Entergy

Indian Point Energy Center
450 Broadway, GSB
P.O. Box 249
Buchanan, N.Y. 10511-0249
Tel (914) 734-6710

Robert Walpole
Manager, Licensing

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U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Mail Stop O-P1-17
Washington, DC 20555-0001

Subject: **Indian Point Nuclear Power Plants Units 1, 2 and 3**
Annual Radiological Environmental Operating Report for 2008
Indian Point Units 1, 2 & 3
Docket Nos. 50-003, 50-247, 50-286
License Nos. DPR-5, DPR-26, DPR-64

Dear Sir or Madam;

Enclosed please find one copy of the Entergy Nuclear Operations, Inc. (Entergy) Indian Point Energy Center (IPEC) site Annual Radiological Environmental Operating Report for the period January 1, 2008 to December 31, 2008.

This report is submitted in accordance with facility Technical Specification section 5.6.2 for DPR-5, DPR-26, and DPR-64, Indian Point Unit Nos. 1, 2 and 3 respectively. No commitments are being made by this report.

Should you or your staff have any questions, please contact Mr. Dennis Loope, Radiation Protection Manager at 914-736-8401.

Sincerely yours,

RW/as

Enclosure

cc: w/o enclosure

Mr. John P. Boska, Senior Project Manager, NRC NRR DORL
Mr. Samuel J. Collins, Regional Administrator, NRC Region 1
Mr. Theodore B. Smith, Project Manager
NRC Resident Inspectors, IP2 and IP3
Mr. Francis J. Murray, Jr., President and CEO, NYSERDA
Mr. Paul Eddy, New York State Dept. of Public Service
Mr. Tim Rice, New York State DEC

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ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT

ENTERGY NUCLEAR

INDIAN POINT NUCLEAR GENERATING STATION
UNITS 1, 2, AND 3

Docket No. 50-003 Indian Point Unit 1 (IP1)
Docket No. 50-247 Indian Point Unit 2 (IP2)
Docket No. 50-286 Indian Point Unit 3 (IP3)

January 1 - December 31, 2008

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SECTION I

EXECUTIVE SUMMARY

1.0 EXECUTIVE SUMMARY

This Annual Radiological Environmental Operating Report (AREOR) contains descriptions and results of the 2008 Radiological Environmental Monitoring Program (REMP) for the Indian Point site. The Indian Point site consists of Units 1, 2 and 3. Units 1, 2 and 3 are owned and operated by Entergy Nuclear Operations, Inc. Unit 1 was retired as a generating facility in 1974, and as such, its reactor is no longer operated.

The REMP is used to measure the direct radiation and the airborne and waterborne pathway activity in the vicinity of the Indian Point site. Direct radiation pathways include radiation from buildings and plant structures, airborne material that might be released from the plant, cosmic radiation, fallout, and the naturally occurring radioactive materials in soil, air and water. Analysis of thermoluminescent dosimeters (TLDs), used to measure direct radiation, indicated that there were no increased radiation levels attributable to plant operations.

The airborne pathway includes measurements of air, precipitation, drinking water, and broad leaf vegetation samples. The airborne pathway measurements indicated that there was no adverse radiological impact to the surrounding environment attributed to Indian Point Station operations.

The waterborne pathway consists of Hudson River water, fish and invertebrates, aquatic vegetation, bottom sediment, and shoreline sediment. Measurements of the media comprising the waterborne pathway indicated that there was no adverse radiological impact to the surrounding environment attributed to Indian Point Station operations.

This report contains a description of the REMP and the conduct of that program as required by the IPEC Offsite Dose Calculation Manual, herein referred to as ODCM. This 2008 AREOR also contains summaries and discussions of the results of the 2008 program, trend analyses, and potential impact on the environment, land use census, and inter-laboratory comparisons.

During 2008, a total of 1223 analyses were performed. Table B-1 presents a summary of the collected sample analyses results.

An investigation of groundwater contamination with tritium and other radionuclides has been ongoing since 2005 and continued throughout 2008. This investigation of potential onsite sources of contamination is not the focus of this Annual Radiological Environmental Operating Report; however, in 2006, Entergy agreed to several changes in the REMP to assure that all pathways were being evaluated. Specifically, two new groundwater wells (non-drinking water) were

designated as "boundary wells" and were sampled as groundwater samples for tritium and strontium-90 analyses and also gamma spectroscopy analysis. These wells (MW-40 and MW-51) were designated as REMP sample stations 104 and 105. In addition, a change was made to the existing fish and invertebrate samples and shoreline sediment samples. The locations and frequency remained the same; however, strontium-90 was added to the required analyses. These additions were committed to in 2006 with the sampling and analyses conducted in 2008. These changes are captured in the ODCM. Groundwater sample results for 2008 are summarized in Table B-20.

In summary, the levels of radionuclides in the environment surrounding Indian Point were within the historical ranges, i.e., previous levels resulting from natural and anthropogenic sources for the detected radionuclides. Further, Indian Point operations in 2008 did not result in exposure to the public greater than environmental background levels.

SECTION 2

INTRODUCTION

2.0 INTRODUCTION

2.1 Site Description

The Indian Point site occupies 239 acres on the east bank of the Hudson River on a point of land at Mile Point 42.6. The site is located in the Village of Buchanan, Westchester County, New York. Three nuclear reactors, Indian Point Unit Nos. 1, 2 and 3, and associated buildings occupy approximately 35 acres. Unit 1 has been retired as a generating facility. Units 1, 2, and 3 are owned and operated by Entergy Nuclear.

2.2 Program Background

Environmental monitoring and surveillance have been conducted at Indian Point since 1958, which was four years prior to the start-up of Unit 1. The pre-operational program was designed and implemented to determine the background radioactivity and to measure the variations in activity levels from natural and other sources in the vicinity, as well as fallout from nuclear weapons tests. Thus, as used in this report, background levels consist of those resulting from both natural and anthropogenic sources of environmental radioactivity. Accumulation of this background data permits the detection and assessment of environmental activity attributable to plant operations.

2.3 Program Objectives

The current environmental monitoring program is designed to meet two primary objectives:

1. To enable the identification and quantification of changes in the radioactivity of the area, and

2. To measure radionuclide concentrations in the environment attributable to operations of the Indian Point site.

To identify changes in activity, the environmental sampling schedule requires that analyses be conducted for specific environmental media on a regular basis. The radioactivity profile of the environment is established and monitored through routine evaluation of the analytical results obtained.

The REMP designates sampling locations for the collection of environmental media for analysis. These sample locations are divided

into indicator and control locations. Indicator locations are established near the site, where the presence of environmental radioactivity of plant origin is most likely to be detected. Control locations are established farther away (and upwind/upstream, where applicable) from the site, where the level would not generally be affected by plant discharges. The use of indicator and control locations enables the identification of potential sources of detected radioactivity, thus meeting one of the program objectives.

Verification of expected radionuclide concentrations resulting from effluent releases attributable to the site is another program objective. Verifying projected concentrations through the REMP is difficult since the environmental concentrations resulting from plant releases are consistently too small to be detected. Plant related radionuclides were detected in 2008; however, residual radioactivity from atmospheric weapons tests and naturally occurring radioactivity were the predominant sources of radioactivity in the samples collected. Analysis of the 2008 REMP sample results supports the premise that radiological effluents were well below regulatory limits.

SECTION 3

PROGRAM DESCRIPTION

3.0 PROGRAM DESCRIPTION

To achieve the objectives of the REMP and ensure compliance with the ODCM, sampling and analysis of environmental media are performed as outlined in Table A-1 and described in section 3.3.

3.1 Sample Collection

Entergy Nuclear Northeast Nuclear Environmental Monitoring (NEM) personnel perform collection of environmental samples for the Indian Point site, with the exception of groundwater and fish/invertebrate samples.

The groundwater (monitoring well) samples are collected by a contracted environmental vendor, GZA Geo Environmental, Inc. Assistance in the collection of fish and invertebrate samples was provided by a contracted environmental vendor - Normandeau Associates, Inc.

3.2 Sample Analysis

The analysis of Indian Point environmental samples is performed by the James A. Fitzpatrick Nuclear Power Plant (JAFNPP) Environmental Laboratory in Fulton, New York. The JAFNPP lab at Fulton currently analyzes nearly all samples, except for groundwater samples and some tritium and strontium analyses on other media. These samples were analyzed at other New York State Department of Health Environmental Laboratory Approval Program (ELAP) certified laboratories.

3.3 Sample Collection and Analysis Methodology

3.3.1 Direct Radiation

Direct gamma radiation is measured using integrating calcium sulfate thermoluminescent dosimeters (TLDs), which provide cumulative measurements of radiation exposure (i.e., total integrated exposures in milli-roentgen, mR) for a given period. The area surrounding the Indian Point site is divided into 16 compass sectors. Each sector has two TLD sample locations. The inner ring is located near the site boundary at approximately 1 mile (1.6 km). The outer ring is located at approximately 5 miles (8 km) from the site (6.7- 8.0 km), see Figures A-1 and A-2.

An additional TLD sample site is located at Roseton (20.7 miles north) as a control, and there are eight other TLD sample locations of special interest.

In total, there are 41 TLD sample sites, designated DR-1 through DR-41, with two TLDs at each site. TLDs are collected and processed on a quarterly basis. The results are reported as mR per standard quarter (91 days). The mR reported is the average of the two TLDs from each sample site.

3.3.2 Airborne Particulates and Radioiodine

Air samples were taken at nine locations varying in distance from 0.28 to 20.7 miles (0.4 to 33 km) from the plant. These locations represent one control at sampling station 23 (A5) and eight indicator locations. These indicator locations are at sampling stations 4 (A1), 5 (A4), 22, 27, 29, 44, 94 (A2), and 95 (A3). The locations are shown on Figures A-1, A-2, and A-3. The air samples are collected continuously by means of fixed air particulate filters followed by in-line charcoal cartridges. Both are changed on a weekly basis. The filter and cartridge samples are analyzed for gross beta and radioiodine, respectively. In addition, gamma spectroscopy analysis (GSA) is performed on quarterly composites of the air particulate filters.

Sampling station 22 (Lovett) was retired in mid-April with the closure of the Lovett generating station and support facilities.

3.3.3 Hudson River Water

Hudson River water sampling is performed continuously at the intake structure (sampling station 9, Wa1) and at a point exterior to the discharge canal where Hudson River water and water from the discharge canal mix (sampling station 10, Wa2); see Figure A-1. An automatic composite sampler is used to take representative samples. On a weekly basis, accumulated samples are taken from both sample points. These weekly river water samples are composited for monthly gamma spectroscopy analysis, and quarterly for tritium analysis.

3.3.4 Drinking Water

Samples of drinking water are collected monthly from the Camp Field Reservoir (3.4 miles NE, sample station 7, sample designation Wb1) and New Croton Reservoir (6.3 Mi SE, sample station 8); see Figure A-3. Each monthly sample is approximately 4 liters and is analyzed for gamma-emitting radionuclides. They are also composited quarterly and analyzed for tritium.

3.3.5 Hudson River Shoreline Soil

Shoreline soil samples are collected at three indicator and two control locations along the Hudson River. The indicator locations are at sampling stations 53 (Wc1), 28, and 17. The control locations are at sampling stations 50 (Wc2) and 84. Figures A-1, A-2, and A-3 show these locations. The samples are gathered at a level above low tide and below high tide and are approximately 2-kg grab samples. These samples are collected at greater than 90 days apart and are analyzed by gamma spectroscopy and for strontium-90.

3.3.6 Broad Leaf Vegetation

Broad leaf vegetation samples are collected from three locations during the growing season. The indicator locations are sampling stations 94 (Ic2) and 95 (Ic1), and the control location is at Roseton, sampling station 23 (Ic3).

See Figures A-1 and A-2. The samples are collected monthly, when available, and analyzed by gamma spectroscopy. These samples consist of at least 1 kg of leafy vegetation and are used in the assessment of the food product and milk ingestion pathways.

3.3.7 Fish and Invertebrates

Fish and invertebrate samples are obtained from the Hudson River at locations upstream and downstream of the plant discharge. The indicator location (downstream sample point) is designated as sampling station 25 (Ib1) and the control location (upstream) is at Roseton, sampling station 23 (Ib2). See Figures A-1 and A-2. These samples are collected in season or semiannually if they are not seasonal. The fish and invertebrates sampled are analyzed by gamma spectroscopy, for Sr-90 and for Ni-63.

3.3.8 Hudson River Aquatic Vegetation

During the spring and summer, aquatic vegetation samples are collected from the Hudson River at two indicator locations (sampling stations 17 and 28) and one control location (84); see Figure A-3. Samples of aquatic vegetation are obtained depending on sample availability. These samples are analyzed by gamma spectroscopy.

3.3.9 Hudson River Bottom Sediment

Bottom sediment and benthos are sampled at four locations: three indicator locations (sampling stations 10, 17, and 28) and one control location (84), along the Hudson River, once each spring and summer; see Figure A-3. These samples are obtained using a Peterson grab sampler or similar instrument. The bottom sediment samples are analyzed by gamma spectroscopy.

3.3.10 Precipitation

Precipitation samples are continuously collected at one indicator location (sampling station 44) and one control location (23); see Figure A-3. They are collected in sample bottles designed to hinder evaporation. They are composited quarterly and analyzed for tritium. They are also analyzed by gamma spectroscopy.

3.3.11 Soil

Soil samples are collected from two indicator locations (sampling stations 94 and 95), and one control location (23) on an annual basis; see Figure A-3. They are approximately 2 kg in size and consist of about twenty 2-inch deep cores. The soil samples are analyzed by gamma spectroscopy.

3.3.12 Groundwater Samples

Based on recent site hydrology evaluations and the addition of a number of groundwater sampling wells, two new monitoring wells were installed in 2006 and designated as REMP sample stations 104 (MW-40) and 105 (MW-51). These wells have sample points at six different elevations which were specifically designed to be representative of groundwater moving towards the site boundary. The locations of the groundwater samples are shown in Figure A-3.

Groundwater samples from these wells were obtained quarterly and analyzed for tritium, Sr-90, Ni-63 and by gamma spectroscopy.

3.3.13 Land Use Census

Each year a land use census consisting of milch animal and residence surveys is conducted during the growing season to determine the current utilization of land within 5 miles (8 km) of the site. These surveys are used to determine whether there are changes in existing conditions that warrant changing the sampling program.

For example, the milch animal census is used to identify animals producing milk for human consumption within 5 miles (8 km) of Indian Point. This census consists of visual field surveys of the areas where a high probability of milch animals exists and confirmation through personnel such as feed suppliers who deal with farm animals and dairy associations (See Tables B-21 and B-22).

Visual inspections were made of the 5-mile area around the Indian Point Site during routine sample collections and emergency plan equipment inspections in the area throughout the year. An extensive land survey was conducted of the 5-mile area in an attempt to identify new residential areas, commercial developments and to identify milch animals in pasture. Previous locations were visited and verified by dispatching Nuclear Environmental Technicians to the various locations.

Note: These actions were taken while performing quarterly environmental badge change out and field inspections through out the four surrounding counties.

- Orange County was surveyed during through the summer and fall.
- Rockland County was surveyed during summer and fall.
- Putnam County was surveyed during the summer and fall.
- Westchester County was surveyed during the spring, summer and fall.

Although there are presently no animals producing milk for human consumption within 5 miles (8 km) of the site, the census is performed to determine if a milk-sampling program needs to be conducted.

A residence census is also performed to identify the nearest residence(s) to the site in each of the 16 sectors surrounding Indian Point. See Table B-22.

A garden census was not performed, as the ODCM allows sampling of vegetation in two sectors near the site boundary in lieu of a garden census. The sectors are chosen to be in the pre-dominant wind directions.

Note: An aerial survey was not conducted of the 5-mile area this year.

3.4 Statistical Methodology

There is a number of statistical calculation methodologies used in evaluating the data from the Indian Point REMP. These methods include determination of Lower Limits of Detection (LLD) and Critical Levels (L_c), and estimation of the mean and associated propagated error.

3.4.1 Lower Limit of Detection (LLD) and Critical Level (L_c)

The LLD is a predetermined concentration or activity level used to establish a detection limit for the analytical procedures.

The Nuclear Regulatory Commission (NRC) specifies the maximum acceptable LLDs for each radionuclide in specific media. The LLDs are determined by taking into account overall measurement methods. The equation (from the ODCM) used to calculate the LLD reduces to:

$$LLD = 4.66\ K\ S_b,$$

where: S_b = standard deviation of the background count rate,

and

K consists of variables, which account for such parameters as:

- Instrument characteristics (e.g., efficiency)
- Sample size
- Counting time
- Media density (self-absorption)
- Radioactive decay
- Chemical yield

In the ODCM program, LLDs are used to ensure that minimum acceptable detection capabilities for the counting system are met with specified statistical confidence levels (95% detection probability with 5% probability of a false negative). The LLD is defined as an "a priori" (before the fact) limit representing the capability of a measurement process and not as an "a posteriori" (after the fact) limit for a particular measurement. Table A-2 presents the ODCM required LLDs for specific media and radionuclides as specified by the NRC. The LLDs actually achieved are usually much lower since the ODCM required LLDs represent the maximum allowed.

The critical level (L_c) is defined as that net sample counting rate which has a 5% probability of being exceeded when the actual sample activity is zero (e.g., when counting background only). It is determined using the following equation.

$$L_c = k_a S_b (1 + T_b/T_s)^{0.5} \text{ in cpm}$$

where:

k_a = 1.645 (corresponds to a 95% confidence level)
S_b = standard deviation of the background count rate = $(R_b/T_b)^{0.5}$
R_b = background count rate (cpm)
T_b = background count time (min)
T_s = sample count time (min)

For the REMP, net sample results which are less than the L_c value are considered not detected, and the L_c value is reported as the "less than" value, unless otherwise noted. Values above the L_c are considered positively detected radioactivity in the environmental media of interest (with a 5% chance of false positive).

3.4.2 Determination of Mean and Propagated Error

In accordance with program policy, recounts of positive samples are performed. When the initial count reveals the presence of radioactivity, which may be attributed to plant operations, at a value greater than the L_c, two recounts are performed to verify the positive results. The recounts are not performed on; air samples with positive results from gross beta analysis, since the results are always positive due to natural background radioactive material in the air, or tritium in water samples, since an outside contractor provides these activities. When a radionuclide is positively identified in two or more counts, the analytical result for the radionuclide is reported as the mean of the positive detections and the associated propagated error for that mean. In cases where more than one sample result is available, the mean of the sample results and the estimated error for the mean are reported in the Annual Report.

The mean (X) and the propagated error (PE) are calculated using the following equations:

$$X = \frac{\sum_{i=1}^{N} X_i}{N}$$

where: X_i = value of each individual observation
N = number of observations

$$PE = \frac{\sqrt{\sum_{i=1}^{N} (ERR_i)^2}}{N}$$

where: ERR_i = 1 sigma error of the individual analysis
N = number of observations

3.4.3 Table Statistics

The averages shown in the summary table (Table B-2) are the averages of the positive values in accordance with the NRC's Branch Technical Position (BTP) to Regulatory Guide 4.8 (Reference 14). Samples with "<" values are not included in the averages.

It should be noted that this statistic for the mean using only positive values tends to strongly bias the average high, particularly when only a few of the data are measurably positive. The REMP data show few positive values; thus the corresponding means are biased high. Exceptions to this include direct radiation measured by TLDs and gross beta radioactivity in air, which show positive monitoring results throughout the year.

In the data tables B-6 through B-20, values shown are based on the L_c value, unless otherwise noted. If a radionuclide was detected at or above the L_c value in two or more counts, the mean and error are calculated as per Section 3.4.2, and reported in the data table. Values listed as "<" in the data tables are the L_c values for that sample, unless otherwise noted. If multiple counts were performed on a sample and a radionuclide's values are "< L_c " each time, the largest critical level is reported in the data table.

The historical data tables contain the annual averages of the positive values for each year. The historical averages are calculated using only the positive values presented for 1998 through 2007. The 2008 average values are included in these historic tables for purposes of comparison.

SECTION 4

RESULTS AND DISCUSSION

4.0 RESULTS AND DISCUSSION

The 2008 Radiological Environmental Monitoring Program (REMP) was conducted in accordance with Indian Point's Offsite Dose Calculation Manual ODCM. The ODCM contains requirements for the number and distribution of sampling locations, the types of samples to be collected, and the types of analyses to be performed for measurement of radioactivity.

The REMP at Indian Point includes measurements of radioactivity levels in the following environmental pathways.

Hudson River Water
Shoreline Soil
Fish and Invertebrates
Aquatic Vegetation
Bottom Sediment
Airborne Particulates and Radioiodine
Precipitation
Drinking Water
Terrestrial Broad Leaf Vegetation
Direct Gamma Radiation
Soil
Groundwater

An annual land use and milch animal census is also part of the REMP.

To evaluate the contribution of plant operations to environmental radioactivity levels, other man-made and natural sources of environmental radioactivity, as well as the aggregate of past monitoring data, must be considered. It is not merely the detection of a radionuclide, but the evaluation of the location, magnitude, source, and history of its detection that determines its significance. Therefore, we have reported the data collected in 2008 and assessed the significance of the findings.

A summary of the results of the 2008 REMP is presented in Table B-2. This Table lists the mean and range of all positive results obtained for each of the media sampled at ODCM indicator and control locations. Discussions of these results and their evaluations are provided below.

The radionuclides detected in the environment can be grouped into three categories: (1) naturally occurring radionuclides; (2) radionuclides resulting from weapons testing and other non-plant related, anthropogenic sources; and (3) radionuclides that could be related to plant operations.

The environment contains a broad inventory of naturally occurring radionuclides which can be classified as, cosmic ray induced (e.g., Be-7, H-3) or geologically derived (e.g., Ra-226 and progeny, Th-228 and progeny, and K-40.) These radionuclides constitute the majority of the background radiation source and thus account for a majority of the annual background dose detected. Since the detected concentrations of these radionuclides were consistent at indicator and control locations, and unrelated to plant operations, their presence is noted only in the data tables and will not be discussed further.

The second group of radionuclides detected in 2008 consists of those resulting from past weapons testing in the earth's atmosphere. Such testing in the 1950's and 1960's resulted in a significant atmospheric radionuclide inventory, which, in turn, contributed to the concentrations in the lower atmosphere and ecological systems. Although reduced in frequency, atmospheric weapons testing continued into the 1980's. The resultant radionuclide inventory, although diminishing with time (e.g., through radioactive decay and natural dispersion processes), remains detectable.

In 2008, the detected radionuclide that may be attributable to past atmospheric weapons testing consisted of Cs-137 and perhaps Sr-90 in some media. The levels detected were consistent with the historical levels of radionuclides resulting from weapons tests as measured in previous years.

The final group of radionuclides detected through the 2008 REMP comprises those that may be attributable to current plant operations. During 2008 Cs-137, I-131, Sr-90 and tritium (H-3) were the only potentially plant-related radionuclides detected in some environmental samples.

H-3 may be present in the local environment due to either natural occurrence, other man-made sources, or as a result of plant operations. Small amounts of H-3 were detected in groundwater boundary wells in 7 of 40 samples at levels which were much lower than the required Lower Limit of Detection (3000 pCi/L); however, they were detectable.

Cs-137 and Cs-134 are both produced in and released from fission reactors and were introduced into the environment from the accident at Chernobyl in 1986. Because Cs-134 has a short half-life relative to Cs-137, Cs-134 from Chernobyl is not likely to be present in 2008. Cs-137 is ubiquitous in the environment from atmospheric testing debris and a lesser amount from the Chernobyl accident. In 2008, there were three detections of Cs-137 in shoreline sediment (2 indicator samples and one control sample), bottom sediment (6 indicator samples). The fact that there was no Cs-134 present (recent plant releases would contain Cs-134) and that there was detection also at a control location indicates that the activity was likely due to

atmospheric weapons testing, with some contribution from plant releases from several years past.

Sr-90 was found in two indicator fish samples in the vicinity of the plant (VOP) and in two fish samples at the Roseton control location. The Roseton samples are of a higher mean value and range than the VOP samples, so the results do not point to the plant as the activity origin.

I-131 is also produced in fission reactors, but can result from non-plant related anthropogenic sources, e.g., medical administrations, such as in previous years. I-131 was detected in aquatic vegetation indicator and control location (1 each).

Co-58 and Co-60 are activation/corrosion products also related to plant operations. They are produced by neutron activation in the reactor core. As Co-58 has a much shorter half-life, its absence "dates" the presence of Co-60 as residual from releases of both radionuclides in the past. If Co-58 and Co-60 are concurrently detected in environmental samples, then the source of these radionuclides is considered to be from recent releases. When significant concentrations of Co-60 are detected but no Co-58, there is an increased likelihood that the Co-60 is due to residual Co-60 from past operations. There was no Co-58 or Co-60 detected in the 2008 REMP, though they (Co-58 and Co-60) can be observed in historical data.

In the following sections, a summary of the results of the 2008 REMP is presented by sample medium and the significance of any positive findings discussed. It should be noted that naturally occurring radionuclides are omitted from the summary table (Table B-2) and further discussion.

4.1 Direct Radiation

The environmental TLDs used to measure the direct radiation were TLDs supplied and processed by AREVA NP via the JAF Laboratory. In 2008, the TLD program produced a consistent picture of ambient background radiation levels in the vicinity of the Indian Point Station. A summary of the annual TLD data is provided in Table B-2 and all the TLD data are presented in Tables B-3, B-4 and B-5. TLD sample site DR-40 is the control site for the direct radiation (DR) series of measurements.

Table B-3 provides the quarterly and annual average reported doses in mR per standard quarter for each of the direct radiation sample points, DR-1 through DR-41. The table also provides the sector for each of the DR sample points. Table B-4 provides the mean, standard deviation, minimum and maximum values in mR per standard quarter for the years 1998 through 2006. The 2008 means are also presented in

Table B-4. Table B-5 presents the 2008 TLD data for the inner ring and outer ring of TLDs.

The 2008 mean value for the direct radiation sample points was 14.4 mR per standard quarter. At those locations where the 2008 mean value was higher, they are within historical bounds for the respective locations.

The DR sample locations are arranged so that there are two concentric rings of TLDs around the Indian Point site. The inner ring (DR-1 to DR-16) is close to the site boundary. The outer ring (DR-17 to DR-32) has a radius of approximately 5 miles from the three Indian Point units. The results for these two rings of TLDs are provided in Table B-5. The annual average for the inner ring was 14.3 mR per standard quarter and also average for the outer ring was 14.5 mR per standard quarter. The control location average for 2008 was 17.3 mR per standard quarter.

Table C-1 and Figure C-1 present the 10-year historical averages for the inner and outer rings of TLDs. The 2008 averages are consistent with the historical data. The 2008 and previous years' data show that there is no measurable direct radiation in the environment due to the operation of the Indian Point site.

4.2 Airborne Particulates and Radioiodine

An annual summary of the results of the 2008 air particulate filter and charcoal cartridge analyses is presented in Table B-2. As shown, there were no radionuclides detected in the air attributable to plant operations.

The results of the analyses of weekly air particulate filter samples for gross beta activity are presented in Table B-6, and the results of the gamma spectroscopy analyses of the quarterly composites of these samples are in Table B-7.

Gross beta activity was found in air particulate samples throughout the year at all indicator and control locations. The average gross beta activity for the eight indicator air sample locations was 0.014 pCi/m^3 and the average for the control location was 0.013 pCi/m^3. The activities detected were consistent for all locations, with no significant differences in gross beta activity in any sample due to location. Gamma spectroscopy analyses of the quarterly composite air samples showed that no reactor-related radionuclides were detected and that only naturally-occurring radionuclides were present at detectable levels.

The mean annual gross beta concentrations and Cs-137 concentrations in air for the past 10 years are presented in Table C-2. From this table and Figure C-2, it can be seen that the average 2008 gross beta concentration was consistent with historical levels. Cs-137 has not been detected since 1987. This is consistent with the trend of decreasing ambient Cs-137 concentrations in recent years.

The charcoal cartridge analytical results are presented in Table B-8. "Less than" values are presented as sample critical level (L_c). There was no I-131 detected (LLD = 0.07 pCi/m^3) in the charcoal cartridge samples, which is consistent with historical trends.

From the data, it can be seen that no airborne radioactivity attributable to the operation of Indian Point was detected in 2008.

4.3 Hudson River Water

A summary of the radionuclides detected in the Hudson River water is contained in Table B-2. Data resulting from analysis of monthly Hudson River water samples for gamma emitters, and H-3 analysis of quarterly composites, are presented in Tables B-9 and B-10, respectively.
No radionuclides other than those that are naturally occurring were detected in the Hudson River Water samples. Additionally, Table C-3 indicates the absence of Cs-137 which is consistent with historical data.

4.4 Drinking Water

The annual program summary table (Table B-2) contains a summary of the 2008 drinking water sample analysis results. Results of the gamma spectroscopy analyses of the monthly drinking water samples are in Table B-11 and results of tritium analysis of quarterly composites are in Table B-12. Other than naturally occurring radionuclides, no radionuclides were detected in drinking water samples.

A summary and illustration of historic trends of drinking water are provided in Table C-4 and Figure C-4, respectively. An examination of the data indicates that operation of the Indian Point units had no detectable radiological impact on drinking water.

4.5 Hudson River Shoreline Soil

A summary of the radionuclide concentrations detected in the shoreline soil samples is contained in Table B-2. Table B-13 contains the results of the gamma spectroscopic and strontium-90 analyses of the shoreline soil samples.

In addition to the naturally occurring radionuclides, Cs-137 was identified in the Hudson River shoreline soil samples in 2008. Cs-137 was detected at the Verplanck location in both samples from that location, for a total of two positive values out of eight samples from indicator locations. Cs-137 was detected at the control location (Manitou Inlet) in one of two samples (236 pCi/kg). The average concentration for the indicator locations that had positive indication of Cs-137 was 163 pCi/kg-dry with a maximum concentration of 181 pCi/kg, dry.

An historical look at Cs-137 detected in shoreline soil at indicator and control locations can be viewed in Table C-5 and Figure C-5. Cs-137 has been and continues to be present in this media, both at indicator and control locations, at a consistent level over the past ten years. Cs-134 and Cs-137 are both discharged from the plant in similar quantities. The lack of Cs-134 activity is an indication that the primary source of the Cs-137 in the shoreline soil is legacy contamination from weapons fallout.

4.6 Broad Leaf Vegetation

Table B-2 contains a summary of the broad leaf vegetation sample analysis results. Data from analysis of the 2008 samples are presented in Table B-14. Analyses of broad leaf vegetation samples revealed only naturally occurring radionuclides.

Table C-6 contains an historical summary and Figure C-6 is an illustration of the broad leaf vegetation analysis results. The detection of low levels of Cs-137 has occurred sporadically at both indicator and control locations at relatively low concentrations for the past ten years; however, Cs-137 was not detected in 2008.

4.7 Fish and Invertebrates

A summary of the fish and invertebrate sample analysis results is presented in Table B-2. Table B-15 contains the results of the analysis of fish and invertebrate samples for 2008. There were no plant related radionuclides detected as a result of the GSA.

Strontium-90 was added to the analyte list in 2007. Ni-63 was added with an ODCM revision in 2008. Sr-90 was found in two of six indicator samples in the vicinity of the plant (8.8. pCi/kg average) and in two of six Roseton control samples (16.3 pCi/kg average).

A summary of historical fish and invertebrate analytical data is presented in Table C-7 and illustrated in Figure C-7. Data are consistent with historical trends.

4.8 Aquatic Vegetation

A summary of the aquatic sample analysis results is presented in Table B-2. Table B-16 contains the results of the analysis of aquatic vegetation samples for 2008. I-131 was detected at one of three indicator station samples and at one of the two control station samples. The concentration of I-131 in the indicator sample was 54 pCi/kg. The control location sample indicated 35 pCi/kg.

