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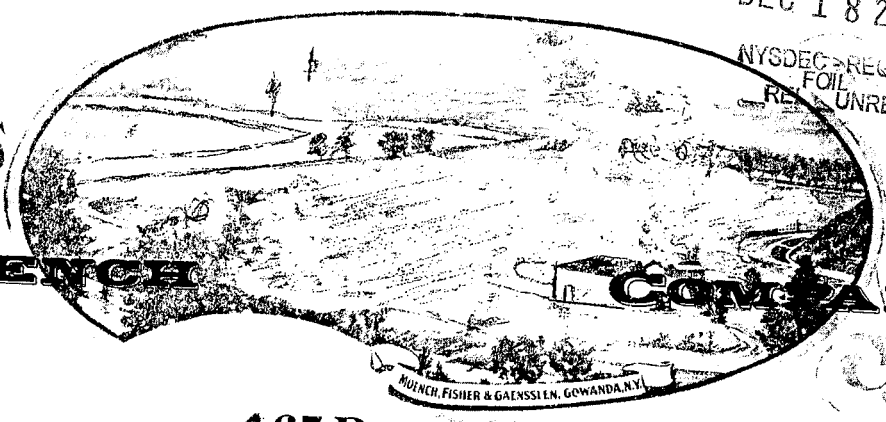


465 PALMER STREET
GOWANDA, NEW YORK 14070

TEL. 716-532-2201

FAX 716-532-5518

Mr. Stan Radon
NYS Department of Environmental Conservation
270 Michigan Ave.
Buffalo, New York 14203-2999

December 12, 2002

Re: Palmer Street Landfill; Annual 2002 Groundwater Quality Report.

Dear Mr. Radon:

Enclosed is the 2002 Annual Summary Report for the Palmer Street Landfill. The weather seemed more typical this year.

The landfill was sampled twice i n 2002.

No "metals of concern" were detected in the landfill, above the class "GA" standard. Some "guidance value" VOC detections occurred. M,p Xylene was detected above the class "GA" standard, in MW-6D, in the August sample only.

These results continue to confirm the minimal impact of the landfill, on the environment.

Moench will continue to conduct two sample events in 2003. Also, we are scheduled to conduct the "Cover System Evaluation", sample and report.

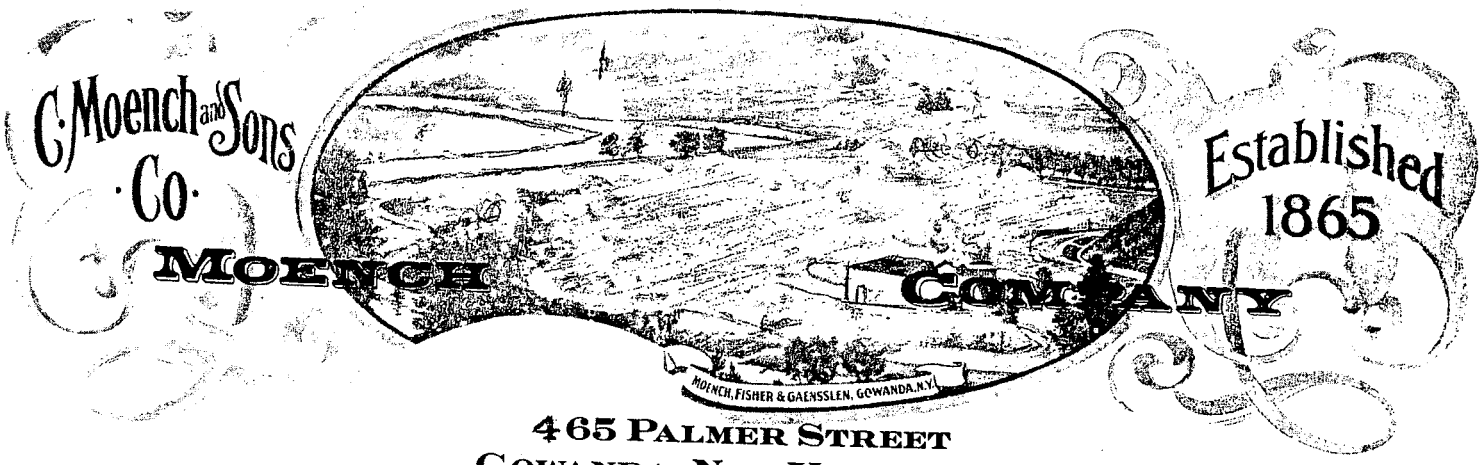
Please call me if you have any questions.

Sincerely,

Jeffrey Smith

Jeffrey Smith
Site Manager

Cc: Ed Miles-NYSDEC, Albany, NY
Virgil Simpson-Brown Shoe Co., St. Louis, Mo.
Rick Frappa-Geomatrix, Williamsville, NY



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PALMER STREET LANDFILL

ANNUAL GROUNDWATER MONITORING REPORT

2002 CALENDAR YEAR

MOENCH COMPANY
GOWANDA, NEW YORK 14070

JEFFREY SMITH
SITE MANAGER
DECEMBER 2002

MOENCH COMPANY
PALMER STREET LANDFILL
2002 ANNUAL GROUNDWATER MONITORING REPORT.....

TABLE OF CONTENTS

		PAGE
1.0	INTRODUCTION	1
	1.1 BACKGROUND	1
	1.2 PURPOSE AND SCOPE	1
2.0	MONITORING SYSTEM	2
3.0	MONITORING METHODS	3
	3.1 GROUNDWATER MONITORING	3
	3.2 INFILTROMETER MONITORING	3
4.0	SUMMARY OF MONITORING RESULTS; 2002 ANNUAL	4
	4.1 EVALATION GROUNDWATER EVEVATIONS,	4
	4.2 SUMMARY OF 2002 GROUNDWATER QUALITY	4
	4.3 RATE OF CONTAMINANT MIGRATION	6
5.0	GROUNDWATER FLOW	5
6.0	REFERENCES	7

LIST OF TABLES

TABLE NO.	DESCRIPTION	FOLLOWING PAGE
1	MONITORING PARAMETERS	3
2	SUMMARY OF INFILTROMETER DATA 3/28/02	3
3	SUMMARY OF INFILTROMETER DATA 8/16/02-	3
4	SUMMARY OF GROUNDWATER ELEVATIONS	3
5	SUMMARY OF ANALYTICAL RESULTS, APRIL 2002 MONITORING EVENT..	4
6	SUMMARY OF ANALYTICAL RESULTS, AUGUST 2002, MONITORING EVENT.....	4
7	SUMMARY OF FIELD MEASUREMENTS: 4/02 & 8/02.	4

LIST OF FIGURES - 2002 ANNUAL REPORT.

FIGURE NO.	DESCRIPTION	FOLLOWING PAGE
1	SITE LOCATION MAP	1
2/2A	MONITORING LOCATIONS	2
3	GROUNDWATER ELEVATION vs TIME; SHALLOW OVERBURDEN MONITORING WELLS.	4
4	GROUNDWATER ELEVATIONS vs TIME; DEEP OVERBURDEN MONITORING WELLS.	4
5	GROUNDWATER ELEVATIONS vs TIME; BEDROCK MONITORING WELLS& PIEZOMETERS.	4
6	"PH" RESULTS vs TIME; MONITORING WELLS AND BANK SEEPS.	5
7	SPECIFIC CONDUCTIVITY RESULTS vs TIME; MONITORING WELLS & BANK SEEPS.	5
8	WATER TABLE ISOPOTENTIAL MAP FOR 3/28/02 MONITORING EVENT.	5
9	WATER TABLE ISOPOTENTIAL MAP FOR 8/16/02, MONITORING EVENT.	5
10	BEDROCK ISOPOTENTIAL MAP FOR 3/28/02 MONITORING EVENT.	5
11	BEDROCK ISOPOTENTIAL MAP FOR 8/16/02 MONITORING EVENT.	5

TABLE OF CONTENTS (CONTINUED)

LIST OF ATTACHMENTS - 2002 ANNUAL

ATTACHMENT	DESCRIPTION
A	INFILTROMETER DESIGN
B	GROUNDWATER ELEVATION DATA & GRAPHES.
C	GRAPH: METALS CONCENTRATION vs TIME; GROUPED BY MONITORING POINT; WHERE DETECTED.
D	GRAPH: VOLATILES vs TIME; GROUPED BY MONITORING POINT; WHERE DETECTED.
E	FIELD MEASUREMENT DATA SHEETS; SUBMITTED IN PREVIOUS SEMI-ANNUAL REPORTS OF: 4/02 & 8/02.
F	ANALYTICAL DATA FROM "PHILLIPS ANALYTICAL SERVICES", 2002 MONITORING EVENT; SUBMITTED IN PREVIOUS SEMIANNUAL REPORTS OF: 4/02 & 8/02.

1.0 INTRODUCTION

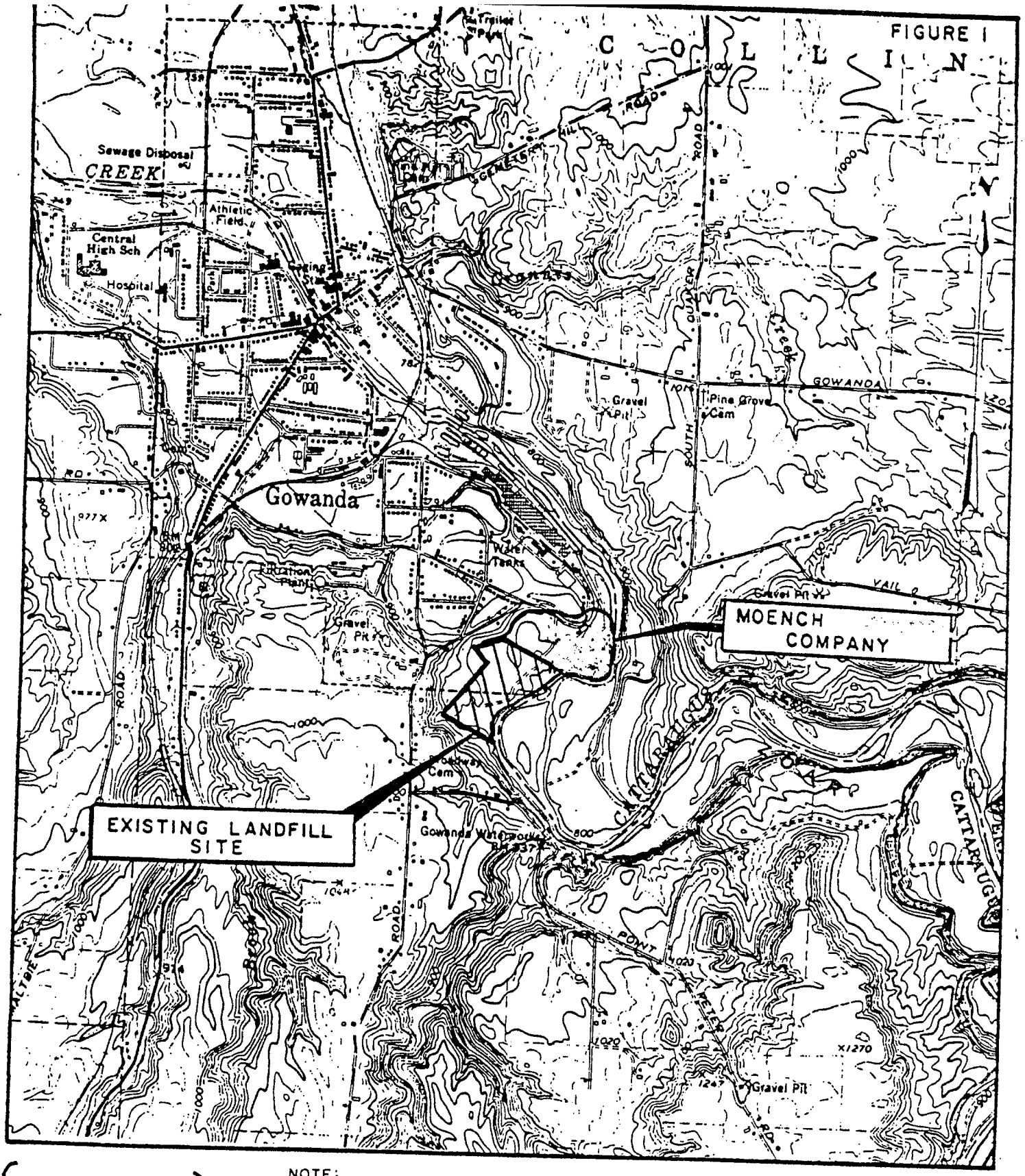
1.1 BACKGROUND

THE MOENCH COMPANY, A DIVISION OF BROWN SHOE COMPANY, INC. IS LOCATED NEAR THE SOUTHEAST CORNER OF THE VILLAGE OF GOWANDA, CATTARAUGUS COUNTY, NEW YORK.
(FIGURE 1). THE PALMER STREET LANDFILL WHICH WAS OPERATED BY MOENCH TANNING FROM 1900 THROUGH JULY 1983, LIES IMMEDIATELY SOUTHWEST OF THE FORMER SITE COMPLEX ON AN APPROXIMATELY 25-ACRE PARCEL OF LAND. A VARIETY OF WASTE GENERATED BY MOENCH TANNING WERE DISPOSED OF AT THE PALMER STREET LANDFILL SITE. THESE WASTES INCLUDED SOLE LEATHER EXTRACT, RENDERING WASTE, SPRAY BOOTH CLEAN UP WASTE, WASTE FINISH, WASTE HAIR/LEATHER SCRAPS, WASTEWATER TREATMENT PLANT SLUDGE, AND OCCASIONAL CONSTRUCTION DEBRIS.

MOENCH TANNING HAS CLOSED THE PALMER STREET LANDFILL. ACCORDINGLY, THE CLOSURE/POST-CLOSURE PLAN (REFERENCE 1), IS BEING PERFORMED. THE LONG-TERM POST CLOSURE MONITORING PROGRAM HAS BEEN APPROVED & IMPLEMENTED.
(JULY 1993, REVISED MARCH 1994.

1.2 PUPOSE AND SCOPE

SAMPLES ASSOCIATED WITH TWO ROUNDS OF WATER QUALITY MONITORING, FOR THE 2002 CALENDAR YEAR, WERE COLLECTED IN APRIL & AUGUST OF 2002, FOR THE LANDFILL. THE PURPOSE OF THIS REPORT IS TO PROVIDE A SUMMARY OF THE DATA GENERATED FOR THE PALMER STREET LANDFILL DURING 2002…..



{FIGURE 1}

NOTE:
TOPOGRAPHY TAKEN FROM 1963 GOWANDA, N.Y.
U.S.G.S. QUADRANGLE 7.5 MIN. SERIES
SCALE: 1" = 2000'

SITE LOCATION MAP
PALMER STREET LANDFILL
GOWANDA, N.Y.

6-94

MOENCH Co.

2.0 MONITORING SYSTEM

SEVEN(7) GROUNDWATER MONITORING WELLS AT THE PALMER STREET LANDFILL ARE MONITORED IN ACCORDANCE WITH THE LONG TERM POST CLOSURE MONITORING PLAN APPROVED FOR THE SITE. THESE WELLS ARE DESIGNATED AS FOLLOWS:

UPGRADIANT UPPER BEDROCK	DOWN GRADIANT UPPER BEDROCK	UPPER BEDROCK PIEZOMETER P-6D
MW-1D	MW-3DR	LOWER OVERBURDEN
MW-7D	MW-4D	PIEZOMETER P-6B
MW-8D(ANNUAL)	MW-6D	

IN ADDITION TO THE WELLS, NYSDEC ALSO REQUIRES THE MONITORING OF TWO(2) BANK SEEPS DESIGNATED AS BS-1 AND BS-3, RESPECTIVELY. THE ABILITY TO OBTAIN SAMPLES FROM THESE BANKSEEPS VARIES DUE WET/DRY WEATHER CONDITIONS. CREEK SAMPLES ARE USUALLY OBTAINED IN THEIR PLACE.

TO AID IN THE EVALUATION OF COVER PERFORMANCE, LEVELS FROM FIVE (5) INFILTROMETERS, ARE ALSO MEASURED. LOCATIONS OF MONITORING POINTS ARE SHOWN ON FIGURE 2.

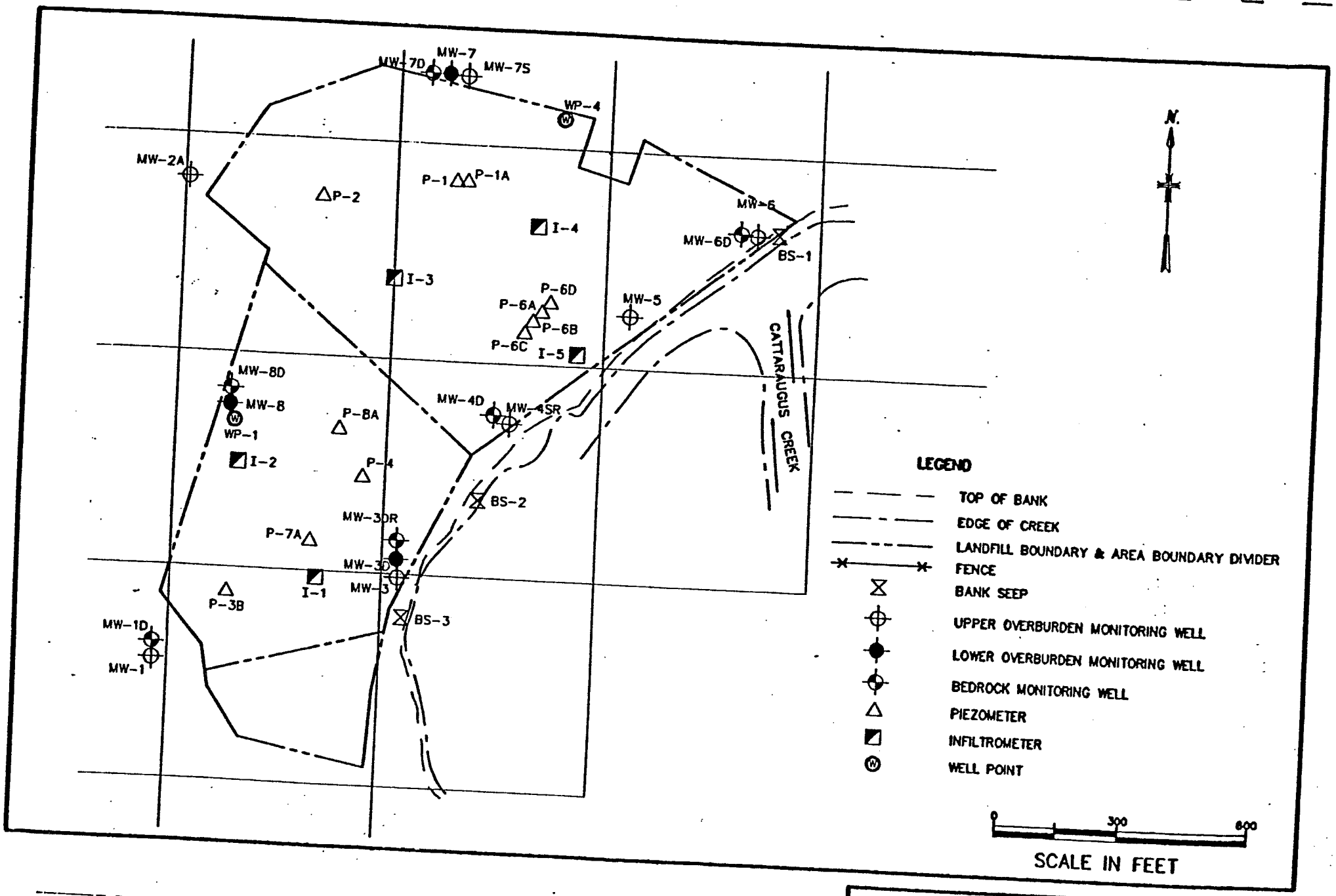


FIGURE #2

PALMER STREET LANDFILL
ANNUAL '02
MONITORING LOCATIONS

3.0 MONITORING METHODS

3.1 GROUNDWATER MONITORING-LANDFILL

SAMPLES COLLECTED DURING THE TWO MONITORING EVENTS, FOR THE LANDFILL, WERE COLLECTED BY MOENCH COMPANY PERSONNEL, IN 2002. THE ANALYTICAL WORK WAS PERFORMED BY PHILIPS ANALYTICAL SERVICES.(HAMILTON, ONTARIO). THE ANALYSIS WAS PERFORMED IN ACCORDANCE WITH THE SAMPLING PLAN/QUALITY ASSURANCE PLAN FOR THE PALMER ST. LANDFILL.(REFERENCE 3).

