



Nuclear Fuel Services, Inc.
1205 Banner Hill Road
Erwin, TN 37650

(423) 743-9141

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

21G-98-0186
GOV-01-60
ACF-98-305

December 11, 1998

Mr. G. A. Farmer, Chief, RCRA Branch
Waste Management Division
U. S. Environmental Protection Agency, Region IV
100 Alabama Street, S. W.
Atlanta, GA 30303

Mr. Thomas Tiesler, Director
Division of Solid Waste Management
Tennessee Department of Environment & Conservation
Fifth Floor, L & C Tower
401 Church Street
Nashville, TN 37243-1535

Reference: 1) HSWA Permit for 1984 RCRA Amendments
Nuclear Fuel Services, Inc., Erwin, TN
EPA ID: TND 003 095 635

Dear Messrs. Farmer and Tiesler:

As required by the above-referenced permit, Condition II.E.3.a. and Condition II.F.3.a., Nuclear Fuel Services, Inc. (NFS) is enclosing the quarterly RCRA Facility Investigation (RFI) and Interim Measures (IM) Progress Reports as Attachments I and II. The next quarterly RFI/IM Progress Reports will be submitted by March 11, 1998.

If you or your staff have any questions, require additional information, or wish to discuss this, please contact me or Ms. Janice Greene, Environmental Safety Manager, at (423) 743-1730. Please reference our unique document identification number (21G-98-0186) in any correspondence concerning this letter.

Sincerely,

NUCLEAR FUEL SERVICES, INC.

Thomas S. Baer, Ph. D.
Vice President
Safety & Regulatory

EAS/mfh

Attachment

IE07

T. S. Baer to Messrs. Farmer and Tiesler
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xc:

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U. S. Nuclear Regulatory Commission
Region II, Atlanta Federal Center
61 Forsyth Street, SW, Suite 23T85
Atlanta, GA 30303

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Technical Services Section
Division of Radiological Health
L&C Annex, Third Floor
401 Church Street
Nashville, TN 37243-1532

Mr. Charles Emeigh, Chief
Licensing Branch, NMSS
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Mr. Bill Gloersen
Project Inspector
U. S. Nuclear Regulatory Commission
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Atlanta, GA 30303

Mr. Larry Gilliam
Regional Director
TN Department of Environment and Conservation
2305 Silverdale Road
Johnson City, TN 37601-2162

Mr. Gary Humphrey
Senior Resident Inspector, NRC

T. S. Baer to Messrs. Farmer and Tiesler
December 11, 1998

21G-98-0186
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Attachment I to letter
T. S. Baer to Mr. Alan Farmer and Mr. Thomas Tiesler

RFI Progress Report

(12 pages to follow)

**RFI PROGRESS REPORT
NUCLEAR FUEL SERVICES, INC.
EPA ID NO. TND 00 309 5635**

1.0 SWMU 20 (Building 130 Scale Pit)

1.1 Work Completed

The groundwater from the Building 130 scale pit (SWMU 20) is pumped monthly and water is transferred to the Wastewater Treatment Facility. The groundwater is sampled for PCE, TCE, 1,2 DCE (total) and vinyl chloride. The groundwater is then treated and released in accordance with applicable regulations. A total of 131,077 gallons of groundwater has been pumped and treated since September 1995.

1.2 Findings and Observations

The analytical results for samples obtained from the scale pit during this and previous reporting periods are presented in Table 1. Except for the sample collected on August 4, PCE concentrations during the third quarter were consistent with previous quarters. The sample collected on August 4 was greater than the laboratory's calibration curve and is an estimated value. TCE and 1,2 DCE concentrations increased slightly during third quarter. Vinyl chloride concentrations remained consistent with previous quarters.

Backfilling of the scale pit was completed on August 3. This action resulted in a disturbance of the soil inside the pit which may be related to slight increases of contaminant concentrations in groundwater.

1.3 Work Projected (First Quarter 1999)

Monthly pumping and sampling of the groundwater from the Building 130 scale pit (SWMU 20) will continue.

2.0 Off-Site Groundwater Investigation

2.1 Work Completed

Third quarter groundwater sampling of the nine off-site monitoring wells was conducted September 3 through September 4. The samples were analyzed for PCE, TCE, 1,2-DCE, vinyl chloride, isotopic uranium and technetium-99 by the NFS Laboratory. Analytical results are presented in this report.

2.2 Findings and Observations

Nonradiological

Third quarter 1998 results for volatile organics compounds in the offsite wells are presented in Table 2.

Concentrations of constituents above their respective PQLs and MCLs (PCE and TCE) for offsite wells were plotted quarterly. The corresponding graphs are presented in Figure 1 and discussed below.

PCE - Detected concentrations of PCE in the offsite wells during third quarter 1998 ranged from 0.099 mg/L to 2.992 mg/L. Seven of the nine wells contained PCE at concentrations greater than the 0.005 mg/L MCL. PCE was not detected in the remaining two wells. Trends for PCE in the offsite wells were not apparent.

TCE - Detected concentrations of TCE in the offsite wells during third quarter 1998 ranged from 0.005 mg/L to 0.096 mg/L. Eight of the nine wells contained TCE at concentrations equal to or greater than the 0.005 mg/L MCL. TCE was not detected in the remaining well. Trends for TCE in the offsite wells were not apparent.

1,2 DCE (cis) - Detected concentrations of 1,2 DCE (cis) in the offsite wells during third quarter 1998 ranged from 0.004 mg/L to 0.146 mg/L. Only one well contained 1,2 DCE (cis) at a concentration greater than the 0.07 mg/L MCL. Results from third quarter are similar to concentrations observed in previous months.

1,2 DCE (trans) - 1,2 DCE (trans) was not detected in offsite wells during third quarter 1998.

Vinyl Chloride - Vinyl chloride was detected in two wells at concentrations greater than the 0.002 mg/L MCL. Vinyl chloride was not detected in the remaining wells at concentrations greater than the PQL; however, the PQL is greater than the MCL.

Radiological

Third quarter 1998 results for total uranium and technetium-99 in the offsite wells are presented in Table 3.

Total Uranium - Concentrations of total uranium in the offsite wells during third quarter 1998 ranged from 0.098 pCi/L to 5.599 pCi/L. Uranium has not been

detected at concentrations greater than the proposed MCL (30 pCi/L) during any offsite sampling event.

Technetium-99 - Concentrations of technetium-99 in the offsite wells during third quarter 1998 ranged from 24.45 pCi/L to 104.63 pCi/L. Technetium-99 results were less than ten percent of the proposed action level.

2.3 Work Projected (First Quarter 1999)

Fourth quarter 1998 analytical results will be received from the NFS Laboratory and validated. First quarter 1999 sampling of off-site wells is planned for February.

3.0 **Vertical Extent Investigation**

3.1 Work Projected

The final report on the Investigation to Define the Vertical Extent of Groundwater Contamination is expected to be submitted to EPA Region IV and the State Division of Solid Waste Management during the fourth quarter 1998.

4.0 **Area of Concern (AOC 6) North of Building 200 Complex**

4.1 Work Completed

A draft RFI Report for AOC 6 has been completed. The draft report will be reviewed by NFS management prior to submittal.

4.2 Work Projected (First Quarter 1999)

The RFI Report for AOC 6 is expected to be submitted to EPA Region IV and the State Division of Solid Waste Management during first quarter 1999.

5.0 **General Information**

As requested by EPA, Region IV, NFS has evaluated options for legally enforceable restrictions to prevent the withdrawal and potable use of groundwater at the adjacent industrial park. The preferred options include deed restrictions and lease agreements. During fourth quarter 1998, NFS will continue to pursue these options with offsite property owners.

NFS is currently revising the groundwater flow and transport model. The original model was completed in 1996. Subsequent to completion of the model eleven

onsite and nine offsite wells have been installed. The model is being revised to incorporate geologic, hydraulic, and contaminant data obtained from these wells. The revised model will provide the best estimate of the horizontal and vertical extent of groundwater contamination in the vicinity of NFS. The model revision is expected to be completed during fourth quarter 1998.

