SURFACE WATER AND GROUNDWATER MONITORING PROGRAM
FALL 2001 MONITORING REPORT

ARCH CHEMICALS
ROCHESTER PLANT SITE
ROCHESTER, NEW YORK

ARCH CHEMICALS, INC.
CHARLESTON, TENNESSEE

February 2002

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February 2002

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This document meets standards prescribed in project planning documents and has been properly reviewed by qualified professionals.

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Quality Control Reviewer

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

EXECUTIVE SUMMARY

This monitoring report presents the results of an on-going groundwater and surface water monitoring program being conducted by Arch Chemicals, Inc., at its Rochester, New York, manufacturing facility. Results in this report include surface and groundwater samples collected from November 28, 2001 through December 4, 2001.

During this monitoring event, samples from a total of 22 groundwater monitoring or pumping wells and three locations associated with the Dolomite Products Quarry seep and outfall were collected and analyzed by Severn Trent Laboratories in Amherst, New York. Sixteen of the 22 groundwater samples were collected in accordance with the revised semiannual monitoring schedule which was agreed to by Arch Chemicals and the New York State Department of Environmental Conservation (NYSDEC) in October 2001. In addition, at the request of NYSDEC, five overburden wells (B-1, B-2, W-2, W-3, and W-4) located along the facility's western boundary were sampled to re-examine concentrations downgradient of the former Lab Sample Disposal Area, and one new off-site bedrock well (MW-16), at the former General Circuits Site, was sampled to further evaluate the possible presence of chloropyridines. Chloropyridines were suspected to be present in the General Circuits well based on findings from prior investigations that were completed by the former property owner.

Groundwater analytical results were compared with previous average concentrations from selected on-site and off-site wells. On-site wells continue to show significant shifts in concentration that are believed to be in response to increased extraction well pumping rates over the past twelve months. Off-site wells located immediately southwest of the facility show increases in chloropyridine concentrations, which are believed to be the result of off-site migration prior to the recent improvements in extraction system performance. Arch expects these levels to start to decrease in future monitoring events.

The analytical results from the additional wells along the western plant boundary generally showed low to non-detectable levels of site-related contaminants, consistent with previous interpretations of the distribution of VOCs and pyridines. These results do not suggest the presence of undetected source areas in the northern portion of the plant.

Two chloropyridine isomers (2-chloropyridine [150 ug/L], and 2,6-dichloropyridine [9 ug/L]) along with p-fluoroaniline (18 ug/L) were detected at the former General Circuits Site well (MW-16). The detection of chloropyridines in bedrock groundwater east of the Arch plant confirms that historical migration of site-related contaminants occurred in that direction. Operation of the current groundwater extraction system is believed to be preventing further migration to the east. Additional monitoring east and southeast of the Arch plant may be warranted to confirm that migration is no longer occurring.

1.0 INTRODUCTION

In accordance with the Order on Consent executed between Olin Corporation and New York State Department of Environmental Conservation (NYSDEC), effective August 23, 1993 and transferred to Arch Chemicals, Inc. (Arch) on February 15, 1999, Arch has been completing a Remedial Investigation and Feasibility Study at its facility on McKee Road in Rochester, New York. As part of this program, Arch conducts regular monitoring events consisting of sampling and chemical analysis of groundwater and surface water in the vicinity of the Rochester facility.

In October 2001, Arch and NYSDEC agreed to a revised monitoring schedule for the Fall 2001 and calendar year 2002 sampling events. In accordance with that schedule, a total of twenty-five groundwater, surface water, and seep samples were collected from off-site and on-site locations from November 28, 2001 through December 4, 2001 for analysis of selected chloropyridines and volatile organic compounds (VOCs). This report has been prepared to present the results of the Fall 2001 monitoring event.

2.0 SAMPLE COLLECTION AND ANALYSIS

2.1 GROUNDWATER

Groundwater samples were collected from off-site wells, on-site wells and piezometers for analysis of selected chloropyridines (2-chloropyridine, 2,6-dichloropyridine, 3-chloropyridine, 4-chloropyridine, pyridine, and p-fluoroaniline) and target compound list (TCL) VOCs. Samples were collected by Severn Trent Laboratories and transported to their laboratory in Amherst, New York for analysis. The off-site and on-site locations of these sampling points are shown in Figures 1 and 2, respectively. Table 1 lists the wells that were sampled and the requested analyses. Groundwater sampling data sheets are provided in Appendix A.

Groundwater was collected with the low flow/low stress purging technique from most of the wells using bladder or peristaltic pumps. Samples from pumping wells (BR-5A, BR-6A, BR-9, PW10, PW11, and PW12) were collected from the discharge lines.

Groundwater piezometric elevations were measured on November 29, 2001. Piezometric contour maps were constructed for each water-bearing zone (overburden, bedrock, and deep bedrock) and are presented in Figures 3, 4, and 5.

2.2 SURFACE WATER

Surface water and quarry samples were collected as part of the on-going monitoring program for the Arch Rochester site. The location of the quarry and its outfall in relation to the site is shown on Figure 6. Samples of the quarry seep, the quarry outfall, and the Barge Canal were collected by Severn Trent Laboratories on December 3, 2001 for selected chloropyridine and TCL VOCs analysis. The three locations sampled during this event are listed below and are shown on Figure 7.

Canal Samples	Quarry Samples
QO-2S1 (100 ft south of QO-2)	QS-4 (Quarry Seep)
	QO-2 (Quarry Outfall)

2.3 ANALYTICAL PROCEDURES

The analytical procedures, data review findings, and validated data for the Fall 2001 groundwater monitoring event are discussed in the following paragraphs.

Groundwater samples were analyzed for the Arch suite of selected chloropyridines and TCL VOCs by USEPA SW-846 Methods 8270C and 8260B, respectively. The reporting limits for the chloropyridines and VOCs are 10 micrograms per liter (µg/L) and 5 to 25 µg/L, respectively, for undiluted samples.

2.4 QUALITY CONTROL

All laboratory analytical results were reviewed and qualified following USEPA Region II modifications to "Laboratory Data Validation Functional Guidelines for Validating Organic Analyses" (USEPA, 9/1994). The following summarizes the chemistry review findings in accordance with these guidelines.

Sample results were reviewed for holding time compliance, surrogate standard recoveries, blank contamination, matrix spike blank/matrix spike blank duplicate (MSB/MSBD), and matrix spike/matrix spike duplicate (MS/MSD) accuracy and precision.

Based on the information provided by the laboratory, the overall data quality for both VOCs and the selected pyridine analysis appears to be good and all results are deemed usable. Results reported for both analyses are a compilation of results from several analytical runs to best represent the most usable data for a given compound.

Analytical holding times were met for all samples and surrogate percent recoveries were within QC limits for all undiluted analyses. Several samples were associated with MS/MSD with percent recoveries and relative percent differences (RPDs) outside QC limits. Chemist review findings and qualifying statements are described below:

- MS/MSD SVOC analyses was performed using sample BR-105. 2-Chloropyridine and 2,6-dichloropyridine were above percent recovery control limits and were qualified estimated (J) in the un-spiked and duplicate sample.

- The result for 3-chloropyridine for PW-10 was reported from a lower dilution that exceeded the instrument calibration range, therefore, this compound result was qualified as estimated (J).

- Trichloroethene was qualified as not detected in sample PZ-107 (5.33 U µg/L) due to method blank contamination.

3.0 ANALYTICAL RESULTS

3.1 GROUNDWATER

The validated results from the November 2001 groundwater monitoring event are provided in Tables 2 and 3. Table 4 provides a comparison of the Fall 2001 analytical results for selected chloropyridines and VOCs in representative wells to mean concentrations since 1997 (March 1997 through May 2001). Long term trends for both selected chloropyridines and VOCs are also presented as time-series plots for representative wells in Appendix B. A summary of the analytical findings is presented below by parameter class.

3.1.1 Chloropyridines

On-Site. With the exception of well W-2, chloropyridines were detected above sample quantitation limits in groundwater samples from all the on-site wells. Concentrations of chloropyridines ranged from estimated low-level micrograms per liter (µg/L) to 61,000 µg/L (sum of all chloropyridine isomer concentrations). Pumping wells BR-5A, BR-6A, BR-7A, and PW12 along with monitoring well PZ-107 show selected chloropyridines concentrations above the mean for the prior monitoring events.

Off-Site. One or more of the chloropyridine isomers were detected above sample quantitation limits in each of the nine off-site wells that were sampled. Concentrations of total selected chloropyridines detected ranged from estimated low-level micrograms per liter (µg/L) to approximately 58,000 µg/L (PZ-103). Eight of these wells contained total chloropyridines concentrations in exceedance of their 5-year mean.

Concentration Contours. Chloropyridine distribution in groundwater is shown as a set of concentration contours on Figure 8. The drawing has been enlarged relative to prior submittals to include MW-16 at the former General Circuits Site. The contours were developed using data from both overburden and bedrock monitoring wells. As shown on Figure 8, total chloropyridine concentrations exceeding 10,000 µg/L are present in on-site wells and in off-site wells (PZ-102, PZ-103, and BR-106/MW-106) located west of the Site. In addition, based on the detection of chloropyridines in MW-16 due east of the site, Figure 8 shows an updated distribution pattern in which chloropyridines are intepreted to have migrated eastward in bedrock groundwater. Previous investigations (Phase I RI) in this direction were limited to overburden groundwater.

The rise in chloropyridine concentrations in on-site pumping wells may be attributed to unusually low water level conditions. During periods of low water, the capture zones for pumping wells expand outward and may draw in additional amounts of chloropyridines. This phenomenon may also have been enhanced by the fact that pumping rates were dramatically increased and incidences of pump outages were decreased beginning in April 2000.

Increases in chloropyridine concentrations in off-site wells along the western boundary are likely the result of lower pumping rates during 1999 and 2000. Based on groundwater travel times estimated from data collected during the Remedial Investigation, contaminants that may have migrated beyond the facility boundary during 1999-2000 (which is also prior to the installation and start-up of pumping well PW-11) would potentially be reaching the off-site wells at the present time. With the improved configuration and operation of the

groundwater extraction system implemented in 2001, Arch anticipates that concentrations in these off-site wells will begin falling in future monitoring events.

3.1.2 Selected VOCs.

On-Site. Concentrations of VOCs ranged from not detected to 40,000 µg/L for several site-related contaminants (carbon tetrachloride, chloroform, methylene chloride, tetrachloroethene, and trichloroethene). Three (PW11, BR-5A, and PW12) of the eight wells, sampled in November 2001 and tracked from March 1997 to May 2001, show VOC concentrations greater than the 5-year mean for the prior monitoring events. Pumping well PW11, which has been sampled only twice before November 2001, showed first ever detections of chloroform (1,300 ug/L), methylene chloride (32 ug/L), and trichloroethene (1.6 ug/L). Other notable constituents detected in PW11 that have been detected previously are 1,2-dichloroethene (260 ug/L) and vinyl chloride (130 ug/L). Chlorobenzene was also detected in all eight on-site wells at concentrations up to 900 ug/L (PW12).

Off-Site. Selected VOCs were not detected in any of the 10 off-site wells sampled in November 2001. Among the other VOCs, chlorobenzene was detected at the highest frequency (8 of 10) and concentration (up to 4,000 ug/L in MW-106) in off site wells. Although chlorobenzene appears to be significant in wells on and near the Site, concentrations in wells located more than 200 feet from the site boundary have not exceeded 8 ug/L within the last 5 years.

Concentration Contours. Selected VOCs distribution in groundwater is shown as a set of concentration contours on Figure 9. These contours were developed using both overburden and bedrock groundwater data. Concentrations and the distribution of VOCs resemble those from recent prior sampling events.

3.2 SURFACE WATER

Results from the Fall 2001 canal and quarry monitoring event are presented in Table 5.

3.2.1 Quarry

For samples collected from the Dolomite products quarry seep (QS-4) and discharge outfall (QO-2) the following chloropyridines and VOCs were detected:

LOCATION	QO-2	QS-4
PARAMETER[1]		
2,6-Dichloropyridine	ND	90
2-Chloropyridine	3 J	320
Acetone	4 J	ND
Benzene	1.4 J	ND
Toluene	1.7 J	ND

Notes:
J = The positive result reported for this analyte is a quantitative estimate (below sample quantitation limit, but above method detection limit).
[1] = Concentrations reported in micrograms per liter (µg/L)

All chloropyridine concentrations are below historical average concentrations.

3.2.2 Barge Canal

Neither chloropyridines nor VOCs were detected in QO-2S1, the only sample collected from the Erie Barge Canal.

4.0 EXTRACTION SYSTEM PERFORMANCE AND MAINTENANCE

The continuing efforts to improve operation of the groundwater extraction system were apparent in the second half of calendar year 2001. Table 6 is a summary of the system flow measurements for the seven extraction wells from July through December 2001. The total volume pumped during the six-month period is approximately 56 percent greater than in the prior six months. Maintenance activities during the period included pump replacements in wells BR-5A, BR-6A, and BR-7A, and meter replacements at wells BR-5A, BR-7A, PW-10, and PW-12.

Substantial contaminant mass removal was also observed during the period. Table 7 provides a calculation of mass removal rates since the previous groundwater monitoring event (i.e., June 2001 through November 2001). Arch estimates that approximately 200 pounds of target VOCs and 1,100 pounds of pyridine compounds were removed by the groundwater extraction system and treated by the plant's activated carbon adsorption units over that time period.

5.0 OTHER ISSUES

At NYSDEC's request, Arch sampled several additional overburden wells along the northwestern facility property boundary during this sampling event. These wells included: B-1, B-2, W-2, W-3, and W-4. The analytical results from these wells are consistent with previous interpretations of the distribution of VOCs and pyridines. The data do not suggest the presence of undetected source areas in the northern portion of the plant, and Arch does not recommend any changes in the current monitoring program in this area.

The detection of chloropyridines in bedrock groundwater at the former General Circuits facility east of the Arch plant confirms that historical migration of site-related contaminants occurred in that direction. Operation of the current groundwater extraction system is believed to be preventing further migration to the east. Arch and NYSDEC should discuss the need for modifications to the monitoring program to confirm that this historical migration pathway has been cut off.

Arch has previously suggested the installation of an overburden groundwater cutoff trench along the southeastern property boundary of the facility to ensure that off-site migration in the overburden in this area is controlled. The water level measurements collected in November 2001 indicate there is now only about five or six feet of saturated thickness in the overburden soils along the proposed alignment of the trench. If this trend continues, the proposed trench may become unnecessary.

6.0 NEXT MONITORING EVENT

The next monitoring event will occur in May 2002 and will include groundwater, surface water, and seep sampling.

Table 8 shows the current monitoring program for the Arch Rochester site.

Figures

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LEGEND

ARCH PROPERTY

BR-121D BEDROCK WELL

I-390

ERIE BARGE CANAL

N

MW-107/BR-107

McKEE ROAD

FIRTH RIXSON

MW-103/BR-103

ARCH

KODAK

MW-108/BR-108

PZ-102

PZ-103

BR-111/111D

MW-106/BR-106

AID TO HOSPITALS

AMERICAN RECYCLE

BR-112/112D

MW-105/BR-105D

MW-104 /BR-104

BUFFALO ROAD

MW-114/ BR-114

12-6

CUMBERLAND FARMS PETROLEUM TERMINAL

8-6

7-6

OW-105

11-6

KW-1

NESS-W

NESS-E

BR-113/113D

LEXINGTON

GENERAL RAIL SIGNAL CO.

9-6

10-6

13-4

OW-102A

BR-122D

OW-103

PFAUDLER

DOLOMITE PRODUCTS QUARRY

HOWARD ROAD

MOREY WELL

MAIN EXTENT OF WATER-BEARING FRACTURE IN QUARRY WALL

BR-117D

BR-117

BR-118

BR-118D

BR-121D

BR-120D

BR-119D

I-390

BR-123D

BR-116D

BR-116

ERIE BARGE CANAL

BR-124D

LETTINGTON ROAD

Scale in Feet

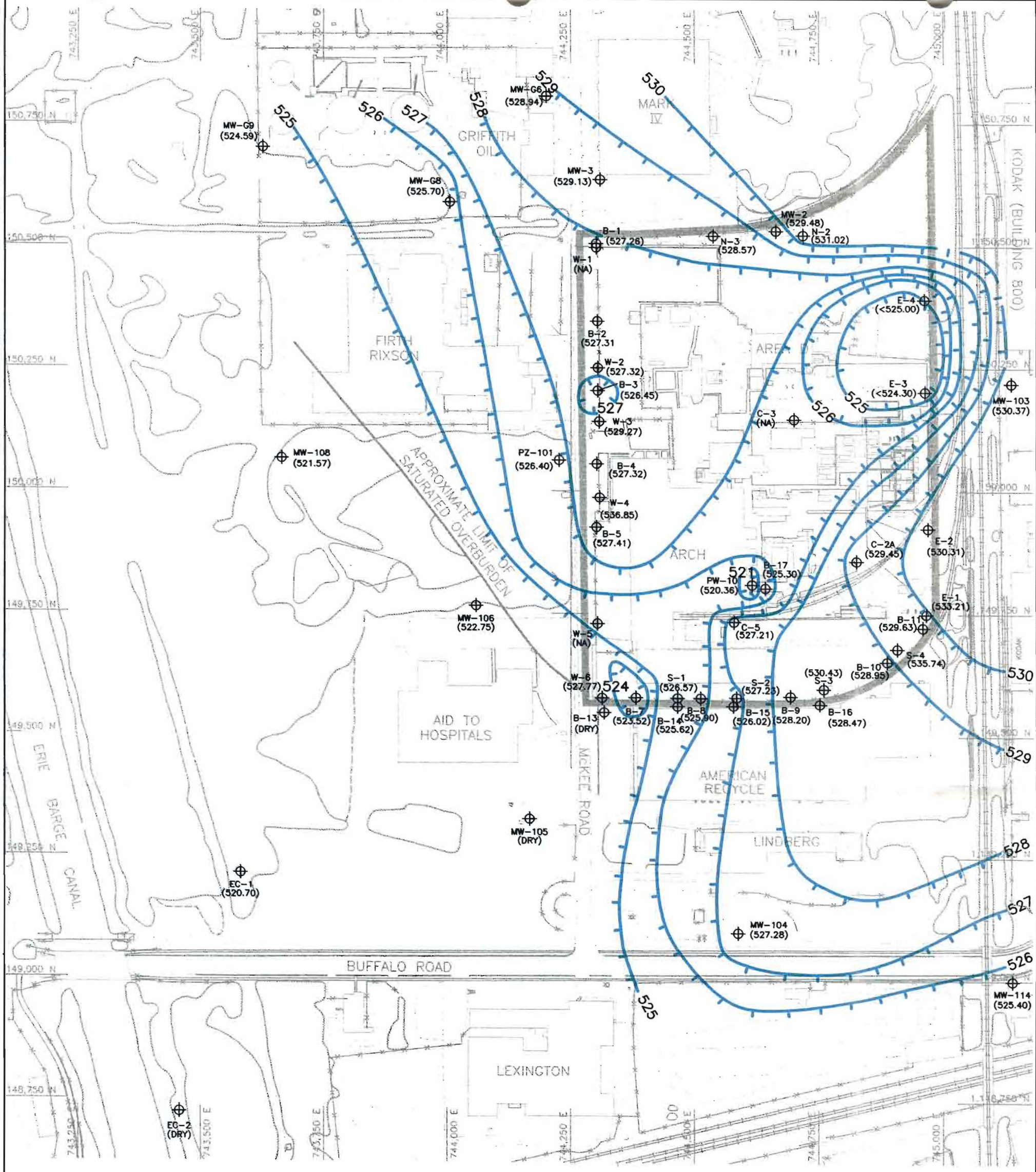
0 500 1000

Source:
USGS Topographic Quadrangle 7.5-Minute Series;
Rochester West, N.Y., 1971 (Photorevised 1978).

FIGURE 1

OFF-SITE GROUNDWATER MONITORING WELL LOCATIONS

ARCH CHEMICALS
ROCHESTER, N.Y.



LEGEND

OUTLINE OF ARCH PROPERTY BOUNDARY

530 — OVERBURDEN PIEZOMETRIC ELEVATION CONTOUR (MSL)

INTERPRETED GROUNDWATER FLOW DIRECTION

MW-106 (529.22) — PIEZOMETRIC ELEVATION AT WELL OR PIEZOMETER (MSL)

(*) DENOTES WATER LEVEL BELOW TOP OF BEDROCK FOR WELL SCREENED IN BOTH BEDROCK AND OVERBURDEN.

NOTES:

1. WATER LEVELS MEASURED ON NOVEMBER 29, 2001.
2. NA=NOT AVAILABLE

FIGURE 3

NOVEMBER 2001 OVERBURDEN GROUNDWATER INTERPRETED PIEZOMETRIC CONTOURS

ARCH CHEMICALS
ROCHESTER, N.Y.

LEGEND

ARCH PROPERTY

500 — DEEP BEDROCK GROUNDWATER PIEZOMETRIC ELEVATION CONTOUR (MSL)

INTERPRETED GROUNDWATER FLOW DIRECTION

BR-114D — BEDROCK WELL ('D' DESIGNATES DEEP WELL)

(500.0) — PIEZOMETRIC ELEVATION AT DEEP BEDROCK WELL

NOTES:

1. WATER LEVELS MEASURED NOVEMBER 29, 2001.
2. DASHED CONTOURS REFLECT UNCERTAINTY

N

I-390

ERIE BARGE CANAL

HOWARD ROAD

BUFFALO ROAD

McKEE ROAD

FIRTH RIXSON

ARCH

KODAK

AID TO HOSPITALS

AMERICAN RECYCLE

CUMBERLAND FARMS PETROLEUM TERMINAL

LEXINGTON

GENERAL RAIL SIGNAL CO.

DOLOMITE PRODUCTS QUARRY

PFAUDLER

LETTINGTON DRIVE

BR-103, BR-9, BR-108, BR-111, BR-111D (502.05), BR-106, BR-2D (NA), BR-3D (467.68), MW-PZ-105, BR-112, BR-112D (502.32), BR-105, BR-105D (502.60), BR-104, BR-114, BR-113, BR-113D (502.41), BR-122D (500.11), BR-123D (500.65), BR-116D (501.33), BR-116, BR-124D (499.24), BR-117D (494.05), BR-117, BR-121D (494.95), BR-118, BR-118D (495.11), BR-120D (497.09), BR-119D (494.67)

495, 496, 497, 498, 499, 500, 501, 502

Scale in Feet

0 500 1000

Source:

USGS Topographic Quadrangle 7.5-Minute Series; Rochester West, N.Y., 1971 (Photorevised 1978).

FIGURE 5

NOVEMBER 2001
DEEP BEDROCK GROUNDWATER
INTERPRETED PIEZOMETRIC CONTOURS

ARCH CHEMICALS
ROCHESTER, N.Y.

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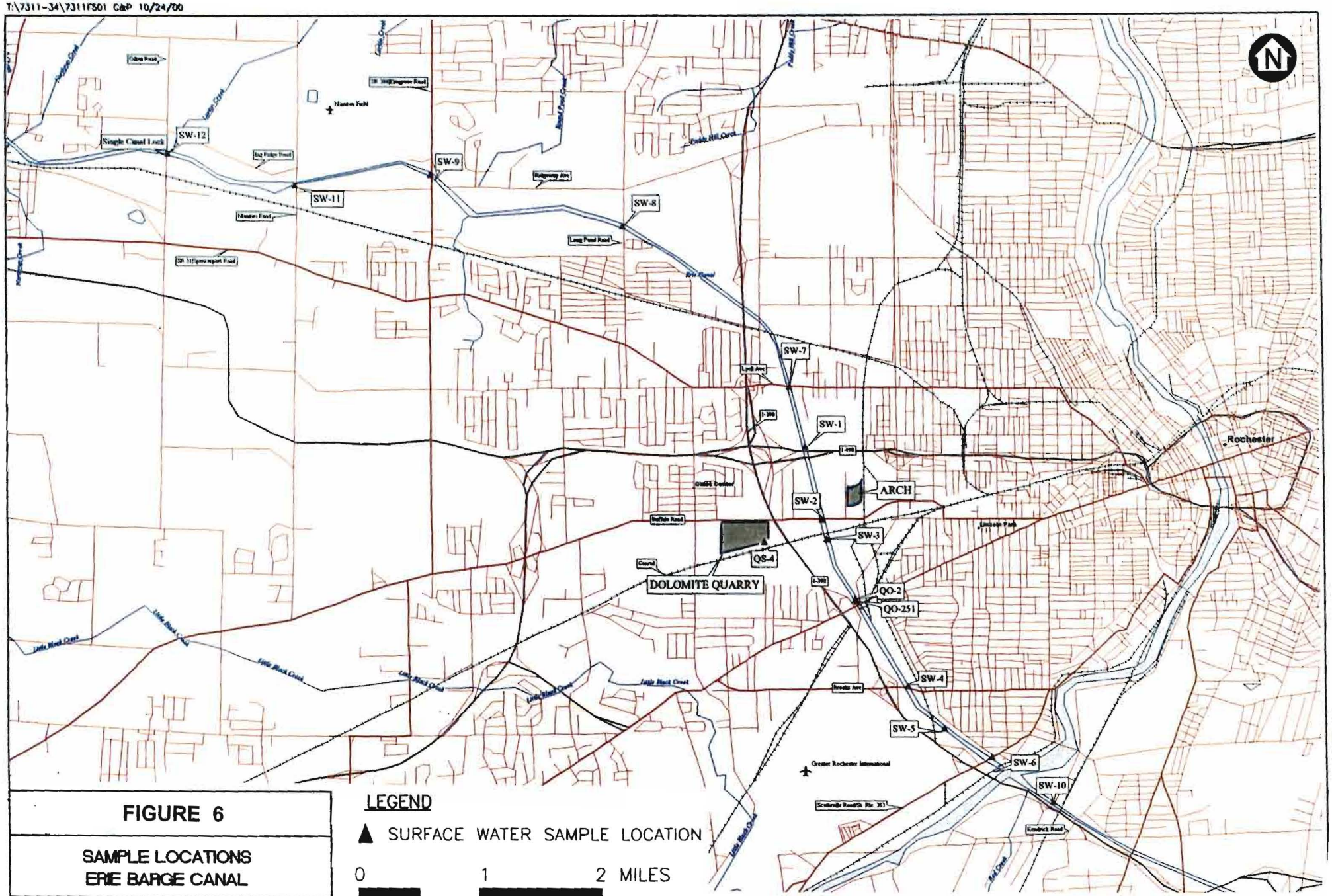


FIGURE 6

SAMPLE LOCATIONS
ERIE BARGE CANAL

ARCH CHEMICALS
ROCHESTER, N.Y.

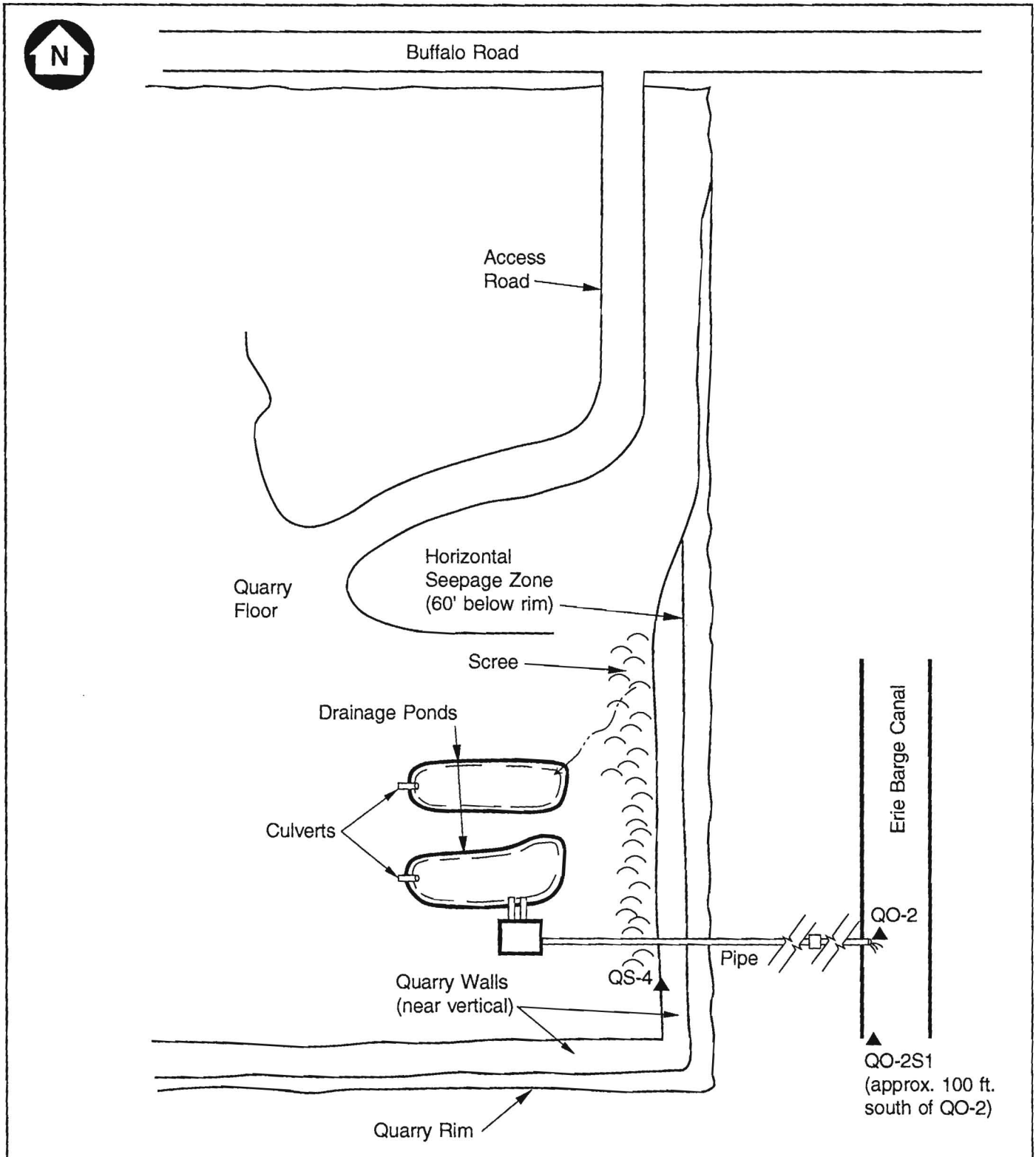
LEGEND

▲ SURFACE WATER SAMPLE LOCATION

0 1 2 MILES

APPROXIMATE SCALE

SOURCE: DeLorme Mapping 1995



Not to Scale

FIGURE 7

SAMPLE LOCATIONS
DOLOMITE PRODUCTS
QUARRY

ARCH CHEMICALS
ROCHESTER, NEW YORK

W2002008.idw

Tables

TABLE 1
FALL 2001 GROUNDWATER SAMPLING AND ANALYTICAL PROGRAM

ARCH CHEMICALS, INC
ROCHESTER, NEW YORK

		ANALYSIS	PYRIDINES[1]	VOCs[2]
SITE / AREA	WELL	DATE		
AID TO HOSPITALS	BR-106	11/30/01	X	X
	MW-106	11/30/01	X	X
	PZ-101	11/29/01	X	X
	PZ-102	11/30/01	X	X
	PZ-103	11/30/01	X	X
AMERICAN RECYCLE MANUF. (58 MCKEE ROAD)	PZ-104	11/30/01	X	X
ARCH ROCHESTER	B-1	11/28/01	X	X
	B-2	11/28/01	X	X
	BR-5A	11/30/01	X	X
	BR-6A	11/30/01	X	X
	BR-7A	12/3/01	X	X
	BR-9	11/30/01	X	X
	PW10	11/30/01	X	X
	PW11	12/4/01	X	X
	PW12	11/30/01	X	X
	PZ-107	11/30/01	X	X
	W-2	11/29/01	X	X
	W-3	11/29/01	X	X
	W-4	11/29/01	X	X
DOLOMITE PRODUCTS, INC.	QS-4	12/3/01	X	X
ERIE BARGE CANAL (surface water)	QO-2	12/3/01	X	X
	QO-2S1	12/3/01	X	X
FORMER GENERAL CIRCUITS	MW-16	11/30/01	X	
RG & E RIGHT OF WAY	BR-105	11/30/01	X	X
	BR-105D	11/30/01	X	X
Totals			25	24

Notes:

1) Pyridines analysis by USEPA SW-846 Method 8270C.
2) VOCs analysis by USEPA SW-846 Method 8260B.

