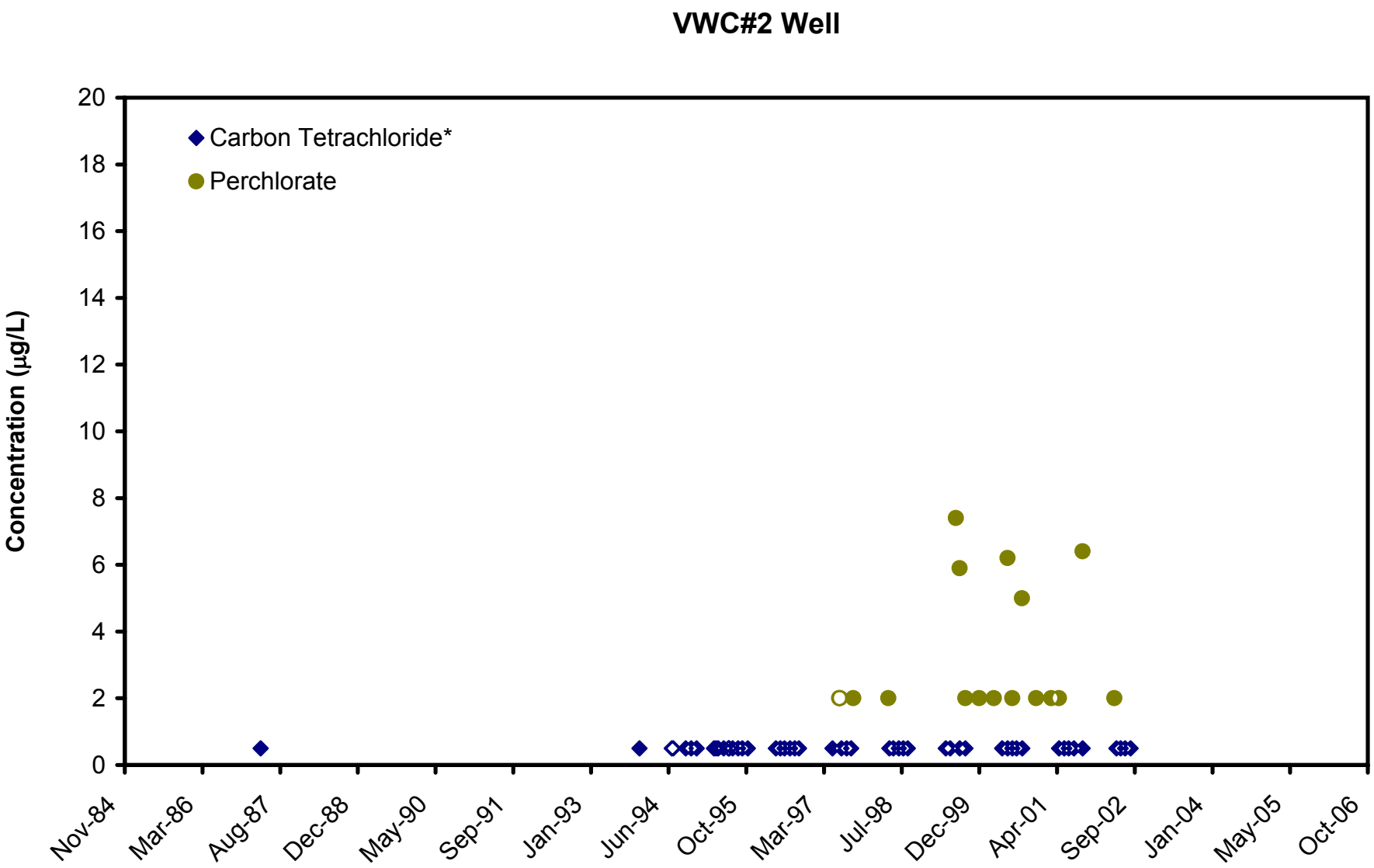
RCWLA#7 Well



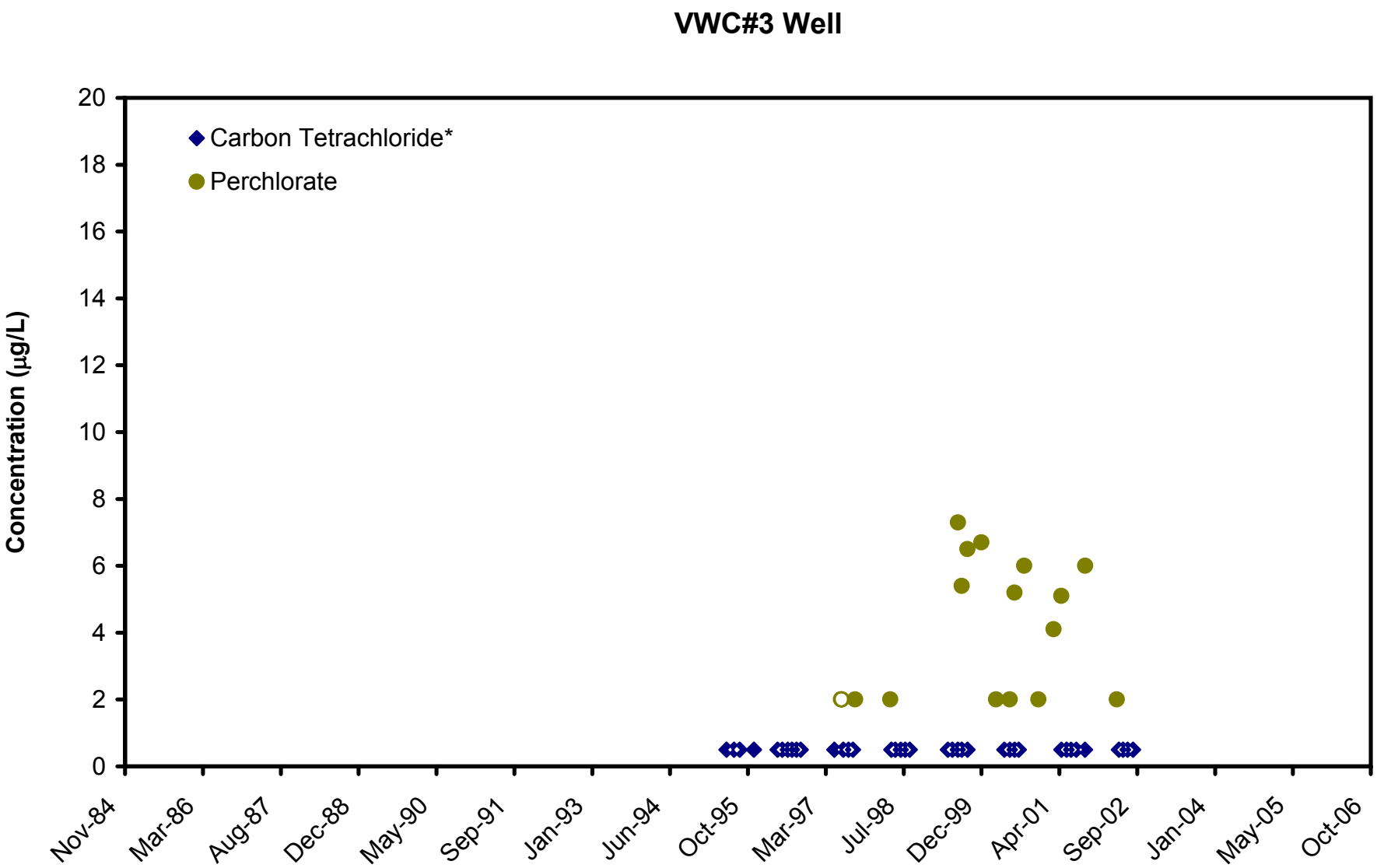
** Carbon tetrachloride and perchlorate have not been detected in samples collected at RCWLA#7*



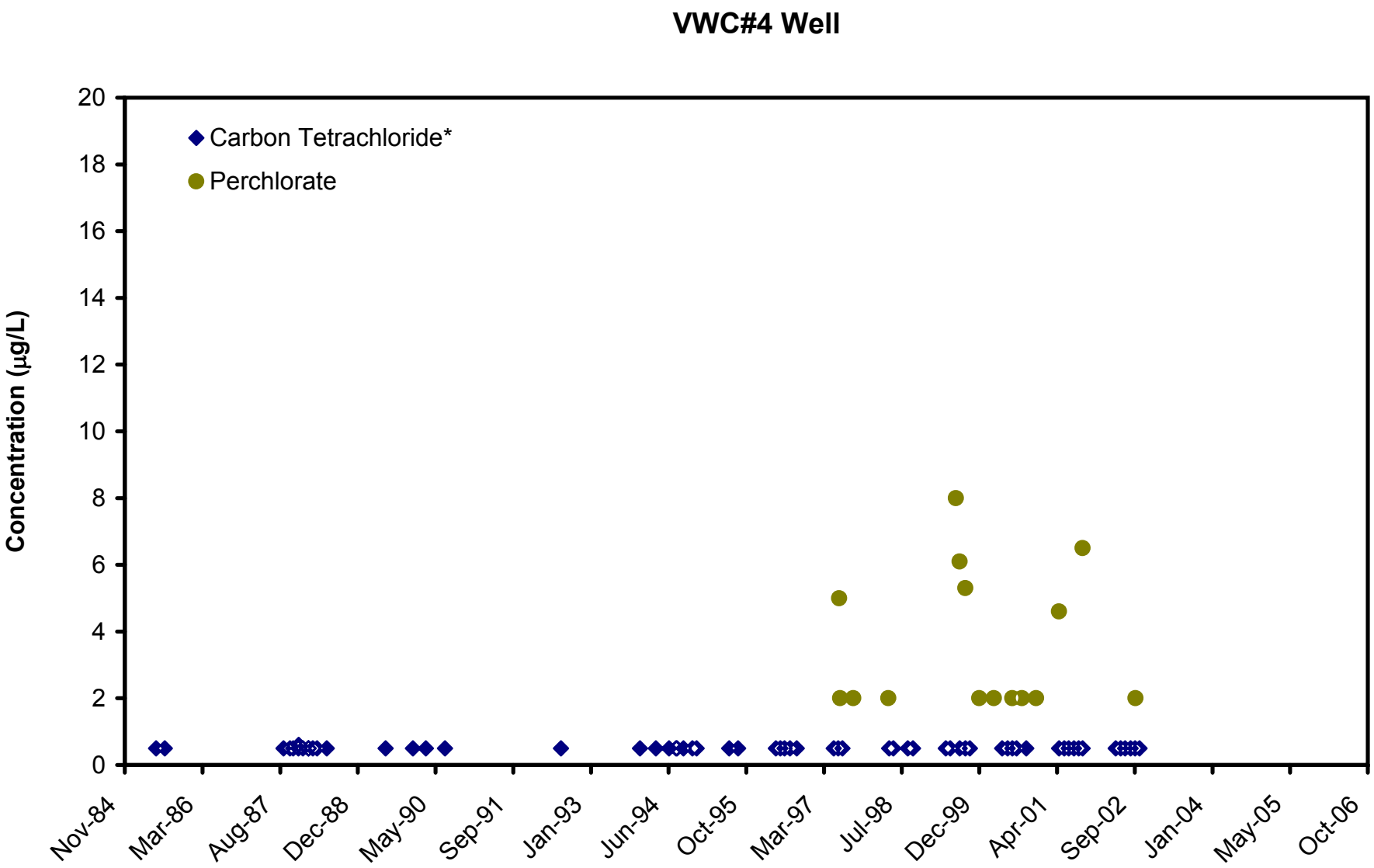
** Carbon tetrachloride has not been detected in samples collected at VWC#1*



** Carbon tetrachloride has not been detected in samples collected at VWC#2*

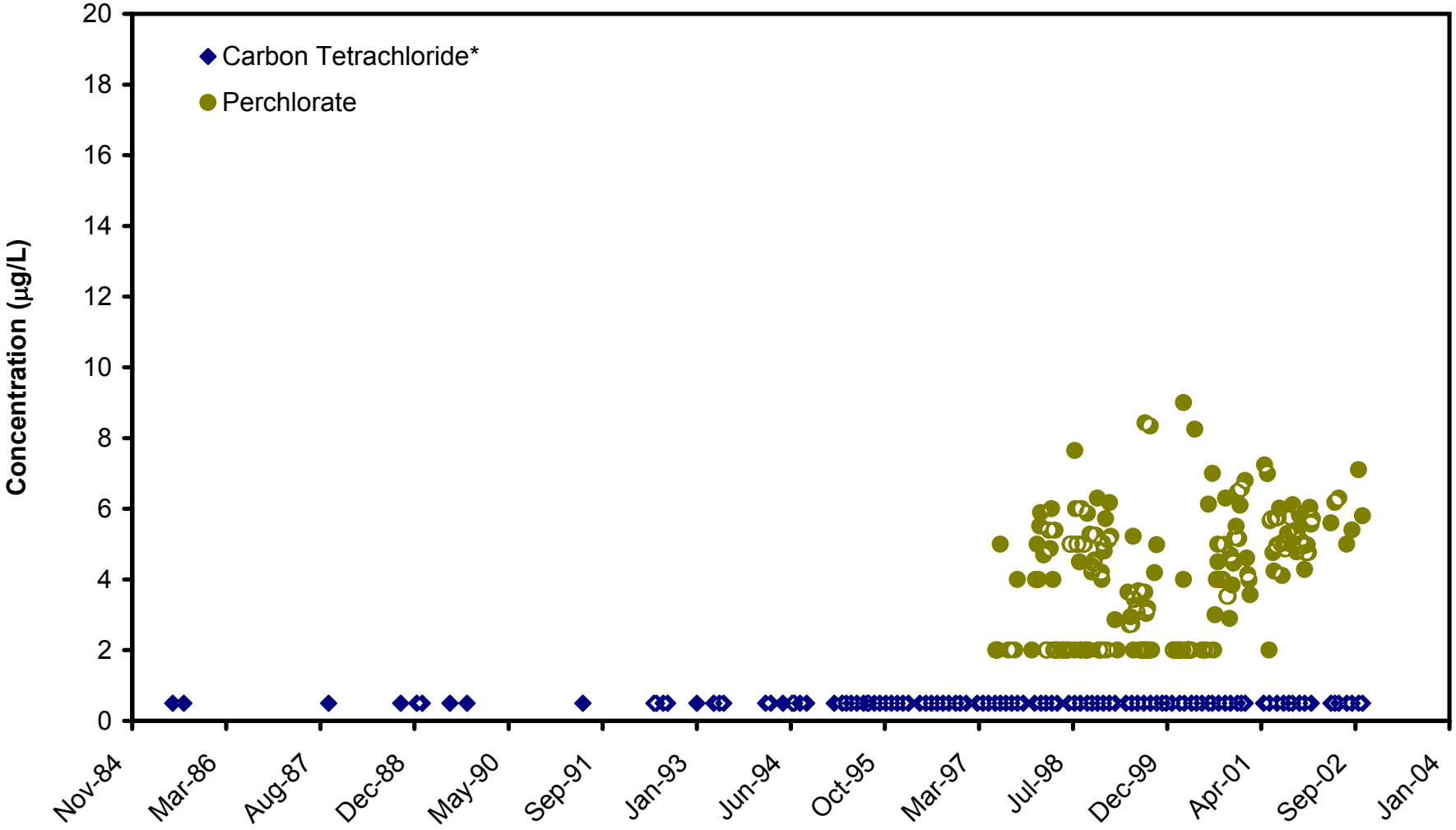


** Carbon tetrachloride has not been detected in samples collected at VWC#3*

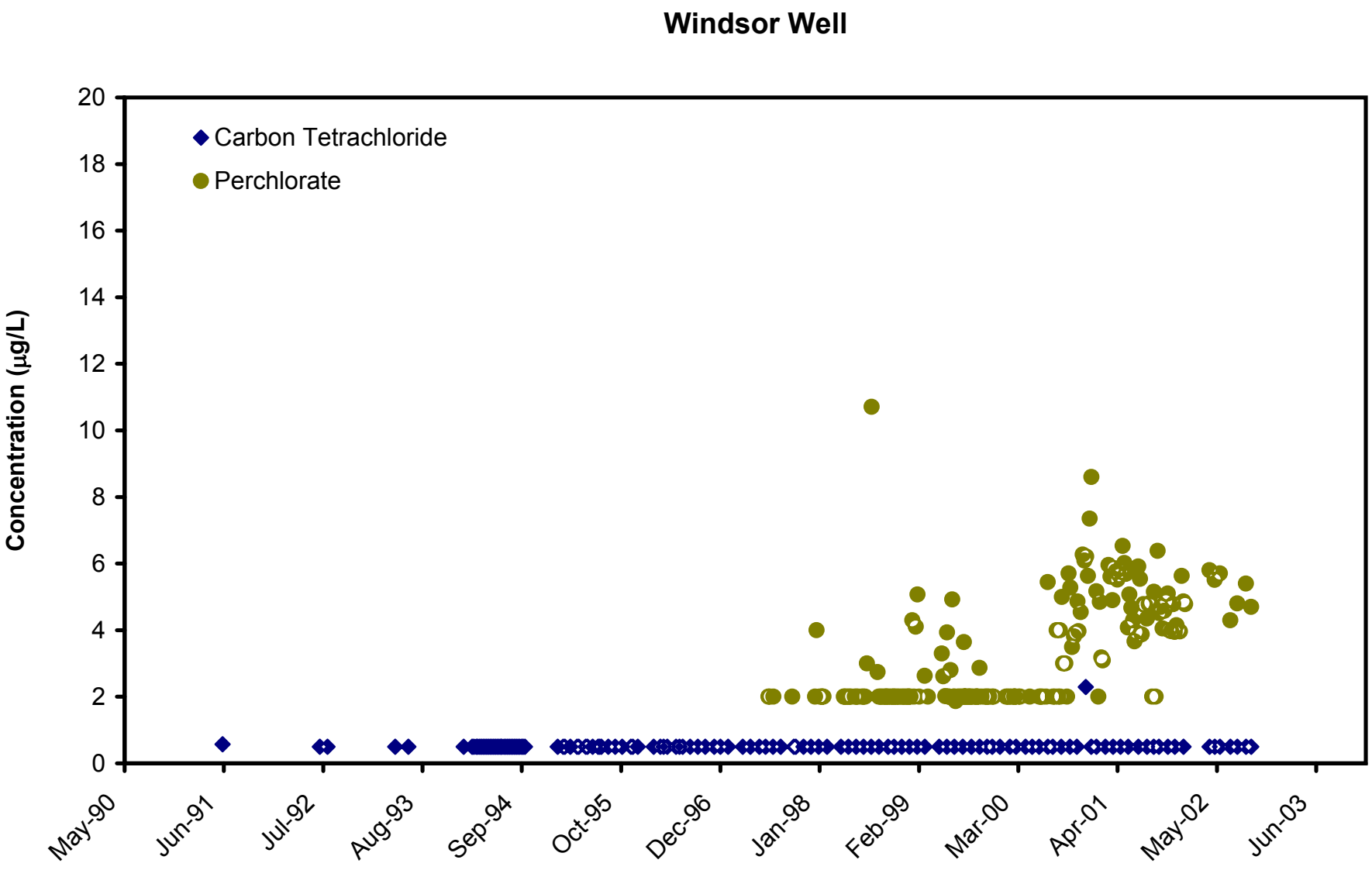


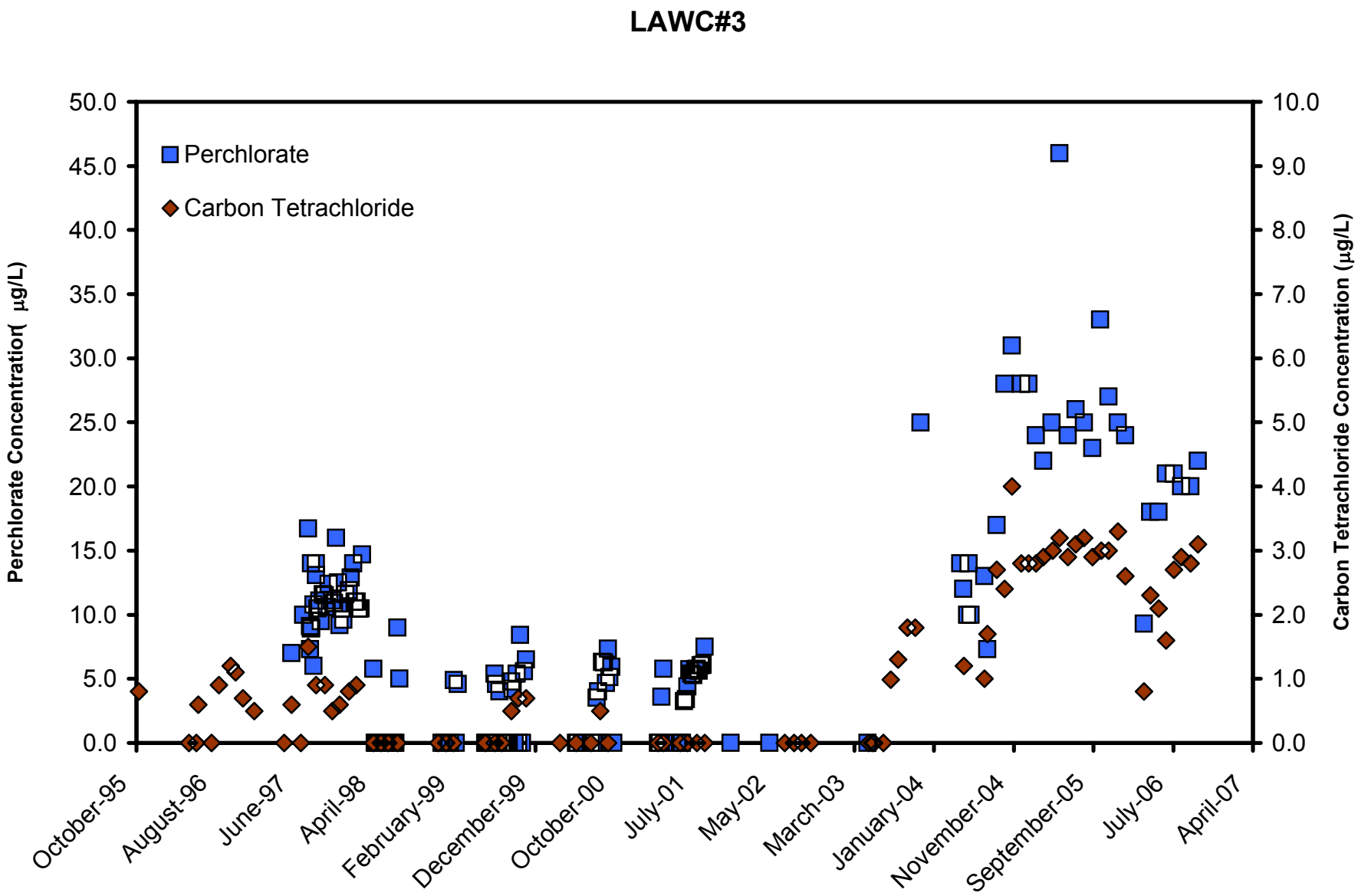
** Carbon tetrachloride has not been detected in samples collected at VWC#4*