The historical data for these two locations are:

Location	Date	Value (pCi/kg, wet)
Off Verplanck	June 2006	< 10.4
Off Verplanck	August 2006	< 21.5
Off Verplanck	June 2007	< 17.1
Off Verplanck	*June 2008*	*< 8.8*
Off Verplanck	*September 2008*	*54*
Cold Spring	June 2006	< 8.2
Cold Spring	September 2006	< 16.4
Cold Spring	June 2007	< 10.9
Cold Spring	*June 2008*	*< 11.7*
Cold Spring	*September 2008*	*35*

The detected I-131 was reviewed against plant discharge records for the calendar year. The discharge records do not support the locally detected I-131. The remote nature of the Cold Spring location, certainly for 8-day half-life I-131, is also a factor. In both the indicator and control locations, the single instances of detection are not due to station operations and may be of medical administration origin.

4.9 Hudson River Bottom Sediment

A summary of the Hudson River bottom sediment analysis results is presented in Table B-2. Table B-17 contains the results of the analysis of bottom sediment samples for 2008. Cs-137 was detected at 6 of 6 indicator station samples, and at 2 of 2 control station samples. Cs-134 was not detected in any bottom sediment samples. The lack of Cs-134 suggests that the primary source of the Cs-137 in bottom sediment is from historical plant releases at least several years old and from residual weapons test fallout.

This detection of Cs-137 in bottom sediment has been generally decreasing over the last 10 years, and Cs-134 has not been detected in bottom sediment since 2002. The data for 2008 are consistent with but slightly lower than historical levels.

4.10 Precipitation

A summary of the precipitation sample analysis results is presented in Table B-2. Table B-18 contains the results of the precipitation samples for 2008. Other than naturally occurring radionuclides, no radionuclides were detected in precipitation samples.

A review of historical data over the last 10 years indicates tritium had been detected in both indicator and control precipitation samples in 1998; however, there have been no instances of positive values since that time.

4.11 Soil

A summary of the soil sample analysis results is presented in Table B-2. Table B-19 contains the results of the soil samples for 2008. Other than naturally occurring radionuclides, no activity was detected in any of the soil samples.

4.12 Groundwater

A summary of the groundwater samples for 2008 is contained in Table B-2. Data resulting from analysis of the groundwater samples for gamma emitters, tritium analysis, and Sr-90 are given in Table B-20.

Tritium was detected at very low concentrations in 7 of the 40 groundwater samples analyzed. The amount detected ranged from 193 to 329 pCi/L and averaged 244 pCi/L - which are well below the required LLD of 3000 pCi/L.

Other than tritium, there were no potentially plant-related radionuclides detected in the groundwater samples.

Detection of tritium (owing to natural levels and laboratory sensitivity) and sporadic detection of Sr-90 and Cs-137 are expected. These radionuclides are normally present in the environment as "background radioactivity" as a consequence of both natural radioactivity and man-made activities un-related to the plant's operations. The concentrations detected by this monitoring program are in the expected range of normal background and based on site hydrogeology are not likely a

result of plant activities. Additionally, these detected concentrations well below any applicable or relevant regulatory standards.

4.13 Land Use Census

A census was performed in the vicinity of Indian Point in 2008. This census consisted of a milch animal and a residence census. Results of this census are presented in Tables B-21 and B-22.

The results of the 2008 census were generally same as the 2007 census results. The New York Agricultural Statistic Service showed there were no animals producing milk for human consumption found within 5 miles (8 km) of the plant. Field observations also yielded no milching animal locations within five miles.

The second part of this census revealed that the two nearest residences in different sectors are located 0.44 miles (0.71 km) ESE and 0.73 miles (1.13 km) S of the plant. The 2008 land use census indicated there were no new residences that were closer in proximity to IPEC.

The ODCM allows the sampling of broad leaf vegetation in two sectors at the site boundary in lieu of performing a garden census. Analysis results for these two sectors are discussed in Section 4.6 and presented in Table B-14, Table C-6 and Figure C-6.

4.14 Conclusion

The Radiological Environmental Monitoring Program is conducted each year to determine the radiological impact of Indian Point operations on the environment. The preceding discussions of the results of the 2008 REMP reveal that operations at the station did not result in an adverse impact on the environment.

The 2008 REMP results demonstrate the relative contributions of different radionuclide sources, both natural and anthropogenic, to the environmental concentrations. The results indicate that the fallout from previous atmospheric weapons testing continues to cause sporadic detection of Cs-137 and Sr-90 in environmental samples. Other anthropogenic sources (e.g. medical administrations) may have been the cause of low-level I-131 detection in a couple of aquatic vegetation samples. There are infrequent detections of plant related radionuclides in the environs; however, the radiological effects are very low and are significantly less than those from natural background and other anthropogenic sources.

SECTION 5

REFERENCES

5.0 REFERENCES

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APPENDIX A

ENVIRONMENTAL SAMPLING AND ANALYSIS REQUIREMENTS

APPENDIX A

Environmental media are sampled at the locations specified in Table A-1 and shown in Figures A-1, A-2, and A-3. The samples are analyzed according to criteria established in the ODCM. These requirements include: methods of sample collection; types of sample analysis; minimum sample size required; lower limit of detection, which must be attained for each medium, sample, or analysis type, and environmental concentrations requiring special reports.

Table A-1 provides the sampling station number, location, sector, distance from Indian Point, sample designation code, and sample type. This table gives the complete listing of sample locations used in the 2008 REMP.

Three maps are provided to show the locations of REMP sampling. Figure A-1 shows the sampling locations within two miles of Indian Point. Figures A-2 and A-3 show the sampling locations within ten miles of Indian Point.

The ODCM required lower limits of detection (LLD) for Indian Point sample analyses are presented in Table A-2. These required lower limits of detection are not the same as the lower limits of detection or critical levels actually achieved by the laboratory. The laboratory's lower limits of detection and critical levels must be equal to or lower than the required levels presented in Table A-2.

Table A-3 provides the reporting level for radioactivity in various media. Sample results that exceed these levels and are due to plant operations require that a special report be submitted to the NRC.

In addition to the sampling outlined in Table A-1, there is an environmental surveillance requirement that an annual land use and milch animal census be performed. See Tables B-21 and B-22 for the milch animal and land use census.

TABLE A-1
INDIAN POINT REMP SAMPLING STATION LOCATIONS

SAMPLING STATION	SAMPLE DESIGNATION	LOCATION	DISTANCE	SAMPLE TYPES
3	DR8	Service Center Building	Onsite - 0.35 Mi (SSE) at 158°	Direct Gamma
4	A1 A1	Algonquin Gas Line	Onsite - 0.28 Mi (SW) at 234°	Air Particulate Radioiodine
5	A4 A4 DR10	NYU Tower	Onsite - 0.88 Mi (SSW) at 208°	Air Particulate Radioiodine Direct Gamma
7	Wb1	Camp Field Reservoir	3.4 Mi (NE) at 51°	Drinking Water
8	**	Croton Reservoir	6.3 Mi (SE) at 124°	Drinking Water
9	Wa1	Plant Inlet (Hudson River Intake)*	Onsite - 0.16 Mi (W) at 273°	HR Water
10	Wa2 **	Discharge Canal (Mixing Zone)	Onsite - 0.3 Mi (WSW) at 249°	HR Water HR Bottom Sediment
14	DR7	Water Meter House	Onsite - 0.3 Mi (SE) at 133°	Direct Gamma
17	** ** **	Off Verplanck	1.5 Mi (SSW) at 202.5°	HR Aquatic Vegetation HR Shoreline Soil HR Bottom Sediment
20	DR38	Cortlandt Yacht Club (AKA Montrose Marina)	1.5 Mi (S) at 180°	Direct Gamma
22	** **	Lovett Power Plant	1.6 Mi (WSW) at 244°	Air Particulate Radioiodine
23	** A5 A5 DR40 Ic3 ** Ib2	Roseton*	20.7 Mi (N) at 357°	Precipitation Air Particulate, Radioiodine Direct Gamma Broad Leaf Vegetation Soil Fish & Invertebrates
25	Ib1	Downstream	Downstream	Fish & Invertebrates
27	** ** DR41	Croton Point	6.36 Mi (SSE) at 156°	Air Particulate Radioiodine Direct Gamma
28	** DR4 ** **	Lent's Cove	0.45 Mi (ENE) at 069°	HR Shoreline Soil Direct Gamma HR Bottom Sediment HR Aquatic Vegetation
29	** ** DR39	Grassy Point	3.37 Mi (SSW) at 196°	Air Particulate Radioiodine Direct Gamma

* = Control location
** = Locations listed do not have sample designation locations specified in the ODCM
HR = Hudson River R/S = Reuter Stokes

TABLE A-1
INDIAN POINT REMP SAMPLING STATION LOCATIONS

SAMPLING STATION	SAMPLE DESIGNATION	LOCATION	DISTANCE	SAMPLE TYPES
33	DR33	Hamilton Street (Substation)	2.88 Mi (NE) at 053°	Direct Gamma
34	DR9	South East Corner of Site	Onsite - 0.52 Mi (S) at 179°	Direct Gamma
35	DR5	Broadway & Bleakley Avenue	Onsite - 0.37 Mi (E) at 092°	Direct Gamma
38	DR34	Furnace Dock (Substation)	3.43 Mi (SE) at 141°	Direct Gamma
44	** ** **	Peekskill Gas Holder Bldg	1.84 Mi (NE) at 052°	Precipitation Air Particulate Radioiodine
50	Wc2	Manitou Inlet*	4.48 Mi (NNW) at 347°	HR Shoreline Soil
53	Wc1 DR11	White Beach	0.92 Mi (SW) at 226°	HR Shoreline Soil Direct Gamma
56	DR37	Verplanck - Broadway & 6th Street	1.25 Mi (SSW) at 202°	Direct Gamma
57	DR1	Roa Hook	2 Mi (N) at 005°	Direct Gamma
58	DR17	Route 9D - Garrison	5.41 Mi (N) at 358°	Direct Gamma
59	DR2	Old Pemart Avenue	1.8 Mi (NNE) at 032°	Direct Gamma
60	DR18	Gallows Hill Road & Sprout Brook Road	5.02 Mi (NNE) at 029°	Direct Gamma
61	DR36	Lower South Street & Franklin Street	1.3 Mi (NE) at 052°	Direct Gamma
62	DR19	Westbrook Drive (near the Community Center)	5.03 Mi (NE) at 062°	Direct Gamma
64	DR20	Lincoln Road - Cortlandt (School Parking Lot)	4.6 Mi (ENE) at 067°	Direct Gamma
66	DR21	Croton Avenue - Cortlandt	4.87 Mi (E) at 083°	Direct Gamma
67	DR22	Colabaugh Pond Road - Cortlandt	4.5 Mi (ESE) at 114°	Direct Gamma
69	DR23	Mt. Airy & Windsor Road	4.97 Mi (SE) at 127°	Direct Gamma
71	DR25	Warren Ave - Haverstraw	4.83 Mi (S) at 188°	Direct Gamma
72	DR26	Railroad Avenue & 9W - Haverstraw	4.53 Mi (SSW) at 203°	Direct Gamma
73	DR27	Willow Grove Road & Captain Faldermeyer Drive	4.97 Mi (SW) at 226°	Direct Gamma
74	DR12	West Shore Drive - South	1.59 Mi (WSW) at 252°	Direct Gamma
75	DR31	Palisades Parkway	4.65 Mi (NW) at 225°	Direct Gamma
76	DR13	West Shore Drive - North	1.21 Mi (W) at 276°	Direct Gamma
77	DR29	Palisades Parkway	4.15 Mi (W) at 272°	Direct Gamma
78	DR14	Rt. 9W across from R/S #14	1.2 Mi (WNW) at 295°	Direct Gamma
79	DR30	Anthony Wayne Park	4.57 Mi (WNW) at 296°	Direct Gamma

* = Control location

** = Locations listed do not have sample designation locations specified in the ODCM

HR = Hudson River R/S = Reuter Stokes

TABLE A-1
INDIAN POINT REMP SAMPLING STATION LOCATIONS

SAMPLING STATION	SAMPLE DESIGNATION	LOCATION	DISTANCE	SAMPLE TYPES
80	DR15	Route 9W South of Ayers Road	1.02 Mi (NW) at 317°	Direct Gamma
81	DR28	Palisades Pkwy - Lake Welch Exit	4.96 Mi (WSW) at 310°	Direct Gamma
82	DR16	Ayers Road	1.01 Mi (NNW) at 334°	Direct Gamma
83	DR32	Route 9W - Fort Montgomery	4.82 Mi (NNW) at 339°	Direct Gamma
84	** ** **	Cold Spring *	10.88 Mi (N) at 356°	HR Aquatic Vegetation HR Shoreline Soil HR Bottom Sediment
88	DR6	R/S Pole #6	0.32 Mi (ESE) at 118°	Direct Gamma
89	DR35	Highland Ave & Sprout Brook Road (near rock cut)	2.89 Mi (NNE) at 025°	Direct Gamma
90	DR3	Charles Point	0.88 Mi (NE) at 047°	Direct Gamma
92	DR24	Warren Road - Cortlandt	3.84 Mi (SSE) at 149°	Direct Gamma
94	A2 A2 Ic2 **	IPEC Training Center	Onsite- 0.39 Mi (S) at 193°	Air Particulate Radioiodine Broad Leaf Vegetation Soil
95	A3 A3 Ic1 **	Meteorological Tower	Onsite - 0.46 Mi (SSW) at 208°	Air Particulate Radioiodine Broad Leaf Vegetation Soil
104	**	MW-40 Boundary Well, lower parking lot	Onsite - 0.21 mi (SW)	Groundwater
105	**	MW-51 Boundary Well, middle parking lot	Onsite - 0.18 mi (SSW)	Groundwater

* = Control location
** = Locations listed do not have sample designation locations specified in the ODCM
HR = Hudson River R/S = Reuter Stokes

FIGURE A-1

SAMPLING LOCATIONS
Within Two Miles of Indian Point

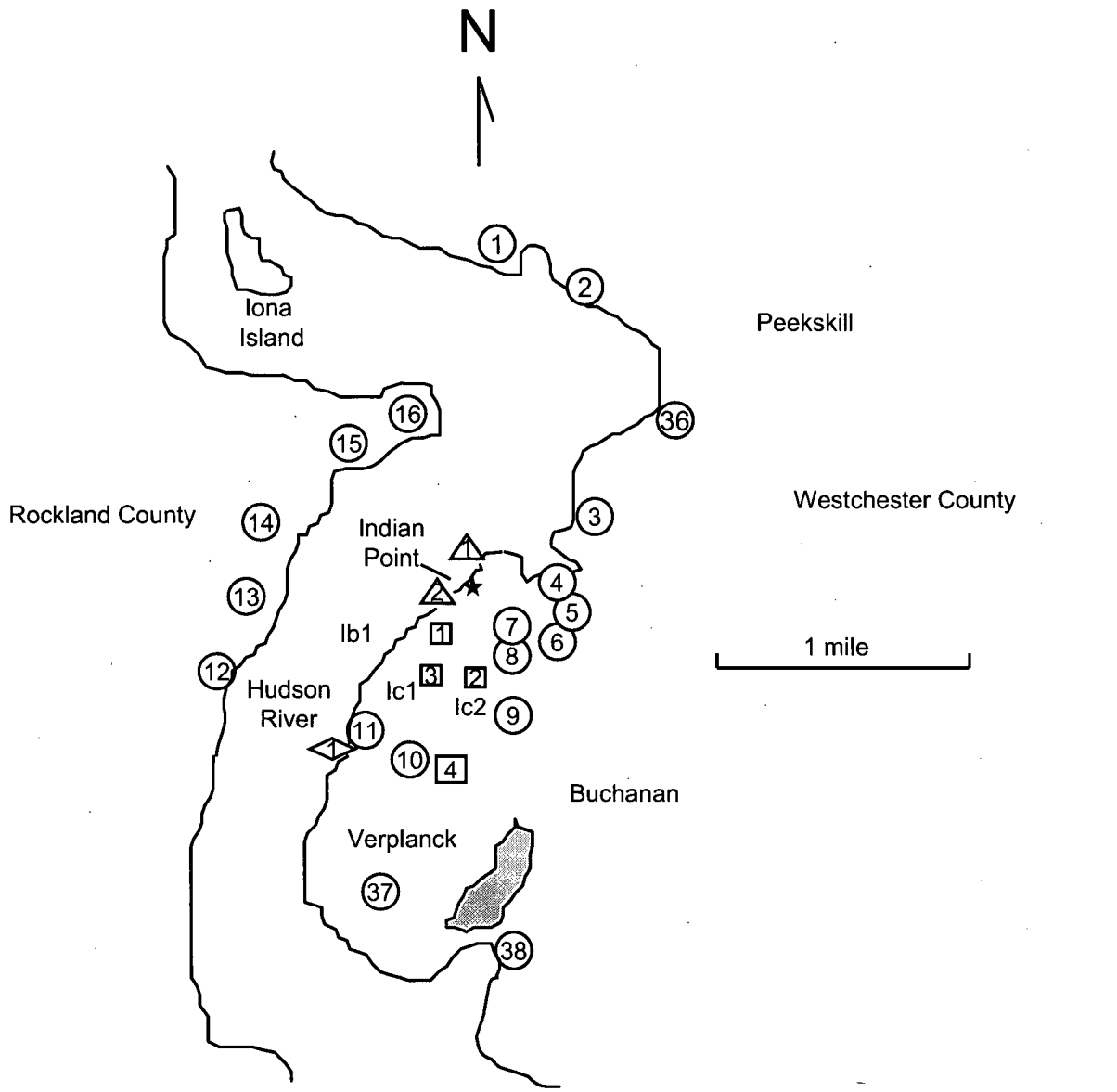
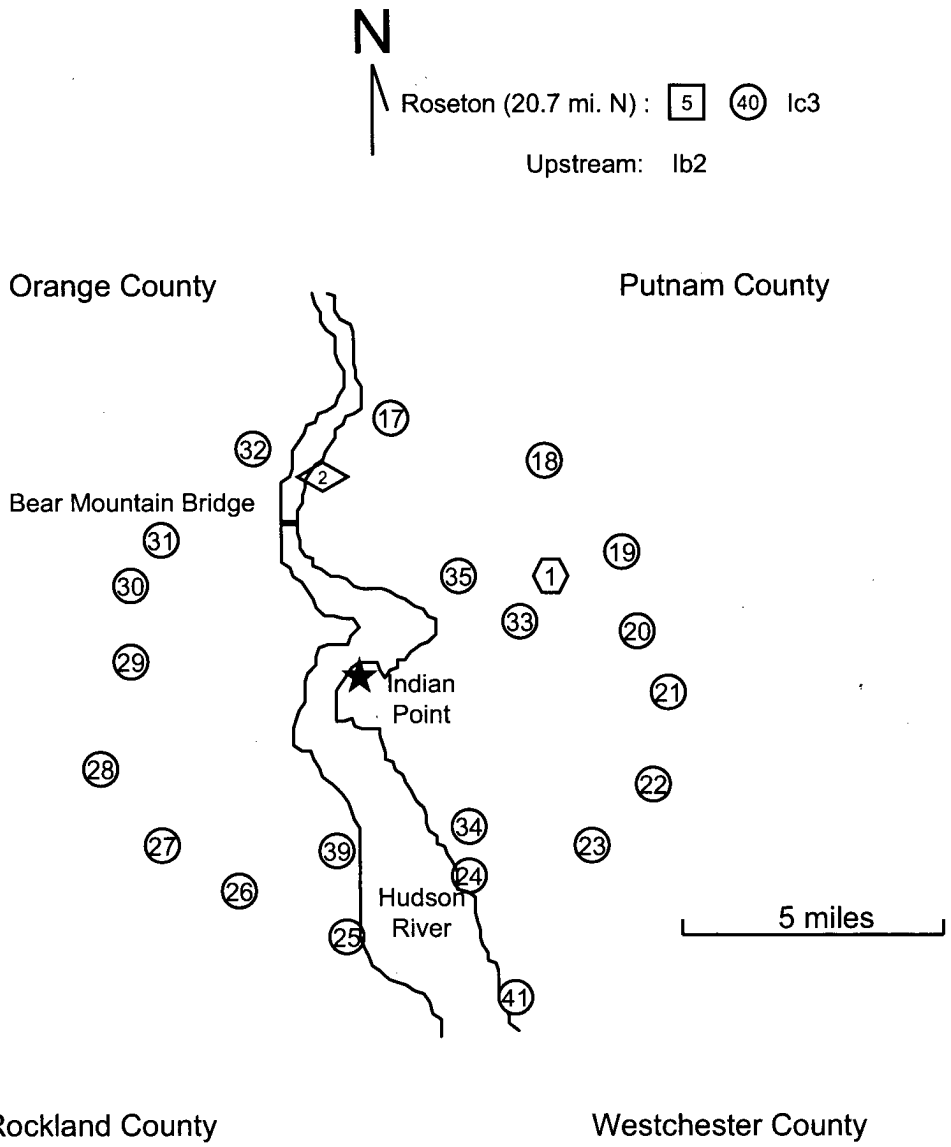


FIGURE A-2

SAMPLING LOCATIONS
Greater Than 2 Miles From Indian Point

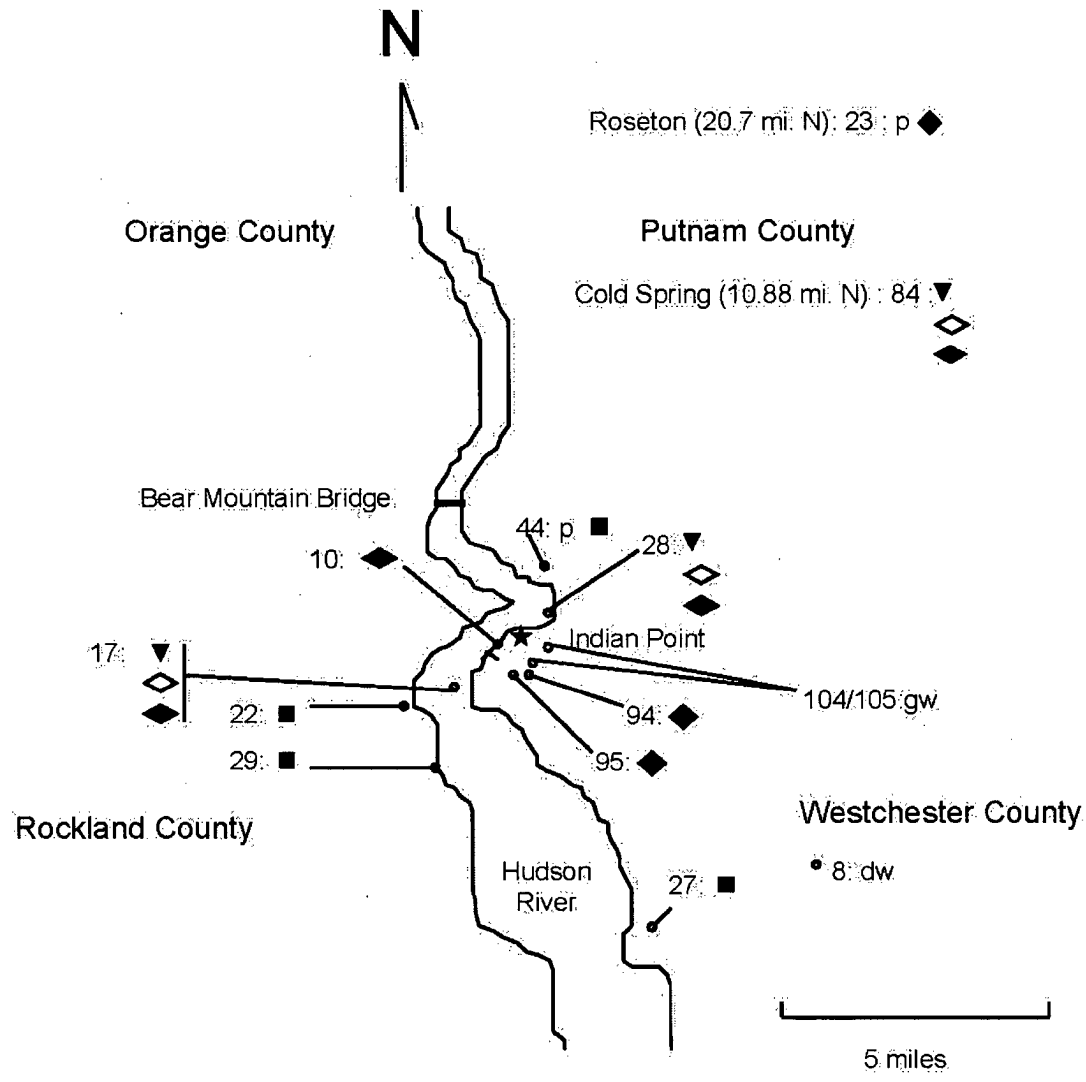


Key:
- ○ - Direct Radiation Sample Location DR#
- □ - Air Particulate & Radioiodine A#
- ◇ - HR Shoreline Sediment Wc#
- ⬡ - Waterborne: Drinking Wb#

Ic3 - Broadleaf Vegetation
Ib2 - Fish and Invertebrates (where available upstream)

FIGURE A-3

SAMPLING LOCATIONS
Additional Sampling Locations



Key:
- ■ - Air Particulate & Radioiodine
- ▼ - Aquatic Vegetation
- ◆ - HR Bottom Sediment
- p - Precipitation
- dw - Drinking Water
- ◇ - HR Shoreline Sediment
- ◆ - Soil
- gw – Ground Water Boundary Monitoring (see detailed site map)

TABLE A-2

LOWER LIMIT OF DETECTION (LLD) REQUIREMENTS FOR ENVIRONMENTAL SAMPLE ANALYSIS [a] [b]

ANALYSIS	WATER (pCi/L)	AIRBORNE PARTICULATES OR GASES (pCi/m3)	FISH (pCi/kg, wet)	MILK (pCi/L)	FOOD PRODUCTS (pCi/kg, wet)	SEDIMENT (pCi/kg, dry)
Gross β	4	0.01				
H-3	2,000 [c]					
Mn-54	15		130			
Fe-59	30		260			
Co-58	15		130			
Co-60	15		130			
Zn-65	30		260			
Zr-Nb-95	15					
I-131	1 [d]	0.07		1	60	
Cs-134	15	0.05	130	15	60	150
Cs-137	18	0.06	150	18	80	180
Ba-La-140	15			15		
Sr-90	1 [e]		5			5,000

(a) This list shows required LLD's, but other radionuclides are considered. Other identifiable peaks from gamma spectroscopy shall also be analyzed and reported in the Annual Radiological Environmental Operating Report.

(b) Required detection capabilities for thermoluminescent dosimeters used for environmental measurements are given in Regulatory Guide 4.13 (Reference 27).

(c) LLD for drinking water samples. If no drinking water pathway exists, a value of 3000 pCi/L may be used.

(d) LLD for drinking water samples. If no drinking water pathway exists, a value of 15 pCi/L may be used.

(e) The Sr-90 water LLD is only for groundwater samples locations 104 and 105 (see Table A-1)

TABLE A-3

REPORTING LEVELS FOR RADIOACTIVITY CONCENTRATIONS IN ENVIRONMENTAL SAMPLES

ANALYSIS	WATER (pCi/L)	AIRBORNE PARTICULATES OR GASES (pCi/m^3)	FISH (pCi/kg, wet)	MILK (pCi/L)	FOOD PRODUCTS (pCi/kg, wet)
H-3	20,000 [(a)]				
Mn-54	1,000		30,000		
Fe-59	400		10,000		
Co-58	1,000		30,000		
Co-60	300		10,000		
Zn-65	300		20,000		
Zr-Nb-95	400				
I-131	2 [(b)]	0.9		3	100
Cs-134	30	10	1,000	60	1,000
Cs-137	50	20	2,000	70	2,000
Ba-La-140	200			300	
Sr-90	8		40		

(a) For drinking water samples. This is the 40 CFR Part 141 value. If no drinking water pathway exists, a value of 30,000 pCi/L may be used.

(b) If no drinking water pathway exists, a value of 20 pCi/L may be used.

APPENDIX B

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM RESULTS SUMMARY

APPENDIX B

B.1 2008 Annual Radiological Environmental Monitoring Program Summary

The results of the 2008 radiological environmental sampling program are presented in Tables B-2 through B-21. Table B-2 is a summary table of the sample results for 2008. The format of this summary table conforms to the reporting requirements of the ODCM, NRC Regulatory Guide 4.8 (Reference 4), and NRC Branch Technical Position to Regulatory Guide 4.8 (Reference 14). In addition, the data obtained from the analysis of samples are provided in Tables B-3 through B-21.

REMP samples were analyzed by various counting methods as appropriate. The methods are; gross beta, gamma spectroscopy analysis, liquid scintillation, radiochemical analysis, and TLD processing. Gamma spectroscopy analysis was performed for the following radionuclides; Be-7, K-40, Mn-54, Co-58, Co-60, Fe-59, Zn-65, Zr-95, Nb-95, Ru-103, Ru-106, I-131, Cs-134, Cs-137, Ba/La-140, Ce-141, Ce-144, Ra-226 and Ac/Th-228. Radiochemical analyses were performed for I-131 and Sr-90 for specific media and locations as required in the ODCM.

B.2 Land Use Census

In accordance with Sections IP2-D3.5.2 and IP3-2.8 of the ODCM, a land use census was conducted to identify the nearest milch animal and the nearest residence. The results of the milch animal and land use census are presented in Tables B-22 and B-23, respectively. In lieu of identifying and sampling the nearest garden of greater than 50 m^2, at least three kinds of broad leaf vegetation were sampled near the site boundary in two sectors and at a designated control location (results are presented in Table B-14).

B.3 Sampling Deviations

During 2008, environmental sampling was performed for 12 media types addressed in the ODCM and direct radiation. A total of 1223 samples/measurements were obtained without any deviation. 1243 were scheduled. Eighteen of the twenty deviations involved under-sampling at air monitoring stations – mostly from power outages affecting week-long sampling. Of the scheduled samples/measurements, 98.4% were performed for the program as intended. Sampling deviations are summarized in Table B-1. Discussions of the reasons for the deviations are provided in Table B-1a for air samples, B-1b for TLDs and B-1c for other environmental media.

B.4 Analytical Deviations

See Table B-1c for analytical deviations information.

B.5 Special Reports

No special reports were required under the REMP.

TABLE B-1

SUMMARY OF SAMPLING DEVIATIONS
2008

MEDIA	TOTAL SCHEDULED SAMPLES	NUMBER OF DEVIATIONS*	SAMPLING EFFICIENCY %	REASON FOR DEVIATION
MEDIA				
PARTICULATES IN AIR	432	9	97.9%	See Table B-1a
CHARCOAL FILTER	432	9	97.9%	N/A
TLD	164	2	99%	Se Table B-1b
HUDSON RIVER WATER	32	0	100%	N/A
DRINKING WATER	32	0	100%	N/A
SHORELINE SOIL	10	0	100%	N/A
BROAD LEAF VEGETATION	54	0	100%	N/A
FISH & INVERTEBRATES	23	0	100%	N/A
AQUATIC VEGETATION	5	0	100%	N/A
HUDSON RIVER BOTTOM SEDIMENT	8	0	100%	N/A
SOIL	3	0	100%	N/A
PRECIPITATION	8	0	100%	N/A
SPECIAL WATER SAMPLES	40	0	100%	N/A
TOTALS	1243	20	98.4%	

TOTAL NUMBER OF ANALYSES REPORTED = 1223

* Samples not collected, partially collected, or unable to be analyzed. Power outages at air samplers simultaneously affect the filter paper and charcoal media. Deviation is taken if sample run-time loss is significant.

