RCRA Part B Post-Closure Permit Application

Book 2 of 3

Submitted to:

U.S. Environmental Protection Agency Region I
and
Connecticut Department of Environmental Protection

Submitted by:

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Section E
Groundwater Monitoring

Table of Contents

Table of Contents, continued

List of Tables

List of Figures

List of Appendices

Section E
Groundwater Monitoring [40 CFR 264 Subpart F]

Section E describes the following efforts taken by Textron Lycoming to comply with the applicable groundwater monitoring requirements for the waste management area:

- installation of a groundwater detection monitoring system, and monitoring of that system from November 1981 to August 1985, in accordance with 40 CFR 265.92
- installation of a groundwater assessment monitoring system, and monitoring of that system from 1985 until the present, in accordance with 40 CFR 265.93
- establishment of background groundwater quality data in accordance with 40 CFR 264.97(g)
- description of the post-closure monitoring activities proposed in accordance with 40 CFR 264.118(b)(1) and 40 CFR 270.14(c)

This section documents the compliance of the facility's detection, assessment, and post-closure groundwater monitoring programs with 40 CFR 264 and 265 Subpart F regulations and applicable EPA RCRA groundwater monitoring guidance established in the "RCRA Groundwater Monitoring Technical Enforcement Guidance Document — September, 1986" (TEGD).

E-1 Interim Status Groundwater Detection Monitoring [270.14(c)(1)]

In accordance with 40 CFR 270.14(c)(1), information is presented in this section describing the groundwater detection monitoring program conducted for the former surface impoundments from November 1981 to August 1985 during the RCRA interim status period. AVCO Lycoming conducted groundwater detection monitoring for the surface impoundments during the RCRA interim status period in accordance with 40 CFR 265.92, as required by 40 CFR 265.90. The locations of the interim status detection monitoring wells along with the locations of all other monitoring wells installed to date at the facility are presented in Figure E-1. Construction details for all monitoring wells installed to date are presented in Table E-1. Geologic logs and well completion data documenting the installation of each monitoring well are included in Appendix E-1.

The area of the facility comprising the four surface impoundments has been designated as the waste management area for the application of 40 CFR 264 Subpart F requirements, as provided by 40 CFR 264.95(b). The approximate limits of this waste management area are delineated in Figure E-1. As defined in 40 CFR 264.95(a), the compliance point is comprised of the vertical surface along the downgradient limit of the waste management area. As described below, the compliance point is principally along the eastern and southern limit of the waste management area, given the predominant groundwater flow patterns in the area.

Major aspects of the facility's interim status detection monitoring program are summarized below in Sections E-1a through E-1c. A summary of data regarding the site's geology,

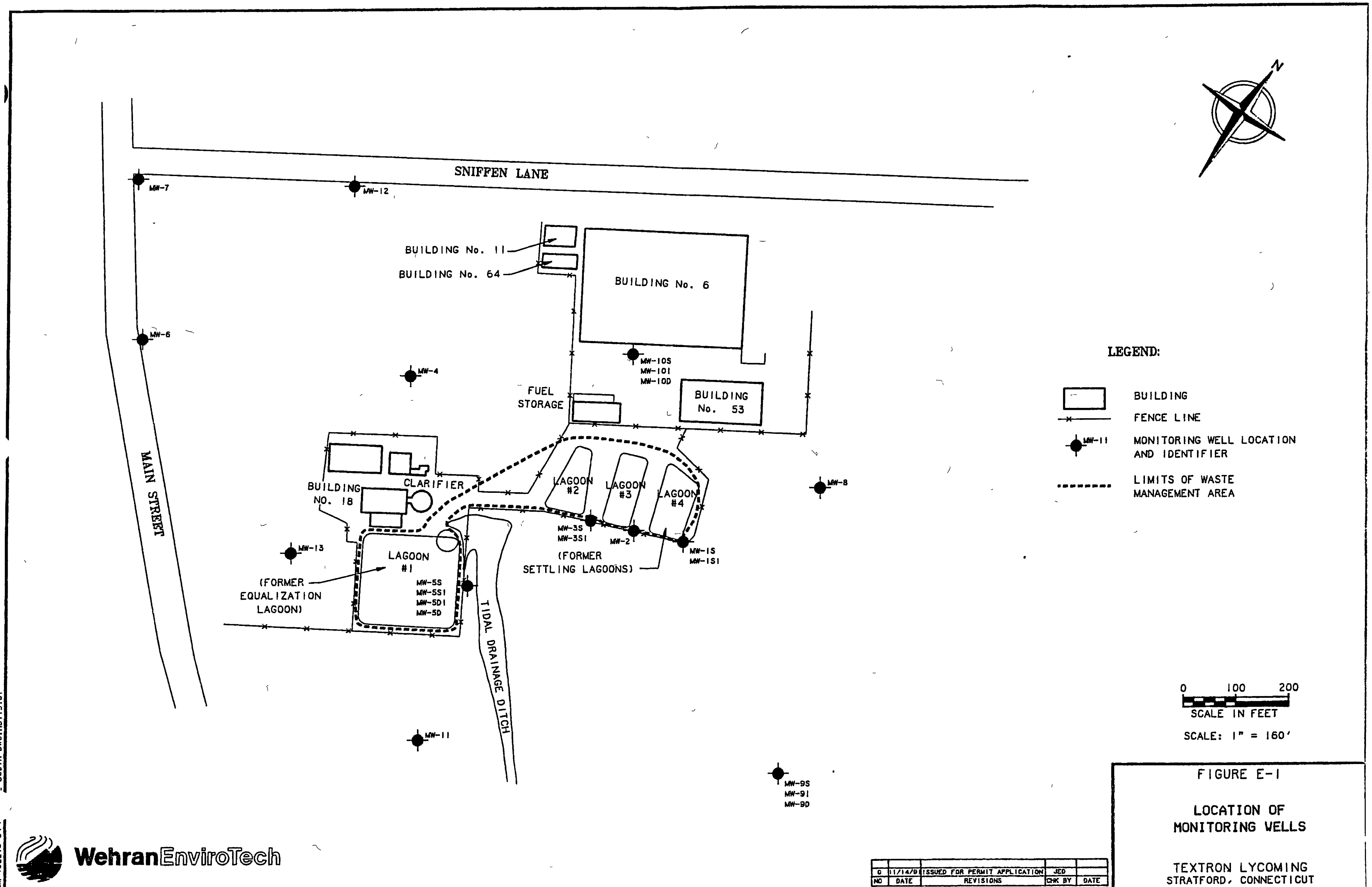

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FIGURE E-1

LOCATION OF MONITORING WELLS

TEXTRON LYCOMING
STRATFORD, CONNECTICUT

4CM-102215 04.1 E SOUTH DWG:HS119101

Table E-1

Monitoring Well Construction Details[1]
Textron Lycoming, Stratford, Connecticut

Well #[2]	Top of Outer Casing Elevation above MSL[3] (ft)	Top of Inner Casing Elevation above MSL (ft)	Ground Surface Elevation above MSL (ft)	Screened Interval Elevation (ft)	Typical Groundwater Elevation[4] (ft)
MW-01S	11.41	11.02	9.63	10 - -0	5.07
MW-01SI	10.98	10.87	9.18	3 - -7	5.03
MW-02	10.43	10.25	8.58	3 - -7	5.05
MW-03S	10.75	10.59	8.15	9 - -1	6.96
MW-03SI	10.28	9.81	8.23	0 - -10	6.82
MW-04	12.48	12.25	9.71	-15 - -25	5.36
MW-05S	10.07	9.86	7.79	9 - -1	5.52
MW-05SI	9.91	9.83	7.54	-10 - -20	5.12
MW-05DI	10.19	10.06	8.43	-30 - -40	5.26
MW-05D	10.72	10.61	8.26	-82 - -102	4.61
MW-06	12.25	11.91	9.54	-6 - -16	5.47
MW-07	12.42	12.29	9.94	-10 - -20	5.44
MW-08	12.24	12.03	9.98	11 - 1	4.96
MW-09S	13.20	13.05	11.20	9 - -1	5.03
MW-09I	13.23	13.04	11.08	-27 - -37	4.87
MW-09D	14.14	13.86	11.36	-69 - -89	4.58
MW-10S	12.33	12.03	10.08	6 - -4	6.49
MW-10I	12.39	12.21	10.07	-28 - -38	4.99
MW-10D	12.63	12.51	10.06	-60 - -76	4.63

1 All elevations relative to Mean Sea Level (MSL).

2 Monitoring wells MW-01D, MW-03D, MW-05D, MW-09 and MW-10 have been renamed MW-01SI, MW-03SI, MW-05SI, MW-09S and MW-10S, respectively.

3 MSL = mean sea level.

4 March 1991 groundwater elevation data.

Table E-1, Continued

Monitoring Well Construction Details
Textron Lycoming, Stratford, Connecticut

Well #	Top of Outer Casing Elevation above MSL (ft)	Top of Inner Casing Elevation above MSL (ft)	Ground Surface Elevation above MSL (ft)	Screened Interval Elevation (ft)	Typical Groundwater Elevation (ft)
MW-11	11.08	10.86	9.87	8 - -2	5.14
MW-12	12.02	11.55	10.65	8 - -2	5.36
MW-13	11.69	10.25[1]	9.68	6 - -4	5.31

1 Top of outer casing used as reference point for groundwater surface measurements.

hydrology, and groundwater quality based on work completed during both the detection, and later assessment monitoring program, is presented in Section E-2.

E-1a Interim Status Groundwater Detection Monitoring System [40 CFR 265.91]

The original interim status groundwater detection monitoring system consisted of the five (5) monitoring wells numbered MW-01 through MW-05. Monitoring wells MW-01, MW-02, MW-03, and MW-05 were installed in November 1981 as compliance point detection monitoring wells for monitoring groundwater quality in the uppermost aquifer immediately downgradient of the four surface impoundments. Monitoring well MW-04 was installed approximately 300 feet north of the equalization lagoon (and approximately 350 feet northwest of the settling lagoons) as an upgradient well for monitoring background groundwater quality, based on an assumed southeasterly groundwater flow direction toward the Housatonic River and Long Island Sound.

However, initial groundwater elevations measured in these five monitoring wells indicated that the localized groundwater flow direction in the immediate vicinity of the waste management area may be radially outward from the impoundments to the east, south, and west. Therefore, monitoring well MW-04 was not clearly upgradient of the four impoundments. As described below, later groundwater level data and the future installation of additional monitoring wells during the detection and assessment monitoring programs generally confirmed these preliminary conclusions on groundwater flow direction.

In 1983, monitoring wells MW-06 and MW-07 were installed approximately 500 - 650 feet (respectively) north and west of MW-04 to better establish upgradient groundwater quality as required by 40 CFR 265.91(a)(2). MW-06 and MW-07 were added to the RCRA quarterly monitoring program at that time as background monitoring wells. Later evaluation of water level data indicated that these wells, like MW-04, may not adequately represent the quality of groundwater reaching the upgradient limit of the waste management area (see Section E-2c).

All interim status detection monitoring wells were drilled by hollow stem auger techniques. These monitoring wells were completed to depths of 10 to 30 feet below ground level and were screened in the uppermost portion of the water table aquifer (see Table E-1). The groundwater surface elevation was determined to be approximately 5 feet below ground level at monitoring wells MW-01 through MW-07.

All monitoring wells were constructed of two-inch inside diameter flush threaded, Schedule 40 polyvinyl chloride (PVC) riser pipe and factory-slotted 0.01-inch (10 slot) flush threaded PVC well screen. A gravel pack was installed in the annular space from the bottom of the borehole to approximately three feet above the top of the well screen, and a bentonite slurry to two feet below ground level. The monitoring wells were completed with protective steel casings or a flush-mounted cast iron curb box (MW-04 only), and a cement pad to prevent surface infiltration and protect the monitoring well integrity. In addition, the PVC well cap was completed with a vent to allow the water levels within the monitoring well to equilibrate to the prevailing atmosphere pressures.

E-1b Detection Monitoring Sampling Program [40 CFR 265.92]

Groundwater sampling during the interim status detection monitoring program was conducted quarterly from November 1981 to August 1985. Specific sampling and analyses conducted during each year of the detection monitoring program are summarized below.

First Year 1981/1982

The first year of interim status detection monitoring for wells MW-01 through MW-05 was comprised of four sampling events, namely: November, 1981; and March, June, and September, 1982, as required by 40 CFR 265.92(c)(1). Parameters analyzed for during the first year of the detection monitoring program included:

- 40 CFR 265 Appendix III parameters;
- groundwater quality parameters specified in 40 CFR 265.92(b)(2); and
- the indicator parameters pH, specific conductance, total organic carbon (TOC), and total organic halides (TOX);

in accordance with 40 CFR 265.92(b).

Second and Third Years 1983/1984 and 1984/1985

On June 6, 1983, personnel from AVCO Lycoming met with DEP to discuss the groundwater detection monitoring program. Based on this meeting, the DEP directed AVCO Lycoming to substitute the following site-specific parameters for those specified in 40 CFR 265.92(d) for the second and subsequent years of detection monitoring:

Parameters for Quarterly Sampling	Parameters for Semi-Annual Sampling
• cadmium • chromium (hexavalent and total) • copper • mercury • nickel • zinc • pH • specific conductivity	• halogenated volatile organics • aromatic volatile organics • TOC • TOX

As described in Section E-1a, monitoring wells MW-06 and MW-07 were installed as new upgradient background monitoring wells in July, 1983. Monitoring wells MW-01 through MW-07 were sampled quarterly during the second year (August 1983, November 1983, February 1984, and May 1984) and third year (October 1984, January 1985, April, and August 1985) of interim status detection monitoring, and analyzed for the parameters specified above.

E-1c Detection Monitoring Groundwater Quality Data

All groundwater samples collected during the interim status detection monitoring period were analyzed by a State of Connecticut certified environmental testing laboratory. Quarterly and annual groundwater monitoring reports were prepared and submitted to DEP/EPA throughout the interim status detection monitoring period as required by 40 CFR 265.94.

A summary of detected constituents and indicator parameter data for all interim status groundwater sampling (detection and assessment monitoring) conducted through October 1989 is presented in Appendix E-2, which includes all detection monitoring results (November 1981 - August 1985). A complete discussion of all groundwater monitoring data collected to date for the detection and assessment monitoring programs is presented in Section E-2d. The results of the interim status detection monitoring groundwater analyses are also discussed in Section IV of Appendix E-3.

It should be noted that groundwater samples collected for metals analysis during all but the last year (1984/1985) of detection monitoring were not filtered and therefore total metals concentrations are reported for these samples. Filtered, sediment-free samples yielding dissolved metals concentrations would be expected to contain significantly lower metals concentrations and would be more representative and appropriate for assessing groundwater quality.

Data evaluated to establish which if any of the existing detection monitoring wells were appropriately hydraulically upgradient of the waste management area was continually inconclusive and somewhat contradictory. Because of this, a single background monitoring well was not formerly selected during the detection monitoring program. Consequently no statistical comparisons were made in accordance with 40 CFR 265.93(b). However, due to the confirmation of hazardous constituents detected in the compliance point monitoring wells, an assessment monitoring program was initiated in 1985, in accordance with 40 CFR 265.93(d)(4). Details of this assessment monitoring program are presented in Section E-2.

E-2 Groundwater Assessment Monitoring Program

The RCRA groundwater assessment monitoring program for the former surface impoundments was initiated in September 1985 and has continued to the present. The investigation efforts undertaken as a part of the assessment monitoring program were conducted in accordance with 40 CFR 265.93(d)(4) and are summarized below.

Initial Assessment Monitoring Efforts (1985)

In an effort to further assess the hydrogeology and constituent distribution in groundwater surrounding the waste management area, additional subsurface investigative work was conducted in September 1985, including:

- completion of 17 soil borings to further characterize site geology
- installation and sampling of six additional monitoring wells (MW-08 through MW-13) to provide additional data on constituent distribution and site hydrology

- continuous water level recording of monitoring wells MW-01, MW-05, MW-10, and MW-13 to identify any tidal influence on the water table aquifer

The results of this investigation are presented in Sections E-2b through E-2g.

DEP Order HM-358

As a result of DEP's 1986 Comprehensive Monitoring Evaluation inspection, DEP Order HM-358 was issued to Textron Lycoming on September 25, 1986 requesting that a Groundwater Assessment Monitoring Plan be submitted to DEP and implemented following receipt of DEP approval. Order HM-358 was later revised (November 26, 1986 to incorporate compliance dates). A copy of Order HM-358, along with other correspondence with DEP regarding assessment monitoring is included in Appendix E-3.

In response to Order HM-358, Textron Lycoming submitted an Assessment Monitoring Plan to DEP on March 25, 1987 (see Appendix E-4). An addendum to this Assessment Monitoring Plan was submitted to DEP on May 22, 1987 (see Appendix E-5). In addition to the assessment efforts initiated in 1985, the following additional tasks were proposed in the 1987 Assessment Monitoring Plan:

- Compile a complete list of all groundwater monitoring analytical data collected to date to provide quick reference to specific data values
- Compile a summary of statistical data in tabular form for each monitoring well
- Collect continuous water level data over a complete tidal cycle for the tidal drainage ditch, the marine basin, and a minimum of eight monitoring wells. Evaluate this data

to establish the effect of the tidal cycle on the site's groundwater flow patterns.

- Redevelop monitoring wells MW-01 through MW-07 using surge block and pump techniques to clear well screens and alleviate siltation problems.

- Perform *in-situ* aquifer testing (slug tests) on monitoring wells MW-01, MW-03, MW-04, MW-06, MW-07, MW-08, MW-09, and MW-11 to establish hydraulic conductivity values to use in estimating groundwater flow rates for the uppermost aquifer.

- Graphically evaluate contaminant data by developing the following:
  - concentration vs. time plots for each contaminant, for each monitoring well using all data collected to date
  - concentration contour maps for each contaminant
  - a cross-section indicating vertical and lateral distribution of contaminant concentrations through a slice of the aquifer

- Estimate and evaluate groundwater flow rates and contaminant migration rates

- Continue to monitor the existing 13 well monitoring system quarterly for all detection monitoring parameters specified in Section E-1b

Details of the above assessment efforts are described in Section IX of Appendix E-4.

Installation of Additional Monitoring Wells During Closure

At the request of DEP, three additional monitoring wells were installed during closure. These three additional wells (MW-01D, MW-03D, and MW-05D) were installed alongside existing wells MW-01, MW-03, and MW-05 (respectively) to form nested well pairs at these three locations. The three new "D" wells were completed with screened intervals at slightly greater depth than the existing three wells to characterize groundwater quality to a depth of 15–25 feet below the water table along the compliance point. MW-01, MW-01D, MW-03, MW-03D, MW-05 and MW-5D were renamed in 1991 as MW-01S, MW-01SI, MW-03S, MW-03SI, MW-05S and MW-05SI, respectively.

Additional Correspondence on Assessment Monitoring With DEP

On September 21, 1989, DEP issued a letter to Textron Lycoming indicating that it had conducted a Comprehensive Monitoring Evaluation (CME) of the RCRA groundwater monitoring program for the surface impoundments. A copy of this letter along with all other correspondence with DEP regarding assessment monitoring is included in Appendix E-3. This letter stated that DEP believed that Textron Lycoming had made significant progress toward characterizing the rate and extent of groundwater contamination in accordance with applicable regulations. This letter also required Textron Lycoming to respond to DEP with a proposal for performing additional monitoring and evaluation to meet the following objectives:

- establish the hydrogeologic and hydrochemical role of the peat layer
- evaluate the potential for tidally induced backflow of the NPDES discharge

- evaluate the groundwater mounding effects in the area of the surface impoundments
- assess the hydrologic impacts of the landfill cap
- resolve the discrepancies between the 1987 Assessment Monitoring Plan and the assessment monitoring efforts actually implemented
- ensure adequate field practices, particularly with respect to bailer decontamination procedures, chain-of-custody protocol, and well integrity (MW-01D)

Additional details regarding the above items are presented in DEP's CME Summary Memorandum dated August 11, 1985 (see Appendix E-3).

In response to this September 21, 1989 DEP letter, Textron Lycoming developed a response letter dated April 4, 1990 (addressed to Textron Lycoming by its former consultant, ESE and forward to DEP). This April 4, 1990 letter outlined the following additional or remaining assessment monitoring tasks to be completed by Textron Lycoming:

- Compile analytical and statistical summary data as specified in the 1987 Assessment Monitoring Plan.
- Resurvey monitoring wells to confirm elevations.
- Manually collect water level data for all monitoring wells (hourly/bi-hourly) and monitor the tidal drainage data using a tide gauge over a 24 hour period to evaluate tidal influences.

- Conduct a surface electric resistivity and ground penetrating radar survey to determine the lateral and vertical continuity of the subsurface peat layer. (Later eliminated from assessment monitoring program after high levels of interference and signal attenuation were encountered in the field.)
- Install additional deep monitoring wells to collect water quality data from beneath the peat layer.
- Conduct slug tests on all monitoring wells to establish the hydraulic conductivity of the uppermost aquifer stratigraphic units.

The report prepared to summarize the result of the above efforts outlined in the April 4, 1990 letter is currently being prepared, and will be submitted to DEP and EPA when complete. Hydraulic conductivity and vertical/horizontal gradient data made available to Textron Lycoming from this study has been used to calculate groundwater flow rates in Section E-2c.

In addition, a verbal agreement was reached in 1990 between DEP and Textron Lycoming to change the frequency of certain analyses performed on groundwater samples collected during the quarterly assessment monitoring program. Specifically it was agreed to limit the frequency of volatile organic analyses to semiannual, (it was previously performed quarterly). It was also established that analyses/determination of RCRA indicator parameters (pH, specific conductance, TOC, and TOX) would be performed quarterly.

E-2a Groundwater Assessment Monitoring System

The current groundwater assessment monitoring system is comprised of 13 monitoring locations and 22 monitoring wells indicated in Figure E-1. This monitoring network is currently being used to assess the rate and extent of any contaminant migration from the closed surface impoundments.

All 13 assessment monitoring locations include at least a single "shallow" well screened generally at or near the water table in the uppermost portion (typically the upper 10 - 20′) of the water table aquifer. In addition, one or more additional wells have been installed and selectively screened at incrementally greater depths to monitor progressively deeper zones of the uppermost aquifer at five selected locations hydraulically upgradient and downgradient of the closed impoundments. These nested groups of 2 to 4 wells at monitoring locations MW-01, MW-03, MW-05, MW-09, and MW-10 also provide data on the geology of the various stratigraphic units present, vertical gradients and vertical groundwater flow, and hydraulic conductivity throughout the upper aquifer. Monitoring wells MW-05D, MW-09D, and MW-10D were installed in the lower portion of the uppermost aquifer and these borings were completed to bedrock to collect geologic data on unconsolidated materials in the deepest portion of the uppermost aquifer.

The suffix for each monitoring well designation within each of the nested groups (S = Shallow, SI = Shallow Intermediate, I = intermediate, DI = deep intermediate, and D = Deep) refer to the progressively deeper zones of the uppermost aquifer that are screened and monitored in each well. Approximate screened intervals (referenced to MSL

{Mean Sea Level} elevation) for each of these categories of monitoring wells are; S = 10 to -10′, SI = -10 to -20′, I = -25 to -35′, DI = -30 to -40′, and D = -70 to -100′). Negative values indicate that the wells are screened below MSL. The specific depth and the screened interval elevations for all wells are indicated in Table E-1.

Wells at monitoring locations MW-01, MW-02, MW-03, and MW-05 monitor groundwater quality at locations immediately downgradient of the surface impoundments. These compliance point wells are used to detect the presence of any constituents that are released from the waste management area.

Wells at the remaining locations monitor downgradient and background groundwater quality beyond the perimeter of the waste management area. These wells are used to further assess the vertical and lateral extent of the groundwater constituents detected at the compliance point. In conjunction with the other wells in the assessment monitoring system, these wells have supplied the necessary water level, hydraulic conductivity, and geologic data to characterize the monitored aquifer, including the rate and direction of groundwater flow.

A description of the construction specifications of monitoring wells MW-01 through MW-07 are presented in Section E-1a. Monitoring wells MW-01SI, MW-03SI, and MW-05SI were constructed and installed similarly. Monitoring wells MW-08 through MW-13 were also installed and constructed similarly, with the following exceptions:

- 20 slot 2″ PVC well screen was used
- a wrapped screen envelope was used

- a sand pack was installed in the annular space surrounding the screen
- bentonite pellets were used to seal the annular space above the screen

These construction details are summarized in Section II of Appendix E-4. Construction and installation specifications for monitoring wells MW-05DI, MW-5D, MW-09I, MW-09D, MW-10I, and MW-10D are described in Appendix E-1, and are essentially similar to monitoring wells MW-08 through MW-13, although no screen envelope was used and a cement bentonite slurry was used to seal the annular space above the bentonite pellet well screen seal.

E-2b Site Geology

The geology of the uppermost aquifer underlying the waste management area has been established from soil samples logged during installation of the various assessment monitoring wells and other borings completed during the assessment program. These data indicate that the unconsolidated strata above the bedrock layer consist primarily of stratified drift deposits. The uppermost 5 to 15′ of deposits consist of fine to coarse sand with a trace of silt, silty sand, and fill material. These uppermost materials are underlain by a variable and discontinuous layer of organic peat which begins between 6 to 17′ below grade where present. The thickness of the organic peat layer varies from 5.5 to 20′ where detected. The soils below the peat layer consist primarily of fine to coarse sand with varying amounts of gravel and a trace of silt. Geologic cross sections for borings completed through 1985 are presented in Section II of Appendix E-4.

Bedrock was encountered at depths of 162, 151, and 103 feet below grade in borings completed for monitoring wells MW-05D, MW-09D, and MW-10D, respectively. These data indicate that bedrock in this area dips downward to the south toward Long Island Sound. Recovered fragments indicate that bedrock consists of hornblende-amphibolitic mica schist.

A description of the closure and final cover design for the surface impoundments is presented in Section I-1. The closure design included excavation and backfilling of the surface impoundments, as well as installation of a multilayered cap as described in Section I-1. Placement of these materials during closure impacted the hydrology in the waste management area.

A soil/cement mixture was used to stabilize the bottoms of the settling lagoons in order to provide the proper structural bearing strength to adequately support the prescribed thickness of backfill and cover materials specified in the approved Closure Plan. This stabilization process has created a layer of artificial fill at the base of each of the settling lagoons with a hydraulic permeability that may be significantly lower than that of the surrounding undisturbed sediments. Because this stabilized soil/cement mixture was installed approximately 1½′ below the water table (at low tide), this material may impact drainage and groundwater movement beneath the impoundment cap of the settling lagoons.

Also, the closure cap contains an impermeable high density polyethylene (HDPE) membrane liner which prevents migration of liquids through the unsaturated zone beneath the cap and the water table. The cap effectively eliminates groundwater recharge from precipitation in the capped waste management area.

E-2c Site Hydrology

Surface Water

The flow of surface water over the waste management area of the site follows the slight topographic gradient which is generally southward toward the tidal drainage ditch and marine basin. Topographic elevations only vary by approximately 15′ over the entire facility, and vary by less than 10′ in the vicinity of the waste management area.

The HDPE membrane liner component of the closure cap for the lagoons prevents groundwater recharge from surface water runoff in the vicinity of the waste management area cap. Surface water run-off directly over the management area cap is collected by drainage ditches surrounding the capped area that direct run-off around the perimeter of the cap and into the tidal drainage ditch. Surface water run-off across the overall facility flows to the east toward the Housatonic River, and south toward the marine basin and Long Island Sound. However, most of the facility is covered with buildings and pavement. The majority of the run-off north of Sniffens Lane is captured by the facility's storm water collection system and is discharged to the Housatonic River after treatment in the Oil Abatement Plant. Run-off from the facility south of Sniffens Lane is either collected in catch basins and discharged to the tidal drainage ditch, or flows to the south toward the tidal drainage ditch and the marine basin.

Groundwater

The data collected to date from the groundwater assessment monitoring system has provided the necessary information to make the following determinations in accordance with 40 CFR 265.93(d)(4):

- groundwater flow direction from water table surface elevation data
- estimation of groundwater flow rate from hydraulic conductivity data

As indicated in Section II of Appendix E-4, groundwater in the uppermost aquifer flowed radially outward from the impoundments prior to closure toward the west, south, and east. A groundwater surface elevation contour map with water level data (May 16, 1991) for all current monitoring wells is presented in Figure E-2, and is representative of groundwater flow in the waste management area after closure.

Overall, horizontal gradients are relatively small across the monitored portion of the facility, except in the immediate vicinity of the waste management area where gradients are somewhat more pronounced. The overall modest horizontal gradients, and the close proximity of discharge to the tidal drainage area and the Housatonic River complicate determination of groundwater flow direction across the study area.

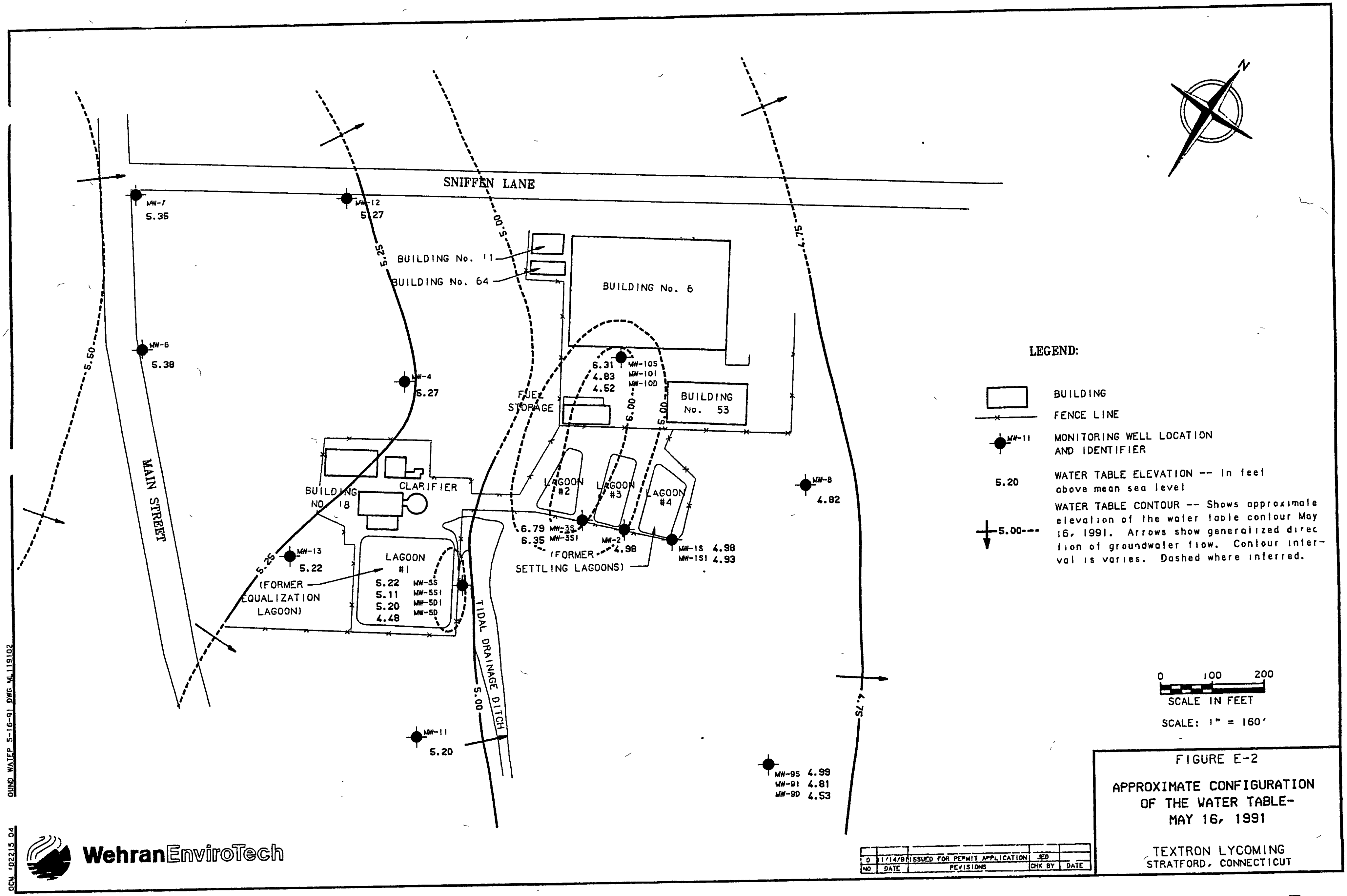


FIGURE E-2

APPROXIMATE CONFIGURATION OF THE WATER TABLE- MAY 16, 1991

Groundwater flow across the site appears to be generally in an easterly direction. However, a localized area of groundwater mounding can be observed in the area of the closed settling lagoons, near lagoons #2 and #3. It is not clear why this apparent mounding anomaly exists in the waste management area. This mounding may be caused by the organic peat layer underlying the shallow portion of the water table aquifer, or the cement/soil stabilization material installed at the base of the settling lagoons during closure to support the final cover. If the permeability of these materials is low relative to the surrounding soils, this could result in a restriction of the vertically downward groundwater flow observed in the area, which may result in the observed mounding. The mounding anomaly could also result from other factors such as a localized area of highly permeable material, surface recharge from surrounding paved areas, or sub-surface recharge from nearby storm drainage systems.

As indicated by the water level data from the nested well groups, vertical groundwater flow in the vicinity of the waste management area appears to be downward in the immediate area of the settling lagoons. This data contradicts the upward vertical groundwater flow typically found in water table aquifers in the vicinity of major discharge zones.

As indicated in Section E-2, water level monitoring has been conducted to determine the degree to which tidal fluctuations in the marine basin, tidal drainage ditch, the Housatonic River, and Long Island Sound affects groundwater gradients and flow patterns in the waste management area. As presented in Appendix E-5, these data indicate that:

- their is no significant tidal influence in the immediate vicinity of the cap over the three settling lagoons

- there is a moderate tidal influence at the east end of the equalization lagoon cap, which causes water table fluctuations of approximately $\pm 0.5'$ in monitoring well MW-05S, which quickly dissipates with distance from the drainage ditch
- overall groundwater flow patterns are not significantly impacted by local tidal fluctuations

The flow rate of groundwater in the uppermost aquifer has been estimated based on the horizontal gradient and hydraulic conductivity data supplied to Textron from the study referenced in the April 4, 1990 letter included in Appendix E-3 (see Section E-2). The Bouwer and Rice analytical method[1] was employed to calculate values of hydraulic conductivity from the slug test data developed during this study. These calculations yielded an average hydraulic conductivity of 23.82 ft/day (9.33×10^{-3} cm/sec) for all monitoring wells. The rate of groundwater flow in the water table aquifer was computed utilizing the Darcy equation:

$$v = \frac{ki}{n}$$

where, v = average linear velocity, in ft/day

k = average hydraulic conductivity, in ft/day

i = average hydraulic gradient, in ft/ft, and

n = soil porosity

[1] Herman Bouwer, The Bouwer and Rice Slug Test - An Update, *Ground Water*, Vol. 27, No. 3, May-June 1989.

A typical horizontal hydraulic gradient along a flow line in the waste management area is approximately 0.00493 ft/ft. A porosity of 25 percent was assumed to calculate the average horizontal groundwater flow rate of approximately 0.47 ft/day.

A hydraulic conductivity of 3.09 ft/day was calculated for monitoring well MW-05SI which is screened exclusively in the organic peat layer. Assuming a typical porosity of 40% for this material, and using a downward vertical gradient of 0.01117 ft/ft (mean value for nested monitoring well groups MW-05, MW-09, and MW-10), a vertical flow rate of 0.086 ft/day has been calculated for groundwater flow through the organic peat layer to the underlying deposits of sand and gravel.

E-2d Assessment Monitoring Groundwater Quality Data

Quarterly groundwater sampling and analysis for the assessment monitoring program has proceeded in accordance with the DEP approved parameters and frequency presented in Section E-2. In accordance with 40 CFR 265.93(d)(4)(ii), the assessment monitoring data collected from November 1985 to the present has established the concentration and distribution of the following principal constituents in groundwater in the waste management area:

- inorganic constituents
  - chromium
  - cadmium
  - nickel
  - cyanide
- volatile organic compounds (VOCs)
  - chlorobenzenes
  - chlorinated ethenes (and associated breakdown products)

Other organic constituents (including 1,1-dichloroethane, 1,1,1-trichloroethane, ethyl benzene, toluene, and xylene) have been detected in groundwater at lower concentrations than the VOC constituents listed above. Copper and zinc have also been detected in groundwater at the compliance point, although these metal constituents are not listed in 40 CFR 261 Appendix VIII, and are therefore not hazardous constituents as defined by 40 CFR 264.93(a).

A summary of all groundwater assessment monitoring data collected from November 1981 through October 1989 is presented in Appendix E-2. Appendix E-2 presents data for all hazardous constituents detected in groundwater and the value of all indicator parameters obtained from the quarterly sampling events through October 1989. Appendix E-6 presents data from the more recent assessment monitoring quarterly sampling events from March 1990 through September 1991. Graphs indicating the variation of concentration over time in each assessment monitoring well (data through May 1990) are presented for several of the principal inorganic and organic constituents in Appendix E-7. A summary of these data is presented below for each principal constituent.

Inorganic Constituents

A brief summary of the data collected to date for the principal inorganic constituents chromium, cadmium, nickel, and cyanide are presented below. The relatively higher concentrations of these inorganic constituents in compliance point monitoring wells in the early years of the RCRA detection monitoring program (1981–1985) indicate that these constituents may have been released from the four surface impoundments. These constituents were known to be present in the wastes previously managed in the former surface impoundments. However, the dramatic decrease in concentration of these inorganic constituents over the 10 years of RCRA monitoring at the site has reduced the levels of these constituents at the compliance point to very low or undetectable (below the method detection limit) levels. The graphical illustration of this dramatic decrease of these inorganic constituents in groundwater is presented in Appendix E-7 (graphical analysis not available for nickel).

It should be noted that groundwater samples collected for metals during all but the last year (1984/1985) of detection monitoring were not filtered and therefore total metals concentrations are reported for these samples. Filtered, sediment-free samples yielding dissolved metals concentrations would be expected to contain significantly lower metals concentrations and would be more representative and appropriate for assessing groundwater quality. This difference in field sampling techniques may account for the significantly higher concentrations of these inorganic constituents reported prior to 1985.

Chromium

As indicated by the graphs in Appendix E-7, chromium concentrations have decreased in all monitoring wells over the RCRA detection and assessment monitoring period. Total chromium concentrations in compliance point wells (MW-01, MW-02, MW-03, and MW-05) and MW-04 ranged from 0.1 to 0.7 mg/ℓ in the period 1981 to 1983. Since that time, chromium concentrations have steadily decreased in all wells, and were below (and generally well below or undetectable) the 0.05 mg/ℓ maximum concentration specified in 40 CFR 264.94, Table 1 (Maximum Concentration of Constituents for Groundwater Protection) from January 1987 through 1990. (Some sporadic detections above this 0.05 mg/ℓ level have been reported for March and May 1991 and will be confirmed in future quarterly sampling events.) Chromium concentrations in monitoring wells away from the compliance point were near or below the 0.05 mg/ℓ level initially, and are now generally undetectable.

Cadmium

As indicated by the graphs in Appendix E-7, cadmium concentrations have generally remained low or undetectable in all monitoring wells over the RCRA detection and assessment monitoring period. Cadmium concentrations in compliance point wells (MW-01, MW-02, MW-03, and MW-05) have ranged from 0.005 to 0.05 mg/ℓ and have frequently been undetectable. Cadmium concentrations in other wells have generally been undetectable, with some sporadic detections marginally above the 0.01 mg/ℓ maximum concentration specified in 40 CFR 264.94, Table 1. Currently, with the exception of low level detections in the range of 0.01 to 0.025 mg/ℓ (MW-05, MW-09, and MW-10), cadmium concentrations have remained undetectable or below the 0.01 mg/ℓ maximum concentration specified in 40 CFR 265.94, Table 1.

Nickel

Nickel concentrations have generally varied from undetectable to less than 0.1 mg/ℓ at the compliance point, and most other assessment monitoring wells. However, the concentration of nickel in monitoring well MW-03SI (installed in 1989 — formerly MW-03D) have generally varied from 0.016 to 0.598 mg/ℓ, and on two occasions (July and October 1989) has exceeded 1.0 mg/ℓ. However, monitoring well MW-03S, which is in the same nested well group as MW-03SI (and screened only 9′ shallower) has consistently ranged from undetected to 0.07 mg/ℓ since 1981. Nickel concentrations in other monitoring wells have generally been below 0.1 mg/ℓ and are currently undetectable, or marginally above the method detection limit of 0.02 mg/ℓ. A maximum concentration is not specified for nickel in 40 CFR 264.94, Table 1.

Cyanide

As indicated by the graphs in Appendix E-7, cyanide concentrations have decreased in all monitoring wells over the RCRA detection and assessment monitoring programs. Cyanide concentrations in compliance point wells (MW-01, MW-02, MW-03, and MW-05) and MW-04 ranged from approximately 0.1 to 1.0 mg/ℓ in the period 1982 to 1985. Since that time, cyanide concentrations have steadily decreased two to three orders of magnitude in compliance point monitoring wells and is generally undetectable. Cyanide concentrations in other assessment monitoring wells have varied from undetectable to as high as 0.05 mg/ℓ in the mid-1980s in some wells, but currently are undetectable in all non-compliance point wells. The only detection of cyanide in any of the 22 assessment monitoring wells in the first three quarterly monitoring periods of 1991, was a detection of 0.028 mg/ℓ of cyanide in MW-02 (May 1991). A maximum concentration is not specified for cyanide in 40 CFR 264.94, Table 1.

Volatile Organic Compounds (VOCs)

The principal volatile organic (VOC) constituents detected at the site to date are chlorinated ethenes (and their breakdown products) and chlorobenzene compounds, which collectively include tetrachloroethene, trichloroethene, cis/trans-1,2-dichloroethene, vinyl chloride, chlorobenzene, 1,2-dichlorobenzene, and 1,4-dichlorobenzene. Concentrations of one or more of these VOC constituents have been detected in at least one sampling event in each of the sites 22 monitoring wells.

However, concentrations of individual VOC constituents vary widely from one well to another. Some or most of these compounds may have never been detected in a given well. Many of the detections of these VOC constituents have been reported at or near the method detection limit, which for most of these compounds is from 1 to 10 μg/ℓ. In addition, for instances in which a detection of a given VOC constituents is reported for a monitoring well in a particular quarter, the same compound was frequently reported as undetected for one or more of the immediately previous and/or subsequent quarters. These type of sporadic detections/inconsistencies have frequently occurred, even in wells in which concentrations of 100 $\mu g/\ell$ or more have been detected in a particular well of a given VOC compound in a particular quarterly sample event.

It should be noted that a number of different analytical laboratories and sampling contractors have been involved in performing the quarterly sampling and analyses over the past 10 years, which may in part account for the inconsistent VOC results. As presented in Appendix E-2, there are a number of cases where all or most of the above principal VOC constituents have been detected in a given well in a given quarter, and are all reported as undetected for several of the following or previous quarters. This pattern may be indicative of a systematic error attributable to sampling and/or analytical methods.

Despite inconsistencies and variation in the data as noted above, several trends and correlations can be made. Several wells have characteristically low VOC concentrations. Monitoring locations MW-01, MW-09, and MW-10 have generally exhibited concentrations near or below the method detection limit for the principal VOC constituents. In addition, monitoring wells MW-11, MW-12, MW-07, and MW-08 have generally exhibited relatively low concentrations of the principal VOC constituents, either below or only marginally (within an order of magnitude) above the method detection limit. Conversely, some of the remaining wells have exhibited relatively higher concentrations of the principal VOC constituents, as noted below.

Chlorobenzenes

Monitoring wells MW-02, MW-03 exhibit markedly higher concentrations of chlorobenzene compounds, namely chlorobenzene, 1,2-dichlorobenzene, and 1,4-dichlorobenzene. Concentrations of these chlorobenzene compounds have ranged to over 1,000 μg/ℓ in MW-03 (July 1989), but are generally below this level in MW-02 and MW-03. Again it is important to note that concentrations of various (or all) chlorobenzene compounds have varied widely and been reported as undetectable in both of these wells for a number of quarters. Chlorobenzene compound concentrations are generally much lower or undetectable in most other assessment monitoring wells.

The elevated concentrations of these chlorobenzene compounds in MW-02 and MW-03 and the relevant absence of these compounds in other wells may indicate that these constituents have been released from the settling lagoons. The closure soil sampling data presented in Appendix I-11 indicates that chlorobenzenes were present in soils underlying the settling lagoons at the time of closure.

Chlorinated Ethenes

This group of VOC compounds comprised of chlorinated ethenes and their breakdown products includes tetrachloroethene, trichloroethene, cis/trans-1,2-dichloroethene, and also vinyl chloride (chlorinated ethene constituents). Cis/trans-1,2-dichloroethene and vinyl chloride are believed to be breakdown products resulting from the reaction and dissociation (reductive dehalogenation) over time of chlorinated ethenes such as tetrachloroethene and trichloroethene in the subsurface environment.

Monitoring well MW-05 exhibits markedly higher concentrations of these chlorinated ethene constituents than the other wells. Concentrations of these constituents have ranged to over 1,000 μg/ℓ in MW-05. Elevated concentrations of these chlorinated ethene constituents were also historically detected in monitoring well MW-04, and to a somewhat lesser extent in wells MW-06 and MW-13. Concentrations of trans-1,2-dichloroethene in these three wells have ranged as high as several hundred μg/ℓ. However, current concentrations of all chlorinated ethene constituents in wells MW-04, MW-06, and MW-13 have dramatically decreased and have remained near or below method detection limits. A detection of 280 μg/ℓ of trans-1,2-dichloroethene was reported for monitoring well MW-10D for the September 1991 quarterly sampling event. Because this is the first sampling event for well MW-10D that included VOC analysis, future VOC monitoring data will be used to confirm this detection.

Again it is important to note that concentrations of various (or all) of these chlorinated ethene constituents have varied widely and have been reported as undetectable in each of the wells noted above for a number of quarters. The concentrations of these chlorinated ethene constituents are generally near or at method detection limits in all assessment monitoring wells, with the exception of MW-05S. The elevated concentrations of these chlorinated ethene constituents in MW-05 and the relevant absence of these compounds in other wells may indicate that these constituents have been released from the equalization lagoon.

E-2e Statistical Background Data

All data collected to date from detection and assessment monitoring programs have been statistically evaluated to establish the background monitoring data for each well, as specified in Appendix E-4, Section 9.1. This data which includes the mean, geometric mean, and variance, and maximum value for each monitoring parameter for each monitoring well is presented in Appendix E-8. This data may be used to make future statistical comparisons of monitoring data, as required.

E-2f Correlation of Monitoring Data with Waste Constituents

The only principal constituents (as identified in Section E-2d) that were previously identified as being present in the wastes managed in the former surface impoundments **and** detected in compliance point wells are cadmium, chromium, nickel, and cyanide. Over the 10 years of RCRA groundwater monitoring at the site, the concentrations of cadmium, chromium, and cyanide have decreased dramatically. Nickel concentrations have generally remained below 0.1 mg/ℓ (with the exception of MW-03SI) throughout the RCRA monitoring program.

With respect to the principal VOC constituents identified in Section E-2d, Textron Lycoming has not located any records documenting the management of any wastes or other materials containing these constituents in any of the former surface impoundments. It has never been the intent or practice of Textron Lycoming to manage wastes or other materials containing these VOC constituents in the former surface impoundments. As presented in

Section C, a volatile organic analysis performed on a sample of sludge waste material from the chemical waste treatment system indicated that no volatile organics were present. However, VOC constituents were detected in samples of the soil underlying the lagoons that were collected during closure (see Appendix I-11).

E-2g Constituent Distribution in Groundwater [40 CFR 270.14(c)(4)]

In accordance with 40 CFR 270.14(c)(4), information is provided in Section E-2d regarding the concentration and distribution of 40 CFR 264 Appendix IX constituents in groundwater in the vicinity of the waste management area. The constituents detected in groundwater in the waste management area migrate in the prevailing direction of groundwater flow (generally south and east) toward discharge into the tidal drainage ditch, marine basin, Long Island Sound, and possibly the Housatonic River.

In accordance with 40 CFR 270.14(c)(4), due to the short distance to the surface water discharge area from the impoundments, any constituent plume specifically associated with these waste management units would generally migrate immediately to the south and east from the surface impoundments to the adjacent surface water discharge area. Due to the groundwater mounding observed in the immediate area of the former settling lagoons, constituents released from these impoundments may have extended radially outward from the waste management area for some short distance before meeting the prevailing southeasterly groundwater flow.

The localized groundwater flow anomalies in the former waste management area preclude Textron Lycoming from graphically delineating this plume as required by 40 CFR 270.14(c)(4)(i). Further review and evaluation of the most recent groundwater flow data, and the results of the on-going assessment monitoring program will enable further delineation of any inorganic constituent plume. Principal inorganic constituents present in groundwater which may have been released from the impoundments include cadmium, chromium, nickel, and cyanide. However, the current concentrations of these constituents in groundwater are generally undetectable or present at concentrations only marginally above the method detection limit in most wells, and as such do not constitute a significant constituent plume.

A groundwater plume(s) containing the principal VOC constituents identified in Section E-2d is also present in the waste management area. If such a plume were to emanate from the former surface impoundments, it would have the same general shape as that indicated above for the inorganic constituents.

E-3 Post-Closure Groundwater Monitoring Program [40 CFR 270.14(c)(5)]

This section describes the groundwater monitoring activities proposed to monitor the waste management area throughout the post-closure care period in accordance with 40 CFR 264.118(b)(1). The groundwater monitoring system described in Section E-2, or possibly additional or alternate monitoring wells installed prior to initiation of the permitted portion of the post-closure care period will be monitored throughout the post-closure care period to detect any releases to groundwater that could potentially occur from the waste management area.

The post-closure groundwater monitoring program proposed for the post-closure care period is presented in Sections E-3a through E-3f. Compliance monitoring in accordance with 40 CFR 264.99 has been selected for the outset of the post-closure monitoring program as required by 40 CFR 270.14(c)(7) due to the detection of hazardous constituents in groundwater (see Section E-2d). However, based on the results of the ongoing assessment monitoring program described in Section E-2, the post-closure compliance monitoring program (i.e. numbers and locations of wells, monitoring parameters, and length of compliance period) described in this Section may be modified prior to the initiation of the permitted portion of the post-closure care period, or an appropriate detection or corrective action monitoring program may be proposed.

In accordance with 40 CFR 264.96, Textron Lycoming proposes to conduct the compliance monitoring program described in this section during post-closure care for a compliance period of two (2) years. Textron Lycoming proposes to discontinue the compliance monitoring program at the end of two years and initiate an appropriate detection monitoring program, contingent upon the following:

- the concentration of all Appendix IX Constituents detected in the compliance monitoring system are below the limits listed in 40 CFR 264.94 Table 1, or any alternate limit established under 40 CFR 264.94(b) (see Section E-3d)

- in accordance with 40 CFR 264.99(i), any detections of Appendix IX constituents at concentrations above limits listed in 40 CFR 264.94 Table 1, or any alternate limit established under 40 CFR 264.94(b) (see Section E-3d) are determined to be the result of a release from a source other than the former surface impoundments

Unless a future application for permit modification is submitted specifying an alternative detection monitoring program, the detection monitoring program initiated at the end of the two year compliance period will be identical to the compliance monitoring program proposed in Sections E-3a through E-3e, with the exception of the annual 40 CFR 264 Appendix IX monitoring (Section E-3c(2)). However, if the results of the compliance monitoring indicate that initiation of a corrective action monitoring program is required, the procedures outlined in Section E-3f will be implemented.

E-3a Post-Closure Groundwater Monitoring System [40 CFR 270.14(c)(7)(v)]

The groundwater assessment monitoring system will be used to monitor groundwater in the vicinity of the waste management area during the post-closure care period. This post closure groundwater monitoring system meets all applicable requirements of 40 CFR 264.97. The locations of these monitoring wells are presented in Figure E-1.

Monitoring locations MW-01, MW-02, MW-03, and MW-05 are positioned hydraulically downgradient of the four surface impoundments and will be used as the compliance point monitoring wells. All nested wells at these monitoring locations will be monitored, including MW-01S, MW-01SI, MW-02, MW-03S, MW-03SI, MW-05S, MW-05SI, MW-05DI, and MW-05D.

The remaining wells in the monitoring system MW-04, MW-06, MW-07, MW-08, MW-09S, MW-09I, MW-09D, MW-10S, MW-10I, MW-10D, MW-11, MW-12, and MW-13 will be used to monitor groundwater surface elevations for each semi-annual sampling event. This data will be used to complement groundwater surface elevation data collected from the other wells to better assess groundwater flow patterns during the post-closure care period. Sampling of wells at these locations is not warranted during the compliance post-closure period due to the fact that they are either removed from the compliance point (MW-08, MW-09, and MW-11), or are not located downgradient of the waste management area (MW-04, MW-06, MW-07, MW-10, MW-12, and MW-13). Also, concentrations of the principal constituents (outlined in Section E-2d) detected in compliance point wells have generally been orders of magnitude lower or non-detectable in these wells.

E-3b Post-Closure Groundwater Sampling Plan

In accordance with 40 CFR 264.99(f), compliance monitoring sampling events will be conducted semi-annually during and after the compliance period portion of the post-closure care period. A schedule for these post-closure monitoring sampling events is presented in Table E-2. The 40 CFR Appendix IX screening analysis will be performed on samples collected annually from compliance point monitoring wells in the first semi-annual sampling event. A schedule for post-closure groundwater monitoring reporting is presented in Section E-3e.

Table E-2

Post-Closure Monitoring Schedule for Groundwater Sampling Events

Schedule for...	Sampling Event	Completed no later than...
Semi-Annual Post-Closure Sampling Events	1st Semi-Annual	May 15
	2nd Semi-Annual	November 15

Depending on the results of the compliance monitoring program, an application for permit modification proposing a detection or corrective action monitoring program will be submitted at the end of the compliance period, if required. As required, such a permit modification will describe all changes to the scope, frequency, and scheduling of monitoring for the remainder of the post-closure care period.

For each scheduled post-closure sampling event, one groundwater samples will be collected from each of the following monitoring wells: MW-01S, MW-01SI, MW-02, MW-03S, MW-03SI, MW-05S, MW-05SI, MW-05DI, and MW-05D (or possibly additional or alternate monitoring wells installed prior to the permitted portion of the post-closure care period).

Groundwater samples will be collected and analyzed for the parameters presented in Section E-3c. All groundwater monitoring activities will be performed in accordance with the EPA

TEGD, and conducted under the supervision of a qualified geologist or hydrogeologist. A summary of the sampling methodology to be used for each post-closure groundwater sampling event is presented in Sections E-3b(1) through E-3b(4).

E-3b(1) Monitoring System Inspections

At the time of each post-closure monitoring sampling event, prior to the collection of any groundwater samples, an inspection of each monitoring well will be conducted to establish the continued integrity of the monitoring system. Typical inspection forms providing checklists for conducting these monitoring system inspections are presented in Figure E-3. These Post-Closure Groundwater Monitoring System Inspection Report Forms will be completed and submitted to the Textron Lycoming Post-Closure Contact as described in Section E-3e.

As indicated in Figure E-3, each monitoring well will be sounded to obtain a depth measurement to the bottom of the monitoring well. These measurements will be compared to the original depth to bottom measurements to assess the degree of sedimentation that has occurred in each monitoring well since the time of installation. The inner casing, outer casing, and surface grouting around each well will also be visually examined to identify any evidence of deterioration or malfunction.

Figure E-3

Typical Post-Closure Groundwater Monitoring System Inspection Report Form

Textron Lycoming **Post-Closure Inspection Checklist**	Date of inspection (month/day/year):
	Time of inspection (hours)

Inspection Element	Status Acceptable (Y/N)	Action Required If Status Not Acceptable
Inner Case Integrity		
Well Screen		
Surface Seal		
Outer Casing Integrity		
Monitoring Wells Locked		
Concrete Apron Integrity		
Other:		

Post-Closure Contact Notified: ☐ Yes ☐ No	Inspected by (signature):
Maintenance or Action Required: ☐ Yes ☐ No	Name and Title:
Response Timing: ☐ Urgent ☐ Routine ☐ None required	Company:

Figure E-3, Continued

Typical Post-Closure Groundwater Monitoring System Inspection Report Form

Monitoring Well Depths	Depth to Bottom (feet)	Original Depth to Bottom (feet)	Comments
MW-1S			
MW-1SI			
MW-2			
MW-3S			
MW-3SI			
MW-4			
MW-5S			
MW-5SI			
MW-5DI			
MW-5D			
MW-6			
MW-7			
MW-8			
MW-9S			
MW-9I			
MW-9D			
MW-10S			
MW-10I			
MW-10D			
MW-11			
MW-12			
MW-13			

In the event that a need for maintenance is identified during implementation of the post-closure monitoring program which compromises monitoring well integrity or precludes the ability to sample, prompt maintenance actions will be taken and sampling will be temporarily delayed until appropriate maintenance has been completed. If it is determined that such maintenance is required and may impact the groundwater monitoring reporting schedule presented in Section E-3e, the EPA Regional Administrator and the DEP Commissioner will be notified.

E-3b(2) Groundwater Surface Elevation

Prior to groundwater sampling, groundwater level measurements will be taken at each monitoring well to determine the volume of water present in each of the monitoring wells to be sampled and to determine the direction of groundwater flow. The groundwater level measurements will later be tabulated and contoured for the monitoring wells. Groundwater level measurements will be obtained using an electric water level recorder. The water level recorder will be decontaminated with a analyte-grade methanol rinse and an analyte-free de-ionized water rinse between monitoring wells.

Groundwater flow rate will also be estimated annually using the hydraulic conductivity data and procedure referenced in Section E-2c, and the groundwater surface gradient calculated from the most recent groundwater surface elevation data. These determinations will be made annually in accordance with 40 CFR 264.99(e), as described in Section E-3e.

E-3b(3) Groundwater Sampling Quality Assurance/Quality Control (QA/QC)

Field QA/QC procedures to be used for the semi-annual sampling events will be based on guidelines set forth in the RCRA Groundwater Monitoring Technical Enforcement Guidance Document (TEGD).

To assess groundwater sampling equipment decontamination procedures, two field blanks will be collected during each groundwater sampling event. One field blank will be collected by pouring de-ionized analyte-free water supplied by the laboratory through one of the pre-cleaned teflon bailers used that day for groundwater sampling. The other field blank will be collected by rinsing the vacuum filtration apparatus with analyte-free de-ionized water. The rinsate will be collected in appropriate laboratory-supplied containers. The bailer field blank will be analyzed for the same constituents as the groundwater samples collected on that day. The filtration apparatus field blank will be analyzed for only the same metals constituents as the groundwater samples collected on that day.

Teflon bailers used to collect groundwater samples during the post-closure monitoring program and vacuum filtration equipment will be decontaminated under controlled laboratory conditions (pre-cleaned) prior to field mobilization, or in the field (as required) using the following procedure:

1. Alconox and tap water wash
2. Tap water rinse
3. 10% Nitric acid solution rinse
4. De-ionized water rinse

5. Reagent-grade methanol rinse
6. Air dry
7. De-ionized water rinse

Cleaned sampling equipment will be wrapped in aluminum foil (shiny-side out) when transported into the field. Upon collection, groundwater samples will be immediately transferred from the pre-cleaned teflon bailer directly into the laboratory-supplied containers. A new pair of disposable latex surgical gloves will be worn during the collection of each groundwater sample. Appropriate quantities of the preservatives specified in Table 4-1 of the TEGD (see Appendix E-10) for each group of analytical parameters presented in Section E-3c will be added to the sample containers.

One trip blank will accompany sample containers for each sampling event. The trip blank will consist of a set of 40 milliliter vials containing analyte-free de-ionized water supplied by the laboratory. The purpose of the trip blank will be to detect the presence of laboratory-induced volatile organic compounds which may be introduced into sample containers during their preparation or during the extraction of the groundwater samples in the laboratory.

All field metering equipment for the measurement of temperature, pH, and specific conductivity will be calibrated prior to use during each sampling event. pH and specific conductance will be measured in the field in quadruplicate for each well. The parameters pH and specific conductance will be measured prior to well evacuation, after the removal of each well volume, and after sampling as a check on the stability of the sampled groundwater over time.

Sample containers will be labelled with the following information:

- project name;
- unique sample identification;
- analysis to be performed;
- sampling date; and
- preservative identification, if applicable.

Sample containers will be packaged in shipping coolers containing a sufficient amount of protective packaging material to prevent breakage. Ice packs will be packaged with the sample containers to maintain a temperature of 4° Celsius. Samples, accompanied by the chain-of-custody records will be shipped to the laboratory within 24 hours of collection via courier or overnight shipment.

E-3b(4) Groundwater Sampling Procedure

Groundwater samples will be collected using the following procedure:

1. Calibrate pH and specific conductance meters with appropriate buffer solutions and water of known specific conductance prior to each sampling event.

2. Unlock protective casing, remove monitoring well cap and sample air near well head for volatile organic compounds using an HNu photoionization detector.

3. Measure and record the static groundwater level using an electric water level indicator. Groundwater measurements will be recorded to 0.01 feet. The depth to the bottom of the well will also be measured.

4. Compute the volume of groundwater in the well casing and surrounding gravel pack. A minimum of five times this volume will be evacuated (purged) from each monitoring well using a centrifugal pump prior to sampling. A valve will be used to restrict the flow until stabilized drawdown has been achieved. The groundwater will be pumped in such a way as not to cause turbulence that may strip out volatile organic compounds. The resulting specific capacity will then be computed. In addition, a check valve will be placed at the intake of the hose to prevent the groundwater from back-flowing into the monitoring well.

5. Measure temperature, pH, and specific conductance prior to well evacuation, after the removal of each well volume, and at the end of sampling to monitor the stability of the samples of groundwater over time.

6. Remove two bailers of groundwater from each well prior to sampling using a pre-cleaned bailer.

7. Collect the groundwater sample using a pre-cleaned teflon bailer and unused length of polypropylene rope. The rope and bailer will not contact the ground during sampling. The order in which groundwater parameters will be sampled are as follows (includes parameters for 40 CFR 264 Appendix IX sampling rounds):
   - Volatile organic compounds (VOCs)
   - Semivolatile organic compounds
   - Polychlorinated biphenyl compounds (PCBs)
   - Metals
   - Cyanide
   - Sulfide

   Samples will be collected and transferred to sample containers in a manner that prevents agitation of the sample to minimize the escape of any VOCs during sampling.

8. Samples collected for metals analysis will be field filtered with a vacuum filtration apparatus equipped with a 0.45 micron filter and submitted for dissolved metals analysis.

9. Label and place all sample containers into shipping coolers containing ice packs. Record sampling details in field notebook and complete the chain-of-custody form.

10. Decontaminate the thermometer, and pH and specific conductance meters with analyte-free deionized water. The bailer, rope, and surgical gloves used will be discarded in plastic bags and replaced.

11. Repeat Steps 2 through 10 for each monitoring well sampled.

12. Collect one field blank from a pre-cleaned bailer prior to sampling and analyze for the same constituents as groundwater samples collected that day. Collect one field blank from the filtration apparatus after decontamination (between filtering groundwater samples) and analyze only for the same metals constituents as groundwater samples collected that day. The field blanks will be collected to ensure that proper field equipment decontamination procedures were performed.

13. One trip blank will accompany each shipment of groundwater samples. The trip blank will be analyzed for volatile organic compounds only.

14. Sample containers will be properly packaged in shipping coolers and transported to the laboratory via a courier or shipped overnight. Samples from each sampling event will be shipped to the laboratory within 24 hours after collection. Shipping papers and chain-of-custody records will accompany the samples during transit.

E-3c Groundwater Analytical Parameters and Methods [40 CFR 270.14(c)(7)(iii)]

In accordance with 40 CFR 270.14(c)(7)(iii), the analytical parameters and methods proposed for the compliance period are presented in Sections E-3c(1) and E-3c(2). Laboratory QA/QC procedures for groundwater analyses are presented in Section E-3c(3).

E-3c(1) Semi-annual Post-Closure Monitoring Analytical Parameters and Methods

All semi-annual groundwater samples collected as described in Section E-3b will be analyzed for the 40 CFR 264 Appendix IX parameters presented in Table E-3 throughout the compliance period and remainder of the post-closure care period. These parameters are proposed based on the data presented in Section E-2d, and may be revised or supplemented as appropriate based on the results of the ongoing assessment monitoring currently being conducted.

The EPA-approved analytical methods to be used for each of these parameters and the corresponding Practical Quantitation Limits (PQLs) are also indicated in Table E-3. Actual method detection limits may be below the PQLs indicated in Table E-3. The rationale for selecting these parameters/constituents for groundwater monitoring during the post-closure care period is presented in the following sub-sections.

Table E-3

Post-Closure Groundwater Monitoring Analytical Parameters

Category	Parameter	EPA Approved Method[1]	Practical Quantification Limit[2] (μg/ℓ)
RCRA Indicator Parameters	pH	9040	NA
	Specific conductance	9050	NA
Site Specific Metals	Cadmium	7131	1
	Chromium	7191	10
	Nickel	6010	50
Site-Specific Volatile Organics	1,1,1-trichloroethane	8240	5
	Chloroform	8240	5
	Methylene Chloride	8240	5
	Chloroethane	8240	10
	Trichloroethene	8240	5
	Chlorobenzene	8240	5
	1,2-Dichlorobenzene	8240	5
	1,4-Dichlorobenzene	8240	5
	Tetrachloroethene	8240	5
	Vinyl Chloride	8240	10
	Cis-1,2-dichloroethene	8240	5
	Trans-1,2-dichloroethene	8240	5
	Benzene	8240	5
	Toluene	8240	5
	Xylene	8240	5
	Ethylbenzene	8240	5

[1] From "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (SW-846).

[2] Estimated Method Detection Limit from "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (SW-46).

RCRA Indicator Parameters — The RCRA indicator parameters pH and specific conductance have been selected to provide broad identification of potential groundwater quality impacts caused by any releases of organic or inorganic constituents. The RCRA indicator parameters TOC and TOX are not included because compound-specific quantitative analysis will be performed during each semi-annual sampling round for halogenated and non-halogenated organics, in addition to analyses for additional 40 CFR 264 Appendix IX organic compounds.

Site Specific Volatile Organics — EPA Method 8240 analysis has been selected to monitor the concentrations of volatile organic constituents (VOCs) detected in compliance point wells in previous detection and assessment monitoring (see Section E-2d). These VOC constituents include: 1,1,1-trichloroethane, chloroform, methylene chloride, chloroethane, trichloroethene, 1,1-dichloroethane, chlorobenzene, 1,2-dichlorobenzene, 1,4-dichlorobenzene, tetrachloroethene, vinyl chloride, cis/trans-1,2-dichloroethene, benzene, toluene, xylene, and ethylbenzene. These organic species were all reported as non-detected in a sludge sample collected from the former surface impoundments (see Section C-2), but several were detected in closure soil samples collected after the impoundments were excavated.

Site Specific Metals — Cadmium, chromium, and nickel have been selected as monitoring parameters due to their presence in compliance point monitoring wells identified during the detection and assessment monitoring programs (see Section E-2d). These inorganic constituents were present in the sludge stored in the settling lagoons and have been historically detected in groundwater at the compliance point. However, the current concentrations of these constituents in groundwater at the compliance point are generally undetectable, marginally detectable, and/or below their corresponding concentration limit from 40 CFR 264.94, Table 1 (where applicable).

E-3c(2) Annual 40 CFR 264 Appendix IX Monitoring Analytical Parameters and Methods

A screening analysis for 40 CFR 264 Appendix IX (Appendix IX) constituents will also be conducted for all compliance point monitoring well locations annually during the compliance period in accordance with 40 CFR 264.99(g). Screening for Appendix IX constituents will be conducted each year during the first semi-annual sampling event (see Table E-2). The EPA-approved analytical methods specified in 40 CFR 264 Appendix IX will be used for each Appendix IX constituent. If any additional Appendix IX constituents are detected based on annual Appendix IX screening analysis, these constituents will be added to the semi-annual monitoring list presented in Table E-3, as described in Section E-3f.

The following wells have been selected as the compliance point monitoring locations for Appendix IX screening analysis: MW-01S, MW-02, MW-03S, and MW-05S. Monitoring wells specified at locations where nested well groups have been installed (MW-01, MW-03, and MW-05) were selected based on the relatively higher levels of Appendix IX constituents previously detected in these individual wells, as compared to the other well(s) in the same nested monitoring group. The remaining well(s) in each nested monitoring group will be analyzed for the semi-annual Appendix IX monitoring constituents listed in Table E-3.

The following Appendix IX parameters, grouped by analyte type and analytical methods, are proposed for Appendix IX screening (with EPA-approved analytical methods indicated):

- volatile organic compounds (EPA Method 8240)
- Appendix IX metals (EPA SW-846 methods - see Appendix E-9)
- total cyanide (EPA Method 9010)
- semi-volatile organic compounds (EPA Method 8270)
- PCBs (EPA Method 8080)
- sulfide (EPA Method 9030)

A detailed list of all Appendix IX constituents to be analyzed under each of the above methods is presented in Appendix E-9. Appendix E-9 lists the common name, chemical abstracts name, CAS No., and Practical Quantification Limit (PQL) for each analyte included in the parameter groups specified for each EPA-approved method listed above.

It is proposed to exclude pesticide and herbicide parameters from the annual Appendix IX screening analysis because no detections of these compounds were reported for first year (1981/1982) detection monitoring of 40 CFR 265 Appendix III compounds in compliance point wells. It is also proposed to exclude polychlorinated dibenzo-p-dioxin and dibenzofuran compounds from the Appendix IX screening analysis because there is no record indicating that these compounds were ever used on site.

E-3c(3) Laboratory Quality Assurance/Quality Control (QA/QC) Procedures

Laboratory QA/QC procedures will comply with the requirements set forth in EPA SW-846 "Test Methods for Evaluating Solid Waste: Physical/Chemical Methods", third edition, November, 1986. At a minimum, the specific QA/QC procedures used on every set of samples will include:

Organic Compounds

- Preparation Blank Analysis
- Matrix Spike/Matrix Spike Duplicates
- Surrogate Spike Recovery

Inorganic Compounds

- Preparation Blank Analysis
- Sample Spike Analysis
- Sample Duplicate Analysis
- Laboratory Control Samples
- ICP Interference Check Sample Analysis

Laboratory data documenting these QA/QC measures will be incorporated in the original laboratory reports and will be maintained on file at Textron Lycoming during the post-closure care period.

E-3d Groundwater Protection Standard [40 CFR 270.14(c)(7)(iv), 264.94]

Due to the status of the on-going assessment monitoring program, a groundwater protection standard for the compliance monitoring program has not been included. Textron Lycoming will develop a groundwater protection standard in accordance with 40 CFR 264.94 for the waste management area. As provided by 40 CFR 264.94(a)(3), Textron Lycoming may establish alternate concentration limits that are protective of human health and the environment in accordance with 40 CFR 264.94(b). Alternate concentration limits may be appropriate for the waste management area for the following reasons:

- Groundwater beneath the waste management area is naturally unfit for human consumption due to the high salinity as a result of the proximity to the Housatonic River estuary, Long Island Sound, and the tidal drainage ditch. Chloride levels in monitoring well MW-05S have ranged as high as 4,241 mg/ℓ, and sodium levels in MW-05S have ranged as high as 2,809 mg/ℓ.

- Groundwater beneath the waste management area is not used as a drinking water supply, nor are there any drinking water wells located downgradient of the site.

- Groundwater beneath the waste management area does not discharge to any surface water body or other aquifer that is a potential drinking water source. All groundwater beneath the waste management area discharges directly to Long Island Sound, a Class SC/SB surface water body.

- The only environmental receptors of concern are the aquatic organisms of Long Island Sound.

Establishment of alternate concentration limits for the groundwater protection standard in accordance with 40 CFR 264.94(b) would require:

- Identification of all Appendix IX hazardous constituents present in groundwater at the compliance point.
- Evaluation and establishment of site-specific groundwater exposure pathways from the waste management unit.
- Evaluation and/or modeling of Appendix IX constituent transport in groundwater (including its ultimate discharge to surface water).
- Identification of receptors along each exposure pathway and evaluation of any resulting risks to human health and the environment.

Based on the above, an appropriate groundwater protection standard may be proposed for the site in accordance with 40 CFR 264.94(b).

The data already obtained from the 1991 assessment monitoring events are currently being reviewed and evaluated. Once the data is completely reviewed, Textron Lycoming will determine whether there is sufficient information to develop alternate concentration limits for the groundwater protection standard. Textron has not yet received its final report regarding the following assessment monitoring activities conducted in 1991:

- New nested monitoring wells were installed in May 1991 to investigate deeper zones of the uppermost aquifer.

- Water level measurements to evaluate any variations of groundwater surface elevations as a result of the local tidal cycle were completed in 1991.
- Water level measurements collected from existing and new monitoring wells in 1991 have clarified and confirmed the somewhat complex groundwater flow patterns in the vicinity of the waste management area indicated by previous monitoring data.
- New data obtained from the additional nested wells installed during 1991 that will allow evaluation of the vertical gradients and vertical groundwater flow patterns at the site.
- Slug testing was performed on all monitoring wells in 1991 to establish groundwater hydraulic conductivity and flow rates for the uppermost aquifers.

The above information is essential to developing a groundwater protection standard for the waste management area. The report being prepared to summarize the findings of the above monitoring activities has not yet been received by Textron Lycoming.

In addition, the following issues also complicate the establishment of a groundwater protection standard for Appendix IX constituents:

- groundwater flow anomalies in the former waste management area
- close proximity to an irregularly shaped surface water discharge area
- tidal influence in groundwater discharge areas

The most recent monitoring data from the assessment monitoring program will be evaluated, and supplemented with any additional or evaluation investigation required to resolve the above issues so that a groundwater protection standard may be developed. Using this data, Textron Lycoming has already begun to prepare a groundwater protection standard for post-closure monitoring of the waste management area. The groundwater protection standard will meet all applicable requirements specified in 40 CFR 264.94. Upon completion, this groundwater protection standard will be submitted to DEP and EPA.

E-3e Post-Closure Monitoring Reporting [40 CFR 264.99(d)]

The Post-Closure Contact (see Section I-2e) will be responsible for the reporting and recordkeeping associated with the post-closure groundwater monitoring program. During the post-closure care period, groundwater monitoring data will be collected semi-annually as indicated in Table E-2. The results for post-closure monitoring will be reported to the EPA Regional Administrator and the DEP Commissioner semi-annually. An annual report will be included with the second of two semi-annual monitoring reports each year. The schedule for reporting this data is presented below in Table E-4.

Table E-4

Post-Closure Groundwater Monitoring Reporting Schedule

Schedule for...	Report	Submitted to EPA/DEP on or before...
Semi-Annual Post-Closure Monitoring Reports	1st Semi-Annual	June 30
	2nd Semi-Annual	December 31

Semi-annual compliance monitoring reports for the post-closure care period will include the following information:

- presentation of the groundwater monitoring analytical data for the most recent sampling round
- determination of groundwater flow data
- statistical comparisons including the groundwater monitoring analytical data for the most recent sampling round

All annual reports will include the following information:

- presentation of all groundwater monitoring analytical data for the year
- statistical comparisons using the entire year's data
- groundwater elevation data for the entire year
- determination of groundwater flow direction
- estimation of groundwater flow rate

Statistical comparisons will be performed in accordance with 40 CFR 264.97(h) as required by 40 CFR 264.99(d). Analysis of Variation (ANOVA) or an alternate method specified in 40 CFR 264.97(h) will be used to compare the mean data for each constituent detected in each compliance point monitoring well to the groundwater protection standard. If required, some data collected from the detection and assessment monitoring programs will be used along with the compliance monitoring data to make the required statistical comparisons required by 40 CFR 264.99(d).

The Post-Closure Contact will maintain on file throughout the post-closure care period all monitoring data, all monitoring reports submitted, and all laboratory QA/QC submittals for the detection monitoring system. The Post-Closure Contact will also maintain on file all monitoring system inspection records as described in Sections E-3b(1) and I-2b(3).

If after receipt of the most recent monitoring data, the Post-Closure Contact determines that:

- an exceedance of groundwater protection standards established under 40 CFR 264.94, or
- detection of an additional Appendix IX constituent,

has occurred at the compliance point, the EPA Regional Administrator and the DEP Commissioner will be notified and appropriate actions will be taken as described in Section E-3f.

If any events occur that may impact Textron Lycoming's ability to meet the post-closure monitoring reporting schedule presented in Table E-4 (i.e., difficulty with laboratory turnaround, damage to monitoring system integrity, etc.), the EPA Regional Administrator and the DEP Commissioner will be notified prior to the scheduled reporting date.

E-3f Compliance and Corrective Action Monitoring Notification Requirements [40 CFR 264.99(g), (h), (i), and (j)]

In accordance with 40 CFR 264.99(g), if the Post-Closure Contact determines based on the results of the annual analysis for 40 CFR 264 Appendix IX constituents, that Appendix IX constituents are present in groundwater at any compliance point monitoring well that are not already identified in the permit as monitoring constituents, Textron Lycoming will:

- Re-sample within one month and repeat the Appendix IX analysis. If the second analysis confirms the presence of additional constituents, Textron Lycoming will report the concentration of these additional constituents to the EPA Regional Administrator and the DEP Commissioner within seven days after receiving the second analysis and add them to the monitoring list.

- If Textron Lycoming elects not to re-sample, the concentrations of these additional constituents will be reported to the EPA Regional Administrator and the DEP Commissioner within 7 days after receipt of the initial analysis and the constituents will be added to the monitoring list.

In accordance with 40 CFR 264.99(h), if the Post-Closure Contact determines in accordance with 40 CFR 264.99(d) that any concentration limits established under 40 CFR 264.94 are being exceeded at any monitoring well at the compliance point, Textron Lycoming will:

- Notify the EPA Regional Administrator and the DEP Commissioner of this finding in writing within seven days.
- Submit to the EPA Regional Administrator and the DEP Commissioner an application for a permit modification to establish a corrective action program meeting the requirements of 40 CFR 264.100 within 90 days (because an engineering feasibility study for corrective action is submitted herein in Section E-3g). The application will contain the following information:
  - A detailed description of corrective actions that will achieve compliance with the groundwater protection standard specified in the permit under 40 CFR 264.99(a).
  - A plan for a groundwater monitoring program that will demonstrate the effectiveness of the corrective action.

In lieu of the above procedures, Textron Lycoming may elect to make a demonstration under 40 CFR 264.99(i) if they believe that the statistically significant increase identified for groundwater monitoring constituents or parameters is either due to a source other than the former surface impoundments, or an error in sampling, analysis, or statistical evaluation or natural variation of the data. If Textron Lycoming elects to make such a demonstration, the following actions will be taken:

- EPA Regional Administrator and the DEP Commissioner will be notified within seven days that Textron Lycoming intends to make a demonstration under 40 CFR 264.99(i)
- a report will be submitted within 90 days to the EPA Regional Administrator and DEP Commissioner demonstrating that a source other than the former surface impoundments caused the contamination, or that the apparent contamination resulted from an error in sampling, analysis, or evaluation
- an application for a permit modification will be submitted within 90 days to the EPA Regional Administrator and DEP Commissioner to make any appropriate changes to the compliance monitoring program
- monitoring in accordance with the on-going compliance monitoring program will be continued

If for any reason during the compliance monitoring period it is determined that the detection monitoring program no longer satisfies the requirements of 40 CFR 264.99, an application for a permit modification will be submitted within 90 days to the EPA Regional Administrator and the DEP Commissioner in accordance with 40 CFR 264.99(j) to make any appropriate changes to the monitoring program.

The Post-Closure Contact will be responsible for taking all the necessary actions outlined above in Section E-3f during the post-closure care period.

E-3g Engineering Feasibility Plan for Corrective Action [40 CFR 270.14(c)(7)]

The following Engineering Feasibility Plan for Corrective Action is presented to satisfy the requirement established in 40 CFR 270.14(c)(7) to include such a plan in the RCRA Post-Closure Permit Application. In accordance with 40 CFR 270.14(c)(7), facilities that are to begin monitoring under the RCRA permit period with a compliance monitoring program in accordance with 40 CFR 264.99 are required to submit an Engineering Feasibility Plan for Corrective Action.

Because the Engineering Feasibility Plan for Corrective Action is to be implemented in response to a hypothetical release case, the completeness of the plan is limited due to the inherent lack of information in the following areas:

- identification of the type of contaminants present (i.e. organic or inorganic, specific gravity less than/ greater than 1.0, etc.)
- identification of specific contaminants involved in the release and their respective physical, chemical, and fate and transport properties
- maximum concentration level of contaminants
- location of contaminants (i.e. monitoring wells affected by release)
- specific permit conditions for the groundwater protection standard including hazardous constituents to be monitored for and corresponding concentration limits

The Engineering Feasibility Plan for Corrective Action is described in Section E-4f(1) through Section E-4f(8). This plan outlines a Corrective Action Program in accordance with 40 CFR 264.100 to be implemented in the event that such a program is required under 40 CFR 264 Subpart F regulations.

E-3g(1) Application for Permit Modification to Establish a Corrective Action Program [40 CFR 264.99(h)]

In the event that concentrations of hazardous constituents are detected above the permitted concentration limits established under 40 CFR 264.94 at the compliance point as described in 40 CFR 264.99(h), the Post-Closure Contact will prepare and submit to the EPA Regional Administrator and the DEP Commissioner an application for a permit modification to establish a Corrective Action Program. This application will include a Corrective Action Plan with a detailed description of the corrective actions to be implemented as described in Section E-3f. An outline of this Corrective Action Plan is presented in the following sections. The Post-Closure Contact will be responsible for preparing any necessary application for permit modification to establish a Corrective Action Program, overseeing the Corrective Action Program, and preparing and submitting any required reports or notifications during implementation of the program.

E-3g(2) Compliance with the Groundwater Protection Standard [40 CFR 264.100(a)]

The goal of the Corrective Action Program will be to attain compliance with the groundwater protection standard in accordance with 40 CFR 264.100(a). The groundwater protection standard specified in accordance with 40 CFR 264.9 in the RCRA Post-Closure Permit will include:

- a list of hazardous constituents identified under 40 CFR 264.93
- concentration limits under 40 CFR 264.94 for each of those hazardous constituents
- the applicable compliance point under 40 CFR 264.95
- the applicable compliance period under 40 CFR 264.96

E-3g(3) Identification of Extent of Contamination

Based on the results of monitoring conducted to date, a field investigation will be described in the Corrective Action Plan. This field investigation will be designed to identify the extent of contamination found to be present in the area of the former surface impoundments associated with the detected release to groundwater. In accordance with 40 CFR 264.100(e)(1) and (2), the field investigation will be designed to adequately characterize the extent of any contaminant plume extending between the compliance point and the downgradient property boundary and beyond the facility property boundary where necessary to protect human health and the environment.

The scope of any field investigation will be dependent upon the scope and results of monitoring conducted prior to the application for permit modification described in Section E-3g(1). If the existing data is sufficient to adequately characterize the contaminant plume, the field investigation may have a limited scope, or may not be necessary at all.

The field investigation will include, as appropriate; additional monitoring wells (additional monitoring locations and/or additional monitoring depths); soil borings; soil, groundwater, and surface water sampling, laboratory analysis, geophysical investigations, or other necessary field investigation measures. All field work will be completed in accordance with the RCRA TEGD as described in Section E-1 through E-3. In accordance with 40 CFR 264.100(e)(2), if it is necessary as a part of the field investigation to conduct aspects of the field investigation (i.e., sampling, monitoring well installation, etc.) beyond the property limit, Textron Lycoming will make their best effort to obtain the necessary permission from the third parties involved to conduct these aspects of the field investigation.

E-3g(4) Evaluation and Selection of Remedial Alternatives

Based on the field investigation (see Section E-3g(3)) or other data collected to date, if the concentrations of hazardous constituents identified in any of the environmental media (i.e. soil, groundwater, or surface water) are found to exceed the proposed RCRA Action Levels published in the July 27, 1990 Federal Register or other appropriate site-specific health risk-based levels, the available remedial alternatives will be evaluated.

Remedial alternatives will be evaluated based on their:

- ability to achieve compliance with the groundwater protection standard established under 40 CFR 264.92 at the compliance point, and beyond the compliance point as required by 40 CFR 264.100(e)(1) and (2)
- reduction of potential risk to human health and the environment
- implementability
- short-term effectiveness
- long-term effectiveness
- cost

Remedial alternatives will be evaluated to remove or treat hazardous constituents in place in all affected environmental media as required to achieve compliance with the groundwater protection standard. Remedial alternatives to be potentially considered would include:

- groundwater recovery and treatment to contain contaminant migration and mitigate levels within the contained zone
- further containment of any hazardous constituents found to be present in the waste management area
- excavation and removal or in-place treatment of contaminated soils in any source areas within the waste management area
- a combination of two or more of the above alternatives
- no action alternative

Based on an evaluation of these or other available remedial alternatives, a remedial alternative will be selected.

E-3g(5) Implementation of Selected Remedial Alternatives

If it is determined that the "no action" remedial alternative is not protective of human health and the environment, the selected remedial alternative will be implemented in accordance with an approved schedule.

E-3g(6) Description of Monitoring Program to Demonstrate the Effectiveness of the Corrective Action Program [40 CFR 264.100(d)]

The monitoring program to be used to demonstrate the effectiveness of the Corrective Action Program will be a compliance monitoring program as outlined in Section E-3. As described in Section E-3 the specific monitoring system to be used for compliance monitoring will be dependent upon the available data from all monitoring conducted to date. Wells in addition to the current monitoring system (see Section E-2) may be required to adequately monitor any contaminant plume that may exist, depending on where contaminants are detected, what concentrations they are detected at, and what the specific fate and transport characteristics of those contaminants are. The constituents to be monitored for during the Corrective Action Program will be those 40 CFR 264 Appendix IX constituents identified to be present through previous monitoring at the compliance point. Comprehensive Appendix IX screening will not be conducted during the Corrective Action Program. Appendix IX analysis will have already been conducted at that point as a part of the annual Appendix IX screening analyses that will be conducted during the compliance period proposed in Section E-3. This comprehensive Appendix IX monitoring is believed to be adequate to confirm detections for any Appendix IX constituents present, thereby precluding the need for additional comprehensive Appendix IX analysis.

E-3g(7) Schedule for Corrective Action Measures [40 CFR 264.100(e)(3)]

In accordance with 40 CFR 264.100(e)(3), a schedule will be submitted along with the Corrective Action Plan as a part of the application for permit modification described in E-3g(1). The schedule will include reasonable time periods for the initiation and completion of all corrective action measures.

E-3g(8) Termination of Corrective Action Measures [40 CFR 264.100(e)(4)]

In accordance with 40 CFR 264.100(e)(4), the Corrective Action Program described in this Section will be terminated once the concentration of hazardous constituents under 40 CFR 264.93 are reduced to levels below their respective concentration limits specified in the permit under 40 CFR 264.94 or alternate levels established under the Corrective Action Program. After termination of the Corrective Action Program, an appropriate detection monitoring program will be instituted in accordance with 40 CFR 264.98 for the remainder of the post-closure period.

E-3g(9) Reporting and Notification [40 CFR 264.100(g) and (h)]

The Post-Closure Contact will prepare and submit semi-annual reports to the EPA Regional Administrator and the DEP Commissioner describing the effectiveness of the Corrective Action Program.

If it is determined at any time that the Corrective Action Program no longer satisfies the requirements of 40 CFR 264.100, the Post-Closure Contact will submit, within 90 days, an application for a permit modification to make any appropriate changes to the program.

Appendix E-1

Geologic Logs

WehranEnviroTech

GROUNDWATER WELL #1 DRILLING LOG

WELL NUMBER: 1
OWNER: Corps of Engineers
LOCATION: NFC [illegible]
LAGOON 3
Stratford Conn.
ADDRESS:
TOTAL DEPTH: 26.5
SURFACE ELEVATION:
WATER LEVEL: -7
DRILLING COMPANY: East Coast
DRILLING METHOD: Auger
DATE DRILLED: 11 10 81
DRILLER: D. Q
HELPER:
LOG BY: DCJ

NOTES

DEPTH (FEET)	GRAPHIC LOG	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE BLOWS*	DESCRIPTION / SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)
0					0-3 Dike fill. Tan sand with lenses of black organic soil.
					3'-10' Black organic soil with layers of peat and wood fragments.
10					10-14 grey course grained sand.
					14-18 grey medium grained sand.
					18-19 medium sand and gravel.
20					19-26.5 grey medium-coarse sand. (H_2S odor)
25		S1	S.S.		split spoon sample 25'-26.5'
					Casing 2.0" i.d. PVC pipe
30					Installed 10' screen 15'-25'

* ASTM D1586

SHEET ___ OF ___

GROUNDWATER WELL #2 DRILLING LOG

WELL NUMBER 2 OWNER Corps of Engineers
LOCATION NEC Lagoon 2 ADDRESS:
Stratford Conn.
TOTAL DEPTH 26.5'
SURFACE ELEVATION
WATER LEVEL: 7.3'
DRILLING COMPANY: East Coast
DRILLING METHOD: Auger
DATE DRILLED 11-10-81
DRILLER: DQ
HELPER:
LOG BY RCJ

NOTES

DEPTH (FEET)	GRAPHIC LOG	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE BLOWS*	DESCRIPTION / SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)
0					
					0-7' Dike fill. Tan Sand w/ fines
10					7'-14' Black organic soil with layers of peat and wood fragments.
					14-26.5' grey medium-coarse grained sand
20					split spoon sample (26.5'). H_2S odor. Casing 2.0 O.D. PVC pipe. Screen 15-25'
		S1	SS		
30					

*ASTM D1586

SHEET ___ OF ___

GROUNDWATER WELL #3 DRILLING LOG

WELL NUMBER: 3
OWNER: Corps of Engineers
LOCATION: [illegible] Lagoon 3, Stratford Conn.
ADDRESS:
TOTAL DEPTH: 25'
SURFACE ELEVATION:
WATER LEVEL: -6.5'

DRILLING COMPANY: East Coast
DRILLING METHOD: Auger
DATE DRILLED: 11-11-81
DRILLER:
HELPER:
LOG BY:

NOTES

DEPTH (FEET)	GRAPHIC LOG	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE BLOWS*	DESCRIPTION / SOIL CLASSIFICATION (COLOR, TEXTURE STRUCTURES)
0					
					0'-9' fine-coarse sand and gravel
10					
					9-13 black organic soil with peat and wood fragments
20					
					13-25 brown medium grained sand with fine sand and silt. Schist fragment at bottom of spoon sample. No odor.
					split spoon sample
					Casing 2.0" O.D. PVC Pipe with 10' screen 15-25.'
30					

*ASTM D1586

SHEET ___ OF ___

TABLE II-4

GROUNDWATER WELL #4 DRILLING LOG

WELL NUMBER 4 OWNER [illegible]

LOCATION [illegible] ADDRESS

[illegible]

TOTAL DEPTH

SURFACE ELEVATION WATER LEVEL* ~5

DRILLING COMPANY East Coast DRILLING METHOD Auger DATE DRILLED 11-11-81

DRILLER [illegible] HELPER

LOG BY LKS

NOTES

DEPTH (FEET)	GRAPHIC LOG	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE B. CONS.	DESCRIPTION / SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)
					0 - .3 Asphalt paving
					0.3 - 4.0 Brown fine sand and silt with gravel
					4-12 grey silty sand. slight odor.
10					
					12-20 peat with fine sand and wood fragments
					15-17' split spoon sample.
20					
					20-34 medium sand with some silt and gravel.
					split spoon sample 25-27'.
30					
					34-36 - light silty sand with some gravel
					split spoon sample 34'-36'
					2.0" O.D. PVC Casing with screen 25'-35'

* ASTM D1586

SHEET ___ OF ___

GROUNDWATER WELL #5 DRILLING LOG

WELL NUMBER	5	OWNER	Corps of Engineers
LOCATION	Equalizer Basin	ADDRESS	
		TOTAL DEPTH	32
SURFACE ELEVATION		WATER LEVEL	
DRILLING COMPANY	East Coast	DRILLING METHOD	Auger
DATE DRILLED	11-11-81		
DRILLER	D. R.	HELPER	
LOG BY	LRS		

NOTES

DEPTH (FEET)	GRAPHIC LOG	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE BLOWS*	DESCRIPTION / SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)
0					0'-8' dike fill soil. Brown silt and sand
					8'-15' peat and organic soil. H_2S odor
10					
					15'-30' Coarse sand with traces of peat
20					
					30'-32' silt and fine sand and peat. Installed 10' 2" O.D. PVC screen 20'-30'.
30					Split spoon sample

* ASTM D1586

SHEET ____ OF ____

WELL LOG

LEGGETTE, BRASHEARS & GRAHAM, INC.
CONSULTING GROUND-WATER GEOLOGISTS
72 DANBURY ROAD
WILTON, CT. 06897

OWNER

WELL NO. MW-6

DATE 7/20 PAGE 1 OF 2 PA

LOCATION: Stratford, Conn.

DATE COMPLETED: July 20, 1983

DRILLING COMPANY: East Coast Drilling Co.

DRILLING METHOD: Hollow-stem auger

SAMPLING METHOD: split spoon & ditch

SAMPLES EXAMINED BY: J. Naso, Jr.

REFERENCE POINT: Land Surface

ELEVATION OF R.P.:

WELL CONSTRUCTION

SCREEN TYPE: 2' PVC

DIAM.: 2-inch SLOT NO.: 10

SETTING: 18.92 - 28.92

GRAVEL PACK SIZE: formation

CASING: 2-inch PVC

DEVELOPMENT: suction pump

PUMPING TEST

DATE:

DURATION:

STATIC WATER LEVEL:

PUMPING WATER LEVEL:

YIELD:

REMARKS:
1/ S-1 split-spoon #1
2/ blow count
18-inch spoon
water at ±5-feet bgl

DEPTH IN FEET FROM	TO	DESCRIPTION
-	---	
0	5	Ditch - sand, very fine to medium, tan to bro silt with muscovite; asphalt pavement
S-1 1/ 5.0	3-3-5 2/ 6.5	Sand, very fine to medium, tan to brown; sil with muscovite
		Material heaving into auger below SWL.
		Cannot spoon 10-11.5, use roller-bit & H_2O tc clean out.
5	10	Ditch - sand, coarse to medium, brown, gravel fine to medium
S-2 10.5	5-11-10 12.0	Sand, very coarse to medium; brown; gravel angular to subangular, fine to medium
10	15	Ditch - sand, medium to coarse, brown; gravel angular to subangular, fine to medium
S-3 15.0	3-2-3 16.5	Sand, very coarse to medium, some fine; brown, gravel, fine to medium
15	20	Ditch - sand, coarse to fine, brown; gravel, to medium
		Driving spoon 20-21.5 6 inch heave - driller asked to drive spoon 2 feet
S-4 20.0	9-7-11 21.5	Sand, very fine to coarse, brown; gravel fine medium
20	25	Ditch - sand, coarse to fine, brown; gravel, fi to medium

OWNER AVCO-Lycoming

WELL NO. MW-6

DEPTH IN FEET FROM	TO	DESCRIPTION
S-5 25.0	12-13-14 26.5	Sand, very fine to coarse; tan; silt; gravel
25	30	Ditch - sand, fine to medium with some coarse
25	30	Ditch - gravel, fine; silt
S-6 30.0	15-7-12 31.5	Sand, very fine; tan to brown; silt with clay
		Top of spoon might be heave from ±29' bgl

LEGGETTE, BRASHEARS & GRAHAM, INC.

CONSULTING GROUND-WATER GEOLOGISTS

72 DANBURY ROAD
WILTON, CT. 06897

WELL NO. MW-7

DATE 7/20/83 PAGE 1 OF 1 PAGES

LOCATION: Stratford, Conn.

DATE COMPLETED: July 21, 1983

DRILLING COMPANY: East Coast Drilling Co.

DRILLING METHOD: hollow stem auger

SAMPLING METHOD: split spoon & ditch

SAMPLES EXAMINED BY: J. Naso, Jr.

REFERENCE POINT: land surface

ELEVATION OF R.P.:

WELL CONSTRUCTION

SCREEN TYPE: 2-inch PVC

DIAM. 2-inch SLOT NO. 1-

SETTING: 20-30 feet bgl

GRAVEL PACK SIZE: formation

CASING: +1 - 20 feet bgl

DEVELOPMENT: suction pump

PUMPING TEST

DATE:

DURATION:

STATIC WATER LEVEL:

PUMPING WATER LEVEL:

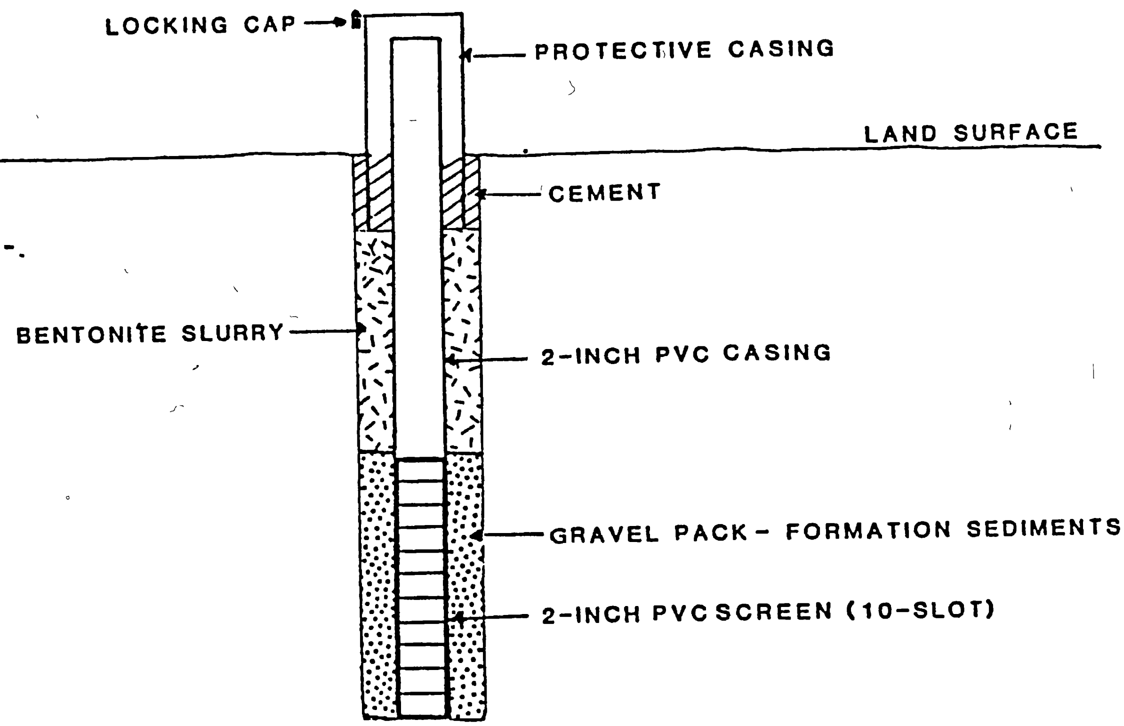
YIELD:

REMARKS:
1/S-1 split spoon #1
2/Blow Count
18-inch spoon
water at ±5-feet bgl

DEPTH IN FEET FROM	TO	DESCRIPTION
0	5	Ditch - sand, very fine to coarse, brown; gravel, fine to medium; asphalt pavement
S-1[1/] 5.0	7-6-7[2/] 6.5	Sand, very fine to very coarse, brown; gravel, fine to medium
5	10	Ditch - sand, very fine to coarse, brown; gravel fine to medium
S-2 10.5	3-2-11 12.0	Sand, very fine to medium, some coarse, brown; silt
10	15	Ditch - sand, very fine to coarse, brown; gravel fine; silt
S-3 15.0	11-7-11 16.5	Sand, fine to coarse, brown; silt
15	20	Ditch - sand, very fine to coarse, brown; silt
S-4 20.0	20-9-11 21.5	Sand, very fine to very coarse, brown; grav fine; silt
20	25	Ditch - sand, very fine to coarse, brown; gravel fine; silt
S-5 25.0	28-28-30 26.5	Sand, very fine to fine, brown
25	30	Ditch - sand, very fine to fine, brown,; silt; gravel
S-6 31.5	9-8-17 33.0	Sand, very fine to fine, brown; silt

AVCO Lycoming Division
Stratford, Connecticut

Schematic Well Construction



Well no.	I.D. (inches)	Screen setting (ft. bg)1/	Slot size	Gravel pack
1	2.0 PVC	15 - 25	10	formation
2	2.0 PVC	15 - 25	10	formation
3	2.0 PVC	15 - 25	10	formation
4	2.0 PVC	25 - 35	10	formation
5	2.0 PVC	20 - 30	10	formation
6	2.0 PVC	18.92 - 28.92	10	formation
7	2.0 PVC	20 - 30	10	formation

1/ Feet below grade.

METCALF & EDDY
ENGINEERS

REPORT OF EXPLORATION

INSPECTOR: Bill Checchi
DRILL CONTRACTOR: Welti Assoc
DRILLER:
TYPE DRILL: Dozer MTD Mobile B305
SIZE & TYPE OF CASING: HSA
DRILLING FLUID: N/A

HOLE NO.: B 1 (OW) (20') 4S
ACCT. ABBR.: AVCO - LYCOMING
ACCT. NO.: 1569
LOCATION: STRATFORD CT.
ELEVATION:
DATE START: 1 OCT. 85 1600
DATE COMPLETE: 1 OCT. 85 1530
WEATHER: P. CLOUDY - 80°

SAMPLE DATA

NO.	TYPE OF SAMPLE	DEPTH OF SAMPLE FROM	DEPTH OF SAMPLE TO	DRIVING RESISTANCE BLOWS/6 IN.	LENGTH DRIVEN	RECOVERY IN. OR %	SAMPLE NO.	FIELD CLASSIFICATION AND REMARKS
S1	SPT	0	2.0	13-16-12-10	24	16	SM	CF Sand, lit Silt, lit Gravel
S2	"	6	8.0	4-8-11-13	24	14	SM	CF Sand, lit Silt, Tr. Gravel
S3	"	12	14.0	16-16-11-10	24	16	SM	Same
S4	"	18	20	13-16-11-11	24	12	SM	
			E.O.B.					

FIELD LOG OF BORING

DEPTH FROM	DEPTH TO	
0		CF Sand lit Silt
	20	lit /Same F Gravel

GROUNDWATER DATA

	DATE	TIME	DEPTH
AT COMPLETION	10-1-85	1700	5.0

WORK COMPLETED

DRILL TYPE	NO. FEET	DIA.	SAMPL. TYPE	NO.	DIA.
CASE					

TIME DISTRIBUTION

DRILLING ______ MOVING ON ______
REPAIRING ______ STAND BY ______
TOTAL ______

SHEET 1 OF 1 SHEETS

HOLE NO. B 1

METCALF & EDDY
ENGINEERS

REPORT OF EXPLORATION

INSPECTOR: Bill Checchi	HOLE NO.: B-2 (20') 4s
DRILL CONTRACTOR: Welti Assoc. Inc.	ACCT. ABBR.: AVCO-LYCOMING
DRILLER:	ACCT. NO.: 1509
TYPE DRILL: DOZER MTD - MOBILE B.30S	LOCATION: STRATFORD, CT.
SIZE & TYPE OF CASING: HSA	ELEVATION:
DRILLING FLUID: N/A	DATE START: 30 SEPT. 1985 1500
	DATE COMPLETE: 30 SEPT. 1985
	WEATHER: CLEAR - 80°

SAMPLE DATA

NO.	TYPE OF SAMPLE	DEPTH OF SAMPLE FROM	DEPTH OF SAMPLE TO	DRIVING RESISTANCE BLOWS/6 IN.	LENGTH DRIVEN	RECOVERY IN. OR %	SAMPLE NO.	FIELD CLASSIFICATION AND REMARKS
S1	SPT	0	2.	2-7-8-6	24	12	SM	
S2	"	6	8	1-1-1-1	24	12	OL	
S3	"	12	14	12-37-44-33	24	14	OL/SM	Gray OL / To CF Sand (Tan) & Some F Gravel w/ Silt
S4	"	18	20	19-25-24-29	24	16	SM	Tan CF Sand Some F Gravel w/ Silt
			E.O.B.					

FIELD LOG OF BORING

DEPTH FROM	DEPTH TO	FIELD LOG OF BORING
0	0.6	Brn Silty F. Sands Some Roots
0.6	2.0	Silty Tan F. Sand
2.0		Grey F Sandy Silty Clay
	[illegible].5	& Some Peat (Organic ?)
1?.5		Tan CF Sand w/ Silt
	20	Some F. Gravel

20' Soil
4 Samples
10' Screen - 5' Riser
Protector Pipe
Develop Well

GROUNDWATER DATA

	DATE	TIME	DEPTH
AT COMPLETION			

WORK COMPLETED

DRILL TYPE	NO. FEET	DIA.	SAMPLE TYPE	NO.	DIA.

CASE

TIME DISTRIBUTION

DRILLING ______ MOVING ON ______
REPAIRING ______ STAND BY ______
TOTAL ______

SHEET 1 OF 1 SHEETS

HOLE NO. B-2

METCALF & EDDY
ENGINEERS

REPORT OF EXPLORATION

INSPECTOR Bill Checchi	HOLE NO. B-3 (20') 45
DRILL CONTRACTOR Welti Assoc., Inc.	ACCT. ABBR. AVCO-LYCOMING
	ACCT. NO. J-1569
DRILLER	LOCATION STRATFORD CT.
	ELEVATION
TYPE DRILL DOZER MTD MOBILE B-30S	DATE START 19 SEPT. 1985 1600
SIZE & TYPE OF CASING H.S.A.	DATE COMPLETE 19 SEPT. 1985 1730
DRILLING FLUID	WEATHER PARTLY CLOUDY - 80°s

SAMPLE DATA

NO.	TYPE OF SAMPLE	DEPTH OF SAMPLE FROM	DEPTH OF SAMPLE TO	DRIVING RESISTANCE BLOWS/6 IN.	LENGTH DRIVEN	RECOVERY IN. OR %	[illegible] NO.
S1	SPT	0	2'	2-6-15-17	24	12	SP
S2	"	6'	8'	8-19-10-[illegible]	"	12	SM
S3	"	12'	14'	6-10-16-15	"	18	SM
S4	"	18'	20'	10-3?-55-[illegible]	"	24	SM
			E.O.B.				

FIELD CLASSIFICATION AND REMARKS

1" Gravel in Tip (wet [illegible]) [illegible] Gravel
Tan MF Sand, [illegible], Lit Silt ([illegible])
Lots of Gravel (C-F) in Auger Spoil [illegible]
change about 4' to Blk CF Sand [illegible]
Spoon wet @ 6'
Grey MF Sand Some Silt, Trace F. Gravel
Grey CF Sand [illegible] [illegible]
& Some Silt

FIELD LOG OF BORING

DEPTH FROM	DEPTH TO	FIELD LOG OF BORING
0	4'	± tan Gravelly Sandy Fill
4'	"	Black Silty Gravelly Sand
.	20'	to Grey " " "

20. Soil
4 Samples

GROUNDWATER DATA

	DATE	TIME	DEPTH
AT COMPLETION	9-19-85	1730	6.0

WORK COMPLETED

DRILL TYPE	NO. FEET	DIA.	SAMPLE TYPE	NO.	DIA.

CASE

TIME DISTRIBUTION

DRILLING ______ MOVING ON ______
REPAIRING ______ STAND BY ______
TOTAL ______

SHEET 1 OF 1 SHEETS

METCALF & EDDY
ENGINEERS

REPORT OF EXPLORATION

INSPECTOR: Bill Checchi

DRILL CONTRACTOR: Welti, Assoc, Inc.

DRILLER:

TYPE DRILL: DOZER MTD. MOBILE B-30 S

SIZE & TYPE OF CASING: HSA (I.D.)

DRILLING FLUID: None!

HOLE NO.: B-4 (30') 9s

ACCT. ABBR.: AVCO - LYCOMING

ACCT. NO.: J-1569

LOCATION: STRATFORD, CT.

ELEVATION:

DATE START: 19 SEPT. 1985

DATE COMPLETE: 19 SEPT. 1985 1508

WEATHER: P. CLOUDY 80's

SAMPLE DATA

NO.	TYPE OF SAMPLE	DEPTH OF SAMPLE FROM	TO	DRIVING RESISTANCE BLOWS/6 IN.	LENGTH DRIVEN	RECOVERY IN. OR %	JAR, SAMP.
S1	SPT.	0'	2'	2-11-17-26	24"	16"	(SP) X
S2	"	3.5	5.5	14-15-16-11	"	14"	(SP) X
S3	"	7	9	2-1-1-2	"	12"	X (OL)
S4	"	10.5	12.5	1-1-2-3	"	16"	X (OL)
S5	"	14	16	6-8-12-11	"	0 first 12"	X (SP)
S6	"	17.5	19.5	Running	Sand	—	—
S7	"	21	23	11-22-26-52	24	24	X (SP)
S8	"	24.5	26.5	7-15-25-[illegible]	"	"	X (SP)
S9	"	28'	30'	—	Running	Sa.	(SP)
		E.O.B.	(30.0)				

FIELD CLASSIFICATION AND REMARKS

[illegible] Tan mf Sand Lit. F. Grave[l]
As Above change [illegible] to 4'
[illegible] Sand [illegible]
(Augers [illegible]) To 7' black [illegible]
BLACK [illegible] (OL)
" " [illegible] Fine Peat
Sand [illegible] 12.4
Running [illegible] CF Sand [illegible]
[illegible] CF S. [illegible] Tight [illegible]
17' [illegible] Reduce [illegible] SPT To 17.5
23 [illegible] [illegible]
CF Sand (Gray) [illegible]
[illegible] running Sand problem
[illegible] Sample [illegible]
Lit Silt, Gray as above
TWO attempts to [illegible] as
[illegible]

FIELD LOG OF BORING

DEPTH FROM	TO	
0	4	
4	4.3	Black oily Sand/Peg CF Sand To Silt
4.3	6.0	mf Tan Sand
6	12.4	Black [illegible] Peat (Organic Soil)
12.4	↓	Running [illegible] CF Sand [illegible]
	30'	(Gray)

30.0 Soil
9 SAMPLES

GROUNDWATER DATA

	DATE	TIME	DEPTH
AT COMPLETION	9-19-85	14:30	6.5

WORK COMPLETED

DRILL TYPE	NO. FEET	DIA.	SAMPLE TYPE	NO.	DIA.

CASE

TIME DISTRIBUTION

DRILLING ______ MOVING ON ______

REPAIRING ______ STAND BY ______

TOTAL ______

SHEET 1 OF 1 SHEETS

HOLE NO. B-[4]

0730 -

METCALF & EDDY
ENGINEERS

REPORT OF EXPLORATION

INSPECTOR	Bill Checchi	HOLE NO.	B5 (25)
DRILL CONTRACTOR	Welti Assoc Inc.	ACCT. ABBR.	AVCO - LYCOMING
DRILLER		ACCT. NO.	1569
TYPE DRILL	Dozer Mtd (B30s)	LOCATION	STRATFORD, CT.
SIZE & TYPE OF CASING	HSA	ELEVATION	
DRILLING FLUID	N/A	DATE START	1 OCT 85 1000
		DATE COMPLETE	1 OCT 85 1130
		WEATHER	P. Cloudy 80°±

SAMPLE DATA

NO.	TYPE OF SAMPLE	DEPTH OF SAMPLE FROM	TO	DRIVING RESISTANCE BLOWS/6 IN.	LENGTH DRIVEN	RECOVERY IN. OR %	SAMPLE NO.	FIELD CLASSIFICATION AND REMARKS
S-1	SPT	0	2.0	5-20-31-28	24	19	SM	[illegible]
S2	"	4.6	6.6	2-2-1-1	24	12	ML/SM	[illegible]
S3	"	9.2	11.2	1-1-2-2	24	18	PE/CK	1-1-2-2
S4	"	13.8	15.9	5-5-7-12	24	10	SM/PE	
S5	"	18.4	20.4	29-34-39-33	24	18	SM	
S6	"	23	25	17-26-37-47	24	24	SM	
			E.O.B.					

FIELD LOG OF BORING

DEPTH FROM	TO	FIELD LOG OF BORING
0	3.5	tan [illegible] CF Sand & Gravel
3.5		gray [illegible] mf Silty fa[illegible]
	9.6	(Fuel oil smell)
9.6		brn PE.
	13.3	
13.3		tan mf Sand little silt lit
		& Clay trace [illegible]
		(Some Peat in 13.8' sample)
		(Some Silt " " ")
		Gr. Silt and F Sand trace
	25	organics (smell)

25' Soil
6 Samples

GROUNDWATER DATA

	DATE	TIME	DEPTH
AT COMPLETION	10-1-85	1130	5.0

WORK COMPLETED

DRILL TYPE	NO. FEET	DIA.	SAMPLE TYPE	NO.	DIA.
CASE					

TIME DISTRIBUTION

DRILLING ______ MOVING ON ______
REPAIRING ______ STAND BY ______
TOTAL ______

SHEET 1 OF 1 SHEETS

HOLE NO. B5

METCALF & EDDY
ENGINEERS

REPORT OF EXPLORATION

INSPECTOR Bill Checchi
DRILL CONTRACTOR Welti Assoc. Inc.
DRILLER
TYPE DRILL Dozer MTD Mobile B30S
SIZE & TYPE OF CASING (Solid) FLT. Auger to 10.6' HW Casing
DRILLING FLUID WATER

HOLE NO. B-6
ACCT. ABBR. AVCO – LYCOMING
ACCT. NO. 1569
LOCATION STRATFORD, CT.
ELEVATION
DATE START 23 SEPT 85 1400
DATE COMPLETE 24 SEPT 85
WEATHER CLOUDY 70°± [illegible]

SAMPLE DATA

NO.	TYPE OF SAMPLE	DEPTH OF SAMPLE FROM	TO	DRIVING RESISTANCE BLOWS/6 IN.	LENGTH DRIVEN	RECOVERY IN. OR %	SAMPLE MK.
S1	SPT	0.8	2.0	14-60 for 2"	14"	12	SP
S2	"	4.8	6.8	6-6-4-4	24	12	SP/SM
S3	"	10.6	11.9	30-83 for 4"	16"	16"	SM
S4	"	16.0	18.0	3-26-33-24	24"	12"	SP SM
S5	"	22.2	24.2	53-24-12-12	24"	0/12	
S6	"	28	30	7-5-6-9	24		
		E.O.B					

Margin notes: 930; 1.9 ▽; [illegible]

FIELD CLASSIFICATION AND REMARKS

Gravelly [illegible] sand [illegible]
Augered [illegible] 3 [illegible]
[illegible] 5.9
[illegible]
brown [illegible]
[illegible]
[illegible] – 12' [illegible]
[illegible] 9.5 [illegible]
drove casing [illegible] 9.5 – 14.5
[illegible]
[illegible] to 22' [illegible]
due to [illegible] 22' [illegible]
[illegible]
[illegible] of silty sand [illegible]
[illegible]
Wash from [illegible] to [illegible]!!

FIELD LOG OF BORING

DEPTH FROM	TO	
0	0.8	Concrete w/ rebar
0.8	3.0	brn [illegible] sand and Gravel
3.0	3.9	Boulder
3.9		Brn mf sand Tr. Silt & Gravel
[illegible]	5.9	[illegible]
[illegible]	8	(?) black [illegible] from 8' ~ 10'
[illegible]	(SM)	[illegible] tan-brn " from 10' ~ 11' ±
10	10.6	? [illegible] 12' ±
12		brown [illegible] SP-SM
[illegible]		Silty [illegible] [illegible]
		(Small 'Coke' [illegible] in Wash [illegible]
	20	[illegible] 12' ~ 16' Wash)
20		brn [illegible] in [illegible] Wash
	30	but little recovery in drive
		Sampler!

GROUNDWATER DATA

	DATE	TIME	DEPTH
AT COMPLETION			
	9-24-85	09:30	4.9

WORK COMPLETED

DRILL TYPE	NO. FEET	DIA.	SAMPLE TYPE	NO.	DIA.

CASE

TIME DISTRIBUTION

DRILLING ____ MOVING ON ____
REPAIRING ____ STAND BY ____
TOTAL ____

SHEET 1 OF 1 SHEETS

30' Soil 10' Screen Protector Pipe
[illegible] Samples 5' Riser

FORM 200

HOLE NO. B-6

METCALF & EDDY
ENGINEERS

REPORT OF EXPLORATION

INSPECTOR: Bill CHECCHI

DRILL CONTRACTOR: WELTI, Assoc., Inc.

DRILLER:

TYPE DRILL: POWER MTO - MOBILE B-30'S

SIZE & TYPE OF CASING: HSA

DRILLING FLUID:

HOLE NO.: B-7 (20) 65

ACCT. ABBR.: AVCO-LYCOMING

ACCT. NO.: J-1569

LOCATION: STRATFORD, CT.

ELEVATION:

DATE START: 20 SEPT. 1985 0800

DATE COMPLETE: 20 SEPT. 1985 1130

WEATHER: P. CLOUDY 80's

SAMPLE DATA

	NO.	TYPE OF SAMPLE	DEPTH OF SAMPLE FROM	DEPTH OF SAMPLE TO	DRIVING RESISTANCE BLOWS/6 IN.	LENGTH DRIVEN	RECOVERY IN. OR %	[illegible] NO.	FIELD CLASSIFICATION AND REMARKS
0920	S1	SPT	0	2'	4-28-50-16	24"	14"	SM	Tan M-F Sand w/ Some Silt & F Gravel
0850	S2	"	3.6	5.6	24-33-45-38	"	14"	SM	[illegible] C&F Sand [illegible], Some gravel
	S3	"	7.2	9.2	13-33-39-44	"	12	SM	black silty SM with [illegible] gravel M-F [illegible] Sand
	S4	"	10.8	12.8	4-10-11-22	"	12"	SM	black silty gravelly silty Sand
	S5	"	14.4	16.4	1/18" 1/6"	"	0/12	SM	black silty gravelly silty Sand - Running Sand @ 14± / " " " 0.5 [illegible]
	S6	"	18	20	4-4-5-6	"	12"	SM	[illegible]

E.O.B.

FIELD LOG OF BORING

DEPTH FROM	DEPTH TO	FIELD LOG OF BORING
0	3'	Tan (SM) M-F Sand w/ Some Silt & F. Gravel
3'		Black-brown Gravelly and Silty CF Sand
	8	(Some [illegible] Silt in [illegible])
8		black oil impregnated Gravelly Sand
	9	
9		[illegible] brown Silty Gravelly M-F Sand
	20	(Oil impregnated)

Oily

20' Soil

6 Samples

GROUNDWATER DATA

	DATE	TIME	DEPTH
AT COMPLETION	9-20-85	1030	6 ±

WORK COMPLETED

DRILL TYPE	NO. FEET	DIA.	SAMPLE TYPE	NO.	DIA.

CASE:

TIME DISTRIBUTION

DRILLING: ______ MOVING ON: ______

REPAIRING: ______ STAND BY: ______

TOTAL: ______

SHEET 1 OF 1 SHEETS

METCALF & EDDY
ENGINEERS

REPORT OF EXPLORATION

INSPECTOR	Bill Checchi	HOLE NO.	B-8
DRILL CONTRACTOR	Welti Assoc. Inc.	ACCT. ABBR.	AVCO - LYCOMING
DRILLER		ACCT. NO.	1569
TYPE DRILL	Dozer Mtd Mobile B30s	LOCATION	STRATFORD, CT.
SIZE & TYPE OF CASING	HSA	ELEVATION	
DRILLING FLUID	N/A	DATE START	1 OCT 85 1300
		DATE COMPLETE	1 OCT 85 1500
		WEATHER	P. CLOUDY 80°

SAMPLE DATA

NO.	TYPE OF SAMPLE	DEPTH OF SAMPLE FROM	DEPTH OF SAMPLE TO	DRIVING RESISTANCE BLOWS/6 IN.	LENGTH DRIVEN	RECOVERY IN. OR %	SAMPLE NO.	FIELD CLASSIFICATION AND REMARKS
S1	SPT	0	2.0	3-3-5-5	24	14	SM	Brn Silt, F. Gravel &. CF Sand Lit [illegible]
S2	"	4.1	6.1	6-12-23-20	24	16	SM	oily smell "
S3	"	8.2	10.2	5-4-2-2	24	0	SM	Auger spoil 2nd Attempt
S4	"	12.3	14.3	1/12-1-1	24	0/14	SM/ML	
S5	"	16.4	18.1	1-2-3-4	24	16	SM-ML / Pt	Brn Pt.
S6	"	20.5	22.5	1-2-1-2	24	12	Pt	" "
S7	"	24.6	25.5	40-63/4	10	10	SM	Brn CF Sand Lit Silt Tr. F Gravel, Peat
S8	"	28.7	30.7	11-13-24-29	24	24	SM/ML	Grey Silt & F Sand @ 30' ±
S9	"	33	35	37-25-34-40	24		SM/ML	As Above CM Sand
			E.O.B.					

FIELD LOG OF BORING

DEPTH FROM	DEPTH TO	FIELD LOG OF BORING
0	3.0	brn CF Sand, Lit Silt, Some F Gravel
3.0		Grey MF Sand ~~Some F Gravel~~
	5.0	~~oily smell @ 5'±~~
5.0		oily smell: black MF Sand &
	7.5	Some F Gravel Lit Silt
7.5		black oily smelling SM/ML
	17.8	
17.8		Brn Peat
	24.6	
24.6		Brn CF Sand, Some
		Organics (Pt) Lit/Trace Silt
	30	Trace F Gravel
30		Grey F Sand and Silt
		SM-ML

GROUNDWATER DATA

	DATE	TIME	DEPTH
AT COMPLETION	10-1-85	1500	5.5

WORK COMPLETED

DRILL TYPE	NO. FEET	DIA.	SAMPLE TYPE	NO.	DIA.

CASE

TIME DISTRIBUTION

DRILLING ________ MOVING ON ________
REPAIRING ________ STAND BY ________
TOTAL ________

SHEET 1 OF 1 SHEETS

METCALF & EDDY
ENGINEERS

REPORT OF EXPLORATION

INSPECTOR: Bill Checchi	HOLE NO. B-9 (20') 6.5
DRILL CONTRACTOR: Worti Assoc. Inc.	ACCT. ABBR. AVCO-LYCOMING
DRILLER:	ACCT. NO. 1569
TYPE DRILL: Dozer MA - Mobile B30 S	LOCATION: STRATFORD, CT.
SIZE & TYPE OF CASING: HSA	ELEVATION:
DRILLING FLUID:	DATE START: 20 Sept 85 1100
	DATE COMPLETE: 20 Sept 85 1400
	WEATHER: Clear, 80°F

SAMPLE DATA

NO.	TYPE OF SAMPLE	DEPTH OF SAMPLE FROM	DEPTH OF SAMPLE TO	DRIVING RESISTANCE BLOWS/6 IN.	LENGTH DRIVEN	RECOVERY IN. OR %	SAMPLE NO.	FIELD CLASSIFICATION AND REMARKS
S1	SPT	0.4	2.4	25-44-43-38	24	12"	S4	CF Tan & Black Silty [illegible] Gravel (Oil [illegible]) Black Gravelly Silty CF Sand (Oil ?)
S2	"	3.6	5.6	5-9-7-11	"	12"	S4	
S3	"	7.2	9.2	37-43-33-22	"	12"	S4	(Silty Black Sand [illegible] 7.2') (Gasoline smell about 9'±)
S4	"	10.8	12.8	1-1-1-1	"	16"	Pt	Peat [illegible]
S5	"	14.4	16.4	2/12-1-2	"	18"	"	Peat [illegible] Cleaner
S6	"	18	20.	1/12-2-2	"	18"	"	" " "
			E.O.B.					

FIELD LOG OF BORING

DEPTH FROM	DEPTH TO	FIELD LOG OF BORING
0	0.4	(5") bit Conc. Pavement
0.4	3	Tan Gravelly Silty CF Sand
3		Black " " " (oily ? smell)
	9	
9		Brown Peat Some Oil
	20	Smell in upper layer
		20' Soil
		6 Samples

GROUNDWATER DATA

	DATE	TIME	DEPTH
AT COMPLETION	9-20-85	1400	6'±

WORK COMPLETED

DRILL TYPE	NO. FEET	DIA.	SAMPLE TYPE	NO.	DIA.

BASE

TIME DISTRIBUTION

DRILLING ______ MOVING ON ______
REPAIRING ______ STAND BY ______
TOTAL ______

SHEET 1 OF 1 SHEETS

FORM 300

HOLE NO. B-9

METCALF & EDDY
ENGINEERS

REPORT OF EXPLORATION

INSPECTOR: BILL CHECCHI
DRILL CONTRACTOR: Wetti Assoc. Inc
DRILLER:
TYPE DRILL: Dozer Mtd - Mobile B30S
SIZE & TYPE OF CASING: HSA
DRILLING FLUID: N/A

HOLE NO.: B 10
ACCT. ABBR.: AVCO - LYCOMING
ACCT. NO.: 1567
LOCATION: STRATFORD, CT.
ELEVATION:
DATE START: 25 Sept 85 1400
DATE COMPLETE: 25 Sept 85 1530
WEATHER: Clear 80° (F)

SAMPLE DATA

NO.	TYPE OF SAMPLE	DEPTH OF SAMPLE FROM	DEPTH OF SAMPLE TO	DRIVING RESISTANCE BLOWS/6 IN.	LENGTH DRIVEN	RECOVERY IN. OR %	SAMPLE NO.	FIELD CLASSIFICATION AND REMARKS
S1	SPT	0	2	1/12-4-13	24	14	SM	
S2	"	3.5	5.5	6-5-5-8	24	16	SM/PE	
S3	"	7	9	9-11-10-11	24	0/12	SM	Grey auger spoil [illegible]
S4	"	10.5	12.5	2-1-2-1	24	24	~~SM~~ Pt	
S5	"	14	16	1-1-1-2	24	16	Pt/OL	Brn auger spoil with [illegible]
S6	"	17.5	19.5	1-1-2-2	24	24	Pt/OL	
S7	"	21	23	1-2-3-2	24	16	Pt/OL	
S8	"	24.5	26.5	1-2-2-3	24	16	Pt/OL	
S9	"	28	30	1-1-1-2	24	16	PE	
			E.O.B.					

FIELD LOG OF BORING

DEPTH FROM	DEPTH TO	FIELD LOG OF BORING
0	1.6	Tan Sandy and Silt Tr. Gravel
1.6		Gray SM Silt and Sand
	5.0	Tr./Lit F. Gravel
5.0	5.2	black "oily" smelling CF Sand
		f Gravel and Silt
5.2	5.4	brn Silty CF Sand Some Fines
5.4	5.5	black "oily" Smelling MF Sand
5.5	~~10~~	10.5 Silt & Peat f ~~Sand~~
10	~~[illegible]~~	~~[illegible]~~ brn Peat with
~~[illegible]~~	15.5	Brn F Sand, Silt layers
15.5		Brn-Grey Clayey-Silty Peaty
	30	(OL? PE?)

30' Soil
9 Samples

GROUNDWATER DATA

	DATE	TIME	DEPTH
AT COMPLETION			

WORK COMPLETED

DRILL TYPE	NO. FEET	DIA.	SAMPLE TYPE	NO.	DIA.

CASE

TIME DISTRIBUTION

DRILLING ____ MOVING ON ____
REPAIRING ____ STAND BY ____
TOTAL ____

SHEET 1 OF 1 SHEETS

METCALF & EDDY
ENGINEERS

REPORT OF EXPLORATION

INSPECTOR: B. Checchi	HOLE NO.: B-11
DRILL CONTRACTOR: Welti Assoc. Inc	ACCT. ABBR.: AVCO-LYCOMING
DRILLER:	ACCT. NO.: 1569
TYPE DRILL: Dozer Mtd - Mobile B30S	LOCATION: STRATFORD, CT.
SIZE & TYPE OF CASING: HSA	ELEVATION:
DRILLING FLUID: N/A	DATE START: 26 SEPT 85 1520
	DATE COMPLETE: 26 SEPT 85 1700
	WEATHER: drizzle, 70° ±

SAMPLE DATA

NO.	TYPE OF SAMPLE	DEPTH OF SAMPLE FROM	DEPTH OF SAMPLE TO	DRIVING RESISTANCE BLOWS/6 IN.	LENGTH DRIVEN	RECOVERY IN. OR %	SAMPLE NO.	FIELD CLASSIFICATION AND REMARKS
S1	SPT	0	2	1-4-8-9	24	14	SM	Tan
S2	"	6	8	2/12-4-7	24	12	SM	Grey [illegible]
S3	"	12	12.5	100/6	6	6	SP	[illegible] CF Sand [illegible]
S4	"	18	20	17-17-13-12	24	16	SM	Grey brown
		E.O.B.						

FIELD LOG OF BORING

DEPTH FROM	DEPTH TO	FIELD LOG OF BORING
0	3	tan mf Silty Sand
3	12	Grey mf Silty Sand
12		Grey brn CF Sand Lit/Some
	20	Gravel Tr/Lit Silt

23 Soil
4 Samples

GROUNDWATER DATA

	DATE	TIME	DEPTH
AT COMPLETION	9-26-85	1700	3.0

WORK COMPLETED

DRILL TYPE	NO. FEET	DIA.	SAMPLE TYPE	NO.	DIA.

CASE

TIME DISTRIBUTION

DRILLING ____ MOVING ON ____
REPAIRING ____ STAND BY ____
TOTAL ____

SHEET 1 OF 1 SHEETS

FORM 200

HOLE NO. B-11

METCALF & EDDY
ENGINEERS

REPORT OF EXPLORATION

INSPECTOR: Bill Checchi
DRILL CONTRACTOR: Welti Assoc. Inc.
DRILLER:
TYPE DRILL: Dozer Mtd. Mobile B-303
SIZE & TYPE OF CASING: HSA O.D. I.D.
DRILLING FLUID: None

HOLE NO.: B-12
ACCT. ABBR.: AVCO/LYCOMING
ACCT. NO.: 1569
LOCATION: STRATFORD CT.
ELEVATION:
DATE START: 23 SEPT. 85 1100
DATE COMPLETE: 23 SEPT. 85 1300
WEATHER: CLOUDY 80°F

SAMPLE DATA

NO.	TYPE OF SAMPLE	DEPTH OF SAMPLE FROM	TO	DRIVING RESISTANCE BLOWS/6 IN.	LENGTH DRIVEN	RECOVERY IN. OR %	STRATUM NO.	FIELD CLASSIFICATION AND REMARKS
S1	SPT	0	2.0	22-50-60-42	24"	6"	GW-SP	[illegible] Trace [illegible]
S2	"	3.5	5.5	10-9-8-8	"	14"	SM	Silty [illegible] M/F Sand (Fine [illegible])
S3	"	7	9	3-4-6-12	"	0/18	SM	[illegible] Silty [illegible]
S4	"	10.5	12.5	3-2-2-3	"	12"	SM	Grayish Silty M/F Sand
S5	"	14	16	2-2-4-5	"	12"	Pt/	[illegible]
S6	"	17.5	19.5	2-7-12-13	"	12"	Pt	[illegible] (organic [illegible])
S7	"	21	23	13-27-37-60	"	12"	Pt/SP	[illegible] Silty Sand [illegible]
S8	"	24.5	26.5	30-35-33-30	"	12"	SP	[illegible] Trace [illegible]
S9	"	28	30	21-43-33-25	"	12"	SP	Brn M/F Sand Some F. Gravel Trace organics
			E.O.B.					

FIELD LOG OF BORING

DEPTH FROM	TO	FIELD LOG OF BORING
0	0.3	Bit. Conc. Pavement
0.3	1.0	Tan-brn Sand + f Gravel
1.0	↓	brn-gray, m/f Sand Trace [illegible]
		[illegible]
	14	
14		[illegible] (Trace [illegible])
	19.3	trace Brn M/f Sands
19.3		[illegible] M/f Sand Some F Gravel
	30	

30' Soil
9 Samples

GROUNDWATER DATA

	DATE	TIME	DEPTH
AT COMPLETION	9-23-85		

WORK COMPLETED

DRILL TYPE	NO. FEET	DIA.	SAMPLE TYPE	NO.	DIA.

CASE

TIME DISTRIBUTION

DRILLING: MOVING ON:
REPAIRING: STAND BY:
TOTAL:

SHEET 1 OF 1 SHEETS

Form 200

HOLE NO. B-9

METCALF & EDDY
ENGINEERS

REPORT OF EXPLORATION

INSPECTOR: Bill Checchi
DRILL CONTRACTOR: Welti Assoc. Inc.
DRILLER:
TYPE DRILL: Dozer Mtd Mobile B-30s
SIZE & TYPE OF CASING: HSA
DRILLING FLUID: N/A

HOLE NO.: B-13
ACCT. ABBR.: AVCO-LYCOMING
ACCT. NO.: 1569
LOCATION: STRATFORD, CT.
ELEVATION:
DATE START: 25 SEPT 85 1600
DATE COMPLETE: 25 SEPT 85 1700
WEATHER: CLEAR 80°

SAMPLE DATA

NO.	TYPE OF SAMPLE	DEPTH OF SAMPLE FROM	DEPTH OF SAMPLE TO	DRIVING RESISTANCE BLOWS/6 IN.	LENGTH DRIVEN	RECOVERY IN. OR %	SAMPLE NO.	FIELD CLASSIFICATION AND REMARKS
S1	SPT	0	2	20-25-18-15	24	12"	SM	Tan-brn Silty Gravelly MF Sand
S2	"	3.6	4.3	18-100/3	9	9	SM	F Sand - Some Silt; Cobble Refusal
S3	"	7.2	9.2	20-14-11-12	24	14	SM	Brn CF Sand W/Some F Gravel Trace Silt
S4	"	10.8	12.8	17-18-23-26	24	14	SM, SP	Brn. (Silt Trace) CF Sand Lit / Some F Gravel
S5	"	14.4	16.4	14-17-23-26	24	14	SM, SP	Brn " "
S6	"	18	20	20-19-23-30	24	14	SM/SP	Same
			E.O.B.					

FIELD LOG OF BORING

DEPTH FROM	DEPTH TO	FIELD LOG OF BORING
0		Tan brown Silty Gravelly
	4.5	MF Sand
4.5		F Sand (Lit Silt)
	8.7	
8.7		brn CF Sand Lit - Trace Silt
	20	Lit / Some F Gravel

20' Soil
6 Samples

GROUNDWATER DATA

	DATE	TIME	DEPTH
AT COMPLETION	9-25-85	1700	4.9

WORK COMPLETED

DRILL TYPE	NO. FEET	DIA.	SAMPLE TYPE	NO.	DIA.

CASE

TIME DISTRIBUTION

DRILLING: ______ MOVING ON: ______
REPAIRING: ______ STAND BY: ______
TOTAL: ______

SHEET 1 OF 1 SHEETS

B-13

no guards to open gates to Tools in cleanup area !!

METCALF & EDDY
ENGINEERS

REPORT OF EXPLORATION

INSPECTOR: Bill Checchi
DRILL CONTRACTOR: Welti Assoc. Inc.
DRILLER:
TYPE DRILL: Dozee Mtd. Mobile B30S
SIZE & TYPE OF CASING: HSA
DRILLING FLUID: N/A

HOLE NO.: B-14 (O.W.) (15') 45
ACCT. ABBR.: AVCO - LYCOMING
ACCT. NO.: 1589
LOCATION: STRATFORD, CT.
ELEVATION:
DATE START: 26 SEPT 85
DATE COMPLETE: 26 SEPT 85
WEATHER: Cloudy 70°

SAMPLE DATA

NO.	TYPE OF SAMPLE	DEPTH OF SAMPLE FROM	DEPTH OF SAMPLE TO	DRIVING RESISTANCE BLOWS/6 IN.	LENGTH DRIVEN	RECOVERY IN. OR %	SAMPLE NO.
S1	SPT	0	2.0	4-26-54-35	24	18	SM
S2	"	6	8	11-17-18-18	24	16	SM
S3	"	12	12.5	50/6"	6"	6"	SP-SM
S4	"	18.5	20	55-58-37	18	18	SM
				E.O.B.			

FIELD CLASSIFICATION AND REMARKS

Tan MF Silt, [illegible]
Lit F Gravel
Sand (to F Gravel) [illegible]
Lit [illegible]
[illegible] to 12'
[illegible]

FIELD LOG OF BORING

DEPTH FROM	DEPTH TO	
0		tan MF to F Sand
		Some Silt, Lit to F.
		Gravel & Gravel (Quant. [illegible]
	12	w/depth)
12		tan-brn CF Sand, F Gravel
	12.5	Lit [illegible] Silt
12.5		tan-brn MF Sand Some F Gravel
	20	Some Silt

20 [illegible] Well
10' Screen
4' Riser
Protector Pipe
[illegible]

GROUNDWATER DATA

	DATE	TIME	DEPTH
AT COMPLETION	9-26-85		

WORK COMPLETED

DRILL TYPE	LIN. FEET	DIA.	SAMPLE TYPE	NO.	DIA.

TIME DISTRIBUTION

DRILLING: ____ MOVING ON: ____
REPAIRING: N/A STAND BY: 3.5
TOTAL: ____

SHEET 1 OF 1 SHEETS

METCALF & EDDY
ENGINEERS

REPORT OF EXPLORATION

INSPECTOR: Bill Checchi	HOLE NO.: B-15 (00) (20) 4:
DRILL CONTRACTOR: Welti Assoc. Inc	ACCT. ABBR.: AVCO - LYCOMING
DRILLER:	ACCT. NO.: 1569
TYPE DRILL: Dr... MTD - Mobile B30S	LOCATION: Stratford, CT.
SIZE & TYPE OF CASING: HSA	ELEVATION:
DRILLING FLUID: N/A	DATE START: 30 Sept 85 1300
	DATE COMPLETE: 30 Sept 85 1430
	WEATHER: Clear - 80°

SAMPLE DATA								FIELD CLASSIFICATION AND REMARKS
NO.	TYPE OF SAMPLE	DEPTH OF SAMPLE FROM	TO	DRIVING RESISTANCE BLOWS/6 IN.	LENGTH DRIVEN	RECOVERY IN. OR %	SAMPLE NO.	
S1	SPT	0.3	2.3	8-9-13-14	24	18	SM	Tan - Lt Brn Silty M-F Sand Trace / Lt F Gravel (Fill)
S2	"	6	8	6-9-10-9	24	14	SM	Sltly moist CF Sand Lt Silt
S3	"	12	14	7-12-14-18	24	18	SM	Same Running sand to 13'
S4	"	18	20	26-44-38-36	24	24	SM	(wet Sand as above)
		E.O.B						

DEPTH FROM	TO	FIELD LOG OF BORING
0	0.3	Bit-Conc (Park. lot)
0.3		Tan Lt. Brn Silty M/F Sand
		Lt / tr. F. Gravel
	20	(To CF Sand)

20' Soil
4 Samples

10' Screen
5' riser
protector pipe
Leveled

GROUNDWATER DATA

	DATE	TIME	DEPTH
AT COMPLETION	9-30-85		

WORK COMPLETED

DRILL TYPE	NO. FEET	DIA.	SAMPLE TYPE	NO.	DIA.

CASE

TIME DISTRIBUTION

DRILLING ______ MOVING ON ______
REPAIRING ______ STAND BY ______
TOTAL ______

SHEET 1 OF 1 SHEETS

HOLE NO. B-15

METCALF & EDDY
ENGINEERS

REPORT OF EXPLORATION

INSPECTOR: Bill Checchi	HOLE NO.: B 16 (20') 9s
DRILL CONTRACTOR: WeHi Assoc. Inc.	ACCT. ABBR.: AVCO-LYCOMING
DRILLER:	ACCT. NO.: 1569
TYPE DRILL: Dozer Mid-Mobile B-30s	LOCATION: STRATFORD, CT.
SIZE & TYPE OF CASING: HSA	ELEVATION:
DRILLING FLUID: N/A	DATE START: 25 SEPT 1995 0900
	DATE COMPLETE: 25 SEPT 1995 1030
	WEATHER: 80° ± CLEAR

SAMPLE DATA

NO.	TYPE OF SAMPLE	DEPTH OF SAMPLE FROM	DEPTH OF SAMPLE TO	DRIVING RESISTANCE BLOWS/6 IN.	LENGTH DRIVEN	RECOVERY IN. OR %	USCS	FIELD CLASSIFICATION AND REMARKS
S1	SPT	0.4	0.6	100/3	3"	3"	SP-GP	Lt. Brn CF Sand Some Gravel Cobble @ (0.6 FT) [illegible]
S2	"	3.5	5.5	7-6-3-8	24"	12"	SM	Brn. Red Sand [illegible]
S3	"	7	9	6-7-9-8	24"	12"	SM	[illegible]
S4	"	10.5	12.5	5-7-10-7	24"	12"	SM	CF Sand Lit Silt Some to and F Gravel
S5	"	14	16	13-10-9-8	24"	12"	SM	[illegible] Same
S6	"	17.5	19.5	20-24-16-11	24"	12"	SM	" Same F. Gravel
S7	"	21	23.5	18-13-20-13/4	22"	12"	SM	" Same "
S8	"	24.5	26.5	30-43-28-31	24"	12"	SM-SP?	Change @ 26'
S9	"	28	30	25-25-23-25	24"	16"	SP-SM	Layers of SP-SM-SP Red Brown CF Sand Some Gravel
			E.O.B.					

DEPTH FROM	DEPTH TO	FIELD LOG OF BORING
0	0.4	Bit. Conc. (Parking Lot)
0.4	2.0	Lt. brn CF Sand Some Gravel Fill
2.0		brn m-f Sand Some Silt [illegible]
	11.0	Gravel
11.		CF Sand and F Gravel [illegible]
	26'	Lit Silt
26		Red Brn CF Sand Some F Gravel
	30	Tr Silt

30' Soil
9 Samples

GROUNDWATER DATA

	DATE	TIME	DEPTH
AT COMPLETION	9-25-95	1030	4.8

WORK COMPLETED

DRILL TYPE	NO. FEET	DIA.	SAMPLE TYPE	NO.	DIA.
CASE					

TIME DISTRIBUTION

DRILLING ______ MOVING ON ______
REPAIRING ______ STAND BY ______
TOTAL ______

SHEET 1 OF 1 SHEETS

HOLE NO. B 16

METCALF & EDDY
ENGINEERS

REPORT OF EXPLORATION

INSPECTOR: Bill Checchi
DRILL CONTRACTOR: WELTI Assoc Inc.
DRILLER:
TYPE DRILL: DOZER MTD MOBILE B30s
SIZE & TYPE OF CASING: HSA
DRILLING FLUID: N/A

HOLE NO.: B 17 (OW) (20) 4s
ACCT. ABBR.: AVCO - LYCOMING
ACCT. NO.: 1569
LOCATION:
ELEVATION:
DATE START: 25 SEPT 1995 1030
DATE COMPLETE: 25 SEPT 1995 1300
WEATHER: Clear 70~80

SAMPLE DATA

NO.	TYPE OF SAMPLE	DEPTH OF SAMPLE FROM	DEPTH OF SAMPLE TO	DRIVING RESISTANCE BLOWS/6 IN.	LENGTH DRIVEN	RECOVERY IN. OR %	SAMPLE TYPE	FIELD CLASSIFICATION AND REMARKS
								See Field Log!! SPT - dry
S1	SPT	0.4	2.4	14-57-39-43	24"	12"	SP	brn CF Sand & F Gravel SPT. wet
S2	"	6	8	6-10-12-8	24"	12"	SP	Tr. Silt 6'±
S3	"	12	14	13-17-12-16	24"	12"	SP	Same
S4	"	18	20	11-14-17-16	24"	12	SP	Same

E.O.B.

FIELD LOG OF BORING

DEPTH FROM	DEPTH TO	FIELD LOG OF BORING
0	0.4	Bit Conc. Parking Area
0.4	0.7	Tan CF Sand + Gravel (SP)
0.7	1.2	black CF Sand, Silt Gravel (SM)
1.2		brn CF Sand and Gravel (SP)
	20	Tr. Silt

20 Soil
4 samples
10' Screen
5' Riser
protector pipe
"developed"

GROUNDWATER DATA

	DATE	TIME	DEPTH
AT COMPLETION			

WORK COMPLETED

DRILL TYPE	NO. FEET	DIA.	SAMPLE TYPE	NO.	DIA.

CASE

TIME DISTRIBUTION

DRILLING: ______ MOVING ON: ______
REPAIRING: ______ STAND BY: ______
TOTAL: ______

SHEET 1 OF 1 SHEETS

212

METCALF & EDDY
ENGINEERS

REPORT OF EXPLORATION

INSPECTOR: BILL CHECCHI
DRILL CONTRACTOR: WELTI ASSOC. INC.
DRILLER:
TYPE DRILL: DOZER MTD Mobile B-30³
SIZE & TYPE OF CASING: HSA
DRILLING FLUID: N/A

HOLE NO.: B-18 (20') 4S
ACCT. ABBR.: AVCO-LYCOMING
ACCT. NO.: 1569
LOCATION: STRATFORD, CT.
ELEVATION:
DATE START: 26 SEPT 85 1330
DATE COMPLETE: 26 SEPT 85 1530
WEATHER: CLOUDY 70°

SAMPLE DATA

NO.	TYPE OF SAMPLE	DEPTH OF SAMPLE FROM	DEPTH OF SAMPLE TO	DRIVING RESISTANCE BLOWS/6 IN.	LENGTH DRIVEN	RECOVERY IN. OR %	SAMPLE NO.	FIELD CLASSIFICATION AND REMARKS
S1	SPT	0	2.	7-11-16-15	24	12	SM	
S2	"	6	8	17-22-20-18	24	16	"	Same
S3	"	12	13.3	12-33-100/4	16	12	"	[illegible] 10 ±
S4	"	18	20	16-24-22-24	24	20	"	
				E.O.B.				

FIELD LOG OF BORING

DEPTH FROM	DEPTH TO	FIELD LOG OF BORING
0		Tan m-f Silty Sand
	20	

20' Soil
4 Samples

GROUNDWATER DATA

	DATE	TIME	DEPTH
AT COMPLETION			

WORK COMPLETED

DRILL TYPE	NO. FEET	DIA.	SAMPLE TYPE	NO.	DIA.
CASE					

TIME DISTRIBUTION

DRILLING: ______ MOVING ON: ______
REPAIRING: ______ STAND BY: ______
TOTAL: ______

SHEET 1 OF 1 SHEETS

APPENDIX ____
(Page __ of __)

Environmental Science & Engineering

Log of Boring Inspector: Thomas R. Hughes Boring Number: MW-05D Total Depth: 164 Ft. Page 1 of 3

Project: Textron/Lycoming Location: Stratford, CT Job No. 4904052.0005 Date Drilled: 3/7-8/91

Drilling Co.: LaFramboise Well Drilling, Inc. Method Used: Standard Mud Rotary Organic Vapor Instrument: None

Depth (ft)	Sample Number	Blow Counts	Sample Interval	Adv./Rec.	Sample Description	Strata Change	Remarks
0-5							
5	SS-01	3 2 1 1	5-7	24"/ 16"	10-inches of SAND, medium, brown; little fine; trace clay 6-inches of PEAT, heavily fibrous with fresh wood and plant fragments; very slight organic odor		Driller reports thin peat layer at 6.5-7.5 Ft.
10	SS-02	2 1 1 5	10-12	24"/ 24"	14-inches of SAND, medium, grayish-brown; little fine trace coarse 10-inches of PEAT, heavily fibrous with plant fragments		Driller reports top of principal peat layer at 13 Ft.
15	SS-03	4 5 5 4	15-17	24"/ 24"	5-inches of PEAT, moderately fibrous, plant fragments 19-inches of CLAY, dark brown, moderately plastic; slightly interbedded wit peat, fresh, fibrous; moderately decayed peat in tip of spoon		
20	SS-04	8 8 10 10	20-22	24"/ 23"	4-inches of silty PEAT, very dark brown, weathered 1-inch of SAND, fine, gray; little gravel, fine; trace silt; trace sand, coarse 18-inches of PEAT, silty, brown; moderately weathered with fresh plant fragments in tip of spoon		
25	SS-05	11 19 19 17	25-27	24"/ 21"	5-inches of SAND, fine, brown; some silt; trace gravel, fine; trace cobbles: granite, mica schist and quartzite 3-inches of SILT, very dark brown; slightly micaceous with peat, fresh, fibrous Contact to 13-inches of SAND, very fine, gray; some silt; trace sand, fine; trace medium; poorly-sorted		Driller reports bottom of peat at 28 Ft.
30	SS-06	11 6 13 21	30-32	24"/ 17"	4-inches of SAND, fine, gray; little silt; trace clay; trace sand, very fine; slight organic odor 5-inches of SAND, brownish-gray; little(+) sand, very fine; slightly micaceous; trace plant fragments 8-inches of SAND, fine, gray; little very fine; little medium; trace silt		
35	SS-07	15 17 14 15	35-37	24"/ 15"	SAND, medium, grayish-brown; little(+) coarse; little(-) very coarse; trace fine; trace gravel, fine		
40	SS-08	14 12 12 12	40-42	24"/ 8"	SAND, fine, gray to brown; little(+) medium; trace(+) coarse; trace(-) gravel, fine		
45	SS-09	12 11 14 16	45-47	24"/ 16"	SAND, fine, mottled gray to brown; some(+) medium; trace coarse; well-sorted		
50	SS-10	9 10 11 11	50-52	24"/ 14"	SAND, medium, gray; little(-) fine; trace(-) coarse; exceptionally well-sorted		
55	SS-11	35 21 18 21	55-57	24"/ 16"	SAND, medium, gray; little coarse; little(-) very coarse; little(-) gravel, fine; trace(+) sand, fine; trace(+) silt, relatively less well-sorted		Gradation to less sorted sand and gravel
60	SS-12	28 19 17 21	60-62	24"/ 16"	SAND, coarse, light yellowish-brown; some(-) gravel, fine; little(-) medium, subrounded; trace(+) sand, fine; trace(-) very coarse; trace(-) silt; moderately well-sorted		
65							

APPENDIX ____
(Page __ of __)

ENVIRONMENTAL SCIENCE & ENGINEERING, INC.

Log of Boring — Boring Number: MW-05D — Page 2 of 3

Depth (ft)	Sample Number	Blow Counts	Sample Interval	Adv./Rec.	Sample Description	Strata Change	Remarks
	SS-13	31 22 21 22	65-67	24"/ 6"	SAND, coarse, brown; little(+) gravel, fine to medium; little(-) clay; trace(+) sand, very fine to fine; poorly-sorted		
70	SS-14	18 14 15 21	70-72	24"/ 14"	GRAVEL, fine, brown; and sand, very coarse; little gravel, medium; trace sand, fine to medium; trace clay; moderately well-sorted; cobbles: granitic, subrounded		
75	SS-15	45 19 20 18	75-77	24"/	SAND, coarse, brown; some(-) gravel, fine to medium; trace(+) sand, medium; moderately well-sorted; cobbles: granitic, subrounded		
80	SS-16	15 11 9 13	80-82	24"/ 13"	8-inches of SAND, coarse, brown; little(-) gravel, fine; little medium, subrounded; trace(+) sand, medium 2-inches of COBBLES, granitic and quartzitic, subrounded; and gravel, coarse 3-inches of SAND, medium, brown, well-sorted		
85	SS-17	19 17 22 36	85-87	24"/ 12"	6-inches of SAND, very fine, pale brown, slightly micaceous; 1/2-inch seam of sand, medium Contact to 6-inches of SAND, medium, brown; little gravel, fine; trace sand, very coarse; trace fine		
90	SS-18	24 12 12 13	90-92	24"/ 6"	SAND, medium, brown; little(+) gravel, fine; little(-) sand, fine; trace(-) clay; cobbles: mica schist and quartzite, rounded		
95	SS-19	17 10 12 9	95-97	24"/ 14"	9-inches of SAND, medium, grayish-brown; and(-) gravel, fine to medium; trace coarse; water-reworked 5-inches of GRAVEL, medium to coarse; with cobbles: granitic, mica schist and quartzitic; subrounded to rounded		
100	SS-20	13 12 8 8	100-102	24"/ 5"	GRAVEL, fine to medium, grayish-brown; cobbles, reworked, rounded and angular mica schist; traces of decayed rock, clayey; poorly-sorted		
105	SS-21	24 20 11 7	105-107	24"/ 14"	6-inches of COBBLES: mica schist and quartz, water-reworked, subrounded 8-inches of SAND, medium, gray; little(+) fine; trace coarse; well-sorted		Driller reports heavy mud loss at 102 Ft.
110	SS-22	17 13 16 25	110-112	24"/ 14"	8-inches of SAND, fine, gray; slightly micaceous; little medium, well-sorted Contact to 6-inches of SAND, very fine, pale grayish-brown; slightly micaceous; trace silt		
115	SS-23	27 28 29 35	115-117	24"/ 20"	3-inches of SAND, very fine, pale grayish-brown; moderately micaceous; little silt 17-inches of SAND, medium, gray; some(+)coarse; trace gravel, fine; well-sorted		
120	SS-24	25 37 34 37	120-122	24"/ 18"	SAND, very fine, light gray, slightly micaceous; trace silt; exceptionally well-sorted		
125	SS-25	17 27 34 37	125-127	24"/ 14"	1-inch of silty CLAY, grayish-brown 13-inches of SAND, very fine, light gray, moderately micaceous; little(+) silt		
130	SS-26	24 33 33 41	130-132	24"/ 19"	SAND, very fine, light gray, slightly micaceous, partially stratified; grading to SAND, medium; trace coarse in bottom 5-inches		
135							

Log of Boring — Boring Number: MW-5D — Page 3 of 3

Depth (ft)	Sample Number	Blow Counts	Sample Interval	Adv./ Rec.	Sample Description	Strata Change	Remarks
	SS-27	22 32 29 29	135-137	24"/ 18"	SAND, fine to coarse, gray; some gravel (angular to subrounded quartzite and hornblende schist)		
140	Wash		140		SAND, medium to coarse, gray to dark brown; some gravel, angular to subrounded quartzite and hornblende schist		Driller instructed to collect wash samples to bottom of borehole
145	Wash		145		SAND, medium to coarse, gray to black; some gravel, angular to subrounded quartzite and hornblende schist		
150	Wash		150		SAND, medium to coarse, gray to black; little gravel, angular to subrounded quartzite and hornblende schist		
155	Wash		155		SAND, medium to coarse, gray to black; little gravel, angular to subrounded quartzite and hornblende schist		
160	Wash		160		SAND, medium to coarse, gray to black; little gravel, angular to subrounded quartzite and hornblende schist	160	
			163		BEDROCK, weathered clayey schist and angular fragments of hornblende schist		Driller reports top of weathered bedrock at 162 Ft., and competent rock at 163 Ft.
165	Wash				Borehole terminated at 164 Feet Below Ground Level	165	
170							
175							
180							
185							
190							
195							
200							

APPENDIX ____
(Page __ of __)

Environmental Science & Engineering

Log of Boring | Inspector: Thomas R. Hughes | Boring Number: MW-09D | Total Depth: 154 Ft. | Page 1 of 3

Project: Textron/Lycoming | Location: Stratford, CT | Job No. 4904052.0005 | Date Drilled: 2/27 - 3/4/91

Drilling Co.: LaFramboise Well Drilling, Inc. | Method Used: Standard Mud Rotary | Organic Vapor Instrument: None

Depth (ft)	Sample Number	Blow Counts	Sample Interval	Adv./ Rec.	Sample Description	Strata Change	Remarks
0-5					14-inches of SILT, brown to dark brown; little(+) sand, very fine, slightly micaceous		
5	SS-01	16 24 28 31	6.5-8.5	24"/ 24"	2-inches of SAND, very fine, dark brownish-black; little silt 8-inches of SAND, fine, brown; little medium; little silt; trace cobbles (feldspathic granite and quartz), subrounded; trace sand, coarse		Driller reports first sampling interval at 6.5 Ft.
10	SS-02	15 16 17 15	10-12	24"/ 11"	SAND, very coarse, brown; some(-) coarse; little gravel, fine to medium; trace cobbles (granite, gneiss and quartz; trace sand, medium; well-sorted		
15	SS-03	15 16 16 22	15-17	24"/ 6"	GRAVEL, medium, brown; and coarse, subrounded to rounded; little fine; trace sand, very coarse		Driller reports "boney coarse gravel" at 15 Ft.
20	SS-04	14 12 11 14	20-22	24"/ 5"	SAND, coarse, grayish-brown; little(+) gravel, fine; trace medium; cobbles, quartzitic, subrounded		
25	SS-05	21 20 16 16	25-27	24"/ 8"	SAND, medium, grayish-brown; little(-) gravel, fine; trace sand, very coarse; cobbles: granite and quartz, subrounded		Driller reports gradation to well-sorted sand at 28 Ft.
30	SS-06	9 10 12 9	30-32	24"/ 18"	SAND, coarse, gray; little gravel, fine; trace medium; trace sand, medium		
35	SS-07	15 16 21 32	35-37	24"/ 22"	8-inches of SAND, fine, light gray; little very fine 14-inches of SILT, light gray, moderately micaceous (biotite); some(+) sand, very fine		
40	SS-08	42 69 156 60/2"	40-42	24"/ 20"	SAND, medium, light gray; little fine; well-sorted		
45	SS-09	78 70 104 87	45-47	24"/ 22"	SAND, very fine; light gray; little(-) fine; little(-) silt; slightly micaceous; well-sorted		
50	SS-10	38 48 48 51	50-52	24"/ 18"	SAND, very fine, light gray, slightly micaceous; trace fine; trace silt; exceptionally well-sorted		
55	SS-11	23 18 21 27	55-57	24"/ 17"	SAND, very fine, light gray; bottom 6-inches moderately micaceous, biotite; slight "salt and pepper" appearance; trace silt; trace(-) sand, fine		
60	SS-12	15 17 20 21	60-62	24"/ 13"	SAND, fine, light gray; little(+) very fine; trace silt; slightly micaceous		
65							

Log of Boring — Boring Number: MW-09D —

Depth (ft)	Sample Number	Blow Counts	Sample Interval	Adv./Rec.	Sample Description	Strata Change	Remarks
	SS-13	20 17 19 18	65-67	24"/ 21"	SAND, very fine, light gray, slightly micaceous; trace fine; trace silt		Driller reports hard-packed sand
70	SS-14	19 19 26 30	70-72	24"/ 15"	SAND, very fine, light gray, slightly micaceous; trace silt		
75	SS-15	19 22 25 27	75-77	24"/ 16"	SAND, very fine, light gray, slightly micaceous; trace silt; trace(-) sand, fine		
80	SS-16	24 26 28 39	80-82	24"/ 17"	SAND, very fine, light gray, slightly micaceous; few stringers of silt and fine sand		
85	SS-17	27 26 26 39	85-87	24"/ 16"	SAND, very fine, light gray, slightly micaceous; trace silt; trace sand, fine		
90	SS-18	32 25 21 23	90-92	24"/ 17"	SAND, very fine, light gray, slightly micaceous; trace silt; trace sand, fine		
95	SS-19	40 31 36 44	95-97	24"/ 18"	SAND, very fine, light gray, slightly micaceous; trace silt; trace sand, fine		
100	SS-20	24 38 37 40	100-102	24"/ 17"	SAND, very fine, light gray, slightly micaceous; trace silt; trace sand, fine		
105	SS-21	33 34 32 42	105-107	24"/ 18"	12-inches of SAND, very fine, slightly darker gray, slightly micaceous, trace fine; trace silt 3-inches of SAND, fine; some very fine; trace silt 3-inches of SILT; and sand, very fine		
110	SS-22	28 36 40 59	110-112	24"/ 17"	7-inches of SILT, medium gray; and sand, very fine 4-inches of SAND, fine, medium gray; some very fine; trace silt 6-inches of SAND, very fine, medium gray; and silt		
115	SS-23	24 32 33 44	115-117	24"/ 18"	SAND, very fine, medium gray, slightly micaceous; trace silt; trace sand, fine 4-inches of SAND, very fine to coarse; schist fragments		Driller reports drilling break to coarse sand at 118 Ft; and return to hard pack sand at 120 Ft.
120	SS-24	64 41 42 57	120-122	24"/ 17"	5-inches of SAND, medium, light gray; and fine; trace very fine; trace coarse 8-inches of SAND, very fine, medium gray, slightly micaceous; trace silt		Driller reports angular mica schist chips in drill cuttings at 124 Ft.
125	SS-25	74 43 59 45	125-127	24"/ 19"	7-inches of SAND, very fine to very coarse, poorly-sorted; and gravel, fine to coarse, subangular to subrounded; cobbles: hornblende mica schist and quartz 8-inches of Sand, very fine, medium gray, slightly micaceous; trace silt; trace sand, fine		
130	SS-26	29 27 23 28	130-132	24"/ 12"	4-inches of SAND, very fine to medium, poorly-sorted; some cobbles; mica schist and quartzite SAND, fine to coarse, dark gray; little gravel, subangular to rounded (hornblende schist and quartzite); trace silt; grading to some gravel in bottom 6 inches		
135						135	

ENVIRONMENTAL SCIENCE & ENGINEERING, INC.

Log of Boring — Boring Number: MW-9D —

Depth (ft)	Sample Number	Blow Counts	Sample Interval	Adv./ Rec.	Sample Description	Strata Change	Remarks
	SS-27	56 62 28 28	135-137	24"/ 7"	SAND, fine to coarse, gray; some gravel, rounded to angular hornblende schist, trace silt, compact		Driller instructed to collect wash samples from 140 Ft. to bottom of borehole
140	Wash		140		Gray, fine to medium SAND and GRAVEL, angular hornblende schist		Driller reports hard zone at 141 Ft., and return to fine sand and gravel at 145 Ft.
145	Wash		145		Fine to medium, hornblende, mica schist and quartz GRAVEL, and SAND, very coarse		
150	Wash		150		Water-reworked subrounded medium gravel; principally mica schist, some quartzite		Driller reports pronounced rig chatter at 151.5 feet; top of bedrock
	Wash		154		Angular fragments of gray amphibolitic mica schist, and gray, finely-powdered weathered BEDROCK		
155					Borehole terminated at 154 Feet Below Ground Level		
160							
165							
170							
175							
180							
185							
190							
195							
200							

APPENDIX ____
(Page __ of __)

Environmental Science & Engineering

Log of Boring   Inspector: Thomas R. Hughes   Boring Number: MW-100   Total Depth: 82 Ft.   Page 1 of 2

Project: Textron/Lycoming   Location: Stratford, CT   Job No. 4904052.0005   Date Drilled: 2/19-20/91

Drilling Co.: LaFromboise Well Drilling, Inc.   Method Used: Standard Mud Rotary   Organic Vapor Instrument: HNu PID

Depth (ft)	Sample Number	Blow Counts	Sample Interval	Adv./ Rec.	Sample Description	Strata Change	Remarks
5	SS-01	5 13 11 8/3"	5-7	21"/ 14"	9-inches of SAND, very coarse, dark gray; little coarse; little gravel, fine to medium; little cobble fragments, subrounded, 3/4" 4-inches of SILT, brown; little sand, very fine; trace mica, muscovitic		
10	SS-02	6 36 37 28/3"	10-12	21"/ 14"	6-inches of SAND, very coarse, dark gray; some gravel, fine; some cobbles and rock fragments, subangular 8-inches of SAND, medium, brown; trace coarse; trace silt; numerous phylittic fragments, subangular		
15	SS-03	34 27 17 12/3"	15-17	21"/ 0"	No Recovery		Driller reports top of peat at 19.5 ft. bgl
20	SS-04	20 37 20 70/3"	20-22	21"/ 0"	No Recovery		
25	SS-05	pushed 7 12 8/3"	25-27	21"/ 12"	PEAT, organic, fibrous, dark brown, strongly odoriferous, organic matrix with clay		
30	SS-06	75 22 20 20	30-32	21"/ 9"	4-inches of SAND, very fine, brownish-gray; little fine; fresh wood fragments 5-inches of SAND, very fine, light gray, micaceous; some silt; well sorted		Bottom of peat approximately 30 ft. bgl
35	SS-07	19 37 34 26/3"	35-37	21"/ 15"	SILT, light gray, micaceous; trace sand, very fine; well sorted		
40	SS-08	11 12 11 9	40-42	24"/ 14"	SAND, fine, light gray; some medium; little coarse; trace very coarse, slightly micaceous		
45	SS-09	17 15 15 10/3"	45-47	21"/ 13"	SAND, medium, brownish-gray; little fine; trace coarse; slightly micaceous; well sorted		
50	SS-10	15 15 18 15/3"	50-52	21"/ 10"	SAND, medium, gray; little coarse; little fine; trace very coarse; tace gravel, fine; slight organic odor		
55	SS-11	11 8 11 9/3"	55-57	21"/ 8"	SAND, medium, grayish-brown; little fine; trace coarse		
60	SS-12	19 16 20 13/3"	60-62	21"/ 21"	5-inches of SAND, very fine, grayish-brown, heavily micaceous; varved (1/4" bands); some(-) silt; trace sand, fine 16-inches of SILT, grayish-brown, moderately micaceous; little sand, very fine, slightly varved		
65							

ENVIRONMENTAL SCIENCE & ENGINEERING, INC.

Log of Boring

Boring Number: MW-10D

Depth (ft)	Sample Number	Blow Counts	Sample Interval	Adv./ Rec.	Sample Description	Strata Change	Remarks
65–70	SS-13	27 20 16 14/3"	65-67	21"/ 12"	SAND, medium, gray; little(+) coarse; trace very coarse; trace fine; trace gravel, fine to coarse, subrounded		
70–75	SS-14	23 15 14 12/3"	70-72	21"/ 10"	SAND, medium, gray; little(+) coarse; little(-) gravel, fine to coarse, subangular; trace sand, very coarse		Angular mica schist & quartz fragments in drill cuttings at 70 ft. bgl
75–80	SS-15	17 22 22 20	75-77	24"/ 10"	SAND, coarse, gray; some(-) gravel, fine to coarse, subrounded; little sand, very coarse; little(-) medium		
80–85	SS-16	37 38 38 47	80-82	24"/ 5"	COBBLE ZONE, consisting of quartzitic, amphibolitic schist and gray weathered rock flour; 1-inch dark gray zone of weathered rock at top of spoon		Driller reports mud loss at 83 ft. bgl
85–90	SS-17	44 25 30 36	85-87	24"/ 1"	GRAVEL, fine, principally quartzitic; and medium to coarse; little sand, very coarse; quartzitic cobble in tip of spoon		Driller reports "boney gravel" 85-90 ft., and continued mud loss
90–95	SS-18	100 43 76 58	90-92	24"/ 8"	SAND, fine to very coarse, poorly-sorted; and gravel, fine to coarse, subangular to subrounded; cobbles: mica schist and smoked quartzite		Grading to poorly-sorted sand and gravel at 90 ft. bgl
95–100	SS-19	19 22 34 28	95-97	24"/ 14"	6-inches of SAND, fine, gray; some(+) silt; trace sand, medium; trace cobbles, gneiss 4-inches of SILT, gray, slightly micaceous; trace(+) sand, very fine 4-inches of SAND, coarse, gray; little(-) gravel, fine; trace sand, very coarse		Driller reports angular mica schist chips in drill cuttings
100–105	SS-20	94 32 40 63	100-102	24"/ 13"	SAND, fine to very coarse, dark gray, poorly-sorted; some(+) cobbles: gneiss, quartzite, mica schist; little (+) silt; trace gravel, fine to medium		Driller reports top of bedrock at 103 ft. bgl
105–110	SS-21	121 113/2"	105-107	8"/ 5"	BEDROCK, consisting of broken-up fragments of hornblende-amphibolitic mica schist, five pieces greater than 1/2" - 3/4"		
110–115					Boring terminated at 105.2 feet below ground level		
115–120							
120–125							
125–130							
130–135							

Environmental Science & Engineering

APPENDIX ____
(Page __ of __)

Log of Boring Inspector: Thomas R. Hughes Boring Number: MW-10I Total Depth: 53.0 Ft. Page 1 of 2

Project: Textron/Lycoming Location: Stratford, CT Job No. 4904052.0005 Date Drilled: 2/25-26/91

Drilling Co.: LaFromboise Well Drilling, Inc. Method Used: Standard Mud Rotary Organic Vapor Instrument: None

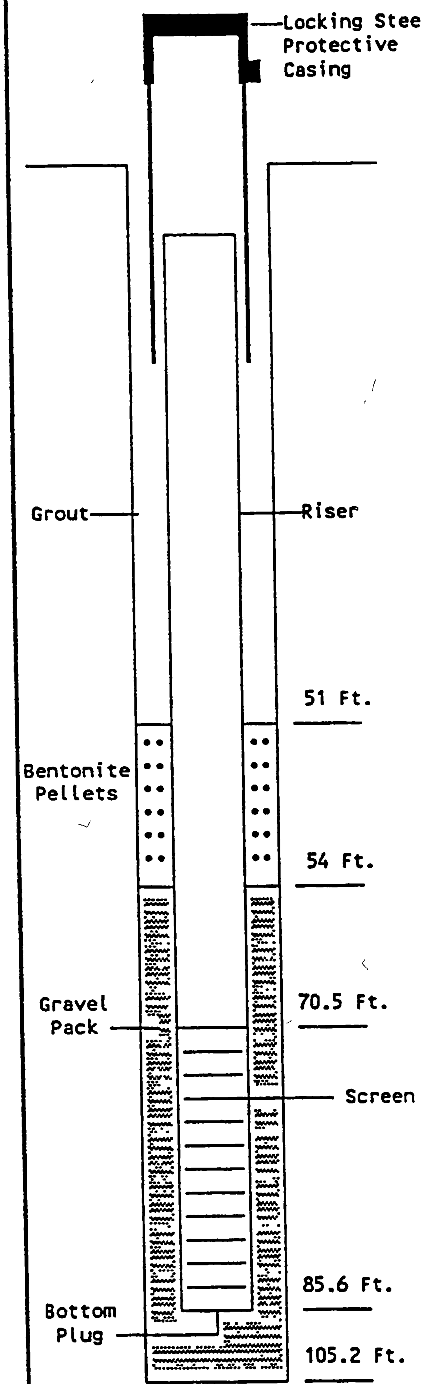
Depth (ft)	Sample Number	Blow Counts	Sample Interval	Adv./ Rec.	Sample Description	Strata Change	Remarks
0					See boring log for MW-10D for additional stratigraphy not shown here.		
5							
10							
15	SS-3A	Pushed with hammer	15-17	24"/ 12"	SAND, fine, brown; some(-) silt; little(-) sand, very fine; trace(+) medium; trace cobble fragments, angular		
20	SS-4A	Pushed with hammer	20-22	24"/ 5"	PEAT, dark brown, heavily fibrous with fresh wood fragments; moderate organic odor; silt matrix		
25							
30							
35							
40							
45							
50							
53					Borehole terminated at 53 Feet below ground level.		
55							
60							
65							

ENVIRONMENTAL SCIENCE & ENGINEERING, INC.

WELL CONSTRUCTION SUMMARY

Well Number: MW-10D

Project: Textron/Lycoming, Inc.   Location: Stratford, Connecticut



DRILLING SUMMARY

Drilling Company: LaFramboise Well Drilling, Inc.   Driller: Joseph Michaud

Drill Rig Make/Model: JASWELL DRILL J 950   Helper: Kurt Donacki

Borehole Diameter: Nominal 8"   Casing Used/Depth: 6" (Temporary)

Drilling Fluid: Sodium Bentonite/Water

Total Depth: 105.2 Feet   Depth to Water: Ft (2/10/91)

Supervisory Geologist: Thomas R. Hughes, James Ryan

WELL DESIGN

Casing Material: Schedule 40 PVC   Diameter: 4" ID   Length: 73.0'

Screen Material: Schedule 40 PVC   Diameter: 4" ID   Length: 15.1'

Slot Size: 0.040"   Setting: 70.5 Ft.- 85.6 Ft.

Filter Material: Morie 2 Sand   Setting: 54 Ft. - 90 Ft.

Seals Material: Bentonite Pellets   Setting: 51 Ft. - 54 Ft.

Grout: Cement\Bentonite   Setting: 0 Ft. - 51 Ft.

Surface Casing Material: 6-inch carbon steel   Setting: Ft. - Ft.

TIME LOG	Started	Completed
Drilling:	2/19/91	2/21/91
Installation:	2/22/91	2/25/91
Development:	3/1/91	

WELL DEVELOPMENT

Method: Surge Block/Centrifugal Pumping

Static Depth to Water: Ft. (2/10/91)

Pumping Depth to Water: Ft.

Pumping Rate: 0. Gallons per Minute   Specific Capacity: gpm/ft

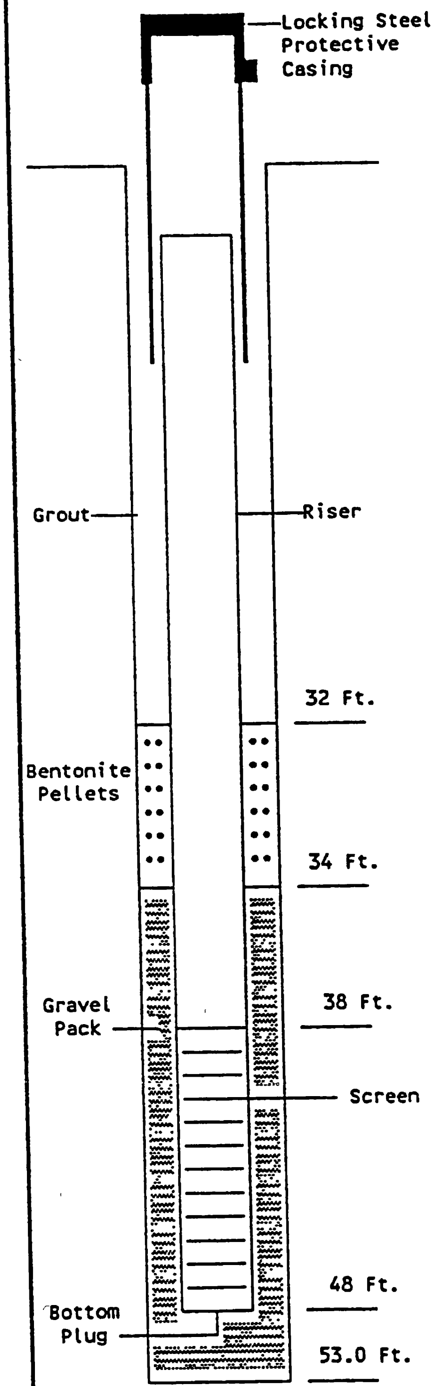
Volume Pumped: Gallons

ENVIRONMENTAL SCIENCE & ENGINEERING, INC.

WELL CONSTRUCTION SUMMARY

Well Number: MW-101

Project: Textron/Lycoming, Inc. Location: Stratford, Connecticut



DRILLING SUMMARY

Drilling Company: LaFramboise Well Drilling, Inc. Driller: Joseph Michaud

Drill Rig Make/Model: JASWELL DRILL J 950 Helper: Kurt Donacki

Borehole Diameter: Nominal 8" Casing Used/Depth: None

Drilling Fluid: Sodium Bentonite/Water

Total Depth: 53.0 Feet Depth to Water: Ft (2/10/91)

Supervisory Geologist: Thomas R. Hughes

WELL DESIGN

Casing Material: Schedule 40 PVC Diameter: 2" ID Length: 40.0'

Screen Material: Schedule 40 PVC Diameter: 2" ID Length: 10.3'

Slot Size: 0.020" Setting: 38.0 Ft.- 48.0 Ft.

Filter Material: Morie 0 Sand Setting: 34.5 Ft.- 53 Ft.

Seals Material: Bentonite Pellets Setting: 32 Ft. - 34.5 Ft.

Grout: Cement\Bentonite Setting: 0 Ft. - 32 Ft.

Surface Casing Material: 6-inch carbon steel Setting: Ft. - Ft.

TIME LOG	Started	Completed
Drilling:	2/25/91	2/26/91
Installation:	2/26/91	2/26/91
Development:	3/1/91	

WELL DEVELOPMENT

Method: Surge Block/Centrifugal Pumping

Static Depth to Water: Ft. (2/10/91)

Pumping Depth to Water: Ft.

Pumping Rate: 0. Gallons per Minute Specific Capacity: gpm/ft

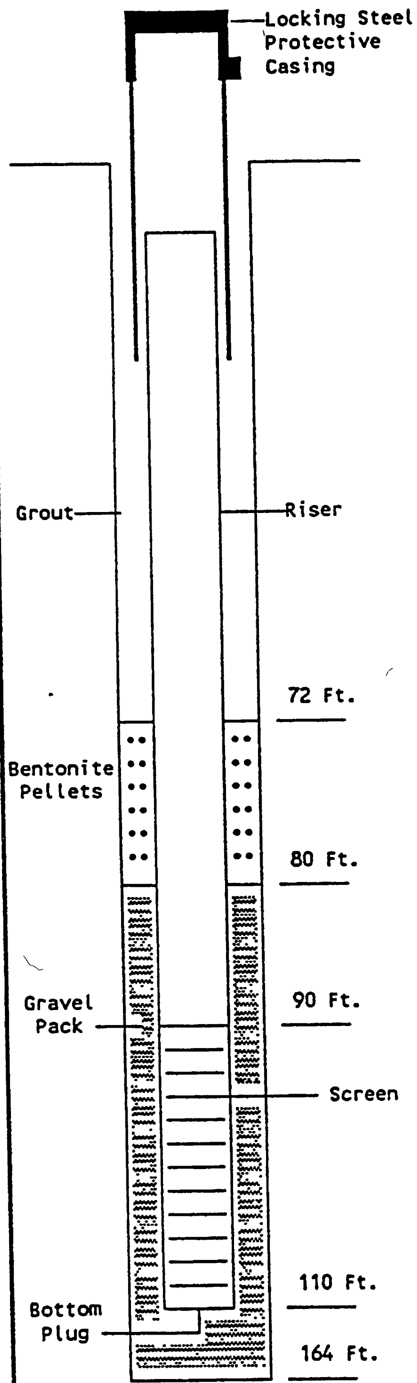
Volume Pumped: Gallons

ENVIRONMENTAL SCIENCE & ENGINEERING, INC.

WELL CONSTRUCTION SUMMARY

Well Number: MW-5D

Project: Textron/Lycoming, Inc. Location: Stratford, Connecticut



DRILLING SUMMARY

Drilling Company: LaFramboise Well Drilling, Inc. Driller: Joseph Michaud

Drill Rig Make/Model: JASWELL DRILL J 950 Helper: Kurt Donacki

Borehole Diameter: Nominal 8" Casing Used/Depth: None

Drilling Fluid: Sodium Bentonite/Water

Total Depth: 164 Feet Depth to Water: Ft (2/10/91)

Supervisory Geologist: Thomas R. Hughes, Barbara Gigliotti

WELL DESIGN

Casing Material: Schedule 40 PVC Diameter: 4" ID Length: 92.3'

Screen Material: Schedule 40 PVC Diameter: 4" ID Length: 20.4'

Slot Size: 0.040" Setting: 90 Ft. - 110 Ft.

Filter Material: Morie 2 Sand Setting: 80 Ft. - 117 Ft.

Seals Material: Bentonite Pellets Setting: 72 Ft. - 80 Ft.

Grout: Cement\Bentonite Setting: 0 Ft. - 72 Ft.

Surface Casing Material: 6-inch carbon steel Setting: Ft. - Ft.

TIME LOG	Started	Completed
Drilling:	3/7/91	3/8/91
Installation:	3/11/91	3/12/91
Development:	3/11/91	

WELL DEVELOPMENT

Method: Surge Block/Centrifugal Pumping

Static Depth to Water: Ft. (2/10/91)

Pumping Depth to Water: Ft.