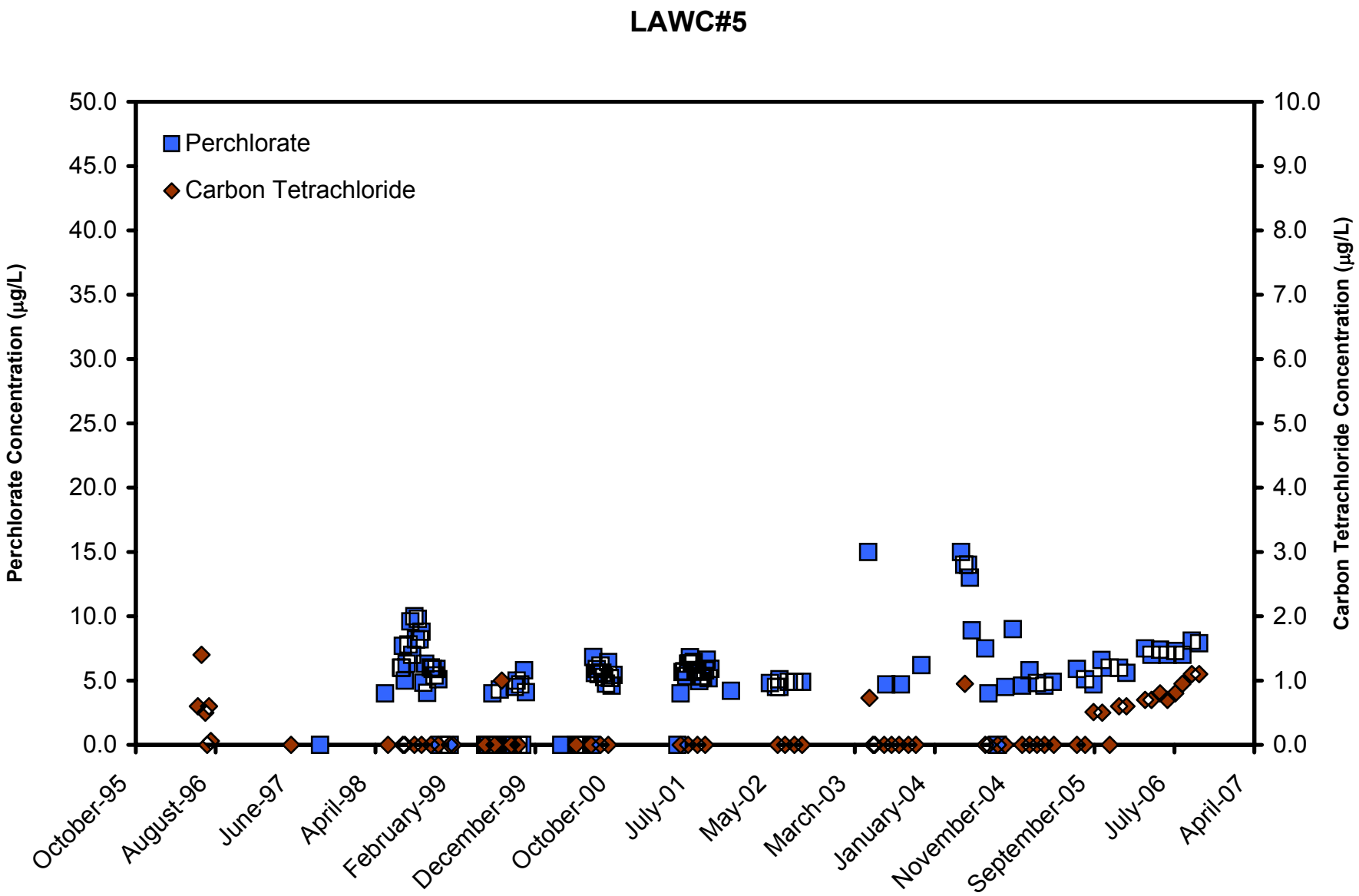
Ventura Well

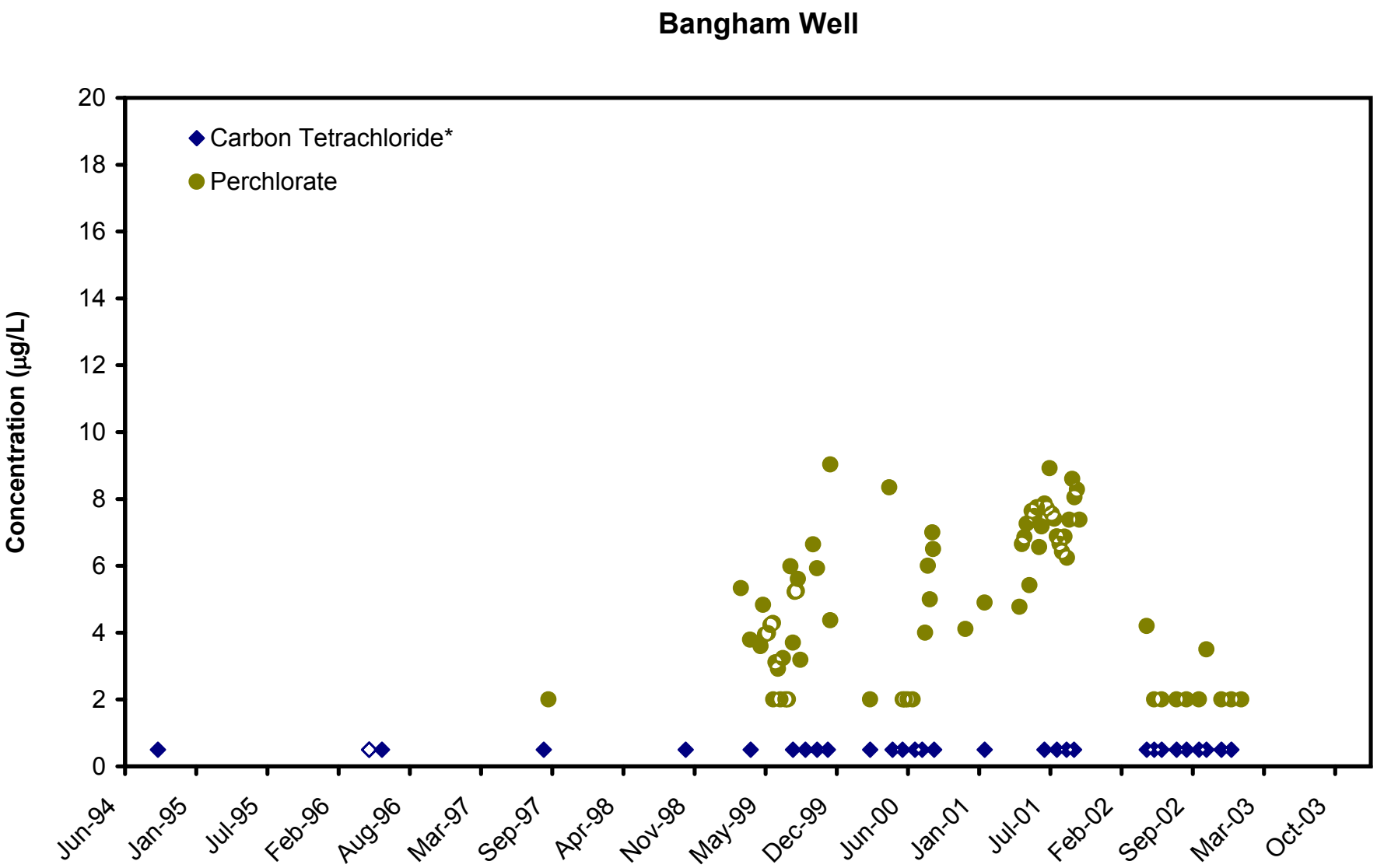


** Carbon tetrachloride has not been detected in samples collected at Ventura Well*

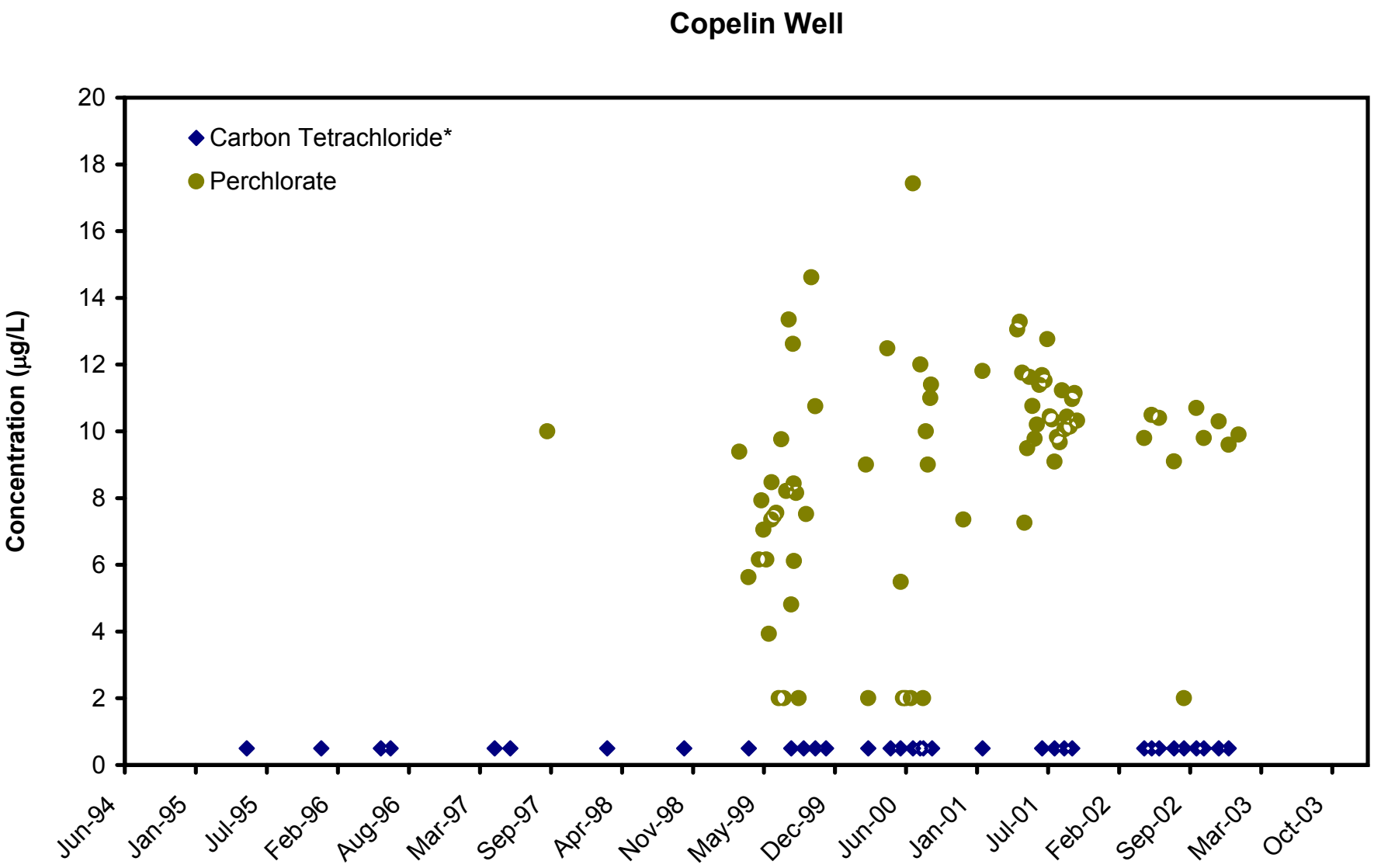

Windsor Well
Carbon Tetrachloride
Perchlorate
Concentration (µg/L)
20
18
16
14
12
10
8
6
4
2
0
May-90
Jun-91
Jul-92
Aug-93
Sep-94
Oct-95
Dec-96
Jan-98
Feb-99
Mar-00
Apr-01
May-02
Jun-03


LAWC#3
Perchlorate
Carbon Tetrachloride
Perchlorate Concentration(µg/L)
Carbon Tetrachloride Concentration (µg/L)
50.0
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
October-95
August-96
June-97
April-98
February-99
December-99
October-00
July-01
May-02
March-03
January-04
November-04
September-05
July-06
April-07

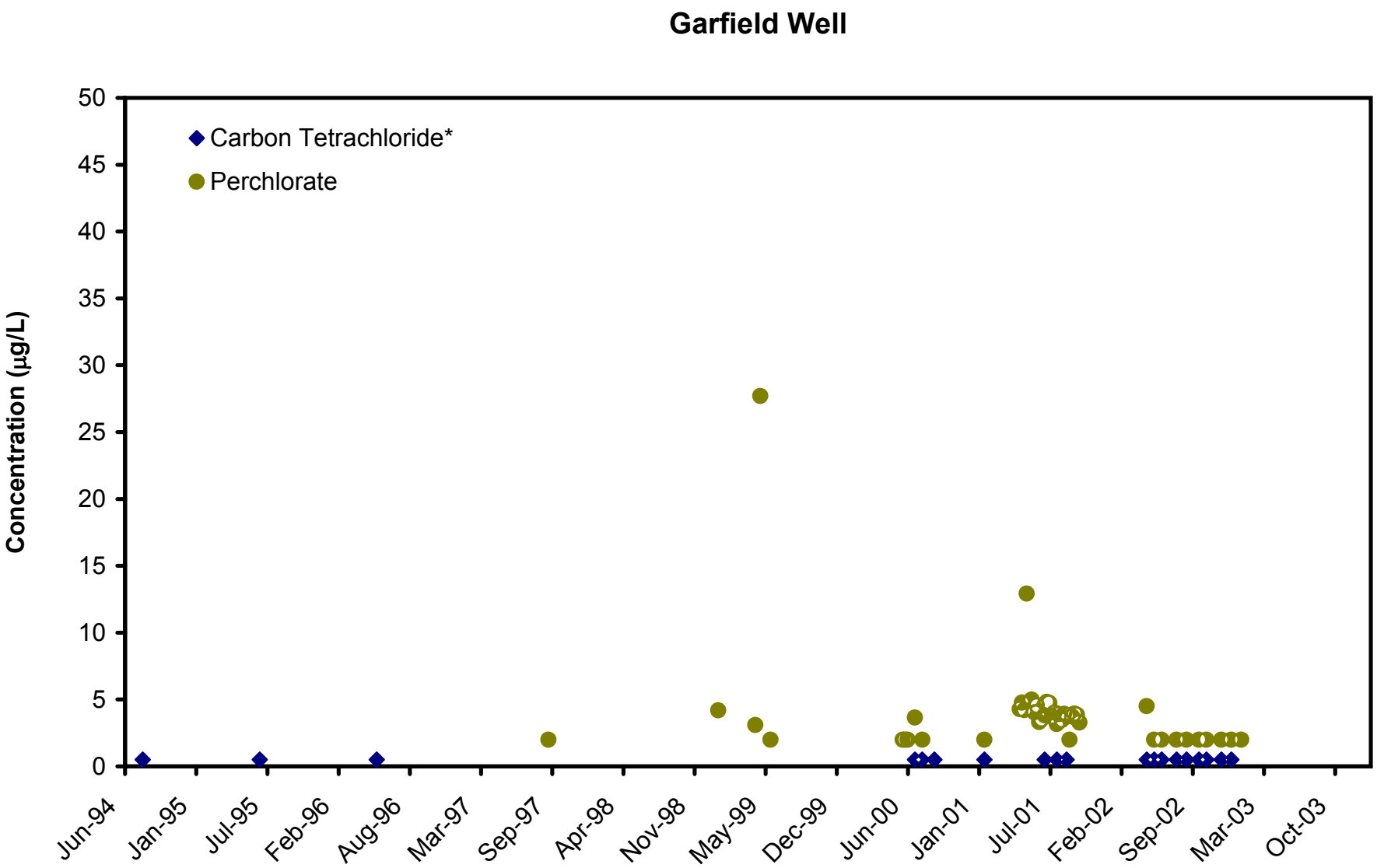

LAWC#5
Perchlorate
Carbon Tetrachloride
Perchlorate Concentration (µg/L)
Carbon Tetrachloride Concentration (µg/L)
50.0
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
October-95
August-96
June-97
April-98
February-99
December-99
October-00
July-01
May-02
March-03
January-04
November-04
September-05
July-06
April-07



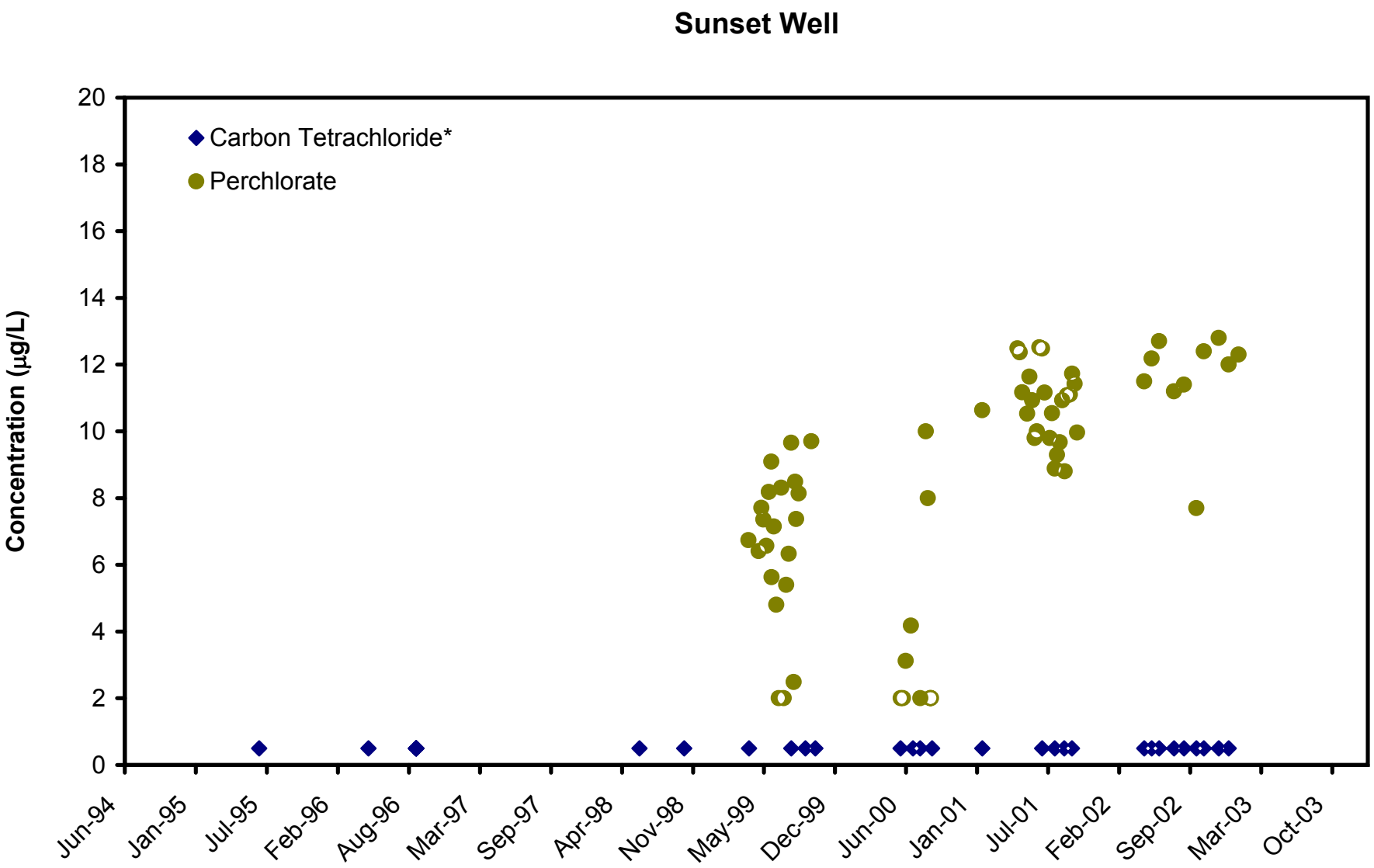
** Carbon tetrachloride has not been detected in samples collected at BanghamWell*



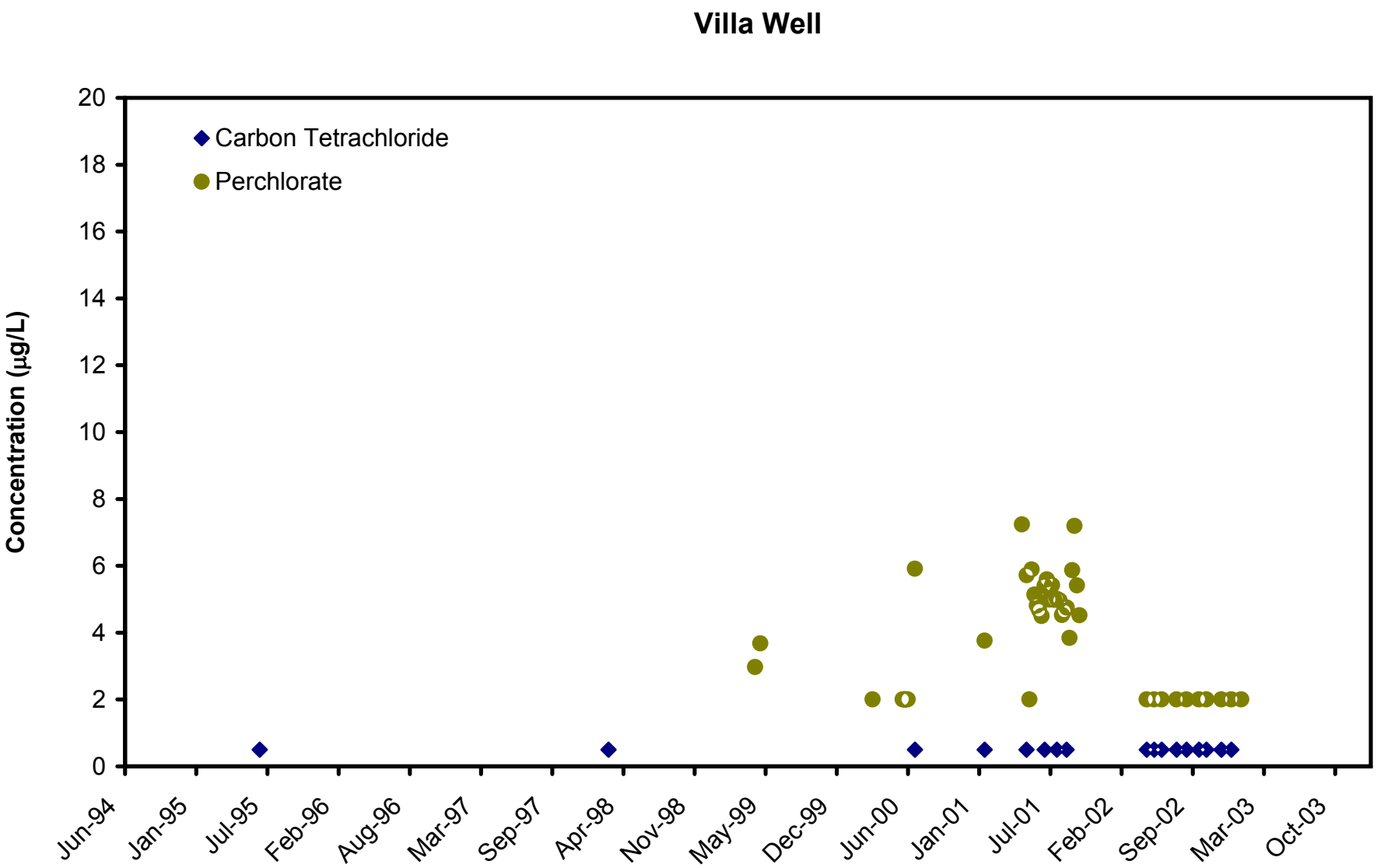
** Carbon tetrachloride has not been detected in samples collected at Copelin Well*



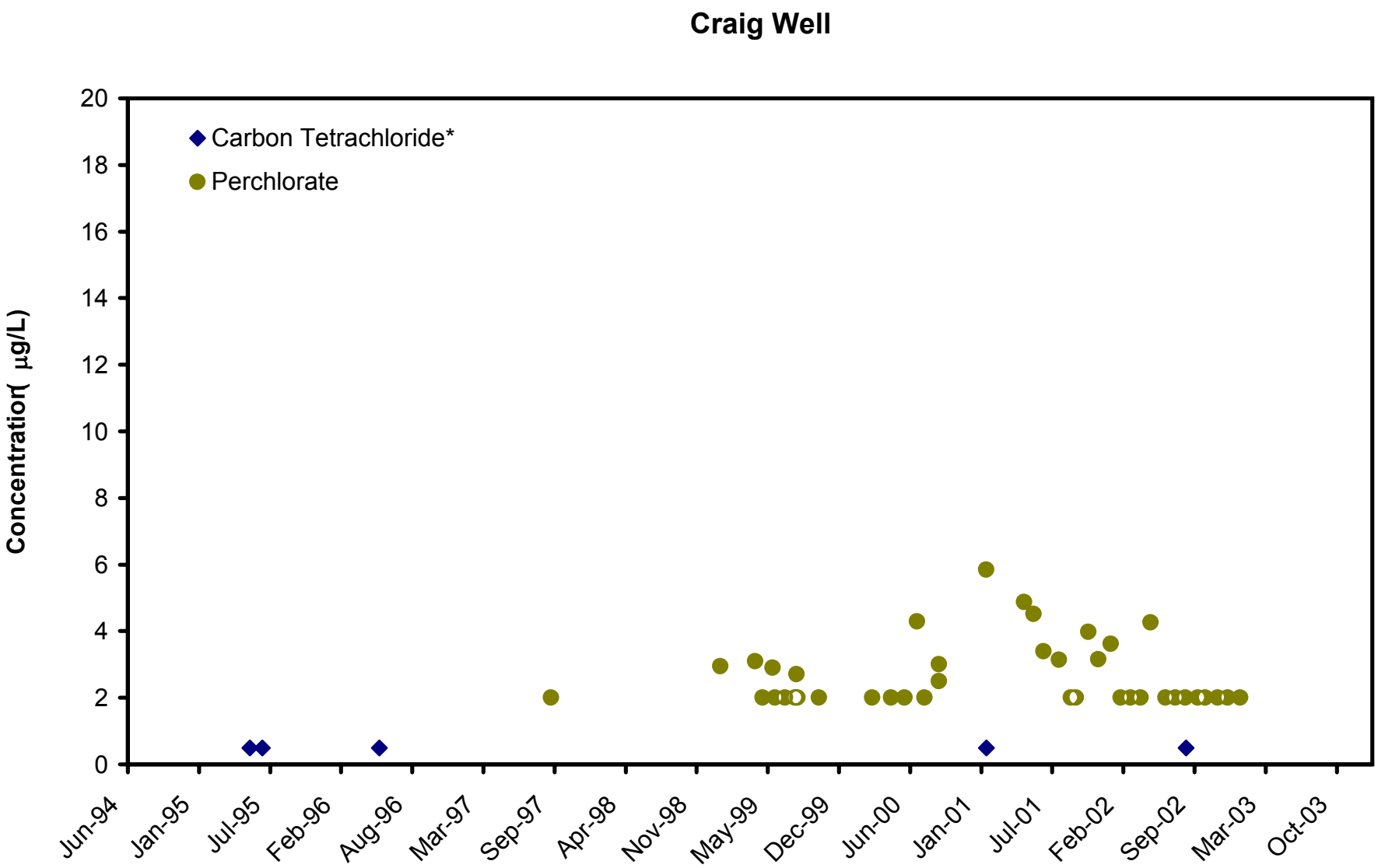
** Carbon tetrachloride has not been detected in samples collected at Garfield Well*