LABORATORY ANALYSES WERE PERFORMED IN ACCORDANCE WITH THE USEPA SW-846, 3RD EDITION (REFERENCE 4). THE MONITORING PARAMETERS ARE LISTED IN TABLE 1. SAMPLES WERE COLLECTED FROM EACH OF THE TEN(10) MONITORING LOCATIONS IDENTIFIED IN SECTION 2.0.

PRIOR TO SAMPLING, STATIC WATER LEVEL ELEVATIONS WERE MEASURED IN THE MONITORING WELLS AND THE WELLS WERE PURGED (SEE TABLE 4). GROUNDWATER ELEVATIONS WERE ALSO MEASURED IN THE PIEZOMETERS, INFILTROMETERS, AND WELLS ON-SITE.

FIELD SAMPLES WERE COLLECTED AND MEASURED FOR THE FIELD PARAMETERS IDENTIFIED IN TABLE 1. THE FIELD MEASUREMENTS ARE SUMMARIZED IN TABLE 7.

3.2 INFILTROMETER MONITORING

FIVE INFILTROMETERS HAVE BEEN INSTALLED BENEATH THE LANDFILL CAP TO AID IN THE ASSESSMENT OF PERFORMANCE OF THE CAP. DURING EACH SEMIANNUAL EVENT, WATER LEVELS IN THE INFILTROMETER ARE MEASURED AND THE AMOUNT OF WATER INFILTRATING IS CALCULATED.

THE CALCULATED INFILTRATION RATES ARE PRESENTED ON TABLE 2 & 3. CALCULATED INFILTRATION RATES ARE USUALLY WITHIN THE DESIGNED INFILTRATION RATE OF 1X10(-7) CM/SEC, EXCEPT ARE NOTED ON THE TABLE. A SCHEMATIC SHOWING THE DESIGN AND DIMENSIONS OF THE INFILTROMETERS IS PRESENTED IN ATTACHMENT A.

TABLE 1

MOENCH COMPANY
PALMER STREET LANDFILL

ROUTINE GROUNDWATER QUALITY MONITORING PARAMETERS

Soluble Arsenic
Soluble Chromium
Soluble Lead

Volatile Organics[2][3]

pH[1]

Conductivity[1]
Turbidity[1] -visual only
Groundwater Elevation[1]
Temperature[1]

All samples collected for analysis of soluble metals will be pressure-filtered in the field immediately upon sample collection.

NOTES:

1. All field parameters (i.e., pH, specific conductance, temperature and turbidity) will be measured in the field. No analysis of these parameters will be required by the laboratory.

2. Volatile organic compounds will be those compounds determined by SW-846, Method 8260.

TABLE 2

MOENCH COMPANY
PALMER STREET LANDFILL
3/28/02 MONITORING EVENT

INFILTROMETER MEASUREMENTS

Infiltrometer	Static Water Level (ft) 3-25-02	Static Water Level (ft) 8-9-01	Δ Depth (ft)	# Days Between Readings (#)	Infiltration Rate gal/day.ft²	Infiltration Rate (cm/sec)	Approx. Total Rainfall This Period (ft)	Infiltration (%)
(A) I-1	4.92	6.73	1.81	228	.004	1.0×10^{-7}	2.59'	10.3 %
I-2	7.74	7.80	.06	"	.00013	$< 1.0 \times 10^{-8}$	"	< .1 %
I-3	6.74	7.36	.62	"	.0014	8.4×10^{-8}	"	3.5 %
I-4	7.88	7.75	NEGATIVE	"	**	**	"	**
I-5	6.65	7.19	.54	"	.0012	7.6×10^{-8}	"	3.0 %

Note:
** Negative ΔD precludes calculation of meaningful data.

(A) FREQUENTLY FLOODED DUE TO HIGH WATER TABLE.

TABLE 3

MOENCH COMPANY
PALMER STREET LANDFILL
8/16/02 MONITORING EVENT

INFILTROMETER MEASUREMENTS

Infiltrometer	Static Water Level (ft) 8/16/02	Static Water Level (ft) 3-25-02	Δ Depth (ft)	# Days Between Readings (#)	Infiltration Rate		Approx. Total Rainfall This Period (ft)	Infiltration (%)
					gal/day.ft²	(cm/sec)		
(A) I-1	4.98	4.92	NEGATIVE	141	NEG.	NEG.	1.85	NEG.
I-2	7.62	7.74	.12	"	.0006	2.9×10^{-8}	"	< 1%
I-3	6.84	6.74	NEGATIVE	"	NEG.	NEG.	"	NEG.
I-4	7.72	7.88	.16	"	.0008	3.7×10^{-8}	"	< 1%
I-5	7.05	6.65	NEGATIVE	"	NEG.	NEG.	"	NEG.

Note:
** Negative ΔD precludes calculation of meaningful data.

(A) I-1, FREQUENTLY FLOODED DUE TO HIGH WATER TABLE.

4.0 GROUNDWATER QUALITY MONITORING RESULTS

4.1 EVALUATION OF GROUNDWATER ELEVATION DATA:

GROUNDWATER ELEVATION MEASUREMENTS WERE TAKEN AT EACH OF THE ACCESSIBLE ONSITE MONITORING WELLS, PIEZOMETERS AND WELL POINTS DURING THE ANNUAL 2002, MONITORING EVENTS. THE DATA IS SUMMARIZED ON TABLE #4.

PLOTS OF THE GROUNDWATER ELEVATIONS MEASURED IN THE MONITORING WELLS WITH RESPECT TO TIME, ARE PRESENTED IN FIGURE 3, 4, & 5, FOR THE "SHALLOW OVERBURDEN, DEEP OVERBURDEN AND BEDROCK WELLS, RESPECTIVELY. AS SHOWN IN FIGURES 3, AND 4, OVERBURDEN GROUNDWATER ELEVATIONS WERE GENERALLY CONSISTENT THROUGHOUT THE MONITORING PERIOD. WATER LEVELS HAVE STABILIZED, AFTER THREE YEARS OF INCREASE('92-'94). THIS OCCURRED DUE TO CESSATION OF VILLAGE AND TANNERY PUMPIMG OF THE DEEP AQUIFERS. SOME SLIGHT SEASONAL FLUCTUATION STILL OCCURS.

4.2 THE GROUNDWATER AND SURFACE WATER QUALITY RESULTS FOR THE TWO MONITORINGS EVENTS AT THE PALMER STREET LANDFILL, ARE PRESENTED IN TABLES #5 THROUGH #7.

IT SHOULD BE NOTED THAT THESE TABLES INCLUDES ONLY THOSE PARAMETERS WHICH WERE DETECTED ABOVE ANALYTICAL DETECTION LIMITS AT A MINIMUM OF ONE LOCATION. COMPARISON OF THE MONITORING DATA TO THE NYSDEC CLASS "GA" GROUNDWATER QUALITY STANDARDS/GUIDANCE VALUES IS ALSO PRESENTED IN THE TABLES.

BOTH THE SOIL AND WASTE AT THE PALMER STREET LANDFILL CONTAIN METALS-OF-INTEREST AS A COMPONENT OF THE SOIL OR WASTE PARTICLES (REFERENCE 5). THEREFORE, THE SEDIMENT (OR TURBIDITY) CONTENT OF ANY GROUNDWATER OR SURFACE WATER QUALITY SAMPLES WILL DIRECTLY IMPACT THE TOTAL METAL CONCENTRATION OF THE SAMPLES. THE TURBIDITY CONTENT OF THE GROUNDWATER SAMPLES COLLECTED AT THE SITE IS EXTREMELY VARIABLE AND RELATIVELY HIGH BECAUSE THE SOIL AND WASTE FILL BOTH CONTAIN HIGH PERCENTAGES OF FINE-GRAINED PARTICLES. AS NYSDEC HAS PREVIOUSLY AGREED, IN ORDER TO AVOID MISINTERPRETATION OF WATER QUALITY DATA, "TOTAL" METALS WILL NO LONGER ANALYZED FOR GROUNDWATER QUALITY STANDARDS OR EVALUATION OF GROUNDWATER QUALITY. IMPACTS WILL BE BASED ON SOLUBLE METALS CONCENTRATION.

ALSO TOTAL NOR SOLUABLE BARIUM WILL NO LONGER BE SAMPLED FOR IN THE AGREEMENT WITH NYSDEC, AS THE ELEMENT IS NATURALLY HIGH IN CONCENTRATION IN NATIVE SOIL. 2002 ANNUAL SUMMARIES AS FOLLOWS:

-THERE WERE NO DETECTIONS OF METALS(As, Cr, Pb),ABOVE THE CLASS "GA" STANDARD, IN EITHER OF THE SAMPLING EVENTS.

-ACETONE WAS DETECTED AT MONITORING POINTS MW-3DR AND MW1D(UPGRADIENT). THIS IS A GUIDANCE VALUE PARAMETER. MW-1D IS UPGRADIENT OF THE LANDFILL. THIS OCCURED IN BOTH SAMPLES. THIS WILL CONTINUE TO BE OBSERVED.

-MONITORING POINT MW-6D, DETECTED m,p XYLENE ABOVE THE "GA" STANDARD(Aug. sample only).

-THESE RESULTS CONTINUE TO CONFIRM THE MINIMAL LEVELS OF CONTAMINANTS IN THE PALMER STREET LANDFILL.

2002

TABLE 4

PALMER STREET LANDFILL
SUMMARY OF GROUNDWATER ELEVATIONS(1)

Location	Dates of Measurement	
	3/25/02	8-16-02
MW-1	821.03	819.95
MW-1D	818.71	819.50
MW-2A	807.90	805.52
MW-3	794.55	796.11
MW-3D	801.03	801.25
MW-3DR	803.10	802.85
MW-4SR	794.65	792.75
MW-4D	789.36	795.13
MW-5	DRY	DRY
MW-6	785.10	793.98
MW-6D	783.05	781.98
MW-7S	793.73	792.73
MW-7	794.40	792.60
MW-7D	795.79	796.89
MW-8D	809.48	809.39
P-1	794.05	794.00
P-1A	DRY	795.80
P-2	801.19	801.24
P-3B	818.17	817.27
P-4	797.44	798.64
P-6A	791.79	791.97
P-6B	791.54	791.42
P-6C	792.53	792.26
P-6D	792.55	792.75
P-7A	796.63	796.15
P-8A	DRY	DRY
WP-1	RUSTED SHUT	RUSTED SHUT
WP-4	" "	" "

Notes:
(1) Measured in feet; distance above sea level.
* Well locked; unable to open.
** Wells added to program prior to November 1993 event.
MW = Monitoring Well P = Piezometer WP = Well Point

TABLE 7

MOENCH COMPANY
PALMER STREET LANDFILL
4/1/02 – 4/3 MONITORING EVENT

SUMMARY OF FIELD MEASUREMENTS

Location	Sampling Date	Sampling Time	Temp. (°C)	pH (units)	Conductance[1] (umhos/cm)	Turbidity (NTU)	Sample Appearance	Sample Odor
(2) MW-1D*	4/2/02	1121	11.7	7.68	820	NA	CLEAR	NONE
MW-3DR***	4/2/02	1004	11.1	7.91	500	"	SLIGHT TUR.	NONE
MW-4D	4/2/02	850	11.1	7.87	610	"	CLEAR	NONE
MW-6D	4/1/02	907	12.7	8.15	1100	"	CLEAR	NONE
(3) MW-7D***	4/3/02	1040	9.7	8.13	790	"	CLEAR	NONE
MW-8D**	ANNUAL (4/2)	1317	11.3	7.94	440	"	CLEAR	NONE
P-6B	4/1/02	1115	10.1	8.12	440	"	CLEAR	NONE
P-6D	4/1/02	1020	11.8	7.91	480	"	CLEAR	NONE
BS-1	4/1/02	950	11.1	7.61	1100	"	SLIGHT TUR.	NONE
BS-3	4/1/02	1305	11.7	7.71	1200	"	TURBID	NONE
				6.5 – 8.5 (CLASS "GA" STD)			IRON	

NOTES:

(1) Conductivity readings corrected to 25°C.
(2) MW-1 is hydraulically upgradient shallow overburden well.
(3) MW-7D is apparent hydraulically upgradient bedrock well.

* Shallow Overburden Well
** Deep Overburden Well
*** Bedrock Well
BS Bank Seep

TABLE 7

MOENCH COMPANY
PALMER STREET LANDFILL
8/19 - 8/20/02 MONITORING EVENT

SUMMARY OF FIELD MEASUREMENTS

Location	Sampling Date	Sampling Time	Temp. (°C)	pH (units)	Conductance[1] (umhos/cm)	Turbidity (NTU)	Sample Appearance	Sample Odor
(2) MW-1D*	8-20-02	1025	13.4	7.80	710	NOT Req'd	CLEAR	NO
MW-3DR***	8-20-02	903	14.7	8.17	490	" "	CLEAR	NO
MW-4D	8-20-02	819	14.6	8.07	600	" "	SLIGHT TUR.	NO
MW-6D	8-19-02	840	15.5	7.65	800	" "	CLEAR	NO
(3) MW-7D ***	8-20-02	1110	16.5	8.14	590	" "	VERY TURB.	NO
MW-8D***	ANNUAL	NA	—	—	—	" "	—	—
P-6B	8-19-02	1036	24.6?	8.21	690	" "	CLEAR	NO
P-6D	8-19-02	944	12.5	8.10	720	" "	VERY SLIGHT	NO
BS-1	8-19-02	923	22.1	7.42	420	" "	SLIGHT TURB	NO
(4) BS-3	8-20-02	1005	22.0	7.60	320	" "	SLIGHT TUR	NO
				6.5 - 8.5 (CLASS "GA" STD)				

NOTES:

(1) Conductivity readings corrected to 25°C.
(2) MW-1 is hydraulically upgradient shallow overburden well.
(3) MW-7D is apparent hydraulically upgradient bedrock well.
(4) NO BANK SEEPS. DRY - TOOK STREAM SAMPLE.

* Shallow Overburden Well
** Deep Overburden Well
*** Bedrock Well
BS Bank Seep

TABLE 5

MOENCH COMPANY
PALMER STREET LANDFILL
4/1 - 4/3/02 MONITORING EVENT[1]

SUMMARY OF ANALYTICAL RESULTS

	Quantitation Limit	MW-1D	MW-3DR	MW 4D	MW 6D	P-6B	P-6D	BLIND DUPLICAT. (MW-1D)	Class "GA" Std.[2]
Metals (mg/l):									
Arsenic - Soluble	0.005	<.002	<.002	<.002	<.002	.008	<.002	<.002	0.025
Chromium - Soluble	0.005	<.004	<.004	<.004	<.004	<.004	<.004	<.004	0.05
Lead - Soluble	0.005	<.02	<.02	<.02	<.02	<.02	<.02	<.02	0.025
Volatiles (mg/l):									
* ACETONE		.028	.120	<.001	<.001 J-VALUE	<.001	<.001	.027	.05 mg/L
XYLENE m,p									

* GUIDANCE VALUE

TABLE 5 (Continued)

MOENCH COMPANY
PALMER STREET LANDFILL
4/1 - 4/3/02 MONITORING EVENT[1]

SUMMARY OF ANALYTICAL RESULTS

Parameter	Quantitation Limit	MW-7D	ANNUAL MW-8D	BS-1	BS-3	EQPT. ~~Trip~~ Blank[3]	Class "GA" Std.[2]
Metals (mg/l):							
Arsenic - Soluble	0.005	<.002	<.002	<.002	<.002	<.002	0.025
							–
Chromium - Soluble	0.005	<.004	<.004	.005	.006	<.004	0.05
Lead - Soluble	0.005	<.02	<.02	<.02	<.02	<.02	0.025
Volatiles (mg/l):							
		<.001	<.001	<.001	<.001	<.001	

NOTES:
(1) Only those parameters found at a concentration above laboratory detection limits at a minimum of one location are shown.
(2) NYSDEC Class "GA" Ground Water Quality Standards, 6NYCRR Part 703, Revised October 1993.
(3) Trip blanks were analyzed for only volatile organic compounds.
(4) MW-8D sampled only once annually (Reference 6).
(5) ~~Monitor wells 3D and 7 are monitored quarterly, sampled annually.~~
J Estimated value due to limitations identified in the quality control review.

(8) LIKELY LAB CONTAMINATION.

TABLE 6

MOENCH COMPANY
PALMER STREET LANDFILL
8/19-8/20/02 MONITORING EVENT[1]

SUMMARY OF ANALYTICAL RESULTS

	Quantitation Limit	MW-1D	MW-3DR	MW 4D	MW 6D	P-6B	P-6D	MW-1D BLIND DUPLICAT.	Class "GA" Std.[2]
Metals (mg/l):									
Arsenic - Soluble	0.005	<.002	<.002	<.002	<.002	.012	<.002	<.002	0.025
									–
Chromium - Soluble	0.005	.004	<.004	<.004	<.004	<.004	<.004	<.004	0.05
Lead - Soluble	0.005	<.020	<.020	<.020	<.020	<.020	<.020	<.02	0.025
Volatiles (mg/l):									
m,p Xylene		ND	ND	ND			ND	ND	
MEK		"	"	"	.005	ND	"	"	.005
ACETONE		.110	.067	"	ND	.012	"	"	.050 GUIDANCE VALUE
					"	ND	"	.100	.050 GUID. VALUE

TABLE 6 (Continued)

MOENCH COMPANY
PALMER STREET LANDFILL
8/19-8/20/02 MONITORING EVENT[1]

SUMMARY OF ANALYTICAL RESULTS

Parameter	Quantitation Limit	MW-7D	MW-8D	BS-1	BS-3	~~Trip Blank~~[3] Eq. BLANK	Class "GA" Std.[2]
			ANNUAL				
Metals (mg/l):			PID 3/02				
Arsenic - Soluble	0.005	<.002		<.002	<.002	<.002	0.025
							–
Chromium - Soluble	0.005	<.004	—	<.004	.005	<.004	0.05
Lead - Soluble	0.005	<.02	—	<.02	<.02	<.02	0.025
Volatiles (mg/l):		ND	—	ND	ND	ND	

NOTES:
(1) Only those parameters found at a concentration above laboratory detection limits at a minimum of one location are shown.
(2) NYSDEC Class "GA" Ground Water Quality Standards, 6NYCRR Part 703, Revised October 1993.
(3) Trip blanks were analyzed for only volatile organic compounds.
(4) MW-8D sampled only once annually (Reference 6).
(5) ~~Monitor wells 3D and 7 are monitored quarterly, sampled annually.~~
J Estimated value due to limitations identified in the quality control review.

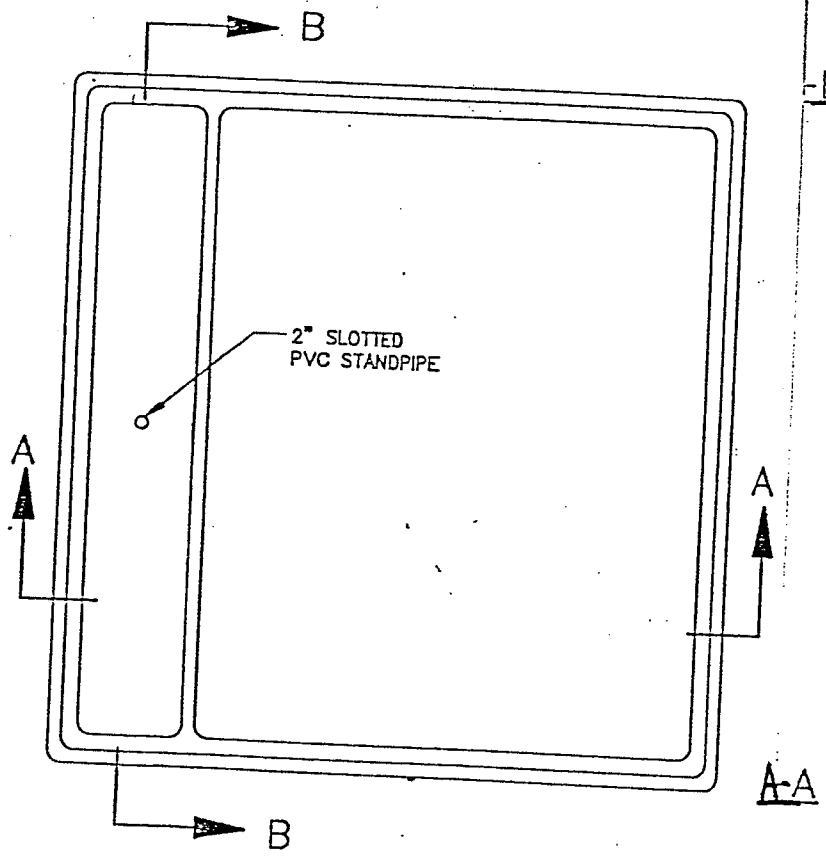
ND - NON DETECT

(8) LIKELY LAB CONTAMINATION.