**Table 1. Analytical Results for SWMU 20
Groundwater**

| Sample ID | Pumping Date | Collection Date | PCE (mg/L) | TCE (mg/L) | 1,2 - DCE (mg/L) | Vinyl Chloride (mg/L) |
|--|--------------|-----------------|------------|------------|------------------|-----------------------|
| Baseline 1377124 | 9/11/95 | 9/11/95 | 0.0258 | 0.0021 | 0.0193 | < 0.005 |
| 1377299 | 9/11/95 | 9/12/95 | 0.0428 | 0.0027 | 0.0191 | 0.0053 |
| 1379194 | 9/27/95 | 9/29/95 | 0.1846 | 0.0090 | 0.0583 | < 0.005 |
| 1380354 | 10/11/95 | 10/12/95 | 0.1601 | 0.0039 | 0.0557 | < 0.005 |
| 1381571 | 10/24/95 | 10/25/95 | 0.0022 | < 0.00038 | < 0.008 | < 0.005 |
| 1382926 | 11/9/95 | 11/10/95 | 0.2079 | < 0.00038 | < 0.008 | < 0.005 |
| 1384040 | 11/21/95 | 11/22/95 | 0.2045 | 0.0239 | 0.0253 | < 0.005 |
| 1385232 | 12/6/95 | 12/7/95 | 1.2020 | < 0.00038 | 0.0808 | < 0.005 |
| 1388088 | 1/16/96 | 1/17/96 | 0.5455 | < 0.00038 | < 0.008 | < 0.005 |
| 1389653 | 2/13/96 | 2/14/96 | 0.1732 | 0.3507 | 0.1742 | < 0.005 |
| 1401424 | 9/18/96 | 9/18/96 | 0.1965 | < 0.00038 | 0.0806 | < 0.005 |
| 1402978 | 10/15/96 | 10/15/96 | 0.047 | 0.003 | UJ 0.009 | < 0.004 |
| 1404091 | 11/5/96 | 11/5/96 | 0.103 | 0.027 | 0.091 | 0.006 |
| 1405586 | 12/3/96 | 12/3/96 | 0.098 | 0.005 | 0.010 | < 0.004 |
| 1409085 | 01/20/97 | 1/21/97 | 0.039 | < 0.004 | < 0.004 | < 0.004 |
| 1411441 | 02/10/97 | 2/10/97 | 0.071 | < 0.004 | < 0.004 | < 0.004 |
| 1415212 | 03/12/97 | 3/13/97 | 0.149 | 0.011 | 0.024 | < 0.004 |
| 1417118 | 04/09/97 | 4/10/97 | 0.097 | 0.008 | 0.017 | < 0.004 |
| 1420305 | 05/16/97 | 05/16/97 | 0.055 | < 0.004 | 0.064 | < 0.005 |
| 1422332 | 06/12/97 | 06/18/97 | 0.089 | 0.008 | 0.016 | < 0.004 |
| 1423746 | 07/10/97 | 07/11/97 | 0.037 | 0.006 | 0.032 | < 0.004 |
| 236201 | 08/06/97 | 08/06/97 | 0.043 | 0.008 | 0.046 | < 0.004 |
| 1430335 | 9/10/97 | 9/10/97 | 0.043 | 0.009 | 0.043 | < 0.004 |
| 1439413 | 10/17/97 | 10/17/97 | 0.006 | < 0.004 | 0.006 | < 0.004 |
| 1445200 | 11/20/97 | 11/20/97 | 0.022 | < 0.004 | 0.015 | < 0.005 |
| 1447262 | 12/12/97 | 12/15/97 | 0.111 | 0.011 | 0.051 | 0.007 |
| 1449087 | 1/6/98 | 1/6/98 | 0.072 | < 0.004 | 0.008 | < 0.004 |
| 1464655 | 2/23/98 | 2/23/98 | 0.070 | 0.006 | 0.019 | < 0.004 |
| 1473859 | 3/23/98 | 3/23/98 | 0.070 | < 0.004 | 0.009 | < 0.004 |
| 1484605 | 4/28/98 | 4/28/98 | 0.103 | 0.004 | 0.013 | < 0.004 |
| 1489380 | 5/14/98 | 5/14/98 | 0.076 | 0.005 | 0.016 | 0.011 |
| 1501755 | 6/25/98 | 6/25/98 | 0.005 | < 0.004 | < 0.004 | < 0.004 |
| 1512676 | 7/31/98 | 7/31/98 | 0.198 | J< 0.004 | 0.006 | < 0.004 |
| 1514547 | 8/4/98 | 8/4/98 | *J 4.155 | 0.069 | 0.074 | 0.009 |
| 1531379 | 9/25/98 | 9/25/98 | 0.205 | 0.012 | 0.038 | < 0.004 |
| Mean | | | 0.261 | 0.018 | 0.033 | 0.005 |
| Standard Deviation | | | 0.720 | 0.060 | 0.036 | 0.002 |
| t-value | | | 1.308 | 1.308 | 1.308 | 1.308 |
| No. of Observations | | | 34 | 34 | 34 | 34 |
| 90% UCL | | | 0.423 | 0.032 | 0.041 | 0.005 |
| Action Level (mg/L) | | | 0.005 | 0.005 | 0.07 | 0.002 |
| Notes: | | | | | | |
| Analysis performed by NFS 105 Laboratory | | | | | | |
| * result above the calibration curve | | | | | | |
| UJ - estimated value below detection limit | | | | | | |
| J - estimated value | | | | | | |
| < - below detection limit | | | | | | |

**Table 2. Third Quarter (1998) Offsite Groundwater Analytical Results for
Volatile Organic Compounds**

| <u>Sample ID</u> | <u>Well Number</u> | <u>Tetrachloroethylene</u> mg/L | <u>Trichloroethylene</u> mg/L | <u>1,2-Dichloroethylene (cis)</u> mg/L | <u>1,2-Dichloroethylene (trans)</u> mg/L | <u>Vinyl chloride</u> mg/L |
|-------------------|----------------------------|------------------------------------|----------------------------------|---|---|-------------------------------|
| 00491 | 116A | 0.971 | 0.030 | 0.048 | < 0.004 | 0.008 |
| 00490 | 116B | 2.992 | 0.096 | 0.146 | < 0.004 | 0.026 |
| 00497 | 117A | 0.253 | 0.010 | 0.012 | < 0.004 | < 0.004 |
| 00495 | 117B | 0.530 | 0.022 | 0.024 | < 0.004 | < 0.004 |
| 00488 | 118A | < 0.004 | 0.005 | 0.004 | < 0.004 | < 0.004 |
| 00489 | 118B | < 0.004 | < 0.004 | 0.011 | < 0.004 | < 0.004 |
| 00492 | 119A | 0.099 | 0.007 | < 0.004 | < 0.004 | < 0.004 |
| 00493 | 120A | 0.229 | 0.013 | 0.011 | < 0.004 | < 0.004 |
| 00494 | 120B | 0.200 | 0.012 | 0.016 | < 0.004 | < 0.004 |
| Statistics | | | | | | |
| | Mean | 0.587 | 0.022 | 0.031 | < 0.004 | 0.007 |
| | Standard Deviation | 0.951 | 0.029 | 0.045 | 0.000 | 0.007 |
| | Observations | 9 | 9 | 9 | 9 | 9 |
| | t-value | 1.860 | 1.860 | 1.860 | 1.860 | 1.860 |
| | 95% Upper Confidence Limit | 1.177 | 0.040 | 0.059 | 0.004 | 0.011 |
| | MCL | 0.005 | 0.005 | 0.07 | 0.1 | 0.002 |

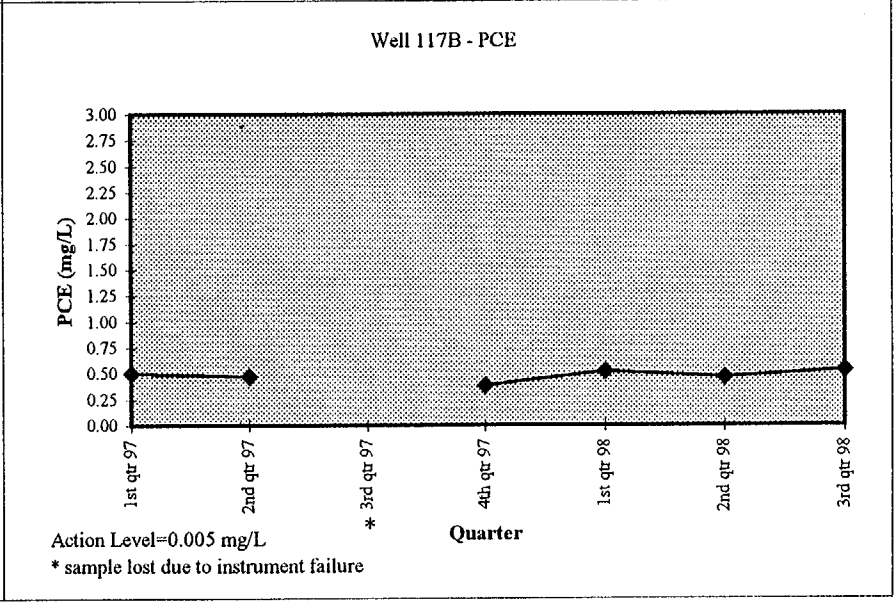
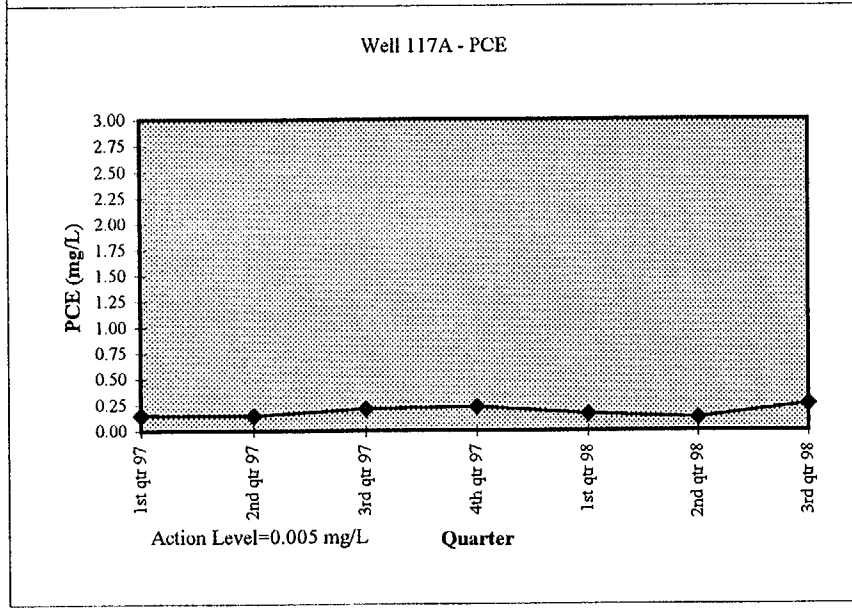
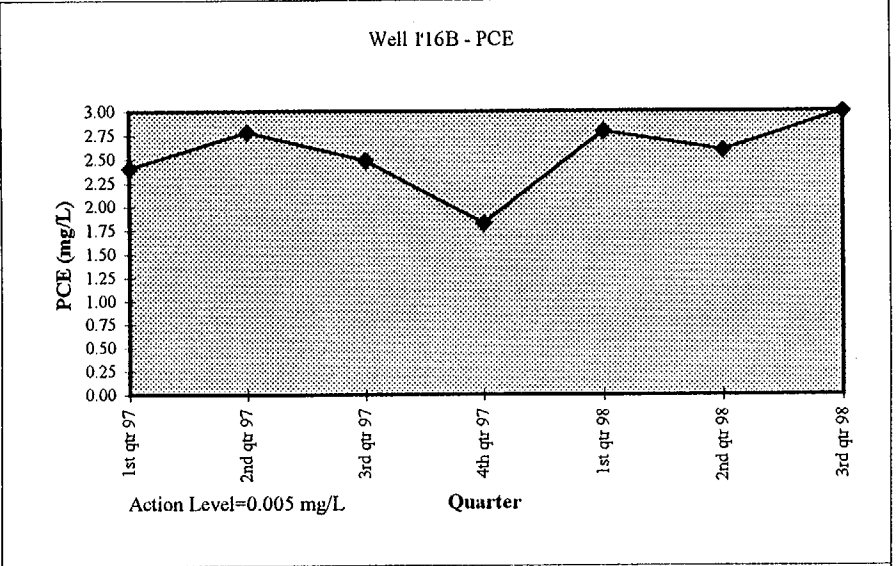
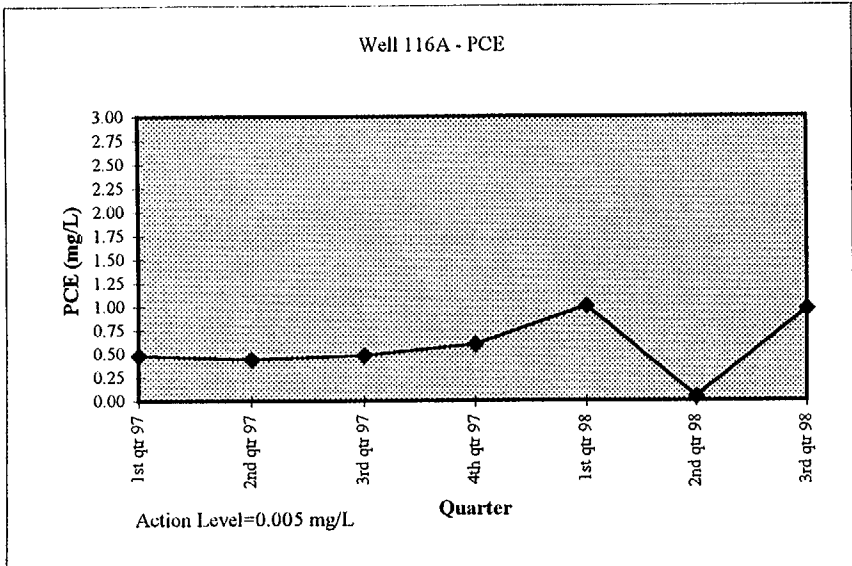
Notes