TABLE B-1a / B-1b / B-1c

TABLE B-1a
2008 Air Sampling Deviations

STATION	WEEK	PROBLEM / ACTIONS TO PREVENT RECURRENCE
ALGONQUIN	6/10/2008	105 sampling hours lost. Air sampler failed and required replacement. (CR-IP2-2008-03064)
CROTON POINT	6/10/2008	71 sampling hours lost due to induced power loss from electrical storm (CR-IP2-2008-03061)
CROTON POINT	10/28/2008	21 hours lost; local overnight power outage noted.(CR-IP2-2008-04858)
GRASSY POINT	5/5/2008	56 hours lost; pump was running at beginning and end of week-long sampling period (CR-IP2-2008-02523)
MET TOWER	2/12/2008	40 hours lost due to GFI trip over a weekend (CR-IP2-2008-00707)
MET TOWER	3/18/2008	53 hours lost from tree falling on power lines (CR-IP2-2008-01270)
NYU	6/24/2008	39 hours lost on GFI trip, proable electrical storm ((CR-IP2-2008-03156)
PEEKSKILL GAS HOLDER	12/22/2008	Air sample was not running when we went to change it out. The pump had failed and we lost 80 hours of sample this past week (CR-IP2-2008-03156)
TRAINING BUILDING	2/19/2008	91 hours lost due to power interruption; secondary power obtained for temporary use (CR-IP2-2008-00820)

TABLE B-1b
2008 TLD Deviations

STATION	QUARTER	PROBLEM / ACTIONS TO PREVENT RECURRENCE
FURNACE DOCK (Substation)	7/10/2008 (2nd)	DR-34 missing with no apparent reason, but DR-34 placed in a more secure location (CR-IP2-2008-03317)
RTE. 9D GARRISON	7/10/2008 (2nd)	DR-17 missing on utility pole; fade TLD also missing; vehicle accident suspected of knocking items off the mounting pole (CR-IP2-2008-03317)

TABLE B-1c
2008 Other Media Deviations

STATION	SAMPLE SCHEDULE	PROBLEM / ACTIONS TO PREVENT RECURRENCE
Roseton Eel, Roseton Catfish, Roseton Blue Crab, Roseton Striped Bass, IPEC Striped Bass	August 2008	Required MDC (LLD) not met: target MDC is 5 pCi/kg and the attained MDC was up to 10 pCi/kg. In four sample analyses, however, the net signal levels were negative. In the fifth sample, the net signal was positive and yielded a computed 1 pCi/kg concentration; the MDC for this sample was 6.7 pCi/kg. The basic data and results do not suggest significant or true deviations. In four other samples the required MDC was not met but the results were greater than attained MDC and reported as positive values. The laboratory has been contacted.

TABLE B-2 (Continued)
ODCM ANNUAL SUMMARY - 2008

MEDIUM (UNITS) SEE TABLE	TYPE AND TOTAL NUMBER OF ANALYSIS PERFORMED	LLD (b)	INDICATOR LOCATIONS: MEAN (a) RANGE	LOCATION OF HIGHEST ANNUAL MEAN: LOCATIONS AND DESIGNATION MEAN (a) RANGE	CONTROL LOCATION: MEAN (a) RANGE	NUMBER OF NON-ROUTINE REPORTS
DIRECT RADIATION (mR / standard quarter) B-3	TLD Reads 164	N/A	*14.4 (160/160) / 9.6 - 22.6*	West Shore Drive - North 1.21 Mi (W) at 276° DR13 20.5 *(4/4) / 18.0 - 22.6*	*17.3 (4/4) / 15.9 - 18.6*	0
AIR PARTICULATES AND RADIOIODINE (pCi/m^3) B-6, B-7, B-8	GB (432)	0.01	*0.013 (380/380) / 0.005 - 0.028*	#22 Lovett Power Plant 1.6 Mi (WSW) at 244° 0.015 (16/16) / 0.003-0.025	*0.014 (52/52) / 0.006-0.027*	0
	I-131 (432)	0.07	$<L_c$	$<L_c$	$<L_c$	0
	GSA (34) Cs-134	0.05	$<L_c$	$<L_c$	$<L_c$	0
	GSA (34) Cs-137	0.06	$<L_c$	$<L_c$	$<L_c$	0
SURFACE HUDSON RIVER WATER (pCi/L) B-9, B-10	H-3 (8)	3000 (c)	$<L_c$	$<L_c$	$<L_c$	0
	GSA (24)					
	Mn-54	15	$<L_c$	$<L_c$	$<L_c$	0
	Co-58	15	$<L_c$	$<L_c$	$<L_c$	0
	Fe-59	30	$<L_c$	$<L_c$	$<L_c$	0
	Co-60	15	$<L_c$	$<L_c$	$<L_c$	0
	Zn-65	30	$<L_c$	$<L_c$	$<L_c$	0
	Zr/Nb-95	15	$<L_c$	$<L_c$	$<L_c$	0
	I-131	15	$<L_c$	$<L_c$	$<L_c$	0
	Cs-134	15	$<L_c$	$<L_c$	$<L_c$	0
	Cs-137	18	$<L_c$	$<L_c$	$<L_c$	0
	Ba/La-140	15	$<L_c$	$<L_c$	$<L_c$	0

(a) Positive values when above L_c; Groundwater positive when above MDC
(b) Required *a priori* LLD; se Table A-2
(c) Not a drinking water pathway; the required LLD is 3000 pCi/L

TABLE B-2 (Continued)
ODCM ANNUAL SUMMARY - 2008

MEDIUM (UNITS) SEE TABLE	TYPE AND TOTAL NUMBER OF ANALYSIS PERFORMED	LLD (b)	INDICATOR LOCATIONS: MEAN (a) RANGE	LOCATION OF HIGHEST ANNUAL MEAN: LOCATIONS AND DESIGNATION MEAN (a) RANGE	CONTROL LOCATION: MEAN (a) RANGE	NUMBER OF NON-ROUTINE REPORTS
DRINKING WATER (pCi/L) B-11, B-12	H-3 (8)	2000	$<L_c$	$<L_c$	N/A	N/A
	GSA (24)					
	Mn-54	15	$<L_c$	$<L_c$	N/A	0
	Co-58	15	$<L_c$	$<L_c$	N/A	0
	Fe-59	30	$<L_c$	$<L_c$	N/A	0
	Co-60	15	$<L_c$	$<L_c$	N/A	0
	Zn-65	30	$<L_c$	$<L_c$	N/A	0
	Zr/Nb-95	15	$<L_c$	$<L_c$	N/A	0
	I-131	15	$<L_c$	$<L_c$	N/A	0
	Cs-134	15	$<L_c$	$<L_c$	N/A	0
	Cs-137	18	$<L_c$	$<L_c$	N/A	0
	Ba/La-140	15	$<L_c$	$<L_c$	N/A	0
HUDSON RIVER SHORELINE SOIL (pCi/kg - dry) B-13	GSA (10)					
	Cs-134	150	$<L_c$	$<L_c$	$<L_c$	0
	Cs-137	180	*163 (2/8) / $<L_c$ - 181*	#17 Off Verplanck 1.5 mi (SSW) at 202.5° 163 *(2/2) / 141 - 184*	*#50 Manitou Inlet 4.48 mi. (NNW) at 347° 236 (1/2)*	0
	Sr-90 (10)	5000	$<L_c$	$<L_c$	$<L_c$	0

(a) Positive values when above L_c; Groundwater positive when above MDC
(b) Required *a priori* LLD; se Table A-2
(c) Not a drinking water pathway; the required LLD is 3000 pCi/L

TABLE B-2 (Continued)
ODCM ANNUAL SUMMARY - 2008

MEDIUM (UNITS) SEE TABLE	TYPE AND TOTAL NUMBER OF ANALYSIS PERFORMED	LLD (b)	INDICATOR LOCATIONS: MEAN (a) RANGE	LOCATION OF HIGHEST ANNUAL MEAN: LOCATIONS AND DESIGNATION MEAN (a) RANGE	CONTROL LOCATION: MEAN (a) RANGE	NUMBER OF NON-ROUTINE REPORTS
BROADLEAF VEGETATION (pCi/kg - wet) B-14	GSA (54)					
	I-131	60	$<L_c$	$<L_c$	$<L_c$	0
	Co-60	N/A	$<L_c$	$<L_c$	$<L_c$	0
	Cs-134	60	$<L_c$	$<L_c$	$<L_c$	0
	Cs-137	80	$<L_c$	$<L_c$	$<L_c$	0
FISH AND INVERTEBRATES pCi/kg (wet) B-15	GSA (23)					
	Mn-54	130	$<L_c$	$<L_c$	$<L_c$	0
	Co-58	130	$<L_c$	$<L_c$	$<L_c$	0
	Fe-59	260	$<L_c$	$<L_c$	$<L_c$	0
	Co-60	130	$<L_c$	$<L_c$	$<L_c$	0
	Zn-65	260	$<L_c$	$<L_c$	$<L_c$	0
	Cs-134	130	$<L_c$	$<L_c$	$<L_c$	0
	Cs-137	150	$<L_c$	$<L_c$	$<L_c$	0
	Sr-90 (12)	5	*8.8 (2/6) / <Lc - 10.3*	Vicinity of Plant - White Perch 8.8 (2/6) 7.3 - 10.3	#23 Roseton 20 Mi (N) at 357° 16.3 (12 - 20.6)	0
	Ni-63 (12)	N/A	<MDC	<MDC	<MDC	0
AQUATIC VEGETATION (pCi/kg - WET) B-16	GSA (5)					
	Co-60	N/A	$<L_c$	$<L_c$	$<L_c$	0
	I-131	N/A	*54 (1/3) L_c - 54*	#17 Off Verplanck 1.5 mi (SSW) at 202.5° 54 (1/2) $<L_c$ - 54	#84 Cold Spring 10.9 mi. (N) at 356° 35 (1/2)	0
	Cs-134	N/A	$<L_c$	$<L_c$	$<L_c$	0
	Cs-137	N/A	$<L_c$	$<L_c$	$<L_c$	0

(a) Positive values when above L_c; Groundwater positive when above MDC
(b) Required *a priori* LLD; se Table A-2
(c) Not a drinking water pathway; the required LLD is 3000 pCi/L

TABLE B-2 (Continued)
ODCM ANNUAL SUMMARY - 2008

MEDIUM (UNITS) SEE TABLE	TYPE AND TOTAL NUMBER OF ANALYSIS PERFORMED	LLD (b)	INDICATOR LOCATIONS: MEAN (a) RANGE	LOCATION OF HIGHEST ANNUAL MEAN: LOCATIONS AND DESIGNATION MEAN (a) RANGE	CONTROL LOCATION: MEAN (a) RANGE	NUMBER OF NON-ROUTINE REPORTS
BOTTOM SEDIMENT (pCi/kg - DRY)	GSA (8)					
B-17	Co-60	N/A	$<L_c$	$<L_c$	$<L_c$	0
	Cs-134	150	$<L_c$	$<L_c$	$<L_c$	0
	Cs-137	180	*239 (6/6) / 137 - 452*	#28 Lents Cove 0.45 Mi (ENE) at 069° 334 (2/2) / 215 - 452	$< L_c$	0
PRECIPITATION (pCi/L)	GSA (8)					
B-18	H-3	3000 (c)	$<L_c$	$<L_c$	$<L_c$	0
	Co-60	15	$<L_c$	$<L_c$	$<L_c$	0
	Cs-134	15	$<L_c$	$<L_c$	$<L_c$	0
	Cs-137	18	$<L_c$	$<L_c$	$<L_c$	0
SOIL (pCi/kg - DRY)	GSA (3)					
B-19	Co-60	N/A	$<L_c$	$<L_c$	$<L_c$	0
	Cs-134	150	$<L_c$	$<L_c$	$<L_c$	0
	Cs-137	180	$<L_c$	$<L_c$	$<L_c$	0

(a) Positive values when above L_c; Groundwater positive when above MDC
(b) Required *a priori* LLD; se Table A-2
(c) Not a drinking water pathway; the required LLD is 3000 pCi/L

TABLE B-2 (Continued)
ODCM ANNUAL SUMMARY - 2008

MEDIUM (UNITS) SEE TABLE	TYPE AND TOTAL NUMBER OF ANALYSIS PERFORMED	LLD (b)	INDICATOR LOCATIONS: MEAN (a) RANGE	LOCATION OF HIGHEST ANNUAL MEAN: LOCATIONS AND DESIGNATION MEAN (a) RANGE	CONTROL LOCATION: MEAN (a) RANGE	NUMBER OF NON-ROUTINE REPORTS
GROUNDWATER (pCi/L)	GSA (40)					
B-20	H-3 (40)	3000 (c)	*244 (7/40) /* *< L_c - 329*	MW-51-40 0.18 mi (SSW) 329 (1/4) / <L_c - 329	N/A	0
	Co-60 (40)	15	<L_c	<L_c	N/A	0
	Cs-134 (40)	15	<L_c	<L_c	N/A	0
	Cs-137 (40)	18	<L_c	<L_c	N/A	0
	Sr-90 (40)	1	<Lc	<Lc	N/A	0
	Ni-63 (24)		<L_c	<L_c	N/A	0

(a) Positive values when above L_c; Groundwater positive when above MDC
(b) Required *a priori* LLD; se Table A-2
(c) Not a drinking water pathway; the required LLD is 3000 pCi/L

TABLE B-3

2008 DIRECT RADIATION, QUARTERLY DATA
(mR per STANDARD QUARTER)

Station ID	Sector	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Mean	Yearly
DR-01	N	15.25 ± 1.69	16.59 ± 0.64	14.65 ± 0.85	16.09 ± 0.66	15.6	62.6
DR-02	NNE	15.45 ± 0.81	15.12 ± 0.59	12.62 ± 0.52	16.64 ± 1.89	15.0	59.8
DR-03	NE	12.52 ± 0.68	12.72 ± 0.55	10.32 ± 0.51	12.95 ± 0.62	12.1	48.5
DR-04	ENE	14.06 ± 0.79	14.92 ± 0.92	11.81 ± 0.71	14.99 ± 0.71	13.9	55.8
DR-05	ENE	14.01 ± 0.91	14.75 ± 0.84	12.49 ± 0.70	15.43 ± 0.70	14.2	56.7
DR-06	ESE	14.74 ± 0.83	14.61 ± 0.62	12.59 ± 0.89	15.47 ± 0.85	14.4	57.4
DR-07	SE	16.32 ± 0.89	18.07 ± 1.71	14.16 ± 0.74	18.04 ± 1.71	16.6	66.6
DR-08	SSE	12.88 ± 1.22	13.23 ± 0.57	10.97 ± 0.74	13.53 ± 0.86	12.7	50.6
DR-09	S	14.15 ± 0.77	14.08 ± 0.82	11.65 ± 0.68	15.06 ± 0.62	13.7	54.9
DR-10	SSW	14.98 ± 1.01	15.14 ± 0.67	12.72 ± 0.55	15.91 ± 1.45	14.7	58.8
DR-11	SW	11.58 ± 0.65	11.84 ± 0.84	9.56 ± 0.63	12.48 ± 0.75	11.4	45.5
DR-12	WSW	15.31 ± 0.65	16.79 ± 1.17	13.47 ± 0.71	17.57 ± 0.72	15.8	63.1
DR-13	WSW	20.91 ± 2.29	20.52 ± 0.62	18.05 ± 0.86	22.64 ± 0.78	20.5	82.1
DR-14	WNW	13.26 ± 0.63	14.78 ± 0.78	12.07 ± 0.56	15.16 ± 1.00	13.8	55.3
DR-15	NW	12.86 ± 0.55	14.46 ± 0.85	11.61 ± 0.54	14.66 ± 0.59	13.4	53.6
DR-16	NNW	13.79 ± 0.78	15.75 ± 0.92	13.13 ± 0.55	16.68 ± 1.11	14.8	59.4
DR-17	N	13.81 ± 0.69	*	12.77 ± 0.56	16.03 ± 0.69	14.2	42.6
DR-18	NNE	15.03 ± 0.69	15.12 ± 0.66	13.02 ± 0.65	15.38 ± 0.53	14.6	58.6
DR-19	NE	15.22 ± 0.73	15.75 ± 0.67	13.64 ± 0.54	16.10 ± 0.73	15.2	60.7
DR-20	ENE	14.15 ± 0.75	14.21 ± 0.66	12.21 ± 0.63	14.63 ± 1.13	13.8	55.2
DR-21	E	14.82 ± 1.08	15.03 ± 0.63	12.63 ± 0.74	15.03 ± 0.61	14.4	57.5
DR-22	ESE	12.27 ± 0.68	12.41 ± 0.57	9.57 ± 0.44	12.25 ± 0.62	11.6	46.5
DR-23	SE	15.05 ± 0.66	14.65 ± 0.84	12.27 ± 0.60	16.08 ± 0.91	14.5	58.1
DR-24	SSE	15.31 ± 0.80	15.00 ± 0.89	12.62 ± 0.58	15.99 ± 1.18	14.7	58.9
DR-25	S	11.94 ± 0.55	13.40 ± 0.71	10.90 ± 0.46	14.16 ± 0.54	12.6	50.4
DR-26	SSW	13.48 ± 0.90	14.54 ± 0.59	12.05 ± 0.52	15.60 ± 0.71	13.9	55.7
DR-27	SW	13.17 ± 1.00	13.72 ± 0.94	11.88 ± 0.52	14.88 ± 0.63	13.4	53.7
DR-28	NW	18.86 ± 1.62	20.31 ± 0.92	18.04 ± 0.77	21.25 ± 0.95	19.6	78.5
DR-29	W	13.67 ± 0.63	15.39 ± 0.94	13.05 ± 0.54	15.69 ± 1.12	14.5	57.8
DR-30	SNS	13.78 ± 0.83	15.20 ± 0.93	13.69 ± 1.61	16.34 ± 0.86	14.8	59.0
DR-31	WSW	16.17 ± 0.96	17.13 ± 0.74	14.72 ± 0.62	17.30 ± 0.90	16.3	65.3
DR-32	NNW	12.95 ± 0.80	14.64 ± 0.72	11.08 ± 0.48	14.31 ± 0.87	13.2	53.0
DR-33	NE	14.79 ± 1.17	14.15 ± 0.85	11.83 ± 0.51	14.09 ± 0.87	13.7	54.9
DR-34	SE	13.08 ± 0.56	*	11.47 ± 0.45	13.92 ± 0.75	12.8	38.5
DR-35	NNE	13.60 ± 0.57	14.05 ± 0.88	11.49 ± 0.62	14.27 ± 0.91	13.4	53.4
DR-36	NE	15.80 ± 0.80	15.08 ± 1.07	13.05 ± 0.72	16.24 ± 0.92	15.0	60.2
DR-37	SSW	14.64 ± 0.88	15.11 ± 1.64	12.14 ± 0.46	16.09 ± 0.94	14.5	58.0
DR-38	S	13.86 ± 1.41	14.58 ± 0.95	12.57 ± 0.66	14.97 ± 0.85	14.0	56.0
DR-39	SSW	14.57 ± 0.63	15.75 ± 0.70	13.57 ± 0.59	16.10 ± 0.83	15.0	60.0
DR-40**	N	18.10 ± 1.72	18.62 ± 1.00	15.91 ± 0.64	16.73 ± 0.56	17.3	69.4
DR-41	SSE	13.13 ± 0.56	10.15 ± 0.55	11.27 ± 0.60	13.86 ± 0.52	12.1	48.4
AVERAGE		14.4	15.0	12.6	15.6	14.4	57

* Data not available

** Control Location

TABLE B-4

DIRECT RADIATION
1998 THROUGH 2008 DATA
(mR per standard quarter basis)

Station ID	Mean (1998-2007)	Standard Deviation (1998-2007)	Minimum Value (1998-2007)	Maximum Value (1998-2007)	2008 Mean
DR-01	62.9	2.8	58.4	68.0	62.6
DR-02	62.4	8.9	53.6	79.2	59.8
DR-03	47.9	1.9	44.0	50.0	48.5
DR-04	53.7	3.6	46.8	58.8	55.8
DR-05	54.3	2.4	48.4	57.2	56.7
DR-06	53.8	3.0	46.4	56.8	57.4
DR-07	63.6	3.6	55.6	68.8	66.6
DR-08	51.7	2.9	47.2	56.4	50.6
DR-09	53.0	3.0	47.2	58.0	54.9
DR-10	56.5	2.2	53.2	60.0	58.8
DR-11	45.0	2.3	40.8	48.4	45.5
DR-12	67.5	3.5	62.4	76.0	63.1
DR-13	76.1	3.9	68.0	81.2	82.1
DR-14	53.9	3.0	50.0	60.4	55.3
DR-15	54.2	4.0	46.4	60.0	53.6
DR-16	59.6	2.8	55.2	63.6	59.4
DR-17	60.4	2.9	56.4	66.8	42.6
DR-18	56.8	2.5	52.4	60.8	58.6
DR-19	59.7	2.5	55.2	62.8	60.7
DR-20	54.4	3.7	47.6	59.2	55.2
DR-21	55.2	3.1	50.0	60.8	57.5
DR-22	46.4	3.4	40.4	52.0	46.5
DR-23	55.9	2.8	49.6	58.8	58.1
DR-24	56.3	2.9	49.2	60.0	58.9
DR-25	49.6	2.3	44.8	52.8	50.4
DR-26	55.4	2.8	50.4	58.8	55.7
DR-27	55.4	3.9	46.8	61.6	53.7
DR-28	66.3	7.8	57.2	78.8	78.5
DR-29	65.4	8.6	54.8	77.2	57.8
DR-30	63.3	6.2	52.4	71.2	59.0
DR-31	72.0	5.8	62.0	80.4	65.3
DR-32	53.0	3.3	46.0	57.2	53.0
DR-33	45.5	9.2	34.0	55.2	54.9
DR-34	53.0	4.6	43.2	60.8	38.5
DR-35	56.6	4.0	48.8	61.2	53.4
DR-36	61.4	4.9	52.4	70.4	60.2
DR-37	54.6	3.0	48.8	58.8	58.0
DR-38	52.2	2.8	48.8	58.4	56.0
DR-39	62.4	4.1	55.2	66.8	60.0
DR-40**	63.6	6.1	54.8	75.2	69.4
DR-41	52.4	3.8	44.4	58.0	48.4
Average	57.2		50.5	63.1	57.1

** Control Location

TABLE B-5

2008 DIRECT RADIATION
Inner and Outer Rings
(mR per standard quarter basis)

Inner Ring ID	Outer Ring ID	Sector	Inner Ring Annual Average	Outer Ring Annual Average
DR-01	DR-17	N	62.6	42.6
DR-02	DR-18	NNE	59.8	58.6
DR-03	DR-19	NE	48.5	60.7
DR-04	DR-20	ENE	55.8	55.2
DR-05	DR-21	E	56.7	57.5
DR-06	DR-22	ESE	57.4	46.5
DR-07	DR-23	SE	66.6	58.1
DR-08	DR-24	SSE	50.6	58.9
DR-09	DR-25	S	54.9	50.4
DR-10	DR-26	SSW	58.8	55.7
DR-11	DR-27	SW	45.5	53.7
DR-12	DR-28	WSW	63.1	78.5
DR-13	DR-29	W	82.1	57.8
DR-14	DR-30	WNW	55.3	59.0
DR-15	DR-31	NW	53.6	65.3
DR-16	DR-32	NNW	59.4	53.0
Average			58.2	57.0

TABLE B-6

IPEC

ENVIRONMENTAL AIRBORNE PARTICULATE SAMPLES - 2008

GROSS BETA ACTIVITY pCi/ m^3 ± 1 Sigma

SAMPLE STATION #

Week Number	Week End Date	4	5	94	95	23**	22	27	29	44
1	1/8/2008	0.024 ± 0.002	0.024 ± 0.001	0.025 ± 0.002	0.023 ± 0.002	0.024 ± 0.002	0.025 ± 0.002	0.023 ± 0.001	0.018 ± 0.001	0.023 ± 0.002
2	1/15/2008	0.009 ± 0.001	0.010 ± 0.001	0.008 ± 0.001	0.010 ± 0.001	0.014 ± 0.001	0.013 ± 0.001	0.010 ± 0.001	0.022 ± 0.002	0.011 ± 0.001
3	1/22/2008	0.018 ± 0.001	0.019 ± 0.001	0.016 ± 0.001	0.018 ± 0.001	0.016 ± 0.001	0.017 ± 0.001	0.016 ± 0.001	0.012 ± 0.001	0.016 ± 0.001
4	1/29/2008	0.020 ± 0.002	0.023 ± 0.002	0.017 ± 0.001	0.019 ± 0.002	0.017 ± 0.001	0.021 ± 0.002	0.021 ± 0.001	0.016 ± 0.001	0.020 ± 0.002
5	2/5/2008	0.022 ± 0.002	0.022 ± 0.002	0.020 ± 0.002	0.024 ± 0.002	0.027 ± 0.002	0.024 ± 0.002	0.020 ± 0.002	0.021 ± 0.001	0.020 ± 0.002
6	2/12/2008	0.016 ± 0.001	0.019 ± 0.001	0.015 ± 0.001	0.010 ± 0.001	0.012 ± 0.001	0.017 ± 0.001	0.017 ± 0.001	0.022 ± 0.001	0.016 ± 0.001
7	2/19/2008	0.014 ± 0.001	0.013 ± 0.001	0.020 ± 0.002	0.014 ± 0.001	0.015 ± 0.001	0.015 ± 0.001	0.013 ± 0.001	0.015 ± 0.001	0.017 ± 0.001
8	2/26/2008	0.015 ± 0.001	0.012 ± 0.001	0.014 ± 0.001	0.012 ± 0.001	0.016 ± 0.001	0.012 ± 0.001	0.015 ± 0.001	0.016 ± 0.001	0.015 ± 0.001
9	3/4/2008	0.014 ± 0.001	0.012 ± 0.001	0.013 ± 0.001	0.012 ± 0.001	0.013 ± 0.001	0.014 ± 0.001	0.011 ± 0.001	0.016 ± 0.001	0.010 ± 0.001
10	3/11/2008	0.013 ± 0.001	0.010 ± 0.001	0.012 ± 0.001	0.011 ± 0.001	0.014 ± 0.001	0.014 ± 0.001	0.011 ± 0.001	0.015 ± 0.001	0.011 ± 0.001
11	3/18/2008	0.013 ± 0.001	0.012 ± 0.001	0.014 ± 0.001	0.008 ± 0.002	0.013 ± 0.001	0.015 ± 0.001	0.016 ± 0.001	0.013 ± 0.001	0.013 ± 0.001
12	3/25/2008	0.012 ± 0.001	0.011 ± 0.001	0.010 ± 0.001	0.010 ± 0.001	0.011 ± 0.001	0.013 ± 0.001	0.012 ± 0.001	0.014 ± 0.001	0.011 ± 0.001
13	4/1/2008	0.012 ± 0.001	0.011 ± 0.001	0.014 ± 0.001	0.013 ± 0.001	0.011 ± 0.001	0.012 ± 0.001	0.011 ± 0.001	0.010 ± 0.001	0.015 ± 0.001
14	4/8/2008	0.009 ± 0.001	0.009 ± 0.001	0.008 ± 0.001	0.009 ± 0.001	0.009 ± 0.001	0.012 ± 0.001	0.010 ± 0.001	0.013 ± 0.001	0.010 ± 0.001
15	4/15/2008	0.007 ± 0.001	0.005 ± 0.001	0.006 ± 0.001	0.005 ± 0.001	0.006 ± 0.001	0.008 ± 0.001	0.006 ± 0.001	0.009 ± 0.001	0.006 ± 0.001
16	4/22/2008	0.019 ± 0.002	0.015 ± 0.001	0.015 ± 0.001	0.018 ± 0.002	0.015 ± 0.001	0.012 ± 0.002	0.013 ± 0.001	0.007 ± 0.001	0.017 ± 0.001
17	4/29/2008	0.010 ± 0.001	0.013 ± 0.001	0.011 ± 0.001	0.011 ± 0.001	0.015 ± 0.001		0.013 ± 0.001	0.013 ± 0.001	0.015 ± 0.001
18	5/6/2008	0.015 ± 0.001	0.015 ± 0.001	0.013 ± 0.001	0.014 ± 0.001	0.010 ± 0.001		0.015 ± 0.001	0.015 ± 0.001	0.011 ± 0.001
19	5/13/2008	0.012 ± 0.001	0.012 ± 0.001	0.011 ± 0.001	0.013 ± 0.001	0.014 ± 0.001		0.013 ± 0.001	0.007 ± 0.001	0.014 ± 0.001
20	5/20/2008	0.011 ± 0.001	0.010 ± 0.001	0.009 ± 0.001	0.011 ± 0.001	0.013 ± 0.001		0.009 ± 0.001	0.013 ± 0.001	0.010 ± 0.001
21	5/27/2008	0.008 ± 0.001	0.007 ± 0.001	0.007 ± 0.001	0.009 ± 0.001	0.008 ± 0.001		0.007 ± 0.001	0.009 ± 0.001	0.010 ± 0.001
22	6/3/2008	0.013 ± 0.001	0.014 ± 0.001	0.014 ± 0.001	0.014 ± 0.001	0.014 ± 0.001		0.013 ± 0.001	0.006 ± 0.001	0.015 ± 0.001
23	6/10/2008	0.008 ± 0.002	0.009 ± 0.001	0.008 ± 0.001	0.010 ± 0.001	0.009 ± 0.001		0.009 ± 0.002	0.013 ± 0.001	0.010 ± 0.001
24	6/17/2008	0.014 ± 0.001	0.013 ± 0.001	0.014 ± 0.001	0.015 ± 0.001	0.015 ± 0.001		0.013 ± 0.001	0.009 ± 0.001	0.013 ± 0.001
25	6/24/2008	0.011 ± 0.001	0.006 ± 0.001	0.008 ± 0.001	0.008 ± 0.001	0.009 ± 0.001		0.008 ± 0.001	0.014 ± 0.001	0.007 ± 0.001
26	7/1/2008	0.015 ± 0.001	0.012 ± 0.001	0.012 ± 0.001	0.011 ± 0.001	0.015 ± 0.001		0.015 ± 0.001	0.011 ± 0.001	0.015 ± 0.001

** Control sample location

TABLE B-6 (Continued)

