July 25, 2006

Mr. William Duvall
Hatch Electric Generating Plant
Southern Nuclear
U. S. Highway #1 North
P. O. Box 2010
Baxley, Georgia 31515

Subject: **Final Report, Assessment of Tritium in Ground Water, Hatch Electric Generating Plant MACTEC Project 6311-06-0020**

Dear Mr. Duvall:

MACTEC is pleased to submit the subject report that describes our assessment of tritium in ground water at Plant Hatch. In addition to our assessment, the report includes recommendations for the construction of additional monitoring wells and an expansion of the number of wells that are currently in your ground-water monitoring program.

If you should have any questions concerning our report or need additional explanations of our assessment, please contact us at your convenience.

Sincerely,

MACTEC Engineering and Consulting, Inc.

James R. Wallace
Senior Principal Engineer

David Alcott
Principal Engineer

Enclosures

B-38

FINAL REPORT

ASSESSMENT OF TRITIUM IN GROUND WATER

HATCH ELECTRIC GENERATING PLANT

Prepared for:

Southern Nuclear

Baxley, Georgia

MACTEC Engineering and Consulting, Inc.

Kennesaw Georgia

July 25, 2006

Project 63121-06-0020

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ASSESSMENT OF TRITIUM IN GROUND WATER HATCH ELECTRIC GENERATING PLANT

1.0 INTRODUCTION

Georgia Power Company, through its agent Southern Nuclear Operating Company, Inc., contracted with MACTEC to provide an assessment of tritium data from the Hatch Electric Generating Plant (HNP). Southern Nuclear provided information about ground water at HNP including early reports, leak/spill events, monitoring well details, hydrology and geology information, and ground-water tritium data. The two primary issues of concern, as stated by Southern Nuclear, are:

1) Potential for tritium in ground-water to migrate off-site
2) Adequacy of the current ground-water monitoring program

The purpose of this report is to provide an assessment of the tritium data supplied by Southern Nuclear and to use that assessment as the basis for addressing these two issues.

2.0 SCOPE OF WORK

The specific scope of work included the following six tasks:

1) Prepare time trend graphs (tritium concentration versus time) for each of the monitoring locations.
2) Prepare isoconcentration maps of tritium plumes at selected intervals of time.
3) Review hydrology of HNP site and the construction of the existing monitoring wells.
4) Based on the results of Tasks 1 and 2, determine the likely source(s) of tritium and whether these sources are continuing.
5) Based on the results of Tasks 1, 2, and 3, determine if the existing monitoring system is adequate; if additional monitoring points are needed, make recommendations regarding potential additional monitoring locations and the associated construction details.
6) Prepare a report containing the analyses and conclusions resulting from the performance of the preceding tasks.

3.0 GEOHYDROLOGY AT HNP

As reported previously (Law 1979), ground water at HNP occurs in a shallow unconfined aquifer and the ground water flow is generally to the north and east toward the Altamaha River. Flow rates were estimated to be about 100 feet/year. The under drain system located in the plant yard was designed to

intercept the majority of this ground-water flow and release it into the Altamaha River. A minor confined aquifer is located beneath the surficial unconfined aquifer; water flow in the confined aquifer also moves toward the Altamaha River. The flow rate in this aquifer has been estimated to be less than 6 feet/year. Approximately 55 feet of aquiclude separates the unconfined and confined aquifers. Movement of ground water from the unconfined to the confined generally is prevented by this aquiclude. However, as discussed later in this report, it may be possible that wells that penetrate the aquiclude provide a localized flow path from the unconfined aquifer to the minor confined aquifer. No hydraulic connection from the unconfined aquifer or from the confined aquifer to the major artesian aquifer is known to exist in the plant area.

Seventeen monitoring wells were installed in 1979 to provide information for a previous (1979-1980) analysis of tritium in ground water. These wells were between 15 and 23 feet deep. Where possible the depths of these wells were determined by the depth to the low permeability clay at the base of the unconfined aquifer. However, several of the wells were terminated short of this depth because the presence of underground piping at depth of approximately 8 to 12 feet below ground surface. When piping was present, the depth of the monitoring well was selected such that the slotted section of the well was at approximately the same elevation as the piping. The locations of the wells were based on the known areas of contamination, the location of subsurface piping known to be carrying water with elevated concentrations of tritium, and on information from HNP concerning known previous breaks in subsurface piping. Well locations are shown on Figure 1.

A potentiometric map of the unconfined aquifer, based to a large extent on data taken from 14 of the 17 monitoring wells described above and 7 other wells previously constructed at HNP, is shown in Figure 2. The data on which this map is based were taken on May 6, 2006. This map shows that, in the vicinity of the reactor and turbine buildings, the ground water flows radially outward from beneath the buildings. (The absence of data in the southwest quadrant of the plant area creates a lack of contours in this quadrant. It is likely that if data from this quadrant were available, the contours would close in a circle around the plant.) The radial flow from the area beneath the buildings is somewhat surprising because there is no known source of water to recharge the aquifer beneath the buildings. This pattern of flow is likely influenced, at least in part, by the under drain system. The density of the monitoring well system is not sufficient to allow a clear distinction to be made regarding the effect of the under drains on the flow directions. Detailed movement of the ground water in the unconfined aquifer also is difficult to predict due to the maze of piping and conduit buried in the plant yard.

4.0 TRITIUM DATA PROVIDED FOR STUDY

Samples of ground water have been obtained and analyzed by HNP for tritium activity since before the beginning of plant operation in 1975. Between 1972, when the first pre-operation samples were obtained, and 1985, ground-water samples were obtained from various monitoring wells, drainage ditches, and piezometers. In 1985 a commitment was made by HNP to continue on-site ground-water sampling on a more systematic basis. In 1988 the sampling locations and frequencies were outlined in procedure 64CH-ADM-001-0S Rev. 4. The ground-water sampling program continues to be managed in accordance with procedure 64CH-ADM-001-0S Rev. 16. The data provided for the current assessment include those dating from January 1985. Information on the sampling locations and the frequency of sampling are shown on Table 1; sampling locations within the plant yard are shown on Figure 1.

5.0 TIME TREND GRAPHS

A time trend graph was prepared for each of the locations listed in Table 1. These graphs are included in Appendix A as Figures A-1 through A-39. Some values of activity were reported as negative numbers. For the purposes of this report, these values arbitrarily were set equal to 100 pCi/L. Background level for tritium activity in ground water in the vicinity of HNP has been stated by HNP personnel to be approximately 300 pCi/L (personal communication, HNP staff).

6.0 ISOCONCENTRATION MAPS OF TRITIUM PLUMES

Fourteen isoconcentration maps were prepared to show changes in ground-water concentration associated with an apparent tritium release at CST-1 in 2003. This release produced the maximum concentration measured in ground water during the time period 1985-2006.

The isoconcentration maps shown in Figures 3 through 16 indicate that the plume of tritium is moving westward from the source area. This interpretation is based solely on there being a high concentration on the east side of the Reactor/Turbine Buildings and a lower concentration on the west side. Interpolation between the two sets of readings produces the plume maps as presented in this report. The ground-water flow data would tend to contradict this interpretation. As stated above, these data show a flow radially outward from the buildings. If this interpretation of the flow directions is correct, a different interpretation must be made of the concentration data. A possible alternative interpretation is that there is

a source of tritium on the west side of the buildings and that this source is creating a localized plume to the west. In this interpretation the plume would not be continuous beneath the buildings. However, there are no known radioactive systems, piping, or components on the west side of the buildings. Data are not sufficient to determine if there is a directional component to the part of the plume on the west side of the buildings. See the discussion below that relates to the comparison between the tritium concentrations found at PY5 and P15B, which are located west of the buildings.

7.0 OBSERVATIONS BASED ON GRAPHS AND MAPS

Based on a review of the time trend graphs, the data on which they are based, the potentiometric map, and the isoconcentration maps, the following general observations were made:

- Locations at which the concentrations have exceeded 100K pCi/L are restricted to the area immediately south of CST-1 (wells T10, 11,12,13,18 & N7A) in the 2003-2006 period and near the northeast corner of Turbine Building 1 (T3 & N9B) in the 1985-1989 period.

- An exception to the above observation is the abrupt rise and fall of the activity in T2 in early 2006. In successive monthly samples the activity level was 127; 127,000; and 583. This abrupt change raises a suspicion that the February 2006 reading (127K) may have been in error.

- The highest activity levels noted during the 1985-2006 period of record occurred during the period 2003-2005. Increases to peak activities followed by decreasing activities occurred in T10, 11, 12, 13, and 18 during this period. (With only a single measurement at T18 during this period, the duration of rise and fall at this location is unknown.)

- High activity levels in the N9B-T3 area occurred in the 1985-1991 period with peak activities of almost 600K pCi/L at N9B and over 160K at T3 in early 1988. Although these wells are only about 20 feet apart, there is a significant difference in the tritium activity in the two wells. For example, a peak at N9B of over 500K in 1994 was not accompanied by a marked rise at T3. Also, T3 shows a steep increase to over 70K in early 2000 with no corresponding increase at N9B. Both wells show a peak in early 2001 with an activity of more than 200K in N9B and 30K in T3. The activity in N9B has consistently been higher than that in T3. This relationship was also noted in the 1980 report by Law Engineering where the activity in N9B and T3 were in the order of 100K and 10K, respectively.

- An interesting characteristic of T3 data that can be seen from the time graphs is the rapid rise and fall of the activity levels as seen in early 2000 as well as at many times during the 1985-1991 period.

- A comparison of the graphs for PY5 and P15B suggests that activity levels in these two sampling locations may have originated from the same events. PY5, the sump that collects storm water runoff from the building roofs, had unusually high peaks in 1986 (515K) and in 1988 (846K); P15B shows a general increase during this period with a peak (30.3K) in 1990 followed by a general decline from 1990 to the present. This is the type of pattern that would be expected if the

water in PY5 is occasionally contaminated by wash off from the roofs and if this same or similar water finds its way to the ground water. That is, the surface water would be expected to peak following a rain event that removed tritium from the roofs, while the ground water, which moves much slower, would be expected to show a lower activity level but persist for much longer and show a continuing decline following the wash off event. Thus, the low level of tritium in the ground water on the west side of the build could have come from past rainfall events that infrequently washed tritium off the roof.

- Data from the minor confined aquifer are very limited and it is expected that there would not be leakage from the unconfined aquifer to the minor confined aquifer. This expectation is based on the presence of an aquiclude approximately 55 feet thick that lies between these two aquifers. However, the wells that are open to the minor confined aquifer, which include N2A, N7A, N8A, P13A, P15A, and P17A, penetrate the aquiclude and it is possible that some water can move from the unconfined to the confined aquifer along the bore hole in which these wells were constructed. The ground-water elevation in the unconfined aquifer is approximately 20 to 40 feet above that in the confined aquifer, so a gradient is available to move the water from the higher to the lower aquifer. The activity in P17A has generally been below background, but there was a brief spike in activity in December 1987. This may be related to the earlier spike noted in P17B that occurred in May 1986. The most significant activity in the confined aquifer is in N7A, which is located near CST-1. The data from N7A show a rise consistent in time with the rise in the unconfined aquifer in the vicinity of T12.

8.0 CONCLUSIONS

8.1 Likely Sources of Tritium

The most apparent source of tritium is in the area around CST-1, especially near T-12. Concentrations above 100K pCi/L have occurred frequently at this location over the period of record, but the highest concentrations were measured during the 2003-2006 period with the highest value, by far, being the 4,070K pCi/L measured in 2003. Other relatively high readings, i.e., greater than 100K, have been measured in locations near T-12 (e.g., T-10, 11, 13, 18) and are likely associated with the same releases as those indicated by measurements at T-12.

It is interesting to note the general correspondence in the timing of the peaks measured at P15B and PY5. Both series of measurements peaked in the 1986-1989 time frame. Therefore, the source of the tritium could be the same for both of these locations, i.e., the water at PY5, if allowed to discharge into the ground, could be the source of the tritium in the ground water on the west side of the building. Elevated concentrations in T-3 were also noted during this period.

Another possible explanation for the tritium on the west side of the building is that there is a water leak under one of the buildings and this leak is responsible for both the apparent high ground-water elevations under the buildings and for the tritium that is found on the west side of the buildings.

8.2 Adequacy of Existing Monitoring

Based on the current monitoring, it can be concluded that tritium is not leaving the site through ground-water flow at concentrations above background. Nevertheless, there are uncertainties in the interpretation of the existing ground-water data that can be eliminated or reduced by installing additional monitoring locations.

9.0 RECOMMENDATIONS

Most of the existing monitoring wells are clustered in locations where known or suspected leaks have occurred previously. To provide a more uniform coverage of the plant area, it is recommended that additional wells be constructed and some existing wells added to the list of those that are part of the regular monitoring program. In addition, it is recommended that water surface elevations be measured in the wells at the beginning of each sample collection procedure. The recommended locations of new sampling points are shown on Figure 17.

- Monitoring wells A1, T14, P16, N5B, and P13B were dry when the last sampling event was conducted. It may be possible to deepen these wells, and any others that have historically been dry, by use existing push technology whereby a smaller diameter well is inserted into the existing well. The success of this operation will depend on the structure of the existing wells. It is recommended that the possibility of extending these wells be investigated, and if feasible, these wells should be added to the list of those sampled.

- Add wells A2, A3, and N3B (s) to the list of wells sampled if they are functional and are shallow wells.

- Construct the new wells NW-1A through NW-9 at the locations shown on Figure 17. The construction of these wells should be in general accord with the monitoring well diagram shown on Figure 18. More detailed specifications for the construction of these wells can be provided if needed. Prior to construction of new wells, it is recommended that all of the existing wells be examined to determine that they are functioning properly, i.e., that they are in good hydraulic communication with the ground water. If any of these wells are not operating properly, it may be useful to either repair these wells or abandon them and construct new wells at these locations.

- The pipes in the circulating water (CW) system go from the circulating water pumps directly west and into the turbine buildings. It has been hypothesized by plant personnel that the concrete pipes

carrying the CW may have cracks and fissures in them that allow some of the pressurized high volume water from the CW system to charge up the surrounding ground water with overpressure. If this is the case, it could help explain the observed ground-water flow pattern. To test this hypothesis, it is recommended that one or more pressure transducers be placed below grade adjacent to one or more of the conduits carrying the CW. Data obtained from this transducer could then be correlated with the on/off pattern of the CW pumps. It may be possible to accomplish this test by placing transducers in existing monitoring wells that are located near the CW conduits.

TABLE 1

SAMPLING LOCATIONS

TABLE 1: SAMPLING LOCATIONS

LOCATION NAME	SAMPLING FREQUENCY	LOCATION TYPE	COMMENTS on ACTIVITY LEVELS
Deep Well 2	2 samples	Water supply well	BG
Deep Well 3	2 samples	Water supply well	BG
N2A	2 samples	MW/Deep	BG
N3A	2 samples	MW	BG
N5B	2 samples	MW	BG
N7A	Irregular/Multiple	MW	220K, '06
N8B	Irregular/Multiple	MW	LT 1K
N9B	Irregular/Multiple	MW	Consistently MT 100K '85-'88, Peaks above 400K in '85, '88, & '94'
N10B	Annually	MW	13K, '91
PY5	Quarterly	Sump	500K, '86; 850K,'88
P13A	2 samples	MW/Deep	BG, 3K
P15	4 samples	MW/Unknown	LT 3.5K
P15A	5 samples	MW/Deep	13K,'86
P15B	Irregular/Multiple	MW	30K, '90
P16	Monthly thru 4/87	MW	87 K '85
P17	2 samples	MW/Unknown	LT 1.6K
P17A	15/ Irregular	MW/deep	LT 1.7 K
P17B	25 samples	MW	5K, '86;most LT 1K
SS1, aka Y22N008A	Monthly	Sub-surface drain	Peaks: 20K, '86; 70K, '87; 30K, '88; 90K, '90; 97K,'00; 23K, '02, 17K, '04;
SS2, aka Y22N022A	Monthly thru 1990;	Sub-surface drain	2K, '85; most at BG
T2	Two/month thru '88; quarterly since '88	MW	29K. '85; 11K, '88; 14K, '91; 127K, '06
T3	Two/month thru '88; monthly since '88	MW	Multi high peaks (20-160K) from'85-'91; 72K, '00; 31K, '01
T4	Quarterly+ thru '88; annually since '89	MW	Mostly BG; 4K, '88
T5	Annually since '92	MW	Mostly BG; 2K, '04
T6	Annually since '86	MW	BG+
T7	Annually since '02	MW	BG+
T8	Quarterly thru '88; irregular since	MW	5K, '89
T10	Monthly thru '88; annual '89-'97, '00-'05; Monthly '06	MW	17K. '85; 36K, '95; 108K, '00; 1170K, '05
T11	Monthly thru '88;	MW	14K, '85; 32K, '95;

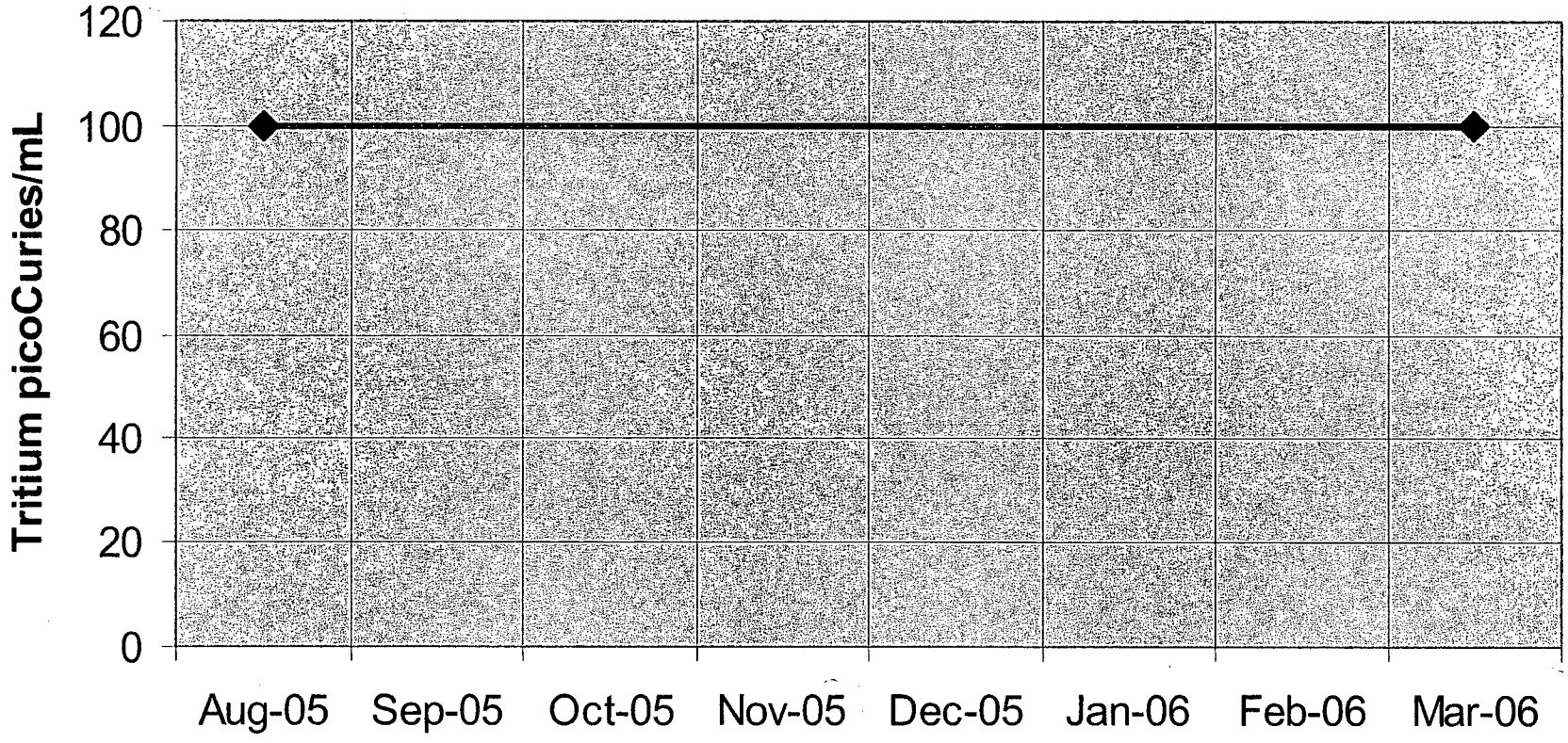
	annually since ;'89		**20K, '00; 218K, '05**
T12	**Monthly thru '88; quarterly since '89**	**MW**	**127K, '88; 72K, '89; 89K, '90; 70K, '91; 479K, '93; 490K, '94; 149K, '95; 44k, '96; 41K, '97; 463K, '99; 382K, '00; 391K, '01; 114K, '02; 4,070K, '03; 3100K' '04; 1060K, '05; 258K, '06**
T13	**Quarterly (approx.) thru '88; annually (approx) thru '05**	**MW**	**14K, '88; 22K, '00; 47K, '03; 313K, '05; 117K, '06**
T14	**Quarterly thru '86; one or two/year since '89**	**MW**	**84K, '06**
T15	**Quarterly thru '88; annually since '89**	**MW**	**95K, '05**
T16	**Quarterly thru '88; annually since '89**	**MW**	**24K, '02**
T18	**Quarterly thru '87; one in '88; one in '03**	**MW**	**486K, '03**
Y22N002A	**Five in '00**	**Drainage ditch (?)**	**BG+**
Y22N007A	**Monthly since '90**	**Drainage ditch (?)**	**9K, '98; 11K, '00; 4K, '01; 1K, '03; 3K, '05**
Y22N012A	**Four-twelve/yr from '90 thru '00, monthly since '01**	**Drainage ditch (?)**	**13K, '91; 36K, '96; 34K, '98; 13K, '03; 12K, '04; 27K, '06**
Y22N024A	**Monthly since '90**	**Drainage ditch (?)**	**4K, '96; 30K, '98; 5K, '01**

Notes: All tritium activity levels are in pico curies/liter; BG=background; LT=less than; MT=more than; high lighted values are GT 100K pCi/L.

APPENDIX A

TIME TREND GRAPHS

Figure A-1 Deep Well #2



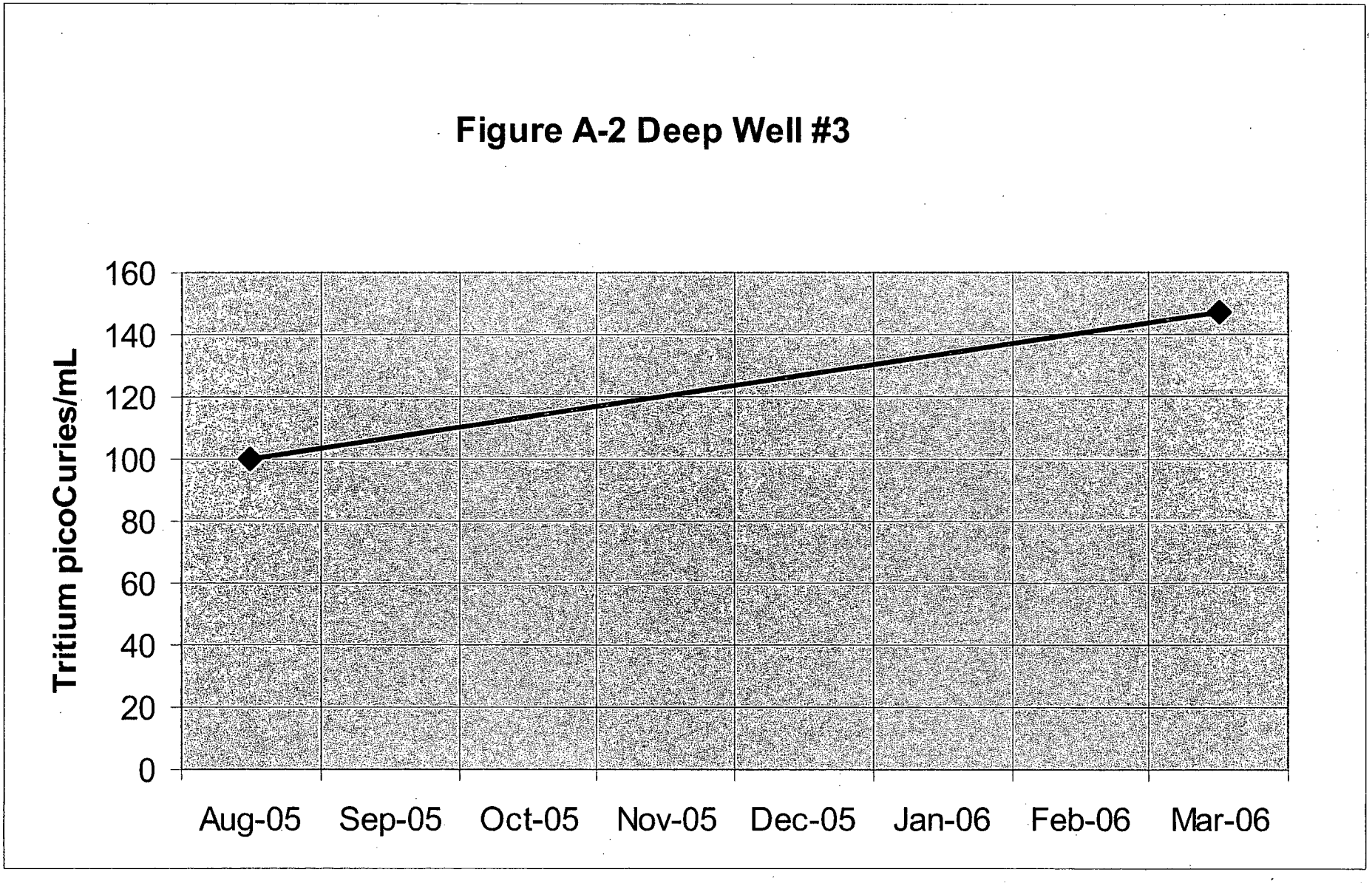


Figure A-2 Deep Well #3
Tritium picoCuries/mL
160
140
120
100
80
60
40
20
0
Aug-05
Sep-05
Oct-05
Nov-05
Dec-05
Jan-06
Feb-06
Mar-06

Figure A-3 N2A (MW)

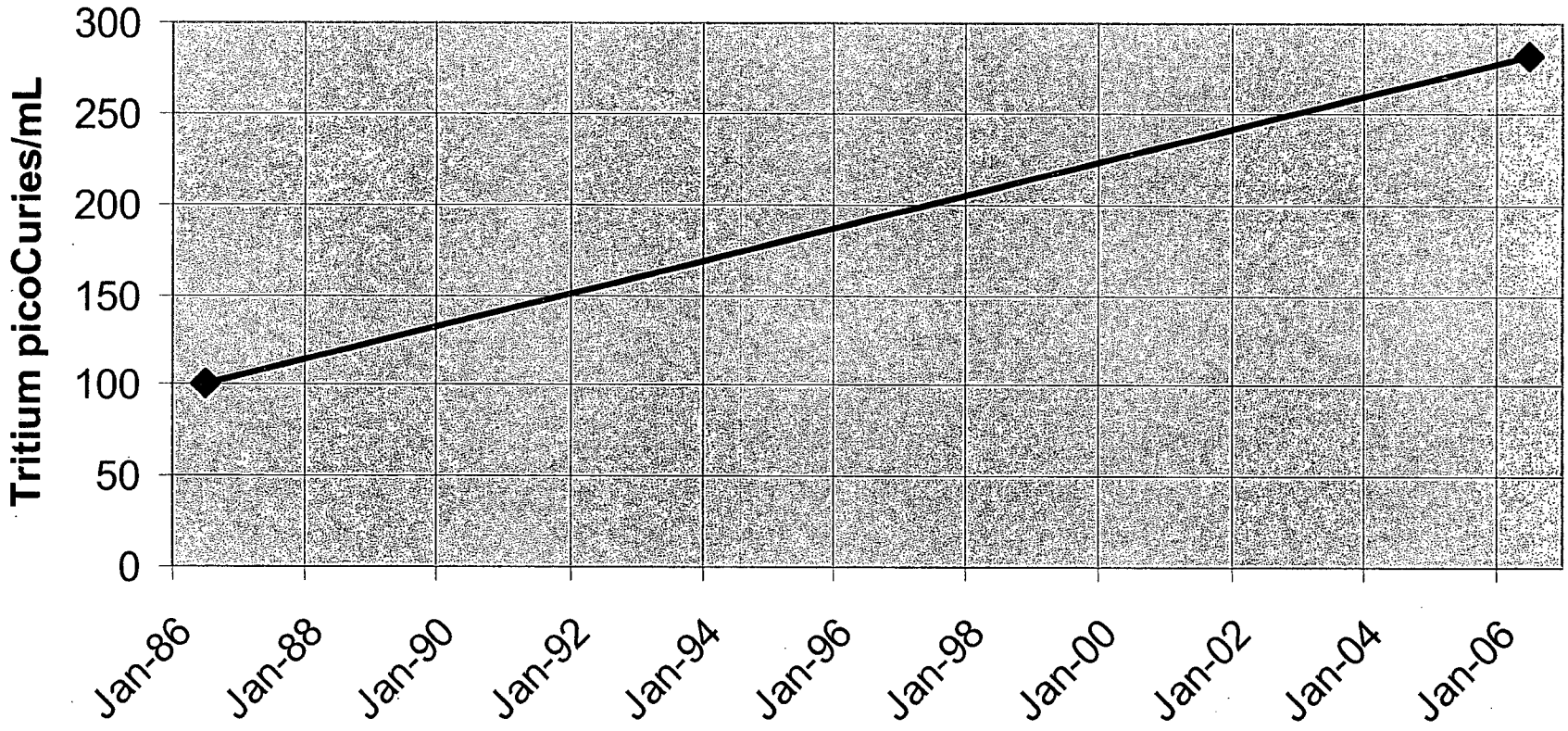


Figure A-4 N3A (MW)

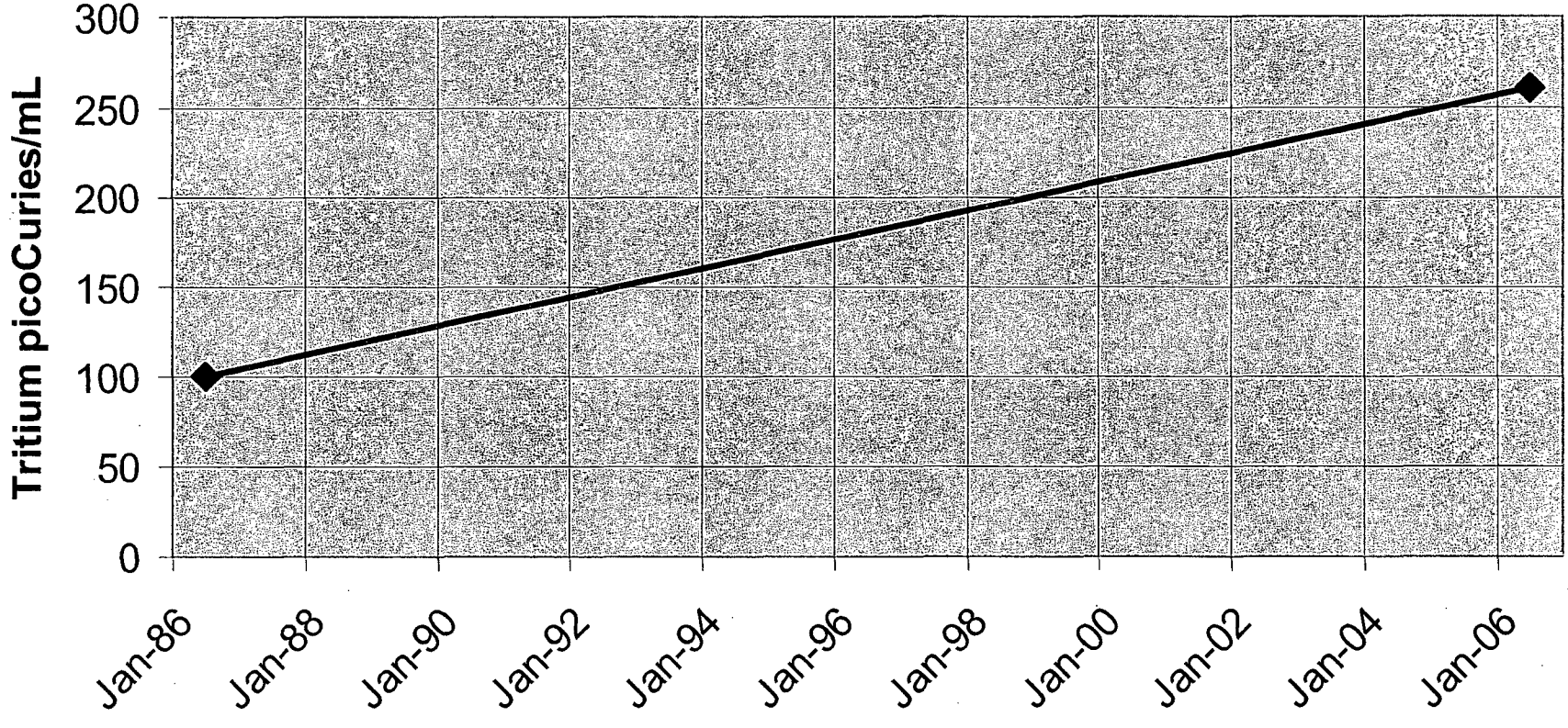


Figure A-5 N5B (MW)

