

April 26, 2005
5928-05-20120

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555

THREE MILE ISLAND NUCLEAR STATION Units 1 and 2
OPERATING LICENSE NO. DPR-50 AND POSSESSION ONLY LICENSE NO. DPR-73
DOCKET NOS. 50-289 AND 50-320

SUBJECT: 2004 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM REPORT

In accordance with TMI-1 Technical Specification 6.9.3.1 and TMI-2 Technical Specification 6.8.1.1, enclosed is the Annual Radiological Environmental Operating Report covering the time-period of January 1 through December 31, 2004, for the Three Mile Island Nuclear Station.

Please contact Steven Acker of TMI-1 Chemistry at (717) 948-8183 if you have any questions regarding this submittal.

Sincerely,



Glen E. Chick
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GEC/awm

Enclosure

cc: Region I Administrator
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File 05011

JEAS

Docket No: 50-289
50-320

THREE MILE ISLAND NUCLEAR STATION UNITS 1 and 2

Annual Radiological
Environmental Operating Report

1 January Through 31 December 2004

Prepared By
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Environmental Services



Three Mile Island Nuclear Station
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April 2005

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I. Summary and Conclusions

This report on the Radiological Environmental Monitoring Program conducted for the Three Mile Island Nuclear Station (TMINS) by AmerGen covers the period 1 January 2004 through 31 December 2004. During that time period, 1,729 analyses were performed on 1,338 samples. In assessing all the data gathered for this report and comparing these results with preoperational data, it was concluded that the operation of TMINS had no adverse radiological impact on the environment.

Surface, drinking, effluent, storm, and ground water samples were analyzed for concentrations of tritium and gamma emitting nuclides. Surface, drinking, and effluent water samples were also analyzed for concentrations of I-131. Drinking and effluent water samples were also analyzed for concentrations of gross beta. Effluent water samples were also analyzed for concentrations of Sr-89 and Sr-90.

Ground water samples were also analyzed for concentrations of Sr-90. No Sr-89 and Sr-90 activities were detected. Gross beta, I-131, and tritium activities detected were consistent with those detected in previous years. Iodine-131 detected in surface water was from upstream medical sources. No other fission or activation products attributed to TMI release were detected.

Fish (predator and bottom feeder) and sediment samples were analyzed for concentrations of gamma emitting nuclides. Fish samples were also analyzed for concentrations of Sr-89 and Sr-90. No Sr-89 and Sr-90 activity was detected. No fission or activation products were detected in fish. Cesium-137 levels detected in sediment were consistent with levels detected in previous years and were due to previous plant releases and fallout from nuclear weapons testing. No other TMINS-produced fission or activation products were detected in sediment.

Air particulate samples were analyzed for concentrations of gross beta and gamma emitting nuclides. Cosmogenic Be-7 was detected at levels consistent with those detected in previous years. No fission or activation products were detected.

High sensitivity I-131 analyses were performed on weekly air samples. All results were less than the minimum detectable activity.

Cow milk samples were analyzed for concentrations of I-131, gamma emitting nuclides, Sr-89 and Sr-90. No I-131 and Sr-89 activities were detected. Concentrations of naturally occurring K-40 were consistent with those detected in previous years. Sr-90 activities detected were consistent with those detected in previous years and were attributed to fallout from nuclear weapons testing. No other fission or activation products were found.

Food Product samples were analyzed for concentrations of gamma emitting nuclides (including I-131) and Sr-90. Sr-90 activities were detected in both the indicator and control samples. This was a result of plant uptake of Sr-90 in soil as a result of past nuclear weapons testing. Concentrations of naturally occurring K-40 were consistent with those detected in previous years. No fission or activation products were detected.

Environmental gamma radiation measurements were performed quarterly using thermoluminescent dosimeters. Levels detected were consistent with those observed in previous years.

A practice of the TMI site is to analyze rodents for radioactivity as a part of the Non-routine REMP. This program is to determine the transport of radioactive materials to unrestricted areas by rodents. Analyses are performed by TMI personnel when samples are available. These results are presented in this report. A pest control program is in place at TMI. This program minimizes the potential for rodents to transport radioactive material to unrestricted areas.

II. Introduction

The Three Mile Island Nuclear Station (TMINS), consisting of two pressurized water reactors (PWR), is located on the northern one-half of Three Mile Island in the Susquehanna River approximately 2.5 miles south of Middletown in Londonderry Township, Dauphin County, Pennsylvania. TMI-1 is owned and operated by AmerGen and became operational in 1974. TMI-2 is operated by GPU Nuclear, Inc. and owned by Metropolitan Edison (50%), Pennsylvania Electric (25%) and Jersey Central Power & Light (25%). TMI-2 became operational in 1978 and was shut down following the 1979 accident. At the end of 1993, TMI-2 was placed in a condition called Post-Defueling Monitored Storage. TMI-2 is maintained by Amergen under contract with GPU Nuclear.

A Radiological Environmental Monitoring Program (REMP) for TMINS was initiated in 1974. This report covers those analyses performed by Teledyne Brown Engineering (TBE), Global Dosimetry Solutions, Inc., and Environmental Inc. (Midwest Labs) on samples collected during the period 1 January 2004 through 31 December 2004.

A. Objective of the REMP

The objectives of the REMP are to:

1. Evaluate the relationship between quantities of radioactive material released from the plant and resultant radiation doses to individuals from principal pathways of exposure.
2. Provide data on measurable levels of radiation and radioactive materials in the site environs.
3. To verify inplant controls for the containment of radioactive materials.
4. To determine buildup of long-lived radionuclides in the environment and changes in background radiation levels.
5. To provide reassurance to the public that the program is capable of adequately assessing impacts and identifying noteworthy changes in the radiological status of the environment.
6. To fulfill the requirements of the TMI-1 and TMI-2 Technical Specifications.

B. Implementation of the Objectives

The implementation of the objectives is accomplished by:

1. Identifying significant exposure pathways.
2. Establishing baseline radiological data of media within those pathways.
3. Continuously monitoring those media before and during Station operation to assess Station radiological effects (if any) on man and the environment.

III. Program Description

A. Sample Collection

Samples for the TMINS REMP were collected for AmerGen by Normandeau Associates, RMC Environmental Services Division (RMC). This section describes the general collection methods used by RMC to obtain environmental samples for the TMINS REMP in 2004. Sample locations and descriptions can be found in Tables B-1 and B-2, and Figures B-1 through B-3, Appendix B. The collection procedures used by RMC are listed in Table B-3.

Aquatic Environment

The aquatic environment was evaluated by performing radiological analyses on samples of surface water, drinking water, effluent water, storm water, ground water, fish, and sediment. Two gallon water samples were collected monthly from continuous samplers located at three surface water locations (A3-2, J1-2 and Q9-1), three drinking water locations (G15-2, G15-3 and Q9-1), and one effluent water location (K1-1). Control locations were A3-2 and Q9-1. Monthly grab water samples were taken from one storm water runoff location (EDCB). Grab ground water samples were collected quarterly at eight locations (48S, GP-1, GP-6, GP-8, GP-9, MS-22, OSF and OS-18), semiannually at 12 locations (GP-12, MS-2, MS-5, MS-8, MS-20, NW-A, NW-B, NW-C, NW-CW, OS-14, RW-1 and RW-2) and annually at seven locations (E1-2, MS-1, MS-4, MS-7, MS-19, MS-21 and N2-1). All water samples were collected in new unused plastic bottles, which were rinsed at least twice with source water prior to collection. Fish samples comprising the flesh of two groups, bottom feeder and predator, were collected semiannually at an upstream control (BKG) and a downstream Indicator (IND) location. Location IND could be

affected by TMINS' effluent releases. Sediment samples composed of recently deposited substrate were collected semiannually at three locations (J2-1, K1-3 and A1-3). In addition, one sediment sample was collected annually at the EDCB. Location A1-3 was the control.

Atmospheric Environment

The atmospheric environment was evaluated by performing radiological analyses on samples of air particulate, airborne iodine, milk, and Food Product. Airborne iodine and particulate samples were collected and analyzed weekly at seven locations (A3-1, E1-2, F1-3, G2-1, H3-1, M2-1, and Q15-1). The control location was Q15-1. Airborne iodine and particulate samples were obtained at each location, using a vacuum pump with charcoal and glass fiber filters attached. The pumps were run continuously and sampled air at the rate of approximately one cubic foot per minute. The filters were replaced weekly and sent to the laboratory for analysis.

Milk samples were collected biweekly at four locations (K15-3, D2-1, E2-2, and G2-1) from March through November, and monthly from December through February. The control location was K15-3. All samples were collected in new unused two gallon plastic bottles from the bulk tank at each location, preserved with sodium bisulfite, and shipped promptly to the laboratory.

Milk was collected at station F4-1 quarterly as part of the Non-routine REMP.

Food Products were collected annually at two locations (B10-2 and E1-2). The control location was B10-2. Four different kinds of samples were collected and placed in new unused plastic bags, and sent to the laboratory for analysis.

Ambient Gamma Radiation

Direct radiation measurements were made using Panasonic 814 calcium sulfate (CaSO_4) thermoluminescent dosimeters (TLD). The TLD locations were placed on and around the TMINS site as follows:

A site boundary ring consisting of 21 locations (A1-4, B1-1, B1-2, C1-2, D1-1, E1-4, F1-2, F1-4, G1-3, G1-5, G1-6, H1-1, J1-1, J1-3, K1-4, L1-1, M1-1, N1-3, P1-2, Q1-2, and R1-1) near and within the site perimeter representing fence post doses (i.e., at locations where the doses will be potentially greater than maximum annual off-site doses) from TMINS release.

An offsite ring consisting of 58 locations (A3-1, A5-1, A9-3, B2-1, B5-1, B10-1, C1-1, C2-1, C5-1, C8-1, D1-2, D2-2, D6-1, E1-2, E2-3, E5-1, E7-1, F1-1, F2-1, F5-1, F10-1, G1-2, G2-4, G5-1, H3-1, H5-1, H8-1, J3-1, J5-1, J7-1, K2-1, K3-1, K5-1, K8-1, L1-2, L2-1, L5-1, L8-1, M1-2, M2-1, M5-1, M9-1, N1-1, N2-1, N5-1, N8-1, P1-1, P2-1, P5-1, P8-1, Q1-1, Q2-1, Q5-1, Q9-1, R1-2, R3-1, R5-1, and R9-1) extending to approximately 5 miles from the site designed to measure possible exposures to close-in population.

The balance of 11 locations (D15-1, F25-1, G10-1, G15-1, H15-1, J15-1, K15-1, L15-1, N15-2, Q15-1, and R15-1) represent control areas.

The specific TLD locations were determined by the following criteria:

1. The presence of relatively dense population;
2. Site meteorological data taking into account distance and elevation for each of the sixteen—22 1/2 degree sectors around the site, where estimated annual dose from TMINS, if any, would be most significant;
3. On hills free from local obstructions and within sight of the vents (where practical);
4. And near the closest dwelling to the vents in the prevailing downwind direction.

Each TLD station consists of two primary program TLD badges, each of which has three CaSO₄ thermoluminescent phosphors enclosed in plastic, placed at each location in a frame located approximately three feet above ground level. Since each TLD responds to radiation independently, this provides six independent detectors at each station. The TLDs were exchanged quarterly and sent to ICN for analysis.

B. Sample Analysis

This section describes the general analytical methods used by TBE and Midwest Labs to analyze the environmental samples for radioactivity for the TMINS REMP in 2004. The analytical procedures used by the laboratories are listed in Table B-3.

In order to achieve the stated objectives, the current program includes the following analyses:

1. Concentrations of beta emitters in drinking and effluent water, and air particulates.
2. Concentrations of gamma emitters in surface, drinking, effluent, storm, and ground water, air particulates, milk, fish, sediment, and Food Product.
3. Concentrations of tritium in surface, drinking, effluent, storm, and ground water.
4. Concentrations of I-131 in surface, drinking, and effluent water, air, milk and Food Product.
5. Concentrations of strontium in effluent and ground water, fish, milk, and Food Product.
6. Ambient gamma radiation levels at various site environs.

C. Data Interpretation

The radiological and direct radiation data collected prior to TMINS becoming operational was used as a baseline with which these operational data were compared. For the purpose of this report, TMINS was considered operational at initial criticality. In addition, data were compared to previous years' operational data for consistency and trending. Several factors were important in the interpretation of the data:

1. Lower Limit of Detection and Minimum Detectable Activity

The lower limit of detection (LLD) was defined as the smallest concentration of radioactive material in a sample that would yield a net count (above background) that would be detected with only a 5% probability of falsely concluding that a blank observation represents a "real" signal. The LLD was intended as a before the fact estimate of a system (including instrumentation, procedure and sample type) and not as an after the fact criteria for the presence of activity. All analyses were designed to achieve the required TMINS detection capabilities for environmental sample analysis.

The minimum detectable activity (MDA) is defined above with the exception that the measurement is an after the fact estimate of the presence of activity.

2. Net Activity Calculation and Reporting of Results

Net activity for a sample was calculated by subtracting background activity from the sample activity. Since the REMP measures extremely small changes in radioactivity in the environment, background variations may result in sample activity being lower than the background activity effecting a negative number. An MDA was reported in all cases where positive activity was not detected.

Gamma spectroscopy results for each type of sample were grouped as follows:

For surface, drinking, effluent, storm, and ground water 11 nuclides, Mn-54, Co-58, Fe-59, Co-60, Zn-65, Zr-95, Nb-95, Cs-134, Cs-137, Ba-140 and La-140 were reported.

For fish eight nuclides, K-40, Mn-54, Co-58, Fe-59, Co-60, Zn-65, Cs-134 and Cs-137 were reported.

For sediment six nuclides, K-40, Mn-54, Co-58, Co-60, Cs-134 and Cs-137 were reported.

For air particulate six nuclides, Be-7, Mn-54, Co-58, Co-60, Cs-134 and Cs-137 were reported.

For milk five nuclides, K-40, Cs-134, Cs-137, Ba-140 and La-140 were reported.

For Food Products four nuclides, K-40, I-131, Cs-134 and Cs-137 were reported.

Means and standard deviations of the results were calculated. The standard deviations represent the variability of measured results for different samples rather than single analysis uncertainty.

D. Program Exceptions

For 2004 the TMINS REMP had a sample recovery rate in excess of 99%. Exceptions are listed below:

1. Air particulate and air iodine samples were not available for the following periods and locations, due to pump failures:
06/16/2004 – 06/23/2004, Location G2-1
08/18/2004 – 08/25/2004, Location M2-1

2. Air particulate and air iodine sample volumes were low for the following periods and locations, due to pump malfunction:
06/16/2004 – 06/23/2004, Location E1-2
06/16/2004 – 06/23/2004, Location H3-1
09/15/2004 – 09/22/2004, Location E1-2Q (Calculated stop date as 09/18/2004)
3. Surface water was collected as a grab sample. The continuous sampler did not operate for one or more hours due to frozen water/ice in sample line, power failure or sampler malfunction:
12/30/2003 – 02/03/2004, Location J1-2
02/03/2004 – 03/02/2004, Location J1-2
03/02/2004 – 03/30/2004, Location J1-2
06/01/2004 – 06/29/2004, Location J1-2 and Q9-1
06/29/2004 – 08/03/2004, Location J1-2
08/03/2004 – 08/31/2004, Location J1-2
08/31/2004 – 09/28/2004, Location J1-2 and Q9-1
12/01/2004 – 12/28/2004, Location J1-2
4. Drinking water was collected as a grab sample. The continuous sampler did not operate for one or more hours due to power failure or pump malfunction:
06/01/2004 – 06/29/2004, Location Q9-1
5. TLD station and sample lost due to flooding on the river:
10/10/2004 – 01/10/2005, Location N1-1

Each program exception was reviewed to understand the causes of the program exception. Sampling and maintenance errors were reviewed with the personnel involved to prevent recurrence. Occasional equipment breakdowns and power outages were unavoidable.

The overall sample recovery rate indicates that the appropriate procedures and equipment are in place to assure reliable program implementation.

- E. Program Changes
- There were no changes to the program in 2004.

IV. Results and Discussion

A. Aquatic Environment

1. Surface Water

Samples were taken from a continuous sampler at three locations (A3-2, J1-2, and Q9-1) on a monthly schedule. Of these locations only J1-2 located downstream, could be affected by TMINS' effluent releases. The following analyses were performed.

Tritium

Monthly samples from all locations were analyzed for tritium activity (Table C-1.1, Appendix C). Positive tritium activity was detected in eight of 24 samples, primarily at location J1-2 which is located immediately downstream of the TMINS effluent outfall. All samples ranged from <143 to 4,390 pCi/l. Concentrations detected were consistent with those detected in previous years and were well below any regulatory limits. (Figures C-1 and C-2, Appendix C).

Iodine

Monthly samples from location A3-2 were analyzed for iodine-131 activity (Table C-1.2, Appendix C). Iodine-131 activity was detected in three samples. The values ranged from <0.4 to 1.4 pCi/l. Concentrations detected were consistent with those detected in previous years. Iodine-131 activity was the result of medical treatments.

Gamma Spectrometry

Samples from all locations were analyzed for gamma emitting nuclides (Table C-1.3, Appendix C). All nuclides were less than the MDA.

2. Drinking Water

Monthly samples were collected from continuous water samplers at three locations (G15-2, G15-3, and Q9-1). Two locations (G15-2 and G15-3) could be affected by TMINS' effluent releases. The following analyses were performed:

Gross Beta

Monthly samples from all locations were analyzed for concentrations of gross beta. (Tables C-II.1, Appendix C). Gross beta activity was detected in 28 of 36 samples. The values ranged from <1.8 to 4.5 pCi/l. Concentrations detected were consistent with those detected in previous years (Figures C-3, Appendix C).

Iodine-131

Monthly samples from all locations were analyzed for concentrations of iodine-131. (Tables C-II.2, Appendix C). Iodine-131 activity was not detected in the samples.

Tritium

Monthly samples from all locations were analyzed for tritium activity (Table C-II.3, Appendix C). Tritium activity was detected in one of 36 samples. Activity was detected in one sample at 197 pCi/l. The concentration detected was consistent with those detected in previous years (Figures C-4, Appendix C).

Gamma Spectrometry

Samples from all locations were analyzed for gamma emitting nuclides (Table C-II.4, Appendix C). All nuclides were less than the MDA.

3. Effluent Water

Monthly samples were collected from a continuous water sampler at one location (K1-1). The following analyses were performed:

Gross Beta

Monthly samples from location K1-1 were analyzed for concentrations of gross beta. (Tables C-III.1, Appendix C). Gross beta was detected in 11 of 12 samples. The values ranged from <2.1 to 8.7 pCi/l. Concentrations detected were consistent with those detected in previous years.

Iodine-131

Monthly samples from location K1-1 were analyzed for concentrations of iodine-131. (Tables C-III.1, Appendix C). Iodine-131 activity was not detected in the samples.

Tritium

Monthly samples from location K1-1 were analyzed for tritium activity (Table C-III.1, Appendix C). Tritium activity was detected in eight samples. The values ranged from <152 to 63,000 pCi/l. Concentrations detected were consistent with those detected in previous years.

Strontium

Semiannual samples from location K1-1 were analyzed for Sr-89 and Sr-90 (Table C-III.1, Appendix C). No strontium activity was detected. The highest MDA was calculated at 3.3 pCi/l for Sr-89 and at 0.8 pCi/l for Sr-90.

Gamma Spectrometry

Samples from location K1-1 were analyzed for gamma emitting nuclides (Table C-III.2, Appendix C). All nuclides were less than the MDA.

4. Storm Water

Monthly grabs from the storm water collection basin (EDCB) were composited quarterly. The following analyses were performed:

Tritium

All samples from location EDCB were analyzed for tritium activity (Table C-IV.1, Appendix C). Tritium activity was detected in two samples. The values ranged from <181 to 675 pCi/l. Concentrations detected were consistent with those detected in previous years.

Gamma Spectrometry

Samples from location EDCB were analyzed for gamma emitting nuclides (Table C-IV.1, Appendix C). All nuclides were less than the MDA.

5. Ground Water

Quarterly, semiannual and annual grab samples were collected at 27 locations (48S, GP-1, GP-6, GP-8, MS-22, OSF, OS-18, GP-9, GP-12, MS-2, MS-5; MS-20, NW-A, NW-B, NW-C, NW-CW, OS-14, RW-1, RW-2, E1-2, MS-1; MS-4, MS-7, MS-8, MS-19, MS-21 and N2-1). The following analyses were performed:

Tritium

All samples from the locations were analyzed for tritium activity (Table C-V.1, Appendix C). Tritium activity was detected in 60 of 63 samples. The values ranged from <163 to 5,360 pCi/l. Concentrations detected were consistent with those detected in previous years.

Strontium

Annual samples from six locations (48S, OSF, MS-2, MS-5, MS-8 and OS-14) were analyzed for Sr-90 (Table C-V.2, Appendix C). No Sr-90 activity was detected. The highest MDA was calculated at <0.6 pCi/l.

Gamma Spectrometry

Quarterly samples from two locations (48S and OSF) and annual composite samples from eight locations (MS-2, MS-5, MS-8, MS-20, MS-22, OS-14, RW-1 and RW-2) and annual grab samples from two locations (E1-2 and N2-1) were analyzed for gamma emitting nuclides (Table C-V.2, Appendix C). All nuclides were less than the MDA.

6. Fish

Fish samples comprised of bottom feeder and predator were collected at two locations (IND and BKG) semiannually. Location IND could be affected by TMINS' effluent releases. The following analyses were performed:

Strontium

The edible portions of fish samples from both locations were analyzed for Sr-89 and Sr-90. (Table C-VI.1, Appendix C). No strontium activity was detected. The highest MDA was calculated

at <17 pCi/kg wet for Sr-89 and at <4 pCi/kg wet for Sr-90.

Gamma Spectrometry

The edible portions of fish samples from both locations were analyzed for gamma emitting nuclides (Table C-VI.2, Appendix C). Naturally occurring K-40 was found at all stations and ranged from 2,450 to 3,780 pCi/kg wet and was consistent with levels detected in previous years. No fission or activation products were found.

7. Sediment

Aquatic sediment samples were collected at three locations (A1-3, J2-1 and K1-3) semiannually. In addition, location EDCB was sampled annually. Of these locations two (J2-1 and K1-3) could be affected by TMINS' effluent releases. The following analysis was performed:

Gamma Spectrometry

Sediment samples from all four locations were analyzed for gamma emitting nuclides (Table C-VII.1, Appendix C). Nuclides detected were naturally occurring K-40, and the fission product Cs-137. K-40 was found at all stations and ranged from 8,360 to 21,700 pCi/kg dry. Concentrations of the fission product Cs-137 were found in all samples (Figure C-5, Appendix C). Location EDCB had the highest average concentration of 242 pCi/kg dry. The activity detected was consistent with those detected in the pre-operational years. No other TMINS fission or activation products were found.

B. Atmospheric Environment

1. Airborne

a. Air Particulates

Continuous air particulate samples were collected from seven locations on a weekly basis. The seven locations were separated into three groups: Group I represents locations within the TMINS site boundary (E1-2 and F1-3), Group II represents the location at an intermediate distance from the TMINS site (A3-1, G2-1, M2-1, and H3-1), and Group III represents the control location at a remote distance from TMINS (Q15-1). The following analyses were

performed:

Gross Beta

Weekly samples were analyzed for concentrations of beta emitters (Table C-VIII.1 and C-VIII.2, Appendix C).

Detectable gross beta activity was observed at all locations. Comparison of results among the three groups aid in determining the effects, if any, resulting from the operation of TMINS. The results from the On-Site locations (Group I) ranged from <6 to 47 E-3 pCi/m³ with a mean of 17 E-3 pCi/m³. The results from the Offsite location (Group II) ranged from <7 to 34 E-3 pCi/m³ with a mean of 17 E-3 pCi/m³. The results from the Control locations (Group III) ranged from 8 to 31 E-3 pCi/m³ with a mean of 17 E-3 pCi/m³. Comparison of the 2004 air particulate data with previous years data indicate no effects from the operation of TMINS (Figure C-6, Appendix C). In addition a comparison of the weekly mean values for 2004 indicate no notable differences among the three groups (Figure C-7, Appendix C).

Gamma Spectrometry

Weekly samples were composited quarterly and analyzed for gamma emitting nuclides (Table C-VIII.3, Appendix C). Naturally occurring Be-7 due to cosmic ray activity was detected in all samples. These values ranged from 43 to 82 E-3 pCi/m³. All other nuclides were less than the MDA.

b. Airborne Iodine

Continuous air samples were collected from seven (A3-1, E1-2, F1-3, G2-1, H3-1, M2-1, and Q15-1) locations and analyzed weekly for I-131 (Table C-IX.1, Appendix C). All results were less than the MDA.

2. Terrestrial

a. Milk

Samples were collected from four locations (K15-3, D2-1, E2-2, and G2-1) biweekly March through November and monthly December through February. Station F4-1 was sampled quarterly. The following analyses were performed:

Iodine-131

Milk samples from all locations were analyzed for concentrations of I-131 (Table C-X.1, Appendix C). All results were less than the MDA.

Strontium

Milk samples from all locations were composited quarterly and analyzed for Sr-89 and Sr-90 (Table C-X.2, Appendix C). No Sr-89 activity was detected. Sr-90 activity was detected. The values ranged from <0.4 to 1.6 pCi/l. The activity detected was consistent with those detected in the pre-operational years (Figure C-8, Appendix C).

Gamma Spectrometry

Milk samples from all locations were analyzed for concentrations of gamma emitting nuclides (Table C-X.3, Appendix C).

Naturally occurring K-40 activity was found in all samples. The values ranged from 819 to 1,560 pCi/l. All other nuclides were less than the MDA.

b. Food Products

Samples were collected from two locations (B10-2 and E1-2) annually. The following analyses were performed:

Strontium

Each Food Product sample was analyzed for concentrations of Sr-90 (Table C-XI.1, Appendix C). Sr-90 activity was detected in one sample at 22 pCi/kg wet. Laboratory reanalysis confirmed the result. The hypothetical dose to the maximum exposed individual was 1.75 mrem from consumption of this food product.

Gamma Spectrometry

Each Food Product sample was analyzed for concentrations of gamma emitting nuclides (Table C-XI.1, Appendix C).

Naturally occurring K-40 activity was found in all samples. The values ranged from 1,550 to 3,540 pCi/l. All other nuclides were less than the MDA.

c. Rodents

Gamma Spectrometry

One rat from the restricted radiologically clean area was obtained and analyzed for gamma emitting nuclides. All nuclides were less than the MDA.

C. Ambient Gamma Radiation

Ambient gamma radiation levels were measured utilizing Panasonic 814 (CaSO₄) thermoluminescent dosimeters. Fifty-eight TLD locations were established around the site. Results of TLD measurements are listed in Tables C-XII.1 to C-XII.3, Appendix C.

TLD measurements were below 10 mR/standard month, with a range of 1.6 to 6.3 mR/standard month. A comparison of the Site Boundary and Intermediate Distance data to the Control Location data, indicate that the ambient gamma radiation levels from the Control Locations D15-1, F25-1, G10-1, G15-1, H15-1, J15-1, K15-1, L15-1, N15-2, Q15-1, and R15-1 were consistently higher. The historical ambient gamma radiation data from Locations D15-1, F25-1, G10-1, G15-1, H15-1, J15-1, K15-1, L15-1, N15-2, Q15-1, and R15-1 were plotted along with similar data from the Site, Intermediate Distance and Outer Ring Locations (Figure C-9, Appendix C). Locations D15-1, F25-1, G10-1, G15-1, H15-1, J15-1, K15-1, L15-1, N15-2, Q15-1, and R15-1 have a historical high bias, but tracked with the data from all three groups, this bias is most likely due to radon emanating from the ground.

D. Land Use Survey

A Land Use Survey conducted in the September and October 2004 growing season around the Three Mile Island Nuclear Station (TMINS) was performed by Normandeau Associates, RMC Environmental Services Division for AmerGen to comply with Sections 2.15 and 3.4.2 of the Plant's Offsite Dose Calculation Manual (ODCM). The purpose of the survey was to document the nearest resident and milk-producing animal in each of the sixteen 22 ½ degree sectors around the site. There were no changes required to the TMINS REMP, as a result of this survey. The results of this survey are summarized below.

Distance in Miles from the TMINS Reactor Buildings		
Sector	Residence	Milk Farm
1 N	1.1	2.1
2 NNE	0.7	-
3 NE	0.5	4.1
4 ENE	0.5	1.1
5 E	0.4	1.1
6 ESE	1.1	3.2
7 SE	0.7	1.4
8 SSE	0.7	-
9 S	2.3	-
10 SSW	0.6	4.9
11 SW	0.5	-
12 WSW	0.5	-
13 W	0.4	-
14 WNW	0.4	3.7
15 NW	0.4	-
16 NNW	0.7	-

As allowed by the ODCM, in lieu of a garden survey, sampling of broadleaf vegetation was performed. The sampling locations were at the site boundary in the east southeast (ESE) and southeast (SE) sectors.

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Exelon TMI 2004 Broad Leaf Vegetation Sampling Results⁽¹⁾

Collection Date	Sample Location	Vegetation Type	Gamma Result (pCi/kg, wet)	Sr-90 Result (pCi/kg, wet)
09/16/04	TM-FPL-ESE1	Maple Leaves	Be-7: 1080 ± 119 K-40: 2360 ± 241	18 ± 3
09/16/04	TM-FPL-ESE2	Beech Leaves	Be-7: 2230 ± 145 K-40: 4200 ± 254	132 ± 5
09/16/04	TM-FPL-ESE3	Sycamore Leaves	Be-7: 1600 ± 160 K-40: 2320 ± 274	11 ± 2
09/16/04	TM-FPL-SE1	Sycamore Leaves	Be-7: 1400 ± 117 K-40: 1910 ± 222	6 ± 2
09/16/04	TM-FPL-SE2	Maple Leaves	Be-7: 1210 ± 122 K-40: 2230 ± 213	26 ± 3
09/16/04	TM-FPL-SE3	Beech Leaves	Be-7: 2530 ± 146 K-40: 5970 ± 369	58 ± 5
09/15/04	TM-FPL-B10-2 ⁽²⁾	Sycamore, Maple and Oak Leaves	Be-7: 1840 ± 130 K-40: 5020 ± 242	84 ± 5

(1) Collection and analysis of broadleaf vegetation was performed in lieu of a garden census.

(2) Control Sample

A dose calculation was performed using the Sr-90 result from station TM-FPL-ESE2. The pathway was determined based on the assumption that a deer or cow would eat the tree leaves and be consumed by man. The resulting hypothetical dose to the maximum exposed individual would be 1.2 mrem to the bone of an adult.

V. References

1. Three Mile Island Nuclear Station, Unit 1, Technical Specifications, DPR 50.
2. Three Mile Island Nuclear Station, Unit 2, PDMS Technical Specifications, DPR 73.
3. Radiation Management Corporation. "Three Mile Island Nuclear Station, Preoperational Radiological Environmental Monitoring Program, January 1, 1974 - June 5, 1974." RMC-TR-75-17, January 1975.
4. AmerGen. "Three Mile Island Nuclear Station Offsite Dose Calculation Manual (ODCM)."

