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May 27, 2016

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555-0001

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 73
January 1, 2015 through December 31, 2015

In accordance with the requirements of Section 5.6.2 of the Peach Bottom Atomic Power Station (PBAPS), Units 2 and 3 Technical Specifications, this letter submits the Annual Radiological Environmental Operating Report 73. This report provides the 2015 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. There are no commitments contained in this letter.

If you have any questions or require additional information, please do not hesitate to contact Gerard Stenclik at (717) 456-4491.

Sincerely,

Patrick D. Navin, Plant Manager
Peach Bottom Atomic Power Station

PDN/SMO/GRS/bcb

Enclosure

ccn 16-50

cc: USNRC Region I Regional Administrator (Daniel H. Dorman)
USNRC Senior Resident Inspector, PBAPS (Justin Heinly)
USNRC Region I Inspector (Christopher Graves)

IE25
NRR

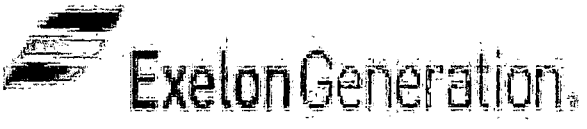
Docket No: 50-277
50-278

PEACH BOTTOM ATOMIC POWER STATION
UNITS 2 and 3

Annual Radiological
Environmental Operating Report

Report No. 73
1 January Through 31 December 2015

Prepared By



Peach Bottom Atomic Power Station
Delta, PA 17314

May 2016

TABLE OF CONTENTS

Appendices

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I. Executive Summary

In 2015, the dose from both liquid and gaseous effluents was conservatively calculated for the Maximum Exposed Member of the Public for Peach Bottom Atomic Power Station. 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	2.68E-01	All	1.10E+03	SSE	1.34E+00	2.00E+01	mrad
Noble Gas	Beta - Air Dose	1.83E-01	All	1.10E+03	SSE	4.58E-01	4.00E+01	mrad
Noble Gas	Total Body (gamma)	2.59E-01	All	1.10E+03	SSE	2.59E+00	1.00E+01	mrem
Noble Gas	Skin (Beta)	4.68E-01	All	1.10E+03	SSE	1.56E-01	3.00E+01	mrem
Gaseous Iodine, Particulate, Carbon-14 & Tritium	Bone	5.52E-01	Child	1.10E+03	SSE	1.83E+00	3.00E+01	mrem
Gaseous Iodine, Particulate, & Tritium	Thyroid	1.13E-02	Infant	1.10E+03	SSE	3.77E-02	3.00E+01	mrem
Liquid	Total Body (gamma)	3.95E-04	Child	Site Boundary		6.59E-03	6.00E+00	mrem
Liquid	Liver	5.69E-04	Child			2.85E-03	2.00E+01	mrem
Direct Radiation	Total Body	0.00E+00	All	1.15E+03	SSE	0.00E+00	2.20E+01	mrem
40 CFR Part 190 Compliance								
Total Dose	Total Body	2.59E-01	All	1.15E+03	SSE	1.04E+00	2.50E+01	mrem
Total Dose	Thyroid	1.13E-02	All	1.15E+03	SSE	1.51E-02	7.50E+01	mrem
Total Dose	Bone	5.52E-01	All	1.15E+03	SSE	2.20E+00	2.50E+01	mrem
Total Dose	Total Body	2.59E-01	All	1.15E+03	SSE	8.65E+00	3.00E+00	mrem
Total Dose	Bone	5.52E-01	All	1.15E+03	SSE	1.83E+01	3.00E+00	mrem
Total Dose	Thyroid	2.79E-01	All	1.15E+03	SSE	5.08E-01	5.50E+01	mrem

Doses calculated were well below all ODCM limits.

This report on the Radiological Environmental Monitoring Program (REMP) conducted for the Peach Bottom Atomic Power Station (PBAPS) by Exelon Nuclear covers the period 1 January 2015 through 31 December 2015. During that time period 1,247 analyses were performed on 968 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, iodine-131 (I-131), tritium (H-3) and gamma emitting nuclides. No fission or activation products were found. Gross beta activity detected was consistent with those observed in previous years. Tritium was not detected in drinking water.

Precipitation samples were analyzed under the Radiological Groundwater Protection Program (RGPP) in 2015.

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 (Cs-137) activity was found at one of three sediment locations and was consistent with data from previous years.

The atmospheric environment was divided into two parts for examination: airborne and terrestrial. Sample media for determining airborne affects 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 I-131analyses were performed on weekly air samples. All results were less than the minimum detectable activity for I-131.

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

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

The results of the Optically-Stimulated Luminescent Dosimetry (OSLD) monitoring program were used to confirm that the Independent Spent Fuel Storage Installation (ISFSI) had no 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.

II. Introduction

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 115 MWth High Temperature, Gas-cooled Reactor (HTGR) 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 rated full-power output of approximately 3,951 MWth following an Extended Power Uprate (EPU) in 2015. 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.

The REMP for PBAPS was initiated in 1966. This report covers those analyses performed by Teledyne Brown Engineering (TBE), Landauer and Environmental Inc. (EI, Midwest Labs) on samples collected during the period 01 January 2015 through 31 December 2015.

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 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 2015. 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, precipitation, fish and sediment. Surface water from two locations (1LL and 1MM) and drinking water from three locations (13B, 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 (surface water) and 6I (drinking water). Fish samples comprising the flesh from two groups: Bottom Feeder (channel catfish, flathead catfish, carp, and shorthead redhorse) and Predator (smallmouth bass and largemouth bass) were collected semiannually from two locations (4 and 6; 6 is the control). Sediment samples composed of recently deposited substrate were collected semiannually at three locations (4J; 4T and 6F; 6F is the control).

Atmospheric Environment

The atmospheric environment was evaluated by performing radiological analyses on air particulate and airborne iodine samples. Air particulate and air iodine samples were collected and analyzed weekly from five locations (1B, 1C, 1Z, 3A and 5H2; 5H2 is the control). 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.

Terrestrial Environment

The terrestrial environment was evaluated by performing radiological analyses on milk and food product samples. Milk samples were collected biweekly at five locations (J, R, S, U and V; V is the control) from April through November and monthly from December through March. Six additional locations (C, D, E, L, P and W; C and E are the controls) were sampled quarterly. 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, 2Q and 55; 55 is the control) in May through September. All samples were collected in new unused plastic bags and shipped promptly to the laboratory.

Ambient Gamma Radiation

The ambient gamma radiation in the areas surrounding PBAPS for the REMP is measured using dosimeters, which are exposed in the field during and exchanged quarterly. Optically-Stimulated Luminescent Dosimeters (OSLD) replaced the Thermo-Luminescent Dosimeter (TLD) type in the field starting in 2012. However, to observe how OSLD compares to TLD technology for environmental monitoring, PBAPS decided to continue using TLD in addition to OSLD. Therefore, both technologies are employed at PBAPS but the primary data reported is using the OSLD only. Additionally, only the "gross" exposure (i.e. no background or control subtraction) is reported in this report with OSLD; prior to 2012, TLD data are "net" exposures are used.

The OSLD locations were placed on and around the PBAPS site as follows:

A site boundary ring, consisting of 20 locations (1A, 1B, 1C, 1D, 1E, 1F, 1G, 1H, 1I, 1J, 1K, 1L, 1M, 1NN, 1P, 1Q, 1R, 2, 2B and 40), 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 24 locations (1T, 14, 15, 17, 22, 23, 26, 27, 31A, 32, 3A, 42, 43, 44, 45, 46, 47, 48, 49, 4K, 5, 50, 51 and 6B), extending to approximately 5 miles from the site and designed to measure possible exposures to close-in population.

The balance of four locations (16, 18, 19 and 24) representing control and special interests areas such as population centers, schools, etc.

The specific dosimeter 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.

Each dosimetry location in the environment has either 2 or 4 OSLD and TLD dosimeters which are enclosed in plastic as a moisture barrier. These dosimeters are protected from the environment in either a small formica box or a polyethylene jar approximately six feet above the ground level. These dosimeters are exchanged quarterly and sent to an off-site laboratory for analysis.

B. Sample Analysis

This section describes the general analytical methods used by TBE and EI. to analyze the environmental samples for radioactivity for the PBAPS REMP in 2015. 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 drinking water, surface water, 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 criticality. In addition, data were compared to previous years' operational data for consistency and trending. Several factors are important in the interpretation of the data.

1. Lower Limit of Detection and Minimum Detectable Concentration

The lower limit of detection (LLD) is 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 is intended as a "before-the-fact" (*a priori*) estimate of a system (including instrumentation, procedure and sample type) and not as an "after-the-fact" (*a posteriori*) measurement for the presence of activity. All analyses are designed to achieve the required PBAPS detection capabilities for environmental sample analysis.

The minimum detectable concentration (MDC) is defined similarly as above for LLD; however, the MDC is the "after-the-fact" (*a posteriori*) estimate vice a before-the-fact as in LLD.

2. Net Activity Calculation and Reporting of Results

Net activity for a sample is 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 affecting a negative number. MDC is 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 water eleven nuclides, manganese-54 (Mn-54), cobalt-58 (Co-58), iron-59 (Fe-59), cobalt-60 (Co-60), zinc-65 (Zn-65), zirconium-95 (Zr-95), niobium-95 (Nb-95), cesium-134 (Cs-134), Cs-137 (Cs-137), barium-140 (Ba-140) and lanthanum-140 (La-140) were reported.

For fish eight nuclides, potassium-40 (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, beryllium-7 (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 eight nuclides, Be-7, K-40, 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 2015 the PBAPS REMP had a sample collection recovery rate of 100%. The exceptions to this program are listed below:

1. Data recovery for the Meteorological Tower #2 in June 2015 was < 90% due to a power supply failure. The power supply was lost on June 4th and replaced on June 16th.

2. The environmental sampling contractor (Normandeau) reported to the REMP Task Manager at Peach Bottom that the sample volume for Air Sample Station 1C was incorrectly reported to the off-site laboratory (TBE) from January to March 2015. The error was a result of an incorrect data entry that was missed during data sheet review.The sample volume was above the minimum requirement of 85 cu. m and the samples were considered valid. All LLD requirements were met.

3. Vegetation at stations 2Q, 3Q and 55 were not collected in May 2015 due to the late planting season which did not provide sufficient sample volume for collections.

Each program exception was identified in the corrective action process and reviewed to understand the causes of the exception and apply the corrective actions . 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

1. Garden station 1Q was removed from the REMP in 2015.
2. New garden station 1B was established next to the MET tower on Exelon property to replace garden 1Q for production in 2016.
3. A new milk farm station X in the NW meteorological sector started sampling 09/07/15.
4. Garden station 2B was removed from the REMP in 2015.
5. A new garden station 1C was established in June 2015.

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.

Iodine

Monthly samples from both locations were analyzed for I-131. All results were less than the MDC (Table C-I.2, Appendix C).

Gamma Spectrometry

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

2. Drinking Water

Monthly samples were collected from continuous water samplers at three locations (13B, 4L and 6I). Two locations (13B and 4L) could be affected by Peach Bottom's effluent releases. The following analyses were performed:

Gross Beta

Samples from all 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 22 of 36 samples. The values ranged from 1.9 to 9.4 pCi/L. Concentrations detected were generally below those detected in previous years.

Tritium

Monthly samples from three locations were composited quarterly and analyzed for tritium activity (Table C-II.2, Appendix C). Tritium activity was not detected in any samples.

Iodine

Monthly samples from three locations were analyzed for I-131 (Table C-II.3, Appendix C). All results were less than the MDC.

Gamma Spectrometry

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

3. Precipitation

Precipitation samples were analyzed under the RGPP in 2015.

4. Fish

Fish samples comprised of bottom feeder and predator 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 2,162 to 4,191 pCi/kg wet and was consistent with levels detected in previous years. No Peach Bottom fission or activation products were found in 2015. Historical levels of Cs-137 are shown in Figure C-2, Appendix C.

5. 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). K-40 was found in all locations and ranged from 10,650 to 23,720 pCi/kg dry. The fission product Cs-137 was not detected in any of the six samples. Historical levels of Cs-137 are shown in Figure C-3, Appendix C. No other Peach Bottom fission or activation products were found.

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, 1C and 1Z), 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-4 and C-5, 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 5 to 36 E-3 pCi/m^3, with a mean of 17 E-3 pCi/m^3. The results from the Intermediate Distance location (Group II) ranged from 7 to 31 E-3 pCi/m^3 with a mean of 15 E-3 pCi/m^3. The results from the Distant location (Group III) ranged from 8 to 39 E-3 pCi/m^3 with a mean of 16 E-3 pCi/m^3. A comparison of the weekly mean values for 2015 indicate no notable differences among the three groups (Figure C-4, Appendix C). In addition, a comparison of the 2015 air particulate data with previous years data indicate no effects from the operation of PBAPS (Figure C-5, 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 18 of 20 samples. The values ranged from 41 to 93 E-3 pCi/m^3. All other nuclides were less than the MDC and all required LLDs were met.

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 for I-131.

2. Terrestrial

a. Milk

Samples were collected from five locations (J, R, S, U and V) biweekly April through November and monthly December through March. Samples from six additional locations (C, D, E, L, P and W) 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 for I-131. All results were less than MDC for I-131 and all required LLDs were met.

Gamma Spectrometry

Each milk sample from all locations 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 1,018 to 1,545 pCi/l. All other nuclides were less than the MDC and all required LLDs were met. Comparison of the 2015 Cs-137 milk data with previous years data indicate no effects from the operation of PBAPS (Figure C-6, Appendix C).

b. Food Products

Food product samples were collected at four locations when available. The following analysis was performed:

Gamma Spectrometry

Each food product sample from was analyzed for concentrations of gamma emitting nuclides (Table C-VIII.1, Appendix C).

Naturally occurring Be-7 activity was found in 22 of 39 samples and ranged from 272 to 2,191 pCi/kg wet. K-40 activity was found in all samples and ranged from 1,265 to

10,930 pCi/kg wet. All other nuclides were less than the MDC.

C. Ambient Gamma Radiation

Beginning in 2012, Exelon changed the type of dosimetry used for the REMP. OSLDs were deployed. TLD monitoring is continuing at PBAPS as a side-by-side technology comparison study but official reporting is from OSLD data. The relative comparison to control locations remains valid. OSLD technology is different than that used in a TLD but has the same purpose (to measure direct radiation). Results of OSLD measurements are listed in Tables C-IX.1 through C-IX.3 and Figure C-7, Appendix C.

Most gross OSLD measurements were below 10 mR per standard month, with a range of 5.3 to 13.7 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)

ISFSI was utilized beginning June 2000. Four new casks were added to the ISFSI pad in 2015. Onsite location 1R, which is located on the hillside overlooking the ISFSI showed a general increase of 1 to 2 mR per standard month from pre-ISFSI loading (Figure C-8, Appendix C) for the period of 2000 to about 2007. Location 2B, which represents the location of the Nearest Real Resident, shows a slight increase in exposure from the ISFSI pad. Data from location 2B is used to demonstrate compliance to both 40CFR190 and 10CFR72.104 limits.

The large increase in multiple direct radiation locations after 2012 is a result of the transition in technology used for ambient gamma radiation measurement (from TLD to OSLD) and the use of "gross" data rather than "net".

All radiation levels are well-below regulatory limits.

E. Land Use Census

A Land Use Survey conducted during the fall of 2015 around the 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. There were no changes in the nearest residence, garden or milk farms from the previous year.

Meteorological Sector and Distance from the Center of PBAPS Reactor Building Exhaust Vents

Sector		Residence Feet	Garden Feet	Milk Farm Feet
1	N	12,362	14,003	14,455
2	NNE	11,112	11,041	10,843
3	NE	10,080	10,004	10,492
4	ENE	10,495	11,554	10,925
5	E	10,066	14,540	14,471
6	ESE	16,085	20,374	20,154
7	SE	19,368	19,368	19,134*
8	SSE	3,912	3,912	-
9	S	5,545	5,545	-
10	SSW	6,072	8,167	11,602
11	SW	4,755	4,865	4,860*
12	WSW	4,036	9,072	-
13	W	5,327	5,327	5,136*
14	WNW	2,928	4,192	22,124
15	NW	2,948	9,545	9,545
16	NNW	5,124	-	-

F. Errata Data

There is no errata data for 2015.

G. Secondary Laboratory Analysis

The Appendix D section of this report presents the results of data analysis 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. Comparisons of the results for all media were within expected ranges.

H. 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 Eckert & Ziegler 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

   The Environmental Resource Associates' evaluation report provides an acceptance range for control and warning limits with associated flag values. The Environmental Resource Associates' acceptance limits are established per the United States Environmental Protection Agency (USEPA), National Environmental Laboratory Accreditation Conference (NELAC), state specific performance testing program requirements or ERA's standard operating procedure 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 Teledyne Brown Engineering (TBE) laboratory, 129 out of 139 analyses performed met the specified acceptance criteria. Ten analyses (AP – chromium-51 (Cr-51), uranium-234/233 (U-234/233), Gross alpha

(Gr-A), Sr-90; Soil Sr-90; Water – nickel-63 (Ni-63), Sr-89, Sr-90, Uranium natural; Vegetation Sr-90 samples) did not meet the specified acceptance criteria for the following reasons:

Note: The Department of Energy (DOE) Mixed Analyte Performance Evaluation Program (MAPEP) samples are created to mimic conditions found at DOE sites which do not resemble typical environmental samples obtained at commercial nuclear power facilities.

1. Teledyne Brown Engineering's Analytics' June 2015 air particulate Cr-51 result of 323 ± 45.5 pCi was higher than the known value of 233 pCi with a ratio of 1.39. The upper ratio of 1.30 (acceptable with warning) was exceeded. The air particulate sample is counted at a distance above the surface of the detector to avoid detector summing which could alter the results. Cr-51 has the shortest half-life (27.7 days) and the lowest gamma energy (320.08 keV) of this mixed nuclide sample. Additionally, Cr-51 has only one gamma energy and also has a low intensity (9.38 gamma photons produced per 100 disintegrations). This geometry produces a larger error for the Cr-51 and other gamma emitters as any distance from the detector decreases the counting rate and the probability of accurately detecting the nuclide energy. Taking into consideration the uncertainty, the activity of Cr-51 overlaps with the known value at a ratio of 1.19, which would statistically be considered acceptable. Non-Conformance Report (NCR)15-18

2. Teledyne Brown Engineering's MAPEP March 2015 soil Sr-90 result of 286 Total Bq/kg was lower than the known value of 653 Bq/kg, exceeding the lower acceptance range of 487 Bq/kg. The failure was due to incomplete digestion of the sample. Incomplete digestion of samples causes some of the sample to be left behind and is not present in the digested sample utilized for analysis. The procedure has been updated to include a more robust digestion using stirring during the heating phase. The MAPEP September 2014 soil Sr-90 series prior to this study was evaluated as acceptable with a result of 694 and an acceptance range of 601 – 1115 Bq/kg. The MAPEP September 2015 series soil Sr-90 after this study was evaluated as acceptable with a result of 429 and an acceptance range of 298 – 553 Bq/kg. We feel the issue is specific to the March 2015 MAPEP sample. NCR 15-13

3. Teledyne Brown Engineering's MAPEP March 2015 air particulate U-234/233 result of 0.0211 ± 0.0120 Bq/sample was higher than the known value of 0.0155 Bq/sample, exceeding the upper acceptance range of 0.0202 Bq/sample. Although evaluated as a failure, taking into consideration the uncertainty, TBE's result would

overlap with the known value, which is statistically considered acceptable. MAPEP spiked the sample with significantly more U-238 activity (a found to known ratio of 0.96) than the normal U-234/233. Due to the extremely low activity, it was difficult to quantify the U-234/233. NCR 15-13

4. Teledyne Brown Engineering's MAPEP March 2015 air particulate gross alpha result of 0.448 Bq/sample was lower than the known value of 1.77 Bq/sample, exceeding the lower acceptance range of 0.53 Bq/sample. The instrument efficiency used for gross alpha is determined using a non-attenuated alpha standard. The MAPEP filter has the alphas embedded in the filter, requiring an attenuated efficiency. When samples contain alpha particles that are embedded in the sample media, due to the size of the alpha particle, some of the alpha particles are absorbed by the media and cannot escape to be counted. When the sample media absorbs the alpha particles this is known as self-absorption or attenuation. The calibration must include a similar configuration/media to correct for the attenuation. In order to correct the low bias, TBE will create an attenuated efficiency for MAPEP air particulate filters. The MAPEP September series air particulate gross alpha result of 0.47 Bq/sample was evaluated as acceptable with a range of 0.24 – 1.53 Bq/sample. Unlike the MAPEP samples, air particulate Gross alpha analyses for power plants are not evaluated as a direct count sample. Power plant air particulate filters for gross alpha go through an acid digestion process prior to counting and the digested material is analyzed. NCR 15-13

5. Teledyne Brown Engineering's MAPEP September water Ni-63 result of 11.8 ± 10.8 Bq/L was higher than the known value of 8.55 Bq/L, exceeding the upper acceptance range of 11.12 Bq/L. The Ni-63 half-life is approximately 100 years. Nickel-63 is considered to be a "soft" or low energy beta emitter, which means that the beta energy is very low. The maximum beta energy for Ni-63 is approximately 65 keV, much lower than other more common nuclides such as Co-60 (maximum beta energy of 1549 keV). The original sample was run with a 10 mL aliquot which was not sufficient for the low level of Ni-63 in the sample. The rerun aliquot of 30 mL produced an acceptable result of 8.81 Bq/L. NCR 15-21

6. Teledyne Brown Engineering's MAPEP September air particulate Sr-90 result of 1.48 Bq/sample was lower than the known value of 2.18 Bq/sample, exceeding the lower acceptance range of 1.53 Bq/sample. In the past, MAPEP has added substances (unusual compounds found in DOE complexes) to various matrices that have resulted in incomplete removal of the isotope of interest for

the laboratories analyzing the cross checks. TBE suspects that this may be the cause of this error. Many compounds, if not properly accounted for or removed in the sample matrix, can cause interferences to either indicate lower activity or higher activity. TBE will no longer analyze the air particulate Sr-90 through MAPEP but will participate in the Analytics cross check program to perform both Sr-89 and Sr-90 in the air particulate matrix. NCR 15-21

7. Teledyne Brown Engineering's MAPEP September vegetation Sr-90 result of 0.386 Bq/sample was lower than the known value of 1.30 Bq/sample, exceeding the lower acceptance range of 0.91 Bq/sample. In the past, MAPEP has added substances (unusual compounds found in DOE complexes) to various matrices that have resulted in incomplete removal of the isotope of interest for the laboratories analyzing the cross checks. TBE suspects that this maybe the cause of this error. Many compounds, if not properly accounted for or removed in the sample matrix, can cause interferences to either indicate lower activity or higher activity. Results from previous performance evaluations were reviewed and shown to be acceptable. NCR 15-21

8. & 9. Teledyne Brown Engineering's ERA May water Sr-89/90 results of 45.2 and 28.0 pCi/L, respectively were lower than the known values of 63.2 and 41.9 pCi/L, respectively, exceeding the lower acceptance limits of 51.1 and 30.8 pCi/L, respectively. The yields were on the high side of the TBE acceptance range, which indicates the present of excess calcium contributed to the yield, resulting in low results. NCR 15-09

10. Teledyne Brown Engineering's ERA November water Uranium natural result of 146.9 pCi/L was higher than the known value of 56.2 pCi/L, exceeding the upper acceptance limit of 62.4 pCi/L. The technician failed to dilute the original sample, but used the entire 12 mL sample. When the results were recalculated without the dilution and using the 12 mL aliquot, the result of 57.16 agreed with the assigned value of 56.2. NCR 15-19

For the EIML laboratory, 90 of 94 analyses met the specified acceptance criteria. Four analyses (Water – Co-57, Fe-55; AP – Co-57; Soil – Sr-90) did not meet the specified acceptance criteria for the following reasons:

1. Environmental Inc., Midwest Laboratory's MAPEP February 2015 water Co-57 result of 10.2 Bq/L was lower than the known value of 29.9 Bq/L, exceeding the lower control limit of 20.9 Bq/L. The reported value should have been 27.84, which would have been

evaluated as acceptable. A data entry error resulted in a non-acceptable result.

