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Peach Bottom Atomic Power Station Unit Nos. 2 and 3
Facility Operating License Nos. DPR-44 and DPR-56
NRC Docket Nos. 50-277 and 50-278

SUBJECT: Annual Radiological Environmental Operating Report No. 65
January 1, 2007 through December 31, 2007

In accordance with the requirements of Section 5.6.2 of the Peach Bottom Atomic Power Station, Units 2 and 3 Technical Specifications, this letter submits the Annual Radiological Environmental Operating Report No. 65. This report provides the 2007 results for the Radiological Environmental Monitoring Program (REMP) as called for in the Offsite Dose Calculation Manual.

In assessing the data collected for the REMP, we have concluded that the operation of PBAPS, Units 2 and 3, had no adverse impact on the environment. Low levels of Cs-137 were found downstream in sediment sampling location. Calculated doses were at small fractions of 10CFR50 limits.

There are no commitments contained in this letter.

If you have any questions or require additional information, please do not hesitate to contact us.

Sincerely,

Joseph P. Grimes
Site Vice President
Peach Bottom Atomic Power Station

JPG/LJL/MT/bcb

Enclosure

ccn 08-30

cc: S. J. Collins, Administrator, Region I, US NRC
G. F. Wunder, Project Manager, US NRC
F. Bower, US NRC Senior Resident Inspector, PBAPS A4

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NRR

Docket No: 50-277
50-278

PEACH BOTTOM ATOMIC POWER STATION
UNITS 2 and 3

Annual Radiological
Environmental Operating Report

Report No. 65

1 January Through 31 December 2007

Prepared By

Exelon SM
Nuclear

Peach Bottom Atomic Power Station
Delta, PA 17314

May 2008

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I. Executive Summary

In 2007, the dose from both liquid and gaseous effluents was conservatively calculated for the Maximum Exposed Member of the Public for PBAPS. The results of those calculations and their comparison to the allowable limits were as follows:

Effluent	Applicable Organ	Estimated Dose	Age Group	Location		% of Applicable Limit	Limit	Unit
				Distance (meters)	Direction (toward)			
Noble Gas	Gamma - Air Dose	3.22E-02	All	1097	SSE	1.61E-01	20	mRad
Noble Gas	Beta – Air Dose	2.379E-02	All	1097	SSE	5.95E-02	40	mRad
Iodine, Particulate & Tritium	Thyroid	1.776E+00	Infant	1097	SSE	5.92E+00	30	mrem
Direct Radiation	Total Body	<LLD	All	1150	SSE	<LLD	22	mrem
Liquid	Total Body	1.502E-02	Adult	Site Boundary		2.50E-01	6	mrem
Liquid	GI-LLI	3.695E-02	Adult	Site Boundary		1.85E-01	20	mrem

Doses calculated were well below all ODCM limits.

This report on the Radiological Environmental Monitoring Program conducted for the Peach Bottom Atomic Power Station (PBAPS) by Exelon Nuclear covers the period 1 January 2007 through 31 December 2007. During that time period, 1,121 analyses were performed on 958 samples.

Surface water samples were analyzed for concentrations of tritium and gamma emitting nuclides. No tritium, fission or activation products were found.

Drinking water samples were analyzed for concentrations of gross beta, tritium, and gamma emitting nuclides. No fission or activation products were found. Gross beta activities detected were consistent with those observed in previous years. No tritium was found.

The remaining sample media representing the aquatic environment included fish and sediment samples. These media were analyzed for concentrations of gamma emitting nuclides. Fish samples showed no detectable fission or activation products from the operation of PBAPS. Cesium-137 activity was found at one sediment location and was consistent with data from previous years. Low levels of Cs-137 activity were detected in sediment during extended sampling. The dose to a teenager's skin from the sediment pathway was calculated to be 4.81 E-04 mrem/year, which represents 0.002% of the allowable fraction of 10 CFR 50,

Appendix I limits. The dose to a teenager's whole body from the sediment pathway was calculated to be 4.12 E-04 mrem/year, which represents 0.007% of the allowable fraction of 10 CFR 50, Appendix I limits. The most likely source of the contamination is the RHR Heat Exchanger.

The atmospheric environment was divided into two parts for examination: airborne and terrestrial. Sample media for determining airborne effects included air particulates and air iodine samples. Analyses performed on air particulate samples included gross beta and gamma spectrometry. No fission or activation products were found. The gross beta results were consistent with results from the previous years. Furthermore, no notable differences between control and indicator locations were observed. These findings indicate no measurable effects from the operation of PBAPS.

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

Examination of the terrestrial environment was accomplished by analyzing milk and food product samples. Milk samples were analyzed for low level concentrations of Iodine-131 and gamma emitting nuclides. No activation or fission products were found. Food product samples were analyzed for concentrations of gamma emitting nuclides. No Peach Bottom activation or fission products were detected.

Ambient gamma radiation levels were measured quarterly throughout the year. Measurements were below 10 mR/standard month and the results were consistent with those measured in previous years.

The results of the TLD monitoring program were used to determine if the Independent Spent Fuel Storage Installation (ISFSI) had any measurable impact on the dose rate in the environs.

In assessing all the data gathered for this report and comparing these results with preoperational data, it was evident that the operation of PBAPS had no adverse radiological impact on the environment.

The second Annual Radiological Groundwater Protection Program Report (ARGPPR) is found in Appendix F. The report concludes that there are no active releases into the groundwater from the operation of PBAPS.

II. Introduction

Peach Bottom Atomic Power Station (PBAPS) is located along the Susquehanna River between Holtwood and Conowingo Dams in Peach Bottom Township, York County, Pennsylvania. The initial loading of fuel into Unit 1, a 40 MWe (net) high temperature, gas-cooled reactor, began on 5 February 1966, and initial criticality was achieved on 3 March 1966. Shutdown of Peach Bottom Unit 1 for decommissioning was on 31 October 1974. For the purposes of the monitoring program, the beginning of the operational period for Unit 1 was considered to be 5 February 1966. A summary of the Unit 1 preoperational monitoring program was presented in a previous report [1]. PBAPS Units 2 and 3 are boiling water reactors, each with a power output of approximately 1170 MWe. The first fuel was loaded into Peach Bottom Unit 2 on 9 August 1973. Criticality was achieved on 16 September 1973, and full power was reached on 16 June 1974. The first fuel was loaded into Peach Bottom Unit 3 on 5 July 1974. Criticality was achieved on 7 August 1974, and full power was first reached on 21 December 1974. Preoperational summary reports [2][3] for Units 2 and 3 have been previously issued and summarize the results of all analyses performed on samples collected from 5 February 1966 through 8 August 1973.

A Radiological Environmental Monitoring Program (REMP) for PBAPS was initiated in 1966. This report covers those analyses performed by Teledyne Brown Engineering (TBE), Global Dosimetry, and Environmental Inc. (Midwest Labs) on samples collected during the period 01 January 2007 through 31 December 2007.

A. Objectives

The objectives of the REMP are:

1. Provide data on measurable levels of radiation and radioactive materials in the site environs.

2. Evaluate the relationship between quantities of radioactive material released from the plant and resultant radiation doses to individuals from principal pathways of exposure.

B. Implementation of the Objectives

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 plant Station operation to assess Station radiological effects (if any) on man and the environment.

III. Program Description

A. Sample Collection

Normandeau Associates Inc., (NAI), collected samples for the PBAPS REMP for Exelon Nuclear. This section describes the general collection methods used by NAI to obtain environmental samples for the PBAPS REMP in 2007. Sample locations and descriptions can be found in Table B-1, and Figures B-1 through B-3, Appendix B. The collection procedures used by NAI are listed in Table B-2, Appendix B.

Aquatic Environment

The aquatic environment was evaluated by performing radiological analyses on samples of surface water, drinking water, fish, and sediment. Surface water from two locations (1LL and 1MM) and drinking water from two locations (4L and 6I) were collected weekly by automatic sampling equipment. Weekly samples from each of the surface and drinking water locations were composited into a separate monthly sample for analysis. Approximately, two quarts of water were removed from the weekly sample container and placed into a clean two-gallon polyethylene bottle to form a monthly composite. Control locations were 1LL and 6I. Fish samples comprising the flesh from two groups: Bottom Feeder (catfish) and Predator (smallmouth bass and largemouth bass) were collected semiannually from two locations: 4 and 6 (control). Sediment samples composed of recently deposited substrate were collected semiannually at three locations: 4J, 4T and 6F (control). An additional set of sediment samples was collected in December to validate results.

Atmospheric Environment

The atmospheric environment was evaluated by performing radiological analyses on air particulate, airborne iodine and milk samples. Air particulate and air iodine samples were collected and analyzed weekly from five locations (1B, 1Z, 1C, 3A, and 5H2). The control location was 5H2. 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 1 cubic foot per minute. The filters were replaced weekly and sent to the laboratory for analysis.

Milk samples were collected biweekly at six locations (J, O, R, S, T and U) from April through November and monthly from December through March. Six additional locations (B, C, D, E, F, L and P) were sampled quarterly. Locations B, C, E, F and T were controls. 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.

Food product samples were collected annually at three locations (1Q, 2B, and 55) in October. All samples were collected in new unused plastic bags and shipped promptly to the laboratory.

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 PBAPS site as follows:

A site boundary ring, consisting of 19 locations (1L, 1P, 1A, 1Q, 1D, 2, 1M, 1R, 1I, 1C, 1J, 1K, 1F, 40, 1NN, 1H, 1G, 1B, and 1E), 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 PBAPS releases.

An intermediate distance ring, consisting of 19 locations (15, 22, 44, 32, 45, 14, 17, 31A, 4K, 23, 27, 48, 3A, 49, 50, 51, 26, 6B, and 42), extending to approximately 5 miles from the site and designed to measure possible exposures to close-in population.

The balance of nine locations (2B, 43, 5, 16, 24, 46, 47, 18, and 19) representing control and special interests areas such as population centers, schools, etc.

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 36 ten-degree sectors around the site, where estimated annual dose from PBAPS, if any, would be more significant;

3. On hills free from local obstructions and within sight of the vents (where practical);

4. And near the dwelling closest to the vents in the prevailing down wind direction.

Two TLDs – each comprised of three $CaSO_4$ themoluminescent phosphors enclosed in plastic – were placed at each location in a Formica "birdhouse" or polyethylene jar located approximately six feet above ground level. The TLD sets were exchanged quarterly, then sent to the laboratory for analysis.

B. Sample Analysis

This section describes the general analytical methods used by Teledyne Brown Engineering and Environmental Inc. to analyze the environmental samples for radioactivity for the PBAPS REMP in 2007. The analytical procedures used by the laboratories are listed in Table B-2, Appendix B.

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

1. Concentrations of beta emitters in drinking water and air particulates.
2. Concentrations of gamma emitting nuclides in surface and drinking water, air particulates, milk, fish, sediment and food products.
3. Concentrations of tritium in surface and drinking water.
4. Concentrations of I-131 in air and milk.
5. Ambient gamma radiation levels at various site environs.

C. Data Interpretation

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

1. <u>Lower Limit of Detection and Minimum Detectable Concentration</u>

   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 PBAPS detection capabilities for environmental sample analysis.

The minimum detectable concentration (MDC) 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 will result in sample activity being lower than the background activity effecting a negative number. An MDC 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 and drinking 12 nuclides, Mn-54, Co-58, Fe-59, Co-60, Zn-65, Zr-95, Nb-95, I-131, 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 product seven nuclides, Be-7, Mn-54, Co-58, Co-60, 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 2007 the PBAPS REMP had a sample collection recovery rate of better than 99%. The exceptions to this program are listed below:

1. The BVS sampler was inoperable; manual sampling was conducted for the following sample:

   02/14/07, Location 1LL

2. The BVS sampler was inoperable; manual sampling was conducted for the following sample:

   02/14/07, Location 1MM

3. The BVS sampler was not delivering samples; manual sampling was conducted for the following sample:

   03/08/07, Location 1MM

4. Positive values of H-3 (185 pCi/L – 150 pCi/L background = 35 pCi/L) were found in the Precipitation Water Abandoned Weather Station sample. Doses calculated are negligible.

   01/01/07 – 03/31/07, Location 1A

5. Vegetables were not available for the following sample:

   05/31/07, Location 2B

6. TLD box was destroyed, possibly due to vehicle impact. The box was replace; the TLDs were not destroyed for the following sample:

   07/02/07, Location 31A

7. Two cracks were discovered on the BVC sampler for the following sample:

   10/25/07, Location 1MM

8. Positive values of H-3 were found in the Precipitation Water Abandoned Weather Station sample. Doses calculated are negligible.

   11/01/07, Location 1A (155 pCi/L – 150 pCi/L background = 35 pCi/L)
   11/01/07, Location 4M (213 pCi/L – 150 pCi/L background = 63 pCi/L

9. Sediment sample rerun to verify Co-60 activity for the following sample:

   11/29/07, Location 4J

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 a recurrence. Occasional equipment breakdowns and power outages were unavoidable.

E. Program Changes

Starting in 2007, the mean and two standard deviation values are calculated using the positive values only.

Milk farm Station O went out of business and was replaced by milk farm Station U.

Milk farm Station B went out of business and was replaced by milk farm Station F

IV. Results and Discussion

A. Aquatic Environment

1. Surface Water

Samples were taken from a continuous sampler at two locations (1LL and 1MM) on a monthly schedule. Of these locations, 1MM located downstream, could be affected by Peach Bottom's effluent releases. The following analyses were performed:

Tritium

Monthly samples from both locations were composited quarterly and analyzed for tritium activity (Table C-I.1, Appendix C). No tritium activity was detected.

Gamma Spectrometry

Samples from both locations were analyzed for gamma emitting nuclides (Table C-I.2, Appendix C). All nuclides were less than the MDC.

2. Drinking Water

Monthly samples were collected from continuous water samplers at two locations (4L and 6I). One location (4L) could be affected by Peach Bottom's effluent releases. The following analyses were performed:

Gross Beta

Samples from both locations were analyzed for concentrations of total gross beta activity (Tables C-II.1 and Figures C-1 Appendix C). Gross beta was detected in 19 of 24 samples. The values ranged from 2.5 to 6.1 pCi/l. Concentrations detected were generally below those detected in previous years.

Tritium

Monthly samples from both locations were composited quarterly and analyzed for tritium activity (Table C-II.2, Appendix C). No tritium activity was detected.

Gamma Spectrometry

Samples from both locations were analyzed for gamma emitting nuclides (Table C-II.3, Appendix C). All nuclides were less than the MDC.

3. Fish

Fish samples comprised of bottom feeder (catfish) and predator (bass) were collected at two locations (4 and 6) semiannually. Location 4 could be affected by Peach Bottom's effluent releases. The following analysis was performed:

Gamma Spectrometry

The edible portion of fish samples from both locations was analyzed for gamma emitting nuclides (Table C-III.1, Appendix C). Naturally occurring K-40 was found at all stations and ranged from 2,010 to 3,690 pCi/kg wet and was consistent with levels detected in previous years. No fission or activation products were found. Historical levels of Cs-137 are shown in Figure C-3, Appendix C.

4. Sediment

Aquatic samples were collected at three locations (4J, 4T and 6F) semiannually. Of these locations two, 4J and 4T located downstream, could be affected by Peach Bottom's effluent releases. The following analysis was performed:

Gamma Spectrometry

Sediment samples from all three locations were analyzed for gamma emitting nuclides (Table C-IV.1, Appendix C). Nuclides detected were naturally occurring Be-7, K-40, Ra-226, Th-228 and Th-232. Potassium-40 was found in all locations and ranged from 11,200 to 23,100 pCi/kg dry. Cobalt-60 was found in one sample at location 4J with a concentration of 99 pCi/kg dry with a recount concentration of 162 pCi/kg dry. The fission product Cs-137 was found at location 4T with a concentration of 120 pCi/kg dry. The activity of Cs-137 detected was consistent with those detected in the preoperational years. No other Peach Bottom fission or activation products were found. The shoreline doses due to the activity in the sediment were calculated using the methodology of Regulatory Guide 1.109, Calculation of Annual Doses to Man From Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance With 10 CFR Part 50, Appendix I. The following nuclides concentrations (Pu-238, Pu-239, Pu-241, Am-241, Cm-242 and Cm-244, C-14, Ni-63 and Tc-99) were scaled from 10 CFR 61 analyses and added to the dose calculations. Based on the Co-60 concentration of 162 pCi/kg, the dose to a teenager's skin from the sediment pathway was calculated to be 1.74 E-03 mrem/year, which represents 0.009% of the allowable fraction of 10 CFR 50, Appendix I limits. The dose to a teenager's whole body from the sediment pathway was calculated to be 1.48 E-03 mrem/year, which represents 0.025% of the allowable fraction of 10 CFR 50, Appendix I limits. Based on the Cs-137 concentration of 120 pCi/kg, the dose to a teenager's skin from the sediment pathway was calculated to be 2.05 E-03 mrem/year, which represents 0.01% of the allowable fraction of 10 CFR 50, Appendix I limits. The dose to a teenager's whole body from the sediment pathway was calculated to be 1.75 E-03 mrem/year, which represents 0.029% of the allowable fraction of 10 CFR 50, Appendix I limits. Doses were neglible.

5. Extended Sediment

Extended sediment sampling at various distances downstream of

PBAPS discharge was done in 2007. Low levels of Cs-137 activity were detected in extended sediment samples. Cesium-137 was found in four of 15 samples and ranged from 126 to 183 pCi/kg dry. The dose to a teenager's skin from the sediment pathway was calculated to be 4.81 E-04 mrem/year, which represents 0.002% of the allowable fraction of 10 CFR 50, Appendix I limits. The dose to a teenager's whole body from the sediment pathway was calculated to be 4.12 E-04 mrem/year, which represents 0.007% of the allowable fraction of 10 CFR 50, Appendix I limits. The most likely source of the contamination is the RHR Heat Exchangers.

B. Atmospheric Environment

1. Airborne

a. Air Particulates

Continuous air particulate samples were collected from five locations on a weekly basis. The five locations were separated into three groups: Group I represents locations within the PBAPS site boundary (1B, 1Z and 1C), Group II represents the location at an intermediate distance from the PBAPS site (3A), and Group III represents the control location at a remote distance from PBAPS (5H2). The following analyses were performed.

Gross Beta

Weekly samples were analyzed for concentrations of beta emitters (Tables C-V.1 and C-V.2 and Figures C-5 and C-6, 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 PBAPS. The results from the On-Site locations (Group I) ranged from <7 to 35 E-3 pCi/m^3, with a mean of 19 E-3 pCi/m^3. The results from the Intermediate Distance location (Group II) ranged from <6 to 33 E-3 pCi/m^3 with a mean of 18 E-3 pCi/m^3. The results from the Distant location (Group III) ranged from 8 to 27 E-3 pCi/m^3 with a mean of 16 E-3 pCi/m^3 A comparison of the weekly mean values for 2007 indicate no notable differences among the three groups (Figure C-5, Appendix C). In addition, a comparison of the 2007 air

particulate data with previous years data indicate no effects from the operation of PBAPS (Figure C-4, Appendix C).

Gamma Spectrometry

Weekly samples were composited quarterly and analyzed for gamma emitting nuclides (Table C-V.3, Appendix C). Naturally occurring Be-7 due to cosmic ray activity was detected in all 20 samples. These values ranged from 58 to 124 E-3 pCi/m^3. All other nuclides were less than the MDC.

b. Airborne Iodine

Continuous air samples were collected from five locations (1B, 1Z, 1C, 3A, and 5H2) and analyzed weekly for I-131 (Table C-VI.1, Appendix C). All results were less than the MDC.

2. Terrestrial

a. Milk

Samples were collected from six locations (J, O, R, S, T and U) biweekly April through November and monthly December through March. Samples from seven additional locations (B, C, D, E, F, L and P) were taken quarterly. The following analyses were performed:

Iodine-131

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

Gamma Spectrometry

Each milk sample from locations J, O, R, S, T and U was analyzed for concentrations of gamma emitting nuclides (Table C-VII.2, Appendix C).

Naturally occurring K-40 was found in all samples and ranged from 1,050 to 2,210 pCi/l. All other nuclides were less than the MDC. Comparison of the 2007 Cs-137 milk data with previous years data indicate no effects from the operation of PBAPS (Figure C-7 (Appendix C).

b. Food Products

Food product samples were collected at three locations (1Q, 2B and 55) when available. Of these locations two, 2B and 55, could be affected by Peach Bottom's effluent releases. The following analysis was performed:

Gamma Spectrometry

Each food product sample from locations 1Q, 2B and 55 was analyzed for concentrations of gamma emitting nuclides (Table C-VIII.1, Appendix C).

Nuclides detected were naturally occurring Be-7, K-40, Ra-226, Ac-228, Th-228 and Th-232. Naturally occurring Be-7 and K-40 activity was found at all locations. Beryllium-7 activity was found in 28 of 39 samples and ranged from 172 to 2,050 pCi/kg wet. Potassium-40 activity was found in all samples and ranged from 1,760 to 9,260 pCi/kg wet. All other nuclides were less than the MDC.

C. Ambient Gamma Radiation

Ambient gamma radiation levels were measured using Panasonic 814 ($CaSO_4$) thermoluminescent dosimeters. Forty-seven TLD locations were established around the site. Results of TLD measurements are listed in Tables C-IX.1 through C-IX.3 and Figure C-7, Appendix C.

All TLD measurements were below 10 mR per standard month, with a range of 1.3 to 8.4 mR per standard month. A comparison of the Site Boundary and Intermediate Distance data to the Control locations data indicate that the ambient gamma radiation levels from the Control locations 16, 18, 19 and 24 were essentially the same as the other locations. The historical ambient gamma radiation data from the Control locations was plotted along with similar data from the Site and the Intermediate Distance locations (Figure C-7, Appendix C)

D. Independent Spent Fuel Storage Installation (ISFSI)

The Independent Spent Fuel Storage Installation (ISFSI) was utilized beginning June 2000. As of 2007, a total of 37 TN-68 casks, each loaded with 68 fuel bundles were in place on the ISFSI pad. As part of the overall REMP, additional TLDs were placed at locations near the site boundary and at the nearest resident. Although there was a general trend for increased dose at all REMP locations (see Figure C-7, Appendix C), Onsite location

1R, which is located on the hillside overlooking the ISFSI showed an increase trend of 0.3 to 0.5 mR per standard month when compared to controls (Figure C-8, Appendix C). Location 2B, which represents the nearest residence showed no increase in dose rates when compared to controls. Data from location 2B is used to demonstrate compliance to both 40CFR190 and 10CFR72.104 limits.

E. Land Use Census

A Land Use Survey conducted during the 2007 growing season around the Peach Bottom Atomic Power Station (PBAPS) was performed by Normandeau Associates, Inc., NAI Environmental Services Division for Exelon Nuclear to comply with Section 3.8.E.2 of PBAPS's Offsite Dose Calculation Manual Specifications (ODCMS) and Bases. The purpose of the survey was to document the nearest milk producing animal in each of the sixteen meteorological sectors out to five miles. In addition, the nearest residence and garden of >500 square feet were documented. The distance and direction of all locations were positioned using Global Positioning System (GPS) technology. The results of this survey are summarized below.

Distance in Miles from the PBAPS Reactor Buildings			
Sector	Residence Miles	Garden Miles	Milk Farm Miles
1 N	2.4	2.8	2.7
2 NNE	2.1	2.1	2.1
3 NE	2.0	2.0	2.1
4 ENE	2.0	2.4	2.1
5 E	2.0	2.8	2.8
6 ESE	3.9	3.9	3.8
7 SE	3.7	3.7	3.6
8 SSE	0.7	0.7	-
9 S	1.0	1.0	-
10 SSW	1.2	1.8	2.7
11 SW	0.9	0.9	4.6
12 WSW	0.8	-	0.9
13 W	1.0	1.0	1.0
14 WNW	0.5	0.8	4.2
15 NW	0.6	1.8	1.8
16 NNW	1.0	-	-

F. Summary of Results – Inter-Laboratory Comparison Program

The primary and secondary laboratories analyzed Performance Evaluation (PE) samples of air particulate, air iodine, milk, soil, food products and water matrices (Appendix E). The PE samples, supplied by Analytics Inc., Environmental Resource Associates (ERA) and DOE's Mixed Analyte

Performance Evaluation Program (MAPEP), were evaluated against the following pre-set acceptance criteria:

1. Analytics Evaluation Criteria

   Analytics' evaluation report provides a ratio of laboratory results and Analytics' known value. Since flag values are not assigned by Analytics, TBE-ES evaluates the reported ratios based on internal QC requirements, which are based on the DOE MAPEP criteria.

2. ERA Evaluation Criteria

   ERA's evaluation report provides an acceptance range for control and warning limits with associated flag values. ERA's acceptance limits are established per the USEPA, NELAC, state specific PT program requirements or ERA's SOP for the Generation of Performance Acceptance Limits, as applicable. The acceptance limits are either determined by a regression equation specific to each analyte or a fixed percentage limit promulgated under the appropriate regulatory document.

3. DOE Evaluation Criteria

   MAPEP's evaluation report provides an acceptance range with associated flag values.

   The MAPEP defines three levels of performance: Acceptable (flag = "A"), Acceptable with Warning (flag = "W"), and Not Acceptable (flag = "N"). Performance is considered acceptable when a mean result for the specified analyte is ± 20% of the reference value. Performance is acceptable with warning when a mean result falls in the range from ±20% to ±30% of the reference value (i.e., 20% < bias < 30%). If the bias is greater than 30%, the results are deemed not acceptable.

For the primary laboratory, 17 out of 19 analytes met the specified acceptance criteria. Two samples did not meet the specified acceptance criteria for the following reasons:

1. Teledyne Brown Engineering's Analytics March 2007 I-131 in charcoal result of 34.7 pCi was lower than the known value of 71.3, resulting in a found to known ratio of 0.49. A new technician counted the charcoal cartridge on the back rather than the face side. Due to decay of the I-131, recounting could not be performed. Counting the 2nd quarter Analytics charcoal cartridge on the face

and the back resulted in approximately 220% more activity on the face of the cartridge. This indicates that we would have had acceptable results (ratio approximately 1.07) if the cartridge had been counted on the face side.

2. Teledyne Brown Engineering's ERA July 2007 Cs-134 result of 57.6 pCi/L exceeded the lower acceptance limit of 60.2 pCi/L. The high activity of the sample resulted in the lower acceptance limit of 8.66, although the ratio of found to known was 83.6%, which is considered acceptable by TBE.

For the secondary laboratory, 18 out of 19 analytes met the specified acceptance criteria. One sample did not meet the specified acceptance criteria for the following reasons:

1. Environmental Inc.'s ERA March 2007 air particulate Cs-137 result of 345.3 pCi/L exceeded the upper control limit of 336 pCi/L. The reported result was calculated using composite filter geometry rather than the single filter geometry. The recalculated result of 305.8 pCi/filter fell within the acceptance limits.

The Inter-Laboratory Comparison Program provides evidence of "in control" counting systems and methods, and that the laboratories are producing accurate and reliable data.

V. References

1. Preoperational Environs Radioactivity Survey Summary Report, March 1960 through January 1966. (September 1967).

2. Interex Corporation, Peach Bottom Atomic Power Station Regional Environs Radiation Monitoring Program Preoperational Summary Report, Units 2 and 3, 5 February 1966 through 8 August 1973, June 1977, Natick, Massachusetts.

3. Radiation Management Corporation Publication, Peach Bottom Atomic Power Station Preoperational Radiological Monitoring Report for Unit 2 and 3, January 1974, Philadelphia, Pennsylvania.

2. Teledyne Brown Engineering's MAPEP Series 15 January 2006 Sr-90 in vegetation result of 2.22 Bq/kg exceeded the upper acceptance range of 2.029 Bq/kg. The samples were analyzed in triplicate and the results averaged. One high result of 2.43 Bq/kg biased the submitted results on the high side. TBE was unable to determine the cause for the higher result. The Sr-90 in vegetation results for MAPEP Series 14 and MAPEP Series 16 were acceptable. No client samples were analyzed during the MAPEP Series 14 time period.

3. Teledyne Brown Engineering's MAPEP Series 15 January 2006 Pu-238 and Pu-239/240 in vegetation result of 2.22 Bq/kg failed the required acceptance ranges. TBE was evaluating the current preparation method for vegetation samples, which proved insufficient for the analyses. TBE does not perform isotopic Pu on client's vegetation samples.

For the secondary laboratory, 20 out of 25 analytes met the specified acceptance criteria. Seven samples did not meet the specified acceptance criteria for the following reasons:

1. Environmental Inc.'s ERA November 2006 water I-131 result of 28.4 pCi/L exceeded the upper control limit of 27.3 pCi/L. The reported result was an average of three analyses, results ranged from 25.36 pCi/L to 29.23 pCi/L. A fourth analysis was performed, with a result of 24.89 pCi/L.