APPENDIX A

**RADIOLOGICAL ENVIRONMENTAL MONITORING
REPORT SUMMARY**

**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY FOR
THE THREE MILE ISLAND NUCLEAR STATION, 2004**

Name of Facility: THREE MILE ISLAND NUCLEAR STATION		DOCKET NUMBER: 50-289 & 50-320		REPORTING PERIOD: 2004		LOCATION WITH HIGHEST ANNUAL MEAN		
Location of Facility: MIDDLETOWN COUNTY, PA								
MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSES PERFORMED	NUMBER OF ANALYSES PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	INDICATOR MEAN (F) RANGE	CONTROL MEAN (F) RANGE	MEAN (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
SURFACE WATER (PCI/LITER)	TRITIUM	24	2000	916 (7/12) (<143/4390)	184 (1/12) (<153/288)	916 (7/12) (<143/4390)	J1-2 INDICATOR WEST SHORE, TMI 0.5 MILES S OF SITE	0
	I-131	12	N/A	N/A	0.8 (3/12) (<0.4/1.4)	0.8 (3/12) (<0.4/1.4)	A3-2 CONTROL SWATARA CREEK 2.5 MILES N OF SITE	0
	GAMMA MN-54	24	15	4 (0/12) (<2/<7)	4 (0/12) (<2/<6)	4 (0/12) (<2/<7)	J1-2 INDICATOR WEST SHORE, TMI 0.5 MILES S OF SITE	0
	CO-58		15	4 (0/12) (<2/<6)	4 (0/12) (<2/<7)	4 (0/12) (<2/<6)	J1-2 INDICATOR WEST SHORE, TMI 0.5 MILES S OF SITE	0
	CO-60		15	4 (0/12) (<3/<7)	5 (0/12) (<2/<14)	5 (0/12) (<2/<14)	Q9-1 CONTROL STEELTON WATER AUTHORITY 8.5 MILES NW OF SITE	0
	FE-59		30	8 (0/12) (<4/<15)	9 (0/12) (<5/<20)	9 (0/12) (<5/<20)	Q9-1 CONTROL STEELTON WATER AUTHORITY 8.5 MILES NW OF SITE	0
	ZN-65		30	8 (0/12) (<5/<15)	10 (0/12) (<6/<24)	10 (0/12) (<6/<24)	Q9-1 CONTROL STEELTON WATER AUTHORITY 8.5 MILES NW OF SITE	0
	ZR-95		30	7 (0/12) (<4/<12)	6 (0/12) (<4/<11)	7 (0/12) (<4/<12)	J1-2 INDICATOR WEST SHORE, TMI 0.5 MILES S OF SITE	0

FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES (F)

**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY FOR
THE THREE MILE ISLAND NUCLEAR STATION, 2004**

Name of Facility: THREE MILE ISLAND NUCLEAR STATION		DOCKET NUMBER: 50-289 & 50-320							
Location of Facility: MIDDLETOWN COUNTY, PA		REPORTING PERIOD: 2004							
MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSES PERFORMED	NUMBER OF ANALYSES PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	INDICATOR MEAN (F) RANGE	CONTROL MEAN (F) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN MEAN (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS	
	NB-95		15	4 (0/12) (<2/<8)	4 (0/12) (<2/<7)	4 (0/12) (<2/<8)	J1-2 INDICATOR WEST SHORE, TMI 0.5 MILES S OF SITE	0	
	CS-134		15	4 (0/12) (<2/<6)	3 (0/12) (<2/<6)	4 (0/12) (<2/<6)	J1-2 INDICATOR WEST SHORE, TMI 0.5 MILES S OF SITE	0	
	CS-137		18	4 (0/12) (<2/<7)	4 (0/12) (<2/<6)	4 (0/12) (<2/<7)	J1-2 INDICATOR WEST SHORE, TMI 0.5 MILES S OF SITE	0	
	BA-140		60	20 (0/12) (<10/<36)	18 (0/12) (<10/<33)	20 (0/12) (<10/<36)	J1-2 INDICATOR WEST SHORE, TMI 0.5 MILES S OF SITE	0	
	LA-140		15	6 (0/12) (<4/<11)	6 (0/12) (<3/<12)	6 (0/12) (<4/<11)	J1-2 INDICATOR WEST SHORE, TMI 0.5 MILES S OF SITE	0	
DRINKING WATER (PCI/LITER)	GROSS BETA	36	4	2.9 (20/24) (<1.9/4.5)	2.4 (8/12) (1.8/3.3)	3.1 (12/12) (2.1/4.1)	G15-2 INDICATOR WRIGHTSVILLE WATER SUPPLY 13.6 MILES SE OF SITE	0	
	I-131	36	1	0.6 (0/24) (<0.4/<0.9)	0.5 (0/12) (<0.3/<0.8)	0.7 (0/12) (<0.4/<0.9)	G15-3 INDICATOR LANCASTER WATER AUTHORITY 14.8 MILES SE OF SITE	0	
	TRITIUM	36	2000	176 (1/24) (<143/<200)	176 (0/12) (<147/<191)	178 (1/12) (<144/197)	G15-3 INDICATOR LANCASTER WATER AUTHORITY 14.8 MILES SE OF SITE	0	

A-2

FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES (F)

**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY FOR
THE THREE MILE ISLAND NUCLEAR STATION, 2004**

Name of Facility: THREE MILE ISLAND NUCLEAR STATION				DOCKET NUMBER: 50-289 & 50-320		REPORTING PERIOD: 2004		
Location of Facility: MIDDLETOWN COUNTY, PA				INDICATOR	CONTROL	LOCATION WITH HIGHEST ANNUAL MEAN		
MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSES PERFORMED	NUMBER OF ANALYSES PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	MEAN (F) RANGE	MEAN (F) RANGE	MEAN (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
	GAMMA	36						
	MN-54		15	4 (0/24) (<2/<9)	4 (0/12) (<3/<10)	4 (0/12) (<2/<9)	G15-3 INDICATOR LANCASTER WATER AUTHORITY 14.8 MILES SE OF SITE	0
	CO-58		15	4 (0/24) (<2/<9)	4 (0/12) (<3/<9)	4 (0/12) (<3/<9)	Q9-1 CONTROL STEELTON WATER AUTHORITY 8.5 MILES NW OF SITE	0
	CO-60		15	5 (0/24) (<2/<9)	4 (0/12) (<2/<8)	5 (0/12) (<3/<9)	G15-3 INDICATOR LANCASTER WATER AUTHORITY 14.8 MILES SE OF SITE	0
	FE-59		30	10 (0/24) (<5/<17)	9 (0/12) (<5/<19)	10 (0/12) (<7/<17)	G15-3 INDICATOR LANCASTER WATER AUTHORITY 14.8 MILES SE OF SITE	0
	ZN-65		30	10 (0/24) (<4/<17)	9 (0/12) (<5/<20)	11 (0/12) (<6/<17)	G15-3 INDICATOR LANCASTER WATER AUTHORITY 14.8 MILES SE OF SITE	0
	ZR-95		30	7 (0/24) (<4/<14)	8 (0/12) (<4/<15)	8 (0/12) (<4/<15)	Q9-1 CONTROL STEELTON WATER AUTHORITY 8.5 MILES NW OF SITE	0
	NB-95		15	4 (0/24) (<2/<10)	5 (0/12) (<3/<10)	5 (0/12) (<3/<10)	Q9-1 CONTROL STEELTON WATER AUTHORITY 8.5 MILES NW OF SITE	0
	CS-134		15	4 (0/24) (<2/<8)	4 (0/12) (<2/<8)	4 (0/12) (<2/<8)	G15-3 INDICATOR LANCASTER WATER AUTHORITY 14.8 MILES SE OF SITE	0

FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES (F)

**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY FOR
THE THREE MILE ISLAND NUCLEAR STATION, 2004**

Name of Facility: THREE MILE ISLAND NUCLEAR STATION				DOCKET NUMBER: 50-289 & 50-320		REPORTING PERIOD: 2004		
Location of Facility: MIDDLETOWN COUNTY, PA				INDICATOR	CONTROL	LOCATION WITH HIGHEST ANNUAL MEAN		
MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSES PERFORMED	NUMBER OF ANALYSES PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	MEAN (F) RANGE	MEAN (F) RANGE	MEAN (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
	CS-137		18	5 (0/24) (<2/<9)	5 (0/12) (<3/<9)	5 (0/12) (<2/<9)	G15-3 INDICATOR LANCASTER WATER AUTHORITY 14.8 MILES SE OF SITE	0
	BA-140		60	21 (0/24) (<8/<40)	20 (0/12) (<11/<40)	21 (0/12) (<10/<40)	G15-3 INDICATOR LANCASTER WATER AUTHORITY 14.8 MILES SE OF SITE	0
	LA-140		15	7 (0/24) (<3/<13)	6 (0/12) (<4/<14)	7 (0/12) (<3/<12)	G15-2 INDICATOR WRIGHTSVILLE WATER SUPPLY 13.6 MILES SE OF SITE	0
EFFLUENT WATER (PCI/LITER)	GROSS BETA	12	N/A	5.3 (11/12) (<2.1/8.7)	N/A	5.3 (11/12) (<2.1/8.7)	K1-1 INDICATOR MAIN STATION LIQ. DISCHARGE 0.2 MILES SSW ON SITE	0
	I-131	12	N/A	0.6 (0/12) (<0.3/<1.0)	N/A	0.6 (0/12) (<0.3/<1.0)	K1-1 INDICATOR MAIN STATION LIQ. DISCHARGE 0.2 MILES SSW ON SITE	0
	H-3	12	N/A	10009 (8/12) (<152/63000)	N/A	10009 (8/12) (<152/63000)	K1-1 INDICATOR MAIN STATION LIQ. DISCHARGE 0.2 MILES SSW ON SITE	0
	SR-89	2	N/A	2.4 (0/2) (<1.5/<3.3)	N/A	2.4 (0/2) (<1.5/<3.3)	K1-1 INDICATOR MAIN STATION LIQ. DISCHARGE 0.2 MILES SSW ON SITE	0
	SR-90	2	N/A	0.7 (0/2) (<0.5/<0.8)	N/A	0.7 (0/2) (<0.5/<0.8)	K1-1 INDICATOR MAIN STATION LIQ. DISCHARGE 0.2 MILES SSW ON SITE	0

FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES (F)

**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY FOR
THE THREE MILE ISLAND NUCLEAR STATION, 2004**

Name of Facility: THREE MILE ISLAND NUCLEAR STATION		DOCKET NUMBER: 50-289 & 50-320						
Location of Facility: MIDDLETOWN COUNTY, PA		REPORTING PERIOD: 2004						
MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSES PERFORMED	NUMBER OF ANALYSES PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	INDICATOR LOCATION MEAN (F) RANGE	CONTROL LOCATION MEAN (F) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN MEAN (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
	GAMMA MN-54	12	N/A	5 (0/12) (<2/<8)	N/A	5 (0/12) (<2/<8)	K1-1 INDICATOR MAIN STATION LIQ. DISCHARGE 0.2 MILES SSW ON SITE	0
	CO-58		N/A	5 (0/12) (<2/<8)	N/A	5 (0/12) (<2/<8)	K1-1 INDICATOR MAIN STATION LIQ. DISCHARGE 0.2 MILES SSW ON SITE	0
	CO-60		N/A	5 (0/12) (<3/<9)	N/A	5 (0/12) (<3/<9)	K1-1 INDICATOR MAIN STATION LIQ. DISCHARGE 0.2 MILES SSW ON SITE	0
	FE-59		N/A	10 (0/12) (<4/<19)	N/A	10 (0/12) (<4/<19)	K1-1 INDICATOR MAIN STATION LIQ. DISCHARGE 0.2 MILES SSW ON SITE	0
	ZN-65		N/A	10 (0/12) (<5/<15)	N/A	10 (0/12) (<5/<15)	K1-1 INDICATOR MAIN STATION LIQ. DISCHARGE 0.2 MILES SSW ON SITE	0
	ZR-95		N/A	8 (0/12) (<4/<13)	N/A	8 (0/12) (<4/<13)	K1-1 INDICATOR MAIN STATION LIQ. DISCHARGE 0.2 MILES SSW ON SITE	0
	NB-95		N/A	5 (0/12) (<2/<9)	N/A	5 (0/12) (<2/<9)	K1-1 INDICATOR MAIN STATION LIQ. DISCHARGE 0.2 MILES SSW ON SITE	0
	CS-134		N/A	5 (0/12) (<2/<8)	N/A	5 (0/12) (<2/<8)	K1-1 INDICATOR MAIN STATION LIQ. DISCHARGE 0.2 MILES SSW ON SITE	0

FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES (F)

**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY FOR
THE THREE MILE ISLAND NUCLEAR STATION, 2004**

Name of Facility: THREE MILE ISLAND NUCLEAR STATION				DOCKET NUMBER: 50-289 & 50-320		REPORTING PERIOD: 2004		
Location of Facility: MIDDLETOWN COUNTY, PA				INDICATOR	CONTROL	LOCATION WITH HIGHEST ANNUAL MEAN		
MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSES PERFORMED	NUMBER OF ANALYSES PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	MEAN (F) RANGE	MEAN (F) RANGE	MEAN (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
STORM WATER (PCI/LITER)	CS-137		N/A	5 (0/12) (<3/<8)	N/A	5 (0/12) (<3/<8)	K1-1 INDICATOR MAIN STATION LIQ. DISCHARGE 0.2 MILES SSW ON SITE	0
	BA-140		N/A	24 (0/12) (<12/<38)	N/A	24 (0/12) (<12/<38)	K1-1 INDICATOR MAIN STATION LIQ. DISCHARGE 0.2 MILES SSW ON SITE	0
	LA-140		N/A	7 (0/12) (<4/<11)	N/A	7 (0/12) (<4/<11)	K1-1 INDICATOR MAIN STATION LIQ. DISCHARGE 0.2 MILES SSW ON SITE	0
	TRITIUM	4	N/A	306 (2/4) (<181/675)	N/A	306 (2/4) (<181/675)	EDCB INDICATOR STORM WATER BASIN 0.2 MILES SE ON SITE	0
	GAMMA MN-54	4	N/A	6 (0/4) (<2/<9)	N/A	6 (0/4) (<2/<9)	EDCB INDICATOR STORM WATER BASIN 0.2 MILES SE ON SITE	0
	CO-58		N/A	6 (0/4) (<2/<10)	N/A	6 (0/4) (<2/<10)	EDCB INDICATOR STORM WATER BASIN 0.2 MILES SE ON SITE	0
	CO-60		N/A	6 (0/4) (<2/<11)	N/A	6 (0/4) (<2/<11)	EDCB INDICATOR STORM WATER BASIN 0.2 MILES SE ON SITE	0

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FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES (F)

**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY FOR
THE THREE MILE ISLAND NUCLEAR STATION, 2004**

Name of Facility: THREE MILE ISLAND NUCLEAR STATION				DOCKET NUMBER: 50-289 & 50-320		REPORTING PERIOD: 2004		
Location of Facility: MIDDLETOWN COUNTY, PA				INDICATOR	CONTROL	LOCATION WITH HIGHEST ANNUAL MEAN		
MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSES PERFORMED	NUMBER OF ANALYSES PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	MEAN (F) RANGE	MEAN (F) RANGE	MEAN (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
	FE-59		N/A	12 (0/4) (<4/<19)	N/A	12 (0/4) (<4/<19)	EDCB INDICATOR STORM WATER BASIN 0.2 MILES SE ON SITE	0
	ZN-65		N/A	12 (0/4) (<4/<18)	N/A	12 (0/4) (<4/<18)	EDCB INDICATOR STORM WATER BASIN 0.2 MILES SE ON SITE	0
	ZR-95		N/A	10 (0/4) (<3/<14)	N/A	10 (0/4) (<3/<14)	EDCB INDICATOR STORM WATER BASIN 0.2 MILES SE ON SITE	0
	NB-95		N/A	6 (0/4) (<2/<10)	N/A	6 (0/4) (<2/<10)	EDCB INDICATOR STORM WATER BASIN 0.2 MILES SE ON SITE	0
	CS-134		N/A	5 (0/4) (<2/<8)	N/A	5 (0/4) (<2/<8)	EDCB INDICATOR STORM WATER BASIN 0.2 MILES SE ON SITE	0
	CS-137		N/A	6 (0/4) (<3/<9)	N/A	6 (0/4) (<3/<9)	EDCB INDICATOR STORM WATER BASIN 0.2 MILES SE ON SITE	0
	BA-140		N/A	28 (0/4) (<8/<42)	N/A	28 (0/4) (<8/<42)	EDCB INDICATOR STORM WATER BASIN 0.2 MILES SE ON SITE	0
	LA-140		N/A	8 (0/4) (<3/<13)	N/A	8 (0/4) (<3/<13)	EDCB INDICATOR STORM WATER BASIN 0.2 MILES SE ON SITE	0

FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES (F)

**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY FOR
THE THREE MILE ISLAND NUCLEAR STATION, 2004**

Name of Facility: THREE MILE ISLAND NUCLEAR STATION				DOCKET NUMBER: 50-289 & 50-320		REPORTING PERIOD: 2004		
Location of Facility: MIDDLETOWN COUNTY, PA				INDICATOR CONTROL		LOCATION WITH HIGHEST ANNUAL MEAN		
MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSES PERFORMED	NUMBER OF ANALYSES PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	MEAN (F) RANGE	MEAN (F) RANGE	MEAN (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
GROUND WATER (PCI/LITER)	II-3	63	N/A	757 (60/63) (<163/5360)	N/A	5225 (2/2) (5090/5360)	NW-C ONSITE WELL	0
	SR-90	6	N/A	0.3 (0/6) (<0.2/<0.6))	N/A	0.6 (0/1) (<0.6)	MS-2 ONSITE WELL	0
	GAMMA MN-54	18	N/A	4 (0/18) (<1/<10)	N/A	5 (0/4) (<3/<10)	OSF ONSITE WELL	0
	CO-58		N/A	4 (0/18) (<2/<11)	N/A	5 (0/4) (<3/<11)	OSF ONSITE WELL	0
	CO-60		N/A	4 (0/18) (<1/<10)	N/A	5 (0/4) (<3/<10)	OSF ONSITE WELL	0
	FE-59		N/A	8 (0/18) (<4/<22)	N/A	11 (0/4) (<6/<22)	OSF ONSITE WELL	0
	ZN-65		N/A	8 (0/18) (<3/<22)	N/A	11 (0/4) (<6/<22)	OSF ONSITE WELL	0

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FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES (F)

**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY FOR
THE THREE MILE ISLAND NUCLEAR STATION, 2004**

Name of Facility: THREE MILE ISLAND NUCLEAR STATION				DOCKET NUMBER: 50-289 & 50-320		REPORTING PERIOD: 2004		
Location of Facility: MIDDLETOWN COUNTY, PA				INDICATOR	CONTROL	LOCATION WITH HIGHEST ANNUAL MEAN		
MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSES PERFORMED	NUMBER OF ANALYSES PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	MEAN (F) RANGE	MEAN (F) RANGE	MEAN (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
	ZR-95		N/A	7 (0/18) (<3/<18)	N/A	9 (0/4) (<5/<18)	OSF ONSITE WELL	0
	NB-95		N/A	4 (0/18) (<2/<11)	N/A	6 (0/4) (<3/<11)	OSF ONSITE WELL	0
	CS-134		N/A	3 (0/18) (<1/<8)	N/A	5 (0/4) (<3/<8)	OSF ONSITE WELL	0
	CS-137		N/A	4 (0/18) (<2/<10)	N/A	5 (0/4) (<3/<10)	OSF ONSITE WELL	0
	BA-140		N/A	27 (0/18) (<13/<46)	N/A	46 (0/1) (<46)	MS-20 ONSITE WELL	0
	LA-140		N/A	9 (0/18) (<4/<14)	N/A	14 (0/1) (<14)	RW-1 ONSITE WELL	0
BOTTOM FEEDER (FISH) (PCI/KG WET)	SR-89	4	N/A	12 (0/2) (<7/<17)	12 (0/2) (<8/<16)	12 (0/2) (<7/<17)	INDB INDICATOR YORK HAVEN DAM DOWNSTREAM OF DISCHARGE	0
	SR-90	4	10	3 (0/2) (<3/<4)	4 (0/2) (<3/<4)	4 (0/2) (<3/<4)	BKGB CONTROL CITY ISLAND UPSTREAM OF DISCHARGE	0

FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES (F)

**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY FOR
THE THREE MILE ISLAND NUCLEAR STATION, 2004**

Name of Facility: THREE MILE ISLAND NUCLEAR STATION				DOCKET NUMBER: 50-289 & 50-320		REPORTING PERIOD: 2004		
Location of Facility: MIDDLETOWN COUNTY, PA				INDICATOR CONTROL		LOCATION WITH HIGHEST ANNUAL MEAN		
MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSES PERFORMED	NUMBER OF ANALYSES PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	MEAN (F) RANGE	MEAN (F) RANGE	MEAN (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
	GAMMA K-40	4	N/A	3180 (2/2) (3170/3190)	2935 (2/2) (2450/3420)	3180 (2/2) (3170/3190)	INDB INDICATOR YORK HAVEN DAM DOWNSTREAM OF DISCHARGE	0
	MN-54		130	39 (0/2) (<35<43)	42 (0/2) (<37/<47)	42 (0/2) (<37/<47)	BKGB CONTROL CITY ISLAND UPSTREAM OF DISCHARGE	0
	CO-58		130	37 (0/2) (<31/<43)	47 (0/2) (<36/<57)	47 (0/2) (<36/<57)	BKGB CONTROL CITY ISLAND UPSTREAM OF DISCHARGE	0
	CO-60		130	48 (0/2) (<48)	45 (0/2) (<45)	48 (0/2) (<48)	INDB INDICATOR YORK HAVEN DAM DOWNSTREAM OF DISCHARGE	0
	FE-59		260	85 (0/2) (<79/<90)	95 (0/2) (<89/<101)	95 (0/2) (<89/<101)	BKGB CONTROL CITY ISLAND UPSTREAM OF DISCHARGE	0
	ZN-65		260	82 (0/2) (<61/<104)	89 (0/2) (<83/<94)	89 (0/2) (<83/<94)	BKGB CONTROL CITY ISLAND UPSTREAM OF DISCHARGE	0
	CS-134		130	34 (0/2) (<29/<38)	37 (0/2) (<34/<41)	37 (0/2) (<34/<41)	BKGB CONTROL CITY ISLAND UPSTREAM OF DISCHARGE	0
	CS-137		150	35 (0/2) (<30/<40)	48 (0/2) (<46/<50)	48 (0/2) (<46/<50)	BKGB CONTROL CITY ISLAND UPSTREAM OF DISCHARGE	0

FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES (F)

**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY FOR
THE THREE MILE ISLAND NUCLEAR STATION, 2004**

Name of Facility: THREE MILE ISLAND NUCLEAR STATION		DOCKET NUMBER: 50-289 & 50-320		REPORTING PERIOD: 2004		LOCATION WITH HIGHEST ANNUAL MEAN		
Location of Facility: MIDDLETOWN COUNTY, PA								
MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSES PERFORMED	NUMBER OF ANALYSES PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	INDICATOR MEAN (F) RANGE	CONTROL MEAN (F) RANGE	MEAN (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
PREDATOR (FISH) (PCI/KG WET)	SR-89	4	N/A	11 (0/2) (<8/<13)	11 (0/2) (<7/<16)	11 (0/2) (<7/<16)	BKGP CONTROL CITY ISLAND UPSTREAM OF DISCHARGE	0
	SR-90	4	10	4 (0/2) (<3/<4)	3 (0/2) (<3/<4)	4 (0/2) (<3/<4)	INDB INDICATOR YORK HAVEN DAM DOWNSTREAM OF DISCHARGE	0
	GAMMA K-40	4	N/A	3225 (2/2) (2670/3780)	2925 (2/2) (2820/3030)	3225 (2/2) (2670/3780)	INDP INDICATOR YORK HAVEN DAM DOWNSTREAM OF DISCHARGE	0
	MN-54		130	33 (0/2) (<21/<45)	42 (0/2) (<32/<52)	42 (0/2) (<32/<52)	BKGP CONTROL CITY ISLAND UPSTREAM OF DISCHARGE	0
	CO-58		130	43 (0/2) (<28/<57)	45 (0/2) (<31/<58)	45 (0/2) (<31/<58)	BKGP CONTROL CITY ISLAND UPSTREAM OF DISCHARGE	0
	CO-60		130	42 (0/2) (<32/<51)	41 (0/2) (<30/<53)	42 (0/2) (<32/<51)	INDP INDICATOR YORK HAVEN DAM DOWNSTREAM OF DISCHARGE	0
	FE-59		260	78 (0/2) (<43/<114)	89 (0/2) (<64/<114)	89 (0/2) (<64/<114)	BKGP CONTROL CITY ISLAND UPSTREAM OF DISCHARGE	0
	ZN-65		260	93 (0/2) (<68/<118)	74 (0/2) (<70/<78)	93 (0/2) (<68/<118)	INDP INDICATOR YORK HAVEN DAM DOWNSTREAM OF DISCHARGE	0

FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES (F)

**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY FOR
THE THREE MILE ISLAND NUCLEAR STATION, 2004**

Name of Facility: THREE MILE ISLAND NUCLEAR STATION				DOCKET NUMBER: 50-289 & 50-320		REPORTING PERIOD: 2004		
Location of Facility: MIDDLETOWN COUNTY, PA				INDICATOR	CONTROL	LOCATION WITH HIGHEST ANNUAL MEAN		
MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSES PERFORMED	NUMBER OF ANALYSES PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	MEAN (F) RANGE	MEAN (F) RANGE	MEAN (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
SEDIMENT (PCI/KG DRY)	CS-134		130	38 (0/2) (<24/<51)	36 (0/2) (<30/<43)	38 (0/2) (<24/<51)	INDP INDICATOR YORK HAVEN DAM DOWNSTREAM OF DISCHARGE	0
	CS-137		150	48 (0/2) (<27/<70)	43 (0/2) (<30/<57)	48 (0/2) (<27/<70)	INDP INDICATOR YORK HAVEN DAM DOWNSTREAM OF DISCHARGE	0
	GAMMA K-40	7	N/A	14472 (5/5) (8360/21700)	12285 (2/2) (9870/14700)	18900 (2/2) (16100/21700)	J2-1 INDICATOR YORK HAVEN DAM 1.5 MILES S OF SITE	0
	MN-54		N/A	44 (0/5) (<26/<58)	35 (0/2) (<22/<47)	53 (0/2) (<48/<58)	J2-1 INDICATOR YORK HAVEN DAM 1.5 MILES S OF SITE	0
	CO-58		N/A	42 (0/5) (<25/<50)	36 (0/2) (<19/<53)	49 (0/2) (<48/<50)	J2-1 INDICATOR YORK HAVEN DAM 1.5 MILES S OF SITE	0
	CO-60		N/A	42 (0/5) (<25/<58)	45 (0/2) (<44/<46)	50 (0/1) (<50)	EDCB INDICATOR STORM WATER BASIN 0.2 MILES SE OF SITE	0
	CS-134		150	39 (0/5) (<23/<49)	31 (0/2) (<18/<44)	45 (0/2) (<41/<49)	J2-1 INDICATOR YORK HAVEN DAM 1.5 MILES S OF SITE	0
	CS-137		180	167 (5/5) (65/242)	83 (2/2) (68/99)	242 (1/1) (242)	EDCB INDICATOR STORM WATER BASIN 0.2 MILES SE OF SITE	0

FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES (F)

**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY FOR
THE THREE MILE ISLAND NUCLEAR STATION, 2004**

Name of Facility: THREE MILE ISLAND NUCLEAR STATION				DOCKET NUMBER: 50-289 & 50-320		REPORTING PERIOD: 2004		
Location of Facility: MIDDLETOWN COUNTY, PA				INDICATOR	CONTROL	LOCATION WITH HIGHEST ANNUAL MEAN		
MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSES PERFORMED	NUMBER OF ANALYSES PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	MEAN (F) RANGE	MEAN (F) RANGE	MEAN (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
AIR PARTICULATE (E-3 PCI/CU.METER)	GROSS BETA	362	10	17 (305/310) (<6/47)	17 (52/52) (8/31)	18 (52/52) (7/34)	A3-1 INDICATOR MIDDLETOWN 2.6 MILES N OF SITE	0
	GAMMA BE-7	28	N/A	58 (24/24) (43/82)	59 (4/4) (45/66)	61 (4/4) (47/78)	M2-1 INDICATOR GOLDSBORO 1.3 MILES WSW OF SITE	0
	MN-54		N/A	0.9 (0/24) (<0.7/<1.3)	0.8 (0/4) (<0.5/<1.2)	1.0 (0/4) (<0.8/<1.3)	F1-3 INDICATOR 500 KEV SUBSTATION 0.6 MILES ESE OF SITE	0
	CO-58		N/A	0.9 (0/24) (<0.4/<1.5)	0.9 (0/4) (<0.7/<1.1)	1.1 (0/4) (<1.0/<1.2)	F1-3 INDICATOR 500 KEV SUBSTATION 0.6 MILES ESE OF SITE	0
	CO-60		N/A	1.1 (0/24) (<0.6/<2.2)	0.9 (0/4) (<0.5/<1.2)	1.3 (0/4) (<0.6/<2.2)	M2-1 INDICATOR GOLDSBORO 1.3 MILES WSW OF SITE	0
	CS-134		50	0.8 (0/24) (<0.5/<1.2)	0.8 (0/4) (<0.6/<0.9)	0.9 (0/4) (<0.8/<1.0)	F1-3 INDICATOR 500 KEV SUBSTATION 0.6 MILES ESE OF SITE	0
	CS-137		60	0.9 (0/24) (<0.6/<1.2)	0.8 (0/4) (<0.7/<1.0)	1.0 (0/4) (<0.9/<1.2)	F1-3 INDICATOR 500 KEV SUBSTATION 0.6 MILES ESE OF SITE	0
	AIR IODINE (E-3 PCI/CU.METER)	I-131	362	70	15 (0/310) (<3/<30)	15 (0/52) (<6/<29)	15 (0/52) (<3/<29)	G2-1 INDICATOR BECKER FARM 1.4 MILES SE OF SITE

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FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES (F)

**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY FOR
THE THREE MILE ISLAND NUCLEAR STATION, 2004**

Name of Facility: THREE MILE ISLAND NUCLEAR STATION				DOCKET NUMBER: 50-289 & 50-320				
Location of Facility: MIDDLETOWN COUNTY, PA				REPORTING PERIOD: 2004				
MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSES PERFORMED	NUMBER OF ANALYSES PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	INDICATOR	CONTROL	LOCATION WITH HIGHEST ANNUAL MEAN		
				LOCATIONS MEAN (F) RANGE	LOCATION MEAN (F) RANGE	MEAN (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
MILK (PCI/LITER)	I-131	96	1	0.5 (0/73) (<0.2/<1.0)	0.5 (0/23) (<0.2/<0.8)	0.6 (0/23) (<0.2/<0.9)	F2-2 INDICATOR NISSLEY FARM 1.1 MILES E OF SITE	0
	SR-89	20	N/A	2.0 (0/16) (<0.7/<3.9)	2.8 (0/4) (<1.7/<4.5)	2.8 (0/4) (<1.7/<4.5)	K15-3 CONTROL MYERS FARM 14.5 MILES SSW OF SITE	0
	SR-90	20	2	0.8 (15/16) (<0.4/1.4)	1.0 (4/4) (0.7/1.6)	1.0 (4/4) (0.7/1.6)	K15-3 CONTROL MYERS FARM 14.5 MILES SSW OF SITE	0
	GAMMA K-40	96	N/A	1241 (73/73) (819/1560)	1330 (23/23) (1200/1560)	1338 (4/4) (1250/1450)	F4-1 INDICATOR TURNPIKE ROAD FARM 3.2 MILES ESE OF SITE	0
	CS-134		15	5 (0/73) (<2/<9)	5 (0/23) (<1/<10)	5 (0/4) (<1/<10)	K15-3 CONTROL MYERS FARM 14.5 MILES SSW OF SITE	0
	CS-137		18	5 (0/73) (<2/<12)	5 (0/23) (<2/<12)	5 (0/23) (<2/<12)	K15-3 CONTROL MYERS FARM 14.5 MILES SSW OF SITE	0
	BA-140		60	21 (0/73) (<8/<45)	23 (0/23) (<7/<47)	23 (0/23) (<7/<47)	K15-3 CONTROL MYERS FARM 14.5 MILES SSW OF SITE	0

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FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES (F)

**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY FOR
THE THREE MILE ISLAND NUCLEAR STATION, 2004**

Name of Facility: THREE MILE ISLAND NUCLEAR STATION				DOCKET NUMBER: 50-289 & 50-320		REPORTING PERIOD: 2004		
Location of Facility: MIDDLETOWN COUNTY, PA				INDICATOR	CONTROL	LOCATION WITH HIGHEST ANNUAL MEAN		
MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSES PERFORMED	NUMBER OF ANALYSES PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	MEAN (F) RANGE	MEAN (F) RANGE	MEAN (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
FOOD PRODUCT (PCI/KG WET)	LA-140		15	7 (0/73) (<2/<15)	7 (0/23) (<2/<14)	7 (0/23) (<3/<15)	G2-1 INDICATOR BECKER FARM 1.4 MILES SE OF SITE	0
	SR-90	2	10	22 (1/1) (22)	7 (0/1) (7)	22 (1/1) (22)	E1-2 INDICATOR TMI VISITORS CENTER 0.4 MILES E OF SITE	0
	GAMMA K-40	8	N/A	2510 (4/4) (1900/3540)	2123 (4/4) (1550/2500)	2510 (4/4) (1900/3540)	E1-2 INDICATOR TMI VISITORS CENTER 0.4 MILES E OF SITE	0
	I-131		60	14 (0/4) (<10/<19)	11 (0/4) (<5/<15)	14 (0/4) (<10/<19)	E1-2 INDICATOR TMI VISITORS CENTER 0.4 MILES E OF SITE	0
	CS-134		60	9 (0/4) (<7/<10)	7 (0/4) (<3/<9)	9 (0/4) (<7/<10)	E1-2 INDICATOR TMI VISITORS CENTER 0.4 MILES E OF SITE	0
	CS-137		80	10 (0/4) (<6/<13)	8 (0/4) (<3/<12)	10 (0/4) (<6/<13)	E1-2 INDICATOR TMI VISITORS CENTER 0.4 MILES E OF SITE	0
DIRECT RADIATION (MILLI-ROENTGEN/STD.MO.)	TLD-QUARTERLY	356	N/A	3.6 (313/313) (1.6/6.2)	4.1 (43/43) (2.1/6.3)	5.9 (4/4) (5.2/6.2)	H8-1 INDICATOR SAGINAW ROAD 7.4 MILES SSE OF SITE	0

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FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES (F)

APPENDIX B

LOCATION DESIGNATION, DISTANCE & DIRECTION, AND SAMPLE COLLECTION & ANALYTICAL METHODS

TABLE B-1: Location Designation and Identification System for the Three Mile Island Nuclear Station

- XYZ- General code for identification of locations, where:
- X** - Angular Sector of Sampling Location. The compass is divided into 16 sectors of 22 1/2 degrees each with center at Three Mile Island's Units 1 and 2 off-gas vents. Sector A is centered due North, and others are alphabetical in a clockwise direction.
 - Y** - Radial Zone of Sampling Location in miles.
 - Z** - Station's Numerical Designation within sector and zone, using 1, 2, 3... in each sector and zone.