ATTACHMENT A

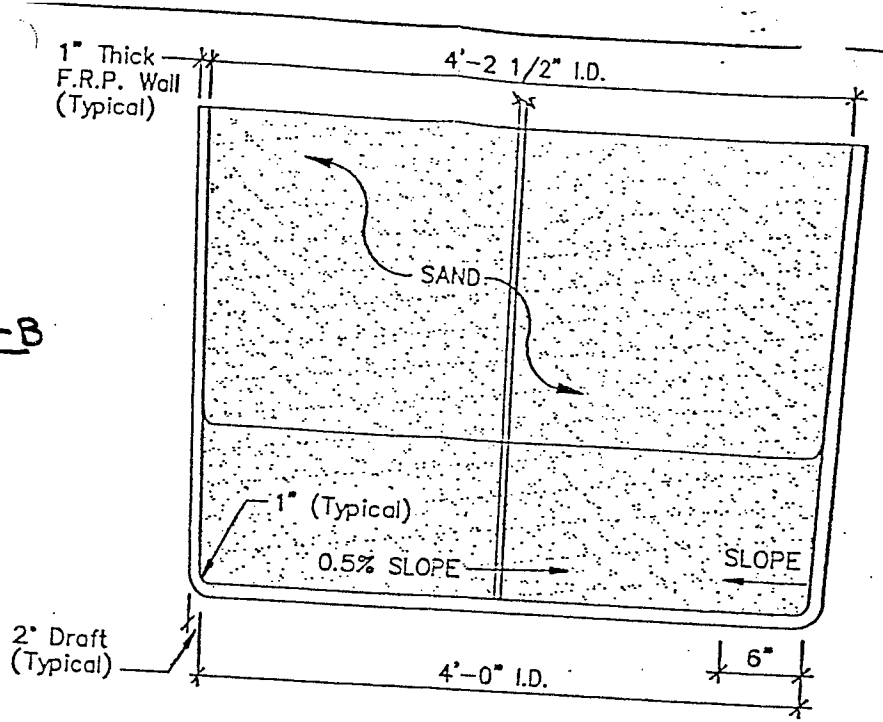
INFILTROMETER DESIGN

PALMER STREET LANDFILL
GROUNDWATER MONITORING REPORT...
4/02, 8/02 SAMPLING EVENT..

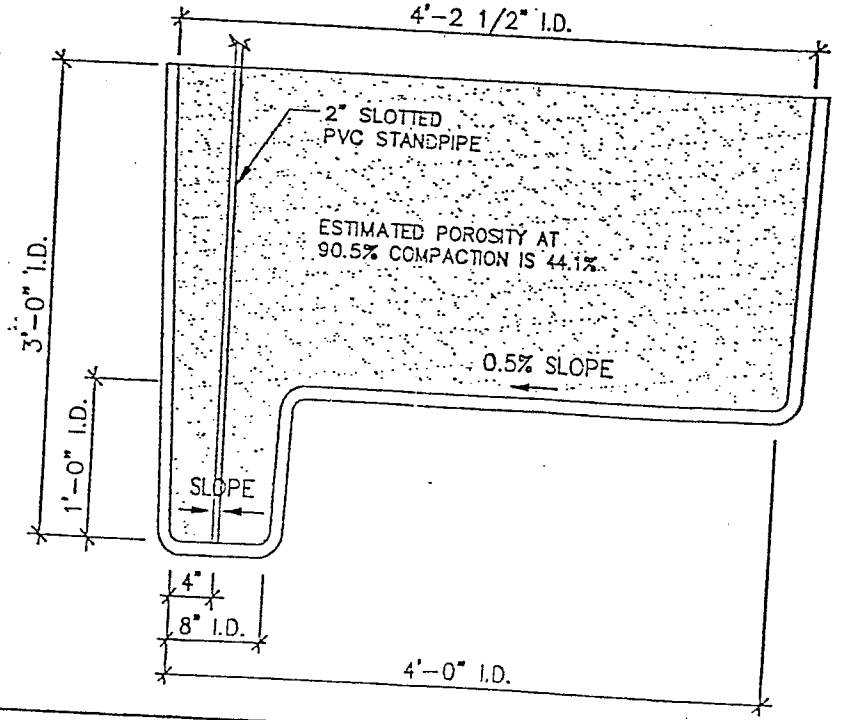


PLAN

B-B



A-A



TYPICAL INFILTROMETER BY HEY'S ENTERPRISES
AS INSTALLED AT PALMER STREET LANDFILL

ATTACHMENT B

GROUNDWATER ELEVATION
DATA & GRAPHES

MONITORING EVENTS 4/02 + 8/02

figure #3

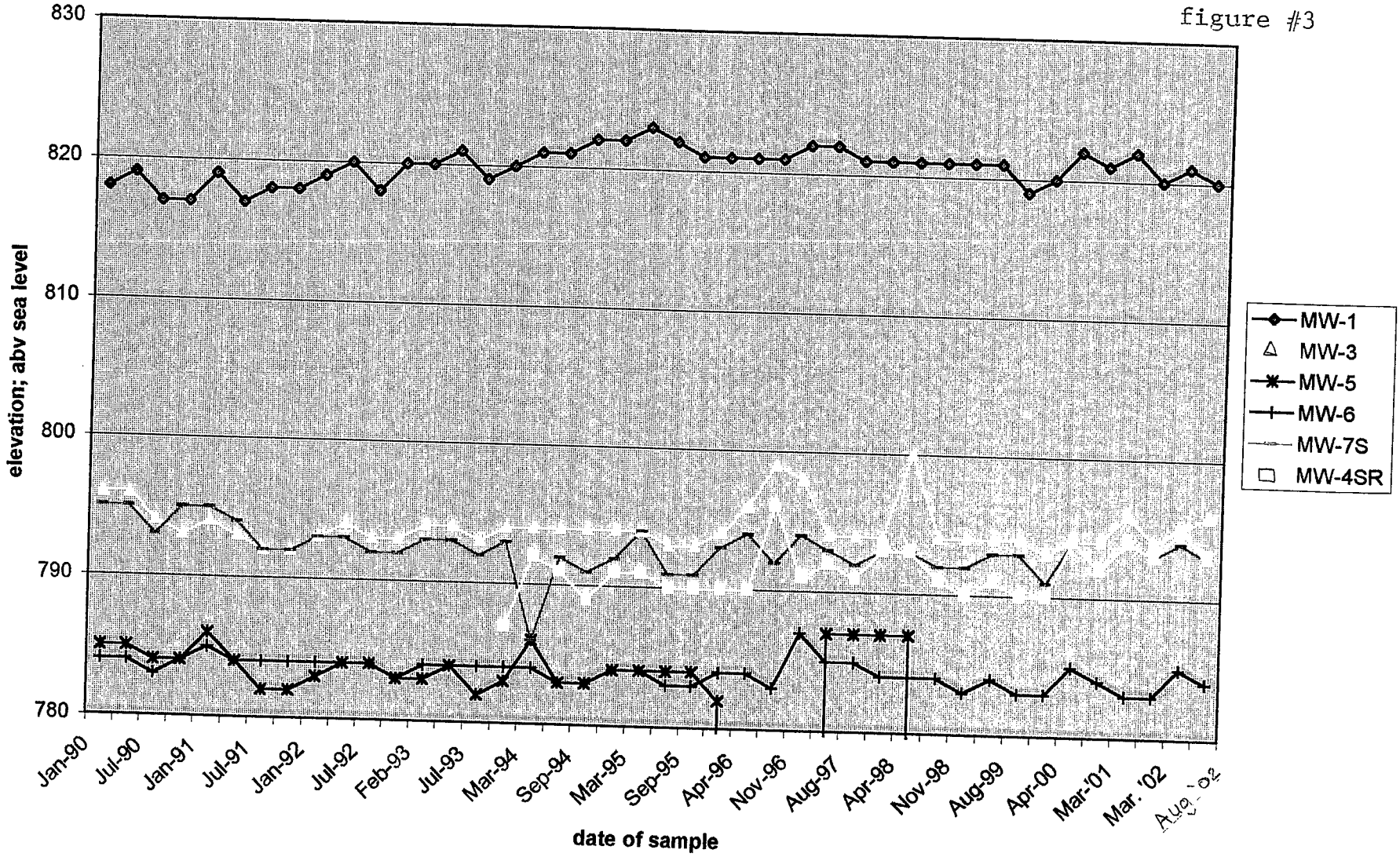
FIGURE #3
PALMER STREET LANDFILL
MOENCH COMPANY
GROUNDWATER ELEVATION vs TIME (FEET ABOVE SEA LEVEL)
SHALLOW OVERBURDEN MONITOR WELLS

	Jan-90	Apr-90	Jul-90	Oct-90	Jan-91	May-91	Jul-91	Oct-91	Jan-92	May-92	Jul-92	Oct-92	Feb-93	May-93	Jul-93	Oct-93	Mar-94	Jun-94	Sep-94	Dec-94	Mar-95
MW-1	818	819	817	817	819	817	818	818	819	820	818	820	820	821	819	820	821	821	822	822	823
MW-3	796	796	794	793	794	793	792	792	793	794	793	793	794	794	793	794	794	794	794	794	794
MW-5	785	785	784	784	786	784	782	782	783	784	784	783	783	784	782	783	786	783	783	784	784
MW-6	784	784	783	784	785	784	784	784	784	784	784	783	784	784	784	784	784	783	783	784	784
MW-7S	795	795	793	795	795	794	792	792	793	793	792	792	793	793	792	793	786	792	791	792	794
MW-4SR																787	792	791	789	791	791

Plrgwelv

	Jun-95	Sep-95	Dec-95	Apr-96	Aug-96	Nov-96	Apr-97	Aug-97	Nov-97	Apr-98	Aug-98	Nov-98	Apr-99	Aug-99	Nov-99	Apr-00	Sep-00	Mar-'01	Aug'01	Mar. '02	Aug. '02
MW-1	822	821	821	821	821	822	822	821	821	821	821	821	821	819	820	822	821	822	820	821	820
-3	793	793	794	796	799	798	794	794	794	800	794	794	794	794	793	794	794	796	794	795	796
-5	784	784	782	DRY	DRY	DRY	787	787	787	787	DRY	DRY	DRY	DRY	DRY	dry	dry	dry	dry	dry	dry
-6	783	783	784	784	783	787	785	785	784	784	784	783	784	783	783	785	784	783	783	785	784
-7S	791	791	793	794	792	794	793	792	793	793	792	792	793	793	791	794	792	794	793	794	793
-4SR	790	790	790	790	796	791	792	791	793	793	791	790	791	790	790	794	792	794	793	795	793

figure #3


Palmer St. I/fill: shallow GW elev.
elevation; abv sea level
830
820
810
800
790
780
Jan-90
Jul-90
Jan-91
Jul-91
Jan-92
Jul-92
Feb-93
Jul-93
Mar-94
Sep-94
Mar-95
Sep-95
Apr-96
Nov-96
Aug-97
Apr-98
Nov-98
Aug-99
Apr-00
Mar-'01
Mar. '02
Aug-02
date of sample
MW-1
MW-3
MW-5
MW-6
MW-7S
MW-4SR

Plmrgw2

figure #4

	Figure #4			PALMER STREET LANDFILL MOENCH COMPANY GROUNDWATER ELEVATION vs TIME(FEET ABOVE SEA LEVEL) DEEP OVERBURDEN MONITOR WELLSS																	
	Jan-90	Apr-90	Jul-90	Oct-90	Jan-91	May-91	Jul-91	Oct-91	Jan-92	May-92	Jul-92	Oct-92	Feb-93	May-93	Jul-93	Oct-93	Mar-94	Jun-94	Sep-94	Dec-94	Mar-95
MW-3D	777	777	777	777	776	778	779	778	778	779	779	781	784	787	789	791	792	793	795	797	798
MW-7	794	793	793	793	794	793	793	794	793	792	793	794	793	792	792	793	792	791	793	794	793
MW-4D																787	790	789	791	792	793

Plmrgw2

Jun-95	Sep-95	Dec-95	Apr-96	Aug-96	Nov-96	Apr-97	Aug-97	Nov-97	Apr-98	Aug-98	Nov-98	Apr-99	Aug-99	Nov-99	Apr-00	Sep-00	Mar-'01	Aug-'01	Mar. '02	Aug. '02
797	797	797	799	801	799	799	799	799	794	798	797	798	799	799	799	800	800	800	801	801
792	794	794	794	794	794	794	794	795	794	795	796	794	793	795	794	795	794	792	794	793
793	793	788	795	794	794	795	795	795	795	794	793	794	794	795	795	795	796	796	789	795

fig.#4

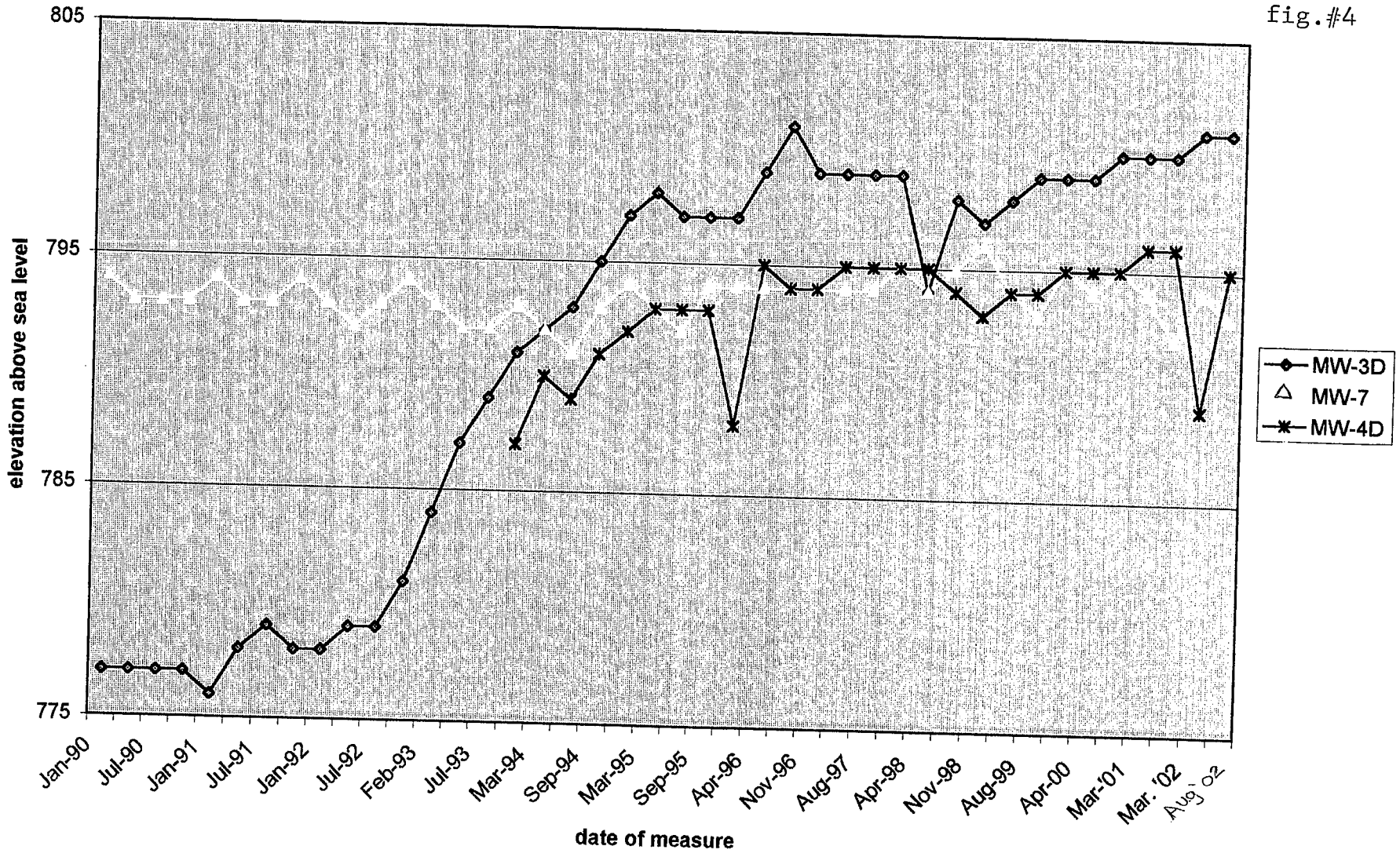

Palmer St. I/fill; deep overburden GW elev.
805
795
785
775
elevation above sea level
Jan-90
Jul-90
Jan-91
Jul-91
Jan-92
Jul-92
Feb-93
Jul-93
Mar-94
Sep-94
Mar-95
Sep-95
Apr-96
Nov-96
Aug-97
Apr-98
Nov-98
Aug-99
Apr-00
Mar-'01
Mar. '02
Aug-02
date of measure
MW-3D
MW-7
MW-4D

fig. #5

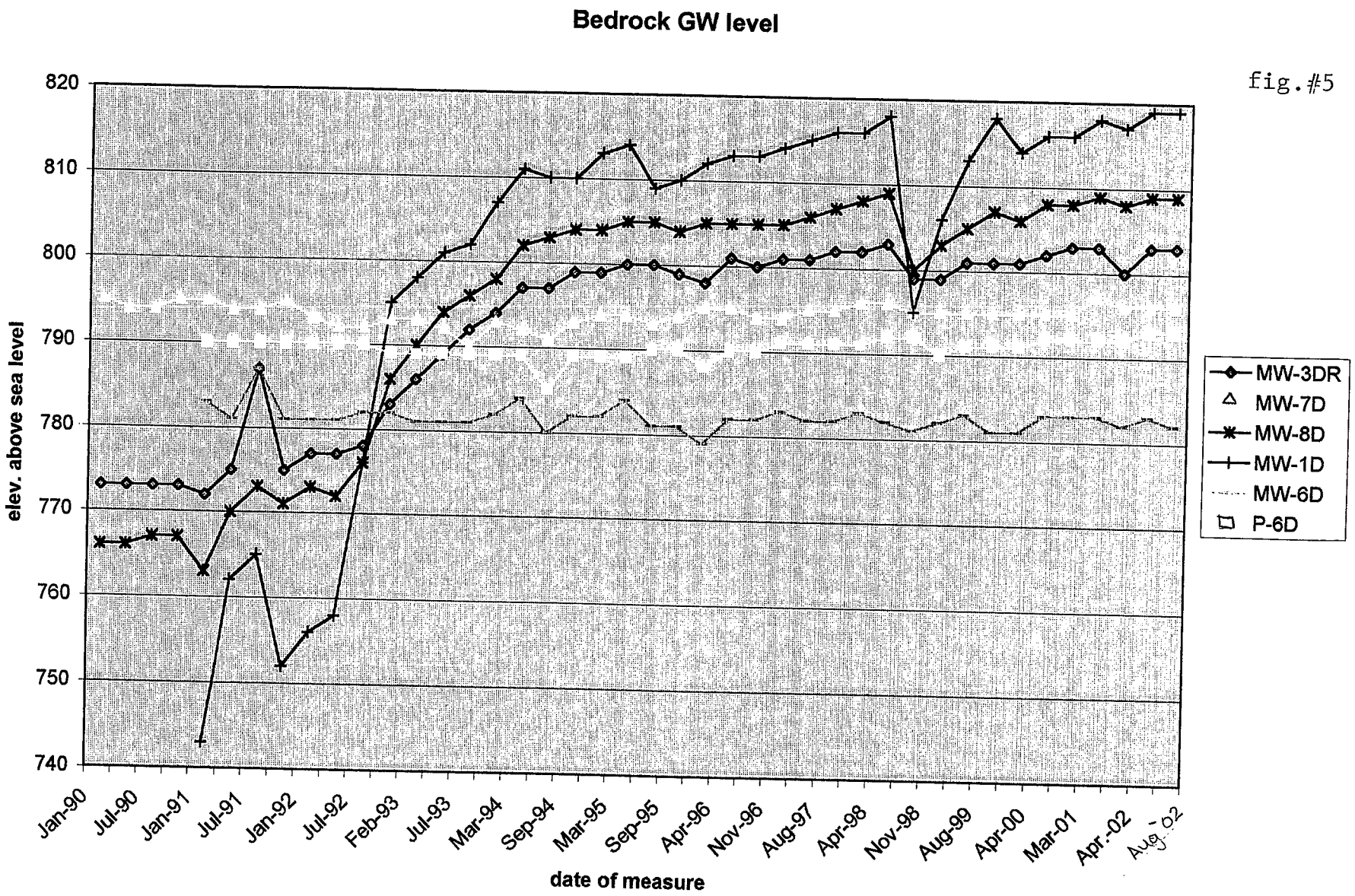
PALMER STREET LANDFILL
MOENCH COMPANY
GROUNDWATER ELEVATION vs TIME
(FIG.#5)
BEDROCK MONITOR WELLS & PIEZOMETERS