2. Environmental Inc., Midwest Laboratory's MAPEP February 2015 AP Co-57 result of 0.04 Bq/sample was lower than the known value of 1.51 Bq/ sample, exceeding the lower control limit of 1.06 Bq/sample. The reported value should have been 1.58 Bq/sample, which would have been evaluated as acceptable. A data entry error resulted in a non-acceptable result.

3. Environmental Inc., Midwest Laboratory's MAPEP August 2015 soil Sr-90 result of 231 Bq/kg was lower than the known value of 425 Bq/kg, exceeding the lower control limit of 298 Bq/kg. The incomplete separation of calcium from strontium caused a failed low result. The reanalysis result of 352 Bq/kg fell within acceptance criteria.

4. Environmental Inc., Midwest Laboratory's MAPEP August 2015 water Fe-55 result of 4.2 Bq/L was lower than the known value of 13.1 Bq/L, exceeding the lower control limit of 9.2 Bq/L. The known activity was below the routine laboratory detection limits for the available aliquot fraction.

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.

APPENDIX A

RADIOLOGICAL ENVIRONMENTAL MONITORING REPORT SUMMARY

TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY FOR THE PEACH BOTTOM ATOMIC POWER STATION, 2015

NAME OF FACILITY: PEACH BOTTOM ATOMIC POWER STATION **DOCKET NUMBER: 50-277 & 50-278**

LOCATION OF FACILITY: YORK COUNTY PA **REPORTING PERIOD: 2015**

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 ANNUAL 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
	I-131	24	1	<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
	Nb-95		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)

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SURFACE WATER (PCI/LITER)	Zr-95		30	<LLD	<LLD	-		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
DRINKING WATER (PCI/LITER)	GR-B	36	4	3.6 (14/24) (2.2/9.4)	3.0 (8/12) (1.9/4.9)	3.9 (8/12) (2.2/9.4)	13B INDICATOR CHESTER WATER AUTH. SUSQUEHANNA PUMPING STA. 13306 FEET ESE	0
	H-3	12	200	<LLD	<LLD	-		0
	I-131	36	1	<LLD	<LLD	-		0

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DRINKING WATER (PCI/LITER)	GAMMA	36						
	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
	Nb-95		15	<LLD	<LLD	-		0
	Zr-95		30	<LLD	<LLD	-		0
	Cs-134		15	<LLD	<LLD	-		0

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DRINKING WATER (PCI/LITER)	Cs-137		18	<LLD	<LLD	-		0
	Ba-140		60	<LLD	<LLD	-		0
	La-140		15	<LLD	<LLD	-		0
BOTTOM FEEDER (PCI/KG WET)	GAMMA K-40	4	NA	2685 (2/2) (2162/3208)	3167 (2/2) (2684/3650)	3167 (2/2) (2684/3650)	6 CONTROL HOLTWOOD POND 57347 FEET NW	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	4						
	K-40		NA	3631 (2/2) (3071/4191)	3172 (2/2) (3148/3195)	3631 (2/2) (3071/4191)	4 INDICATOR CONOWINGO POND 7162 FEET SE	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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PREDATOR (PCI/KG WET)	Zn-65		260	<LLD	<LLD	-		0
	Cs-134		130	<LLD	<LLD	-		0
	Cs-137		150	<LLD	<LLD	-		0
SEDIMENT (PCI/KG DRY)	GAMMA	6						
	K-40		NA	16363 (4/4) (10650/23720)	11540 (2/2) (11430/11650)	21040 (2/2) (18360/23720)	4T INDICATOR CONOWINGO POND NEAR CONOWINGO DAM 41818 FEET SE	0
	Mn-54		NA	<LLD	<LLD	-		0
	Co-58		NA	<LLD	<LLD	-		0
	Co-60		NA	<LLD	<LLD	-		0
	Cs-134		150	<LLD	<LLD	-		0

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SEDIMENT (PCI/KG DRY)	Cs-137		180	<LLD	<LLD	-		0
AIR PARTICULATE (E-3 PCI/CU.METER)	GR-B	260	10	16 (205/208) (5/36)	16 (51/52) (8/39)	18 (52/52) (7/36)	1C INDICATOR PEACH BOTTOM SOUTH SUB STATION 4513 FEET SSE	0
	GAMMA	20						
	Be-7		NA	69 (14/16) (41/93)	74 (4/4) (59/83)	74 (4/4) (59/83)	5H2 CONTROL MANOR SUBSTATION 162565 FEET NE	0
	Mn-54		NA	<LLD	<LLD	-		0
	Co-58		NA	<LLD	<LLD	-		0
	Co-60		NA	<LLD	<LLD	-		0
	Cs-134		50	<LLD	<LLD	-		0
	Cs-137		60	<LLD	<LLD	-		0

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AIR IODINE (E-3 PCI/CU.METER)	GAMMA I-131	260	70	<LLD	<LLD	-		0
MILK (PCI/LITER)	I-131	143	1	<LLD	<LLD	-		0
	GAMMA K-40	143	NA	1291 (112/112) (1018/1545)	1281 (31/31) (1117/1495)	1408 (4/4) (1315/1503)	D INDICATOR 18533 FEET NE	0
MILK (PCI/LITER)	Cs-134		15	<LLD	<LLD	-		0
	Cs-137		18	<LLD	<LLD	-		0
	Ba-140		60	<LLD	<LLD	-		0
	La-140		15	<LLD	<LLD	-		0

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VEGETATION (PCI/KG WET)	GAMMA	39						
	Be-7		NA	1000 (14/27) (288/2191)	954 (8/12) (272/1613)	1076 (8/12) (288/2191)	3Q INDICATOR 103 FLINTVILLE RD. 9292 FEET W	0
	K-40		NA	4850 (27/27) (1265/10930)	5062 (12/12) (3185/6937)	6119 (12/12) (3216/10930)	3Q INDICATOR 103 FLINTVILLE RD. 9292 FEET W	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

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DIRECT RADIATION (MILLIREM/STD.MO.)	OSLD-QUARTERLY	192	NA	9.6 (176/176) (5.3/13.7)	9.1 (16/16) (6.4/10.6)	12.6 (4/4) (10.4/13.7)	1R INDICATOR TRANSMISSION LINE HILL 2798 FEET SSE	0

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

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, 2015

Location	Location Description	Distance & Direction from Site per PBAPS ODCM
A. Surface Water		
1LL	Peach Bottom Units 2 and 3 Intake - Composite (Control)	1,200 feet ENE
1MM	Peach Bottom Canal Discharge -Composite	5,500 feet SE
B. Drinking (Potable) Water		
4L	Conowingo Dam EL 33' MSL - Composite	45,900 feet SE
6I	Holtwood Dam Hydroelectric Station - Composite (Control)	30,500 feet NW
13B	Chester Water Authority (CWA) Susquehanna Pumping Station- Composite	13,300 feet ESE
C. Precipitation		
1A		1,396 feet SE
1B		2,587 feet NW
4M		45,989 feet SE
D. Fish		
4	Conowingo Pond	6,000 – 10,000 feet SE
6	Holtwood Pond (Control)	50,000 – 70,000 feet NNW
E. Sediment		
4J	Conowingo Pond near Berkin's Run	7,400 feet SE
4T	Conowingo Pond near Conowingo Dam	41,818 feet SE
6F	Holtwood Dam (Control)	31,469 feet NW
F. Air Particulate - Air Iodine		
1B	Weather Station #2	2,500 feet NW
1Z	Weather Station #1	1,500 feet SE
1A	Weather Station #1	1,500 feet SE
1C	Peach Bottom South Sub Station	4,700 feet SSE
3A	Delta, PA – Substation	19,300 feet SW
5H2	Manor Substation (Control)	162,400 feet NE
G. Milk – bi-weekly / monthly		
J		5,100 feet W
R		4,900 feet SW
S		19,061 feet SE
U		11,200 feet SSW
V	(Control)	32,600 feet W
H. Milk – quarterly		
C	(Control)	5,037 feet NW
D		18,533 feet NE

TABLE B-1 Radiological Environmental Monitoring Program – Sampling Locations, Distance and Direction from Reactor Buildings, Peach Bottom Atomic Power Station, 2015

Location	Location Description	Distance & Direction from Site per PBAPS ODCM
H. Milk – quarterly (cont'd)		
E	(Control)	46,147 feet N
L		11,194 feet NE
P		10,982 feet ENE
W		89,232 feet S
I. Food Products – monthly when available		
1Q		4,171 feet NW
2B		3,854 feet SSE
2Q		9,245 feet SW
55	(Control)	51,900 feet NE
J. Environmental Dosimetry - OSLD		
Site Boundary		
1L	Peach Bottom Unit 3 Intake	1,100 feet NE
1P	Tower B & C Fence	2,200 feet ESE
1A	Weather Station #1	1,500 feet SE
1Q	Tower D & E Fence	3,274 feet SE
1D	140 ° Sector	3,538 feet SE
2	Peach Bottom 130° Sector Hill	4,700 feet SE
2B	Burk Property	3,749 feet SSE
1M	Discharge	5,438 feet SE
1R	Transmission Line Hill/ISFSI Pad	2,798 feet SSE
1I	Peach Bottom South Substation	2,900 feet SSE
1C	Peach Bottom South Substation	4,700 feet SSE
1J	Peach Bottom 180° Sector Hill	4,000 feet S
1K	Peach Bottom Site Area	4,700 feet SW
1F	Peach Bottom 200° Sector Hill	2,900 feet SSW
40	Peach Bottom Site Area	8,000 feet SW
1NN	Peach Bottom Site	2,700 feet WSW
1H	Peach Bottom 270° Sector Hill	3,200 feet W
1G	Peach Bottom North Substation	3,100 feet WNW
1B	Weather Station #2	2,500 feet NW
1E	Peach Bottom 350° Sector Hill	3,000 feet NNW
Intermediate Distance		
5	Wakefield, PA	24,400 feet E
15	Silver Spring Rd	19,300 feet N
22	Eagle Road	13,230 feet NNE
44	Goshen Mill Rd	26,700 feet NE
32	Slate Hill Rd	14,400 feet ENE
45	PB-Keeney Line	17,600 feet ENE
14	Peters Creek	10,300 feet E
17	Riverview Rd	21,500 feet ESE
31A	Eckman Rd	24,100 feet SE
4K	Conowingo Dam Power House Roof	45,900 feet SE
23	Peach Bottom 150° Sector Hill	5,500 feet SSE
27	N. Cooper Road	14,400 feet S
48	Macton Substation	26,500 feet SSW

TABLE B-1 Radiological Environmental Monitoring Program – Sampling Locations, Distance and Direction from Reactor Buildings, Peach Bottom Atomic Power Station, 2015

Location	Location Description	Distance & Direction from Site per PBAPS ODCM
J. Environmental Dosimetry – OSLD (cont'd)		
Intermediate Distance (cont'd)		
3A	Delta, PA Substation	19,300 feet SW
49	PB-Conastone Line	21,500 feet WSW
50	TRANSCO Pumping Station	26,400 feet W
51	Fin Substation	21,000 feet WNW
26	Slab Road	22,300 feet NW
6B	Holtwood Dam Power House Roof	30,400 feet NW
42	Muddy Run Environ. Laboratory	21,600 feet NNW
43	Drumore Township School	26,200 feet NNE
46	Broad Creek	23,800 feet SSE
47	Broad Creek Scout Camp	22,700 feet S
1T	Lay Road/LLRWSF	3,100 feet WNW
Control		
16	Nottingham, PA Substation (Control)	67,100 feet E
24	Harrisville, MD Substation (Control)	57,600 feet ESE
18	Fawn Grove, PA (Control)	52,200 feet W
19	Red Lion, PA (Control)	124,000 feet WNW

TABLE B-2 Radiological Environmental Monitoring Program – Summary of Sample Collection and Analytical Methods, Peach Bottom Atomic Power Station, 2015

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)
Surface Water	I-131	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-2012 Radioiodine in various matrices Env. Inc., I-131-01 Determination of I-131 in water by an ion exchange
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	I-131	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-2031 Radioiodine in drinking water Env. Inc., I-131-01 Determination of I-131 in water by an ion exchange
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

TABLE B-2 Radiological Environmental Monitoring Program – Summary of Sample Collection and Analytical Methods, Peach Bottom Atomic Power Station, 2015

Sample Medium	Analysis	Sampling Method	Collection Procedure Number	Sample Size	Analytical Procedure Number
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
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 an ion 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
OSLD	Optically Stimulated Luminescence Dosimetry	Quarterly OSLDs comprised of two Al_2O_3:C Landauer Incorporated elements.	NAI-ER9 Collection of OSLD samples for radiological analysis (Peach Bottom Atomic Power Station)	2 dosimeters	Landauer Incorporated

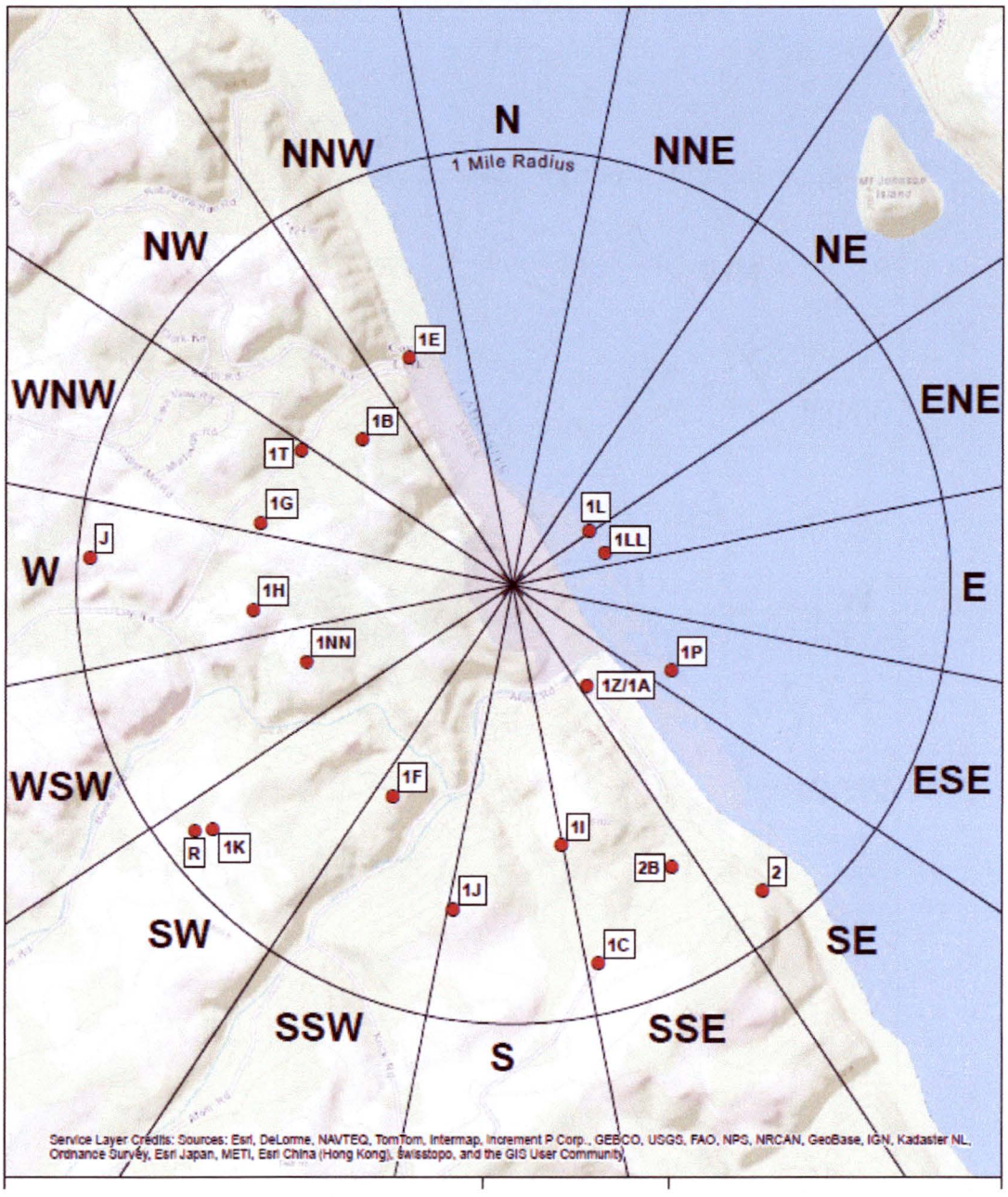


Figure B-1
Environmental Sampling Locations Within One
Mile of the Peach Bottom Atomic Power Station, 2015

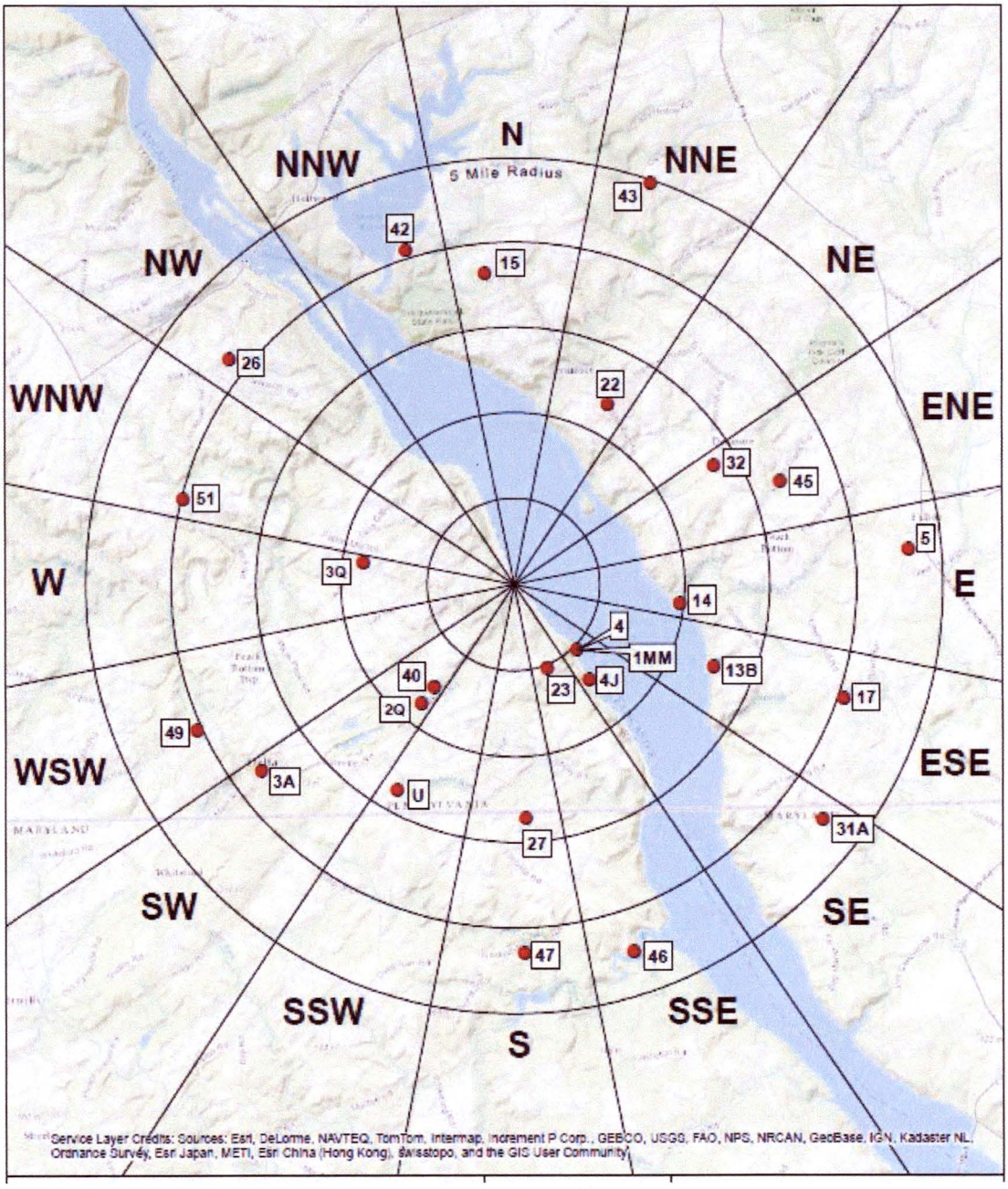


Figure B-2
Environmental Sampling Locations Between One and Approximately Five Miles of the Peach Bottom Atomic Power Station, 2015