TABLE 2
FALL 2001 GROUNDWATER MONITORING RESULTS
CHLOROPYRIDINES

ARCH CHEMICALS, INC.
ROCHESTER, NEW YORK

LOCATION:	B-1		B-2		BR-105		BR-105D		BR-106		BR-5A		BR-6A	
SAMPLE DATE:	11/28/01		11/28/01		11/30/01		11/30/01		11/30/01		11/30/01		11/30/01	
BY SW-846 Method 8270C (µg/L)														
2,6-Dichloropyridine	4	J	67		530	J	150	J	4,400		56		5,600	
2-Chloropyridine	2	J	72		3,700	J	4,200		20,000		140		44,000	
3-Chloropyridine	9	U	9	U	500	U	500	U	500	U	9	U	1,200	
4-Chloropyridine	9	U	9	U	500	U	500	U	500	U	9	U	1,000	U
p-Fluoroaniline	9	U	16		500	U	500	U	170	J	41		1,000	U
Pyridine	23	U	23	U	1,200	U	1,200	U	1,200	U	23	U	5,500	

Notes:
U = Compound not detected; value represents sample quantitation limit.
J = Estimated value.

TABLE 2
FALL 2001 GROUNDWATER MONITORING RESULTS
CHLOROPYRIDINES

ARCH CHEMICALS, INC.
ROCHESTER, NEW YORK

LOCATION:	BR-7A		BR-9		MW-106		MW-16		PW10		PW11		PW12		PZ-101	
SAMPLE DATE:	12/3/01		11/30/01		11/30/01		11/30/01		11/30/01		12/4/01		11/30/01		11/29/01	
BY SW-846 Method 8270C (µg/L)																
2,6-Dichloropyridine	12,000		51		6,400		9		7,900		260		1,500		330	
2-Chloropyridine	49,000		160		26,000		150		47,000		1,000		2,900		5,000	
3-Chloropyridine	1,000	U	10	U	500	U	9	U	1,400	J	250	U	78	J	13	J
4-Chloropyridine	1,000	U	10	U	500	U	9	U	130		250	U	160	U	50	U
p-Fluoroaniline	240	J	6	J	240	J	18		51		250	U	550		110	
Pyridine	2,500	U	24	U	1,200	U	23	U	2,500	J	620	U	190	J	120	U

Notes:
U = Compound not detected; value represents sample quantitation limit.
J = Estimated value.

TABLE 2
FALL 2001 GROUNDWATER MONITORING RESULTS
CHLOROPYRIDINES

ARCH CHEMICALS, INC.
ROCHESTER, NEW YORK

LOCATION:	PZ-102		PZ-103		PZ-104		PZ-107		W-2		W-3		W-4	
SAMPLE DATE:	11/30/01		11/30/01		11/30/01		11/30/01		11/29/01		11/29/01		11/29/01	
BY SW-846 Method 8270C (µg/L)														
2,6-Dichloropyridine	1,700		13,000		670		690		190	U	9	U	30	
2-Chloropyridine	11,000		44,000		7,800		1,700		190	U	10		16	
3-Chloropyridine	200	U	300	J	160	U	120		190	U	9	U	9	U
4-Chloropyridine	200	U	1,000	U	160	U	100	U	190	U	9	U	9	U
p-Fluoroaniline	140	J	340	J	23	J	100	U	190	U	9	U	9	U
Pyridine	500	U	2,500	U	400	U	250	U	470	U	6	J	23	U

Notes:
U = Compound not detected; value represents sample quantitation limit.
J = Estimated value.

TABLE 3
FALL 2001 GROUNDWATER MONITORING RESULTS
VOLATILE ORGANIC COMPOUNDS

ARCH CHEMICALS, INC.
ROCHESTER, NEW YORK

LOCATION:	B-1		B-2		BR-105		BR-105D		BR-106		BR-5A		BR-6A		BR-7A		BR-9		MW-106		PW10	
SAMPLE DATE:	11/28/01		11/28/01		11/30/01		11/30/01		11/30/01		11/30/01		11/30/01		12/3/01		11/30/01		11/30/01		11/30/01	
VOLATILE ORGANIC COMPOUNDS BY SW-846 Method 8260/5ML (µg/L)																						
1,1,1-Trichloroethane	5	U	5	U	5	U	5	U	5	U	5	U	200	U	20	U	4	J	100	U	500	U
1,1,2,2-Tetrachloroethane	5	U	5	U	5	U	5	U	5	U	5	U	200	U	20	U	5	U	100	U	500	U
1,1,2-Trichloroethane	5	U	5	U	5	U	5	U	5	U	5	U	200	U	20	U	5	U	100	U	500	U
1,1-Dichloroethane	5	U	5	U	5	U	10		5	U	5	U	200	U	15	J	16		100	U	500	U
1,1-Dichloroethene	5	U	5	U	5	U	5	U	5	U	5	U	200	U	20	U	3	J	100	U	500	U
1,2-Dichloroethane	5	U	5	U	5	U	5	U	5	U	5	U	200	U	20	U	5	U	100	U	500	U
1,2-Dichloroethene (total)	1	J	8		5	U	2	J	2	J	17		200	U	170		640		21	J	130	J
1,2-Dichloropropane	5	U	5	U	5	U	5	U	5	U	5	U	200	U	20	U	5	U	100	U	500	U
2-Butanone	10	U	10	U	10	U	10	U	10	U	10	U	400	U	40	U	10	U	200	U	1,000	U
2-Hexanone	10	U	10	U	10	U	10	U	10	U	10	U	400	U	40	U	10	U	200	U	1,000	U
4-Methyl-2-pentanone	10	U	10	U	10	U	10	U	10	U	10	U	400	U	40	U	10	U	200	U	1,000	U
Acetone	25	U	25	U	25	U	25	U	2	J	25	U	1,000	U	100	U	25	U	500	U	2,500	U
Benzene	5	U	2	J	5	J	7		40		12		200	U	64		100		520		500	U
Bromodichloromethane	5	U	5	U	5	U	5	U	5	U	5	U	200	U	20	U	5	U	100	U	500	U
Bromoform	5	U	5	U	5	U	5	U	5	U	5	U	200	U	20	U	5	U	100	U	340	J
Bromomethane	10	U	10	U	10	U	10	U	10	U	10	U	400	U	40	U	10	U	200	U	1,000	U
Carbon disulfide	5	U	5	U	5	U	2	J	3	J	5	U	580		20	U	5	U	100	U	360	J
Carbon tetrachloride	5	U	5	U	5	U	5	U	5	U	5	U	780		16	J	5	J	100	U	2,900	
Chlorobenzene	5	U	2.1	J	20		5	U	350		12		45	J	530		17		4000		190	J
Chloroethane	10	U	10	U	10	U	10	U	10	U	10	U	400	U	40	U	10	U	200	U	1,000	U
Chloroform	5	U	5	U	5	U	5	U	5	U	29		3,800		110		6		100	U	36,000	
Chloromethane	10	U	10	U	10	U	10	U	10	U	10	U	400	U	40	U	10	U	200	U	1,000	U
cis-1,3-Dichloropropene	5	U	5	U	5	U	5	U	5	U	5	U	200	U	20	U	5	U	100	U	500	U
Dibromochloromethane	5	U	5	U	5	U	5	U	5	U	5	U	200	U	20	U	5	U	100	U	500	U
Ethylbenzene	5	U	5	U	5	U	5	U	5	U	5	U	200	U	5	J	18		100	U	500	U
Methylene chloride	5	U	5	U	5	U	5	U	5	U	40		310		40		5	U	100	U	820	
Styrene	5	U	5	U	5	U	5	U	5	U	5	U	200	U	20	U	5	U	100	U	500	U
Tetrachloroethene	5	U	1	J	5	U	5	U	5	U	5	U	220		8	J	5	U	100	U	380	J
Toluene	5	U	5	U	5	U	5	U	5		9		130	J	30		11		68	J	220	J
Total Xylenes	15	U	15	U	15	U	15	U	1	J	15	U	600	U	60	U	5	J	300	U	1,500	U
trans-1,3-Dichloropropene	5	U	5	U	5	U	5	U	5	U	5	U	200	U	20	U	5	U	100	U	500	U
Trichloroethene	5	U	1	J	5	U	5	U	5	U	75		200	U	20	U	4	J	100	U	500	U
Vinyl acetate	10	U	10	U	10	U	10	U	10	U	10	U	400	U	40	U	10	U	200	U	1,000	U
Vinyl chloride	4	J	2	J	5	U	5	U	5	U	7		200	U	140		470		100	U	120	J

Notes:

U = Compound not detected; value represents sample quantitation limit.

J = Estimated value.

TABLE 3
FALL 2001 GROUNDWATER MONITORING RESULTS
VOLATILE ORGANIC COMPOUNDS

ARCH CHEMICALS, INC.
ROCHESTER, NEW YORK

LOCATION:	PW11		PW12		PZ-101		PZ-102		PZ-103		PZ-104		PZ-107		W-2		W-3		W-4	
SAMPLE DATE:	12/4/01		11/30/01		11/29/01		11/30/01		11/30/01		11/30/01		11/30/01		11/29/01		11/29/01		11/29/01	
VOLATILE ORGANIC COMPOUNDS BY SW-846 Method 8260/5ML (µg/L)																				
1,1,1-Trichloroethane	2	J	120	U	5	U	10	U	40	U	5	U	5	U	5	U	5	U	5	U
1,1,2,2-Tetrachloroethane	5	U	120	U	5	U	10	U	40	U	5	U	5	U	5	U	5	U	5	U
1,1,2-Trichloroethane	5	U	120	U	5	U	10	U	40	U	5	U	5	U	5	U	5	U	5	U
1,1-Dichloroethane	10		120	U	5	U	10	U	40	U	5	U	5	U	5	U	5	U	3	J
1,1-Dichloroethene	5	U	120	U	5	U	10	U	40	U	5	U	5	U	5	U	5	U	5	U
1,2-Dichloroethane	5	U	120	U	1	J	10	U	40	U	5	U	5	U	5	U	5	U	5	U
1,2-Dichloroethene (total)	260		120	U	5	U	10	U	10	J	5	U	6		5	U	5	U	99	
1,2-Dichloropropane	5	U	120	U	5	U	10	U	40	U	5	U	5	U	5	U	5	U	5	U
2-Butanone	10	U	250	U	10	U	20	U	80	U	10	U	10	U	10	U	10	U	10	U
2-Hexanone	10	U	250	U	10	U	20	U	80	U	10	U	10	U	10	U	10	U	10	U
4-Methyl-2-pentanone	10	U	250	U	10	U	20	U	80	U	10	U	10	U	10	U	10	U	10	U
Acetone	10	J	64	J	25	U	50	U	200	U	25	U	25	U	25	U	25	U	25	U
Benzene	30		270		35		38		73		4	J	3	J	5	U	5	U	1	J
Bromodichloromethane	5	U	120	U	5	U	10	U	40	U	5	U	5	U	5	U	5	U	5	U
Bromoform	5	U	120	U	5	U	10	U	40	U	5	U	5	U	5	U	5	U	5	U
Bromomethane	10	U	250	U	10	U	20	U	80	U	10	U	10	U	10	U	10	U	10	U
Carbon disulfide	5	U	120	U	5	U	10	U	22	J	5	U	5	U	5	U	5	U	5	U
Carbon tetrachloride	5	U	120	U	5	U	10	U	40	U	5	U	5	U	5	U	5	U	5	U
Chlorobenzene	76		900		150		360		1600		5.3		13		5	U	5	U	5	U
Chloroethane	10	U	250	U	10	U	20	U	80	U	10	U	10	U	10	U	10	U	10	U
Chloroform	1,300		7,700		5	U	10	U	40	U	5	U	5	U	5	U	5	U	1	J
Chloromethane	10	U	250	U	10	U	20	U	80	U	10	U	10	U	10	U	10	U	10	U
cis-1,3-Dichloropropene	5	U	120	U	5	U	10	U	40	U	5	U	5	U	5	U	5	U	5	U
Dibromochloromethane	5	U	120	U	5	U	10	U	40	U	5	U	5	U	5	U	5	U	5	U
Ethylbenzene	3	J	54	J	5	U	10	U	40	U	5	U	5	U	5	U	5	U	5	U
Methylene chloride	32		2,700		5	U	10	U	40	U	5	U	5	U	5	U	5	U	5	U
Styrene	5	U	120	U	5	U	10	U	40	U	5	U	5	U	5	U	5	U	5	U
Tetrachloroethene	5	U	120	U	5	U	10	U	40	U	5	U	5	U	5	U	5	U	5	U
Toluene	4	J	1,400		5	U	3	J	160		5	U	1	J	5	U	5	U	5	U
Total Xylenes	15	U	230	J	15	U	30	U	120	U	15	U	15	U	15	U	15	U	15	U
trans-1,3-Dichloropropene	5	U	120	U	5	U	10	U	40	U	5	U	5	U	5	U	5	U	5	U
Trichloroethene	2	J	120	U	5	U	10	U	40	U	5	U	5	U	5	U	5	U	5	U
Vinyl acetate	10	U	250	U	10	U	20	U	80	U	10	U	10	U	10	U	10	U	10	U
Vinyl chloride	130		120	U	5	U	10	U	40	U	5	U	5		5	U	5	U	19	

Notes:

U = Compound not detected; value represents sample quantitation limit.

J = Estimated value.

TABLE 4
COMPARISON OF FALL 2001
CHLOROPYRIDINES AND VOLATILE ORGANICS CONCENTRATIONS
IN GROUNDWATER TO PREVIOUS RESULTS (ug/L)

ARCH ROCHESTER
SEMI-ANNUAL GROUNDWATER MONITORING REPORT - FALL 2001

WELL	SELECTED CHLOROPYRIDINES						SELECTED VOCs					
	# EVENTS (PRIOR 5 YRS)	HISTORIC MAXIMUM	5-YEAR MEAN	NOV-2001 RESULT	=< MEAN OR ND	> MEAN	# EVENTS (PRIOR 5 YRS)	HISTORIC MAXIMUM	5-YEAR MEAN	NOV-2001 RESULT	=< MEAN OR ND	> MEAN
ON-SITE WELLS/LOCATIONS												
B-17	6	28,000,000	160,000	NA			6	345,000	81,000	NA		
BR-3	5	6,500,000	170,000	NA			5	600,000	450,000	NA		
BR-5A	8	1,700	150	240		X	8	9400	55	150		X
BR-6A	8	93,000	31,000	56,000		X	8	26,000	10,000	5,100	X	
BR-7A	8	510,000	15,000	61,000		X	8	3000	590	180	X	
BR-8	8	57,000	10,000	NA			8	6900	1	NA		
BR-9	5	720	600	220	X		5	160	110	17	X	
E-3	8	600	39	NA			8	12000	120	NA		
PW10*	4	160,000	97,000	59,000	X		4	120,000	71,000	40,000	X	
PW11*	2	27,000	15,000	1,300	X		2	ND	ND	1,300		X
PW12	6	11,000	2,500	5,200		X	6	120,000	7,500	10,000		X
PZ-106	6	110,000	12,000	NA			6	960,000	450,000	NA		
PZ-107	6	11,000	1,800	2,500		X	6	12,000	930	ND	X	
S-3	4	6,800	5,700	NA			4	260	360	NA		

TABLE 4
COMPARISON OF FALL 2001
CHLOROPYRIDINES AND VOLATILE ORGANICS CONCENTRATIONS
IN GROUNDWATER TO PREVIOUS RESULTS (ug/L)

ARCH ROCHESTER
SEMI-ANNUAL GROUNDWATER MONITORING REPORT - FALL 2001

WELL	SELECTED CHLOROPYRIDINES						SELECTED VOCs					
	# EVENTS (PRIOR 5 YRS)	HISTORIC MAXIMUM	5-YEAR MEAN	NOV-2001 RESULT	=< MEAN OR ND	> MEAN	# EVENTS (PRIOR 5 YRS)	HISTORIC MAXIMUM	5-YEAR MEAN	NOV-2001 RESULT	=< MEAN OR ND	> MEAN
OFF-SITE WELLS/LOCATIONS												
BR-103	7	400	36	NA			5	1	ND	NA		
BR-104	8	3,100	14	NA			6	9	ND	NA		
BR-105	8	24,000	2,700	4,200		X	6	310	6	ND	X	
BR-105D	8	10,000	3,300	4,400		X	6	230	20	ND	X	
BR-106	8	21,000	8,000	25,000		X	5	6,300	4	ND	X	
BR-108	8	1,700	230	NA			5	ND	ND	NA		
BR-112D	8	310	70	NA			3	4	0	NA	X	
BR-113D	8	490	120	NA			0	3	NA	NA		
BR-114	8	450	160	NA			5	5	5	NA		X
MW-106	5	130,000	17,000	33,000		X	5	89	ND	ND	X	
MW-114	8	18	4	NA			5	11	10	NA		
NESS-E	7	5,000	560	NA			5	700	ND	NA		
NESS-W	7	2,100	550	NA			5	89	0	NA		
PZ-101	5	27,000	1,500	5,500		X	3	0	ND	ND	X	
PZ-102	5	58,000	8,200	13,000		X	3	10,000	ND	ND	X	
PZ-103	5	73,000	31,000	58,000		X	3	4,900	ND	ND	X	
PZ-104	4	9,100	2,700	8,500		X	3	40	ND	ND	X	
QS-4	19	3,400	760	410	X		5	ND	ND	ND	X	

Note:
1) Number of samples and mean reflect 5-year sampling period from March 1997 through September 2001.
Historic maximum based on all available results from March 1990 through September 2001
2) Chloropyridines represented by: 2-Chloropyridine, 2,6-Dichloropyridine, and 3-Chloropyridine, p-Fluoroaniline, and Pyridine.
3) Selected VOCs represented by Carbon Tetrachloride, Chloroform, Methylene Chloride, Tetrachloroethene, and Trichloroethene.
4) X = Comparison of November 2001 concentration to 5-year mean.
5) NA = Not analyzed or not applicable
ND = Not detected
* = PW10 and PW11 were first sampled in January 1999 and May 2000, respectively.

TABLE 5
FALL 2001 CANAL/QUARRY MONITORING RESULTS

ARCH CHEMICAL, INC.
ROCHESTER, NEW YORK

WELL / POINT	QO-2		QO-2S1		QS-4	
DATE	12/3/01		12/3/01		12/3/01	
VOLATILE ORGANIC COMPOUNDS BY SW-846 Method 8260/5ML (µg/L)						
1,1,1-Trichloroethane	5	U	5	U	5	U
1,1,2,2-Tetrachloroethane	5	U	5	U	5	U
1,1,2-Trichloroethane	5	U	5	U	5	U
1,1-Dichloroethane	5	U	5	U	5	U
1,1-Dichloroethene	5	U	5	U	5	U
1,2-Dichloroethane	5	U	5	U	5	U
1,2-Dichloroethene (total)	5	U	5	U	5	U
1,2-Dichloropropane	5	U	5	U	5	U
2-Butanone	10	U	10	U	10	U
2-Hexanone	10	U	10	U	10	U
4-Methyl-2-pentanone	10	U	10	U	10	U
Acetone	4	J	25	U	25	U
Benzene	1.4	J	5	U	5	U
Bromodichloromethane	5	U	5	U	5	U
Bromoform	5	U	5	U	5	U
Bromomethane	10	U	10	U	10	U
Carbon disulfide	5	U	5	U	5	U
Carbon tetrachloride	5	U	5	U	5	U
Chlorobenzene	5	U	5	U	5	U
Chloroethane	10	U	10	U	10	U
Chloroform	5	U	5	U	5	U
Chloromethane	10	U	10	U	10	U
cis-1,3-Dichloropropene	5	U	5	U	5	U
Dibromochloromethane	5	U	5	U	5	U
Ethylbenzene	5	U	5	U	5	U
Methylene chloride	5	U	5	U	5	U
Styrene	5	U	5	U	5	U
Tetrachloroethene	5	U	5	U	5	U
Toluene	1.7	J	5	U	5	U
Total Xylenes	15	U	15	U	15	U
trans-1,3-Dichloropropene	5	U	5	U	5	U
Trichloroethene	5	U	5	U	5	U
Vinyl acetate	10	U	10	U	10	U
Vinyl chloride	5	U	5	U	5	U
SELECTED CHLOROPYRIDINES BY SW-846 Method 8270C (µg/L)						
2,6-Dichloropyridine	10	U	9	U	90	
2-Chloropyridine	3	J	9	U	320	
3-Chloropyridine	10	U	9	U	40	U
4-Chloropyridine	10	U	9	U	40	U
p-Fluoroaniline	10	U	9	U	40	U
Pyridine	25	U	23	U	100	U

Notes:

U = Compound not detected; value represents sample quantitation limit.

J = Estimated value.

NA = Not analyzed

TABLE 6
EXTRACTION WELL WEEKLY FLOW MEASUREMENTS - JULY 2001 THROUGH DECEMBER 2001

ARCH CHEMICALS, INC.
ROCHESTER, NEW YORK

Week Ending	BR-5A [Gal./Wk]	BR-6A [Gal./Wk]	BR-7A [Gal./Wk]	BR-9 [Gal./Wk]	PW-10 [Gal./Wk]	PW-11 [Gal./Wk]	PW12 [Gal./Wk]	Total [Gal./Wk]
July								
07/06/01	4,841	78,965	76,137	43,165	1,978	24,956	10,525	240,567
07/13/01	41,178	48,394	84,061	49,682	10,230	25,210	20,860	279,615
07/20/01	44,695	81,541	85,990	53,725	9,750	26,396	9,413	311,510
07/27/01	26,401	61,301	84,223	57,227	7,240	26,337	20,765	283,494
							Total [Gal.]	1,115,186
August								
08/03/01	72,918	68,848	75,780	63,363	9,260	26,497	23,040	339,706
08/10/01	20,929	40,884	86,217	62,928	6,530	12,848	13,077	243,413
08/17/01	46,083	71,547	81,987	59,701	10,230	26,328	24,500	320,376
08/24/01	37,119	54,670	73,472	62,424	9,820	26,576	40,672	304,753
08/31/01	35,053	39,042	72,193	57,902	9,550	27,914	39,483	281,137
							Total [Gal.]	1,489,385
September								
09/07/01	39,630	55,161	3,951	55,786	9,710	32,022	40,949	237,209
09/14/01	16,886	15,612	56,523	23,718	3,080	10,716	18,172	144,707
09/21/01	1,389	36,803	84,252	52,254	8,810	22,155	23,459	229,122
09/28/01	15,386	55,841	87,429	61,168	9,710	26,294	42,505	298,333
							Total [Gal.]	909,371
October								
10/05/01	398	54,238	59,428	43,184	6,870	18,604	29,369	212,091
10/12/01	57,720	63,952	94,900	65,190	10,060	26,888	46,823	365,533
10/19/01	37,433	54,914	106,901	59,393	8,420	24,471	42,968	334,500
10/26/01	17,020	54,892	102,667	59,515	7,420	25,978	44,926	312,418
							Total [Gal.]	1,224,542
November								
11/02/01	26,085	18,060	83,687	50,676	7,520	19,872	40,718	246,618
11/09/01	48,526	10,269	117,886	57,779	7,780	18,461	53,042	313,743
11/16/01	28,127	34,580	90,946	51,660	7,990	21,127	42,405	276,835
11/23/01	14,182	0	82,948	54,715	5,000	11,617	40,137	208,599
11/30/01	34,791	65,313	84,164	55,257	699	15,193	38,246	293,663
							Total [Gal.]	1,339,458
December								
12/07/01	51,145	10	66,240	48,236	326	12,145	39,592	217,694
12/14/01	44,410	79,471	87,365	0	752	15,351	851	228,200
12/21/01	58,709	64,447	96,408	1,700	771	17,759	61	239,855
12/28/01	58,321	50,827	92,321	1,962	711	16,545	1,262	221,949
							Total [Gal.]	907,698
Total 6 Mo. Removal (Gal.)	879,375	1,259,582	2,118,076	1,252,310	170,217	558,260	747,820	6,985,640

TABLE 7

MASS REMOVAL SUMMARY
PERIOD: 6/2/01 - 11/30/01

ARCH ROCHESTER
FALL 2001 GROUNDWATER MONITORING REPORT

Well	Total Vol. Pumped (gallons)	Avg. VOC Conc. (ppm)	Avg. PYR. Conc. (ppm)	VOCs Removed (pounds)	PYR. Removed (pounds)
BR-5A	775,000	0.18	0.235	1.2	1.5
BR-6A	1,350,000	7.55	36.5	85	410
BR-7A	2,134,000	0.22	35.4	4	629
BR-9	1,282,000	0.075	0.345	0.8	3.7
PW-10	179,000	38	30.6	57	46
PW-11	601,000	0.65	2.15	3.3	11
PW-12	763,000	7.4	2.74	47	17.4
Totals:	7,084,000			197.7	1118.7

Note: VOC and pyridine concentrations used in this table are an average of the analytical results from the 2nd quarter 2001 and 4th quarter 2001 sampling events for each well

TABLE 8
2001 / 2002 SAMPLING SCHEDULE
ARCH CHEMICALS, INC.
ROCHESTER, NEW YORK

ARCH ROCHESTER						Revised 2001		Planned 2002					
MONITORING PROGRAM						FALL		SPRING		FALL		TOTAL	
	Well	*zone*	*area*	*Recommendation:*	*Reason:*	*Pyridines*	*VOCs*	*Pyridines*	*VOCs*	*Pyridines*	*VOCs*	*Pyridines*	*VOCs*
OFF-SITE MONITORING	MW-103	OB	KODAK EAST	annual monitoring, VOCs & PYR	trend monitoring			1	1			1	1
	BR-103	BR	KODAK EAST	annual monitoring, VOCs & PYR	trend monitoring			1	1			1	1
	MW-104	OB	BUFFALO RD	annual monitoring, PYR	trend monitoring			1				1	0
	BR-104	BR	BUFFALO RD	annual monitoring, PYR	trend monitoring			1				1	0
	BR-105	BR	AID-HOSP	semi-annual monitoring, VOCs & PYR	perimeter sentinel/trend monitoring	1	1	1	1	1	1	3	3
	BR-105D	BR deep	AID-HOSP	semi-annual monitoring, VOCs & PYR	perimeter sentinel/trend monitoring	1	1	1	1	1	1	3	3
	MW-106	OB	AID-HOSP	semi-annual monitoring, VOCs & PYR	perimeter sentinel/trend monitoring	1	1	1	1	1	1	3	3
	BR-106	BR	AID-HOSP	semi-annual monitoring, VOCs & PYR	perimeter sentinel/trend monitoring	1	1	1	1	1	1	3	3
	MW-108	OB	AID-HOSP	no monitoring	adequate database; minimal impacts							0	0
	BR-108	BR	AID-HOSP	annual monitoring, PYR	trend monitoring			1				1	0
	BR-111	BR	NYSDOT	no monitoring	adequate database; minimal impacts							0	0
	BR-111D	BR deep	NYSDOT	no monitoring	adequate database; minimal impacts							0	0
	8R-112A	BR	NYSDOT	no monitoring	adequate database; minimal impacts							0	0
	BR-112D	BR deep	NYSDOT	annual monitoring, PYR	trend monitoring			1				1	0
	BR-113	BR	NYSDOT	no monitoring	adequate database; minimal impacts							0	0
	BR-113D	BR deep	NYSDOT	annual monitoring, PYR	trend monitoring			1				1	0
	MW-114	OB	JACKSON	annual monitoring, VOCs & PYR	trend monitoring			1	1			1	1
	BR-114	BR	JACKSON	annual monitoring, VOCs & PYR	trend monitoring			1	1			1	1
	BR-116	BR	PFAUDLER	annual monitoring, PYR	trend monitoring			1				1	0
	BR-116D	BR deep	PFAUDLER	annual monitoring, PYR	trend monitoring			1				1	0
	BR-117D	BR deep	QUARRY	annual monitoring, PYR	trend monitoring			1				1	0
	BR-118D	BR deep	QUARRY	annual monitoring, PYR	trend monitoring			1				1	0
	BR-119D	BR deep	QUARRY	no monitoring	adequate database; minimal impacts							0	0
	BR-120D	BR deep	QUARRY	no monitoring	adequate database; minimal impacts							0	0
	BR-121D	BR deep	QUARRY	no monitoring	adequate database; minimal impacts							0	0
	BR-122D	BR deep	QUARRY	annual monitoring, PYR	trend monitoring			1				1	0
	BR-123D	BR deep	QUARRY	annual monitoring, PYR	trend monitoring			1				1	0
	BR-124D	BR deep	QUARRY	no monitoring	adequate database; minimal impacts							0	0
	NESS-E	BR deep	NESS	annual monitoring, PYR	trend monitoring			1				1	0
	NESS-W	BR deep	NESS	annual monitoring, PYR	trend monitoring			1				1	0
	PZ-101	BR	McKee Rd	semi-annual monitoring, VOCs & PYR	perimeter sentinel/trend monitoring	1	1	1	1	1	1	3	3
	PZ-102	BR	McKee Rd	semi-annual monitoring, VOCs & PYR	perimeter sentinel/trend monitoring	1	1	1	1	1	1	3	3
	PZ-103	BR	McKee Rd	semi-annual monitoring, VOCs & PYR	perimeter sentinel/trend monitoring	1	1	1	1	1	1	3	3
	PZ-104	BR	ALH	semi-annual monitoring, VOCs & PYR	perimeter sentinel/trend monitoring	1	1	1	1	1	1	3	3
ON-SITE MONITORING	PZ-107	BR	ON-SITE	semi-annual monitoring, VOCs & PYR	perimeter sentinel/trend monitoring	1	1	1	1	1	1	3	3
	PZ-106	BR	ON-SITE	annual monitoring, VOCs & PYR	trend monitoring			1	1			1	1
	PZ-105	BR	ON-SITE	annual monitoring, VOCs & PYR	trend monitoring			1	1			1	1
	BR-102	BR	ON-SITE	no monitoring	duplicates BR-9							0	0
	BR-3	BR	ON-SITE	annual monitoring, VOCs & PYR	trend monitoring			1	1			1	1
	BR-8	BR	ON-SITE	annual monitoring, VOCs & PYR	trend monitoring			1	1			1	1
	BR-9	pumping well	ON-SITE	semi-annual monitoring, VOCs & PYR	mass removal/trend monitoring	1	1	1	1	1	1	3	3
	BR-5A	pumping well	ON-SITE	semi-annual monitoring, VOCs & PYR	mass removal/trend monitoring	1	1	1	1	1	1	3	3
	BR-6A	pumping well	ON-SITE	semi-annual monitoring, VOCs & PYR	mass removal/trend monitoring	1	1	1	1	1	1	3	3
	BR-7A	pumping well	ON-SITE	semi-annual monitoring, VOCs & PYR	mass removal/trend monitoring	1	1	1	1	1	1	3	3
	B-17	OB	ON-SITE	annual monitoring, VOCs & PYR	trend monitoring			1	1			1	1
	B-7	OB	ON-SITE	annual monitoring, VOCs & PYR	trend monitoring			1	1			1	1
	B-9	OB	ON-SITE	annual monitoring, VOCs & PYR	trend monitoring			1	1			1	1
	S-3	OB	ON-SITE	no monitoring	replaced by trench							0	0
	S-4	OB	ON-SITE	no monitoring	replaced by trench							0	0
	E-1	OB	ON-SITE	no monitoring	replaced by trench							0	0
	E-3	OB	ON-SITE	annual monitoring, VOCs & PYR	trend monitoring			1	1			1	1
	PW10	pumping well	ON-SITE	semi-annual monitoring, VOCs & PYR	mass removal/trend monitoring	1	1	1	1	1	1	3	3
	PW11	pumping well	ON-SITE	semi-annual monitoring, VOCs & PYR	mass removal/trend monitoring	1	1	1	1	1	1	3	3
	PW12	pumping well	ON-SITE	semi-annual monitoring, VOCs & PYR	mass removal/trend monitoring	1	1	1	1	1	1	3	3
QUARRY/CANAL MONITORING	QS-4	quarry seep	QUARRY	semi-annual monitoring, VOCs & PYR	trend monitoring	1	1	1	1	1	1	3	3
	QO-2	quarry outfall	CANAL	semi-annual monitoring, VOCs & PYR	trend monitoring	1	1	1	1	1	1	3	3
	QO-2S1	canal at outfall	CANAL	semi-annual monitoring, VOCs & PYR	surface water monitoring	1	1	1	1	1	1	3	3
	SW-1	barge canal	CANAL	no monitoring	adequate database; minimal impacts							0	0
	SW-2	barge canal	CANAL	no monitoring	adequate database; minimal impacts							0	0
	SW-3	barge canal	CANAL	no monitoring	adequate database; minimal impacts							0	0
	SW-6	barge canal	CANAL	no monitoring	adequate database; minimal impacts							0	0
	SW-12	barge canal	CANAL	no monitoring	adequate database; minimal impacts							0	0
ONE-TIME NOV. 2001 SAMPLING	B-1	OB	ON-SITE			1	1					1	1
	B-2	OB	ON-SITE			1	1					1	1
	W-2	OB	ON-SITE			1	1					1	1
	W-3	OB	ON-SITE			1	1					1	1
	W-4	OB	ON-SITE			1	1					1	1
	MW-16	BR	GENERAL CIRCUITS			1						1	0
TOTAL SAMPLES						25	24	44	31	19	19	82	69