2. Environmental Inc.'s MAPEP January 2006 vegetation Pu-238 result of 0.08 Bq/sample exceeded the lower control limit of 0.10 Bq/sample due to incomplete dissolution of the sample.

3. Environmental Inc.'s MAPEP January 2006 air particulate Pu-238 result of 0.03 Bq/sample exceeded the lower control limit of 0.05 Bq/sample due to incomplete dissolution of the sample.

4. Environmental Inc.'s MAPEP January 2006 soil Pu-238, Pu-239/240, U-233/234 and U-238 results of 14.6, 14.6, 13.5 and 15.4 Bq/kg, respectively, exceeded the lower control limits of 42.81, 32.09, 25.9 and 27.2 Bq/kg, respectively, due to incomplete dissolution of the sample.

The Inter-Laboratory Comparison Program provides evidence of "in control" counting systems and methods, and that the laboratories are producing accurate and reliable data.

V. References

1. Preoperational Environs Radioactivity Survey Summary Report, March 1960 through January 1966. (September 1967).

2. Interex Corporation, Peach Bottom Atomic Power Station Regional Environs Radiation Monitoring Program Preoperational Summary Report, Units 2 and 3, 5 February 1966 through 8 August 1973, June 1977, Natick, Massachusetts.

3. Radiation Management Corporation Publication, Peach Bottom Atomic Power Station Preoperational Radiological Monitoring Report for Unit 2 and 3, January 1974, Philadelphia, Pennsylvania.

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APPENDIX A

RADIOLOGICAL ENVIRONMENTAL MONITORING REPORT SUMMARY

TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY FOR ANNUAL SUMMARY FOR THE PEACH BOTTOM ATOMIC POWER STATION, 2007

Name of Facility: PEACH BOTTOM ATOMIC POWER STATION **DOCKET NUMBER: 50-277 & 50-278**
Location of Facility: YORK COUNTY PA **REPORTING PERIOD: 2007**

MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSIS PERFORMED	NUMBER OF ANALYSIS PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	INDICATOR LOCATIONS MEAN(M) (F) RANGE	CONTROL LOCATION MEAN(M) (F) RANGE	LOCATION WITH HIGHEST ANNAUL MEAN(M) MEAN(M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
SURFACE WATER (PCI/LITER)	H-3	8	200	<LLD	<LLD	-	-	0
	GAMMA	24						
	MN-54		15	<LLD	<LLD	-	-	0
	CO-58		15	<LLD	<LLD	-	-	0
	FE-59		30	<LLD	<LLD	-	-	0
	CO-60		15	<LLD	<LLD	-	-	0
	ZN-65		30	<LLD	<LLD	-	-	0

THE MEAN AND 2 STANDARD DEVIATION VALUES ARE CALCULATED USING THE POSITIVE VALUES
FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES (F)

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SURFACE WATER (PCI/LITER)	NB-95		15	<LLD	<LLD	-	-	0
	ZR-95		30	<LLD	<LLD	-	-	0
	I-131		15	<LLD	<LLD	-	-	0
	CS-134		15	<LLD	<LLD	-	-	0
	CS-137		18	<LLD	<LLD	-	-	0
	BA-140		60	<LLD	<LLD	-	-	0
SURFACE WATER	LA-140		15	<LLD	<LLD	-	-	0

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DRINKING WATER (PCI/LITER)	GR-B	24	4	3.7 (9/12) (2.5/6.1)	2.8 (10/12) (2/3.8)	3.7 (9/12) (2.5/6.1)	4L INDICATOR CONOWINGO DAM EL 33' MSL 8.66 MILES SE OF SITE	0
	H-3	8	200	<LLD	<LLD	-	-	0
	GAMMA	24						
	MN-54		15	<LLD	<LLD	-	-	0
	CO-58		15	<LLD	<LLD	-	-	0
	FE-59		30	<LLD	<LLD	-	-	0
	CO-60		15	<LLD	<LLD	-	-	0

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DRINKING WATER (PCI/LITER)	ZN-65		30	<LLD	<LLD	-	-	0
	NB-95		15	<LLD	<LLD	-	-	0
	ZR-95		30	<LLD	<LLD	-	-	0
	I-131		15	<LLD	<LLD	-	-	0
	CS-134		15	<LLD	<LLD	-	-	0
	CS-137		18	<LLD	<LLD	-	-	0
	BA-140		60	<LLD	<LLD	-	-	0

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DRINKING WATER (PCI/LITER)	LA-140		15	<LLD	<LLD	-	-	0
BOTTOM FEEDER (PCI/KG WET)	GAMMA	4						
	K-40		NA	2855 (2/2) (2850/2860)	2815 (2/2) (2010/3620)	2855 (2/2) (2850/2860)	4 INDICATOR CONOWINGO POND LOCATED IN CONOWINGO	0
	MN-54		130	<LLD	<LLD	-	-	0
	CO-58		130	<LLD	<LLD	-	-	0
	FE-59		260	<LLD	<LLD	-	-	0
	CO-60		130	<LLD	<LLD	-	-	0

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BOTTOM FEEDER (PCI/KG WET)	ZN-65		260	<LLD	<LLD	-	-	0
	CS-134		130	<LLD	<LLD	-	-	0
	CS-137		150	<LLD	<LLD	-	-	0
PREDATOR (PCI/KG WET)	GAMMA K-40	4	NA	3585 (2/2) (3480/3690)	3055 (2/2) (2870/3240)	3585 (2/2) (3480/3690)	4 INDICATOR CONOWINGO POND LOCATED IN CONOWINGO	0
	MN-54		130	<LLD	<LLD	-	-	0
	CO-58		130	<LLD	<LLD	-	-	0

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PREDATOR (PCI/KG WET)	FE-59		260	<LLD	<LLD	-	-	0
	CO-60		130	<LLD	<LLD	-	-	0
	ZN-65		260	<LLD	<LLD	-	-	0
	CS-134		130	<LLD	<LLD	-	-	0
PREDATOR (PCI/KG WET)	CS-137		150	<LLD	<LLD	-	-	0
SEDIMENT (PCI/KG DRY)	GAMMA K-40	6	NA	17750 (4/4) (11200/23100)	14450 (2/2) (13000/15900)	23100 (2/2) (23100/23100)	4T INDICATOR CONOWINGO POND NEAR CONOWINGO DAM 7.92 MILES SE OF SITE	0

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SEDIMENT (PCI/KG DRY)	MN-54		NA	<LLD	<LLD	-	-	0
	CO-58		NA	<LLD	<LLD	-	-	0
	CO-60		NA	131 (2/5) (99/162)	<LLD	131 (2/3) (99/162)	4J INDICATOR CONOWINGO POND NEAR BERKIN'S RUN 1.39 MILES SE OF SITE	0
	CS-134		150	<LLD	<LLD	-	-	0
	CS-137		180	120 (1/4) (120)	<LLD	120 (1/2) (120)	4T INDICATOR CONOWINGO POND NEAR CONOWINGO DAM 7.92 MILES SE OF SITE	0
SEDIMENT EXTENDED (PCI/KG DRY)	K-40	15	NA	17420 (15/15) (10200/22500)	NA	22500 (1/1)	15000 W INDICATOR	0
	MN-54		NA	<LLD	NA	-	-	0

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SEDIMENT EXTENDED (PCI/KG DRY)	CO-58		NA	<LLD	NA	-	-	0
	CO-60		NA	<LLD	NA	-	-	0
	CS-134		150	<LLD	NA	-	-	0
	CS-137		180	154.3 (4/15) (126/183)	NA	183 (1/1)	9000 W INDICATOR	0
AIR PARTICULATE (E-3 PCI/CU.METER)	GR-B	264	10	18 (262/264) (6/35)	NA	19 (52/53) (7/30)	1Z INDICATOR WEATHER STATION #1 0.26 MILES SE OF SITE	0
	GAMMA BE-7	20	NA	93.6 (20/20) (57.6/124)	NA	106 (4/4) (86.8/115)	3A INDICATOR DELTA PA SUBSTATION 3.62 MILES SW OF SITE	0

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AIR PARTICULATE (E-3 PCI/CU.METER)	MN-54		NA	<LLD	NA	-	-	0
	CO-58		NA	<LLD	NA	-	-	0
	CO-60		NA	<LLD	NA	-	-	0
	CS-134		50	<LLD	NA	-	-	0
	CS-137		60	<LLD	NA	-	-	0
AIR IODINE (E-3 PCI/CU.METER)	GAMMA I-131	264	70	<LLD	NA	-	-	0

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MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSIS PERFORMED	NUMBER OF ANALYSIS PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	INDICATOR LOCATIONS MEAN(M) (F) RANGE	CONTROL LOCATION MEAN(M) (F) RANGE	LOCATION WITH HIGHEST ANNAUL MEAN(M) MEAN(M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
MILK (PCI/LITER)	I-131	126	1	<LLD	<LLD	-	-	0
	GAMMA K-40	103	NA	1272 (72/72) (1050/2210)	1261 (31/31) (1100/1450)	1297 (21/21) (1130/1530)	S INDICATOR 3.61 MILES ESE OF SITE	0
	CS-134		15	<LLD	<LLD	-	-	0
	CS-137		18	<LLD	<LLD	-	-	0
	BA-140		60	<LLD	<LLD	-	-	0
	LA-140		15	<LLD	<LLD	-	-	0

THE MEAN AND 2 STANDARD DEVIATION VALUES ARE CALCULATED USING THE POSITIVE VALUES
FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES (F)

TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY FOR ANNUAL SUMMARY FOR THE PEACH BOTTOM ATOMIC POWER STATION, 2007

Name of Facility: PEACH BOTTOM ATOMIC POWER STATION **DOCKET NUMBER: 50-277 & 50-278**
Location of Facility: YORK COUNTY PA **REPORTING PERIOD: 2007**

MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSIS PERFORMED	NUMBER OF ANALYSIS PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	INDICATOR LOCATIONS MEAN(M) (F) RANGE	CONTROL LOCATION MEAN(M) (F) RANGE	LOCATION WITH HIGHEST ANNAUL MEAN(M) MEAN(M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
VEGETATION (PCI/KG WET)	GAMMA	39						
	BE-7		NA	678.1 (19/25) (172/2050)	492.3 (9/14) (198/975)	686.3 (8/13) (172/2050)	1Q INDICATOR NW SECTOR	0
	MN-54		NA	<LLD	<LLD	-	-	0
	CO-58		NA	<LLD	<LLD	-	-	0
	CO-60		NA	<LLD	<LLD	-	-	0
	I-131		60	<LLD	<LLD	-	-	0
	CS-134		60	<LLD	<LLD	-	-	0
	CS-137		80	<LLD	<LLD	-	-	0

THE MEAN AND 2 STANDARD DEVIATION VALUES ARE CALCULATED USING THE POSITIVE VALUES
FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES (F)

TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY FOR ANNUAL SUMMARY FOR THE PEACH BOTTOM ATOMIC POWER STATION, 2007

Name of Facility: PEACH BOTTOM ATOMIC POWER STATION **DOCKET NUMBER:** 50-277 & 50-278
Location of Facility: YORK COUNTY PA **REPORTING PERIOD:** 2007

MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSIS PERFORMED	NUMBER OF ANALYSIS PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	INDICATOR LOCATIONS MEAN(M) (F) RANGE	CONTROL LOCATION MEAN(M) (F) RANGE	LOCATION WITH HIGHEST ANNAUL MEAN(M) MEAN(M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
DIRECT RADIATION (MILLI-ROENTGEN/STD.MO.)	TLD-QUARTERLY	188	NA	5.6 (172/172) (1.3/8.4)	5.4 (16/16) (3.8/6.5)	7.6 (4/4) (7.1/8.4)	1R INDICATOR TRANSMISSION LINE HILL 0.53 MILES SSE	0

THE MEAN AND 2 STANDARD DEVIATION VALUES ARE CALCULATED USING THE POSITIVE VALUES
FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES (F)

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APPENDIX B

SAMPLE DESIGNATION AND LOCATIONS

TABLE B-1 Radiological Environmental Monitoring Program – Sampling Locations, Distance and Direction from Reactor Buildings, Peach Bottom Atomic Power Station, 2007

Location	Location Description	Distance & Direction from PBAPS Vents
A. Surface Water		
1LL	Peach Bottom Units 2 and 3 Intake - Composite (Control)	0.24 miles NE
1MM	Peach Bottom Canal Discharge -Composite	1.04 miles SE
B. Drinking (Potable) Water		
4L	Conowingo Dam EL 33' MSL - Composite	8.66 miles SE
6I	Holtwood Dam Hydroelectric Station - Composite (Control)	5.75 miles NW
C. Fish		
4	Conowingo Pond	Located in Conowingo Pond below the discharge
6	Holtwood Pond (Control)	Located in Holtwood Pond
D. Sediment		
4J	Conowingo Pond near Berkin's Run	1.39 miles SE
4T	Conowingo Pond near Conowingo Dam	7.92 miles SE
6F	Holtwood Dam (Control)	5.96 miles NW
E. Air Particulate - Air Iodine		
1B	Weather Station #2	0.49 miles NW
1Z	Weather Station #1	0.26 miles SE
1A	Weather Station #1	0.26 miles SE
1C	Peach Bottom South Sub Station	0.85 miles SSE
3A	Delta, PA – Substation	3.62 miles SW
5H2	Manor Substation	30.79 miles NE
F. Milk – bi-weekly / monthly		
J		0.97 miles W
O		2.32 miles SW
R		0.89 miles WSW
S		3.61 miles SE
T	(Control)	6.55 miles W
U		2.20 miles SSW
G. Milk – quarterly		
B	(Control)	10.58 miles S
C	(Control)	9.54 miles NW
D		3.51 miles NE
E	(Control)	8.74 miles N
F	(Control)	13.05 miles S
L		2.12 miles NE
P		2.08 miles ENE

TABLE B-1 Radiological Environmental Monitoring Program – Sampling Locations, Distance and Direction from Reactor Buildings, Peach Bottom Atomic Power Station, 2007

Location	Location Description	Distance & Direction from PBAPS Vents
H. Food Products – monthly when available		
1Q		0.79 miles NW
2B		0.73 miles SSE
55	(Control)	9.9 miles NE
I. Environmental Dosimetry - TLD		
Site Boundary		
1L	Peach Bottom Unit 3 Intake	0.24 miles NE
1P	Tower B & C Fence	0.40 miles ESE
1A	Weather Station #1	0.26 miles SE
1Q	Tower D & E Fence	0.62 miles SE
1D	140° Sector	0.67 miles SE
2	Peach Bottom 130° Sector Hill	0.88 miles SE
1M	Discharge	1.03 miles SE
1R	Transmission Line Hill	0.53 miles SSE
1I	Peach Bottom South Substation	0.54 miles SSE
1C	Peach Bottom South Substation	0.85 miles SSE
1J	Peach Bottom 180° Sector Hill	0.71 miles S
1K	Peach Bottom Site Area	0.87 miles SW
1F	Peach Bottom 200° Sector Hill	0.51 miles SSW
40	Peach Bottom Site Area	1.46 miles SW
1NN	Peach Bottom Site	0.48 miles WSW
1H	Peach Bottom 270° Sector Hill	0.59 miles W
1G	Peach Bottom North Substation	0.60 miles WNW
1B	Weather Station #2	0.49 miles NW
1E	Peach Bottom 350° Sector Hill	0.59 miles NNW
Intermediate Distance		
2B	Burk Property	0.71 miles SSE
5	Wakefield, PA	4.64 miles E
15	Silver Spring Rd	3.68 miles N
22	Eagle Road	2.39 miles NNE
44	Goshen Mill Rd	5.07 miles NE
32	Slate Hill Rd	2.75 miles ENE
45	PB-Keeney Line	3.38 miles ENE
14	Peters Creek	1.97 miles E
17	Riverview Rd	4.07 miles ESE
31A	Eckman Rd	4.57 miles SE
4K	Conowingo Dam Power House Roof	8.61 miles SE
23	Peach Bottom 150° Sector Hill	1.01 miles SSE
27	N. Cooper Road	2.68 miles S
48	Macton Substation	4.99 miles SSW
3A	Delta, PA Substation	3.62 miles SW
49	PB-Conastone Line	4.05 miles WSW
50	TRANSCO Pumping Station	4.99 miles W
51	Fin Substation	3.98 miles WNW
26	Slab Road	4.23 miles NW
6B	Holtwood Dam Power House Roof	5.78 miles NW
42	Muddy Run Environ. Laboratory	4.13 miles NNW
43	Drumore Township School	5.00 miles NNE
46	Broad Creek	4.48 miles SSE
47	Broad Creek Scout Camp	4.26 miles S

TABLE B-1 Radiological Environmental Monitoring Program – Sampling Locations, Distance and Direction from Reactor Buildings, Peach Bottom Atomic Power Station, 2007

Location	Location Description	Distance & Direction from PBAPS Vents
I. Environmental Dosimetry - TLD		
Control		
16	Nottingham, PA Substation (Control)	12.72 miles E
24	Harrisville, MD Substation (Control)	10.91 miles ESE
18	Fawn Grove, PA (Control)	9.86 miles W
19	Red Lion, PA (Control)	20.21 miles WNW

TABLE B-2 Radiological Environmental Monitoring Program – Summary of Sample Collection and Analytical Methods, Peach Bottom Atomic Power Station, 2007

Sample Medium	Analysis	Sampling Method	Collection Procedure Number	Sample Size	Analytical Procedure Number
Surface Water	Gamma Spectroscopy	Monthly composite from a continuous water compositor.	NAI-ER15 Collection of water samples for radiological analysis (Peach Bottom Atomic Power Station)	2 gallon	TBE, TBE-2007 Gamma emitting radioisotope analysis Env. Inc., GS-01 Determination of gamma emitters by gamma spectroscopy
Surface Water	Tritium	Quarterly composite from a continuous water compositor.	NAI-ER15 Collection of water samples for radiological analysis (Peach Bottom Atomic Power Station)	500 ml	TBE, TBE-2010 Tritium and carbon-14 analysis by liquid scintillation Env. Inc., T-02 Determination of tritium in water (direct method)
Drinking Water	Gross Beta	Monthly composite from a continuous water compositor.	NAI-ER15 Collection of water samples for radiological analysis (Peach Bottom Atomic Power 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)
Drinking Water	Gamma Spectroscopy	Monthly composite from a continuous water compositor.	NAI-ER15 Collection of water samples for radiological analysis (Peach Bottom Atomic Power Station)	2 gallon	TBE, TBE-2007 Gamma emitting radioisotope analysis Env. Inc., GS-01 Determination of gamma emitters by gamma spectroscopy
Drinking Water	Tritium	Quarterly composite from a continuous water compositor.	NAI-ER15 Collection of water samples for radiological analysis (Peach Bottom Atomic Power Station)	500 ml	TBE, TBE-2010 Tritium and carbon-14 analysis by liquid scintillation Env. Inc., T-02 Determination of tritium in water (direct method)
Fish	Gamma Spectroscopy	Semi-annual samples collected via electroshocking or other techniques	NAI-ER3 Collection of fish samples for radiological analysis (Peach Bottom Atomic Power Station)	1000 grams (wet)	TBE, TBE-2007 Gamma emitting radioisotope analysis
Sediment	Gamma Spectroscopy	Semi-annual grab samples	NAI-ER2 Collection of sediment samples for radiological analysis (Peach Bottom Atomic Power Station)	500 grams (dry)	TBE, TBE-2007 Gamma emitting radioisotope analysis
Air Particulates	Gross Beta	One-week composite of continuous air sampling through glass fiber filter paper	NAI-ER16 Collection of air particulate and air iodine samples for radiological analysis (Peach Bottom Atomic Power 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-2 Radiological Environmental Monitoring Program – Summary of Sample Collection and Analytical Methods, Peach Bottom Atomic Power Station, 2007

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	NAI-ER8 Collection of air particulate and air iodine samples for radiological analysis (Peach Bottom Atomic Power 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	NAI-ER10 Collection of milk samples for radiological analysis (Peach Bottom Atomic Power 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	Gamma Spectroscopy	Bi-weekly grab sample when cows are on pasture. Monthly all other times	NAI-ER10 Collection of milk samples for radiological analysis (Peach Bottom Atomic Power Station)	2 gallon	TBE, TBE-2007 Gamma emitting radioisotope analysis Env. Inc., GS-01 Determination of gamma emitters by gamma spectroscopy
Food Products	Gamma Spectroscopy	Monthly when available	NAI-ER12 Collection of vegetation samples for radiological analysis (Peach Bottom Atomic Power Station)	1000 grams	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 3 each $CaSO_4$ elements)	NAI-ER9 Collection of TLD samples for radiological analysis (Peach Bottom Atomic Power Station)	2 dosimeters	Global Dosimetry

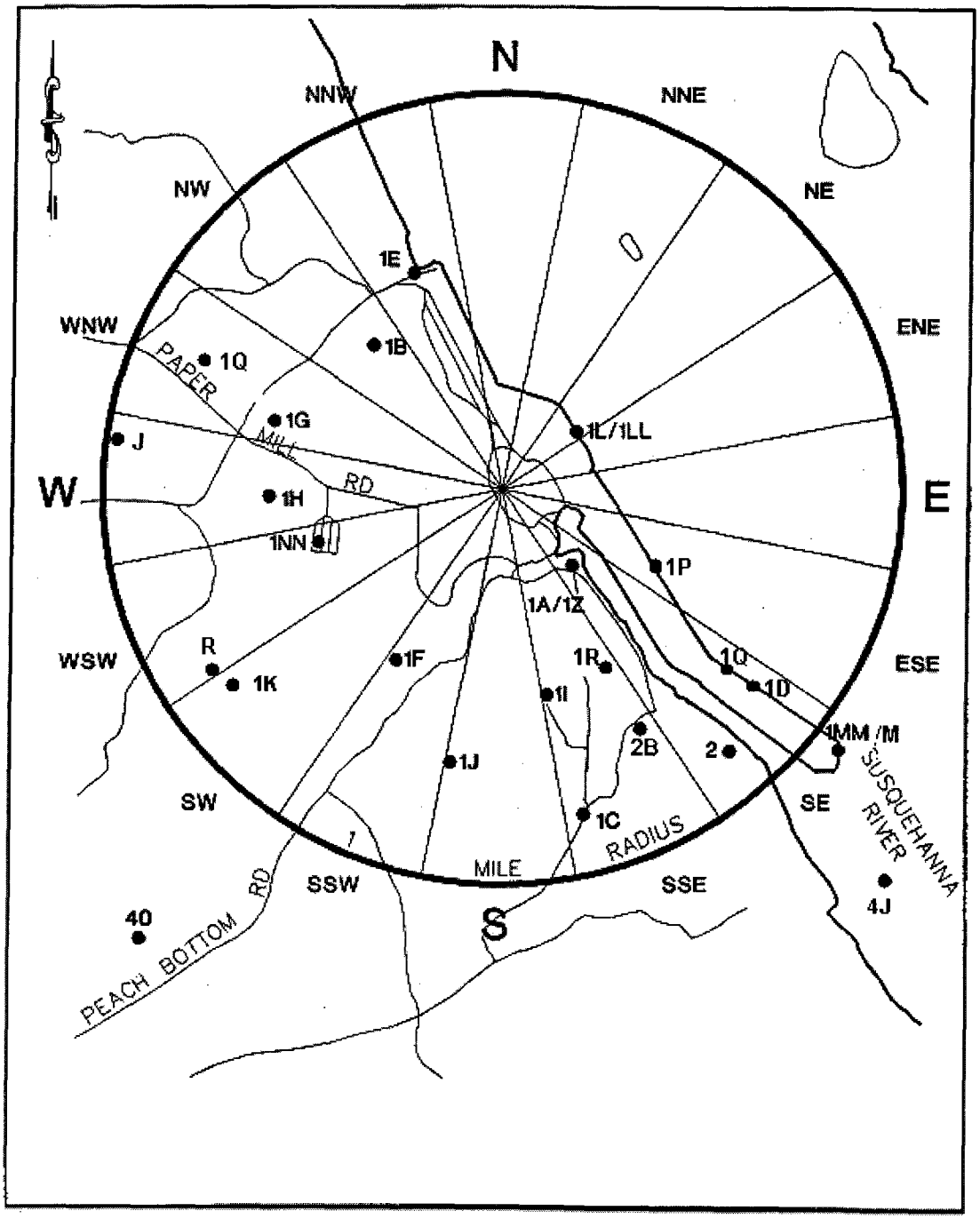

Figure B-1
Environmental Sampling Locations Between Within One Mile of the Peach Bottom Atomic Power Station, 2007

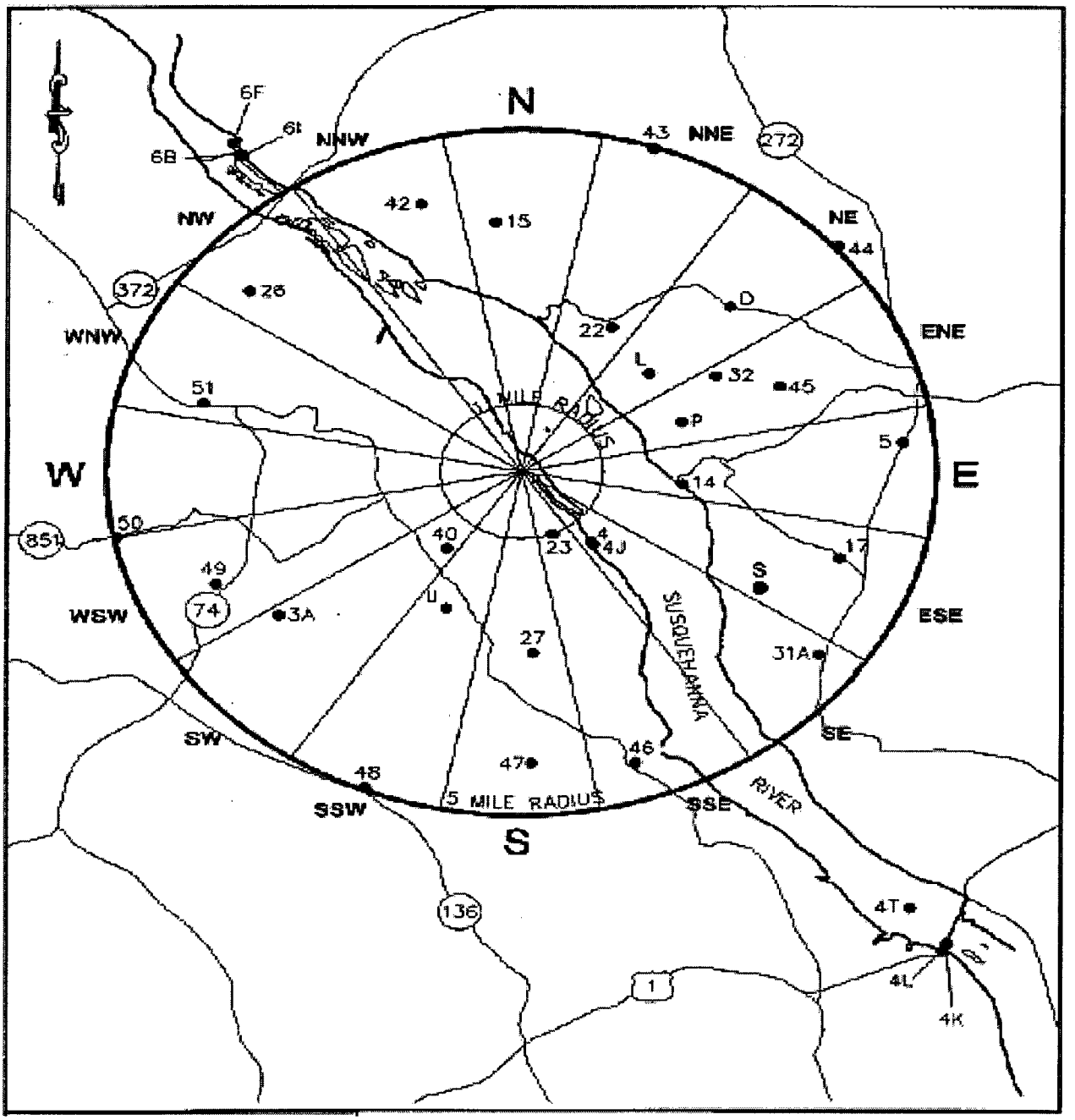

Figure B-2
Environmental Sampling Locations Between One and Approximately Five Miles of the Peach Bottom Atomic Power Station, 2007

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APPENDIX C

DATA TABLES AND FIGURES
PRIMARY LABORATORY

TABLE C-I.1 **CONCENTRATIONS OF TRITIUM IN SURFACE WATER SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2007**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	1LL	1MM
12/27/06 - 03/28/07	< 164	< 165
03/28/07 - 06/27/07	< 152	< 153
06/27/07 - 09/26/07	< 179	< 179
09/26/07 - 01/02/08	< 171	< 172
MEAN	-	-