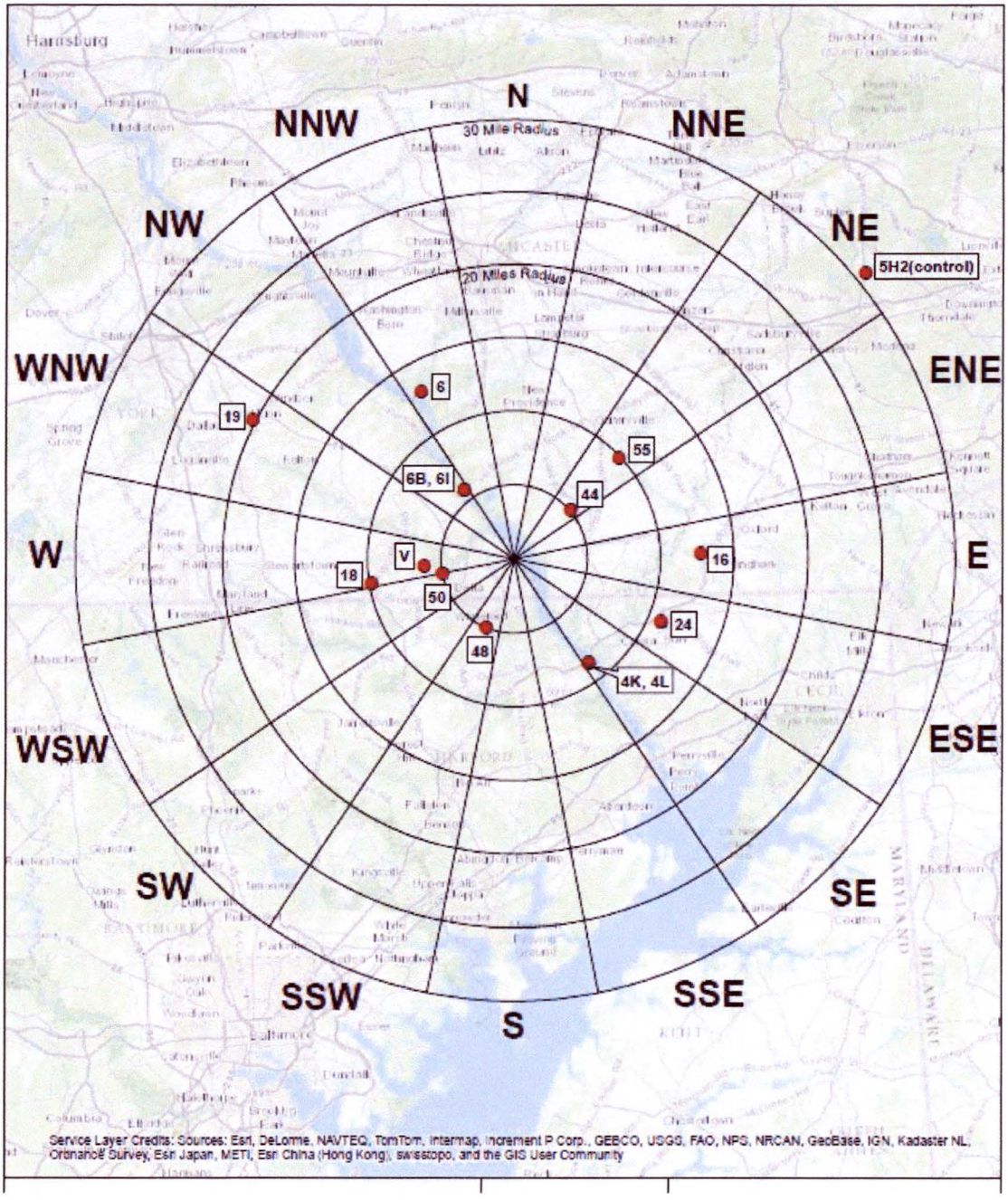


Figure B-3
Environmental Sampling Locations Greater Than
Five Miles from the Peach Bottom Atomic Power Station, 2015

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, 2015**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	1LL	1MM
12/31/14 - 03/25/15	< 181	< 171
03/25/15 - 07/01/15	< 181	< 182
07/01/15 - 09/30/15	< 187	< 184
09/30/15 - 12/30/15	< 195	< 194
MEAN	-	-

Table C-I.2 **CONCENTRATIONS OF I-131 IN SURFACE WATER SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2015**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	1LL	1MM
12/31/14 - 01/28/15	< 0.4	< 0.3
01/28/15 - 02/25/15	< 0.3	< 0.3
02/25/15 - 03/25/15	< 0.6	< 0.5
03/25/15 - 04/29/15	< 0.4	< 0.5
04/29/15 - 05/27/15	< 0.6	< 0.6
05/27/15 - 07/01/15	< 0.6	< 0.8
07/01/15 - 07/29/15	< 0.3	< 0.4
07/29/15 - 08/26/15	< 0.8	< 0.7
08/26/15 - 09/30/15	< 0.7	< 0.6
09/30/15 - 10/28/15	< 0.6	< 0.6
10/28/15 - 11/25/15	< 0.6	< 0.5
11/25/15 - 12/30/15	< 0.5	< 0.5
MEAN	-	-

Table C-I.3 **CONCENTRATIONS OF GAMMA EMITTERS IN SURFACE WATER SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2015**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION PERIOD	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	Cs-134	Cs-137	Ba-140	La-140
1LL	12/31/14 - 01/28/15	< 4	< 3	< 8	< 5	< 7	< 4	< 7	< 4	< 5	< 19	< 5
	01/28/15 - 02/25/15	< 9	< 8	< 16	< 10	< 17	< 8	< 16	< 6	< 8	< 37	< 12
	02/25/15 - 03/25/15	< 5	< 5	< 12	< 4	< 9	< 6	< 9	< 4	< 5	< 29	< 10
	03/25/15 - 04/29/15	< 8	< 7	< 17	< 9	< 15	< 8	< 13	< 7	< 8	< 27	< 12
	04/29/15 - 05/27/15	< 3	< 3	< 7	< 3	< 6	< 3	< 6	< 3	< 3	< 25	< 9
	05/27/15 - 07/01/15	< 4	< 3	< 7	< 4	< 8	< 4	< 6	< 3	< 4	< 25	< 8
	07/01/15 - 07/29/15	< 6	< 6	< 12	< 7	< 11	< 5	< 8	< 6	< 5	< 29	< 10
	07/29/15 - 08/26/15	< 5	< 4	< 9	< 3	< 10	< 5	< 6	< 4	< 5	< 18	< 5
	08/26/15 - 09/30/15	< 6	< 7	< 10	< 11	< 10	< 8	< 15	< 6	< 7	< 35	< 13
	09/30/15 - 10/28/15	< 9	< 8	< 16	< 9	< 12	< 8	< 14	< 8	< 9	< 39	< 11
	10/28/15 - 11/25/15	< 7	< 9	< 15	< 8	< 16	< 9	< 13	< 9	< 10	< 42	< 11
	11/25/15 - 12/30/15	< 8	< 8	< 12	< 9	< 16	< 6	< 14	< 6	< 9	< 30	< 5
	MEAN	-	-	-	-	-	-	-	-	-	-	-
1MM	12/31/14 - 01/28/15	< 4	< 4	< 8	< 4	< 7	< 4	< 7	< 4	< 4	< 18	< 5
	01/28/15 - 02/25/15	< 5	< 5	< 11	< 5	< 11	< 6	< 10	< 5	< 7	< 26	< 7
	02/25/15 - 03/25/15	< 5	< 5	< 11	< 6	< 10	< 5	< 10	< 5	< 5	< 30	< 9
	03/25/15 - 04/29/15	< 7	< 6	< 18	< 8	< 12	< 7	< 10	< 6	< 9	< 26	< 11
	04/29/15 - 05/27/15	< 3	< 3	< 7	< 3	< 5	< 3	< 5	< 3	< 3	< 25	< 8
	05/27/15 - 07/01/15	< 4	< 4	< 11	< 4	< 8	< 5	< 7	< 4	< 4	< 30	< 10
	07/01/15 - 07/29/15	< 6	< 5	< 13	< 6	< 13	< 7	< 11	< 6	< 6	< 28	< 9
	07/29/15 - 08/26/15	< 5	< 7	< 10	< 6	< 12	< 6	< 10	< 4	< 6	< 24	< 8
	08/26/15 - 09/30/15	< 8	< 8	< 16	< 6	< 17	< 8	< 15	< 7	< 8	< 37	< 12
	09/30/15 - 10/28/15	< 7	< 7	< 14	< 7	< 15	< 7	< 11	< 6	< 8	< 31	< 12
	10/28/15 - 11/25/15	< 6	< 5	< 12	< 7	< 10	< 7	< 11	< 6	< 6	< 24	< 8
	11/25/15 - 12/30/15	< 5	< 7	< 12	< 8	< 15	< 7	< 13	< 6	< 6	< 30	< 12
	MEAN	-	-	-	-	-	-	-	-	-	-	-

Table C-II.1 CONCENTRATIONS OF GROSS BETA IN DRINKING WATER SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2015

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	13B	4L	6I
01/02/15 - 01/29/15	3.7 ± 1.4	2.2 ± 1.2	1.9 ± 1.2
01/29/15 - 02/26/15	< 2.0	< 2.0	2.0 ± 1.4
02/26/15 - 03/26/15	3.6 ± 1.5	2.4 ± 1.4	3.0 ± 1.5
03/26/15 - 04/30/15	< 2.0	< 1.9	< 1.9
04/30/15 - 05/28/15	< 1.8	< 1.9	< 1.9
05/28/15 - 07/02/15	3.2 ± 1.4	4.1 ± 2.4	4.9 ± 2.4
07/02/15 - 07/30/15	< 2.1	< 2.1	< 2.1
07/30/15 - 08/27/15	3.1 ± 1.3	3.0 ± 1.3	3.5 ± 1.3
08/27/15 - 10/01/15	2.2 ± 1.5	3.8 ± 1.6	3.6 ± 1.6
10/01/15 - 10/29/15	2.3 ± 1.4	3.2 ± 1.5	2.8 ± 1.4
10/29/15 - 11/25/15	3.8 ± 1.6	< 2.1	< 2.1
11/25/15 - 12/30/15	9.4 ± 2.1	< 2.0	2.0 ± 1.4
MEAN	3.9 ± 4.6	3.1 ± 1.5	3.0 ± 2.0

Table C-II.2 CONCENTRATIONS OF TRITIUM IN DRINKING WATER SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2015

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	13B	4L	6I
01/02/15 - 03/26/15	< 176	< 175	< 175
03/26/15 - 07/02/15	< 177	< 178	< 182
07/02/15 - 10/01/15	< 187	< 188	< 189
10/01/15 - 12/30/15	< 194	< 197	< 193
MEAN	-	-	-

Table C-II.3 CONCENTRATIONS OF I-131 IN DRINKING WATER SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2015

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	13B	4L	6I
01/02/15 - 01/29/15	< 0.4	< 0.3	< 0.4
01/29/15 - 02/26/15	< 0.4	< 0.2	< 0.3
02/26/15 - 03/26/15	< 0.6	< 0.6	< 0.6
03/26/15 - 04/30/15	< 0.7	< 0.3	< 0.4
04/30/15 - 05/28/15	< 0.8	< 0.6	< 0.7
05/28/15 - 07/02/15	< 0.8	< 0.6	< 0.6
07/02/15 - 07/30/15	< 0.4	< 0.3	< 0.3
07/30/15 - 08/27/15	< 0.6	< 0.6	< 0.5
08/27/15 - 10/01/15	< 0.8	< 0.6	< 0.5
10/01/15 - 10/29/15	< 0.7	< 0.8	< 0.7
10/29/15 - 11/25/15	< 0.6	< 0.6	< 0.6
11/25/15 - 12/30/15	< 0.5	< 0.6	< 0.6
MEAN	-	-	-

THE MEAN AND TWO STANDARD DEVIATION ARE CALCULATED USING THE POSITIVE VALUES

Table C-II.4 **CONCENTRATIONS OF GAMMA EMITTER IN DRINKING WATER SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2015**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION PERIOD	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	Cs-134	Cs-137	Ba-140	La-140
13B	12/29/14 - 01/26/15	< 3	< 3	< 6	< 3	< 7	< 4	< 6	< 3	< 3	< 15	< 6
	01/26/15 - 02/23/15	< 5	< 5	< 13	< 5	< 11	< 5	< 8	< 4	< 6	< 32	< 9
	02/23/15 - 03/23/15	< 3	< 4	< 7	< 4	< 6	< 4	< 6	< 3	< 4	< 24	< 7
	03/23/15 - 04/27/15	< 5	< 5	< 11	< 5	< 11	< 6	< 8	< 4	< 5	< 25	< 8
	04/27/15 - 05/26/15	< 2	< 3	< 7	< 3	< 5	< 3	< 5	< 2	< 2	< 20	< 8
	05/26/15 - 06/29/15	< 4	< 5	< 11	< 5	< 9	< 5	< 8	< 5	< 5	< 32	< 12
	06/29/15 - 07/27/15	< 5	< 4	< 9	< 4	< 8	< 6	< 7	< 5	< 4	< 30	< 10
	07/27/15 - 08/24/15	< 6	< 9	< 21	< 8	< 14	< 5	< 12	< 8	< 9	< 24	< 10
	08/24/15 - 09/28/15	< 7	< 8	< 14	< 5	< 15	< 8	< 12	< 7	< 6	< 36	< 15
	09/28/15 - 10/26/15	< 7	< 5	< 10	< 7	< 9	< 7	< 11	< 6	< 5	< 30	< 8
	10/26/15 - 11/24/15	< 7	< 5	< 16	< 6	< 12	< 7	< 13	< 8	< 6	< 37	< 13
	11/24/15 - 12/29/15	< 8	< 7	< 17	< 7	< 11	< 10	< 13	< 6	< 8	< 35	< 11
	MEAN	-	-	-	-	-	-	-	-	-	-	-
4L	01/02/15 - 01/29/15	< 4	< 4	< 10	< 4	< 11	< 5	< 8	< 4	< 5	< 23	< 7
	01/29/15 - 02/26/15	< 5	< 5	< 12	< 6	< 10	< 5	< 11	< 5	< 6	< 25	< 7
	02/26/15 - 03/26/15	< 5	< 6	< 10	< 5	< 10	< 6	< 9	< 5	< 5	< 33	< 9
	03/26/15 - 04/30/15	< 7	< 10	< 17	< 9	< 19	< 9	< 15	< 7	< 9	< 36	< 12
	04/30/15 - 05/28/15	< 2	< 2	< 5	< 2	< 4	< 3	< 4	< 2	< 2	< 17	< 5
	05/28/15 - 07/02/15	< 4	< 4	< 9	< 4	< 6	< 4	< 6	< 3	< 3	< 28	< 6
	07/02/15 - 07/30/15	< 6	< 5	< 13	< 7	< 10	< 7	< 11	< 5	< 5	< 26	< 10
	07/30/15 - 08/27/15	< 6	< 6	< 10	< 6	< 8	< 5	< 9	< 5	< 7	< 24	< 7
	08/27/15 - 10/01/15	< 9	< 10	< 21	< 14	< 25	< 12	< 14	< 9	< 12	< 45	< 11
	10/01/15 - 10/29/15	< 6	< 7	< 13	< 5	< 20	< 8	< 11	< 7	< 6	< 40	< 12
	10/29/15 - 11/25/15	< 7	< 6	< 13	< 7	< 14	< 7	< 13	< 6	< 5	< 33	< 11
	11/25/15 - 12/30/15	< 7	< 7	< 16	< 7	< 10	< 5	< 12	< 6	< 7	< 32	< 5
	MEAN	-	-	-	-	-	-	-	-	-	-	-

Table C-II.4 **CONCENTRATIONS OF GAMMA EMITTER IN DRINKING WATER SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2015**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION PERIOD	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	Cs-134	Cs-137	Ba-140	La-140
6I	01/02/15 - 01/29/15	< 4	< 5	< 9	< 4	< 9	< 4	< 7	< 4	< 5	< 20	< 7
	01/29/15 - 02/26/15	< 6	< 5	< 11	< 7	< 14	< 6	< 11	< 6	< 5	< 27	< 6
	02/26/15 - 03/26/15	< 4	< 5	< 10	< 5	< 8	< 5	< 7	< 4	< 5	< 28	< 10
	03/26/15 - 04/30/15	< 8	< 8	< 12	< 10	< 14	< 9	< 15	< 7	< 8	< 32	< 15
	04/30/15 - 05/28/15	< 2	< 3	< 6	< 3	< 5	< 3	< 5	< 2	< 3	< 18	< 5
	05/28/15 - 07/02/15	< 4	< 5	< 10	< 5	< 10	< 5	< 10	< 4	< 5	< 29	< 10
	07/02/15 - 07/30/15	< 9	< 9	< 23	< 9	< 20	< 10	< 15	< 9	< 10	< 40	< 15
	07/30/15 - 08/27/15	< 8	< 5	< 16	< 10	< 17	< 8	< 13	< 8	< 8	< 31	< 10
	08/27/15 - 10/01/15	< 5	< 8	< 16	< 8	< 14	< 8	< 15	< 6	< 8	< 34	< 12
	10/01/15 - 10/29/15	< 6	< 6	< 13	< 5	< 12	< 5	< 11	< 7	< 6	< 33	< 5
	10/29/15 - 11/25/15	< 6	< 7	< 17	< 8	< 16	< 8	< 12	< 6	< 9	< 38	< 14
	11/25/15 - 12/30/15	< 6	< 7	< 8	< 10	< 15	< 7	< 11	< 5	< 8	< 31	< 15
	MEAN	-	-	-	-	-	-	-	-	-	-	-

Table C-III.1 **CONCENTRATIONS OF GAMMA EMITTERS IN PREDATOR AND BOTTOM FEEDER (FISH) SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2015**

RESULTS IN UNITS OF PCI/KG WET ± 2 SIGMA

SITE	COLLECTION PERIOD	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Cs-134	Cs-137
4	PREDATOR								
	06/09/15	4191 ± 909	< 50	< 55	< 129	< 52	< 155	< 48	< 60
	09/25/15	3071 ± 892	< 50	< 33	< 114	< 44	< 80	< 39	< 56
	MEAN	3631 ± 1584	-	-	-	-	-	-	-
4	BOTTOM FEEDER								
	06/09/15	3208 ± 1073	< 71	< 73	< 177	< 75	< 160	< 68	< 64
	09/25/15	2162 ± 1091	< 60	< 66	< 133	< 57	< 150	< 80	< 71
	MEAN	2685 ± 1479	-	-	-	-	-	-	-
6	PREDATOR								
	06/15/15	3195 ± 788	< 46	< 59	< 95	< 48	< 112	< 55	< 53
	10/05/15	3148 ± 464	< 32	< 73	< 260	< 27	< 71	< 27	< 25
	MEAN	3172 ± 66	-	-	-	-	-	-	-
6	BOTTOM FEEDER								
	06/15/15	3650 ± 876	< 73	< 59	< 146	< 53	< 120	< 67	< 71
	10/05/15	2684 ± 315	< 23	< 56	< 211	< 19	< 56	< 19	< 19
	MEAN	3167 ± 1366	-	-	-	-	-	-	-

Table C-IV.1 **CONCENTRATIONS OF GAMMA EMITTERS IN SEDIMENT SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2015**

RESULTS IN UNITS OF PC/KG DRY ± 2 SIGMA

SITE	COLLECTION PERIOD	K-40	Mn-54	Co-58	Co-60	Cs-134	Cs-137
4J	06/24/15	12720 ± 1911	< 81	< 81	< 93	< 62	< 96
	11/16/15	10650 ± 2503	< 70	< 91	< 140	< 101	< 103
	MEAN	11685 ± 2927	-	-	-	-	-
4T	06/24/15	23720 ± 2790	< 128	< 151	< 135	< 143	< 170
	11/16/15	18360 ± 2329	< 123	< 123	< 124	< 120	< 172
	MEAN	21040 ± 7580	-	-	-	-	-
6F	06/24/15	11650 ± 2035	< 87	< 97	< 94	< 87	< 101
	11/16/15	11430 ± 2558	< 133	< 104	< 103	< 93	< 138
	MEAN	11540 ± 311	-	-	-	-	-

Table C-V.1 **CONCENTRATIONS OF GROSS BETA IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2015**

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

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

Table C-V.1 **CONCENTRATIONS OF GROSS BETA IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2015**

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

COLLECTION PERIOD	GROUP I			GROUP II	GROUP III
	1B	1C	1Z	3A	5H2
06/29/15 - 07/07/15					11 ± 4
07/02/15 - 07/09/15	13 ± 4	15 ± 5	16 ± 4	12 ± 4	
07/07/15 - 07/13/15					14 ± 5
07/09/15 - 07/16/15	13 ± 4	14 ± 5	10 ± 4	12 ± 4	
07/13/15 - 07/20/15					10 ± 4
07/16/15 - 07/23/15	16 ± 3	15 ± 5	17 ± 3	19 ± 3	
07/20/15 - 07/27/15					17 ± 5
07/23/15 - 07/30/15	18 ± 3	24 ± 5	22 ± 4	18 ± 3	
07/27/15 - 08/03/15					18 ± 5
07/30/15 - 08/06/15	17 ± 3	19 ± 5	17 ± 3	13 ± 3	
08/03/15 - 08/10/15					13 ± 5
08/06/15 - 08/13/15	7 ± 3	13 ± 5	12 ± 3	10 ± 3	
08/10/15 - 08/17/15					17 ± 5
08/13/15 - 08/20/15	15 ± 3	22 ± 5	18 ± 3	20 ± 4	
08/17/15 - 08/24/15					22 ± 5
08/20/15 - 08/27/15	17 ± 3	19 ± 5	15 ± 3	15 ± 3	
08/24/15 - 08/31/15					25 ± 5
08/27/15 - 09/03/15	28 ± 4	30 ± 6	28 ± 4	24 ± 4	
08/31/15 - 09/08/15					35 ± 6
09/03/15 - 09/10/15	24 ± 4	29 ± 6	22 ± 4	21 ± 4	
09/08/15 - 09/14/15					20 ± 6
09/10/15 - 09/17/15	20 ± 4	26 ± 6	23 ± 4	19 ± 3	
09/14/15 - 09/21/15					21 ± 5
09/17/15 - 09/24/15	17 ± 3	22 ± 5	17 ± 3	18 ± 3	
09/21/15 - 09/28/15					14 ± 5
09/24/15 - 10/01/15	11 ± 3	14 ± 5	9 ± 3	13 ± 3	
09/28/15 - 10/05/15					11 ± 4
10/01/15 - 10/08/15	11 ± 3	13 ± 5	10 ± 3	11 ± 3	
10/05/15 - 10/12/15					17 ± 5
10/08/15 - 10/15/15	23 ± 4	18 ± 5	21 ± 4	17 ± 3	
10/12/15 - 10/19/15					10 ± 4
10/15/15 - 10/22/15	14 ± 3	16 ± 5	14 ± 3	14 ± 3	
10/19/15 - 10/26/15					30 ± 6
10/22/15 - 10/29/15	15 ± 3	20 ± 5	17 ± 3	17 ± 3	
10/26/15 - 11/02/15					16 ± 5
10/29/15 - 11/05/15	24 ± 4	23 ± 5	25 ± 4	22 ± 4	
11/02/15 - 11/08/15					22 ± 6
11/05/15 - 11/12/15	12 ± 3	11 ± 5	12 ± 3	9 ± 3	
11/08/15 - 11/16/15					15 ± 5
11/12/15 - 11/19/15	18 ± 4	19 ± 5	14 ± 3	19 ± 4	
11/16/15 - 11/23/15					15 ± 5
11/19/15 - 11/25/15	18 ± 4	18 ± 5	16 ± 4	12 ± 3	
11/23/15 - 11/30/15					24 ± 5
11/25/15 - 12/03/15	12 ± 3	13 ± 4	16 ± 3	11 ± 3	
11/30/15 - 12/07/15					24 ± 5
12/03/15 - 12/10/15	35 ± 5	36 ± 6	34 ± 5	31 ± 4	
12/07/15 - 12/14/15					39 ± 6
12/10/15 - 12/17/15	31 ± 5	33 ± 6	28 ± 4	26 ± 4	
12/14/15 - 12/21/15					11 ± 5
12/17/15 - 12/23/15	17 ± 5	21 ± 6	24 ± 5	17 ± 4	
12/21/15 - 12/28/15					12 ± 5
12/23/15 - 12/30/15	8 ± 4	9 ± 5	5 ± 3	7 ± 3	
MEAN	16 ± 12	18 ± 13	17 ± 11	15 ± 10	16 ± 13