Pumping Rate: 0. Gallons per Minute Specific Capacity: gpm/ft

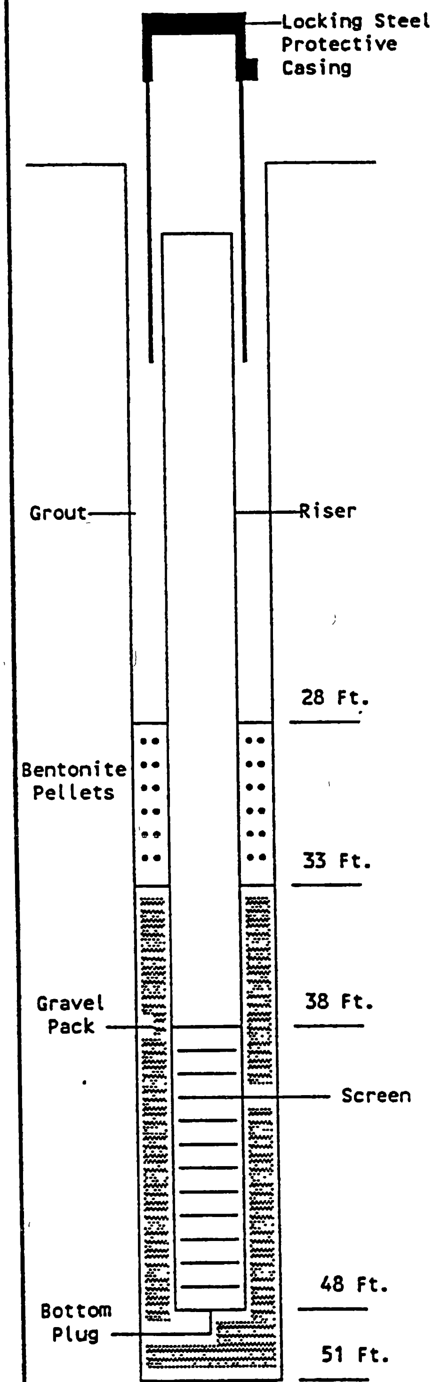
Volume Pumped: Gallons

ENVIRONMENTAL SCIENCE & ENGINEERING, INC.

WELL CONSTRUCTION SUMMARY

Well Number: MW-51

Project: Textron/Lycoming, Inc.   Location: Stratford, Connecticut



DRILLING SUMMARY

Drilling Company: LaFramboise Well Drilling, Inc.   Driller: Joseph Michaud

Drill Rig Make/Model: JASWELL DRILL J 950   Helper: Kurt Donacki

Borehole Diameter: Nominal 8"   Casing Used/Depth: None

Drilling Fluid: Sodium Bentonite/Water

Total Depth: 51 Feet   Depth to Water: Ft (2/10/91)

Supervisory Geologist: Thomas R. Hughes, Barbara Gigliotti

WELL DESIGN

Casing Material: Schedule 40 PVC   Diameter: 2" ID   Length: 39.8'

Screen Material: Schedule 40 PVC   Diameter: 2" ID   Length: 10.0'

Slot Size: 0.020"   Setting: 38 Ft. - 48 Ft.

Filter Material: Morie 0 Sand   Setting: 33 Ft. - 51 Ft.

Seals Material: Bentonite Pellets   Setting: 28 Ft. - 33 Ft.

Grout: Cement\Bentonite   Setting: 0 Ft. - 28 Ft.

Surface Casing Material: 6-inch carbon steel   Setting: Ft. - Ft.

TIME LOG	Started	Completed
Drilling:	3/11/91	3/11/91
Installation:	3/11/91	3/11/91
Development:	3/11/91	

WELL DEVELOPMENT

Method: Surge Block/Centrifugal Pumping

Static Depth to Water: Ft. (2/10/91)

Pumping Depth to Water: Ft.

Pumping Rate: 0. Gallons per Minute   Specific Capacity: gpm/ft

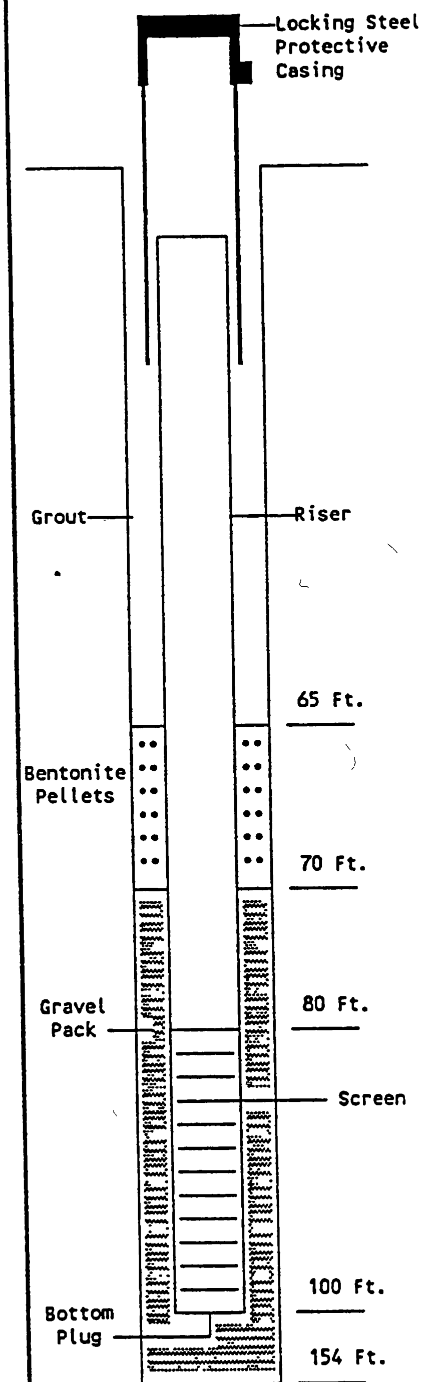
Volume Pumped: Gallons

ENVIRONMENTAL SCIENCE & ENGINEERING, INC.

WELL CONSTRUCTION SUMMARY

Well Number: MW-9D

Project: Textron/Lycoming, Inc. Location: Stratford, Connecticut



DRILLING SUMMARY

Drilling Company: LaFramboise Well Drilling, Inc. Driller: Joseph Michaud

Drill Rig Make/Model: JASWELL Drill J-950

Borehole Diameter: Nominal 8" Casing Used/Depth: None

Drilling Fluid: Sodium Bentonite/Water

Total Depth: 154 Feet Depth to Water: Ft (2/10/91)

Supervisory Geologist: Thomas R. Hughes, James Ryan, Barbara Gigliotti

WELL DESIGN

Casing Material: Schedule 40 PVC Diameter: 4" ID Length: 82.8'

Screen Material: Schedule 40 PVC Diameter: 4" ID Length: 20.3'

Slot Size: 0.010" Setting: 80 Ft. - 100 Ft.

Filter Material: Morie 00 Sand Setting: 70 Ft. - 100 Ft.

Seals Material: Bentonite Pellets Setting: 65 Ft. - 70 Ft.

Grout: Cement\Bentonite Setting: 0 Ft. - 65 Ft.

Surface Casing Material: 6-inch carbon steel Setting: Ft. - Ft.

TIME LOG

	Started	Completed
Drilling:	2/27/91	3/5/91
Installation:	3/5/91	3/5/91
Development:	3/6/91	

WELL DEVELOPMENT

Method: Centrifugal Pumping

Static Depth to Water: Ft. (2/10/91)

Pumping Depth to Water: Ft.

Pumping Rate: Gallons per Minute Specific Capacity: gpm/ft

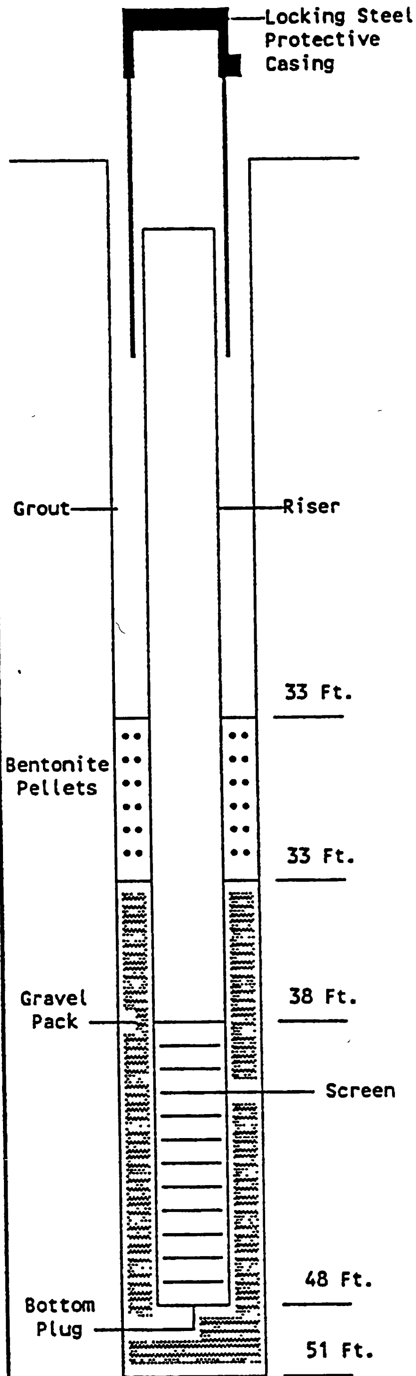
Volume Pumped: Gallons

ENVIRONMENTAL SCIENCE & ENGINEERING, INC.

WELL CONSTRUCTION SUMMARY

Well Number: MW-91

Project: Textron/Lycoming, Inc. Location: Stratford, Connecticut



DRILLING SUMMARY

Drilling Company: LaFramboise Well Drilling, Inc. Driller: Joseph Michaud

Drill Rig Make/Model: JASWELL Drill J-950

Borehole Diameter: Nominal 8" Casing Used/Depth: None

Drilling Fluid: Sodium Bentonite/Water

Total Depth: 51 Feet Depth to Water: Ft (2/10/91)

Supervisory Geologist: Thomas R. Hughes

WELL DESIGN

Casing Material: Schedule 40 PVC Diameter: 2" ID Length: 39.7'

Screen Material: Schedule 40 PVC Diameter: 2" ID Length: 10.3'

Slot Size: 0.020" Setting: 38 Ft. - 48 Ft.

Filter Material: Morie 0 Sand Setting: 33 Ft. - 51 Ft.

Seals Material: Bentonite Pellets Setting: 30 Ft. - 33 Ft.

Grout: Cement\Bentonite Setting: 0 Ft. - 33 Ft.

Surface Casing Material: 4-inch carbon steel Setting: Ft. - Ft.

TIME LOG	Started	Completed
Drilling:	3/6/91	3/6/91
Installation:	3/6/91	3/6/91
Development:	3/6/91	

WELL DEVELOPMENT

Method: Centrifugal Pumping

Static Depth to Water: Ft. (2/10/91)

Pumping Depth to Water: 19.5 Ft.

Pumping Rate: 2.5 Gallons per Minute Specific Capacity: gpm/ft

Volume Pumped: Gallons

Appendix E-2

Summary of Detected Constituents from Interim Status Groundwater Data November 1981 – October 1989

WELL 1
GROUNDWATER MONITORING ANALYTICAL DATA
TEXTRON-LYCOMING, STRATFORD, CONNECTICUT
AUGUST, 1983 - APRIL, 1986

	Nov-81	Mar-82	Jun-82	Sep-82	Aug-83	Nov-83	Feb-84	May-84	Oct-84	Jan-85
trichloroethene	NA	NA	NA	NA	2 U	6	2 U	2 U	NA	7
Barium	20	96	10	490	NA	NA	NA	NA	NA	NA
Chromium (Total)	5 U	48	10 U	290	80	160	10	40	50	20
Chromium (Hexavalent)	5 U	NA	NA	NA	80	5 U	5 U	5 U	5 U	5
Copper	5 U	NA	NA	NA	10 U	30	50	20	40	10
Iron	1,525	7,900	20,200	35,330	NA	NA	NA	NA	NA	NA
Manganese	NA	490	400	590	NA	NA	NA	NA	NA	NA
Nickel	5 U	NA	NA	NA	60	50	70	20	40	30
Zinc	20 U	NA	NA	NA	790	600	630	110	60	30
Cyanide (Total)	100 U	NA	NA	NA	970	600	680	560	NA	190
Total Organic Halides (TOX)	260	1,000	410	50	NA	NA	101	58	NA	10
Total Organic Halides (TOX)	150	500	470	42	NA	NA	NA	NA	NA	10
Total Organic Halides (TOX)	100	1,240	420	46	NA	NA	NA	NA	NA	10
Total Organic Halides (TOX)	120	1,720	390	41	NA	NA	NA	NA	NA	10
Total Organic Carbon (TOC)	26,000	82,500	66,000	19,790	NA	NA	44,000	64,000	NA	48
Total Organic Carbon (TOC)	29,000	85,900	60,500	19,900	NA	NA	NA	NA	NA	39
Total Organic Carbon (TOC)	39,000	80,400	64,500	20,000	NA	NA	NA	NA	NA	43
Total Organic Carbon (TOC)	42,000	83,200	64,900	19,700	NA	NA	NA	NA	NA	45
Specific Conductance (umhos/cm)	3,100	3,570	2,910	3,685	NA	NA	600	620	543	1,900
Specific Conductance (umhos/cm)	3,200	3,560	2,920	3,690	NA	NA	NA	NA	NA	1,950
pH	6.60	6.30	6.52	6.76	6.40	6.30	6.80	6.50	6.50	6.70
pH	6.70	6.28	6.55	6.80	NA	NA	NA	NA	NA	6.75
pH	6.70	6.30	6.55	6.80	NA	NA	NA	NA	NA	6.70
pH	6.70	6.30	6.55	6.79	NA	NA	NA	NA	NA	6.70
Radium	1.39	0.15	0.10	0.01 U	NA	NA	NA	NA	NA	NA
Gross Beta	35.08	0.50	0.40	0.01	NA	NA	NA	NA	NA	NA
Gross Alpha	24.3	2.0	1.1	0.01	NA	NA	NA	NA	NA	NA
phenol	75.0	50.0 U	50.0 U	630.0	NA	NA	NA	NA	NA	NA
Turbidity	36.75	NA	500	80	NA	NA	NA	NA	NA	NA
Sulfate (SO4)	31,800	612,000	487,900	800,400	NA	NA	NA	NA	NA	NA
Nitrate, as N	NA	19,500	38,400	720	NA	NA	NA	NA	NA	NA
Chloride	102,500	673,200	467,300	1,782,000	NA	NA	NA	NA	NA	NA
Sodium	596,500	451,000	475,200	419,480	NA	NA	NA	NA	NA	NA
Fluoride	625	700	1,800	270	NA	NA	NA	NA	NA	NA

Notes: * All values are in ug/l unless noted otherwise
U indicates element was analyzed for but not detected. The number shown is the detection limit.

WELL 1
GROUNDWATER MONITORING ANALYTICAL DATA
TEXTRON-LYCOMING, STRATFORD, CONNECTICUT
April, 1985 - September, 1987

	Apr-85	Aug-85	Nov-85	Apr-86	Jun-86	Oct-86	Jan-87	Apr-87	Jul-87	Sep-87
chloroform (THM)	NA	1 U	NA	1	NA	10 U	NA	1 U	NA	1.7
1,1-dichloroethane	NA	25 U	NA	1	NA	10 U	NA	1 U	NA	5.2
1,1-dichloroethene	NA	25 U	NA	1	NA	10 U	NA	1 U	NA	1
dichloromethane	NA	25 U	NA	4	NA	10 U	NA	1 U	NA	1
1,1,1,2-tetrachloroethane	NA	1 U	NA	1	NA	10 U	NA	1 U	NA	1
1,1,1-trichloroethane	NA	1 U	NA	1	NA	10 U	NA	1 U	NA	1
trichloroethene	NA	1 U	NA	27	NA	10 U	NA	1 U	NA	1
toluene	NA	14	NA	2	NA	1 U	NA	1 U	NA	1
Cadmium	10 U	10 U	10 U	50	10 U	10 U	10 U	10 U	10 U	10
Chromium (Total)	20	10	20	40	17	40	20 U	20 U	40	20
Copper	10 U	10 U	10 U	20	120	90	20 U	20 U	40	80
Iron	NA	NA	NA	NA	NA	76,800	1,980	NA	NA	NA
Manganese	NA	NA	NA	NA	NA	540	450	NA	NA	NA
Mercury	2 U	2 U	2 U	2 U	2	1 U	0.2 U	0.2 U	0.2 U	0.2
Nickel	10 U	30	30	40	72	30	40	60	20 U	20
Zinc	60	10	40	10	300	130	20 U	20 U	330	20
Cyanide (Total)	60	180	370	100 U	50 U	50 U	10 U	10 U	10 U	10
Cyanide (Amenable)	20 U	100 U	190	100 U	50 U	50 U	10 U	10 U	10 U	10
Total Organic Halogens (TOX)	NA	140.0 U	NA	1,320	NA	15 U	9	7	55.2	59.5
Total Organic Halogens (TOX)	NA	69.5 U	NA	1,400	NA	15 U	13	8	55.0	63.7
Total Organic Halogens (TOX)	NA	36.0 U	NA	NA	NA	15 U	15	12	55.4	70.1
Total Organic Halogens (TOX)	NA	199.5 U	NA	NA	NA	15 U	18	16	56.1	56.0
Total Organic Carbon (TOC)	NA	113,000	NA	49,000	NA	19,800	20,500	26,500	34,600	29,700
Total Organic Carbon (TOC)	NA	105,000	NA	NA	NA	21,600	28,500	32,400	43,500	32,000
Total Organic Carbon (TOC)	NA	118,000	NA	NA	NA	22,000	36,700	34,300	35,200	34,100
Total Organic Carbon (TOC)	NA	102,000	NA	NA	NA	25,000	40,300	35,800	34,500	31,700
Specific Conductance (umhos/cm)	1,800	950	1,050	480	2,740	2,450	2,380	2,420	2,870	2,030
Specific Conductance (umhos/cm)	2,600	945	1,170	800	2,880	2,490	2,430	2,530	2,890	2,085
pH	7.60	6.60	7.20	7.00	6.80	6.70	6.46	6.55	6.37	6.77
pH	7.50	6.60	7.40	7.00	6.90	6.70	6.46	6.56	6.36	6.75
pH	7.40	6.70	7.40	7.00	6.90	6.70	6.49	6.59	6.42	6.78
pH	7.60	6.69	7.50	7.10	7.00	6.80	6.51	6.65	6.36	6.79
Sulfate (SO4)	NA	NA	NA	NA	NA	236,000	201,800	NA	NA	NA
Chloride	NA	NA	NA	NA	NA	NA	334,900	NA	NA	NA
Sodium	NA	NA	NA	NA	NA	206,000	254,000	NA	NA	NA

Notes: * All values are in ug/l unless noted otherwise
U Indicates element was analyzed for but not detected. The number shown is the detection limit.

WELL MW-1S
GROUNDWATER MONITORING ANALYTICAL DATA
TEXTRON-LYCOMING, STRATFORD, CONNECTICUT
December, 1987 - Present

	Dec-87	Mar-88	Jul-88	Nov-88	Feb-89	Apr-89	Jul-89	Oct-89
chloroform (THM)	NA	1.9	NA	NA	NA	NA	1 U	NA
1,1-dichloroethane	NA	6.7	NA	NA	NA	NA	1 U	NA
Copper	NA	20 U	20 U	NA	NA	NA	110	60
Iron	NA	6,750	NA	NA	NA	NA	NA	NA
Manganese	NA	510	NA	NA	NA	NA	NA	NA
Zinc	NA	20 U	30	NA	NA	NA	40	30
Total Organic Halogens (TOX)	NA	24.4	50.0	NA	NA	NA	87.9	54.8
Total Organic Halogens (TOX)	NA	20.8	52.8	NA	NA	NA	98.2	62.2
Total Organic Halogens (TOX)	NA	25.2	49.1	NA	NA	NA	73.6	57.8
Total Organic Halogens (TOX)	NA	31.0	46.7	NA	NA	NA	89.4	59.9
Total Organic Carbon (TOC)	NA	40,690	54,640	NA	NA	NA	37,600	43,220
Total Organic Carbon (TOC)	NA	42,030	78,810	NA	NA	NA	37,510	40,780
Total Organic Carbon (TOC)	NA	44,810	52,100	NA	NA	NA	37,680	42,940
Total Organic Carbon (TOC)	NA	43,600	61,730	NA	NA	NA	37,460	43,100
Specific Conductance (umhos/cm)	NA	1,164	1,950	NA	NA	NA	1,180	1,704
Specific Conductance (umhos/cm)	NA	1,183	2,070	NA	NA	NA	1,185	1,721
pH	NA	6.75	7.00	NA	NA	NA	6.50	6.52
pH	NA	6.69	6.85	NA	NA	NA	6.54	6.51
pH	NA	6.61	6.93	NA	NA	NA	6.57	6.52
pH	NA	6.59	7.07	NA	NA	NA	6.61	6.53
Sulfate (SO4)	NA	310,600	NA	NA	NA	NA	NA	NA
Chloride	NA	492,800	NA	NA	NA	NA	NA	NA
Sodium	NA	430,100	NA	NA	NA	NA	NA	NA

Notes: * All values are in ug/l unless noted otherwise
U Indicates element was analyzed for but not detected. The number shown is the detection limit.

WELL 2
GROUNDWATER MONITORING ANALYTICAL DATA
TEXTRON-LYCOMING, STRATFORD, CONNECTICUT
AUGUST, 1983 - APRIL, 1986

	Nov-81	Mar-82	Jun-82	Sep-82	Aug-83	Nov-83	Feb-84	May-84	Oct-84	Jan-85
chlorobenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	280
trichloroethene	NA	NA	NA	NA	2 U	5 U	2 U	2 U	NA	6
chlorobenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	305
Barium	32.5	96	200	390	NA	NA	NA	NA	NA	NA
Chromium (Total)	5 U	24	110	270	5 U	350	5 U	30	20	40
Copper	5 U	NA	NA	NA	10 U	10 U	30	20	10	20
Iron	578	7,300	16,710	10,670	NA	NA	NA	NA	NA	NA
Manganese	NA	4,000	5,300	2,030	NA	NA	NA	NA	NA	NA
Nickel	5 U	NA	NA	NA	40	40	70	30	30	50
Silver	10 U	10 U	10 U	750	NA	NA	NA	NA	NA	NA
Zinc	37.5	NA	NA	NA	490	560	920	30	10	40
Cyanide (Total)	100 U	NA	NA	NA	780	450	620	660	NA	230
Total Organic Halides (TOX)	110	155,000	90	560	NA	NA	157	135	NA	10
Total Organic Halides (TOX)	150	165,000	95	610	NA	NA	NA	NA	NA	10
Total Organic Halides (TOX)	110	148,000	87	545	NA	NA	NA	NA	NA	10
Total Organic Halides (TOX)	200	140,000	79	575	NA	NA	NA	NA	NA	10
Total Organic Carbon (TOC)	30,500	99,000	49,000	28,050	NA	NA	34,000	41,000	NA	46,000
Total Organic Carbon (TOC)	29,000	100,240	52,000	29,000	NA	NA	NA	NA	NA	47,000
Total Organic Carbon (TOC)	35,500	102,500	51,500	29,000	NA	NA	NA	NA	NA	47,000
Total Organic Carbon (TOC)	32,500	100,850	48,900	28,850	NA	NA	NA	NA	NA	46,000
Specific Conductance (umhos/cm)	2,500	5,450	4,300	5,000	NA	NA	950	900	1,099	3,500
Specific Conductance (umhos/cm)	2,500	5,400	4,290	4,990	NA	NA	NA	NA	NA	3,500
pH	6.60	6.50	7.12	7.01	6.90	6.20	7.20	6.80	6.90	6.70
pH	6.60	6.50	7.10	6.99	NA	NA	NA	NA	NA	6.70
pH	6.60	6.48	7.12	7.00	NA	NA	NA	NA	NA	6.70
pH	6.70	6.50	7.12	7.00	NA	NA	NA	NA	NA	6.70
Radium	0.96	0.12	0.11	0.01 U	NA	NA	NA	NA	NA	NA
Gross Beta	30.93	0.50	0.40	0.01	NA	NA	NA	NA	NA	NA
Gross Alpha	10.6	1.4	1.4	0.01	NA	NA	NA	NA	NA	NA
phenol	32.5	50.0 U	50.0 U	50.0 U	NA	NA	NA	NA	NA	NA
Turbidity	3.88	NA	250	80	NA	NA	NA	NA	NA	NA
Sulfate (SO4)	394,750	587,200	570,900	741,800	NA	NA	NA	NA	NA	NA
Nitrate, as N	NA	28,000	29,600	2,560	NA	NA	NA	NA	NA	NA
Chloride	662,500	1,194,000	990,000	1,106,200	NA	NA	NA	NA	NA	NA
Sodium	242,000	838,000	818,800	726,600	NA	NA	NA	NA	NA	NA
Fluoride	775	640	400	180	NA	NA	NA	NA	NA	NA

Notes: * All values are in ug/l unless noted otherwise
U Indicates element was analyzed for but not detected. The number shown is the detection limit.

WELL 2
GROUNDWATER MONITORING ANALYTICAL DATA
TEXTRON-LYCOMING, STRATFORD, CONNECTICUT
April, 1985 - September, 1987

	Apr-85	Aug-85	Nov-85	Apr-86	Jun-86	Oct-86	Jan-87	Apr-87	Jul-87	Sep-87
chlorobenzene	NA	680	NA	1 U	NA	10 U	NA	39.1	NA	520.0
1,2-dichlorobenzene	NA	25 U	NA	1 U	NA	10 U	NA	339.6	NA	1 U
1,4-dichlorobenzene	NA	25 U	NA	1 U	NA	10 U	NA	1 U	NA	369.0
1,1-dichloroethane	NA	25 U	NA	1	NA	10 U	NA	42.9	NA	71.5
1,2-dichloroethane (EDC)	NA	25 U	NA	25	NA	10 U	NA	1 U	NA	1 U
1,2-trans-dichloroethene	NA	25 U	NA	1 U	NA	10 U	NA	1 U	NA	2.4
dichloromethane	NA	25 U	NA	5	NA	10 U	NA	1 U	NA	1 U
1,1,2,2-tetrachloroethane	NA	1 U	NA	2	NA	10 U	NA	1 U	NA	1 U
trichloroethene	NA	1 U	NA	5	NA	10 U	NA	1 U	NA	1 U
chlorobenzene	NA	680	NA	1 U	NA	380	NA	39.1	NA	1 U
1,2-dichlorobenzene	NA	10 U	NA	1 U	NA	15 U	NA	339.6	NA	1 U
ethylbenzene	NA	10 U	NA	5	NA	1 U	NA	1.8	NA	1 U
toluene	NA	5 U	NA	10	NA	18	NA	1.3	NA	2.5
xylenes	NA	10 U	NA	8	NA	1 U	NA	1 U	NA	1 U
Chromium (Total)	30	10	10	40	28	40	20 U	20 U	20 U	20 U
Copper	10 U	10 U	10 U	100	34	10	20 U	20 U	50	20 U
Iron	NA	NA	NA	NA	NA	10,600	2,030	NA	NA	NA
Manganese	NA	NA	NA	NA	NA	1,360	2,010	NA	NA	NA
Nickel	40	30	30	20	34	70	50	70	20 U	20 U
Zinc	80	20	30	10	42	60	20 U	20 U	410	20 U
Cyanide (Total)	50	180	460	100 U	50 U	50 U	10 U	10 U	10 U	10 U
Total Organic Halogens (TOX)	NA	341.5	NA	960	NA	15 U	398	369	256	410
Total Organic Halogens (TOX)	NA	201.0	NA	960	NA	15 U	419	387	255	388
Total Organic Halogens (TOX)	NA	320.0	NA	NA	NA	15 U	425	399	257	430
Total Organic Halogens (TOX)	NA	291.5	NA	NA	NA	15 U	510	412	256	394
Total Organic Carbon (TOC)	NA	90,000	NA	31,000	NA	25,600	24,000	25,400	48,200	33,100
Total Organic Carbon (TOC)	NA	127,000	NA	NA	NA	26,000	24,600	26,000	51,900	30,800
Total Organic Carbon (TOC)	NA	108,000	NA	NA	NA	27,600	31,500	27,900	53,100	32,600
Total Organic Carbon (TOC)	NA	186,000	NA	NA	NA	29,000	40,200	28,600	56,800	34,000
Specific Conductance (umhos/cm)	2,000	1,600	1,650	990	5,620	4,220	3,470	4,100	4,720	2,870
Specific Conductance (umhos/cm)	4,000	1,600	2,150	1,060	5,990	4,260	3,620	4,270	4,760	2,813
pH	7.90	6.90	7.50	7.00	7.00	7.00	6.65	6.71	6.69	6.78
pH	7.90	6.90	7.50	7.00	7.10	7.00	6.65	6.73	6.68	6.75
pH	7.80	6.85	7.40	7.00	7.10	7.00	6.67	6.74	6.70	6.76
pH	7.80	6.85	7.40	7.00	7.20	7.00	6.69	6.74	6.69	6.95
phenol	NA	NA	NA	NA	NA	17	10 U	NA	NA	NA
Sulfate (SO4)	NA	NA	NA	NA	NA	269,000	273,400	NA	NA	NA
Chloride	NA	NA	NA	NA	NA	NA	674,300	NA	NA	NA
Sodium	NA	NA	NA	NA	NA	780,000	610,000	NA	NA	NA

Notes: * All values are in ug/l unless noted otherwise
U Indicates element was analyzed for but not detected. The number shown is the detection limit.

WELL MW-2
GROUNDWATER MONITORING ANALYTICAL DATA
TEXTRON-LYCOMING, STRATFORD, CONNECTICUT
December, 1987 - Present

	Dec-87	Mar-88	Jul-88	Nov-88	Feb-89	Apr-89	Jul-89	Oct-89
chlorobenzene	NA	180	NA	NA	NA	NA	1060	NA
chloroethane	NA	1 U	NA	NA	NA	NA	3.7	NA
1,2-dichlorobenzene	NA	337	NA	NA	NA	NA	856	NA
1,1-dichloroethane	NA	65.9	NA	NA	NA	NA	43.6	NA
1,2-trans-dichloroethene	NA	1 U	NA	NA	NA	NA	15.7	NA
trichloroethene	NA	1 U	NA	NA	NA	NA	2.1	NA
vinyl chloride	NA	1 U	NA	NA	NA	NA	15.2	NA
ethylbenzene	NA	1 U	NA	NA	NA	NA	2.8	NA
toluene	NA	1 U	NA	NA	NA	NA	1.6	NA
xylenes	NA	1 U	NA	NA	NA	NA	11.5	NA
Copper	NA	20 U	70	NA	NA	NA	130	20 U
Iron	NA	780	NA	NA	NA	NA	NA	NA
Manganese	NA	1,380	NA	NA	NA	NA	NA	NA
Nickel	NA	20 U	60	NA	NA	NA	20 U	20 U
Zinc	NA	20 U	20 U	NA	NA	NA	40	20 U
Cyanide (Total)	NA	10 U	10 U	NA	NA	NA	20	10 U
Total Organic Halogens (TOX)	NA	883	199	NA	NA	NA	613	464
Total Organic Halogens (TOX)	NA	553	176	NA	NA	NA	585	437
Total Organic Halogens (TOX)	NA	778	179	NA	NA	NA	650	472
Total Organic Halogens (TOX)	NA	716	184	NA	NA	NA	630	445
Total Organic Carbon (TOC)	NA	47,180	189,200	NA	NA	NA	78,170	142,300
Total Organic Carbon (TOC)	NA	47,100	170,900	NA	NA	NA	78,240	138,700
Total Organic Carbon (TOC)	NA	51,120	180,700	NA	NA	NA	78,770	144,800
Total Organic Carbon (TOC)	NA	49,440	184,500	NA	NA	NA	78,140	134,000
Specific Conductance (umhos/cm)	NA	2,570	1,656	NA	NA	NA	2,640	4,170
Specific Conductance (umhos/cm)	NA	2,580	1,712	NA	NA	NA	2,940	4,180
pH	NA	6.64	6.85	NA	NA	NA	7.11	7.04
pH	NA	6.67	6.88	NA	NA	NA	7.18	7.02
pH	NA	6.64	6.85	NA	NA	NA	7.20	7.01
pH	NA	6.69	6.81	NA	NA	NA	7.15	7.03
Sulfate (SO4)	NA	215,300	NA	NA	NA	NA	NA	NA
Chloride	NA	625,400	NA	NA	NA	NA	NA	NA
Sodium	NA	673,050	NA	NA	NA	NA	NA	NA

Notes: * All values are in ug/l unless noted otherwise
U Indicates element was analyzed for but not detected. The number shown is the detection limit.

WELL 3
GROUNDWATER MONITORING ANALYTICAL DATA
TEXTRON-LYCOMING, STRATFORD, CONNECTICUT
AUGUST, 1983 - APRIL, 1986

	Nov-81	Mar-82	Jun-82	Sep-82	Aug-83	Nov-83	Feb-84	May-84	Oct-84	Jan-85
tetrachloroethene	NA	NA	NA	NA	2 U	2 U	2 U	2 U	NA	4
trichloroethene	NA	NA	NA	NA	2 U	4	2 U	2 U	NA	3
Barium	10	190	210	390	NA	NA	NA	NA	NA	NA
Chromium (Total)	5 U	24	110	210	20	20	120	100	30	130
Chromium (Hexavalent)	5 U	NA	NA	NA	9	5 U	5 U	5 U	5 U	5
Copper	10 U	NA	NA	NA	10 U	10 U	50	30	10	40
Iron	500	29,200	27,200	19,000	NA	NA	NA	NA	NA	NA
Manganese	NA	12,600	15,800	10,080	NA	NA	NA	NA	NA	NA
Nickel	5 U	NA	NA	NA	30	20	90	50	30	60
Zinc	12.5	NA	NA	NA	560	620	750	50	30	30
Cyanide (Total)	100 U	NA	NA	NA	620	950	390	470	NA	20
Total Organic Halides (TOX)	140	70,000	50	52	NA	NA	73	49	NA	10
Total Organic Halides (TOX)	110	78,000	53	58	NA	NA	NA	NA	NA	10
Total Organic Halides (TOX)	220	65,000	43	60	NA	NA	NA	NA	NA	10
Total Organic Halides (TOX)	120	80,000	51	56	NA	NA	NA	NA	NA	10
Total Organic Carbon (TOC)	30,000	92,000	363,000	51,150	NA	NA	42,000	55,000	NA	27,000
Total Organic Carbon (TOC)	62,500	89,000	349,000	50,950	NA	NA	NA	NA	NA	29,000
Total Organic Carbon (TOC)	34,000	95,000	340,000	50,850	NA	NA	NA	NA	NA	24,000
Total Organic Carbon (TOC)	34,000	100,250	357,500	51,000	NA	NA	NA	NA	NA	32,000
Specific Conductance (umhos/cm)	4,400	4,850	4,410	4,276	NA	NA	975	1000	1,418	3,005
Specific Conductance (umhos/cm)	4,400	4,300	4,415	4,276	NA	NA	NA	NA	NA	3,005
pH	6.90	6.80	7.00	6.90	6.90	6.80	7.30	6.80	7.30	6.90
pH	6.90	6.80	7.00	6.89	NA	NA	NA	NA	NA	6.95
pH	6.90	6.80	7.05	6.91	NA	NA	NA	NA	NA	6.90
pH	6.90	6.78	7.05	6.91	NA	NA	NA	NA	NA	6.90
Radium	0.67	0.20	0.10	0.01 U	NA	NA	NA	NA	NA	NA
Gross Beta	44.90	0.80	0.50	0.01	NA	NA	NA	NA	NA	NA
Gross Alpha	14.2	1.9	2.0	0.01	NA	NA	NA	NA	NA	NA
phenol	62.5	50.0 U	50.0 U	100.0	NA	NA	NA	NA	NA	NA
Turbidity	74.75	NA	500	160	NA	NA	NA	NA	NA	NA
Sulfate (SO4)	535,000	483,600	291,600	99,000	NA	NA	NA	NA	NA	NA
Nitrate, as N	NA	22,000	48,000	1,640	NA	NA	NA	NA	NA	NA
Chloride	1,206,000	930,000	1,006,500	1,089,500	NA	NA	NA	NA	NA	NA
Sodium	752,000	559,000	737,510	629,220	NA	NA	NA	NA	NA	NA
Fluoride	1,000	120	10 U	10 U	NA	NA	NA	NA	NA	NA

Notes: * All values are in ug/l unless noted otherwise
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WELL 3
GROUNDWATER MONITORING ANALYTICAL DATA
TEXTRON-LYCOMING, STRATFORD, CONNECTICUT
April, 1985 - September, 1987

	Apr-85	Aug-85	Nov-85	Apr-86	Jun-86	Oct-86	Jan-87	Apr-87	Jul-87	Sep-87
chlorobenzene	NA	5 U	NA	825	NA	10 U	NA	1 U	NA	1 U
1,2-dichlorobenzene	NA	25 U	NA	473	NA	10 U	NA	5.6	NA	1 U
1,1-dichloroethane	NA	25 U	NA	1	NA	55	NA	33.7	NA	44.5
1,2-dichloroethane (EDC)	NA	25 U	NA	1	NA	10 U	NA	1 U	NA	1 U
1,2-trans-dichloroethene	NA	25 U	NA	1	NA	10 U	NA	1 U	NA	6.1
dichloromethane	NA	25 U	NA	1	NA	10 U	NA	1 U	NA	1 U
1,1,1,2-tetrachloroethane	NA	1 U	NA	1	NA	10 U	NA	1 U	NA	1 U
1,1,1-trichloroethane	NA	1 U	NA	1	NA	10 U	NA	1 U	NA	1 U
trichloroethene	NA	1 U	NA	2	NA	10 U	NA	1 U	NA	1.0
chlorobenzene	NA	5 U	NA	825	NA	15 U	NA	1 U	NA	1 U
1,4-dichlorobenzene	NA	10 U	NA	473	NA	15 U	NA	1 U	NA	1 U
1,2-dichlorobenzene	NA	10 U	NA	1 U	NA	15 U	NA	5.6	NA	1 U
ethylbenzene	NA	10 U	NA	4	NA	1 U	NA	1 U	NA	1 U
toluene	NA	5 U	NA	11	NA	1 U	NA	1 U	NA	1 U
xylenes	NA	10 U	NA	22	NA	1 U	NA	1 U	NA	1.0
Cadmium	10 U	10 U	10 U	20	10 U	10 U	10 U	10 U	10 U	10 U
Chromium (Total)	10	20	10 U	10	28	30	20 U	20 U	20 U	20 U
Copper	10 U	10 U	10 U	60	66	20	20 U	20 U	20 U	30
Iron	NA	NA	NA	NA	NA	16,800	230	NA	NA	NA
Manganese	NA	NA	NA	NA	NA	2,840	3,510	NA	NA	NA
Nickel	50	30	20	40	48	40	70	20 U	20 U	20 U
Zinc	150	10	30	50	40	30	20 U	20 U	190	20 U
Cyanide (Total)	20 U	550	460	100 U	50 U	50 U	10 U	10 U	10 U	10 U
Total Organic Halogens (TOX)	NA	111.0	NA	336	NA	15 U	48	38	45.7	54.0
Total Organic Halogens (TOX)	NA	33.5	NA	380	NA	15 U	55	42	45.0	45.7
Total Organic Halogens (TOX)	NA	201.5	NA	NA	NA	15 U	60	49	45.6	40.1
Total Organic Halogens (TOX)	NA	194.5	NA	NA	NA	15 U	63	61	45.6	62.8
Total Organic Carbon (TOC)	NA	126,000	NA	21,000	NA	16,500	22,600	28,100	41,200	41,500
Total Organic Carbon (TOC)	NA	137,000	NA	NA	NA	17,100	22,700	30,300	36,600	38,700
Total Organic Carbon (TOC)	NA	119,000	NA	NA	NA	17,500	24,600	32,500	39,400	37,400
Total Organic Carbon (TOC)	NA	91,000	NA	NA	NA	18,000	26,300	35,000	39,800	36,300
Specific Conductance (umhos/cm)	3,300	2,000	1,300	900	2,840	2,410	2,300	2,160	2,080	1,875
Specific Conductance (umhos/cm)	3,600	1,980	1,410	1,050	2,900	2,470	2,350	2,290	2,090	1,858
pH	7.60	6.90	7.70	6.90	7.30	7.20	6.86	7.00	6.74	6.94
pH	7.50	6.95	7.70	6.95	7.30	7.30	6.87	7.00	6.79	6.96
pH	7.50	6.90	7.70	7.00	7.30	7.30	6.92	7.01	6.79	6.88
pH	7.60	6.90	NA	7.00	7.40	7.30	7.00	7.02	6.68	6.90
phenol	NA	NA	NA	NA	NA	6	10 U	NA	NA	NA
Sulfate (SO4)	NA	NA	NA	NA	NA	91,500	145,300	NA	NA	NA
Chloride	NA	NA	NA	NA	NA	NA	388,300	NA	NA	NA
Sodium	NA	NA	NA	NA	NA	189,000	331,000	NA	NA	NA

Notes: * All values are in ug/l unless noted otherwise
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WELL MW-3S
GROUNDWATER MONITORING ANALYTICAL DATA
TEXTRON-LYCOMING, STRATFORD, CONNECTICUT
December, 1987 - Present

	Dec-87	Mar-88	Jul-88	Nov-88	Feb-89	Apr-89	Jul-89	Oct-89
1,2-dichlorobenzene	NA	8.3	NA	NA	NA	NA	85.9	NA
1,1-dichloroethane	NA	57.4	NA	NA	NA	NA	1 U	NA
ethylbenzene	NA	1 U	NA	NA	NA	NA	1.3	NA
xylenes	NA	1 U	NA	NA	NA	NA	5.3	NA
Cadmium	NA	10 U	10 U	NA	NA	NA	10 U	50
Copper	NA	20 U	60	NA	NA	NA	180	20 U
Iron	NA	2,320	NA	NA	NA	NA	NA	NA
Manganese	NA	2,160	NA	NA	NA	NA	NA	NA
Zinc	NA	20 U	110	NA	NA	NA	20 U	20 U
Total Organic Halogens (TOX)	NA	32.1	97.0	NA	NA	NA	78.4	147
Total Organic Halogens (TOX)	NA	29.6	86.2	NA	NA	NA	74.1	155
Total Organic Halogens (TOX)	NA	21.7	95.7	NA	NA	NA	62.7	132
Total Organic Halogens (TOX)	NA	39.2	93.0	NA	NA	NA	83.6	141
Total Organic Carbon (TOC)	NA	41,610	75,230	NA	NA	NA	47,770	65,220
Total Organic Carbon (TOC)	NA	40,520	70,680	NA	NA	NA	46,580	65,400
Total Organic Carbon (TOC)	NA	42,930	69,120	NA	NA	NA	45,950	66,340
Total Organic Carbon (TOC)	NA	38,700	63,400	NA	NA	NA	46,120	66,100
Specific Conductance (umhos/cm)	NA	1,596	1,143	NA	NA	NA	7,480	3,200
Specific Conductance (umhos/cm)	NA	1,581	1,166	NA	NA	NA	6,990	3,180
pH	NA	6.88	6.87	NA	NA	NA	6.92	7.20
pH	NA	6.89	6.92	NA	NA	NA	6.97	7.20
pH	NA	6.90	6.90	NA	NA	NA	6.93	7.20
pH	NA	6.91	6.90	NA	NA	NA	6.88	7.21
Sulfate (SO4)	NA	136,600	NA	NA	NA	NA	NA	NA
Chloride	NA	452,100	NA	NA	NA	NA	NA	NA
Sodium	NA	434,150	NA	NA	NA	NA	NA	NA

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WELL MW-3D

GROUNDWATER MONITORING ANALYTICAL DATA

TEXTRON-LYCOMING, STRATFORD, CONNECTICUT

December, 1987 - Present

	Dec-87	Mar-88	Jul-88	Nov-88	Feb-89	Apr-89	Jul-89	Oct-89
1,2-dichlorobenzene	NA	NA	NA	NA	NA	NA	1 U	5.9
Cadmium	NA	NA	NA	NA	NA	NA	70	10 U
Copper	NA	NA	NA	NA	NA	NA	350	620
Nickel	NA	NA	NA	NA	NA	NA	1,630	1,570
Zinc	NA	NA	NA	NA	NA	NA	4,460	3,080
Cyanide (Total)	NA	NA	NA	NA	NA	NA	10 U	40
Total Organic Halogens (TOX)	NA	NA	NA	NA	NA	NA	1 U	23.2
Total Organic Halogens (TOX)	NA	NA	NA	NA	NA	NA	1 U	18.7
Total Organic Halogens (TOX)	NA	NA	NA	NA	NA	NA	1 U	20.2
Total Organic Halogens (TOX)	NA	NA	NA	NA	NA	NA	1 U	22.1
Total Organic Carbon (TOC)	NA	NA	NA	NA	NA	NA	3,020	8,840
Total Organic Carbon (TOC)	NA	NA	NA	NA	NA	NA	3,100	8,200
Total Organic Carbon (TOC)	NA	NA	NA	NA	NA	NA	3,060	7,380
Total Organic Carbon (TOC)	NA	NA	NA	NA	NA	NA	3,080	7,640
Specific Conductance (umhos/cm)	NA	NA	NA	NA	NA	NA	2,030	1,311
Specific Conductance (umhos/cm)	NA	NA	NA	NA	NA	NA	2,050	1,360
pH	NA	NA	NA	NA	NA	NA	4.57	4.42
pH	NA	NA	NA	NA	NA	NA	4.61	4.40
pH	NA	NA	NA	NA	NA	NA	4.54	4.42
pH	NA	NA	NA	NA	NA	NA	4.58	4.41

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WELL 4

GROUNDWATER MONITORING ANALYTICAL DATA

TEXTRON-LYCOMING, STRATFORD, CONNECTICUT

AUGUST, 1983 - APRIL, 1986

	Nov-81	Mar-82	Jun-82	Sep-82	Aug-83	Nov-83	Feb-84	May-84	Oct-84	Jan-85
trichloroethene	NA	NA	NA	NA	5 U	62	10	26	NA	3
chlorobenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	8
Barium	127	48	400	580	NA	NA	NA	NA	NA	NA
Chromium (Total)	5 U	24	300	370	5	160	50	90	30	10
Copper	10 U	NA	NA	NA	10 U	10 U	50	100	10	10
Iron	7,390	1,800	150,400	11,300	NA	NA	NA	NA	NA	NA
Manganese	NA	150	2,710	450	NA	NA	NA	NA	NA	NA
Nickel	5 U	NA	NA	NA	30	80	30	80	20	20
Selenium	10	10 U	10 U	10 U	NA	NA	NA	NA	NA	NA
Zinc	20 U	NA	NA	NA	340	160	410	90	40	20
Cyanide (Total)	100 U	NA	NA	NA	210	100 U	560	380	NA	90
Total Organic Halides (TOX)	150	819,000	380	115	NA	NA	80	120	NA	10
Total Organic Halides (TOX)	190	850,000	450	118	NA	NA	NA	NA	NA	10
Total Organic Halides (TOX)	200	820,000	405	105	NA	NA	NA	NA	NA	10
Total Organic Halides (TOX)	80	828,000	410	120	NA	NA	NA	NA	NA	10
Total Organic Carbon (TOC)	84,000	85,050	49,000	19,800	NA	NA	22,000	31,000	NA	23,000
Total Organic Carbon (TOC)	31,000	91,100	52,000	20,010	NA	NA	NA	NA	NA	23,000
Total Organic Carbon (TOC)	40,000	90,050	52,900	20,120	NA	NA	NA	NA	NA	33,000
Total Organic Carbon (TOC)	58,500	84,020	49,900	19,900	NA	NA	NA	NA	NA	23,000
Specific Conductance (umhos/cm)	5,500	3,430	3,200	2,690	NA	NA	1000	1000	1,516	2,100
Specific Conductance (umhos/cm)	6,000	3,420	3,220	2,685	NA	NA	NA	NA	NA	2,100
pH	6.90	6.20	6.43	6.64	6.30	6.30	7.20	6.20	7.10	6.30
pH	6.60	6.22	6.45	6.65	NA	NA	NA	NA	NA	6.35
pH	7.00	6.22	6.45	6.65	NA	NA	NA	NA	NA	6.25
pH	7.10	6.22	6.45	6.65	NA	NA	NA	NA	NA	6.30
Radium	1.13	0.20	0.10	0.01 U	NA	NA	NA	NA	NA	NA
Gross Beta	44.50	0.80	0.40	0.01	NA	NA	NA	NA	NA	NA
Gross Alpha	9.3	1.9	1.0	0.01	NA	NA	NA	NA	NA	NA
phenol	35.0	50.0 U	50.0 U	100.0	NA	NA	NA	NA	NA	NA
Turbidity	76.00	NA	2,500	80	NA	NA	NA	NA	NA	NA
Sulfate (SO4)	844,000	233,000	232,000	74,700	NA	NA	NA	NA	NA	NA
Nitrate, as N	980,000	33,000	20,800	1,160	NA	NA	NA	NA	NA	NA
Chloride	171,200	831,000	6,430	677,400	NA	NA	NA	NA	NA	NA
Sodium	36,000	539,000	675,000	397,000	NA	NA	NA	NA	NA	NA
Fluoride	844,000	330	400	40	NA	NA	NA	NA	NA	NA

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WELL 4
GROUNDWATER MONITORING ANALYTICAL DATA
TEXTRON-LYCOMING, STRATFORD, CONNECTICUT
April, 1985 - September, 1987

	Apr-85	Aug-85	Nov-85	Apr-86	Jun-86	Oct-86	Jan-87	Apr-87	Jul-87	Sep-87
bromodichloromethane (THM)	NA	1 U	NA	8	NA	10 U	NA	1 U	NA	1
dibromochloromethane (THM)	NA	1 U	NA	1	NA	10 U	NA	1 U	NA	2.4
1,1-dichloroethane	NA	25 U	NA	20	NA	13	NA	21.9	NA	33.7
1,2-dichloroethane (EDC)	NA	25 U	NA	1	NA	10 U	NA	1 U	NA	1
1,1-dichloroethene	NA	25 U	NA	1	NA	10 U	NA	1 U	NA	1.8
1,2-trans-dichloroethene	NA	25 U	NA	173	NA	210	NA	544.7	NA	519.0
dichloromethane	NA	25 U	NA	1	NA	10 U	NA	1 U	NA	1
trans-1,3-dichloropropene	NA	25 U	NA	1	NA	10 U	NA	1 U	NA	1
1,1,2-trichloroethane	NA	25 U	NA	1	NA	10 U	NA	1 U	NA	1
trichloroethene	NA	4	NA	10	NA	10 U	NA	154.3	NA	4.0
ethylbenzene	NA	10 U	NA	1	NA	1 U	NA	1 U	NA	1
toluene	NA	5 U	NA	4	NA	1 U	NA	1 U	NA	1
xylenes	NA	10 U	NA	5	NA	1 U	NA	1 U	NA	1
Chromium (Total)	20	10	10 U	20	18	40	20 U	20 U	20 U	20
Copper	10 U	10	10	30	80	70	20 U	20 U	50	20
Iron	NA	NA	NA	NA	NA	7,400	440	NA	NA	NA
Manganese	NA	NA	NA	NA	NA	180	150	NA	NA	NA
Mercury	2 U	2 U	2 U	2 U	3	1 U	0.2 U	0.2 U	0.2 U	0.2
Nickel	10 U	20	10 U	30	50	30	20 U	20 U	20 U	20
Zinc	60	40	140	70	36	60	20 U	20 U	230	20
Cyanide (Total)	90	10 U	20 U	100 U	50 U	50 U	10 U	10 U	10 U	10
Total Organic Halogens (TOX)	NA	131.0	NA	968	NA	185	66	71	226	402
Total Organic Halogens (TOX)	NA	122.5	NA	923	NA	189	69	77	227	459
Total Organic Halogens (TOX)	NA	25.5	NA	NA	NA	191	73	83	226	317
Total Organic Halogens (TOX)	NA	64.5	NA	NA	NA	196	85	88	226	357
Total Organic Carbon (TOC)	NA	85,000	NA	21,000	NA	7,500	7,300	16,400	17,200	18,200
Total Organic Carbon (TOC)	NA	24,000	NA	NA	NA	8,000	10,500	17,500	17,800	20,600
Total Organic Carbon (TOC)	NA	39,000	NA	NA	NA	8,300	13,300	21,100	19,000	21,900
Total Organic Carbon (TOC)	NA	38,000	NA	NA	NA	8,800	14,000	37,300	15,100	20,000
Specific Conductance (umhos/cm)	1,200	1,400	1,600	1,100	3,210	3,070	2,630	3,440	3,100	3,050
Specific Conductance (umhos/cm)	2,100	1,400	1,600	1,150	3,250	3,080	2,680	3,520	3,120	3,028
pH	7.00	6.20	7.50	6.90	6.70	6.60	6.23	6.23	6.16	6.27
pH	7.00	6.30	7.40	6.90	6.70	6.60	6.27	6.27	6.18	6.25
pH	7.00	6.40	7.40	6.90	6.80	6.60	6.29	6.31	6.14	6.25
pH	7.10	6.40	7.40	6.95	6.90	6.70	6.31	6.32	6.14	6.29
phenol	NA	NA	NA	NA	NA	7	10 U	NA	NA	NA
Sulfate (SO4)	NA	NA	NA	NA	NA	23,100	58,000	NA	NA	NA
Chloride	NA	NA	NA	NA	NA	NA	658,100	NA	NA	NA
Sodium	NA	NA	NA	NA	NA	430,000	473,000	NA	NA	NA

Notes: * All values are in ug/l unless noted otherwise
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WELL MW-4
GROUNDWATER MONITORING ANALYTICAL DATA
TEXTRON-LYCOMING, STRATFORD, CONNECTICUT
December, 1987 - Present

	Dec-87	Mar-88	Jul-88	Nov-88	Feb-89	Apr-89	Jul-89	Oct-89
1,1-dichloroethane	NA	25.2	NA	14.6	NA	7.6	NA	1 U
1,1-dichloroethene	NA	5.2	NA	1 U	NA	1.3	NA	1 U
1,2-trans-dichloroethene	NA	129	NA	262	NA	285	NA	131
trichloroethene	NA	4.9	NA	1 U	NA	1 U	NA	1 U
vinyl chloride	NA	1 U	NA	1 U	NA	147	NA	66.6
Copper	20 U	20 U	50	20 U	20 U	20 U	20 U	20 U
Iron	NA	490	NA	NA	140	NA	NA	NA
Manganese	NA	160	NA	NA	70	NA	NA	NA
Nickel	30	20 U	20 U	20 U	20 U	20 U	20 U	20 U
Zinc	20 U	20 U	20 U	20 U	80	20 U	20 U	20 U
Total Organic Halogens (TOX)	172	267	174	189	170	186	193	181
Total Organic Halogens (TOX)	203	227	166	176	161	184	218	167
Total Organic Halogens (TOX)	186	249	159	182	172	180	180	172
Total Organic Halogens (TOX)	158	253	155	190	166	176	187	180
Total Organic Carbon (TOC)	18,000	19,500	34,860	14,370	12,990	14,800	9,730	16,920
Total Organic Carbon (TOC)	18,000	21,760	41,160	16,300	14,760	14,200	9,810	19,300
Total Organic Carbon (TOC)	17,800	23,720	31,190	14,910	13,560	14,950	10,230	16,040
Total Organic Carbon (TOC)	17,800	23,530	34,330	15,970	14,310	14,410	10,150	15,790
Specific Conductance (umhos/cm)	2,050	2,610	2,250	1,810	2,100	2,040	1,982	1,902
Specific Conductance (umhos/cm)	2,050	2,630	2,190	1,798	2,070	2,060	1,977	1,903
pH	6.48	6.17	6.68	6.42	6.95	6.36	6.31	6.50
pH	6.50	6.18	6.73	6.45	6.93	6.38	6.38	6.50
pH	6.54	6.16	6.66	6.39	6.96	6.41	6.41	6.52
pH	6.60	6.20	6.67	6.40	6.94	6.32	6.36	6.54
Sulfate (SO4)	NA	84,100	NA	NA	31,000	NA	NA	NA
Chloride	NA	763,500	NA	NA	596,000	NA	NA	NA
Sodium	NA	813,200	NA	NA	297,790	NA	NA	NA

Notes: * All values are in ug/l unless noted otherwise
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WELL 5
GROUNDWATER MONITORING ANALYTICAL DATA
TEXTRON-LYCOMING, STRATFORD, CONNECTICUT
AUGUST, 1983 - APRIL, 1986

	Nov-81	Mar-82	Jun-82	Sep-82	Aug-83	Nov-83	Feb-84	May-84	Oct-84	Jan-85
tetrachloroethene	NA	NA	NA	NA	26	17	10	13	NA	7
1,1,1-trichloroethane	NA	NA	NA	NA	41	26	21	52	NA	12
trichloroethene	NA	NA	NA	NA	5	37	13	24	NA	9
Barium	650	96	50 U	390	NA	NA	NA	NA	NA	NA
Chromium (Total)	125	100	100	690	20	110	70	70	40	120
Chromium (Hexavalent)	5 U	NA	NA	NA	20	5 U	5 U	5 U	5 U	5 U
Copper	10 U	NA	NA	NA	10 U	10 U	50	10	10 U	20
Iron	11,225	27,100	17,100	27,670	NA	NA	NA	NA	NA	NA
Manganese	NA	2,800	5,110	2,020	NA	NA	NA	NA	NA	NA
Nickel	5 U	NA	NA	NA	50	70	70	60	50	70
Zinc	50	NA	NA	NA	480	440	490	20	20	10
Cyanide (Total)	100 U	NA	NA	NA	370	170	100	100 U	NA	20 U
Total Organic Halides (TOX)	760	868,000	365	750	NA	NA	431	1014	NA	10 U
Total Organic Halides (TOX)	920	900,000	325	790	NA	NA	NA	NA	NA	10 U
Total Organic Halides (TOX)	930	890,000	330	765	NA	NA	NA	NA	NA	10 U
Total Organic Halides (TOX)	880	880,000	315	810	NA	NA	NA	NA	NA	44
Total Organic Carbon (TOC)	11,000	87,100	33,000	197,600	NA	NA	9,000	8,000	NA	15,000
Total Organic Carbon (TOC)	11,000	84,500	27,000	198,000	NA	NA	NA	NA	NA	14,000
Total Organic Carbon (TOC)	11,000	90,500	27,900	196,240	NA	NA	NA	NA	NA	16,000
Total Organic Carbon (TOC)	11,000	88,250	30,300	198,140	NA	NA	NA	NA	NA	14,000
Specific Conductance (umhos/cm)	950	980	947	16,900	NA	NA	500	480	547	600
Specific Conductance (umhos/cm)	940	982	950	16,900	NA	NA	NA	NA	NA	600
pH	7.20	5.50	6.88	6.58	6.70	6.60	7.20	6.80	7.10	6.60
pH	7.20	5.45	6.90	6.59	NA	NA	NA	NA	NA	6.60
pH	7.20	5.50	6.90	6.59	NA	NA	NA	NA	NA	6.60
pH	7.20	5.50	6.89	6.59	NA	NA	NA	NA	NA	6.90
Radium	0.69	0.21	0.11	0.01 U	NA	NA	NA	NA	NA	NA
Gross Beta	14.75	0.90	0.40	0.01	NA	NA	NA	NA	NA	NA
Gross Alpha	6.6	2.1	1.0	0.01	NA	NA	NA	NA	NA	NA
phenol	102.5	50.0 U	50.0 U	150.0	NA	NA	NA	NA	NA	NA
Turbidity	53.50	NA	250	400	NA	NA	NA	NA	NA	NA
Sulfate (SO4)	80,900	354,200	247,100	741,100	NA	NA	NA	NA	NA	NA
Nitrate, as N	480 U	28,000	41,600	1,320	NA	NA	NA	NA	NA	NA
Chloride	162,000	132,000	168,300	4,241,700	NA	NA	NA	NA	NA	NA
Sodium	113,250	102,000	150,220	2,809,030	NA	NA	NA	NA	NA	NA
Fluoride	1,590	920	4,100	400	NA	NA	NA	NA	NA	NA

Notes: * All values are in ug/l unless noted otherwise
U indicates element was analyzed for but not detected. The number shown is the detection limit.

WELL 5
GROUNDWATER MONITORING ANALYTICAL DATA
TEXTRON-LYCOMING, STRATFORD, CONNECTICUT
April, 1985 - September, 1987

	Apr-85	Aug-85	Nov-85	Apr-86	Jun-86	Oct-86	Jan-87	Apr-87	Jul-87	Sep-87
chlorobenzene	NA	5 U	NA	1 U	NA	10 U	NA	1 U	NA	1.9
1,1-dichloroethane	NA	25 U	NA	24	NA	93	NA	129.8	NA	65.7
1,2-dichloroethane (EDC)	NA	25 U	NA	44	NA	10 U	NA	1 U	NA	1
1,2-trans-dichloroethene	NA	25 U	NA	1 U	NA	198	NA	422.1	NA	147.0
dichloromethane	NA	25 U	NA	6	NA	10 U	NA	1 U	NA	1
1,1,1,2-tetrachloroethane	NA	1 U	NA	2	NA	10 U	NA	1 U	NA	1
tetrachloroethene	NA	10	NA	1 U	NA	25	NA	3.7	NA	3.1
1,1,1-trichloroethane	NA	63	NA	7	NA	81	NA	55.3	NA	13.0
1,1,2-trichloroethane	NA	25 U	NA	1 U	NA	10 U	NA	1 U	NA	2.1
trichloroethene	NA	14	NA	8	NA	32	NA	12.6	NA	7.7
trichlorofluoromethane	NA	25 U	NA	1	NA	10 U	NA	1 U	NA	1
chlorobenzene	NA	5 U	NA	1 U	NA	15 U	NA	1 U	NA	1.9
toluene	NA	5 U	NA	36	NA	1 U	NA	2.5	NA	1
xylenes	NA	10 U	NA	15	NA	1 U	NA	1.7	NA	1
Chromium (Total)	10	30	50	50	210	160	20 U	20 U	50	20
Copper	10 U	10 U	10 U	20	170	110	20	20 U	30	40
Iron	NA	NA	NA	NA	NA	15,200	3,060	NA	NA	NA
Manganese	NA	NA	NA	NA	NA	2,490	3,120	NA	NA	NA
Mercury	2 U	2 U	2 U	2 U	1	1 U	0.2 U	0.2 U	0.2 U	0.2
Nickel	10 U	40	50	50	84	70	90	60	40	20
Zinc	90	10	30	40	38	30	20 U	20 U	160	20
Cyanide (Total)	20 U	10 U	460	100 U	50 U	50 U	10 U	90	10 U	10
Cyanide (Amenable)	20 U	10 U	270	100 U	50 U	50 U	10 U	10 U	10 U	10
Total Organic Halogens (TOX)	NA	37.9	NA	870	NA	194	22	31	197	178
Total Organic Halogens (TOX)	NA	34.0	NA	837	NA	198	33	32	197	179
Total Organic Halogens (TOX)	NA	24.5	NA	NA	NA	210	36	39	197	196
Total Organic Halogens (TOX)	NA	60.6	NA	NA	NA	215	37	45	197	184
Total Organic Carbon (TOC)	NA	27,000	NA	12,000	NA	3,600	11,200	8,300	22,200	31,700
Total Organic Carbon (TOC)	NA	31,000	NA	NA	NA	3,700	12,400	8,400	20,600	32,400
Total Organic Carbon (TOC)	NA	172,000	NA	NA	NA	3,800	16,400	8,500	18,100	28,200
Total Organic Carbon (TOC)	NA	31,000	NA	NA	NA	4,000	20,000	18,500	21,200	29,500
Specific Conductance (umhos/cm)	410	450	690	360	980	1,010	1,000	979	965	1,077
Specific Conductance (umhos/cm)	600	450	650	450	1,000	1,030	1,004	1,009	962	1,093
pH	7.80	6.70	7.50	7.00	7.00	6.70	6.63	6.65	6.58	6.55
pH	7.00	6.80	7.30	7.00	7.10	6.70	6.63	6.67	6.57	6.51
pH	7.00	6.80	7.40	7.00	7.10	6.80	6.64	6.67	6.58	6.53
pH	6.90	6.80	7.40	7.00	7.30	6.80	6.64	6.69	6.55	6.55
phenol	NA	NA	NA	NA	NA	4	10 U	NA	NA	NA
Sulfate (SO4)	NA	NA	NA	NA	NA	60,200	91,100	NA	NA	NA
Chloride	NA	NA	NA	NA	NA	NA	166,400	NA	NA	NA
Sodium	NA	NA	NA	NA	NA	121,000	106,600	NA	NA	NA

Notes: * All values are in ug/l unless noted otherwise
U indicates element was analyzed for but not detected. The number shown is the detection limit.

WELL MW-5S
GROUNDWATER MONITORING ANALYTICAL DATA
TEXTRON-LYCOMING, STRATFORD, CONNECTICUT
December, 1987 - Present

	Dec-87	Mar-88	Jul-88	Nov-88	Feb-89	Apr-89	Jul-89	Oct-89
chloroethane	NA	1 U	NA	NA	NA	NA	1 U	1.9
1,2-dichlorobenzene	NA	1 U	NA	NA	NA	NA	1 U	12.9
1,1-dichloroethane	NA	147	NA	NA	NA	NA	8.2	13.4
1,2-dichloroethane (EDC)	NA	1 U	NA	NA	NA	NA	1 U	2.6
1,1-dichloroethene	NA	2.1	NA	NA	NA	NA	4.6	1 U
1,2-trans-dichloroethene	NA	112	NA	NA	NA	NA	1,740	2,300
dichloromethane	NA	1 U	NA	NA	NA	NA	12.1	1 U
tetrachloroethene	NA	3.5	NA	NA	NA	NA	2.3	3.3
1,1,1-trichloroethane	NA	20.7	NA	NA	NA	NA	1 U	1 U
trichloroethene	NA	3.7	NA	NA	NA	NA	20.1	14.4
vinyl chloride	NA	1 U	NA	NA	NA	NA	160	559
xylenes	NA	1 U	NA	NA	NA	NA	1 U	8.2
Cadmium	NA	10 U	10 U	NA	NA	NA	60	10 U
Copper	NA	20 U	50	NA	NA	NA	20 U	20 U
Iron	NA	2,700	NA	NA	NA	NA	NA	NA
Manganese	NA	3,600	NA	NA	NA	NA	NA	NA
Zinc	NA	20 U	20 U	NA	NA	NA	20 U	20
Cyanide (Total)	NA	10 U	10	NA	NA	NA	10 U	10 U
Total Organic Halogens (TOX)	NA	1230	288	NA	NA	NA	1,390	2,440
Total Organic Halogens (TOX)	NA	1150	326	NA	NA	NA	1,510	2,220
Total Organic Halogens (TOX)	NA	1080	317	NA	NA	NA	1,430	2,370
Total Organic Halogens (TOX)	NA	1200	290	NA	NA	NA	1,460	2,390
Total Organic Carbon (TOC)	NA	10,050	10,950	NA	NA	NA	6,780	30,780
Total Organic Carbon (TOC)	NA	9,880	9,860	NA	NA	NA	7,340	26,580
Total Organic Carbon (TOC)	NA	12,610	9,410	NA	NA	NA	8,380	37,180
Total Organic Carbon (TOC)	NA	11,550	10,310	NA	NA	NA	8,070	38,780
Specific Conductance (umhos/cm)	NA	952	2,440	NA	NA	NA	2,360	1,844
Specific Conductance (umhos/cm)	NA	987	2,460	NA	NA	NA	2,310	1,850
pH	NA	6.43	6.74	NA	NA	NA	6.17	6.82
pH	NA	6.47	6.73	NA	NA	NA	6.23	6.85
pH	NA	6.41	6.78	NA	NA	NA	6.21	6.83
pH	NA	6.46	6.74	NA	NA	NA	6.18	6.81
Sulfate (SO4)	NA	76,300	NA	NA	NA	NA	NA	NA
Chloride	NA	412,200	NA	NA	NA	NA	NA	NA
Sodium	NA	336,300	NA	NA	NA	NA	NA	NA

Notes: * All values are in ug/l unless noted otherwise
U Indicates element was analyzed for but not detected. The number shown is the detection limit.

WELL MW-5D
GROUNDWATER MONITORING ANALYTICAL DATA
TEXTRON-LYCOMING, STRATFORD, CONNECTICUT
December, 1987 - Present

	Dec-87	Mar-88	Jul-88	Nov-88	Feb-89	Apr-89	Jul-89	Oct-89
chloroethane	NA	NA	NA	NA	NA	NA	5.3	1 U
1,2-dichlorobenzene	NA	NA	NA	NA	NA	NA	5.3	1 U
1,1-dichloroethane	NA	NA	NA	NA	NA	NA	36.7	58.2
1,2-trans-dichloroethene	NA	NA	NA	NA	NA	NA	235	362
dichloromethane	NA	NA	NA	NA	NA	NA	14.0	1 U
trichloroethene	NA	NA	NA	NA	NA	NA	1 U	5.7
vinyl chloride	NA	NA	NA	NA	NA	NA	117	272
ethylbenzene	NA	NA	NA	NA	NA	NA	1.9	1 U
toluene	NA	NA	NA	NA	NA	NA	1.5	1 U
xylenes	NA	NA	NA	NA	NA	NA	4.8	1 U
Copper	NA	NA	NA	NA	NA	NA	110	30
Nickel	NA	NA	NA	NA	NA	NA	170	20 U
Zinc	NA	NA	NA	NA	NA	NA	40	20 U
Total Organic Halogens (TOX)	NA	NA	NA	NA	NA	NA	207	341
Total Organic Halogens (TOX)	NA	NA	NA	NA	NA	NA	220	329
Total Organic Halogens (TOX)	NA	NA	NA	NA	NA	NA	221	324
Total Organic Halogens (TOX)	NA	NA	NA	NA	NA	NA	210	336
Total Organic Carbon (TOC)	NA	NA	NA	NA	NA	NA	21,810	18,840
Total Organic Carbon (TOC)	NA	NA	NA	NA	NA	NA	20,120	18,480
Total Organic Carbon (TOC)	NA	NA	NA	NA	NA	NA	17,570	17,490
Total Organic Carbon (TOC)	NA	NA	NA	NA	NA	NA	18,780	17,830
Specific Conductance (umhos/cm)	NA	NA	NA	NA	NA	NA	13,290	5,200
Specific Conductance (umhos/cm)	NA	NA	NA	NA	NA	NA	10,000	5,310
pH	NA	NA	NA	NA	NA	NA	6.53	6.91
pH	NA	NA	NA	NA	NA	NA	6.57	6.93
pH	NA	NA	NA	NA	NA	NA	6.68	6.94
pH	NA	NA	NA	NA	NA	NA	6.73	6.91

Notes: * All values are in ug/l unless noted otherwise
U Indicates element was analyzed for but not detected. The number shown is the detection limit.

WELL 6

GROUNDWATER MONITORING ANALYTICAL DATA

TEXTRON-LYCOMING, STRATFORD, CONNECTICUT

AUGUST, 1983 - APRIL, 1986

	Nov-81	Mar-82	Jun-82	Sep-82	Aug-83	Nov-83	Feb-84	May-84	Oct-84	Jan-85
Chromium (Total)	NA	NA	NA	NA	5 U	20	50	40	30	40
Copper	NA	NA	NA	NA	10 U	50	40	20	10	10
Nickel	NA	NA	NA	NA	40	140	50	30	20	20
Zinc	NA	NA	NA	NA	590	360	320	30	30	20
Total Organic Halides (TOX)	NA	NA	NA	NA	NA	NA	52	31	NA	10 U
Total Organic Carbon (TOC)	NA	NA	NA	NA	NA	NA	10,000	11,000	NA	12,000
Total Organic Carbon (TOC)	NA	NA	NA	NA	NA	NA	NA	NA	NA	16,000
Total Organic Carbon (TOC)	NA	NA	NA	NA	NA	NA	NA	NA	NA	17,000
Total Organic Carbon (TOC)	NA	NA	NA	NA	NA	NA	NA	NA	NA	29,000
Specific Conductance (umhos/cm)	NA	NA	NA	NA	NA	NA	900	920	970	2,500
Specific Conductance (umhos/cm)	NA	NA	NA	NA	NA	NA	NA	NA	NA	2,500
pH	NA	NA	NA	NA	6.50	6.50	6.90	6.50	6.90	6.70
pH	NA	NA	NA	NA	NA	NA	NA	NA	NA	6.70
pH	NA	NA	NA	NA	NA	NA	NA	NA	NA	6.70
pH	NA	NA	NA	NA	NA	NA	NA	NA	NA	6.70

Notes: * All values are in ug/l unless noted otherwise

U Indicates element was analyzed for but not detected. The number shown is the detection limit.

WELL 6
GROUNDWATER MONITORING ANALYTICAL DATA
TEXTRON-LYCOMING, STRATFORD, CONNECTICUT
April, 1985 - September, 1987

	Apr-85	Aug-85	Nov-85	Apr-86	Jun-86	Oct-86	Jan-87	Apr-87	Jul-87	Sep-87
1,1-dichloroethane	NA	25 U	NA	1 U	NA	93	NA	1 U	NA	1
1,2-trans-dichloroethene	NA	25 U	NA	1 U	NA	198	NA	1 U	NA	1
1,1,1,2-tetrachloroethane	NA	1 U	NA	1	NA	10 U	NA	1 U	NA	1
tetrachloroethene	NA	1 U	NA	1 U	NA	25	NA	1 U	NA	1
1,1,1-trichloroethane	NA	1 U	NA	1 U	NA	81	NA	1 U	NA	1
trichloroethene	NA	1 U	NA	31	NA	32	NA	1 U	NA	1
chlorobenzene	NA	5 U	NA	2	NA	15 U	NA	1 U	NA	1
toluene	NA	5 U	NA	2	NA	1 U	NA	1 U	NA	1
Chromium (Total)	40	10 U	10 U	10	18	30	20 U	20 U	20 U	20
Copper	60	10	10	10 U	180	110	20 U	20 U	40	20
Iron	NA	NA	NA	NA	NA	24,700	3,130	NA	NA	NA
Manganese	NA	NA	NA	NA	NA	760	630	NA	NA	NA
Nickel	10 U	10	10	10	44	40	20 U	20 U	20 U	20
Zinc	110	20	30	50	46	50	20 U	20 U	230	20
Total Organic Halogens (TOX)	NA	215.0	NA	49	NA	15 U	2	2	69.7	24.0
Total Organic Halogens (TOX)	NA	851.5	NA	59	NA	15 U	2	2	70.7	44.6
Total Organic Halogens (TOX)	NA	35.0	NA	NA	NA	15 U	2	2	69.9	27.7
Total Organic Halogens (TOX)	NA	170.0	NA	NA	NA	15 U	3	4	70.0	28.2
Total Organic Carbon (TOC)	NA	24,000	NA	10,000	NA	8,100	3,900	4,600	16,200	27,300
Total Organic Carbon (TOC)	NA	27,000	NA	NA	NA	9,000	5,100	5,500	17,900	24,400
Total Organic Carbon (TOC)	NA	35,000	NA	NA	NA	9,900	7,900	6,700	18,100	31,300
Total Organic Carbon (TOC)	NA	20,000	NA	NA	NA	10,200	8,200	8,000	20,500	26,700
Specific Conductance (umhos/cm)	1,900	1,650	1,600	910	2,880	3,040	2,700	2,730	2,540	2,010
Specific Conductance (umhos/cm)	2,600	1,650	1,800	1,050	2,900	3,050	2,720	2,770	2,590	2,012
pH	7.20	6.50	7.60	7.05	6.80	6.70	6.48	6.49	6.41	6.88
pH	7.20	6.50	7.50	7.15	6.80	6.70	6.49	6.51	6.41	6.71
pH	7.20	6.60	7.50	7.00	6.80	6.70	6.50	6.51	6.40	6.83
pH	7.20	6.60	7.60	6.95	6.90	6.80	6.50	6.59	6.42	6.81
phenol	NA	NA	NA	NA	NA	10	10 U	NA	NA	NA
Sulfate (SO4)	NA	NA	NA	NA	NA	60,200	94,900	NA	NA	NA
Chloride	NA	NA	NA	NA	NA	NA	688,700	NA	NA	NA
Sodium	NA	NA	NA	NA	NA	325,000	481,000	NA	NA	NA

Notes: * All values are in ug/l unless noted otherwise
U Indicates element was analyzed for but not detected. The number shown is the detection limit.

WELL MW-6
GROUNDWATER MONITORING ANALYTICAL DATA
TEXTRON-LYCOMING, STRATFORD, CONNECTICUT
December, 1987 - Present

	Dec-87	Mar-88	Aug-88	Nov-88	Feb-89	Apr-89	Jul-89	Oct-89
1,2-trans-dichloroethene	NA	NA	NA	1 U	NA	1 U	NA	1.6
Copper	20 U	NA	20 U	20 U	20 U	20 U	130	20 U
Iron	NA	NA	NA	NA	70	NA	NA	NA
Manganese	NA	NA	NA	NA	510	NA	NA	NA
Nickel	50	NA	20 U	20 U	20 U	20 U	20 U	20 U
Zinc	20 U	NA	20 U	20 U	150	20 U	40	20 U
Total Organic Halogens (TOX)	18.2	NA	47.9	20.4	105	29.8	50.1	51.3
Total Organic Halogens (TOX)	21.0	NA	64.7	19.6	92.9	33.8	53.2	57.5
Total Organic Halogens (TOX)	13.8	NA	70.0	19.2	110	31.4	60.3	50.9
Total Organic Halogens (TOX)	32.1	NA	74.4	18.8	98.5	30.9	49.8	48.8
Total Organic Carbon (TOC)	37,800	NA	16,600	7,220	7,400	7,010	4,490	10,210
Total Organic Carbon (TOC)	37,700	NA	18,400	7,410	5,830	6,840	4,530	9,810
Total Organic Carbon (TOC)	37,400	NA	19,000	7,140	6,080	7,090	4,660	10,320
Total Organic Carbon (TOC)	37,900	NA	20,600	6,980	7,220	6,920	4,610	9,830
Specific Conductance (umhos/cm)	1,190	NA	183	1,977	1,039	1,076	2,060	1,626
Specific Conductance (umhos/cm)	1,207	NA	194	1,970	1,042	1,077	2,050	1,611
pH	6.50	NA	6.02	6.59	7.08	6.89	6.66	6.87
pH	6.52	NA	6.04	6.51	7.09	6.94	6.68	6.84
pH	6.52	NA	6.07	6.50	7.08	6.88	6.71	6.83
pH	6.54	NA	6.05	6.57	7.07	6.81	6.65	6.90
Sulfate (SO_4)	NA	NA	NA	NA	43,300	NA	NA	NA
Chloride	NA	NA	NA	NA	760,000	NA	NA	NA
Sodium	NA	NA	NA	NA	324,960	NA	NA	NA

Notes: * All values are in ug/l unless noted otherwise
U Indicates element was analyzed for but not detected. The number shown is the detection limit.

WELL 7

GROUNDWATER MONITORING ANALYTICAL DATA

TEXTRON-LYCOMING, STRATFORD, CONNECTICUT

AUGUST, 1983 - APRIL, 1986

	Nov-81	Mar-82	Jun-82	Sep-82	Aug-83	Nov-83	Feb-84	May-84	Oct-84	Jan-85
1,1,1-trichloroethane	NA	NA	NA	NA	2.7	2 U	2 U	2 U	NA	1 U
trichloroethene	NA	NA	NA	NA	2.8	9	5	7	NA	1 U
Chromium (Total)	NA	NA	NA	NA	5 U	10	20	10 U	40	10 U
Copper	NA	NA	NA	NA	10 U	20	50	20	10 U	10 U
Nickel	NA	NA	NA	NA	30	100	50	20	10	20
Zinc	NA	NA	NA	NA	480	180	330	20	10 U	10
Total Organic Halides (TOX)	NA	NA	NA	NA	NA	NA	39	31	NA	10 U
Total Organic Carbon (TOC)	NA	NA	NA	NA	NA	NA	6,000	7,000	NA	14,000
Total Organic Carbon (TOC)	NA	NA	NA	NA	NA	NA	NA	NA	NA	10,000
Total Organic Carbon (TOC)	NA	NA	NA	NA	NA	NA	NA	NA	NA	14,000
Total Organic Carbon (TOC)	NA	NA	NA	NA	NA	NA	NA	NA	NA	12,000
Specific Conductance (umhos/cm)	NA	NA	NA	NA	NA	NA	975	1000	824	1,600
Specific Conductance (umhos/cm)	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,600
pH	NA	NA	NA	NA	6.50	6.60	6.90	6.40	6.80	6.50
pH	NA	NA	NA	NA	NA	NA	NA	NA	NA	6.50
pH	NA	NA	NA	NA	NA	NA	NA	NA	NA	6.50
pH	NA	NA	NA	NA	NA	NA	NA	NA	NA	6.48

Notes: * All values are in ug/l unless noted otherwise

U Indicates element was analyzed for but not detected. The number shown is the detection limit.

WELL 7
GROUNDWATER MONITORING ANALYTICAL DATA
TEXTRON-LYCOMING, STRATFORD, CONNECTICUT
April, 1985 - September, 1987

	Apr-85	Aug-85	Nov-85	Apr-86	Jun-86	Oct-86	Jan-87	Apr-87	Jul-87	Sep-87
chlorobenzene	NA	5 U	NA	1	NA	10 U	NA	1 U	NA	1
chloroform (THM)	NA	1 U	NA	1	NA	10 U	NA	1 U	NA	1
1,2-dichloroethane (EDC)	NA	25 U	NA	25	NA	10 U	NA	1 U	NA	1
dichloromethane	NA	25 U	NA	7	NA	10 U	NA	1 U	NA	1
1,1,1,2-tetrachloroethane	NA	1 U	NA	1	NA	10 U	NA	1 U	NA	1
1,1,1-trichloroethane	NA	1 U	NA	1	NA	10 U	NA	1 U	NA	1
trichloroethene	NA	1 U	NA	16	NA	10 U	NA	1 U	NA	1
chlorobenzene	NA	5 U	NA	1	NA	15 U	NA	1 U	NA	1
ethylbenzene	NA	10 U	NA	2	NA	1 U	NA	1 U	NA	1
toluene	NA	5 U	NA	27	NA	1 U	NA	1 U	NA	1
xylenes	NA	10 U	NA	6	NA	1 U	NA	1 U	NA	1
Cadmium	10 U	10 U	10 U	10	10 U	10 U	10 U	10 U	10 U	10
Chromium (Total)	10 U	10 U	10 U	10	14	20	20 U	20 U	20 U	20
Copper	10 U	10 U	10 U	100	130	40	40	40	20 U	20
Iron	NA	NA	NA	NA	NA	2,120	190	NA	NA	NA
Manganese	NA	NA	NA	NA	NA	600	960	NA	NA	NA
Nickel	10 U	10 U	10 U	30	30	40	20 U	20 U	20 U	20
Zinc	60	30	20	40	32	50	20 U	20 U	210	20
Total Organic Halogens (TOX)	NA	58.0	NA	35	NA	15 U	2	3	110	24.8
Total Organic Halogens (TOX)	NA	163.5	NA	46	NA	15 U	2	3	110	52.4
Total Organic Halogens (TOX)	NA	193.0	NA	NA	NA	15 U	3	4	111	29.0
Total Organic Halogens (TOX)	NA	176.0	NA	NA	NA	15 U	4	4	111	36.9
Total Organic Carbon (TOC)	NA	13,000	NA	5,000	NA	9,600	23,400	6,400	16,100	6,600
Total Organic Carbon (TOC)	NA	20,000	NA	NA	NA	10,400	24,200	9,400	11,700	4,900
Total Organic Carbon (TOC)	NA	11,000	NA	NA	NA	10,800	25,300	14,600	13,300	5,500
Total Organic Carbon (TOC)	NA	16,000	NA	NA	NA	12,100	34,200	16,200	12,000	7,300
Specific Conductance (umhos/cm)	2,100	1,500	1,400	650	2,670	2,290	2,360	2,800	2,160	1,935
Specific Conductance (umhos/cm)	1,500	1,490	1,500	1,300	2,690	2,300	2,530	2,950	2,190	1,919
pH	6.70	6.40	7.50	6.90	6.80	6.60	6.39	6.37	6.39	6.51
pH	6.50	6.30	7.50	6.90	6.80	6.70	6.40	6.39	6.38	6.53
pH	6.50	6.40	7.50	6.90	6.80	6.70	6.42	6.41	6.36	6.49
pH	6.70	6.30	7.50	6.90	7.00	6.70	6.42	6.49	6.37	6.46
phenol	NA	NA	NA	NA	NA	2	10 U	NA	NA	NA
Sulfate (SO4)	NA	NA	NA	NA	NA	75,800	95,000	NA	NA	NA
Chloride	NA	NA	NA	NA	NA	NA	614,800	NA	NA	NA
Sodium	NA	NA	NA	NA	NA	223,000	418,000	NA	NA	NA

Notes: * All values are in ug/l unless noted otherwise
U Indicates element was analyzed for but not detected. The number shown is the detection limit.

WELL MW-7

GROUNDWATER MONITORING ANALYTICAL DATA

TEXTRON-LYCOMING, STRATFORD, CONNECTICUT

December, 1987 - Present

	Dec-87	Mar-88	Jul-88	Nov-88	Feb-89	Apr-89	Jul-89	Oct-89
1,2-dichlorobenzene	NA	1 U	NA	1 U	NA	1 U	NA	5.9
Copper	20 U	30	60	20 U	20 U	20 U	20 U	20 U
Iron	NA	400	NA	NA	30	NA	NA	NA
Manganese	NA	890	NA	NA	440	NA	NA	NA
Nickel	40	20 U	20 U	20 U	20 U	20 U	20 U	20 U
Total Organic Halogens (TOX)	22.4	8.0	5.8	18.6	275	25.8	30.7	25.8
Total Organic Halogens (TOX)	17.8	7.7	8.7	18.8	291	22.3	39.2	23.6
Total Organic Halogens (TOX)	10.7	3.4	7.4	17.5	288	24.1	42.1	32.4
Total Organic Halogens (TOX)	44.7	5.2	7.2	18.0	279	21.2	29.9	27.7
Total Organic Carbon (TOC)	6,700	62,700	12,820	4,110	4,380	6,840	22,100	10,900
Total Organic Carbon (TOC)	7,100	66,600	12,960	5,240	4,440	6,210	18,420	8,020
Total Organic Carbon (TOC)	6,500	58,400	10,710	3,510	4,530	6,620	19,680	9,470
Total Organic Carbon (TOC)	6,800	67,900	10,880	3,970	4,320	7,320	18,530	7,890
Specific Conductance (umhos/cm)	1,988	450	505	1,438	223	307	998	1,046
Specific Conductance (umhos/cm)	1,992	447	510	1,430	216	309	983	1,048
pH	6.59	6.34	6.65	6.55	7.10	6.72	6.78	6.98
pH	6.68	6.37	6.69	6.50	7.11	6.77	6.81	7.00
pH	6.70	6.34	6.71	6.48	7.12	6.74	6.83	6.97
pH	6.78	6.34	6.73	6.61	7.10	6.69	6.87	6.98
Sulfate (SO4)	NA	102,700	NA	NA	18,200	NA	NA	NA
Chloride	NA	523,800	NA	NA	128,000	NA	NA	NA
Sodium	NA	484,580	NA	NA	168,580	NA	NA	NA

Notes: * All values are in ug/l unless noted otherwise

U Indicates element was analyzed for but not detected. The number shown is the detection limit.

WELL 8
GROUNDWATER MONITORING ANALYTICAL DATA
TEXTRON-LYCOMING, STRATFORD, CONNECTICUT
April, 1985 - September, 1987

	Apr-85	Aug-85	Nov-85	Apr-86	Jun-86	Oct-86	Jan-87	Apr-87	Jul-87	Sep-87
chlorobenzene	NA	NA	NA	38	NA	10 U	NA	1 U	NA	1
chloroform (THM)	NA	NA	NA	1	NA	10 U	NA	1 U	NA	1
1,2-dichlorobenzene	NA	NA	NA	38	NA	10 U	NA	1 U	NA	1
1,2-dichloroethane (EDC)	NA	NA	NA	35	NA	10 U	NA	1 U	NA	1
dichloromethane	NA	NA	NA	10	NA	10 U	NA	1 U	NA	1
1,1,1,2-tetrachloroethane	NA	NA	NA	3	NA	10 U	NA	1 U	NA	1
1,1,1-trichloroethane	NA	NA	NA	1	NA	10 U	NA	1 U	NA	1.5
trichloroethene	NA	NA	NA	24	NA	10 U	NA	1 U	NA	1
chlorobenzene	NA	NA	NA	38	NA	15 U	NA	1 U	NA	1
1,4-dichlorobenzene	NA	NA	NA	38	NA	15 U	NA	1 U	NA	1
ethylbenzene	NA	NA	NA	9	NA	1 U	NA	1 U	NA	1
toluene	NA	NA	NA	39	NA	1 U	NA	1 U	NA	1
xylenes	NA	NA	NA	15	NA	1 U	NA	1 U	NA	1
Chromium (Total)	NA	NA	10	30	20	50	20 U	20 U	20 U	20
Copper	NA	NA	10	10 U	84	120	20	20 U	70	20
Iron	NA	NA	NA	NA	NA	20,100	120	NA	NA	NA
Manganese	NA	NA	NA	NA	NA	1,660	100	NA	NA	NA
Mercury	NA	NA	2 U	2 U	3	1 U	0.2 U	0.2 U	0.2 U	0.2
Nickel	NA	NA	10 U	20	50	40	20 U	20 U	20 U	20
Zinc	NA	NA	30	60	36	80	20 U	20 U	160	20
Total Organic Halogens (TOX)	NA	NA	NA	25	NA	15 U	2	2	3.5	28.9
Total Organic Halogens (TOX)	NA	NA	NA	28	NA	15 U	2	3	3.5	22.4
Total Organic Halogens (TOX)	NA	NA	NA	NA	NA	15 U	4	3	3.4	15.5
Total Organic Halogens (TOX)	NA	NA	NA	NA	NA	15 U	4	3	3.7	10.9
Total Organic Carbon (TOC)	NA	NA	NA	1,800	NA	1,500	16,800	6,700	10,800	11,700
Total Organic Carbon (TOC)	NA	NA	NA	NA	NA	2,000	17,700	8,100	14,100	11,000
Total Organic Carbon (TOC)	NA	NA	NA	NA	NA	2,100	18,500	8,400	12,300	13,600
Total Organic Carbon (TOC)	NA	NA	NA	NA	NA	2,400	21,700	12,900	16,600	12,800
Specific Conductance (umhos/cm)	NA	NA	110	89	164	183	138	113	126	125
Specific Conductance (umhos/cm)	NA	NA	100	85	167	186	145	122	129	118
pH	NA	NA	7.80	7.40	4.40	4.20	4.56	4.80	4.69	4.92
pH	NA	NA	7.80	7.35	4.40	4.20	4.57	4.85	4.72	4.85
pH	NA	NA	7.70	7.40	4.40	4.20	4.57	4.95	4.66	4.94
pH	NA	NA	7.70	7.50	4.40	4.30	4.60	5.02	4.71	4.87
phenol	NA	NA	NA	NA	NA	15	10 U	NA	NA	NA
Sulfate (SO4)	NA	NA	NA	NA	NA	55,200	33,400	NA	NA	NA
Chloride	NA	NA	NA	NA	NA	NA	9,800	NA	NA	NA
Sodium	NA	NA	NA	NA	NA	12,100	19,200	NA	NA	NA

Notes: * All values are in ug/l unless noted otherwise
U Indicates element was analyzed for but not detected number shown is the detection limit.

WELL MW-8

GROUNDWATER MONITORING ANALYTICAL DATA

TEXTRON-LYCOMING, STRATFORD, CONNECTICUT

December, 1987 - Present

	Dec-87	Mar-88	Aug-88	Nov-88	Feb-89	Apr-89	Jul-89	Oct-89
Copper	20 U	20 U	20 U	20 U	20 U	20 U	120	NA
Iron	NA	160	NA	NA	20 U	NA	NA	NA
Manganese	NA	50	NA	NA	20 U	NA	NA	NA
Zinc	20 U	20 U	20 U	20 U	20 U	80	20 U	NA
Total Organic Halogens (TOX)	8.6	2 U	16.9	7.2	145	36.5	38.1	NA
Total Organic Halogens (TOX)	9.7	8.3	12.6	8.6	153	37.9	36.2	NA
Total Organic Halogens (TOX)	8.4	4.4	10.9	6.4	139	37.1	41.2	NA
Total Organic Halogens (TOX)	10.0	3.7	17.6	6.6	146	35.3	43.6	NA
Total Organic Carbon (TOC)	2,100	1,870	1,800	1,330	1,200	1,830	1,200	NA
Total Organic Carbon (TOC)	1,400	1,090	2,800	1,250	1,500	1,960	1,310	NA
Total Organic Carbon (TOC)	1,200	1,930	2,600	1,230	1,710	2,290	1,000	NA
Total Organic Carbon (TOC)	1,400	2,010	3,300	1,270	1,320	2,310	1,420	NA
Specific Conductance (umhos/cm)	102	109	163	97	130	142	110	NA
Specific Conductance (umhos/cm)	102	115	178	99	127	144	114	NA
pH	4.96	5.52	5.70	6.45	6.60	5.92	5.80	NA
pH	5.00	5.54	5.64	6.43	6.59	5.98	5.82	NA
pH	5.02	5.53	5.55	6.47	6.60	6.01	5.79	NA
pH	5.02	5.58	5.48	6.42	6.61	5.90	5.76	NA
Sulfate (SO4)	NA	86,400	NA	NA	29,500	NA	NA	NA
Chloride	NA	184,700	NA	NA	6,000	NA	NA	NA
Sodium	NA	134,900	NA	NA	7,880	NA	NA	NA

Notes: * All values are in ug/l unless noted otherwise

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WELL 9
GROUNDWATER MONITORING ANALYTICAL DATA
TEXTRON-LYCOMING, STRATFORD, CONNECTICUT
April, 1985 - September, 1987

	Apr-85	Aug-85	Nov-85	Apr-86	Jun-86	Oct-86	Jan-87	Apr-87	Jul-87	Sep-87
dichloromethane	NA	NA	NA	4	NA	10 U	NA	1 U	NA	1
trichloroethene	NA	NA	NA	2	NA	10 U	NA	1 U	NA	1
toluene	NA	NA	NA	8	NA	1 U	NA	1 U	NA	1
xylenes	NA	NA	NA	1	NA	1 U	NA	1 U	NA	1
Cadmium	NA	NA	10 U	10 U	10 U	10 U	10 U	670	10 U	10
Chromium (Total)	NA	NA	10 U	10 U	56	40	20 U	20 U	20 U	20
Copper	NA	NA	30	10	550	560	100	120	40	20
Iron	NA	NA	NA	NA	NA	67,400	170	NA	NA	NA
Manganese	NA	NA	NA	NA	NA	3,510	2,130	NA	NA	NA
Nickel	NA	NA	60	60	90	70	100	70	20 U	20
Zinc	NA	NA	690	150	240	300	630	540	910	170
Total Organic Halogens (TOX)	NA	NA	NA	67	NA	15 U	2	5	15.9	4.7
Total Organic Halogens (TOX)	NA	NA	NA	59	NA	15 U	3	6	16.9	2.1
Total Organic Halogens (TOX)	NA	NA	NA	NA	NA	15 U	6	9	16.2	3.5
Total Organic Halogens (TOX)	NA	NA	NA	NA	NA	15 U	7	10	16.6	5.2
Total Organic Carbon (TOC)	NA	NA	NA	5,000	NA	7,100	26,300	8,900	15,700	10,500
Total Organic Carbon (TOC)	NA	NA	NA	NA	NA	7,700	28,300	9,200	14,500	12,300
Total Organic Carbon (TOC)	NA	NA	NA	NA	NA	8,000	30,100	9,700	15,300	10,900
Total Organic Carbon (TOC)	NA	NA	NA	NA	NA	8,500	31,200	11,100	17,000	11,600
Specific Conductance (umhos/cm)	NA	NA	550	300	1,550	1,680	862	490	1,242	1,232
Specific Conductance (umhos/cm)	NA	NA	480	600	1,560	1,720	1,036	518	1,255	1,231
pH	NA	NA	7.70	6.90	6.80	6.70	4.46	4.61	5.82	6.34
pH	NA	NA	7.80	6.90	6.90	6.70	4.60	4.72	5.81	6.42
pH	NA	NA	8.00	7.00	7.00	6.70	4.61	4.76	5.81	6.28
pH	NA	NA	NA	7.00	7.00	6.70	4.64	4.81	5.80	6.30
phenol	NA	NA	NA	NA	NA	2	10 U	NA	NA	NA
Sulfate (SO4)	NA	NA	NA	NA	NA	909,000	529,800	NA	NA	NA
Chloride	NA	NA	NA	NA	NA	NA	25,800	NA	NA	NA
Sodium	NA	NA	NA	NA	NA	41,400	24,500	NA	NA	NA

Notes: * All values are in ug/l unless noted otherwise
U Indicates element was analyzed for but not detected. The number shown is the detection limit.

WELL MW-9

GROUNDWATER MONITORING ANALYTICAL DATA

TEXTRON-LYCOMING, STRATFORD, CONNECTICUT

December, 1987 - Present

	Dec-87	Mar-88	Jul-88	Nov-88	Feb-89	Apr-89	Jul-89	Oct-89
Cadmium	10 U	40	10 U	10 U	10 U	10 U	10 U	10 U
Copper	20 U	150	20 U	60	210	140	130	20 U
Iron	NA	940	NA	NA	100	NA	NA	NA
Manganese	NA	2,200	NA	NA	830	NA	NA	NA
Nickel	110	20 U	20 U	20 U	20 U	150	20 U	20 U
Zinc	280	1,000	110	170	1,070	770	260	300
Total Organic Halogens (TOX)	5.1	2 U	8.7	17.0	129	28.1	5.1	24.4
Total Organic Halogens (TOX)	7.4	2 U	8.5	16.2	132	27.1	4.1	27.8
Total Organic Halogens (TOX)	8.0	2 U	8.2	16.8	125	29.0	10.2	21.1
Total Organic Halogens (TOX)	6.8	2 U	7.1	15.4	134	26.4	6.3	27.3
Total Organic Carbon (TOC)	8,100	6,580	6,660	2,340	3,520	7,940	3,200	6,480
Total Organic Carbon (TOC)	7,800	4,310	5,060	2,820	4,530	6,920	3,260	6,060
Total Organic Carbon (TOC)	6,600	5,760	5,980	2,410	2,970	6,240	3,140	6,640
Total Organic Carbon (TOC)	6,700	5,840	6,810	2,940	4,160	5,360	3,080	6,320
Specific Conductance (umhos/cm)	1,866	884	1,310	1,148	443	432	867	614
Specific Conductance (umhos/cm)	1,874	893	1,380	1,145	429	434	861	633
pH	6.22	4.40	6.47	6.05	5.23	4.34	5.86	6.19
pH	6.25	4.41	6.54	6.02	5.22	4.38	5.80	6.15
pH	6.26	4.43	6.53	6.07	5.25	4.41	5.80	6.17
pH	6.30	4.40	6.49	6.01	5.21	4.47	5.82	6.19
Sulfate (SO4)	NA	191,800	NA	NA	110,000	NA	NA	NA
Chloride	NA	30,610	NA	NA	8,800	NA	NA	NA
Sodium	NA	24,900	NA	NA	8,940	NA	NA	NA

Notes: * All values are in ug/l unless noted otherwise

U Indicates element was analyzed for but not detected. The number shown is the detection limit.

WELL 10
GROUNDWATER MONITORING ANALYTICAL DATA
TEXTRON-LYCOMING, STRATFORD, CONNECTICUT
April, 1985 - September, 1987

	Apr-85	Aug-85	Nov-85	Apr-86	Jun-86	Oct-86	Jan-87	Apr-87	Jul-87	Sep-87
chloroform (THM)	NA	NA	NA	1 U	NA	10 U	NA	9.5	NA	1.9
1,1-dichloroethane	NA	NA	NA	18	NA	10 U	NA	1 U	NA	1
1,2-dichloroethane (EDC)	NA	NA	NA	1	NA	10 U	NA	1 U	NA	1
1,1-dichloroethene	NA	NA	NA	1	NA	10 U	NA	1 U	NA	1
1,2-trans-dichloroethene	NA	NA	NA	4	NA	10 U	NA	1 U	NA	1
dichloromethane	NA	NA	NA	4	NA	10 U	NA	1 U	NA	1
tetrachloroethene	NA	NA	NA	1	NA	10 U	NA	1 U	NA	1
1,1,1-trichloroethane	NA	NA	NA	1 U	NA	10 U	NA	29.1	NA	2.9
trichloroethene	NA	NA	NA	2	NA	10 U	NA	1 U	NA	1
toluene	NA	NA	NA	27	NA	1 U	NA	1 U	NA	1
xylenes	NA	NA	NA	3	NA	1 U	NA	1 U	NA	1
Chromium (Total)	NA	NA	10 U	10 U	32	80	20 U	20 U	20 U	20
Copper	NA	NA	10	10 U	150	160	30	20 U	20 U	20
Iron	NA	NA	NA	NA	NA	57,000	100	NA	NA	NA
Manganese	NA	NA	NA	NA	NA	2,100	100	NA	NA	NA
Nickel	NA	NA	10 U	10 U	76	80	50	20 U	20 U	20
Zinc	NA	NA	20	20	160	170	20 U	20 U	240	20
Total Organic Halogens (TOX)	NA	NA	NA	38	NA	15 U	4	7	59.0	14.8
Total Organic Halogens (TOX)	NA	NA	NA	29	NA	15 U	5	7	58.1	13.7
Total Organic Halogens (TOX)	NA	NA	NA	NA	NA	15 U	7	8	59.0	17.3
Total Organic Halogens (TOX)	NA	NA	NA	NA	NA	15 U	7	12	59.4	12.0
Total Organic Carbon (TOC)	NA	NA	NA	9,000	NA	13,000	10,000	3,500	7,800	1,900
Total Organic Carbon (TOC)	NA	NA	NA	NA	NA	14,600	10,200	3,500	11,100	2,600
Total Organic Carbon (TOC)	NA	NA	NA	NA	NA	15,000	10,500	4,800	4,000	3,800
Total Organic Carbon (TOC)	NA	NA	NA	NA	NA	15,400	12,900	6,300	10,200	3,000
Specific Conductance (umhos/cm)	NA	NA	220	440	835	399	234	260	266	298
Specific Conductance (umhos/cm)	NA	NA	240	425	895	421	241	270	269	323
pH	NA	NA	9.30	7.00	7.70	7.50	8.05	7.95	8.11	7.18
pH	NA	NA	8.90	7.00	7.80	7.50	8.12	7.96	8.11	7.21
pH	NA	NA	8.50	6.90	7.80	7.50	8.13	8.08	8.12	7.15
pH	NA	NA	8.40	6.90	7.80	7.50	8.13	8.13	8.11	7.17
phenol	NA	NA	NA	NA	NA	5	10 U	NA	NA	NA
Sulfate (SO4)	NA	NA	NA	NA	NA	30,000	41,500	NA	NA	NA
Chloride	NA	NA	NA	NA	NA	NA	20,300	NA	NA	NA
Sodium	NA	NA	NA	NA	NA	32,400	20,500	NA	NA	NA

Notes: * All values are in ug/l unless noted otherwise
U Indicates element was analyzed for but not detected number shown is the detection limit.

WELL MW-10

GROUNDWATER MONITORING ANALYTICAL DATA

TEXTRON-LYCOMING, STRATFORD, CONNECTICUT

December, 1987 - Present

	Dec-87	Mar-88	Jul-88	Nov-88	Feb-89	Apr-89	Jul-89	Oct-89
bromodichloromethane (THM)	NA	2.2	NA	1 U	NA	1 U	NA	1 U
chloroform (THM)	NA	15.3	NA	1 U	NA	1 U	NA	1 U
1,1-dichloroethane	NA	1 U	NA	1.0	NA	1 U	NA	1 U
1,1,1-trichloroethane	NA	6.0	NA	1 U	NA	1 U	NA	1.1
Copper	20 U	20 U	20 U	30	20 U	20 U	100	20 U
Iron	NA	1,080	NA	NA	20 U	NA	NA	NA
Manganese	NA	100	NA	NA	980	NA	NA	NA
Nickel	50	20 U	20 U	20 U	20 U	20 U	20 U	20 U
Total Organic Halogens (TOX)	15.6	78.0	7.9	54.6	15.1	36.3	29.1	42.9
Total Organic Halogens (TOX)	12.4	67.2	11.8	49.1	23.9	34.0	36.5	40.5
Total Organic Halogens (TOX)	13.2	76.1	13.0	46.7	17.9	35.8	28.8	38.8
Total Organic Halogens (TOX)	17.3	88.2	11.6	50.0	27.8	36.4	31.3	39.4
Total Organic Carbon (TOC)	4,100	3,790	6,630	2,150	9,650	8,630	4,200	8,630
Total Organic Carbon (TOC)	3,900	2,880	5,770	1,950	10,270	9,000	3,810	6,310
Total Organic Carbon (TOC)	4,300	3,910	7,200	2,480	10,630	8,820	3,600	6,630
Total Organic Carbon (TOC)	4,400	4,610	6,640	1,950	8,940	9,060	3,150	6,950
Specific Conductance (umhos/cm)	287	256	433	313	816	763	510	417
Specific Conductance (umhos/cm)	286	248	441	312	804	762	512	421
pH	7.39	7.31	7.54	7.06	7.65	7.87	7.24	7.57
pH	7.43	7.33	7.61	7.10	7.63	7.91	7.28	7.54
pH	7.48	7.36	7.64	7.05	7.64	7.88	7.31	7.56
pH	7.51	7.30	7.58	7.03	7.65	7.85	7.34	7.55
Sulfate (SO4)	NA	33,300	NA	NA	53,500	NA	NA	NA
Chloride	NA	25,300	NA	NA	574,000	NA	NA	NA
Sodium	NA	24,600	NA	NA	31,770	NA	NA	NA

Notes: * All values are in ug/l unless noted otherwise

U Indicates element was analyzed for but not detected. The number shown is the detection limit.

WELL 11
GROUNDWATER MONITORING ANALYTICAL DATA
TEXTRON-LYCOMING, STRATFORD, CONNECTICUT
April, 1985 - September, 1987

	Apr-85	Aug-85	Nov-85	Apr-86	Jun-86	Oct-86	Jan-87	Apr-87	Jul-87	Sep-87
chloroform (THM)	NA	NA	NA	1	NA	10 U	NA	1 U	NA	1
1,2-dichloroethane (EDC)	NA	NA	NA	49	NA	10 U	NA	1 U	NA	1
dichloromethane	NA	NA	NA	6	NA	10 U	NA	1 U	NA	1
1,1,1,2-tetrachloroethane	NA	NA	NA	3	NA	10 U	NA	1 U	NA	1
tetrachloroethene	NA	NA	NA	1 U	NA	10	NA	1 U	NA	1
1,1,1-trichloroethane	NA	NA	NA	1	NA	10 U	NA	1 U	NA	1
trichloroethene	NA	NA	NA	21	NA	13	NA	1 U	NA	1
ethylbenzene	NA	NA	NA	9	NA	1 U	NA	1 U	NA	1
toluene	NA	NA	NA	42	NA	1 U	NA	1 U	NA	1
xylenes	NA	NA	NA	14	NA	1 U	NA	1 U	NA	1
Chromium (Total)	NA	NA	10 U	10 U	20	20	20 U	20 U	20 U	20
Copper	NA	NA	20	20	300	80	20 U	20 U	40	20
Iron	NA	NA	NA	NA	NA	11,500	60	NA	NA	NA
Manganese	NA	NA	NA	NA	NA	1,660	1,270	NA	NA	NA
Mercury	NA	NA	2 U	2 U	2	1 U	0.2 U	0.2 U	0.2 U	0.2
Nickel	NA	NA	40	30	34	30	30	20 U	20 U	20
Zinc	NA	NA	550	150	180	100	180	160	170	20
Total Organic Halogens (TOX)	NA	NA	NA	24	NA	15 U	3	2	13.1	67.1
Total Organic Halogens (TOX)	NA	NA	NA	28	NA	15 U	3	2	14.2	72.6
Total Organic Halogens (TOX)	NA	NA	NA	NA	NA	15 U	4	3	14.0	80.3
Total Organic Halogens (TOX)	NA	NA	NA	NA	NA	15 U	5	4	14.6	65.0
Total Organic Carbon (TOC)	NA	NA	NA	12,000	NA	1,500	21,900	13,700	6,500	14,000
Total Organic Carbon (TOC)	NA	NA	NA	NA	NA	1,700	21,900	14,700	18,400	12,900
Total Organic Carbon (TOC)	NA	NA	NA	NA	NA	1,900	22,700	19,200	16,000	13,100
Total Organic Carbon (TOC)	NA	NA	NA	NA	NA	2,000	26,900	21,900	18,700	12,200
Specific Conductance (umhos/cm)	NA	NA	1,000	160	248	239	228	125	294	251
Specific Conductance (umhos/cm)	NA	NA	650	145	258	240	241	130	299	256
pH	NA	NA	7.70	7.10	5.40	5.60	5.16	5.38	5.34	6.12
pH	NA	NA	7.00	7.10	5.40	5.60	5.21	5.48	5.32	6.17
pH	NA	NA	7.70	7.20	5.50	5.60	5.22	5.48	5.32	6.13
pH	NA	NA	7.70	7.30	5.50	5.80	5.23	5.49	5.33	6.20
phenol	NA	NA	NA	NA	NA	6	10 U	NA	NA	NA
Sulfate (SO4)	NA	NA	NA	NA	NA	34,600	28,100	NA	NA	NA
Chloride	NA	NA	NA	NA	NA	NA	42,000	NA	NA	NA
Sodium	NA	NA	NA	NA	NA	38,000	38,600	NA	NA	NA

Notes: * All values are in ug/l unless noted otherwise
U Indicates element was analyzed for but not detected. The number shown is the detection limit.

WELL MW-11

GROUNDWATER MONITORING ANALYTICAL DATA

TEXTRON-LYCOMING, STRATFORD, CONNECTICUT

December, 1987 - Present

	Dec-87	Mar-88	Aug-88	Nov-88	Feb-89	Apr-89	Jul-89	Oct-89
Manganese	NA	NA	NA	NA	300	NA	NA	NA
Nickel	50	NA	20 U	20 U	20 U	20 U	20 U	20 U
Zinc	20 U	NA	20 U	20 U	20 U	60	20 U	30
Total Organic Halogens (TOX)	9.3	NA	3.8	16.9	22.3	33.6	7.5	37.7
Total Organic Halogens (TOX)	8.8	NA	8.8	17.5	35.4	31.1	8.4	36.2
Total Organic Halogens (TOX)	9.7	NA	6.4	15.8	32.6	35.0	7.0	29.9
Total Organic Halogens (TOX)	7.8	NA	6.8	17.1	29.9	32.4	7.9	32.4
Total Organic Carbon (TOC)	13,600	NA	8,300	7,260	11,750	18,240	6,810	25,060
Total Organic Carbon (TOC)	13,400	NA	8,500	7,430	11,490	19,120	6,440	25,390
Total Organic Carbon (TOC)	13,200	NA	8,600	7,480	11,820	18,160	6,730	26,210
Total Organic Carbon (TOC)	13,000	NA	8,900	8,190	11,540	17,560	6,550	26,950
Specific Conductance (umhos/cm)	174	NA	160	146	125	125	167	148
Specific Conductance (umhos/cm)	174	NA	168	138	120	127	178	150
pH	5.42	NA	5.38	6.54	6.54	5.99	6.33	6.59
pH	5.44	NA	5.10	6.59	6.53	6.05	6.19	6.60
pH	5.46	NA	4.99	6.55	6.55	6.01	6.29	6.60
pH	5.42	NA	5.00	6.55	6.52	6.01	6.34	6.61
Sulfate (SO4)	NA	NA	NA	NA	28,800	NA	NA	NA
Chloride	NA	NA	NA	NA	18,600	NA	NA	NA
Sodium	NA	NA	NA	NA	19,290	NA	NA	NA

Notes: * All values are in ug/l unless noted otherwise

U Indicates element was analyzed for but not detected. The number shown is the detection limit.

WELL 12
GROUNDWATER MONITORING ANALYTICAL DATA
TEXTRON-LYCOMING, STRATFORD, CONNECTICUT
April, 1985 - September, 1987

	Apr-85	Aug-85	Nov-85	Apr-86	Jun-86	Oct-86	Jan-87	Apr-87	Jul-87	Sep-87
chloroform (THM)	NA	NA	NA	1	NA	10 U	NA	1 U	NA	2.6
1,2-dichloroethane (EDC)	NA	NA	NA	52	NA	10 U	NA	1 U	NA	1
dichloromethane	NA	NA	NA	8	NA	10 U	NA	1 U	NA	1.0
1,1,1,2-tetrachloroethane	NA	NA	NA	4	NA	10 U	NA	1 U	NA	1
tetrachloroethene	NA	NA	NA	1 U	NA	10 U	NA	16.2	NA	20.4
1,1,1-trichloroethane	NA	NA	NA	1	NA	10 U	NA	1 U	NA	1
trichloroethene	NA	NA	NA	24	NA	10 U	NA	19.2	NA	33.3
ethylbenzene	NA	NA	NA	3	NA	1 U	NA	1 U	NA	1
toluene	NA	NA	NA	35	NA	1 U	NA	1 U	NA	1
xylenes	NA	NA	NA	6	NA	1 U	NA	1 U	NA	1
Chromium (Total)	NA	NA	20	20	42	50	20 U	20 U	20 U	20
Chromium (Hexavalent)	NA	NA	5 U	5 U	30	10 U	10 U	10 U	10 U	10
Copper	NA	NA	10	10 U	130	80	20 U	20 U	40	40
Iron	NA	NA	NA	NA	NA	17,100	90	NA	NA	NA
Manganese	NA	NA	NA	NA	NA	1,570	60	NA	NA	NA
Mercury	NA	NA	2 U	2 U	2	1 U	0.2 U	0.2 U	0.2 U	0.2
Nickel	NA	NA	10	10 U	66	40	30	20 U	20 U	20
Zinc	NA	NA	40	30	130	110	20 U	20 U	270	20
Total Organic Halogens (TOX)	NA	NA	NA	812	NA	19	11	11	18.7	36.9
Total Organic Halogens (TOX)	NA	NA	NA	832	NA	21	13	16	18.0	32.2
Total Organic Halogens (TOX)	NA	NA	NA	NA	NA	24	18	18	19.0	24.0
Total Organic Halogens (TOX)	NA	NA	NA	NA	NA	24	90	31	18.8	39.7
Total Organic Carbon (TOC)	NA	NA	NA	2,400	NA	5,000	5,300	2,500	5,900	2,900
Total Organic Carbon (TOC)	NA	NA	NA	NA	NA	5,500	6,800	2,900	6,800	2,000
Total Organic Carbon (TOC)	NA	NA	NA	NA	NA	5,800	6,900	3,700	6,100	1,500
Total Organic Carbon (TOC)	NA	NA	NA	NA	NA	6,500	7,500	5,900	7,700	3,100
Specific Conductance (umhos/cm)	NA	NA	365	400	910	860	758	800	758	730
Specific Conductance (umhos/cm)	NA	NA	360	360	911	890	792	817	764	705
pH	NA	NA	7.90	6.90	6.40	6.20	6.02	6.13	6.07	6.21
pH	NA	NA	7.90	6.90	6.40	6.20	6.05	6.13	6.09	6.18
pH	NA	NA	7.80	6.90	6.40	6.30	6.09	6.14	6.12	6.24
pH	NA	NA	7.80	6.90	6.90	6.30	6.12	6.20	6.11	6.27
Sulfate (SO4)	NA	NA	NA	NA	NA	42,800	35,800	NA	NA	NA
Chloride	NA	NA	NA	NA	NA	NA	161,700	NA	NA	NA
Sodium	NA	NA	NA	NA	NA	10,300	101,200	NA	NA	NA

Notes: * All values are in ug/l unless noted otherwise
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WELL MW-12
GROUNDWATER MONITORING ANALYTICAL DATA
TEXTRON-LYCOMING, STRATFORD, CONNECTICUT
December, 1987 - Present

	Dec-87	Mar-88	Jul-88	Nov-88	Feb-89	Apr-89	Jul-89	Oct-89
chloroform (THM)	NA	1.7	NA	1 U	NA	1 U	NA	1 U
tetrachloroethene	NA	26.3	NA	13.9	NA	22.2	NA	10.8
trichloroethene	NA	21.8	NA	13.7	NA	25.9	NA	10.5
Copper	20 U	20 U	40	20 U	20 U	20 U	20 U	20 U
Iron	NA	350	NA	NA	20 U	NA	NA	NA
Manganese	NA	40	NA	NA	20 U	NA	NA	NA
Nickel	40	20 U	20 U	20 U	20 U	20 U	20 U	20 U
Total Organic Halogens (TOX)	32.4	44.5	46.9	16.9	189	46.7	19.6	25.9
Total Organic Halogens (TOX)	29.2	53.2	47.8	17.5	200	49.9	33.4	29.1
Total Organic Halogens (TOX)	30.2	39.7	56.2	15.8	181	45.9	40.1	26.7
Total Organic Halogens (TOX)	40.1	38.4	54.3	17.1	194	48.0	39.2	24.9
Total Organic Carbon (TOC)	2,900	1,810	2,310	7,260	1,710	3,310	1,050	2,290
Total Organic Carbon (TOC)	1,800	2,520	2,080	7,430	1,280	1,530	1,770	2,100
Total Organic Carbon (TOC)	1,800	2,090	1,840	7,480	1,530	2,200	990	2,140
Total Organic Carbon (TOC)	1,800	1,540	2,130	8,190	1,600	2,610	1,120	2,360
Specific Conductance (umhos/cm)	676	808	680	146	596	619	737	580
Specific Conductance (umhos/cm)	683	799	712	138	593	624	742	585
pH	6.19	6.24	6.59	6.54	7.14	6.40	6.49	6.62
pH	6.25	6.28	6.61	6.59	7.13	6.41	6.51	6.60
pH	6.28	6.24	6.59	6.55	7.12	6.48	6.53	6.61
pH	5.44	6.26	6.59	6.55	7.11	6.43	6.48	6.61
Sulfate (SO4)	NA	124,300	NA	NA	49,000	NA	NA	NA
Chloride	NA	416,900	NA	NA	446,000	NA	NA	NA
Sodium	NA	355,300	NA	NA	84,600	NA	NA	NA

Notes: * All values are in ug/l unless noted otherwise
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WELL 13
GROUNDWATER MONITORING ANALYTICAL DATA
TEXTRON-LYCOMING, STRATFORD, CONNECTICUT
April, 1985 - September, 1987

	Apr-85	Aug-85	Nov-85	Apr-86	Jun-86	Oct-86	Jan-87	Apr-87	Jul-87	Sep-87
1,2-dichloroethane (EDC)	NA	NA	NA	1	NA	10 U	NA	1 U	NA	1
1,2-trans-dichloroethene	NA	NA	NA	182	NA	128	NA	2.3	NA	250.0
dichloromethane	NA	NA	NA	2	NA	10 U	NA	1 U	NA	1.1
1,1,1,2-tetrachloroethane	NA	NA	NA	14	NA	10 U	NA	1 U	NA	1
tetrachloroethene	NA	NA	NA	14	NA	16	NA	5.2	NA	7.8
1,1,1-trichloroethane	NA	NA	NA	1	NA	10 U	NA	1 U	NA	3.2
trichloroethene	NA	NA	NA	44	NA	32	NA	25.7	NA	29.4
toluene	NA	NA	NA	8	NA	1 U	NA	1 U	NA	1
Cadmium	NA	NA	10 U	20	10 U	10 U	NA	10 U	10 U	10
Chromium (Total)	NA	NA	10	50	32	40	NA	20 U	20 U	20
Copper	NA	NA	20	610	180	150	NA	20 U	20 U	20
Iron	NA	NA	NA	NA	NA	17,700	NA	NA	NA	NA
Manganese	NA	NA	NA	NA	NA	6,240	NA	NA	NA	NA
Nickel	NA	NA	30	20	170	140	NA	20 U	20 U	20
Zinc	NA	NA	30	70	92	100	NA	20 U	140	20
Total Organic Halogens (TOX)	NA	NA	NA	140	NA	50	NA	18	38.2	54.9
Total Organic Halogens (TOX)	NA	NA	NA	146	NA	54	NA	22	38.4	55.7
Total Organic Halogens (TOX)	NA	NA	NA	NA	NA	58	NA	21	39.0	68.1
Total Organic Halogens (TOX)	NA	NA	NA	NA	NA	60	NA	34	38.4	61.1
Total Organic Carbon (TOC)	NA	NA	NA	11,000	NA	4,500	NA	9,300	17,600	17,500
Total Organic Carbon (TOC)	NA	NA	NA	NA	NA	4,900	NA	9,400	14,800	16,400
Total Organic Carbon (TOC)	NA	NA	NA	NA	NA	5,200	NA	9,800	21,500	18,100
Total Organic Carbon (TOC)	NA	NA	NA	NA	NA	5,600	NA	9,900	14,700	18,300
Specific Conductance (umhos/cm)	NA	NA	380	319	570	626	NA	617	592	590
Specific Conductance (umhos/cm)	NA	NA	405	315	577	630	NA	637	598	638
pH	NA	NA	7.80	7.30	6.20	6.10	NA	6.17	5.96	6.24
pH	NA	NA	7.80	7.20	6.20	6.30	NA	6.19	6.00	6.21
pH	NA	NA	7.80	7.20	6.20	6.40	NA	6.23	5.98	6.27
pH	NA	NA	7.80	7.20	6.20	6.40	NA	6.24	5.96	6.21
phenol	NA	NA	NA	NA	NA	3	NA	NA	NA	NA
Sulfate (SO4)	NA	NA	NA	NA	NA	81,600	NA	NA	NA	NA
Sodium	NA	NA	NA	NA	NA	11,600	NA	NA	NA	NA

Notes: * All values are in ug/l unless noted otherwise
U indicates element was analyzed for but not detected. The number shown is the detection limit.

WELL MW-13
GROUNDWATER MONITORING ANALYTICAL DATA
TEXTRON-LYCOMING, STRATFORD, CONNECTICUT
December, 1987 - Present

	Dec-87	Mar-88	Jul-88	Nov-88	Feb-89	Apr-89	Jul-89	Oct-89
1,2-dichlorobenzene	NA	1 U	NA	6.4	NA	NA	NA	NA
1,2-trans-dichloroethene	NA	68.9	NA	47.2	NA	NA	NA	NA
tetrachloroethene	NA	10.2	NA	2.7	NA	NA	NA	NA
trichloroethene	NA	12.2	NA	7.0	NA	NA	NA	NA
Iron	NA	300	NA	NA	NA	NA	NA	NA
Manganese	NA	900	NA	NA	NA	NA	NA	NA
Nickel	50	20 U	20 U	20 U	NA	NA	NA	NA
Total Organic Halogens (TOX)	113	155	198	63.4	NA	NA	NA	NA
Total Organic Halogens (TOX)	98.9	132	212	54.6	NA	NA	NA	NA
Total Organic Halogens (TOX)	105	127	197	78.1	NA	NA	NA	NA
Total Organic Halogens (TOX)	107	152	231	66.0	NA	NA	NA	NA
Total Organic Carbon (TOC)	12,300	10,200	14,620	4,050	NA	NA	NA	NA
Total Organic Carbon (TOC)	11,700	9,870	14,190	3,470	NA	NA	NA	NA
Total Organic Carbon (TOC)	11,400	10,440	13,770	3,560	NA	NA	NA	NA
Total Organic Carbon (TOC)	11,400	11,100	14,780	3,760	NA	NA	NA	NA
Specific Conductance (umhos/cm)	680	676	745	588	NA	NA	NA	NA
Specific Conductance (umhos/cm)	675	681	751	590	NA	NA	NA	NA
pH	5.99	6.02	6.86	6.24	NA	NA	NA	NA
pH	6.08	6.09	6.89	6.25	NA	NA	NA	NA
pH	6.14	6.00	6.78	6.25	NA	NA	NA	NA
pH	6.19	6.00	6.79	6.28	NA	NA	NA	NA
Sulfate (SO4)	NA	77,900	NA	NA	NA	NA	NA	NA
Chloride	NA	274,400	NA	NA	NA	NA	NA	NA
Sodium	NA	302,100	NA	NA	NA	NA	NA	NA

Notes: * All values are in ug/l unless noted otherwise
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Appendix E-3

DEP Correspondence Regarding Assessment Monitoring

MEMORANDUM

TO: GWM File: AVCO Lycoming Textron: Stratford

FR: Mark Bamberger, Environmental Analyst, RCRA GW Group

DT: 11 August, 1989

RE: CME Summary

A Comprehensive Groundwater Monitoring Evaluation (CME) was conducted on the AVCO Lycoming plant at 550 Main Street, Stratford, Connecticut (CTD 001181502). This included a site visit on 21 July, 1989 to observe groundwater sampling. The objectives of this CME were to fully evaluate the implementation of the assessment monitoring program, and also to evaluate the post- closure, post-assessment groundwater program. The last CME was conducted in 1986 (CTDEP: Ken Feathers). AVCO's consulting firm is Environmental Monitoring Laboratories (EML) who do both the sampling and lab analyses at the site. The Groundwater Monitoring Assessment Plan, which included the Sampling and Analysis Plan, was prepared by Metcalf & Eddy, Inc.

Background/Source

AVCO manufactures gas turbine engines used in tanks, aircraft and helicopters. The facility is owned by the Federal Government (U.S. Army) and operated by a contractor, (AVCO). AVCO is bordered on the north by industrial buildings, on the east by the Housatonic River, on the south by a marsh formerly used as a landfill area and currently with housing under construction, and to the west by Bridgeport Airport. Hazardous wastes are handled in the following areas;

The NPDES-permitted wastewater treatment plant is located to the south of the plant area. Currently metal finishing wastewaters from the plant discharges to a flow equilization tank. Cyanide destruction occurs on-site in the plant itself. After hexavalent chrome reduction, NaOH is used to adjust pH and precipitate metal hydroxides. The settled precipitate is dewatered in filter presses and shipped off-site for disposal (Stablex, Quebec, Canada). The supernatant liquid is discharged to a nearby tidal ditch.

Of primary interest in this evaluation are the four closing RCRA-regulated units located to the south-southeast of the AVCO plant which were used prior to installation of the current system. The four units consisted of one flow equalization lagoon, reportedly bentonite-lined and three unlined sludge drying lagoons. The former lagoon received untreated plant wastewater, while latter lagoons were used to dewater the residual sludge.

History of Groundwater Monitoring at AVCO

There are currently thirteen (13) groundwater monitoring wells at the AVCO facility, installed on three different occasions:

Well#	Instal. Date	Reason for Instal.	Contractor
1-5	11/81	detect.	Roy F. Weston, Inc.
6-7	7/83	detect.	Leggette, Brashears & Graham
8-13	9/85	assess.	Metcalf & Eddy, Inc.

Wells 1, 2, 3 and 5 were used as downgradient, "point of compliance" wells in initial detection- and subsequent assessment-mode monitoring. This delineation was made based on their locations adjacent to sludge and equilization lagoons. Wells 6 and 7 served as background groundwater quality sampling points based on an assumed, and later data-supported, southeast groundwater flow direction. Wells 8 through 13 were later emplaced for requested data control.

As a result of the FY86 CME inspection, an order was issued requiring initiation of a groundwater monitoring assessment program at the site (3/87). This enforcement action was based on the detected presence of metals, the unlined nature of the three sludge drying lagoons, and uncertainties regarding tidal and mounding influences. The primary objectives of groundwater monitoring at AVCO were to determine the extent of all hazardous waste constituents in the uppermost aquifer leaking from AVCO surface impoundments and to estimate the rate of migration of those constituents in groundwater.

Synopsis of Recent Enforcement History

09/25/86 HM-358-calling for an Assessment Monitoring Plan describing; site hydrogeology, future investigations, Sampling and Analysis plan, recommendations for upgrading existing groundwater monitoring wells, and an Implementation Schedule.

11/26/86 HM-358 modified-fixing compliance dates
-steps have been taken toward clearing this Order: study these results have been submitted and are currently being reviewed by the CTDEP.

NOTE: Steps A and B of this Order have been satisfied although no approval letter for Step B has been received.

Hydrogeologic Synopsis

Thirteen groundwater monitoring and eleven soil boring cores have yielded the following evaluation;

The AVCO facility is underlain by glacial stratified drift deposits. The uppermost 5 to 15 feet of soil consist of fine to coarse sand with a trace of silt, silty sand, or fill, which is typically sand and gravel with varying amounts of silt. Laboratory grain size analyses estimate the hydraulic permeability of this unit at 1 X 10^{-4} to 1 X 10^{-3} cm/sec. These are underlain by a variable and discontinuous layer of peat (ranging from 5.5 to 20 feet in thickness). Hydraulic conductivity through laboratory testing is gauged at 1 X 10^{-4} cm/sec yet these data need to be field-supported. Depth to the top of the peat layer ranged between 6 and 17 feet beneath existing ground surface. There are no boring data from the base of the peat and from between peat and bedrock units. This is interpreted by the CTDEP as a data gap indicating the need for further delineation. Bedrock was not encountered in any of the borings. Previous mapping of the area interprets the bedrock at a depth of greater than 120 feet in this area.

The facility and associated lagoons are located in relatively flat area near the mouth of the Housatonic River, with ground surface elevations generally lower than 10 feet MSL. The water table is also quite flat, and marshy areas with tidal channels exist in the vicinity of the site. Under non-mounding conditions, groundwater in the shallow part of the aquifer in the vicinity of the lagoons would be expected to flow primarily southeastward toward the tidal ditch or eastward toward the river. The analysis of vertical and horizontal gradients on-site has been complicated by extensive anthropologic development of the area. Though vertical gradients are interpreted as generally upward toward southeastern discharge into the Housatonic River, horizontal gradients are far less understood (examined only by generalized computer modeling relying upon regional data).

Water Quality

The AVCO facility is situated in a GB area. Flow is generally south-easterly into the Housatonic River. There are no specifically impacted receptors, but contamination contributes to overall degradation of the Housatonic River itself, and subsequently Long Island Sound. Samples taken from wells on the AVCO site have historically been above the State Drinking Water Standard in Zn, Ni, Cu, Cr(hexavalent), Cr(total), and CN, as well as 1,1 dichloroethane, 1,1 Dichloroethylene, trans-1,2-Dichloroethylene, Vinyl Chloride and tetrachloroethylene (PCE).

Current Activities

As of 10 March, 1989, the two surface impoundment areas were in final stages of closure. They had been backfilled and graded. The equilization basin had topsoil installed and was seeded in the fall. This area was then reseeded this spring and along with final grades, appeared reasonable. A drainage swale extends over part of the lagoon cover to facilitate runoff control. Due to regrading activities associated with closure, parts of the lagoon cap and also the equilization basin cap may be at risk from storm-tide flooding. Increased drainage management including additional drainage swale berms and an outflow culvert with a one-way valve, are being considered by AVCO, although no formal proposal has yet been made.

Wells 1, 2, 3, and 5 were damaged during closure procedures. Therefore, AVCO and the CTDEP have agreed, as a condition on approval to the Closure/Post-Closure plan (4/5/88), to replace wells 1, 3 and 5 as shallow (water table)/deeper well nest networks. The deeper emplacements are to be into a peat layer and appear sufficient to gauge the vertical component of three-dimensional flow.

Analysis of Current Monitoring Program

The primary recent reports on file at the DEP are;

a) Groundwater Monitoring Program (2: 3/25/87 & 5/22/87, Metcalf & Eddy, Inc.)
b) Surface Impoundment Closure Plan (9/87, Metcalf & Eddy, Inc.)
c) Groundwater Monitoring Quarterly and Annual Reports (EML).

The geological characterization of the AVCO/Stratford area, specifically including stratigraphic and hydrologic treatments, is deemed satisfactory to set a framework for delineation of three-dimensional contaminant migration emanating from the AVCO facility. Although more data are needed to document mounding and tidal influences in groundwater flow direction, a more complete interpretation is forthcoming in light of recent well emplacements following closure construction. Furthermore, with impoundment closure, mounding effects appear no longer significant. These newly emplaced wells should complement the pre-existing groundwater monitoring system and should facilitate more complete data collection, interpretation and presentation in the name of examination of three-dimensional contaminant flow.

AVCO is working within the enforcement framework prescribed to update their groundwater monitoring network to more comprehensively determine the rate, extent and degree of contaminant flow. There is a need however for greater examination of the transport mechanism for contaminant flow at this site. Specifically, high resolution of groundwater flow direction and detailed stratigraphic influence need further study.

The Sampling and Analysis Plan, as included in Section VII of the Groundwater Monitoring Program (3/87) is deemed satisfactory in all necessary areas, consistent with EPA guidance.

A number of data gaps in the assessment program for the AVCO site, as presented by Metcalf & Eddy, Inc., have also been identified. None of these points are deemed critical, yet they should be addressed in future phase of groundwater monitoring. They are the following;

a) The lack of detailed data collection, with subsequent interpretation as to the effect the peat layer has on contaminant migration, as well as eH and pH readings. Soil borings and well placements into the basal peat unit is indicated.

b) The lack of interpretation as to the relative and composite influences of diverse site-specific controls on groundwater flow and contaminant migration. Such overlapping composite effects may include; discharges to the tidal inlet, the effect of large paved areas, tidal surge effects and the effect of a potential "buried channel" running north-south beneath the site.

c) The lack of interpretation relating groundwater sampling to potential backflow sampling of NPDES effluent at the tidal inlet due to seasonal or tidal flow surges.

d) The lack of borings between peat and bedrock layer, making interpretation of the lower extent of flow difficult.

Routine periodic monitoring conducted at the facility is technically deficient in that there is disregard, on a regular basis, for sampling (specifically the important data points at wells 1, 2, 3, and 5), although explanations are given each quarter.

Field Observations

Field observations of quarterly sampling at AVCO took place between 9a.m. and 2:30p.m. on 21 July, 1989 by Mark J. Bamberger of the CTDEP. Also present were John Fleming (AVCO), Andrew Burke (EML) and John Cronin (EML).

A dichotomy exists between the Sampling and Analysis Plan, submitted by Metcalf & Eddy and the past quarterly and annual groundwater monitoring reports. Yet, although different in detail, the sampling protocol used by EML is consistent with EPA guidance.

An exit interview was conducted between CTDEP and EML personnel prior to sampling completion and the following points were addressed;

a) no protective equipment, especially gloves, were used during sampling, which may provide a minor conduit for cross-contamination.

b) the depth/specific conductivity probe used was not decontaminated between wells.

c) bailers used for evacuation and subsequent sampling are lowered down well hole too rapidly, potentially liberating volatile constituents of samples.

d) the newly installed well #1D was severely out-of-plumb, was therefore not sampled, and needs immediate repair.

e) the pH meter used in the field was placed in the purge water between several well samplings, instead of its proper placement in buffer solution or deionized water.

f) even though EML does both field sampling and analysis, chain of custody protocol, especially relating to labels and protective seals, should be completed.

Post-Closure Groundwater Monitoring

After the four AVCO surface impoundments are successfully closed, a post-closure groundwater monitoring program is proposed to evaluate any future outflow of contamination for a 30-year period, pursuant to Federal Regulations, 40 CFR 265.210 and Part 265.310.

Technically, this program will consist of sampling and testing of the existing well network, maintenance of these wells, along with cap and security system and newly-planted vegetative cover. This proposal, as described in the Surface Impoundments Closure Plan, appears satisfactory and satisfying of Federal and State Regulations. Interpretations made during this period should focus on evaluation of the monitoring network adequacy toward determining three-dimensional contaminant distribution and temporal changes thereof.

Reporting and Record Keeping

The reporting and record keeping procedures at AVCO are deemed adequate, yet a significant dichotomy exists between the proposed monitoring/sampling protocol of Metcalf & Eddy, Inc. and EML's reporting in quarterly and annual reports.

Timeliness

Sampling and subsequent quarterly/annual report submittal have been conducted in a timely and efficient manner over the past three years.

Content

Quarterly and Annual reports have followed required formats for monitoring reports per Connecticut Regulations. Yet, in content, they are deficient in the areas mentioned previously, specifically relating to upgradient and down-gradient well delineation and quarterly re-evaluation of contouring, and interpretation of results to depict a complete picture of three-dimensional contaminant flow.

The annual reports submitted to date do not present enough data to fully document rate and extent of contaminant migration, and concentration of hazardous waste constituents.

CONCLUSIONS

In general terms, AVCO has presented a sufficient information package to the CTDEP for evaluation of the contamination problems associated with their facility. Their proposals, as presented by Metcalf & Eddy Inc. have defined well the techniques and technology needed to adequately document the rate and extent of contamination and concentration of the constituents. On the other hand, the field sampling, testing and interpretation, done by EML, does not reflect the detail promised, by inference, in aforementioned proposals. There appears to be a lack of verbal and written communication between these two consulting firms, therefore yielding results which do not closely mirror expectations.

This evaluation was carried out within the timeframe of AVCO's overall groundwater assessment program. To this point, the CTDEP finds that adequate progress has been made by AVCO toward returning into compliance with State and Federal Regulations. It is recommended that progress be continued and that a proposal for further and phase study be prepared toward complete compliance.

Violations/Recommended Response

Violation	Class	Regulation
Failure to follow groundwater sampling and Analysis Plan, although field practices are satisfactory	II	22a-449(c)-28(b)
Incomplete determination of rate and extent of contaminant migration and concentration of contamination	II	22a-449(c)-28(b) 40 CFR 265.93(d)(4)
Inadequate discussion of sample bottle cleaning and sample preservation methodology	II	22a-449(c)-28

Response

A single letter should suffice to achieve equality between proposed plan and actual field/analytical work done at AVCO. Incompleteness of the assessment determination can be addressed by review and comment under Step C of Order HM-358.

STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION

21 September, 1989

Dr. John S. Fleming
Chief Environmental Compliance Engineer
Textron Lycoming
550 Main St.
Stratford, CT 06497-2452

RE: CME Findings

Dear Mr. Fleming,

A Comprehensive Groundwater Monitoring Evaluation (CME) was was finalized on 11 August, 1989 at Textron Lycoming (AVCO) by the Connecticut Department of Environmental Protection (CTDEP). The CME was performed to evaluate the implementation of the assessment monitoring program, as well as the post-closure, post-assessment groundwater program.

Enclosed please find the final CTDEP memorandum summarizing the findings of this evaluation.

- Generally speaking, the CTDEP feels that AVCO has made progress toward characterizing the rate and extent of contamination on-site, pursuant to federal regulations (40 CFR, Subpart F).

- Though progress is being made within the framework of the groundwater assessment program, deficiencies in the areas of conceptual evaluation and program execution have been noted and must be addressed in the requested submittal and future quarterly sampling practices (refer to pages 5-7 of attached memo):

  * conceptual- the assessment program must more fully address evaluation of: a) the hydrogeologic and hydrochemical role of the peat layer, b) hydrochemical effects of the potential for NPDES discharge (tidally- induced) backflow, c) mounding effects (formerly with respect to the lagoon, currently associated with the "sand channel"), and d) hydrogeologic impacts of the landfill cap.

* execution- a) AVCO must resolve the discrepancy between the documented Groundwater Monitoring Program (dated 3/87) and the executed groundwater monitoring program and b) AVCO must ensure adequate field practices and well maintenance are implemented [specifically relating to decontamination and bailer sampling procedures, well integrity (well #1D), and chain-of-custody protocol].

Please submit to the CTDEP within thirty (30) days of receipt of this letter, a response indicating how you will address the above-noted deficiencies and violations. If appropriate, you may also include within this response a proposal and schedule for developing detailed study plans for further phased investigations of these concerns. This submittal may be considered a supplement to the material previously submitted under Order HM-358 (modified) to achieve full compliance with the order's requirements.

If there are further questions, feel free to contact me at (203) 566-1847.

Sincerely,

MJ Bamberger
Environmental Analyst
RCRA Groundwater Section
Hazardous Materials Management Unit

Send Certified
Return Receipt Requested

cc: Donna Ashford, AVCO
Mike Nosenzo, AVCO
Andrew Burke, Environmental Monitoring Laboratories

Environmental
Science &
Engineering, Inc.
A CH2M HILL Company

April 4, 1990

Textron Lycoming
550 Main Street
Stratford, Connecticut 06497-2452

Attn: Dr. John S. Fleming
Chief Environmental Compliance Engineer

Subject: Proposal to Address CT-DEP Conceptual Concerns
Additional Professional Services to P.O. YK99452
ESE Proposal #90-2132-90

Dear Dr. Fleming:

Environmental Science and Engineering, Inc. (ESE) is pleased to present this proposal to evaluate conceptual issues related to implementation of the CT-DEP-Approved Ground Water Monitoring Program. This proposal is specifically targeted to address comments documented in a September 21, 1989 letter from Mr. Mark Bamberger of CT-DEP and discussed in subsequent meetings with Textron and CT-DEP on January 29 and March 16, 1990.

The conceptual issues raised by CT-DEP include the following:

- Evaluation of the hydrogeological and hydrochemical role of the peat layer
- Evaluation of the potential for tidal-induced flow in the surficial aquifer
- Evaluation of the cause for ground water mounding in the "sand channel"
- Evaluation of hydrogeologic impacts of the landfill cap.

To address these issues, ESE is prepared to offer the professional services described below:

555 Bridgeport Avenue Shelton, CT 06484 Phone (203) 929-6761 Fax (203) 926-0108
Formerly known as Hunter/ESE.

Task 1 Complete Review and Analysis of Existing Analytical Data

ESE is currently in the process of reviewing and analyzing all existing data. This review essentially consists of a compilation of all analytical data for the period of record into a standardized Lotus 1-2-3 spreadsheet. A draft output of this effort was presented to Textron and CT-DEP on March 16, 1990.

The computerized data will be compared to prevailing federal and state standards for potable water. A frequency of occurrence analysis will be performed on compounds exceeding standards to determine which would be appropriate indicator compounds of site contamination.

Arithmetic mean, geometric mean and variance will be computed for the subset of indicator compounds. Logarithmic time-concentration plots will be prepared for the compound subsets and linear regression will be performed to indicate changes in contaminant concentrations versus time for each well in which the indicator compound is present.

ESE has tabulated all historic site analytical data and is in the final steps of calibrating a spreadsheet to process this data. A meeting will be scheduled at which time ESE will propose a list of indicator chemicals for more detailed evaluation based on the frequency of occurrence analysis. Once CT-DEP concurrence with this approach is obtained, ESE will complete the time-concentration plots and linear regression analyses for the data subset.

Task 2 Complete New Topographic Survey of Existing Monitoring Wells

ESE proposes to conduct a new topographic survey of existing wells to resolve apparent discrepancies and determine reference point elevations of newly installed wells.

Historically, five surveys have been performed of wells that existed at the time of each survey. At least one survey, in 1985, coincided with the preparation of a site base map. Within the last two years, since the last effective topographic survey, in January of 1987, Monitoring Wells MW-1S, MW-2, MW-3S and MW-5S have been replaced and Monitoring Wells MW-1D, MW-3D and MW-5D have been newly constructed. Newly established reference point elevations at the top of the casing of these wells are required to compile accurate water table elevation maps and determine the direction of ground water flow.

ESE will conduct a new survey of the top of the inner casing, top of the outer casing and land surface of each monitoring well. ESE will revise and update the site base map prepared in 1985. ESE assumes that Textron will provide a mylar copy of the original site map which is suitable for revisions.

Task 3 - Evaluate the Potential for Tidal-Induced Flow in the Surficial Aquifer

CT-DEP continues to express concern about the influence of tidal fluctuations on ground water flow near the tidal inlet and the NPDES-permitted discharge. Textron's previous consultant attempted to characterize the extent of tidal fluctuations in Monitoring Wells MW-5S and a temporary well point completed in the tidal ditch. The tidal influence observed in MW-5S was used to extrapolate the inland distance over which tidal fluctuations could be occurring in the surficial aquifer. There was no attempt, however, to confirm the conclusions of this theoretical approach.

ESE proposes to conduct measurements through two successive tidal cycles in all wells. Water levels in Monitoring Wells MW-1S, MW-1D, MW-2, MW-3, MW-5S and MW-5D will be measured manually at a one-hour frequency. All other wells will be measured at a frequency of once per two hours. The hourly measurements will be collected in a compressed time interval to provide a series of 24 "snapshots" throughout the two tidal cycles. Water level hydrographs will be prepared showing observed changes in water levels versus time.

A tide gauge will be installed in the tidal channel to determine the range of tidal fluctuations. The measurements will be conducted during a spring tide period when the tidal ranges will be at a maximum.

ESE will prepare four ground water flow direction contour maps corresponding to two high tide and two low tide cycles, respectively. ESE will review the water level hydrographs and ground water flow contour maps to determine the degree, if any, of tidal interaction between the tidal inlet and the surficial aquifer.

Task 4 - Conduct Surface Electric Resistivity Survey to Determine Lateral and Vertical Continuity of the Subsurface Peat Layer

A major concern of CT-DEP is the lateral and vertical extent of the peat layer underlying portions of the site and the capacity of this layer in preventing vertical contaminant flow into deeper subsurface formations.

ESE proposes two tasks to characterize this layer, although additional investigation may be required if the information at the conclusion of the tasks is inconclusive or incomplete. The additional investigation would require the installation of costly test borings. It is anticipated that this expense can be avoided by first conducting the proposed investigation.

ESE proposes to perform an electric resistivity survey. The resistivity survey involves inserting four probes into the surface at set distances. A current is then applied to the outer set of probes. The current registered in the inner set of probes is then measured. Different earth materials exhibit different conductance properties. By increasing or decreasing the spacing between probes, different vertical layers of aquifer materials can be profiled.

The electric resistivity method is subject to outside external interferences, such as overhead high tension electrical transmission lines. This condition must be assessed before conducting the electric resistivity survey.

Different areas and depths will be profiled to determine the vertical thickness and lateral continuity of the peat layer. Data from areas with sufficient ground control (i.e., presence of test borings) will be used to determine the overall nature and extent of the peat layer.

Task 5 - Installation and Sampling of Deep Monitoring Wells to Assess the Presence of Contamination Beneath the Peat Layer

The absence of deep monitoring wells to determine water quality in formations beneath the peat layer is identified as a data gap in the CT-DEP August 11, 1989 CME Summary memorandum to the GWM File. ESE concurs that information about deeper stratigraphic units is necessary to determine both the effectiveness of the peat layer in preventing vertical contaminant flow and whether regional hydraulic gradients are upward, thereby further preventing vertical flow into deeper aquifer zones.

ESE proposes to install three deep monitoring wells to assess whether contaminants are present in the aquifer beneath the peat layer. The deep monitoring wells will be completed with screened intervals open only at the bottom of the glacial outwash aquifer, directly above the bedrock surface.

The deep monitoring wells would be installed adjacent to existing shallow and intermediate wells MW-10, MW-5S and 5D and MW-9. These well placements assume deep regional ground water flow is in an easterly direction.

The proposed well placements may change if a review of borings logs or results of the surface electric resistivity task (Task 4) indicate that the peat layer is discontinuous, and that downward leakage could be occurring through a "window" where the peat is absent. In this latter case, the proposed deep monitoring well near MW-9 would be relocated to the area of the suspected breach in the peat layer.

The wells will be drilled by the standard mud rotary method and completed with 2-inch diameter PVC well screen and casing, in accordance with CT-DEP guidelines for monitoring well construction. Following installation, ground water levels will be measured in the new wells and adjacent shallow wells to determine the vertical hydraulic gradient between aquifers.

The deep monitoring wells will be sampled to determine whether contaminants are present at depth. These results would then be used to evaluate the significance of the peat layer. It is anticipated that contamination will be absent in the deep aquifer, in which case the confining capacity of the peat layer would no longer be a critical issue. Future attention could then be directed solely to contamination of the shallow aquifer.

Task 6 - <u>Conduct Slug Tests to Determine Aquifer Hydraulic Conductivity</u>

ESE proposes to conduct slug tests of existing monitoring wells to determine the hydraulic conductivity of the shallow aquifer. CT-DEP has requested in the August 11, 1989 CME

Summary memorandum to the GWM File that laboratory testing of hydraulic conductivity be confirmed through field testing. The proposed slug tests will provide a field determination of hydraulic conductivity and enable a calculation of ground water flow rates.

Hydraulic conductivity is a measure of the potential for ground water flow through aquifer media. It is measured by means of slug tests. The slug tests entail displacing a given volume of water in each monitoring well and timing the rate at which the water in the well equilibrates to the pre-test condition. Due to the anticipated rapid response in the wells, ESE proposes to measure recovery by means of a submerged pressure transducer.

The slug test data will be evaluated by standard analytical methods. ESE has developed a calibrated Lotus 1-2-3 spreadsheet to execute these calculations.

ESE proposes to conduct the slug tests after other site tasks are completed, and sufficient site data is available to accurately determine prevailing hydraulic gradients. ESE will conduct two additional rounds of ground water measurements during the second and third quarter sample events. Ground water flow maps will be prepared to determine seasonal variations in site hydraulic gradients.

The hydraulic conductivity from the slug tests and hydraulic gradients measured during the first, second and third quarter sample events will be used to determine ground water flow rates in the surficial aquifer.

Task 7 - Report Preparation

ESE will complete two interim reports covering the tasks addressed above. The first report will provide a complete summary of historic ground water analytical data. The data will be compared to prevailing federal and state water quality standards and criteria. Maximum, geometric mean, arithmetic mean and variance will be computed for all indicator compounds identified through the frequency of occurrence analysis. ESE will use Cochran's Approximation to the Fisher Student t-test to determine statistically significant changes in ground water concentration compared to initial background concentrations in accordance with 265.92(d)(2).

The second report will summarize the work performed, procedures used, information and data assembled, and conclusions obtained in the site geological and hydrogeological investigation described in Tasks 2-6. This report will recommend inclusion of the three deep monitoring wells in the quarterly monitoring assessment program. Each conceptual issue raised by CT-DEP will be individually addressed.

SCHEDULE

Task 1 is nearing completion with development of a calibrated spreadsheet, and the data is now being checked to ensure correct entry. Data from the recent first quarter sampling event can be included when it is received, thereby providing a current assessment of contaminant distribution. An interim report summarizing the results of Task 1 can be prepared in approximately 4 weeks after receipt of the first quarter data.

ESE believes the site work proposed in Tasks 2-6 can be completed in approximately 12 weeks. An additional four weeks will be required following completion of the field work to evaluate the data and prepare a summary report.

STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION

SITE NAME: Avco Lycoming Textron
TOWN: Stratford
FILE TYPE: ENF/01

STATE OF CONNECTICUT
VS
AVCO LYCOMING TEXTRON

IN THE MATTER OF AN ORDER TO AVCO LYCOMING TEXTRON TO ABATE POLLUTION AND COMPLY WITH CONNECTICUT'S HAZARDOUS WASTE MANAGEMENT REGULATIONS

ORDER

Having found that Avco Lycoming Textron, located at 550 South Main Street in Stratford, Connecticut, is in violation of Connecticut's Hazardous Waste Management Regulations and is maintaining a facility or condition which can reasonably be expected to create a source of pollution to the waters of the State of Connecticut, under the provisions of Chapters 439 and 446K of the Connecticut General Statutes, as ammended, the Commissioner of Environmental Protection, acting under Sections 22a-6, 22a-432, and 22a-449 of the General Statutes, hereby orders Avco Lycoming Textron to comply with all the conditions of Order HM-358, entered as an Order of the Commissioner of Environmental Protection on the 25th day of September, 1986, except that:

1. Paragraphs A, B, and C, in conformance with written and oral requests from Avco Lycoming Textron, are modified by the Commissioner of Environmental Protection, acting under Section 22a-436 of the Connecticut General Statutes as amended, to read as follows:

   A. On or before November 30, 1986, verify to the Commissioner of Environmental Protection that a qualified consultant has been retained to perform the necessary work under Directive 1.

   B. On or before January 31, 1987, submit to the Commissioner of Environmental Protection for review and approval an assessment monitoring plan which, at a minimum, describes site hydrogeology as presently known, including summaries of existing hydrogeologic and monitoring data; identifies and details further investigations needed to comply with Directive 1; and contains a schedule for implementation of all phases of the groundwater quality assessment plan. Such plan shall also include a sampling and analysis plan and recommendations for upgrading the physical condition of existing groundwater monitoring wells.

Phone:
165 Capitol Avenue • Hartford, Connecticut 06106

C. On or before March 31, 1987 verify to the Commissioner of Environmental Protection that the plan approved under step B has been implemented.

Entered as an Order of the Commissioner of Environmental Protection the 26th day of November, 1986.

Stanley J. Pac
Commissioner

Order No. HM-358 Modified
Town of Stratford

Sent Certified Mail
Return Receipt Requested

Appendix E-4

Groundwater Assessment Monitoring Plan March 1987

WehranEnviroTech

Avco Lycoming TEXTRON

Groundwater Monitoring Assessment Program

March 1987

Submitted by
Metcalf & Eddy, Inc.

M&E

Metcalf & Eddy, Inc.
Engineers & Planners

10 Harvard Mill Square
Wakefield Massachusetts

Mailing Address PO Box 4043
Woburn, MA 01888-4043

March 23, 1987

Ms. Donna L. Ashford
Avco Lycoming TEXTRON
550 Main Street
Stratford, CT 06497-2452

Subject: Groundwater Monitoring Assessment Program
Connecticut DEP Order No. HM-358

Dear Ms. Ashford:

We are pleased to submit the Groundwater Monitoring Assessment Program for the Avco Lycoming TEXTRON facility in Stratford, CT. This report describes site hydrogeology as presently known, including summaries of existing hydrogeologic and monitoring data; identifies and details further investigations needed to comply with Directive 1 of the Order; and contains a schedule for implementation of the Groundwater Monitoring Assessment Program.

Very truly yours,

Carmine V. DiFilippo

Carmine V. DiFilippo
Project Manager

TABLE OF CONTENTS

TABLE OF CONTENTS (Continued)

LIST OF TABLES

LIST OF FIGURES

LIST OF FIGURES (Continued)

FOREWORD

At the request of AVCO Lycoming Textron, Metcalf & Eddy, Inc. (M&E) has prepared this Groundwater Assessment Monitoring Plan for the surface impoundments at the AVCO Lycoming Textron facility in Stratford, Connecticut. The objective of this assessment monitoring plan is to provide a systematic, well defined method for determining the rate of migration, extent, and hazardous waste constituent composition of any release of materials from the surface impoundments. The plan describes the rationale for employing the chosen methodologies in an effort to illustrate that the implementation of this monitoring plan will result in full compliance with Subpart F of 40 CFR265, Connecticut's Hazardous Waste Management Regulations, and in particular, Connecticut Department of Environmental Protection's Administrative Order dated 25 September 1986.

SECTION I

APPLICABLE REGULATIONS

The Avco facility, which is owned by the U.S. Army and operated by Avco-Lycoming Textron is located in Stratford, CT just south (approximately 1,000 feet) of where the Housatonic River enters the Long Island Sound (Figure 1.1). The activities at the facility include the manufacturing of tank and aircraft engines. The production of these engines includes the plating of engine and other miscellaneous parts in zinc, cadmium, chrome, copper, magnesium, nickel and black oxide baths. The spent plating baths are discharged to an equalization lagoon. Wastewater from this lagoon is pumped to a chemical waste treatment plant which, in turn, produces a metal hydroxide sludge which is pumped to one of three sludge storage lagoons. In all, Avco has a storage capacity of 908,940 gallons in four surface impoundments.

1.1 Federal Regulations

The operation of these hazardous waste surface impoundments has been regulated under the Resource Conservation and Recovery Act (RCRA) since the effective date of these regulations on November 19, 1980. In compliance with the first requirement of RCRA, Avco submitted Part A of the RCRA permit application to the U.S. EPA on November 13, 1980.

On November 8, 1984, RCRA was amended by the "Hazardous and Solid Waste Amendments of 1984" (HSWA). Section 213 of the HSWA required that all land disposal facilities either cease operation or submit a complete Part B permit application by November 8,

1985. In compliance with this requirement, Avco submitted its Part B permit application to USEPA, Region I and the Connecticut Department of Environmental Protection (DEP) on November 8, 1985. Until this permit application is reviewed and the final RCRA permit issued, Avco is considered to be operating under "interim status".

One requirement that interim status facilities must meet to prepare an adequate Part B permit application is to develop a groundwater assessment monitoring plan. According to 40 CFR, §270.14(c) permit applicants must provide in their permit application a complete description of any plume of groundwater contamination (if one exists), and, based upon any levels of contamination found, generate detailed plans for the appropriate 40 CFR §264 Subpart F groundwater monitoring program: detection monitoring, compliance monitoring or corrective action. The groundwater assessment plan for Avco-Lycoming will determine if and to what extent the area groundwater may be contaminated.

1.2 CT DEP Regulations

As operators of four hazardous waste surface impoundments, Avco is also subject to the Connecticut Hazardous Waste Regulations (Title 25, Chapter 54 cc(c)). With respect to groundwater monitoring, these regulations state that owner/operators should comply with 40 CFR Parts 265.90 to 265.94 (CT Section 25-54 cc(c) -33). However, the Hazardous Waste Management Unit of the CT DEP revised the groundwater monitoring reporting requirements in a February, 1984 memorandum which was sent to all facilities required to monitor groundwater and to all consultants dealing with groundwater monitoring. These report requirements were to supersede all state groundwater reporting requirements as well as 40 CFR §265.94.

It should be noted that this memorandum covered groundwater monitoring issues other than reporting. 40 CFR Part 265.93(b) states that the Student's t-test at the 0.01 level of significance should be used as the statistical test to determine statistically significant increases (and decreases, in the case of pH) of indicator parameters over their background. The state mentions that an underlying assumption for any of the standard t-tests is that the populations being compared have equal variances. They further emphasize that this assumption is not valid with groundwater requirements because upgradient results for the first year have both seasonal and analytical variation, while the subsequent quarter results exhibit only analytical variance. The Connecticut DEP therefore, decided to adopt the Cochran's Approximation to the Behran's-Fisher Student's t-test as the only t-test because it is designed to specifically compare populations with unequal variances.

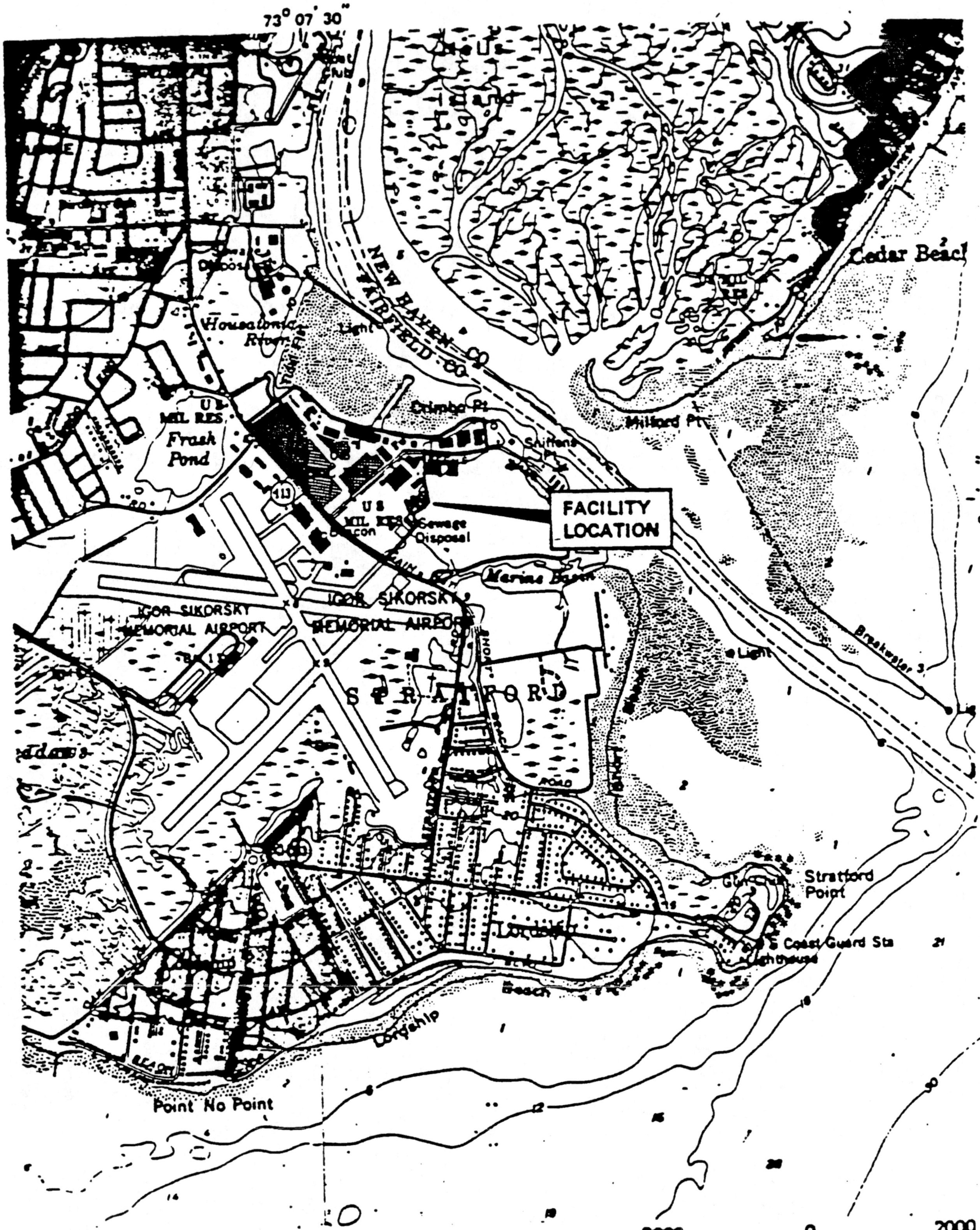
With respect to the specific groundwater monitoring program at the Avco-facility, the CT DEP has modified the groundwater requirements on two occasions. On June 6, 1983, personnel from Avco-Lycoming, CT DEP and Avco's groundwater consultant: Leggette, Brashears and Graham Inc. (L,B&G) met to discuss the groundwater monitoring program (which had been in operation since November, 1981). In that meeting, Tom Stark of the CT DEP recommended a change in the parameters to be sampled from those specified in 40 CFR §265.92 to the first 12 site-specific parameters listed in Table 1.1. Then, in late 1983, Mr. Stark further added the indicator parameters Total Organic Carbon (TOC), Total Organic Halide (TOX) and specific conductivity. The entire list of site specific parameters used to characterize the groundwater at the Avco-Lycoming site is as follows:

TABLE 1.1. GROUNDWATER MONITORING PARAMETERS SPECIFIED BY THE CONNECTICUT DEP

Parameter	Sampling Frequency
Cadmium	Quarterly
Chromium - hexavalent	Quarterly
Chromium - total	Quarterly
Copper	Quarterly
Mercury	Quarterly
Nickel	Quarterly
Zinc	Quarterly
Cyanide - amenable	Quarterly
Cyanide- total	Quarterly
pH	Quarterly
Halogenated volatile organics	Semi-annually
Aromatic volatile organics	Semi-annually
Specific Conductivity	Quarterly
TOC	Semi-annually
TOX	Semi-annually

All sampling data from the groundwater monitoring program is compared against the Connecticut Public Drinking Water Code (CPDWC) to determine if any groundwater violations have occurred. The CPDWC, similar to the National Interim Primary Drinking Water Regulations (NIPDWR) standards, refers to dissolved concentrations of constituents (free of sediments). When possible the Cochran's Approximation of the Behran's-Fisher Student's t-test will also be used to determine if there has been a statistical increase (or decrease for pH) in the indicator parameters.

The groundwater assessment monitoring plan presented herein has been developed in compliance with the above mentioned state and federal regulations and requirements as well as the September 25, 1986 CT Dep Order (No. HM-358) requiring Avco to prepare such a plan.



SOURCE: USGS TOPOGRAPHIC MAPS
MILFORD, CT., 1984
BRIDGEPORT, CT., 1984

FIGURE 1.1 LOCATION MAP - AVCO LYCOMING FACILITY

SECTION II

HYDROGEOLOGIC CONDITIONS

2.1 Subsurface Investigations

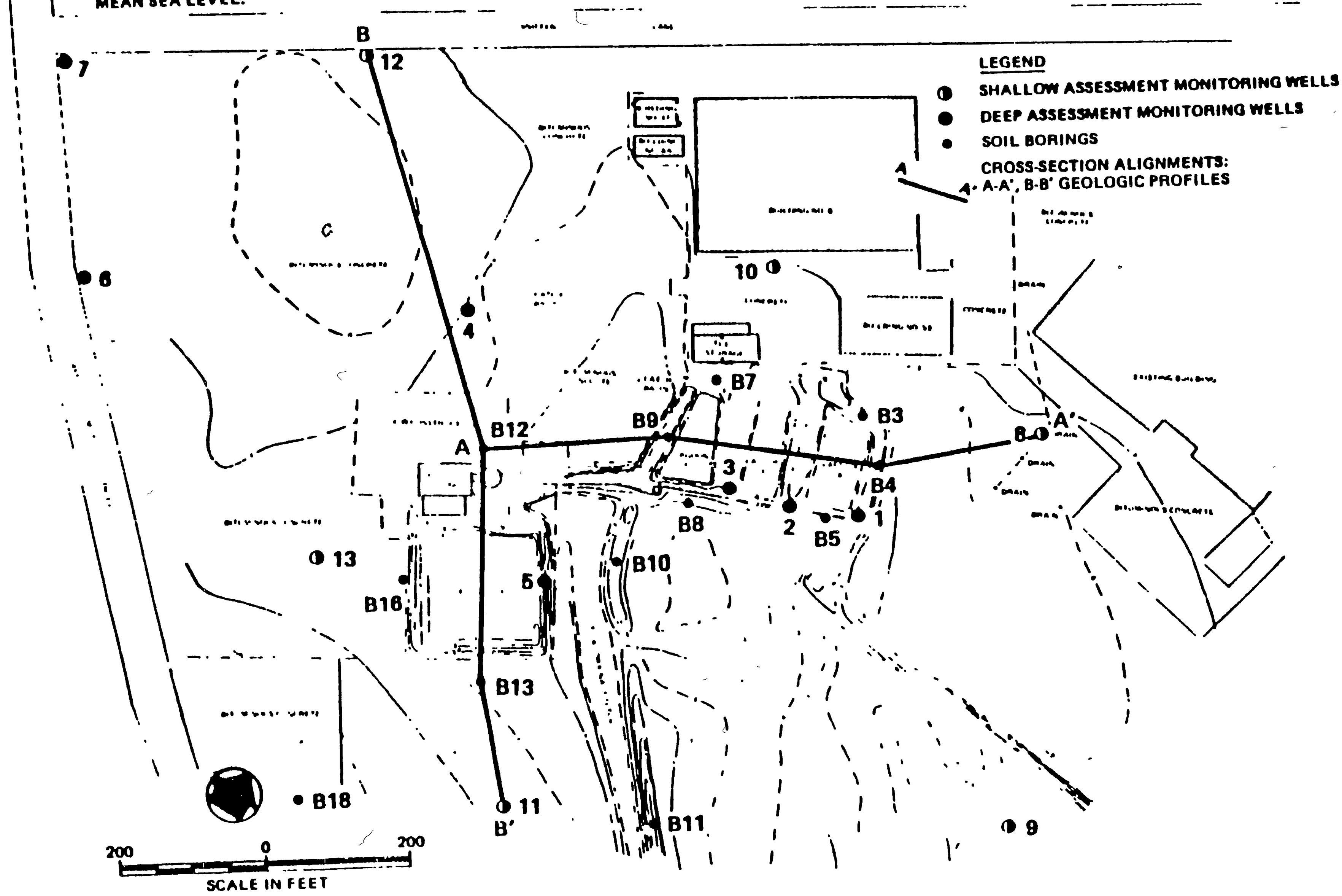
Several subsurface investigations have been conducted and groundwater monitoring wells have been installed at the Avco-Lycoming facility at various times. Existing well and boring locations are shown in Figure 2.1. Wells No. 1 to 5 were installed in November, 1981 by Roy F. Weston, Inc. In July, 1983, Leggette, Brashears, and Graham (LB&G) installed two wells (No. 6 and 7) to help establish local groundwater flow directions. Between 18 and 27 September, 1985, M&E supervised the drilling of 18 borings, seven of which were completed as monitoring wells.

M&E's field work included the following: Eleven (11) borings (B-1, B-2, B-3, B-7, B-9, B-11, B-13, B-14, B-15, B-17 and B-18) were completed to a depth of 20 feet. Five (5) borings (B-4, B-6, B-10, B-12 and B-16) were completed to a depth of 30 ft. Borings B-5 and B-8 were completed to a depth of 25 ft. and 35 ft. respectively. Observation wells were installed in Borings B-1, B-2, B-6, B-14, B-15 and B-17 to a depth of 15 feet, except B-14 which was completed to a depth of 14 ft. All borings, except where observation wells are installed, were grouted with cement from the bottom of the boring up to existing ground surface.

Two Stevens water level recorders were used to monitor observation well ground water levels on the site. The recorders were placed in wells 1, 5, 10 and 13 for a period of one to

NOTES:

1. BASE MAP FROM METCALF & EDDY SURVEYS 1985 & 1986.
2. ALL ELEVATIONS REFERENCED TO MEAN SEA LEVEL.



METCALF & EDDY

FIGURE 2.1 GEOLOGIC CROSS - S   'ONS AND BORINGS LOCATION PLAN several days between September 17, 1985 and October 4, 1985. The recorders were installed to determine the effect of tide changes in Long Island Sound and the Housatonic River on groundwater levels at the site. A temporary tide gage board was also installed adjacent to the site (oil loading dock) to check tide water levels.

A total of one hundred and one (101) soil samples were obtained primarily for chemical laboratory analysis to determine contaminant concentrations and distribution. Soil classification tests (wet sieve and hydrometer) were performed on selected samples. Soil permeability data was extrapolated from effective grain size (D 10) values obtained from the wet sieve analysis test (See Appendix A).

Six borings (B-3, B-4, B-5, B-7, B-8 and B-9) were placed adjacent to lagoons Nos. 2, 3, and 4. Three borings (B-10, B-13, and B-16) were placed at the embankment toe of lagoon No. 1. All other borings were placed in areas surrounding the lagoon proper.

2.2 Subsurface Conditions/Stratigraphy

The Avco-Lycoming facility is underlain by glacial stratified drift deposits. The stratigraphy of the deposits beneath the lagoons has been determined by examining the logs of borings which are currently available (borings B-1 through B-18, Metcalf & Eddy, Inc., 1985). These borings were visually classified by an M&E geologist in the field using the Unified Soil Classification System. Grain size analyses and hydrometer tests were run on selected soil samples. See Appendix B for boring logs and Appendix A for the grain size plots.

The uppermost 5 to 15 feet of soil consist of one or more of the following materials: fine to coarse sand with a trace of silt (SP); silty sand (SM); or fill, which is typically sand and gravel with varying amounts of silt. These uppermost materials are underlain by a variable and discontinuous layer of peat (OL). The organic peat was encountered in seven borings (B-2, B-4, B-5, B-8, B-9, B-10 and B-12,). The soils below the uppermost layer consist primarily of fine to coarse sand with varying amounts of gravel and a trace of silt (SP). Two geologic cross sections (see Figure 2.1) were prepared based on the existing soil borings and are presented in Figures 2.2 and 2.3. The peat ranged from 5.5 feet to a maximum of 20 feet in thickness in borings B-4 and B-10 respectively. Depth to the top of the peat layer ranged from 6 feet to a maximum of 17 feet below existing ground surface in borings B-2 and B-8 respectively. Bedrock was not encountered in any of these borings.

Maps prepared by the U.S. Geological Survey (Wilson, et.al., 1974) indicate that bedrock occurs at a depth greater than 120 feet. Information regarding the depth to bedrock at this facility was not generated during recent field work.

Soils containing hydrocarbon in varying concentrations were encountered during the course of the subsurface investigation. Hydrocarbons were noted in six borings (B-4, B-7, B-8, B-9, B-10 and B-12) by visual examination and varied from an oily odor to a black sludge.

Based on the soil strata encountered, the following permeabilities have been computed from laboratory grain size analyses: silty sand (SM) $K = 3 \times 10^{-4}$ CM/SEC; poorly graded sand (SP) $K = 150 \times 10^{-4}$ CM/SEC; low plasticity silt (ML) $K = 1 \times 10^{-4}$ CM/SEC; peat (OL), $K = 0.75 \times 10^{-4}$ CM/SEC. Although estimating aquifer permeabilities from grain size analyses is valid, the results are only accurate within an order of magnitude. Until more accurate data are available from the scheduled stress and recovery tests, an average permeability of 3.5×10^{-2} CM/SEC will be considered representative based on experience with similar aquifers.

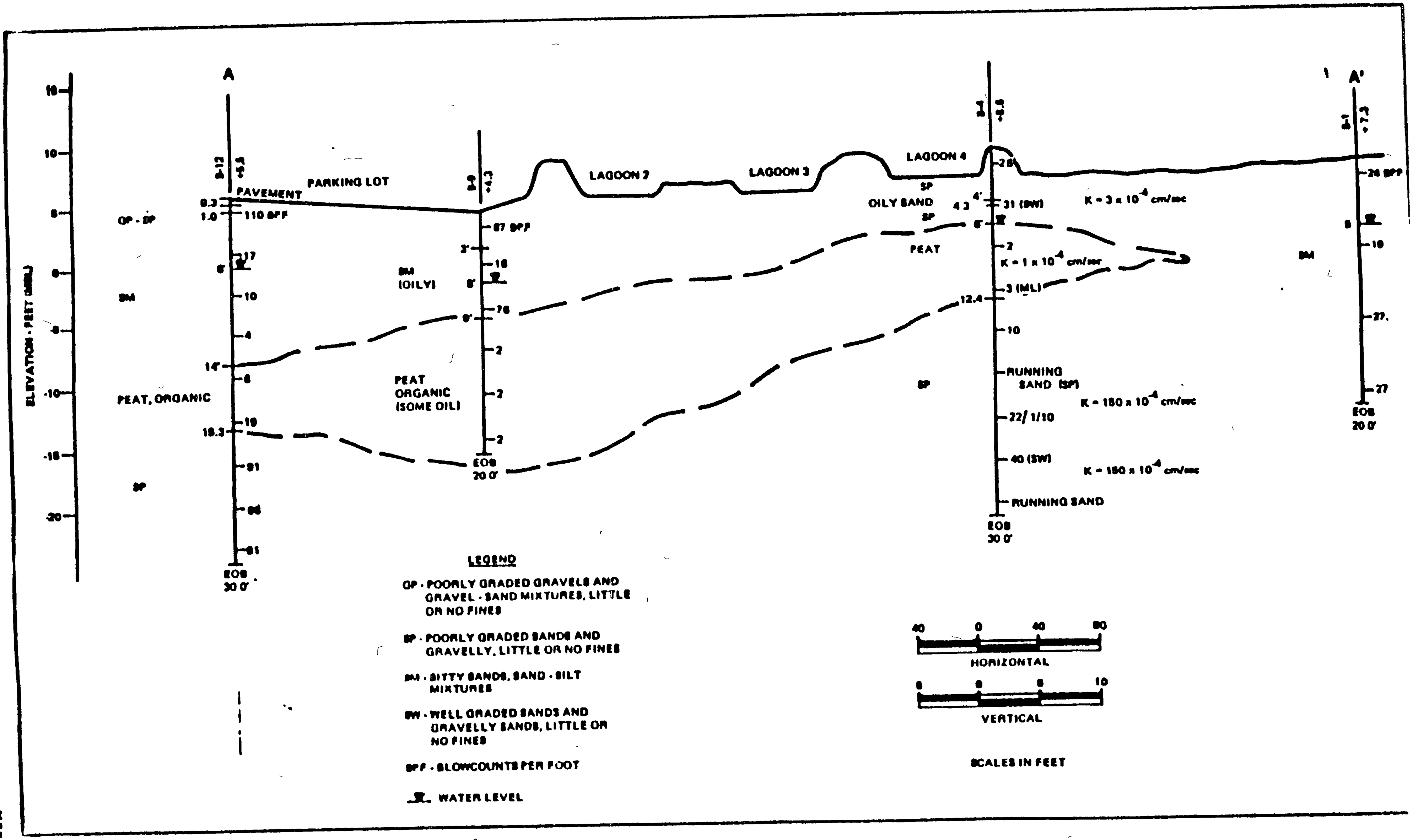


FIGURE 2.2 SECTION A-A' GENERALIZED SUBSURFACE STRATIFICATION

METCALF & EDDY

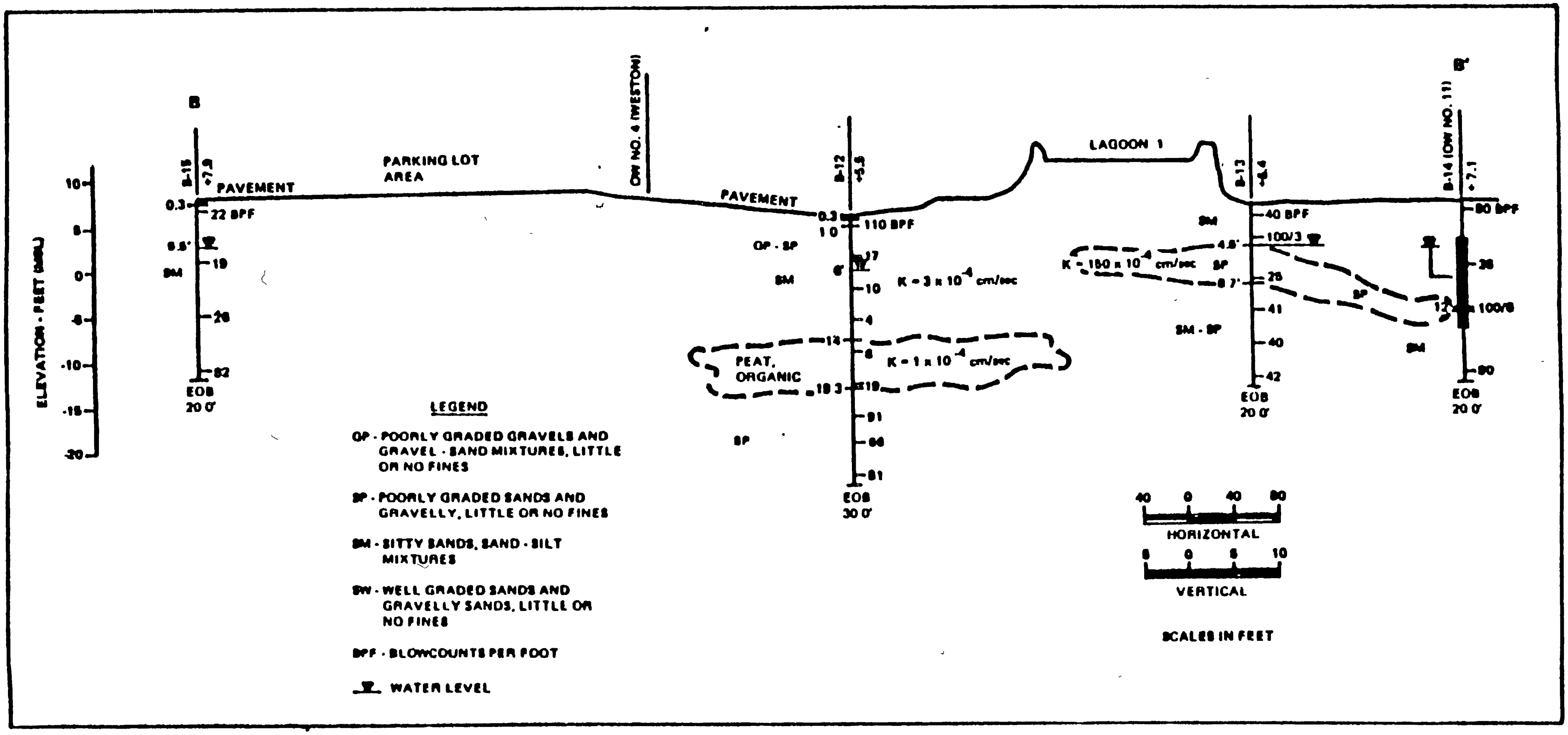


FIGURE 2.3 SECTION B-B' GENERALIZED SUBSURFACE STRATIFICATION

2.3 Hydrogeologic Evaluation

As part of the subsurface investigation program observation wells were installed in six borings (B-1, B-2, B-6, B-14, B-15 and B-17). These wells supplement the existing observation wells (OW-1 to OW-7) installed by R.F. Weston, Inc. and currently being monitored by IPC, Inc. as part of the assessment monitoring program.