TABLE B-2: Radiological Environmental Monitoring Program - Sampling Locations, Distance and Direction, Three Mile Island Nuclear Generating Station, 2004

Sample Medium	Station Code	Map Number	Distance*	Azimuth	Description
AQS	A1-3	16	0.5 mi	0°	N of site off north tip of TMI in Susquehanna River
ID	A1-4	113	0.3	5	N of Reactor Building on W fence adjacent to North Weather Station, TMI
AP,AI,ID	A3-1	39	2.6	358	N of site at Mill Street Substation
SW	A3-2	40	2.5	355	N of site at Swatara Creek, Middletown
ID	A5-1	44	4.3	3	N of site on Vine Street Exit off Route 283
ID	A9-3	127	8.1	3	N of site at Duke Street Pumping Station, Hummelstown
ID	B1-1	2	0.6	25	NNE of site on light pole in middle of North Bridge, TMI
ID	B1-2	114	0.4	26	NNE of Reactor Building on top of dike, TMI
ID	B2-1	132	1.9	16	NNE of site on Sunset Dr. (off Hillsdale Rd.)
ID	B5-1	45	4.8	18	NNE of site at intersection of School House and Miller Roads
ID	B10-1	61	9.4	21	NNE of site at intersection of West Areba Avenue and Mill Street, Hershey
FP	B10-2	1	10.1	28	NNE of site at Milton Hershey School, Hershey
ID	C1-1	17	0.7	35	NE of site along Route 441 N
ID	C1-2	116	0.3	54	NE of Reactor Building on top of dike, TMI
ID	C2-1	43	1.6	48	NE of site at Middletown Junction
ID	C5-1	46	4.5	42	NE of site on Kennedy Lane
ID	C8-1	62	7.2	48	NE of site at Schenk's Church on School House Road
AQF	Control	-	-	-	All locations where finfish are collected upstream of the TMINS liquid discharge outfall (above Dock St. Dam, Harrisburg) are grouped together and referred to as "control"
GAD	Control	-	-	-	All locations greater than 10 miles from TMINS
ID	D1-1	3	0.2	74	ENE of Reactor Building on top of dike, TMI
ID	D1-2	18	0.6	60	ENE of site on Laurel Road
M	D2-1	29	1.1	65	ENE of site at farm on Gingrich Road
ID	D2-2	133	1.7	73	ENE of site along Hillsdale Rd. (S of Zion Rd.)
ID	D6-1	47	5.2	65	ENE of site off Beagle Road
ID	D15-1	80	10.9	63	ENE of site along Route 241, Lawn, PA
AP,AI,ID,GW,FP	E1-2	19	0.4	95	E of site at TMI Visitor's Center
ID	E1-4	117	0.2	98	E of Reactor Building on top of dike, TMI
M	E2-2	109	1.1	93	E of site at farm on Pecks Road
ID	E2-3	134	1.9	96	E of site along Hillsdale Rd. (N of Creek Rd.)
ID	E5-1	48	4.6	81	E of site at intersection of North Market Street (Route 230) and Zeager Road
ID	E7-1	64	6.8	86	E of site along Hummelstown Street, Elizabethtown
ID	F1-1	20	0.5	117	ESE of site near entrance to 500 kV Substation
ID	F1-2	118	0.2	109	ESE of Reactor Building on top of dike midway within Interim Solid Waste Staging Facility, TMI
AP,AI	F1-3	149	0.6	105	ESE of site in 500 kV Substation
ID	F1-4	154	0.3	115	ESE of Reactor Building on top of dike, TMI
ID	F2-1	135	1.2	120	ESE of site along Engle Road
M	F4-1	156	3.2	104	ESE of site at farm on Turnpike Road
ID	F5-1	49	4.7	107	ESE of site along Amosite Road
ID	F10-1	66	9.4	112	ESE of site along Donegal Springs Road, Donegal Springs
ID	F25-1	82	21.1	113	ESE of site at intersection of Steel Way and Loop Roads, Lancaster
ID	G1-2	22	0.6	143	SE of site along Route 441 S
ID	G1-3	119	0.3	129	SE of Reactor Building on top of dike, TMI
ID	G1-5	139	0.3	144	SE of Reactor Building on top of dike, TMI
ID	G1-6	140	0.3	141	SE of Reactor Building on top of dike, TMI
AJ,AP,M	G2-1	104	1.4	125	SE of site at farm on Becker Road
ID	G2-4	136	1.7	135	SE of site on Becker Road
ID	G5-1	50	4.8	131	SE of site at intersection of Bainbridge and Risser Roads
ID	G10-1	67	9.8	127	SE of site at farm along Engles Tollgate Road, Marietta
ID	G15-1	84	14.4	124	SE of site at Columbia Water Treatment Plant
DW	G15-2	85	13.6	128	SE of site at Wrightsville Water Treatment Plant
DW	G15-3	86	14.8	124	SE of site at Lancaster Water Treatment Plant
ID	H1-1	5	0.5	167	SSE of site, TMI

TABLE B-2: Radiological Environmental Monitoring Program - Sampling Locations, Distance and Direction, Three Mile Island Nuclear Generating Station, 2004

Sample Medium	Station Code	Map Number	Distance*	Azimuth	Description
AP, AI, ID	H3-1	41	2.3 mi	159°	SSE of site in Falmouth-Collins Substation
ID	H5-1	52	4.1	157	SSE of site by Guard Shack at Brunner Island Steam Electric Station
ID	H8-1	68	7.4	163	SSE of site along Saginaw Road, Starview
ID	H15-1	87	13.2	157	SSE of site at Intersection of Orchard and Stonewood Roads, Wilshire Hills
AQF	Indicator	-	-	-	All locations where finfish are collected downstream of the TMINS liquid discharge outfall are grouped together and referred to as "indicator"
GAD	Indicator	-	-	-	All locations within ten miles of TMINS
ROD	Indicator	-	-	-	All locations where rodents are collected within the owner controlled area, TMI
ID	J1-1	6	0.8	182	S of site, TMI
SW	J1-2	23	0.5	188	S of site downstream of the TMINS liquid discharge outfall in Susquehanna River
ID	J1-3	121	0.3	189	S of Reactor Building on wooden post of Building 221, just S of Unit 2 Admin. Building, TMI
AQS	J2-1	31	1.5	182	S of site in Susquehanna River just upstream of the York Haven Dam
ID	J3-1	141	2.7	178	S of site at York Haven/Cly
ID	J5-1	53	4.9	182	S of site along Canal Road, Conewago Heights
ID	J7-1	69	6.5	177	S of site off of Maple Street, Manchester
ID	J15-1	88	12.6	180	S of site in Met-Ed York Load Dispatch Station
EW	K1-1	7	0.2	209	On site at RML-7 Main Station Discharge Building
AQS	K1-3	24	0.3	202	SSW of site in Susquehanna River
ID	K1-4	123	0.2	208	SSW of Reactor Building on top of dike behind Warehouse 2, TMI
ID	K2-1	32	1.1	200	SSW of site on S Shelley Island
ID	K3-1	142	2.1	202	SSW of site along Rt. 262, N of Cly
ID	K5-1	54	5.0	200	SSW of site along Conewago Creek Road, Strinestown
ID	K8-1	70	7.4	196	SSW of site at intersection of Coppenhaffer Road and Route 295, Zions View
ID	K15-1	90	12.7	204	SSW of site on the Bird's Nest Child Care Center Building, Weiglestown
M	K15-3	151	14.5	205	SSW of site at farm along S Salem Church Rd, Dover
ID	L1-1	9	0.1	235	SW of site on top of dike W of Mech. Draft Cooling Tower, TMI
ID	L1-2	26	0.5	221	SW of site on Beech Island
ID	L2-1	33	1.9	227	SW of site along Route 262
ID	L5-1	55	4.1	228	SW of site at intersection of Stevens and Wilson Roads
ID	L8-1	71	8.0	225	SW of site along Rohlers Church Rd., Andersontown
ID	L15-1	91	11.7	225	SW of site on W side of Route 74, rear of church, Mt. Royal
ID	M1-1	129	0.1	249	WSW of Reactor Building on SE corner of U-2 Screenhouse fence, TMI
ID	M1-2	143	0.5	241	WSW of site on W side of unnamed island between N tip of Beech Island and Shelley Island
AP, AI, ID	M2-1	34	1.3	253	WSW of site adjacent to Fishing Creek, Goldsboro
ID	M5-1	56	4.3	249	WSW of site at intersection of Lewisberry and Roxberry Roads, Newberrytown
ID	M9-1	72	8.6	242	WSW of site along Alpine Road, Maytown
ID	N1-1	10	0.7	270	W of site on Shelley Island
ID	N1-3	124	0.1	270	W of Reactor Building on fence adjacent to Screenhouse entrance gate, TMI
ID, GW	N2-1	35	1.2	262	W of site at Goldsboro Marina
ID	N5-1	57	4.9	268	W of site off of Old York Road along Robin Hood Drive
ID	N8-1	73	7.8	260	W of site along Route 382, 1/2 mile north of Lewisberry
ID	N15-2	95	10.4	274	W of site at intersection of Lisburn Road and Main Street, Lisburn
ID	P1-1	12	0.4	293	WNW of site on Shelley Island

TABLE B-2: Radiological Environmental Monitoring Program - Sampling Locations, Distance and Direction, Three Mile Island Nuclear Generating Station, 2004

<u>Sample Medium</u>	<u>Station Code</u>	<u>Map Number</u>	<u>Distance*</u>	<u>Azimuth</u>	<u>Description</u>
ID	P1-2	38	0.2 mi	290°	WNW of Reactor Building on fence N of Unit 1 Screenhouse, TMI
ID	P2-1	36	1.9	283	WNW of site along Route 262
ID	P5-1	58	4.9	285	WNW of site at intersection of Valley Road (Route 262) and Beinhower Road
ID	P8-1	74	8.0	292	WNW of site along Evergreen Road, Reesers Summit
ID	Q1-1	13	0.5	317	NW of site on Shelley Island
ID	Q1-2	125	0.2	318	NW of Reactor Building on fence W of Warehouse 1, TMI
ID	Q2-1	37	1.8	310	NW of site along access road along river
ID	Q5-1	59	5.0	318	NW of site along Lumber Street, Highspire
SW,DW,ID	Q9-1	76	8.5	308	NW of site at the Steelton Water Company
AP,AI,ID	Q15-1	97	13.5	305	NW of site behind West Fairview Fire Dept. Social Hall
ID	R1-1	14	0.2	335	NNW of Reactor Building along W fence, TMI
ID	R1-2	27	0.7	332	NNW of site on Henry Island
ID	R3-1	107	2.6	338	NNW of site at Crawford Station, Middletown
ID	R5-1	60	4.9	339	NNW of site at interstecion of Spring Garden Drive and Route 441
ID	R9-1	77	8.1	340	NNW of site at intersection of Derry and 66th Streets, Rutherford Heights
ID	R15-1	99	11.2	330	NNW of site at intersection of Route 22 and Colonial Road, Colonial Park

IDENTIFICATION KEY

ID = Immersion Dose (TLD)

SW = Surface Water

AI = Air Iodine

AP = Air Particulate

FP = Food Products (Green Leafy Vegetation, Fruits, Vegetables)

GW = Ground Water (offsite)

DW = Drinking Water

M = Milk (Cow)

GAD = Meat (Game)

AQF = Finfish

AQS = Aquatic Sediment

EW = Effluent Water

ROD = Rodents

TABLE B-3: Radiological Environmental Monitoring Program – Summary of Sample Collection and Analytical Methods, Three Mile Island Nuclear Station, 2004

Sample Medium	Analysis	Sampling Method	Collection Procedure Number	Sample Size	Analytical Procedure Number
Surface Water	Gamma Spectroscopy	Monthly composite from a continuous water compositor.	ER-TMI-06 Collection of water samples for radiological analysis (Three Mile Island Nuclear Generating Station)	2 gallon	TBE, TBE-2007 Gamma emitting radioisotope analysis Env. Inc., GS-01 Determination of gamma emitters by gamma spectroscopy
Surface Water	Tritium	Monthly composite from a continuous water compositor.	ER-TMI-06 Collection of water samples for radiological analysis (Three Mile Island Nuclear Generating Station)	2 gallon	TBE, TBE-2010 Tritium and carbon-14 analysis by liquid scintillation Env. Inc., T-02 Determination of tritium in water (direct method)
Surface Water	Iodine-131	Monthly composite from a continuous water compositor.	ER-TMI-06 Collection of water samples for radiological analysis (Three Mile Island Nuclear Generating Station)	2 gallon	TBE, TBE-2012 Radiiodine in various matrices Env. Inc., I-131-01 Determination of I-131 in milk by anion exchange
Drinking Water	Gross Beta	Monthly composite from a continuous water compositor.	ER-TMI-06 Collection of water samples for radiological analysis (Three Mile Island Nuclear Generating Station)	2 gallon	TBE, TBE-2008 Gross alpha and/or gross beta activity in various matrices Env. Inc., W(DS)-01 Determination of gross alpha and/or gross beta in water (dissolved solids or total residue) Env. Inc., W(SS)-02 Determination of gross alpha and/or gross beta in water (suspended solids)
Drinking Water	Gamma Spectroscopy	Monthly composite from a continuous water compositor.	ER-TMI-06 Collection of water samples for radiological analysis (Three Mile Island Nuclear Generating Station)	2 gallon	TBE, TBE-2007 Gamma emitting radioisotope analysis Env. Inc., GS-01 Determination of gamma emitters by gamma spectroscopy
Drinking Water	Tritium	Monthly composite from a continuous water compositor.	ER-TMI-06 Collection of water samples for radiological analysis (Three Mile Island Nuclear Generating Station)	2 gallon	TBE, TBE-2010 Tritium and carbon-14 analysis by liquid scintillation Env. Inc., T-02 Determination of tritium in water (direct method)
Drinking Water	Iodine-131	Monthly composite from a continuous water compositor.	ER-TMI-06 Collection of water samples for radiological analysis (Three Mile Island Nuclear Generating Station)	2 gallon	TBE, TBE-2012 Radiiodine in various matrices Env. Inc., I-131-01 Determination of I-131 in milk by anion exchange
Effluent Water	Iodine-131	Monthly composite from a continuous water compositor.	ER-TMI-06 Collection of water samples for radiological analysis (Three Mile Island Nuclear Generating Station)	2 gallon	TBE, TBE-2012 Radiiodine in various matrices Env. Inc., I-131-01 Determination of I-131 in milk by anion exchange

TABLE B-3: Radiological Environmental Monitoring Program – Summary of Sample Collection and Analytical Methods, Three Mile Island Nuclear Station, 2004

Effluent Water	Gross Beta	Monthly composite from a continuous water compositor.	ER-TMI-06 Collection of water samples for radiological analysis (Three Mile Island Nuclear Generating Station)	2 gallon	TBE, TBE-2008 Gross alpha and/or gross beta activity in various matrices Env. Inc., W(DS)-01 Determination of gross alpha and/or gross beta in water (dissolved solids or total residue) Env. Inc., W(SS)-02 Determination of gross alpha and/or gross beta in water (suspended solids)
Effluent Water	Gamma Spectroscopy	Monthly composite from a continuous water compositor.	ER-TMI-06 Collection of water samples for radiological analysis (Three Mile Island Nuclear Generating Station)	2 gallon	TBE, TBE-2007 Gamma emitting radioisotope analysis Env. Inc., GS-01 Determination of gamma emitters by gamma spectroscopy
Effluent Water	Tritium	Monthly composite from a continuous water compositor.	ER-TMI-06 Collection of water samples for radiological analysis (Three Mile Island Nuclear Generating Station)	2 gallon	TBE, TBE-2010 Tritium and carbon-14 analysis by liquid scintillation Env. Inc., T-02 Determination of tritium in water (direct method)
Effluent Water	Strontium 89/90	Semi-annual composite from monthly samples.	ER-TMI-06 Collection of water samples for radiological analysis (Three Mile Island Nuclear Generating Station)	2 gallon	TBE, TBE-2019 Radiostrontium analysis by ion exchange
Storm Water	Gamma Spectroscopy	Quarterly grab sample	ER-TMI-06 Collection of water samples for radiological analysis (Three Mile Island Nuclear Generating Station)	1 gallon	TBE, TBE-2007 Gamma emitting radioisotope analysis Env. Inc., GS-01 Determination of gamma emitters by gamma spectroscopy
Storm Water	Tritium	Quarterly grab sample	ER-TMI-06 Collection of water samples for radiological analysis (Three Mile Island Nuclear Generating Station)	1 gallon	TBE, TBE-2010 Tritium and carbon-14 analysis by liquid scintillation Env. Inc., T-02 Determination of tritium in water (direct method)
Ground Water	Gamma Spectroscopy	Monthly, Quarterly, Semi-Annual and Annual samples	ER-TMI-10 Collection of water samples for radiological analysis (Three Mile Island Nuclear Generating Station)	1 gallon	TBE, TBE-2007 Gamma emitting radioisotope analysis Env. Inc., GS-01 Determination of gamma emitters by gamma spectroscopy
Ground Water	Tritium	Monthly, Quarterly, Semi-Annual and Annual samples	EM-TMI-10 Collection of water samples for radiological analysis (Three Mile Island Nuclear Generating Station)	1 gallon	TBE, TBE-2010 Tritium and carbon-14 analysis by liquid scintillation Env. Inc., T-02 Determination of tritium in water (direct method)

TABLE B-3: Radiological Environmental Monitoring Program – Summary of Sample Collection and Analytical Methods, Three Mile Island Nuclear Station, 2004

Ground Water	Strontium 89/90	Monthly, Quarterly, Semi-Annual and Annual samples	ER-TMI-10 Collection of water samples for radiological analysis (Three Mile Island Nuclear Generating Station)	1 gallon	TBE, TBE-2019 Radiostrontium analysis by ion exchange
Fish	Gamma Spectroscopy	Semi-annual samples collected via electroshocking or other techniques	ER-TMI-13 Collection of fish samples for radiological analysis (Three Mile Island Nuclear Generating Station)	1000 grams (wet)	TBE, TBE-2007 Gamma emitting radioisotope analysis Env. Inc., GS-01 Determination of gamma emitters by gamma spectroscopy
Fish	Strontium 89/90	Semi-annual samples collected via electroshocking or other techniques	ER-TMI-13 Collection of fish samples for radiological analysis (Three Mile Island Nuclear Generating Station)	1000 grams (wet)	TBE, TBE-2019 Radiostrontium analysis by ion exchange
Sediment	Gamma Spectroscopy	Semi-annual grab samples	ER-TMI-03 Collection of sediment samples for radiological analysis (Three Mile Island Nuclear Generating Station)	500 grams (dry)	TBE, TBE-2007 Gamma emitting radioisotope analysis Env. Inc., GS-01 Determination of gamma emitters by gamma spectroscopy
Air Particulates	Gross Beta	One-week composite of continuous air sampling through glass fiber filter paper	ER-TMI-14 Collection of air particulate and air iodine samples for radiological analysis (Three Mile Island Nuclear Generating Station)	1 filter (approximately 280 cubic meters weekly)	TBE, TBE-2008 Gross alpha and/or gross beta activity in various matrices Env. Inc., AP-02 Determination of gross alpha and/or gross beta in air particulate filters

TABLE B-3: Radiological Environmental Monitoring Program – Summary of Sample Collection and Analytical Methods, Three Mile Island Nuclear Station, 2004

Sample Medium	Analysis	Sampling Method	Collection Procedure Number	Sample Size	Analytical Procedure Number
Air Particulates	Gamma Spectroscopy	Quarterly composite of each station	TBE, TBE-2023 Compositing of samples Env. Inc., AP-03 Procedure for compositing air particulate filters for gamma spectroscopic analysis	13 filters (approximately 3600 cubic meters)	TBE, TBE-2007 Gamma emitting radioisotope analysis Env. Inc., GS-01 Determination of gamma emitters by gamma spectroscopy
Air Iodine	Gamma Spectroscopy	One-week composite of continuous air sampling through charcoal filter	RMC-ER8 Collection of air particulate and air iodine samples for radiological analysis (Three Mile Island Nuclear Generating Station)	1 filter (approximately 280 cubic meters weekly)	TBE, TBE-2007 Gamma emitting radioisotope analysis Env. Inc., I-131-02 Determination of I-131 in charcoal canisters by gamma spectroscopy (batch method)
Milk	I-131	Bi-weekly grab sample when cows are on pasture. Monthly all other times	ER-TMI-01 Collection of milk samples for radiological analysis (Three Mile Island Nuclear Generating Station)	2 gallon	TBE, TBE-2012 Radioiodine in various matrices Env. Inc., I-131-01 Determination of I-131 in milk by anion exchange
Milk	Strontium-89/90	Quarterly composite of Bi-weekly and monthly grab samples	ER-TMI-01 Collection of milk samples for radiological analysis (Three Mile Island Nuclear Generating Station)	2 gallon	TBE, TBE-2019 Radiostrontium analysis by ion exchange
Vegetation	Gamma Spectroscopy	Annual grab sample	ER-TMI-04 Collection of vegetation samples for radiological analysis (Three Mile Island Nuclear Generating Station)	1000 grams	TBE, TBE-2007 Gamma emitting radioisotope analysis Env. Inc., GS-01 Determination of gamma emitters by gamma spectroscopy
Vegetation	Strontium-89/90	Annual grab sample	ER-TMI-04 Collection of vegetation samples for radiological analysis (Three Mile Island Nuclear Generating Station)	1000 grams	TBE, TBE-2019 Radiostrontium analysis by ion exchange
Milk	Gamma Spectroscopy	Bi-weekly grab sample when cows are on pasture. Monthly all other times	ER-TMI-01 Collection of milk samples for radiological analysis (Three Mile Island Nuclear Generating Station)	2 gallon	TBE, TBE-2007 Gamma emitting radioisotope analysis Env. Inc., GS-01 Determination of gamma emitters by gamma spectroscopy
TLD	Thermoluminescence Dosimetry	Quarterly TLDs comprised of two Panasonic 814 (containing 4 each CaSO ₄ elements)	ER-TMI-02 Collection of TLD samples for radiological analysis (Three Mile Island Nuclear Generating Station)	2 dosimeters	Global Dosimetry Solutions, Inc.

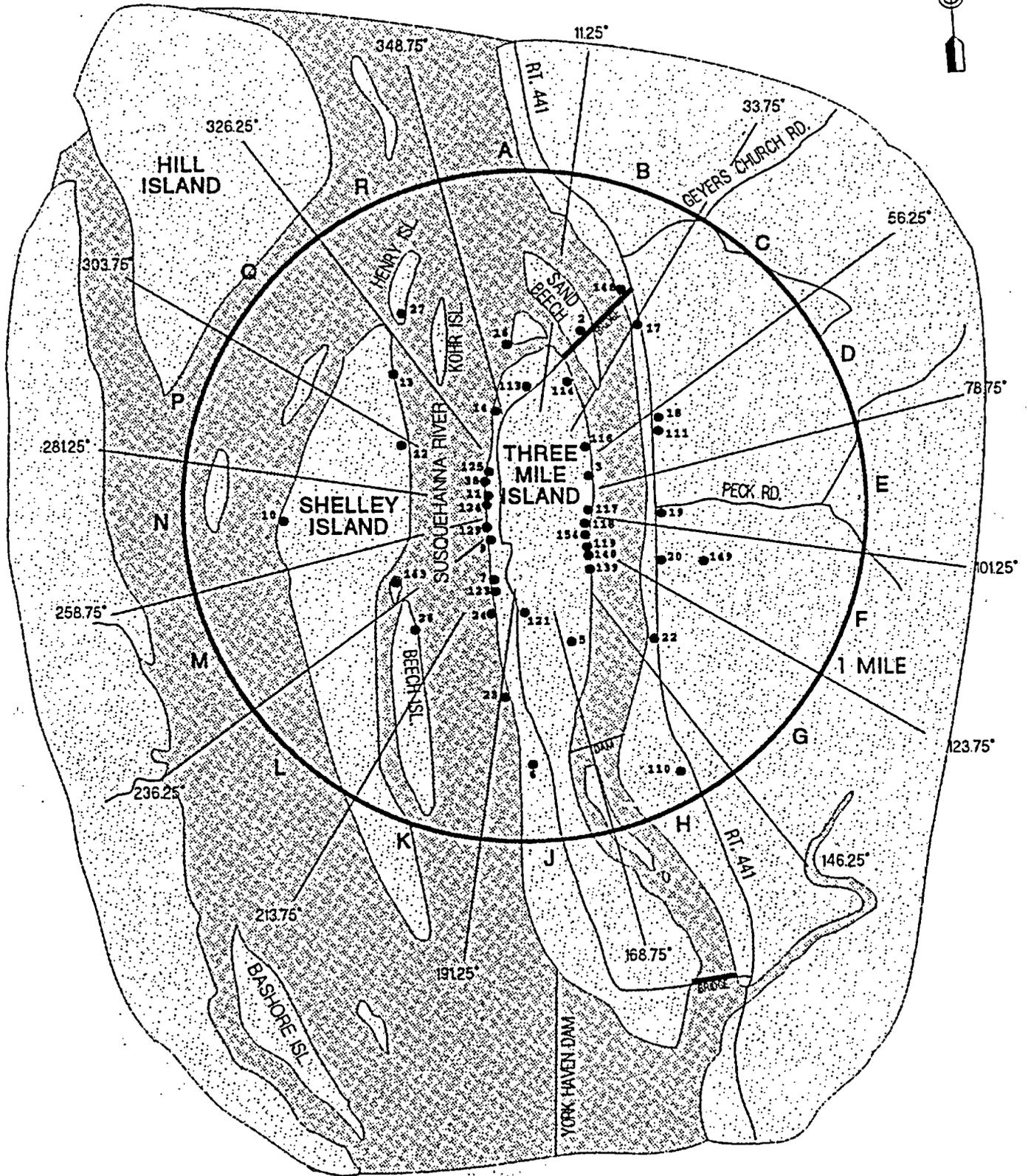


Figure B-1
Locations of REMP Stations
Within 1 Mile of TMINS

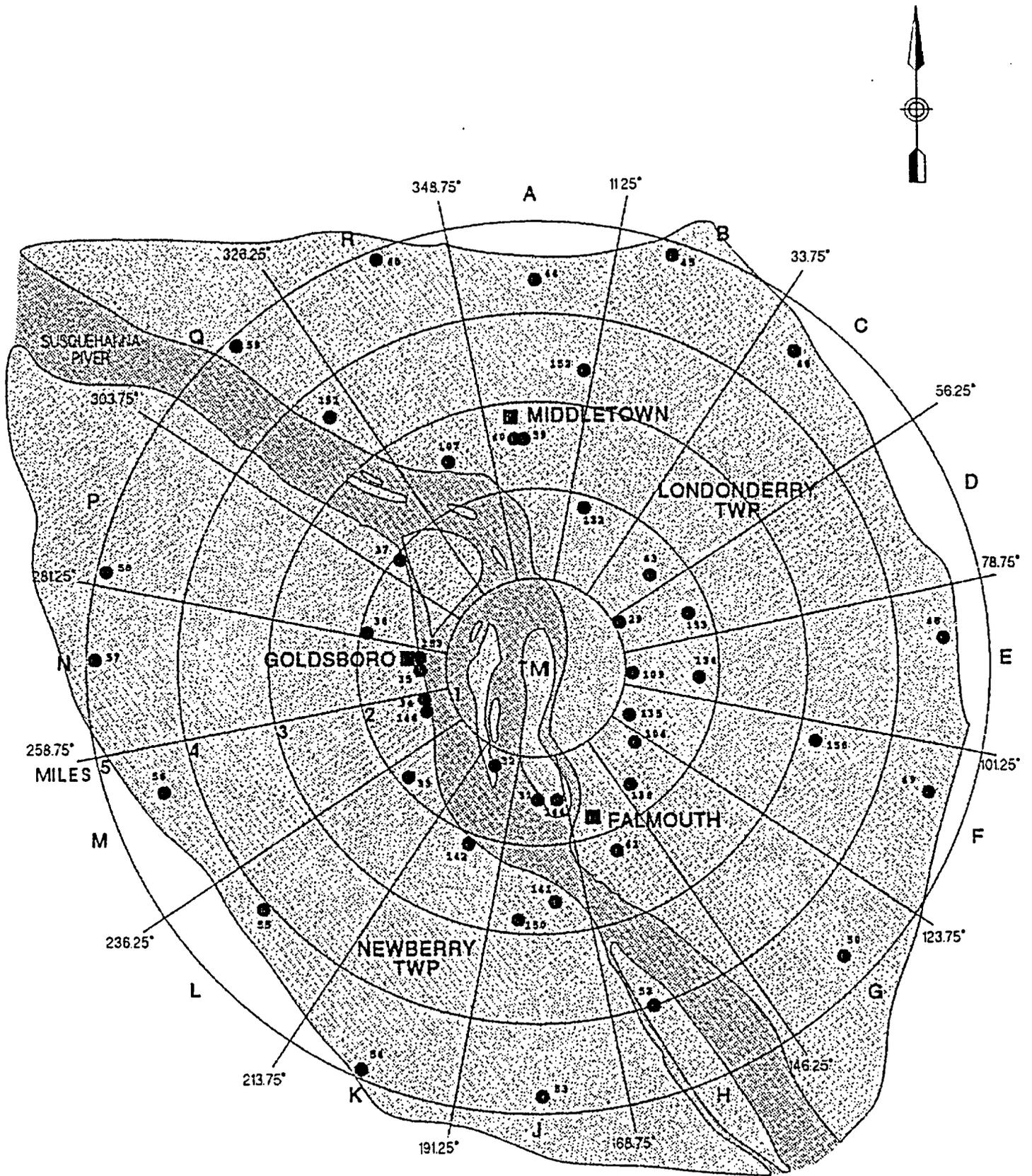


Figure B-2
 Locations of REMP Stations
 1 to 5 Miles of TMINS

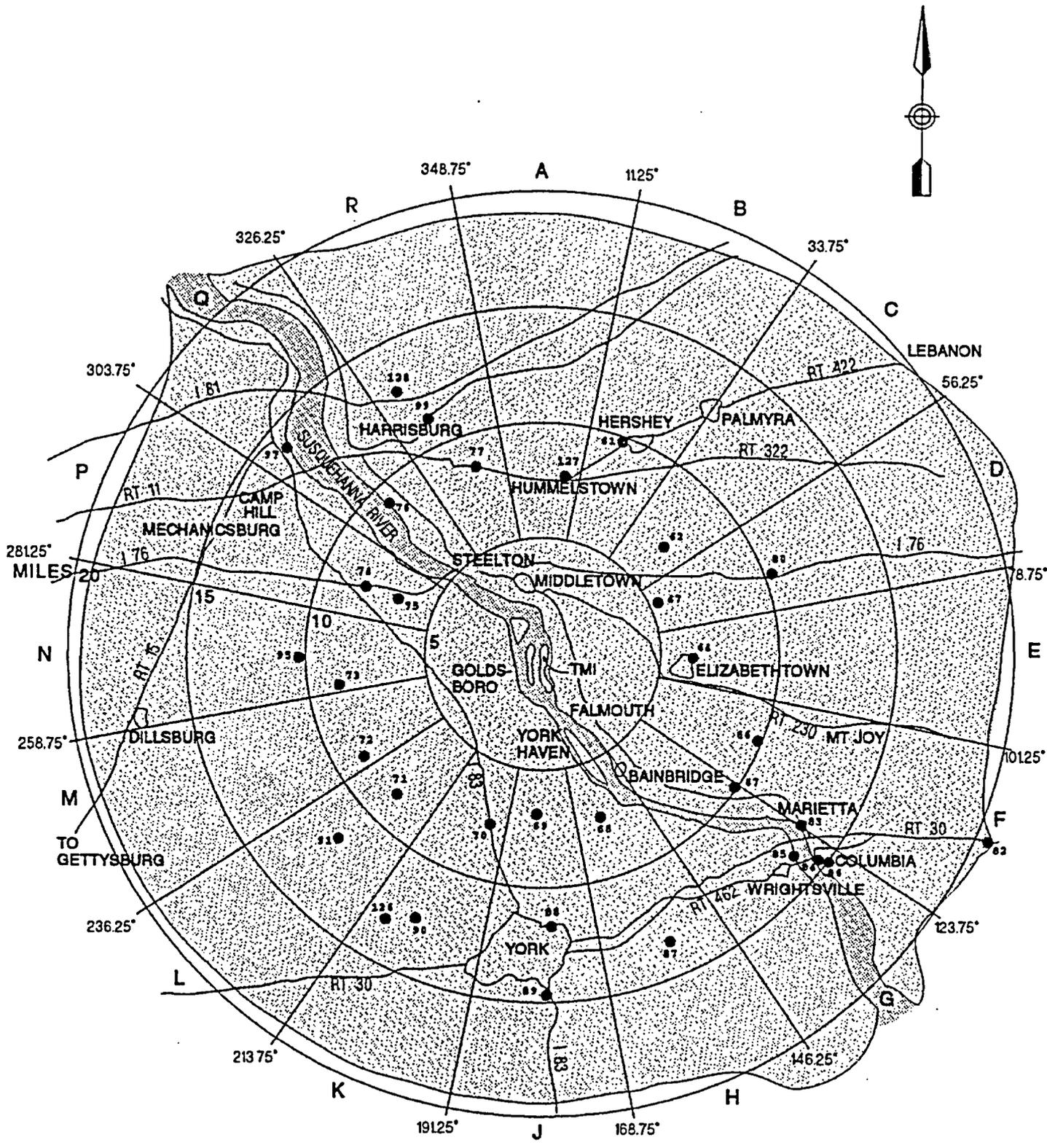


Figure B-3
 Locations of REMP Stations
 Greater Than 5 Miles of TMINS

APPENDIX C

**DATA TABLES AND FIGURES
PRIMARY LABORATORY**

**TABLE C-I.1 CONCENTRATIONS OF TRITIUM IN SURFACE WATER SAMPLES COLLECTED
IN THE VICINITY OF THREE MILE ISLAND NUCLEAR STATION, 2004**