THE MEAN AND TWO STANDARD DEVIATION ARE CALCULATED USING THE POSITIVE VALUES

Table C-V.2 **MONTHLY AND YEARLY MEAN VALUES OF GROSS BETA CONCENTRATIONS IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2015**

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

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
01/02/15 - 01/29/15	11	20	17 ± 5	01/02/15 - 01/29/15	13	17	14 ± 3	01/05/15 - 02/16/15	12	19	15 ± 5
01/29/15 - 02/26/15	13	31	20 ± 11	01/29/15 - 02/26/15	15	21	18 ± 5	02/16/15 - 03/17/15	16	23	20 ± 6
02/26/15 - 04/02/15	11	22	16 ± 6	02/26/15 - 04/02/15	12	18	14 ± 5	03/17/15 - 04/20/15	9	17	13 ± 6
04/02/15 - 04/30/15	7	12	10 ± 4	04/02/15 - 04/30/15	8	14	10 ± 5	04/20/15 - 05/18/15	8	14	10 ± 5
04/30/15 - 06/04/15	8	20	15 ± 7	04/30/15 - 05/28/15	11	17	14 ± 5	05/18/15 - 06/22/15	10	20	13 ± 8
06/04/15 - 07/02/15	9	19	13 ± 7	06/04/15 - 07/02/15	8	12	10 ± 3	06/22/15 - 07/20/15	9	20	12 ± 10
07/02/15 - 07/30/15	10	24	16 ± 8	07/02/15 - 07/30/15	12	19	15 ± 7	07/20/15 - 08/17/15	10	18	14 ± 7
07/30/15 - 09/03/15	7	30	18 ± 12	07/30/15 - 09/03/15	10	24	16 ± 11	08/17/15 - 09/21/15	13	35	22 ± 16
09/03/15 - 10/01/15	9	29	20 ± 12	09/03/15 - 10/01/15	13	21	18 ± 6	09/21/15 - 10/19/15	11	21	16 ± 9
10/01/15 - 10/29/15	10	23	16 ± 8	10/01/15 - 10/29/15	11	17	15 ± 5	10/19/15 - 11/16/15	10	30	18 ± 15
10/29/15 - 12/03/15	11	25	17 ± 9	10/29/15 - 12/03/15	9	22	14 ± 11	11/16/15 - 12/21/15	15	24	20 ± 8
12/03/15 - 12/30/15	5	36	23 ± 22	12/03/15 - 12/30/15	7	31	20 ± 19	12/21/15 - 12/28/15	11	39	20 + 32
01/02/15 - 12/30/15	5	36	17 ± 12	01/02/15 - 12/30/15	7	31	15 ± 10	12/29/14 - 12/28/15	8	39	16 ± 13

JIM WORKING ON THE NUMBERS
REQUERY ON 05/03 SOME OF THE NUBMERS CHANGED FOR ALL GROUPS

Table C-V.3 CONCENTRATIONS OF GAMMA EMITTERS IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2015

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

SITE	COLLECTION PERIOD	Be-7	Mn-54	Co-58	Co-60	Cs-134	Cs-137
1B	01/02/15 - 04/02/15	77 ± 32	< 4	< 4	< 2	< 3	< 3
	04/02/15 - 07/02/15	60 ± 23	< 3	< 5	< 3	< 3	< 3
	07/02/15 - 10/01/15	64 ± 18	< 2	< 2	< 2	< 2	< 2
	10/01/15 - 12/30/15	< 37	< 3	< 3	< 4	< 3	< 3
	MEAN	67 ± 17	-	-	-	-	-
1C	01/02/15 - 04/02/15	< 43	< 4	< 4	< 3	< 4	< 3
	04/02/15 - 07/02/15	86 ± 31	< 4	< 5	< 4	< 4	< 3
	07/02/15 - 10/01/15	72 ± 29	< 3	< 5	< 4	< 4	< 3
	10/01/15 - 12/30/15	56 ± 26	< 3	< 3	< 1	< 3	< 3
	MEAN	72 ± 30	-	-	-	-	-
1Z	01/02/15 - 04/02/15	80 ± 24	< 3	< 4	< 4	< 3	< 2
	04/02/15 - 07/02/15	83 ± 25	< 2	< 2	< 3	< 3	< 3
	07/02/15 - 10/01/15	73 ± 20	< 2	< 2	< 2	< 2	< 2
	10/01/15 - 12/30/15	41 ± 15	< 2	< 2	< 2	< 2	< 1
	MEAN	69 ± 38	-	-	-	-	-
3A	01/02/15 - 04/02/15	93 ± 54	< 3	< 7	< 4	< 5	< 3
	04/02/15 - 07/02/15	77 ± 25	< 2	< 1	< 3	< 2	< 2
	07/02/15 - 10/01/15	67 ± 15	< 1	< 2	< 1	< 1	< 1
	10/01/15 - 12/30/15	42 ± 16	< 2	< 2	< 2	< 2	< 1
	MEAN	70 ± 43	-	-	-	-	-
5H2	12/29/14 - 03/30/15	59 ± 29	< 3	< 7	< 3	< 3	< 3
	03/30/15 - 06/29/15	82 ± 36	< 3	< 6	< 4	< 5	< 5
	06/29/15 - 09/28/15	83 ± 33	< 4	< 7	< 4	< 5	< 4
	09/28/15 - 12/28/15	72 ± 25	< 2	< 3	< 3	< 3	< 2
	MEAN	74 ± 22	-	-	-	-	-

THE MEAN AND TWO STANDARD DEVIATION 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, 2015**

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

COLLECTION PERIOD	GROUP I			GROUP II	GROUP III
	1B	1C	1Z	3A	5H2
12/29/14 - 01/05/15					< 17
01/02/15 - 01/08/15	< 45	< 44	< 44	< 39	
01/05/15 - 01/13/15					< 21
01/08/15 - 01/15/15	< 53	< 53	< 51	< 45	
01/13/15 - 01/20/15					< 28
01/15/15 - 01/22/15	< 61	< 59	< 57	< 20	
01/20/15 - 01/26/15					< 60
01/22/15 - 01/29/15	< 68	< 68	< 69	< 60	
01/26/15 - 02/01/15					< 52
01/29/15 - 02/05/15	< 69	< 66	< 67	< 58	
02/01/15 - 02/08/15					< 27
02/05/15 - 02/12/15	< 68	< 62	< 32	< 54	
02/08/15 - 02/16/15					< 27
02/12/15 - 02/19/15	< 27	< 43	< 46	< 39	
02/16/15 - 02/23/15					< 38
02/19/15 - 02/26/15	< 57	< 51	< 52	< 46	
02/23/15 - 03/03/15					< 21
02/26/15 - 03/06/15	< 41	< 35	< 36	< 31	
03/03/15 - 03/10/15					< 35
03/06/15 - 03/12/15	< 53	< 46	< 47	< 40	
03/10/15 - 03/17/15					< 22
03/12/15 - 03/19/15	< 37	< 12	< 32	< 28	
03/17/15 - 03/23/15					< 12
03/19/15 - 03/26/15	< 65	< 63	< 59	< 55	
03/23/15 - 03/30/15					< 22
03/26/15 - 04/02/15	< 32	< 36	< 31	< 13	
03/30/15 - 04/06/15					< 24
04/02/15 - 04/09/15	< 31	< 35	< 54	< 32	
04/06/15 - 04/13/15					< 31
04/09/15 - 04/16/15	< 58	< 64	< 69	< 59	
04/13/15 - 04/20/15					< 56
04/16/15 - 04/23/15	< 57	< 62	< 54	< 59	
04/20/15 - 04/27/15					< 22
04/23/15 - 04/30/15	< 25	< 69	< 61	< 66	
04/27/15 - 05/04/15					< 24
04/30/15 - 05/07/15	< 49	< 54	< 47	< 51	
05/04/15 - 05/11/15					< 14
05/07/15 - 05/14/15	< 40	< 15	< 37	< 41	
05/11/15 - 05/18/15					< 27
05/14/15 - 05/21/15	< 63	< 68	< 59	< 64	
05/18/15 - 05/26/15					< 18
05/21/15 - 05/28/15	< 38	< 41	< 35	< 15	
05/26/15 - 06/01/15					< 13
05/28/15 - 06/04/15	< 59	< 63	< 54	< 60	
06/01/15 - 06/08/15					< 16
06/04/15 - 06/11/15	< 25	< 26	< 9	< 26	
06/08/15 - 06/15/15					< 34
06/11/15 - 06/18/15	< 58	< 68	< 21	< 60	
06/15/15 - 06/22/15					< 25
06/18/15 - 06/25/15	< 51	< 58	< 47	< 62	
06/22/15 - 06/29/15					< 7
06/25/15 - 07/02/15	< 21	< 57	< 46	< 51	

Table C-VI.1 **CONCENTRATIONS OF I-131 IN AIR IODINE SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2015**

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

COLLECTION PERIOD	GROUP I			GROUP II	GROUP III
	1B	1C	1Z	3A	5H2
06/29/15 - 07/07/15					< 24
07/02/15 - 07/09/15	< 60	< 68	< 56	< 61	
07/07/15 - 07/13/15					< 7
07/09/15 - 07/16/15	< 62	< 70	< 58	< 64	
07/13/15 - 07/20/15					< 32
07/16/15 - 07/23/15	< 19	< 34	< 19	< 19	
07/20/15 - 07/27/15					< 32
07/23/15 - 07/30/15	< 14	< 63	< 36	< 36	
07/27/15 - 08/03/15					< 4
07/30/15 - 08/06/15	< 37	< 64	< 36	< 36	
08/03/15 - 08/10/15					< 25
08/06/15 - 08/13/15	< 23	< 40	< 23	< 23	
08/10/15 - 08/17/15					< 12
08/13/15 - 08/20/15	< 30	< 51	< 29	< 11	
08/17/15 - 08/24/15					< 16
08/20/15 - 08/27/15	< 31	< 53	< 30	< 30	
08/24/15 - 08/31/15					< 12
08/27/15 - 09/03/15	< 34	< 59	< 34	< 33	
09/08/15 - 09/14/15					< 19
09/10/15 - 09/17/15	< 32	< 54	< 31	< 31	
09/14/15 - 09/21/15					< 26
09/17/15 - 09/24/15	< 28	< 47	< 27	< 27	
09/21/15 - 09/28/15					< 13
09/24/15 - 10/01/15	< 22	< 38	< 22	< 21	
09/28/15 - 10/05/15					< 18
10/01/15 - 10/08/15	< 19	< 31	< 18	< 7	
10/05/15 - 10/12/15					< 21
10/08/15 - 10/15/15	< 26	< 43	< 25	< 10	
10/12/15 - 10/19/15					< 21
10/15/15 - 10/22/15	< 37	< 64	< 36	< 14	
10/19/15 - 10/26/15					< 25
10/22/15 - 10/29/15	< 33	< 56	< 33	< 32	
10/26/15 - 11/02/15					< 47
10/29/15 - 11/05/15	< 11	< 19	< 11	< 11	
11/02/15 - 11/08/15					< 15
11/05/15 - 11/12/15	< 29	< 48	< 28	< 11	
11/08/15 - 11/16/15					< 16
11/12/15 - 11/19/15	< 28	< 44	< 27	< 26	
11/16/15 - 11/23/15					< 17
11/19/15 - 11/25/15	< 46	< 60	< 39	< 15	
11/23/15 - 11/30/15					< 23
11/25/15 - 12/03/15	< 21	< 27	< 18	< 6	
11/30/15 - 12/07/15					< 23
12/03/15 - 12/10/15	< 46	< 59	< 38	< 36	
12/07/15 - 12/14/15					< 17
12/10/15 - 12/17/15	< 46	< 58	< 35	< 13	
12/14/15 - 12/21/15					< 20
12/17/15 - 12/23/15	< 52	< 64	< 39	< 39	
12/21/15 - 12/28/15					< 19
12/23/15 - 12/30/15	< 44	< 55	< 33	< 33	
MEAN	-	-	-	-	-

Table C-VII.1 **CONCENTRATIONS OF I-131 IN MILK SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2015**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

	CONTROL FARM			INDICATOR FARM								
COLLECTION PERIOD	C	E	V	D	J	L	P	R	S	U	W	X
01/05/15			< 0.8		< 0.8			< 0.5	< 0.5	< 0.7		
02/03/15	< 0.4	< 0.3	< 0.5	< 0.7	< 0.5	< 0.4	< 0.3	< 0.4	< 0.2	< 0.7	< 0.6	
03/02/15			< 0.3		< 0.6			< 0.3	< 0.3	< 0.6		
04/06/15			< 0.4		< 0.3			< 0.3	< 0.4	< 0.6		
04/20/15			< 0.8		< 0.6			< 0.4	< 0.4	< 0.6		
05/05/15	< 0.8	< 0.6	< 0.9	< 0.9	< 0.8	< 0.6	< 0.6	< 0.9	< 0.6	< 0.7	< 0.7	
05/18/15			< 0.4		< 0.9			< 0.7	< 0.6	< 0.7		
06/01/15			< 0.8		< 0.3			< 0.7	< 0.6	< 0.6		
06/12/15			< 0.6									
06/15/15					< 0.5			< 0.7	< 0.7	< 0.5		
06/29/15			< 0.6		< 0.4			< 0.5	< 0.4	< 0.5		
07/13/15			< 0.5		< 0.5			< 0.6	< 0.5	< 0.6		
07/27/15			< 0.2		< 0.3			< 0.2	< 0.2	< 0.3		
08/11/15	< 0.8	< 0.8	< 0.6	< 0.8	< 0.7	< 0.7	< 0.9	< 0.4	< 0.7	< 0.5	< 0.8	
08/21/15			< 0.6									
08/24/15					< 0.7			< 0.6	< 0.8	< 0.6		
09/07/15			< 0.4		< 0.4			< 0.3	< 0.3	< 0.3		< 0.5 (1)
09/18/15			< 0.6									
09/21/15					< 0.4			< 0.6	< 0.3	< 0.6		< 0.4
10/05/15			< 0.7		< 0.8			< 0.7	< 0.6	< 0.7		< 0.5
10/19/15			< 0.8		< 0.8			< 0.7	< 0.8	< 0.8		< 0.4
11/03/15	< 0.8	< 0.9	< 0.6	< 1.0	< 0.8	< 0.5	< 0.8	< 0.9	< 0.6	< 0.8	< 0.4	< 0.9
11/16/15			< 0.9		< 0.6			< 0.7	< 0.9	< 0.7		< 0.8
11/30/15			< 0.9		< 0.6			< 0.6	< 0.6	< 0.9		< 0.8
12/14/15			< 0.4		< 0.4			< 0.3	< 0.2	< 0.2		< 0.2
12/31/15			< 0.7									
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, 2015

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION PERIOD	K-40	Cs-134	Cs-137	Ba-140	La-140
C	02/02/15	1388 ± 153	< 6	< 7	< 37	< 14
	05/04/15	1231 ± 155	< 6	< 7	< 38	< 14
	08/10/15	1237 ± 139	< 6	< 6	< 33	< 14
	11/02/15	1231 ± 197	< 8	< 7	< 36	< 12
	MEAN	1272 ± 155	-	-	-	-
E	02/02/15	1332 ± 123	< 4	< 5	< 28	< 7
	05/04/15	1229 ± 145	< 6	< 6	< 34	< 5
	08/10/15	1281 ± 141	< 5	< 6	< 30	< 9
	11/02/15	1180 ± 202	< 5	< 7	< 46	< 9
	MEAN	1256 ± 131	-	-	-	-
V	01/03/15	1171 ± 177	< 8	< 9	< 44	< 15
	02/02/15	1243 ± 195	< 7	< 9	< 44	< 11
	03/02/15	1418 ± 149	< 7	< 8	< 30	< 10
	04/04/15	1473 ± 138	< 6	< 6	< 40	< 12
	04/18/15	1344 ± 163	< 6	< 7	< 34	< 11
	05/02/15	1224 ± 88	< 3	< 3	< 23	< 6
	05/18/15	1354 ± 146	< 7	< 8	< 34	< 11
	06/01/15	1324 ± 129	< 5	< 6	< 27	< 8
	06/12/15	1424 ± 173	< 6	< 8	< 50	< 14
	06/27/15	1265 ± 251	< 7	< 9	< 45	< 13
	07/13/15	1231 ± 145	< 5	< 6	< 23	< 6
	07/25/15	1313 ± 106	< 4	< 5	< 28	< 7
	08/08/15	1251 ± 149	< 6	< 6	< 42	< 10
	08/21/15	1228 ± 176	< 6	< 10	< 35	< 9
	09/05/15	1381 ± 269	< 9	< 12	< 58	< 7
	09/18/15	1238 ± 178	< 8	< 9	< 40	< 10
	10/04/15	1248 ± 179	< 8	< 8	< 37	< 8
	10/17/15	1147 ± 181	< 8	< 10	< 39	< 12
	10/31/15	1247 ± 166	< 6	< 8	< 46	< 14
	11/14/15	1495 ± 186	< 5	< 7	< 30	< 7
	11/28/15	1117 ± 162	< 6	< 8	< 30	< 8
	12/12/15	1267 ± 155	< 6	< 7	< 28	< 10
	12/31/15	1187 ± 156	< 5	< 6	< 30	< 10
	MEAN	1287 ± 202	-	-	-	-
D	02/02/15	1503 ± 121	< 4	< 5	< 28	< 9
	05/05/15	1329 ± 164	< 7	< 7	< 39	< 12
	08/11/15	1486 ± 198	< 7	< 7	< 46	< 11
	11/03/15	1315 ± 164	< 5	< 6	< 25	< 6
	MEAN	1408 ± 200	-	-	-	-

Table C-VII.2 CONCENTRATIONS OF GAMMA EMITTERS IN MILK SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2015

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION PERIOD	K-40	Cs-134	Cs-137	Ba-140	La-140
J	01/05/15	1410 ± 153	< 6	< 6	< 35	< 10
	02/02/15	1346 ± 126	< 6	< 6	< 32	< 10
	03/02/15	1415 ± 157	< 6	< 7	< 38	< 11
	04/06/15	1236 ± 159	< 6	< 6	< 32	< 11
	04/20/15	1157 ± 181	< 7	< 8	< 33	< 10
	05/04/15	1204 ± 110	< 3	< 4	< 24	< 5
	05/18/15	1332 ± 169	< 7	< 8	< 34	< 13
	06/01/15	1246 ± 129	< 2	< 3	< 11	< 4
	06/15/15	1224 ± 129	< 5	< 6	< 34	< 13
	06/29/15	1036 ± 167	< 7	< 8	< 41	< 15
	07/13/15	1199 ± 157	< 6	< 8	< 31	< 7
	07/27/15	1293 ± 130	< 6	< 6	< 30	< 10
	08/10/15	1372 ± 175	< 8	< 9	< 51	< 11
	08/24/15	1335 ± 161	< 6	< 8	< 25	< 8
	09/07/15	1018 ± 235	< 7	< 12	< 30	< 13
	09/21/15	1307 ± 187	< 5	< 8	< 31	< 5
	10/05/15	1413 ± 239	< 9	< 9	< 37	< 11
	10/19/15	1253 ± 195	< 7	< 11	< 35	< 7
	11/02/15	1257 ± 194	< 6	< 7	< 37	< 11
	11/16/15	1172 ± 210	< 7	< 9	< 30	< 14
	11/30/15	1270 ± 185	< 7	< 9	< 29	< 10
	12/14/15	1482 ± 269	< 14	< 12	< 36	< 7
	MEAN	1272 ± 234	-	-	-	-
L	02/02/15	1484 ± 186	< 7	< 8	< 42	< 15
	05/04/15	1240 ± 147	< 6	< 6	< 41	< 11
	08/10/15	1186 ± 166	< 8	< 10	< 52	< 15
	11/02/15	1133 ± 171	< 8	< 9	< 50	< 15
	MEAN	1261 ± 310	-	-	-	-
P	02/02/15	1233 ± 153	< 5	< 6	< 33	< 9
	05/04/15	1157 ± 147	< 5	< 6	< 33	< 9
	08/10/15	1174 ± 144	< 6	< 7	< 35	< 8
	11/02/15	1019 ± 181	< 10	< 9	< 54	< 13
	MEAN	1146 ± 181	-	-	-	-

Table C-VII.2 CONCENTRATIONS OF GAMMA EMITTERS IN MILK SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2015

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION PERIOD	K-40	Cs-134	Cs-137	Ba-140	La-140
R	01/05/15	1260 ± 199	< 7	< 8	< 47	< 13
	02/03/15	1545 ± 167	< 5	< 6	< 35	< 10
	03/02/15	1251 ± 164	< 6	< 8	< 38	< 11
	04/06/15	1384 ± 121	< 4	< 6	< 29	< 8
	04/20/15	1339 ± 140	< 6	< 6	< 23	< 5
	05/04/15	1258 ± 97	< 3	< 4	< 20	< 6
	05/18/15	1064 ± 144	< 6	< 5	< 33	< 9
	06/01/15	1400 ± 99	< 3	< 4	< 20	< 7
	06/15/15	1212 ± 162	< 7	< 8	< 50	< 13
	06/29/15	1402 ± 190	< 6	< 8	< 39	< 14
	07/13/15	1241 ± 180	< 7	< 11	< 31	< 10
	07/27/15	1250 ± 124	< 5	< 6	< 29	< 10
	08/10/15	1240 ± 180	< 8	< 8	< 47	< 12
	08/24/15	1330 ± 219	< 9	< 9	< 30	< 11
	09/07/15	1350 ± 269	< 10	< 10	< 45	< 7
	09/21/15	1430 ± 225	< 9	< 9	< 40	< 13
	10/05/15	1133 ± 266	< 9	< 11	< 40	< 14
	10/19/15	1430 ± 277	< 14	< 15	< 55	< 10
	11/02/15	1242 ± 160	< 6	< 8	< 36	< 9
	11/16/15	1215 ± 209	< 7	< 10	< 37	< 7
	11/30/15	1214 ± 188	< 6	< 7	< 30	< 10
	12/14/15	1284 ± 227	< 7	< 11	< 32	< 14
	MEAN	1294 ± 218	-	-	-	-
S	01/05/15	1156 ± 156	< 6	< 8	< 41	< 9
	02/02/15	1296 ± 147	< 5	< 5	< 34	< 7
	03/02/15	1375 ± 139	< 8	< 8	< 44	< 10
	04/06/15	1384 ± 175	< 8	< 9	< 52	< 14
	04/20/15	1450 ± 169	< 6	< 7	< 33	< 9
	05/04/15	1428 ± 177	< 6	< 9	< 47	< 12
	05/18/15	1343 ± 155	< 6	< 6	< 34	< 11
	06/01/15	1389 ± 149	< 5	< 5	< 35	< 11
	06/15/15	1432 ± 133	< 4	< 5	< 29	< 10
	06/29/15	1446 ± 165	< 7	< 9	< 35	< 12
	07/13/15	1369 ± 147	< 8	< 8	< 35	< 8
	07/27/15	1292 ± 124	< 4	< 4	< 21	< 6
	08/10/15	1311 ± 131	< 6	< 6	< 38	< 10
	08/24/15	1261 ± 187	< 7	< 7	< 27	< 7
	09/07/15	1437 ± 251	< 8	< 9	< 39	< 11
	09/21/15	1426 ± 204	< 7	< 9	< 34	< 10
	10/05/15	1321 ± 234	< 11	< 10	< 43	< 11
	10/19/15	1303 ± 263	< 10	< 12	< 37	< 11
	11/02/15	1324 ± 218	< 8	< 7	< 55	< 4
	11/16/15	1245 ± 175	< 8	< 8	< 29	< 10
	11/30/15	1150 ± 176	< 10	< 9	< 38	< 8
	12/14/15	1284 ± 235	< 11	< 12	< 32	< 13
	MEAN	1337 ± 173	-	-	-	-