Samples obtained 09/03/98 - 09/04/98. Analysis completed by NFS 105 Laboratory

< - less than detection limit; value given is the quantitation limit.

MCL - Maximum Contaminant Level (EPA, 1996)

Fig. 1
 Graphs of PCE and TCE Concentrations for the Offsite Wells



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Figure 1 (cont.)
 Graphs of PCE and TCE Concentrations for the Offsite Wells

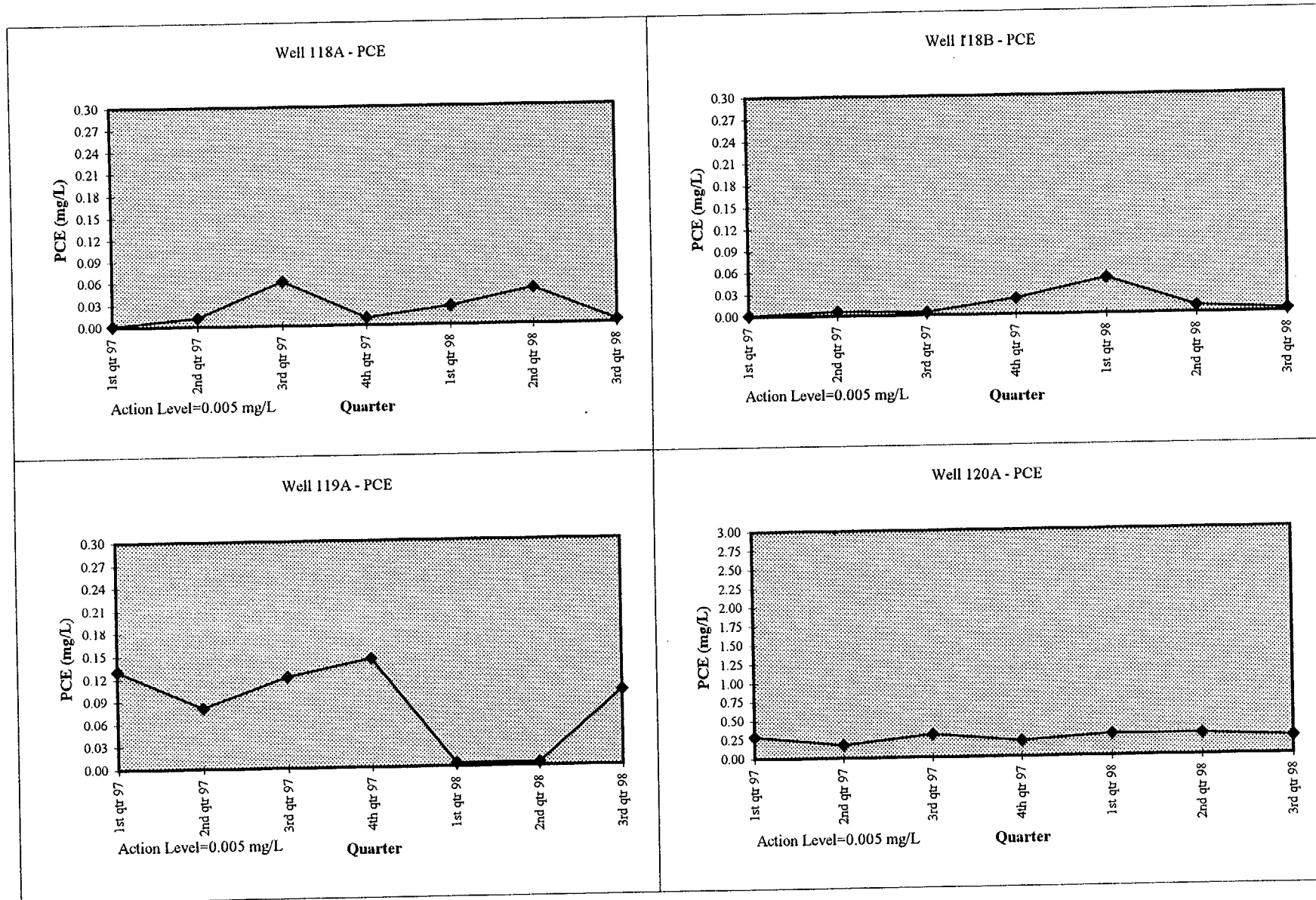


Fig. 1
Graphs of PCE and TCE Concentrations for the Offsite Wells

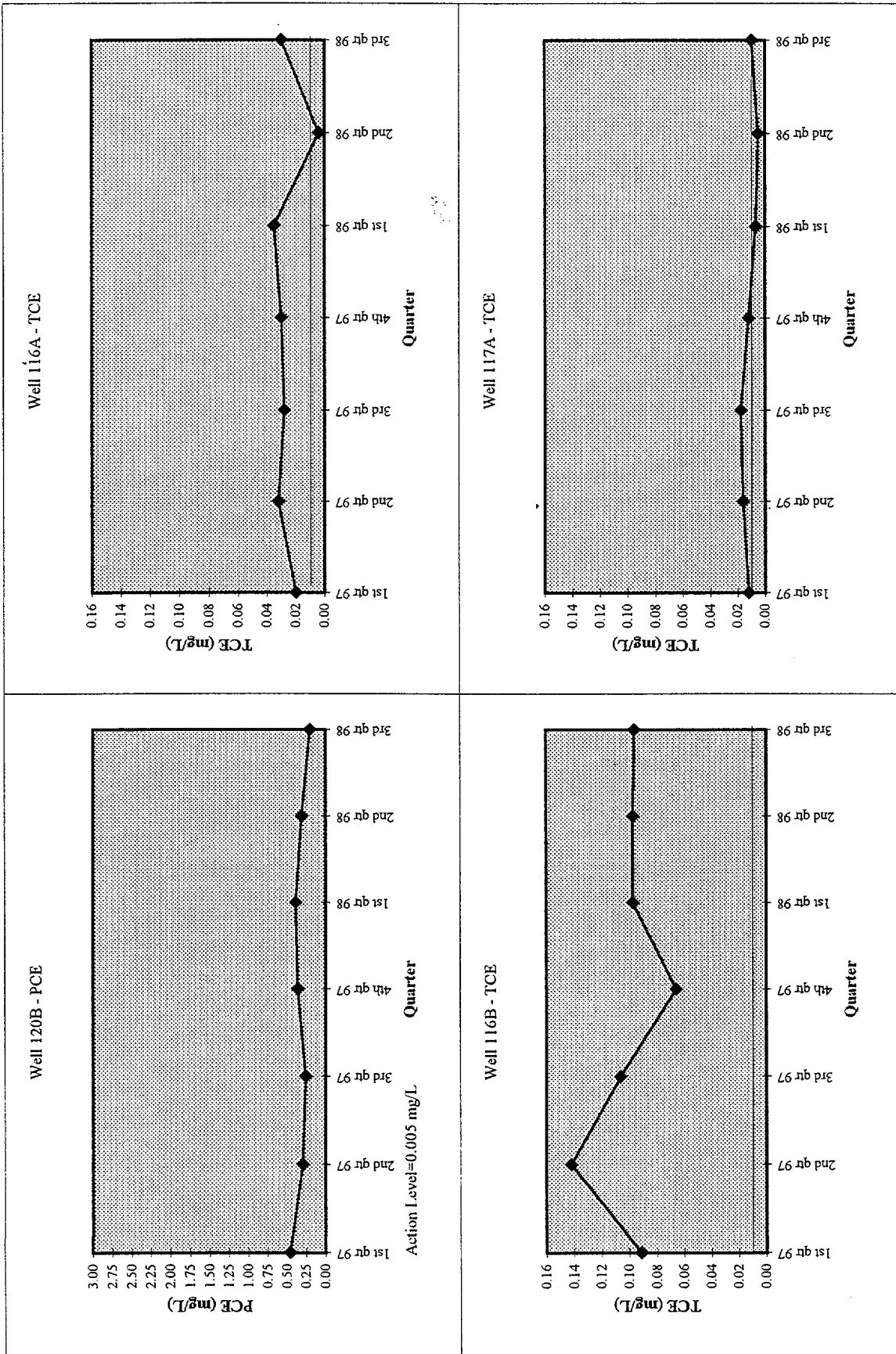


Figure 1
Graphs of PCE and TCE Concentrations for the Offsite Wells

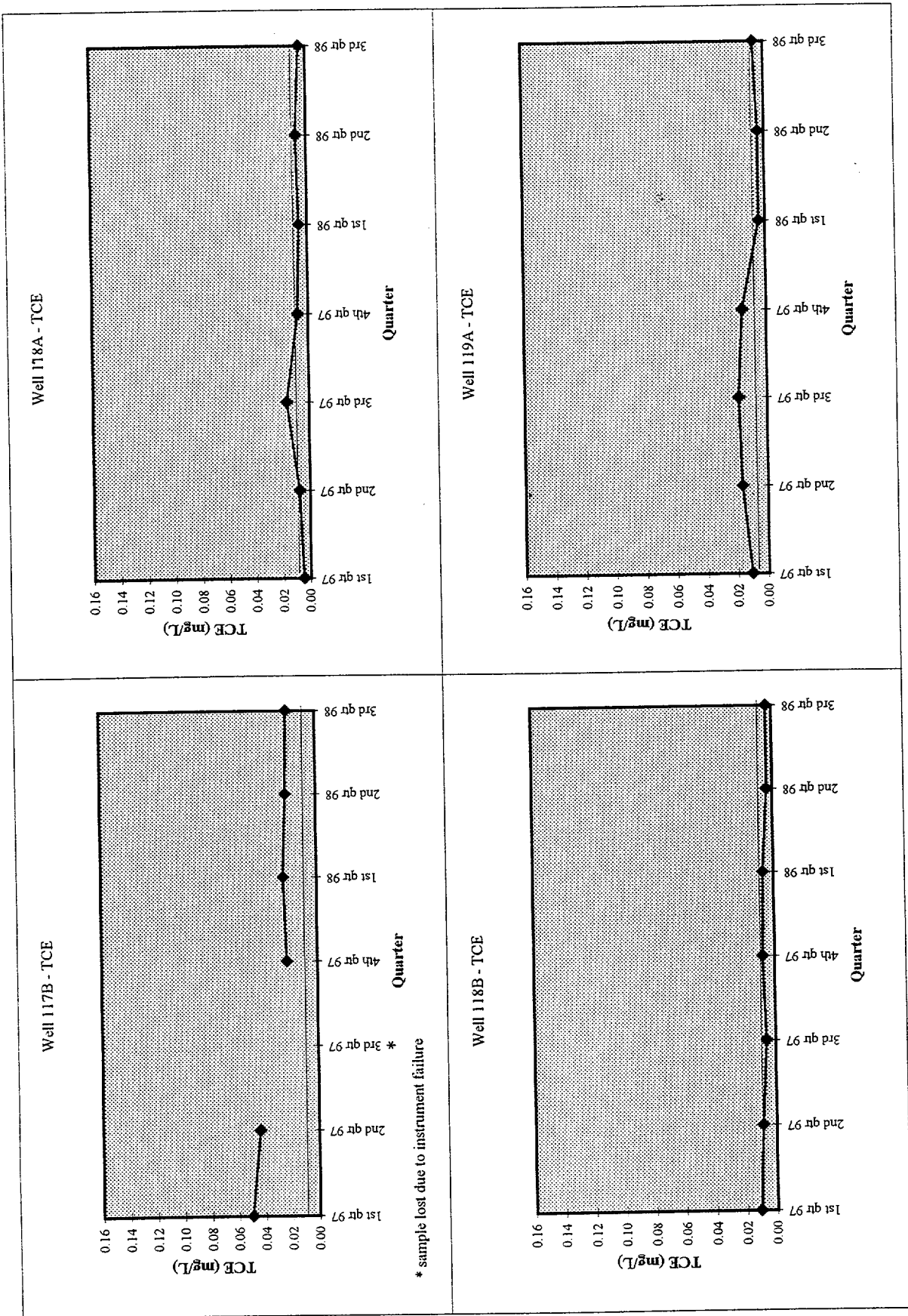


Figure 1 (cont.)
Graphs of PCE and TCE Concentrations for the Offsite Wells

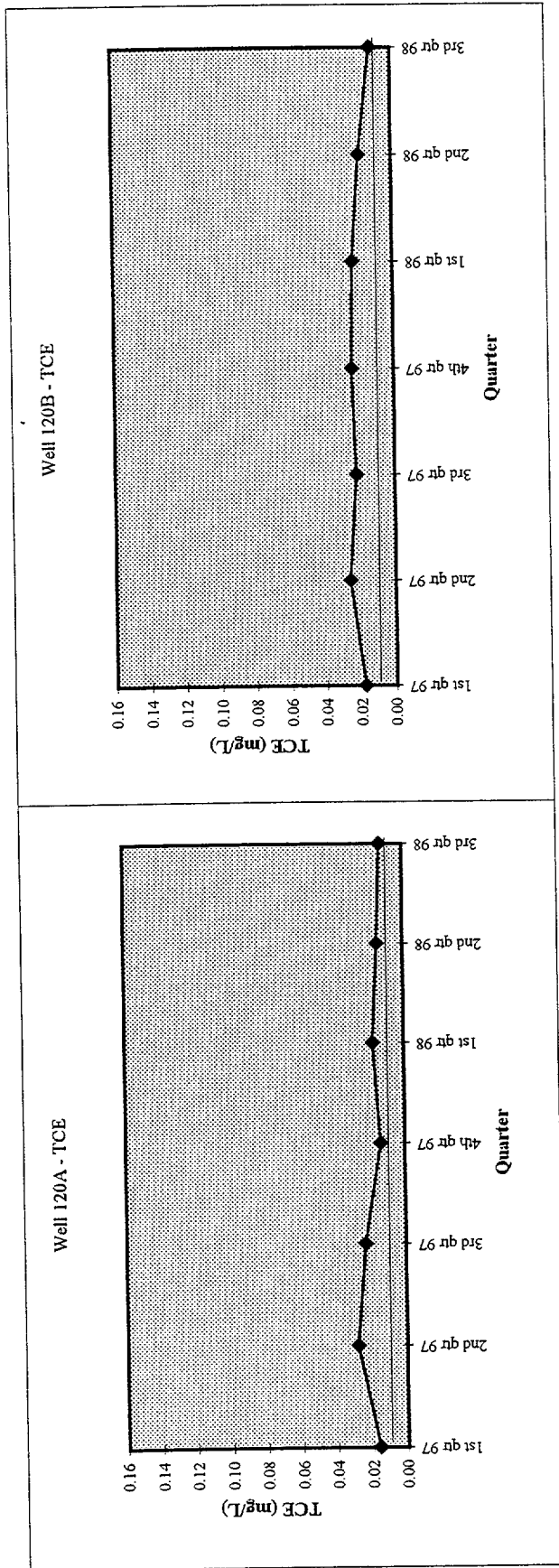


Table 3. Third Quarter (1998) Offsite Groundwater Analytical Results for Radionuclides

| Sample ID | Well Number | U-238 (pCi/L) | | | U-235 (pCi/L) | | | U-234 (pCi/L) | | | Total U (pCi/L) | Tc-99 (pCi/L) | | | |
|----------------------|-------------|---------------|-------|-------|---------------|-------|-------|---------------|---------|-------|-----------------|---------------|--------|-------|-------|
| | | Result | Error | MDC | Result | Error | MDC | Result | Error | MDC | | Result | Error | MDC | |
| 00491 | 116A | 0.174 | 0.044 | 0.029 | J 0.087 | 0.049 | 0.153 | 1.663 | 0.140 | 0.080 | J 1.924 | 60.99 | 8.02 | 12.06 | |
| 00490 | 116B | 0.219 | 0.059 | 0.042 | | 0.141 | 0.052 | 0.115 | 2.128 | 0.192 | 0.168 | 2.488 | 104.63 | 11.19 | 16.49 |
| 00497 | 117A | 0.033 | 0.019 | 0.029 | UJ -0.011 | 0.019 | 0.100 | 0.076 | 0.039 | 0.117 | UJ 0.098 | 64.44 | 10.71 | 16.49 | |
| 00495 | 117B | J 0.128 | 0.039 | 0.032 | | 0.140 | 0.057 | 0.165 | J 1.588 | 0.141 | 0.086 | J 1.856 | 78.85 | 8.23 | 12.06 |
| 00488 | 118A | 0.670 | 0.086 | 0.028 | | 0.149 | 0.043 | 0.078 | 3.370 | 0.205 | 0.114 | 4.189 | 24.45 | 7.57 | 12.06 |
| 00489 | 118B | 0.260 | 0.098 | 0.100 | | 2.299 | 0.301 | 0.100 | 3.040 | 0.361 | 0.400 | 5.599 | 36.10 | 7.71 | 12.06 |
| 00492 | 119A | 0.204 | 0.046 | 0.028 | UJ 0.031 | 0.027 | 0.095 | 1.532 | 0.138 | 0.185 | J 1.767 | 55.65 | 7.95 | 12.06 | |