TABLE V-I.2 **CONCENTRATIONS OF GAMMA EMITTERS IN SURFACE WATER SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2007**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

STC	COLLECTION PERIOD	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	I-131	Cs-134	Cs-137	Ba-140	La-140
1LL	12/27/06 - 01/31/07	< 3	< 3	< 7	< 3	< 6	< 3	< 6	< 8	< 3	< 3	< 19	< 6
	01/31/07 - 02/28/07	< 4	< 4	< 8	< 4	< 9	< 4	< 6	< 7	< 4	< 4	< 20	< 7
	02/28/07 - 03/28/07	< 4	< 4	< 9	< 4	< 7	< 4	< 8	< 7	< 4	< 4	< 21	< 6
	03/28/07 - 05/02/07	< 1	< 2	< 4	< 2	< 3	< 2	< 3	< 8	< 2	< 2	< 14	< 5
	05/02/07 - 05/30/07	< 2	< 2	< 4	< 2	< 3	< 2	< 4	< 5	< 2	< 2	< 12	< 4
	05/30/07 - 06/27/07	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 10	< 2	< 2	< 18	< 6
	06/27/07 - 08/01/07	< 2	< 2	< 5	< 2	< 5	< 2	< 4	< 7	< 2	< 2	< 16	< 5
	08/01/07 - 08/29/07	< 3	< 3	< 8	< 3	< 6	< 4	< 6	< 14	< 3	< 3	< 29	< 8
	08/29/07 - 09/26/07	< 8	< 7	< 15	< 8	< 15	< 7	< 13	< 11	< 6	< 7	< 32	< 14
	09/26/07 - 10/31/07	< 3	< 4	< 8	< 3	< 7	< 4	< 6	< 11	< 3	< 4	< 28	< 8
	10/31/07 - 11/28/07	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 10	< 2	< 2	< 18	< 6
	11/28/07 - 01/02/08	< 6	< 5	< 12	< 7	< 9	< 5	< 9	< 8	< 6	< 5	< 28	< 8
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-
1MM	12/27/06 - 01/31/07	< 4	< 4	< 10	< 3	< 8	< 4	< 7	< 10	< 3	< 4	< 25	< 8
	01/31/07 - 02/28/07	< 5	< 5	< 10	< 7	< 12	< 6	< 9	< 10	< 4	< 5	< 25	< 11
	02/28/07 - 03/28/07	< 4	< 3	< 7	< 3	< 7	< 3	< 6	< 7	< 3	< 3	< 17	< 5
	03/28/07 - 05/02/07	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 8	< 2	< 2	< 16	< 5
	05/02/07 - 05/30/07	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 5	< 2	< 2	< 12	< 4
	05/30/07 - 06/27/07	< 2	< 2	< 4	< 2	< 4	< 2	< 4	< 10	< 2	< 2	< 19	< 6
	06/27/07 - 08/01/07	< 2	< 2	< 5	< 3	< 5	< 3	< 4	< 8	< 2	< 2	< 17	< 5
	08/01/07 - 08/29/07	< 3	< 3	< 7	< 3	< 6	< 3	< 5	< 14	< 3	< 3	< 26	< 10
	08/29/07 - 09/26/07	< 4	< 7	< 14	< 7	< 12	< 6	< 13	< 12	< 6	< 7	< 34	< 8
	09/26/07 - 10/31/07	< 4	< 4	< 9	< 4	< 8	< 4	< 7	< 12	< 3	< 4	< 26	< 10
	10/31/07 - 11/28/07	< 2	< 2	< 6	< 2	< 4	< 3	< 4	< 10	< 2	< 2	< 19	< 6
	11/28/07 - 01/02/08	< 6	< 6	< 15	< 6	< 11	< 5	< 12	< 10	< 5	< 6	< 28	< 8
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-

TABLE C-II.1 **CONCENTRATIONS OF TOTAL GROSS BETA IN DRINKING WATER SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2007**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	4L	6I
12/28/06 - 02/01/07	2.5 ± 1.3	2.0 ± 1.3
02/01/07 - 03/01/07	3.4 ± 1.3	2.1 ± 1.2
03/01/07 - 03/29/07	< 1.9	3.8 ± 1.5
03/29/07 - 05/03/07	3.2 ± 1.3	2.2 ± 1.2
05/03/07 - 05/31/07	2.9 ± 1.4	< 1.9
05/31/07 - 06/28/07	< 2.2	< 2.2
06/28/07 - 08/02/07	3.2 ± 1.5	2.5 ± 1.5
08/02/07 - 08/30/07	4.3 ± 1.7	3.2 ± 1.5
08/30/07 - 09/27/07	< 2.4	2.3 ± 1.6
09/27/07 - 11/01/07	4.1 ± 1.5	3.3 ± 1.5
11/01/07 - 11/29/07	6.1 ± 1.6	3.1 ± 1.3
11/29/07 - 01/02/08	3.5 ± 1.6	3.3 ± 1.6
MEAN	3.7 ± 2.1	2.8 ± 1.2

TABLE C-II.2 **CONCENTRATIONS OF TRITIUM IN DRINKING WATER SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2007**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	4L	6I
12/28/06 - 03/29/07	< 165	< 159
03/29/07 - 06/28/07	< 155	< 150
06/28/07 - 09/27/07	< 180	< 182
09/27/07 - 01/02/08	< 176	< 176
MEAN	-	-

* THE MEAN AND 2 STANDARD DEVIATION VALUES ARE CALCULATED USING THE POSITIVE VALUES

TABLE C-II.3 **CONCENTRATIONS OF GAMMA EMITTER IN DRINKING WATER SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2007**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

STC	COLLECTION PERIOD	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	I-131	Cs-134	Cs-137	Ba-140	La-140
4L	12/28/06 - 02/01/07	< 4	< 4	< 10	< 4	< 7	< 5	< 7	< 10	< 4	< 4	< 23	< 9
	02/01/07 - 03/01/07	< 6	< 5	< 11	< 5	< 10	< 6	< 9	< 12	< 5	< 6	< 30	< 11
	03/01/07 - 03/29/07	< 4	< 5	< 8	< 4	< 9	< 4	< 7	< 8	< 5	< 4	< 23	< 7
	03/29/07 - 05/03/07	< 2	< 2	< 4	< 1	< 3	< 2	< 3	< 7	< 1	< 2	< 13	< 4
	05/03/07 - 05/31/07	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 6	< 2	< 2	< 13	< 4
	05/31/07 - 06/28/07	< 2	< 2	< 5	< 2	< 4	< 2	< 3	< 9	< 2	< 2	< 17	< 6
	06/28/07 - 08/02/07	< 2	< 3	< 6	< 2	< 5	< 3	< 5	< 7	< 2	< 3	< 17	< 5
	08/02/07 - 08/30/07	< 3	< 3	< 7	< 3	< 6	< 3	< 5	< 13	< 3	< 3	< 29	< 8
	08/30/07 - 09/27/07	< 6	< 7	< 12	< 6	< 13	< 7	< 11	< 13	< 4	< 5	< 28	< 10
	09/27/07 - 11/01/07	< 4	< 4	< 7	< 4	< 6	< 4	< 6	< 11	< 4	< 4	< 24	< 8
	11/01/07 - 11/29/07	< 2	< 2	< 5	< 2	< 4	< 3	< 4	< 10	< 2	< 2	< 19	< 6
	11/29/07 - 01/02/08	< 7	< 6	< 14	< 7	< 13	< 6	< 10	< 10	< 5	< 7	< 33	< 9
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-
6I	12/28/06 - 02/01/07	< 3	< 3	< 8	< 4	< 7	< 4	< 6	< 9	< 3	< 4	< 19	< 8
	02/01/07 - 03/01/07	< 4	< 5	< 9	< 4	< 8	< 5	< 7	< 8	< 3	< 5	< 20	< 8
	03/01/07 - 03/29/07	< 5	< 5	< 10	< 6	< 11	< 5	< 10	< 8	< 5	< 5	< 25	< 7
	03/29/07 - 05/03/07	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 7	< 2	< 2	< 16	< 5
	05/03/07 - 05/31/07	< 2	< 2	< 3	< 2	< 3	< 2	< 3	< 4	< 1	< 2	< 9	< 3
	05/31/07 - 06/28/07	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 10	< 2	< 2	< 20	< 6
	06/28/07 - 08/02/07	< 2	< 3	< 6	< 2	< 5	< 3	< 5	< 7	< 2	< 3	< 17	< 6
	08/02/07 - 08/30/07	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 13	< 2	< 2	< 23	< 7
	08/30/07 - 09/27/07	< 5	< 5	< 11	< 5	< 10	< 6	< 10	< 10	< 5	< 5	< 24	< 9
	09/27/07 - 11/01/07	< 4	< 5	< 11	< 5	< 9	< 6	< 8	< 15	< 4	< 4	< 35	< 9
	11/01/07 - 11/29/07	< 1	< 2	< 4	< 2	< 3	< 2	< 3	< 7	< 1	< 2	< 14	< 5
	11/29/07 - 01/02/08	< 7	< 5	< 14	< 6	< 15	< 7	< 12	< 10	< 6	< 6	< 31	< 9
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-

TABLE C-III.1 **CONCENTRATIONS OF GAMMA EMITTERS IN PREDATOR & BOTTOM FEEDER (FISH) SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2007**

RESULTS IN UNITS OF PC/KG WET ± 2 SIGMA

STC	COLLECTION PERIOD	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Cs-134	Cs-137
4	PREDATOR								
	06/07/07	3690 ± 710	< 46	< 50	< 155	< 49	< 113	< 41	< 48
	10/10/07	3480 ± 252	< 13	< 16	< 35	< 14	< 27	< 11	< 13
	MEAN	3585 ± 297	-	-	-	-	-	-	-
	BOTTOM FEEDER								
	06/07/07	2850 ± 681	< 36	< 47	< 133	< 30	< 61	< 36	< 40
	10/09/07	2860 ± 858	< 42	< 44	< 143	< 63	< 92	< 42	< 42
	MEAN	2855 ± 14	-	-	-	-	-	-	-
6	PREDATOR								
	06/07/07	2870 ± 834	< 47	< 27	< 104	< 32	< 100	< 29	< 46
	10/08/07	3240 ± 925	< 64	< 68	< 133	< 49	< 141	< 47	< 73
	MEAN	3055 ± 523.3	-	-	-	-	-	-	-
	BOTTOM FEEDER								
	06/05/07	2010 ± 585	< 45	< 43	< 97	< 52	< 103	< 42	< 46
	10/05/07	3620 ± 771	< 45	< 61	< 113	< 48	< 97	< 45	< 46
	MEAN	2815 ± 2277	-	-	-	-	-	-	-

* THE MEAN AND 2 STANDARD DEVIATION VALUES ARE CALCULATED USING THE POSITIVE VALUES

TABLE C-IV.1 **CONCENTRATIONS OF GAMMA EMITTERS IN SEDIMENT SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2007**

RESULTS IN UNITS OF PC/KG DRY ± 2 SIGMA

STC	COLLECTION PERIOD	K-40	Mn-54	Co-58	Co-60	Cs-134	Cs-137
4J	06/14/07	13600 ± 1190	< 60	< 55	< 68	< 53	< 63
	11/29/07	11200 ± 1170	< 65	< 44	99 ± 43	< 44	< 56
	11/29/07 (1)				162 ± 30		
	MEAN	12400 ± 3394	-	-	131 ± 89	-	-
4T	06/14/07	23100 ± 2050	< 86	< 88	< 104	< 81	120 ± 85
	11/29/07	23100 ± 2480	< 110	< 97	< 120	< 91	< 145
	MEAN	23100 ± 0	-	-	-	-	120 ± 0
6F	06/14/07	15900 ± 1500	< 68	< 68	< 76	< 55	< 79
	11/29/07	13000 ± 1760	< 87	< 84	< 71	< 76	< 98
	MEAN	14450 ± 4101	-	-	-	-	-

* THE MEAN AND 2 STANDARD DEVIATION VALUES ARE CALCULATED USING THE POSITIVE VALUES

(1) SEE PROGRAM EXCEPTIONS SECTION FOR EXPLANATION

TABLE C-IV.2 **CONCENTRATIONS OF GAMMA EMITTERS IN EXTENDED SEDIMENT SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2007**

RESULTS IN UNITS OF PC/KG DRY ± 2 SIGMA

STC	COLLECTION PERIOD	K-40	Mn-54	Co-58	Co-60	Cs-134	Cs-137
12000 E	06/19/07	20200 ± 2540	< 113	< 103	< 153	< 97	< 130
12000 MID	06/19/07	21700 ± 2210	< 125	< 95	< 113	< 105	< 119
12000 W	06/19/07	22200 ± 2680	< 131	< 137	< 184	< 112	151 ± 130
15000 E	06/19/07	19100 ± 2670	< 125	< 123	< 148	< 114	157 ± 101
15000 MID	06/19/07	20500 ± 2370	< 95	< 100	< 127	< 93	126 ± 87
15000 W	06/19/07	22500 ± 2760	< 118	< 86	< 132	< 105	< 160
3000 E	06/19/07	10200 ± 1300	< 72	< 62	< 92	< 57	< 81
3000 MID	06/19/07	14900 ± 2500	< 129	< 114	< 181	< 96	< 153
3000 W	06/19/07	15800 ± 1930	< 99	< 96	< 136	< 84	< 132
6000 E	06/19/07	15000 ± 2200	< 117	< 123	< 119	< 107	< 124
6000 MID	06/19/07	12800 ± 1610	< 87	< 97	< 107	< 73	< 96
6000 W	06/19/07	19900 ± 2060	< 88	< 89	< 112	< 77	< 117
9000 E	06/19/07	11300 ± 1560	< 65	< 69	< 82	< 68	< 88
9000 MID	06/19/07	15000 ± 2110	< 100	< 82	< 106	< 94	< 123
9000 W	06/19/07	20200 ± 1980	< 112	< 96	< 119	< 75	183 ± 114
	MEAN	17420 ± 8150					154 ± 47

* THE MEAN AND 2 STANDARD DEVIATION VALUES ARE CALCULATED USING THE POSITIVE VALUES

TABLE C-V.1 CONCENTRATIONS OF GROSS BETA IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2007

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

COLLECTION PERIOD	GROUP I			GROUP II	GROUP III
	1B	1C	1Z	3A	5H2
12/28/06 - 01/04/07	22 ± 5	17 ± 5	22 ± 5	17 ± 5	
01/02/07 - 01/08/07					9 ± 5
01/04/07 - 01/11/07	15 ± 5	13 ± 5	16 ± 5	13 ± 5	
01/08/07 - 01/15/07					20 ± 5
01/11/07 - 01/18/07	16 ± 5	14 ± 4	15 ± 5	16 ± 5	
01/15/07 - 01/22/07					13 ± 5
01/18/07 - 01/25/07	21 ± 5	16 ± 5	18 ± 5	15 ± 5	
01/22/07 - 01/29/07					20 ± 5
01/25/07 - 02/01/07	18 ± 5	16 ± 5	20 ± 5	20 ± 5	
01/29/07 - 02/05/07					19 ± 5
02/01/07 - 02/08/07	23 ± 5	24 ± 5	21 ± 5	17 ± 5	
02/05/07 - 02/12/07					17 ± 5
02/08/07 - 02/15/07	17 ± 5	22 ± 5	17 ± 5	16 ± 5	
02/12/07 - 02/20/07					21 ± 5
02/15/07 - 02/22/07	18 ± 5	20 ± 5	18 ± 5	17 ± 5	
02/20/07 - 02/26/07					12 ± 5
02/22/07 - 03/01/07	10 ± 4	10 ± 4	11 ± 4	11 ± 4	
02/26/07 - 03/05/07					12 ± 4
03/01/07 - 03/08/07	19 ± 5	16 ± 5	17 ± 5	11 ± 4	
03/05/07 - 03/12/07					18 ± 5
03/08/07 - 03/15/07	19 ± 5	22 ± 5	22 ± 5	18 ± 5	
03/12/07 - 03/19/07					13 ± 5
03/15/07 - 03/22/07	10 ± 5	14 ± 5	12 ± 5	12 ± 5	
03/19/07 - 03/27/07					13 ± 5
03/22/07 - 03/29/07	16 ± 4	16 ± 4	17 ± 5	18 ± 5	
03/27/07 - 04/02/07					15 ± 6
03/29/07 - 04/05/07	11 ± 4	14 ± 5	12 ± 5	13 ± 5	
04/02/07 - 04/09/07					9 ± 5
04/05/07 - 04/12/07	11 ± 4	12 ± 4	14 ± 4	11 ± 4	
04/09/07 - 04/16/07					8 ± 5
04/12/07 - 04/19/07	8 ± 4	6 ± 4	7 ± 4	< 6	
04/16/07 - 04/23/07					8 ± 5
04/19/07 - 04/27/07	13 ± 4	11 ± 4	16 ± 4	12 ± 4	
04/23/07 - 04/30/07					17 ± 5
04/27/07 - 05/03/07	10 ± 5	13 ± 5	< 7	11 ± 5	
04/30/07 - 05/07/07					13 ± 5
05/03/07 - 05/10/07	12 ± 5	11 ± 4	7 ± 4	8 ± 4	
05/07/07 - 05/15/07					15 ± 5
05/10/07 - 05/18/07	13 ± 4	18 ± 5	15 ± 4	12 ± 4	
05/15/07 - 05/21/07					15 ± 6
05/18/07 - 05/24/07	14 ± 5	15 ± 5	17 ± 5	16 ± 5	
05/21/07 - 05/29/07					18 ± 5
05/24/07 - 05/31/07	24 ± 5	26 ± 5	26 ± 5	28 ± 5	
05/29/07 - 06/04/07					24 ± 6
05/31/07 - 06/07/07	14 ± 5	12 ± 4	16 ± 5	13 ± 5	
06/04/07 - 06/11/07					13 ± 5
06/07/07 - 06/14/07	17 ± 5	16 ± 5	15 ± 5	14 ± 5	
06/11/07 - 06/18/07					13 ± 5
06/14/07 - 06/21/07	14 ± 5	14 ± 5	15 ± 5	16 ± 5	
06/18/07 - 06/25/07					15 ± 5
06/21/07 - 06/28/07	21 ± 5	24 ± 5	19 ± 5	17 ± 5	
06/25/07 - 07/02/07					14 ± 5
06/28/07 - 07/05/07	11 ± 5	17 ± 5	17 ± 5	12 ± 5	

TABLE C-V.1 CONCENTRATIONS OF GROSS BETA IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2007

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

COLLECTION PERIOD	GROUP I			GROUP II	GROUP III
	1B	1C	1Z	3A	5H2
07/02/07 - 07/09/07					19 ± 5
07/05/07 - 07/13/07	17 ± 5	18 ± 5	24 ± 5	18 ± 5	
07/09/07 - 07/16/07					23 ± 6
07/13/07 - 07/19/07	23 ± 6	30 ± 7	20 ± 6	22 ± 6	
07/16/07 - 07/23/07					14 ± 5
07/19/07 - 07/26/07	16 ± 5	13 ± 5	14 ± 5	12 ± 5	
07/23/07 - 07/31/07					17 ± 5
07/26/07 - 08/02/07	18 ± 5	21 ± 6	22 ± 6	19 ± 5	
07/31/07 - 08/06/07					26 ± 6
08/02/07 - 08/09/07	35 ± 6	31 ± 6	28 ± 6	33 ± 6	
08/06/07 - 08/14/07					19 ± 5
08/09/07 - 08/16/07	23 ± 6	18 ± 5	17 ± 5	18 ± 5	
08/14/07 - 08/20/07					17 ± 6
08/16/07 - 08/23/07	7 ± 5	10 ± 5	16 ± 5	15 ± 5	
08/20/07 - 08/27/07					10 ± 5
08/23/07 - 08/30/07	25 ± 6	18 ± 5	25 ± 6	16 ± 5	
08/27/07 - 09/04/07					18 ± 5
08/30/07 - 09/06/07	27 ± 6	33 ± 6	24 ± 6	29 ± 6	
09/04/07 - 09/11/07					23 ± 6
09/06/07 - 09/13/07	30 ± 7	20 ± 6	22 ± 6	20 ± 6	
09/11/07 - 09/17/07					19 ± 6
09/13/07 - 09/20/07	16 ± 6	17 ± 5	19 ± 5	18 ± 5	
09/17/07 - 09/24/07					18 ± 5
09/20/07 - 09/27/07	25 ± 6	23 ± 6	30 ± 6	24 ± 6	
09/24/07 - 10/01/07					27 ± 6
09/27/07 - 10/04/07	20 ± 5	22 ± 5	22 ± 5	20 ± 5	
10/01/07 - 10/08/07					10 ± 5
10/04/07 - 10/11/07	20 ± 6	17 ± 6	25 ± 6	23 ± 6	
10/08/07 - 10/15/07					20 ± 5
10/11/07 - 10/18/07	26 ± 6	23 ± 5	28 ± 6	26 ± 6	
10/15/07 - 10/22/07					22 ± 6
10/18/07 - 10/25/07	27 ± 6	24 ± 5	26 ± 6	21 ± 5	
10/22/07 - 10/29/07					19 ± 6
10/25/07 - 11/01/07	21 ± 5	13 ± 5	15 ± 5	18 ± 7	
10/29/07 - 11/05/07					17 ± 5
11/01/07 - 11/08/07	14 ± 5	18 ± 5	20 ± 6	19 ± 5	
11/05/07 - 11/12/07					14 ± 5
11/08/07 - 11/15/07	29 ± 6	25 ± 6	25 ± 6	25 ± 6	
11/12/07 - 11/19/07					22 ± 5
11/15/07 - 11/22/07	16 ± 5	17 ± 5	17 ± 5	18 ± 5	
11/19/07 - 11/26/07					19 ± 6
11/22/07 - 11/29/07	17 ± 5	22 ± 6	22 ± 6	21 ± 6	
11/26/07 - 12/03/07					16 ± 5
11/29/07 - 12/07/07	13 ± 5	16 ± 5	17 ± 5	18 ± 5	
12/03/07 - 12/10/07					9 ± 5
12/07/07 - 12/13/07	22 ± 7	24 ± 7	24 ± 7	21 ± 7	
12/10/07 - 12/17/07					18 ± 5
12/13/07 - 12/20/07	23 ± 5	22 ± 5	20 ± 5	26 ± 6	
12/17/07 - 12/24/07					18 ± 5
12/20/07 - 12/27/07	23 ± 6	31 ± 6	28 ± 6	26 ± 6	
12/24/07 - 12/31/07					22 ± 6
12/27/07 - 01/02/08	24 ± 6	27 ± 7	24 ± 6	24 ± 6	
MEAN*	18 ± 12	19 ± 12	19 ± 10	18 ± 11	16 ± 9

* THE MEAN AND 2 STANDARD DEVIATION VALUES ARE CALCULATED USING THE POSITIVE VALUES

TABLE C-V.2 MONTHLY AND YEARLY MEAN VALUES OF GROSS BETA CONCENTRATIONS (PCI/CU METER) IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2007

GROUP I - ON-SITE LOCATIONS				GROUP II - INTERMEDIATE DISTANCE LOCATIONS				GROUP III - CONTROL LOCATIONS			
COLLECTION PERIOD	MIN	MAX	MEAN ± 2SD	COLLECTION PERIOD	MIN	MAX	MEAN ± 2SD	COLLECTION PERIOD	MIN	MAX	MEAN ± 2SD
12/28/06 - 02/01/07	13	22	17 ± 6	12/28/06 - 02/01/07	13	20	16 ± 5	01/02/07 - 01/29/07	9	20	15 ± 11
02/01/07 - 03/01/07	10	24	17 ± 10	02/01/07 - 03/01/07	11	17	15 ± 6	01/29/07 - 02/26/07	12	21	17 ± 8
03/01/07 - 03/29/07	10	22	17 ± 7	03/01/07 - 03/29/07	11	18	15 ± 8	02/26/07 - 04/02/07	12	18	14 ± 5
03/29/07 - 04/27/07	6	16	11 ± 6	03/29/07 - 04/27/07	< 6	13	12 ± 2	04/02/07 - 04/30/07	8	17	10 ± 8
04/27/07 - 05/31/07	< 7	26	16 ± 11	04/27/07 - 05/31/07	8	28	15 ± 15	04/30/07 - 05/29/07	13	18	15 ± 5
05/31/07 - 06/28/07	12	24	16 ± 7	05/31/07 - 06/28/07	13	17	15 ± 4	05/29/07 - 07/02/07	13	24	16 ± 10
06/28/07 - 08/02/07	11	30	19 ± 10	06/28/07 - 08/02/07	12	22	17 ± 9	07/02/07 - 07/31/07	14	23	18 ± 8
08/02/07 - 08/30/07	7	35	21 ± 17	08/02/07 - 08/30/07	15	33	20 ± 17	07/31/07 - 09/04/07	10	26	18 ± 11
08/30/07 - 09/27/07	16	33	24 ± 11	08/30/07 - 09/27/07	18	29	23 ± 10	09/04/07 - 10/01/07	18	27	22 ± 8
09/27/07 - 11/01/07	13	28	22 ± 9	09/27/07 - 11/01/07	18	26	22 ± 6	10/01/07 - 10/29/07	10	22	18 ± 10
11/01/07 - 11/29/07	14	29	20 ± 9	11/01/07 - 11/29/07	18	25	21 ± 6	10/29/07 - 12/03/07	14	22	17 ± 6
11/29/07 - 01/02/08	13	31	23 ± 9	11/29/07 - 01/02/08	18	26	23 ± 7	12/03/07 - 12/31/07	9	22	17 ± 11
12/28/06 - 01/02/08	< 7	35	19 ± 7	12/28/06 - 01/02/08	< 6	33	18 ± 7	01/02/07 - 12/31/07	8	27	16 ± 5

* THE MEAN AND 2 STANDARD DEVIATION VALUES ARE CALCULATED USING THE POSITIVE VALUES

TABLE C-V.3 **CONCENTRATIONS OF GAMMA EMITTERS IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2007**

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
1B	12/28/06 - 03/29/07	87 ± 28	< 3	< 3	< 4	< 3	< 3
	03/29/07 - 06/28/07	124 ± 38	< 3	< 6	< 3	< 4	< 2
	06/28/07 - 09/27/07	108 ± 27	< 2	< 4	< 2	< 3	< 2
	09/27/07 - 01/02/08	58 ± 20	< 2	< 2	< 3	< 2	< 2
	MEAN	94 ± 57	-	-	-	-	-
1C	12/28/06 - 03/29/07	80 ± 34	< 3	< 4	< 3	< 3	< 2
	03/29/07 - 06/28/07	81 ± 27	< 2	< 5	< 2	< 3	< 2
	06/28/07 - 09/27/07	107 ± 25	< 2	< 4	< 3	< 3	< 2
	09/27/07 - 01/02/08	90 ± 23	< 3	< 4	< 3	< 4	< 3
	MEAN	89 ± 25	-	-	-	-	-
1Z	12/28/06 - 03/29/07	89 ± 33	< 3	< 4	< 4	< 4	< 4
	03/29/07 - 06/28/07	103 ± 46	< 4	< 6	< 3	< 4	< 4
	06/28/07 - 09/27/07	106 ± 36	< 3	< 5	< 4	< 3	< 4
	09/27/07 - 01/02/08	71 ± 23	< 2	< 4	< 4	< 4	< 3
	MEAN	92 ± 32	-	-	-	-	-
3A	12/28/06 - 03/29/07	109 ± 36	< 3	< 4	< 4	< 4	< 3
	03/29/07 - 06/28/07	113 ± 43	< 4	< 6	< 3	< 4	< 3
	06/28/07 - 09/27/07	115 ± 32	< 4	< 5	< 4	< 4	< 3
	09/27/07 - 01/02/08	87 ± 25	< 4	< 3	< 3	< 4	< 3
	MEAN	106 ± 26	-	-	-	-	-
5H2	12/28/06 - 04/02/07	117 ± 35	< 4	< 5	< 4	< 3	< 3
	04/02/07 - 07/02/07	59 ± 46	< 4	< 4	< 3	< 4	< 3
	07/02/07 - 10/01/07	93 ± 31	< 3	< 3	< 3	< 3	< 2
	10/01/07 - 12/31/07	76 ± 27	< 3	< 4	< 1	< 3	< 3
	MEAN	86 ± 49	-	-	-	-	-