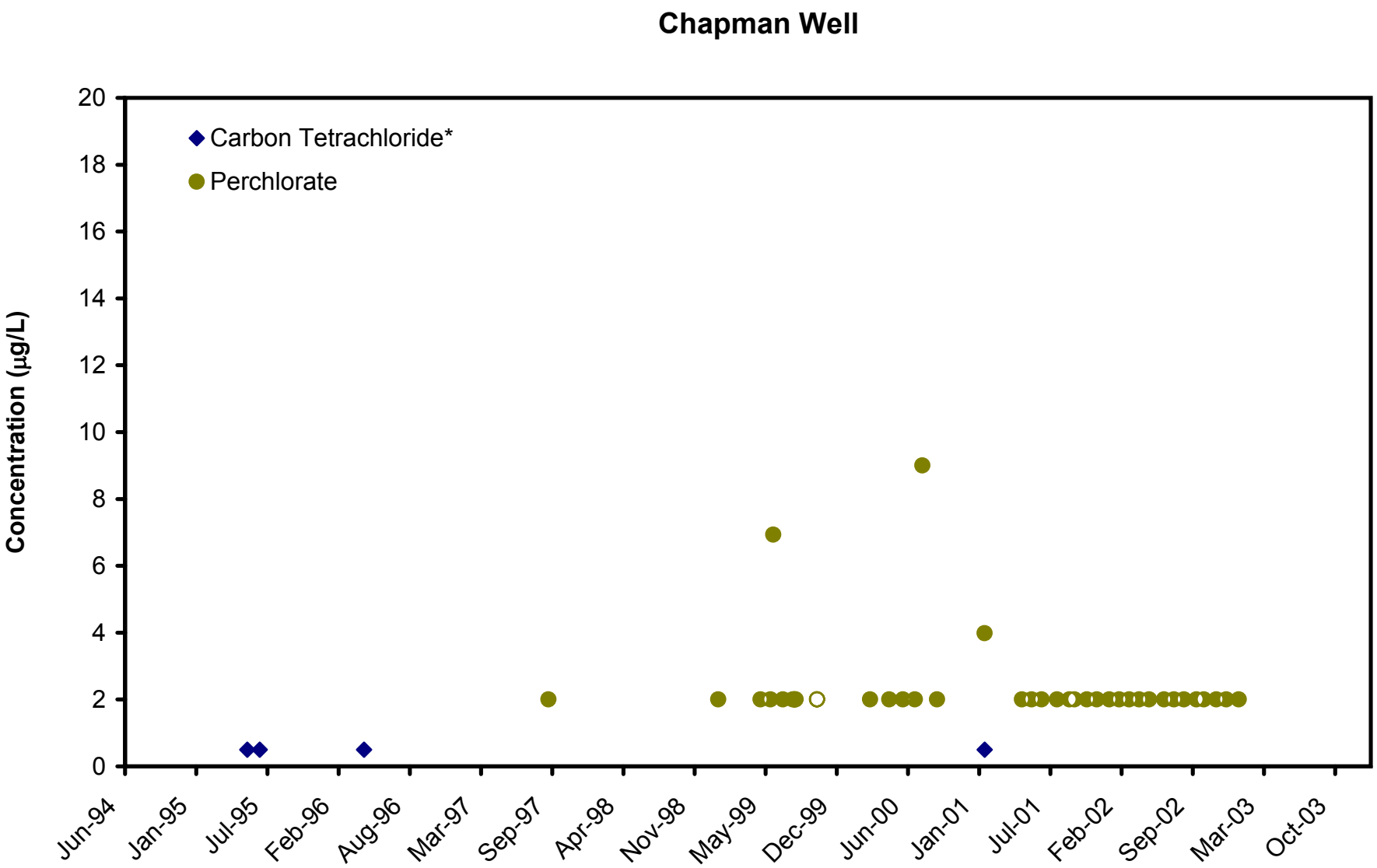
** Carbon tetrachloride has not been detected in samples collected at Sunset Well*



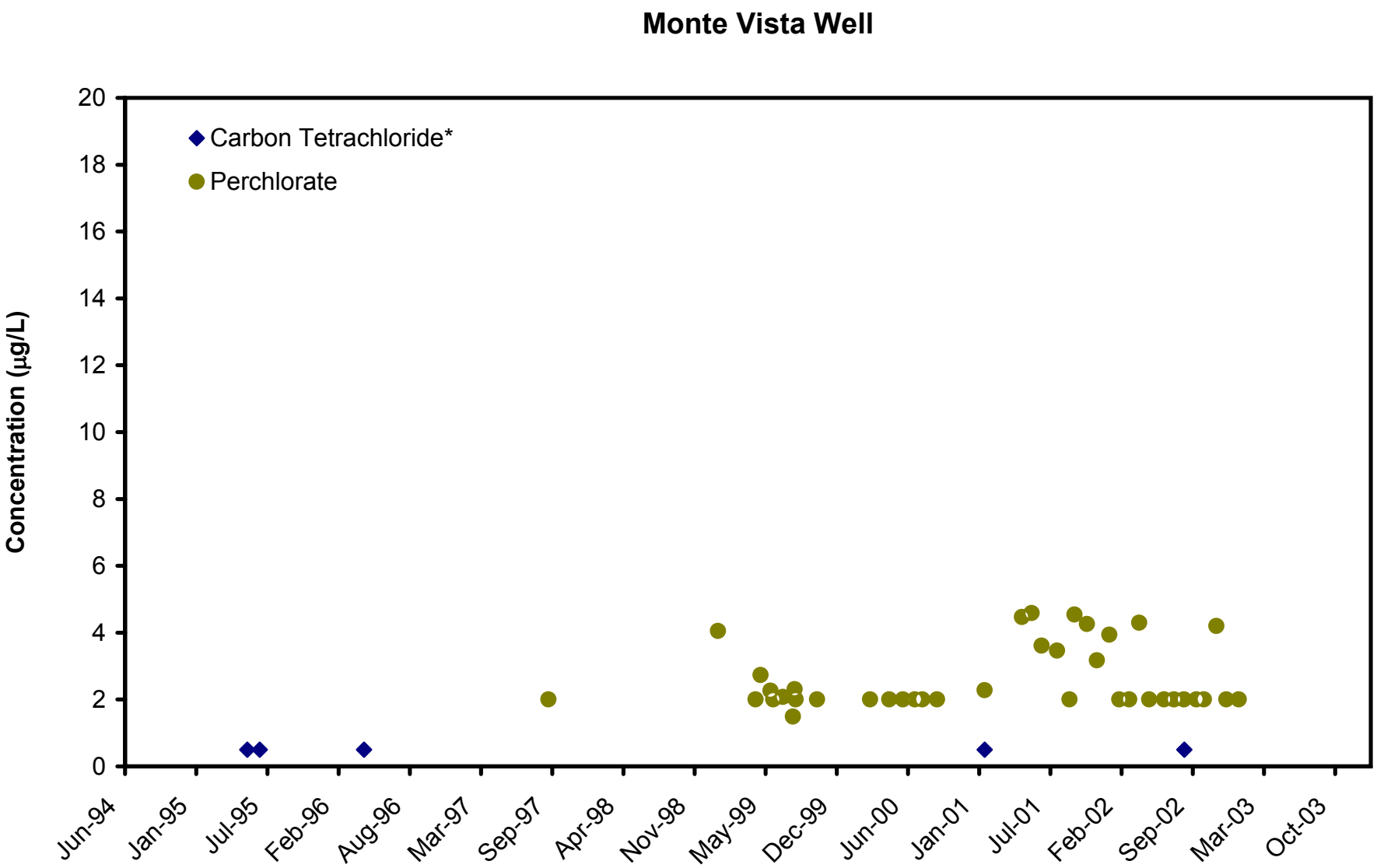
** Carbon Tetrachloride has not been detected in samples collected at Villa Well*



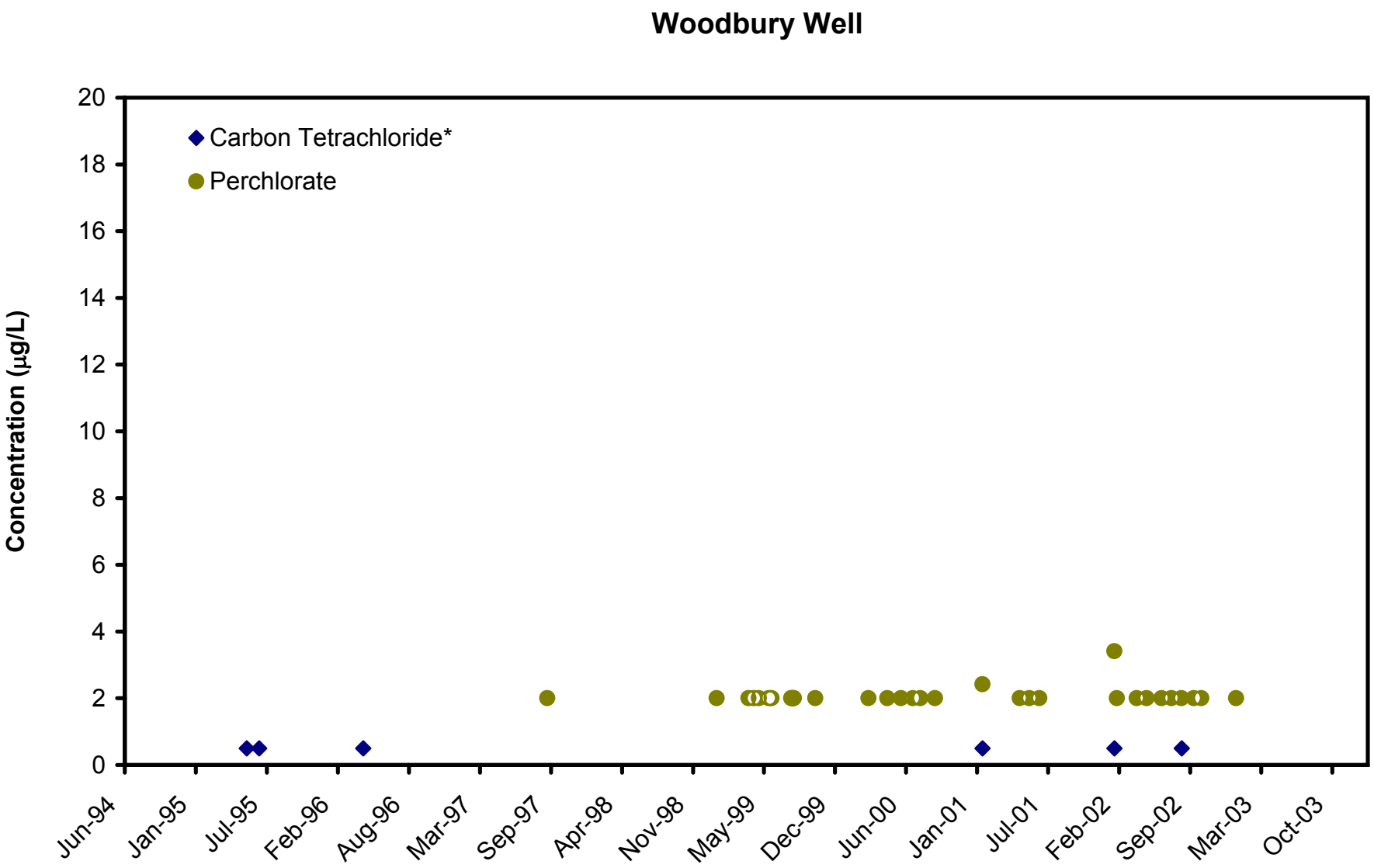
** Carbon tetrachloride has not been detected in samples collected at Craig Well*



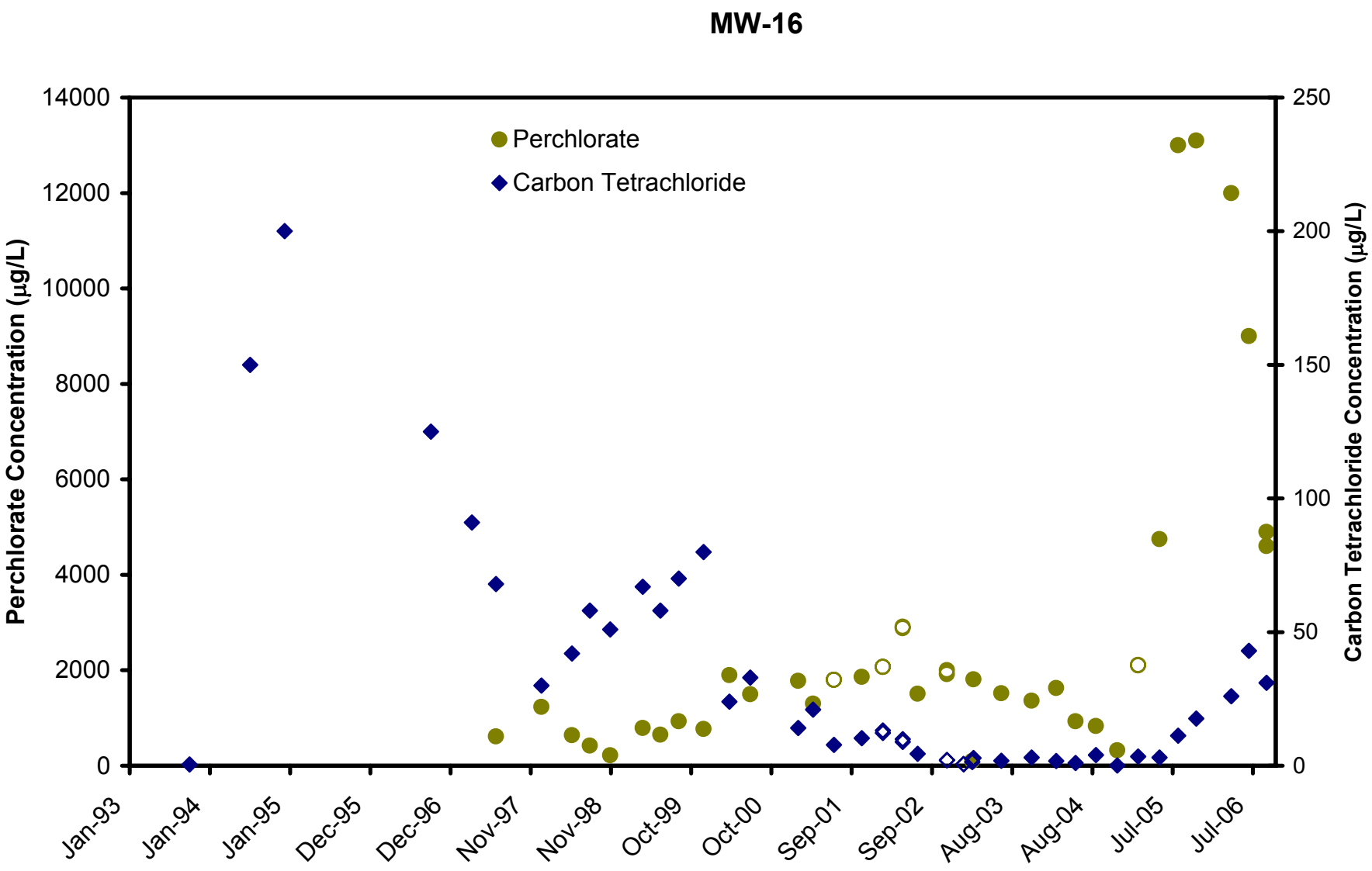
** Carbon tetrachloride has not been detected in samples collected at Chapman Well*

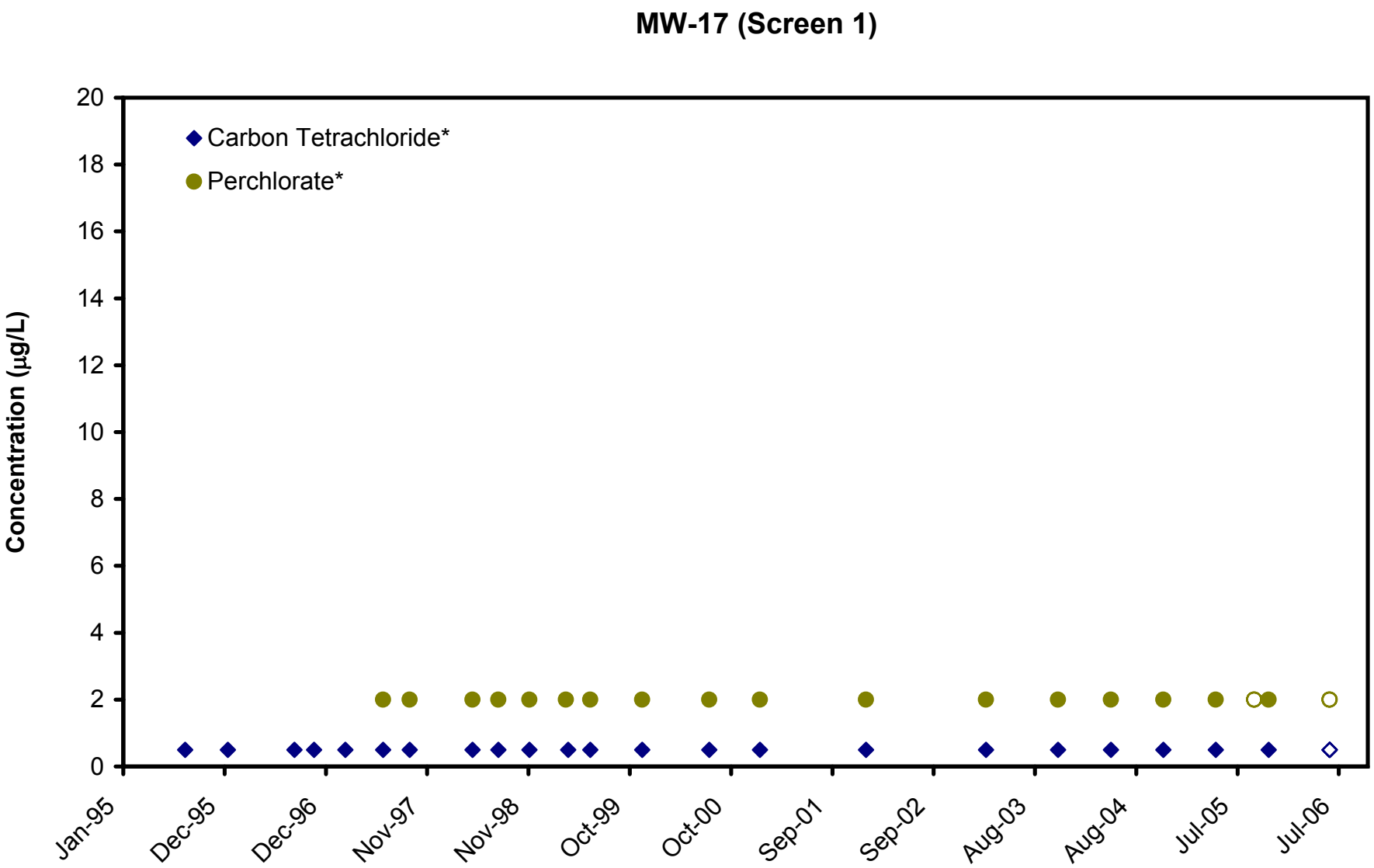


** Carbon tetrachloride has not been detected in samples collected at Monte Vista Well*

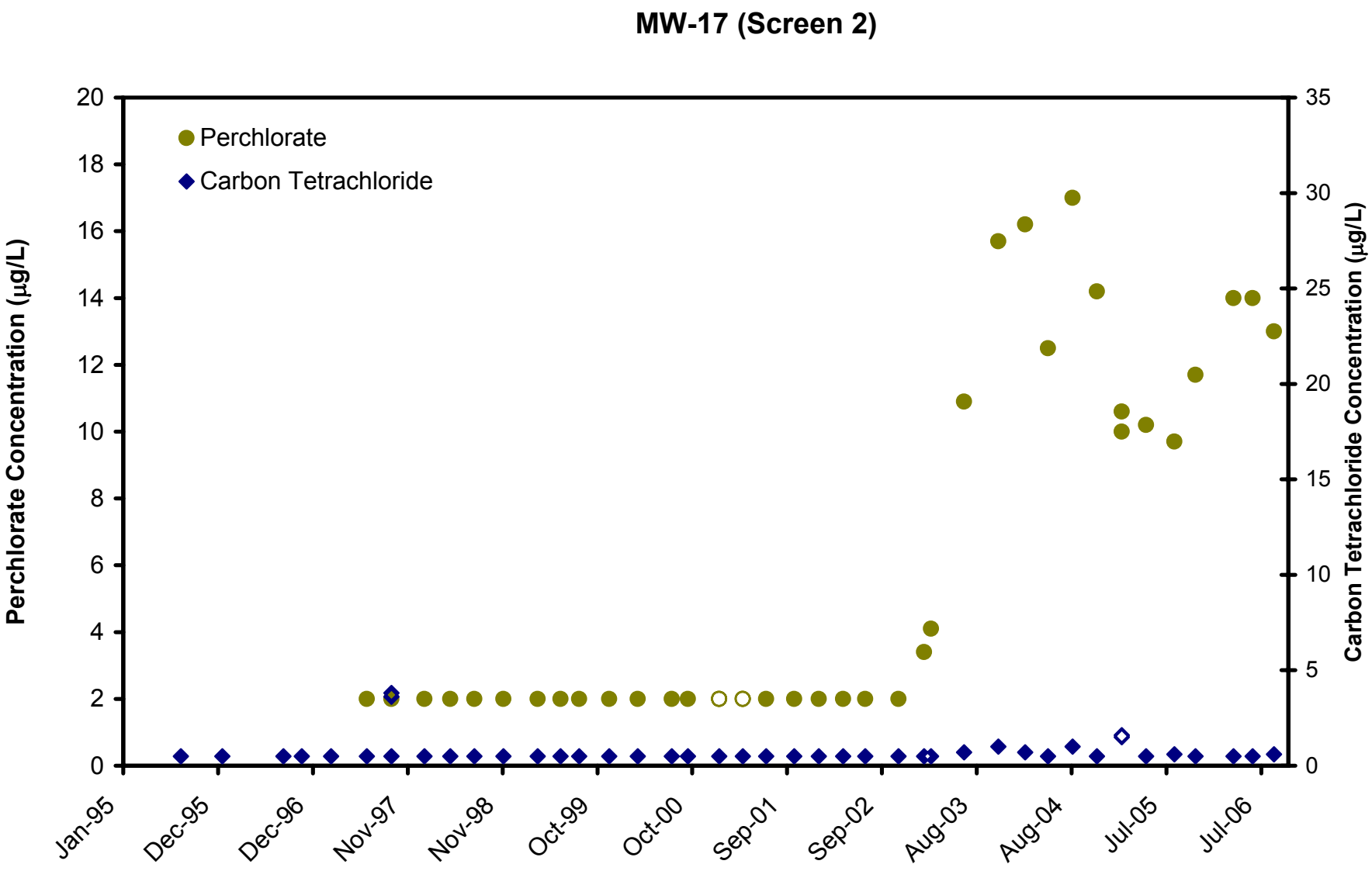


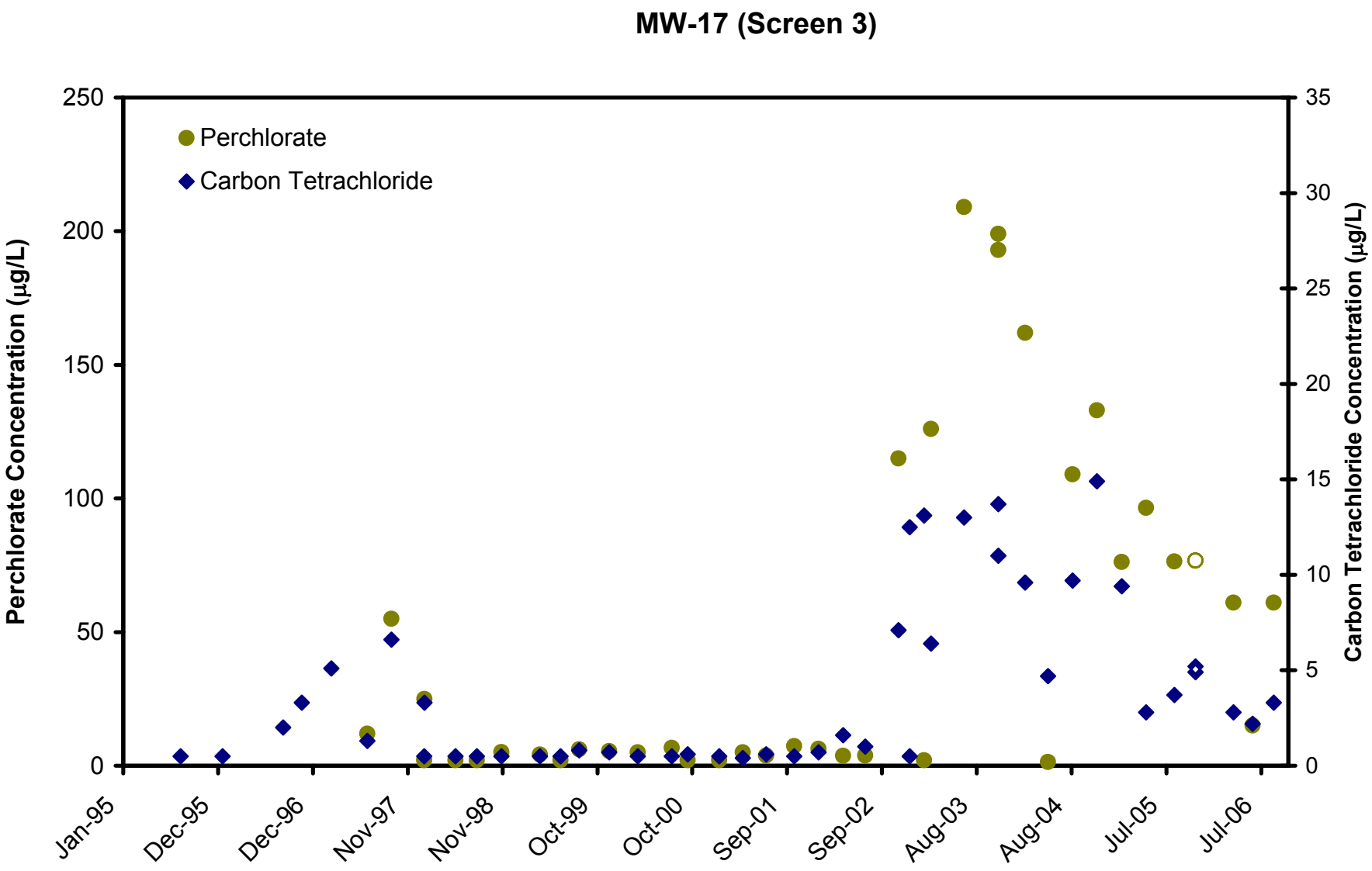
** Carbon tetrachloride has not been detected in samples collected at Woodbury Well*