Table C-VII.2 CONCENTRATIONS OF GAMMA EMITTERS IN MILK SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2015

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION PERIOD	K-40	Cs-134	Cs-137	Ba-140	La-140
U	01/05/15	1170 ± 126	< 5	< 6	< 25	< 6
	02/02/15	1266 ± 117	< 4	< 5	< 26	< 7
	03/02/15	1135 ± 155	< 5	< 7	< 31	< 8
	04/06/15	1205 ± 119	< 4	< 5	< 26	< 7
	04/20/15	1219 ± 195	< 7	< 7	< 36	< 10
	05/04/15	1163 ± 108	< 5	< 6	< 33	< 10
	05/18/15	1138 ± 173	< 7	< 7	< 37	< 11
	06/01/15	1248 ± 81	< 3	< 3	< 18	< 4
	06/15/15	1274 ± 155	< 8	< 10	< 48	< 14
	06/29/15	1257 ± 234	< 10	< 13	< 43	< 8
	07/13/15	1351 ± 161	< 5	< 7	< 27	< 8
	07/27/15	1308 ± 117	< 5	< 5	< 28	< 8
	08/10/15	1369 ± 172	< 6	< 7	< 37	< 12
	08/24/15	1145 ± 143	< 6	< 7	< 21	< 6
	09/07/15	1102 ± 302	< 10	< 13	< 51	< 8
	09/21/15	1321 ± 196	< 9	< 11	< 37	< 10
	10/05/15	1097 ± 227	< 9	< 12	< 40	< 13
	10/19/15	1350 ± 169	< 7	< 8	< 28	< 10
	11/02/15	1067 ± 211	< 10	< 9	< 45	< 14
	11/16/15	1368 ± 186	< 6	< 9	< 26	< 7
	11/30/15	1335 ± 186	< 6	< 8	< 28	< 9
	12/14/15	1061 ± 182	< 5	< 6	< 16	< 2
	MEAN	1225 ± 204	-	-	-	-
W	02/03/15	1474 ± 170	< 6	< 6	< 40	< 13
	05/05/15	1519 ± 159	< 6	< 7	< 37	< 12
	08/11/15	1346 ± 218	< 8	< 12	< 41	< 15
	11/03/15	1218 ± 156	< 6	< 8	< 30	< 8
	MEAN	1389 ± 271	-	-	-	-
X	09/07/15 (1)	1403 ± 267	< 10	< 11	< 44	< 7
	09/21/15	1343 ± 180	< 6	< 8	< 30	< 8
	10/05/15	1345 ± 260	< 7	< 12	< 33	< 10
	10/19/15	1450 ± 272	< 8	< 11	< 46	< 12
	11/02/15	1359 ± 218	< 9	< 10	< 53	< 12
	11/16/15	1266 ± 161	< 10	< 10	< 40	< 11
	11/30/15	1398 ± 169	< 8	< 7	< 33	< 6
	12/14/15	1427 ± 186	< 8	< 9	< 33	< 7
	MEAN	1374 ± 116	-	-	-	-

(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 2015

RESULTS IN UNITS OF PCI/KG WET ± 2 SIGMA

SITE	COLLECTION PERIOD			Be-7	K-40	Mn-54	Co-58	Co-60	I-131	Cs-134	Cs-137
1Q	2015		(1)	-	-	-	-	-	-	-	-
1C	06/23/15		(1)								
	09/23/15	Bok Choy Leaves		< 335	4814 ± 683	< 33	< 35	< 24	< 52	< 32	< 37
	09/23/15	Broccoli Leaves		< 282	4291 ± 684	< 33	< 31	< 29	< 49	< 32	< 35
	09/23/15	Zuchini Leaves		620 ± 231	1265 ± 469	< 32	< 32	< 30	< 48	< 32	< 35
	MEAN			620 ± 0	3457 ± 3832	-	-	-	-	-	-
2Q	06/23/15	Cabbage Leaves		< 259	2723 ± 450	< 26	< 29	< 32	< 45	< 26	< 29
	06/23/15	Kale Leaves		< 289	4677 ± 597	< 27	< 28	< 28	< 48	< 29	< 25
	06/23/15	Sweet Corn Leaves		1644 ± 264	4730 ± 480	< 27	< 23	< 27	< 54	< 25	< 26
	07/22/15	Kale Leaves		455 ± 164	4731 ± 373	< 14	< 16	< 18	< 54	< 14	< 18
	07/22/15	Sweet Corn Leaves		1392 ± 146	2735 ± 230	< 11	< 11	< 10	< 40	< 10	< 11
	07/22/15	Yellow Wax Bean Leaves		893 ± 165	3099 ± 269	< 12	< 11	< 11	< 43	< 10	< 12
	08/25/15	Broccoli Leaves		< 281	4393 ± 635	< 29	< 28	< 28	< 34	< 25	< 27
	08/25/15	Cabbage Leaves		< 286	4282 ± 770	< 33	< 32	< 40	< 35	< 27	< 35
	08/25/15	Kale Leaves		< 421	5066 ± 830	< 39	< 45	< 61	< 39	< 40	< 47
	09/23/15	Broccoli Leaves		381 ± 215	3024 ± 516	< 25	< 25	< 21	< 37	< 23	< 25
	09/23/15	Cabbage Leaves		< 280	3326 ± 563	< 24	< 27	< 31	< 34	< 26	< 27
	09/23/15	Kale Leaves		< 301	4355 ± 750	< 44	< 40	< 35	< 50	< 35	< 32
	MEAN			953 ± 1118	3928 ± 1749	-	-	-	-	-	-
3Q	06/23/15	Kale Leaves		< 322	6914 ± 760	< 22	< 31	< 29	< 57	< 29	< 34
	06/23/15	Lettuce Leaves		288 ± 230	3216 ± 499	< 30	< 25	< 29	< 53	< 27	< 28
	06/23/15	Sweet Corn Leaves		1037 ± 255	4397 ± 581	< 30	< 26	< 27	< 51	< 22	< 27
	07/22/15	Eggplant leaves		1237 ± 181	6884 ± 379	< 9	< 10	< 8	< 56	< 8	< 8
	07/22/15	Green Pepper Leaves		948 ± 161	10930 ± 436	< 14	< 18	< 15	< 51	< 13	< 15
	07/22/15	Sweet Corn Leaves		1158 ± 156	4841 ± 261	< 8	< 10	< 8	< 56	< 8	< 10
	08/25/15	Collard Greens Leaves		< 247	4726 ± 547	< 24	< 23	< 30	< 23	< 24	< 25
	08/25/15	Green Pepper Leaves		630 ± 244	9456 ± 836	< 36	< 29	< 20	< 29	< 26	< 26
	08/25/15	Sweet Corn Leaves		2191 ± 537	3286 ± 910	< 54	< 52	< 52	< 59	< 52	< 67
	09/23/15	Collard Greens Leaves		< 335	5570 ± 808	< 26	< 28	< 40	< 47	< 22	< 32
	09/23/15	Green Pepper Leaves		1121 ± 295	8367 ± 979	< 38	< 40	< 38	< 47	< 27	< 38
	09/23/15	Kale Leaves		< 282	4842 ± 642	< 32	< 34	< 28	< 57	< 30	< 36
	MEAN			1076 ± 1099	6119 ± 4880	-	-	-	-	-	-

(1) SEE PROGRAM CHANGES SECTION FOR EXPLANATION
THE MEAN AND TWO STANDARD DEVIATION ARE CALCULATED USING THE POSITIVE VALUES

Table C-VIII.1 CONCENTRATIONS OF GAMMA EMITTERS IN FOOD PRODUCT SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION 2015

RESULTS IN UNITS OF PCI/KG WET ± 2 SIGMA

SITE	COLLECTION PERIOD		Be-7	K-40	Mn-54	Co-58	Co-60	I-131	Cs-134	Cs-137
55	06/23/15	Broccoli Leaves	374 ± 205	5598 ± 601	< 23	< 25	< 26	< 48	< 25	< 24
	06/23/15	Cabbage Leaves	< 194	5415 ± 507	< 22	< 17	< 24	< 39	< 18	< 24
	06/23/15	Lettuce Leaves	272 ± 186	3185 ± 426	< 26	< 23	< 29	< 33	< 23	< 23
	07/22/15	Cabbage Leaves	430 ± 124	4322 ± 333	< 10	< 12	< 12	< 57	< 9	< 12
	07/22/15	Green Bean Leaves	1613 ± 175	5815 ± 345	< 12	< 13	< 9	< 54	< 10	< 11
	07/22/15	Sweet Corn Leaves	1301 ± 179	4647 ± 332	< 12	< 11	< 10	< 58	< 10	< 11
	08/25/15	Celery Leaves	954 ± 255	6937 ± 684	< 25	< 26	< 26	< 28	< 23	< 25
	08/25/15	Sweet Corn Leaves	1312 ± 282	3596 ± 524	< 23	< 28	< 33	< 30	< 26	< 30
	08/25/15	Watermelon Leaves	1373 ± 253	3677 ± 416	< 21	< 21	< 25	< 25	< 22	< 21
	09/23/15	Broccoli Leaves	< 366	5403 ± 782	< 37	< 37	< 34	< 59	< 33	< 41
	09/23/15	Cabbage Leaves	< 336	5527 ± 816	< 38	< 38	< 36	< 59	< 34	< 31
	09/23/15	Lettuce Leaves	< 342	6623 ± 844	< 39	< 30	< 36	< 54	< 34	< 35
	MEAN		953 ± 1052	5062 ± 2380	-	-	-	-	-	-

THE MEAN AND TWO STANDARD DEVIATION ARE CALCULATED USING THE POSITIVE VALUES

Table C-IX.1 QUARTERLY OSLD RESULTS FOR PEACH BOTTOM ATOMIC POWER STATION, 2015

RESULTS IN UNITS OF MILLIREM/STD. MONTH ± STANDARD DEVIATIONS

STATION CODE	MEAN ± 2 S.D.	JAN - MAR	APR - JUN	JUL - SEP	OCT - DEC
16	9.6 ± 1.9	8.2	10.3	9.6	10.2
18	9.7 ± 2.1	8.2	10.0	10.6	10.1
19	9.2 ± 2.2	7.6	9.2	10.1	9.8
24	8.1 ± 2.2	6.4	8.6	8.5	8.7
5	9.1 ± 2.7	7.2	9.3	10.0	10.0
14	9.6 ± 2.2	8.0	10.1	10.2	10.2
15	9.8 ± 2.0	8.3	10.2	10.3	10.4
17	11.0 ± 2.5	9.1	11.4	11.4	11.9
1T	10.0 ± 2.6	8.1	10.5	11.0	10.5
22	10.1 ± 2.5	8.3	10.4	11.2	10.5
23	10.6 ± 2.8	8.5	11.4	11.4	10.9
26	10.9 ± 2.3	9.2	11.3	11.6	11.6
27	10.2 ± 2.7	8.2	10.8	11.2	10.6
32	10.4 ± 2.9	8.2	11.3	11.0	11.0
3A	7.9 ± 2.5	6.0	8.4	8.4	8.7
42	9.0 ± 2.1	7.4	9.3	9.5	9.6
43	10.9 ± 2.1	9.4	11.1	11.7	11.4
44	9.5 ± 3.0	7.3	10.1	10.4	10.3
45	10.2 ± 2.3	8.6	10.2	10.9	11.1
46	9.1 ± 2.3	7.4	9.4	9.9	9.6
47	10.6 ± 2.5	8.7	11.2	11.5	10.8
48	10.1 ± 2.3	8.4	10.4	10.8	10.7
49	10.0 ± 2.3	8.3	10.2	10.9	10.4
4K	6.8 ± 2.1	5.3	7.0	7.5	7.5
50	11.2 ± 2.5	9.4	11.4	12.0	12.1
51	10.0 ± 2.7	8.1	10.1	11.2	10.5
6B	8.5 ± 2.1	6.9	9.0	8.9	9.2
31A	8.6 ± 2.3	6.9	9.0	9.4	9.0
2	9.7 ± 2.7	7.8	9.8	10.9	10.3
1A	9.8 ± 2.4	8.0	10.2	10.5	10.4
1B	8.5 ± 2.5	6.8	8.5	9.4	9.4
1C	10.2 ± 2.4	8.4	10.5	10.9	10.8
1D	10.0 ± 2.6	8.1	10.6	10.7	10.7
1E	9.7 ± 2.3	8.0	9.8	10.3	10.6
1F	10.9 ± 2.9	8.8	11.4	12.0	11.4
1G	7.0 ± 1.9	5.6	7.1	7.3	7.8
1H	9.8 ± 2.2	8.1	10.4	10.2	10.4
1I	9.1 ± 2.2	7.5	9.5	9.6	9.9
1J	10.9 ± 2.8	8.9	11.2	12.1	11.4
1K	10.4 ± 2.3	8.7	11.1	10.8	11.0
1L	8.5 ± 2.1	6.9	9.0	9.1	8.9
1M	6.7 ± 1.8	5.4	6.8	7.1	7.4
1P	7.2 ± 2.2	5.6	7.6	7.5	8.1
1Q	8.2 ± 2.3	6.6	8.0	8.8	9.2
1R	12.6 ± 2.9	10.4	12.9	13.2	13.7
2B	9.3 ± 2.4	7.5	9.5	9.9	10.2
40	11.3 ± 2.7	9.2	11.8	12.1	11.9
1NN	10.3 ± 1.8	9.1	11.2	10.5	10.4

TABLE C-IX.2 MEAN QUARTERLY OSLD RESULTS FOR THE SITE BOUNDARY, INTERMEDIATE AND CONTROL LOCATIONS FOR PEACH BOTTOM ATOMIC POWER STATION, 2015

RESULTS IN UNITS OF MILLIREM/MONTH ± STANDARD DEVIATIONS OF THE STATION DATA

COLLECTION PERIOD	SITE BOUNDARY ± 2 S.D.	INTERMEDIATE	CONTROL
JAN-MAR	7.8 ± 2.6	8.0 ± 2.0	7.6 ± 1.7
APR-JUN	9.8 ± 3.3	10.1 ± 2.2	9.5 ± 1.5
JUL-SEP	10.1 ± 3.3	10.5 ± 2.2	9.7 ± 1.8
OCT-DEC	10.2 ± 2.9	10.4 ± 2.1	9.7 ± 1.4

TABLE C-IX.3 SUMMARY OF THE AMBIENT DOSIMETRY PROGRAM FOR PEACH BOTTOM ATOMIC POWER STATION, 2015

RESULTS IN UNITS OF MILLI-ROENTGEN/STD. MONTH

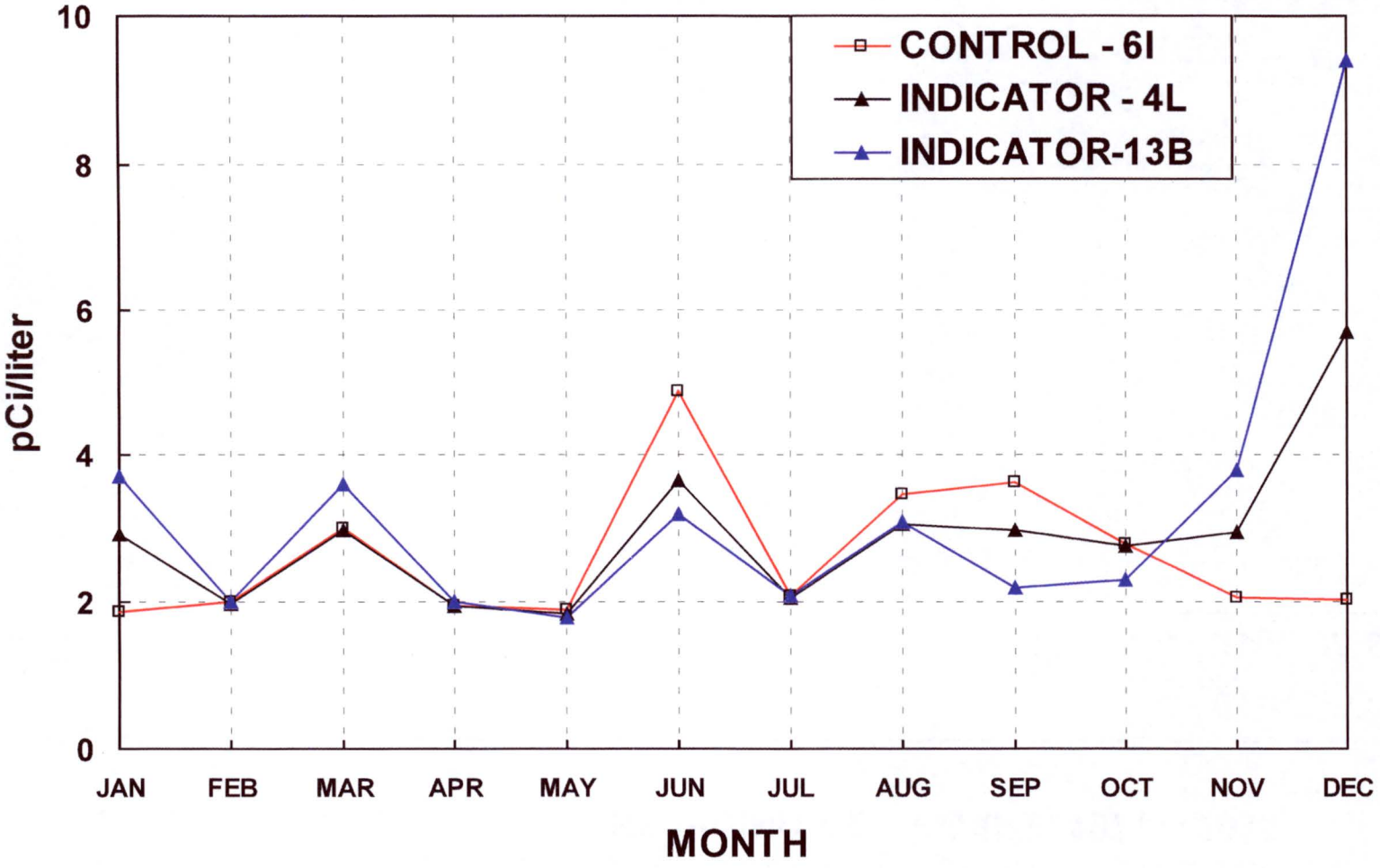
LOCATION	SAMPLES ANALYZED	PERIOD MINIMUM	PERIOD MAXIMUM	PERIOD MEAN ± 2 S.D.
SITE BOUNDARY	80	5.4	14	9.5 ± 3.6
INTERMEDIATE	96	5.3	12	9.7 ± 3.0
CONTROL	16	6.4	11	9.1 ± 2.3

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, 1T, 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