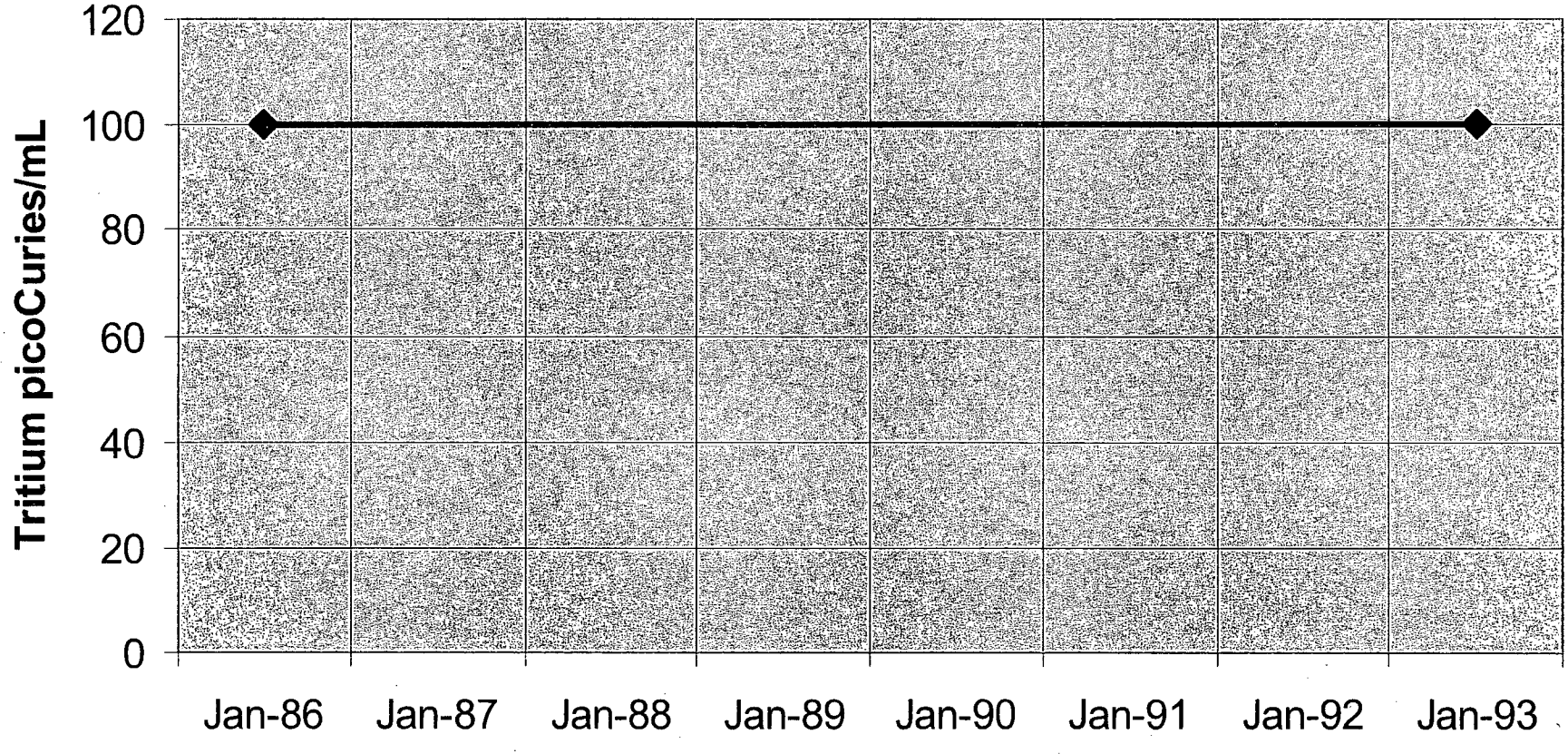


Figure A-6 N7A (MW)

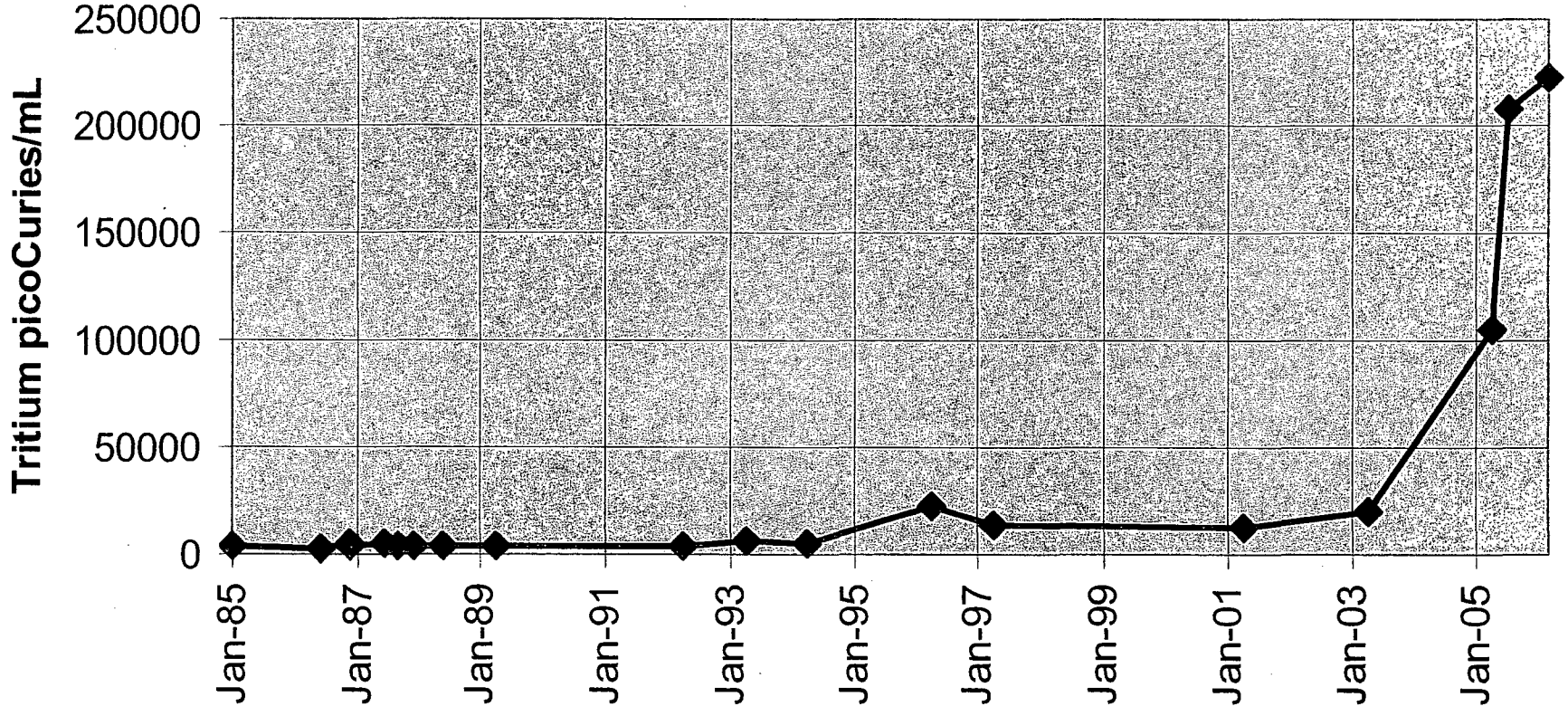


Figure A-7 N8B (MW)

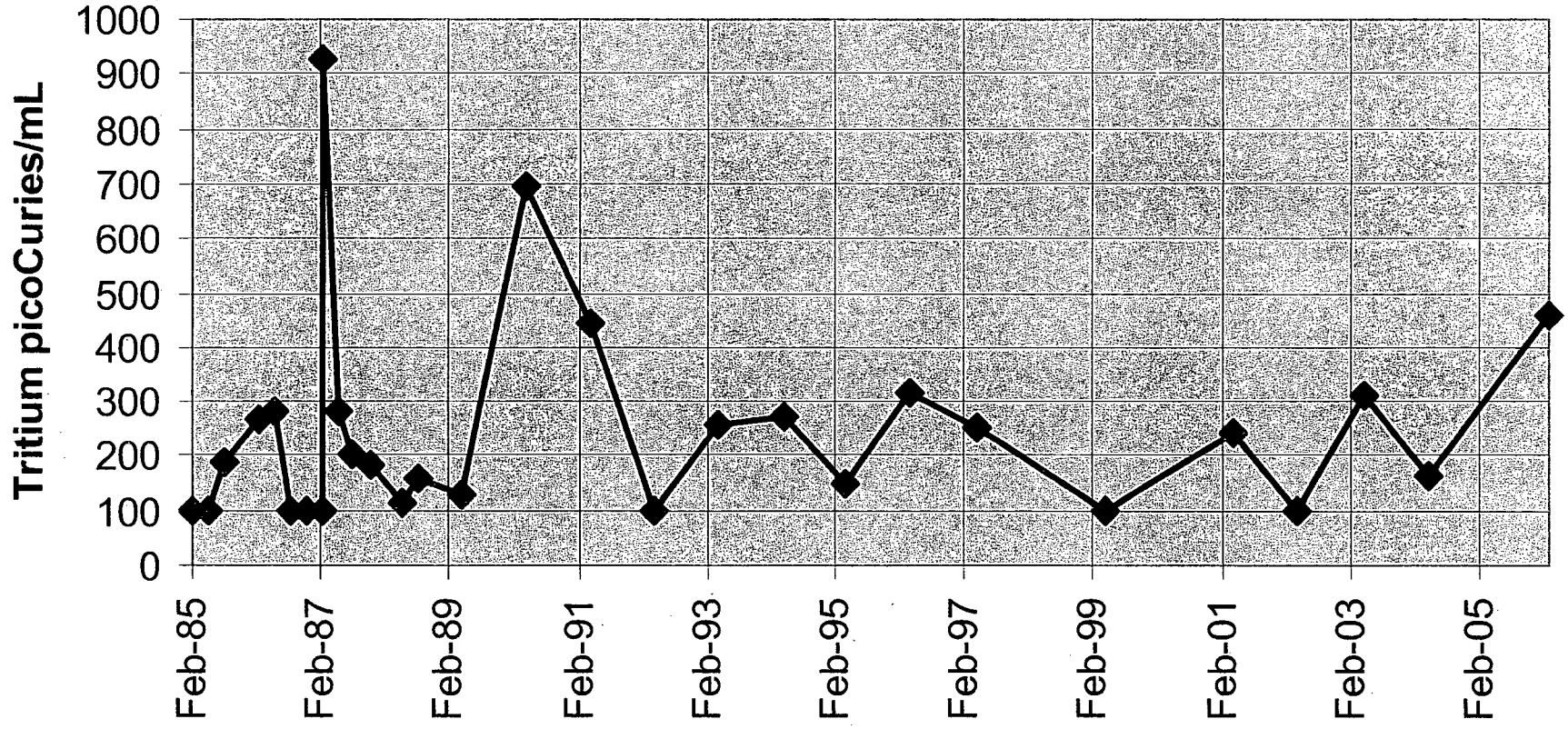


Figure A-8 N9B (MW)

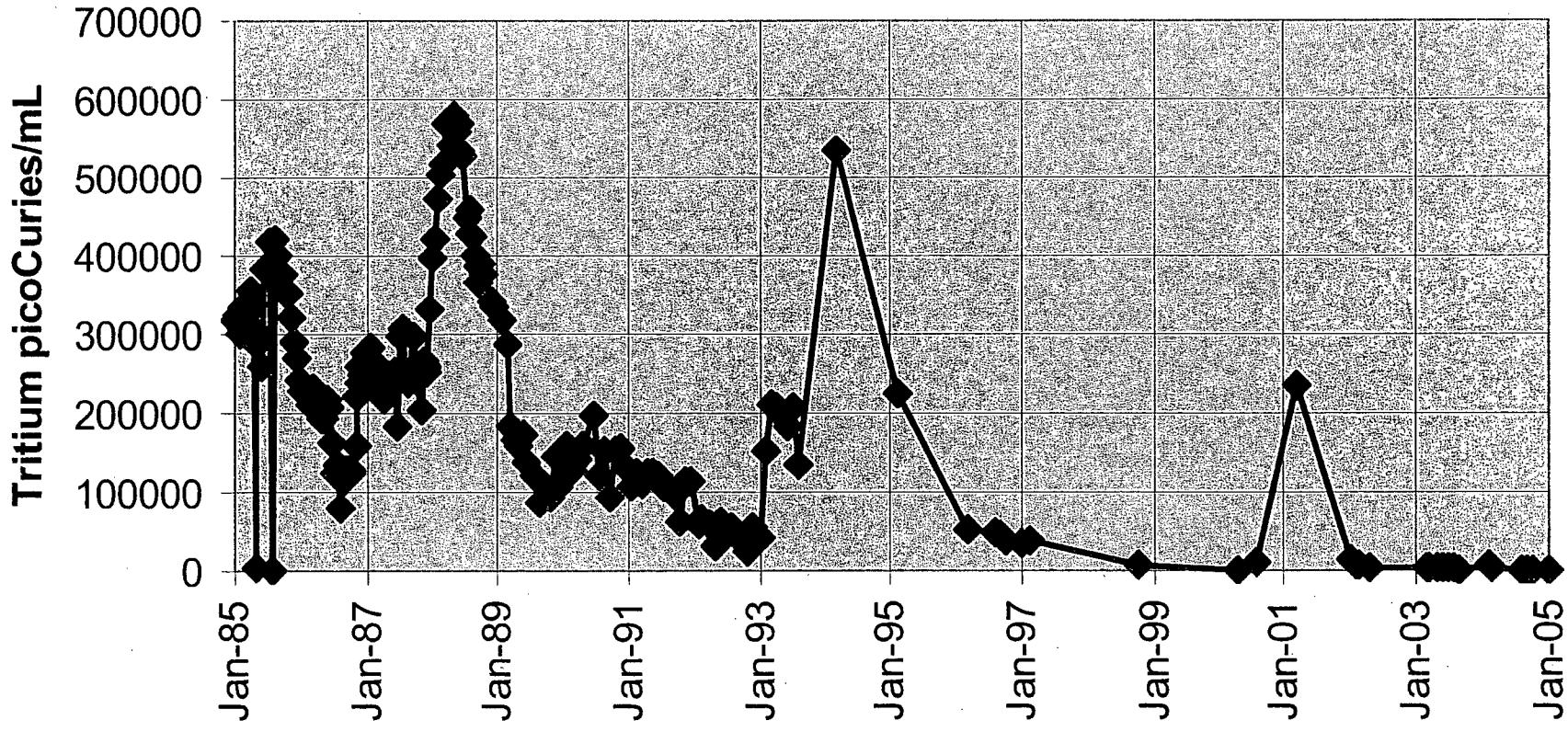


Figure A-9 N10B (MW)

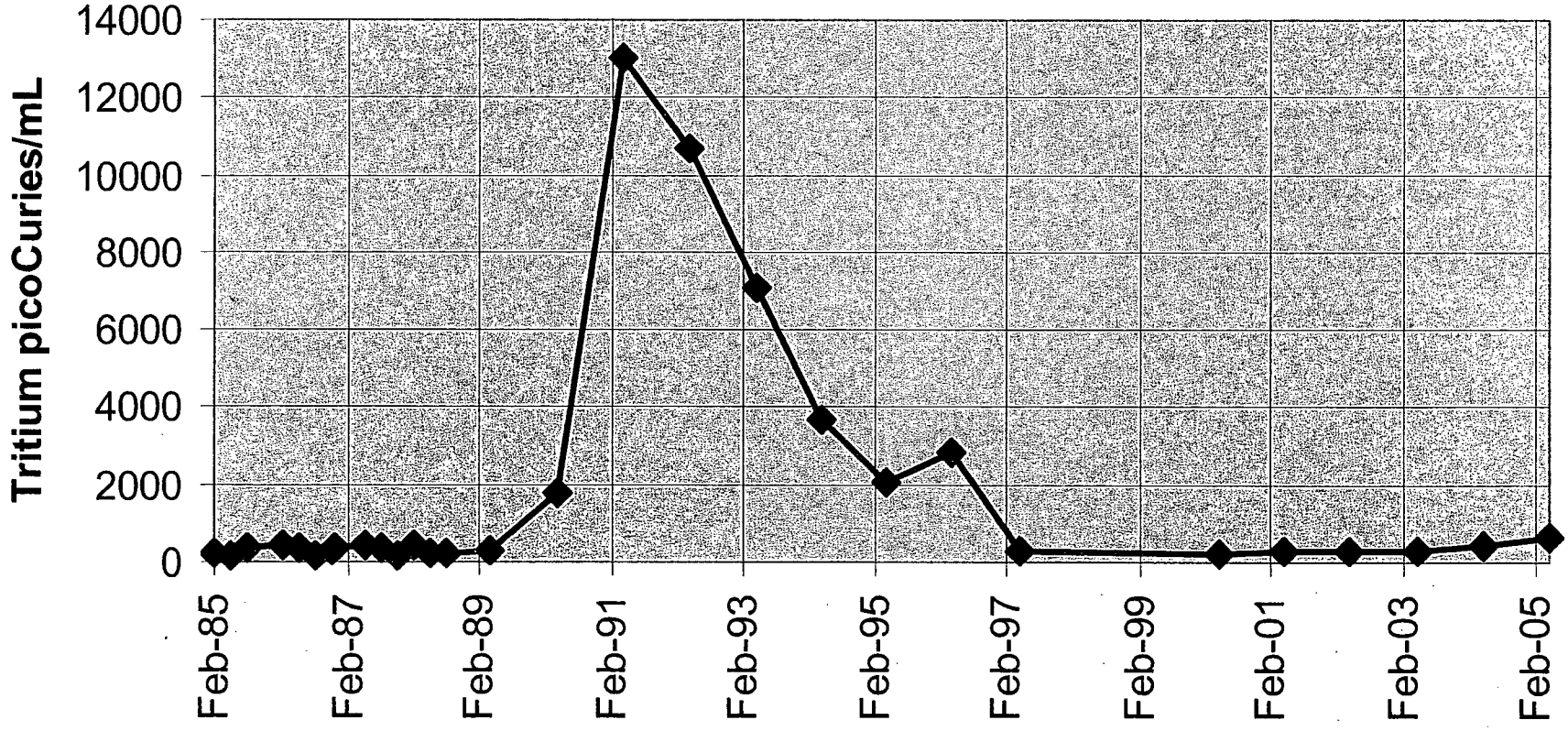


Figure A-10 PY5 (Sump)

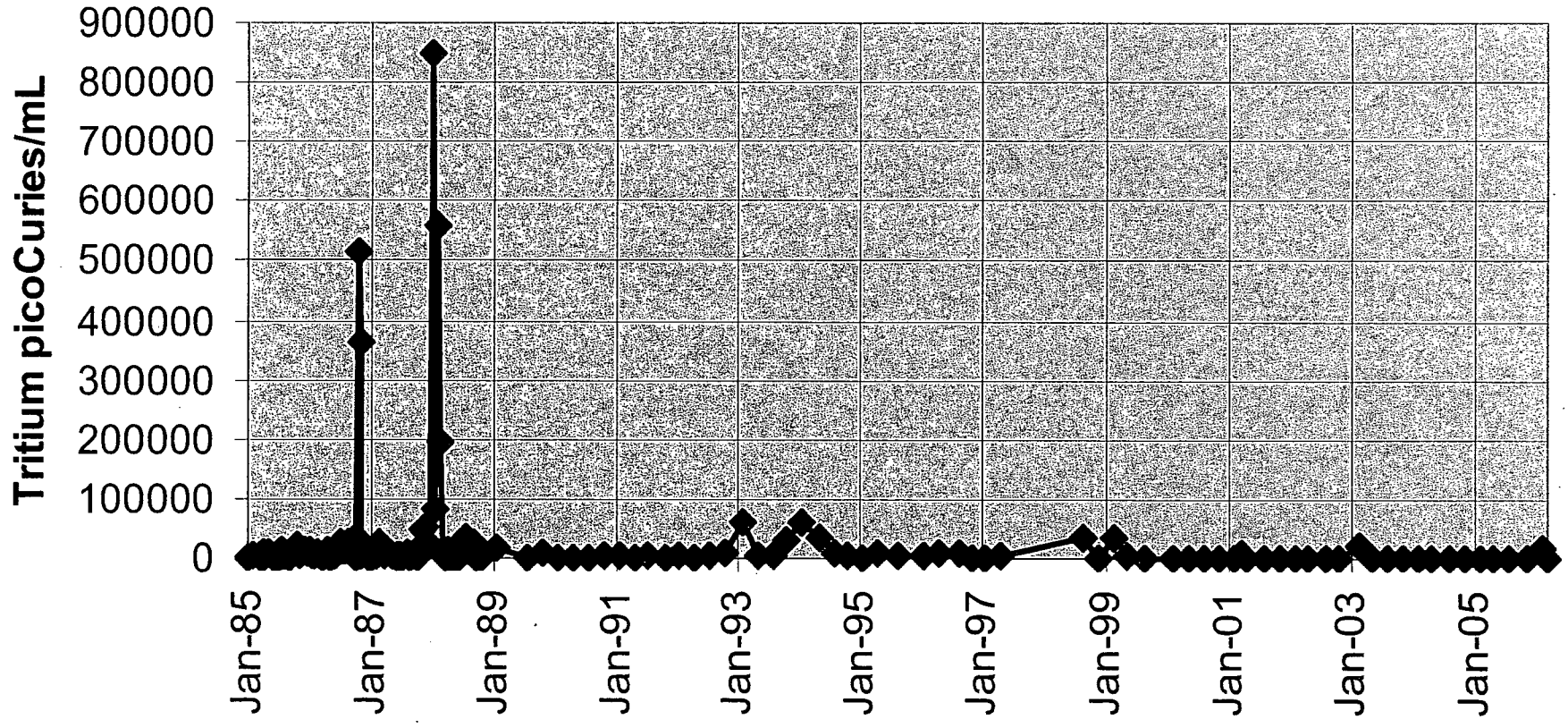
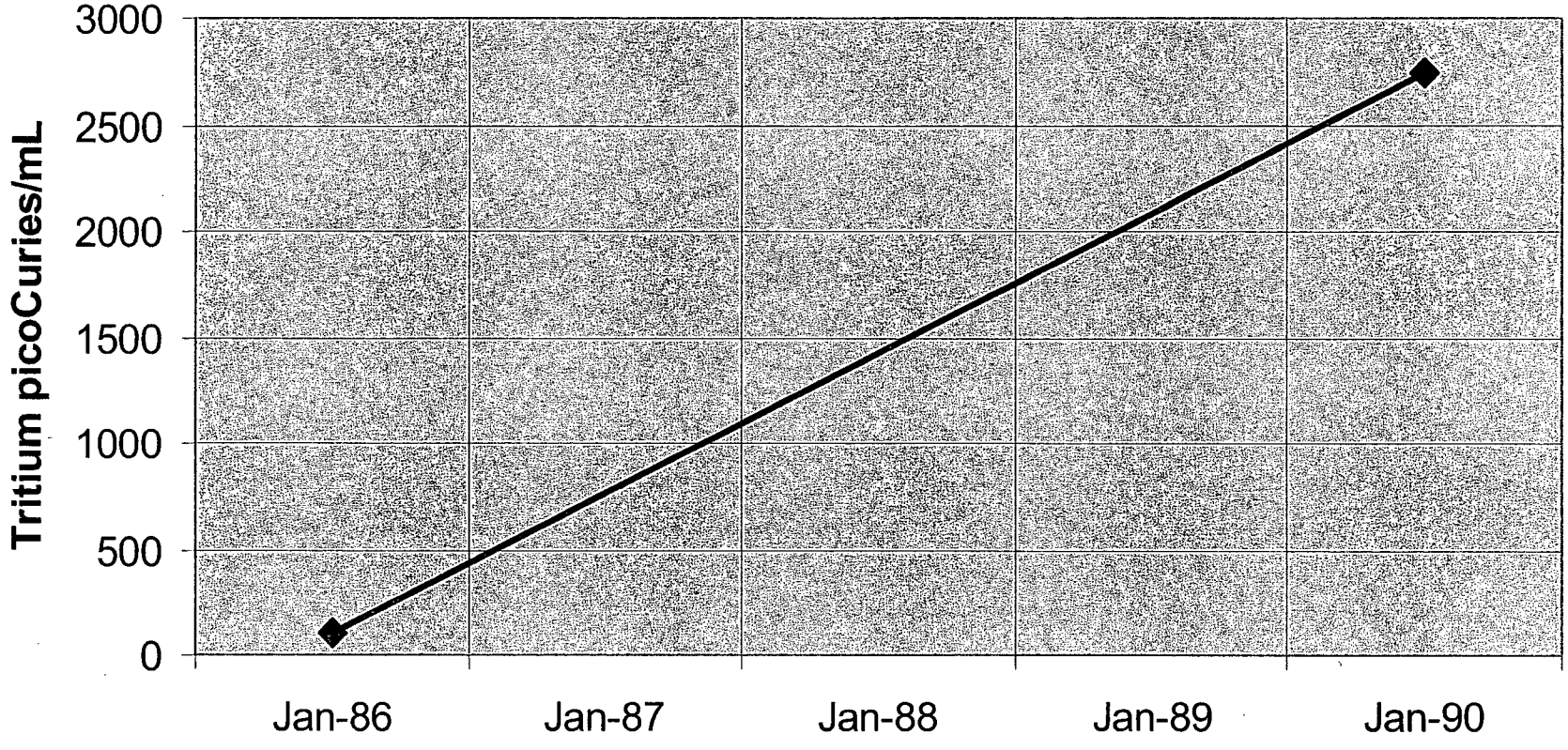


Figure A-11 P13A (MW)



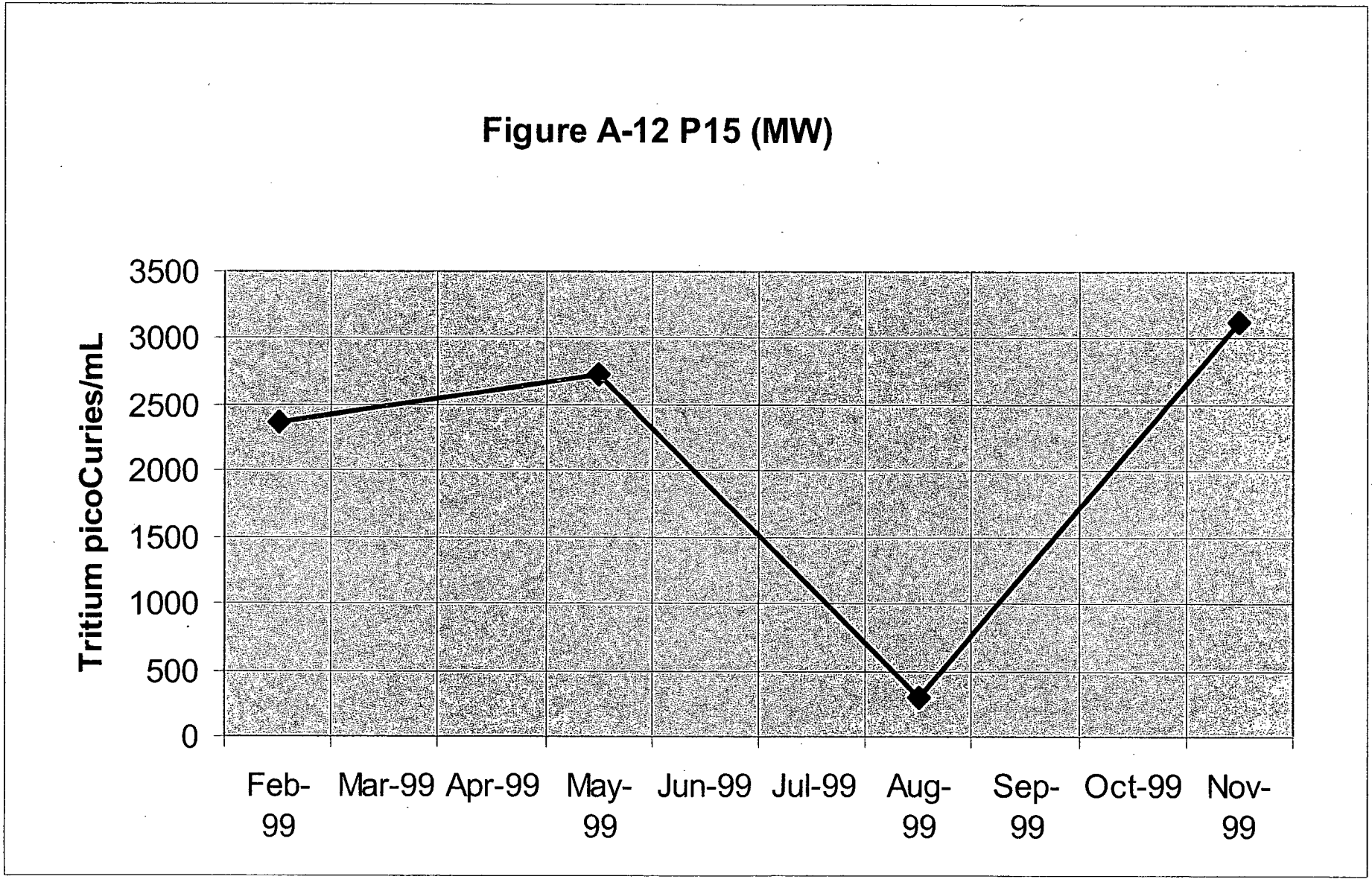


Figure A-12 P15 (MW)
Tritium picoCuries/mL
3500
3000
2500
2000
1500
1000
500
0
Feb-99
Mar-99
Apr-99
May-99
Jun-99
Jul-99
Aug-99
Sep-99
Oct-99
Nov-99

Figure A-13 P15A (MW)