RESULTS IN UNITS OF PCI/LITER \pm 2 SIGMA

COLLECTION PERIOD	J1-2	Q9-1
12/30/03 - 02/03/04	298 \pm 124	< 189
02/03/04 - 03/02/04	< 169	288 \pm 111
03/02/04 - 03/30/04	830 \pm 127	< 173
03/30/04 - 04/28/04	1160 \pm 138	< 166
04/28/04 - 06/01/04	363 \pm 136	< 182
06/01/04 - 06/29/04	< 173	< 173
06/29/04 - 08/03/04	< 167	< 165
08/03/04 - 08/31/04	< 143	< 153
08/31/04 - 09/28/04	< 190	< 185
09/28/04 - 11/02/04	4390 \pm 215	< 180
11/02/04 - 12/01/04	2140 \pm 166	< 166
12/01/04 - 12/28/04	970 \pm 142	< 186
MEAN	916 \pm 2495	184 \pm 69

TABLE C-1.2

**CONCENTRATIONS OF I-131 IN SURFACE WATER SAMPLES COLLECTED
IN THE VICINITY OF THREE MILE ISLAND NUCLEAR STATION, 2004**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	A3-2
12/30/03 - 02/03/04	0.8 ± 0.6
02/03/04 - 03/02/04	< 0.7
03/02/04 - 03/30/04	< 0.4
03/30/04 - 04/28/04	1.4 ± 0.4
04/28/04 - 06/01/04	1.2 ± 0.4
06/01/04 - 06/29/04	< 0.8
06/29/04 - 08/03/04	< 0.9
08/03/04 - 08/31/04	< 0.6
08/31/04 - 09/28/04	< 0.8
09/28/04 - 11/02/04	< 0.5
11/02/04 - 12/01/04	< 0.4
12/01/04 - 12/28/04	< 0.5
MEAN	0.8 ± 0.6

TABLE C-1.3

CONCENTRATIONS OF GAMMA EMITTERS IN SURFACE WATER SAMPLES
COLLECTED IN THE VICINITY OF THREE MILE ISLAND NUCLEAR STATION, 2004

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

STC	COLLECTION PERIOD	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Zr-95	Nb-95	Cs-134	Cs-137	Ba-140	La-140	
J1-2	12/30/03 - 02/03/04	< 3	< 3	< 6	< 3	< 6	< 5	< 3	< 3	< 3	< 14	< 5	
	02/03/04 - 03/02/04	< 3	< 3	< 6	< 3	< 6	< 5	< 3	< 3	< 3	< 16	< 5	
	03/02/04 - 03/30/04	< 5	< 5	< 8	< 4	< 9	< 8	< 5	< 5	< 5	< 18	< 5	
	03/30/04 - 04/28/04	< 7	< 6	< 14	< 7	< 12	< 11	< 8	< 6	< 7	< 30	< 11	
	04/28/04 - 06/01/04	< 4	< 5	< 9	< 5	< 9	< 8	< 5	< 4	< 5	< 24	< 8	
	06/01/04 - 06/29/04	< 2	< 2	< 4	< 4	< 5	< 4	< 2	< 2	< 2	< 10	< 4	
	06/29/04 - 08/03/04	< 7	< 6	< 15	< 7	< 15	< 11	< 7	< 6	< 7	< 32	< 11	
	08/03/04 - 08/31/04	< 2	< 2	< 5	< 4	< 5	< 4	< 2	< 2	< 3	< 12	< 4	
	08/31/04 - 09/28/04	< 3	< 3	< 6	< 3	< 6	< 6	< 3	< 3	< 3	< 15	< 5	
	09/28/04 - 11/02/04	< 3	< 3	< 6	< 3	< 6	< 5	< 3	< 3	< 3	< 14	< 4	
	11/02/04 - 12/01/04	< 6	< 6	< 12	< 7	< 9	< 12	< 6	< 6	< 7	< 36	< 10	
	12/01/04 - 12/28/04	< 4	< 3	< 6	< 4	< 7	< 7	< 3	< 3	< 4	< 14	< 5	
	MEAN		4 ± 3	4 ± 3	8 ± 7	4 ± 3	8 ± 6	7 ± 6	4 ± 4	4 ± 3	4 ± 3	20 ± 17	6 ± 5
	Q9-1	12/30/03 - 02/03/04	< 3	< 3	< 6	< 2	< 6	< 5	< 3	< 3	< 3	< 13	< 4
02/03/04 - 03/02/04		< 4	< 4	< 8	< 4	< 8	< 7	< 4	< 4	< 4	< 21	< 7	
03/02/04 - 03/30/04		< 3	< 3	< 5	< 3	< 6	< 4	< 3	< 3	< 3	< 10	< 4	
03/30/04 - 04/28/04		< 4	< 4	< 20	< 14	< 24	< 9	< 5	< 4	< 5	< 21	< 7	
04/28/04 - 06/01/04		< 3	< 3	< 6	< 3	< 6	< 5	< 3	< 3	< 3	< 16	< 6	
06/01/04 - 06/29/04		< 2	< 2	< 10	< 7	< 12	< 4	< 2	< 2	< 3	< 10	< 4	
06/29/04 - 08/03/04		< 6	< 7	< 11	< 6	< 14	< 11	< 7	< 6	< 6	< 33	< 12	
08/03/04 - 08/31/04		< 4	< 4	< 8	< 4	< 7	< 7	< 4	< 4	< 4	< 20	< 6	
08/31/04 - 09/28/04		< 5	< 5	< 10	< 5	< 11	< 8	< 5	< 4	< 5	< 23	< 8	
09/28/04 - 11/02/04		< 2	< 2	< 8	< 6	< 9	< 4	< 2	< 2	< 2	< 10	< 3	
11/02/04 - 12/01/04		< 3	< 3	< 6	< 3	< 7	< 5	< 3	< 3	< 4	< 16	< 5	
12/01/04 - 12/28/04		< 5	< 5	< 9	< 5	< 9	< 8	< 5	< 5	< 5	< 24	< 8	
MEAN			4 ± 2	4 ± 3	9 ± 8	5 ± 6	10 ± 10	6 ± 5	4 ± 3	3 ± 2	4 ± 3	18 ± 14	6 ± 5

TABLE C-II.1 CONCENTRATIONS OF GROSS BETA IN DRINKING WATER SAMPLES COLLECTED IN THE VICINITY OF THREE MILE ISLAND NUCLEAR STATION, 2004

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	G15-2	G15-3	Q9-1
12/30/03 - 02/03/04	2.6 ± 1.4	< 1.9	2.1 ± 1.3
02/03/04 - 03/02/04	3.3 ± 1.5	2.1 ± 1.5	< 2.1
03/02/04 - 03/30/04	2.8 ± 1.5	< 2.0	< 2.0
03/30/04 - 04/28/04	2.2 ± 1.4	< 1.9	< 2.0
04/28/04 - 06/01/04	3.4 ± 1.4	2.6 ± 1.3	3.3 ± 1.3
06/01/04 - 06/29/04	3.2 ± 1.6	< 2.2	< 2.1
06/29/04 - 08/03/04	4.1 ± 1.5	3.0 ± 1.4	2.3 ± 1.3
08/03/04 - 08/31/04	3.6 ± 1.4	4.5 ± 1.5	2.7 ± 1.3
08/31/04 - 09/28/04	3.0 ± 1.4	3.6 ± 1.5	2.9 ± 1.4
09/28/04 - 11/02/04	3.8 ± 1.5	2.7 ± 1.4	2.6 ± 1.4
11/02/04 - 12/01/04	3.5 ± 1.4	2.7 ± 1.3	2.4 ± 1.2
12/01/04 - 12/28/04	2.1 ± 1.3	2.8 ± 1.4	1.8 ± 1.2
MEAN	3.1 ± 1.2	2.7 ± 1.5	2.4 ± 0.9

TABLE C-II.2 CONCENTRATIONS OF I-131 IN DRINKING WATER SAMPLES COLLECTED IN THE VICINITY OF THREE MILE ISLAND NUCLEAR STATION, 2004

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	G15-2	G15-3	Q9-1
12/30/03 - 02/03/04	< 0.9	< 0.9	< 0.7
02/03/04 - 03/02/04	< 0.8	< 0.9	< 0.8
03/02/04 - 03/30/04	< 0.9	< 0.8	< 0.5
03/30/04 - 04/28/04	< 0.7	< 0.6	< 0.6
04/28/04 - 06/01/04	< 0.6	< 0.5	< 0.6
06/01/04 - 06/29/04	< 0.6	< 0.9	< 0.4
06/29/04 - 08/03/04	< 0.6	< 0.8	< 0.6
08/03/04 - 08/31/04	< 0.4	< 0.5	< 0.4
08/31/04 - 09/28/04	< 0.6	< 0.6	< 0.3
09/30/03 - 10/28/03	< 0.4	< 0.6	< 0.6
10/28/03 - 12/02/03	< 0.4	< 0.5	< 0.3
12/02/03 - 12/30/03	< 0.4	< 0.4	< 0.4
MEAN	0.6 ± 0.4	0.7 ± 0.4	0.5 ± 0.3

TABLE C-II.3 CONCENTRATIONS OF TRITIUM IN DRINKING WATER SAMPLES COLLECTED IN THE VICINITY OF THREE MILE ISLAND NUCLEAR STATION, 2004

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	G15-2	G15-3	Q9-1
12/30/03 - 02/03/04	< 178	< 180	< 187
02/03/04 - 03/02/04	< 167	< 188	< 189
03/02/04 - 03/30/04	< 174	< 172	< 174
03/30/04 - 04/28/04	< 172	< 171	< 171
04/28/04 - 06/01/04	< 200	< 191	< 191
06/01/04 - 06/29/04	< 172	< 172	< 172
06/29/04 - 08/03/04	< 162	< 165	< 168
08/03/04 - 08/31/04	< 143	< 144	< 147
08/31/04 - 09/28/04	< 184	< 184	< 183
09/30/03 - 10/28/03	< 181	197 ± 111	< 180
10/28/03 - 12/02/03	< 166	< 185	< 166
12/02/03 - 12/30/03	< 187	< 187	< 185
MEAN	174 ± 29	178 ± 29	176 ± 25

TABLE C-II.4

CONCENTRATIONS OF GAMMA EMITTERS IN DRINKING WATER SAMPLES COLLECTED
IN THE VICINITY OF THREE MILE ISLAND NUCLEAR STATION, 2004

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

STC	COLLECTION PERIOD	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Zr-95	Nb-95	Cs-134	Cs-137	Ba-140	La-140
G15-2	12/30/03 - 02/03/04	< 3	< 3	< 7	< 3	< 7	< 6	< 4	< 3	< 4	< 16	< 6
	02/03/04 - 03/02/04	< 5	< 6	< 12	< 6	< 13	< 9	< 6	< 6	< 5	< 30	< 12
	03/02/04 - 03/30/04	< 2	< 2	< 10	< 8	< 12	< 4	< 2	< 2	< 2	< 8	< 3
	03/30/04 - 04/28/04	< 2	< 2	< 5	< 2	< 4	< 4	< 2	< 2	< 2	< 9	< 3
	04/28/04 - 06/01/04	< 3	< 3	< 7	< 3	< 7	< 6	< 4	< 3	< 3	< 17	< 6
	06/01/04 - 06/29/04	< 3	< 3	< 7	< 3	< 7	< 6	< 3	< 3	< 4	< 16	< 5
	06/29/04 - 08/03/04	< 7	< 7	< 16	< 8	< 16	< 14	< 8	< 7	< 9	< 34	< 11
	08/03/04 - 08/31/04	< 4	< 4	< 8	< 4	< 8	< 6	< 4	< 4	< 4	< 17	< 6
	08/31/04 - 09/28/04	< 3	< 4	< 7	< 4	< 8	< 6	< 4	< 3	< 4	< 17	< 6
	09/28/04 - 11/02/04	< 5	< 8	< 13	< 7	< 15	< 11	< 6	< 6	< 9	< 34	< 10
	11/02/04 - 12/01/04	< 6	< 7	< 14	< 6	< 14	< 10	< 4	< 5	< 6	< 33	< 10
	12/01/04 - 12/28/04	< 3	< 3	< 6	< 3	< 5	< 6	< 3	< 3	< 3	< 13	< 5
	MEAN		4 ± 3	4 ± 4	9 ± 7	5 ± 4	10 ± 8	7 ± 6	4 ± 4	4 ± 3	5 ± 4	20 ± 19
G15-3	12/30/03 - 02/03/04	< 3	< 3	< 7	< 4	< 8	< 7	< 4	< 3	< 4	< 17	< 6
	02/03/04 - 03/02/04	< 4	< 4	< 8	< 4	< 8	< 7	< 4	< 4	< 4	< 22	< 7
	03/02/04 - 03/30/04	< 9	< 9	< 16	< 9	< 17	< 14	< 10	< 8	< 9	< 36	< 13
	03/30/04 - 04/28/04	< 2	< 2	< 10	< 7	< 12	< 4	< 2	< 2	< 3	< 10	< 4
	04/28/04 - 06/01/04	< 3	< 2	< 11	< 7	< 12	< 4	< 2	< 2	< 2	< 12	< 4
	06/01/04 - 06/29/04	< 3	< 3	< 7	< 3	< 7	< 6	< 3	< 3	< 3	< 16	< 4
	06/29/04 - 08/03/04	< 7	< 6	< 14	< 5	< 13	< 11	< 6	< 6	< 7	< 31	< 4
	08/03/04 - 08/31/04	< 5	< 5	< 11	< 5	< 11	< 9	< 5	< 5	< 5	< 25	< 8
	08/31/04 - 09/28/04	< 2	< 2	< 12	< 6	< 13	< 4	< 3	< 2	< 3	< 11	< 3
	09/28/04 - 11/02/04	< 8	< 8	< 17	< 7	< 17	< 13	< 8	< 7	< 9	< 40	< 12
	11/02/04 - 12/01/04	< 3	< 3	< 7	< 3	< 6	< 6	< 3	< 3	< 3	< 17	< 5
	12/01/04 - 12/28/04	< 3	< 4	< 7	< 4	< 7	< 6	< 4	< 4	< 3	< 17	< 5
	MEAN		4 ± 5	4 ± 4	10 ± 7	5 ± 4	11 ± 8	7 ± 7	5 ± 5	4 ± 4	5 ± 5	21 ± 20

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TABLE C-II.4

CONCENTRATIONS OF GAMMA EMITTERS IN DRINKING WATER SAMPLES COLLECTED
IN THE VICINITY OF THREE MILE ISLAND NUCLEAR STATION, 2004

RESULTS IN UNITS OF PCI/LITER \pm 2 SIGMA

STC	COLLECTION PERIOD	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Zr-95	Nb-95	Cs-134	Cs-137	Ba-140	La-140
Q9-1	12/30/03 - 02/03/04	< 7	< 7	< 12	< 8	< 12	< 15	< 9	< 7	< 8	< 32	< 8
	02/03/04 - 03/02/04	< 3	< 3	< 5	< 3	< 5	< 5	< 3	< 3	< 3	< 15	< 4
	03/02/04 - 03/30/04	< 7	< 7	< 15	< 7	< 14	< 11	< 6	< 6	< 7	< 23	< 6
	03/30/04 - 04/28/04	< 3	< 3	< 5	< 2	< 5	< 4	< 3	< 2	< 3	< 11	< 4
	04/28/04 - 06/01/04	< 3	< 4	< 8	< 4	< 7	< 6	< 4	< 3	< 4	< 19	< 6
	06/01/04 - 06/29/04	< 3	< 3	< 5	< 3	< 5	< 4	< 3	< 3	< 3	< 13	< 4
	06/29/04 - 08/03/04	< 5	< 5	< 10	< 5	< 10	< 8	< 5	< 5	< 5	< 22	< 8
	08/03/04 - 08/31/04	< 3	< 3	< 6	< 3	< 7	< 5	< 3	< 3	< 3	< 15	< 5
	08/31/04 - 09/28/04	< 3	< 3	< 5	< 3	< 6	< 5	< 3	< 2	< 3	< 12	< 4
	09/28/04 - 11/02/04	< 10	< 9	< 19	< 8	< 20	< 15	< 10	< 8	< 9	< 40	< 14
	11/02/04 - 12/01/04	< 3	< 3	< 7	< 3	< 6	< 5	< 3	< 3	< 3	< 15	< 6
	12/01/04 - 12/28/04	< 4	< 4	< 8	< 5	< 9	< 6	< 4	< 4	< 4	< 19	< 6
		MEAN	4 \pm 5	4 \pm 4	9 \pm 9	4 \pm 4	9 \pm 9	8 \pm 8	5 \pm 5	4 \pm 4	5 \pm 5	20 \pm 17

TABLE C-III.1 CONCENTRATIONS OF GROSS BETA, IODINE-131, TRITIUM, AND STRONTIUM IN EFFLUENT WATER SAMPLES FOR STATION K1-1 COLLECTED IN THE VICINITY OF THREE MILE ISLAND NUCLEAR STATION, 2004

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	Gross Beta	I-131	H-3	Sr-89	Sr-90
12/30/03 - 02/03/04	3.2 ± 1.5	< 0.6	981 ± 146		
02/03/04 - 03/02/04	2.8 ± 1.6	< 0.8	< 169		
03/02/04 - 03/30/04	< 2.1	< 0.7	8580 ± 277		
03/30/04 - 04/28/04	7.6 ± 1.9	< 0.7	11500 ± 309		
04/28/04 - 06/01/04	5.0 ± 1.6	< 0.5	5810 ± 255		
06/01/04 - 06/29/04	8.7 ± 2.2	< 0.8	< 168	< 3.3	< 0.5
06/29/04 - 08/03/04	8.0 ± 2.0	< 1.0	199 ± 108		
08/03/04 - 08/31/04	7.6 ± 1.8	< 0.7	< 152		
08/31/04 - 09/28/04	4.2 ± 1.6	< 0.5	< 191		
09/28/04 - 11/02/04	3.5 ± 1.6	< 0.4	63000 ± 715		
11/02/04 - 12/01/04	5.8 ± 1.6	< 0.3	20700 ± 420		
12/01/04 - 12/28/04	4.8 ± 1.5	< 0.3	8660 ± 277	< 1.5	< 0.8
MEAN	5.3 ± 4.5	0.6 ± 0.4	10009 ± 35731	2.4 ± 2.5	0.7 ± 0.4

TABLE C-III.2

**CONCENTRATIONS OF GAMMA EMITTERS IN EFFLUENT WATER SAMPLES COLLECTED
IN THE VICINITY OF THREE MILE ISLAND NUCLEAR STATION, 2004**

RESULTS IN UNITS OF PCI/LITER \pm 2 SIGMA

STC	COLLECTION PERIOD	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Zr-95	Nb-95	Cs-134	Cs-137	Ba-140	La-140	
K1-1	12/30/03 - 02/03/04	< 3	< 3	< 7	< 3	< 6	< 5	< 3	< 3	< 3	< 14	< 5	
	02/03/04 - 03/02/04	< 4	< 4	< 10	< 5	< 10	< 8	< 5	< 4	< 5	< 24	< 8	
	03/02/04 - 03/30/04	< 7	< 8	< 19	< 9	< 15	< 13	< 9	< 8	< 8	< 35	< 11	
	03/30/04 - 04/28/04	< 6	< 7	< 15	< 7	< 14	< 12	< 7	< 7	< 7	< 34	< 10	
	04/28/04 - 06/01/04	< 3	< 3	< 6	< 3	< 6	< 5	< 3	< 3	< 3	< 18	< 5	
	06/01/04 - 06/29/04	< 5	< 5	< 13	< 7	< 10	< 11	< 5	< 7	< 6	< 35	< 10	
	06/29/04 - 08/03/04	< 5	< 6	< 11	< 6	< 15	< 10	< 6	< 6	< 6	< 28	< 7	
	08/03/04 - 08/31/04	< 4	< 4	< 7	< 4	< 7	< 7	< 4	< 4	< 4	< 4	< 17	< 5
	08/31/04 - 09/28/04	< 8	< 6	< 15	< 8	< 14	< 13	< 8	< 7	< 8	< 8	< 38	< 9
	09/28/04 - 11/02/04	< 4	< 4	< 7	< 4	< 7	< 6	< 4	< 3	< 4	< 4	< 18	< 6
	11/02/04 - 12/01/04	< 2	< 2	< 4	< 3	< 5	< 4	< 2	< 2	< 3	< 3	< 12	< 4
	12/01/04 - 12/28/04	< 5	< 4	< 10	< 4	< 10	< 7	< 5	< 5	< 5	< 5	< 22	< 8
MEAN		5 \pm 3	5 \pm 3	10 \pm 9	5 \pm 4	10 \pm 7	8 \pm 7	5 \pm 4	5 \pm 4	5 \pm 4	24 \pm 18	7 \pm 5	

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TABLE C-IV.1

CONCENTRATIONS OF TRITIUM AND GAMMA EMITTERS IN STORM WATER SAMPLES COLLECTED
IN THE VICINITY OF THREE MILE ISLAND NUCLEAR STATION, 2004

RESULTS IN UNITS OF PCI/LITER \pm 2 SIGMA

STC	COLLECTION PERIOD	H-3	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Zr-95	Nb-95	Cs-134	Cs-137	Ba-140	La-140
EDCB	02/03/04 - 03/30/04	675 \pm 131	< 2	< 2	< 4	< 2	< 4	< 3	< 2	< 2	< 3	< 8	< 3
	04/28/04 - 06/29/04	186 \pm 112	< 9	< 10	< 19	< 11	< 18	< 14	< 9	< 8	< 9	< 42	< 9
	08/03/04 - 09/28/04	< 183	< 8	< 8	< 16	< 9	< 18	< 14	< 10	< 7	< 8	< 40	< 13
	11/02/04 - 12/28/04	< 181	< 4	< 3	< 7	< 4	< 8	< 6	< 4	< 4	< 3	< 20	< 6
	MEAN	306 \pm 492	6 \pm 7	6 \pm 8	12 \pm 14	6 \pm 8	12 \pm 14	10 \pm 11	6 \pm 8	5 \pm 6	6 \pm 7	28 \pm 33	8 \pm 9

TABLE C-V.1 CONCENTRATIONS OF TRITIUM IN GROUND WATER SAMPLES COLLECTED IN THE VICINITY OF THREE MILE ISLAND NUCLEAR STATION, 2004

RESULTS IN UNITS OF PCI/LITER \pm 2 SIGMA

STATION CODE	03/18/04	06/04/04	09/09/04	12/11/04	MEAN
48S	191 \pm 115	< 169	322 \pm 110	306 \pm 123	273 \pm 143
GP-1	814 \pm 139	620 \pm 124	273 \pm 110	204 \pm 121	478 \pm 578
GP-6	652 \pm 135	554 \pm 115	581 \pm 117	798 \pm 132	646 \pm 219
GP-8	575 \pm 138	514 \pm 127	639 \pm 120	474 \pm 120	551 \pm 144
GP-9	402 \pm 123	385 \pm 103	413 \pm 114	1100 \pm 143	575 \pm 700
MS-22	972 \pm 167	1190 \pm 137	1140 \pm 134	1310 \pm 150	1153 \pm 280
OSF	248 \pm 117	299 \pm 114	461 \pm 115	419 \pm 126	357 \pm 200
OS-18	555 \pm 185	525 \pm 148	436 \pm 113	970 \pm 138	622 \pm 476
GP-12		437 \pm 112		417 \pm 124	427 \pm 28
MS-2		337 \pm 112		236 \pm 107	287 \pm 143
MS-5		317 \pm 113		284 \pm 117	301 \pm 47
MS-8		364 \pm 115		425 \pm 124	395 \pm 86
MS-20		757 \pm 128		1220 \pm 147	989 \pm 655
NW-A		894 \pm 129		1290 \pm 141	1092 \pm 560
NW-B		1260 \pm 139		1230 \pm 146	1245 \pm 42
NW-C		5360 \pm 223		5090 \pm 228	5225 \pm 382
NW-CW		1450 \pm 145		1570 \pm 157	1510 \pm 170
OS-14		274 \pm 111		293 \pm 120	284 \pm 27
RW-1		200 \pm 108		346 \pm 122	273 \pm 206
RW-2		784 \pm 129		2490 \pm 179	1637 \pm 2413
E1-2		< 164			
MS-1		230 \pm 111			
MS-4		640 \pm 122			
MS-7		264 \pm 130			
MS-19		199 \pm 111			
MS-21		195 \pm 108			
N2-1		< 163			

TABLE C-V.2 CONCENTRATIONS OF STRONTIUM AND GAMMA EMITTERS IN GROUND WATER SAMPLES COLLECTED IN THE VICINITY OF THREE MILE ISLAND NUCLEAR STATION, 2004

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

STC	COLLECTION PERIOD	Sr-90	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Zr-95	Nb-95	Cs-134	Cs-137	Ba-140	La-140
48S	03/18/04	< 0.2	< 4	< 4	< 8	< 4	< 8	< 7	< 5	< 4	< 4	< 19	< 6
	06/04/04		< 3	< 3	< 6	< 3	< 6	< 5	< 3	< 3	< 3	< 14	< 5
	09/09/04		< 3	< 3	< 7	< 3	< 7	< 6	< 4	< 3	< 3	< 16	< 5
	12/11/04		< 8	< 7	< 18	< 8	< 16	< 13	< 9	< 7	< 8	< 38	< 13
	MEAN		5 ± 5	4 ± 4	10 ± 11	5 ± 4	9 ± 9	8 ± 8	5 ± 6	4 ± 4	5 ± 5	22 ± 22	7 ± 7
OSF	03/13/03	< 0.2	< 3	< 3	< 6	< 3	< 6	< 5	< 3	< 3	< 3	< 14	< 5
	06/04/04		< 3	< 3	< 7	< 3	< 7	< 6	< 4	< 3	< 4	< 17	< 6
	09/09/04		< 4	< 4	< 9	< 5	< 9	< 7	< 5	< 4	< 5	< 20	< 7
	12/11/04		< 10	< 11	< 22	< 10	< 22	< 18	< 11	< 8	< 10	< 43	< 13
	MEAN		5 ± 6	5 ± 7	11 ± 15	5 ± 6	11 ± 15	9 ± 12	6 ± 8	5 ± 5	5 ± 6	23 ± 26	8 ± 8
E1-2	06/04/04		< 3	< 3	< 7	< 3	< 7	< 6	< 4	< 3	< 3	< 16	< 5
MS-2	06/03/04	< 0.6	< 2	< 3	< 6	< 2	< 5	< 5	< 3	< 2	< 3	< 42	< 12
MS-5	06/03/04	< 0.2	< 1	< 2	< 4	< 2	< 3	< 3	< 2	< 1	< 2	< 20	< 7
MS-8	06/03/04	< 0.2	< 3	< 4	< 7	< 3	< 6	< 6	< 3	< 3	< 3	< 36	< 12
MS-20	06/03/04		< 3	< 4	< 9	< 5	< 8	< 6	< 4	< 3	< 3	< 46	< 13
MS-22	03/13/03		< 1	< 2	< 5	< 1	< 3	< 3	< 2	< 1	< 2	< 28	< 9
N2-1	06/04/04		< 3	< 3	< 5	< 2	< 5	< 4	< 3	< 3	< 3	< 13	< 4
OS-14	06/03/04	< 0.5	< 2	< 2	< 5	< 2	< 4	< 4	< 2	< 2	< 2	< 23	< 7
RW-1	06/03/04		< 3	< 3	< 10	< 4	< 8	< 8	< 4	< 3	< 4	< 44	< 14
RW-2	06/03/04		< 3	< 3	< 8	< 3	< 7	< 6	< 4	< 3	< 3	< 39	< 13

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TABLE C-VI.1

CONCENTRATIONS OF STRONTIUM IN PREDATOR & BOTTOM FEEDER (FISH) SAMPLES COLLECTED IN THE VICINITY OF THREE MILE ISLAND NUCLEAR STATION, 2004

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

STC	COLLECTION PERIOD	Sr-89	Sr-90
INDP	PREDATOR		
	06/14/04	< 8	< 3
	10/11/04	< 13	< 4
	MEAN	11 ± 8	4 ± 1
INDB	BOTTOM FEEDER		
	06/14/04	< 7	< 3
	10/11/04	< 17	< 4
	MEAN	12 ± 14	3 ± 2.0
BKGP	PREDATOR		
	06/15/04	< 7	< 3
	10/08/04	< 16	< 4
	MEAN	11 ± 12	3 ± 2
BKGB	BOTTOM FEEDER		
	06/15/04	< 8	< 3
	06/18/04	< 16	< 4
	MEAN	12 ± 11	4 ± 2

TABLE C-VI.2

CONCENTRATIONS OF GAMMA EMITTERS IN PREDATOR & BOTTOM FEEDER (FISH)
 SAMPLES COLLECTED IN THE VICINITY OF THREE MILE ISLAND NUCLEAR STATION, 2004

RESULTS IN UNITS OF PCI/KG WET \pm 2 SIGMA

STC	COLLECTION PERIOD	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Cs-134	Cs-137
INDP	PREDATOR								
	06/14 - 06/22/04	3780 \pm 1040	< 45	< 57	< 114	< 51	< 118	< 51	< 70
	10/11 - 10/27/04	2670 \pm 605	< 21	< 28	< 43	< 32	< 68	< 24	< 27
	MEAN	3225 \pm 1570	33 \pm 33	43 \pm 41	78 \pm 101	42 \pm 26	93 \pm 71	38 \pm 39	48 \pm 61
INDB	BOTTOM FEEDER								
	06/14 - 06/14/04	3170 \pm 594	< 35	< 31	< 79	< 48	< 61	< 29	< 30
	10/11 - 10/11/04	3190 \pm 690	< 43	< 43	< 90	< 48	< 104	< 38	< 40
	MEAN	3180 \pm 28	39 \pm 11	37 \pm 17	85 \pm 17	48 \pm 0	82 \pm 61	34 \pm 12	35 \pm 14
BKGP	PREDATOR								
	06/15 - 06/15/04	2820 \pm 784	< 52	< 58	< 114	< 53	< 78	< 43	< 57
	10/08 - 10/08/04	3030 \pm 609	< 32	< 31	< 64	< 30	< 70	< 30	< 30
	MEAN	2925 \pm 297	42 \pm 29	45 \pm 38	89 \pm 71	41 \pm 33	74 \pm 11	36 \pm 19	43 \pm 39
BKGB	BOTTOM FEEDER								
	06/15 - 06/15/04	3420 \pm 811	< 47	< 57	< 101-	< 45	< 94	< 41	< 50
	10/18 - 10/27/04	2450 \pm 748	< 37	< 36	< 89	< 45	< 83	< 34	< 46
	MEAN	2935 \pm 1372	42 \pm 14	47 \pm 30	95 \pm 17	45 \pm 0	89 \pm 16	37 \pm 11	48 \pm 5