FIGURE C-1
MONTHLY TOTAL GROSS BETA CONCENTRATIONS IN DRINKING WATER SAMPLES COLLECTED IN THE VICINITY OF PBAPS, 2015



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 – 2015

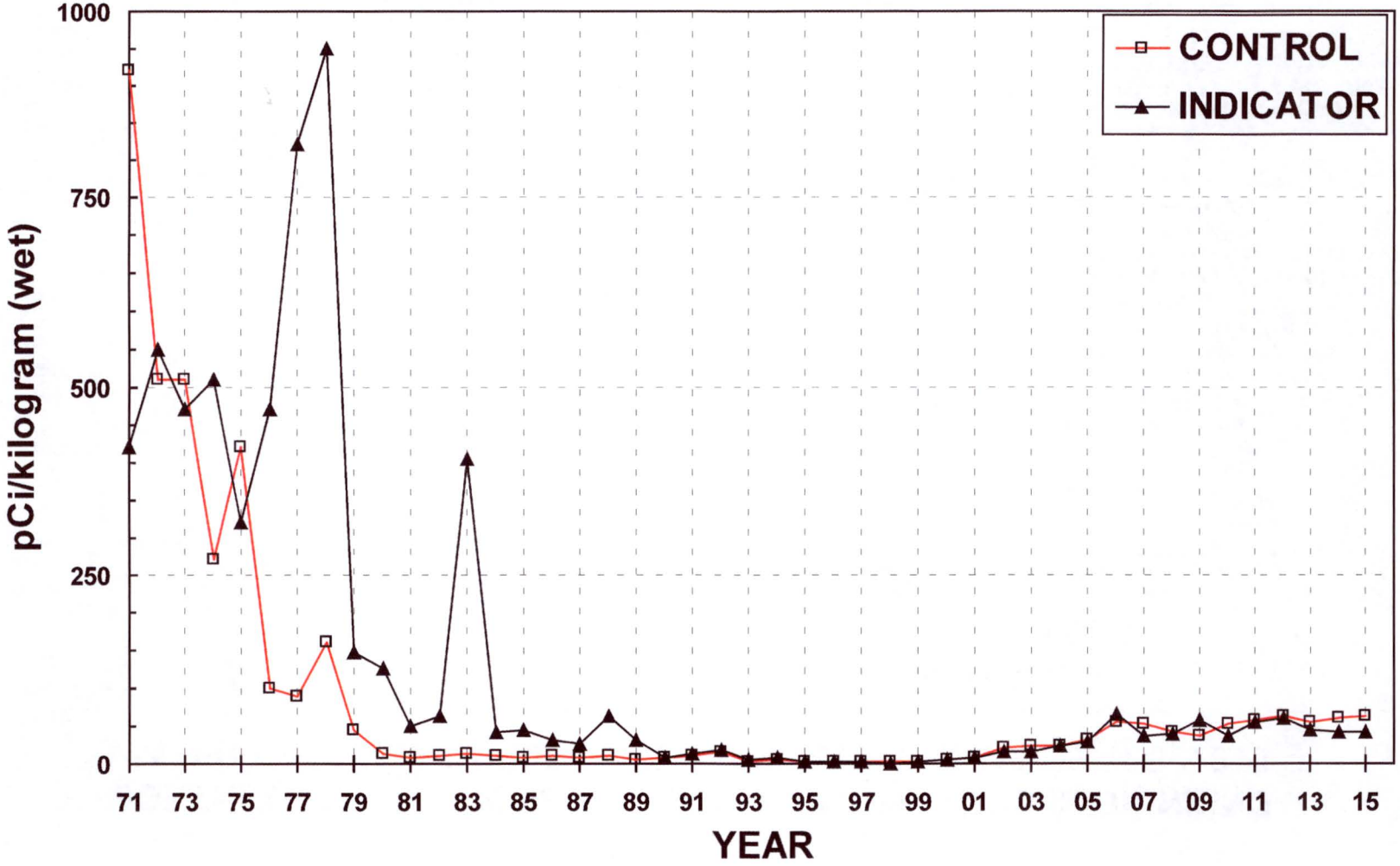
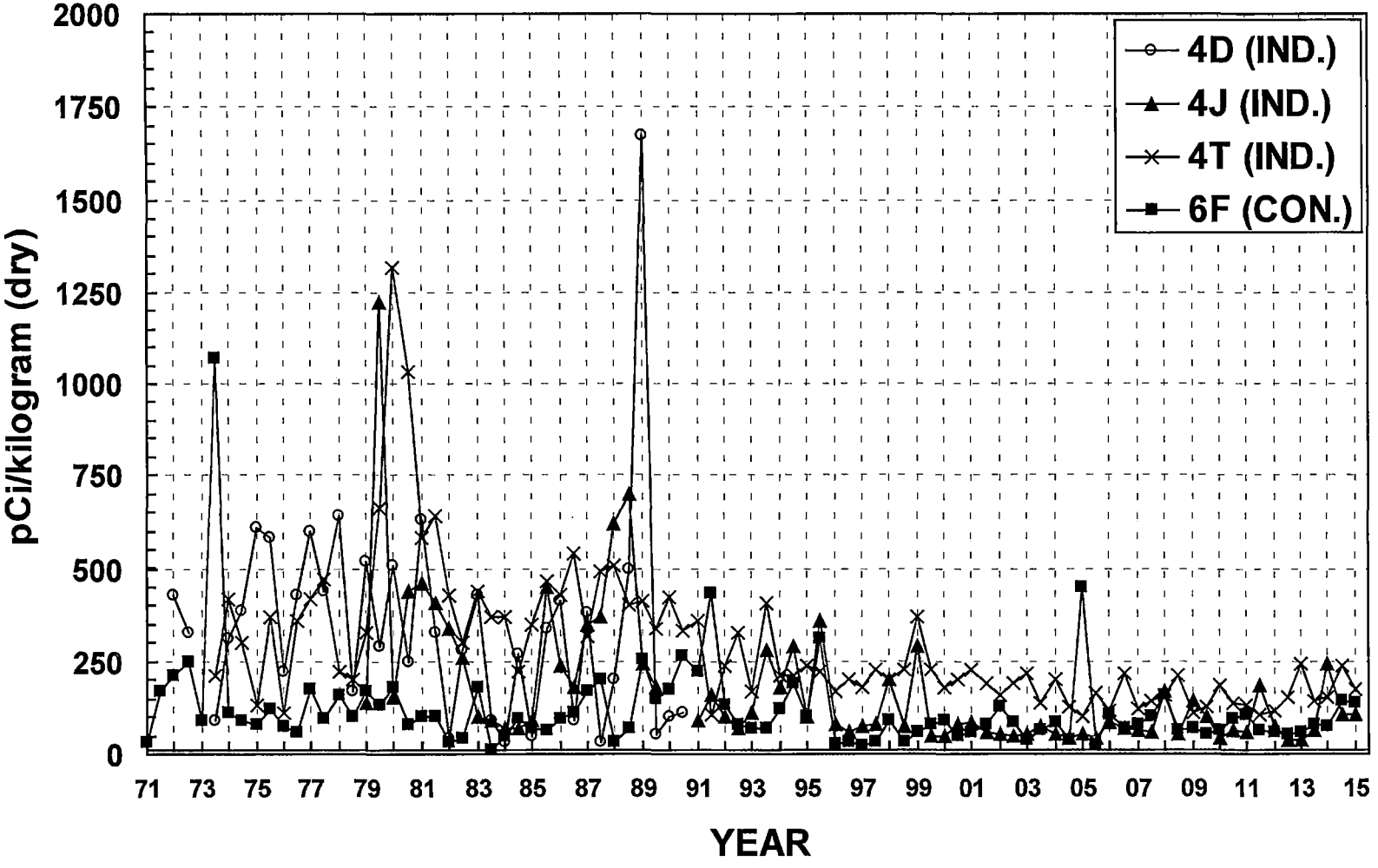


FIGURE C-3
MEAN SEMI-ANNUAL CS-137 CONCENTRATIONS IN SEDIMENT SAMPLES COLLECTED IN THE VICINITY OF PBAPS, 1971 – 2015



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, 2015

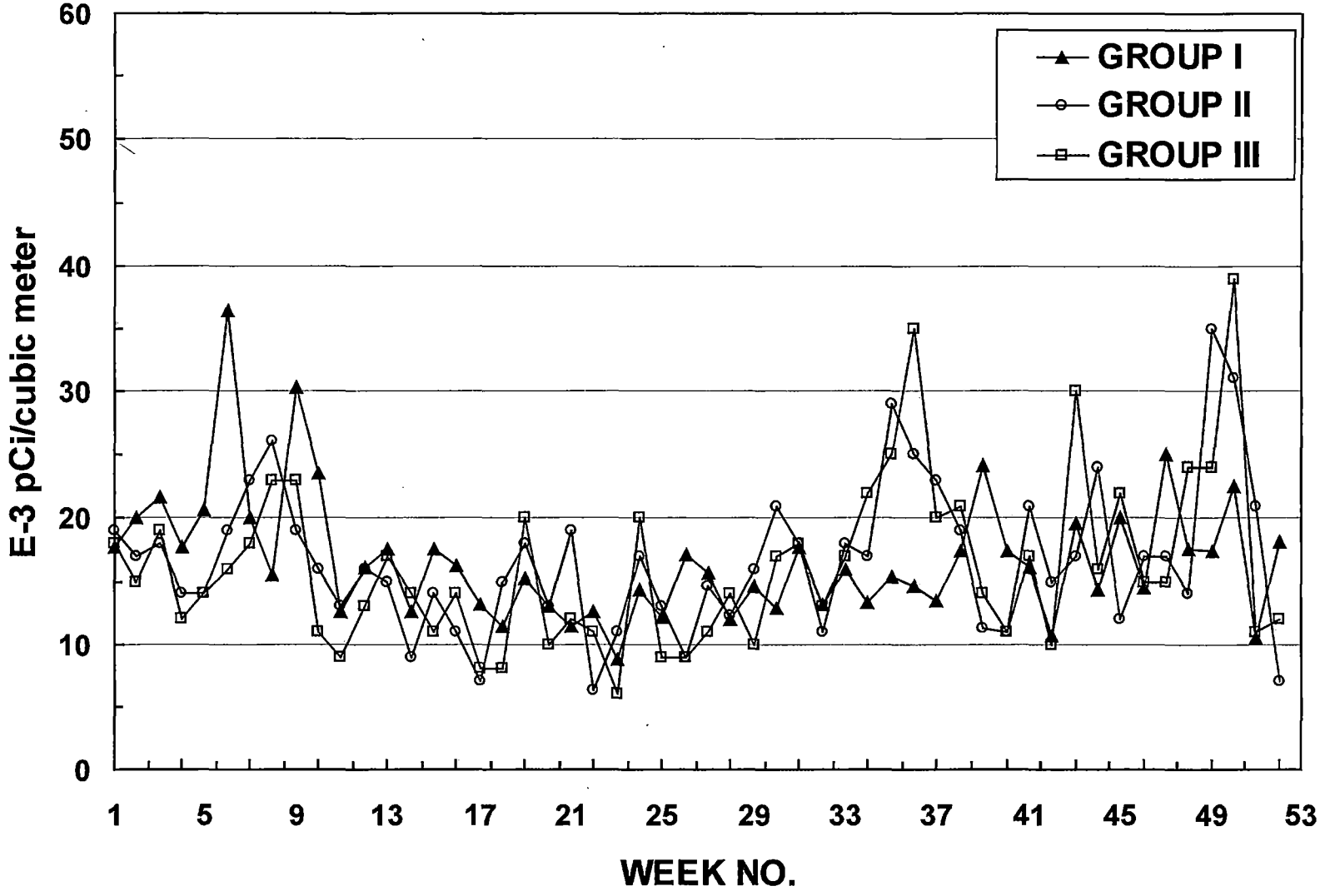


FIGURE C-5
MEAN MONTHLY GROSS BETA CONCENTRATIONS IN AIR PARTICULATE
SAMPLES COLLECTED IN THE VICINITY OF PBAPS, 1970 – 2015

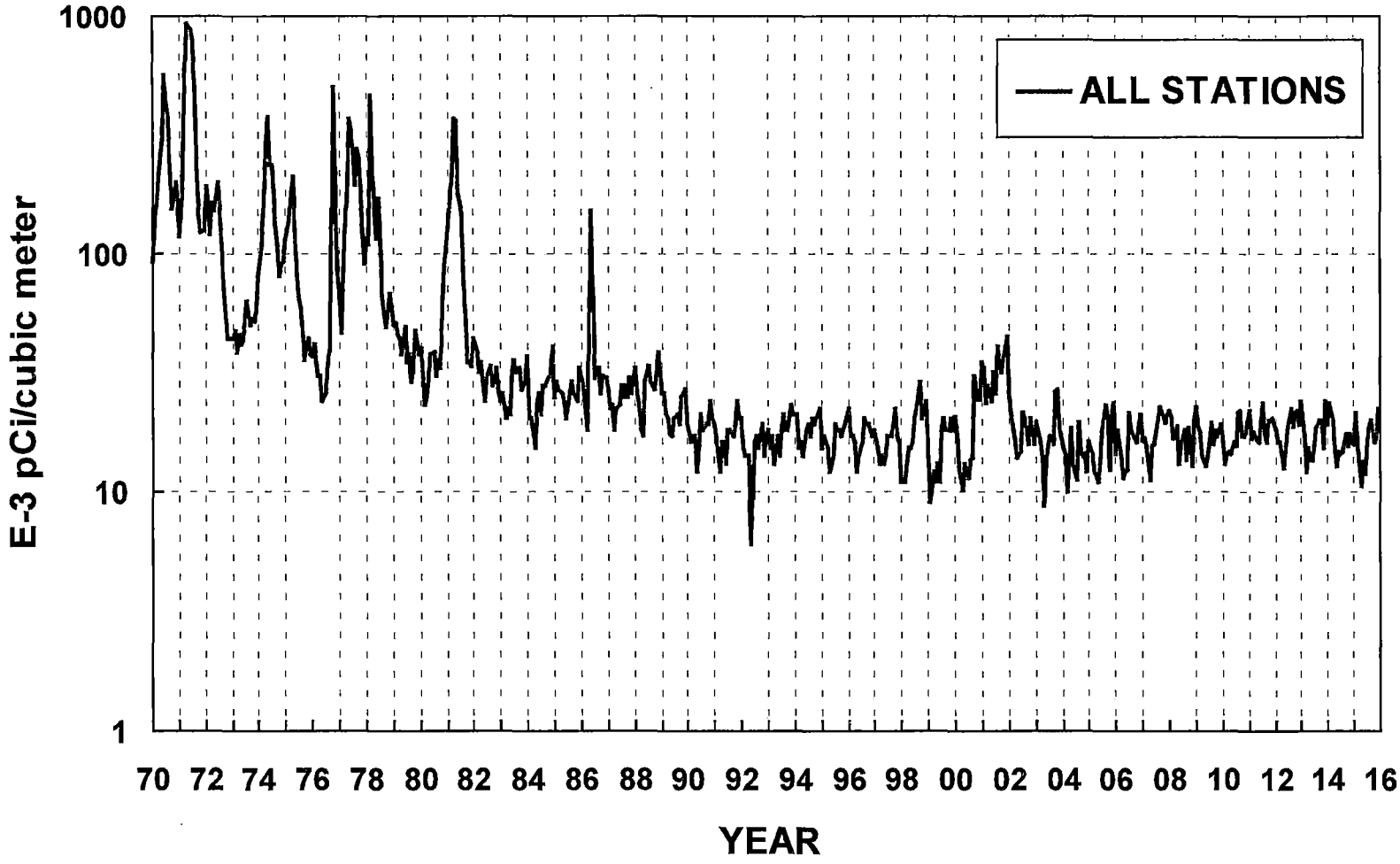
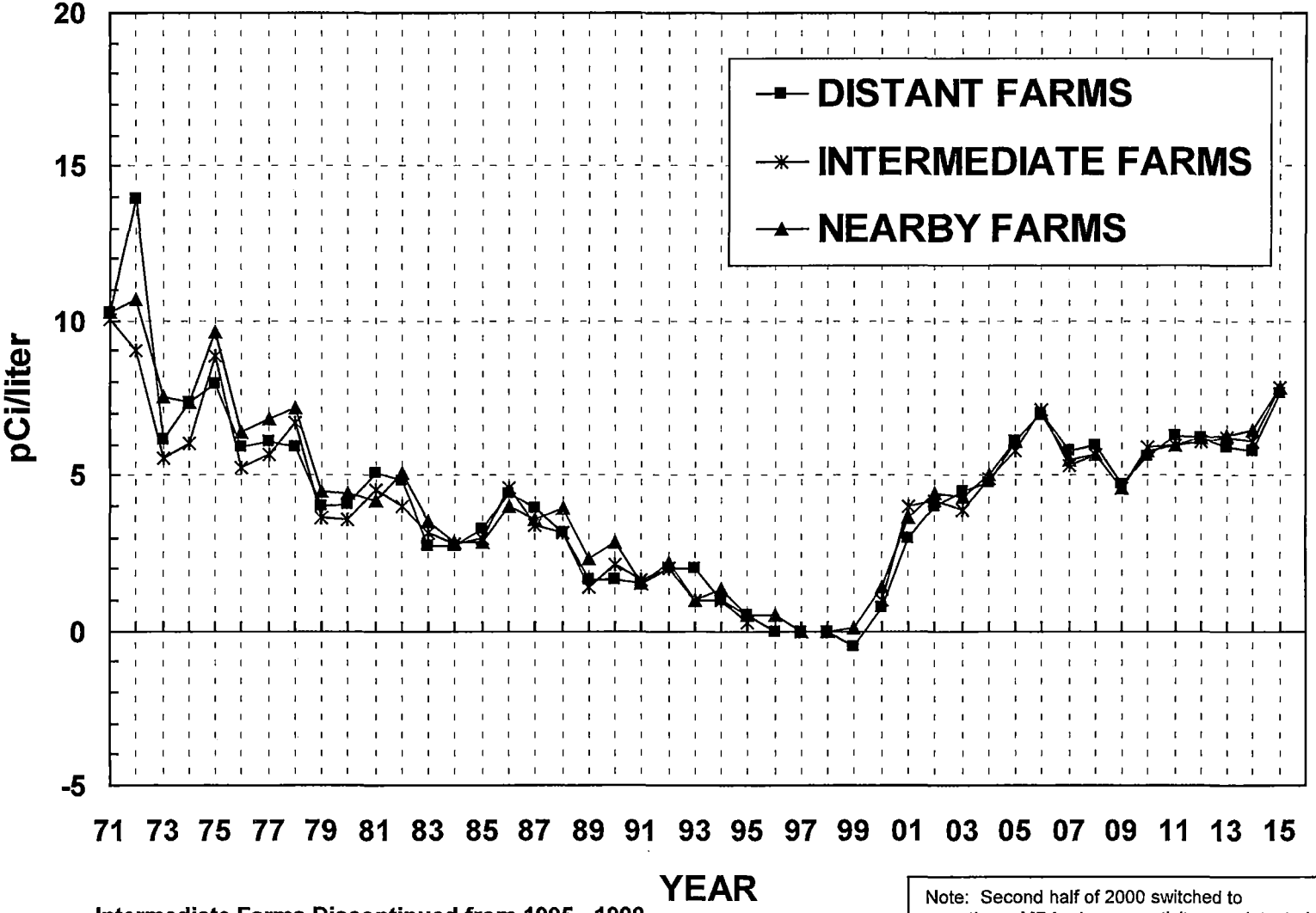


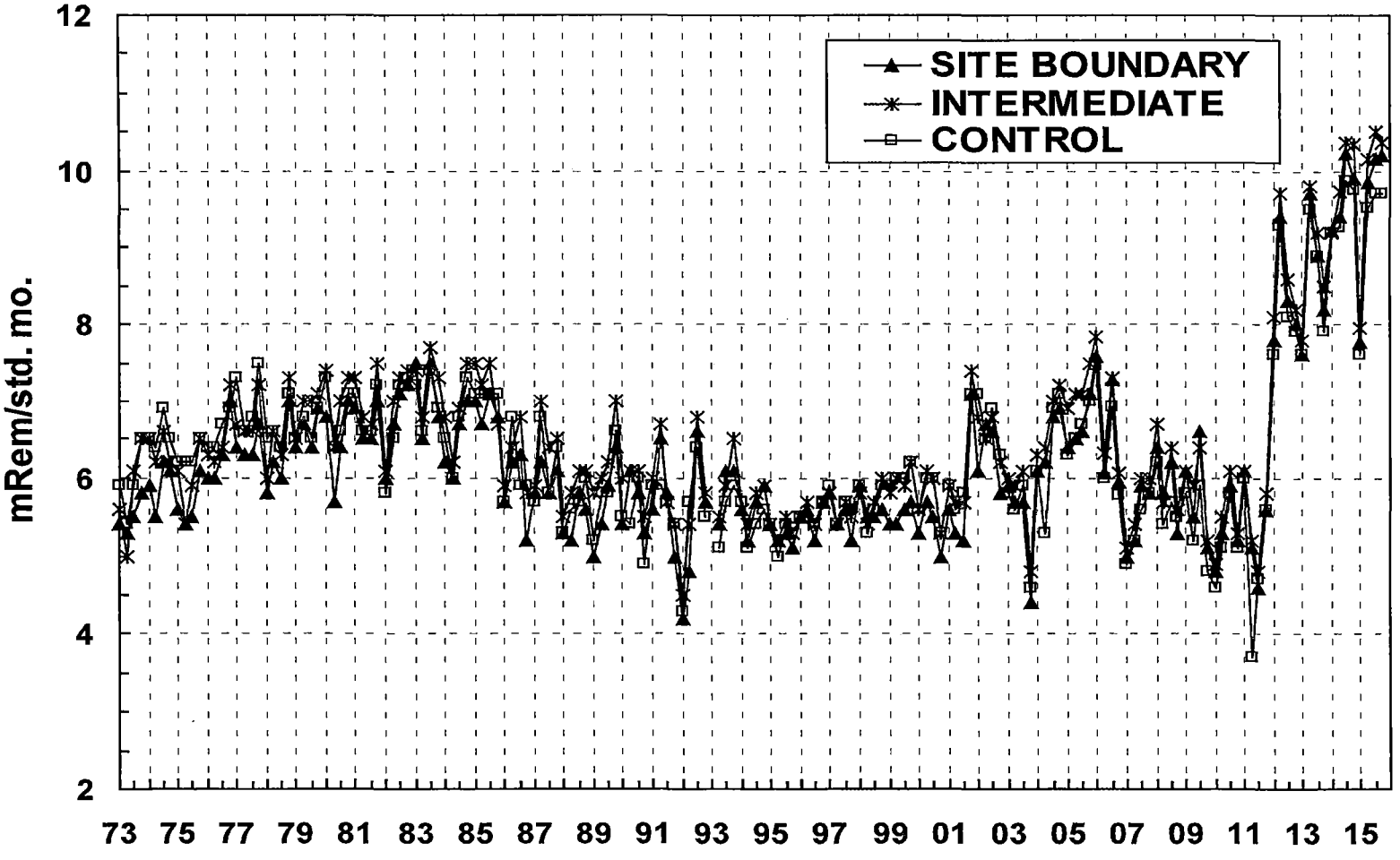
FIGURE C-6
MEAN ANNUAL CS-137 CONCENTRATIONS IN MILK SAMPLES COLLECTED IN THE VICINITY OF PBAPS, 1971 - 2015



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

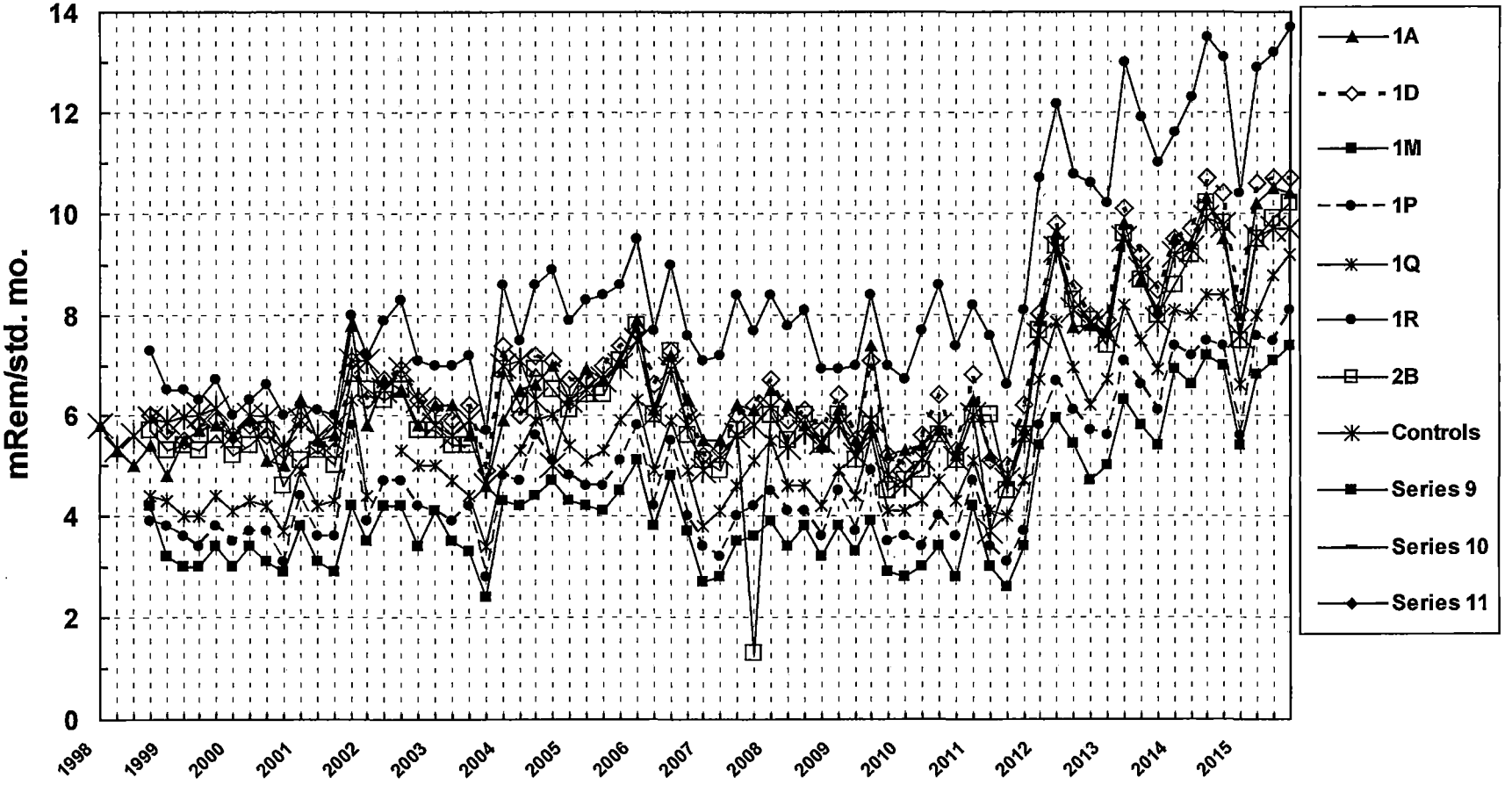
Note: Second half of 2000 switched to reporting < MDA when no activity was detected. Using MDA values result in a larger number.