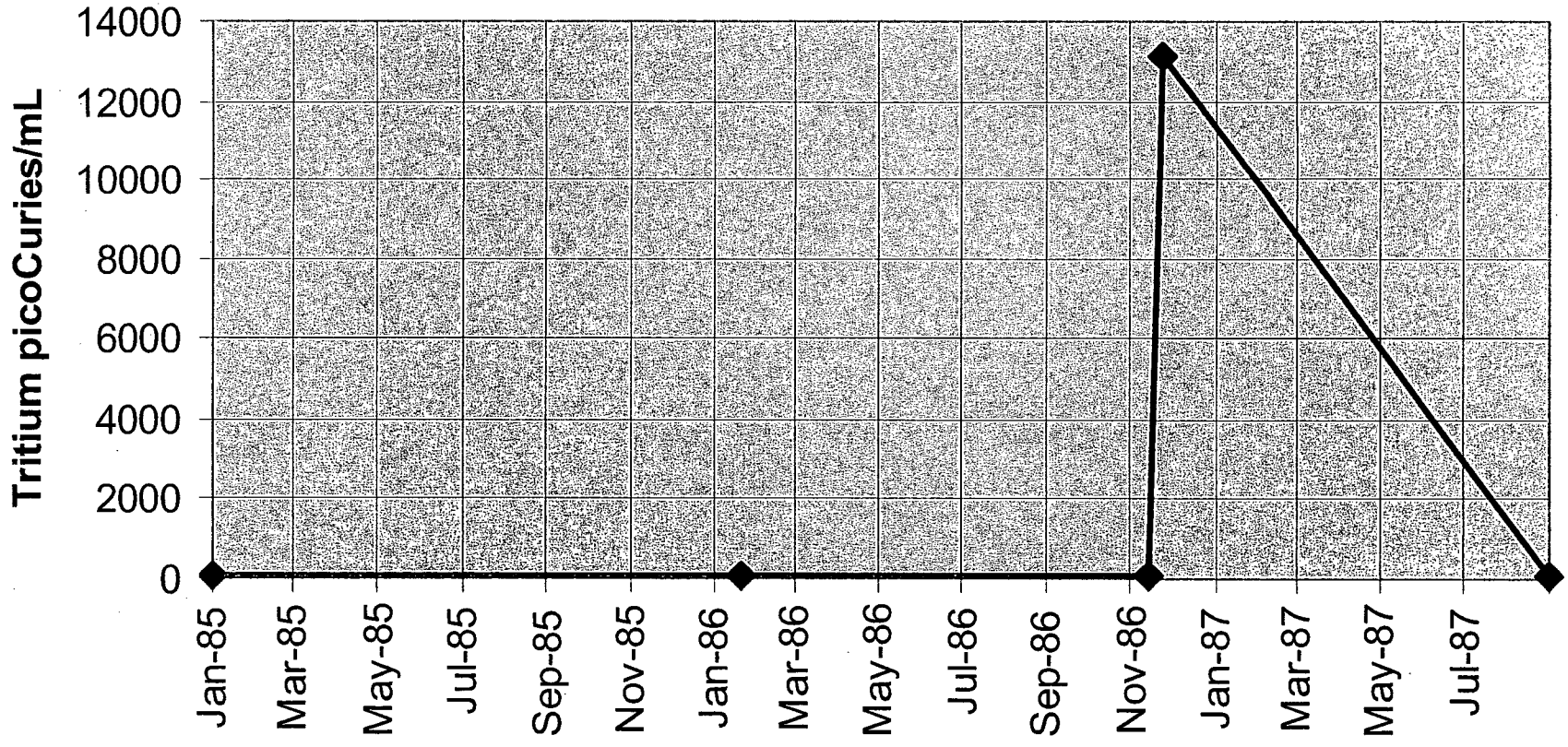


Figure A-14 P15B (MW)

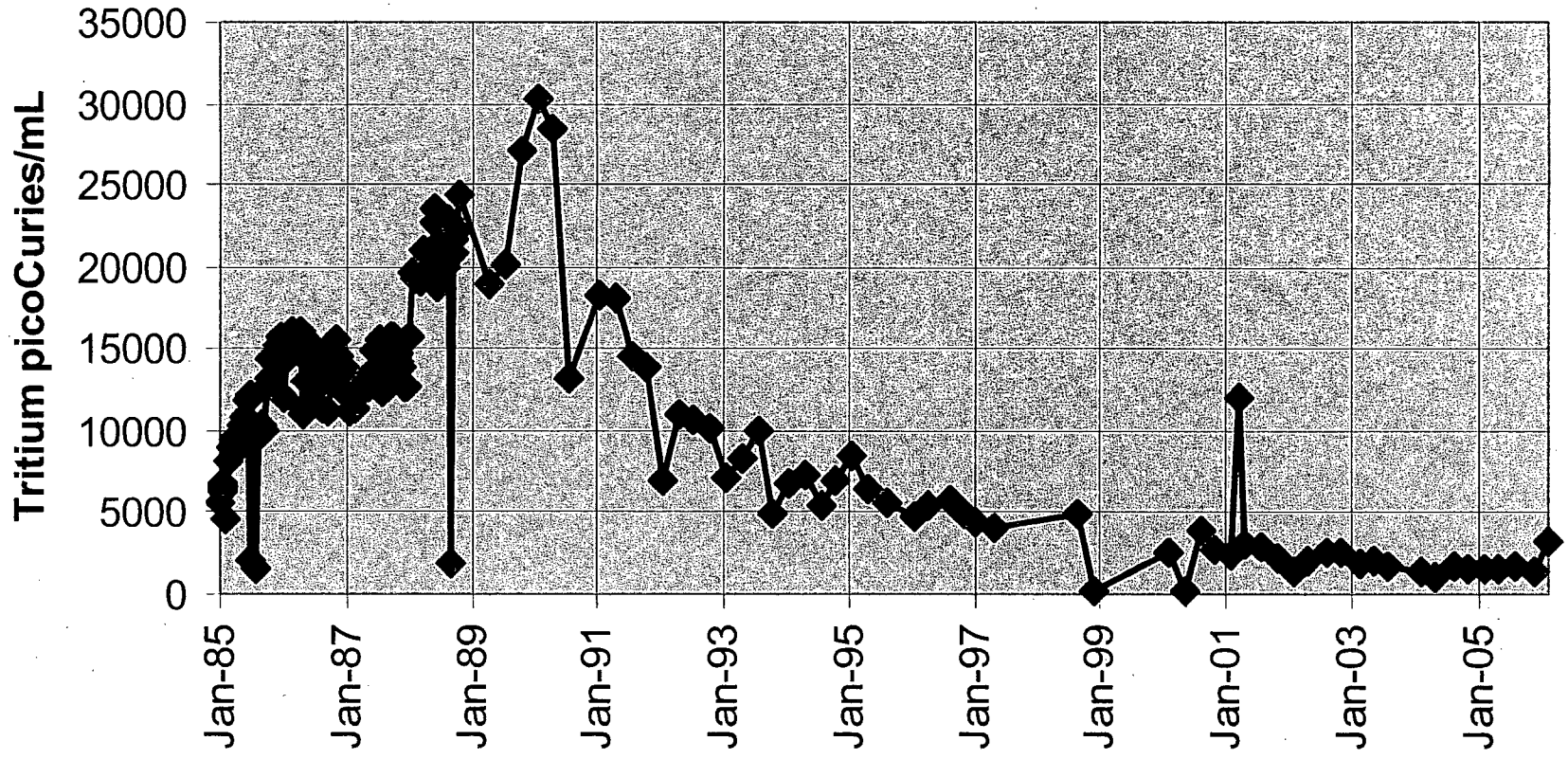


Figure A-15 P16 (MW)

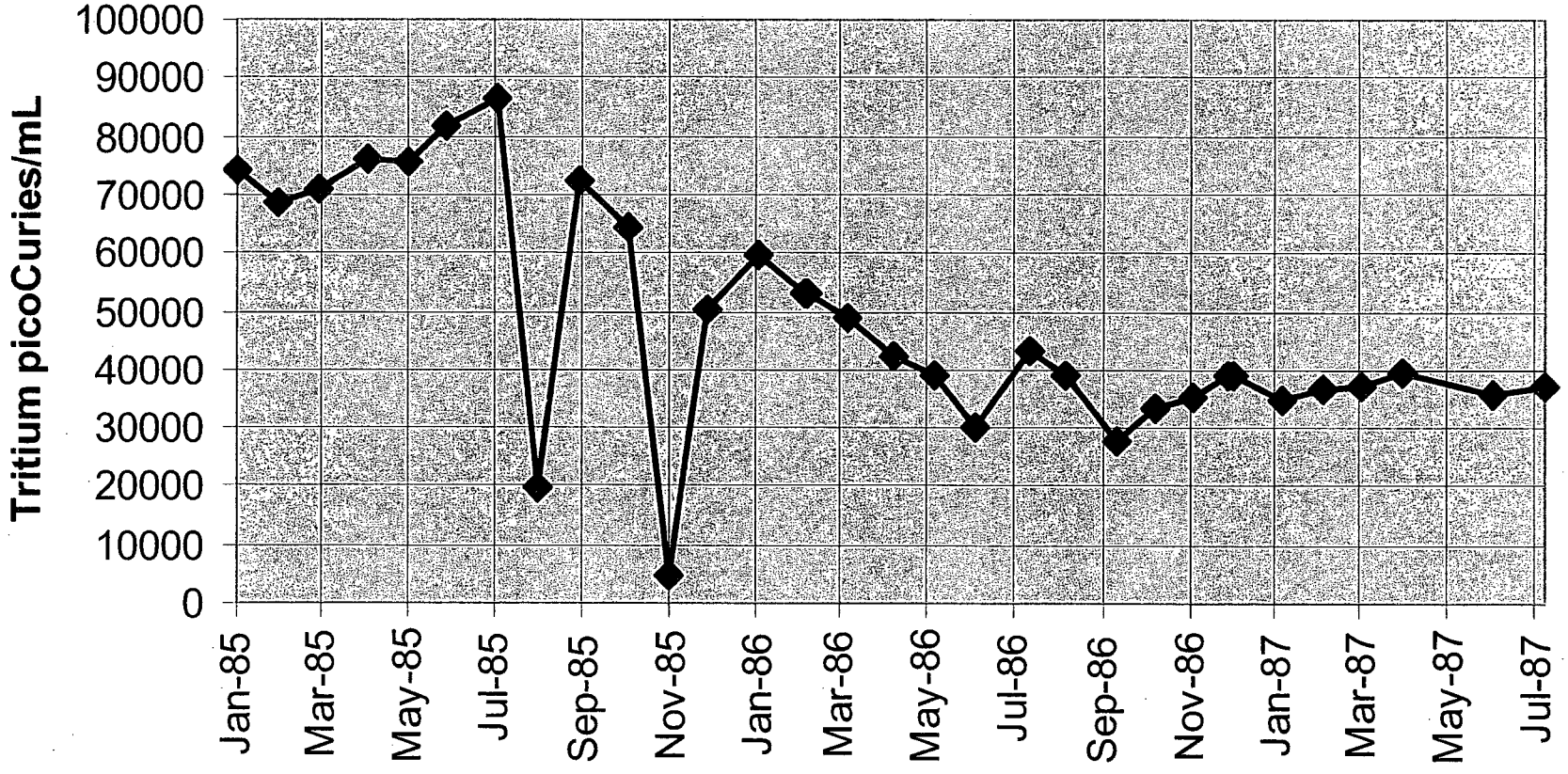


Figure A-16 P17 (MW)

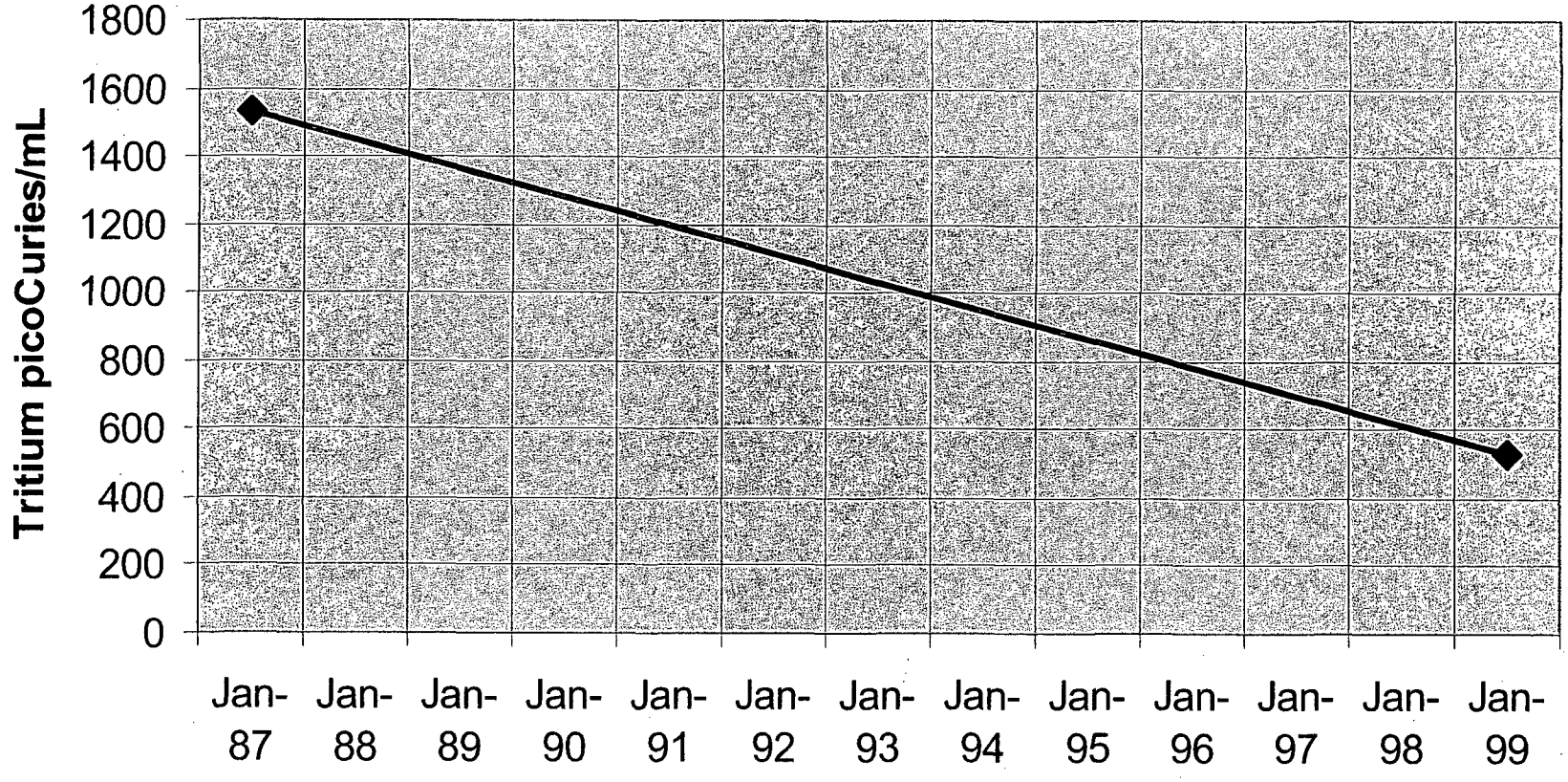
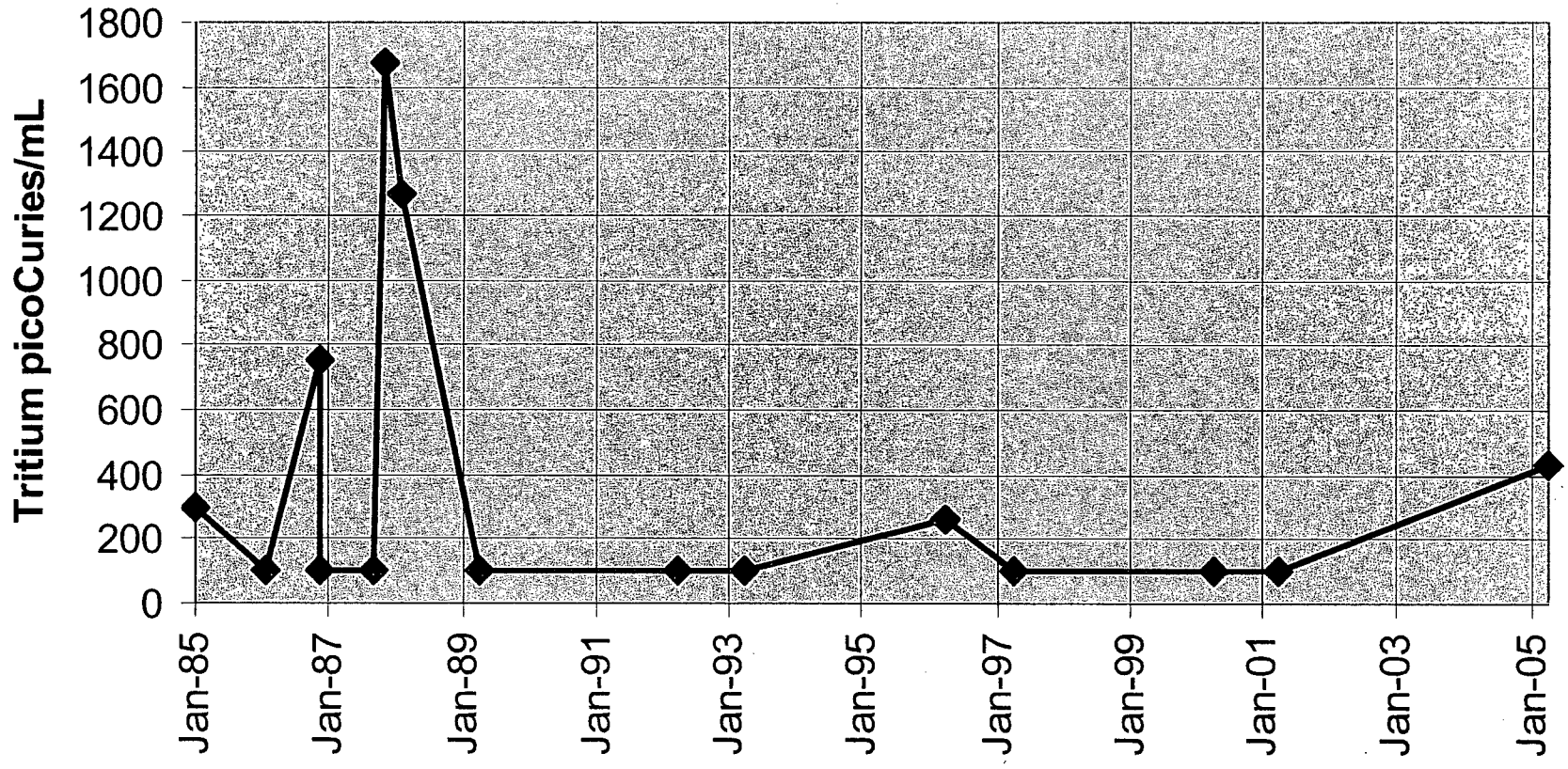


Figure A-17 P17A (MW)



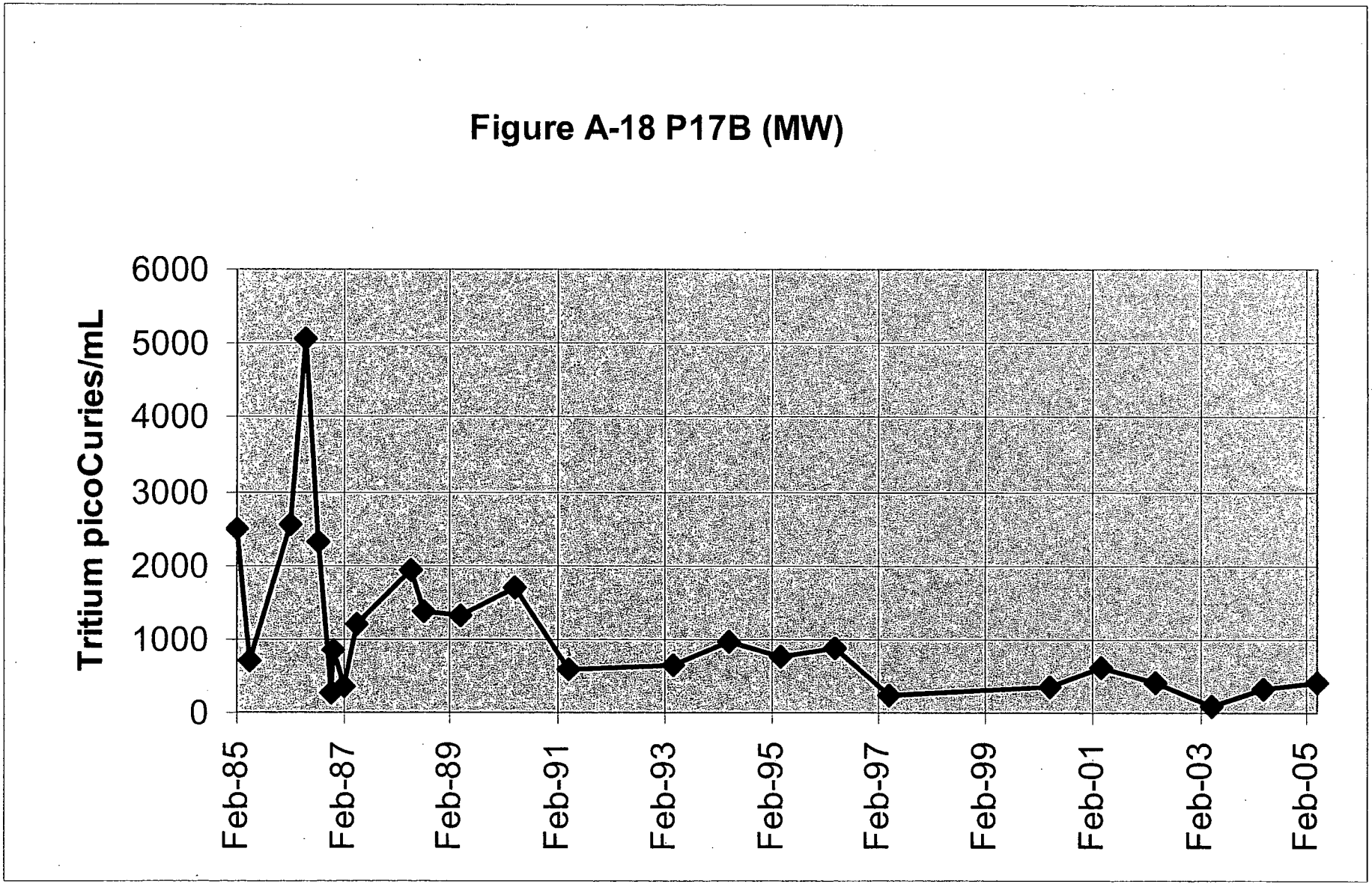


Figure A-18 P17B (MW)
Tritium picoCuries/mL
6000
5000
4000
3000
2000
1000
0
Feb-85
Feb-87
Feb-89
Feb-91
Feb-93
Feb-95
Feb-97
Feb-99
Feb-01
Feb-03
Feb-05

Figure A-19 SS1 (Subsurface Drain #1)

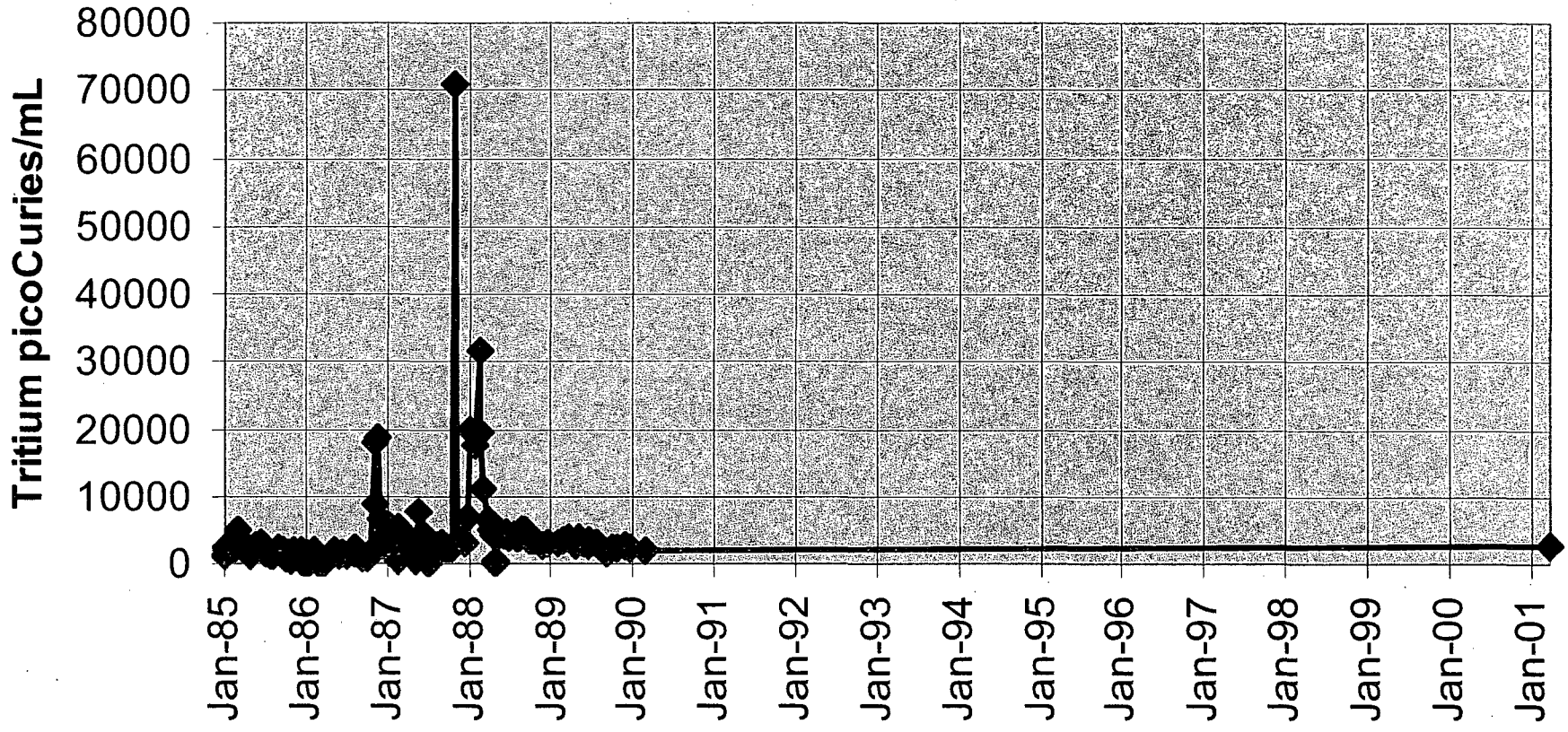


Figure A-19 SS2 (Subsurface Drain #2)

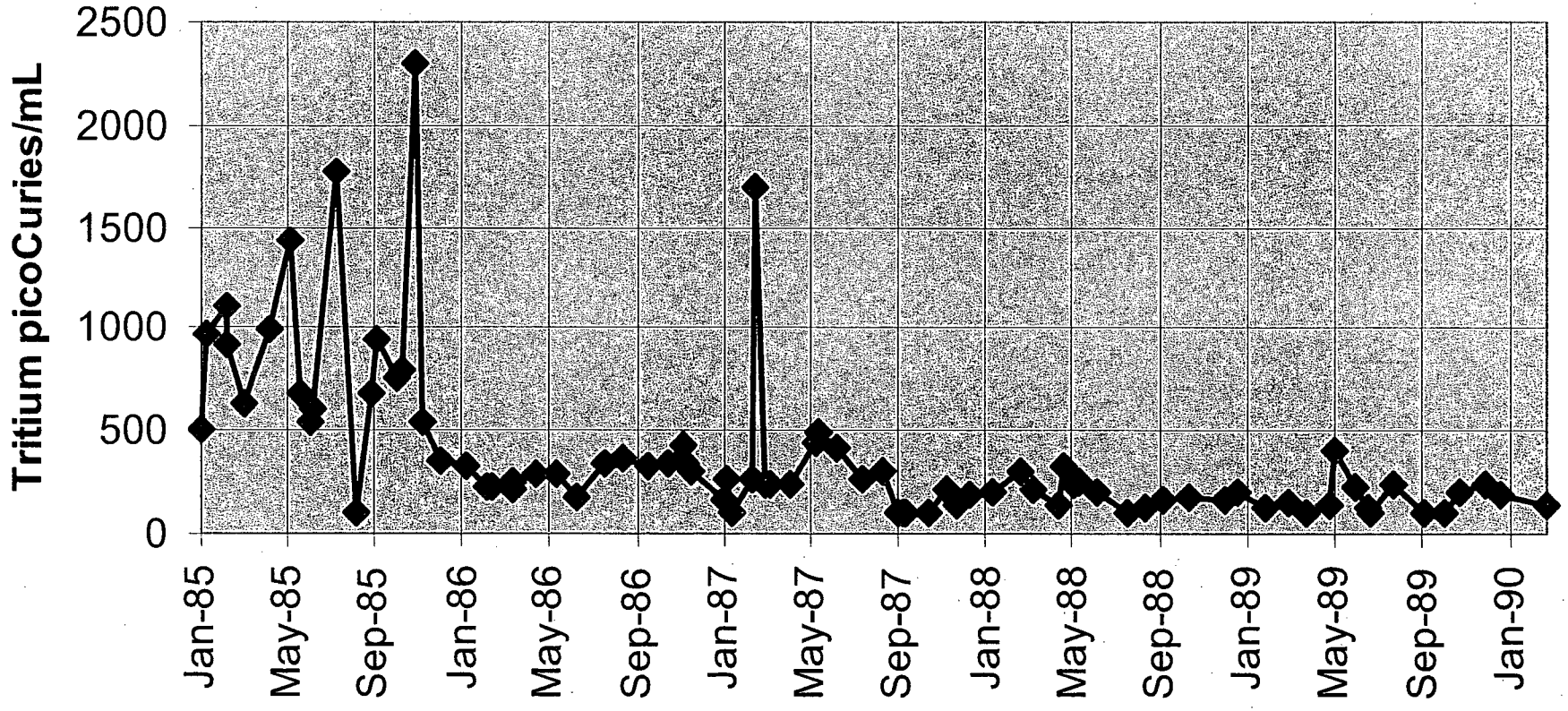


Figure A-20 Y22N008A (Subsurface Drain #1)