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TABLE C-VII.1 CONCENTRATIONS OF GAMMA EMITTERS IN SEDIMENT SAMPLES COLLECTED IN THE VICINITY OF THREE MILE ISLAND NUCLEAR STATION, 2004

RESULTS IN UNITS OF PCI/KG DRY \pm 2 SIGMA

STC	COLLECTION PERIOD	K-40	Mn-54	Co-58	Co-60	Cs-134	Cs-137
A1-3	06/14/04	14700 \pm 577	< 22	< 19	< 46	< 18	99 \pm 23
	10/18/04	9870 \pm 1030	< 47	< 53	< 44	< 44	68 \pm 44
	MEAN	12285 \pm 6831	35 \pm 36	36 \pm 47	45 \pm 3	31 \pm 38	83 \pm 43
J2-1	06/14/04	21700 \pm 1350	< 48	< 48	< 41	< 41	171 \pm 59
	10/18/04	16100 \pm 1250	< 58	< 50	< 58	< 49	120 \pm 51
	MEAN	18900 \pm 7920	53 \pm 15	49 \pm 3	49 \pm 24	45 \pm 11	146 \pm 72
K1-3	06/14/04	11100 \pm 493	< 26	< 25	< 25	< 23	236 \pm 35
	10/18/04	8360 \pm 817	< 39	< 37	< 34	< 35	65 \pm 46
	MEAN	9730 \pm 3875	33 \pm 19	31 \pm 17	29 \pm 13	29 \pm 17	151 \pm 242
EDCB	10/18/04	15100 \pm 1050	< 47	< 46	< 50	< 44	242 \pm 47

TABLE C-VIII.1 CONCENTRATIONS OF GROSS BETA IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF THREE MILE ISLAND NUCLEAR STATION, 2004

RESULTS IN UNITS OF E-3 PCI/CU METER ± 2 SIGMA

COLLECTION PERIOD	GROUP I		GROUP II				GROUP III
	E1-2	F1-3	A3-1	G2-1	M2-1	H3-1	Q15-1
12/31/03 - 01/07/04	18 ± 6	21 ± 5	22 ± 5	18 ± 5	16 ± 5	21 ± 6	17 ± 5
01/07/04 - 01/14/04	24 ± 5	23 ± 5	27 ± 5	19 ± 5	23 ± 5	25 ± 6	23 ± 5
01/14/04 - 01/21/04	15 ± 5	10 ± 4	12 ± 4	12 ± 5	12 ± 5	14 ± 5	14 ± 5
01/21/04 - 01/28/04	15 ± 5	21 ± 5	21 ± 5	18 ± 5	18 ± 5	17 ± 5	20 ± 5
01/28/04 - 02/04/04	18 ± 5	21 ± 5	22 ± 5	15 ± 5	18 ± 5	20 ± 5	15 ± 5
02/04/04 - 02/11/04	19 ± 5	24 ± 5	16 ± 5	18 ± 5	12 ± 5	19 ± 5	20 ± 5
02/11/04 - 02/18/04	27 ± 5	24 ± 5	23 ± 5	25 ± 5	22 ± 5	26 ± 6	28 ± 5
02/18/04 - 02/25/04	22 ± 5	18 ± 5	21 ± 5	22 ± 6	19 ± 5	21 ± 6	25 ± 5
02/25/04 - 03/03/04	24 ± 4	24 ± 4	22 ± 4	25 ± 4	23 ± 4	25 ± 4	28 ± 4
03/03/04 - 03/10/04	12 ± 5	16 ± 5	16 ± 5	14 ± 5	14 ± 5	15 ± 5	16 ± 5
03/10/04 - 03/17/04	16 ± 5	17 ± 5	14 ± 4	14 ± 5	16 ± 5	12 ± 5	10 ± 4
03/17/04 - 03/24/04	16 ± 5	16 ± 5	14 ± 5	15 ± 5	11 ± 5	15 ± 5	12 ± 5
03/24/04 - 03/31/04	18 ± 5	10 ± 5	12 ± 5	15 ± 5	11 ± 5	10 ± 5	10 ± 5
03/31/04 - 04/07/04	7 ± 4	11 ± 4	9 ± 4	10 ± 4	9 ± 4	9 ± 4	8 ± 4
04/07/04 - 04/14/04	9 ± 5	8 ± 5	11 ± 5	< 7	< 7	9 ± 5	11 ± 5
04/14/04 - 04/21/04	16 ± 5	20 ± 5	14 ± 5	14 ± 5	16 ± 5	16 ± 5	17 ± 5
04/21/04 - 04/28/04	11 ± 4	14 ± 5	17 ± 5	17 ± 5	15 ± 5	16 ± 5	15 ± 5
04/28/04 - 05/05/04	15 ± 4	16 ± 5	17 ± 5	18 ± 5	18 ± 5	17 ± 5	17 ± 5
05/05/04 - 05/12/04	25 ± 6	11 ± 5	19 ± 5	21 ± 5	21 ± 5	23 ± 6	23 ± 5
05/12/04 - 05/19/04	20 ± 5	22 ± 5	24 ± 5	21 ± 5	23 ± 5	24 ± 6	20 ± 5
05/19/04 - 05/26/04	18 ± 5	13 ± 5	14 ± 5	18 ± 5	15 ± 5	17 ± 5	15 ± 5
05/26/04 - 06/02/04	12 ± 4	16 ± 5	15 ± 5	20 ± 5	16 ± 5	21 ± 5	16 ± 5
06/02/04 - 06/09/04	15 ± 5	15 ± 5	19 ± 5	11 ± 5	13 ± 5	12 ± 5	16 ± 5
06/09/04 - 06/16/04	14 ± 5	13 ± 5	9 ± 4	11 ± 5	10 ± 5	8 ± 5	9 ± 5
06/16/04 - 06/23/04	9 ± 5 (1)	23 ± 6	7 ± 5	(1)	< 8	< 8 (1)	10 ± 5
06/23/04 - 06/29/04	47 ± 7	21 ± 6	23 ± 6	21 ± 6	26 ± 6	26 ± 6	18 ± 5
06/29/04 - 07/07/04	18 ± 4	17 ± 5	21 ± 4	16 ± 5	15 ± 5	15 ± 5	22 ± 5
07/07/04 - 07/14/04	8 ± 4	11 ± 5	10 ± 4	9 ± 4	8 ± 4	12 ± 5	13 ± 5
07/14/04 - 07/21/04	27 ± 5	17 ± 5	16 ± 5	15 ± 5	12 ± 5	21 ± 6	11 ± 5
07/21/04 - 07/28/04	16 ± 5	16 ± 5	19 ± 5	19 ± 5	20 ± 5	16 ± 5	22 ± 5
07/28/04 - 08/04/04	10 ± 5	15 ± 5	17 ± 5	29 ± 6	15 ± 5	21 ± 6	15 ± 5
08/04/04 - 08/11/04	14 ± 5	11 ± 5	17 ± 5	17 ± 5	18 ± 5	16 ± 5	16 ± 5
08/11/04 - 08/18/04	14 ± 5	17 ± 5	20 ± 5	14 ± 5	18 ± 5	14 ± 5	15 ± 5
08/18/04 - 08/25/04	21 ± 5	23 ± 5	27 ± 6	20 ± 5	(1)	22 ± 5	21 ± 5
08/25/04 - 09/01/04	13 ± 5	12 ± 5	14 ± 5	16 ± 5	14 ± 5	13 ± 5	13 ± 5
09/01/04 - 09/08/04	21 ± 5	19 ± 5	18 ± 5	18 ± 5	18 ± 5	18 ± 5	16 ± 5
09/08/04 - 09/15/04	17 ± 5	15 ± 5	15 ± 5	16 ± 5	10 ± 5	14 ± 5	17 ± 5
09/15/04 - 09/22/04	12 ± 5	< 6	15 ± 5	10 ± 5	11 ± 5	11 ± 5	15 ± 5
09/22/04 - 09/29/04	28 ± 5	22 ± 5	31 ± 6	25 ± 5	26 ± 5	26 ± 5	31 ± 6
09/29/04 - 10/06/04	24 ± 5	19 ± 5	19 ± 4	20 ± 5	24 ± 5	22 ± 5	22 ± 5
10/06/04 - 10/13/04	19 ± 5	12 ± 4	15 ± 5	18 ± 5	19 ± 5	18 ± 5	19 ± 5
10/13/04 - 10/20/04	16 ± 5	14 ± 5	12 ± 5	16 ± 5	16 ± 5	13 ± 5	16 ± 5
10/20/04 - 10/27/04	13 ± 5	12 ± 4	14 ± 5	14 ± 5	13 ± 5	13 ± 5	19 ± 5
10/27/04 - 11/03/04	18 ± 5	20 ± 5	22 ± 5	19 ± 5	18 ± 5	20 ± 5	20 ± 5
11/03/04 - 11/10/04	18 ± 5	12 ± 5	16 ± 5	16 ± 5	19 ± 5	16 ± 5	15 ± 5
11/10/04 - 11/17/04	21 ± 5	19 ± 5	19 ± 5	21 ± 5	17 ± 5	22 ± 5	18 ± 5
11/17/04 - 11/23/04	21 ± 6	24 ± 6	34 ± 7	25 ± 6	28 ± 7	23 ± 6	26 ± 6
11/23/04 - 12/01/04	14 ± 4	14 ± 4	16 ± 4	15 ± 4	14 ± 4	18 ± 4	14 ± 4
12/01/04 - 12/08/04	21 ± 5	22 ± 5	21 ± 5	18 ± 5	21 ± 5	21 ± 5	22 ± 5
12/08/04 - 12/15/04	13 ± 5	11 ± 4	12 ± 5	11 ± 5	11 ± 4	12 ± 5	12 ± 4
12/15/04 - 12/21/04	16 ± 6	16 ± 6	20 ± 6	20 ± 6	17 ± 6	18 ± 6	24 ± 6
12/21/04 - 12/29/04	13 ± 5	16 ± 5	13 ± 4	14 ± 5	18 ± 5	19 ± 5	16 ± 5
MEAN	17 ± 13	17 ± 9	18 ± 11	17 ± 9	16 ± 10	17 ± #	17 ± 10

(1) SEE PROGRAM EXCEPTIONS SECTION FOR EXPLANATION

TABLE C-VIII.2 MONTHLY AND YEARLY MEAN VALUES OF GROSS BETA CONCENTRATIONS (E-3 PCI/CU METER) IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF THREE MILE ISLAND NUCLEAR STATION, 2004

GROUP I - SITE LOCATIONS				GROUP II - OFFSITE LOCATIONS				GROUP III - CONTROL LOCATIONS			
COLLECTION PERIOD	MIN.	MAX.	MEAN ± 2 SD	COLLECTION PERIOD	MIN.	MAX.	MEAN ± 2 SD	COLLECTION PERIOD	MIN.	MAX.	MEAN ± 2 SD
12/31/03 - 01/28/04	10	24	18 ± 9	12/31/03 - 01/28/04	12	27	18 ± 9	12/31/03 - 01/28/04	14	23	18 ± 8
01/28/04 - 03/03/04	18	27	22 ± 6	01/28/04 - 03/03/04	12	26	21 ± 7	01/28/04 - 03/03/04	15	28	23 ± 11
03/03/04 - 03/31/04	10	18	15 ± 5	03/03/04 - 03/31/04	10	16	13 ± 4	03/03/04 - 03/31/04	10	16	12 ± 6
03/31/04 - 04/28/04	7	20	12 ± 9	03/31/04 - 04/28/04	< 7	17	12 ± 7	03/31/04 - 04/28/04	8	17	13 ± 8
04/28/04 - 06/02/04	11	25	17 ± 9	04/28/04 - 06/02/04	14	24	19 ± 6	04/28/04 - 06/02/04	15	23	18 ± 6
06/02/04 - 06/29/04	9	47	20 ± 24	06/02/04 - 06/29/04	7	26	14 ± 13	06/02/04 - 06/29/04	9	18	13 ± 9
06/29/04 - 07/28/04	8	27	16 ± 11	06/29/04 - 07/28/04	8	21	15 ± 8	06/29/04 - 07/28/04	11	22	17 ± 12
07/28/04 - 09/01/04	10	23	15 ± 8	07/28/04 - 09/01/04	13	29	18 ± 9	07/28/04 - 09/01/04	13	21	16 ± 6
09/01/04 - 09/29/04	< 6	28	18 ± 13	09/01/04 - 09/29/04	10	31	18 ± 12	09/01/04 - 09/29/04	15	31	20 ± 16
09/29/04 - 11/03/04	12	24	17 ± 8	09/29/04 - 11/03/04	12	24	17 ± 7	09/29/04 - 11/03/04	16	22	19 ± 5
11/03/04 - 12/01/04	12	24	18 ± 9	11/03/04 - 12/01/04	14	34	20 ± 11	11/03/04 - 12/01/04	14	26	18 ± 10
12/01/04 - 12/29/04	11	22	16 ± 8	12/01/04 - 12/29/04	11	21	17 ± 8	12/01/04 - 12/29/04	12	24	18 ± 11
12/31/03 - 12/29/04	< 6	47	17 ± 5	12/31/03 - 12/29/04	< 7	34	17 ± 5	12/31/03 - 12/29/04	8	31	17 ± 6

TABLE C-VIII.3 CONCENTRATION OF GAMMA EMITTERS IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF THREE MILE ISLAND NUCLEAR STATION, 2004

RESULTS IN UNITS OF E-3 PCI/CU METER ± 2 SIGMA

STC	COLLECTION PERIOD	Be-7	Mn-54	Co-58	Co-60	Cs-134	Cs-137
A3-1	12/31 - 03/31/04	49 ± 11	< 0.7	< 0.5	< 0.7	< 0.7	< 0.8
	03/31 - 06/29/04	59 ± 13	< 0.8	< 1.0	< 1.2	< 0.9	< 0.7
	06/29 - 09/29/04	62 ± 11	< 0.7	< 0.9	< 1.1	< 0.7	< 0.8
	09/29 - 12/29/04	50 ± 10	< 0.8	< 0.8	< 1.3	< 0.7	< 0.8
MEAN	42 ± 43	0.8 ± 0.1	0.8 ± 0.4	1.1 ± 0.5	0.7 ± 0.2	0.8 ± 0.1	
E1-2	12/31 - 03/31/04	52 ± 16	< 1.1	< 1.1	< 1.1	< 1.0	< 1.1
	03/31 - 06/29/04	63 ± 13	< 0.7	< 0.7	< 1.0	< 0.7	< 0.8
	06/29 - 09/29/04	68 ± 11	< 1.0	< 1.2	< 1.1	< 1.0	< 1.0
	09/29 - 12/29/04	55 ± 11	< 0.8	< 1.0	< 0.9	< 0.7	< 0.8
MEAN	59 ± 14	0.9 ± 0.3	1.0 ± 0.4	1.0 ± 0.2	0.8 ± 0.3	0.9 ± 0.3	
F1-3	12/31 - 03/31/04	55 ± 12	< 0.8	< 1.0	< 0.9	< 0.8	< 0.9
	03/31 - 06/29/04	68 ± 13	< 0.9	< 1.0	< 1.0	< 0.9	< 0.9
	06/29 - 09/29/04	48 ± 12	< 1.1	< 1.1	< 1.2	< 1.0	< 0.9
	09/29 - 12/29/04	52 ± 13	< 1.3	< 1.2	< 1.4	< 1.0	< 1.2
MEAN	55 ± 17	1.0 ± 0.4	1.1 ± 0.2	1.1 ± 0.5	0.9 ± 0.2	1.0 ± 0.2	
G2-1	12/31 - 03/31/04	55 ± 10	< 0.7	< 0.9	< 2.1	< 0.6	< 0.7
	03/31 - 06/29/04	82 ± 14	< 0.7	< 0.8	< 0.6	< 0.8	< 0.9
	06/29 - 09/29/04	56 ± 13	< 1.2	< 1.0	< 1.2	< 1.2	< 1.2
	09/29 - 12/29/04	43 ± 13	< 1.0	< 0.4	< 1.2	< 0.9	< 0.8
MEAN	59 ± 33	0.9 ± 0.5	0.8 ± 0.5	1.3 ± 1.2	0.9 ± 0.5	0.9 ± 0.5	
H3-1	12/31 - 03/31/04	55 ± 14	< 1.1	< 1.0	< 1.1	< 1.0	< 1.1
	03/31 - 06/29/04	69 ± 12	< 0.8	< 0.8	< 0.6	< 0.7	< 0.6
	06/29 - 09/29/04	54 ± 11	< 0.8	< 0.7	< 1.1	< 0.5	< 0.6
	09/29 - 12/29/04	53 ± 13	< 1.3	< 1.3	< 1.3	< 0.5	< 0.9
MEAN	58 ± 14	1.0 ± 0.5	1.0 ± 0.5	1.0 ± 0.6	0.7 ± 0.4	0.8 ± 0.5	
M2-1	12/31 - 03/31/04	47 ± 14	< 0.9	< 0.8	< 0.6	< 0.7	< 0.9
	03/31 - 06/29/04	78 ± 14	< 1.0	< 1.5	< 1.4	< 1.2	< 1.2
	06/29 - 09/29/04	57 ± 11	< 0.7	< 0.8	< 2.2	< 0.7	< 0.6
	09/29 - 12/29/04	63 ± 13	< 0.8	< 0.7	< 1.2	< 0.6	< 0.8
MEAN	61 ± 26	0.9 ± 0.2	0.9 ± 0.7	1.3 ± 1.3	0.8 ± 0.5	0.9 ± 0.4	
Q15-1	12/31 - 03/31/04	45 ± 11	< 0.5	< 0.8	< 0.5	< 0.6	< 0.7
	03/31 - 06/29/04	61 ± 13	< 1.2	< 0.7	< 1.2	< 0.9	< 0.9
	06/29 - 09/29/04	66 ± 12	< 0.7	< 0.9	< 0.9	< 0.8	< 0.8
	09/29 - 12/29/04	64 ± 12	< 1.0	< 1.1	< 1.1	< 0.8	< 1.0
MEAN	59 ± 19	0.8 ± 0.6	0.9 ± 0.3	0.9 ± 0.6	0.8 ± 0.3	0.8 ± 0.3	

TABLE C-IX.1 CONCENTRATIONS OF I-131 IN AIR IODINE SAMPLES COLLECTED IN THE VICINITY OF THREE MILE ISLAND NUCLEAR STATION, 2004
RESULTS IN UNITS OF E-3 PCI/CU METER ± 2 SIGMA

COLLECTION PERIOD	GROUP I		GROUP II				GROUP III
	E1-2	F1-3	A3-1	G2-1	H3-1	M2-1	Q15-1
12/31/03 - 01/07/04	< 18	< 16	< 11	< 16	< 17	< 11	< 11
01/07/04 - 01/14/04	< 17	< 18	< 15	< 18	< 18	< 16	< 15
01/14/04 - 01/21/04	< 12	< 13	< 15	< 13	< 13	< 15	< 15
01/21/04 - 01/28/04	< 4	< 5	< 5	< 3	< 3	< 4	< 6
01/28/04 - 02/04/04	< 6	< 7	< 7	< 7	< 7	< 7	< 7
02/04/04 - 02/11/04	< 14	< 8	< 10	< 9	< 9	< 11	< 14
02/11/04 - 02/18/04	< 5	< 5	< 6	< 6	< 6	< 7	< 6
02/18/04 - 02/25/04	< 12	< 12	< 15	< 12	< 13	< 15	< 10
02/25/04 - 03/03/04	< 5	< 5	< 6	< 5	< 5	< 6	< 6
03/03/04 - 03/10/04	< 16	< 14	< 15	< 11	< 8	< 9	< 12
03/10/04 - 03/17/04	< 13	< 14	< 13	< 14	< 14	< 13	< 13
03/17/04 - 03/24/04	< 10	< 11	< 9	< 11	< 11	< 10	< 10
03/24/04 - 03/31/04	< 16	< 17	< 10	< 18	< 18	< 10	< 10
03/31/04 - 04/07/04	< 7	< 8	< 6	< 8	< 8	< 6	< 6
04/07/04 - 04/14/04	< 23	< 24	< 16	< 24	< 24	< 17	< 16
04/14/04 - 04/21/04	< 13	< 14	< 14	< 14	< 15	< 8	< 14
04/21/04 - 04/28/04	< 17	< 17	< 14	< 17	< 17	< 15	< 15
04/28/04 - 05/05/04	< 15	< 16	< 14	< 17	< 17	< 14	< 14
05/05/04 - 05/12/04	< 20	< 21	< 16	< 21	< 17	< 16	< 16
05/12/04 - 05/19/04	< 13	< 13	< 11	< 13	< 14	< 11	< 11
05/19/04 - 05/26/04	< 15	< 16	< 12	< 16	< 16	< 12	< 12
05/26/04 - 06/02/04	< 8	< 11	< 11	< 8	< 8	< 11	< 11
06/02/04 - 06/09/04	< 11	< 12	< 18	< 12	< 20	< 18	< 18
06/09/04 - 06/16/04	< 13	< 14	< 16	< 14	< 14	< 12	< 12
06/16/04 - 06/23/04	< 14	< 14	< 16	(1)	< 15	< 14	< 17
06/23/04 - 06/29/04	< 28	< 29	< 21	< 29	< 30	< 21	< 20
06/29/04 - 07/07/04	< 18	< 18	< 19	< 19	< 19	< 20	< 20
07/07/04 - 07/14/04	< 18	< 19	< 19	< 19	< 20	< 20	< 19
07/14/04 - 07/21/04	< 17	< 18	< 21	< 18	< 19	< 21	< 21
07/21/04 - 07/28/04	< 13	< 13	< 13	< 14	< 14	< 13	< 13
07/28/04 - 08/04/04	< 11	< 14	< 8	< 9	< 7	< 12	< 12
08/04/04 - 08/11/04	< 15	< 15	< 14	< 15	< 15	< 14	< 14
08/11/04 - 08/18/04	< 5	< 5	< 6	< 5	< 5	< 6	< 6
08/18/04 - 08/25/04	< 8	< 8	< 9	< 9	< 8	(1)	< 9
08/25/04 - 09/01/04	< 25	< 25	< 28	< 26	< 26	< 29	< 28
09/01/04 - 09/08/04	< 15	< 15	< 20	< 16	< 15	< 20	< 20
09/08/04 - 09/15/04	< 16	< 16	< 16	< 17	< 17	< 16	< 16
09/15/04 - 09/22/04	< 16	< 16	< 22	< 17	< 16	< 22	< 21
09/22/04 - 09/29/04	< 17	< 17	< 18	< 18	< 18	< 19	< 18
09/29/04 - 10/06/04	< 24	< 24	< 29	< 25	< 24	< 30	< 29
10/06/04 - 10/13/04	< 8	< 8	< 10	< 8	< 8	< 9	< 9
10/13/04 - 10/20/04	< 18	< 18	< 14	< 18	< 18	< 14	< 14
10/20/04 - 10/27/04	< 18	< 18	< 18	< 18	< 18	< 18	< 18
10/27/04 - 11/03/04	< 13	< 13	< 15	< 14	< 13	< 15	< 15
11/03/04 - 11/10/04	< 23	< 23	< 15	< 23	< 23	< 15	< 15
11/10/04 - 11/17/04	< 18	< 18	< 23	< 18	< 18	< 23	< 22
11/17/04 - 11/23/04	< 21	< 21	< 18	< 22	< 18	< 18	< 18
11/23/04 - 12/01/04	< 16	< 16	< 14	< 17	< 16	< 14	< 14
12/01/04 - 12/08/04	< 14	< 14	< 15	< 14	< 14	< 15	< 15
12/08/04 - 12/15/04	< 17	< 17	< 18	< 18	< 17	< 18	< 17
12/15/04 - 12/21/04	< 20	< 20	< 26	< 20	< 20	< 26	< 26
12/21/04 - 12/29/04	< 14	< 14	< 13	< 15	< 14	< 13	< 13
MEAN	15 ± 11	15 ± 11	14 ± 11	15 ± 11	15 ± 11	15 ± 11	15 ± 11

(1) SEE PROGRAM EXCEPTIONS SECTION FOR EXPLANATION

TABLE C-X.1 CONCENTRATIONS OF IODINE I-131 IN MILK SAMPLES COLLECTED IN THE VICINITY OF THREE MILE ISLAND NUCLEAR STATION, 2004

RESULTS IN UNITS OF PCI/LITER \pm 2 SIGMA

COLLECTION PERIOD	CONTROL FARM	INDICATOR FARMS			
	K15-3	D2-1	E2-2	F4-1	G2-1
01/07/04	< 0.5	< 0.4	< 0.5		< 0.5
02/04/04	< 0.6	< 0.5	< 0.5		< 0.5
03/03/04	< 0.5	< 0.7	< 0.8		< 0.6
03/17/04	< 0.7	< 0.6	< 0.7		< 0.5
03/31/04	< 0.5	< 0.5	< 0.7	< 0.5	< 0.6
04/14/04	< 0.4	< 0.4	< 0.7		< 0.5
04/28/04	< 0.8	< 0.5	< 0.5		< 0.9
05/12/04	< 0.6	< 0.7	< 0.7		< 0.7
05/26/04	< 0.4	< 0.7	< 0.6		< 0.5
06/09/04	< 0.4	< 0.8	< 0.4		< 0.9
06/23/04	< 0.4	< 0.3	< 0.4	< 0.5	< 0.6
07/07/04	< 0.6	< 1.0	< 0.9		< 0.6
07/21/04	< 0.2	< 0.2	< 0.4		< 0.3
08/04/04	< 0.4	< 0.7	< 0.9		< 0.6
08/18/04	< 0.4	< 0.4	< 0.7		< 0.4
09/01/04	< 0.5	< 0.6	< 0.6		< 0.4
09/15/04	< 0.3	< 0.4	< 0.4		< 0.3
09/29/04	< 0.4	< 0.5	< 0.7	< 0.3	< 0.5
10/13/04	< 0.2	< 0.2	< 0.2		< 0.2
10/27/04	< 0.4	< 0.4	< 0.3		< 0.4
11/10/04	< 0.3	< 0.4	< 0.4		< 0.4
11/23/04	< 0.6	< 0.9	< 0.5		< 0.4
12/08/04	< 0.2	< 0.3	< 0.3	< 0.3	< 0.3
MEAN	0.5 \pm 0.3	0.5 \pm 0.4	0.6 \pm 0.4	0.4 \pm 0.2	0.5 \pm 0.3

TABLE C-X.2 CONCENTRATIONS OF STRONTIUM IN MILK SAMPLES COLLECTED IN THE VICINITY OF THREE MILE ISLAND NUCLEAR STATION, 2004

RESULTS IN UNITS OF PCI/LITER \pm 2 SIGMA

COLLECTION PERIOD	CONTROL FARM		INDICATOR FARMS							
	K15-3		D2-1		E2-2		F4-1		G2-1	
	Sr-89	Sr-90	Sr-89	Sr-90	Sr-89	Sr-90	Sr-89	Sr-90	Sr-89	Sr-90
01/07/04 - 03/31/04	< 2.0	1.6 \pm 0.5	< 1.5	< 0.5	< 2.4	0.7 \pm 0.3	< 1.5	0.9 \pm 0.3	< 2.9	0.9 \pm 0.5
04/14/04 - 06/23/04	< 4.5	0.7 \pm 0.4	< 3.2	0.4 \pm 0.3	< 3.9	1.2 \pm 0.4	< 0.7	0.5 \pm 0.1	< 3.8	1.2 \pm 0.5
07/07/04 - 09/29/04	< 1.7	1.0 \pm 0.2	< 1.5	1.3 \pm 0.2	< 1.6	0.8 \pm 0.2	< 2.6	1.2 \pm 0.7	< 1.8	0.6 \pm 0.2
10/13/04 - 12/08/04	< 3.1	0.8 \pm 0.2	< 1.4	1.4 \pm 0.2	< 1.5	0.8 \pm 0.2	< 0.9	0.7 \pm 0.2	< 1.5	0.4 \pm 0.2
MEAN	2.8 \pm 2.5	1.0 \pm 0.8	1.9 \pm 1.7	0.9 \pm 1.0	2.3 \pm 2.2	0.9 \pm 0.4	1.4 \pm 1.7	0.8 \pm 0.6	2.5 \pm 2.1	0.8 \pm 0.7

TABLE C-X.3

CONCENTRATIONS OF GAMMA EMITTERS IN MILK SAMPLES COLLECTED IN THE VICINITY OF THREE MILE ISLAND NUCLEAR STATION, 2004

RESULTS IN UNITS OF PCI/LITER \pm 2 SIGMA

STC	COLLECTION PERIOD	K-40	Cs-134	Cs-137	Ba-140	La-140
D2-1	01/07/04	1250 \pm 90	< 4	< 5	< 20	< 7
	02/04/04	1240 \pm 72	< 2	< 3	< 9	< 3
	03/03/04	1240 \pm 208	< 8	< 11	< 45	< 10
	03/17/04	1330 \pm 71	< 3	< 3	< 14	< 5
	03/31/04	1370 \pm 71	< 3	< 3	< 11	< 4
	04/14/04	1340 \pm 90	< 4	< 4	< 18	< 6
	04/28/04	1280 \pm 78	< 3	< 3	< 14	< 5
	05/12/04	1210 \pm 82	< 3	< 4	< 16	< 5
	05/26/04	1310 \pm 70	< 3	< 3	< 14	< 4
	06/09/04	1230 \pm 74	< 2	< 3	< 10	< 3
	06/23/04	1180 \pm 89	< 3	< 4	< 16	< 6
	07/07/04	1370 \pm 112	< 4	< 5	< 22	< 7
	07/21/04	1320 \pm 71	< 3	< 3	< 14	< 4
	08/04/04	1330 \pm 80	< 3	< 4	< 15	< 5
	08/18/04	1560 \pm 191	< 6	< 7	< 26	< 7
	09/01/04	1180 \pm 146	< 8	< 8	< 37	< 12
	09/15/04	1180 \pm 198	< 8	< 10	< 25	< 11
	09/29/04	1220 \pm 157	< 6	< 7	< 30	< 9
	10/13/04	1250 \pm 185	< 7	< 7	< 24	< 12
	10/27/04	1420 \pm 143	< 5	< 6	< 25	< 7
11/10/04	1360 \pm 182	< 8	< 7	< 35	< 10	
11/23/04	1370 \pm 61	< 2	< 2	< 8	< 2	
12/08/04	1390 \pm 138	< 4	< 5	< 22	< 4	
	MEAN	1301 \pm 185	4 \pm 4	5 \pm 5	20 \pm 19	6 \pm 6
E2-2	01/07/04	1230 \pm 94	< 4	< 4	< 20	< 6
	02/04/04	1160 \pm 92	< 4	< 4	< 18	< 6
	03/03/04	1250 \pm 221	< 7	< 6	< 35	< 11
	03/17/04	1230 \pm 79	< 3	< 4	< 15	< 5
	03/31/04	1320 \pm 76	< 3	< 4	< 12	< 4
	04/14/04	1250 \pm 84	< 2	< 3	< 12	< 4
	04/28/04	1280 \pm 78	< 2	< 3	< 11	< 4
	05/12/04	1220 \pm 71	< 3	< 3	< 12	< 4
	05/26/04	1290 \pm 77	< 3	< 4	< 16	< 5
	06/09/04	1320 \pm 73	< 2	< 3	< 9	< 3
	06/23/04	1240 \pm 186	< 8	< 10	< 39	< 12
	07/07/04	1300 \pm 74	< 3	< 4	< 15	< 5
	07/21/04	1390 \pm 75	< 3	< 3	< 15	< 5
	08/04/04	1260 \pm 245	< 8	< 9	< 41	< 7
	08/18/04	1240 \pm 189	< 6	< 7	< 34	< 9
	09/01/04	1300 \pm 248	< 7	< 8	< 35	< 15
	09/15/04	1290 \pm 100	< 4	< 4	< 16	< 4
	09/29/04	1330 \pm 143	< 4	< 4	< 20	< 4
	10/13/04	1190 \pm 181	< 8	< 9	< 36	< 13
	10/27/04	1290 \pm 159	< 4	< 6	< 19	< 6
11/10/04	1270 \pm 210	< 9	< 10	< 41	< 8	
11/23/04	1390 \pm 54	< 2	< 2	< 9	< 3	
12/08/04	1460 \pm 129	< 4	< 5	< 19	< 5	
	MEAN	1283 \pm 135	5 \pm 5	5 \pm 5	22 \pm 22	6 \pm 7

TABLE C-X.3 CONCENTRATIONS OF GAMMA EMITTERS IN MILK SAMPLES COLLECTED IN THE VICINITY OF THREE MILE ISLAND NUCLEAR STATION, 2004