| 00493 | 120A | 0.179 | 0.045 | 0.030 | | 0.090 | 0.032 | 0.030 | 2.748 | 0.187 | 0.083 | 3.017 | 69.27 | 8.12 | 12.06 |
| 00494 | 120B | 1.026 | 0.109 | 0.079 | | 0.108 | 0.037 | 0.079 | 2.052 | 0.158 | 0.116 | 3.186 | 72.73 | 10.81 | 16.49 |
| Mean | | 0.321 | | | | 0.337 | | | 2.022 | | | 2.680 | 63.01 | | |
| Standard Deviation | | 0.318 | | | | 0.738 | | | 0.983 | | | 1.579 | 23.42 | | |
| Observations | | 9 | | | | 9 | | | 9 | | | 9 | 9 | | |
| t-value | | 1.860 | | | | 1.860 | | | 1.860 | | | 1.860 | 1.86 | | |
| 95% Upper confidence | | 0.52 | | | | 0.79 | | | 2.63 | | | 3.66 | 77.53 | | |
| Action Level | | ND | | | | ND | | | ND | | | 30* | 3760** | | |

Notes:

J - estimated value

UJ = value is less than the MDC; value is estimated.

Samples collected on 09/03/98 - 09/04/98; Analysis completed by NFS 105 and 110D Laboratories.

Total uranium is the sum of the activities of U-234, U-235, and U-238

* Action level based on EPA proposed maximum contaminant level (MCL) for radionuclides in drinking water (EPA, 1996).

** Action level based on site dose assessment

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December 11, 1998

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Attachment II to letter
T. S. Baer to Mr. Alan Farmer and Mr. Thomas Tiesler

Interim Measures Progress Report

(13 pages to follow)

INTERIM MEASURES (IM) PROGRESS REPORT
SWMU's 2, 4, 6, 7, 9 and 10
NUCLEAR FUEL SERVICES, INC.
EPA ID. NO. TND 00 309 5635

1.0 Work Completed

Since the last IM Progress Report dated September 11, 1998, work has continued on the North Site excavation. Since the startup (April 10, 1997) of the excavation process for the North Site Burial Grounds approximately 458,789 cubic feet of soil and debris have been transported into Building 410 as of November 13, 1998. Approximately 199,770 cubic feet of soil has been shipped in 6,659 bulk shipping bags and approximately 154,444 cubic feet of soil has been shipped in 315 intermodal shipping containers. In addition, 57,604 cubic feet of debris has been shipped in 533 burial boxes and 30 intermodels.