* THE MEAN AND 2 STANDARD DEVIATION VALUES ARE CALCULATED USING THE POSITIVE VALUES

TABLE C-VI.1 CONCENTRATIONS OF I-131 IN AIR IODINE SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2007

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

COLLECTION PERIOD	GROUP I			GROUP II	GROUP III
	1B	1C	1Z	3A	5H2
12/28/06 - 01/04/07	< 20	< 20	< 20	< 20	
01/02/07 - 01/08/07					< 9
01/04/07 - 01/11/07	< 41	< 42	< 41	< 42	
01/08/07 - 01/15/07					< 19
01/11/07 - 01/18/07	< 25	< 25	< 26	< 26	
01/15/07 - 01/22/07					< 17
01/18/07 - 01/25/07	< 28	< 28	< 27	< 28	
01/22/07 - 01/29/07					< 21
01/25/07 - 02/01/07	< 50	< 50	< 50	< 51	
01/29/07 - 02/05/07					< 17
02/01/07 - 02/08/07	< 28	< 28	< 28	< 29	
02/05/07 - 02/12/07					< 35
02/08/07 - 02/15/07	< 33	< 33	< 33	< 33	
02/12/07 - 02/20/07					< 21
02/15/07 - 02/22/07	< 38	< 38	< 38	< 39	
02/20/07 - 02/26/07					< 13
02/22/07 - 03/01/07	< 30	< 30	< 30	< 31	
02/26/07 - 03/05/07					< 13
03/01/07 - 03/08/07	< 57	< 57	< 57	< 58	
03/05/07 - 03/12/07					< 22
03/08/07 - 03/15/07	< 21	< 21	< 21	< 21	
03/12/07 - 03/19/07					< 21
03/15/07 - 03/22/07	< 24	< 24	< 24	< 24	
03/19/07 - 03/27/07					< 21
03/22/07 - 03/29/07	< 46	< 46	< 46	< 46	
03/27/07 - 04/02/07					< 28
03/29/07 - 04/05/07	< 56	< 55	< 56	< 56	
04/02/07 - 04/09/07					< 39
04/05/07 - 04/12/07	< 36	< 36	< 36	< 37	
04/09/07 - 04/16/07					< 23
04/12/07 - 04/19/07	< 34	< 56	< 56	< 57	
04/16/07 - 04/23/07					< 29
04/19/07 - 04/27/07	< 55	< 55	< 55	< 55	
04/23/07 - 04/30/07					< 21
04/27/07 - 05/03/07	< 62	< 62	< 62	< 63	
04/30/07 - 05/07/07					< 40
05/03/07 - 05/10/07	< 57	< 57	< 57	< 57	
05/07/07 - 05/15/07					< 36
05/10/07 - 05/18/07	< 25	< 25	< 15	< 26	
05/15/07 - 05/21/07					< 28
05/18/07 - 05/24/07	< 69	< 69	< 70	< 70	
05/21/07 - 05/29/07					< 19
05/24/07 - 05/31/07	< 49	< 49	< 49	< 50	
05/29/07 - 06/04/07					< 28
05/31/07 - 06/07/07	< 23	< 23	< 23	< 24	
06/04/07 - 06/11/07					< 20
06/07/07 - 06/14/07	< 24	< 24	< 23	< 23	
06/11/07 - 06/18/07					< 15
06/14/07 - 06/21/07	< 19	< 20	< 20	< 20	
06/18/07 - 06/25/07					< 48
06/21/07 - 06/28/07	< 19	< 19	< 20	< 19	
06/25/07 - 07/02/07					< 26
06/28/07 - 07/05/07	< 35	< 33	< 35	< 25	

TABLE C-VI.1 CONCENTRATIONS OF I-131 IN AIR IODINE SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2007

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

COLLECTION PERIOD	GROUP I			GROUP II	GROUP III
	1B	1C	1Z	3A	5H2
07/02/07 - 07/09/07					< 8
07/05/07 - 07/13/07	< 31	< 32	< 32	< 31	
07/09/07 - 07/16/07					< 15
07/13/07 - 07/19/07	< 60	< 60	< 60	< 61	
07/16/07 - 07/23/07					< 30
07/19/07 - 07/26/07	< 43	< 41	< 43	< 42	
07/23/07 - 07/31/07					< 26
07/26/07 - 08/02/07	< 57	< 58	< 33	< 56	
07/31/07 - 08/06/07					< 34
08/02/07 - 08/09/07	< 34	< 35	< 34	< 35	
08/06/07 - 08/14/07					< 12
08/09/07 - 08/16/07	< 39	< 39	< 40	< 40	
08/14/07 - 08/20/07					< 54
08/16/07 - 08/23/07	< 57	< 57	< 58	< 57	
08/20/07 - 08/27/07					< 39
08/23/07 - 08/30/07	< 53	< 53	< 54	< 23	
08/27/07 - 09/04/07					< 29
08/30/07 - 09/06/07	< 58	< 58	< 58	< 58	
09/04/07 - 09/11/07					< 8
09/06/07 - 09/13/07	< 40	< 37	< 37	< 37	
09/11/07 - 09/17/07					< 30
09/13/07 - 09/20/07	< 58	< 48	< 49	< 48	
09/17/07 - 09/24/07					< 26
09/20/07 - 09/27/07	< 40	< 40	< 41	< 40	
09/24/07 - 10/01/07					< 15
09/27/07 - 10/04/07	< 62	< 60	< 64	< 60	
10/01/07 - 10/08/07					< 37
10/04/07 - 10/11/07	< 47	< 48	< 48	< 47	
10/08/07 - 10/15/07					< 28
10/11/07 - 10/18/07	< 24	< 24	< 24	< 24	
10/15/07 - 10/22/07					< 41
10/18/07 - 10/25/07	< 40	< 40	< 40	< 40	
10/22/07 - 10/29/07					< 21
10/25/07 - 11/01/07	< 56	< 56	< 57	< 62	
10/29/07 - 11/05/07					< 20
11/01/07 - 11/08/07	< 25	< 11	< 25	< 25	
11/05/07 - 11/12/07					< 38
11/08/07 - 11/15/07	< 28	< 65	< 66	< 65	
11/12/07 - 11/19/07					< 40
11/15/07 - 11/22/07	< 54	< 54	< 55	< 54	
11/19/07 - 11/26/07					< 13
11/22/07 - 11/29/07	< 36	< 36	< 36	< 35	
11/26/07 - 12/03/07					< 68
11/29/07 - 12/07/07	< 39	< 39	< 17	< 40	
12/03/07 - 12/10/07					< 20
12/07/07 - 12/13/07	< 32	< 32	< 32	< 32	
12/10/07 - 12/17/07					< 17
12/13/07 - 12/20/07	< 55	< 55	< 56	< 55	
12/17/07 - 12/24/07					< 21
12/20/07 - 12/27/07	< 39	< 39	< 40	< 39	
12/24/07 - 12/31/07					< 21
12/27/07 - 01/02/08	< 36	< 36	< 37	< 36	
MEAN	-	-	-	-	-

TABLE C-VII.1 CONCENTRATIONS OF I-131 IN MILK SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2007

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

	NEARBY FARMS				INDICATOR FARM				CONTROL FARM				
COLLECTION PERIOD	J	O	R	U	S	D	L	P	B	C	E	F	T
01/15/07	< 0.6	< 0.6	< 0.7		< 0.6								< 0.7
02/12/07	< 0.8	< 1.0	< 0.7		< 0.6	< 0.8	< 0.7	< 0.7	< 0.7 (1)	< 0.8	< 0.8		< 0.7
03/12/07	< 0.5	< 0.5	< 0.6		< 0.6								< 0.7
04/09/07	< 0.7	< 0.8	< 0.7		< 0.7								< 0.8
04/23/07	< 0.6	< 0.5	< 0.5		< 0.6								< 0.6
05/07/07	< 0.7	< 0.6	< 0.7		< 0.6	< 0.8	< 0.8	< 0.6		< 0.8	< 0.7		< 0.7
05/21/07	< 0.5	< 0.4	< 0.5		< 0.5								< 0.5
06/04/07	< 0.8	< 0.9	< 0.8		< 0.9								< 0.8
06/18/07	< 0.7	< 0.7	< 0.7		< 0.8								< 0.8
07/02/07	< 0.8	(1)	< 0.8		< 0.8								< 0.7
07/16/07	< 0.5		< 0.7	(1)	< 0.7								< 0.6
07/30/07	< 0.7		< 0.8	< 0.8	< 0.4							(1)	< 0.6
08/14/07	< 0.9		< 1.0	< 0.8	< 0.7	< 0.8	< 0.7	< 0.6		< 0.8	< 0.6	< 0.7	< 0.7
08/27/07	< 0.4		< 0.5	< 0.5	< 0.5								< 0.6
09/10/07	< 0.9		< 0.6	< 0.6	< 0.7								< 0.7
09/24/07	< 0.5		< 0.4	< 0.5	< 0.5								< 0.6
10/08/07	< 0.5		< 0.4	< 0.3	< 0.4								< 0.5
10/22/07	< 0.8		< 0.6	< 0.5	< 0.5								< 0.4
11/06/07	< 0.8		< 0.8	< 0.8	< 0.8	< 0.7	< 0.8	< 0.6		< 0.7	< 0.7	< 0.6	< 0.8
11/19/07	< 0.6		< 0.5	< 0.6	< 0.5								< 0.5
12/17/07	< 0.8		< 0.7	< 0.7	< 0.7								< 0.6
MEAN	-	-	-	-	-	-	-	-	-	-	-	-	-

(1) SEE PROGRAM CHANGES SECTION FOR EXPLANATION

TABLE C-VII.2 CONCENTRATIONS OF GAMMA EMITTERS IN MILK SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2007

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

STC	COLLECTION PERIOD	K-40	Cs-134	Cs-137	Ba-140	La-140
J	01/15/07	1260 ± 208	< 7	< 12	< 37	< 11
	02/12/07	1200 ± 183	< 6	< 8	< 36	< 12
	03/12/07	1260 ± 137	< 4	< 5	< 25	< 9
	04/09/07	1230 ± 150	< 7	< 8	< 40	< 12
	04/23/07	1210 ± 114	< 4	< 5	< 34	< 10
	05/07/07	1270 ± 113	< 5	< 6	< 30	< 7
	05/21/07	1450 ± 135	< 5	< 6	< 37	< 14
	06/04/07	1160 ± 116	< 5	< 6	< 42	< 11
	06/18/07	1180 ± 96	< 4	< 4	< 51	< 14
	07/02/07	1090 ± 109	< 4	< 4	< 19	< 7
	07/16/07	2210 ± 156	< 5	< 5	< 34	< 8
	07/30/07	1180 ± 148	< 7	< 8	< 38	< 13
	08/13/07	1230 ± 84	< 3	< 4	< 39	< 14
	08/27/07	1320 ± 99	< 4	< 4	< 45	< 13
	09/10/07	1050 ± 155	< 6	< 6	< 31	< 7
	09/24/07	1220 ± 124	< 4	< 5	< 37	< 10
	10/08/07	1180 ± 151	< 7	< 7	< 39	< 14
	10/22/07	1210 ± 114	< 4	< 5	< 41	< 15
	11/05/07	1300 ± 69	< 3	< 3	< 31	< 10
	11/19/07	1270 ± 59	< 2	< 2	< 20	< 6
	12/17/07	1340 ± 116	< 4	< 5	< 35	< 12
	MEAN*	1277 ± 460	-	-	-	-
O	01/15/07	1360 ± 189	< 7	< 10	< 42	< 12
	02/12/07	1120 ± 139	< 2	< 2	< 17	< 5
	03/12/07	1120 ± 115	< 4	< 5	< 22	< 8
	04/09/07	1070 ± 135	< 4	< 5	< 22	< 7
	04/23/07	1220 ± 100	< 3	< 4	< 29	< 10
	05/07/07	1180 ± 109	< 4	< 5	< 29	< 9
	05/21/07	1310 ± 139	< 6	< 7	< 45	< 12
	06/04/07	1150 ± 100	< 3	< 4	< 29	< 9
	06/18/07 (1)	1060 ± 85	< 3	< 4	< 41	< 13
	MEAN*	1177 ± 207	-	-	-	-

* THE MEAN AND 2 STANDARD DEVIATION VALUES ARE CALCULATED USING THE POSITIVE VALUES

(1) SEE PROGRAM CHANGES SECTION FOR EXPLANATION

TABLE C-VII.2 CONCENTRATIONS OF GAMMA EMITTERS IN MILK SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2007

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

STC	COLLECTION PERIOD	K-40	Cs-134	Cs-137	Ba-140	La-140
R	01/15/07	1480 ± 182	< 7	< 7	< 32	< 10
	02/12/07	1160 ± 198	< 8	< 9	< 40	< 11
	03/12/07	1150 ± 145	< 6	< 6	< 30	< 12
	04/09/07	1300 ± 137	< 5	< 6	< 33	< 8
	04/23/07	1310 ± 117	< 4	< 5	< 34	< 11
	05/07/07	1270 ± 129	< 5	< 6	< 26	< 6
	05/21/07	1160 ± 128	< 5	< 6	< 39	< 10
	06/04/07	1340 ± 120	< 4	< 4	< 33	< 13
	06/18/07	1280 ± 104	< 4	< 5	< 49	< 14
	07/02/07	1250 ± 105	< 4	< 5	< 22	< 6
	07/16/07	1280 ± 117	< 5	< 6	< 28	< 8
	07/30/07	1350 ± 151	< 5	< 6	< 30	< 6
	08/13/07	1360 ± 87	< 3	< 4	< 41	< 14
	08/27/07	1320 ± 81	< 3	< 3	< 32	< 12
	09/10/07	1210 ± 175	< 7	< 7	< 37	< 11
	09/24/07	1400 ± 144	< 5	< 6	< 36	< 10
	10/08/07	1180 ± 160	< 7	< 7	< 40	< 12
	10/22/07	1290 ± 119	< 4	< 5	< 37	< 12
	11/05/07	1310 ± 80	< 3	< 3	< 35	< 11
	11/19/07	1190 ± 66	< 2	< 3	< 23	< 7
	12/17/07	1340 ± 144	< 5	< 7	< 45	< 11
	MEAN*	1282 ± 171	-	-	-	-
S	01/15/07	1420 ± 192	< 11	< 10	< 49	< 12
	02/12/07	1470 ± 194	< 8	< 8	< 46	< 15
	03/12/07	1340 ± 125	< 5	< 5	< 24	< 8
	04/09/07	1280 ± 155	< 5	< 7	< 31	< 8
	04/23/07	1280 ± 111	< 4	< 5	< 38	< 8
	05/07/07	1270 ± 120	< 5	< 6	< 35	< 11
	05/21/07	1320 ± 111	< 4	< 5	< 32	< 11
	06/04/07	1290 ± 105	< 4	< 5	< 35	< 8
	06/18/07	1320 ± 92	< 3	< 4	< 47	< 15
	07/02/07	1300 ± 130	< 5	< 5	< 24	< 9
	07/16/07	1320 ± 106	< 4	< 4	< 27	< 7
	07/30/07	1250 ± 80	< 3	< 3	< 15	< 3
	08/14/07	1330 ± 111	< 4	< 5	< 51	< 14
	08/27/07	1280 ± 111	< 4	< 5	< 52	< 13
	09/10/07	1310 ± 193	< 6	< 5	< 39	< 14
	09/24/07	1230 ± 94	< 4	< 5	< 32	< 9
	10/08/07	1130 ± 137	< 5	< 6	< 34	< 11
	10/22/07	1530 ± 134	< 6	< 6	< 56	< 14
	11/05/07	1170 ± 101	< 3	< 4	< 43	< 14
	11/19/07	1230 ± 64	< 3	< 3	< 23	< 6
	12/17/07	1170 ± 122	< 5	< 6	< 46	< 11
	MEAN*	1297 ± 188	-	-	-	-

* THE MEAN AND 2 STANDARD DEVIATION VALUES ARE CALCULATED USING THE POSITIVE VALUES

TABLE C-VII.2 CONCENTRATIONS OF GAMMA EMITTERS IN MILK SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2007

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

STC	COLLECTION PERIOD	K-40	Cs-134	Cs-137	Ba-140	La-140
T	01/15/07	1420 ± 208	< 7	< 9	< 37	< 13
	02/12/07	1360 ± 163	< 8	< 8	< 45	< 14
	03/12/07	1160 ± 147	< 6	< 7	< 34	< 10
	04/09/07	1280 ± 133	< 5	< 5	< 29	< 6
	04/23/07	1250 ± 97	< 4	< 4	< 26	< 9
	05/07/07	1450 ± 116	< 4	< 6	< 31	< 10
	05/21/07	1230 ± 142	< 5	< 6	< 40	< 11
	06/04/07	1290 ± 139	< 5	< 7	< 47	< 15
	06/18/07	1310 ± 112	< 3	< 4	< 30	< 11
	07/02/07	1170 ± 134	< 3	< 4	< 20	< 5
	07/16/07	1190 ± 131	< 5	< 6	< 32	< 11
	07/30/07	1310 ± 124	< 5	< 5	< 27	< 7
	08/13/07	1240 ± 106	< 4	< 5	< 44	< 15
	08/27/07	1310 ± 112	< 4	< 5	< 44	< 14
	09/10/07	1390 ± 139	< 4	< 5	< 26	< 8
	09/24/07	1160 ± 137	< 6	< 8	< 52	< 10
	10/08/07	1250 ± 168	< 6	< 8	< 39	< 10
	10/22/07	1210 ± 147	< 5	< 6	< 48	< 15
	11/05/07	1300 ± 98	< 4	< 4	< 46	< 10
	11/19/07	1210 ± 66	< 3	< 3	< 23	< 8
	12/17/07	1290 ± 139	< 5	< 7	< 56	< 14
	MEAN*	1275 ± 164	-	-	-	-
U	07/30/07 (1)	1210 ± 132	< 4	< 5	< 25	< 7
	08/13/07	1310 ± 118	< 4	< 5	< 57	< 14
	08/27/07	1290 ± 107	< 4	< 5	< 49	< 13
	09/10/07	1220 ± 148	< 6	< 7	< 31	< 12
	09/24/07	1100 ± 137	< 5	< 6	< 35	< 10
	10/08/07	1190 ± 131	< 6	< 6	< 32	< 9
	10/22/07	1350 ± 110	< 5	< 5	< 36	< 12
	11/05/07	1290 ± 92	< 3	< 3	< 35	< 10
	11/19/07	1120 ± 61	< 3	< 3	< 28	< 10
	12/17/07	1230 ± 143	< 6	< 6	< 43	< 13
	MEAN*	1231 ± 162	-	-	-	-

* THE MEAN AND 2 STANDARD DEVIATION VALUES ARE CALCULATED USING THE POSITIVE VALUES

(1) SEE PROGRAM CHANGES SECTION FOR EXPLANATION

TABLE C-VIII.1 **CONCENTRATIONS OF GAMMA EMITTERS IN FOOD PRODUCT SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2007**

RESULTS IN UNITS OF PCI/KG WET ± 2 SIGMA

STC	COLLECTION PERIOD	Be-7	Mn-54	Co-58	Co-60	I-131	Cs-134	Cs-137
1Q								
Cabbage	05/31/07	< 137	< 15	< 16	< 14	< 47	< 14	< 16
Cabbage & Leaves	07/02/07	< 139	< 15	< 17	< 15	< 31	< 15	< 17
Red Beet Leaves	07/02/07	< 170	< 15	< 16	< 18	< 33	< 15	< 18
Turnip Greens	07/02/07	285 ± 123	< 18	< 16	< 14	< 27	< 15	< 18
Cabbage	07/30/07	< 133	< 13	< 17	< 14	< 39	< 13	< 15
Lettuce	07/30/07	380 ± 176	< 15	< 14	< 16	< 44	< 14	< 16
Red Beet Leaves	07/30/07	576 ± 153	< 13	< 14	< 12	< 44	< 12	< 15
Cabbage & Leaves	08/27/07	532 ± 55	< 5	< 6	< 5	< 33	< 5	< 6
Lettuce Leaves	08/27/07	2050 ± 104	< 8	< 9	< 8	< 55	< 7	< 8
Red Beet Leaves	08/27/07	1200 ± 154	< 10	< 10	< 10	< 60	< 9	< 10
Brussel Sprout Leaves	09/24/07	295 ± 74	< 9	< 10	< 9	< 38	< 9	< 10
Cabbage	09/24/07	172 ± 112	< 13	< 16	< 13	< 57	< 11	< 13
Turnip Greens	09/24/07	< 114	< 13	< 14	< 13	< 56	< 12	< 14
	MEAN*	686 ± 1272	-	-	-	-	-	-
2B								
	05/31/07	(1)						
Red Cabbage Leaves	07/02/07	< 296	< 30	< 28	< 26	< 60	< 27	< 34
Yellow Squash Leaves	07/02/07	375 ± 241	< 28	< 31	< 33	< 54	< 28	< 33
Zucchini Leaves	07/02/07	300 ± 167	< 20	< 18	< 22	< 34	< 17	< 19
Cabbage & Leaves	07/30/07	314 ± 109	< 15	< 16	< 15	< 46	< 14	< 16
Turnip Greens	07/30/07	759 ± 153	< 16	< 17	< 14	< 47	< 15	< 14
Zucchini Leaves	07/30/07	944 ± 164	< 14	< 15	< 16	< 39	< 14	< 15
Pepper Leaves	08/27/07	1190 ± 106	< 10	< 11	< 10	< 54	< 8	< 10
Red Cabbage & Leaves	08/27/07	623 ± 99	< 8	< 10	< 9	< 54	< 8	< 8
Turnip Greens	08/27/07	1150 ± 91	< 8	< 9	< 8	< 43	< 6	< 8
Pepper Leaves	09/24/07	673 ± 84	< 8	< 8	< 8	< 28	< 7	< 7
Red Cabbage	09/24/07	336 ± 89	< 9	< 10	< 9	< 28	< 8	< 8
Tomatoe Leaves	09/24/07	729 ± 147	< 14	< 16	< 15	< 54	< 14	< 15
	MEAN*	672 ± 649	-	-	-	-	-	-

* THE MEAN AND 2 STANDARD DEVIATION VALUES ARE CALCULATED USING THE POSITIVE VALUES

(1) SEE PROGRAM EXCEPTIONS SECTION FOR EXPLANATION

TABLE C-VIII.1 **CONCENTRATIONS OF GAMMA EMITTERS IN FOOD PRODUCT SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2007**

RESULTS IN UNITS OF PCI/KG WET ± 2 SIGMA

STC	COLLECTION PERIOD	Be-7	Mn-54	Co-58	Co-60	I-131	Cs-134	Cs-137
55								
Lettuce	05/31/07	218 ± 154	< 18	< 21	< 20	< 58	< 18	< 20
Rhubarb Leaves	05/31/07	246 ± 109	< 14	< 15	< 16	< 39	< 13	< 14
Broccoli Leaves	07/02/07	< 256	< 24	< 34	< 32	< 54	< 27	< 27
Lettuce & leaves	07/02/07	< 197	< 19	< 18	< 19	< 42	< 19	< 19
Turnip Greens	07/02/07	364 ± 206	< 14	< 15	< 15	< 28	< 14	< 15
Broccoli Leaves	07/30/07	543 ± 152	< 14	< 15	< 13	< 36	< 12	< 16
Cabbage	07/30/07	< 124	< 14	< 13	< 15	< 36	< 12	< 14
Lettuce	07/30/07	510 ± 125	< 15	< 15	< 12	< 40	< 13	< 14
Broccoli Leaves	08/27/07	722 ± 67	< 6	< 7	< 6	< 38	< 6	< 6
Cabbage	08/27/07	< 57	< 6	< 6	< 5	< 32	< 5	< 6
Lettuce Leaves	08/27/07	655 ± 102	< 10	< 11	< 10	< 58	< 9	< 10
Red Beet Leaves	09/24/07	< 105	< 12	< 13	< 11	< 43	< 10	< 11
Rhubarb Leaves	09/24/07	198 ± 117	< 14	< 16	< 17	< 60	< 14	< 16
Sweet Corn Leaves	09/24/07	975 ± 118	< 10	< 11	< 9	< 41	< 9	< 10
	MEAN*	492 ± 526	-	-	-	-	-	-

* THE MEAN AND 2 STANDARD DEVIATION VALUES ARE CALCULATED USING THE POSITIVE VALUES

TABLE C-IX.1 QUARTERLY TLD RESULTS FOR PEACH BOTTOM ATOMIC POWER STATION, 2007

RESULTS IN UNITS OF MILLI-ROETGEN/STD. QUARTER ± 2 STANDARD DEVIATIONS

STATION CODE	MEAN ±- 2 S.D.	01/04/07 - 04/05/07	04/05/07 - 07/06/07	07/06/07 - 10/05/07	10/05/07 - 01/04/08
1A	5.8 ± 0.8	5.5 ± 0.4	5.5 ± 0.9	6.2 ± 1	6.1 ± 0.4
1B	4.9 ± 1.1	4.5 ± 0.4	4.5 ± 0.4	5.6 ± 0.7	5.1 ± 0.8
1C	6.2 ± 0.9	5.9 ± 2.5	5.7 ± 0.6	6.4 ± 0.4	6.7 ± 0.7
1D	5.7 ± 1.0	5.2 ± 1.3	5.3 ± 0.4	6.0 ± 1.0	6.2 ± 0.6
1E	5.3 ± 1.0	4.7 ± 0.7	5.0 ± 0.3	5.7 ± 0.5	5.7 ± 0.4
1F	6.9 ± 1.5	6.0 ± 0.6	6.7 ± 0.4	7.7 ± 1.9	7.2 ± 0.4
1G	4.3 ± 1.1	3.7 ± 0.6	3.9 ± 0.4	4.7 ± 0.5	4.7 ± 0.2
1H	5.9 ± 0.7	5.5 ± 0.5	6.0 ± 0.2	5.7 ± 0.3	6.3 ± 0.3
1I	4.8 ± 1.0	4.6 ± 0.3	4.2 ± 0.5	5.3 ± 0.7	5.1 ± 0.3
1J	6.5 ± 1.1	5.8 ± 0.6	6.4 ± 0.6	6.6 ± 0.6	7.1 ± 0.5
1K	6.3 ± 1.6	5.4 ± 0.4	6.0 ± 0.6	6.4 ± 0.6	7.3 ± 1.1
1L	4.9 ± 0.8	4.4 ± 0.6	4.9 ± 0.5	5.2 ± 1.0	5.2 ± 0.5
1M	3.2 ± 0.9	2.7 ± 0.3	2.8 ± 0.1	3.5 ± 0.3	3.6 ± 1.3
1P	3.7 ± 1.0	3.4 ± 0.3	3.2 ± 0.2	4.0 ± 0.5	4.2 ± 0.6
1Q	4.4 ± 1.1	3.8 ± 0.4	4.1 ± 0.2	4.6 ± 0.4	5.1 ± 1.5
1R	7.6 ± 1.2	7.1 ± 0.5	7.2 ± 0.2	8.4 ± 2.0	7.7 ± 0.5
2	5.7 ± 1.0	5.1 ± 0.4	5.4 ± 0.2	5.9 ± 0.5	6.2 ± 0.7
2B	4.3 ± 4.0	5.1 ± 0.7	4.9 ± 0.2	5.7 ± 0.6	1.3 ± 10.3
3A	4.1 ± 1.1	3.6 ± 0.5	3.8 ± 0.3	4.2 ± 0.6	4.8 ± 0.9
4K	3.0 ± 1.5	3.1 ± 0.3	3.2 ± 0.3	3.7 ± 0.4	1.9 ± 7.1
5	5.3 ± 0.9	4.9 ± 0.7	4.9 ± 0.2	5.7 ± 0.6	5.7 ± 1.1
1NN	6.3 ± 1.8	5.5 ± 0.5	5.5 ± 0.7	7.2 ± 0.8	6.8 ± 0.2
6B	4.6 ± 0.8	4.4 ± 0.2	4.2 ± 0.3	5.1 ± 0.6	4.6 ± 0.3
14	5.5 ± 1.1	5.0 ± 0.6	5.1 ± 0.5	6.1 ± 0.4	5.8 ± 0.5
15	5.9 ± 0.8	5.5 ± 1.3	5.6 ± 0.7	6.3 ± 0.5	6.1 ± 0.6
16	5.8 ± 0.8	5.3 ± 0.3	5.7 ± 0.5	6.2 ± 0.5	5.9 ± 0.4
17	6.7 ± 1.3	5.9 ± 0.4	6.4 ± 0.5	7.1 ± 0.9	7.3 ± 0.9
18	6.1 ± 0.8	5.6 ± 0.5	6.3 ± 1.8	6.0 ± 0.6	6.5 ± 0.6
19	5.3 ± 0.9	4.8 ± 0.2	5.0 ± 0.6	5.4 ± 0.7	5.8 ± 0.5
22	6.0 ± 0.9	5.5 ± 0.6	5.8 ± 1.0	6.4 ± 1.2	6.4 ± 0.5
23	6.0 ± 0.8	5.6 ± 1.0	5.8 ± 0.6	6.2 ± 0.6	6.5 ± 0.9
24	4.4 ± 1.3	3.9 ± 0.8	3.8 ± 0.3	4.9 ± 0.3	5.0 ± 0.5
26	6.6 ± 0.9	6.2 ± 0.6	6.4 ± 0.5	6.6 ± 0.7	7.2 ± 1.2
27	6.0 ± 1.0	5.4 ± 0.4	5.8 ± 0.3	6.5 ± 1.2	6.3 ± 0.5
31A	4.6 ± 1.3	4.0 ± 0.6	4.1 ± 0.3	5.4 ± 0.9	4.9 ± 0.5
32	6.2 ± 0.8	5.9 ± 0.4	5.8 ± 0.5	6.4 ± 1.0	6.6 ± 0.5
40	6.8 ± 1.3	6.0 ± 0.5	6.7 ± 0.7	7.0 ± 1.3	7.5 ± 0.8
42	5.1 ± 0.8	4.9 ± 0.5	4.6 ± 0.4	5.4 ± 0.5	5.4 ± 0.3
43	6.4 ± 1.3	5.7 ± 0.6	6.1 ± 0.5	7.0 ± 0.6	6.9 ± 0.7
44	5.6 ± 0.9	5.1 ± 0.4	5.3 ± 0.2	5.8 ± 0.8	6.1 ± 0.4
45	6.2 ± 1.0	5.5 ± 0.7	6.1 ± 0.5	6.4 ± 0.6	6.7 ± 0.7
46	5.3 ± 1.3	4.4 ± 0.4	5.3 ± 0.6	5.7 ± 0.4	5.8 ± 0.5
47	6.5 ± 1.4	5.6 ± 0.2	6.4 ± 0.7	7.2 ± 1.0	6.8 ± 0.8
48	6.0 ± 1.0	5.4 ± 0.4	5.7 ± 0.5	6.3 ± 0.6	6.5 ± 0.9
49	5.6 ± 0.9	5.1 ± 0.8	5.5 ± 0.4	5.7 ± 0.4	6.2 ± 0.3
50	6.6 ± 0.5	6.3 ± 0.6	6.4 ± 1.1	6.8 ± 0.7	6.8 ± 0.3
51	6.0 ± 1.3	5.2 ± 0.3	5.7 ± 0.6	6.5 ± 0.7	6.5 ± 1.0