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

STC	COLLECTION PERIOD	K-40	Cs-134	Cs-137	Ba-140	La-140
F4-1	03/31/04	1300 ± 89	< 4	< 4	< 14	< 4
	06/23/04	1250 ± 191	< 6	< 7	< 32	< 10
	09/29/04	1350 ± 134	< 5	< 5	< 22	< 7
	12/08/04	1450 ± 159	< 4	< 5	< 22	< 3
	MEAN	1338 ± 171	4 ± 2	5 ± 3	23 ± 15	6 ± 6
G2-1	01/07/04	1260 ± 75	< 2	< 2	< 11	< 4
	02/04/04	1160 ± 68	< 3	< 3	< 13	< 5
	03/03/04	1160 ± 74	< 2	< 3	< 11	< 4
	03/17/04	1270 ± 94	< 3	< 4	< 16	< 6
	03/31/04	1220 ± 70	< 3	< 3	< 12	< 4
	04/14/04	1050 ± 96	< 5	< 5	< 22	< 7
	04/28/04	1230 ± 176	< 7	< 6	< 29	< 11
	05/12/04	1010 ± 93	< 5	< 5	< 21	< 7
	05/26/04	974 ± 110	< 5	< 6	< 23	< 8
	06/09/04	1150 ± 96	< 4	< 4	< 19	< 5
	06/23/04	916 ± 150	< 8	< 9	< 36	< 13
	07/07/04	1320 ± 76	< 2	< 3	< 10	< 4
	07/21/04	1200 ± 218	< 8	< 12	< 40	< 13
	08/04/04	956 ± 73	< 3	< 4	< 16	< 5
	08/18/04	1410 ± 202	< 9	< 9	< 45	< 10
	09/01/04	819 ± 177	< 7	< 7	< 35	< 15
	09/15/04	993 ± 116	< 4	< 4	< 16	< 6
	09/29/04	1040 ± 131	< 4	< 5	< 19	< 7
	10/13/04	1120 ± 85	< 4	< 4	< 17	< 6
	10/27/04	1180 ± 157	< 5	< 5	< 25	< 8
11/10/04	1270 ± 243	< 7	< 9	< 34	< 9	
11/23/04	1140 ± 55	< 2	< 2	< 11	< 3	
12/08/04	942 ± 142	< 4	< 6	< 26	< 7	
MEAN	1121 ± 294	5 ± 4	5 ± 5	22 ± 20	7 ± 6	
K15-3	01/07/04	1360 ± 80	< 3	< 4	< 16	< 5
	02/04/04	1360 ± 72	< 2	< 2	< 9	< 2
	03/03/04	1260 ± 259	< 8	< 11	< 47	< 11
	03/17/04	1310 ± 84	< 2	< 3	< 12	< 3
	03/31/04	1390 ± 85	< 3	< 3	< 10	< 3
	04/14/04	1230 ± 71	< 3	< 3	< 13	< 4
	04/28/04	1350 ± 98	< 4	< 5	< 18	< 6
	05/12/04	1240 ± 93	< 3	< 4	< 17	< 6
	05/26/04	1370 ± 70	< 3	< 3	< 13	< 4
	06/09/04	1360 ± 82	< 3	< 4	< 16	< 5
	06/23/04	1380 ± 215	< 6	< 8	< 33	< 12
	07/07/04	1320 ± 82	< 3	< 3	< 13	< 3
	07/21/04	1270 ± 78	< 3	< 4	< 15	< 5
	08/04/04	1260 ± 245	< 7	< 6	< 37	< 14
	08/18/04	1230 ± 200	< 8	< 8	< 38	< 13
	09/01/04	1230 ± 290	< 10	< 12	< 42	< 8
	09/15/04	1380 ± 120	< 4	< 5	< 20	< 5
	09/29/04	1380 ± 151	< 5	< 6	< 27	< 8
	10/13/04	1410 ± 201	< 8	< 9	< 39	< 11
	10/27/04	1440 ± 153	< 5	< 7	< 24	< 9
11/10/04	1200 ± 179	< 7	< 7	< 35	< 8	
11/23/04	1300 ± 57	< 1	< 2	< 7	< 2	
12/08/04	1560 ± 134	< 5	< 5	< 19	< 7	
MEAN	1330 ± 169	5 ± 5	5 ± 6	23 ± 24	7 ± 7	

TABLE C-XI.1

CONCENTRATIONS OF STRONTIUM AND GAMMA EMITTERS IN
FOOD PRODUCT SAMPLES COLLECTED IN THE VICINITY OF THREE
MILE ISLAND NUCLEAR STATION, 2004

RESULTS IN UNITS OF PCI/KG WET \pm 2 SIGMA

STC	COLLECTION PERIOD	Sr-90	K-40	I-131	Cs-134	Cs-137
B10-2 Cabbage	07/22/04	7 \pm 2	1550 \pm 206	< 10	< 6	< 6
B10-2 Beets	07/29/04		2500 \pm 260	< 15	< 9	< 12
B10-2 Tomatoes	07/29/04		2040 \pm 203	< 13	< 8	< 9
B10-2 Corn	08/05/04		2400 \pm 118	< 5	< 3	< 3
	MEAN		2123 \pm 860	11 \pm 9	7 \pm 5	8 \pm 8
E1-2 Cabbage	07/22/04	22 \pm 4	1900 \pm 222	< 10	< 7	< 6
E1-2 Beets	07/29/04		3540 \pm 259	< 15	< 8	< 10
E1-2 Tomatoes	07/29/04		2580 \pm 212	< 12	< 8	< 10
E1-2 Corn	08/05/04		2020 \pm 258	< 19	< 10	< 13
	MEAN		2510 \pm 1496	14 \pm 7	9 \pm 3	10 \pm 5

TABLE C-XII.1 QUARTERLY TLD RESULTS FOR THREE MILE ISLAND NUCLEAR STATION, 2004

RESULTS IN UNITS OF MILLI-ROENTGEN/STD. MONTH

STATION CODE	MEAN ± 2 S. D.	01/10 - 04/10/04	04/10 - 07/10/04	07/10 - 10/10/04	10/10 - 01/10/05
A1-4	3.1 ± 1.8	4.3	3.1	2.1	2.8
A3-1	4.1 ± 0.5	4.0	3.7	2.5	3.2
A5-1	3.9 ± 1.8	5.0	4.1	2.8	3.6
A9-3	3.3 ± 2.4	4.9	3.3	2.1	2.7
B1-1	3.1 ± 1.8	4.3	3.1	2.1	2.9
B1-2	3.2 ± 2.0	4.5	3.1	2.0	3.1
B2-1	3.2 ± 2.1	4.5	3.3	2.0	2.9
B5-1	4.0 ± 1.9	5.2	4.1	2.9	3.6
B10-1	3.6 ± 1.5	4.5	3.8	2.7	3.4
C1-1	3.9 ± 1.4	4.4	4.0	2.8	4.2
C1-2	2.9 ± 1.7	3.7	3.3	1.8	2.8
C2-1	3.4 ± 1.6	4.1	3.8	2.3	3.5
C5-1	4.3 ± 1.0	4.8	4.1	4.5	3.6
C8-1	4.4 ± 0.8	4.7	4.4	4.7	3.8
D1-1	3.6 ± 1.2	4.5	3.2	3.4	3.3
D1-2	3.8 ± 0.7	4.0	4.1	3.9	3.3
D2-2	4.7 ± 0.9	5.2	4.8	4.6	4.1
D6-1	4.9 ± 1.0	5.6	4.7	4.8	4.5
D15-1	4.6 ± 1.9	5.9	4.3	4.5	3.6
E1-2	3.6 ± 0.7	3.9	3.5	3.9	3.2
E1-4	3.3 ± 1.2	4.2	3.2	3.1	2.8
E2-3	4.8 ± 1.6	5.8	4.7	4.7	3.9
E5-1	3.8 ± 0.8	4.1	4.0	3.7	3.4
E7-1	4.1 ± 0.6	4.4	4.1	4.2	3.7
F1-1	3.8 ± 0.7	4.2	3.8	3.9	3.4
F1-2	3.9 ± 1.1	4.5	3.7	4.0	3.2
F1-4	3.7 ± 1.2	4.4	3.2	3.6	2.9
F2-1	4.7 ± 0.9	5.1	4.7	4.9	4.1
F5-1	4.9 ± 1.1	4.9	4.8	5.6	4.3
F10-1	5.1 ± 0.7	5.1	5.1	5.4	4.6
F25-1	4.2 ± 0.9	4.7	4.2	4.4	3.6
G1-2	3.8 ± 1.6	4.7	3.9	2.7	3.7
G1-3	3.3 ± 1.7	4.4	3.3	2.4	3.1
G1-5	3.7 ± 2.2	4.7	4.5	2.5	2.9
G1-6	3.9 ± 2.3	5.1	4.6	2.6	3.2
G2-4	4.6 ± 1.1	5.2	4.8	3.9	4.4
G5-1	3.4 ± 1.7	4.3	3.6	2.3	3.4
G10-1	5.8 ± 1.3	6.3	6.2	4.9	5.8
G15-1	4.4 ± 2.7	6.2	4.3	2.9	4.0
H1-1	3.6 ± 1.3	4.0	4.0	2.6	3.8
H3-1	2.8 ± 1.9	3.9	2.9	1.6	2.8
H5-1	2.7 ± 1.7	3.6	2.9	1.6	2.7
H8-1	5.9 ± 0.9	6.2	6.0	5.2	6.1
H15-1	4.3 ± 2.1	5.6	4.5	3.0	4.2
J1-1	3.0 ± 1.6	3.8	3.3	1.9	2.9

TABLE C-XII.1 QUARTERLY TLD RESULTS FOR THREE MILE ISLAND NUCLEAR STATION, 2004

RESULTS IN UNITS OF MILLI-ROENTGEN/STD. MONTH

STATION CODE	MEAN ± 2 S. D.	01/10 - 04/10/04	04/10 - 07/10/04	07/10 - 10/10/04	10/10 - 01/10/05
J1-3	2.7 ± 1.6	3.5	3.0	1.6	2.7
J3-1	3.2 ± 1.3	3.9	3.3	2.3	3.2
J5-1	4.1 ± 1.5	4.9	4.3	3.1	4.1
J7-1	4.4 ± 0.9	4.9	4.5	3.8	4.4
J15-1	3.8 ± 2.6	5.1	4.4	3.5	2.1
K1-4	3.0 ± 1.7	4.0	3.1	2.0	2.8
K2-1	3.8 ± 1.0	4.2	4.2	3.2	3.7
K3-1	3.0 ± 1.3	3.6	3.1	2.1	3.1
K5-1	4.2 ± 1.7	5.1	4.5	3.1	3.9
K8-1	4.0 ± 0.9	4.5	4.1	3.5	3.8
K15-1	3.6 ± 1.2	4.3	3.6	2.8	3.6
L1-1	3.3 ± 1.6	4.1	3.7	2.3	3.0
L1-2	3.0 ± 1.7	3.7	3.6	1.9	2.9
L2-1	3.6 ± 1.6	4.7	3.6	2.8	3.7
L5-1	3.5 ± 2.0	4.2	3.3	2.2	3.1
L8-1	3.7 ± 1.4	4.5	4.4	2.8	3.7
L15-1	3.6 ± 1.5	4.5	3.9	2.8	3.9
M1-1	2.9 ± 1.6	3.7	3.3	1.9	2.7
M1-2	2.8 ± 1.4	3.6	3.3	1.9	2.9
M2-1	3.1 ± 1.8	3.7	2.8	1.9	2.9
M5-1	3.7 ± 1.8	4.2	3.8	2.5	3.5
M9-1	4.2 ± 1.6	5.0	4.6	3.9	4.7
N1-1	3.1 ± 1.5	3.7	3.2	2.3	(1)
N1-3	2.7 ± 1.1	3.0	3.4	1.9	2.6
N2-1	2.6 ± 1.0	2.6	3.1	2.0	2.5
N5-1	2.9 ± 1.9	2.6	3.2	1.9	2.7
N8-1	3.7 ± 1.4	3.2	4.2	3.1	3.7
N15-2	3.6 ± 0.8	3.6	4.6	3.1	4.1
P1-1	3.2 ± 1.3	3.0	3.6	2.5	3.2
P1-2	3.1 ± 2.1	3.1	4.1	1.8	3.3
P2-1	3.7 ± 0.6	3.8	4.3	3.3	4.0
P5-1	3.0 ± 1.0	3.2	3.6	2.4	3.5
P8-1	2.8 ± 1.6	2.9	2.8	1.8	2.9
Q1-1	2.8 ± 1.3	2.9	3.7	2.2	3.7
Q1-2	2.6 ± 1.5	2.5	2.5	1.7	2.6
Q2-1	3.0 ± 0.9	2.8	3.5	2.5	3.0
Q5-1	3.2 ± 0.7	3.1	3.6	2.8	3.2
Q9-1	3.6 ± 1.4	3.3	3.7	2.8	3.7
Q15-1	3.5 ± 0.9	4.0	4.5	3.2	3.8
R1-1	3.1 ± 0.3	2.9	3.1	3.3	3.0
R1-2	3.1 ± 2.1	2.7	3.1	2.0	3.0
R3-1	3.9 ± 0.6	4.2	4.5	3.5	3.9
R5-1	3.7 ± 1.1	3.4	4.1	3.2	3.9
R9-1	3.6 ± 0.6	3.7	4.4	3.2	3.9
R15-1	3.0 ± 0.6	3.3	3.7	2.7	3.1

(1) SEE PROGRAM EXCEPTIONS SECTION FOR EXPLANATION

TABLE C-XII.2 MEAN QUARTERLY TLD RESULTS FOR THE SITE BOUNDARY, MIDDLE AND CONTROL LOCATIONS FOR THREE MILE ISLAND NUCLEAR STATION, 2004

RESULTS IN UNITS OF MILLI-ROENTGEN PER STD. MONTH ± 2 STANDARD DEVIATIONS OF THE STATION DATA

STATION CODE	SITE BOUNDARY ± 2 S. D.	OFFSITE	CONTROL
JAN-MAR	4.0 \pm 1.3	4.2 \pm 1.7	4.9 \pm 2.1
APR-JUN	3.4 \pm 1.0	3.9 \pm 1.3	4.5 \pm 1.3
JUL-SEP	2.4 \pm 1.4	3.1 \pm 2.1	3.4 \pm 1.6
OCT-DEC	3.0 \pm 0.6	3.6 \pm 1.3	3.8 \pm 1.8

TABLE C-XII.3 SUMMARY OF THE AMBIENT DOSIMETRY PROGRAM FOR THREE MILE ISLAND NUCLEAR STATION, 2004

RESULTS IN UNITS OF MILLI-ROENTGEN/STD. MONTH

LOCATION	SAMPLES ANALYZED	PERIOD MINIMUM	PERIOD MAXIMUM	PERIOD MEAN ± 2 S. D.	PRE-OP MEAN ± 2 S. D.
SITE BOUNDARY	83	1.6	5.1	3.2 \pm 1.6	4.8 \pm 1.5
OFFSITE	230	1.6	6.2	3.7 \pm 1.8	5.2 \pm 1.5
CONTROL	43	2.1	6.3	4.1 \pm 2.0	5.8 \pm 1.7

THE PRE-OPERATIONAL MEAN WAS CALCULATED FROM MONTHLY TLD READINGS 1980 TO 1985.

SITE BOUNDARY STATIONS - A1-4, B1-1, B1-2, C1-2, D1-1, E1-4, F1-2, F1-4, G1-3, G1-5, G1-6, H1-1, J1-1, J1-3, K1-4, L1-1, M1-1, N1-3, P1-2, Q1-2, R1-1

OFFSITE STATIONS - A3-1, A5-1, A9-3, B2-1, B5-1, B10-1, C1-1, C2-1, C5-1, C8-1, D1-2, D2-2, D6-1, E1-2, E2-3, E5-1, E7-1, F1-1, F2-1, F5-1, F10-1, G1-2, G2-4, G5-1, H3-1, H5-1, H8-1, J3-1, J5-1, J7-1, K2-1, K3-1, K5-1, K8-1, L1-2, L2-1, L5-1, L8-1, M1-2, M2-1, M5-1, M9-1, N1-1, N2-1, N5-1, N8-1, P1-1, P2-1, P5-1, P8-1, Q1-1, Q2-1, Q5-1, Q9-1, R1-2, R3-1, R5-1, R9-1

CONTROL STATIONS - D15-1, F25-1, G10-1, G15-1, H15-1, J15-1, K15-1, L15-1, N15-2, Q15-1, R15-1

FIGURE C-1
Monthly Tritium Concentrations in Surface Water
Three Mile Island Nuclear Station, 2004

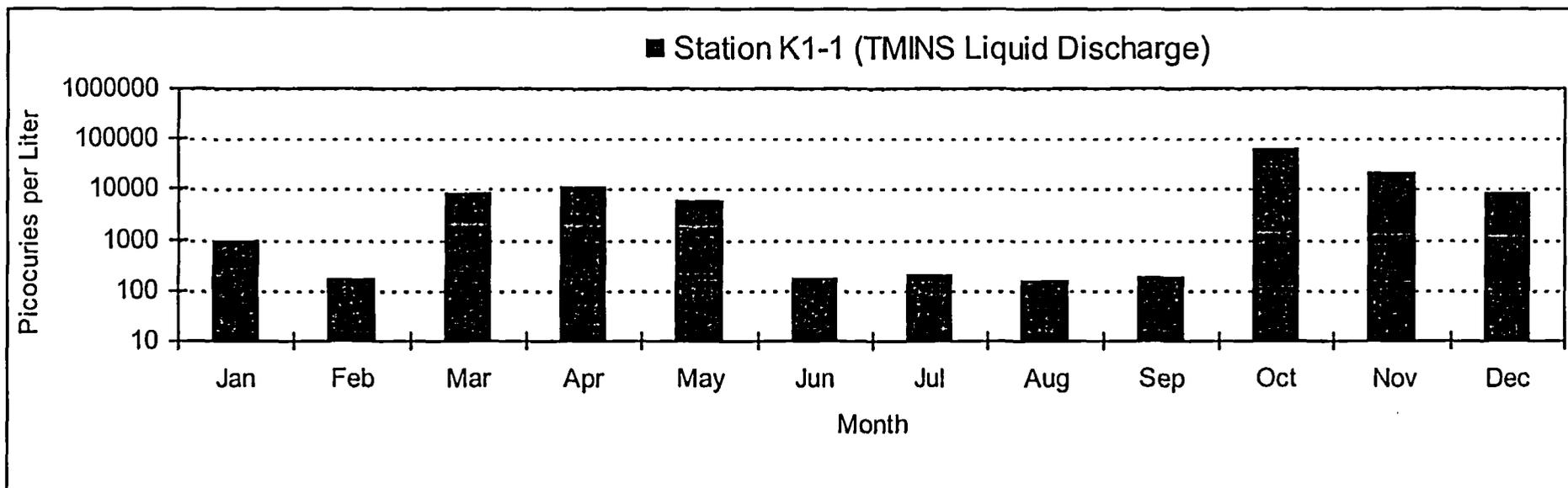
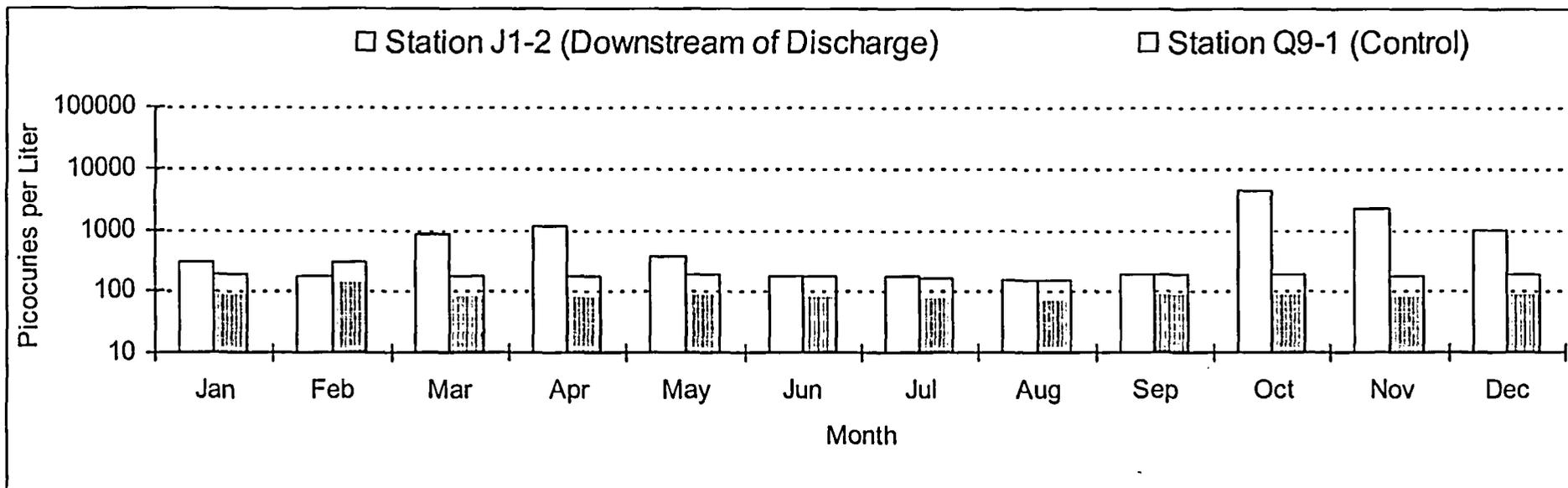


FIGURE C-2

Mean Quarterly Tritium Concentrations in Surface Water Three Mile Island Nuclear Station, 1974 - 2004

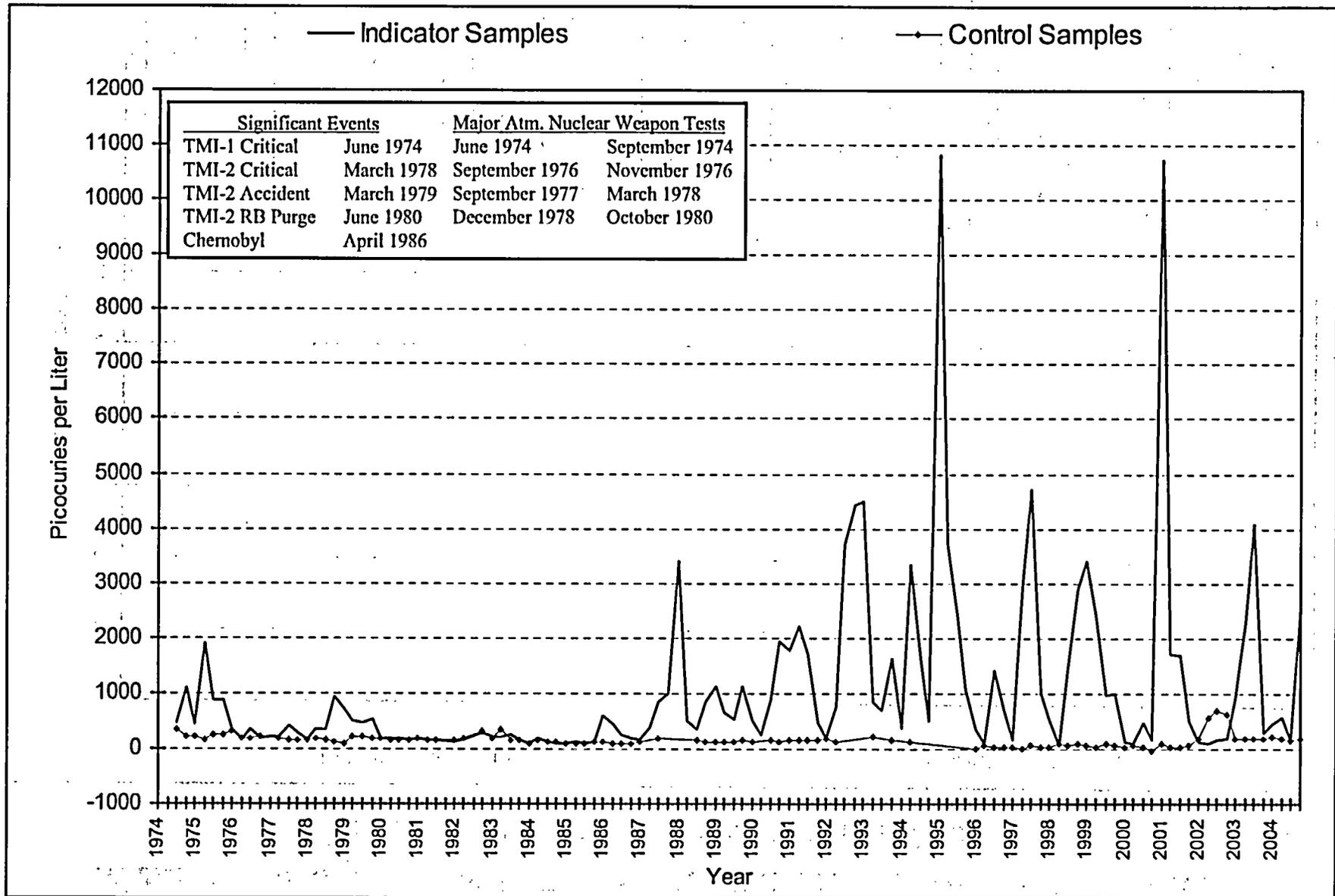


FIGURE C-3
Mean Monthly Gross Beta Concentrations in Drinking Water
Three Mile Island Nuclear Station, 2004

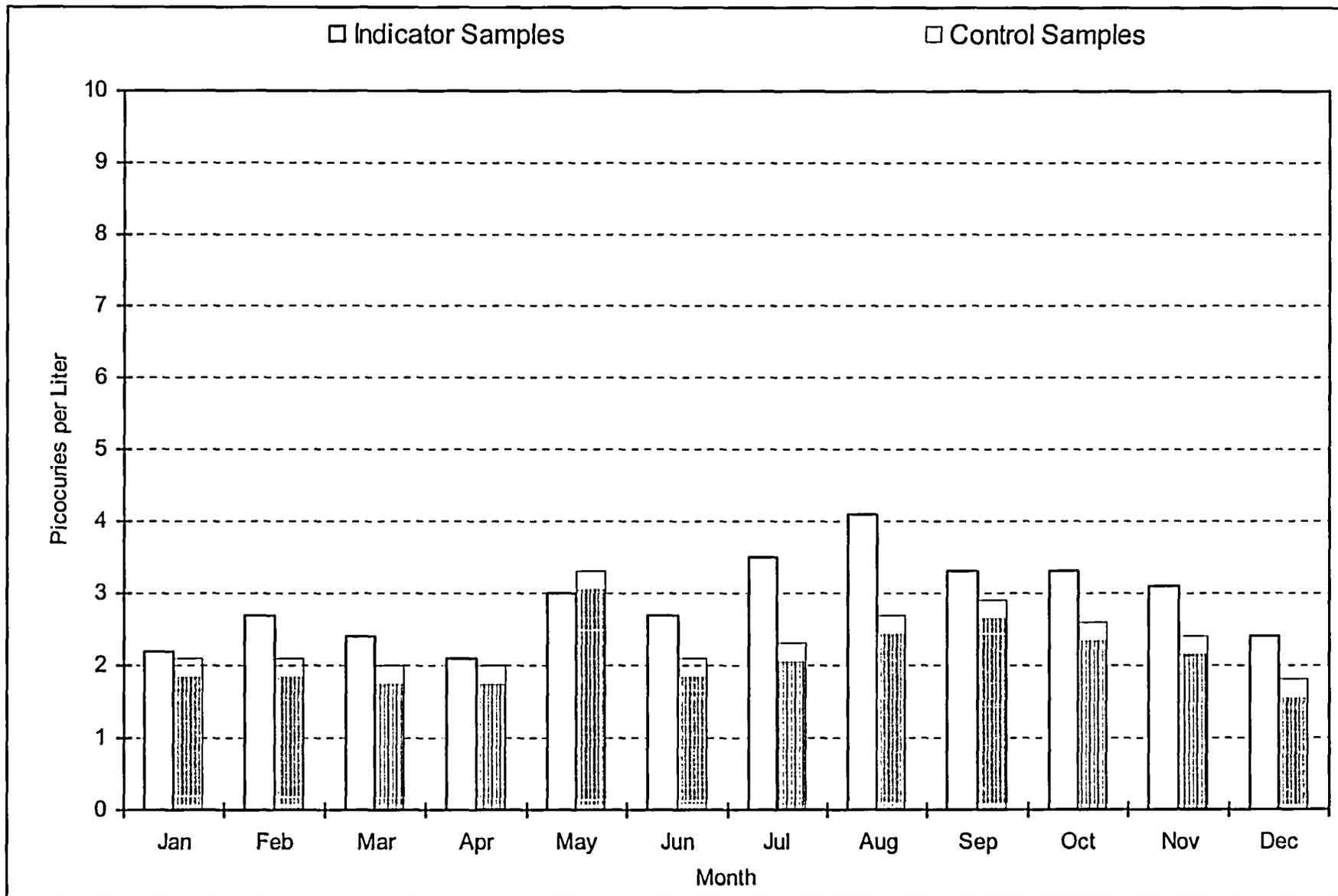


FIGURE C-4

Mean Monthly Tritium Concentrations in Drinking Water and Effluent Water Three Mile Island Nuclear Station, 2004

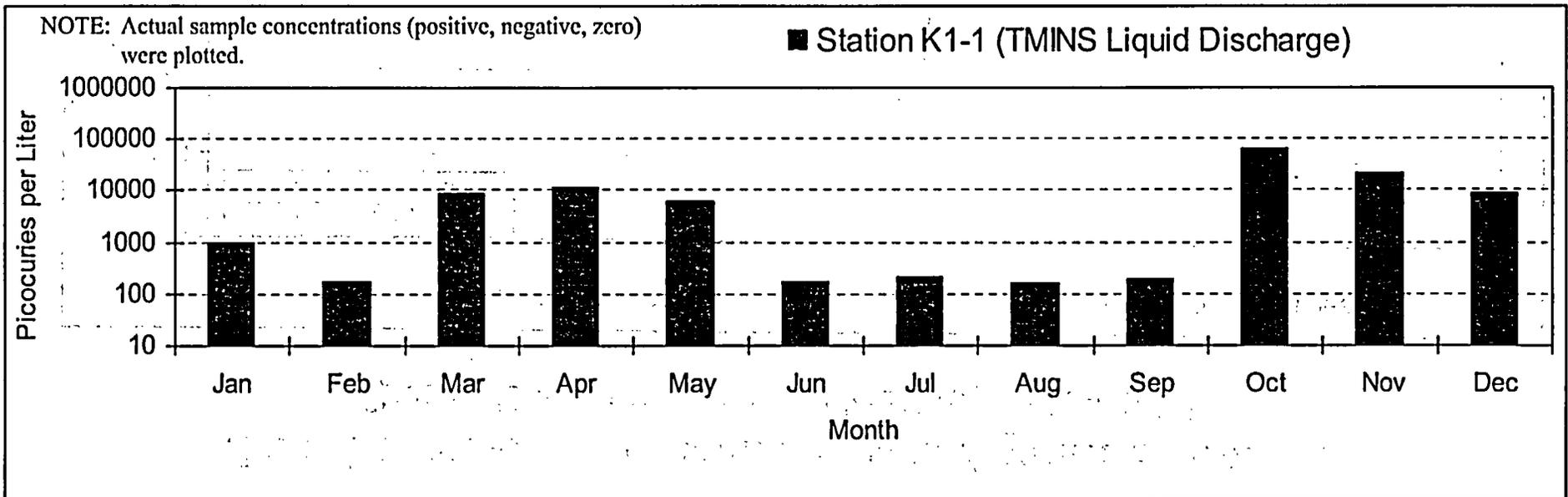
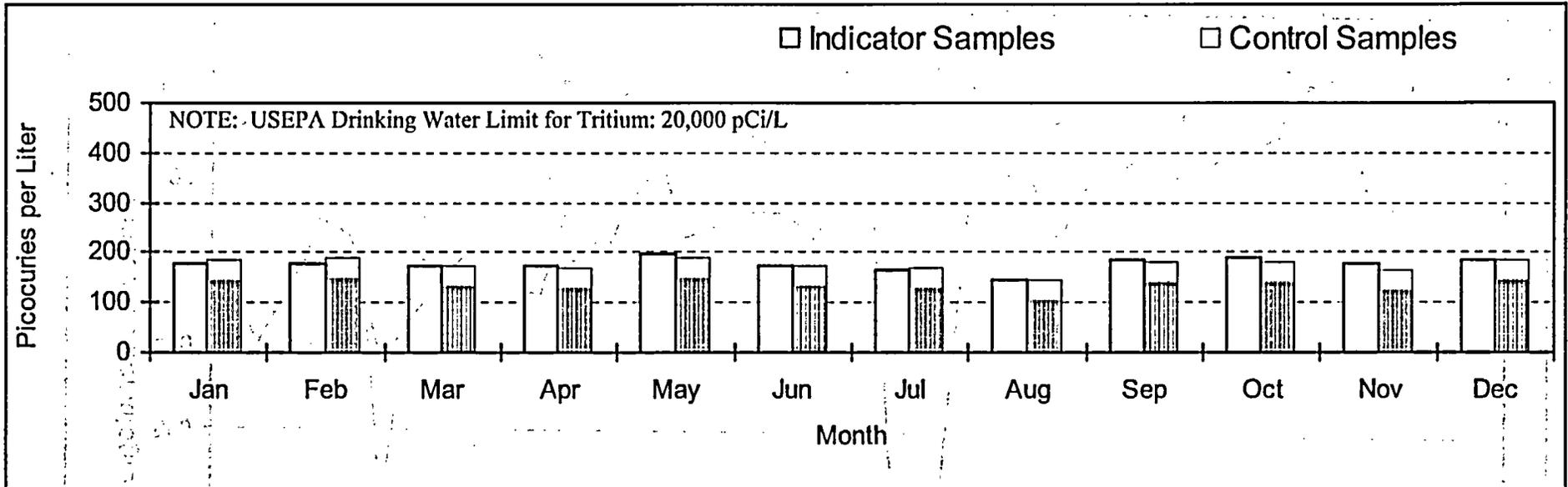