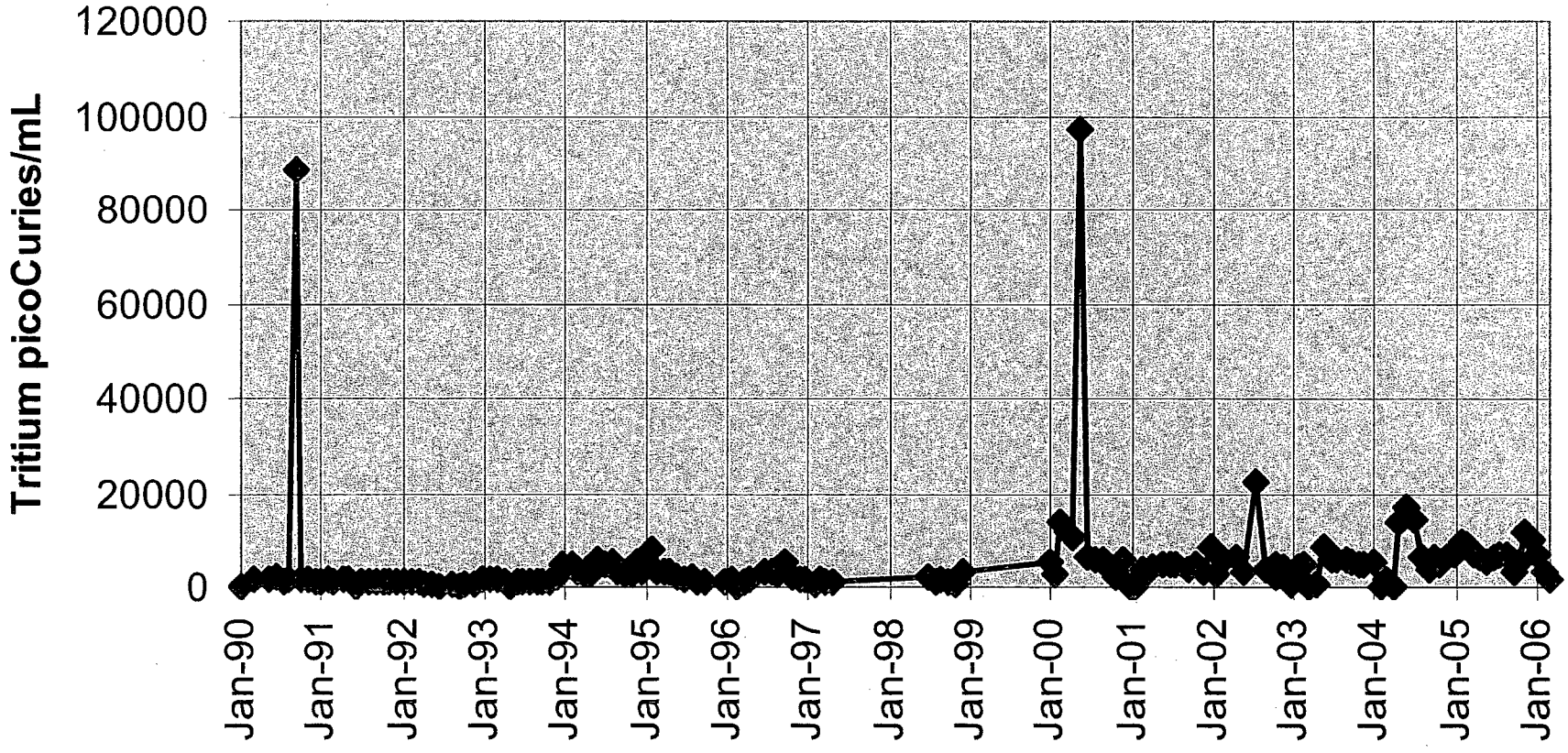
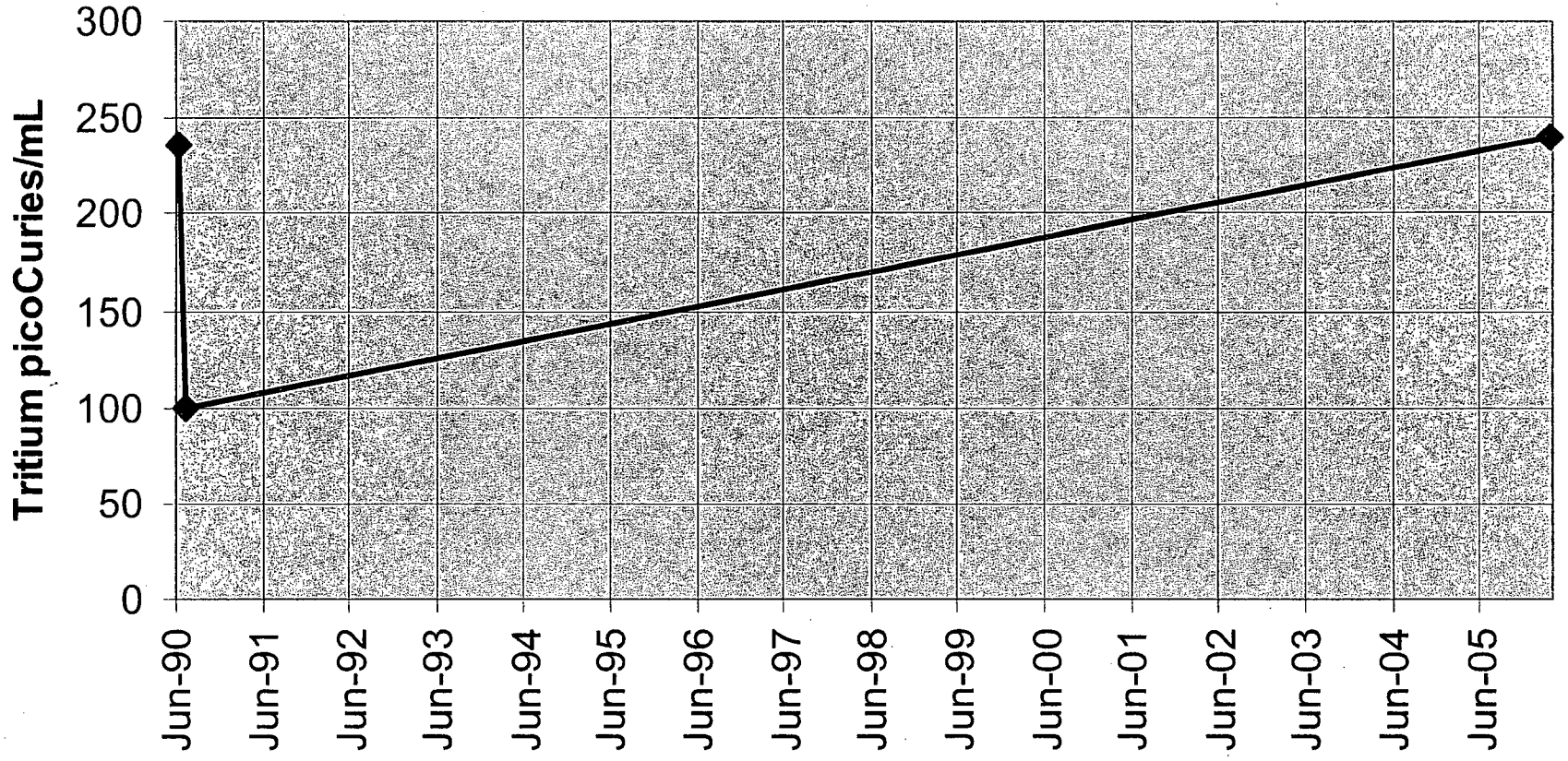


Figure A-20 Y22N022A (Subsurface Drain #2)



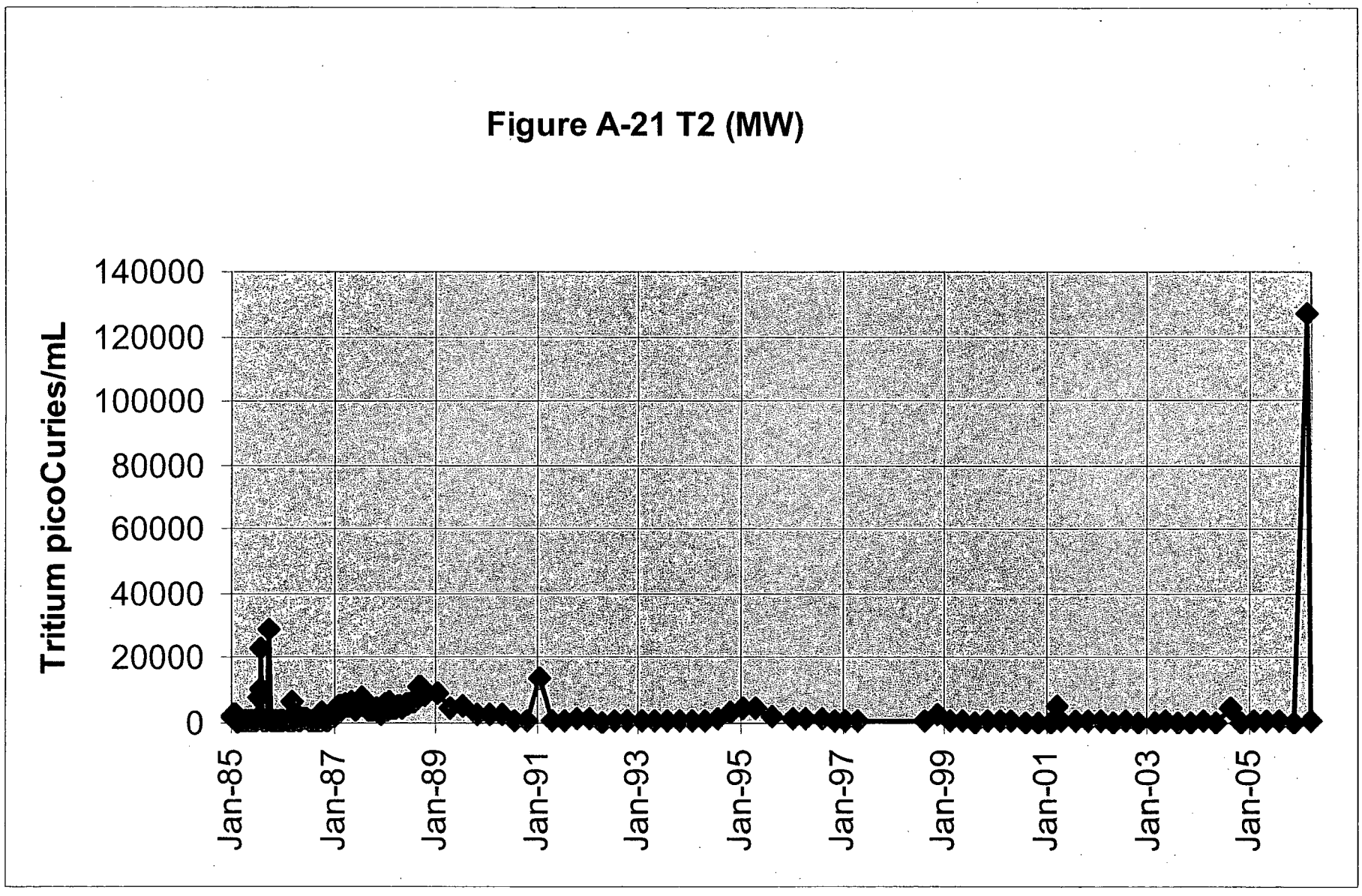


Figure A-21 T2 (MW)
Tritium picoCuries/mL
140000
120000
100000
80000
60000
40000
20000
0
Jan-85
Jan-87
Jan-89
Jan-91
Jan-93
Jan-95
Jan-97
Jan-99
Jan-01
Jan-03
Jan-05

Figure A-22 T3 (MW)

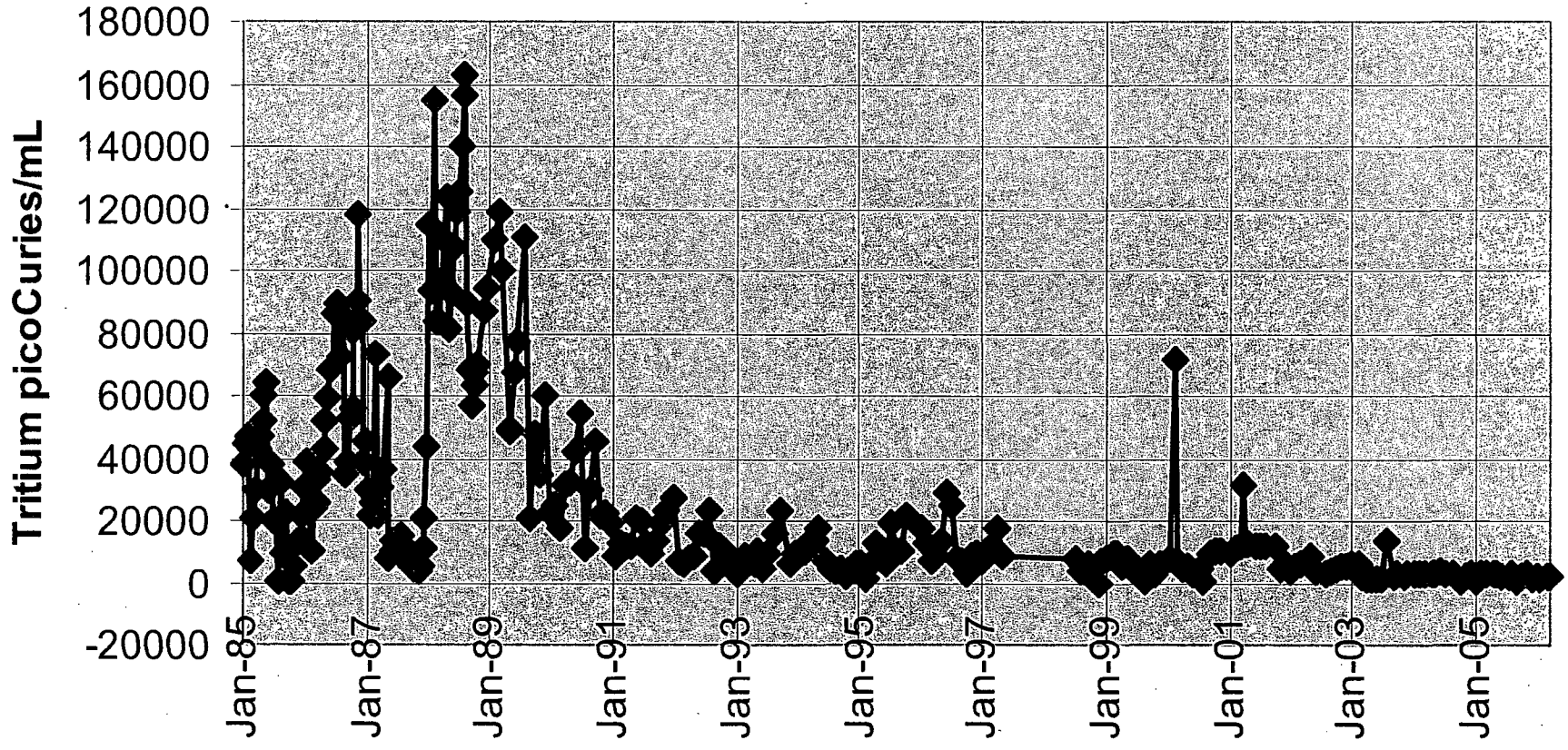
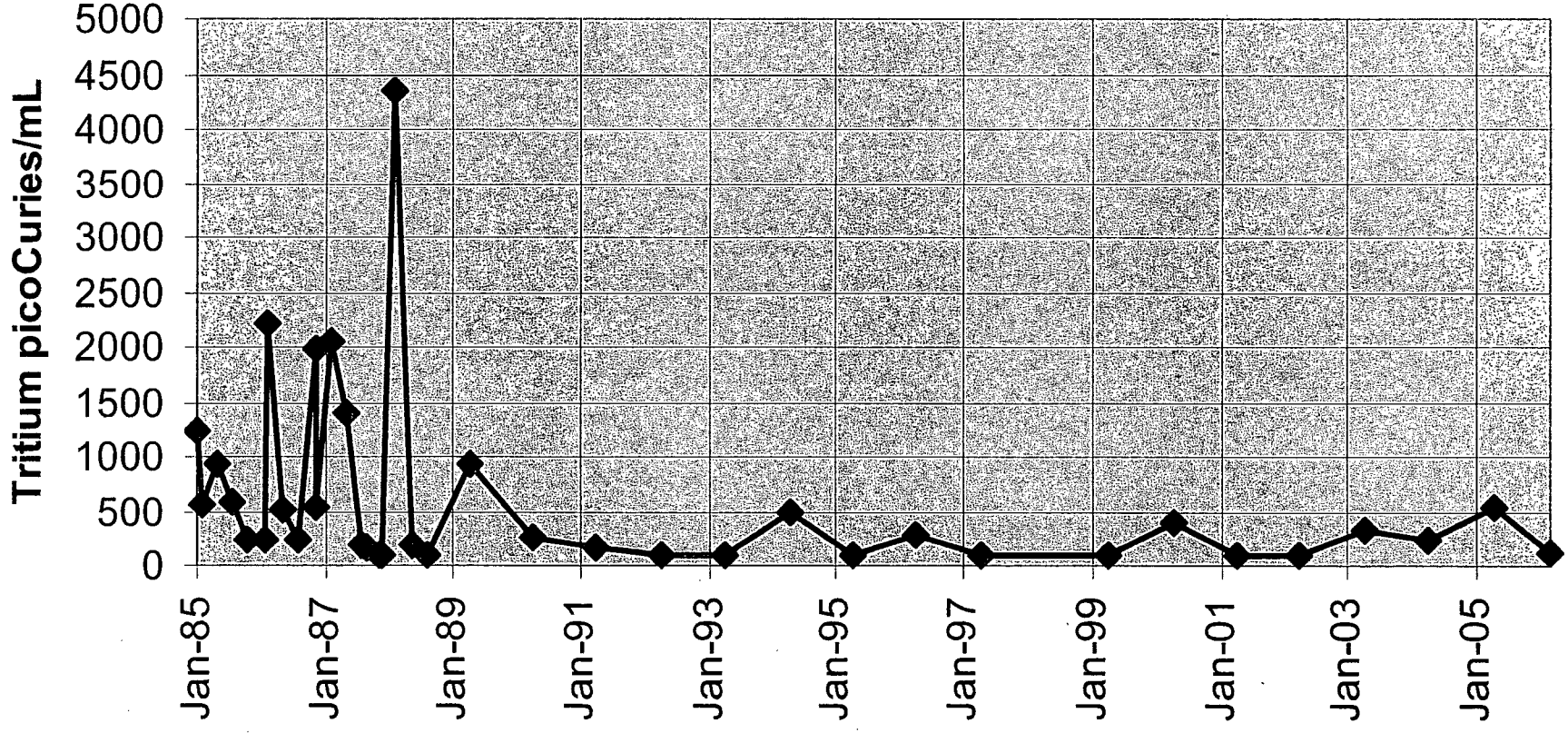


Figure A-23 T4 (MW)



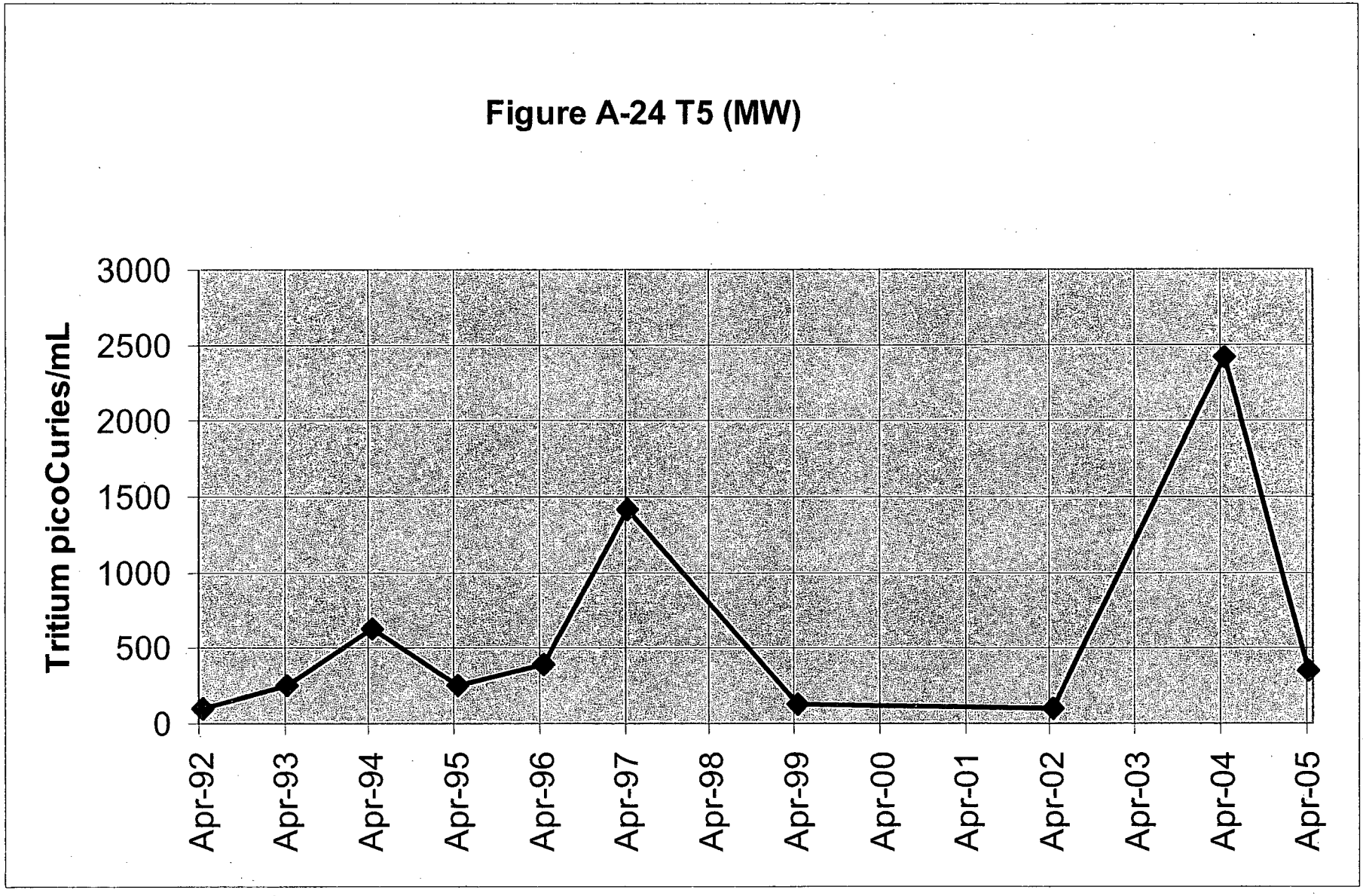


Figure A-24 T5 (MW)
Tritium picoCuries/mL
3000
2500
2000
1500
1000
500
0
Apr-92
Apr-93
Apr-94
Apr-95
Apr-96
Apr-97
Apr-98
Apr-99
Apr-00
Apr-01
Apr-02
Apr-03
Apr-04
Apr-05

Figure A-25 T6 (MW)

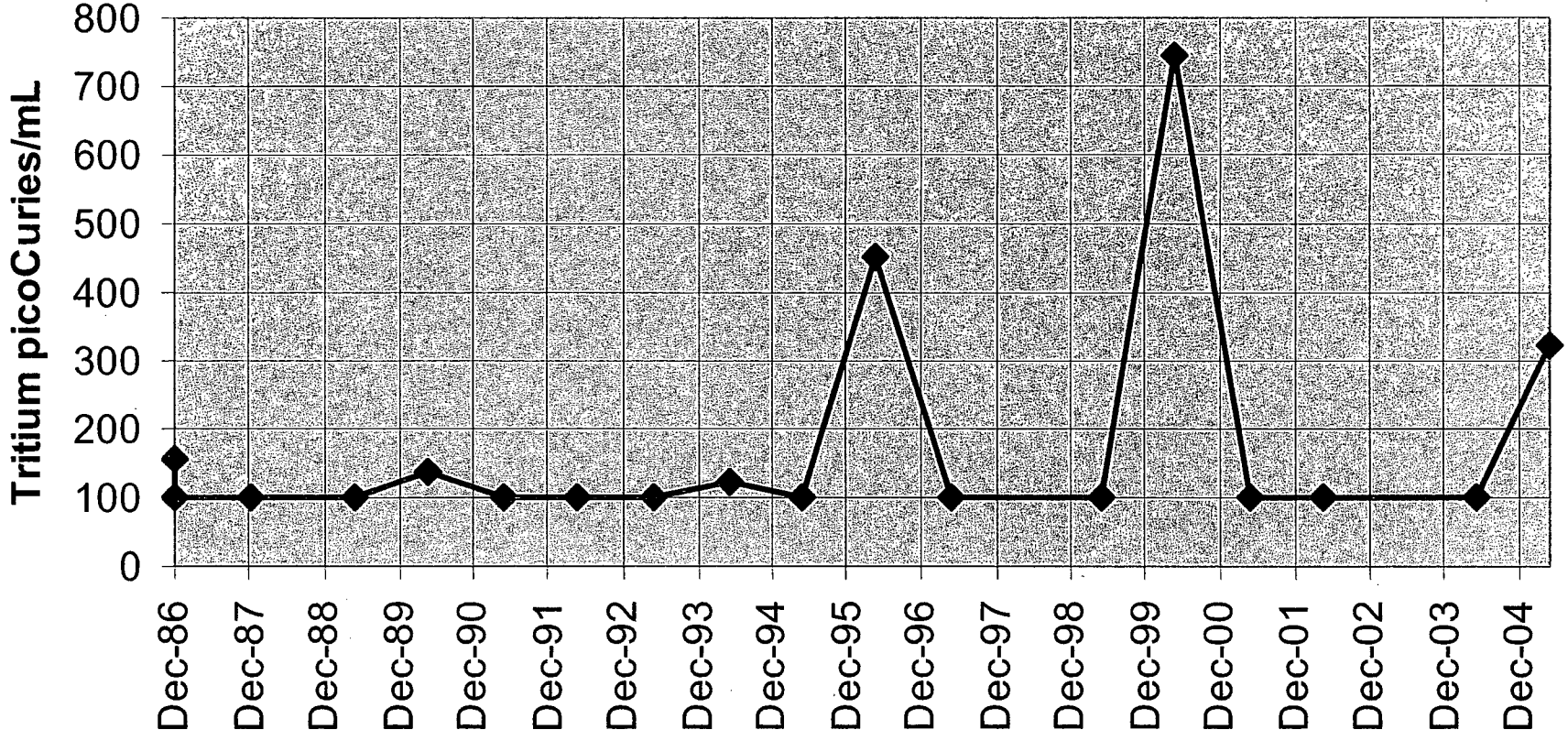


Figure A-26 T7 (MW)

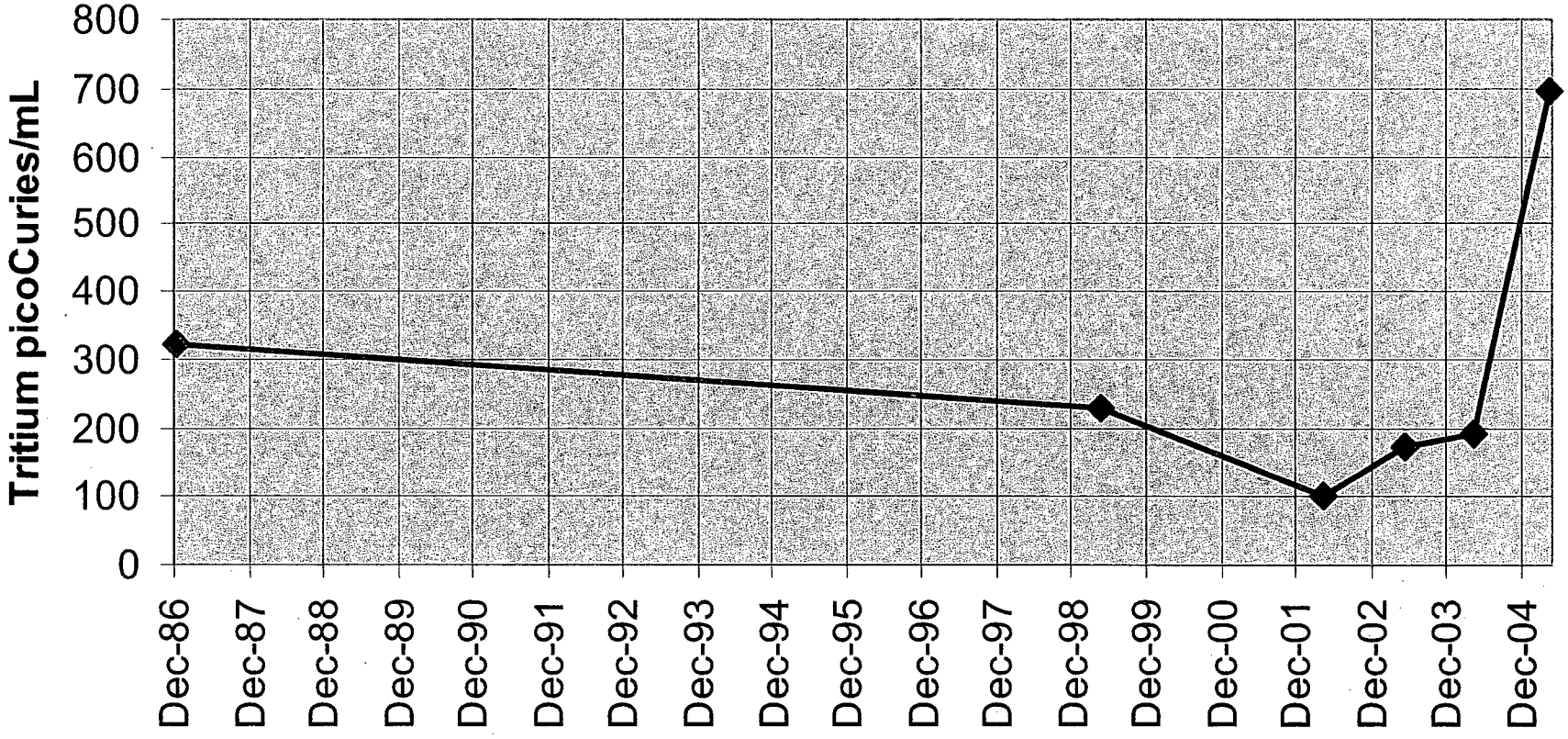
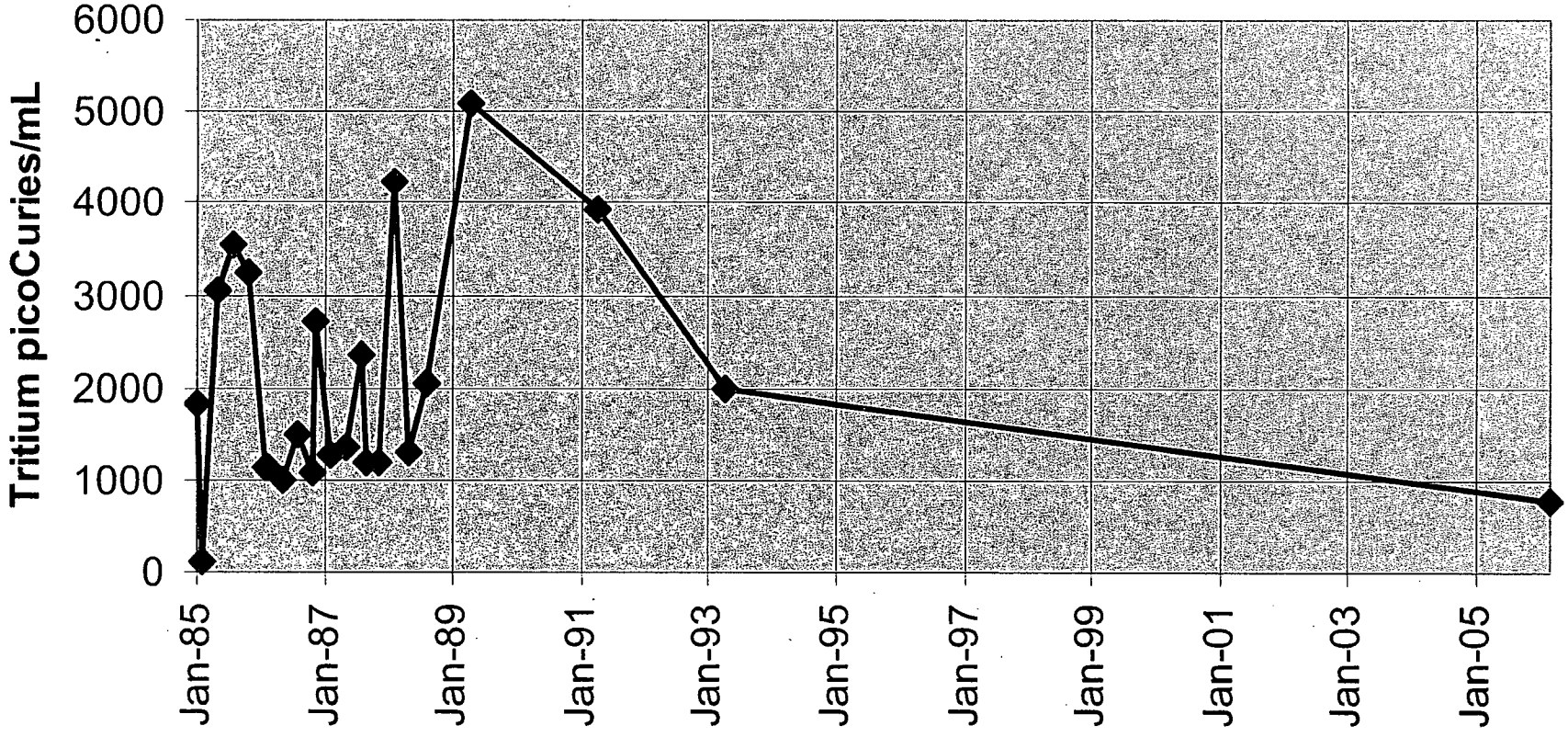