TABLE C-IX.2 **MEAN QUARTERLY TLD RESULTS FOR THE SITE BOUNDRY, INTERMEDIATE AND CONTROL LOCATIONS FOR PEACH BOTTOM ATOMIC POWER STATION, 2007**

RESULTS IN UNITS OF MILLI-ROENTGENS/MONTH ± 2 STANDARD DEVIATIONS OF THE STATION DATA

COLLECTION PERIOD	SITE BOUNDARY ± 2 S.D.	INTERMEDIATE	CONTROL
JAN-MAR	5.0 ± 2.1	5.1 ± 1.6	4.9 ± 1.5
APR-JUN	5.2 ± 2.3	5.4 ± 1.8	5.2 ± 2.1
JUL-SEP	5.9 ± 2.4	6.0 ± 1.7	5.6 ± 1.2
OCT-DEC	5.8 ± 3.1	6.0 ± 2.3	5.8 ± 1.2

TABLE C-IX.3 **SUMMARY OF THE AMBIENT DOSIMETRY PROGRAM FOR PEACH BOTTOM ATOMIC POWER STATION, 2007**

RESULTS IN UNITS OF MILLI-ROENTGEN/STD. MONTH

LOCATION	SAMPLES ANALYZED	PERIOD MINIMUM	PERIOD MAXIMUM	PERIOD MEAN ± 2 S.D.
SITE BOUNDARY	80	1.3	8.4	5.5 ± 2.6
INTERMEDIATE	92	1.9	7.3	5.6 ± 2.0
CONTROL	16	4	6.5	5.4 ± 1.6

SITE BOUNDARY STATIONS - 1A, 1B, 1C, 1D, 1E, 1F, 1G, 1H, 1I, 1J, 1K, 1L, 1M, 1NN, 1P, 1Q, 1R, 2, 2B, 40

INTERMEDIATE STATIONS - 14, 15, 17, 22, 23, 26, 27, 31A, 32, 3A, 42, 43, 44, 45, 46, 47, 48, 49, 4K, 5, 50, 51, 6B

CONTROL STATIONS - 16, 18, 19, 24

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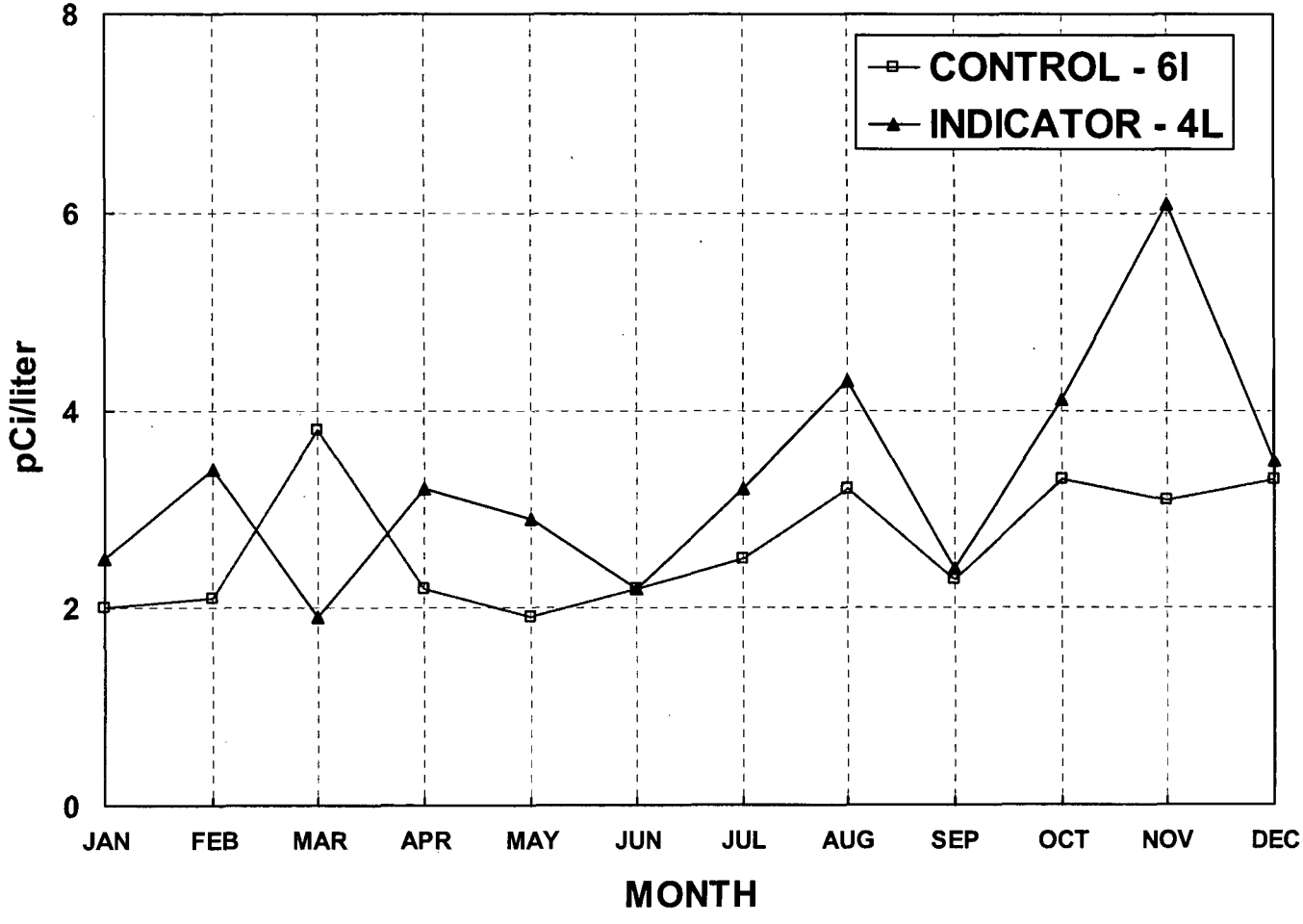
FIGURE C-1
MONTHLY TOTAL GROSS BETA CONCENTRATIONS IN DRINKING WATER SAMPLES COLLECTED IN THE VICINITY OF PBAPS, 2007



PBAPS changed to total gross beta at the beginning of 2005.
Previous data included summation of less than values.

FIGURE C-2
MEAN ANNUAL CS-137 CONCENTRATIONS IN FISH SAMPLES COLLECTED IN THE VICINITY OF PBAPS, 1971 – 2007

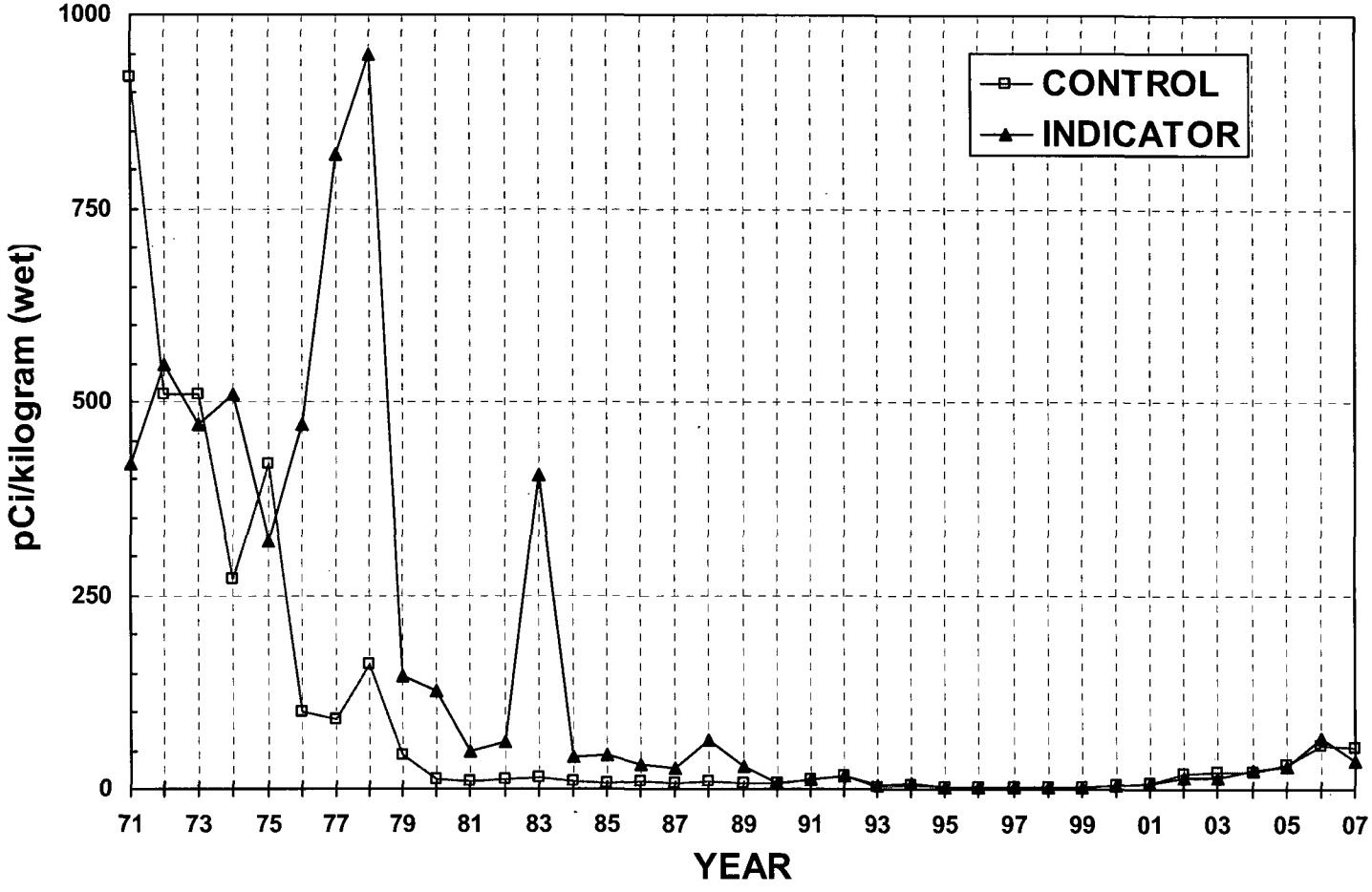
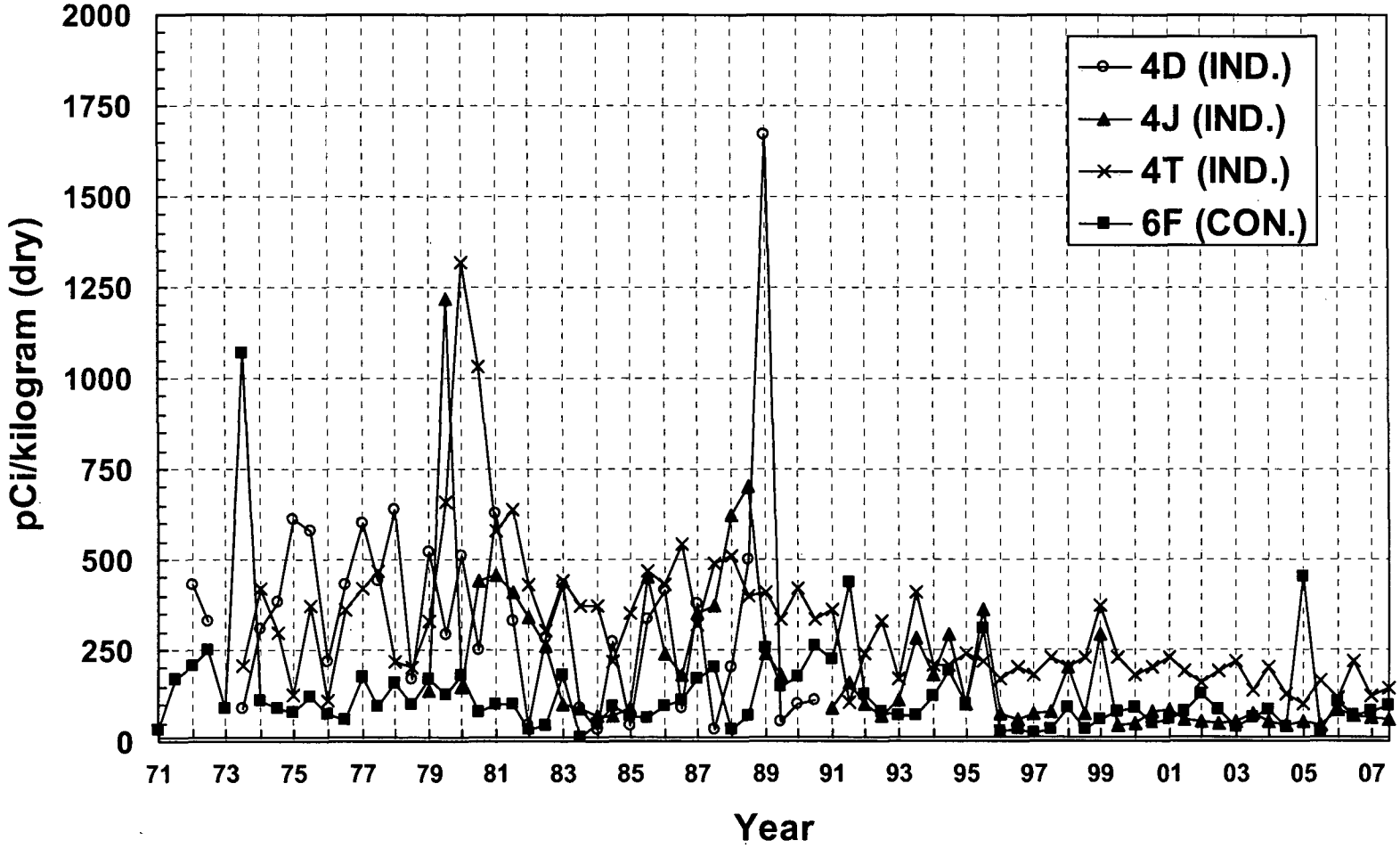


FIGURE C-3
CONCENTRATIONS OF CS-137 IN SEDIMENT SAMPLES COLLECTED IN THE VICINITY OF PBAPS, 1971 – 2007



No sample collected from Station 4J in 1990 and
Station 4D discontinued beginning 1991

FIGURE C-4
MEAN WEEKLY GROSS BETA CONCENTRATIONS IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF PBAPS, 2007

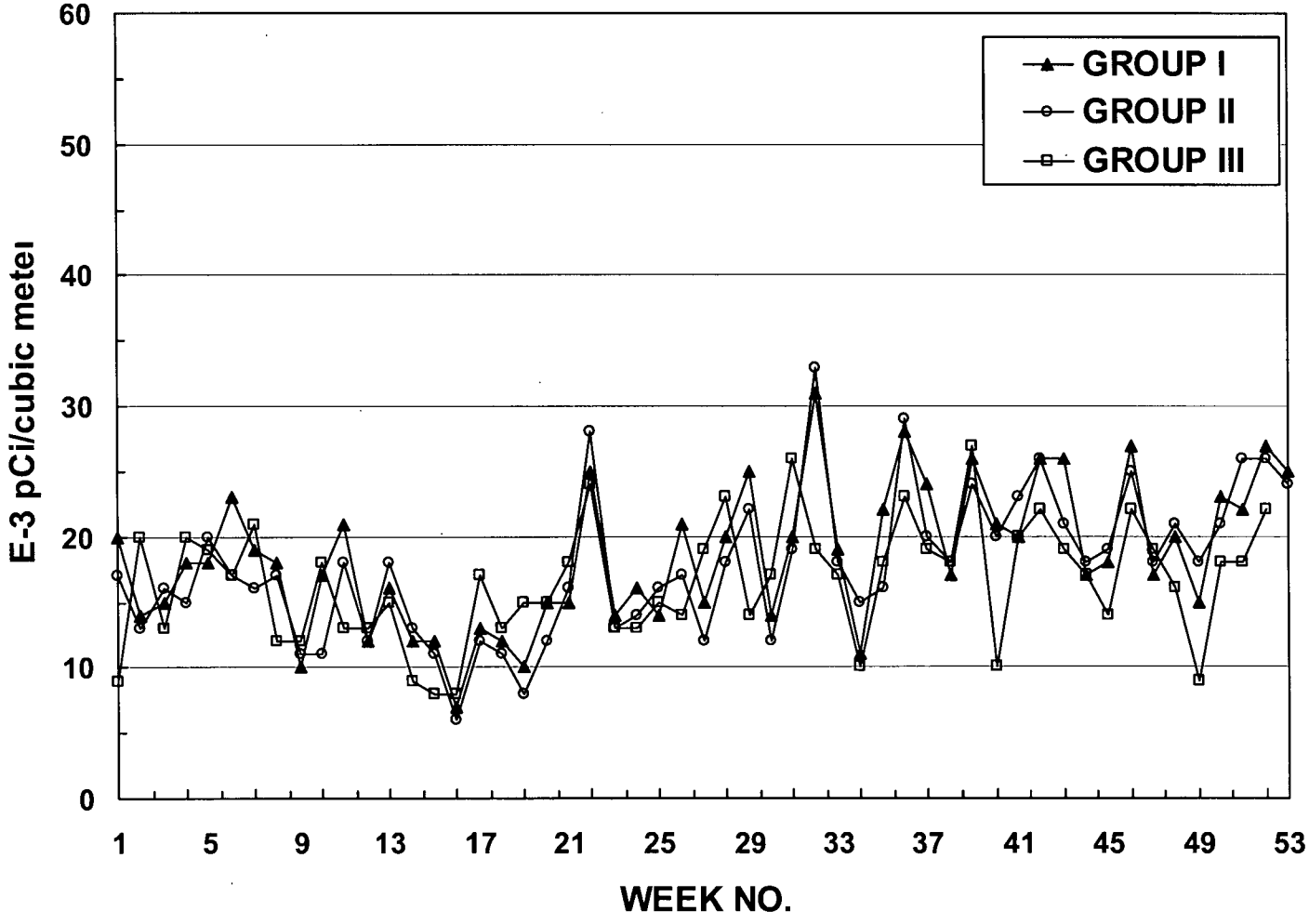


FIGURE C-5
MEAN MONTHLY GROSS BETA CONCENTRATIONS IN AIR PARTICULATE
SAMPLES COLLECTED IN THE VICINITY OF PBAPS, 1970 – 2007

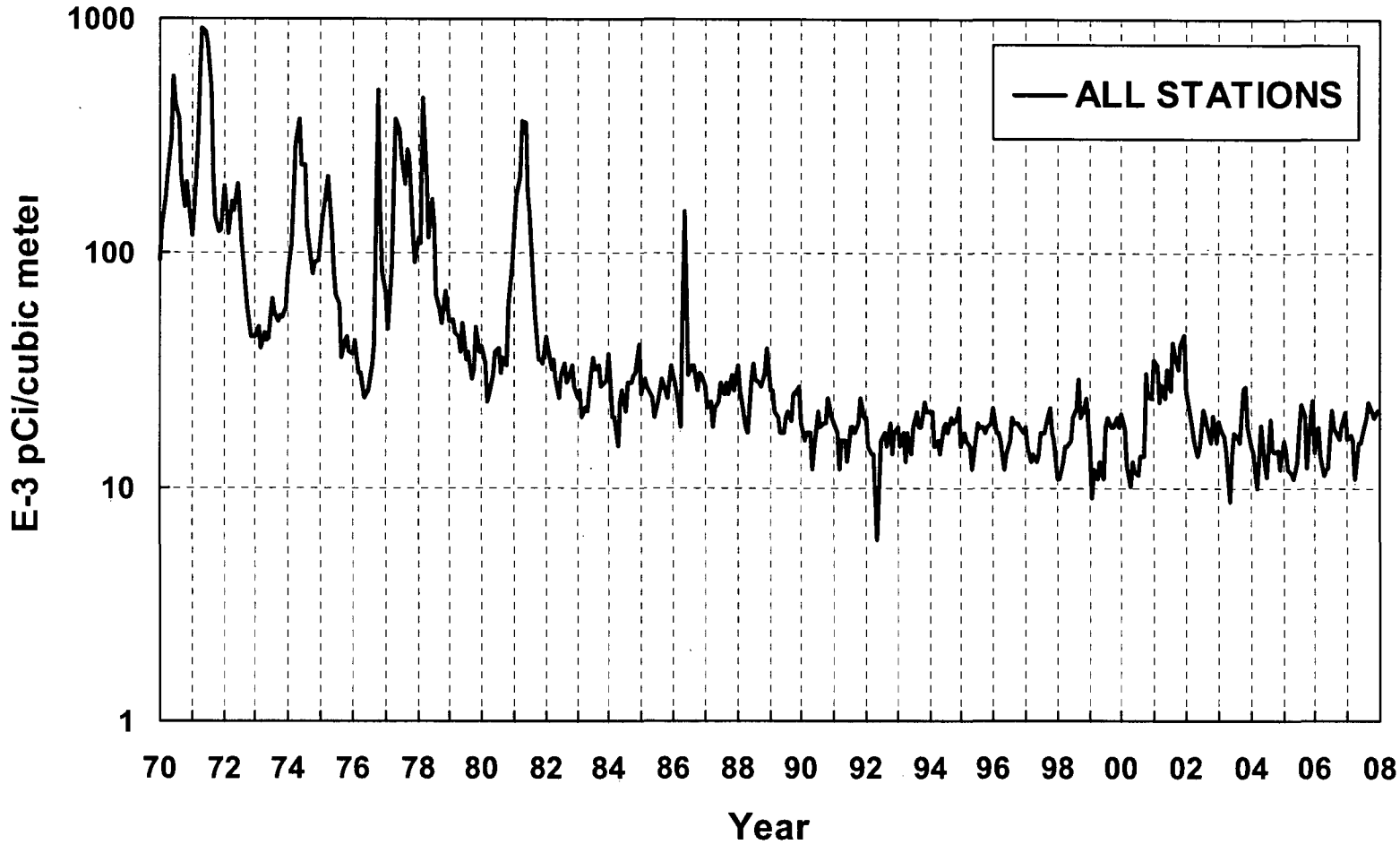
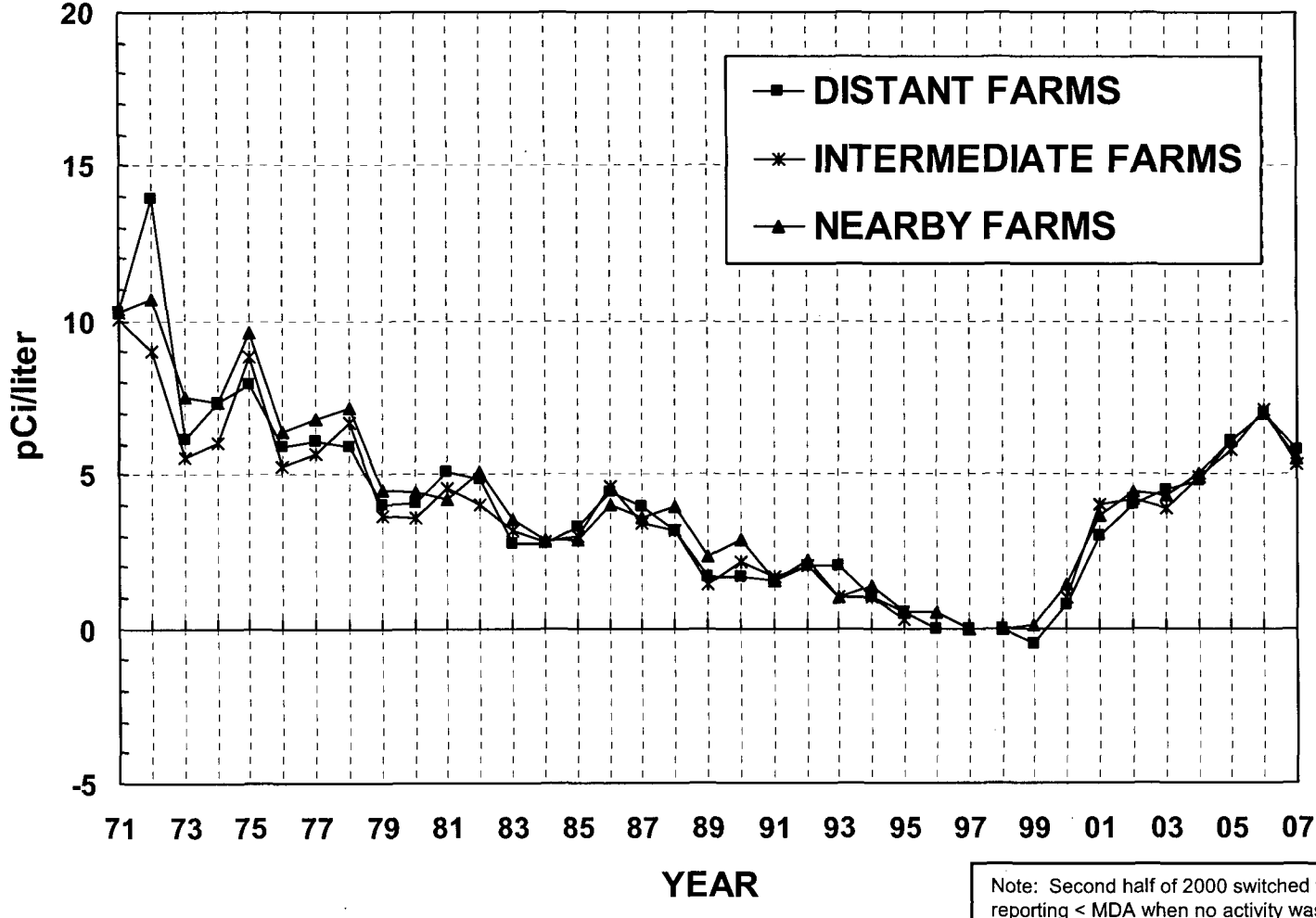


FIGURE C-6
MEAN ANNUAL CS-137 CONCENTRATIONS IN MILK SAMPLES COLLECTED IN THE VICINITY OF PBAPS, 1971 - 2007



Note: Second half of 2000 switched to reporting < MDA when no activity was detected. Using MDA values result in a larger number.