	Jan-90	Apr-90	Jul-90	Oct-90	Jan-91	May-91	Jul-91	Oct-91	Jan-92	May-92	Jul-92	Oct-92	Feb-93	May-93	Jul-93
MW-3DR	773	773	773	773	772	775	787	775	777	777	778	783	786	789	792
MW-7D	795	794	794	795	795	794	794	795	793	792	792	793	793	792	790
MW-8D	766	766	767	767	763	770	773	771	773	772	776	786	790	794	796
MW-1D					743	762	765	752	756	758	776	795	798	801	802
MW-6D					783	781	787	781	781	781	782	782	781	781	781
P-6D					790	790	790	790	790	790	790	789	789	789	789

	Oct-93	Mar-94	Jun-94	Sep-94	Dec-94	Mar-95	Jun-95	Sep-95	Dec-95	Apr-96	Aug-96	Nov-96	Apr-97	Aug-97	Nov-97
MW-3DR	794	797	797	799	799	800	800	799	798	801	800	801	801	802	802
MW-7D	793	792	791	793	794	794	793	794	795	795	794	794	795	795	796
MW-8D	798	802	803	804	804	805	805	804	805	805	805	805	806	807	808
MW-1D	807	811	810	810	813	814	809	810	812	813	813	814	815	816	816
MW-6D	782	784	780	782	782	784	781	781	779	782	782	783	782	782	783
P-6D	789	789	785	789	789	789	790	790	788	790	790	791	791	791	791

	Apr-98	Aug-98	Nov-98	Apr-99	Aug-99	Nov-99	Apr-00	Sep-00	Mar-01	Aug-01	Apr.-02	Aug.-02
MW-3DR	803	799	799	801	801	801	802	803	803	800	803	803
MW-7D	796	795	795	795	795	795	795	795	797	796	796	796
MW-8D	809	800	803	805	807	806	808	808	809	808	809	809
MW-1D	818	795	806	813	818	814	816	816	818	817	819	819
MW-6D	782	781	782	783	781	781	783	783	783	782	783	782
P-6D	792	792	790	791	791	791	792	792	792	792	793	793

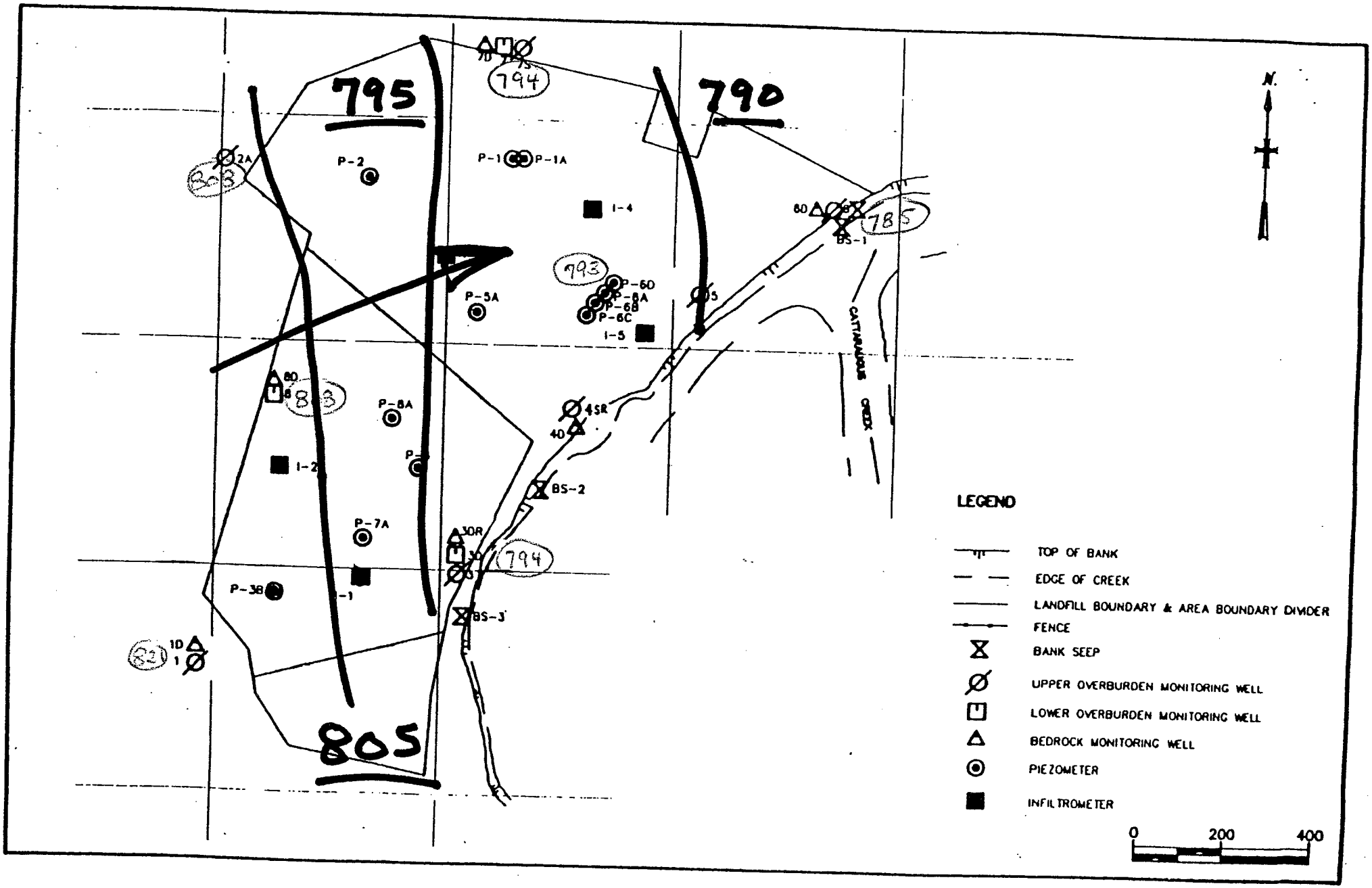
fig.#5



plmrgw3-chrt10

5.0 GROUNDWATER FLOW

A WATER TABLE ISOPOTENTIAL MAP, BEDROCK ISOPOTENTIAL MAP AND A BEDROCK WATER LEVEL HYDROGRAPH HAVE BEEN PREPARED FOR THE PALMER STREET LANDFILL AND ARE PRESENTED IN FIGURES 3,4 AND 5, RESPECTIVELY. GROUNDWATER ELEVATIONS MEASURED THROUGH 2002 WERE USED IN PREPARING THE WATER TABLE AND BEDROCK ISOPOTENTIAL MAP INDICATED THAT THE SHALLOW GROUNDWATER FLOW IS PRIMARILY TO THE EAST TOWARD CATTARAUGUS CREEK. THE BEDROCK ISOPOTENTIAL MAP AND THE BEDROCK WATER LEVEL HYDROGRAPH ILLUSTRATE A "LEVELING OFF" AFTER THREE YEARS ('92-'94) OF RISING LEVELS AT WELLS MW-1D, MW-3DR AND MW-8D. MW-1D AND MW-8D, WHICH WERE FORMERLY DOWNGRADIENT WELLS ARE NOW UPGRADIENT OF THE LANDFILL.



PALMER STREET LANDFILL
WATER TABLE ISOPOTENTIAL MAP
3-25-02 MONITORING EVENT

MOENCH [illegible] COMPANY JULY 1992

FIG. # 8

FIGURE

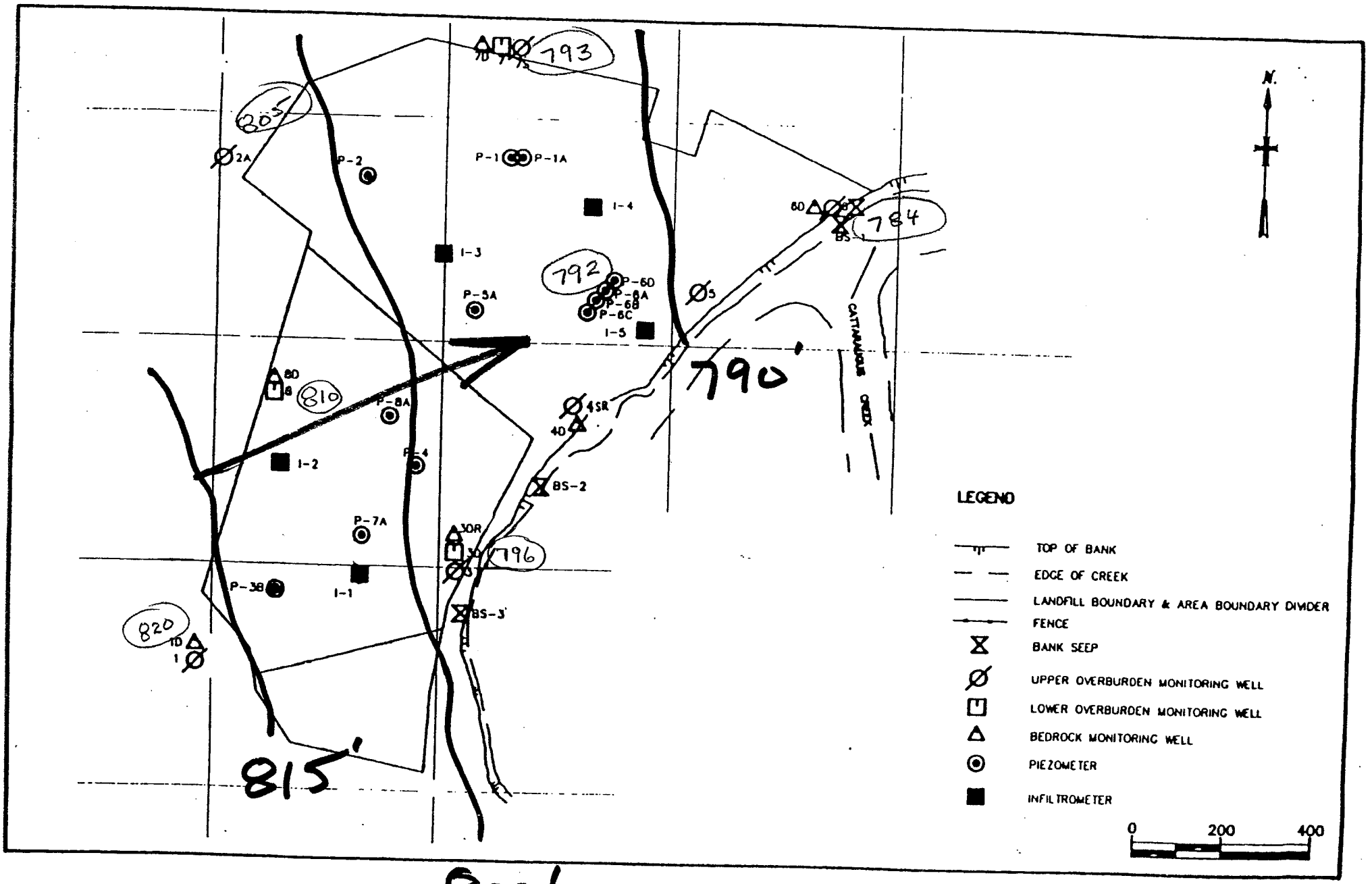
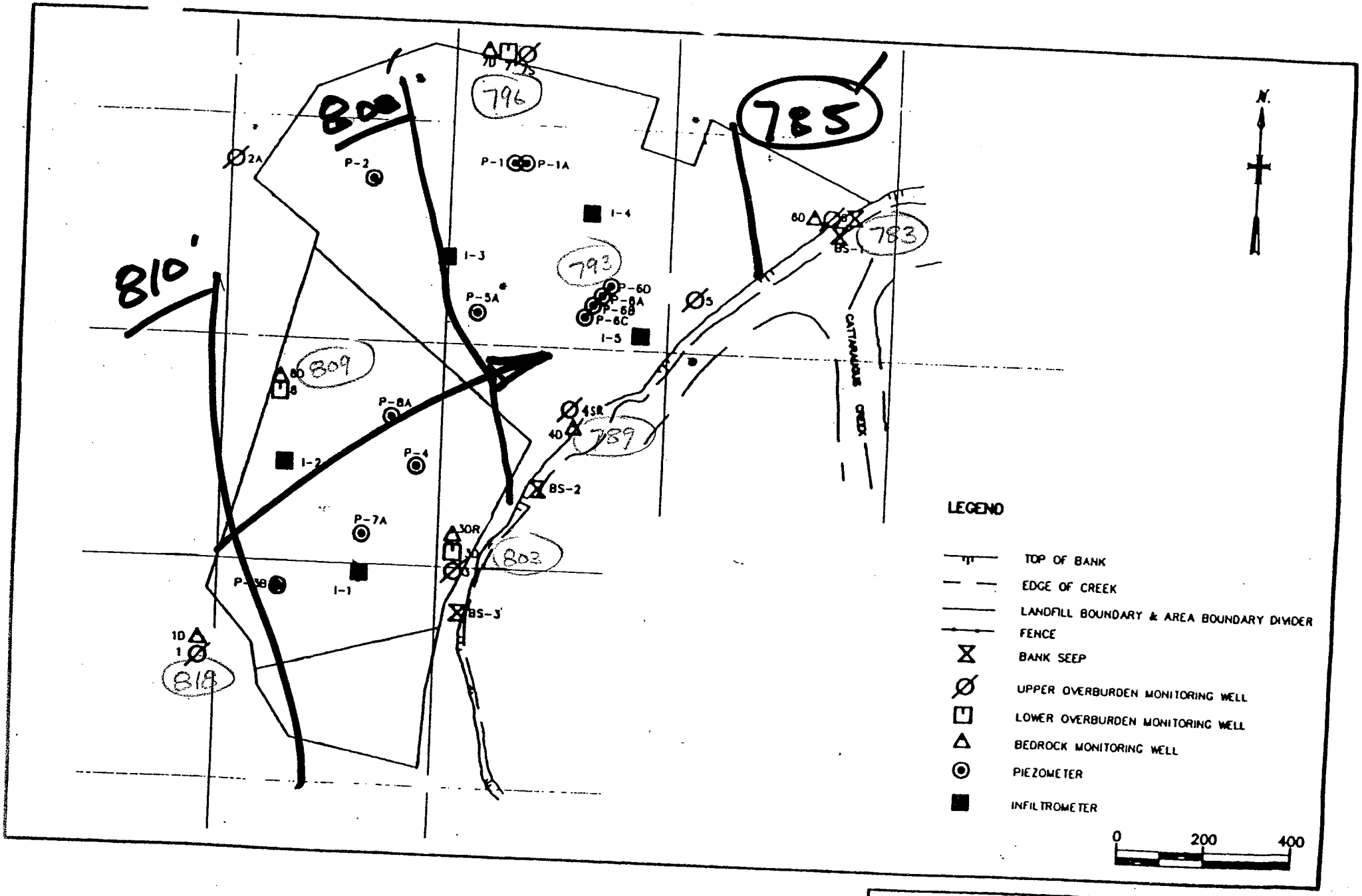