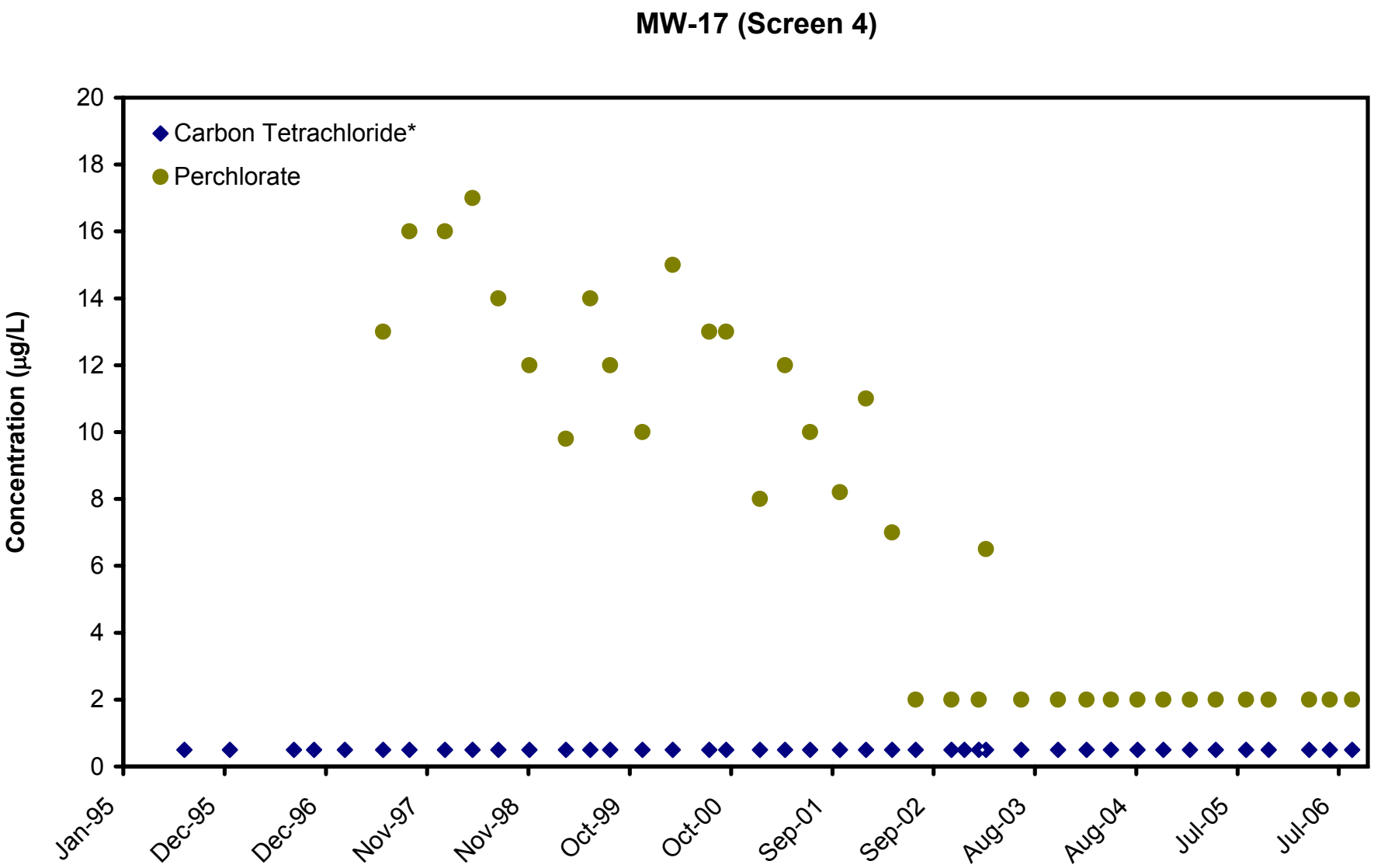

MW-16
Perchlorate
Carbon Tetrachloride
Perchlorate Concentration (µg/L)
Carbon Tetrachloride Concentration (µg/L)
14000
12000
10000
8000
6000
4000
2000
0
250
200
150
100
50
0
Jan-93
Jan-94
Jan-95
Dec-95
Dec-96
Nov-97
Nov-98
Oct-99
Oct-00
Sep-01
Sep-02
Aug-03
Aug-04
Jul-05
Jul-06



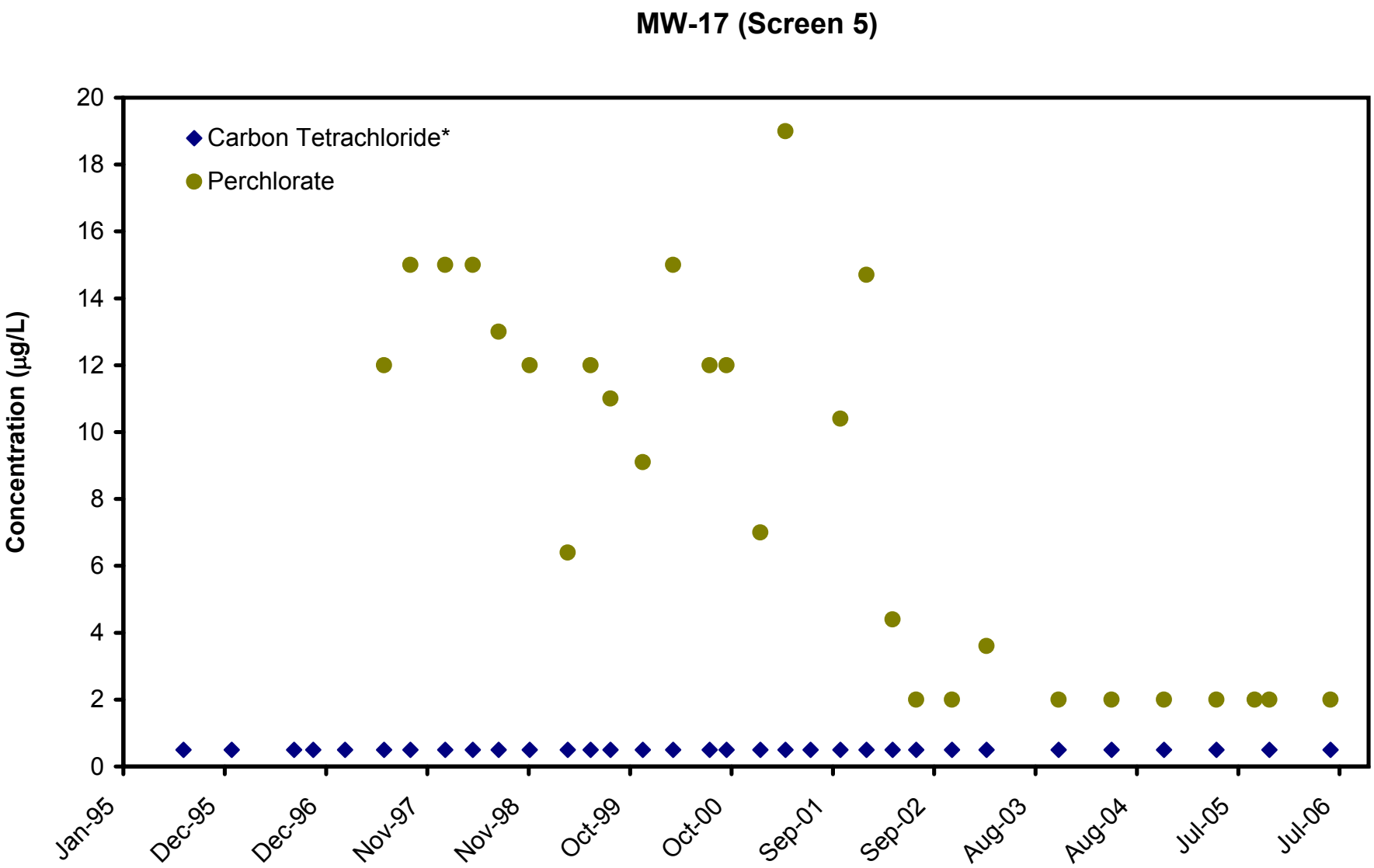
** Carbon tetrachloride and perchlorate have not been detected in samples collected at MW-17-1*


MW-17 (Screen 2)
Perchlorate
Carbon Tetrachloride
Perchlorate Concentration (µg/L)
Carbon Tetrachloride Concentration (µg/L)
0
2
4
6
8
10
12
14
16
18
20
0
5
10
15
20
25
30
35
Jan-95
Dec-95
Dec-96
Nov-97
Nov-98
Oct-99
Oct-00
Sep-01
Sep-02
Aug-03
Aug-04
Jul-05
Jul-06

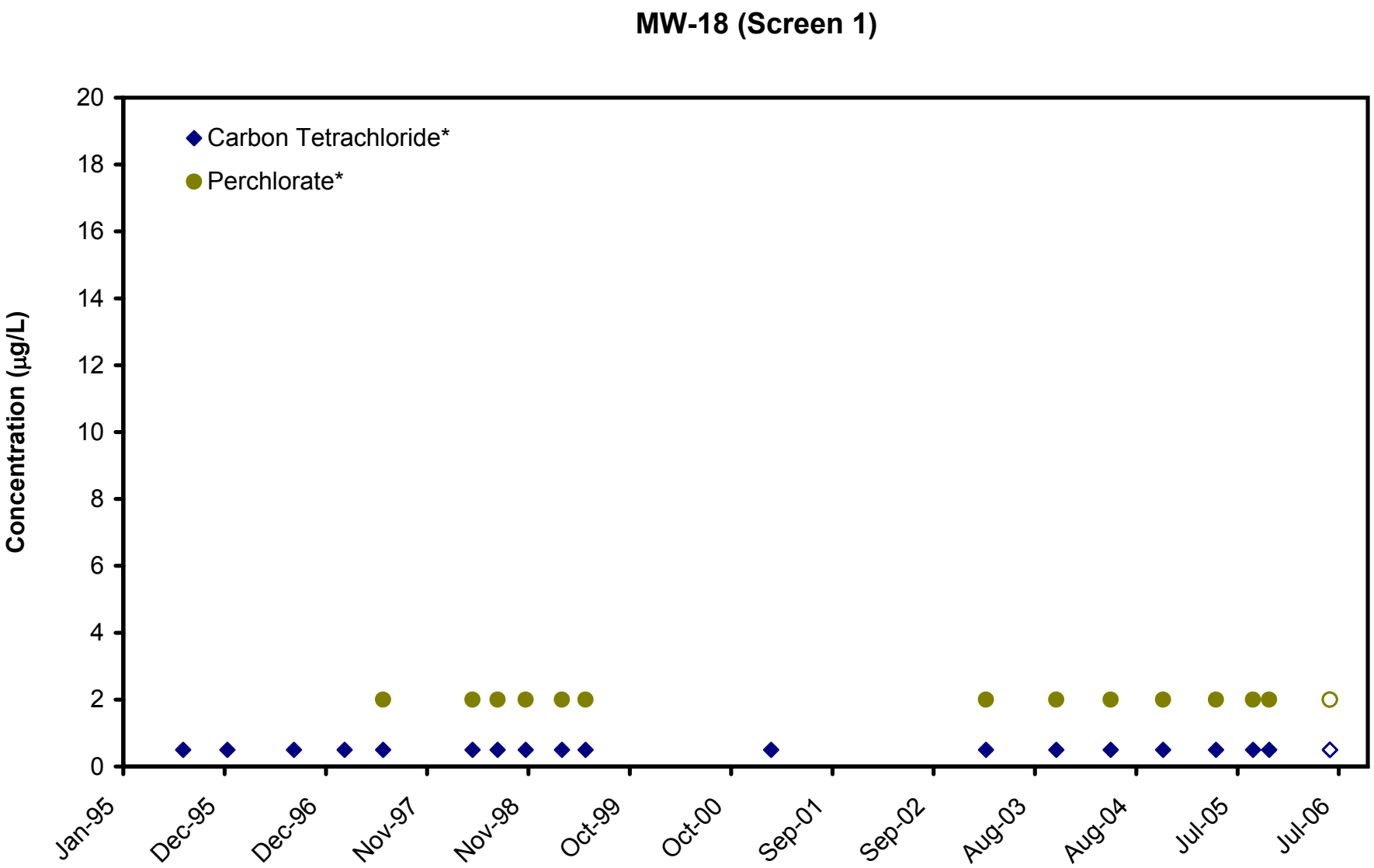

MW-17 (Screen 3)
Perchlorate
Carbon Tetrachloride
Perchlorate Concentration (µg/L)
Carbon Tetrachloride Concentration (µg/L)
250
200
150
100
50
0
35
30
25
20
15
10
5
0
Jan-95
Dec-95
Dec-96
Nov-97
Nov-98
Oct-99
Oct-00
Sep-01
Sep-02
Aug-03
Aug-04
Jul-05
Jul-06



** Carbon tetrachloride has not been detected in samples collected at MW-17-4*

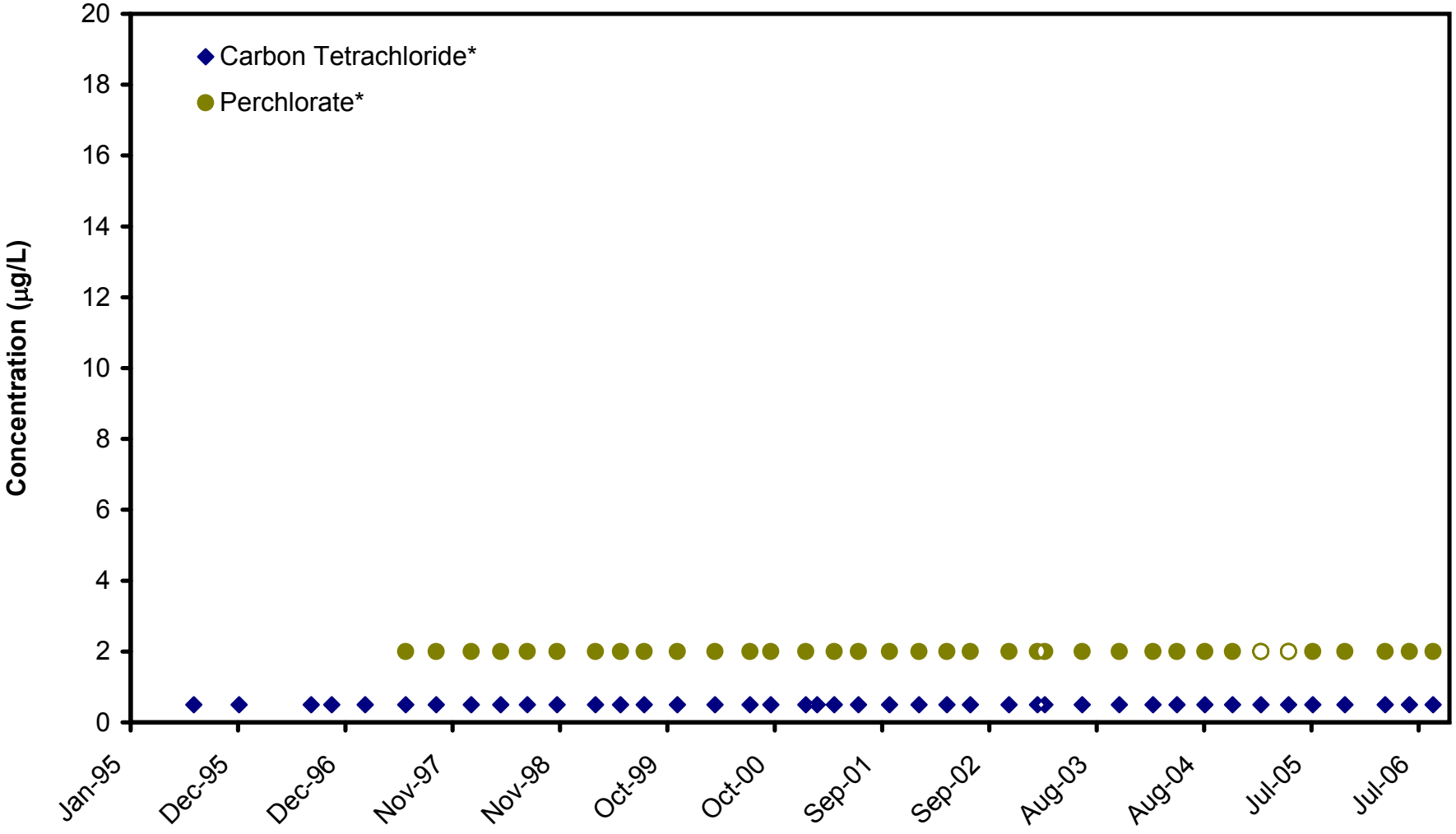


** Carbon tetrachloride has not been detected in samples collected at MW-17-5*

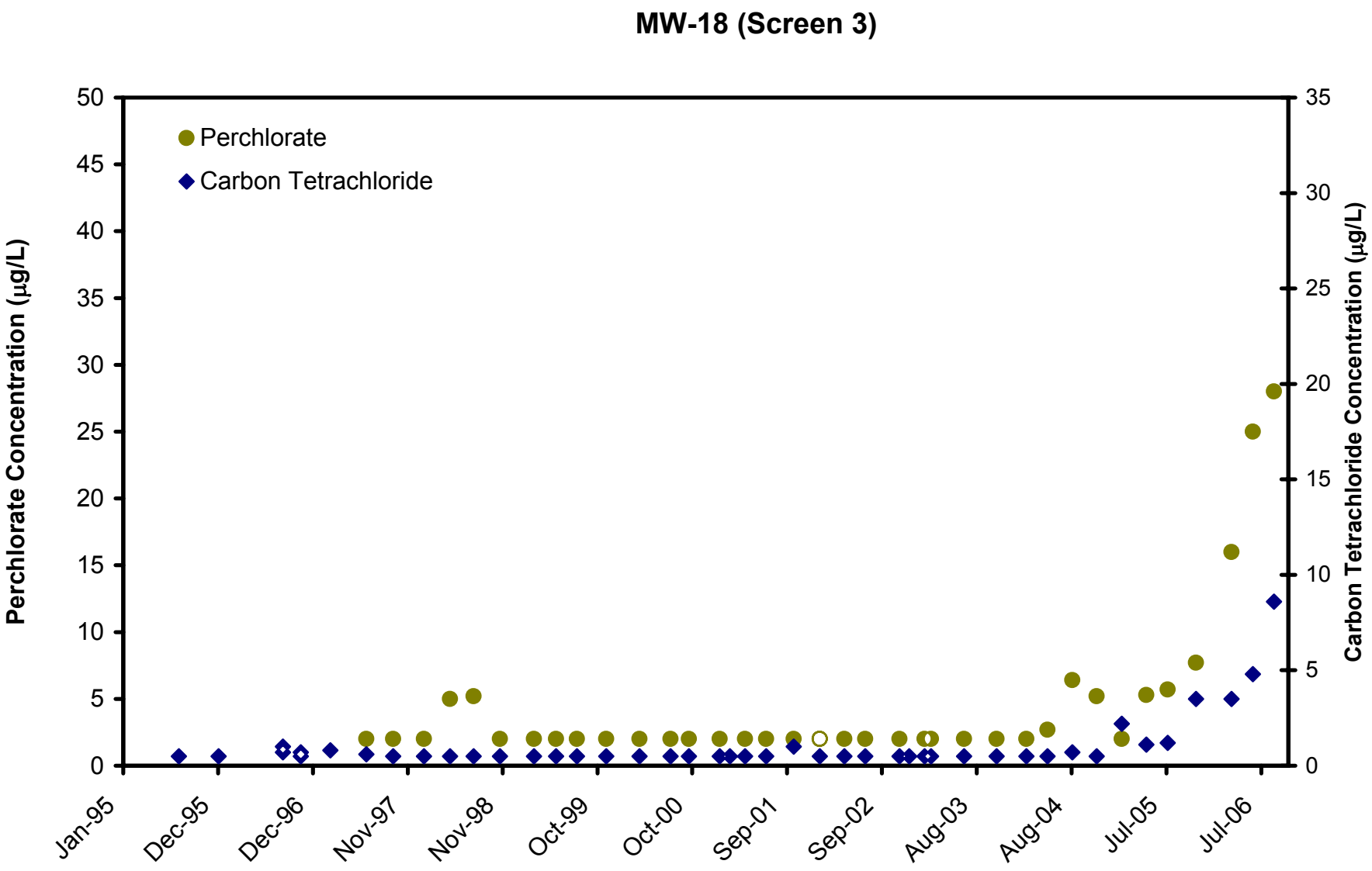


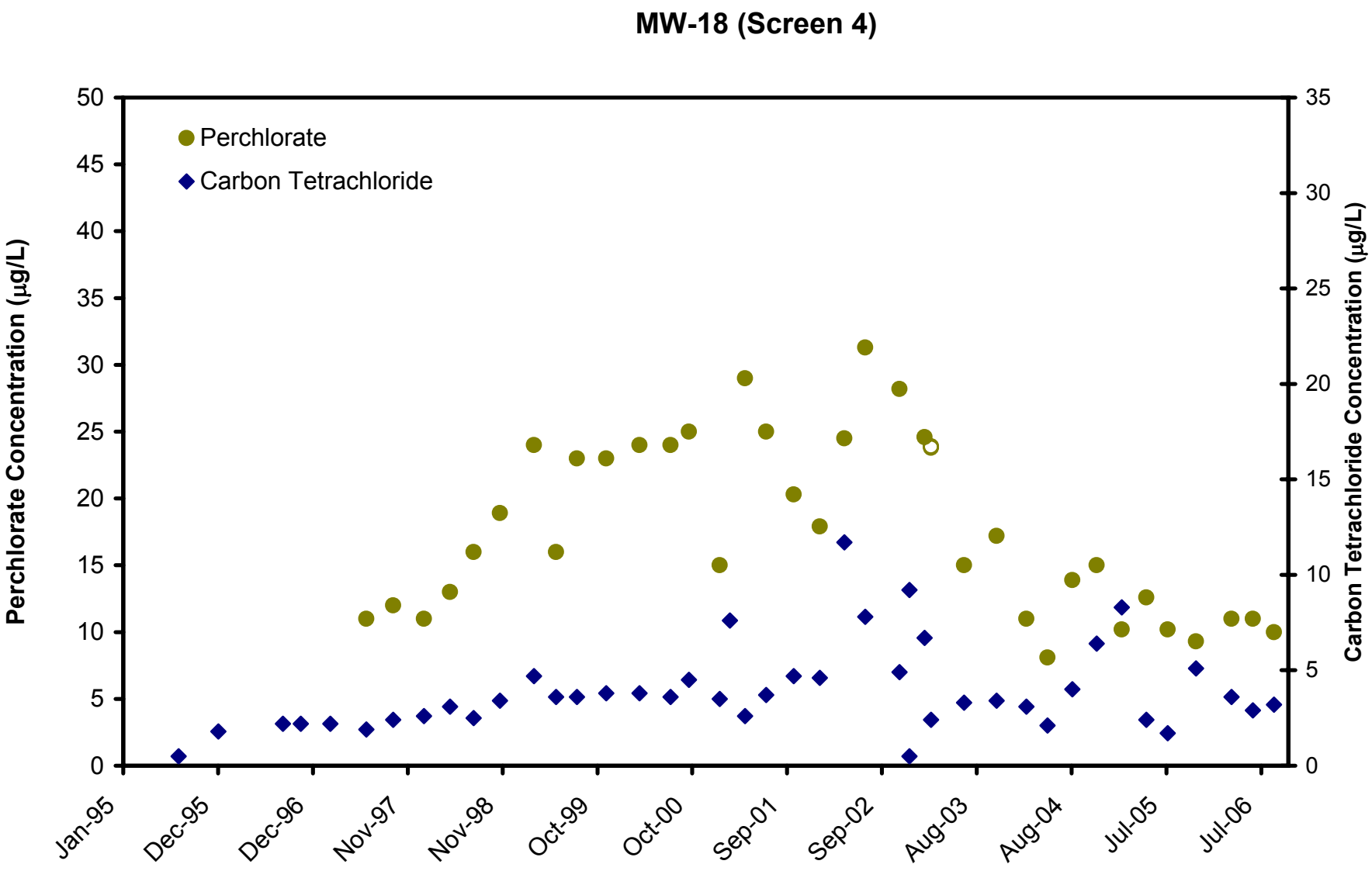
** Carbon tetrachloride and perchlorate have not been detected in samples collected at MW-18-1*