Figure A-27 T8 (MW)



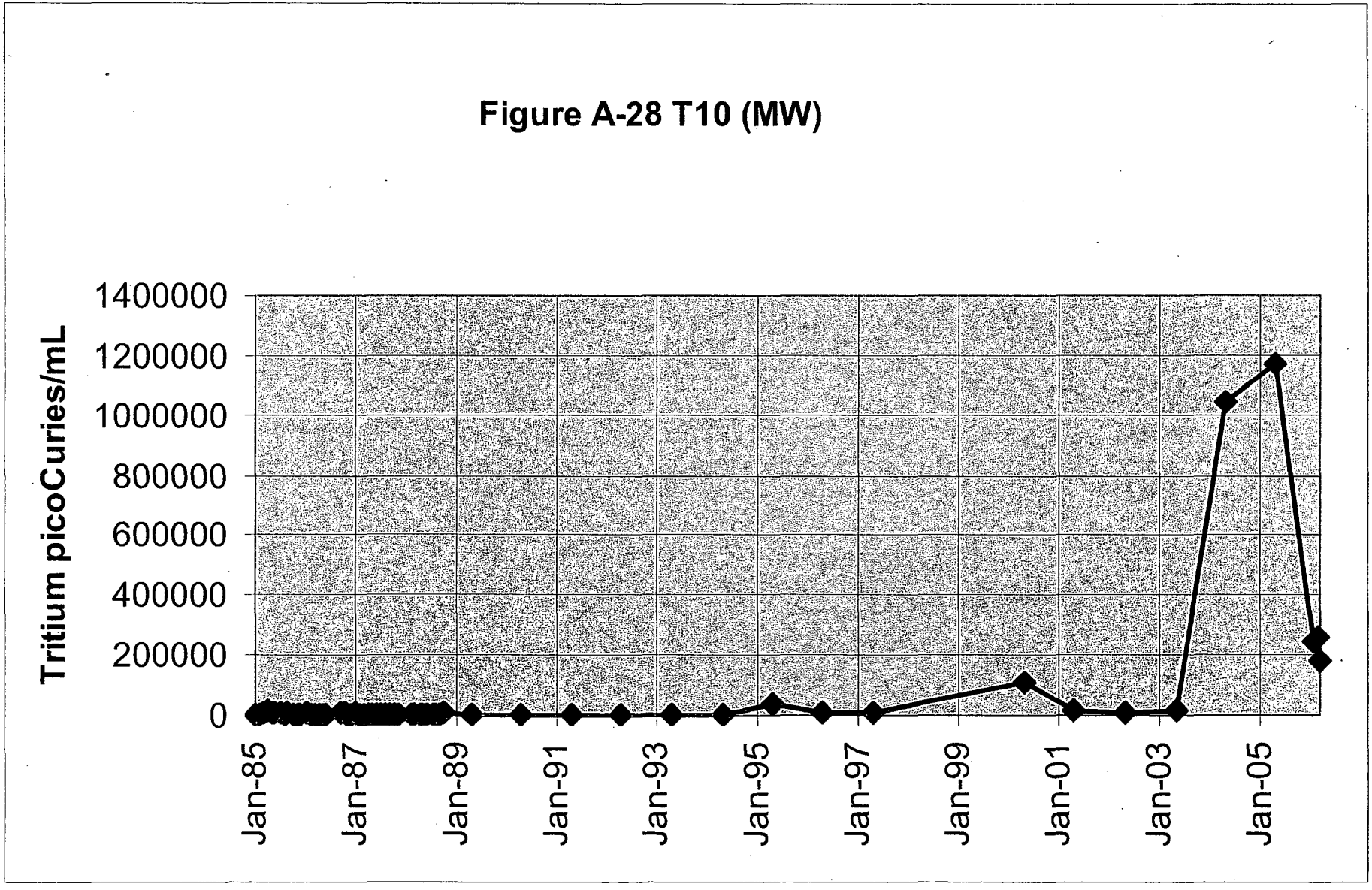


Figure A-28 T10 (MW)
Tritium picoCuries/mL
1400000
1200000
1000000
800000
600000
400000
200000
0
Jan-85
Jan-87
Jan-89
Jan-91
Jan-93
Jan-95
Jan-97
Jan-99
Jan-01
Jan-03
Jan-05

Figure A-29 T11 (MW)

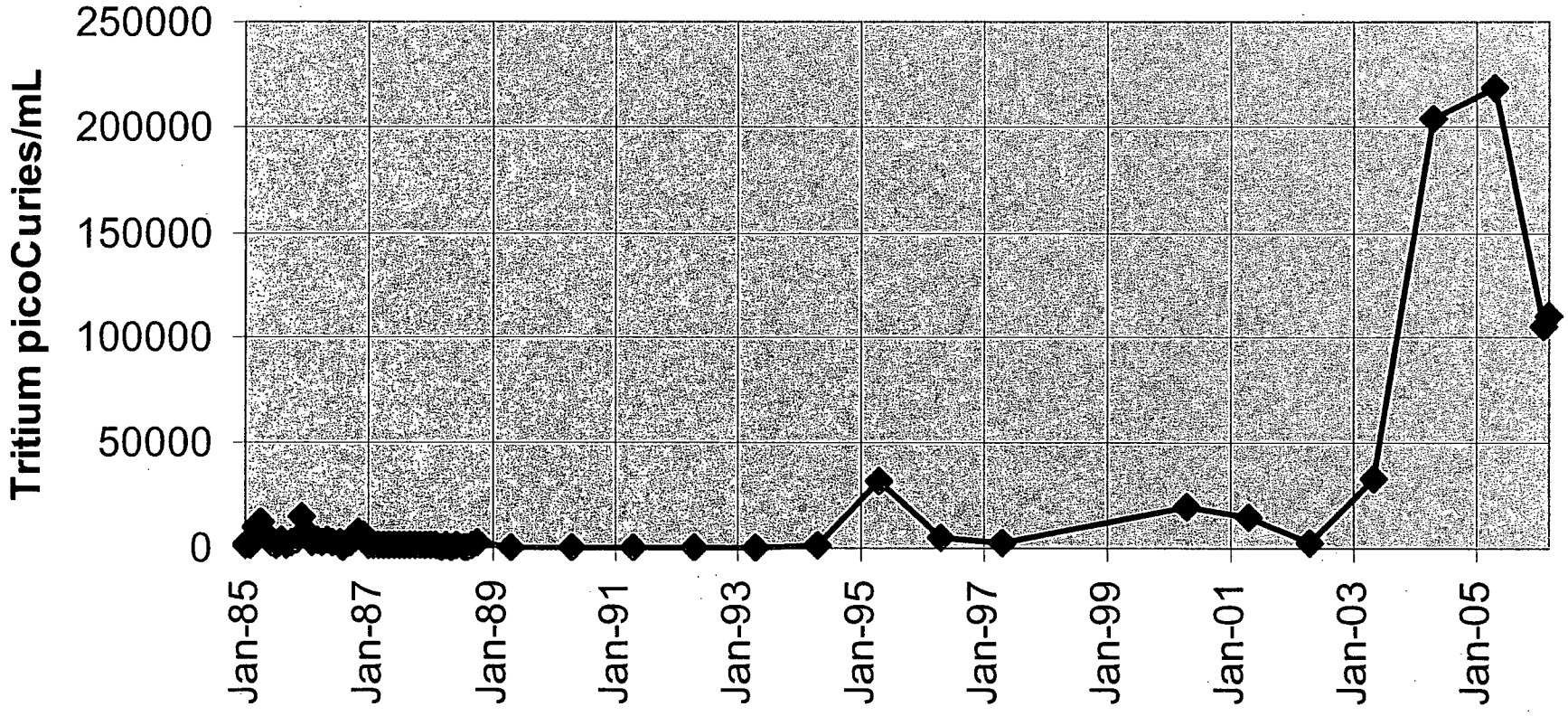


Figure A-30 T12 (MW)

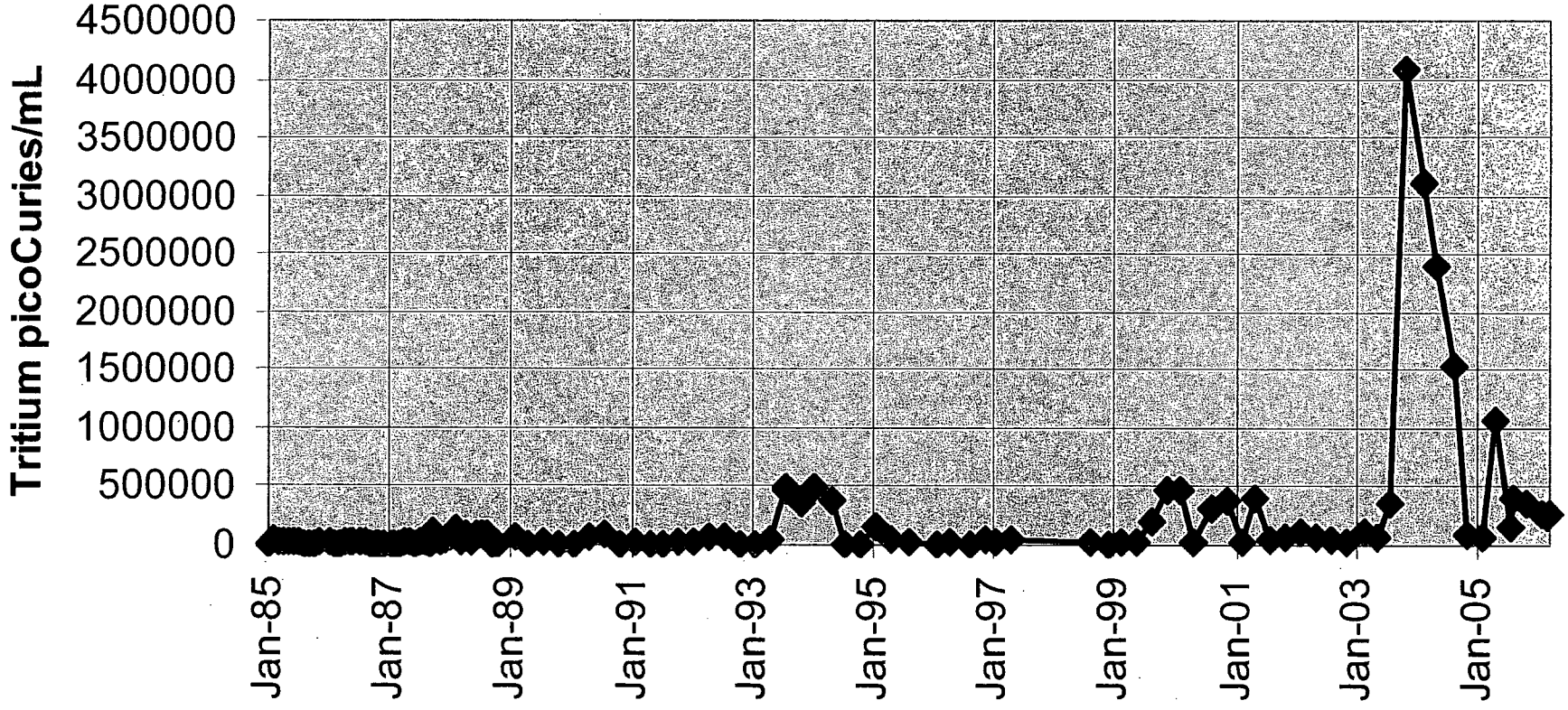


Figure A-31 T13 (MW)

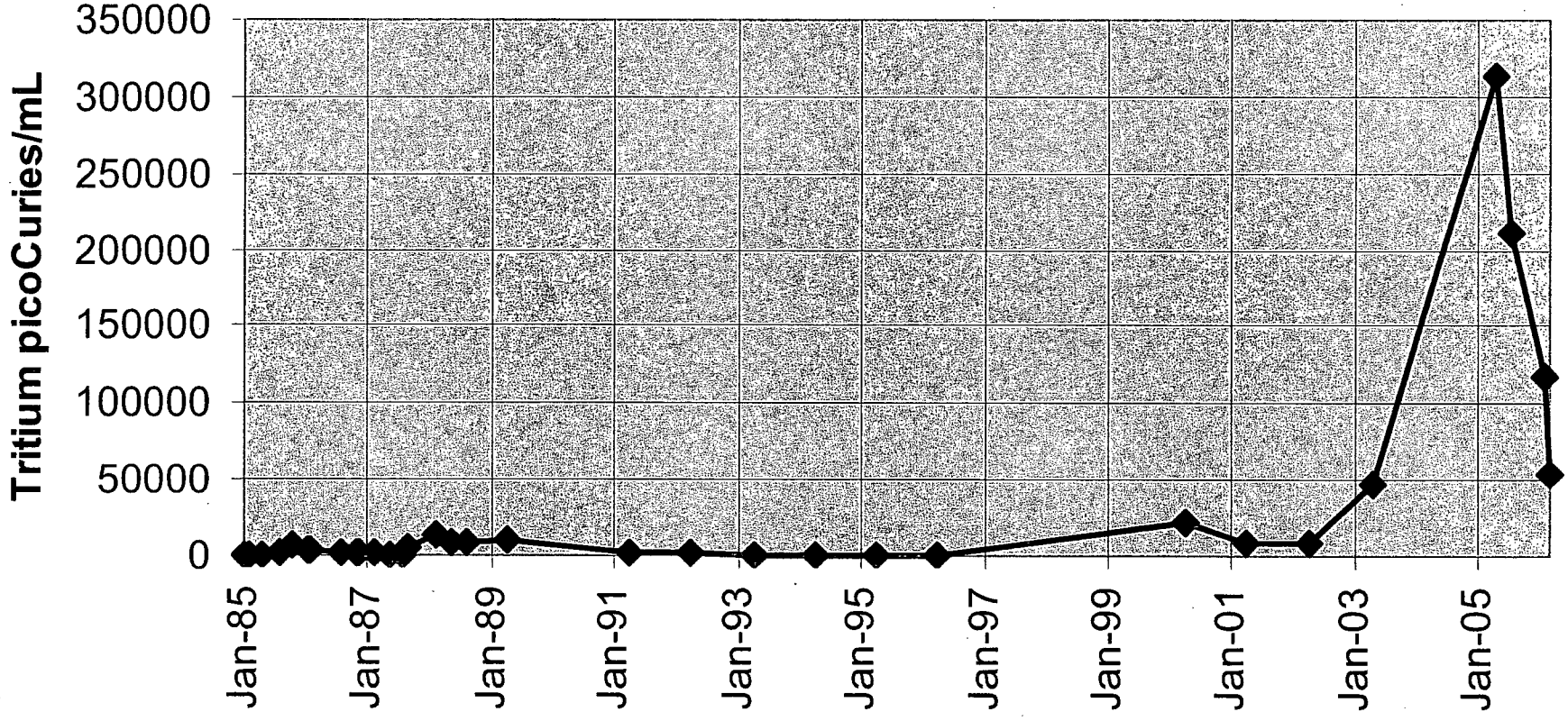


Figure A-32 T14 (MW)

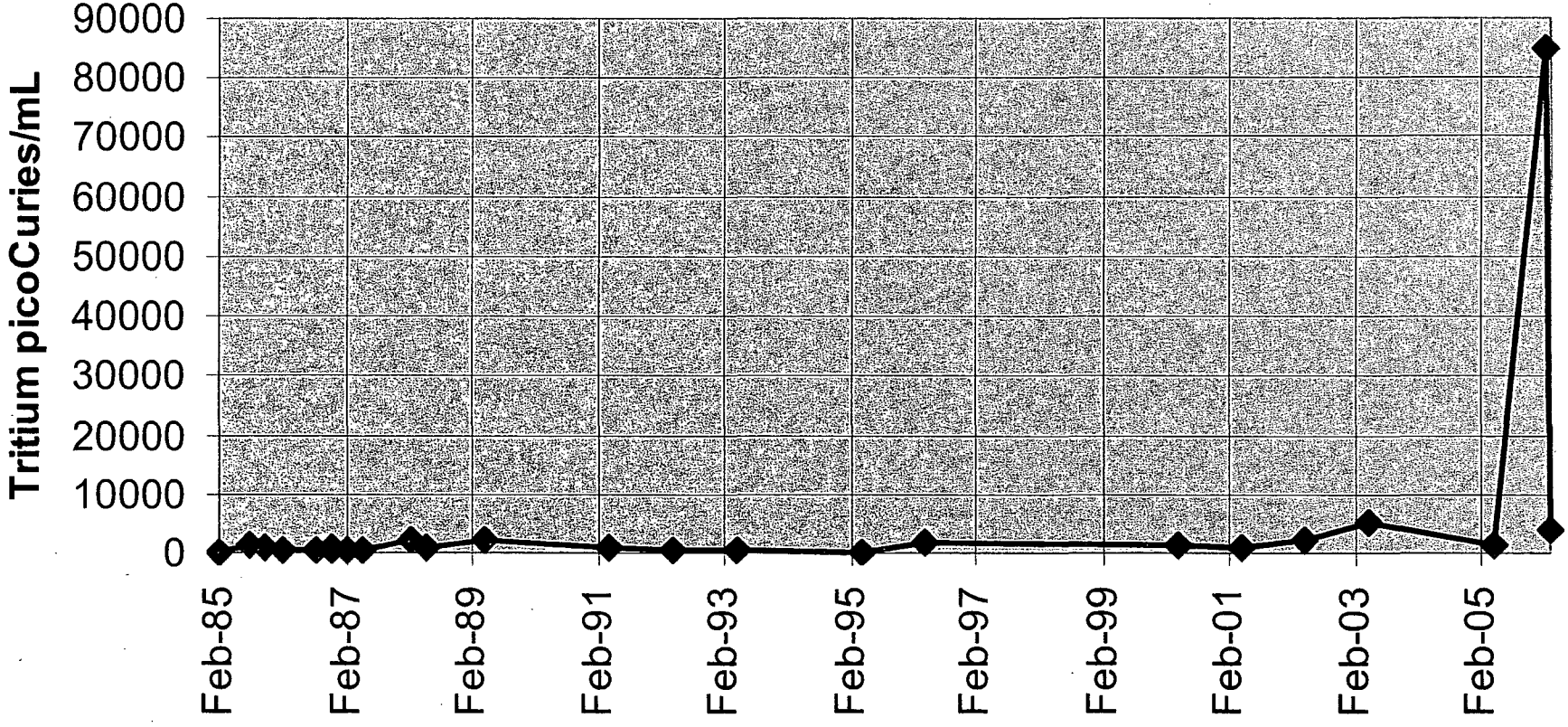
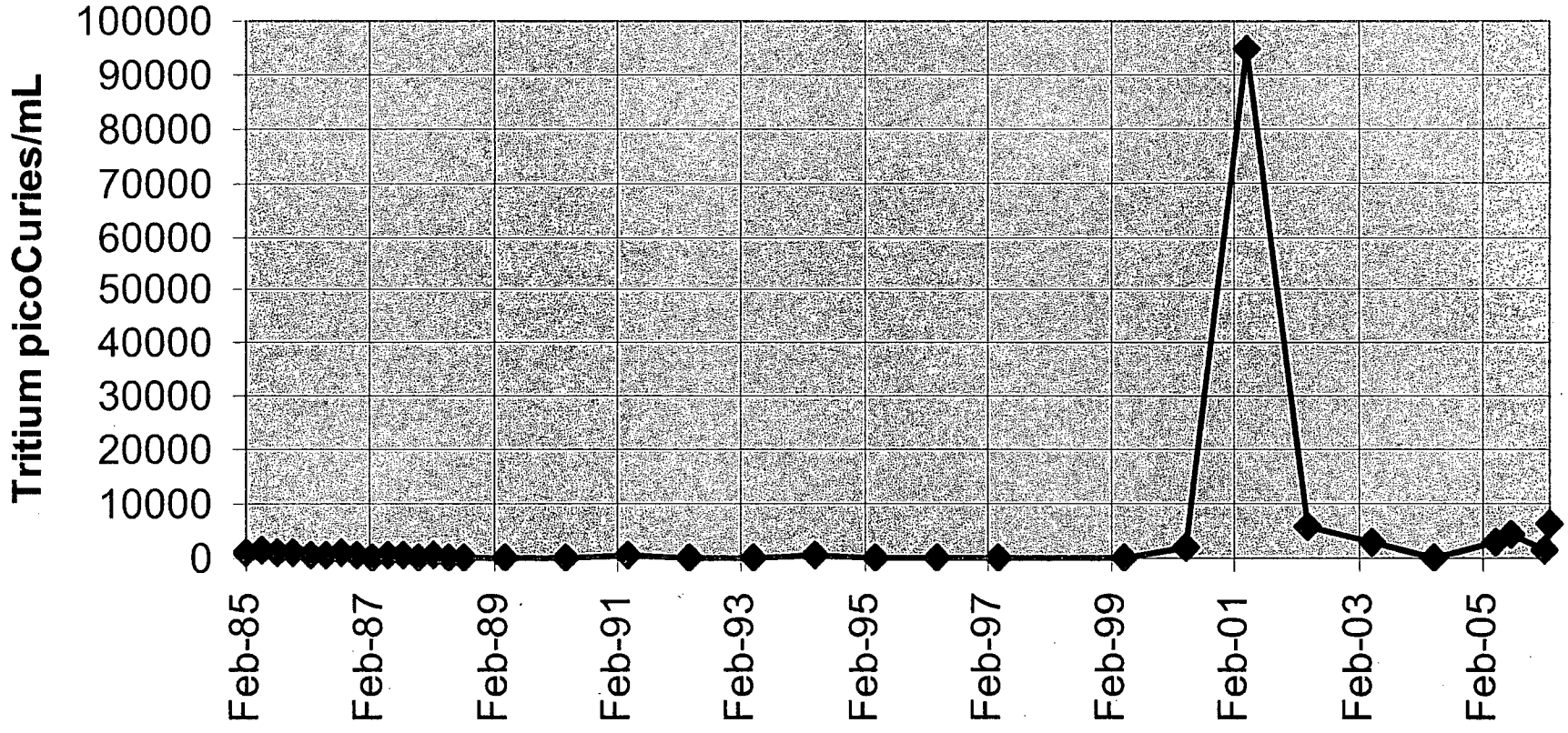


Figure A-33 T15 (MW)



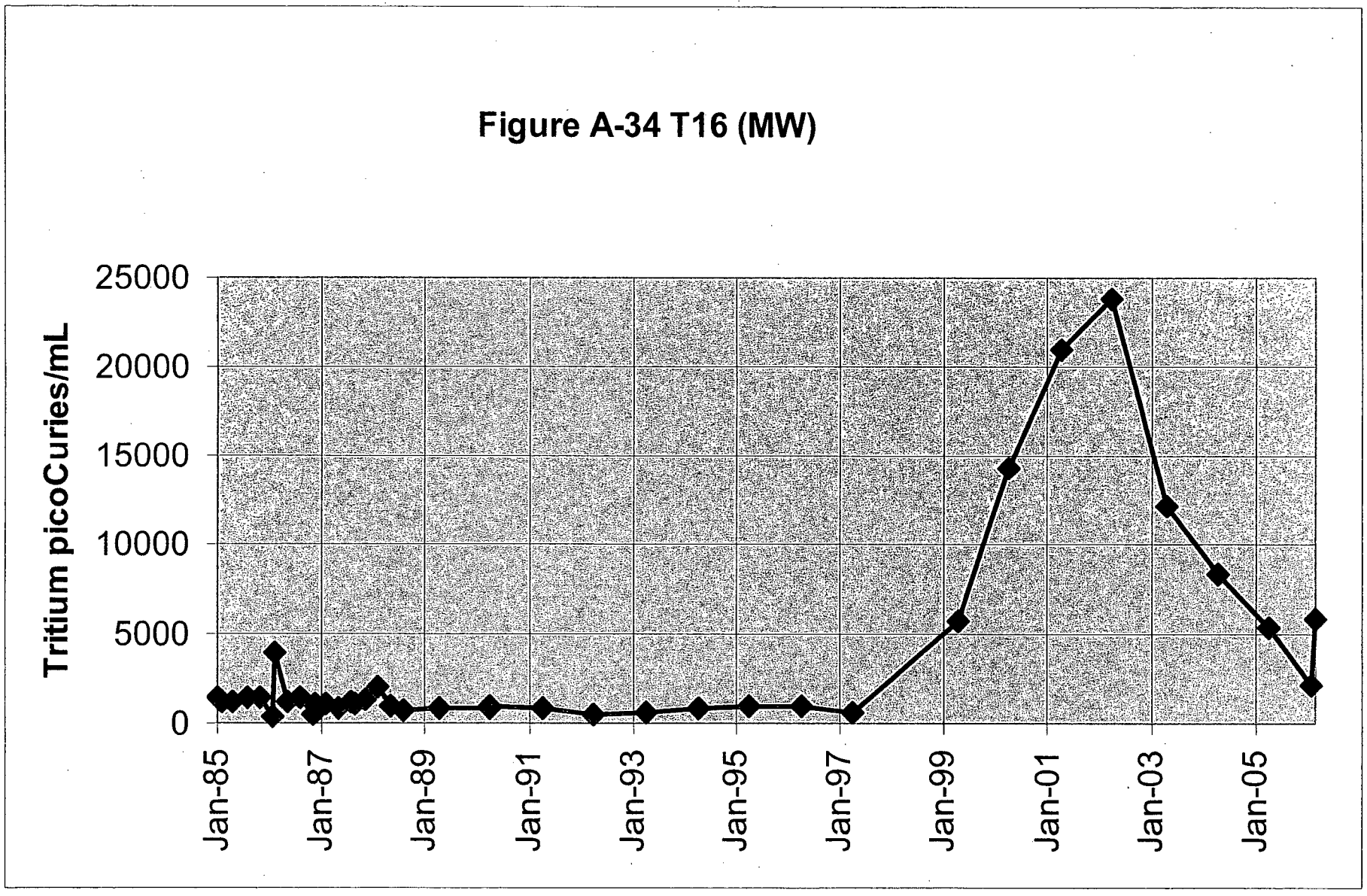


Figure A-34 T16 (MW)
Tritium picoCuries/mL
25000
20000
15000
10000
5000
0
Jan-85
Jan-87
Jan-89
Jan-91
Jan-93
Jan-95
Jan-97
Jan-99
Jan-01
Jan-03
Jan-05

Figure A-35 T18 (MW)

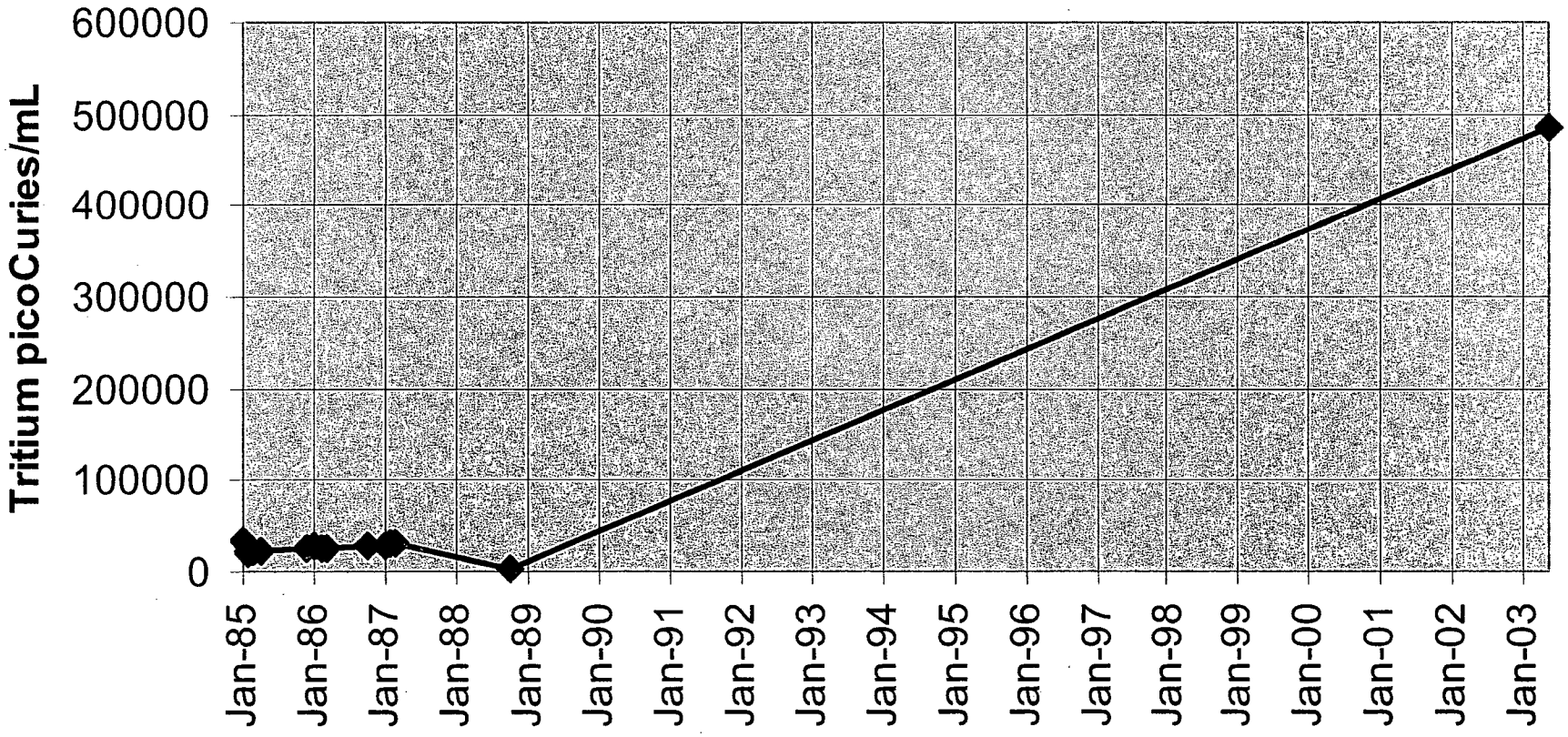


Figure A-36 Y22N002A (Surface Water Ourfall)