FIGURE C- 7
MEAN QUARTERLY AMBIENT GAMMA RADIATION LEVELS IN THE VICINITY OF PBAPS, 1973 – 2015



OSLD technology use began January 2012, TLD technology ended December 2011. For only OSLD data, Gross mRem per standard month is reported.

FIGURE C-8
QUARTERLY AMBIENT GAMMA RADIATION LEVELS NEAR THE INDEPENDENT SPENT FUEL STORAGE INSTALLATION LOCATED AT PBAPS, 1998 – 2015



OSLD technology use began January 2012, TLD technology ended December 2011. For only OSLD data, Gross mRem per standard month is reported.

ISFSI activated June, 2000

APPENDIX D

DATA TABLES AND FIGURES
QC LABORATORY

TABLE D-I.1 CONCENTRATIONS OF GROSS BETA INSOLUBLE IN DRINKING WATER SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2015

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	4L
JAN	< 1.9
FEB	< 1.7
MAR	< 1.9
APR	< 1.8
MAY	< 1.2
JUN	< 1.9
JUL	< 1.9
AUG	< 1.8
SEP	< 0.8
OCT	< 0.8
NOV	< 1.7
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, 2015

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	4L
JAN	1.6 ± 0.7
FEB	2.3 ± 1.0
MAR	2.1 ± 0.9
APR	< 1.7
MAY	1.7 ± 0.7
JUN	1.9 ± 1.0
JUL	1.6 ± 0.6
AUG	1.4 ± 0.6
SEP	2.0 ± 0.6
OCT	1.5 ± 0.6
NOV	< 0.8
DEC	< 0.7
MEAN	1.9 ± 0.6

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

TABLE D-I.3 CONCENTRATIONS OF TRITIUM IN DRINKING WATER SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2015

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	4L
JAN-MAR	< 148
APR-JUN	< 147
JUL-SEP	< 147
OCT-DEC	< 156
MEAN	-

TABLE D-I.4 CONCENTRATIONS OF I-131 IN DRINKING WATER SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2015

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	4L
JAN	< 0.2
FEB	< 0.4
MAR	< 0.1
APR	< 0.4
MAY	< 0.4
JUN	< 0.4
JUL	< 0.2
AUG	< 0.2
SEP	< 0.4
OCT	< 0.4
NOV	< 0.3
DEC	< 0.2
MEAN	-

TABLE D-I.5 CONCENTRATIONS OF GAMMA EMITTERS IN DRINKING WATER SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2015

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION PERIOD	Mn-54	Fe-59	Co-58	Co-60	Zn-65	Zr-95	Nb-95	Cs-134	Cs-137	Ba-140	La-140
4L	JAN	< 2	< 6	< 2	< 3	< 4	< 4	< 3	< 3	< 3	< 15	< 3
	FEB	< 3	< 3	< 3	< 2	< 6	< 4	< 3	< 3	< 2	< 13	< 2
	MAR	< 1	< 3	< 1	< 1	< 2	< 2	< 1	< 1	< 1	< 12	< 3
	APR	< 2	< 4	< 2	< 2	< 3	< 4	< 3	< 2	< 3	< 23	< 3
	MAY	< 2	< 5	< 3	< 2	< 4	< 5	< 3	< 2	< 3	< 23	< 2
	JUN	< 3	< 3	< 1	< 1	< 3	< 3	< 3	< 2	< 3	< 9	< 3
	JUL	< 5	< 8	< 5	< 5	< 12	< 9	< 3	< 4	< 5	< 22	< 6
	AUG	< 2	< 4	< 3	< 2	< 5	< 6	< 4	< 3	< 3	< 25	< 8
	SEP	< 2	< 7	< 3	< 1	< 4	< 5	< 4	< 3	< 3	< 16	< 7
	OCT	< 2	< 5	< 2	< 2	< 4	< 3	< 3	< 2	< 3	< 31	< 5
	NOV	< 2	< 5	< 2	< 2	< 3	< 4	< 2	< 2	< 2	< 19	< 3
	DEC	< 2	< 5	< 2	< 3	< 4	< 5	< 2	< 2	< 2	< 17	< 2
	MEAN	-	-	-	-	-	-	-	-	-	-	-

TABLE D-II.1 CONCENTRATIONS OF GROSS BETA INSOLUBLE IN AIR PARTICULATE AND I-131 IN AIR IODINE SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2015

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

COLLECTION PERIOD	1A GROSS BETA	1A I-131
1	25 ± 5	< 14
2	27 ± 4	< 13
3	26 ± 4	< 13
4	20 ± 4	< 10
5	18 ± 4	< 7
6	30 ± 4	< 8
7	25 ± 4	< 10
8	27 ± 4	< 17
9	23 ± 4	< 15
10	29 ± 5	< 21
11	16 ± 4	< 15
12	22 ± 4	< 15
13	18 ± 4	< 11
14	19 ± 4	< 8
15	18 ± 4	< 7
16	17 ± 4	< 12
17	12 ± 3	< 10
18	22 ± 4	< 14
19	25 ± 4	< 25
20	20 ± 4	< 13
21	23 ± 4	< 10
22	14 ± 4	< 16
23	19 ± 4	< 20
24	22 ± 4	< 13
25	25 ± 4	< 17
26	17 ± 4	< 12
27	23 ± 4	< 14
28	24 ± 4	< 13
29	24 ± 3	< 9
30	22 ± 3	< 5
31	27 ± 3	< 10
32	20 ± 3	< 7
33	27 ± 3	< 11
34	25 ± 3	< 9
35	42 ± 4	< 10
36	35 ± 4	< 6
37	28 ± 3	< 10
38	32 ± 3	< 58
39	14 ± 3	< 10
40	18 ± 3	< 8
41	30 ± 3	< 7
42	25 ± 3	< 8
43	23 ± 3	< 11
44	33 ± 3	< 7
45	25 ± 3	< 6
46	20 ± 3	< 13
47	26 ± 4	< 14
48	25 ± 3	< 11
49	56 ± 5	< 13
50	46 ± 4	< 9
51	24 ± 4	< 17
52	10 ± 3	< 4
MEAN	24 ± 16	-

TABLE D-II.2 **CONCENTRATIONS OF GAMMA EMITTERS IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2015**

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

SITE	COLLECTION PERIOD	Be-7	Mn-54	Co-58	Co-60	Cs-134	Cs-137
1A	01/02/15 - 04/02/15	70 ± 16	< 0.8	< 1.2	< 0.6	< 1.0	< 0.9
	04/02/15 - 07/02/15	70 ± 13	< 0.6	< 0.5	< 0.5	< 0.8	< 0.5
	07/02/15 - 10/01/15	74 ± 14	< 0.4	< 0.4	< 0.3	< 0.4	< 0.4
	10/01/15 - 12/30/15	53 ± 11	< 0.7	< 0.5	< 0.5	< 0.5	< 0.4
	MEAN*	67 ± 19	-	-	-	-	-

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, 2015

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION PERIOD	I-131	K-40	Cs-134	Cs-137	Ba-140	La-140
J	02/02/15	< 0.3	1360 ± 109	< 4	< 4	< 22	< 4
	05/04/15	< 0.5	1359 ± 92	< 3	< 3	< 41	< 6
	08/10/15	< 0.2	1387 ± 101	< 3	< 2	< 46	< 11
	11/05/15	< 0.4	1372 ± 39	< 1	< 1	< 16	< 3
	MEAN	-	1369 ± 26	-	-	-	-
S	02/02/15	< 0.3	1429 ± 113	< 4	< 4	< 22	< 4
	05/04/15	< 0.5	1409 ± 90	< 2	< 3	< 25	< 3
	08/10/15	< 0.3	1458 ± 98	< 3	< 3	< 42	< 7
	11/02/15	< 0.3	1363 ± 41	< 1	< 1	< 14	< 3
	MEAN	-	1415 ± 80	-	-	-	-
V	01/31/15	< 0.3	1393 ± 41	< 1	< 2	< 19	< 2
	05/02/15	< 0.5	1351 ± 41	< 1	< 2	< 20	< 4
	08/08/15	< 0.3	1271 ± 91	< 2	< 3	< 39	< 5
	11/02/15	< 0.4	1279 ± 44	< 1	< 1	< 21	< 4
	MEAN	-	1323 ± 117	-	-	-	-

TABLE D-IV.1 SUMMARY OF COLLECTION DATES FOR SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2015

DRINKING WATER (GROSS BETA & GAMMA SPECTROSCOPY)

COLLECTION PERIOD	4L
JAN	01/02/15 - 01/29/15
FEB	01/29/15 - 02/26/15
MAR	02/26/15 - 03/26/15
APR	03/26/15 - 04/30/15
MAY	04/30/15 - 05/28/15
JUN	05/28/15 - 07/02/15
JUL	07/02/15 - 07/30/15
AUG	07/30/15 - 08/27/15
SEP	08/27/15 - 10/01/15
OCT	10/01/15 - 10/29/15
NOV	10/29/15 - 11/25/15
DEC	11/25/15 - 12/30/15

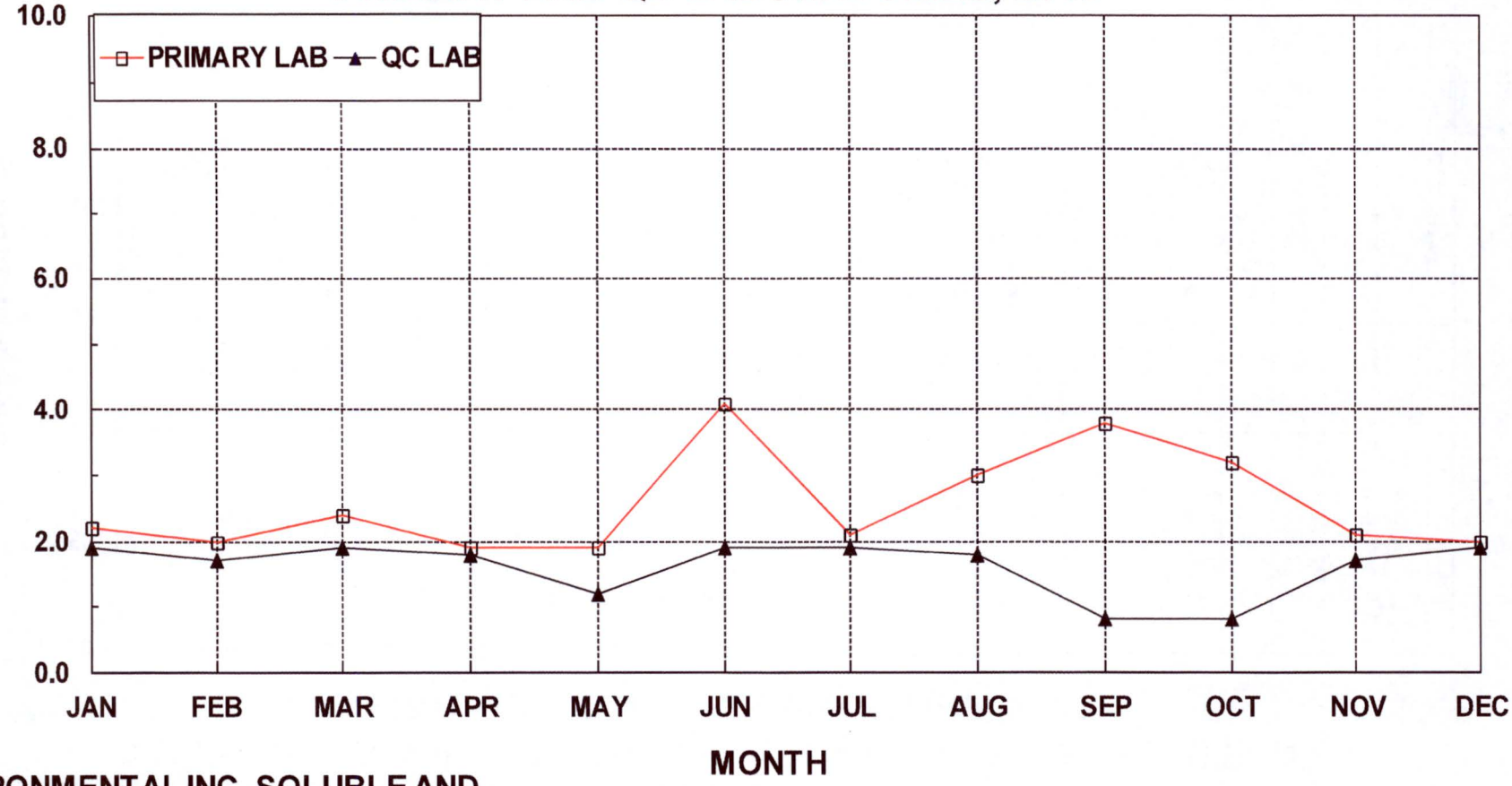
AIR PARTICULATE (GAMMA SPECTROSCOPY)

COLLECTION PERIOD	1A
JAN-MAR	01/02/15 - 04/02/15
APR-JUN	04/02/15 - 07/02/15
JUL-SEP	07/02/15 - 10/01/15
OCT-DEC	10/01/15 - 12/30/15

AIR PARTICULATE (GROSS BETA) AND AIR IODINE (I-131)

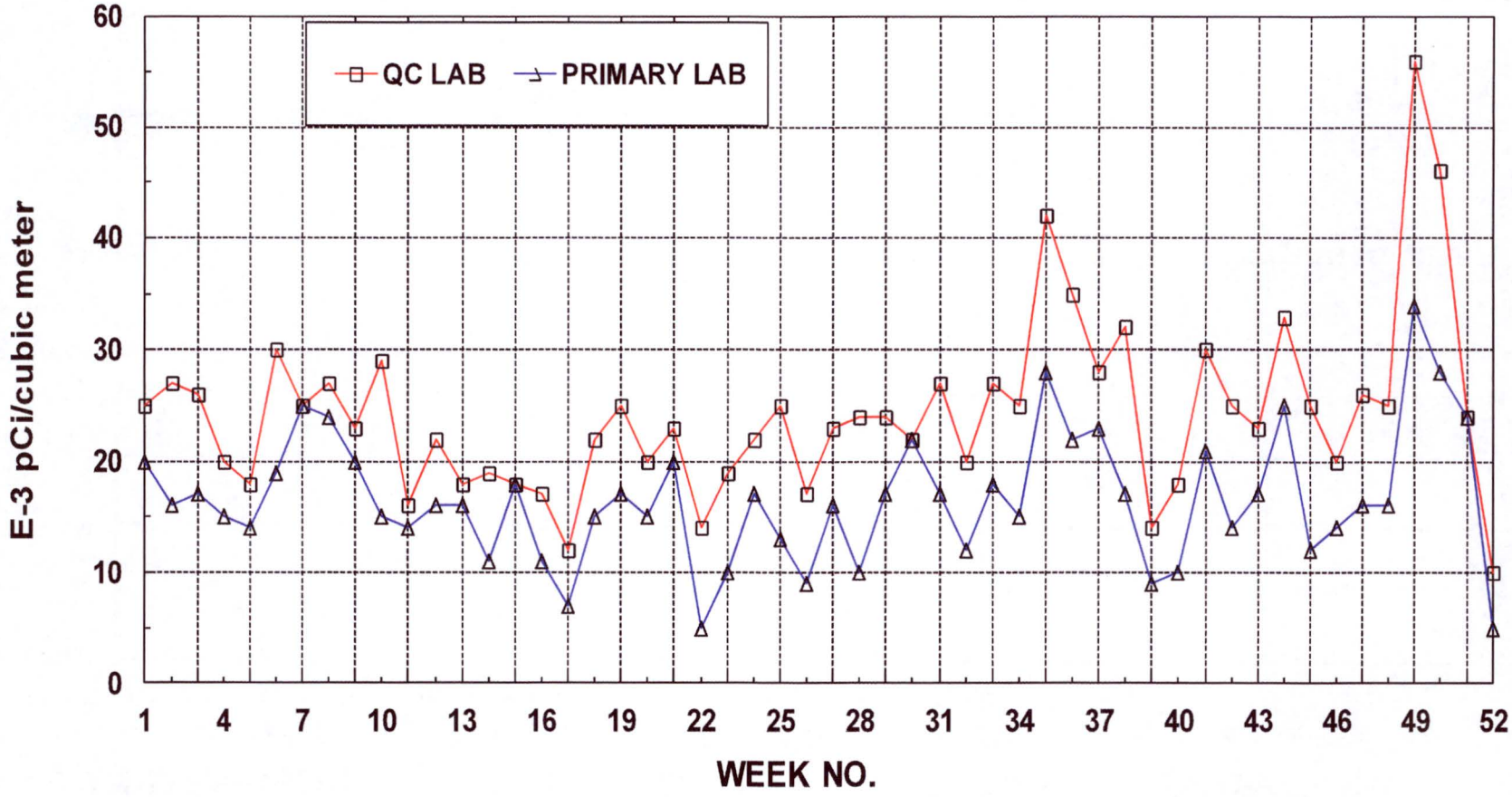
COLLECTION PERIOD	1A	COLLECTION PERIOD	1A
1	01/02/15 - 01/08/15	27	07/02/15 - 07/09/15
2	01/08/15 - 01/15/15	28	07/09/15 - 07/16/15
3	01/15/15 - 01/22/15	29	07/16/15 - 07/23/15
4	01/22/15 - 01/29/15	30	07/23/15 - 07/30/15
5	01/29/15 - 02/05/15	31	07/30/15 - 08/06/15
6	02/05/15 - 02/12/15	32	08/06/15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

FIGURE D-1
COMPARISON OF MONTHLY TOTAL GROSS BETA CONCENTRATIONS IN DRINKING WATER SAMPLES SPLIT BETWEEN THE PRIMARY AND QC LABORATORIES, 2015



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

FIGURE D-2
COMPARISON OF WEEKLY GROSS BETA CONCENTRATIONS FROM COLLOCATED AIR PARTICULATE LOCATIONS SPLIT BETWEEN THE PRIMARY AND QC LABORATORIES, 2015



APPENDIX E

QUALITY CONTROL - INTER-LABORATORY COMPARISON PROGRAM

TABLE E-1 ANALYTICS ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM
TELEDYNE BROWN ENGINEERING, 2015
(PAGE 1 OF 3)

Month/Year	Identification Number	Matrix	Nuclide	Units	Reported Value (a)	Known Value (b)	Ratio (c) TBE/Analytics	Evaluation (d)
March 2015	E11181	Milk	Sr-89	pCi/L	88.9	97.2	0.91	A
			Sr-90	pCi/L	12.2	17.4	0.70	W
	E11182	Milk	I-131	pCi/L	61.3	65.1	0.94	A
			Ce-141	pCi/L	104	113	0.92	A
			Cr-51	pCi/L	265	276	0.96	A
			Cs-134	pCi/L	138	154	0.90	A
			Cs-137	pCi/L	205	207	0.99	A
			Co-58	pCi/L	178	183	0.97	A
			Mn-54	pCi/L	187	188	0.99	A
			Fe-59	pCi/L	182	177	1.03	A
			Zn-65	pCi/L	345	351	0.98	A
			Co-60	pCi/L	379	405	0.94	A
	E11184	AP	Ce-141	pCi	107	85.0	1.26	W
			Cr-51	pCi	261	224	1.17	A
			Cs-134	pCi	74.6	77.0	0.97	A
			Cs-137	pCi	99.6	102	0.98	A
			Co-58	pCi	99.8	110	0.91	A
			Mn-54	pCi	99.2	96.9	1.02	A
			Fe-59	pCi	109	119	0.92	A
			Zn-65	pCi	188	183	1.03	A
			Co-60	pCi	200	201	1.00	A
	E11183	Charcoal	I-131	pCi	82.9	85.4	0.97	A
	E11185	Water	Fe-55	pCi/L	1950	1900	1.03	A
June 2015	E11234	Milk	Sr-89	pCi/L	94.9	92.6	1.02	A
			Sr-90	pCi/L	14.3	12.7	1.13	A
	E11238	Milk	I-131	pCi/L	93.2	95.9	0.97	A
			Ce-141	pCi/L	Not provided for this study			
			Cr-51	pCi/L	349	276	1.26	W
			Cs-134	pCi/L	165	163	1.01	A
			Cs-137	pCi/L	143	125	1.14	A
			Co-58	pCi/L	82.0	68.4	1.20	A
			Mn-54	pCi/L	113	101	1.12	A
			Fe-59	pCi/L	184	151	1.22	W
			Zn-65	pCi/L	269	248	1.08	A
			Co-60	pCi/L	208	193	1.08	A
	E11237	AP	Ce-141	pCi	Not provided for this study			
			Cr-51	pCi	323	233	1.39	N (1)
			Cs-134	pCi	139	138	1.01	A
			Cs-137	pCi	111	106	1.05	A
			Co-58	pCi	54.0	57.8	0.93	A
			Mn-54	pCi	96.8	84.9	1.14	A
			Fe-59	pCi	162	128	1.27	W
			Zn-65	pCi	198	210	0.94	A
			Co-60	pCi	178	163	1.09	A
	E11236	Charcoal	I-131	pCi	93.9	80	1.17	A

TABLE E-1 ANALYTICS ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM
TELEDYNE BROWN ENGINEERING, 2015
(PAGE 2 OF 3)