Note: Wells W-2, W-3, and W-4 were substituted for wells B-3, B-4, and B-5 because these B-series wells were found to be inaccessible

Appendix A

Groundwater Field Sampling Data Sheets

Sampling Su Table
HARDING LAWSON ASSOCIATES
NOVEMBER 2001
RI SAMPLING/ROCHESTER NY FACILITY

Sample Point	—Water Level— Date	Time	Water Level (ft)*	Water Elevation (ft)**	Bottom Of Well (ft)*	Field Measurements Date	Time	pH (STD) (Units)	Spec. Cond. (umhos)	Temp (°C)	Turb. (NTU)	Other Field Measurements	
-1	11/28/2001	1210	13.10	N/A	17.30	11/28/2001	1235	7.50	311	12.9	107.30	EH(mv)= 30	DO(ppm)= 0.79
-2	11/28/2001	1115	11.75	N/A	17.50	11/28/2001	1145	7.00	3210	10.7	13.50	EH(mv)= -30	DO(ppm)= 0
R-101	11/30/2001	1415	0.00	N/A	N/A	11/30/2001	1415	7.72	5563	16.3	0.89	EH(mv)= -181	
	Comments: WELL OBSTRUCTED												
R-105	11/30/2001	1230	25.66	N/A	44.60	11/30/2001	1305	7.24	2091	13.1	13.29	EH(mv)= -169	DO(ppm)= 0.87
R-105D	11/30/2001	1130	32.91	N/A	79.50	11/30/2001	1210	7.57	6205	12.5	2.93	EH(mv)= -252	DO(ppm)= 0.67
R-106	11/30/2001	1400	30.75	N/A	43.22	11/30/2001	1435	7.33	3855	12.9	112.00	EH(mv)= -193	DO(ppm)= 0.33
R-5A	11/30/2001	1355	30.55	N/A	N/A	11/30/2001	1355	7.38	2008	14.4	41.40	EH(mv)= -75	
R-6A	11/30/2001	1330	14.60	N/A	N/A	11/30/2001	1330	9.44	4607	17.4	0.80	EH(mv)= -228	
R-7A	12/03/2001	1010	35.72	N/A	N/A	12/03/2001	1010	7.42	3325	14.9	8.83	EH(mv)= -70	
R-9	11/30/2001	1430	31.30	N/A	N/A	11/30/2001	1430	6.76	2220	16.1	83.30	EH(mv)= 34	
MW-106	11/30/2001	1315	12.71	N/A	19.35	11/30/2001	1350	7.48	3001	13.0	26.50	EH(mv)= -175	DO(ppm)= 0.87
MW-16	11/30/2001	1020	13.50	N/A	34.44	11/30/2001	1100	7.07	3339	15.9	5.43	EH(mv)= -215	DO(ppm)= 0.87
	Comments: GENERAL CIRCUITS												
PW-10	11/30/2001	1345	17.45	N/A	N/A	11/30/2001	1345	9.17	4751	16.3	3.54	EH(mv)= -136	
PW-11	12/04/2001	1040	19.40	N/A	N/A	12/04/2001	1040	6.29	2076	12.0	70.60	EH(mv)= -14	
PZ-101	11/29/2001	1325	16.55	N/A	21.69	11/29/2001	1345	7.12	5966	13.3	3.03	EH(mv)= 14	DO(ppm)= 0
PZ-102	11/30/2001	1105	17.05	N/A	32.60	11/30/2001	1140	7.63	3784	11.1	2.19	EH(mv)= -165	DO(ppm)= 0
PZ-103	11/30/2001	1205	14.05	N/A	32.52	11/30/2001	1230	7.53	4950	12.7	0.28	EH(mv)= -267	DO(ppm)= 0
PZ-104	11/30/2001	1015	16.15	N/A	23.93	11/30/2001	1040	7.20	2083	15.4	4.30	EH(mv)= -174	DO(ppm)= 0
PZ-107	11/30/2001	1252	9.40	N/A	27.90	11/30/2001	1310	7.60	2190	13.5	4.09	EH(mv)= -116	DO(ppm)= 0
SO-2	12/03/2001	1140	0.00	N/A	N/A	12/03/2001	1140	8.25	2773	10.6	9.64	EH(mv)= 51	
SO-2S1	12/03/2001	1155	0.00	N/A	N/A	12/03/2001	1155	7.84	691	8.9	11.50	EH(mv)= 68	
SS-4	12/03/2001	1115	0.00	N/A	N/A	12/03/2001	1115	8.19	1632	9.7	2.43	EH(mv)= 13	
W-2	11/29/2001	1155	13.00	N/A	17.20	11/29/2001	1225	8.10	299	14.2	87.30	EH(mv)= 70	DO(ppm)= 0
	Comments: SAMPLED FOR B-3												
W-3	11/29/2001	1100	9.00	N/A	15.37	11/29/2001	1120	8.12	248	13.1	13.01	EH(mv)= 46	DO(ppm)= 0
	Comments: SAMPLED FOR B-4												
W-4	11/29/2001	1010	4.32	N/A	14.72	11/29/2001	1035	7.75	1940	12.0	2.11	EH(mv)= 74	DO(ppm)= 0
	Comments: SAMPLED FOR B-5												

SG - Specific Gravity
EH - Redox
DO - Dissolved Oxygen

* From Top of Riser
** Elevation Above Sea Level

Groundwater E .tion Report
HARDING LAWSON ASSOC.
NOVEMBER 2001
ARCH-ROCHESTER WATER LEVEL MEASUREMENTS

Sample Point	Date	Time	Casing Elevation	Depth to Water	GW Elv.	Comments
-1	11/27/2001	1004	0.00	10.49	N/A	
-10	11/27/2001	845	0.00	9.85	N/A	
-11	11/27/2001	844	0.00	6.37	N/A	
-13	11/27/2001	1033	0.00	N/A	N/A	DRY
-14	11/27/2001	1038	0.00	12.33	N/A	
-15	11/27/2001	1041	0.00	9.27	N/A	
-16	11/27/2001	1043	0.00	7.74	N/A	
-17	11/27/2001	822	0.00	10.44	N/A	
-2	11/27/2001	1002	0.00	11.81	N/A	
-3	11/27/2001	953	0.00	15.36	N/A	
-4	11/27/2001	1011	0.00	15.55	N/A	
-5	11/27/2001	1015	0.00	12.80	N/A	
-7	11/27/2001	928	0.00	17.59	N/A	
-8	11/27/2001	902	0.00	12.98	N/A	
-9	11/27/2001	854	0.00	7.35	N/A	
BR-1	11/27/2001	1105	0.00	9.57	N/A	
BR-102	11/27/2001	954	0.00	23.55	N/A	
BR-103	11/27/2001	758	0.00	7.29	N/A	
BR-104	11/27/2001	837	0.00	10.43	N/A	
BR-105	11/27/2001	901	0.00	25.71	N/A	
BR-105D	11/27/2001	902	0.00	33.89	N/A	
BR-106	11/27/2001	900	0.00	30.82	N/A	
BR-107	11/27/2001	0	0.00	N/A	N/A	DESTROYED
BR-108	11/27/2001	852	0.00	28.95	N/A	
BR-111	11/27/2001	1125	0.00	31.11	N/A	
BR-111D	11/27/2001	1127	0.00	38.29	N/A	
BR-112A	11/27/2001	1123	0.00	36.05	N/A	
BR-112D	11/27/2001	1120	0.00	45.59	N/A	
BR-113	11/27/2001	1113	0.00	40.62	N/A	
BR-113D	11/27/2001	1115	0.00	40.52	N/A	
BR-114	11/27/2001	757	0.00	16.32	N/A	
BR-116	11/27/2001	818	0.00	31.09	N/A	
BR-116D	11/27/2001	820	0.00	43.89	N/A	
BR-117	11/27/2001	948	0.00	36.15	N/A	

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Groundwater E tion Report
HARDING LAWSON ASSOC.
NOVEMBER 2001
ARCH-ROCHESTER WATER LEVEL MEASUREMENTS

Sample Point	Date	Time	Casing Elevation	Depth to Water	GW Elv.	Comments
R-117D	11/27/2001	950	0.00	53.11	N/A	
R-118	11/27/2001	958	0.00	38.26	N/A	
R-118D	11/27/2001	1000	0.00	52.82	N/A	
R-119D	11/27/2001	1005	0.00	72.39	N/A	
R-120D	11/27/2001	940	0.00	60.34	N/A	
R-121D	11/27/2001	944	0.00	59.84	N/A	
R-122D	11/27/2001	1100	0.00	52.23	N/A	
R-123D	11/27/2001	1055	0.00	52.97	N/A	
R-124D	11/27/2001	1052	0.00	38.21	N/A	
R-2	11/27/2001	816	0.00	N/A	N/A	DRY
R-2A	11/27/2001	817	0.00	11.34	N/A	
R-2D	11/27/2001	818	0.00	1.11	N/A	
R-3	11/27/2001	851	0.00	12.96	N/A	
R-3D	11/27/2001	852	0.00	69.99	N/A	
R-4	11/27/2001	842	0.00	9.40	N/A	
R-5	11/27/2001	757	0.00	15.24	N/A	
R-5A	11/27/2001	758	0.00	29.22	N/A	4.53GPM = FLOW RATE
R-6	11/27/2001	858	0.00	13.50	N/A	
R-6A	11/27/2001	859	0.00	15.02	N/A	0.00GPM = FLOW RATE
R-7	11/27/2001	932	0.00	34.87	N/A	7.99GPM = FLOW RATE
R-7A	11/27/2001	933	0.00	22.15	N/A	
R-8	11/27/2001	1017	0.00	12.58	N/A	
R-9	11/27/2001	955	0.00	32.71	N/A	FLOW RATE= 5.49 GPM
-1	11/27/2001	0	0.00	N/A	N/A	BROKEN/BURIED
-2A	11/27/2001	815	0.00	10.21	N/A	
-3	11/27/2001	802	0.00	N/A	N/A	BROKE AT GROUND SURFACE/DRY
-4	11/27/2001	0	0.00	N/A	N/A	BUILDING IN THIS AREA/WELL NO LONGER EXISTS
-5	11/27/2001	850	0.00	12.42	N/A	
-1	11/27/2001	841	0.00	1.80	N/A	
-2	11/27/2001	843	0.00	8.01	N/A	
-3	[illegible]	[illegible]	[illegible]	N/A	N/A	DRY
-4	11/27/2001	753	0.00	N/A	N/A	DRY
-5	11/27/2001	752	0.00	N/A	N/A	DRY
C-1	11/27/2001	1140	0.00	19.29	N/A	

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Groundwater E ation Report
HARDING LAWSON ASSOC.
NOVEMBER 2001
ARCH-ROCHESTER WATER LEVEL MEASUREMENTS

Sample Point	Date	Time	Casing Elevation	Depth to Water	GW Elv.	Comments
C-2	11/27/2001	1117	0.00	N/A	N/A	DRY AT 12.75
RIE CANAL	11/27/2001	1145	0.00	42.35	N/A	
W-103	11/27/2001	800	0.00	2.88	N/A	
W-104	11/27/2001	835	0.00	10.26	N/A	
W-105	11/27/2001	900	0.00	N/A	N/A	DRY AT 19.01
W-106	11/27/2001	858	0.00	12.69	N/A	
W-107	11/27/2001	0	0.00	N/A	N/A	DESTROYED
W-108	11/27/2001	850	0.00	19.12	N/A	
W-114	11/27/2001	755	0.00	14.29	N/A	
W-16	11/27/2001	1040	0.00	13.77	N/A	GENERAL CIRCUITS
W-2	11/27/2001	843	0.00	6.02	N/A	
W-3	11/27/2001	840	0.00	6.76	N/A	
W-G6	11/27/2001	740	0.00	5.71	N/A	
MW-G7	11/27/2001	730	0.00	4.99	N/A	
MW-G8	11/27/2001	732	0.00	8.55	N/A	
MW-G9	11/27/2001	734	0.00	12.01	N/A	
N-1	11/27/2001	1106	0.00	N/A	N/A	DAMAGED CASING/BAILER STUCK IN WELL
N-2	11/27/2001	750	0.00	6.31	N/A	
N-3	11/27/2001	749	0.00	8.81	N/A	
NESS-E	11/27/2001	750	0.00	42.75	N/A	
NESS-W	11/27/2001	745	0.00	40.71	N/A	
PW-10	11/27/2001	827	0.00	18.40	N/A	
PW-11	11/27/2001	1025	0.00	19.52	N/A	
PW-12(BR-101)	11/27/2001	803	0.00	N/A	N/A	OBSTRUCTION
PZ-101	11/27/2001	1049	0.00	16.55	N/A	
PZ-102	11/27/2001	1048	0.00	17.16	N/A	
PZ-103	11/27/2001	1047	0.00	14.31	N/A	
PZ-104	11/27/2001	1030	0.00	15.21	N/A	
PZ-105	11/27/2001	904	0.00	12.75	N/A	
PZ-106	11/27/2001	849	0.00	12.50	N/A	
PZ-1	11/27/2001	7	0.00	9.83	N/A	
PZ-108	11/27/2001	0	0.00	N/A	N/A	DESTROYED
S-1	11/27/2001	903	0.00	10.92	N/A	
S-2	11/27/2001	901	0.00	9.92	N/A	

Groundwater E ation Report
HARDING LAWSON ASSOC.
NOVEMBER 2001
ARCH-ROCHESTER WATER LEVEL MEASUREMENTS

Sample Point	Date	Time	Casing Elevation	Depth to Water	GW Elv.	Comments
3-3	11/27/2001	857	0.00	6.76	N/A	
3-4	11/27/2001	844	0.00	1.04	N/A	
W-1	11/27/2001	1003	0.00	N/A	N/A	UNABLE TO OBTAIN MEASUREMENT/OBSTRUCTION
W-2	11/27/2001	1000	0.00	13.00	N/A	
W-3	11/27/2001	1025	0.00	13.37	N/A	
W-4	11/27/2001	1030	0.00	4.25	N/A	
W-5	11/27/2001	935	0.00	N/A	N/A	UNABLE TO OBTAIN MEASUREMENT/OBSTRUCTION
W-6	11/27/2001	931	0.00	11.22	N/A	

FLDLOGBF

FIELD OBSERVATIONS

Facility: ARCH **Sample Point ID:** B-1

Field Personnel: PL / TB Sample Matrix: GW

(X) Grab ( ) Composite

MONITORING WELL INSPECTION:

Date/Time 11-28-01 ~~1210~~ PL / 1210 Cond. of seal: (X) Good ( ) Cracked __% ( ) None ( ) Buried

Prot. casing/riser height: — Cond. of prot. casing/riser: ( ) Unlocked (X) Good ( ) Loose ( ) Flush Mount

If prot. casing; depth to riser below: — ( ) Damaged ____

Gas Meter (Calibration/Reading): % Gas: — / — % LEL: — / —

Vol. Org Meter (Calibration/Reading): Volatiles(ppm): — / —

PURGE INFORMATION:

Date / Time Initiated: 11-28-01 / 1220 Date/Time Completed: 11-28-01 / 1235

Surf. Meas. Pt.: ( ) Prot. Casing (X) Riser Riser Diameter,Inches: 2.0

Initial Water Level, Feet: 13.10 Elevation, G/W MSL: —

Well Total Depth, Feet: 17.30 Method of Well Purge: Peristaltic pump

One (1) Riser Volume, Gal: — Dedicated: Y / (N)

Total Volume Purged, Gal: 1.5 Purged To Dryness: Y / (N)

Purge Observations: Start TURBID Finish SL TURBID

PURGE DATA: (if applicable)

Time	WL Purge Rate (gpm/htz)	Cumulative Volume	Temp. (°C)	pH (std units)	Conduct. (µmhos/cm)	Turb. (NTU)	Other DO (mg/L)	ORP mV pH
1220	~~13.70~~ 12.90	0	11.5	7.50	318	192	1.03	~~+422~~
1225	13.05		12.5	7.51	308	145.8	0.89	26.0
1230	13.40		12.6	~~6.77~~ 7.51 pH	310	132.6	0.84	28.0
1235	13.55	1.5	12.9	7.50	311	107.3	0.79	30.0

SAMPLED AT 1235 ON 11-28-01 JL

FLDLOGBF

FIELD OBSERVATIONS

Facility: ARCH **Sample Point ID:** B-2

Field Personnel: PL / TB Sample Matrix: GW

(X) Grab ( ) Composite

MONITORING WELL INSPECTION:

Date/Time 11-28-01 / 1115 Cond. of seal: (X) Good ( ) Cracked __ %
( ) None ( ) Buried

Prot. casing/riser height: — Cond. of prot. casing/riser: ( ) Unlocked (X) Good
( ) Loose ( ) Flush Mount

If prot. casing; depth to riser below: — ( ) Damaged ____

Gas Meter (Calibration/Reading): % Gas: — / — % LEL: — / —

Vol. Org Meter (Calibration/Reading): Volatiles(ppm): — / —

PURGE INFORMATION:

Date / Time Initiated: 11-28-01 / 1120 Date/Time Completed: 11-28-01 / 1145

Surf. Meas. Pt.: ( ) Prot. Casing (X) Riser Riser Diameter, Inches: 2.0

Initial Water Level, Feet: ~~11.90~~ 11.75 Elevation, G/W MSL: —

Well Total Depth, Feet: 17.50 Method of Well Purge: Peristaltic Pump

One (1) Riser Volume, Gal: ____ Dedicated: Y / (N)

Total Volume Purged, Gal: 2.0 Purged To Dryness: Y / (N)

Purge Observations: Start SL TURB Finish clear

PURGE DATA: (if applicable)

Time	WL Purge Rate (gpm/htz)	Cumulative Volume	Temp. (°C)	pH (std units)	Conduct. (µmhos/cm)	Turb. (NTU)	Other DO (mg/L)	ORP
1125	12.50		10.0	7.06	4046	43.0	0	48.0
1130	12.50		9.60	7.05	3603	42.1	0	-25.7
1135	12.50		10.02	7.04	3569	34.7	0	-28
1140	12.50		10.5	7.02	3302	20.4	0	-29
1145	12.50	2.0	10.7	7.00	3210	13.5	0	-30

SAMPLED AT 1145 ON 11-28-01 PL

FIELD OBSERVATIONS

BR-101

Facility: ARCH

Sample Point ID: PW-12

Field Personnel: Paul Light /TB

Sample Matrix: GW

(X) GRAB ( ) COMPOSITE

SAMPLING INFORMATION:

Date/Time: 11-30-01 / 1415

Water Level @ Sampling, Feet: NA

Method of Sampling: Peristaltic Pump

Dedicated: (Y) N

Multi-phased/layered: ( )Yes (X)No ; If yes; ( )light ( )heavy

SAMPLING DATA:

Time	Temp. (°C)	pH (Std. Units)	Conduct. (µmhos/cm)	Turb. (NTU)	Other ORP (mV)	Other ____ (____)
1415	16.3	7.72	5563	0.89	-181	

INSTRUMENT CHECK DATA:

Turbidity Serial #: 3794 ____ NTU std. = ____ NTU ____ NTU std. = ____ NTU

pH Serial #: 260347 4.0 std. = ____ 7.0 std. = 7.0 10.0 std. = 10.0

Conductivity Serial #: ↘ 147 umhos/cm = 147 ____ umhos/cm = ____

GENERAL INFORMATION:

Weather Conditions @ time of sampling: Clouds /RAIN 50°

Sample Characterisitics: Clear

COMMENTS AND OBSERVATIONS: Well OBSTRUCTED BY PUMP

CAN NOT OBTAIN A WATER LEVEL

I certify that sampling procedures were in accordance with all applicable EPA, State and Site-Specific protocols.

Date: 11/30/01 By: T Lutz Company: STL

FLDLOGBF

FIELD OBSERVATIONS

Facility: ARCH

Sample Point ID: BR-105

Field Personnel: R. SENF/CS

Sample Matrix: G/W

(X) Grab ( ) Composite

MONITORING WELL INSPECTION:

Date/Time 11-30-01 / 1230

Cond. of seal: (X) Good ( ) Cracked__% ( ) None ( ) Buried

Prot. casing/riser height: —

Cond. of prot. casing/riser: ( ) Unlocked ( ) Good ( ) Loose (X) Flush Mount ( ) Damaged_____

If prot. casing; depth to riser below: —

Gas Meter (Calibration/Reading): % Gas: — / — % LEL: — / —

Vol. Org Meter (Calibration/Reading): Volatiles(ppm): — / —

PURGE INFORMATION:

Date / Time Initiated: 11-30-01 / 1235 Date/Time Completed: 11-30-01 / 1300

Surf. Meas. Pt.: ( ) Prot. Casing (X) Riser Riser Diameter,Inches: 4.0

Initial Water Level, Feet: 25.66 Elevation, G/W MSL: _____

Well Total Depth, Feet: 44.60 Method of Well Purge: BLADDER PUMP

One (1) Riser Volume, Gal: _____ Dedicated: Y / (N)

Total Volume Purged, Gal: 1.5 Purged To Dryness: Y / (N)

Purge Observations: Start CLEAR Finish CLEAR

PURGE DATA: (if applicable)

Time	Purge (gpm/mL/min)	WL Rate (ft/hr)	Cumulative Volume	Temp. (°C)	pH (std units)	Conduct. (µmhos/cm)	Turb. (NTU)	Other ORP (mV)	DO ppm
1240	150	25.71		12.9	7.30	2077	13.82	-143	0.98
1245	↓	25.70		13.0	7.34	2095	13.75	-167	0.90
1250		—		13.0	7.32	2100	13.87	-167	0.91
1255		25.70	↓	13.1	7.29	2098	13.58	-168	0.89
1300	↓	25.70	1.5	13.1	7.24	2091	13.29	-169	0.87

SAMPLED AT 1305 / 11-30-01

FLDLOGBF

FIELD OBSERVATIONS

Facility: ARCH

Sample Point ID: BR-105 D

Field Personnel: R. STENF / CS

Sample Matrix: G/W

(X) Grab ( ) Composite

MONITORING WELL INSPECTION:

Date/Time 11-30-01 / 1130

Cond. of seal: (X) Good ( ) Cracked__% ( ) None ( ) Buried

Prot. casing/riser height: —

Cond. of prot. casing/riser: ( ) Unlocked ( ) Good ( ) Loose (X) Flush Mount ( ) Damaged

If prot. casing; depth to riser below: —

Gas Meter (Calibration/Reading): % Gas: — / — % LEL: — / —

Vol. Org Meter (Calibration/Reading): Volatiles(ppm): — / —

PURGE INFORMATION:

Date / Time Initiated: 11-30-01 / 1135

Date/Time Completed: 11-30-01 / 1205

Surf. Meas. Pt.: ( ) Prot. Casing (X) Riser

Riser Diameter,Inches: 2.0

Initial Water Level, Feet: 32.91

Elevation, G/W MSL:

Well Total Depth, Feet: 79.50

Method of Well Purge: BLADDER PUMP

One (1) Riser Volume, Gal:

Dedicated: Y / (N)

Total Volume Purged, Gal: 1.5

Purged To Dryness: Y / (N)

Purge Observations: Start CLEAR Finish CLEAR

PURGE DATA: (if applicable)

Time	Purge Rate (gpm/~~htz~~) (ml/min WL)	Cumulative Volume	Temp. (°C)	pH (std units)	Conduct. (µmhos/cm)	Turb. (NTU)	Other ORP (-mv)	DO
1145	150 34.20		13.1	7.39	6048	3.78	-241	0.77
1150	1 34.75		12.6	7.67	6170	3.20	-243	0.68
1155	1 34.90		12.5	7.56	6137	3.23	-240	0.65
1200	1 35.02		12.5	7.55	6170	3.09	-250	0.65
1205	V 35.00		12.5	7.57	6205	2.93	-252	0.67

SAMPLED AT 1210/11-30-01

FLDLOGBF

FIELD OBSERVATIONS

Facility: ARCH

Sample Point ID: BR-106

Field Personnel: R. SENF / CS

Sample Matrix: G/W

(X) Grab ( ) Composite

MONITORING WELL INSPECTION:

Date/Time 11-30-01 | 1400

Cond. of seal: (X) Good ( ) Cracked__% ( ) None ( ) Buried

Prot. casing/riser height: —

Cond. of prot. casing/riser: ( ) Unlocked ( ) Good ( ) Loose (X) Flush Mount ( ) Damaged

If prot. casing; depth to riser below: —

Gas Meter (Calibration/Reading): % Gas: — / — % LEL: — / —

Vol. Org Meter (Calibration/Reading): Volatiles(ppm): — / —

PURGE INFORMATION:

Date / Time Initiated: 11-30-01 | 1410

Date/Time Completed: 11-30-01 | 1430

Surf. Meas. Pt.: ( ) Prot. Casing (X) Riser

Riser Diameter, Inches: 4.0

Initial Water Level, Feet: 30.75

Elevation, G/W MSL:

Well Total Depth, Feet: 43.22

Method of Well Purge: BLADDER PUMP

One (1) Riser Volume, Gal:

Dedicated: Y / (N)

Total Volume Purged, Gal: 1.5

Purged To Dryness: Y / (N)

Purge Observations: Start SL. TURBID Finish SL. TURBID

PURGE DATA: (if applicable)

Time	Purge (gpm/htz)	WL Rate	Cumulative Volume	Temp. (°C)	pH (std units)	Conduct. (µmhos/cm)	Turb. (NTU)	Other ORP (mV)	DO PPM
1410	160	30.90		13.0	7.27	3790	130.0	-169	0.28
1415	|	30.95		12.9	7.39	3856	121.0	-189	0.37
1420	|	30.92		13.0	7.32	3846	114.0	-201	0.35
1425	|	30.90		13.0	7.35	3860	110.0	-199	0.33
1430	↓	30.87	1.5	12.9	7.33	3855	112.0	-193	0.33

SAMPLED AT 1435 / 11-30-01

FIELD OBSERVATIONS

Facility: ARCH Sample Point ID: BR-5A

Field Personnel: P. Little / TO Sample Matrix: GW

#GRAB ( )COMPOSITE

SAMPLING INFORMATION:

Date/Time: 11-30-01 / 1355 Water Level @ Sampling, Feet: 30.55

Method of Sampling: IN-SITU PUMP Dedicated: (Y) / N

Multi-phased/layered: ( )Yes (X)No ; If yes; ( )light ( )heavy

SAMPLING DATA:

Time	Temp. (°C)	pH (Std. Units)	Conduct. (µmhos/cm)	Turb. (NTU)	Other ORP (mV)	Other ( )
1355	14.4	7.38	2008	41.4	-75	

INSTRUMENT CHECK DATA:

Turbidity Serial #: 3794 5.0 NTU std. = 5.0 NTU ___ NTU std. = ___ NTU

pH Serial #: 601347 4.0 std. = ___ 7.0 std. = 7.0 10.0 std. = 10.0

Conductivity Serial #: NA 147 umhos/cm = 147 ___ umhos/cm = ___

GENERAL INFORMATION:

Weather Conditions @ time of sampling: RAIN / cloudy 50°

Sample Characterisitics: SL TURBID

COMMENTS AND OBSERVATIONS: ___

I certify that sampling procedures were in accordance with all applicable EPA, State and Site-Specific protocols.

Date: 11/30/01 By: P. Little Company: STL

FIELD OBSERVATIONS

Facility: ARCH Sample Point ID: BR-6A

Field Personnel: PL/JTB Sample Matrix: GW

X GRAB ( ) COMPOSITE

SAMPLING INFORMATION:

Date/Time: 11-30-01 / 1330 Water Level @ Sampling, Feet: 14.60

Method of Sampling: IN-SITU PUMP Dedicated: (Y) / N

Multi-phased/layered: ( )Yes (X)No ; If yes; ( )light ( )heavy

SAMPLING DATA:

Time	Temp. (°C)	pH (Std. Units)	Conduct. (µmhos/cm)	Turb. (NTU)	Other ORP (mV)	Other ____ (____)
1330	17.4	9.44	4607	0.80	-228	

INSTRUMENT CHECK DATA:

Turbidity Serial #: 3794 5.0 NTU std. = 5.0 NTU ____ NTU std. = ____ NTU

pH Serial #: 6d347 4.0 std. = ____ 7.0 std. = 7.0 10.0 std. = 10.0

Conductivity Serial #: ↓ 147 umhos/cm = 147 ____ umhos/cm = ____

GENERAL INFORMATION:

Weather Conditions @ time of sampling: Clear 45°

Sample Characterisitics: AMB. STRONG ODOR

COMMENTS AND OBSERVATIONS: ____

I certify that sampling procedures were in accordance with all applicable EPA, State and Site-Specific protocols.

Date: 11/30/01 By: PL Lee Company: STC

FIELD OBSERVATIONS

Facility: ARCH Sample Point ID: BR-7A

Field Personnel: PL/TB Sample Matrix: GW

(X) GRAB ( ) COMPOSITE

SAMPLING INFORMATION:

Date/Time: 12-3-01 / 1010 Water Level @ Sampling, Feet: 35.72

Method of Sampling: IN-SITU PUMP Dedicated: (Y) / N

Multi-phased/layered: ( )Yes (X)No ; If yes; ( )light ( )heavy

SAMPLING DATA:

Time	Temp. (°C)	pH (Std. Units)	Conduct. (µmhos/cm)	Turb. (NTU)	Other ORP (-70)	Other ( )
1010	14.9	7.42	3325	8.83	-70	

INSTRUMENT CHECK DATA:

Turbidity Serial #: 3794 5.0 NTU std. = 5.0 NTU ___ NTU std. = ___ NTU

pH Serial #: 601347 4.0 std. = ___ 7.0 std. = 7.0 10.0 std. = 10.0

Conductivity Serial #: ___ 147 umhos/cm = 147 ___ umhos/cm = ___

GENERAL INFORMATION:

Weather Conditions @ time of sampling: Sunny 50°

Sample Characterisitics: Clear

COMMENTS AND OBSERVATIONS:

I certify that sampling procedures were in accordance with all applicable EPA, State and Site-Specific protocols.

Date: 12/3/01 By: [signature] Company: STL

FIELD OBSERVATIONS

Facility: ARCH Sample Point ID: BR-9

Field Personnel: P. Little/JTB Sample Matrix: GW

(GRAB) ( )COMPOSITE

SAMPLING INFORMATION:

Date/Time: 11-30-01 1430 Water Level @ Sampling, Feet: 31.30

Method of Sampling: In-situ Pump Dedicated: (Y) / N

Multi-phased/layered: ( )Yes (N)No ; If yes; ( )light ( )heavy

SAMPLING DATA:

Time	Temp. (°C)	pH (Std. Units)	Conduct. (µmhos/cm)	Turb. (NTU)	Other ORP (MV)	Other ___ ( )
1430	16.1	6.76	2220	83.30	34	

INSTRUMENT CHECK DATA:

Turbidity Serial #: 3784 50 NTU std. = 50 NTU ___ NTU std. = ___ NTU

pH Serial #: 601347 4.0 std. = ___ 7.0 std. = 7.0 10.0 std. = 10.01

Conductivity Serial #: ↓ 147 umhos/cm = 147 ___ umhos/cm = ___

GENERAL INFORMATION:

Weather Conditions @ time of sampling: cloudy/RAIN 50°

Sample Characterisitics: Clear

COMMENTS AND OBSERVATIONS: ___

I certify that sampling procedures were in accordance with all applicable EPA, State and Site-Specific protocols.