The Pond 4 groundwater drawdown system has been operating during this reporting period; however, the drawdown wells have not pumped sufficient groundwater to run the groundwater treatment system. The low flow is due to the lack of rainfall and subsequent drop in the water table.

In accordance with Addendum 1 to the Pond 4 Decommissioning/Interim Measures Workplan, wells in the vicinity of the burial ground are sampled routinely to monitor the effect of waste removal on groundwater quality. PCE and uranium were identified during the North Site Characterization Project as the primary constituents present in groundwater in the vicinity of the burial ground. Third quarter 1998 PCE data are discussed in Section 2.2.2. Third quarter 1998 uranium data have not been received from the laboratory and will be reported in the next update.

2.0 Finding and Observations

Analytical data indicate that the excavated waste and debris from the North Site Burial Grounds (Trenches L, M, K, J, H, and I) do not contain any hazardous constituents above the TCLP regulatory limits.

2.1 Influent Data

All pumps for the Pond 4 groundwater drawdown system have been operational for this reporting period. The condition of pumps and the groundwater levels have been checked on a weekly basis. However, drawdown of the groundwater in the Pond 4 area is no longer needed since waste removal activities have been completed and authorization from the Nuclear Regulatory Commission (NRC) has been received to shut down the drawdown system. Therefore, the system was placed in shut down on November 30, 1998.

Since initial start-up, groundwater has been sampled weekly for the following constituents: 1,2 dichloroethylene (1,2 DCE), tetrachloroethylene (PCE), trichloroethylene (TCE), vinyl chloride, tributyl phosphate (TBP), bis(2-ethylhexyl)phthalate (BEHP), and di-n-octyl phthalate (DOP). Due to the amount of data collected and to improve presentation clarity, only the most recent quarter of data will be reported and discussed. Influent data (Pond 4 drawdown wells and Ponds 1, 2, & 3) for constituents detected in samples collected third quarter 1998 (June 30, 1998 through September 28, 1998) are presented in Table 1 and are discussed below.

Influent data for constituents consistently above their respective PQLs (1,2 DCE, PCE, TCE, and TBP) were plotted weekly. The corresponding graphs are presented in Figure 1 and discussed below.

1,2 Dichloroethylene - Detected concentrations of 1,2 DCE for third quarter 1998 ranged from 0.012 mg/L to 1.191 mg/L. Five of the eight samples with detected 1,2 DCE concentrations were above the 0.07 mg/L MCL; however, the PQL is greater than the MCL. Trends for 1,2 DCE in influent data were not apparent.

Tetrachloroethylene - Detected concentrations of PCE for third quarter 1998 ranged from 0.012 mg/L to 2.994 mg/L. All detected PCE concentrations were greater than the 0.005 mg/L MCL. Except for the sample collected on August 11, 1998, a significant decrease was observed in PCE for third quarter 1998.

Trichloroethylene - Detected concentrations of TCE for third quarter 1998 ranged from 0.010 mg/L to 1.079 mg/L. All detected TCE concentrations were greater than the 0.005 mg/L MCL; however, the PQL for one sample was greater than the MCL. Trends for TCE in influent data were not apparent.

Vinyl Chloride - Vinyl chloride was not detected in influent data during third quarter 1998; however, the PQL is greater than the 0.002 mg/L MCL.

Tributyl Phosphate - Detected concentrations of TBP for third quarter 1998 ranged from 0.114 mg/L to 73.660 mg/L. Seven of the nine samples with detected TBP concentrations were above the 0.2 mg/L provisional MCL. Except for the sample collected on August 11, 1998, trends for TBP in influent data were not apparent. The cause of the elevated TBP result (73.660 mg/L) collected on August 11 is unknown.

Bis(2-ethylhexyl)phthalate - The detected concentration of BEHP for third quarter 1998 was 0.090 mg/L; however, the PQL is greater than the 0.003 mg/L MCL.

Di-n-octyl phthalate - DOP was not detected in influent during third quarter 1998.

2.2 Groundwater Data

2.2.1 Pond 4 Downgradient Wells (Wells 101A and 102A)

Monthly sampling has continued for Wells 101A and 102A that are located along the western perimeter of the NFS site and downgradient of Pond 4. Due to the amount of data collected and to improve presentation clarity, only the most recent quarter of data will be reported and discussed. Third quarter 1998 PCE, vinyl chloride and TBP analytical results from Wells 101A and 102A are presented in Table 2.

Groundwater data for constituents consistently above their respective PQLs (PCE) were plotted monthly for both wells. The corresponding graphs are presented in Figure 2 and discussed below.

Tetrachloroethylene - Detected concentrations of PCE for third quarter in Well 102A ranged from 1.176 mg/L to 1.907 mg/L. PCE was not detected in Well 101A during the third quarter. Trends for PCE in Wells 101A and 102A were not apparent.

Vinyl Chloride - Vinyl chloride was not detected in Wells 101A and 102A during the third quarter; however, the PQL is greater than the 0.002 mg/L MCL.

Tributyl Phosphate - TBP was not detected in Wells 101A and 102A during the third quarter.

2.2.2 Burial Ground Wells

Monthly sampling has continued for wells in the vicinity of the burial ground. Analytical results are presented in Table 3.

Tetrachloroethylene - Third quarter 1998 results for PCE in the upgradient and downgradient wells are presented in Table 3. Detected concentrations of PCE in the downgradient wells during third quarter 1998 ranged from 0.005 mg/L to 0.044 mg/L. Results from third quarter are similar to concentrations observed in previous months.

Concentrations of PCE for each well were plotted monthly. The corresponding graphs are presented in Figure 3. Trends for PCE in the burial ground wells were not apparent.

3.0 **Deviations from Workplan**

There have been no deviations from the workplan for this quarter.

4.0 Work Projected

Work Projected for the first quarter of 1999:

- Continue excavation and processing soil and debris of North Site Burial Grounds.
- PCE and total uranium data will continue to be evaluated to determine trends in groundwater quality during the burial ground project. Fourth quarter 1998 PCE and third quarter 1998 uranium results will be received and validated. Findings will be presented in the next IM Progress Report.

Table 1. Analytical Results for Constituents Detected in Pond 4 Groundwater and Ponds 1, 2, & 3 Influent Data

Results are reported as mg/L

| Date Collected | 1,2 Dichloro-ethylene | Tetrachloro-ethylene | Trichloro-ethylene | Vinyl Chloride | Tributyl Phosphate | Bis(2-ethylhexyl) phthalate | Di-n-octyl phthalate |
|----------------|-----------------------|----------------------|--------------------|----------------|--------------------|-----------------------------|----------------------|
| 6/30/98 | < 0.080 | 0.110 | 0.046 | < 0.050 | 1.105 | < 0.030 | < 0.030 |
| 7/6/98 | < 0.400 | < 0.005 | < 0.200 | < 0.250 | < 0.030 | < 0.030 | < 0.030 |
| 7/17/98 | 0.012 | 0.012 | 0.010 | < 0.013 | < 0.030 | < 0.030 | < 0.030 |
| 7/21/98 | 0.047 | < 0.001 | 0.043 | < 0.050 | < 0.030 | < 0.030 | < 0.030 |
| 7/27/98 | < 0.080 | 0.087 | 0.043 | < 0.050 | < 0.030 | < 0.030 | < 0.030 |
| 8/3/98 | < 0.080 | 0.085 | 0.043 | < 0.050 | < 0.030 | < 0.030 | < 0.030 |
| 8/11/98 | 1.191 | 2.994 | 1.079 | < 0.250 | 73.660 | < 0.030 | < 0.030 |
| 8/20/98 | < 0.400 | 0.261 | 0.200 | < 0.250 | 0.340 | 0.090 | < 0.030 |
| 8/24/98 | 0.379 | 0.375 | 0.040 | < 0.050 | 5.590 | < 0.030 | < 0.030 |
| 9/1/98 | 0.264 | 0.130 | 0.046 | < 0.050 | 0.902 | < 0.030 | < 0.030 |
| 9/8/98 | 0.338 | 0.073 | < 0.004 | < 0.050 | 0.900 | < 0.030 | < 0.030 |
| 9/15/98 | < 0.080 | 0.047 | < 0.004 | < 0.050 | 0.256 | < 0.030 | < 0.030 |
| 9/22/98 | 0.073 | 0.048 | 0.039 | < 0.050 | 0.134 | < 0.030 | < 0.030 |
| 9/28/98 | 0.061 | < 0.001 | < 0.004 | < 0.050 | 0.114 | < 0.030 | < 0.030 |
| Mean | 0.249 | 0.302 | 0.129 | < 0.090 | 5.939 | 0.034 | < 0.030 |
| Action Level | 0.07 | 0.005 | 0.005 | 0.002 | 0.2* | 0.003 | 0.7 |

Action Levels based on US EPA Maximum Contaminant Levels (MCL) for drinking water (February 1996).