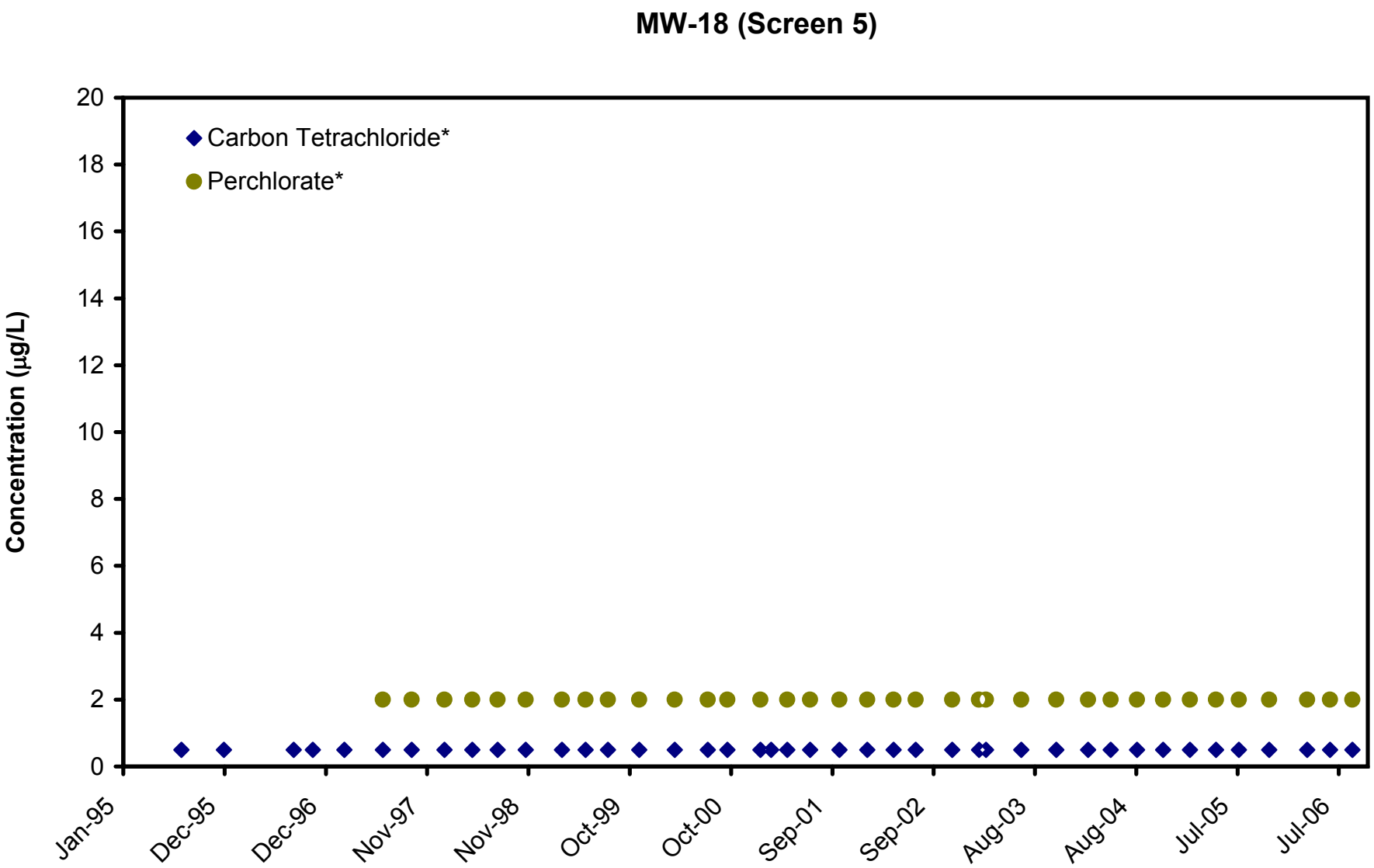
MW-18 (Screen 2)



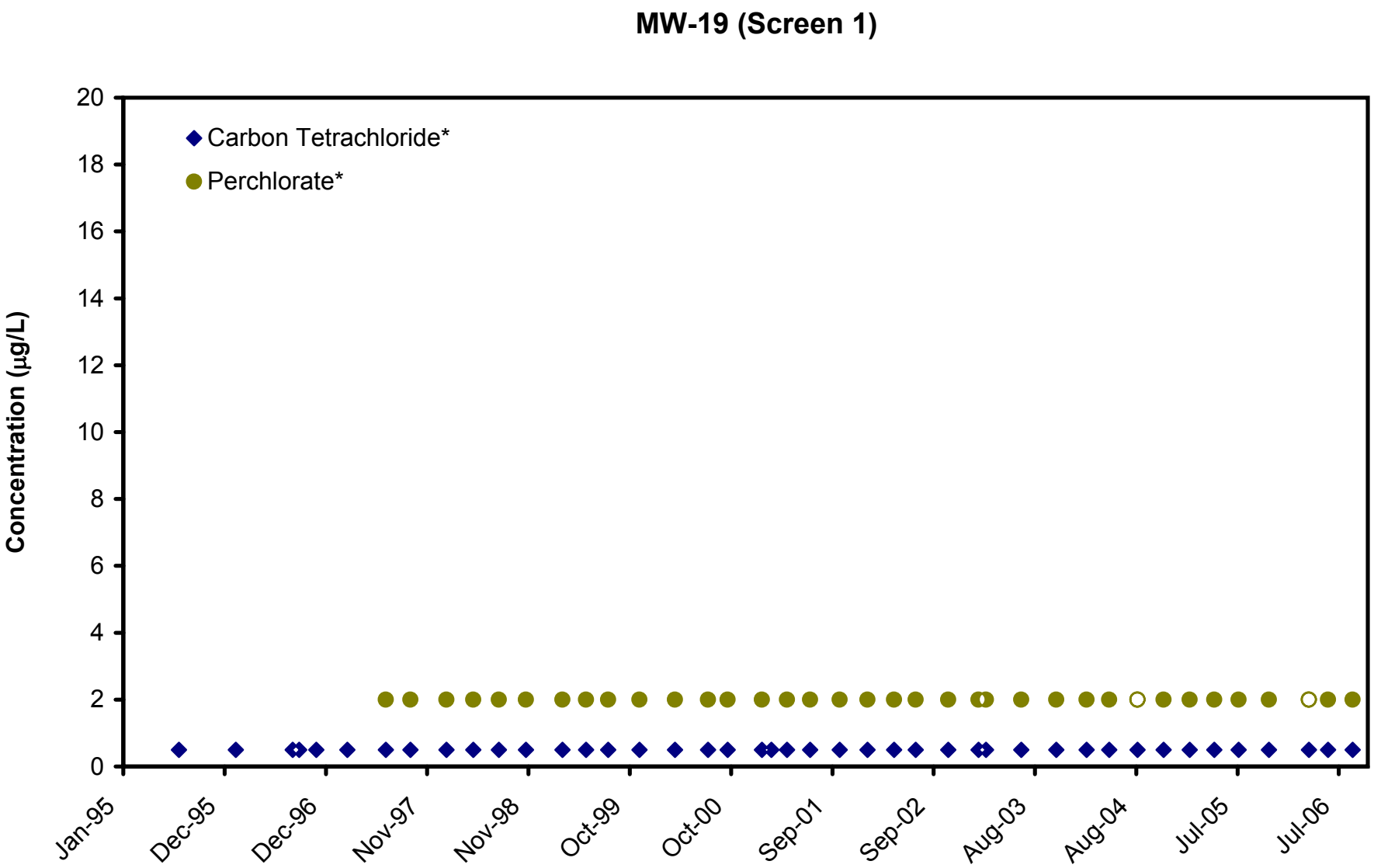
** Carbon tetrachloride and perchlorate have not been detected in samples collected at MW-18-2*


MW-18 (Screen 3)
Perchlorate
Carbon Tetrachloride
Perchlorate Concentration (µg/L)
Carbon Tetrachloride Concentration (µg/L)
0
5
10
15
20
25
30
35
40
45
50
0
5
10
15
20
25
30
35
Jan-95
Dec-95
Dec-96
Nov-97
Nov-98
Oct-99
Oct-00
Sep-01
Sep-02
Aug-03
Aug-04
Jul-05
Jul-06

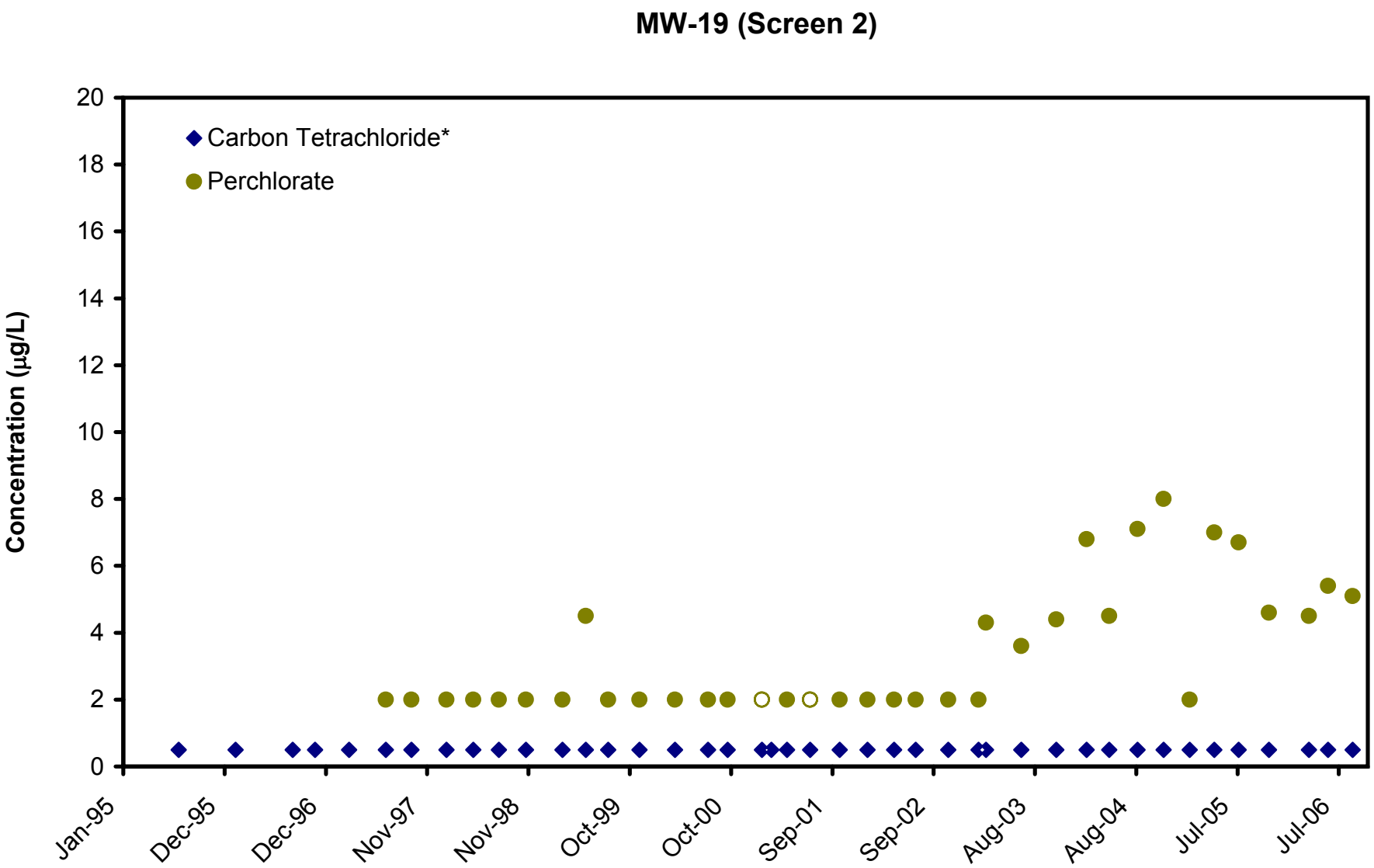

MW-18 (Screen 4)
Perchlorate
Carbon Tetrachloride
Perchlorate Concentration (µg/L)
Carbon Tetrachloride Concentration (µg/L)
0
5
10
15
20
25
30
35
40
45
50
0
5
10
15
20
25
30
35
Jan-95
Dec-95
Dec-96
Nov-97
Nov-98
Oct-99
Oct-00
Sep-01
Sep-02
Aug-03
Aug-04
Jul-05
Jul-06



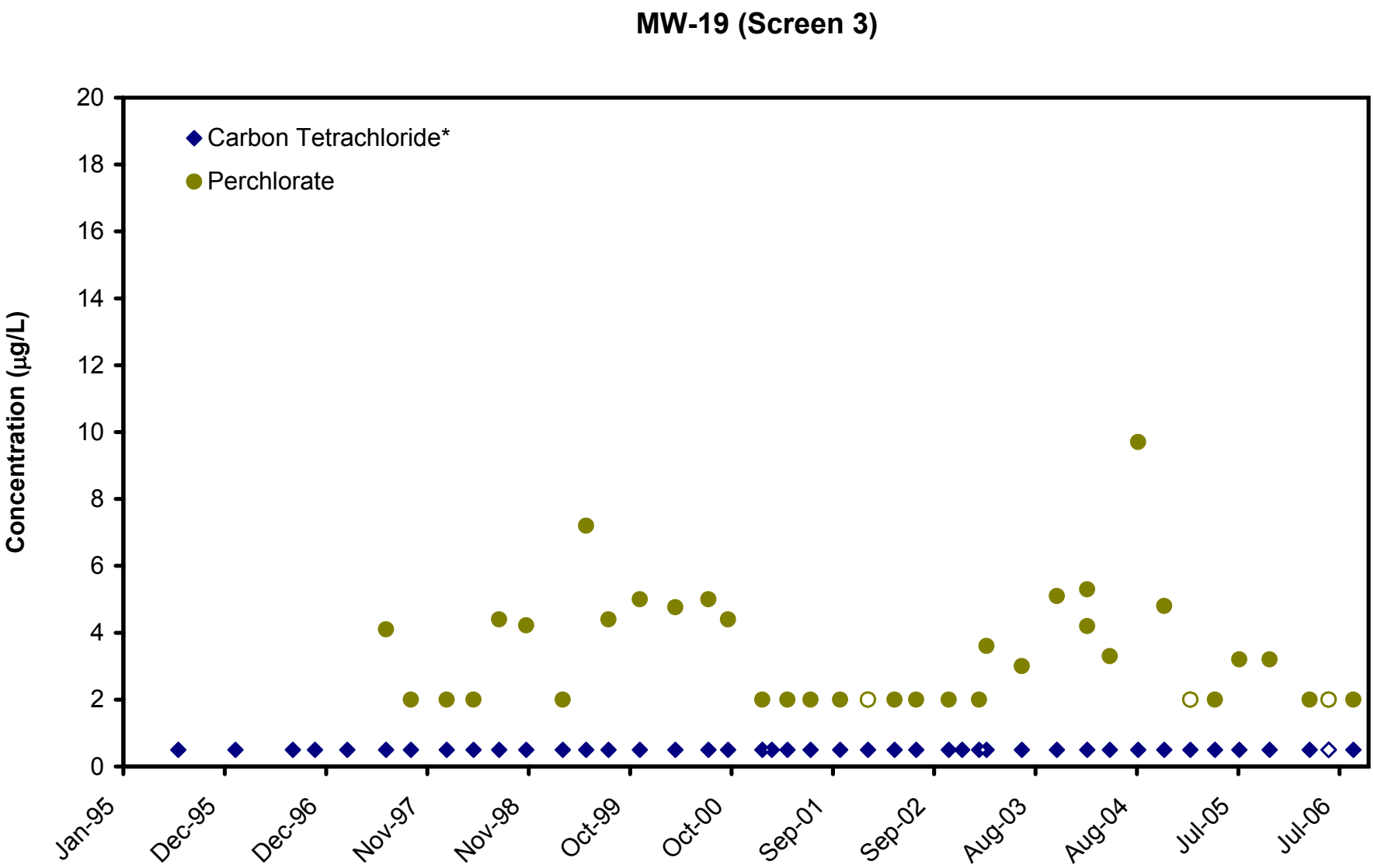
** Carbon tetrachloride and perchlorate have not been detected in samples collected at MW-18-5*



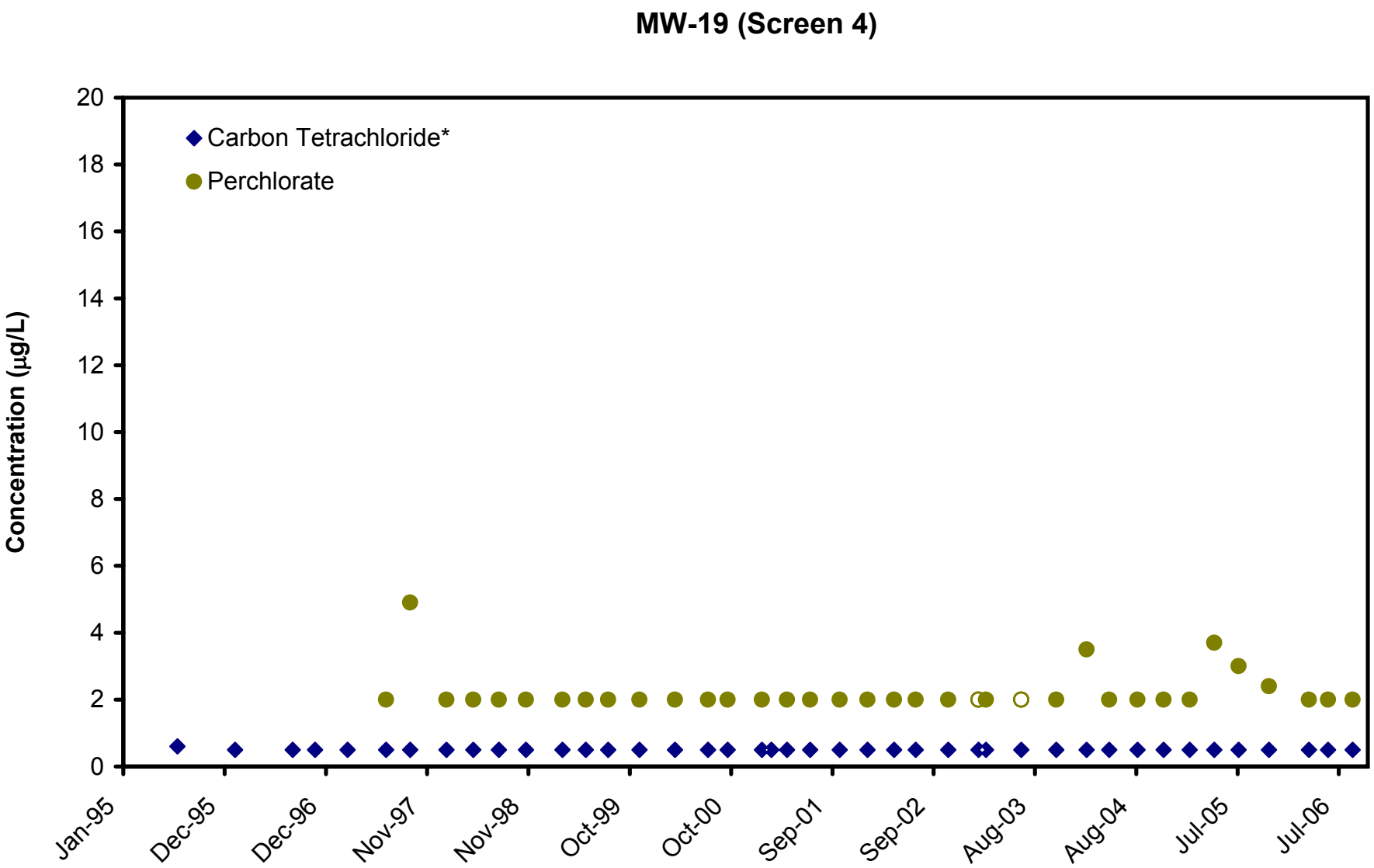
** Carbon tetrachloride and perchlorate have not been detected in samples collected at MW-19-1*



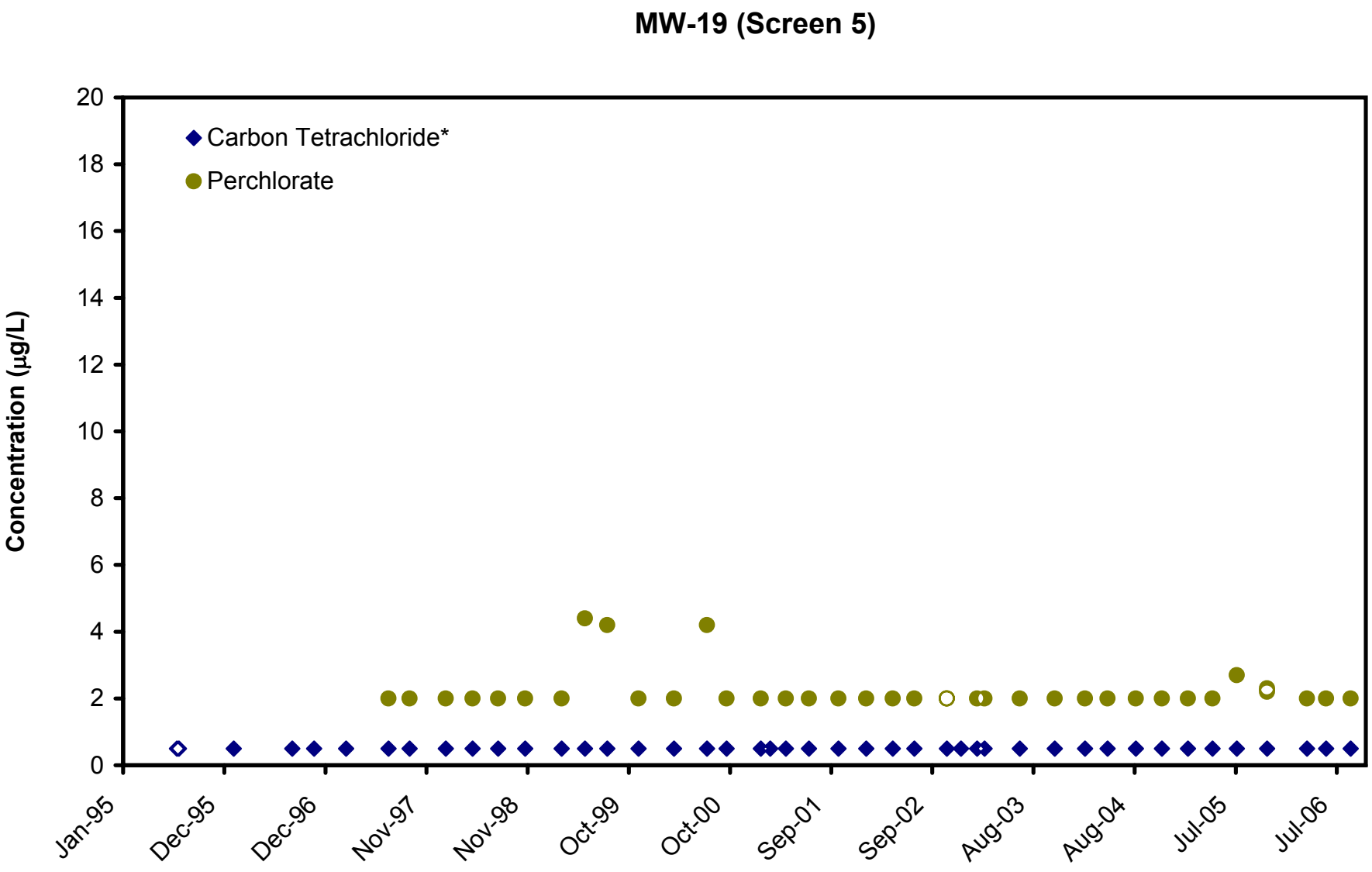
** Carbon tetrachloride has not been detected in samples collected at MW-19-2*