Date: 11/30/01 By: J. Little Company: STR

FLDLOGBF

FIELD OBSERVATIONS

Facility: ARCH **Sample Point ID:** MW-106

Field Personnel: R.SAVF/CS Sample Matrix: G/W

(X) Grab ( ) Composite

MONITORING WELL INSPECTION:

Date/Time 11-30-01 / 1315 Cond. of seal: (X) Good ( ) Cracked __ %
( ) None ( ) Buried

Prot. casing/riser height: — Cond. of prot. casing/riser: ( ) Unlocked ( ) Good
( ) Loose (X) Flush Mount

If prot. casing; depth to riser below: — ( ) Damaged ____

Gas Meter (Calibration/Reading): % Gas: — / — % LEL: — / —

Vol. Org Meter (Calibration/Reading): Volatiles(ppm): — / —

PURGE INFORMATION:

Date / Time Initiated: 11-30-01 / 1320 Date/Time Completed: 11-30-01 / 1350

Surf. Meas. Pt.: ( ) Prot. Casing (X) Riser Riser Diameter,Inches: 2.0

Initial Water Level, Feet: 12.71 Elevation, G/W MSL: ____

Well Total Depth, Feet: 19.35 Method of Well Purge: BLADDER PUMP

One (1) Riser Volume, Gal: ____ Dedicated: Y / (N)

Total Volume Purged, Gal: 2.0 Purged To Dryness: Y / (N)

Purge Observations: Start SL, TURBID Finish BLACK TINT

PURGE DATA: (if applicable)

Time	Purge Rate (gpm/ml/min)	WL (ft)	Cumulative Volume	Temp. (°C)	pH (std units)	Conduct. (µmhos/cm)	Turb. (NTU)	Other ORP (-mV)	DO (mg/L)
1325	150	12.75		12.9	7.16	2615	39.5	-150	1.03
1330	|	12.90		13.0	7.21	2680	38.0	-142	0.92
1335	|	13.01		13.1	7.35	2850	37.3	-165	0.94
1340	|	13.05		13.0	7.38	2889	27.2	-167	0.89
1345	|	13.05		12.9	7.42	2919	26.7	-170	0.88
1350	↓	13.05	2.0	13.0	7.48	3001	26.5	-175	0.87

SAMPLED AT 1350 / 11-30-01

FIELD OBSERVATIONS

GENERAL CIRCUITS

Facility: ARCH

Sample Point ID: MW-16

Field Personnel: R. SAUF / C. SCARDINA

Sample Matrix: G/W

(X) Grab ( ) Composite

MONITORING WELL INSPECTION:

Date/Time 11-30-01 | 1020

Cond. of seal: (X) Good ( ) Cracked__% ( ) None ( ) Buried

Prot. casing/riser height: —

Cond. of prot. casing/riser: ( ) Unlocked ( ) Good ( ) Loose (X) Flush Mount ( ) Damaged_____

If prot. casing; depth to riser below: —

Gas Meter (Calibration/Reading): % Gas: — / — % LEL: — / —

Vol. Org Meter (Calibration/Reading): Volatiles(ppm): — / —

PURGE INFORMATION:

Date / Time Initiated: 11-30-01 | 1030 Date/Time Completed: 11-30-01 | 1055

Surf. Meas. Pt.: ( ) Prot. Casing (X) Riser Riser Diameter, Inches: 4.0

Initial Water Level, Feet: 13.50 Elevation, G/W MSL: _____

Well Total Depth, Feet: 34.44 Method of Well Purge: BLADDER PUMP

One (1) Riser Volume, Gal: _____ Dedicated: Y / (N)

Total Volume Purged, Gal: 1.0 Purged To Dryness: Y / (N)

Purge Observations: Start CLEAR Finish CLEAR

PURGE DATA: (if applicable)

Time	ml/min Purge (gpm ~~bbl~~)	WL Rate	Cumulative Volume	Temp. (°C)	pH (std units)	Conduct. (µmhos/cm)	Turb. (NTU)	Other ORP (-41)	DO ppm
1035	100	13.51		16.2	6.96	3510	10.35	-194	1.20
1040	|	13.50		16.1	7.00	3420	7.53	-221	0.90
1045	|	13.50		15.9	7.03	3350	5.60	-211	0.87
1050	|	13.50		15.9	7.07	3346	5.50	-213	0.85
1055	↓	13.50		15.9	7.07	3339	5.43	-215	0.87

SAMPLED AT 1100 / 11-30-01

FIELD OBSERVATIONS

Facility: ARCH Sample Point ID: PW-10

Field Personnel: P. Little / ITB Sample Matrix: GW

(GRAB / COMPOSITE)

SAMPLING INFORMATION:

Date/Time: 11-30-01 / 1345 Water Level @ Sampling, Feet: 17.45

Method of Sampling: IN-SITU PUMP Dedicated: (Y) / N

Multi-phased/layered: ( )Yes (X)No ; If yes; ( )light ( )heavy

SAMPLING DATA:

Time	Temp. (°C)	pH (Std. Units)	Conduct. (µmhos/cm)	Turb. (NTU)	Other ORP (MV)	Other ( )
1345	16.3	9.17	4751	3.54	-136	

INSTRUMENT CHECK DATA:

Turbidity Serial #: 3794 5.0 NTU std. = 5.0 NTU ___ NTU std. = ___ NTU

pH Serial #: 601347 4.0 std. = ___ 7.0 std. = 7.0 10.0 std. = 10.0

Conductivity Serial #: ↘ 147 umhos/cm = 147 ___ umhos/cm = ___

GENERAL INFORMATION:

Weather Conditions @ time of sampling: RAIN / CLOUDY 50°

Sample Characterisitics: AMBER STRONG ODER

COMMENTS AND OBSERVATIONS: UNPURG. WAITED FOR VOL

I certify that sampling procedures were in accordance with all applicable EPA, State and Site-Specific protocols.

Date: 11/30/01 By: P. Little Company: STC

FIELD OBSERVATIONS

Facility: ARCH CHEMICAL Sample Point ID: PW-11

Field Personnel: JBPL/TB Sample Matrix: GW

(X)GRAB ( )COMPOSITE

SAMPLING INFORMATION:

Date/Time: 12-4-01 / 1040 Water Level @ Sampling, Feet: 19.40

Method of Sampling: Peristaltic Pump Dedicated: (Y) / N

Multi-phased/layered: ( )Yes (X)No ; If yes; ( )light ( )heavy

SAMPLING DATA:

Time	Temp. (°C)	pH (Std. Units)	Conduct. (µmhos/cm)	Turb. (NTU)	Other ORP (-14)	Other ( )
1040	12.0	6.29	2076	70.6	-14	

INSTRUMENT CHECK DATA:

Turbidity Serial #: 3794 5.0 NTU std. = 5.0 NTU ___ NTU std. = ___ NTU

pH Serial #: 601347 4.0 std. = ___ 7.0 std. = 7.0 10.0 std. = 10.0

Conductivity Serial #: V 147 umhos/cm = 147 ___ umhos/cm = ___

GENERAL INFORMATION:

Weather Conditions @ time of sampling: clouds 60°

Sample Characterisitics: TURBID ORANGE

COMMENTS AND OBSERVATIONS: Limited volume only able to obtain 2 VOAs 1 Amber

I certify that sampling procedures were in accordance with all applicable EPA, State and Site-Specific protocols.

Date: 12/4/01 By: [signature] Company: SIL

FIELD OBSERVATIONS

Facility: ARCH

Sample Point ID: P2-101

Field Personnel: PL/TB

Sample Matrix: GW

(X) Grab ( ) Composite

MONITORING WELL INSPECTION:

Date/Time 11-29-01 / 1325

Cond. of seal: (X) Good ( ) Cracked ___ %
( ) None ( ) Buried

Prot. casing/riser height: —

Cond. of prot. casing/riser: ( ) Unlocked (X) Good
( ) Loose ( ) Flush Mount
( ) Damaged ___

If prot. casing; depth to riser below: —

Gas Meter (Calibration/Reading): % Gas: — / — % LEL: — / —

Vol. Org Meter (Calibration/Reading): Volatiles(ppm): — / —

PURGE INFORMATION:

Date / Time Initiated: 11-29-01 / 1330

Date/Time Completed: 11-29-01 / 1345

Surf. Meas. Pt.: ( ) Prot. Casing (X) Riser

Riser Diameter, Inches: 2.0

Initial Water Level, Feet: 16.55

Elevation, G/W MSL: ___

Well Total Depth, Feet: 21.69

Method of Well Purge: Peristaltic Pump

One (1) Riser Volume, Gal: ___

Dedicated: (Y) / N

Total Volume Purged, Gal: 2.0

Purged To Dryness: Y / (N)

Purge Observations: Start clear Finish clear

PURGE DATA: (if applicable)

Time	Purge Rate (gpm/htz)	Cumulative Volume	Temp. (°C)	pH (std units)	Conduct. (µmhos/cm)	Turb. (NTU)	Other ORP (mV)	DO mg/L
1330	17.30	0	13.7	7.14	5930	9.30	49	0
1335	17.44		13.4	7.14	5956	4.50	19	0
1340	17.51		13.3	7.14	5964	3.10	15	0
1345	17.60	2.0	13.3	7.12	5966	3.03	14	0

SAMPLED AT 1345 ON 11-29-01 PL

FLDLOGBF

FIELD OBSERVATIONS

Facility: ARCH

Sample Point ID: PZ-102

Field Personnel: RL/TB

Sample Matrix: GW

(X) Grab ( ) Composite

MONITORING WELL INSPECTION:

Date/Time 11-30-01 / 1105

Cond. of seal: (X) Good ( ) Cracked__% ( ) None ( ) Buried

Prot. casing/riser height: —

Cond. of prot. casing/riser: ( ) Unlocked (X) Good ( ) Loose ( ) Flush Mount ( ) Damaged

If prot. casing; depth to riser below: —

Gas Meter (Calibration/Reading): % Gas: — / — % LEL: — / —

Vol. Org Meter (Calibration/Reading): Volatiles(ppm): — / —

PURGE INFORMATION:

Date / Time Initiated: 11-30-01 / 1120

Date/Time Completed: 11-30-01 / 1140

Surf. Meas. Pt.: ( ) Prot. Casing (X) Riser

Riser Diameter,Inches: 2.0

Initial Water Level, Feet: 17.05

Elevation, G/W MSL:

Well Total Depth, Feet: 32.60

Method of Well Purge: Peristaltic pump

One (1) Riser Volume, Gal:

Dedicated: (Y) / N

Total Volume Purged, Gal: 1.0

Purged To Dryness: Y / (N)

Purge Observations: Start clear Finish clear

PURGE DATA: (if applicable)

Time	WL Purge Rate (gpm/htz)	Cumulative Volume	Temp. (°C)	pH (std units)	Conduct. (µmhos/cm)	Turb. (NTU)	Other ORP (mV)	DO mg/L
1125	17.75		11.7	7.53	3651	1.55	-110	0
1130	18.00		11.1	7.66	3651	1.45	-140	0
1135	18.10		10.9	7.66	3720	2.80	-164	0
1140	18.16	1.0	11.1	7.63	3784	2.19	-165	0

SAMPLED AT 1140 / 11-30-01

FLDLOGBF

FIELD OBSERVATIONS

Facility: ARCH

Sample Point ID: PZ-103

Field Personnel: PL/TB

Sample Matrix: GW

(X) Grab ( ) Composite

MONITORING WELL INSPECTION:

Date/Time 11-30-01 1400 1205

Cond. of seal: (X) Good ( ) Cracked ___ %
( ) None ( ) Buried

Prot. casing/riser height: —

Cond. of prot. casing/riser: ( ) Unlocked (X) Good
( ) Loose ( ) Flush Mount
( ) Damaged ___

If prot. casing; depth to riser below: —

Gas Meter (Calibration/Reading): % Gas: — / — % LEL: — / —

Vol. Org Meter (Calibration/Reading): Volatiles(ppm): — / —

PURGE INFORMATION:

Date / Time Initiated: 11-30-01 / 1210

Date/Time Completed: 11-30-01 / 1230

Surf. Meas. Pt.: ( ) Prot. Casing (X) Riser

Riser Diameter, Inches: 2.0

Initial Water Level, Feet: 14.05

Elevation, G/W MSL: ___

Well Total Depth, Feet: 32.52

Method of Well Purge: Peristaltic Pump

One (1) Riser Volume, Gal: ___

Dedicated: (Y) / N

Total Volume Purged, Gal: 1.0

Purged To Dryness: Y / (N)

Purge Observations: Start clear Finish clear

PURGE DATA: (if applicable)

Time	WL Purge Rate (gpm/htz)	Cumulative Volume	Temp. (°C)	pH (std units)	Conduct. (µmhos/cm)	Turb. (NTU)	Other ORP (mV)	DO mg/L
1215	15.40		12.7	7.58	4831	0.38	-218	0
1220	15.59		12.7	7.64	4862	0.41	-245	0
1225	15.63		12.8	7.58	4908	0.31	-265	0
1230	15.70	1.0	12.7	7.53	~~4450~~ PC 4950	0.28	-267	0

SAMPLE AT 1230 ON 11-30-01 PL

FLDLOGBF

FIELD OBSERVATIONS

Facility: ARCH Sample Point ID: PZ-104

Field Personnel: PL / TB Sample Matrix: GW

(X) Grab ( ) Composite

MONITORING WELL INSPECTION:

Date/Time 11-30-01 / 1015 Cond. of seal: (X) Good ( ) Cracked__% ( ) None ( ) Buried

Prot. casing/riser height: — Cond. of prot. casing/riser: ( ) Unlocked ( ) Good ( ) Loose (X) Flush Mount ( ) Damaged_____

If prot. casing; depth to riser below: —

Gas Meter (Calibration/Reading): % Gas: — / — % LEL: — / —

Vol. Org Meter (Calibration/Reading): Volatiles(ppm): — / —

PURGE INFORMATION:

Date / Time Initiated: 11-30-01 / 1020 Date/Time Completed: 11-30-01 / 1640

Surf. Meas. Pt.: ( ) Prot. Casing ( ) Riser Riser Diameter,Inches: 2.0

Initial Water Level, Feet: 16.15 Elevation, G/W MSL: _____

Well Total Depth, Feet: 23.93 Method of Well Purge: Peristaltic Pump

One (1) Riser Volume, Gal: _____ Dedicated: (Y) / N

Total Volume Purged, Gal: 1.0 Purged To Dryness: Y / (N)

Purge Observations: Start Clear Finish Clear

PURGE DATA: (if applicable)

Time	Purge Rate (gpm/htz)	Cumulative Volume	Temp. (°C)	pH (std units)	Conduct. (µmhos/cm)	Turb. (NTU)	Other ORP (MV)	DO mg/L
1025	150 16.20		15.5	7.09	2105	14.15	-153	0
1030	16.26		15.4	7.19	2095	PL 14.1334	-158	0
1035	16.20		15.4	7.26	2082	7.53	-172	0
1040	16.20	1.0	15.4	7.20	2083	4.30	-174	0

SAMPLED AT 1040 / 11-30-01

PL Zutz

FLDLOGBF

FIELD OBSERVATIONS

Facility: ARCH Sample Point ID: PZ-107

Field Personnel: PL/TB Sample Matrix: GW

(X) Grab ( ) Composite

MONITORING WELL INSPECTION:

Date/Time 11-30-01 / 1252 Cond. of seal: (X) Good ( ) Cracked __% ( ) None ( ) Buried

Prot. casing/riser height: — Cond. of prot. casing/riser: ( ) Unlocked (X) Good ( ) Loose ( ) Flush Mount ( ) Damaged

If prot. casing; depth to riser below: —

Gas Meter (Calibration/Reading): % Gas: — / — % LEL: — / —

Vol. Org Meter (Calibration/Reading): Volatiles(ppm): — / —

PURGE INFORMATION:

Date / Time Initiated: 11-30-01 / 1255 Date/Time Completed: ~~11-30~~ 11-30-01 1310

Surf. Meas. Pt.: ( ) Prot. Casing ( ) Riser Riser Diameter,Inches: 2.0

Initial Water Level, Feet: 9.40 Elevation, G/W MSL:

Well Total Depth, Feet: 27.90 Method of Well Purge: Peristaltic Pump

One (1) Riser Volume, Gal: Dedicated: (Y) / N

Total Volume Purged, Gal: 1.0 Purged To Dryness: Y / (N)

Purge Observations: Start Clear Finish Clear

PURGE DATA: (if applicable)

Time	WL Purge Rate (gpm/htz)	Cumulative Volume	Temp. (°C)	pH (std units)	Conduct. (µmhos/cm)	Turb. (NTU)	Other ORP (mv)	DO mg/L
1300	9.60		12.5	7.26	2140	10.82	-80	0
1305	9.60		13.5	7.59	2179	5.32	-115	0
1310	9.60	1.0	13.5	7.60	2190	4.09	-116	0

SAMPLED AT 1310 ON 11-30-01 PL

FLDLOG

FIELD OBSERVATIONS

Facility: ARCH

Sample Point ID: QO-2

Field Personnel: P. Little /TB

Sample Matrix: Surface WATER

GRAB / COMPOSITE

SAMPLING INFORMATION:

Date/Time: 12-3-01 / 1140

Water Level @ Sampling, Feet: —

Method of Sampling: MANUAL GRAB

Dedicated: Y / (N)

Multi-phased/layered: ( )Yes (X)No ; If yes; ( )light ( )heavy

SAMPLING DATA:

Time	Temp. (°C)	pH (Std. Units)	Conduct. (µmhos/cm)	Turb. (NTU)	Other ORP (MV)	Other ( )
1140	10.6	8.25	2773	9.64	51	

INSTRUMENT CHECK DATA:

Turbidity Serial #: 3794 5.0 NTU std. = 5.0 NTU ___ NTU std. = ___ NTU

pH Serial #: 601347 4.0 std. = ___ 7.0 std. = 7.0 10.0 std. = 10.0

Conductivity Serial #: ↘ 147 umhos/cm = 147 ___ umhos/cm = ___

GENERAL INFORMATION:

Weather Conditions @ time of sampling: Sunny 50°

Sample Characterisitics: Clear

COMMENTS AND OBSERVATIONS: ___

I certify that sampling procedures were in accordance with all applicable EPA, State and Site-Specific protocols.

Date: 12/3/01 By: T P Little Company: SFR

FIELD OBSERVATIONS

Facility: ARCH Sample Point ID: QO-251

Field Personnel: P.Little/TB Sample Matrix: SURFACE WATER

X GRAB ( ) COMPOSITE

SAMPLING INFORMATION:

Date/Time: 12-3-01 1155 Water Level @ Sampling, Feet: —

Method of Sampling: SS BAILER Dedicated: Y / (N)

Multi-phased/layered: ( )Yes (X)No ; If yes; ( )light ( )heavy

SAMPLING DATA:

Time	Temp. (°C)	pH (Std. Units)	Conduct. (µmhos/cm)	Turb. (NTU)	Other ORP (___)	Other ___ (___)
1200pl	8.9	7.84	691	11.50	68	
1155						

INSTRUMENT CHECK DATA:

Turbidity Serial #: 3794 5.0 NTU std. = 5.0 NTU ___ NTU std. = ___ NTU

pH Serial #: 601347 4.0 std. = ___ 7.0 std. = 7.0 10.0 std. = 10.01

Conductivity Serial #: \ 147 umhos/cm = 147 ___ umhos/cm = ___

GENERAL INFORMATION:

Weather Conditions @ time of sampling: Sunny 50°

Sample Characterisitics: clear

COMMENTS AND OBSERVATIONS: ___

I certify that sampling procedures were in accordance with all applicable EPA, State and Site-Specific protocols.

Date: 12/3/01 By: P. Little Company: STL

FIELD OBSERVATIONS

Facility: ARCH Sample Point ID: QS-4

Field Personnel: PAUL LITH/TB Sample Matrix: GW

(GRAB ( )COMPOSITE

SAMPLING INFORMATION:

Date/Time: 12-3-01 / 1115 Water Level @ Sampling, Feet: —

Method of Sampling: SS Bucket Dedicated: Y / (N)

Multi-phased/layered: ( )Yes (N)No ; If yes; ( )light ( )heavy

SAMPLING DATA:

Time	Temp. (°C)	pH (Std. Units)	Conduct. (µmhos/cm)	Turb. (NTU)	Other ORP (mV)	Other ( )
~~1120~~ 1	9.7	8.19	1632	2.43	2013	
1115						

INSTRUMENT CHECK DATA:

Turbidity Serial #: 3794 5.0 NTU std. = 5.0 NTU ___ NTU std. = ___ NTU

pH Serial #: 601347 4.0 std. = ___ 7.0 std. = 7.0 10.0 std. = 10.0

Conductivity Serial #: ↓ 147 umhos/cm = 147 ___ umhos/cm = ___

GENERAL INFORMATION:

Weather Conditions @ time of sampling: Sunny 50°

Sample Characterisitics: clear

COMMENTS AND OBSERVATIONS: ___

I certify that sampling procedures were in accordance with all applicable EPA, State and Site-Specific protocols.

Date: 12/3/01 By: [signature] Company: STC

FLDLOGBF

FIELD OBSERVATIONS

Facility: ARCH

Sample Point ID: W-2 FOR B-3

Field Personnel: PL / TB

Sample Matrix: GW

(X) Grab ( ) Composite

MONITORING WELL INSPECTION:

Date/Time 11-29-01 / 1155

Cond. of seal: (X) Good ( ) Cracked__% ( ) None ( ) Buried

Prot. casing/riser height: —

Cond. of prot. casing/riser: ( ) Unlocked (X) Good ( ) Loose ( ) Flush Mount ( ) Damaged_____

If prot. casing; depth to riser below: —

Gas Meter (Calibration/Reading): % Gas: — / — % LEL: — / —

Vol. Org Meter (Calibration/Reading): Volatiles(ppm): — / —

PURGE INFORMATION:

Date / Time Initiated: 11-29-01 / ~~1200~~ 1215

Date/Time Completed: 11-29-01 / 1225

Surf. Meas. Pt.: ( ) Prot. Casing (X) Riser

Riser Diameter,Inches: 2.0

Initial Water Level, Feet: 13.00

Elevation, G/W MSL: _____

Well Total Depth, Feet: 17.20

Method of Well Purge: Peristaltic Pump

One (1) Riser Volume, Gal: _____

Dedicated: Y / (N)

Total Volume Purged, Gal: 1.0

Purged To Dryness: Y / (N)

Purge Observations: Start SL TURBID Finish SL TURBID

PURGE DATA: (if applicable)

Time	Purge Rate (gpm/htz)	Cumulative Volume	Temp. (°C)	pH (std units)	Conduct. (µmhos/cm)	Turb. (NTU)	Other ORP (mV)	DO mg/L
1215	13.90	0	14.3	7.97	299	80.1	88	0
1220	14.90		14.2	8.01	299	85.2	76	0
1225	15.71	1.0	14.2	8.10	299	87.3	70	0

PURGED TO ALMOST DRY AND SAMPLED

SAMPLED AT 1225 / 11-29-01 PAL Tube

FLDLOGBF

FIELD OBSERVATIONS

Facility: ARCH

Sample Point ID: W-3 FOR B-4

Field Personnel: PL/TB

Sample Matrix: GW

(X) Grab ( ) Composite

MONITORING WELL INSPECTION:

Date/Time 11-29-01 / 1100

Cond. of seal: (X) Good ( ) Cracked__% ( ) None ( ) Buried

Prot. casing/riser height: —

Cond. of prot. casing/riser: ( ) Unlocked (X) Good ( ) Loose ( ) Flush Mount ( ) Damaged_____

If prot. casing; depth to riser below: —

Gas Meter (Calibration/Reading): % Gas: — / — % LEL: — / —

Vol. Org Meter (Calibration/Reading): Volatiles(ppm): — / —

PURGE INFORMATION:

Date / Time Initiated: 11-29-01 / 1105

Date/Time Completed: 11-29-01 / 1120

Surf. Meas. Pt.: (X) Prot. Casing (X) Riser

Riser Diameter,Inches: 2.0

Initial Water Level, Feet: 9.00

Elevation, G/W MSL: _____

Well Total Depth, Feet: 15.37 T.O.P.

Method of Well Purge: Peristaltic Pump

One (1) Riser Volume, Gal: _____

Dedicated: Y / (N)

Total Volume Purged, Gal: 1.0

Purged To Dryness: Y / (N)

Purge Observations: Start Clear Finish clear

PURGE DATA: (if applicable)

Time	Purge Rate (gpm/htz)	Cumulative Volume	Temp. (°C)	pH (std units)	Conduct. (µmhos/cm)	Turb. (NTU)	Other ORP (MV)	DO mg/L
1110	9.30		13.1	8.30	248	15.75	79	0
1115	9.35		13.1	8.20	248	14.19	50	0
1120	9.41	1.0	13.1	8.12	248	13.01	46	0

SAMPLED AT 1120 / 11-29-01 PL Little

FLDLOGBF

FIELD OBSERVATIONS

Facility: ARCH

Sample Point ID: W-4 FOR B-5

Field Personnel: PL / RTP

Sample Matrix: GW

(X) Grab ( ) Composite

MONITORING WELL INSPECTION:

Date/Time 11-29-01 / 1010

Cond. of seal: (X) Good ( ) Cracked __ %
( ) None ( ) Buried

Prot. casing/riser height: —

Cond. of prot. casing/riser: ( ) Unlocked (X) Good
( ) Loose ( ) Flush Mount
( ) Damaged ____

If prot. casing; depth to riser below: —

Gas Meter (Calibration/Reading): % Gas: — / — % LEL: — / —

Vol. Org Meter (Calibration/Reading): Volatiles(ppm): — / —

PURGE INFORMATION:

Date / Time Initiated: 11-29-01 / 1015

Date/Time Completed: 11-29-01 / 1035

Surf. Meas. Pt.: ( ) Prot. Casing (X) Riser

Riser Diameter, Inches: 2.0

Initial Water Level, Feet: 4.32

Elevation, G/W MSL: ____

Well Total Depth, Feet: 14.72 T.O.P

Method of Well Purge: Peristaltic Pump

One (1) Riser Volume, Gal: ____

Dedicated: Y / (N)

Total Volume Purged, Gal: 2.0

Purged To Dryness: Y / (N)

Purge Observations: Start Clear Finish Clear

PURGE DATA: (if applicable)

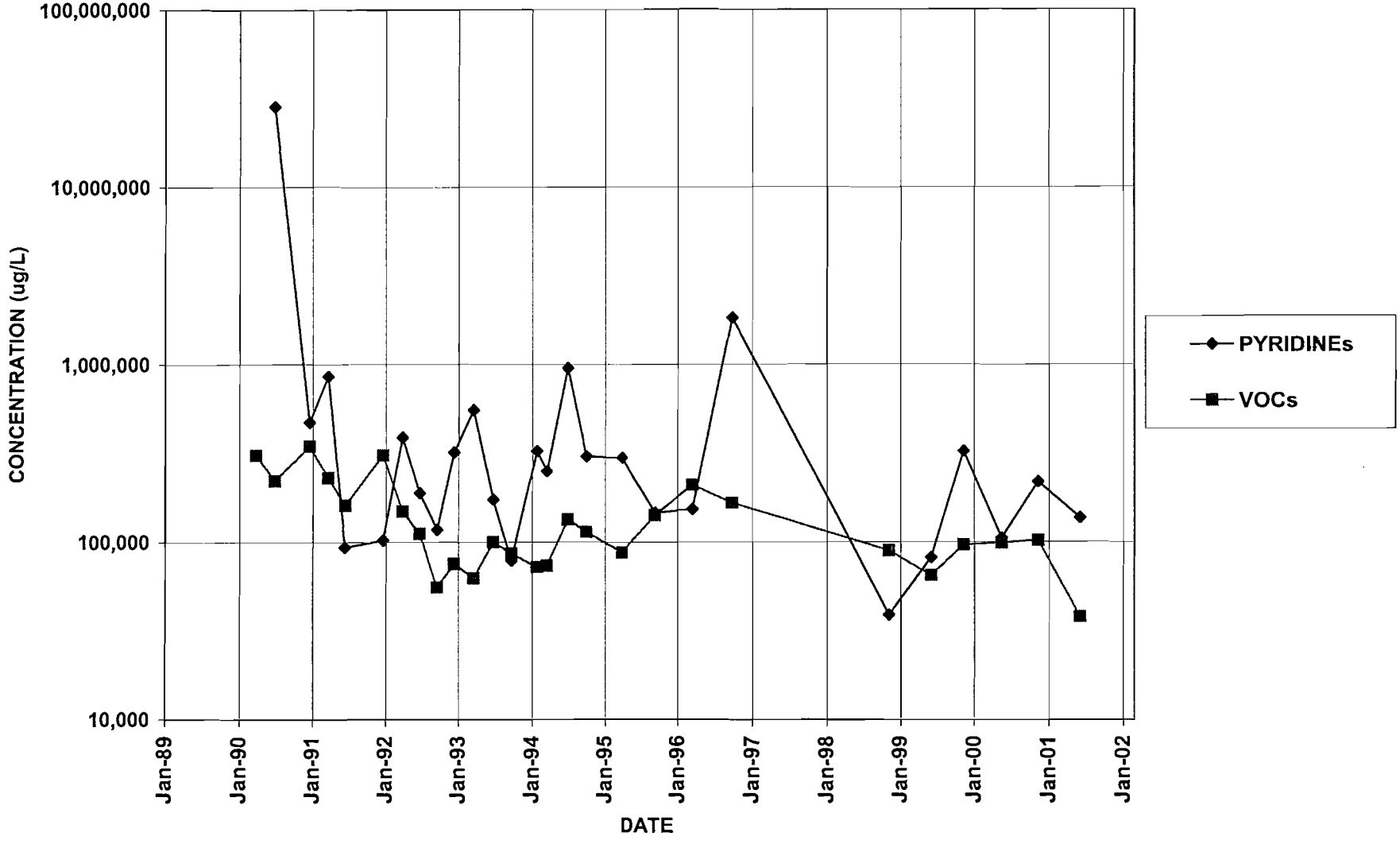
Time	wl Purge Rate (gpm/htz)	Cumulative Volume	Temp. (°C)	pH (std units)	Conduct. (µmhos/cm)	Turb. (NTU)	Other ORP (mv)	DO mg/L
1020	4.32	1 PL	12.4	7.73	1968	7.27	93	0
1025	4.32		12.2	7.72	1960	5.65	81	0
1030	4.32		12.1	7.73	1946	3.86	74	0
1035	4.32	2.0	12.0	7.75	1940	2.11	74	0

SAMPLED AT 1035 ON 11-29-01 PL Lute

Appendix B

Well Trend Data

B-17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1,000,000
100,000
10,000
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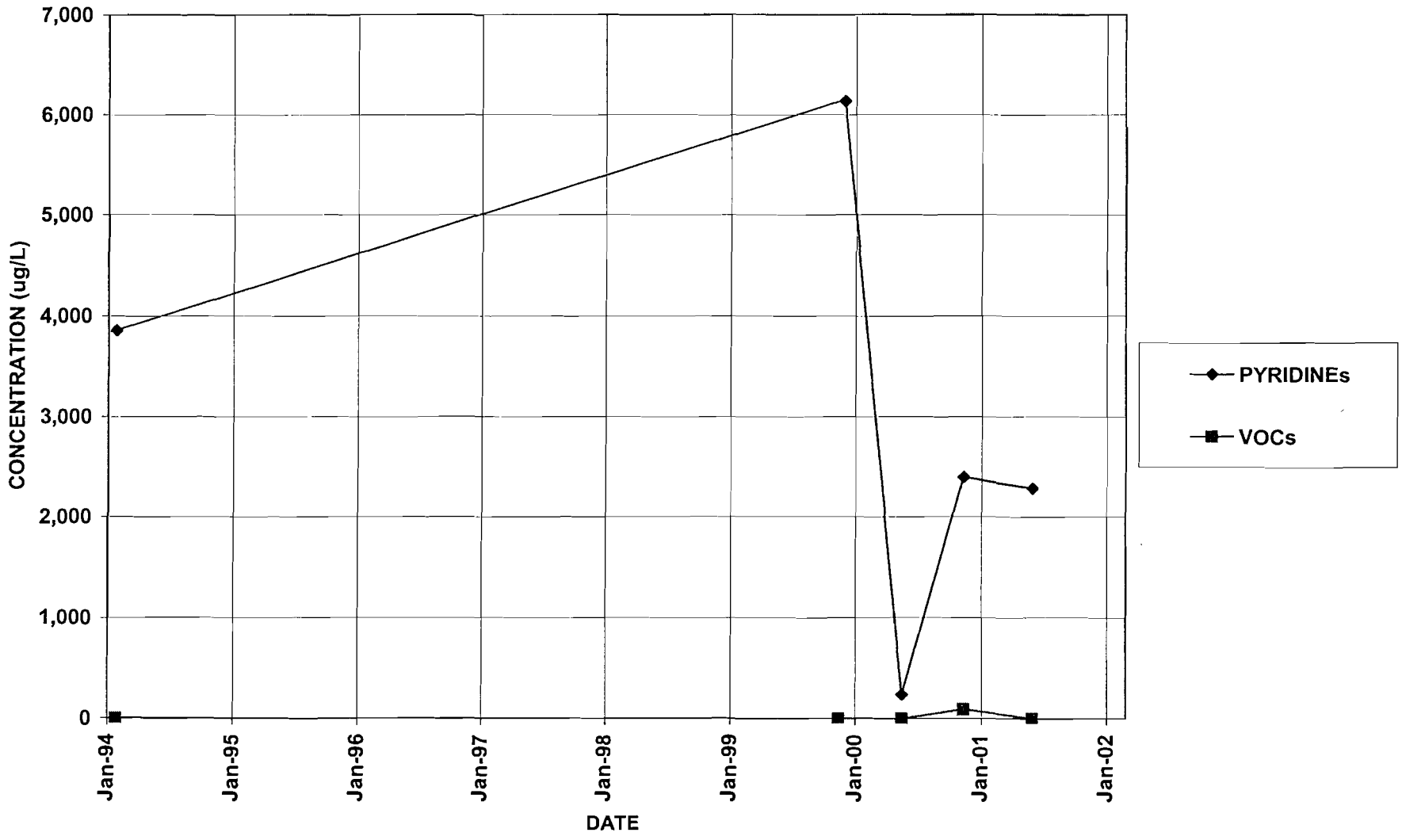
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
DATE
PYRIDINEs
VOCs