IPEC

ENVIRONMENTAL AIRBORNE PARTICULATE SAMPLES - 2008

GROSS BETA ACTIVITY pCi/ m^3 ± 1 Sigma

SAMPLE STATION #

Week Number	Week End Date	4	5	94	95	23**	22	27	29	44
27	7/8/2008	0.012 ± 0.001	0.010 ± 0.001	0.014 ± 0.001	0.012 ± 0.001	0.017 ± 0.001		0.013 ± 0.001	0.014 ± 0.001	0.011 ± 0.001
28	7/15/2008	0.011 ± 0.001	0.011 ± 0.001	0.009 ± 0.001	0.009 ± 0.001	0.013 ± 0.001		0.010 ± 0.001	0.011 ± 0.001	0.011 ± 0.001
29	7/22/2008	0.023 ± 0.002	0.020 ± 0.002	0.019 ± 0.001	0.025 ± 0.002	0.022 ± 0.002		0.021 ± 0.002	0.019 ± 0.001	0.022 ± 0.002
30	7/29/2008	0.015 ± 0.001	0.016 ± 0.001	0.014 ± 0.001	0.015 ± 0.001	0.014 ± 0.001		0.015 ± 0.001	0.015 ± 0.001	0.012 ± 0.001
31	8/5/2008	0.012 ± 0.001	0.010 ± 0.001	0.012 ± 0.001	0.016 ± 0.001	0.014 ± 0.001		0.013 ± 0.001	0.015 ± 0.001	0.015 ± 0.001
32	8/12/2008	0.009 ± 0.001	0.010 ± 0.001	0.007 ± 0.001	0.010 ± 0.001	0.009 ± 0.001		0.010 ± 0.001	0.011 ± 0.001	0.008 ± 0.001
33	8/19/2008	0.013 ± 0.001	0.014 ± 0.001	0.017 ± 0.001	0.014 ± 0.001	0.012 ± 0.001		0.017 ± 0.001	0.016 ± 0.001	0.017 ± 0.002
34	8/26/2008	0.012 ± 0.001	0.012 ± 0.001	0.010 ± 0.001	0.012 ± 0.001	0.014 ± 0.001		0.011 ± 0.001	0.014 ± 0.001	0.013 ± 0.001
35	9/2/2008	0.011 ± 0.001	0.010 ± 0.001	0.014 ± 0.001	0.015 ± 0.001	0.013 ± 0.001		0.011 ± 0.001	0.012 ± 0.001	0.014 ± 0.001
36	9/9/2008	0.016 ± 0.001	0.014 ± 0.001	0.016 ± 0.001	0.018 ± 0.001	0.019 ± 0.002		0.014 ± 0.001	0.017 ± 0.001	0.016 ± 0.002
37	9/16/2008	0.010 ± 0.001	0.009 ± 0.001	0.007 ± 0.001	0.011 ± 0.001	0.009 ± 0.001		0.009 ± 0.001	0.011 ± 0.001	0.010 ± 0.001
38	9/23/2008	0.012 ± 0.001	0.012 ± 0.001	0.011 ± 0.001	0.012 ± 0.001	0.007 ± 0.001		0.013 ± 0.001	0.012 ± 0.001	0.009 ± 0.001
39	9/30/2008	0.008 ± 0.001	0.007 ± 0.001	0.006 ± 0.001	0.009 ± 0.001	0.011 ± 0.001		0.007 ± 0.001	0.008 ± 0.001	0.005 ± 0.001
40	10/7/2008	0.012 ± 0.001	0.012 ± 0.001	0.009 ± 0.001	0.011 ± 0.001	0.011 ± 0.001		0.011 ± 0.001	0.010 ± 0.001	0.013 ± 0.001
41	10/14/2008	0.022 ± 0.002	0.024 ± 0.002	0.022 ± 0.002	0.021 ± 0.002	0.021 ± 0.002		0.023 ± 0.002	0.020 ± 0.001	0.018 ± 0.002
42	10/21/2008	0.013 ± 0.001	0.013 ± 0.001	0.012 ± 0.001	0.016 ± 0.001	0.014 ± 0.001		0.010 ± 0.001	0.014 ± 0.001	0.014 ± 0.001
43	10/28/2008	0.010 ± 0.001	0.010 ± 0.001	0.013 ± 0.001	0.011 ± 0.001	0.011 ± 0.001		0.010 ± 0.001	0.011 ± 0.001	0.012 ± 0.001
44	11/4/2008	0.015 ± 0.001	0.015 ± 0.001	0.016 ± 0.001	0.013 ± 0.001	0.015 ± 0.001		0.013 ± 0.001	0.014 ± 0.001	0.016 ± 0.001
45	11/10/2008	0.017 ± 0.002	0.015 ± 0.001	0.012 ± 0.001	0.011 ± 0.001	0.015 ± 0.001		0.012 ± 0.001	0.015 ± 0.001	0.015 ± 0.001
46	11/18/2008	0.005 ± 0.001	0.006 ± 0.001	0.005 ± 0.001	0.007 ± 0.001	0.006 ± 0.001		0.006 ± 0.001	0.005 ± 0.001	0.005 ± 0.001
47	11/24/2008	0.009 ± 0.001	0.009 ± 0.001	0.010 ± 0.001	0.009 ± 0.001	0.008 ± 0.001		0.009 ± 0.001	0.007 ± 0.001	0.012 ± 0.001
48	12/2/2008	0.017 ± 0.001	0.015 ± 0.001	0.017 ± 0.001	0.012 ± 0.001	0.014 ± 0.001		0.015 ± 0.001	0.015 ± 0.001	0.017 ± 0.001
49	12/9/2008	0.012 ± 0.001	0.016 ± 0.001	0.013 ± 0.001	0.013 ± 0.001	0.016 ± 0.001		0.016 ± 0.001	0.014 ± 0.001	0.012 ± 0.001
50	12/15/2008	0.011 ± 0.001	0.010 ± 0.001	0.010 ± 0.001	0.012 ± 0.001	0.012 ± 0.001		0.011 ± 0.001	0.011 ± 0.001	0.012 ± 0.001
51	12/23/2008	0.014 ± 0.001	0.012 ± 0.001	0.012 ± 0.001	0.013 ± 0.001	0.013 ± 0.001		0.015 ± 0.001	0.012 ± 0.001	0.014 ± 0.001
52	12/30/2008	0.028 ± 0.002	0.026 ± 0.002	0.023 ± 0.002	0.025 ± 0.002	0.022 ± 0.001		0.026 ± 0.002	0.022 ± 0.001	0.023 ± 0.002

** Control sample location

TABLE B-7
CONCENTRATIONS OF GAMMA EMITTERS IN QUARTERLY COMPOSITES
OF SITE AIR PARTICULATE SAMPLES - 2007
Results in Units of 1E-3 pCi/ m3 ± 1 Sigma

SAMPLE LOCATIONS - 1ST QTR 2008

Nuclide	Algonquin Sta #4	NYU Tower #5	Croton Point #27	Training Bldg #94	Met Tower #95	Lovett #22	Roseton #23**	Grassy Point #29	Peekskill #44
Be-7	120.4 +/- 14.2	129.1 +/- 13.5	88.7 +/- 13.9	102.0 +/- 12.5	108.1 +/- 13.8	105.5 +/- 12.9	138.0 +/- 28.6	112.9 +/- 13.6	130.4 +/- 12.5
Cs-134	< 0.7	< 0.7	< 1.2	< 0.7	< 0.5	< 0.9	< 2.5	< 0.8	< 0.5
Cs-137	< 0.5	< 0.4	< 0.8	< 0.5	< 0.5	< 0.8	< 3.5	< 0.7	< 0.5
Zr-95	< 1.2	< 1.3	< 1.7	< 1.6	< 1.8	< 1.7	< 4.3	< 2.1	< 1.1
Nb-95	< 1.4	< 1.1	< 2.2	< 0.6	< 0.6	< 2.0	< 5.3	< 1.5	< 1.1
Co-58	< 0.7	< 1.4	< 1.0	< 0.5	< 0.8	< 0.6	< 3.0	< 0.9	< 0.6
Mn-54	< 0.4	< 0.7	< 0.5	< 0.4	< 0.5	< 0.9	< 2.2	< 0.7	< 0.6
Zn-65	< 2.1	< 1.2	< 2.9	< 1.7	< 1.7	< 1.8	< 3.5	< 1.9	< 1.0
Co-60	< 0.6	< 0.4	< 1.3	< 0.6	< 0.4	< 0.6	< 2.1	< 0.5	< 0.3
K-40	49.0 +/- 10.1	< 5.9	64.0 +/- 14.0	< 5.8	< 8.2	< 6.2	< 31.1	54.4 +/- 10.6	< 3.4

SAMPLE LOCATIONS - 2ND QTR 2008

Nuclide	Algonquin Sta #4	NYU Tower #5	Croton Point #27	Training Bldg #94	Met Tower #95	Lovett #22*	Roseton #23**	Grassy Point #29	Peekskill #44
Be-7	142.5 +/- 14.4	109.8 +/- 16.5	126.8 +/- 13.8	144.2 +/- 13.6	129.6 +/- 14.6	138 +/- 29	101.7 +/- 14.2	99.9 +/- 11.1	172.3 +/- 19.6
Cs-134	< 0.8	< 1.0	< 0.7	< 0.8	< 0.8	< 2.5	< 1.2	< 0.4	< 0.7
Cs-137	< 0.5	< 0.4	< 0.7	< 0.4	< 0.6	< 3.5	< 0.8	< 0.5	< 0.8
Zr-95	< 1.4	< 2.4	< 1.3	< 1.2	< 0.9	< 4.3	< 1.9	< 1.3	< 3.3
Nb-95	< 1.3	< 2.6	< 1.6	< 1.0	< 0.7	< 5.3	< 2.2	< 1.3	< 2.3
Co-58	< 0.9	< 1.2	< 0.8	< 0.6	< 0.7	< 3	< 0.9	< 0.5	< 0.7
Mn-54	< 0.9	< 0.7	< 0.6	< 0.7	< 0.5	< 2.2	< 0.8	< 0.6	< 0.9
Zn-65	< 1.7	< 3.5	< 1.6	< 1.4	< 2.1	< 3.5	< 2.1	< 1.9	< 2.7
Co-60	< 0.9	< 1.0	< 0.7	< 0.4	< 0.8	< 2.1	< 0.7	< 0.6	< 1.0
K-40	< 4.3	87.3 +/- 17.3	< 5.5	< 5.6	< 10.0	< 31.1	53.8 +/- 11.8	< 3.3	92.3 +/- 17.9

* 3 samples
** Control Sample Location

TABLE B-7
CONCENTRATIONS OF GAMMA EMITTERS IN QUARTERLY COMPOSITES
OF SITE AIR PARTICULATE SAMPLES - 2007
Results in Units of 1E-3 pCi/ m3 ± 1 Sigma

SAMPLE LOCATIONS - 3RD QTR 2008

Nuclide	Algonquin Sta #4	NYU Tower #5	Croton Point #27	Training Bldg #94	Met Tower #95	Lovett #22	Roseton #23**	Grassy Point #29	Peekskill #44
Be-7	135.1 +/- 13.3	105.7 +/- 14.0	99.3 +/- 13.1	110.4 +/- 14.4	137.0 +/- 16.1	retired	115.2 +/- 11.1	123.8 +/- 10.3	111.4 +/- 12.5
Cs-134	< 0.7	< 0.6	< 0.6	< 0.9	< 1.2		< 0.4	< 0.4	< 0.8
Cs-137	< 0.3	< 0.5	< 0.5	< 0.6	< 0.8		< 0.2	< 0.3	< 0.5
Zr-95	< 1.7	< 1.2	< 1.8	< 2.0	< 2.2		< 1.0	< 0.8	< 1.1
Nb-95	< 0.8	< 0.9	< 0.7	< 1.4	< 2.0		< 0.8	< 0.8	< 0.9
Co-58	< 0.5	< 0.8	< 0.9	< 0.8	< 0.7		< 0.7	< 0.5	< 0.6
Mn-54	< 0.6	< 0.4	< 0.5	< 0.6	< 0.6		< 0.4	< 0.4	< 0.5
Zn-65	< 1.4	< 1.5	< 2.2	< 1.5	< 2.1		< 0.8	< 0.9	< 1.8
Co-60	< 0.8	< 0.7	< 0.7	< 0.8	< 0.8		< 0.4	< 0.4	< 0.7
K-40	< 4.0	< 5.3	< 4.8	36.7 +/- 9.6	68.7 +/- 16.1		< 5.2	< 5.0	< 4.3

SAMPLE LOCATIONS - 4TH QTR 2008

Nuclide	Algonquin Sta #4	NYU Tower #5	Croton Point #27	Training Bldg #94	Met Tower #95	Lovett #22	Roseton #23**	Grassy Point #29	Peekskill #44
Be-7	64.4 +/- 15.1	58.4 +/- 10.0	100.2 +/- 11.4	97.6 +/- 11.6	90.9 +/- 11.5	retired	91.5 +/- 12.4	114.2 +/- 10.8	100.0 +/- 15.6
Cs-134	< 0.9	< 0.8	< 0.7	< 0.5	< 0.9		< 1.0	< 0.7	< 0.8
Cs-137	< 1.0	< 0.7	< 0.4	< 0.7	< 0.4		< 0.4	< 0.4	< 0.4
Zr-95	< 2.3	< 1.0	< 0.8	< 1.6	< 1.7		< 2.0	< 1.4	< 1.7
Nb-95	< 3.1	< 1.3	< 1.0	< 0.6	< 1.4		< 1.0	< 0.9	< 2.2
Co-58	< 1.7	< 0.8	< 0.8	< 0.8	< 0.6		< 1.1	< 0.4	< 1.8
Mn-54	< 0.9	< 0.4	< 0.6	< 0.5	< 0.8		< 0.6	< 0.4	< 1.0
Zn-65	< 4.0	< 1.6	< 0.9	< 1.2	< 1.7		< 1.0	< 0.9	< 3.5
Co-60	< 1.5	< 0.6	< 0.4	< 0.7	< 0.4		< 0.9	< 0.3	< 0.8
K-40	91.4 +/- 16.4	< 7.9	< 4.5	< 5.0	< 5.9		35.7 +/- 9.4	< 3.4	90.8 +/- 16.6

** Control Sample Location

TABLE B-8

IPEC

ENVIRONMENTAL CHARCOAL CARTRIDGE SAMPLES - 2008

I-131 ACTIVITY pCi/ m^3 ± 1 Sigma

SAMPLE STATION #

Week Number	Week End Date	4	5	94	95	23**	22	27	29	44
1	01/08/08	< 0.022	< 0.029	< 0.025	< 0.024	< 0.025	< 0.036	< 0.021	< 0.033	< 0.033
2	01/15/08	< 0.025	< 0.040	< 0.023	< 0.026	< 0.026	< 0.040	< 0.025	< 0.032	< 0.036
3	01/22/08	< 0.008	< 0.032	< 0.023	< 0.028	< 0.022	< 0.026	< 0.022	< 0.015	< 0.027
4	01/29/08	< 0.027	< 0.024	< 0.032	< 0.036	< 0.039	< 0.041	< 0.024	< 0.028	< 0.032
5	02/05/08	< 0.025	< 0.026	< 0.029	< 0.020	< 0.038	< 0.032	< 0.020	< 0.024	< 0.038
6	02/12/08	< 0.027	< 0.021	< 0.025	< 0.037	< 0.032	< 0.046	< 0.025	< 0.026	< 0.035
7	02/19/08	< 0.026	< 0.023	< 0.067	< 0.033	< 0.022	< 0.027	< 0.029	< 0.015	< 0.027
8	02/26/08	< 0.031	< 0.029	< 0.025	< 0.024	< 0.027	< 0.042	< 0.028	< 0.021	< 0.032
9	03/04/08	< 0.023	< 0.025	< 0.026	< 0.024	< 0.041	< 0.045	< 0.036	< 0.023	< 0.028
10	03/11/08	< 0.035	< 0.038	< 0.026	< 0.041	< 0.025	< 0.053	< 0.022	< 0.012	< 0.039
11	03/18/08	< 0.052	< 0.040	< 0.017	< 0.042	< 0.030	< 0.054	< 0.022	< 0.016	< 0.042
12	03/25/08	< 0.032	< 0.006	< 0.025	< 0.032	< 0.026	< 0.030	< 0.050	< 0.023	< 0.036
13	04/01/08	< 0.030	< 0.020	< 0.026	< 0.038	< 0.040	< 0.028	< 0.030	< 0.021	< 0.046
14	04/08/08	< 0.030	< 0.028	< 0.006	< 0.006	< 0.029	< 0.038	< 0.041	< 0.024	< 0.047
15	04/15/08	< 0.020	< 0.032	< 0.019	< 0.007	< 0.030	< 0.031	< 0.016	< 0.030	< 0.034
16	04/22/08	< 0.026	< 0.034	< 0.027	< 0.044	< 0.044	< 0.065	< 0.022	< 0.017	< 0.019
17	04/29/08	< 0.024	< 0.032	< 0.014	< 0.022	< 0.030		< 0.024	< 0.022	< 0.039
18	05/06/08	< 0.017	< 0.029	< 0.024	< 0.035	< 0.028		< 0.024	< 0.032	< 0.028
19	05/13/08	< 0.037	< 0.021	< 0.021	< 0.033	< 0.034		< 0.035	< 0.022	< 0.037
20	05/20/08	< 0.033	< 0.029	< 0.025	< 0.039	< 0.042		< 0.034	< 0.024	< 0.045
21	05/27/08	< 0.032	< 0.022	< 0.027	< 0.039	< 0.038		< 0.007	< 0.020	< 0.029
22	06/03/08	< 0.023	< 0.034	< 0.016	< 0.034	< 0.040		< 0.024	< 0.036	< 0.040
23	06/10/08	< 0.064	< 0.029	< 0.028	< 0.029	< 0.036		< 0.049	< 0.029	< 0.037
24	06/17/08	< 0.018	< 0.036	< 0.031	< 0.036	< 0.032		< 0.022	< 0.018	< 0.026
25	06/24/08	< 0.032	< 0.041	< 0.028	< 0.023	< 0.036		< 0.017	< 0.025	< 0.038
26	07/01/08	< 0.033	< 0.016	< 0.034	< 0.036	< 0.037		< 0.025	< 0.028	< 0.035

** Control sample location

TABLE B-8 (Continued)

IPEC

ENVIRONMENTAL CHARCOAL CARTRIDGE SAMPLES - 2008

I-131 ACTIVITY pCi/ m^3 ± 1 Sigma

SAMPLE STATION #

Week Number	Week End Date	4	5	94	95	23**	22	27	29	44
27	07/08/08	< 0.036	< 0.043	< 0.015	< 0.038	< 0.038		< 0.017	< 0.027	< 0.035
28	07/15/08	< 0.033	< 0.043	< 0.022	< 0.027	< 0.038		< 0.027	< 0.022	< 0.044
29	07/22/08	< 0.020	< 0.035	< 0.023	< 0.024	< 0.024		< 0.033	< 0.028	< 0.044
30	07/29/08	< 0.013	< 0.026	< 0.010	< 0.025	< 0.033		< 0.014	< 0.020	< 0.035
31	08/05/08	< 0.052	< 0.025	< 0.032	< 0.030	< 0.056		< 0.020	< 0.015	< 0.029
32	08/11/08	< 0.043	< 0.031	< 0.030	< 0.028	< 0.026		< 0.047	< 0.028	< 0.024
33	08/19/08	< 0.032	< 0.031	< 0.026	< 0.021	< 0.039		< 0.029	< 0.045	< 0.049
34	08/26/08	< 0.024	< 0.016	< 0.032	< 0.026	< 0.028		< 0.017	< 0.023	< 0.037
35	09/02/08	< 0.032	< 0.026	< 0.019	< 0.006	< 0.025		< 0.020	< 0.020	< 0.024
36	09/09/08	< 0.042	< 0.014	< 0.023	< 0.020	< 0.034		< 0.027	< 0.038	< 0.027
37	09/16/08	< 0.032	< 0.025	< 0.021	< 0.022	< 0.028		< 0.022	< 0.027	< 0.023
38	09/23/08	< 0.038	< 0.021	< 0.016	< 0.025	< 0.032		< 0.025	< 0.039	< 0.019
39	09/30/08	< 0.030	< 0.023	< 0.023	< 0.022	< 0.028		< 0.010	< 0.028	< 0.024
40	10/07/08	< 0.029	< 0.021	< 0.029	< 0.025	< 0.040		< 0.022	< 0.033	< 0.038
41	10/14/08	< 0.022	< 0.030	< 0.025	< 0.018	< 0.039		< 0.034	< 0.015	< 0.018
42	10/21/08	< 0.023	< 0.021	< 0.031	< 0.023	< 0.035		< 0.025	< 0.046	< 0.037
43	10/28/08	< 0.037	< 0.049	< 0.028	< 0.023	< 0.033		< 0.052	< 0.025	< 0.057
44	11/04/08	< 0.036	< 0.028	< 0.027	< 0.030	< 0.039		< 0.023	< 0.016	< 0.032
45	11/10/08	< 0.039	< 0.034	< 0.036	< 0.030	< 0.035		< 0.038	< 0.023	< 0.028
46	11/18/08	< 0.028	< 0.041	< 0.013	< 0.026	< 0.033		< 0.024	< 0.033	< 0.057
47	11/24/08	< 0.028	< 0.025	< 0.021	< 0.024	< 0.024		< 0.019	< 0.019	< 0.019
48	12/02/08	< 0.021	< 0.022	< 0.005	< 0.019	< 0.040		< 0.022	< 0.041	< 0.029
49	12/09/08	< 0.023	< 0.038	< 0.023	< 0.021	< 0.037		< 0.016	< 0.030	< 0.036
50	12/15/08	< 0.031	< 0.030	< 0.021	< 0.023	< 0.026		< 0.024	< 0.014	< 0.019
51	12/23/08	< 0.052	< 0.023	< 0.029	< 0.041	< 0.030		< 0.030	< 0.025	< 0.053
52	12/30/08	< 0.021	< 0.026	< 0.036	< 0.033	< 0.028		< 0.036	< 0.044	< 0.031

** Control sample location

TABLE B-9
CONCENTRATIONS OF GAMMA EMITTERS IN SURFACE WATER SAMPLES – 2008
Results in Units of pCi/liter ± 1 Sigma
#9 PLANT INLET (HUDSON RIVER INTAKE)

Date	1/25/2008	2/29/2008	3/28/2008	4/25/2008	5/30/2008	6/27/2008
NUCLIDE						
I-131	< 5.96	< 6.97	< 4.85	< 7.03	< 7.16	< 5.49
Cs-134	< 1.50	< 1.46	< 1.37	< 0.91	< 0.70	< 0.95
Cs-137	< 1.32	< 1.35	< 1.17	< 1.50	< 0.95	< 1.21
Zr-95	< 3.18	< 2.67	< 2.33	< 2.97	< 1.98	< 2.70
Nb-95	< 2.29	< 1.90	< 1.70	< 1.80	< 1.51	< 1.66
Co-58	< 1.76	< 1.48	< 1.28	< 1.66	< 1.09	< 1.36
Mn-54	< 1.69	< 1.17	< 0.98	< 1.53	< 1.01	< 1.37
Fe-59	< 5.38	< 3.77	< 3.51	< 3.98	< 3.23	< 3.55
Zn-65	< 3.31	< 3.16	< 2.75	< 1.58	< 1.28	< 3.58
Co-60	< 1.72	< 0.90	< 1.18	< 1.28	< 0.87	< 1.40
K-40	183.9 +/- 19.01	97.05 +/- 12.98	26.52 +/- 9.28	< 12.83	44.11 +/- 8.56	53.3 +/- 12.75
Ba/La-140	< 4.74	< 4.25	< 3.63	< 4.12	< 4.00	< 3.75
Date	7/25/2008	8/29/2008	9/26/2008	10/31/2008	11/26/2008	12/31/2008
NUCLIDE						
I-131	< 6.96	< 4.90	< 4.60	< 6.67	< 6.73	< 4.06
Cs-134	< 1.09	< 1.25	< 0.80	< 0.80	< 1.01	< 0.86
Cs-137	< 1.75	< 1.06	< 1.14	< 1.19	< 0.85	< 0.76
Zr-95	< 3.43	< 2.02	< 2.14	< 2.62	< 1.99	< 1.55
Nb-95	< 2.65	< 1.28	< 1.01	< 1.72	< 1.39	< 1.15
Co-58	< 2.10	< 1.25	< 1.39	< 1.48	< 1.15	< 0.80
Mn-54	< 1.71	< 1.18	< 1.20	< 1.28	< 0.91	< 0.73
Fe-59	< 5.57	< 3.00	< 3.72	< 4.05	< 3.08	< 2.47
Zn-65	< 4.44	< 2.28	< 1.59	< 1.58	< 1.34	< 0.93
Co-60	< 1.90	< 1.02	< 1.23	< 1.18	< 1.01	< 0.78
K-40	194.3 +/- 19.76	48.4 +/- 10.43	109.7 +/- 12.89	393 +/- 17.62	120.7 +/- 10.99	41.43 +/- 6.39
Ba/La-140	< 5.27	< 4.00	< 2.52	< 4.04	< 3.43	< 2.46

TABLE B-9 (Continued)
CONCENTRATIONS OF GAMMA EMITTERS IN SURFACE WATER SAMPLES – 2008
Results in Units of pCi/liter ± 1 Sigma
#10 DISCHARGE CANAL (MIXING ZONE)

Date	1/25/2008	2/29/2008	3/28/2008	4/25/2008	5/30/2008	6/27/2008
NUCLIDE						
I-131	< 5.35	< 6.86	< 5.42	< 6.81	< 6.19	< 6.90
Cs-134	< 0.92	< 1.47	< 0.80	< 1.12	< 0.92	< 1.17
Cs-137	< 1.17	< 1.31	< 1.04	< 1.44	< 1.21	< 1.68
Zr-95	< 2.61	< 2.40	< 2.09	< 2.64	< 2.14	< 3.24
Nb-95	< 1.68	< 2.17	< 0.98	< 1.99	< 1.82	< 2.20
Co-58	< 1.54	< 1.51	< 1.18	< 1.57	< 1.54	< 1.95
Mn-54	< 1.36	< 1.18	< 1.09	< 1.31	< 1.25	< 1.69
Fe-59	< 4.16	< 4.27	< 3.09	< 4.47	< 3.65	< 4.71
Zn-65	< 1.62	< 3.69	< 1.54	< 2.02	< 1.70	< 2.46
Co-60	< 1.26	< 1.41	< 1.15	< 1.26	< 1.29	< 1.72
K-40	150.8 +/- 15.35	63.96 +/- 12.47	102 +/- 10.85	307.4 +/- 18.34	329 +/- 16.70	439.3 +/- 24.30
Ba/La-140	< 3.47	< 5.37	< 3.17	< 3.67	< 3.68	< 4.08
Date	7/25/2008	8/29/2008	9/26/2008	10/31/2008	11/26/2008	12/31/2008
NUCLIDE						
I-131	< 6.52	< 5.18	< 5.04	< 6.39	< 5.87	< 5.42
Cs-134	< 1.01	< 0.75	< 0.90	< 1.14	< 0.87	< 0.70
Cs-137	< 1.35	< 0.89	< 1.08	< 0.96	< 1.17	< 0.97
Zr-95	< 2.79	< 2.08	< 1.99	< 2.17	< 2.31	< 2.29
Nb-95	< 1.91	< 1.35	< 1.53	< 1.43	< 1.74	< 1.55
Co-58	< 1.65	< 1.15	< 1.29	< 1.27	< 1.39	< 1.19
Mn-54	< 1.31	< 0.96	< 1.14	< 1.05	< 1.18	< 1.04
Fe-59	< 4.42	< 3.49	< 4.18	< 3.25	< 3.67	< 3.73
Zn-65	< 2.09	< 1.19	< 3.03	< 2.42	< 1.62	< 2.29
Co-60	< 1.39	< 0.96	< 1.29	< 1.06	< 1.08	< 1.08
K-40	400.8 +/- 20.29	83.0 +/- 9.65	71.07 +/- 11.74	65.45 +/- 9.12	391.9 +/- 17.97	141.8 +/- 11.51
Ba/La-140	< 4.15	< 2.78	< 3.76	< 3.86	< 3.59	< 3.73

TABLE B-10
CONCENTRATIONS OF TRITIUM IN SURFACE WATER SAMPLES – 2008
(QUARTERLY COMPOSITE SAMPLES)

Results in Units of pCi/l ± 1 Sigma

STATION CODE	PERIOD	DATE		TRITIUM
PLANT INTAKE (HUDSON RIVER) (09, INLET) **	First Quarter	12/31/07	03/28/08	<450
	Second Quarter	03/28/08	06/27/08	<440
	Third Quarter	06/27/08	09/26/08	<427
	Fourth Quarter	09/26/08	12/31/08	<424
DISCHARGE CANAL (10, MIXING ZONE)	First Quarter	12/31/07	03/28/08	<450
	Second Quarter	03/28/08	06/27/08	<440
	Third Quarter	06/27/08	09/26/08	<427
	Fourth Quarter	09/26/08	12/31/08	<424

** Control Sample location

TABLE B-11
CONCENTRATIONS OF GAMMA EMITTERS IN DRINKING WATER SAMPLES – 2008
Results in Units of pCi/L ± 1 Sigma
CAMP FIELD RESERVOIR

Date	1/15/2008	2/12/2008	3/11/2008	4/15/2008	5/13/2008	6/17/2008
Nuclide						
I-131	< 3.51	< 2.82	< 2.22	< 2.20	< 3.66	< 2.45
Cs-134	< 2.05	< 3.17	< 2.10	< 2.16	< 2.02	< 2.73
Cs-137	< 3.05	< 2.69	< 1.97	< 1.66	< 2.93	< 1.33
Zr-95	< 4.04	< 4.31	< 2.55	< 3.37	< 4.32	< 3.73
Nb-95	< 3.45	< 1.92	< 1.75	< 1.92	< 2.92	< 2.77
Co-58	< 3.27	< 3.09	< 1.68	< 2.28	< 3.13	< 2.53
Mn-54	< 3.45	< 2.32	< 1.88	< 1.65	< 3.07	< 2.27
Fe-59	< 7.60	< 7.38	< 5.25	< 5.47	< 7.26	< 6.05
Zn-65	< 3.41	< 5.88	< 5.73	< 5.71	< 9.41	< 5.16
Co-60	< 3.26	< 2.58	< 1.70	< 2.44	< 2.41	< 2.92
K-40	307.2 +/- 40.54	122.9 +/- 28.08	< 24.82	< 14.86	328.3 +/- 39.19	< 30.59
Ba/La-140	< 5.56	< 4.32	< 2.42	< 2.61	< 4.07	< 3.93

Date	7/15/2008	8/11/2008	9/23/2008	10/21/2008	11/18/2008	12/15/2008
Nuclide						
I-131	< 2.70	< 2.89	< 2.63	< 3.29	< 2.01	< 2.09
Cs-134	< 1.43	< 2.81	< 1.67	< 1.93	< 1.72	< 1.32
Cs-137	< 2.50	< 2.50	< 2.22	< 3.48	< 1.83	< 2.02
Zr-95	< 3.59	< 3.63	< 2.96	< 3.87	< 2.64	< 3.15
Nb-95	< 2.36	< 2.94	< 1.97	< 2.40	< 1.62	< 1.64
Co-58	< 2.78	< 2.80	< 2.08	< 2.37	< 1.64	< 2.12
Mn-54	< 1.96	< 2.54	< 2.08	< 2.46	< 1.60	< 1.55
Fe-59	< 4.94	< 5.79	< 4.99	< 7.21	< 4.17	< 4.35
Zn-65	< 7.29	< 7.11	< 5.41	< 7.69	< 4.47	< 4.82
Co-60	< 2.61	< 2.61	< 2.60	< 2.92	< 1.73	< 2.27
K-40	< 29.19	< 30.59	76.75 +/- 23.49	110.4 +/- 33.44	< 15.30	< 18.17
Ba/La-140	< 3.20	< 3.66	< 3.94	< 3.58	< 2.47	< 1.87

TABLE B-11 (Continued)
CONCENTRATIONS OF GAMMA EMITTERS IN DRINKING WATER SAMPLES – 2008
Results in Units of pCi/L ± 1 Sigma
NEW CROTON RESERVOIR

Date	1/15/2008	2/12/2008	3/11/2008	4/15/2008	5/13/2008	6/17/2008
Nuclide						
I-131	< 2.81	< 2.96	< 1.84	< 2.92	< 3.30	< 2.46
Cs-134	< 3.26	< 3.11	< 1.91	< 3.14	< 5.04	< 2.11
Cs-137	< 3.32	< 2.82	< 1.90	< 2.57	< 2.27	< 2.22
Zr-95	< 5.07	< 4.62	< 2.88	< 3.44	< 4.55	< 3.34
Nb-95	< 2.04	< 2.78	< 2.01	< 2.61	< 2.71	< 1.97
Co-58	< 3.11	< 2.62	< 1.71	< 2.22	< 3.28	< 2.15
Mn-54	< 3.57	< 2.17	< 1.25	< 2.40	< 3.40	< 2.39
Fe-59	< 5.21	< 5.70	< 3.56	< 7.11	< 4.85	< 4.74
Zn-65	< 7.82	< 5.44	< 3.71	< 6.23	< 7.55	< 6.05
Co-60	< 2.89	< 2.06	< 2.01	< 2.10	< 3.63	< 2.50
K-40	< 34.61	169.2 +/- 29.43	90.65 +/- 18.35	< 29.94	< 33.93	< 21.55
Ba/La-140	< 5.93	< 3.47	< 1.89	< 2.66	< 3.14	< 2.54