FIGURE C-5
Mean Cesium-137 Concentrations in Aquatic Sediments
Three Mile Island Nuclear Station, 1984 - 2004

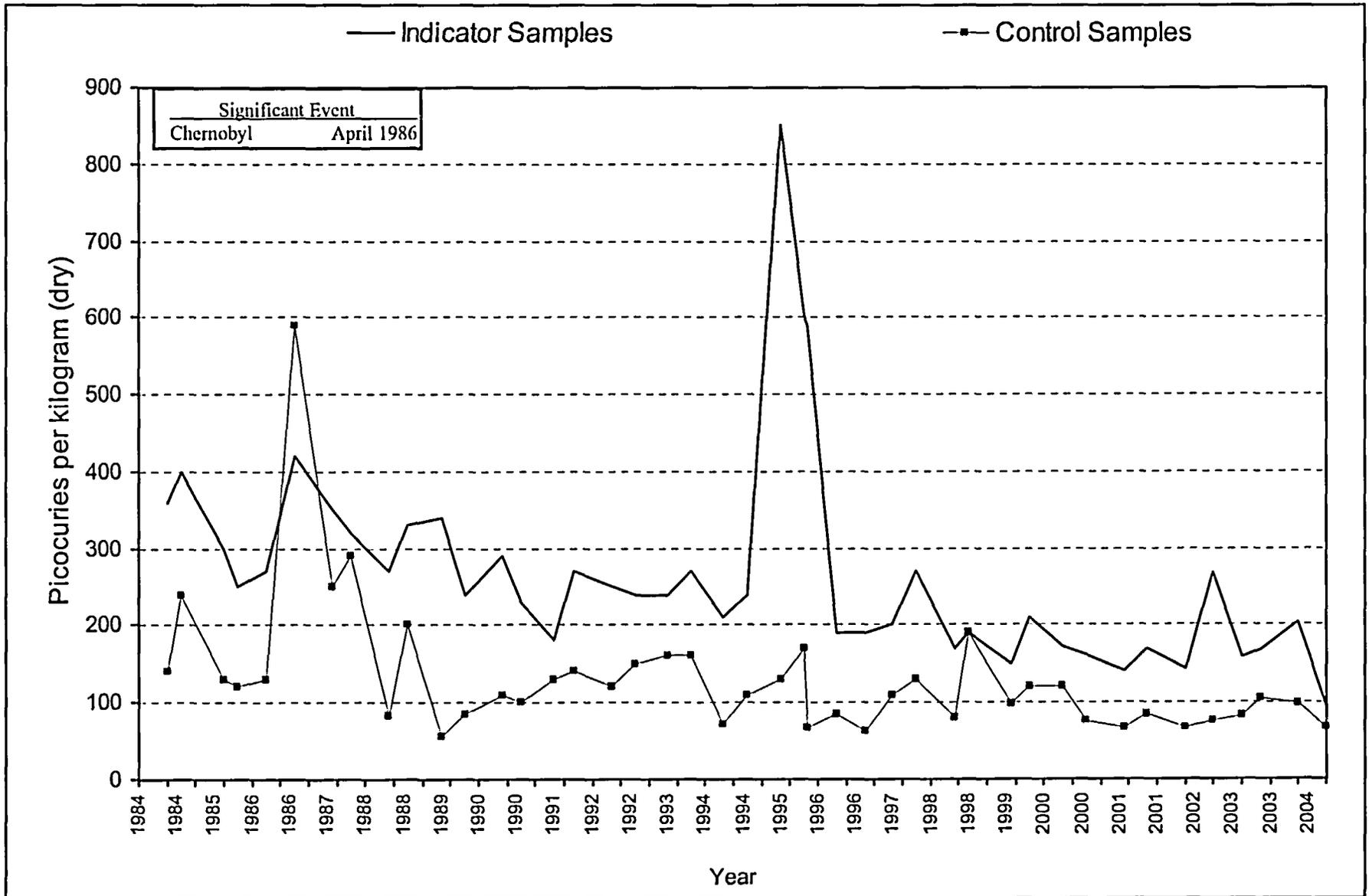


FIGURE C-7
Mean Weekly Gross Beta Concentrations in Air Particulates
Three Mile Island Nuclear Station, 2004

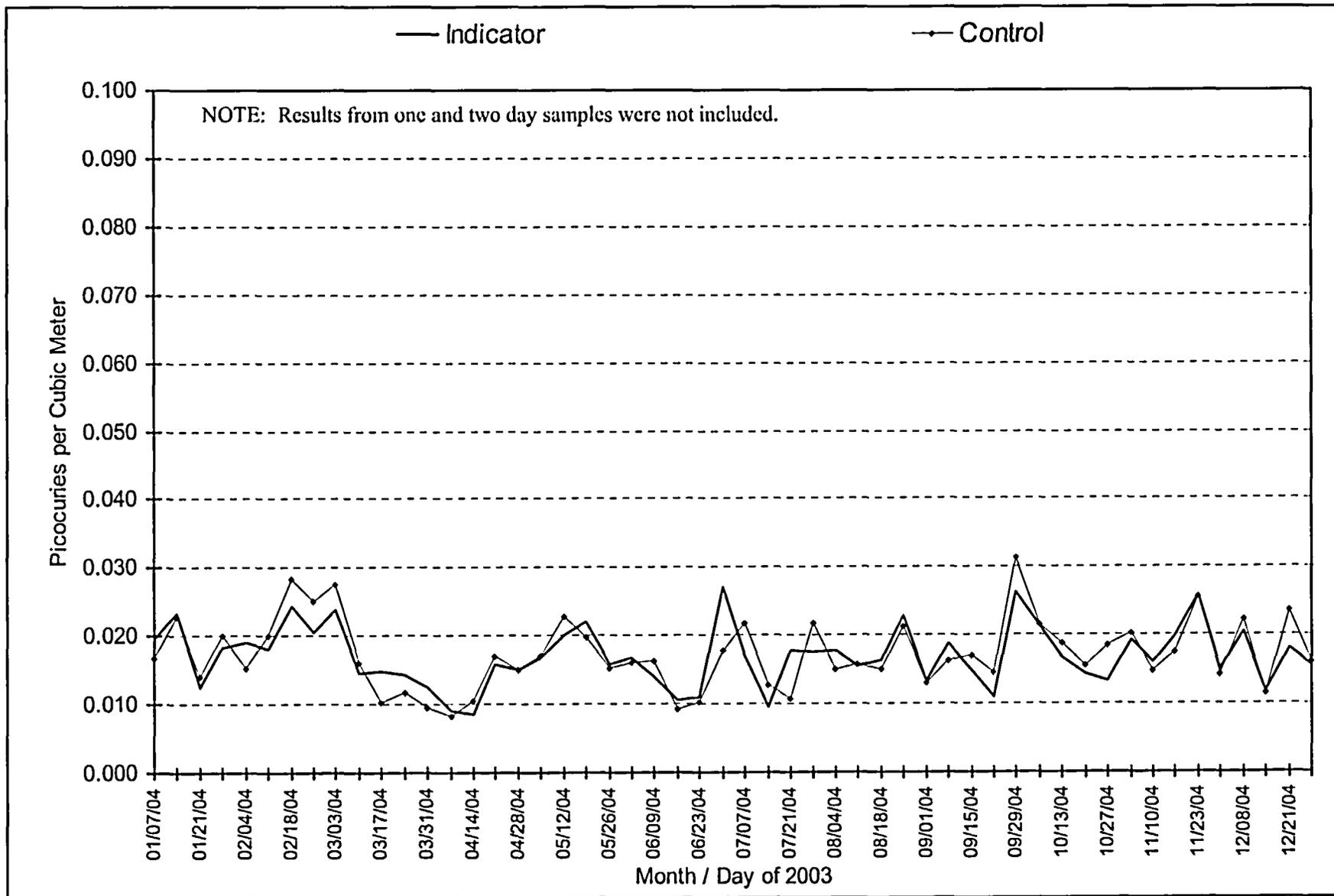
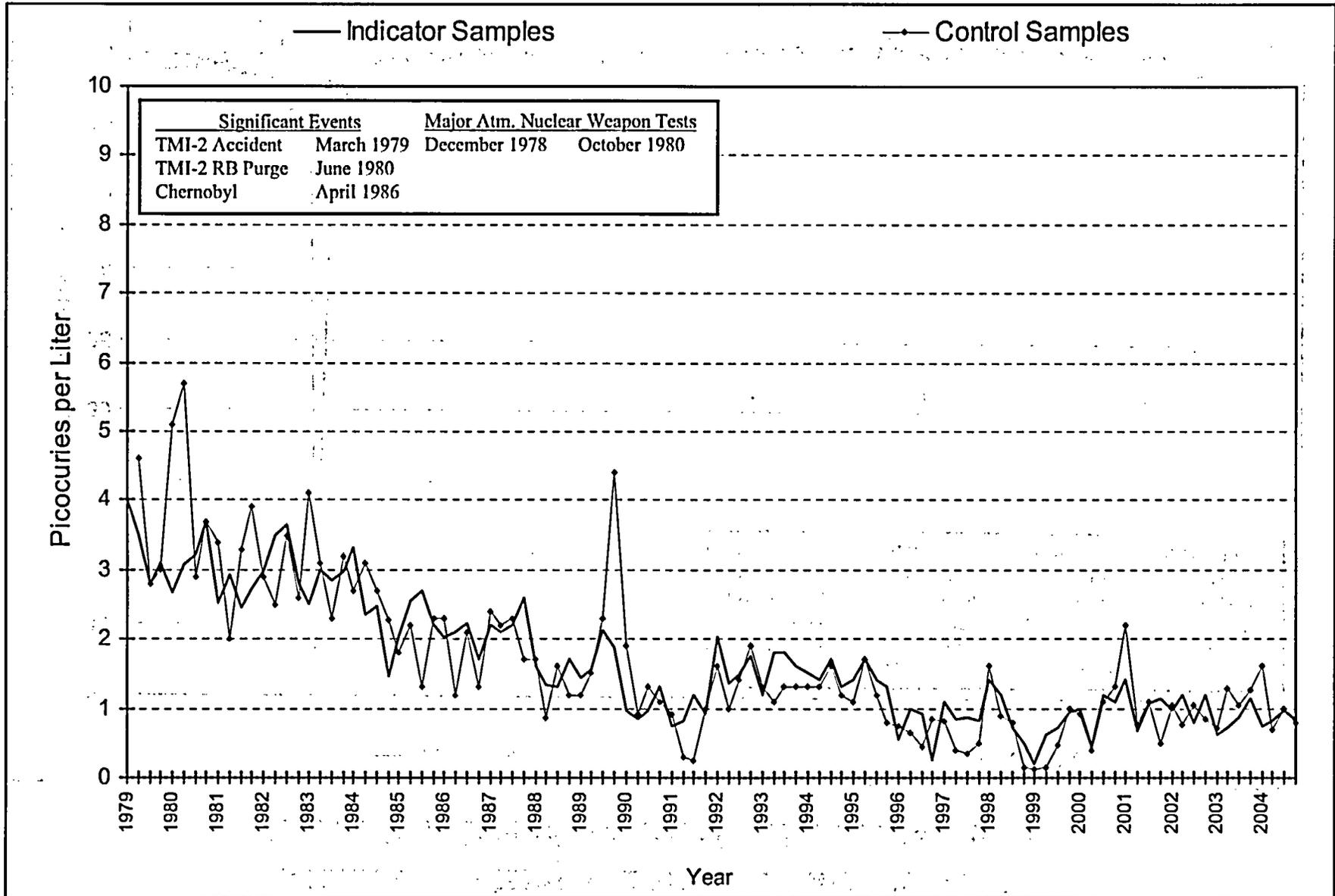


FIGURE C-8

Mean Quarterly Strontium-90 Concentrations in Cow Milk Three Mile Island Nuclear Station, 1979 - 2004



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APPENDIX D

**DATA TABLES AND FIGURES
COMPARISON LABORATORY**

The following section contains data and figures illustrating the analyses performed by the quality control laboratory, Environmental Inc. (Env). Duplicate samples were obtained from several locations and media and split between the primary laboratory, Teledyne Brown Engineering (TBE) and Environmental Inc. (Env). Comparison of the results for most media were within expected ranges.

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**TABLE D-I.1 CONCENTRATIONS OF GROSS BETA IN DRINKING WATER SAMPLES COLLECTED
IN THE VICINITY OF THREE MILE ISLAND NUCLEAR STATION, 2004**

RESULTS IN UNITS OF PCI/LITER \pm 2 SIGMA

COLLECTION PERIOD	Q9-1Q
12/30/03 - 02/03/04	3.1 \pm 1.0
02/03/04 - 03/02/04	< 1.6
03/02/04 - 03/30/04	< 1.9
03/30/04 - 04/28/04	< 1.7
04/28/04 - 06/01/04	< 1.5
06/01/04 - 06/29/04	2.4 \pm 0.9
06/29/04 - 08/03/04	1.7 \pm 0.9
08/03/04 - 08/31/04	2.1 \pm 1.1
08/31/04 - 09/28/04	2.7 \pm 1.0
09/28/04 - 11/02/04	3.6 \pm 1.1
11/02/04 - 12/01/04	1.5 \pm 0.7
12/01/04 - 12/28/04	< 1.6
MEAN	2.1 \pm 1.4

**TABLE D-I.2 CONCENTRATIONS OF TRITIUM IN DRINKING WATER SAMPLES COLLECTED IN
THE VICINITY OF THREE MILE ISLAND NUCLEAR STATION, 2004**

RESULTS IN UNITS OF PCI/LITER \pm 2 SIGMA

COLLECTION PERIOD	Q9-1Q
12/30/03 - 02/03/04	< 154
02/03/04 - 03/02/04	< 152
03/02/04 - 03/30/04	< 156
03/30/04 - 04/28/04	< 156
04/28/04 - 06/01/04	< 164
06/01/04 - 06/29/04	< 163
06/29/04 - 08/03/04	< 162
08/03/04 - 08/31/04	< 160
08/31/04 - 09/28/04	< 161
09/28/04 - 11/02/04	< 132
11/02/04 - 12/01/04	< 162
12/01/04 - 12/28/04	< 158
MEAN	157 \pm 17

**TABLE D-I.3 CONCENTRATIONS OF IODINE-131 IN DRINKING WATER SAMPLES COLLECTED
IN THE VICINITY OF THREE MILE ISLAND NUCLEAR STATION, 2004**

RESULTS IN UNITS OF PCI/LITER \pm 2 SIGMA

COLLECTION PERIOD	Q9-1Q
12/30/03 - 02/03/04	< 0.3
02/03/04 - 03/02/04	< 0.3
03/02/04 - 03/30/04	< 0.4
03/30/04 - 04/28/04	< 0.3
04/28/04 - 06/01/04	< 0.3
06/01/04 - 06/29/04	< 0.4
06/29/04 - 08/03/04	< 0.3
08/03/04 - 08/31/04	< 0.3
08/31/04 - 09/28/04	< 0.2
09/28/04 - 11/02/04	< 0.3
11/02/04 - 12/01/04	< 0.3
12/01/04 - 12/28/04	< 0.3
MEAN	0.3 \pm 0.1

TABLE D-1.4

**CONCENTRATIONS OF GAMMA EMITTERS IN DRINKING WATER SAMPLES COLLECTED IN THE VICINITY
OF THREE MILE ISLAND NUCLEAR STATION, 2004**

RESULTS IN UNITS OF PCI/LITER \pm 2 SIGMA

STC	COLLECTION PERIOD	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Zr-95	Nb-95	Cs-134	Cs-137	Ba-140	La-140
Q9-1Q	12/30/01 - 02/03/04	< 2.3	< 1.9	< 4.6	< 1.2	< 5.1	< 4.0	< 3.1	< 3.9	< 1.6	< 8.6	< 2.8
	02/03/04 - 03/02/04	< 2.3	< 1.6	< 5.5	< 2.7	< 8.8	< 4.7	< 3.4	< 3.6	< 4.1	< 17	< 5.5
	03/02/04 - 03/30/04	< 2.8	< 2.6	< 5.4	< 2.4	< 4.1	< 6.5	< 2.6	< 2.9	< 5.2	< 17	< 5.7
	03/30/04 - 04/28/04	< 1.4	< 2.9	< 3.5	< 1.8	< 4.5	< 3.4	< 2.1	< 2.3	< 2.0	< 10	< 1.7
	04/28/04 - 06/01/04	< 1.9	< 1.7	< 5.3	< 2.6	< 2.9	< 5.2	< 2.7	< 2.5	< 4.1	< 19	< 4.5
	06/01/04 - 06/29/04	< 5.5	< 2.5	< 4.8	< 5.5	< 7.7	< 5.4	< 4.9	< 5.9	< 3.4	< 15	< 3.7
	06/29/04 - 08/03/04	< 3.7	< 2.9	< 11	< 1.9	< 2.1	< 5.5	< 2.6	< 3.7	< 3.9	< 36	< 11
	08/03/04 - 08/31/04	< 2.7	< 2.4	< 7.4	< 1.5	< 4.3	< 4.5	< 3.5	< 3.9	< 2.4	< 19	< 4.2
	08/31/04 - 09/28/04	< 4.0	< 2.2	< 11	< 3.6	< 6.4	< 7.1	< 2.0	< 2.8	< 4.2	< 26	< 9.7
	09/28/04 - 11/02/04	< 1.7	< 3.3	< 7.0	< 1.2	< 3.7	< 5.2	< 4.5	< 3.7	< 2.8	< 18	< 2.8
	11/02/04 - 12/01/04	< 2.1	< 3.3	< 5.2	< 2.3	< 5.7	< 8.5	< 3.6	< 3.7	< 3.5	< 45	< 9.1
	12/01/04 - 12/28/04	< 4.7	< 2.8	< 8.7	< 2.2	< 4.8	< 4.1	< 5.5	< 2.8	< 3.2	< 17	< 3.7
		MEAN	2.9 \pm 2.6	2.5 \pm 1.1	6.6 \pm 4.8	2.4 \pm 2.4	5.0 \pm 3.8	5.3 \pm 2.9	3.4 \pm 2.2	3.5 \pm 1.9	3.4 \pm 2.1	21 \pm 21

TABLE D-I.5 CONCENTRATIONS OF TRITIUM, STRONTIUM, AND GAMMA EMITTERS IN GROUND WATER SAMPLES COLLECTED IN THE VICINITY OF THREE MILE ISLAND NUCLEAR STATION, 2004

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

STC	COLLECTION PERIOD	H-3	Sr-90	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Zr-95	Nb-95	Cs-134	Cs-137	Ba-140	La-140
MS-2Q	06/03/04	226 ± 95												
	12/09/04	< 143	< 0.7	< 2.9	< 3.4	< 4.7	< 2.2	< 6.9	< 6.3	< 5.0	< 2.4	< 2.4	< 23	< 8.0

TABLE D-I.6 CONCENTRATIONS OF STRONTIUM AND GAMMA EMITTERS IN FISH SAMPLES COLLECTED IN THE VICINITY OF THREE MILE ISLAND NUCLEAR STATION, 2004

RESULTS IN UNITS OF PCI/KG WET \pm 2 SIGMA

STC	COLLECTION PERIOD	Sr-89	Sr-90	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Cs-134	Cs-137
INDPQ	10/27/04	< 6.4	7.1 \pm 2.3	2650 \pm 472	< 17	< 24	< 30	< 7.8	< 40	< 18	< 11

**TABLE D-I.7 CONCENTRATIONS OF GAMMA EMITTERS IN SEDIMENT SAMPLES
 COLLECTED IN THE VICINITY OF THREE MILE ISLAND NUCLEAR
 STATION, 2004**

RESULTS IN UNITS OF PCI/KG WET ± 2 SIGMA

STC	COLLECTION PERIOD	K-40	Cs-134	Cs-137
J2-1Q	10/18/04	15245 ± 677	< 21	126 ± 28

**TABLE D-I.8 CONCENTRATIONS OF GAMMA EMITTERS AND STRONTIUM IN
FOOD PRODUCT SAMPLES COLLECTED IN THE VICINITY OF THREE MILE
ISLAND NUCLEAR STATION, 2004**

RESULTS IN UNITS OF PCI/KG WET \pm 2 SIGMA

STC	COLLECTION PERIOD	K-40	I-131	Cs-134	Cs-137	Sr-89	Sr-90
B10-2Q	07/22/04	1668 \pm 306	< 20	< 6.8	< 15	< 0.9	0.9 \pm 0.5

TABLE D-II.1 CONCENTRATIONS OF GROSS BETA IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF THREE MILE ISLAND NUCLEAR STATION, 2004

RESULTS IN UNITS OF E-3 PCI/CU METER ± 2 SIGMA

COLLECTION PERIOD	E1-2Q
12/31/04 - 01/07/04	27 ± 5
01/07/04 - 01/14/04	30 ± 5
01/14/04 - 01/21/04	13 ± 3
01/21/04 - 01/28/04	19 ± 4
01/28/04 - 02/04/04	27 ± 5
02/04/04 - 02/11/04	18 ± 5
02/11/04 - 02/18/04	29 ± 4
02/18/04 - 02/25/04	26 ± 6
02/25/04 - 03/03/04	31 ± 5
03/03/04 - 03/10/04	13 ± 6
03/10/04 - 03/17/04	18 ± 5
03/17/04 - 03/24/04	18 ± 5
03/24/04 - 03/31/04	17 ± 5
03/31/04 - 04/07/04	12 ± 6
04/07/04 - 04/14/04	15 ± 5
04/14/04 - 04/21/04	23 ± 5
04/21/04 - 04/28/04	19 ± 4
04/28/04 - 05/05/04	20 ± 5
05/05/04 - 05/12/04	27 ± 5
05/12/04 - 05/19/04	25 ± 5
05/19/04 - 05/26/04	16 ± 6
05/26/04 - 06/02/04	16 ± 5
06/02/04 - 06/09/04	17 ± 5
06/09/04 - 06/16/04	17 ± 4
06/16/04 - 06/23/04	17 ± 6
06/23/04 - 06/29/04	26 ± 5
06/29/04 - 07/07/04	24 ± 4
07/07/04 - 07/14/04	13 ± 6
07/14/04 - 07/21/04	17 ± 4
07/21/04 - 07/28/04	16 ± 5
07/28/04 - 08/04/04	10 ± 5
08/04/04 - 08/11/04	14 ± 6
08/11/04 - 08/18/04	14 ± 5
08/18/04 - 08/25/04	21 ± 5
08/25/04 - 09/01/04	13 ± 5
09/01/04 - 09/08/04	20 ± 4
09/08/04 - 09/15/04	18 ± 5
09/15/04 - 09/18/04	18 ± 8 (1)
09/23/04 - 09/29/04	30 ± 7
09/29/04 - 10/06/04	29 ± 3
10/06/04 - 10/13/04	23 ± 5
10/13/04 - 10/20/04	18 ± 5
10/20/04 - 10/27/04	12 ± 6
10/27/04 - 11/03/04	25 ± 4
11/03/04 - 11/10/04	22 ± 5
11/10/04 - 11/17/04	25 ± 3
11/17/04 - 11/23/04	34 ± 4
11/24/04 - 12/01/04	17 ± 5
12/01/04 - 12/08/04	22 ± 4
12/08/04 - 12/15/04	11 ± 4
12/15/04 - 12/21/04	22 ± 5
12/21/04 - 12/29/05	26 ± 4
MEAN	20 ± 12

(1) SEE PROGRAM EXCEPTIONS SECTION FOR EXPLANATION

TABLE D-II.2 CONCENTRATIONS OF GAMMA EMITTERS IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF THREE MILE ISLAND NUCLEAR STATION, 2004

RESULTS IN UNITS OF E-3 PCI/CU METER \pm 2 SIGMA

STC	COLLECTION PERIOD	Be-7	Cs-134	Cs-137
E1-2Q	12/31 - 03/31/04	46 \pm 13	< 0.6	< 0.7
	03/31 - 06/29/04	85 \pm 15	< 0.7	< 0.5
	06/29 - 09/29/04	62 \pm 16	< 0.9	< 0.5
	09/29 - 12/29/04	66 \pm 13	< 0.6	< 0.5
MEAN		65 \pm 32	0.7 \pm 0.3	0.6 \pm 0.2

TABLE D-III.1 CONCENTRATIONS OF I-131 BY CHEMICAL SEPARATION, GAMMA EMITTERS, & STRONTIUM IN MILK SAMPLES COLLECTED IN THE VICINITY OF THREE MILE ISLAND NUCLEAR STATION, 2004

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

STC	COLLECTION PERIOD	I-131	K-40	Cs-134	Cs-137	Ba-140	La-140	Sr-89	Sr-90
G2-1Q	01/07/04	< 0.3	1133 ± 112	< 2.9	< 4.0	< 22	< 6.5		
	02/04/04	< 0.3	1244 ± 194	< 9.4	< 7.3	< 40	< 7.1		
	03/03/04	< 0.5	1226 ± 140	< 6.4	< 5.4	< 27	< 3.7		
	03/17/04	< 0.2	1261 ± 158	< 4.5	< 5.5	< 23	< 2.7		
	03/31/04	< 0.4	1363 ± 116	< 3.1	< 3.8	< 14	< 3.1	< 0.5	< 0.5
	04/14/04	< 0.2	1097 ± 184	< 7.8	< 5.4	< 21	< 8.2		
	04/28/04	< 0.3	1096 ± 126	< 6.2	< 5.1	< 22	< 4.9		
	05/12/04	< 0.3	1076 ± 130	< 4.9	< 5.2	< 29	< 6.1		
	05/26/04	< 0.2	1051 ± 114	< 4.0	< 4.3	< 15	< 3.4		
	06/09/04	< 0.4	1115 ± 108	< 3.8	< 3.0	< 24	< 5.6		
	06/23/04	< 0.3	921 ± 104	< 5.9	< 5.0	< 18	< 5.4	< 0.6	< 0.6
	07/07/04	< 0.3	1319 ± 134	< 4.5	< 4.2	< 60	< 5.4		
	07/21/04	< 0.4	1352 ± 192	< 4.6	< 6.8	< 48	< 7.3		
	08/04/04	< 0.3	930 ± 161	< 6.4	< 5.7	< 47	< 7.2		
	08/18/04	< 0.3	1473 ± 192	< 4.7	< 5.3	< 21	< 3.2		
	09/01/04	< 0.3	1297 ± 121	< 2.4	< 3.7	< 29	< 4.0		
	09/15/04	< 0.2	934 ± 121	< 4.7	< 2.7	< 38	< 6.4		
	09/29/04	< 0.3	1135 ± 164	< 10	< 5.0	< 39	< 9.5	< 1.0	< 1.3
	10/13/04	< 0.3	1038 ± 159	< 4.7	< 4.6	< 38	< 10		
	10/27/04	< 0.3	1111 ± 176	< 3.8	< 7.3	< 41	< 9.1		
11/10/04	< 0.3	1380 ± 168	< 5.5	< 5.1	< 27	< 13			
11/23/04	< 0.3	1068 ± 174	< 6.4	< 4.6	< 30	< 7.2			
12/08/04	< 0.4	923 ± 106	< 4.9	< 3.7	< 20	< 4.8	< 0.6	< 0.7	
	MEAN	0.3 ± 0.1	1154 ± 320	5.3 ± 3.8	4.9 ± 2.4	30 ± 24	6.3 ± 5.2	0.7 ± 0.4	0.8 ± 0.7

APPENDIX E

**INTER-LABORATORY COMPARISON
PROGRAM**

TABLE E-1

ANALYTICS ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM
TELEDYNE QC SPIKE PROGRAM
TELEDYNE BROWN ENGINEERING ENVIRONMENTAL SERVICES
(PAGE 1 OF 3)

Month/Year	Identification Number	Matrix	Nuclide	Units	Reported Value (a)	Known Value (b)	Ratio (c) TBE/Analytics	Evaluation (d)			
March, 2004	E4128-396	Milk	Sr-89	pCi/L	91	103	0.88	A			
			Sr-90	pCi/L	13	12	1.08	A			
March, 2004	E4129-396	Milk	I-131	pCi/L	77	78	0.99	A			
			Ce-141	pCi/L	77	85	0.91	A			
			Cr-51	pCi/L	340	327	1.04	A			
			Cs-134	pCi/L	76	90	0.84	A			
			Cs-137	pCi/L	176	185	0.95	A			
			Co-58	pCi/L	113	112	1.01	A			
			Mn-54	pCi/L	110	114	0.96	A			
			Fe-59	pCi/L	65	57	1.14	A			
			Zn-65	pCi/L	132	143	0.92	A			
			Co-60	pCi/L	144	153	0.94	A			
			March, 2004	E4131-396	AP	Ce-141	pCi	87	88	0.99	A
						Cr-51	pCi	325	338	0.96	A
						Cs-134	pCi	87	93	0.94	A
						Cs-137	pCi	185	192	0.96	A
Co-58	pCi	117				116	1.01	A			
Mn-54	pCi	105				118	0.89	A			
Fe-59	pCi	59				59	1.00	A			
Zn-65	pCi	179				148	1.21	W			
Co-60	pCi	145	159	0.91	A						
March, 2004	E4130-396	Charcoal	I-131	pCi	88	97	0.91	A			
June, 2004	E4213-396	Milk	Sr-89	pCi/L	77.9	87.7	0.89	A			
			Sr-90	pCi/L	12.0	12.7	0.95	A			
June, 2004	E4214-396	Milk	I-131	pCi/L	53.7	58.2	0.92	A			
			Ce-141	pCi/L	145	157	0.92	A			
			Cr-51	pCi/L	212	228	0.93	A			
			Cs-134	pCi/L	85.2	101	0.84	A			
			Cs-137	pCi/L	145	156	0.93	A			
			Co-58	pCi/L	45.7	46.2	0.99	A			
			Mn-54	pCi/L	68.2	70.5	0.97	A			
			Fe-59	pCi/L	44.4	44.5	1.00	A			
			Zn-65	pCi/L	102	99.3	1.03	A			
			Co-60	pCi/L	162	172	0.94	A			
			June, 2004	E4216-396	AP	Ce-141	pCi	116	118	0.98	A
						Cr-51	pCi	160	172	0.93	A
						Cs-134	pCi	68.6	76.3	0.90	A
						Cs-137	pCi	108	118	0.92	A
Co-58	pCi	33.1				39.4	0.84	A			
Mn-54	pCi	51.1				53.3	0.96	A			
Fe-59	pCi	44.0				33.6	1.31	N (1)			
Zn-65	pCi	69.1				75.1	0.92	A			
Co-60	pCi	123	130	0.95	A						

TABLE E-1

ANALYTICS ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM
TELEDYNE QC SPIKE PROGRAM
TELEDYNE BROWN ENGINEERING ENVIRONMENTAL SERVICES
(PAGE 2 OF 3)

Month/Year	Identification Number	Matrix	Nuclide	Units	Reported Value (a)	Known Value (b)	Ratio (c) TBE/Analytics	Evaluation (d)
	E4215-396	Charcoal	I-131	pCi	71.8	82.0	0.88	A
September, 2004	E4323-396	Milk	Sr-89	pCi/L	93.9	102	0.92	A
			Sr-90	pCi/L	24.0	24.5	0.98	A
	E4324-396	Milk	I-131	pCi/L	81.9	83.5	0.98	A
Ce-141			pCi/L	214	235	0.91	A	
Cr-51			pCi/L	196	210	0.93	A	
Cs-134			pCi/L	77.3	90.6	0.85	A	
Cs-137			pCi/L	192	202	0.95	A	
Co-58			pCi/L	86.2	89.0	0.97	A	
Mn-54			pCi/L	163	171	0.96	A	
Fe-59			pCi/L	87.4	86.1	1.02	A	
Zn-65			pCi/L	168	167	1.00	A	
Co-60			pCi/L	108	118	0.92	A	
September, 2004	E4326-396	AP	Ce-141	pCi	149	148	1.01	A
			Cr-51	pCi	122	132	0.92	A
			Cs-134	pCi	50.3	57.1	0.88	A
			Cs-137	pCi	112	127	0.88	A
			Co-58	pCi	54.8	56.0	0.98	A
			Mn-54	pCi	102	108.0	0.95	A
			Fe-59	pCi	47.6	54.2	0.88	A
			Zn-65	pCi	111	106	1.05	A
			Co-60	pCi	69.0	74.1	0.93	A
	E4325-396	Charcoal	I-131	pCi	70.3	74.9	0.94	A
October, 2004	E4407-396	Milk	Sr-89	pCi/L	91.7	98.6	0.93	A
			Sr-90	pCi/L	11.9	11.3	1.05	A
	E4408-396	Milk	I-131	pCi/L	58.3	66.7	0.87	A
Ce-141			pCi/L	140	155	0.91	A	
Cr-51			pCi/L	374	379	0.99	A	
Cs-134			pCi/L	143	170	0.84	A	
Cs-137			pCi/L	120	126	0.95	A	
Co-58			pCi/L	140	146	0.96	A	
Mn-54			pCi/L	135	136	1.00	A	
Fe-59			pCi/L	124	121	1.02	A	
Zn-65			pCi/L	198	196	1.01	A	
Co-60			pCi/L	166	175	0.95	A	

TABLE E-1

**ANALYTICS ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM
TELEDYNE QC SPIKE PROGRAM
TELEDYNE BROWN ENGINEERING ENVIRONMENTAL SERVICES
(PAGE 3 OF 3)**

Month/Year	Identification Number	Matrix	Nuclide	Units	Reported Value (a)	Known Value (b)	Ratio (c) TBE/Analytics	Evaluation (d)
	E4410-396	AP	Ce-141	pCi	77.0	79.1	0.97	A
			Cr-51	pCi	156	187	0.84	A
			Cs-134	pCi	76.6	83.5	0.92	A
			Cs-137	pCi	58.9	62.0	0.95	A
			Co-58	pCi	68.6	71.8	0.96	A
			Mn-54	pCi	63.2	66.7	0.95	A
			Fe-59	pCi	65.2	59.7	1.09	A
			Zn-65	pCi	99.7	96.3	1.04	A
			Co-60	pCi	80.1	85.9	0.93	A
	E4409A-396	Charcoal	I-131	pCi	80.9	83.3	0.97	A

(1) The Analytics filter had very low activity and was counted longer than two days. This resulted in poor accuracy as demonstrated by the very large error term. Dan Montgomery of Analytics concurred that, with the low counts and large error, the results were reasonably accurate and would not be considered a failed cross check at 1.31 for an environmental level sample. NCR 04-16

(a) Teledyne Brown Engineering reported result.