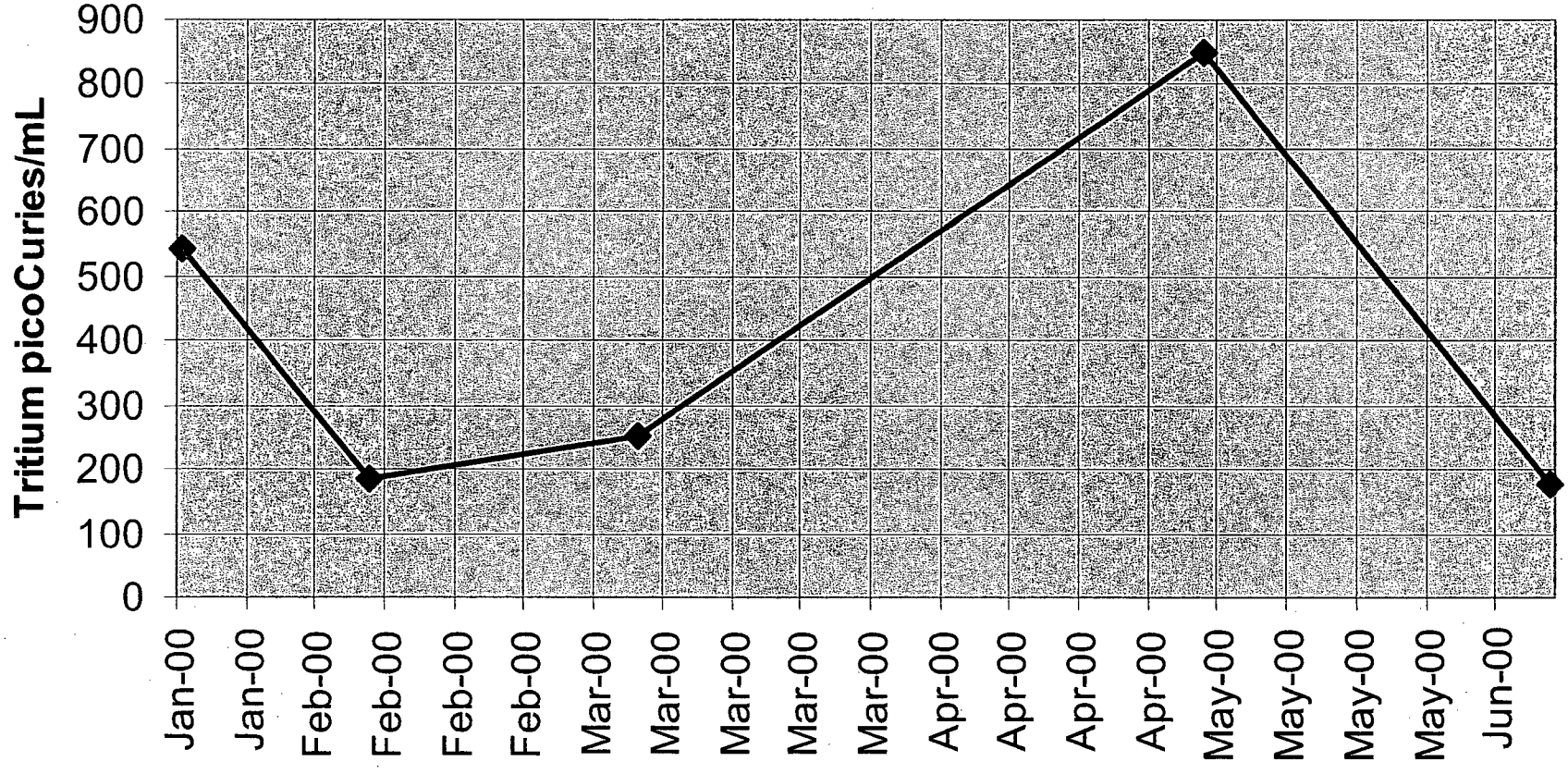


Figure A-37 Y22N007A (Surface Water Outfall)

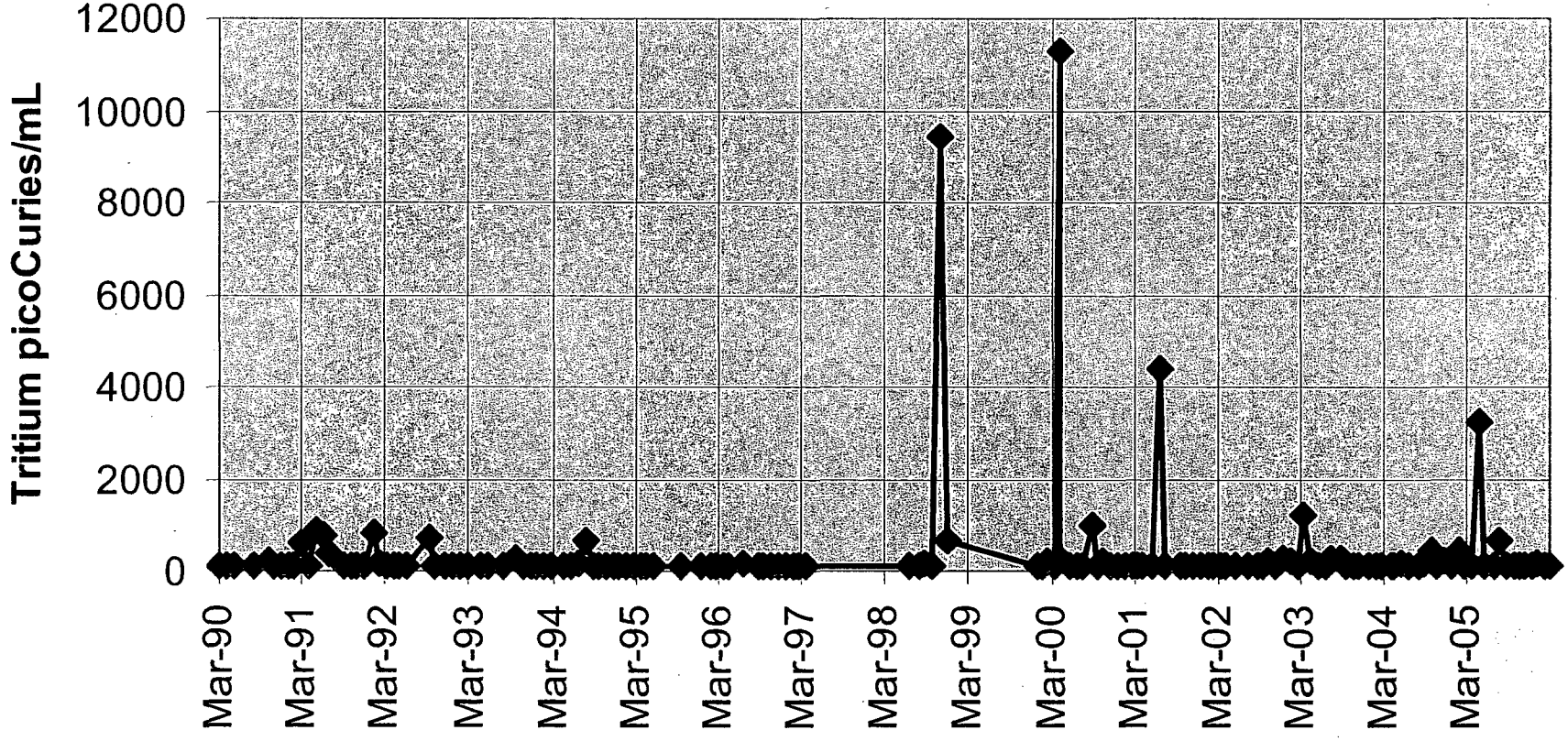


Figure A-38 Y22N012A (Surface Water Outfall)

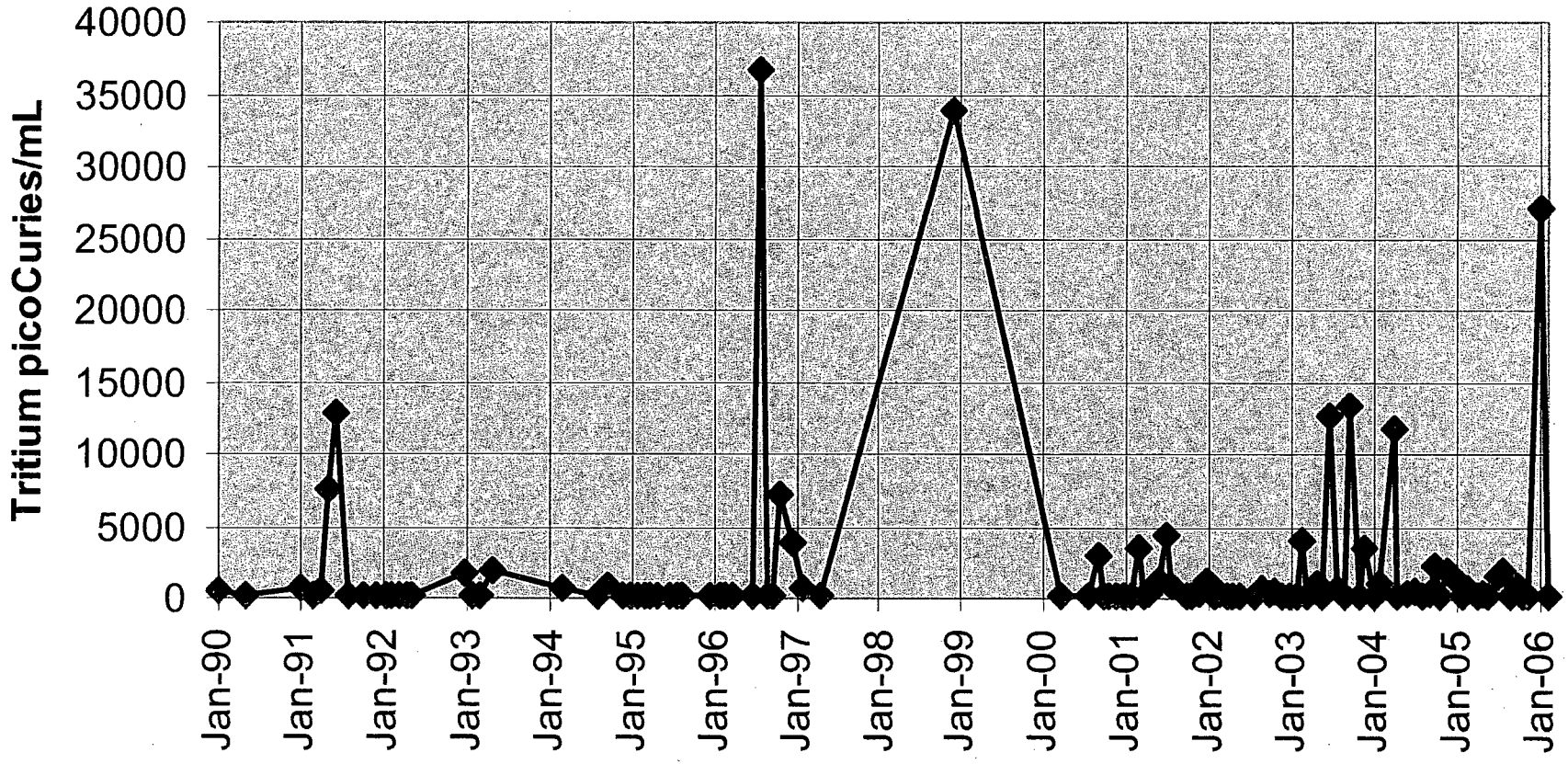
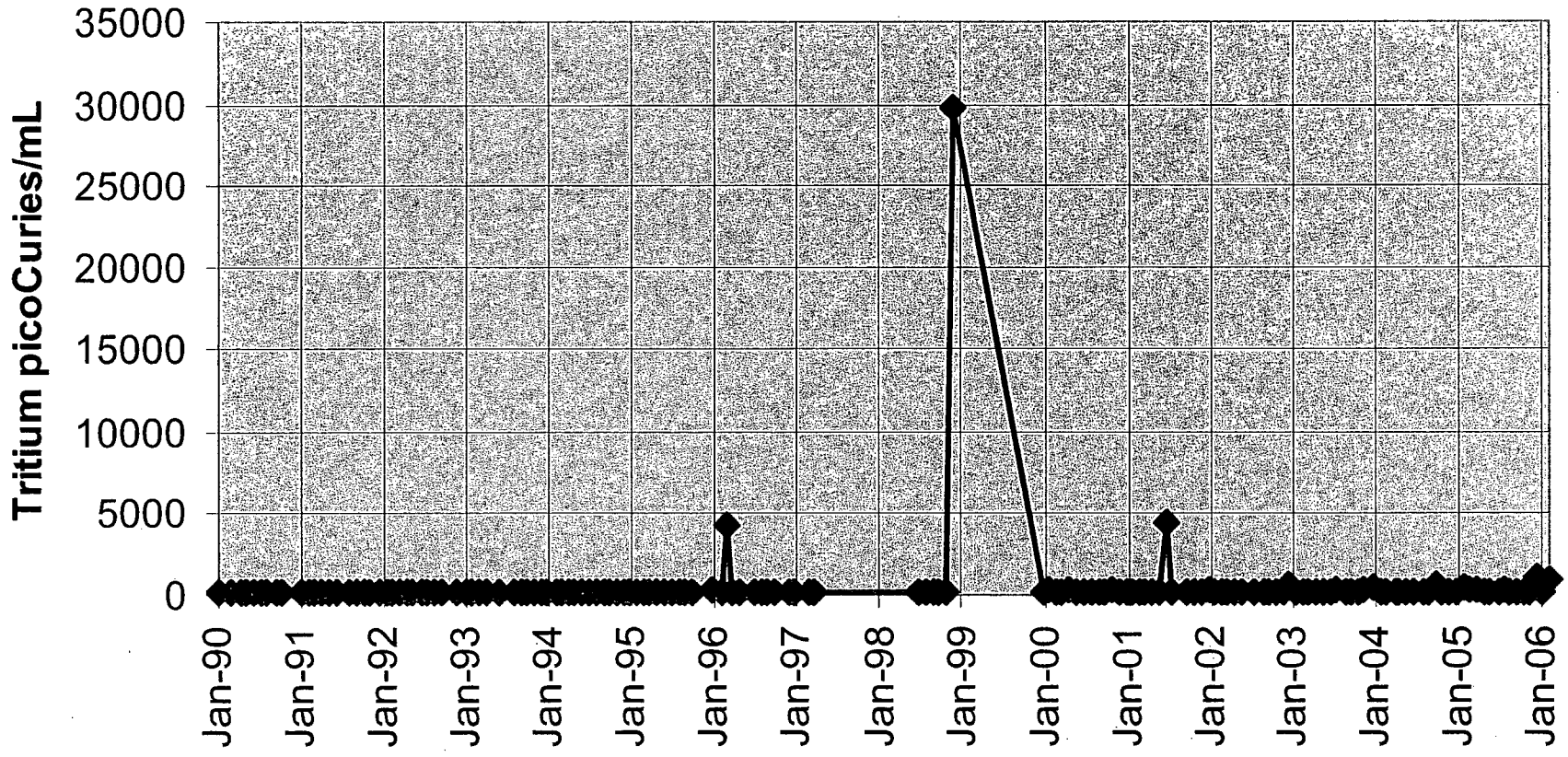


Figure A-39 Y22N024A (Surface Water Outfall)



FIGURES

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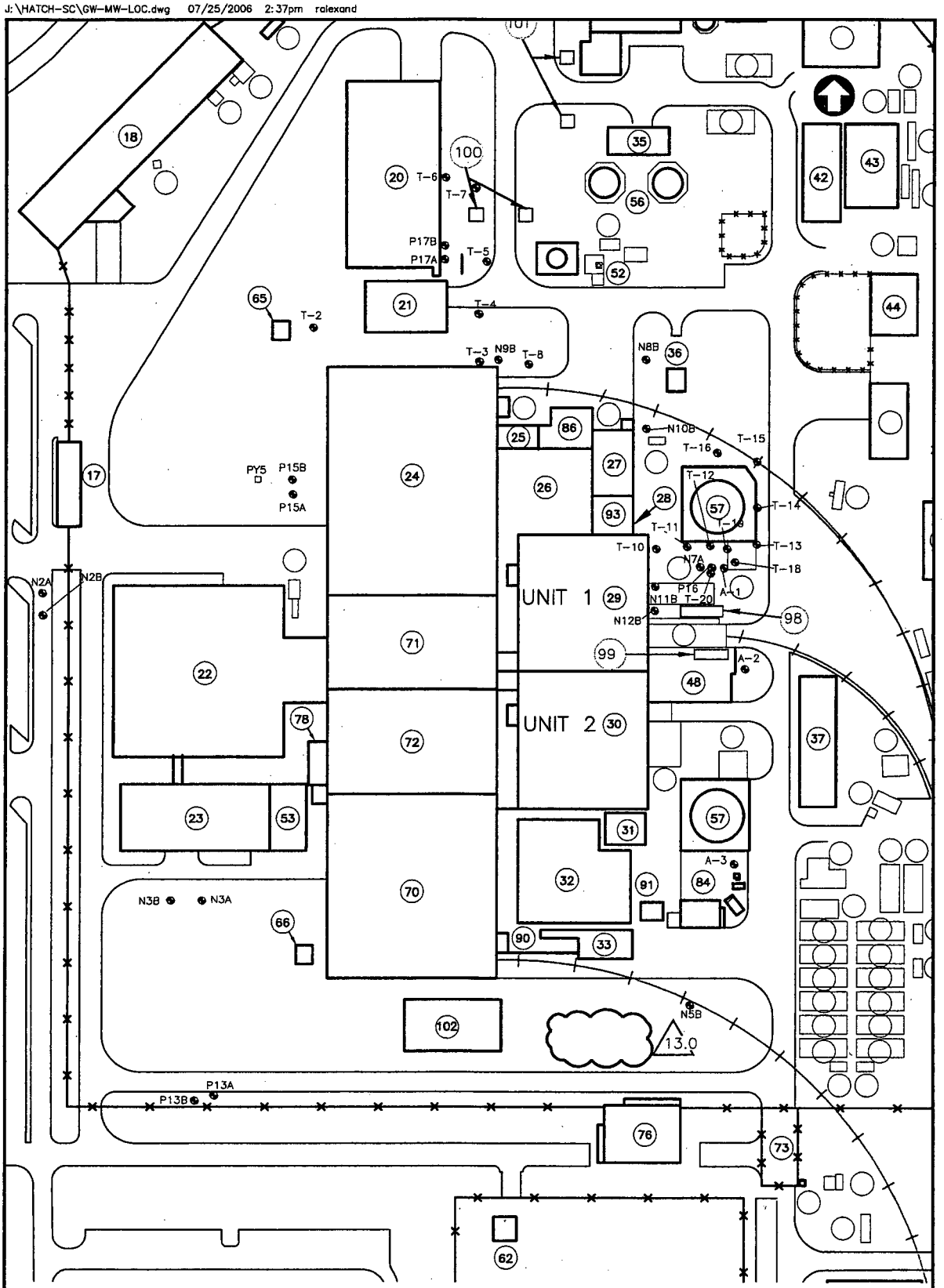

LEGEND

● MONITORING WELL LOCATION

PY5 □ SUMP

SCALE IN FEET

0 100 200

EDWIN I. HATCH NUCLEAR PLANT BAXLEY, GEORGIA	MACTEC MACTEC Engineering and Consulting, Inc. 3200 TOWN POINT DRIVE, SUITE 100 KENNESAW, GEORGIA 30144 (770) 421-3400	GROUND-WATER MONITORING LOCATIONS JOB NO. 6311-06-0020 FIGURE 1

PREPARED BY/DATE RLA 07/24/2006 CHECKED BY/DATE JRW 07/24/2006

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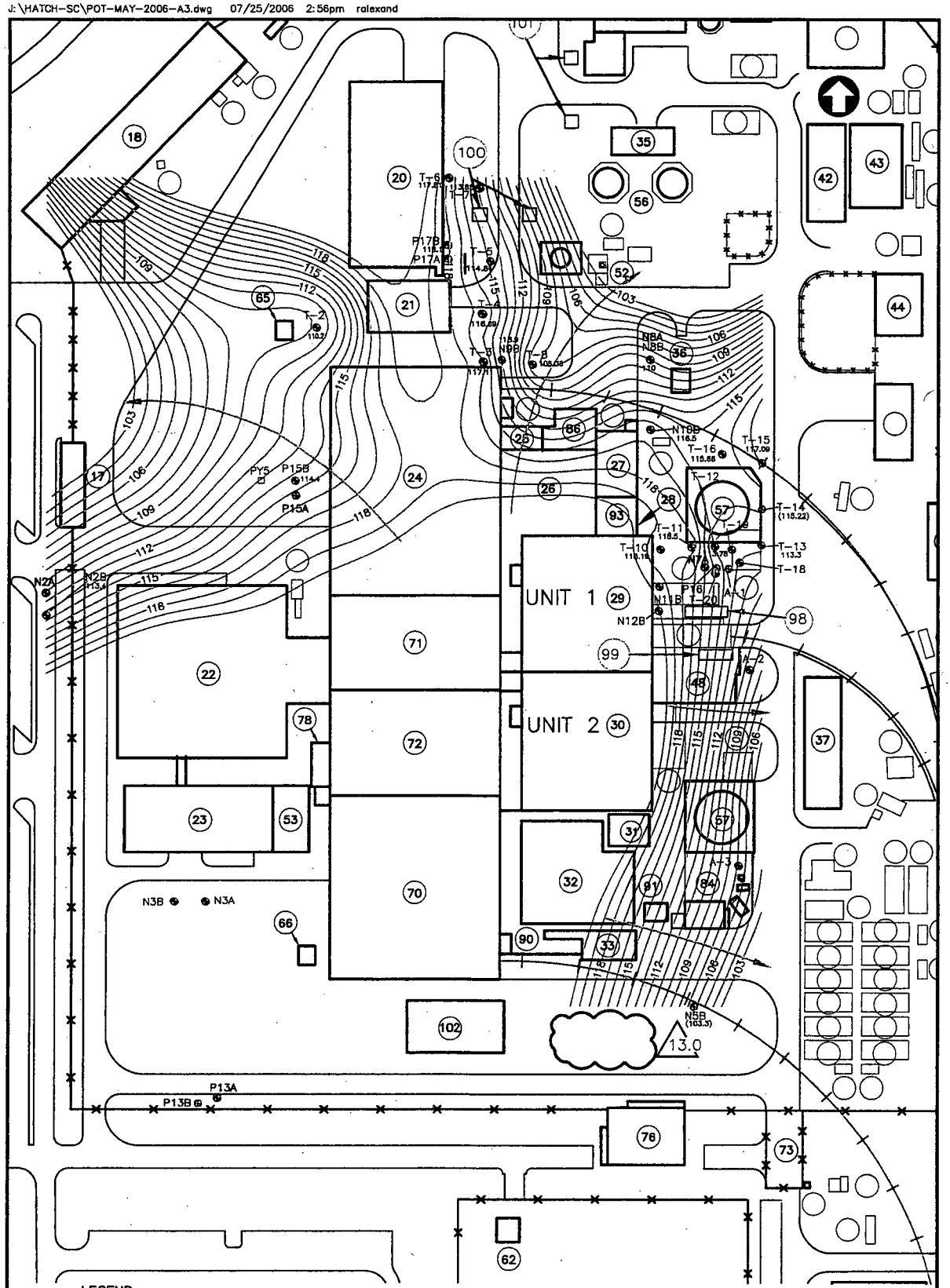

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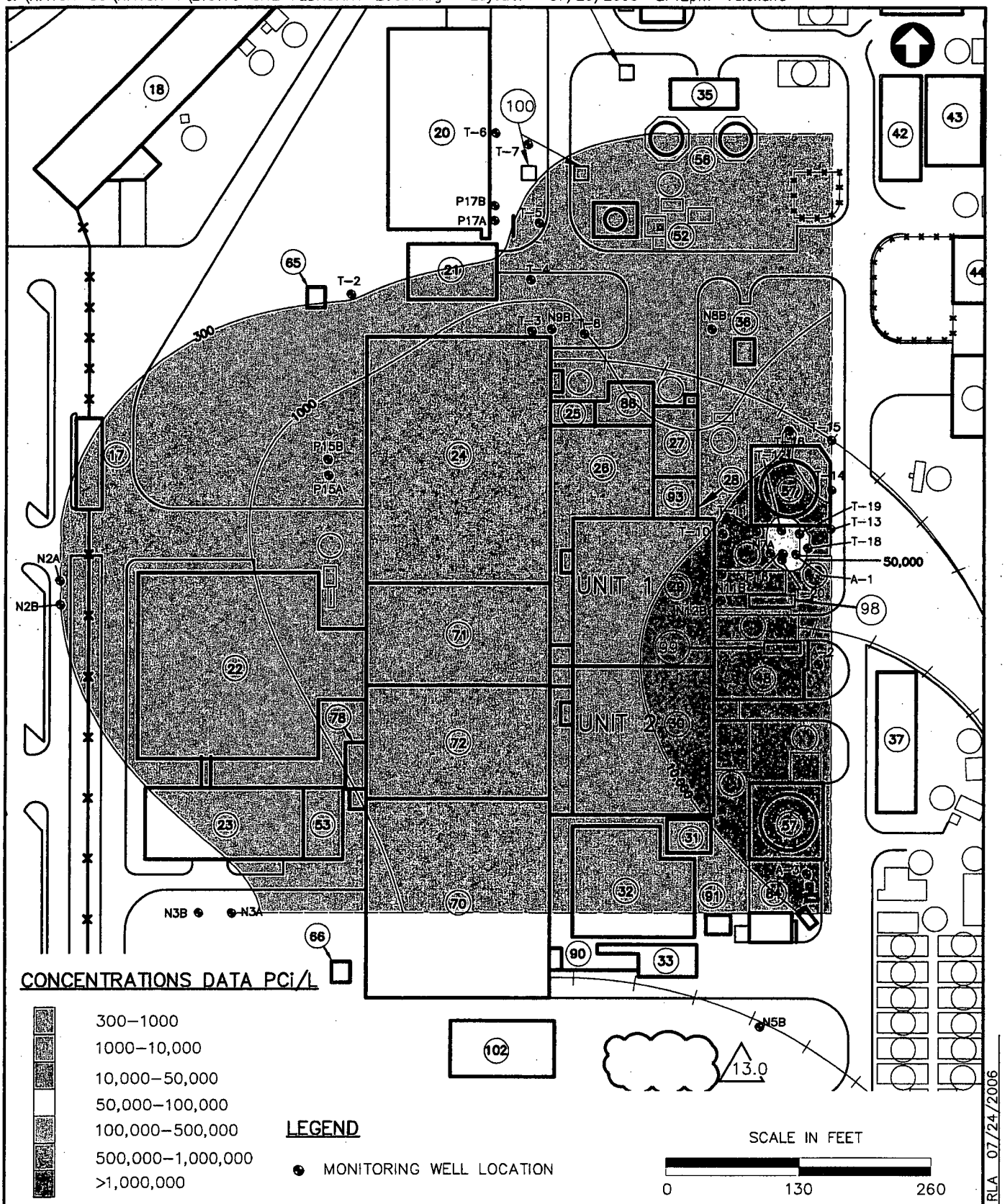
POTENTIOMETRIC MAP
SURFICIAL AQUIFER
MAY 2006

JOB NO. 6311-06-0020 FIGURE 2

PREPARED BY/DATE RLA 07/24/2006 CHECKED BY/DATE JRW 07/24/2006

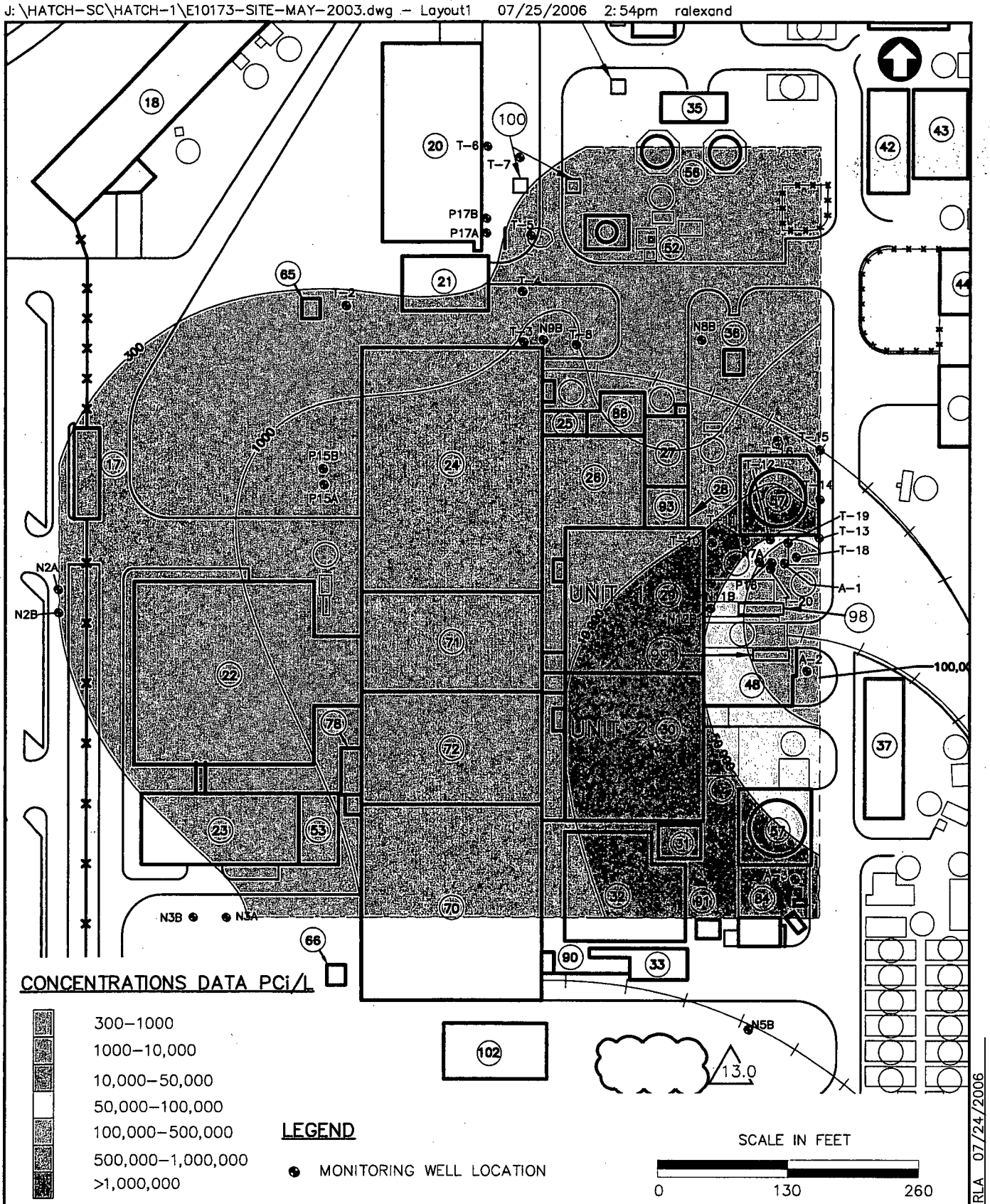
J:\HATCH-SC\HATCH-1\E10173-SITE-FEBRUARY-2003.dwg - Layout1 07/25/2006 2:42pm ralexand



EDWIN I. HATCH NUCLEAR PLANT BAXLEY, GEORGIA	MACTEC MACTEC Engineering and Consulting, Inc. 3200 TOWN POINT DRIVE, SUITE 100 KENNESAW, GEORGIA 30144 (770) 421-3400	CONCENTRATION DATA FEBRUARY 2003 JOB NO. 6311-06-0020 FIGURE 3