Groundwater Flow Directions and Gradients

The Avco facility and associated lagoons are located in a relatively flat area near the mouth of the Housatonic River. Ground surface elevations are generally lower than 10 feet (above mean sea level, National/Geodetic Vertical Datum). The water table is also fairly flat, and marshy areas with tidal channels exist in the vicinity of the site.

A regional surface water drainage divide exists west of Main Street. Groundwater flows in both the northeast and southwest directions away from the ridge of the divide. The presence of this divide infers the existence of a groundwater divide in the same proximity. Under non-mounding conditions, groundwater in the shallow part of the aquifer in the vicinity of the lagoons would be expected to flow primarily southeastward toward the tidal ditch or eastward toward the Housatonic River. A small percentage of the groundwater would be expected to flow downward into deeper parts of the aquifer.

The development of the area has had some significant effects on the hydrologic system. The large buildings and paved areas with storm drainage systems greatly reduce groundwater recharge and generally cause a lowering of the water table.

Recent surveys have provided measurement of all wells to a single datum (mean sea level) and allowed the plotting and contouring of groundwater elevations measured at four different times (see Figures 2.4, 2.5, 2.6 and 2.7). In unconfined aquifers when vertical gradients exist, only wells whose screen intersects the water table can be used to accurately plot water table contours. Figures 2.4, 2.5, 2.6 and 2.7 should be interpreted as total head contours because the plots were developed using both wells that intersect and that are below the water table. Plots of the wells that do intersect the water table are presented in the Vertical Gradient portion of this section. Water elevations for the four dates of measurement are shown in tables presented in Appendix C. The groundwater elevation data and well construction data, see Figure 2.8, allow estimates to be made of vertical gradients and flow directions, and are presented as part of this section.

On all the measurement dates, except June 27, 1986, some groundwater mounding is apparent in the vicinity of the equalization lagoon, the western sludge lagoon and Building 6. The groundwater contours for the June 27, 1986 data show mounding only in the vicinity of the equalization lagoon. The apparent mounding near the equalization lagoon may be due to the tides, the effects of which have already been observed in Well 5, adjacent to the equalization lagoon. In support of this observation are the groundwater contours which were prepared

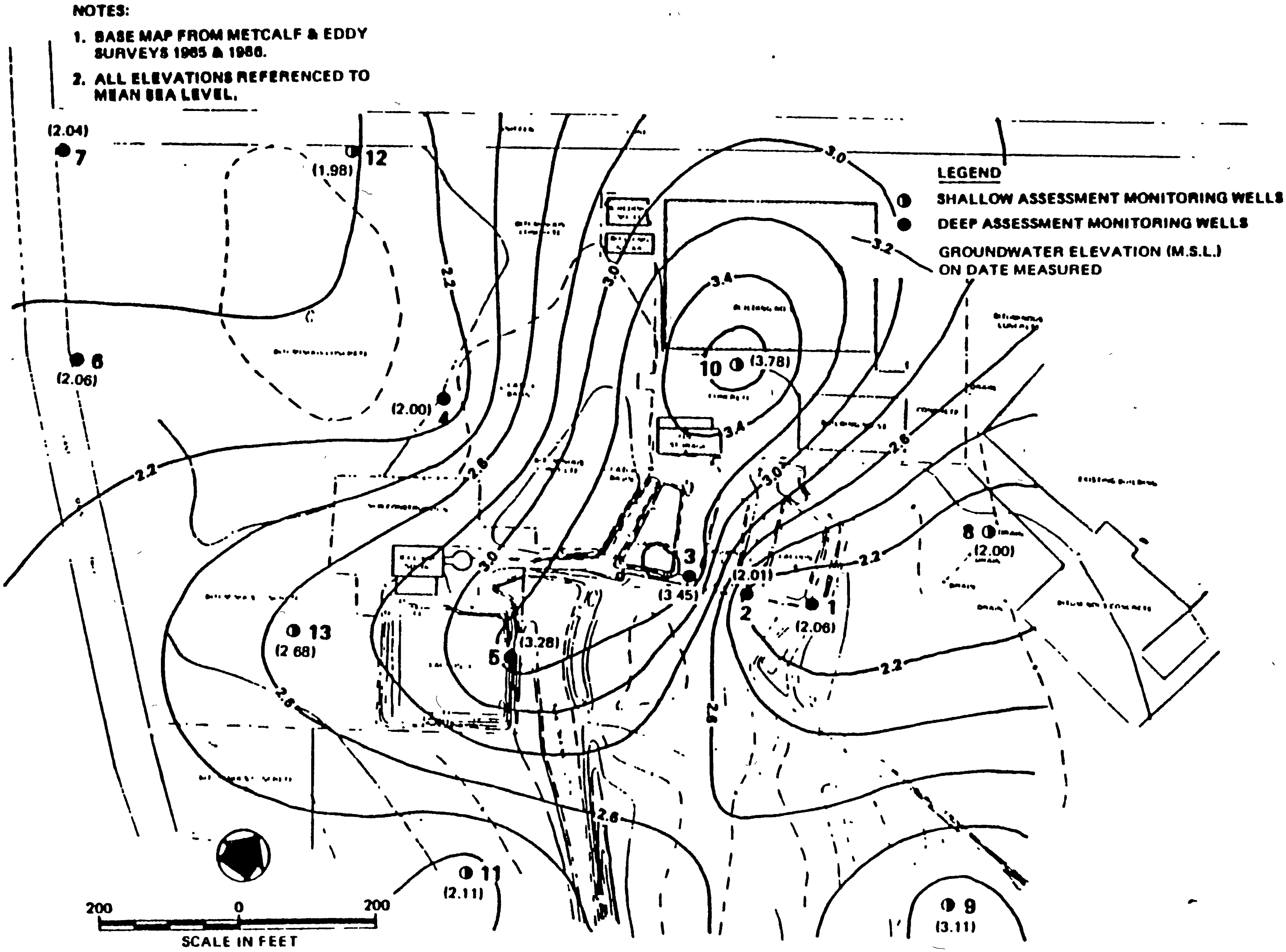


FIGURE 2.4 GROUNDWATER ELEVATION CONTOURS, NOVEMBER 25, 1985

METCALF & EDDY

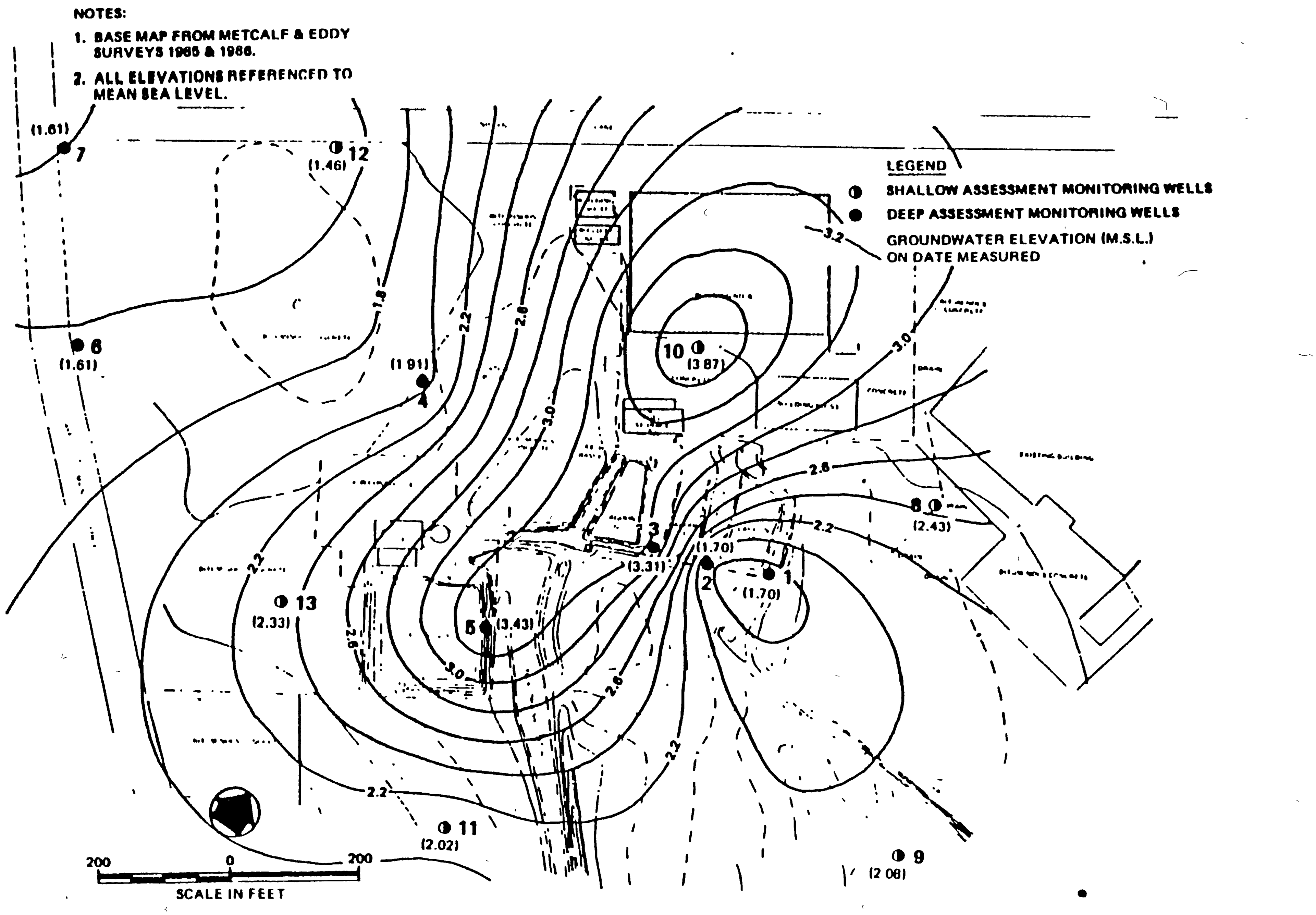


FIGURE 2.5 GROUNDWATER ELEVATION CONTOURS, APRIL 19, 1986

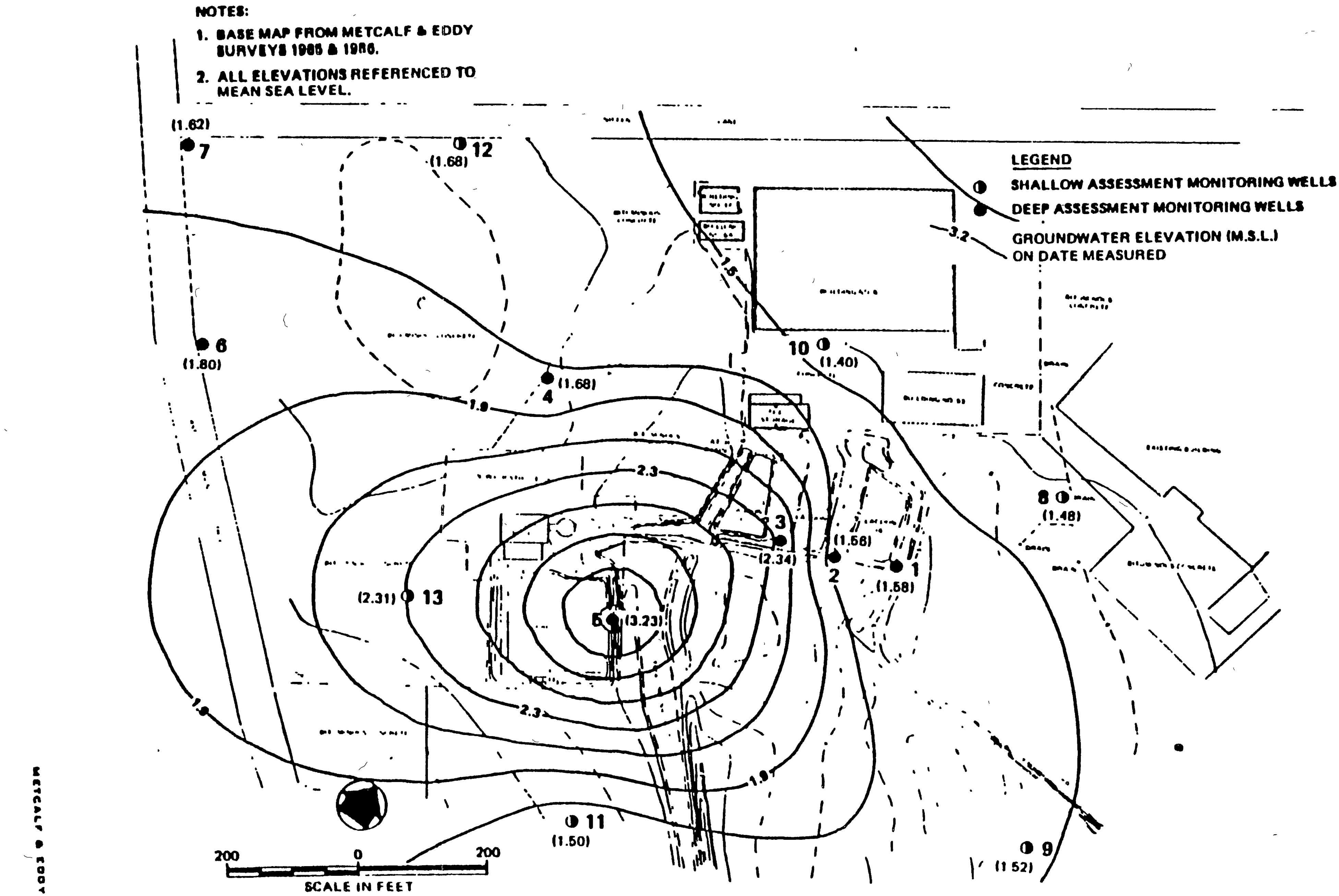


FIGURE 2.6 GROUNDWATER E ATION CONTOURS, JUNE 27, 1986

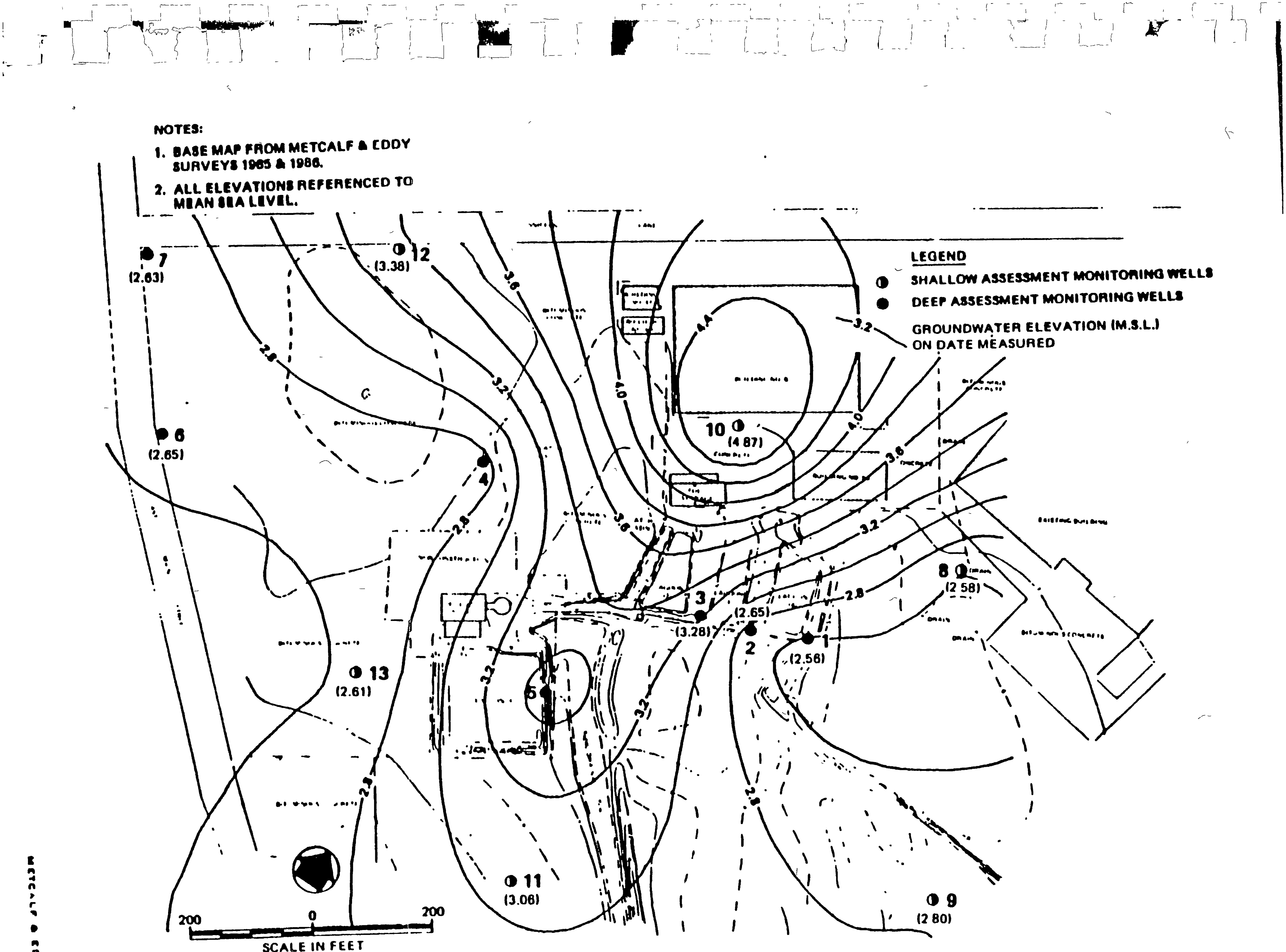
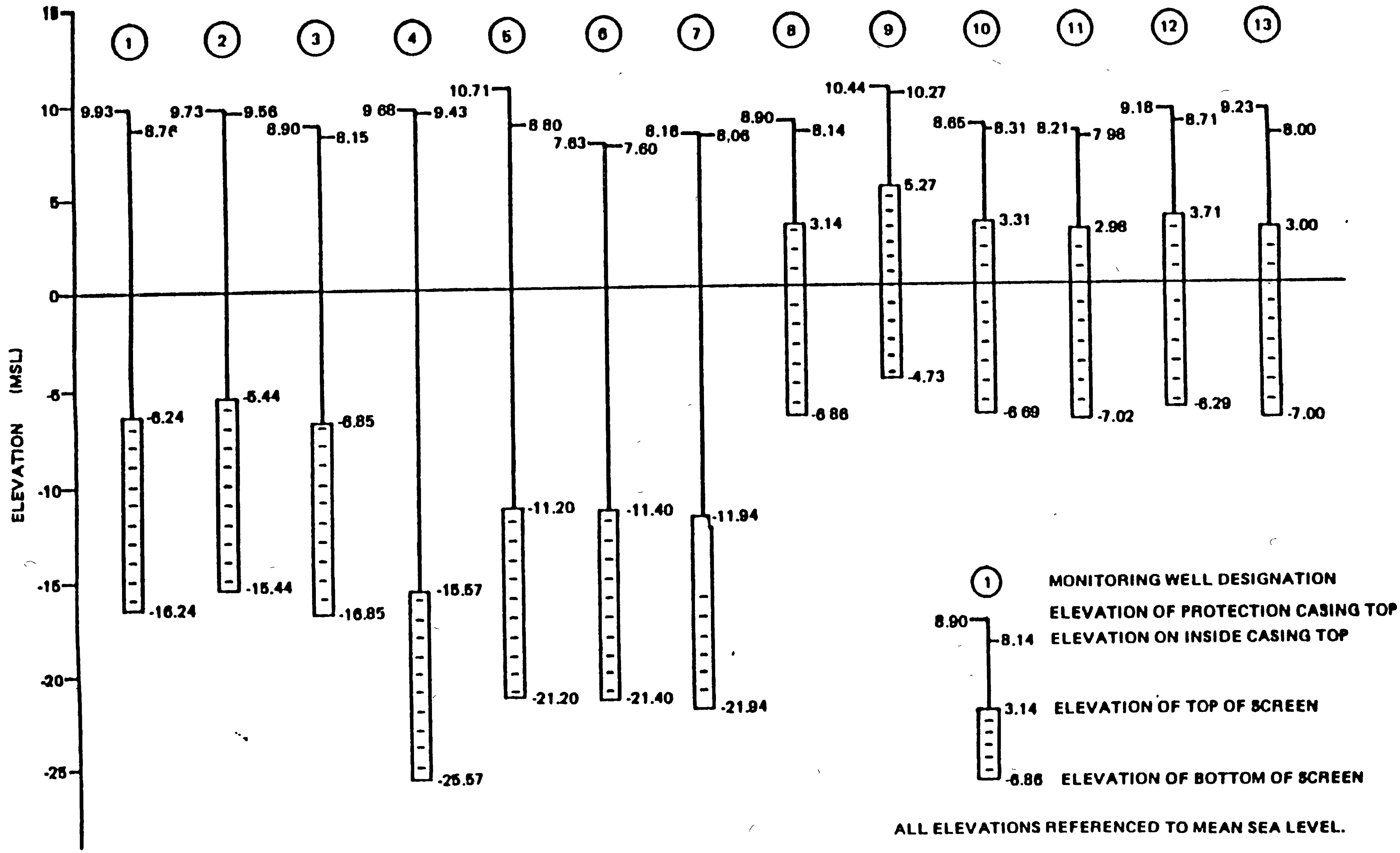


FIGURE 2.7 GROUNDWATER ELEVATION CONTOURS, DECEMBER 29, 1986

based upon data from the shallow wells and do not include Well 5 (see Figures 2.9, 2.10, 2.11 and 2.12) which show no apparent mounding near the equalization lagoon. Groundwater level data from Wells 1, 10 and 13 indicated no tidal fluctuation in these observation wells. The overall effect of the tides and mounding has obscured flow directions and gradients by introducing vertical gradients

Vertical Gradients

Vertical gradients occur in areas of groundwater recharge and discharge. The apparent groundwater mounding at the Avco-Lycoming facility imparts downward vertical gradients in the vicinity where the recharge is occurring. Upward vertical gradients occur as groundwater flows toward natural discharge areas, such as the Marine Basin and the mouth of the Housatonic River adjacent to the Avco-Lycoming facility. On a regional scale, groundwater flow directions toward large discharge areas, such as the mouth of the Housatonic River, can be estimated, but on a smaller scale actual groundwater contours are used. In the absence of unobscured groundwater contours, areas of increasing vertical gradients can serve to identify a local discharge area toward which local groundwater is flowing. Normally, paired ,roundwater wells with screens set at different elevations are used to measure vertical gradients. At the Avco-Lycoming facility, although the 13 existing monitoring wells are distributed over approximately 40 acres, they are screened at different elevations (see Figure 2.8).



METCALF & EDDY

FIGURE 2.8 AVCO - LYCOMING MONITORING WELL SCREEN SETTINGS

To take advantage of the different screen settings, the groundwater measurements for a given date were plotted separately for shallow wells (8, 9, 10 ,11, 12 & 13) and deep wells (1, 2, 3, 4, 5, 6 & 7), see Figures 2.9 through 2.16. The next step was to superimpose the groundwater level contours from shallow and deep wells and plot the contour intersection points.

To compute a vertical gradient at any contour intersection points, the deep head value is subtracted from the shallow head value and the difference divided by the average screen setting separation of 13.38 feet. This data has been plotted and contoured for the four complete measurement dates and presented in Figures 2.17, 2.18, 2.19, and 2.20.

One feature present in all the vertical gradient figures is a trough of increasing upward vertical gradients in the south-central portion of each figure. This location coincides with the location of the equalization lagoon and the small tidal drainage ditch which flows to the marine basin. One characteristic of groundwater discharge areas is that vertical gradients increase approaching the discharge area. This condition is evident near the tidal ditch in all the vertical gradient figures indicating the tidal ditch is a local groundwater discharge area even under varying groundwater conditions. Comparison of the magnitudes of the vertical and the horizontal gradients in the vicinity of the tidal drainage ditch also demonstrates a predominant upward flow. The vertical gradients exceeded the horizontal gradients by a factor of between 15 and 23 for all four of the measurement dates. Even considering a ratio of horizontal to vertical permeability of 10 to 1, and using Darcy's equation the minimum ratio of vertical to horizontal groundwater flow would be 1.5 to 1. Because the vertical gradients are upward, 1.5 times the horizontal flow is discharging upward to the tidal drainage ditch. Based on these findings, horizontal groundwater flow beneath the Avco-Lycoming facility could be considered to be toward the tidal drainage ditch.

Horizontal Gradients

While flow directions can be inferred from the location of discharge areas, natural horizontal gradients cannot be calculated using existing contour data because of the apparent mounding. One way of estimating horizontal gradients is to use known aquifer parameters in an analytic model. An analytic model which incorporates all the essential hydrogeologic features of the aquifer beneath the Avco-Lycoming facility is a steady unconfined flow with uniform vertical recharge. Figure 2.21 presents a schematic diagram of the model along with the calculations to determine an average horizontal gradient of 0.02 feet per foot beneath the Avco-Lycoming facility. While the use of a model to determine a gradient is an indirect method, this solution is based on site specific aquifer data and could be used in other flow calculations until gradients can be measured or determined more accurately.

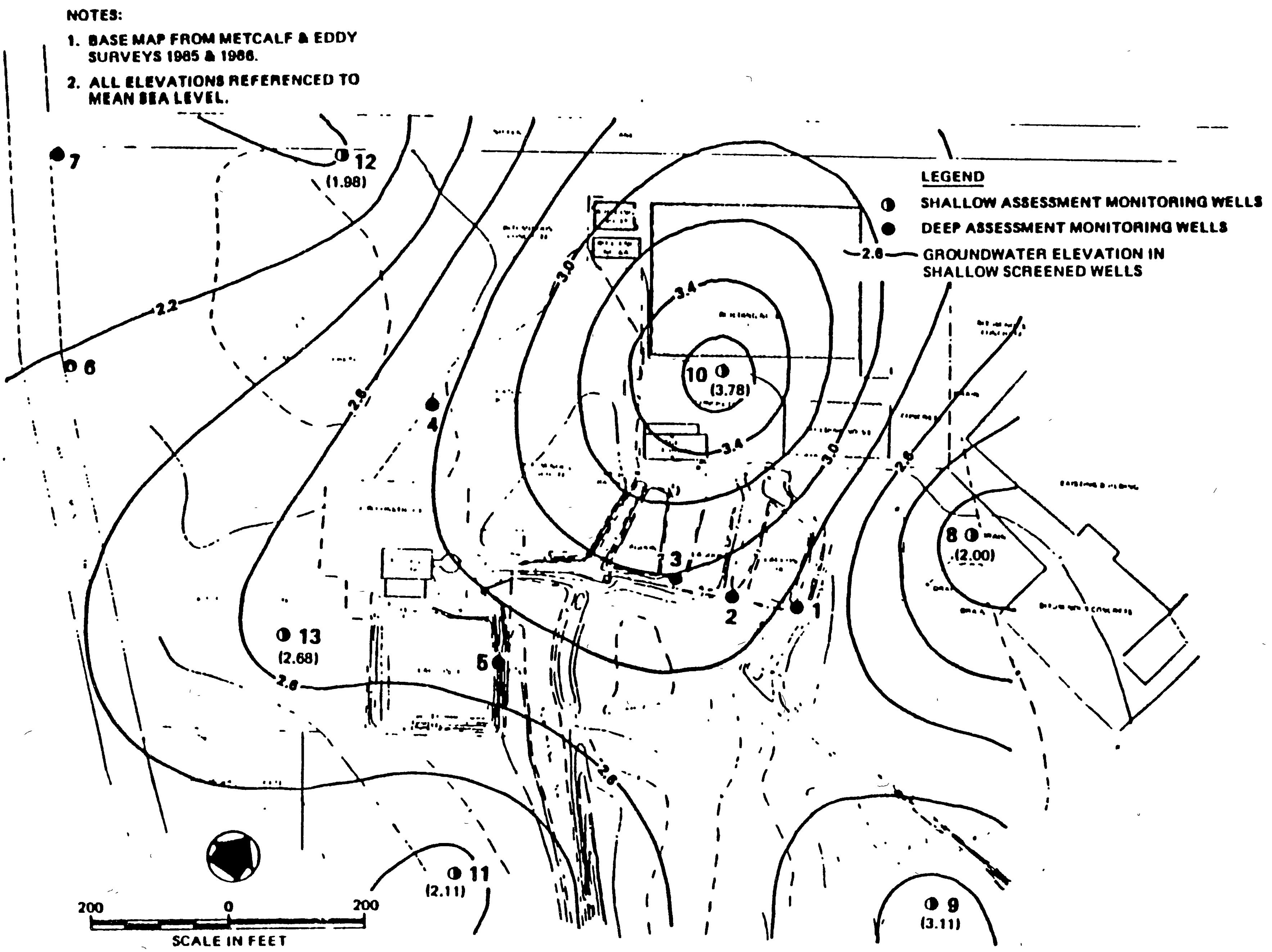


FIGURE 2.9 SHALLOW GROUNDWATER [illegible]ATION CONTOURS, NOVEMBER 25, 1985

METCALF & EDDY

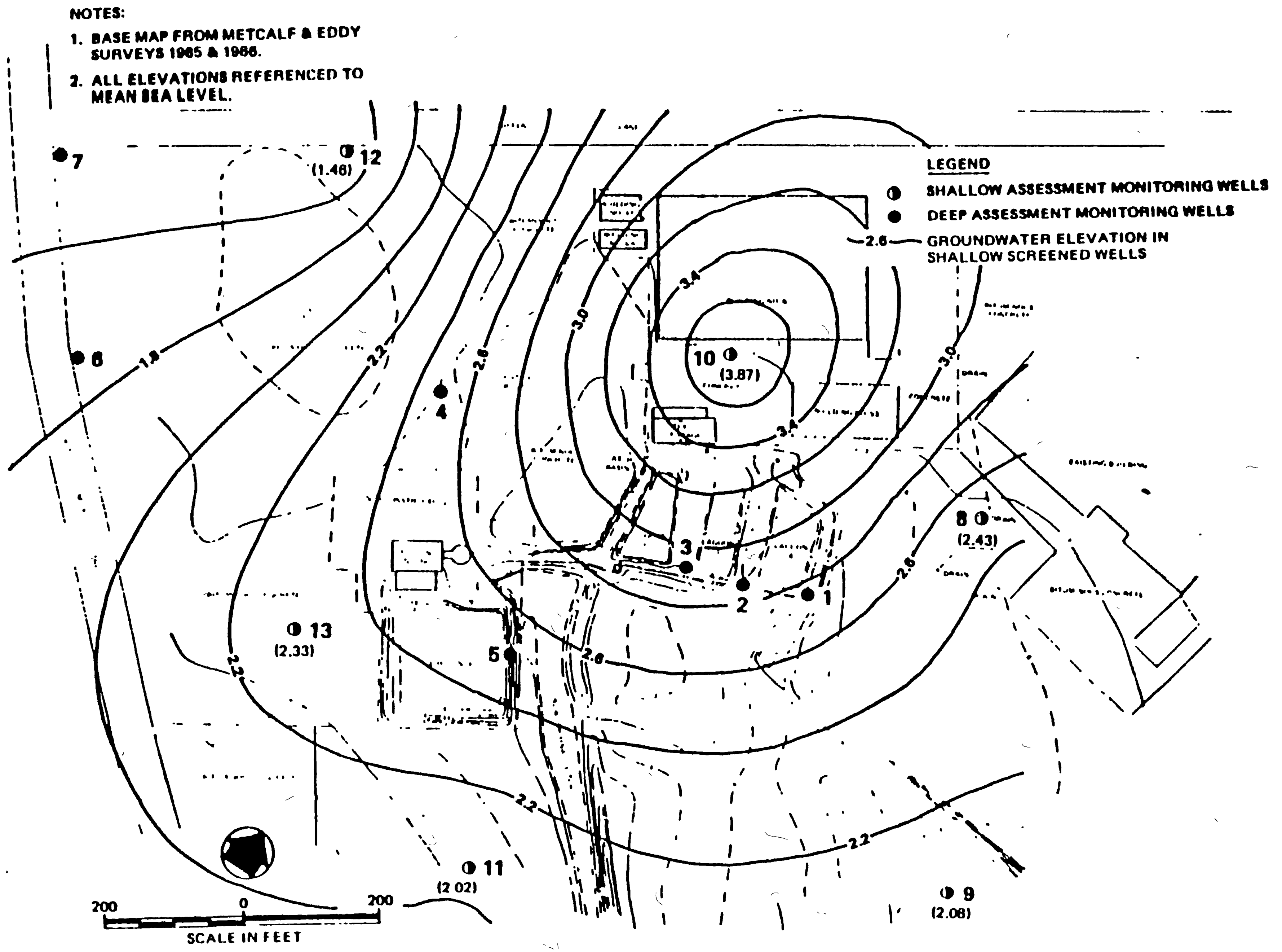


FIGURE 2.10 SHALLOW GROUNDWATER ELEVATION CONTOURS, APRIL 19, 1986

METCALF & EDDY

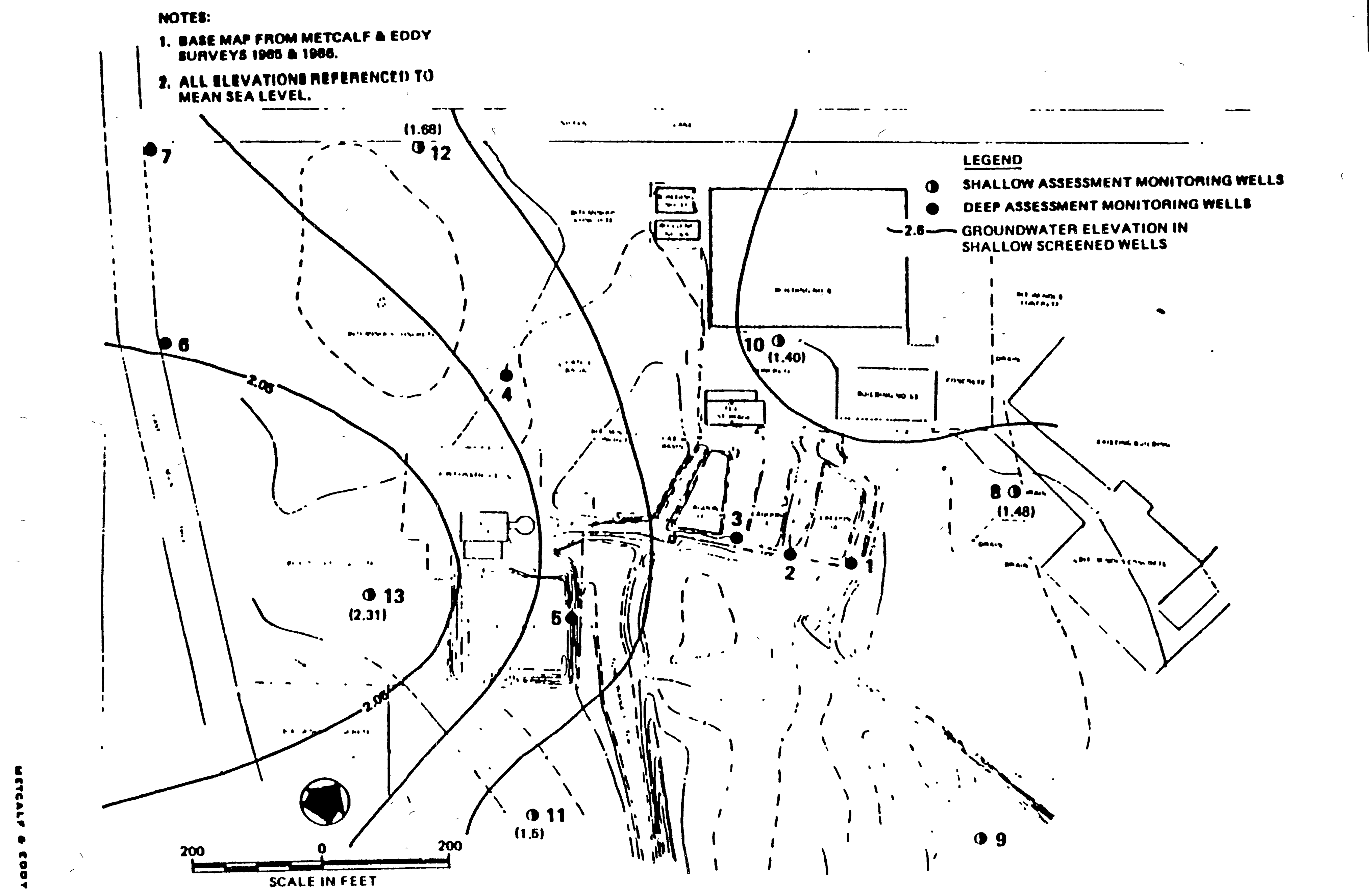


FIGURE 2.11 SHALLOW GROUNDWA ELEVATION CONTOURS, JUNE 27, 1986

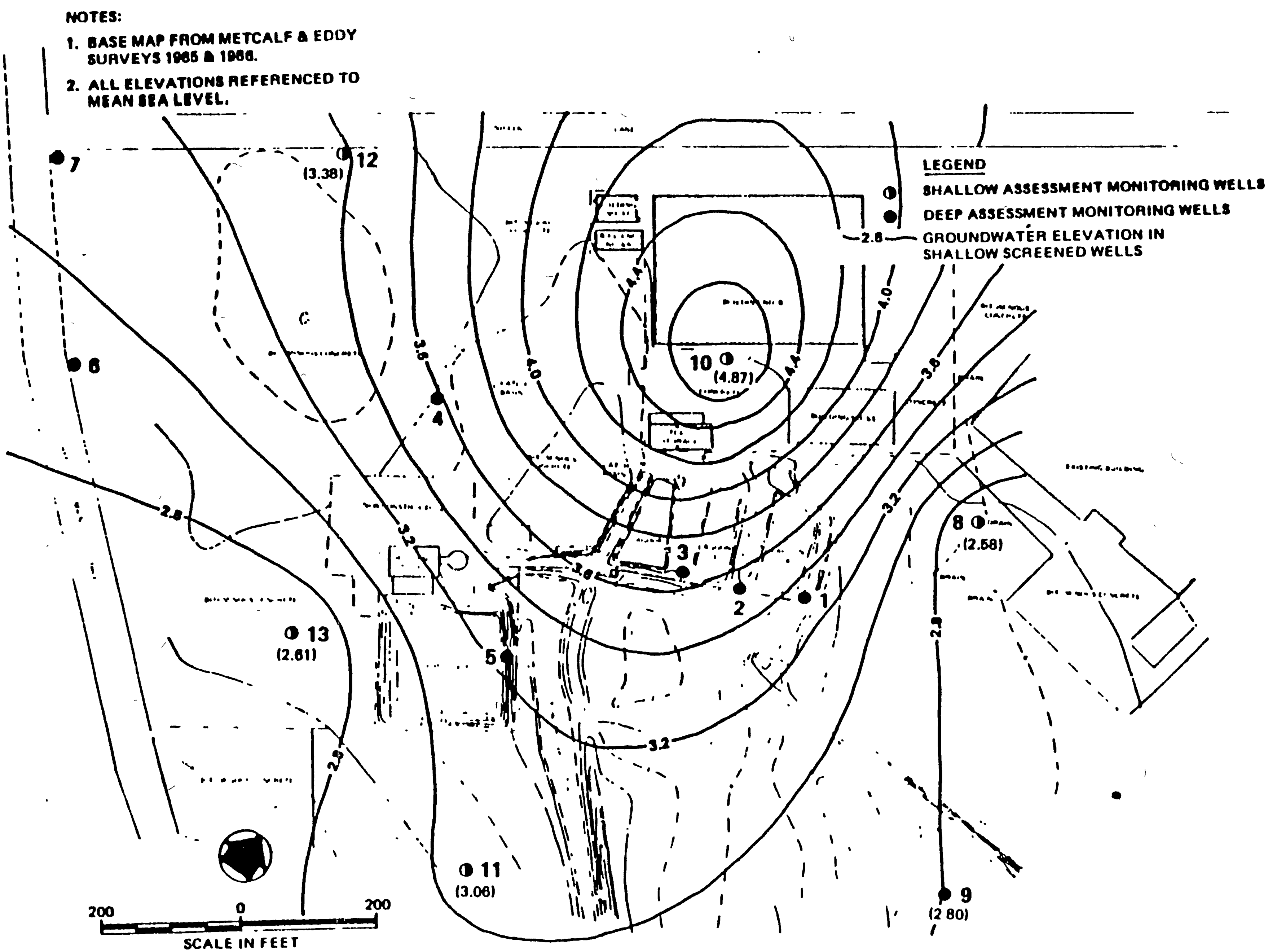


FIGURE 2.12 SHALLOW GROUNDWATER ELEVATION CONTOURS, DECEMBER 29, 1986

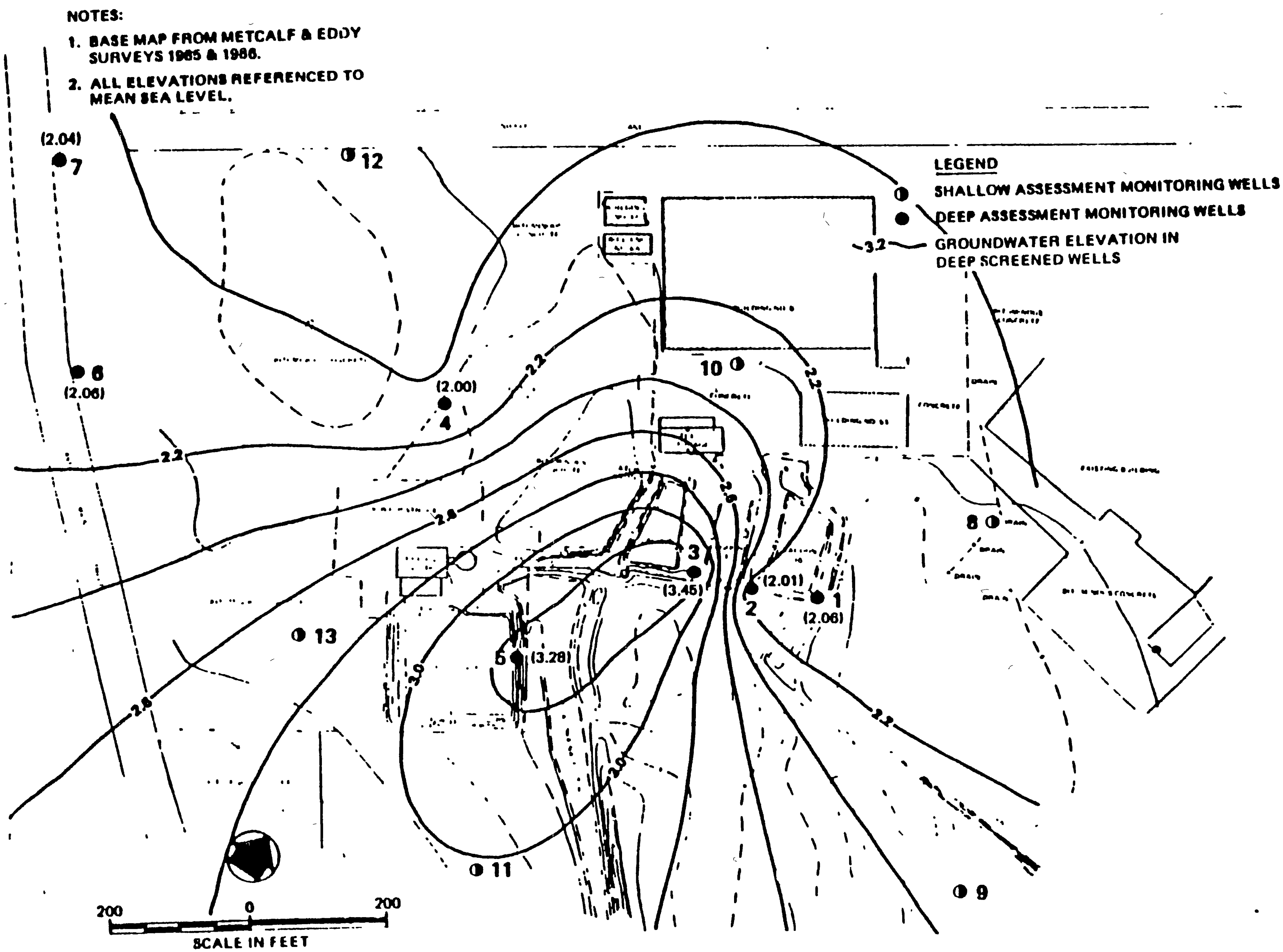


FIGURE 2.13 DEEP GROUNDWATER ELEVATION CONTOURS, NOVEMBER 25, 1985

METCALF & EDDY

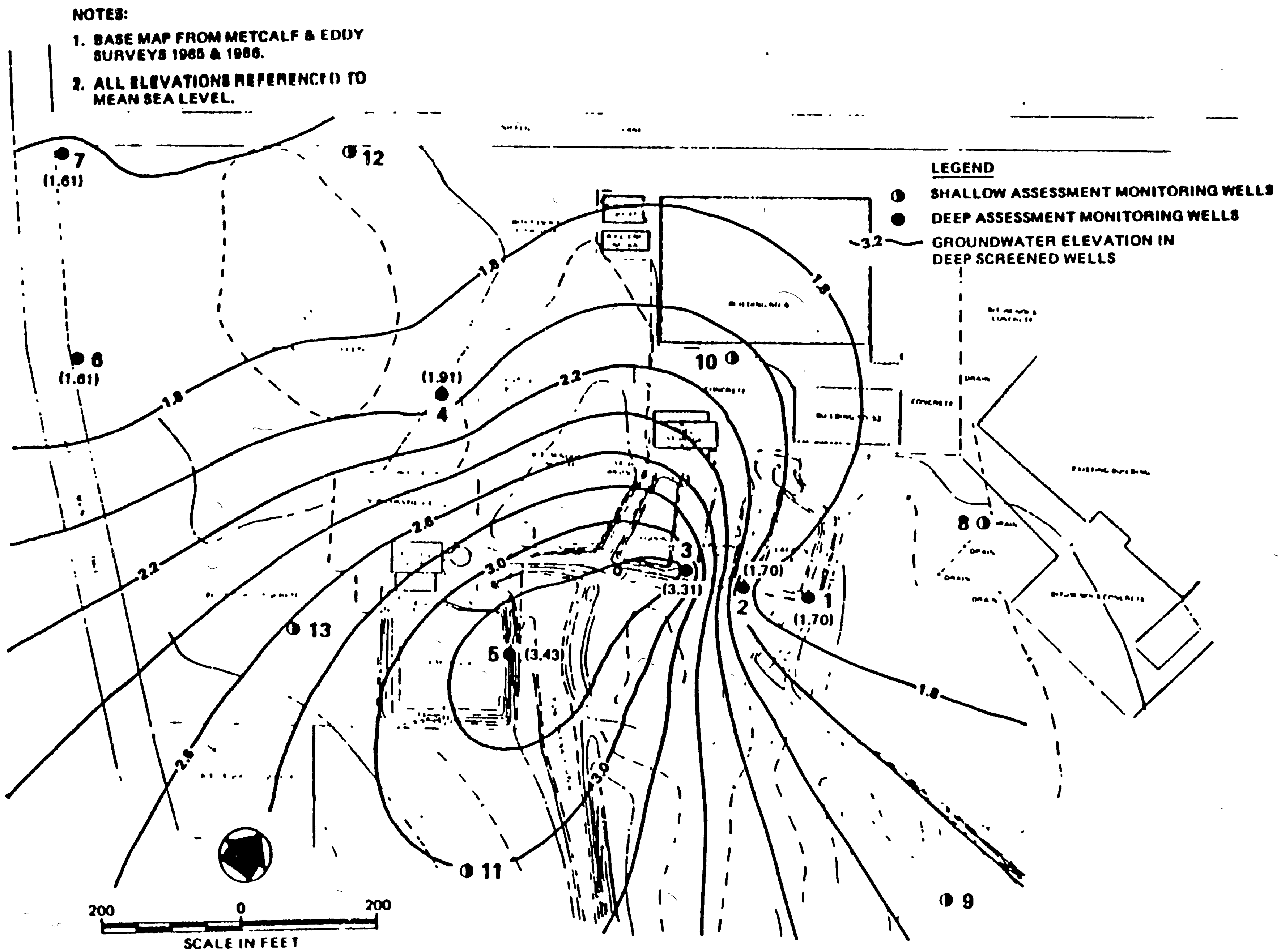


FIGURE 2.14 DEEP GROUNDWATER ELEVATION CONTOURS, APRIL 19, 1986

METCALF & EDDY

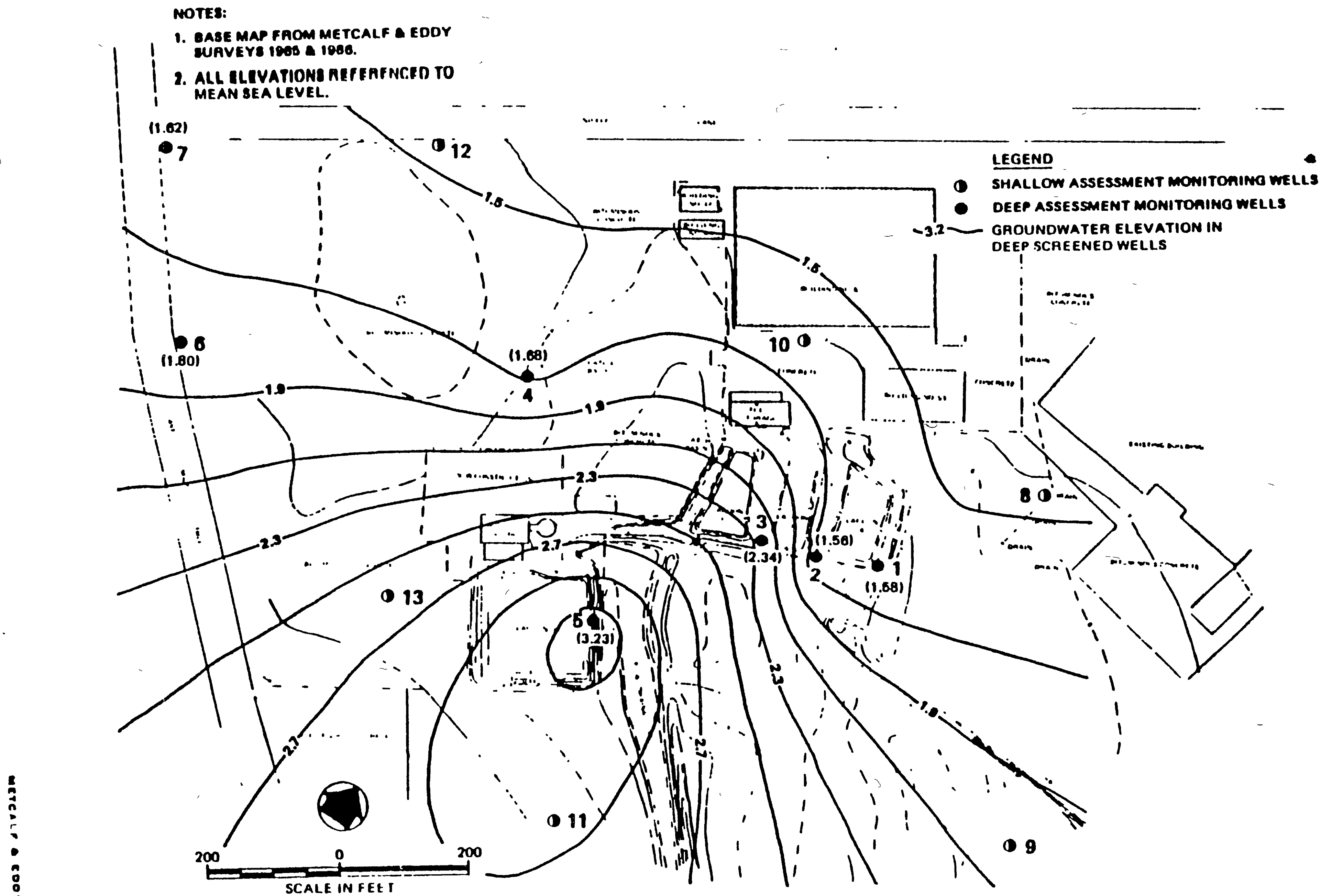


FIGURE 2.15 DEEP GROUNDWATER ELEVATION CONTOURS, JUNE 27, 1986

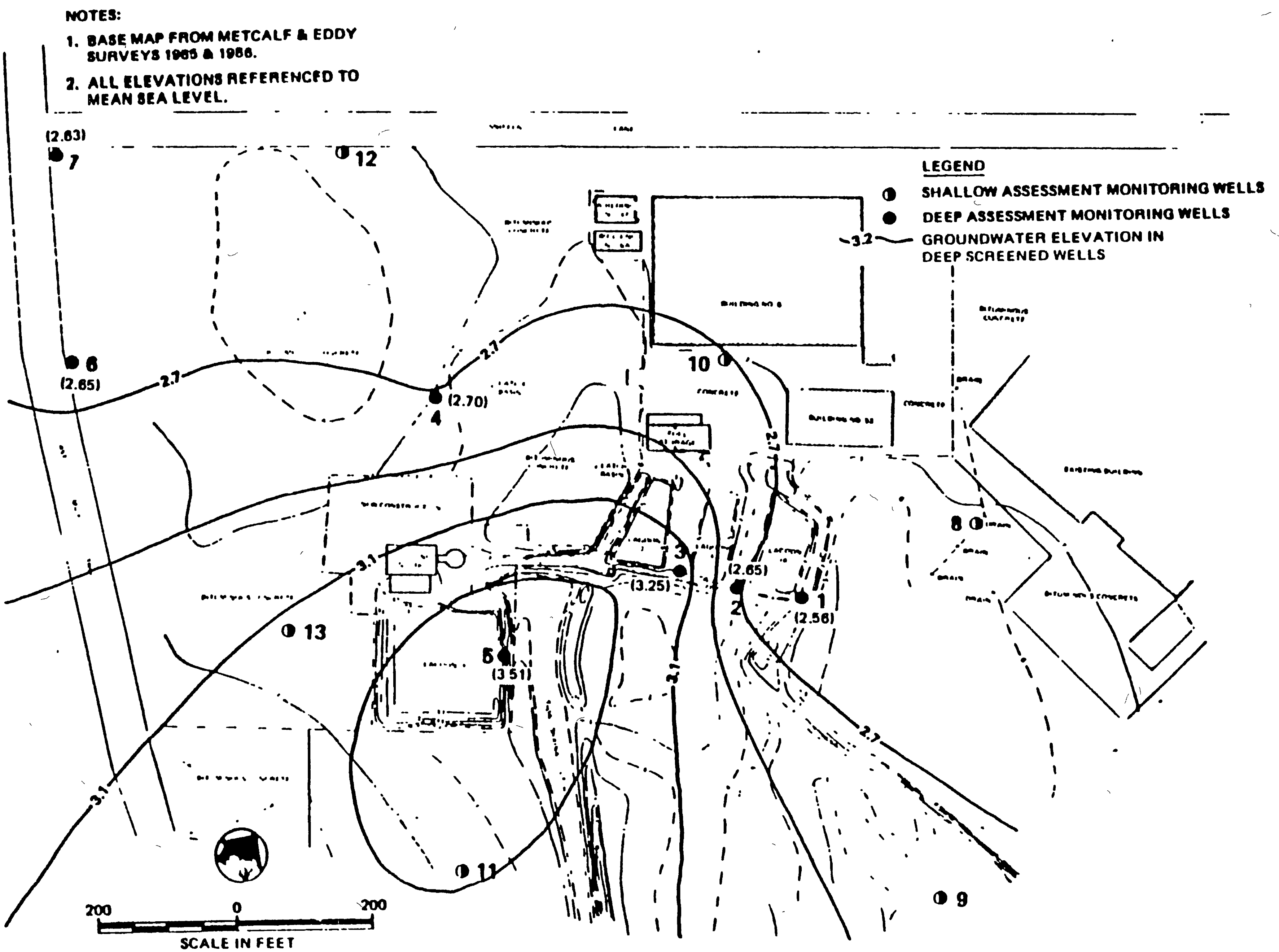
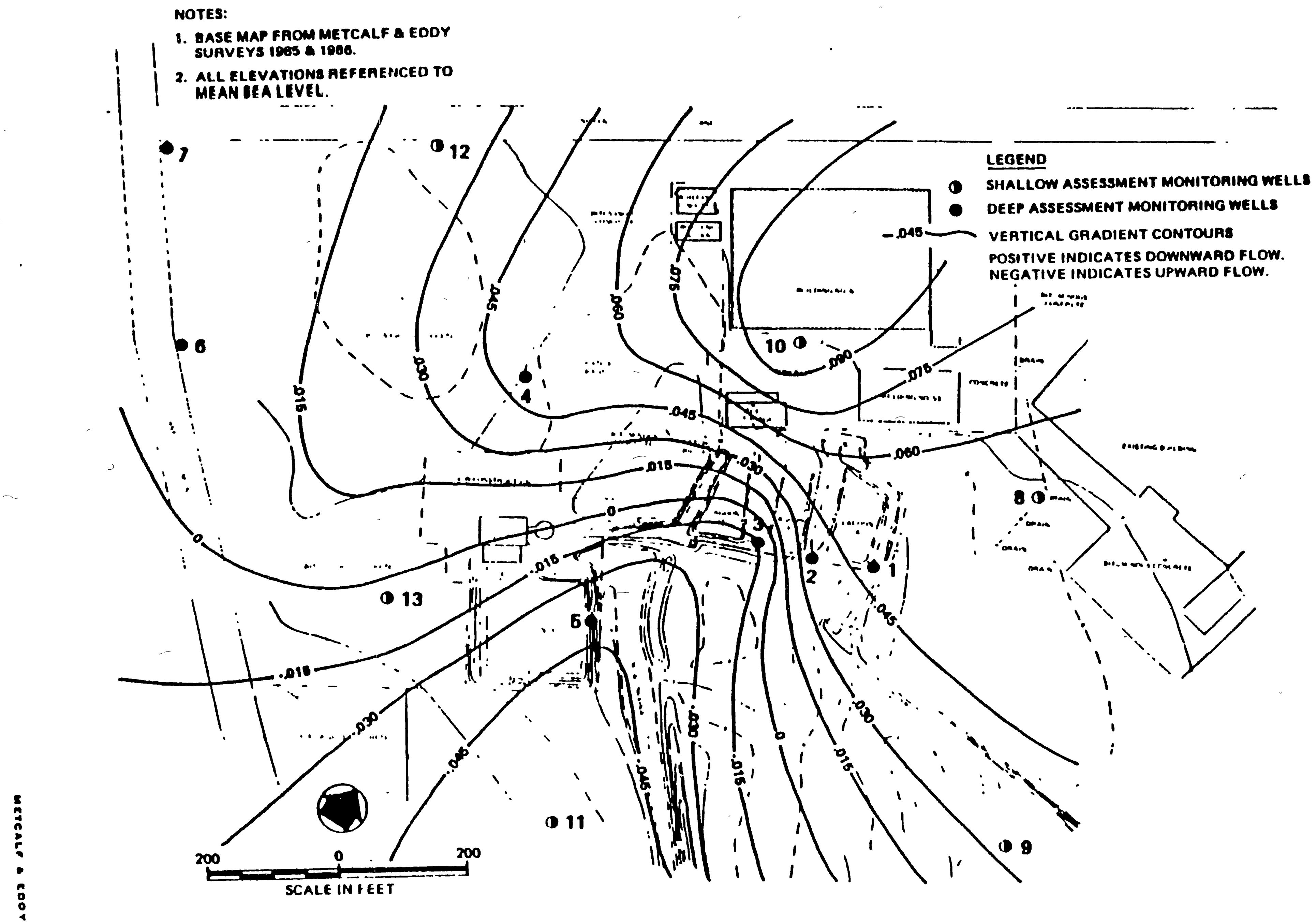


FIGURE 2.16 DEEP GROUNDWATER ELEVATION CONTOURS, DECEMBER 29, 1986

METCALF & EDDY



F RE VE AL GROU ATE ADIENTS, NOVEMBER 1985

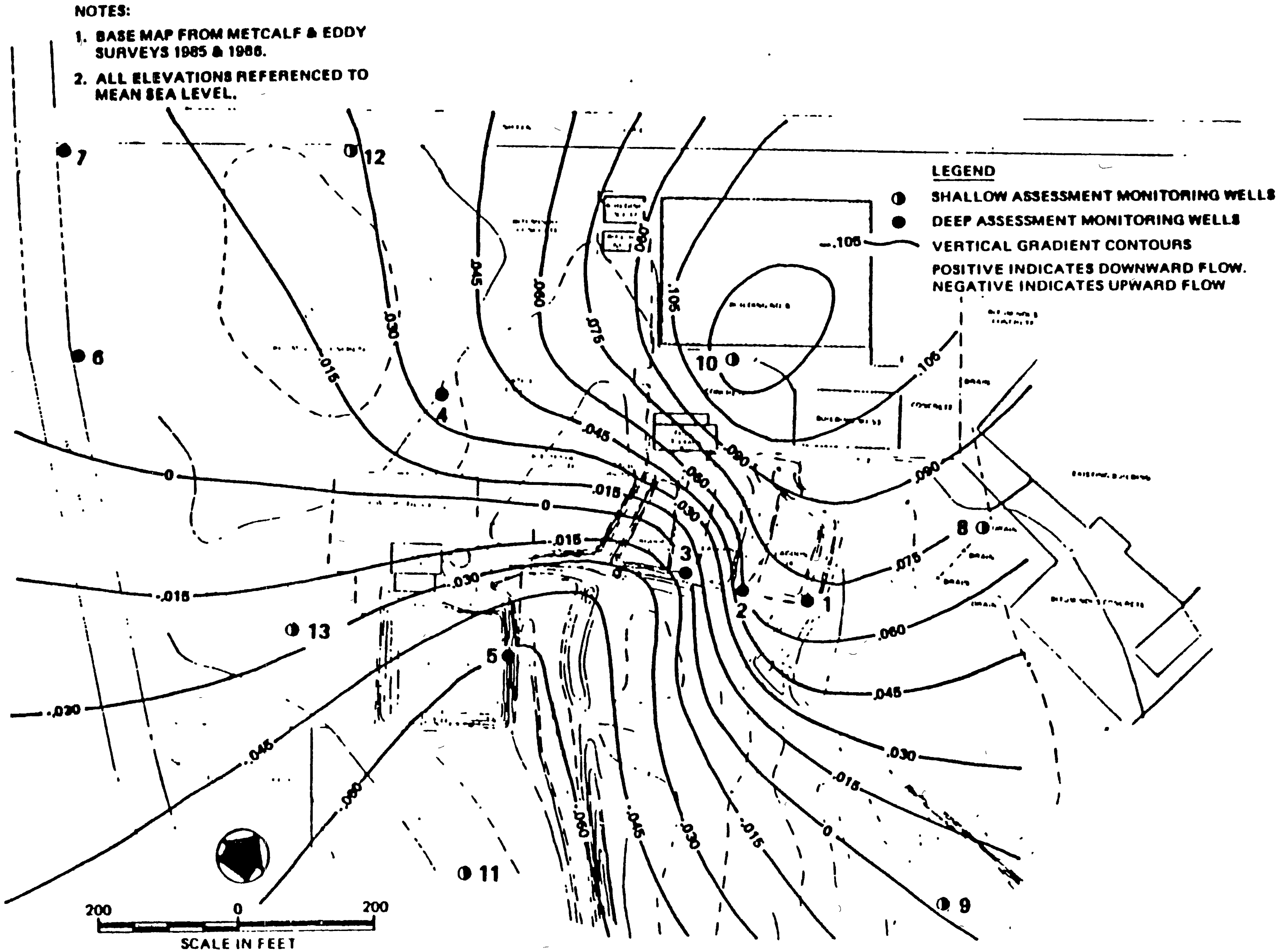
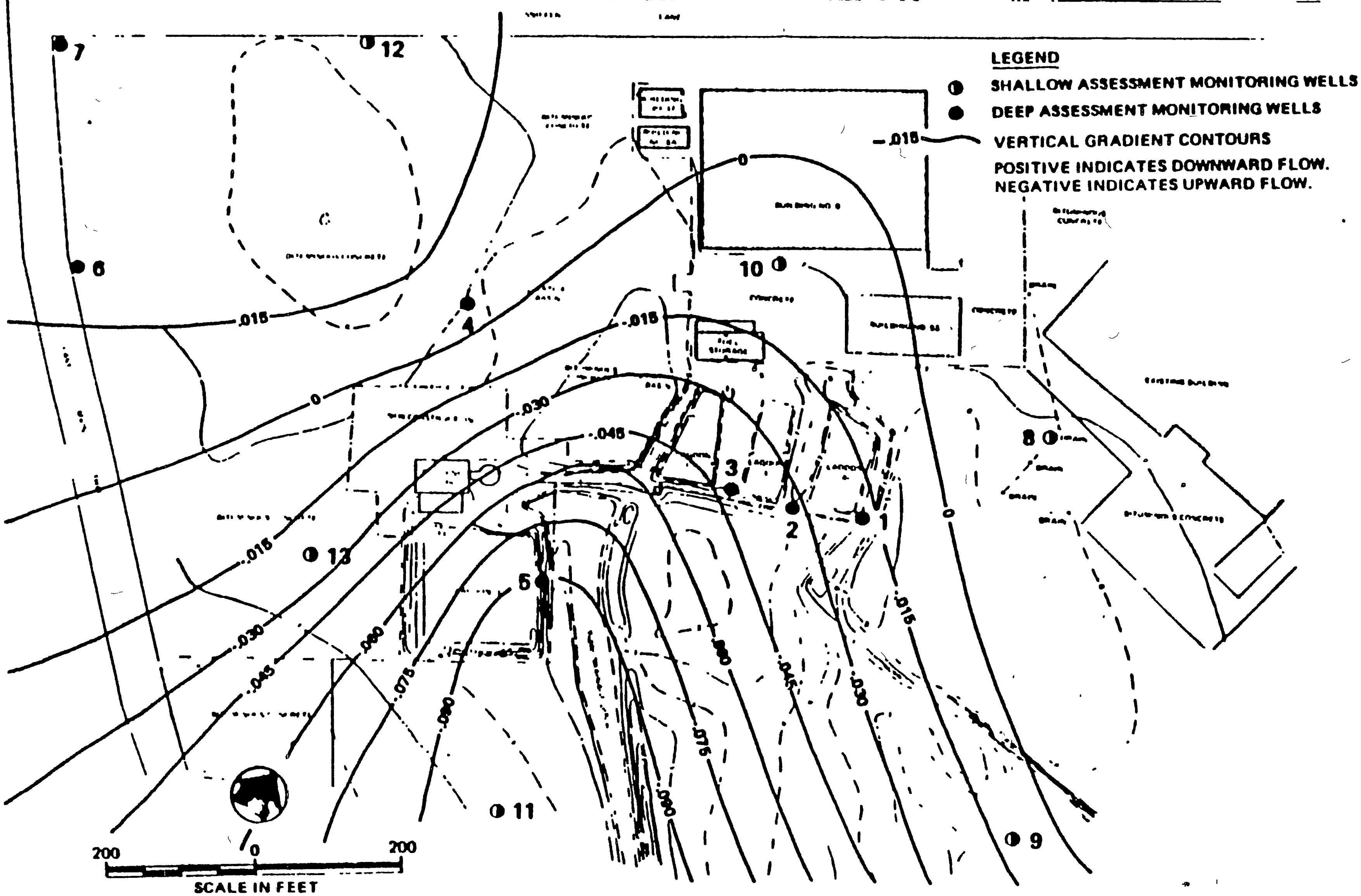


FIGURE 2.18 VERTICAL GROUNDWATER GRADIENTS, APRIL 1986

NOTES:

1. BASE MAP FROM METCALF & EDDY SURVEYS 1985 & 1986.
2. ALL ELEVATIONS REFERENCED TO MEAN SEA LEVEL.



METCALF & EDDY

FIGURE 2-10. VERTICAL GROUNDWATER GRADIENTS, JUNE 1986

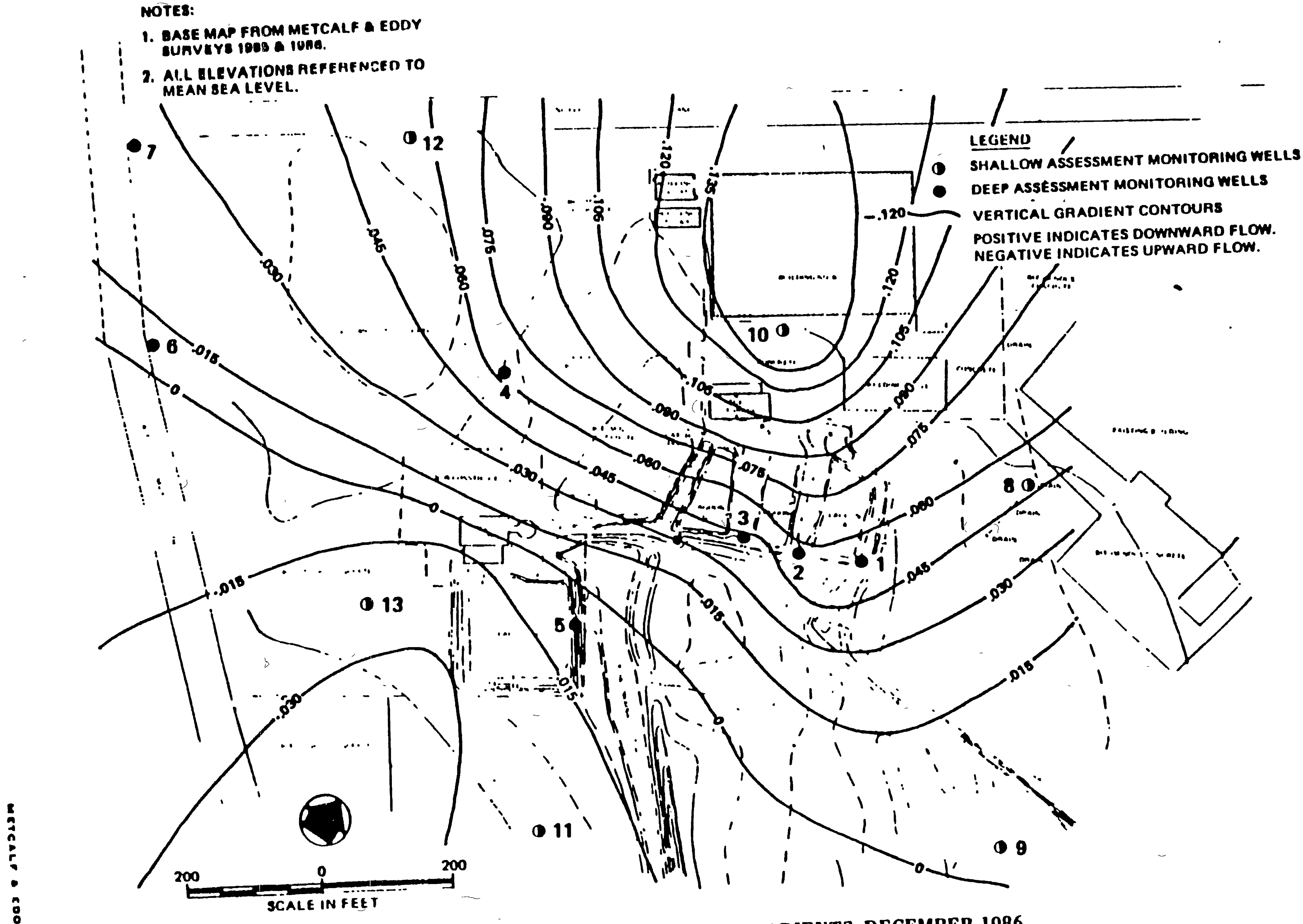
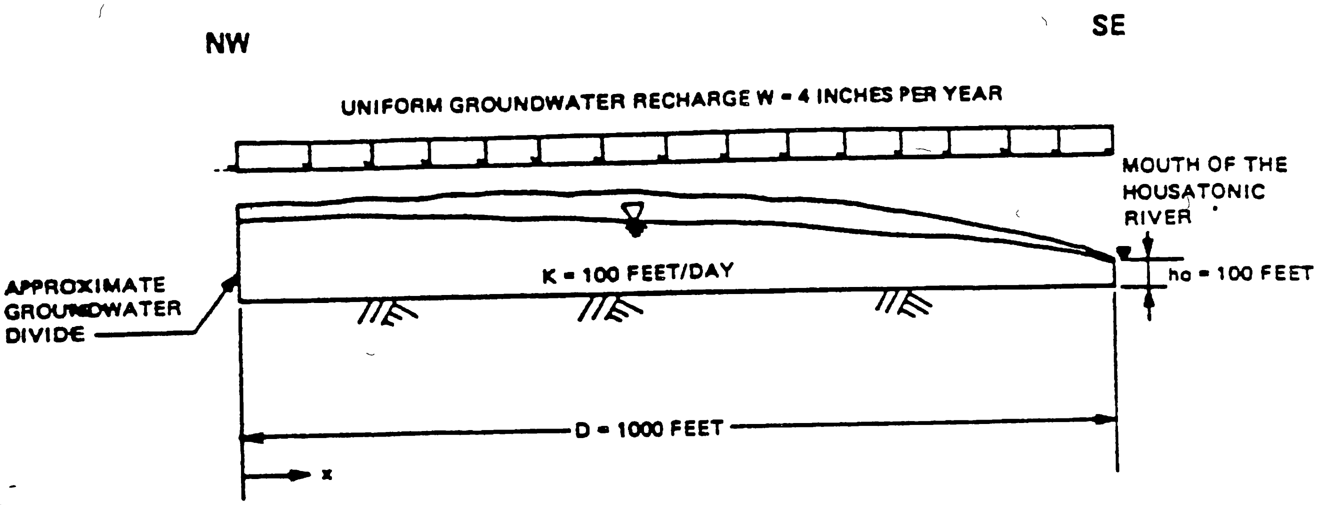


FIGURE 2.20 VERTICAL GROUNDWATER GRADIENTS, DECEMBER 1986



$$h(x) = \sqrt{ho^2 - \frac{w}{k}(x^2 - D^2)}$$

WHERE:

h = TOTAL HEAD @ LOCATION x
ho = HEAD A DISCHARGE POINT
w = UNIFORM GROUNDWATER RECHARGE
K = AQUIFER PERMEABILITY
D = DISTANCE FROM DISCHARGE POINT TO THE GROUNDWATER DIVIDE

@ x = 0 FEET	h = 115.5 FEET
@ x = 1000 FEET	h = 100.0 FEET

AVERAGE HORIZONTAL GRADIENT

$$i_h = \frac{\Delta h}{\Delta x} = \frac{100.0\ FT - 115.5\ FT}{1000\ FT - 0\ FT} = -0.02$$

(2:100)

FIGURE 2.21 STEADY UNCONFINED FLOW WITH UNIFORM VERTICAL RECHARGE

SECTION III

EXISTING DETECTION MONITORING SYSTEM

The thirteen (13) groundwater monitoring wells at the Avco-Lycoming facility have been installed on three different occasions:

Well Numbers	Date of Installation	Contractor
1-5	November 1981	Roy F. Weston, Inc.
6 & 7	July 1983	Leggette, Brashears, & Graham
8-13	September 1985	Metcalf & Eddy

A schematic diagram of the well construction details is presented in Figure 3.1, elevations of the individual 10-foot screen settings and groundwater measuring points is presented in Figure 2.8, and the location of all monitoring wells is presented in Figure 2.1.

3.1 Detection Monitoring Wells

Detection monitoring at the Avco-Lycoming facility has been conducted using seven (wells 1-7) of the current thirteen (13) wells. Wells 1, 2, 3 and 5 were used as downgradient, point of compliance wells based on their locations adjacent to the sludge and equalization lagoons. Wells 6 and 7 served as background groundwater quality sampling points based on an assumed southeast groundwater flow direction.

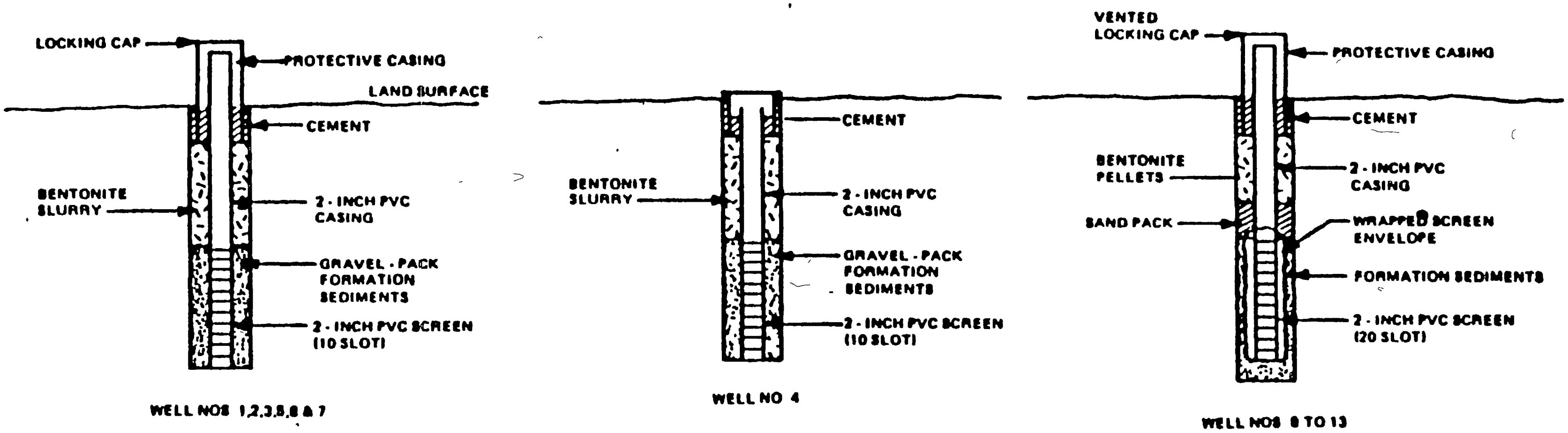


FIGURE 3.1 SCHEMATIC OF AVCO-LYCOMING MONITORING WELL CONSTRUCTION

3.2 Limitations of Detection Monitoring System

As a result of groundwater mounding in the vicinity of the sludge and equalization lagoons, groundwater elevations in all the detection monitoring wells were excessively high (see Figures 2.4, 2.5 and 2.6). The overall effect of the mounding was to obscure any natural flow directions or gradients.

Another limitation in the detection monitoring system is that there are no well clusters and the well screens were set at similar elevations (see Figure 2.8). As all the groundwater measurements were essentially made near the same screen elevations, no estimates could be made of vertical gradients.

Well 5, a compliance point well adjacent to the equalization lagoon, is also adjacent to the tidal drainage ditch (see Figure 2.1). Continuous groundwater level measurements in Well 5, using the Stevens recorder, demonstrated a response of more than 1 foot to tidal fluctuations. As a result, groundwater measurements in Well 5 would read higher than the natural groundwater elevation if the reading is not made about the time of low tide.

The overall extent of aquifer response to tidal fluctuations has not been fully evaluated. The tidal response test was conducted in monitoring Wells 1, 5, 10 and 13, and the only noted response to tidal fluctuations was in Well 5. The response to tidal fluctuations in a unconfined aquifer is primarily a function of distance from ocean and permeability, the nearer the ocean, the greater the response. Well 5 is located adjacent, 50 feet, to the tidal drainage ditch, which experiences delayed effects of the tides from the Marine Basin. As part of the implementation of the assessment monitoring program for the Avco-Lycoming facility, further investigative work is scheduled for February 1987 to assess the extent of tidal effects in the aquifer. More details of this work are presented in Section IX.

SECTION IV

SUMMARY OF DETECTION MONITORING DATA

1.1 1981-1982

Groundwater detection monitoring at Avco-Lycoming began in November 1981 with the installation of monitoring wells 1-5 by Roy F. Weston, Inc. The first quarter of sampling of these wells was also conducted by Weston at this time. In March 1982, Leggette, Brashears & Graham, Inc. (LB&G) of Wilton, Connecticut was retained by Avco to replace Weston in conducting the groundwater monitoring activities at the facility. The second, third and fourth quarter sampling was performed on March 31, 1982, June 29, 1982 and September 28, 1982. The water chemistry for this first year of sampling was performed by the Baron Consulting Company, Orange, Connecticut. The parameters analyzed were those specified under 40 CFR §265, Subpart F.

The results of the first year's monitoring were summarized in a report prepared by LB&G on October 29, 1982. These results were intended to show the initial background concentrations to which subsequent analyses could be compared. However, they would eventually be discarded.

1.2 1983-1984

On June 6, 1983, personnel from Avco-Lycoming, LB&G and the Connecticut DEP met to discuss the groundwater monitoring program. Tom Stark of the Connecticut DEP changed the parameters to be sampled from those specified in 40 CFR §265.92 to the first 12 parameters listed in Table 4.1.

TABLE 4.1. GROUNDWATER MONITORING PARAMETERS SPECIFIED BY THE CONNECTICUT DEP

Parameter	Sampling Frequency
Cadmium	Quarterly
Chromium - hexavalent	Quarterly
Chromium - total	Quarterly
Copper	Quarterly
Mercury	Quarterly
Nickel	Quarterly
Zinc	Quarterly
Cyanide - amenable	Quarterly
Cyanide - total	Quarterly
pH	Quarterly
Halogenated volatile organics	Semi-annually
Aromatic volatile organics	Semi-annually
Specific conductivity	Quarterly
TOC	Semi-annually
TOX	Semi-annually

In July of 1983, LB&G installed wells 6 and 7 to establish the local groundwater flow direction. LB&G completed two quarterly samplings on August 15, 1983 and November 14, 1983 before the DEP added the indicator parameters of specific conductivity, total organic carbon (TOC), and total organic halide (TOX). Because these indicator parameters were not measured in August and November 1983, it was not possible to make a statistical comparison between first and second year indicator parameters. Therefore, Mr. Stark recommended that the 1983-1984 program be substituted for the first year of analytical results (1981-1982). LB&G agreed with his recommendation, discarded the first year of data and began the monitoring program anew in 1983.

The final two quarterly samples of the (now) first year of sampling were taken on February 13, 1984 and May 9, 1984.

Laboratory analysis for each of the four quarters was performed by the Environmental Science Corporation (ESC) of Middletown, Connecticut.

The "first" year summary report was prepared on November 6, 1984. In that report, the results of the groundwater sampling indicated that separately or in combination, total and hexavalent chromium, total cyanide, trichloroethylene and tetrachloroethylene had been discontinuously detected above the Connecticut Public Drinking Water Code Limits (CPDWC) in wells 1-5 and not in wells 6 and 7. Table 4.2 shows the specific exceeding parameters detected for each well. (Appendix D contains tables listing all water quality data for the first monitoring year).

It should be noted with regard to this year of sampling that the groundwater samples were not filtered prior to analysis. The CPDWC, similar to the National Interim Primary Drinking Water Regulations (NIPDWR) standards, refer to dissolved concentrations of constituents (filtered) in sediment-free drinking water. On November 14, 1984, the U.S. Army Environmental Hygiene Agency (USAEHA) observed the groundwater sampling procedures. In addition to observing the sampling, the USAEHA took replicate samples and filtered these with a Millipore hazardous waste filtration device with 0.45-micron membrane filters. An unfiltered sample for well 5 showed a chromium concentration of 0.261 milligram per filter. USAEHA's filtered sample for this

TABLE 4.2. AVCO-LYCOMING DIVISION, STRATFORD, CONNECTICUT CHEMICALS DETECTED IN GROUNDWATER SAMPLES IN CONCENTRATIONS ABOVE CPDWC LIMITS[1]

Parameter	08/18/83 MW No.	11/14/83 MW No.	02/13/84 MW No.	05/09/84 MW No.	CPDWC limits
Copper (ppm)					1.0 ppm
Chromium total (ppm)	1	1,2,4,5	3,5	3,4,5	0.05 ppm
Chromium hexavalent (ppm)	1				0.05 ppm
Cadmium (ppm)					0.01 ppm
Mercury (ppm)					0.002 ppm
Nickel (ppm)					0.70 ppm
Zinc (ppm)					5.0 ppm
Cyanide total (ppm)	1,2,3, 4,5	1,2,3	1,2,3,4	1,2,3,4	0.20 ppm
Cyanide amenable (ppm)					(2)
Benzene (ppb)					1 ppb
Toluene (ppb)					1,000 ppb
Xylenes (ppb)					(2)
1,1,1 Trichloroethane (ppb)					300 ppb
Trichloroethylene		4,5		4	25 ppb
Tetrachloroethylene (ppb)	5				20 ppb
Chloroform (ppb)					100 ppb

1. Connecticut Public Drinking Water Code.
2. Not available.

same well contained 0.011 milligrams per liter of chromium. Therefore, as illustrated in this sample, it may not be appropriate to compare unfiltered sample values to the NIPDWR or CPDWC standards. This point was not considered by LB&G when they presented their conclusions in the summary report.

In that report, LB&G stated that "the detection of these chemicals in wells adjacent to the existing surface impoundments suggests that these chemicals are leaking from the impoundments into the shallow groundwater aquifer."

LB&G went on to conclude that a more extensive monitoring system was not necessary for the following reasons:

1. The total absence of any existing or potential future groundwater users in the area.
2. The relatively low concentrations of contaminants detected near the suspected sources.
3. The close proximity of the site to a discharge area where the concentrations of groundwater contaminants would be further diluted.
4. Plans to build a new treatment facility would include the removal and treatment of the contaminated material from the impoundment areas, thus removing the source of contamination.

LB&G also stated that with the present design of the program, statistical analysis was not possible because of the absence of TOC, TOX and specific conductance data for the first two quarters. However, this analysis was considered "probably not necessary" to show the impact of the lagoons on the groundwater because there are definite signs that the lagoons are affecting the quality of the upper-most aquifer.

1.3 1984-1985

The "second" year of detection monitoring began on October 10, 1984 with the first quarter of sampling. Subsequent quarterly samples were taken on January 24, 1985, April 26, 1985 and August 8, 1985. All laboratory analyses were performed by ESC.

The second year summary report, dated November 14, 1985, again showed that total chromium and total cyanide were detected above the CPDWC limits in wells 1-5 (Table 4.3). (Samples taken during the fourth quarter were submitted to the laboratory as both filtered and unfiltered samples in order to view any discrepancies caused by the sampling technique.) A review of the data also revealed that with the exception of increasing trends in TOC and TOX values no significant changes in water quality had occurred. (See Appendix D for actual analysis data.)

The conclusions of the second year report simply reiterated those of the first year's. Again, the surface impoundments were considered to be having an impact on the shallow groundwater system in the nearby area due to detected concentrations of contaminants above the CPDWC. One new piece of information provided by this report was a determination of the mean and variance background data for the contamination index parameters

(TOC, TOX, pH and specific conductance) based on the results of what L, B & G considered to be the upgradient wells: 6 and 7 (Table 4.4). With this information, subsequent year's of groundwater monitoring data could be compared to these background values using the Cochran's approximation of the Behren's-Fisher Student's t-test to determine if there has been a statistical increase in the indicator parameters.

TABLE 4.3. AVCO-LYCOMING DIVISION, STRATFORD, CONNECTICUT CHEMICALS DETECTED IN GROUNDWATER SAMPLES IN CONCENTRATIONS AT OR ABOVE CPDWC LIMITS(1) (SECOND YEAR MONITORING PROGRAM)

Parameter	Date 10/10/84 MW No.	01/24/85 MW No.	04/26/85 MW No.	08/08/85 MW No.	CPDWC limits (ppm)
Chromium (total) ppm	1	3,5	3,5	3(2),5(3)	0.05
Cyanide (total) ppm		2		3	0.2

1. Connecticut Public Drinking Water Code
2. Dissolved equals 0.02 ppm (filtered). Total equals 0.07 ppm.
3. Dissolved equals 0.03 ppm (filtered). Total equals 0.10 ppm.

Although this analysis had not yet been performed, the contaminants chromium and cyanide showed an observed trend of consistently appearing in wells 3 and 5. Due to these increased concentrations Metcalf & Eddy, Inc. was retained by the U.S. Army Corps of Engineers, New York Division, in September 1985 to perform hazardous waste management services at the Avco facility. These services include (among others) the following activities:

TABLE 4.4. AVCO-LYCOMING DIVISION,
STRATFORD, CONNECTICUT
MEAN AND VARIANCE FOR UPGRADIENT WELLS
WELLS 6 AND 7

Well 6 Parameter		Sampling Date 01/24/85	08/08/85
TOC ppm		12	24
		16	27
		17	35
		29	20
	Mean:	18.5	26.5
	Variance:	53.67	40.33
TOX ppb 1/		*10	215.0
		*10	851.5
		*10	35.0
		*10	170.0
	Mean:	10	317.9
	Variance:	0.00	132,408
pH		6.70	6.50
		6.70	6.50
		6.70	6.60
		6.70	6.60
	Mean:	6.70	6.55
	Variance:	0.00	0.0033
Specific conductance umhos/cm		2500	1650
		2500	1650
		2500	1650
		2500	1650
	Mean:	2500	1650
	Variance:	0.00	0.00

TABLE 4.4 (Continued). AVCO-LYCOMING DIVISION, STRATFORD, CONNECTICUT
MEAN AND VARIANCE FOR UPGRADIENT WELLS
WELLS 6 AND 7

Well 7 Parameter		Sampling Date 01/24/85	08/08/85	Upgradient Water/Chemistry Mean and Variance (MW-6 and MW-7)
TOC ppm		14	13	
		27	20	
		35	11	
		20	16	
	Mean:	24	15.00	Background mean: 21
	Variance:	82.00	15.33	Background variance: 60
TOX ppb 1/		*10	58.0	
		*10	163.5	
		*10	193.0	
		*10	176.0	
	Mean:	*10	590.5	Background mean: 232.8
	Variance:	0.00	147.6	Background variance: 66,620
pH		6.5	6.4	
		6.5	6.3	
		6.5	6.4	
		6.48	6.3	
	Mean:	6.50	6.35	Background mean: 6.52
	Variance:	0.0001	0.003	Background variance: 1.81
Specific Conductance umhos/cm		1600	1500	
		1600	1500	
		1600	1490	
		1600	1490	
	Mean:	1600	1495	Background mean: 1,811.25
	Variance:	0.00	33.33	Background variance: 172,011.57

* Denotes less than
1/ Fourth quarter sample obtained August 22, 1985.

(1) Drill borings in the vicinity of the four lagoons to determine the extent of soil contamination at the site. (Contaminated soil is defined as soil contaminated above background.)

(2) Install additional groundwater monitoring wells to determine the local ground flow direction and to determine the extent of groundwater contamination.

In September 1985, soil borings were taken and additional monitoring wells No. 8-13 were installed at various locations around the surface impoundments. The six new monitoring wells combined with the original seven wells comprise the existing 13-well groundwater monitoring network which is intended to provide the components necessary to address the groundwater monitoring assessment program. Therefore, the third year of groundwater quality data is addressed under Section VIII, Summary of Assessment Monitoring Data, and will be used to ascertain the rate, extent and concentration of contaminant movement.

SECTION V

APPROACH FOR CONDUCTING ASSESSMENT MONITORING PROGRAM

As a result of suspected contaminant leakage from one or more of the Avco-Lycoming surface impoundments, a detailed groundwater assessment program has been established and will be implemented. The primary objectives of the groundwater assessment program will be to determine the extent of all hazardous waste constituents in the uppermost aquifer leaking from Avco-Lycoming surface impoundments and estimate the rate of migration of those constituents in groundwater.

In achieving those objectives, this groundwater assessment program, in the following sections, will outline the construction details of existing groundwater monitoring wells (Section VI), the sampling and analyses procedures of the uppermost aquifer (Section VII), the summary and reporting of the monitoring data (Section VIII), the procedures to determine the extent and rate of contaminant migration (Section IX), and a schedule of implementation. The existing groundwater database has been used to develop the assessment program and identify specific program deficiencies and methods to correct those deficiencies.

Specific items that were deficient in the previous groundwater assessment program include:

1. A detailed interpretation of the site hydrogeology
2. An estimate of any tidal influences on local groundwater flow

3. Estimates of vertical groundwater gradients

4. Determination of aquifer parameters of the site

5. Interpretation of contaminant plume on a yearly basis

6. A schedule for implementing the groundwater assessment program, and

7. A single survey of all monitoring wells tied to a mean sea level datum.

Each of these items is addressed in this assessment monitoring plan. Items 1, 2 and 3 are addressed in Section II of this plan. Items 4 and 5 are addressed in Section IX, and item 6 is addressed in Section X. Item 7 was addressed on Monday 29 December 1986. Monitoring well survey data is contained in Appendix C and is reflected in all figures in this plan.

This assessment monitoring plan has been designed around a direct method of sample collection and chemical analysis to determine actual water quality. This method includes the use of seven original groundwater observation wells (Detection System) and six additional observation wells. Together, the 13 wells comprise the Assessment Monitoring System.

Assessment Monitoring data will be collected, at a minimum, on a quarterly basis. Water elevations, depth to sediment in the well, and general condition of the well will be noted on each sampling date. Thirteen groundwater samples will be extracted, packaged, shipped, and analyzed according to the sampling and analyses procedures outlined in Section VII. The method and procedures for evaluating the assessment monitoring data is described in Section IX.

SECTION VI

EXISTING ASSESSMENT MONITORING SYSTEM

As described in Section III, thirteen (13) groundwater monitoring wells comprise the groundwater assessment monitoring program for the AVCO-Lycoming facility. The wells were installed on three different dates:

Wells	Date Installed	Contractor
1-5	November 1981	Roy F. Weston
6 & 7	July 1983	Leggette, Brashears & Graham
8 - 13	September 1985	Metcalf & Eddy

A schematic diagram of the monitoring well construction is presented in Figure 3.1, elevations of individual well screens and groundwater measuring points are presented in Figure 2.8, and the locations of all assessment monitoring wells are presented in Figure 2.1.

6.1 Assessment Monitoring Wells

The uppermost aquifer beneath the Avco-Lycoming facility is comprised of a fairly uniform silty sand over a less silty sand, at approximately 20 feet, that contains some discontinuous peat layers. While no borings or observation wells have been drilled to the bottom of the aquifer, published reports cite the depth to bedrock at approximately 120 feet. Major groundwater discharge areas include Frash Pond, the mouth of the Housatonic River, the

Marine Basin and the numerous wetlands surrounding the Igor Sikorsky Memorial Airport.

Analyses of local flow directions and vertical gradients presented in Section II propose a southeasterly groundwater flow toward the tidal drainage ditch. Even under varying mounding conditions the method demonstrated increasing upward vertical gradients around the tidal drainage ditch. Groundwater discharging to the tidal ditch which drains to the Marine Basin, effectively extending the basin's influence as a groundwater discharge area to the Avco-Lycoming facility.

Based on the demonstrated location of a local groundwater discharge area at the tidal drainage ditch and an assumed southeasterly groundwater flow direction toward the ditch, existing monitoring wells that are considered as being upgradient of the hazardous waste management units are Wells 6, 7 and 12. As Figure 2.8 demonstrates, Wells 6 and 7 are screened a minimum of 10 feet below any measured water table, while well 12 is screened almost at the water table. This vertical screen distribution provides 20 feet of vertical-upgradient groundwater sampling in the top 25 feet of the uppermost aquifer. Wells 1, 2, 3 and 5, by virtue of their locations adjacent to the three sludge and equalization lagoons, are point of compliance wells in the assessment monitoring program. Wells 8, 9, 11 and 13 are downgradient of the hazardous waste management units, and serve as downgradient migration points in the groundwater assessment monitoring program. These wells should provide sufficient information pertaining to migration downgradient of the management lagoons.

6.2 Limitations of Assessment Monitoring System

Although the Avco-Lycoming assessment monitoring system is an existing groundwater monitoring network, a number of system deficiencies have been identified. Along with the deficiencies, corrective actions have been developed and will be implemented. The following table presents a list of the noted system deficiencies along with their proposed corrective actions:

	Limitations	Corrective Actions
1.	Extent of tidal influences	Continuous time series monitoring of groundwater elevations over a complete tidal cycle(1)
2.	Runoff protection seals for monitoring wells.	Re-seal wells 4,8,11 & 13 and install seals in wells 1,2,3, & 5
3.	Missing monitoring well caps	Provide vented caps for those uncovered inside casings
4.	Protective stanchions in traffic areas	Provide stanchions on wells 6,7,12 & 13
5.	Siltation in wells 1,2,3,4, 5,6, & 7	Redevelop those wells using the surge and pump technique(1)
6.	Incomplete aquifer perm-eability data.	Perform stress and slug tests on wells 1,3,4,6,7,8,9 & 11(1)
7.	Rate of groundwater and contaminant movement in the uppermost aquifer.	Using the results from the proposed aquifer tests, estimate groundwater and contaminant movement.(1)

8.	Data gaps for shallow parts of the aquifer in the central part of the facility due to the spatial distribution of the deep and shallow wells.	Place a well-point piezometer in the tidal drainage scale at the site. The piezometer will provide additional information pertaining to the potentiometric surface.

1) See Section IX for detailed explanation of proposed tests and methods

SECTION VII
SAMPLING AND ANALYSES PROCEDURES

The objective of Metcalf & Eddy's sampling and analysis program is to ensure that all measurement, data gathering, and data generation activities yield data that are of adequate quality for the intended use. The key to achieving this objective is the successful implementation of project specific Quality Assurance and Quality Control procedures for all such activities.

This section identifies site specific sampling, analysis and quality control procedures for the groundwater monitoring activities at Avco-Lycoming Textron of Stratford Connecticut and specifically addresses sampling, analysis and Quality Assurance (QA) issues for groundwater monitoring at that site. This section outlines the procedures and methods to be employed for all sampling episodes conducted by Avco and its subcontractors.

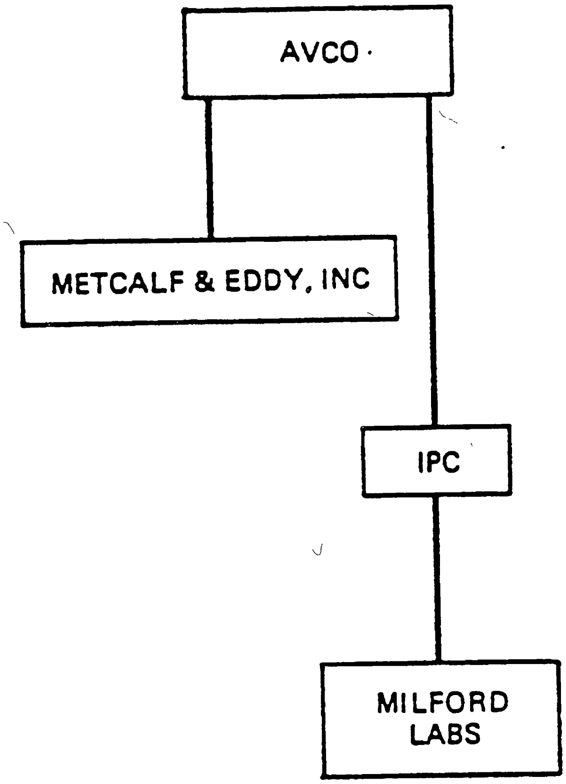
The procedures set forth in this section have been prepared according to guidelines presented in the EPA document "Interim Guidelines and Specifications for Preparing QAPP's" QAMS-005/80 as well as the guidelines established by EPA (August 26, 1985) based upon the type of work being performed and the intended use of the data.

7.1 Organization and Responsibility

Figure 7.1 presents the Organizational Chart for sampling and analysis activities and identifies the individuals responsible for each element of the overall program.

. FIGURE 7.1

ORGANIZATION CHART



The subcontract laboratory, which will provide analytical services during the sampling episodes, will be Milford Labs of Milford Connecticut. Milford Labs is to provide Avco with environmental analysis services together with technical support in the application of the chemical data produced, and stands committed to providing chemical measurements of a quality consistent with project needs and requirements in a reasonable time while maintaining cost control. The actual sampling and field measurements are the responsibility of the Westport Connecticut based firm of IPC; an organization which recognizes the need for field data to be representative of the environmental conditions under consideration, to be valid and reliable as well as suitable for making decisions that involve public health and safety, property rights, and legal liabilities. IPC is committed to employing proper field protocol, acquiring appropriate equipment suitable to the protocol, maintaining such equipment in good condition, securing qualified staff, and to coordinating all aspects of operation so as to produce a useful report.

7.2 Sampling

All sampling methods described in this section are project specific SOP's based on recognized USEPA procedures.

Selection of Sampling Locations

Information obtained during the initial records review and site visit was compiled and reviewed to assist with selection of sampling locations for groundwater.

The selection of actual sampling locations was made by utilizing the preliminary information in conjunction with several criteria necessary to collect representative samples from the Avco site:

1. Locations were selected to maximize the ability to intercept a contamination migration plume from on-site contamination, if one exists. This criteria was considered for the location of groundwater monitoring wells.
2. Sampling locations were positioned near areas with the greatest potential for contamination within the site.
3. Where possible, groundwater sampling locations have been selected to characterize all major work areas and boundaries of the site.

   The sampling locations for groundwater are presented in Figure 7.2.

Groundwater Sampling

Thirteen (13) groundwater monitoring wells have been previously installed at the site. The well locations were chosen to provide upgradient or background wells, in addition to wells which were anticipated to intercept the groundwater flow from areas of potentially high contamination.

Measurements from the first two years of detection monitoring have indicated no violation of the CPDWC standards at Wells 6 and 7, but violation of these standards has been noted on

NOTES:

1. BASE MAP FROM METCALF & EDDY SURVEYS 1985 & 1986.
2. ALL ELEVATIONS REFERENCED TO MEAN SEA LEVEL.

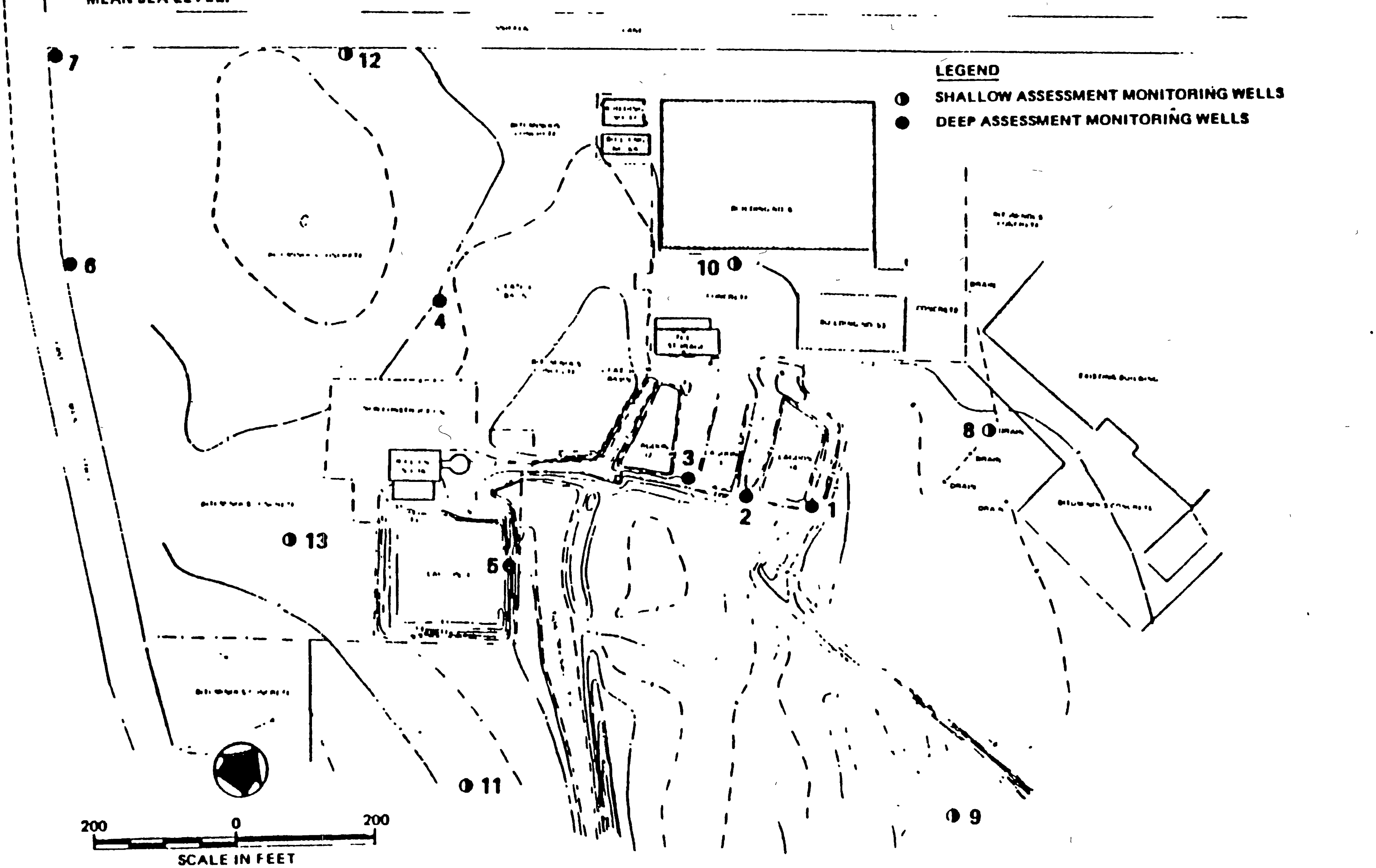


FIGURE 7.2 LOCATION OF EXISTING GROUNDWATER ASSESSMENT MONITORING WELLS

METCALF & EDDY

occasion at wells 1 through 5. Based on these considerations, and an assumed southeasterly groundwater flow direction, Wells 6, 7, and 12 are considered to represent background water that has not been affected by leakage from the surface impoundments. Wells 8, 9, 11 and 13 will be used to monitor for any migration of contaminants away from the surface impoundments.

Groundwater monitoring wells 1, 2, 3 and 5 should qualify as point of compliance wells because they are located so that any off-site migration of hazardous constituents should pass through these wells.

Samples to be Collected

Table 7.1 summarizes the samples to be collected as described above and identifies the parameters to be measured on each sample.

Sample Collection Methods for Groundwater Monitoring Wells

Each of the thirteen groundwater monitoring wells will be sampled on a quarterly basis for a duration of 30 years beyond closure of the surface impoundments. As shown in the previous Table 7.1, certain field generated quality control samples will be collected and submitted to the analytical laboratory. Before a sample is collected from a well, the standing water level and depth to the bottom of the well will be measured and recorded. The well will be pumped with clean, decontaminated equipment to

TABLE 7.1
Samples to be Collected and Parameters to be Analyzed
Avco Lycoming Textron

Description of Sample	Total Samples Collected	Parameter List(1)
13 groundwater monitoring wells, 2 field duplicates	15[2]	Dissolved[3] Cd, Cr^{+6}, Cr^{T}, Cu, Hg, Ni, Zn; Total and Amenable Cyanide; Total Organic Carbon[4]; Total Organic Halides[4]; Halogenated and Aromatic volatile organics
Travel/Trip blanks	2[2]	Halogenated and Aromatic Volatile Organics
Sampling/Field Decon blanks	2[2]	Dissolved[3] Cd, Cr^{+6}, Cr^{T}, Cu, Hg, Ni, Zn; Total and Amenable Cyanide; Total Organic Carbon[4]; Total Organic Halides[4]; Halogenated and Aromatic volatile organics
Field Filtration blanks	2[2]	Dissolved[3] Cd, Cr^{+6}, Cr^{T}, Cu, Hg, Ni, Zn

(1) As specified by CTDEP, page XIV-4 of Avco Lycoming Part B application (October, 1985 Metcalf & Eddy);
(2) Assumes two sampling teams for 1 day; (i.e. 1 QC sample per day per team)
(3) As discussed on page XIV-6 of Avco Lycoming Part B Application, (October 1985; Metcalf & Eddy) the CPDWC, similar to the National Interim Primary Drinking Water Regulations (NIPDWR) standards, refer to dissolved concentrations of constituents (filtered) in sediment free water. Therefore, all metals are to be determined on samples after filtration through a 0.45um membrane in the field
(4) Must be determined in quadruplicate (four replicate analyses) per 40 CFR §265.92 (b)(3) and (c)(2) of 40 CFR Part 265 "Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage and Disposal Facilities"

remove a quantity of water equal to five times the submerged volume of well casing. If the well does not recharge fast enough to permit removing five casing volumes, the well shall be pumped to dryness and subsequently sampled as soon as sufficient recharge has occurred.

In particular, a standard operating procedure for well sampling has been prepared for this project and is presented below.

<u>Sampling Procedure -- Avco Groundwater Monitoring Wells</u>

The equipment required for each sampling team includes:

1. Stainless steel weighted tape to measure the standing water level and depth of well. "Chalking" of the tape will not be allowed during this operation.
2. Bladder, Fultz, or positive displacement hand pump to purge the well. Entire pump and discharge lines to be constructed of non-contaminating materials and decontaminated before use.
3. Teflon bailers to collect the sample. Teflon bailers are typically closed top, 1.66" O.D., five feet in length, with ball valves at top and bottom. Bailers will be inscribed with sequential numbers for stock tracing.
4. Woven nylon rope to be used as leader line for bailers. A new length of clean rope will be prepared for sampling at each well.

5. Glass funnels to facilitate filling sample bottles (not VOA vials) may be used if properly cleaned before use. Preferably, the laboratory should be instructed to provide wide-mouth bottles.
6. Sample bottles prepared per standard lab washing procedure described in Section 7.3.
7. Disposable polystyrene cups for collection of field monitoring aliquots. Temperature, pH, and conductivity will be measured in these aliquots.
8. Thermometer for monitoring temperature, meeting ASTM specifications.
9. pH meter.
10. Conductivity meter.
11. Fisher Scientific "buffer pak®" containing factory prepared, certified, dated, pH standards of 4.0, 7.0, and 10.0 pH units.
12. Single use KCl calibration standard (molar concentration per manufacturer's recommendations) for calibration of conductivity meter.

General: Sampling will proceed beginning with the wells located in the areas of least contamination (up gradient) and proceeding to areas of most contamination.

<u>Procedure</u>

1. Calibrate pH meter with two buffers before each use. Select standard buffers which will bracket the pH of the sample to

be measured. Calibrate conductivity meter with standard KCl solution according to manufacturer's instructions. Record in field book.

2. Unlock protective casing on well.
3. Using decontaminated measuring tape (refer to SOP for decontamination, Section 7.3), measure and record in field book the static groundwater level in the well, and then the depth to the bottom of the well.
4. Using the measured depth of standing water and a well volume table for that diameter well, note and record the volume of standing well water corresponding to the measured depth.
5. Using the decontaminated purging pump (refer to 7.3 for decontamination), purge five well volumes from the well. The volumes will be estimated by discharging all purge water to a calibrated container. During the purging, the temperature, conductivity, and pH will be measured and recorded at intervals no greater than every 15 minutes. Purging will be stopped after five well volumes have been pumped providing pH and conductivity readings have stabilized. (i.e., any given pH or conductivity reading demonstrates no more than a 10% change from the previous reading.) A minimum of three readings is required. The discharged water is to be containerized and ultimately discharged to the facility treatment system. Do not dispose of the discharge water by allowing it to drain on the ground.

6. Withdraw two full bailers of groundwater from the well prior to sampling. Use a freshly decontaminated bailer and length of unused nylon rope which has been dedicated for that well. The rope must not contact the ground.

7. Using the same bailer and nylon rope, collect groundwater samples from the well. Record time at beginning and end of bailing. During sample collection, the rope and bailer must not touch the ground or any objects except the well casing. Personnel filling sample bottles must wear new PVC gloves.

8. Immediately transfer the groundwater sample directly from the bailer to the appropriate sample containers. Fill VOA vials directly from the bailer, avoid bubbling of sample, and eliminate all air bubbles from vials. The use of a decontaminated glass funnel may be used to facilitate sample transfer to all other bottles. Field filtration of samples for metals is required and should be performed as follows:

   a. Withdraw 100 ml of sample to be filtered into a new 120CC disposable, polyethylene syringe.

   b. Invert syringe and attach an Acrodisc® 0.45) membrane filter to the filled syringe.

   c. Hold filter/syringe assembly upright over the sample bottle and gently depress plunger of syringe to discharge filtrate directly into sample bottle.

   d. Remove Acrodisc from syringe.

   e. Refill syringe as before.

f. Attach a new Acrodisc to syringe and proceed as in c above.

g. Continue until required volume of filtrate has been collected.

h. Prepare a field/filtration blank by passing a volume of blank water equal to the volume of filtrate collected through new Acrodiscs in the same manner as samples.

i. One filtration blank per LOT of filters used is sufficient to demonstrate the absence/presence of metallic impurities in the filter/syringe assembly.

j. Preserve filtrates to pH <2 with nitric acid.

9. Collect a final sample aliquot, and dispense into 4 separate disposable containers. Immediately measure and record pH, temperature, and conductivity on each of the four containers. Always measure temperature first, conductivity second and pH last.

10. Immediately label and place all sample bottles in iced shipping coolers. Record sampling details in field log book and complete chain of custody forms.

11. Repeat Steps 6 through 9 to satisfy duplicate sample requirements.

12. Decontaminate all sampling equipment according to Standard Operating Procedures. Obtain a sampling/field blank after collection of the samples from the last well as follows:

a. Obtain a large quantity of fresh, deionized, analyte-free water in glass containers from the subcontract laboratory.

b. Pour the deionized water through all decontaminated sampling equipment as in field procedure.

c. Dispense into proper sample containers.

This sampling/field blank will verify that proper field equipment decontamination has been performed.

13. After all samples have been taken from a given well, decontaminate the pH, conductivity, and temperature monitoring equipment. The used bailer shall be placed in an appropriate contaminated equipment storage bag for transportation. Discard all contaminated gloves.

14. Replace protective inner cap and lock well.

15. Ship samples to appropriate laboratory according to Standard Operating Procedures for sample packaging and shipping.

7.3 Decontamination Protocol

The cleaning procedures outlined in this section are to be used by all personnel to clean sampling and other field equipment as well as sample containers prior to field use. Sufficient clean equipment and sample containers should be transported to the field so that the entire investigation can be conducted without the need for cleaning equipment in the field. Since this will not always be possible when using specialized field equipment, field cleaning procedures are included to cover these special problem areas.

These procedures are the standard operating procedures (SOP) for the Avco project; <u>any</u> deviation from them <u>must</u> be documented in field records and investigative reports.

Cleaning Materials

The cleaning materials referred to throughout this section are defined in the following paragraphs.

The laboratory detergent shall be a standard brand of phosphate-free laboratory detergent such as Sparkleen® or Liquinox®. The use of any other detergent must be justified and documented in the field log books.

The nitric acid solution shall be made from ACS reagent-grade nitric acid and laboratory deionized water.

The standard cleaning solvent shall be pesticide-grade isopropanol. Pesticide-grade acetone or methanol is not acceptable. Pesticide-grade methanol is much more hazardous to use than pesticide-grade isopropanol and its use is discouraged. Pesticide-grade hexane and petroleum ether are not miscible with water; therefore, these two solvents are not effective rinsing agents. The use of any solvent other than pesticide-grade ispropanol for equipment cleaning purposes must be justified and its use must be documented in field log books and inspection or investigation reports.

Tap water may be used from any municipal water treatment system. The use of an untreated or non-potable water supply is not an acceptable substitute for tap water.

Deionized water is defined as tap water that has been treated by passing it through a standard deionizing resin column. Most commercial systems utilize a 5-micron prefilter followed by a mixed bed deionization unit to produce deionized water. The deionized water should contain no heavy metals or other inorganic compounds. Organic-free water is defined as tap water that has been treated with activated carbon and deionizing units. Usually, commercial units utilize a 5-micron prefilter, activated carbon unit, two mixed bed deionizing units (in series), a 0.2 micron post filter, and a postcarbon filter to produce organic-free water. Organic-free water should contain no pesticides, herbicides, extractable organic compounds, and less than 50 ug/l of purgeable organic compounds as measured by a low level GC/MS scan.

The brushes used to clean equipment as outlined in the various paragraphs of this procedure shall not be of the wire-wrapped type.

The solvent, nitric acid solution, laboratory detergent, and rinse waters used to clean equipment shall not be reused, except as specifically permitted.

Marking of Cleaned Sampling Equipment and Containers

All equipment and sample containers that are cleaned utilizing these procedures shall be labeled or marked with the date that the equipment was cleaned. Also, if there was a deviation from the standard cleaning procedures outlined in this section, this fact should be noted on the label.

When sample containers are cleaned and prepared, they should be cleaned in standard sized lots to facilitate the quality control procedures outlined in Section 7.3.

Marking and Segregation of Used Field Equipment

Field or sampling equipment that needs to be repaired shall be identified with a red tag. Any problems encountered with the equipment and needed repairs shall be noted on this tag. Field equipment or reusable sample containers needing cleaning or repairs shall not be stored with clean equipment, sample tubing, or sample containers. Field equipment, reusable sample containers, disposable sample containers, and sample tubing that are not used during the course of an investigation may not be replaced in storage without being recleaned if these materials have been transported to an area of the Avco site where herbicides, pesticides, organic compounds, or other toxic materials are present or suspected of being present.

Decontamination of Equipment Used to Collect Samples of Toxic or Hazardous Waste

Equipment that is used to collect samples of known hazardous materials or toxic wastes or materials from hazardous in-process waste streams on this site, shall be decontaminated before it is returned from the field. At a minimum, this decontamination procedure shall consist of washing with laboratory detergent and rinsing with tap water. More stringent decontamination procedures may be required, depending on the waste sampled (such as: additional solvent washing, pyrolysis, or the use of disposal equipment).

Proper Disposal of Cleaning Materials

Ordinary wastewater will be disposed at the headworks of the facility treatment system. Any solvent used shall be collected and disposed of by allowing it to evaporate under a fume hood or be containerized and disposed of through an approved hazardous waste disposal contract. Similarly, spent nitric acid shall be collected and disposed of through the same disposal contract. These procedures apply whether the cleaning operations take place in a laboratory or in the field.

Use of Safety Procedures to be Utilized During Cleaning Operations

The materials used to implement the cleaning procedures outlined in this SOP can be dangerous if improperly handled. Caution must be exercised by all personnel and all applicable safety procedures shall be followed. At a minimum, the following precautions shall be taken in the lab and in the field during these cleaning operations:

1. Safety glasses with splash shields or goggles, neoprene gloves, and a neoprene laboratory apron will be worn during all cleaning operations.
2. All solvent rinsing operations will be conducted under a fume hood or in the open (never in a closed room).
3. No eating, smoking, drinking, chewing, or any hand to mouth contact shall be permitted during cleaning operations.

Storage of Field Equipment and Sample Containers

All field equipment and sample containers shall be stored in a contaminant free environment after being cleaned using the procedures outlined in this section.

Sampling Equipment Cleaned in the Field

The effectiveness of field cleaning procedures shall be monitored by rinsing field cleaned equipment with organic-free water and submitting the rinse water in standard sample containers to the laboratory for analysis (sampling/field blank).

Cleaning Procedures For Teflon® Or Glass Field Sampling Equipment Used For The Collection Of Samples For Trace Organic Compounds And/Or Metals Analyses*

1. Equipment will be washed thoroughly with laboratory detergent and hot water using a brush to remove any particulate matter or surface film.
2. The equipment will be rinsed thoroughly with hot tap water.
3. Rinse equipment with at least a 10 percent nitric acid solution.**

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* - When this sampling equipment is used to collect samples that contain oil, grease or other hard to remove materials, it may be necessary to rinse the equipment several times with pesticide-grade acetone or hexane to remove the materials and steam clean the field equipment before proceeding with Step 1. If the field equipment cannot be cleaned utilizing these procedures, it should be discarded.

** - Small and awkward equipment such as bottle lid inserts and well bailers may be soaked in the nitric acid solution

4. Rinse equipment thoroughly with tap water.
5. Rinse equipment thoroughly with deionized water.
6. Rinse equipment twice with solvent and allow it to air dry.
7. Wrap equipment completely with solvent rinsed aluminum foil to prevent contamination during storage and/or transport to the field.
8. Rinse the Teflon® or glass sampling equipment thoroughly with tap water in the field as soon as possible after use.

Miscellaneous Equipment Cleaning Procedures

Well Sounders or Tapes Used to Measure Ground Water Levels

1. Wash with laboratory detergent and tap water.
2. Rinse with tap water.
3. Rinse with deionized water.
4. Equipment should be placed in a Polyethylene bag or wrapped with Polyethylene film to prevent contamination during storage or transit.

Ice Chests and Shipping Containers

All ice chests and reusable containers will be washed with laboratory detergent (interior and exterior) and rinsed with tap water and air dried before storage. In the event that an ice

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instead of being rinsed with it. Fresh nitric acid solution should be prepared for each cleaning session.

chest becomes severely contaminated with concentrated waste or other toxic material, it shall be cleaned as thoroughly as possible and disposed of properly.

Vehicles

All vehicles utilized should be washed at the conclusion of each field episode. This routine maintenance should minimize any chance of contamination of equipment or samples due to contamination of vehicles. It shall be the responsibility of the Project Engineer and/or field investigators to see that this procedure is followed.

Preparation Of Sample Containers

General

No sample container will ever be reused. All sample containers will be stored in their original packing cartons. When packages of uncapped sample containers are opened, they will be placed in new plastic garbage bags and sealed to prevent contamination during storage. Specific precleaning instructions for sample containers are given in the following paragraphs.

40 ml Glass Vials for Water Samples (Purgeable Organic Compounds Analysis) and 250 ml Amber Glass Narrow Necked Bottles for Water Samples (TOX Analysis) with Teflon® Lined Septa;

1. Wash vials, bottles and jars, Teflon® liners and septa, and caps in hot tap water and laboratory detergent.

2. Rinse all items with deionized water.

3. Oven dry at 125°C overnight.

4. Allow all vials, bottles, jars, liners, and septa to cool in an enclosed contaminant-free environment.

5. Seal vials, bottles, and jars with liners or septa as appropriate and cap.

6. Store vials, bottles, and jars in a contaminant free area.

One Liter Polyethylene Bottle for Metals and General Inorganics

1. Wash Polyethylene bottles and caps in hot water with laboratory detergent.

2. Rinse both with at least 10% nitric acid solution

3. Rinse three times with deionized water.

4. Invert bottles and dry in contaminant free environment.

5. Cap bottles.

6. Store in contaminant free area.

7.4 Sample Handling and Chain of Custody

An overriding consideration for environmental measurement data is the ability to demonstrate that samples have been obtained from the locations stated and that they have reached the laboratory without alteration. Evidence of collection, shipment, laboratory receipt and laboratory custody until disposal must be documented to accomplish this. Documentation is accomplished through a chain of custody record that records each sample and the individuals responsible for sample collection, shipment, and receipt. A sample is considered in custody if it is:

- In a person's actual possession.
- In view after being in physical possession.
- Locked so that no one can tamper with it after having been in physical custody.
- In a secured area, restricted to authorized personnel.

Sample custody will be initiated by field personnel upon collection of samples. Documents specifically prepared for such purposes will be used for recording pertinent information about the types and numbers of samples collected and shipped for analysis. An example chain of custody form is included as figure 7.3. The samples collected will first be brought to an on-site location for batching and paperwork checks. Labels and log information are checked to be sure there is no error in identification. Samples are packaged to prevent breakage or leakage, and labeled according to DOT regulations for transport by air as laboratory samples. These procedures are outlined in Section 7.7. Copies of forms will be maintained for the project record. Storage of samples by the laboratory will be under conditions specified for the analyses to be performed. Samples partially used for analysis will be held for 60 days following report of the data before disposal. Archived samples will be stored until the end of the project, or shipped to another lab (for reanalysis if necessary).

Chain of Custody Record Form

Figure 7.3 is an example of the chain of custody form to be used while collecting and shipping samples from the Avco site.

The chain of custody form shall be signed by each individual who has had the samples in their possession. Preparation of the chain of custody form shall be as follows:

- The chain of custody record shall be initiated for every sample by the person collecting the sample. Every sample shall be assigned a unique identification number that is entered on the chain of custody form. Samples can be grouped for shipment using a single form.

- The record shall be completed in the field to indicate project, sampling team, etc.

- The person transporting the samples for shipment shall sign the record form as Transported By _______.

- Because the samples are to be shipped to the laboratory by commercial carrier, the chain of custody form shall be sealed in a watertight envelope, placed in the shipping container, and the shipping container sealed prior to being given to the carrier.

- The commercial carrier's airbill shall serve as an extension of the chain of custody record between the final field custodian and receipt in the laboratory.

- Upon receipt in the laboratory, the Quality Control Coordinator, or representative, shall open the chain of custody record, and sign and date the record. Any discrepancies shall be noted on the chain of custody form.

- If discrepancies occur, the samples in question shall be segregated from normal sample storage and the field personnel immediately notified.

- Chain of custody records shall be maintained with the specific project files, becoming part of the permanent project documentation.

FIGURE 7.3

CHAIN OF CUSTODY RECORD

PROJ. NO.	PROJECT NAME	NO. OF CON-TAINERS
SAMPLERS: (Signature)		

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CON-TAINERS							REMARKS

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks	

Distribution. Original Accompanies Shipment, Copy to Field Files

METCALF & EDDY

Field Collection and Shipment

In addition to initiating the chain of custody form, field personnel are responsible for uniquely identifying (required for the chain of custody form) and labeling samples, providing proper filtration and preservation, and packaging samples to preclude breakage during shipment.

Every sample shall be labeled so as to include:

- Project number.
- Unique sample number.
- Sample description (such as well number and depth).
- Sampling data and time.
- Person obtaining the sample.
- Method of sample preservation/filtration, if any.

Samples must be placed in containers compatible with the intended analysis and properly preserved. Requirements for various analytical parameters with respect to the type of container, preservation method, and maximum holding time between collection and analysis have been presented in other sections.

Shipping containers are to be sealed prior to shipment, both during direct transport via field personnel as well as when commercial carrier is used. The only exception to this is if sufficient holding time exists so that the samples can be held in the field and it is necessary to re-ice the containers prior to or during transport.

As soon as field personnel are ready to transport samples from the field to the laboratory, they shall notify the laboratory by telephone of the shipment. The estimated time of arrival at the laboratory should be given.

Laboratory Sample Receipt

Upon sample receipt, the QC Coordinator, sample custodian or his designee shall:

- Examine all samples and determine if proper temperature has been maintained during shipment. If samples have been damaged during shipment, the remaining samples shall be carefully examined to determine whether they were affected. Any samples affected shall also be considered damaged. It will be noted on the chain of custody record that specific samples were damaged and that the samples were removed from the sampling program. Field personnel will be notified as soon as possible that samples were damaged and that they must be resampled, or the testing program changed.

- Compare samples received against those listed on the chain of custody.

- Verify that sample holding times have not been exceeded.

- Sign and date the chain of custody form and attach the waybill to the chain of custody.

- List the samples in the laboratory sample master log-in book which contains the following information:

  - Project identification number
  - Sample numbers
  - Type of samples
  - Date received in laboratory

- Notify the Laboratory Manager of sample arrival.

- Place the completed chain of custody records in the project file.

Laboratory Storage of Samples.

The primary considerations for sample storage are:

- Maintenance of prescribed temperature. Typically four degrees Celcius is required.

- Preparing and/or analyzing samples within the prescribed holding time for the parameters of interest.

Placement of samples in the proper storage environment is the responsibility of the QC Coordinator, who should notify the Laboratory Manager or his designated representative, if there are any samples which must be analyzed immediately because of holding-time requirements.

7.5 Sample Containers and Preservation Requirements

Table 7.2 presents container requirements, preservation specifications and laboratory holding times to be adhered to during all sampling and analysis activities associated with this project.

7.6 Sample Packaging and Shipping

In order to ensure safe, secure delivery of all collected samples to the analytical laboratory involved, the following packaging, labeling and shipping procedures have been prepared for this project. All procedures presented below are written to comply with applicable DOT regulations for transportation by surface and air.

Unless information collected during on-site activities indicates otherwise, all samples collected at the Avco site will be treated as non-hazardous aqueous liquids.

Because of the expected non-hazardous nature of the collected samples, packaging and shipping criteria have been designed only to maintain chain-of-custody protocol as well as prevent breakage of the sample containers.

Packaging and Shipping - Field Procedure

1. Place a signed, dated, chain of custody seal on each of the bottles and vials in such a way that no bottles may be opened without breaking the seal.

2. Wrap properly labeled and secured glass sample bottles and purgeable vials with two thicknesses of plastic bubble wrap. Place the wrapped containers into a water-tight zip lock bag. Seal and label the outside of the bag with the sample number or other field assigned identifier.

3. Put a layer of cushioning material (e.g., styrofoam board) in the bottom of the watertight shipping containers.

4. Place sample bottles, tops up, in the shipper. Arrange bottles such that glass bottles are surrounded by plastic bottles.

TABLE 7.2

AVCO WATER SAMPLES

Parameter	Container (1)	Preservation (2)	Holding Time (3)
Aromatic Volatile Organics	3 x 40 ml, G septa vials, teflon seal	Ice, 4°C no head space or air bubbles	14 days
Halogenated Volatile Organics	3 x 40 ml, G septa vials, teflon seal	Ice, 4°C no head space or air bubbles	14 days
Dissolved Cd, Cr^T, Cu,Hg, Ni, Zn	1L, P teflon lined lid	HNO_3 to pH 2 after 0.45u filtration	6 months (4)
Dissolved Cr^{+6}	250 ml, P	Ice, 4°C	24 hours
Total and Amenable Cyanide	2 x 1L P	NaOH to pH 12; Ice, 4°C	Analyze ASAP
:al Organic Carbon (Quadruplicate)	4 x 125 ml, G teflon lined lid	H_2So_4 to pH2; Ice, 4°C no air bubbles	Analyze ASAP
Total Organic Halide (Quadruplicate)	4 x 250 ml, G teflon septa lid	Ice, 4°C; protect from light; no air bubbles	Analyze ASAP

(1) G, glass; P, Polyethylene with teflon-lined polyethylene cap

(2) Sample preservation will be performed in the field immediately upon sample collection.

(3) Samples should be analyzed as soon as possible after collection. The times listed are the maximum times that samples may be held before analysis and still be considered valid. Samples may be held for longer periods only if the laboratory has data on file to show that the specific types of samples under study are stable for the longer time, and has received a variance from the Regional EPA Administrator. Some samples may not be stable for the maximum time period given in the table. A laboratory is obligated to hold the samples for a shorter time if knowledge exists to show that this is necessary to maintain sample stability.

(4) 28 day holding time for mercury.

TABLE 7.2 (Continued)

(5) Use pieces of rigid styrofoam as necessary to ensure that there will be no shifting of bottles during transport.

(6) Fill void space around and on top of the sample bottles with ice cubes or chips that have been sealed in water-tight plastic bags.

(7) Seal chain of custody forms in a zip-lock plastic bag and tape securely to the inside of the shipper lid.

(8) Close and lock or latch the shippers. Seal the space between the container body and lid with waterproof tape.

(9) Apply several wraps of pre-printed chain of custody tape around the shipping containers perpendicular to the seal to assure that the lid will remain closed if the latch is accidentally released or damaged and to prevent tampering during shipment.

(10) If the shipping container used is an all metal picnic cooler, tape the drain plug closed so it will not open.

(11) Place a completed Federal Express Airbill on the lid of the cooler including name, address and phone number of the receiving laboratory and the return address and phone number of the shipper.

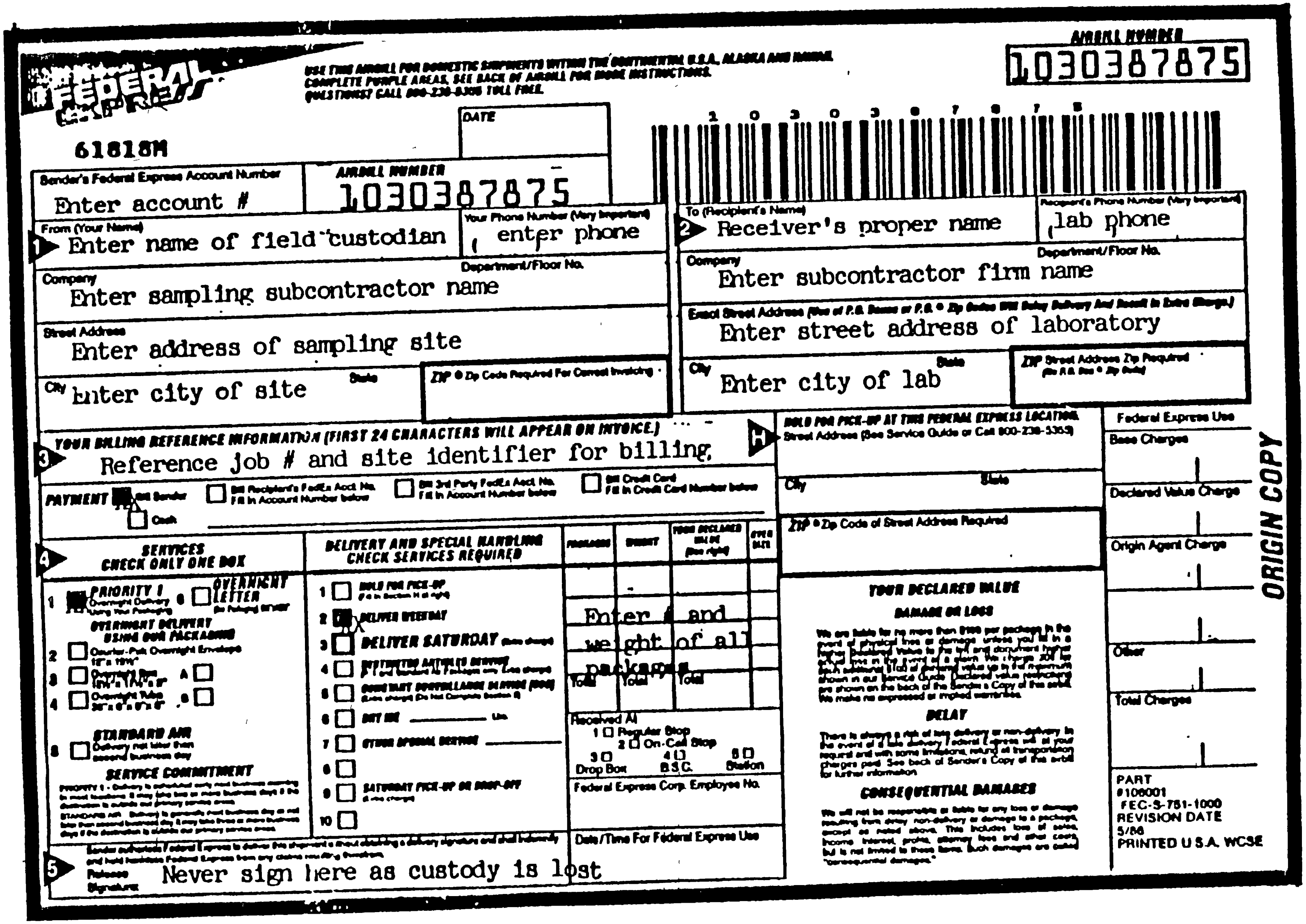
(12) Place a "This End Up" label on the lid and on all four sides of the shipper.

Samples will be shipped to the laboratory via Federal Express Priority 1 directly from the Avco site. Samples will be shipped directly to the appropriate laboratory.

For each shipment to the laboratory, a Federal Express air bill must be properly completed. An example of a properly prepared air bill to be used to ship samples to the contracted laboratory is shown as Figure 7.4.

FIGURE 7.4

FEDERAL EXPRESS AIR BILL


AIRBILL NUMBER 1030387875

61818M

Sender's Federal Express Account Number: Enter account #

AIRBILL NUMBER 1030387875

DATE

From (Your Name): Enter name of field custodian

Your Phone Number (Very Important): enter phone

Company: Enter sampling subcontractor name

Department/Floor No.

Street Address: Enter address of sampling site

City: Enter city of site

State

ZIP

To (Recipient's Name): Receiver's proper name

Recipient's Phone Number (Very Important): lab phone

Company: Enter subcontractor firm name

Department/Floor No.

Exact Street Address: Enter street address of laboratory

City: Enter city of lab

State

ZIP Street Address Zip Required

YOUR BILLING REFERENCE INFORMATION (FIRST 24 CHARACTERS WILL APPEAR ON INVOICE.)

Reference job # and site identifier for billing

PAYMENT: Bill Sender; Bill Recipient's FedEx Acct. No.; Bill 3rd Party FedEx Acct. No.; Bill Credit Card; Cash

SERVICES CHECK ONLY ONE BOX

DELIVERY AND SPECIAL HANDLING CHECK SERVICES REQUIRED

Enter # and weight of all packages

Received At: 1 Regular Stop; 2 On-Call Stop; 3 Drop Box; 4 B.S.C.; 5 Station

Federal Express Corp. Employee No.

Date/Time For Federal Express Use

HOLD FOR PICK-UP AT THIS FEDERAL EXPRESS LOCATION

Federal Express Use: Base Charges; Declared Value Charge; Origin Agent Charge; Other; Total Charges

YOUR DECLARED VALUE

DELAY

CONSEQUENTIAL DAMAGES

ORIGIN COPY

PART #106001 FEC-S-751-1000 REVISION DATE 5/86 PRINTED U.S.A. WCSE

Release Signature: Never sign here as custody is lost

TABLE 7.3a PARAMETERS TO BE MEASURED - METHOD REFERENCES

Parameter Description	Method No.	Title	Method Reference
Aromatic Volatile Organics	8020	Aromatic Volatile Organics	Test Methods for Evaluating Solid Waste, SW846; USEPA, July 1982, Second Edition
Halogenated Volatile Organics	8010	Halogenated Volatile Organics	Test Methods for Evaluating Solid Waste, SW846; USEPA, July 1982, Second Edition
Sample Introduction, Volatile Organics	5030	Purge and Trap Method	Test Methods for Evaluating Solid Waste, SW846; USEPA, July 1982, Second Edition
Dissolved Metals: Cadmium, dissolved	7131	Cadmium, Atomic Absorption Furnace Technique	Test Methods for Evaluating Solid Waste, SW846; USEPA, July 1982, Second Edition
Chromium; All forms, dissolved	7191	Chromium, Atomic Absorption Furnace Technique	Test Methods for Evaluting Solid Waste, SW846; USEPA, July 1982, Second Edition
Chromium; Hexavalent, dissolved	218.5	Chromium, Dissolved Hexavalent, Atomic Absorption, Furnace Technique	Methods for Chemical Analysis of Water and Wastes; USEPA, EPA-600/4-79-020, March 1983
Copper, dissolved	220.2	Copper, Atomic Absorption Furnace Technique	Methods for Chemical Analysis of Water and Wastes; USEPA, EPA-600/4-79-020, March 1983
Mercury, dissolved	7470	Mercury, Manual Cold Vapor Technique	Test Methods for Evaluating Solid Waste, SW846; USEPA, July 1982, Second Edition
Nickel, dissolved	7521	Nickel, Atomic Absorption Furnace Technique	Test Methods for Evaluating Solid Waste, SW846; USEPA, July 1982, Second Edition
Zinc, dissolved	289.2	Zinc, Atomic Absorption Furnace Technique	Methods for Chemical Analysis of Water and Wastes; USEPA, EPA-600/4-79-020, March 1983
Sample Preparation Technique, Furnace Atomic Absorption	3020	Acid Digestion Procedure for Furnace Atomic Absorption	Test Methods for Evaluating Solid Waste, SW846; USEPA, July 1982, Second Edition
Sample Filtration Technique, Dissolved Metals	302A	Preliminary Filtration	Standard Methods for the Examination of Water and Wastewater; APHA; 16th Edition, pg. 145
Cyanide, Total	9010	Total and Amenable Cyanide	Test Methods for Evaluating Solid Waste, SW846; USEPA, July 1982, Second Edition
Cyanide, Amenable to Chlorine	9010	Total and Amenable Cyanide	Test Methods for Evaluating Solid Waste, SW846; USEPA, July 1982, Second Edition
Total Organic Carbon[1] (TOC)	415.1	Organic Carbon, Total	Methods for Chemical Analysis of Water and Wastes; USEPA, EPA-600/4-79-020, March 1983
Total Organic Halide[1] (TOX)	9020	Total Organic Halides (TOX) Cyanide	Test Methods for Evaluating Solid Waste, SW846; USEPA, July 1982, Second Edition
pH[1,2]	9040	pH Measurement Cyanide	Test Methods for Evaluating Solid Waste, SW846; USEPA, July 1982, Second Edition
Conductivity[1,2]	120.1	Conductance	Methods for Chemical Analysis of Water and Wastes; USEPA, EPA-600/4-79-020, March 1983

(1) As required, four replicate analyses are to be performed.
(2) To be performed in the field.

7.7 Analytical Methods

Table 7.3a summarizes parameters to be measured as well as specific analytical methods to be used during the analysis of the water samples collected at the Avco site.

Data Quality Objectives for Critical Measurements

Precision and accuracy goals for sampling and analysis depend upon the type of samples and analyses to be performed. For the sampling program at Avco, only groundwater monitoring well samples will be collected.

Quality assurance objectives in terms of precision, accuracy, and completeness are summarized in Table 7.3b.

The usefulness of sampling and analysis data is contingent upon meeting criteria for representativeness and comparability. Wherever possible, only reference methods and standard sampling procedures will be followed. The main objective of quality assurance activities is that all measurements be representative of the actual site conditions and, that all data resulting from sampling and analysis activities be comparable. The use of accepted, published sampling and analysis methods as well as standard reporting units will aid in ensuring the comparability of the data.

7.8 Data Reduction, Validation and Reporting

Consistent data quality for this program will be obtained by the application of a standard data analysis and validation process designed to isolate spurious values. Data will be

Table 7.3b

Precision, Accuracy, Completeness Objectives for Measurement Data

Parameter Description	Method No.	Precision[1]	Accuracy[2]	Completeness[3]
Aromatic Volatile Organics	8020	± 20%	± 15%	90%
Halogenated Volatile Organics	8010	± 20%	± 15%	90%
Dissolved Metals:				
Cadmium, dissolved	7131	± 15%	± 10%	90%
Chromium; All forms, dissolved	7191	± 15%	± 10%	90%
Copper, dissolved	220.2	± 10%	± 10%	90%
Mercury, dissolved	7470	± 10%	± 10%	90%
Nickel, dissolved	7521	± 20%	± 15%	90%
Zinc, dissolved	289.2	± 15%	± 10%	90%
Chromium; Hexavalent, dissolved	218.5	± 15%	± 15%	90%
Cyanide, Total	9010	± 20%	± 20%	90%
Cyanide, Amenable to Chlorine	9010	± 25%	± 25%	90%
Total Organic Carbon	415.1	± 20%	± 10%	90%
Total Organic Halide (TOX)	9020	± 25%	± 15%	90%
pH	9040	± 5%	± 5%	90%
Conductivity	120.1	± 5%	± 5%	90%

(1) Expressed as Relative Percent Difference except for TOC, TOX, pH Conductivity which will be Percent Relative Star[illegible]d Deviation of quadruplicate measurements
(2) [illegible]essed as % Recovery
(3[illegible]pre[illegible] as[illegible]omp[illegible]

reviewed at a minimum by the analyst, his/her supervisor, and the QA Project Officer. Statistical tests will be applied to data to assess determinate and indeterminate errors. Determinate errors will usually be identified through the use of spikes, control charts and analysis of differing sample sizes. Indeterminate errors will be estimated in this program through statistical calculations and duplicate analyses as well as control charts.

Field Data Quality Reviews

	Objective	Action	Responsible Person
1.	Sample and field monitoring information conforms to specified conditions and schedule	Review of labeled samples and in-process samples using daily sample inventory	Field Sampling team
2.	Verify incoming field data and sample completeness	Daily count of in-complete items	Field Sampling team
3.	Verify completeness of field log books	Review Daily	Field Team Leader
4.	Field calibration criteria reviewed and test calibration acceptance recorded	With each measurement	Field Team Leader
5.	All data forms are properly completed	Review and check off during each sample collection	Field Team Leader
6.	All field generated QC samples collected as required	Review require-ments and confirm	Field Team Leader

Laboratory Data Quality Reviews

Objective	Action	Responsible Person
1. Verify incoming data and sample completeness	Daily count of number and nature of samples received versus number and nature of entries made in log. Mark "verified" on log.	Sample Custodian
2. Verify all data forms completed	Review and check off during each analysis. Forms provided by supervisor with non-required entries marked out	Analyst
3. Manual data reduction procedures	Daily review of calculated values against raw data values	Analyst
4. Verify completeness of laboratory notebooks/bench sheets	Review Weekly	Laboratory Supervisor/ Manager
5. Verify calibration criteria	Calibration criteria in method reviewed and test calibration acceptance recorded.	Analyst
6. Verify repeatability and accuracy	Record values of replicate analyses and Control samples	Analyst

Engineering Data Quality Reviews

Objective	Action	Responsible Person
1. Assure completeness of field and lab data	Compare field and lab data forms against data list at each use and check off	Project Engineer

2.	Assure comparability of units	Review units reported for consistency in calculations at each use and check off.	Project Engineer
3.	Examine engineering validity of data	Review parameter extremes and transients versus expected data trends. Document data excluded on this basis	Project Engineer & Quality Assurance Program Manager
4.	Examination of statistical data	Apply tests to data groupings to be used. Record data and test results.	Project Engineer & Quality Assurance Project Officer

7.9 Quality Control Checks

All analyses performed in support of this program will be done using standardized laboratory procedures. The QC guidelines developed by Metcalf & Eddy make use of QC samples which are both known and unknown, or "blind", to the laboratory, calibration check samples, method blanks, field blanks, and replicate aliquot analyses.

Known QC samples called laboratory control standards (LCS) are prepared by adding known quantities of EMSL-Cincinnati or NBS Standard Reference or independently prepared stock materials to deionized water. The LCS are routinely used to establish that an instrument or procedure is in Control before analysis of samples begins. The analyst notes the LCS result in the instrument logbook and on the Control chart; the result must be within Control limits before sample analysis may proceed. A LCS is normally carried through the entire sample preparation and analysis procedure.

Unknown or "blind" QC samples (standards) are inserted in the sample batch in a solution not recognizable to the analyst to enable an estimation of the accuracy of the analytical procedure. These "blind" QC samples are made up in the same way as LCS; the only difference is that the analyst does not know which sample is a QC standard, or its true value.

A calibration check sample is one of the working calibration standards that is periodically re-analyzed and the subsequent values used to demonstrate that the original calibration is still valid.

A method or reagent blank consists of deionized water carried through the entire preparation and analysis procedure. Analytical results are corrected for the method blank values before they are reported.

Analysis of "blind" replicate aliquots of actual samples or QC samples is done to enable estimation of the precision of the analytical procedure. These "blind" replicates are analyzed in addition to the replicates prescribed by the analytical procedure.

A filtration blank is generated in the field by the sampling team to demonstrate that the filtration process is not contaminating the field samples. Laboratory deionized water is carried through the entire filtration and preservation process. Analytical results obtained are taken into consideration during data interpretation activities.

Field blank samples serve to identify possible field and sampling contamination. A field blank is prepared by sampling fresh, deionized, analyte-free water with the field sampling equipment in an identical manner as samples. For manually operated sample equipment, the deionized water is manually brought into contact with wetted portions of the sampling equipment using the standard sampling procedures. Field blanks are analyzed "blind" by the laboratory, and are preserved by the field team during the field activities.

A trip blank sample serves to identify contamination contributed from shipping, handling and storing the samples. A trip blank consists of deionized water placed in VOA vials as well as other bottles supplied by the laboratory. The trip blanks are taken into the field and are processed through all sample handling steps just like other samples. One trip blank is analyzed for each batch of samples sent to the laboratory for analysis by each field team.

Analysis of surrogate compounds during organics analysis is performed to monitor laboratory processing and purging efficiency of samples. The results of surrogate analyses are used to monitor laboratory performance and may also indicate sample matrix interferences when viewed in conjunction with laboratory 'spike' data.

Spiked samples are used as a measure of the combined effects of precision and accuracy as well as to indicate how the sample matrix effects the recovery of analytes. The results can be used to monitor overall laboratory performance by calculating percent recoveries. Percent recoveries are reported and discussed with the analytical data.

Laboratory splits are samples which are divided into two or more parts after collection. Each split aliquot is sent to a different laboratory for independent analysis of the same parameters, thus serving as an external QC sample.

Laboratory generated blanks, duplicates, and standards are to be analyzed alongside samples to provide continuous quality control during the determination of trace constituents. The blanks are analyzed to provide data on possible carry-over contamination of samples by the purging or digestion process and also provide background concentration levels in the reagents used during sample preparation and analysis. The duplicate analyses provide laboratory precision data while the certified standards provide a measure of accuracy.

7.10 Internal Quality Assurance Procedures

As applied to chemical analyses performed during this project, Quality Assurance is the demonstration and documentation of data quality. These procedures include the recording of all quality control activities, and the assessment of analytical performance by analysis of internal and external control and audit samples as discussed in previous paragraphs.

Calculation of Data Qualify Indicators

The quality control activities undertaken during this project include ongoing activities to assure that measurement systems as well as activities specific to a given site use evaluation are under control.

The ongoing quality control activities consist principally of the evaluation of data obtained from the following sample categories, whenever possible: (a) calibration standards, (b) working standards, (c) LCS (d) field replicates (e) field blanks (f) field samples (g) laboratory duplicates (h) laboratory spikes, (i) laboratory methods blanks, (j) trip blanks (k) laboratory split samples. Procedures used to evaluate this data will include calculation of arithmetic means, standard deviations, relative percent differences for duplicate samples and comparison of differences between standards of spiked and experimentally determined values expressed as percent recovery. As noted in preceding sections, these data will be summarized in quality control tables. Additional tables presenting the results of the actual field samples will additionally provide calculation of up to eight summary statistics including:

- Number of LT detection limit values reported
- Total number of values reported
- Mean
- Median
- Standard deviation
- Coefficient of variation
- Minimum value
- Maximum value

Project-specific data evaluation procedures will be dependent on the types and numbers of field samples actually collected. In general, it is likely that the overall objectives of the contemplated site evaluations will include comparison of concentrations of one or more measurement parameters in areas of the site known to be previously "active" with measurements made in the "background" areas. For the most part, it is anticipated that the statistical procedures used for this work will be simple and straightforward, including, for example, calculation of limits of detection, limits of quantification, confidence intervals, and evaluation by least squares linear regression. In all cases, these procedures will be taken from EPA documents and manuals appropriate to the media under investigation. Overall guidance will be obtained from the EPA document "Calculation of Precision, Bias, and Method Detection Limit for Chemical and Physical Measurements" issued on March 30, 1984 as Chapter 5 to the EPA Quality Assurance Manual.

Equations for routing statistical measures to be used for such calculations are presented below.

Precision. Precision will be determined by the analysis of replicate samples and will be expressed as the relative percent difference, which is determined according to the following equation:

$$RPD = \frac{Range}{Mean} \times 100$$

where RPD = relative percent difference
range = maximum value - minimum value
mean = average of duplicate values

When quadruplicate measurements have been made, precision will be expressed as the standard deviation, s, which is determined according to the following equation:

where S = standard deviation
X_i = individual measurement result
N = number of measurements

$$S = \sqrt{\frac{\sum_{i=1}^{n} X_i^2 - \left(\sum_{i=1}^{n} X_i\right)^2 / n}{n-1}}$$

Relative standard deviation may also be reported. If so, it will be calculated as follows:

$$RSD = 100 \frac{S}{\bar{X}}$$

where RSD = relative standard deviation, expressed in percent
S = standard deviation
$\bar{X}$ = arithmetic mean of replicate measurement.

Accuracy. Accuracy will be estimated from the analysis of "blind" QC samples whose true values are known to the QA Project Officer. Accuracy will be expressed as percent recovery or as relative error. The formulas to calculate these values are:

$$\text{Percent Recovery} = 100 \frac{\text{Measured Value}}{\text{True Value}}$$

$$\text{Relative Error} = 100 \frac{\text{Measured Value} - \text{True Value}}{\text{True Value}}$$

Completeness. Completeness will be reported as the percentage of all measurements made that generate results judged to be valid according to project criteria compared to the total number of measurements made. The following formula will be used to estimate completeness:

$$C = 100 \frac{V}{T}$$

where C = percent completeness
V = number of measurements judged valid
T = total number of measurements

7.11 Performance and System Audits

An audit is a systematic check to determine the quality of operation of some function or activity. There are two basic types of audits: (1) laboratory performance audits in which quantitative data are independently obtained for comparison with routinely obtained data in the measurement system; or (2) system audits of a qualitative nature that consist of on-site review of conformance with quality assurance/control procedures in all laboratory, field sampling and chemical analysis activities.

Laboratory Performance Audits

An independent performance audit program involving preparation and analysis of QA samples may be conducted by the Quality Assurance Project Officer. The purpose of these QA samples is to provide an independent determination of problem areas in sample handling, analysis, and reporting. The program also provides data to document performance on the various measurement systems. Quality assurance samples are submitted blind to the laboratory for comparison of results. The QA samples may include spikes in samples previously analyzed, duplicate sample pairs, standards, blanks, and repeat analysis of filtrates. Some spikes are made in real sample matrices and others are prepared in certified organic free water.

Field Sampling and Chemical Analysis Systems Audits

The QA Project Officer may schedule audits of field activities at various times to evaluate the execution of sample identification, sample control, chain-of-custody procedures, field documentation, instrument calibration and field measurement and sampling operations. The evaluation is based on the extent to which the applicable standard operating procedures are being followed.

Field documents pertaining to sample identification and control will be examined for completeness and accuracy. Field log books, field data forms and chain of custody forms will be reviewed to see that all entries are dated and signed and that the contents are legible, written in ink, and contain accurate and inclusive documentation of project activities. Because the log book, field data forms and chain of custody forms provide the basis for reports written later, they will contain only facts and observations. Language will be objective, factual, and free of personal interpretations or other terminology that might prove inappropriate.

The auditor will also check to see that chain-of-custody procedures are being followed and that samples are being kept in custody at all times and are secured in a manner to prevent tampering.

Sampling operations will be evaluated to determine if they are performed as stated in the project plan or as directed by the project manager. The auditor will check to determine that the appropriate number of samples are being collected, samples are placed in proper containers, and proper preservation, packaging and shipment protocols are being followed.

Field measurement activities will be evaluated to determine if they are performed according to specified guidelines. The auditor will spot check various instruments for proper calibration, the frequency of calibration, and to ensure that the techniques utilized with these instruments are providing accurate data.

Laboratory Systems Audit

A laboratory systems audit may be performed to assure that the subcontractor laboratory is maintaining the necessary minimum levels of instrumentation and levels of experience of personnel, and that laboratory quality assurance/control procedures are in conformance with the specified requirements.

7.12 Corrective Action Procedures

Corrective action procedures for this program will be initiated by the analytical personnel and their supervisors directly involved with implementing the procedures presented herein. Quality control charts for daily instrument calibration and replicate analyses will be utilized to indicate the necessity for corrective action. Control charts will be established for each procedure indicating upper and lower limits of three standard deviations as the acceptability ranges. Warning ranges are established at two standard deviations. At the point when the control charts show a determination outside the warning ranges, investigation as to the cause will be initiated. Any of the following events that occurs on the quality control chart will trigger corrective action:

- Two consecutive determinations fall outside the upper or lower control limits.
- Runs up--(seven consecutive determinations increasing in value)--or runs down (seven consecutive determinations decreasing in value).

- Three consecutive values fall above or below the warning limits (two standard deviations).

Corrective actions will also be initiated as a result of other QA activities which include performance audits, systems audits, and laboratory comparison studies.

The corrective action relative to the control charts is related more to precision than to accuracy. These charts give clues as to when some factor, generally of a procedural nature, is causing the results to drift or when an unexpected difference beyond the control limits occurs. Data within the upper and lower control limits of the control charts are well within the precision, accuracy, and completeness criteria.

7.13 References

1. Quality Assurance Handbook for Air Pollution Measurement Systems. Volume I - Principles. EPA-600/9-76-995, March 1976.

2. Quality Assurance Handbook for Air Pollution Measurement Systems. Volume II - Ambient Air Specific Methods. EPA-600/4-77-027a, May 1977.

3. Quality Assurance Handbook for Air Pollution Measurement Systems. Volume III - Stationary Source Specific Methods. EPA-600/4-7-027b, August 1977.

4. Handbook for Analytical Quality Control in Water and Wastewater Laboratories, EPA-600/4-79-019, March 1979.

5. Test Methods for evaluating Solid Waste, SW-846, 2nd edn., July 1982.

6. "Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act," Federal Register, Vol 49, No. 209, October 26, 1984.

SECTION VIII

VIII SUMMARY OF EXISTING ASSESSMENT MONITORING DATA

The third year of groundwater monitoring was conducted in the following fashion:

	Groundwater Consultant	Analytical laboratory
1st quarter (11/25/85)	L,B & G, Inc. (Wilton, CT)	Environmental Sciences Corp.
2nd quarter (4/19/86)		(Middletown, CT)
3rd quarter (6/27/86)	IPC Corporation (Westport, CT)	Milford Testing Laboratory
4th quarter (10/17/86)		(Milford, CT)

Each quarter of analysis used samples taken from the seven original wells as well as the six new wells. Analysis was performed for the site-specific parameters specified in 1983 by Tom Stark of the CT DEP. The fourth quarter of analysis also included the six groundwater quality parameters specified under 40 CFR §265.92(b)(2) (chloride, iron, manganese, phenols, sodium and sulfate).

The third year groundwater summary report was prepared by IPC in January, 1987. In this report, as in previous reports, analytical results indicated a continuing presence of several pollutants in concentrations above the CPDWC. (See Appendix E for the complete groundwater analysis). Elevated levels of total and hexavalent chromium, total cyanide, trichloroethylene and tetrachloroethylene were detected in wells #1,2 and 3 which are adjacent to and downgradient from the sludge storage impoundments and well #5 which is adjacent to and downgradient from the equalization impoundment. However, a comparison of the indicator parameter concentrations for the three years of monitoring of wells #1 - 7 indicates that the level of contamination in the local shallow groundwater aquifer has remained relatively constant. The three year trends for site-specific parameters showed relatively constant levels of cyanide and chromium as well.

As indicated in Table 8.1, all of the 13 wells had at least one parameter at a level in excess of the CPDWC. However, IPC felt that analyses of samples from monitoring wells #8, 10 and 11 indicated relatively low levels of contaminants and that these wells consistently measured hydraulically upgradient of the hazardous waste management area. Based upon this data, IPC suggested that one or two of these wells be designated as upgradient and that all future quarterly samples from these designated wells have replicate samples and analyses done for the indicator parameters. With this data a baseline analysis can be developed for future statistical analysis.

The report concluded that it can be assumed that the sludge and equalization surface impoundments are having an impact on the shallow groundwater system in the monitoring area. It also recommends that analytical information from well #10 be used to begin a statistical analysis report assuming this well continues with high standing water levels and can be designated as an upgradient well.

Aside from the obvious confusion as to which well is upgradient and the inability to perform a statistical analysis based on that well data, the groundwater monitoring data can be used to begin assessing the rate and extent of contaminant migration at the Avco-Lycoming Site. An evaluation of the first year of assessment monitoring data is covered in Section IX of this report.

TABLE 8.1
Avco LYCOMING DIVISION
Stratford, Connecticut

Chemicals Detected in Ground-Water Samples in Concentrations Above CPDWC Limits[1/]

Parameter	11/25/85 MW#	4/18/86 MW#	6/27/86 MW#	10/17/86 MW#	CPDWC limits
chloride					250
sulfate				2,9	250
chromium, total	5	5,13	1,5,9	5,10	0.05
copper					1.0
cadmium		1,3,7,13			0.01
mercury			4,8		0.002
nickel					0.7
zinc					5.0
iron				1-13	0.3
sodium				1-7, 9-11	20
manganese				1-13	0.05
cyanide, total	1,2,3,5				0.2
phenol				2-11, 13	0.001
benzene		3,5,7,8,11,12			0.001
toluene					1.0
xylenes					0.1
1,2-dichloroethane					0.001
1,2-dichloropropane					0.01
1,3-dichloropropene					0.01
tetrachloroethylene				5	0.02
1,1,1-trichloroethane					0.3
trichloroethylene				5,13	0.025

1/ Connecticut Public Drinking Water Code

SECTION IX

PROCEDURES FOR EVALUATING ASSESSMENT MONITORING DATA

This section describes the evaluation procedures to be used in order to meet the objectives of this assessment monitoring plan, more specifically, to estimate the rate and extent of migration and the concentration of constituents in the plume as required by CFR 265.93(d)(3)(iii) and 265.93(d)(4).

9.1 Listing of Data

A list of all assessment analytical data shall be compiled in quarterly and annual reports and maintained at the facility. All reports will be available to technical reviewers when a review of on-site records is called for. Reports will include information pertaining to quality control samples and standard quality control procedures as outlined in Section VII of this plan.

The listing of the groundwater analytical data shall identify the groundwater contaminant constituents, well number, date of sampling, time, the unit of measure, the limit of detection and the concentration of the contaminant. The listing shall be organized to allow quick reference to specific data values. The groundwater monitoring data shall be summarized and presented in tabular formats. Summary tables of each round of sampling shall be formatted to include the following summary statistics:

- Total number of values

- Number of samples less than detection limit values
- Mean
- Standard deviation

Quality control data shall accompany each set of assessment monitoring data in the quarterly and annual reports. Quality control data shall be identified in all reports as specified in Section VII of this plan.

9.2 Extent of Tidal Fluctuations

The fluctuation of groundwater levels in unconfined aquifers adjacent to oceans is primarily a function of distance from the ocean. The further away, the less of an effect tides play on groundwater. Because the tidal drainage ditch extends the effects of tides inland to the Avco-Lycoming facility, groundwater fluctuations could be noticed in any of the existing assessment monitoring wells.

To assess the extent of tidal influences on the uppermost aquifer at the Avco-Lycoming facility, a continuous time-series monitoring of groundwater levels over a complete tidal cycle is proposed. Water levels, in a minimum of eight of the existing groundwater monitoring wells, the tidal drainage ditch and the marine basin will be monitored using pressure transducers and a computer for data storage and retrieval. Each of the eight stations will be read simultaneously throughout the tidal cycle at predetermined time intervals. The time series developed during the tidal cycle will be plotted on a semi-logarithmic scale of water level change versus the log of distance from the tidal drainage ditch to develop a predictive plot for of effect versus distance from the tidal ditch. Another plot will be developed for those wells affected by the tides, which presents the time during a tidal cycle when the well should be read to avoid tidal effects.

9.3 Development of Existing Assessment Monitoring Wells

To develop a graded filter around the well intakes of those wells experiencing siltation (1,2,3,4,5,6,&7), a surge and pump technique is proposed. The method uses a surge block, slightly smaller than the existing well diameter, to force groundwater in and out of the casing using a reciprocating motion. The fines that are drawn into the well are pumped out, and the process repeated until consistently clear groundwater is being pumped.

9.4 Aquifer Stress and Slug Tests

An in-situ aquifer test will be conducted on wells 1, 3, 4, 6, 7, 8, 9 & 11 in order to characterize the upper most aquifer. Hydraulic conductivity values obtained as a result of these tests shall be used in conjunction with a hydraulic gradient to estimate the rate of groundwater flow beneath the site. This information will be used to determine the rate of migration.

To determine in-situ hydraulic conductivity, a slug test will be performed on each well. The following protocol will be followed:

- Remove a known volume of water from the well. Record the response in the well while allowing the water level in the well to reach equilibrium.
- Measure static water level.
- Introduce a slug of known volume. The slug of water will be the same water previously removed.
- Record the fall of the water level with time.

Water levels will be measured using an electronic water level indicator or a recorder with pressure transducers. The data will then be plotted on semi-logarithmic paper and analyzed using a basic time lag method. The following formula shall be used to calculate hydraulic conductivity:

$$K = \frac{r^2 \ln (L/R)}{2 \, LTo}$$

where: r - well radius

R - radial distance between well center and undisturbed aquifer

L - length of saturated screen

To- basic time lag in recovery rate

(after Freeze and Cherry, 1979 and Hvorslev, 1951)

This method has the advantage of monitoring both how the aquifer responds to added and subtracted water. Analysis of both the recovery and slug data will provide a quality control check for the data.

9.5 Extent of Contamination

In order to define the boundaries governing the extent of contamination, groundwater data from each sampling location shall be plotted to allow the evaluation of temporal changes in contaminant concentrations. Each plot shall consist of a horizontal axis, which represents time with year and month identified at intervals. The Y or vertical axis shall represent the concentrations of contaminants. The plots shall be constructed using the mean concentration values of constituents from the summary tables. One plot will be constructed for each well and for each sampling event. Existing plots based on first year data are illustrated in Appendix D.

Two additional plots shall be prepared in order to illustrate the most up to date extent of contamination. One plot will be a plan view of the site with contaminant concentration contours based on analytical values from each well. The second plot shall be a cross section of the aquifer, illustrating contaminant concentrations through a slice of the aquifer. The two plots will allow the horizontal and vertical extent of contamination based on available data, to be viewed. Comparison of similar plots in the future will allow the comparison and evaluations of spatial and temporal changes in contaminant concentrations.

9.6 Current Extent of Contamination

The most mobile contaminants in groundwater, and that have also been detected in Avco assessment monitoring wells, are the volatile organics. While mounding and tidal effect have apparently spread volatile organics to upgradient assessment monitoring wells (wells 6, 7 and 12), analyses of the most recent sampling (October 17, 1986) have been plotted in both the horizontal and vertical planes and do not show any volatile organics.

Figure 9.1 illustrates the total volatile organics concentrations (plan view) across the Avco facility. Figures 9.2 and 9.3 illustrate the concentration of total volatile organics based on screen intervals at the shallow (8, 9, 10, 11, 12 and 13) wells and deep (1, 2, 3, 4, 5, 6, & 7) wells. A similar method used for characterizing the vertical flow of groundwater (refer to Section 2) has also been used for characterising the vertical extent of contamination. The two (shallow and deep) horizontal plots (Figures 9.2 and 9.3) were used to develop cross sections which represent the vertical distribution of total volatile organics beneath the Avco-Lycoming facility. Figure 9.4 presents the locations of cross sections C-C' and D-D', Figure 9.5 illustrate cross section C-C', and cross section D-D'. This information will be compared to 2nd quarter results (1987) in order to assess the extent and rate of migration.

A similar cross-sectional plot for chromium was not possible due to the lack of a sufficient number of data points illustrating "high" (higher than background) concentrations. A

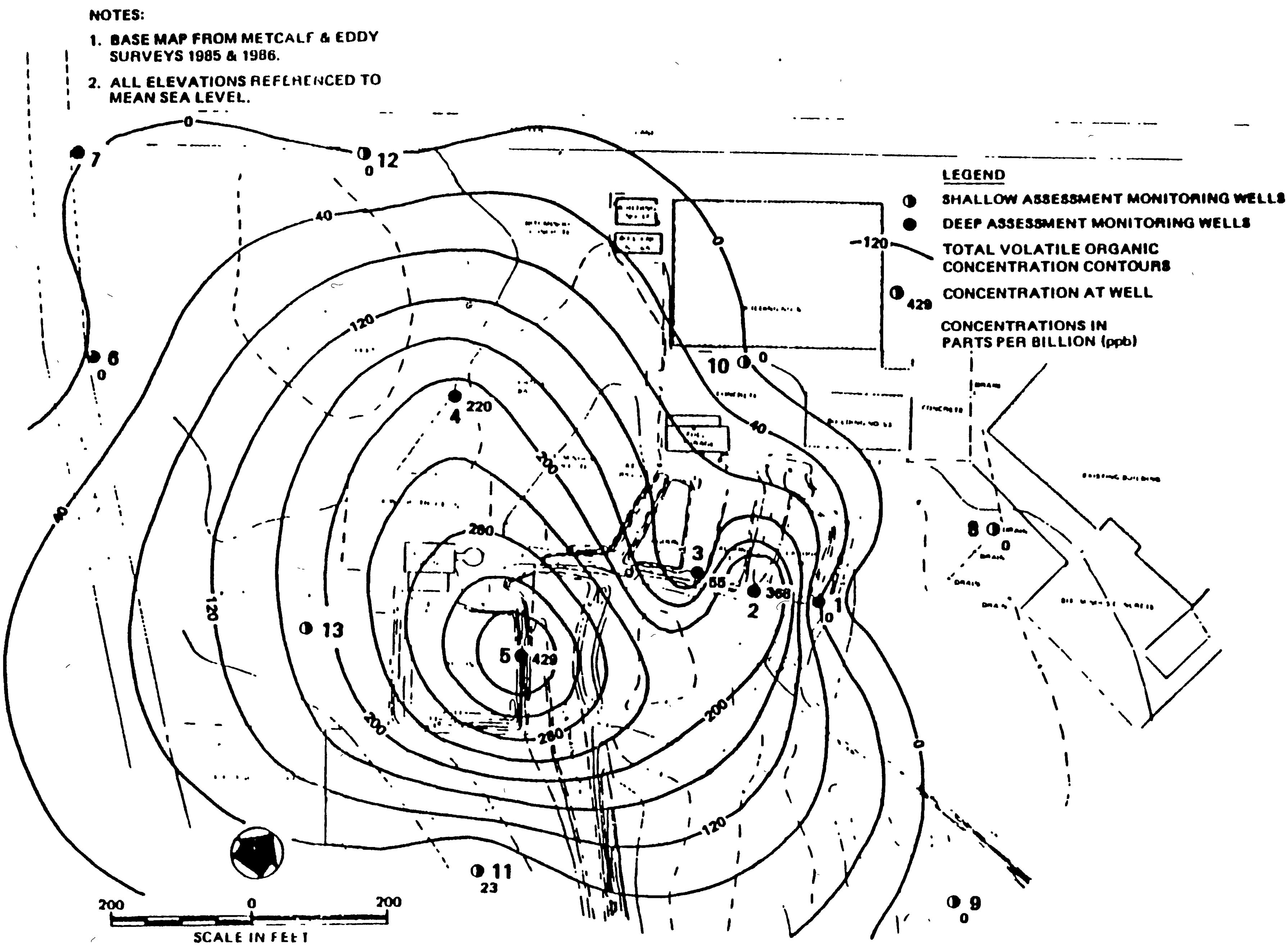


FIGURE 9.1 TOTAL VOLATILE ORGANICS, OCTOBER 1986

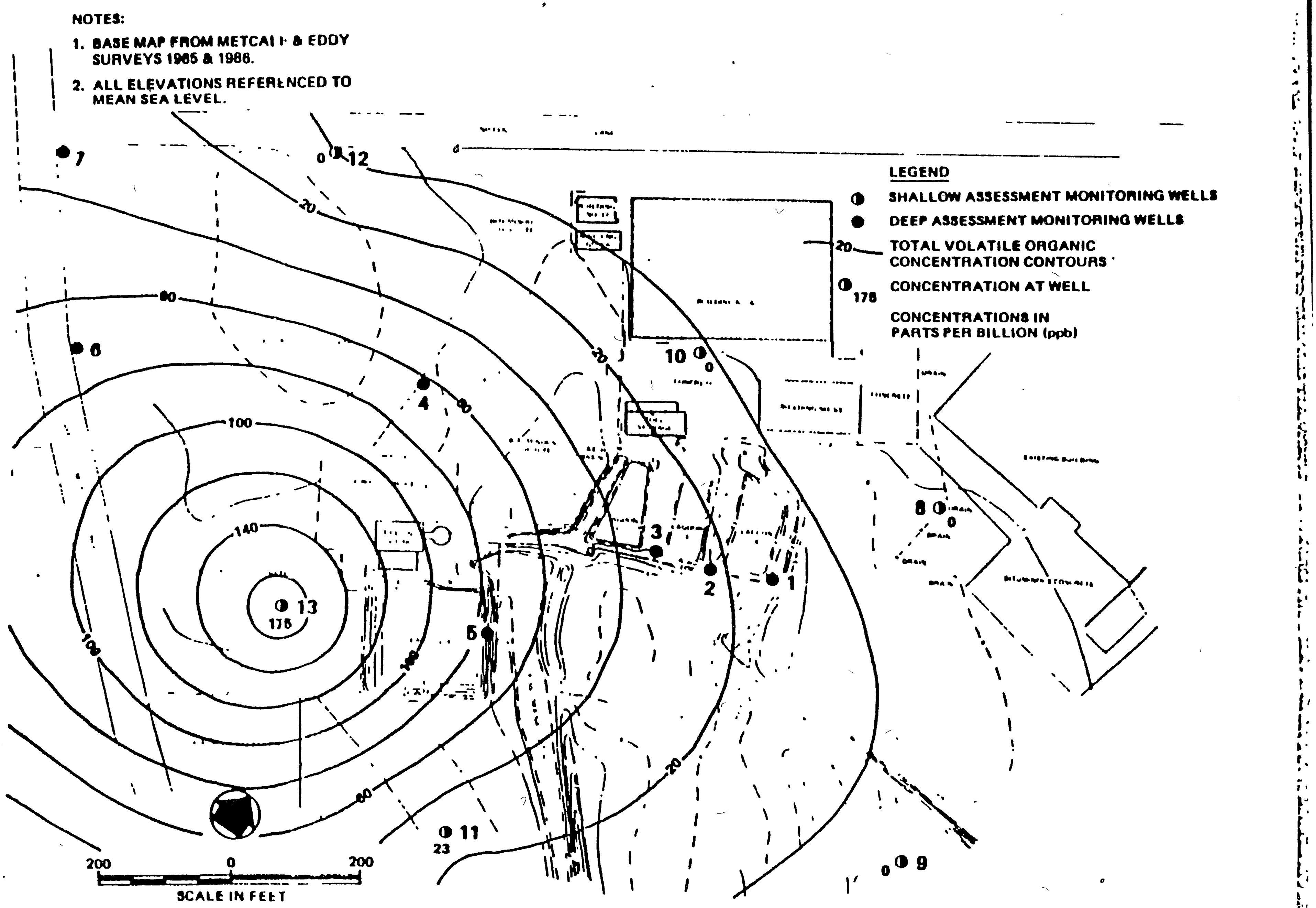


FIGURE 9.2 TOTAL VOLATILE OR NICS (SHALLOW), OCTOBER 1986

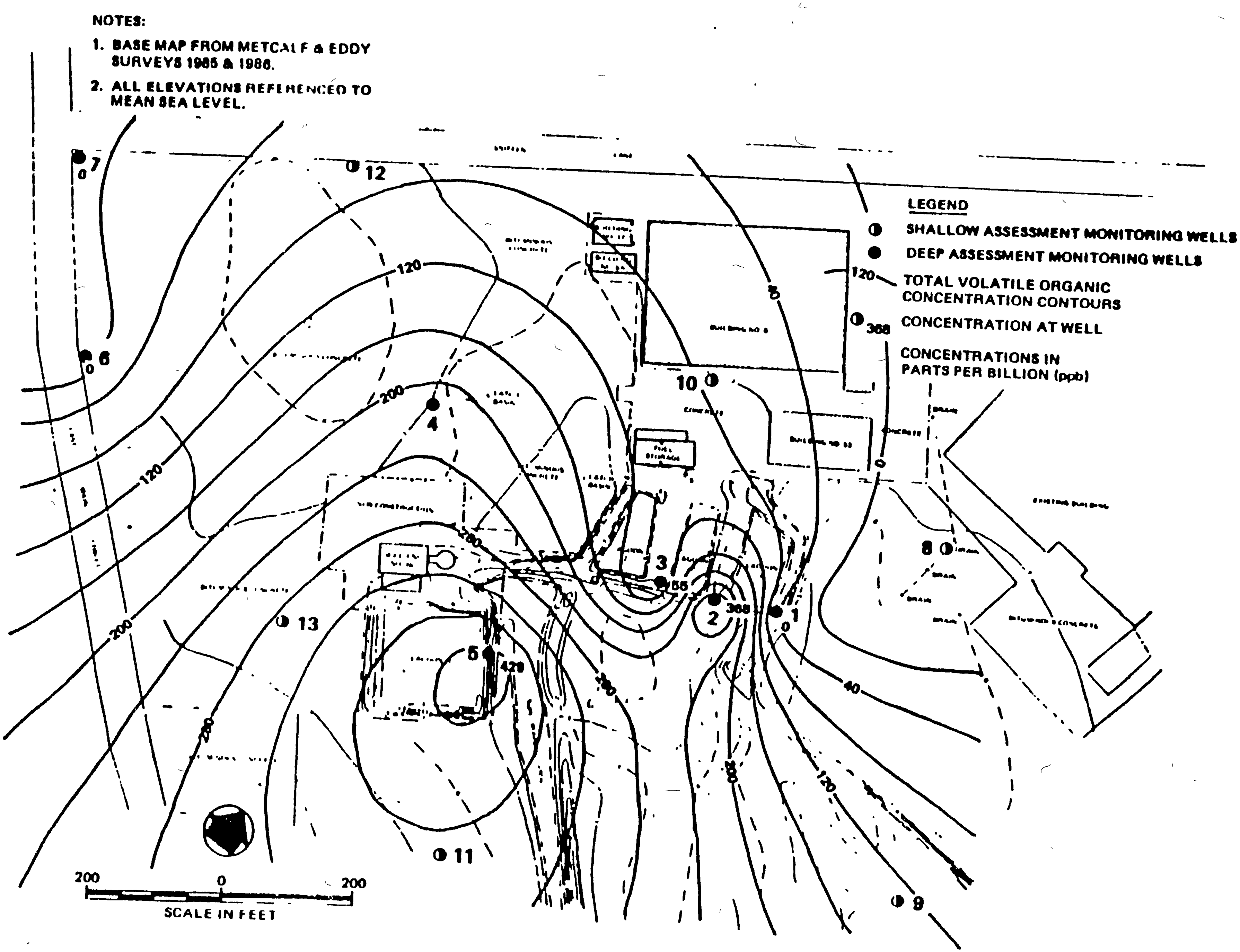


FIGURE 9.3 TOTAL VOLATILE ORGANICS (DEEP), OCTOBER 1986

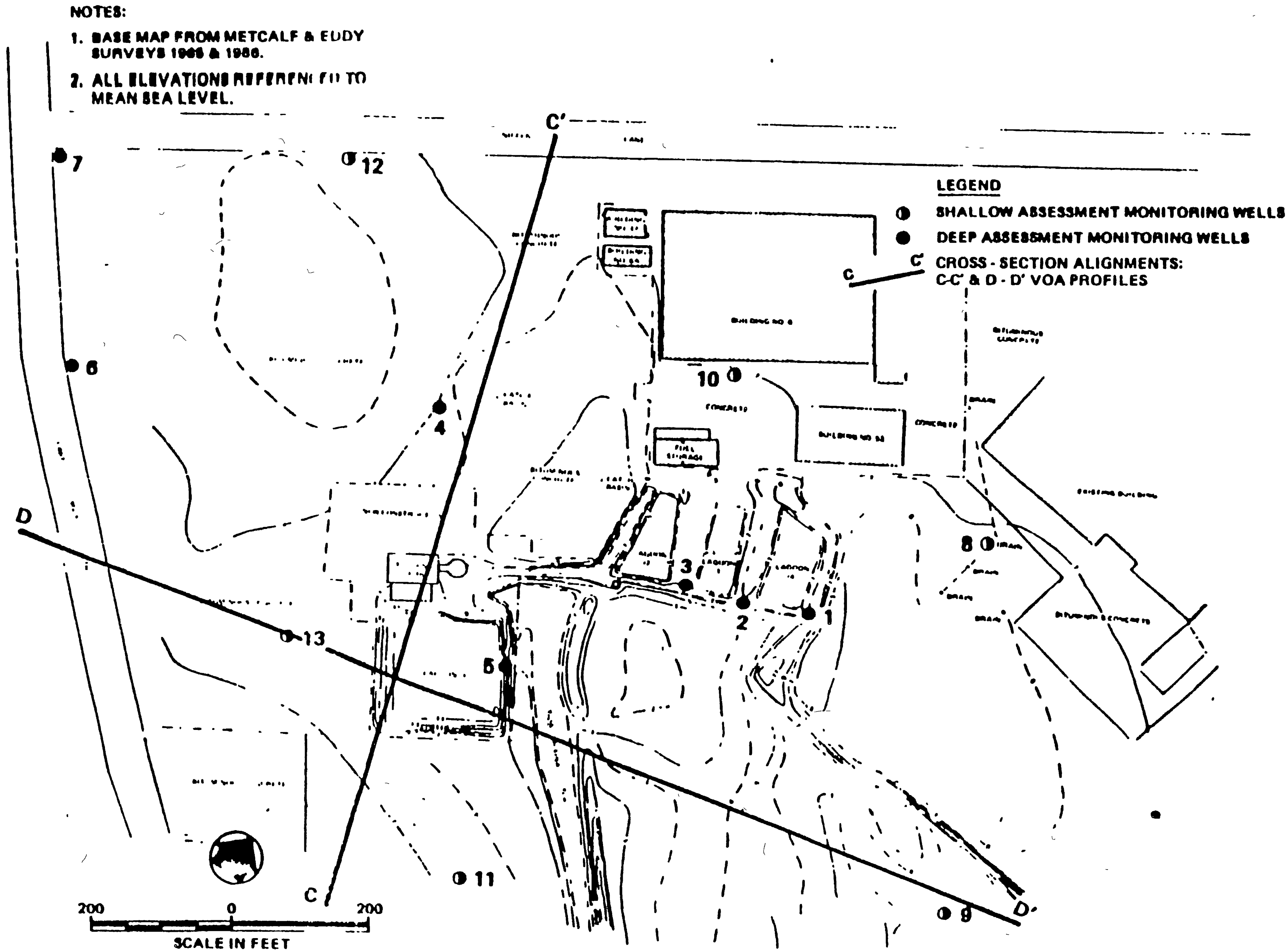


FIGURE 9.4 LOCATION OF CROSS - SECTIO... E VO...TILE ORGANIC CONCENTRATIONS

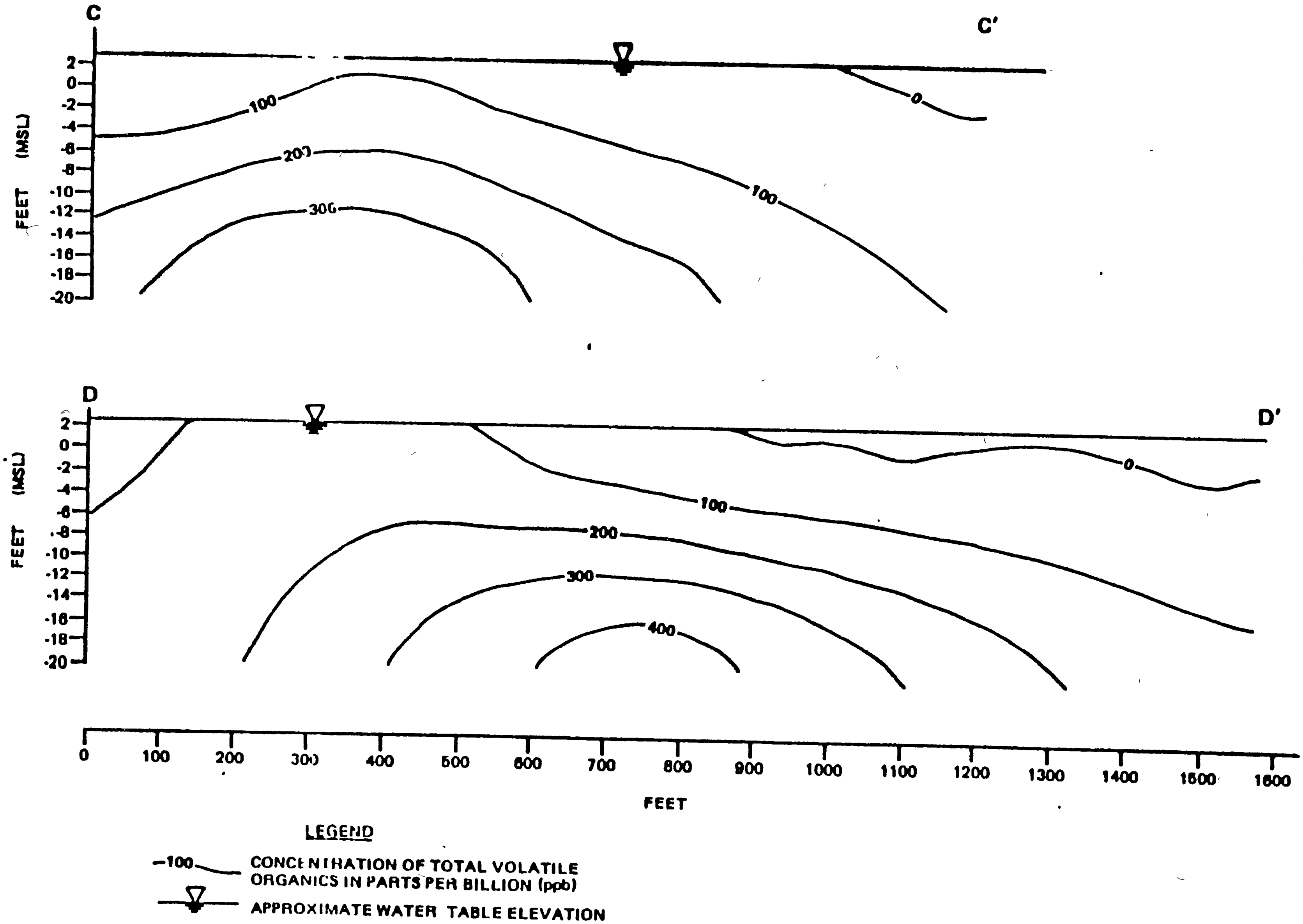


FIGURE 9.5 CROSS - SECTIONS (C-C' & D-D') OF VOLATILE ORGANICS IN GROUNDWATER

plot of these few data points would yield a potentially inaccurate and misleading illustration of chromium concentrations.