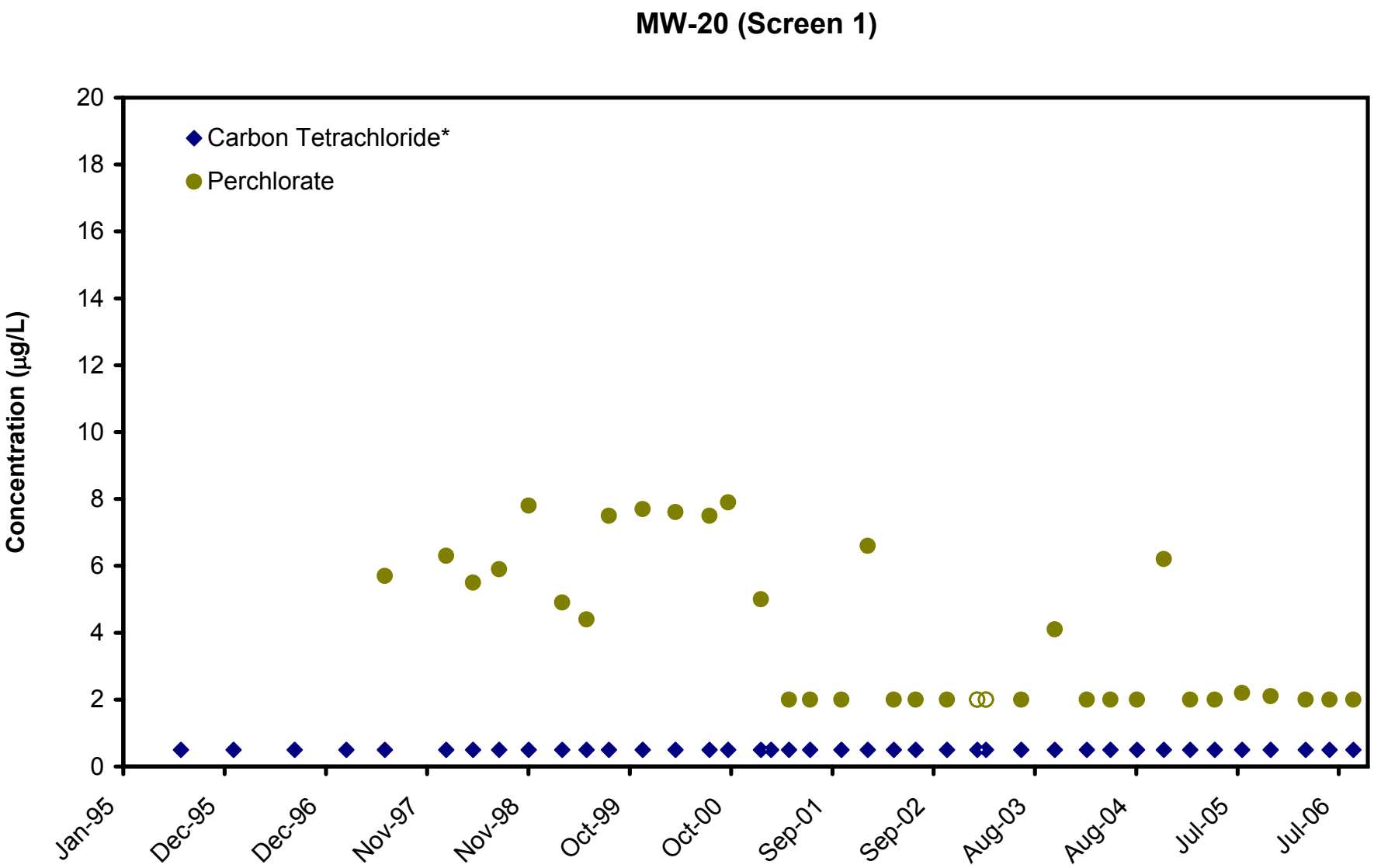
** Carbon tetrachloride has not been detected in samples collected at MW-19-3*



** Carbon tetrachloride has not been detected in samples collected at MW-19-4*

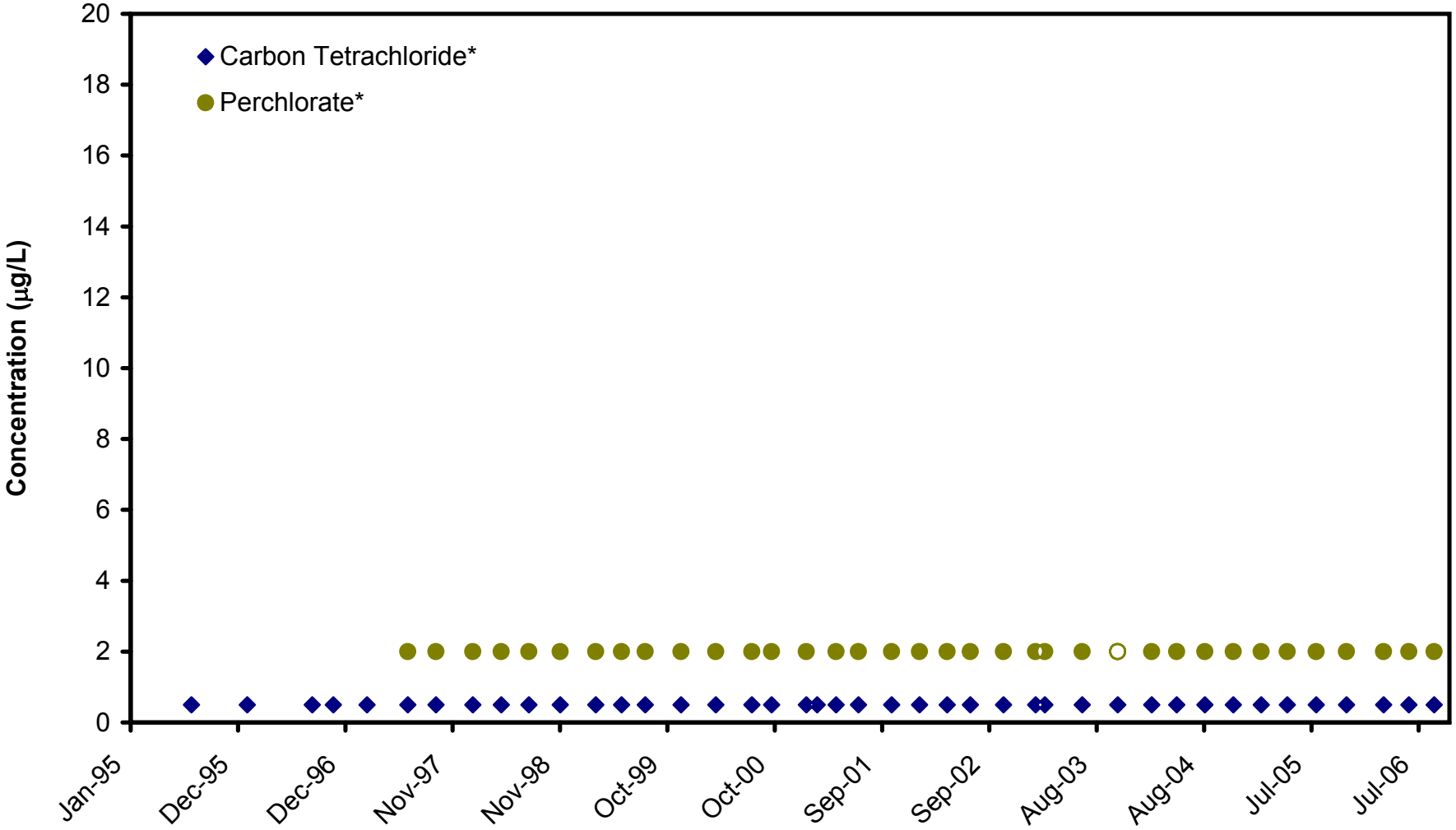


** Carbon tetrachloride has not been detected in samples collected at MW-19-5*



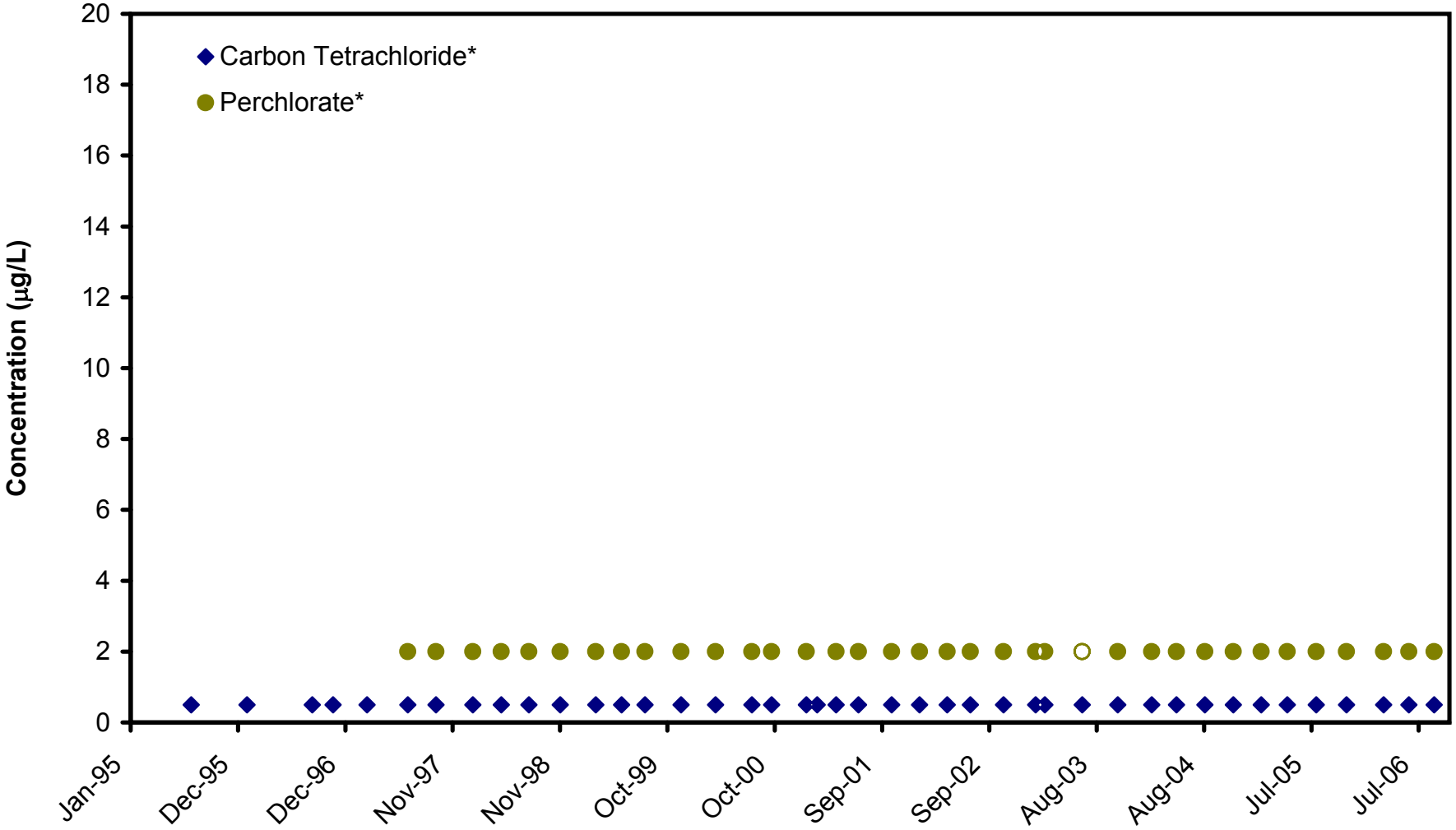
** Carbon tetrachloride has not been detected in samples collected at MW-20-1*

MW-20 (Screen 2)

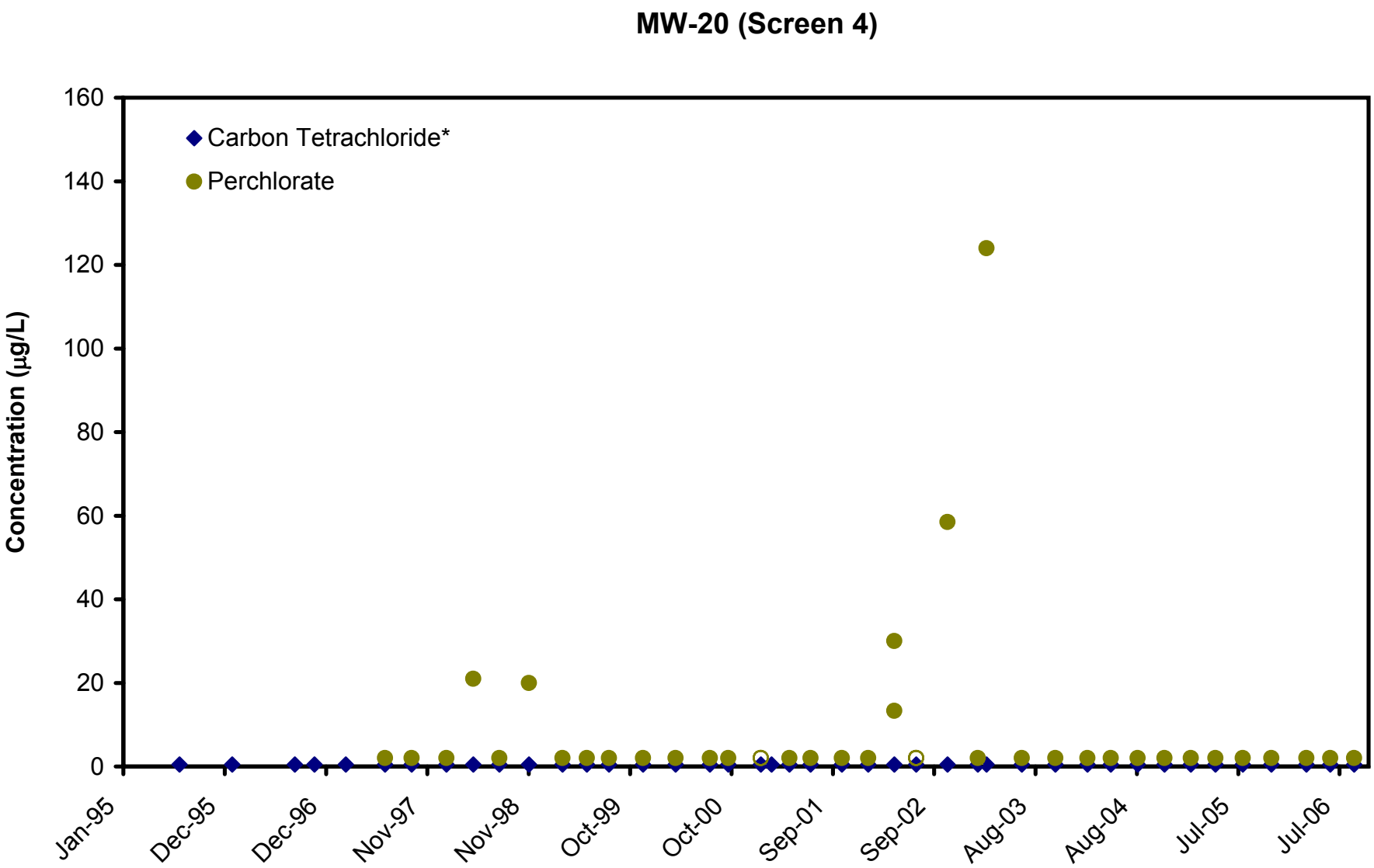


** Carbon tetrachloride and perchlorate have not been detected in samples collected at MW-20-2*

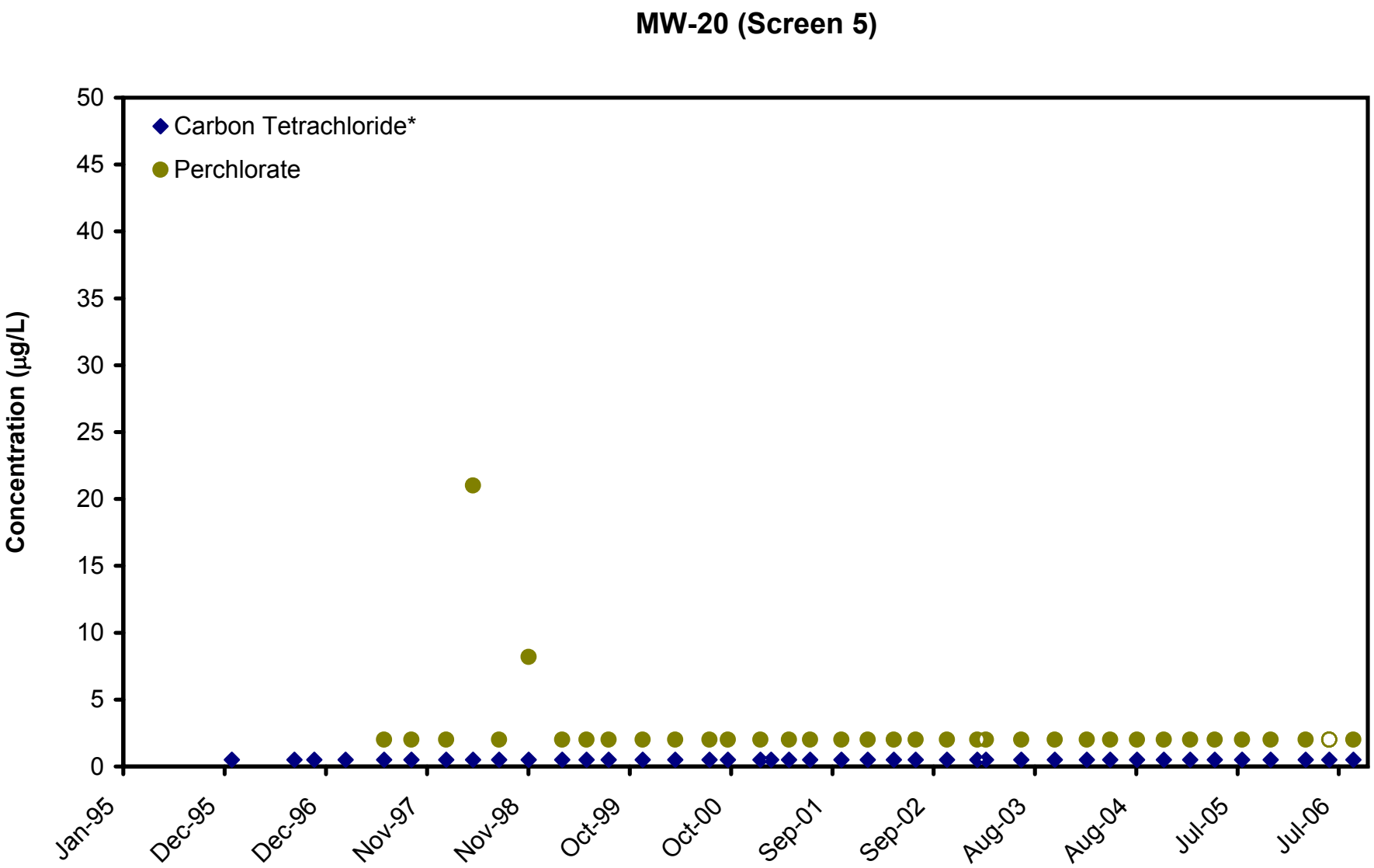
MW-20 (Screen 3)



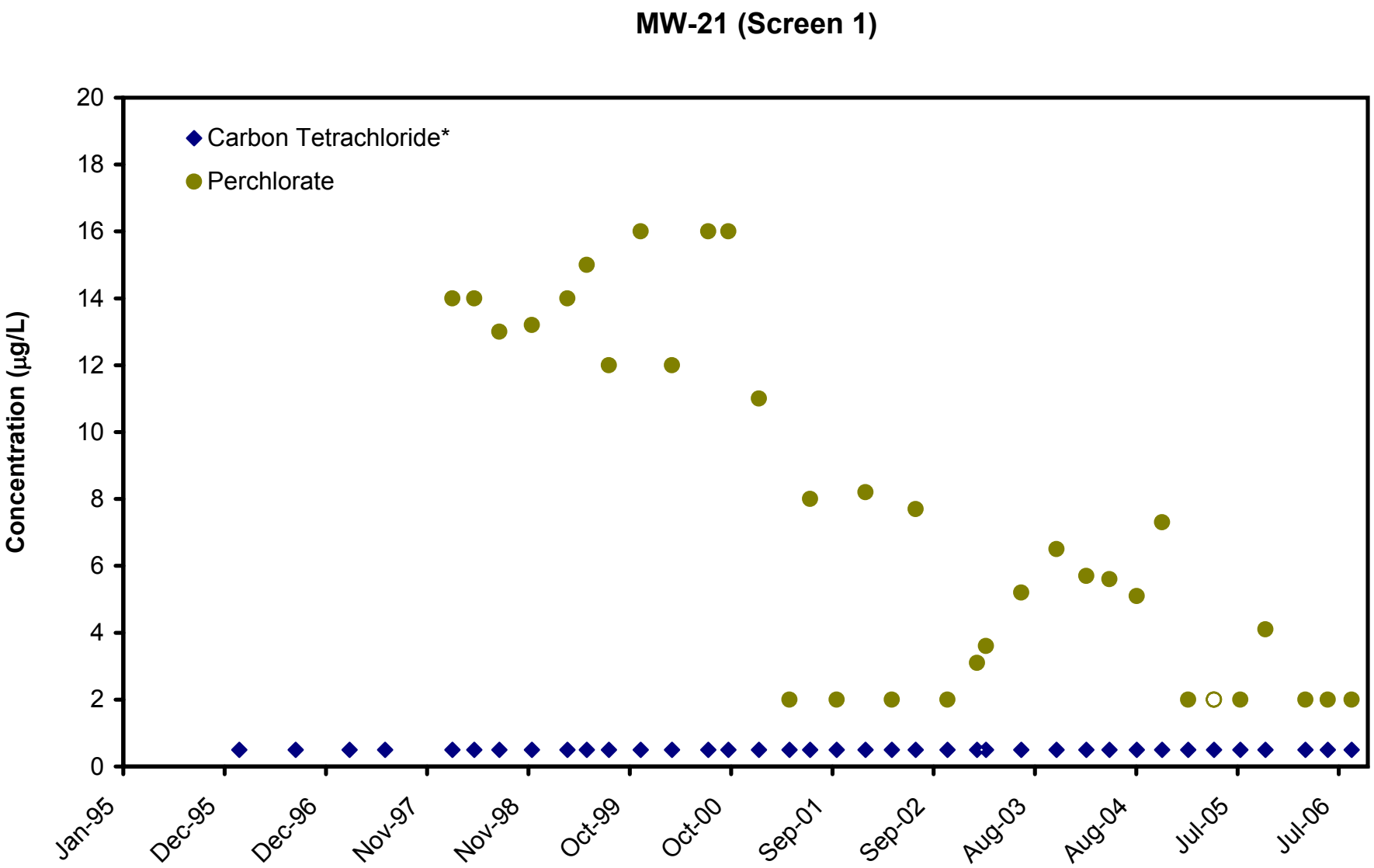
** Carbon tetrachloride and perchlorate have not been detected in samples collected at MW-20-3*



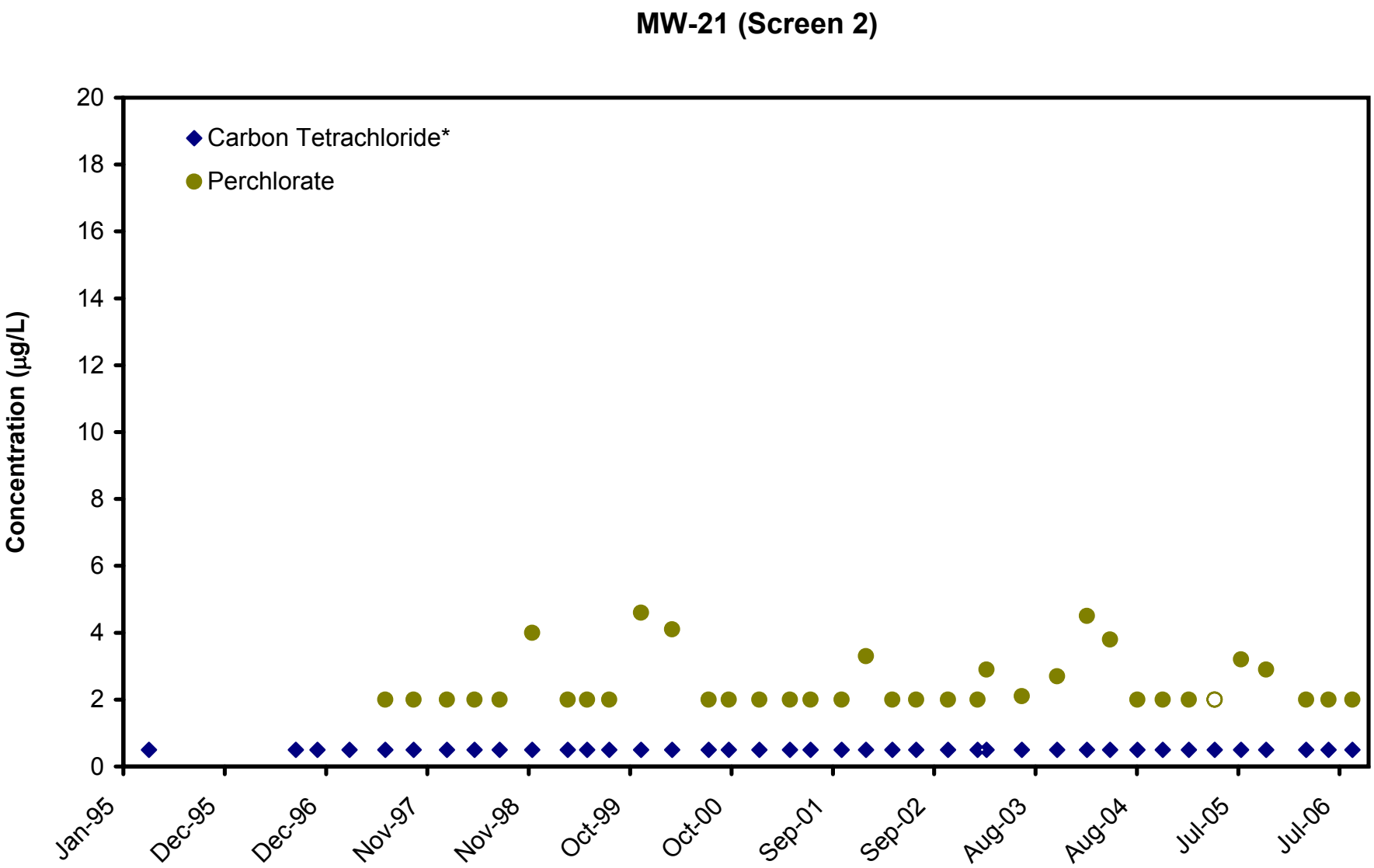
** Carbon tetrachloride has not been detected in groundwater collected at MW-20-4*