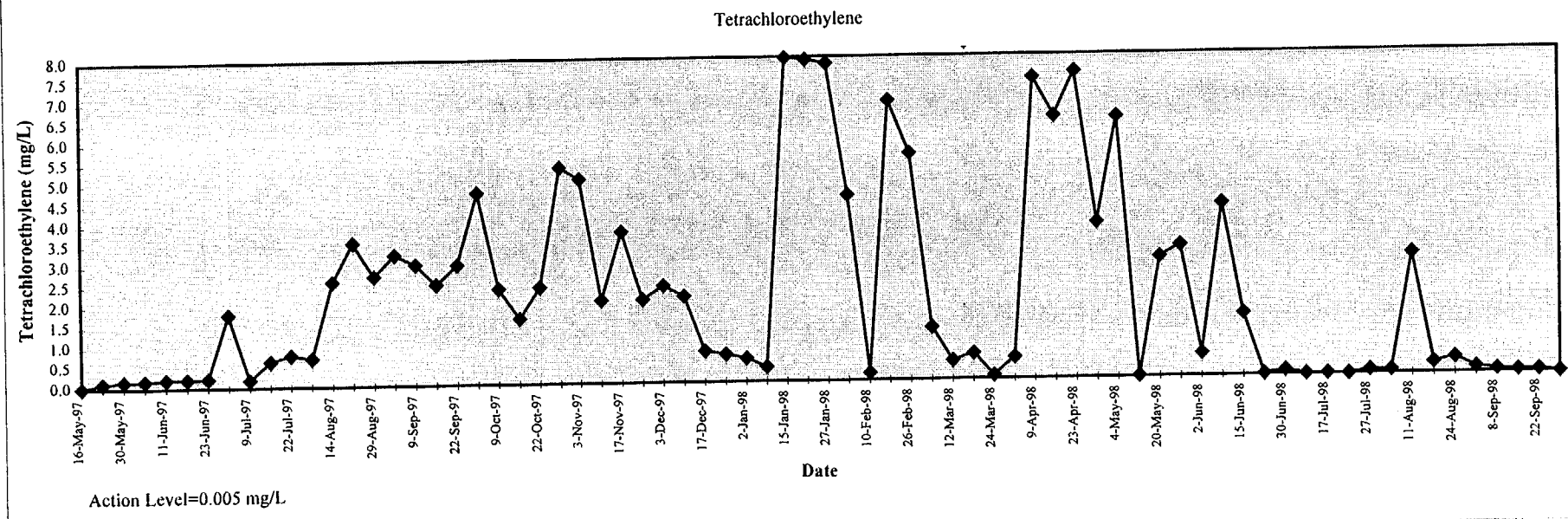
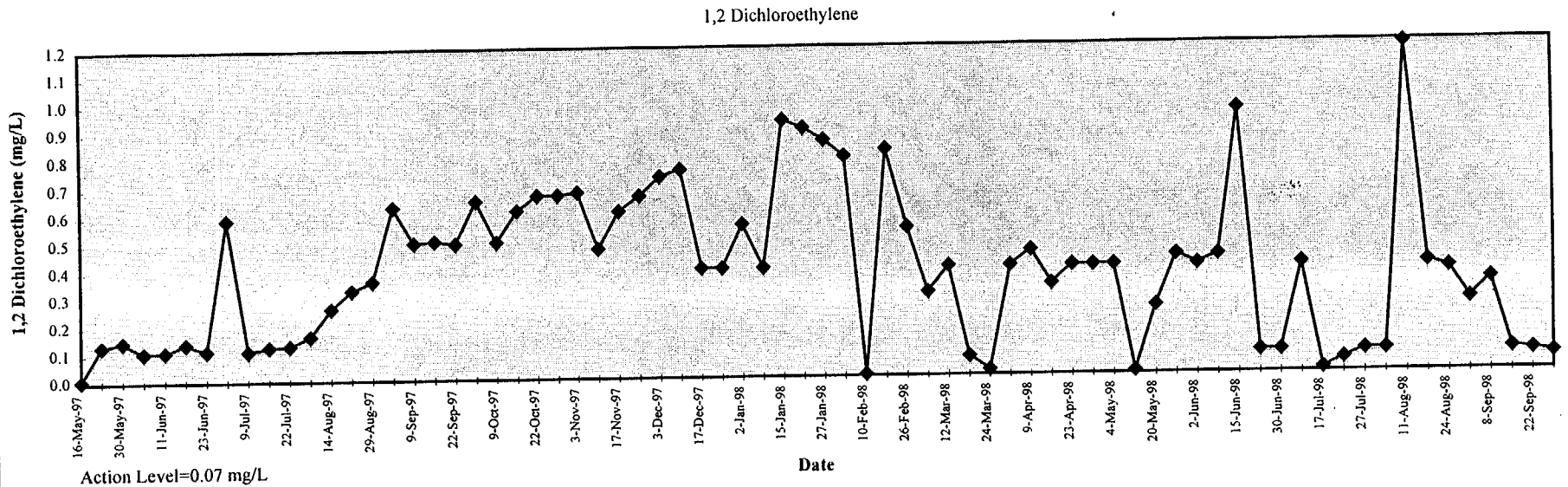
* Provisional action level based on Issue Paper (1992), verified with USEPA RCRA Health Assessment Office (May 1996).

< Less than detection limit

Analysis performed by NFS

Figure 1

Graphs of Constituents Detected in Pond 4 Groundwater and Ponds 1,2, and 3 Influent Data



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Figure 1 (cont.)

Graphs of Constituents Detected in Pond 4 Groundwater and Ponds 1,2, and 3 Influent Data

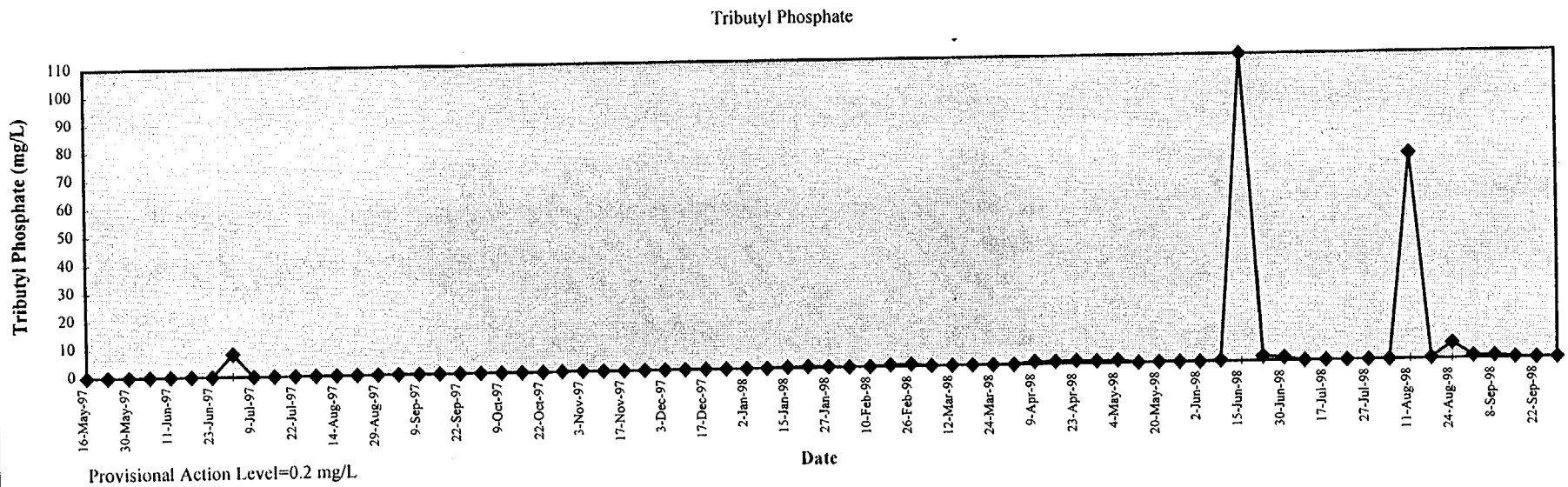
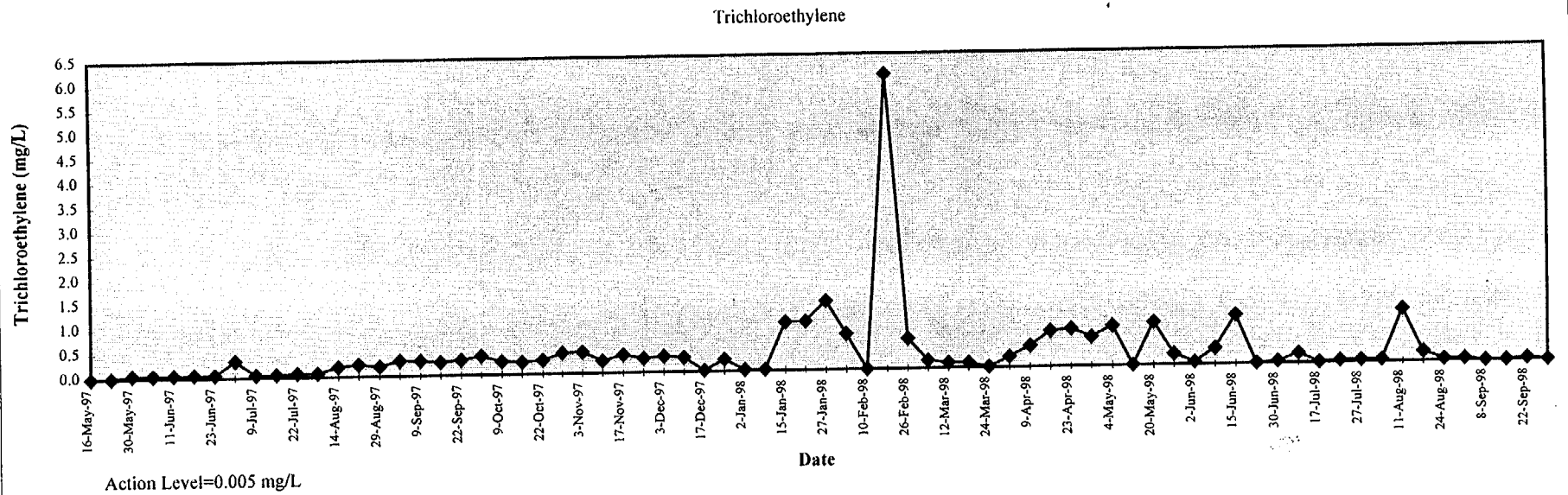


Table 2. Third Quarter 1998 Analytical Results for Wells 101A and 102A

Results are reported as mg/L

| | Tetrachloroethylene | | Vinyl Chloride | | Tributyl Phosphate | |
|-------------------------|---------------------|-----------|----------------|-----------|--------------------|-----------|
| | Well 101A | Well 102A | Well 101A | Well 102A | Well 101A | Well 102A |
| 3rd Quarter 1998 | | | | | | |
| Jul-98 | < 0.001 | 1.293 | < 0.050 | < 0.050 | < 0.030 | <B 0.030 |
| Aug-98 | < 0.001 | 1.907 | < 0.050 | < 0.125 | < 0.030 | < 0.030 |
| Sep-98 | < 0.001 | 1.176 | < 0.050 | < 0.125 | < 0.030 | < 0.030 |
| Mean | < 0.001 | 1.459 | < 0.050 | < 0.100 | < 0.030 | < 0.030 |
| Action Level | 0.005 | 0.005 | 0.002 | 0.002 | 0.2* | 0.2* |