B-7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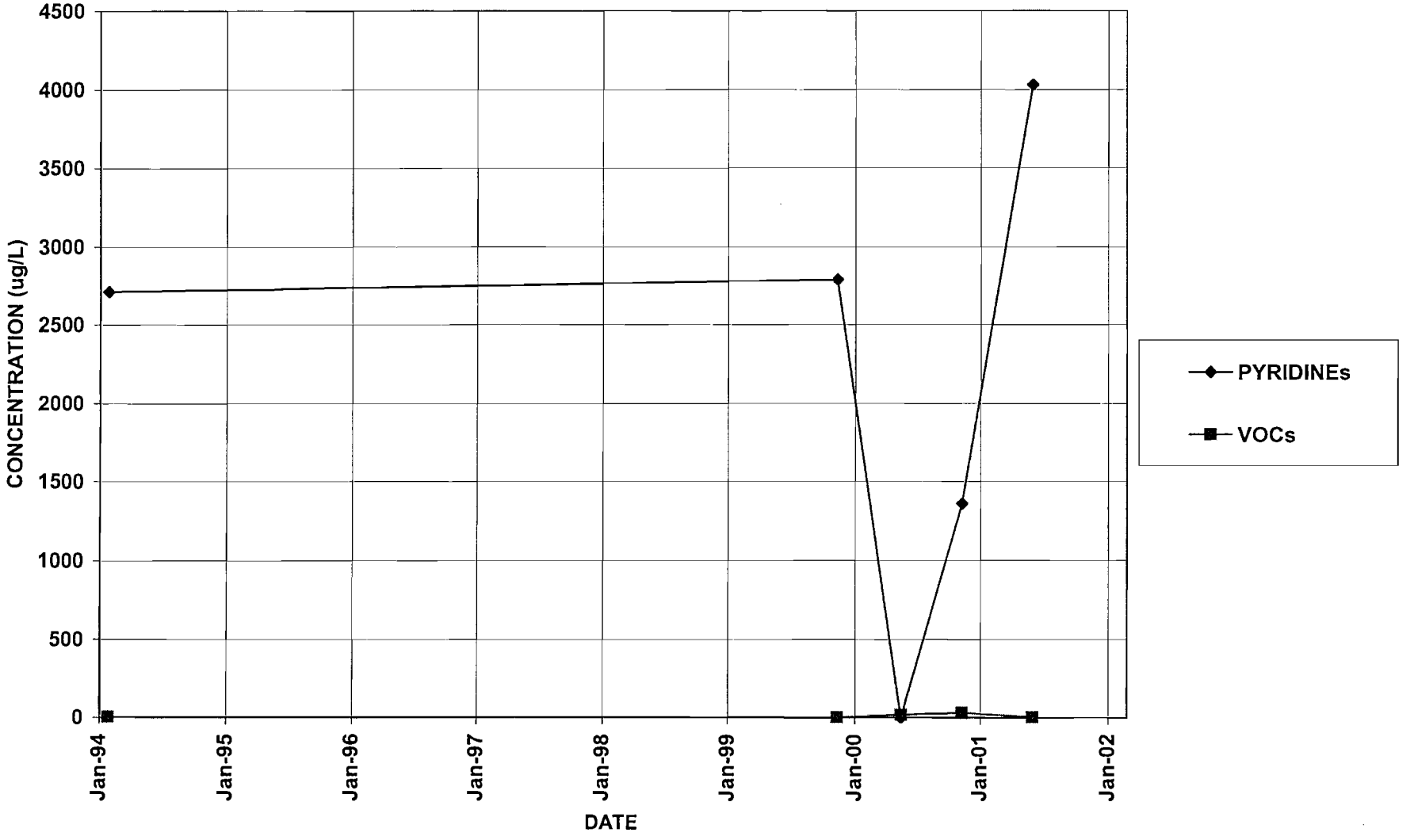
6,000
5,000
4,000
3,000
2,000
1,000
0
CONCENTRATION (ug/L)
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
DATE
PYRIDINEs
VOCs

B-9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4000
3500
3000
2500
2000
1500
1000
500
0
CONCENTRATION (ug/L)
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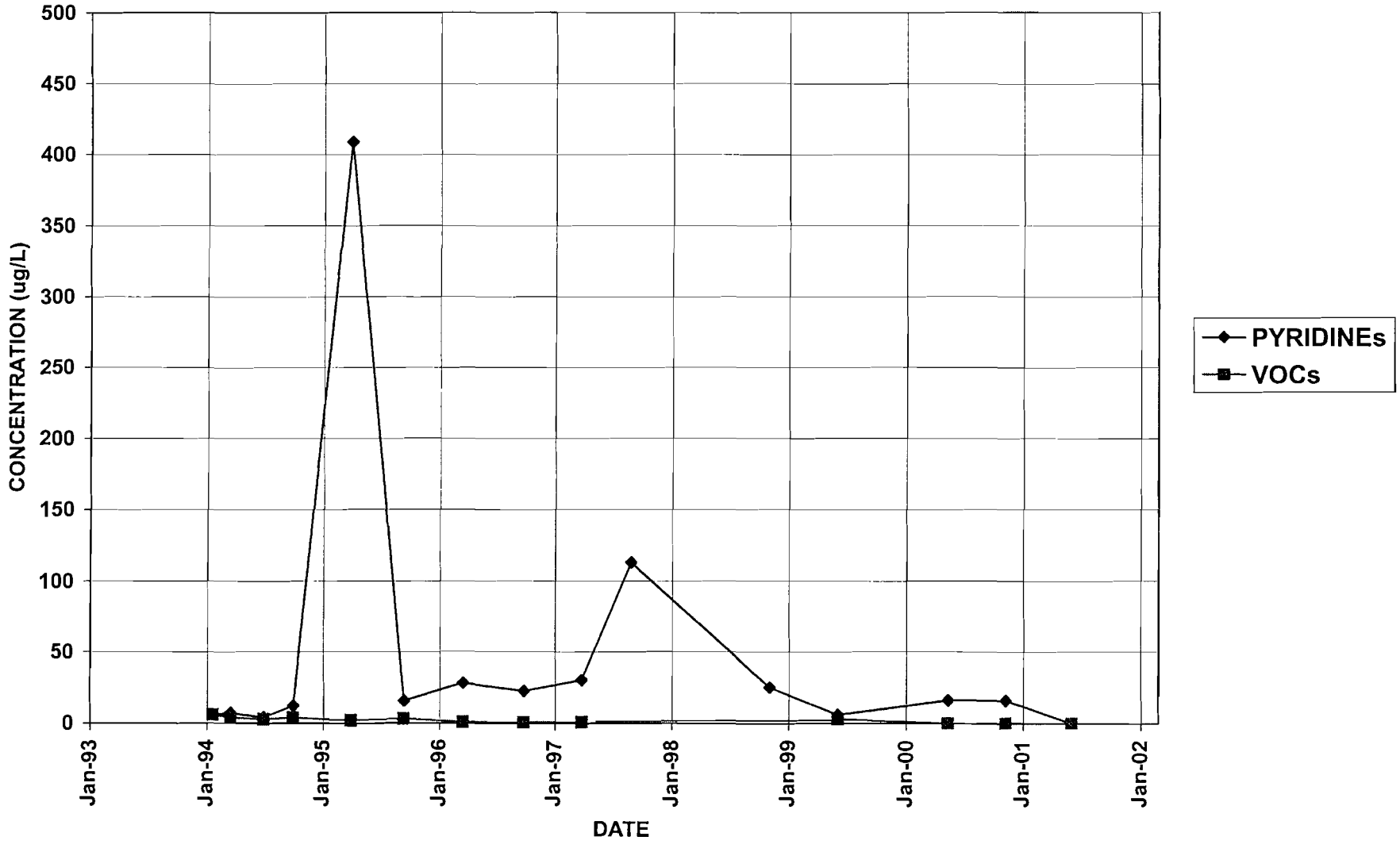
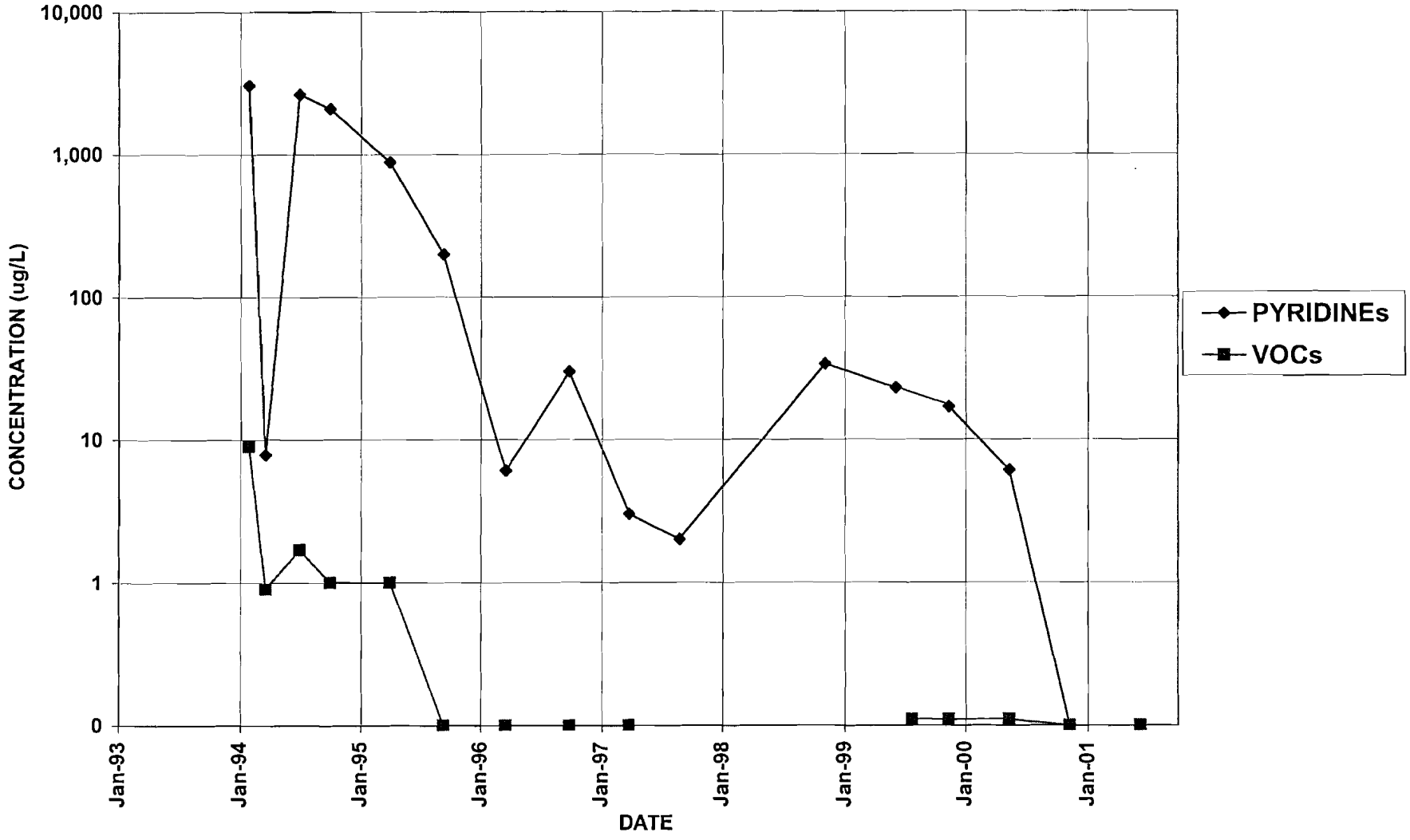
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
DATE
PYRIDINEs
VOCs

BR-103


500
450
400
350
300
250
200
150
100
50
0
CONCENTRATION (ug/L)
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
DATE
PYRIDINEs
VOCs

BR-104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1,000
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10
1
0
CONCENTRATION (ug/L)
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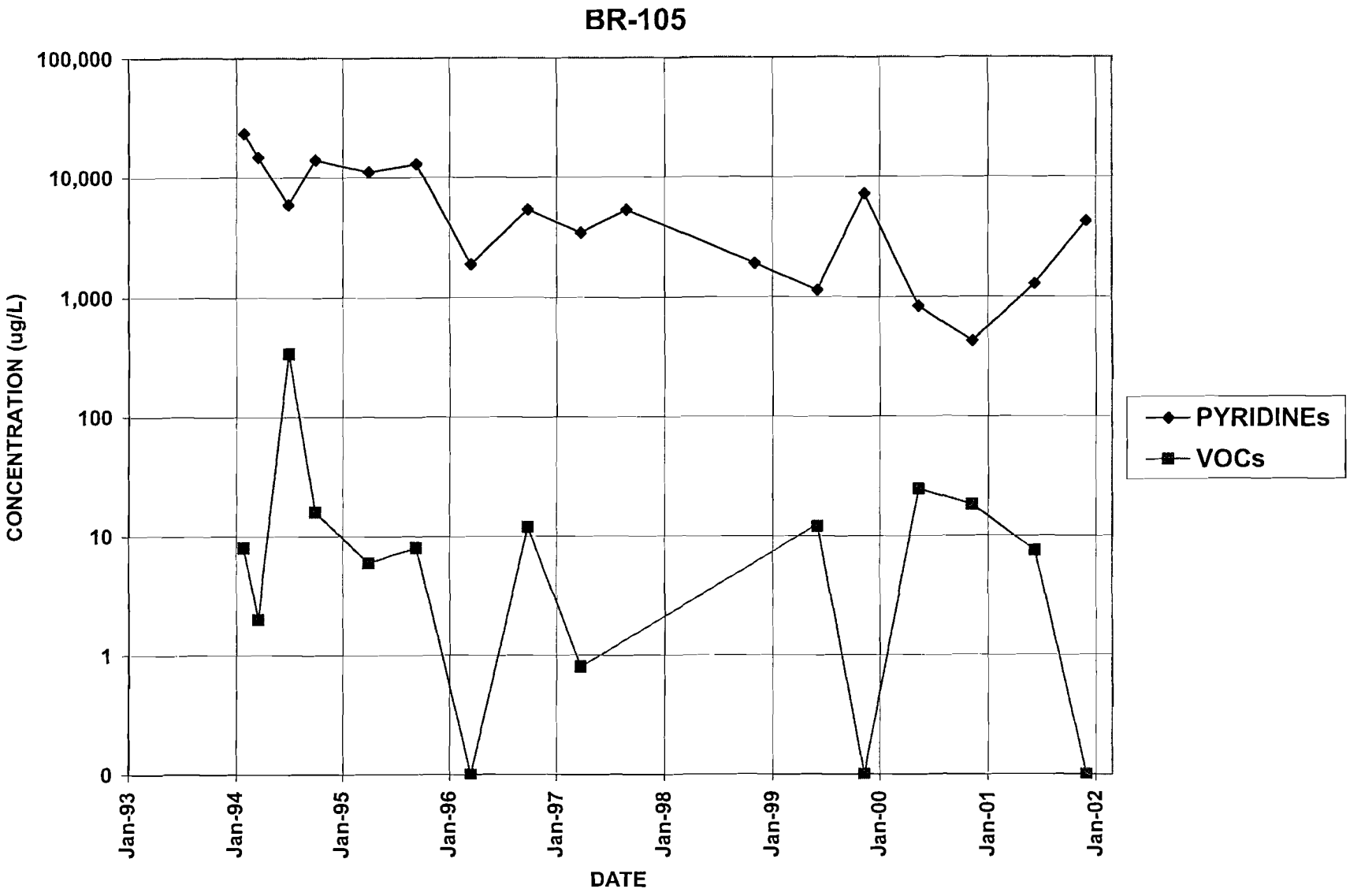
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
DATE
PYRIDINEs
VOCs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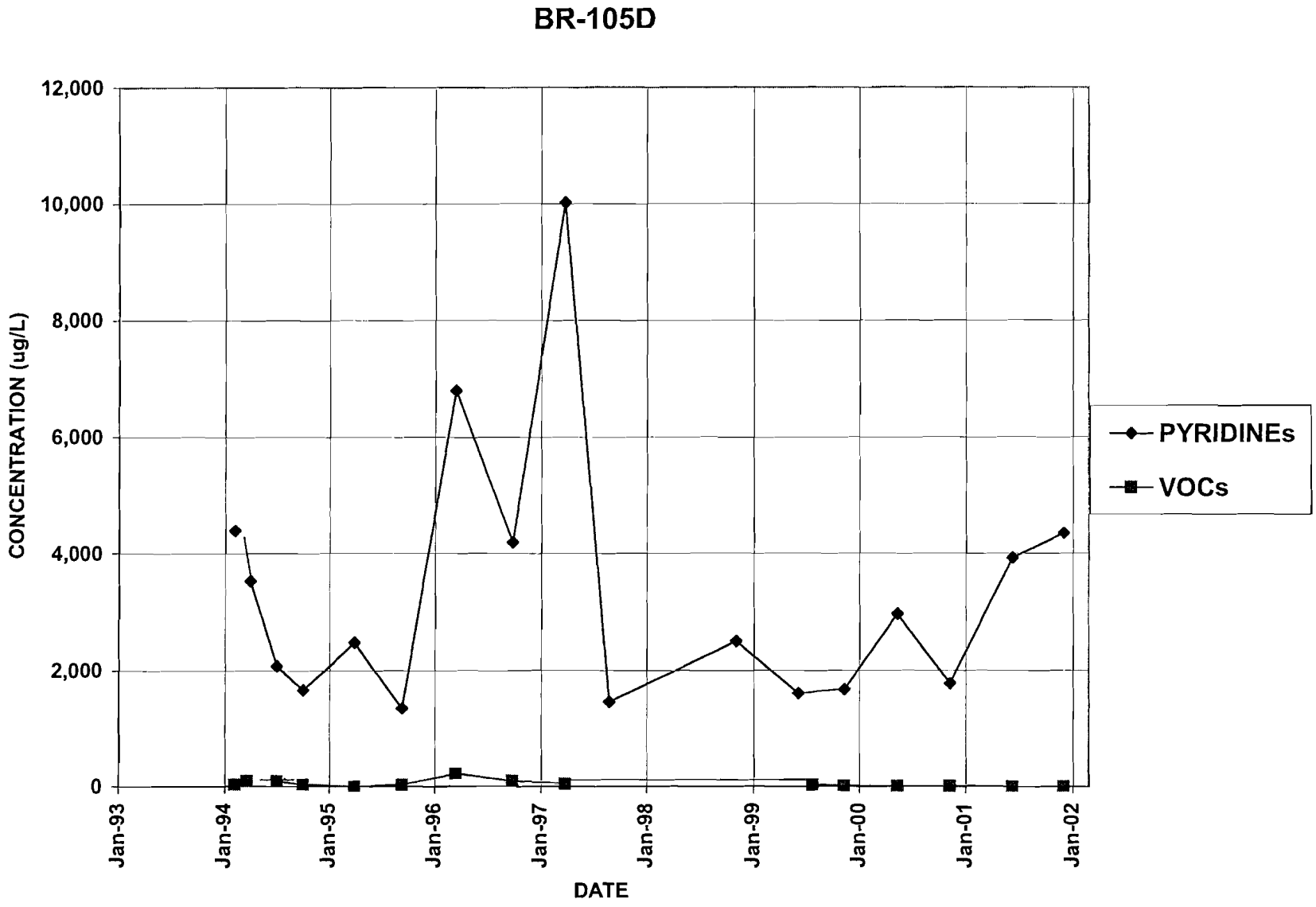
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
DATE
PYRIDINEs
VOCs


BR-105D
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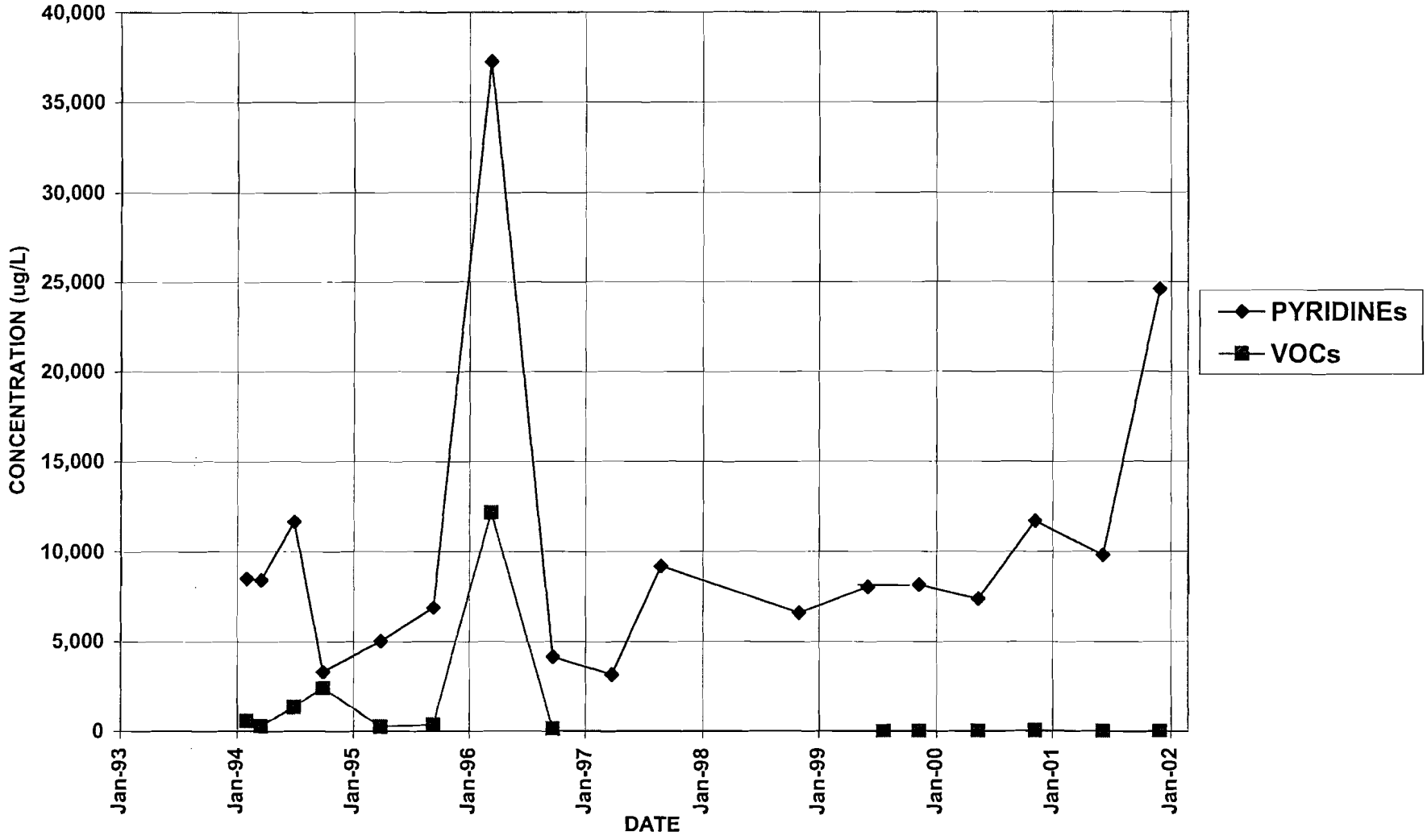
8,000
6,000
4,000
2,000
0
CONCENTRATION (ug/L)
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
DATE
PYRIDINEs
VOCs

BR-106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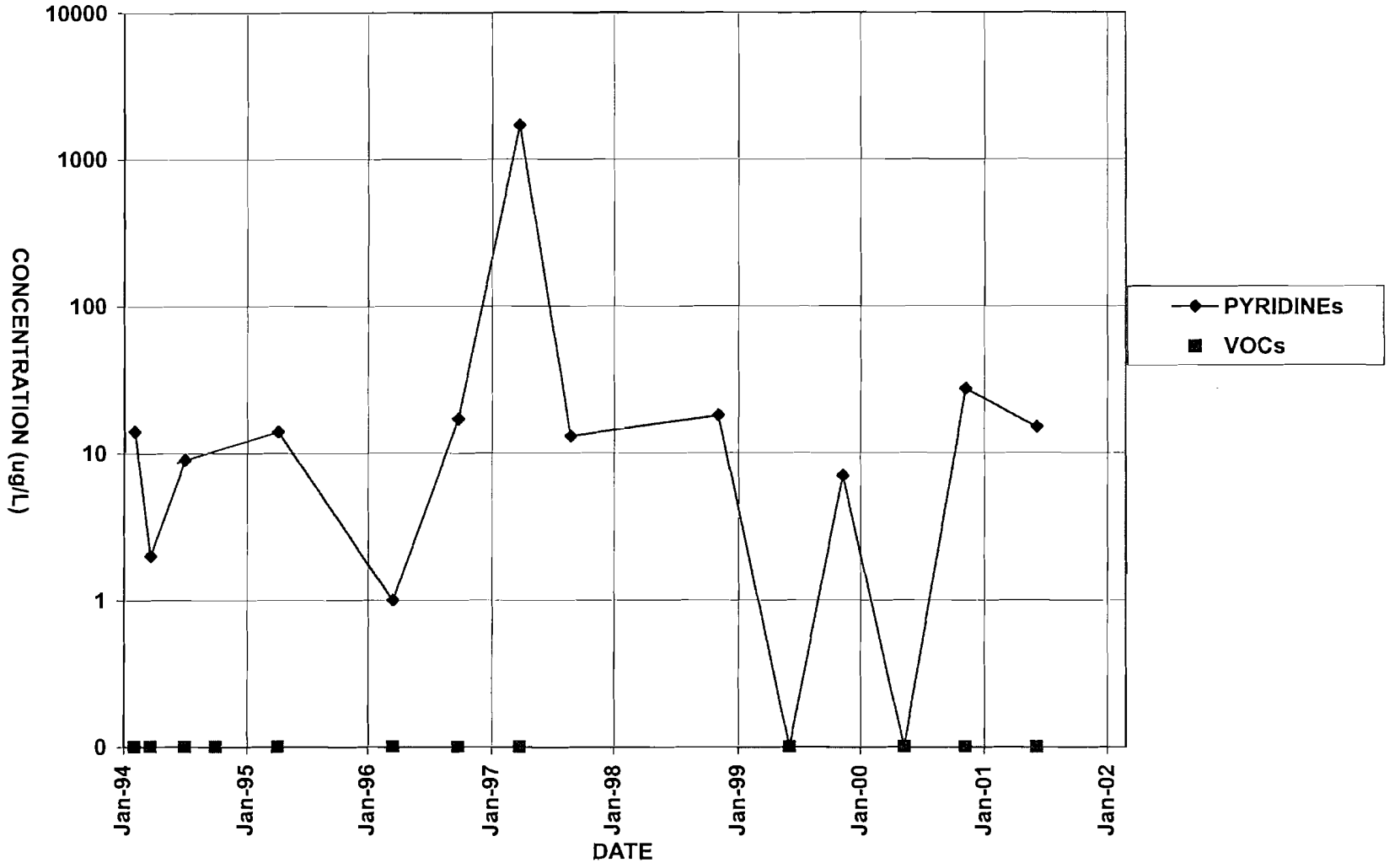
30,000
25,000
20,000
15,000
10,000
5,000
0
CONCENTRATION (ug/L)
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
DATE
PYRIDINEs
VOCs

BR-108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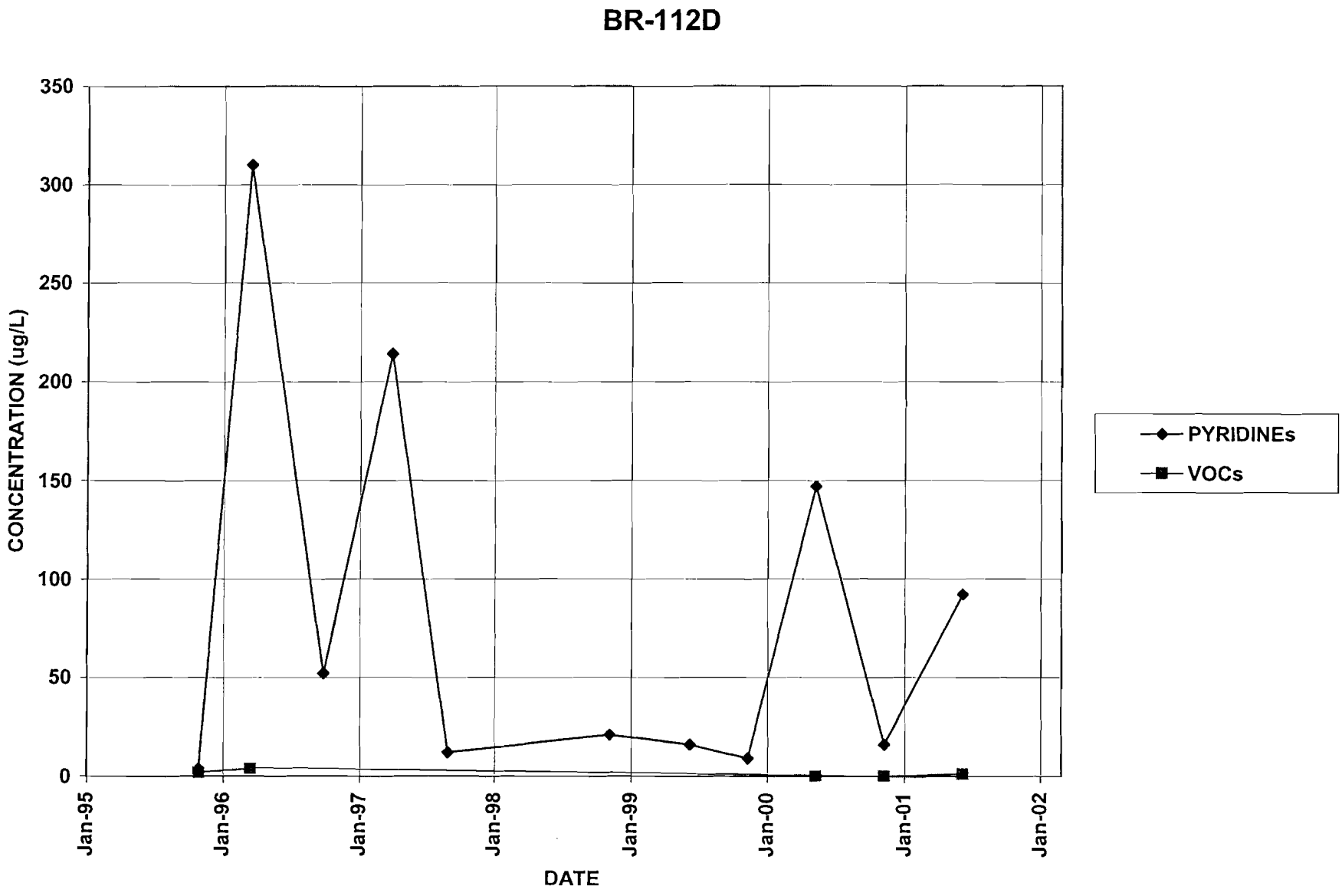
1000
100
10
1
0
CONCENTRATION (ug/L)
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
DATE
PYRIDINEs
VOCs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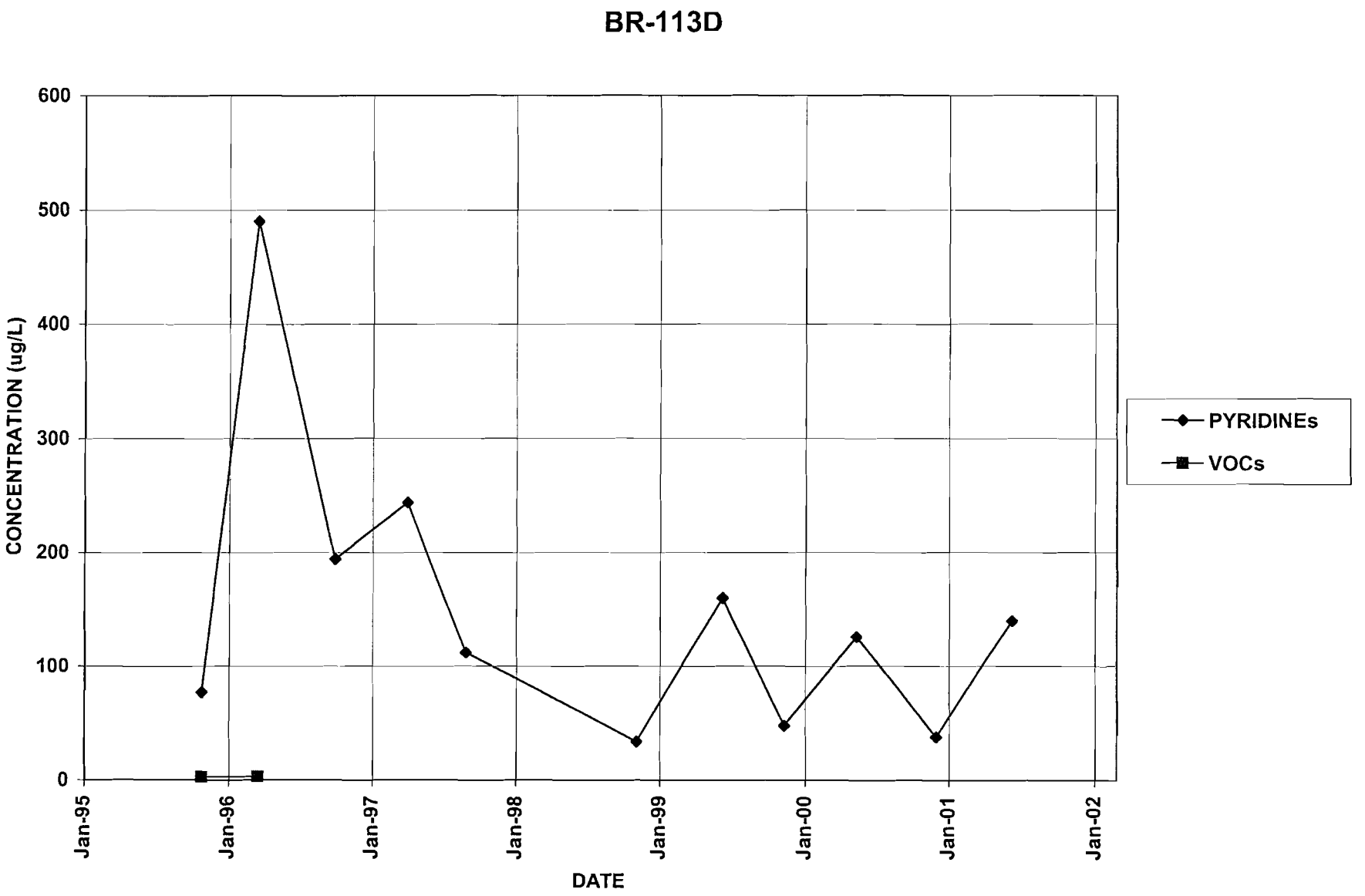
300
250
200
150
100
50
0
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
DATE
PYRIDINEs
VOCs