9.7 Rate of Migration

The physio-chemical characteristics of the aquifer and the chemical constituents will effect the rate at which contaminants move through the aquifer. The site stratigraphy, natural and artificial recharge conditions, tidal influences, vertical hydraulic gradients, variations in hydraulic conductivity and the relative mobility of individual constituents will all influence the rate at which constituents move.

Calculations of contaminant migration based on groundwater flow rates will not be reliable without field verification because of potential differential transport rates among various classes of chemical constituents. Variations of transport rates are caused by several factors including:

- Dispersion due to diffusion and mechanical mixing;
- Retardation due to adsorption and electrostatic interactions; and
- Transformation due to physical, chemical, and/or biological processes.

Dispersion may result in the overall dilution of the contaminant and blurring at plume boundaries. Dispersion may result in a contaminant's arrival at a particular location before the arrival time computed solely on average rates of groundwater flow. Also, retardation processes can delay the arrival of contaminants beyond that calculated by the average rates of groundwater flow. Relating rates of constituent migration to rates of groundwater flow is appropriate for an approximation during the initial assessment phase. For this assessment, two methods shall be preformed to estimate and further quantify the rate of migration across the Avco facility.

First, information gained during the aquifer stress and slug tests shall be used to calculate an average pore velocity for groundwater flow across the site. The average pore velocity is an average linear velocity, $\bar{V}$, which is derived from Darcy's equation for saturated flow.

$$\bar{V} = \frac{K}{P_e} \cdot i$$

where K is the saturated hydraulic conductivity, is the average horizontal gradient across the facility, and P_e is the effective porosity. The following assumptions apply:

- Source constituents are soluble and mobil in groundwater
- Flow occurs under saturated conditions along a single flow line (one-dimensional);
- Contaminants move advectively without dispersion.

The calculated average linear velocity, $\bar{V}$, represents the rate of groundwater flow through pore spaces only, which is an approximation of contamination migration rates.

The second method shall be employed semi-annually in order to verify the groundwater flow velocity and help assess the rate of migration. Migration rates shall be determined by monitoring the concentration of constituents over a period of time in monitoring wells. Because the wells are located both at the edge and the interior of the plume, subsequent analysis of the monitoring data will then provide a rate of migration, both of the contaminant front as a whole and of individual constituents within the plume.

This approach requires the collection of a time series of data of sufficient duration and frequency to gauge the movement of contaminants. The schedule of sampling outlined in Section 10 will provide adequate data to perform this task. The following method shall be employed:

1) Plot analytical data for constituents of concern (at a minimum this should include total volatile organics) in the same manner as previously described in this section (see figures 9.1 to 9.5).

2) Resultant plots of each round of sampling shall be compared with the plot prepared from the previous round of sampling (6 months earlier).

3) Changes in distance between like concentration contours (i.e. the 100 ppb contour on October 1986 plot and the 100 ppb contour on the April 1987 plot) shall be measured. A resultant velocity or rate of migration, based on the distance of movement between like concentration contours and the interval of time (number of days between sampling events), shall be calculated.

4) The rate will be compared with the groundwater velocity and a written discussion outlining agreement, differences and any anomalies between results of the two methods shall be incorporated in the second quarter and annual reports in a section entitled Current Extent and Rate of Migration.

SECTION X

SCHEDULE OF IMPLEMENTATION

Field work outlined in Section 9.0 will be implemented and completed within the 1st quarter of 1987. Preliminary indications are that this work will be started in late March of 1987.

Figure 10.1 illustrates the schedule of implementation to be exercised in carrying out this groundwater assessment monitoring plan. Milestones include quarterly sampling events, development of a comprehensive site evaluation for contamination and quarterly reporting dates.

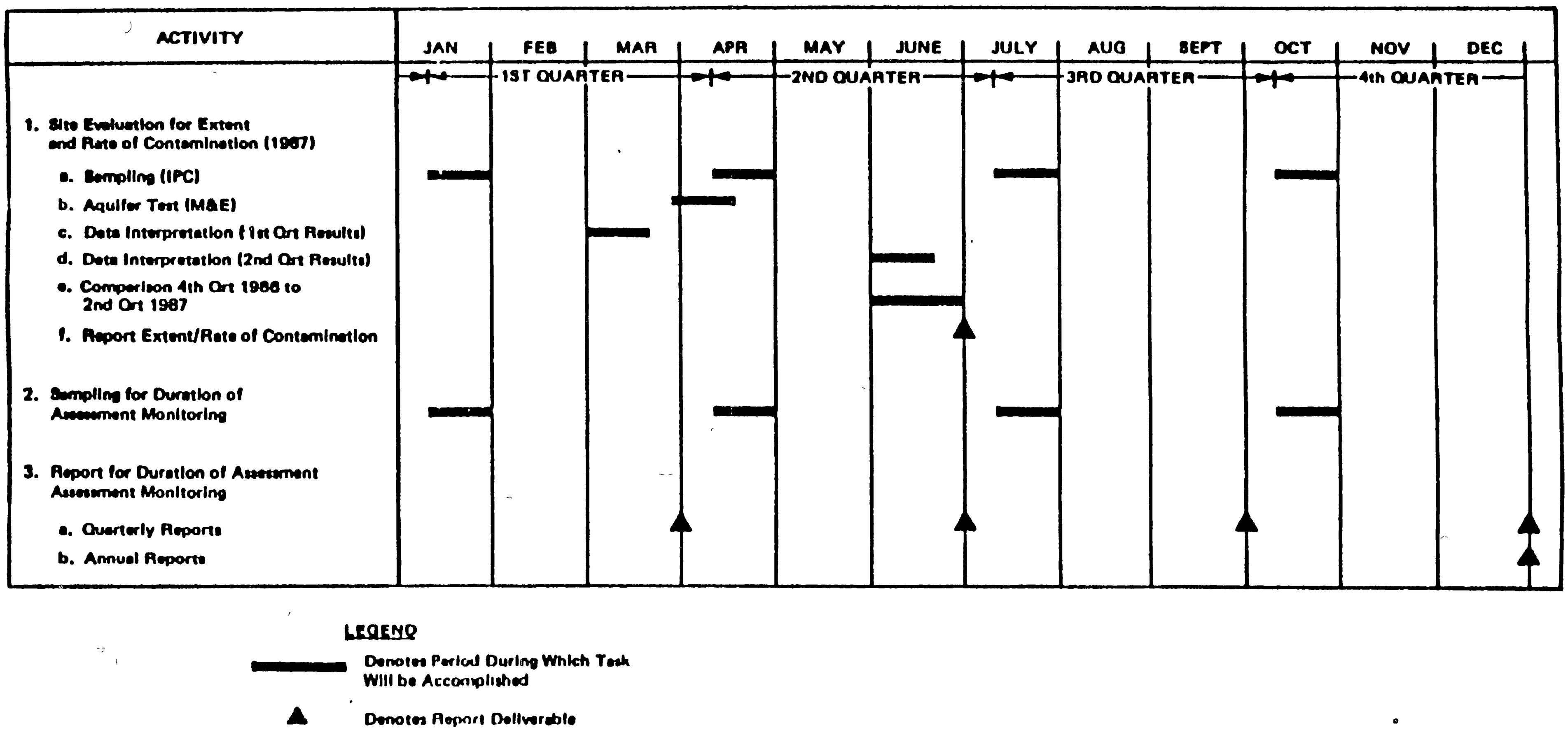


FIGURE 10.1 SCHEDULE OF IMPLEMENTATION

APPENDIX A

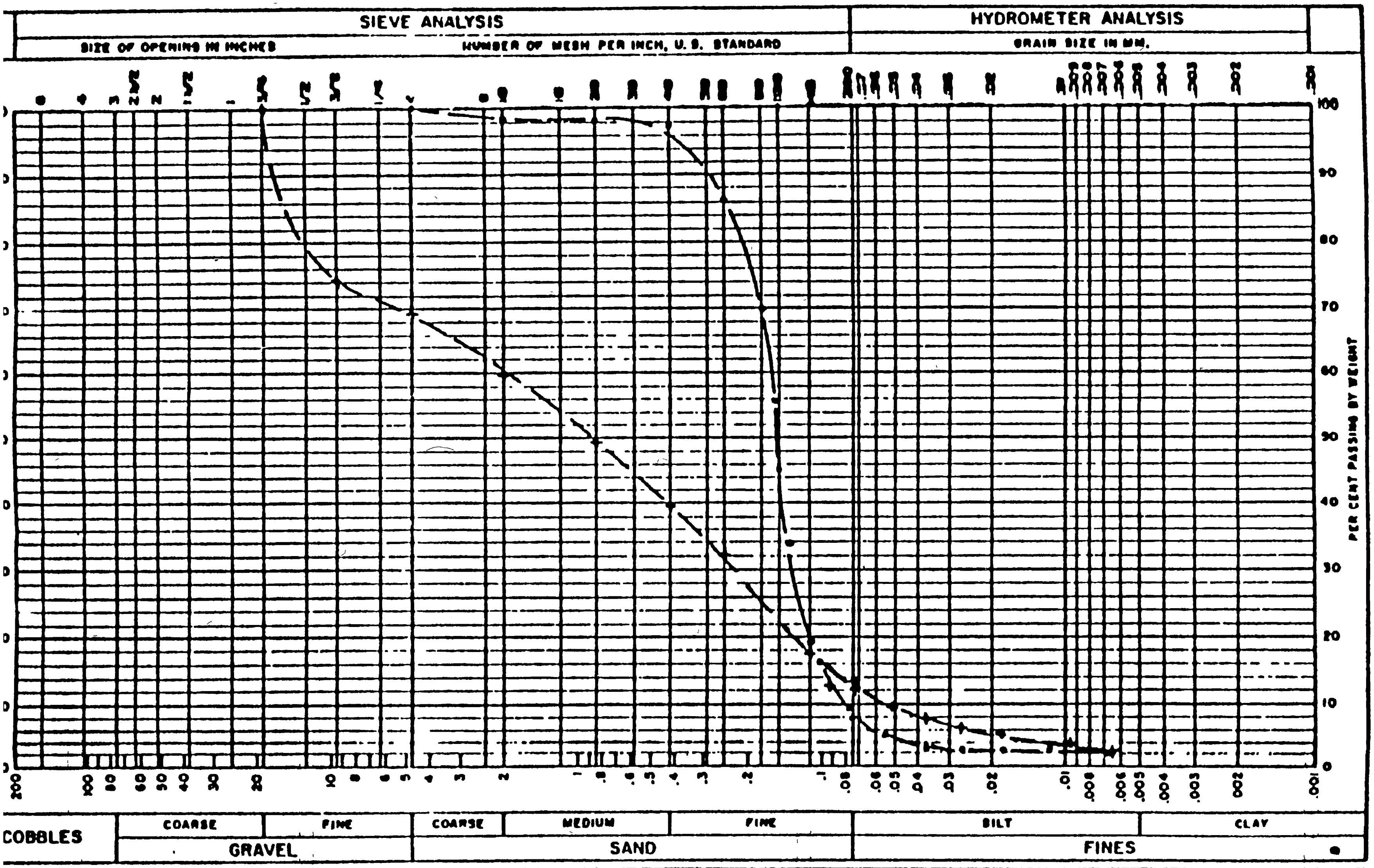
HYDROMETER AND SIEVE ANALYSIS

BORINGS 3, 4, 7, & 9

METCALF & EDDY, ENGINEERS

GRADATION CURVES

LABORATORY NO. 018 - SO. BOSTON
FIELD SAMPLE NOS. BORING B3
DATE TESTED 10-10-1985
ACCT. ABBR. AUG. LYCOMING
ACCT. NO. 1569
TESTED BY W. CHECCHI



FIELD SAMPLE NO.	KEY	SAMPLE DEPTH	SAMPLE DESCRIPTION
3 - S1	+ — + — + — +	0 - 2'	SM
3 - S3	• • • •	12' - 14'	SP

METCALF & EDDY ENGINEERS

GRADATION CURVES

LABORATORY NO. 018 SO. BOSTON

FIELD SAMPLE NOS. BORING B4

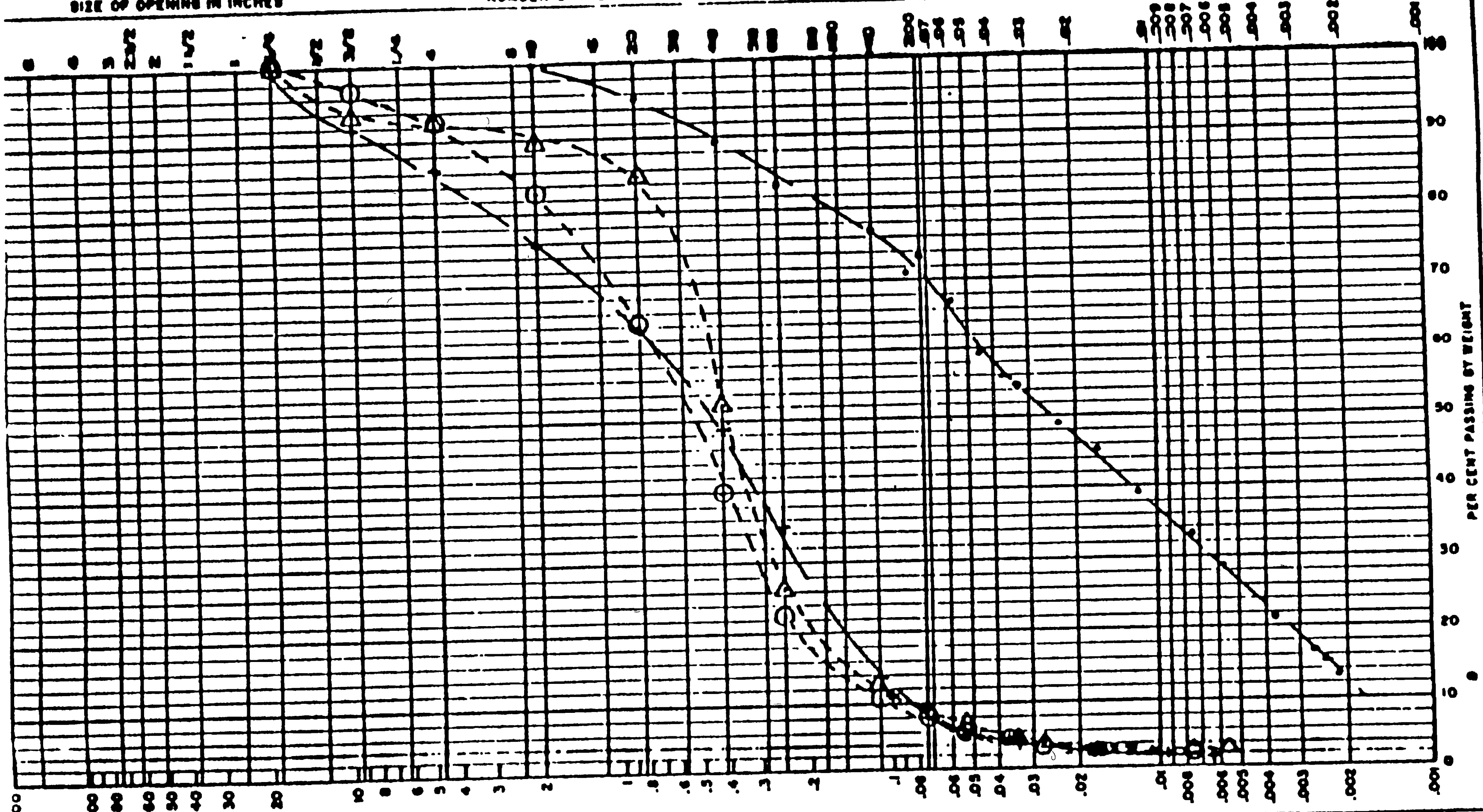
DATE TESTED 10/11

ACCT. ABBR. NCO-LYCOMING

ACCT. NO. 1569

TESTED BY W. CHECCHI

SIEVE ANALYSIS	HYDROMETER ANALYSIS
SIZE OF OPENING IN INCHES / NUMBER OF MESH PER INCH, U.S. STANDARD	GRAIN SIZE IN MM.



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY

FIELD SAMPLE NO.	KEY	SAMPLE DEPTH	SAMPLE DESCRIPTION
- S2	+——+——+——+	3.5' – 5.5'	
- S4	•——•——•	10.5' – 12.5'	
- S6	△- - -△- - - -△	17.5' – 19.5'	
- S8	⊙ -⊙- - - -⊙-	24.5' – 26.5'	

METCALF & EDDY ENGINEERS

GRADATION CURVES

LABORATORY NO. 018 - SO. BOSTON

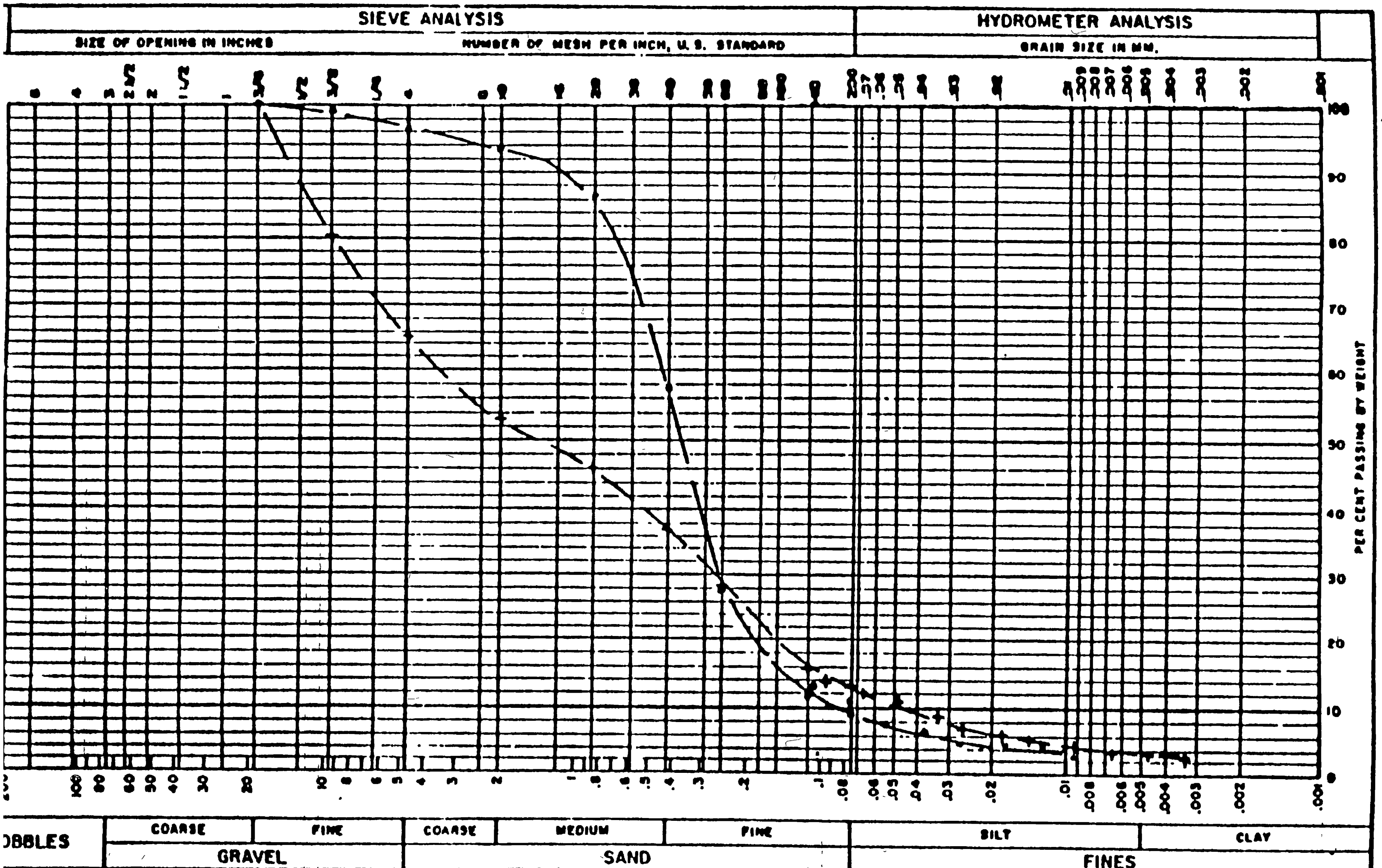
FIELD SAMPLE NOS. BORING - B7

DATE TESTED 10/10 1985

ACCT. ABBR. AVCO-LYCOMING

ACCT. NO. 1669

TESTED BY W. CHECCHI



FIELD SAMPLE NO.	KEY	SAMPLE DEPTH	SAMPLE DESCRIPTION
- S2	+ — + — +	3.6' - 5.6'	
- S5	• — • — •	14.4' - 16.4'	

GRADATION CURVES

LABORATORY NO. 018 - SO. BOSTON

FIELD SAMPLE NOS. BORING - 89

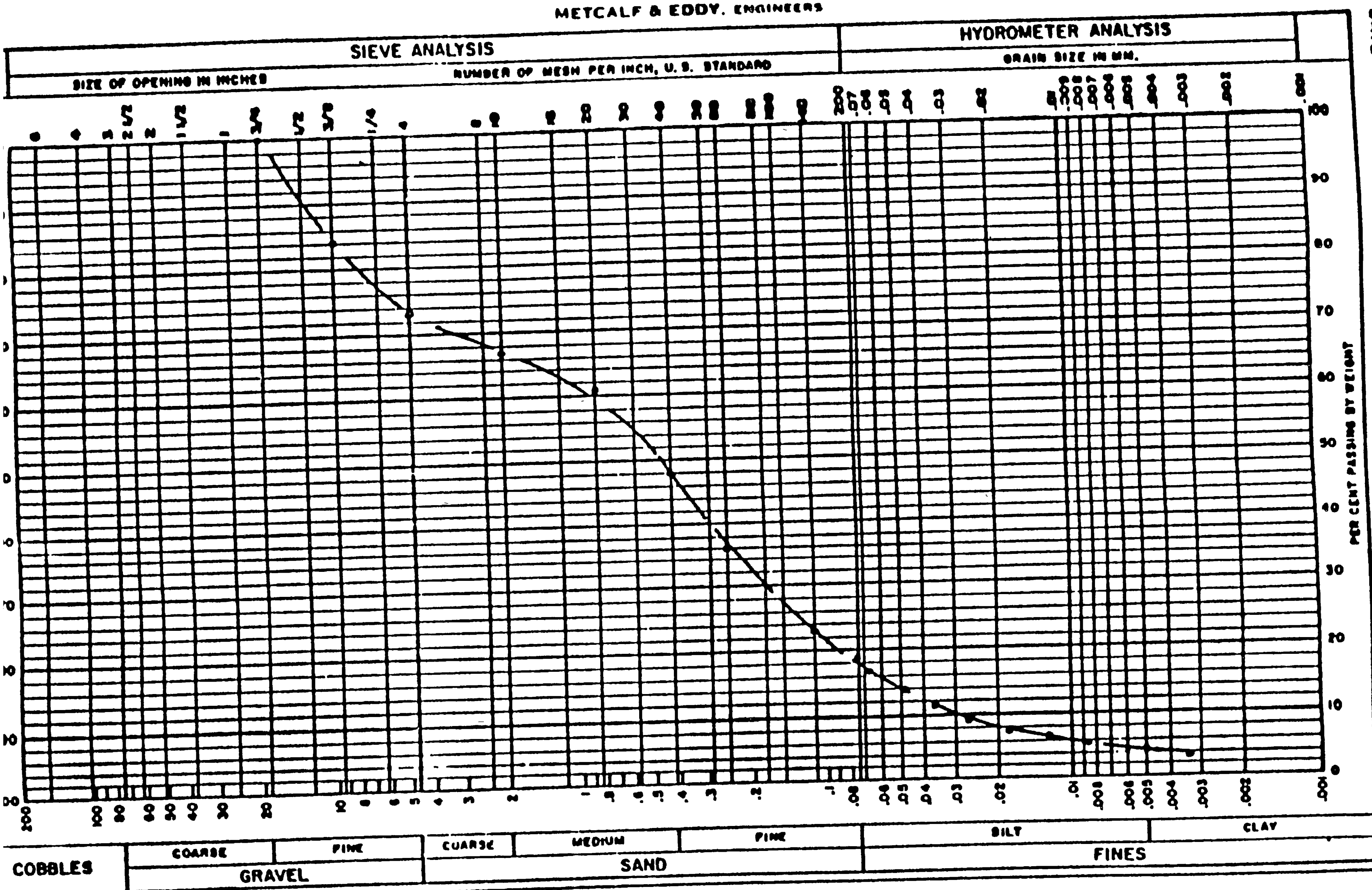
DATE TESTED 10/10/85

ACCT. ABBR. AVCO-LYCOMING

ACCT. NO. 1569

TESTED BY W. CHECCHI

METCALF & EDDY, ENGINEERS



FIELD SAMPLE NO.	KEY	SAMPLE DEPTH	SAMPLE DESCRIPTION
89-S2	—•—•—•	3.6' - 5.6'	

APPENDIX B

REPORTS OF EXPLORATION

METCALF & EDDY
ENGINEERS

REPORT OF EXPLORATION

INSPECTOR: Bill Checchi
DRILL CONTRACTOR: Welti Assoc.
DRILLER:
TYPE DRILL: Dozer MTD Mobile B30S
SIZE & TYPE OF CASING: HSA
DRILLING FLUID: N/A

HOLE NO.: B 1 (OW)(20')45
ACCT. ABBR.: AVCO-LYCOMING
ACCT. NO.: 1569
LOCATION: STRATFORD CT.
ELEVATION:
DATE START: 1 OCT. 85 1600
DATE COMPLETE: 1 OCT. 85 1530
WEATHER: P. CLOUDY - 80°

SAMPLE DATA

NO.	TYPE OF SAMPLE	DEPTH OF SAMPLE FROM	DEPTH OF SAMPLE TO	DRIVING RESISTANCE BLOWS/6 IN.	LENGTH DRIVEN	RECOVERY IN. OR %	SAMPLE NO.	FIELD CLASSIFICATION AND REMARKS
S1	SPT	0	2.0	13-16-12-10	24	16	SM	CF Sand, lit Silt, lit Gravel
S2	"	6	8.0	4-8-11-13	24	14	SM	CF Sand, lit Silt, Tr. Gravel
S3	"	12	14.0	16-16-11-10	24	16	SM	Same
S4	"	18	20	13-16-11-11	24	12	SM	
			E.O.B.					

FIELD LOG OF BORING

DEPTH FROM	DEPTH TO	FIELD LOG OF BORING
0		CF Sand lit Silt
	20	lit/Some F Gravel

GROUNDWATER DATA

	DATE	TIME	DEPTH
AT COMPLETION	10-1-85	1700	5.0

WORK COMPLETED

DRILL TYPE	NO. FEET	DIA.	SAMPLE TYPE	NO.	DIA.
CASE					

TIME DISTRIBUTION

DRILLING: ______ MOVING ON: ______
REPAIRING: ______ STAND BY: ______
TOTAL: ______

SHEET 1 OF 1 SHEETS

HOLE NO. B 1

METCALF & EDDY
ENGINEERS

REPORT OF EXPLORATION

INSPECTOR Bill Checchi
DRILL CONTRACTOR Welti Assoc. Inc.
DRILLER
TYPE DRILL Dozer MTD - Mobile B30S
SIZE & TYPE OF CASING HSA
DRILLING FLUID N/A

HOLE NO. B-2 (20') 4s
ACCT. ABBR. AVCO-LYCOMING
ACCT. NO. 1509
LOCATION Stratford, Ct.
ELEVATION
DATE START 30 Sept. 1985 150
DATE COMPLETE 30 Sept. 1985
WEATHER Clear - 80°

SAMPLE DATA

NO.	TYPE OF SAMPLE	DEPTH OF SAMPLE FROM	TO	DRIVING RESISTANCE BLOWS/6 IN.	LENGTH DRIVEN	RECOVERY IN. OR %	SAMPLE NO.	FIELD CLASSIFICATION AND REMARKS
S1	SPT	0	2.	2-7-8-6	24	12	SM	
S2	"	6	8	1-1-1-1	24	12	OL	
S3	"	12	14	12-37-44-33	24	14	OL/SM	Grey OL / Tan CF Sand & Some F Gravel ...
S4	"	18	20	19-35-24-29	24	16	SM	Tan CF Sand Some F Gravel lit Silt
			E.O.B.					

FIELD LOG OF BORING

DEPTH FROM	TO	
0	0.6	Brn Silty F Sands Some Roots
0.6	2.0	Silty Tan F Sand
2.0		Grey F Sandy Silt, Clay
	19.5	& Some Peat (Organic ?)
19.5		Grey CF Sand lit Silt
	20	Some F Gravel

20' Soil
4 Samples
10' Screen - 5' Riser
Protector Pipe
Develop Well

GROUNDWATER DATA

	DATE	TIME	DE[PTH]
AT COMPLETION			

WORK COMPLETED

DRILL TYPE	NO. FEET	DIA.	SAMPLE TYPE	NO.
CASE				

TIME DISTRIBUTION

DRILLING ______ MOVING ON ______
REPAIRING ______ STAND BY ______
TOTAL ______

SHEET 1 OF 1 SHEETS

HOLE NO.

METCALF & EDDY
ENGINEERS

REPORT OF EXPLORATION

INSPECTOR: Bill Checchi,
DRILL CONTRACTOR: Welti Assoc., Inc.
DRILLER:
TYPE DRILL: DOZER MTD MOBILE B-30S
SIZE & TYPE OF CASING: H.S.A.
DRILLING FLUID:

HOLE NO.: B-3 (20') 45
ACCT. ABBR.: AVCO-LYCOMING
ACCT. NO.: J-1569
LOCATION: STRATFORD CT.
ELEVATION:
DATE START: 19 SEPT. 1985 1600
DATE COMPLETE: 19 SEPT. 1985 1730
WEATHER: PARTLY CLOUDY - 80°s

SAMPLE DATA

NO.	TYPE OF SAMPLE	DEPTH OF SAMPLE FROM	DEPTH OF SAMPLE TO	DRIVING RESISTANCE BLOWS/6 IN.	LENGTH DRIVEN	RECOVERY IN. OR %	[illegible] NO.
S1	SPT	0	2'	2-6-15-17	24	12	SP
S2	"	6'	8'	8-19-10-[illegible]	"	12	SM
S3	"	12'	14'	6-10-16-15	"	18	SM
S4	"	18'	20'	10-3?-55-6?	"	24	SM
			E.O.B.				

FIELD CLASSIFICATION AND REMARKS

1" Gravel in Tip (bit roll) [illegible] Gravel
Tan MF Sand, [illegible], Lit Silt (Fill)
Lot of Gravel (Gap) in Auger [illegible]
change about 4' to Blk CF Sand [illegible]
Spoon wet @ 6'
Gray MF Sand Some Silt, Trace F. Gravel
Gray CF Sand Lit Gravel
& Some Silt

FIELD LOG OF BORING

DEPTH FROM	DEPTH TO	
0	4'	± tan Gravelly Sandy Fill
4'	·	Black Silty Gravelly Sand
·	20'	to Gray " " "

· 20. Soil
4 Samples

GROUNDWATER DATA

	DATE	TIME	DEPTH
AT COMPLETION	9-19-85	1730	6.0

WORK COMPLETED

DRILL TYPE	NO. FEET	DIA.	SAMPLE TYPE	NO.	DIA.
CASE					

TIME DISTRIBUTION

DRILLING: ______ MOVING ON: ______
REPAIRING: ______ STAND BY: ______
TOTAL: ______

SHEET 1 OF 1 SHEETS

METCALF & EDDY
ENGINEERS

REPORT OF EXPLORATION

INSPECTOR: Bill Checchi	HOLE NO.: B-4 (30') 9
DRILL CONTRACTOR: Welti, Assoc. Inc.	ACCT. ABBR.: AVCO - LYCOMING
DRILLER:	ACCT. NO.: J-1569
TYPE DRILL: DOZER MTD. MOBILE B-30	LOCATION: STRATFORD, CT.
SIZE & TYPE OF CASING: HSA (I.D.)	ELEVATION:
DRILLING FLUID: None!	DATE START: 19 SEPT. 1985
	DATE COMPLETE: 19 SEPT. 1985 1508
	WEATHER: P. CLOUDY 80's

SAMPLE DATA

NO.	TYPE OF SAMPLE	DEPTH OF SAMPLE FROM	DEPTH OF SAMPLE TO	DRIVING RESISTANCE BLOWS/6 IN.	LENGTH DRIVEN	RECOVERY IN. OR %	JAR SAMP.
S1	SPT.	0'	2'	2-11-17-24	24"	16"	(SP) X
S2	"	3.5	5.5	14-15-16-11	"	14"	(SP) X
S3	"	7	9	2-1-1-2	"	12"	X (OL)
S4	"	10.5	12.5	1-1-2-3	"	16"	X (OL)
S5	"	14	16	6-8-12-11	"	0 [illegible] 12"	X (SP)
S6	"	17.5	19.5	Running	Sand	—	—
S7	"	21	23	11-22-[illegible]-52	24	24	X (SP)
S8	"	24.5	26.5	7-15-25-[illegible]	"	"	X (SP)
S9	"	28'	30'	———	Running	Sand	(SP)
		E.O.B. (30.0)					

FIELD CLASSIFICATION AND REMARKS

[illegible] Tan mf Sand Lit F. Gravel

As Above Change [illegible] at 4' of [illegible] oily Smelling cf Sand (Auger [illegible]) To 7' black [illegible]

Black [illegible] (OL)

" " [illegible] Fine [illegible]

Sand [illegible] 12.4 [illegible]

Running [illegible] CF Sand [illegible]

17' [illegible] Tight [illegible]

24' [illegible] / Reduce [illegible] SPT To 0.5 [illegible]

CF Sand (Gray) [illegible]

Still [illegible] Sand Problem

1' Auger [illegible] / Sample [illegible]

Lit Silt, Gray as above

Two Attempts [illegible]

[illegible]

FIELD LOG OF BORING

DEPTH FROM	DEPTH TO	
0	4	
4	4.3	Black oily Smelling cf Sand To Silt
4.3	6.0	mf Tan Sand
6	12.4	Black (f) Peat (Organic Soil)
12.4	↓	Running [illegible] cf Sand & Silt [illegible] (Gray)
	30'	

30.0 Soil
9 SAMPLES

GROUNDWATER DATA

	DATE	TIME	DEPTH
AT COMPLETION	9-19-85	14:30	6.5

WORK COMPLETED

DRILL TYPE	NO. FEET	DIA.	SAMPLE TYPE	NO.

CASE

TIME DISTRIBUTION

DRILLING ______ MOVING ON ______
REPAIRING ______ STAND BY ______
TOTAL ______

SHEET 1 OF 1 SHEETS

HOLE NO. B

STANDBY
0730 -

METCALF & EDDY
ENGINEERS

REPORT OF EXPLORATION

INSPECTOR: Bill Checchi
DRILL CONTRACTOR: Welti Assoc Inc.
DRILLER:
TYPE DRILL: Dozer Mtd (B30s)
SIZE & TYPE OF CASING: HSA
DRILLING FLUID: N/A

HOLE NO.: B5 (25)
ACCT. ABBR.: AVCO - LYCOMING
ACCT. NO.: 1569
LOCATION: STRATFORD, CT.
ELEVATION:
DATE START: 1 OCT 85 1000
DATE COMPLETE: 1 OCT 85 1130
WEATHER: P. Cloudy 80°±

SAMPLE DATA

NO.	TYPE OF SAMPLE	DEPTH OF SAMPLE FROM	DEPTH OF SAMPLE TO	DRIVING RESISTANCE BLOWS/6 IN.	LENGTH DRIVEN	RECOVERY IN. OR %	SAMPLE NO.
S1	SPT	0	2.0	5-20-31-28	24	19	SM
S2	"	4.6	6.6	2-2-1-1	24	12	ML/SM
S3	"	9.2	11.2	1-1-2-2	24	18	PT/CH
S4	"	13.8	15.0	5-5-7-13	24	10	SM/PT
S5	"	18.4	20.4	29-34-37-35	24	18	SM
S6	"	23	25	17-26-37-41	24	24	SM
			E.O.B.				

FIELD CLASSIFICATION AND REMARKS

[illegible] gravel
2-2-1-1
[illegible]
[illegible]
1-1-2-2

FIELD LOG OF BORING

DEPTH FROM	DEPTH TO	FIELD LOG OF BORING
0	3.5	tan [illegible] CF Sand & Gravel
3.5		gray [illegible] mf silty [illegible]
	9.6	(Fuel oil smell)
9.6		brn Pt.
	10.3	
10.3		tan mf Sand little silt [illegible]
		[illegible] trace [illegible]
		(Some Peat in 13.8 sample)
		(Some Silt " " ")
		[illegible] Silt and F Sand trace
	25	[illegible] organics (smell)

Margin notes: (SM), ML, PT, SM, (SM/CL)

25' Soil
6 Samples

GROUNDWATER DATA

	DATE	TIME	DEPTH
AT COMPLETION	10-1-85	1130	5.0

WORK COMPLETED

DRILL TYPE	NO. FEET	DIA.	SAMPLE TYPE	NO.	DIA.

CASE

TIME DISTRIBUTION

DRILLING ____ MOVING ON ____
REPAIRING ____ STAND BY ____
TOTAL ____

SHEET 1 OF 1 SHEETS

HOLE NO. B5

METCALF & EDDY
ENGINEERS

REPORT OF EXPLORATION

INSPECTOR Bill Checchi	HOLE NO. B-6
DRILL CONTRACTOR Welti Assoc. Inc.	ACCT. ABBR. AVCO-LYCOMING
	ACCT. NO. 1569
DRILLER	LOCATION STRATFORD, CT.
TYPE DRILL Dozer Mtd Mobile B30s	ELEVATION
SIZE & TYPE OF CASING (Solid) FLT. Auger to 10.6', HW Casing	DATE START 23 SEPT 85 1400
	DATE COMPLETE 24 SEPT 85
DRILLING FLUID WATER	WEATHER CLOUDY 70° ± [illegible]

SAMPLE DATA

NO.	TYPE OF SAMPLE	DEPTH OF SAMPLE FROM	TO	DRIVING RESISTANCE BLOWS/6 IN.	LENGTH DRIVEN	RECOVERY IN. OR %	SAMPLE NO.
S1	SPT	0.8	2.0	14-60/4	14"	12	SP
S2	"	4.8	6.8	6-6-4-4	24	12	SP/SM
S3	"	10.6	11.9	30-31-50/4	16"	16"	SM
S4	"	16.0	18.0	3-26-33-21	24"	12"	SP-SM
S5	"	22.2	24.2	52-24-12-12	24"	0/12	
S6	"	28	30	7-5-6-9	24		
			E.O.B				

FIELD CLASSIFICATION AND REMARKS

Gravelly [illegible] Sand [illegible]
Augered [illegible] 3' [illegible]
[illegible] 5.3
[illegible]
[illegible]
[illegible] 9.5-15'
[illegible] 9.5-14.5
[illegible]
[illegible] 20' [illegible]
[illegible] 20' [illegible]
[illegible]
[illegible] (WASH ?)
Wash from [illegible] to 10 [illegible]

Margin notes: 330 / 1.9 ∇ / [illegible]

FIELD LOG OF BORING

DEPTH FROM	TO	
0	0.8	Concrete w/rebar
0.8	3.0	brn [illegible] sand and Gravel
3.0	3.9	Boulder
3.9		[illegible] mf Sand Tr. Silt & Gravel
[illegible]	5.3	[illegible]
[illegible]	8 (?)	(?) blackish [illegible] from 8'~10'
[illegible]	(SM)	tan-brn " from 10'~11'±
10	10 (?)	? [illegible] 12'±
12		[illegible] SP-SM
[illegible]		Silty [illegible] Gravel
		(Sand [illegible] in Wash
	20	from 12'~16' Wash)
20		brn [illegible] in [illegible] Wash
	30	but little recovery in drive Sampler!

GROUNDWATER DATA

	DATE	TIME	DEPTH
AT COMPLETION			
	9-24-85	09:30	4.9

WORK COMPLETED

DRILL TYPE	NO. FEET	DIA.	SAMPLE TYPE	NO.	DIA.
BASE					

TIME DISTRIBUTION

DRILLING ____ MOVING ON ____
REPAIRING ____ STAND BY ____
TOTAL ____

SHEET 1 OF 1 SHEETS

30' Soil 10' Screen Protector Pipe
6 Samples 5' Riser

FORM 226 HOLE NO. B-6

METCALF & EDDY
ENGINEERS

REPORT OF EXPLORATION

INSPECTOR: Bill Checchi
DRILL CONTRACTOR: Welti, Assoc., Inc.
DRILLER:
TYPE DRILL: Power MTD - Mobile B-30's
SIZE & TYPE OF CASING: HSA
DRILLING FLUID:

HOLE NO.: B-7 (20) 6s
ACCT. ABBR.: AVCO-LYCOMING
ACCT. NO.: J-1569
LOCATION: STRATFORD, CT.
ELEVATION:
DATE START: 20 SEPT. 1985 0800
DATE COMPLETE: 20 SEPT. 1985 1130
WEATHER: P. CLOUDY 80's

SAMPLE DATA

	NO.	TYPE OF SAMPLE	DEPTH OF SAMPLE FROM	DEPTH OF SAMPLE TO	DRIVING RESISTANCE BLOWS/6 IN.	LENGTH DRIVEN	RECOVERY IN. OR %	[illegible] NO.	FIELD CLASSIFICATION AND REMARKS
0820	S1	SPT	0	2'	4-28-50-16	24"	14"	SM	Tan M-F Sand, Lit./Some Silt & F Gravel
0850	S2	"	3.6	5.6	24-33-45-38	"	14"	SM	Grn. Black C&F Sand Lit. Silt, Some Gravel
	S3	"	7.2	9.2	13-33-39-44	"	12	SM	black silty SM with little Gravel, oil [illegible]
	S4	"	10.8	12.8	4-10-11-22	"	12"	SM	black silty gravelly silty Sand
	S5	"	14.4	16.4	1/18" 1/6"	"	0/12 [illegible]	SM	black silty Gravelly, little Sand. Running Sand @ 16 ± / " " " 0.5 [illegible]
	S6	"	18	20	4-4-5-6	"	12"	SM	[illegible] pulling large split [illegible]

E.O.B.

FIELD LOG OF BORING

DEPTH FROM	DEPTH TO	FIELD LOG OF BORING
0	3'	Tan (SM) M-f Sand, Lit/Some Silt & F. Grav
3'		Black-brown Gravelly and Silty C-F Sand
	8	(Some [illegible] Silt in [illegible])
8		black oil impregnated Gravelly Sand
	9	
9		tr. brown Silty Gravelly M-f Sand
	20	(Oil impregnated)

Oily

20' Soil

6 Samples

GROUNDWATER DATA

	DATE	TIME	DEPTH
AT COMPLETION	9-20-85	1030	6 ±

WORK COMPLETED

DRILL TYPE	NO. FEET	DIA.	SAMPLE TYPE	NO.	DIA.

CASE

TIME DISTRIBUTION

DRILLING ____ MOVING ON ____
REPAIRING ____ STAND BY ____
TOTAL ____

SHEET 1 OF 1 SHEETS

METCALF & EDDY
ENGINEERS

REPORT OF EXPLORATION

INSPECTOR: Bill Checchi	HOLE NO.: B-8
DRILL CONTRACTOR: Welti Assoc. Inc.	ACCT. ABBR.: AVCO - LYCOMING
DRILLER:	ACCT. NO.: 1569
TYPE DRILL: Dozer Mtd Mobile B30s	LOCATION: STRATFORD, CT.
SIZE & TYPE OF CASING: HSA	ELEVATION:
DRILLING FLUID: N/A	DATE START: 1 OCT 85 1300
	DATE COMPLETE: 1 OCT 85 1500
	WEATHER: P. CLOUDY 80°

SAMPLE DATA

NO.	TYPE OF SAMPLE	DEPTH OF SAMPLE FROM	DEPTH OF SAMPLE TO	DRIVING RESISTANCE BLOWS/6 IN.	LENGTH DRIVEN	RECOVERY IN. OR %	SAMPLE NO.	FIELD CLASSIFICATION AND REMARKS
S1	SPT	0	2.0	3-3-5-5	24	14	SM	Brown Silt, F. Gravel & CF Sand, Lit [illegible]
S2	"	4.1	6.1	6-12-22-20	24	16	SM	oily smell
S3	"	8.2	10.2	5-4-2-2	24	0	SM	Auger spoil, 2nd Attempt
S4	"	12.3	14.3	1/12-1-1	24	9/14	SM/ML	
S5	"	16.4	18.1	1-2-3-4	24	16	SM-ML, Pt	Brn Pt.
S6	"	20.5	22.5	1-2-1-2	24	12	Pt	" "
S7	"	24.6	25.5	40-63/4	10	10	SM	Brn CF Sand Lit Silt, Tr. F. Gravel, Peat
S8	"	28.7	30.7	11-13-24-29	24	24	SM/ML	Grey Silt & F. Sand @ 30'
S9	"	33	35	37-29-34-40	24		SM/ML	As Above CM Sand
			E.O.B.					

FIELD LOG OF BORING

DEPTH FROM	DEPTH TO	FIELD LOG OF BORING
0	3.0	brn CF Sand, Lit Silt, Some F Gravel
3.0	5.0	Grey MF Sand Some F Gravel ~~oily [illegible]~~
5.0	7.5	oily smelling black MF Sand & Some F Gravel, Lit Silt
7.5	12.8	black oily smelling SM/ML
12.8	24.6	Brn Peat
24.6	30	Brn CF Sand, Some Organics (Pt) Lit/Trace Silt, Trace F Gravel
30		Grey F Sand and Silt SM~ML

GROUNDWATER DATA

	DATE	TIME	DEPTH
AT COMPLETION	10-1-85	1500	5.5

WORK COMPLETED

DRILL TYPE	NO. FEET	DIA.	SAMPLE TYPE	NO.	DIA.

CASE

TIME DISTRIBUTION

DRILLING ______ MOVING ON ______
REPAIRING ______ STAND BY ______
TOTAL ______

SHEET 1 OF 1 SHEETS

METCALF & EDDY
ENGINEERS

REPORT OF EXPLORATION

INSPECTOR: Bill Checchi	HOLE NO.: B-9 (20') 6S
DRILL CONTRACTOR: Worti Assoc. Inc.	ACCT. ABBR.: AVCO-LYCOMING
DRILLER:	ACCT. NO.: 1569
TYPE DRILL: Dozer MA - Mobile B30S	LOCATION: STRATFORD, CT.
SIZE & TYPE OF CASING: HSA	ELEVATION:
DRILLING FLUID:	DATE START: 20 Sept 85 1100
	DATE COMPLETE: 20 Sept 85 1400
	WEATHER: Clear, 80°±

SAMPLE DATA

NO.	TYPE OF SAMPLE	DEPTH OF SAMPLE FROM	DEPTH OF SAMPLE TO	DRIVING RESISTANCE BLOWS/6 IN.	LENGTH DRIVEN	RECOVERY IN. OR %	SAMPLE NO.	FIELD CLASSIFICATION AND REMARKS
S1	SPT	0.4	2.4	25-44-43-38	24	12"	SM	CF Tan & Black Silty Sand Some Gravel (Bit Core, Pavement)
S2	"	3.6	5.6	5-9-7-11	"	12"	SM	Black Gravelly Silty CF Sand (Oil ?)
S3	"	7.2	9.2	37-43-33-22	"	12"	SM	(Silty black sand around to 7.2') (Organic smell about 9'±)
S4	"	10.8	12.8	1-1-1-1	"	16"	Pt	Peat with smell
S5	"	14.4	16.4	2/12-1-2	"	18"	"	Peat getting cleaner
S6	"	18	20.	1/12-2-2	"	18"	"	" " "

E.O.B.

Margin notes: 3'±, 9', 0il, ▽

DEPTH FROM	DEPTH TO	FIELD LOG OF BORING
0	0.4	(5") bit Core. Pavement
0.4	3	Tan Gravelly Silty CF Sand
3		Black " " " (oily ? odor smell)
	9	
9		Brown Peat Some Oil
	20	Smell in upper layer

20' Soil
6 Samples

GROUNDWATER DATA

	DATE	TIME	DEPTH
AT COMPLETION	9-20-85	1400	6'±

WORK COMPLETED

DRILL TYPE	NO. FEET	DIA.	SAMPLE TYPE	NO.	DIA.

CASE

TIME DISTRIBUTION

DRILLING ______ MOVING ON ______
REPAIRING ______ STAND BY ______
TOTAL ______

SHEET 1 OF 1 SHEETS

HOLE NO. B-9

METCALF & EDDY
ENGINEERS

REPORT OF EXPLORATION

INSPECTOR: BILL CHECCHI
DRILL CONTRACTOR: Welti Assoc. Inc
DRILLER:
TYPE DRILL: Dozer Mtd - Mobile B30S
SIZE & TYPE OF CASING: HSA
DRILLING FLUID: N/A

HOLE NO.: B 10
ACCT. ABBR.: AVCO - LYCOMING
ACCT. NO.: 1569
LOCATION: STRATFORD, CT.
ELEVATION:
DATE START: 25 Sept 85 1400
DATE COMPLETE: 25 Sept 85 1530
WEATHER: Clear 80° (F)

SAMPLE DATA

NO.	TYPE OF SAMPLE	DEPTH OF SAMPLE FROM	DEPTH OF SAMPLE TO	DRIVING RESISTANCE BLOWS/6 IN.	LENGTH DRIVEN	RECOVERY IN. OR %	SAMPLE NO.	FIELD CLASSIFICATION AND REMARKS
S1	SPT	0	2	1/12-4-13	24	14	SM	
S2	"	3.5	5.5	6-5-5-8	24	16	SM/Pt	
S3	"	7	9	9-11-10-11	24	0/12	SM	Grey auger spoil gravelly
S4	"	10.5	12.5	2-1-2-1	24	24	~~SM~~ Pt	
S5	"	14	16	1-1-1-2	24	16	Pt/OL	brn auger spoil with silty sand
S6	"	17.5	19.5	1-1-2-2	24	24	Pt/OL	
S7	"	21	23	1-2-3-2	24	16	Pt/OL	
S8	"	24.5	26.5	1-2-2-3	24	16	Pt/OL	
S9	"	28	30	1-1-1-2	24	16	Pt	
			E.	O. B.				

FIELD LOG OF BORING

DEPTH FROM	DEPTH TO	
0	1.6	Tan Sandy and Silt Tr. Gravel
1.6		Gray SM Silt and Sand
	5.0	Tr./Lit F. Gravel
5.0	5.2	black "oily" smelling CF Sand
		& Gravel and Silt
5.2	5.4	brn Silty CF Sand Some F Gravel
5.4	5.5	black "oily" smelling MF Sand
5.5	~~[illegible]~~	10" Silt & Peat & Sand
10	~~[illegible]~~	brn Peat with
~~[illegible]~~	15.5	brn F Sand, Silt layers
15.5		Brn-Grey Clayey-Silty-Peaty
	30	(OL? or Pt?)
		30' Soil
		9 Samples

GROUNDWATER DATA

	DATE	TIME	DEPTH
AT COMPLETION			

WORK COMPLETED

DRILL TYPE	NO. FEET	DIA.	SAMPLE TYPE	NO.	DIA.

CASE

TIME DISTRIBUTION

DRILLING ____ MOVING ON ____
REPAIRING ____ STAND BY ____
TOTAL ____

SHEET 1 OF 1 SHEETS

B 10

METCALF & EDDY
ENGINEERS

REPORT OF EXPLORATION

INSPECTOR B. Checchi	HOLE NO. B-11
DRILL CONTRACTOR Welti Assoc Inc	ACCT. ABBR. AVCO-LYCOMING
DRILLER	ACCT. NO. 1569
TYPE DRILL Dozer Mtd - Mobile B30s	LOCATION STRATFORD, CT.
SIZE & TYPE OF CASING HSA	ELEVATION
DRILLING FLUID N/A	DATE START 26 SEPT 85 1520
	DATE COMPLETE 26 SEPT 85 1700
	WEATHER drizzle 70° ±

SAMPLE DATA

NO.	TYPE OF SAMPLE	DEPTH OF SAMPLE FROM	DEPTH OF SAMPLE TO	DRIVING RESISTANCE BLOWS/6 IN.	LENGTH DRIVEN	RECOVERY IN. OR %	SAMPLE NO.	FIELD CLASSIFICATION AND REMARKS
S1	SPT	0	2	1-4-8-9	24	14	SM	Tan
S2	"	6	8	3/12-4-7	24	12	SM	Grey [illegible]
S3	"	12	12.5	100/6	6	6	SP	Tr. silt [illegible] CF Sand [illegible]
S4	"	18	20	17-17-13-12	24	16	SM	Grey brn
			E.O.B.					

FIELD LOG OF BORING

DEPTH FROM	DEPTH TO	
0	3	tan MF Silty Sand
3	12	Grey MF Silt, Sand
12		Grey brn CF Sand Lit/Some
	20	& Gravel Tr/Lit Silt

23 Soil
4 Samples

GROUNDWATER DATA

	DATE	TIME	DEPTH
AT COMPLETION	9-26-85	1700	3.0

WORK COMPLETED

DRILL TYPE	NO. FEET	DIA.	SAMPLE TYPE	NO.	DIA.

CASE

TIME DISTRIBUTION

DRILLING ______ MOVING ON ______
REPAIRING ______ STAND BY ______
TOTAL ______

SHEET 1 OF 1 SHEETS

B-11

METCALF & EDDY
ENGINEERS

REPORT OF EXPLORATION

INSPECTOR: Bill Checchi
DRILL CONTRACTOR: Welti Assoc. Inc.
DRILLER:
TYPE DRILL: Dozer Mtd. Mobile B-30?
SIZE & TYPE OF CASING: HSA O.D. I.D.
DRILLING FLUID: NONE

HOLE NO.: B-12
ACCT. ABBR.: AVCO/LYCOMING
ACCT. NO.: 1569
LOCATION: STRATFORD CT.
ELEVATION:
DATE START: 23 SEPT. 85 1100
DATE COMPLETE: 23 SEPT. 85 1300
WEATHER: CLOUDY 80°F

SAMPLE DATA

NO.	TYPE OF SAMPLE	DEPTH OF SAMPLE FROM	DEPTH OF SAMPLE TO	DRIVING RESISTANCE BLOWS/6 IN.	LENGTH DRIVEN	RECOVERY IN. OR %	SAMPLE NO.	FIELD CLASSIFICATION AND REMARKS
S1	SPT	0	2.0	22-59-60-42	24"	6"	GW-SP	[illegible]
S2	"	3.5	5.5	10-9-8-8	"	14"	SM	Silty gray [illegible] M/F Sand (Stained)
S3	"	7	9	3-4-6-12	"	0/18	SM	[illegible]
S4	"	10.5	12.5	3-2-2-3	"	12"	SM	Gray [illegible] Silty M/F Sand [illegible]
S5	"	14	16	2-2-4-5	"	12"	PT	[illegible] (Organic [illegible])
S6	"	17.5	19.5	2-7-12-19	"	12"	PT	[illegible] Sand [illegible]
S7	"	21	23	13-27-31-60	"	12"	PT/SP	[illegible]
S8	"	24.5	26.5	30-33-33-30	"	12"	SP	Trace [illegible] Brn M/F Sand Some F. Gravel
S9	"	29	30	21-43-33-25	"	12"	SP	Trace organics
			E.O.B.					

FIELD LOG OF BORING

DEPTH FROM	DEPTH TO	FIELD LOG OF BORING
0	0.3	Bit. Conc. Pavement
0.3	1.0	Tan-brn Sand & f Gravel
1.0	14	brn & gray m/f Sand Trace [illegible] [illegible] silt [illegible]
14	19.3	Brown Pt. (Trace [illegible]) trace Brn M/f Sands
19.3	30	brn [illegible] m/f Sand Some F Gravel

30' Soil
9 Samples

GROUNDWATER DATA

	DATE	TIME	DEPTH
AT COMPLETION	9-23-85		

WORK COMPLETED

DRILL TYPE	NO. FEET	DIA.	SAMPLE TYPE	NO.	DIA.

BASE

TIME DISTRIBUTION
DRILLING ___ MOVING ON ___
REPAIRING ___ STAND BY ___
TOTAL ___

SHEET 1 OF 1 SHEETS

HOLE NO. B-9

METCALF & EDDY
ENGINEERS

REPORT OF EXPLORATION

INSPECTOR Bill Checchi
DRILL CONTRACTOR Welti Assoc. Inc.
DRILLER
TYPE DRILL Dozer MTD Mobile B-30s
SIZE & TYPE OF CASING HSA
DRILLING FLUID N/A

HOLE NO. B-13
ACCT. ABBR. AVCO-LYCOMING
ACCT. NO. 1569
LOCATION STRATFORD, CT.
ELEVATION
DATE START 25 SEPT 85 1600
DATE COMPLETE 25 SEPT 85 1700
WEATHER CLEAR 80°

SAMPLE DATA

NO.	TYPE OF SAMPLE	DEPTH OF SAMPLE FROM	DEPTH OF SAMPLE TO	DRIVING RESISTANCE BLOWS/6 IN.	LENGTH DRIVEN	RECOVERY IN. OR %	SAMPLE NO.	FIELD CLASSIFICATION AND REMARKS
S1	SPT	0	2	20-25-15-15	24	12"	SM	Tan-brn Silty Gravelly MF Sand
S2	"	3.6	4.B	18-100/3	9	9	SM	F Sand - Some Silt; Cobble Refusal
S3	"	7.2	9.2	20-14-11-12	24	14	SM	Brn CF Sand W/Some F Gravel, Trace Silt
S4	"	10.8	12.8	17-18-23-26	24	14	SM, SP	Brn. (Silt Trace) CF Sand Lit / Some F Gravel
S5	"	14.4	16.4	14-17-23-26	24	14	SM, SP	Brn "
S6	"	18	20	20-19-23-20	24	14	SM/SP	Same
			E.O.B.					

FIELD LOG OF BORING

DEPTH FROM	DEPTH TO	FIELD LOG OF BORING
0		Tan brown Silty Gravelly
	4.5	MF Sand
4.5		F Sand (Lit Silt)
	8.7	
8.7		brn CF Sand Lit - Trace Silt
	20	Lit / Some F Gravel

20' Soil
6 Samples

GROUNDWATER DATA

	DATE	TIME	DEPTH
AT COMPLETION	9-25-85	1700	4.0

WORK COMPLETED

DRILL TYPE	NO. FEET	DIA.	SAMPLE TYPE	NO.	DIA.

CASE

TIME DISTRIBUTION

DRILLING ______ MOVING ON ______
REPAIRING ______ STAND BY ______
TOTAL ______

SHEET 1 OF 1 SHEETS

B-13

Standby Time 0730 – 1100
no guards to open gates to
Tools in cleanup area !!

METCALF & EDDY
ENGINEERS

REPORT OF EXPLORATION

INSPECTOR: Bill Checchi
DRILL CONTRACTOR: Welti Assoc. Inc.
DRILLER:
TYPE DRILL: Dodge Mtd. Mobile B30S
SIZE & TYPE OF CASING: HSA
DRILLING FLUID: N/A

HOLE NO.: B-14 (OW) (15')
ACCT. ABBR.: AVCO - LYCOMING
ACCT. NO.: 1589
LOCATION: STRATFORD, CT.
ELEVATION:
DATE START: 26 SEPT 85
DATE COMPLETE: 26 SEPT 85
WEATHER: Cloudy 70°

SAMPLE DATA

NO.	TYPE OF SAMPLE	DEPTH OF SAMPLE FROM	DEPTH OF SAMPLE TO	DRIVING RESISTANCE BLOWS/6 IN.	LENGTH DRIVEN	RECOVERY IN. OR %	SAMPLE NO.	FIELD CLASSIFICATION AND REMARKS
S1	SPT	0	2.0	4-26-54-35	24	18	SM	[illegible]
S2	"	6	8	11-17-18-18	24	16	SM	[illegible]
S3	"	12	12.5	100/6"	6"	6"	SP-SM	[illegible] to 15'
S4	"	18.5	20	55-58-37	18	18	SM	[illegible]
		E.O.B.						

FIELD LOG OF BORING

DEPTH FROM	DEPTH TO	FIELD LOG OF BORING
0		tan m-f to f Sand
		Some Silt, little F.
		Gravel [Gravel (?) [illegible]
	12	w/depth)
12		tan-brn CF Sand, F Gravel
	12.5	lit [illegible] Silt
12.5		tan-brn Mf Sand Some F Gravel
	20	Some Silt

(circled) 20' [illegible] 14' Well
10' Screen
4' Riser
Protector Pipe
[illegible]

GROUNDWATER DATA

	DATE	TIME	DEPTH
AT COMPLETION	9-26-85		

WORK COMPLETED

DRILL TYPE	IN. NET	DIA.	SAMPLE TYPE	NO.	DIA.

BASE

TIME DISTRIBUTION

DRILLING: ____ MOVING ON: ____
REPAIRING: N/A STAND BY: 3.5
TOTAL: ____

SHEET 1 OF 1 SHEETS

R-14

STANDBY 1000 ~ 1100

METCALF & EDDY
ENGINEERS

REPORT OF EXPLORATION

INSPECTOR: Bill Checchi	HOLE NO.: B-15 (OW) (20) 4:
DRILL CONTRACTOR: Welti Assoc. Inc	ACCT. ABBR.: AVCO - LYCOMING
DRILLER:	ACCT. NO.: 1569
TYPE DRILL: Dr. Mtd - Mobile B30S	LOCATION: Stratford, CT.
SIZE & TYPE OF CASING: HSA	ELEVATION:
DRILLING FLUID: N/A	DATE START: 30 Sept 85 1300
	DATE COMPLETE: 30 Sept 85 1430
	WEATHER: Clear - 80°

SAMPLE DATA

NO.	TYPE OF SAMPLE	DEPTH OF SAMPLE FROM	TO	DRIVING RESISTANCE BLOWS/6 IN.	LENGTH DRIVEN	RECOVERY IN. OR %	SAMPLE NO.	FIELD CLASSIFICATION AND REMARKS
S1	SPT	0.3	2.3	8-9-13-14	24	18	SM	Tan-Lt Brn Silty M-F Sand tr. Lt Gravel (Fill)
S2	"	6	8	6-9-10-9	24	14	SM	Sly moist CF Sand Lit Silt
S3	"	12	14	7-12-14-18	24	18	SM	Same; running sand to 15±
S4	"	18	20	26-44-38-36	24	24	SM	(M-F Sand as above)
			E.O.B					

FIELD LOG OF BORING

DEPTH FROM	TO	
0	0.3	Bit-Con (Park. lot)
0.3		Tan Lt. brn Silty M/F Sand
		Lit/tr. F. Gravel
	20	(to CF Sand)

20' Soil
4 Samples

10' Screen
5' riser
protector pipe
developed

GROUNDWATER DATA

	DATE	TIME	DEPTH
AT COMPLETION	9-30-85		

WORK COMPLETED

DRILL TYPE	NO. FEET	DIA.	SAMPLE TYPE	NO.	DIA.

CASE

TIME DISTRIBUTION

DRILLING ______ MOVING ON ______
REPAIRING ______ STAND BY ______
TOTAL ______

SHEET 1 OF 1 SHEETS

B-15

METCALF & EDDY
ENGINEERS

REPORT OF EXPLORATION

INSPECTOR Bill Checchi
DRILL CONTRACTOR Welti Assoc. Inc.
DRILLER
TYPE DRILL Dozer Mid-Mobile B-30S
SIZE & TYPE OF CASING HSA
DRILLING FLUID N/A

HOLE NO. B 16 (20') 95
ACCT. ABBR. AVCO-LYCOMING
ACCT. NO. 1569
LOCATION STRATFORD, CT.
ELEVATION
DATE START 25 SEPT 1995 0800
DATE COMPLETE 25 SEPT 1995 1030
WEATHER 80°± CLEAR

SAMPLE DATA

NO.	TYPE OF SAMPLE	DEPTH OF SAMPLE FROM	DEPTH OF SAMPLE TO	DRIVING RESISTANCE BLOWS/6 IN.	LENGTH DRIVEN	RECOVERY IN. OR %		FIELD CLASSIFICATION AND REMARKS
S1	SPT	0.4	0.6	100/3	3"	3"	SP-GP	Lt. Brn. CF Sand & Some Gravel Cobble @ (0.6 FT!!) [illegible]
S2	"	3.5	5.5	7-6-3-8	24"	12"	SM	[illegible]
S3	"	7	9	5-7-9-8	24"	12"	SM	[illegible]
S4	"	10.5	12.5	5-7-10-7	24"	12"	SM	CF Sand Lit. Silt [illegible] and F Gravel
S5	"	14	16	13-10-9-8	24"	12"	SM	[illegible] Same
S6	"	17.5	19.5	20-24-16-11	24"	12"	SM	" Same [illegible] F. Gravel
S7	"	21	23.5	18-13-20-13/4	22"	12"	SM	" Same "
S8	"	24.5	26.5	30-43-28-31	24"	12"	SM-SP?	Change @ 26 ±
S9	"	28	30	25-25-23-25	24"	16"	SP-SM	Layers of SP-SM-SP Red Brown CF Sand Some Gravel
		E.O.B.						

(left margin: 9 [illegible] 2' [illegible])

FIELD LOG OF BORING

DEPTH FROM	DEPTH TO	FIELD LOG OF BORING
0	0.4	Bit. Conc. (Parking Lot)
0.4	2.0	Lt. brn. CF Sand Some Gravel Fill
2.0		brn. [illegible] Sand Some Lit. [illegible]
	11.0	Gravel
11.		CF Sand and F Gravel [illegible]
	26'	Lit Silt
26		Red Brn CF Sand Some F Gravel
	30	Tr. Silt

30' Soil
9 Samples

GROUNDWATER DATA

	DATE	TIME	DEPTH
AT COMPLETION	9-25-95	1030	4.8

WORK COMPLETED

DRILL TYPE	NO. FEET	DIA.	SAMPLE TYPE	NO.	DIA.

CASE

TIME DISTRIBUTION

DRILLING ______ MOVING ON ______
REPAIRING ______ STAND BY ______
TOTAL ______

SHEET 1 OF 1 SHEETS

HOLE NO. B 16

METCALF & EDDY
ENGINEERS

REPORT OF EXPLORATION

INSPECTOR Bill Checchi	HOLE NO. B 17 (001) (20) 4s
DRILL CONTRACTOR Welti Assoc Inc.	ACCT. ABBR. AVCO - LYCOMING
DRILLER	ACCT. NO. 1569
TYPE DRILL Dozer Mtd Mobile B30s	LOCATION
SIZE & TYPE OF CASING HSA	ELEVATION
DRILLING FLUID N/A	DATE START 25 SEPT 1995 1030
	DATE COMPLETE 25 SEPT 1995 1300
	WEATHER Clear 70~80

SAMPLE DATA

NO.	TYPE OF SAMPLE	DEPTH OF SAMPLE FROM	TO	DRIVING RESISTANCE BLOWS/6 IN.	LENGTH DRIVEN	RECOVERY IN. OR %	SAMPLE	FIELD CLASSIFICATION AND REMARKS
S1	SPT	0.4	2.4	14-57-39-43	24"	12"	SP	See Field Log. SPT - dry
S2	"	6	8	6-10-8-12	24"	12"	SP	Brown CF Sand & F Gravel Tr. Silt SPT. wet 6'±
S3	"	12	14	13-17-12-16	24"	12"	SP	Same
S4	"	18	20	11-14-17-16	24"	12	SP	Same

E.O.B.

DEPTH FROM	TO	FIELD LOG OF BORING
0	0.4	Bit Conc. Parking Area
0.4	0.7	Tan CF Sand + Gravel (SP)
0.7	1.2	black CF Sand, Silt Gravel (SM)
1.2		brown CF Sand and Gravel (SP)
	20	Tr. Silt

20 Soil
4 samples
10' Screen
5' Riser
protector pipe
developed

GROUNDWATER DATA

	DATE	TIME	DEPTH
AT COMPLETION			

WORK COMPLETED

DRILL TYPE	NO. FEET	DIA.	SAMPLE TYPE	NO.	DIA.

CASE

TIME DISTRIBUTION

DRILLING ____ MOVING ON ____
REPAIRING ____ STAND BY ____
TOTAL ____

SHEET 1 OF 1 SHEETS

METCALF & EDDY
ENGINEERS

REPORT OF EXPLORATION

INSPECTOR Bill Checchi
DRILL CONTRACTOR Welti Assoc. Inc.
DRILLER
TYPE DRILL Dozer Mtd Mobile B-30³
SIZE & TYPE OF CASING HSA
DRILLING FLUID N/A

HOLE NO. B-18 (20') 4S
ACCT. ABBR. AVCO-LYCOMING
ACCT. NO. .1569
LOCATION STRATFORD, CT.
ELEVATION
DATE START 26 SEPT 85 1330
DATE COMPLETE 26 SEPT 85 1500
WEATHER CLOUDY 70°

SAMPLE DATA

NO.	TYPE OF SAMPLE	DEPTH OF SAMPLE FROM	DEPTH OF SAMPLE TO	DRIVING RESISTANCE BLOWS/6 IN.	LENGTH DRIVEN	RECOVERY IN. OR %	SAMPLE NO.	FIELD CLASSIFICATION AND REMARKS
S1	SPT	0	2.	7-11-16-15	24	12	SM	
S2	"	6	8	17-22-20-18	24	16	"	Same
S3	"	12	13.3	12-33-100/4	16	12	"	Coarsening [illegible] 10'
S4	"	18	20	16-24-22-34	24	20	"	
			E.O.B.					

DEPTH FROM	DEPTH TO	FIELD LOG OF BORING
0		Tan m-f Silty Sand
	20	

20' Soil
4 Samples

GROUNDWATER DATA

	DATE	TIME	DEPTH
AT COMPLETION			

WORK COMPLETED

DRILL TYPE	NO. FEET	DIA.	SAMPLE TYPE	NO.	DIA.
CASE					

TIME DISTRIBUTION

DRILLING ______ MOVING ON ______
REPAIRING ______ STAND BY ______
TOTAL ______

SHEET 1 OF 1 SHEETS

HOLE NO. B-18

APPENDIX C

GROUNDWATER MEASUREMENTS

AVCO-LYCOMING Groundwater Measurements

Date: 11/25/85

WELL	Elev Top of Protect Casing* (MSL)	Elev Top of Inside Casing (MSL)	Length Inside Casing (feet)	Total Depth Screen (feet)	Screen opening Elev Top (MSL)	Screen opening Elev Bottom (MSL)	Depth to GH2O (feet)	Total Head H (MSL)	Elev. Head Z (MSL)	Pressure Head P/62.4 (feet)
1	9.93	8.76	15.0	25.0	-6.24	-16.24	7.87	2.06	-11.24	13.30
2	9.73	9.56	15.0	25.0	-5.44	-15.44	7.72	2.01	-10.44	12.45
3	8.90	8.15	15.0	25.0	-6.85	-16.85	5.45	3.45	-11.85	15.30
4	9.68	9.43	25.0	35.0	-15.57	-25.57	7.68	2.00	-20.57	22.57
5	10.71	8.80	20.0	30.0	-11.20	-21.20	7.43	3.28	-16.20	19.48
6	7.63	7.60	19.0	29.0	-11.40	-21.40	5.57	2.06	-16.40	18.46
7	8.16	8.06	20.0	30.0	-11.94	-21.94	6.12	2.04	-16.94	18.98
8	8.90	8.14	5.0	15.0	3.14	-6.86	6.90	2.00	-2.43	4.43
9	10.44	10.27	5.0	15.0	5.27	-4.73	7.33	3.11	-0.81	3.92
10	8.65	8.31	5.0	15.0	3.31	-6.69	4.87	3.78	-1.69	5.47
11	8.21	7.98	5.0	15.0	2.98	-7.02	6.10	2.11	-2.45	4.57
12	9.18	8.71	5.0	15.0	3.71	-6.29	7.20	1.98	-2.16	4.14
13	9.23	8.00	5.0	15.0	3.00	-7.00	6.55	2.68	-2.16	4.84

* Groundwater measuring point is the protective casing.

AVCO-LYCOMING Groundwater Measurements

Date: 4/19/86

WELL	Elev Top of Protect Casing* (MSL)	Elev Top of Inside Casing (MSL)	Length Inside Casing (feet)	Total Depth Screen (feet)	Screen opening Elev Top (MSL)	Screen opening Elev Bottom (MSL)	Depth to GH2O (feet)	Total Head H (MSL)	Elev. Head Z (MSL)	Pressure Head P/62.4 (feet)
1	9.93	8.76	15.0	25.0	-6.24	-16.24	8.23	1.70	-11.24	12.94
2	9.73	9.56	15.0	25.0	-5.44	-15.44	8.03	1.70	-10.44	12.14
3	8.90	8.15	15.0	25.0	-6.85	-16.85	5.59	3.31	-11.85	15.16
4	9.68	9.43	25.0	35.0	-15.57	-25.57	7.77	1.91	-20.57	22.48
5	10.71	8.80	20.0	30.0	-11.20	-21.20	7.28	3.43	-16.20	19.63
6	7.63	7.60	19.0	29.0	-11.40	-21.40	6.02	1.61	-16.40	18.01
7	8.16	8.06	20.0	30.0	-11.94	-21.94	6.55	1.61	-16.94	18.55
8	8.90	8.14	5.0	15.0	3.14	-6.86	6.47	2.43	-2.21	4.65
9	10.44	10.27	5.0	15.0	5.27	-4.73	8.36	2.08	-1.33	3.41
10	8.65	8.31	5.0	15.0	3.31	-6.69	4.78	3.87	-1.69	5.56
11	8.21	7.98	5.0	15.0	2.98	-7.02	6.19	2.02	-2.50	4.52
12	9.18	8.71	5.0	15.0	3.71	-6.29	7.72	1.46	-2.41	3.87
13	9.23	8.00	5.0	15.0	3.00	-7.00	6.90	2.33	-2.34	4.67

*Groundwater measuring point is the protective casing.

AVCO-LYCOMING Groundwater Measurements

Date: 6/27/86

WELL	Elev Top of Protect Casing* (MSL)	Elev Top of Inside Casing (MSL)	Length Inside Casing (feet)	Total Depth Screen (feet)	Screen opening: Elev Top (MSL)	Screen opening: Elev Bottom (MSL)	Depth to GH2O (feet)	Total Head H (MSL)	Elev. Head Z (MSL)	Pressure Head P/62.4 (feet)
1	9.93	8.76	15.0	25.0	-6.24	-16.24	8.35	1.58	-11.24	12.82
2	9.73	9.56	15.0	25.0	-5.44	-15.44	8.17	1.56	-10.44	12.00
3	8.90	8.15	15.0	25.0	-6.85	-16.85	6.56	2.34	-11.85	14.19
4	9.68	9.43	25.0	35.0	-15.57	-25.57	8.00	1.68	-20.57	22.25
5	10.71	8.80	20.0	30.0	-11.20	-21.20	7.48	3.23	-16.20	19.43
6	7.63	7.60	19.0	29.0	-11.40	-21.40	5.83	1.80	-16.40	18.20
7	8.16	8.06	20.0	30.0	-11.94	-21.94	6.54	1.62	-16.94	18.56
8	8.90	8.14	5.0	15.0	3.14	-6.86	7.42	1.48	-2.69	4.17
9	10.44	10.27	5.0	15.0	5.27	-4.73	8.92	1.52	-1.61	3.13
10	8.65	8.31	5.0	15.0	3.31	-6.69	7.25	1.40	-2.64	4.05
11	8.21	7.98	5.0	15.0	2.98	-7.02	6.71	1.50	-2.76	4.26
12	9.18	8.71	5.0	15.0	3.71	-6.29	7.50	1.68	-2.30	3.98
13	9.23	8.00	5.0	15.0	3.00	-7.00	6.92	2.31	-2.34	4.66

*Groundwater measuring point is the protective casing.

AVCO-LYCOMING Groundwater Measurements

Date: 12/29/86

WELL	Elev Top of Protect Casing* (MSL)	Elev Top of Inside Casing (MSL)	Length Inside Casing (feet)	Total Depth Screen (feet)	Screen opening Elev Top (MSL)	Screen opening Elev Bottom (MSL)	Depth to GH2O (feet)	Total Head H (MSL)	Elev. Head Z (MSL)	Pressure Head P/62.4 (feet)
1	9.93	8.76	15.0	25.0	-6.24	-16.24	7.37	2.56	-11.24	13.80
2	9.73	9.56	15.0	25.0	-5.44	-15.44	7.08	2.65	-10.44	13.09
3	8.90	8.15	15.0	25.0	-6.85	-16.85	5.64	3.26	-11.85	15.11
4	9.68	9.43	25.0	35.0	-15.57	-25.57	6.98	2.70	-20.57	23.27
5	10.71	8.80	20.0	30.0	-11.20	-21.20	7.20	3.51	-16.20	19.71
6	7.63	7.60	19.0	29.0	-11.40	-21.40	4.98	2.65	-16.40	19.05
7	8.16	8.06	20.0	30.0	-11.94	-21.94	5.53	2.63	-16.94	19.57
8	8.90	8.14	5.0	15.0	3.14	-6.86	6.32	2.58	-2.14	4.72
9	10.44	10.27	5.0	15.0	5.27	-4.73	7.64	2.80	-0.97	3.77
10	8.65	8.31	5.0	15.0	3.31	-6.69	3.78	4.87	-1.69	6.56
11	8.21	7.98	5.0	15.0	2.98	-7.02	5.15	3.06	-2.02	5.08
12	9.18	8.71	5.0	15.0	3.71	-6.29	5.80	3.38	-1.45	4.84
13	9.23	8.00	5.0	15.0	3.00	-7.00	6.62	2.61	-2.20	4.81

*Groundwater measuring point is the protective casing.

APPENDIX D

DETECTION MONITORING
GROUNDWATER QUALITY DATA

(YEARS 1 & 2)

AVCO Lycoming Division
Stratford, Connecticut

Quarterly First-Year Ground-Water Quality
For Monitor Well 1

	08/18/83	11/14/83	02/13/84	05/09/84
Copper (ppm)	*0.01	0.03	0.05	0.02
Chromium total (ppm)	0.08	0.16	0.01	0.04
Chromium hexavalent (ppm)	0.08	*0.005	*0.005	*0.005
Cadmium (ppm)	*0.01	*0.01	*0.01	*0.01
Mercury (ppm)	*0.002	*0.002	*0.002	*0.002
Nickel (ppm)	0.06	0.05	0.07	0.02
Zinc (ppm)	0.79	0.60	0.63	0.11
Cyanide total (ppm)	0.97	0.60	0.68	0.56
Cyanide amenable (ppm)	*0.1	*0.1	*0.1	*0.1
TOC (ppm)	1/	1/	44	64.0
TOX as chloride (ppm)	1/	1/	0.101	0.058
Benzene (ppb)	*5	*5	*2	1/
Toluene (ppb)	*5	*5	*2	1/
Xylenes (ppb)	*10	*10	*10	1/
1,1,1 Trichloroethane (ppb)	*2	*2	*2	*2
Trichloroethylene (ppb)	*2	6	*2	*2
Tetrachloroethylene (ppb)	*2	*2	*2	*2
Chloroform (ppb)	1/	1/	*2	*2
pH	6.4	6.3	6.8	6.5
Specific conductance (umhos/cm)	1/	1/	600	620

* Denotes less than
1/ Not analyzed

AVCO Lycoming Division
Stratford, Connecticut

Quarterly First-Year Ground-Water Quality
For Monitor Well 2

	08/18/83	11/14/83	02/13/84	05/09/84
Copper (ppm)	*0.01	*0.10	0.03	0.02
Chromium total (ppm)	*0.005	0.35	*0.005	0.03
Chromium hexavalent (ppm)	*0.005	*0.005	*0.005	*0.005
Cadmium (ppm)	*0.01	*0.01	*0.01	*0.01
Mercury (ppm)	*0.002	*0.002	*0.002	*0.002
Nickel (ppm)	0.04	0.04	0.07	0.03
Zinc (ppm)	0.49	0.56	0.92	0.03
Cyanide total (ppm)	0.78	0.45	0.62	0.66
Cyanide amenable (ppm)	*0.1	*0.1	*0.1	*0.1
TOC (ppm)	1/	1/	34	41.0
TOX as chloride (ppm)	1/	1/	0.157	0.135
Benzene (ppb)	*5	*5	*2	1/
Toluene (ppb)	*5	*5	*2	1/
Xylenes (ppb)	*10	*10	*10	1/
1,1,1 Trichloroethane (ppb)	*2	*2	*2	*2
Trichloroethylene (ppb)	*2	*5	*2	*2
Tetrachloroethylene (ppb)	*2	*2	*2	*2
Chloroform (ppb)	1/	1/	*2	*2
pH	6.9	6.2	7.2	6.8
Specific conductance (umhos/cm)	1/	1/	950	900

* Denotes less than
1/ Not analyzed

AVCO Lycoming Division
Stratford, Connecticut

Quarterly First-Year Ground-Water Quality
For Monitor Well 3

	08/18/83	11/14/83	02/13/84	05/09/84
Copper (ppm)	*0.01	*0.01	0.05	0.03
Chromium total (ppm)	0.02	0.02	0.12	0.10
Chromium hexavalent (ppm)	0.009	*0.005	*0.005	*0.005
Cadmium (ppm)	*0.01	*0.01	*0.01	*0.01
Mercury (ppm)	*0.002	*0.002	*0.002	*0.002
Nickel (ppm)	0.03	0.02	0.09	0.05
Zinc (ppm)	0.56	0.62	0.75	0.05
Cyanide total (ppm)	0.62	0.95	0.39	0.47
Cyanide amenable (ppm)	*0.1	*0.1	*0.1	*0.1
TOC (ppm)	1/	1/	42	55.0
TOX as chloride (ppm)	1/	1/	0.073	0.049
Benzene (ppb)	*5	*5	*2	1/
Toluene (ppb)	*5	*5	*2	1/
Xylenes (ppb)	*10	*10	*10	1/
1,1,1 Trichloroethane (ppb)	*2	*2	*2	*2
Trichloroethylene (ppb)	*2	4	*2	*2
Tetrachloroethylene (ppb)	*2	*2	*2	*2
Chloroform (ppb)	1/	1/	*2	*2
pH	6.9	6.8	7.3	6.8
Specific conductance (umhos/cm)	1/	1/	575	1000

* Denotes less than
1/ Not analyzed

AVCO Lycoming Division
Stratford, Connecticut

Quarterly First-Year Ground-Water Quality
For Monitor Well 4

	08/18/83	11/14/83	02/13/84	05/09/84
Copper (ppm)	*0.01	*0.01	0.05	0.10
Chromium total (ppm)	0.005	0.16	0.05	0.09
Chromium hexavalent (ppm)	*0.005	*0.005	*0.005	*0.005
Cadmium (ppm)	*0.01	*0.01	*0.01	*0.01
Mercury (ppm)	*0.002	*0.002	*0.002	*0.002
Nickel (ppm)	0.03	0.08	0.03	0.08
Zinc (ppm)	0.34	0.16	0.41	0.09
Cyanide total (ppm)	0.21	*0.1	0.56	0.38
Cyanide amenable (ppm)	*0.1	*0.1	*0.1	*0.1
TOC (ppm)	1/	1/	22	31.0
TOX as chloride (ppm)	1/	1/	0.080	0.12
Benzene (ppb)	*5	*5	*2	1/
Toluene (ppb)	*5	*5	*2	1/
Xylenes (ppb)	*10	*10	*10	1/
1,1,1 Trichloroethane (ppb)	*2	*2	*2	*2
Trichloroethylene (ppb)	*5	62	10	26
Tetrachloroethylene (ppb)	*2	*2	*2	*2
Chloroform (ppb)	1/	1/	*2	*2
pH	6.3	6.3	7.2	6.2
Specific conductance (umhos/cm)	1/	1/	1000	1000

* Denotes less than
1/ Not analyzed

AVCO Lycoming Division
Stratford, Connecticut

Quarterly First-Year Ground-Water Quality
For Monitor Well 5

	08/18/83	11/14/83	02/13/84	05/09/84
Copper (ppm)	*0.01	*0.01	0.05	0.01
Chromium total (ppm)	0.02	0.11	0.07	0.07
Chromium hexavalent (ppm)	0.02	*0.005	*0.005	*0.005
Cadmium (ppm)	*0.01	*0.01	*0.01	*0.01
Mercury (ppm)	*0.002	*0.002	*0.002	*0.002
Nickel (ppm)	0.05	0.07	0.07	0.06
Zinc (ppm)	0.48	0.44	0.49	0.02
Cyanide total (ppm)	0.37	0.17	0.10	*0.1
Cyanide amenable (ppm)	*0.1	*0.1	*0.1	*0.1
TOC (ppm)	1/	1/	9	8.0
TOX as chloride (ppm)	1/	1/	0.431	1.014
Benzene (ppb)	*5	*5	*2	1/
Toluene (ppb)	*5	*5	*2	1/
Xylenes (ppb)	*10	*10	*10	1/
1,1,1 Trichloroethane (ppb)	41	26	21	52
Trichloroethylene (ppb)	5	37	13	24
Tetrachloroethylene (ppb)	26	17	10	13
Chloroform (ppb)	1/	1/	*2	*2
pH	6.7	6.6	7.2	6.8
Specific conductance (umhos/cm)	1/	1/	500	480

* Denotes less than
1/ Not analyzed

AVCO Lycoming Division
Stratford, Connecticut

Quarterly First-Year Ground-Water Quality For Monitor Well 6

	08/18/83	11/14/83	02/13/84	05/09/84
Copper (ppm)	*0.01	0.05	0.04	0.02
Chromium total (ppm)	*0.005	0.02	0.05	0.04
Chromium hexavalent (ppm)	*0.005	*0.005	*0.005	*0.005
Cadmium (ppm)	*0.01	*0.01	*0.01	*0.01
Mercury (ppm)	*0.002	*0.002	*0.002	*0.002
Nickel (ppm)	0.04	0.14	0.05	0.03
Zinc (ppm)	0.59	0.36	0.32	0.03
Cyanide total (ppm)	*0.1	*0.1	*0.1	*0.1
Cyanide amenable (ppm)	*0.1	*0.1	*0.1	*0.1
TOC (ppm)	1/	1/	10	11.0
TOX as chloride (ppm)	1/	1/	0.052	0.031
Benzene (ppb)	*5	*5	*2	1/
Toluene (ppb)	*5	*5	*2	1/
Xylenes (ppb)	*10	*10	*10	1/
1,1,1 Trichloroethane (ppb)	*2	*2	*2	*2
Trichloroethylene (ppb)	*2	*2	*2	*2
Tetrachloroethylene (ppb)	*2	*2	*2	*2
Chloroform (ppb)	1/	1/	*2	*2
pH	6.5	6.5	6.9	6.5
Specific conductance (umhos/cm)	1/	1/	900	920

* Denotes less than
1/ Not analyzed

AVCO Lycoming Division
Stratford, Connecticut

Quarterly First-Year Ground-Water Quality For Monitor Well 7

	08/18/83	11/14/83	02/13/84	05/09/84
Copper (ppm)	*0.01	0.02	0.05	0.02
Chromium total (ppm)	*0.005	0.01	0.02	*0.01
Chromium hexavalent (ppm)	*0.005	*0.005	*0.005	*0.005
Cadmium (ppm)	*0.01	*0.01	*0.01	*0.01
Mercury (ppm)	*0.002	*0.002	*0.002	*0.002
Nickel (ppm)	0.03	0.10	0.05	0.02
Zinc (ppm)	0.48	0.18	0.33	0.02
Cyanide total (ppm)	*0.1	*0.1	*0.1	*0.1
Cyanide amenable (ppm)	*0.1	*0.1	*0.1	*0.1
TOC (ppm)	1/	1/	6	7.0
TOX as chloride (ppm)	1/	1/	0.039	0.031
Benzene (ppb)	*5	*5	*2	1/
Toluene (ppb)	*5	*5	*2	1/
Xylenes (ppb)	*10	*10	*10	1/
1,1,1 Trichloroethane (ppb)	2.7	*2	*2	*2
Trichloroethylene (ppb)	2.8	9	5	7
Tetrachloroethylene (ppb)	*2	*2	*2	*2
Chloroform (ppb)	1/	1/	*2	*2
pH	6.5	6.6	6.9	6.4
Specific conductance (umhos/cm)	1/	1/	975	1000

* Denotes less than
1/ Not analyzed

AVCO Lycoming Division
STRATFORD, CONNECTICUT

Quarterly Second-Year Ground-Water Quality
For Monitor Well 1

Parameter	Date 10/10/84	01/24/85	04/26/85	08/08/85 (Dissolved)	(Total)
Copper ppm	0.04	*0.01	*0.01	*0.01	*0.02
Chromium (total) ppm	0.05	0.02	0.02	0.01	0.04
Chromium (hexavalent) ppm	*0.005	*0.005	*0.005	*0.005	*0.005
Cadmium ppm	*0.01	*0.01	*0.01	*0.01	*0.01
Mercury ppm	*0.002	*0.002	*0.002	*0.002	*0.002
Nickel ppm	0.04	0.03	*0.01	0.01	0.04
Zinc ppm	0.06	0.03	0.06	0.02	0.04
Cyanide (total) ppm	1/	0.19	0.06	1/	0.02
Cyanide (amenable) ppm	1/	*0.02	*0.02	1/	*0.02
Temperature (°C)	15	15	15	18	1/
pH (mean)	6.50	6.71	7.53	6.65	1/
Conductivity umhos/cm (mean)	843	1500	2100	949	1/
				Pump	Bailer
Benzylchloride ppb	1/	*25	1/	*25	*25
Bis(2-chloroethoxy)methane ppb	1/	*25	1/	*25	*25
Bis(2-chloroisopropyl)ether ppb	1/	*25	1/	*25	*25
Bromobenzene ppb	1/	*25		*25	*25
Bromodichloromethane ppb	1/	*1		*1	*1
Bromoform ppb	1/	*1		*1	*1
Bromomethane ppb	1/	*25		*25	*25
Carbon tetrachloride ppb	1/	*1		*1	*1
Chloroacetaldehyde ppb	1/	*25		*25	*25
Choral ppb	1/	*25		*25	*25
Chlorobenzene ppb	1/	*5		*5	*5
Chloroethane ppb	1/	*25		*25	*25
Chloroform ppb	1/	*1		*1	*1
1-Chlorohexane ppb	1/	*25		*25	*25
2-Chloroethylvinylether ppb	1/	*25		*25	*25
Chloromethane ppb	1/	*25		*25	*25
Chloromethylether ppb	1/	*25		*25	*25
Clorotoluene ppb	1/	*25	1/	*25	*25
Dibromochloromethane ppb	1/	*1	1/	*1	*1
Dibromomethane ppb	1/	*25	1/	*25	*25
1,2-Dichlorobenzene ppb	1/	*25	1/	*25	*25
1,3-Dichlorobenzene ppb	1/	*25	1/	*25	*25
1,4-Dichlorobenzene ppb	1/	*25	1/	*25	*25
Dichlorodifluoromethane ppb	1/	*25	1/	*25	*25
1,1-Dichloroethane ppb	1/	*25	1/	*25	*25
1,2-Dichloroethane ppb	1/	*25	1/	*25	*25
1,1-Dichloroethylene ppb	1/	*25	1/	*25	*25
Trans-1,2-Dichloroethylene ppb	1/	*25	1/	*25	*25
Dichloromethane ppb	1/	*25	1/	*25	*25
1,2 Dichloropropane ppb	1/	*25	1/	*25	*25
1,3-Dichloropropylene ppb	1/	*25	1/	*25	*25
1,1,2,2-Tetrachloroethane ppb	1/	*1	1/	*1	*1
1,1,1,2 Tetrachloroethane ppb	1/	*1	1/	*1	*1
Tetrachloroethylene ppb	1/	*1	1/	*1	*1
1,1,1-Trichloroethane ppb	1/	*1	1/	*1	*1
1,1,2-Trichloroethane ppb	1/	*25	1/	*1	*1
Trichloroethylene ppb	1/	7	1/	*1	*1
Trichlorofluoromethane ppb	1/	*25	1/	*25	*25
Trichloropropane ppb	1/	*25	1/	*25	*25
Vinyl chloride ppb	1/	*25	1/	*25	*25
Benzene ppb	1/	*1	1/	*1	*1
Chlorobenzene	1/	*5	1/	*5	*5
1,2 Dichlorobenzene ppb	1/	*10	1/	*10	*10
1,3 Dichlorobenzene ppb	1/	*10	1/	*10	*10
1,4 Dichlorobenzene ppb	1/	*10	1/	*10	*10
Ethylbenzene ppb	1/	*10	1/	*10	*10
Toluene ppb	1/	*5	1/	*5	14
Xylenes ppb	1/	*10	1/	*10	*10
TOC ppm (mean)	1/	41.75	1/	309.5	1/
TOX ppb (mean)	1/	*10	1/	1/	111.3 (08/22/85)

3RD year data
(YEAR TWO)

* Denotes less than
1/ Not analyzed

AVCO Lycoming Division
STRATFORD, CONNECTICUT

Quarterly Second-Year Ground-Water Quality
For Monitor Well 2

Parameter	10/10/84	01/24/85	04/26/85	08/08/85 (Dissolved)	(Total)
Copper ppm	0.01	0.02	<0.01	<0.01	0.01
Chromium (total) ppm	0.02	0.04	0.03	0.01	0.03
Chromium (hexavalent) ppm	<0.005	<0.005	<0.005	<0.005	<0.005
Cadmium ppm	<0.01	<0.01	<0.01	<0.01	<0.01
Mercury ppm	<0.002	<0.002	<0.002	<0.002	<0.002
Nickel ppm	0.03	0.05	0.04	0.03	0.03
Zinc ppm	0.01	0.04	0.08	0.02	0.04
Cyanide (total) ppm	1/	0.23	0.05	1/	0.10
Cyanide (amenable) ppm	1/	<0.02	<0.02	1/	<0.02
Temperature (°C)	16	16	15	10	
pH (mean)	6.9	6.70	7.05	6.80	
Conductivity umhos/cm (mean)	1099	2500	2325	1612	
				Pump	Bailer
Benzylchloride ppb	1/	<25	1/	<25	<25
Bis(2-chloroethoxy)methane ppb	1/	<25	1/	<25	<25
Bis(2-chloroisopropyl)ether ppb	1/	<25	1/	<25	<25
Bromobenzene ppb	1/	<25	1/	<25	<25
Bromodichloromethane ppb	1/	<1	1/	<1	<1
Bromoform ppb	1/	<1	1/	<1	<1
Bromomethane ppb	1/	<25	1/	<25	<25
Carbon tetrachloride ppb	1/	<1	1/	<1	<1
Chloroacetaldehyde ppb	1/	<25	1/	<25	<25
Chloral ppb	1/	<25	1/	<25	<25
Chlorobenzene ppb	1/	300	1/	11	680
Chloroethane ppb	1/	<25	1/	<25	<25
[illegible]oform ppb	1/	<1	1/	<1	<1
[illegible]rohexane ppb	1/	<25	1/	<25	<25
[illegible]roethylvinylether ppb	1/	<25	1/	<25	<25
Chloromethane ppb	1/	<25	1/	<25	<25
Chloromethylether ppb	1/	<25	1/	<25	<25
Chlorotoluene ppb	1/	<25	1/	<25	<25
Dibromochloromethane ppb	1/	<1	1/	<1	<1
Dibromomethane ppb	1/	<25	1/	<25	<25
1,2-Dichlorobenzene ppb	1/	<25	1/	<25	<25
1,3-Dichlorobenzene ppb	1/	<25	1/	<25	<25
1,4-Dichlorobenzene ppb	1/	<25	1/	<25	<25
Dichlorodifluoromethane ppb	1/	<25	1/	<25	<25
1,1-Dichloroethane ppb	1/	<25	1/	<25	<25
1,2-Dichloroethane ppb	1/	<25	1/	<25	<25
1,1-Dichloroethylene ppb	1/	<25	1/	<25	<25
Trans-1,2-Dichloroethylene ppb	1/	<25	1/	<25	<25
Dichloromethane ppb	1/	<25	1/	<25	<25
1,2 Dichloropropane ppb	1/	<25	1/	<25	<25
1,3-Dichloropropylene ppb	1/	<25	1/	<25	<25
1,1,2,2-Tetrachloroethane ppb	1/	<1	1/	<1	<1
1,1,1,2 Tetrachloroethane ppb	1/	<1	1/	<1	<1
Tetrachloroethylene ppb	1/	<1	1/	<1	<1
1,1,1-Trichloroethane ppb	1/	<1	1/	<1	<1
1,1,2-Trichloroethane ppb	1/	<25	1/	<1	<1
Trichloroethylene ppb	1/	6	1/	<1	<1
Trichlorofluoromethane ppb	1/	<25	1/	<25	<25
Trichloropropane ppb	1/	<35	1/	<25	<25
Vinyl chloride ppb	1/	<25	1/	<25	<25
Benzene ppb	1/	<1	1/	<1	<1
Chlorobenzene	1/	305	1/	11	680
1,2 Dichlorobenzene ppb	1/	<10	1/	<10	<10
1,3 Dichlorobenzene ppb	1/	<10	1/	<10	<10
1,4 Dichlorobenzene ppb	1/	<10	1/	<10	<10
Ethylbenzene ppb	1/	<10	1/	<10	<10
Toluene ppb	1/	<5	1/	<5	<5
Xylenes ppb	1/	<10	1/	<10	<10
TOC ppm (mean)	1/	46.3	1/	127.8	1/
TOX ppb (mean)	1/	<10	1/	1/	266.5 (06/22/85)

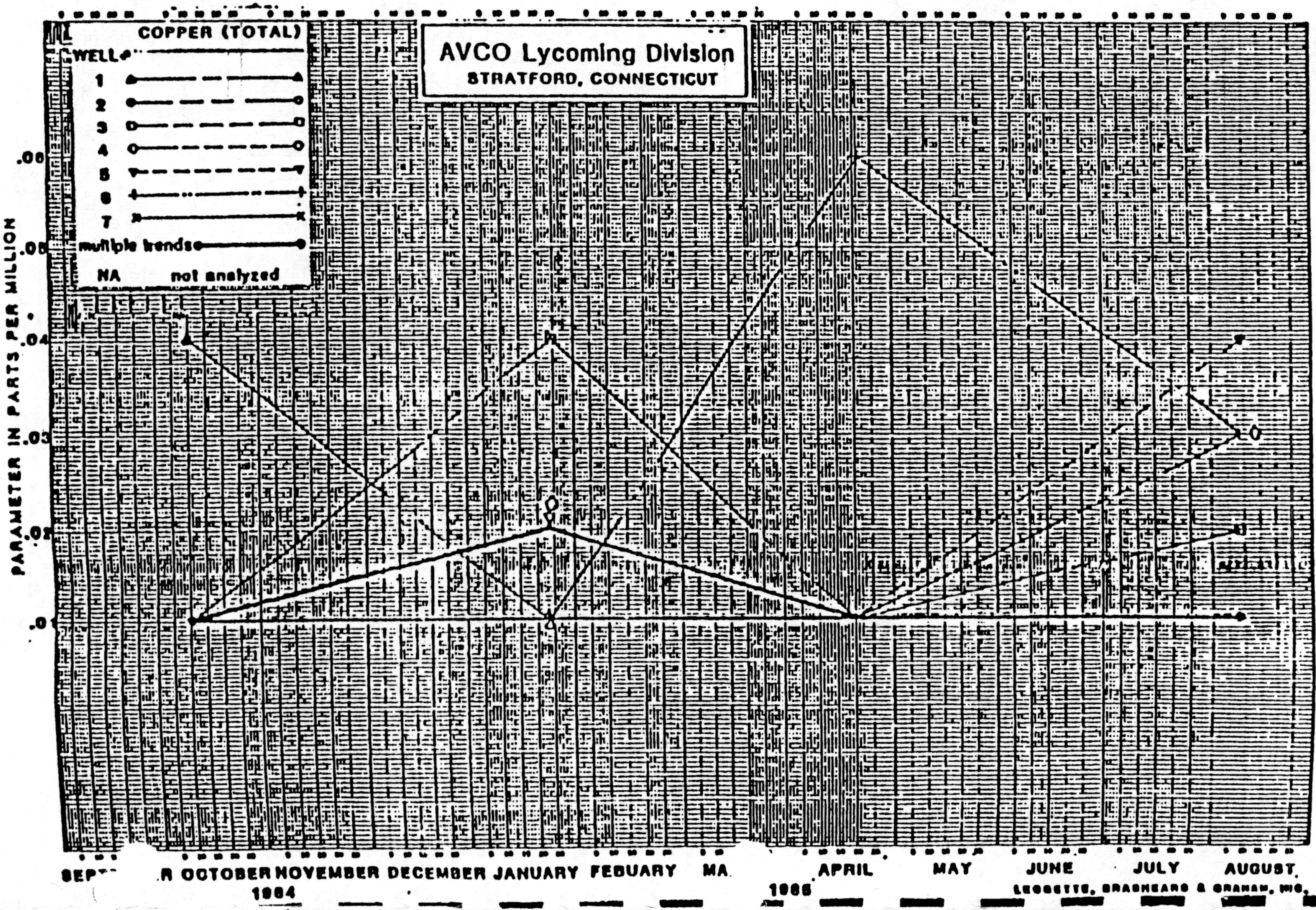
[illegible]notes less than
[illegible]ot analyzed

AVCO Lycoming Division
STRATFORD, CONNECTICUT

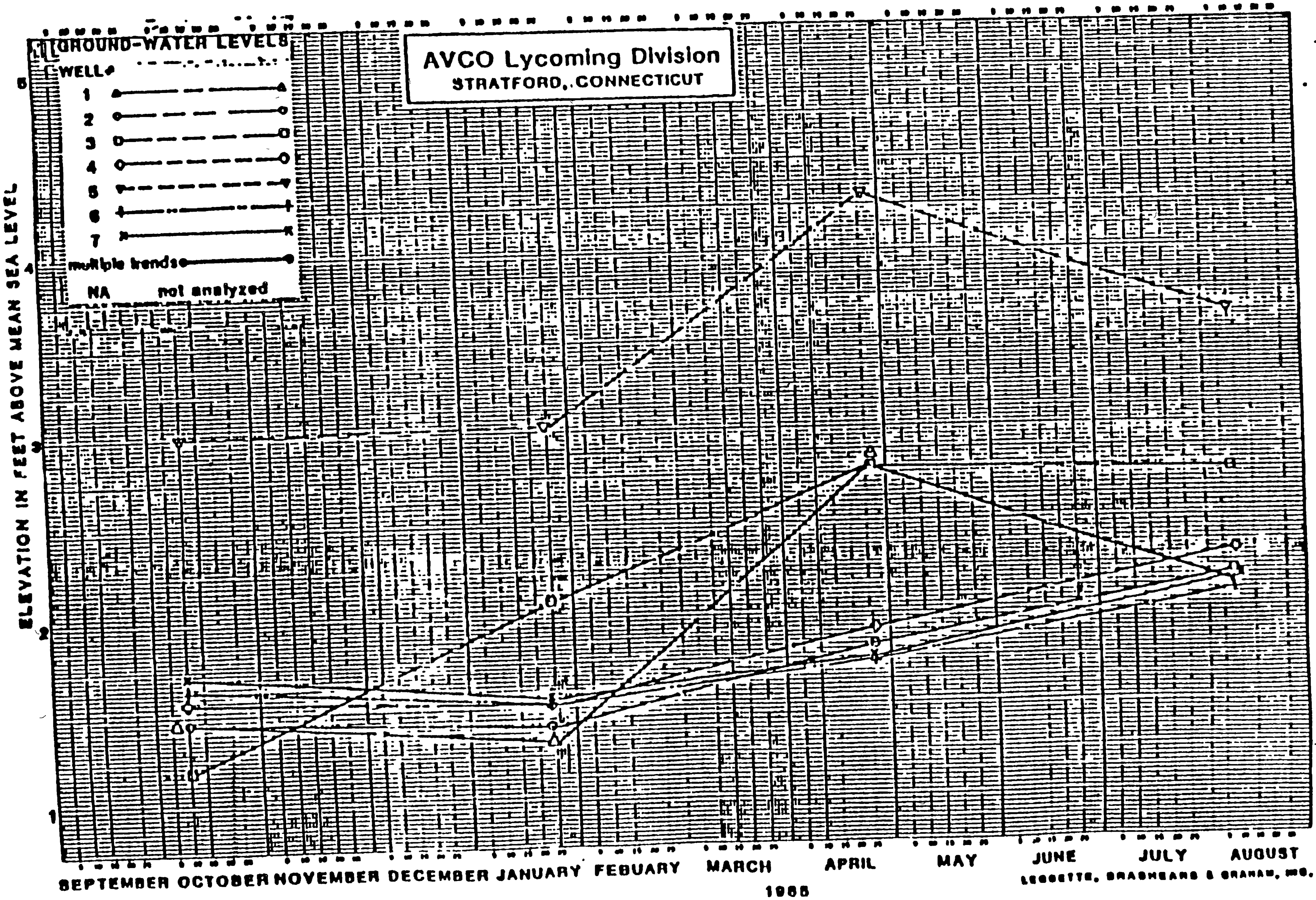
Quarterly Second-Year Ground-Water Quality For Monitor Well 3

Parameter	10/18/84	01/24/85	04/26/85	08/08/85 (Dissolved)	(Total)
Copper ppm	0.01	0.04	*0.01	*0.01	0.02
Chromium (total) ppm	0.03	0.13	0.10	0.02	0.07
Chromium (hexavalent) ppm	*0.005	*0.005	*0.005	*0.005	*0.005
Cadmium ppm	*0.01	*0.01	*0.01	*0.01	*0.01
Mercury ppm	*0.002	*0.002	*0.002	*0.002	*0.002
Nickel ppm	0.03	0.06	0.05	0.03	0.05
Zinc ppm	0.03	0.03	0.15	0.01	0.04
Cyanide (total) ppm	1/	*0.02	*0.02	1/	0.55
Cyanide (amenable) ppm	1/	*0.02	*0.02	1/	*0.02
Temperature (°C)	17	17	16	18	1/
pH (mean)	7.1	9.23	7.55	6.91	1/
Conductivity umhos/cm (mean)	2418	3005	3050	1990	1/
				Pump	**Bailer**
Benzylchloride ppb	1/	*25	1/	*25	*25
Bis(2-chloroethoxy)methane ppb	1/	*25	1/	*25	*25
Bis(2-chloroisopropyl)ether ppb	1/	*25	1/	*25	*25
Bromobenzene ppb	1/	*25	1/	*25	*25
Bromodichloromethane ppb	1/	*1	1/	*1	*1
Bromoform ppb	1/	*1	1/	*1	*1
Bromomethane ppb	1/	*25	1/	*25	*25
Carbon tetrachloride ppb	1/	*1	1/	*1	*1
Chloroacetaldehyde ppb	1/	*25	1/	*25	*25
Chloral ppb	1/	*25	1/	*25	*25
Chlorobenzene ppb	1/	*5	1/	*5	*5
Chloroethane ppb	1/	*25	1/	*25	*25
Chloroform ppb	1/	*1	1/	*1	*1
1-Chlorohexane ppb	1/	*25	1/	*25	*25
2-Chloroethylvinylether ppb	1/	*25	1/	*25	*25
Chloromethane ppb	1/	*25	1/	*25	*25
Chloromethylether ppb	1/	*25	1/	*25	*25
Clorotoluene ppb	1/	*25	1/	*25	*25
Dibromochloromethane ppb	1/	*1	1/	*1	*1
Dibromomethane ppb	1/	*25	1/	*25	*25
1,2-Dichlorobenzene ppb	1/	*25	1/	*25	*25
1,3-Dichlorobenzene ppb	1/	*25	1/	*25	*25
1,4-Dichlorobenzene ppb	1/	*25	1/	*25	*25
Dichlorodifluoromethane ppb	1/	*25	1/	*25	*25
1,1-Dichloroethane ppb	1/	*25	1/	*25	*25
1,2-Dichloroethane ppb	1/	*25	1/	*25	*25
1,1-Dichloroethylene ppb	1/	*25	1/	*25	*25
Trans-1,2-Dichloroethylene ppb	1/	*25	1/	*25	*25
Dichloromethane ppb	1/	*25	1/	*25	*25
1,2 Dichloropropane ppb	1/	*25	1/	*25	*25
1,3-Dichloropropylene ppb	1/	*25	1/	*25	*25
1,1,2,2-Tetrachloroethane ppb	1/	*1	1/	*1	*1
1,1,1,2 Tetrachloroethane ppb	1/	*1	1/	*1	*1
Tetrachloroethylene ppb	1/	4	1/	*1	*1
1,1,1-Trichloroethane ppb	1/	*1	1/	*1	*1
1,1,2-Trichloroethane ppb	1/	*25	1/	*1	*1
Trichloroethylene ppb	1/	3	1/	*1	*1
Trichlorofluoromethane ppb	1/	*25	1/	*25	*25
Trichloropropane ppb	1/	*25	1/	*25	*25
Vinyl chloride ppb	1/	*25	1/	*25	*25
Benzene ppb	1/	*1	1/	*1	*1
Chlorobenzene	1/	*5	1/	*5	*5
1,2 Dichlorobenzene ppb	1/	*10	1/	*10	*10
1,3 Dichlorobenzene ppb	1/	*10	1/	*10	*10
1,4 Dichlorobenzene ppb	1/	*10	1/	*10	*10
Ethylbenzene ppb	1/	*10	1/	*10	*10
Toluene ppb	1/	*5	1/	*5	*5
Xylenes ppb	1/	*10	1/	*10	*10
TOC ppm (mean)	1/	20.8	1/	118.3	1/
TOX ppb (mean)	1/	*10	1/	1/	135.1 (08/22/

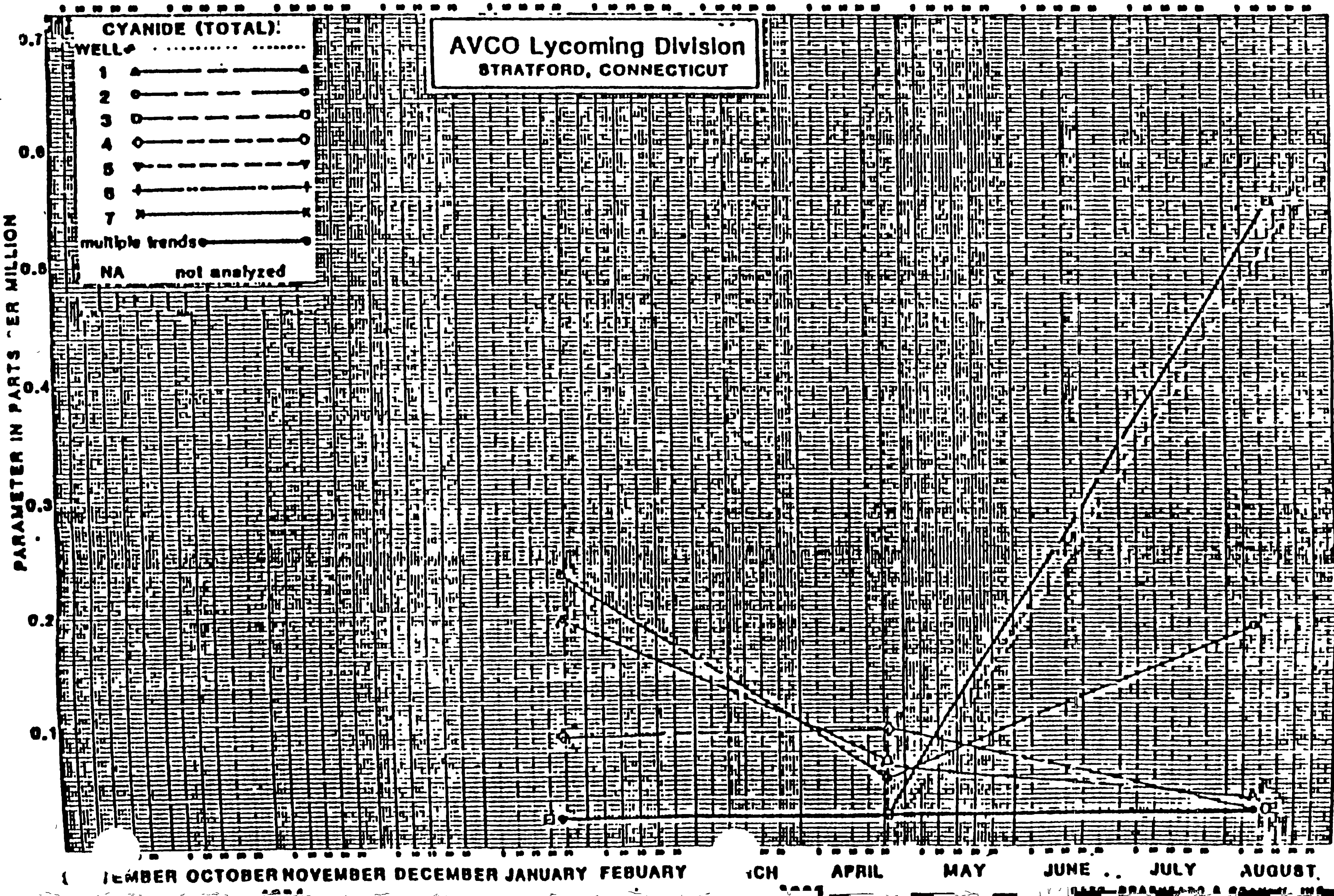
* Denotes less than
1/ Not analyzed



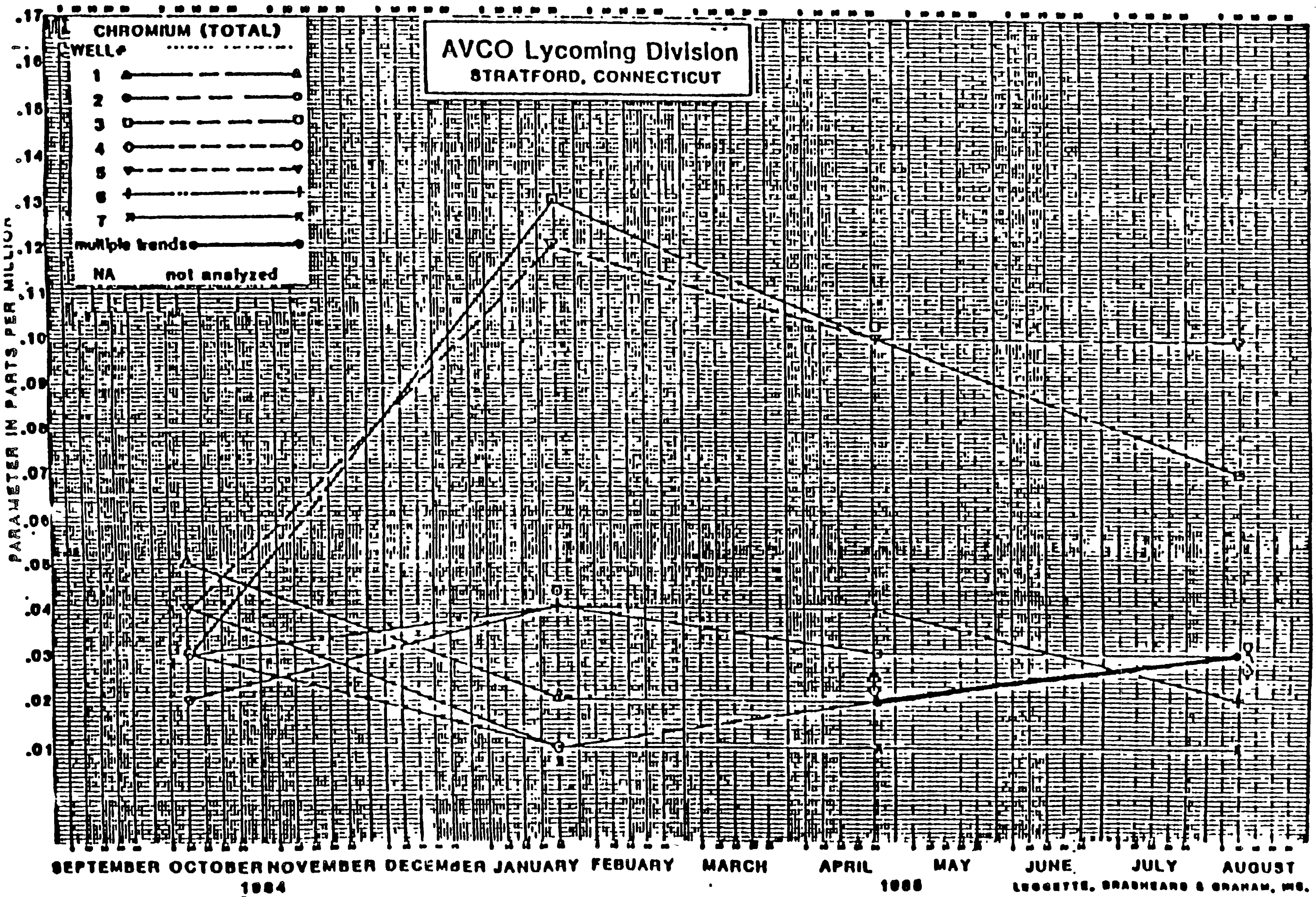
COPPER (TOTAL)
WELL #
1
2
3
4
5
6
7
multiple trends
NA not analyzed
AVCO Lycoming Division
STRATFORD, CONNECTICUT
PARAMETER IN PARTS PER MILLION
.06
.05
.04
.03
.02
.01
R OCTOBER
NOVEMBER
DECEMBER
JANUARY
FEBUARY
MA
APRIL
MAY
JUNE
JULY
AUGUST
1984
1985



AVCO Lycoming Division
STRATFORD, CONNECTICUT
GROUND-WATER LEVELS
WELL#
1
2
3
4
5
6
7
multiple trends
NA not analyzed
ELEVATION IN FEET ABOVE MEAN SEA LEVEL
5
4
3
2
1
SEPTEMBER OCTOBER NOVEMBER DECEMBER JANUARY FEBUARY MARCH APRIL MAY JUNE JULY AUGUST
1985
LEGGETTE, BRASHEARS & GRAHAM, INC.



CYANIDE (TOTAL):
WELL
1
2
3
4
5
6
7
multiple trends
NA not analyzed
AVCO Lycoming Division
STRATFORD, CONNECTICUT
PARAMETER IN PARTS PER MILLION
0.7
0.6
0.5
0.4
0.3
0.2
0.1
TEMBER OCTOBER NOVEMBER DECEMBER JANUARY FEBUARY
CH APRIL MAY JUNE JULY AUGUST



LEGGETTE, BRASHEARS & GRAHAM, INC.

APPENDIX F

GRAPHICAL PRESENTATION OF CHEMICAL PARAMETERS FOR ALL MONITORING WELLS

(1984-1985)

TABLE I - ANALYTICAL RESULTS OF 3RD YEAR GROUNDWATER MONITORING

Avco Lycoming Textron
950 S. Main St.
Stratford, CT 06497

QUARTERLY SAMPLES 1986: 1 - November 1985
2 - April 1986
3 - June 1986
4 - October 1986

Monitoring Well #	Well # 6				Well # 7				Well # 8				Well # 9				Well #10			
Sample Quarter / Parameter	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Method 8010 (ppb)																				
Benzyl chloride	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10
Bis(2-chloroethoxy)methane	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10
Bis(2-chloroisopropyl)ether	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10
Bromobenzene	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10
Bromodichloromethane	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10
Bromoform	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10
Bromomethane	—	ND	—	<25	—	ND	—	<25	—	ND	—	<25	—	ND	—	<25	—	ND	—	<25
Carbon tetrachloride	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10
Chloroacetaldehyde	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10
Chloral	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10
Chlorobenzene	—	ND	—	<10	—	ND	—	<10	—	38	—	<10	—	ND	—	<10	—	ND	—	<10
Chloroethane	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10
Chloroform	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10
1-Chlorohexane	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10
2-Chloroethyl vinyl ether	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10
Chloromethane	—	ND	—	<25	—	ND	—	<25	—	ND	—	<25	—	ND	—	<25	—	ND	—	<25
Chloromethyl methyl ether	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10
Chlorotoluene	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10
Dibromochloromethane	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10
Dibromomethane	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10
1,2-Dichlorobenzene	—	ND	—	<10	—	ND	—	<10	—	38	—	<10	—	ND	—	<10	—	ND	—	<10
1,3-Dichlorobenzene	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10
1,4-Dichlorobenzene	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10
Dichlorodifluoromethane	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10
1,1-Dichloroethane	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	18	—	<10
1,2-Dichloroethane	—	ND	—	<10	—	25	—	<10	—	35	—	<10	—	ND	—	<10	—	1	—	<10
1,1-Dichloroethylene	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	1	—	<10
trans-1,2-Dichloroethylene	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	4	—	<10
Dichloromethane	—	ND	—	<10	—	7	—	<10	—	10	—	<10	—	4	—	<10	—	4	—	<10
1,2-Dichloropropane	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10
1,3-Dichloropropylene	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10
1,1,1,2-Tetrachloroethane	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10
1,1,2,2-Tetrachloroethane	—	1	—	<10	—	1	—	<10	—	3	—	<10	—	ND	—	<10	—	ND	—	<10
Tetrachloroethylene	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	1	—	<10
1,1,1-Trichloroethane	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10
1,1,2-Trichloroethane	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10
Trichloroethylene	—	31	—	<10	—	16	—	<10	—	24	—	<10	—	2	—	<10	—	2	—	<10
Trichlorofluoromethane	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10
Trichloropropane	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10
Vinyl chloride	—	ND	—	<50	—	ND	—	<50	—	ND	—	<50	—	ND	—	<50	—	ND	—	<50

TABLE I - ANALYTICAL RESULTS OF 3RD YEAR GROUNDWATER MONITORING

Avco Lycoming Textron
550 S. Main St.
Stratford, CT 06497

QUARTERLY SAMPLES 1986: 1 - November 1985
2 - April 1986
3 - June 1986
4 - October 1986

Monitoring Well #	Well # 11				Well # 12				Well # 13											
Sample Quarter	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Parameter Method 8010 (ppb)																				
Benzyl chloride	–	ND	–	<10	–	ND	–	<10	–	ND	–	<10								
Bis(2-chloroethoxy)methane	–	ND	–	<10	–	ND	–	<10	–	ND	–	<10								
Bis(2-chloroisopropyl)ether	–	ND	–	<10	–	ND	–	<10	–	ND	–	<10								
Bromobenzene	–	ND	–	<10	–	ND	–	<10	–	ND	–	<10								
Bromodichloromethane	–	ND	–	<10	–	ND	–	<10	–	ND	–	<10								
Bromoform	–	ND	–	<10	–	ND	–	<10	–	ND	–	<10								
Bromomethane	–	ND	–	<25	–	ND	–	<25	–	ND	–	<25								
Carbon tetrachloride	–	ND	–	<10	–	ND	–	<10	–	ND	–	<10								
Chloroacetaldehyde	–	ND	–	<10	–	ND	–	<10	–	ND	–	<10								
Chloral	–	ND	–	<10	–	ND	–	<10	–	ND	–	<10								
Chlorobenzene	–	ND	–	<10	–	ND	–	<10	–	ND	–	<10								
Chloroethane	–	ND	–	<10	–	ND	–	<10	–	ND	–	<10								
Chloroform	–	ND	–	<10	–	ND	–	<10	–	ND	–	<10								
1-Chlorohexane	–	ND	–	<10	–	ND	–	<10	–	ND	–	<10								
2-Chloroethyl vinyl ether	–	ND	–	<10	–	ND	–	<10	–	ND	–	<10								
Chloromethane	–	ND	–	<25	–	ND	–	<25	–	ND	–	<25								
Chloromethyl methyl ether	–	ND	–	<10	–	ND	–	<10	–	ND	–	<10								
Chlorotoluene	–	ND	–	<10	–	ND	–	<10	–	ND	–	<10								
Dibromochloromethane	–	ND	–	<10	–	ND	–	<10	–	ND	–	<10								
Dibromomethane	–	ND	–	<10	–	ND	–	<10	–	ND	–	<10								
1,2-Dichlorobenzene	–	ND	–	<10	–	ND	–	<10	–	ND	–	<10								
1,3-Dichlorobenzene	–	ND	–	<10	–	ND	–	<10	–	ND	–	<10								
1,4-Dichlorobenzene	–	ND	–	<10	–	ND	–	<10	–	ND	–	<10								
Dichlorodifluoromethane	–	ND	–	<10	–	ND	–	<10	–	ND	–	<10								
1,1-Dichloroethane	–	ND	–	<10	–	ND	–	<10	–	ND	–	<10								
1,2-Dichloroethane	–	49	–	<10	–	52	–	<10	–	ND	–	<10								
1,1-Dichloroethylene	–	ND	–	<10	–	ND	–	<10	–	ND	–	<10								
trans-1,2-Dichloroethylene	–	ND	–	<10	–	ND	–	<10	–	182	–	128								
Dichloromethane	–	6	–	<10	–	8	–	<10	–	2	–	<10								
1,2-Dichloropropane	–	ND	–	<10	–	ND	–	<10	–	ND	–	<10								
trans-1,3-Dichloropropylene	–	ND	–	<10	–	ND	–	<10	–	ND	–	<10								
1,1,2,2-Tetrachloroethane	–	ND	–	<10	–	ND	–	<10	–	ND	–	<10								
1,1,1,2-Tetrachloroethane	–	3	–	<10	–	4	–	<10	–	14	–	<10								
Tetrachloroethylene	–	ND	–	10	–	ND	–	<10	–	14	–	16								
1,1,1-Trichloroethane	–	ND	–	<10	–	ND	–	<10	–	ND	–	<10								
1,1,2-Trichloroethane	–	ND	–	<10	–	ND	–	<10	–	ND	–	<10								
Trichloroethylene	–	21	–	13	–	24	–	<10	–	44	–	32								
Trichlorofluoromethane	–	ND	–	<10	–	ND	–	<10	–	ND	–	<10								
Trichloropropane	–	ND	–	<10	–	ND	–	<10	–	ND	–	<10								
Vinyl chloride	–	ND	–	<50	–	ND	–	<50	–	ND	–	<50								

TABLE I - ANALYTICAL RESULTS OF THIRD YEAR GROUNDWATER MONITORING

Avco Lycoming Textron
550 S. Main St.
Stratford, CT 06497

QUARTERLY SAMPLES 1986:
1 - November 1985
2 - April 1986
3 - June 1986
4 - October 1986

All results are in mg/l unless otherwise stated.
Analysis from Method 8020 are in ppb.

Monitoring Well #	Well # 11				Well # 12				Well # 13			
Sample Quarter	1	2	3	4	1	2	3	4	1	2	3	4
H_2O Table above datum (ft)	5.39	5.30	4.78	4.84	3.45	2.93	3.15	3.00	5.38	5.83	5.01	4.18
Parameter												
pH (S.U.)	7.7	7.1	5.4	5.6	7.8	6.9	6.4	6.2	7.8	7.2	6.2	6.1
	7.7	7.1	5.4	5.6	7.8	6.9	6.4	6.2	7.8	7.2	6.2	6.3
	7.7	7.2	5.5	5.6	7.9	6.9	6.4	6.3	7.8	7.2	6.2	6.4
	7.8	7.3	5.5	5.8	7.9	6.9	6.9	6.3	7.8	7.3	6.3	6.4
Specific Conductance (µmhos)	650	145	248	239	350	300	910	860	380	315	570	626
	700	145	251	239	360	360	911	870	390	319	575	630
	800	150	258	240	360	370	911	890	405	320	577	630
	1000	160	259	240	365	400	918	900	410	320	580	634
TOC (mg/l)	—	12	—	1.5	—	2.4	—	5.0	—	11	—	4.5
	—		—	1.7	—		—	5.5	—		—	4.9
	—		—	1.9	—		—	5.8	—		—	5.2
	—		—	2.0	—		—	6.5	—		—	5.6
TOX (ppb)	—	24	—	<15	—	812	—	19	—	140	—	50
	—	28	—	<15	—	832	—	21	—	146	—	54
	—		—	<15	—		—	24	—		—	58
	—		—	<15	—		—	24	—		—	60
chloride	—	—	—	—	—	—	—	—	—	—	—	—
sulfate	—	—	—	34.6	—	—	—	42.8	—	—	—	81.6
hex. Cr	<.005	<.005	<.01	<.01	<.005	<.005	.05	<.01	<.005	<.005	<.01	<.01
total Cr	<.01	<.01	.020	.02	.02	.02	.042	.05	.01	.05	.032	.04
Cu	.02	.02	.30	.08	.01	<.01	.13	.08	.02	.61	.18	.15
Cd	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	.02	<.01	<.01
Hg	<.002	<.002	.002	<.001	<.002	<.002	.002	<.001	<.002	<.002	<.001	<.001
Ni	.04	.03	.034	.03	.01	<.01	.066	.04	.03	.02	.17	.14
Zn	.55	.15	.18	.10	.04	.03	.13	.11	.03	.07	.092	.10
Fe	—	—	—	11.5	—	—	—	17.1	—	—	—	17.7
Na	—	—	—	38.0	—	—	—	10.3	—	—	—	11.6
Mn	—	—	—	1.66	—	—	—	1.57	—	—	—	6.24
T-CN	<.02	<.1	<.05	<.05	<.02	<.1	<.05	<.05	<.02	<.1	<.05	<.05
A-CN	<.02	<.1	<.05	<.05	<.02	<.1	<.05	<.05	<.02	<.1	<.05	<.05
Phenol	—	—	—	.006	—	—	—	<.001	—	—	—	.003
Temp. (°C)	12.8	13	20	16	14.4	13	19	19	12.8	12	20	18
Method 8020 (ppb)												
benzene	—	3	—	<1	—	4	—	<1	—	1	—	<1
chlorobenzene	—	ND	—	<15	—	ND	—	<15	—	ND	—	<15
1,2-DICHLOROBENZENE	—	ND	—	<15	—	ND	—	<15	—	ND	—	<15
1,3-DICHLOROBENZENE	—	ND	—	<15	—	ND	—	<15	—	ND	—	<15
1,4-DICHLOROBENZENE	—	ND	—	<15	—	ND	—	<15	—	ND	—	<15
ethylbenzene	—	9	—	<1	—	3	—	1	—	ND	—	<1
[illegible]	—	[illegible]	—	<1	—	35	—	<1	—	8	—	<1

TABLE I - ANALYTICAL RESULTS OF 3RD YEAR GROUNDWATER MONITORING

Avco Lycoming Textron
550 S. Main St.
Stratford, CT 06497

QUARTERLY SAMPLES 1986: 1 - November 1985
2 - April 1986
3 - June 1986
4 - October 1986

Monitoring Well #	Well # 1				Well # 2				Well # 3				Well # 4				Well # 5			
Sample Quarter	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Parameter																				
Method 8010 (ppb)																				
Benzyl chloride	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10
Bis(2-chloroethoxy)methane	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10
Bis(2-chloroisopropyl)ether	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10
Bromobenzene	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10
Bromodichloromethane	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	8	—	<10	—	ND	—	<10
Bromoform	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10
Bromomethane	—	ND	—	<25	—	ND	—	<25	—	ND	—	<25	—	ND	—	<25	—	ND	—	<25
Carbon tetrachloride	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10
Chloroacetaldehyde	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10
Chloral	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10
Chlorobenzene	—	ND	—	<10	—	ND	—	<10	—	825	—	<10	—	ND	—	<10	—	ND	—	<10
Chloroethane	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10
Chloroform	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10
1-Chlorohexane	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10
2-Chloroethyl vinyl ether	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10
Chloromethane	—	ND	—	<25	—	ND	—	<25	—	ND	—	<25	—	ND	—	<25	—	ND	—	<25
Chloromethyl methyl ether	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10
Chlorotoluene	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10
Dibromochloromethane	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10
Dibromomethane	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10
1,2-Dichlorobenzene	—	ND	—	<10	—	ND	—	<10	—	473	—	<10	—	ND	—	<10	—	ND	—	<10
1,3-Dichlorobenzene	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10
1,4-Dichlorobenzene	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10
Dichlorodifluoromethane	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10
1,1-Dichloroethane	—	1	—	<10	—	ND	—	<10	—	1	—	55	—	20	—	13	—	24	—	93
1,2-Dichloroethane	—	ND	—	<10	—	25	—	<10	—	1	—	<10	—	ND	—	<10	—	44	—	<10
1,1-Dichloroethylene	—	1	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10
Trans-1,2-dichloroethylene	—	ND	—	<10	—	ND	—	<10	—	1	—	<10	—	173	—	<10	—	ND	—	158
Dichloromethane	—	4	—	<10	—	5	—	<10	—	ND	—	<10	—	ND	—	<10	—	6	—	<10
1,2-Dichloropropane	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10
1,3-Dichloropropylene	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10
1,1,2,2-Tetrachloroethane	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10
1,1,1,2-Tetrachloroethane	—	1	—	<10	—	2	—	<10	—	ND	—	<10	—	ND	—	<10	—	2	—	<10
Tetrachloroethylene	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	25
1,1,1-Trichloroethane	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	7	—	81
1,1,2-Trichloroethane	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10
Trichloroethylene	—	27	—	<10	—	5	—	<10	—	2	—	<10	—	10	—	<10	—	8	—	32
Trichlorofluoromethane	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	1	—	<10
Trichloropropane	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10	—	ND	—	<10
Vinyl chloride	—	ND	—	<50	—	ND	—	<50	—	ND	—	<50	—	ND	—	<50	—	ND	—	<50

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TABLE I - ANALYTICAL RESULTS OF THIRD YEAR GROUNDWATER MONITORING p.1a

Avco Lycoming Textron
550 S. Main St.
Stratford, CT 06497

QUARTERLY SAMPLES 1986:
1 - November 1985
2 - April 1986
3 - June 1986
4 - October 1986

All results are in mg/l unless otherwise stated.
Analysis from Method 8020 are in ppb.

Monitoring Well #	Well # 1				Well # 2				Well # 3				Well # 4				Well # 5			
Sample Quarter	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
H_2O Table above datum (ft)	2.26	4.44	1.78	1.61	2.22	4.67	1.77	1.61	3.68	6.13	2.57	0.54	2.26	4.99	1.94	1.77	3.57	6.15	3.52	2.8[illegible]
Parameter																				
pH (S.U.)	7.2 7.4 7.4 7.5	7.0 7.0 7.0 7.1	6.8 6.9 6.9 7.0	6.7 6.7 6.7 6.8	7.4 7.4 7.5 7.5	7.0 7.0 7.0 7.0	7.0 7.1 7.1 7.2	7.0 7.0 7.0 7.0	7.7 7.7 7.7 —	6.9 6.95 7.0 7.0	7.3 7.3 7.3 7.4	7.2 7.3 7.3 7.3	7.4 7.4 7.4 7.5	6.9 6.9 6.9 6.95	6.7 6.7 6.8 6.9	6.6 6.6 6.6 6.7	7.8 7.4 7.4 7.5	7.0 7.0 7.0 7.0	7.0 7.1 7.1 7.3	6.7 6.[illegible] 6.[illegible] 6.8
Specific Conductance (µmhos)	1060 1050 1170 1200	480 600 800 850	2740 2870 2880 2910	2450 2460 2490 2491	1650 1980 2150 2200	990 1040 1060 1070	5620 5920 5990 6000	4220 4240 4260 4360	1300 1410 1410 —	900 1000 1050 1100	2840 2850 2900 2980	2410 2420 2470 2480	1600 1600 1600 1600	1100 1150 1200 1200	3210 3230 3250 3260	3070 3080 3080 3080	650 650 690 700	360 410 440 450	980 990 1000 1020	10[illegible] 10[illegible] 10[illegible] 10[illegible]
TOC (mg/l)	— — — —	49	— — — —	19.8 21.6 22.0 25.0	— — — —	31	— — — —	25.6 26.0 27.6 29.0	— — — —	21	— — — —	16.5 17.1 17.5 18.0	— — — —	21	— — — —	7.5 8.0 8.3 8.8	— — — —	12	— — — —	3.6 3.7 3.8 4.0
TOX (ppb)	— — — —	1320 1400	— — — —	<15 <15 <15 <15	— — — —	960 985	— — — —	<15 <15 <15 <15	— — — —	336 380	— — — —	<15 <15 <15 <15	— — — —	923 968	— — — —	185 189 191 196	— — — —	837 870	— — — —	194 198 216 215
chloride	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
sulfate	—	—	—	236	—	—	—	269	—	—	—	91.5	—	—	—	23.1	—	—	—	602
hex. Cr	<.005	<.005	<.01	<.01	<.005	<.005	<.01	<.01	<.005	<.005	<.01	<.01	<.005	<.005	<.01	<.01	<.005	<.005	<.01	<.01
total Cr	.02	.04	.17	.04	.01	.04	.028	.04	<.01	.01	.028	.03	<.01	.02	.018	.04	.05	.05	.21	.16
Cu	<.01	.02	.12	.09	<.01	.10	.034	.01	<.01	.06	.066	.02	.01	.03	.080	.07	<.01	.02	.17	.11
Cd	<.01	.05	<.01	<.01	<.01	<.01	<.01	<.01	<.01	.02	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.0[illegible]
Hg	<.002	<.002	.002	<.001	<.002	<.002	<.001	<.001	<.002	<.002	<.001	<.001	<.002	<.002	.003	<.001	<.002	<.002	.001	<.00[illegible]
Ni	.03	.04	.072	.03	.03	.02	.034	.07	.02	.04	.038	.04	<.01	.03	.050	.03	.05	.05	.004	.07
Zn	.04	.10	.30	.13	.03	.01	.042	.06	.03	.05	.040	.03	.14	.07	.036	.06	.03	.04	.038	.03
Fe	—	—	—	7.68	—	—	—	10.6	—	—	—	16.8	—	—	—	7.4	—	—	—	15.2
Ba	—	—	—	206	—	—	—	780	—	—	—	189	—	—	—	430	—	—	—	121
Mn	—	—	—	.54	—	—	—	1.36	—	—	—	2.84	—	—	—	.18	—	—	—	2.49
T-CN	.37	<.1	<.05	<.05	.46	<.1	<.05	<.05	.46	<.1	<.05	<.05	<.02	<.1	<.05	<.05	.46	<.1	<.05	<.0[illegible]
A-CN	.19	<.1	<.05	<.05	<.02	<.1	<.05	<.05	<.02	<.1	<.05	<.05	<.02	<.1	<.05	<.05	.27	<.1	<.05	<.05
Phenol	—	—	—	<.001	—	—	—	.017	—	—	—	.006	—	—	—	.007	—	—	—	.004
Temp. (°C)	12.2	12	16	14	12.2	11	16	14	12.2	13	17.5	16	13.3	15	20	18	13.3	14	19	18
Method 8020 (ppb)																				
benzene	—	1	—	<1	—	1	—	<1	—	2	—	<1	—	1	—	<1	—	3	—	<1
chlorobenzene	—	ND	—	<15	—	ND	—	380	—	825	—	<15	—	ND	—	<15	—	ND	—	<15
1,2-dichlorobenzene	—	ND	—	<15	—	ND	—	<15	—	473	—	<15	—	ND	—	<15	—	ND	—	<15
1,3-dichlorobenzene	—	N[illegible]	—	<15	—	ND	—	<15	—	ND	—	<15	—	ND	—	<15	—	ND	—	<15
1,4-dichlorobenzene	—	ND	—	<15	—	NR	—	<15	—	ND	—	<15	—	ND	—	<15	—	ND	—	<15
ethyl[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	—	—	<1	—	1	—	<1	—	1	—	<1	—	ND	—	<1

TABLE I - ANALYTICAL RESULTS OF THIRD YEAR GROUNDWATER MONITORING

Avco Lycoming Textron
950 S. Main St.
Stratford, CT 06497

QUARTERLY SAMPLES 1986:
1 - November 1985
2 - April 1986
3 - June 1986
4 - October 1986

All results are in mg/l unless otherwise stated.
Analysis from Method 8020 are in ppb.

Monitoring Well #	Well # 6				Well # 7			
Sample Quarter	1	2	3	4	1	2	3	4
H_2O Table above datum (ft)	2.21	4.25	1.95	1.57	2.20	3.55	1.78	1.59
Parameter								
pH (S.U.)	7.5 7.5 7.6 7.6	6.95 7.0 7.05 7.15	6.8 6.8 6.8 6.9	6.7 6.7 6.7 6.8	7.5 7.5 7.5 7.5	6.9 6.9 6.9 6.9	6.8 6.8 6.8 7.0	6.6 6.7 6.7 6.7
Specific Conductance (µmhos)	1600 1800 1800 1850	910 1000 1050 1125	2880 2830 2700 2910	3040 3080 3050 3060	1400 1500 1500 1500	650 1300 1300 1300	2670 2680 2690 2700	2290 2290 2300 2300
TOC (mg/l)	— — — —	10	— — — —	8.1 9.0 9.9 10.2	— — — —	5	— — — —	9.6 10.4 10.8 12.1
TOX (ppb)	— — — —	49 59	— — — —	<15 <15 <15 <15	— — — —	35 46	— — — —	<15 <15 <15 <15
chloride	—	—	—	—	—	—	—	—
sulfate	—	—	—	60.2	—	—	—	75.8
hex. Cr	<.005	<.005	<.01	<.01	<.005	<.005	<.01	<.01
total Cr	<.01	.01	.018	.03	<.01	.01	.014	.02
Cu	.01	<.01	.18	.11	<.01	.10	.13	.04
Cd	<.01	<.01	<.01	<.01	<.01	.01	<.01	<.01
Hg	<.002	<.002	<.001	<.001	<.002	<.002	<.001	<.001
Ni	.01	.01	.044	.04	<.01	.03	.030	.04
Zn	.03	.05	.046	.05	.02	.04	.032	.05
Fe	—	—	—	24.7	—	—	—	2.12
Na	—	—	—	325	—	—	—	223
Mn	—	—	—	.76	—	—	—	.60
T-CN	<.02	<.1	<.05	<.05	<.02	<.1	<.05	<.05
A-CN	<.02	<.1	<.05	<.05	<.02	<.1	<.05	<.05
Phenol	—	—	—	.010	—	—	—	.002
Temp. (°C)	13.3	15	18	17	13.3	15	17	18
Method 8020 (ppb)								
benzene	—	ND	—	<1	—	4	—	<1
chlorobenzene	—	2	—	<15	—	ND	—	<15
1,2-DICHLOROBENZENE	—	ND	—	<15	—	ND	—	<15
1,3-DICHLOROBENZENE	—	ND	—	<15	—	ND	—	<15
1,4-DICHLOROBENZENE	—	ND	—	<15	—	ND	—	<15
ethylbenzene	—	ND	—	<1	—	2	—	<1

Monitoring Well #	Well # 8				Well # 9			
Sample Quarter	1	2	3	4	1	2	3	4
H_2O Table above datum (ft)	4.79	5.22	4.27	4.29	2.81	1.78	1.22	1.14
Parameter								
pH (S.U.)	7.7 7.7 7.8 7.8	7.35 7.4 7.4 7.5	4.4 4.4 4.4 4.5	4.2 4.2 4.2 4.3	7.7 7.8 8.0 —	6.9 6.9 7.0 7.0	6.8 6.9 7.0 7.0	6.7 6.7 6.7 6.7
Specific Conductance (µmhos)	100 100 100 110	85 85 89 90	164 166 167 168	183 186 186 188	480 550 550 —	300 400 600 600	1550 1555 1560 1560	1680 1690 1720 1730
TOC (mg/l)	— — — —	1.8	— — — —	1.5 2.0 2.1 2.4	— — — —	5	— — — —	7.1 7.7 8.0 8.5
TOX (ppb)	— — — —	25 28	— — — —	<15 <15 <15 <15	— — — —	59 67	— — — —	<15 <15 <15 <15
chloride	—	—	—	—	—	—	—	—
sulfate	—	—	—	55.2	—	—	—	909
hex. Cr	<.005	<.005	<.01	<.01	<.005	<.005	<.01	<.01
total Cr	.01	.03	.020	.05	<.01	<.01	.056	.04
Cu	.01	<.01	.004	.12	.03	.01	.55	.56
Cd	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01
Hg	<.002	<.002	.003	<.001	<.002	<.002	<.001	<.001
Ni	<.01	.02	.050	.04	.06	.06	.090	.07
Zn	.03	.06	.036	.08	.69	.15	.24	.30
Fe	—	—	—	20.1	—	—	—	674
Na	—	—	—	12.1	—	—	—	414
Mn	—	—	—	1.66	—	—	—	3.51
T-CN	<.02	<.1	<.05	<.05	<.02	<.1	<.05	<.05
A-CN	<.02	<.1	<.05	<.05	<.02	<.1	<.05	<.05
Phenol	—	—	—	.015	—	—	—	.002
Temp. (°C)	13.3	12	18.5	19	11.7	13	16	14
Method 8020 (ppb)								
benzene	—	4	—	<1	—	1	—	<1
chlorobenzene	—	38	—	<15	—	ND	—	<15
1,2-DICHLOROBENZENE	—	38	—	<15	—	ND	—	<15
1,3-DICHLOROBENZENE	—	ND	—	<15	—	ND	—	<15
1,4-DICHLOROBENZENE	—	ND	—	<15	—	ND	—	<15
ethylbenzene	—	9	—	<1	—	ND	—	<1

Monitoring Well #	Well # 10			
Sample Quarter	1	2	3	4
H_2O Table above datum (ft)	6.18	6.27	3.80	6.6[illegible]
Parameter				
pH (S.U.)	8.4 8.5 8.9 9.3	6.9 6.9 7.0 7.0	7.7 7.8 7.8 7.8	7.6 7.6 7.5 7.5
Specific Conductance (µmhos)	220 230 240 250	426 430 440 450	835 864 895 959	39[illegible] 40[illegible] 42[illegible] 43[illegible]
TOC (mg/l)	— — — —	9	— — — —	13.[illegible] 14.6 15.0 15.4
TOX (ppb)	— — — —	29 38	— — — —	<15 <15 <15 <15
chloride	—	—	—	—
sulfate	—	—	—	30.0
hex. Cr	<.005	<.005	<.01	<.0[illegible]
total Cr	<.01	<.01	.032	.08
Cu	.01	<.01	.15	.16
Cd	<.01	<.01	<.01	<.0[illegible]
Hg	<.002	<.002	<.001	<.00[illegible]
Ni	<.01	<.01	.076	.08
Zn	.02	.02	.16	.17
Fe	—	—	—	57.0
Na	—	—	—	92.5
Mn	—	—	—	2.16
T-CN	<.02	<.1	<.05	<.05
A-CN	<.02	<.1	<.05	<.0[illegible]
Phenol	—	—	—	.00[illegible]
Temp. (°C)	11.7	14	20	20
Method 8020 (ppb)				
benzene	—	1	—	<1
chlorobenzene	—	ND	—	<15
1,2-DICHLOROBENZENE	—	ND	—	<15
1,3-DICHLOROBENZENE	—	ND	—	<15
1,4-DICHLOROBENZENE	—	ND	—	<15
ethylbenzene	—	ND	—	<1

APPENDIX E

ASSESSMENT MONITORING
GROUNDWATER QUALITY DATA

(YEAR 3)

AVCO Lycoming Division
STRATFORD, CONNECTICUT

Quarterly Second-Year Ground-Water Quality
For Monitor Well 6

Parameter	Date 10/10/84	01/24/85	04/26/85	08/08/85 (Dissolved)	(Total)
Copper ppm	0.01	0.01	0.06	*0.01	0.03
Chromium (total) ppm	0.03	0.04	0.04	*0.01	0.02
Chromium (hexavalent) ppm	*0.005	*0.005	*0.005	*0.005	*0.005
Cadmium ppm	*0.01	*0.01	*0.01	*0.01	*0.01
Mercury ppm	*0.002	*0.002	*0.002	*0.002	*0.002
Nickel ppm	0.02	0.02	*0.01	0.01	0.02
Zinc ppm	0.03	0.02	0.11	0.02	0.04
Cyanide (total) ppm	1/	*0.02	*0.02	1/	*0.02
Cyanide (amenable) ppm	1/	*0.02	*0.02	1/	*0.02
Temperature (°C)	10	10	16	10	1/
pH (mean)	6.9	6.7	7.2	6.6	1/
Conductivity umhos/cm (mean)	970	2500	2300	1650	1/
				Pump	Bailer
Benzylchloride ppb	1/	*25	1/	*25	*25
Bis(2-chloroethoxy)methane ppb	1/	*25	1/	*25	*25
Bis(2-chloroisopropyl)ether ppb	1/	*25	1/	*25	*25
Bromobenzene ppb	1/	*25	1/	*25	*25
Bromodichloromethane ppb	1/	*1	1/	*1	*1
Bromoform ppb	1/	*1	1/	*1	*1
Bromomethane ppb	1/	*25	1/	*25	*25
Carbon tetrachloride ppb	1/	*1	1/	*1	*1
Chloroacetaldehyde ppb	1/	*25	1/	*25	*25
Chloral ppb	1/	*25	1/	*25	*25
Chlorobenzene ppb	1/	*5	1/	*5	*5
Chloroethane ppb	1/	*25	1/	*25	*25
Chloroform ppb	1/	*1	1/	*1	*1
1-Chlorohexane ppb	1/	*25	1/	*25	*25
2-Chloroethylvinylether ppb	1/	*25	1/	*25	*25
Chloromethane ppb	1/	*25	1/	*25	*25
Chloromethylether ppb	1/	*25	1/	*25	*25
Chlorotoluene ppb	1/	*25	1/	*25	*25
Dibromochloromethane ppb	1/	*1	1/	*1	*1
Dibromomethane ppb	1/	*25	1/	*25	*25
1,2-Dichlorobenzene ppb	1/	*25	1/	*25	*25
1,3-Dichlorobenzene ppb	1/	*25	1/	*25	*25
1,4-Dichlorobenzene ppb	1/	*25	1/	*25	*25
Dichlorodifluoromethane ppb	1/	*25	1/	*25	*25
1,1-Dichloroethane ppb	1/	*25	1/	*25	*25
1,2-Dichloroethane ppb	1/	*25	1/	*25	*25
1,1-Dichloroethylene ppb	1/	*25	1/	*25	*25
Trans-1,2-Dichloroethylene ppb	1/	*25	1/	*25	*25
Dichloromethane ppb	1/	*25	1/	*25	*25
1,2 Dichloropropane ppb	1/	*25	1/	*25	*25
1,3-Dichloropropylene ppb	1/	*25	1/	*25	*25
1,1,2,2-Tetrachloroethane ppb	1/	*1	1/	*1	*1
1,1,1,2 Tetrachloroethane ppb	1/	*1	1/	*1	*1
Tetrachloroethylene ppb	1/	*1	1/	*1	*1
1,1,1-Trichloroethane ppb	1/	*1	1/	*1	*1
1,1,2-Trichloroethane ppb	1/	*25	1/	*1	*1
Trichloroethylene ppb	1/	*1	1/	*1	*1
Trichlorofluoromethane ppb	1/	*25	1/	*25	*25
Trichloropropane ppb	1/	*25	1/	*25	*25
Vinyl chloride ppb	1/	*25	1/	*25	*25
Benzene ppb	1/	*1	1/	*1	*1
Chlorobenzene	1/	*5	1/	*5	*5
1,2 Dichlorobenzene ppb	1/	*10	1/	*10	*10
1,3 Dichlorobenzene ppb	1/	*10	1/	*10	*10
1,4 Dichlorobenzene ppb	1/	*10	1/	*10	*10
Ethylbenzene ppb	1/	*10	1/	*10	*10
Toluene ppb	1/	*5	1/	*5	*5
Xylenes ppb	1/	*10	1/	*10	*10
TOC ppm (mean)	1/	18.30	1/	36.30	1/
TOX ppb (mean)	1/	*10	1/	1/	317.0 (08/22/85)

* Denotes less than
1/ Not analyzed

AVCO Lycoming Division
STRATFORD, CONNECTICUT

Quarterly Second-Year Ground-Water Quality
For Monitor Well 7

Parameter	Date				
	10/10/84	01/24/85	04/26/85	08/06/85 (Dissolved)	(Total)
Copper ppm	*0.01	*0.01	*0.01	*0.01	*0.01
Chromium (total) ppm	0.04	*0.01	*0.01	*0.01	*0.01
Chromium (hexavalent) ppm	*0.005	*0.005	*0.005	*0.005	*0.005
Cadmium ppm	*0.01	*0.01	*0.01	*0.01	*0.01
Mercury ppm	*0.002	*0.002	*0.002	*0.002	*0.003
Nickel ppm	0.01	0.02	*0.01	*0.01	*0.01
Zinc ppm	*0.01	0.01	0.06	0.03	0.03
Cyanide (total) ppm	1/	*0.02	*0.02	1/	*0.02
Cyanide (amenable) ppm	1/	*0.02	*0.02	1/	*0.02
Temperature (°C)	16	16	16	16	1/
pH (mean)	6.8	6.50	6.6	6.4	1/
Conductivity umhos/cm (mean)	834	1600	1750	1695	1/
				Pump	Bailer
Benzylchloride ppb	1/	*25	1/	*25	*25
Bis(2-chloroethoxy)methane ppb	1/	*25	1/	*25	*25
Bis(2-chloroisopropyl)ether ppb	1/	*25	1/	*25	*25
Bromobenzene ppb	1/	*25	1/	*25	*25
Bromodichloromethane ppb	1/	*1	1/	*1	*1
Bromoform ppb	1/	*1	1/	*1	*1
Bromomethane ppb	1/	*25	1/	*25	*25
Carbon tetrachloride ppb	1/	*1	1/	*1	*1
Chloroacetaldehyde ppb	1/	*25	1/	*25	*25
Chloral ppb	1/	*25	1/	*25	*25
Chlorobenzene ppb	1/	*5	1/	*5	*5
Chloroethane ppb	1/	*25	1/	*25	*25
Chloroform ppb	1/	*1	1/	*1	*1
1-Chlorohexane ppb	1/	*25	1/	*25	*25
2-Chloroethylvinylether ppb	1/	*25	1/	*25	*25
Chloromethane ppb	1/	*25	1/	*25	*25
Chloromethylether ppb	1/	*25	1/	*25	*25
Chlorotoluene ppb	1/	*25	1/	*25	*25
Dibromochloromethane ppb	1/	*1	1/	*1	*1
Dibromomethane ppb	1/	*25	1/	*25	*25
1,2-Dichlorobenzene ppb	1/	*25	1/	*25	*25
1,3-Dichlorobenzene ppb	1/	*25	1/	*25	*25
1,4-Dichlorobenzene ppb	1/	*25	1/	*25	*25
Dichlorodifluoromethane ppb	1/	*25	1/	*25	*25
1,1-Dichloroethane ppb	1/	*25	1/	*25	*25
1,2-Dichloroethane ppb	1/	*25	1/	*25	*25
1,1-Dichloroethylene ppb	1/	*25	1/	*25	*25
Trans-1,2-Dichloroethylene ppb	1/	*25	1/	*25	*25
Dichloromethane ppb	1/	*25	1/	*25	*25
1,2 Dichloropropane ppb	1/	*25	1/	*25	*25
1,3-Dichloropropylene ppb	1/	*25	1/	*25	*25
1,1,2,2-Tetrachloroethane ppb	1/	*1	1/	*1	*1
1,1,1,2 Tetrachloroethane ppb	1/	*1	1/	*1	*1
Tetrachloroethylene ppb	1/	*1	1/	*1	*1
1,1,1-Trichloroethane ppb	1/	*1	1/	*1	*1
1,1,2-Trichloroethane ppb	1/	*25	1/	*1	*1
Trichloroethylene ppb	1/	*1	1/	*1	*1
Trichlorofluoromethane ppb	1/	*25	1/	*25	*25
Trichloropropane ppb	1/	*25	1/	*25	*25
Vinyl chloride ppb	1/	*25	1/	*25	*25
Benzene ppb	1/	*1	1/	*1	*1
Chlorobenzene	1/	*5	1/	*5	*5
1,2 Dichlorobenzene ppb	1/	*10	1/	*10	*10
1,3 Dichlorobenzene ppb	1/	*10	1/	*10	*10
1,4 Dichlorobenzene ppb	1/	*10	1/	*10	*10
Ethylbenzene ppb	1/	*10	1/	*10	*10
Toluene ppb	1/	*5	1/	*5	*5
Xylenes ppb	1/	*10	1/	*10	*10
TOC ppm (mean)	1/	12.5	1/	15	1/
TOX ppb (mean)	1/	*10	1/	1/	147.6 (08/22/85)

* Denotes less than
1/ Not analyzed

AVCO Lycoming Division
STRATFORD, CONNECTICUT

Quarterly Second-Year Ground-Water Quality
For Monitor Well 4

Parameter	Date 10/10/84	01/24/85	04/26/85	08/08/85 (Dissolved)	(Total)
Copper ppm	0.01	*0.01	*0.01	*0.01	0.03
Chromium (total) ppm	0.03	*0.01	0.02	*0.01	0.03
Chromium (hexavalent) ppm	*0.005	*0.005	*0.005	*0.005	*0.005
Cadmium ppm	*0.01	*0.01	*0.01	*0.01	*0.01
Mercury ppm	*0.002	*0.002	*0.002	*0.002	*0.002
Nickel ppm	0.02	0.02	*0.01	0.02	0.03
Zinc ppm	0.04	0.09	0.06	0.04	0.09
Cyanide (total) ppm	1/	*0.02	0.09	1/	*0.02
Cyanide (amenable) ppm	1/	*0.02	*0.02	1/	*0.02
Temperature (°C)	16	16	17	18	1/
pH (mean)	7.10	6.30	7.03	6.33	1/
Conductivity umhos/cm (mean)	1316	2100	1700	1400	1/
				Pump	Bailer
Benzylchloride ppb	1/	*25	1/	*25	*25
Bis(2-chloroethoxy)methane ppb	1/	*25	1/	*25	*25
Bis(2-chloroisopropyl)ether ppb	1/	*25	1/	*25	*25
Bromobenzene ppb	1/	*25	1/	*25	*25
Bromodichloromethane ppb	1/	*1	1/	*1	*1
Bromoform ppb	1/	*1	1/	*1	*1
Bromomethane ppb	1/	*25	1/	*25	*25
Carbon tetrachloride ppb	1/	*1	1/	*1	*1
Chloroacetaldehyde ppb	1/	*25	1/	*25	*25
Choral ppb	1/	*25	1/	*25	*25
Chlorobenzene ppb	1/	*5	1/	*5	*5
Chloroethane ppb	1/	*25	1/	*25	*25
Chloroform ppb	1/	*1	1/	*1	*1
1-Chlorohexane ppb	1/	*25	1/	*25	*25
2-Chloroethylvinylether ppb	1/	*25	1/	*25	*25
Chloromethane ppb	1/	*25	1/	*25	*25
Chloromethylether ppb	1/	*25	1/	*25	*25
...rotoluene ppb	1/	*25	1/	*25	*25
...romochloromethane ppb	1/	*1	1/	*1	*1
...bromomethane ppb	1/	*25	1/	*25	*25
1,2-Dichlorobenzene ppb	1/	*25	1/	*25	*25
1,3-Dichlorobenzene ppb	1/	*25	1/	*25	*25
1,4-Dichlorobenzene ppb	1/	*25	1/	*25	*25
Dichlorodifluoromethane ppb	1/	*25	1/	*25	*25
1,1-Dichloroethane ppb	1/	*25	1/	*25	*25
1,2-Dichloroethane ppb	1/	*25	1/	*25	*25
1,1-Dichloroethylene ppb	1/	*25	1/	*25	*25
Trans-1,2-Dichloroethylene ppb	1/	*25	1/	*25	*25
Dichloromethane ppb	1/	*25	1/	*25	*25
1,2 Dichloropropane ppb	1/	*25	1/	*25	*25
1,3-Dichloropropylene ppb	1/	*25	1/	*25	*25
1,1,2,2-Tetrachloroethane ppb	1/	*1	1/	*1	*1
1,1,1,2 Tetrachloroethane ppb	1/	*1	1/	*1	*1
Tetrachloroethylene ppb	1/	*1	1/	*1	*1
1,1,1-Trichloroethane ppb	1/	*1	1/	*1	*1
1,1,2-Trichloroethane ppb	1/	*25	1/	*1	*1
Trichloroethylene ppb	1/	3	1/	4	4
Trichlorofluoromethane ppb	1/	*25	1/	*25	*25
Trichloropropane ppb	1/	*25	1/	*25	*25
Vinyl chloride ppb	1/	*25	1/	*25	*25
Benzene ppb	1/	*1	1/	*1	*1
Chlorobenzene	1/	5	1/	*5	*5
1,2 Dichlorobenzene ppb	1/	*10	1/	*10	*10
1,3 Dichlorobenzene ppb	1/	*10	1/	*10	*10
1,4 Dichlorobenzene ppb	1/	*10	1/	*10	*10
Ethylbenzene ppb	1/	*10	1/	*10	*10
Toluene ppb	1/	*5	1/	*5	*5
Xylenes ppb	1/	*10	1/	*10	*10
TOC ppm (mean)	1/	25.5	1/	66.5	1/ 85.9
TOX ppb (mean)	1/	*10	1/	1/	(08/22/85)

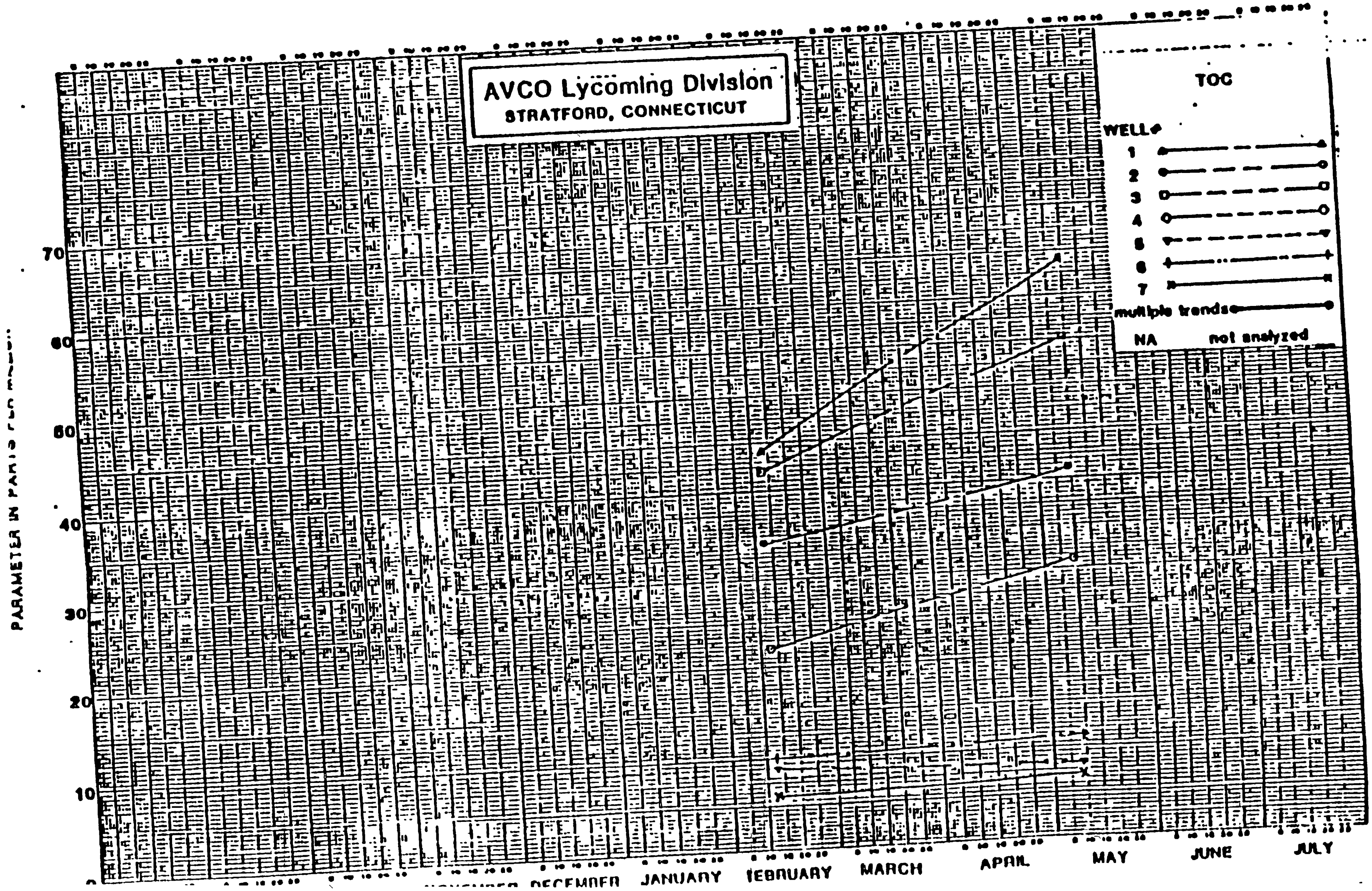
* Denotes less than
1/ Not analyzed

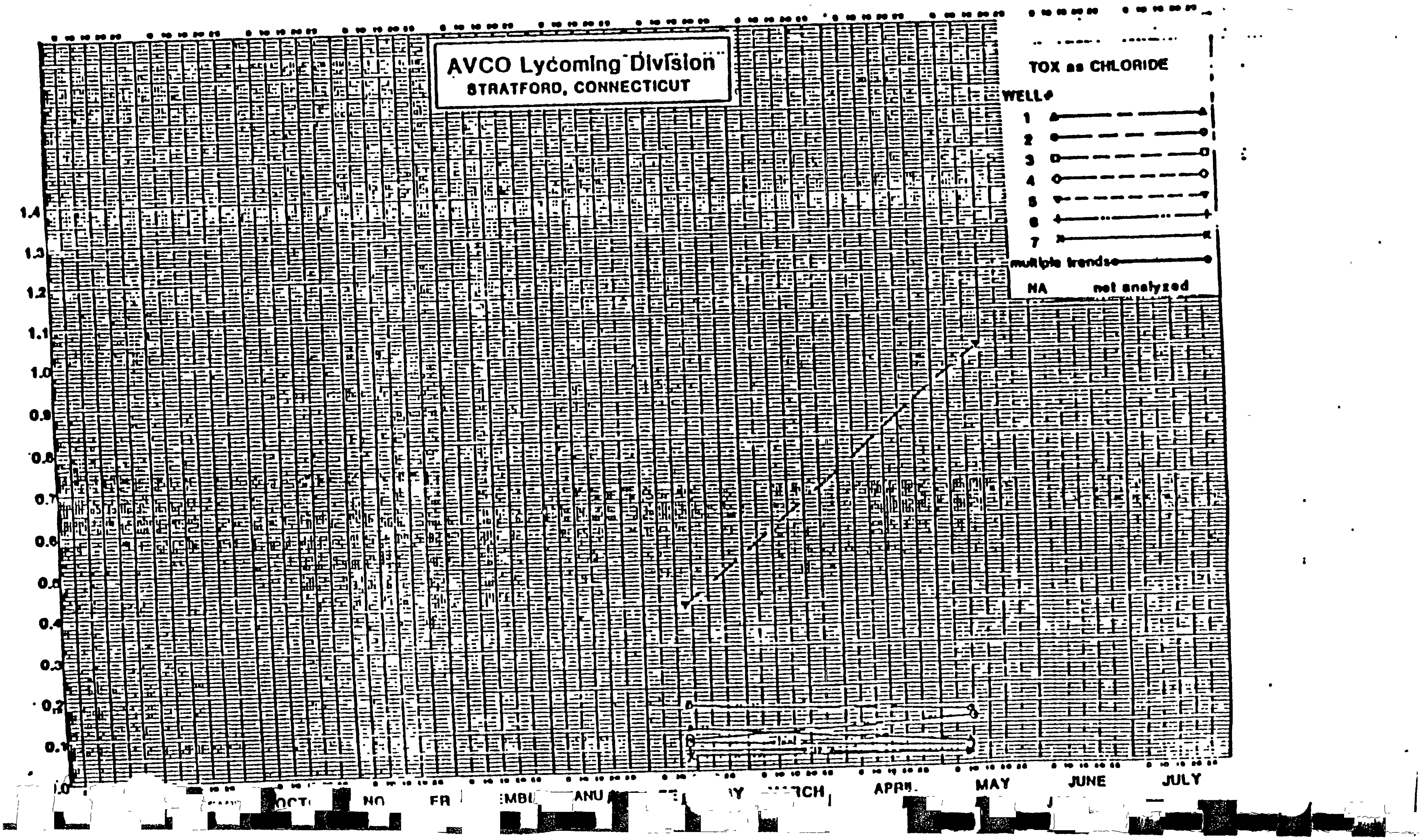
AVCO Lycoming Division
STRATFORD, CONNECTICUT

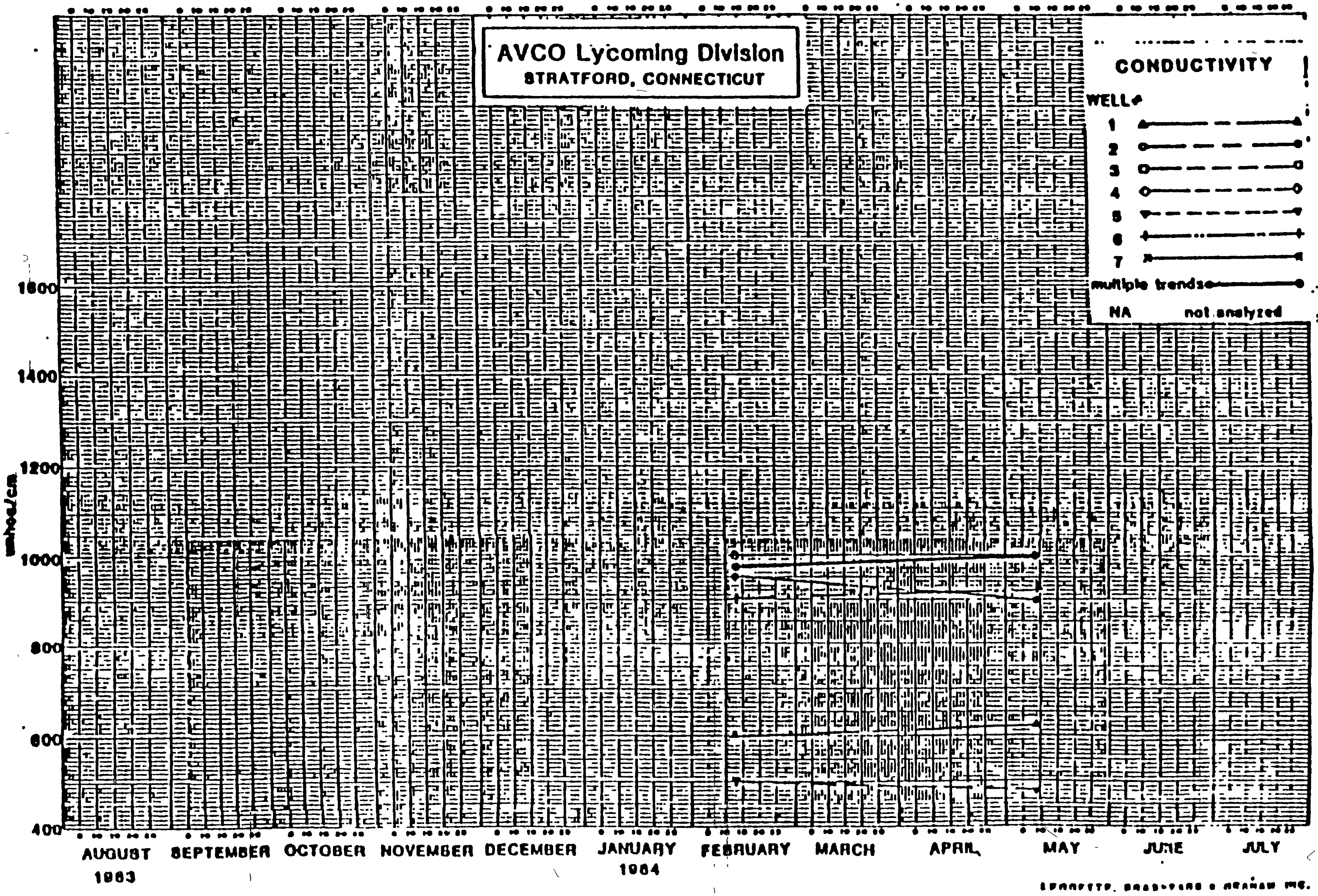
Quarterly Second-Year Ground-Water Quality
For Monitor Well 5