Intermediate Farms Discontinued from 1995 - 1999
Cs-137 milk LLD = 18 pCi/liter

FIGURE C- 7
MEAN QUARTERLY AMBIENT GAMMA RADIATION LEVELS (TLD) IN THE VICINITY OF PBAPS, 1973 – 2007

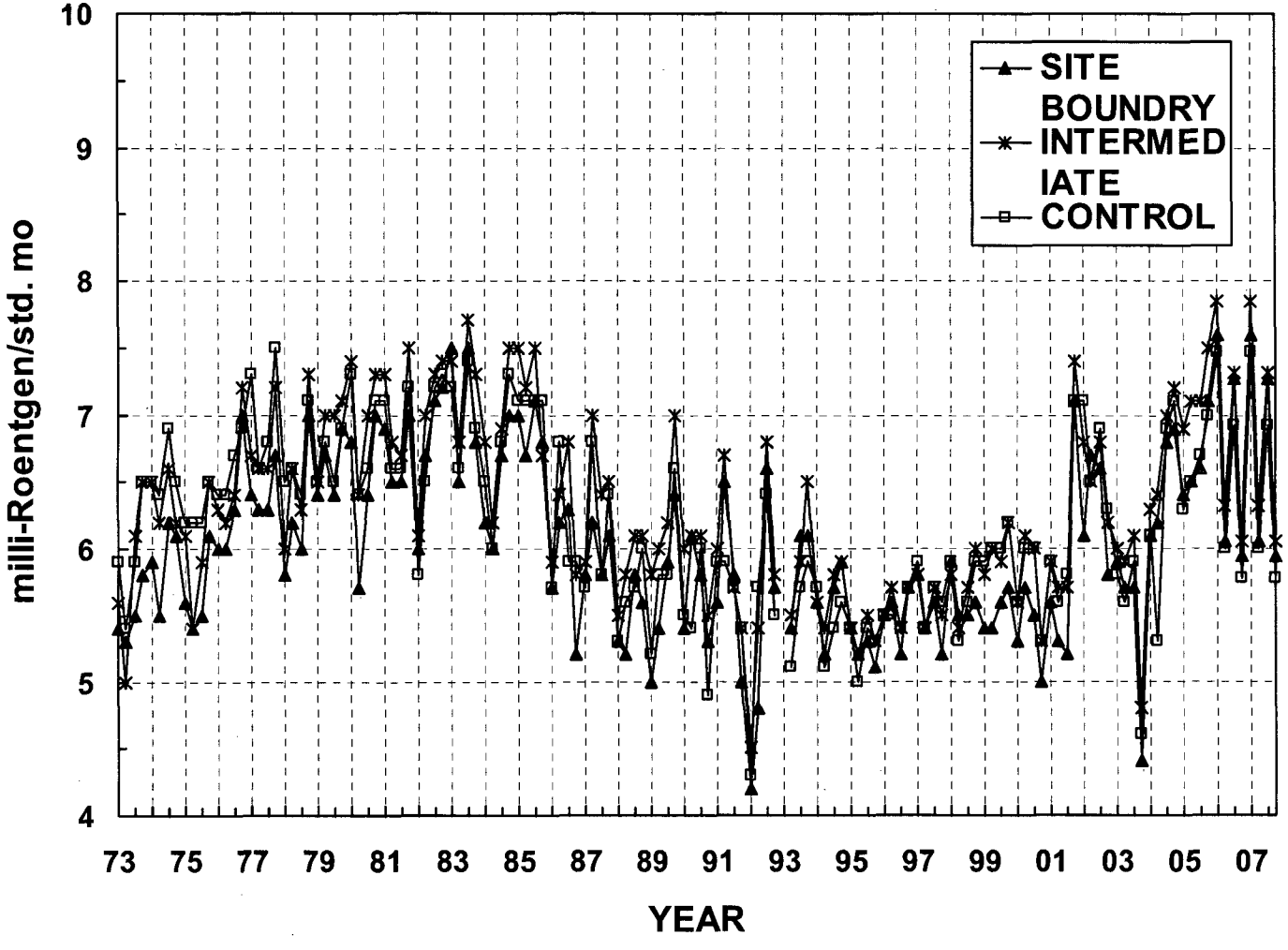
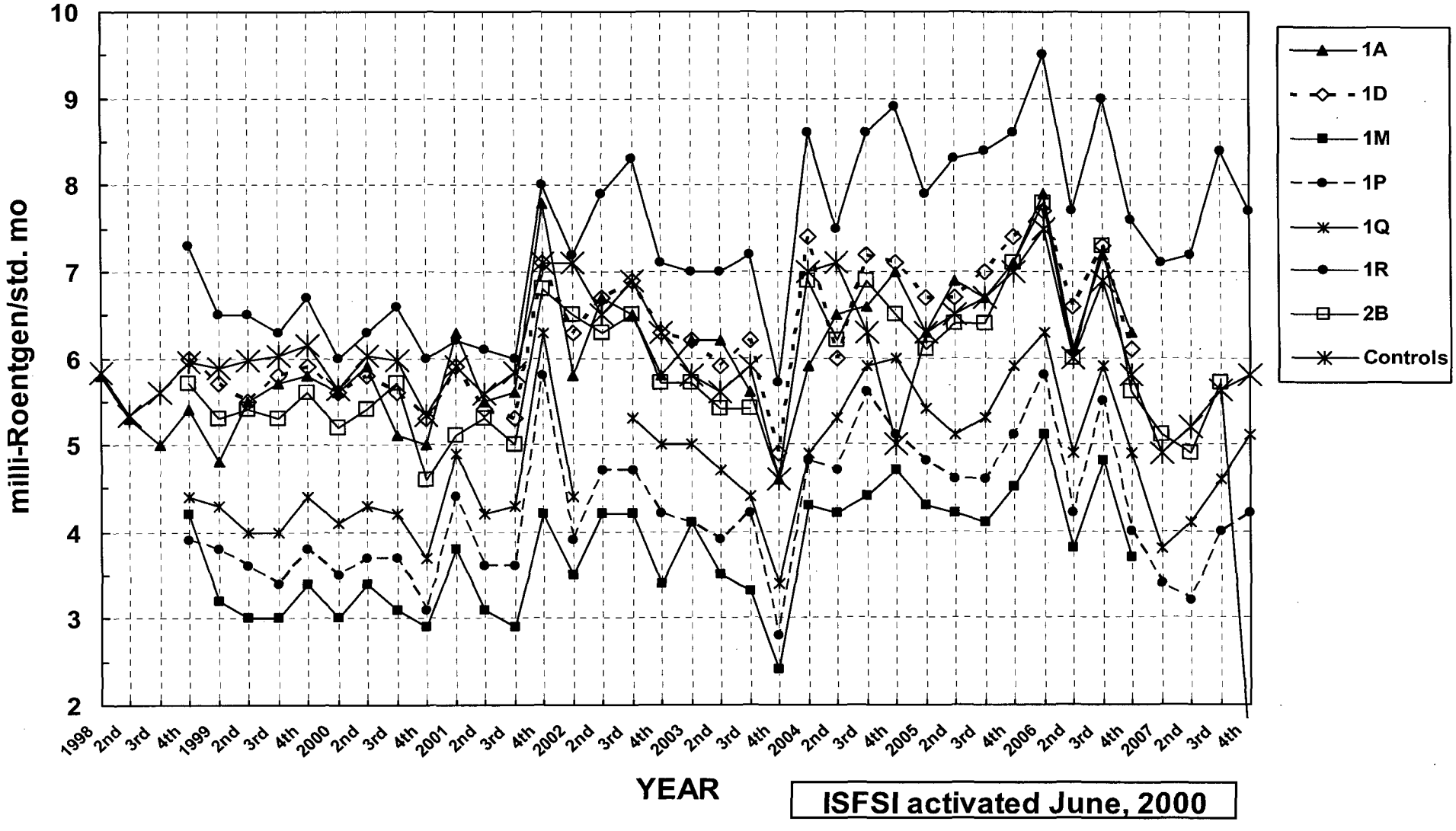


FIGURE C-8
QUARTERLY AMBIENT GAMMA RADIATION LEVELS (TLD) NEAR THE INDEPENDENT SPENT FUEL STORAGE INSTALLATION LOCATED AT PBAPS, 1998 – 2007



APPENDIX D

DATA TABLES AND FIGURES
COMPARISON LABORATORY

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

The QC laboratory results for gross beta insoluble and soluble in drinking water samples were very similar to those reported by the Primary laboratory. All results between the laboratories were within 4 pCi/l of each other. The data reported were well within the historical range.

TABLE D-I.1 CONCENTRATIONS OF GROSS BETA INSOLUBLE IN DRINKING WATER SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2007

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	4L
JAN	< 1.9
FEB	< 1.9
MAR	< 2.1
APR	< 1.8
MAY	< 1.0
JUN	< 0.6
JUL	< 1.9
AUG	< 1.7
SEP	< 2.1
OCT	< 1.9
NOV	< 1.9
DEC	< 1.9
MEAN	-

TABLE D-I.2 CONCENTRATIONS OF GROSS BETA SOLUBLE IN DRINKING WATER SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2007

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	4L
JAN	< 0.8
FEB	< 0.8
MAR	< 1.8
APR	< 1.8
MAY	< 0.9
JUN	< 0.8
JUL	< 1.8
AUG	< 1.8
SEP	< 0.9
OCT	< 0.9
NOV	< 0.9
DEC	< 1.6
MEAN	-

TABLE D-I.3 CONCENTRATIONS OF GAMMA EMITTERS IN DRINKING WATER SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2007

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
4L	JAN	< 3	< 3	< 4	< 3	< 5	< 6	< 4	< 2	< 3	< 10	< 6
	FEB	< 2	< 2	< 3	< 2	< 4	< 5	< 3	< 4	< 3	< 14	< 2
	MAR	< 1.8	< 1.9	< 4.4	< 1.8	< 4.6	< 3	< 2.8	< 2.2	< 2.5	< 17	< 2.1
	APR	< 3.1	< 2.1	< 6.9	< 1.9	< 2.9	< 5.1	< 3.5	< 2.2	< 3.9	< 15	< 1.7
	MAY	< 2.4	< 1.9	< 7.3	< 1.9	< 6	< 4.4	< 4.1	< 2.6	< 3.4	< 14	< 4.2
	JUN	< 2.2	< 3.4	< 11	< 2.1	< 1.9	< 3.2	< 2.8	< 1.9	< 3.9	< 25	< 2.7
	JUL	< 3.1	< 4.5	< 13	< 3.9	< 5.7	< 9.8	< 5.6	< 3.2	< 3.1	< 33	< 5
	AUG	< 3.3	< 4.4	< 12	< 3.6	< 7.2	< 12	< 4.9	< 4.5	< 4.7	< 20	< 7.7
	SEP	< 3.2	< 2.6	< 6	< 3.7	< 4.2	< 4.5	< 2.7	< 3.1	< 3.9	< 27	< 5.4
	OCT	< 2.5	< 2.2	< 8.8	< 2.5	< 5.5	< 5.4	< 5.7	< 4.4	< 3.8	< 25	< 6.7
	NOV	< 2.9	< 5	< 9.4	< 4.2	< 7.1	< 6.2	< 2.7	< 6	< 4.5	< 22	< 6.2
	DEC	< 2.5	< 3	< 4.4	< 1.6	< 4	< 5.5	< 3	< 2.4	< 3	< 11	< 2.3
	MEAN	-	-	-	-	-	-	-	-	-	-	-

TABLE D-II.1 CONCENTRATIONS OF GROSS BETA INSOLUBLE IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2007

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

COLLECTION PERIOD	1A
1	30 ± 5
2	19 ± 4
3	24 ± 4
4	24 ± 5
5	29 ± 5
6	28 ± 4
7	22 ± 4
8	30 ± 5
9	13 ± 4
10	21 ± 4
11	34 ± 5
12	23 ± 4
13	18 ± 4
14	16 ± 4
15	14 ± 4
16	8 ± 4
17	22 ± 4
18	16 ± 5
19	10 ± 4
20	18 ± 4
21	18 ± 5
22	24 ± 5
23	19 ± 4
24	24 ± 4
25	23 ± 5
26	30 ± 5
27	17 ± 5
28	29 ± 4
29	35 ± 6
30	24 ± 5
31	34 ± 5
32	44 ± 6
33	29 ± 5
34	19 ± 5
35	28 ± 5
36	34 ± 5
37	32 ± 5
38	21 ± 5
39	39 ± 5
40	36 ± 5
41	23 ± 4
42	30 ± 4
43	34 ± 5
44	(1)
45	32 ± 6
46	34 ± 5
47	25 ± 5
48	25 ± 5
49	22 ± 4
50	39 ± 6
51	26 ± 5
52	35 ± 5
53	37 ± 5
MEAN	26 ± 16

(1) NO SAMPLE. LOW VOLUME DUE TO OPEN BREAKER

TABLE D-II.2 **CONCENTRATIONS OF GAMMA EMITTERS IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2007**

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
1A	12/28/06 - 03/29/07	81 ± 15	< 0.6	< 0.6	< 0.5	< 0.8	< 0.6
	03/29/07 - 07/02/07	82 ± 17	< 0.9	< 0.9	< 1.1	< 0.6	< 0.7
	07/02/07 - 09/27/07	100 ± 19	< 0.9	< 0.6	< 0.7	< 0.5	< 0.7
	09/27/07 - 01/02/08	73 ± 22	< 2.7	< 0.8	< 0.5	< 0.9	< 0.8
	MEAN*	84 ± 23	-	-	-	-	-

* THE MEAN AND 2 STANDARD DEVIATION VALUES ARE CALCULATED USING THE POSITIVE VALUES

TABLE D-III.1 CONCENTRATIONS OF I-131 BY CHEMICAL SEPARATION AND GAMMA EMITTERS IN MILK SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2007

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

STC	COLLECTION PERIOD	I-131	K-40	Cs-134	Cs-137	Ba-140	La-140
J	02/12/07	< 0.3	1375 ± 115	< 3	< 3	< 12	< 3
	05/07/07	< 0.2	1344 ± 116	< 3	< 4	< 14	< 4
	08/13/07	< 0.5	1342 ± 119	< 4	< 4	< 20	< 5
	11/05/07	< 0.4	1457 ± 115	< 2	< 3	< 14	< 2
	MEAN	-	1379 ± 107				
O	02/12/07	< 0.3	1204 ± 114	< 4	< 3	< 14	< 2
	05/07/07	< 0.3	1217 ± 120	< 3	< 3	< 13	< 2
	08/13/07	< 0.4	1385 ± 114	< 3	< 4	< 12	< 2
	11/05/07	< 0.4	1431 ± 120	< 4	< 2	< 18	< 2
	MEAN	-	1309 ± 232				
T	02/12/07	< 0.4	1221 ± 104	< 4	< 4	< 15	< 3
	05/07/07	< 0.3	1162 ± 116	< 2	< 5	< 12	< 2
	08/13/07	< 0.4	1323 ± 117	< 5	< 4	< 23	< 3
	11/05/07	< 0.3	1264 ± 109	< 3	< 4	< 22	< 5
	MEAN	-	1243 ± 136				

* THE MEAN AND 2 STANDARD DEVIATION VALUES ARE CALCULATED USING THE POSITIVE VALUES

TABLE D-IV.1 SUMMARY OF COLLECTION DATES FOR SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2007

DRINKING WATER (GROSS BETA & GAMMA SPECTROSCOPY)

COLLECTION PERIOD	4L
JAN	12/28/06 - 02/01/07
FEB	02/01/07 - 03/01/07
MAR	03/01/07 - 03/29/07
APR	03/29/07 - 05/03/07
MAY	05/03/07 - 05/31/07
JUN	05/31/07 - 06/28/07
JUL	06/28/07 - 08/02/07
AUG	08/02/07 - 08/30/07
SEP	08/30/07 - 09/27/07
OCT	09/27/07 - 11/01/07
NOV	11/01/07 - 11/29/07
DEC	11/29/07 - 01/02/08

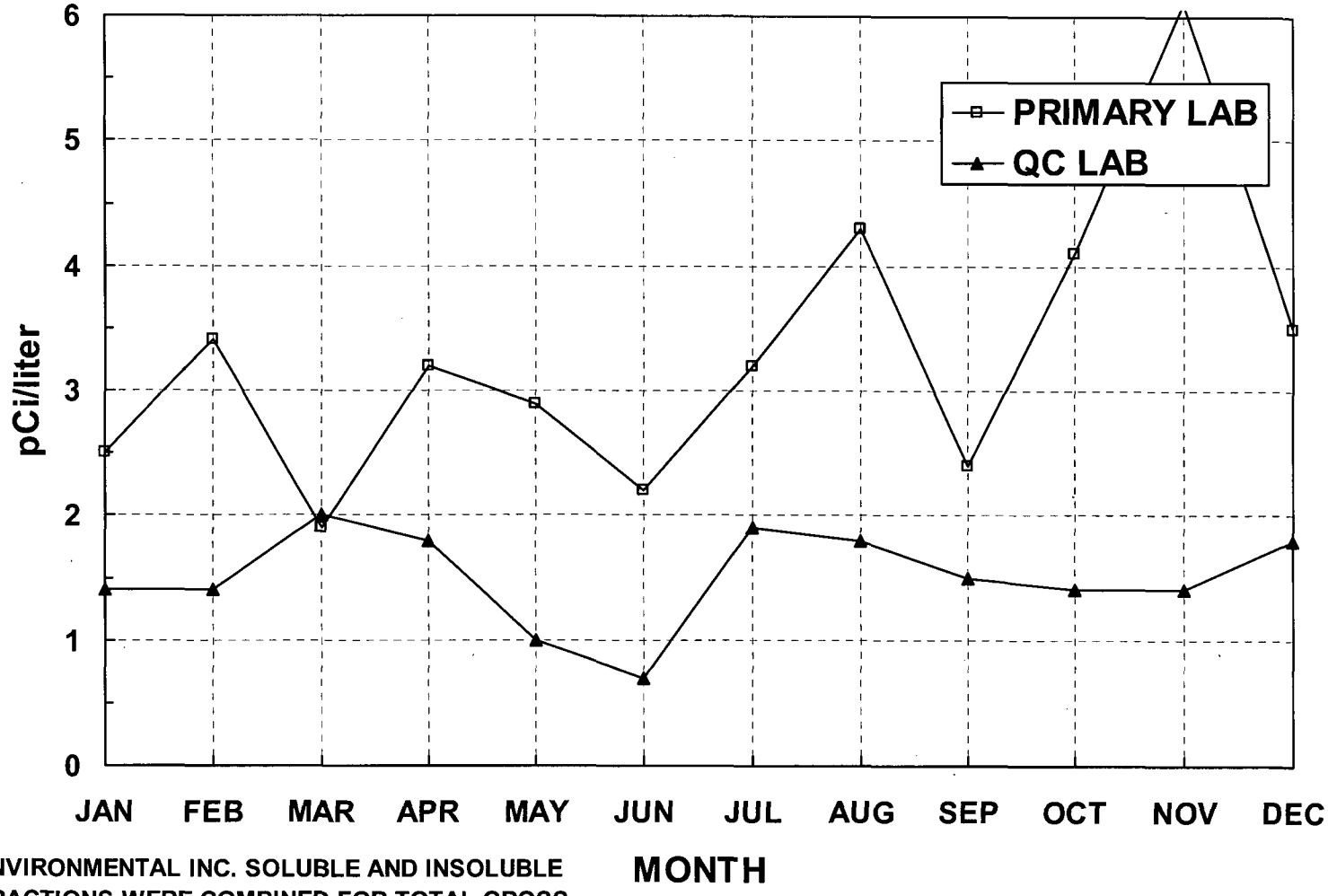
AIR PARTICULATE (GAMMA SPECTROSCOPY)

COLLECTION PERIOD	1A
JAN-MAR	12/28/06 - 03/29/07
APR-JUN	03/29/07 - 07/02/07
JUL-SEP	07/02/07 - 09/27/07
OCT-DEC	09/27/07 - 01/02/08

AIR PARTICULATE (GROSS BETA)

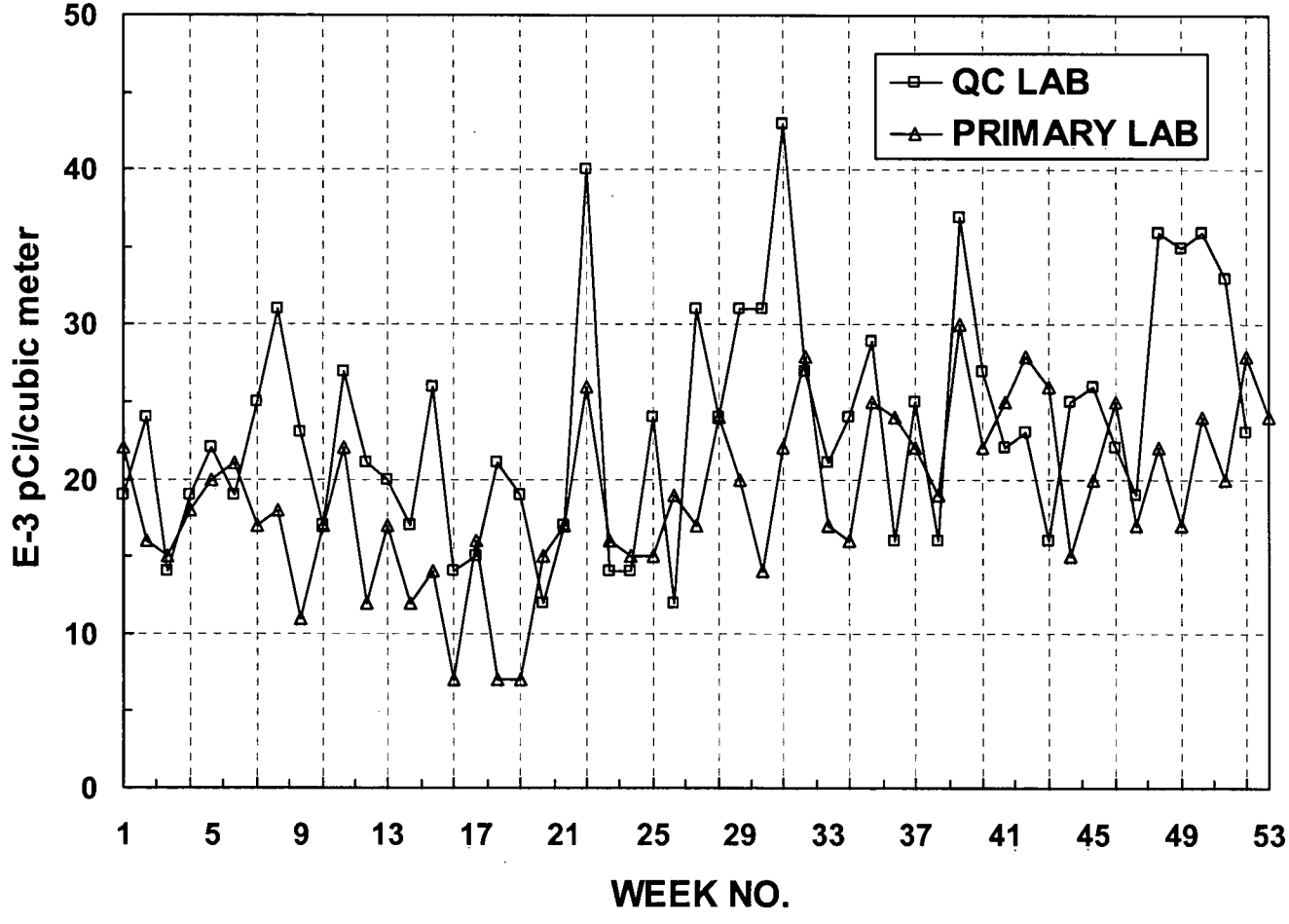
COLLECTION PERIOD	1A	COLLECTION PERIOD	1A
1	12/28/06 - 01/04/07	27	06/28/07 - 07/05/07
2	01/04/07 - 01/11/07	28	07/05/07 - 07/13/07
3	01/11/07 - 01/18/07	29	07/13/07 - 07/19/07
4	01/18/07 01/25/07	30	07/19/07 - 07/26/07
5	01/25/07 - 02/01/07	31	07/26/07 - 08/02/07
6	02/01/07 - 02/08/07	32	08/02/07 - 08/09/07
7	02/08/07 - 02/15/07	33	08/09/07 - 08/16/07
8	02/15/07 - 02/22/07	34	08/16/07 - 08/23/07
9	02/22/07 - 03/01/07	35	08/23/07 - 08/30/07
10	03/01/07 - 03/08/07	36	08/30/07 - 09/06/07
11	03/08/07 - 03/15/07	37	09/06/07 - 09/13/07
12	03/15/07 - 03/22/07	38	09/13/07 - 09/20/07
13	03/22/07 - 03/29/07	39	09/20/07 - 09/27/07
14	03/29/07 - 04/05/07	40	09/27/07 - 10/04/07
15	04/05/07 - 04/12/07	41	10/04/07 - 10/11/07
16	04/12/07 - 04/19/07	42	10/11/07 - 10/18/07
17	04/19/07 - 04/26/07	43	10/18/07 - 10/25/07
18	04/27/07 - 05/03/07	44	10/25/07 - 11/01/07
19	05/03/07 - 05/10/07	45	11/01/07 - 11/08/07
20	05/10/07 - 05/17/07	46	11/08/07 - 11/15/07
21	05/18/07 - 05/24/07	47	11/15/07 - 11/22/07
22	05/24/07 - 05/31/07	48	11/22/07 - 11/29/07
23	05/31/07 - 06/07/07	49	11/29/07 - 12/07/07
24	06/07/07 - 06/14/07	50	12/07/07 - 12/13/07
25	06/14/07 - 06/21/07	51	12/13/07 - 12/20/07
26	06/21/07 - 06/28/07	52	12/20/07 - 12/27/07
		53	12/28/07 - 01/02/08

FIGURE D-1
COMPARISON OF MONTHLY TOTAL GROSS BETA CONCENTRATIONS IN DRINKING WATER SAMPLES SPLIT BETWEEN THE PRIMARY AND QC LABORATORIES, 2007



ENVIRONMENTAL INC. SOLUBLE AND INSOLUBLE FRACTIONS WERE COMBINED FOR TOTAL GROSS BETA COMPARISON.