PREPARED BY/DATE RLA 07/24/2006
CHECKED BY/DATE JRW 07/24/2006

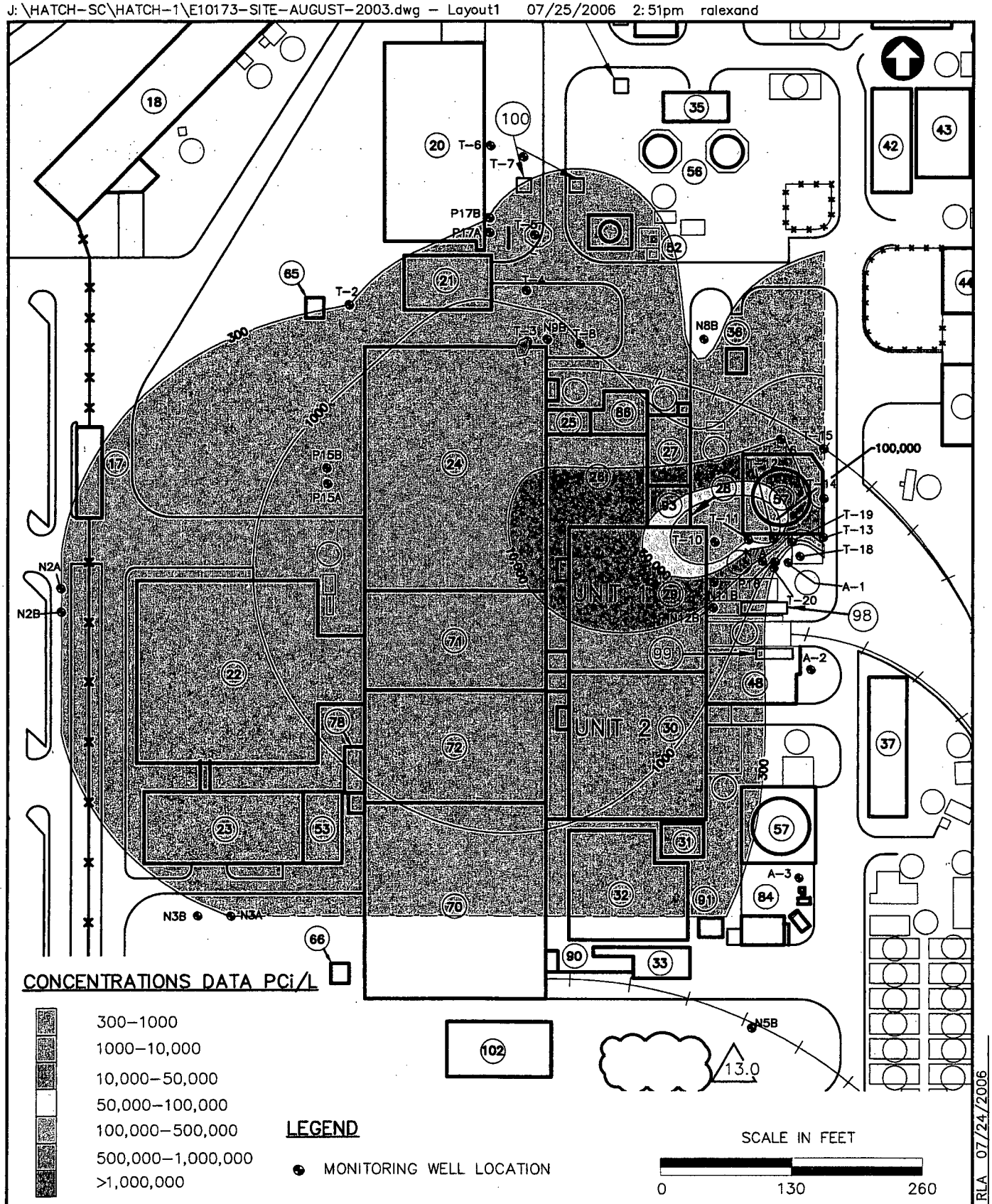
J:\HATCH-SC\HATCH-1\E10173-SITE-MAY-2003.dwg - Layout1 07/25/2006 2:54pm ralexand



EDWIN I. HATCH NUCLEAR PLANT BAXLEY, GEORGIA	MACTEC MACTEC Engineering and Consulting, Inc. 3200 TOWN POINT DRIVE, SUITE 100 KENNESAW, GEORGIA 30144 (770) 421-3400	CONCENTRATION DATA MAY 2003 JOB NO. 6311-06-0020 FIGURE 4

PREPARED BY/DATE RLA 07/24/2006
CHECKED BY/DATE JRW 07/24/2006

J:\HATCH-SC\HATCH-1\E10173-SITE-AUGUST-2003.dwg - Layout1 07/25/2006 2:51pm ralexand



CONCENTRATIONS DATA PCi/L

- 300–1000
- 1000–10,000
- 10,000–50,000
- 50,000–100,000
- 100,000–500,000
- 500,000–1,000,000
- >1,000,000

LEGEND

● MONITORING WELL LOCATION

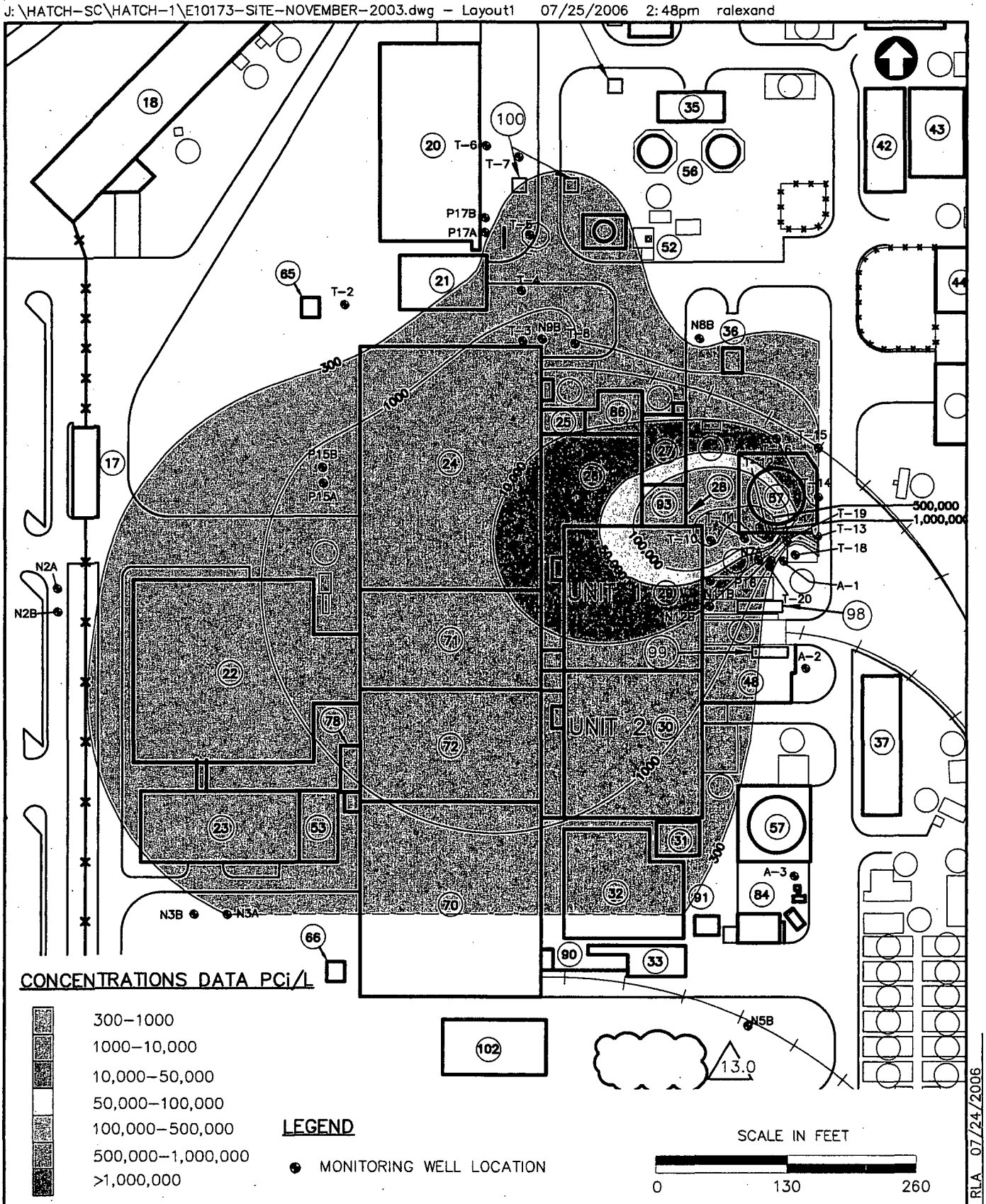
SCALE IN FEET

0 130 260

EDWIN I. HATCH NUCLEAR PLANT BAXLEY, GEORGIA	MACTEC MACTEC Engineering and Consulting, Inc. 3200 TOWN POINT DRIVE, SUITE 100 KENNESAW, GEORGIA 30144 (770) 421-3400	CONCENTRATION DATA AUGUST 2003 JOB NO. 6311-06-0020 FIGURE 5

PREPARED BY/DATE RLA 07/24/2006
CHECKED BY/DATE JRW 07/24/2006

J:\HATCH-SC\HATCH-1\E10173-SITE-NOVEMBER-2003.dwg - Layout1 07/25/2006 2:48pm ralexand



EDWIN I. HATCH NUCLEAR PLANT BAXLEY, GEORGIA	MACTEC MACTEC Engineering and Consulting, Inc. 3200 TOWN POINT DRIVE, SUITE 100 KENNESAW, GEORGIA 30144 (770) 421-3400	CONCENTRATION DATA NOVEMBER 2003 JOB NO. 6311-06-0020 FIGURE 6

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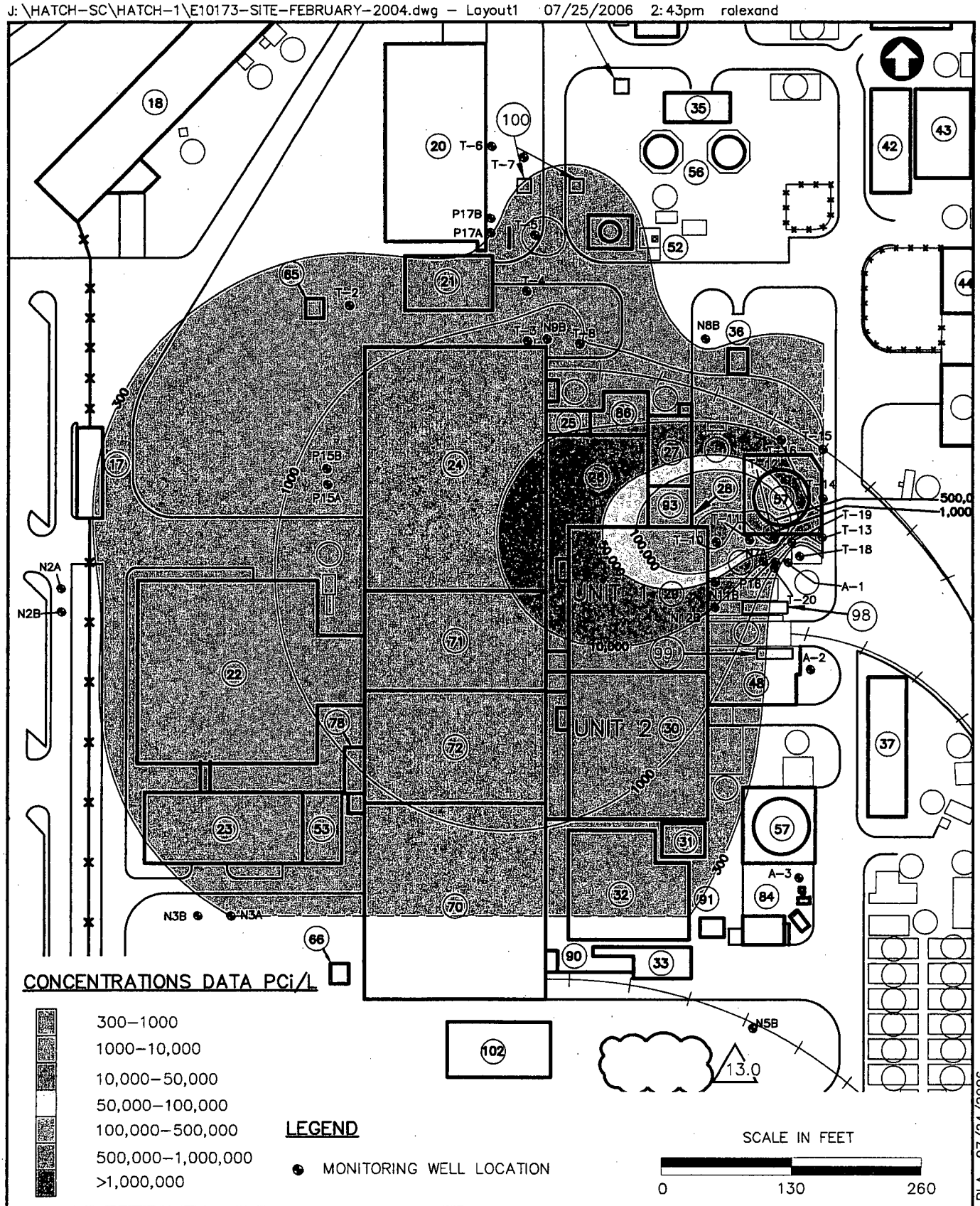
CHECKED BY/DATE JRW 07/24/2006

J:\HATCH-SC\HATCH-1\E10173-SITE-FEBRUARY-2004.dwg - Layout1 07/25/2006 2:43pm ralexand



CONCENTRATIONS DATA PCi/L

- 300–1000
- 1000–10,000
- 10,000–50,000
- 50,000–100,000
- 100,000–500,000
- 500,000–1,000,000
- >1,000,000

LEGEND

● MONITORING WELL LOCATION

SCALE IN FEET

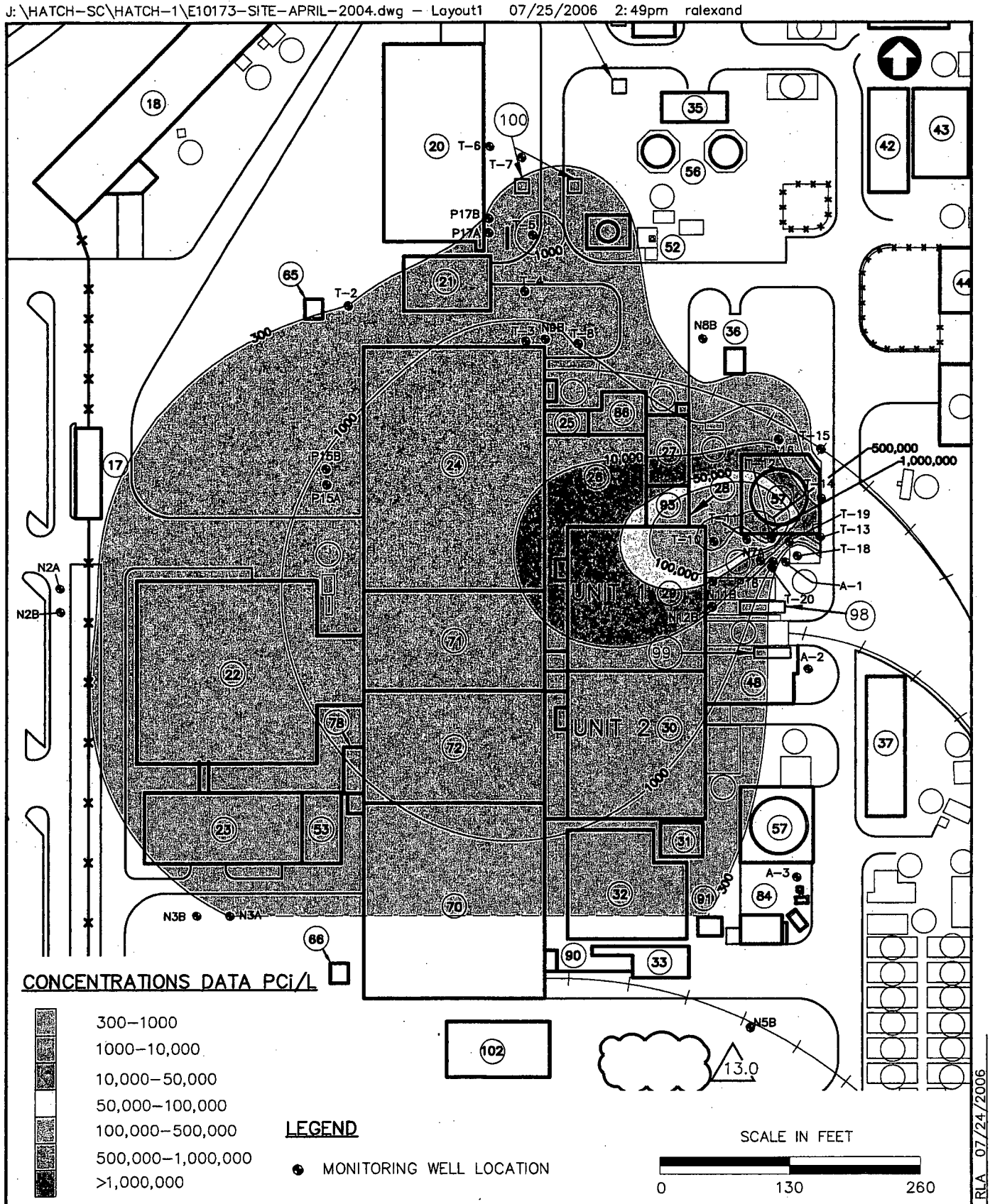
0 130 260

EDWIN I. HATCH NUCLEAR PLANT BAXLEY, GEORGIA	MACTEC MACTEC Engineering and Consulting, Inc. 3200 TOWN POINT DRIVE, SUITE 100 KENNESAW, GEORGIA 30144 (770) 421-3400	CONCENTRATION DATA FEBRUARY 2004 JOB NO. 6311-06-0020 FIGURE 7

PREPARED BY/DATE RLA 07/24/2006

CHECKED BY/DATE JRW 07/24/2006

J:\HATCH-SC\HATCH-1\E10173-SITE-APRIL-2004.dwg - Layout1 07/25/2006 2:49pm ralexand



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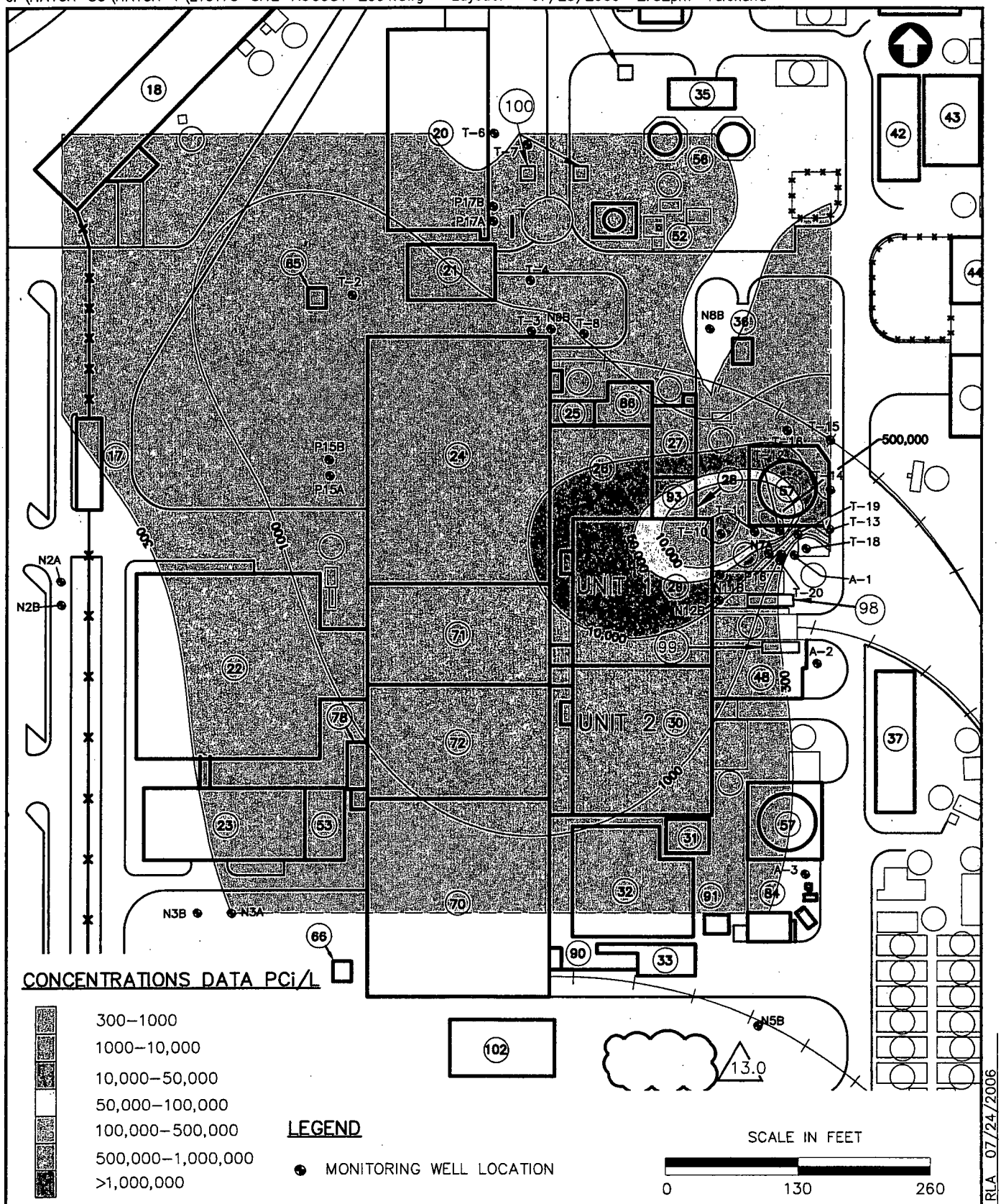
CONCENTRATION DATA
APRIL 2004

JOB NO. 6311-06-0020 FIGURE 8

PREPARED BY/DATE RLA 07/24/2006
CHECKED BY/DATE JRW 07/24/2006

J:\HATCH-SC\HATCH-1\E10173-SITE-AUGUST-2004.dwg - Layout1 07/25/2006 2:52pm ralexand



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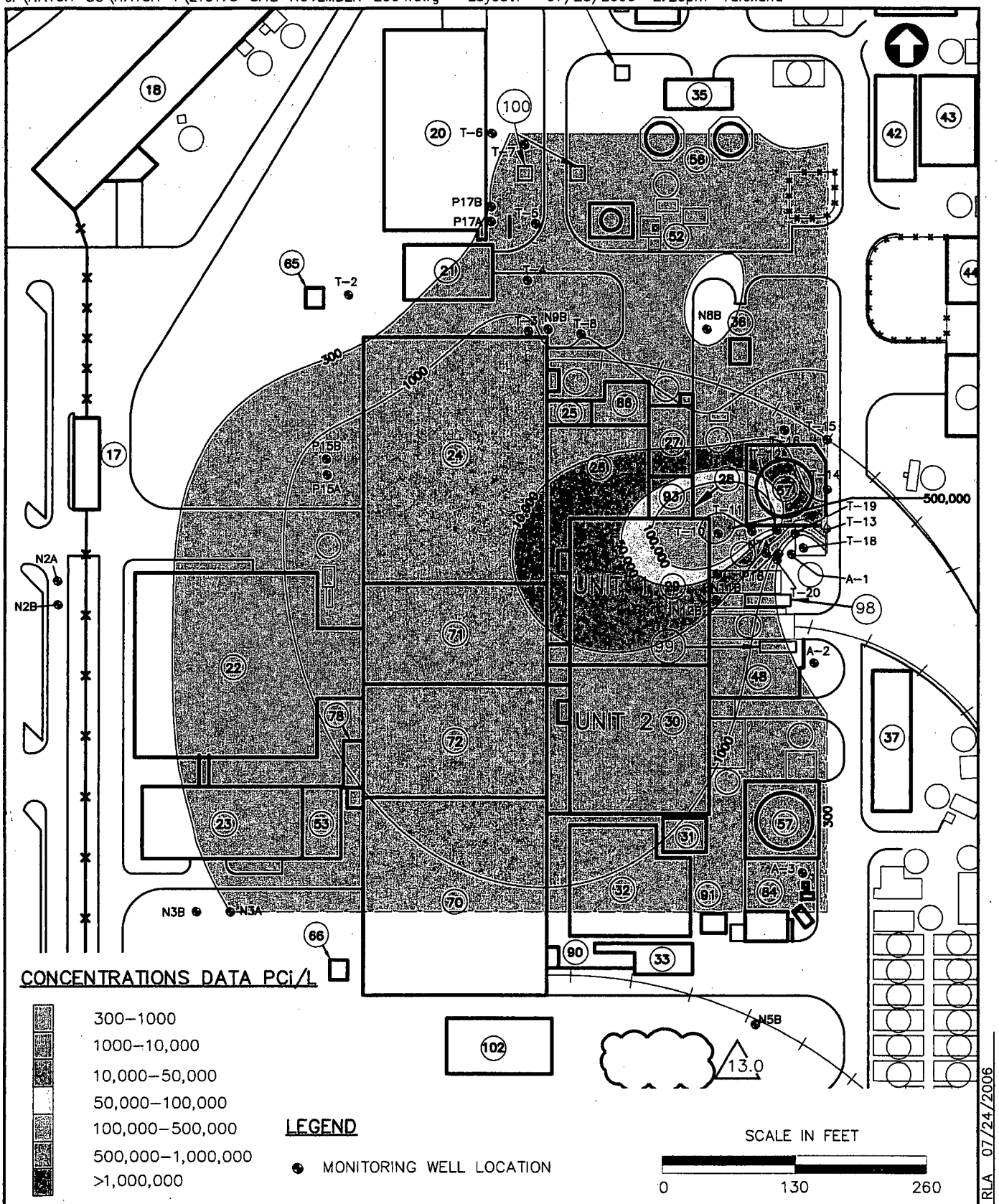
MACTEC Engineering and Consulting, Inc.
3200 TOWN POINT DRIVE, SUITE 100
KENNESAW, GEORGIA 30144 (770) 421-3400

CONCENTRATION DATA
AUGUST 2004

JOB NO. 6311-06-0020 FIGURE 9

PREPARED BY/DATE RLA 07/24/2006
CHECKED BY/DATE JRW 07/24/2006

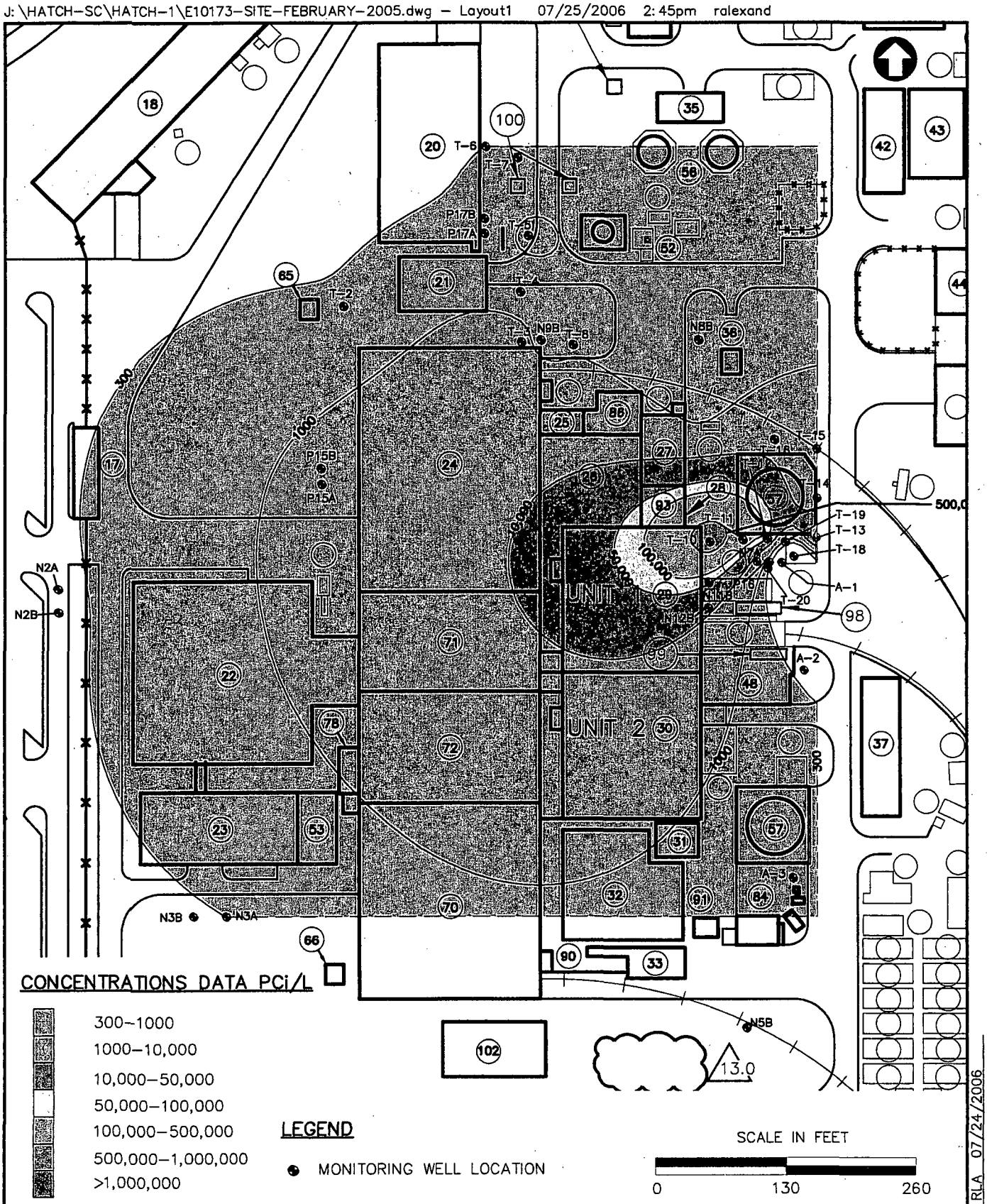
J:\HATCH-SC\HATCH-1\E10173-SITE-NOVEMBER-2004.dwg - Layout1 07/25/2006 2:26pm ralexand



EDWIN I. HATCH NUCLEAR PLANT BAXLEY, GEORGIA	MACTEC MACTEC Engineering and Consulting, Inc. 3200 TOWN POINT DRIVE, SUITE 100 KENNESAW, GEORGIA 30144 (770) 421-3400	CONCENTRATION DATA NOVEMBER 2004 JOB NO. 6311-06-0020 FIGURE 10

PREPARED BY/DATE RLA 07/24/2006
CHECKED BY/DATE JRW 07/24/2006

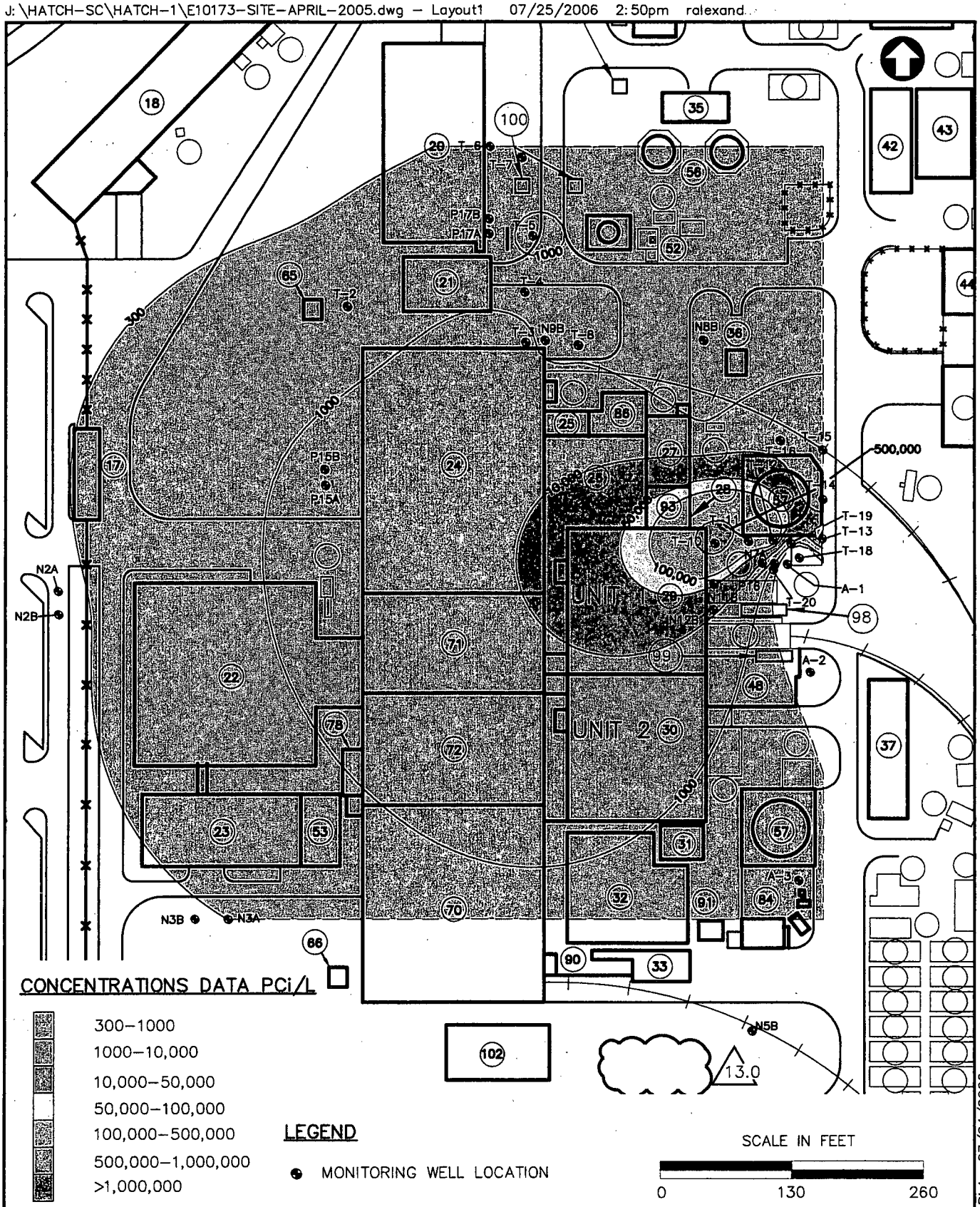
J:\HATCH-SC\HATCH-1\E10173-SITE-FEBRUARY-2005.dwg - Layout1 07/25/2006 2:45pm ralexand