Parameter	Date 10/18/84	01/24/85	04/26/85	08/08/85 (Dissolved)	(Total)
Copper ppm	*0.01	0.02	*0.01	*0.01	0.04
Chromium (total) ppm	0.04	0.12	0.10	0.03	0.10
Chromium (hexavalent) ppm	*0.005	*0.005	*0.005	*0.005	*0.005
Cadmium ppm	*0.01	*0.01	*0.01	*0.01	*0.01
Mercury ppm	*0.002	*0.002	*0.002	*0.002	*0.002
Nickel ppm	0.05	0.07	*0.01	0.04	0.06
Zinc ppm	0.02	0.01	0.09	0.01	0.04
Cyanide (total) ppm	1/	*0.02	*0.02	1/	*0.02
Cyanide (amenable) ppm	1/	*0.02	*0.02	1/	*0.02
Temperature (°C)	14	16	16	18	1/
pH (mean)	7.10	6.68	7.18	6.78	1/
Conductivity umhos/cm (mean)	547	600	553	650	1/
				Pump	Bailer
Benzylchloride ppb	1/	*25	1/	*25	*25
Bis(2-chloroethoxy)methane ppb	1/	*25	1/	*25	*25
Bis(2-chloropropyl)ether ppb	1/	*25	1/	*25	*25
Bromobenzene ppb	1/	*25	1/	*25	*25
Bromodichloromethane ppb	1/	*1	1/	*1	*1
Bromoform ppb	1/	*1	1/	*1	*1
Bromomethane ppb	1/	*25	1/	*25	*25
Carbon tetrachloride ppb	1/	*1	1/	*1	*1
Chloroacetaldehyde ppb	1/	*25	1/	*25	*25
Chloral ppb	1/	*25	1/	*25	*25
Chlorobenzene ppb	1/	*5	1/	*5	*5
Chloroethane ppb	1/	*25	1/	*25	*25
Chloroform ppb	1/	*1	1/	*1	*1
1-Chlorohexane ppb	1/	*25	1/	*25	*25
2-Chloroethylvinylether ppb	1/	*25	1/	*25	*25
Chloromethane ppb	1/	*25	1/	*25	*25
Chloromethylether ppb	1/	*25	1/	*25	*25
Chlorotoluene ppb	1/	*25	1/	*25	*25
Dibromochloromethane ppb	1/	*1	1/	*1	*1
Dibromomethane ppb	1/	*25	1/	*25	*25
1,2-Dichlorobenzene ppb	1/	*25	1/	*25	*25
1,3-Dichlorobenzene ppb	1/	*25	1/	*25	*25
1,4-Dichlorobenzene ppb	1/	*25	1/	*25	*25
Dichlorodifluoromethane ppb	1/	*25	1/	*25	*25
1,1-Dichloroethane ppb	1/	*25	1/	*25	*25
1,2-Dichloroethane ppb	1/	*25	1/	*25	*25
1,1-Dichloroethylene ppb	1/	*25	1/	*25	*25
Trans-1,2-Dichloroethylene ppb	1/	*25	1/	*25	*25
Dichloromethane ppb	1/	*25	1/	*25	*25
1,2 Dichloropropane ppb	1/	*25	1/	*25	*25
1,3-Dichloropropylene ppb	1/	*1	1/	*1	*1
1,1,2,2-Tetrachloroethane ppb	1/	*1	1/	*1	*1
1,1,1,2 Tetrachloroethane ppb	1/	7	1/	10	10
Tetrachloroethylene ppb	1/	12	1/	34	63
1,1,1-Trichloroethane ppb	1/	*25	1/	*1	*1
1,1,2-Trichloroethane ppb	1/	9	1/	16	14
Trichloroethylene ppb	1/	*25	1/	*25	*25
Trichlorofluoromethane ppb	1/	*25	1/	*25	*25
Trichloropropane ppb	1/	*25	1/	*25	*25
Vinyl chloride ppb	1/		1/		
Benzene ppb	1/	*1	1/	*1	*1
Chlorobenzene	1/	*5	1/	*5	*5
1,2 Dichlorobenzene ppb	1/	*10	1/	*10	*10
1,3 Dichlorobenzene ppb	1/	*10	1/	*10	*10
1,4 Dichlorobenzene ppb	1/	*10	1/	*10	*10
Ethylbenzene ppb	1/	*10	1/	*10	*10
Toluene ppb	1/	*5	1/	*5	*5
Xylenes ppb	1/	*10	1/	*10	*10
TOC ppm (mean)	1/	14.75	1/	65.25	1/
TOX ppb (mean)	1/	19	1/	1/	39.3 (08/22/85)

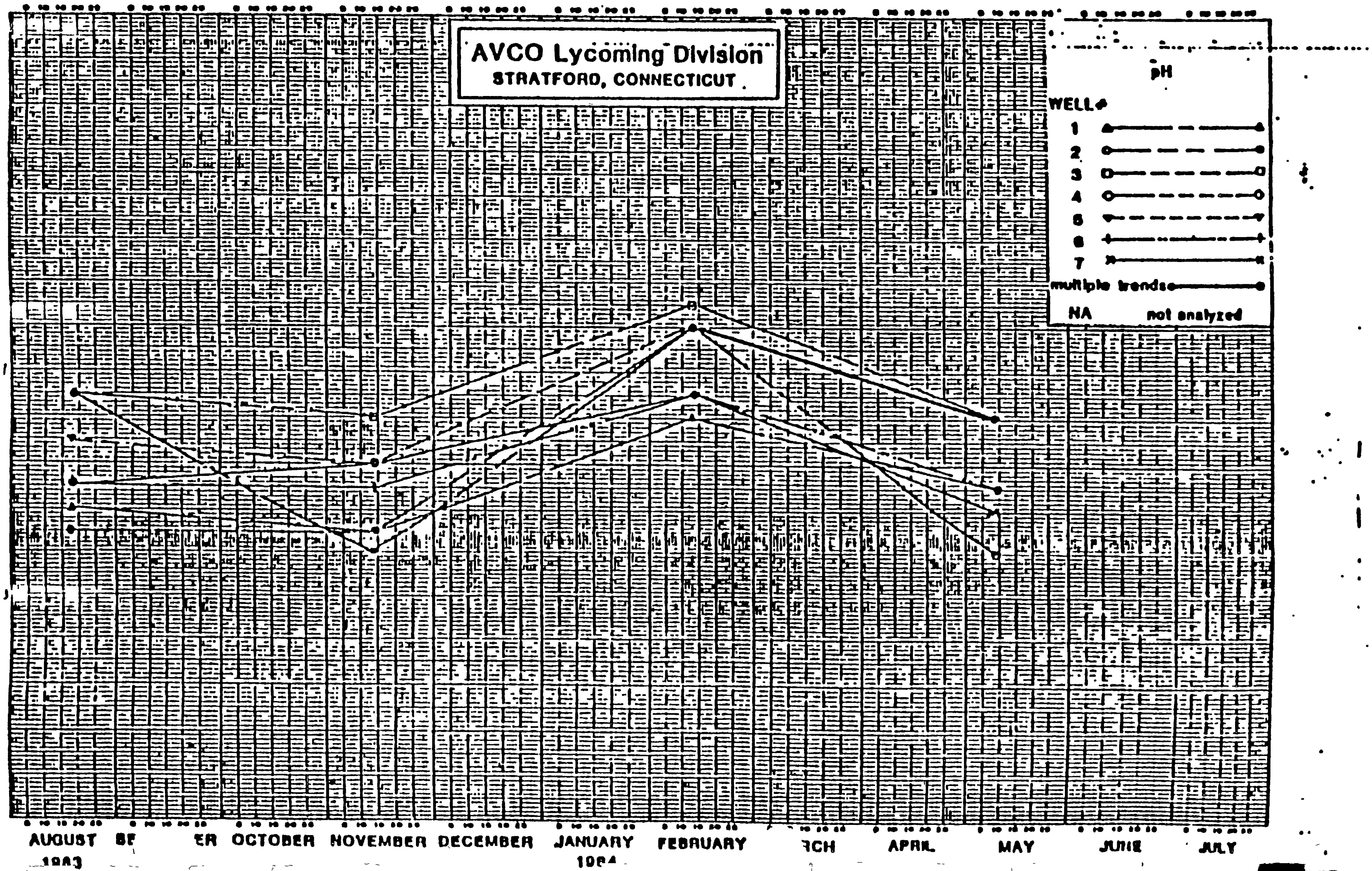
* Denotes less than
1/ Not analyzed

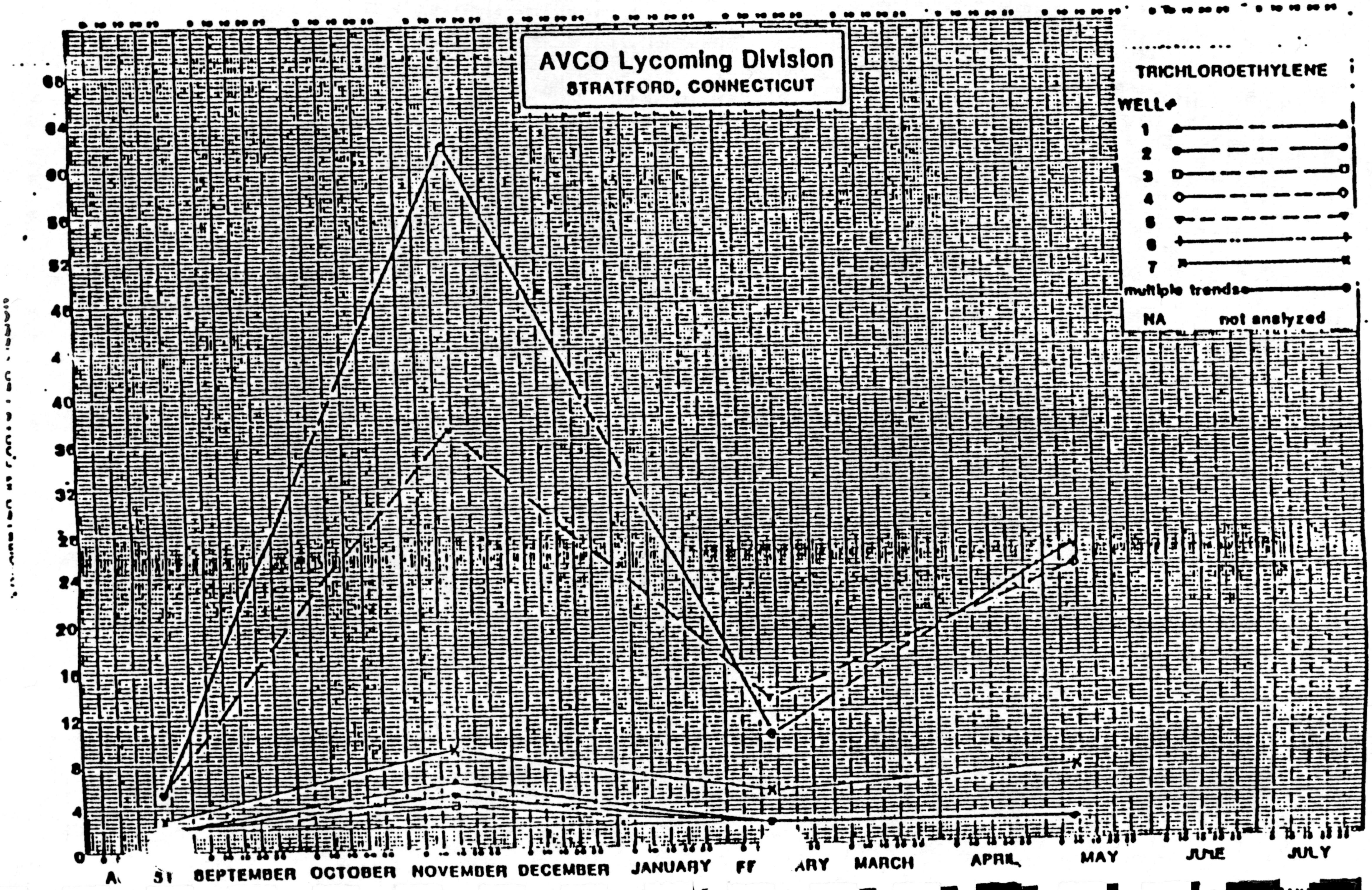

AVCO Lycoming Division
STRATFORD, CONNECTICUT
TOC
WELL#
1
2
3
4
5
6
7
multiple trends
NA not analyzed
PARAMETER IN PARTS PER
70
60
50
40
30
20
10
DECEMBER
JANUARY
FEBRUARY
MARCH
APRIL
MAY
JUNE
JULY

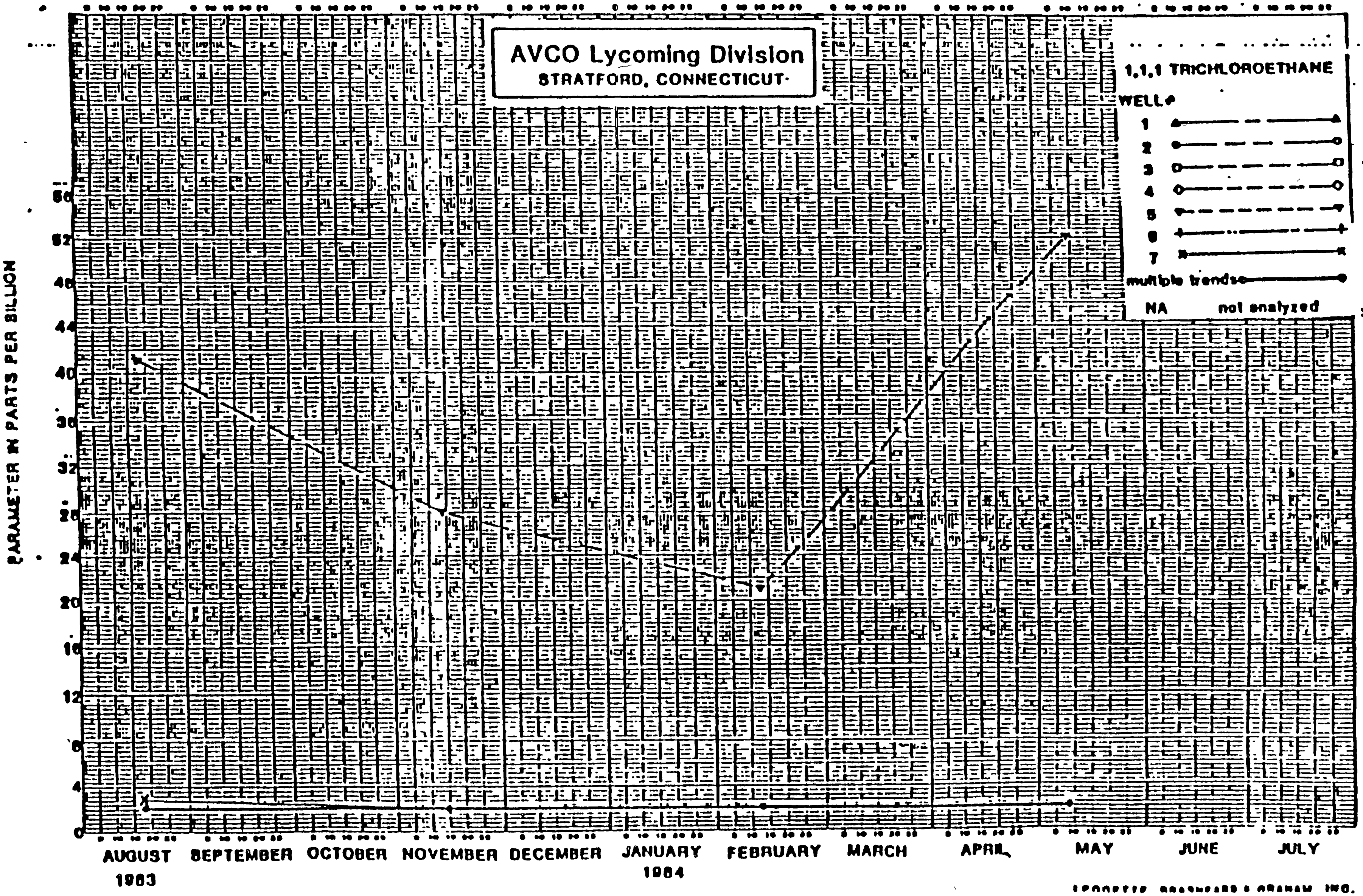

AVCO Lycoming Division
STRATFORD, CONNECTICUT
TOX as CHLORIDE
WELL#
1
2
3
4
5
6
7
multiple trends
NA not analyzed
1.4
1.3
1.2
1.1
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
APRIL
MAY
JUNE
JULY

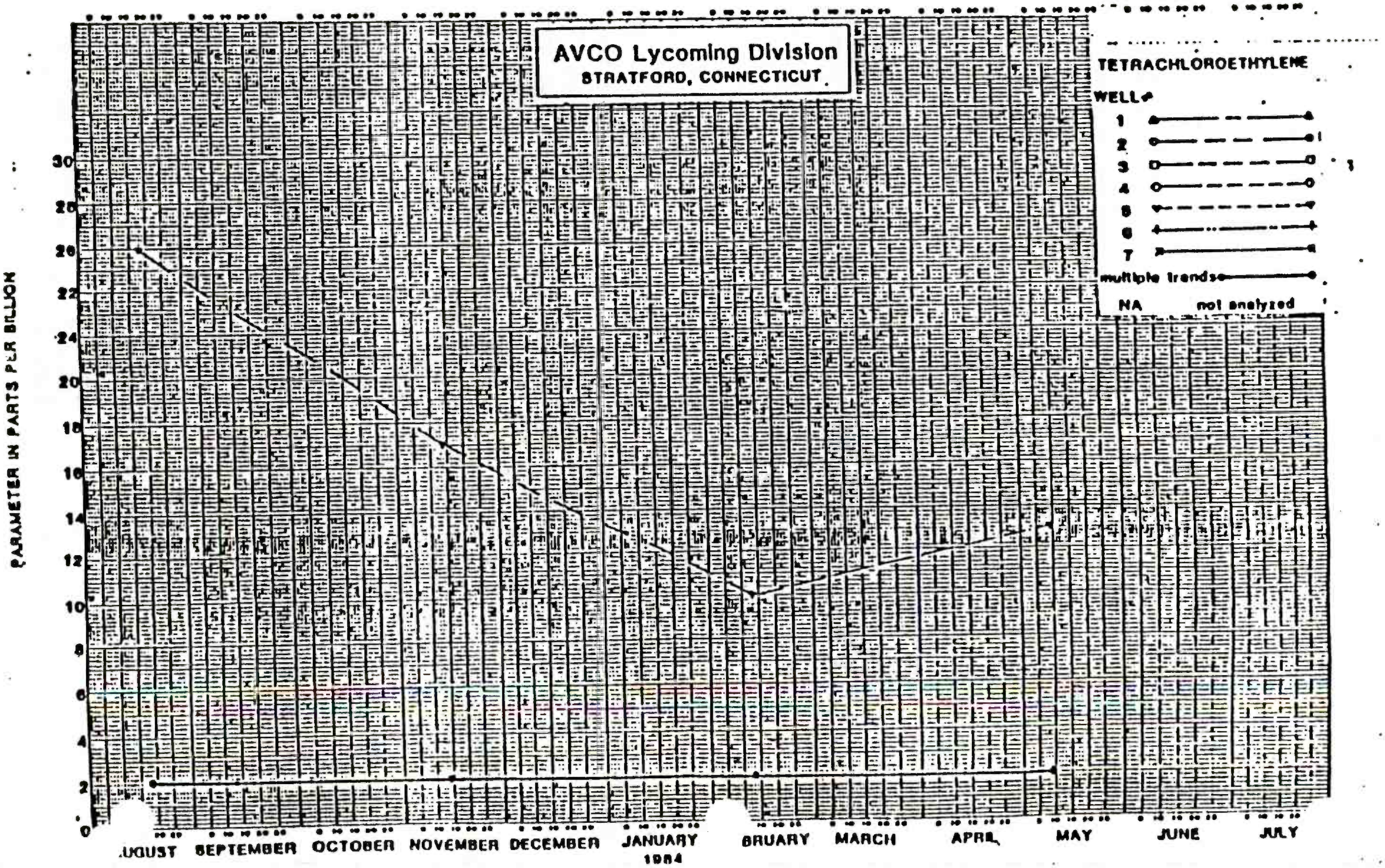


AVCO Lycoming Division
STRATFORD, CONNECTICUT
CONDUCTIVITY
WELL#
1
2
3
4
5
6
7
multiple trends
NA not analyzed
1600
1400
1200
1000
800
600
400
umhos/cm
AUGUST
1963
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER
JANUARY
1964
FEBRUARY
MARCH
APRIL
MAY
JUNE
JULY

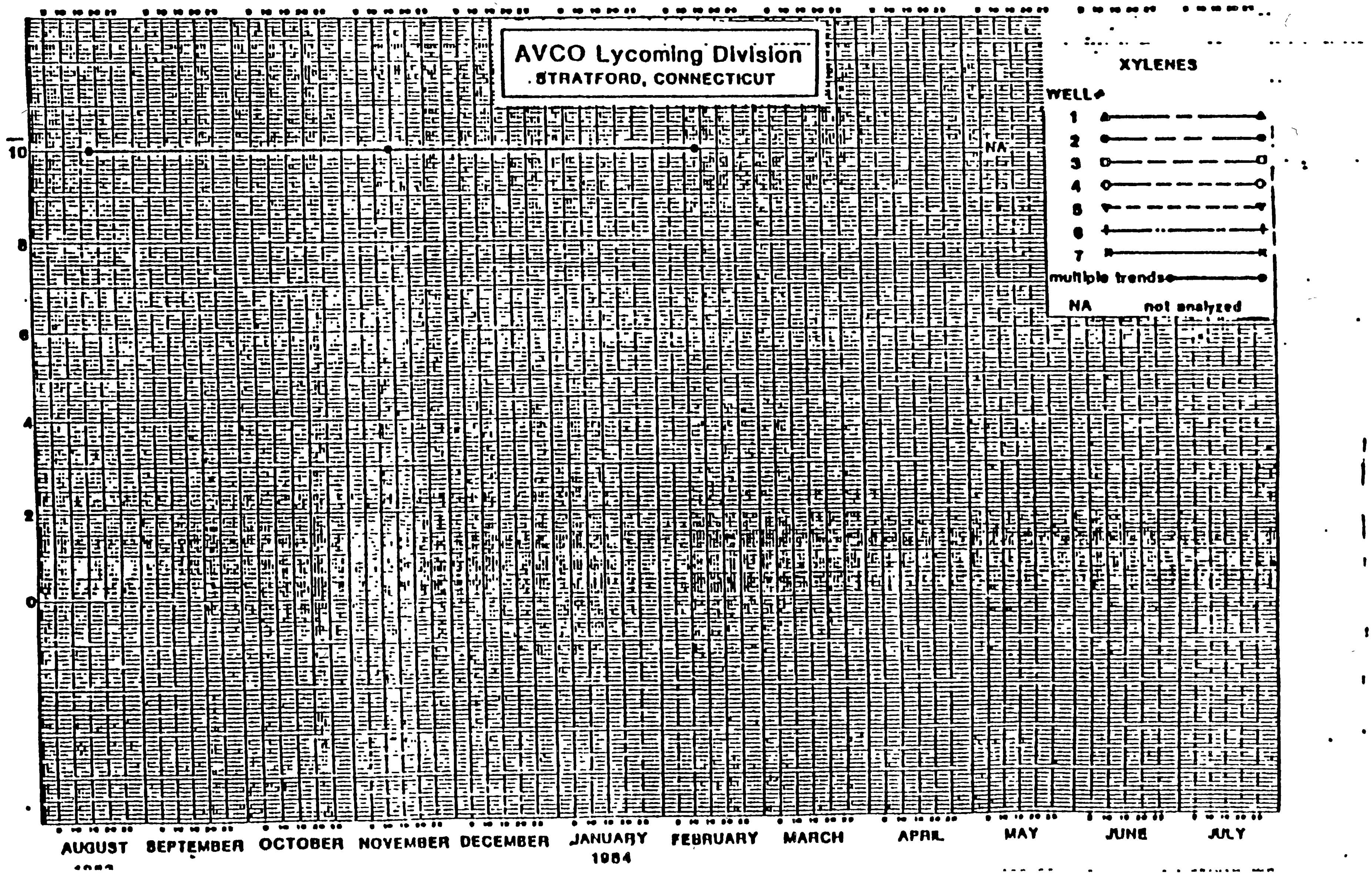

AVCO Lycoming Division
STRATFORD, CONNECTICUT
pH
WELL#
1
2
3
4
5
6
7
multiple trends
NA not analyzed
AUGUST
1983
OCTOBER
NOVEMBER
DECEMBER
JANUARY
FEBRUARY
APRIL
MAY
JUNE
JULY


AVCO Lycoming Division
STRATFORD, CONNECTICUT
TRICHLOROETHYLENE
WELL#
1
2
3
4
5
6
7
multiple trends
NA not analyzed
0
4
8
12
20
24
28
32
36
40
48
52
56
60
64
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER
JANUARY
MARCH
APRIL
MAY
JUNE
JULY

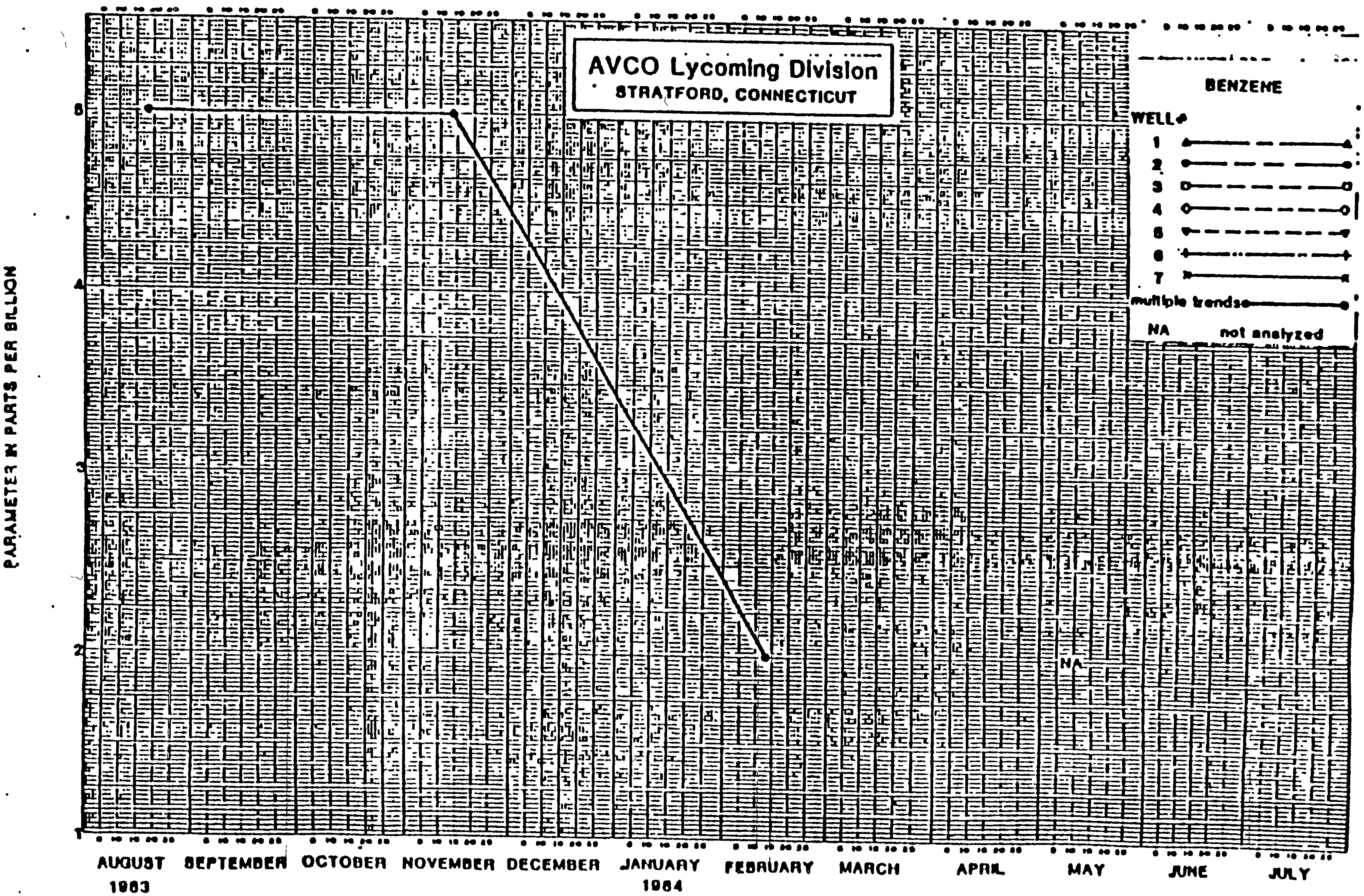

AVCO Lycoming Division
STRATFORD, CONNECTICUT
1,1,1 TRICHLOROETHANE
WELL#
1
2
3
4
5
6
7
multiple trends
NA not analyzed
PARAMETER IN PARTS PER BILLION
0
4
8
12
16
20
24
28
32
36
40
44
48
52
56
AUGUST
1983
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER
JANUARY
1984
FEBRUARY
MARCH
APRIL
MAY
JUNE
JULY



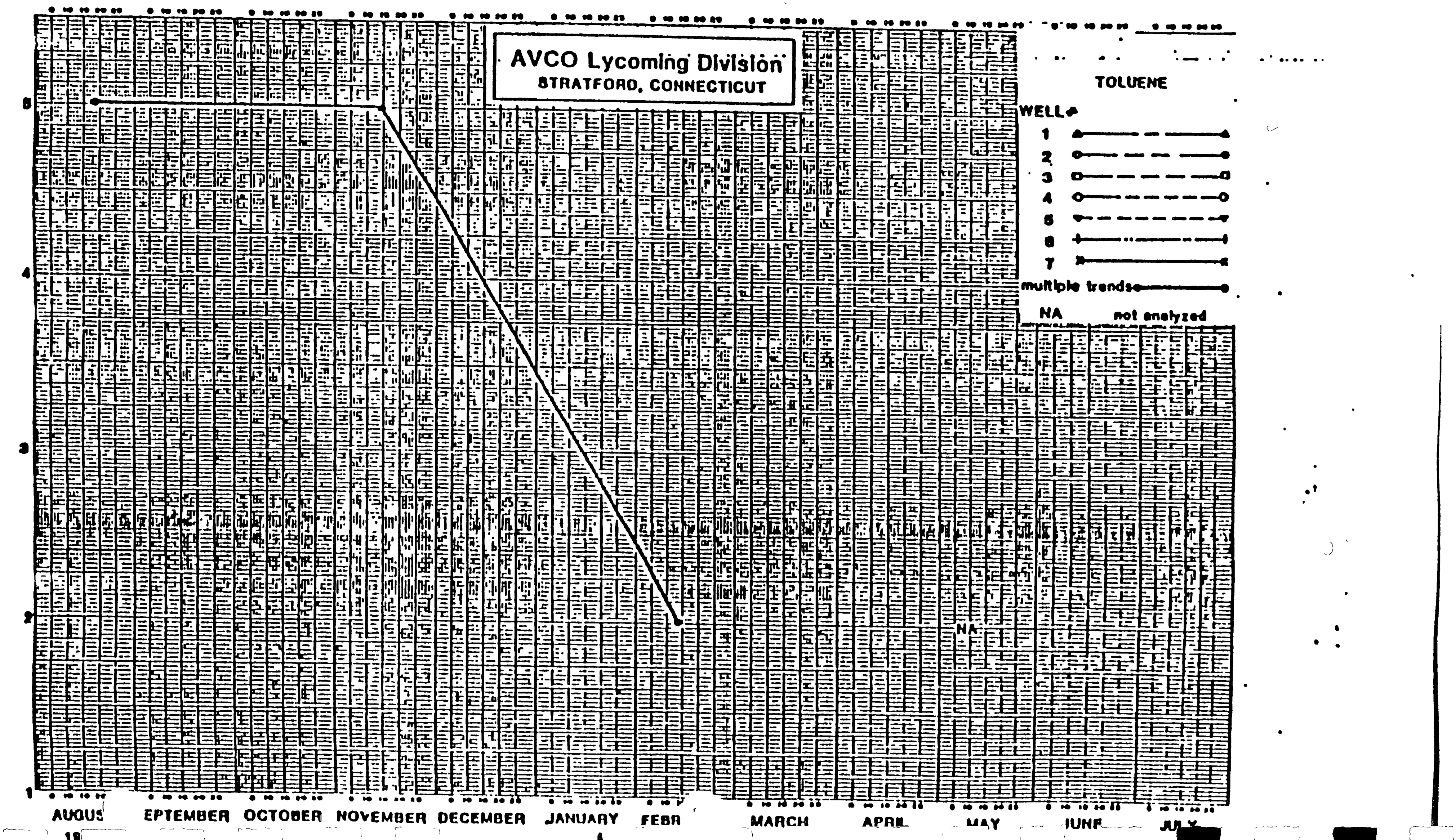
AVCO Lycoming Division
STRATFORD, CONNECTICUT
TETRACHLOROETHYLENE
WELL#
1
2
3
4
5
6
7
multiple trends
NA not analyzed
PARAMETER IN PARTS PER BILLION
30
28
26
22
24
20
18
16
14
12
10
8
6
4
2
0
UGUST
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER
JANUARY
1984
BRUARY
MARCH
APRIL
MAY
JUNE
JULY



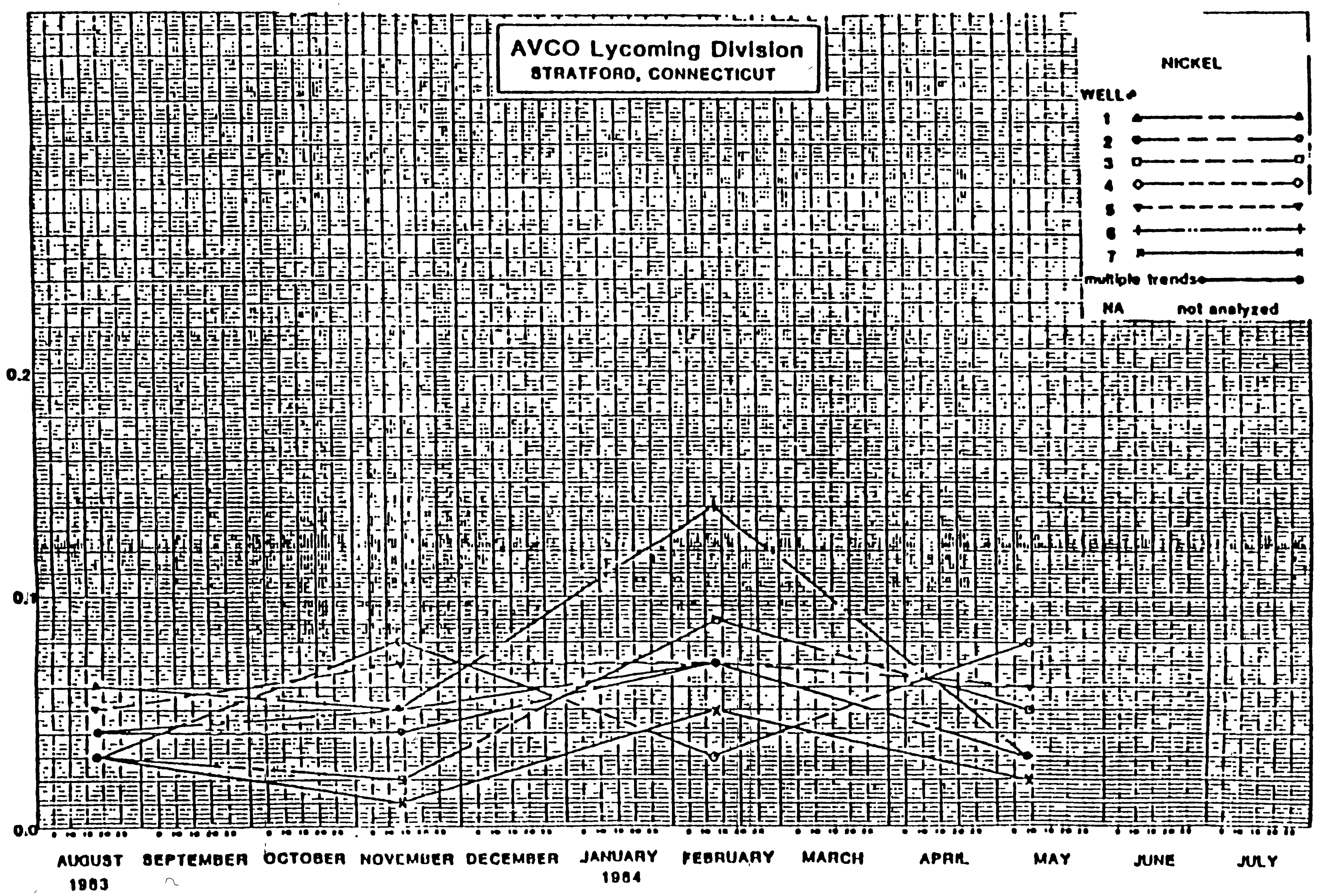
AVCO Lycoming Division
STRATFORD, CONNECTICUT
XYLENES
WELL#
1
2
3
4
5
6
7
multiple trends
NA not analyzed
NA
10
8
6
4
2
0
AUGUST
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER
JANUARY
1984
FEBRUARY
MARCH
APRIL
MAY
JUNE
JULY

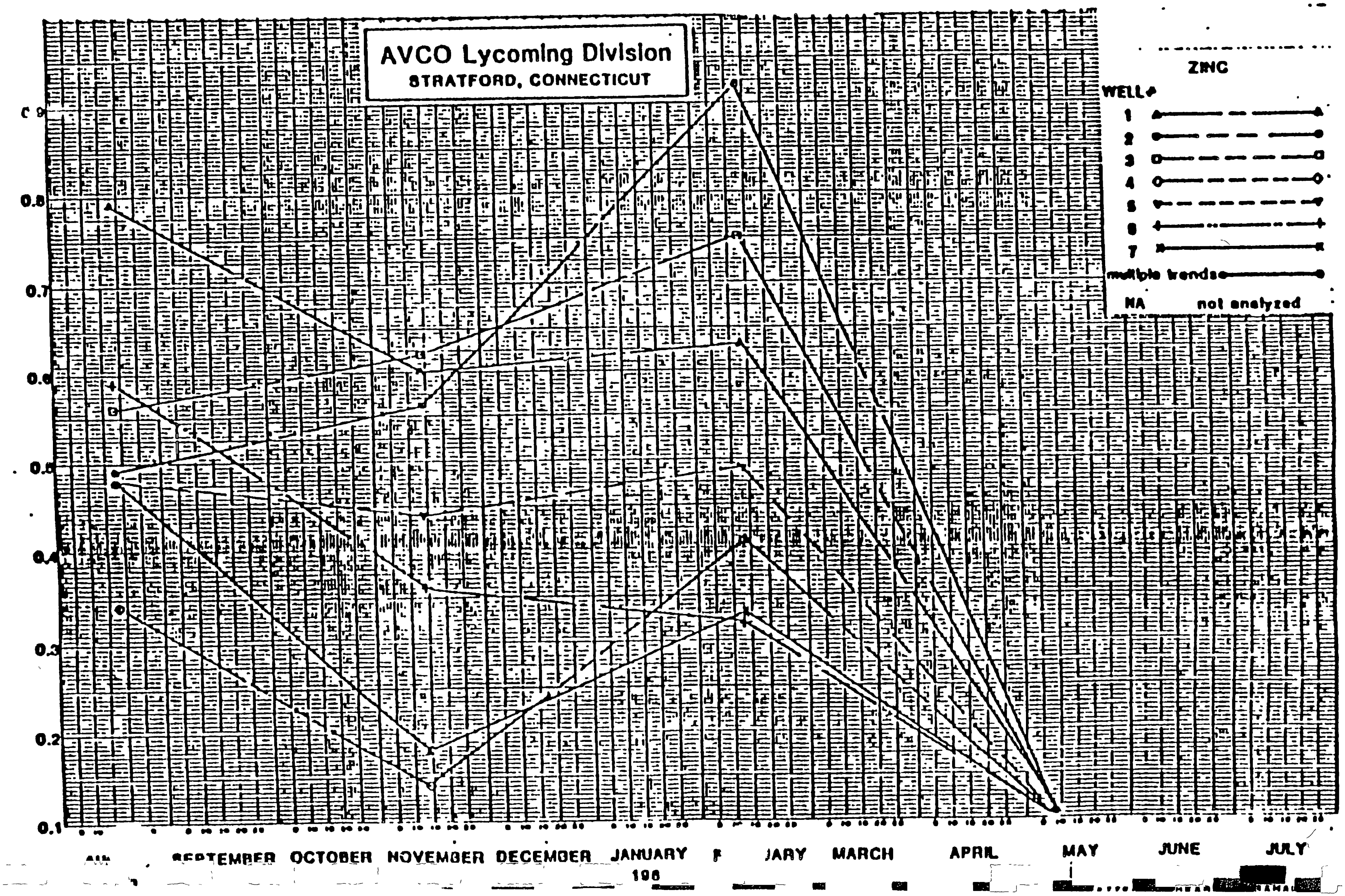


AVCO Lycoming Division
STRATFORD, CONNECTICUT
BENZENE
WELL#
1
2
3
4
5
6
7
multiple trends
NA not analyzed
NA
PARAMETER IN PARTS PER BILLION
5
4
3
2
1
AUGUST 1983
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER
JANUARY 1984
FEBRUARY
MARCH
APRIL
MAY
JUNE
JULY

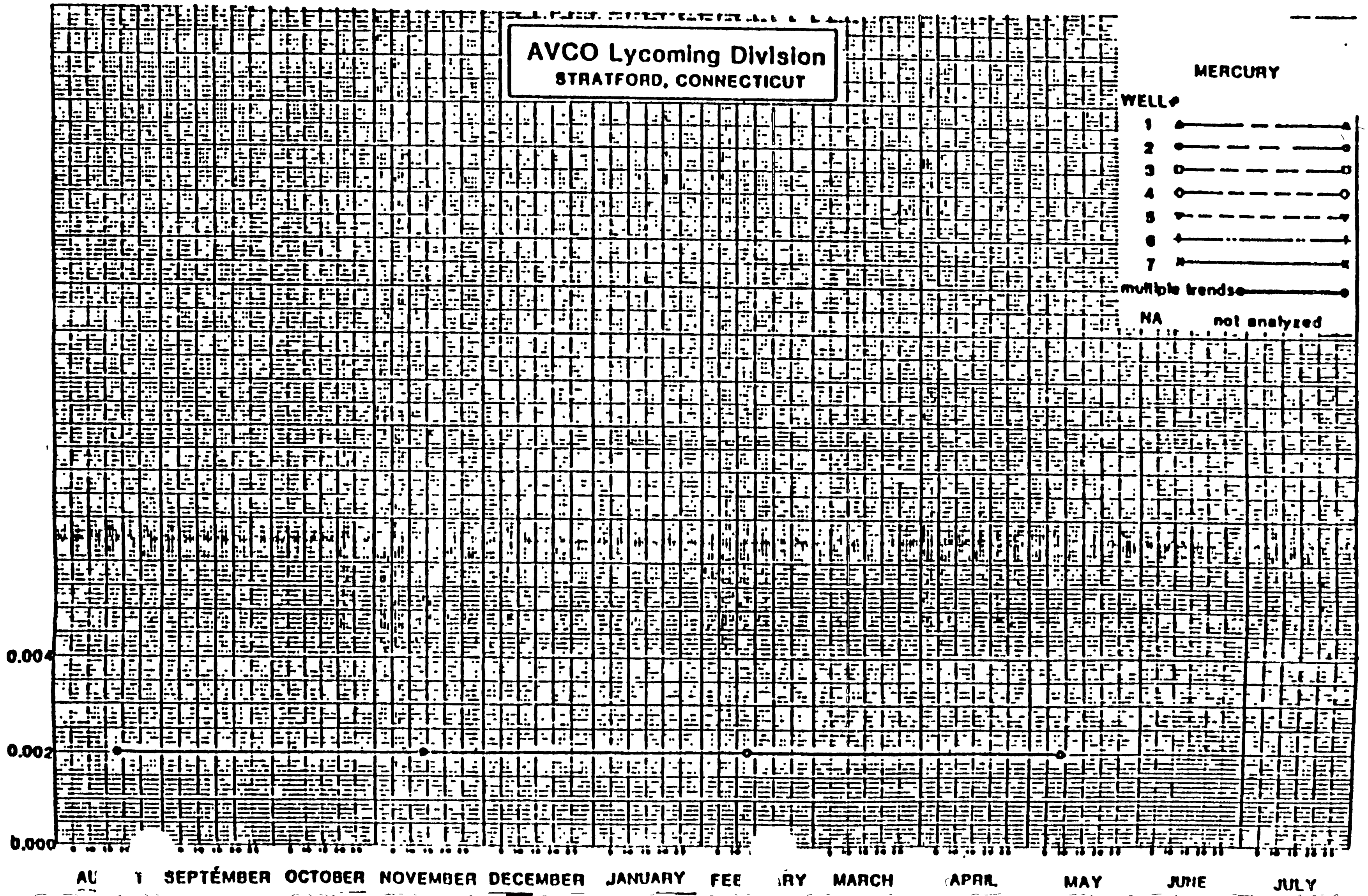


AVCO Lycoming Division
STRATFORD, CONNECTICUT
TOLUENE
WELL#
1
2
3
4
5
6
7
multiple trends
NA not analyzed
NA
5
4
3
2
1
AUGUS
EPTEMBER
OCTOBER
NOVEMBER
DECEMBER
JANUARY
FEBR
MARCH
APRIL
MAY
JUNE

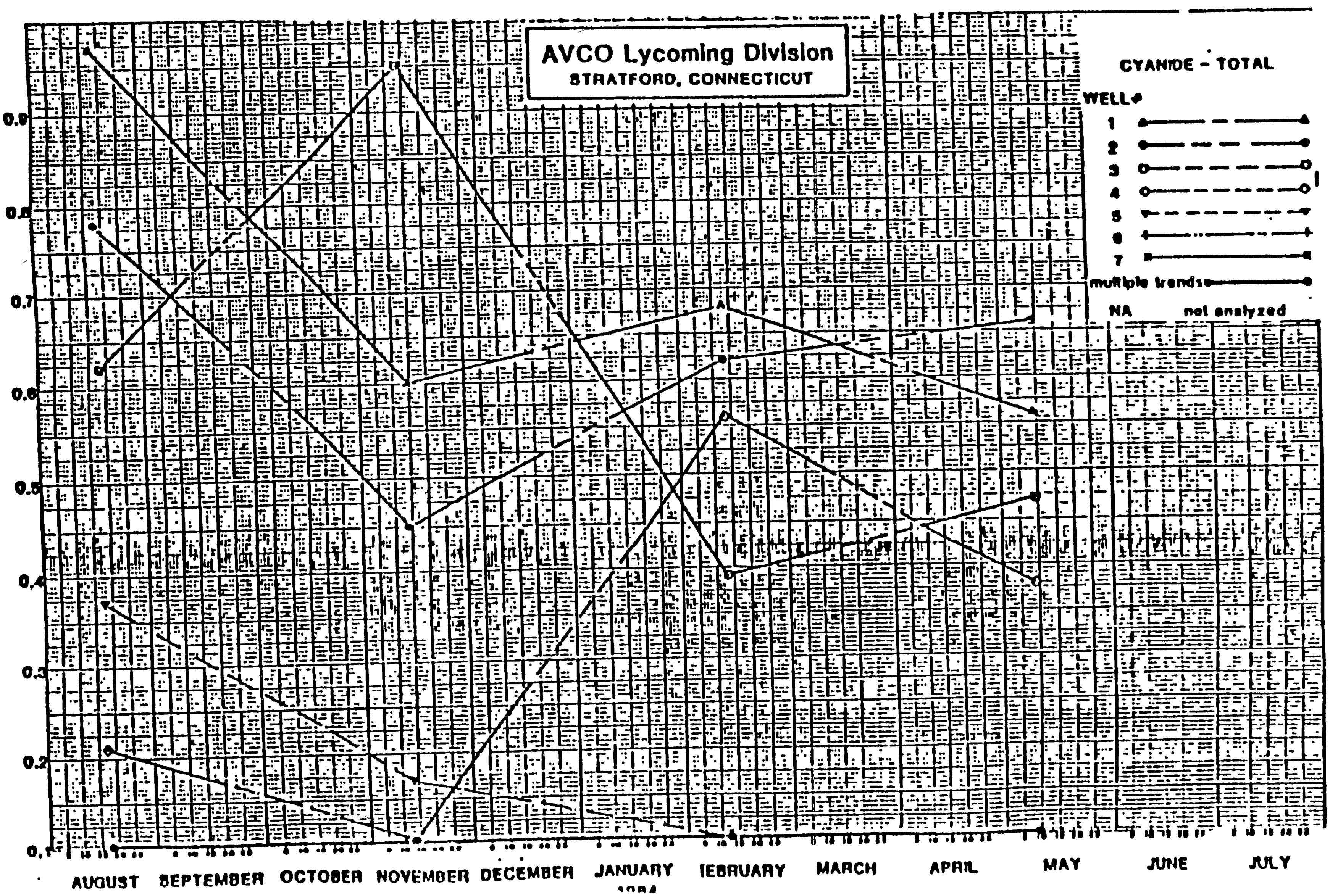

AVCO Lycoming Division
STRATFORD, CONNECTICUT
NICKEL
WELL #
1
2
3
4
5
6
7
multiple trends
NA not analyzed
0.2
0.1
0.0
AUGUST 1983
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER
JANUARY 1984
FEBRUARY
MARCH
APRIL
MAY
JUNE
JULY



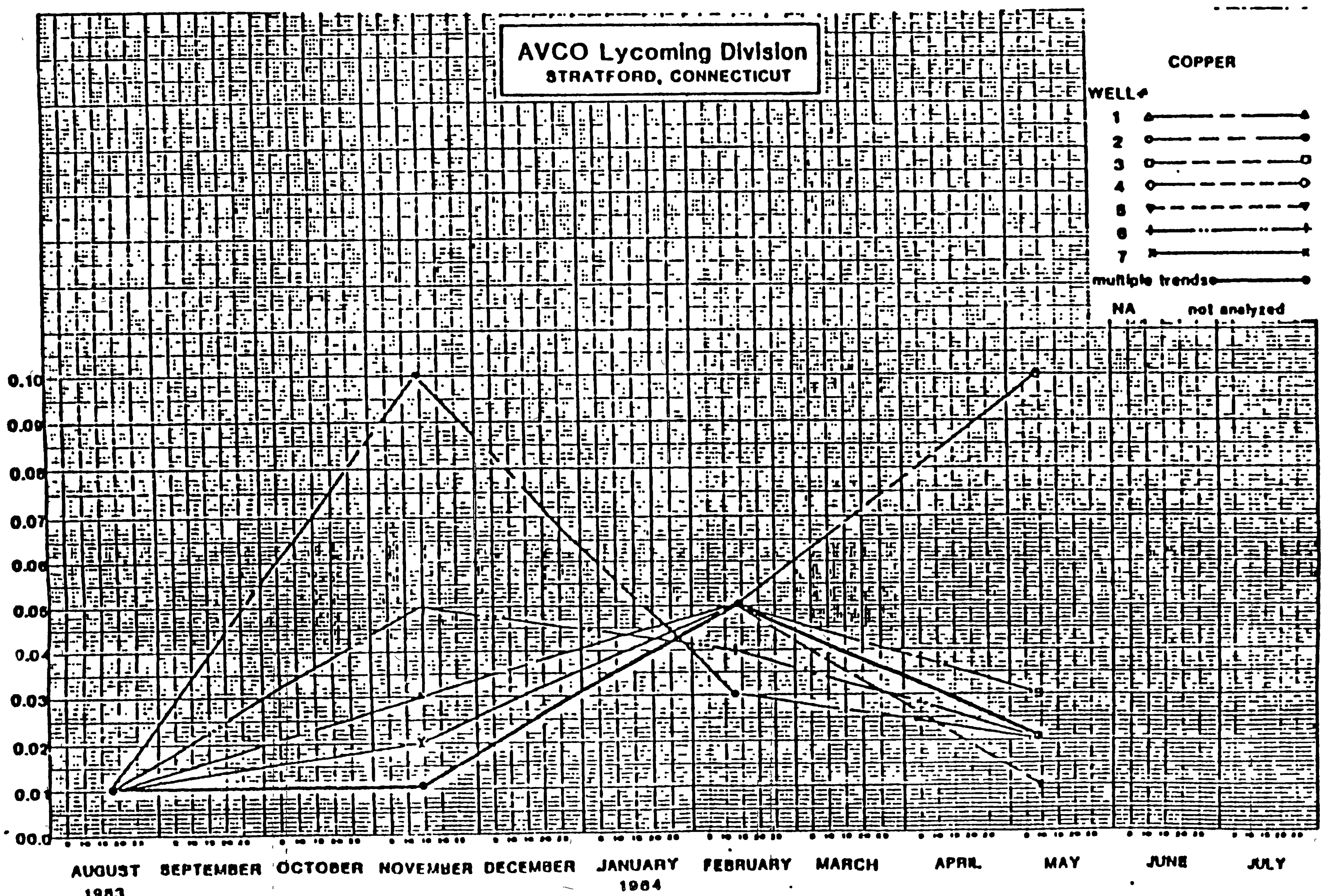
AVCO Lycoming Division
STRATFORD, CONNECTICUT
ZINC
WELL #
1
2
3
4
5
6
7
multiple trends
NA not analyzed
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER
JANUARY
JARY
MARCH
APRIL
MAY
JUNE
JULY



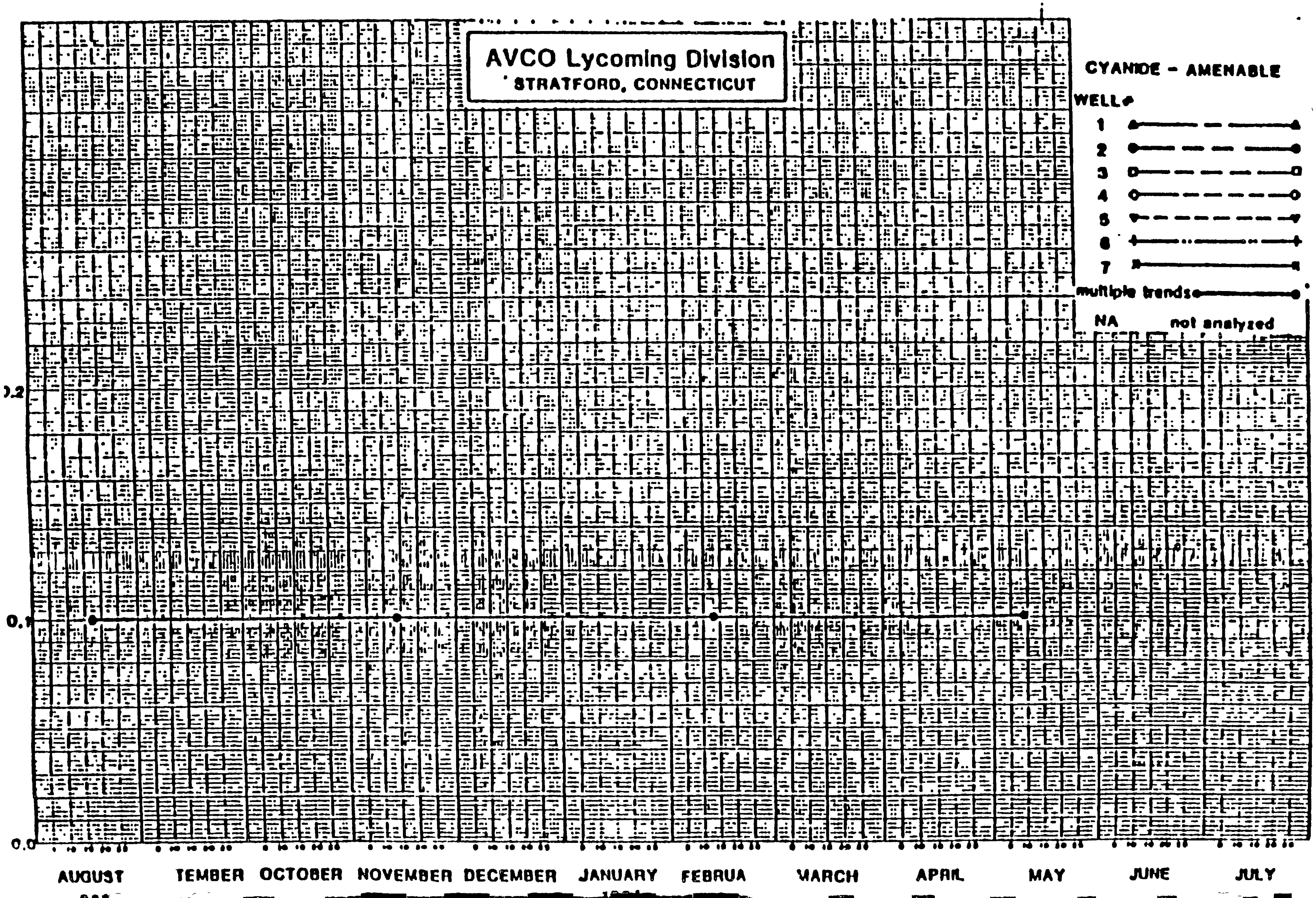
AVCO Lycoming Division
STRATFORD, CONNECTICUT
MERCURY
WELL#
1
2
3
4
5
6
7
multiple trends
NA not analyzed
0.004
0.002
0.000
AU
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER
JANUARY
MARCH
APRIL
MAY
JUNE
JULY

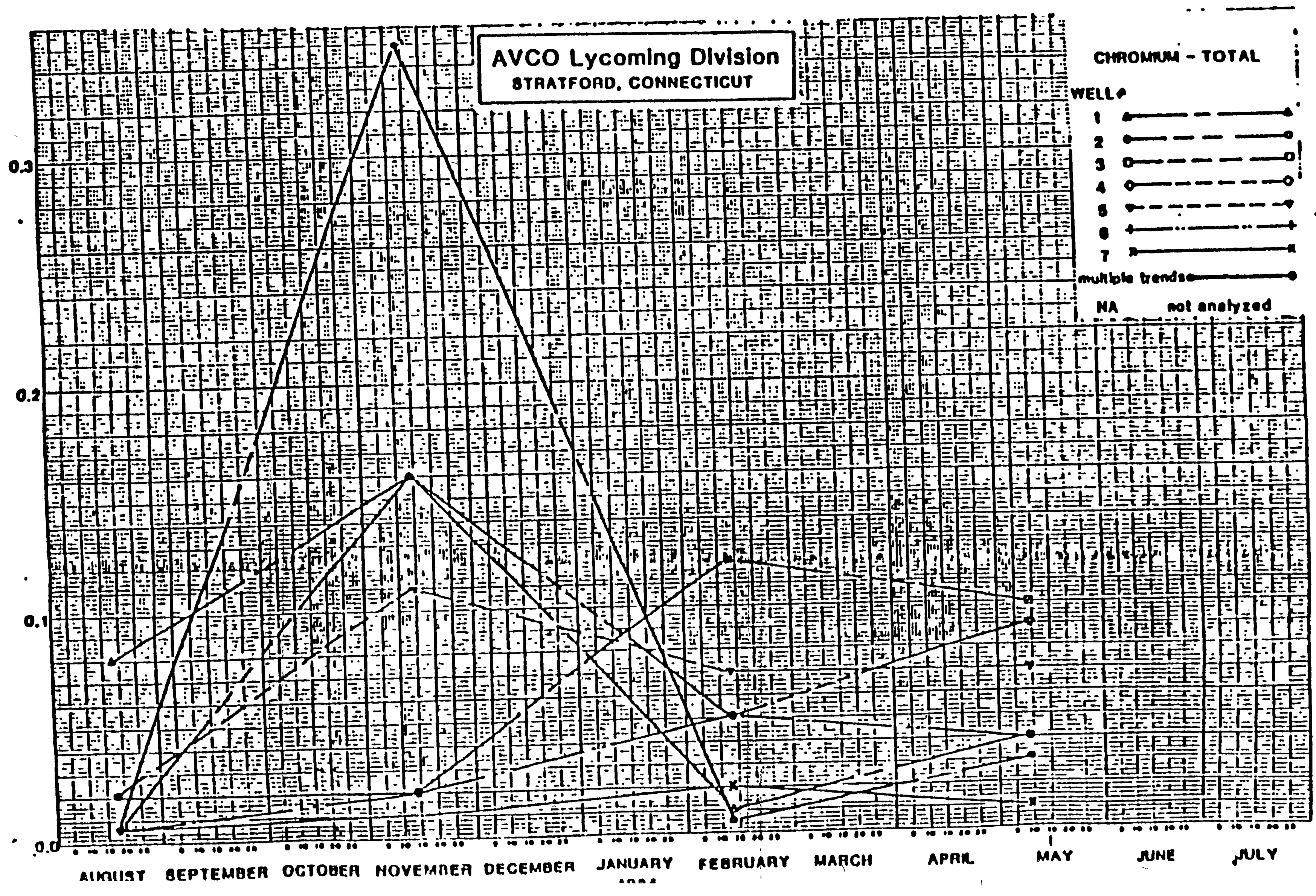


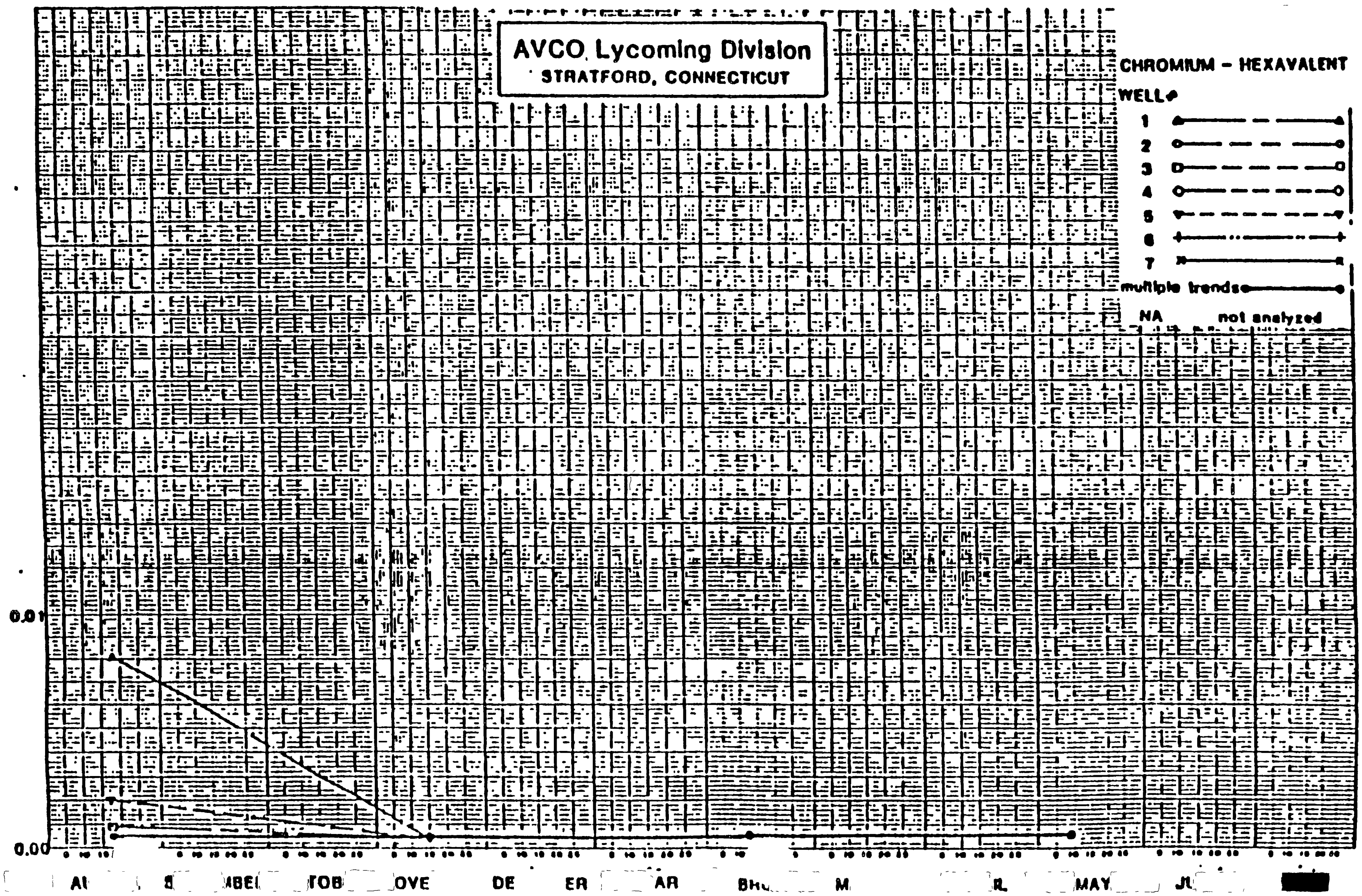
AVCO Lycoming Division
STRATFORD, CONNECTICUT
CYANIDE - TOTAL
WELL#
1
2
3
4
5
6
7
multiple trends
NA not analyzed
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
AUGUST
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER
JANUARY
FEBRUARY
MARCH
APRIL
MAY
JUNE
JULY

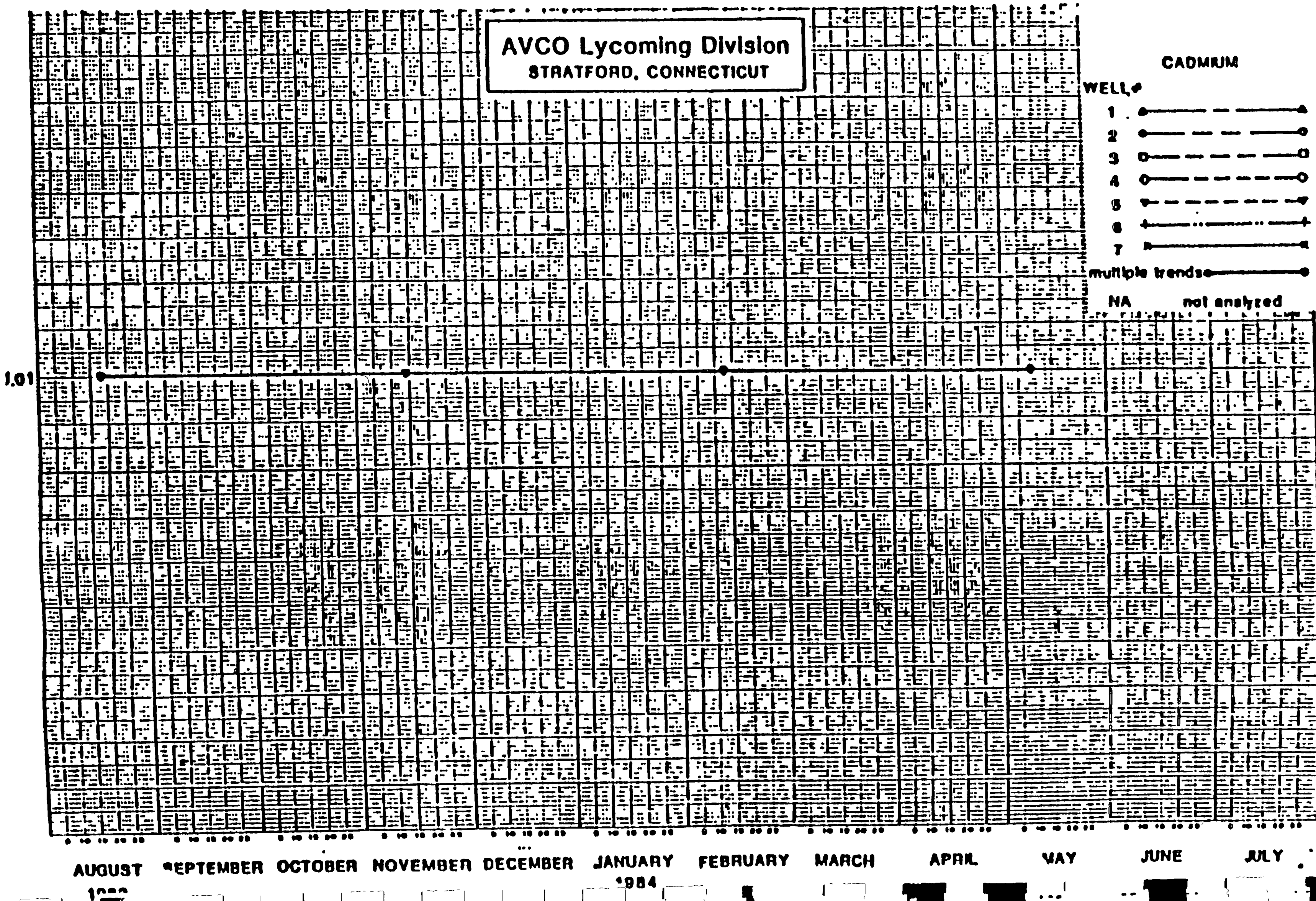


LEGGETTE, BRASHEARS & GRAHAM, INC.

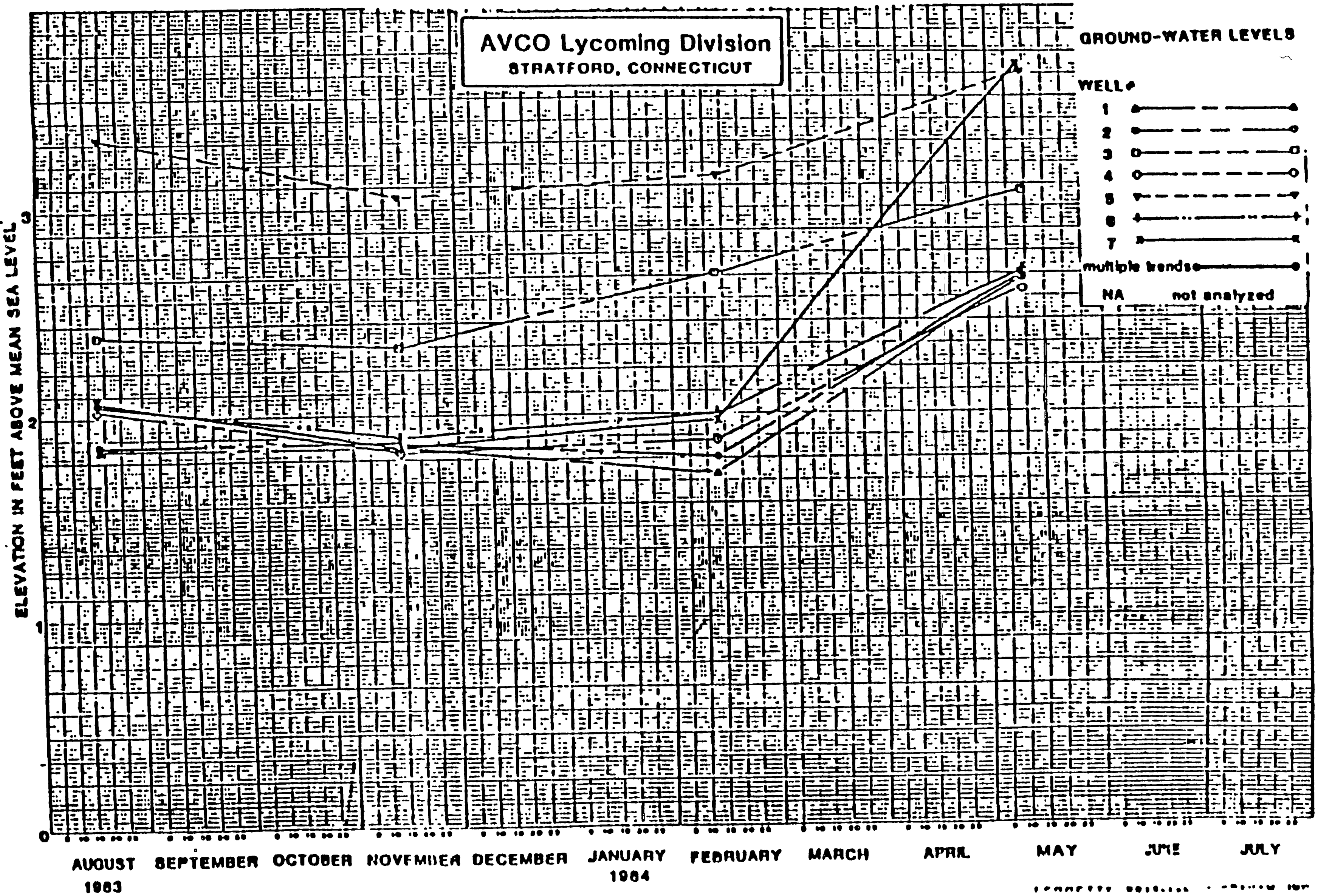

AVCO Lycoming Division
STRATFORD, CONNECTICUT
CYANIDE - AMENABLE
WELL#
1
2
3
4
5
6
7
multiple trends
NA not analyzed
0.2
0.1
0.0
AUGUST
TEMBER
OCTOBER
NOVEMBER
DECEMBER
JANUARY
FEBRUA
MARCH
APRIL
MAY
JUNE
JULY


AVCO Lycoming Division
STRATFORD, CONNECTICUT
CHROMIUM - TOTAL
WELL #
1
2
3
4
5
6
7
multiple trends
NA not analyzed
0.3
0.2
0.1
0.0
AUGUST
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER
JANUARY
FEBRUARY
MARCH
APRIL
MAY
JUNE
JULY


AVCO Lycoming Division
STRATFORD, CONNECTICUT
CHROMIUM - HEXAVALENT
WELL#
1
2
3
4
5
6
7
multiple trends
NA not analyzed
0.01
0.00
MAY

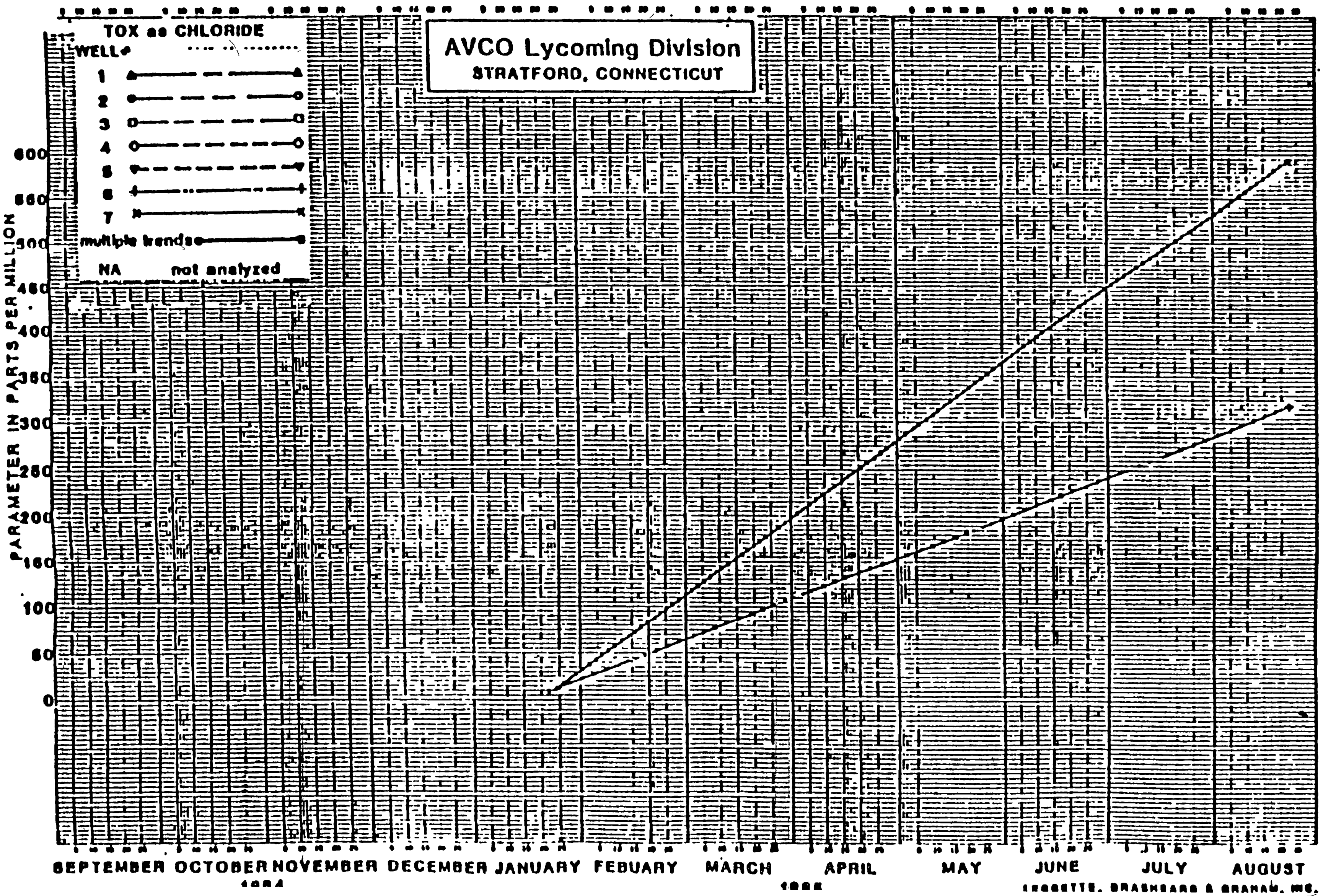


AVCO Lycoming Division
STRATFORD, CONNECTICUT
CADMIUM
WELL #
1
2
3
4
5
6
7
multiple trends
NA not analyzed
1.01
AUGUST
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER
JANUARY
1984
FEBRUARY
MARCH
APRIL
MAY
JUNE
JULY

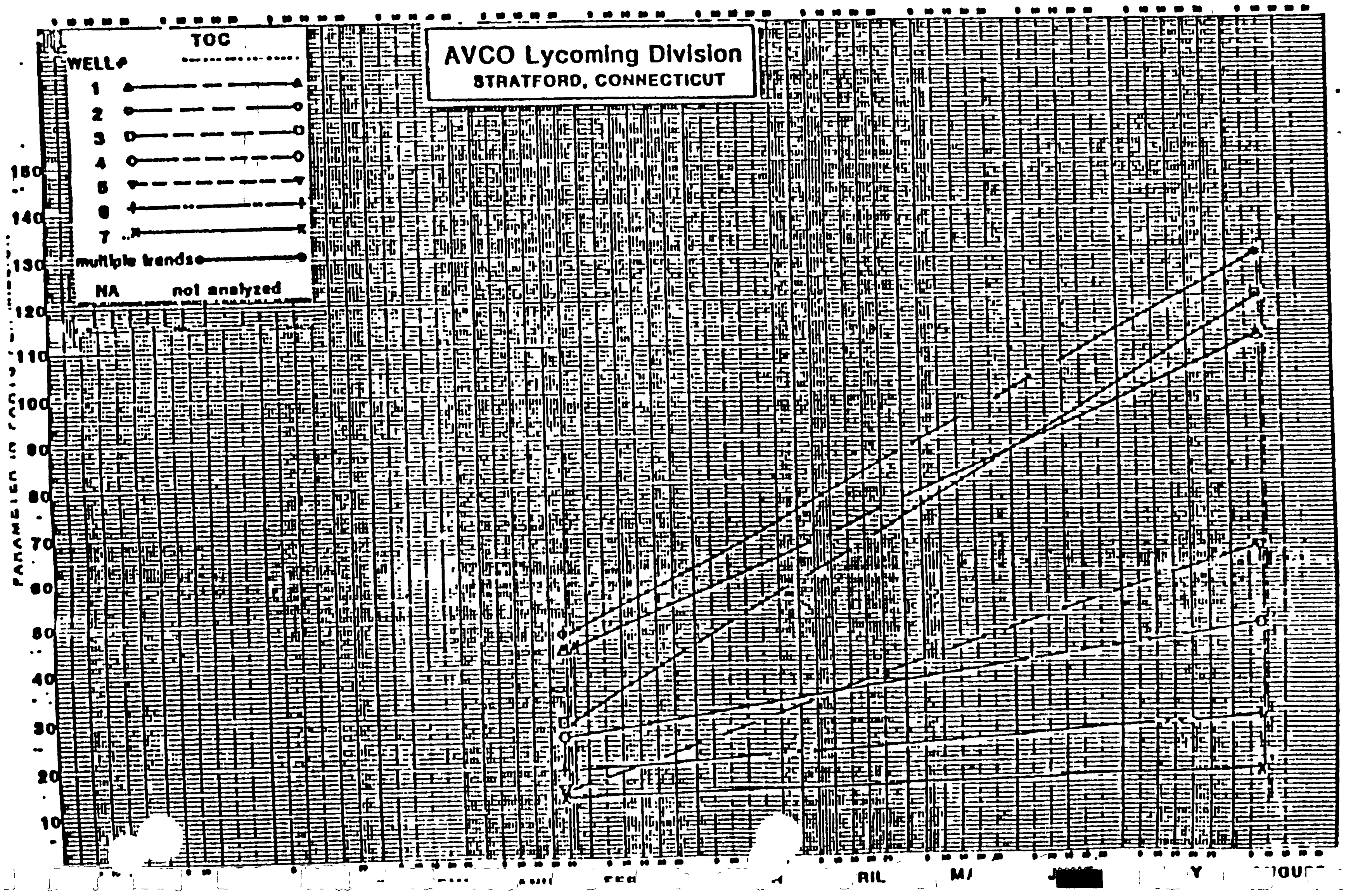

AVCO Lycoming Division
STRATFORD, CONNECTICUT
GROUND-WATER LEVELS
WELL #
1
2
3
4
5
6
7
multiple trends
NA not analyzed
ELEVATION IN FEET ABOVE MEAN SEA LEVEL
0
1
2
3
AUGUST
1983
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER
JANUARY
1984
FEBRUARY
MARCH
APRIL
MAY
JUNE
JULY

APPENDIX VI

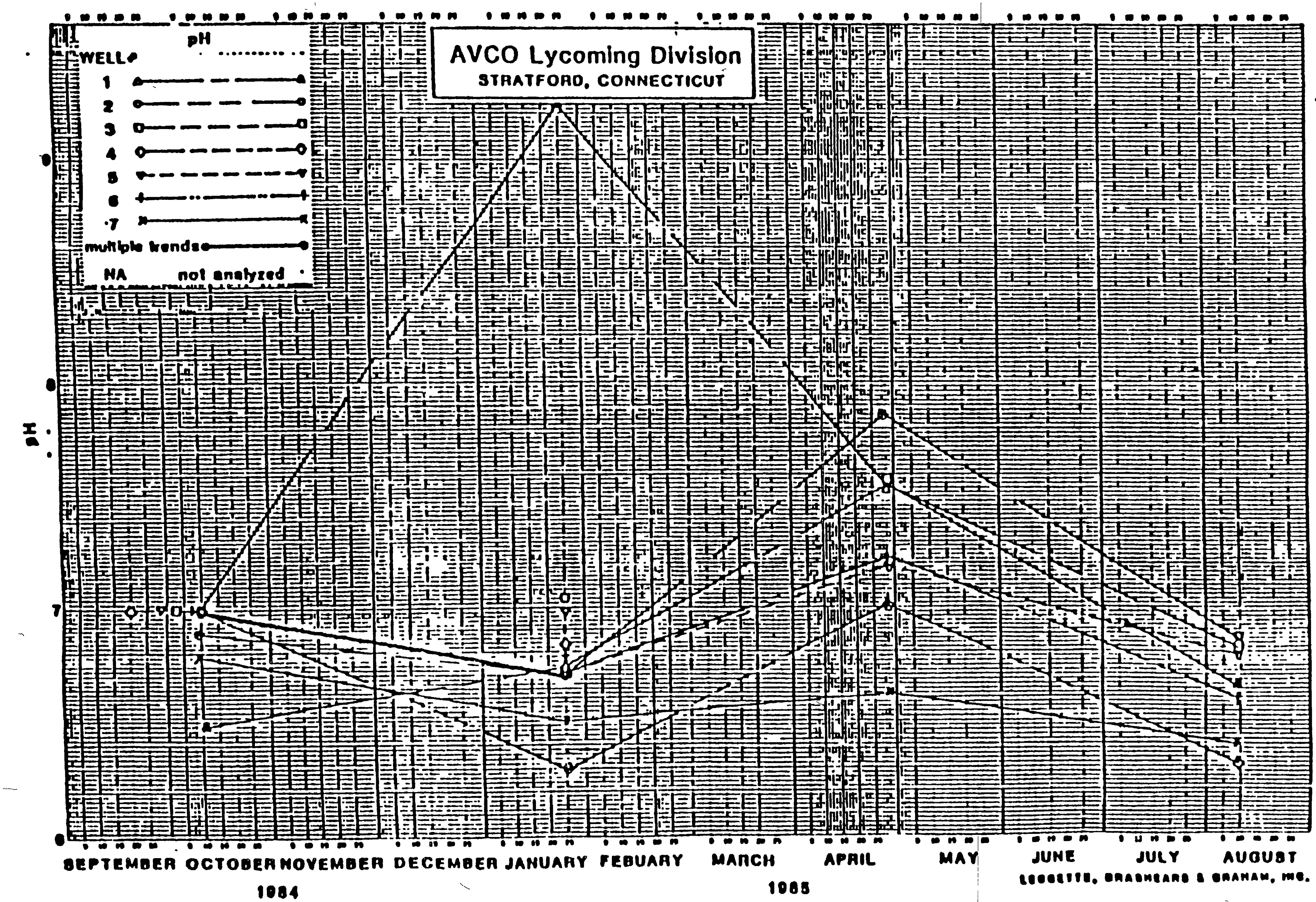
GRAPHICAL PRESENTATION OF CHEMICAL PARAMETERS DETECTED IN ALL MONITOR WELLS (SECOND-YEAR PROGRAM)

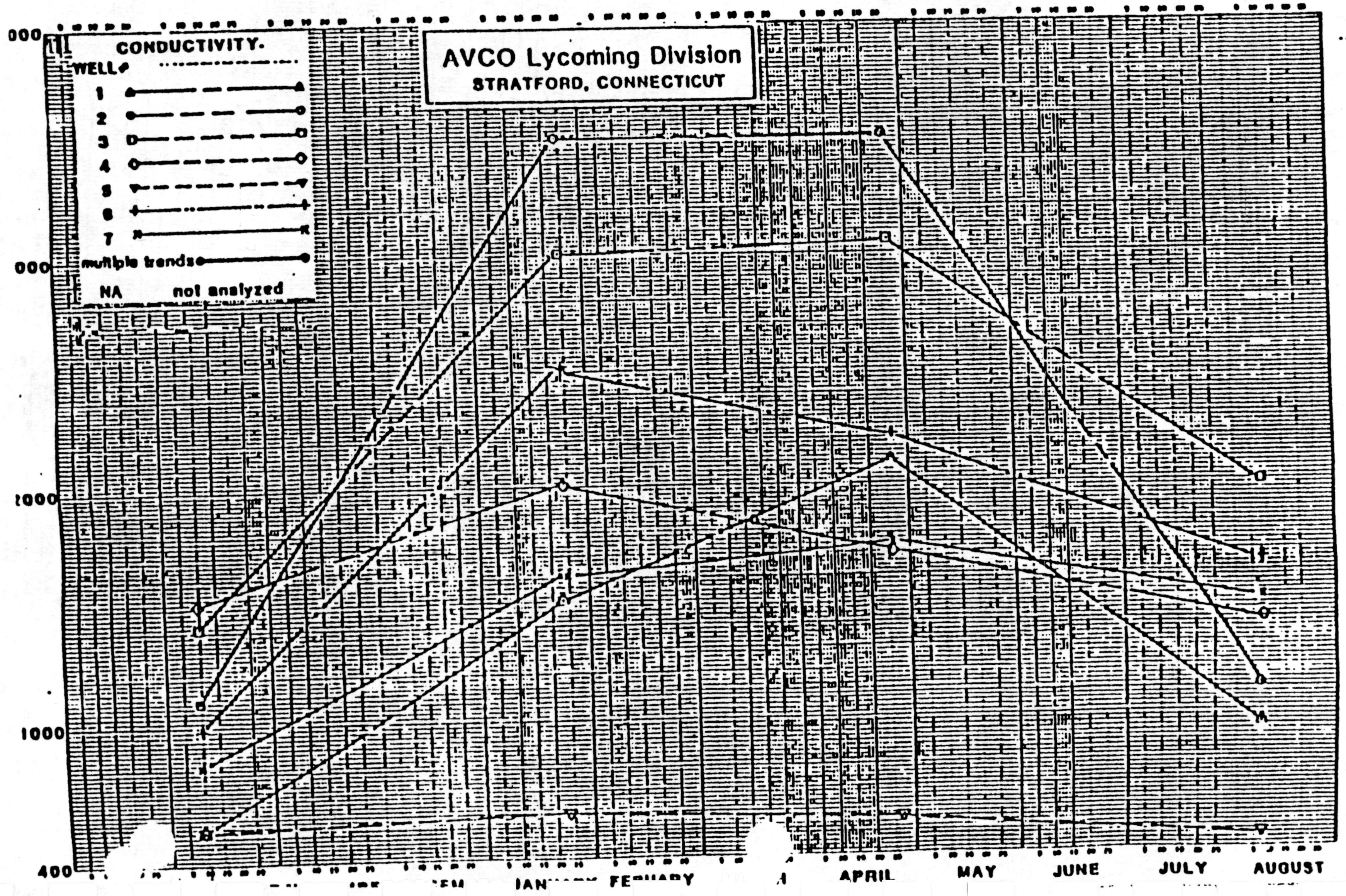


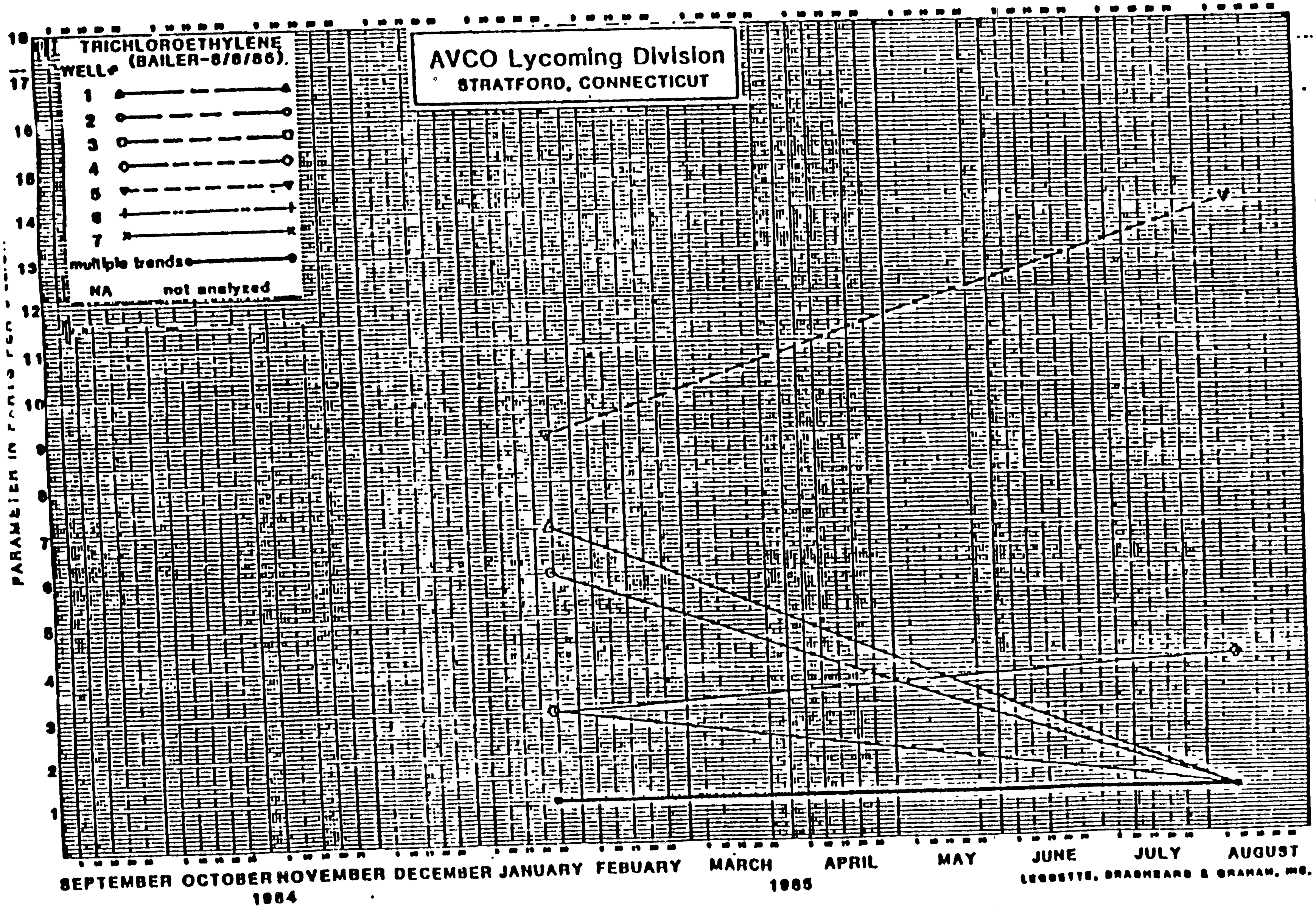
AVCO Lycoming Division
STRATFORD, CONNECTICUT
TOX as CHLORIDE
WELL#
1
2
3
4
5
6
7
multiple trends
NA not analyzed
PARAMETER IN PARTS PER MILLION
600
550
500
450
400
350
300
250
200
150
100
50
0
SEPTEMBER OCTOBER NOVEMBER DECEMBER JANUARY FEBUARY MARCH APRIL MAY JUNE JULY AUGUST

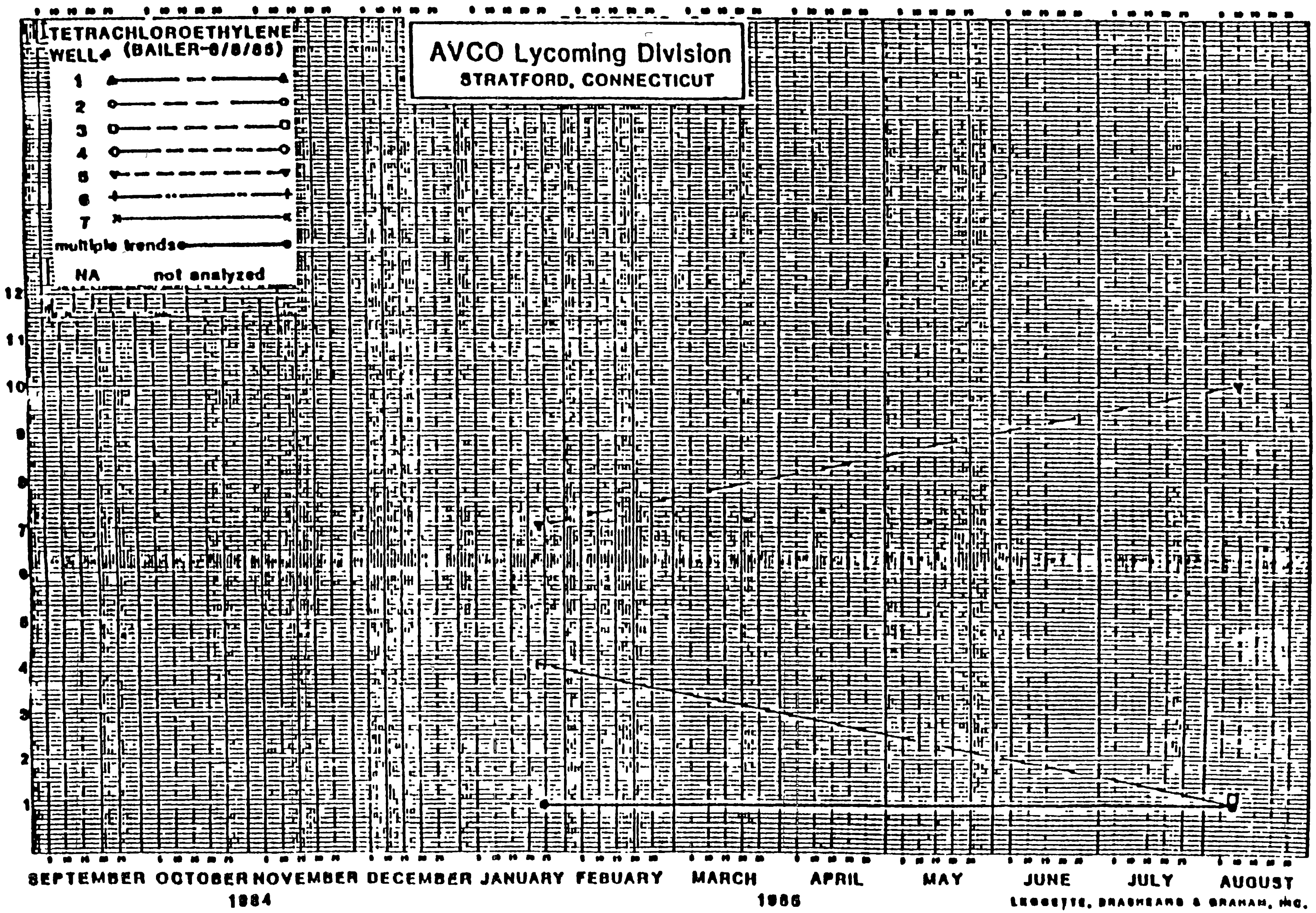


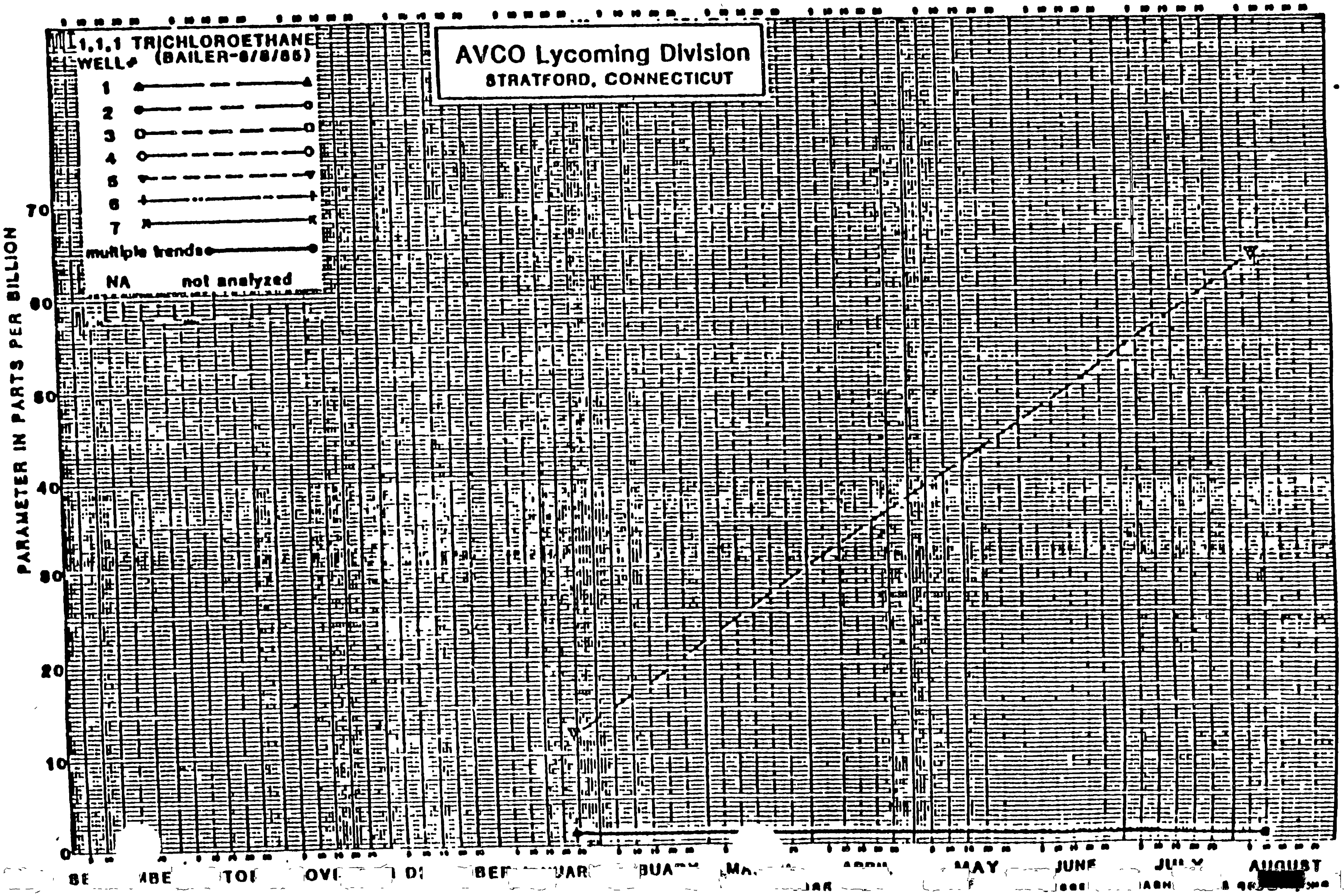
AVCO Lycoming Division
STRATFORD, CONNECTICUT
TOC
WELL#
1
2
3
4
5
6
7
multiple trends
NA not analyzed
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10

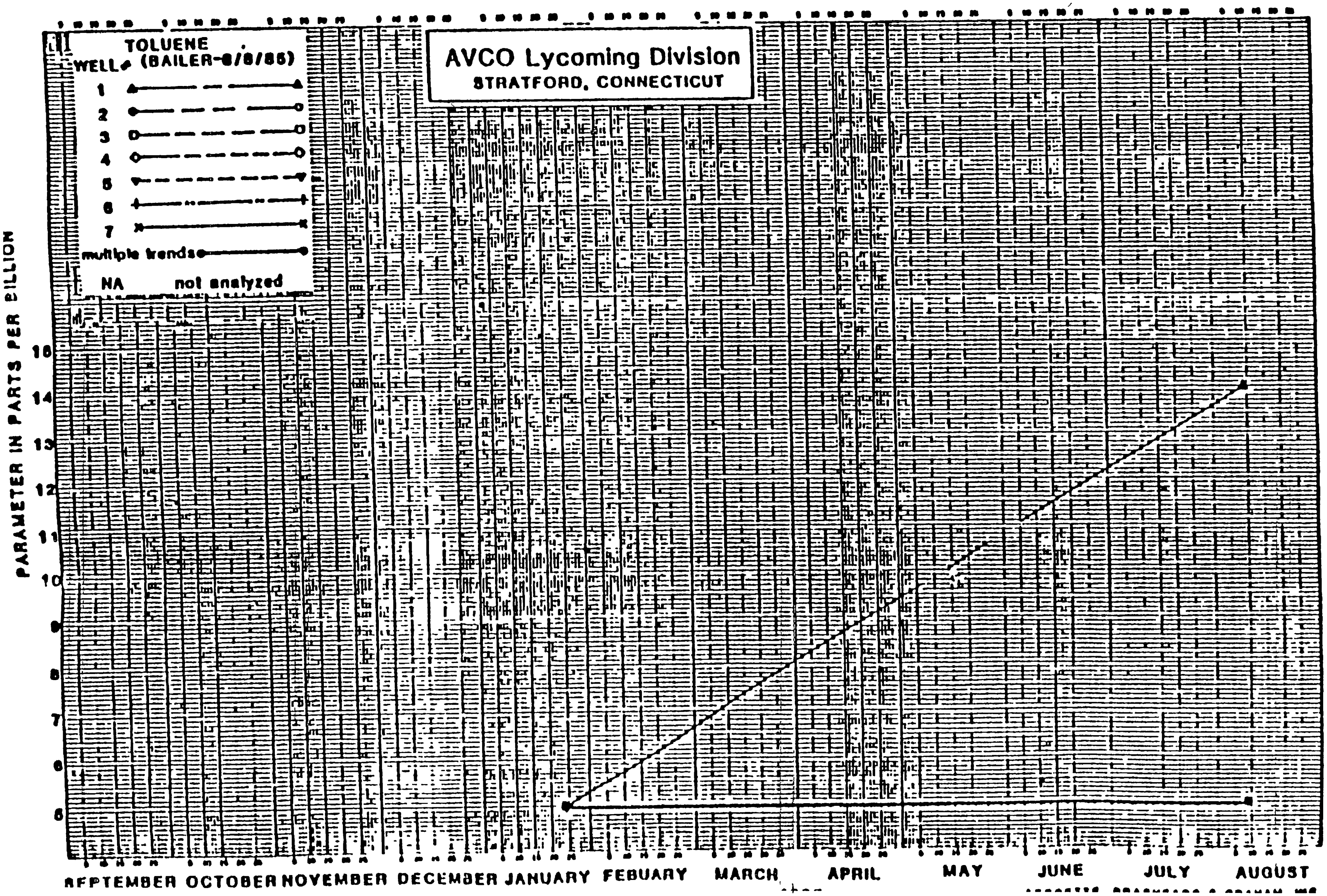

AVCO Lycoming Division
STRATFORD, CONNECTICUT
pH
WELL#
1
2
3
4
5
6
7
multiple trends
NA not analyzed
pH
7
8
SEPTEMBER OCTOBER NOVEMBER DECEMBER JANUARY FEBUARY MARCH APRIL MAY JUNE JULY AUGUST
1984
1985
LEGGETTE, BRASHEARS & GRAHAM, INC.


AVCO Lycoming Division
STRATFORD, CONNECTICUT
CONDUCTIVITY
WELL#
1
2
3
4
5
6
7
multiple trends
NA not analyzed
000
000
2000
1000
400
JANUARY
FEBRUARY
APRIL
MAY
JUNE
JULY
AUGUST

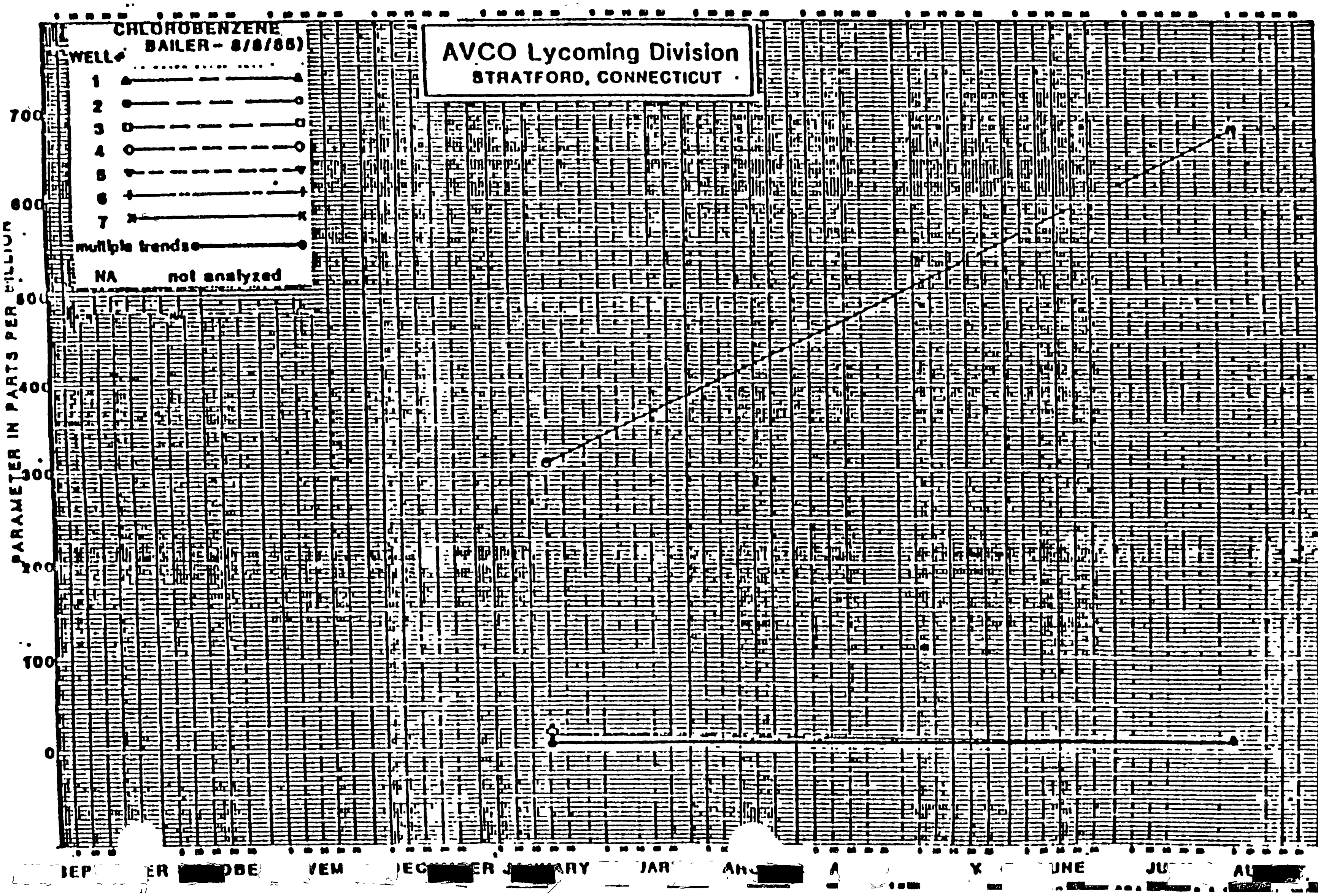

AVCO Lycoming Division
STRATFORD, CONNECTICUT
TRICHLOROETHYLENE
(BAILER-8/8/85)
WELL#
1
2
3
4
5
6
7
multiple trends
NA not analyzed
PARAMETER IN PARTS PER
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
SEPTEMBER
OCTOBER
1984
NOVEMBER
DECEMBER
JANUARY
FEBUARY
MARCH
1985
APRIL
MAY
JUNE
JULY
AUGUST
LEGGETTE, BRASHEARS & GRAHAM, INC.


TETRACHLOROETHYLENE
(BAILER-6/8/86)
WELL#
1
2
3
4
5
6
7
multiple trends
NA not analyzed
AVCO Lycoming Division
STRATFORD, CONNECTICUT
12
11
10
9
8
7
6
5
4
3
2
1
SEPTEMBER OCTOBER NOVEMBER DECEMBER JANUARY FEBUARY MARCH APRIL MAY JUNE JULY AUGUST
1984
1986
LEGGETTE, BRASHEARS & GRAHAM, INC.

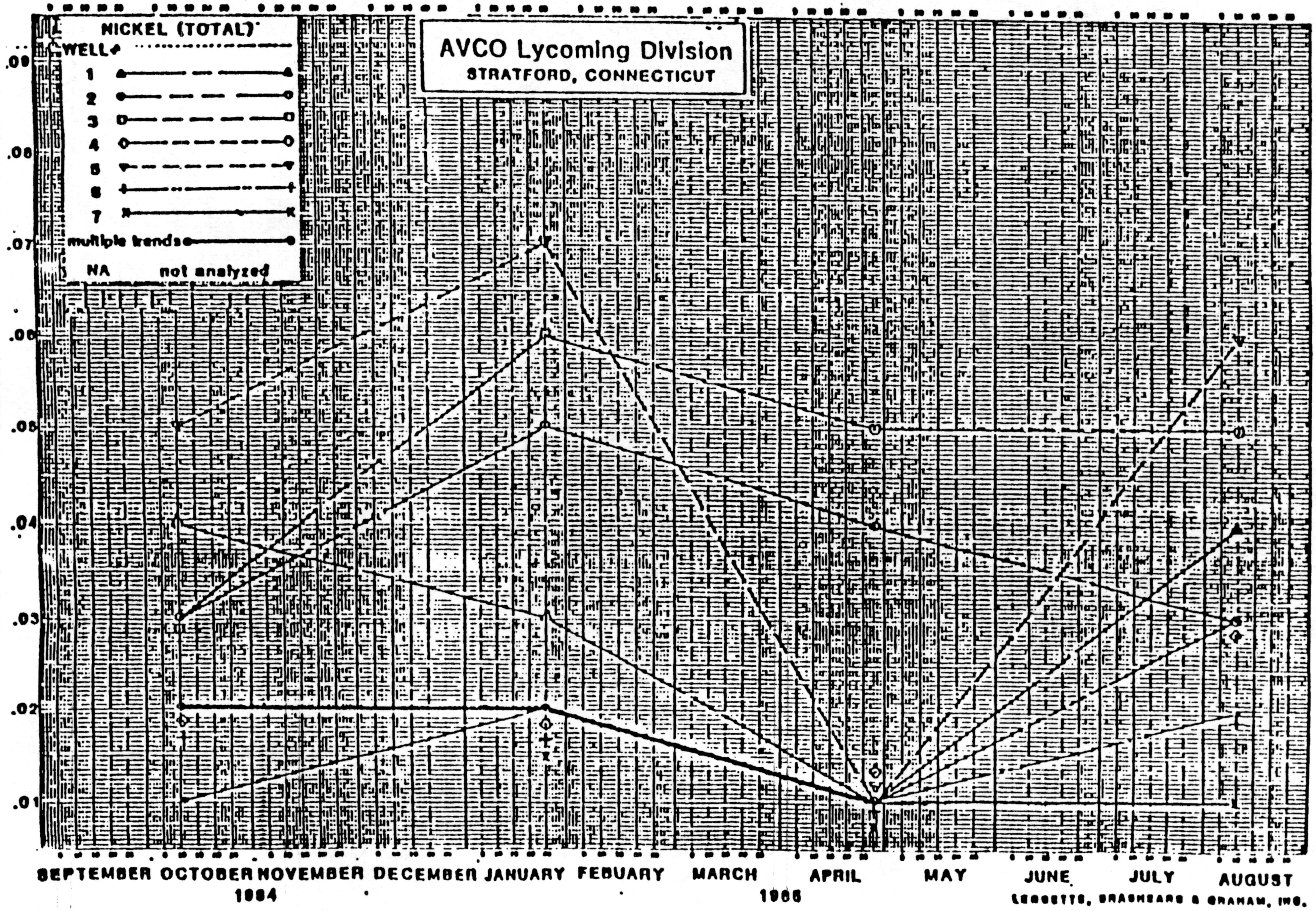

1,1,1 TRICHLOROETHANE
(BAILER-8/8/85)
WELL#
1
2
3
4
5
6
7
multiple trends
NA not analyzed
AVCO Lycoming Division
STRATFORD, CONNECTICUT
PARAMETER IN PARTS PER BILLION
70
60
50
40
30
20
10
0
MAY
JUNE
AUGUST



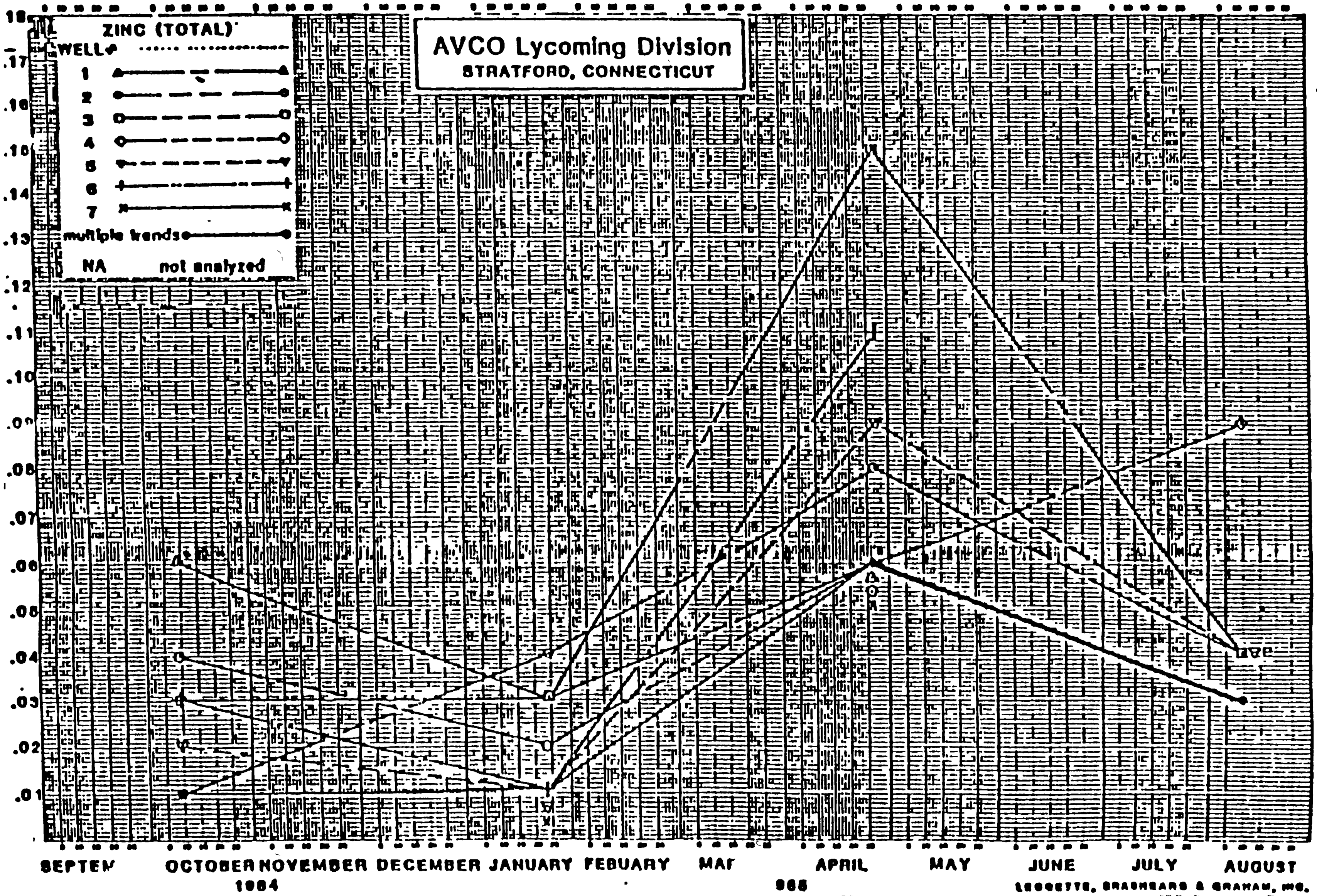
TOLUENE
(BAILER-8/8/85)
WELL#
1
2
3
4
5
6
7
multiple trends
NA not analyzed
AVCO Lycoming Division
STRATFORD, CONNECTICUT
PARAMETER IN PARTS PER BILLION
15
14
13
12
11
10
9
8
7
6
5
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER
JANUARY
FEBUARY
MARCH
APRIL
MAY
JUNE
JULY
AUGUST



AVCO Lycoming Division
STRATFORD, CONNECTICUT
CHLOROBENZENE
BAILER - 8/8/88)
WELL#
1
2
3
4
5
6
7
multiple trends
NA not analyzed
PARAMETER IN PARTS PER BILLION
700
600
100
0



NICKEL (TOTAL)
WELL#
1
2
3
4
5
6
7
multiple trends
NA not analyzed
AVCO Lycoming Division
STRATFORD, CONNECTICUT
.09
.08
.07
.06
.05
.04
.03
.02
.01
SEPTEMBER OCTOBER NOVEMBER DECEMBER JANUARY FEBUARY MARCH APRIL MAY JUNE JULY AUGUST
1984
1985
LEGGETTE, BRASHEARS & GRAHAM, INC.



ZINC (TOTAL)
WELL#
1
2
3
4
5
6
7
multiple trends
NA not analyzed
AVCO Lycoming Division
STRATFORD, CONNECTICUT
.17
.16
.14
.13
.12
.11
.10
.08
.07
.06
.05
.04
.03
.02
.01
SEPTEM
OCTOBER
1984
NOVEMBER
DECEMBER
JANUARY
FEBUARY
APRIL
MAY
JUNE
JULY
AUGUST
LEGGETTE, BRASHEARS & GRAHAM, INC.

Appendix E-5

Groundwater Assessment Monitoring Plan Addendum May 1987

WehranEnviroTech

Avco Lycoming TEXTRON

Groundwater Monitoring Assessment Program

Addendum, May 1987

Submitted by
Metcalf & Eddy, Inc.

M&E

Metcalf & Eddy

10 Harvard Mill Square
Wakefield, Massachusetts
Mailing Address PO Box 4043
Woburn MA 01888-4043

May 18, 1987

Ms. Donna Ashford
Avco Lycoming TEXTRON
550 Main St.
Stratford, CT 06497-2452

Subject: Groundwater Monitoring Assessment
Program Addendum, Connecticut DEP Order No. HM-358

Dear Ms. Ashford:

Metcalf & Eddy is pleased to submit this Addendum to complete the Groundwater Monitoring Assessment Program we submitted in March 1987. This report describes recent field activities and the results of the analyses to determine the influence of the tides on local groundwater levels and to estimate an average aquifer hydraulic conductivity. A groundwater well point was also installed adjacent to the equilization lagoon as a part of the field work, and this report also presents the well point location and its as-installed characteristics.

Very truly yours,

METCALF & EDDY, INC.

Carmine V. DiFilippo

Carmine V. DiFilippo
Project Manager

Enclosure

Telephone 617 246 5200—Telex 681?067 METED ... —Cable METEDD—Boston
New York Palo Alto San Bernardino ... Arlington Heights, IL Chicago ... Houston Atlanta Branchburg, NJ ... MD Honolulu San ...

TABLE OF CONTENTS

I. INTRODUCTION

Metcalf & Eddy conducted a tidal influence study and aquifer permeability testing and installed a shallow well point at the Avco Lycoming TEXTRON facility in Stratford, Connecticut consistant with the objectives and protocol outlined in the Groundwater Monitoring Assessment Program (GMAP), March 1987. The results of these field measurements, in conjunction with the procedures and objectives outlined in Section IX of the Groundwater Monitoring Assessment Program provide a comprehensive plan which will be followed to monitor and estimate the rate of groundwater flow at the facility. The following field monitoring was performed:

- Consistent with Section 9.2 GMAP, M&E personnel monitored water levels at locations in and around the tidal drainage ditch during a 24 hour period, March 31 to April 1, 1987, in order to assess the extent of tidal influences on the aquifer at the Avco-Lycoming facility.

- Consistent with Section 9.4 GMAP, M&E personnel performed slug/bail tests, April 1 to April 2, 1987, at locations on the facility in order to characterize the aquifer. Tests performed at monitoring well locations yielded hydraulic conductivity values which have been used to estimate rates of groundwater flow beneath the site.

II. FIELD PROCEDURES AND PROTOCOL

M&E began monitoring the tidal influence in and around the tidal ditch at the Avco Lycoming TEXTRON facility on March 31, 1987. Six locations were monitored from approximately 1530 (3:30pm) on March 31, to approximately 2000 hrs. (8:00pm) on April 1 for total of 28.5 hours. The reduction in the number or monitoring locations during the tidal cycle from eight locations to six locations was the result of an assumed area of influence based on available information and the relative location of the monitoring wells to the coast. The results demonstrated that only those locations within or immediately adjacent to the tidal ditch are influenced by the tidal cycle.

A well point was installed adjacent to the tidal ditch and its postion and elevation were surveyed on April 1, 1987, see Figure 1. The well point has been included in Table 1 to be included in the semi-annual measurement of water level elevations.

Groundwater levels in monitoring wells 3, 4, 5, 13 and the well point were monitored similtaneously and levels were recorded by an In-Situ SE200 computer. Pressure transducers, which monitored the water levels, were connected to the SE200 and recorded the levels every 10 minutes for the test duration. The results of the monitoring of the tidal cycle were plotted with water level change versus the log of distance from the tidal drainage ditch. These plots were developed to estimate the effect of tides on groundwater flow with respect to distance from the tidal ditch.

Aquifer tests were conducted on monitoring wells to characterize the aquifer flow parameters. Slug or bail tests were performed on Wells 3 and 4 on April 2, 1987. The ability of some wells to respond very quickly to water level changes prevented a more extensive testing program. Results from the tidal influence study did provide an additional estimate of the aquifer hydraulic conductivity and will be presented in the Results and Discussion.

Two tests were performed in each monitoring well by causing an instantaneous change in the water level in the monitoring well. A water level change was caused by inserting a 10 foot by 1-3/4 inch diameter (1.25 gallon) solid pipe into the well, which remained in the well until the water level reached equilibrium. When the slug (pipe) was removed, the recovery of the water level in the well (rising head) was recorded using a pressure transducer and the SE200 computer. After the wells reached equilibrium, a second test was performed by adding a volume of water to the well causing an instantaneous rise in the water level in the well. Again, the recovery of the water level in the well (falling head) was recorded with respect to time. Analysis of both the rising head and falling head phases of this test provided an quality assurance check of the results.

III RESULTS and DISCUSSIONS

Tidal Influence

Fluctuation of groundwater levels in monitoring wells near the tidal estuary of the Housatonic River is a function of the distance from the estuary and the flow characteristics of the aquifer. An advantage of simultaneously monitoring water level changes due to tidal influences is that it allows an interpretation of the distance and time lag of tidal influence. Results of the monitoring conducted March 31 to April 1 indicate that the tidal cycle does, to a limited extent, influence groundwater levels, and therefore the flow of groundwater at the Avco-Lycoming TEXTRON facility. Plotted field data, see Figure 2, illustrates the influence tides have on groundwater levels By comparing the magnitude of the tidal influence in monitoring wells located at different distances from the estuary an estimate of the extent of the tidal influence was made. Figure 3 presents the groundwater level plots from Well 5 and the Well Point, which are 35 and 10 feet, respectively from the tidal ditch.

A plot of the average amplitude of groundwater response versus the log of the well distance from the tidal ditch is presented in Figure 4. Extrapolation of the data in Figure 4 shows that at a distance of approximately 80 feet beyond the tidal ditch, the groundwater response to the tides is essentially zero. This conclusion is supported by data from Wells 3, 13 and 4, which are located 160, 280, and 320 feet, respectively from the tidal ditch. The plots of groundwater levels in those wells, refer to

Figure 2, show no apparent tidal response.

Another result of this conclusion is that groundwater level data from Well 5 and the Well Point should be used recognizing that they are affected by the tides. In determining horizontal gradients in the aquifer, data from Well 5 and the Well Point should not be used. Groundwater levels in Well 5 and the Well Point, in conjunction with other well data, will be most useful in determining vertical gradients in the vicinity of the tidal drainage ditch.

<u>Aquifer Tests</u>

For the analysis of the single well tests, Hvorslev's (1951) basic time lag and variable head methods were used. The basic time lag uses a plot of the lag of the well response over time to estimate a time, To, at which an equilibrium exists between the head measured in the well and the head in the adjacent aquifer, see Figures 5, 6, 7 and 8. Hvorslev demonstrated that the time to reach equilibrium is inversly proportional to the aquifer hydraulic conductivity and can be calculated knowing the well construction details.

Hvorslev's variable head method is based on the same mathematical approach and can be used as a check on the basic time lag method. The variable head method uses two data points representing heads at two times during the well response. This method uses measured data rather than a statistical best fit of the data for the basic time lag. Figure 9 presents a brief summary of Hvorslev's method and the formulas for the basic time lag and variable head methods.

Another advantage of monitoring the aquifer response to tidal changes is the ability to use the data to estimate aqufier parameters. Using a mathematical model that preducts aquifer response to change in adjacent water levels, see Figure 10, allows back calculating an aquifer hydraulic conductivity.

Solving this type of problem requires finding a distance and corresponding time at which the response in the aquifer is zero. As was presented for the tidal influence study, see Figures 3 and 4, the response to tidal influences is almost zero beyond 80 feet from the tidal ditch. The time between tidal change and aquifer response can be estimated by noting the delay between well and tidal peaks in Figure 3, which shows a lag of 20 and 75 minutes for the Well Point and Well 5, respectively. For this analysis, it will be assumed that the aquifer, at a distance of 80 feet from the tidal ditch, will lag the tidal change by 75 minutes.

The conditions under which the flow equation in Figure 10 is being solved are at x = 80 feet and t = 75 minutes the response in the aquifer is zero or s(x, t) = 0. The right-hand side of the flow equation is a product of the tidal change and the error function term. Recognizing that the tidal charge does not equal zero, allows setting the error function term equal to zero. At this point the only unknowns are the aquifer transmissivity, T and specific yield, Sy. Solving for T/Sy yields a value of 43,207 square feet per day, and assuming a representative specific yield of 25 percent yields a transmissivity of 10,800 square feet per day. Using the reported aquifer depth of 120 feet (Wilson, et. al., 1974) yields an aquifer hydraulic conductivity of 90 feet per day.

Results of the aquifer tests performed on the single wells at Avco are presented in Table 2. The data shows some variability not only throughout the aquifer but also in the different methods of analyses used for single well tests. This is due to the nature of single well tests, which address only that portion of the aquifer adjacent to the well screen and the variable aquifer geology.

Hydraulic conductivities presented in Table 2 range between 0.4 and 23.1 feet per day. This range is in agreement with the hydraulic conductivities for soil types taken during boring exploration programs. Table 3 presents a listing of the soil types from GMAP Appendix A, and the expected range of hydraulic conductivities for these soils. The majority of soils, making up the Avco aquifer exhibit hydraulic conductivities in the range of 0.1 to 100 feet per day. Given the changing composition of the aquifer, with area and depth, and a majority of the soils being permeable sands, an aquifer hydraulic conductivity of 30 feet per day will be assumed for aquifer flow calculations.

Rate of Groundwater Flow

Using a hydraulic conductivity of 30 feet per day, a horizontal gradient of 0.02, and an effective porosity of 0.25, the average horizontal groundwater flow rate at Avco would be 2.4 feet per day. Because of the effects of the tides on the aquifer, the rate of groundwater flow will experience cyclic changes, especially in the vicinity of the tidal ditch. As the tidal influence data showed, the extent of the influence is limited to within 80 feet of the tidal ditch, and would not be expected to effect the average flow rate.

TABLES

Table 1 AVCO-Lycoming Groundwater Monitoring Wells

WELL	Elev Top of Protect Casing* (MSL)	Elev Top of Inside Casing (MSL)	Length Inside Casing (feet)	Total Depth Screen (feet)	Screen opening: Elev Top (MSL)	Screen opening: Elev Bottom (MSL)	Depth to GH2O (feet)	Total Head H (MSL)	Elev. Head Z (MSL)	Pressure Head P/62.4 (feet)
1	9.93	8.76	15.0	25.0	-6.24	-16.24	NA	NA	NA	NA
2	9.73	9.56	15.0	25.0	-5.44	-15.44	NA	NA	NA	NA
3	8.90	8.15	15.0	25.0	-6.85	-16.85	NA	NA	NA	NA
4	9.68	9.43	25.0	35.0	-15.57	-25.57	NA	NA	NA	NA
5	10.71	8.80	20.0	30.0	-11.20	-21.20	NA	NA	NA	NA
6	7.63	7.60	19.0	29.0	-11.40	-21.40	NA	NA	NA	NA
7	8.16	8.06	20.0	30.0	-11.94	-21.94	NA	NA	NA	NA
8	8.90	8.14	5.0	15.0	3.14	-6.86	NA	NA	NA	NA
9	10.44	10.27	5.0	15.0	5.27	-4.73	NA	NA	NA	NA
10	8.65	8.31	5.0	15.0	3.31	-6.69	NA	NA	NA	NA
11	8.21	7.98	5.0	15.0	2.98	-7.02	NA	NA	NA	NA
12	9.18	8.71	5.0	15.0	3.71	-6.29	NA	NA	NA	NA
13	9.23	8.00	5.0	15.0	3.00	-7.00	NA	NA	NA	NA
W.P.**	4.16	4.16	5.0	7.0	-0.84	-2.84	NA	NA	NA	NA

*Groundwater measuring point is the protective casing.
**Well Point adjacent to the tidal drainage ditch.

TABLE 2. HYDRAULIC CONDUCTIVITY RESULTS OF SINGLE WELL TESTS AT AVCO

	WELL 3		WELL 4	
	SLUG	RECOVERY	SLUG	RECOVERY
Basic Time Lag (FT/DAY)	0.6	0.4	9.7	11.7
Variable Head (FT/DAY)	0.6	0.4	23.1	14.1

TABLE 3. HYDRAULIC CONDUCTIVITY RANGES FOR AVCO SOIL TYPES

Soil Sample Designation	Unified Soil Classification	Hydraulic Conductivity Range LOWER (FT/DAY)	Upper (FT/DAY)
B4-S4	ML	$3X10^{-4}$	14
B3-S1,B7-S2,B9-S2	SM	$3X10^{-3}$	140
B4-S5,B4-S6,B4-S8	SW	140	14,100
B3-S3,B7-S5	SP	14	141,000

FIGURES

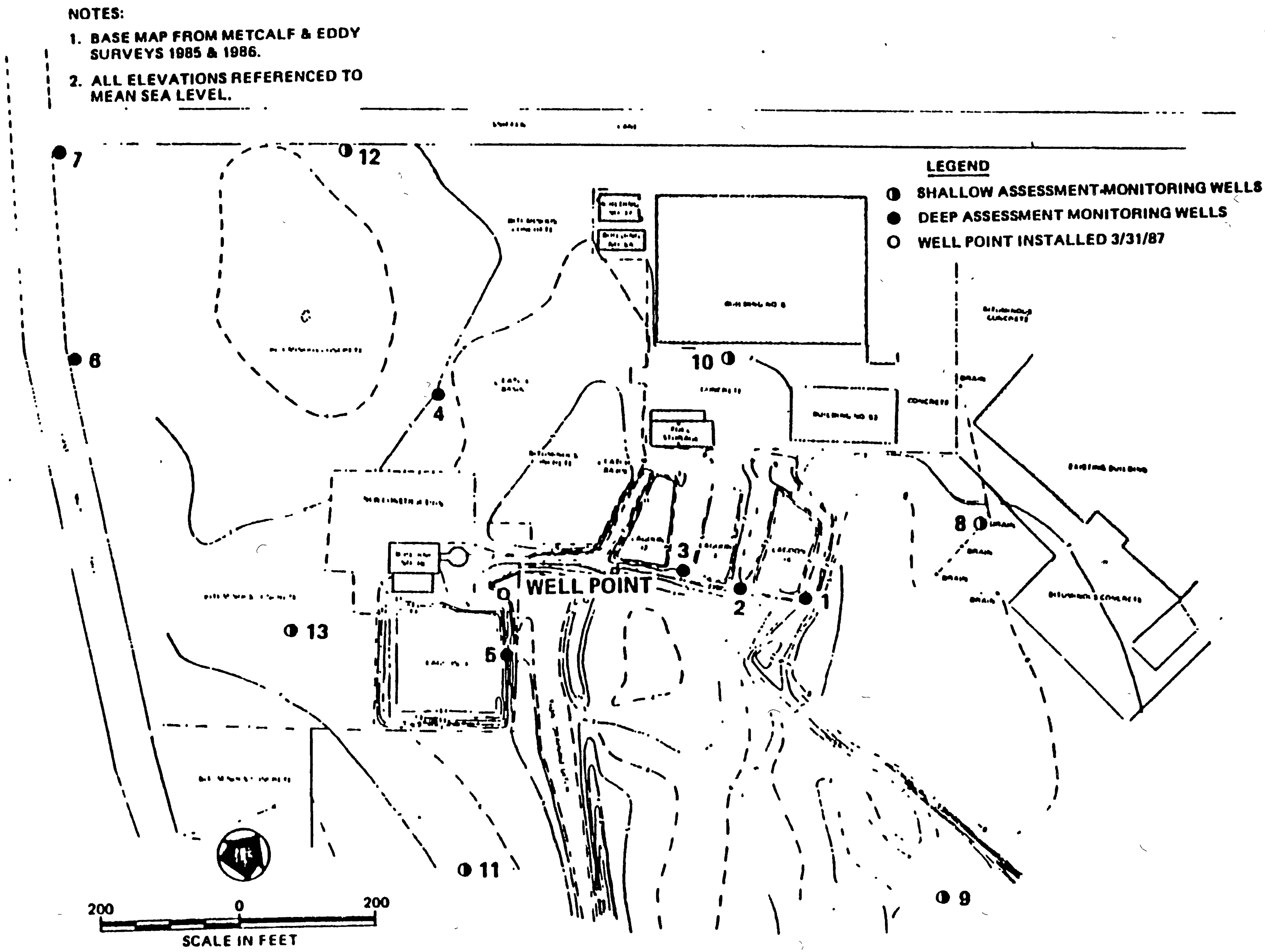


FIGURE 1 LOCATION OF GROUNDWA‑ ASSESSMENT MONITORING WELLS AND WELL POINT

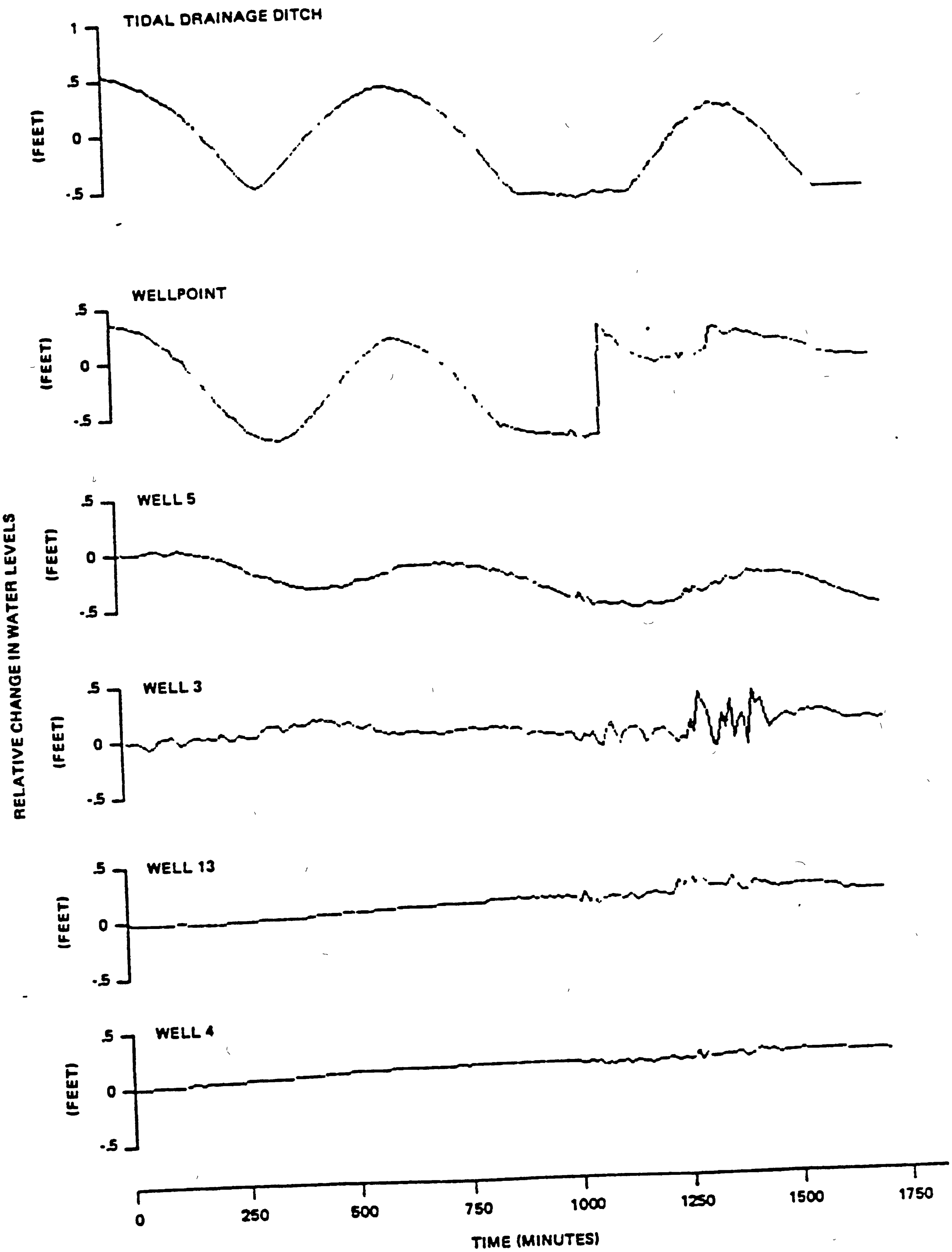


FIGURE 2 TIDAL AND GROUNDWATER ELEVATION CHANGES

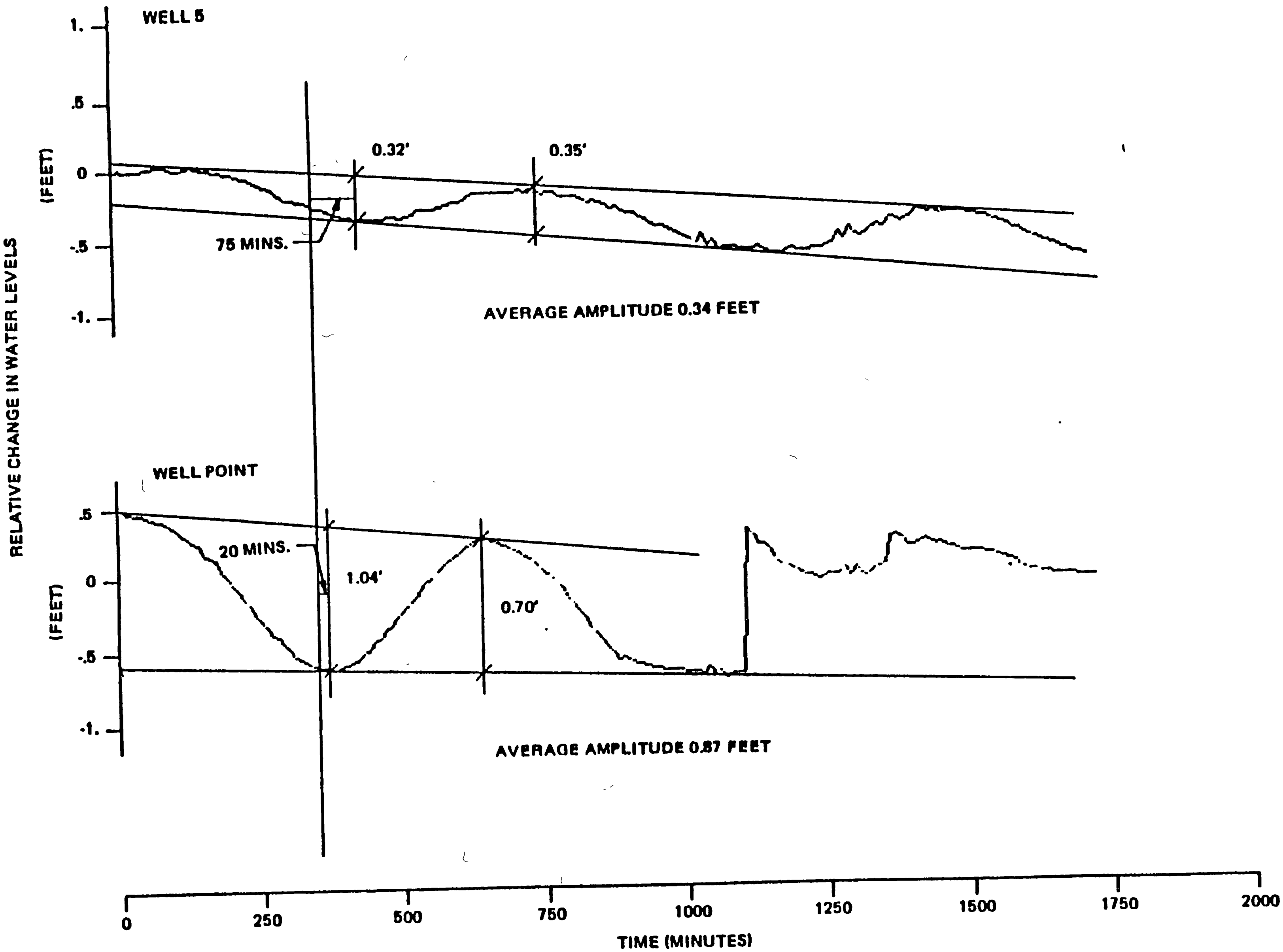


FIGURE 3 AVERAGE RESPONSE AMPLITUDES - WELL 5 & WELL POINT

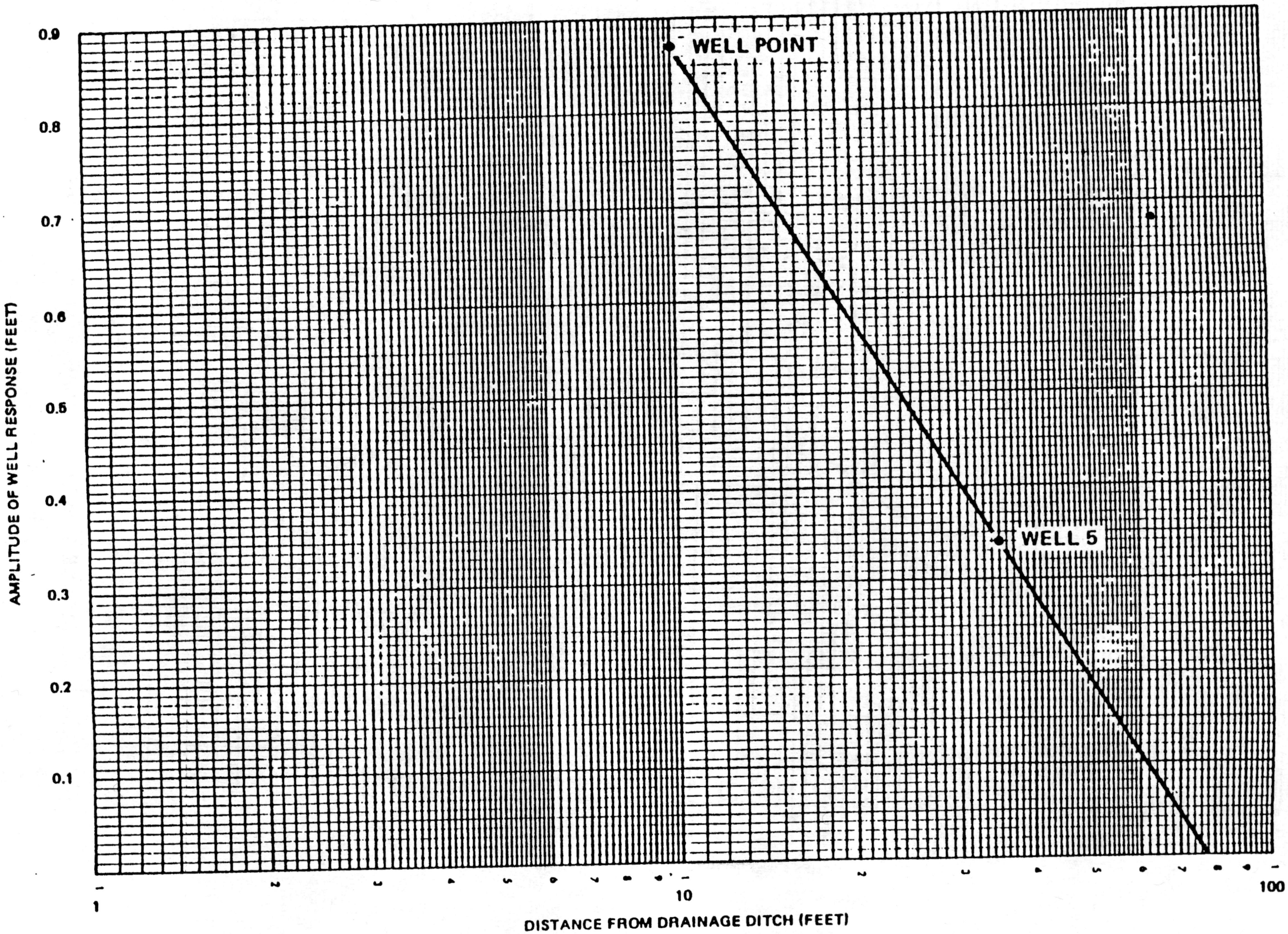


FIGURE 4 RESPONSE AMPLITUDE VERSUS DISTANCE FROM TIDAL DRAINAGE DITCH

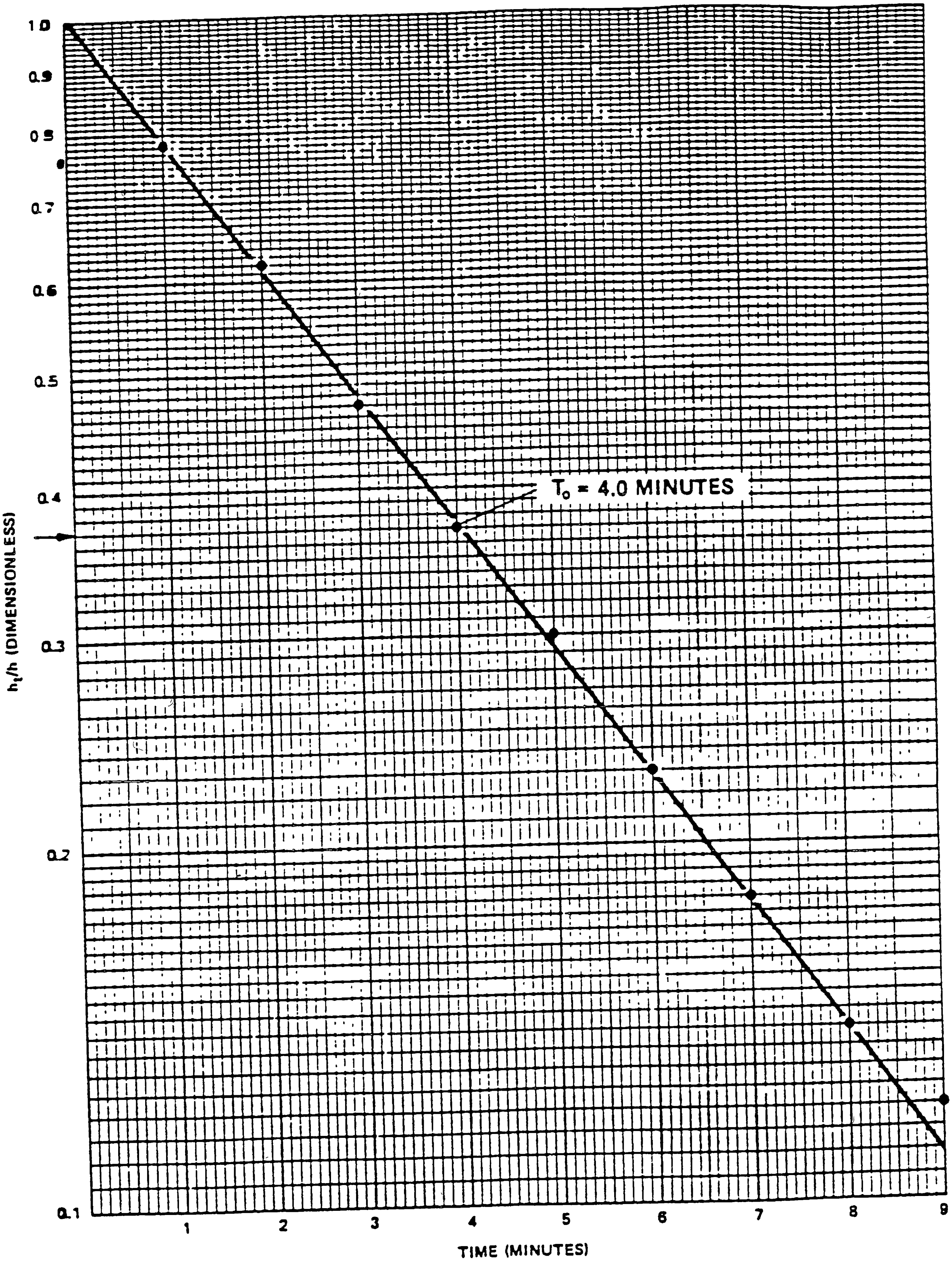


FIGURE 5 BASIC TIME LAG WELL 3 SLUG TEST

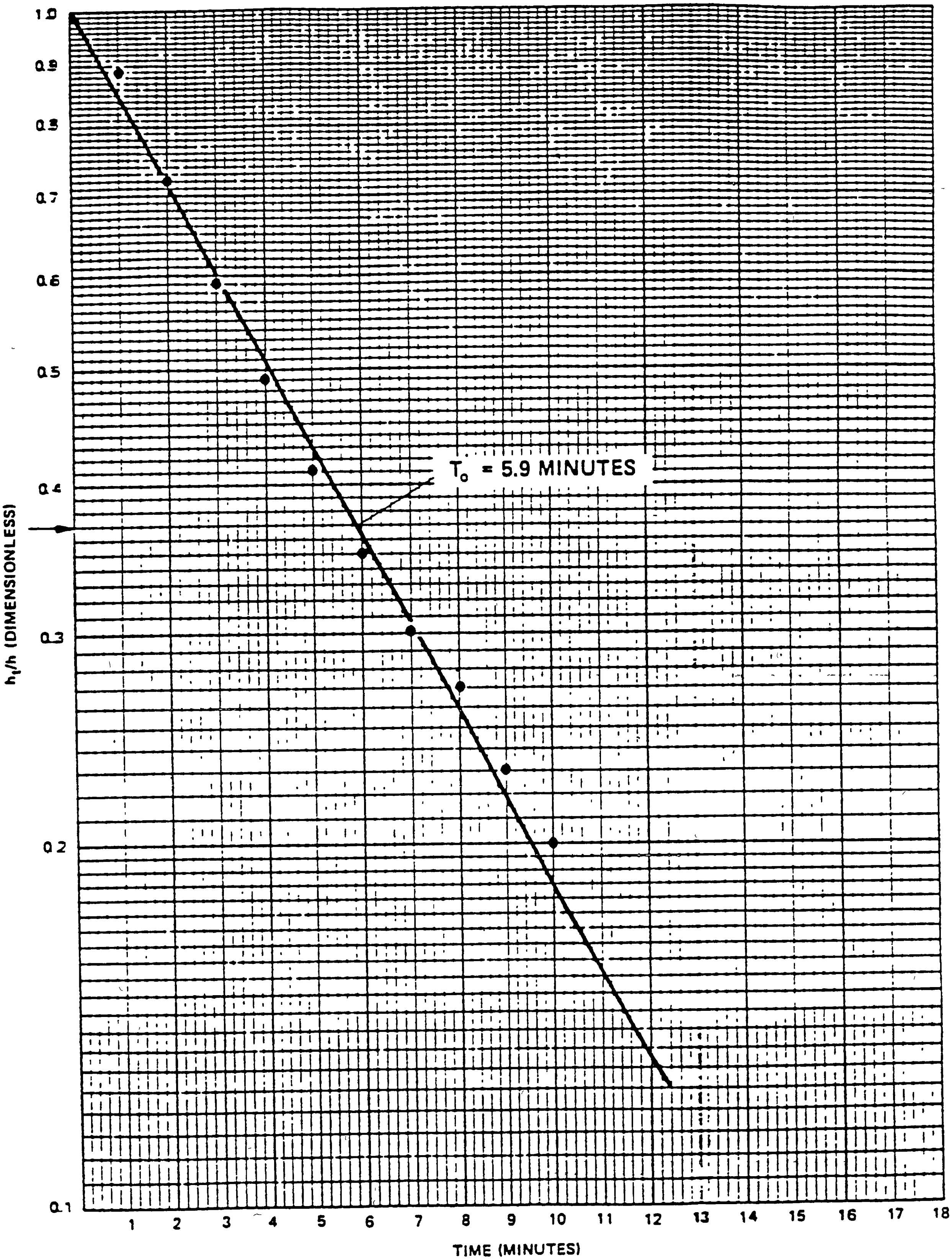


FIGURE 6 BASIC TIME LAG WELL 3 RECOVERY TEST

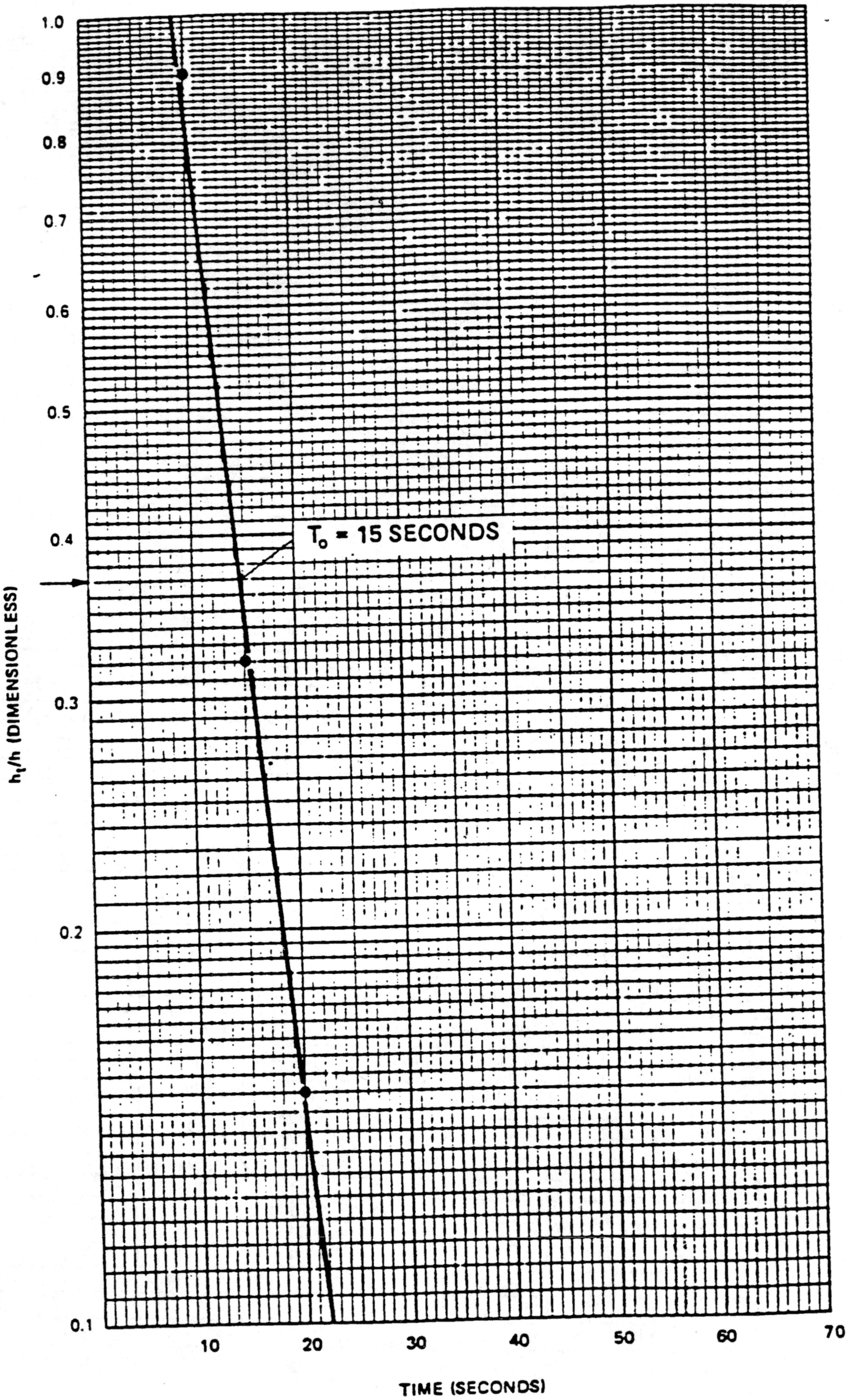


FIGURE 7 BASIC TIME LAG WELL 4 SLUG TEST

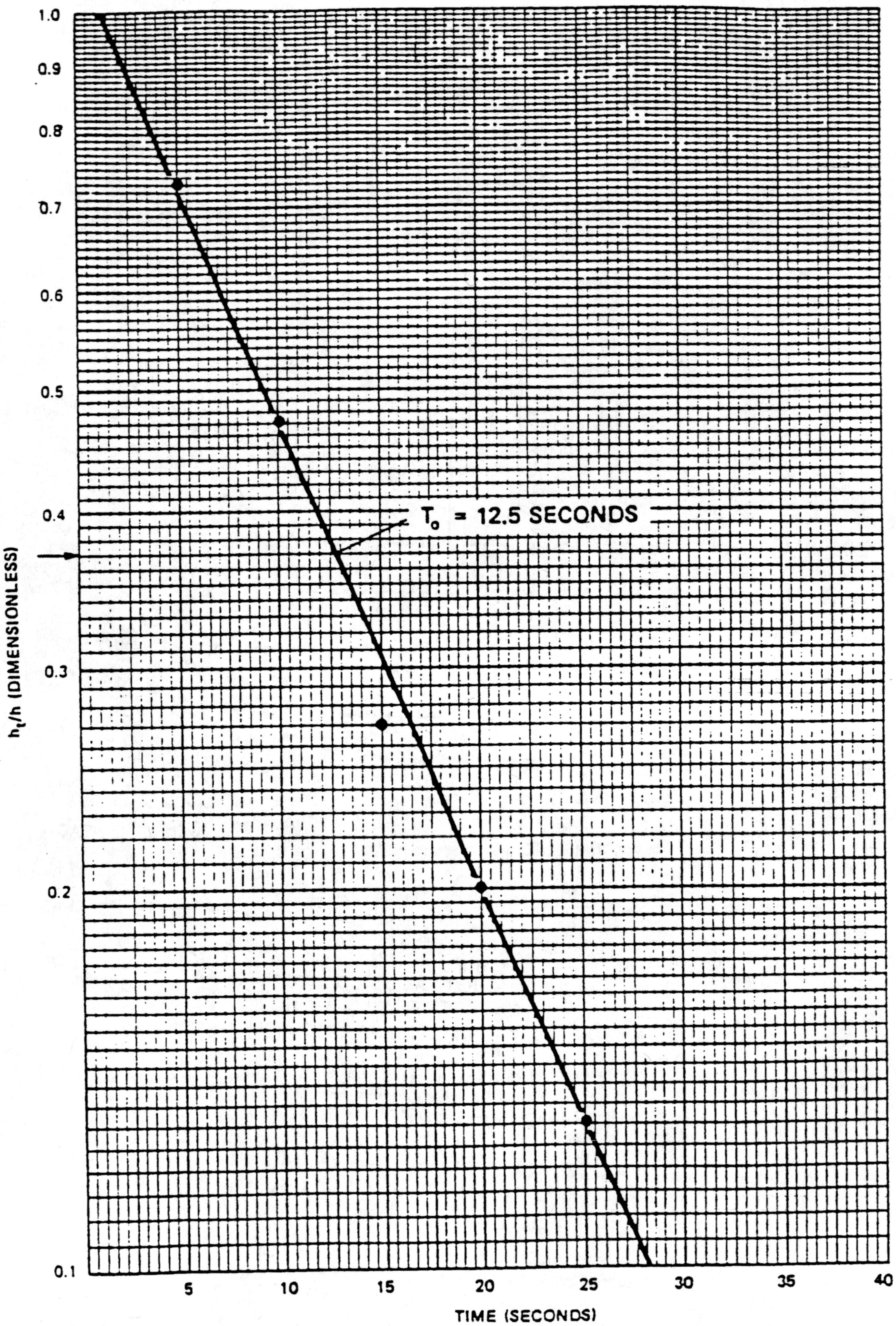
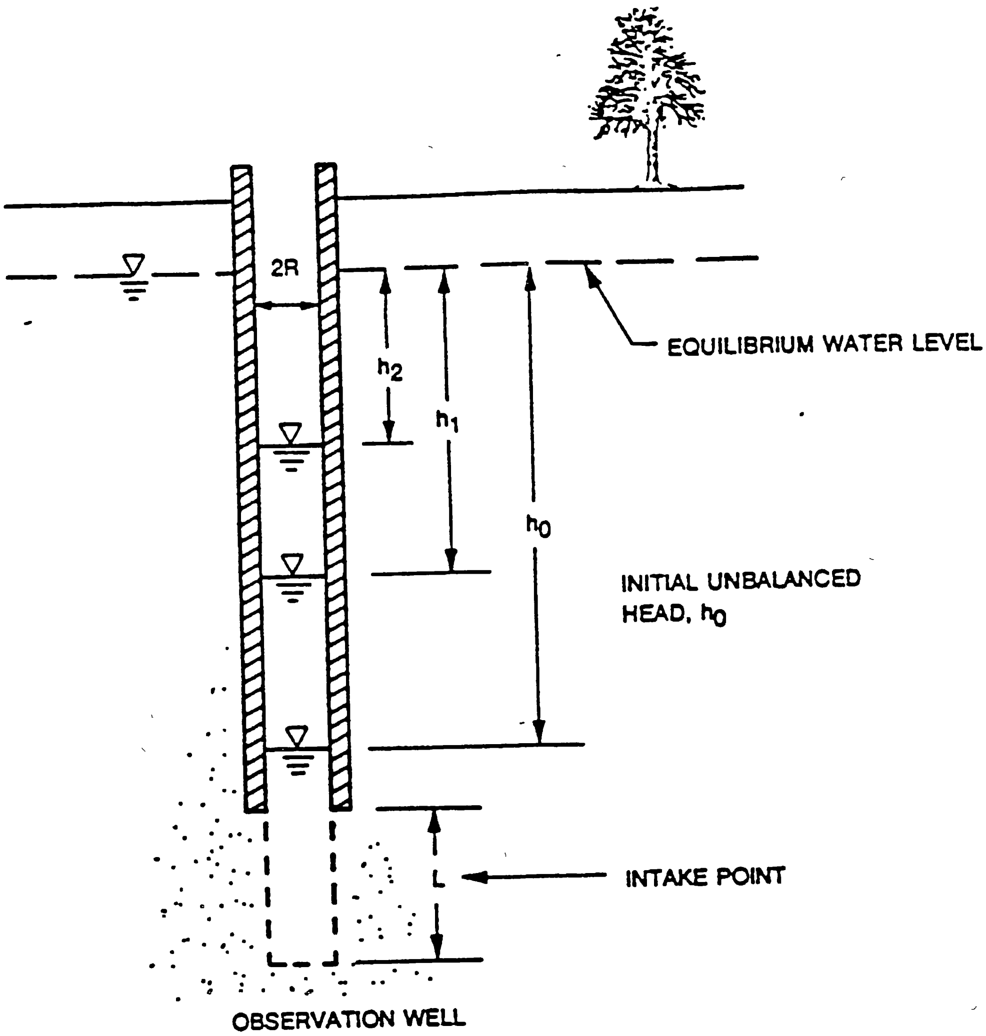


FIGURE 8 BASIC TIME LAG WELL 4 RECOVERY DATA



BASIC TIME LAG

$$K = \frac{A}{FT}$$

VARIABLE HEAD

$$K = \frac{A}{F(t_2 - t_1)} \ln \left(\frac{h_1}{h_2}\right)$$

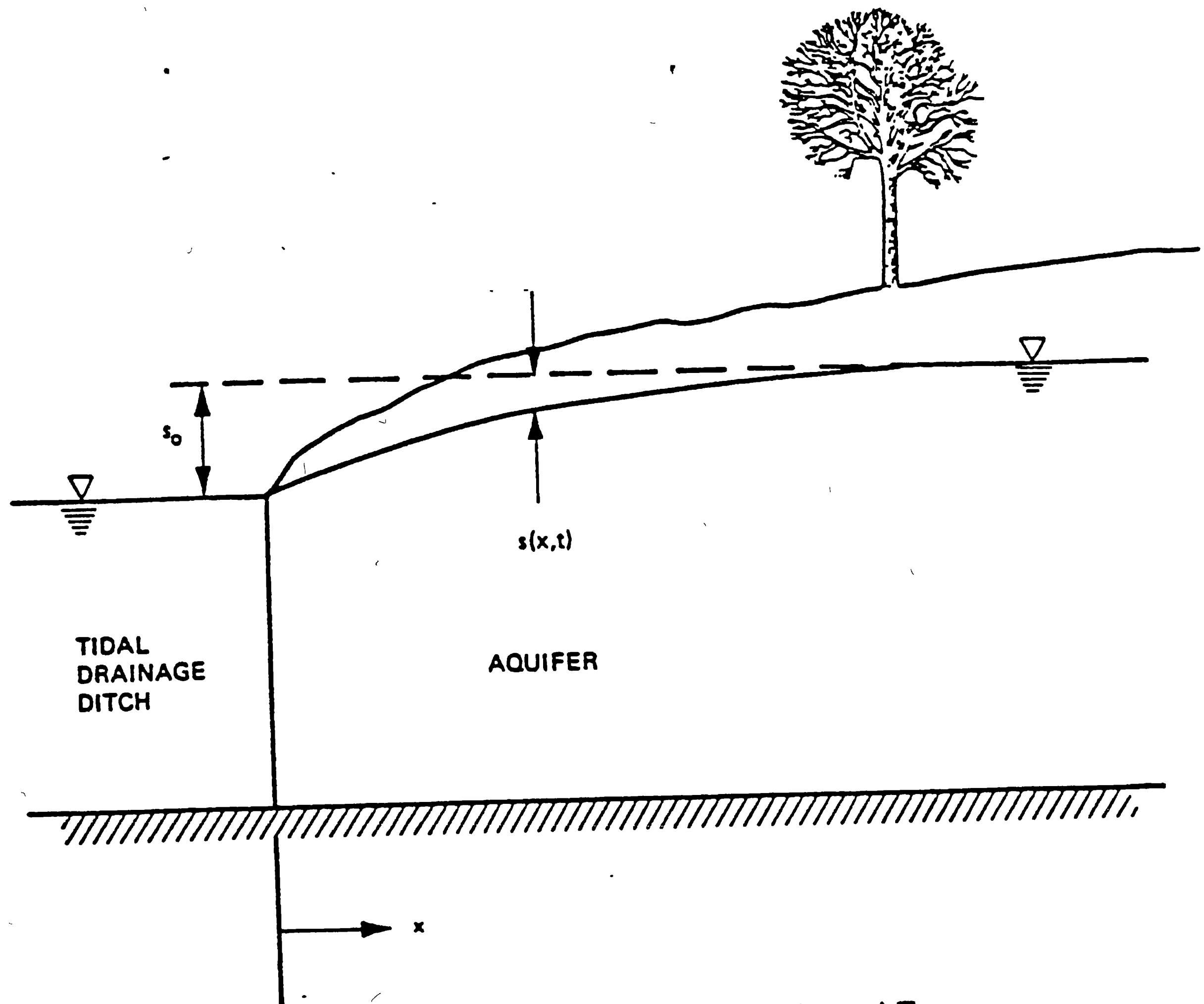
WHERE :
K = HYDRAULIC CONDUCTIVITY [L/T]
A = AREA OF WELL [πR^2]
F = WELL SHAPE FACTOR [L]

$$\left\{\frac{2\pi L}{\ln (L/R)}\right\}$$

h_1, t_1 = HEAD h_1 AT TIME t_1 [L], [T]
h_2, t_2 = HEAD h_2 AT TIME t_2 [L], [T]

Reference: Hvorslevs, M.J. 1951. Time Lag and Soil Permeability in Groundwater Observations. U.S. Army Corps of Engineers. Waterways Experiment Sta., Bull. 36, Vicksburg, Miss.

FIGURE 9 HVORSLEVS BASIC TIME LAG AND VARIABLE HEAD METHODS



FLOW EQUATION: $$s(x,t) = s_o \left[1 - \mathrm{erf} \left(\frac{x}{\sqrt{\frac{4Tt}{S_y}}} \right) \right]$$

where: $s(x,t)$ = response in aquifer as a function of distance and time [L].
s_o = tidal change [L].
erf = error function .
x = distance from tidal ditch [L].
T = transmissivity [L^2/T].
S_y = specific yield.
t = time [T].

FIGURE 10 MODEL OF FLOW TO/FROM TIDAL DRAINAGE DITCH

Appendix E-6

1990 - 1991
Assessment Monitoring Data

TABLE 3

WELL1
GROUNDWATER MONITORING ANALYTICAL DATA
TEXTRON-LYCOMING, STRATFORD, CONNECTICUT

	Mar-90	Apr-90	Aug-90	Nov-90
8010 Volatile Organic Compounds				
chloroethane	5 U	NA	1 U	NA
1,2-dichlorobenzene	5 U	NA	1 U	NA
1,1-dichloroethane	5 U	NA	1 U	NA
1,2-trans-dichloroethene	5 U	NA	3.0	NA
1,1-dichloroethene	5 U	NA	1 U	NA
tetrachloroethene	5 U	NA	1 U	NA
trichloroethene	5 U	NA	1 U	NA
dichloromethane	5 U	NA	1 U	NA
1,1,1-trichloroethane	5 U	NA	1 U	NA
vinyl chloride	5 U	NA	1 U	NA
8020 Volatile Organic Compounds				
chlorobenzene	5 U	NA	1 U	NA
Inorganic Compounds				
Cadmium	5 U	8	4.0 U	4.0 U
Chromium (Total)	10 U	10 U	7.0 U	10 U
Chromium (Hexavalent)	50 U	50 U	10 U	10 U
Copper	25 U	25 U	15 B	8.0 B
Nickel	140	71	54	53
Zinc	120	20 U	431 *	141
Cyanide (Total)	40	5 U	10 U	10 U
Cyanide (Amenable)	20	1 U	10 U	10 U
Conventional Parameters				
Total Organic Halogens (TOX)	101,000	NA	44	NA
Total Organic Halogens (TOX)	123,000	NA	10 U	NA
Total Organic Halogens (TOX)	186,000	NA	10 U	NA
Total Organic Halogens (TOX)	133,000	NA	104	NA
Total Organic Carbon (TOC)	35,610	NA	50,900	NA
Total Organic Carbon (TOC)	32,920	NA	46,300	NA
Total Organic Carbon (TOC)	36,880	NA	52,200	NA
Total Organic Carbon (TOC)	35,020	NA	50,900	NA
Specific Conductance (umhos/cm)	900	850	700	300
Specific Conductance (umhos/cm)	900	850	700	350
Specific Conductance (umhos/cm)	900	850	700	420
Specific Conductance (umhos/cm)	900	860	700	450
pH	6.70	6.45	6.46	7.04
pH	6.90	6.44	6.47	7.05
pH	6.90	6.46	6.48	7.03
pH	6.90	6.45	6.52	7.01

Notes: * All values are in ug/l unless noted otherwise
U Indicates element was analyzed for but not detected. The number shown is the detection limit. NA - Not Analyzed.

Table 4

Well 1D

GROUNDWATER MONITORING ANALYTICAL DATA
TEXTRON-LYCOMING, STRATFORD, CONNECTICUT

	Mar-90	Apr-90	Aug-90	Nov-90
8010 Volatile Organic Compounds				
chloroethane	5 U	NA	1 U	NA
1,2-dichlorobenzene	5 U	NA	1 U	NA
1,1-dichloroethane	5 U	NA	3.1	NA
1,2-trans-dichloroethene	5 U	NA	7.4	NA
1,1-dichloroethene	5 U	NA	1 U	NA
tetrachloroethene	5 U	NA	1 U	NA
trichloroethene	5 U	NA	1 U	NA
dichloromethane	5 U	NA	1 U	NA
1,1,1-trichloroethane	5 U	NA	1 U	NA
vinyl chloride	5 U	NA	1 U	NA
8020 Volatile Organic Compounds				
chlorobenzene	5 U	NA	1.3	NA
Inorganic Compounds				
Cadmium	5 U	8	4.0 U	4.0 U
Chromium (Total)	10 U	10 U	7.0 U	10 U
Chromium (Hexavalent)	50 U	50 U	10 U	10 U
Copper	25 U	25 U	11 B	5.0 B
Nickel	40 U	40 U	14 U	17 U
Zinc	200	780	119 *	12 B
Cyanide (Total)	10 U	5 U	10 U	10 U
Cyanide (Amenable)	10 U	1 U	10 U	10 U
Conventional Parameters				
Total Organic Halogens (TOX)	124,000	NA	195	NA
Total Organic Halogens (TOX)	82,300	NA	117	NA
Total Organic Halogens (TOX)	72,100	NA	NA	NA
Total Organic Halogens (TOX)	41,100	NA	10 U	NA
Total Organic Carbon (TOC)	26,660	NA	37,900	NA
Total Organic Carbon (TOC)	24,460	NA	41,400	NA
Total Organic Carbon (TOC)	27,730	NA	36,100	NA
Total Organic Carbon (TOC)	26,890	NA	35,900	NA
Specific Conductance (umhos/cm)	1,700	1,150	2,500	3,100
Specific Conductance (umhos/cm)	1,650	1,050	2,500	3,100
Specific Conductance (umhos/cm)	1,600	1,050	2,500	3,100
Specific Conductance (umhos/cm)	1,400	1,150	2,500	3,100
pH	6.28	6.48	6.66	7.16
pH	6.25	6.51	6.65	7.15
pH	6.22	6.46	6.64	7.15
pH	6.20	6.44	6.65	7.14

Notes: * All values are in ug/l unless noted otherwise
U Indicates element was analyzed for but not detected. The number shown is the detection limit. NA - Not Analyzed.

TABLE 5

WELL2

GROUNDWATER MONITORING ANALYTICAL DATA

TEXTRON-LYCOMING, STRATFORD, CONNECTICUT

	Mar-90	Apr-90	Aug-90	Nov-90
8010 Volatile Organic Compounds				
chloroethane	50 U	NA	10 U	NA
1,2-dichlorobenzene	350	NA	73	NA
1,1-dichloroethane	50 U	NA	10 U	NA
1,2-trans-dichloroethene	50 U	NA	10 U	NA
1,1-dichloroethene	50 U	NA	10 U	NA
tetrachloroethene	50 U	NA	10 U	NA
trichloroethene	50 U	NA	10 U	NA
dichloromethane	50 U	NA	10 U	NA
1,1,1-trichloroethane	50 U	NA	10 U	NA
vinyl chloride	50 U	NA	10 U	NA
8020 Volatile Organic Compounds				
chlorobenzene	2,200	NA	320	NA
Inorganic Compounds				
Cadmium	5 U	5 U	4.0 B	4.0 U
Chromium (Total)	10 U	16	7.0 U	10 U
Chromium (Hexavalent)	90	130	10 U	10 U
Copper	25 U	25 U	8.0 B	3.0 B
Nickel	40 U	40 U	14 B	17 U
Zinc	86	20 U	54 *	67
Cyanide (Total)	50	5 U	10 U	66
Cyanide (Amenable)	50	1 U	10 U	60
Conventional Parameters				
Total Organic Halogens (TOX)	751,000	NA	182	NA
Total Organic Halogens (TOX)	875,000	NA	10 U	NA
Total Organic Halogens (TOX)	663,000	NA	115	NA
Total Organic Halogens (TOX)	194,000	NA	63	NA
Total Organic Carbon (TOC)	111,900	NA	89,900	NA
Total Organic Carbon (TOC)	108,000	NA	77,700	NA
Total Organic Carbon (TOC)	110,400	NA	88,100	NA
Total Organic Carbon (TOC)	107,400	NA	88,000	NA
Specific Conductance (umhos/cm)	2,300	2,900	2,700	2,200
Specific Conductance (umhos/cm)	1,970	2,850	3,000	2,400
Specific Conductance (umhos/cm)	2,000	2,850	2,900	2,500
Specific Conductance (umhos/cm)	2,100	2,850	2,950	2,900
pH	7.25	7.11	7.01	7.03
pH	7.31	7.12	7.08	7.00
pH	7.29	7.06	7.04	7.00
pH	7.26	7.08	7.05	7.01

Notes: * All values are in ug/l unless noted otherwise
U Indicates element was analyzed for but not detected. The number shown is the detection limit. NA - Not Analyzed.

TABLE 6

WELL3

GROUNDWATER MONITORING ANALYTICAL DATA

TEXTRON-LYCOMING, STRATFORD, CONNECTICUT

	Mar-90	Apr-90	Aug-90	Nov-90
8010 Volatile Organic Compounds				
chloroethane	7	NA	3.9	NA
1,2-dichlorobenzene	350	NA	160	NA
1,1-dichloroethane	38	NA	15	NA
1,2-trans-dichloroethene	21	NA	9.1	NA
1,1-dichloroethene	5 U	NA	1 U	NA
tetrachloroethene	5 U	NA	1 U	NA
trichloroethene	5 U	NA	1 U	NA
dichloromethane	5 U	NA	1 U	NA
1,1,1-trichloroethane	5 U	NA	1 U	NA
vinyl chloride	13	NA	2.8	NA
8020 Volatile Organic Compounds				
chlorobenzene	5 U	NA	66	NA
Inorganic Compounds				
Cadmium	5 U	5	4.0 U	4.0 U
Chromium (Total)	10 U	10 U	7.0 U	10 U
Chromium (Hexavalent)	50 U	60	10 U	10 U
Copper	25 U	25 U	6.0 B	3.0 B
Nickel	40 U	40 U	15 B	17 U
Zinc	100	130	3.0 U*	78
Cyanide (Total)	10 U	5 U	10 U	10 U
Cyanide (Amenable)	10 U	1 U	10 U	10 U
Conventional Parameters				
Total Organic Halogens (TOX)	1,039,000	NA	108	NA
Total Organic Halogens (TOX)	868,000	NA	26	NA
Total Organic Halogens (TOX)	1,070,000	NA	31	NA
Total Organic Halogens (TOX)	919,000	NA	10 U	NA
Total Organic Carbon (TOC)	25,830	NA	51,100	NA
Total Organic Carbon (TOC)	24,700	NA	56,000	NA
Total Organic Carbon (TOC)	24,450	NA	57,800	[illegible]
Total Organic Carbon (TOC)	25,010	NA	59,800	NA
Specific Conductance (umhos/cm)	1,200	1,500	1,800	2,650
Specific Conductance (umhos/cm)	1,200	1,500	1,800	2,650
Specific Conductance (umhos/cm)	1,200	1,700	1,860	2,700
Specific Conductance (umhos/cm)	1,200	1,740	1,870	2,700
pH	4.80	7.68	7.37	7.04
pH	5.47	7.64	7.29	7.05
pH	5.68	7.69	7.30	7.06
pH	5.87	7.67	7.29	7.06

Notes: * All values are in ug/l unless noted otherwise
U Indicates element was analyzed for but not detected. The number shown is the detection limit. NA - Not Analyzed.