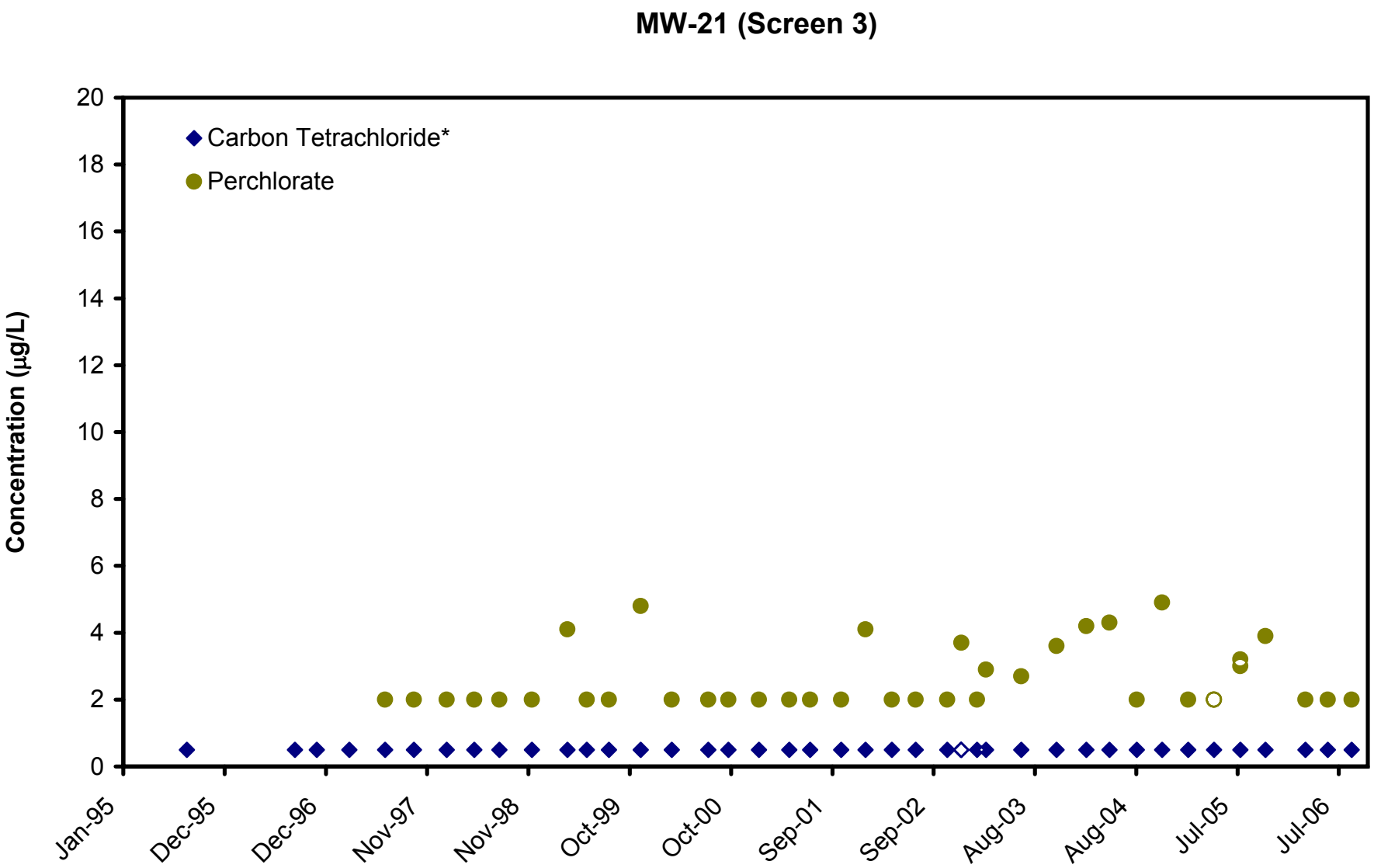
** Carbon tetrachloride has not been detected in samples collected at MW-20-5*



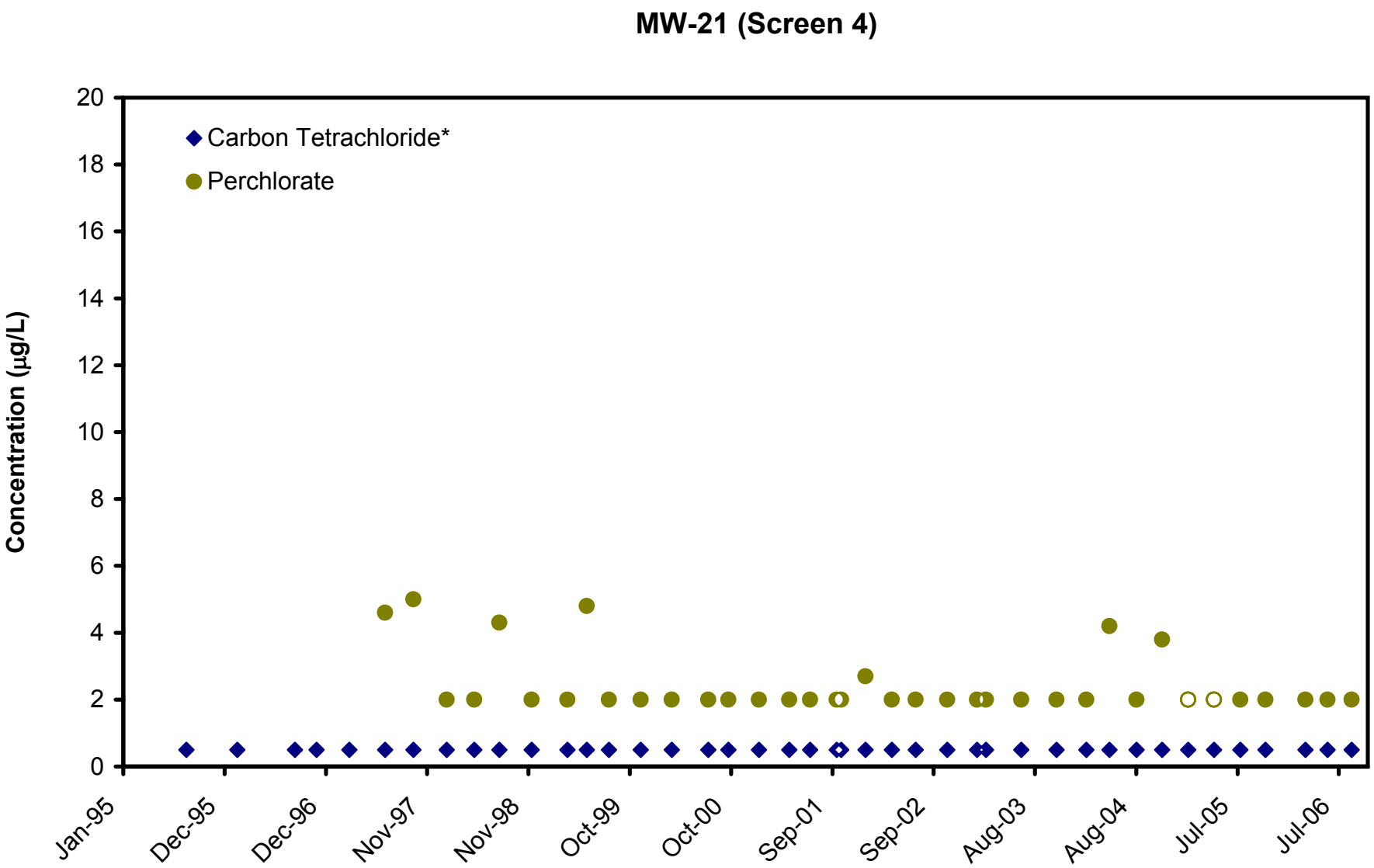
** Carbon tetrachloride has not been detected in samples collected at MW-21-1*



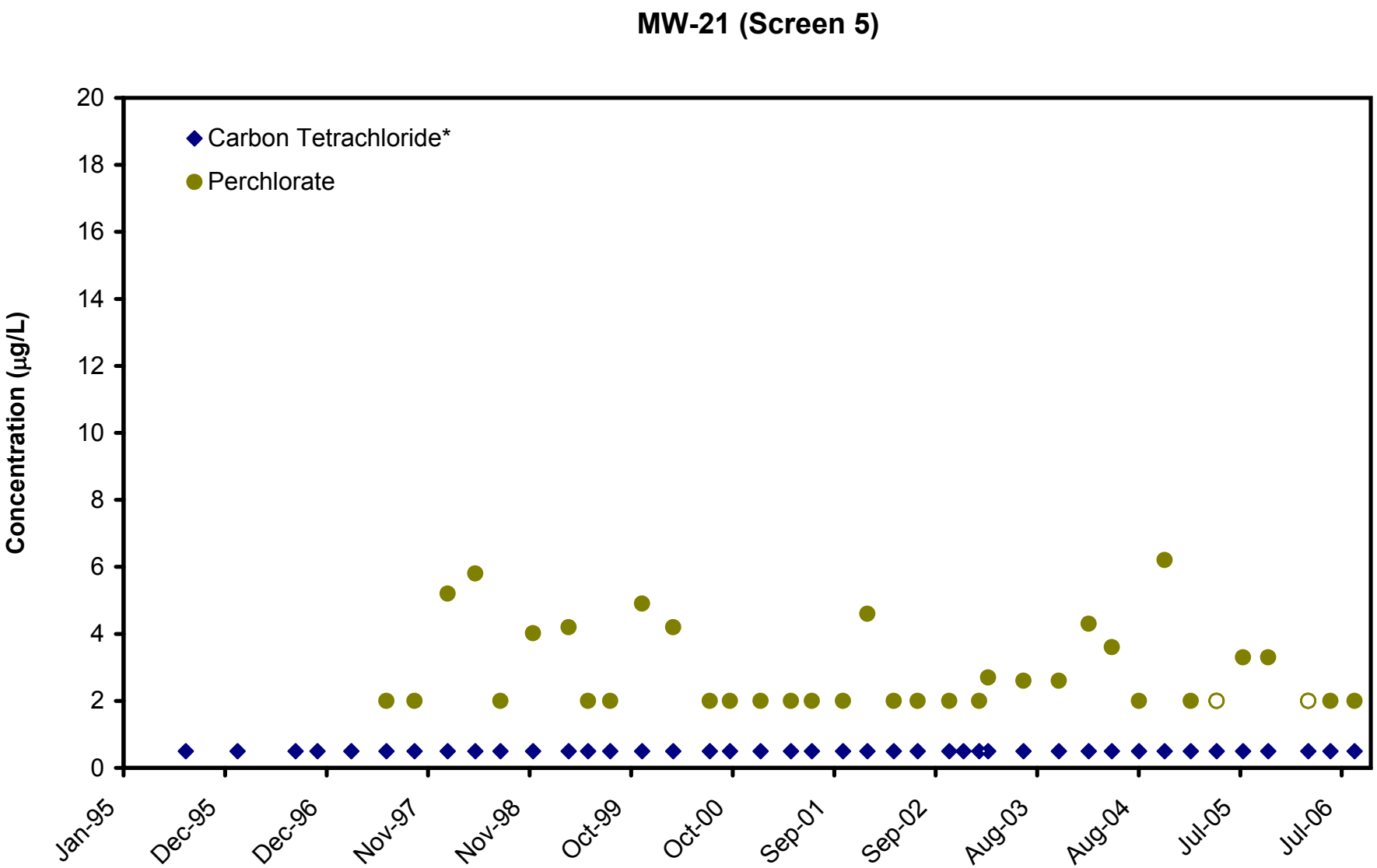
** Carbon tetrachloride has not been detected in samples collected at MW-21-2*



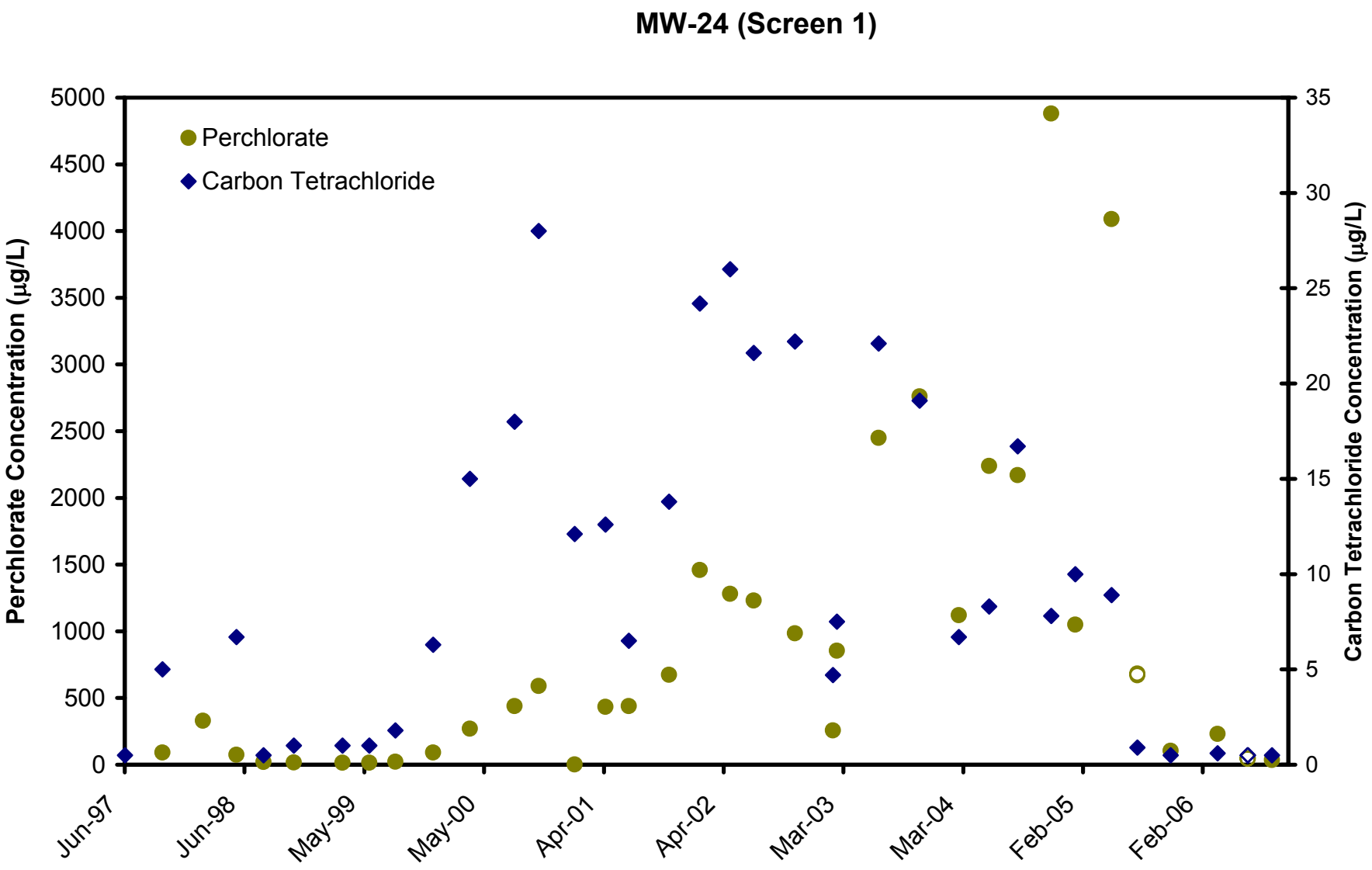
** Carbon tetrachloride has not been detected in samples collected at MW-21-3*

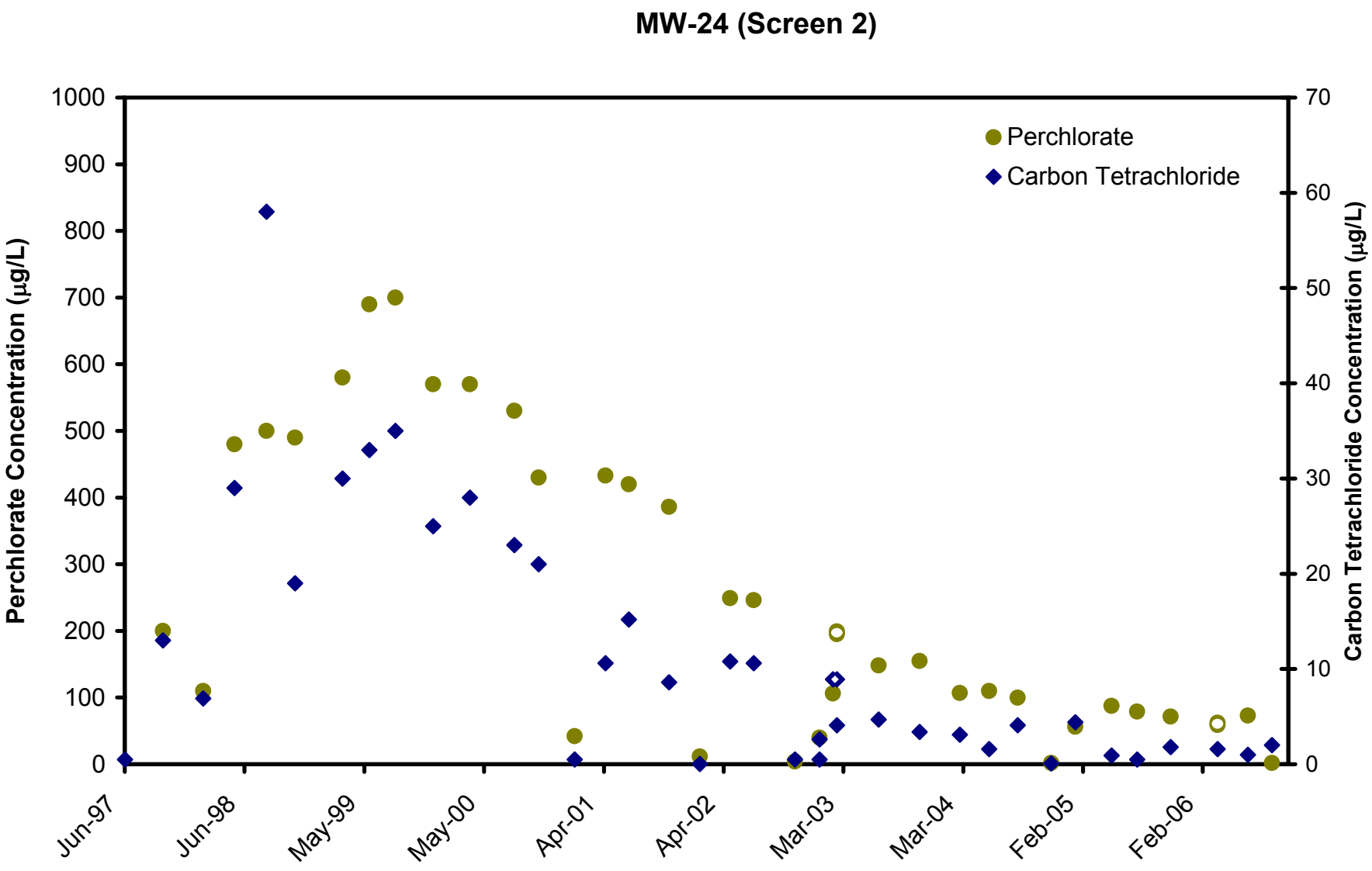


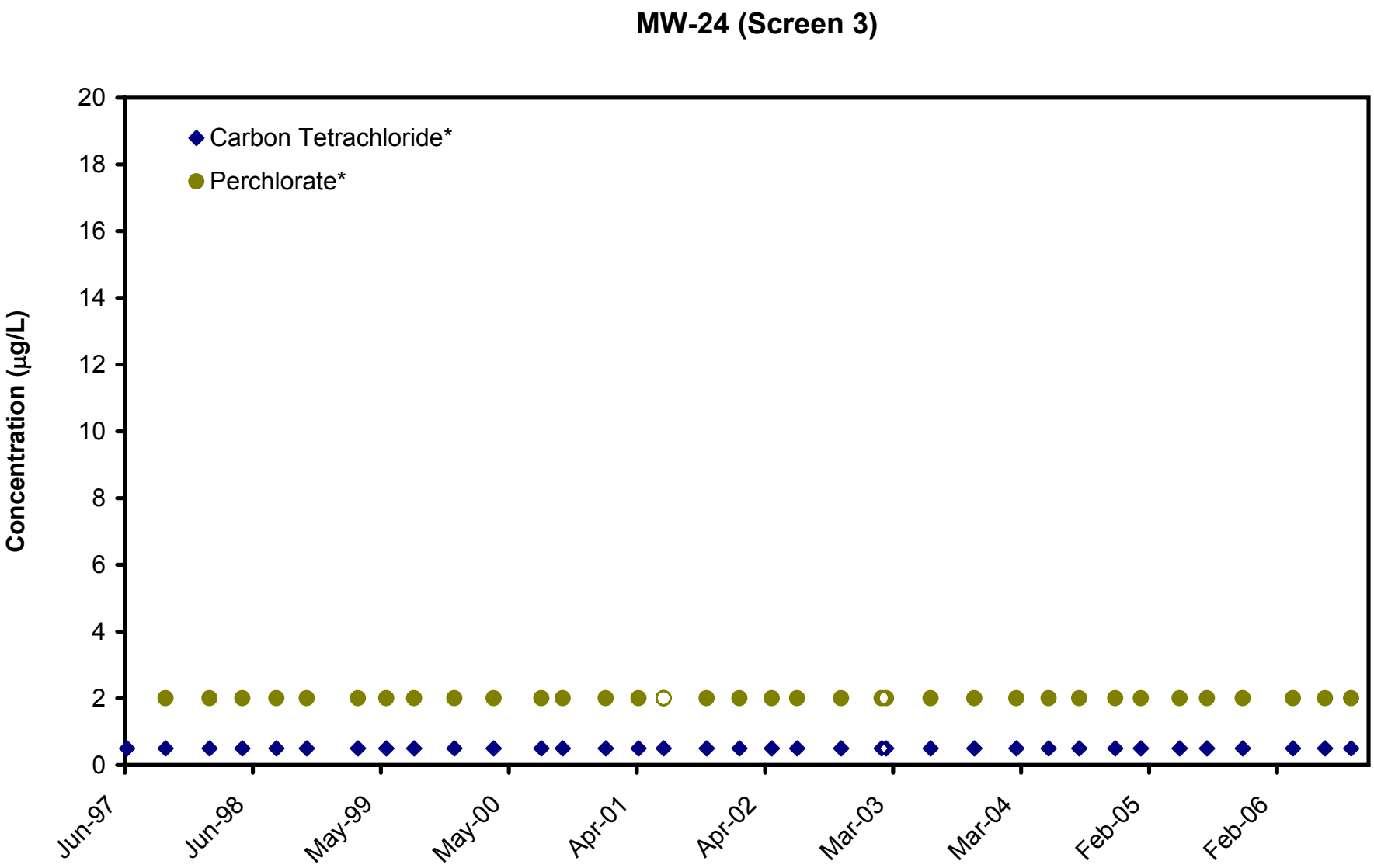
** Carbon tetrachloride has not been detected in samples collected at MW-21-4*



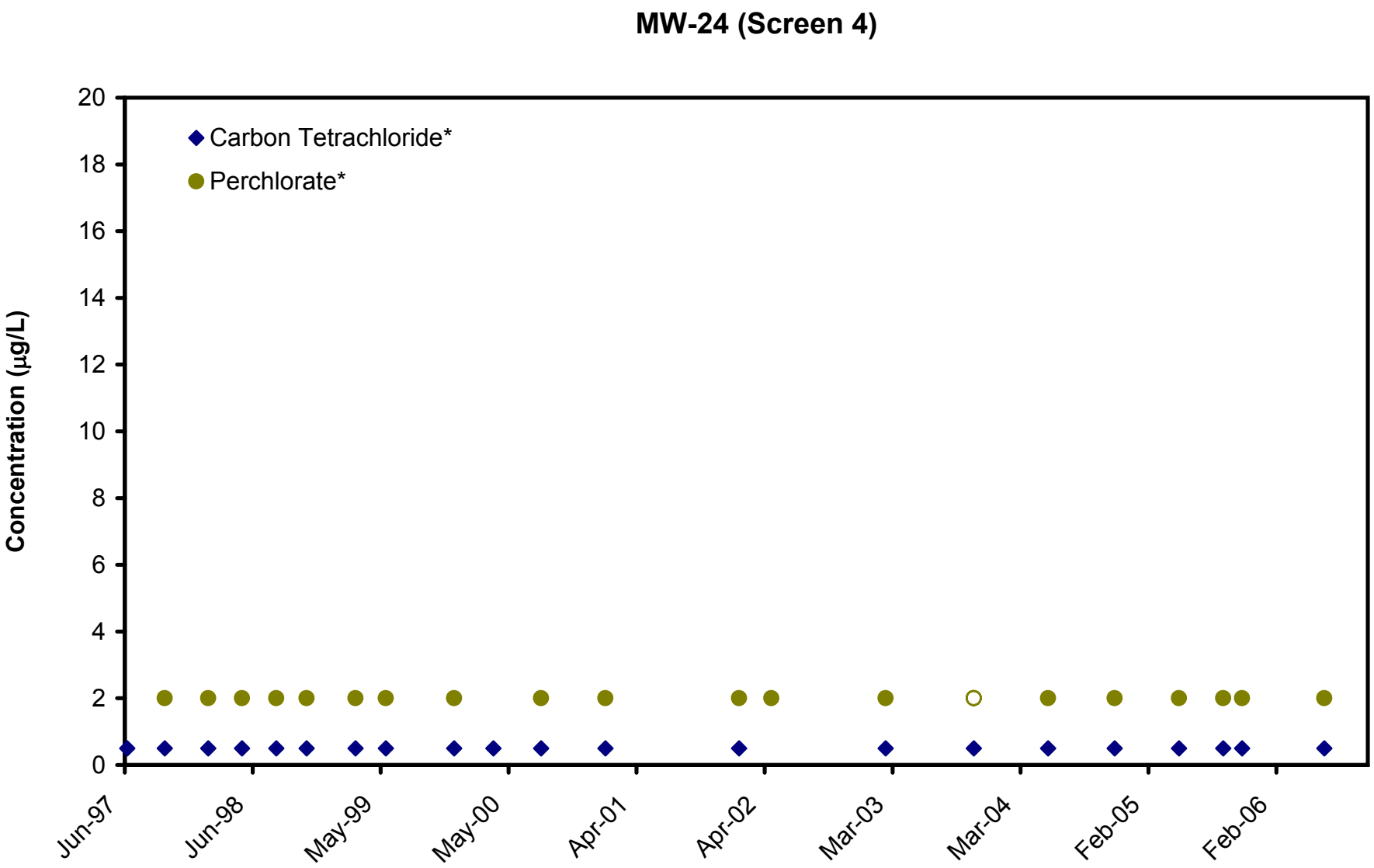
** Carbon tetrachloride has not been detected in samples collected at MW-21-5*