Date	7/15/2008	8/11/2008	9/23/2008	10/21/2008	11/18/2008	12/15/2008
Nuclide						
I-131	< 2.56	< 2.76	< 3.21	< 3.26	< 1.69	< 3.39
Cs-134	< 2.03	< 2.61	< 1.68	< 3.51	< 1.01	< 2.12
Cs-137	< 2.52	< 2.31	< 3.17	< 2.23	< 1.45	< 2.42
Zr-95	< 4.38	< 3.13	< 4.21	< 4.39	< 2.19	< 5.38
Nb-95	< 2.44	< 1.80	< 2.90	< 3.16	< 1.44	< 3.02
Co-58	< 2.02	< 2.78	< 2.26	< 3.12	< 1.65	< 3.43
Mn-54	< 2.33	< 2.50	< 2.56	< 3.65	< 1.52	< 2.83
Fe-59	< 4.73	< 6.00	< 5.37	< 7.08	< 3.63	< 4.55
Zn-65	< 3.02	< 2.62	< 7.87	< 7.32	< 3.89	< 9.91
Co-60	< 2.04	< 2.04	< 3.42	< 3.19	< 1.30	< 3.04
K-40	96.07 +/- 23.12	105.1 +/- 22.44	200.6 +/- 34.10	358.4 +/- 41.89	82.11 +/- 13.90	469 +/- 49.27
Ba/La-140	< 2.53	< 2.86	< 3.26	< 3.37	< 1.67	< 4.60

TABLE B-12
CONCENTRATIONS OF TRITIUM IN DRINKING WATER SAMPLES – 2008
(QUARTERLY COMPOSITE SAMPLES)

Results in Units of pCi/L ± 1 Sigma

STATION CODE	PERIOD	DATE		TRITIUM
CAMP FIELD RESERVOIR	First Quarter	12/18/07	03/11/08	< 452
	Second Quarter	03/11/08	06/17/08	< 442
	Third Quarter	06/17/08	09/23/08	< 416
	Fourth Quarter	09/23/08	12/15/08	< 413
NEW CROTON RESERVOIR	First Quarter	12/18/07	03/11/08	< 452
	Second Quarter	03/11/08	06/17/08	< 442
	Third Quarter	06/17/08	09/23/08	< 416
	Fourth Quarter	09/23/08	12/15/08	< 413

TABLE B-13
CONCENTRATIONS OF RADIONUCLIDES IN SHORELINE SOIL SAMPLES – 2008
Results in Units of pCi/kg ± 1 Sigma

Sample Location / Date		COLD SPRING SHORELINE 6/11/2008	LENTS COVE SHORELINE 6/11/2008	MANITOU SHORELINE 6/11/2008	VERPLANCK SHORELINE 6/12/2008	WHITE BEACH SHORELINE 6/12/2008
Client ID		ISS842508	ISS282508	ISS502508	ISS172508	ISS532508
Radionuclide	Req. CL (pCi)					
Be-7		< 252.1	< 415.4	1420.0 +/- 426.4	< 261.6	< 156.4
I-131		< 49.8	< 80.5	< 118.5	< 54.8	< 21.3
Cs-134	**75**	< 28.1	< 38.4	< 53.8	< 39.2	< 24.1
Cs-137	**90**	< 31.5	< 49.9	235.7 +/- 55.2	184.3 +/- 40.9	< 19.4
Zr-95		< 52.6	< 87.9	< 93.3	< 78.2	< 31.7
Nb-95		< 36.5	< 56.9	< 64.5	< 48.7	< 26.4
Co-58		< 32.1	< 48.4	< 56.7	< 41.9	< 22.8
Mn-54		< 34.3	< 42.6	< 69.1	< 44.7	< 20.4
Zn-65		< 51.1	< 77.0	< 149.2	< 96.2	< 70.1
Fe-59		< 85.5	< 126.0	< 172.4	< 108.3	< 58.1
Co-60		< 35.6	< 45.9	< 55.9	< 46.6	< 23.5
Ba/La-140		< 29.6	< 110.9	< 98.7	< 80.9	< 31.3
Ru-103		< 32.9	< 42.6	< 68.4	< 43.2	< 16.3
Ru-106		< 311.7	< 376.4	< 670.0	< 365.8	< 193.7
Ce-141		< 57.4	< 81.8	< 97.5	< 55.5	< 19.3
Ce-144		< 202.0	< 329.5	< 254.7	< 220.7	< 117.1
AcTh-228		629.2 +/- 108.6	1882.0 +/- 196.8	1621.0 +/- 242.6	851.0 +/- 155.0	< 71.1
Ra-226		2256.0 +/- 612.2	3670.0 +/- 922.2	6661.0 +/- 1150.0	1943.0 +/- 615.0	680.3 +/- 324.2
K-40		34190.0 +/- 1052.0	16070.0 +/- 1002.0	9427.0 +/- 861.3	22600.0 +/- 1258.0	11260.0 +/- 660.6
Sr-90	**3000**	< 440	< 480	< 550	< 470	< 670

TABLE B-13 (Continued)

CONCENTRATIONS OF RADIONUCLIDES IN SHORELINE SOIL SAMPLES – 2008

Results in Units of pCi/kg ± 1 Sigma

Sample Location / Date		COLD SPRING SHORELINE 9/3/2008	LENTS COVE SHORELINE 9/3/2008	MANITOU SHORELINE 9/3/2008	VERPLANCK SHORELINE 9/4/2008	WHITE BEACH SHORELINE 9/4/2008
Client ID		ISS843608	ISS283608	ISS503608	ISS173608	ISS533608
Radionuclide	Req. CL (pCi)					
Be-7		< 270.7	< 401.2	< 419.0	< 341.3	< 151.6
I-131		< 59.5	< 78.3	< 98.5	< 59.7	< 37.0
Cs-134	**75**	< 22.6	< 48.6	< 32.2	< 38.0	< 17.1
Cs-137	**90**	< 29.1	< 56.1	< 53.0	141.3 +/- 32.4	< 23.8
Zr-95		< 53.6	< 79.5	< 94.5	< 65.6	< 40.5
Nb-95		< 33.1	< 45.9	< 72.2	< 49.8	< 26.2
Co-58		< 39.5	< 52.3	< 62.2	< 39.6	< 22.6
Mn-54		< 35.9	< 45.5	< 51.3	< 33.0	< 23.6
Zn-65		< 60.3	< 65.8	< 70.1	< 115.6	< 65.1
Fe-59		< 93.1	< 122.0	< 144.1	< 100.4	< 61.9
Co-60		< 33.3	< 32.6	< 53.5	< 41.9	< 29.8
Ba/La-140		< 37.1	< 90.4	< 110.9	< 54.7	< 19.4
Ru-103		< 32.2	< 40.8	< 58.5	< 42.2	< 25.5
Ru-106		< 278.6	< 451.4	< 606.5	< 380.9	< 173.8
Ce-141		< 52.9	< 75.3	< 94.8	< 51.8	< 32.0
Ce-144		< 214.8	< 283.7	< 299.8	< 168.6	< 126.8
AcTh-228		387.7 +/- 116.9	1631.0 +/- 201.2	1800.0 +/- 227.1	716.7 +/- 154.8	< 89.3
Ra-226		1752.0 +/- 523.1	3345.0 +/- 832.4	5595.0 +/- 892.3	< 640.8	< 519.2
K-40		34980.0 +/- 1148.0	14810.0 +/- 1009.0	12580.0 +/- 981.9	18460.0 +/- 1086.0	10080.0 +/- 650.9
Sr-90	**3000**	< 1100	< 1100	< 1200	< 1100	< 1800

TABLE B-14
CONCENTRATIONS OF GAMMA EMITTERS IN BROADLEAF VEGETATION SAMPLES – 2008
Results in Units of pCi/kg ± 1 Sigma

#95 Meteorological Tower

Sample Location / Date		MET TOWER 4/29/2008	MET TOWER 4/29/2008	MET TOWER 4/29/2008	MET TOWER 5/20/2008	MET TOWER 5/20/2008	MET TOWER 5/20/2008
Client ID	Req. CL (pCi)	IBV951808	IBV951808S2	IBV951808S3	IBV952108S1	IBV952108S2	IBV952108S3
Radionuclide		JAP KNOT	RAGWEED	COMMON MULLE	GARLC MUSTAR	RAGWEED	MULLEN
Be-7		163.3 +/- 69.5	401.3 +/- 66.1	703.4 +/- 80.6	404.4 +/- 40.1	984.6 +/- 57.4	952.1 +/- 54.2
I-131	**50**	< 11.74	< 8.08	< 9.35	< 7.01	< 8.79	< 9.74
Cs-134	**50**	< 12.54	< 6.91	< 6.25	< 5.17	< 4.88	< 6.45
Cs-137	**50**	< 11.16	< 8.14	< 8.64	< 4.35	< 4.68	< 5.59
Zr-95		< 20.12	< 13.54	< 13.14	< 6.50	< 6.32	< 9.10
Nb-95		< 13.51	< 9.10	< 8.82	< 4.95	< 5.46	< 5.21
Co-58		< 10.15	< 7.85	< 8.51	< 4.54	< 5.81	< 5.77
Mn-54		< 10.19	< 8.12	< 8.90	< 4.62	< 5.55	< 4.80
Zn-65		< 34.16	< 27.23	< 25.04	< 11.69	< 16.80	< 15.73
Fe-59		< 29.46	< 21.43	< 24.78	< 13.22	< 15.97	< 17.54
Co-60		< 11.66	< 8.37	< 9.73	< 5.41	< 5.44	< 5.70
Ba/La-140		< 11.97	< 12.07	< 9.92	< 5.10	< 8.34	< 8.74
Ru-103		< 10.91	< 6.38	< 8.41	< 4.96	< 5.68	< 5.66
Ru-106		< 110.00	< 83.07	< 92.40	< 38.15	< 53.17	< 54.36
Ce-141		< 14.57	< 10.68	< 10.84	< 6.29	< 7.43	< 8.18
Ce-144		< 62.68	< 41.08	< 47.53	< 25.65	< 31.20	< 27.37
AcTh-228		< 42.16	< 40.04	< 33.56	< 13.24	< 18.01	26.4 +/- 14.4
Ra-226		< 193.30	300.8 +/- 133.8	286.3 +/- 125.0	< 78.24	< 93.24	313.9 +/- 77.5
K-40		5269.0 +/- 296.2	5641.0 +/- 273.5	4793.0 +/- 237.2	4036.0 +/- 136.5	5426.0 +/- 172.3	5375.0 +/- 154.7

TABLE B-14 (Continued)
CONCENTRATIONS OF GAMMA EMITTERS IN BROADLEAF VEGETATION SAMPLES – 2008
Results in Units of pCi/kg ± 1 Sigma

#95 Meteorological Tower

Sample Location		MET TOWER	MET TOWER	MET TOWER	MET TOWER	MET TOWER	MET TOWER
Date		6/24/2008	6/24/2008	6/24/2008	7/22/2008	7/22/2008	7/22/2008
Client ID	Req. CL (pCi)	IBV952608S1	IBV952608S2	IBV952608S3	IBV953008S1	IBV953008S2	IBV953008S3
Radionuclide		GRAPE LEAVES	RAGWEED	MULLEN	GRAPE LEAVES	RAGWEED	MULLEN
Be-7		512.3 +/- 59.9	1152.0 +/- 110.9	1258.0 +/- 128.0	598.7 +/- 78.1	1754.0 +/- 158.5	1149.0 +/- 123.3
I-131	**50**	< 7.49	< 11.45	< 13.47	< 8.12	< 15.93	< 16.11
Cs-134	**50**	< 5.42	< 7.97	< 18.09	< 9.62	< 10.44	< 11.15
Cs-137	**50**	< 6.81	< 14.68	< 12.70	< 7.42	< 12.76	< 11.69
Zr-95		< 11.04	< 14.26	< 20.14	< 16.47	< 22.06	< 20.49
Nb-95		< 7.76	< 10.82	< 15.26	< 8.86	< 15.14	< 10.46
Co-58		< 5.90	< 8.70	< 12.47	< 8.58	< 14.22	< 11.98
Mn-54		< 7.57	< 12.82	< 13.10	< 6.03	< 14.15	< 11.14
Zn-65		< 17.80	< 30.14	< 35.59	< 22.38	< 36.43	< 35.50
Fe-59		< 16.77	< 40.84	< 32.34	< 21.86	< 42.08	< 33.72
Co-60		< 8.21	< 14.18	< 12.95	< 8.70	< 17.70	< 13.41
Ba/La-140		< 7.23	< 16.80	< 9.63	< 9.69	< 9.80	< 7.33
Ru-103		< 5.38	< 7.91	< 12.78	< 9.25	< 14.59	< 13.18
Ru-106		< 73.95	< 122.10	< 126.00	< 87.53	< 148.30	< 129.10
Ce-141		< 10.42	< 12.43	< 17.02	< 11.88	< 15.52	< 16.27
Ce-144		< 42.89	< 53.53	< 81.78	< 51.41	< 74.80	< 70.61
AcTh-228		< 23.69	< 41.22	< 49.28	< 22.95	< 56.04	< 49.23
Ra-226		265.3 +/- 118.2	< 219.30	< 249.00	307.0 +/- 121.8	316.7 +/- 192.8	395.9 +/- 193.8
K-40		3958.0 +/- 181.2	7965.0 +/- 366.0	6479.0 +/- 344.6	2515.0 +/- 173.4	8579.0 +/- 434.8	7965.0 +/- 354.4

TABLE B-14 (Continued)

CONCENTRATIONS OF GAMMA EMITTERS IN BROADLEAF VEGETATION SAMPLES – 2008

Results in Units of pCi/kg ± 1 Sigma

#95 Meteorological Tower

Sample Location / Date		MET TOWER 9/16/2008	MET TOWER 9/16/2008	MET TOWER 9/16/2008	MET TOWER 10/7/2008	MET TOWER 10/7/2008	MET TOWER 10/7/2008
Client ID	Req. CL (pCi)	IBV953808S1	IBV953808S2	IBV953808S3	IBV954108S1	IBV954108S2	IBV954108S3
Radionuclide		GRAPE LEAVES	RAGWEED	MULLEN	GRAPE LEAVES	RAGWEED	MULLEIN
Be-7		749.2 +/- 83.5	1597.0 +/- 109.2	996.3 +/- 114.2	741.3 +/- 96.0	1197.0 +/- 129.9	1734.0 +/- 135.0
I-131	**50**	< 10.33	< 10.39	< 12.35	< 13.22	< 13.70	< 14.26
Cs-134	**50**	< 12.39	< 11.70	< 13.92	< 9.42	< 20.66	< 19.61
Cs-137	**50**	< 7.89	< 9.08	< 9.97	< 12.84	< 13.02	< 13.90
Zr-95		< 16.28	< 16.35	< 17.98	< 24.73	< 22.32	< 25.31
Nb-95		< 10.44	< 8.57	< 11.75	< 12.45	< 13.63	< 13.78
Co-58		< 7.12	< 9.93	< 11.81	< 12.86	< 13.71	< 12.97
Mn-54		< 11.39	< 9.39	< 12.41	< 10.65	< 13.74	< 13.69
Zn-65		< 27.76	< 23.37	< 31.10	< 30.49	< 33.88	< 35.30
Fe-59		< 25.09	< 24.98	< 30.40	< 38.73	< 41.97	< 32.94
Co-60		< 7.74	< 8.92	< 12.37	< 14.31	< 13.28	< 13.09
Ba/La-140		< 11.21	< 8.93	< 14.61	< 15.60	< 12.58	< 12.41
Ru-103		< 7.23	< 8.23	< 11.05	< 11.93	< 13.54	< 13.03
Ru-106		< 97.13	< 92.86	< 114.80	< 126.80	< 153.20	< 122.10
Ce-141		< 11.12	< 12.30	< 15.27	< 14.36	< 18.02	< 18.59
Ce-144		< 48.47	< 58.56	< 67.29	< 60.65	< 78.51	< 76.79
AcTh-228		< 22.49	< 40.29	< 52.79	< 43.66	< 55.31	< 45.67
Ra-226		< 181.40	< 191.50	537.5 +/- 187.2	< 239.60	< 244.60	511.5 +/- 205.4
K-40		3895.0 +/- 245.3	7485.0 +/- 296.9	7038.0 +/- 360.5	3974.0 +/- 271.5	7481.0 +/- 380.2	7038.0 +/- 313.0

TABLE B-14 (Continued)
CONCENTRATIONS OF GAMMA EMITTERS IN BROADLEAF VEGETATION SAMPLES – 2008
Results in Units of pCi/kg ± 1 Sigma
#94 IPEC Training Center

Sample Location / Date		TRAINING BLDG 4/29/2008	TRAINING BLDG 4/29/2008	TRAINING BLDG 4/29/2008	TRAINING BLDG 5/20/2008	TRAINING BLDG 5/20/2008	TRAINING BLDG 5/20/2008
Client ID		IBV941808S1	IBV941808S2	IBV941808S3	IBV942108S1	IBV942108S2	IBV942108S3
Radionuclide	Req. CL (pCi)	BURDOCK	MULLEN	RAGWEEED	POKEWEED	MULLEN	RAGWEED
Be-7		266.0 +/- 66.6	409.1 +/- 56.1	713.9 +/- 114.5	825.9 +/- 61.4	1614.0 +/- 110.0	1223.0 +/- 74.9
I-131	**50**	< 8.67	< 9.34	< 14.33	< 11.49	< 20.49	< 13.50
Cs-134	**50**	< 5.79	< 5.37	< 13.44	< 3.87	< 7.57	< 7.42
Cs-137	**50**	< 8.46	< 5.57	< 11.34	< 6.55	< 9.50	< 5.49
Zr-95		< 13.60	< 12.46	< 22.82	< 9.24	< 14.96	< 11.66
Nb-95		< 6.72	< 7.93	< 14.93	< 6.74	< 7.57	< 7.74
Co-58		< 6.73	< 7.26	< 12.63	< 4.82	< 11.65	< 6.65
Mn-54		< 5.90	< 8.09	< 11.26	< 5.61	< 9.63	< 7.12
Zn-65		< 24.25	< 19.48	< 37.02	< 9.77	< 13.38	< 10.82
Fe-59		< 25.19	< 20.89	< 41.48	< 19.41	< 35.66	< 17.49
Co-60		< 9.54	< 8.28	< 18.27	< 7.21	< 10.46	< 9.02
Ba/La-140		< 11.61	< 5.52	< 16.17	< 8.98	< 15.27	< 6.44
Ru-103		< 7.76	< 6.51	< 11.92	< 6.22	< 9.00	< 6.53
Ru-106		< 78.50	< 75.84	< 129.30	< 65.83	< 105.50	< 78.00
Ce-141		< 9.55	< 9.63	< 17.16	< 9.52	< 16.01	< 10.22
Ce-144		< 36.33	< 42.39	< 67.91	< 31.12	< 59.87	< 34.90
AcTh-228		< 28.88	82.2 +/- 20.6	< 49.80	< 17.05	< 35.86	< 18.29
Ra-226		< 138.80	321.2 +/- 115.0	461.8 +/- 210.2	< 124.50	< 197.50	236.2 +/- 104.1
K-40		4391.0 +/- 219.7	5232.0 +/- 222.1	6878.0 +/- 399.3	3990.0 +/- 161.3	5782.0 +/- 256.3	6482.0 +/- 212.9

TABLE B-14 (Continued)
CONCENTRATIONS OF GAMMA EMITTERS IN BROADLEAF VEGETATION SAMPLES – 2008
Results in Units of pCi/kg ± 1 Sigma

#94 IPEC Training Center

Sample Location Date		TRAINING BLDG 6/24/2008	TRAINING BLDG 6/24/2008	TRAINING BLDG 6/24/2008	TRAINING BLDG 7/22/2008	TRAINING BLDG 7/22/2008	TRAINING BLDG 7/22/2008
Client ID		IBV942608S1	IBV942608S2	IBV942608S3	IBV943008S1	IBV943008S2	IBV943008S3
Radionuclide	Req. CL (pCi)	BURDOCK	MULLEN	RAGWEED	BURDOCK	MULLEN	RAGWEED
Be-7		1001.0 +/- 71.8	1422.0 +/- 134.2	1427.0 +/- 186.9	1249.0 +/- 101.1	1477.0 +/- 111.6	1041.0 +/- 105.7
I-131	**50**	< 7.78	< 16.24	< 21.21	< 9.98	< 11.34	< 14.99
Cs-134	**50**	< 7.67	< 20.55	< 25.22	< 7.26	< 7.44	< 14.29
Cs-137	**50**	< 7.92	< 14.78	< 24.17	< 8.73	< 9.08	< 12.90
Zr-95		< 10.75	< 27.96	< 44.85	< 15.20	< 15.46	< 20.69
Nb-95		< 5.53	< 14.53	< 26.24	< 9.15	< 9.73	< 12.48
Co-58		< 7.63	< 14.37	< 27.81	< 10.67	< 11.91	< 11.23
Mn-54		< 8.17	< 13.65	< 25.40	< 9.63	< 9.57	< 11.38
Zn-65		< 11.56	< 39.80	< 68.29	< 30.14	< 30.82	< 37.17
Fe-59		< 23.93	< 42.12	< 78.79	< 25.59	< 32.07	< 35.26
Co-60		< 9.00	< 18.02	< 26.97	< 10.12	< 9.96	< 13.86
Ba/La-140		< 12.01	< 21.19	< 22.57	< 10.03	< 9.40	< 10.67
Ru-103		< 7.55	< 14.42	< 23.16	< 8.38	< 10.09	< 12.60
Ru-106		< 77.06	< 185.30	< 262.10	< 93.46	< 102.30	< 120.10
Ce-141		< 9.86	< 22.27	< 32.26	< 14.63	< 12.35	< 18.49
Ce-144		< 45.29	< 83.81	< 124.80	< 59.14	< 60.77	< 80.58
AcTh-228		< 27.40	< 56.18	196.6 +/- 74.0	< 35.36	< 37.91	< 54.60
Ra-226		244.3 +/- 128.2	1238.0 +/- 283.2	< 402.40	432.6 +/- 146.7	< 168.50	436.3 +/- 174.2
K-40		5205.0 +/- 216.0	9223.0 +/- 402.2	14870.0 +/- 723.5	8254.0 +/- 305.0	8656.0 +/- 357.9	9519.0 +/- 371.2

TABLE B-14 (Continued)
CONCENTRATIONS OF GAMMA EMITTERS IN BROADLEAF VEGETATION SAMPLES – 2008
Results in Units of pCi/kg ± 1 Sigma
#94 IPEC Training Center

Sample Location Date		TRAINING BLDG 9/16/2008	TRAINING BLDG 9/16/2008	TRAINING BLDG 9/16/2008	TRAINING BLDG 10/7/2008	TRAINING BLDG 10/7/2008	TRAINING BLDG 10/7/2008
Client ID	Req. CL (pCi)	IBV943808S1	IBV943808S2	IBV943808S3	IBV944108S1	IBV944108S2	IBV944108S3
Radionuclide		GRAPE	MULLEN	RAGWEED	GRAPE LE	MULLEIN	RAGWEED
Be-7		1098.0 +/- 115.9	332.6 +/- 85.3	2047.0 +/- 118.8	1845.0 +/- 120.9	458.8 +/- 89.2	1782.0 +/- 142.2
I-131	**50**	< 11.60	< 14.05	< 10.14	< 9.46	< 12.12	< 14.44
Cs-134	**50**	< 7.76	< 10.16	< 7.16	< 12.45	< 14.27	< 10.36
Cs-137	**50**	< 11.19	< 7.35	< 10.06	< 10.93	< 10.97	< 15.86
Zr-95		< 14.40	< 19.47	< 18.04	< 13.27	< 19.05	< 22.67
Nb-95		< 12.32	< 12.07	< 10.13	< 10.91	< 12.70	< 16.49
Co-58		< 8.43	< 14.38	< 10.70	< 10.03	< 11.53	< 13.67
Mn-54		< 11.85	< 12.30	< 10.25	< 10.63	< 11.59	< 15.94
Zn-65		< 26.74	< 34.97	< 26.68	< 23.58	< 30.21	< 37.66
Fe-59		< 23.40	< 38.14	< 32.54	< 32.88	< 31.33	< 33.35
Co-60		< 11.31	< 13.54	< 10.18	< 9.40	< 11.02	< 15.12
Ba/La-140		< 11.25	< 17.20	< 8.94	< 15.30	< 14.12	< 22.70
Ru-103		< 11.87	< 11.34	< 11.00	< 8.55	< 10.34	< 13.80
Ru-106		< 108.60	< 102.70	< 94.80	< 110.90	< 117.50	< 147.20
Ce-141		< 13.83	< 15.86	< 14.61	< 11.60	< 15.81	< 17.75
Ce-144		< 56.51	< 66.78	< 63.32	< 45.10	< 66.91	< 73.50
AcTh-228		< 30.43	< 52.93	65.0 +/- 27.7	< 28.29	< 41.22	< 59.87
Ra-226		< 185.20	261.9 +/- 140.6	< 191.40	< 202.70	< 228.40	370.4 +/- 208.4
K-40		3766.0 +/- 269.2	6696.0 +/- 377.6	8271.0 +/- 309.4	3234.0 +/- 231.1	6534.0 +/- 336.2	6760.0 +/- 373.8

TABLE B-14 (Continued)
CONCENTRATIONS OF GAMMA EMITTERS IN BROADLEAF VEGETATION SAMPLES – 2008
Results in Units of pCi/kg ± 1 Sigma
#23 Roseton **

Sample Location Date		ROSETON 4/28/2008	ROSETON 4/28/2008	ROSETON 4/28/2008	ROSETON 5/19/2008	ROSETON 5/19/2008	ROSETON 5/19/2008
Client ID	Req. CL (pCi)	IBV231808S1	IBV231808S2	IBV231808S3	IBV232108S1	IBV232108S2	IBV232108S3
Radionuclide		MULLEN	RAGWEED	SKUNK CABBAGE	BURDOCK	RAGWEED	THISTLE
Be-7		552.2 +/- 67.0	421.1 +/- 61.4	< 77.73	1294.0 +/- 50.8	1212.0 +/- 74.6	274.1 +/- 35.9
I-131	**50**	< 10.09	< 8.21	< 7.25	< 8.69	< 12.96	< 8.57
Cs-134	**50**	< 7.26	< 9.30	< 12.29	< 2.77	< 7.48	< 3.50
Cs-137	**50**	< 7.83	< 6.64	< 9.34	< 3.72	< 6.84	< 4.41
Zr-95		< 12.18	< 14.23	< 13.12	< 7.37	< 11.13	< 8.22
Nb-95		< 7.37	< 6.67	< 7.98	< 4.65	< 8.17	< 3.87
Co-58		< 8.03	< 7.78	< 7.44	< 3.94	< 7.08	< 4.55
Mn-54		< 9.57	< 6.66	< 9.71	< 4.30	< 7.15	< 4.15
Zn-65		< 23.85	< 18.80	< 24.15	< 5.77	< 20.61	< 12.05
Fe-59		< 29.71	< 19.20	< 28.10	< 11.42	< 23.10	< 14.25
Co-60		< 8.60	< 7.55	< 9.98	< 4.77	< 7.33	< 6.09
Ba/La-140		< 9.64	< 6.03	< 14.76	< 5.94	< 12.90	< 7.19
Ru-103		< 8.37	< 7.84	< 7.85	< 3.94	< 7.47	< 4.55
Ru-106		< 74.50	< 57.42	< 77.21	< 42.73	< 61.23	< 46.49
Ce-141		< 11.86	< 8.90	< 8.99	< 6.37	< 9.58	< 5.81
Ce-144		< 48.17	< 33.53	< 41.30	< 21.63	< 38.25	< 22.34
AcTh-228		< 28.47	< 27.64	< 22.39	< 17.40	58.7 +/- 21.7	< 16.53
Ra-226		< 167.40	< 148.60	< 116.30	< 84.11	254.1 +/- 91.3	< 80.74
K-40		4271.0 +/- 212.1	3674.0 +/- 205.9	2566.0 +/- 214.5	5271.0 +/- 128.0	7249.0 +/- 227.9	3768.0 +/- 140.8

** Control Sample Location

TABLE B-14 (Continued)
CONCENTRATIONS OF GAMMA EMITTERS IN BROADLEAF VEGETATION SAMPLES – 2008
Results in Units of pCi/kg ± 1 Sigma

#23 Roseton **

Sample Location Date		ROSETON 6/23/2008	ROSETON 6/23/2008	ROSETON 6/23/2008	ROSETON 7/21/2008	ROSETON 7/21/2008	ROSETON 7/21/2008
Client ID		IBV232608S1	IBV232608S2	IBV232608S3	IBV233008S1	IBV233008S2	IBV233008S3
Radionuclide	Req. CL (pCi)	BURDOCK	RAGWEED	MULLEN	BURDOCK	RAGWEED	MULLEN
Be-7		860.5 +/- 76.7	1991.0 +/- 141.7	1037.0 +/- 115.5	1107.0 +/- 75.1	1862.0 +/- 129.0	1188.0 +/- 146.6
I-131	**50**	< 8.55	< 15.20	< 18.40	< 8.49	< 14.87	< 18.60
Cs-134	**50**	< 6.48	< 16.29	< 16.85	< 4.47	< 12.76	< 19.35
Cs-137	**50**	< 7.75	< 11.42	< 14.92	< 6.55	< 10.12	< 17.56
Zr-95		< 10.97	< 24.09	< 23.73	< 11.74	< 20.15	< 23.36
Nb-95		< 5.61	< 12.43	< 14.51	< 6.80	< 12.75	< 18.46
Co-58		< 7.86	< 13.59	< 13.56	< 7.44	< 12.33	< 12.63
Mn-54		< 7.77	< 14.37	< 15.44	< 6.47	< 14.56	< 14.97
Zn-65		< 21.30	< 36.28	< 37.34	< 20.70	< 34.34	< 42.35
Fe-59		< 24.77	< 38.86	< 43.00	< 15.07	< 36.44	< 43.69
Co-60		< 9.98	< 11.05	< 15.19	< 8.71	< 13.05	< 13.83
Ba/La-140		< 7.50	< 17.38	< 18.74	< 6.98	< 12.13	< 21.99
Ru-103		< 8.06	< 13.75	< 13.44	< 6.39	< 11.88	< 15.29
Ru-106		< 68.11	< 138.30	< 128.70	< 58.36	< 107.40	< 139.00
Ce-141		< 9.15	< 14.96	< 20.13	< 9.97	< 12.93	< 22.44
Ce-144		< 36.16	< 72.31	< 73.31	< 41.61	< 61.95	< 85.28
AcTh-228		< 27.93	< 40.91	< 53.48	< 26.62	< 35.14	< 62.97
Ra-226		< 147.20	< 228.90	1044.0 +/- 216.2	< 137.40	359.9 +/- 163.8	605.2 +/- 246.0
K-40		5480.0 +/- 241.3	9717.0 +/- 393.7	5464.0 +/- 286.4	7429.0 +/- 233.6	9531.0 +/- 389.6	7186.0 +/- 371.7

TABLE B-14 (Continued)
CONCENTRATIONS OF GAMMA EMITTERS IN BROADLEAF VEGETATION SAMPLES – 2008
Results in Units of pCi/kg ± 1 Sigma
#23 Roseton **