TABLE 7

WELL3-D
GROUNDWATER MONITORING ANALYTICAL DATA
TEXTRON-LYCOMING, STRATFORD, CONNECTICUT

	Mar-90	Apr-90	Aug-90	Nov-90
8010 Volatile Organic Compounds				
chloroethane	5 U	NA	1 U	NA
1,2-dichlorobenzene	5 U	NA	7.3	NA
1,1-dichloroethane	5 U	NA	1 U	NA
1,2-trans-dichloroethene	5 U	NA	1 U	NA
1,1-dichloroethene	5 U	NA	1 U	NA
tetrachloroethene	5 U	NA	1 U	NA
trichloroethene	5 U	NA	1 U	NA
dichloromethane	5 U	NA	1 U	NA
1,1,1-trichloroethane	5 U	NA	1 U	NA
vinyl chloride	5 U	NA	1 U	NA
8020 Volatile Organic Compounds				
chlorobenzene	5 U	NA	1 U	NA
Inorganic Compounds				
Cadmium	5 U	10	6.0	4.0 U
Chromium (Total)	10 U	10 U	7.0 U	10 U
Chromium (Hexavalent)	50 U	50 U	10 U	10 U
Copper	860	400	240	48
Nickel	1,500	880	898	588
Zinc	3,000	2,300	2,160 *	998
Cyanide (Total)	10 U	5 U	10 U	10 U
Cyanide (Amenable)	10 U	1 U	10 U	10 U
Conventional Parameters				
Total Organic Halogens (TOX)	445,000	NA	10 U	NA
Total Organic Halogens (TOX)	892,000	NA	10 U	NA
Total Organic Halogens (TOX)	710,000	NA	10 U	NA
Total Organic Halogens (TOX)	918,000	NA	10 U	NA
Total Organic Carbon (TOC)	5,020	NA	7,780	NA
Total Organic Carbon (TOC)	6,000	NA	6,270	NA
Total Organic Carbon (TOC)	5,130	NA	11,000	NA
Total Organic Carbon (TOC)	6,650	NA	6,900	NA
Specific Conductance (umhos/cm)	1,600	600	900	600
Specific Conductance (umhos/cm)	1,550	600	900	600
Specific Conductance (umhos/cm)	1,600	600	800	600
Specific Conductance (umhos/cm)	1,600	600	800	590
pH	4.49	4.75	4.39	7.11
pH	4.50	4.76	4.34	7.11
pH	4.54	4.76	4.33	7.10
pH	4.52	4.75	4.33	7.10

Notes: * All values are in ug/l unless noted otherwise
U Indicates element was analyzed for but not detected. The number shown is the detection limit. NA - Not Analyzed.

TABLE 8

WELL4

GROUNDWATER MONITORING ANALYTICAL DATA

TEXTRON-LYCOMING, STRATFORD, CONNECTICUT

	Mar-90	Apr-90	Aug-90	Nov-90
8010 Volatile Organic Compounds				
chloroethane	5 U	NA	1 U	NA
1,2-dichlorobenzene	5 U	NA	1 U	NA
1,1-dichloroethane	11	NA	6.5	NA
1,2-trans-dichloroethene	270	NA	83	NA
1,1-dichloroethene	5 U	NA	1 U	NA
tetrachloroethene	5 U	NA	1 U	NA
trichloroethene	5 U	NA	1 U	NA
dichloromethane	5 U	NA	1 U	NA
1,1,1-trichloroethane	5 U	NA	1 U	NA
vinyl chloride	5 U	NA	29	NA
8020 Volatile Organic Compounds				
chlorobenzene	5 U	NA	1 U	NA
Inorganic Compounds				
Cadmium	5 U	9	4.0 U	4.0 U
Chromium (Total)	10 U	10 U	7.0 U	10 U
Chromium (Hexavalent)	50 U	50 U	10 U	10 U
Copper	25 U	25 U	4.0 U	3.0 U
Nickel	40 U	40 U	14 U	17 U
Zinc	210	160	75 *	92
Cyanide (Total)	10 U	5 U	10 U	10 U
Cyanide (Amenable)	10 U	1 U	10 U	10 U
Conventional Parameters				
Total Organic Halogens (TOX)	160,000	NA	10 U	NA
Total Organic Halogens (TOX)	150,000	NA	10 U	NA
Total Organic Halogens (TOX)	235,000	NA	33	NA
Total Organic Halogens (TOX)	206,000	NA	412	NA
Total Organic Carbon (TOC)	13,320	NA	28,100	NA
Total Organic Carbon (TOC)	12,950	NA	33,100	NA
Total Organic Carbon (TOC)	13,430	NA	29,700	NA
Total Organic Carbon (TOC)	13,030	NA	26,300	NA
Specific Conductance (umhos/cm)	1,120	1,310	1,200	1,200
Specific Conductance (umhos/cm)	1,100	1,310	1,200	1,200
Specific Conductance (umhos/cm)	1,160	1,300	1,200	1,200
Specific Conductance (umhos/cm)	1,180	1,310	1,300	1,200
pH	6.27	6.80	6.87	7.14
pH	6.26	6.73	6.87	7.14
pH	6.29	6.73	6.87	7.14
pH	6.28	6.72	6.84	7.14

Notes: * All values are in ug/l unless noted otherwise

U Indicates element was analyzed for but not detected. The number shown is the detection limit. NA - Not Analyzed.

TABLE 9

WELLS

GROUNDWATER MONITORING ANALYTICAL DATA

TEXTRON-LYCOMING, STRATFORD, CONNECTICUT

	Mar-90	Apr-90	Aug-90	Nov-90
8010 Volatile Organic Compounds				
chloroethane	50 U	NA	3.9	NA
1,2-dichlorobenzene	50 U	NA	11	NA
1,1-dichloroethane	50 U	NA	21	NA
1,2-trans-dichloroethene	6,600	NA	4350	NA
1,1-dichloroethene	50 U	NA	8.9	NA
tetrachloroethene	50 U	NA	3.9	NA
trichloroethene	50 U	NA	13	NA
dichloromethane	50 U	NA	3.6	NA
1,1,1-trichloroethane	50 U	NA	1 U	NA
vinyl chloride	120	NA	140	NA
8020 Volatile Organic Compounds				
chlorobenzene	100 U	NA	3.1	NA
Inorganic Compounds				
Cadmium	5 U	5 U	4.0 U	4.0 U
Chromium (Total)	15	32	7.0 U	10 U
Chromium (Hexavalent)	50 U	50 U	10 U	10 U
Copper	25 U	39	4.0 U	3.0 U
Nickel	40 U	40 U	21 B	41
Zinc	150	130	112 *	56
Cyanide (Total)	10 U	5 U	10 U	10 U
Cyanide (Amenable)	10 U	1 U	10 U	10 U
Conventional Parameters				
Total Organic Halogens (TOX)	1,552,000	NA	233	NA
Total Organic Halogens (TOX)	1,458,000	NA	338	NA
Total Organic Halogens (TOX)	1,778,000	NA	482	NA
Total Organic Halogens (TOX)	1,783,000	NA	178	NA
Total Organic Carbon (TOC)	14,360	NA	29,900	NA
Total Organic Carbon (TOC)	13,000	NA	30,800	NA
Total Organic Carbon (TOC)	13,040	NA	33,500	NA
Total Organic Carbon (TOC)	20,200	NA	28,400	NA
Specific Conductance (umhos/cm)	1,000	850	900	700
Specific Conductance (umhos/cm)	950	820	900	700
Specific Conductance (umhos/cm)	950	850	900	700
Specific Conductance (umhos/cm)	950	820	900	710
pH	4.70	6.52	6.42	7.10
pH	4.80	6.53	6.41	7.10
pH	5.00	6.47	6.41	7.10
pH	5.08	6.47	6.41	7.10

Notes: * All values are in ug/l unless noted otherwise
U Indicates element was analyzed for but not detected. The number shown is the detection limit. NA - Not Analyzed.

TABLE 10

WELL5-D

GROUNDWATER MONITORING ANALYTICAL DATA

TEXTRON-LYCOMING, STRATFORD, CONNECTICUT

	Mar-90	Apr-90	Aug-90	Nov-90
8010 Volatile Organic Compounds				
chloroethane	53	NA	21	NA
1,2-dichlorobenzene	5 U	NA	10 U	NA
1,1-dichloroethane	5 U	NA	26	NA
1,2-trans-dichloroethene	190	NA	160	NA
1,1-dichloroethene	5 U	NA	10 U	NA
tetrachloroethene	5 U	NA	10 U	NA
trichloroethene	5 U	NA	10 U	NA
dichloromethane	5 U	NA	10 U	NA
1,1,1-trichloroethane	5 U	NA	10 U	NA
vinyl chloride	5 U	NA	120	NA
8020 Volatile Organic Compounds				
chlorobenzene	5 U	NA	10 U	NA
Inorganic Compounds				
Cadmium	5 U	7	4.0 U	4.0 U
Chromium (Total)	69	55	56 N	46
Chromium (Hexavalent)	50 U	50 U	10 U	10 U
Copper	25 U	25 U	4.0 U	3.0 B
Nickel	48	68	52	55
Zinc	150	61	35 *	10 B
Cyanide (Total)	10 U	5 U	10 U	10 U
Cyanide (Amenable)	10 U	1 U	10 U	10 U
Conventional Parameters				
Total Organic Halogens (TOX)	180,000	NA	739	NA
Total Organic Halogens (TOX)	439,000	NA	43	NA
Total Organic Halogens (TOX)	558,000	NA	152	NA
Total Organic Halogens (TOX)	1,032,000	NA	78	NA
Total Organic Carbon (TOC)	11,520	NA	31,600	NA
Total Organic Carbon (TOC)	10,900	NA	25,000	[illegible]
Total Organic Carbon (TOC)	11,010	NA	24,1[illegible]	[illegible]
Total Organic Carbon (TOC)	11,010	NA	26,500	NA
Specific Conductance (umhos/cm)	1,800	3,200	5,000	13,000
Specific Conductance (umhos/cm)	1,800	3,050	5,000	13,500
Specific Conductance (umhos/cm)	1,800	2,600	4,800	13,900
Specific Conductance (umhos/cm)	1,800	2,750	4,800	14,000
pH	6.61	6.52	6.49	7.10
pH	6.58	6.51	6.55	7.09
pH	6.50	6.50	6.63	7.09
pH	6.52	6.51	6.61	7.09

Notes: * All values are in ug/l unless noted otherwise

U Indicates element was analyzed for but not detected. The number shown is the detection limit. NA - Not Analyzed.

TABLE 11

WELL6

GROUNDWATER MONITORING ANALYTICAL DATA

TEXTRON-LYCOMING, STRATFORD, CONNECTICUT

	Mar-90	Apr-90	Aug-90	Nov-90
8010 Volatile Organic Compounds				
chloroethane	5 U	NA	1 U	NA
1,2-dichlorobenzene	5 U	NA	1 U	NA
1,1-dichloroethane	5 U	NA	1 U	NA
1,2-trans-dichloroethene	5 U	NA	1 U	NA
1,1-dichloroethene	5 U	NA	1 U	NA
tetrachloroethene	5 U	NA	1 U	NA
trichloroethene	5 U	NA	1 U	NA
dichloromethane	5 U	NA	1 U	NA
1,1,1-trichloroethane	5 U	NA	1 U	NA
vinyl chloride	5 U	NA	1 U	NA
8020 Volatile Organic Compounds				
chlorobenzene	5 U	NA	1 U	NA
Inorganic Compounds				
Cadmium	7	6	4.0 U	4.0 U
Chromium (Total)	10 U	10 U	7.0 U	10 U
Chromium (Hexavalent)	50 U	50 U	10 U	10 U
Copper	25 U	25 U	12 B	8.0 B
Nickel	40 U	40 U	16 B	17 U
Zinc	100	83	150 *	33
Cyanide (Total)	10 U	5 U	10 U	10 U
Cyanide (Amenable)	10 U	1 U	10 U	10 U
Conventional Parameters				
Total Organic Halogens (TOX)	33,500	NA	10 U	NA
Total Organic Halogens (TOX)	14,000	NA	17	NA
Total Organic Halogens (TOX)	114,000	NA	10 U	NA
Total Organic Halogens (TOX)	68,400	NA	10 U	NA
Total Organic Carbon (TOC)	8,190	NA	26,000	NA
Total Organic Carbon (TOC)	8,280	NA	30,900	NA
Total Organic Carbon (TOC)	8,790	NA	21,500	NA
Total Organic Carbon (TOC)	8,440	NA	19,200	NA
Specific Conductance (umhos/cm)	720	1,390	1,600	1,750
Specific Conductance (umhos/cm)	710	1,400	1,600	1,750
Specific Conductance (umhos/cm)	710	1,500	1,600	1,800
Specific Conductance (umhos/cm)	710	1,500	1,600	1,800
pH	6.67	6.74	7.20	7.17
pH	6.75	6.76	7.20	7.16
pH	6.76	6.75	7.20	7.16
pH	6.79	6.79	7.20	7.16

Notes: * All values are in ug/l unless noted otherwise

U Indicates element was analyzed for but not detected. The number shown is the detection limit. NA - Not Analyzed.

TABLE 12

WELL7

GROUNDWATER MONITORING ANALYTICAL DATA

TEXTRON-~~LYCOMING~~, STRATFORD, CONNECTICUT

	Mar-90	Apr-90	Aug-90	Nov-90
8010 Volatile Organic Compounds				
chloroethane	5 U	NA	1 U	NA
1,2-dichlorobenzene	5 U	NA	1 U	NA
1,1-dichloroethane	5 U	NA	1.5	NA
1,2-trans-dichloroethene	5 U	NA	1 U	NA
1,1-dichloroethene	5 U	NA	1 U	NA
tetrachloroethene	5 U	NA	1 U	NA
trichloroethene	5 U	NA	1 U	NA
dichloromethane	5 U	NA	1 U	NA
1,1,1-trichloroethane	5 U	NA	1 U	NA
vinyl chloride	5 U	NA	1 U	NA
8020 Volatile Organic Compounds				
chlorobenzene	5 U	NA	1 U	NA
Inorganic Compounds				
Cadmium	5 U	9	4.0 U	4.0 U
Chromium (Total)	10 U	10 U	7.0 U	10 U
Chromium (Hexavalent)	50 U	50 U	10 U	10 U
Copper	25 U	25 U	4.0 U	3.0 B
Nickel	40 U	40 U	14 U	17 U
Zinc	48	95	104 *	41
Cyanide (Total)	10 U	5 U	10 U	10 U
Cyanide (Amenable)	10 U	1 U	10 U	10 U
Conventional Parameters				
Total Organic Halogens (TOX)	2,600	NA	53	NA
Total Organic Halogens (TOX)	14,300	NA	163	NA
Total Organic Halogens (TOX)	11,000	NA	209	NA
Total Organic Halogens (TOX)	22,400	NA	86	NA
Total Organic Carbon (TOC)	1,540	NA	13,900	NA
Total Organic Carbon (TOC)	1,680	NA	17,000	NA
Total Organic Carbon (TOC)	1,360	NA	12,80[illegible]	[illegible]
Total Organic Carbon (TOC)	2,120	NA	12,200	NA
Specific Conductance (umhos/cm)	200	225	580	570
Specific Conductance (umhos/cm)	206	220	590	580
Specific Conductance (umhos/cm)	210	220	590	590
Specific Conductance (umhos/cm)	210	220	600	600
pH	6.66	6.73	7.20	7.16
pH	6.60	6.74	7.21	7.16
pH	6.65	6.72	7.21	7.15
pH	6.60	6.74	7.20	7.15

Notes: * All values are in ug/l unless noted otherwise

U Indicates element was analyzed for but not detected. The number shown is the detection limit. NA - Not Analyzed.

TABLE 13

WELL8

GROUNDWATER MONITORING ANALYTICAL DATA

TEXTRON-LYCOMING, STRATFORD, CONNECTICUT

	Mar-90	Apr-90	Aug-90	Nov-90
8010 Volatile Organic Compounds				
chloroethane	5 U	NA	1 U	NA
1,2-dichlorobenzene	5 U	NA	1 U	NA
1,1-dichloroethane	5 U	NA	1 U	NA
1,2-trans-dichloroethene	5 U	NA	1 U	NA
1,1-dichloroethene	5 U	NA	1 U	NA
tetrachloroethene	5 U	NA	1 U	NA
trichloroethene	5 U	NA	1 U	NA
dichloromethane	5 U	NA	1 U	NA
1,1,1-trichloroethane	5 U	NA	1 U	NA
vinyl chloride	5 U	NA	1 U	NA
8020 Volatile Organic Compounds				
chlorobenzene	5 U	NA	1 U	NA
Inorganic Compounds				
Cadmium	5 U	5	4.0 U	4.0 U
Chromium (Total)	10 U	10 U	7.0 U	10 U
Chromium (Hexavalent)	50 U	50 U	10 U	10 U
Copper	25 U	46	4.0 U	3.0 U
Nickel	40 U	40 U	14 U	17 U
Zinc	69	210	259 *	31
Cyanide (Total)	10 U	5 U	10 U	10 U
Cyanide (Amenable)	10 U	1 U	10 U	10 U
Conventional Parameters				
Total Organic Halogens (TOX)	11,400	NA	10 U	NA
Total Organic Halogens (TOX)	2,000	NA	20	NA
Total Organic Halogens (TOX)	43,300	NA	40	NA
Total Organic Halogens (TOX)	30,300	NA	10 U	NA
Total Organic Carbon (TOC)	4,630	NA	10,700	NA
Total Organic Carbon (TOC)	3,480	NA	10,600	NA
Total Organic Carbon (TOC)	6,660	NA	10,200	NA
Total Organic Carbon (TOC)	5,470	NA	10,000	NA
Specific Conductance (umhos/cm)	50	65	100	79
Specific Conductance (umhos/cm)	50	55	90	79
Specific Conductance (umhos/cm)	50	60	85	72
Specific Conductance (umhos/cm)	50	60	85	70
pH	6.02	6.34	6.48	7.20
pH	6.06	6.39	6.44	7.20
pH	6.07	6.38	6.41	7.19
pH	6.16	6.37	6.40	7.19

Notes: * All values are in ug/l unless noted otherwise

U Indicates element was analyzed for but not detected. The number shown is the detection limit. NA - Not Analyzed.

TABLE 14

WELL9

GROUNDWATER MONITORING ANALYTICAL DATA

TEXTRON-LYCOMING, STRATFORD, CONNECTICUT

	Mar-90	Apr-90	Aug-90	Nov-90
8010 Volatile Organic Compounds				
chloroethane	5 U	NA	1 U	NA
1,2-dichlorobenzene	5 U	NA	1 U	NA
1,1-dichloroethane	5 U	NA	1 U	NA
1,2-trans-dichloroethene	5 U	NA	1 U	NA
1,1-dichloroethene	5 U	NA	1 U	NA
tetrachloroethene	5 U	NA	1 U	NA
trichloroethene	5 U	NA	1 U	NA
dichloromethane	5 U	NA	1 U	NA
1,1,1-trichloroethane	5 U	NA	1 U	NA
vinyl chloride	5 U	NA	1 U	NA
8020 Volatile Organic Compounds				
chlorobenzene	5 U	NA	1 U	NA
Inorganic Compounds				
Cadmium	5 U	89	12	11
Chromium (Total)	10 U	10 U	7.0 U	10 U
Chromium (Hexavalent)	50 U	50 U	10 U	10 U
Copper	25 U	25 U	13	17 B
Nickel	40 U	40 U	16 B	17 U
Zinc	220	1,000	174 *	171
Cyanide (Total)	10 U	5 U	10 U	10 U
Cyanide (Amenable)	10 U	1 U	10 U	10 U
Conventional Parameters				
Total Organic Halogens (TOX)	0	NA	10 U	NA
Total Organic Halogens (TOX)	11,900	NA	10 U	NA
Total Organic Halogens (TOX)	52,800	NA	10 U	NA
Total Organic Halogens (TOX)	27,300	NA	10 U	NA
Total Organic Carbon (TOC)	7,670	NA	25,100	NA
Total Organic Carbon (TOC)	7,840	NA	26,400	NA
Total Organic Carbon (TOC)	9,350	NA	27,300	NA
Total Organic Carbon (TOC)	6,940	NA	25,300	NA
Specific Conductance (umhos/cm)	400	380	500	461
Specific Conductance (umhos/cm)	400	350	600	470
Specific Conductance (umhos/cm)	400	330	600	480
Specific Conductance (umhos/cm)	400	350	600	480
pH	6.45	6.32	6.54	7.15
pH	6.46	6.31	6.49	7.15
pH	6.46	6.30	6.58	7.15
pH	6.47	6.28	6.67	7.16

Notes: * All values are in ug/l unless noted otherwise

U Indicates element was analyzed for but not detected. The number shown is the detection limit. NA - Not Analyzed.

TABLE 15

WELL10

GROUNDWATER MONITORING ANALYTICAL DATA

TEXTRON-LYCOMING, STRATFORD, CONNECTICUT

	Mar-90	Apr-90	Aug-90	Nov-90
8010 Volatile Organic Compounds				
chloroethane	5 U	NA	1 U	NA
1,2-dichlorobenzene	5 U	NA	1 U	NA
1,1-dichloroethane	5 U	NA	4.1	NA
1,2-trans-dichloroethene	5 U	NA	1 U	NA
1,1-dichloroethene	5 U	NA	1 U	NA
tetrachloroethene	5 U	NA	1 U	NA
trichloroethene	5 U	NA	1 U	NA
dichloromethane	5 U	NA	1 U	NA
1,1,1-trichloroethane	5 U	NA	1 U	NA
vinyl chloride	5 U	NA	1 U	NA
8020 Volatile Organic Compounds				
chlorobenzene	5 U	NA	1 U	NA
Inorganic Compounds				
Cadmium	5 U	9	4.0 U	4.0 U
Chromium (Total)	10 U	10 U	7.0 U	10 U
Chromium (Hexavalent)	50 U	50 U	10 U	10 U
Copper	25 U	25 U	4.0 U	4.0 B
Nickel	40 U	40 U	14 U	17 U
Zinc	20 U	100	30 *	59
Cyanide (Total)	10 U	5 U	10 U	10 U
Cyanide (Amenable)	10 U	1 U	10 U	10 U
Conventional Parameters				
Total Organic Halogens (TOX)	114,000	NA	132	NA
Total Organic Halogens (TOX)	30,500	NA	186	NA
Total Organic Halogens (TOX)	38,200	NA	10 U	NA
Total Organic Halogens (TOX)	38,900	NA	11	NA
Total Organic Carbon (TOC)	3,870	NA	19,500	NA
Total Organic Carbon (TOC)	4,180	NA	21,400	NA
Total Organic Carbon (TOC)	4,080	NA	10,400	NA
Total Organic Carbon (TOC)	3,960	NA	20,600	NA
Specific Conductance (umhos/cm)	330	390	400	352
Specific Conductance (umhos/cm)	320	380	400	355
Specific Conductance (umhos/cm)	320	375	440	359
Specific Conductance (umhos/cm)	310	380	440	360
pH	7.71	7.51	7.50	7.20
pH	7.68	7.52	7.47	7.20
pH	7.68	7.51	7.50	7.20
pH	7.67	7.54	7.49	7.20

Notes: * All values are in ug/l unless noted otherwise

U Indicates element was analyzed for but not detected. The number shown is the detection limit. NA - Not Analyzed.

TABLE 16

WELL11

GROUNDWATER MONITORING ANALYTICAL DATA

TEXTRON-LYCOMING, STRATFORD, CONNECTICUT

	Mar-90	Apr-90	Aug-90	Nov-90
8010 Volatile Organic Compounds				
chloroethane	5 U	NA	1 U	NA
1,2-dichlorobenzene	5 U	NA	1 U	NA
1,1-dichloroethane	5 U	NA	1 U	NA
1,2-trans-dichloroethene	5 U	NA	1 U	NA
1,1-dichloroethene	5 U	NA	1 U	NA
tetrachloroethene	5 U	NA	1 U	NA
trichloroethene	5 U	NA	1 U	NA
dichloromethane	5 U	NA	1 U	NA
1,1,1-trichloroethane	5 U	NA	1 U	NA
vinyl chloride	5 U	NA	1 U	NA
8020 Volatile Organic Compounds				
chlorobenzene	5 U	NA	1 U	NA
Inorganic Compounds				
Cadmium	5 U	5 U	4.0 U	4.0 U
Chromium (Total)	10 U	10 U	7.0 U	10 U
Chromium (Hexavalent)	50 U	50 U	10 U	10 U
Copper	25 U	25 U	6.0 B	3.0 B
Nickel	40 U	40 U	15 B	17 U
Zinc	97	20 U	158 *	8.0 B
Cyanide (Total)	10 U	5 U	10 U	10 U
Cyanide (Amenable)	10 U	1 U	10 U	10 U
Conventional Parameters				
Total Organic Halogens (TOX)	21,600	NA	10 U	NA
Total Organic Halogens (TOX)	56,300	NA	248	NA
Total Organic Halogens (TOX)	72,200	NA	269	NA
Total Organic Halogens (TOX)	76,100	NA	84	NA
Total Organic Carbon (TOC)	10,250	NA	20,200	NA
Total Organic Carbon (TOC)	9,670	NA	20,800	NA
Total Organic Carbon (TOC)	10,250	NA	22,800	NA
Total Organic Carbon (TOC)	10,750	NA	25,300	NA
Specific Conductance (umhos/cm)	100	100	220	120
Specific Conductance (umhos/cm)	100	100	220	120
Specific Conductance (umhos/cm)	100	100	220	115
Specific Conductance (umhos/cm)	100	95	220	115
pH	6.14	6.31	7.01	7.17
pH	6.17	6.29	7.08	7.17
pH	6.18	6.28	7.27	7.17
pH	6.21	6.27	7.17	7.17

Notes: * All values are in ug/l unless noted otherwise

U Indicates element was analyzed for but not detected. The number shown is the detection limit. NA - Not Analyzed.

TABLE 17

WELL12

GROUNDWATER MONITORING ANALYTICAL DATA

TEXTRON-LYCOMING, STRATFORD, CONNECTICUT

	Mar-90	Apr-90	Aug-90	Nov-90
8010 Volatile Organic Compounds				
chloroethane	5 U	NA	1 U	NA
1,2-dichlorobenzene	5 U	NA	1 U	NA
1,1-dichloroethane	5 U	NA	1 U	NA
1,2-trans-dichloroethene	5 U	NA	2.3	NA
1,1-dichloroethene	5 U	NA	1 U	NA
tetrachloroethene	15	NA	12	NA
trichloroethene	19	NA	14	NA
dichloromethane	5 U	NA	1 U	NA
1,1,1-trichloroethane	5 U	NA	1.3	NA
vinyl chloride	5 U	NA	1 U	NA
8020 Volatile Organic Compounds				
chlorobenzene	5 U	NA	1 U	NA
Inorganic Compounds				
Cadmium	5 U	5 U	4.0 U	4.0 U
Chromium (Total)	14	10 U	9.0 B	10 U
Chromium (Hexavalent)	50 U	50 U	20	10 U
Copper	25 U	25 U	4.0 U	5.0 B
Nickel	40 U	40 U	14 U	17 U
Zinc	120	100	155 *	32
Cyanide (Total)	10 U	5 U	10 U	10 U
Cyanide (Amenable)	10 U	1 U	10 U	10 U
Conventional Parameters				
Total Organic Halogens (TOX)	40,100	NA	10 U	NA
Total Organic Halogens (TOX)	218,000	NA	10 U	NA
Total Organic Halogens (TOX)	71,200	NA	39	NA
Total Organic Halogens (TOX)	255,000	NA	10 U	NA
Total Organic Carbon (TOC)	1,530	NA	17,000	NA
Total Organic Carbon (TOC)	1,150	NA	10,400	NA
Total Organic Carbon (TOC)	1,400	NA	13,600	NA
Total Organic Carbon (TOC)	1,310	NA	13,800	NA
Specific Conductance (umhos/cm)	325	375	500	420
Specific Conductance (umhos/cm)	325	380	600	430
Specific Conductance (umhos/cm)	330	365	600	430
Specific Conductance (umhos/cm)	335	345	620	432
pH	5.91	6.34	7.45	7.16
pH	6.05	6.33	7.46	7.19
pH	6.04	6.32	7.44	7.19
pH	6.05	6.35	7.45	7.19

Notes: * All values are in ug/l unless noted otherwise
U Indicates element was analyzed for but not detected. The number shown is the detection limit. NA - Not Analyzed.

TABLE 18

WELL13

GROUNDWATER MONITORING ANALYTICAL DATA

TEXTRON-LYCOMING, STRATFORD, CONNECTICUT

	Mar-90	Apr-90	Aug-90	Nov-90
8010 Volatile Organic Compounds				
chloroethane	5 U	NA	1 U	NA
1,2-dichlorobenzene	5 U	NA	1 U	NA
1,1-dichloroethane	5 U	NA	3.1	NA
1,2-trans-dichloroethene	5 U	NA	1.7	NA
1,1-dichloroethene	5 U	NA	1 U	NA
tetrachloroethene	5 U	NA	3.0	NA
trichloroethene	5 U	NA	2.9	NA
dichloromethane	5 U	NA	1 U	NA
1,1,1-trichloroethane	5 U	NA	2.3	NA
vinyl chloride	5 U	NA	1 U	NA
8020 Volatile Organic Compounds				
chlorobenzene	5 U	NA	1 U	NA
Inorganic Compounds				
Cadmium	5 U	8	4.0 U	4.0 U*
Chromium (Total)	10 U	10 U	7.0 U	10 U
Chromium (Hexavalent)	50 U	50 U	10 U	10 U
Copper	25 U	25 U	8.0 B	3.0 B
Nickel	40 U	40 U	14 U	17 U
Zinc	130	33	160 *	32
Cyanide (Total)	10 U	5 U	10 U	10 U
Cyanide (Amenable)	10 U	1 U	10 U	10 U
Conventional Parameters				
Total Organic Halogens (TOX)	25,800	NA	105	NA
Total Organic Halogens (TOX)	31,900	NA	10 U	NA
Total Organic Halogens (TOX)	78,000	NA	10 U	NA
Total Organic Halogens (TOX)	58,200	NA	10 U	NA
Total Organic Carbon (TOC)	6,600	NA	24,000	NA
Total Organic Carbon (TOC)	5,340	NA	21,400	NA
Total Organic Carbon (TOC)	5,220	NA	21,600	NA
Total Organic Carbon (TOC)	6,450	NA	20,200	NA
Specific Conductance (umhos/cm)	400	500	850	420
Specific Conductance (umhos/cm)	400	500	880	420
Specific Conductance (umhos/cm)	400	500	860	419
Specific Conductance (umhos/cm)	400	500	820	412
pH	6.47	6.56	6.66	7.16
pH	6.42	6.55	6.66	7.16
pH	6.46	6.53	6.65	7.15
pH	6.48	6.45	6.65	7.15

Notes: * All values are in ug/l unless noted otherwise
U Indicates element was analyzed for but not detected. The number shown is the detection limit. NA - Not Analyzed.

TABLE 4
GROUNDWATER MONITORING ANALYTICAL DATA
TEXTRON-LYCOMING, STRATFORD, CONNECTICUT
MARCH 4 - 5, 1991

	Well MW-1S	Well MW-1SI	Well MW-2	Well MW-3S	Well MW-3S (Duplicate)	Well MW-3SI	Well MW-4	Well MW-5S	Well MW-5SI	Well MW-6
8010 Volatile Organic Compounds										
chlorobenzene	1 U	1.5	860	70	47	1.3	1 U	4.1	1 U	1 U
chloroethane	1 U	1 U	10 U	5 U	4.9	1 U	1 U	2.7	40	1 U
1,2-dichlorobenzene	1 U	1 U	110	230	170	10	1 U	7.6	4.2	1 U
1,4-dichlorobenzene	1 U	1 U	48	18	12	1 U	1 U	1 U	1 U	1 U
1,1-dichloroethane	1 U	2.1	10 U	15	8.7	1 U	6.8	7.2	16	1 U
1,1-dichloroethene	1 U	1 U	10 U	5 U	1 U	1 U	1 U	3.1	1 U	1 U
1,2-trans-dichloroethene	1 U	1 U	10 U	5 U	1 U	1 U	1.4	3.7	2.8	1 U
1,2-cis-dichloroethene	1.4	6.3	10 U	14	4.4	1 U	110	1,600	54	1 U
tetrachloroethene	1 U	1 U	10 U	5 U	1 U	1 U	1 U	1.5	1 U	1 U
trichloroethene	1 U	1 U	10 U	5 U	1 U	1 U	1 U	6.9	1.3	1 U
vinyl chloride	1.0	1.9	10 U	5 U	6.3	1 U	17	240	36	1 U
8020 Volatile Organic Compounds										
benzene	1 U	1 U	10 U	5 U	1 U	1 U	1 U	1 U	1.2	1 U
chlorobenzene	1 U	1.7	870	66	66	1.3	1 U	3.6	1 U	1 U
1,4-dichlorobenzene	1 U	1 U	39	14	11	1 U	1 U	1.6	1 U	1 U
1,2-dichlorobenzene	1 U	1 U	82	190	170	7.9	1 U	6.6	4.6	1 U
xylenes, total	1 U	1 U	10 U	5 U	2.0	1 U	1 U	1 U	1.7	1 U
Inorganic Compounds										
Chromium (Total)	9.0 U	9.0 U	9.0 U	9.0 U	9.0 U	9.0 U	9.0 U	9.0 U	50.8	9.0 U
Copper	2.78 B	3.85 B	2.25 B	3.86 B	4.07 B	93.9	2.0 U	2.0 U	2.0 U	3.03 B
Nickel	72.4	12 U	12.4 B	12 U	12 U	155	12 U	19.8 B	63.5	12 U
Zinc	32.3	79.8	19.9 B	18.5 B	22.9	283	15.7 B	16.1 B	12.9 B	32.5
Conventional Parameters										
Total Organic Halogens (TOX)	117	202	515	300	258	36	153	1,017	136	27
Total Organic Halogens (TOX)	227	126	453	526	249	23	140	1,238	134	26
Total Organic Halogens (TOX)	83	223	452	405	377	36	138	1,147	142	21
Total Organic Halogens (TOX)	54	326	403	404	433	32	137	893	134	35
Total Organic Carbon (TOC)	45,440	46,190	92,250	48,550	29,150	9,115	32,400	30,670	28,370	30,800
Total Organic Carbon (TOC)	53,310	48,850	75,200	41,920	34,120	9,848	28,820	39,950	28,660	38,130
Total Organic Carbon (TOC)	48,320	31,210	83,950	39,510	45,020	9,444	33,350	40,160	21,990	36,670
Total Organic Carbon (TOC)	51,520	48,320	87,750	41,110	50,820	10,040	32,460	30,510	32,670	35,960
Specific Conductance (umhos/cm)	390	1,900	2,600	930	930	250	900	900	12,000	160
Specific Conductance (umhos/cm)	490	2,010	2,700	1,300	1,300	268	990	600	12,000	170
Specific Conductance (umhos/cm)	600	2,040	3,100	1,200	1,200	355	1,010	600	7,000	170
Specific Conductance (umhos/cm)	600	2,045	3,000	800	800	370	1,015	600	5,200	170
pH	6.56	6.32	7.07	6.90	6.90	5.87	6.42	6.63	6.81	6.79
pH	6.34	6.35	7.10	6.90	6.90	4.75	6.01	6.74	6.82	6.69
pH	6.28	6.35	6.98	7.00	7.00	4.69	6.24	6.83	6.80	6.61
pH	6.27	6.37	6.91	7.20	7.20	4.71	6.22	6.84	6.78	6.59

Notes: - All volatile organic, inorganic and conventional compound concentrations are in ug/l unless noted otherwise.
B - Indicates the reported value is greater than the Instrument Detection Level, but less than the CRDL.
U - Indicates element was analyzed for but not detected. The number shown is the detection limit.

TABLE 4 (Continued)
GROUNDWATER MONITORING ANALYTICAL DATA
TEXTRON-LYCOMING, STRATFORD, CONNECTICUT
MARCH 4 - 5, 1991

	Well MW-7	Well MW-8	Well MW-9S	Well MW-10S	Well MW-11	Well MW-12	Well MW-12 (Duplicate)	Well MW-13
8010 Volatile Organic Compounds								
chloroform (THM)	NA	1 U	1 U	1 U	1 U	1.5	1.2	1 U
1,1-dichloroethane	NA	1 U	1 U	1.3	1 U	1 U	1 U	1 U
1,2-cis-dichloroethene	NA	1 U	1 U	1 U	1 U	1.8	1.2	1 U
tetrachloroethene	NA	1 U	1 U	1 U	1 U	19	18	1.2
1,1,1-trichloroethane	NA	1 U	1 U	1 U	1 U	1.3	1.1	1 U
trichloroethene	NA	1 U	1 U	1 U	1 U	21	19	1 U
Inorganic Compounds								
Cadmium	NA	4.0 U	6.19	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U
Copper	NA	2.0 U	33.5	3.05 B	2.73 B	2.0 U	2.0 U	2.80 B
Nickel	NA	12 U	22.7 B	12 U	12 U	12 U	12 U	12 U
Zinc	NA	24.0	178	28.3	41.4	11.2 B	38.1	18.5 B
Conventional Parameters								
Total Organic Halogens (TOX)	NA	86	13	15	108	46	31	22
Total Organic Halogens (TOX)	NA	10 U	60	13	67	39	35	25
Total Organic Halogens (TOX)	NA	56	32	17	10 U	50	14	23
Total Organic Halogens (TOX)	NA	28	46	13	43	57	22	21
Total Organic Carbon (TOC)	NA	12,840	22,700	11,310	26,880	10,540	14,380	15,330
Total Organic Carbon (TOC)	NA	15,010	22,550	13,110	26,100	15,820	12,400	17,760
Total Organic Carbon (TOC)	NA	12,440	22,330	14,100	28,960	11,410	14,120	14,980
Total Organic Carbon (TOC)	NA	14,530	23,000	15,580	27,900	20,750	12,440	20,530
Specific Conductance (umhos/cm)	NA	80	300	190	120	360	360	450
Specific Conductance (umhos/cm)	NA	55	420	235	90	360	360	550
Specific Conductance (umhos/cm)	NA	52	500	250	90	360	360	450
Specific Conductance (umhos/cm)	NA	52	495	258	90	360	360	450
pH	NA	6.84	5.65	6.83	6.99	7.11	7.11	7.09
pH	NA	6.56	6.11	7.00	6.56	6.93	6.93	6.67
pH	NA	6.24	6.40	7.09	6.31	6.80	6.80	6.53
pH	NA	6.25	6.51	7.11	6.08	6.74	6.74	6.44

Notes: - All volatile organic, inorganic and conventional compound concentrations are in ug/l unless noted otherwise.
B - Indicates the reported value is greater than the Instrument Detection Level, but less than the CRDL.
U - Indicates element was analyzed for but not detected. The number shown is the detection limit.
NA - Not Analyzed.

TABLE 4

SUMMARY OF DETECTED COMPOUNDS IN GROUND WATER MONITORING WELLS

TEXTRON-LYCOMING, STRATFORD, CONNECTICUT

MAY 14 - 16, 1991

	Well MW-1S	Well MW-1SI	Well MW-2	Well MW-3S	Well MW-3SI	Well MW-3SI (Duplicate)	Well MW-4	Well MW-5S	Well MW-5SI	Well MW-5DI
Inorganic Compounds										
Cadmium	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	8.16
Chromium (Total)	10 U	23.1	172	14.2	20.7	24.6	10.8	101 U	83.0	21.8
Copper	8.47 B*	8.42 B*	83.5 *	6.9 B*	164 *	172 *	6.0 U	30.4 *	9.53 B*	20.9 B*
Mercury	0.37	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Nickel	19.8 B	13 U	32.4 B	13 U	220	230	13 U	35.1 B	63.8	13 U
Zinc	241 *	283.0 *	189 *	3.0 *	484 *	470 *	124	109 *	111 *	109 *
Cyanide (Total)	10.0 U	10.0 U	28	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Conventional Parameters										
Specific Conductance (umhos/cm)	443	1,700	2,500	1,100	280	280	11,000	880	15,500	6,000
Specific Conductance (umhos/cm)	438	1,980	2,700	1,200	290	290	11,000	900	3,950	7,000
Specific Conductance (umhos/cm)	450	2,040	3,000	1,700	280	280	11,000	880	2,500	7,000
Specific Conductance (umhos/cm)	460	2,080	3,200	950	285	285	10,900	850	2,310	7,200
pH	6.52	6.48	6.90	7.02	5.05	5.05	6.24	6.63	6.65	6.84
pH	6.51	6.55	6.89	6.89	5.03	5.03	6.23	6.51	6.81	6.79
pH	6.50	6.55	6.85	6.81	5.02	5.02	6.22	6.74	6.85	6.78
pH	6.50	6.55	6.78	6.85	5.02	5.02	6.17	6.51	6.82	6.77

Notes: - All inorganic compound concentrations are in ug/l (parts per billion), unless noted otherwise.

B - Indicates the reported value is greater than the Instrument Detection Level, but less than the CRDL.

* - Indicates duplicate analysis was not within control limits.

U - Indicates element was analyzed for but not detected. The number shown is the detection limit.

TABLE 4 (Continued)

SUMMARY OF DETECTED COMPOUNDS IN GROUND WATER MONITORING WELLS

TEXTRON-LYCOMING, STRATFORD, CONNECTICUT

MAY 14 - 16, 1991

	Well MW-5D	Well MW-6	Well MW-7	Well MW-8	Well MW-9S	Well MW-9S (Duplicate)	Well MW-9I	Well MW-9D	Well MW-10S	Well MW-10I
Inorganic Compounds										
Cadmium	8.49	5.0 U	5.0 U	5.0 U	11.7	11.2	13.2	14.1	5.0 U	10.8
Chromium (Total)	11.5	10 U	14.8	10 U	10 U	10 U	10 U	10 U	10 U	92.3
Copper	43.6 *	11.8 B	10.7 B	8.51 B	19.5 B	22.2 B	36.3	47.6	76.8	38.5
Nickel	13 U	13 U	13 U	13 U	22.7 B	35.6 B	13 U	13 U	13 U	15.0 B
Zinc	218 *	25.8	75.3	18.1 B	296	394	33.1	95.4	20.8	82.0
Conventional Parameters										
Specific Conductance (umhos/cm)	13,000	1,600	700	120	590	590	12,500	14,000	1,250	12,000
Specific Conductance (umhos/cm)	18,000	1,620	900	60	420	420	12,000	18,000	900	15,000
Specific Conductance (umhos/cm)	17,000	1,650	900	65	430	430	12,500	19,000	500	15,000
Specific Conductance (umhos/cm)	18,000	1,650	900	61	440	440	12,500	21,000	450	15,000
pH	6.57	6.44	6.19	7.54	5.94	5.94	6.63	6.36	7.35	7.38
pH	6.64	6.45	6.31	6.93	6.16	6.16	6.40	6.44	7.23	7.84
pH	6.62	6.46	6.34	6.59	6.29	6.29	6.33	6.59	7.24	7.83
pH	6.67	6.46	6.36	6.43	6.37	6.37	6.31	6.69	7.24	7.75

Notes: - All inorganic compound concentrations are in ug/l (parts per billion), unless noted otherwise.

B - Indicates the reported value is greater than the Instrument Detection Level, but less than the CRDL.

* - Indicates duplicate analysis was not within control limits.

U - Indicates element was analyzed for but not detected. The number shown is the detection limit.

TABLE 4 (Continued)

SUMMARY OF DETECTED COMPOUNDS IN GROUND WATER MONITORING WELLS

TEXTRON-LYCOMING, STRATFORD, CONNECTICUT

MAY 14 - 16, 1991

	Well MW-10D	Well MW-11	Well MW-12	Well MW-13
Inorganic Compounds				
Cadmium	12.5	5.0 U	5.0 U	5.0 U
Chromium (Total)	10 U	10 U	10 U	13.1
Copper	42.1	7.20 B	6.0 U	9.67 B*
Nickel	13 U	13 U	13 U	15.0 B
Zinc	50.3	128	12.9 B	113 *
Conventional Parameters				
Specific Conductance (umhos/cm)	20,000	78	365	425
Specific Conductance (umhos/cm)	20,000	75	400	411
Specific Conductance (umhos/cm)	20,500	81	395	410
Specific Conductance (umhos/cm)	21,000	80	400	409
pH	6.88	5.70	5.87	6.80
pH	6.82	5.72	6.10	6.64
pH	6.84	5.78	6.18	6.43
pH	6.78	5.74	6.19	6.22

Notes: - All inorganic compound concentrations are in ug/l (parts per billion), unless noted otherwise.

B - Indicates the reported value is greater than the Instrument Detection Level, but less than the CRDL.

* - Indicates duplicate analysis was not within control limits.

U - Indicates element was analyzed for but not detected. The number shown is the detection limit.

TABLE 4
SUMMARY OF DETECTED COMPOUNDS IN GROUNDWATER MONITORING WELLS
TEXTRON-LYCOMING, STRATFORD, CONNECTICUT
SEPTEMBER 23 - 25, 1991

	Well MW-1S	Well MW-1SI	Well MW-2	Well MW-3S	Well MW-3S (Duplicate)	Well MW-3SI	Well MW-4	Well MW-5S	Well MW-5SI	Well MW-5DI
8010 Volatile Organic Compounds										
chlorobenzene	1 U	18	690 E	120	110	1.5	1 U	50 U	1 U	1 U
chloroethane	1 U	1 U	10 U	6.5	6.5	1 U	1 U	50 U	38	1 U
1,2-dichlorobenzene	1 U	3.1	21	210 E	190 E	11	1 U	50 U	4.6	2.9
1,3-dichlorobenzene	1 U	1 U	24	5 U	5 U	1 U	1 U	50 U	1 U	1 U
1,4-dichlorobenzene	1 U	1 U	10 U	14	12	1 U	1 U	50 U	1 U	1 U
1,1-dichloroethane	1 U	6.5	10 U	8.6	8.6	1 U	7.8	50 U	32	22
1,2-dichloroethane (EDC)	1 U	1 U	10 U	5 U	5 U	1 U	1 U	50 U	1 U	2.1
1,1-dichloroethene	1 U	1 U	10 U	5 U	5 U	1 U	1.1	50 U	1 U	1 U
1,2-dichloroethene (total)	2.2	13	10 U	5.5	5.5	1 U	97 E	5800 E	36	69 E
1,1,2,2-tetrachloroethane	1 U	1 U	10 U	5 U	5 U	1.1	1 U	50 U	1 U	1 U
tetrachloroethene	1 U	1 U	10 U	5 U	5 U	1 U	1 U	50 U	1 U	1.6
trichloroethene	1 U	1.4	10 U	5 U	5 U	1 U	1 U	50 U	1.2	3
trichlorofluoromethane	13	1 U	10 U	5 U	5 U	1 U	1 U	50 U	1 U	1 U
vinyl chloride	1.1	5.3	10 U	9.5	9	1 U	18	1200 E	92 E	38 E
8020 Volatile Organic Compounds										
benzene	1 U	1 U	10 U	5 U	5 U	1 U	1 U	50 U	1	6.7
chlorobenzene	1 U	20	920 E	140	130	1	1 U	50 U	1 U	1 U
1,4-dichlorobenzene	1 U	1 U	25	14	14	1 U	1 U	50 U	1 U	1 U
1,2-dichlorobenzene	1 U	3.3	23	260 E	230 E	9.3	1 U	50 U	6.3	6.2
xylenes, total	1 U	1 U	10 U	5 U	5 U	1 U	1 U	50 U	1.8	1 U
Inorganic Compounds										
Cadmium	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	4.0 B
Chromium (Total)	11.6	13.4	12.1	10 U	10 U	14.5	10 U	10 U	58.9	10 U
Copper	8.8 B	7.1 B	9.7 B	10.7 B	6.5 B	10.4 B	5.0 U	23.8 B	6.8 B	15.1 B
Nickel	29.5 B	18.0 B	13.9 B	12 U	12 U	16.8 B	12 U	28.3 B	58.4	12 U
Zinc	75.4 *	49.0 *	199 *	76.2 *	94.8 *	55.0 *	72.5	110 *	158 *	63.6 *
Conventional Parameters										
Total Organic Halogens (TOX)	88	196	532	290	33	19	102	3,220	181	193
Total Organic Halogens (TOX)	107	173	481	230	41	19	103	3,380	165	199
Total Organic Halogens (TOX)	73	185	502	256	36	21	121	3,250	177	202
Total Organic Halogens (TOX)	81	235	515	275	37	22	108	2,930	170	203
Total Organic Carbon (TOC)	40,400	33,200	74,000	40,900	40,300	15,300	18,500	23,400	23,000	20,000
Total Organic Carbon (TOC)	40,800	33,800	72,700	40,600	40,300	15,200	18,300	25,100	21,700	21,000
Total Organic Carbon (TOC)	40,400	33,500	72,500	40,100	40,300	15,100	18,200	25,100	21,900	19,900
Total Organic Carbon (TOC)	40,500	33,200	71,400	39,500	40,000	15,000	18,000	24,900	21,900	20,300
Specific Conductance (umhos/cm)	1,050	3,500	3,100	1,400	1,400	450	900	1,300	15,000	8,000
Specific Conductance (umhos/cm)	1,000	3,600	4,200	1,400	1,400	470	1,100	1,300	7,500	8,000
Specific Conductance (umhos/cm)	950	3,700	6,300	1,400	1,400	470	1,200	1,300	10,000	8,500
Specific Conductance (umhos/cm)	900	3,700	4,300	2,000	2,000	480	1,150	1,400	60,000	8,500
pH	6.55	6.75	6.98	6.76	6.76	4.74	6.09	7.80	6.72	7.04
pH	6.45	6.74	6.94	7.05	7.05	4.66	5.81	7.05	6.34	7.04
pH	6.45	6.75	6.93	6.66	6.66	4.59	5.78	6.53	6.38	7.05
pH	6.41	6.77	6.93	6.83	6.83	4.65	5.81	6.64	6.18	7.08

Notes: - All compound concentrations are in micrograms per liter (ug/l, or parts per billion), unless noted otherwise.
B - Indicates the reported value is greater than the Instrument Detection Level, but less than the CRDL.
* - Indicates duplicate analysis was not within control limits.
E - Indicates the concentration exceeded the linear calibration range of the GC/MS instrument.
U - Indicates element was analyzed for but not detected. The number shown is the detection limit.

TABLE 4 (Continued)
SUMMARY OF DETECTED COMPOUNDS IN GROUNDWATER MONITORING WELLS
TEXTRON-LYCOMING, STRATFORD, CONNECTICUT
SEPTEMBER 23 - 25, 1991

	Well MW-5D	Well MW-6	Well MW-7	Well MW-8	Well MW-9S	Well MW-9I	Well MW-9D	Well MW-10S	Well MW-10I	Well MW-10D
8010 Volatile Organic Compounds										
1,1-dichloroethane	1 U	1 U	2.1	1 U	1 U	1 U	1 U	2.4	7.7	5.8
1,1-dichloroethene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2.7
1,2-trans-dichloroethene	1.4	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	280 E
1,2-dichloropropane	1 U	1 U	4.4	1 U	1 U	1 U	1 U	1 U	1 U	1 U
trichloroethene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	4.1
trichlorofluoromethane	1 U	1 U	70 E	1 U	1 U	1 U	1 U	1 U	1 U	1 U
vinyl chloride	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.1	1 U	2.3
Inorganic Compounds										
Cadmium	13.4	3.0 U	3.0 U	3.0 U	25.7	12.1	12.5	3.0 U	8.0	14.0
Chromium (Total)	10 U	10 U	10 U	14.2	10 U	11.8	10 U	10 U	10 U	10 U
Copper	32.9	6.3 B	5.5 B	6.13 B	12.9 B	26.5	32.6	5.0 U	20.1 B	26.0
Nickel	16.5 B	12 U	12 U	12 U	32.3 B	12 U	12 U	12 U	12 U	12 U
Zinc	208 *	79.1	45.6	58.9	321	69.9	30.9	48.7	79.7	45.0
Conventional Parameters										
Total Organic Halogens (TOX)	454	199	49	10 U	48	200	108	55	367	717
Total Organic Halogens (TOX)	457	142	53	10 U	48	253	103	59	385	684
Total Organic Halogens (TOX)	447	196	52	10 U	54	244	104	53	349	697
Total Organic Halogens (TOX)	426	190	49	10 U	48	254	108	63	433	633
Total Organic Carbon (TOC)	16,200	18,700	12,300	6,000	18,300	15,800	11,500	12,400	17,400	9,900
Total Organic Carbon (TOC)	14,800	18,200	12,200	6,100	18,200	15,000	11,300	12,500	16,800	9,700
Total Organic Carbon (TOC)	13,000	17,600	11,300	6,300	17,900	14,600	10,800	12,700	15,700	9,300
Total Organic Carbon (TOC)	12,800	17,500	11,000	6,300	17,900	15,000	10,300	13,100	15,500	8,900
Specific Conductance (umhos/cm)	25,000	1,800	680	500	700	15,000	21,200	500	20,000	22,000
Specific Conductance (umhos/cm)	25,000	1,950	680	150	700	17,000	21,000	500	19,500	22,000
Specific Conductance (umhos/cm)	28,000	1,900	680	80	700	16,000	20,300	480	18,000	22,500
Specific Conductance (umhos/cm)	28,000	1,900	650	79	700	16,000	20,800	400	18,000	22,500
pH	6.44	7.42	6.06	5.04	5.91	6.30	6.24	6.45	6.96	5.59
pH	6.44	6.57	6.12	4.80	6.03	6.30	6.39	6.98	6.93	5.69
pH	6.43	6.37	6.11	5.26	6.24	6.40	6.43	6.99	6.84	5.61
pH	6.44	6.55	6.17	5.21	6.22	6.56	6.45	6.70	6.78	5.63

Notes: - All volatile organic, inorganic and conventional compound concentrations are in ug/l unless noted otherwise.
B - Indicates the reported value is greater than the Instrument Detection Level, but less than the CRDL.

TABLE 4 (Continued)
SUMMARY OF DETECTED COMPOUNDS IN GROUNDWATER MONITORING WELLS
TEXTRON-LYCOMING, STRATFORD, CONNECTICUT
SEPTEMBER 23 - 25, 1991

	Well MW-11	Well MW-12	Well MW-12DUP (Duplicate)	Well MW-13
8010 Volatile Organic Compounds				
tetrachloroethene	1 U	13	14	3.8
trichloroethene	1 U	13	14	1.9
Inorganic Compounds				
Copper	6.6 B	5.8 B	5.0 U	5.0 U
Zinc	229	85.1	88.9	95.0
Conventional Parameters				
Total Organic Halogens (TOX)	10 U	24	22	19
Total Organic Halogens (TOX)	10 U	22	29	22
Total Organic Halogens (TOX)	10 U	24	30	29
Total Organic Halogens (TOX)	10 U	36	31	26
Total Organic Carbon (TOC)	17,000	7,900	7,800	8,300
Total Organic Carbon (TOC)	17,000	7,900	7,800	8,200
Total Organic Carbon (TOC)	16,700	7,800	7,800	8,200
Total Organic Carbon (TOC)	16,700	7,900	7,800	8,200
Specific Conductance (umhos/cm)	110	420	420	480
Specific Conductance (umhos/cm)	100	430	430	460
Specific Conductance (umhos/cm)	100	430	430	470
Specific Conductance (umhos/cm)	100	430	430	465
pH	6.02	5.71	5.71	5.68
pH	5.83	5.74	5.74	5.36
pH	5.83	5.80	5.80	5.31
pH	5.82	5.84	5.84	5.27

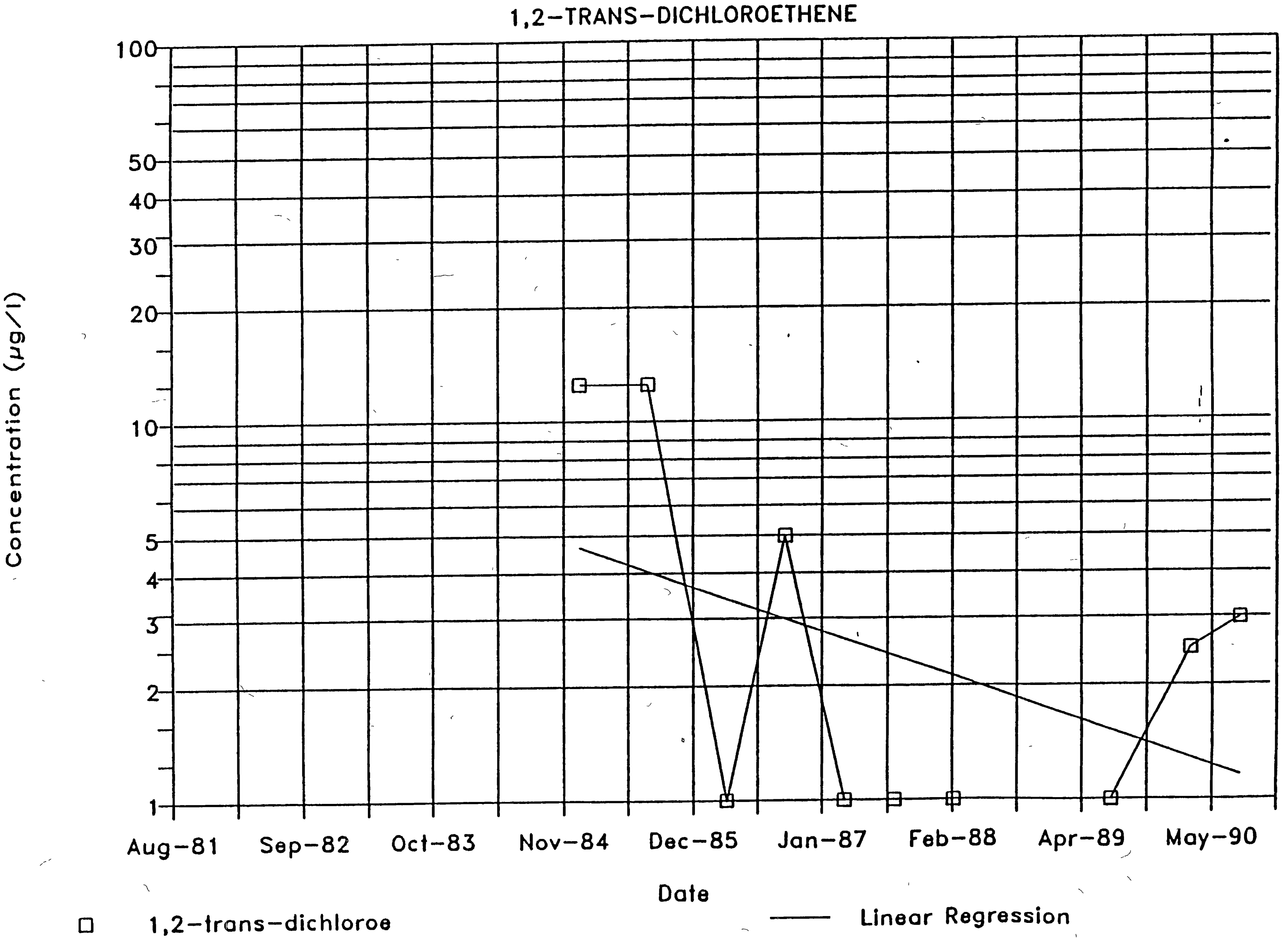
Notes: - All volatile organic, inorganic and conventional compound concentrations are in ug/l unless noted otherwise.
B - Indicates the reported value is greater than the Instrument Detection Level, but less than the CRDL.
* - Indicates duplicate analysis was not within control limits.
U - Indicates element was analyzed for but not detected. The number shown is the detection limit.

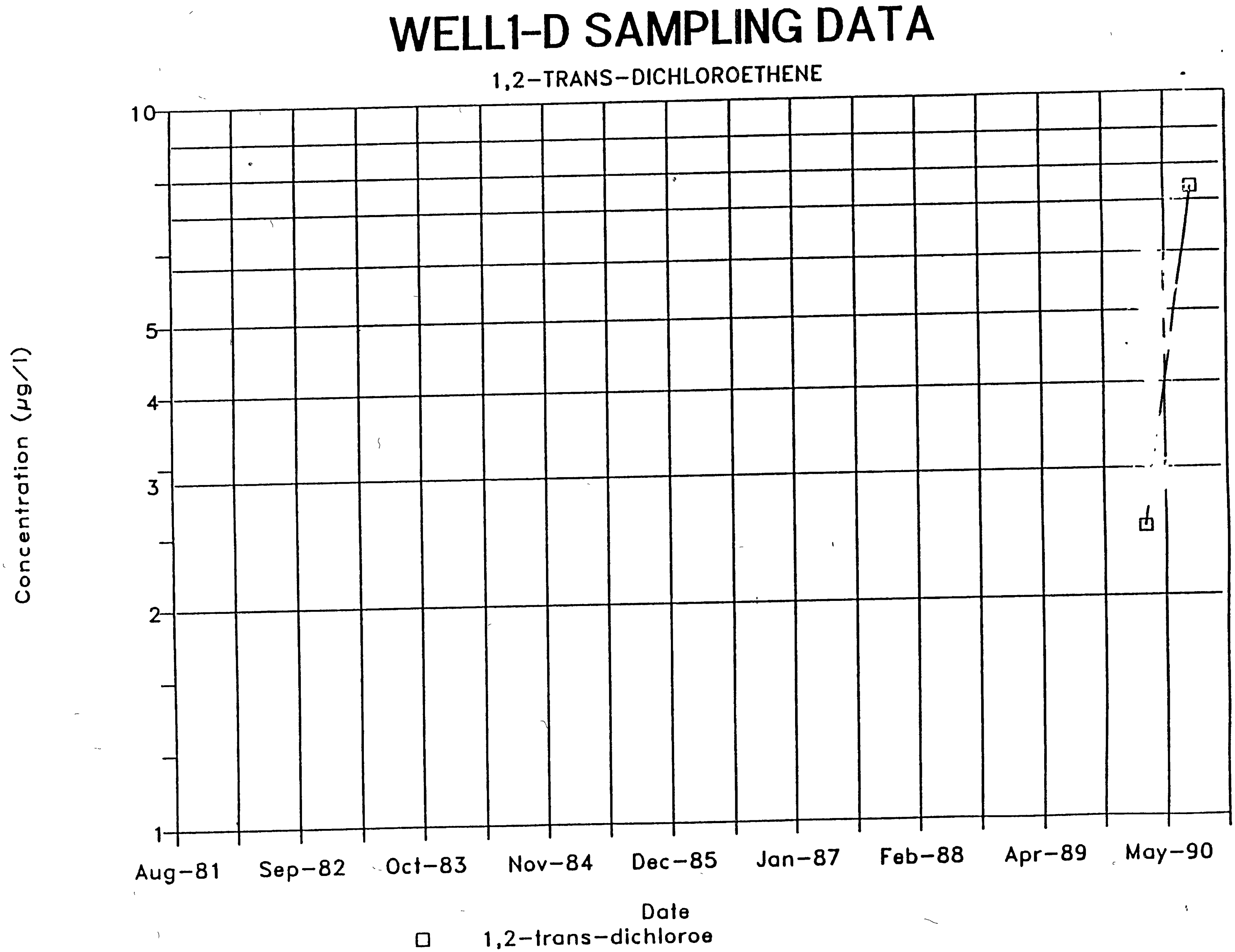
Appendix E-7

Graphical Analysis of Quarterly Groundwater Monitoring Analytical Data

WehranEnviroTech

WELL1 SAMPLING DATA

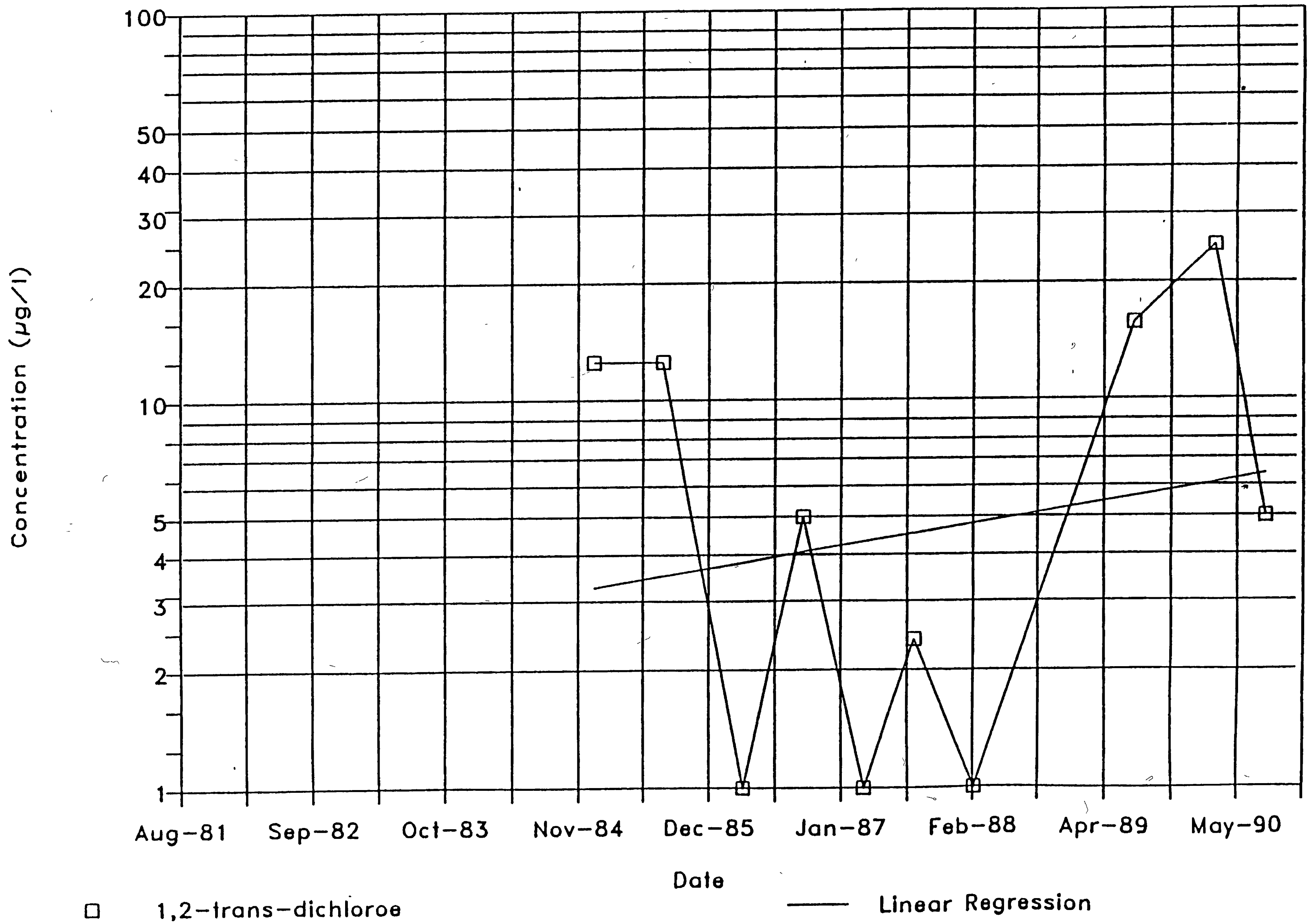


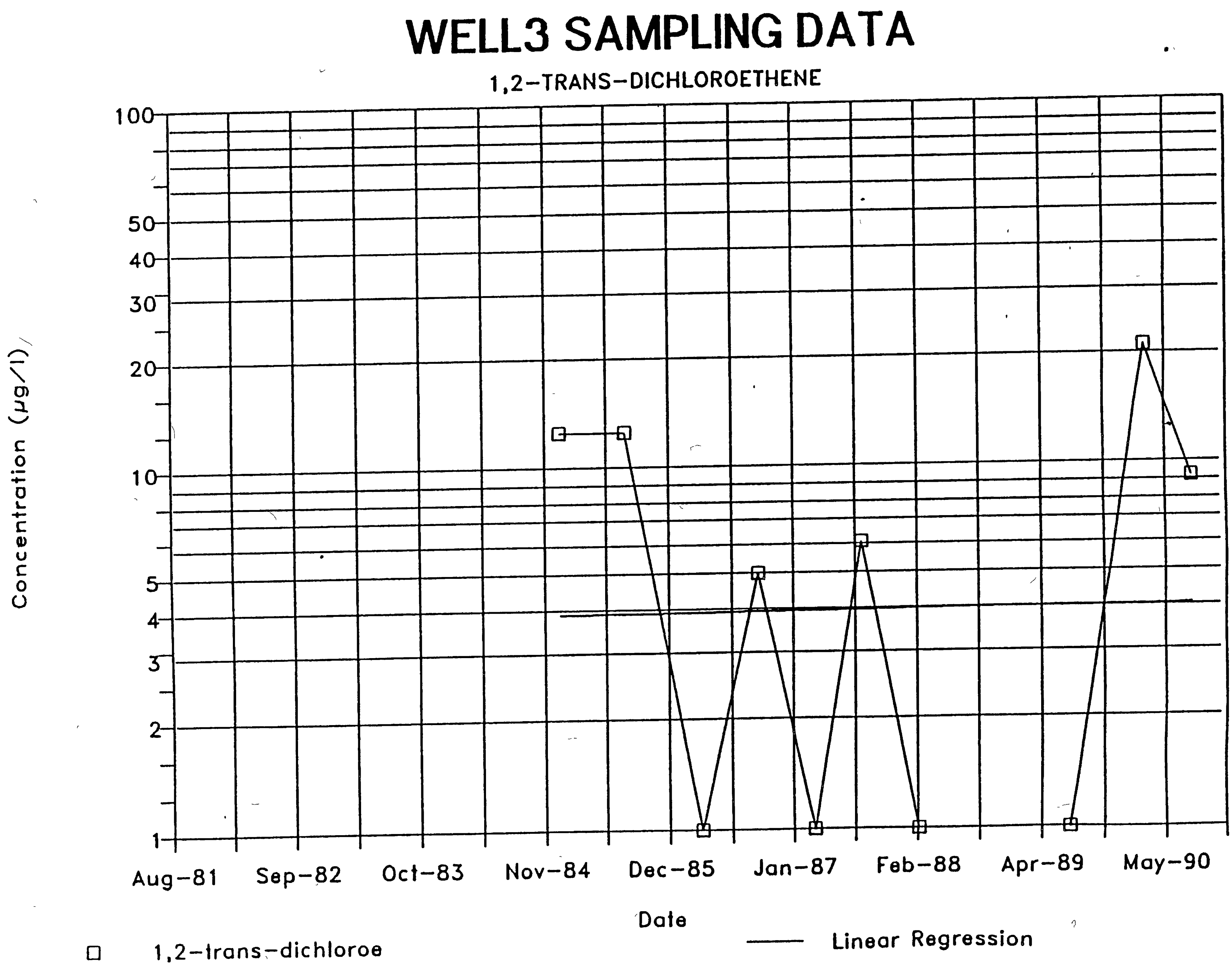


WELL1-D SAMPLING DATA
1,2-TRANS-DICHLOROETHENE
Concentration (μg/l)
10
5
4
3
2
1
Aug-81
Sep-82
Oct-83
Nov-84
Dec-85
Jan-87
Feb-88
Apr-89
May-90
Date
1,2-trans-dichloroe

WELL2 SAMPLING DATA

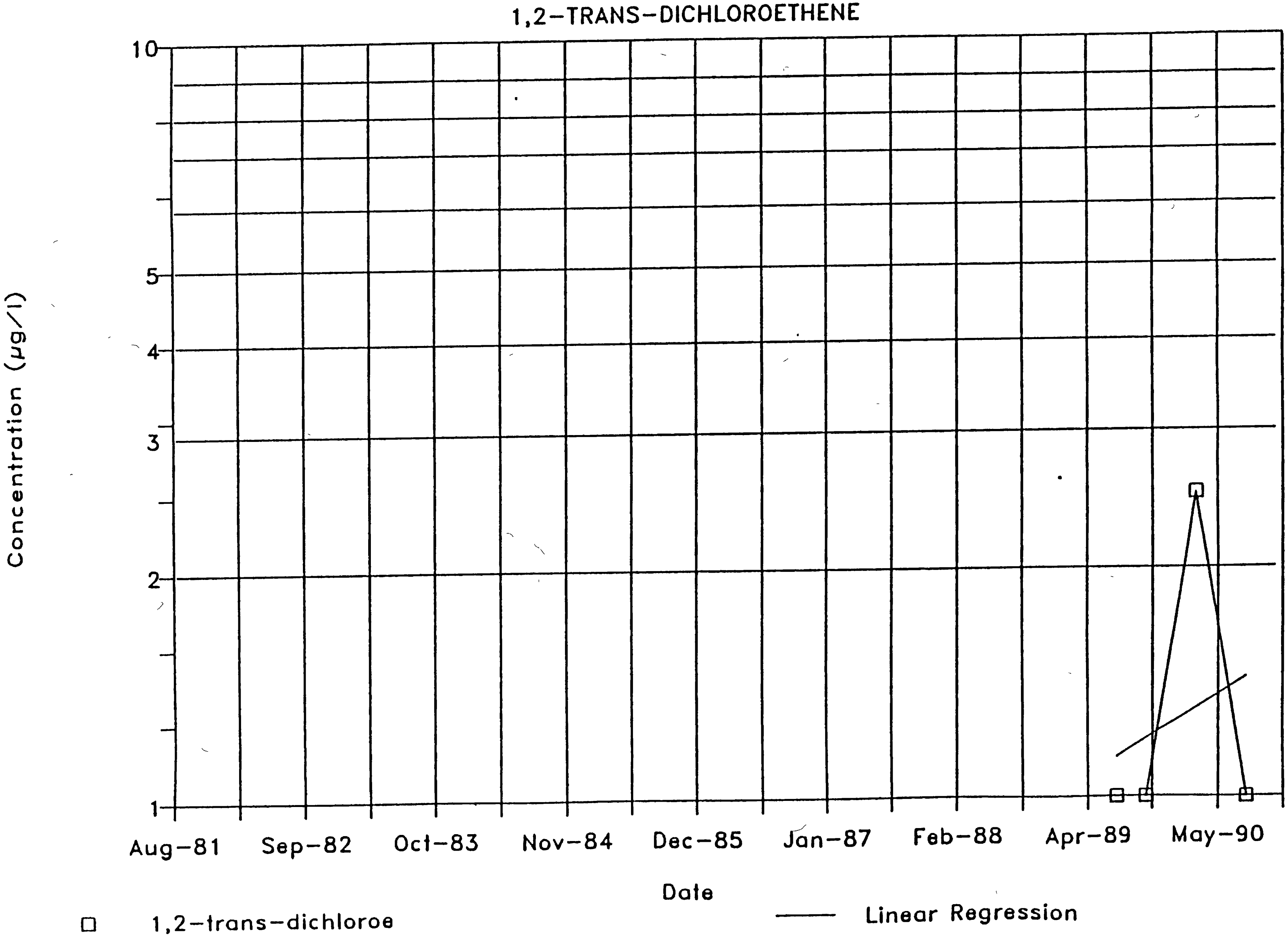
1,2-TRANS-DICHLOROETHENE



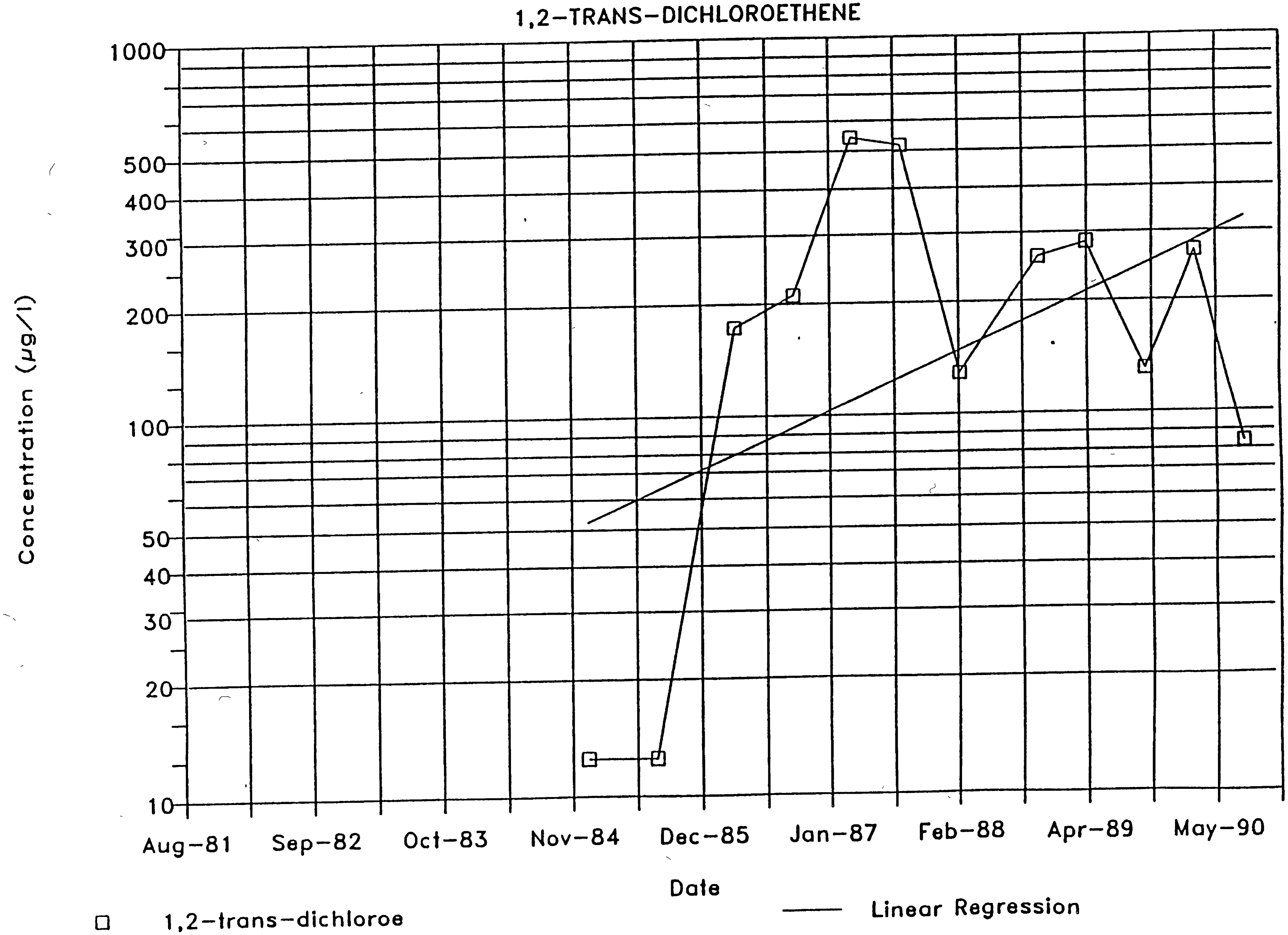


WELL3 SAMPLING DATA
1,2-TRANS-DICHLOROETHENE
Concentration (µg/l)
100
50
40
30
20
10
5
4
3
2
1
Aug-81
Sep-82
Oct-83
Nov-84
Dec-85
Jan-87
Feb-88
Apr-89
May-90
Date
1,2-trans-dichloroe
Linear Regression

WELL3-D SAMPLING DATA

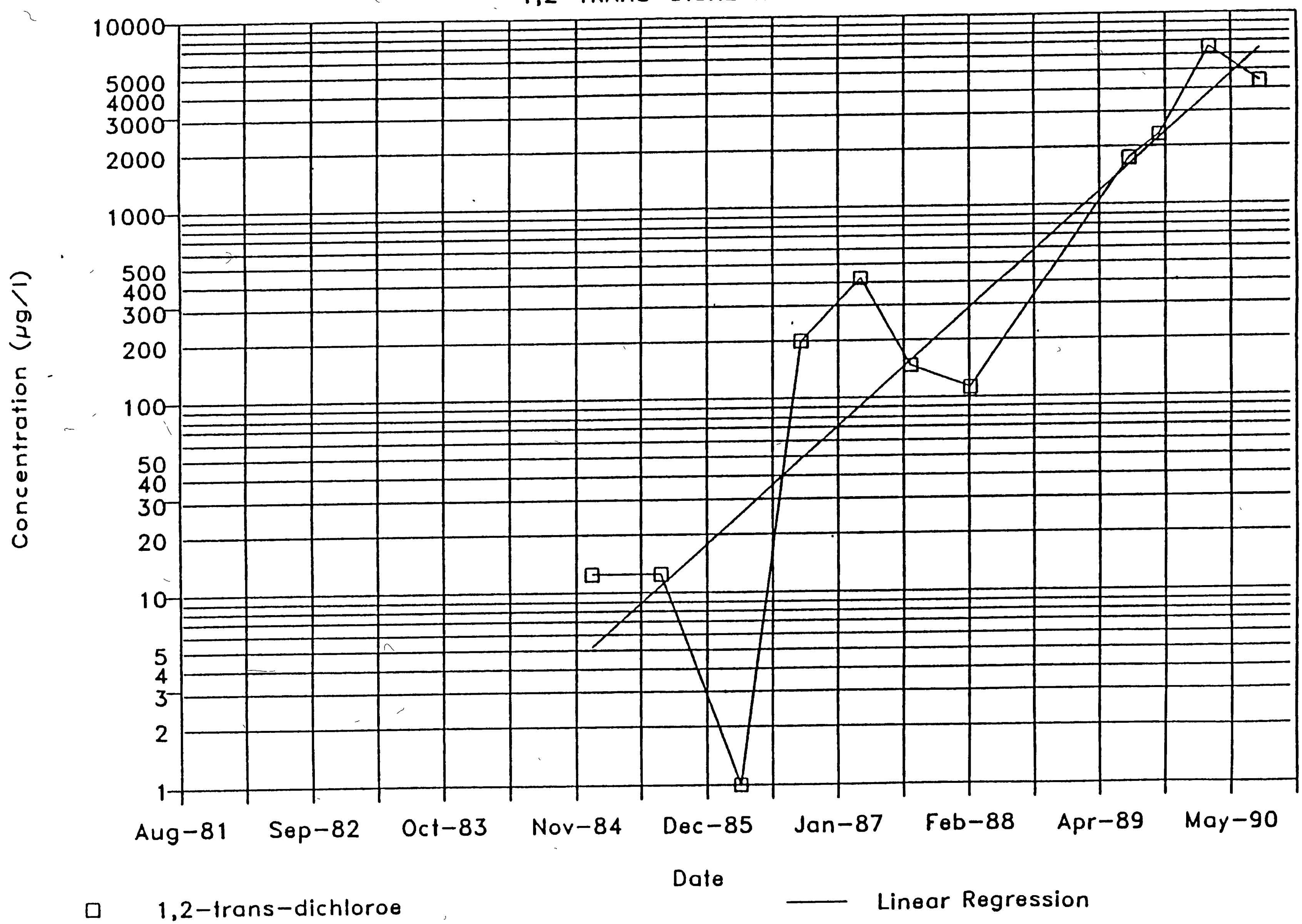


WELL4 SAMPLING DATA



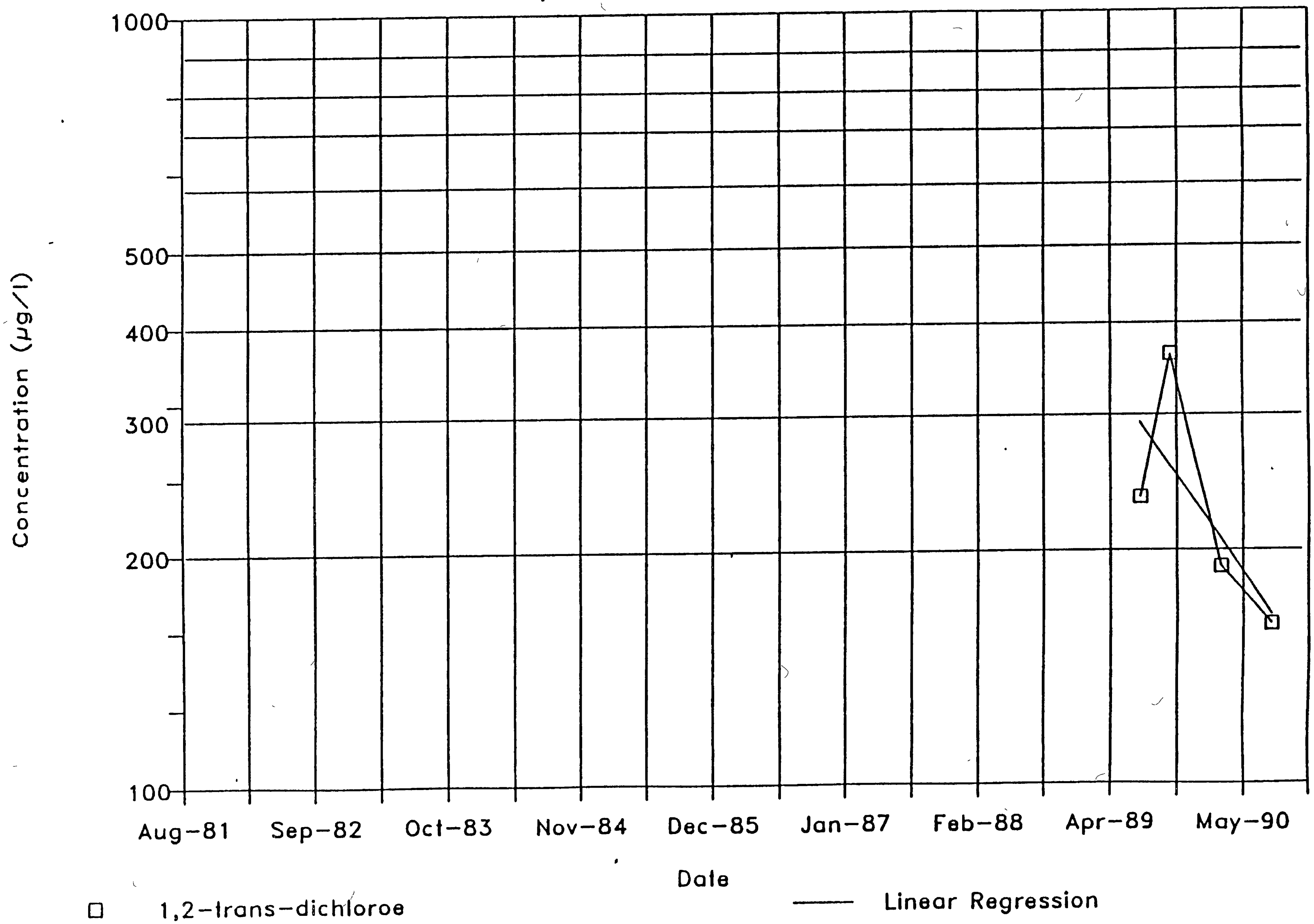
WELL5 SAMPLING DATA

1,2-TRANS-DICHLOROETHENE



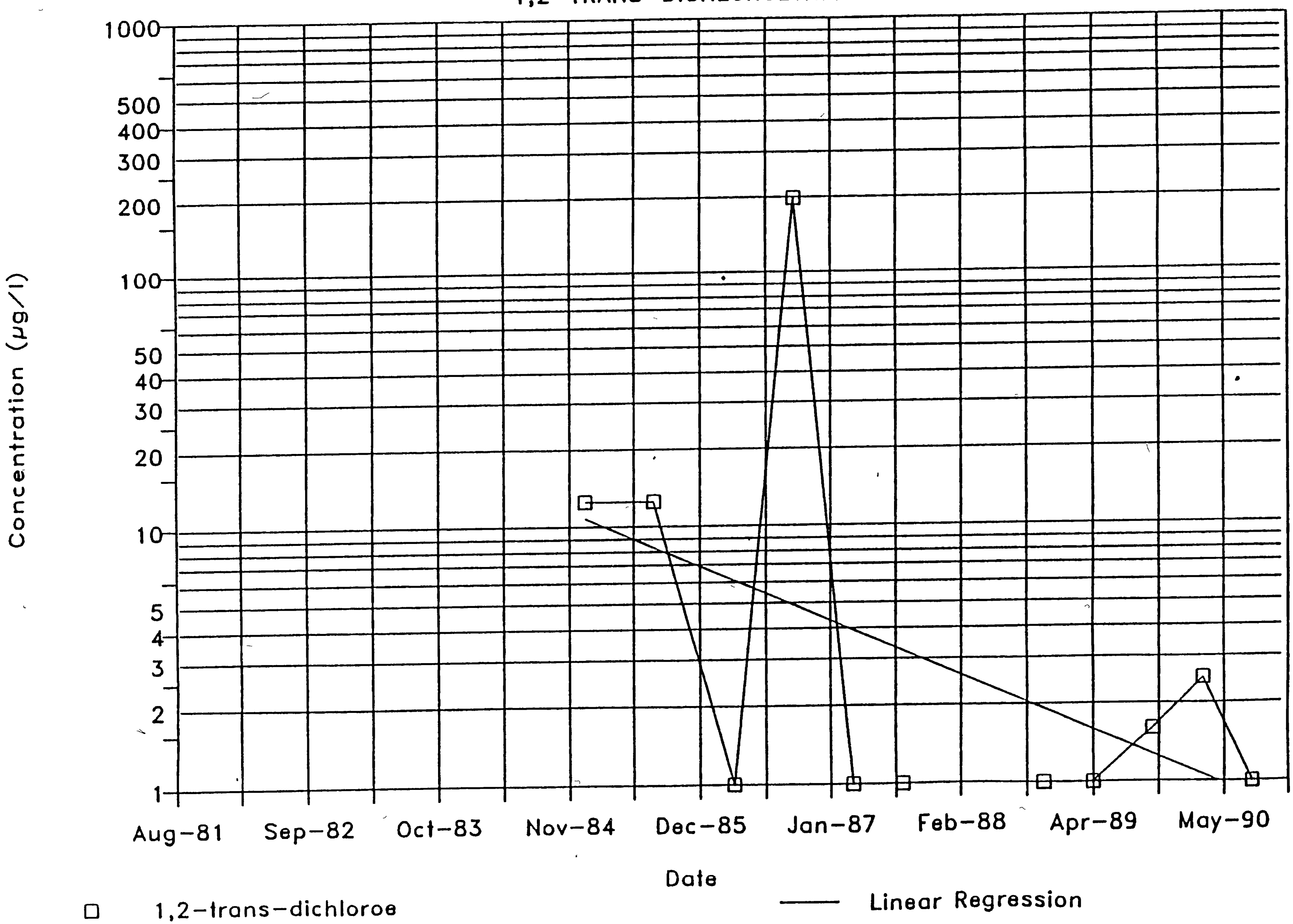
WELL5-D SAMPLING DATA

1,2-TRANS-DICHLOROETHENE

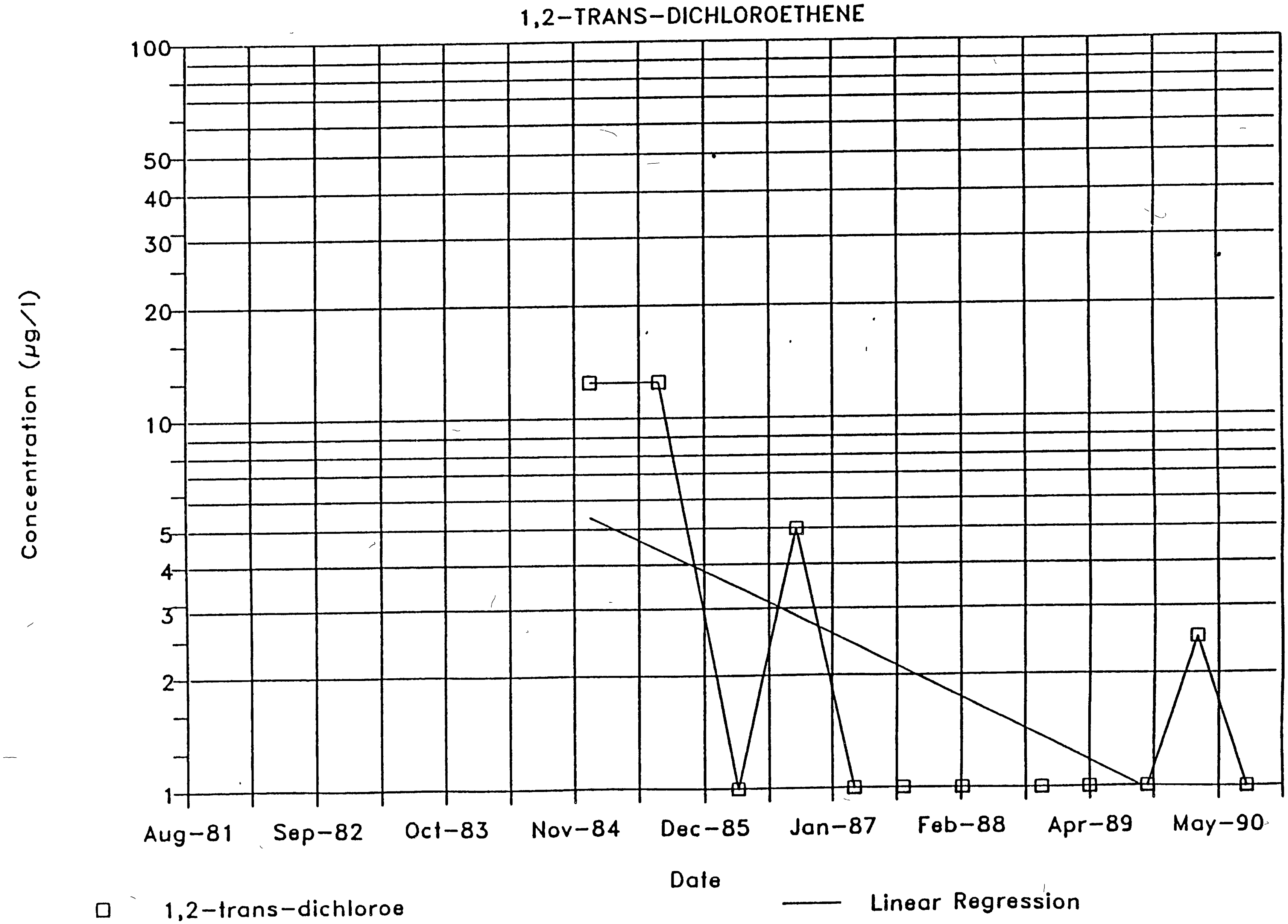


WELL6 SAMPLING DATA

1,2-TRANS-DICHLOROETHENE

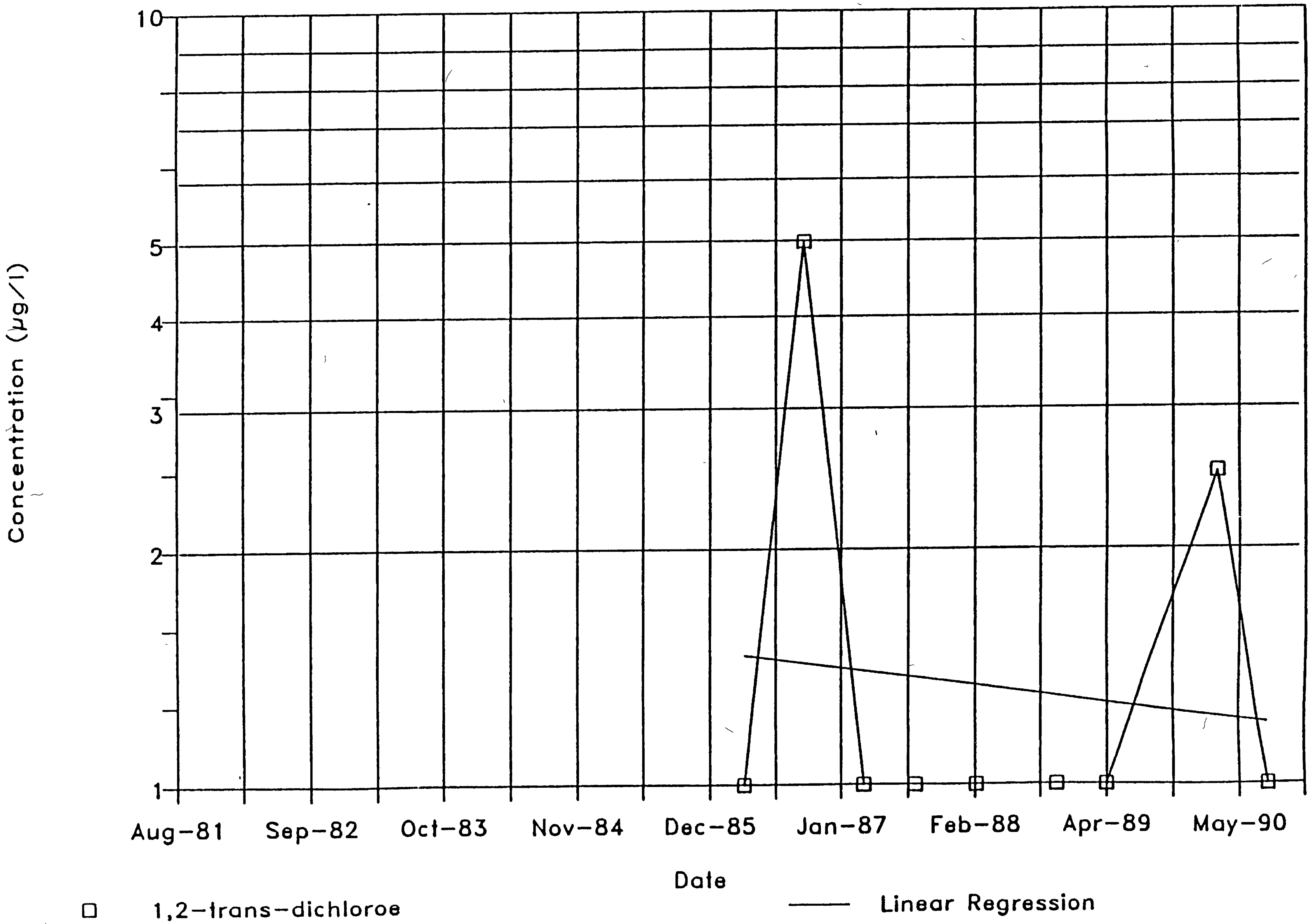


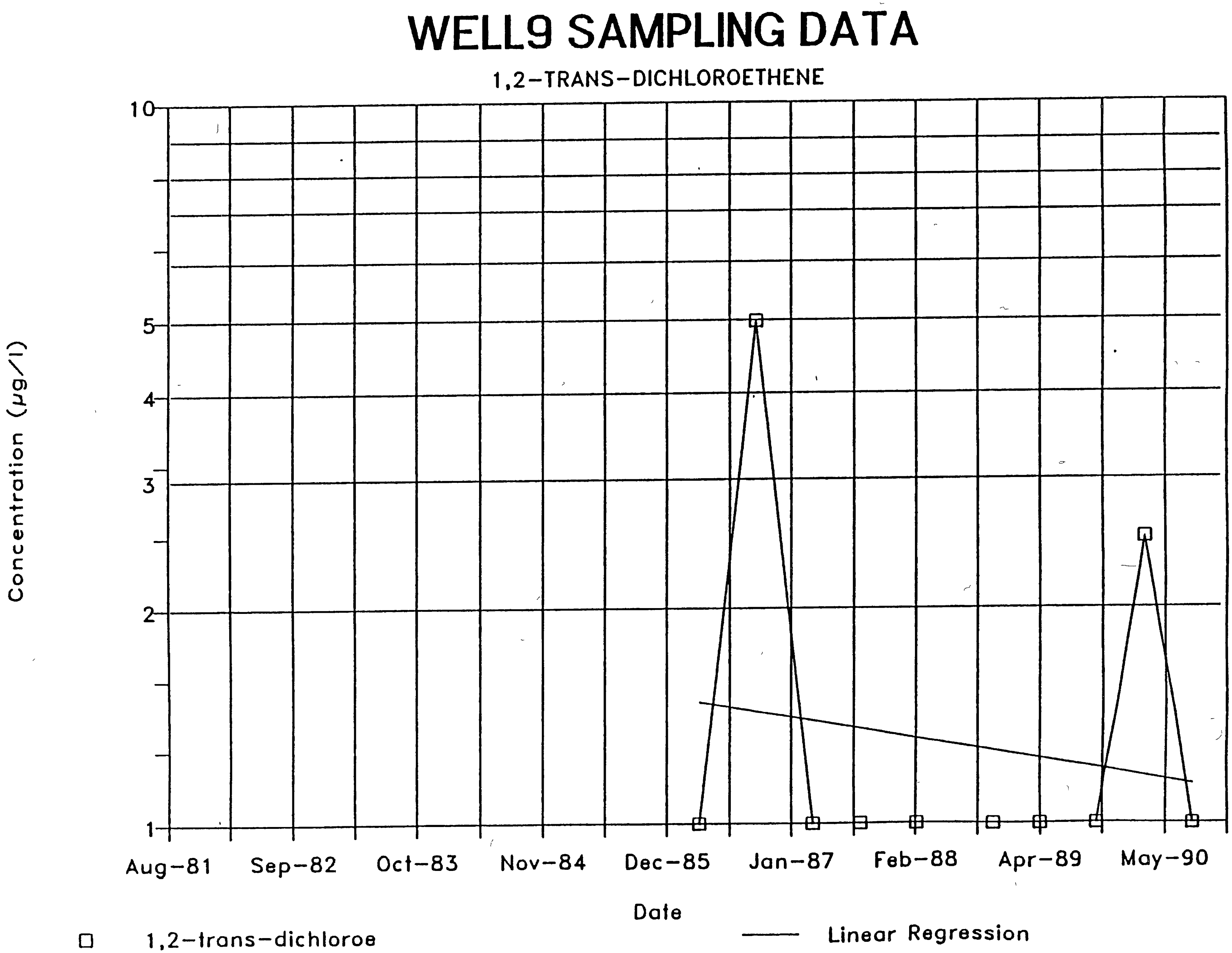
WELL7 SAMPLING DATA



WELL8 SAMPLING DATA

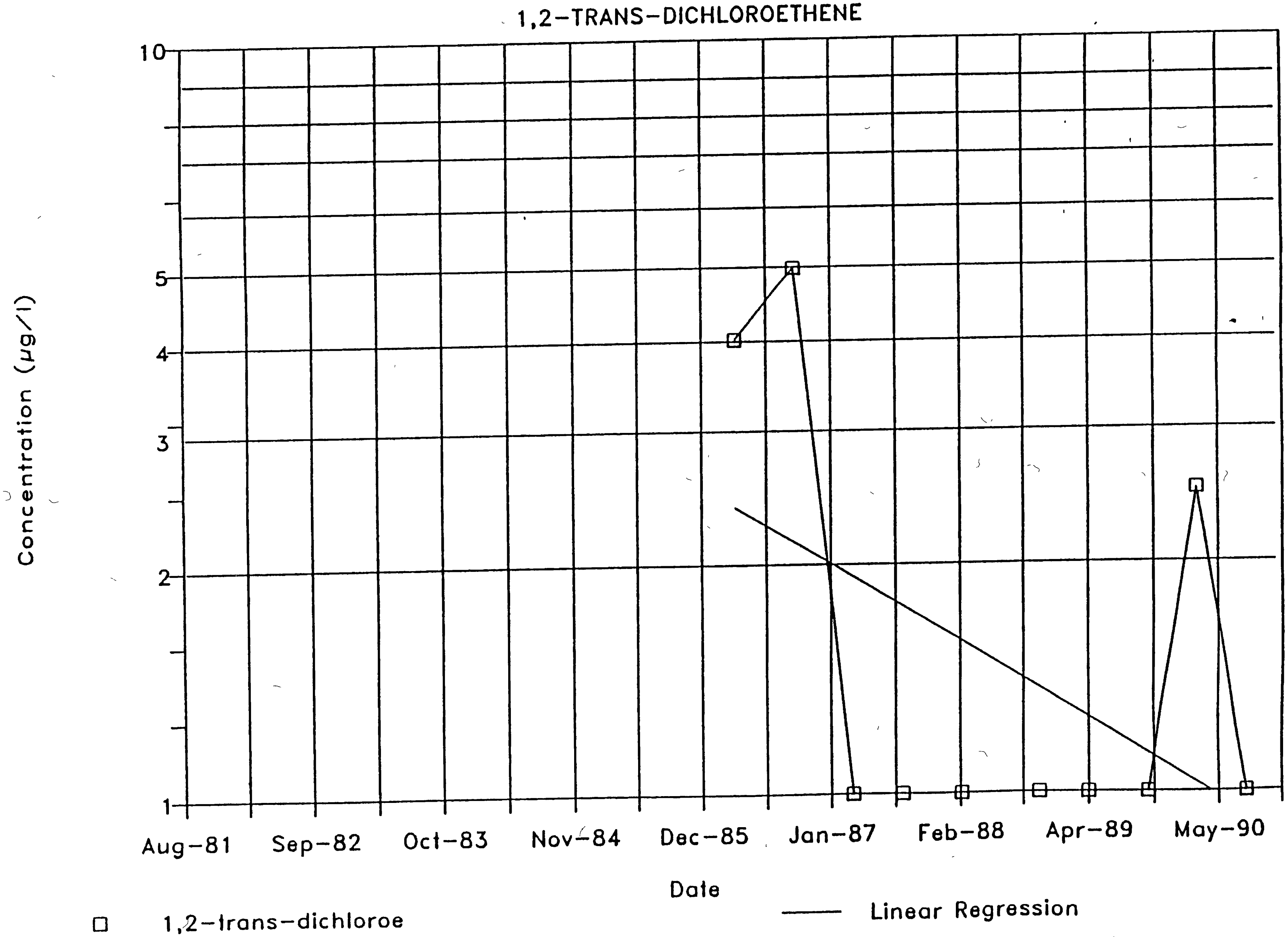
1,2-TRANS-DICHLOROETHENE





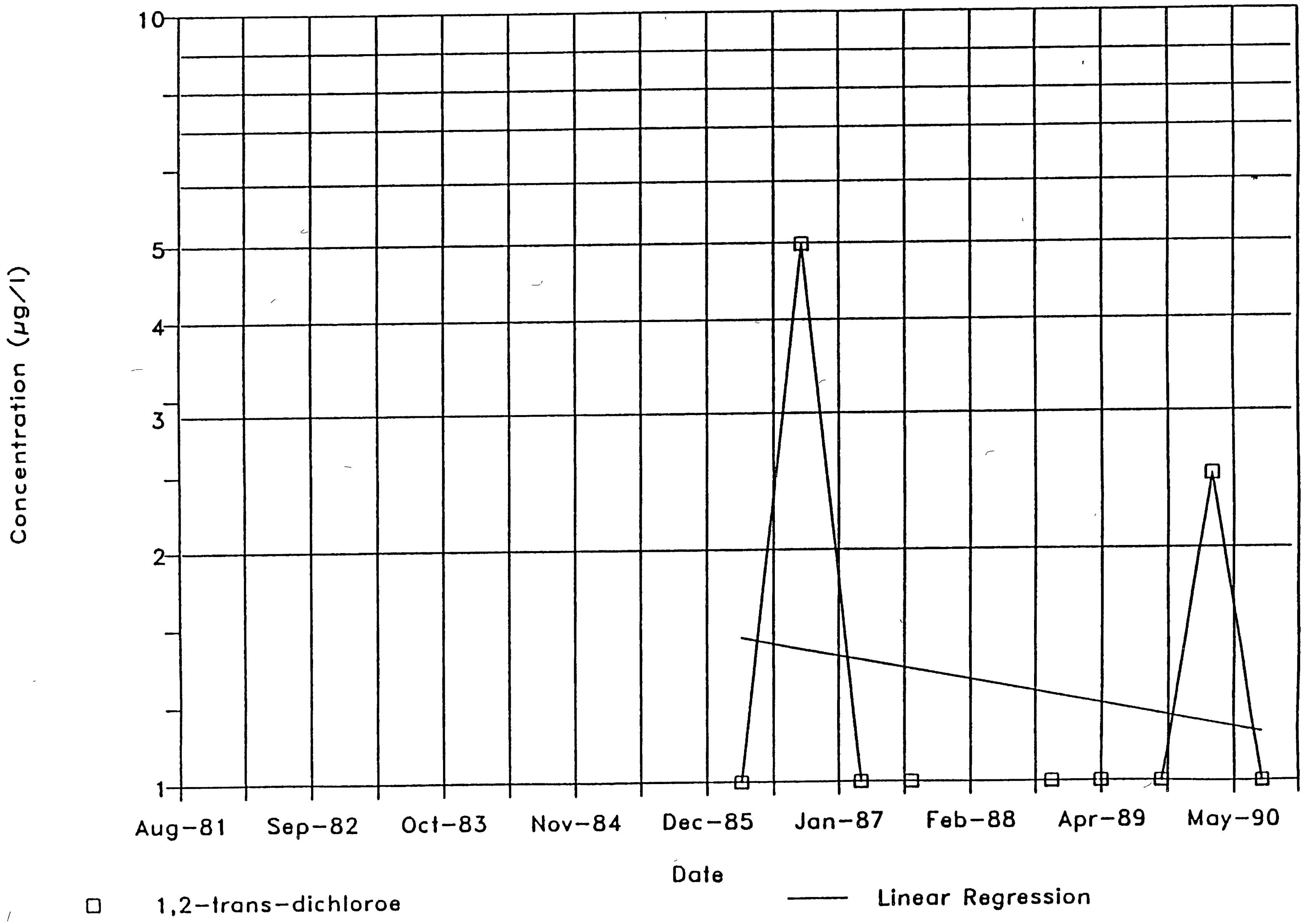
WELL9 SAMPLING DATA
1,2-TRANS-DICHLOROETHENE
10
5
4
3
2
1
Concentration (μg/l)
Aug-81
Sep-82
Oct-83
Nov-84
Dec-85
Jan-87
Feb-88
Apr-89
May-90
Date
1,2-trans-dichloroe
Linear Regression

WELL10 SAMPLING DATA



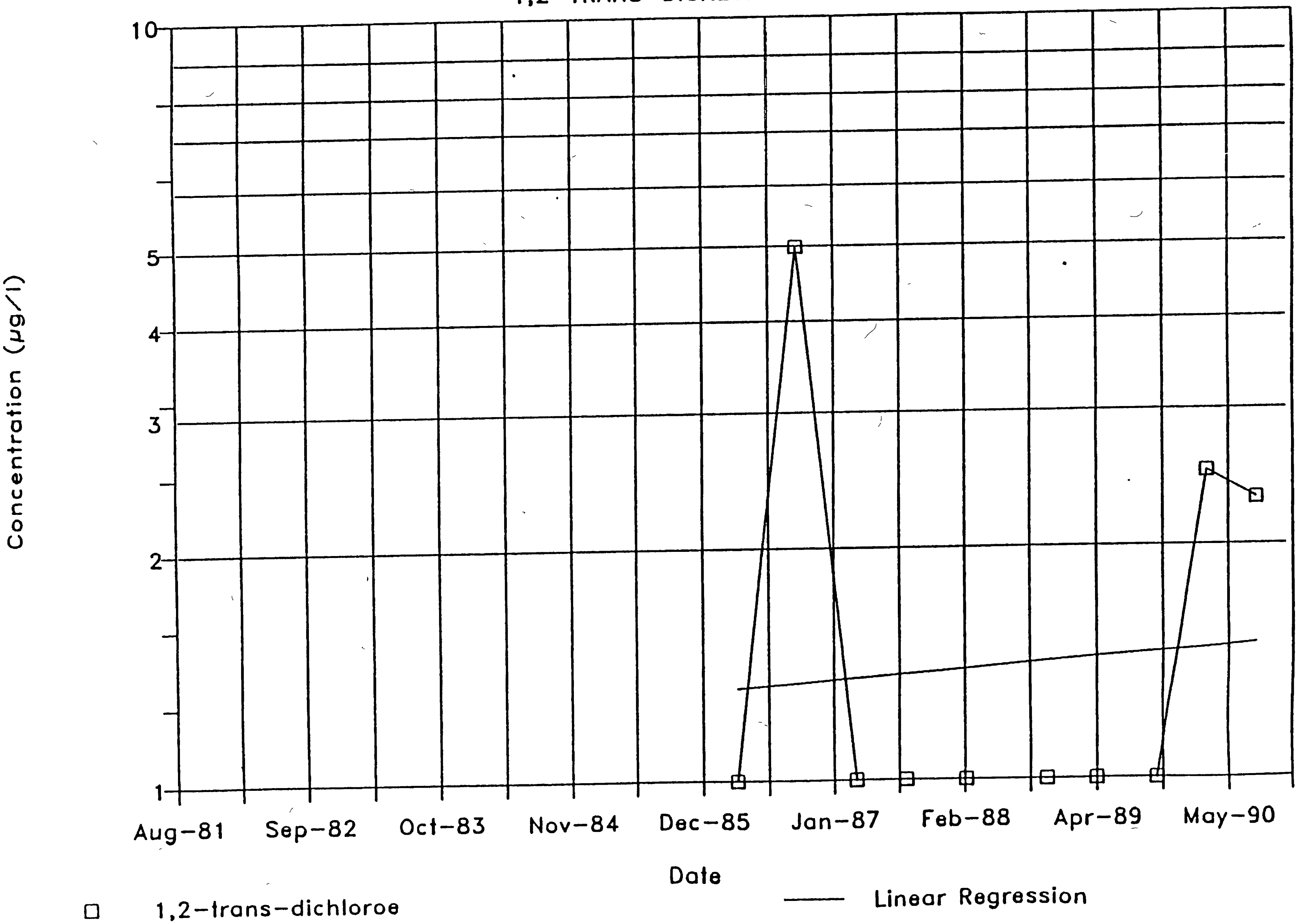
WELL11 SAMPLING DATA

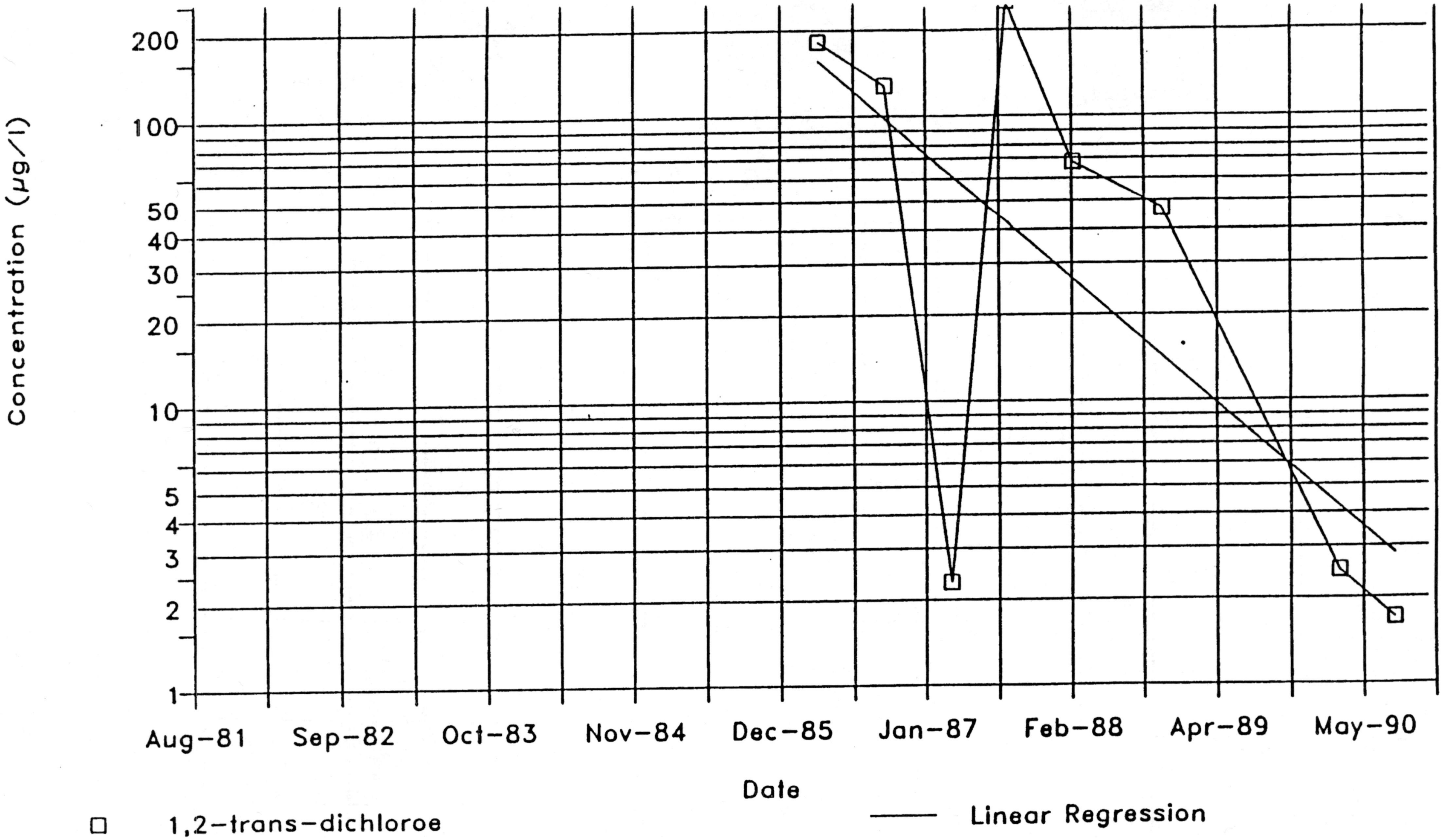
1,2-TRANS-DICHLOROETHENE

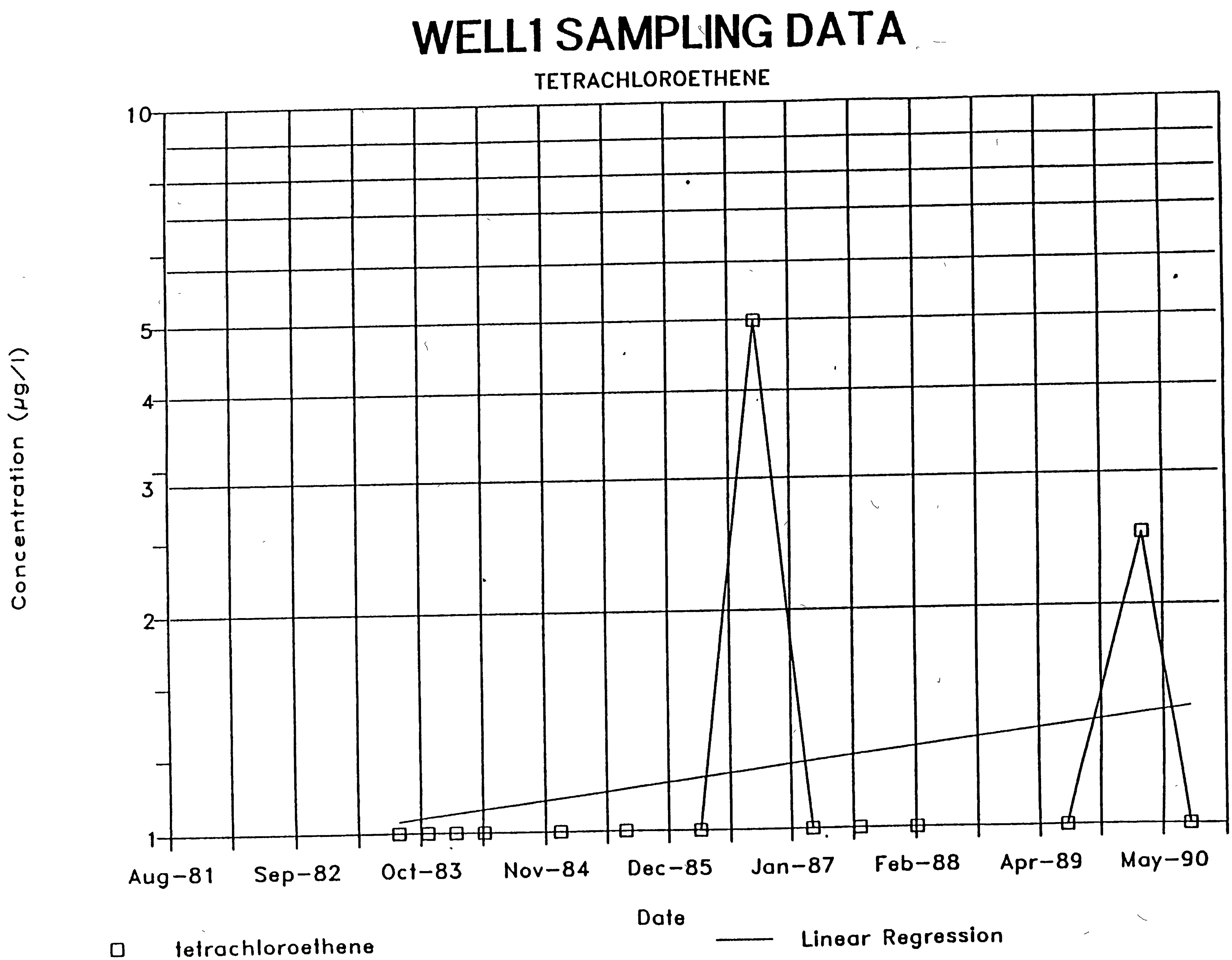


WELL12 SAMPLING DATA

1,2-TRANS-DICHLOROETHENE



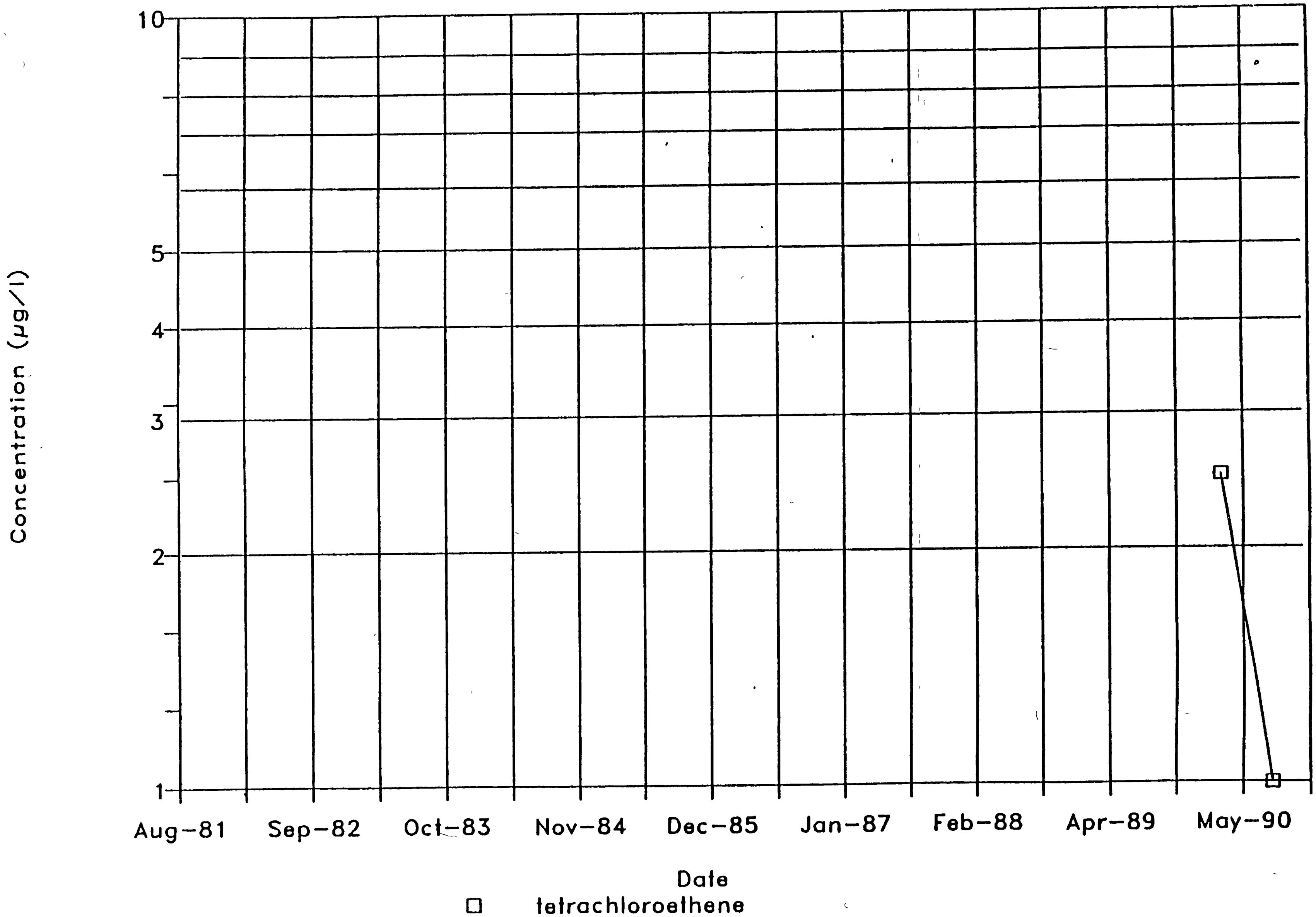

Concentration (µg/l)
200
100
50
40
30
20
10
5
4
3
2
1
Aug-81
Sep-82
Oct-83
Nov-84
Dec-85
Jan-87
Feb-88
Apr-89
May-90
Date
1,2-trans-dichloroe
Linear Regression



WELL1 SAMPLING DATA
TETRACHLOROETHENE
Concentration (µg/l)
10
5
4
3
2
1
Aug-81
Sep-82
Oct-83
Nov-84
Dec-85
Jan-87
Feb-88
Apr-89
May-90
Date
tetrachloroethene
Linear Regression

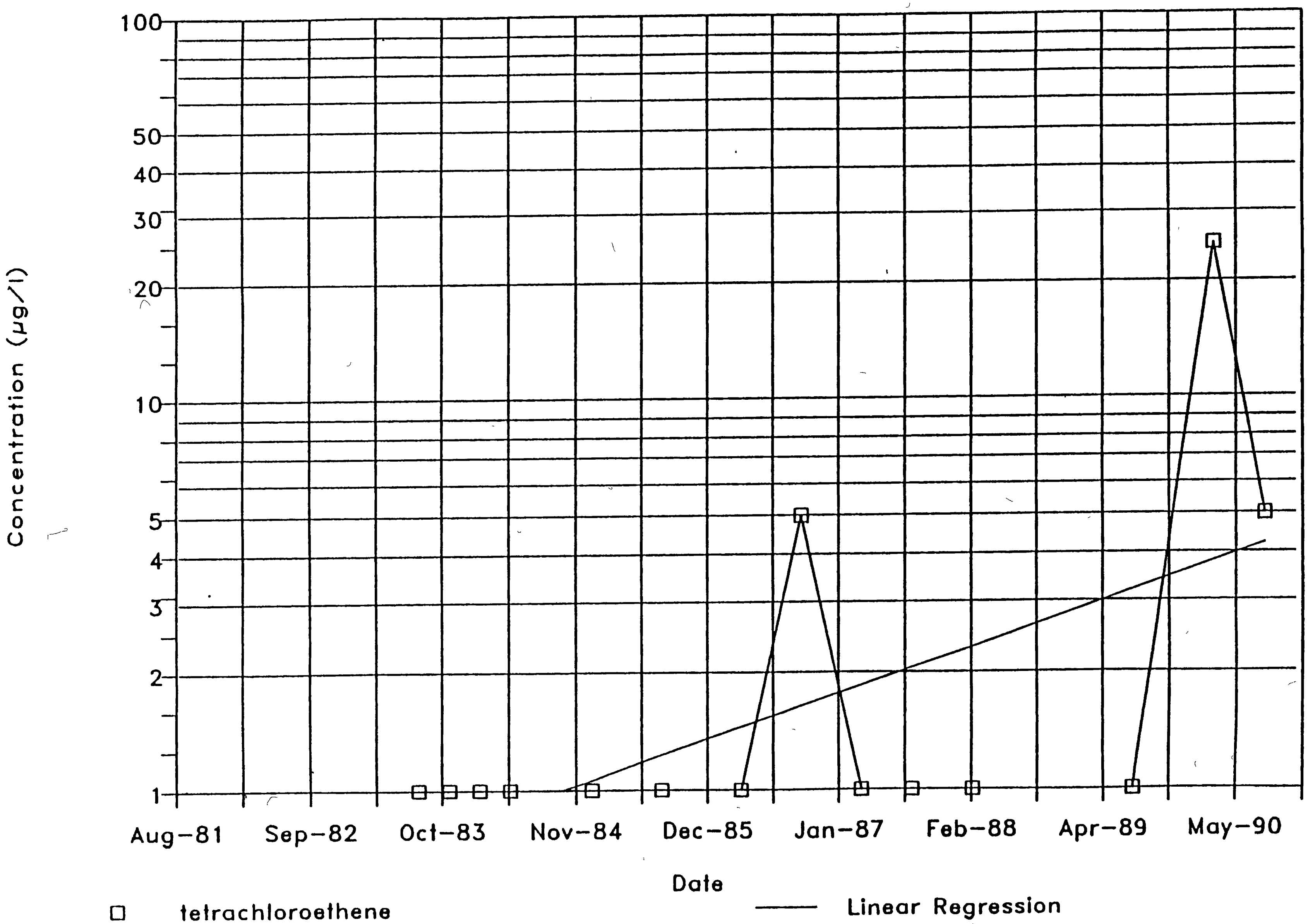
WELL1-D SAMPLING DATA

TETRACHLOROETHENE



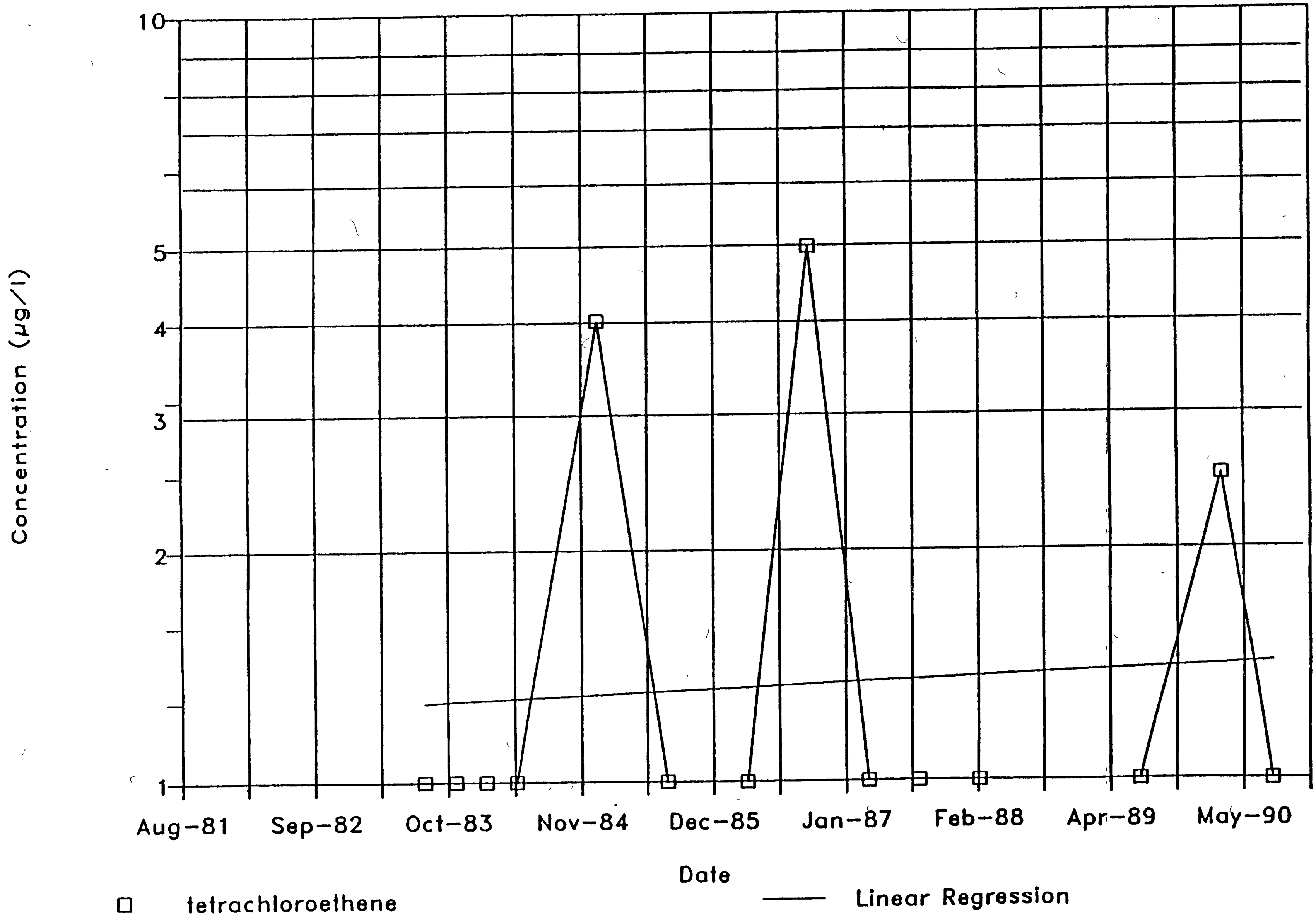
WELL2 SAMPLING DATA

TETRACHLOROETHENE



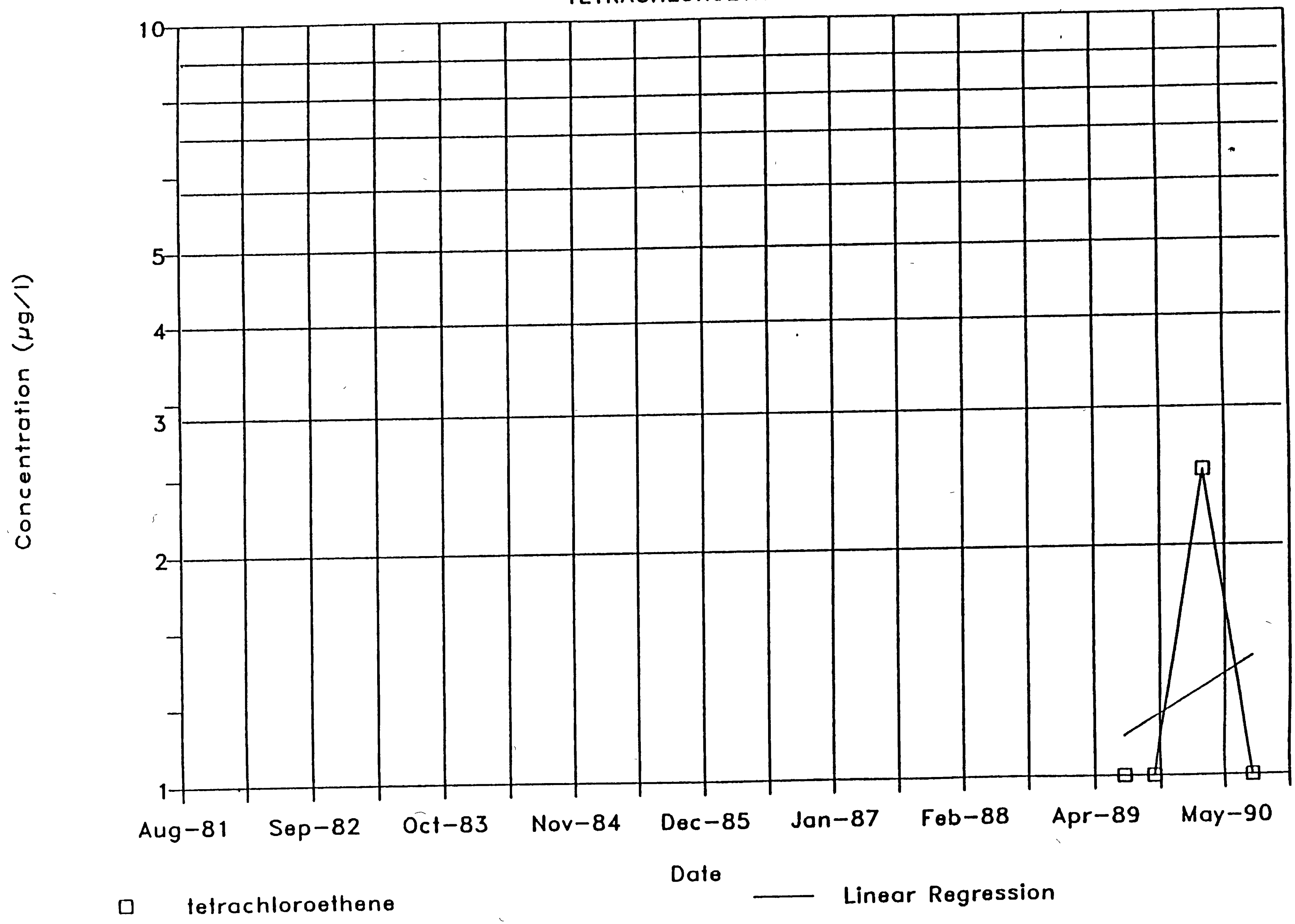
WELL3 SAMPLING DATA

TETRACHLOROETHENE

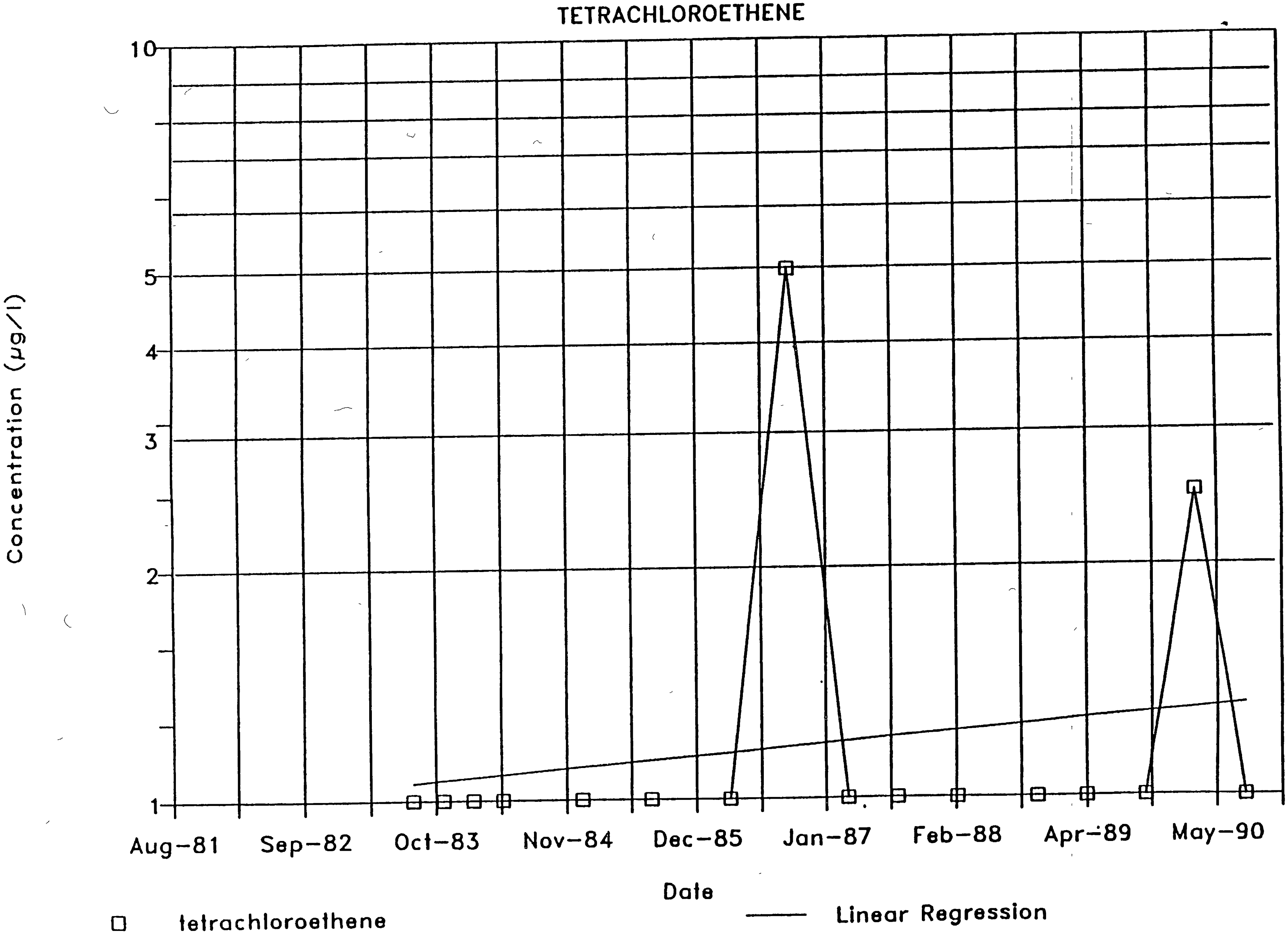


WELL3-D SAMPLING DATA

TETRACHLOROETHENE

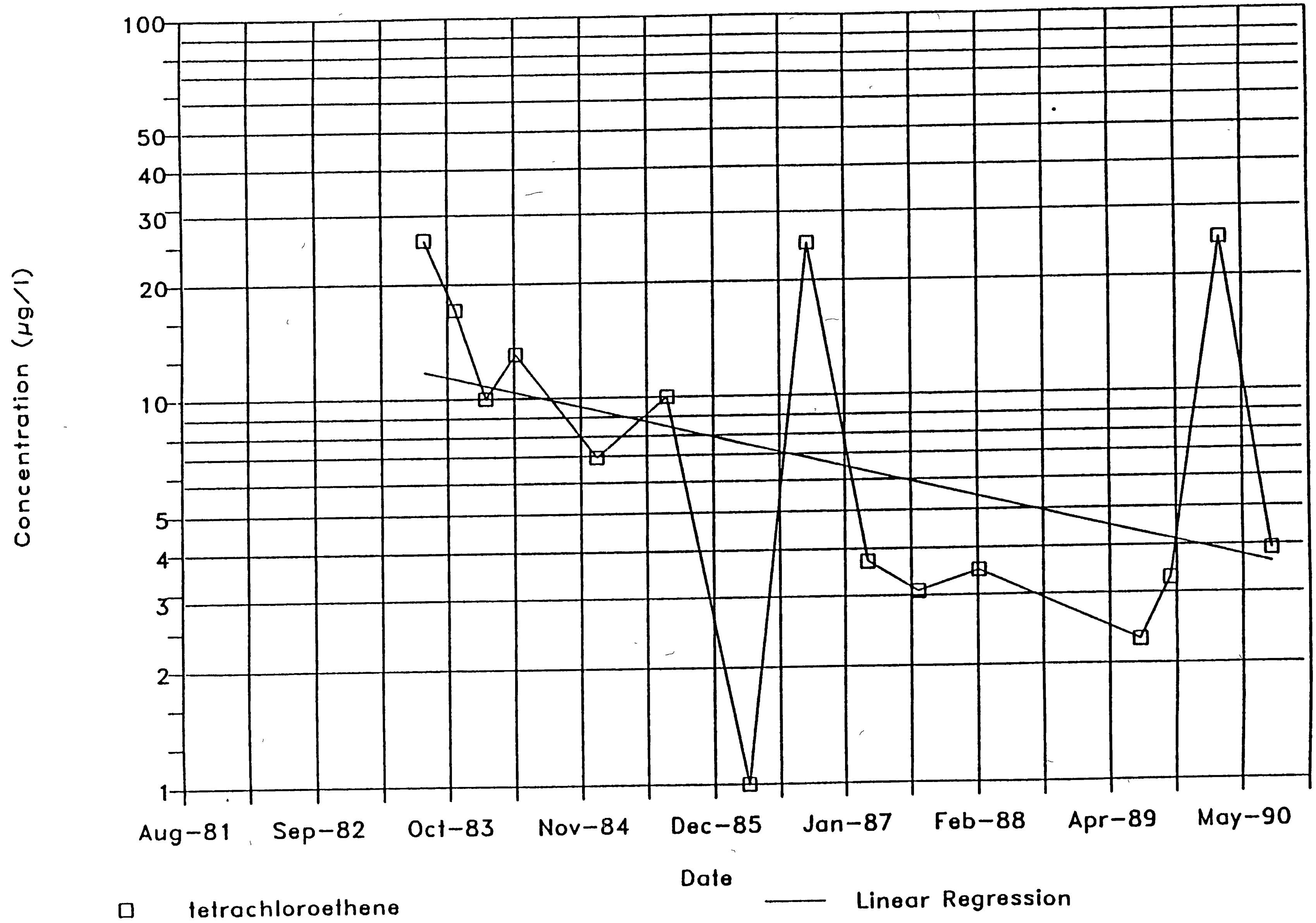


WELL4 SAMPLING DATA



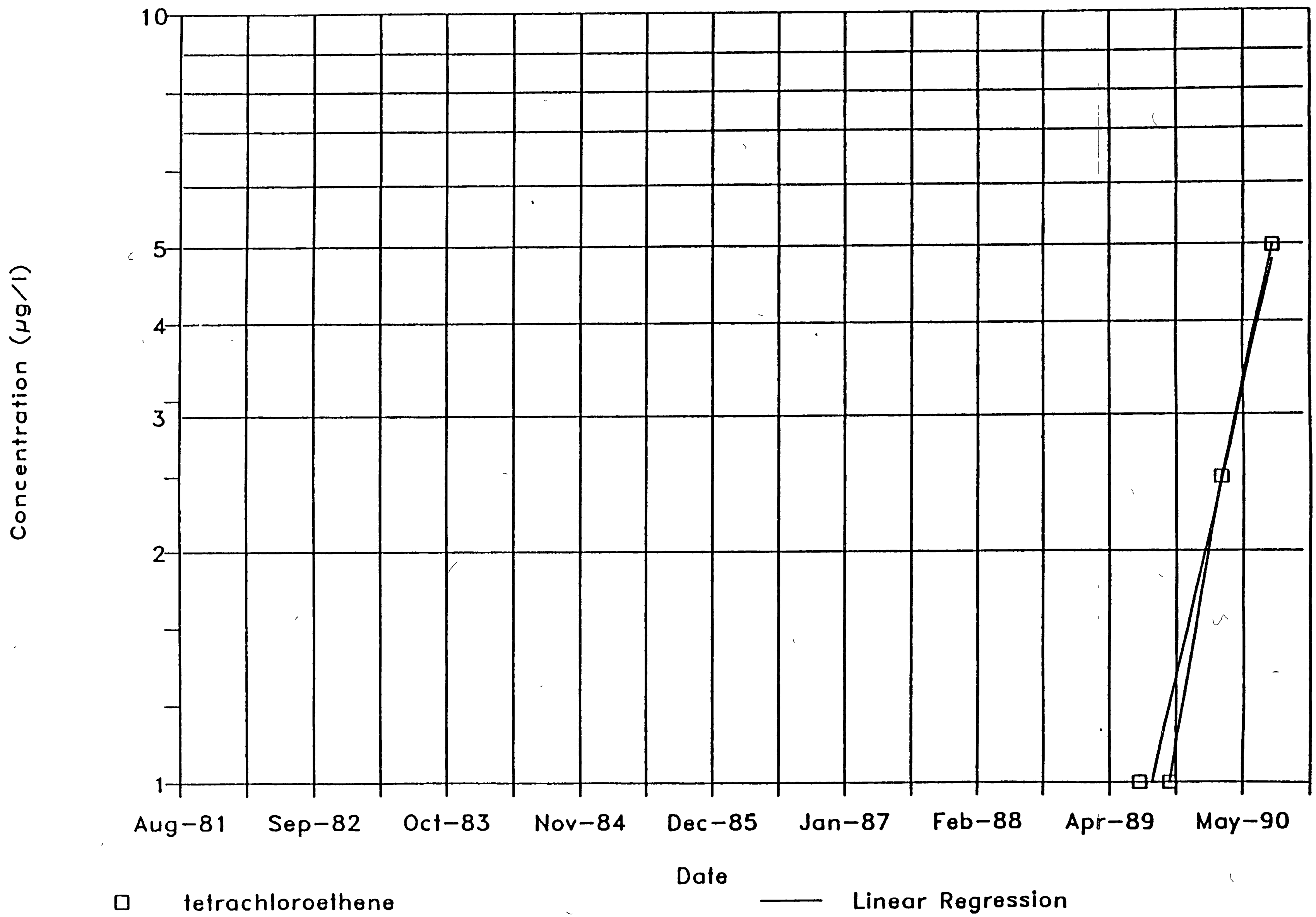
WELL5 SAMPLING DATA

TETRACHLOROETHENE

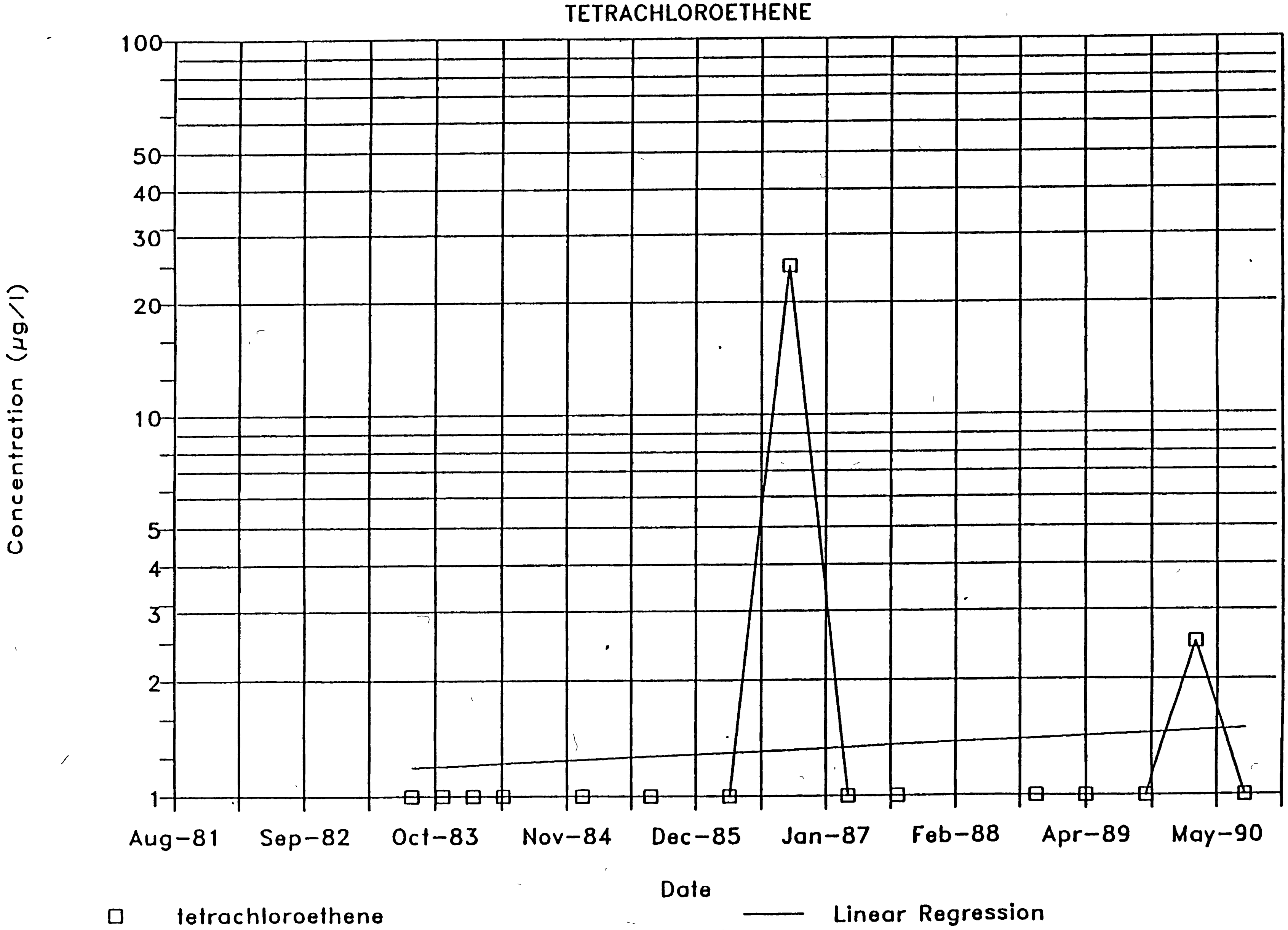


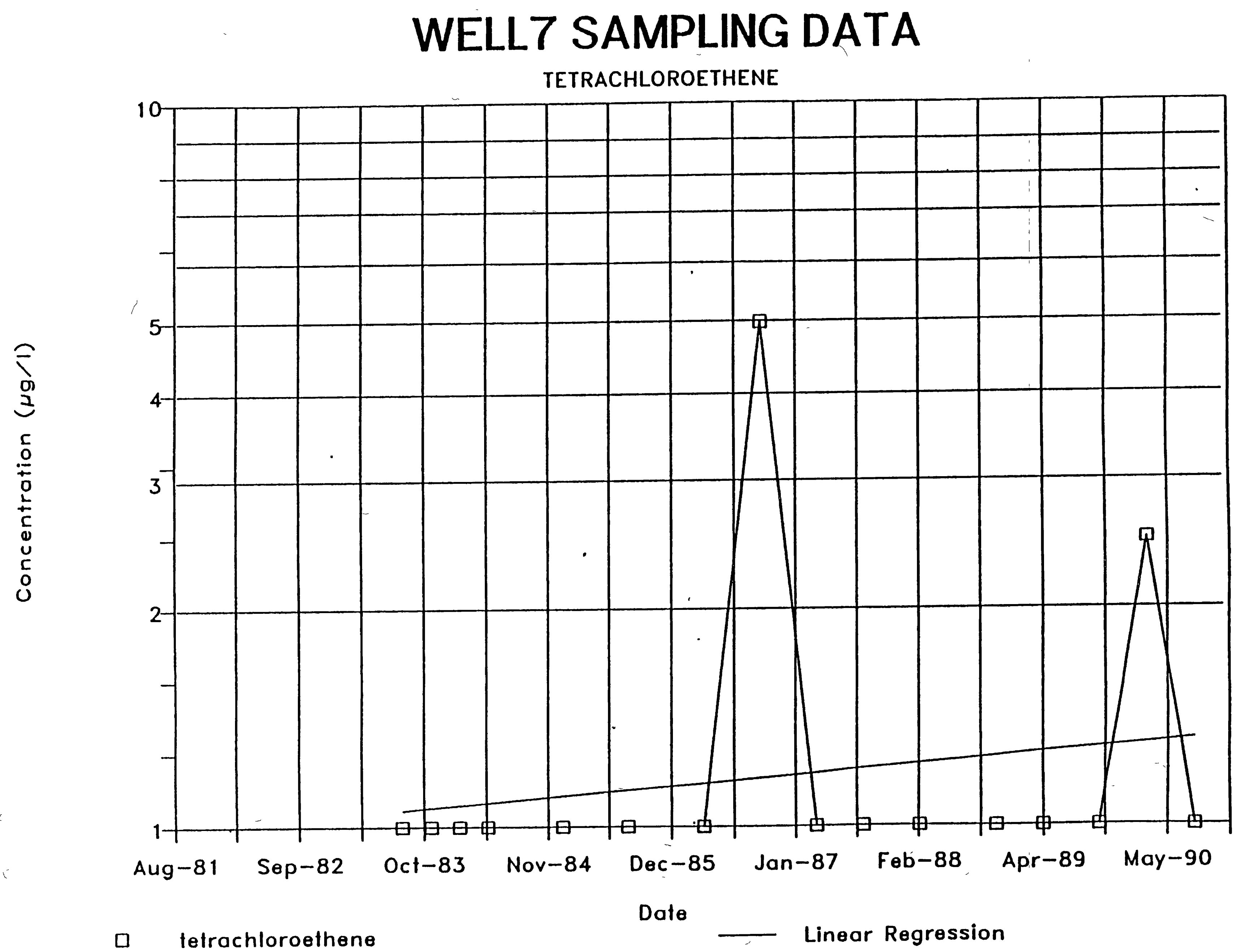
WELL5-D SAMPLING DATA

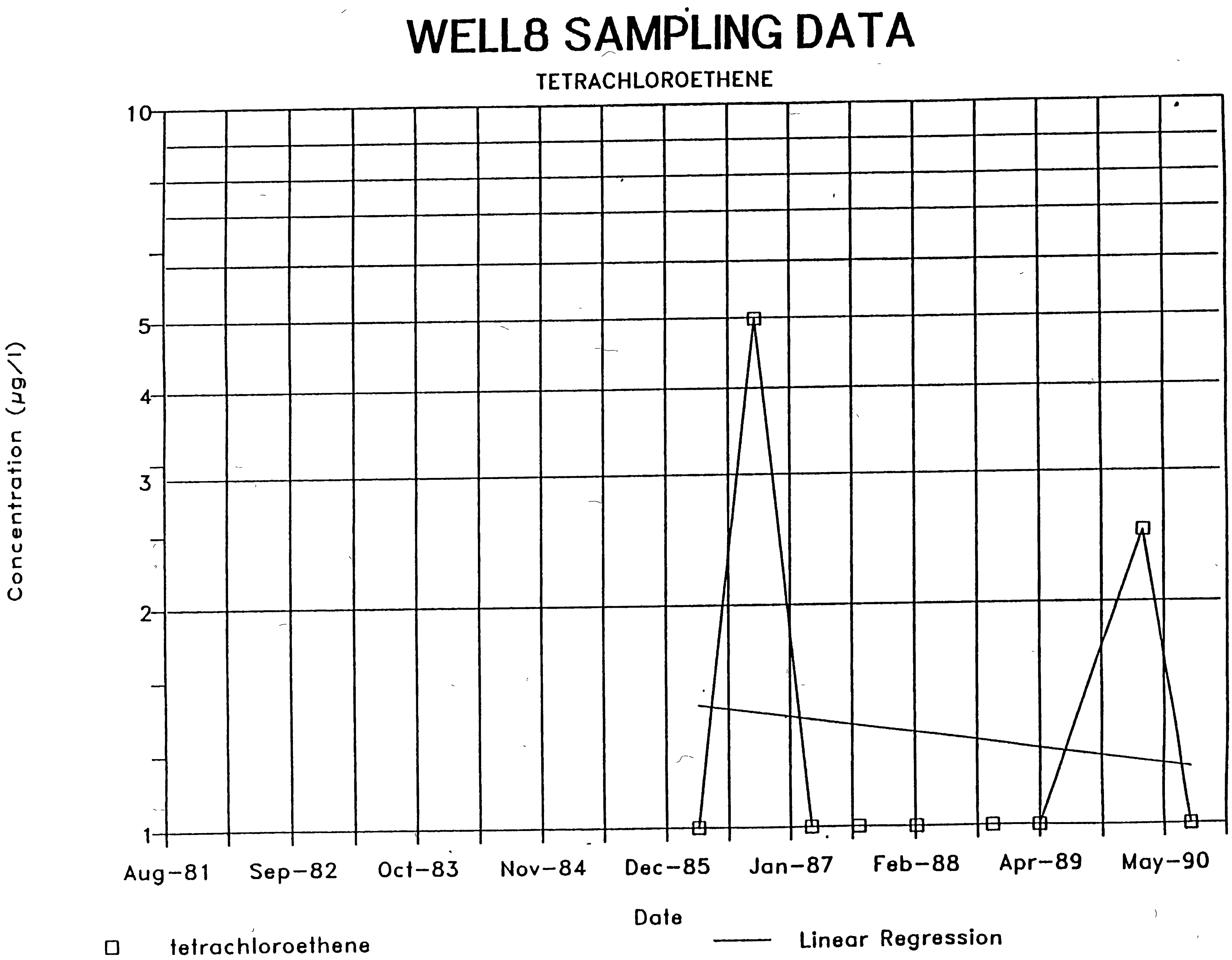
TETRACHLOROETHENE



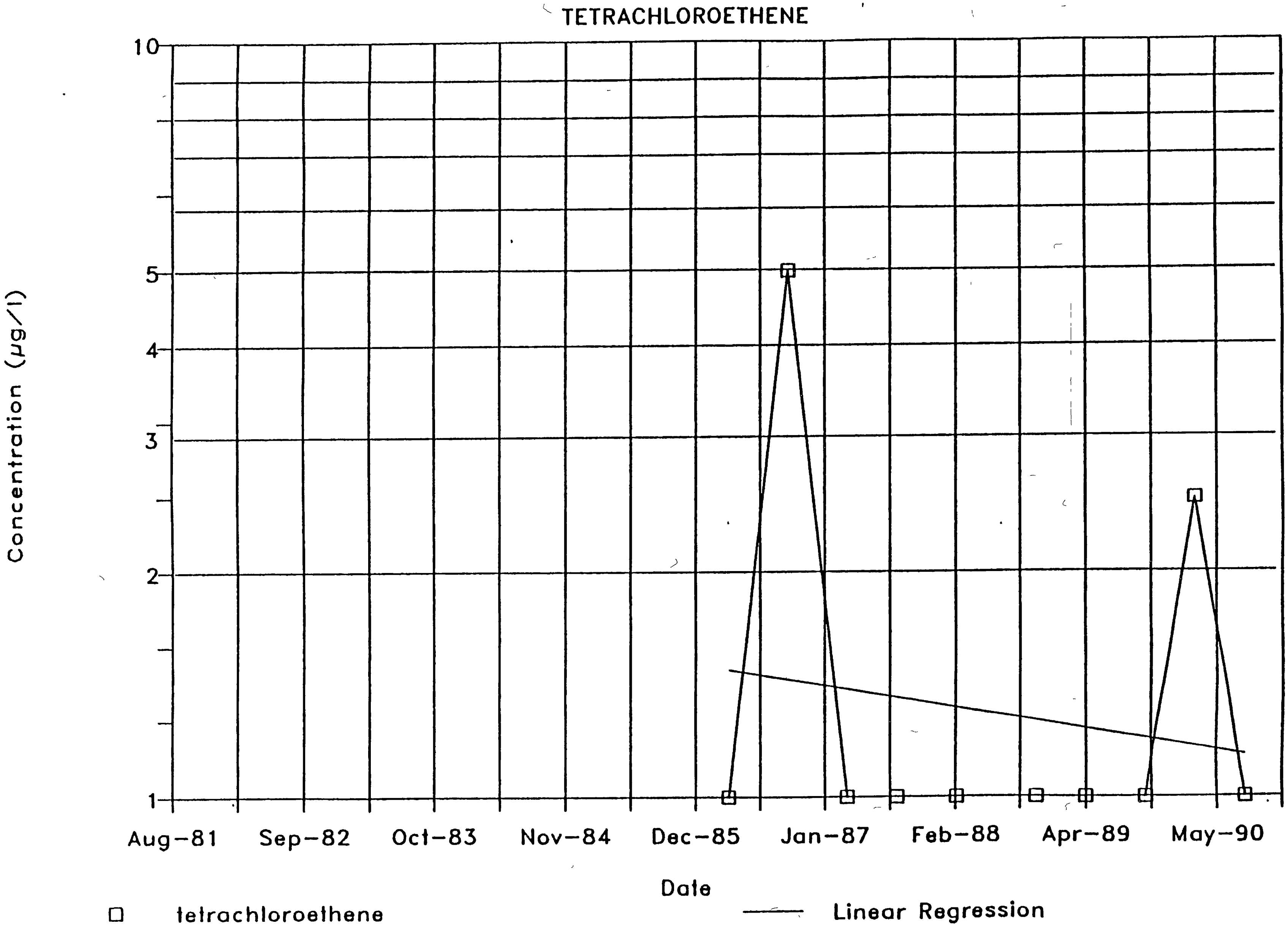
WELL6 SAMPLING DATA




WELL7 SAMPLING DATA
TETRACHLOROETHENE
Concentration (µg/l)
10
5
4
3
2
1
Aug-81
Sep-82
Oct-83
Nov-84
Dec-85
Jan-87
Feb-88
Apr-89
May-90
Date
tetrachloroethene
Linear Regression

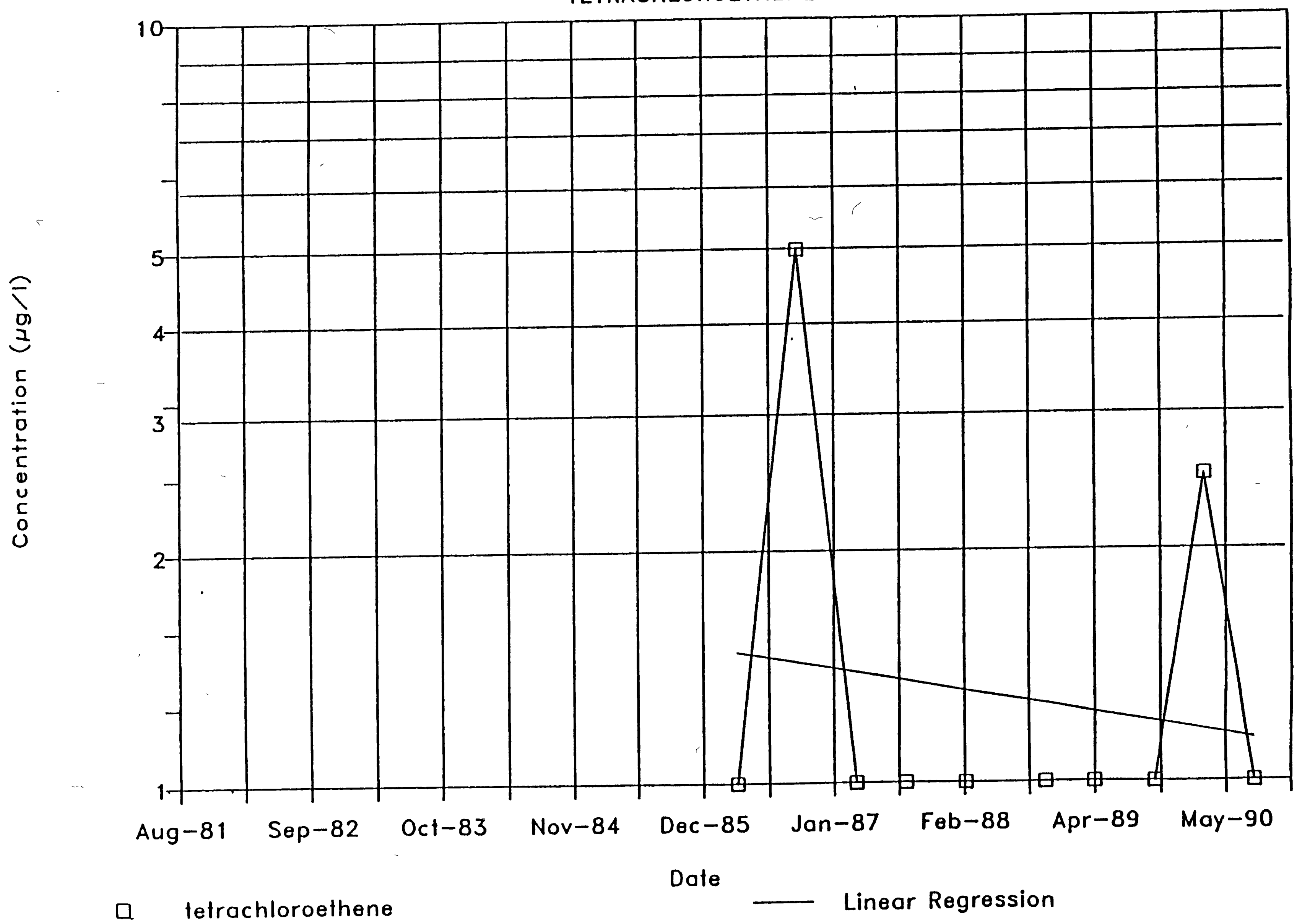

WELL8 SAMPLING DATA
TETRACHLOROETHENE
10
5
4
3
2
1
Concentration (µg/l)
Aug-81
Sep-82
Oct-83
Nov-84
Dec-85
Jan-87
Feb-88
Apr-89
May-90
Date
tetrachloroethene
Linear Regression

WELL9 SAMPLING DATA



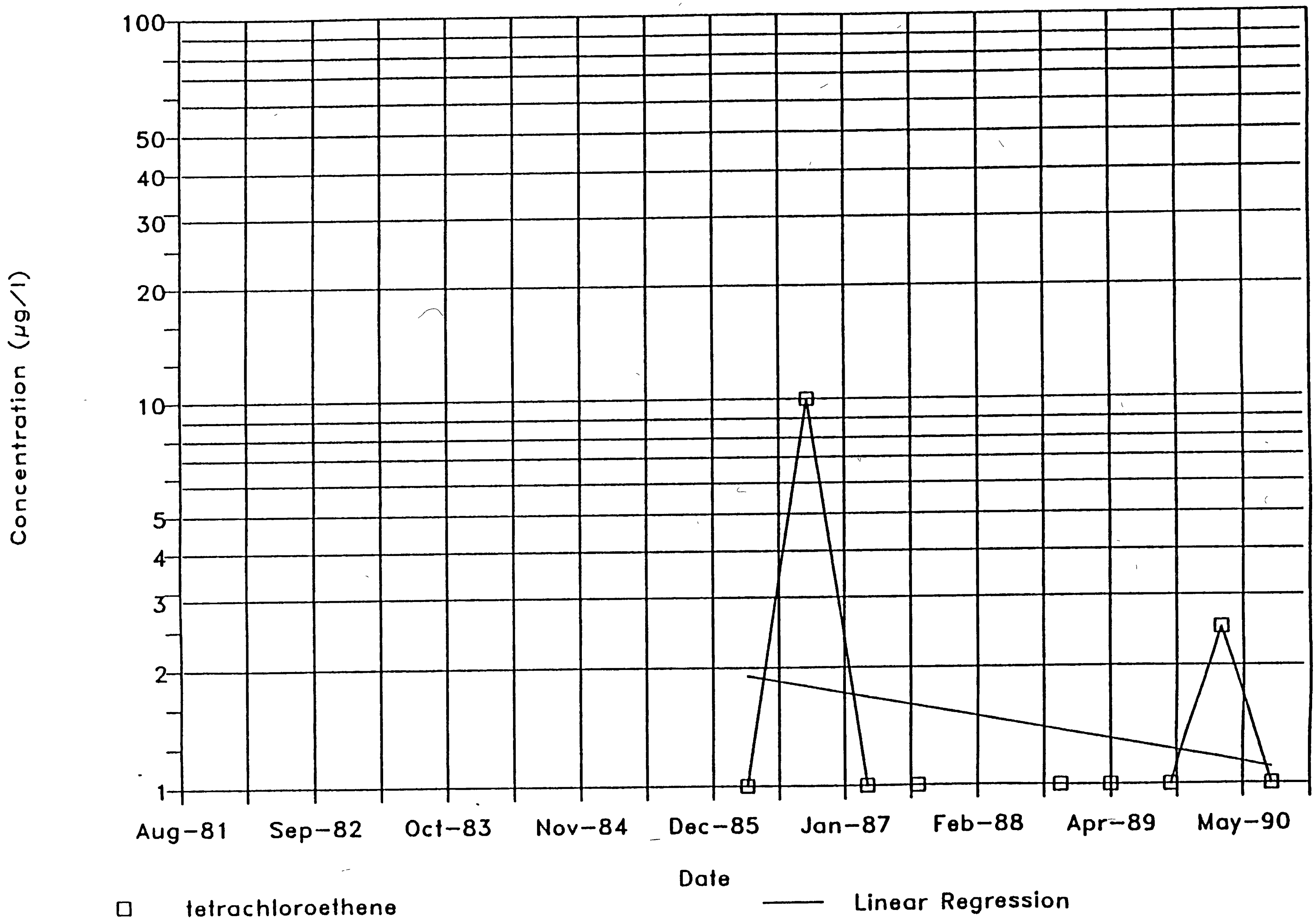
WELL10 SAMPLING DATA

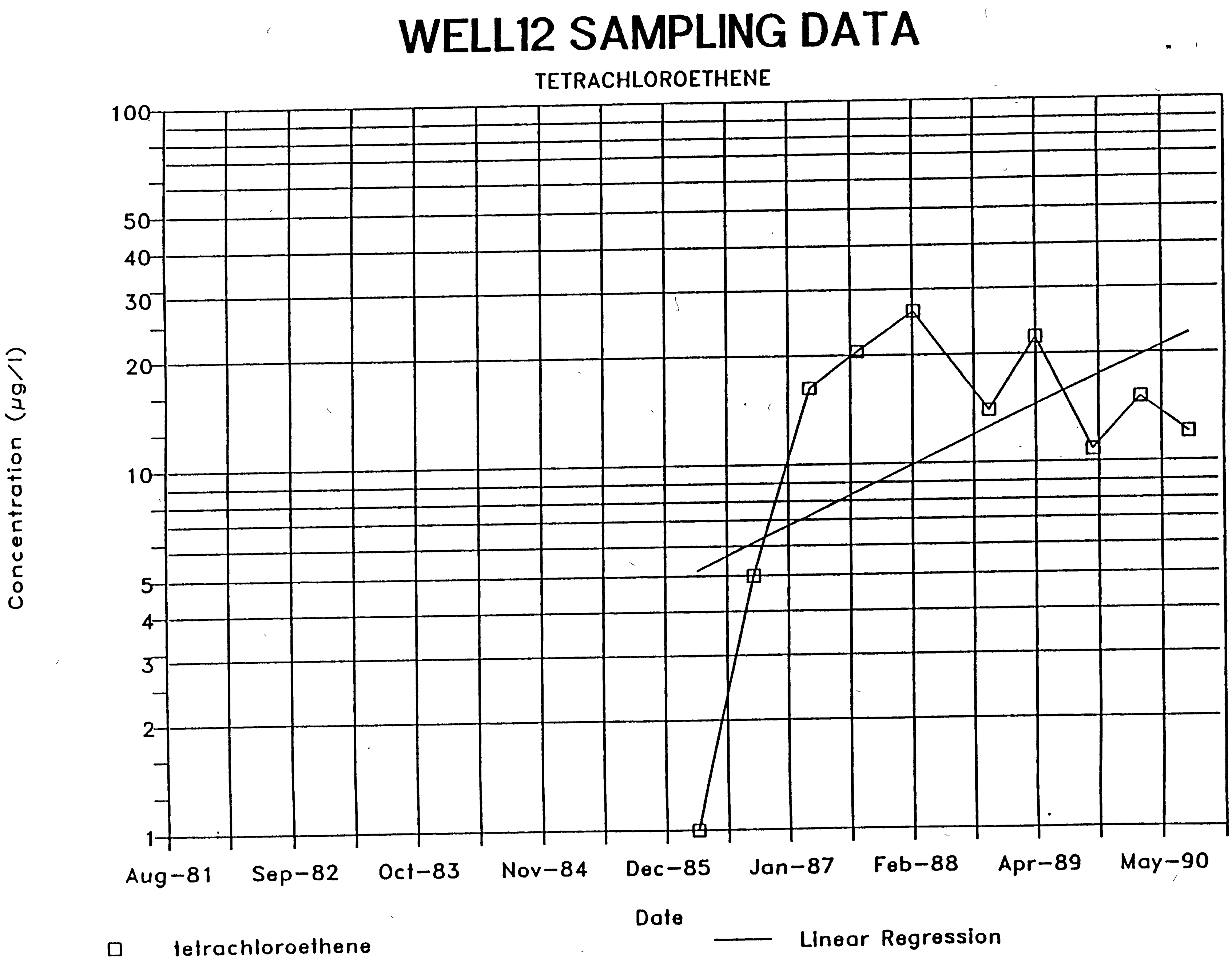
TETRACHLOROETHENE



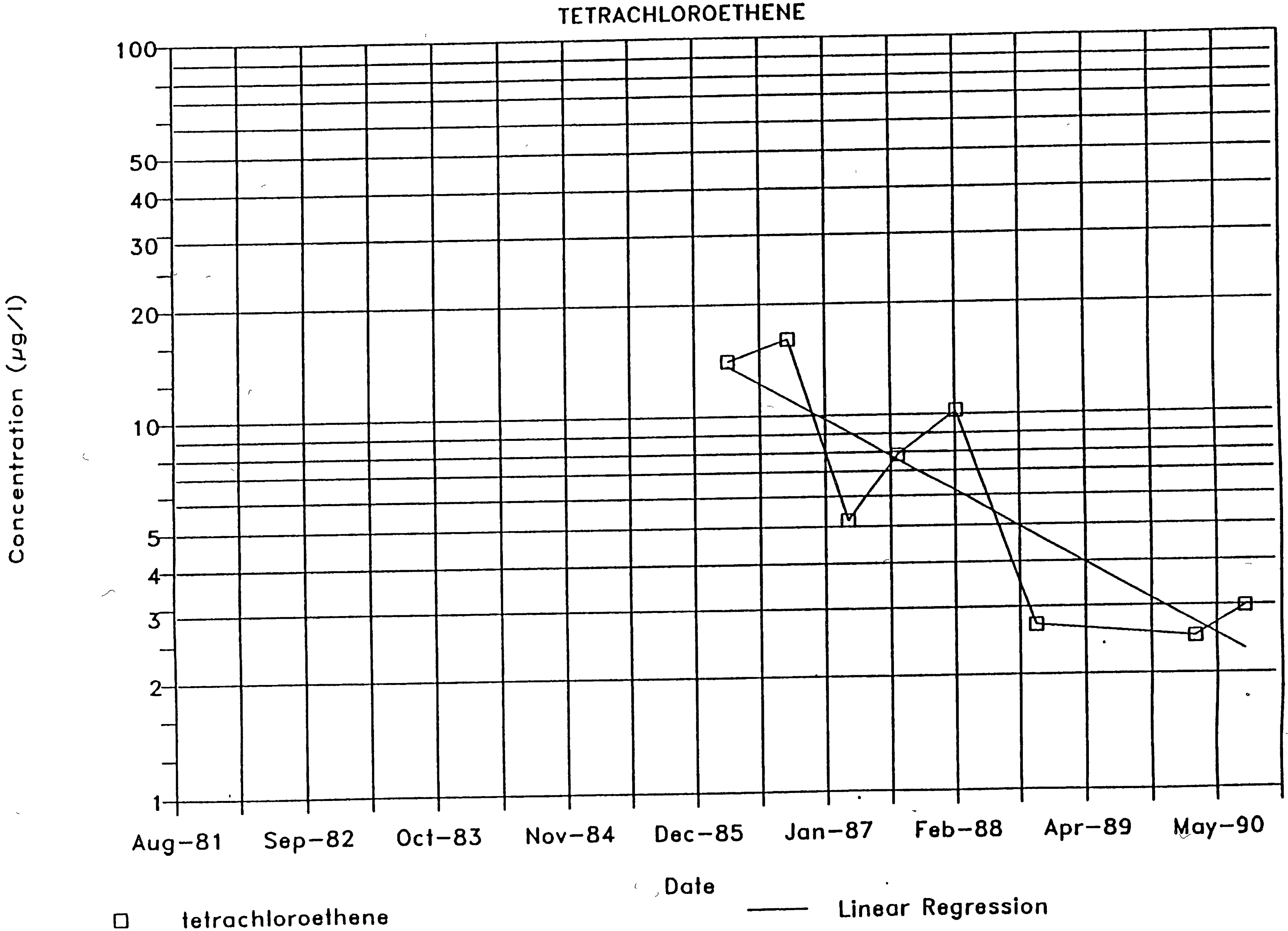
WELL11 SAMPLING DATA

TETRACHLOROETHENE

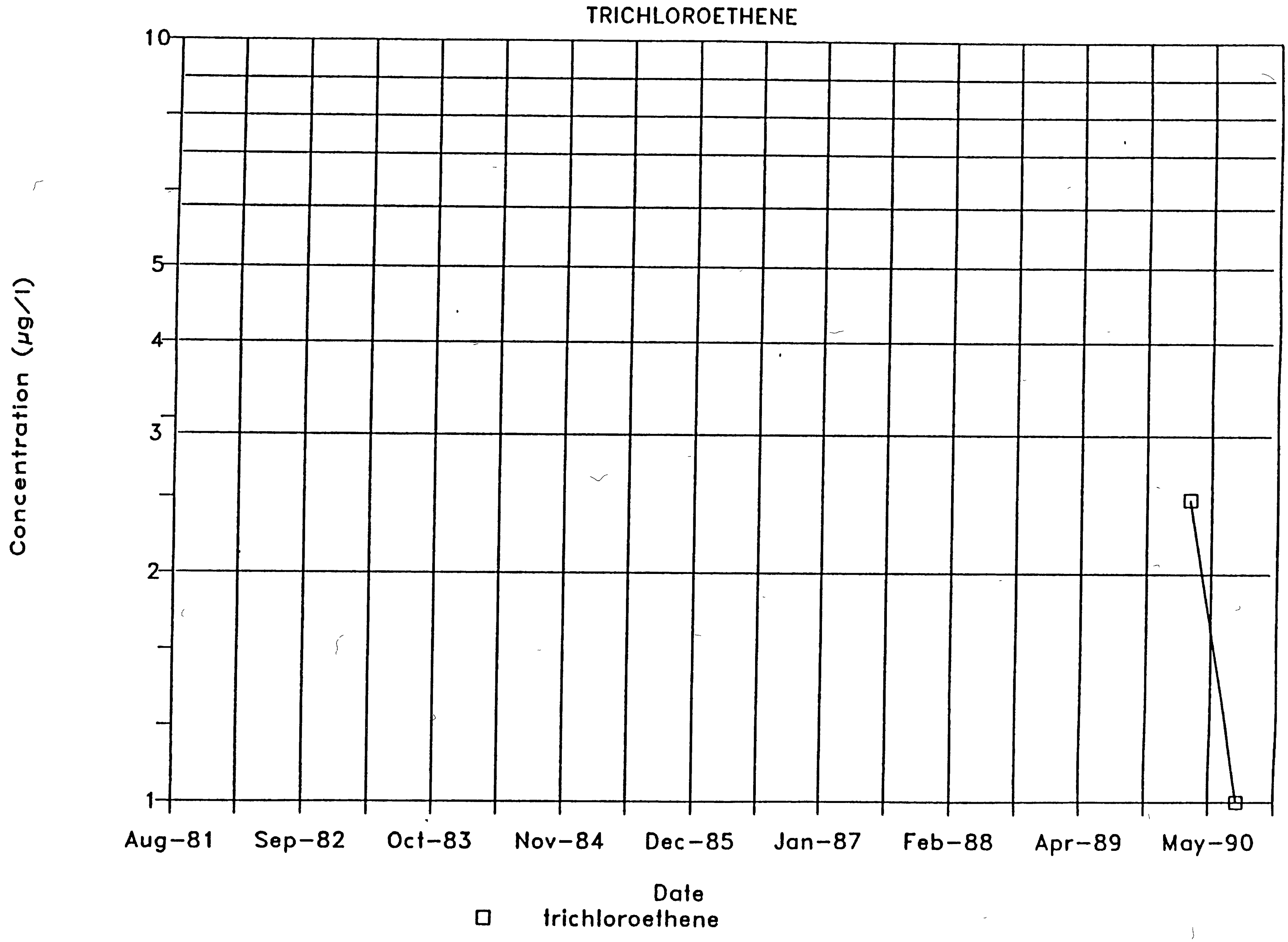



WELL12 SAMPLING DATA
TETRACHLOROETHENE
Concentration (μg/l)
100
50
40
30
20
10
5
4
3
2
1
Aug-81
Sep-82
Oct-83
Nov-84
Dec-85
Jan-87
Feb-88
Apr-89
May-90
Date
tetrachloroethene
Linear Regression