BR-113D
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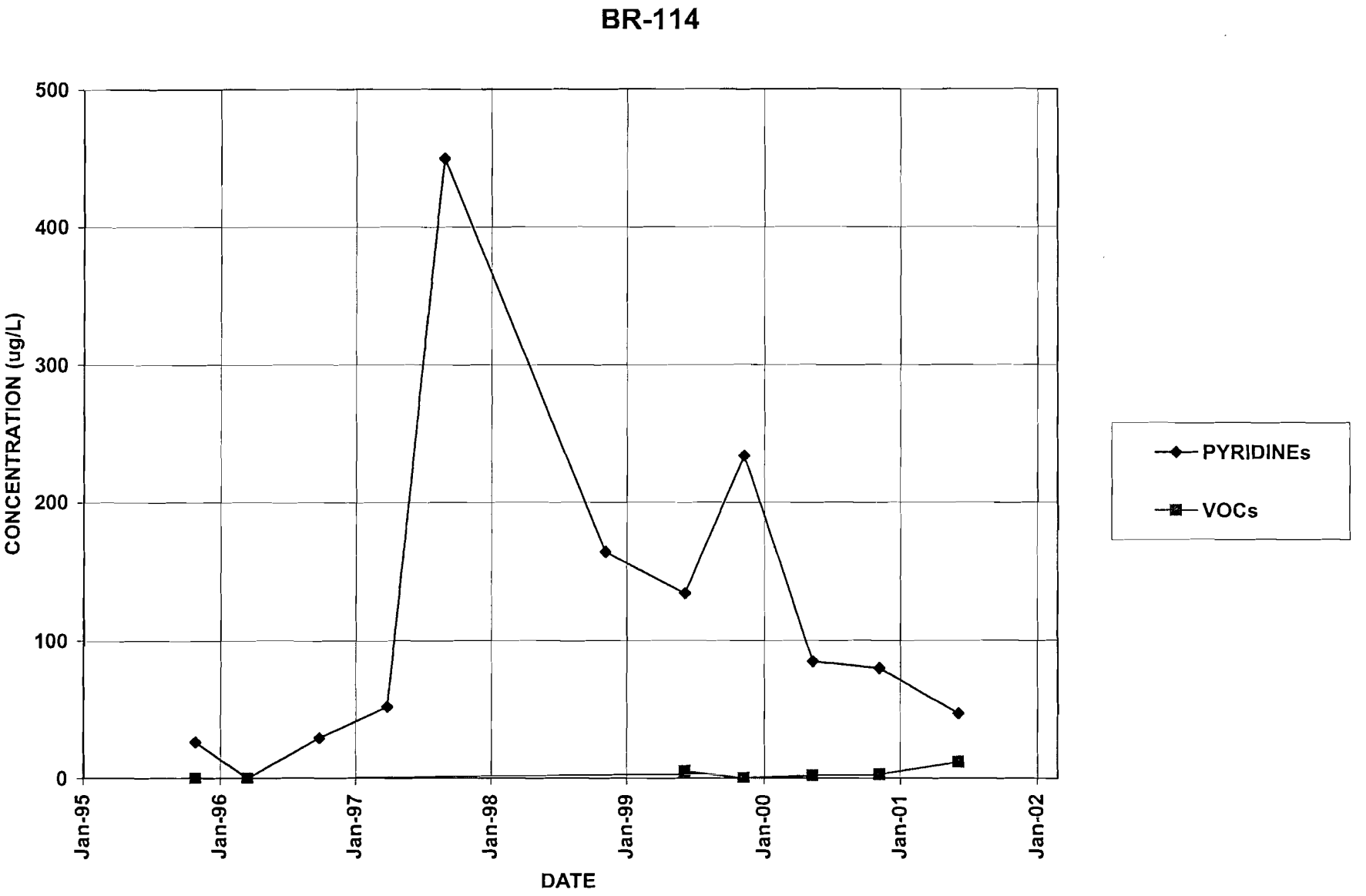
400
300
200
100
0
CONCENTRATION (ug/L)
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
DATE
PYRIDINEs
VOCs


BR-114
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200
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CONCENTRATION (ug/L)
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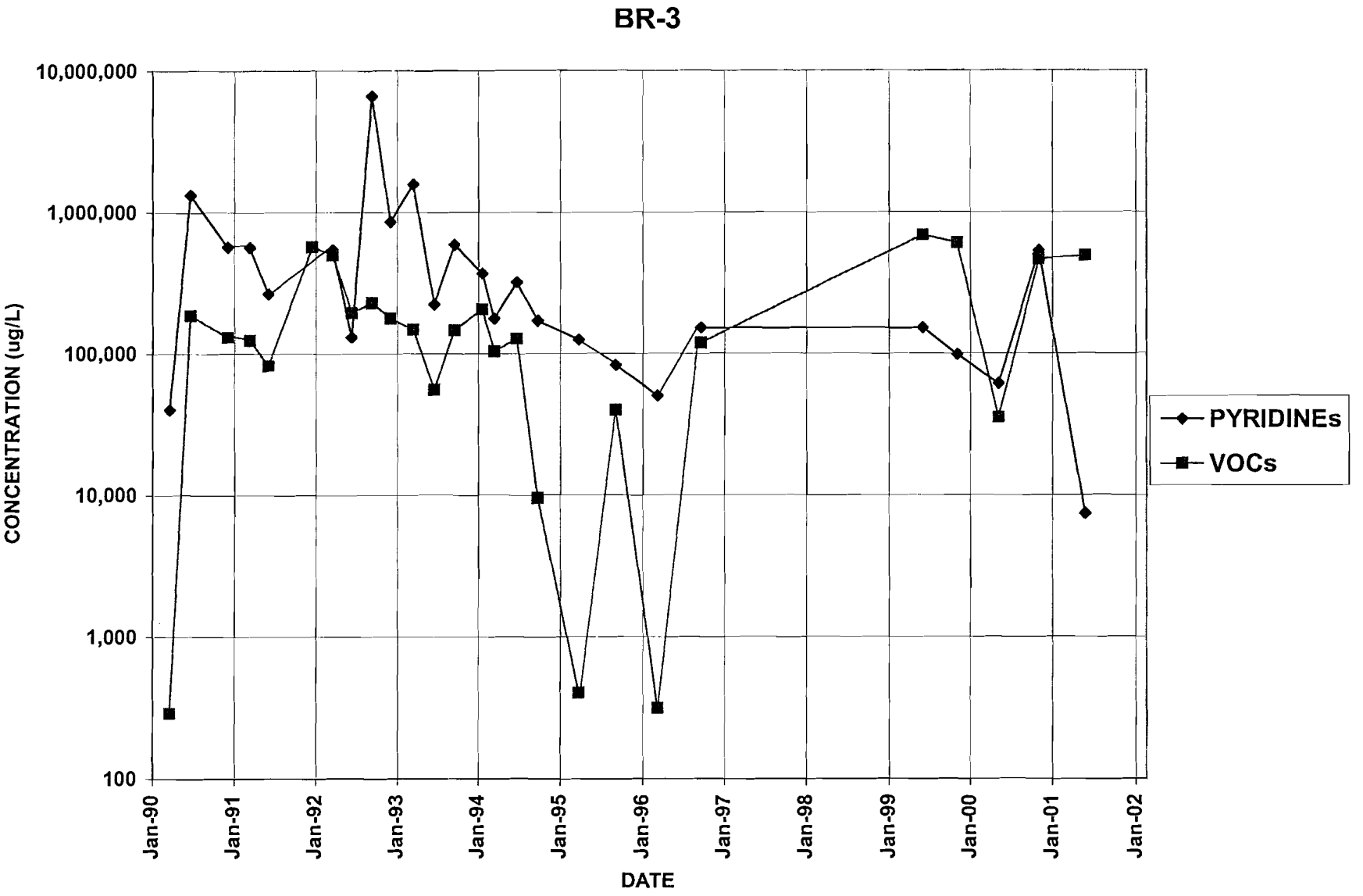
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
DATE
PYRIDINEs
VOCs


BR-3
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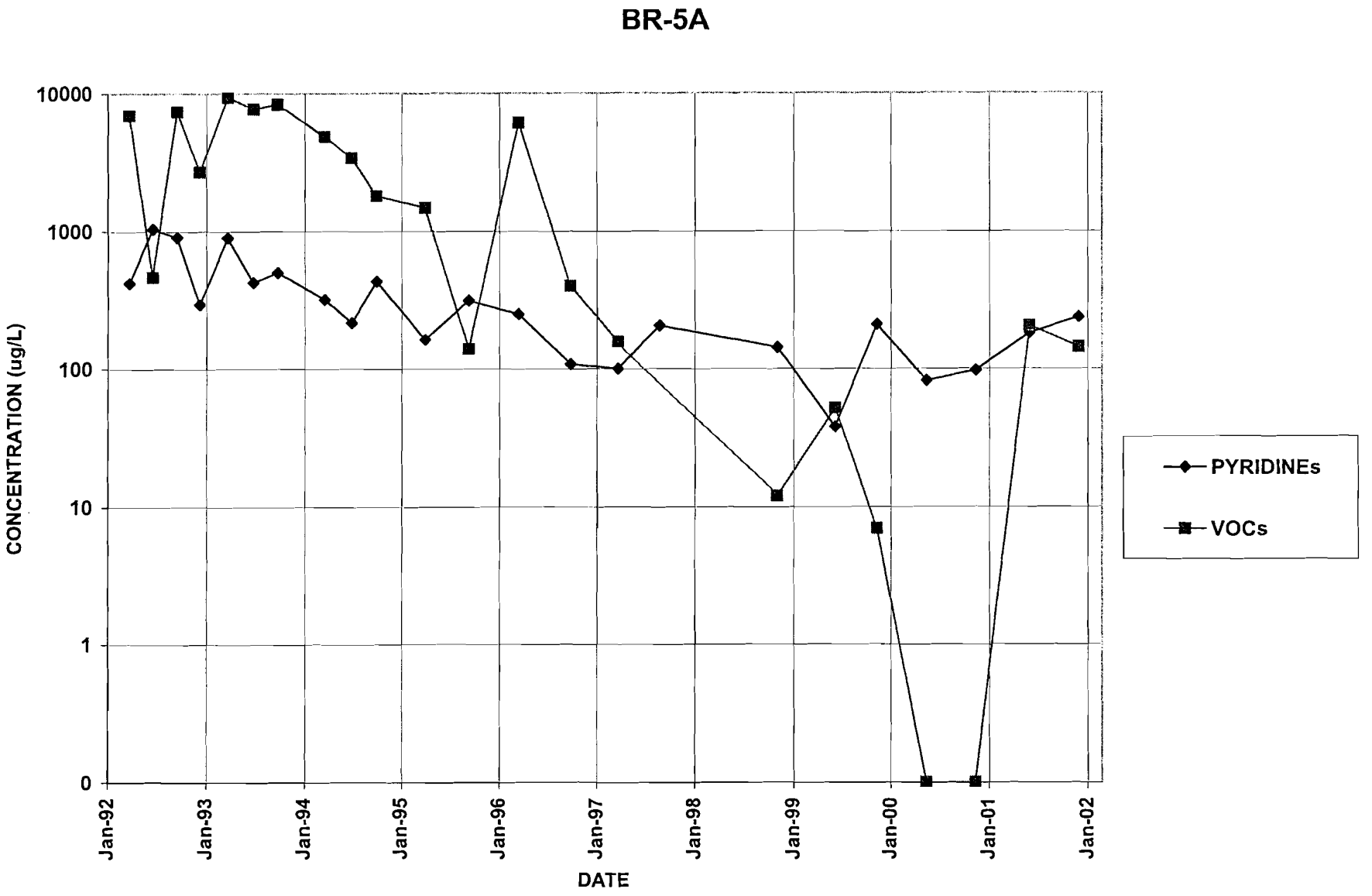
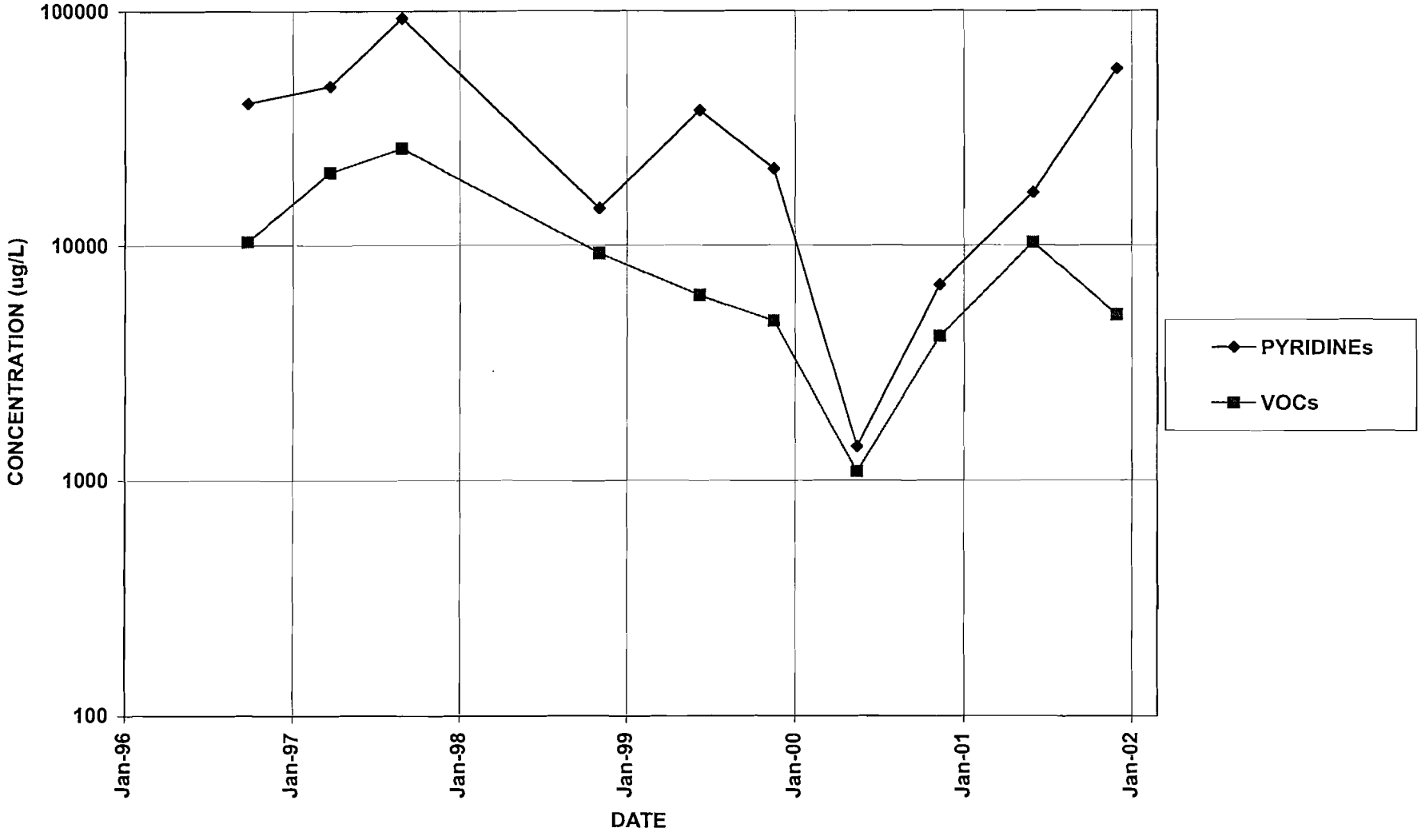
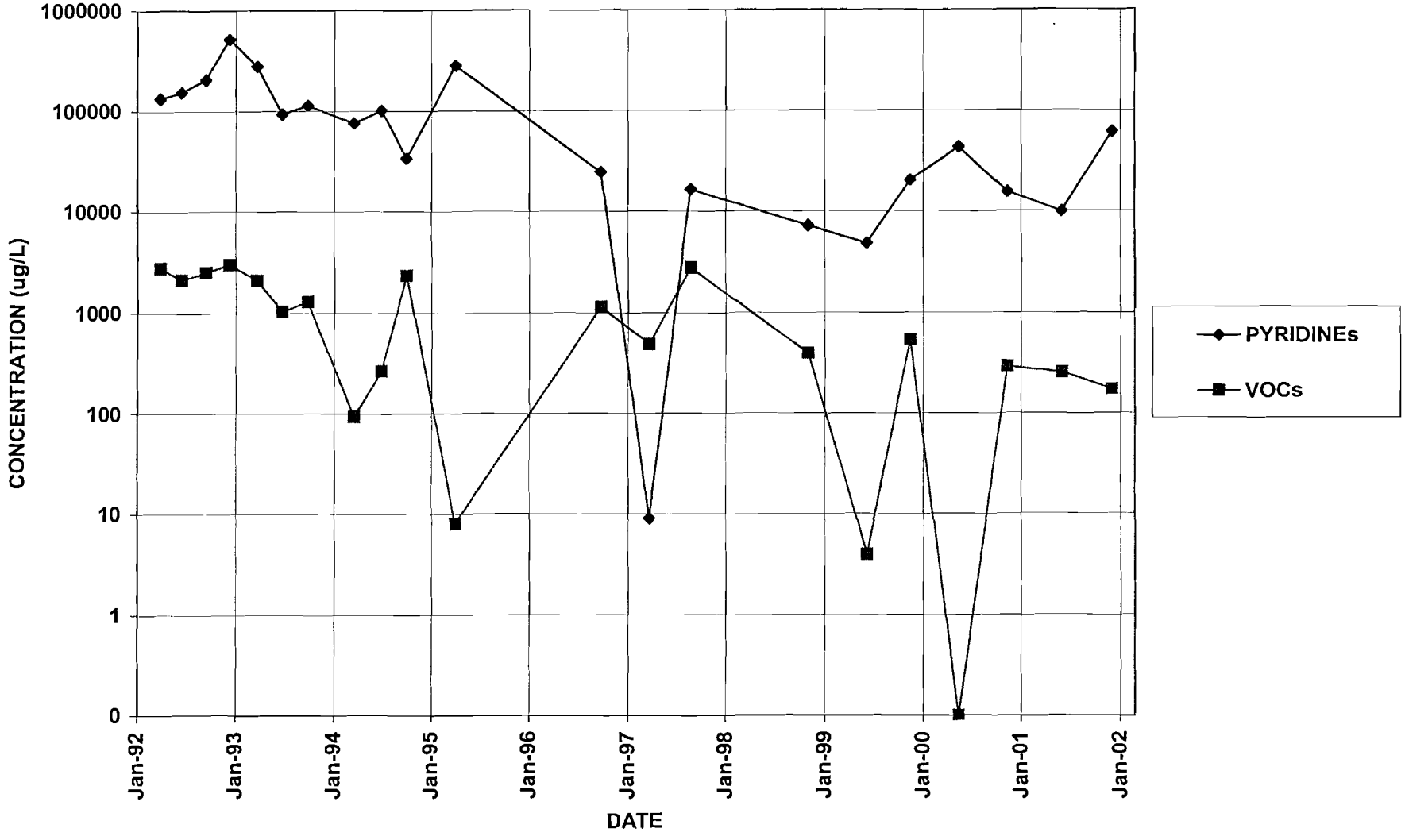
1,000,000
100,000
10,000
1,000
100
CONCENTRATION (ug/L)
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
DATE
PYRIDINEs
VOCs


BR-5A
10000
1000
100
10
1
0
CONCENTRATION (ug/L)
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
DATE
PYRIDINEs
VOCs

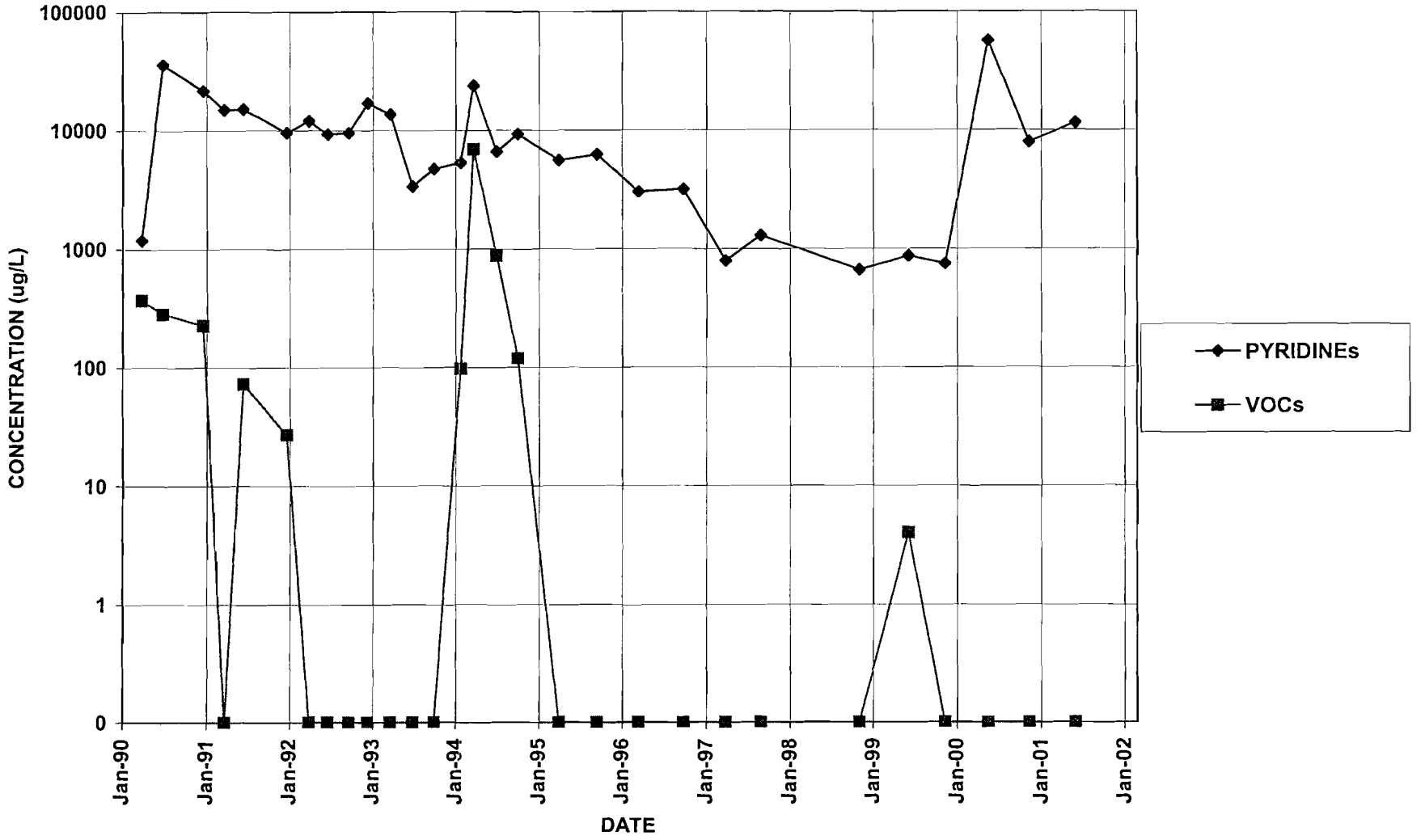
BR-6A


100000
10000
1000
100
CONCENTRATION (ug/L)
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
DATE
PYRIDINEs
VOCs

BR-7A


1000000
100000
10000
1000
100
10
1
0
CONCENTRATION (ug/L)
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
DATE
PYRIDINEs
VOCs

BR-8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10000
1000
100
10
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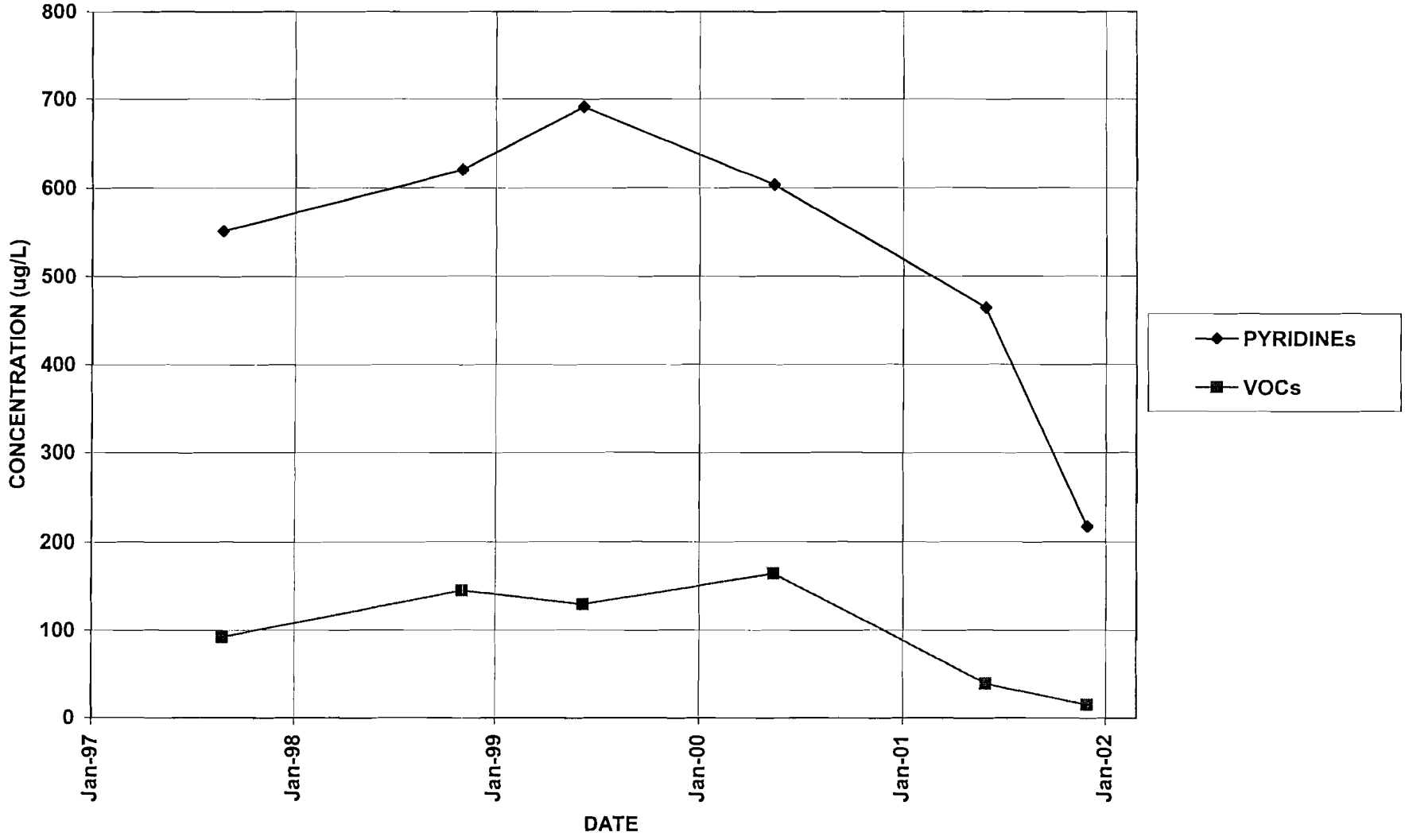
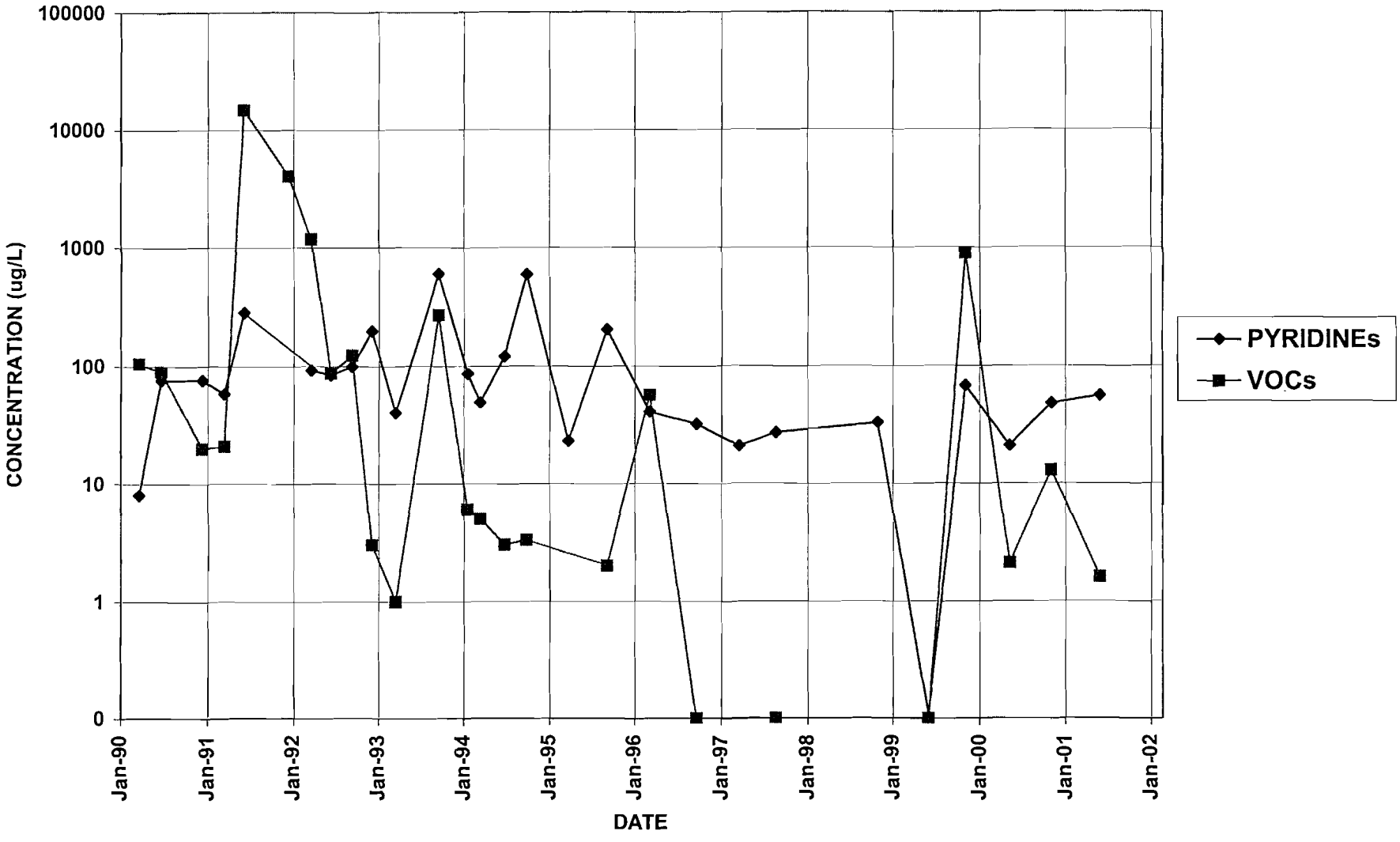
CONCENTRATION (ug/L)
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
DATE
PYRIDINEs
VOCs