MW-24 (Screen 1)
Perchlorate
Carbon Tetrachloride
Perchlorate Concentration (µg/L)
Carbon Tetrachloride Concentration (µg/L)
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
35
30
25
20
15
10
5
0
Jun-97
Jun-98
May-99
May-00
Apr-01
Apr-02
Mar-03
Mar-04
Feb-05
Feb-06

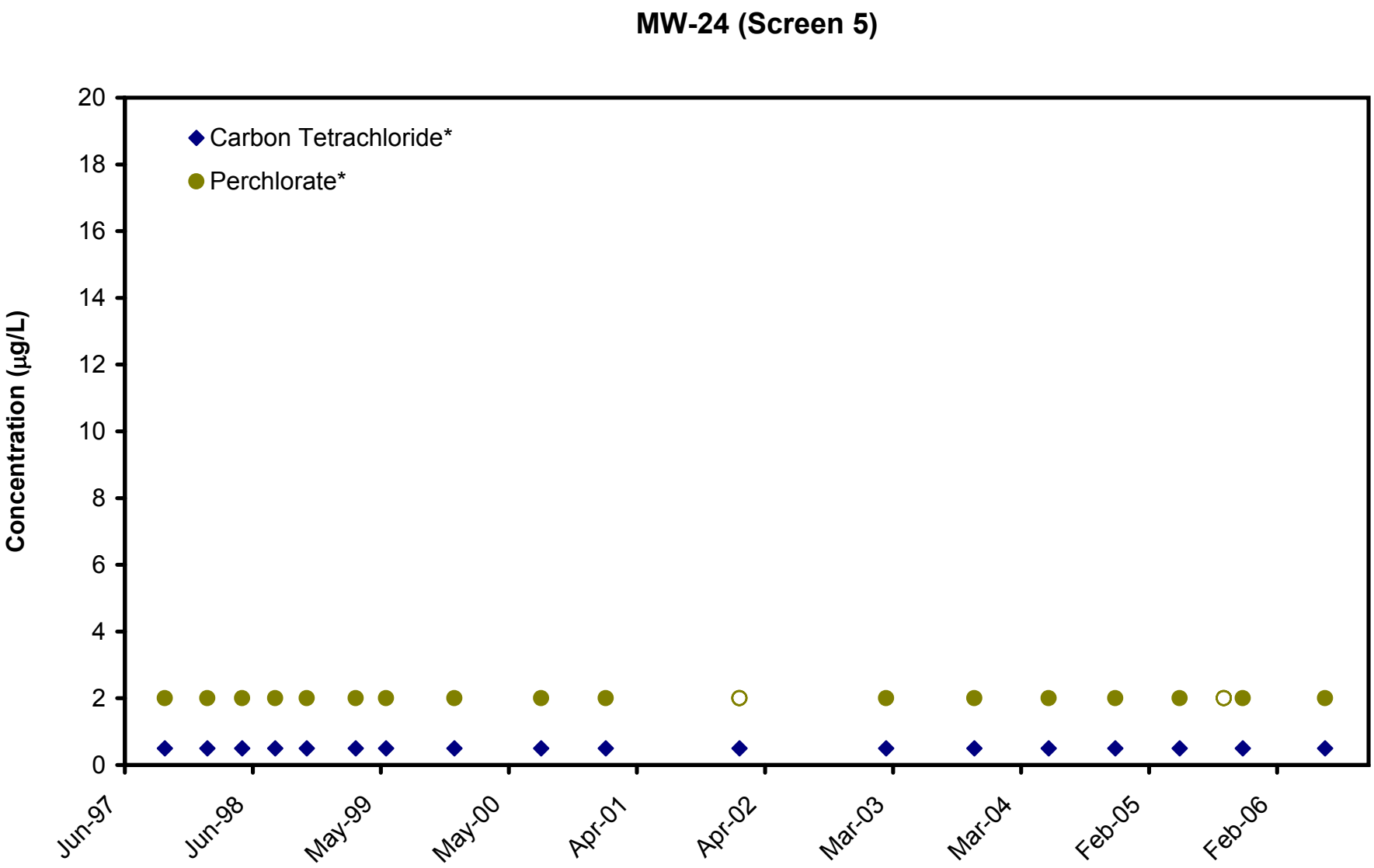

MW-24 (Screen 2)
Perchlorate
Carbon Tetrachloride
Perchlorate Concentration (µg/L)
Carbon Tetrachloride Concentration (µg/L)
1000
900
800
700
600
500
400
300
200
100
0
70
60
50
40
30
20
10
0
Jun-97
Jun-98
May-99
May-00
Apr-01
Apr-02
Mar-03
Mar-04
Feb-05
Feb-06



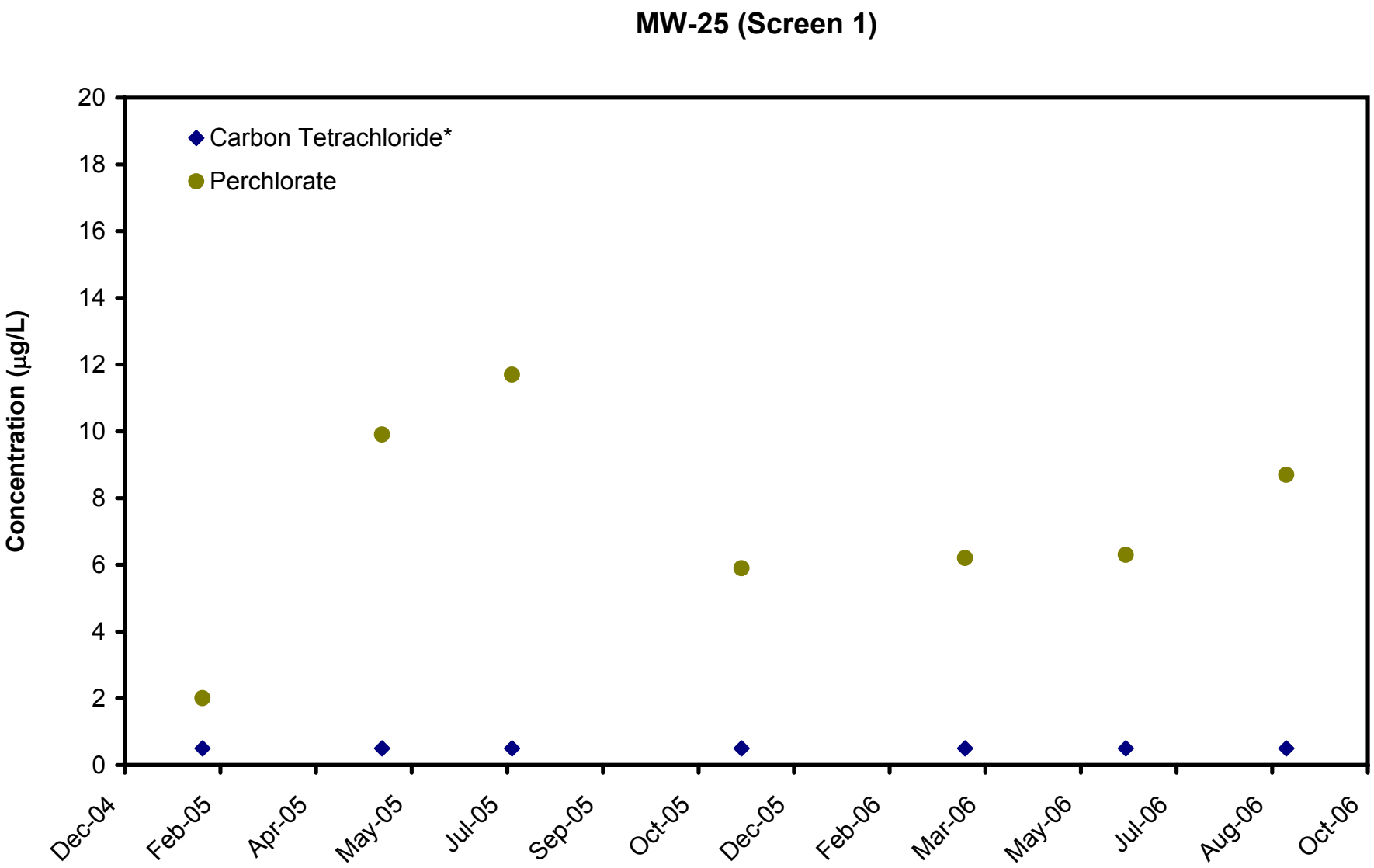
** Carbon tetrachloride and perchlorate have not been detected in samples collected at MW-24-3*



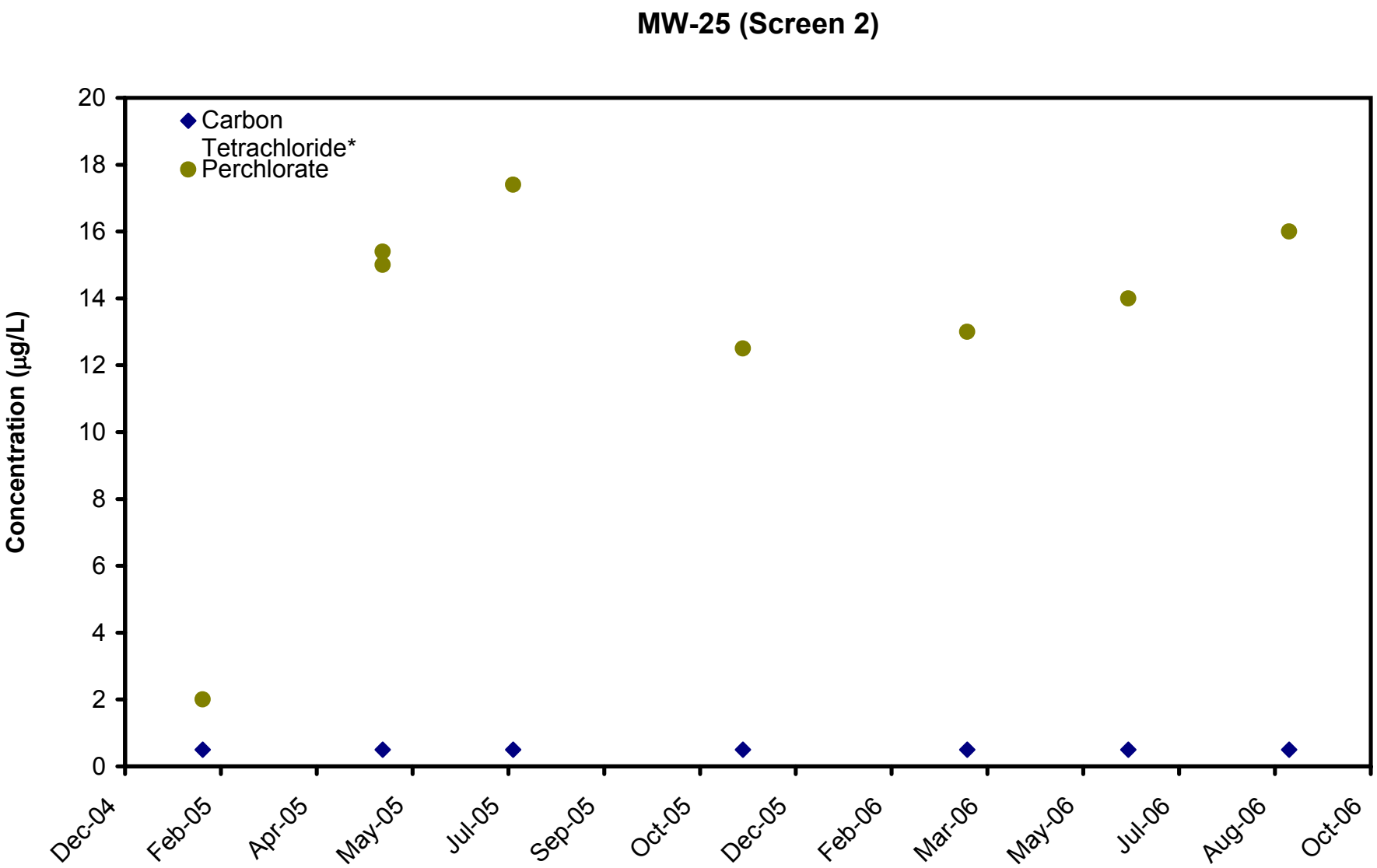
** Carbon tetrachloride and perchlorate have not been detected in samples collected at MW-24-4*



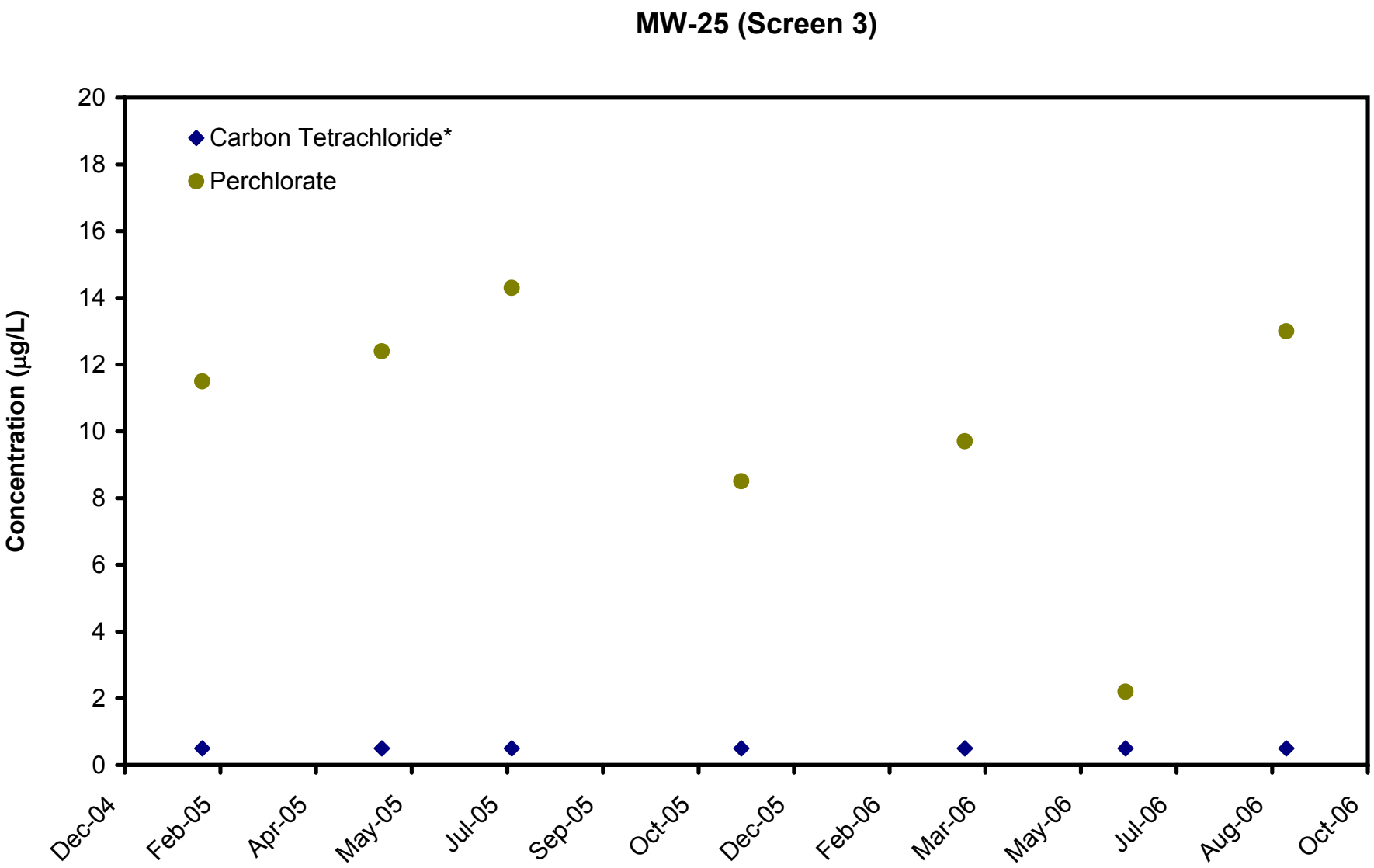
** Carbon tetrachloride and perchlorate have not been detected in samples collected at MW-24-5*



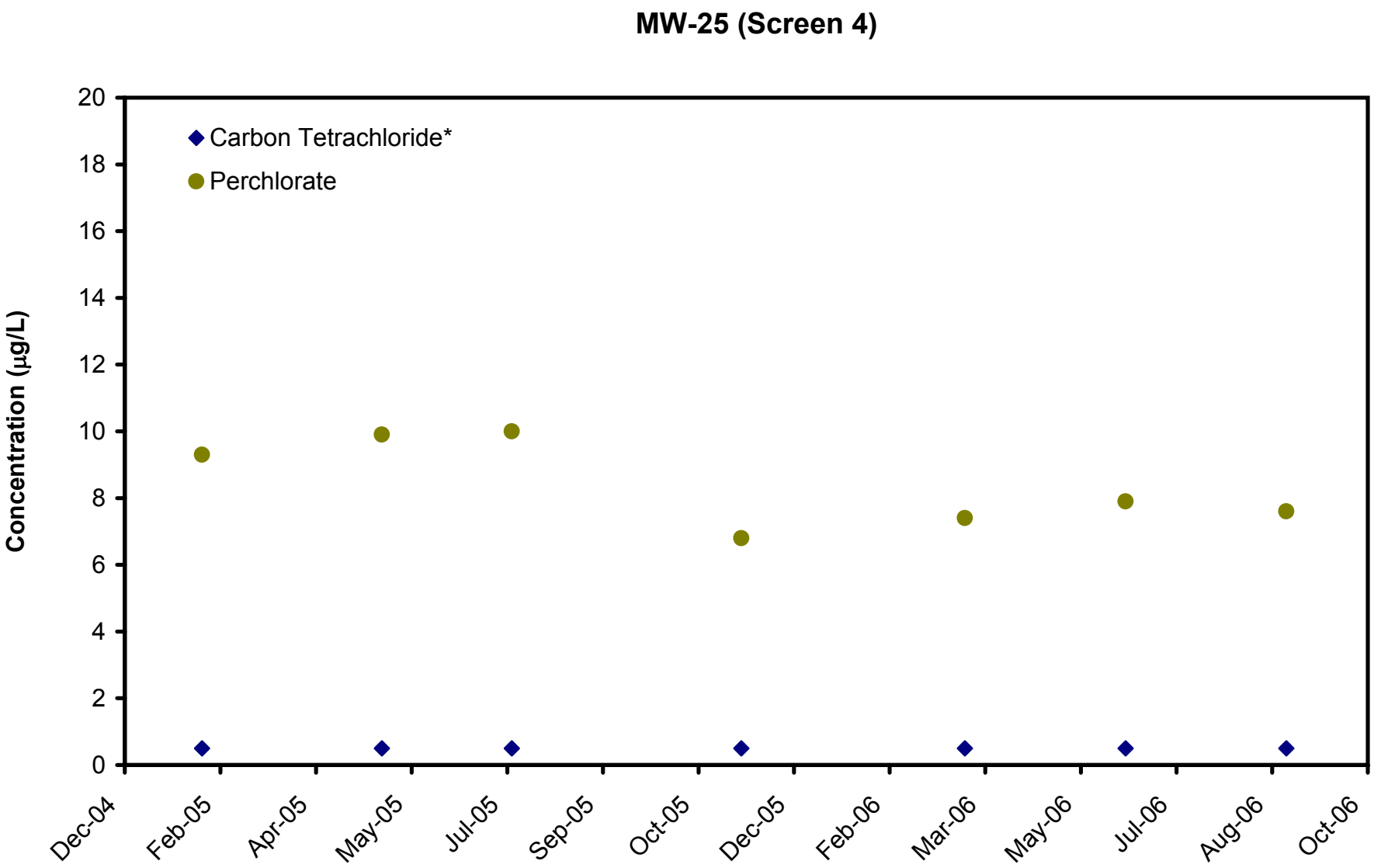
** Carbon tetrachloride has not been detected in samples collected at MW-25-1*



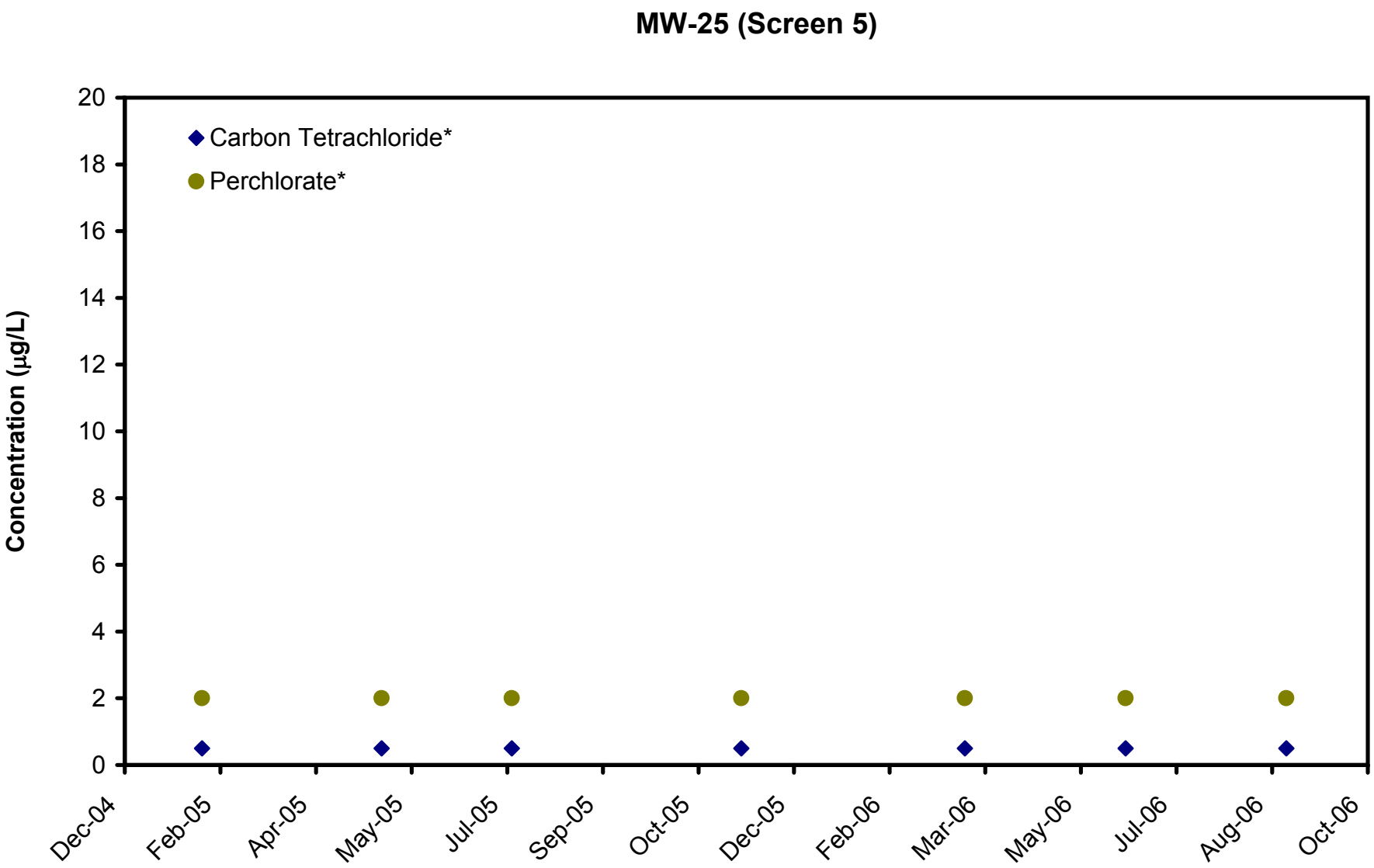
** Carbon tetrachloride has not been detected in samples collected at MW-25-2*



** Carbon tetrachloride has not been detected in samples collected at MW-25-3*



** Carbon tetrachloride has not been detected in samples collected at MW-25-4*



** Carbon tetrachloride and perchlorate have not been detected in samples collected at MW-25-5*