(b) The Analytics known value is equal to 100% of the parameter present in the standard as determined by gravimetric and/or volumetric measurements made during standard preparation.

(c) Ratio of Teledyne Brown Engineering to Analytics results.

(d) Analytics evaluation based on TBE internal QC limits: A= Acceptable. Reported result falls within ratio limits of 0.80-1.20. W-Acceptable with warning. Reported result falls within 0.70-0.80 or 1.20-1.30. N = Not Acceptable. Reported result falls outside the ratio limits of < 0.70 and > 1.30.

TABLE E-2

**DOE/EML ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM
TELEDYNE QC SPIKE PROGRAM
TELEDYNE BROWN ENGINEERING ENVIRONMENTAL SERVICES
(PAGE 1 OF 1)**

Month/Year	Identification Number	Media	Nuclide	Units	Reported Value (a)	Known Value (b)	Ratio (c) TBE/EML	Evaluation (d)
March, 2004 (2)	QAP 60 (QAP 0403)	AP	Co-60	Bq/filter	33.5	35.4	0.95	A
			Sr-90	Bq/filter	1.8	1.76	1.02	A
			Cs-134	Bq/filter	18.7	18.2	1.03	A
			Cs-137	Bq/filter	24.8	26.4	0.94	A
			Gr-A	Bq/filter	1.8	1.2	1.50	N (1)
			Gr-B	Bq/filter	2.88	2.85	1.01	A
		Soil	K-40	Bq/kg	583	539	1.08	A
			Sr-90	Bq/kg	42.1	51.0	0.83	A
			Cs-137	Bq/kg	1429	1323	1.08	A
			Bi-212	Bq/kg	52.6	50.43	1.04	A
			Pb-212	Bq/kg	50.1	47.73	1.05	A
			Bi-214	Bq/kg	57.6	58.4	0.99	A
			Pb-214	Bq/kg	61.4	61.0	1.01	A
			Ac-228	Bq/kg	49.4	49.0	1.01	A
			Th-234	Bq/kg	114.9	84.0	1.37	A
			Vegetation	K-40	Bq/kg	807.5	720.0	1.12
		Co-60		Bq/kg	14.2	14.47	0.98	A
		Sr-90		Bq/kg	685	734.0	0.93	A
		Cs-137		Bq/kg	637.3	584.67	1.09	A
		Water	Co-60	Bq/L	159.7	163.2	0.98	A
			Sr-90	Bq/L	4.74	4.76	1.00	A
			Cs-137	Bq/L	50.6	51.95	0.97	A
			Gr-A	Bq/L	394.0	326.0	1.21	W
			Gr-B	Bq/L	1200.0	1170.0	1.03	A

(1) Incorrect efficiency used. When recalculated with the correct efficiency, the Gross Alpha activity of 1.16 Bq/filter compared well with the value of 1.2 Bq/filter. NCR 04-14

(2) DOE discontinued the EML quality assessment program. MAPEP has expanded their performance test program to include water, soil, AP and vegetation samples.

(a) Teledyne Brown Engineering reported result.

(b) The DOE/EML known value is equal to 100% of the parameter present in the standard as determined by gravimetric and/or volumetric measurements made during standard preparation.

(c) Ratio of Teledyne Brown Engineering to DOE/EML results.

(d) DOE/EML evaluation: A=acceptable, W=acceptable with warning, N=not acceptable.

TABLE E-3

ERA ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM
TELEDYNE QC SPIKE PROGRAM
TELEDYNE BROWN ENGINEERING ENVIRONMENTAL SERVICES
(PAGE 1 OF 1)

Month/Year	Identification Number	Media	Nuclide	Units	Reported Value (a)	Known Value (b)	Control Limits	Evaluation (c)
May, 2004	Rad 57	Water	Sr-89	pCi/L	139	45.9	37.2 - 54.6	N (1)
			Sr-90	pCi/L	11.3	11.6	2.94 - 20.3	A
			Ba-133	pCi/L	93.9	101	83.5 - 118	A
			Cs-134	pCi/L	43.3	50.5	41.8 - 59.2	A
			Cs-137	pCi/L	79.3	82.5	73.8 - 91.2	A
			Co-60	pCi/L	42.4	41.6	32.9 - 50.3	A
			Zn-65	pCi/L	81.9	75.2	62.2 - 88.2	A
			Gr-A	pCi/L	39.9	38.8	22.0 - 55.6	A
			Gr-B	pCi/L	62.5	59.6	42.3 - 76.9	A
			H-3	pCi/L	33500	30900	25600 - 36200	A
August, 2004	Rad 58	Water	I-131	pCi/L	9.09	9.29	5.83 - 12.8	A
December, 2004	Rad 59	Water	Sr-89	pCi/L	44.0	45.7	37.0 - 54.4	A
			Sr-90	pCi/L	35.3	36.6	27.9 - 45.3	A
			Ba-133	pCi/L	73.9	78.4	64.8 - 92.0	A
			Cs-134	pCi/L	37.8	42.9	34.2 - 51.6	A
			Cs-137	pCi/L	58.3	60.1	51.4 - 68.8	A
			Co-60	pCi/L	11.5	11.7	3.04 - 20.4	A
			Zn-65	pCi/L	51.3	50.9	42.1 - 59.7	A
			Gr-A	pCi/L	23.9	31.7	18.0 - 45.4	W
			Gr-B	pCi/L	33.9	36.3	27.6 - 45.0	A
			I-131	pCi/L	19.2	22.1	16.9 - 27.3	A
H-3	pCi/L	22900	20700	17100 - 24300	A			

(1) The strontium-89 mount was counted without the absorber. When recounted using the absorber, the Sr-89 result of 41.5 pCi/L agreed well with the ERA known value of 45.9 pCi/L. NCR 04-13

(a) Teledyne Brown Engineering reported result.

(b) The ERA known value is equal to 100% of the parameter present in the standard as determined by gravimetric and/or volumetric measurements made during standard preparation.

(c) ERA evaluation: A=acceptable. Reported result falls within the Warning Limits. NA=not acceptable. Reported result falls outside of the Control Limits. CE=check for Error. Reported result falls within the Control Limits and outside of the Warning Limit.

TABLE E-4

DOE's MIXED ANALYTE PERFORMANCE EVALUATION PROGRAM (MAPEP)
TELEDYNE QC SPIKE PROGRAM
TELEDYNE BROWN ENGINEERING ENVIRONMENTAL SERVICES
(PAGE 1 OF 1)

Month/Year	Identification Number	Media	Nuclide	Units	Reported Value (a)	Known Value (b)	Control Limits	Evaluation (c)
January, 2004	03-W11	Water	Cs-134	Bq/L	289.1	322.0	225.40 - 418.60	A
			Cs-137	Bq/L	118.7	124.0	86.80 - 161.20	A
			Co-57	Bq/L	164	173.0	121.10 - 224.90	A
			Co-60	Bq/L	121.1	121.8	85.26 - 158.34	A
			H-3	Bq/L	425.3	379.0	265.30 - 492.70	A
			Mn-54	Bq/L	152.6	155.0	108.50 - 201.50	A
			Sr-90	Bq/L	16.4	17.7	12.39 - 23.01	A
			Zn-65	Bq/L	303.3	320.0	224.00 - 416.00	A
July, 2004	MaW12	Water	Cs-134	Bq/L	177	208	145.60 - 270.40	A
			Cs-137	Bq/L	237	250	175.00 - 325.00	A
			Co-60	Bq/L	160	163	114.10 - 211.90	A
			H-3	Bq/L	109	82.9	58.10 - 107.90	N (1)
			Mn-54	Bq/L	262	267	186.90 - 347.10	A
			Sr-90	Bq/L	6.79	7.4	4.90 - 9.10	A
			Zn-65	Bq/L	217	208	145.60 - 270.40	A
	GrW12	Water	Gr-A	Bq/L	0.836	1.24	>0.0 - 2.40	A
			Gr-B	Bq/L	4.95	4.07	2.05 - 6.15	A
	RdF12	AP	Cs-134	Bq/sample	2.19	2.9	2.03 - 3.77	W
			Cs-137	Bq/sample	1.87	1.96	1.40 - 2.60	A
			Co-60	Bq/sample	2.28	2.35	1.61 - 2.99	A
			Mn-54	Bq/sample	3.06	3.03	2.10 - 3.90	A
			Sr-90	Bq/sample	0.909	0.83	0.56 - 1.04	A
			Zn-65	Bq/sample	4.53	4.11	2.80 - 5.20	A
	GrF12	AP	Gr-A	Bq/sample	0.126	0.37	>0.0 - 0.80	A
			Gr-B	Bq/sample	1.34	1.21	0.60 - 1.80	A
	MaS12	Soil	Cs-134	Bq/kg	327.7	414	290.08 - 538.72	W
			Cs-137	Bq/kg	786.0	836	585.34 - 1,088	A
			Co-60	Bq/kg	509.3	518	362.60 - 673.40	A
			Mn-54	Bq/kg	477	485	339.29 - 630.11	A
			K-40	Bq/kg	609	604	422.80 - 785.20	A
			Zn-65	Bq/kg	727	699	489.51 - 909.09	A

(1) All raw data looked normal for the sample. Evaluating the results based on the ± 20 Bq/L uncertainty, the result easily overlaps the known value at the 95% confidence level. The sample was rerun with a larger aliquot to improve accuracy and lower the uncertainty. The H-3 result of 96.4 ± 7.75 Bq/L was within the acceptance range. NCR 04-19

(a) Teledyne Brown Engineering reported result.

(b) The MAPEP known value is equal to 100% of the parameter present in the standard as determined by gravimetric and/or volumetric measurements made during standard preparation.

(c) DOE/MAPEP evaluation: A=acceptable, W=acceptable with warning, N=not acceptable.

TABLE E-5 DOE/EML ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM^a
 ENVIRONMENTAL, INC., 2004
 (Page 1 of 1)

Lab Code	Type	Date	Analysis	Laboratory results	Concentration ^a		Ratio ^a Env/EML
					EML Result ^b	Control Limits ^c	
STW-1009	Water	03/01/04	Am-241	1.21 ± 0.02	1.31	0.66 - 1.56	0.92
STW-1009	Water	03/01/04	Co-60	152.30 ± 0.30	163.20	0.87 - 1.17	0.93
STW-1009	Water	03/01/04	Cs-137	50.40 ± 0.90	51.95	0.90 - 1.25	0.97
STW-1009	Water	03/01/04	H-3	263.50 ± 10.00	186.60	0.69 - 1.91	1.41
STW-1009	Water	03/01/04	Pu-238	1.03 ± 0.04	1.10	0.68 - 1.33	0.94
STW-1009	Water	03/01/04	Pu-239/40	2.90 ± 0.10	3.08	0.62 - 1.38	0.94
STW-1009	Water	03/01/04	Sr-90	5.20 ± 0.30	4.76	0.73 - 1.65	1.09
STW-1009	Water	03/01/04	Uranium	4.35 ± 0.21	4.62	0.40 - 1.45	0.94
STW-1010	Water	03/01/04	Gr. Alpha	208.00 ± 20.70	326.00	0.55 - 1.31	0.64
STW-1010	Water	03/01/04	Gr. Beta	1063.00 ± 27.00	1170.00	0.75 - 1.65	0.91
STSO-1011	Soil	03/01/04	Am-241	14.10 ± 4.30	13.00	0.52 - 2.41	1.08
STSO-1011	Soil	03/01/04	Cs-137	1292.00 ± 13.00	1323.00	0.74 - 1.40	0.98
STSO-1011	Soil	03/01/04	K-40	563.00 ± 83.00	539.00	0.70 - 1.59	1.04
STSO-1011	Soil	03/01/04	Pu-239/40	20.70 ± 1.10	22.82	0.62 - 1.99	0.91
STSO-1011	Soil	03/01/04	Sr-90	72.10 ± 5.80	51.00	0.58 - 2.96	1.41
STSO-1011	Soil	03/01/04	Uranium	139.10 ± 10.20	180.22	0.27 - 1.48	0.77
STVE-1012	Vegetation	03/01/04	Am-241	4.50 ± 0.20	4.93	0.58 - 2.86	0.91
STVE-1012	Vegetation	03/01/04	Co-60	14.10 ± 0.40	14.47	0.64 - 1.49	0.97
STVE-1012	Vegetation	03/01/04	Cs-137	573.90 ± 6.00	584.67	0.75 - 1.48	0.98
STVE-1012	Vegetation	03/01/04	K-40	709.00 ± 19.30	720.00	0.45 - 1.51	0.98
STVE-1012	Vegetation	03/01/04	Pu-239/40	6.60 ± 0.50	6.81	0.60 - 1.98	0.97
STVE-1012	Vegetation	03/01/04	Sr-90	766.50 ± 51.30	734.00	0.50 - 1.37	1.04
STAP-1013	Air Filter	03/01/04	Am-241	0.11 ± 0.01	0.10	0.62 - 1.93	1.05
STAP-1013	Air Filter	03/01/04	Co-60	30.90 ± 1.08	35.40	0.74 - 1.25	0.87
STAP-1013 ^d	Air Filter	03/01/04	Cs-134	12.30 ± 1.30	18.20	0.70 - 1.21	0.68
STAP-1013	Air Filter	03/01/04	Cs-137	24.90 ± 0.60	26.40	0.72 - 1.32	0.94
STAP-1013	Air Filter	03/01/04	Pu-238	0.04 ± 0.01	0.04	0.61 - 1.55	0.99
STAP-1013	Air Filter	03/01/04	Pu-239/40	0.17 ± 0.02	0.16	0.67 - 1.58	1.03
STAP-1013	Air Filter	03/01/04	Sr-90	1.80 ± 0.20	1.76	0.62 - 2.26	1.02
STAP-1013	Air Filter	03/01/04	Uranium	0.17 ± 0.01	0.17	0.79 - 2.88	1.00
STAP-1014	Air Filter	03/01/04	Gr. Alpha	1.09 ± 0.06	1.20	0.82 - 1.58	0.91
STAP-1014	Air Filter	03/01/04	Gr. Beta	2.68 ± 0.05	2.85	0.75 - 1.94	0.94

^a Results are reported in Bq/L with the following exceptions: Air Filters (Bq/Filter), Soil and Vegetation (Bq/kg).

^b The EML result listed is the mean of replicate determinations for each nuclide ± the standard error of the mean.

^c Control limits are reported by EML as the ratio of Reported Value / EML value.

^d Probable effect of summation peaks and slight difference in filter geometry.

^e Ratio of Environmental, Inc. to DOE/EML results.

TABLE E-6

ERA STATISTICAL SUMMARY PROFICIENCY TESTING PROGRAM^a
ENVIRONMENTAL, INC., 2004

(Page 1 of 2)

Lab Code	Date	Analysis	Concentration (pCi/L)		Control Limits	Ratio ^d Env/ERA
			Laboratory Result ^b	ERA Result ^c		
STW-1005	02/17/04	Sr-89	36.5 ± 6.5	44.9 ± 4.5	36.2 - 53.6	0.81
STW-1005	02/17/04	Sr-90	13.4 ± 0.8	11.6 ± 1.2	2.9 - 20.3	1.16
STW-1006	02/17/04	Ba-133	60.9 ± 2.8	63.2 ± 6.3	52.3 - 74.1	0.96
STW-1006	02/17/04	Co-60	95.2 ± 1.5	96.4 ± 9.6	87.7 - 105.0	0.99
STW-1006	02/17/04	Cs-134	71.2 ± 5.4	75.8 ± 7.6	67.1 - 84.5	0.94
STW-1006	02/17/04	Cs-137	157.0 ± 6.5	155.0 ± 15.5	142.0 - 168.0	1.01
STW-1006	02/17/04	Zn-65	103.0 ± 1.1	102.0 ± 10.2	84.4 - 120.0	1.01
STW-1007	02/17/04	Gr. Alpha	15.6 ± 1.2	16.6 ± 1.7	7.9 - 25.3	0.94
STW-1007	02/17/04	Gr. Beta	46.3 ± 4.4	41.5 ± 4.2	32.8 - 50.2	1.12
STW-1008	02/17/04	Ra-226	8.7 ± 0.2	9.3 ± 0.0	6.9 - 11.7	0.93
STW-1008	02/17/04	Ra-228	16.6 ± 0.4	18.2 ± 1.8	10.3 - 26.1	0.91
STW-1008	02/17/04	Uranium	34.2 ± 0.8	33.0 ± 3.3	27.8 - 38.2	1.04
STW-1015	05/18/04	Sr-89	39.7 ± 3.3	45.9 ± 5.0	37.2 - 54.6	0.86
STW-1015	05/18/04	Sr-90	12.4 ± 0.9	11.6 ± 5.0	2.9 - 20.3	1.07
STW-1016	05/18/04	Ba-133	96.9 ± 2.4	101.0 ± 10.1	83.5 - 118.0	0.96
STW-1016	05/18/04	Co-60	39.9 ± 0.5	41.6 ± 5.0	32.9 - 50.3	0.96
STW-1016	05/18/04	Cs-134	48.8 ± 0.8	50.5 ± 5.0	41.8 - 59.2	0.97
STW-1016	05/18/04	Cs-137	82.6 ± 2.3	82.5 ± 5.0	73.8 - 91.2	1.00
STW-1016	05/18/04	Zn-65	77.5 ± 1.5	75.2 ± 7.5	62.2 - 88.2	1.03
STW-1017	05/18/04	Gr. Alpha	32.4 ± 2.1	38.8 ± 9.7	22.0 - 55.6	0.84
STW-1017	05/18/04	Gr. Beta	63.4 ± 3.5	59.6 ± 10.0	42.3 - 76.9	1.06
STW-1018	05/18/04	I-131	25.2 ± 0.4	25.1 ± 3.0	19.9 - 30.3	1.00
STW-1019	05/18/04	Ra-226	16.0 ± 1.1	17.3 ± 2.6	12.8 - 21.8	0.92
STW-1019	05/18/04	Ra-228	12.6 ± 0.9	10.3 ± 2.6	5.8 - 14.8	1.23
STW-1019	05/18/04	Uranium	13.0 ± 0.0	12.7 ± 3.0	7.5 - 17.9	1.02
STW-1020	05/18/04	H-3	32043 ± 166	30900 ± 3090	25600 - 36200	1.04
STW-1028	08/17/04	Sr-89	16.1 ± 1.9	20.0 ± 2.0	11.3 - 28.7	0.80
STW-1028	08/17/04	Sr-90	13.4 ± 0.1	13.6 ± 1.4	4.9 - 22.3	0.98
STW-1029	08/17/04	Ba-133	30.2 ± 3.9	32.1 ± 3.2	23.4 - 40.8	0.94
STW-1029	08/17/04	Co-60	24.9 ± 1.9	24.0 ± 2.4	15.3 - 32.7	1.04
STW-1029	08/17/04	Cs-134	21.4 ± 3.4	21.6 ± 2.2	12.9 - 30.3	0.99
STW-1029	08/17/04	Cs-137	205.6 ± 4.3	193.0 ± 19.3	176.0 - 210.0	1.07
STW-1029	08/17/04	Zn-65	145.5 ± 3.0	143.0 ± 14.3	118.0 - 168.0	1.02
STW-1030	08/17/04	Gr. Alpha	47.7 ± 9.1	57.0 ± 5.7	32.3 - 81.7	0.84
STW-1030	08/17/04	Gr. Beta	28.1 ± 2.5	20.0 ± 2.0	11.3 - 28.7	1.40
STW-1030	08/17/04	Gr. Beta	28.1 ± 2.5	20.0 ± 2.0	11.3 - 28.7	1.40
STW-1031	08/17/04	Ra-226	6.9 ± 0.5	6.3 ± 0.6	4.6 - 7.9	1.10
STW-1031	08/17/04	Ra-228	13.1 ± 1.4	14.7 ± 1.5	8.3 - 21.1	0.89
STW-1031	08/17/04	Uranium	6.0 ± 0.1	6.2 ± 0.6	1.0 - 11.4	0.97

TABLE E-6

ERA STATISTICAL SUMMARY PROFICIENCY TESTING PROGRAM^a
ENVIRONMENTAL, INC., 2004

(Page 2 of 2)

Lab Code	Date	Analysis	Concentration (pCi/L)			Ratio ^d Env/ERA
			Laboratory Result ^b	ERA Result ^c	Control Limits	
STW-1037	11/15/04	Sr-89	42.2 ± 3.5	45.7 ± 5.0	37.0 - 51.5	0.92
STW-1037	11/15/04	Sr-90	37.3 ± 1.3	36.6 ± 5.0	27.9 - 45.3	1.02
STW-1038	11/15/04	Ba-133	75.5 ± 0.8	78.4 ± 7.8	64.8 - 92.0	0.96
STW-1038	11/15/04	Co-60	12.2 ± 0.7	11.7 ± 5.0	3.0 - 20.4	1.04
STW-1038	11/15/04	Cs-134	43.6 ± 0.5	42.9 ± 5.0	34.2 - 51.6	1.02
STW-1038	11/15/04	Cs-137	59.5 ± 2.9	60.1 ± 5.0	51.4 - 68.8	0.99
STW-1038	11/15/04	Zn-65	50.7 ± 3.2	50.9 ± 5.1	42.1 - 59.7	1.00
STW-1039	11/15/04	Gr. Alpha	23.9 ± 2.2	31.7 ± 7.9	18.0 - 45.4	0.75
STW-1039	11/15/04	Gr. Beta	35.8 ± 1.3	36.3 ± 5.0	27.6 - 45.0	0.99
STW-1040	11/15/04	I-131	22.4 ± 1.9	22.0 ± 5.0	16.9 - 27.3	1.02
STW-1041	11/15/04	Ra-226	9.8 ± 0.4	9.2 ± 1.4	6.8 - 11.6	1.07
STW-1041	11/15/04	Ra-228	8.6 ± 0.3	7.1 ± 1.8	7.0 - 10.2	1.22
STW-1041	11/15/04	Uranium	11.1 ± 0.3	11.4 ± 3.0	6.2 - 16.6	0.97
STW-1042	11/15/04	H-3	21218.0 ± 285.0	20700.0 ± 2070.0	17100.0 - 24300.0	1.03

^a Results obtained by Environmental, Inc., Midwest Laboratory as a participant in the crosscheck program for proficiency testing in drinking water conducted by Environmental Resources Associates (ERA).

^b Unless otherwise indicated, the laboratory result is given as the mean ± standard deviation for three determinations.

^c Results are presented as the known values, expected laboratory precision (1 sigma, 1 determination) and control limits as provided by ERA.

^d Ratio of Environmental, Inc. to ERA results.

TABLE E-7 DOE's MIXED ANALYTE PERFORMANCE EVALUATION PROGRAM (MAPEP)^g
 ENVIRONMENTAL, INC., 2004
 (Page 1 of 2)

Lab Code	Type	Date	Analysis	Concentration ^b			Ratio ^h Env/MAPEP
				Laboratory result	Known Activity	Control Limits ^c	
STSO-1022	Soil	05/01/04	Am-241	65.90 ± 4.50	66.97 ± 6.70	46.88 - 87.06	0.98
STSO-1022	Soil	05/01/04	Co-57	388.90 ± 4.00	399.60 ± 40.00	279.72 - 519.48	0.97
STSO-1022	Soil	05/01/04	Co-60	524.80 ± 7.10	518.00 ± 51.80	362.60 - 673.40	1.01
STSO-1022	Soil	05/01/04	Cs-134	403.40 ± 4.60	414.40 ± 41.40	290.08 - 538.72	0.97
STSO-1022	Soil	05/01/04	Cs-137	829.10 ± 7.60	836.20 ± 83.62	585.34 - 1088.00	0.99
STSO-1022	Soil	05/01/04	K-40	620.60 ± 29.50	604.00 ± 60.40	422.80 - 785.20	1.03
STSO-1022	Soil	05/01/04	Ni-63	254.80 ± 8.40	357.05 ± 35.70	249.94 - 464.17	0.71
STSO-1022 ^{d, e}	Soil	05/01/04	Tc-99	59.00 ± 6.00	117.66 ± 11.78	82.36 - 152.96	0.50
STSO-1022 ^{d, f}	Soil	05/01/04	U-233/4	24.70 ± 3.60	37.00 ± 3.70	25.90 - 48.40	0.67
STSO-1022 ^{d, f}	Soil	05/01/04	U-238	24.20 ± 3.50	38.85 ± 3.90	27.20 - 50.51	0.62
STSO-1022	Soil	05/01/04	Zn-65	743.00 ± 13.10	699.30 ± 69.90	489.51 - 909.09	1.06
STAP-1023	Air Filter	05/01/04	Gr. Alpha	0.06 ± 0.02	0.40 ± 0.04	0.00 - 0.80	0.16
STAP-1023	Air Filter	05/01/04	Gr. Beta	1.37 ± 0.08	1.20 ± 0.12	0.60 - 1.80	1.14
STAP-1024	Air Filter	05/01/04	Am-241	0.08 ± 0.03	0.10 ± 0.01	0.07 - 0.13	0.80
STAP-1024	Air Filter	05/01/04	Co-57	2.07 ± 0.06	2.40 ± 0.24	1.68 - 3.12	0.86
STAP-1024	Air Filter	05/01/04	Co-60	2.11 ± 0.08	2.30 ± 0.23	1.61 - 2.99	0.92
STAP-1024 ^g	Air Filter	05/01/04	Cs-134	1.78 ± 0.08	2.90 ± 0.29	2.03 - 3.77	0.61
STAP-1024	Air Filter	05/01/04	Cs-137	1.76 ± 0.08	2.00 ± 0.20	1.40 - 2.60	0.88
STAP-1024	Air Filter	05/01/04	Mn-54	2.84 ± 0.11	3.00 ± 0.30	2.10 - 3.90	0.95
STAP-1024	Air Filter	05/01/04	Pu-238	0.12 ± 0.01	0.13 ± 0.01	0.09 - 0.17	0.92
STAP-1024	Air Filter	05/01/04	Pu-239/40	0.08 ± 0.01	0.09 ± 0.01	0.06 - 0.12	0.92
STAP-1024	Air Filter	05/01/04	Sr-90	0.66 ± 0.19	0.80 ± 0.08	0.56 - 1.04	0.83
STAP-1024	Air Filter	05/01/04	U-233/4	0.23 ± 0.03	0.21 ± 0.02	0.15 - 0.27	1.10
STAP-1024	Air Filter	05/01/04	U-238	0.23 ± 0.03	0.22 ± 0.02	0.15 - 0.29	1.05
STAP-1024	Air Filter	05/01/04	Zn-65	3.90 ± 0.22	4.00 ± 0.40	2.80 - 5.20	0.98
STW-1026	Water	05/01/04	Am-241	0.56 ± 0.07	0.60 ± 0.06	0.42 - 0.78	0.93
STW-1026	Water	05/01/04	Co-57	184.10 ± 13.50	185.00 ± 18.50	129.50 - 240.50	1.00
STW-1026	Water	05/01/04	Co-60	164.40 ± 11.70	163.00 ± 16.30	114.10 - 211.90	1.01
STW-1026	Water	05/01/04	Cs-134	201.10 ± 14.00	208.00 ± 20.80	145.60 - 270.40	0.97
STW-1026	Water	05/01/04	Cs-137	245.50 ± 15.80	250.00 ± 25.00	175.00 - 325.00	0.98
STW-1026	Water	05/01/04	Fe-55	37.60 ± 25.30	33.00 ± 3.30	23.10 - 42.90	1.14
STW-1026	Water	05/01/04	H-3	76.50 ± 5.40	83.00 ± 8.30	58.10 - 107.90	0.92
STW-1026	Water	05/01/04	Mn-54	272.10 ± 17.50	267.00 ± 26.70	186.90 - 347.10	1.02
STW-1026	Water	05/01/04	Ni-63	94.40 ± 3.20	100.00 ± 10.00	70.00 - 130.00	0.94
STW-1026	Water	05/01/04	Pu-238	1.11 ± 0.09	1.20 ± 0.12	0.84 - 1.56	0.93
STW-1026	Water	05/01/04	Sr-90	6.20 ± 1.10	7.00 ± 0.70	4.90 - 9.10	0.89
STW-1026	Water	05/01/04	Tc-99	10.70 ± 1.00	10.00 ± 1.00	7.00 - 13.00	1.07

TABLE E-7 DOE's MIXED ANALYTE PERFORMANCE EVALUATION PROGRAM (MAPEP)^a
ENVIRONMENTAL, INC., 2004

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Lab Code	Type	Date	Analysis	Concentration ^b		Control Limits ^c	Ratio ^h Env/MAPEP
				Laboratory result	Known Activity		
STW-1026	Water	05/01/04	U-233/4	0.14 ± 0.02	0.12 ± 0.01	0.08 - 0.16	1.17
STW-1026	Water	05/01/04	U-238	0.94 ± 0.05	0.90 ± 0.09	0.63 - 1.17	1.04
STW-1026	Water	05/01/04	Zn-65	219.60 ± 27.90	208.00 ± 20.80	145.60 - 270.40	1.06
STW-1027	Water	05/01/04	Gr. Alpha	1.20 ± 0.10	1.20 ± 0.12	0.00 - 2.40	1.00
STW-1027	Water	05/01/04	Gr. Beta	4.30 ± 0.10	4.10 ± 0.41	2.05 - 6.15	1.05

^a Results obtained by Environmental, Inc. Midwest Laboratory as a participant in the Department of Energy's Mixed Analyte Performance Evaluation Program, Idaho Operations office, Idaho Falls, Idaho

^b All results are in Bq/kg or Bq/L as requested by the Department of Energy.

^c MAPEP results are presented as the known values and expected laboratory precision (1 sigma, 1 determination) and control limits as defined by the MAPEP.

^d The cause of the deviation seems to be incomplete dissolution of the sample.

^e A spiked soil sample was prepared. Known activity; 32.98 pCi/g; laboratory result 33.47 pCi/g.

^f The sample was reanalyzed with the same results. Investigation is in progress.

^g Based on the results of gamma emitting isotopes (Cs-137 and Co-60), the filter geometry appears to be biased by -10%. Addition of the summation peak at 1400 KeV results in a recalculation of 2.12 ± 0.15 Bq/sample.

^h Ratio of Environmental, Inc. to MAPEP results.