FIG. # 9

PALMER STREET LANDFILL
WATER TABLE ISOPOTENTIAL MAP
8-16-02 MONITORING EVENT

MOENCH [illegible] COMPANY JULY 1992

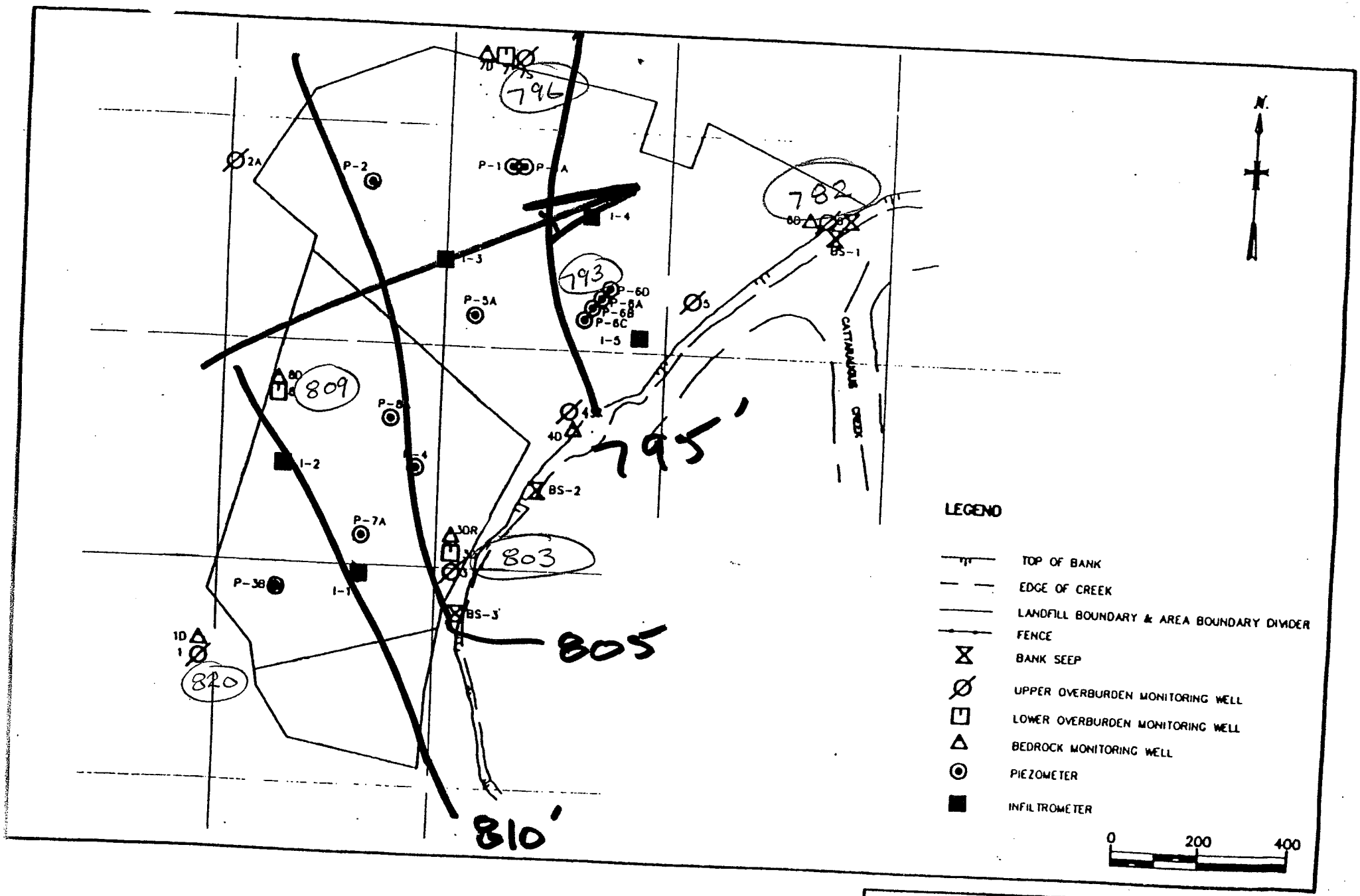
FIGURE



PALMER STREET LANDFILL
BEDROCK ISOPOTENTIAL MAP
3-25-02 MONITORING EVENT
MOENCH TANNING COMPANY JULY 1992

FIGURE

FIG. # 10



PALMER STREET LANDFILL
BEDROCK ISOPOTENTIAL MAP
8-16-02 MONITORING EVENT

MOENCH TANNING COMPANY JULY 1992

FIGURE # 11

fig. #6

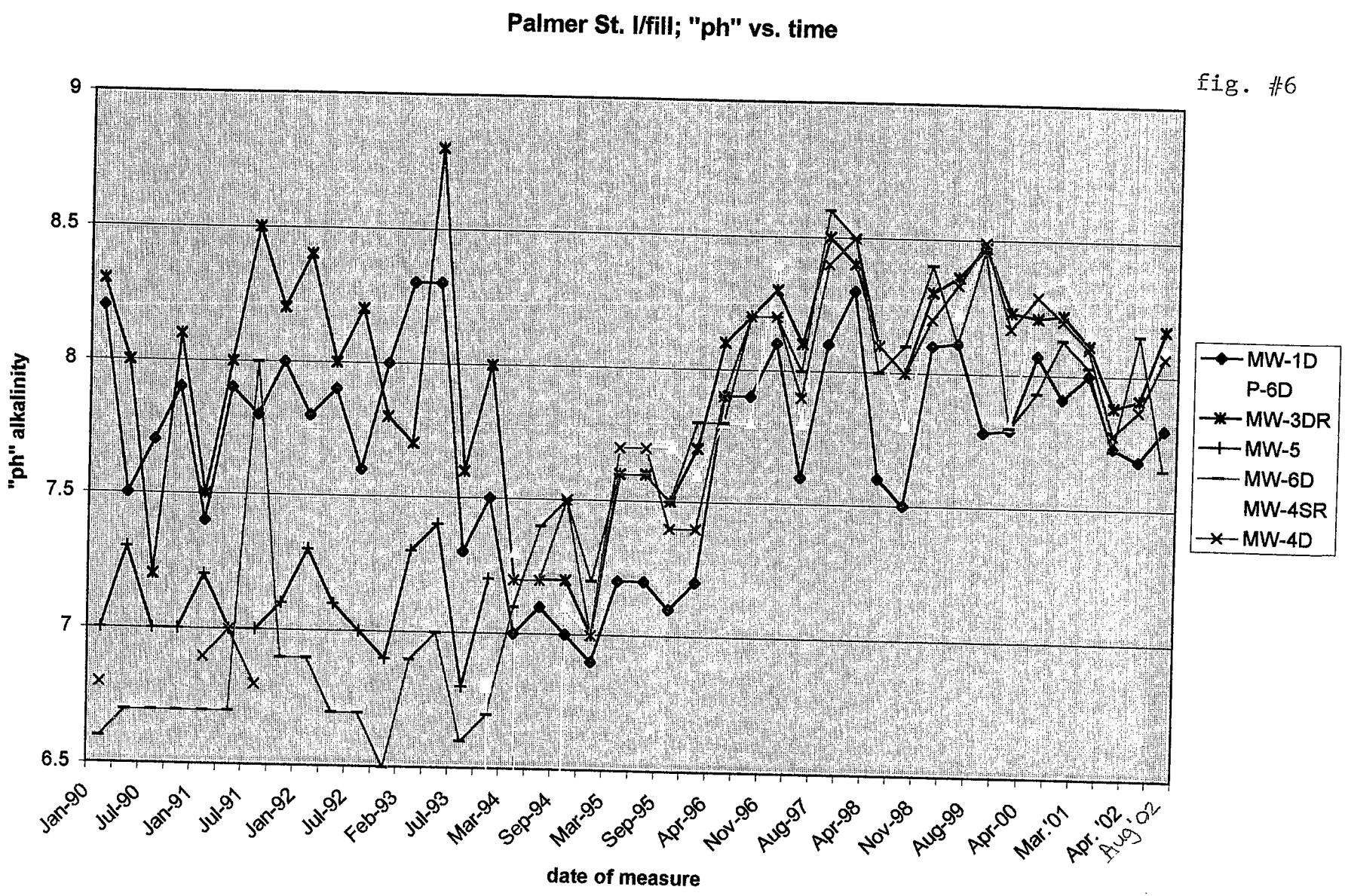
PALMER ST L/F, MOENCH COMPANY
"PH" vs TIME
MONITOR POINTS & BANK SEEP
Fig.#6

	Jan-90	Apr-90	Jul-90	Oct-90	Jan-91	May-91	Jul-91	Oct-91	Jan-92	May-92	Jul-92	Oct-92	Feb-93	May-93	Jul-93	Nov-93	Mar-94	Jun-94	Sep-94	Dec-94	Mar-95	Jun-95
MW-1D	8.2	7.5	7.7	7.9	7.4	7.9	7.8	8	7.8	7.9	7.6	8	8.3	8.3	7.3	7.5	7	7.1	7	6.9	7.2	7.2
P-6D	START 94																7.3		7.1	7	7.7	7.7
MW-3DR	8.3	8	7.2	8.1	7.5	8	8.5	8.2	8.4	8	8.2	7.8	7.7	8.8	7.6	8	7.2	7.2	7.2	7	7.6	7.6
MW-5	7	7.3	7	7	7.2	7	7	7.1	7.3	7.1	7	6.9	7.3	7.4	6.8	7.2						
MW-6D	6.6	6.7	6.7	6.7	6.7	6.7	8	6.9	6.9	6.7	6.7	6.5	6.9	7	6.6	6.7	7.1	7.4	7.5	7.2	7.6	7.6
MW-4SR	START93															6.8						
MW-4D	6.8				6.9	7	6.8										7.2	7.2	7.5	7	7.7	7.7

Plmrgw4

	Sep-95	Dec-95	Apr-96	Aug-96	Nov-96	Apr-97	Aug-97	Nov-97	Apr-98	Aug-98	Nov-98	Apr-99	Aug-99	Nov-99	Apr-00	Sep-00	Mar.'01	Aug.-'01	Apr. '02	Aug. '02
MW-1D	7.1	7.2	7.9	7.9	8.1	7.6	8.1	8.3	7.6	7.5	8.1	8.11	7.78	7.79	8.07	7.91	8	7.73	7.68	7.8
P-6D	7.7	7.6	7.8	7.8	8.4	7.8	8.5	8.4	8.1	7.8	8.3	8.22	8.5	7.81	8.31	8.36	8.15	7.87	7.91	8.1
MW-3DR	7.5	7.7	8.1	8.2	8.3	8.1	8.5	8.4	8.1	8	8.3	8.36	8.47	8.23	8.21	8.22	8.11	7.88	7.91	8.17
MW-5																				
MW-6D	7.5	7.8	7.8	8.2	8.2	8	8.6	8.5	8	8.1	8.4	8.11	8.46	7.8	7.93	8.13	8.03	7.72	8.15	7.65
MW-4SR																				
MW-4D	7.4	7.4	7.9	8.2	8.2	7.9	8.4	8.5	8.1	8	8.2	8.33	8.49	8.17	8.29	8.2	8.1	7.78	7.87	8.07

fig. #6



plmrgw4-chrt4

Palmer St. Landfill
Moench Co.; "ph" vs. time

Plmr5ph

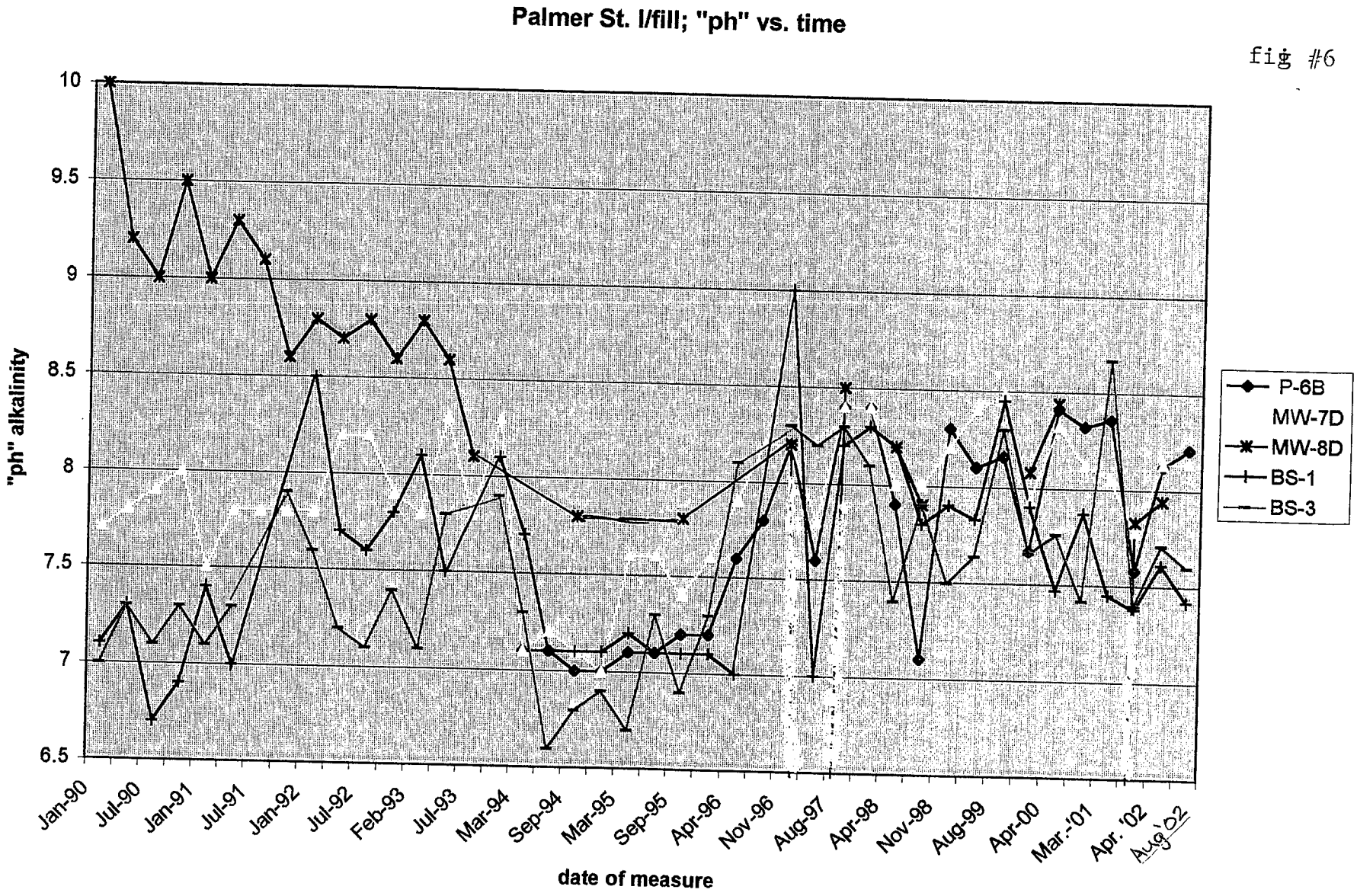
fig. #6

	Jan-90	Apr-90	Jul-90	Oct-90	Jan-91	May-91	Jul-91	Oct-91	Jan-92	May-92	Jul-92	Oct-92	Feb-93	May-93	Jul-93	Nov-93	Mar-94	Jun-94	Sep-94	Dec-94	Mar-95	Jun-95
P-6B																	7.1	7.1	7	7	7.1	7.1
MW-7D	7.7	7.8	7.9	8	7.5	7.8	7.8	7.8	7.8	8.2	8.2	7.9	7.8	8.3	7.8	8.3	7.1	7.2	7.1	7	7.6	7.6
MW-8D	10	9.2	9	9.5	9	9.3	9.1	8.6	8.8	8.7	8.8	8.6	8.8	8.6	8.1				7.8			
BS-1	7.1	7.3	6.7	6.9	7.4	7			8.5	7.7	7.6	7.8	8.1	7.5		8.1	7.7	7.1	7.1	7.1	7.2	7.1
BS-3	7	7.3	7.1	7.3	7.1	7.3		7.9	7.6	7.2	7.1	7.4	7.1	7.8		7.9	7.3	6.6	6.8	6.9	6.7	7.3

Plmr5ph

	Sep-95	Dec-95	Apr-96	Aug-96	Nov-96	Apr-97	Aug-97	Nov-97	Apr-98	Aug-98	Nov-98	Apr-99	Aug-99	Nov-99	Apr-00	Sep-00	Mar.-'01	Aug.-'01	Apr. '02	Aug. ;02
P-6B	7.2	7.2	7.6	7.8	8.2	7.6	8.4	8.4	7.9	7.1	8.3	8.1	8.16	7.67	8.41	8.32	8.36	7.58	8.12	8.21
MW-7D	7.4	7.6	7.9	8.2	8.2	7.8	8.4	8.4	8	8	8.2	8.4	8.48	7.93	8.32	8.12	8.05	7.78	8.13	8.14
MW-8D	7.8				8.2		8.5		8.2	7.9				8.08	8.44			7.83	7.94	
BS-1	7.1	7.1	7		9	7	8.2	8.3	8.2	7.8	7.9	7.83	8.45	7.9	7.47	7.87	7.45	7.38	7.61	7.42
BS-3	6.9	7.3	8.1		8.3	8.2	8.3	8.1	7.4	7.9	7.5	7.64	8.3	7.66	7.76	7.42	8.67	7.4	7.71	7.6

fig #6



plmr5ph-chrt5

fig. #7

PALMER SS ST L/F; M OENCH CO.
SPECIFIC CONDUCTIVITY vs TIME
MONITOR WELLS & BANK SEEPS

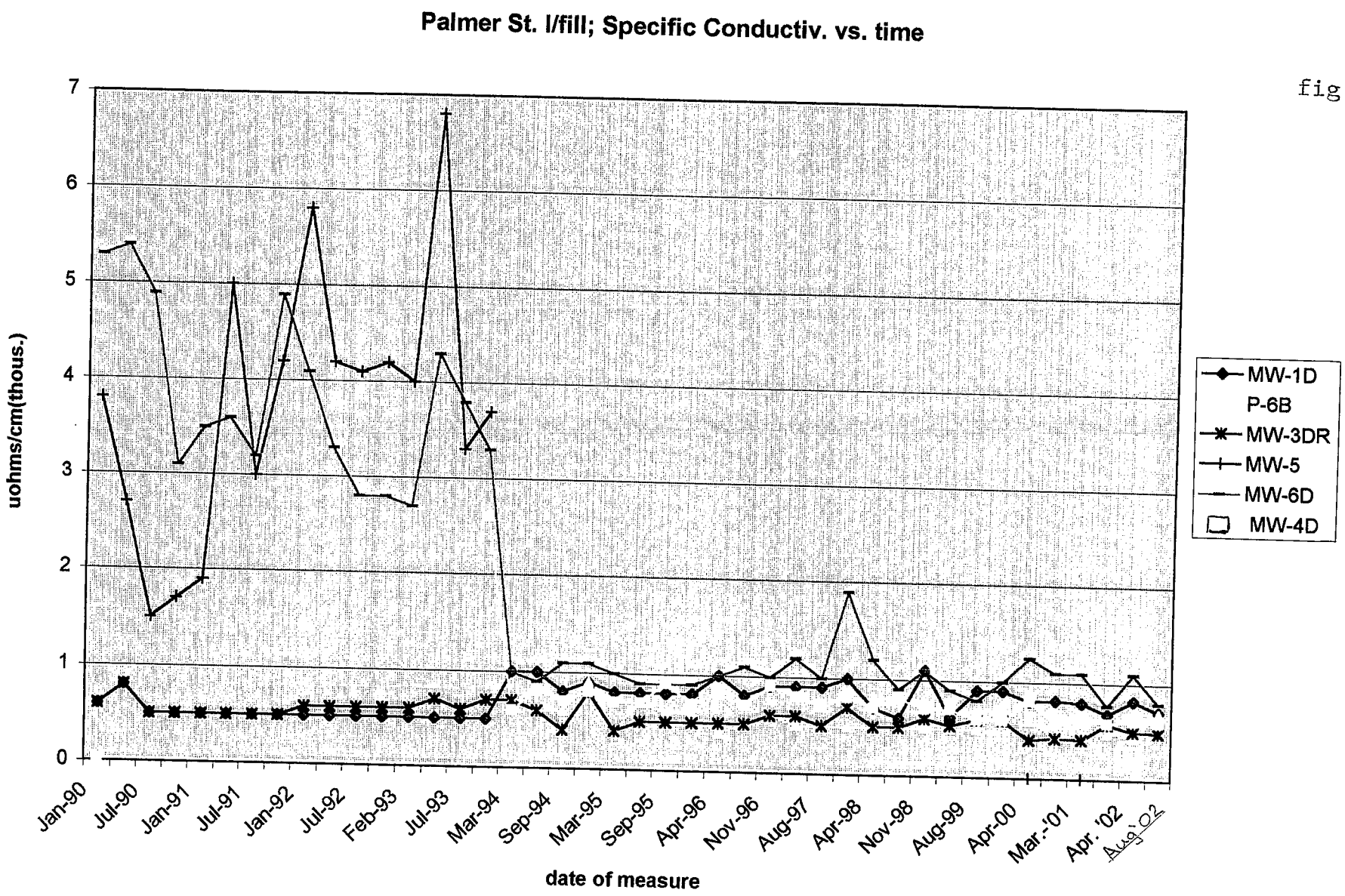
Plmrsc1

	Jan-90	Apr-90	Jul-90	Oct-90	Jan-91	May-91	Jul-91	Oct-91	Jan-92	May-92	Jul-92	Oct-92	Feb-93	May-93	Jul-93
MW-1D	0.6	0.8	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
P-6B	START94														
MW-3DR	0.6	0.8	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.7	0.6
MW-5	3.8	2.7	1.5	1.7	1.9	5	3	4.2	5.8	4.2	4.1	4.2	4	6.8	3.3
MW-6D	5.3	5.4	4.9	3.1	3.5	3.6	3.2	4.9	4.1	3.3	2.8	2.8	2.7	4.3	3.8
MW-4D															

	Nov-93	Mar-94	Jun-94	Sep-94	Dec-94	Mar-95	Jun-95	Sep-95	Dec-95	Apr-96	Aug-96	Nov-96	Apr-97	Aug-97	Nov-97
MW-1D	0.5	1	1	0.8	0.9	0.8	0.8	0.8	0.8	1	0.8	0.9	0.9	0.9	1
P-6B		0.7	0.6	0.6	0.9	0.4	0.7	0.6	0.6	0.4	0.5	0.6	0.5	0.5	0.5
MW-3DR	0.7	0.7	0.6	0.4	0.8	0.4	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.5	0.7
MW-5	3.7														
MW-6D	3.3	1	0.9	1.1	1.1	1	0.9	0.9	0.9	1	1.1	1	1.2	1	1.9
MW-4D	2.6	0.6	0.8	0.7	0.8	0.7	0.7	0.9	0.7	0.8	0.7	0.9	0.8	0.7	0.8