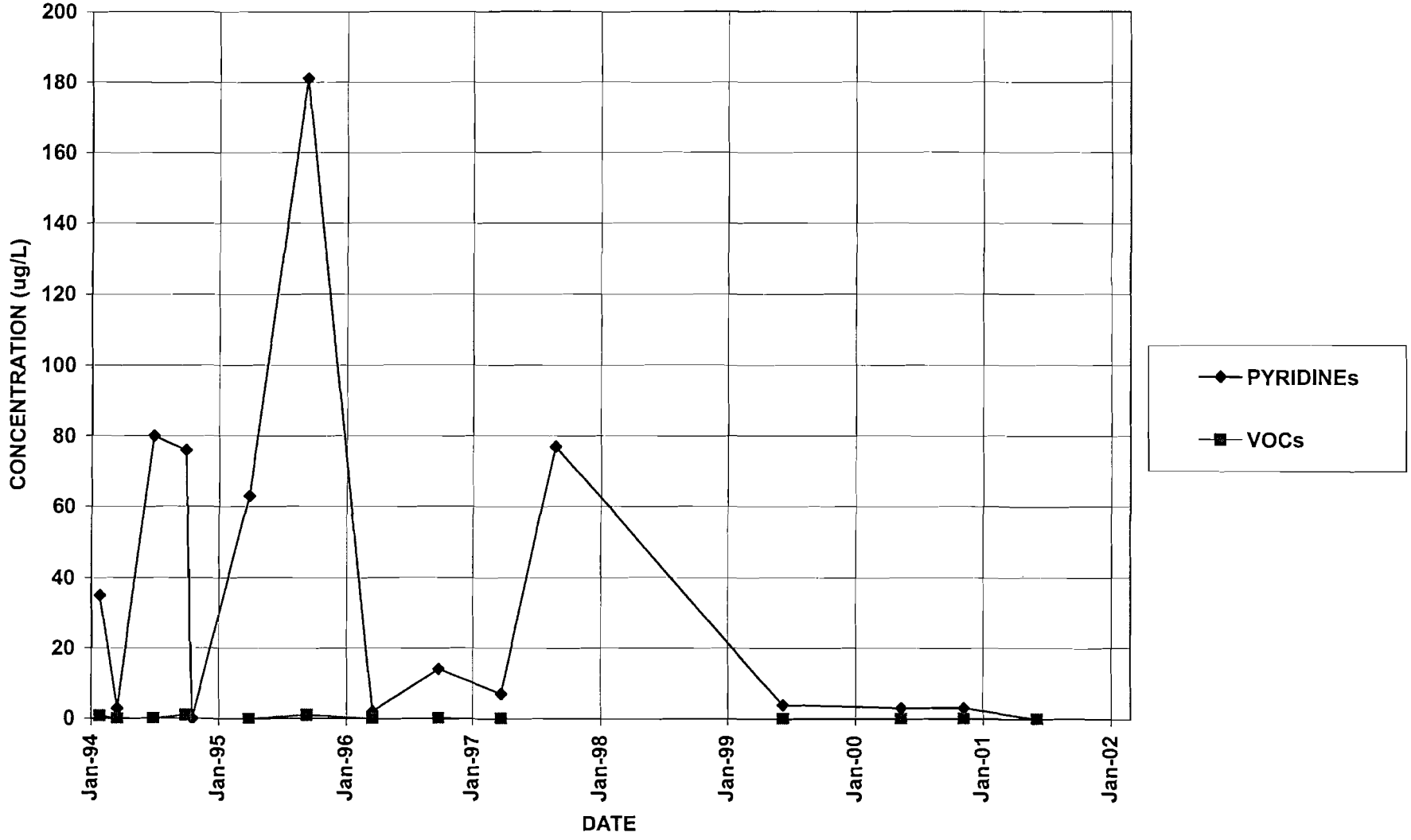
BR-9


800
700
600
500
400
300
200
100
0
CONCENTRATION (ug/L)
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
DATE
PYRIDINEs
VOCs

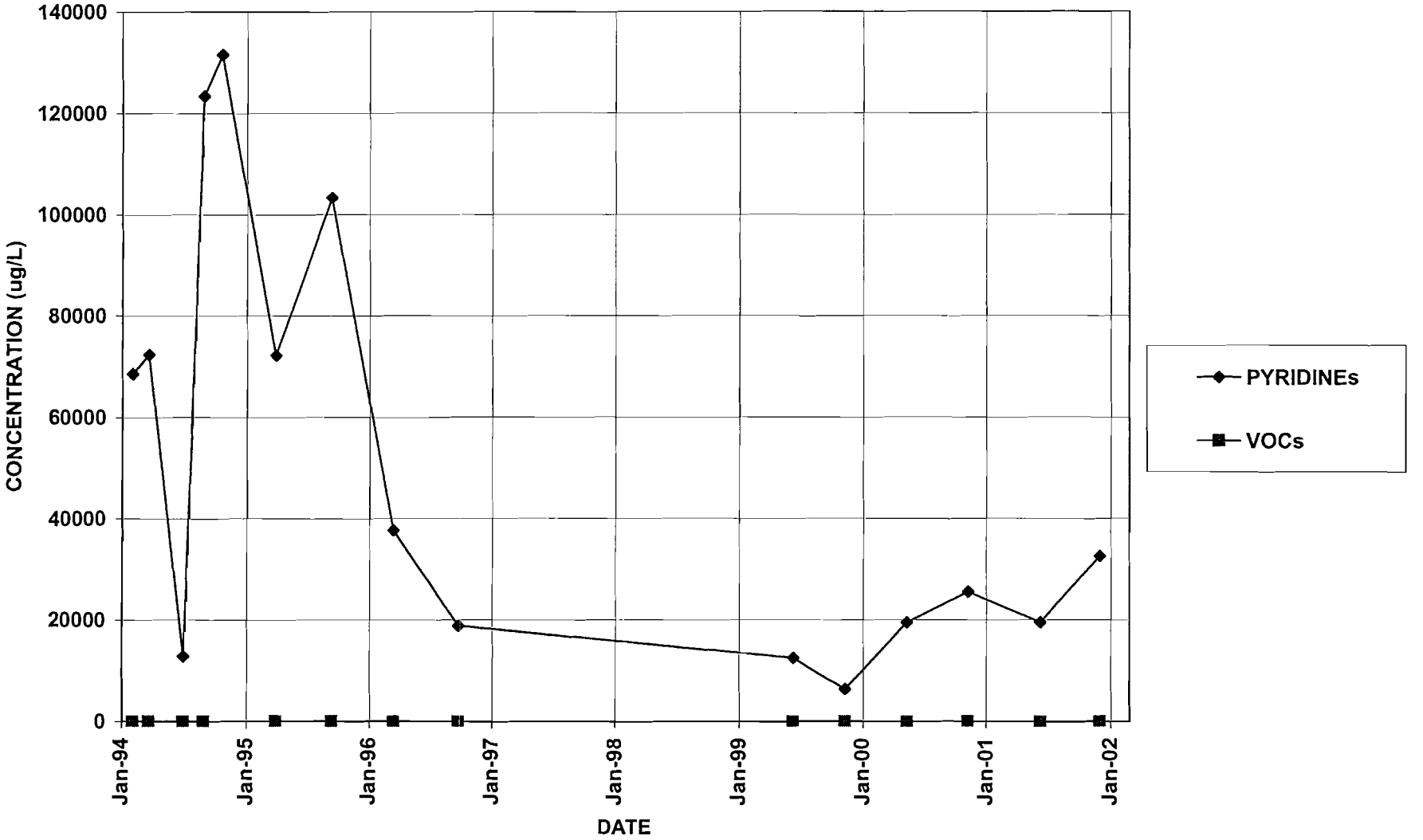
E-3


100000
10000
1000
100
10
1
0
CONCENTRATION (ug/L)
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
DATE
PYRIDINEs
VOCs

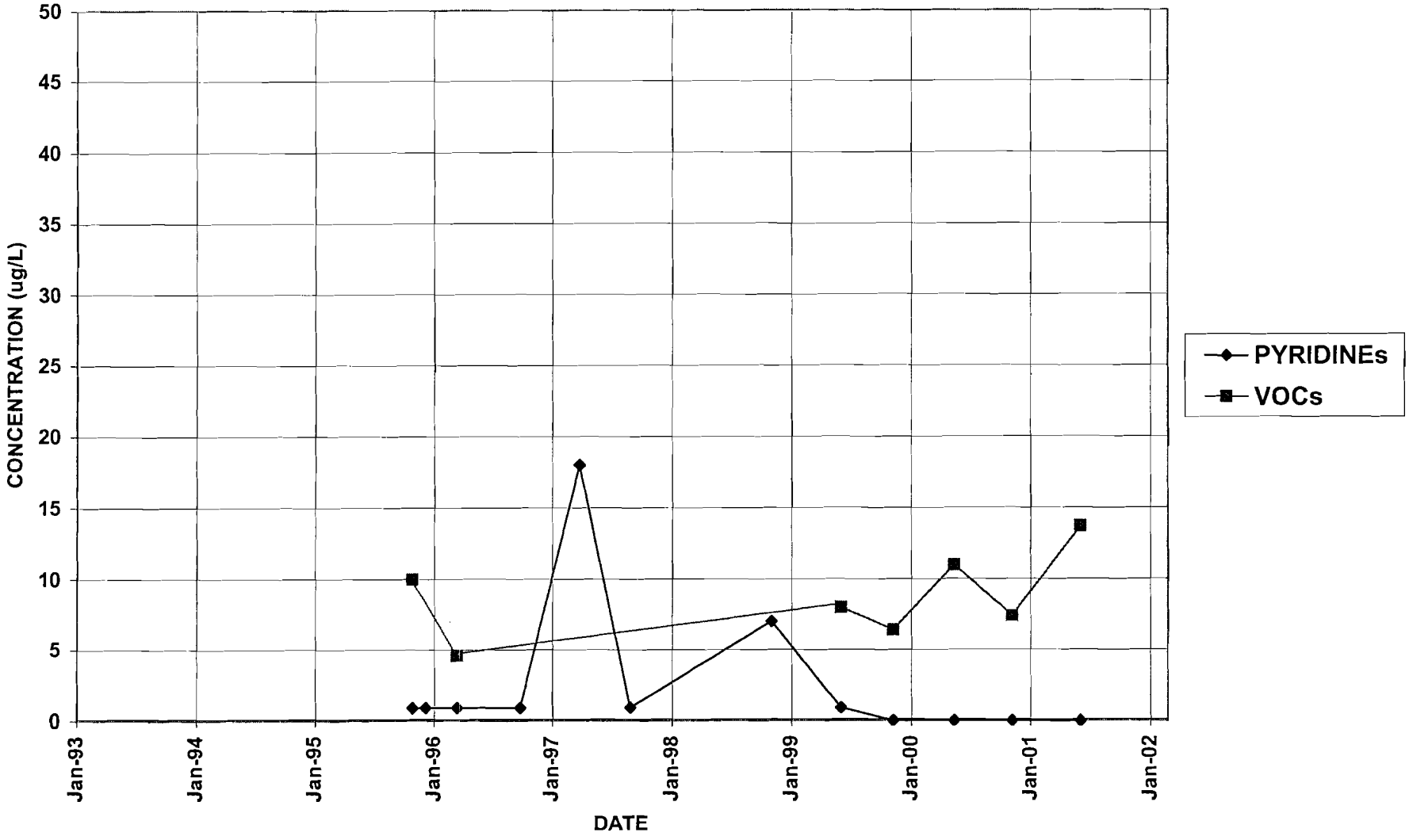
MW-104

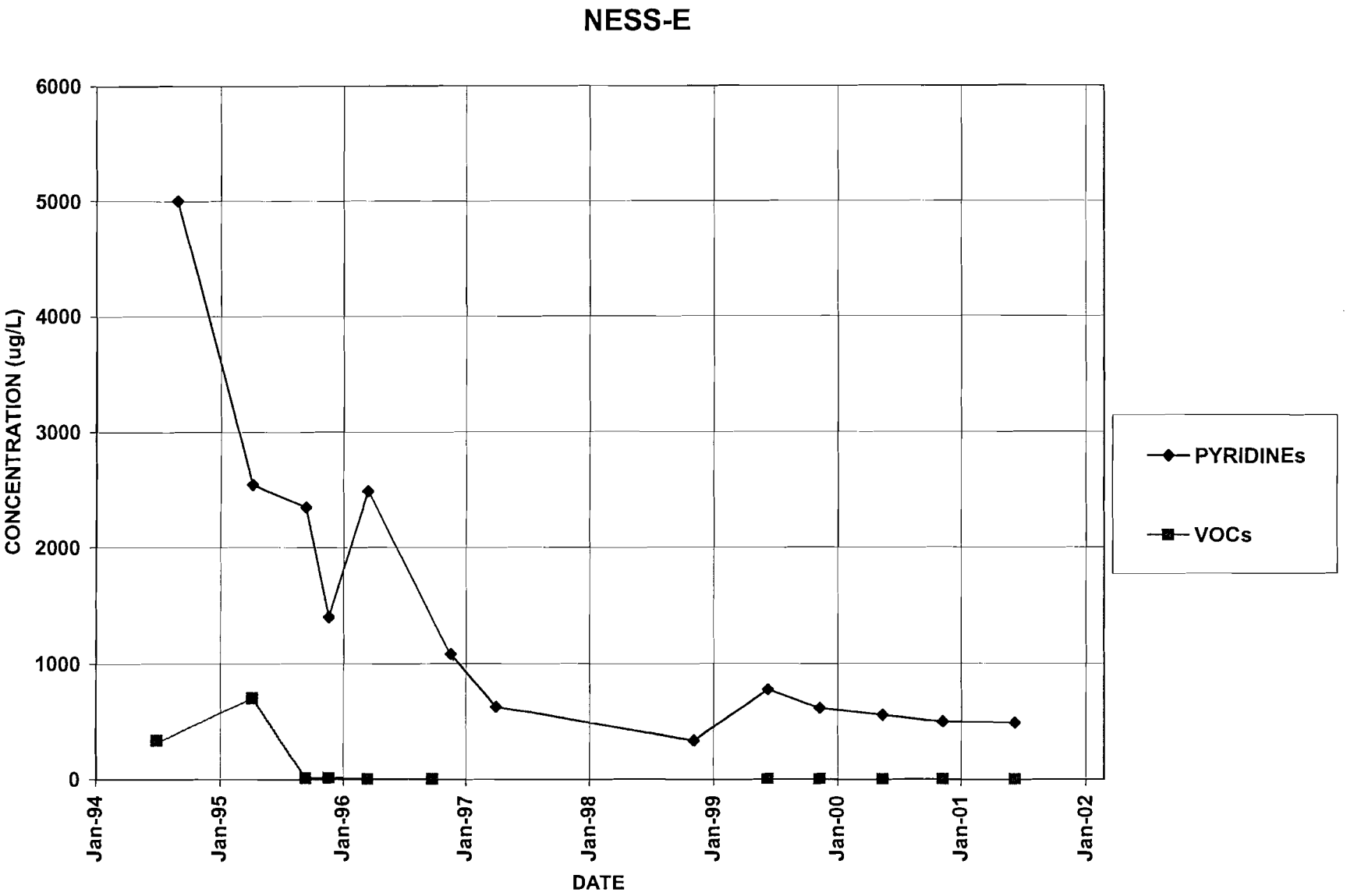

200
180
160
140
120
100
80
60
40
20
0
CONCENTRATION (ug/L)
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
DATE
PYRIDINEs
VOCs

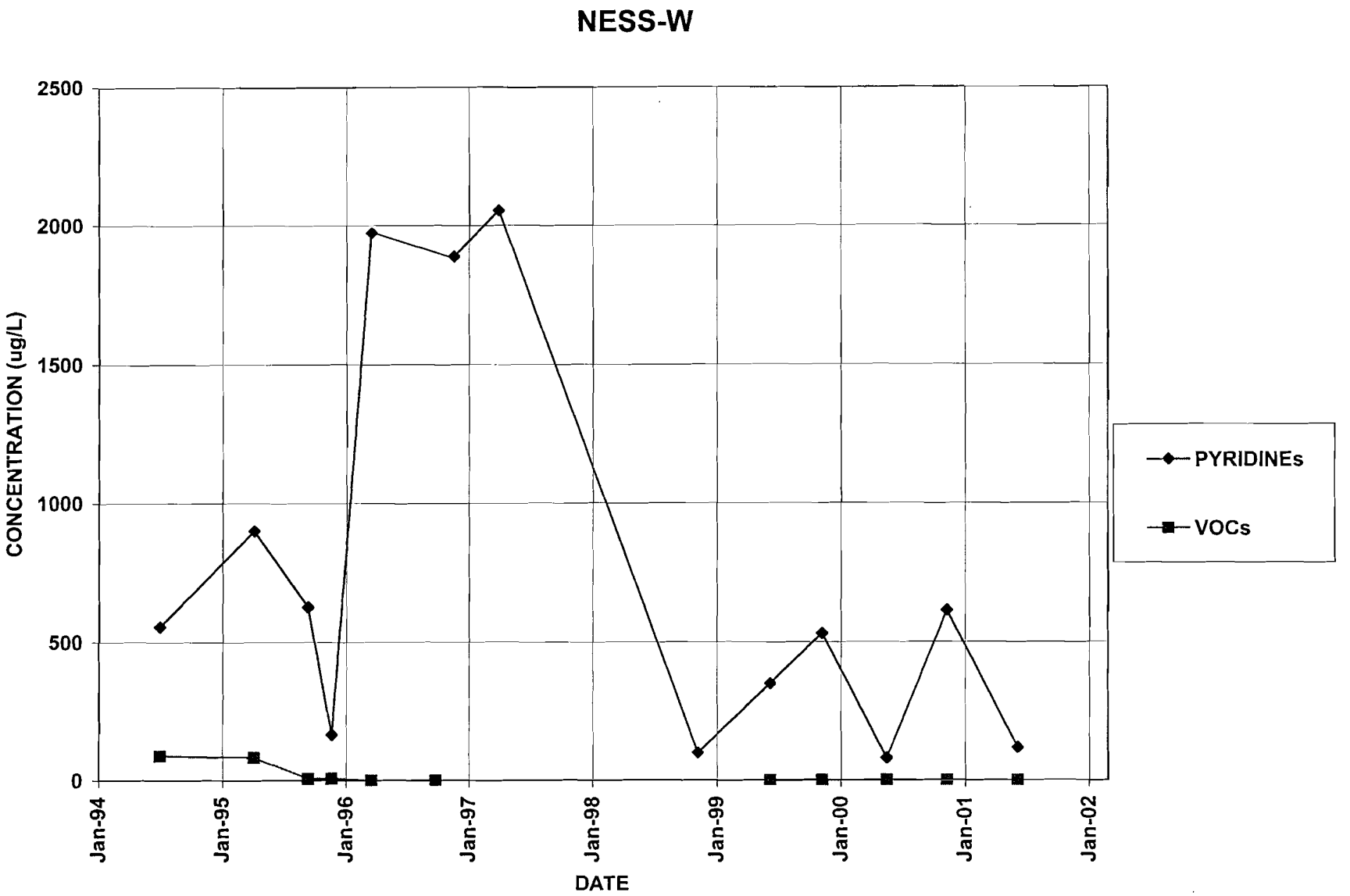
MW-106


140000
120000
100000
80000
60000
40000
20000
0
CONCENTRATION (ug/L)
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
DATE
PYRIDINEs
VOCs

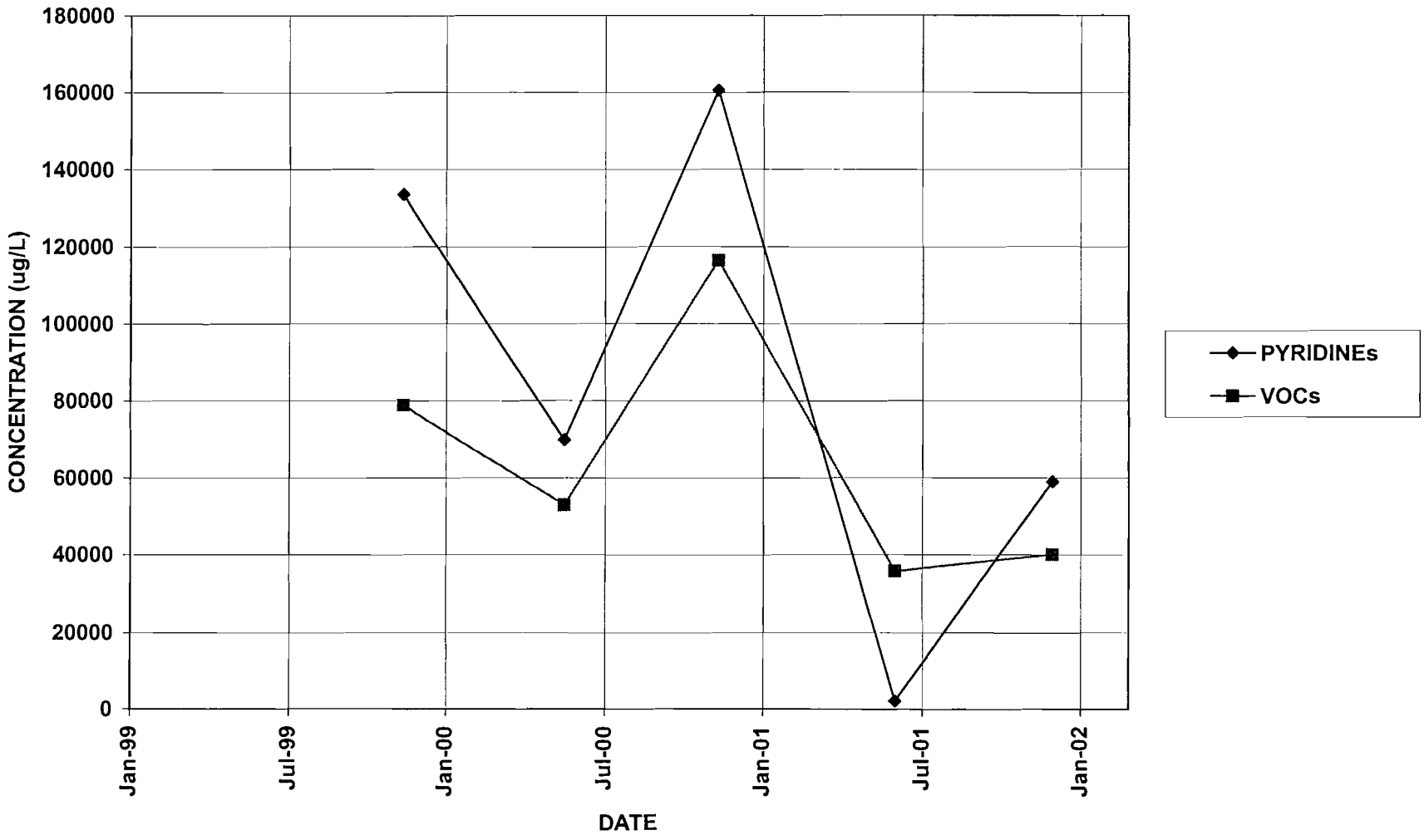
MW-114

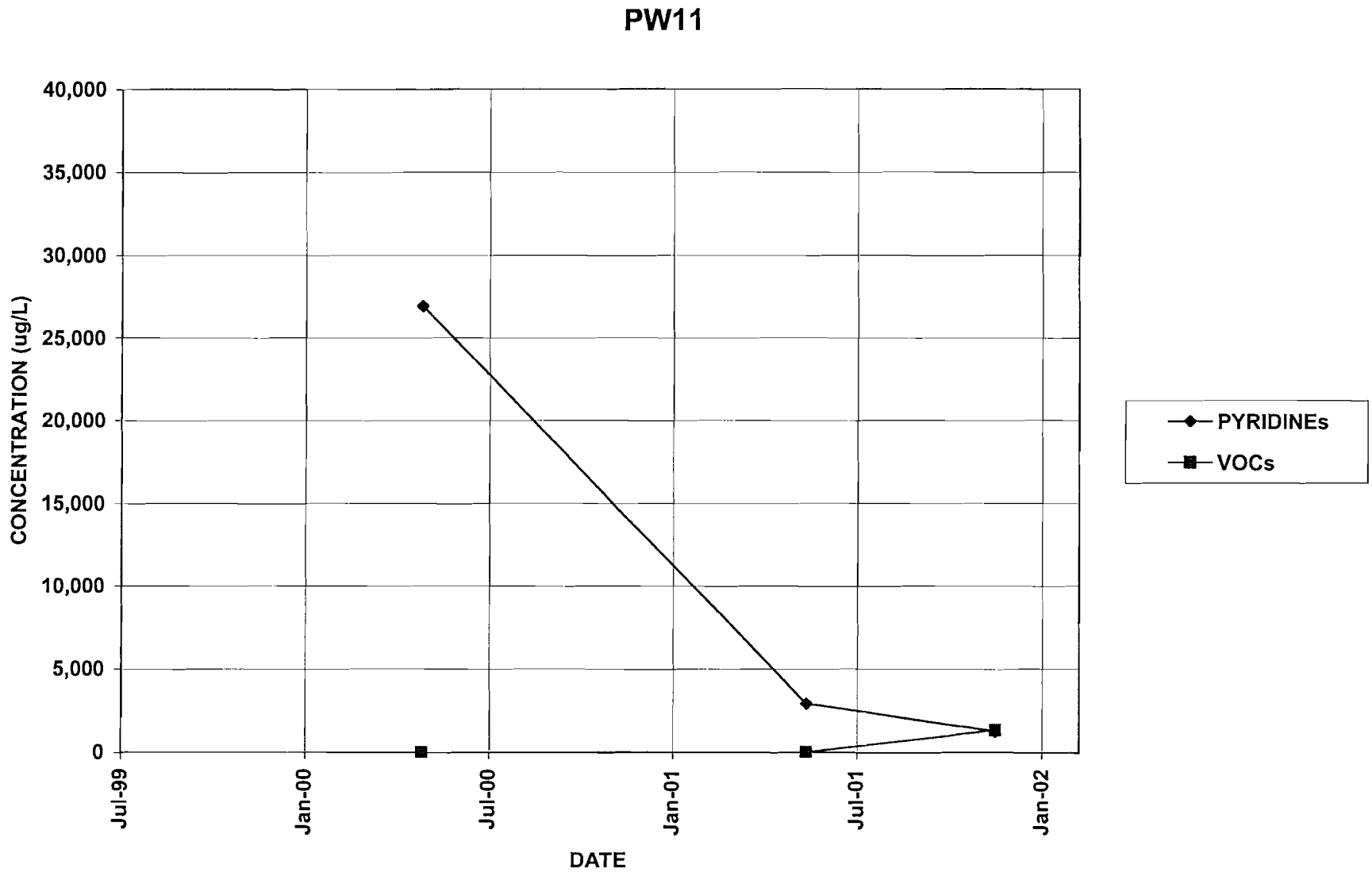

CONCENTRATION (ug/L)
50
45
40
35
30
25
20
15
10
5
0
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
DATE
PYRIDINEs
VOCs

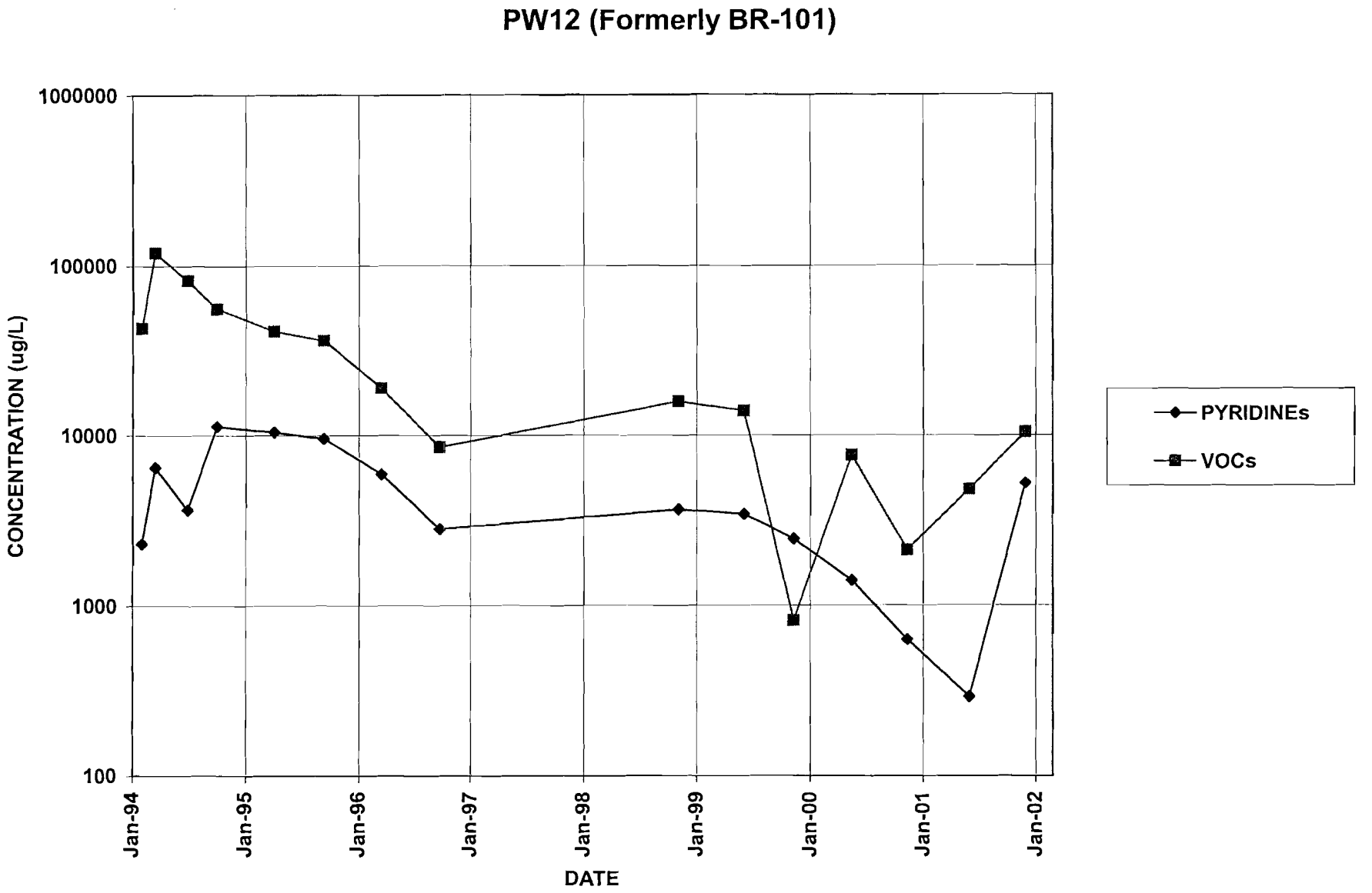

NESS-E
6000
5000
4000
3000
2000
1000
0
CONCENTRATION (ug/L)
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
DATE
PYRIDINEs
VOCs