FIGURE D-2
COMPARISON OF WEEKLY GROSS BETA CONCENTRATIONS FROM COLLOCATED AIR PARTICULATE LOCATIONS SPLIT BETWEEN THE PRIMARY AND QC LABORATORIES, 2007



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APPENDIX E

INTER-LABORATORY COMPARISON PROGRAM

TABLE E-1 **ANALYTICS ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM**
TELEDYNE BROWN ENGINEERING, 2007
(PAGE 1 OF 3)

Month/Year	Identification Number	Matrix	Nuclide	Units	Reported Value (a)	Known Value (b)	Ratio (c) TBE/Analytics	Evaluation (d)
March 2007	E5255-396	Milk	Sr-89	pCi/L	125	137	0.91	A
			Sr-90	pCi/L	10.8	10	1.08	A
	E5256-396	Milk	I-131	pCi/L	107	85.2	1.26	W
			Ce-141	pCi/L	269	297	0.91	A
			Cr-51	pCi/L	244	245	1.00	A
			Cs-134	pCi/L	98.1	112	0.88	A
			Cs-137	pCi/L	227	234	0.97	A
			Co-58	pCi/L	92.5	98.8	0.94	A
			Mn-54	pCi/L	182.0	182	1.00	A
			Fe-59	pCi/L	108.0	106	1.02	A
			Zn-65	pCi/L	985	1000	0.99	A
			Co-60	pCi/L	143	152	0.94	A
	E5258-396	AP	Ce-141	pCi	252	245	1.03	A
			Cr-51	pCi	204	202	1.01	A
			Cs-134	pCi	74.9	92.3	0.81	A
			Cs-137	pCi	190.0	197.0	0.96	A
			Co-58	pCi	79.7	81.6	0.98	A
			Mn-54	pCi	156	151	1.03	A
			Fe-59	pCi	99.1	87.2	1.14	A
			Zn-65	pCi	894	826	1.08	A
			Co-60	pCi	122	126	0.97	A
	E5257-396	Charcoal	I-131	pCi	34.7	71.3	0.49	N (1)
June 2007	E5384-396	Milk	Sr-89	pCi/L	98.3	95.2	1.03	A
			Sr-90	pCi/L	16.1	12.9	1.25	W
	E5385-396	Milk	I-131	pCi/L	71.0	70.1	1.01	A
			Ce-141	pCi/L	176	200	0.88	A
			Cr-51	pCi/L	459	512	0.90	A
			Cs-134	pCi/L	197	242	0.81	A
			Cs-137	pCi/L	158	169	0.93	A
			Co-58	pCi/L	180	198	0.91	A
			Mn-54	pCi/L	163	166	0.98	A
			Fe-59	pCi/L	158	167	0.95	A
			Zn-65	pCi/L	318	334	0.95	A
			Co-60	pCi/L	212	238	0.89	A
	E5387-396	AP	Ce-141	pCi	87.5	105	0.83	A
			Cr-51	pCi	232	268	0.87	A
			Cs-134	pCi	101	127	0.80	A
			Cs-137	pCi	78.9	88.5	0.89	A
			Co-58	pCi	91.8	104.0	0.88	A
			Mn-54	pCi	85.6	87	0.99	A
			Fe-59	pCi	89.8	87.3	1.03	A
			Zn-65	pCi	178	175	1.02	A
			Co-60	pCi	111	125	0.89	A
	E5386-396	Charcoal	I-131	pCi	79.3	79.1	1.00	A

TABLE E-1 ANALYTICS ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM
TELEDYNE BROWN ENGINEERING, 2007
(PAGE 2 OF 3)

Month/Year	Identification Number	Matrix	Nuclide	Units	Reported Value (a)	Known Value (b)	Ratio (c) TBE/Analytics	Evaluation (d)
September 2007	E5492-396	Milk	Sr-89	pCi/L	99.0	94.9	1.04	A
			Sr-90	pCi/L	13.9	13.1	1.06	A
	E5493-396	Milk	I-131	pCi/L	81.9	85.2	0.96	A
			Ce-141	pCi/L	200	211	0.95	A
			Cr-51	pCi/L	271	289	0.94	A
			Cs-134	pCi/L	131	147	0.89	A
			Cs-137	pCi/L	131	131	1.00	A
			Co-58	pCi/L	114	114	1.00	A
			Mn-54	pCi/L	171	168	1.02	A
			Fe-59	pCi/L	117	111	1.05	A
			Zn-65	pCi/L	212	202	1.05	A
			Co-60	pCi/L	143	148	0.97	A
	E5495-396	AP	Ce-141	pCi	128	136	0.94	A
			Cr-51	pCi	181	186	0.97	A
			Cs-134	pCi	85.9	94.7	0.91	A
			Cs-137	pCi	83.2	83.9	0.99	A
			Co-58	pCi	69.4	73.3	0.95	A
			Mn-54	pCi	112	108	1.04	A
			Fe-59	pCi	79.6	71.1	1.12	A
			Zn-65	pCi	159	130	1.22	W
			Co-60	pCi	92.0	95.2	0.97	A
	E5494-396	Charcoal	I-131	pCi	70.8	69.5	1.02	A
December 2007	E5749-396	Milk	Sr-89	pCi/L	87.6	93.7	0.93	A
			Sr-90	pCi/L	15.5	15.2	1.02	A
	E5750-396	Milk	I-131	pCi/L	60.6	60.8	1.00	A
			Ce-141	pCi/L	137	141	0.97	A
			Cr-51	pCi/L	497	512	0.97	A
			Cs-134	pCi/L	117	137	0.85	A
			Cs-137	pCi/L	166	166	1.00	A
			Co-58	pCi/L	159	174	0.91	A
			Mn-54	pCi/L	190	190	1.00	A
			Fe-59	pCi/L	149	148	1.01	A
			Zn-65	pCi/L	231	234	0.99	A
			Co-60	pCi/L	198	211	0.94	A
	E5752-396	AP	Ce-141	pCi	88.6	93.4	0.95	A
			Cr-51	pCi	352	340	1.04	A
			Cs-134	pCi	84.6	91.2	0.93	A
			Cs-137	pCi	111	110.0	1.01	A
			Co-58	pCi	114	116.0	0.98	A
			Mn-54	pCi	135	126	1.07	A
			Fe-59	pCi	119	98.5	1.21	W
			Zn-65	pCi	172	155	1.11	A
			Co-60	pCi	137	141	0.97	A

TABLE E-1 **ANALYTICS ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM**
TELEDYNE BROWN ENGINEERING, 2007
(PAGE 3 OF 3)

Month/Year	Identification Number	Matrix	Nuclide	Units	Reported Value (a)	Known Value (b)	Ratio (c) TBE/Analytics	Evaluation (d)
December 2007	E5751-396	Charcoal	I-131	pCi	65.8	74.1	0.89	A

(1) New technician counted charcoal cartridge on the back rather than the face, resulting in low activity. If the charcoal cartridge had been counted on the face, the ratio would have been approximately 1.07, which is acceptable. NCR 07-02

(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 **ERA ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM**
TELEDYNE BROWN ENGINEERING, 2007
(PAGE 1 OF 1)

Month/Year	Identification Number	Media	Nuclide	Units	Reported Value (a)	Known Value (b)	Control Limits	Evaluation (c)
July 2007	Rad 70	Water	Sr-89	pCi/L	58.6	58.2	49.5 - 66.9	A
			Sr-90	pCi/L	18.7	19.0	10.3 - 27.7	A
			Ba-133	pCi/L	18.6	19.4	10.7 - 28.1	A
			Cs-134	pCi/L	57.6	68.9	60.2 - 77.6	N (1)
			Cs-137	pCi/L	55.4	61.3	52.6 - 70.0	A
			Co-60	pCi/L	31.3	33.5	24.8 - 42.2	A
			Zn-65	pCi/L	49.0	54.6	45.2 - 64.0	A
			Gr-A	pCi/L	26.8	27.1	15.4 - 38.8	A
			Gr-B	pCi/L	12	11.5	2.84 - 20.2	A
			I-131	pCi/L	31.1	26.5	21.3 - 31.7	A
			H-3	pCi/L	1700	1770	1180 - 2360	A
October 2007	RAD 71	Water	Sr-89	pCi/L	27.07	27.4	19.3 - 33.9	A
			Sr-90	pCi/L	17.40	18.2	12.9 - 21.6	A
			Ba-133	pCi/L	12.57	12.6	8.64 - 15.5	A
			Cs-134	pCi/L	63.33	71.1	58.0 - 78.2	A
			Cs-137	pCi/L	168	180	162 - 200	A
			Co-60	pCi/L	21.93	23.2	19.9 - 28.3	A
			Zn-65	pCi/L	245.33	251	226 - 294	A
			Gr-A	pCi/L	55.60	58.6	30.6 - 72.9	A
			Gr-B	pCi/L	15.23	9.73	4.26 - 18.2	A
			I-131	pCi/L	27.43	28.9	24.0 - 33.8	A
			H-3	pCi/L	9263.3	9700	8430 - 10700	A

(1) The Cs-134 TBE found/ERA known ratio is 83.6%, which TBE considers acceptable. NCR 07-07
(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-3 **DOE'S MIXED ANALYTE PERFORMANCE EVALUATION PROGRAM (MAPEP)**
TELEDYNE BROWN ENGINEERING, 2007
(PAGE 1 OF 1)

Month/Year	Identification Number	Media	Nuclide	Units	Reported Value (a)	Known Value (b)	Acceptance Range	Evaluation (c)
February 2007	07-MaW17	Water	Cs-134	Bq/L	74.5	83.5	58.5 - 108.6	A
			Cs-137	Bq/L	162	163.0	114-1 - 211.9	A
			Co-57	Bq/L	140	143.7	100.6 - 186.8	A
			Co-60	Bq/L	27.9	26.9	18.8 - 35.0	A
			H-3	Bq/L	346	283.0	198.1 - 367.9	W
			Mn-54	Bq/L	125	123.8	86.7 - 160.9	A
			Sr-90	Bq/L	8.90	8.87	6.21- 11.53	A
			Zn-65	Bq/L	117	114.8	80.4 - 149.2	A
	07-GrW17	Water	Gr-A	Bq/L	0.502	0.327	>0.0 - 0.654	A
			Gr-B	Bq/L	0.975	0.851	0.426 - 1.277	A
	07-MaS17	Soil	Cs-134	Bq/kg	322	327.4	229.2 - 425.6	A
			Cs-137	Bq/kg	893	799.7	559.8 - 1039.6	A
			Co-57	Bq/kg	508.3	471.2	329.8 - 612.6	A
			Co-60	Bq/kg	300.3	274.7	192.3 - 357.1	A
			Mn-54	Bq/kg	779	685.2	479.6 - 890.8	A
			K-40	Bq/kg	682	602	421 - 783	A
			Sr-90	Bq/kg	293	319.0	223.3 - 414.7	A
			Zn-65	Bq/kg	618.7	536.8	375.8 - 697.8	A
	07-RdF17	AP	Cs-134	Bq/sample	3.230	1.4960	2.9372 - 5.4548	W
			Cs-137	Bq/sample	2.453	2.5693	1.7985 - 3.3401	A
			Co-57	Bq/sample	3.067	2.8876	2.0213 - 3.7539	A
			Co-60	Bq/sample	2.767	2.9054	2.0338 - 3.7770	A
			Mn-54	Bq/sample	3.557	3.5185	2.4630 - 4.5741	A
			Sr-90	Bq/sample	0.584	0.6074	0.4252 - 0.7896	A
			Zn-65	Bq/sample	2.463	2.6828	1.8780 - 3.4876	A
	07-GrF17	AP	Gr-A	Bq/sample	0.353	0.601	>0.0 - 1.202	A
			Gr-B	Bq/sample	0.500	0.441	0.221 - 0.662	A
February 2007	07-RdV17	Vegetation	Cs-134	Bq/sample	6.207	6.2101	4.3471 - 8.0731	A
			Cs-137	Bq/sample	7.80	6.9949	4.8964 - 9.0934	A
			Co-57	Bq/sample	8.64	8.1878	5.7315 - 10.6441	A
			Co-60	Bq/sample	6.10	5.8215	4.0751 - 7.5680	A
			Mn-54	Bq/sample	9.41	8.4492	5.9144 - 10.9840	A
			K-40	Bq/sample	63.5	Not evaluated by MAPEP		
			Sr-90	Bq/sample	1.51	1.5351	1.0746 - 1.9956	A
			Zn-65	Bq/sample	7.15	5.6991	3.9894 - 7.4088	W

(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-4 **ERA[a] STATISTICAL SUMMARY PROFICIENCY TESTING PROGRAM ENVIRONMENTAL, INC., 2007**

(Page 1 of 2)

Lab Code *	Date	Analysis	Concentration (pCi/L) Laboratory Result[b]	ERA Result[c]	Control Limits	Acceptance
STAP-1116	03/19/07	Gr. Alpha	34.64 ± 2.56	25.8	12.4 - 39	Pass
STAP-1116	03/19/07	Gr. Beta	93.41 ± 3.20	79.5	48.8 - 116	Pass
STAP-1117	03/19/07	Co-60	1610.00 ± 8.40	1300.0	1010.0 - 1620	Pass
STAP-1117	03/19/07	Cs-134	1340.40 ± 48.84	1120.0	732.0 - 1380	Pass
STAP-1117 [e]	03/19/07	Cs-137	345.30 ± 8.20	255.0	192.0 - 336	Fail
STAP-1117 [f]	03/19/07	Mn-54	< 5.0	0.0		Pass
STAP-1117	03/19/07	Sr-90	156.10 ± 6.60	156.0	66.6 - 246	Pass
STAP-1117	03/19/07	Zn-65	363.80 ± 11.90	245.0	208.0 - 412	Pass
STSO-1118	03/19/07	Ac-228	3097.77 ± 94.96	2790.0	1790.0 - 3930	Pass
STSO-1118	03/19/07	Bi-212	2467.87 ± 114.33	2500.0	658.0 - 3730	Pass
STSO-1118	03/19/07	Co-60	7847.40 ± 86.60	7330.0	5340.0 - 9820	Pass
STSO-1118	03/19/07	Cs-134	7910.60 ± 356.88	7560.0	4850.0 - 9070	Pass
STSO-1118	03/19/07	Cs-137	4635.00 ± 99.10	4300.0	3290.0 - 5580	Pass
STSO-1118	03/19/07	K-40	12201.60 ± 423.20	11100.0	8050.0 - 15000	Pass
STSO-1118 [f]	03/19/07	Mn-54	< 34.0	0.0		Pass
STSO-1118	03/19/07	Pb-212	2046.80 ± 127.20	1730.0	1120.0 - 2430	Pass
STSO-1118	03/19/07	Pb-214	4142.80 ± 110.40	3330.0	1980.0 - 4980	Pass
STSO-1118	03/19/07	Sr-90	6163.30 ± 791.60	7500.0	2610.0 - 12400	Pass
STSO-1118	03/19/07	Th-234	4329.40 ± 569.10	3590.0	2190.0 - 4560	Pass
STSO-1118 [f]	03/19/07	Zn-65	0.00 ± 0.00	0.0	0.0 - 0	Pass
STVE-1119	03/19/07	Co-60	2827.90 ± 62.40	2600.0	1760.0 - 3720	Pass
STVE-1119	03/19/07	Cs-134	654.80 ± 48.40	579.0	308.0 - 822	Pass
STVE-1119	03/19/07	Cs-137	3307.30 ± 58.80	2920.0	2150.0 - 4060	Pass
STVE-1119	03/19/07	K-40	40814.20 ± 618.80	37900.0	27200.0 - 53600	Pass
STVE-1119 [f]	03/19/07	Mn-54	< 27.6	0.0		Pass
STVE-1119	03/19/07	Sr-90	8999.70 ± 580.90	8890.0	4900.0 - 11800	Pass
STVE-1119	03/19/07	Zn-65	474.30 ± 45.70	366.0	267.0 - 500	Pass
STW-1120	03/19/07	Co-60	541.40 ± 9.00	536.0	467.0 - 631	Pass
STW-1120	03/19/07	Cs-134	1623.80 ± 66.10	1750.0	1290.0 - 2020	Pass
STW-1120	03/19/07	Cs-137	1839.10 ± 17.90	1850.0	1570.0 - 2220	Pass
STW-1120 [f]	03/19/07	Mn-54	< 8.1	0.0		Pass
STW-1120	03/19/07	Sr-90	949.40 ± 16.70	989.0	630.0 - 1320	Pass
STW-1120	03/19/07	Zn-65	2009.00 ± 36.40	1910.0	1600.0 - 2410	Pass
STW-1121	04/09/07	Sr-89	30.7 ± 4.3	35.4	26.7 - 44.1	Pass
STW-1121	04/09/07	Sr-90	39.3 ± 1.8	42.1	33.4 - 50.8	Pass

TABLE E-4 ERA[(a)] STATISTICAL SUMMARY PROFICIENCY TESTING PROGRAM ENVIRONMENTAL, INC., 2007

(Page 2 of 2)

Lab Code *	Date	Analysis	Concentration (pCi/L) Laboratory Result[b]	ERA Result[c]	Control Limits	Acceptance
STW-1122	04/09/07	Ba-133	30.0 ± 2.4	29.3	20.6 - 38.0	Pass
STW-1122	04/09/07	Co-60	118.5 ± 3.9	119.0	109.0 - 129.0	Pass
STW-1122	04/09/07	Cs-134	52.6 ± 2.3	54.3	45.6 - 63.0	Pass
STW-1122	04/09/07	Cs-137	49.5 ± 3.8	50.3	41.6 - 59.0	Pass
STW-1122	04/09/07	Zn-65	91.7 ± 6.3	88.6	73.3 - 104.0	Pass
STW-1123	04/09/07	Gr. Alpha	33.8 ± 3.5	56.5	32.0 - 81.0	Pass
STW-1123	04/09/07	Gr. Beta	24.2 ± 2.3	25.3	16.6 - 34.0	Pass
STW-1124	04/09/07	I-131	19.2 ± 1.2	18.9	13.7 - 24.1	Pass
STW-1125	04/09/07	H-3	7540.0 ± 255.0	8060.0	6660.0 - 9450.0	Pass
STW-1127	07/09/07	Sr-89	51.7 ± 5.0	58.2	49.5 - 66.9	Pass
STW-1127	07/09/07	Sr-90	21.4 ± 2.3	19.0	10.3 - 27.7	Pass
STW-1128	07/09/07	Ba-133	19.4 ± 2.2	19.4	10.7 - 28.1	Pass
STW-1128	07/09/07	Co-60	32.8 ± 2.0	33.5	24.8 - 42.2	Pass
STW-1128	07/09/07	Cs-134	67.0 ± 2.9	68.9	60.2 - 77.6	Pass
STW-1128	07/09/07	Cs-137	61.6 ± 3.8	61.3	52.6 - 70.0	Pass
STW-1128	07/09/07	Zn-65	55.6 ± 7.5	54.6	45.2 - 64.0	Pass
STW-1129	07/09/07	Gr. Alpha	19.2 ± 1.6	27.1	15.4 - 38.8	Pass
STW-1129	07/09/07	Gr. Beta	9.1 ± 0.9	11.5	2.8 - 20.2	Pass
STW-1131	10/05/07	Sr-89	27.3 ± 3.3	27.4	19.3 - 33.9	Pass
STW-1131	10/05/07	Sr-90	17.7 ± 1.2	18.2	12.9 - 21.6	Pass
STW-1132	10/05/07	Ba-133	12.2 ± 3.3	12.6	8.6 - 15.5	Pass
STW-1132	10/05/07	Co-60	23.8 ± 1.4	23.2	19.9 - 28.3	Pass
STW-1132	10/05/07	Cs-134	70.5 ± 4.2	71.1	58.0 - 78.2	Pass
STW-1132	10/05/07	Cs-137	178.2 ± 3.3	180.0	162.0 - 200.0	Pass
STW-1132	10/05/07	Zn-65	263.9 ± 6.9	251.0	226.0 - 294.0	Pass
STW-1133	10/05/07	Gr. Alpha	54.7 ± 2.1	58.6	30.6 - 72.9	Pass
STW-1133	10/05/07	Gr. Beta	11.9 ± 0.9	9.7	4.3 - 18.2	Pass
STW-1134	10/05/07	I-131	33.0 ± 1.5	28.9	24.0 - 33.8	Pass
STW-1135	10/05/07	H-3	9965.0 ± 250.0	9700.0	8430.0 - 10700.0	Pass

* Laboratory codes as follows: STW (water), STAP (air filter), STSO (soil), STVE (vegetation).

[a] Results obtained by Environmental, Inc., Midwest Laboratory as a participant in the crosscheck program for proficiency testing administered by Environmental Resources Associates, serving as a replacement for studies conducted previously by the Environmental Measurements Laboratory Quality Assessment Program (EML).

[c] Unless otherwise indicated, the laboratory result is given as the mean ± standard deviation for three determinations.

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

[e] A high bias (~ 20%) was observed in gamma results for air filters. A composite filter geometry was used in the calculations vs. a single filter geometry. Result of recalculation. Cs-137, 305.8 ± 6.0 pCi/filter.

[f] Included in the testing series as a "false positive". No activity expected.

TABLE E-5 DOE'S MIXED ANALYTE PERFORMANCE EVALUATION PROGRAM (MAPEP)[a] ENVIRONMENTAL, INC., 2007

(Page 1 of 1)

			Concentration [b]			
Lab Code[c]	Date	Analysis	Laboratory result	Known Activity	Control Limits [d]	Acceptance
STW-1110	01/01/07	Gr. Alpha	0.45 ± 0.08	0.33	0.00 - 0.65	Pass
STW-1110	01/01/07	Gr. Beta	0.90 ± 0.14	0.85	0.43 - 1.28	Pass
STW-1111	01/01/07	Co-57	151.60 ± 10.00	143.70	100.60 - 186.80	Pass
STW-1111	01/01/07	Cs-134	79.20 ± 8.00	83.50	58.50 - 108.60	Pass
STW-1111	01/01/07	Cs-137	168.70 ± 12.10	163.00	114.10 - 211.90	Pass
STW-1111	01/01/07	H-3	262.20 ± 9.10	283.00	198.10 - 367.90	Pass
STW-1111	01/01/07	Mn-54	130.60 ± 11.50	123.80	86.70 - 160.90	Pass
STW-1111	01/01/07	Sr-90	9.60 ± 1.40	8.87	6.21 - 11.53	Pass
STW-1111	01/01/07	Zn-65	123.70 ± 17.00	114.80	80.40 - 149.20	Pass
STSO-1112	01/01/07	Co-57	501.20 ± 2.90	471.20	329.80 - 612.60	Pass
STSO-1112	01/01/07	Co-60	285.90 ± 2.10	274.70	192.30 - 357.10	Pass
STSO-1112	01/01/07	Cs-134	325.90 ± 7.40	327.40	229.20 - 425.60	Pass
STSO-1112	01/01/07	Cs-137	855.70 ± 4.60	799.70	559.80 - 1039.60	Pass
STSO-1112	01/01/07	Mn-54	750.90 ± 4.70	685.20	479.60 - 890.80	Pass
STAP-1113	01/01/07	Gr. Alpha	0.27 ± 0.04	0.60	0.00 - 1.20	Pass
STAP-1113	01/01/07	Gr. Beta	0.57 ± 0.05	0.44	0.22 - 0.66	Pass
STAP-1114	01/01/07	Co-57	3.51 ± 0.07	2.89	2.02 - 3.75	Pass
STAP-1114	01/01/07	Co-60	2.98 ± 0.10	2.91	2.03 - 3.78	Pass
STAP-1114	01/01/07	Cs-134	4.02 ± 0.16	4.20	2.94 - 5.45	Pass
STAP-1114	01/01/07	Cs-137	2.75 ± 0.12	2.57	1.80 - 3.34	Pass
STAP-1114	01/01/07	Mn-54	3.94 ± 0.12	3.52	2.46 - 4.57	Pass
STAP-1114	01/01/07	Sr-90	0.58 ± 0.18	0.61	0.43 - 0.79	Pass
STAP-1114	01/01/07	Zn-65	2.70 ± 0.10	2.68	1.88 - 3.49	Pass
STVE-1115	01/01/07	Co-57	8.90 ± 0.20	8.19	5.73 - 10.64	Pass
STVE-1115	01/01/07	Co-60	6.50 ± 0.20	5.82	4.08 - 7.57	Pass
STVE-1115	01/01/07	Cs-134	6.90 ± 0.30	6.21	4.35 - 8.07	Pass
STVE-1115	01/01/07	Cs-137	8.20 ± 0.30	6.99	4.90 - 9.09	Pass
STVE-1115	01/01/07	Mn-54	10.10 ± 0.30	8.46	5.91 - 10.98	Pass

[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] Results are reported in units of Bq/kg (soil), Bq/L (water) or Bq/total sample (filters, vegetation).

[c] Laboratory codes as follows: STW (water), STAP (air filter), STSO (soil), STVE (vegetation).

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

APPENDIX F

ANNUAL RADIOLOGICAL GROUNDWATER PROTECTION PROGRAM REPORT (ARGPPR)

Docket No: 50-277
50-278

PEACH BOTTOM ATOMIC POWER STATION UNITS 2 and 3

Annual Radiological
Groundwater Protection Program Report

1 January Through 31 December 2007

Prepared By

Teledyne Brown Engineering
Environmental Services

Exelon SM
Nuclear

Peach Bottom Atomic Power Station
Delta, PA 17314

May 2008

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Appendices

Appendix A Sampling Locations, Distance and Direction

Tables

Table A-1: Radiological Groundwater Protection Program - Sampling Locations, Distance and Direction, Peach Bottom Atomic Power Station, 2007

Figures

Figure A-1: Well Water Locations, Peach Bottom Atomic Power Station, 2007

Figure A-2: RGPP Monitoring Locations, Peach Bottom Atomic Power Station, 2007

Appendix B Data Tables

Tables

Table B-I.1 Concentrations of Tritium and Strontium in Groundwater and Seep Water Samples Collected in the Vicinity of Peach Bottom Atomic Power Station, 2007.

Table B-I.2 Concentrations of Gamma Emitters in Groundwater and Seep Water Samples Collected in the Vicinity of Peach Bottom Atomic Power Station, 2007.

I. Summary and Conclusions

This report on the Radiological Groundwater Protection Program (RGPP) conducted for the Peach Bottom Atomic Power Station (PBAPS) by Exelon Nuclear covers the period 01 January 2006 through 31 December 2007. This evaluation involved numerous station personnel and contractor support personnel. At Peach Bottom Atomic Power Station, 14 permanent groundwater monitoring wells were installed in 2006. Of these new monitoring locations, none were assigned to the station's Radiological Environmental Monitoring Program (REMP). This is the second in a series of annual reports on the status of the Radiological Groundwater Protection Program (RGPP) conducted at Peach Bottom Atomic Power Station. This report covers groundwater and seep water samples, collected from the environment, both on and off station property in 2007. During that time period, 101 analyses were performed on 54 samples from 21 locations. Phase 1 of the monitoring was part of a comprehensive study initiated by Exelon to determine whether groundwater or surface water at and in the vicinity of Peach Bottom Atomic Power Station had been adversely impacted by any releases of radionuclides. Phase 1 was conducted by Conestoga Rovers and Associates (CRA) and the conclusions were made available to state and federal regulators as well as the public on an Exelon web site http://www.exeloncorp.com/ourcompanies/powergen/nuclear/Tritium.htm]. Phase 2 of the RGPP was conducted by Exelon corporate and station personnel to initiate follow up of Phase 1 and begin long-term monitoring at groundwater and surface water locations selected during Phase 1. All analytical results from Phase 2 monitoring are reported herein.

In assessing all the data gathered for this report, it was concluded that the operation of Peach Bottom Atomic Power Station had no adverse radiological impact on the environment, and there are no known active releases into the groundwater at Peach Bottom Atomic Power Station.

Gamma-emitting radionuclides associated with licensed plant operations were not detected at concentrations greater than their respective Lower Limits of Detection (LLDs) as specified in the Offsite Dose Calculation Manual (ODCM) in any of the groundwater or surface water samples. In the case of tritium, Exelon specified that it's laboratories achieve a lower limit of detection 10 times lower than that required by federal regulation.

Strontium-89/90 was not detected at a concentration greater than the LLD of 2.0 picoCuries per liter (pCi/L) in any of the groundwater or seep water samples tested.

Tritium was not detected in any of the groundwater or surface water samples at concentrations greater than the United States Environmental Protection Agency (USEPA) drinking water standard (and the Nuclear Regulatory Commission

Reporting Limit) of 20,000 pCi/L. Low levels of tritium were detected at concentrations greater than the LLD of 200 pCi/L in five of 21 groundwater and seep water monitoring locations. The tritium concentrations ranged from 236 ± 106 pCi/L to 2,840 ± 356 pCi/L. Tritium was detected in some samples collected from bedrock wells, bedrock seeps and overburden wells. Based on the sample data, tritium is not migrating off the station property at detectable concentrations and there are no active releases into the groundwater at the station.

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II. Introduction

Peach Bottom Atomic Power Station (PBAPS) is located along the Susquehanna River between Holtwood and Conowingo Dams in Peach Bottom Township, York County, Pennsylvania. The initial loading of fuel into Unit 1, a 40 MWe (net) high temperature, gas-cooled reactor, began on 5 February 1966, and initial criticality was achieved on 3 March 1966. Shutdown of Peach Bottom Unit 1 for decommissioning was on 31 October 1974. For the purposes of the monitoring program, the beginning of the operational period for Unit 1 was considered to be 5 February 1966. A summary of the Unit 1 preoperational monitoring program was presented in a previous report [(1)]. PBAPS Units 2 and 3 are boiling water reactors, each with a power output of approximately 1170 MWe. The first fuel was loaded into Peach Bottom Unit 2 on 9 August 1973. Criticality was achieved on 16 September 1973, and full power was reached on 16 June 1974. The first fuel was loaded into Peach Bottom Unit 3 on 5 July 1974. Criticality was achieved on 7 August 1974, and full power was first reached on 21 December 1974. Preoperational summary reports [(2)(3)] for Units 2 and 3 have been previously issued and summarize the results of all analyses performed on samples collected from 5 February 1966 through 8 August 1973.

This report covers those analyses performed by Teledyne Brown Engineering (TBE) on samples collected in 2007.

A. Objective of the RGPP

The long-term objectives of the RGPP are as follows:

1. Identify suitable locations to monitor and evaluate potential impacts from station operations before significant radiological impact to the environment and potential drinking water sources.

2. Understand the local hydrogeologic regime in the vicinity of the station and maintain up-to-date knowledge of flow patterns on the surface and shallow subsurface.

3. Perform routine water sampling and radiological analysis of water from selected locations.

4. Report new leaks, spills, or other detections with potential radiological significance to stakeholders in a timely manner.

5. Regularly assess analytical results to identify adverse trends.

6. Take necessary corrective actions to protect groundwater resources.

B. Implementation of the Objectives

The objectives identified have been implemented at Peach Bottom Atomic Power Station as discussed below:

1. Exelon and its consultant identified locations as described in the Phase 1 study. Phase 1 studies were conducted by Conestoga Rovers and Associates (CRA) and the results and conclusions were made available to state and federal regulators as well as the public on an Exelon web site in station specific reports. Samples for Phase 2 were collected by Normandeau associates. http://www.exeloncorp.com/ourcompanies/powergen/nuclear/Tritium.htm

2. The Peach Bottom Atomic Power Station reports describe the local hydrogeologic regime. Periodically, the flow patterns on the surface and shallow subsurface are updated based on ongoing measurements.

3. Peach Bottom Atomic Power Station will continue to perform routine sampling and radiological analysis of water from selected locations.

4. Peach Bottom Atomic Power Station has implemented new procedures to identify and report new leaks, spills, or other detections with potential radiological significance in a timely manner.

5. Peach Bottom Atomic Power Station staff and consulting hydrogeologist assess analytical results on an ongoing basis to identify adverse trends.

C. Program Description

1. Sample Collection

Sample locations can be found in Table A–1 and Figures A–1 and A–2, Appendix A.