Month/Year	Identification Number	Matrix	Nuclide	Units	Reported Value (a)	Known Value (b)	Ratio (c) TBE/Analytics	Evaluation (d)
June 2015	E11238	Water	Fe-55	pCi/L	1890	1790	1.06	A
September 2015	E11289	Milk	Sr-89	pCi/L	95.7	99.1	0.97	A
			Sr-90	pCi/L	15.4	16.4	0.94	A
	E11290	Milk	I-131	pCi/L	94.9	99.9	0.95	A
			Ce-141	pCi/L	228	213	1.07	A
			Cr-51	pCi/L	499	538	0.93	A
			Cs-134	pCi/L	208	212	0.98	A
			Cs-137	pCi/L	270	255	1.06	A
			Co-58	pCi/L	275	263	1.05	A
			Mn-54	pCi/L	320	290	1.10	A
			Fe-59	pCi/L	255	226	1.13	A
			Zn-65	pCi/L	392	353	1.11	A
			Co-60	pCi/L	350	330	1.06	A
	E11292	AP	Ce-141	pCi	104	85.1	1.22	W
			Cr-51	pCi	262	215	1.22	W
			Cs-134	pCi	86.1	84.6	1.02	A
			Cs-137	pCi	93	102	0.91	A
			Co-58	pCi	106	105	1.01	A
			Mn-54	pCi	117	116	1.01	A
			Fe-59	pCi	94.8	90.2	1.05	A
			Zn-65	pCi	160	141	1.13	A
			Co-60	pCi	146	132	1.11	A
	E11291	Charcoal	I-131	pCi	85.9	81.7	1.05	A
	E11293	Water	Fe-55	pCi/L	2090	1800	1.16	A
	E11294	Soil	Ce-141	pCi/kg	209	222	0.94	A
			Cr-51	pCi/kg	463	560	0.83	A
			Cs-134	pCi/kg	231	221	1.05	A
			Cs-137	pCi/kg	311	344	0.90	A
			Co-58	pCi/kg	245	274	0.89	A
			Mn-54	pCi/kg	297	302	0.98	A
			Fe-59	pCi/kg	248	235	1.06	A
			Zn-65	pCi/kg	347	368	0.94	A
			Co-60	pCi/kg	328	344	0.95	A
December 2015	E11354	Milk	Sr-89	pCi/L	96.2	86.8	1.11	A
			Sr-90	pCi/L	14.8	12.5	1.18	A
	E11355	Milk	I-131	pCi/L	95.1	91.2	1.04	A
			Ce-141	pCi/L	117	129	0.91	A
			Cr-51	pCi/L	265	281	0.94	A
			Cs-134	pCi/L	153	160	0.96	A
			Cs-137	pCi/L	119	115	1.03	A
			Co-58	pCi/L	107	110	0.97	A
			Mn-54	pCi/L	153	145	1.06	A
			Fe-59	pCi/L	117	108	1.08	A
			Zn-65	pCi/L	261	248	1.05	A
			Co-60	pCi/L	212	213	1.00	A

TABLE E-1 ANALYTICS ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM
TELEDYNE BROWN ENGINEERING, 2015
(PAGE 3 OF 3)

Month/Year	Identification Number	Matrix	Nuclide	Units	Reported Value (a)	Known Value (b)	Ratio (c) TBE/Analytics	Evaluation (d)
December 2015	E11357	AP	Ce-141	pCi	89.9	84.0	1.07	A
			Cr-51	pCi	215	184	1.17	A
			Cs-134	pCi	103	105	0.98	A
			Cs-137	pCi	76.6	74.8	1.02	A
			Co-58	pCi	76.2	71.9	1.06	A
			Mn-54	pCi	91.4	94.4	0.97	A
			Fe-59	pCi	78.6	70.3	1.12	A
			Zn-65	pCi	173	162	1.07	A
			Co-60	pCi	138	139	0.99	A
	E11422	AP	Sr-89	pCi	98.0	96.9	1.01	A
			Sr-90	pCi	10.0	14.0	0.71	W
	E11356	Charcoal	I-131	pCi	74.9	75.2	1.00	A
	E11358	Water	Fe-55	pCi/L	2160	1710	1.26	W
	E11353	Soil	Ce-141	pCi/kg	252	222	1.14	A
			Cr-51	pCi/kg	485	485	1.00	A
			Cs-134	pCi/kg	319	277	1.15	A
			Cs-137	pCi/kg	292	276	1.06	A
			Co-58	pCi/kg	193	190	1.02	A
			Mn-54	pCi/kg	258	250	1.03	A
			Fe-59	pCi/kg	218	186	1.17	A
			Zn-65	pCi/kg	457	429	1.07	A
			Co-60	pCi/kg	381	368	1.04	A

(1) AP Cr-51 - Cr-51 has the shortest half-life and the weakest gamma energy of the mixed nuclide sample, which produces a large error. Taking into account the error, the lowest value would be 119% of the reference value, which would be considered acceptable. NCR 15-18

(a) Teledyne Brown Engineering reported result.

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

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

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

TABLE E-2 DOE'S MIXED ANALYTE PERFORMANCE EVALUATION PROGRAM (MAPEP)
TELEDYNE BROWN ENGINEERING, 2015
(PAGE 1 OF 1)

Month/Year	Identification Number	Media	Nuclide*	Units	Reported Value (a)	Known Value (b)	Acceptance Range	Evaluation (c)
March 2015	15-MaW32	Water	Am-241	Bq/L	0.632	0.654	0.458 - 0.850	A
			Ni-63	Bq/L	2.5		(1)	A
			Pu-238	Bq/L	0.0204	0.0089	(2)	A
			Pu-239/240	Bq/L	0.9	0.8	0.582 - 1.082	A
	15-MaS32	Soil	Ni-63	Bq/kg	392	448.0	314 - 582	A
			Sr-90	Bq/kg	286	653	487 - 849	N (3)
	15-RdF32	AP	Sr-90	Bq/sample	-0.0991		(1)	A
			U-234/233	Bq/sample	0.0211	0.0155	0.0109 - 0.0202	N (3)
			U-238	Bq/sample	0.095	0.099	0.069 - 0.129	A
	15-GrF32	AP	Gr-A	Bq/sample	0.448	1.77	0.53 - 3.01	N (3)
			Gr-B	Bq/sample	0.7580	0.75	0.38 - 1.13	A
	15-RdV32	Vegetation	Cs-134	Bq/sample	8.08	7.32	5.12 - 9.52	A
			Cs-137	Bq/sample	11.6	9.18	6.43 - 11.93	W
			Co-57	Bq/sample	-0.0096		(1)	A
			Co-60	Bq/sample	6.53	5.55	3.89 - 7.22	A
			Mn-54	Bq/sample	0.0058		(1)	A
			Sr-90	Bq/sample	0.999	1.08	0.76 - 1.40	A
			Zn-65	Bq/sample	-0.108		(1)	A
September 2015	15-MaW33	Water	Am-241	Bq/L	1.012	1.055	0.739 - 1.372	A
			Ni-63	Bq/L	11.8	8.55	5.99 - 11.12	N (4)
			Pu-238	Bq/L	0.727	0.681	0.477 - 0.885	A
			Pu-239/240	Bq/L	0.830	0.900	0.630 - 1.170	A
	15-MaS33	Soil	Ni-63	Bq/kg	635	682	477 - 887	A
			Sr-90	Bq/kg	429	425	298 - 553	A
	15-RdF33	AP	Sr-90	Bq/sample	1.48	2.18	1.53 - 2.83	N (4)
			U-234/233	Bq/sample	0.143	0.143	0.100 - 0.186	A
			U-238	Bq/sample	0.149	0.148	0.104 - 0.192	A
	15-GrF33	AP	Gr-A	Bq/sample	0.497	0.90	0.27 - 1.53	A
			Gr-B	Bq/sample	1.34	1.56	0.78 - 2.34	A
	15-RdV33	Vegetation	Cs-134	Bq/sample	6.10	5.80	4.06 - 7.54	A
			Cs-137	Bq/sample	0.0002		(1)	A
			Co-57	Bq/sample	8.01	6.62	4.63 - 8.61	W
			Co-60	Bq/sample	4.97	4.56	3.19 - 5.93	A
			Mn-54	Bq/sample	8.33	7.68	5.38 - 9.98	A
			Sr-90	Bq/sample	0.386	1.30	0.91 - 1.69	N (4)
			Zn-65	Bq/sample	6.07	5.46	3.82 - 7.10	A

(1) False positive test.

(2) Sensitivity evaluation.

(3) Soil Sr-90 - incomplete digestion of the sample resulted in low results; AP U-234/233 - extremely low activity was difficult to quantify AP Gr-A - the MAPEP filter has the activity embedded in the filter. To corrected the low bias, TBE will create an attenuated efficiency for MAPEP samples. NCR 15-13

(4) Water Ni-63 extremely low activity was difficult to quantify; AP & Vegetation Sr-90 was lost during separation, possible from substance added by MAPEP NCR 15-21.

(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-3 **ERA ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM**
TELEDYNE BROWN ENGINEERING, 2015
(PAGE 1 OF 1)

Month/Year	Identification Number	Media	Nuclide	Units	Reported Value (a)	Known Value (b)	Acceptance Limits	Evaluation (c)
May 2015	RAD-101	Water	Sr-89	pCi/L	45.2	63.2	51.1 - 71.2	N (1)
			Sr-90	pCi/L	28.0	41.9	30.8 - 48.1	N (1)
			Ba-133	pCi/L	80.6	82.5	63.9 - 90.8	A
			Cs-134	pCi/L	71.7	75.7	61.8 - 83.3	A
			Cs-137	pCi/L	187	189	170 - 210	A
			Co-60	pCi/L	85.7	84.5	76.0 - 95.3	A
			Zn-65	pCi/L	197	203	183 - 238	A
			Gr-A	pCi/L	26.1	42.6	22.1 - 54.0	A
			Gr-B	pCi/L	28.8	32.9	21.3 - 40.6	A
			I-131	pCi/L	23.5	23.8	19.7 - 28.3	A
			U-Nat	pCi/L	6.19	6.59	4.99 - 7.83	A
			H-3	pCi/L	3145	3280	2770 - 3620	A
November 2015	RAD-103	Water	Sr-89	pCi/L	40.9	35.7	26.7 - 42.5	A
			Sr-90	pCi/L	29.3	31.1	22.7 - 36.1	A
			Ba-133	pCi/L	31.5	32.5	25.9 - 36.7	A
			Cs-134	pCi/L	59.65	62.3	50.6 - 68.5	A
			Cs-137	pCi/L	156	157	141 - 175	A
			Co-60	pCi/L	70.6	71.1	64.0 - 80.7	A
			Zn-65	pCi/L	145	126	113 - 149	A
			Gr-A	pCi/L	38.2	51.6	26.9 - 64.7	A
			Gr-B	pCi/L	42.0	36.6	24.1 - 44.2	A
			I-131	pCi/L	24.8	26.3	21.9 - 31.0	A
			U-Nat	pCi/L	146.90	56.2	45.7 - 62.4	N (2)
			H-3	pCi/L	21100	21300	18700 - 23400	A

(1) Yield on the high side of our acceptance range indicates possibility of calcium interference. NCR 15-09

(2) Technician failed to dilute original sample. If dilulted, the result would have been 57.1, which fell within the acceptance limits. NCR 15-19

(a) Teledyne Brown Engineering reported result.

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

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

TABLE E-4 **ERA (a) STATISTICAL SUMMARY PROFICIENCY TESTING PROGRAM[a]**
ENVIRONMENTAL, INC., 2015

Lab Code	Date	Analysis	Concentration (pCi/L) Laboratory Result [b]	ERA Result [c]	Control Limits	Acceptance
ERW-1444	04/06/15	Sr-89	59.71 ± 5.44	63.20	51.10 - 71.20	Pass
ERW-1444	04/06/15	Sr-90	43.41 ± 2.43	41.90	30.80 - 48.10	Pass
ERW-1448	04/06/15	Ba-133	77.75 ± 4.69	82.50	69.30 - 90.80	Pass
ERW-1448	04/06/15	Cs-134	68.82 ± 3.08	75.70	61.80 - 83.30	Pass
ERW-1448	04/06/15	Cs-137	-191.92 ± 5.9	189	-170.00 - 210.0	Pass
ERW-1448	04/06/15	Co-60	85.05 ± 4.59	84.50	76.00 - 95.30	Pass
ERW-1448	04/06/15	Zn-65	-195.97 ± 12.0	203	-183.00 - 238.0	Pass
ERW-1450	04/06/15	Gr. Alpha	34.05 ± 1.90	42.60	22.10 - 54.00	Pass
ERW-1450	04/06/15	Gr. Beta	26.93 ± 1.12	32.90	21.30 - 40.60	Pass
ERW-1453	04/06/15	I-131	22.47 ± 0.83	23.80	19.70 - 28.30	Pass
ERW-1456	04/06/15	Uranium	5.98 ± 0.31	6.59	4.99 - 7.83	Pass
ERW-1461	04/06/15	H-3	3,254 ± 180	3280	2,770 - 3620	Pass
ERW-5528	10/05/15	Sr-89	34.76 ± 0.06	35.70	26.70 - 42.50	Pass
ERW-5528	10/05/15	Sr-90	29.23 ± 0.06	31.10	22.70 - 36.10	Pass
ERW-5531	10/05/15	Ba-133	30.91 ± 0.53	32.50	25.90 - 36.70	Pass
ERW-5531	10/05/15	Cs-134	57.40 ± 2.57	62.30	50.69 - 68.50	Pass
ERW-5531	10/05/15	Cs-137	-163.12 ± 4.8	157	-141.00 - 175.0	Pass
ERW-5531	10/05/15	Co-60	73.41 ± 1.72	71.10	64.00 - 80.70	Pass
ERW-5531	10/05/15	Zn-65	-138.94 ± 5.7	126	-113.00 - 149.0	Pass
ERW-5534	10/05/15	Gr. Alpha	29.99 ± 0.08	51.60	26.90 - 64.70	Pass
ERW-5534	10/05/15	Gr. Beta	27.52 ± 0.04	36.60	24.10 - 44.20	Pass
ERW-5537	10/05/15	I-131	25.54 ± 0.60	26.30	21.90 - 31.00	Pass
ERW-5540	10/05/15	Uranium	53.30 ± 0.55	56.20	45.70 - 62.40	Pass
ERW-5543	10/05/15	H-3	21,260 ± 351	21,300	18,700 - 23400.0	Pass

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

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

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

TABLE E-5 DOE'S MIXED ANALYTE PERFORMANCE EVALUATION PROGRAM (MAPEP)
ENVIRONMENTAL, INC., 2015
(Page 1 of 2)

			Concentration [a]			
Lab Code [b]	Date	Analysis	Laboratory result	Known Activity	Control Limits [c]	Acceptance
MASO-975	02/01/15	Ni-63	341 ± 18	448	314 - 582	Pass
MASO-975	02/01/15	Sr-90	523 ± 12	653	457 - 849	Pass
MASO-975	02/01/15	Cs-134	533 ± 6	678	475 - 881	Pass
MASO-975	02/01/15	Cs-137	0.8 ± 2.5	0.0	NA [c]	Pass
MASO-975	02/01/15	Co-57	0.5 ± 1	0.0	NA [c]	Pass
MASO-975	02/01/15	Co-60	741 ± 8	817	572 - 1062	Pass
MASO-975	02/01/15	Mn-54	1,153 ± 9	1,198	839 - 1557	Pass
MASO-975	02/01/15	Zn-65	892 ± 18	1064	745 - 1383	Pass
MAW-969	02/01/15	Am-241	0.650 ± 0.078	0.654	0.458 - 0.850	Pass
MAW-969	02/01/15	Cs-134	21.09 ± 0.25	23.5	16.5 - 30.6	Pass
MAW-969	02/01/15	Cs-137	19.63 ± 0.34	19.1	13.4 - 24.8	Pass
MAW-969 [d]	02/01/15	Co-57	10.2 ± 0.4	29.9	20.9 - 38.9	Fail
MAW-969	02/01/15	Co-60	0.02 ± 0.05	0.00	NA [c]	Pass
MAW-969	02/01/15	H-3	569 ± 13	563	394 - 732	Pass
MAW-969	02/01/15	Fe-55	6.00 ± 6.60	6.88	4.82 - 8.94	Pass
MAW-969	02/01/15	Mn-54	0.02 ± 0.07	0.00	NA [c]	Pass
MAW-969	02/01/15	Ni-63	2.9 ± 3	0.00	NA [c]	Pass
MAW-969	02/01/15	Zn-65	16.54 ± 0.85	18.3	12.8 - 23.8	Pass
MAW-969	02/01/15	Pu-238	0.02 ± 0.03	0.01	NA [e]	Pass
MAW-969	02/01/15	Pu-239/240	0.81 ± 0.10	0.83	0.58 - 1.08	Pass
MAW-969	02/01/15	Sr-90	9.40 ± 1.30	9.48	6.64 - 12.32	Pass
MAW-950	02/01/15	Gr. Alpha	0.66 ± 0.05	1.07	0.32 - 1.81	Pass
MAW-950	02/01/15	Gr. Beta	2.72 ± 0.06	2.79	1.40 - 4.19	Pass
MAAP-978	02/01/15	Cs-134	1.00 ± 0.04	1.15	0.81 - 1.50	Pass
MAAP-978	02/01/15	Cs-137	0.004 ± 0.023	0.00	NA [c]	Pass
MAAP-978 e	02/01/15	Co-57	0.04 ± 0.04	1.51	1.06 - 1.96	Fail
MAAP-978	02/01/15	Co-60	0.01 ± 0.02	0.00	NA [c]	Pass
MAAP-978	02/01/15	Mn-54	1.11 ± 0.08	1.02	0.71 - 1.33	Pass
MAAP-978	02/01/15	Zn-65	0.83 ± 0.10	0.83	0.58 - 1.08	Pass
MAAP-981	02/01/15	Sr-89	38.12 ± 1.01	47.5	33.3 - 61.8	Pass
MAAP-981	02/01/15	Sr-90	1.22 ± 0.13	1.06	0.74 - 1.38	Pass
MAAP-984	02/01/15	Gr. Alpha	0.59 ± 0.06	1.77	0.53 - 3.01	Pass
MAAP-984	02/01/15	Gr. Beta	0.95 ± 0.07	0.75	0.38 - 1.13	Pass
MAVE-972	02/01/15	Cs-134	6.98 ± 0.13	7.32	5.12 - 9.52	Pass
MAVE-972	02/01/15	Cs-137	9.73 ± 0.21	9.18	6.43 - 11.93	Pass
MAVE-972	02/01/15	Co-57	0.01 ± 0.04	0.00	NA [c]	Pass
MAVE-972	02/01/15	Co-60	3.89 ± 0.20	5.55	3.89 - 7.22	Pass
MAVE-972	02/01/15	Mn-54	0.04 ± 0.07	0.00	NA [c]	Pass
MAVE-972	02/01/15	Zn-65	0.09 ± 0.12	0.00	NA [c]	Pass

TABLE E-5 DOE'S MIXED ANALYTE PERFORMANCE EVALUATION PROGRAM (MAPEP) ENVIRONMENTAL, INC., 2015

			Concentration [a]			
Lab Code [b]	Date	Analysis	Laboratory result	Known Activity	Control Limits [c]	Acceptance
MASO-4903	08/01/15	Ni-63	556 ± 18	682	477 - 887	Pass
MASO-4903 f	08/01/15	Sr-90	231 ± 7	425	298 - 553	Fail
MASO-4903 f	08/01/15	Sr-90	352 ± 10	425	298 - 553	Pass
MASO-4903	08/01/15	Cs-134	833 ± 10	1,010	707 - 1313	Pass
MASO-4903	08/01/15	Cs-137	808 ± 11	809.00	566 - 1052	Pass
MASO-4903	08/01/15	Co-57	1,052 ± 10	1,180	826 - 1534	Pass
MASO-4903	08/01/15	Co-60	2 ± 2	1.3	NA [e]	Pass
MASO-4903	08/01/15	Mn-54	1,331 ± 13	1,340	938 - 1742	Pass
MASO-4903	08/01/15	Zn-65	686 ± 15	662	463 - 861	Pass
MAW-5007	08/01/15	Cs-134	16.7 ± 0.4	23.1	16.2 - 30	Pass
MAW-5007	08/01/15	Cs-137	-0.36 ± 0.13	0	NA [c]	Pass
MAW-5007	08/01/15	Co-57	21.8 ± 0.4	20.8	14.6 - 27	Pass
MAW-5007	08/01/15	Co-60	17.3 ± 0.3	17.1	12 - 22.2	Pass
MAW-5007	08/01/15	H-3	227.5 ± 8.9	216	151 - 281	Pass
MAW-5007 g	08/01/15	Fe-55	4.2 ± 14.1	13.1	9.2 - 17	Fail
MAW-5007	08/01/15	Mn-54	16.6 ± 0.5	15.6	10.9 - 20.3	Pass
MAW-5007	08/01/15	Ni-63	9.1 ± 2.6	8.55	5.99 - 11.12	Pass
MAW-5007	08/01/15	Zn-65	15.5 ± 0.9	13.9	9.7 - 18.1	Pass
MAW-5007	08/01/15	Sr-90	4.80 ± 0.50	4.80	3.36 - 6.24	Pass
MAW-5007	08/01/15	Gr. Alpha	0.41 ± 0.04	0.43	0.13 - 0.73	Pass
MAW-5007	08/01/15	Gr. Beta	3.45 ± 0.07	3.52	1.76 - 5.28	Pass
MAAP-4911	08/01/15	Sr-89	3.55 ± 0.67	3.98	2.79 - 5.17	Pass
MAAP-4911	08/01/15	Sr-90	0.94 ± 0.16	1.05	0.74 - 1.37	Pass
MAAP-4907	08/01/15	Gr. Alpha	0.30 ± 0.04	0.90	0.27 - 1.53	Pass
MAAP-4907	08/01/15	Gr. Beta	1.85 ± 0.09	1.56	0.78 - 2.34	Pass
MAVE-4901	08/01/15	Cs-134	5.56 ± 0.16	5.80	4.06 - 7.54	Pass
MAVE-4901	08/01/15	Cs-137	-0.02 ± 0.06	0.00	NA [c]	Pass
MAVE-4901	08/01/15	Co-57	7.74 ± 0.18	6.62	4.63 - 8.61	Pass
MAVE-4901	08/01/15	Co-60	4.84 ± 0.15	4.56	3.19 - 5.93	Pass
MAVE-4901	08/01/15	Mn-54	8.25 ± 0.25	7.68	5.38 - 9.98	Pass
MAVE-4901	08/01/15	Zn-65	5.78 ± 0.29	5.46	3.82 - 7.10	Pass

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

[b] Laboratory codes as follows: MAW (water), MAAP (air filter), MASO (soil), MAVE (vegetation).

[c] MAPEP results are presented as the known values and expected laboratory precision (1 sigma, 1 determination) and control limits as defined by the MAPEP. A known value of "zero" indicates an analysis was included in the testing series as a "false positive". MAPEP does not provide control limits.

[d] Lab result was 27.84. Data entry error resulted in a non-acceptable result.

[e] Lab result was 1.58. Data entry error resulted in a non-acceptable result.

f The incomplete separation of calcium from strontium caused a failed low result. The result of reanalysis acceptable.

g The known activity was below the routine laboratory detection limits for the available aliquot fraction.

APPENDIX F

ERRATA DATA

There is no errata data for 2015.

APPENDIX G

ANNUAL RADIOLOGICAL GROUNDWATER PROTECTION PROGRAM REPORT (ARGPPR)