EDWIN I. HATCH NUCLEAR PLANT BAXLEY, GEORGIA	MACTEC MACTEC Engineering and Consulting, Inc. 3200 TOWN POINT DRIVE, SUITE 100 KENNESAW, GEORGIA 30144 (770) 421-3400	CONCENTRATION DATA FEBRUARY 2005 JOB NO. 6311-06-0020 FIGURE 11

PREPARED BY/DATE RLA 07/24/2006
CHECKED BY/DATE JRW 07/24/2006

J:\HATCH-SC\HATCH-1\E10173-SITE-APRIL-2005.dwg - Layout1 07/25/2006 2:50pm ralexand



EDWIN I. HATCH NUCLEAR PLANT BAXLEY, GEORGIA	MACTEC MACTEC Engineering and Consulting, Inc. 3200 TOWN POINT DRIVE, SUITE 100 KENNESAW, GEORGIA 30144 (770) 421-3400	CONCENTRATION DATA APRIL 2005 JOB NO. 6311-06-0020 FIGURE 12

PREPARED BY/DATE RLA 07/24/2006
CHECKED BY/DATE JRW 07/24/2006

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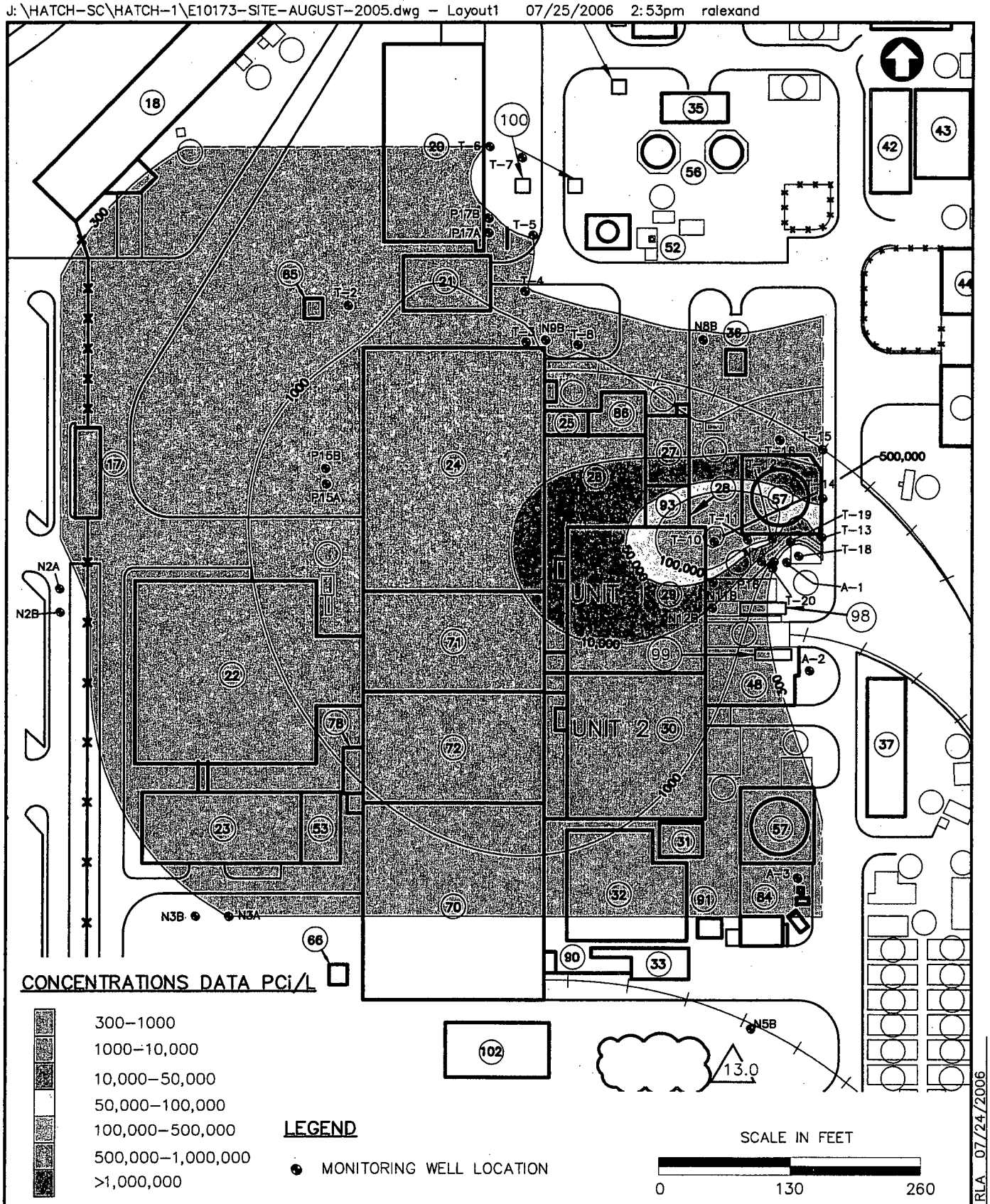
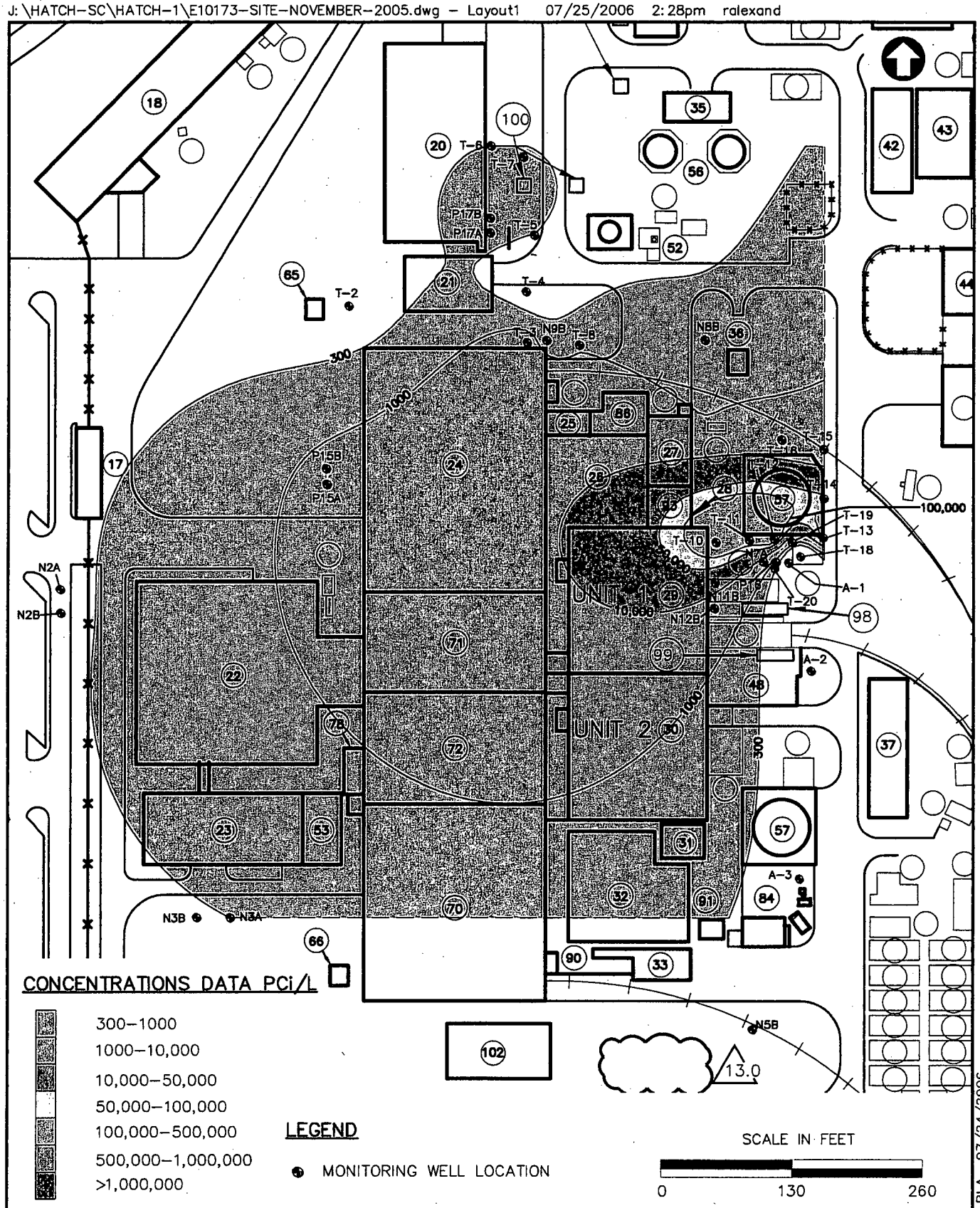


EDWIN I. HATCH NUCLEAR PLANT BAXLEY, GEORGIA	MACTEC MACTEC Engineering and Consulting, Inc. 3200 TOWN POINT DRIVE, SUITE 100 KENNESAW, GEORGIA 30144 (770) 421-3400	CONCENTRATION DATA AUGUST 2005 JOB NO. 6311-06-0020 FIGURE 13

PREPARED BY/DATE RLA 07/24/2006
CHECKED BY/DATE JRW 07/24/2006

J:\HATCH-SC\HATCH-1\E10173-SITE-NOVEMBER-2005.dwg - Layout1 07/25/2006 2:28pm ralexand



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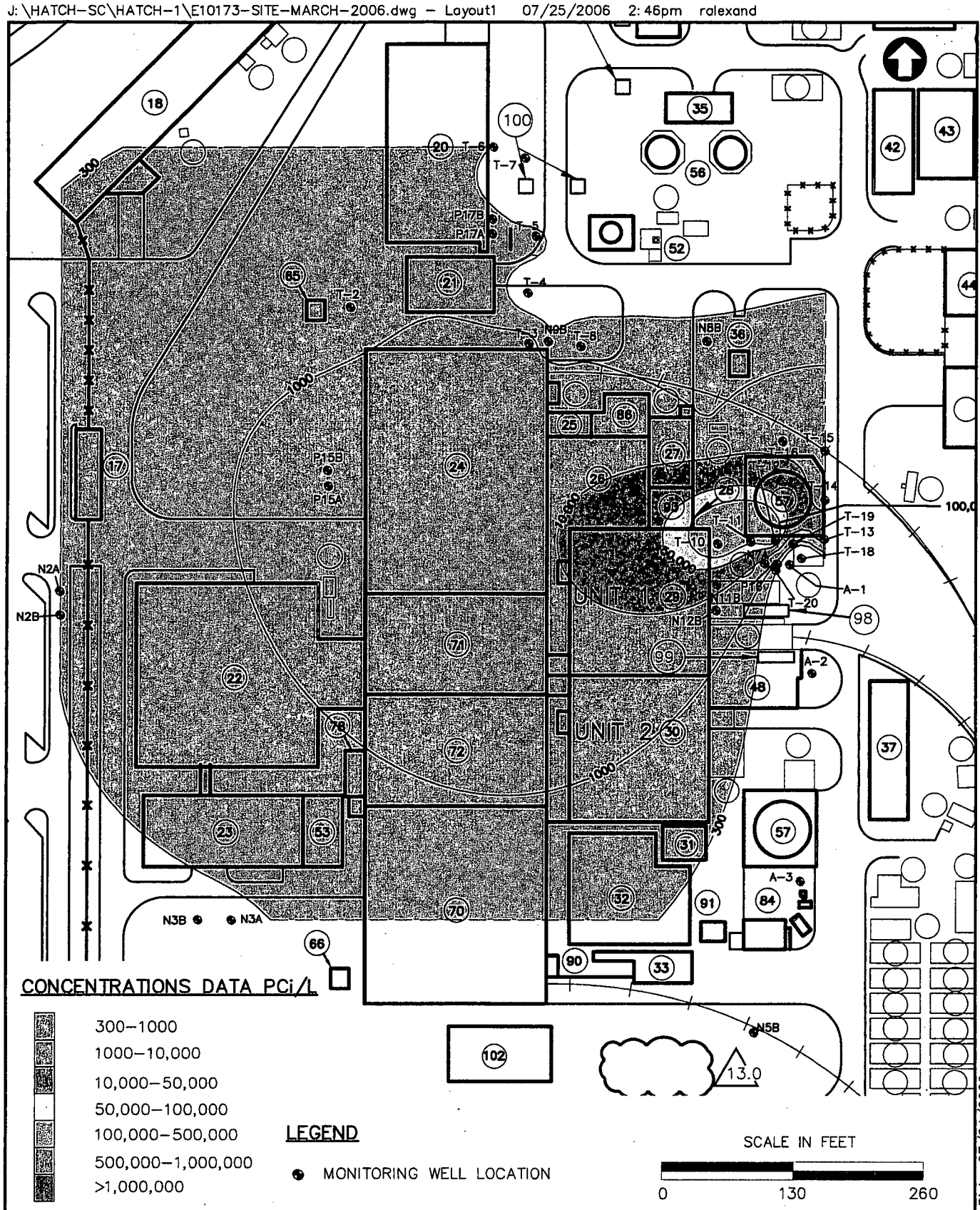
MACTEC Engineering and Consulting, Inc.
3200 TOWN POINT DRIVE, SUITE 100
KENNESAW, GEORGIA 30144 (770) 421-3400

CONCENTRATION DATA
NOVEMBER 2005

JOB NO. 6311-06-0020 FIGURE 14

PREPARED BY/DATE RLA 07/24/2006
CHECKED BY/DATE JRW 07/24/2006

J:\HATCH-SC\HATCH-1\E10173-SITE-MARCH-2006.dwg - Layout1 07/25/2006 2:46pm ralexand



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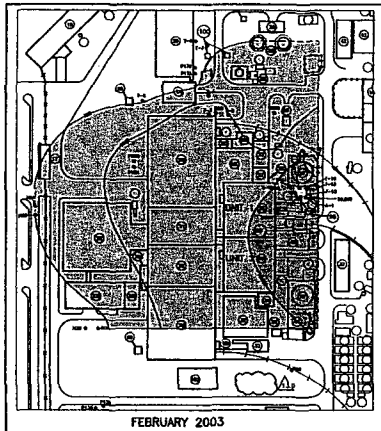
KENNESAW, GEORGIA 30144 (770) 421-3400

CONCENTRATION DATA
MARCH 2006

JOB NO. 6311-06-0020 FIGURE 15

PREPARED BY/DATE RLA 07/24/2006
CHECKED BY/DATE JRW 07/24/2006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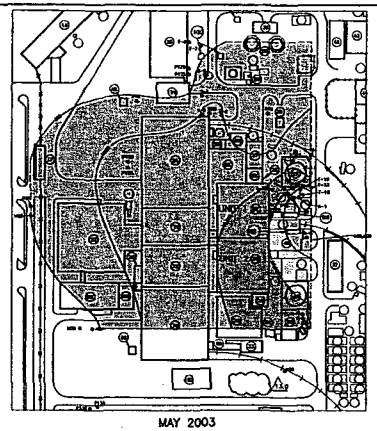
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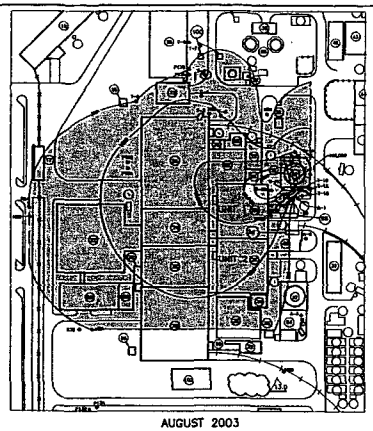
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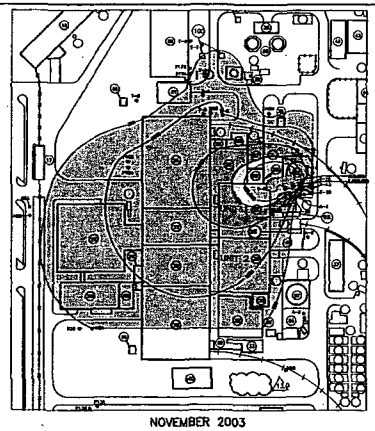
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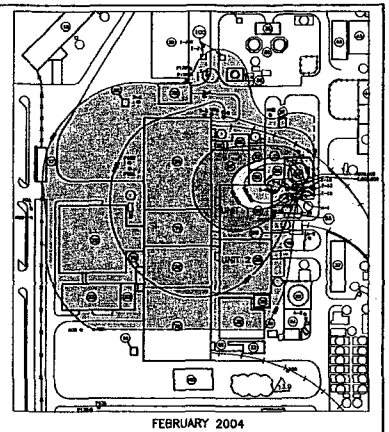
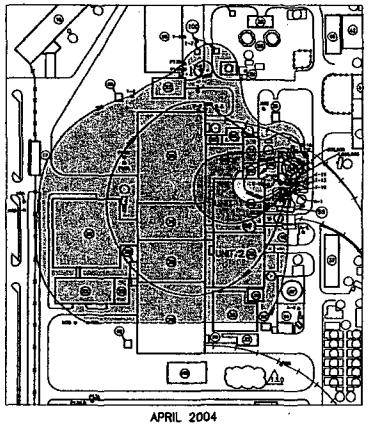

FEBRUARY 2004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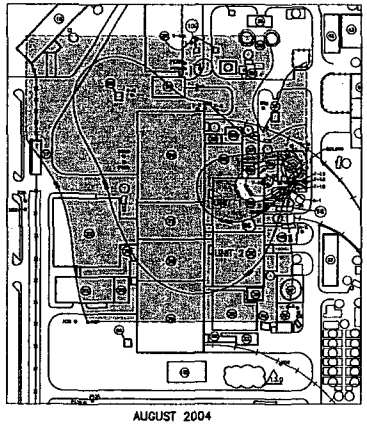
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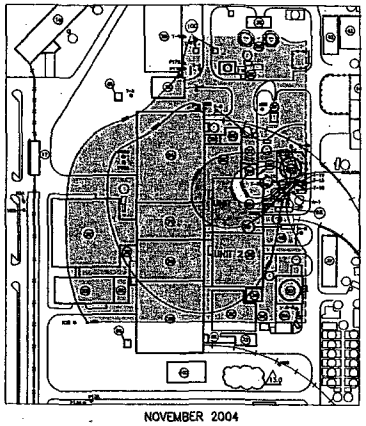
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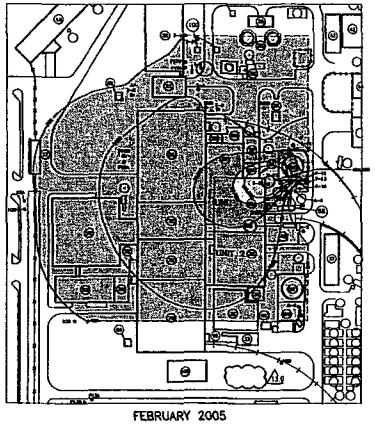
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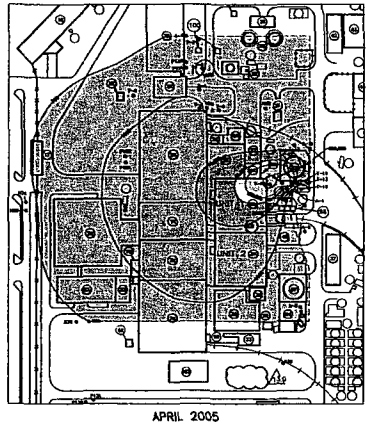
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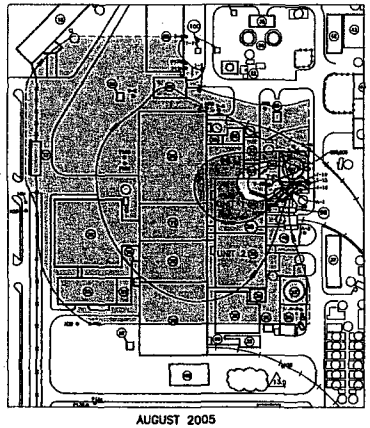
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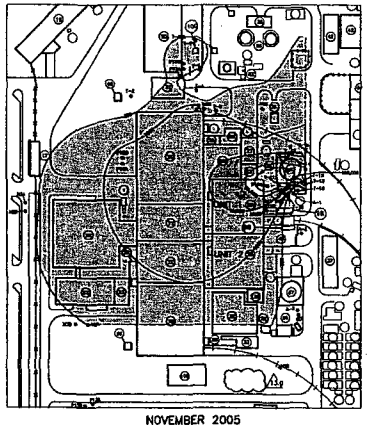
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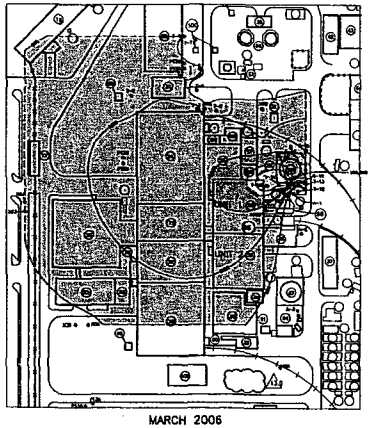
MARCH 2006

LEGEND

● MONITORING WELL LOCATION

CONCENTRATIONS DATA PCI/L

- 300–1000
- 1000–10,000
- 10,000–50,000
- 50,000–100,000
- 100,000–500,000
- 500,000–1,000,000
- >1,000,000

SCALE IN FEET

0 130 260

REV	DATE	BY	CHK	APP	DESCRIPTION	REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED J. GUNN
DRAWN R. ALEXANDER
CHECKED J. WALLACE
IN CHARGE J. WALLACE
DATE 06/15/2006

EDWIN I. HATCH NUCLEAR PLANT
BAILEY, GEORGIA

MACTEC

MACTEC Engineering and Consulting, Inc.
3350 TOWN POINT DRIVE, SUITE 100
KENNESAW, GEORGIA 30144 (770) 421-3400

SUMMARY OF CONCENTRATION DATA FROM FEBRUARY 2003 – MARCH 2006

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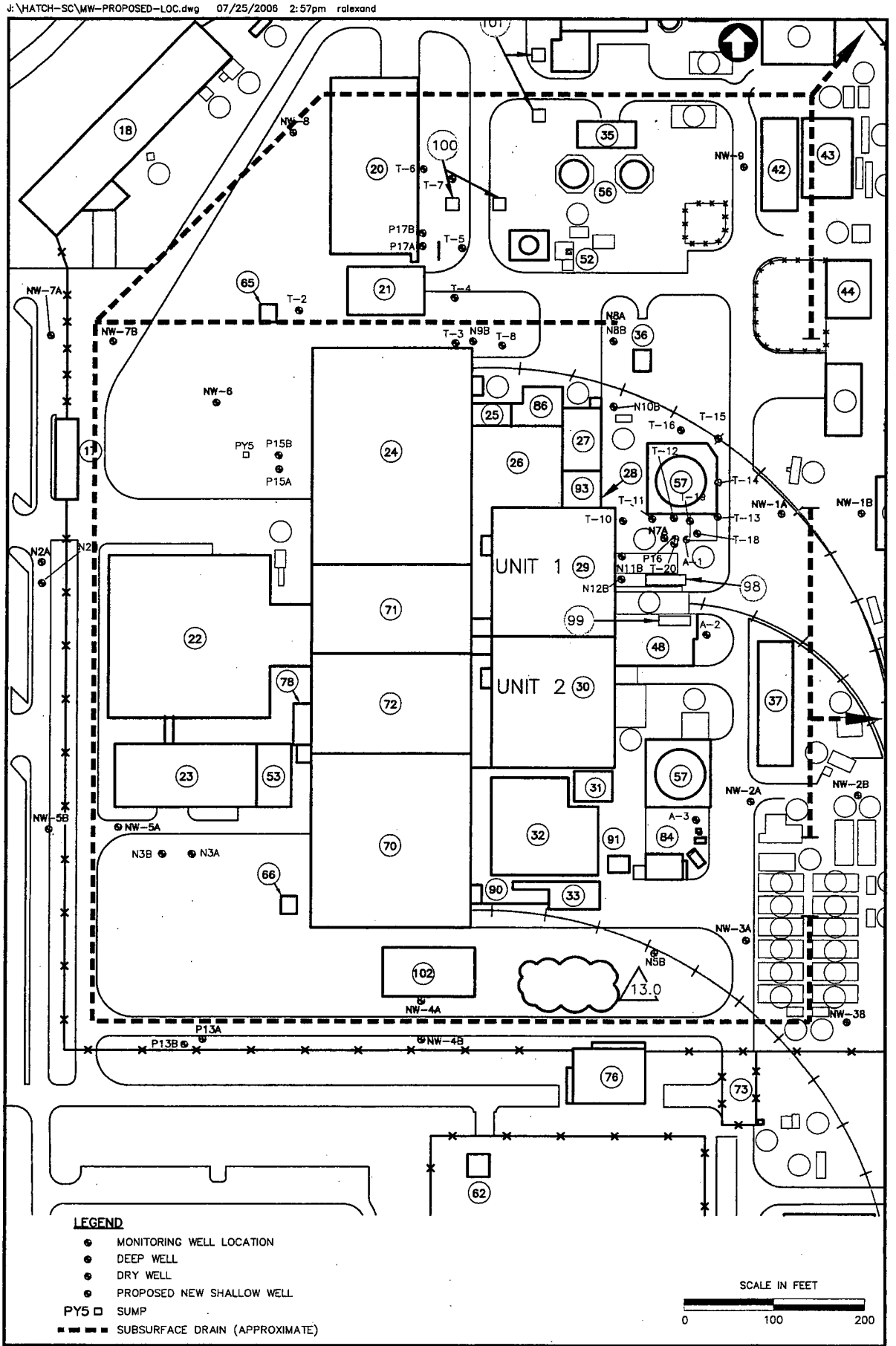
SCALE AS SHOWN
CONTRACT 6311-06-0020
DWG NO. FIG. 16
REVISION NO.

J:\HATCH-SC\MW-PROPOSED-LOC.dwg 07/25/2006 2:57pm rolexand



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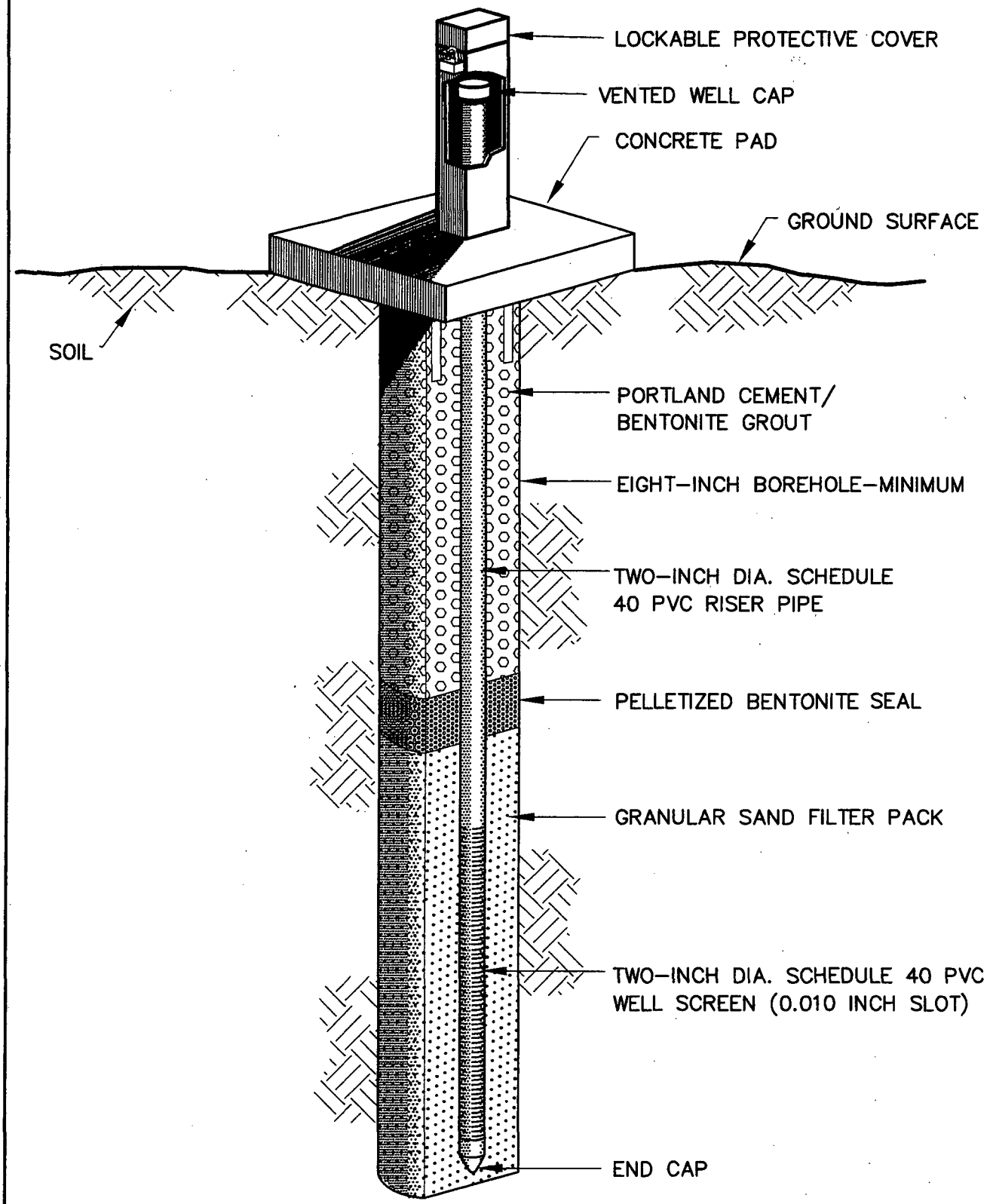
PROPOSED LOCATION OF NEW MONITORING WELLS

JOB NO. 6311-06-0020 FIGURE 17

PREPARED BY/DATE RLA 07/24/2006 CHECKED BY/DATE JRW 07/24/2006

J:\HATCH-SC\HATCH-2\mw2-av.dwg - Layout1 07/25/2006 2:34pm ralexand



EDWIN I. HATCH NUCLEAR PLANT BAXLEY, GEORGIA	MACTEC MACTEC Engineering and Consulting, Inc. 3200 TOWN POINT DRIVE, SUITE 100 KENNESAW, GEORGIA 30144 (770) 421-3400	TYPE II GROUND-WATER MONITORING WELL SCHEMATIC JOB NO. 6311-06-0020 FIGURE 18

PREPARED BY/DATE RLA 07/24/2006
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