	Apr-98	Aug-98	Nov-98	Apr-99	Aug-99	Nov-99	Apr-00	Sep-00	Mar.-'01	Aug.-'01	Apr. '02	Aug. '02
MW-1D	0.7	0.6	1.1	0.62	0.9	0.9	0.8	0.81	0.79	0.68	0.82	0.71
P-6B	0.5	0.5	0.5	0.5	0.5	0.7	0.6	0.44	0.48	0.48	0.44	0.69
MW-3DR	0.5	0.5	0.6	0.53	0.6	0.6	0.4	0.42	0.41	0.57	0.5	0.49
MW-5												
MW-6D	1.2	0.9	1.1	0.9	0.8	1	1.25	1.1	1.1	0.77	1.1	0.8
MW-4D	0.7	0.8	0.7	0.7	0.6	0.6	0.8	0.57	0.63	0.58	0.61	0.6

fig. #7



plmrscl-chrt4

fig. #7

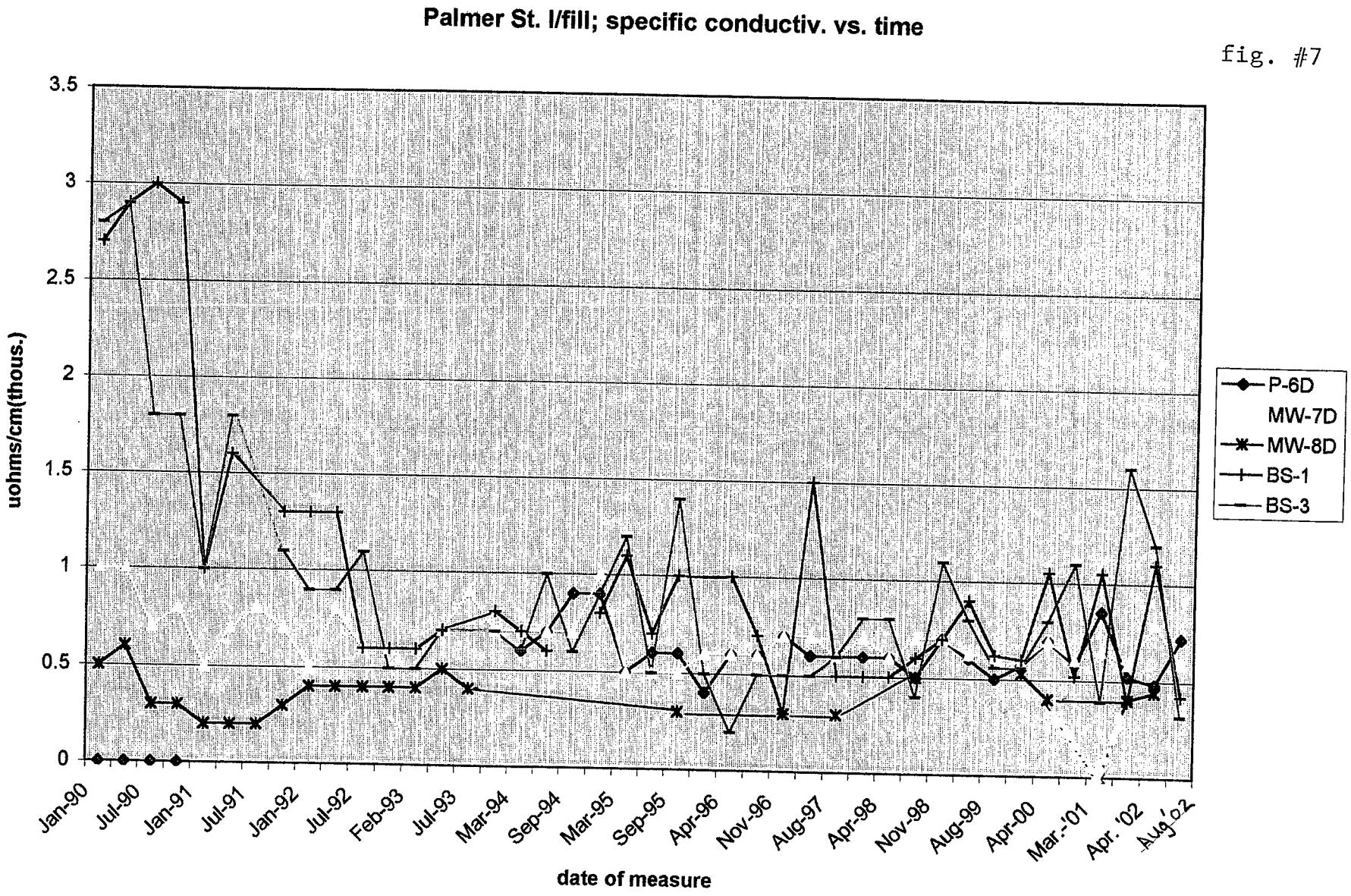
PALMER ST. LANDFILL, MOENCH COMPANY
SPECIFIC CONDUCTIVITY vs TIME (umhos/CM)(THOUSANDS)
MONITOR WELLS & BANK SEEPS

	Jan-90	Apr-90	Jul-90	Oct-90	Jan-91	May-91	Jul-91	Oct-91	Jan-92	May-92	Jul-92	Oct-92	Feb-93	May-93	Jul-93
P-6D	STRT-94														
MW-7D	1	1	0.7	0.8	0.5	0.7	0.8	0.7	0.5	0.8	0.6	0.6	0.6	0.7	0.9
MW-8D	0.5	0.6	0.3	0.3	0.2	0.2	0.2	0.3	0.4	0.4	0.4	0.4	0.4	0.5	0.4
BS-1	2.7	2.9	3	2.9	1	1.6		1.3	1.3	1.3	0.6	0.6	0.6	0.7	
BS-3	2.8	2.9	1.8	1.8	1	1.8		1.1	0.9	0.9	1.1	0.5	0.5	0.7	

	Nov-93	Mar-94	Jun-94	Sep-94	Dec-94	Mar-95	Jun-95	Sep-95	Dec-95	Apr-96	Aug-96	Nov-96	Apr-97	Aug-97	Nov-97
P-6D		0.6	0.7	0.9	0.9	0.5	0.6	0.6	0.4	0.6	0.6	0.7	0.6	0.6	0.6
MW-7D	0.7	0.7	0.7	0.7	1	0.5	0.5	0.5	0.6	0.6	0.6	0.7	0.7	0.6	0.7
MW-8D								0.3				0.3		0.3	
BS-1	0.8	0.7	0.6		0.8	1.1	0.7	1		1	0.7	0.3	1.5	0.5	0.5
BS-3	0.7	0.6	1	0.6	0.9	1.2	0.5	1.4	0.5	0.2	0.5	0.5	0.5	0.6	0.8

	Apr-98	Aug-98	Nov-98	Apr-99	Aug-99	Nov-99	Apr-00	Sep-00	Mar.-'01	Aug.-'01	Apr. '02	Aug. '02
P-6D	0.6	0.5	0.7	0.6	0.5	0.57	0.7	0.58	0.85	0.52	0.48	0.72
MW-7D	0.6	0.7	0.7	0.62	0.61	0.59	0.7	0.6	0.65	0.58	0.79	0.59
MW-8D		0.5				0.53	0.4			0.4	0.44	
BS-1	0.5	0.6	0.7	0.9	0.62	0.6	1.05	0.52	1.05	0.39	1.1	0.42
BS-3	0.8	0.4	1.1	0.8	0.56	0.56	0.8	1.1	0.39	1.6	1.2	0.32

fig. #7



plmr2sc-chrt4

4.3 RATE OF CONTAMINANT MIGRATION

Contaminant migration and potential environmental impacts for the Palmer Street Landfill are discussed in detail in the report entitled "Palmer Street Landfill - Evaluation of Alternative Cover Systems" prepared by Malcolm Pirnie, Inc., January 1989 (Reference 7). As described in the above-mentioned report, groundwater migrates from the landfill through the shallow water-bearing zone along both the eastern and northern boundaries of the waste/fill area. A reasonable assumption in determining the rate of contaminant migration across the site is the rate of contaminant migration is equivalent to the rate at which groundwater leaves the site. This latter calculation can be performed through the application of Darcy's Law which is expressed as:

$$V = \frac{ki}{\theta}$$

where: V = velocity of shallow groundwater flow (feet/day)
k = hydraulic conductivity of the shallow water bearing zone (feet/day)
i = hydraulic gradient (dimensionless)
θ = average porosity of the shallow water bearing zone (dimensionless

Values for k and θ were previously determined (see Reference 2) as 4.1 ft/day and 0.35, respectively. The hydraulic gradient (i) is measured perpendicular to the primary direction of groundwater flow (viz., to the east toward Cattaraugus Creek - see Section 5.0) using average water level elevations as measured in MW-1 and MW-3 and elevation as measured in MW-2A and MW-5 during the 1993 monitoring year. The hydraulic gradient for MW-1 and MW-3 is thus:

$$\frac{\Delta H}{\Delta X} = \frac{26.3}{600} = 0.044$$

where

Δ H = difference in average groundwater elevations between MW-1 and MW-3 (feet)
Δ X = distance between MW-1 and MW-3 (feet)

Upon inserting this value into the Darcy's Law expression for velocity, the following result is obtained:

$$V = \frac{Ki}{\theta} \frac{(4.1)(0.044)}{0.35} = 0.52 \; ft/day$$

Thus, the rate of contaminant migration across the site is approximately 0.52 feet/day between monitoring wells MW-1 and MW-3.

The hydraulic gradient for MW-2A and MW-5 is as follows:

$$\frac{\Delta H}{\Delta X} = \frac{24.5}{1085} = 0.022$$

ΔH = difference in average groundwater elevations between MW-2A and MW-5 (feet)

ΔX = distance between MW-2A and MW-5 (feet)

$$V = \frac{Ki}{\theta} \frac{(4.1)(0.022)}{0.35} = 0.26 \; ft/day$$

The rate of contaminant migration across the site is approximately 0.26 ft/day between monitoring wells MW-2A and MW-5.

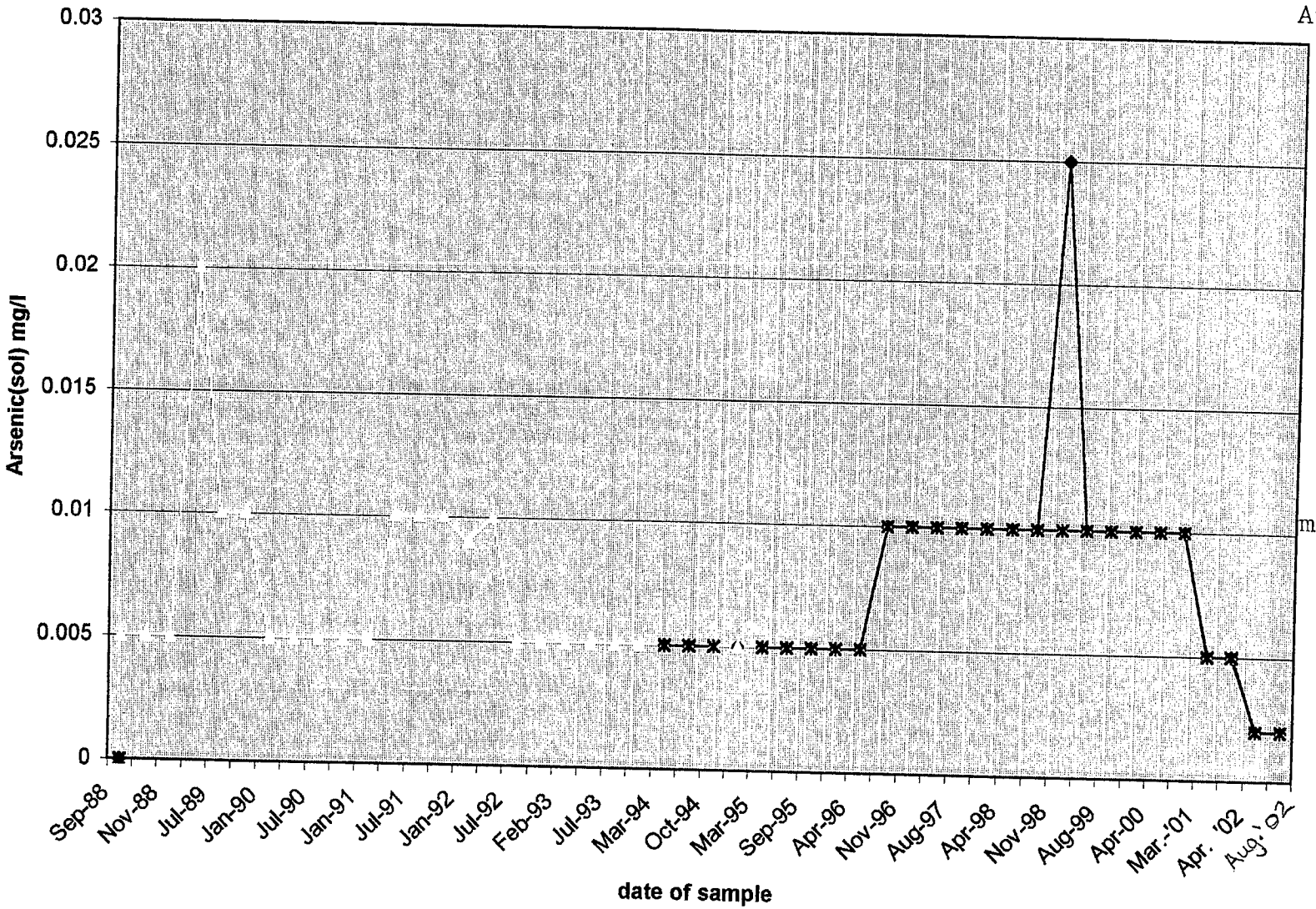
ATTACHMENT C

SOLUBLE METALS CONCENTRATION VS. TIME

MONITORING EVENTS: April 2002

August 2002

Attachment "C"

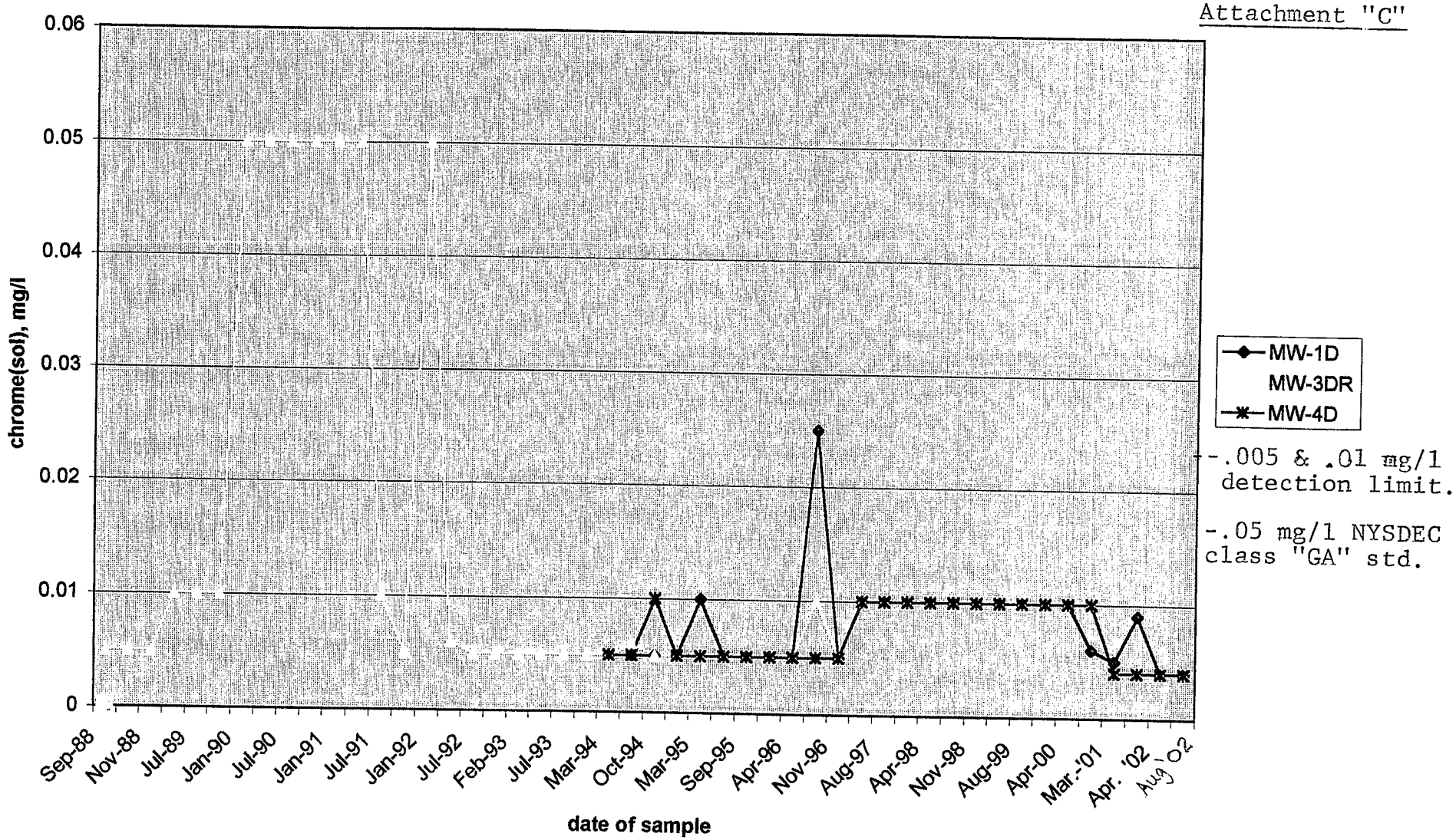


-.002, .005 & .01 mg/ldetection limi

-.025 mg/NYSDEC class GA std.

plmrmtll-chrt5

Attachment "C"

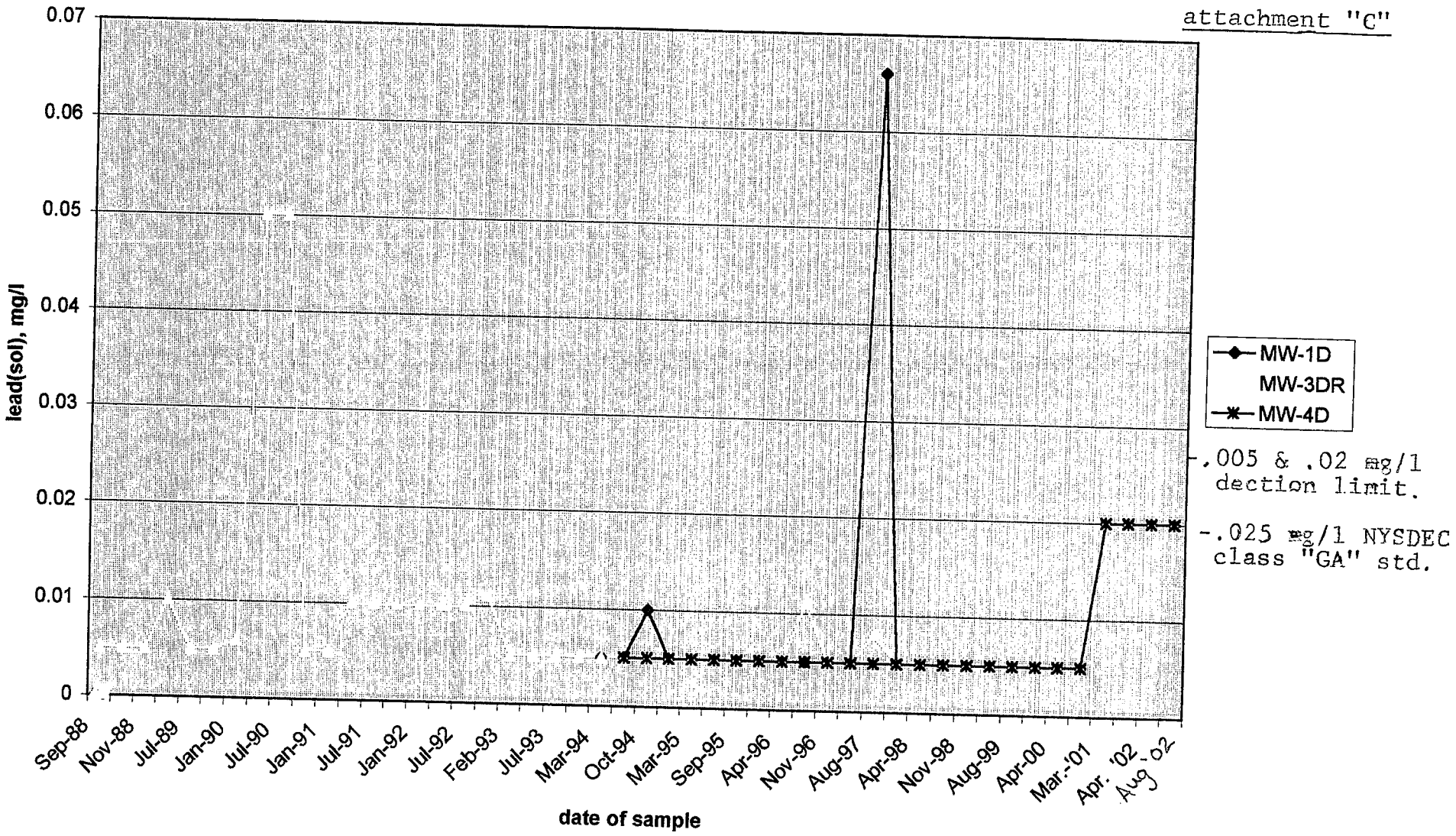


-.005 & .01 mg/l detection limit.

-.05 mg/l NYSDEC class "GA" std.