NESS-W
2500
2000
1500
1000
500
0
CONCENTRATION (ug/L)
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
DATE
PYRIDINEs
VOCs

PW10


180000
160000
140000
120000
100000
80000
60000
40000
20000
0
CONCENTRATION (ug/L)
Jan-99
Jul-99
Jan-00
Jul-00
Jan-01
Jul-01
Jan-02
DATE
PYRIDINEs
VOCs


PW11
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0
CONCENTRATION (ug/L)
Jul-99
Jan-00
Jul-00
Jan-01
Jul-01
Jan-02
DATE
PYRIDINEs
VOCs


PW12 (Formerly BR-101)
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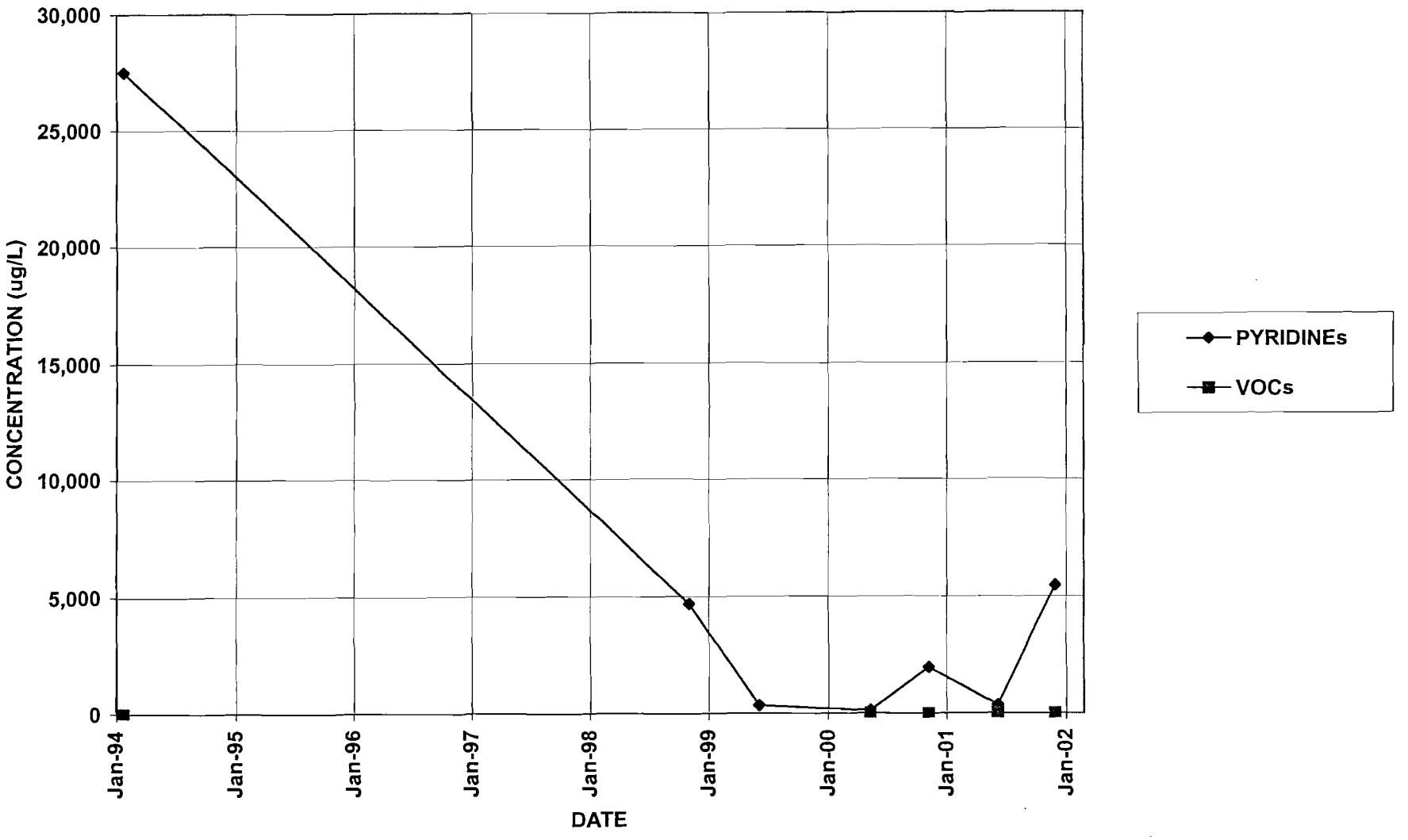
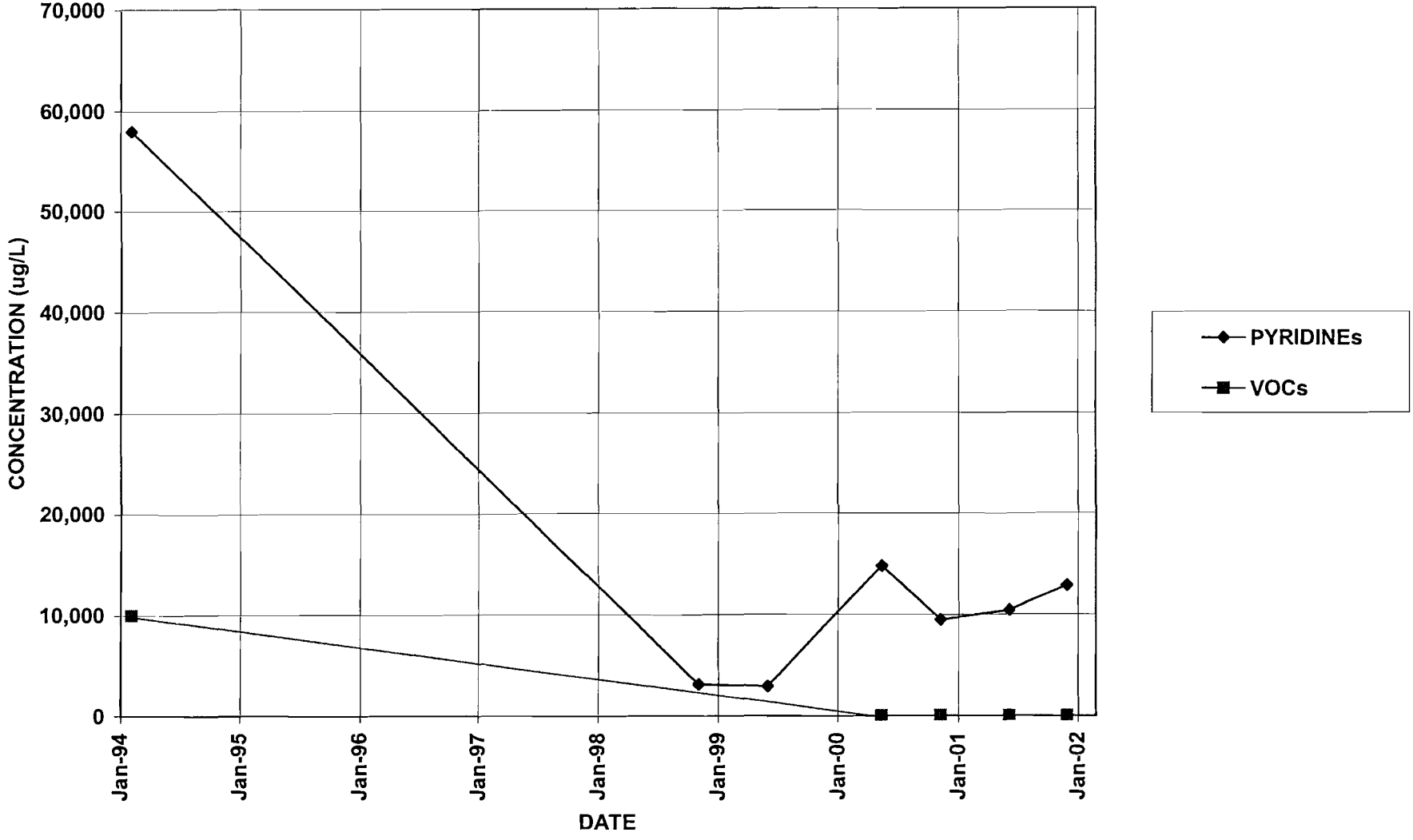
10000
1000
100
CONCENTRATION (ug/L)
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
DATE
PYRIDINEs
VOCs

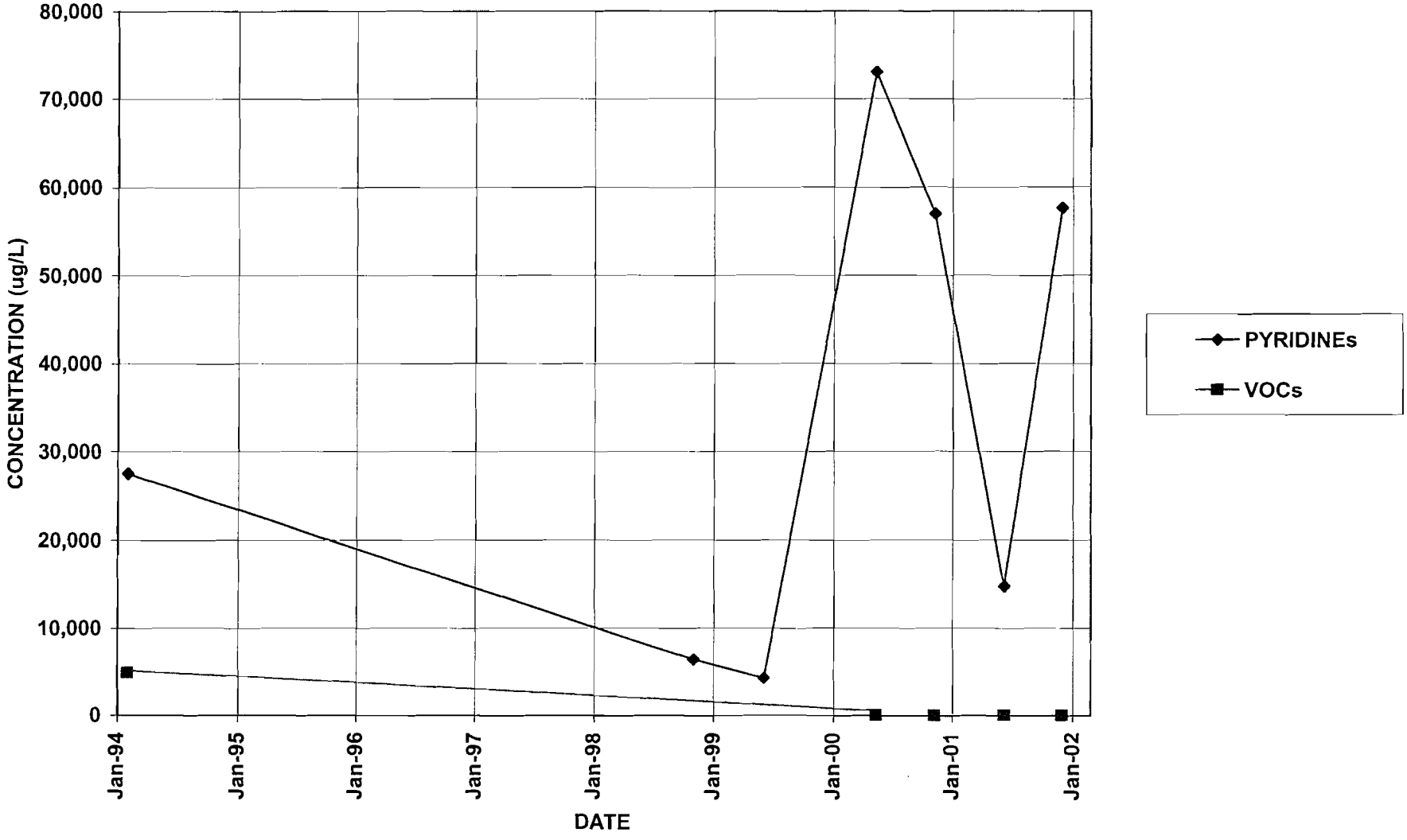
PZ-101


30,000
25,000
20,000
15,000
10,000
5,000
0
CONCENTRATION (ug/L)
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
DATE
PYRIDINEs
VOCs

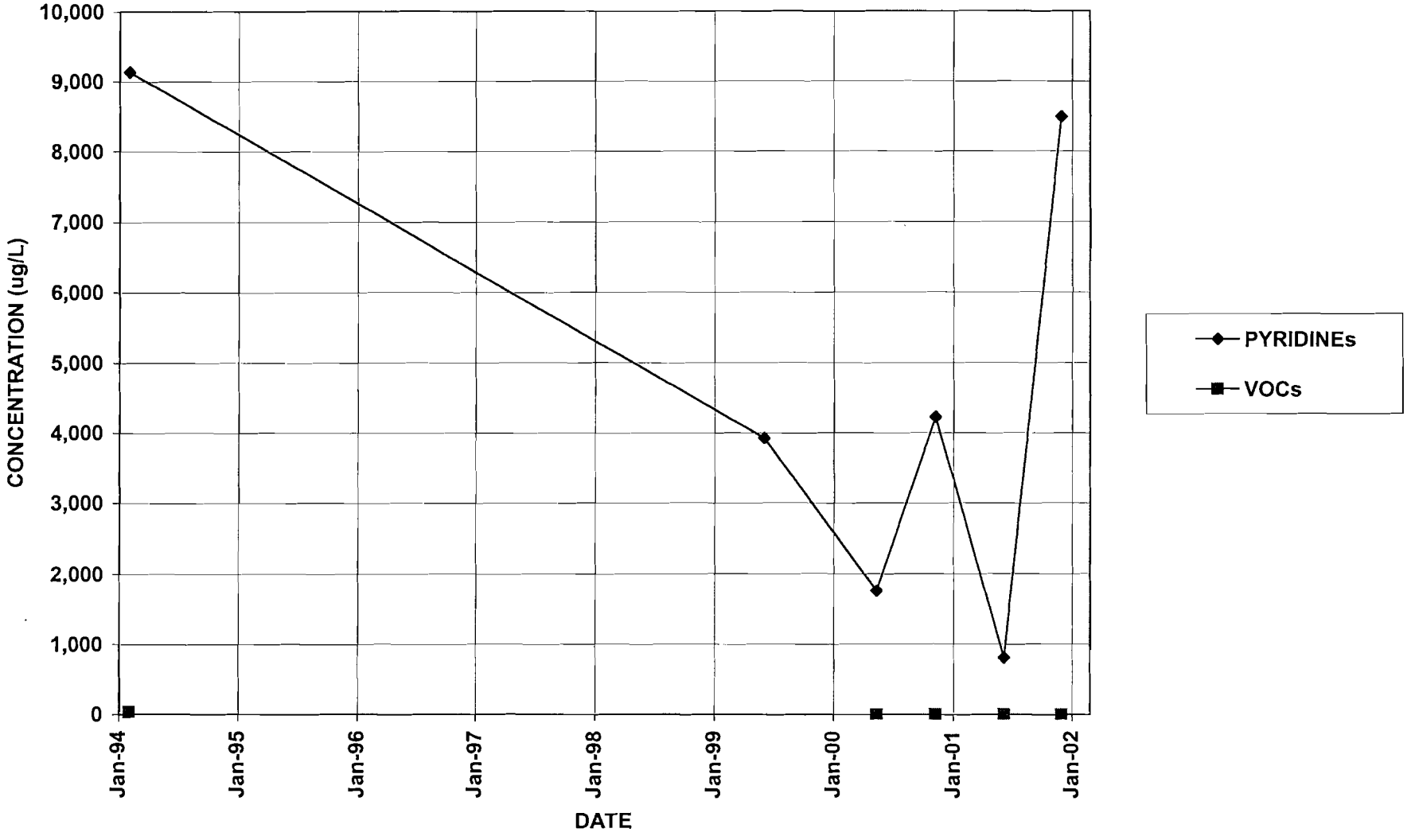
PZ-102


70,000
60,000
50,000
40,000
30,000
20,000
10,000
0
CONCENTRATION (ug/L)
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
DATE
PYRIDINEs
VOCs

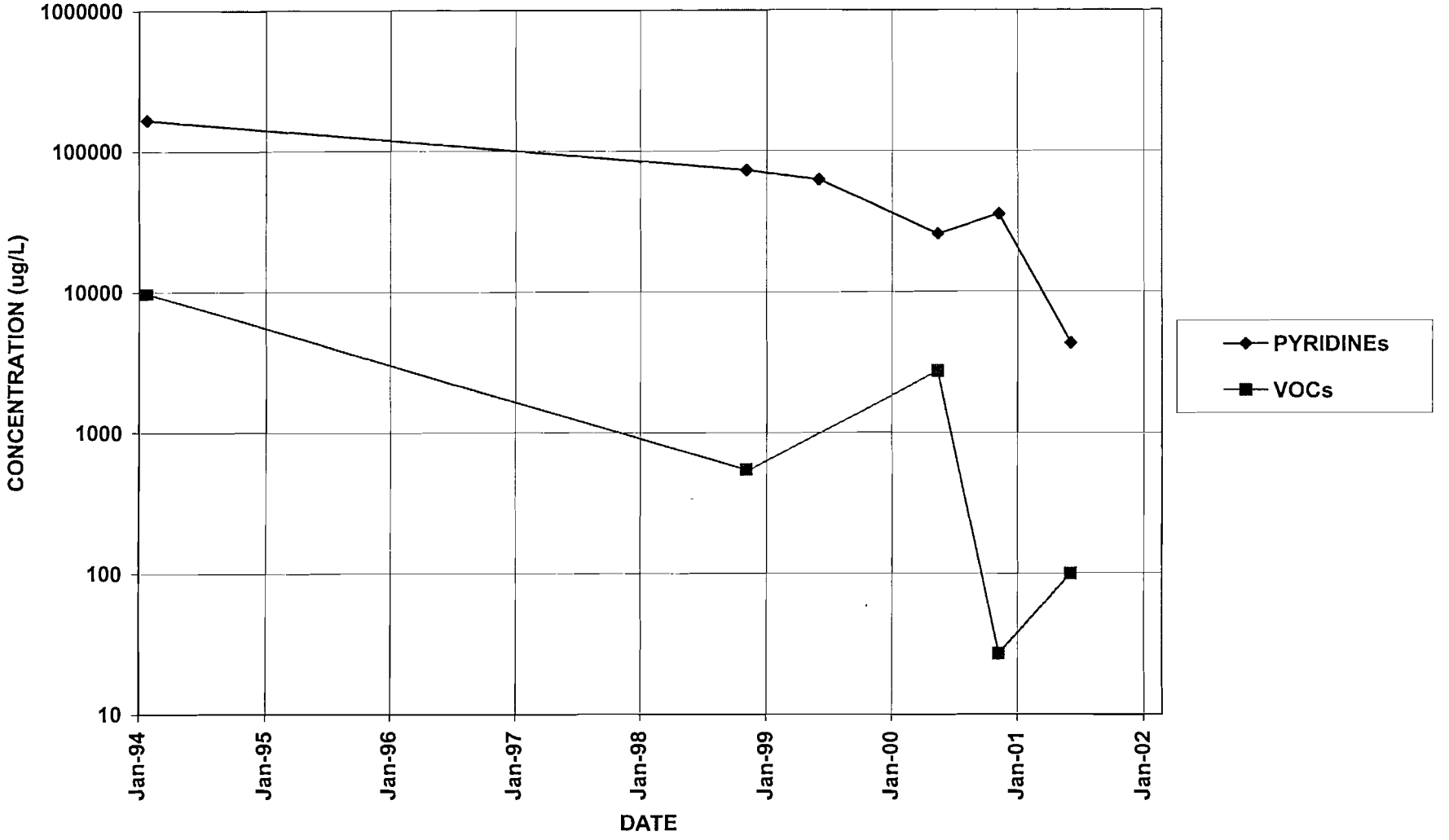
PZ-103


80,000
70,000
60,000
50,000
40,000
30,000
20,000
10,000
0
CONCENTRATION (ug/L)
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
DATE
PYRIDINEs
VOCs

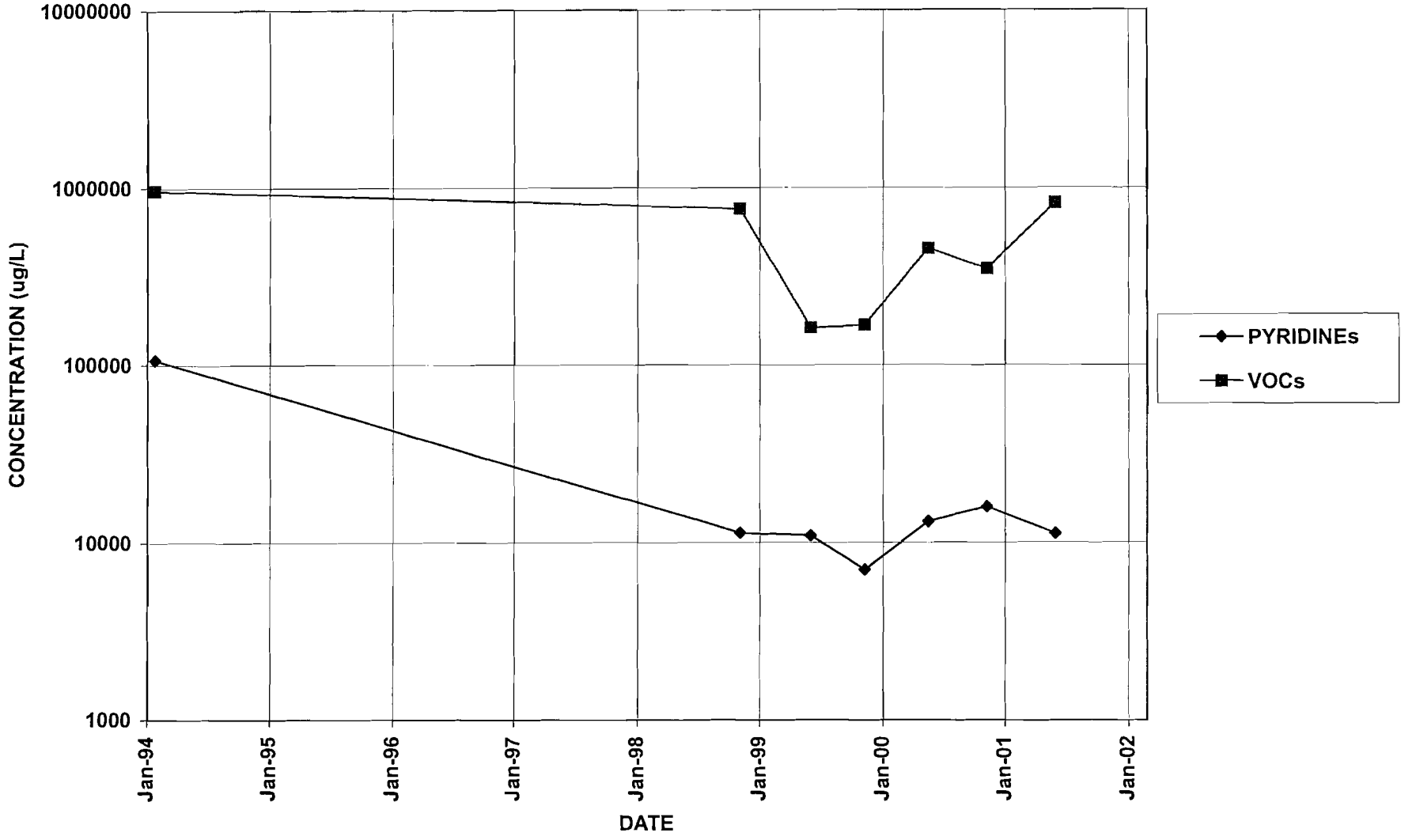
PZ-104


10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
CONCENTRATION (ug/L)
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
DATE
PYRIDINEs
VOCs

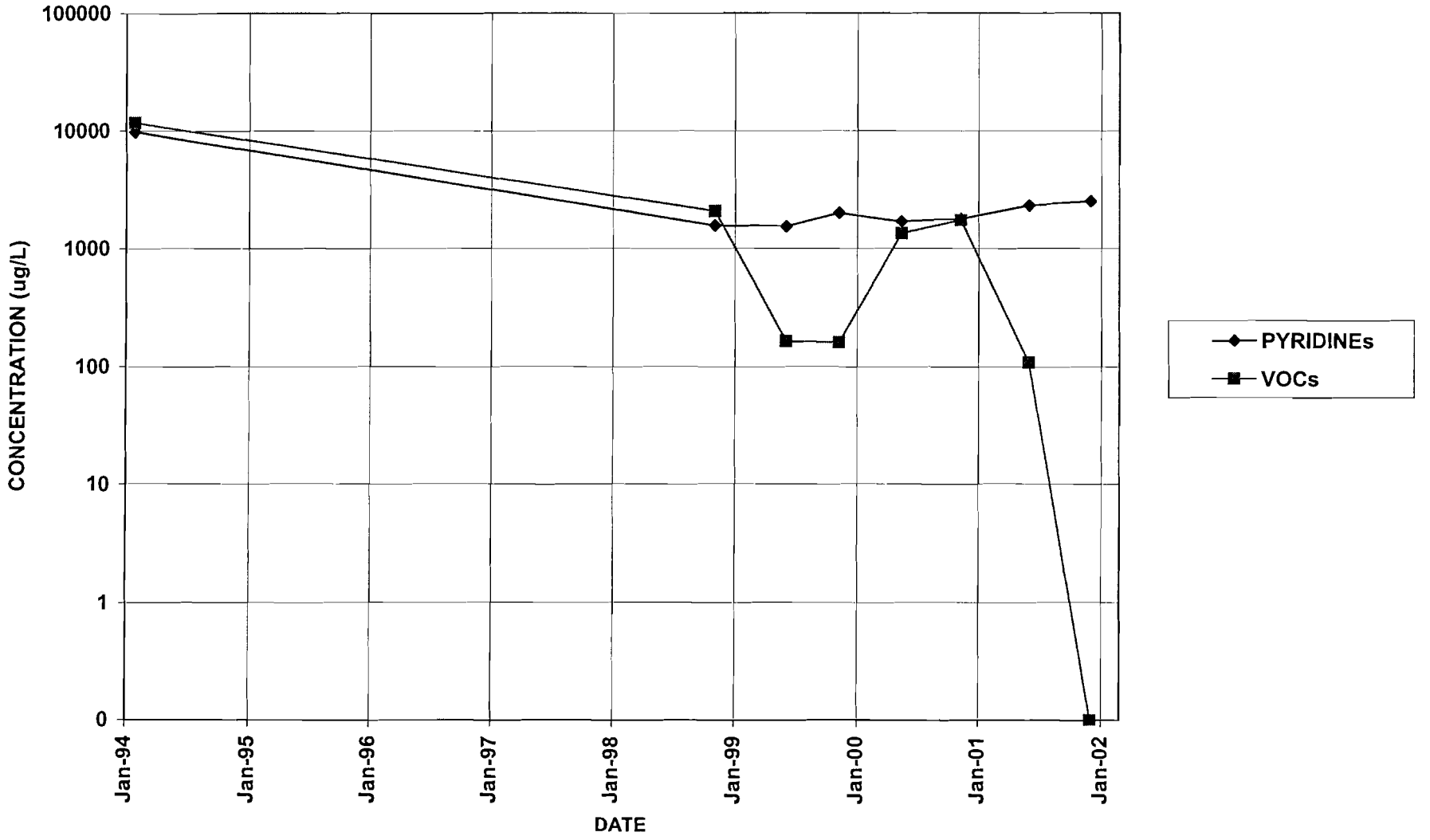
PZ-105


1000000
100000
10000
1000
100
10
CONCENTRATION (ug/L)
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
DATE
PYRIDINEs
VOCs

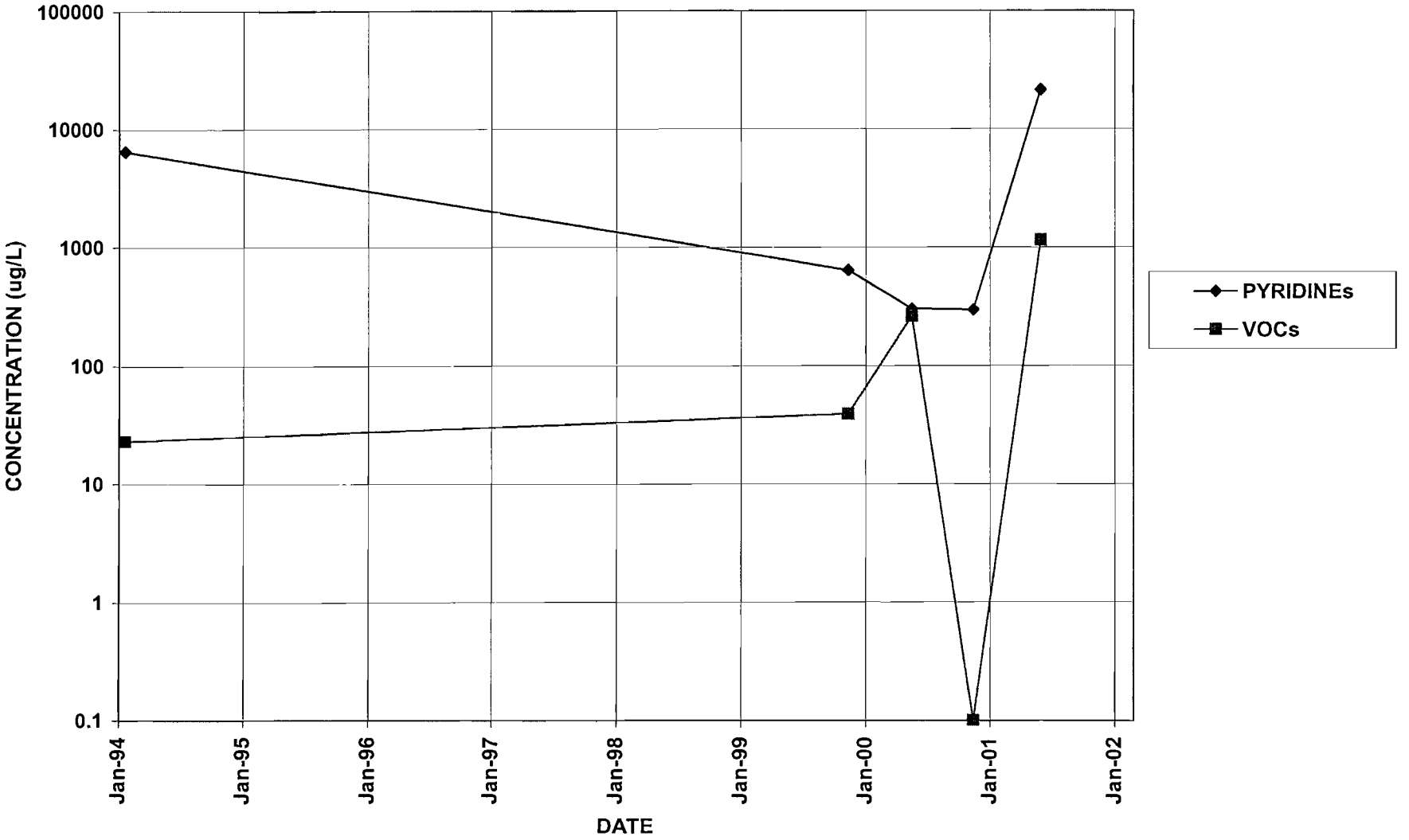
PZ-106


10000000
1000000
100000
10000
1000
CONCENTRATION (ug/L)
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
DATE
PYRIDINEs
VOCs

PZ-107


100000
10000
1000
100
10
1
0
CONCENTRATION (ug/L)
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
DATE
PYRIDINEs
VOCs

S-3


100000
10000
1000
100
10
1
0.1
CONCENTRATION (ug/L)
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
DATE
PYRIDINEs
VOCs