Sample Location Date		ROSETON 9/15/2008	ROSETON 9/15/2008	ROSETON 9/15/2008	ROSETON 10/6/2008	ROSETON 10/6/2008	ROSETON 10/6/2008
Client ID		IBV233808S1	IBV233808S2	IBV233808S3	IBV234108S1	IBV234108S2	IBV234108S3
Radionuclide	Req. CL (pCi)	BURDOCK	RAGWEED	CATALPA	BURDOCK	MULLEIN	CATALPA
Be-7		823.4 +/- 125.1	2208.0 +/- 138.1	1668.0 +/- 132.1	1838.0 +/- 131.4	1848.0 +/- 182.2	1642.0 +/- 132.6
I-131	**50**	< 17.68	< 12.79	< 14.04	< 14.72	< 21.88	< 16.84
Cs-134	**50**	< 13.09	< 9.27	< 8.91	< 8.63	< 27.25	< 10.32
Cs-137	**50**	< 11.85	< 12.20	< 3.34	< 12.27	< 19.99	< 13.10
Zr-95		< 27.27	< 21.04	< 16.04	< 22.58	< 44.43	< 18.27
Nb-95		< 13.69	< 12.11	< 10.27	< 13.77	< 23.57	< 13.50
Co-58		< 17.03	< 12.93	< 9.58	< 11.80	< 19.81	< 15.59
Mn-54		< 14.87	< 11.51	< 10.05	< 11.74	< 18.84	< 13.27
Zn-65		< 41.75	< 34.37	< 25.43	< 41.07	< 63.04	< 13.35
Fe-59		< 47.20	< 38.01	< 26.73	< 49.50	< 53.71	< 32.49
Co-60		< 10.32	< 14.01	< 10.88	< 13.25	< 26.49	< 16.06
Ba/La-140		< 14.63	< 13.98	< 13.38	< 22.03	< 24.59	< 12.56
Ru-103		< 15.95	< 9.79	< 9.36	< 13.17	< 19.31	< 13.55
Ru-106		< 161.90	< 108.90	< 110.10	< 119.00	< 217.40	< 133.00
Ce-141		< 20.54	< 15.43	< 12.98	< 15.69	< 25.81	< 19.40
Ce-144		< 80.51	< 60.10	< 43.83	< 67.63	< 105.50	< 78.85
AcTh-228		< 50.60	< 42.11	< 28.89	< 52.48	< 65.67	< 47.51
Ra-226		< 252.20	< 195.60	< 199.40	< 286.90	< 344.30	510.4 +/- 226.2
K-40		5990.0 +/- 408.2	8648.0 +/- 352.5	3637.0 +/- 287.8	8737.0 +/- 396.1	11470.0 +/- 564.2	6161.0 +/- 302.5

** Control Sample Location

TABLE B-15

CONCENTRATIONS OF RADIONUCLIDES IN FISH SAMPLES – 2008

Results in Units of pCi/kg ± 1 Sigma

#25 Downstream (Hudson River)

Sample Location Date		VOP FISH 6/4/2008	VOP FISH 6/5/2008	VOP FISH 6/6/2008	VOP FISH 6/6/2008	VOP FISH 6/6/2008	VOP FISH 6/6/2008
Client ID		IFH252408S6	IFH252408S5	IFH252408S1	IFH252408S2	IFH252408S3	IFH252408S4
Radionuclide	Req. CL (pCi)	STRIPED BASS	WHITE PERCH	BLUE CRAB	SUN FISH	CAT FISH	AMERICAN EEL
Be-7		< 352.4	< 316.4	< 294.3	< 221.1	< 263.4	< 222.1
I-131		< 2029.0	< 1777.0	< 1618.0	< 1416.0	< 1460.0	< 1391.0
Cs-134	**65**	< 13.6	< 19.2	< 14.5	< 18.7	< 21.5	< 13.9
Cs-137	**75**	< 21.2	< 19.1	< 18.2	< 14.0	< 17.2	< 11.1
Zr-95		< 58.5	< 44.5	< 55.7	< 38.7	< 43.5	< 46.2
Nb-95		< 54.2	< 44.5	< 56.5	< 32.7	< 40.6	< 35.4
Co-58	**65**	< 31.8	< 27.3	< 33.4	< 26.1	< 19.2	< 23.2
Mn-54	**65**	< 20.1	< 19.0	< 25.9	< 17.0	< 17.1	< 12.9
Zn-65	**130**	< 47.7	< 55.3	< 58.7	< 37.9	< 36.2	< 37.8
Fe-59	**130**	< 109.5	< 111.7	< 110.4	< 68.8	< 107.1	< 68.2
Co-60	**65**	< 18.0	< 18.9	< 21.1	< 15.6	< 21.7	< 17.3
Ba/La-140		< 453.9	< 296.9	< 405.0	< 298.5	< 358.8	< 245.6
Ru-103		< 46.7	< 45.2	< 50.1	< 38.3	< 34.2	< 36.6
Ru-106		< 211.1	< 176.9	< 214.1	< 168.6	< 174.4	< 155.7
Ce-141		< 82.3	< 71.6	< 81.3	< 59.6	< 49.4	< 52.2
Ce-144		< 133.2	< 116.3	< 119.5	< 99.1	< 72.2	< 85.0
AcTh-228		< 66.1	< 57.8	< 68.1	94.6 +/- 38.5	< 59.6	< 53.7
Ra-226		944.3 +/- 316.4	845.3 +/- 283.7	794.2 +/- 356.9	865.9 +/- 219.1	< 263.9	< 269.8
K-40		6686.0 +/- 370.7	4852.0 +/- 365.8	3497.0 +/- 305.8	3441.0 +/- 224.0	4153.0 +/- 342.9	3237.0 +/- 269.8

TABLE B-15 (Continued)

CONCENTRATIONS OF RADIONUCLIDES IN FISH SAMPLES – 2008

Results in Units of pCi/kg ± 1 Sigma

#25 Downstream (Hudson River)

Sample Location Date		VOP FISH 8/7/2008	VOP FISH 8/13/2008	VOP FISH 8/21/2008	VOP FISH 8/25/2008	VOP FISH 9/5/2008	VOP FISH 9/11/2008
Client ID	Req. CL (pCi)	IFH253308S4	IFH253308S2	IFH253308S3	IFH253308S5	IFH253308S1	IFH253308S6
Radionuclide		EEL	SUNFISH	CATFISH	WHITE PERCH	BLUE CRAB	STRIPED BASS
Be-7		< 259.7	< 365.2	< 184.8	< 265.3	< 251.9	< 248.1
I-131		< 1641.0	< 1613.0	< 646.0	< 486.5	< 181.3	< 139.7
Cs-134	**65**	< 17.7	< 15.1	< 11.0	< 17.5	< 19.0	< 12.1
Cs-137	**75**	< 14.2	< 23.1	< 14.7	< 25.9	< 21.0	< 25.9
Zr-95		< 45.7	< 61.9	< 32.0	< 48.0	< 39.9	< 53.6
Nb-95		< 46.8	< 64.9	< 34.9	< 51.5	< 28.7	< 34.7
Co-58	**65**	< 27.7	< 33.9	< 21.8	< 30.5	< 22.8	< 34.3
Mn-54	**65**	< 17.3	< 23.9	< 12.4	< 23.5	< 19.4	< 27.3
Zn-65	**130**	< 46.3	< 63.1	< 39.2	< 70.8	< 50.7	< 68.4
Fe-59	**130**	< 82.1	< 112.4	< 75.0	< 98.9	< 85.7	< 88.8
Co-60	**65**	< 17.9	< 24.5	< 15.7	< 15.5	< 16.0	< 25.3
Ba/La-140		< 300.1	< 355.0	< 178.9	< 234.1	< 83.6	< 80.8
Ru-103		< 42.0	< 61.7	< 26.7	< 37.3	< 27.1	< 35.3
Ru-106		< 160.7	< 223.2	< 171.7	< 253.9	< 224.4	< 273.1
Ce-141		< 58.4	< 91.9	< 42.2	< 59.2	< 33.4	< 50.2
Ce-144		< 94.8	< 135.8	< 93.1	< 119.0	< 106.7	< 141.2
AcTh-228		< 50.3	< 84.9	< 64.3	< 79.2	< 91.5	< 82.9
Ra-226		568.2 +/- 208.3	1573.0 +/- 391.0	486.9 +/- 224.1	< 363.8	600.6 +/- 285.9	997.3 +/- 353.2
K-40		3435.0 +/- 267.4	7504.0 +/- 402.7	3708.0 +/- 319.1	7143.0 +/- 445.9	4515.0 +/- 384.0	10430.0 +/- 549.7
Sr-90	**5**	< 5.0	7.3 +/- 1.9	< 3.9	10.3 +/- 2.7	< 3.8	< 6.7
Ni-63		< 97.0	< 96.0	< 95.0	< 92.0	< 98.0	< 88.0

TABLE B-15 (Continued)
CONCENTRATIONS OF RADIONUCLIDES IN FISH SAMPLES – 2008
Results in Units of pCi/kg ± 1 Sigma
#23 Roseton (Control)

Sample Location Date		ROSETON FISH 6/4/2008	ROSETON FISH 6/4/2008	ROSETON FISH 6/4/2008	ROSETON FISH 6/4/2008	ROSETON FISH 6/5/2008
Client ID		IFH232408S1	IFH232408S2	IFH232408S4	IFH232408S5	IFH232408S3
Radionuclide	Req. CL (pCi)	CAT FISH	AMERICAN EEL	WHITE PERCH	SUN FISH	STRIPED BASS
Be-7		< 202.6	< 251.8	< 226.9	< 275.4	< 184.2
I-131		< 1347.0	< 1636.0	< 1654.0	< 1729.0	< 1219.0
Cs-134	**65**	< 13.2	< 9.8	< 17.9	< 10.4	< 14.5
Cs-137	**75**	< 15.0	< 15.1	< 13.2	< 14.8	< 10.5
Zr-95		< 48.5	< 45.2	< 41.6	< 52.7	< 29.9
Nb-95		< 38.4	< 42.6	< 44.2	< 44.8	< 32.6
Co-58	**65**	< 23.5	< 24.1	< 26.0	< 23.7	< 18.8
Mn-54	**65**	< 13.9	< 16.8	< 16.5	< 17.4	< 12.3
Zn-65	**130**	< 42.9	< 38.0	< 39.3	< 40.0	< 34.1
Fe-59	**130**	< 89.2	< 78.4	< 79.4	< 90.0	< 77.2
Co-60	**65**	< 16.0	< 16.0	< 21.2	< 16.9	< 13.4
Ba/La-140		< 349.4	< 275.8	< 298.7	< 342.8	< 170.8
Ru-103		< 33.1	< 41.7	< 46.7	< 48.9	< 31.3
Ru-106		< 156.6	< 181.8	< 181.2	< 212.1	< 145.3
Ce-141		< 53.9	< 63.6	< 53.5	< 69.8	< 41.5
Ce-144		< 83.0	< 103.2	< 97.1	< 100.8	< 56.1
AcTh-228		< 56.0	156.2 +/- 45.2	< 56.6	185.2 +/- 47.5	< 45.7
Ra-226		716.8 +/- 204.0	1250.0 +/- 263.5	518.6 +/- 209.6	< 377.7	357.7 +/- 161.2
K-40		4600.0 +/- 278.8	6287.0 +/- 277.0	3450.0 +/- 287.1	3768.0 +/- 272.0	3614.0 +/- 255.3
Sr-90	**5**					< 9.2
Ni-63						< 92

TABLE B-15 (Continued)
CONCENTRATIONS OF RADIONUCLIDES IN FISH SAMPLES – 2008
Results in Units of pCi/kg ± 1 Sigma
#23 Roseton (Control)

Sample Location Date		ROSETON FISH 8/13/2008	ROSETON FISH 8/19/2008	ROSETON FISH 8/20/2008	ROSETON FISH 9/10/2008	ROSETON FISH 9/17/2008
Client ID	Req. CL (pCi)	IFH233308S5	IFH233308S4	IFH233308S2	IFH233308S6	IFH233308S3
Radionuclide		SUN FISH	WHITE PERCH	EEL	BLUE CRAB	STRIPED BASS
Be-7		< 210.9	< 283.8	< 231.8	< 180.6	< 138.9
I-131		< 1317.0	< 657.2	< 753.6	< 111.5	< 43.4
Cs-134	**65**	< 19.2	< 20.2	< 18.3	< 16.3	< 15.1
Cs-137	**75**	< 19.0	< 19.3	< 15.9	< 18.7	< 13.4
Zr-95		< 46.3	< 51.1	< 37.5	< 32.9	< 27.1
Nb-95		< 51.9	< 35.9	< 40.9	< 25.6	< 18.4
Co-58	**65**	< 28.5	< 29.5	< 21.7	< 17.8	< 14.0
Mn-54	**65**	< 20.8	< 15.1	< 15.0	< 13.8	< 13.3
Zn-65	**130**	< 58.6	< 49.9	< 41.3	< 38.2	< 39.3
Fe-59	**130**	< 94.9	< 111.4	< 87.9	< 52.4	< 42.4
Co-60	**65**	< 14.2	< 23.9	< 17.8	< 19.1	< 15.1
Ba/La-140		< 248.1	< 347.1	< 161.1	< 75.0	< 41.2
Ru-103		< 42.3	< 45.0	< 30.1	< 26.6	< 19.8
Ru-106		< 211.3	< 220.2	< 98.2	< 151.9	< 138.7
Ce-141		< 62.8	< 59.0	< 48.2	< 35.9	< 22.9
Ce-144		< 100.6	< 111.1	< 82.1	< 102.4	< 72.1
AcTh-228		< 63.8	< 62.7	< 63.7	< 57.6	< 49.0
Ra-226		348.9 +/- 206.6	1107.0 +/- 286.1	< 330.1	972.8 +/- 277.5	< 249.6
K-40		6355.0 +/- 393.1	4400.0 +/- 385.8	3322.0 +/- 320.8	4762.0 +/- 292.7	4483.0 +/- 297.2
Sr-90	**5**	12.0 +/- 1.6	20.6 +/- 2.8	< 7.7	< 8.9	< 10.0
Ni-63		< 98.0	< 96.0	< 86.0	< 92.0	< 95.0

TABLE B-16
CONCENTRATIONS OF GAMMA EMITTERS IN AQUATIC VEGETATION SAMPLES – 2008
Results in Units of pCi/kg ± 1 Sigma

Sample Location / Date		COLD SPRING 6/11/2008	COLD SPRING 9/3/2008	LENTS COVE 9/3/2008	VERPLANCK 6/12/2008	VERPLANCK 9/4/2008
Client ID		IAV842508	IAV843608	IAV283608	IAV172508	IAV173608
Radionuclide	Req. CL (pCi)	MYRO	MYRO	MYRO	MYRO	MYRO
Be-7		222.3 +/- 55.6	< 53.7	< 46.4	163.2 +/- 34.6	< 37.2
I-131	**30**	< 11.7	35.0 +/- 5.1	< 8.5	< 8.8	53.7 +/- 6.0
Cs-134	**30**	< 10.1	< 6.4	< 4.4	< 3.8	< 6.5
Cs-137	**40**	< 8.1	< 5.4	< 4.2	< 4.6	< 5.5
Zr-95		< 12.4	< 10.4	< 7.8	< 9.2	< 9.7
Nb-95		< 7.5	< 7.9	< 5.9	< 5.2	< 5.5
Co-58		< 8.1	< 6.3	< 5.1	< 4.1	< 6.0
Mn-54		< 7.9	< 6.3	< 4.7	< 5.1	< 5.3
Zn-65		< 22.0	< 16.2	< 12.7	< 13.3	< 12.8
Fe-59		< 19.6	< 20.1	< 12.7	< 12.8	< 13.5
Co-60		< 8.4	< 5.0	< 4.7	< 5.4	< 5.8
Ba/La-140		< 11.8	< 8.7	< 9.5	< 6.4	< 9.3
Ru-103		< 6.6	< 5.8	< 6.0	< 5.2	< 5.1
Ru-106		< 76.4	< 60.0	< 50.8	< 58.9	< 45.5
Ce-141		< 12.0	< 9.0	< 8.1	< 7.1	< 7.4
Ce-144		< 39.7	< 36.7	< 31.2	< 31.5	< 31.7
AcTh-228		88.9 +/- 26.2	135.6 +/- 21.6	61.7 +/- 17.8	70.4 +/- 16.9	100.7 +/- 18.5
Ra-226		232.8 +/- 123.1	251.6 +/- 85.7	201.1 +/- 77.8	< 101.5	175.5 +/- 83.9
K-40		2560.0 +/- 157.4	2129.0 +/- 133.7	1937.0 +/- 118.7	1812.0 +/- 106.9	2181.0 +/- 133.7

TABLE B-17
CONCENTRATIONS OF GAMMA EMITTERS IN BOTTOM SEDIMENT SAMPLES – 2008
Results in Units of pCi/kg ± 1 Sigma

Sample Location Date		COLD SPRING 6/11/2008	COLD SPRING 9/3/2008	LENTS COVE 6/11/2008	LENTS COVE 9/3/2008	VERPLANCK 6/12/2008	VERPLANCK 9/4/2008
Client ID		IBS842508	IBS843608	IBS282508	IBS283608	IBS172508	IBS173608
Radionuclide	Req. CL (pCi)						
Be-7		< 278.6	< 373.2	< 498.0	< 472.0	< 407.7	< 399.4
I-131		< 58.2	< 65.3	< 78.2	< 111.7	< 68.8	< 60.3
Cs-134	**75**	< 36.7	< 52.6	< 38.0	< 60.4	< 31.7	< 55.4
Cs-137	**90**	< 32.5	< 45.6	214.9 +/- 56.2	452.0 +/- 46.8	256.7 +/- 43.6	200.5 +/- 47.7
Zr-95		< 58.8	< 76.3	< 92.6	< 127.4	< 79.5	< 77.9
Nb-95		< 44.0	< 52.4	< 74.3	< 100.2	< 60.5	< 45.2
Co-58		< 39.4	< 32.2	< 48.9	< 74.2	< 46.3	< 44.0
Mn-54		< 33.5	< 44.3	< 62.9	< 70.5	< 43.7	< 42.2
Zn-65		< 52.5	< 157.5	< 203.6	< 211.0	< 127.9	< 134.6
Fe-59		< 125.6	< 157.5	< 158.9	< 218.7	< 91.0	< 131.7
Co-60		< 29.2	< 37.7	< 63.4	< 65.6	< 47.0	< 60.5
Ba/La-140		< 29.7	< 78.4	< 99.4	< 95.8	< 77.2	< 68.7
Ru-103		< 27.6	< 36.0	< 58.6	< 69.9	< 50.0	< 44.6
Ru-106		< 368.6	< 484.0	< 545.7	< 711.3	< 453.0	< 483.4
Ce-141		< 62.2	< 68.9	< 91.3	< 89.2	< 65.6	< 63.6
Ce-144		< 207.0	< 246.0	< 308.9	< 354.7	< 289.3	< 246.0
AcTh-228		693.0 +/- 125.9	682.5 +/- 162.2	986.0 +/- 246.8	1202.0 +/- 255.1	818.7 +/- 162.2	1159.0 +/- 186.9
Ra-226		1214.0 +/- 568.7	< 777.5	1842.0 +/- 896.0	2828.0 +/- 1058.0	3377.0 +/- 750.2	3334.0 +/- 857.3
K-40		38120.0 +/- 1168.0	36600.0 +/- 1474.0	19680.0 +/- 1408.0	21010.0 +/- 1564.0	23590.0 +/- 1250.0	19920.0 +/- 1261.0

TABLE B-17 (Continued)

CONCENTRATIONS OF GAMMA EMITTERS IN BOTTOM SEDIMENT SAMPLES – 2008
Results in Units of pCi/kg ± 1 Sigma

Sample Location Date		DISCHARGE CANAL 6/12/2008	DISCHARGE CANAL 9/4/2008
Client ID Radionuclide	Req. CL	IBS102508	IBS103608
Be-7		< 235.5	< 238.1
I-131		< 45.6	< 54.1
Cs-134	75	< 31.6	< 41.0
Cs-137	90	137.3 +/- 29.1	171.7 +/- 31.9
Zr-95		< 49.1	< 63.3
Nb-95		< 30.1	< 37.0
Co-58		< 21.9	< 29.6
Mn-54		< 21.3	< 24.9
Zn-65		< 123.5	< 115.5
Fe-59		< 82.1	< 108.2
Co-60		< 30.7	< 29.1
Ba/La-140		< 44.3	< 45.0
Ru-103		< 28.2	< 32.5
Ru-106		< 287.1	< 293.0
Ce-141		< 34.5	< 47.8
Ce-144		< 167.3	< 185.5
AcTh-228		397.2 +/- 97.7	296.7 +/- 102.0
Ra-226		1091.0 +/- 479.6	1025.0 +/- 422.9
K-40		15980.0 +/- 930.8	15710.0 +/- 873.2

TABLE B-18
CONCENTRATIONS OF RADIONUCLIDES IN RAINWATER SAMPLES – 2008
Results in Units of pCi/L ± 1 Sigma

Sample Location / Date		PEEKSKILL RAINWATER 3/28/2008	PEEKSKILL RAINWATER 6/30/2008	PEEKSKILL RAINWATER 9/29/2008	PEEKSKILL RAINWATER 12/31/2008
Client ID / Radionuclide	Req. CL (pCi)	IRF44Q108	IRF44Q208	IRF443Q08	IRF44Q408
H-3		< 450.0	< 439.0	< 427.0	< 424.0
Be-7		< 51.1	116.4 +/- 27.6	< 51.2	< 50.6
I-131		< 36.9	< 21.6	< 25.2	< 49.6
Cs-134	**7.5**	< 2.3	< 1.6	< 2.6	< 4.0
Cs-137	**9**	< 3.3	< 1.2	< 2.8	< 3.5
Zr-95		< 10.0	< 5.3	< 6.1	< 6.5
Nb-95		< 8.0	< 5.3	< 6.2	< 7.5
Co-58		< 4.5	< 3.2	< 4.1	< 6.0
Mn-54		< 3.6	< 2.7	< 3.2	< 2.7
Zn-65		< 10.0	< 2.7	< 4.0	< 8.6
Fe-59		< 16.3	< 10.0	< 10.0	< 12.6
Co-60	**7.5**	< 3.8	< 1.5	< 3.1	< 2.0
Ba/La-140		< 24.8	< 13.3	< 19.2	< 26.5
Ru-103		< 7.4	< 4.7	< 7.2	< 8.8
Ru-106		< 29.2	< 22.8	< 32.3	< 35.2
Ce-141		< 13.6	< 9.1	< 11.5	< 17.2
Ce-144		< 23.7	< 20.4	< 23.8	< 27.0
AcTh-228		< 10.3	< 6.5	< 9.3	< 12.8
Ra-226		114.5 +/- 58.7	< 57.1	< 71.5	< 84.0
K-40		338.6 +/- 45.5	< 21.4	122.6 +/- 30.8	< 28.2

TABLE B-18 (Continued)
CONCENTRATIONS OF RADIONUCLIDES IN RAINWATER SAMPLES – 2008
Results in Units of pCi/L ± 1 Sigma

Sample Location / Date		ROSETON RAINWATER 3/28/2008	ROSETON RAINWATER 6/30/2008	ROSETON RAINWATER 9/29/2008	ROSETON RAINWATER 12/31/2008
Client ID / Radionuclide	Req. CL (pCi)	IRF23Q108	IRF23Q208	IRF233Q08	IRF23Q408
H-3		< 450.0	< 439.0	< 427.0	< 424.0
Be-7		< 45.0	< 37.4	62.2 +/- 40.2	< 83.9
I-131		< 43.2	< 23.6	< 25.6	< 60.8
Cs-134	**7.5**	< 2.3	< 1.8	< 3.5	< 4.3
Cs-137	**9**	< 3.6	< 2.8	< 3.0	< 4.5
Zr-95		< 9.4	< 5.7	< 9.6	< 13.8
Nb-95		< 9.4	< 5.9	< 7.5	< 10.1
Co-58		< 4.2	< 3.8	< 5.1	< 8.3
Mn-54		< 2.7	< 3.2	< 3.5	< 4.1
Zn-65		< 6.1	< 3.8	< 8.5	< 14.0
Fe-59		< 14.8	< 12.0	< 16.7	< 25.5
Co-60	**7.5**	< 3.3	< 2.1	< 3.4	< 5.1
Ba/La-140		< 23.1	< 13.2	< 15.3	< 27.6
Ru-103		< 7.9	< 6.2	< 6.7	< 10.8
Ru-106		< 30.6	< 25.7	< 30.7	< 46.8
Ce-141		< 13.4	< 11.5	< 11.4	< 22.2
Ce-144		< 24.6	< 24.4	< 24.8	< 45.0
AcTh-228		< 13.9	< 10.4	< 8.5	< 20.0
Ra-226		< 84.1	109.8 +/- 56.0	< 67.0	< 114.3
K-40		436.9 +/- 47.8	395.6 +/- 35.4	432.6 +/- 48.3	830.6 +/- 92.8

TABLE B-19
CONCENTRATIONS OF GAMMA EMITTERS IN SOIL SAMPLES – 2008
Results in Units of pCi/kg ± 1 Sigma

Sample Location Date		ROSETON 9/29/2008	MET TOWER 9/30/2008	TRAINING BLDG 9/30/2008
Client ID Radionuclide	Req. CL (pCi)	ISO234008	ISO954008	ISO944008
Be-7		1074.0 +/- 275.9	1007.0 +/- 227.0	664.3 +/- 197.3
I-131		< 38.1	< 31.9	< 24.3
Cs-134	**75**	< 38.9	< 21.1	< 29.2
Cs-137	**90**	< 48.0	< 36.0	< 27.9
Zr-95		< 62.0	< 51.8	< 36.2
Nb-95		< 29.9	< 29.5	< 24.9
Co-58		< 36.5	< 38.5	< 28.6
Mn-54		< 40.6	< 34.9	< 19.6
Zn-65		< 61.2	< 107.8	< 90.9
Fe-59		< 127.1	< 86.4	< 69.5
Co-60		< 44.6	< 31.6	< 26.6
Ba/La-140		< 63.0	< 34.3	< 38.4
Ru-103		< 47.9	< 26.0	< 27.4
Ru-106		< 373.2	< 245.6	< 300.9
Ce-141		< 56.3	< 44.5	< 34.0
Ce-144		< 248.1	< 199.5	< 161.4
AcTh-228		1259.0 +/- 162.9	480.9 +/- 116.0	662.2 +/- 114.5
Ra-226		1743.0 +/- 572.5	1092.0 +/- 546.8	< 640.5
K-40		20170.0 +/- 1132.0	18100.0 +/- 983.9	14130.0 +/- 814.1

TABLE B-20

CONCENTRATIONS OF RADIONUCLIDES IN MONITORING WELL SAMPLES
Results in pCi/L ± 3 sigma

Monitoring Well Sample Name Sample Date		MW-40 MW-40-027-003 1/7/2008	MW-40 MW-40-027-004 8/11/2008	MW-40 MW-40-027-005 10/28/2008
Radionuclide	Req. MDC			
H-3		< 182.0	222.0 + / - 159.0	< 195.0
Be-7		< 22.2	< 38.2	< 85.9
Cs-134	**15**	< 2.0	< 3.9	< 7.7
Cs-137	**18**	< 1.9	< 4.0	< 6.2
Zr-95		< 4.3	< 8.2	< 16.1
Nb-95		< 2.9	< 5.2	< 11.7
Co-58		< 2.2	< 4.1	< 10.5
Mn-54		< 1.7	< 3.4	< 6.2
Zn-65		< 4.0	< 7.2	< 12.8
Fe-59		< 5.5	< 9.4	< 24.8
Co-60		< 2.0	< 3.8	< 7.4
Sr-90	**1**	< 0.8	< 0.7	< 0.6
Ba-140		< 32.1	< 45	< 237
La-140		< 11.0	< 11.1	< 78.5
Ru-106		< 18.3	< 30.4	< 54.9
Ce-141		< 5.1	< 10.3	< 22.5
Ce-144		< 13.0	< 27.5	< 41.2
AcTh-228		< 7.9	< 14.7	< 27.7
K-40		< 28.3	< 47.3	< 87.6
Ni-63			< 20.5	< 18.5

Note 1: Less than values "<" are Minimum Detectable Concentration (MDC) values.
Note 2: A sample is positive if the result is greater than or equal to the MDC.

TABLE B-20 (Continued)

CONCENTRATIONS OF RADIONUCLIDES IN MONITORING WELL SAMPLES
Results in pCi/L ± 3 sigma

Monitoring Well Sample Name Sample Date		MW-40 MW-40-046-004 1/7/2008	MW-40 MW-40-046-005 8/11/2008	MW-40 MW-40-046-006 10/28/2008
Radionuclide	Req. MDC			
H-3		< 180.0	< 171.0	< 198.0
Be-7		< 36.0	< 38.3	< 88.7
Cs-134	**15**	< 3.8	< 3.4	< 9.0
Cs-137	**18**	< 3.0	< 3.3	< 7.5
Zr-95		< 7.4	< 5.9	< 15.1
Nb-95		< 5.3	< 4.9	< 17.4
Co-58		< 3.9	< 3.8	< 8.6
Mn-54		< 3.3	< 3.2	< 7.7
Zn-65		< 7.5	< 6.0	< 16.1
Fe-59		< 8.7	< 8.4	< 24.2
Co-60		< 2.8	< 3.6	< 7.5
Sr-90	**1**	< 0.9	< 0.8	< 0.7
Ba-140		< 47.3	< 44.2	< 284
La-140		< 18.6	< 15.4	< 94.4
Ru-106		< 32.2	< 24.4	< 57.8
Ce-141		< 8.8	< 8.7	< 25.7
Ce-144		< 23.4	< 23.5	< 46.3
AcTh-228		< 13.8	< 13.4	< 31.1
K-40		< 34.1	< 51.1	< 106.0
Ni-63			< 20.1	< 19.6

Note 1: Less than values "<" are Minimum Detectable Concentration (MDC) values.
Note 2: A sample is positive if the result is greater than or equal to the MDC.

TABLE B-20 (Continued)

CONCENTRATIONS OF RADIONUCLIDES IN MONITORING WELL SAMPLES
Results in pCi/L ± 3 sigma

Monitoring Well Sample Name Sample Date		MW-40 MW-40-081-004 1/7/2008	MW-40 MW-40-081-005 8/11/2008	MW-40 MW-40-081-006 10/28/2008
Radionuclide	Req. MDC			
H-3		< 181.0	242.0 + / - 171.0	< 193.0
Be-7		< 27.8	< 33.0	< 75.4
Cs-134	15	< 2.4	< 3.0	< 7.1
Cs-137	18	< 2.4	< 2.8	< 6.2
Zr-95		< 4.9	< 6.7	< 14.6
Nb-95		< 3.7	< 4.9	< 13.1
Co-58		< 2.8	< 3.1	< 8.8
Mn-54		< 2.3	< 2.8	< 6.0
Zn-65		< 4.4	< 5.5	< 12.2
Fe-59		< 6.2	< 6.1	< 21.7
Co-60		< 2.0	< 3.3	< 7.3
Sr-90	1	< 0.8	< 0.7	< 0.6
Ba-140		< 32.3	< 39.8	< 224
La-140		< 11.4	< 12.0	< 91.5
Ru-106		< 20.9	< 27.5	< 59.8
Ce-141		< 6.9	< 7.9	< 19.4
Ce-144		< 17.2	< 20.5	< 34.9
AcTh-228		< 9.1	< 12.4	< 24.4
K-40		< 24.8	< 39.1	< 87.6
N-63			< 19.2	< 26.9

Note 1: Less than values "<" are Minimum Detectable Concentration (MDC) values.
Note 2: A sample is positive if the result is greater than or equal to the MDC.