Action Levels are based on US EPA Maximum Contaminant Levels (MCL) for drinking water (February 1996)

* - Provisional action level based on Issue Paper (1992), verified with USEPA RCRA Health Assessment Office (May 1996)

< - Less than detection limit

All analysis performed by NFS

B=Blank

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Figure 2
 Graphs of Analytical Results for Wells 101A and 102A

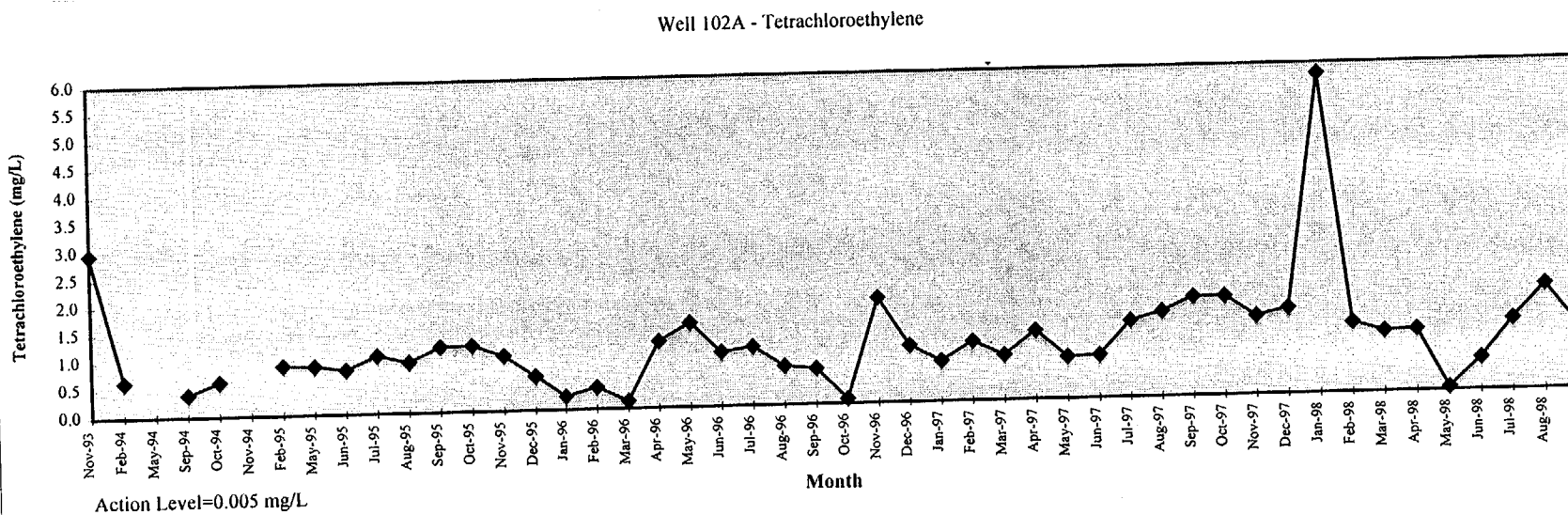
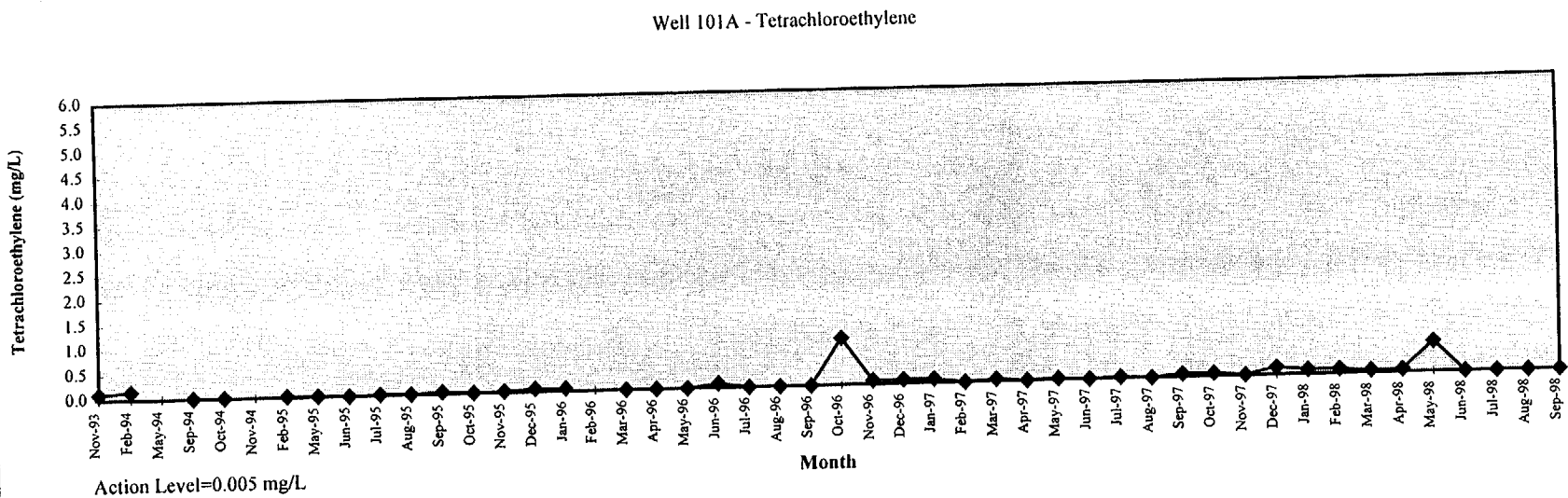


Table 3. Third Quarter 1998 Tetrachloroethylene Results for the Burial Ground Wells
Results are reported as mg/L

| | Upgradient | | Downgradient | | | | | | | |
|-------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| | Well 55 | Well 63A | Well 57 | Well 60 | Well 60B | Well 63 | Well 64 | Well 67 | Well 67B | Well 95A |
| 3rd Quarter 1998 | | | | | | | | | | |
| Jul-98 | 0.025 | 0.006 | 0.011 | 0.008 | 0.012 | 0.035 | 0.013 | 0.014 | 0.041 | < 0.0001 |
| Aug-98 | 0.026 | 0.006 | 0.012 | 0.008 | 0.015 | 0.032 | 0.013 | 0.015 | 0.044 | < 0.0001 |
| Sep-98 | 0.027 | 0.006 | 0.012 | 0.008 | 0.015 | 0.031 | 0.019 | 0.009 | 0.041 | 0.005 |
| Mean | 0.026 | 0.006 | 0.012 | 0.008 | 0.014 | 0.033 | 0.015 | 0.012 | 0.042 | 0.002 |

MCL = 0.005 mg/L

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Fig.