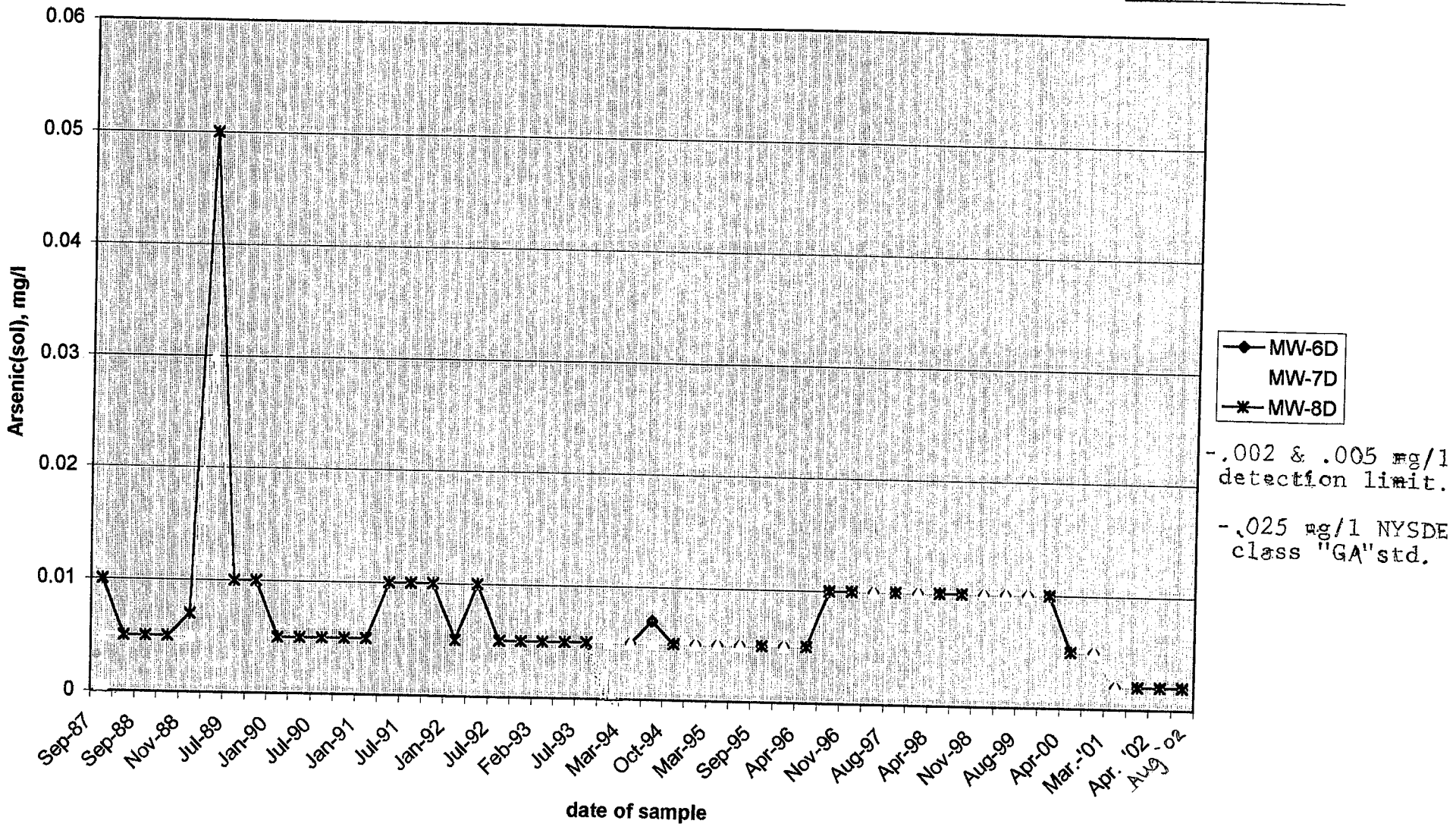
plmrmt12-chrt5

attachment "C"



plmrmt13-chrt5

attachment "C"

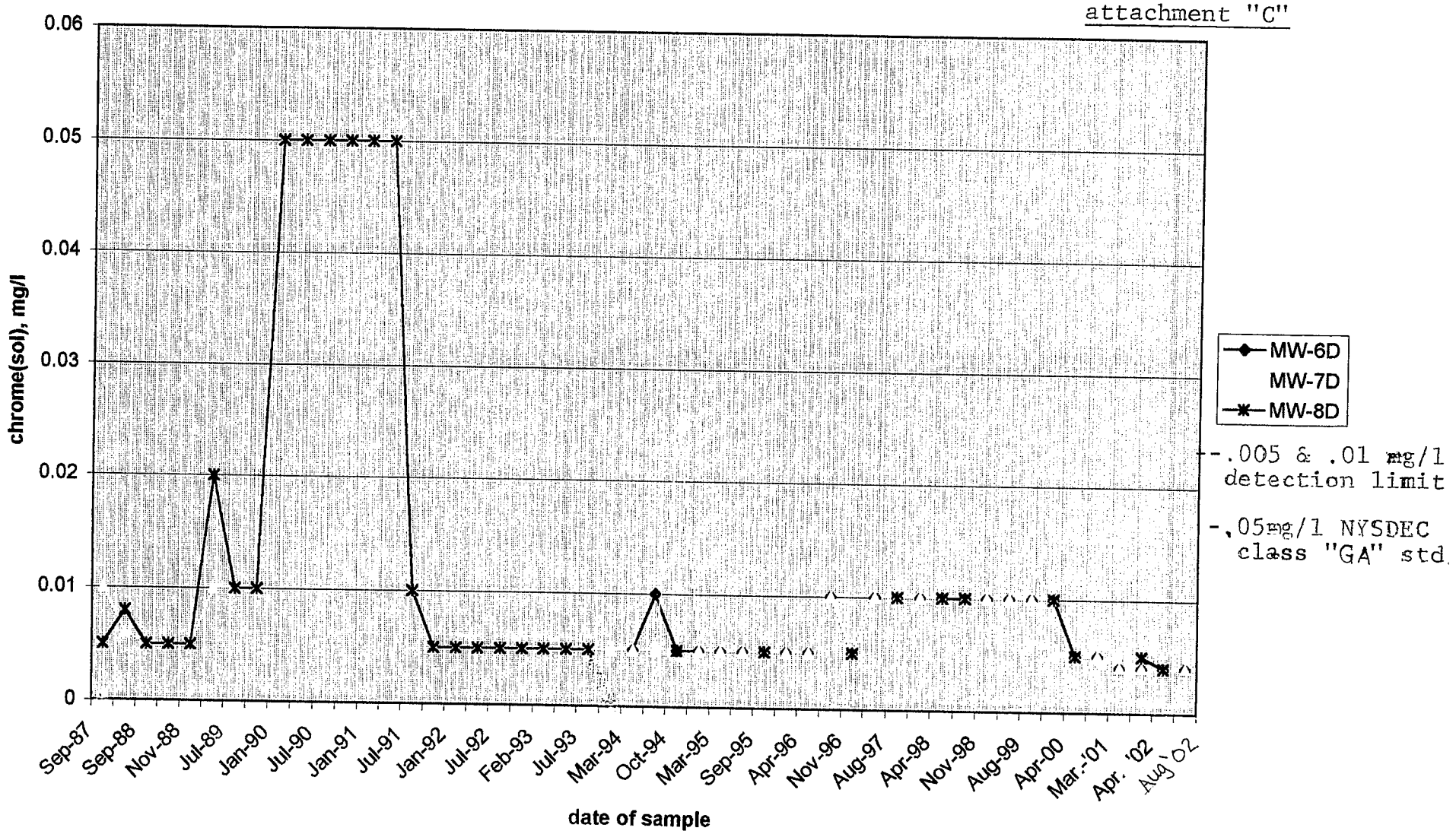


-.002 & .005 mg/l detection limit.

-.025 mg/l NYSDE class "GA"std.

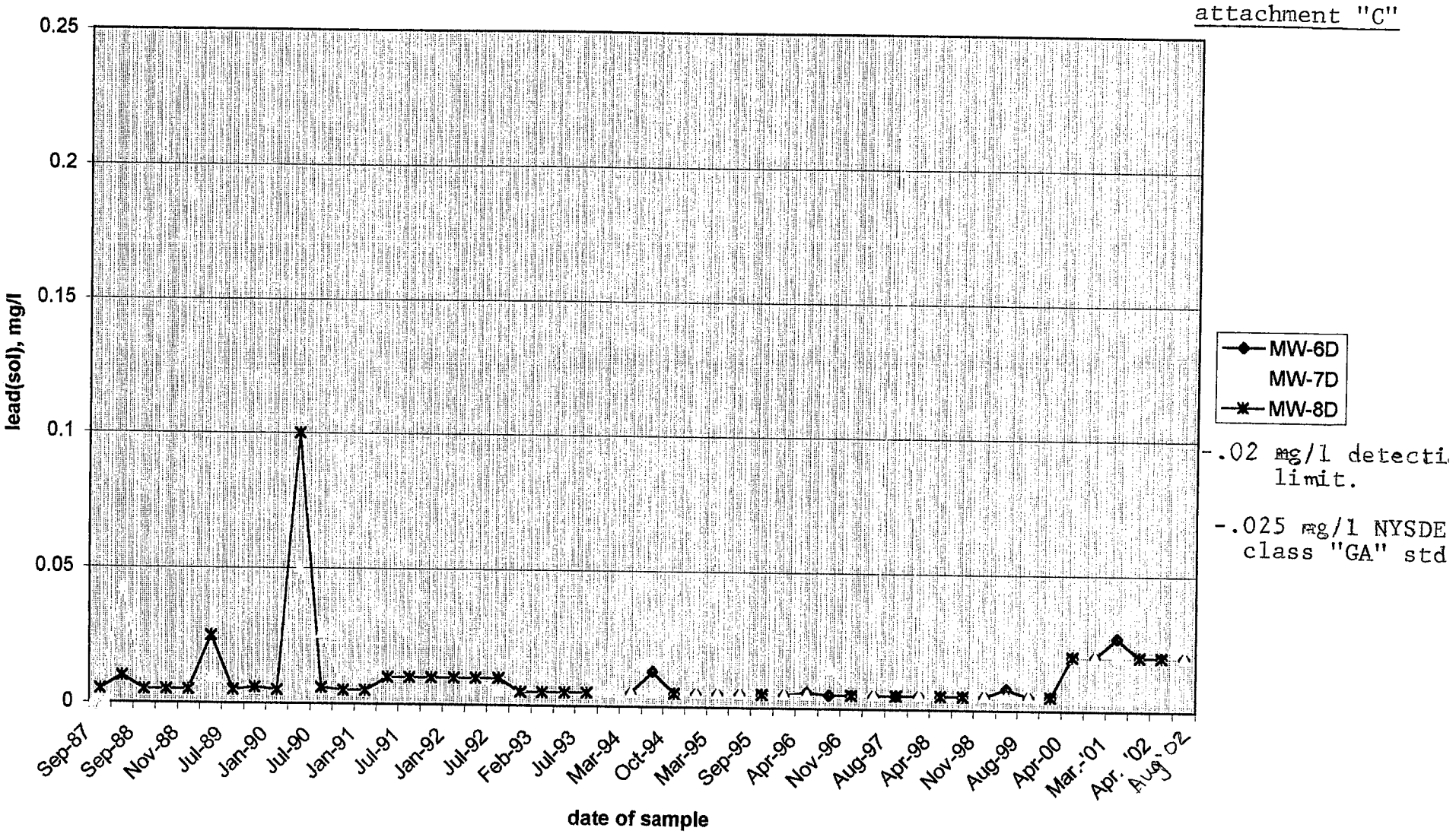
plrmtl5-chrt5

attachment "C"



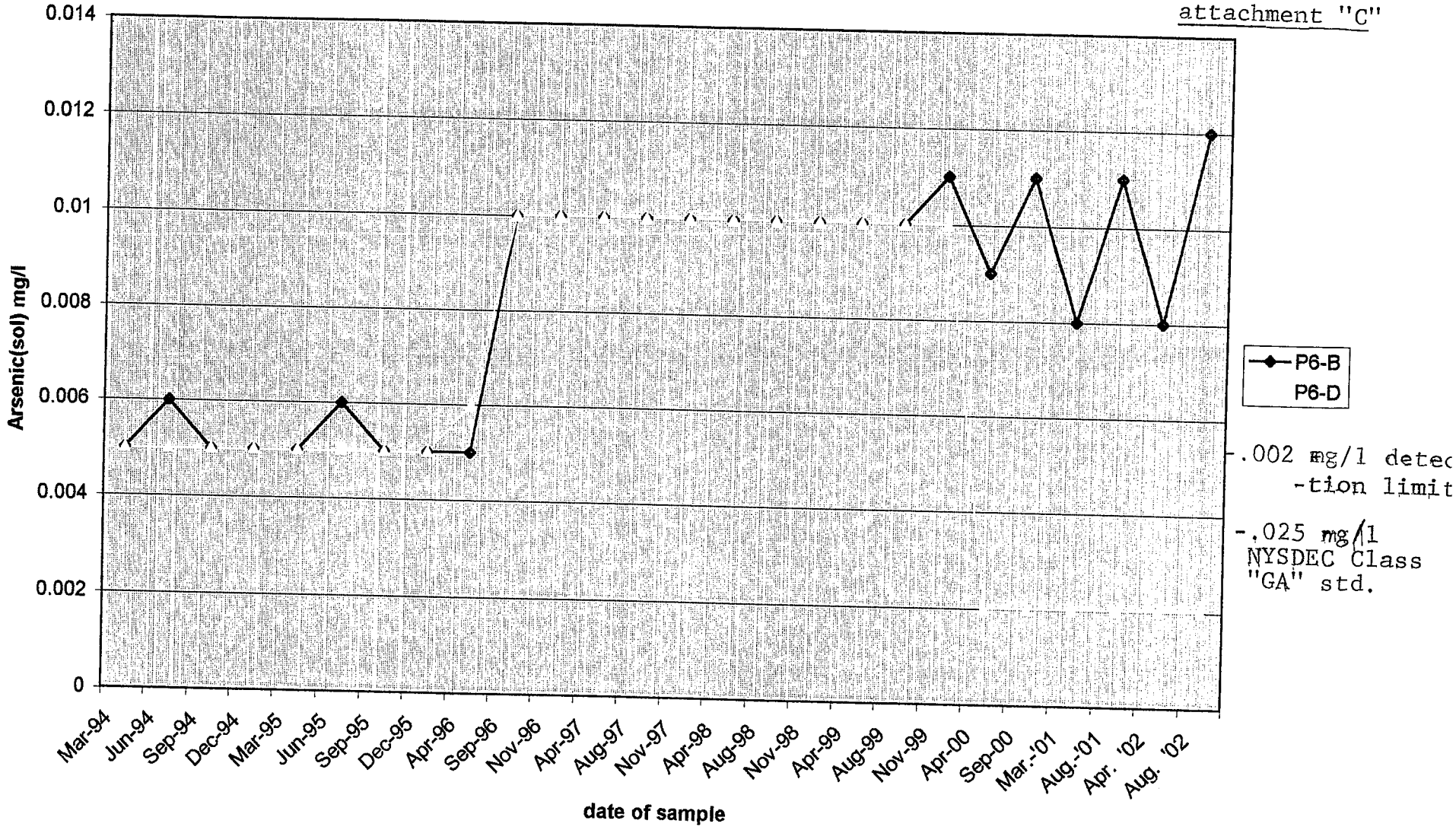
plrmt16-chrt5

attachment "C"



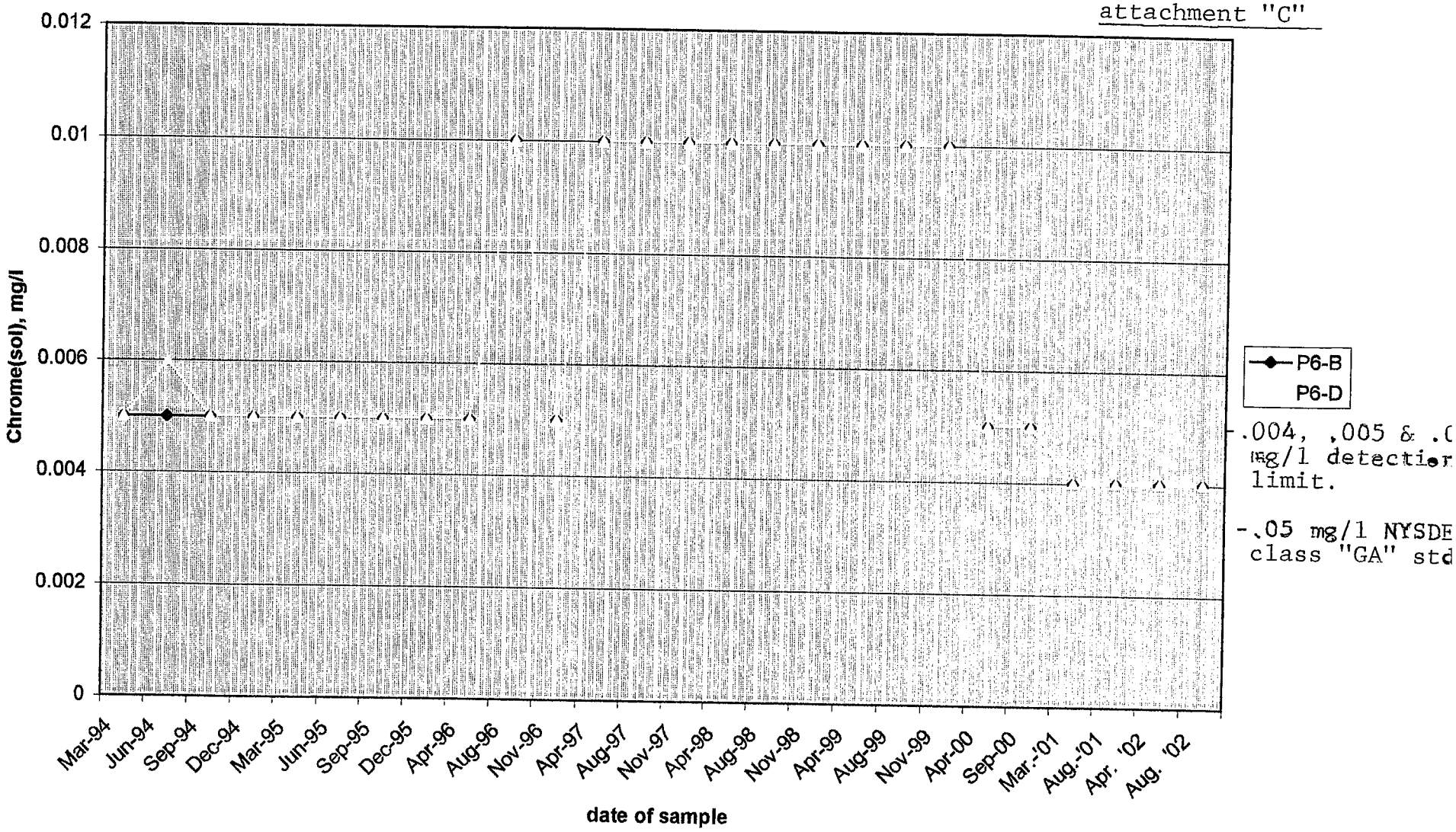
plrmt17-chrt5

attachment "C"