WELL13 SAMPLING DATA

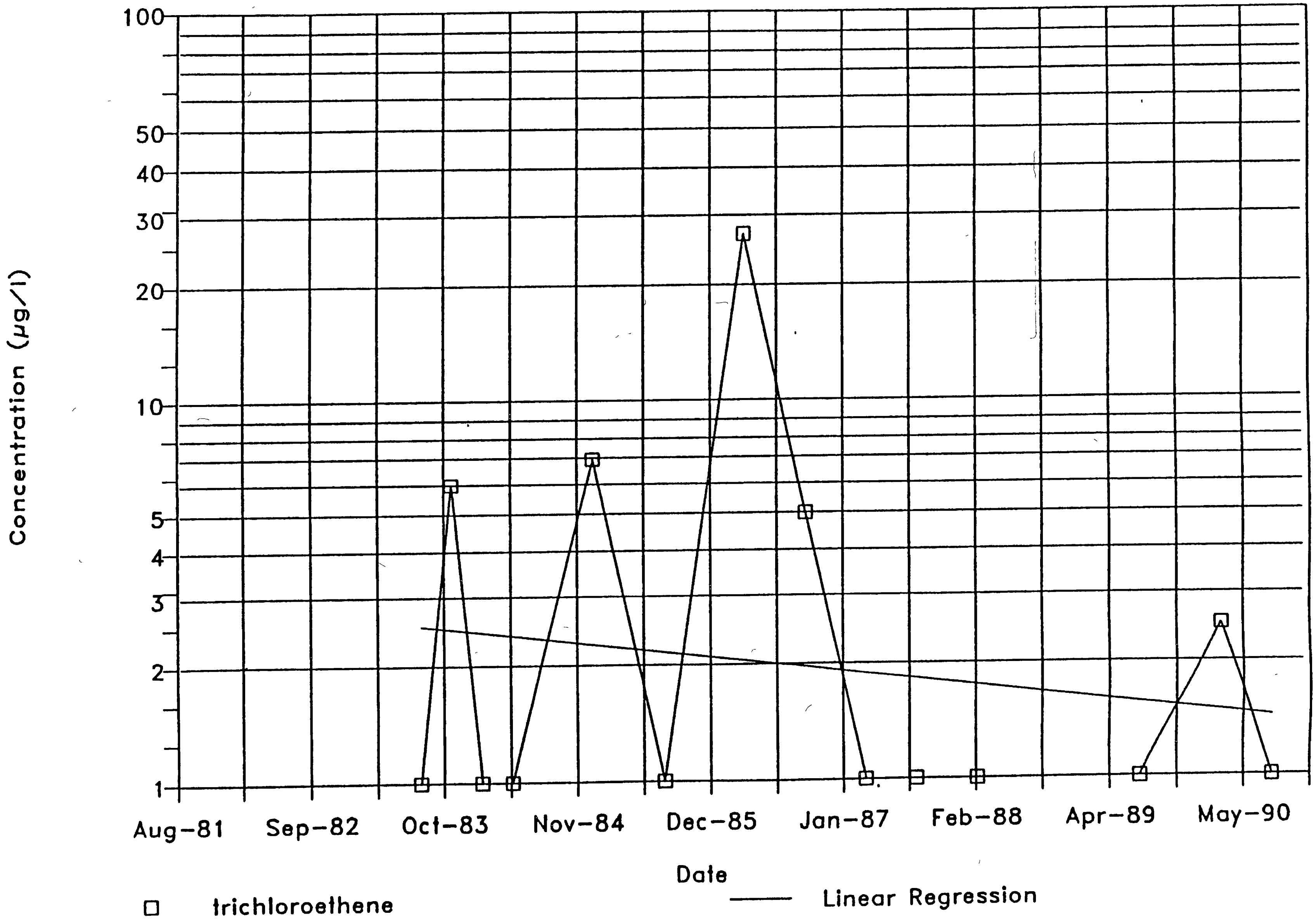


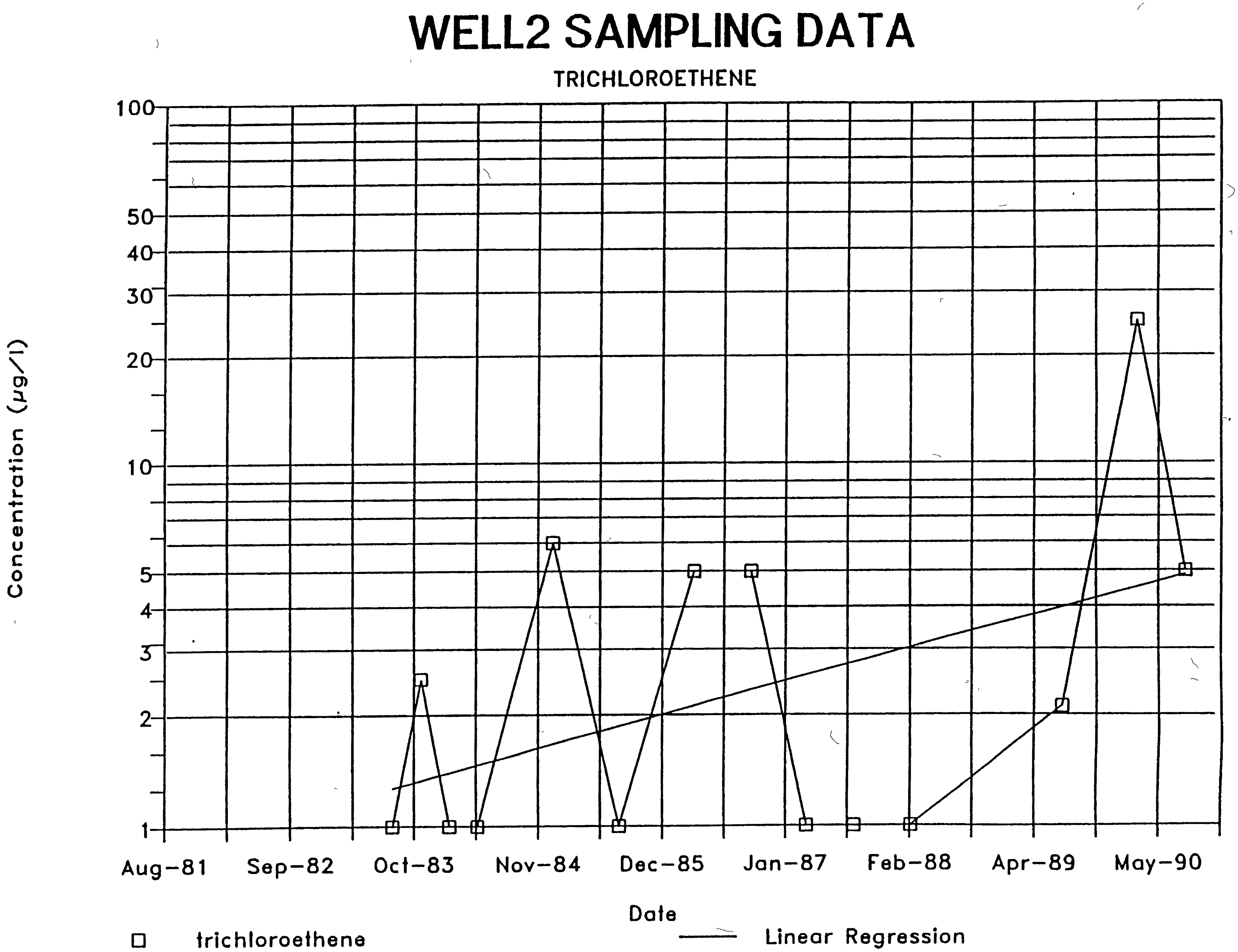
WELL1-D SAMPLING DATA



WELL1 SAMPLING DATA

TRICHLOROETHENE

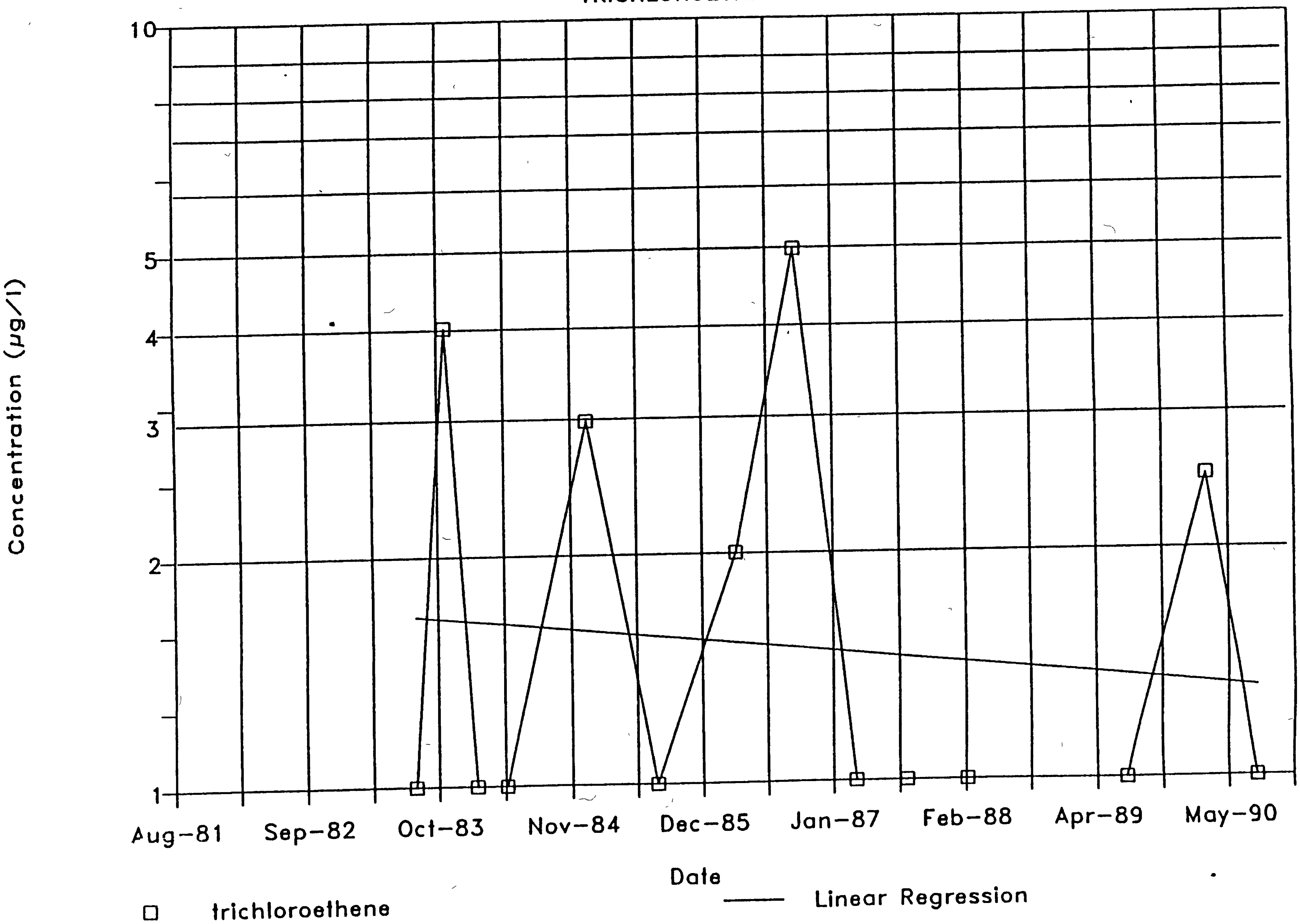



WELL2 SAMPLING DATA
TRICHLOROETHENE
100
50
40
30
20
10
5
4
3
2
1
Concentration (μg/l)
Aug-81
Sep-82
Oct-83
Nov-84
Dec-85
Jan-87
Feb-88
Apr-89
May-90
Date
trichloroethene
Linear Regression

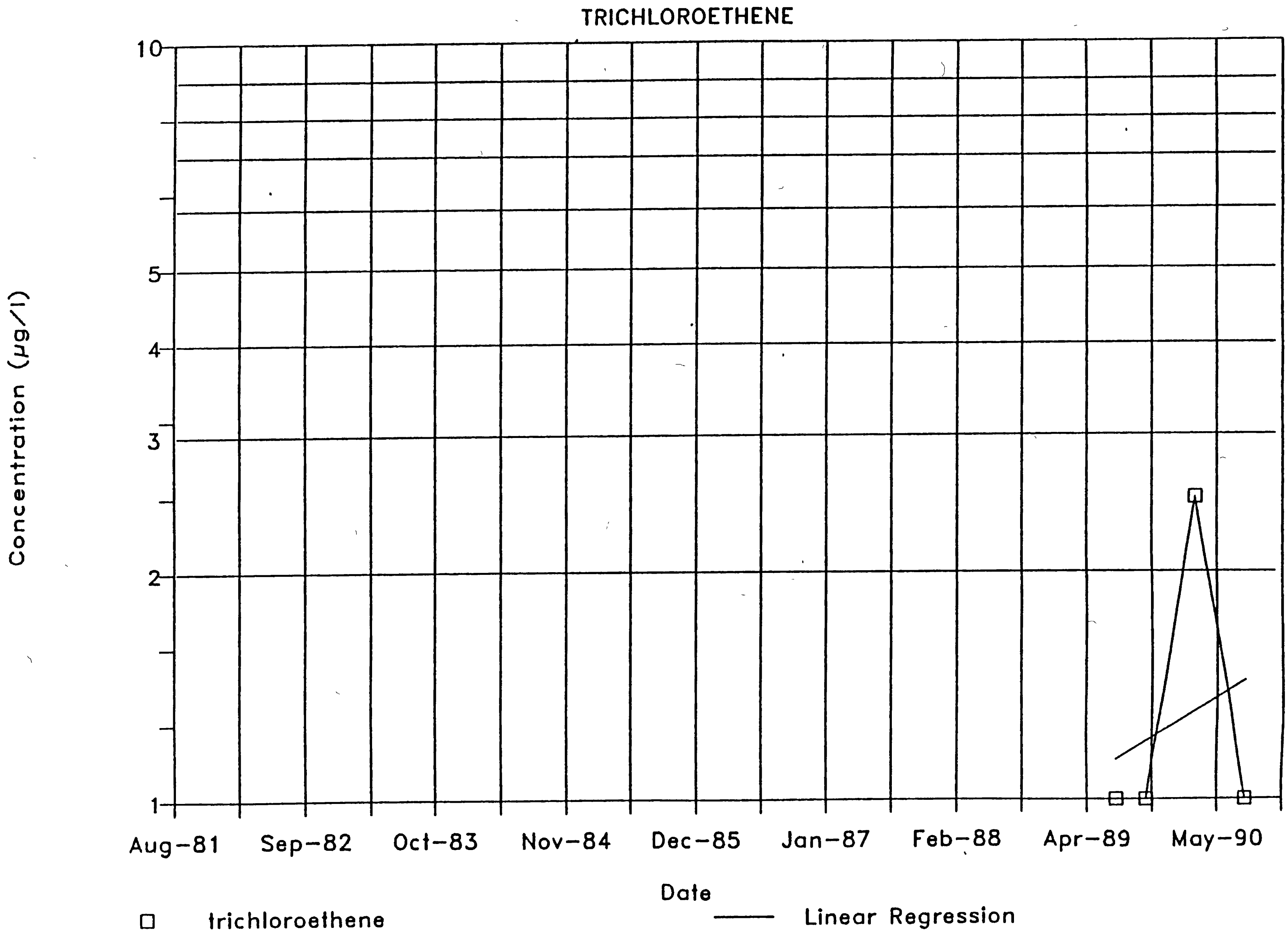
[redacted] [redacted]

WELL3 SAMPLING DATA

TRICHLOROETHENE

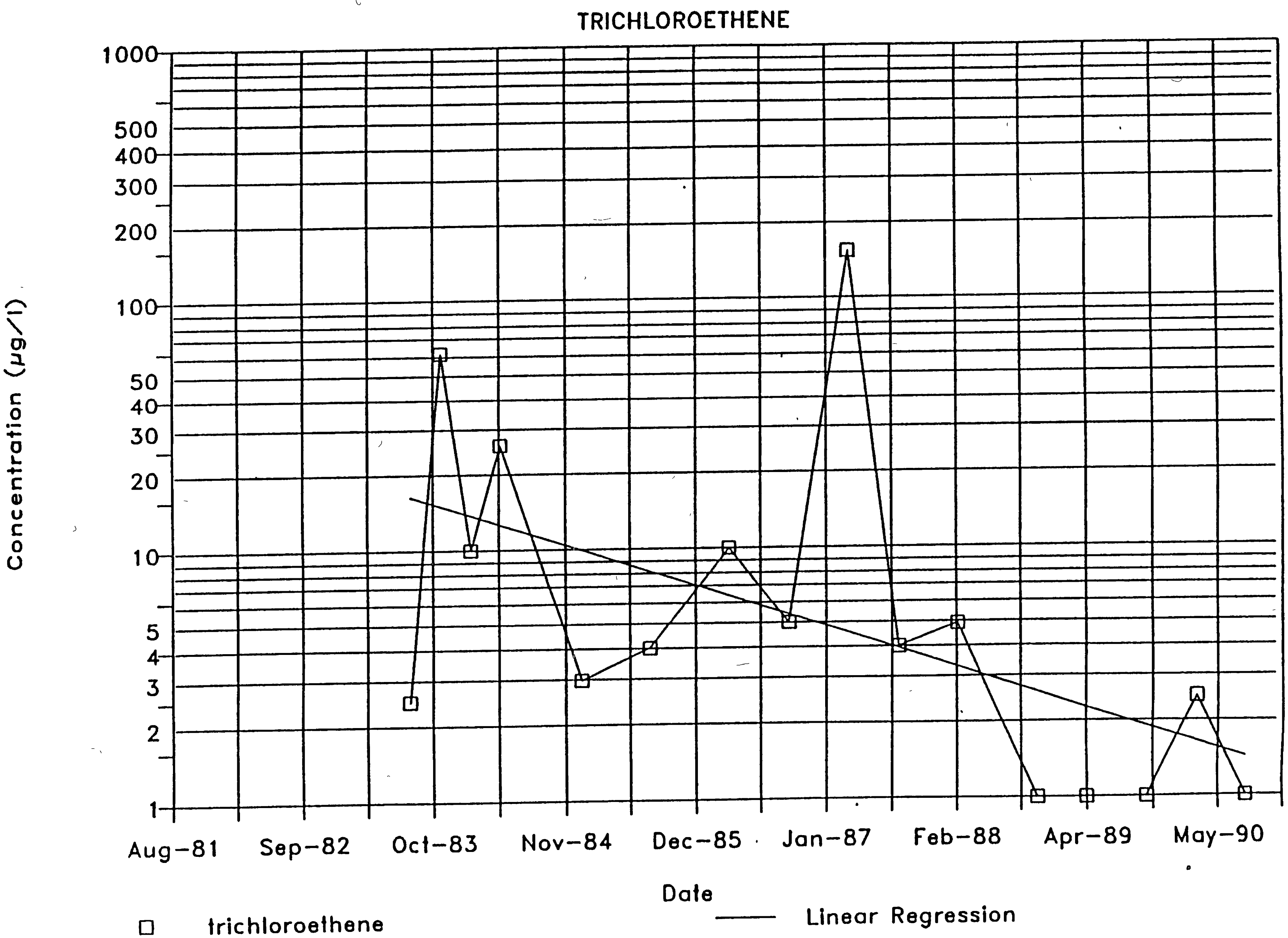


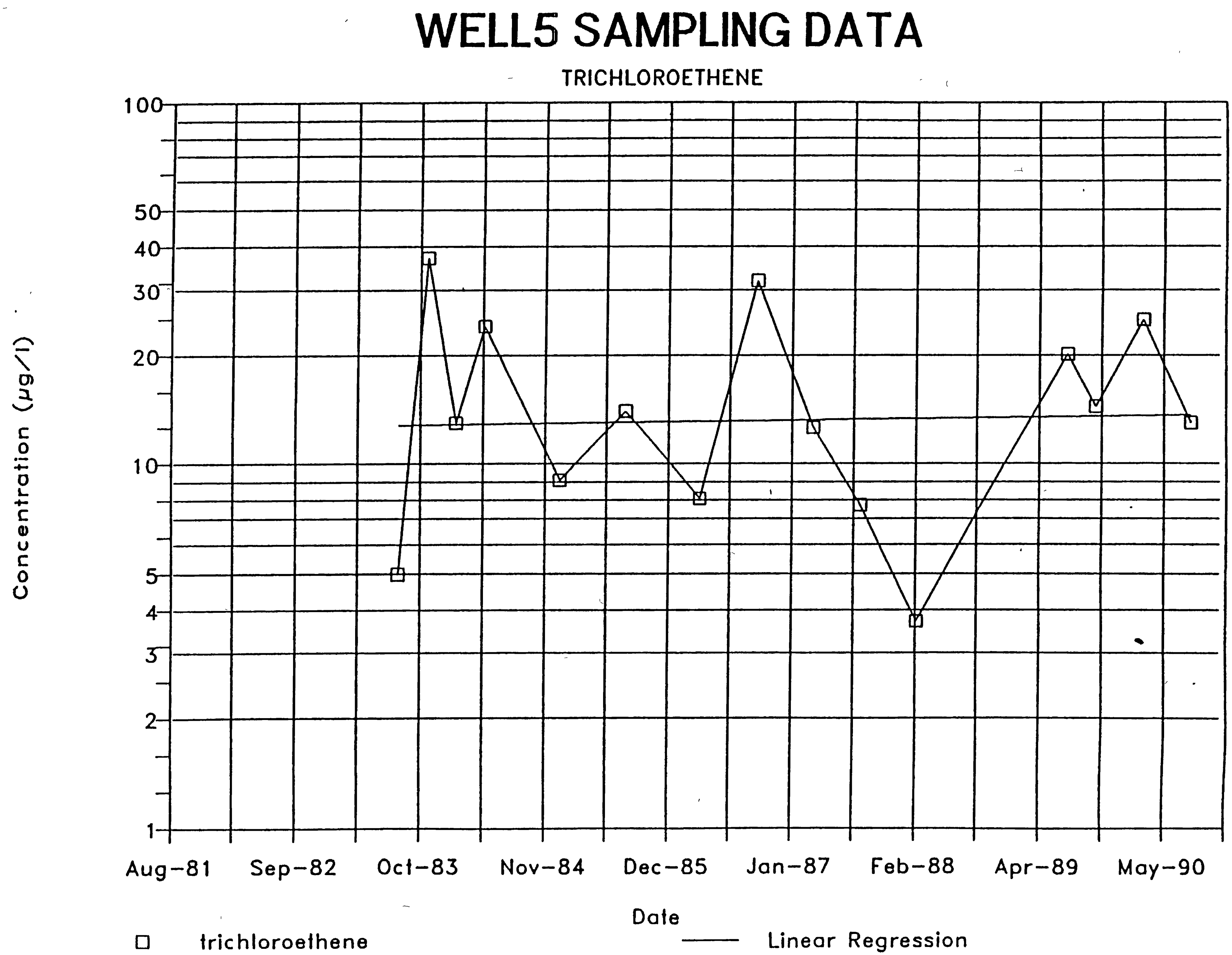
WELL3-D SAMPLING DATA



[redacted] [redacted]

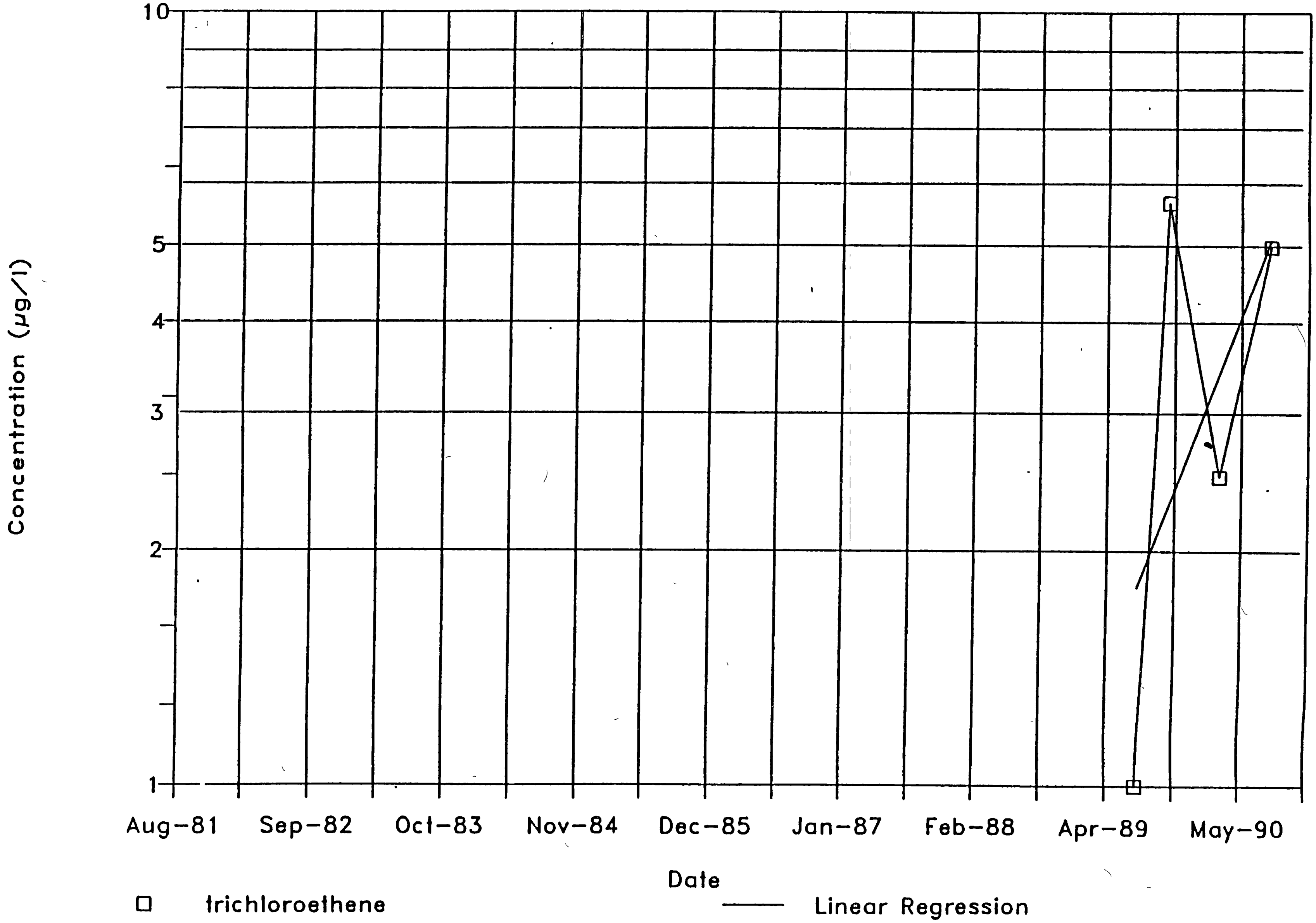
WELL4 SAMPLING DATA

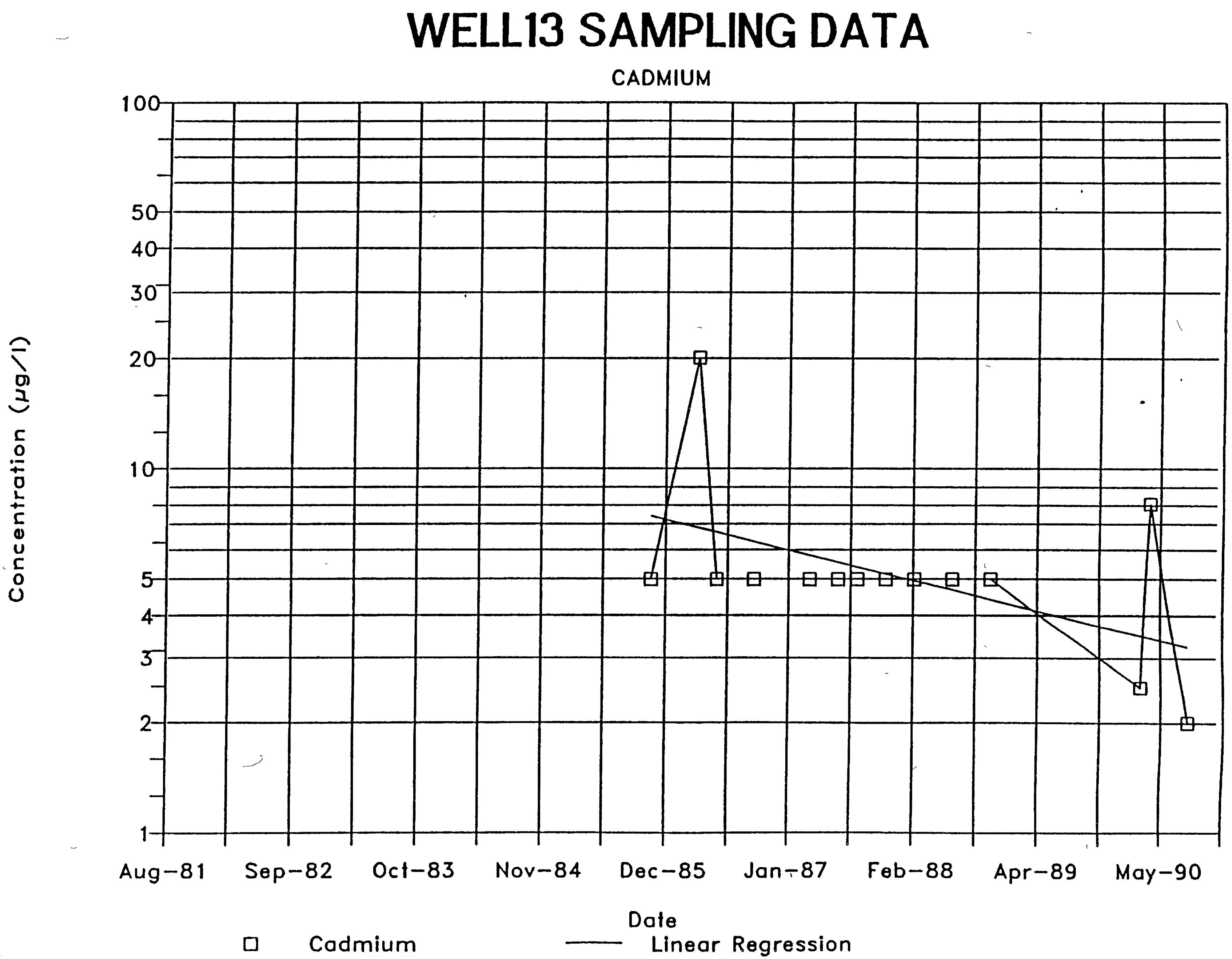



WELL5 SAMPLING DATA
TRICHLOROETHENE
100
50
40
30
20
10
5
4
3
2
1
Concentration (µg/l)
Aug-81
Sep-82
Oct-83
Nov-84
Dec-85
Jan-87
Feb-88
Apr-89
May-90
Date
trichloroethene
Linear Regression

WELL5-D SAMPLING DATA

TRICHLOROETHENE

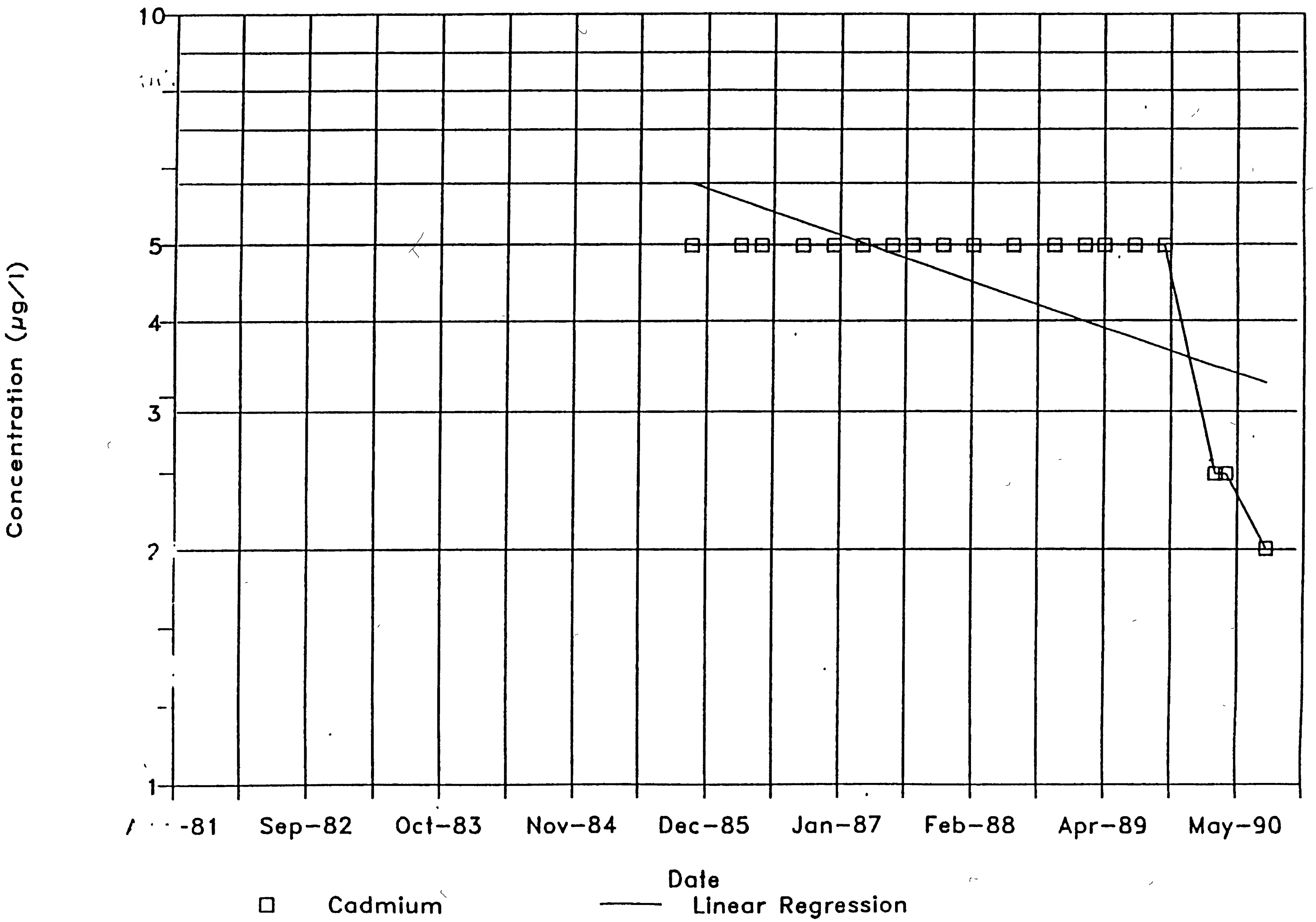


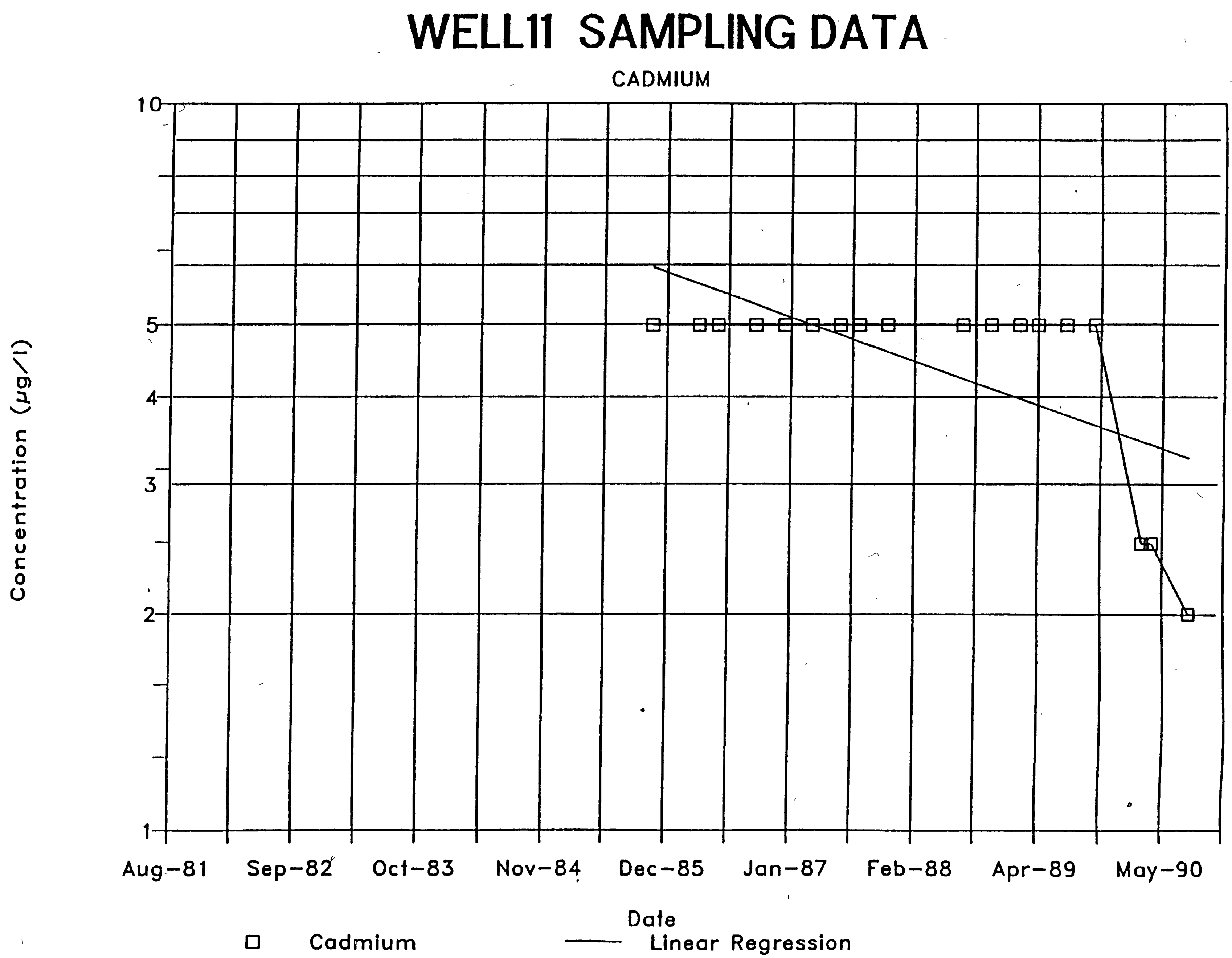


WELL13 SAMPLING DATA
CADMIUM
Concentration (µg/l)
100
50
40
30
20
10
5
4
3
2
1
Aug-81
Sep-82
Oct-83
Nov-84
Dec-85
Jan-87
Feb-88
Apr-89
May-90
Date
Cadmium
Linear Regression

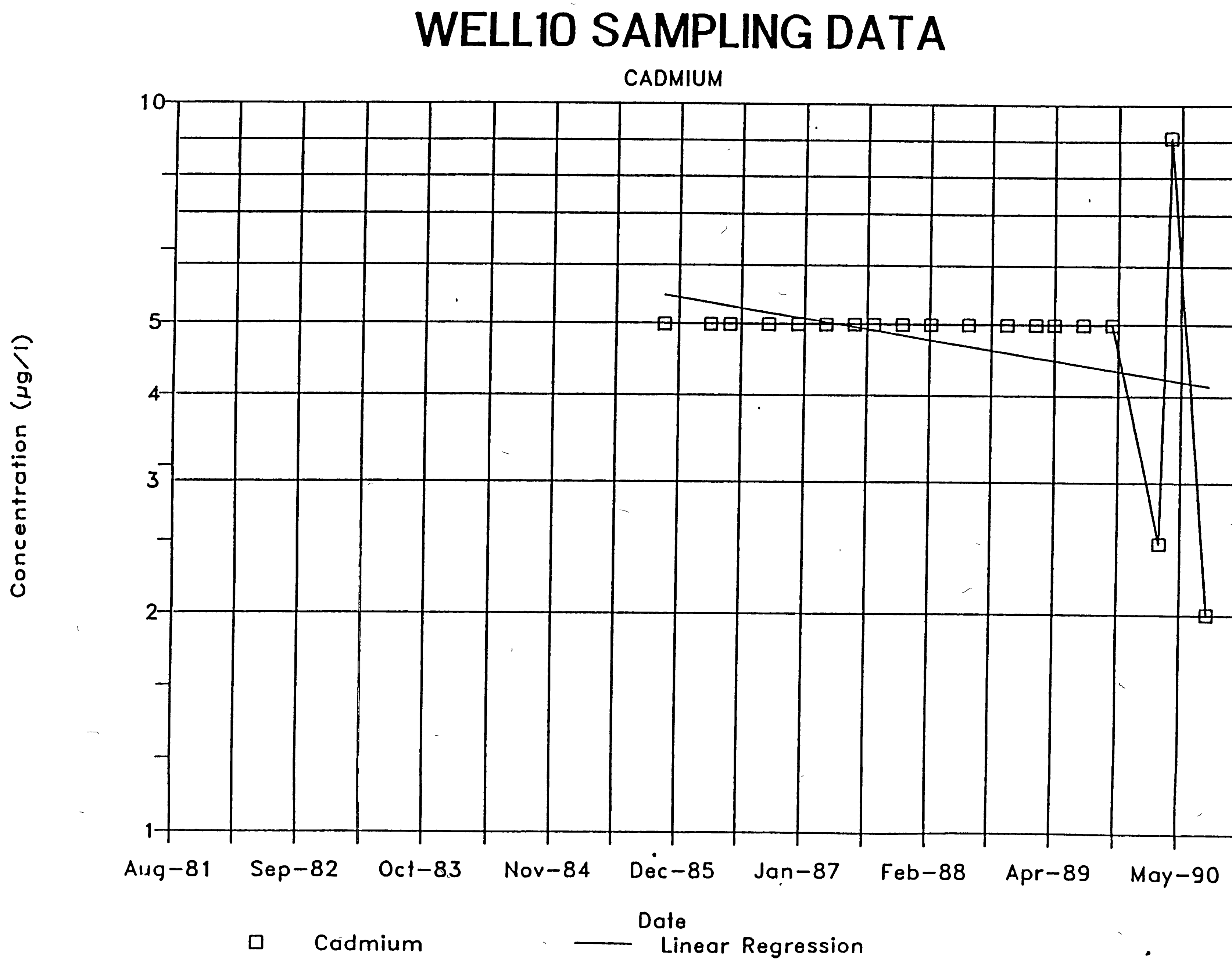
WELL12 SAMPLING DATA

CADMIUM



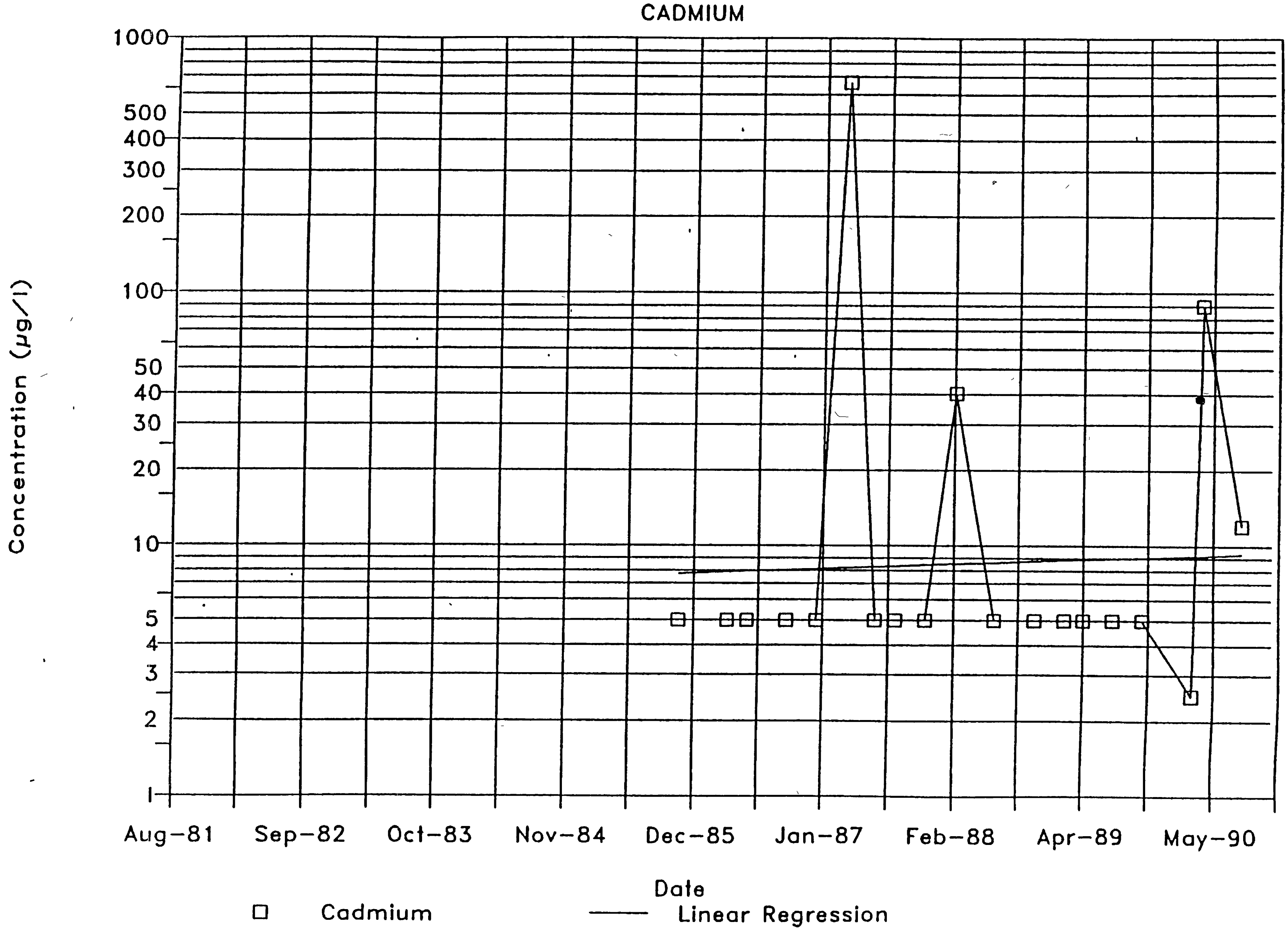


WELL11 SAMPLING DATA
CADMIUM
10
5
4
3
2
1
Concentration (µg/l)
Aug-81
Sep-82
Oct-83
Nov-84
Dec-85
Jan-87
Feb-88
Apr-89
May-90
Date
Cadmium
Linear Regression

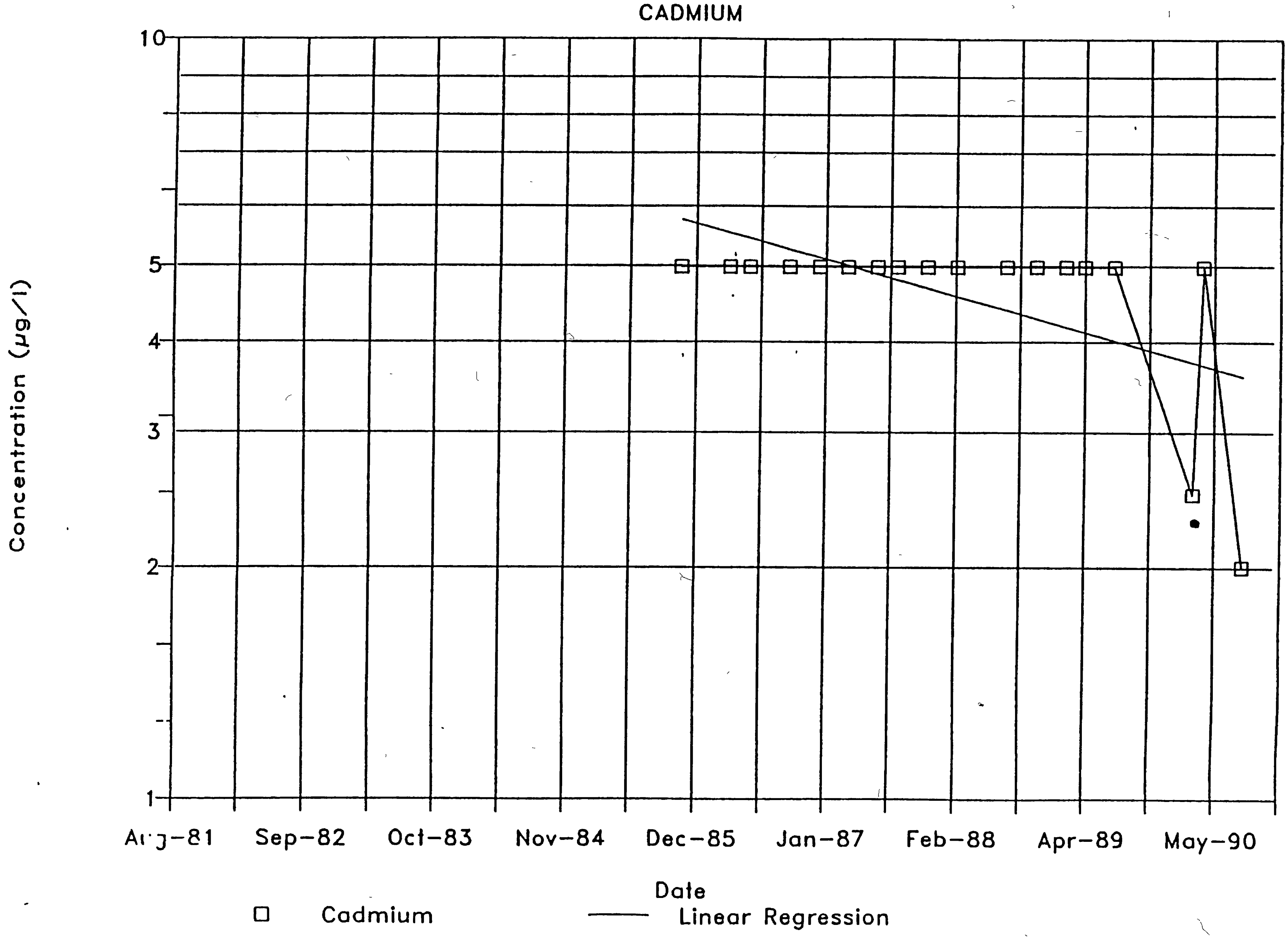


WELL10 SAMPLING DATA
CADMIUM
Concentration (μg/l)
10
5
4
3
2
1
Aug-81
Sep-82
Oct-83
Nov-84
Dec-85
Jan-87
Feb-88
Apr-89
May-90
Date
Cadmium
Linear Regression

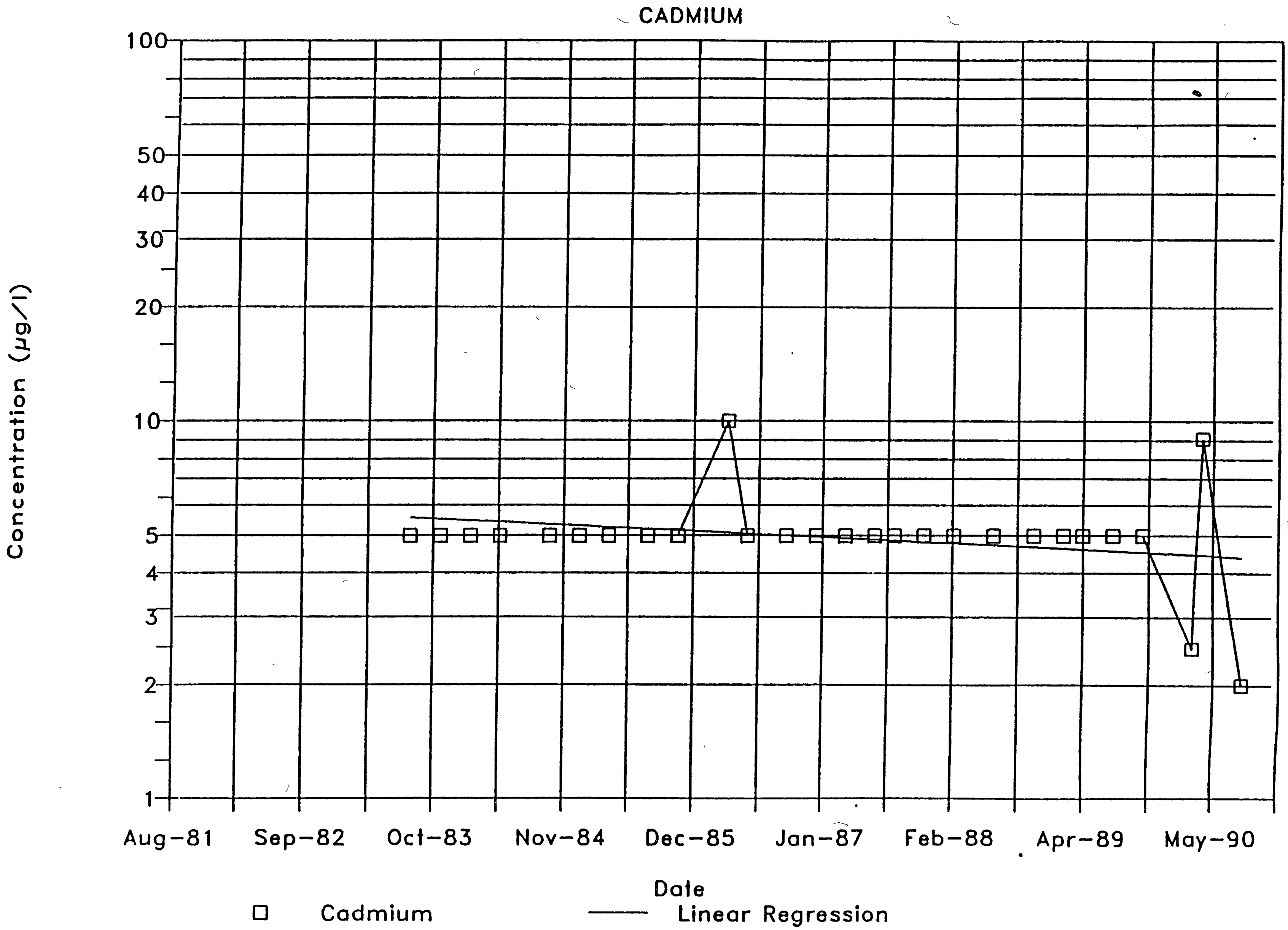
WELL9 SAMPLING DATA



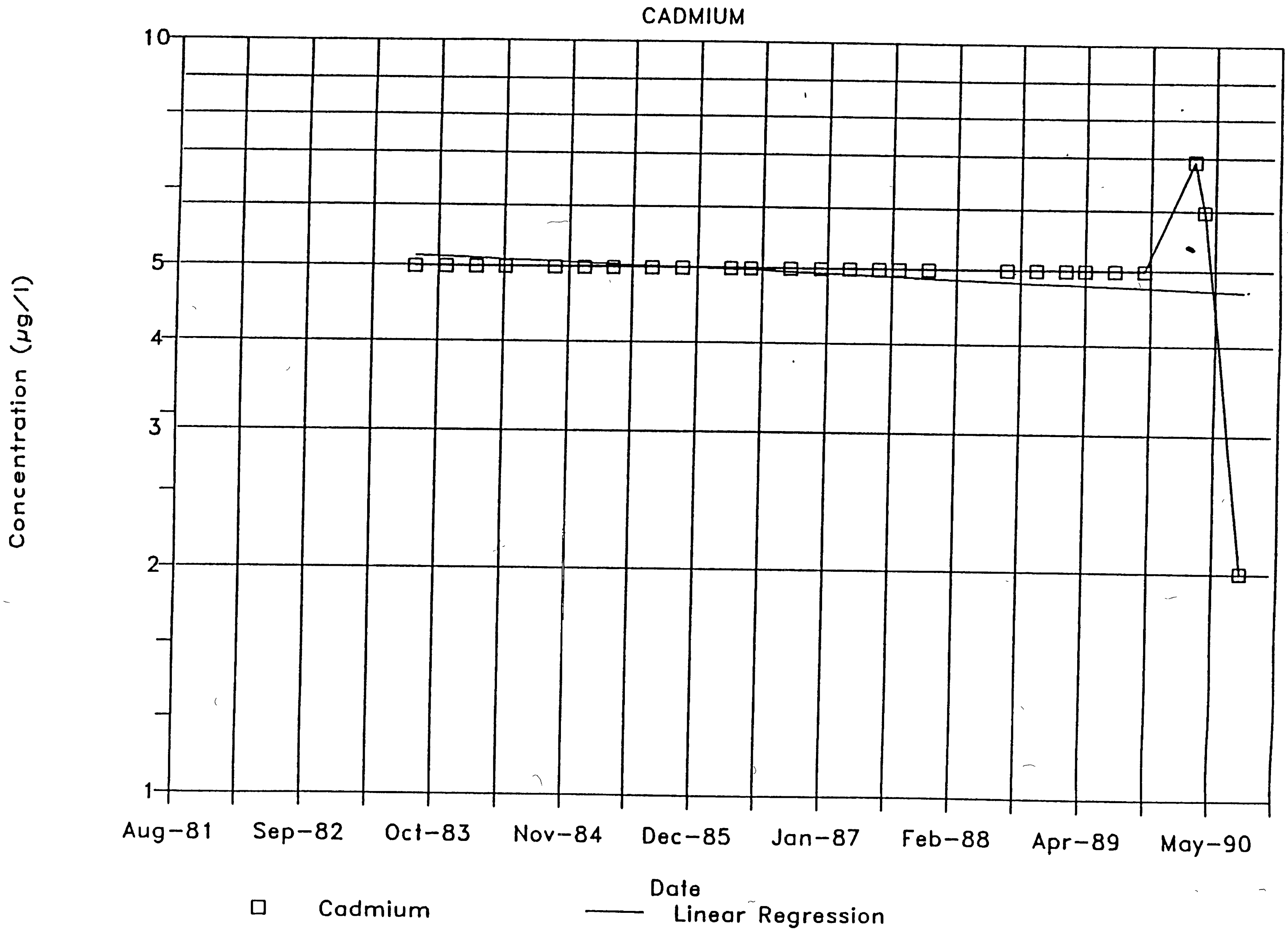
WELL8 SAMPLING DATA



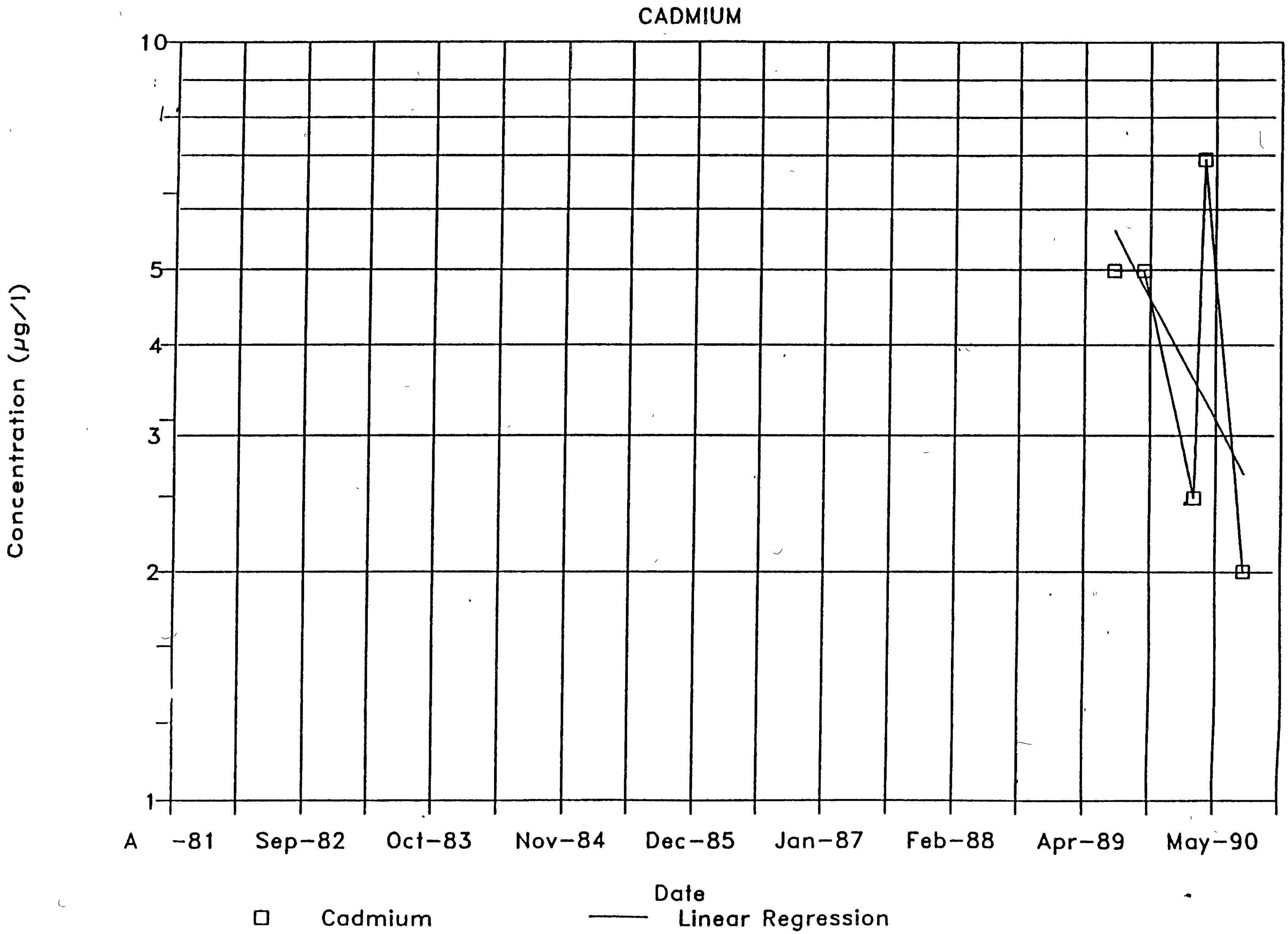
WELL7 SAMPLING DATA



WELL6 SAMPLING DATA

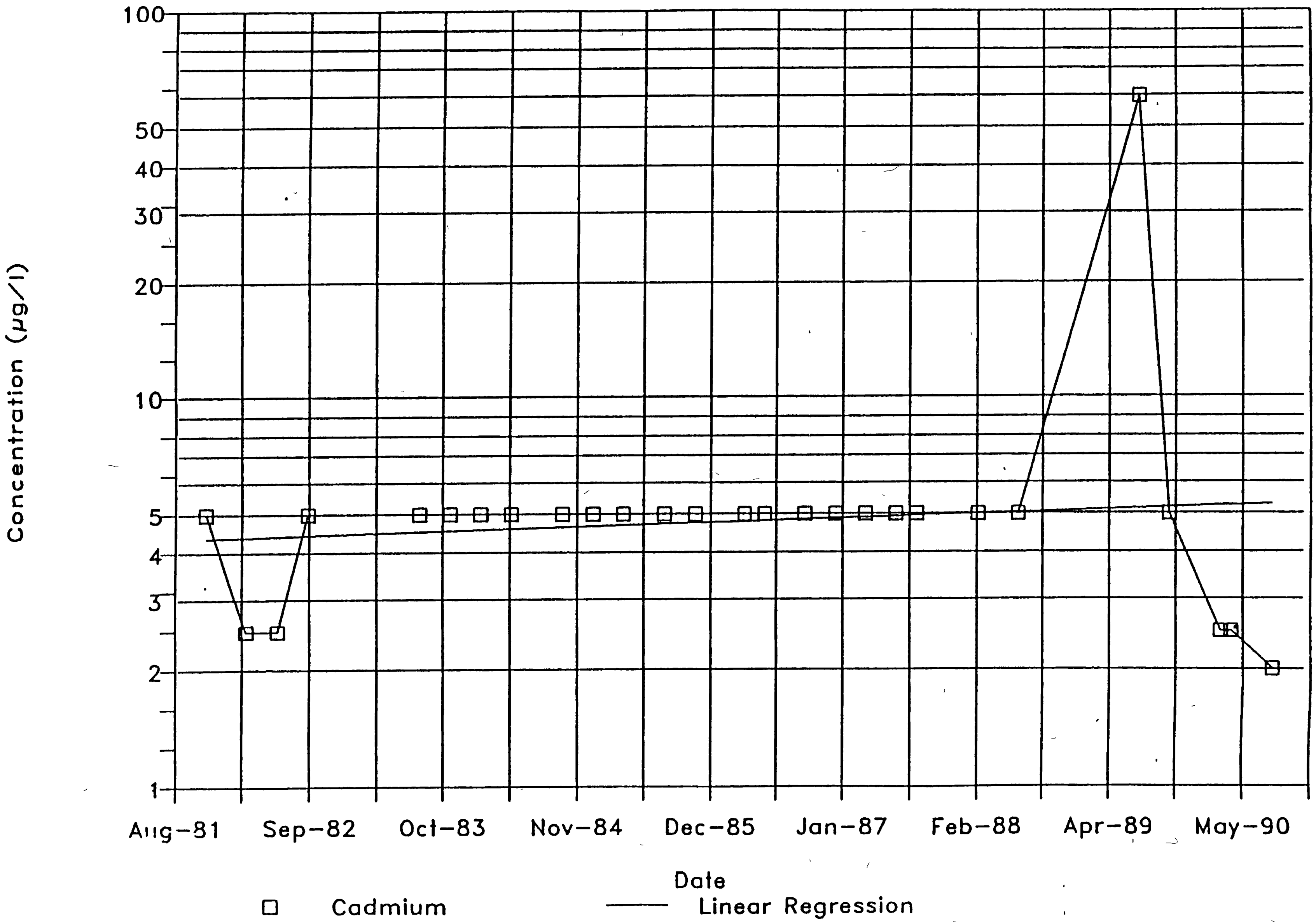


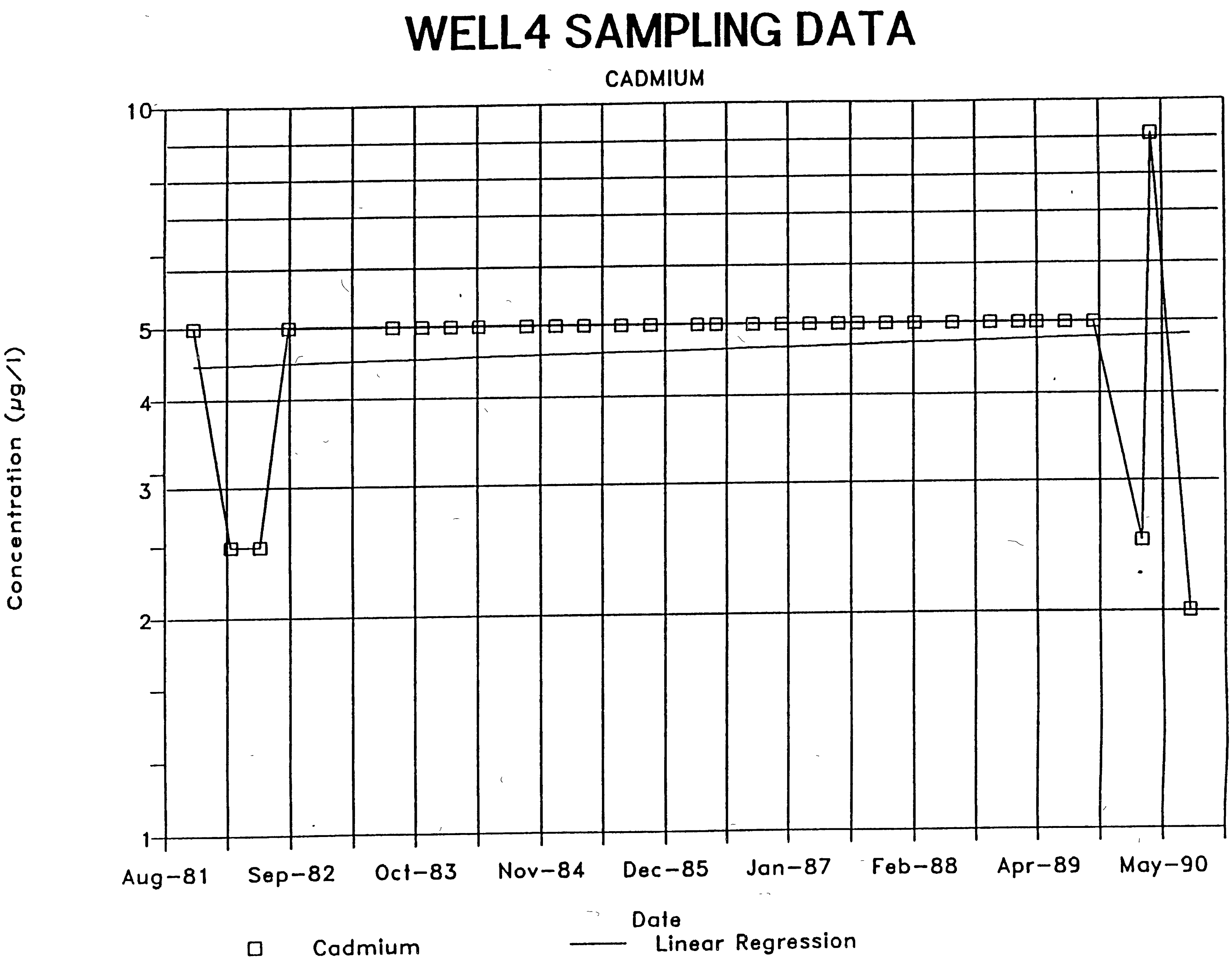
WELL5-D SAMPLING DATA



WELL5 SAMPLING DATA

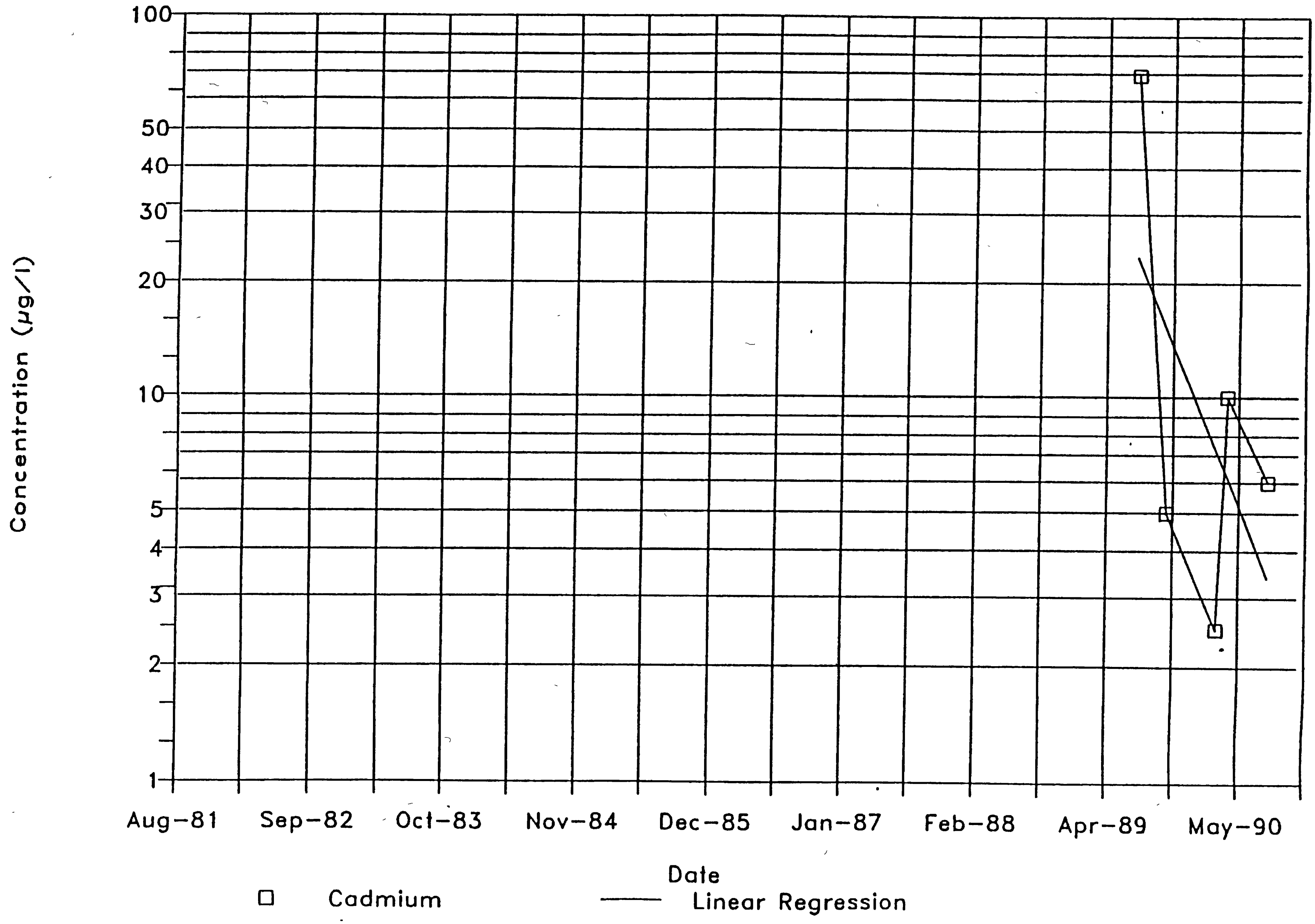
CADMIUM

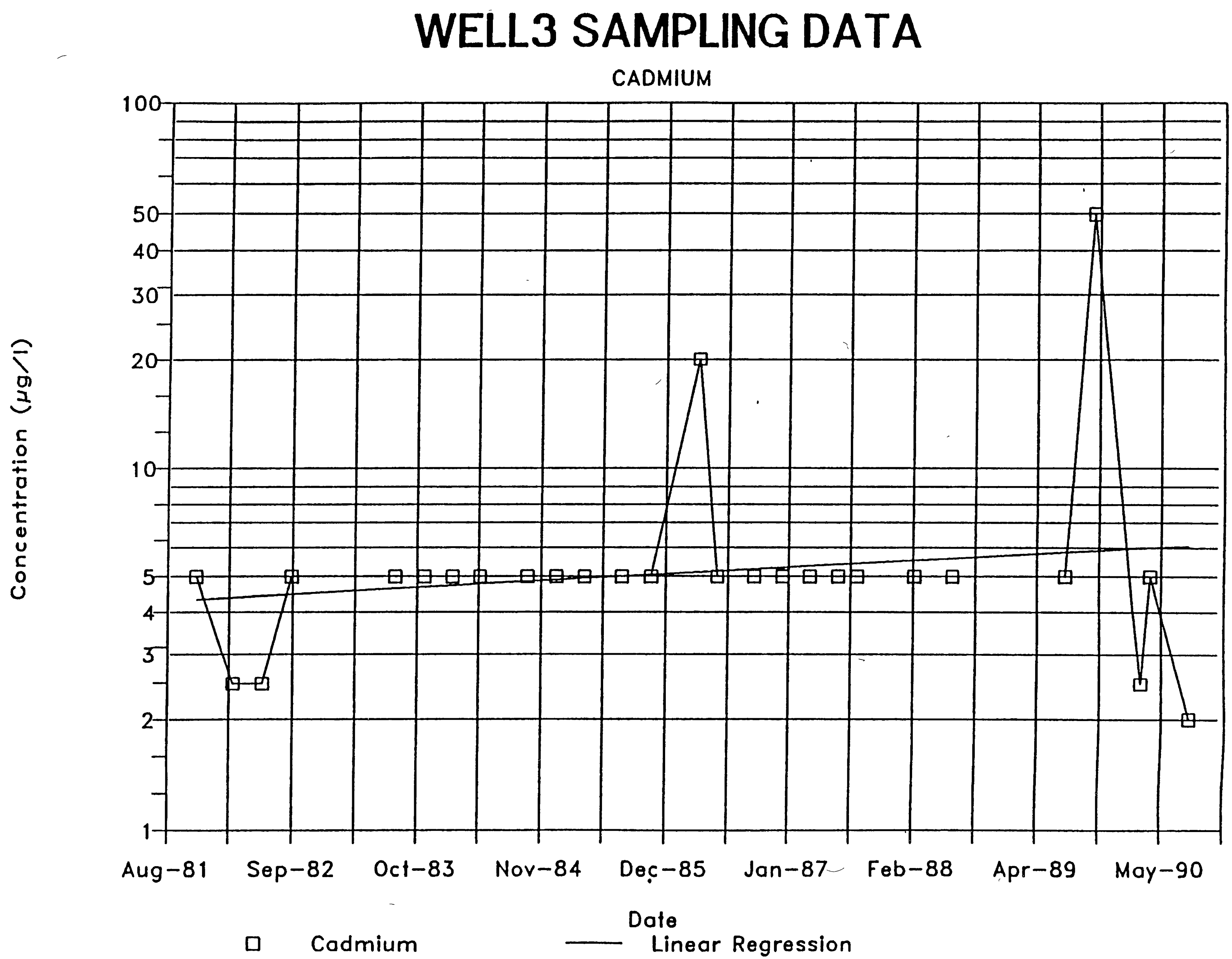



WELL4 SAMPLING DATA
CADMIUM
Concentration (µg/l)
10
5
4
3
2
1
Aug-81
Sep-82
Oct-83
Nov-84
Dec-85
Jan-87
Feb-88
Apr-89
May-90
Date
Cadmium
Linear Regression

WELL3-D SAMPLING DATA

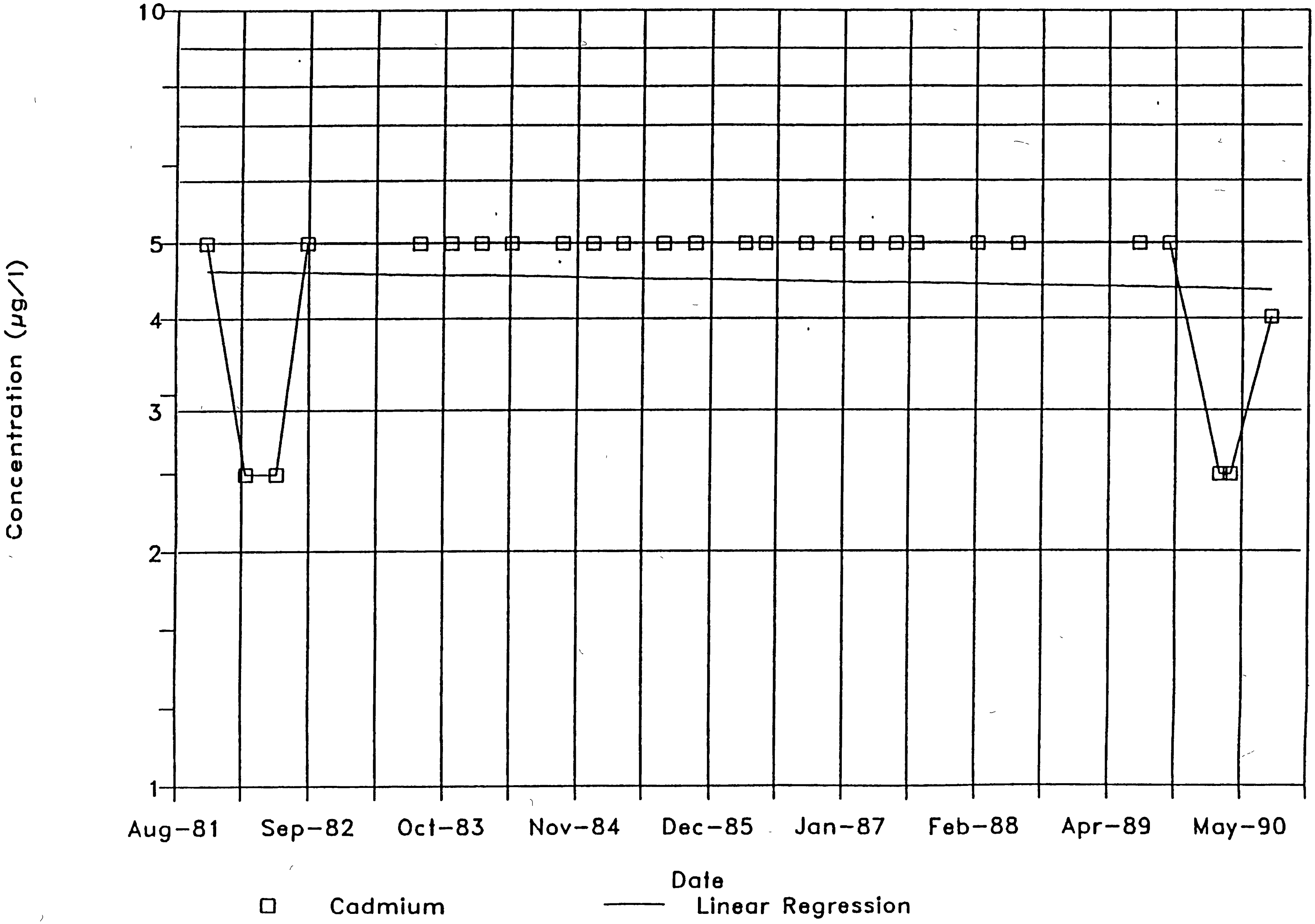
CADMIUM

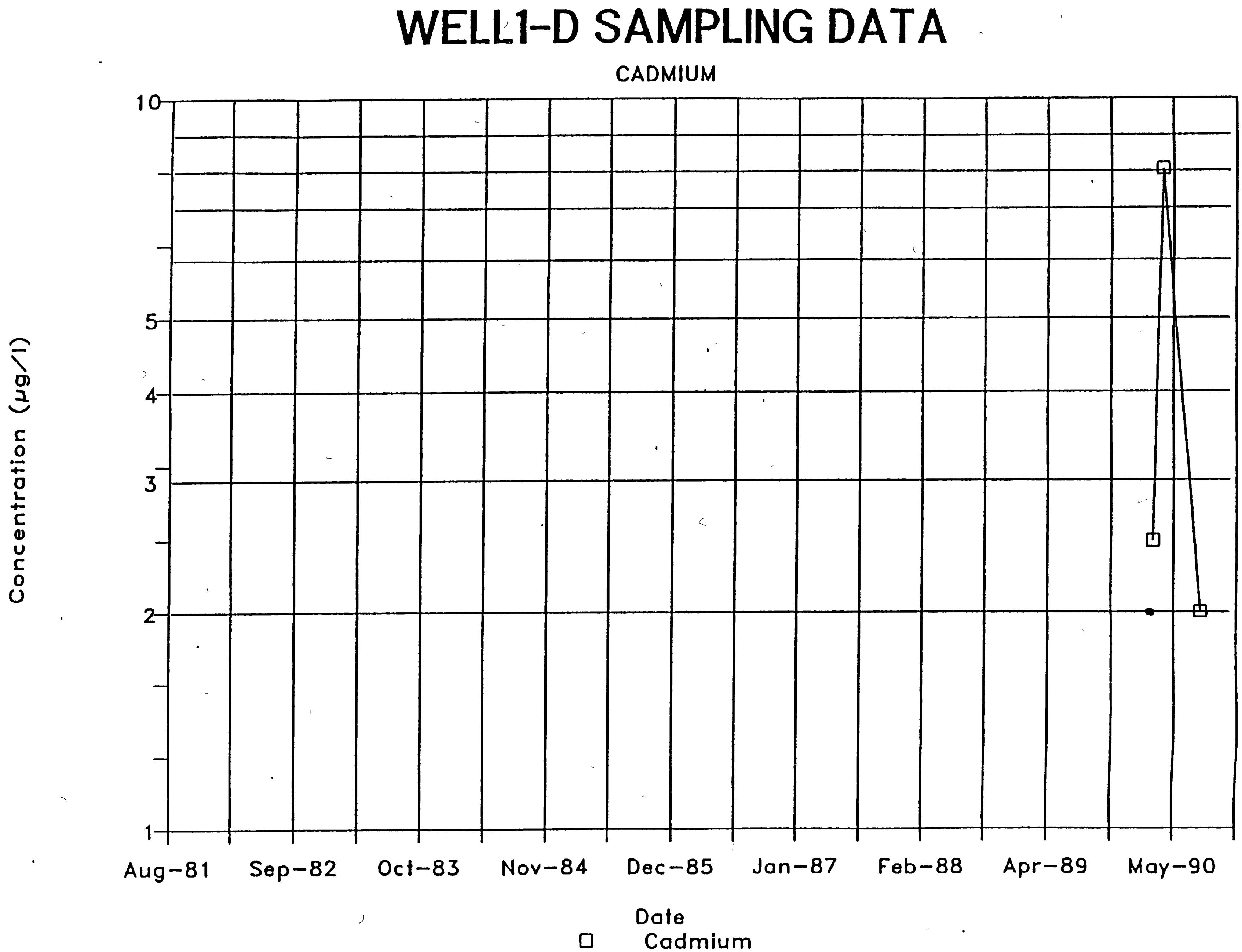



WELL3 SAMPLING DATA
CADMIUM
Concentration (µg/l)
100
50
40
30
20
10
5
4
3
2
1
Aug-81
Sep-82
Oct-83
Nov-84
Dec-85
Jan-87
Feb-88
Apr-89
May-90
Date
Cadmium
Linear Regression

WELL2 SAMPLING DATA

CADMIUM



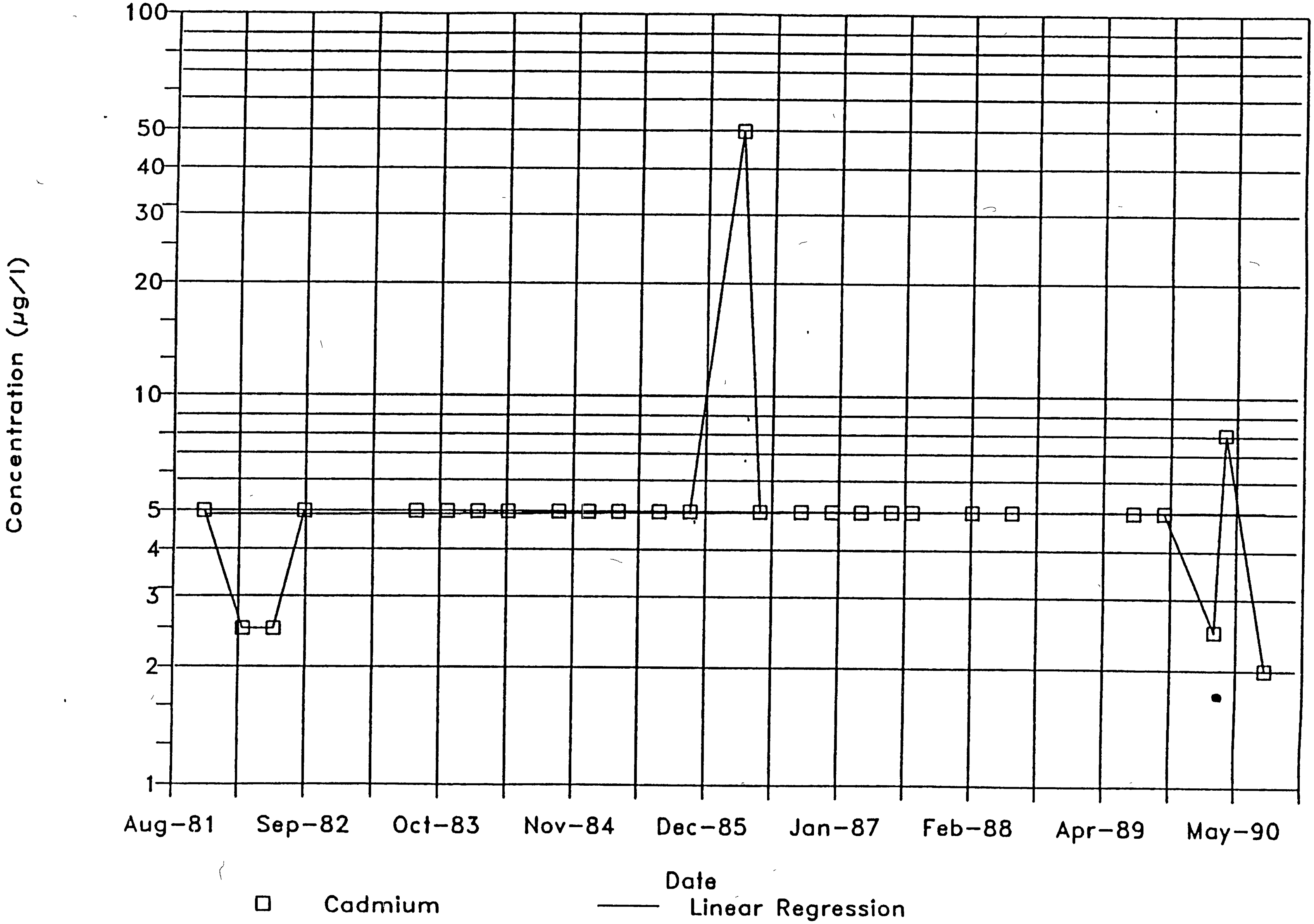


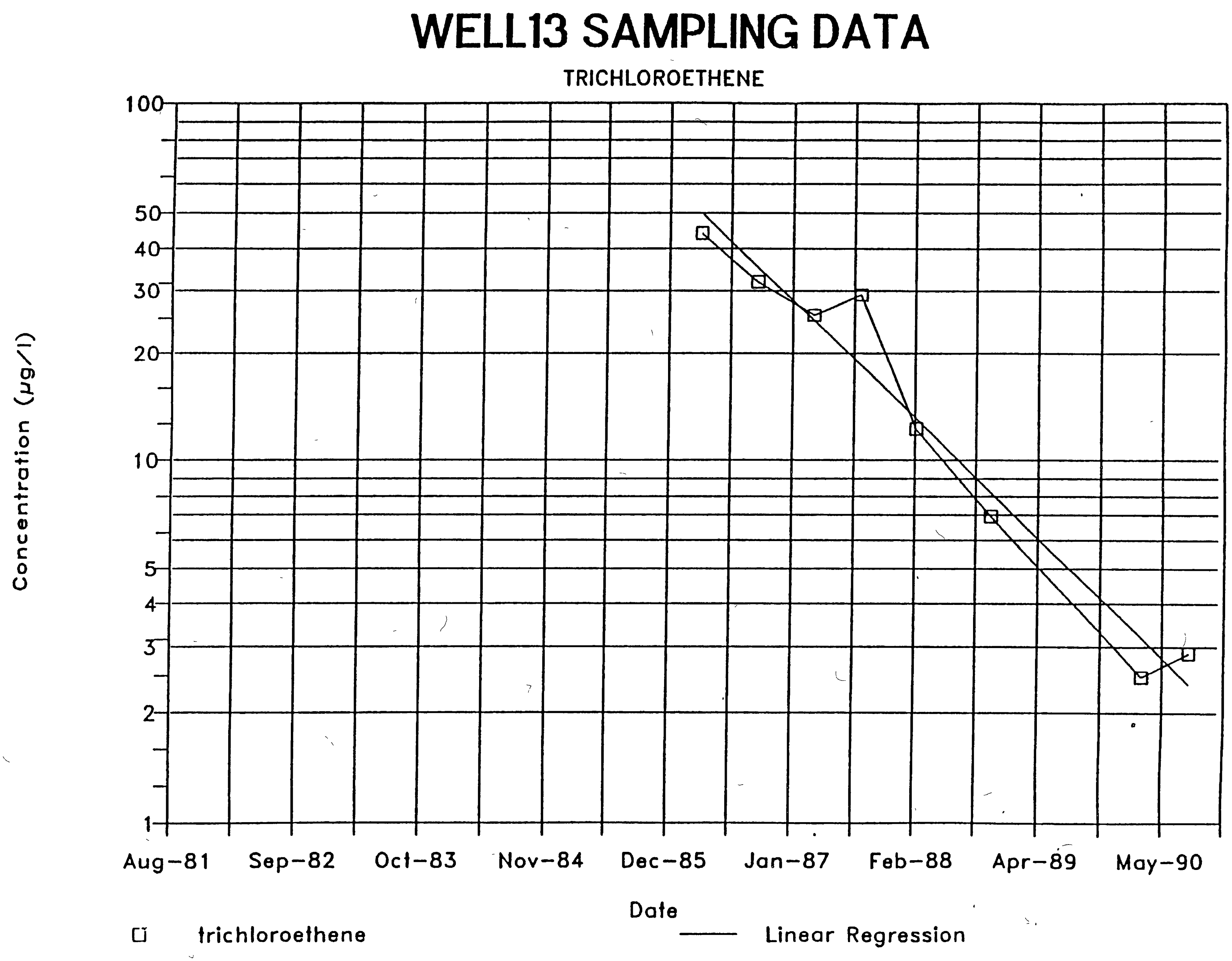
WELL1-D SAMPLING DATA
CADMIUM
10
5
4
3
2
1
Concentration (µg/l)
Aug-81
Sep-82
Oct-83
Nov-84
Dec-85
Jan-87
Feb-88
Apr-89
May-90
Date
Cadmium

[redacted]

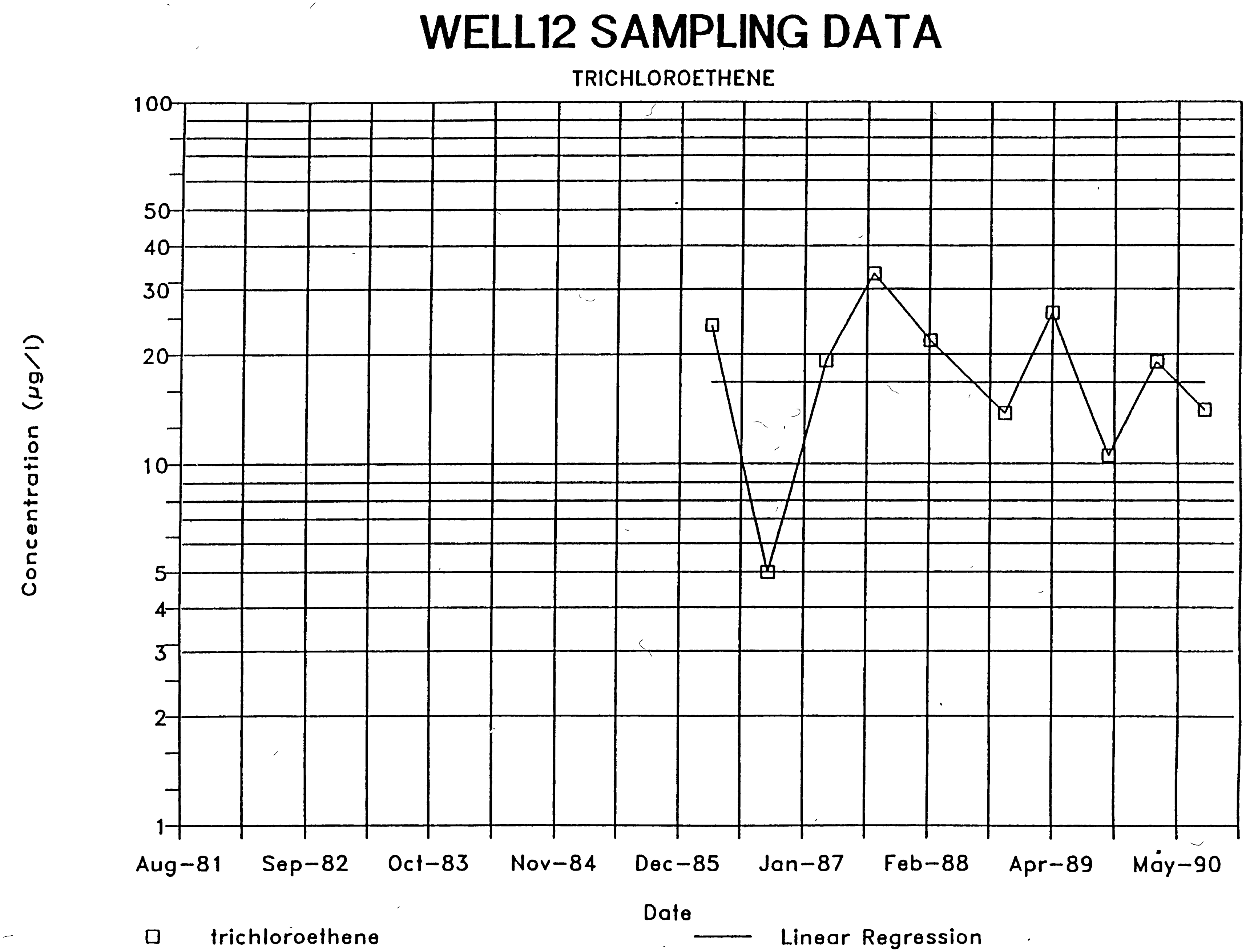
WELL1 SAMPLING DATA

CADMIUM



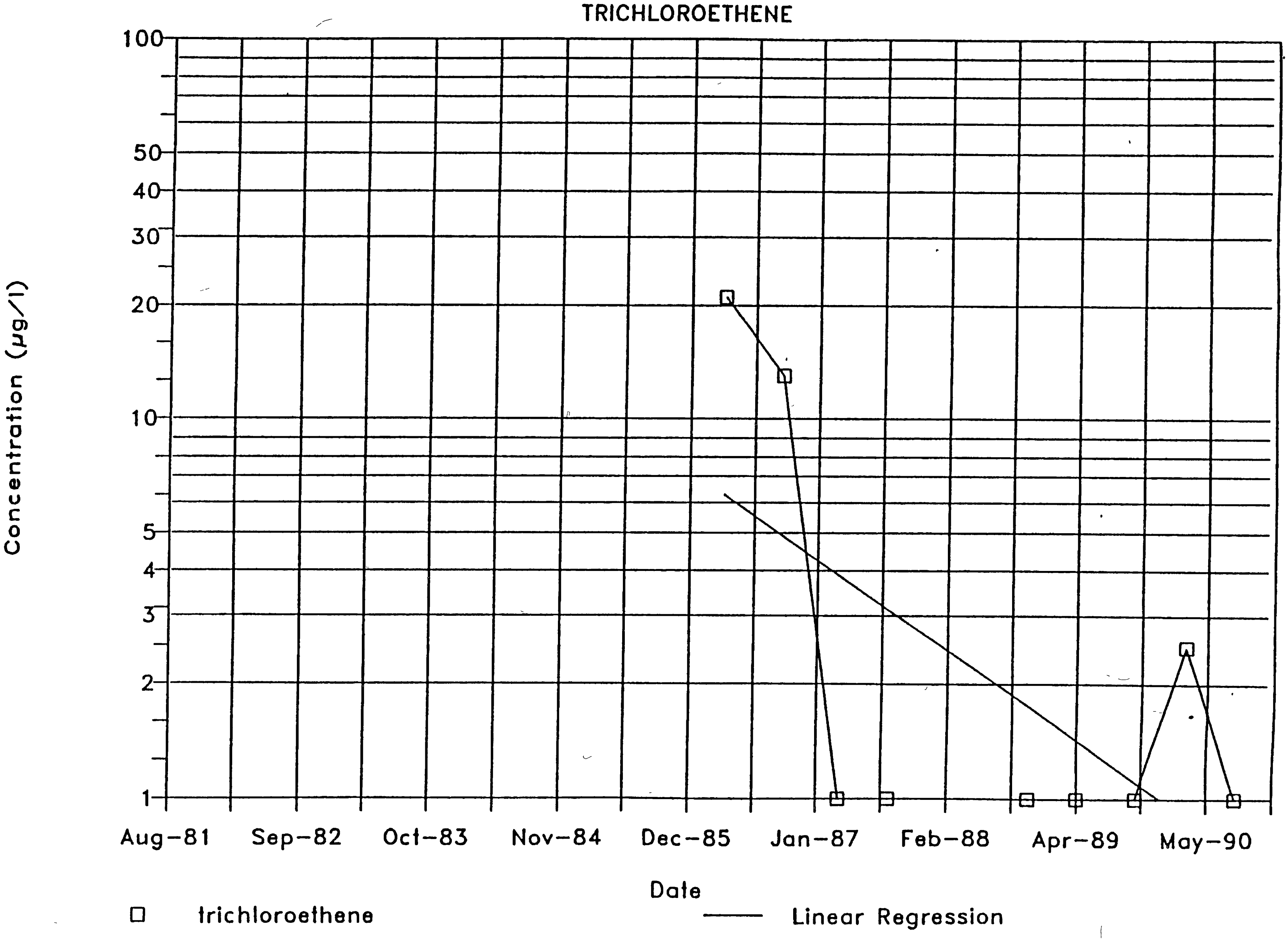


WELL13 SAMPLING DATA
TRICHLOROETHENE
Concentration (μg/l)
100
50
40
30
20
10
5
4
3
2
1
Aug-81
Sep-82
Oct-83
Nov-84
Dec-85
Jan-87
Feb-88
Apr-89
May-90
Date
trichloroethene
Linear Regression



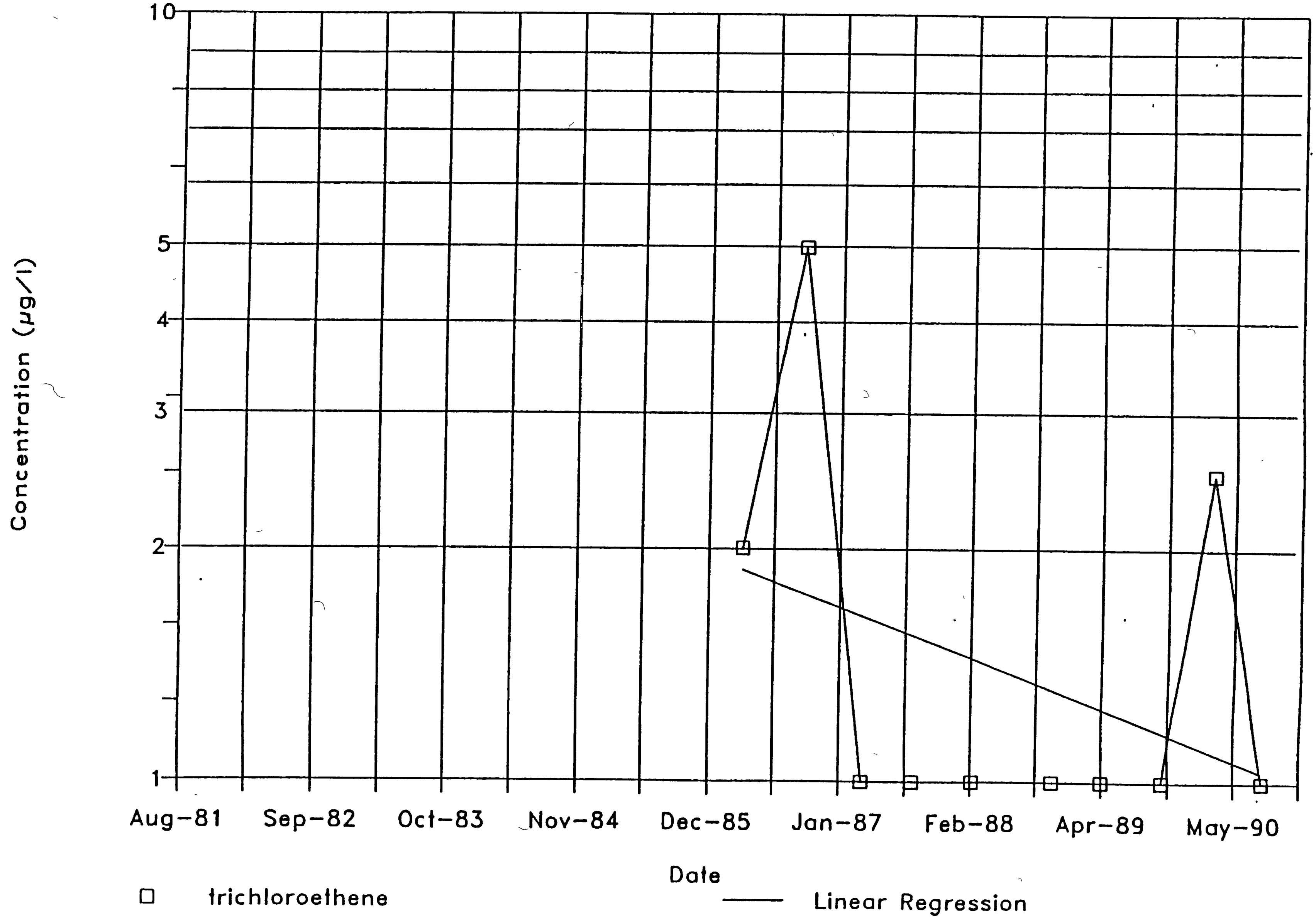
WELL12 SAMPLING DATA
TRICHLOROETHENE
100
50
40
30
20
10
5
4
3
2
1
Concentration (μg/l)
Aug−81
Sep−82
Oct−83
Nov−84
Dec−85
Jan−87
Feb−88
Apr−89
May−90
Date
trichloroethene
Linear Regression

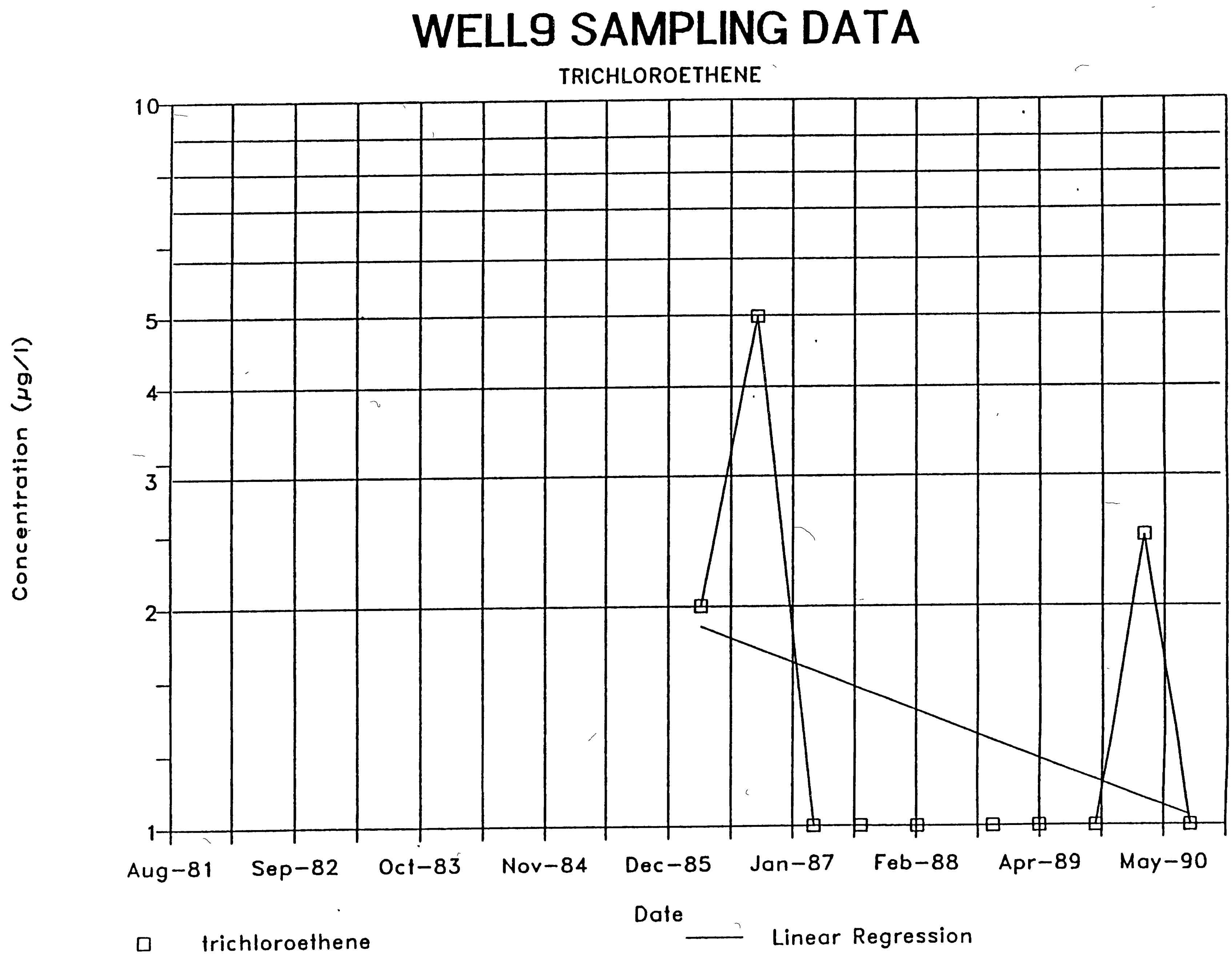
WELL11 SAMPLING DATA



WELL10 SAMPLING DATA

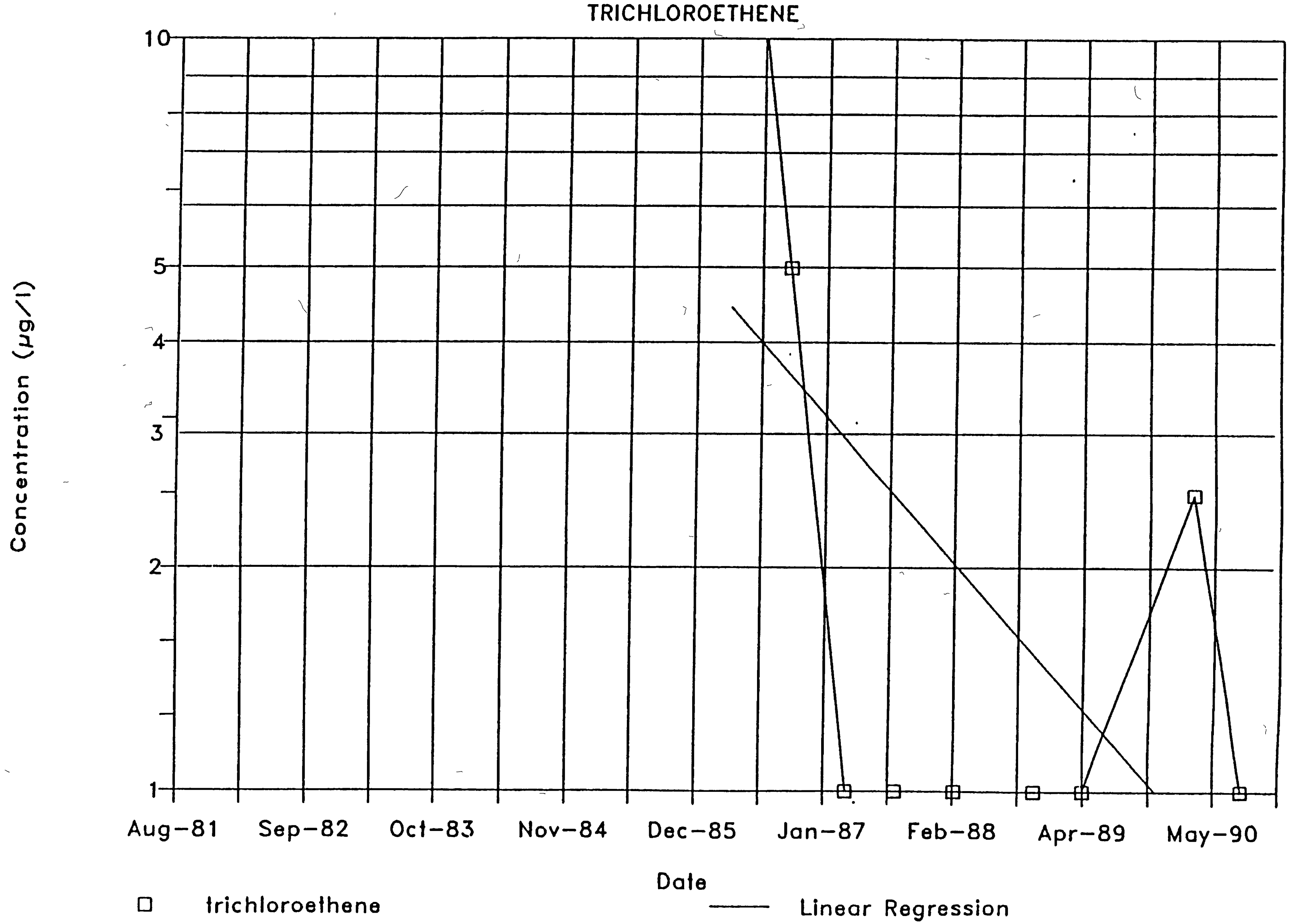
TRICHLOROETHENE

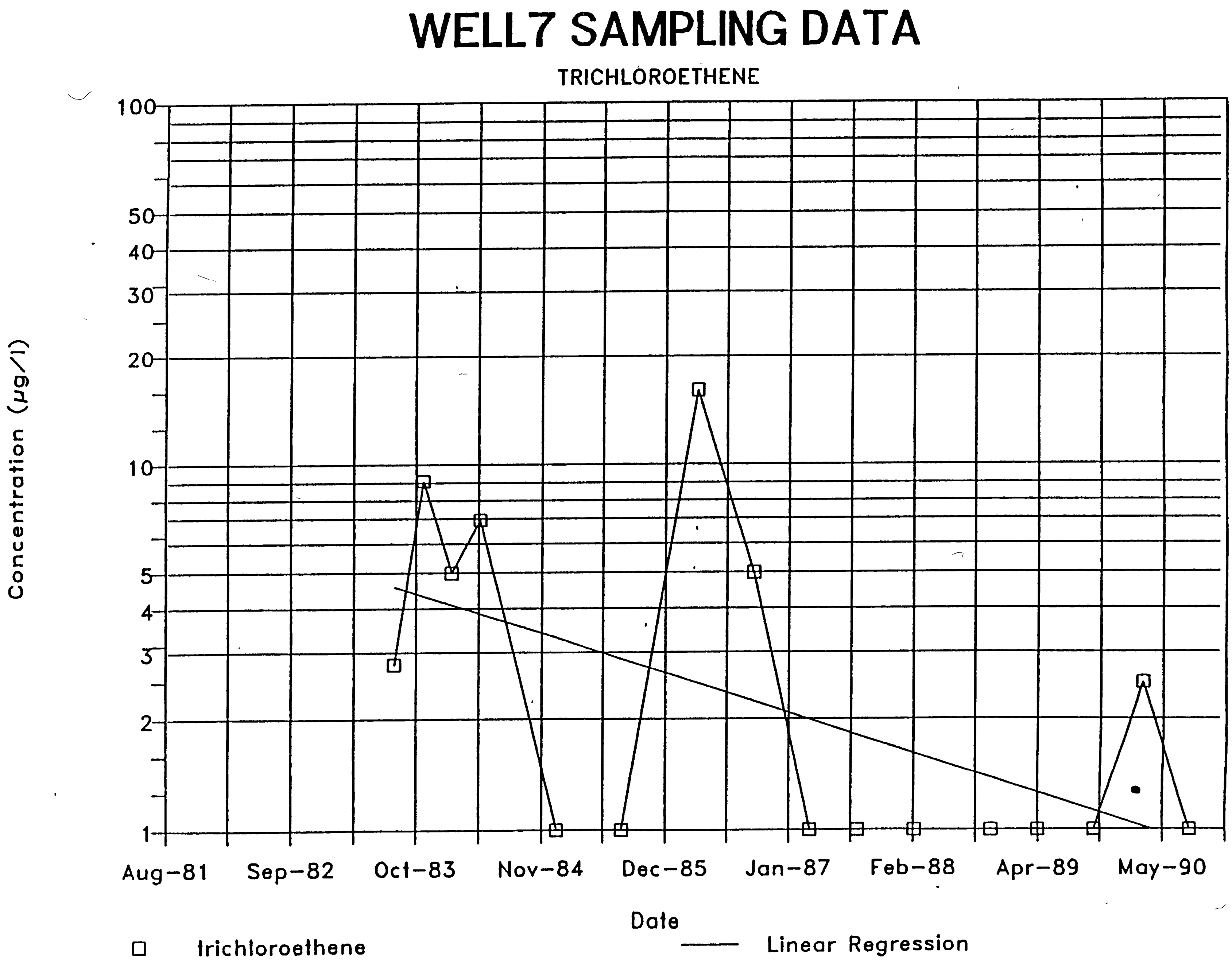


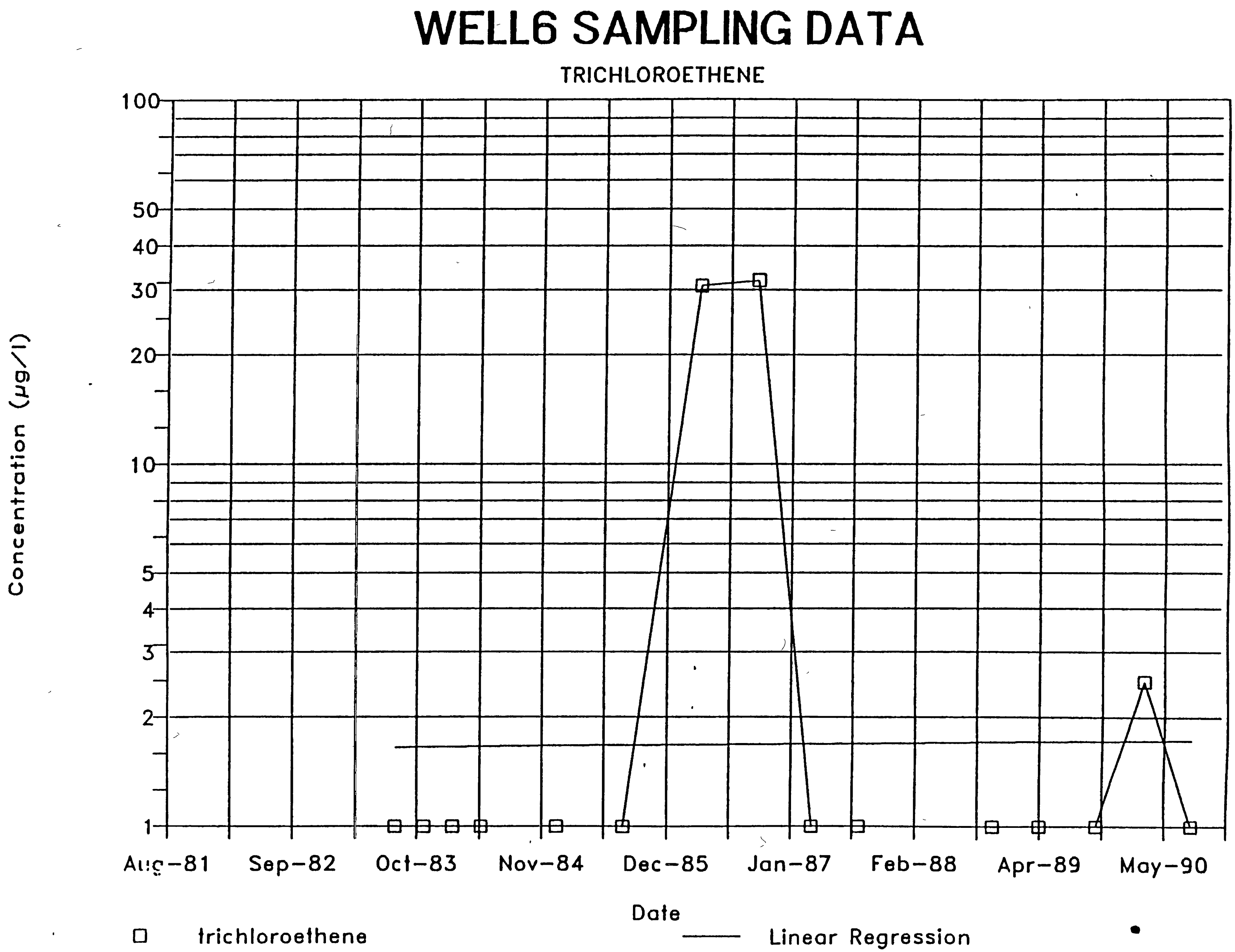


WELL9 SAMPLING DATA
TRICHLOROETHENE
Concentration (µg/l)
10
5
4
3
2
1
Aug-81
Sep-82
Oct-83
Nov-84
Dec-85
Jan-87
Feb-88
Apr-89
May-90
Date
trichloroethene
Linear Regression

WELL8 SAMPLING DATA

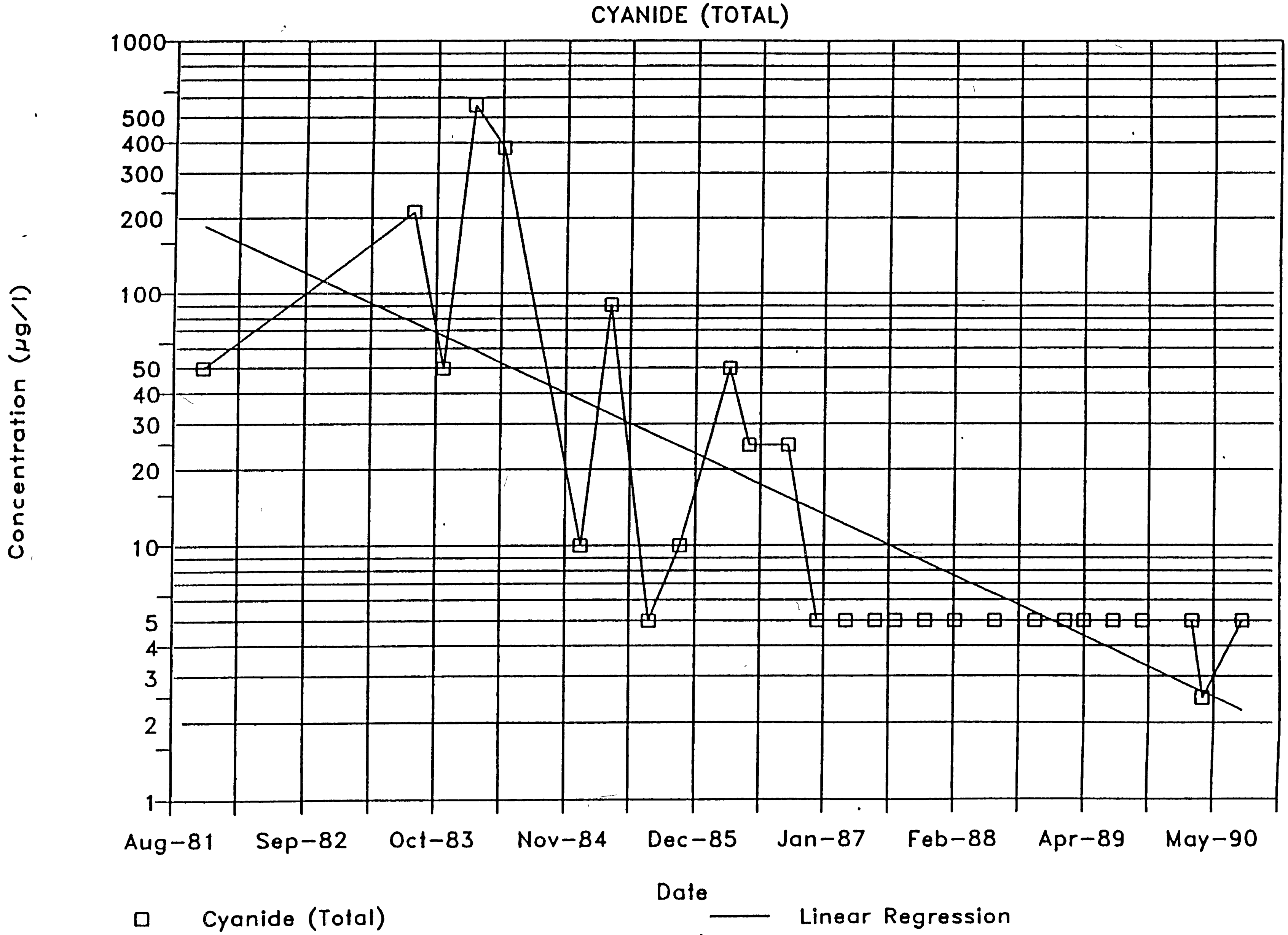


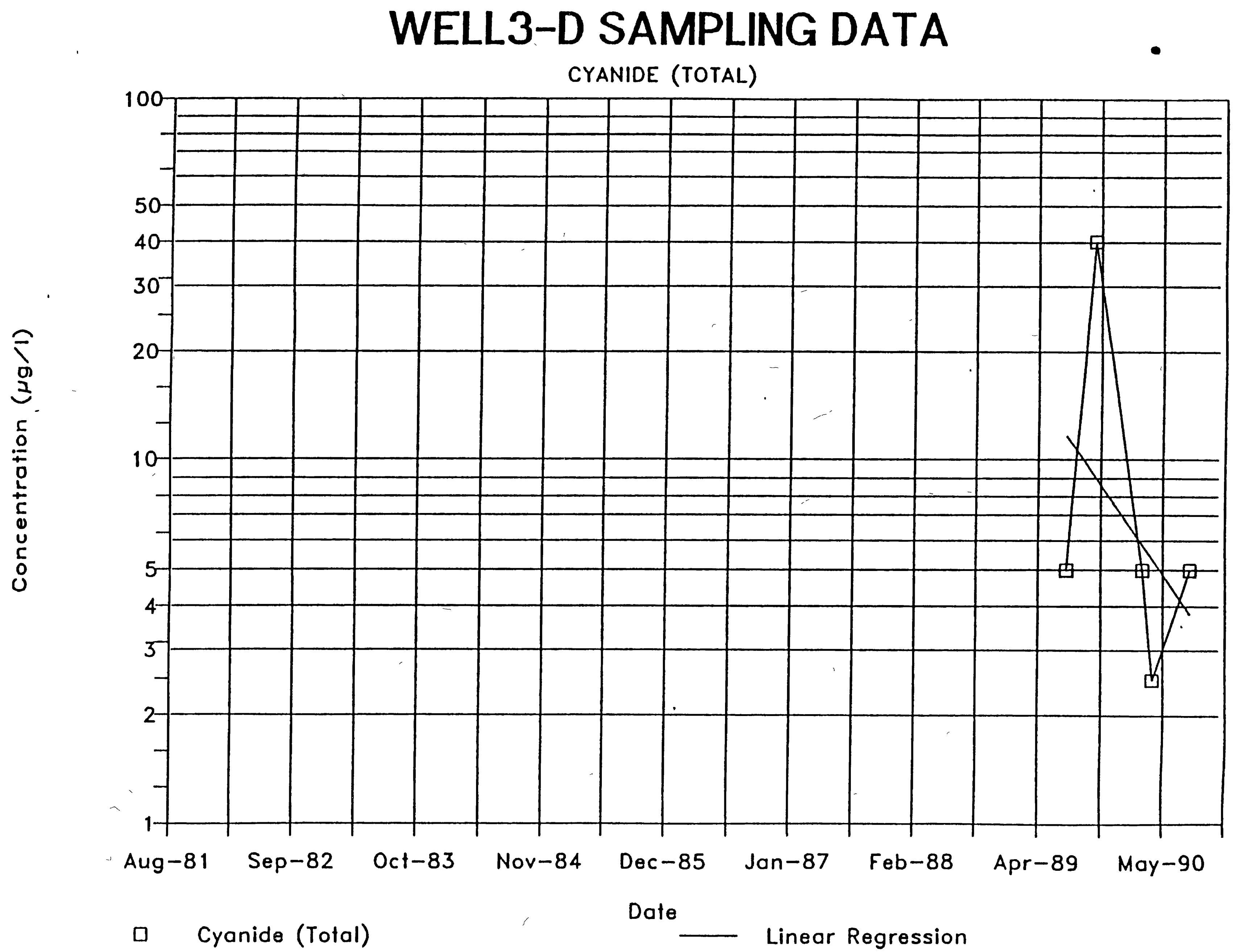

WELL7 SAMPLING DATA
TRICHLOROETHENE
Concentration (µg/l)
100
50
40
30
20
10
5
4
3
2
1
Aug-81
Sep-82
Oct-83
Nov-84
Dec-85
Jan-87
Feb-88
Apr-89
May-90
Date
trichloroethene
Linear Regression



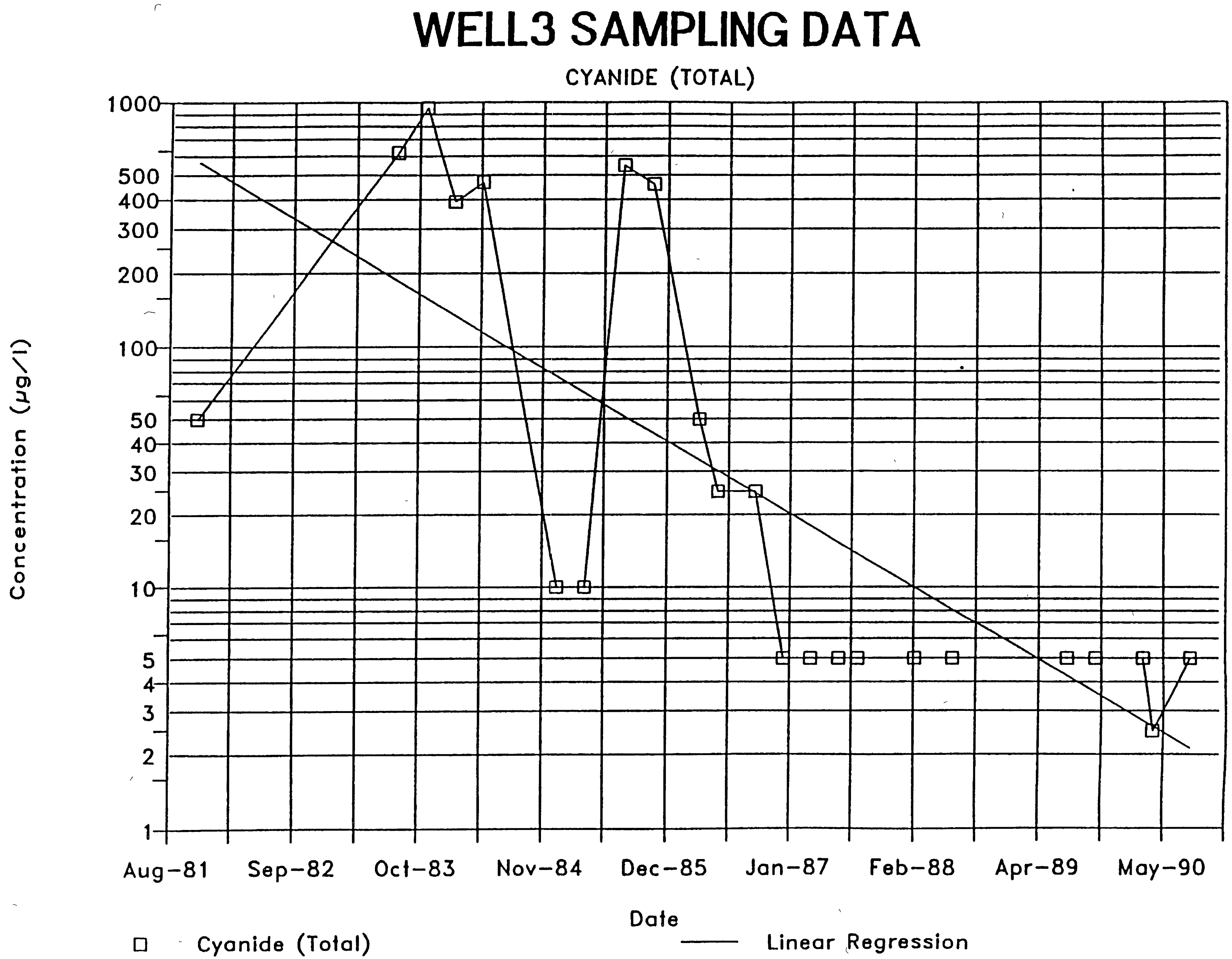
WELL6 SAMPLING DATA
TRICHLOROETHENE
Concentration (µg/l)
100
50
40
30
20
10
5
4
3
2
1
Aug-81
Sep-82
Oct-83
Nov-84
Dec-85
Jan-87
Feb-88
Apr-89
May-90
Date
trichloroethene
Linear Regression

WELL4 SAMPLING DATA



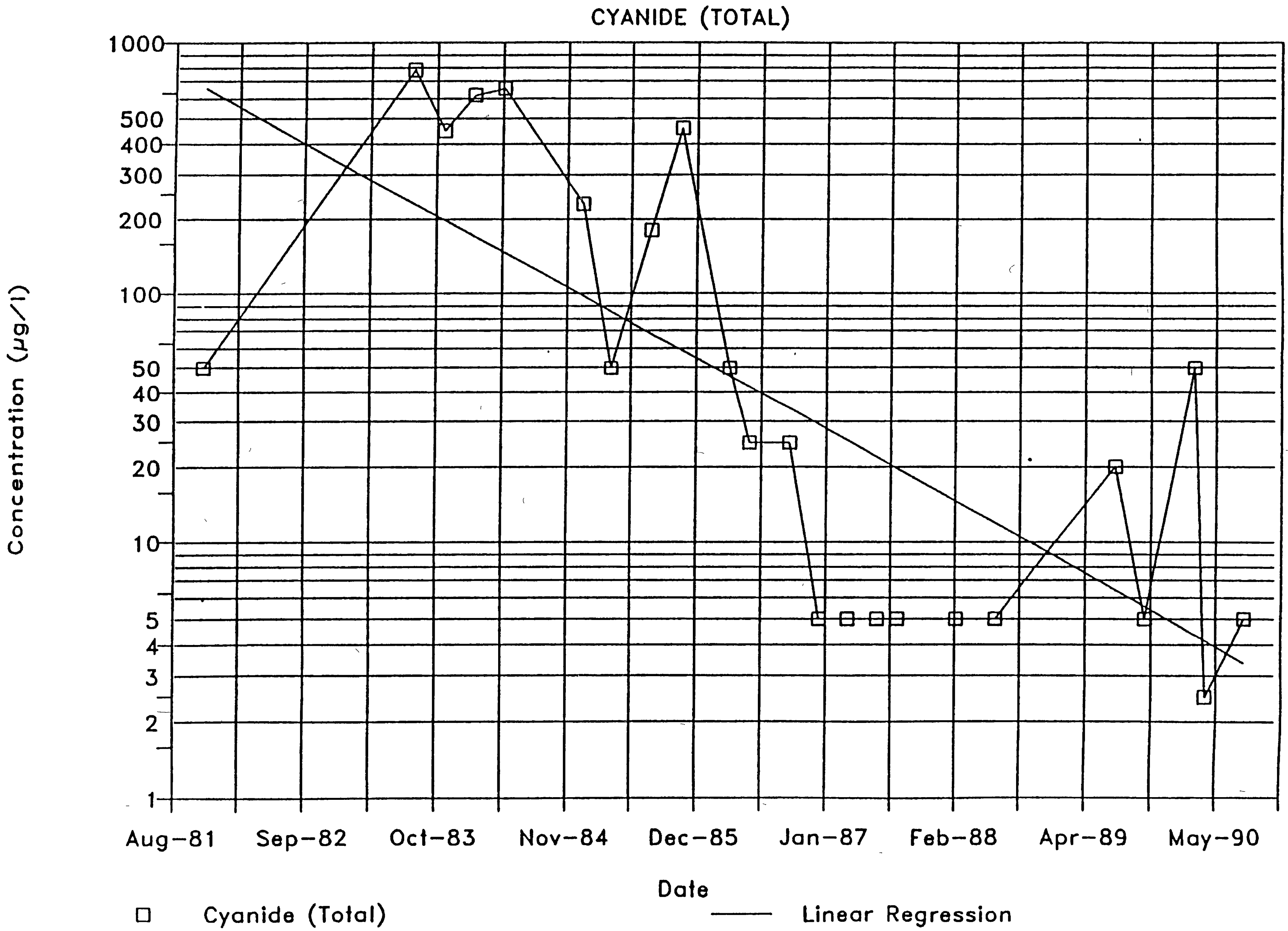


WELL3-D SAMPLING DATA
CYANIDE (TOTAL)
Concentration (µg/l)
100
50
40
30
20
10
5
4
3
2
1
Aug-81
Sep-82
Oct-83
Nov-84
Dec-85
Jan-87
Feb-88
Apr-89
May-90
Date
Cyanide (Total)
Linear Regression


WELL3 SAMPLING DATA
CYANIDE (TOTAL)
1000
500
400
300
200
100
50
40
30
20
10
5
4
3
2
1
Concentration (μg/l)
Aug-81
Sep-82
Oct-83
Nov-84
Dec-85
Jan-87
Feb-88
Apr-89
May-90
Date
Cyanide (Total)
Linear Regression

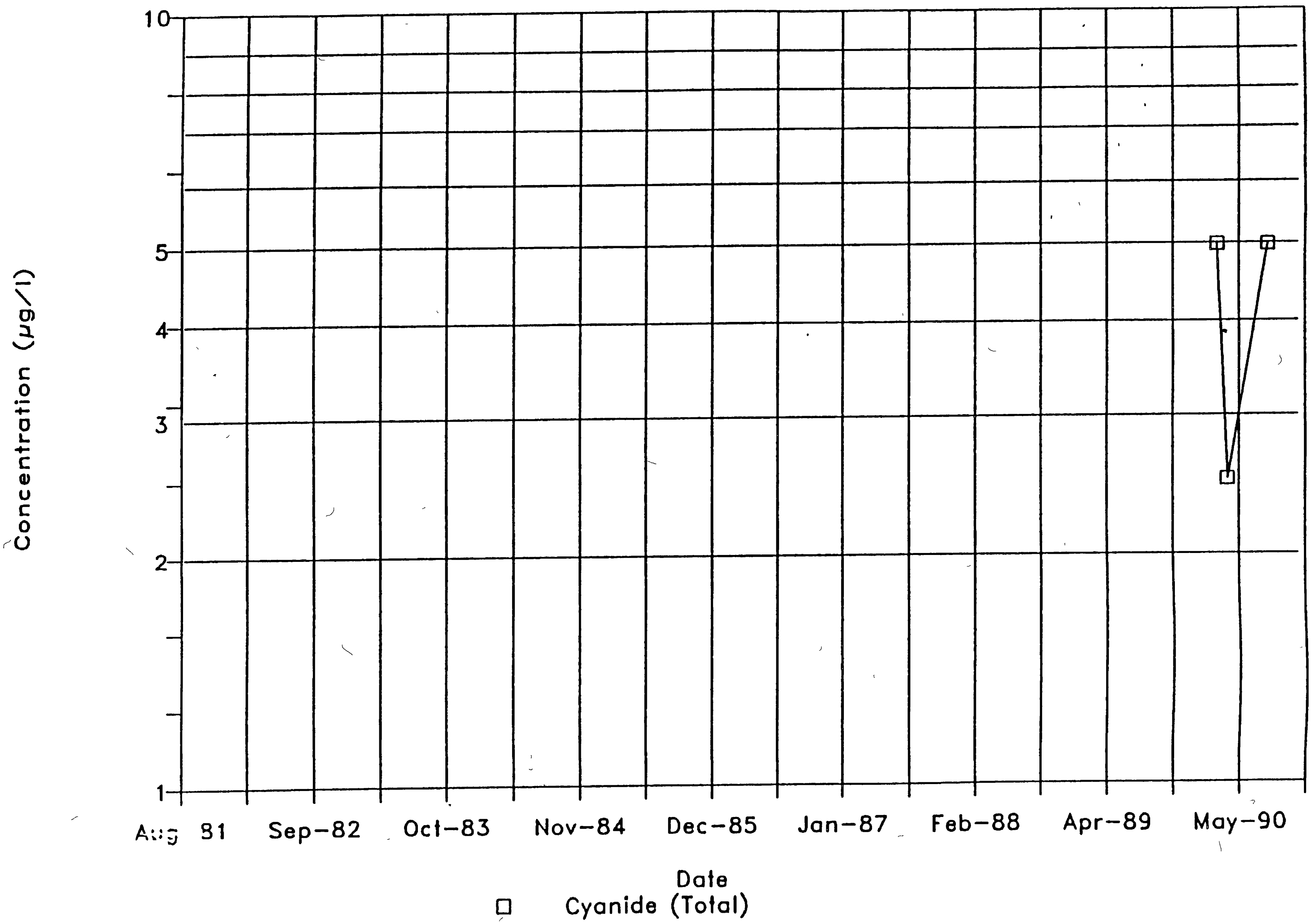
[redacted] [redacted]

WELL2 SAMPLING DATA



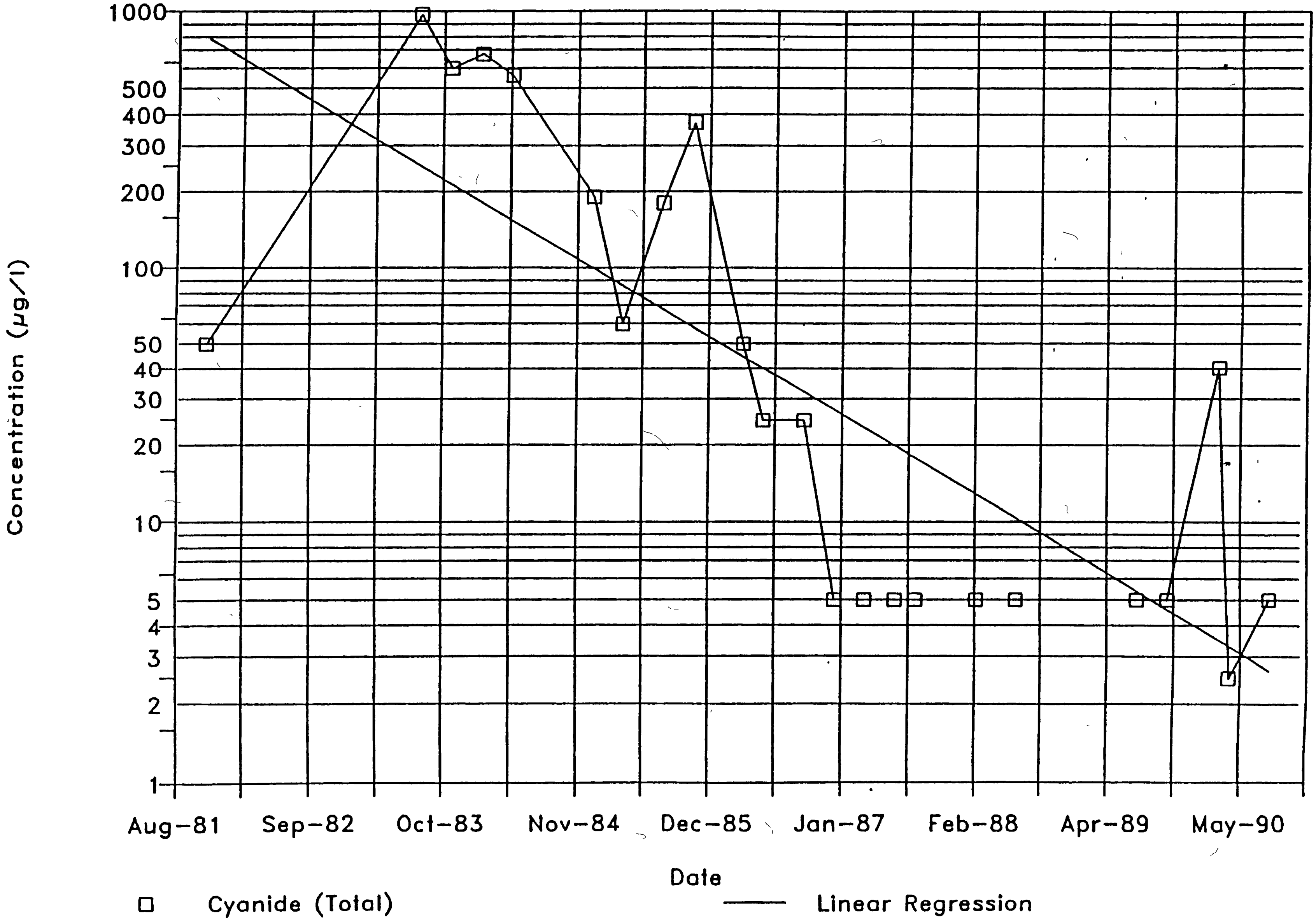
WELL1-D SAMPLING DATA

CYANIDE (TOTAL)



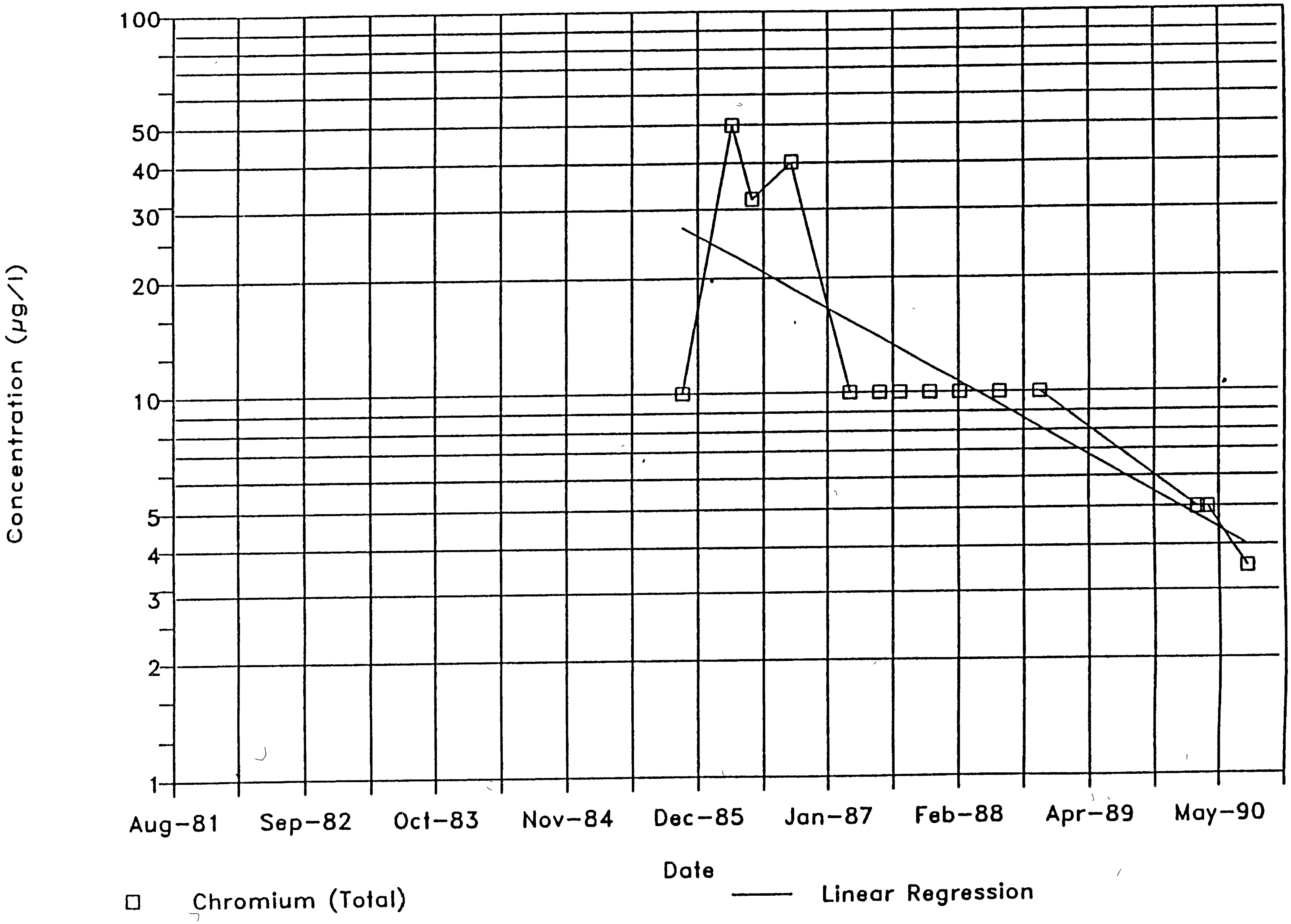
WELL1 SAMPLING DATA

CYANIDE (TOTAL)

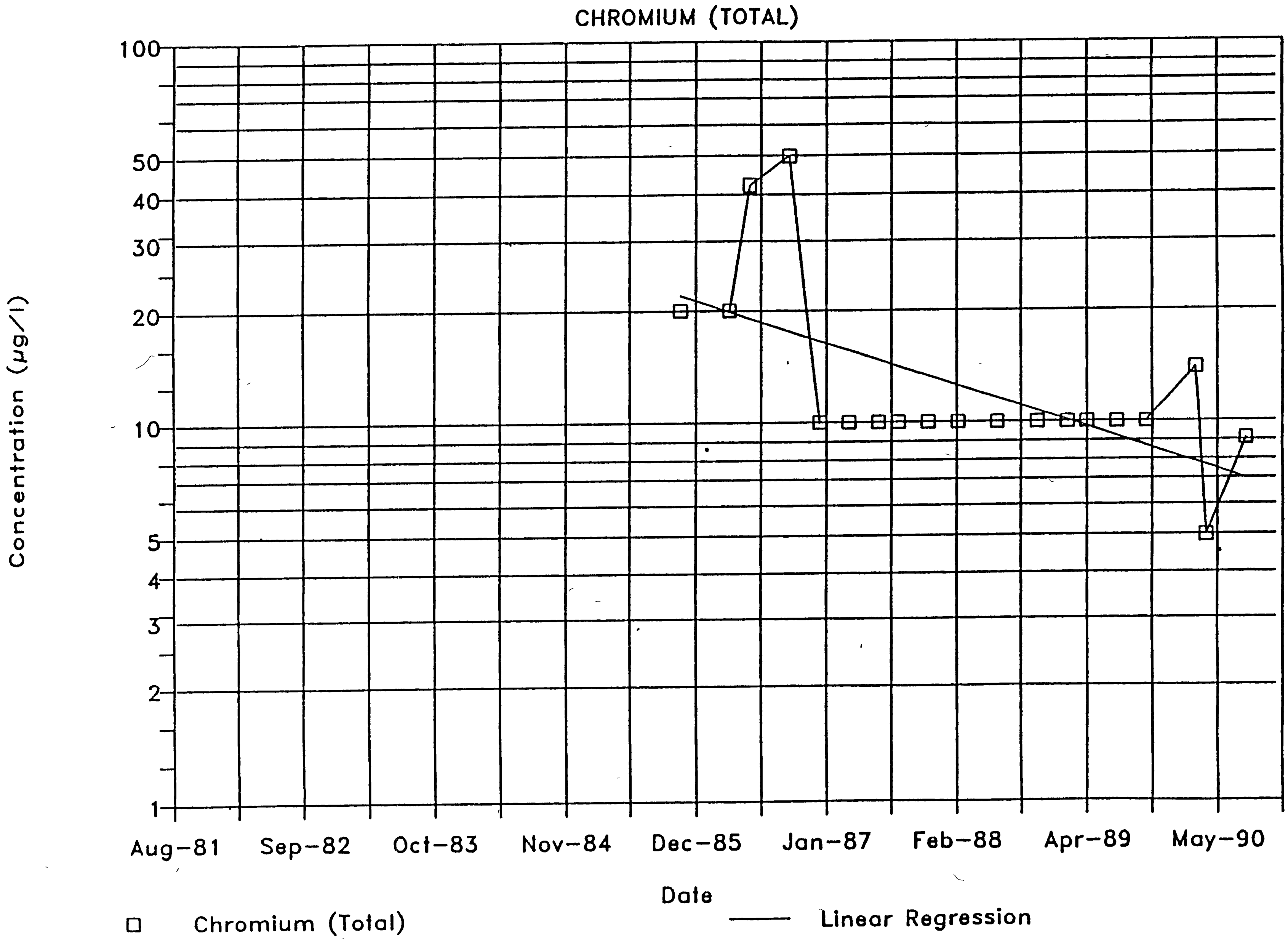


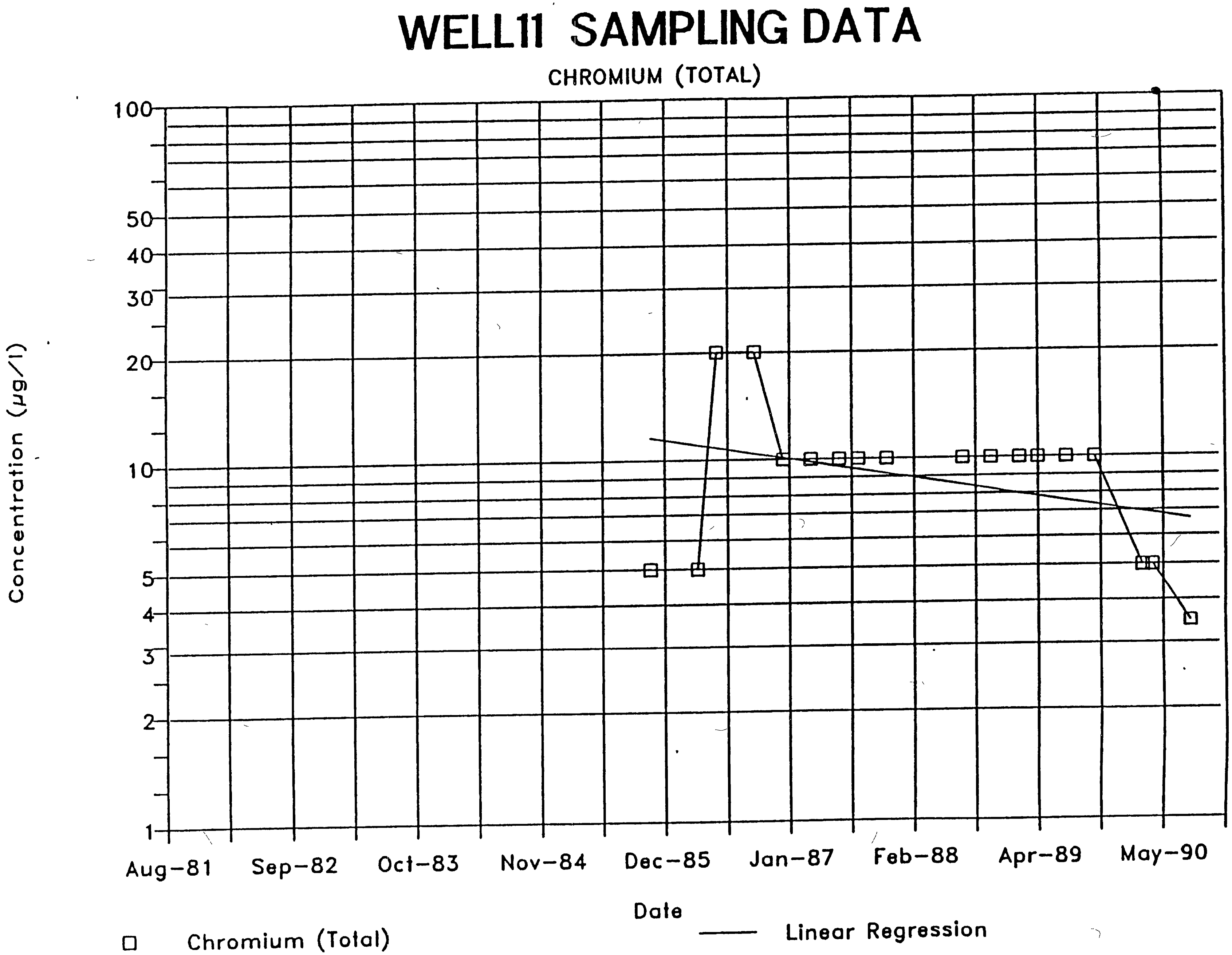
WELL13 SAMPLING DATA

CHROMIUM (TOTAL)



WELL12 SAMPLING DATA

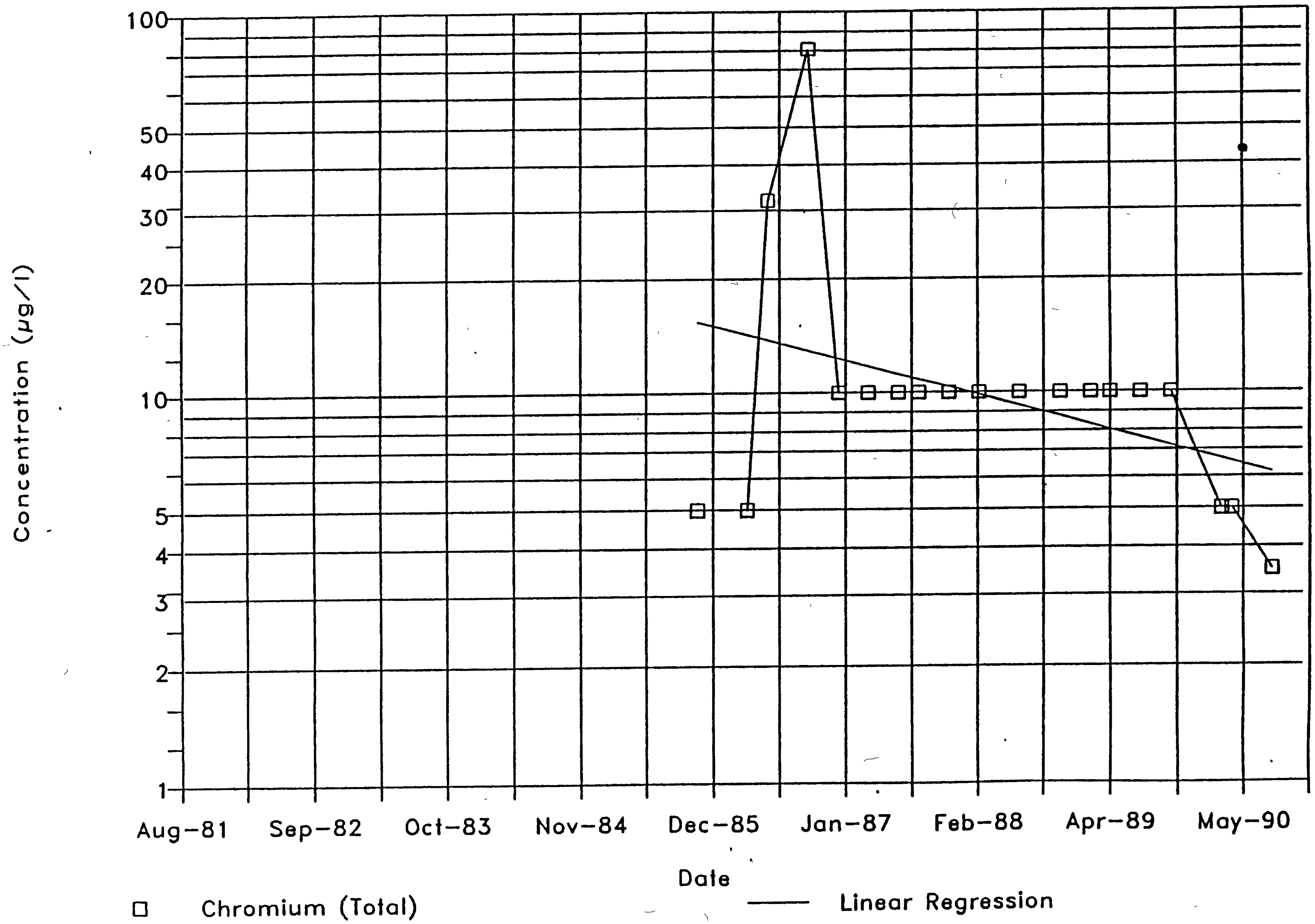




WELL11 SAMPLING DATA
CHROMIUM (TOTAL)
Concentration (µg/l)
100
50
40
30
20
10
5
4
3
2
1
Aug-81
Sep-82
Oct-83
Nov-84
Dec-85
Jan-87
Feb-88
Apr-89
May-90
Date
Chromium (Total)
Linear Regression

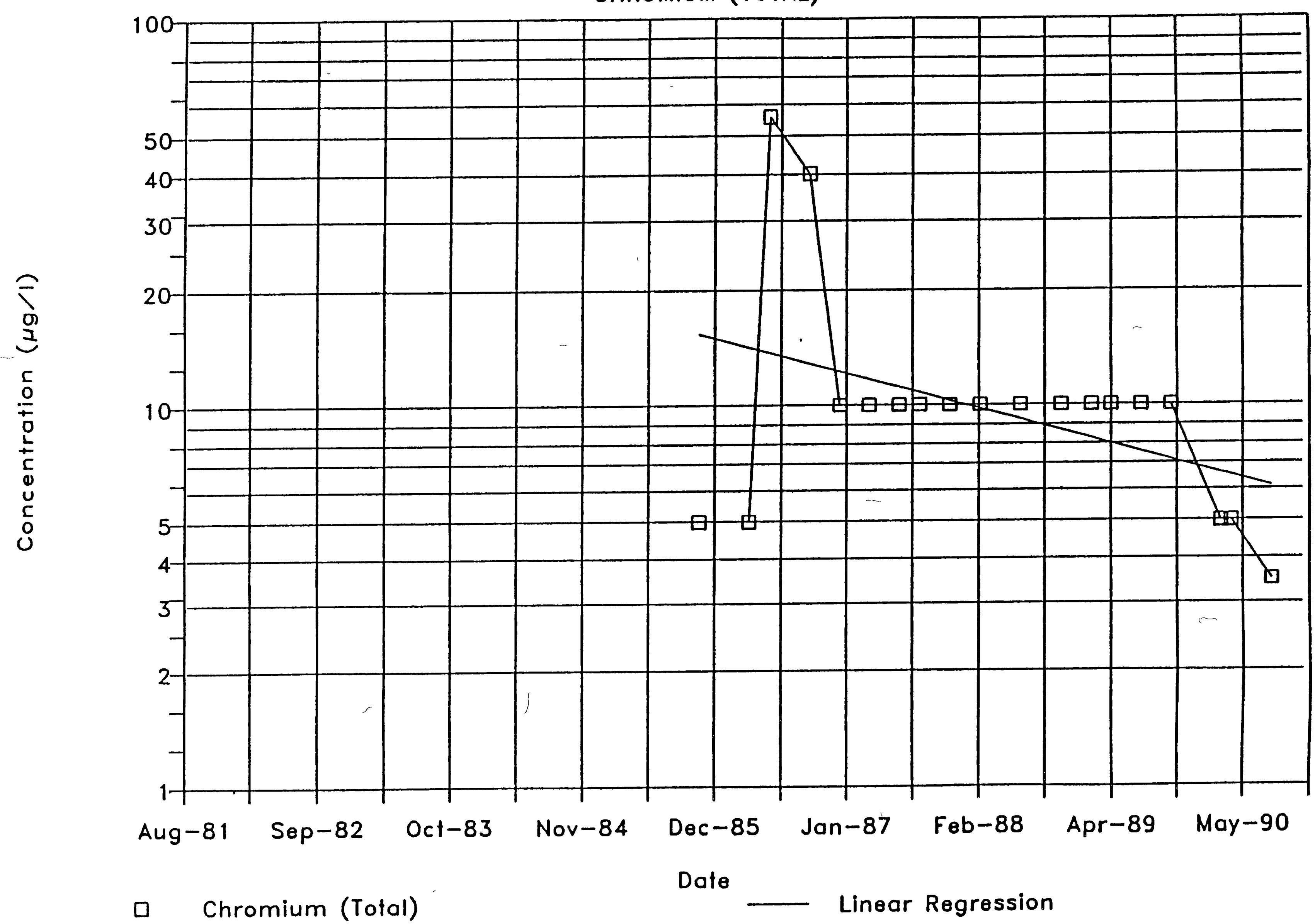
WELL10 SAMPLING DATA

CHROMIUM (TOTAL)



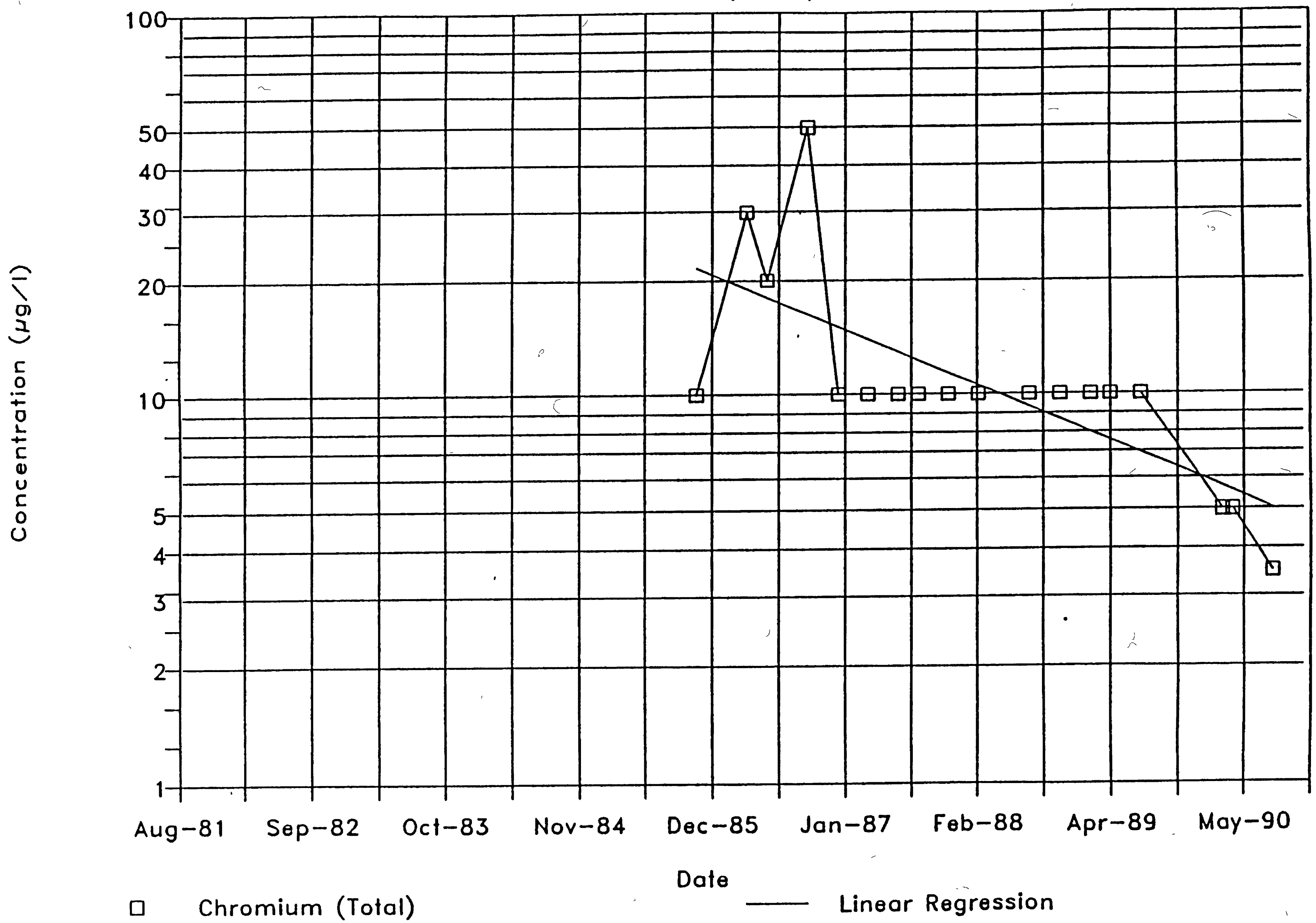
WELL9 SAMPLING DATA

CHROMIUM (TOTAL)

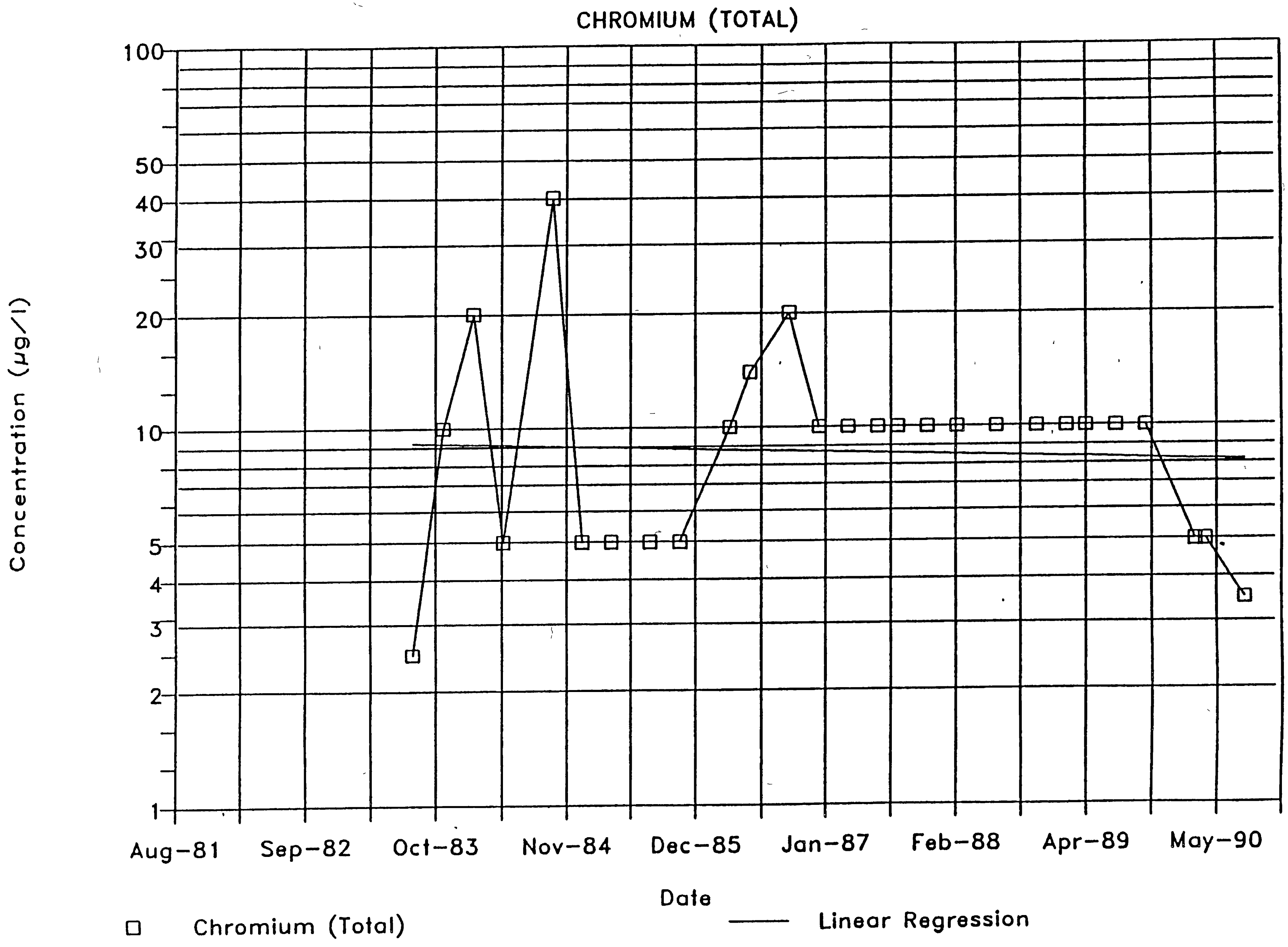


WELL8 SAMPLING DATA

CHROMIUM (TOTAL)

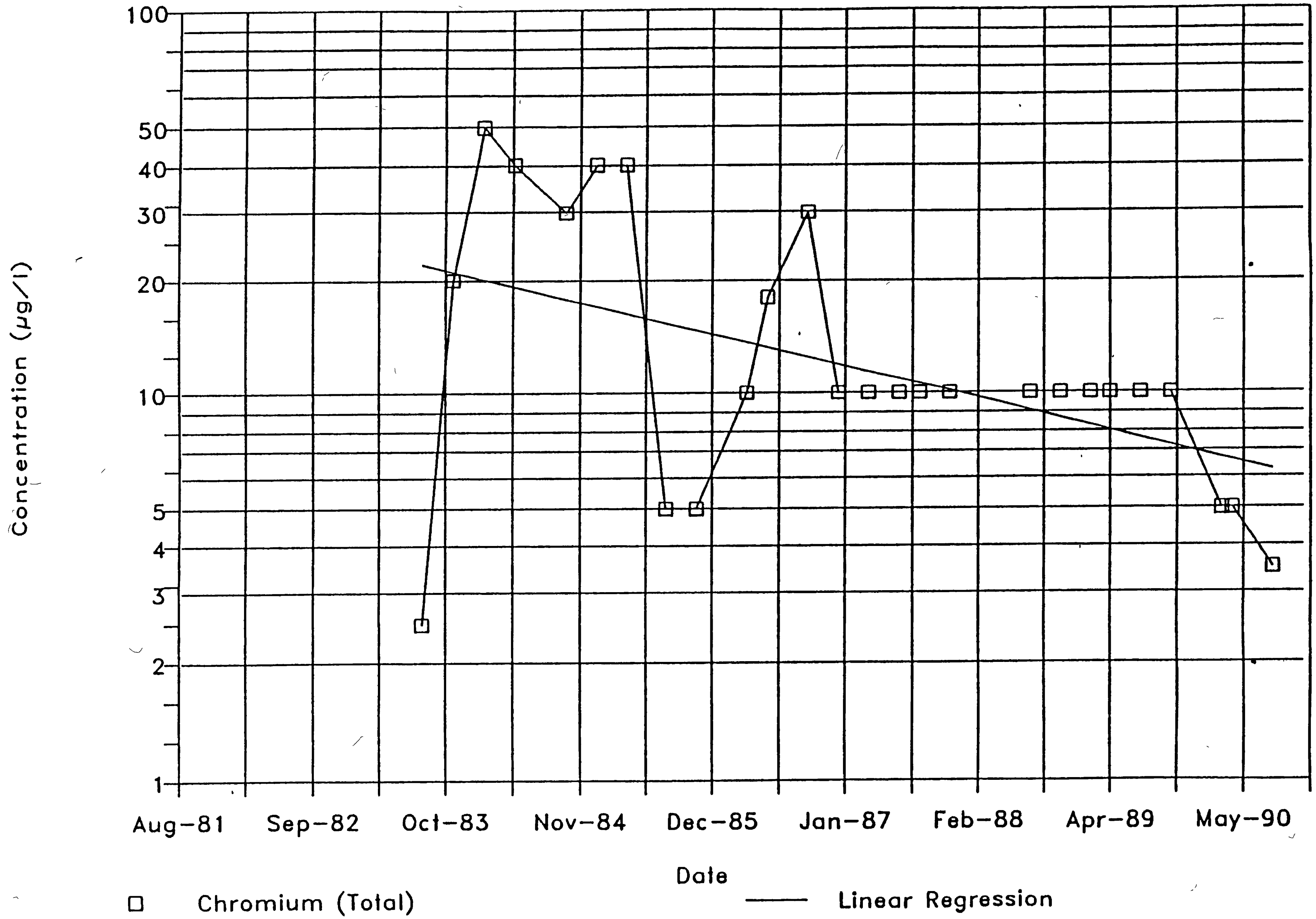


WELL7 SAMPLING DATA

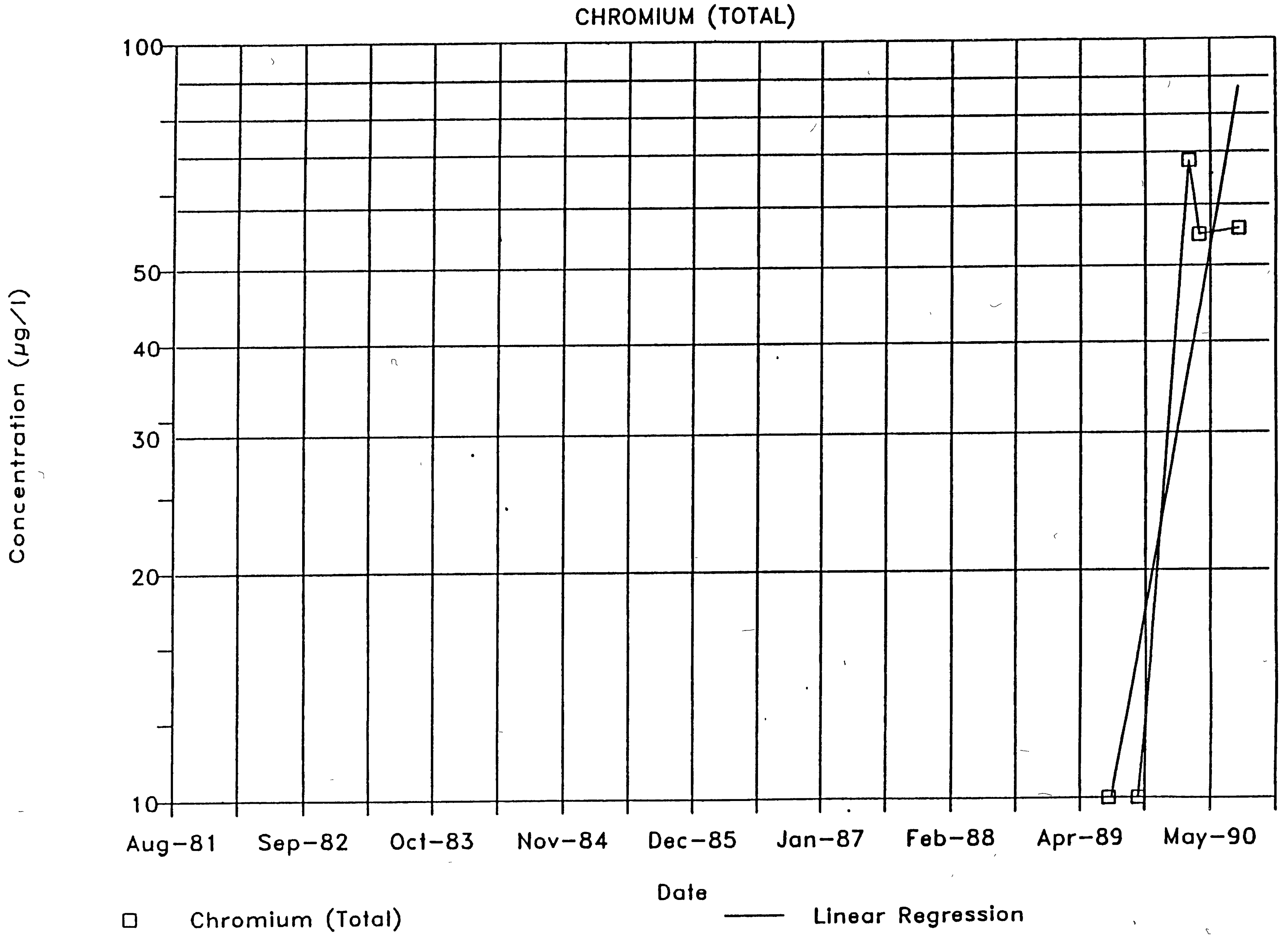


WELL6 SAMPLING DATA

CHROMIUM (TOTAL)