Graphs of Tetrachloroethylene Concentrations for the Burial Ground Wells

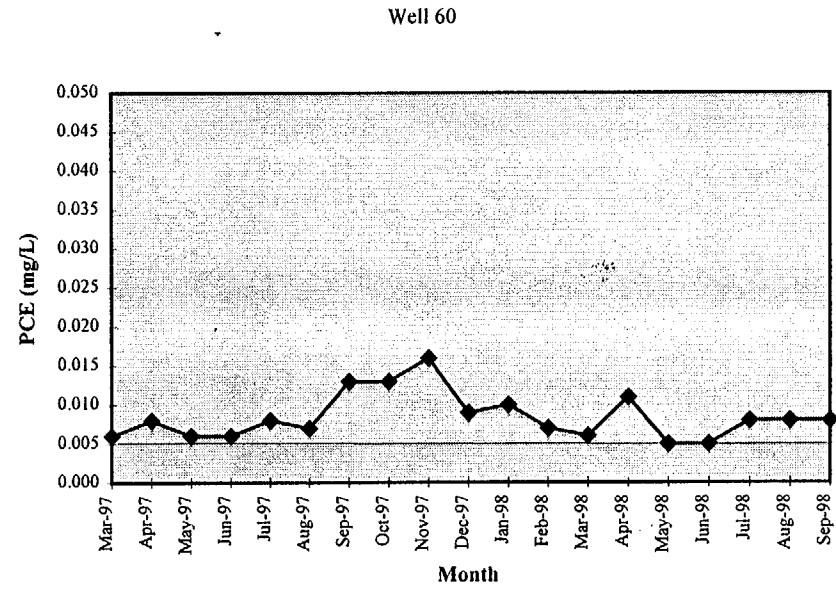
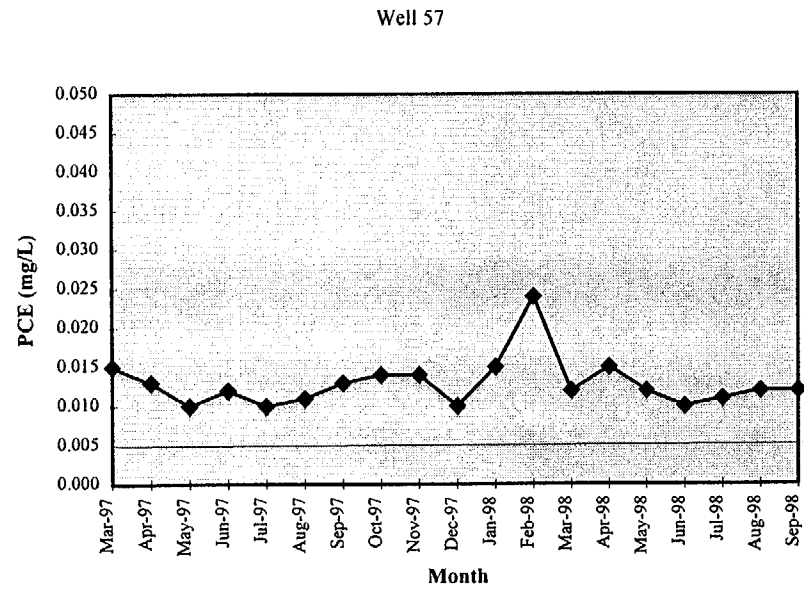
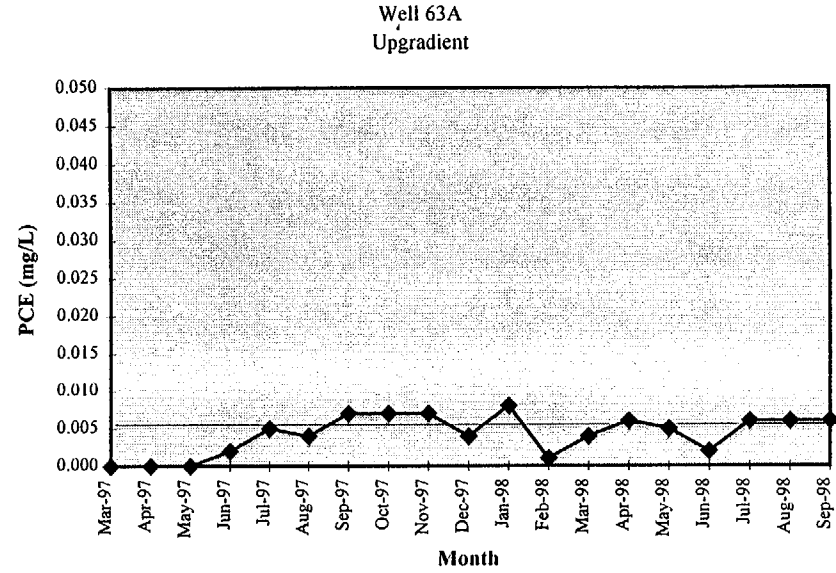
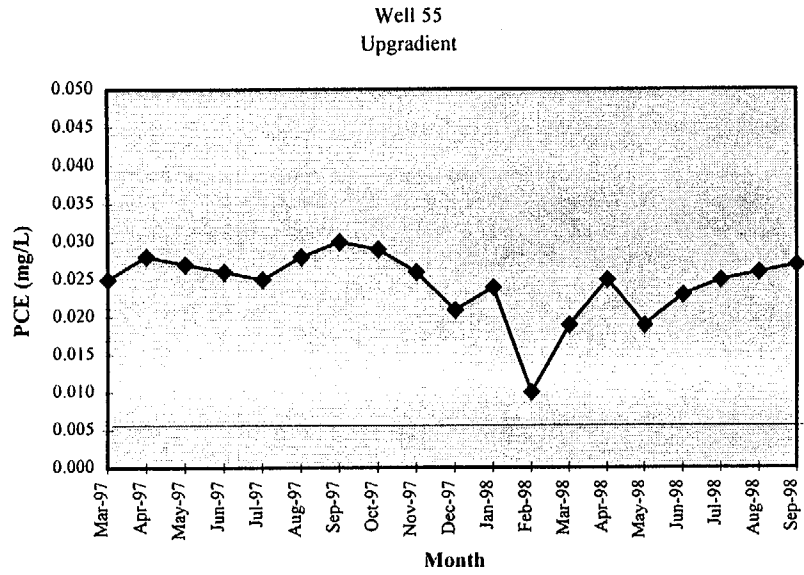
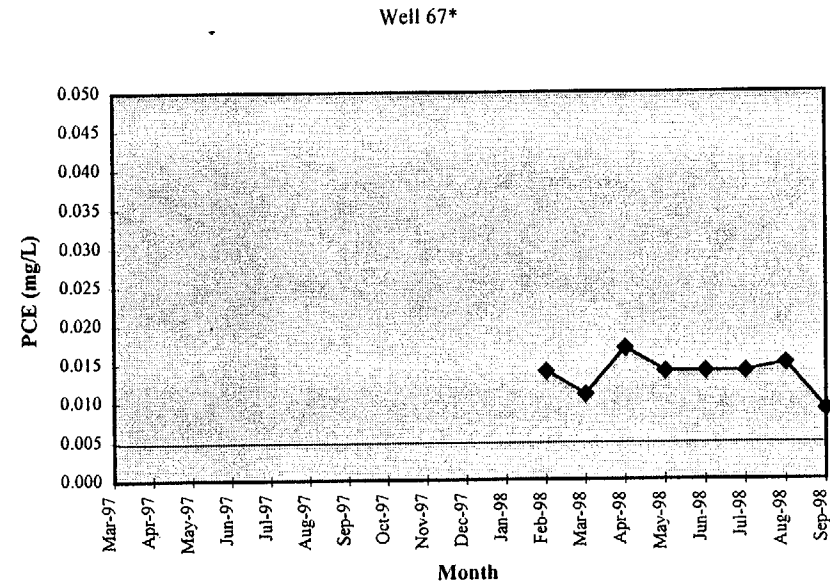
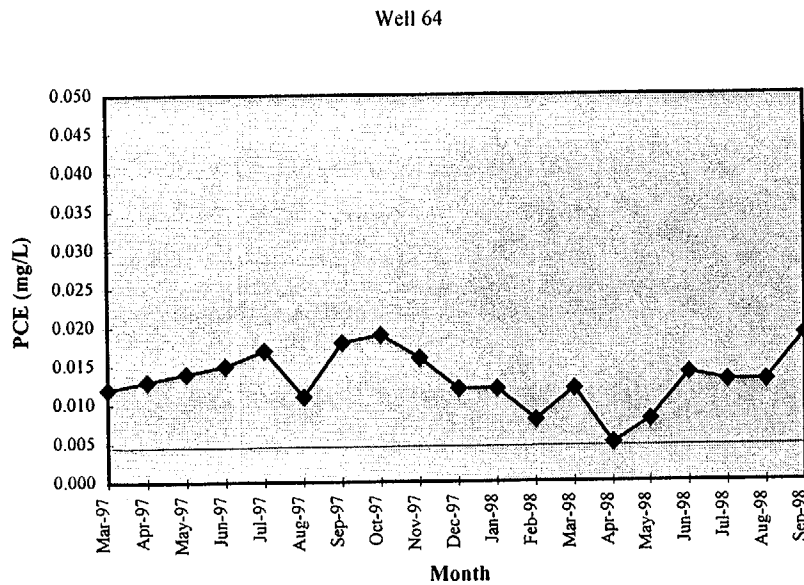
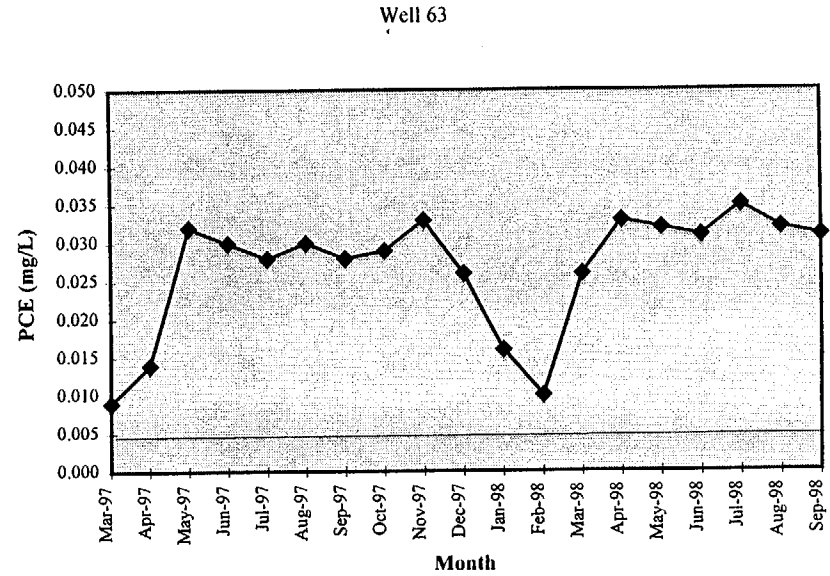
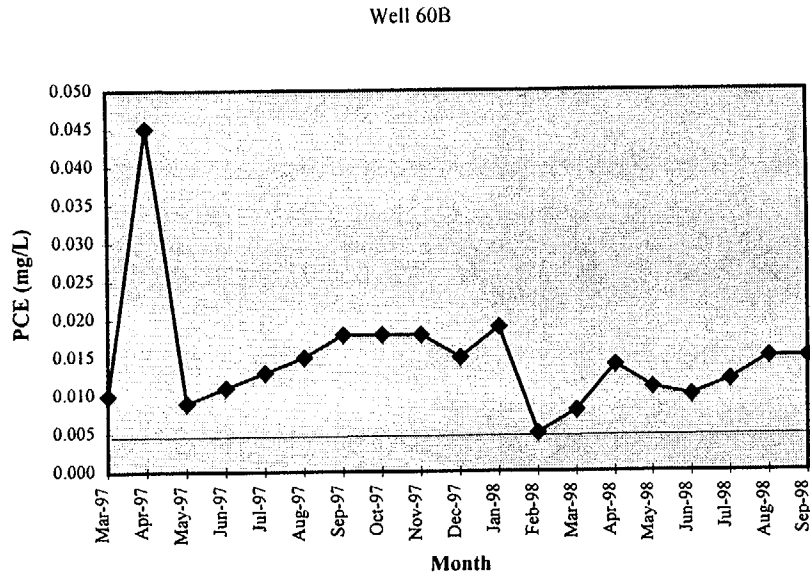


Figure 5 (cont.)

Graphs of Tetrachloroethylene Concentrations for the Burial Ground Wells

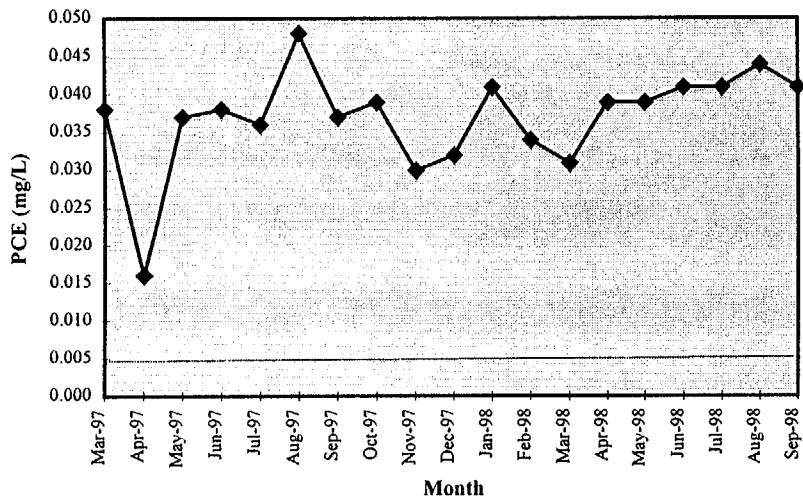


* Sampling of Well 67 began in February 1998

Fig (cont.)

Graphs of Tetrachloroethylene Concentrations for the Burial Ground Wells

Well 67B



Well 95A