Groundwater and Surface Water

Samples of water are collected, managed, transported and analyzed in accordance with approved procedures following EPA

methods. Both groundwater and surface water are collected. Sample locations, sample collection frequencies and analytical frequencies are controlled in accordance with approved station procedures. Contractor and/or station personnel are trained in the collection, preservation management, and shipment of samples, as well as in documentation of sampling events. Analytical laboratories are subject to internal quality assurance programs, industry cross-check programs, as well as nuclear industry audits. Station personnel review and evaluate all analytical data deliverables as data are received.

Analytical data results are reviewed by both station personnel and an independent hydrogeologist for adverse trends or changes to hydrogeologic conditions.

D. Characteristics of Tritium (H-3)

Tritium (chemical symbol H-3) is a radioactive isotope of hydrogen. The most common form of tritium is tritium oxide, which is also called "tritiated water." The chemical properties of tritium are essentially those of ordinary hydrogen.

Tritiated water behaves the same as ordinary water in both the environment and the body. Tritium can be taken into the body by drinking water, breathing air, eating food, or absorption through skin. Once tritium enters the body, it disperses quickly and is uniformly distributed throughout the body. Tritium is excreted primarily through urine with a clearance rate characterized by an effective biological half-life of about 14 days. Within one month or so after ingestion, essentially all tritium is cleared. Organically bound tritium (tritium that is incorporated in organic compounds) can remain in the body for a longer period.

Tritium is produced naturally in the upper atmosphere when cosmic rays strike air molecules. Tritium is also produced during nuclear weapons explosions, as a by-product in reactors producing electricity, and in special production reactors, where the isotopes lithium-7 and/or boron-10 are activated to produce tritium. Like normal water, tritiated water is colorless and odorless. Tritiated water behaves chemically and physically like non-tritiated water in the subsurface, and therefore tritiated water will travel at the same velocity as the average groundwater velocity.

Tritium has a half-life of approximately 12.3 years. It decays spontaneously to helium-3 (3He). This radioactive decay releases a beta particle (low-energy electron). The radioactive decay of tritium is the source of the health risk from exposure to tritium. Tritium is one of the

least dangerous radionuclides because it emits very weak radiation and leaves the body relatively quickly. Since tritium is almost always found as water, it goes directly into soft tissues and organs. The associated dose to these tissues is generally uniform and is dependent on the water content of the specific tissue.

III. Program Description

A. Sample Analysis

This section describes the general analytical methodologies used by TBE and EIML to analyze the environmental samples for radioactivity for the Peach Bottom Atomic Power Station RGPP in 2007.

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

1. Concentrations of gamma emitters in groundwater and surface water.

2. Concentrations of strontium in groundwater and surface water.

3. Concentrations of tritium in groundwater and surface water.

B. Data Interpretation

The radiological data collected prior to Peach Bottom Atomic Power Station becoming operational were used as a baseline with which these operational data were compared. For the purpose of this report, Peach Bottom Atomic Power Station was considered operational at initial criticality. Several factors were important in the interpretation of the data:

1. <u>Lower Limit of Detection</u>

   The lower limit of detection (LLD) is a minimum sensitivity value that must be achieved routinely by the analytical parameter.

2. <u>Laboratory Measurements Uncertainty</u>

   The estimated uncertainty in measurement of tritium in environmental samples is frequently on the order of 50% of the measurement value.

   Statistically, the exact value of a measurement is expressed as a

range with a stated level of confidence. The convention is to report results with a 95% level of confidence. The uncertainty comes from calibration standards, sample volume or weight measurements, sampling uncertainty and other factors. Exelon reports the uncertainty of a measurement created by statistical process (counting error) as well as all sources of error (Total Propagated Uncertainty or TPU). Each result has two values calculated. Exelon reports the TPU by following the result with plus or minus ± the estimated sample standard deviation, as TPU, that is obtained by propagating all sources of analytical uncertainty in measurements.

Analytical uncertainties are reported at the 95% confidence level in this report for reporting consistency with the AREOR.

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

For groundwater and surface water 13 nuclides, Be-7, K-40, Mn-54, Co-58, Fe-59, Co-60, Zn-65, Nb-95, Zr-95, Cs-134, Cs-137, Ba-140 and La-140 were reported.

C. Background Analysis

A pre-operational radiological environmental monitoring program (pre-operational REMP) was conducted to establish background radioactivity levels prior to operation of the Station. The environmental media sampled and analyzed during the pre-operational REMP were atmospheric radiation, fall-out, domestic water, surface water, marine life, and foodstuffs. The results of the monitoring were detailed in the report entitled, Peach Bottom Atomic Power Station, Environs Radiation Monitoring Program, Preoperational Summary Report units 2 and 3, September 1970- August 1973, January 1974 and Peach Bottom Atomic Power Station, Environs Radiation Monitoring Program, Preoperational Summary Report units 2 and 3, June 1977.

The pre-operational REMP contained analytical results from samples collected from the surface water, discharge, well and rain water.

The pre-operational REMP (Units 2 and 3) analytical results from samples collected from surface water and drinking water wells indicate that tritium was detected in both surface water and drinking water samples. Tritium concentrations in surface water ranged from non-detect at the lower limit of detection (LLD) of 80 picoCuries per liter (pCi/L) to 1,300 pCi/L over the 3-year monitoring period (1970-1973). Tritium concentrations in drinking

water ranged from non-detect at the LLD of 80 pCi/L to 790 ± 90 pCi/L. Gross beta analytical results in surface water ranged from 1.2 ± 1.1 pCi/L to 9.6 ± 3.1 pCi/L. Gamma spectrometry analytical results in surface water and drinking water were found very sporadically and at concentrations nominally that exceed their respective LLD.

1. Background Concentrations of Tritium

The purpose of the following discussion is to summarize background measurements of tritium in various media performed by others. Additional detail may be found by consulting references (CRA 2006).

a. Tritium Production

Tritium is created in the environment from naturally occurring processes both cosmic and subterranean, as well as from anthropogenic (i.e., man-made) sources. In the upper atmosphere, "Cosmogenic" tritium is produced from the bombardment of stable nuclides and combines with oxygen to form tritiated water, which will then enter the hydrologic cycle. Below ground, "lithogenic" tritium is produced by the bombardment of natural lithium present in crystalline rocks by neutrons produced by the radioactive decay of naturally abundant uranium and thorium. Lithogenic production of tritium is usually negligible compared to other sources due to the limited abundance of lithium in rock. The lithogenic tritium is introduced directly to groundwater.

A major anthropogenic source of tritium and strontium-90 comes from the former atmospheric testing of thermonuclear weapons. Levels of tritium in precipitation increased significantly during the 1950s and early 1960s, and later with additional testing, resulting in the release of significant amounts of tritium to the atmosphere. The Canadian heavy water nuclear power reactors, other commercial power reactors, nuclear research and weapons production continue to influence tritium concentrations in the environment.

b. Precipitation Data

Precipitation samples are routinely collected at stations around the world for the analysis of tritium and other radionuclides. Two publicly available databases that provide tritium concentrations in precipitation are Global Network of

Isotopes in Precipitation (GNIP) and USEPA's RadNet database. GNIP provides tritium precipitation concentration data for samples collected world wide from 1960 to 2006. RadNet provides tritium precipitation concentration data for samples collected at stations through out the U.S. from 1960 up to and including 2006. Based on GNIP data for sample stations located in the U.S. Midwest, tritium concentrations peaked around 1963. This peak, which approached 10,000 pCi/L for some stations, coincided with the atmospheric testing of thermonuclear weapons. Tritium concentrations in surface water showed a sharp decline up until 1975 followed by a gradual decline since that time. Tritium concentrations have typically been below 100 pCi/L since around 1980. Tritium concentrations in wells may still be above the 200 pCi/L detection limit from the external causes described above. Water from previous years and decades is naturally captured in groundwater, so some well water sources today are affected by the surface water from the 1960s that was elevated in tritium.

c. Surface Water Data

Surface water level measurements were collected at the surface water monitoring locations during the groundwater level measurement event. The purpose of the surface water monitoring was to provide surface water elevation data to evaluate the groundwater/surface water interaction at the Station.

The USEPA RadNet surface water data typically has a reported 'Combined Standard Uncertainty' of 35 to 50 pCi/L. According to USEPA, this corresponds to a ±70 to 100 pCi/L 95% confidence bound on each given measurement. Therefore, the typical background data provided may be subject to measurement uncertainty of approximately ± 70 to 100 pCi/L.

The radio-analytical laboratory is counting tritium results to an Exelon specified LLD of 200 pCi/L. Typically, the lowest positive measurement will be reported within a range of 40 – 240 pCi/L or 140 ± 100 pCi/L. Clearly, these sample results cannot be distinguished as different from background at this concentration.

IV. Results and Discussion

A. Groundwater Results

Groundwater

Samples were collected from on and off-site wells throughout the year in accordance with the station radiological groundwater protection program. Analytical results and anomalies are discussed below.

Tritium

Samples from 21 locations were analyzed for tritium activity (Table B–I.1, Appendix B). Tritium values ranged from the detection limit to 2,840 pCi/l. Within the station boundary, concentrations of tritium in shallow groundwater reached 2840 pCi/L. The existing wells at or near the owner-controlled boundary showed no tritium. The location most representative of potential offsite user of drinking water is less than the LLD.

Strontium

Strontium-90 was not detected in any of the samples and the required LLD of 2.0 pCi/liter was met. (Table B–I.1, Appendix B).

Gamma Emitters

No power-production gamma emitters were detected in any of the samples. Naturally occurring, berillyum-7 was detected in one of 24 samples at a concentration of 81 pCi/liter. Naturally occurring, potassium-40 was detected in one of 24 samples at a concentration of 151 pCi/liter. No other gamma emitting nuclides were detected. (Table B–I.5 and B–I.6, Appendix B).

B. Drinking Water Well Survey

A drinking water well survey was conducted during the summer 2006 by CRA (CRA 2006) around the Peach Bottom Atomic Power Station.

C. Summary of Results – Inter-Laboratory Comparison Program

Inter-Laboratory Comparison Program results for TBE and Environmental Inc. (Midwest Labs) are presented in the AREOR.

D. Leaks, Spills, and Releases

Tritium detected in the groundwater sample MW-PB-4 is likely, a residual impact from the historical release from the Unit 3 Condensate Storage Tank (CST). Additional monitoring will help to further evaluate whether there is an active leak or whether there are natural fluctuations from a historical release. Monitoring for MW-PB-4 has been increased to ascertain the cause. An investigation into the release at the south plume is still under investigation. Rain water is sampled at station 1A, 1B and 4M.

E. Trends

There were no previously identified plumes.

F. Investigations

Rain water was sampled at sampling locations 1A, 1B and 4M to investigate the cause of the South plume. This release is still under investigation.

G. Actions Taken

1. Compensatory Actions

   There have been no station events requiring compensatory actions

2. Installation of Monitoring Wells

   No new wells were installed in 2007.

3. Actions to Recover/Reverse Plumes

   No actions were required to recover or reverse groundwater plumes.

V. References

1. Conestoga rovers and Associates, Fleetwide Assessment, Peach Bottom Atomic Power station, Delta, PA, Fleetwide Assessment, Rev. 1, September 1, 2006

2. Peach Bottom Atomic Power Station, Environs Radiation Monitoring Program, Preoperational Summary Report units 2 and 3, June 1977

3. Peach Bottom Atomic Power Station, Environs Radiation Monitoring Program, Preoperational Summary Report units 2 and 3, September 1970- August 1973, January 1974

4. AMO Environmental Decisions, January12, 2007 Report " Fall 2006 Routine Ground water and Surface water Monitoring round Summary of Results, Conclusions and Recommendations for Future Monitoring Rounds PBAPS, Delta, PA."

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APPENDIX A

SAMPLING LOCATIONS, DISTANCE AND DIRECTION

TABLE A-1: Radiological Groundwater Protection Program - Sampling Locations, Distance and Direction, Peach Bottom Atomic Power Station, 2007

Site	Site Type	Sector	Distance (ft.)
MW-PB-1	Groundwater Well	SW	1166.6
MW-PB-2	Groundwater Well	WNW	309.0
MW-PB-3	Groundwater Well	SSE	709.7
MW-PB-4	Groundwater Well	ENE	350.2
MW-PB-5	Groundwater Well	NNW	1146.1
MW-PB-6	Groundwater Well	NE	1072.4
MW-PB-7	Groundwater Well	SE	813.9
MW-PB-8	Groundwater Well	SE	1167.0
MW-PB-9	Groundwater Well	SE	2816.9
MW-PB-10	Groundwater Well	SSE	1125.1
MW-PB-11	Groundwater Well	SE	438.4
MW-PB-12	Groundwater Well	NNE	317.2
MW-PB-13	Groundwater Well	NW	329.4
MW-PB-14	Groundwater Well	S	1231.2
PB-HAZMAT STORAGE SHED	Domestic Well - Tap	NNW	2527.1
PB-NORTH SUBSTATION	Domestic Well - Tap	WNW	2553.3
PB-SALT WASHDOWN	Domestic Well - Tap	WSW	2618.2
PB-SOUTH SUBSTATION	Domestic Well - Tap	SSE	2594.3
SP-PB-1	Seep	S	514.2
SP-PB-2	Seep	WNW	311.6
SP-PB-3	Seep	NNW	1281.1

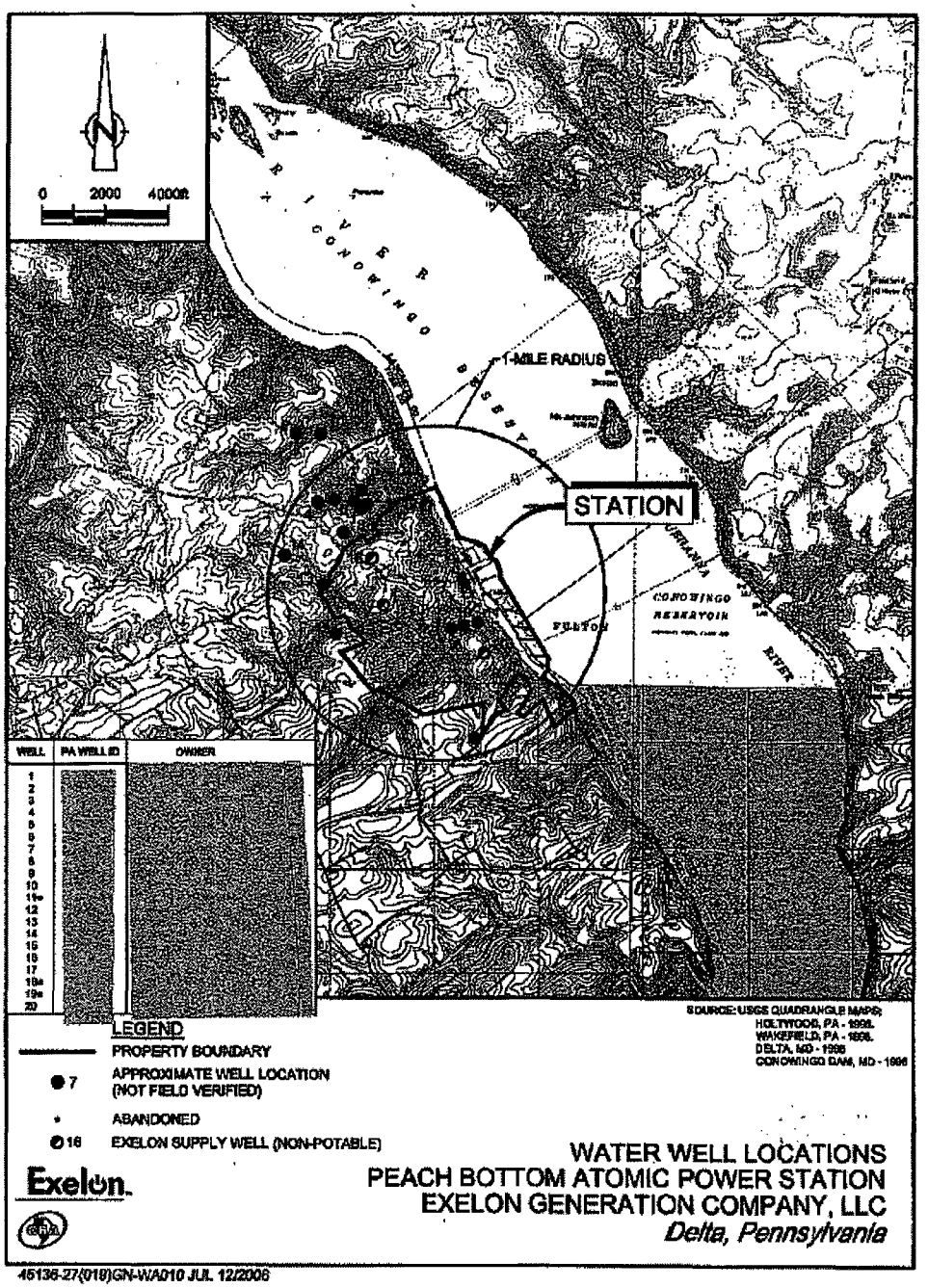

Figure A-1
Well Water Locations, Peach Bottom Atomic Power Station, 2007

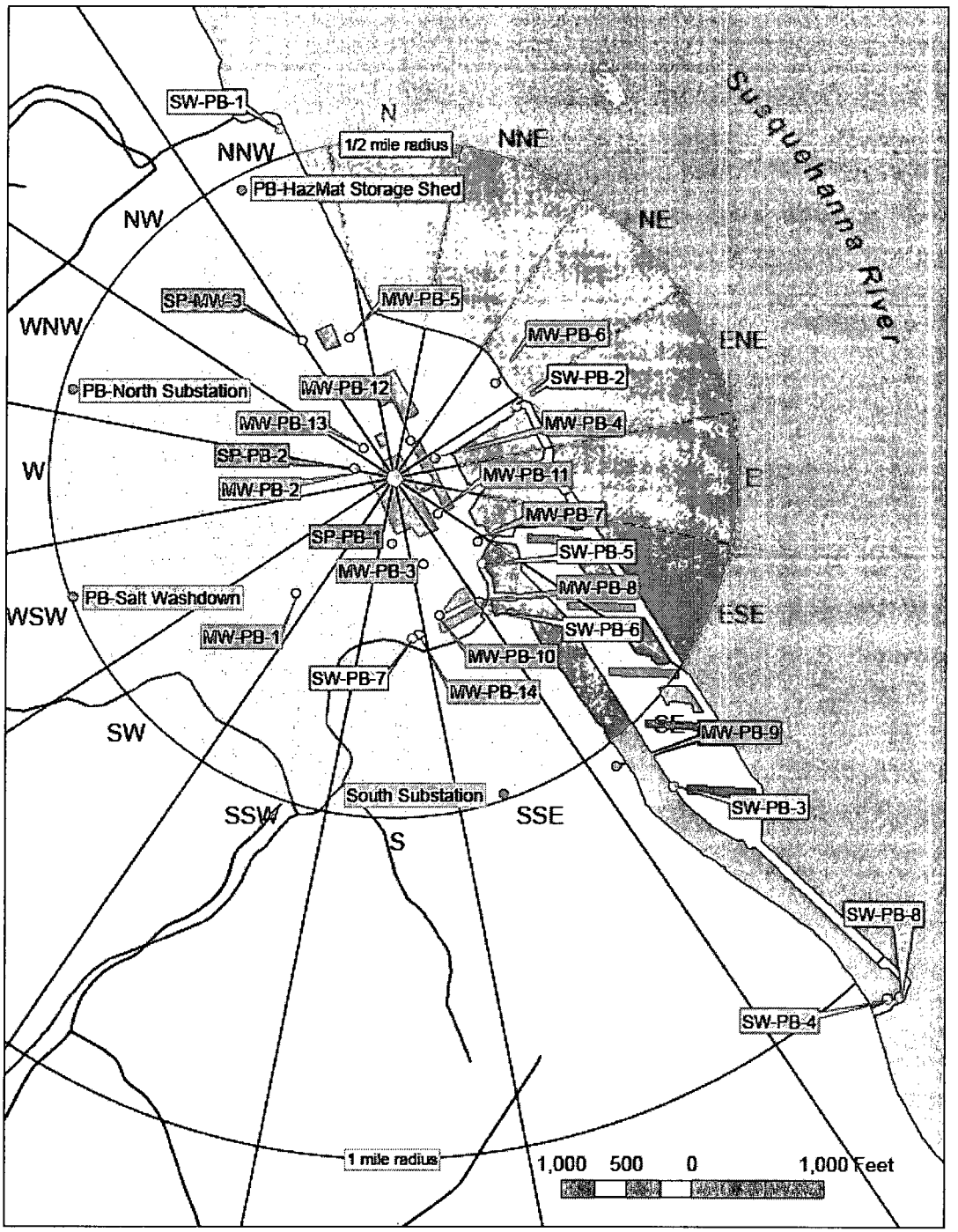

Figure A-2
RGPP Monitoring Locations, Peach Bottom Atomic Power Station, 2007

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APPENDIX B

DATA TABLES

TABLE B-I.1

CONCENTRATIONS OF TRITIUM IN GROUNDWATER AND SEEP SAMPLES COLLECTED IN THE VICINITY OF PEACH WATER BOTTOM ATOMIC POWER STATION, 2007

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE		COLLECTION DATE	H-3	SR-90
MW-PB-1		05/15/07	< 152	
MW-PB-1M		05/15/07	< 163	
MW-PB-1		11/05/07	< 192	
MW-PB-1		11/06/07	288 ± 131	< 1.8
MW-PB-1		11/07/07	< 198	< 1.2
MW-PB-2		05/15/07	267 ± 108	
MW-PB-2		11/06/07	279 ± 130	< 1.8
MW-PB-2M		11/06/07	311 ± 132	< 1.7
MW-PB-3		05/15/07	< 154	
MW-PB-3		11/06/07	< 196	< 1.2
MW-PB-4		05/15/07	684 ± 131	
MW-PB-4		11/06/07	2830 ± 348	< 1.6
MW-PB-4		12/05/07	1980 ± 281	
MW-PB-4H		05/15/07	583 ± 123	
MW-PB-4M	ORIGINAL	11/06/07	2840 ± 356	< 1.3
MW-PB-4M	RERUN	11/06/07	2660 ± 330	
MW-PB-5		05/15/07	< 151	
MW-PB-5		11/05/07	< 188	
MW-PB-5		11/06/07	< 193	< 1.3
MW-PB-6		05/16/07	< 149	
MW-PB-6		11/05/07	< 193	
MW-PB-6		11/06/07	302 ± 133	< 1.7
MW-PB-6H		05/16/07	< 149	
MW-PB-7		05/16/07	< 144	
MW-PB-7		11/06/07	< 193	< 1.5
MW-PB-8		05/15/07	< 150	
MW-PB-8		11/06/07	< 194	< 1.4
MW-PB-9		05/15/07	< 153	
MW-PB-9		11/06/07	< 188	< 1.7
MW-PB-10		05/15/07	< 153	
MW-PB-10		11/06/07	< 191	< 1.2
MW-PB-11		05/15/07	< 153	
MW-PB-11		11/06/07	< 197	< 1.1
MW-PB-12		05/15/07	236 ± 106	
MW-PB-12		11/06/07	461 ± 138	< 1.5
MW-PB-12M		11/06/07	395 ± 136	< 1.6
MW-PB-13		05/15/07	< 152	
MW-PB-13		11/06/07	< 189	< 1.6
MW-PB-14		05/15/07	< 153	
MW-PB-14		11/06/07	< 192	< 1.6

SAMPLES ARE DISTILLED FOR H-3 ANALYSIS

TABLE B-I.1

CONCENTRATIONS OF TRITIUM IN GROUNDWATER AND SEEP SAMPLES COLLECTED IN THE VICINITY OF PEACH WATER BOTTOM ATOMIC POWER STATION, 2007

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION DATE	H-3	SR-90
PB-HAZMAT STORAGE SHED	05/16/07	< 162	
PB-HAZMAT STORAGE SHED	11/07/07	< 194	< 1.7
PB-NORTH SUBSTATION	05/15/07	< 167	
PB-NORTH SUBSTATION	11/07/07	< 193	< 1.6
PB-SALT WASHDOWN	05/15/07	< 165	
PB-SALT WASHDOWN	11/07/07	< 197	< 1.4
PB-SOUTH SUBSTATION	05/15/07	< 167	
PB-SOUTH SUBSTATION	11/07/07	< 194	< 1.7
SP-PB-1	05/15/07	< 170	
SP-PB-2	05/15/07	165 ± 108	
SP-PB-2	11/06/07	< 194	< 1.8
SP-PB-3	05/16/07	< 167	
SP-PB-3	11/07/07	< 195	< 1.7

SAMPLES ARE DISTILLED FOR H-3 ANALYSIS

TABLE B-I.2

CONCENTRATIONS OF GAMMA EMITTERS IN GROUNDWATER AND SEEP WATER SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2007

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

STC	COLLECTION PERIOD	Be-7	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	Cs-134	Cs-137	Ba-140	La-140
MW-PB-1	11/07/07	< 44	< 94	< 5	< 5	< 12	< 5	< 11	< 5	< 10	< 4	< 5	< 41	< 14
MW-PB-1	11/06/07	81 ± 19	< 34	< 2	< 2	< 4	< 2	< 3	< 2	< 3	< 1	< 2	< 16	< 5
MW-PB-2	11/06/07	< 40	< 85	< 4	< 4	< 11	< 4	< 8	< 5	< 8	< 3	< 4	< 40	< 14
MW-PB-2M	11/06/07	< 39	< 26	< 4	< 4	< 9	< 4	< 7	< 4	< 8	< 4	< 4	< 44	< 14
MW-PB-3	11/06/07	< 40	< 34	< 4	< 4	< 9	< 4	< 7	< 5	< 7	< 4	< 4	< 39	< 11
MW-PB-4	11/06/07	< 29	151 ± 37	< 3	< 3	< 7	< 3	< 5	< 4	< 6	< 3	< 3	< 33	< 11
MW-PB-4M	11/06/07	< 34	< 80	< 4	< 5	< 10	< 4	< 9	< 4	< 7	< 3	< 4	< 35	< 15
MW-PB-5	11/06/07	< 40	< 35	< 3	< 4	< 9	< 4	< 8	< 4	< 8	< 4	< 4	< 36	< 13
MW-PB-6	11/06/07	< 24	< 24	< 2	< 3	< 7	< 3	< 6	< 3	< 5	< 2	< 3	< 29	< 10
MW-PB-7	11/06/07	< 52	< 101	< 5	< 5	< 13	< 5	< 12	< 6	< 10	< 5	< 5	< 48	< 14
MW-PB-8	11/06/07	< 25	< 21	< 2	< 3	< 5	< 3	< 5	< 3	< 5	< 2	< 3	< 27	< 9
MW-PB-9	11/06/07	< 45	< 86	< 5	< 5	< 11	< 5	< 10	< 5	< 8	< 5	< 4	< 48	< 15
MW-PB-10	11/06/07	< 41	< 37	< 5	< 5	< 11	< 4	< 8	< 5	< 8	< 4	< 4	< 43	< 14
MW-PB-11	11/06/07	< 40	< 31	< 4	< 5	< 10	< 4	< 8	< 5	< 8	< 4	< 4	< 38	< 12
MW-PB-12	11/06/07	< 27	< 60	< 3	< 3	< 8	< 3	< 6	< 4	< 6	< 3	< 3	< 32	< 11
MW-PB-12M	11/06/07	< 37	< 77	< 4	< 4	< 9	< 3	< 9	< 5	< 7	< 4	< 4	< 40	< 14
MW-PB-13	11/06/07	< 34	< 79	< 3	< 4	< 8	< 3	< 8	< 3	< 7	< 3	< 3	< 34	< 14
MW-PB-14	11/06/07	< 42	< 72	< 4	< 4	< 9	< 4	< 10	< 5	< 8	< 4	< 4	< 42	< 15
PB-HAZMAT STORAGE SHED	11/07/07	< 42	< 92	< 4	< 5	< 11	< 4	< 10	< 6	< 10	< 4	< 5	< 41	< 13
PB-NORTH SUBSTATION	11/07/07	< 43	< 83	< 4	< 5	< 12	< 4	< 7	< 5	< 9	< 4	< 5	< 43	< 11
PB-SALT WASHDOWN	11/07/07	< 39	< 88	< 4	< 5	< 12	< 4	< 8	< 5	< 8	< 4	< 5	< 39	< 13
PB-SOUTH SUBSTATION	11/07/07	< 37	< 78	< 4	< 4	< 10	< 4	< 8	< 5	< 8	< 4	< 4	< 38	< 14
SP-PB-2	11/06/07	< 39	< 37	< 4	< 4	< 9	< 4	< 8	< 5	< 7	< 4	< 4	< 38	< 11
SP-PB-3	11/07/07	< 40	< 37	< 4	< 4	< 9	< 4	< 8	< 5	< 7	< 3	< 4	< 37	< 11

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