TABLE B-20 (Continued)

CONCENTRATIONS OF RADIONUCLIDES IN MONITORING WELL SAMPLES
Results in pCi/L ± 3 sigma

Monitoring Well Sample Name Sample Date		MW-40 MW-40-100-004 1/7/2008	MW-40 MW-40-100-006 5/30/2008	MW-40 MW-40-100-007 8/11/2008	MW-40 MW-40-100-008 10/28/2008
Radionuclide	Req. MDC				
H-3		< 181.0	< 160.0	193.0 + / - 105.0	< 195.0
Be-7		< 31.2	< 33.3	< 26.9	< 108.0
Cs-134	**15**	< 2.6	< 4.0	< 3.0	< 9.0
Cs-137	**18**	< 2.6	< 3.5	< 2.7	< 7.1
Zr-95		< 5.3	< 6.9	< 5.2	< 15.6
Nb-95		< 4.1	< 5.1	< 4.6	< 17.5
Co-58		< 2.9	< 3.3	< 3.0	< 9.8
Mn-54		< 2.5	< 3.2	< 2.5	< 7.3
Zn-65		< 6.1	< 7.6	< 5.8	< 16.7
Fe-59		< 7.2	< 8.6	< 7.1	< 21.0
Co-60		< 2.9	< 3.2	< 2.7	< 8.6
Sr-90	**1**	< 0.8	< 1.0	< 0.6	< 0.8
Ba-140		< 44.3	< 31.3	< 37.8	< 255
La-140		< 14.0	< 10.0	< 12.0	< 99.0
Ru-106		< 24.0	< 28.5	< 23.4	< 61.8
Ce-141		< 7.4	< 7.4	< 7.5	< 26.6
Ce-144		< 18.5	< 23.4	< 20.0	< 47.9
AcTh-228		< 10.4	< 12.3	< 11.2	< 31.1
K-40		< 27.0	< 35.3	< 36.5	< 93.5
Ni-63				< 18.9	< 20.6

Note 1: Less than values "<" are Minimum Detectable Concentration (MDC) values.
Note 2: A sample is positive if the result is greater than or equal to the MDC.

TABLE B-20 (Continued)

CONCENTRATIONS OF RADIONUCLIDES IN MONITORING WELL SAMPLES
Results in pCi/L ± 3 sigma

Monitoring Well		MW-40	MW-40	MW-40	MW-40
Sample Name		MW-40-127-004	MW-40-127-006	MW-40-127-007	MW-40-127-008
Sample Date		1/7/2008	5/30/2008	8/11/2008	10/28/2008
Radionuclide	Req. MDC				
H-3		< 179.0	< 163.0	< 170.0	< 195.0
Be-7		< 31.7	< 36.0	< 28.5	< 91.3
Cs-134	**15**	< 3.2	< 4.3	< 2.9	< 8.9
Cs-137	**18**	< 2.8	< 3.4	< 2.8	< 6.9
Zr-95		< 6.4	< 7.0	< 5.8	< 20.5
Nb-95		< 4.5	< 4.1	< 4.7	< 17.0
Co-58		< 3.4	< 3.4	< 2.9	< 12.1
Mn-54		< 2.9	< 3.0	< 2.7	< 8.6
Zn-65		< 5.5	< 6.7	< 5.0	< 17.7
Fe-59		< 6.5	< 7.5	< 7.8	< 21.8
Co-60		< 2.6	< 3.6	< 2.5	< 7.7
Sr-90	**1**	< 0.7	< 1.0	< 0.4	< 0.8
Ba-140		< 39.5	< 29.4	< 39.1	< 271
La-140		< 11.2	< 8.1	< 11.9	< 105.0
Ru-106		< 25.5	< 32.2	< 24.3	< 68.7
Ce-141		< 7.9	< 6.3	< 7.8	< 25.8
Ce-144		< 19.7	< 22.7	< 19.9	< 44.7
AcTh-228		33.1 + / - 16.8	21.7 + / - 11.8	37.0 + / - 9.3	< 45.6
K-40		< 31.2	< 32.6	< 27.3	< 66.5
Ni-63				< 20.1	< 19.3

Note 1: Less than values "<" are Minimum Detectable Concentration (MDC) values.
Note 2: A sample is positive if the result is greater than or equal to the MDC.

TABLE B-20 (Continued)

CONCENTRATIONS OF RADIONUCLIDES IN MONITORING WELL SAMPLES
Results in pCi/L ± 3 sigma

Monitoring Well Sample Name Sample Date		MW-40 MW-40-162-004 1/7/2008	MW-40 MW-40-162-005 8/11/2008	MW-40 MW-40-162-006 10/28/2008
Radionuclide	Req. MDC			
H-3		< 182.0	230.0 + / - 162.0	< 196.0
Be-7		< 31.8	< 35.9	< 84.2
Cs-134	**15**	< 3.0	< 4.4	< 9.1
Cs-137	**18**	< 2.9	< 4.2	< 6.3
Zr-95		< 6.5	< 7.4	< 18.9
Nb-95		< 4.9	< 5.9	< 15.1
Co-58		< 3.4	< 3.8	< 7.7
Mn-54		< 2.8	< 3.6	< 6.6
Zn-65		< 6.5	< 7.7	< 14.6
Fe-59		< 7.0	< 7.3	< 18.8
Co-60		< 2.7	< 4.1	< 7.3
Sr-90	**1**	< 0.4	< 0.8	< 0.7
Ba-140		< 48.3	< 49.2	< 227
La-140		< 17.5	< 12.3	< 85.3
Ru-106		< 26.1	< 30.9	< 56.2
Ce-141		< 8.2	< 9.9	< 20.8
Ce-144		< 21.4	< 26.3	< 37.4
AcTh-228		< 15.1	33.4 + / - 13.7	< 33.6
K-40		< 35.8	< 43.8	< 86.9
Ni-63			< 21.6	< 20.4

Note 1: Less than values "<" are Minimum Detectable Concentration (MDC) values.
Note 2: A sample is positive if the result is greater than or equal to the MDC.

TABLE B-20 (Continued)

CONCENTRATIONS OF RADIONUCLIDES IN MONITORING WELL SAMPLES
Results in pCi/L ± 3 sigma

Monitoring Well Sample Name Sample Date		MW-51 MW-51-040-005 1/8/2008	MW-51 MW-51-040-007 5/30/2008	MW-51 MW-51-040-008 8/8/2008	MW-51 MW-51-040-009 10/27/2008
Radionuclide	Req. MDC				
H-3		< 179.0	< 160.0	329.0 + / - 240.0	< 195.0
Be-7		< 35.8	< 30.4	< 39.8	< 79.3
Cs-134	**15**	< 3.1	< 3.6	< 3.8	< 6.6
Cs-137	**18**	< 2.9	< 3.4	< 4.0	< 4.9
Zr-95		< 6.7	< 5.2	< 7.6	< 14.9
Nb-95		< 4.4	< 4.3	< 6.4	< 12.4
Co-58		< 3.5	< 3.6	< 5.0	< 7.1
Mn-54		< 2.6	< 3.1	< 4.1	< 6.1
Zn-65		< 6.3	< 7.7	< 6.6	< 12.1
Fe-59		< 7.9	< 7.1	< 9.8	< 23.8
Co-60		< 2.9	< 3.5	< 3.0	< 6.6
Sr-90	**1**	< 0.8	< 1.0	< 0.7	< 0.6
Ba-140		< 45.8	< 23.1	< 59.6	< 234
La-140		< 13.6	< 11.3	< 20.6	< 86.8
Ru-106		< 25.0	< 28.7	< 29.5	< 55.3
Ce-141		< 7.9	< 7.3	< 11.1	< 19.4
Ce-144		< 21.8	< 23.4	< 28.2	< 31.2
AcTh-228		< 12.2	< 11.6	< 15.1	< 21.9
K-40		< 33.5	< 33.5	< 38.0	< 80.1
Ni-63				< 18.3	< 24.6

Note 1: Less than values "<" are Minimum Detectable Concentration (MDC) values.
Note 2: A sample is positive if the result is greater than or equal to the MDC.

TABLE B-20 (Continued)

CONCENTRATIONS OF RADIONUCLIDES IN MONITORING WELL SAMPLES
Results in pCi/L± 3 sigma

Monitoring Well Sample Name Sample Date		MW-51 MW-51-079-005 1/8/2008	MW-51 MW-51-079-007 8/8/2008	MW-51 MW-51-079-008 10/27/2008	MW-51 MW-51-079-009 10/28/2008
Radionuclide	Req. MDC				
H-3		< 179.0	< 161.0	< 201.0	< 199.0
Be-7		< 28.6	< 36.0	< 41.7	< 69.7
Cs-134	**15**	< 2.8	< 4.5	< 3.6	< 7.0
Cs-137	**18**	< 2.4	< 4.8	< 3.8	< 5.8
Zr-95		< 5.3	< 9.4	< 8.4	< 13.2
Nb-95		< 4.1	< 6.0	< 6.8	< 14.3
Co-58		< 3.0	< 4.3	< 4.2	< 7.2
Mn-54		< 2.7	< 5.1	< 3.3	< 4.0
Zn-65		< 6.0	< 9.9	< 7.2	< 12.9
Fe-59		< 6.4	< 11.6	< 10.8	< 20.7
Co-60		< 2.7	< 4.3	< 4.0	< 6.4
Sr-90	**1**	< 1.0	< 1.0	< 0.5	< 0.8
Ba-140		< 33	< 32.9	< 57.2	< 224
La-140		< 13.2	< 12.9	< 21.6	< 85.1
Ru-106		< 22.3	< 41.2	< 34.7	< 46.0
Ce-141		< 7.1	< 6.9	< 10.8	< 17.5
Ce-144		< 18.4	< 22.6	< 28.5	< 34.6
AcTh-228		< 8.7	< 22.1	< 15.3	< 23.2
K-40		< 34.2	< 44.8	< 30.2	< 59.7
Ni-63				< 19.3	< 20.2

Note 1: Less than values "<" are Minimum Detectable Concentration (MDC) values.
Note 2: A sample is positive if the result is greater than or equal to the MDC.

TABLE B-20 (Continued)

CONCENTRATIONS OF RADIONUCLIDES IN MONITORING WELL SAMPLES
Results in pCi/L ± 3 sigma

Monitoring Well Sample Name Sample Date		MW-51 MW-51-104-005 1/8/2008	MW-51 MW-51-104-006 8/8/2008	MW-51 MW-51-104-007 10/27/2008
Radionuclide	Req. MDC			
H-3		< 178.0	282.0 + / - 233.0	< 149.0
Be-7		< 24.6	< 37.8	< 106.0
Cs-134	**15**	< 2.7	< 3.9	< 8.1
Cs-137	**18**	< 2.3	< 3.6	< 8.5
Zr-95		< 4.9	< 6.2	< 19.6
Nb-95		< 4.1	< 5.9	< 15.7
Co-58		< 2.8	< 3.6	< 11.0
Mn-54		< 2.3	< 3.1	< 8.2
Zn-65		< 4.8	< 6.6	< 14.8
Fe-59		< 6.4	< 7.9	< 21.8
Co-60		< 2.5	< 3.4	< 8.3
Sr-90	**1**	< 0.9	< 0.8	< 0.6
Ba-140		< 36.5	< 45.2	< 32.2
La-140		< 11.8	< 16.0	< 106.0
Ru-106		< 19.3	< 31.1	< 65.5
Ce-141		< 6.3	< 9.3	< 23.6
Ce-144		< 16.0	< 24.9	< 46.2
AcTh-228		< 7.1	< 11.8	< 33.3
K-40		< 18.6	< 46.3	< 110.0
Ni-63			< 23.6	< 21.2

Note 1: Less than values "<" are Minimum Detectable Concentration (MDC) values.
Note 2: A sample is positive if the result is greater than or equal to the MDC.

TABLE B-20 (Continued)

CONCENTRATIONS OF RADIONUCLIDES IN MONITORING WELL SAMPLES
Results in pCi/L ± 3 sigma

Monitoring Well Sample Name Sample Date		MW-51 MW-51-135-005 1/8/2008	MW-51 MW-51-135-006 8/8/2008	MW-51 MW-51-135-007 10/27/2008
Radionuclide	Req. MDC			
H-3		< 180.0	209.0 + / - 199.0	< 199.0
Be-7		< 22.6	< 35.4	< 88.5
Cs-134	**15**	< 2.6	< 3.7	< 9.2
Cs-137	**18**	< 2.1	< 3.3	< 5.6
Zr-95		< 4.4	< 6.6	< 16.1
Nb-95		< 3.4	< 5.3	< 18.0
Co-58		< 2.6	< 3.8	< 10.0
Mn-54		< 2.1	< 3.1	< 6.0
Zn-65		< 4.4	< 6.4	< 14.0
Fe-59		< 5.4	< 9.1	< 22.8
Co-60		< 1.9	< 3.3	< 7.7
Sr-90	**1**	< 0.9	< 0.5	< 0.7
Ba-140		< 30.1	< 50.6	< 254
La-140		< 10.0	< 16.5	< 90.1
Ru-106		< 18.3	< 27.4	< 61.8
Ce-141		< 5.3	< 8.9	< 20.6
Ce-144		< 13.9	< 23.4	< 36.9
AcTh-228		22.0 + / - 13.6	22.1 + / - 18.6	< 35.8
K-40		< 17.2	< 33.6	< 85.5
Ni-63			< 20.2	< 20.1

Note 1: Less than values "<" are Minimum Detectable Concentration (MDC) values.
Note 2: A sample is positive if the result is greater than or equal to the MDC.

TABLE B-20 (Continued)

CONCENTRATIONS OF RADIONUCLIDES IN MONITORING WELL SAMPLES
Results in pCi/L ± 3 sigma

Monitoring Well Sample Name Sample Date		MW-51 MW-51-163-005 1/8/2008	MW-51 MW-51-163-006 8/8/2008	MW-51 MW-51-163-007 10/27/2008
Radionuclide	Req. MDC			
H-3		< 182.0	< 140.0	< 195.0
Be-7		< 27.6	< 38.8	< 9.1
Cs-134	15	< 3.1	< 4.1	< 8.6
Cs-137	18	< 2.5	< 3.6	< 6.7
Zr-95		< 5.3	< 7.2	< 17.9
Nb-95		< 4.2	< 5.5	< 15.8
Co-58		< 2.9	< 4.1	< 9.6
Mn-54		< 2.5	< 3.5	< 6.4
Zn-65		< 5.0	< 7.6	< 13.4
Fe-59		< 6.3	< 9.2	< 25.1
Co-60		< 2.4	< 3.4	< 6.3
Sr-90	1	< 0.9	< 0.5	< 0.7
Ba-140		< 37.7	< 59.6	< 27.7
La-140		< 12.5	< 22.6	< 80.7
Ru-106		< 23.8	< 32.8	< 63.6
Ce-141		< 7.4	< 10.4	< 25.2
Ce-144		< 18.3	< 26.6	< 43.6
AcTh-228		25.1 + / - 17.4	32.3 + / - 18.1	< 36.3
K-40		< 25.6	< 30.7	< 55.5
Ni-63			< 21.5	< 21.4

Note 1: Less than values "<" are Minimum Detectable Concentration (MDC) values.
Note 2: A sample is positive if the result is greater than or equal to the MDC.

TABLE B-20 (Continued)

CONCENTRATIONS OF RADIONUCLIDES IN MONITORING WELL SAMPLES
Results in pCi/L ± 3 sigma

Monitoring Well Sample Name Sample Date		MW-51 MW-51-189-005 1/8/2008	MW-51 MW-51-189-006 8/8/2008	MW-51 MW-51-189-007 10/27/2008
Radionuclide	Req. MDC			
H-3		< 177.0	< 143.0	< 199.0
Be-7		< 24.6	< 33.5	< 95.4
Cs-134	**15**	< 2.3	< 3.5	< 7.6
Cs-137	**18**	< 2.5	< 3.1	< 7.3
Zr-95		< 4.4	< 6.7	< 20.5
Nb-95		< 3.6	< 5.7	< 18.0
Co-58		< 2.8	< 4.3	< 10.2
Mn-54		< 2.1	< 3.7	< 7.3
Zn-65		< 4.5	< 7.3	< 15.5
Fe-59		< 6.4	< 8.5	< 24.4
Co-60		< 2.4	< 3.6	< 7.6
Sr-90	**1**	< 0.9	< 0.7	< 0.8
Ba-140		< 33.5	< 51.1	< 300
La-140		< 11.0	< 19.8	< 116.0
Ru-106		< 18.4	< 30.2	< 59.3
Ce-141		< 6.2	< 9.9	< 28.1
Ce-144		< 16.0	< 26.6	< 45.5
AcTh-228		11.0 + / - 12.8	< 14.7	< 29.6
K-40		< 30.7	< 40.2	< 106.0
Ni-63			< 20.4	< 21.7

Note 1: Less than values "<" are Minimum Detectable Concentration (MDC) values.
Note 2: A sample is positive if the result is greater than or equal to the MDC.

Table B-21
LAND USE CENSUS - RESIDENCE and MILCH ANIMAL RESULTS
2008

The 2008 land use census indicated there were no new residences that were closer in proximity to IPEC. NEM maintains a complete nearest residence survey with updated distances.

No milch animals were observed during this reporting period within the 5-mile zone nor were listed in the New York Agricultural Statistic Service. There are no animals producing milk for human consumption within five miles of Indian Point.

TABLE B-22
LAND USE CENSUS
2008

INDIAN POINT ENERGY CENTER

UNRESTRICTED AREA BOUNDARY
AND NEAREST RESIDENCES

Sector	Compass Point	Distance to site Boundary from Unit 2 Plant Vent (meters)	Distance to site Boundary from Unit 3 Plant Vent (meters)	Distance to nearest resident, from Unit 1 superheater (meters)	Address of nearest resident, Dec 2004 Census
1	N	RIVER	RIVER	1788	41 River Road Tomkins Cove
2	NNE	RIVER	RIVER	3111	Chateau Rive Apts. John St. Peekskill
3	NE	550	636	1907	122 Lower South St. Peekskill
4	ENE	600	775	1478	1018 Lower South St. Peekskill
5	E	662	785	1371	1103 Lower South St. Peekskill
6	ESE	569	622	715	461 Broadway Buchanan
7	SE	553	564	1168	223 First St. Buchanan
8	SSE	569	551	1240	5 Pheasant's Run Buchanan
9	S	700	566	1133	320 Broadway Verplanck
10	SSW	755	480	1574	240 Eleventh St. Verplanck
11	SW	544	350	3016	8 Spring St. Tomkins Cove
12	WSW	RIVER	RIVER	2170	9 West Shore Dr. Tomkins Cove
13	W	RIVER	RIVER	1919	712 Rt. 9W Tomkins Cove
14	WNW	RIVER	RIVER	1752	770 Rt. 9W Tomkins Cove
15	NW	RIVER	RIVER	1693	807 Rt. 9W Tomkins Cove
16	NNW	RIVER	RIVER	1609	4 River Rd. Tomkins Cove

APPENDIX C

HISTORICAL TRENDS

APPENDIX C

The past ten years of historical data for various radionuclides and media are presented both in tabular form and in graphical form to facilitate the comparison of 2008 data with historical values. Although other samples were taken and analyzed, values were only tabulated and plotted where positive indications were present.

Averaging only the positive values in these tables can result in a biased high value, especially, when the radionuclide is detected in only one or two quarters for the year.

TABLE C-1

DIRECT RADIATION ANNUAL SURVEY
1998 to 2008

Year	Average Quarterly Dose (mR/Quarter) Inner Ring	Outer Ring	Control Location
1998	14.0	15.0	16.0
1999	15.0	15.0	16.0
2000	14.0	15.0	16.0
2001	15.0	15.0	17.0
2002	15.0	15.0	14.0
2003	14.3	13.9	14.7
2004	13.0	13.0	14.0
2005	14.1	14.1	15.9
2006	13.9	14.3	17.5
2007	14.4	14.6	18.8
2008	**14.5**	**14.2**	**17.3**
Historical Average 1998-2007	14.3	14.5	16.0

FIGURE C-1
DIRECT RADIATION
1998 to 2008

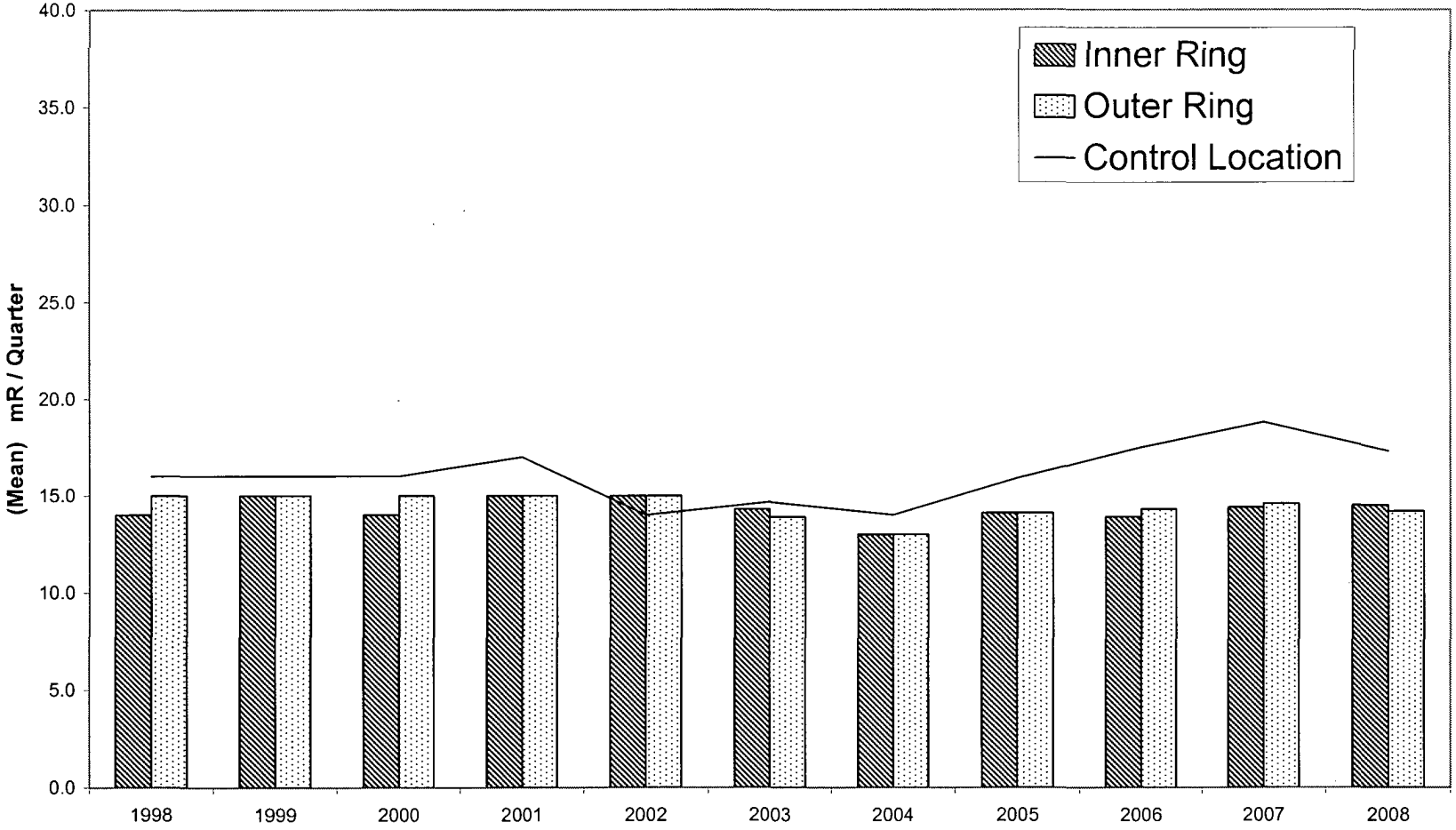


TABLE C-2

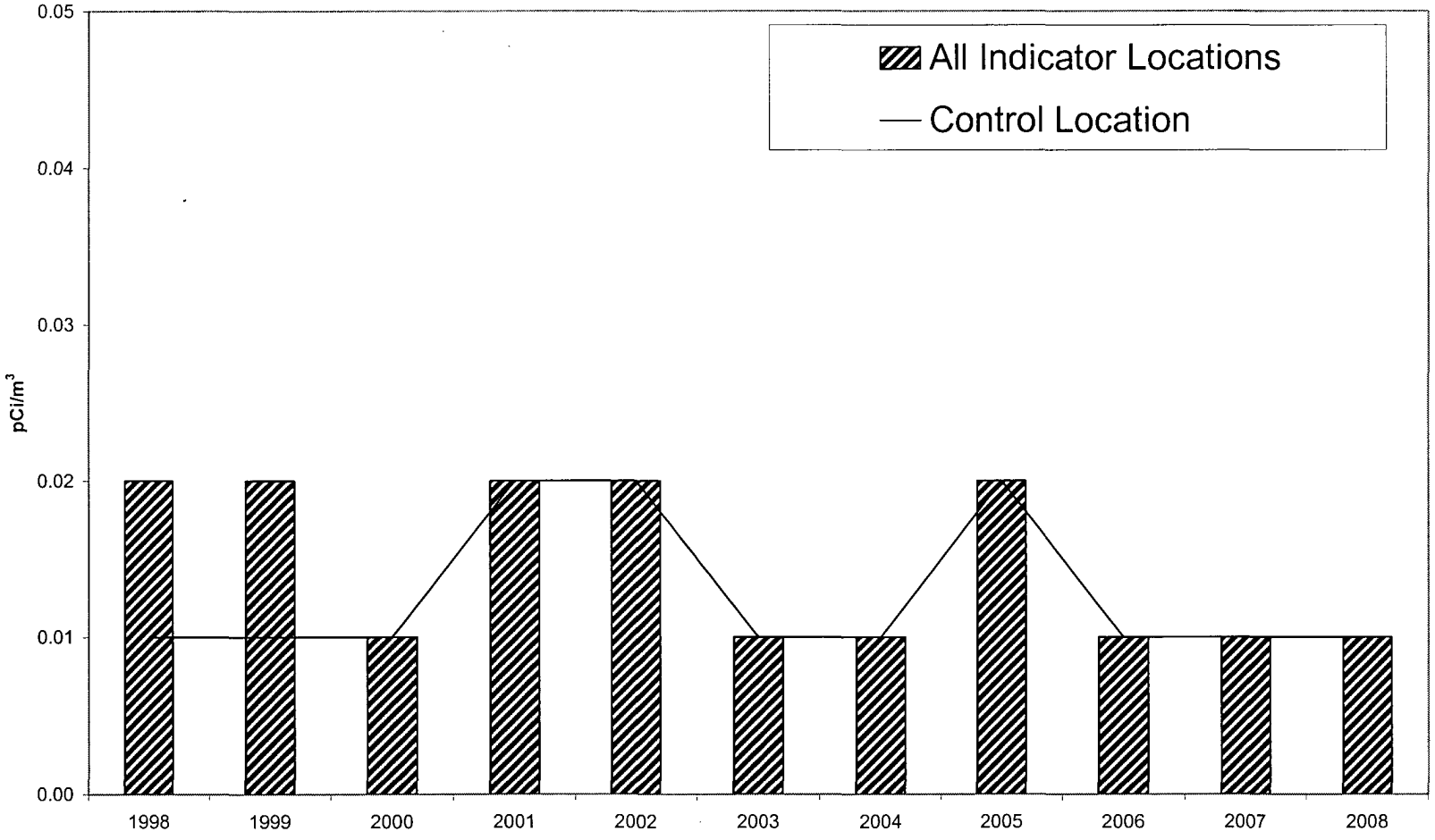
RADIONUCLIDES IN AIR
1998 to 2008
(pCi/m^3)

Year	Gross Beta		Cs-137	
	All Indicator Locations	Control Location	All Indicator Locations	Control Location
1998	0.02	0.01	$< L_c$	$< L_c$
1999	0.02	0.01	$< L_c$	$< L_c$
2000	0.01	0.01	$< L_c$	$< L_c$
2001	0.02	0.02	$< L_c$	$< L_c$
2002	0.02	0.02	$< L_c$	$< L_c$
2003	0.01	0.01	$< L_c$	$< L_c$
2004	0.01	0.01	$< L_c$	$< L_c$
2005	0.02	0.02	$< L_c$	$< L_c$
2006	0.01	0.01	$< L_c$	$< L_c$
2007	0.01	0.01	$< L_c$	$< L_c$
2008	**0.01**	**0.01**	**$< L_c$**	**$< L_c$**
Historical Average 1998-2007	0.02	0.01	$< L_c$	$< L_c$

Critical Level (L_C) is less than the ODCM required LLD.

$<L_C$ indicates no positive values above sample critical level.

FIGURE C-2
RADIONUCLIDES IN AIR – GROSS BETA
1998 to 2008



This Figure includes ODCM and non-ODCM indicator locations

ODCM Required LLD for Gross Beta = 0.01 pCi/m^3

TABLE C-3

RADIONUCLIDES IN HUDSON RIVER WATER
1998 to 2008
(pCi/L)

Year	Tritium (H-3)		Cs-137	
	Inlet	Discharge	Inlet	Discharge
1998	$< L_c$	220	$< L_c$	$< L_c$
1999	191	318	$< L_c$	$< L_c$
2000	190	267	$< L_c$	$< L_c$
2001	$< L_c$	323	$< L_c$	$< L_c$
2002	432	562	$< L_c$	$< L_c$
2003	$< L_c$	$< L_c$	$< L_c$	$< L_c$
2004	$< L_c$	553	$< L_c$	$< L_c$
2005	$< L_c$	618	$< L_c$	$< L_c$
2006	$< L_c$	386	$< L_c$	$< L_c$
2007	$< L_c$	$< L_c$	$< L_c$	$< L_c$
2008	**$< L_c$**	**$< L_c$**	**$< L_c$**	**$< L_c$**
Historical Average 1998-2007	271	406	$< L_c$	$< L_c$

Critical Level (L_C) is less than the ODCM required LLD.

$<L_C$ indicates no positive values above sample critical level.