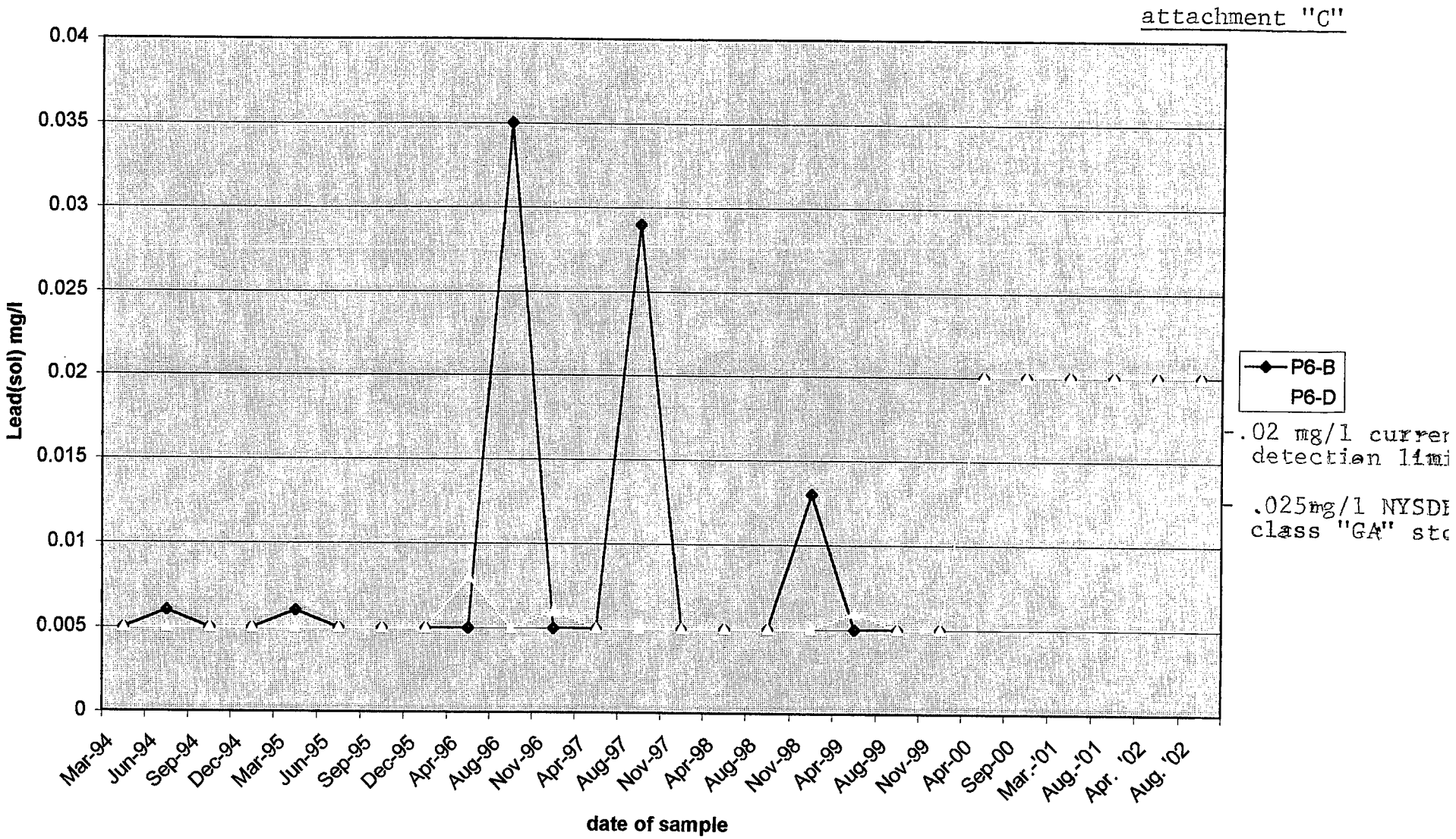


plrmt19-chrt5

attachment "C"



attachment "C"



plrmtlll-chrt5

attachment "C"

PALMER ST L/F, MOENCH COMPANY
ARSENIC(SOL), CHROME(SOL), LEAD(SOL) vs TIME (MG/L)
BANK SEEPS

ARSENIC	Mar-94	Jun-94	Sep-94	Dec-94	Mar-95	Jun-95	Sep-95	Dec-95	Apr-96	Aug-96	Nov-96	Apr-97	Aug-97	Nov-97
BS-1	0.005	0.005		0.005	0.005	0.005	0.005		0.005	LT .01	LT.01	0.01	0.01	0.01
BS-3	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	LT.025	LT.01	0.01	0.012	0.01
CHROME														
BS-1	0.005	0.005		0.005	0.005	0.006	0.005		0.005	LT.025	0.005	0.01	0.01	0.01
BS-3	0.005	0.008	0.005	0.005	0.005	0.005	0.005	0.005	0.005	LT.025	0.005	0.01	0.01	0.01
LEAD														
.BS-1	0.005	0.005		0.005	0.005	0.005	0.005		0.005	0.005	0.005	0.005	0.005	0.005
BS-3	0.005	0.005	0.007	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.2	0.005

(NO GRAPHS GENERATED DUE TO NO OR MINIMAL DETECTION)

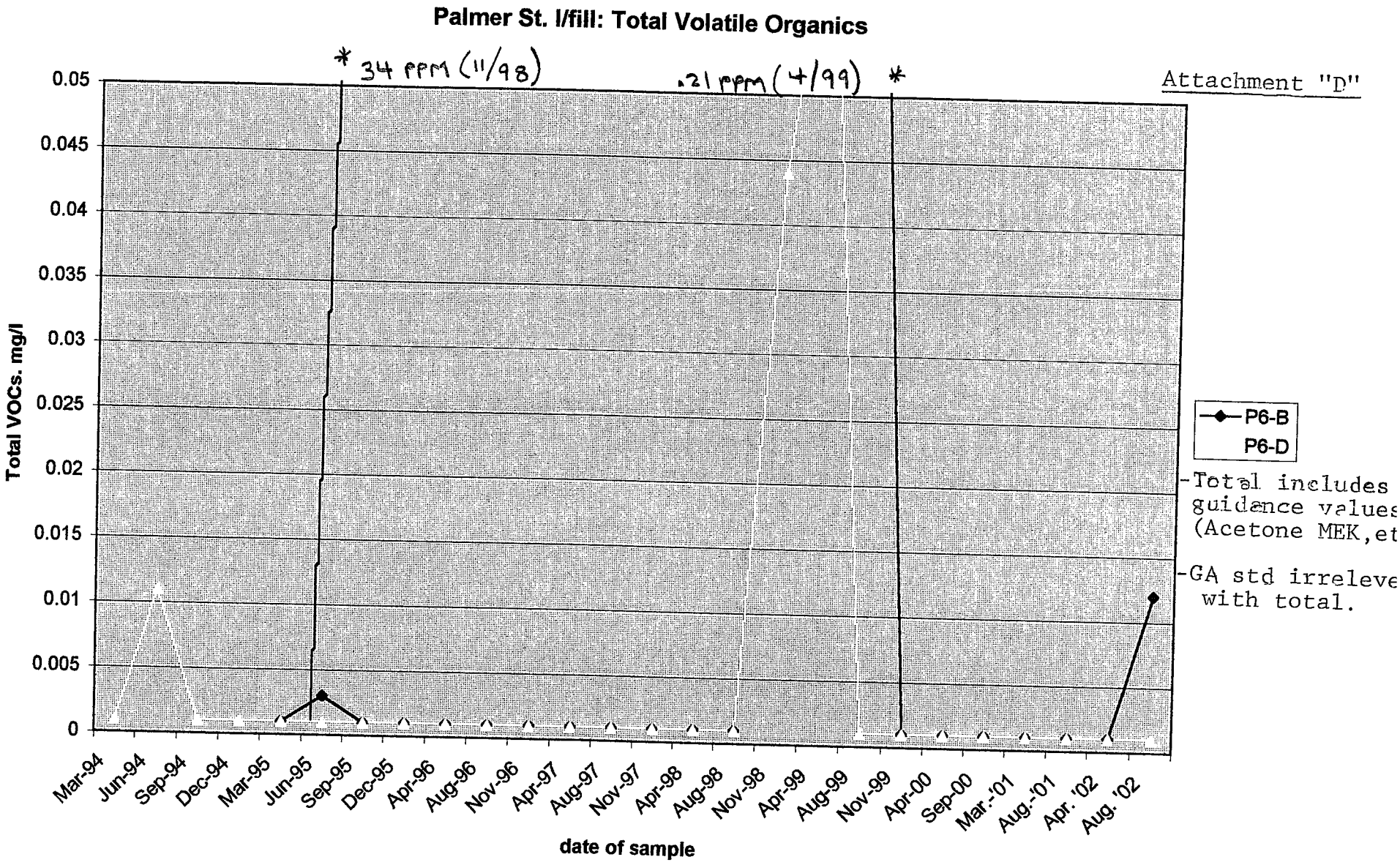
ARSENIC	Apr-98	Aug-98	Nov-98	arsenic	Apr-99	Aug-99	Nov-99	Apr-00	Sep-00	Mar.-'01	Aug.-'01	Apr. '02	Aug. '02
BS-1	0.01	0.011	0.01	BS-1	0.01	0.01	0.01	0.005	0.005	0.004	0.002	0.002	0.002
												l.t.	l.t.
BS-3	0.012	0.01	0.027	BS-3	0.01	0.01	0.01	0.005	0.005	0.002	0.002	0.002	0.002
												l.t.	l.t.
CHROME				Chrome									
BS-1	0.01	0.01	0.01	BS-1	0.01	0.01	0.01	0.006	0.005	0.01	0.004	0.005	0.004
													l.t.
BS-3	0.01	0.01	0.01	Bs-3	0.01	0.01	0.01	0.004	0.009	0.005	0.012	0.006	0.005
LEAD				Lead									
.BS-1	0.005	0.005	0.005	BS-1	0.008	0.005	0.005	0.02	0.02	0.02	0.02	0.02	0.02
												l.t.	l.t.
BS-3	0.005	0.005	0.005	BS-3	0.006	0.005	0.005	0.02	0.02	0.02	0.02	0.02	0.02
												l.t.	l.t.

ATTACHMENT "D"

TOTAL VOLATILES vs TIME
(grouped by monitoring point)

MONITORING EVENTS: April 2002
August 2002

Attachment "D"

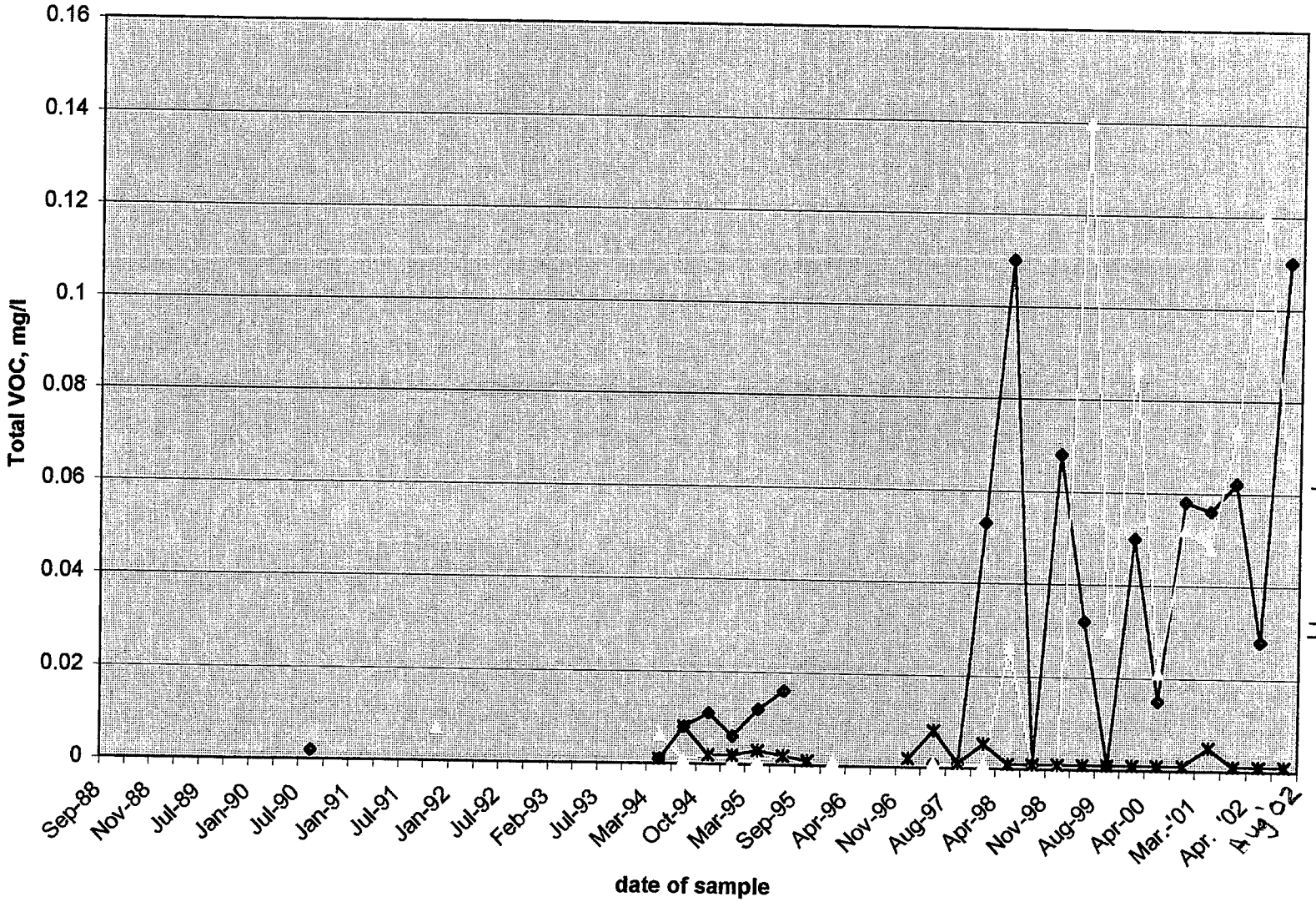


-Total includes guidance values (Acetone MEK, et

-GA std irreleve with total.

plrvoc12-chrt5

Attachment "D"



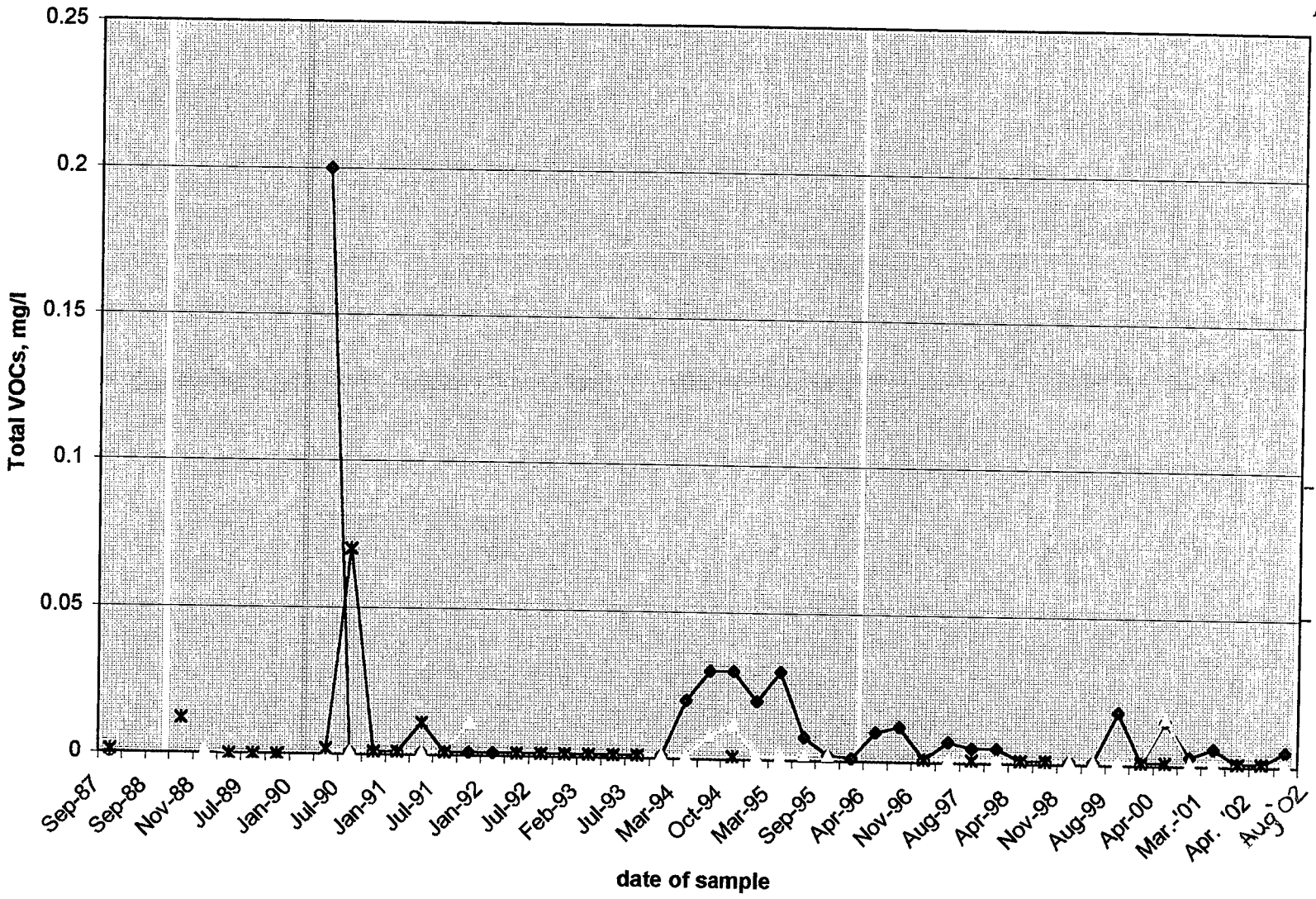
"-guidance values" included since '9 in total. (acetone MEK, etc.)

-GA standard not relevant as this is a combined value.

plrvocll-chrt5

Attachment "D"

Palmer St. l/fill: Total Volatile Organics



-Total includes "guidance values VOCs. (acetone, MEK, etc.)

--not relevent to GA std, as is t -al value.

plrvoc8-chart5

PALMER ST. L/F, MOENCH COMPANY
TOTAL VOLATILE ORGANICS vs TIME (MG/L)
MONITOR WELLS & BANK SEEPS

	Mar-94	Jun-94	Sep-94	Dec-94	Mar-95	Jun-95	Sep-95	Dec-95	Apr-96	Aug-96	Nov-96	Apr-97
P6-B					0.001	0.003	0.001	0.001	0.001	0.001	0.001	0.001
P6-D	0.001	0.011	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001

Aug-97	Nov-97	Apr-98	Aug-98	Nov-98	Apr-99	Aug-99	Nov-99	Apr-00	Sep-00	Mar.-'01	Aug.-'01	Apr. '02	Aug. '02
0.001	0.001	0.001	0.001	34.1	0.21	0.084	0.001	0.001	0.001	0.001	0.001	0.001	0.012
0.001	0.001	0.001	0.001	0.044	0.066	0.001	0.001	0.001	0.001	0.001	0.001	l.t. 0.001	0.001

PALMER ST. L/F, MOENCH COMPANY
TOTAL VOLATILE ORGANICS vs TIME (MG/L)
BANK SEEPS

	Mar-94	Jun-94	Sep-94	Dec-94	Mar-95	Jun-95	Sep-95	Dec-95
BS-1	0.13			0.009	0.01	0.01		
BS-3						0.001		

	Apr-96	Aug-96	Nov-96	Apr-97	Aug-97	Nov-97	Apr-98	Aug-98	Nov-98
BS-1	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
BS-3	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001

	Apr-99	Aug-99	Nov-99	Apr-00	Sep-00	Mar.-'01	Aug.-'01	Apr. '02	Aug. '02
BS-1	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
BS-3	0.001	0.001	0.001	0.001	0.001	0.001	l.t. 0.001 l.t.	l.t. 0.001 l.t.	l.t. 0.001 l.t.

NO GRAPH GENERATED: NO DETECTION OF VOCs IN 8 YEARS.

ATTACHMENT "E"

* FIELD MEASUREMENT DATA SHEETS;

SAMPLE EVENTS: April & August 2002

*Individual "field data sheets" were submitted with prior actual sample event reports. Contact Moench if you require them.

ATTACHMENT "F"

ANALYTICAL DATA; EVENTS: April & August 2002

*Analytical data from Phillips Analytical Services, of Hamilton, Ontario, was submitted in the prior individual semiannual reports. Please contact Moench if you require them.

6.0 REFERENCES

1. PALMER STREET LANDFILL CLOSURE/POST CLOSURE PLAN (EPA ID. NYDOO2126910), PREPARED BY MALCOLM PIRNIE, INC. REVISED FEBRUARY 1989.
2. PALMER STREET LANDFILL, SUPPLEMENTAL HYDROGEOLOGIC INVESTIGATION, PREPARED BY MALCOLM PIRNIE, INC. JANUARY 1989.
3. SAMPLING PLAN/QUALITY ASSURANCE PLAN FOR GROUNDWATER MONITORING - PALMER STREET LANDFILL. PREPARED BY MALCOLM PIRNIE, INC., AUGUST 1989. REVISED-7/93, 8/94.
4. TEST METHODS FOR EVALUATING SOLID WASTE, PHYSICAL/ CHEMICAL METHODS, THIRD EDITION, USEPA OFFICE OF SOLID WASTE AND EMERGENCY RESPONSE, NOVEMBER 1986.
5. PALMER STREET LANDFILL, EVALUATION OF ALTERNATIVE COVER SYSTEMS, PREPARED BY MALCOLM PIRNIE, INC., JANUARY 1989.
6. COVER SYSTEM PERFORMANCE EVALUATION, PALMER STREET LANDFILL; PREPARED BY MALCOLM PIRNIE, INC. OCTOBER 1995 & FEBRUARY 1999.
7. FORMER TANNERY PLANT SITE, WELL INSTALLATION REPORT; PREPARED BY BENCHMARK ENVIRONMENTAL ENGINEERING SCIENCE CO., AUGUST 2000.