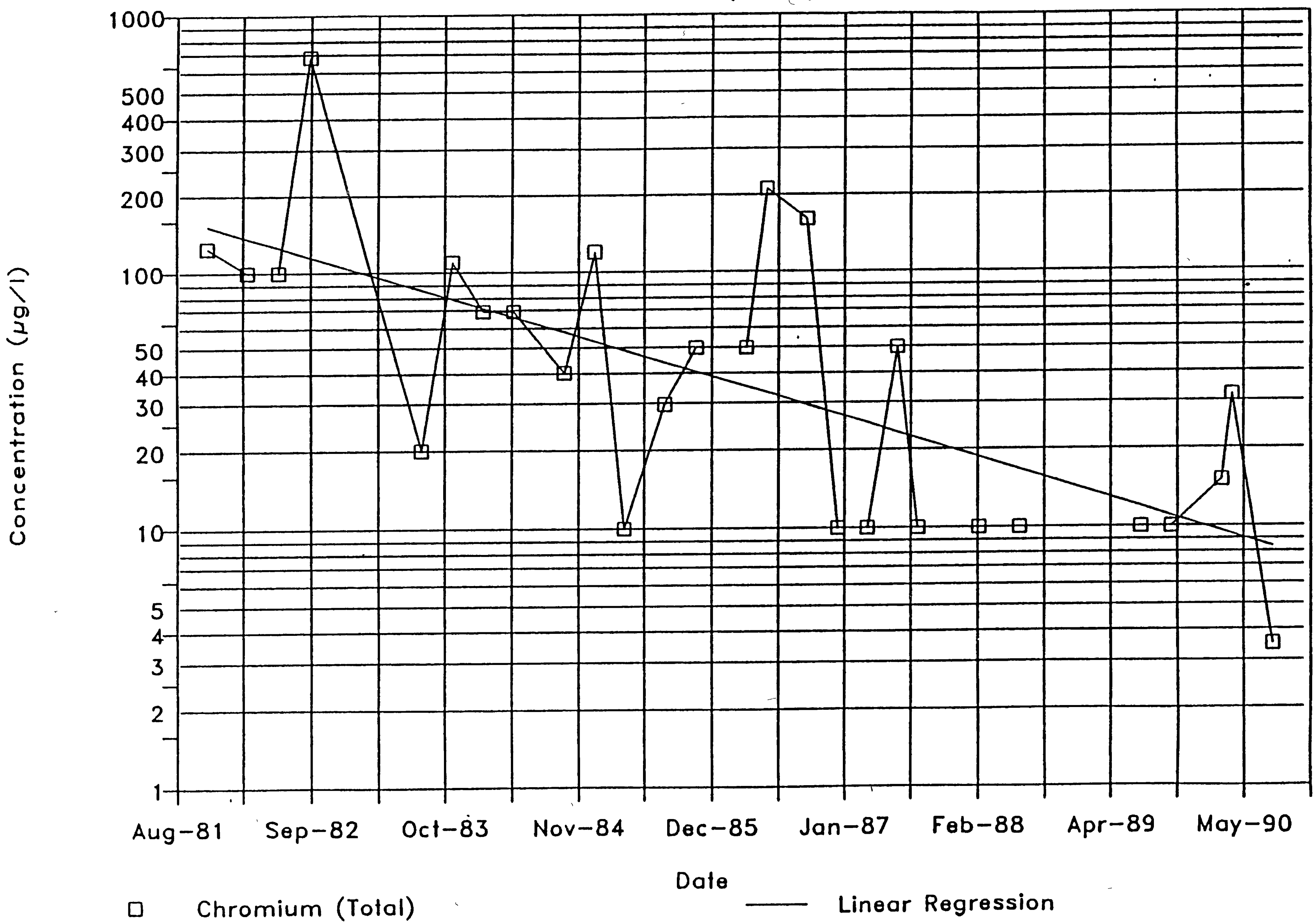


WELL5-D SAMPLING DATA



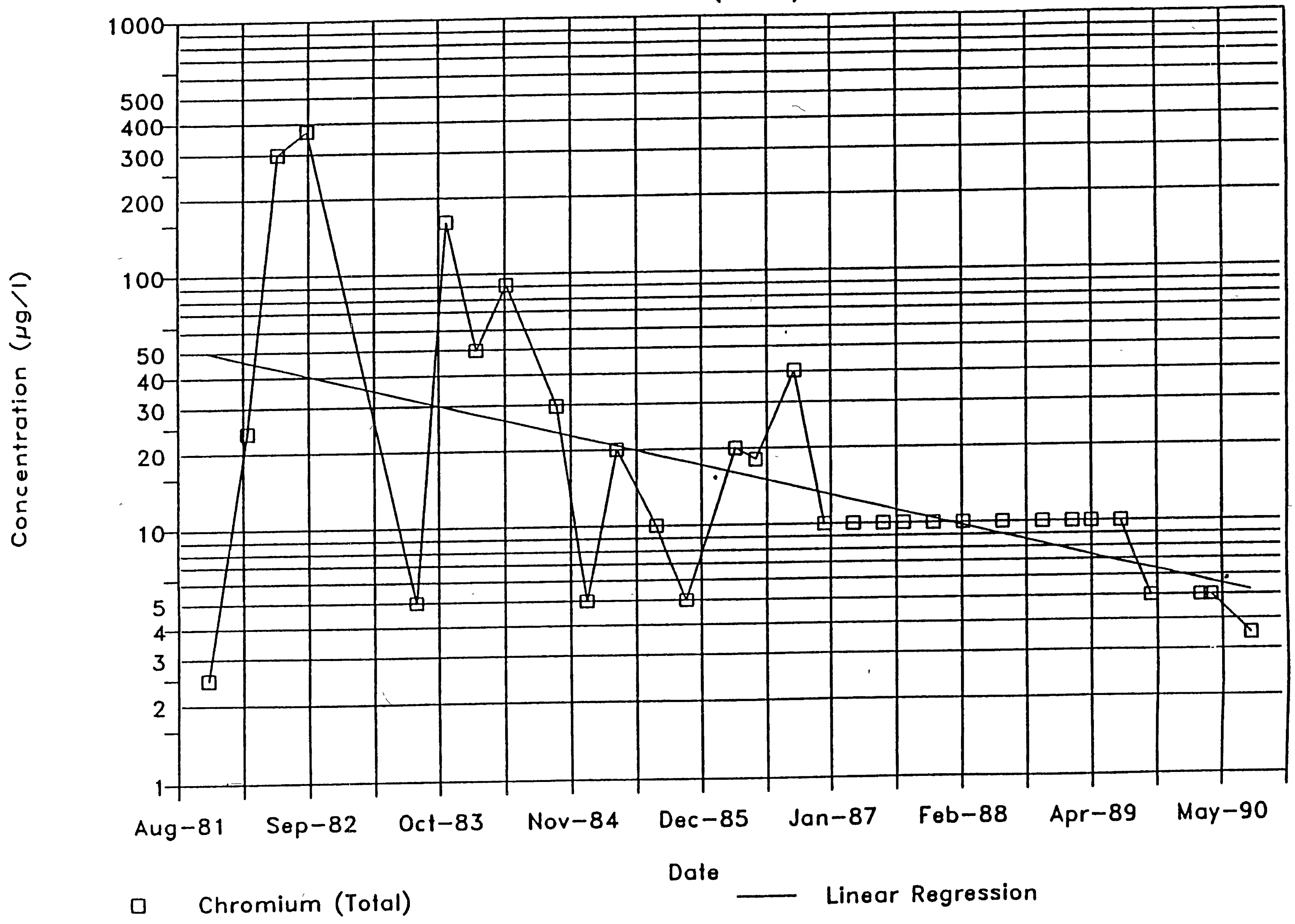
WELL5 SAMPLING DATA

CHROMIUM (TOTAL)



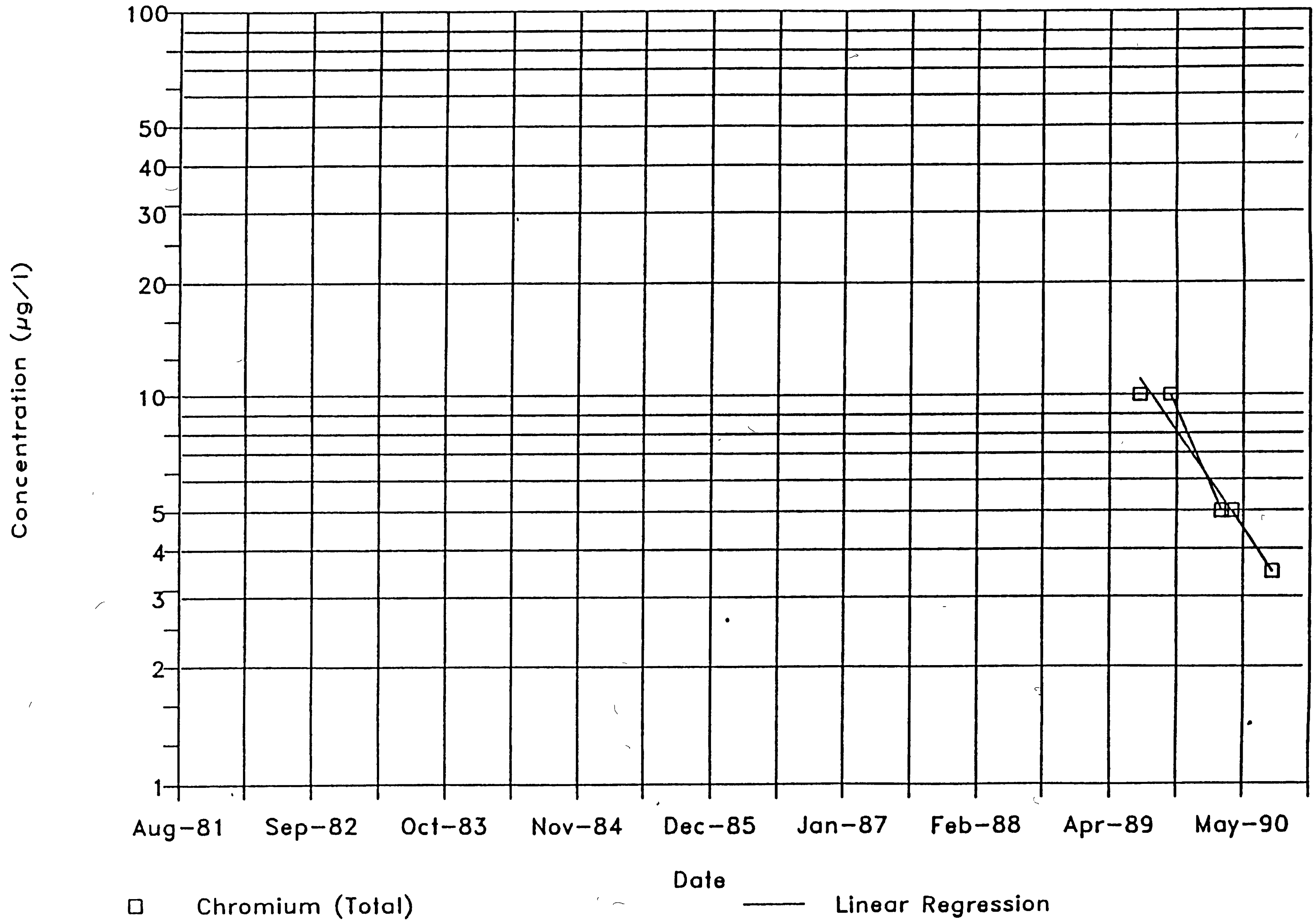
WELL4 SAMPLING DATA

CHROMIUM (TOTAL)



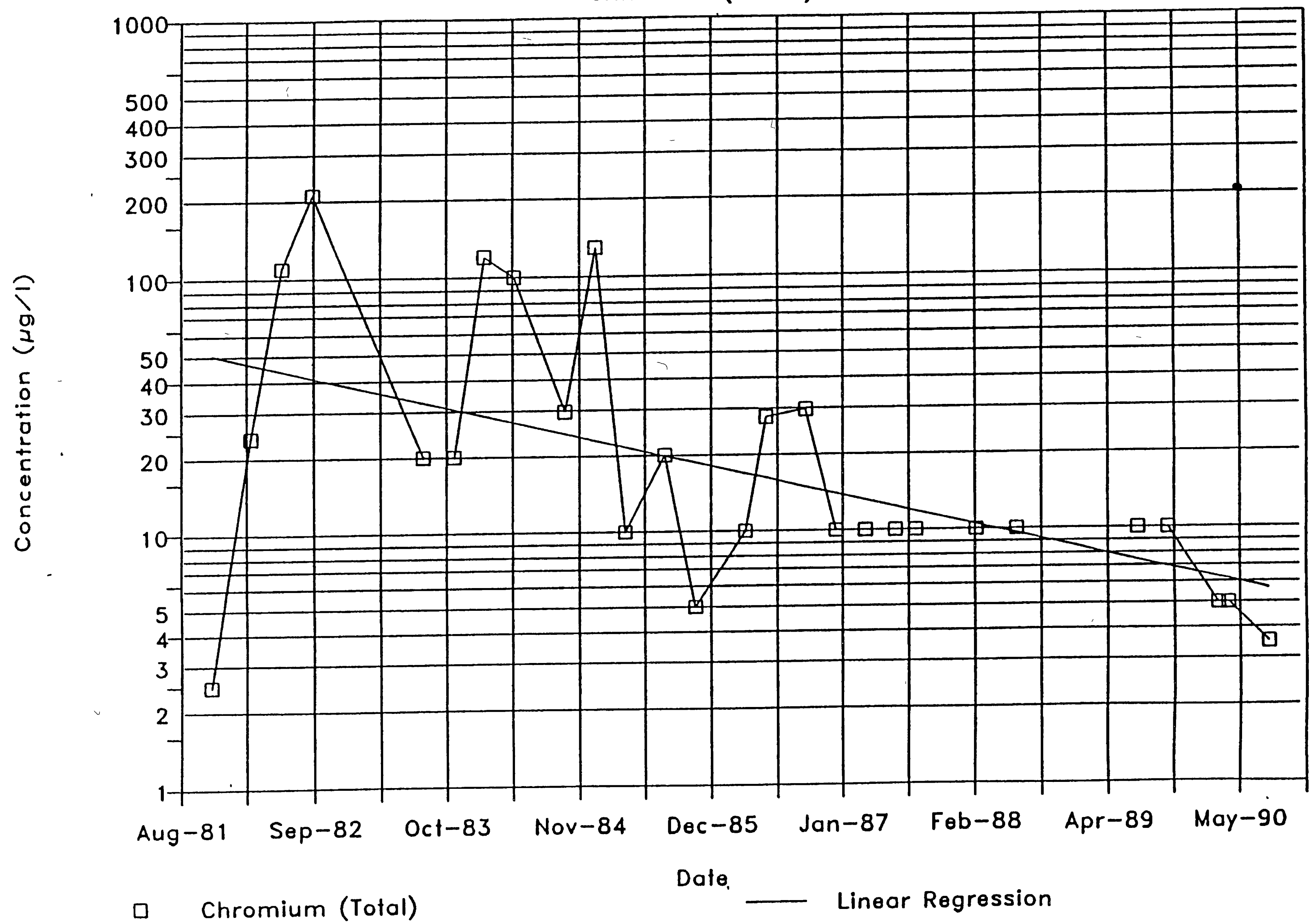
WELL3-D SAMPLING DATA

CHROMIUM (TOTAL)



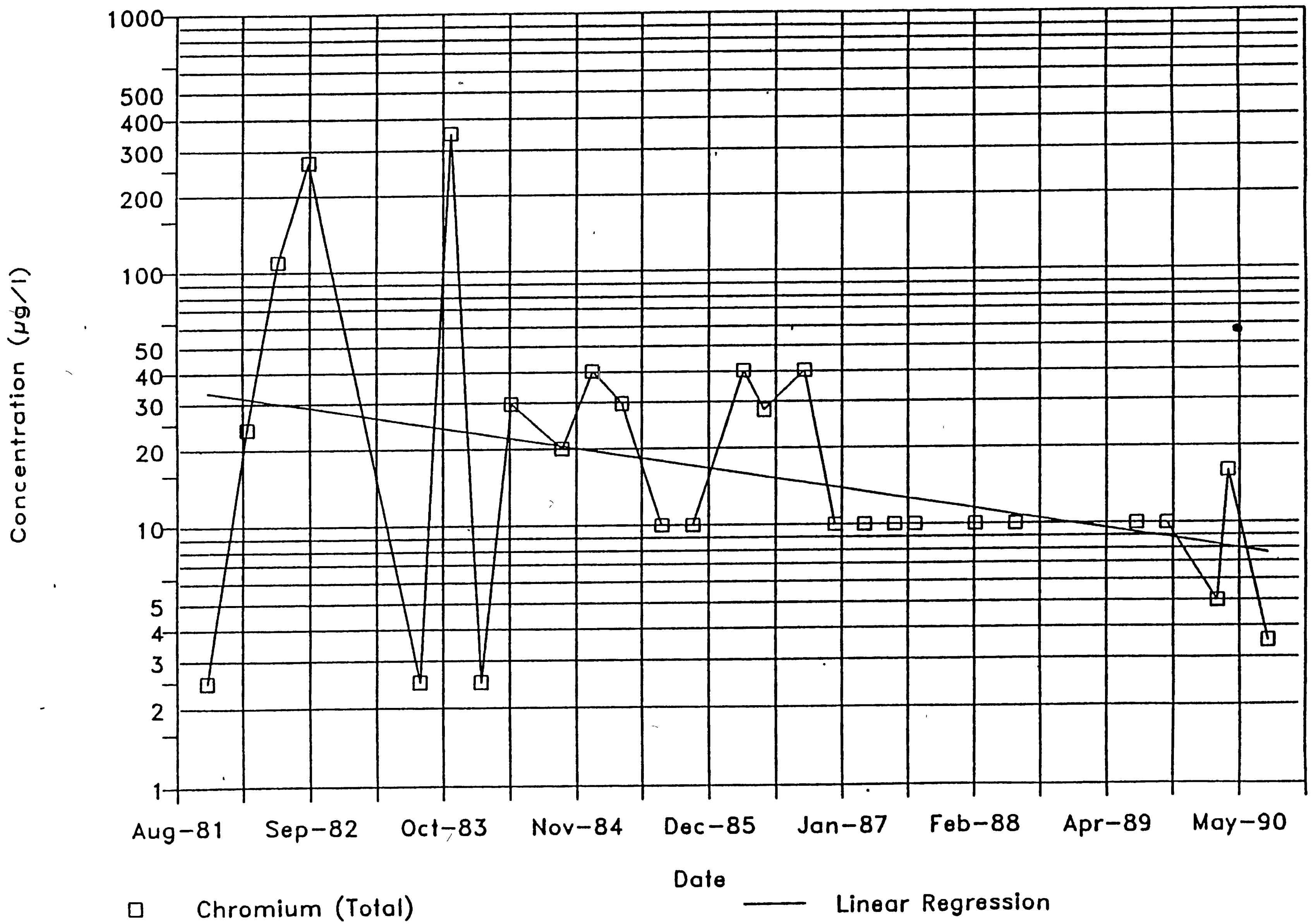
WELL3 SAMPLING DATA

CHROMIUM (TOTAL)



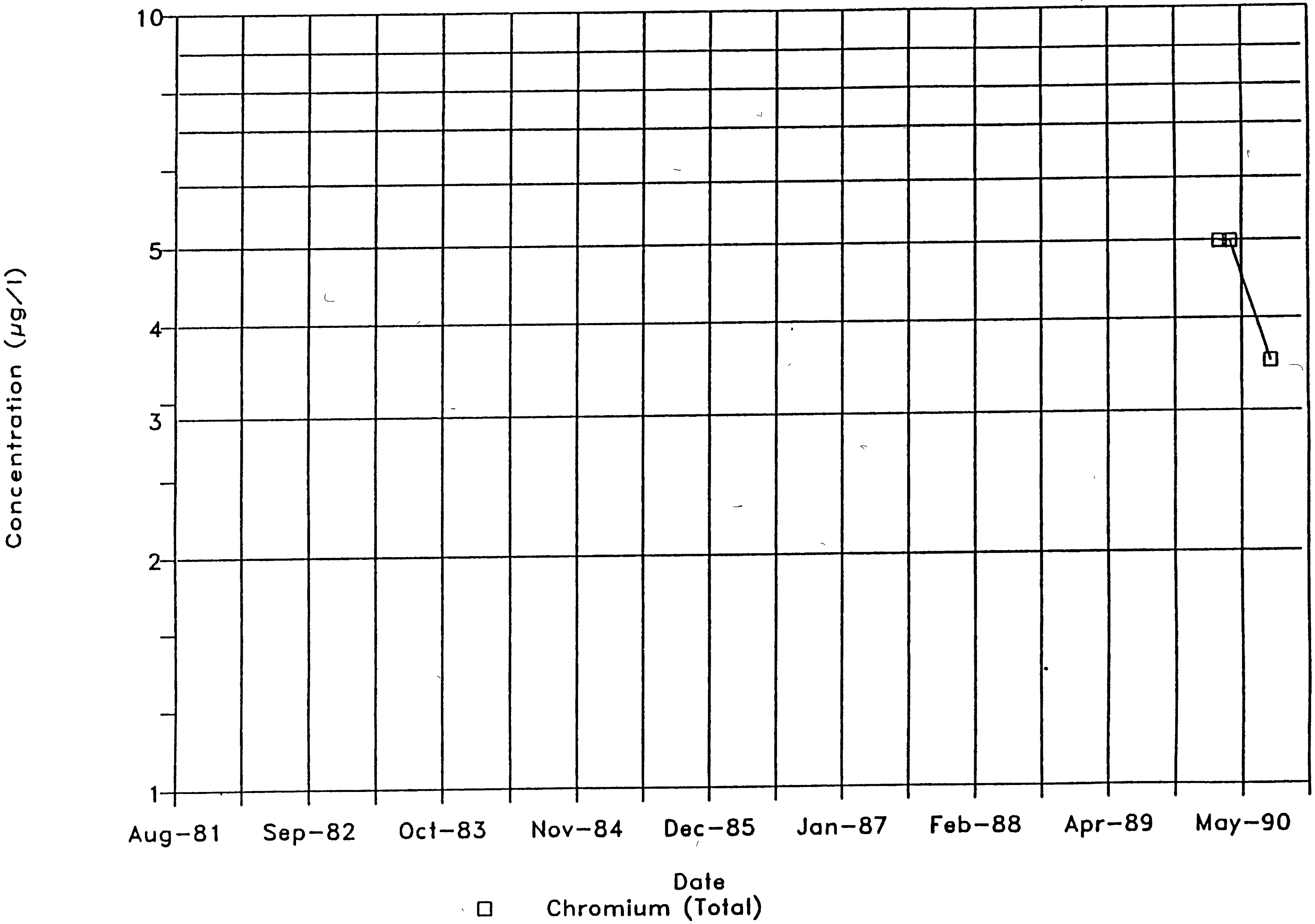
WELL2 SAMPLING DATA

CHROMIUM (TOTAL)



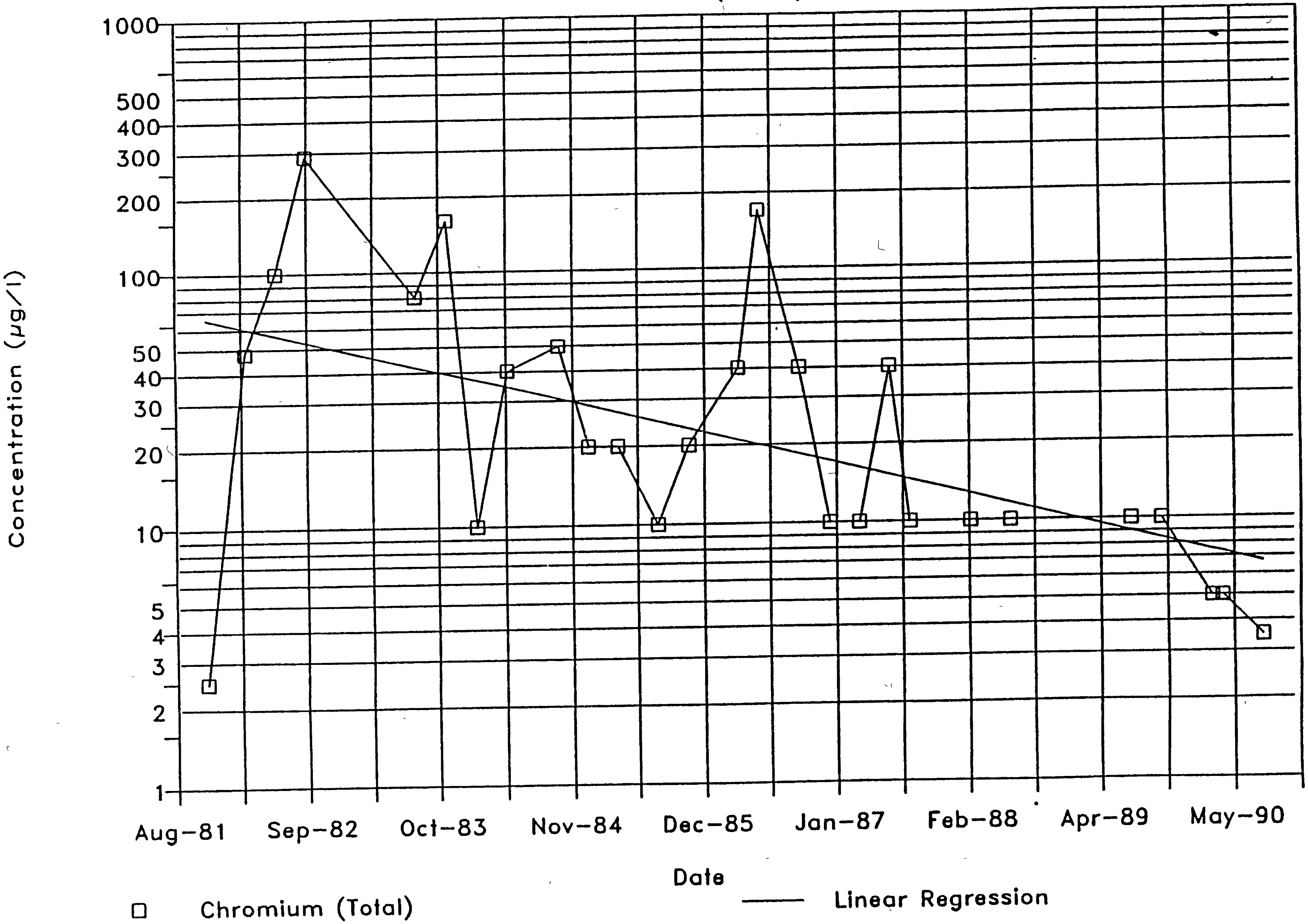
WELL1-D SAMPLING DATA

CHROMIUM (TOTAL)

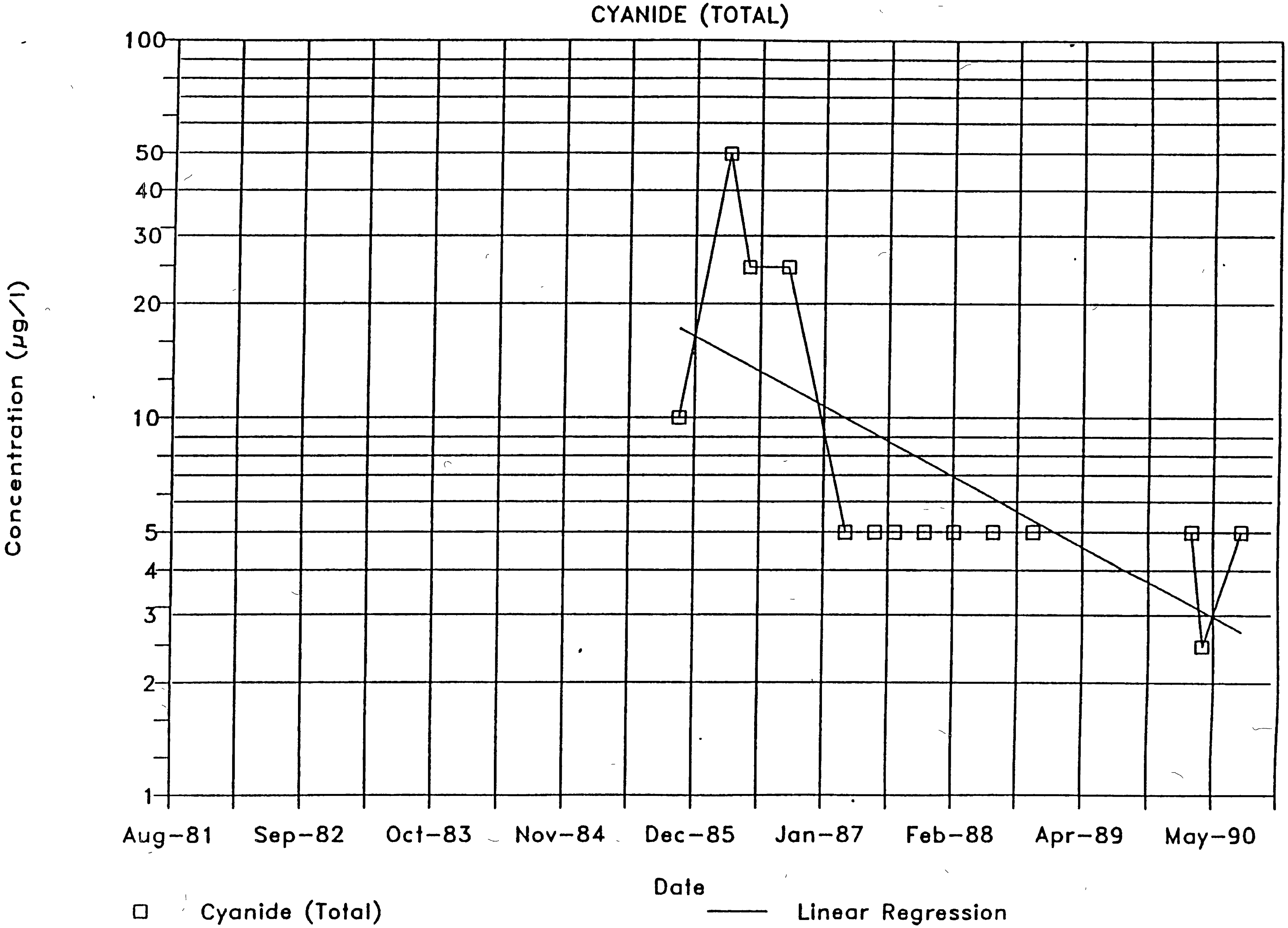


WELL1 SAMPLING DATA

CHROMIUM (TOTAL)



WELL13 SAMPLING DATA

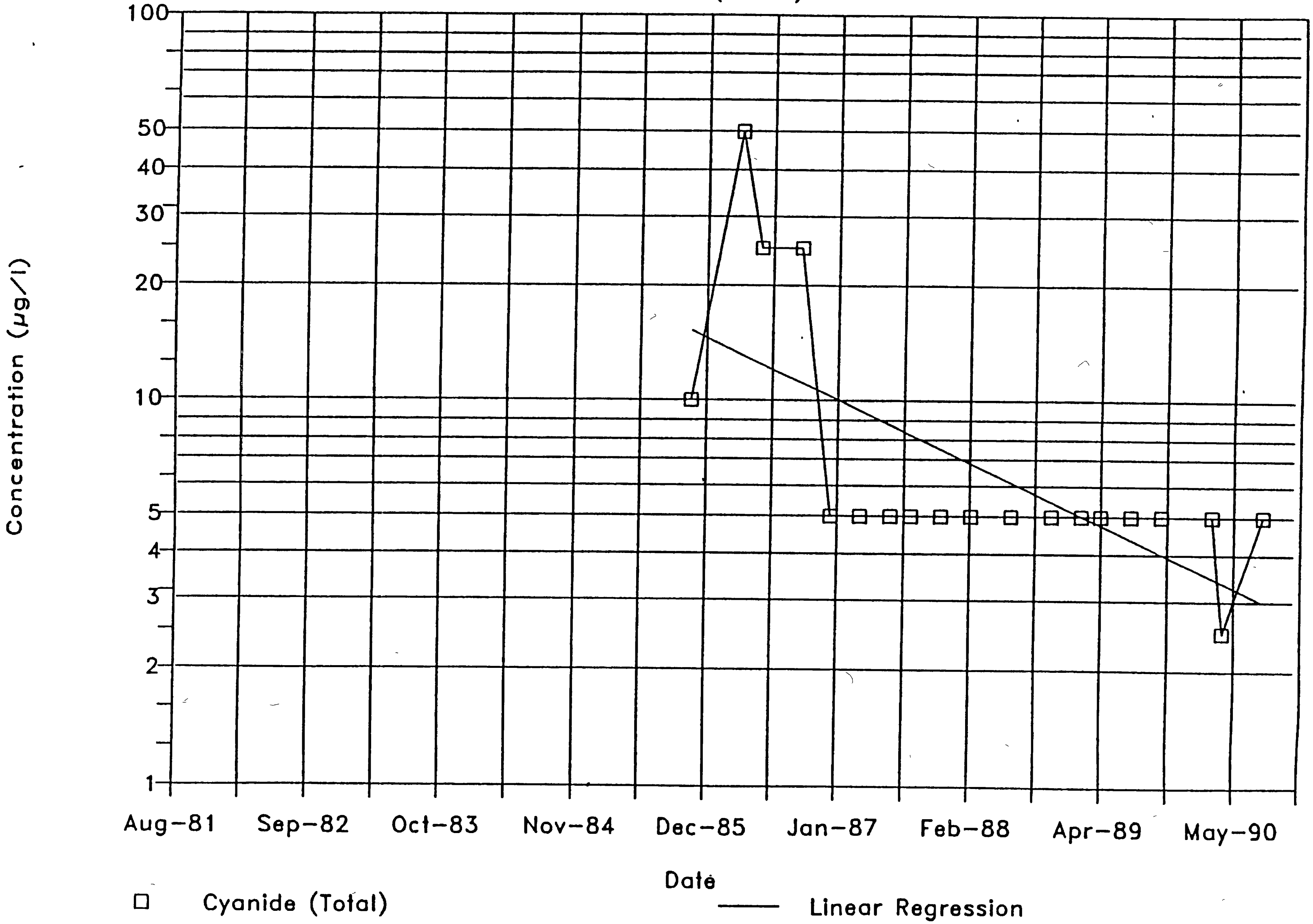


[redacted]

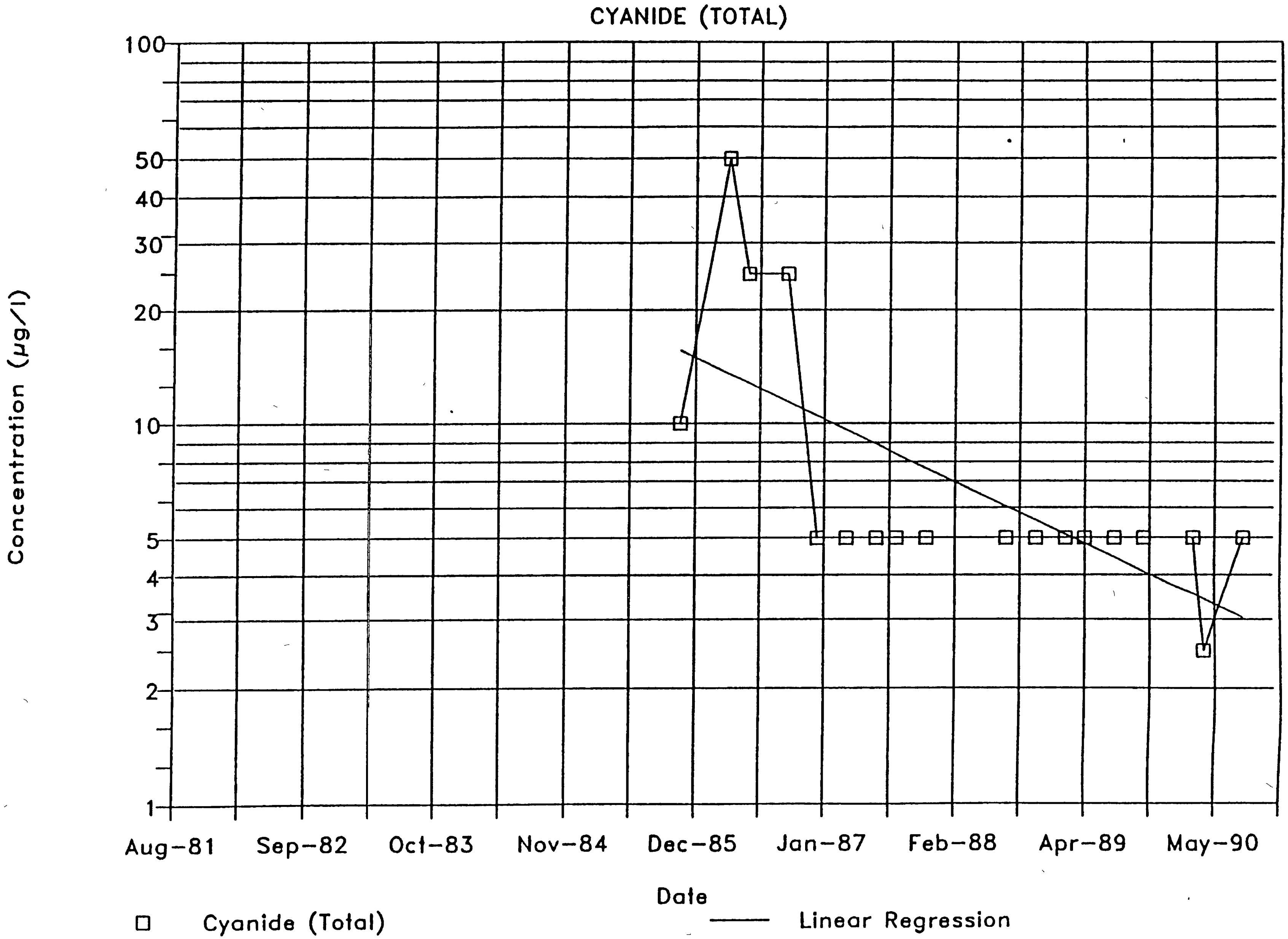
[redacted] [redacted]

WELL12 SAMPLING DATA

CYANIDE (TOTAL)

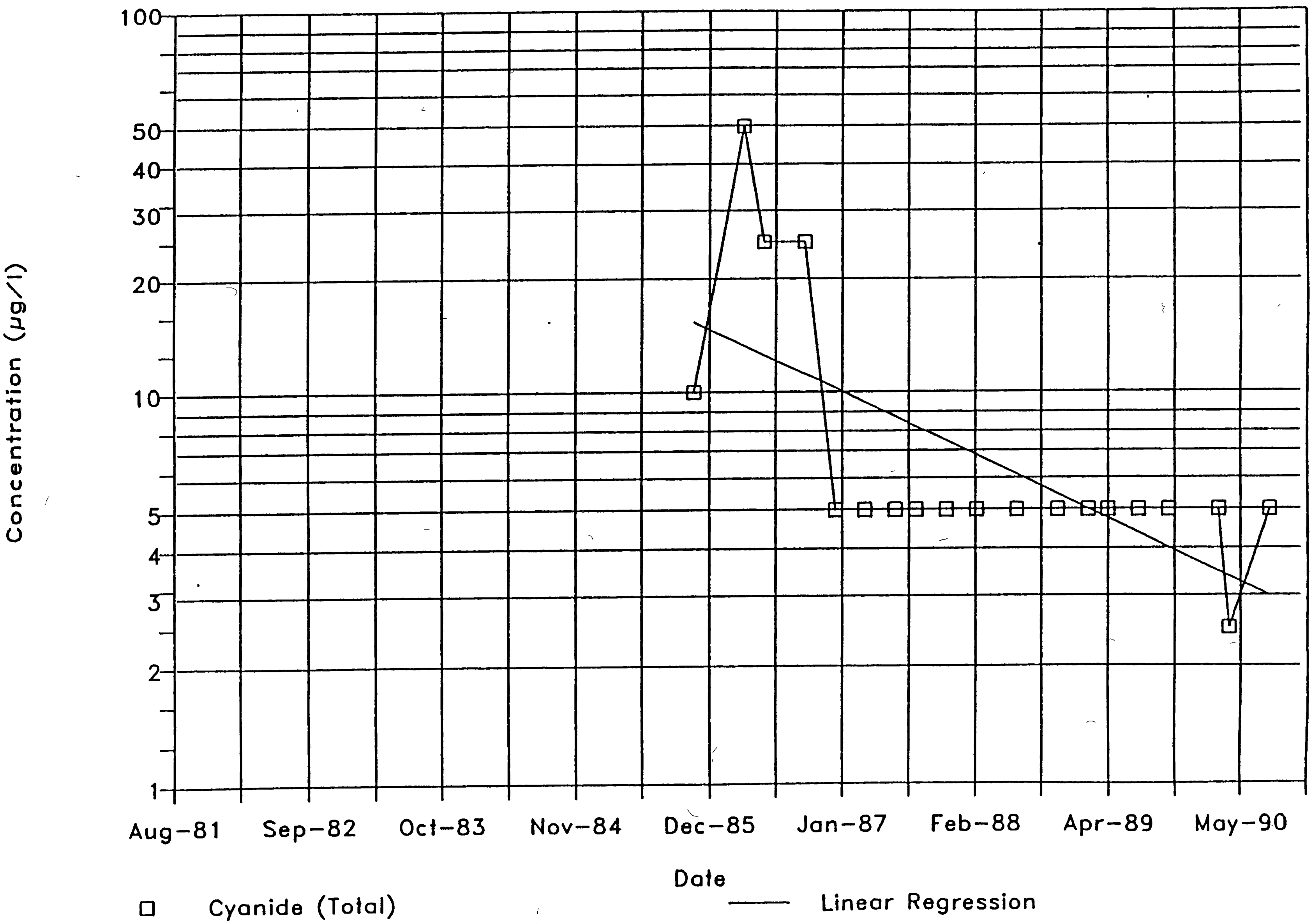


WELL11 SAMPLING DATA

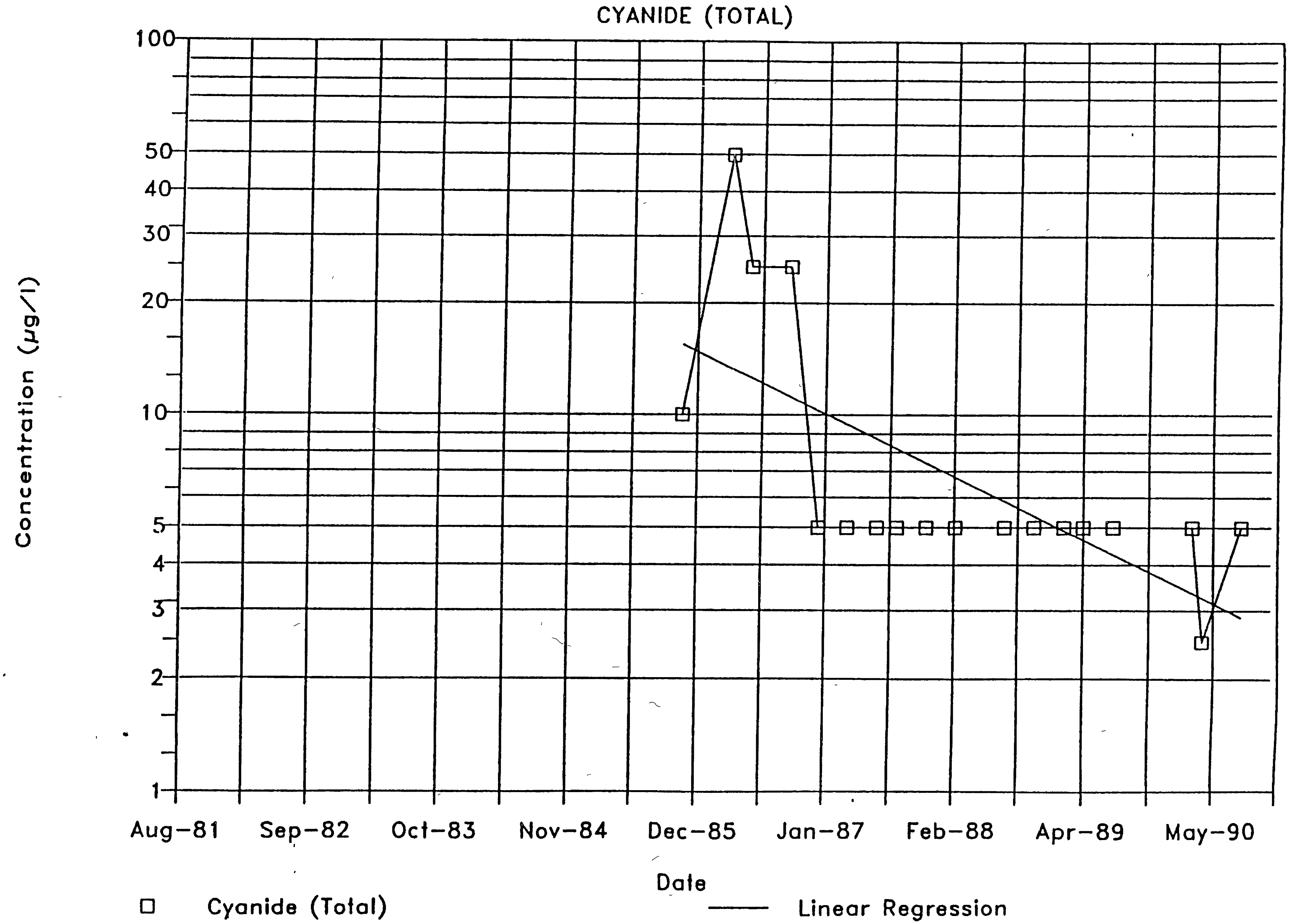


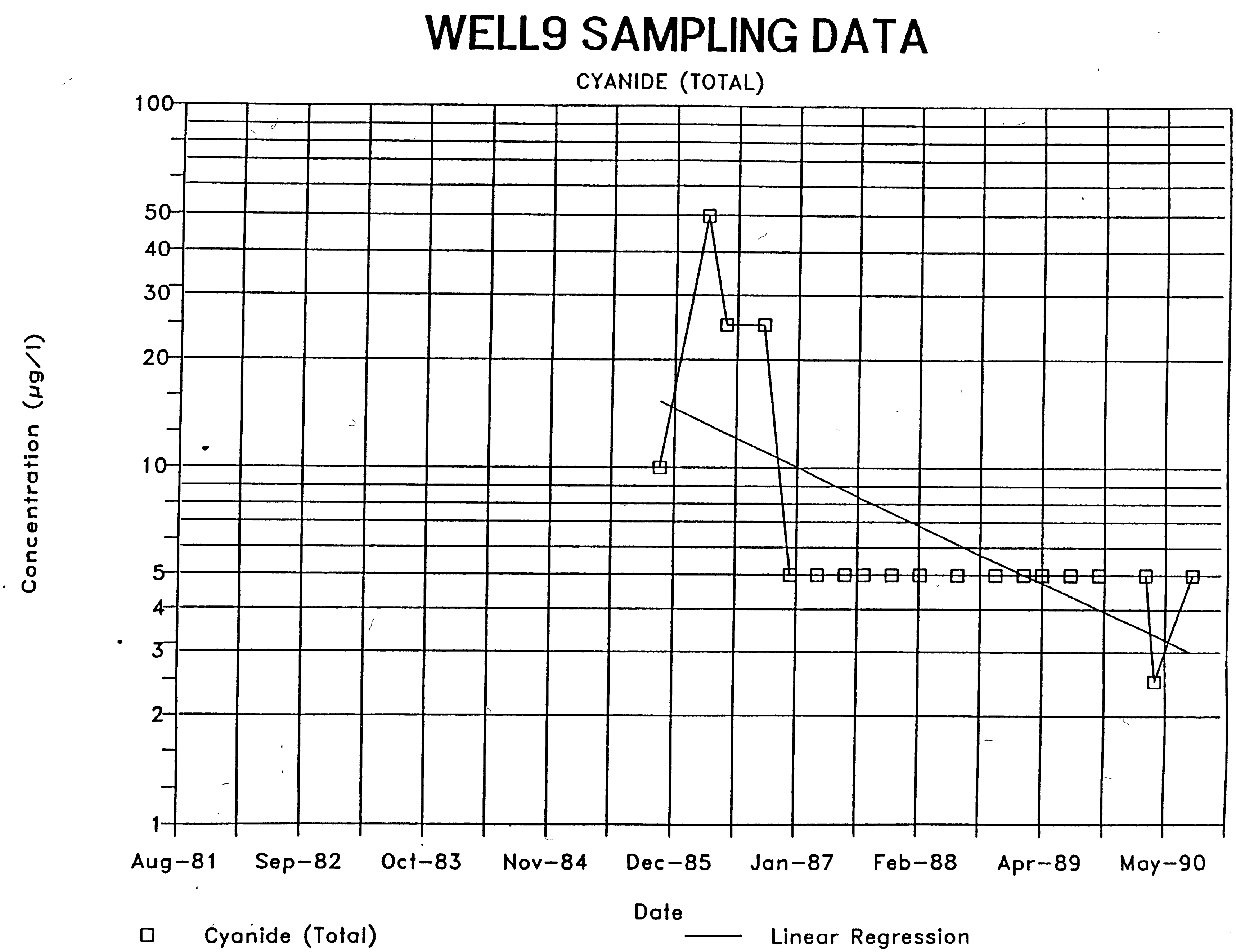
WELL10 SAMPLING DATA

CYANIDE (TOTAL)



WELL8 SAMPLING DATA

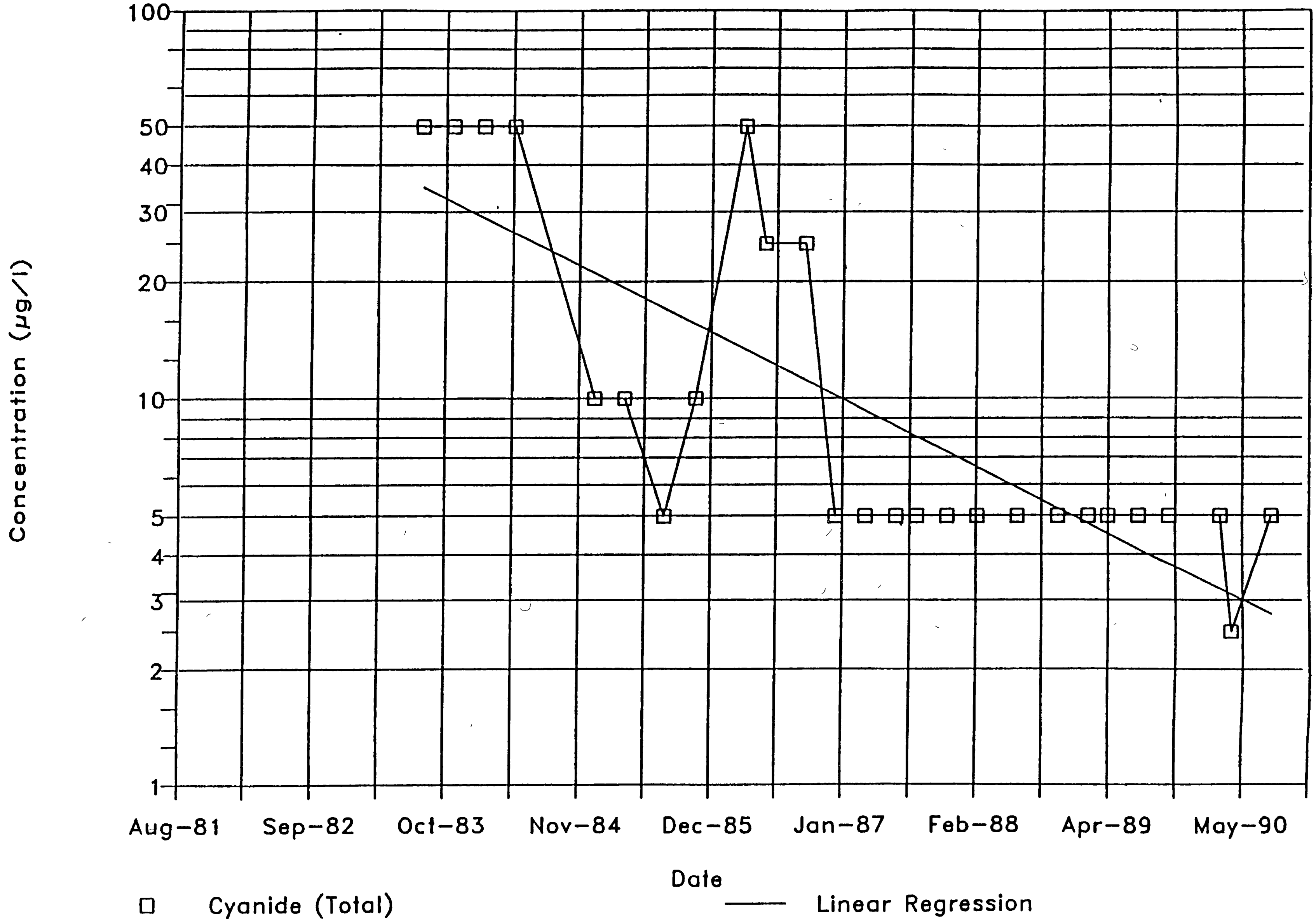




WELL9 SAMPLING DATA
CYANIDE (TOTAL)
Concentration (μg/l)
100
50
40
30
20
10
5
4
3
2
1
Aug-81
Sep-82
Oct-83
Nov-84
Dec-85
Jan-87
Feb-88
Apr-89
May-90
Date
Cyanide (Total)
Linear Regression

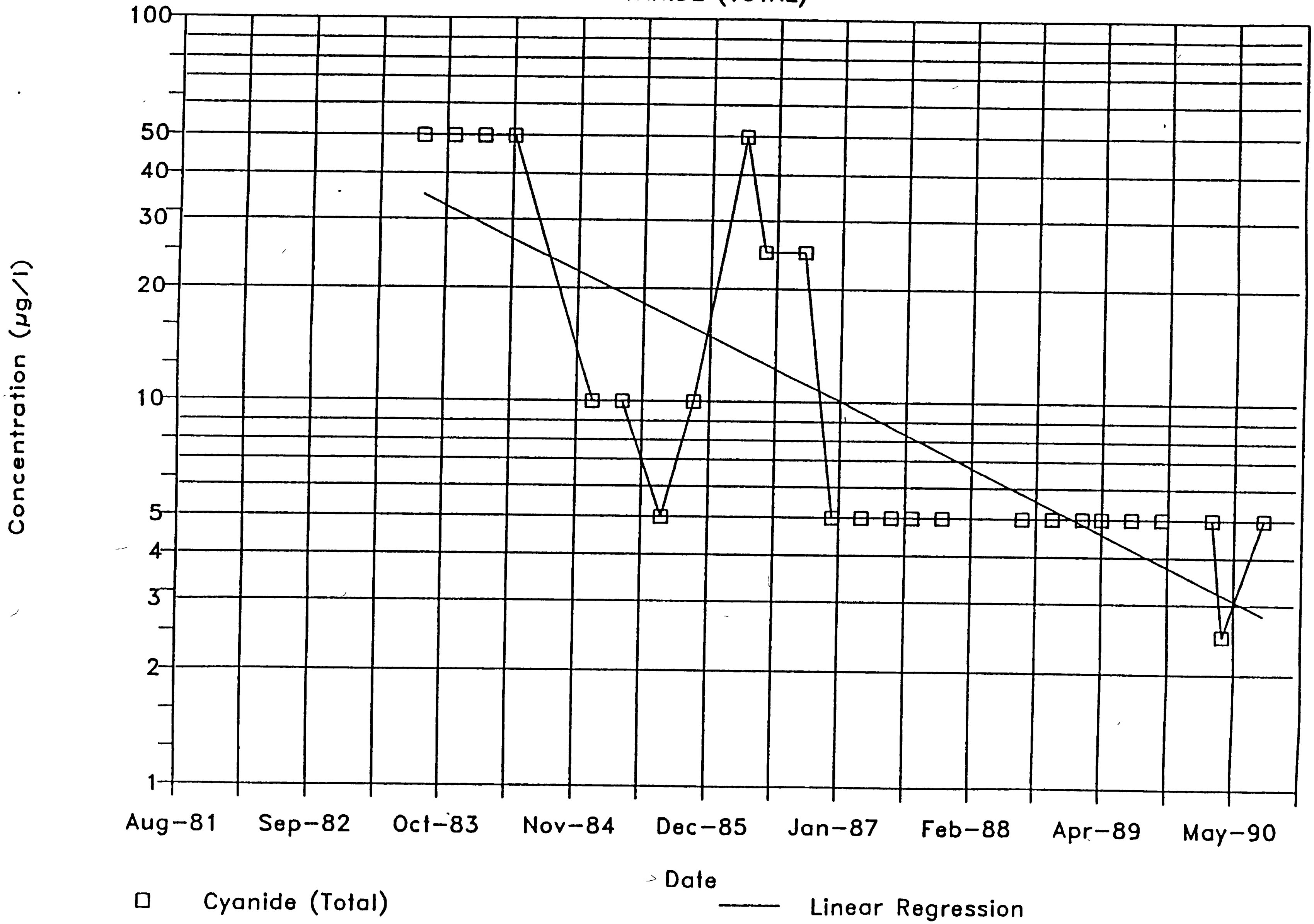
WELL7 SAMPLING DATA

CYANIDE (TOTAL)



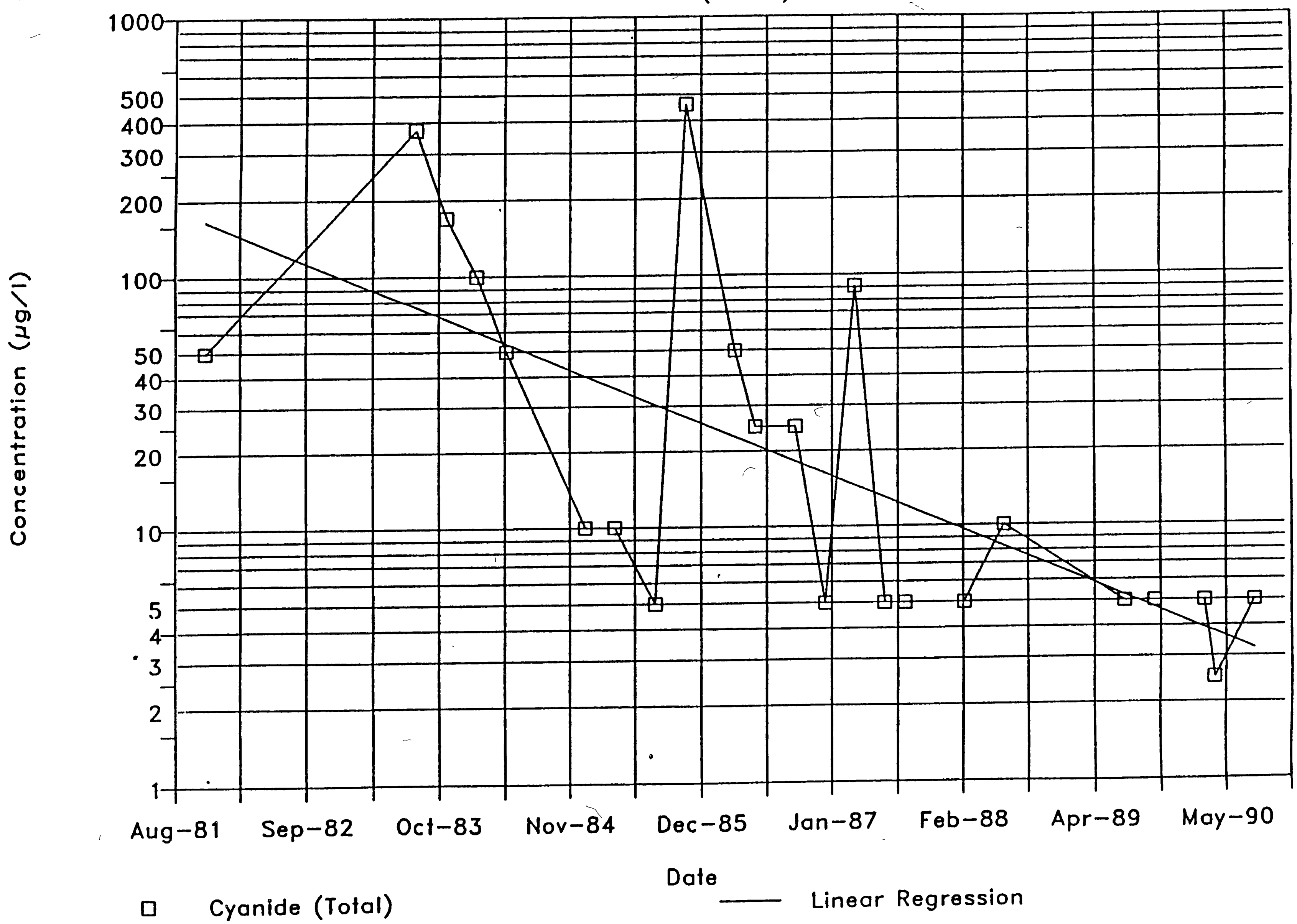
WELL6 SAMPLING DATA

CYANIDE (TOTAL)

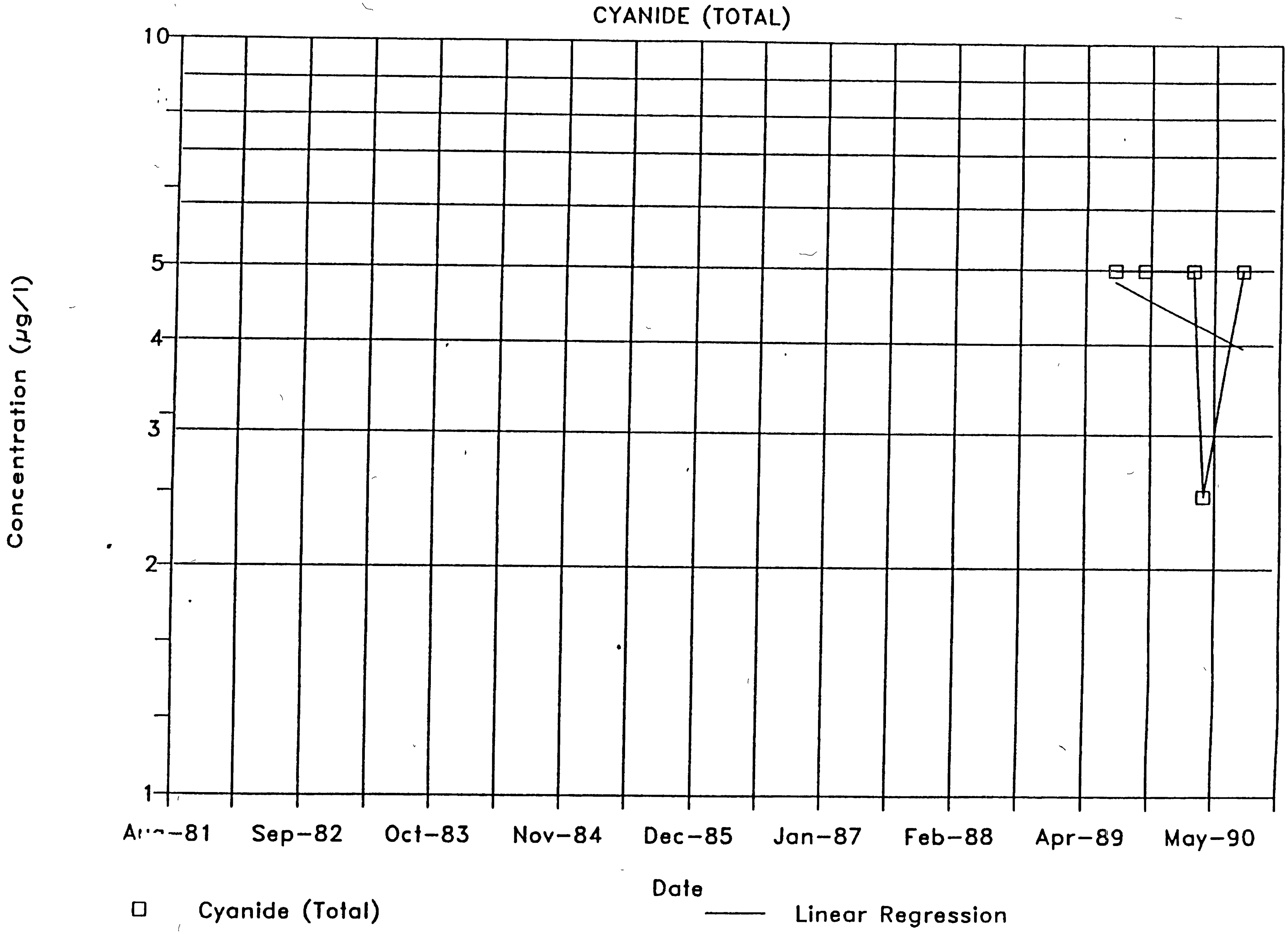


WELL5 SAMPLING DATA

CYANIDE (TOTAL)



WELL5-D SAMPLING DATA



Appendix E-8

Summary of Quarterly Monitoring Statistical Data

WELL1

GROUND WATER MONITORING ANALYTICAL DATA STATISTICAL SUMMARY

TEXTRON-LYCOMING, STRATFORD, CONNECTICUT

COMPOUND	TOTAL NUMBER OF SAMPLES	GEOMETRIC MEAN	MAXIMUM	AVERAGE	VARIANCE
bromodichloromethane (THM)	9	1.3	5.0	1.6	2.38E+00
chlorobenzene	9	1.6	5.0	1.9	2.28E+00
chloroethane	9	2.3	12.5	4.2	1.69E+01
chloroform (THM)	9	1.5	1.9	1.8	2.20E+00
dibromochloromethane (THM)	9	1.3	5.0	1.6	2.38E+00
1,2-dichlorobenzene	9	2.3	12.5	4.2	1.69E+01
1,4-dichlorobenzene	9	2.3	12.5	4.2	1.69E+01
1,1-dichloroethane	9	3.4	12.5	5.3	1.76E+01
1,2-dichloroethane (EDC)	9	2.3	12.5	4.2	1.69E+01
1,1-dichloroethene	9	2.3	12.5	4.2	1.69E+01
1,2-trans-dichloroethene	9	2.3	12.5	4.2	1.69E+01
dichloromethane	9	2.7	12.5	4.5	1.50E+01
trans-1,3-dichloropropene	9	2.3	12.5	4.2	1.69E+01
1,1,2,2-tetrachloroethane	9	1.3	5.0	1.6	2.38E+00
1,1,1,2-tetrachloroethane	9	1.3	2.5	1.6	2.38E+00
tetrachloroethene	13	1.2	5.0	1.4	1.43E+00
1,1,1-trichloroethane	13	1.2	5.0	1.4	1.43E+00
1,1,2-trichloroethane	9	1.8	12.5	2.9	2.38E+00
trichloroethene	13	2.1	27.0	4.3	5.50E+01
trichlorofluoromethane	9	2.3	12.5	4.2	1.69E+01
vinyl chloride	9	2.8	25.0	6.4	7.63E+01
benzene	12	1.2	2.5	1.3	2.50E-01
chlorobenzene	7	2.0	7.5	2.6	7.92E+00
1,4-dichlorobenzene	7	2.4	7.5	3.3	9.05E+00
1,2-dichlorobenzene	7	2.4	7.5	3.3	9.05E+00
ethylbenzene	9	1.6	5.0	2.1	2.38E+00
toluene	12	1.8	14.0	2.7	1.49E+01
xylenes	12	2.1	5.0	2.8	1.59E+00
Barium	4	69.6	490.0	172.8	4.67E+04
Cadmium	26	5.1	50.0	6.6	8.03E+01
Chromium (Total)	26	22.8	290.0	46.9	3.92E+03
Chromium (Hexavalent)	23	4.8	80.0	8.9	2.85E+02
Copper	23	17.9	120.0	32.7	1.35E+03
Iron	7	7,069.5	35,330.0	11,623.6	1.71E+08
Manganese	6	492.8	590.0	496.7	7.37E+03
Mercury	25	1.0	2.0	1.0	4.09E-02
Nickel	23	24.8	140.0	37.0	1.10E+03
Selenium	3	5.0	5.0	5.0	0.00E+00
Silver	4	5.0	5.0	5.0	0.00E+00
Zinc	23	49.1	790.0	147.0	4.17E+04

WELL1

GROUND WATER MONITORING ANALYTICAL DATA STATISTICAL SUMMARY

TEXTRON-LYCOMING, STRATFORD, CONNECTICUT

COMPOUND	TOTAL NUMBER OF SAMPLES	GEOMETRIC MEAN	MAXIMUM	AVERAGE	VARIANCE
Cyanide (Total)	22	35.2	970.0	174.7	3.63E+04
Cyanide (Amenable)	22	15.0	190.0	. 30.5	1.60E+03
Total Organic Halogens (TOX)	19	92.9	135,750.0	7,339.0	9.21E+08
Total Organic Carbon (TOC)	19	29,647.7	109,500.0	44,306.5	6.66E+08
Specific Conductance (umhos/cm)	24	1,591.2	3,688.8	1,874.9	9.69E+05
pH	26	6.7	7.5	6.7	7.71E-02
Radium	5	1.1	1.4	1.1	3.75E-02
Gross Beta	5	2.0	35.1	7.8	2.90E+02
Gross Alpha	5	2.2	24.3	5.9	1.31E+02
phenol	8	19.2	630.0	98.9	5.23E+04
Turbidity	4	34.8	500.0	154.4	6.55E+04
Sulfate (SO4)	8	69,779.5	800,400.0	335,063.1	7.40E+10
Nitrate, as N	4	1,281.3	38,400.0	14,656.3	3.55E+08
Chloride	7	89,888.5	1,782,000.0	550,386.4	4.23E+11
Sodium	8	76,772.5	596,500.0	354,035.1	2.23E+10
Fluoride	0	0.0	0.0	NA	NA

NOTE: All values in µg/l (ppb) unless noted otherwise.

TOX, TOC, Specific Conductance and pH are the average of four replicate samples for each sampling quarter.

Number of samples is total number of analyses exceeding method detection limits.

For undetected compounds, 1/2 the detection limit was used in the calculations.

WELL1-D
GROUND WATER MONITORING ANALYTICAL DATA STATISTICAL SUMMARY
TEXTRON-LYCOMING, STRATFORD, CONNECTICUT

COMPOUND	TOTAL NUMBER OF SAMPLES	GEOMETRIC MEAN	MAXIMUM	AVERAGE	VARIANCE
bromodichloromethane (THM)	1	2.5	2.5	2.5	NA
chlorobenzene	1	2.5	2.5	2.5	NA
chloroethane	1	2.5	2.5	2.5	NA
chloroform (THM)	1	2.5	2.5	2.5	NA
dibromochloromethane (THM)	1	2.5	2.5	2.5	NA
1,2-dichlorobenzene	1	2.5	2.5	2.5	NA
1,4-dichlorobenzene	1	2.5	2.5	2.5	NA
1,1-dichloroethane	1	2.5	2.5	2.5	NA
1,2-dichloroethane (EDC)	1	2.5	2.5	2.5	NA
1,1-dichloroethene	1	2.5	2.5	2.5	NA
1,2-trans-dichloroethene	1	2.5	2.5	2.5	NA
dichloromethane	1	2.5	2.5	2.5	NA
trans-1,3-dichloropropene	1	2.5	2.5	2.5	NA
1,1,2,2-tetrachloroethane	1	2.5	2.5	2.5	NA
1,1,1,2-tetrachloroethane	1	2.5	2.5	2.5	NA
tetrachloroethene	1	2.5	2.5	2.5	NA
1,1,1-trichloroethane	1	2.5	2.5	2.5	NA
1,1,2-trichloroethane	1	2.5	2.5	2.5	NA
trichloroethene	1	2.5	2.5	2.5	NA
trichlorofluoromethane	1	2.5	2.5	2.5	NA
vinyl chloride	1	2.5	2.5	2.5	NA
benzene	1	1.0	1.0	1.0	NA
chlorobenzene	1	2.5	2.5	2.5	NA
1,4-dichlorobenzene	1	2.5	2.5	2.5	NA
1,2-dichlorobenzene	1	2.5	2.5	2.5	NA
ethylbenzene	1	2.5	2.5	2.5	NA
toluene	1	2.5	2.5	2.5	NA
xylenes	1	2.5	2.5	2.5	NA
Barium	0	0.0	0.0	NA	NA
Cadmium	2	4.5	8.0	5.3	1.51E+01
Chromium (Total)	2	5.0	5.0	5.0	0.00E+00
Chromium (Hexavalent)	2	25.0	25.0	25.0	0.00E+00
Copper	2	12.5	12.5	12.5	0.00E+00
Iron	0	0.0	0.0	NA	NA
Manganese	0	0.0	0.0	NA	NA
Mercury	2	1.0	1.0	1.0	0.00E+00
Nickel	2	20.0	20.0	20.0	0.00E+00
Selenium	0	0.0	0.0	NA	NA
Silver	0	0.0	0.0	NA	NA
Zinc	2	395.0	780.0	490.0	1.68E+05

WELL1-D

GROUND WATER MONITORING ANALYTICAL DATA STATISTICAL SUMMARY

TEXTRON-LYCOMING, STRATFORD, CONNECTICUT

COMPOUND	TOTAL NUMBER OF SAMPLES	GEOMETRIC MEAN	MAXIMUM	AVERAGE	VARIANCE
Cyanide (Total)	2	3.5	5.0	3.8	3.12E+00
Cyanide (Amenable)	2	2.2	5.0	3.0	8.00E+00
Total Organic Halogens (TOX)	1	79,875.0	79,875.0	79,875.0	NA
Total Organic Carbon (TOC)	1	26,435.0	26,435.0	26,435.0	NA
Specific Conductance (umhos/cm)	2	1,321.5	1,587.5	1,343.8	1.19E+05
pH	2	6.4	6.5	6.4	2.76E-02
Radium	1	1.0	1.0	1.0	NA
Gross Beta	1	1.0	1.0	1.0	NA
Gross Alpha	1	1.0	1.0	1.0	NA
phenol	1	25.0	25.0	25.0	NA
Turbidity	1	1.0	1.0	1.0	NA
Sulfate (SO4)	1	5.0	5.0	5.0	NA
Nitrate, as N	1	5.0	5.0	5.0	NA
Chloride	1	5.0	5.0	5.0	NA
Sodium	1	1.0	1.0	1.0	NA
Fluoride	0	0.0	0.0	NA	NA

NOTE: All values in μg/l (ppb) unless noted otherwise.

TOX, TOC, Specific Conductance and pH are the average of four replicate samples for each sampling quarter.

Number of samples is total number of analyses exceeding method detection limits.

For undetected compounds, 1/2 the detection limit was used in the calculations.

WELL2
GROUND WATER MONITORING ANALYTICAL DATA STATISTICAL SUMMARY
TEXTRON-LYCOMING, STRATFORD, CONNECTICUT

COMPOUND	TOTAL NUMBER OF SAMPLES	GEOMETRIC MEAN	MAXIMUM	AVERAGE	VARIANCE
bromodichloromethane (THM)	9	1.7	25.0	4.1	6.61E+01
chlorobenzene	9	76.7	1,060.0	310.0	1.75E+05
chloroethane	9	3.5	12.5	7.0	7.43E+01
chloroform (THM)	9	1.7	25.0	4.1	6.61E+01
dibromochloromethane (THM)	9	1.7	25.0	4.1	6.61E+01
1,2-dichlorobenzene	9	31.0	856.0	212.7	4.42E+04
1,4-dichlorobenzene	9	5.8	369.0	47.6	1.78E+04
1,1-dichloroethane	9	17.7	71.5	31.1	7.40E+02
1,2-dichloroethane (EDC)	9	4.3	25.0	9.3	1.33E+02
1,1-dichloroethene	9	3.0	25.0	6.7	8.07E+01
1,2-trans-dichloroethene	9	4.5	15.7	8.5	6.43E+01
dichloromethane	9	3.6	25.0	7.1	7.87E+01
trans-1,3-dichloropropene	9	3.0	25.0	6.7	8.07E+01
1,1,2,2-tetrachloroethane	9	1.8	25.0	4.2	6.60E+01
1,1,1,2-tetrachloroethane	9	1.7	25.0	4.1	6.61E+01
tetrachloroethene	13	1.4	25.0	3.2	3.97E+01
1,1,1-trichloroethane	13	1.4	25.0	3.2	3.97E+01
1,1,2-trichloroethane	9	3.0	25.0	6.7	8.07E+01
trichloroethene	13	2.1	6.0	4.0	4.05E+01
trichlorofluoromethane	9	3.0	25.0	6.7	8.07E+01
vinyl chloride	9	4.8	25.0	10.5	1.25E+02
benzene	12	1.5	2.5	2.1	5.88E+00
chlorobenzene	7	68.1	2,200.0	515.2	9.15E+04
1,4-dichlorobenzene	7	3.3	25.0	6.5	9.05E+00
1,2-dichlorobenzene	7	11.2	350.0	101.3	2.26E+04
ethylbenzene	9	2.9	5.0	5.3	6.24E+01
toluene	12	3.1	18.0	5.9	6.44E+01
xylenes	12	3.7	11.5	6.1	3.67E+01
Barium	4	124.9	390.0	179.6	2.44E+04
Cadmium	26	4.5	5.0	4.6	7.97E-01
Chromium (Total)	26	17.0	350.0	42.7	6.09E+03
Chromium (Hexavalent)	23	4.7	130.0	12.9	7.76E+02
Copper	23	14.0	130.0	25.1	1.07E+03
Iron	7	3,853.4	16,710.0	6,952.5	4.32E+07
Manganese	6	2,335.6	5,300.0	2,680.0	1.88E+06
Mercury	25	1.0	1.0	1.0	0.00E+00
Nickel	23	25.3	70.0	32.9	4.33E+02
Selenium	4	5.0	5.0	5.0	0.00E+00
Silver	4	17.5	750.0	191.3	1.39E+05
Zinc	23	37.8	920.0	127.6	4.61E+04

WELL2

GROUND WATER MONITORING ANALYTICAL DATA STATISTICAL SUMMARY

TEXTRON-LYCOMING, STRATFORD, CONNECTICUT

COMPOUND	TOTAL NUMBER OF SAMPLES	GEOMETRIC MEAN	MAXIMUM	AVERAGE	VARIANCE
Cyanide (Total)	22	37.5	780.0	167.6	3.03E+04
Cyanide (Amenable)	22	12.7	50.0	21.9	2.63E+02
Total Organic Halogens (TOX)	19	428.3	620,750.0	40,978.3	2.05E+10
Total Organic Carbon (TOC)	19	52,455.9	181,325.0	64,148.0	1.41E+09
Specific Conductance (umhos/cm)	24	2,669.3	5,882.5	3,062.6	2.32E+06
pH	26	6.9	7.9	6.9	1.01E-01
Radium	5	1.0	1.0	1.0	0.00E+00
Gross Beta	5	2.0	30.9	7.0	2.24E+02
Gross Alpha	5	1.8	10.6	3.1	2.20E+01
phenol	8	16.5	32.5	19.9	6.28E+01
Turbidity	4	16.7	250.0	83.7	1.59E+04
Sulfate (SO4)	8	96,898.0	741,800.0	381,544.4	1.67E+10
Nitrate, as N	4	1,804.7	29,600.0	15,041.3	2.30E+08
Chloride	7	151,437.8	1,194,000.0	750,343.6	8.95E+10
Sodium	8	118,406.5	838,000.0	586,056.4	9.54E+10
Fluoride	0	0.0	0.0	NA	NA

NOTE: All values in µg/l (ppb) unless noted otherwise.

TOX, TOC, Specific Conductance and pH are the average of four replicate samples for each sampling quarter.

Number of samples is total number of analyses exceeding method detection limits.

For undetected compounds, 1/2 the detection limit was used in the calculations.

WELL3

GROUND WATER MONITORING ANALYTICAL DATA STATISTICAL SUMMARY

TEXTRON-LYCOMING, STRATFORD, CONNECTICUT

COMPOUND	TOTAL NUMBER OF SAMPLES	GEOMETRIC MEAN	MAXIMUM	AVERAGE	VARIANCE
bromodichloromethane (THM)	9	1.3	5.0	1.6	2.38E+00
chlorobenzene	9	3.4	825.0	93.5	9.02E+04
chloroethane	9	2.6	12.5	4.6	2.03E+01
chloroform (THM)	10	1.3	5.0	1.6	2.04E+00
dibromochloromethane (THM)	9	1.3	5.0	1.6	2.38E+00
1,2-dichlorobenzene	9	20.0	473.0	106.0	3.98E+04
1,4-dichlorobenzene	9	2.3	12.5	4.2	1.69E+01
1,1-dichloroethane	9	14.5	57.4	28.4	6.06E+02
1,2-dichloroethane (EDC)	9	2.3	12.5	4.2	1.69E+01
1,1-dichloroethene	9	2.3	12.5	4.2	1.69E+01
1,2-trans-dichloroethene	9	3.6	21.0	6.8	5.93E+01
dichloromethane	9	2.3	12.5	4.2	1.69E+01
trans-1,3-dichloropropene	9	2.3	12.5	4.2	1.69E+01
1,1,2,2-tetrachloroethane	9	1.3	5.0	1.6	2.38E+00
1,1,1,2-tetrachloroethane	9	1.3	2.5	1.6	2.38E+00
tetrachloroethene	13	1.4	5.0	1.7	2.15E+00
1,1,1-trichloroethane	13	1.2	2.5	1.4	1.43E+00
1,1,2-trichloroethane	9	2.3	12.5	4.2	1.69E+01
trichloroethene	13	1.6	4.0	1.9	2.15E+00
trichlorofluoromethane	9	2.3	12.5	4.2	1.69E+01
vinyl chloride	9	3.3	25.0	7.6	9.20E+01
benzene	12	1.2	2.5	1.3	3.39E-01
chlorobenzene	7	5.2	825.0	120.3	1.35E+05
1,4-dichlorobenzene	7	5.8	473.0	70.7	4.41E+04
1,2-dichlorobenzene	7	3.1	5.6	3.9	8.45E+00
ethylbenzene	9	1.9	5.0	2.4	2.74E+00
toluene	12	1.8	11.0	2.5	8.78E+00
xylenes	12	3.1	22.0	4.9	3.79E+01
Barium	4	111.7	390.0	200.0	2.41E+04
Cadmium	26	5.3	50.0	7.0	8.45E+01
Chromium (Total)	26	18.2	210.0	36.9	1.81E+03
Chromium (Hexavalent)	23	4.5	60.0	7.3	1.27E+02
Copper	23	15.8	180.0	28.3	1.49E+03
Iron	7	4,898.1	29,200.0	13,607.1	1.63E+08
Manganese	6	5,923.7	15,800.0	7,831.7	5.55E+06
Mercury	25	1.0	1.0	1.0	0.00E+00
Nickel	23	22.0	90.0	30.0	4.44E+02
Selenium	4	4.2	5.0	4.4	1.56E+00
Silver	4	5.0	5.0	5.0	0.00E+00
Zinc	23	45.0	750.0	128.4	3.58E+04

WELL3

GROUND WATER MONITORING ANALYTICAL DATA STATISTICAL SUMMARY

TEXTRON-LYCOMING, STRATFORD, CONNECTICUT

COMPOUND	TOTAL NUMBER OF SAMPLES	GEOMETRIC MEAN	MAXIMUM	AVERAGE	VARIANCE
Cyanide (Total)	22	26.5	950.0	166.3	5.35E+04
Cyanide (Amenable)	22	11.1	50.0	19.6	1.75E+02
Total Organic Halogens (TOX)	19	136.3	974,000.0	55,193.3	4.77E+10
Total Organic Carbon (TOC)	19	46,444.4	352,375.0	63,170.5	5.55E+09
Specific Conductance (umhos/cm)	24	2,199.3	7,235.0	2,558.0	2.37E+06
pH	26	7.0	7.7	7.0	1.68E-01
Radium	5	1.0	1.0	1.0	0.00E+00
Gross Beta	5	2.1	44.9	9.8	4.82E+02
Gross Alpha	5	2.2	14.2	4.0	3.97E+01
phenol	8	18.7	100.0	31.7	8.14E+02
Turbidity	4	49.5	500.0	183.9	5.06E+04
Sulfate (SO4)	8	53,678.7	543,750.0	223,919.4	2.65E+10
Nitrate, as N	4	1,715.4	48,000.0	17,911.3	5.40E+08
Chloride	7	140,473.1	1,205,750.0	724,593.6	3.60E+10
Sodium	8	89,266.7	737,510.0	431,519.5	2.48E+10
Fluoride	0	0.0	0.0	NA	NA

NOTE: All values in µg/l (ppb) unless noted otherwise.

TOX, TOC, Specific Conductance and pH are the average of four replicate samples for each sampling quarter.

Number of samples is total number of analyses exceeding method detection limits.

For undetected compounds, 1/2 the detection limit was used in the calculations.

WELL3-D
GROUND WATER MONITORING ANALYTICAL DATA STATISTICAL SUMMARY
TEXTRON-LYCOMING, STRATFORD, CONNECTICUT

COMPOUND	TOTAL NUMBER OF SAMPLES	GEOMETRIC MEAN	MAXIMUM	AVERAGE	VARIANCE
bromodichloromethane (THM)	3	1.4	2.5	1.5	7.50E-01
chlorobenzene	3	1.4	2.5	1.5	7.50E-01
chloroethane	3	1.4	2.5	1.5	7.50E-01
chloroform (THM)	3	1.4	2.5	1.5	7.50E-01
dibromochloromethane (THM)	3	1.4	2.5	1.5	7.50E-01
1,2-dichlorobenzene	3	2.5	5.9	3.1	6.30E+00
1,4-dichlorobenzene	3	1.4	2.5	1.5	7.50E-01
1,1-dichloroethane	3	1.4	2.5	1.5	7.50E-01
1,2-dichloroethane (EDC)	3	1.4	2.5	1.5	7.50E-01
1,1-dichloroethene	3	1.4	2.5	1.5	7.50E-01
1,2-trans-dichloroethene	3	1.4	2.5	1.5	7.50E-01
dichloromethane	3	1.4	2.5	1.5	7.50E-01
trans-1,3-dichloropropene	3	1.4	2.5	1.5	7.50E-01
1,1,2,2-tetrachloroethane	3	1.4	2.5	1.5	7.50E-01
1,1,1,2-tetrachloroethane	3	1.4	2.5	1.5	7.50E-01
tetrachloroethene	3	1.4	2.5	1.5	7.50E-01
1,1,1-trichloroethane	3	1.4	2.5	1.5	7.50E-01
1,1,2-trichloroethane	3	1.4	2.5	1.5	7.50E-01
trichloroethene	3	1.4	2.5	1.5	7.50E-01
trichlorofluoromethane	3	1.4	2.5	1.5	7.50E-01
vinyl chloride	3	1.4	2.5	1.5	7.50E-01
benzene	3	1.0	1.0	1.0	0.00E+00
chlorobenzene	1	2.5	2.5	2.5	NA
1,4-dichlorobenzene	1	2.5	2.5	2.5	NA
1,2-dichlorobenzene	1	2.5	2.5	2.5	NA
ethylbenzene	3	1.4	2.5	1.5	7.50E-01
toluene	3	1.4	2.5	1.5	7.50E-01
xylenes	3	1.4	2.5	1.5	7.50E-01
Barium	0	0.0	0.0	NA	NA
Cadmium	4	9.7	70.0	21.9	1.04E+03
Chromium (Total)	4	7.1	10.0	7.5	8.33E+00
Chromium (Hexavalent)	4	11.2	25.0	15.0	1.33E+02
Copper	4	522.7	860.0	557.5	5.44E+04
Iron	0	0.0	0.0	NA	NA
Manganese	0	0.0	0.0	NA	NA
Mercury	4	1.0	1.0	1.0	0.00E+00
Nickel	4	1,355.7	1,630.0	1,395.0	1.21E+05
Selenium	0	0.0	0.0	NA	NA
Silver	0	0.0	0.0	NA	NA
Zinc	4	3,120.2	4,460.0	3,210.0	8.17E+05

WELL3-D

GROUND WATER MONITORING ANALYTICAL DATA STATISTICAL SUMMARY

TEXTRON-LYCOMING, STRATFORD, CONNECTICUT

COMPOUND	TOTAL NUMBER OF SAMPLES	GEOMETRIC MEAN	MAXIMUM	AVERAGE	VARIANCE
Cyanide (Total)	4	7.1	40.0	13.1	3.22E+02
Cyanide (Amenable)	4	3.3	5.0	4.0	4.00E+00
Total Organic Halogens (TOX)	3	249.9	741,250.0	247,090.7	1.83E+11
Total Organic Carbon (TOC)	3	5,192.8	8,015.0	5,593.3	6.13E+06
Specific Conductance (umhos/cm)	4	1,272.0	2,047.5	1,394.4	3.66E+05
pH	4	4.6	4.8	4.6	2.07E-02
Radium	1	1.0	1.0	1.0	NA
Gross Beta	1	1.0	1.0	1.0	NA
Gross Alpha	1	1.0	1.0	1.0	NA
phenol	1	25.0	25.0	25.0	NA
Turbidity	1	1.0	1.0	1.0	NA
Sulfate (SO4)	1	5.0	5.0	5.0	NA
Nitrate, as N	1	5.0	5.0	5.0	NA
Chloride	1	5.0	5.0	5.0	NA
Sodium	1	1.0	1.0	1.0	NA
Fluoride	0	0.0	0.0	NA	NA

NOTE: All values in $\mu g/l$ (ppb) unless noted otherwise.

TOX, TOC, Specific Conductance and pH are the average of four replicate samples for each sampling quarter.

Number of samples is total number of analyses exceeding method detection limits.

For undetected compounds, 1/2 the detection limit was used in the calculations.

WELL4

GROUND WATER MONITORING ANALYTICAL DATA STATISTICAL SUMMARY

TEXTRON-LYCOMING, STRATFORD, CONNECTICUT

COMPOUND	TOTAL NUMBER OF SAMPLES	GEOMETRIC MEAN	MAXIMUM	AVERAGE	VARIANCE
bromodichloromethane (THM)	11	1.5	8.0	2.1	5.32E+00
chlorobenzene	11	1.5	5.0	1.8	1.75E+00
chloroethane	11	2.0	12.5	3.6	1.28E+01
chloroform (THM)	13	1.2	5.0	1.4	1.46E+00
dibromochloromethane (THM)	11	1.4	2.5	1.6	1.74E+00
1,2-dichlorobenzene	11	2.0	12.5	3.6	1.28E+01
1,4-dichlorobenzene	11	2.0	12.5	3.6	1.28E+01
1,1-dichloroethane	11	12.2	33.7	15.7	7.73E+01
1,2-dichloroethane (EDC)	11	2.0	12.5	3.6	1.28E+01
1,1-dichloroethene	11	2.5	12.5	4.1	1.36E+01
1,2-trans-dichloroethene	11	143.9	544.7	231.7	2.99E+04
dichloromethane	11	2.0	12.5	3.6	1.28E+01
trans-1,3-dichloropropene	11	2.0	12.5	3.6	1.28E+01
1,1,2,2-tetrachloroethane	11	1.3	5.0	1.5	1.83E+00
1,1,1,2-tetrachloroethane	11	1.3	5.0	1.5	1.83E+00
tetrachloroethene	15	1.2	5.0	1.4	1.22E+00
1,1,1-trichloroethane	15	1.2	5.0	1.4	1.22E+00
1,1,2-trichloroethane	11	2.0	12.5	3.6	1.28E+01
trichloroethene	15	5.6	154.3	19.4	1.68E+03
trichlorofluoromethane	11	2.0	12.5	3.6	1.28E+01
vinyl chloride	11	5.3	147.0	24.6	2.12E+03
benzene	14	1.1	2.5	1.2	2.05E-01
chlorobenzene	7	2.3	8.0	3.4	7.92E+00
1,4-dichlorobenzene	7	2.4	7.5	3.3	9.05E+00
1,2-dichlorobenzene	7	2.4	7.5	3.3	9.05E+00
ethylbenzene	11	1.5	5.0	1.9	1.83E+00
toluene	14	1.5	4.0	1.8	9.72E-01
xylenes	14	2.1	5.0	2.8	1.91E+00
Barium	4	193.9	580.0	288.8	6.04E+04
Cadmium	30	4.8	9.0	4.9	1.19E+00
Chromium (Total)	30	15.6	370.0	42.5	5.86E+03
Chromium (Hexavalent)	27	4.2	25.0	5.5	2.73E+01
Copper	27	14.1	100.0	22.6	6.91E+02
Iron	8	2,903.4	150,400.0	22,420.0	3.11E+09
Manganese	7	246.5	2,710.0	552.9	9.80E+05
Mercury	29	1.0	3.0	1.1	1.38E-01
Nickel	27	15.6	80.0	21.6	3.30E+02
Selenium	4	5.9	10.0	6.3	6.25E+00
Silver	4	5.0	5.0	5.0	0.00E+00
Zinc	27	40.3	410.0	86.1	9.78E+03

WELL4

GROUND WATER MONITORING ANALYTICAL DATA STATISTICAL SUMMARY

TEXTRON–LYCOMING, STRATFORD, CONNECTICUT

COMPOUND	TOTAL NUMBER OF SAMPLES	GEOMETRIC MEAN	MAXIMUM	AVERAGE	VARIANCE
Cyanide (Total)	26	13.9	560.0	58.9	1.09E+04
Cyanide (Amenable)	26	9.8	50.0	17.3	1.44E+02
Total Organic Halogens (TOX)	23	294.1	829,250.0	44,407.2	3.10E+10
Total Organic Carbon (TOC)	23	21,760.6	87,555.0	25,967.7	2.47E+08
Specific Conductance (umhos/cm)	28	2,103.4	5,775.0	2,299.8	1.05E+06
pH	30	6.5	7.4	6.6	1.25E–01
Radium	5	1.0	1.1	1.0	3.91E–03
Gross Beta	5	2.1	44.5	9.7	4.73E+02
Gross Alpha	5	1.8	9.3	2.8	1.60E+01
phenol	9	15.4	100.0	25.8	6.98E+02
Turbidity	4	62.4	2,500.0	664.3	1.96E+06
Sulfate (SO4)	9	31,490.1	431,750.0	129,739.4	1.14E+10
Nitrate, as N	5	4,550.3	33,000.0	108,993.0	5.58E+10
Chloride	8	137,414.1	874,500.0	571,622.5	1.27E+11
Sodium	9	122,927.6	901,000.0	502,887.9	7.96E+10
Fluoride	0	0.0	0.0	NA	NA

NOTE: All values in $\mu g/l$ (ppb) unless noted otherwise.

TOX, TOC, Specific Conductance and pH are the average of four replicate samples for each sampling quarter.

Number of samples is total number of analyses exceeding method detection limits.

For undetected compounds, 1/2 the detection limit was used in the calculations.

WELLS

GROUND WATER MONITORING ANALYTICAL DATA STATISTICAL SUMMARY

TEXTRON-LYCOMING, STRATFORD, CONNECTICUT

COMPOUND	TOTAL NUMBER OF SAMPLES	GEOMETRIC MEAN	MAXIMUM	AVERAGE	VARIANCE
bromodichloromethane (THM)	10	1.6	25.0	3.8	6.35E+01
chlorobenzene	10	2.1	25.0	4.2	6.33E+01
chloroethane	10	2.9	12.5	6.2	7.46E+01
chloroform (THM)	12	1.5	25.0	3.3	4.94E+01
dibromochloromethane (THM)	10	1.6	25.0	3.8	6.35E+01
1,2-dichlorobenzene	10	3.5	12.9	7.3	7.08E+01
1,4-dichlorobenzene	10	2.7	25.0	6.1	7.60E+01
1,1-dichloroethane	10	32.2	147.0	53.1	3.22E+03
1,2-dichloroethane (EDC)	10	4.3	44.0	10.6	2.47E+02
1,1-dichloroethene	10	3.4	12.5	6.6	6.92E+01
1,2-trans-dichloroethene	10	149.8	6,600.0	1,154.5	3.30E+06
dichloromethane	10	4.1	12.5	7.7	6.86E+01
trans-1,3-dichloropropene	10	2.7	25.0	6.1	7.60E+01
1,1,2,2-tetrachloroethane	10	1.6	25.0	3.8	6.35E+01
1,1,1,2-tetrachloroethane	10	1.7	25.0	3.9	6.34E+01
tetrachloroethene	14	7.1	26.0	10.7	8.75E+01
1,1,1-trichloroethane	14	17.1	81.0	29.9	5.18E+02
1,1,2-trichloroethane	10	2.9	25.0	6.2	7.52E+01
trichloroethene	14	13.2	37.0	16.1	1.20E+02
trichlorofluoromethane	10	2.7	25.0	6.1	7.60E+01
vinyl chloride	10	11.5	559.0	89.3	2.52E+04
benzene	13	1.7	20.0	3.0	2.78E+01
chlorobenzene	8	2.9	50.0	8.4	2.46E+02
1,4-dichlorobenzene	8	3.1	50.0	8.9	2.47E+02
1,2-dichlorobenzene	8	3.1	50.0	8.9	2.47E+02
ethylbenzene	10	2.0	50.0	6.7	2.59E+02
toluene	13	2.5	50.0	8.0	2.74E+02
xylenes	13	3.8	15.0	8.0	1.81E+02
Barium	4	157.1	650.0	290.3	8.25E+04
Cadmium	26	4.9	60.0	6.7	1.14E+02
Chromium (Total)	26	39.2	690.0	81.6	1.68E+04
Chromium (Hexavalent)	23	4.5	25.0	6.3	4.05E+01
Copper	23	15.3	170.0	28.1	1.53E+03
Iron	7	10,882.5	27,670.0	14,865.0	6.65E+07
Manganese	6	3,052.1	5,110.0	3,190.0	1.79E+06
Mercury	25	1.0	1.0	1.0	0.00E+00
Nickel	23	28.7	90.0	41.4	5.35E+02
Selenium	4	5.0	5.0	5.0	0.00E+00
Silver	4	5.0	5.0	5.0	0.00E+00
Zinc	23	37.5	490.0	98.6	1.92E+04

WELL5

GROUND WATER MONITORING ANALYTICAL DATA STATISTICAL SUMMARY

TEXTRON-LYCOMING, STRATFORD, CONNECTICUT

COMPOUND	TOTAL NUMBER OF SAMPLES	GEOMETRIC MEAN	MAXIMUM	AVERAGE	VARIANCE
Cyanide (Total)	22	19.3	460.0	66.5	1.39E+04
Cyanide (Amenable)	22	12.9	270.0	31.4	3.25E+03
Total Organic Halogens (TOX)	19	668.2	1,642,750.0	133,553.1	1.77E+11
Total Organic Carbon (TOC)	19	18,090.6	197,495.0	31,188.7	2.05E+09
Specific Conductance (umhos/cm)	24	986.3	16,923.8	1,645.6	1.11E+07
pH	26	6.7	7.4	6.7	2.39E-01
Radium	5	1.0	1.0	1.0	0.00E+00
Gross Beta	5	1.7	14.8	3.8	4.73E+01
Gross Alpha	5	1.7	6.6	2.3	7.04E+00
phenol	8	19.8	150.0	42.7	2.32E+03
Turbidity	4	48.1	400.0	176.1	3.02E+04
Sulfate (SO4)	8	42,664.8	741,100.0	206,363.1	4.78E+10
Nitrate, as N	5	1,130.3	41,600.0	14,233.0	4.17E+08
Chloride	7	65,613.3	4,241,700.0	754,657.9	3.15E+12
Sodium	8	46,307.3	2,809,030.0	467,300.1	1.09E+12
Fluoride	0	0.0	0.0	NA	NA

NOTE: All values in $\mu g/l$ (ppb) unless noted otherwise.

TOX, TOC, Specific Conductance and pH are the average of four replicate samples for each sampling quarter.

Number of samples is total number of analyses exceeding method detection limits.

For undetected compounds, 1/2 the detection limit was used in the calculations.

WELL5-D

GROUND WATER MONITORING ANALYTICAL DATA STATISTICAL SUMMARY

TEXTRON-LYCOMING, STRATFORD, CONNECTICUT

COMPOUND	TOTAL NUMBER OF SAMPLES	GEOMETRIC MEAN	MAXIMUM	AVERAGE	VARIANCE
bromodichloromethane (THM)	3	1.4	2.5	1.5	7.50E-01
chlorobenzene	3	1.4	2.5	1.5	7.50E-01
chloroethane	3	6.5	53.0	19.8	8.33E+02
chloroform (THM)	3	1.4	2.5	1.5	7.50E-01
dibromochloromethane (THM)	3	1.4	2.5	1.5	7.50E-01
1,2-dichlorobenzene	3	2.4	5.3	2.9	4.76E+00
1,4-dichlorobenzene	3	1.4	2.5	1.5	7.50E-01
1,1-dichloroethane	3	17.5	58.2	32.5	7.89E+02
1,2-dichloroethane (EDC)	3	1.4	2.5	1.5	7.50E-01
1,1-dichloroethene	3	1.4	2.5	1.5	7.50E-01
1,2-trans-dichloroethene	3	252.8	362.0	262.3	7.96E+03
dichloromethane	3	3.3	14.0	5.8	5.06E+01
trans-1,3-dichloropropene	3	1.4	2.5	1.5	7.50E-01
1,1,2,2-tetrachloroethane	3	1.4	2.5	1.5	7.50E-01
1,1,1,2-tetrachloroethane	3	1.4	2.5	1.5	7.50E-01
tetrachloroethene	3	1.4	2.5	1.5	7.50E-01
1,1,1-trichloroethane	3	1.4	2.5	1.5	7.50E-01
1,1,2-trichloroethane	3	1.4	2.5	1.5	7.50E-01
trichloroethene	3	2.4	5.7	3.1	5.76E+00
trichlorofluoromethane	3	1.4	2.5	1.5	7.50E-01
vinyl chloride	3	43.0	272.0	130.5	1.83E+04
benzene	3	1.0	1.0	1.0	0.00E+00
chlorobenzene	1	2.5	2.5	2.5	NA
1,4-dichlorobenzene	1	2.5	2.5	2.5	NA
1,2-dichlorobenzene	1	2.5	2.5	2.5	NA
ethylbenzene	3	1.7	1.9	1.8	5.70E-01
toluene	3	1.6	1.5	1.7	5.83E-01
xylenes	3	2.3	4.8	2.8	3.66E+00
Barium	0	0.0	0.0	NA	NA
Cadmium	4	4.6	7.0	4.9	3.40E+00
Chromium (Total)	4	24.8	69.0	36.0	9.34E+02
Chromium (Hexavalent)	4	11.2	25.0	15.0	1.33E+02
Copper	4	26.8	110.0	41.3	2.17E+03
Iron	0	0.0	0.0	NA	NA
Manganese	0	0.0	0.0	NA	NA
Mercury	4	1.0	1.0	1.0	0.00E+00
Nickel	4	48.5	170.0	74.0	4.67E+03
Selenium	0	0.0	0.0	NA	NA
Silver	0	0.0	0.0	NA	NA
Zinc	4	43.7	150.0	65.3	3.63E+03

WELL5-D

GROUND WATER MONITORING ANALYTICAL DATA STATISTICAL SUMMARY

TEXTRON-LYCOMING, STRATFORD, CONNECTICUT

COMPOUND	TOTAL NUMBER OF SAMPLES	GEOMETRIC MEAN	MAXIMUM	AVERAGE	VARIANCE
Cyanide (Total)	4	4.2	5.0	4.4	1.56E+00
Cyanide (Amenable)	4	3.3	5.0	4.0	4.00E+00
Total Organic Halogens (TOX)	3	3,402.4	552,250.0	184,265.7	1.02E+11
Total Organic Carbon (TOC)	3	15,805.5	19,570.0	16,280.0	2.05E+07
Specific Conductance (umhos/cm)	4	4,161.2	10,935.0	5,221.9	1.66E+07
pH	4	6.7	6.9	6.7	3.46E-02
Radium	1	1.0	1.0	1.0	NA
Gross Beta	1	1.0	1.0	1.0	NA
Gross Alpha	1	1.0	1.0	1.0	NA
phenol	1	25.0	25.0	25.0	NA
Turbidity	1	1.0	1.0	1.0	NA
Sulfate (SO4)	1	5.0	5.0	5.0	NA
Nitrate, as N	1	5.0	5.0	5.0	NA
Chloride	1	5.0	5.0	5.0	NA
Sodium	1	1.0	1.0	1.0	NA
Fluoride	0	0.0	0.0	NA	NA

NOTE: All values in μg/l (ppb) unless noted otherwise.

TOX, TOC, Specific Conductance and pH are the average of four replicate samples for each sampling quarter.

Number of samples is total number of analyses exceeding method detection limits.

For undetected compounds, 1/2 the detection limit was used in the calculations.

WELL6

GROUND WATER MONITORING ANALYTICAL DATA STATISTICAL SUMMARY

TEXTRON-LYCOMING, STRATFORD, CONNECTICUT

COMPOUND	TOTAL NUMBER OF SAMPLES	GEOMETRIC MEAN	MAXIMUM	AVERAGE	VARIANCE
bromodichloromethane (THM)	10	1.3	5.0	1.6	2.07E+00
chlorobenzene	10	1.5	5.0	1.9	1.98E+00
chloroethane	10	2.1	12.5	3.8	1.46E+01
chloroform (THM)	12	1.2	5.0	1.5	1.61E+00
dibromochloromethane (THM)	10	1.3	5.0	1.6	2.07E+00
1,2-dichlorobenzene	10	2.1	12.5	3.8	1.46E+01
1,4-dichlorobenzene	10	2.1	12.5	3.8	1.46E+01
1,1-dichloroethane	10	2.9	93.0	12.7	9.22E+02
1,2-dichloroethane (EDC)	10	2.1	12.5	3.8	1.46E+01
1,1-dichloroethene	10	2.1	12.5	3.8	1.46E+01
1,2-trans-dichloroethene	10	3.2	198.0	23.2	4.32E+03
dichloromethane	10	2.1	12.5	3.8	1.46E+01
trans-1,3-dichloropropene	10	2.1	12.5	3.8	1.46E+01
1,1,2,2-tetrachloroethane	10	1.3	5.0	1.6	2.07E+00
1,1,1,2-tetrachloroethane	10	1.3	2.5	1.6	2.07E+00
tetrachloroethene	14	1.3	25.0	2.8	4.20E+01
1,1,1-trichloroethane	14	1.5	81.0	6.8	4.66E+02
1,1,2-trichloroethane	10	1.7	12.5	2.7	2.07E+00
trichloroethene	14	1.7	32.0	5.5	1.02E+02
trichlorofluoromethane	10	2.1	12.5	3.8	1.46E+01
vinyl chloride	10	2.5	25.0	5.9	6.54E+01
benzene	13	1.2	2.5	1.2	2.25E-01
chlorobenzene	7	2.2	2.5	2.7	7.33E+00
1,4-dichlorobenzene	7	2.4	7.5	3.3	9.05E+00
1,2-dichlorobenzene	7	2.4	7.5	3.3	9.05E+00
ethylbenzene	10	1.5	5.0	2.0	2.07E+00
toluene	13	1.5	2.5	1.7	5.37E-01
xylenes	13	2.0	5.0	2.7	1.45E+00
Barium	0	0.0	0.0	NA	NA
Cadmium	25	5.1	7.0	5.1	1.82E-01
Chromium (Total)	25	12.3	50.0	16.4	1.22E+02
Chromium (Hexavalent)	25	4.3	25.0	5.6	2.90E+01
Copper	25	17.4	180.0	31.8	2.04E+03
Iron	3	1,755.7	24,700.0	9,300.0	2.33E+08
Manganese	3	625.0	760.0	633.3	8.45E+03
Mercury	25	1.0	1.0	1.0	0.00E+00
Nickel	25	17.0	140.0	24.4	6.15E+02
Selenium	0	0.0	0.0	NA	NA
Silver	0	0.0	0.0	NA	NA
Zinc	25	39.9	590.0	93.6	1.55E+04

WELL6

GROUND WATER MONITORING ANALYTICAL DATA STATISTICAL SUMMARY

TEXTRON-LYCOMING, STRATFORD, CONNECTICUT

COMPOUND	TOTAL NUMBER OF SAMPLES	GEOMETRIC MEAN	MAXIMUM	AVERAGE	VARIANCE
Cyanide (Total)	24	9.8	50.0	16.6	1.55E+02
Cyanide (Amenable)	24	9.4	50.0	16.5	1.56E+02
Total Organic Halogens (TOX)	18	42.3	57,475.0	3,244.1	1.92E+08
Total Organic Carbon (TOC)	18	11,283.1	37,700.0	13,530.6	9.35E+07
Specific Conductance (umhos/cm)	23	1,480.4	3,050.0	1,708.2	4.20E+05
pH	25	6.7	7.6	6.7	9.33E-02
Radium	1	1.0	1.0	1.0	NA
Gross Beta	1	1.0	1.0	1.0	NA
Gross Alpha	1	1.0	1.0	1.0	NA
phenol	4	8.9	25.0	11.3	1.06E+02
Turbidity	1	1.0	1.0	1.0	NA
Sulfate (SO4)	4	5,930.3	94,900.0	49,601.3	7.70E+08
Nitrate, as N	1	5.0	5.0	5.0	NA
Chloride	3	13,780.7	760,000.0	482,901.7	2.89E+11
Sodium	4	15,012.9	481,000.0	282,740.3	3.25E+10
Fluoride	0	0.0	0.0	NA	NA

NOTE: All values in $\mu g/l$ (ppb) unless noted otherwise.

TOX, TOC, Specific Conductance and pH are the average of four replicate samples for each sampling quarter.

Number of samples is total number of analyses exceeding method detection limits.

For undetected compounds, 1/2 the detection limit was used in the calculations.

WELL7

GROUND WATER MONITORING ANALYTICAL DATA STATISTICAL SUMMARY

TEXTRON-LYCOMING, STRATFORD, CONNECTICUT

COMPOUND	TOTAL NUMBER OF SAMPLES	GEOMETRIC MEAN	MAXIMUM	AVERAGE	VARIANCE
bromodichloromethane (THM)	11	1.3	5.0	1.5	1.83E+00
chlorobenzene	11	1.5	2.5	1.8	1.75E+00
chloroethane	11	2.0	12.5	3.6	1.28E+01
chloroform (THM)	13	1.2	2.5	1.4	1.46E+00
dibromochloromethane (THM)	11	1.3	5.0	1.5	1.83E+00
1,2-dichlorobenzene	11	2.3	12.5	4.0	1.48E+01
1,4-dichlorobenzene	11	2.0	12.5	3.6	1.28E+01
1,1-dichloroethane	11	2.0	12.5	3.6	1.28E+01
1,2-dichloroethane (EDC)	11	2.7	25.0	5.8	5.18E+01
1,1-dichloroethene	11	2.0	12.5	3.6	1.28E+01
1,2-trans-dichloroethene	11	2.0	12.5	3.6	1.28E+01
dichloromethane	11	2.4	12.5	4.1	1.17E+01
trans-1,3-dichloropropene	11	2.0	12.5	3.6	1.28E+01
1,1,2,2-tetrachloroethane	11	1.3	5.0	1.5	1.83E+00
1,1,1,2-tetrachloroethane	11	1.3	2.5	1.5	1.83E+00
tetrachloroethene	15	1.2	5.0	1.4	1.22E+00
1,1,1-trichloroethane	15	1.3	2.7	1.5	1.41E+00
1,1,2-trichloroethane	11	1.6	12.5	2.5	1.83E+00
trichloroethene	15	2.2	16.0	3.7	1.76E+01
trichlorofluoromethane	11	2.0	12.5	3.6	1.28E+01
vinyl chloride	11	2.3	25.0	5.4	5.73E+01
benzene	14	1.3	4.0	1.5	8.85E-01
chlorobenzene	7	2.0	2.5	2.6	7.92E+00
1,4-dichlorobenzene	7	2.4	7.5	3.3	9.05E+00
1,2-dichlorobenzene	7	2.4	7.5	3.3	9.05E+00
ethylbenzene	11	1.6	5.0	2.0	1.73E+00
toluene	14	1.8	27.0	3.4	4.82E+01
xylenes	14	2.2	6.0	2.9	2.42E+00
Barium	0	0.0	0.0	NA	NA
Cadmium	26	5.1	10.0	5.3	1.94E+00
Chromium (Total)	26	8.9	40.0	10.4	5.45E+01
Chromium (Hexavalent)	26	4.3	25.0	5.6	2.85E+01
Copper	26	15.4	130.0	25.6	9.15E+02
Iron	4	263.7	2,120.0	685.0	9.65E+05
Manganese	4	689.2	960.0	722.5	8.30E+04
Mercury	26	1.0	1.0	1.0	0.00E+00
Nickel	26	15.1	100.0	20.6	3.39E+02
Selenium	0	0.0	0.0	NA	NA
Silver	0	0.0	0.0	NA	NA
Zinc	26	26.0	480.0	66.2	1.03E+04

WELL7

GROUND WATER MONITORING ANALYTICAL DATA STATISTICAL SUMMARY

TEXTRON-LYCOMING, STRATFORD, CONNECTICUT

COMPOUND	TOTAL NUMBER OF SAMPLES	GEOMETRIC MEAN	MAXIMUM	AVERAGE	VARIANCE
Cyanide (Total)	25	9.5	50.0	16.1	1.48E+02
Cyanide (Amenable)	25	9.2	50.0	16.0	1.48E+02
Total Organic Halogens (TOX)	19	30.5	12,575.0	706.5	8.72E+06
Total Organic Carbon (TOC)	19	8,148.2	26,775.0	9,726.7	3.51E+07
Specific Conductance (umhos/cm)	24	1,033.2	2,840.0	1,336.3	3.12E+05
pH	26	6.7	7.5	6.7	7.53E-02
Radium	1	1.0	1.0	1.0	NA
Gross Beta	1	1.0	1.0	1.0	NA
Gross Alpha	1	1.0	1.0	1.0	NA
phenol	5	5.7	25.0	8.4	9.04E+01
Turbidity	1	1.0	1.0	1.0	NA
Sulfate (SO4)	5	9,238.5	102,700.0	58,341.0	2.06E+09
Nitrate, as N	1	5.0	5.0	5.0	NA
Chloride	4	21,306.9	614,800.0	316,651.3	7.46E+10
Sodium	5	23,786.5	484,580.0	258,832.2	4.67E+10
Fluoride	0	0.0	0.0	NA	NA

NOTE: All values in μg/l (ppb) unless noted otherwise.

TOX, TOC, Specific Conductance and pH are the average of four replicate samples for each sampling quarter.

Number of samples is total number of analyses exceeding method detection limits.

For undetected compounds, 1/2 the detection limit was used in the calculations.

WELL8
GROUND WATER MONITORING ANALYTICAL DATA STATISTICAL SUMMARY
TEXTRON-LYCOMING, STRATFORD, CONNECTICUT

COMPOUND	TOTAL NUMBER OF SAMPLES	GEOMETRIC MEAN	MAXIMUM	AVERAGE	VARIANCE
bromodichloromethane (THM)	8	1.4	5.0	1.7	2.28E+00
chlorobenzene	8	2.2	38.0	6.3	1.61E+02
chloroethane	8	1.4	5.0	1.7	2.28E+00
chloroform (THM)	8	1.4	5.0	1.7	2.28E+00
dibromochloromethane (THM)	8	1.4	5.0	1.7	2.28E+00
1,2-dichlorobenzene	8	2.2	38.0	6.3	1.61E+02
1,4-dichlorobenzene	8	1.4	5.0	1.7	2.28E+00
1,1-dichloroethane	8	1.4	5.0	1.7	2.28E+00
1,2-dichloroethane (EDC)	8	2.1	35.0	5.9	1.35E+02
1,1-dichloroethene	8	1.4	5.0	1.7	2.28E+00
1,2-trans-dichloroethene	8	1.4	5.0	1.7	2.28E+00
dichloromethane	8	1.8	10.0	2.8	9.41E+00
trans-1,3-dichloropropene	8	1.4	5.0	1.7	2.28E+00
1,1,2,2-tetrachloroethane	8	1.4	5.0	1.7	2.28E+00
1,1,1,2-tetrachloroethane	8	1.6	3.0	1.9	2.11E+00
tetrachloroethene	8	1.4	5.0	1.7	2.28E+00
1,1,1-trichloroethane	8	1.4	2.5	1.8	2.15E+00
1,1,2-trichloroethane	8	1.4	5.0	1.7	2.28E+00
trichloroethene	8	2.0	24.0	4.6	6.07E+01
trichlorofluoromethane	8	1.4	5.0	1.7	2.28E+00
vinyl chloride	8	1.7	25.0	4.2	7.23E+01
benzene	8	1.2	4.0	1.4	1.12E+00
chlorobenzene	5	3.7	38.0	10.0	3.13E+02
1,4-dichlorobenzene	5	3.7	38.0	10.0	3.13E+02
1,2-dichlorobenzene	5	1.8	7.5	2.6	1.06E+01
ethylbenzene	8	1.5	9.0	2.2	8.28E+00
toluene	8	1.8	39.0	5.9	1.81E+02
xylenes	8	1.6	15.0	2.9	2.48E+01
Barium	0	0.0	0.0	NA	NA
Cadmium	17	4.8	5.0	4.9	3.70E-01
Chromium (Total)	17	11.3	50.0	13.5	1.02E+02
Chromium (Hexavalent)	17	5.6	25.0	7.1	4.21E+01
Copper	17	18.9	120.0	33.4	1.63E+03
Iron	4	249.2	20,100.0	5,097.5	9.98E+07
Manganese	4	95.4	1,660.0	455.0	6.09E+05
Mercury	17	1.1	3.0	1.1	2.33E-01
Nickel	17	12.9	50.0	15.6	1.38E+02
Selenium	0	0.0	0.0	NA	NA
Silver	0	0.0	0.0	NA	NA
Zinc	17	25.7	210.0	47.9	3.66E+03

WELL8

GROUND WATER MONITORING ANALYTICAL DATA STATISTICAL SUMMARY

TEXTRON-LYCOMING, STRATFORD, CONNECTICUT

COMPOUND	TOTAL NUMBER OF SAMPLES	GEOMETRIC MEAN	MAXIMUM	AVERAGE	VARIANCE
Cyanide (Total)	17	6.9	50.0	10.1	1.23E+02
Cyanide (Amenable)	17	6.6	50.0	10.1	1.23E+02
Total Organic Halogens (TOX)	14	19.5	21,750.0	1,576.3	3.44E+07
Total Organic Carbon (TOC)	14	3,276.9	18,675.0	5,299.5	1.96E+07
Specific Conductance (umhos/cm)	17	114.4	185.8	120.3	1.26E+03
pH	17	5.6	7.8	5.7	1.04E+00
Radium	1	1.0	1.0	1.0	NA
Gross Beta	1	1.0	1.0	1.0	NA
Gross Alpha	1	1.0	1.0	1.0	NA
phenol	5	8.6	25.0	11.0	1.06E+02
Turbidity	1	1.0	1.0	1.0	NA
Sulfate (SO4)	5	7,485.1	86,400.0	40,901.0	1.36E+09
Nitrate, as N	1	5.0	5.0	5.0	NA
Chloride	4	2,714.6	184,700.0	50,126.3	1.10E+10
Sodium	5	3,009.7	134,900.0	34,816.2	3.83E+09
Fluoride	0	0.0	0.0	NA	NA

NOTE: All values in µg/l (ppb) unless noted otherwise.

TOX, TOC, Specific Conductance and pH are the average of four replicate samples for each sampling quarter.

Number of samples is total number of analyses exceeding method detection limits.

For undetected compounds, 1/2 the detection limit was used in the calculations.

WELL9

GROUND WATER MONITORING ANALYTICAL DATA STATISTICAL SUMMARY

TEXTRON-LYCOMING, STRATFORD, CONNECTICUT

COMPOUND	TOTAL NUMBER OF SAMPLES	GEOMETRIC MEAN	MAXIMUM	AVERAGE	VARIANCE
bromodichloromethane (THM)	9	1.3	5.0	1.6	1.97E+00
chlorobenzene	9	1.3	5.0	1.6	1.97E+00
chloroethane	9	1.3	5.0	1.6	1.97E+00
chloroform (THM)	9	1.3	5.0	1.6	1.97E+00
dibromochloromethane (THM)	9	1.3	5.0	1.6	1.97E+00
1,2-dichlorobenzene	9	1.3	5.0	1.6	1.97E+00
1,4-dichlorobenzene	9	1.3	5.0	1.6	1.97E+00
1,1-dichloroethane	9	1.3	5.0	1.6	1.97E+00
1,2-dichloroethane (EDC)	9	1.3	5.0	1.6	1.97E+00
1,1-dichloroethene	9	1.3	5.0	1.6	1.97E+00
1,2-trans-dichloroethene	9	1.3	5.0	1.6	1.97E+00
dichloromethane	9	1.5	4.0	1.9	2.08E+00
trans-1,3-dichloropropene	9	1.3	5.0	1.6	1.97E+00
1,1,2,2-tetrachloroethane	9	1.3	5.0	1.6	1.97E+00
1,1,1,2-tetrachloroethane	9	1.3	5.0	1.6	1.97E+00
tetrachloroethene	9	1.3	5.0	1.6	1.97E+00
1,1,1-trichloroethane	9	1.3	5.0	1.6	1.97E+00
1,1,2-trichloroethane	9	1.3	5.0	1.6	1.97E+00
trichloroethene	9	1.4	2.5	1.7	1.79E+00
trichlorofluoromethane	9	1.3	5.0	1.6	1.97E+00
vinyl chloride	9	1.6	25.0	3.8	6.20E+01
benzene	9	1.0	1.0	1.0	0.00E+00
chlorobenzene	5	1.8	7.5	2.6	1.06E+01
1,4-dichlorobenzene	5	1.8	7.5	2.6	1.06E+01
1,2-dichlorobenzene	5	1.8	7.5	2.6	1.06E+01
ethylbenzene	9	1.1	2.5	1.2	2.57E-01
toluene	9	1.4	8.0	1.9	5.51E+00
xylenes	9	1.1	2.5	1.2	2.57E-01
Barium	0	0,0	0.0	NA	NA
Cadmium	18	8.3	670.0	48.4	2.46E+04
Chromium (Total)	18	10.2	56.0	13.1	1.60E+02
Chromium (Hexavalent)	18	5.5	25.0	6.9	4.06E+01
Copper	18	48.7	560.0	120.3	2.77E+04
Iron	4	1,018.7	67,400.0	17,152.5	1.13E+09
Manganese	4	1,922.2	3,510.0	2,167.5	9.45E+05
Mercury	18	1.0	1.0	1.0	0.00E+00
Nickel	18	27.9	150.0	46.1	1.92E+03
Selenium	0	0.0	0.0	NA	NA
Silver	0	0.0	0.0	NA	NA
Zinc	18	381.3	1,070.0	489.4	1.20E+05

WELL9

GROUND WATER MONITORING ANALYTICAL DATA STATISTICAL SUMMARY

TEXTRON-LYCOMING, STRATFORD, CONNECTICUT

COMPOUND	TOTAL NUMBER OF SAMPLES	GEOMETRIC MEAN	MAXIMUM	AVERAGE	VARIANCE
Cyanide (Total)	18	6.8	50.0	9.9	1.15E+02
Cyanide (Amenable)	18	6.5	50.0	9.8	1.16E+02
Total Organic Halogens (TOX)	15	18.7	23,000.0	1,555.0	3.61E+07
Total Organic Carbon (TOC)	15	7,042.6	28,975.0	8,537.2	3.04E+07
Specific Conductance (umhos/cm)	18	805.0	1,873.3	925.3	2.42E+05
pH	18	5.9	7.8	6.0	9.23E-01
Radium	1	1.0	1.0	1.0	NA
Gross Beta	1	1.0	1.0	1.0	NA
Gross Alpha	1	1.0	1.0	1.0	NA
phenol	5	5.7	25.0	8.4	9.04E+01
Turbidity	1	1.0	1.0	1.0	NA
Sulfate (SO4)	5	34,767.8	909,000.0	348,121.0	3.01E+10
Nitrate, as N	1	5.0	5.0	5.0	NA
Chloride	4	2,427.9	30,610.0	16,303.8	2.48E+08
Sodium	5	2,956.2	41,400.0	19,948.2	1.54E+08
Fluoride	0	0.0	0.0	NA	NA

NOTE: All values in µg/l (ppb) unless noted otherwise.

TOX, TOC, Specific Conductance and pH are the average of four replicate samples for each sampling quarter.

Number of samples is total number of analyses exceeding method detection limits.

For undetected compounds, 1/2 the detection limit was used in the calculations.

WELL10

GROUND WATER MONITORING ANALYTICAL DATA STATISTICAL SUMMARY

TEXTRON-LYCOMING, STRATFORD, CONNECTICUT

COMPOUND	TOTAL NUMBER OF SAMPLES	GEOMETRIC MEAN	MAXIMUM	AVERAGE	VARIANCE
bromodichloromethane (THM)	9	1.4	5.0	1.7	2.03E+00
chlorobenzene	9	1.3	5.0	1.6	1.97E+00
chloroethane	9	1.3	5.0	1.6	1.97E+00
chloroform (THM)	9	2.5	15.3	4.2	2.87E+01
dibromochloromethane (THM)	9	1.3	5.0	1.6	1.97E+00
1,2-dichlorobenzene	9	1.3	5.0	1.6	1.97E+00
1,4-dichlorobenzene	9	1.3	5.0	1.6	1.97E+00
1,1-dichloroethane	9	1.8	18.0	3.5	2.81E+01
1,2-dichloroethane (EDC)	9	1.3	2.5	1.6	1.97E+00
1,1-dichloroethene	9	1.3	2.5	1.6	1.97E+00
1,2-trans-dichloroethene	9	1.5	4.0	1.9	2.08E+00
dichloromethane	9	1.5	4.0	1.9	2.08E+00
trans-1,3-dichloropropene	9	1.3	5.0	1.6	1.97E+00
1,1,2,2-tetrachloroethane	9	1.3	5.0	1.6	1.97E+00
1,1,1,2-tetrachloroethane	9	1.3	5.0	1.6	1.97E+00
tetrachloroethene	9	1.3	2.5	1.6	1.97E+00
1,1,1-trichloroethane	9	2.7	29.1	5.5	7.70E+01
1,1,2-trichloroethane	9	1.3	5.0	1.6	1.97E+00
trichloroethene	9	1.4	2.5	1.7	1.79E+00
trichlorofluoromethane	9	1.3	5.0	1.6	1.97E+00
vinyl chloride	9	1.6	25.0	3.8	6.20E+01
benzene	9	1.0	1.0	1.0	0.00E+00
chlorobenzene	5	1.8	7.5	2.6	1.06E+01
1,4-dichlorobenzene	5	1.8	7.5	2.6	1.06E+01
1,2-dichlorobenzene	5	1.8	7.5	2.6	1.06E+01
ethylbenzene	9	1.1	2.5	1.2	2.57E-01
toluene	9	1.6	27.0	4.1	7.27E+01
xylenes	9	1.3	3.0	1.4	6.86E-01
Barium	0	0.0	0.0	NA	NA
Cadmium	18	5.0	9.0	5.1	1.38E+00
Chromium (Total)	18	10.3	80.0	14.0	2.90E+02
Chromium (Hexavalent)	18	5.5	25.0	6.9	4.06E+01
Copper	18	17.2	160.0	33.3	2.38E+03
Iron	4	498.1	57,000.0	14,547.5	8.10E+08
Manganese	4	378.8	2,100.0	820.0	1.19E+06
Mercury	18	1.0	1.0	1.0	0.00E+00
Nickel	18	15.0	80.0	22.6	5.56E+02
Selenium	0	0.0	0.0	NA	NA
Silver	0	0.0	0.0	NA	NA
Zinc	18	20.0	240.0	46.1	4.33E+03

WELL10

GROUND WATER MONITORING ANALYTICAL DATA STATISTICAL SUMMARY

TEXTRON-LYCOMING, STRATFORD, CONNECTICUT

COMPOUND	TOTAL NUMBER OF SAMPLES	GEOMETRIC MEAN	MAXIMUM	AVERAGE	VARIANCE
Cyanide (Total)	18	6.8	50.0	9.9	1.15E+02
Cyanide (Amenable)	18	6.5	50.0	9.8	1.16E+02
Total Organic Halogens (TOX)	15	37.1	55,400.0	3,720.7	2.10E+08
Total Organic Carbon (TOC)	15	5,835.1	14,500.0	6,685.5	1.12E+07
Specific Conductance (umhos/cm)	18	383.2	888.3	419.3	4.20E+04
pH	18	7.6	8.8	7.6	1.80E-01
Radium	1	1.0	1.0	1.0	NA
Gross Beta	1	1.0	1.0	1.0	NA
Gross Alpha	1	1.0	1.0	1.0	NA
phenol	5	6.9	25.0	9.0	8.89E+01
Turbidity	1	1.0	1.0	1.0	NA
Sulfate (SO4)	5	6,441.5	53,500.0	31,661.0	5.09E+08
Nitrate, as N	1	5.0	5.0	5.0	NA
Chloride	4	6,196.2	574,000.0	154,901.3	1.05E+11
Sodium	5	3,491.8	32,400.0	21,854.2	2.09E+08
Fluoride	0	0.0	0.0	NA	NA

NOTE: All values in µg/l (ppb) unless noted otherwise.

TOX, TOC, Specific Conductance and pH are the average of four replicate samples for each sampling quarter.

Number of samples is total number of analyses exceeding method detection limits.

For undetected compounds, 1/2 the detection limit was used in the calculations.

WELL11

GROUND WATER MONITORING ANALYTICAL DATA STATISTICAL SUMMARY

TEXTRON-LYCOMING, STRATFORD, CONNECTICUT

COMPOUND	TOTAL NUMBER OF SAMPLES	GEOMETRIC MEAN	MAXIMUM	AVERAGE	VARIANCE
bromodichloromethane (THM)	8	1.4	5.0	1.7	2.28E+00
chlorobenzene	8	1.4	5.0	1.7	2.28E+00
chloroethane	8	1.4	5.0	1.7	2.28E+00
chloroform (THM)	8	1.4	5.0	1.7	2.28E+00
dibromochloromethane (THM)	8	1.4	5.0	1.7	2.28E+00
1,2-dichlorobenzene	8	1.4	5.0	1.7	2.28E+00
1,4-dichlorobenzene	8	1.4	5.0	1.7	2.28E+00
1,1-dichloroethane	8	1.4	5.0	1.7	2.28E+00
1,2-dichloroethane (EDC)	8	2.2	49.0	7.7	2.74E+02
1,1-dichloroethene	8	1.4	5.0	1.7	2.28E+00
1,2-trans-dichloroethene	8	1.4	5.0	1.7	2.28E+00
dichloromethane	8	1.7	6.0	2.3	3.74E+00
trans-1,3-dichloropropene	8	1.4	5.0	1.7	2.28E+00
1,1,2,2-tetrachloroethane	8	1.4	5.0	1.7	2.28E+00
1,1,1,2-tetrachloroethane	8	1.6	3.0	1.9	2.11E+00
tetrachloroethene	8	1.5	10.0	2.3	1.04E+01
1,1,1-trichloroethane	8	1.4	5.0	1.7	2.28E+00
1,1,2-trichloroethane	8	1.4	5.0	1.7	2.28E+00
trichloroethene	8	2.3	21.0	5.2	4.83E+01
trichlorofluoromethane	8	1.4	5.0	1.7	2.28E+00
vinyl chloride	8	1.7	25.0	4.2	7.23E+01
benzene	8	1.1	3.0	1.3	5.00E-01
chlorobenzene	5	1.8	7.5	2.6	1.06E+01
1,4-dichlorobenzene	5	1.8	7.5	2.6	1.06E+01
1,2-dichlorobenzene	5	1.8	7.5	2.6	1.06E+01
ethylbenzene	8	1.5	9.0	2.2	8.28E+00
toluene	8	1.8	42.0	6.3	2.10E+02
xylenes	8	1.6	14.0	2.8	2.14E+01
Barium	0	0.0	0.0	NA	NA
Cadmium	17	4.6	5.0	4.7	6.48E-01
Chromium (Total)	17	9.2	20.0	10.0	1.84E+01
Chromium (Hexavalent)	17	5.6	25.0	7.1	4.21E+01
Copper	17	16.7	300.0	34.4	4.61E+03
Iron	3	190.4	11,500.0	3,856.7	6.54E+07
Manganese	3	858.4	1,660.0	1,076.7	7.60E+04
Mercury	17	1.0	2.0	1.1	5.83E-02
Nickel	17	16.9	50.0	20.2	1.63E+02
Selenium	0	0.0	0.0	NA	NA
Silver	0	0.0	0.0	NA	NA
Zinc	17	45.0	550.0	102.8	1.21E+04

WELL11

GROUND WATER MONITORING ANALYTICAL DATA STATISTICAL SUMMARY

TEXTRON-LYCOMING, STRATFORD, CONNECTICUT

COMPOUND	TOTAL NUMBER OF SAMPLES	GEOMETRIC MEAN	MAXIMUM	AVERAGE	VARIANCE
Cyanide (Total)	17	6.9	50.0	10.1	1.23E+02
Cyanide (Amenable)	17	6.6	50.0	10.1	1.23E+02
Total Organic Halogens (TOX)	14	24.5	56,550.0	4,058.0	2.33E+08
Total Organic Carbon (TOC)	14	11,286.2	25,902.5	13,185.7	4.55E+07
Specific Conductance (umhos/cm)	17	182.9	787.5	212.5	2.05E+04
pH	17	6.0	7.7	6.1	5.55E-01
Radium	1	1.0	1.0	1.0	NA
Gross Beta	1	1.0	1.0	1.0	NA
Gross Alpha	1	1.0	1.0	1.0	NA
phenol	4	7.8	25.0	10.3	1.00E+02
Turbidity	1	1.0	1.0	1.0	NA
Sulfate (SO4)	4	3,439.8	34,600.0	22,876.3	2.18E+08
Nitrate, as N	1	5.0	5.0	5.0	NA
Chloride	3	1,574.9	42,000.0	20,201.7	1.73E+08
Sodium	4	2,306.4	38,600.0	23,972.8	9.31E+07
Fluoride	0	0.0	0.0	NA	NA

NOTE: All values in $\mu g/l$ (ppb) unless noted otherwise.

TOX, TOC, Specific Conductance and pH are the average of four replicate samples for each sampling quarter.

Number of samples is total number of analyses exceeding method detection limits.

For undetected compounds, 1/2 the detection limit was used in the calculations.

WELL12

GROUND WATER MONITORING ANALYTICAL DATA STATISTICAL SUMMARY

TEXTRON-LYCOMING, STRATFORD, CONNECTICUT

COMPOUND	TOTAL NUMBER OF SAMPLES	GEOMETRIC MEAN	MAXIMUM	AVERAGE	VARIANCE
bromodichloromethane (THM)	9	1.3	5.0	1.6	1.97E+00
chlorobenzene	9	1.3	5.0	1.6	1.97E+00
chloroethane	9	1.3	5.0	1.6	1.97E+00
chloroform (THM)	9	1.6	2.6	1.9	1.78E+00
dibromochloromethane (THM)	9	1.3	5.0	1.6	1.97E+00
1,2-dichlorobenzene	9	1.3	5.0	1.6	1.97E+00
1,4-dichlorobenzene	9	1.3	5.0	1.6	1.97E+00
1,1-dichloroethane	9	1.3	5.0	1.6	1.97E+00
1,2-dichloroethane (EDC)	9	2.1	52.0	7.3	2.66E+02
1,1-dichloroethene	9	1.3	5.0	1.6	1.97E+00
1,2-trans-dichloroethene	9	1.3	5.0	1.6	1.97E+00
dichloromethane	9	1.7	8.0	2.4	5.22E+00
trans-1,3-dichloropropene	9	1.3	5.0	1.6	1.97E+00
1,1,2,2-tetrachloroethane	9	1.3	5.0	1.6	1.97E+00
1,1,1,2-tetrachloroethane	9	1.5	4.0	1.9	2.08E+00
tetrachloroethene	9	10.9	26.3	14.5	5.92E+01
1,1,1-trichloroethane	9	1.3	2.5	1.6	1.97E+00
1,1,2-trichloroethane	9	1.3	5.0	1.6	1.97E+00
trichloroethene	9	17.0	33.3	19.2	8.15E+01
trichlorofluoromethane	9	1.3	5.0	1.6	1.97E+00
vinyl chloride	9	1.6	25.0	3.8	6.20E+01
benzene	9	1.2	4.0	1.3	9.64E-01
chlorobenzene	5	1.8	7.5	2.6	1.06E+01
1,4-dichlorobenzene	5	1.8	7.5	2.6	1.06E+01
1,2-dichlorobenzene	5	1.8	7.5	2.6	1.06E+01
ethylbenzene	9	1.3	3.0	1.4	6.86E-01
toluene	9	1.6	35.0	4.9	1.24E+02
xylenes	9	1.4	6.0	1.7	2.94E+00
Barium	0	0.0	0.0	NA	NA
Cadmium	18	4.6	5.0	4.7	6.25E-01
Chromium (Total)	18	12.5	50.0	15.1	1.13E+02
Chromium (Hexavalent)	18	6.1	30.0	8.3	7.67E+01
Copper	18	16.1	130.0	25.6	9.01E+02
Iron	4	270.9	17,100.0	4,387.5	7.24E+07
Manganese	4	78.3	1,570.0	420.0	5.70E+05
Mercury	18	1.0	2.0	1.1	5.47E-02
Nickel	18	14.3	66.0	18.4	2.52E+02
Selenium	0	0.0	0.0	NA	NA
Silver	0	0.0	0.0	NA	NA
Zinc	18	23.7	270.0	50.6	4.65E+03

WELL12

GROUND WATER MONITORING ANALYTICAL DATA STATISTICAL SUMMARY

TEXTRON-LYCOMING, STRATFORD, CONNECTICUT

COMPOUND	TOTAL NUMBER OF SAMPLES	GEOMETRIC MEAN	MAXIMUM	AVERAGE	VARIANCE
Cyanide (Total)	18	6.8	50.0	9.9	1.15E+02
Cyanide (Amenable)	18	6.5	50.0	9.8	1.16E+02
Total Organic Halogens (TOX)	15	78.9	146,075.0	9,833.1	1.46E+09
Total Organic Carbon (TOC)	15	2,486.1	6,625.0	2,915.8	1.65E+06
Specific Conductance (umhos/cm)	18	601.3	912.5	633.8	3.64E+04
pH	18	6.4	7.9	6.5	2.21E-01
Radium	1	1.0	1.0	1.0	NA
Gross Beta	1	1.0	1.0	1.0	NA
Gross Alpha	1	1.0	1.0	1.0	NA
phenol	5	5.0	25.0	8.2	9.16E+01
Turbidity	1	1.0	1.0	1.0	NA
Sulfate (SO4)	5	8,586.0	124,300.0	50,381.0	2.62E+09
Nitrate, as N	1	5.0	5.0	5.0	NA
Chloride	4	19,690.7	446,000.0	256,151.3	6.23E+10
Sodium	5	7,928.6	355,300.0	110,280.2	2.43E+10
Fluoride	0	0.0	0.0	NA	NA

NOTE: All values in μg/l (ppb) unless noted otherwise.

TOX, TOC, Specific Conductance and pH are the average of four replicate samples for each sampling quarter.

Number of samples is total number of analyses exceeding method detection limits.

For undetected compounds, 1/2 the detection limit was used in the calculations.

WELL13
GROUND WATER MONITORING ANALYTICAL DATA STATISTICAL SUMMARY
TEXTRON-LYCOMING, STRATFORD, CONNECTICUT

COMPOUND	TOTAL NUMBER OF SAMPLES	GEOMETRIC MEAN	MAXIMUM	AVERAGE	VARIANCE
bromodichloromethane (THM)	7	1.4	5.0	1.8	2.70E+00
chlorobenzene	7	1.4	5.0	1.8	2.70E+00
chloroethane	7	1.4	5.0	1.8	2.70E+00
chloroform (THM)	7	1.4	5.0	1.8	2.70E+00
dibromochloromethane (THM)	7	1.4	5.0	1.8	2.70E+00
1,2-dichlorobenzene	7	1.9	6.4	2.6	5.51E+00
1,4-dichlorobenzene	7	1.4	5.0	1.8	2.70E+00
1,1-dichloroethane	7	1.4	5.0	1.8	2.70E+00
1,2-dichloroethane (EDC)	7	1.4	2.5	1.8	2.70E+00
1,1-dichloroethene	7	1.4	5.0	1.8	2.70E+00
1,2-trans-dichloroethene	7	37.7	250.0	97.3	7.05E+03
dichloromethane	7	1.6	2.5	1.9	2.40E+00
trans-1,3-dichloropropene	7	1.4	5.0	1.8	2.70E+00
1,1,2,2-tetrachloroethane	7	1.4	5.0	1.8	2.70E+00
1,1,1,2-tetrachloroethane	7	2.1	14.0	3.6	2.29E+01
tetrachloroethene	7	6.7	16.0	8.3	2.32E+01
1,1,1-trichloroethane	7	1.7	3.2	2.1	2.55E+00
1,1,2-trichloroethane	7	1.4	5.0	1.8	2.70E+00
trichloroethene	7	15.6	44.0	21.8	4.70E+01
trichlorofluoromethane	7	1.4	5.0	1.8	2.70E+00
vinyl chloride	7	1.8	25.0	4.6	8.67E+01
benzene	7	1.0	1.0	1.0	0.00E+00
chlorobenzene	5	1.8	7.5	2.6	1.06E+01
1,4-dichlorobenzene	5	1.8	7.5	2.6	1.06E+01
1,2-dichlorobenzene	5	1.8	7.5	2.6	1.06E+01
ethylbenzene	7	1:1	2.5	1.2	3.00E-01
toluene	7	1.5	8.0	2.2	7.65E+00
xylenes	7	1.1	2.5	1.2	3.00E-01
Barium	0	0.0	0.0	NA	NA
Cadmium	13	5.5	20.0	6.2	1.89E+01
Chromium (Total)	13	12.4	50.0	16.3	1.64E+02
Chromium (Hexavalent)	13	6.1	25.0	8.1	4.51E+01
Copper	13	23.0	610.0	81.2	2.62E+04
Iron	2	2,304.3	17,700.0	9,000.0	NA
Manganese	2	2,369.8	6,240.0	3,570.0	NA
Mercury	13	1.0	1.0	1.0	0.00E+00
Nickel	13	22.0	170.0	39.2	2.69E+03
Selenium	0	0.0	0.0	NA	NA
Silver	0	0.0	0.0	NA	NA
Zinc	13	29.3	140.0	50.4	2.40E+03

WELL13

GROUND WATER MONITORING ANALYTICAL DATA STATISTICAL SUMMARY

TEXTRON-LYCOMING, STRATFORD, CONNECTICUT

COMPOUND	TOTAL NUMBER OF SAMPLES	GEOMETRIC MEAN	MAXIMUM	AVERAGE	VARIANCE
Cyanide (Total)	13	7.6	50.0	11.7	1.54E+02
Cyanide (Amenable)	13	7.1	50.0	11.6	1.55E+02
Total Organic Halogens (TOX)	10	145.8	48,475.0	4,931.8	2.34E+08
Total Organic Carbon (TOC)	10	9,524.4	17,575.0	10,643.0	2.35E+07
Specific Conductance (umhos/cm)	13	552.0	751.5	567.3	1.67E+04
pH	13	6.5	7.8	6.5	2.89E-01
Radium	1	1.0	1.0	1.0	NA
Gross Beta	1	1.0	1.0	1.0	NA
Gross Alpha	1	1.0	1.0	1.0	NA
phenol	3	7.2	25.0	11.0	2.00E+02
Turbidity	1	1.0	1.0	1.0	NA
Sulfate (SO4)	3	3,167.6	81,600.0	53,168.3	3.03E+09
Nitrate, as N	1	5.0	5.0	5.0	NA
Chloride	2	1,171.3	274,400.0	137,202.5	3.76E+10
Sodium	3	1,518.9	302,100.0	104,567.0	4.56E+10
Fluoride	0	0.0	0.0	NA	NA

NOTE: All values in μg/l (ppb) unless noted otherwise.

TOX, TOC, Specific Conductance and pH are the average of four replicate samples for each sampling quarter.

Number of samples is total number of analyses exceeding method detection limits.

For undetected compounds, 1/2 the detection limit was used in the calculations.

Appendix E-9

40 CFR 264 Appendix IX Monitoring Parameters

WehranEnviroTech

APPENDIX IX—GROUND-WATER MONITORING LIST[1]

Common name[2]	CAS RN[3]	Chemical abstracts service index name[4]	Suggested methods[5]	PQL (µg/L)[6]
Acenaphthene	83-32-9	Acenaphthylene, 1,2-dihydro-	8100 8270	200 10
Acenaphthylene	208-96-8	Acenaphthylene	8100 8270	200 10
Acetone	67-64-1	2-Propanone	8240	100
Acetophenone	98-86-2	Ethanone, 1-phenyl	8270	10
Acetonitrile; Methyl cyanide	75-05-8	Acetonitrile	8015	100
2-Acetylaminofluorene; 2-AAF	53-96-3	Acetamide, N-9H-fluoren-2-yl-	8270	10
Acrolein	107-02-8	2-Propenal	8030 8240	5 5
Acrylonitrile	107-13-1	2-Propenenitrile	8030 8240	5 5
Aldrin	309-00-2	1,4:5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexachloro-1,4,4a,5,8,8a-hexahydro-(1α,4α,4aβ,5α,8α,8aβ)-	8080 8270	0.05 10
Allyl chloride	107-05-1	1-Propene, 3-chloro-	8010 8240	5 100
4-Aminobiphenyl	92-67-1	[1,1'-Biphenyl]-4-amine	8270	10
Aniline	62-53-3	Benzenamine	8270	10
Anthracene	120-12-7	Anthracene	8100 8270	200 10
Antimony	(Total)	Antimony	6010 7040 7041	300 2,000 30
Aramite	140-57-8	Sulfurous acid, 2-chloroethyl-, 2-[4-(1,1-dimethylethyl)phenoxy]-1-methylethyl ester)	8270	10
Arsenic	(Total)	Arsenic	6010 7060 7061	500 10 20
Barium	(Total)	Barium	6010 7080	20 1,000
Benzene	71-43-2	Benzene	8020 8240	2 5
Benzo[a]anthracene; Benzantracene	56-55-3	Benz[a]anthracene	8100 8270	200 10
Benzo[b]fluoranthene	205-99-2	Benz[e]acephenanthrylene	8100 8270	200 10
Benzo[k]fluoranthene	207-08-9	Benzo[k]fluoranthene	8100 8270	200 10
Benzo[ghi]perylene	191-24-2	Benzo[ghi]perylene	8100 8270	200 10
Benzo[a]pyrene	50-32-8	Benzo[a]pyrene	8100 8270	200 10
Benzyl alcohol	100-51-6	Benzenemethanol	8270	20
Beryllium	(Total)	Beryllium	6010 7090 7091	3 50 2
alpha-BHC	319-84-6	Cyclohexane, 1,2,3,4,5,6-hexachloro-(1α,2α,3β,4α,5β,6β)-	8080 8250	0.05 10
beta-BHC	319-85-7	Cyclohexane, 1,2,3,4,5,6-hexachloro-(1α,2β,3α,4β,5α,6β)-	8080 8250	0.05 40
delta-BHC	319-86-8	Cyclohexane, 1,2,3,4,5,6-hexachloro-(1α,2α,3α,4β,5α,6β)-	8080 8250	0.1 30
gamma-BHC; Lindane	58-89-9	Cyclohexane, 1,2,3,4,5,6-hexachloro-(1α,2α,3β,4α,5α,6β)-	8080 8250	0.05 10
Bis(2-chloroethoxy)methane	111-91-1	Ethane, 1,1'-[methylenebis(oxy)]bis[2-chloro-	8270	10
Bis(2-chloroethyl) ether	111-44-4	Ethane, 1,1'-oxybis[2-chloro-	8270	10
Bis(2-chloro-1methylethyl)ether; 2,2'-Dichlorodiisopropyl ether	108-60-1	Propane, 2,2'-oxybis[1-chloro-	8010 8270	100 10
Bis(2-ethylhexyl) phthalate	117-81-7	1,2-Benzenedicarboxylic acid, bis(2-ethylhexyl)ester	8060 8270	20 10
Bromodichloromethane	75-27-4	Methane, bromodichloro-	8010 8240	1 5

APPENDIX IX—GROUND-WATER MONITORING LIST[1]—Continued

Common name[2]	CAS RN[3]	Chemical abstracts service index name[4]	Suggested methods[5]	PQL (μg/L)[6]
Bromoform; Tribromomethane	75-25-2	Methane, tribromo-	8010 8240	2 5
4-Bromophenyl phenyl ether	101-55-3	Benzene, 1-bromo-4-phenoxy-	8270	10
Butyl benzyl phthalate; Benzyl butyl phthalate	85-68-7	1,2-Benzenedicarboxylic acid, butyl phenylmethyl ester	8060 8270	5 10
Cadmium	(Total)	Cadmium	6010 7130 7131	40 50 1
Carbon disulfide	75-15-0	Carbon disulfide	8240	5
Carbon tetrachloride	56-23-5	Methane, tetrachloro-	8010 8240	1 5
Chlordane	57-74-9	4,7-Methano-1H-indene, 1,2,4,5,6,7,8,8-octachloro-2,3,3a,4,7,7a-hexahydro	8080 8250	0.1 10
p-Chloroaniline	106-47-8	Benzenamine, 4-chloro-	8270	20
Chlorobenzene	108-90-7	Benzene, chloro-	8010 8020 8240	2 2 5
Chlorobenzilate	510-15-6	Benzeneacetic acid, 4-chloro-α-(4-chlorophenyl)-α-hydroxy,ethyl ester	8270	10
p-Chloro-m-cresol	59-50-7	Phenol, 4-chloro-3-methyl-	8040 8270	5 20
Chloroethane; Ethyl chloride	75-00-3	Ethane, chloro-	8010 8240	5 10
Chloroform	67-66-3	Methane, trichloro-	8010 8240	0.5 5
2-Chloronaphthalene	91-58-7	Napthalene, 2-chloro-	8120 8270	10 10
2-Chlorophenol	95-57-8	Phenol, 2-chloro-	8040 8270	5 10
4-Chlorophenyl phenyl ether	7005-72-3	Benzene, 1-chloro-4-phenoxy	8270	10
Chloroprene	126-99-8	1,3-Butadiene,2-chloro-	8010 8240	50 5
Chromium	(Total)	Chromium	6010 7190 7191	70 500 10
Chrysene	218-01-9	Chrysene	8100 8270	200 10
Cobalt	(Total)	Cobalt	6010 7200 7201	70 500 10
Copper	(Total)	Copper	6010 7210	60 200
m-Cresol	108-39-4	Phenol, 3-methyl-	8270	10
o-Cresol	95-48-7	Phenol, 2-methyl-	8270	10
p-Cresol	106-44-5	Phenol, 4-methyl-	8270	10
Cyanide	57-12-5	Cyanide	9010	40
2,4-D; 2,4-Dichlorophenoxyacetic acid	94-75-7	Acetic acid, (2,4-dichlorophenoxy)-	8150	10
4,4′-DDD	72-54-8	Benzene, 1,1′-(2,2-dichloroethylidene)bis[4-chloro-	8080 8270	0.1 10
4,4′-DDE	72-55-9	Benzene, 1,1′-(dichloroethylidene)bis[4-chloro-	8080 8270	0.05 10
4,4′-DDT	50-29-3	Benzene, 1,1′-(2,2,2-trichloroethylidene)bis[4-chloro-	8080 8270	0.1 10
Diallate	2303-16-4	Carbamothioic acid, bis(1-methylethyl)-, S-(2,3-dichloro-2-propenyl) ester	8270	10
Dibenz[a,h]anthracene	53-70-3	Dibenz[a,h]anthracene	8100 8270	200 10
Dibenzofuran	132-64-9	Dibenzofuran	8270	10
Dibromochloromethane; Chlorodibromomethane	124-48-1	Methane, dibromochloro-	8010 8240	1 5

APPENDIX IX—GROUND-WATER MONITORING LIST[1]—Continued

Common name[2]	CAS RN[3]	Chemical abstracts service index name[4]	Suggested methods[5]	PQL (µg/L)[6]
1,2-Dibromo-3-chloropropane; DBCP	96-12-8	Propane, 1,2-dibromo-3-chloro-	8010 8240 8270	100 5 10
1,2-Dibromoethane; Ethylene dibromide	106-93-4	Ethane, 1,2-dibromo-	8010 8240	10 5
Di-n-butyl phthalate	84-74-2	1,2-Benzenedicarboxylic acid, dibutyl ester	8060 8270	5 10
o-Dichlorobenzene	95-50-1	Benzene, 1,2-dichloro-	8010 8020 8120 8270	2 5 10 10
m-Dichlorobenzene	541-73-1	Benzene, 1,3-dichloro-	8010 8020 8120 8270	5 5 10 10
p-Dichlorobenzene	106-46-7	Benzene, 1,4-dichloro-	8010 8020 8120 8270	2 5 15 10
3,3′-Dichlorobenzidine	91-94-1	[1,1′-Biphenyl]-4,4′-diamine, 3,3′-dichloro-	8270	20
trans-1,4-Dichloro-2-butene	110-57-6	2-Butene, 1,4-dichloro-, (E)-	8240	5
Dichlorodifluoromethane	75-71-8	Methane, dichlorodifluoro-	8010 8240	10 5
1,1-Dichloroethane	75-34-3	Ethane, 1,1-dichloro-	8010 8240	1 5
1,2-Dichloroethane; Ethylene dichloride	107-06-2	Ethane, 1,2-dichloro-	8010 8240	0.5 5
1,1-Dichloroethylene; Vinylidene chloride	75-35-4	Ethene, 1,1-dichloro-	8010 8240	1 5
trans-1,2-Dichloroethylene	156-60-5	Ethene, 1,2-dichloro-, (E)-	8010 8240	1 5
2,4-Dichlorophenol	120-83-2	Phenol, 2,4-dichloro-	8040 8270	5 10
2,6-Dichlorophenol	87-65-0	Phenol, 2,6-dichloro-	8270	10
1,2-Dichloropropane	78-87-5	Propane, 1,2-dichloro-	8010 8240	0.5 5
cis-1,3-Dichloropropene	10061-01-5	1-Propene, 1,3-dichloro-, (Z)-	8010 8240	20 5
trans-1,3-Dichloropropene	10061-02-6	1-Propene, 1,3-dichloro-, (E)-	8010 8240	5 5
Dieldrin	60-57-1	2,7:3,6-Dimethanonaphth[2,3-b]oxirene, 3,4,5,6,9,9-hexachloro-1a,2,2a,3,6,6a,7,7a-octahydro-,(1aα,2β,2aα,3β,6β,6aα,7β,7aα)-	8080 8270	0.05 10
Diethyl phthalate	84-66-2	1,2-Benzenedicarboxylic acid, diethyl ester	8060 8270	5 10
O,O-Diethyl O-2-pyrazinyl phosphorothioate; Thionazin	297-97-2	Phosphorothioic acid, O,O-diethyl O-pyrazinyl ester	8270	10
Dimethoate	60-51-5	Phosphorodithioic acid, O,O-dimethyl S-[2-(methylamino)-2-oxoethyl] ester	8270	10
p-(Dimethylamino)azobenzene	60-11-7	Benzenamine, N,N-dimethyl-4-(phenylazo)-	8270	10
7,12-Dimethylbenz[a]anthracene	57-97-6	Benz[a]anthracene, 7,12-dimethyl-	8270	10
3,3′-Dimethylbenzidine	119-93-7	[1,1′-Biphenyl]-4,4′-diamine, 3,3′-dimethyl-	8270	10
alpha, alpha-Dimethylphenethylamine	122-09-8	Benzeneethanamine, α,α-dimethyl-	8270	10
2,4-Dimethylphenol	105-67-9	Phenol, 2,4-dimethyl-	8040 8270	5 10
Dimethyl phthalate	131-11-3	1,2-Benzenedicarboxylic acid, dimethyl ester	8060 8270	5 10
m-Dinitrobenzene	99-65-0	Benzene, 1,3-dinitro-	8270	10
4,6-Dinitro-o-cresol	534-52-1	Phenol, 2-methyl-4,6-dinitro-	8040 8270	150 50
2,4-Dinitrophenol	51-28-5	Phenol, 2,4-dinitro-	8040 8270	150 50

APPENDIX IX—GROUND-WATER MONITORING LIST[1]—Continued

Common name[2]	CAS RN[3]	Chemical abstracts service index name[4]	Suggested methods[5]	PQL (μg/L)[6]
2,4-Dinitrotoluene	121-14-2	Benzene, 1-methyl-2,4-dinitro-	8090 8270	0.2 10
2,6-Dinitrotoluene	606-20-2	Benzene, 2-methyl-1,3-dinitro-	8090 8270	0.1 10
Dinoseb; DNBP; 2-sec-Butyl-4,6-dinitrophenol	88-85-7	Phenol, 2-(1-methylpropyl)-4,6-dinitro-	8150 8270	1 10
Di-n-octyl phthalate	117-84-0	1,2-Benzenedicarboxylic acid, dioctyl ester	8060 8270	30 10
1,4-Dioxane	123-91-1	1,4-Dioxane	8015	150
Diphenylamine	122-39-4	Benzenamine, N-phenyl-	8270	10
Disulfoton	298-04-4	Phosphorodithioic acid, O,O-diethyl S-[2-(ethylthio)ethyl] ester	8140 8270	2 10
Endosulfan I	959-98-8	6,9-Methano-2,4,3-benzodioxathiepin, 6,7,8,9,10,10-hexachloro-1,5,5a,6,9,9a-hexahydro-, 3-oxide, ($3\alpha,5a\beta,6\alpha,9\alpha,9a\beta$)-	8080 8250	0.1 10
Endosulfan II	33213-65-9	6,9-Methano-2,4,3-benzodioxathiepin, 6,7,8,9,10,10-hexachloro-1,5,5a,6,9,9a-hexahydro-, 3-oxide, ($3\alpha,5a\alpha,6\beta,9\beta,9a\alpha$)-	8080	0.05
Endosulfan sulfate	1031-07-8	6,9-Methano-2,4,3-benzodioxathiepin, 6,7,8,9,10,10-hexachloro-1,5,5a,6,9,9a-hexahydro-, 3,3-dioxide	8080 8270	0.5 10
Endrin	72-20-8	2,7:3,6-Dimethanonaphth[2,3-b]oxirene, 3,4,5,6,9,9-hexachloro-1a,2,2a,3,6,6a,7,7a-octahydro-, ($1a\alpha,2\beta,2a\beta,3\alpha,6\alpha,6a\beta,7\beta,7a\alpha$)-	8080 8250	0.1 10
Endrin aldehyde	7421-93-4	1,2,4-Methenocyclopenta[cd]pentalene-5-carboxaldehyde, 2,2a,3,3,4,7-hexachlorodecahydro-, ($1\alpha,2\beta,2a\beta,4\beta,4a\beta,5\beta,6a\beta,6b\beta,7R^*$)-	8080 8270	0.2 10
Ethylbenzene	100-41-4	Benzene, ethyl-	8020 8240	2 5
Ethyl methacrylate	97-63-2	2-Propenoic acid, 2-methyl-, ethyl ester	8015 8240 8270	10 5 10
Ethyl methanesulfonate	62-50-0	Methanesulfonic acid, ethyl ester	8270	10
Famphur	52-85-7	Phosphorothioic acid, O-[4-[(dimethylamino)sulfonyl]phenyl]-O,O-dimethyl ester	8270	10
Fluoranthene	206-44-0	Fluoranthene	8100 8270	200 10
Fluorene	86-73-7	9H-Fluorene	8100 8270	200 10
Heptachlor	76-44-8	4,7-Methano-1H-indene, 1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-	8080 8270	0.05 10
Heptachlor epoxide	1024-57-3	2,5-Methano-2H-indeno[1,2b]oxirene, 2,3,4,5,6,7,7-heptachloro-1a,1b,5,5a,6,6a-hexahydro-, ($1a\alpha,1b\beta,2\alpha,5\alpha,5a\beta,6\beta,6a\alpha$)	8080 8270	1 10
Hexachlorobenzene	118-74-1	Benzene, hexachloro-	8120 8270	0.5 10
Hexachlorobutadiene	87-68-3	1,3-Butadiene, 1,1,2,3,4,4-hexachloro-	8120 8270	5 10
Hexachlorocyclopentadiene	77-47-4	1,3-Cyclopentadiene, 1,2,3,4,5,5-hexachloro-	8120 8270	5 10
Hexachloroethane	67-72-1	Ethane, hexachloro-	8120 8270	0.5 10
Hexachlorophene	70-30-4	Phenol, 2,2′-methylenebis[3,4,6-trichloro-	8270	10
Hexachloropropene	1888-71-7	1-Propene, 1,1,2,3,3,3-hexachloro-	8270	10
2-Hexanone	591-78-6	2-Hexanone	8240	50
Indeno[1,2,3-cd]pyrene	193-39-5	Indeno[1,2,3-cd]pyrene	8100 8270	200 10
Isobutyl alcohol	78-83-1	1-Propanol, 2-methyl-	8015	50
Isodrin	465-73-6	1,4,5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexachloro-1,4,4a,5,8,8a-hexahydro-($1\alpha,4\alpha,4a\beta,5\beta,8\beta,8a\beta$)-	8270	10
Isophorone	78-59-1	2-Cyclohexen-1-one, 3,5,5-trimethyl	8090 8270	60 10
Isosafrole	120-58-1	1,3-Benzodioxole, 5-(1-propenyl)-	8270	10

APPENDIX IX—GROUND-WATER MONITORING LIST[1]—Continued

Common name[2]	CAS RN[3]	Chemical abstracts service index name[4]	Suggested methods[5]	PQL (μg/L)[6]
Kepone	143-50-0	1,3,4-Metheno-2H-cyclobuta[cd]pentalen-2-one, 1,1a,3,3a,4,5,5,5a,5b,6-decachlorooctahydro-	8270	10
Lead	(Total)	Lead	6010 7420 7421	40 1,000 10
Mercury	(Total)	Mercury	7470	2
Methacrylonitrile	126-98-7	2-Propenenitrile, 2-methyl-	8015 8240	5 5
Methapyrilene	91-80-5	1,2-Ethanediamine, N,N-dimethyl-N′-2-pyridinyl-N′-(2-thienylmethyl)-	8270	10
Methoxychlor	72-43-5	Benzene, 1,1′-(2,2,2-trichloroethylidene)bis[4-methoxy-	8080 8270	2 10
Methyl bromide; Bromomethane	74-83-9	Methane, bromo-	8010 8240	20 10
Methyl chloride: Chloromethane	74-87-3	Methane, chloro-	8010 8240	1 10
3-Methylcholanthrene	56-49-5	Benz[j]aceanthrylene, 1,2-dihydro-3-methyl-	8270	10
Methylene bromide; Dibromomethane	74-95-3	Methane, dibromo-	8010 8240	15 5
Methylene chloride; Dichloromethane	75-09-2	Methane, dichloro-	8010 8240	5 5
Methyl ethyl ketone; MEK	78-93-3	2-Butanone	8015 8240	10 100
Methyl iodide; Iodomethane	74-88-4	Methane, iodo-	8010 8240	40 5
Methyl methacrylate	80-62-6	2-Propenoic acid, 2-methyl-, methyl ester	8015 8240	2 5
Methyl methanesulfonate	66-27-3	Methanesulfonic acid, methyl ester	8270	10
2-Methylnaphthalene	91-57-6	Naphthalene, 2-methyl-	8270	10
Methyl parathion; Parathion methyl	298-00-0	Phosphorothioic acid, O,O-dimethyl O-(4-nitrophenyl) ester	8140 8270	0.5 10
4-Methyl-2-pentanone; Methyl isobutyl ketone	108-10-1	2-Pentanone, 4-methyl-	8015 8240	5 50
Naphthalene	91-20-3	Naphthalene	8100	200
1,4-Naphthoquinone	130-15-4	1,4-Naphthalenedione	8270	10
1-Naphthylamine	134-32-7	1-Naphthalenamine	8270	10
2-Naphthylamine	91-59-8	2-Naphthalenamine	8270	10
Nickel	(Total)	Nickel	6010 7520	50 400
o-Nitroaniline	88-74-4	Benzenamine, 2-nitro-	8270	50
m-Nitroaniline	99-09-2	Benzenamine, 3-nitro-	8270	50
p-Nitroaniline	100-01-6	Benzenamine, 4-nitro-	8270	50
Nitrobenzene	98-95-3	Benzene, nitro-	8090 8270	40 10
o-Nitrophenol	88-75-5	Phenol, 2-nitro	8040 8270	5 10
p-Nitrophenol	100-02-7	Phenol, 4-nitro-	8040 8270	10 50
4-Nitroquinoline-1-oxide	56-57-5	Quinoline, 4-nitro-, 1-oxide	8270	10
N-Nitrosodi-n-butylamine	924-16-3	1-Butanamine, N-butyl-N-nitroso-	8270	10
N-Nitrosodiethylamine	55-18-5	Ethanamine, N-ethyl-N-nitroso-	8270	10
N-Nitrosodimethylamine	62-75-9	Methamine, N-methyl-N-nitroso-	8270	10
N-Nitrosodiphenylamine	86-30-6	Benzenamine, N-nitroso-N-phenyl-	8270	10
N-Nitrosodipropylamine; Di-n-propylnitrosamine	621-64-7	1-Propanamine, N-nitroso-N-propyl	8270	10
N-Nitrosomethylethylamine	10595-95-6	Ethanamine, N-methyl-N-nitroso-	8270	10
N-Nitrosomorpholine	59-89-2	Morpholine, N-nitroso-	8270	10
N-Nitrosopiperidine	100-75-4	Piperidine, 1-nitroso-	8270	10
N-Nitrosopyrrolidine	930-55-2	Pyrrolidine, 1-nitroso-	8270	10
5-Nitro-o-toluidine	99-55-8	Benzenamine, 2-methyl-5-nitro-	8270	10

APPENDIX IX—GROUND-WATER MONITORING LIST[1]—Continued

Common name[2]	CAS RN[3]	Chemical abstracts service index name[4]	Suggested methods[5]	PQL (µg/L)[6]
Parathion	56-38-2	Phosphorothioic acid, O,O-diethyl-O-,(4-nitrophenyl) ester	8270	10
Polychlorinated biphenyls; PCBs	Note 7	1,1′-Biphenyl, chloroderivatives	8080 8250	50 100
Polychlorinated dibenzo-p-dioxins; PCDDs	Note 8	Dibenzo[b,e][1,4]dioxin, chloro derivatives	8280	0.01
Polychlorinated dibenzofurans; PCDFs	Note 9	Dibenzofuran, chloro derivatives	8280	0.01
Pentachlorobenzene	608-93-5	Benzene, pentachloro-	8270	10
Pentachloroethane	76-01-7	Ethane, pentachloro-	8240 8270	5 10
Pentachloronitrobenzene	82-68-8	Benzene, pentachloronitro-	8270	10
Pentachlorophenol	87-86-5	Phenol, pentachloro-	8040 8270	5 50
Phenacetin	62-44-2	Acetamide, N-(4-ethoxyphenyl)-	8270	10
Phenanthrene	85-01-8	Phenanthrene	8100 8270	200 10
Phenol	108-95-2	Phenol	8040 8270	1 10
p-Phenylenediamine	106-50-3	1,4-Benzenediamine	8270	10
Phorate	298-02-2	Phosphorodithioic acid, O,O-diethyl S-[(ethylthio)methyl] ester	8140 8270	2 10
2-Picoline	109-06-8	Pyridine, 2-methyl-	8240 8270	5 10
Pronamide	23950-58-5	Benzamide, 3,5-Dichloro-N-(1,1-dimethyl-2-propynyl)-	8270	10
Propionitrile; Ethyl cyanide	107-12-0	Propanenitrile	8015 8240	60 5
Pyrene	129-00-0	Pyrene	8100 8270	200 10
Pyridine	110-86-1	Pyridine	8240 8270	5 10
Safrole	94-59-7	1,3-Benzodioxole, 5-(2-propenyl)-	8270	10
Selenium	(Total)	Selenium	6010 7740 7741	750 20 20
Silver	(Total)	Silver	6010 7760	70 100
Silvex; 2,4,5-TP	93-72-1	Propanoic acid, 2-(2,4,5-trichlorophenoxy)-	8150	2
Styrene	100-42-5	Benzene, ethenyl-	8020 8240	1 5
Sulfide	18496-25-8	Sulfide	9030	10,000
2,4,5-T; 2,4,5-Trichlorophenoxyacetic acid	93-76-5	Acetic acid, (2,4,5-trichlorophenoxy)-	8150	2
2,3,7,8-TCDD; 2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	Dibenxo[b,e][1,4]dioxin, 2,3,7,8-tetrachloro-	8280	0.005
1,2,4,5-Tetrachlorobenzene	95-94-3	Benzene, 1,2,4,5-tetrachloro-	8270	10
1,1,1,2-Tetrachloroethane	630-20-6	Ethane, 1,1,1,2-tetrachloro-	8010 8240	5 5
1,1,2,2-Tetrachloroethane	79-34-5	Ethane, 1,1,2,2-tetrachloro-	8010 8240	0.5 5
Tetrachloroethylene; Perchloroethylene; Tetrachlorothene	127-18-4	Ethene, tetrachloro-	8010 8240	0.5 5
2,3,4,6-Tetrachlorophenol	58-90-2	Phenol, 2,3,4,6-tetrachloro-	8270	10
Tetraethyl dithiopyrophosphate; Sulfotepp	3689-24-5	Thiodiphosphoric acid, ([(HO)$_2$P(S)]$_2$O), tetraethyl ester	8270	10
Thallium	(Total)	Thallium	6010 7840 7841	400 1,000 10
Tin	(Total)	Tin	7870	8,000
Toluene	108-88-3	Benzene, methyl-	8020 8240	2 5
o-Toluidine	95-53-4	Benzenamine, 2-methyl-	8270	10

APPENDIX IX—GROUND-WATER MONITORING LIST[1]—Continued

Common name[2]	CAS RN[3]	Chemical abstracts service index name[4]	Suggested methods[5]	PQL (µg/L)[6]
Toxaphene	8001-35-2	Toxaphene	8080 8250	2 10
1,2,4-Trichlorobenzene	120-82-1	Benzene, 1,2,4-trichloro-	8270	10
1,1,1-Trichloroethane; Methylchloroform	71-55-6	Ethane, 1,1,1-trichloro-	8240	5
1,1,2-Trichloroethane	79-00-5	Ethane, 1,1,2-trichloro-	8010 8240	0.2 5
Trichloroethylene; Trichloroethene	79-01-6	Ethene, trichloro	8010 8240	1 5
Trichlorofluoromethane	75-69-4	Methane, trichlorofluoro-	8010 8240	10 5
2,4,5-Trichlorophenol	95-95-4	Phenol, 2,4,5-trichloro-	8270	10
2,4,6-Trichlorophenol	88-06-2	Phenol, 2,4,6-trichloro-	8040 8270	5 10
1,2,3-Trichloropropane	96-18-4	Propane, 1,2,3-trichloro-	8010 8240	10 5
O,O,O-Triethyl phosphorothioate	126-68-1	Phosphorothioic acid, O,O,O-triethyl ester	8270	10
sym-Trinitrobenzene	99-35-4	Benzene, 1,3,5-trinitro-	8270	10
Vanadium	(Total)	Vanadium	6010 7910 7911	80 2,000 40
Vinyl acetate	108-05-4	Acetic acid, ethenyl ester	8240	5
Vinyl chloride	75-01-4	Ethene, chloro-	8010 8240	2 10
Xylene (total)	1330-20-7	Benzene, dimethyl-	8020 8240	5 5
Zinc	(Total)	Zinc	6010 7950	20 50

[1] The regulatory requirements pertain only to the list of substances; the right hand columns (Methods and PQL) are given for informational purposes only. See also footnotes 5 and 6.

[2] Common names are those widely used in government regulations, scientific publications, and commerce; synonyms exist for many chemicals.

[3] Chemical Abstracts Service registry number. Where "Total" is entered, all species in the ground water that contain this element are included.

[4] CAS index names are those used in the 9th Cumulative Index.

[5] Suggested Methods refer to analytical procedure numbers used in EPA Report SW-846 "Test Methods for Evaluating Solid Waste", third edition, November 1986. Analytical details can be found in SW-846 and in documentation on file at the agency. CAUTION: The methods listed are representative SW-846 procedures and may not always be the most suitable method(s) for monitoring an analyte under the regulations.

[6] Practical Quantitation Limits (PQLs) are the lowest concentrations in ground waters that can be reliably determined within specified limits of precision and accuracy by the indicated methods under routine laboratory operating conditions. The PQLs listed are generally stated to one significant figure. CAUTION: The PQL values in many cases are based only on a general estimate for the method and not on a determination for individual compounds; PQLs are not a part of the regulation.

[7] Polychlorinated biphenyls (CAS RN 1336-36-3); this category contains congener chemicals, including constituents of Aroclor-1016 (CAS RN 12674-11-2); Aroclor-1221 (CAS RN 11104-28-2), Aroclor-1232 (CAS RN 11141-16-5), Aroclor-1242 (CAS RN 53469-21-9), Aroclor-1248 (CAS RN 12672-29-6), Aroclor-1254 (CAS RN 11097-69-1), and Aroclor-1260 (CAS RN 11096-82-5). The PQL shown is an average value for PCB congeners.

[8] This category contains congener chemicals, including tetrachlorodibenzo-p-dioxins (see also 2,3,7,8-TCDD), pentachlorodibenzo-p-dioxins, and hexachlorodibenzo-p-dioxins. The PQL shown is an average value for PCDD congeners.

[52 FR 25946, July 9, 1987]

Appendix E-10

Table 4-1
Sampling and Preservation Procedures for Detection Monitoring

TABLE 4-1

SAMPLING AND PRESERVATION PROCEDURES FOR DETECTION MONITORING[a]

Parameter	Recommended Container[b]	Preservative	Maximum Holding Time	Minimum Volume Required for Analysis
		Indicators of Ground-Water Contamination[c]		
pH	T, P, G	Field determined	None	25 ml
Specific conductance	T, P, G	Field determined	None	100 ml
TOC	G, amber, T-lined cap[e]	Cool 4°C,[d] HCl to pH <2	28 days	4 x 15 ml
TOX	G, amber, T-lined septa or caps	Cool 4°C, add 1 ml of 1.1M sodium sulfite	7 days	4 x 15 ml
		Ground-Water Quality Characteristics		
Chloride	T, P, G	4°C	28 days	50 ml
Iron Manganese Sodium	T, P	Field acidified to pH <2 with HNO_3	6 months	200 ml
Phenols	G	4°C/H_2SO_4 to pH <2	28 days	500 ml
Sulfate	T, P, G	Cool, 4°C	28 days	50 ml
		EPA Interim Drinking Water Characteristics		
Arsenic Barium Cadmium Chromium Lead Mercury Selenium Silver	T, P Dark Bottle	Total Metals Field acidified to pH <2 with HNO_3 Dissolved Metals 1. Field filtration (0.45 micron) 2. Acidify to pH <2 with HNO_3	6 months 6 months	1,000 ml 1,000 ml
Fluoride	T, P	Cool, 4°C	28 days	300 ml
Nitrate/Nitrite	T, P, G	4°C/H_2SO_4 to pH <2	14 days	1,000 ml

(Continued)

TABLE 3-1 (Continued)

SAMPLING AND PRESERVATION PROCEDURES FOR DETECTION MONITORING

Parameter	Recommended Container[b]	Preservative	Maximum Holding Time	Minimum Volume Required for Analysis
Endrin Lindane Methoxychlor Toxaphene 2,4 D 2,4,5 TP Silvex	T, G	Cool, 4°C	7 days	2,000 ml
Radium Gross Alpha Gross Beta	P, G	Field acidified to pH <2 with HNO_3	6 months	1 gallon
Coliform bacteria	PP, G (sterilized)	Cool, 4°C	6 hours	200 ml
	Other Ground-Water Characteristics of Interest			
Cyanide	P, G	Cool, 4°C, NaOH to pH >12. 0.6 g ascorbic acid[f]	14 days[g]	500 ml
Oil and Grease	G only	Cool, 4°C H_2SO_4 to pH <2	28 days	100 ml
Semivolatile, nonvolatile organics	T, G	Cool, 4°C	14 days	60 ml
Volatiles	G, T-lined	Cool, 4°C	14 days	60 ml

[a]References: *Test Methods for Evaluating Solid Waste - Physical/Chemical Methods*, SW-846 (2nd edition, 1982).
Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020.
Standard Methods for the Examination of Water and Wastewater, 16th edition (1985).

[b]Container Types:
- P = Plastic (polyethylene)
- G = Glass
- T = Fluorocarbon resins (PTFE, Teflon®, FEP, PFA, etc.)
- PP = Polypropylene

(Continued)

TABLE 4-1 (Continued)

SAMPLING AND PRESERVATION PROCEDURES FOR DETECTION MONITORING

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[c]Based on the requirements for detection monitoring (§265.93), the owner/operator must collect a sufficient volume of ground water to allow for the analysis of four separate replicates.

[d]Shipping containers (cooling chest with ice or ice pack) should be certified as to the 4°C temperature at time of sample placement into these containers. Preservation of samples requires that the temperature of collected samples be adjusted to the 4°C immediately after collection. Shipping coolers must be at 4°C and maintained at 4°C upon placement of sample and during shipment. Maximum-minimum thermometers are to be placed into the shipping chest to record temperature history. Chain-of-custody forms will have Shipping/Receiving and In-transit (max/min) temperature boxes for recording data and verification.

[e]Do not allow any head space in the container.

[f]Use ascorbic acid only in the presence of oxidizing agents.

[g]Maximum holding time is 24 hours when sulfide is present. Optionally, all samples may be tested with lead acetate paper before the pH adjustment in order to determine if sulfide is present. If sulfide is present, it can be removed by addition of cadmium nitrate powder until a negative spot test is obtained. The sample is filtered and then NaOH is added to pH 12.