FIGURE C-3
RADIONUCLIDES IN HUDSON RIVER WATER
1998 to 2008
(pCi/L)

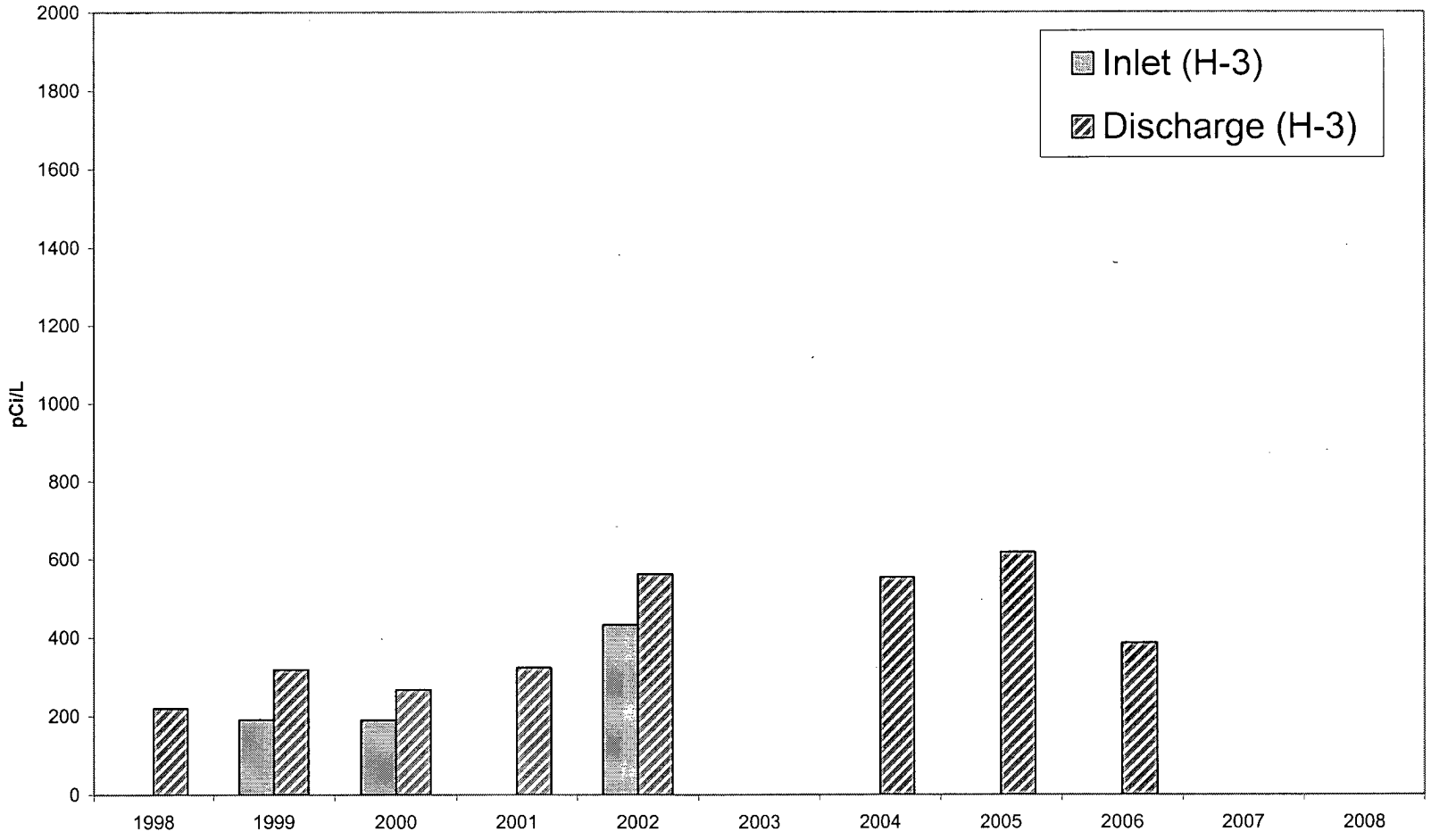


TABLE C-4

RADIONUCLIDES IN DRINKING WATER
1998 to 2008
(pCi/L)

Year	Tritium (H-3)	Cs-137
1998	< L_c	< L_c
1999	< L_c	< L_c
2000	< L_c	< L_c
2001	< L_c	< L_c
2002	< L_c	< L_c
2003	< L_c	< L_c
2004	< L_c	< L_c
2005	< L_c	< L_c
2006	< L_c	< L_c
2007	< L_c	< L_c
2008	**< L_c**	**< L_c**
Historical Average 1998-2007	< L_c	< L_c

Critical Level (L_C) is less than the ODCM required LLD.

<L_C indicates no positive values above sample critical level.

FIGURE C-4
RADIONUCLIDES IN DRINKING WATER
1998 to 2008
(pCi/L)

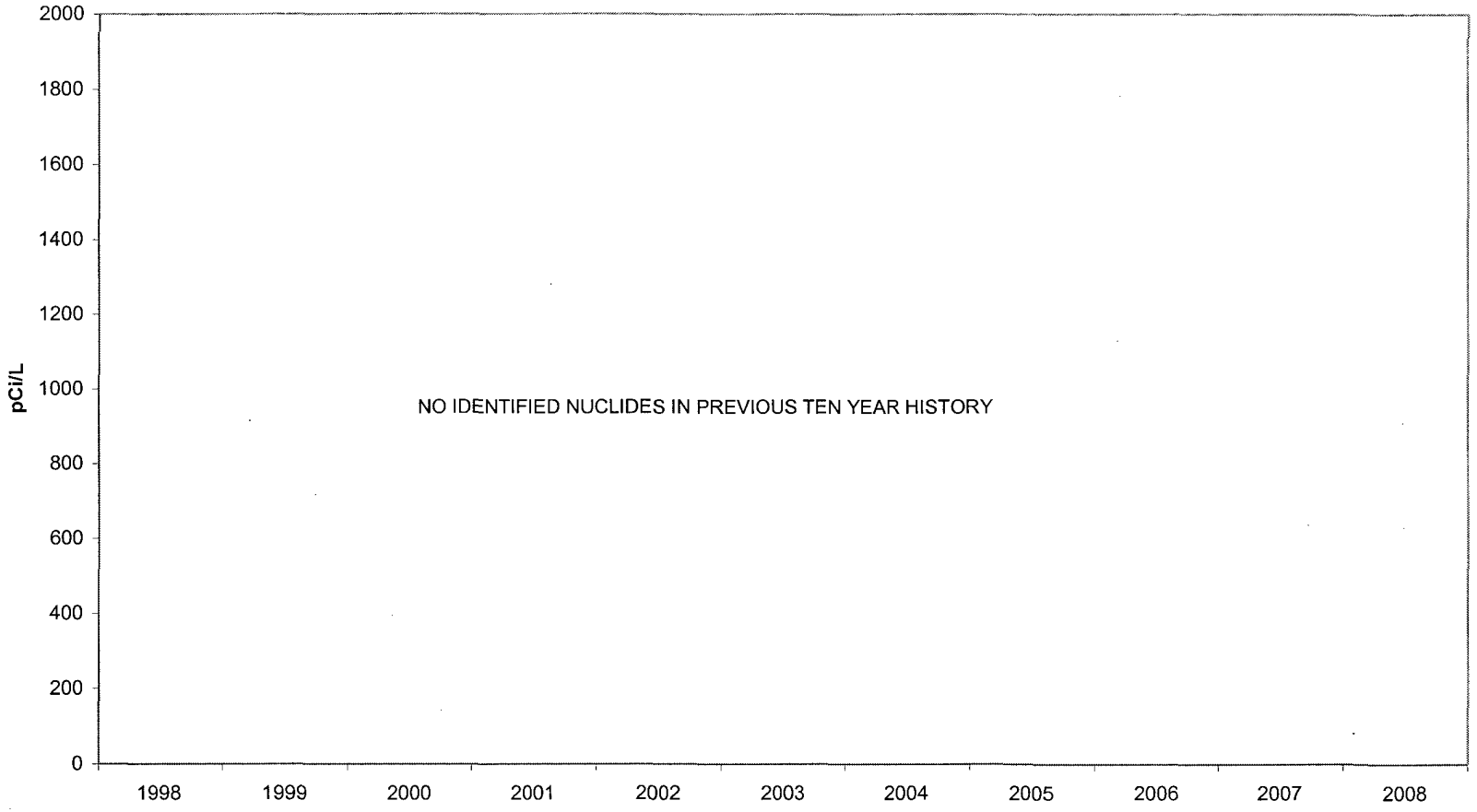


TABLE C-5

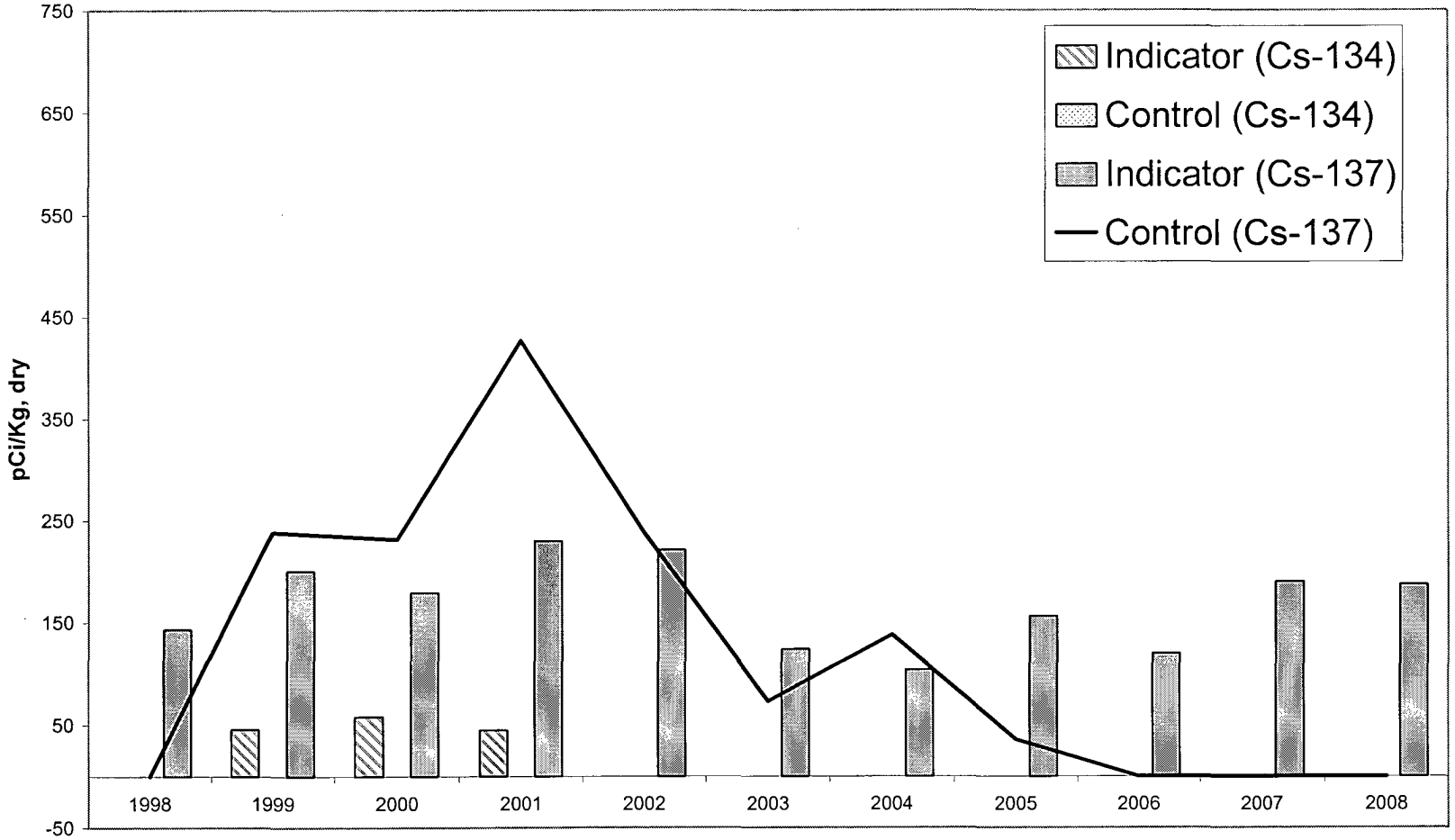
RADIONUCLIDES IN SHORELINE SOIL
1998 to 2008
(pCi/kg, dry)

	Cs-134		Cs-137	
Year	Indicator	Control	Indicator	Control
1998	< L_c	< L_c	143	< L_c
1999	46	< L_c	200	238
2000	58	< L_c	179	231
2001	45	< L_c	230	427
2002	< L_c	< L_c	221	238
2003	< L_c	< L_c	124	73
2004	< L_c	< L_c	104	138
2005	< L_c	< L_c	156	36
2006	< L_c	< L_c	120	< L_c
2007	< L_c	< L_c	190	< L_c
2008	< L_c	< L_c	**187**	**< L_c**
Historical Average 1998-2007	50	< L_c	167	197

Critical Level (L_C) is less than the ODCM required LLD.

<L_C indicates no positive values above sample critical level.

FIGURE C-5
RADIONUCLIDES IN SHORELINE SOIL
1998 to 2008
(pCi/kg, dry)



Cs-134 ODCM required LLD = 150 pCi/kg, dry
Cs-137 ODCM required LLD = 175 pCi/kg, dry

TABLE C-6

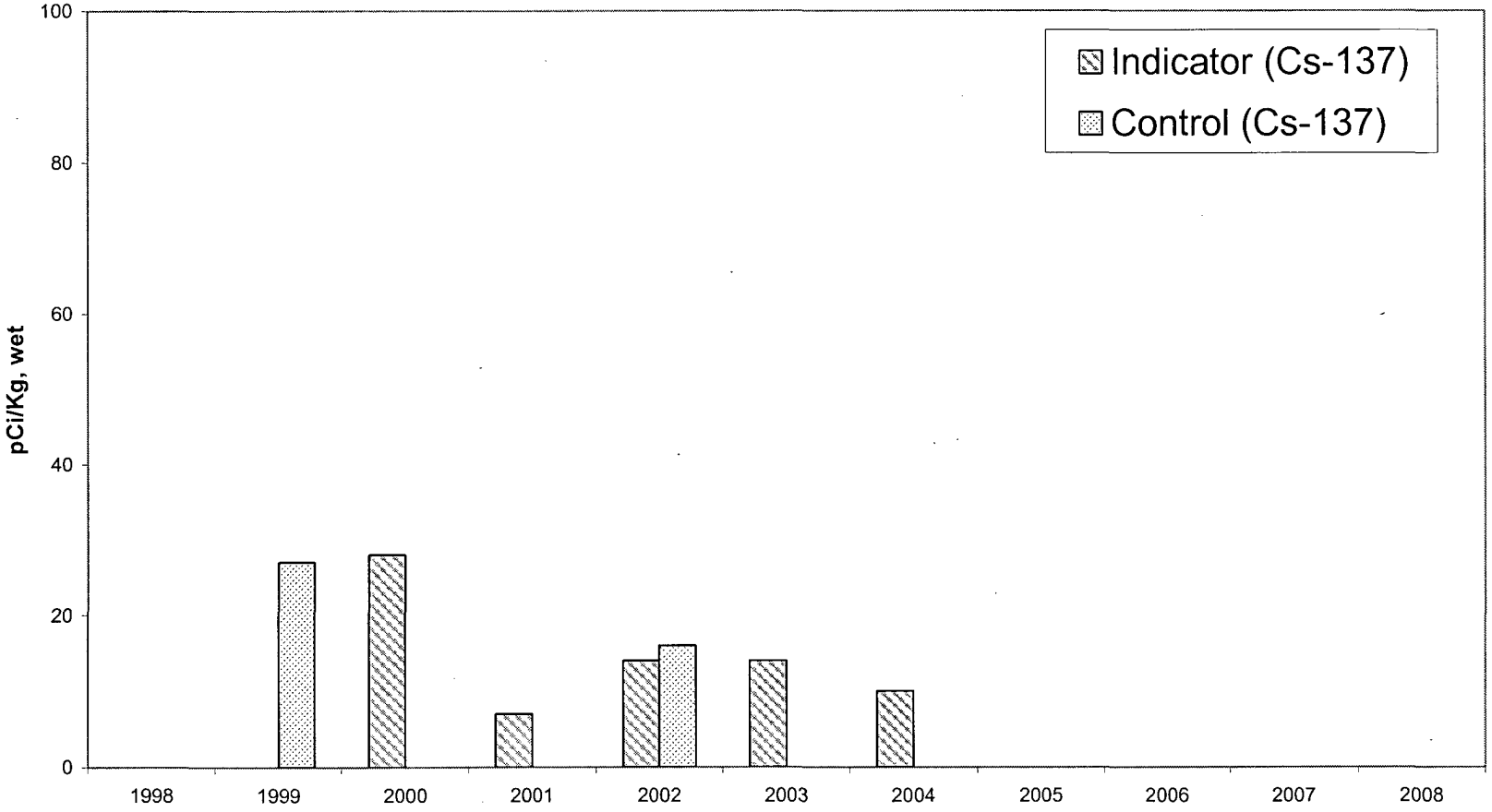
BROADLEAF VEGETATION – Cs-137
1998 to 2008
(pCi/kg, wet)

Cs-137		
Year	**Indicator**	**Control**
1998	$< L_c$	$< L_c$
1999	$< L_c$	27
2000	28	$< L_c$
2001	7	$< L_c$
2002	14	16
2003	14	$< L_c$
2004	10	$< L_c$
2005	$< L_c$	$< L_c$
2006	$< L_c$	$< L_c$
2007	$< L_c$	$< L_c$
2008	**$< L_c$**	**$< L_c$**
Historical Average 1998-2007	15	22

Critical Level (L_C) is less than the ODCM required LLD.

$<L_C$ indicates no positive values above sample critical level.

FIGURE C-6
Broad Leaf Vegetation – Cs-137
1998 to 2008



ODCM required LLD = 80 pCi/kg, wet

TABLE C-7

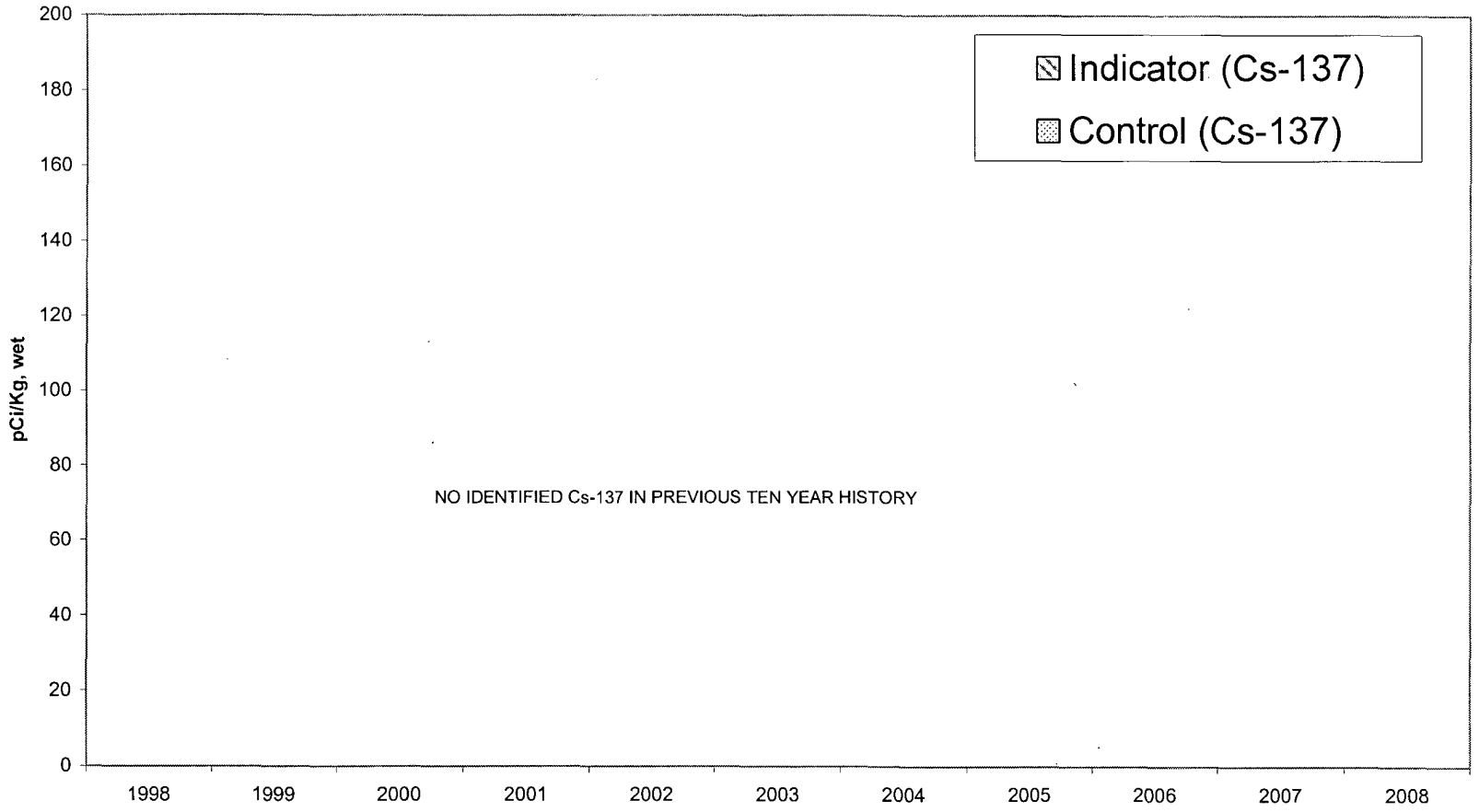
FISH AND INVERTEBRATES – Cs-137
1998 to 2008
(pCi/kg, wet)

	Cs-137	
Year	Indicator	Control
1998	< L_c	< L_c
1999	< L_c	< L_c
2000	< L_c	< L_c
2001	< L_c	< L_c
2002	< L_c	< L_c
2003	< L_c	< L_c
2004	< L_c	< L_c
2005	< L_c	< L_c
2006	< L_c	< L_c
2007	< L_c	< L_c
2008	**< L_c**	**< L_c**
Historical Average 1998-2007	< L_c	< L_c

Critical Level (L_C) is less than the ODCM required LLD.

$<L_C$ indicates no positive values above sample critical level.

FIGURE C-7
FISH AND INVERTEBRATES – Cs-137
1998 to 2008



ODCM required LLD = 150 pCi/kg, wet

APPENDIX D

INTERLABORATORY COMPARISON PROGRAM

APPENDIX D

D.1 PROGRAM DESCRIPTION

The Offsite Dose Calculation Manual (ODCM), Part 1, Section D 3.5.3 requires that the licensee participate in an Interlaboratory Comparison Program. The Interlaboratory Comparison Program shall include sample media for which samples are routinely collected and for which comparison samples are commercially available. Participation in an Interlaboratory Comparison Program ensures that independent checks on the precision and accuracy of the measurement of radioactive material in the environmental samples are performed as part of the Quality Assurance Program for environmental monitoring. To fulfill the requirement for an Interlaboratory Comparison Program, the JAF Environmental Laboratory has engaged the services of Eckert & Ziegler Analytics, Incorporated in Atlanta, Georgia.

Analytics supplies sample media as blind sample spikes, which contain certified levels of radioactivity unknown to the analysis laboratory. These samples are prepared and analyzed by the JAF Environmental Laboratory using standard laboratory procedures. Analytics issues a statistical summary report of the results. The JAF Environmental Laboratory uses predetermined acceptance criteria methodology for evaluating the laboratory's performance.

The JAF Environmental Laboratory also analyzes laboratory blanks. The analysis of laboratory blanks provides a means to detect and measure radioactive contamination of analytical samples. The analysis of analytical blanks also provides information on the adequacy of background subtraction. Laboratory blank results are analyzed using control charts.

It is important to note that the JAF Environmental Laboratory has participated in the NEI/NIST MAP for several years. There were 2 NIST samples included as part of the blind samples received each year. The JAF Environmental Laboratory was not able to participate in the program for 2008. This program is no longer sponsored by NEI. The NIST program has been cut back and did not meet our QC needs for 2008. We are still working with NIST to stay involved in the NIST MAP for 2009, if it can meet our QC needs.

D.2 PROGRAM SCHEDULE

TABLE D-1
QA PROGRAM SCHEDULE

SAMPLE MEDIA	LABORATORY ANALYSIS	SAMPLE PROVIDER ANALYTICS
Water	Gross Beta	3
Water	Tritium	5
Water	I-131	4
Water	Mixed Gamma	4
Air	Gross Beta	3
Air	I-131	4
Air	Mixed Gamma	2
Milk	I-131	3
Milk	Mixed Gamma	3
Soil	Mixed Gamma	1
Vegetation	Mixed Gamma	2
TOTAL SAMPLE INVENTORY		**34**

D.3 ACCEPTANCE CRITERIA

Each sample result is evaluated to determine the accuracy and precision of the laboratory's analysis result. The sample evaluation method is discussed below.

D.3.1 SAMPLE RESULTS EVALUATION

Samples provided by Analytics are evaluated using what is specified as the NRC method. This method is based on the calculation of the ratio of results reported by the participating laboratory (QC result) to the Vendor Laboratory Known value (reference result).

An Environmental Laboratory analytical result is evaluated using the following calculation:

The value for the error resolution is calculated.

$$\text{The error resolution} = \frac{\text{Reference Result}}{\text{Reference Results Error (1 sigma)}}$$

Using the appropriate row under the Error Resolution column in Table 8.3.1 below, a corresponding Ratio of Agreement interval is given.

The value for the ratio is then calculated.

$$\text{Ratio of Agreement} = \frac{\text{QC Result}}{\text{Reference Result}}$$

If the value falls within the agreement interval, the result is acceptable.

TABLE D-2
RATIO OF AGREEMENT

ERROR RESOLUTION	RATIO OF AGREEMENT
< 4	No Comparison
4 to 7	0.5 to 2.0
8 to 15	0.6 to 1.66
16 to 50	0.75 to 1.33
51 to 200	0.8 to 1.25
>200	0.85 to 1.18

This acceptance test is generally referred to as the "NRC" method. The acceptance criteria are contained in Procedure EN-CY-102. The NRC method generally results in an acceptance range of approximately ± 25% of the Known value when applied to sample results from the Eckert & Ziegler Analytics Interlaboratory Comparison Program. This method is used as the procedurally required assessment method and requires the generation of a deviation from QA/QC program report when results are unacceptable.

D.4 PROGRAM RESULTS SUMMARY

The Interlaboratory Comparison Program numerical results are provided on Table D-3.

D.4.1 ECKERT & ZIEGLER ANALYTICS QA SAMPLES RESULTS

Thirty-four QA blind spike samples were analyzed as part of Analytics 2008 Interlaboratory Comparison Program. The following sample media were evaluated as part of the comparison program.

- Air Charcoal Cartridge: I-131
- Air Particulate Filter: Mixed Gamma Emitters, Gross Beta
- Water: I-131, Mixed Gamma Emitters, Tritium, Gross Beta
- Soil: Mixed Gamma Emitters
- Milk: I-131, Mixed Gamma Emitters
- Vegetation: Mixed Gamma Emitters

The JAF Environmental Laboratory performed 130 individual analyses on the 34 QA samples. Of the 130 analyses performed, 130 were in agreement using the NRC acceptance criteria for a 100% agreement ratio.

There were no non-conformities in the 2008 program.

D.4.3 NUMERICAL RESULTS TABLES

TABLE D-3
INTERLABORATORY INTERCOMPARISON PROGRAM
Gross Beta Analysis of Air Particulate Filter

DATE	SAMPLE ID NO.	MEDIUM	ANALYSIS	JAF ELAB RESULTS pCi ±1 sigma	REF. LAB* pCi ±1 sigma	RATIO (1)
06/19/2008	E5914-05	Filter	Gross Beta	57.0 ± 1.9 57.8 ± 1.9 52.9 ± 1.9 Mean = 55.9 ± 1.1	52.2 ± 0.871	1.07 A
06/19/2008	E5940-09	Filter	Gross Beta	51.7 ± 0.8 51.4 ± 0.8 51.0 ± 0.8 Mean = 51.4 ± 0.5	49.2 ± 0.822	1.04 A
12/11/2008	E6368-05	Filter	Gross Beta	123.6 ± 1.9 125.5 ± 1.9 119.9 ± 1.9 Mean = 123 ± 1.1	113 ± 1.89	1.09 A

(1) Ratio = Reported/Analytics.
* Sample provided by Eckert & Ziegler Analytics
A=Acceptable
U=Unacceptable

TABLE D-3 (Continued)
Tritium Analysis of Water

DATE	SAMPLE ID NO.	MEDIUM	ANALYSIS	JAF ELAB RESULTS pCi/liter ±1 sigma	REF. LAB* pCi/liter ±1 sigma	RATIO (1)
3/20/2008	E5822-05	Water	H-3	4265 ± 170 4244 ± 170 4201 ± 169 Mean = 4237 ± 98	4010 ± 67	1.06 A
6/19/2008	E5913-05	Water	H-3	860 ± 136 994 ± 137 832 ± 136 Mean = 895 ± 79	843 ± 14.1	1.06 A
9/18/2008	E6248-05	Water	H-3	1017 ± 134 978 ± 134 937 ± 134 Mean = 977 ± 77	996 ± 16.6	0.98 A
12/11/2008	E6359-09	Water	H-3	10501 ± 207 10401 ± 207 10441 ± 207 Mean = 10448 ± 120	1.02E+04 ± 1.70E+02	1.02 A
12/11/2008	E6360-09	Water	H-3	10483 ± 207 10564 ± 208 10355 ± 206 Mean = 10467 ± 120	1.02E+04 ± 1.70E+02	1.03 A

(1) Ratio = Reported/Analytics.
* Sample provided by Eckert & Ziegler Analytics
A=Acceptable
U=Unacceptable

TABLE D-3 (Continued)
Gross Beta Analysis of Water

DATE	SAMPLE ID NO.	MEDIUM	ANALYSIS	JAF ELAB RESULTS pCi/liter ±1 sigma	REF. LAB* pCi/liter ±1 sigma	RATIO (1)
03/20/2008	E5822-05	Water	Gross Beta	2.26E+02 ± 2.30E+00 2.29E+02 ± 2.30E+00 2.23E+02 ± 2.30E+00 Mean = 2.26E+02 ± 1.33E+00	2.30E+02 ± 3.84E+00	0.98 A
06/19/2008	E5919-05	Water	Gross Beta	1.38E+02 ± 1.80E+00 1.40E+02 ± 1.80E+00 1.37E+02 ± 1.70E+00 Mean = 1.38E+02 ± 1.02E+00	1.49E+02 ± 2.49E+00	0.93 A
09/18/2008	E6253-05	Water	Gross Beta	2.76E+02 ± 2.60E+00 2.76E+02 ± 2.60E+00 2.75E+02 ± 2.60E+00 Mean = 2.76E+02 ± 1.50E+00	2.90E+02 ± 4.85E+00	0.95 A

(1) Ratio = Reported/Analytics.
* Sample provided by Eckert & Ziegler Analytics
A=Acceptable
U=Unacceptable

TABLE D-3 (Continued)
I-131 Gamma Analysis of Air Charcoal

DATE	SAMPLE ID NO.	MEDIUM	ANALYSIS	JAF ELAB RESULTS pCi ±1 sigma	REF. LAB* pCi ±1 sigma	RATIO (1)
3/20/2008	E5845-09	Air	I-131	65.8 ± 2.95 63.7 ± 2.88 61.7 ± 3.13 Mean = 63.7 ± 1.73	60.0 ± 1.0	1.06 A
6/19/2008	E5917-05	Air	I-131	79.8 ± 4.1 81.4 ± 3.02 85.8 ± 3.51 Mean = 82.3 ± 2.06	84.8 ± 1.42	0.97 A
9/18/2008	E6301-09	Air	I-131	87.4 ± 2.6 85.3 ± 2.62 92.5 ± 2.86 Mean = 88.4 ± 1.56	87.7 ± 1.46	1.01 A
9/18/2008	E6252-05	Air	I-131	83.6 ± 3.29 90.1 ± 2.57 83.1 ± 2.69 Mean = 85.6 ± 1.66	82.0 ± 1.37	1.04 A

(1) Ratio = Reported/Analytics.
* Sample provided by Eckert & Ziegler Analytics
A=Acceptable
U=Unacceptable

TABLE D-3 (Continued)
INTERLABORATORY INTERCOMPARISON PROGRAM
Gamma Analysis of Water

DATE	SAMPLE ID NO.	MEDIUM	ANALYSIS	JAF ELAB RESULTS pCi/liter ±1 sigma	REF. LAB* pCi/liter ±1 sigma	RATIO (1)
3/20/2008	E5820-05	Water	Ce-141	208 ± 5.87 200 ± 8.89 210 ± 8.46 Mean = 206 ± 4.5	198 ± 3.31	1.04 A
			Cr-51	320 ± 27.1 280 ± 34.8 349 ± 33.4 Mean = 316 ± 18.4	286 ± 4.77	1.11 A
			Cs-134	105 ± 3.89 109 ± 6 109 ± 5.42 Mean = 108 ± 3.0	99.7 ± 1.67	1.08 A
			Cs-137	120 ± 4.23 137 ± 6.1 116 ± 5.64 Mean = 124 ± 3.1	116 ± 1.94	1.07 A
			Co-58	55.7 ± 3.55 66.1 ± 4.81 51.8 ± 4.76 Mean = 57.9 ± 2.5	56.4 ± 0.941	1.03 A
			Mn-54	79.6 ± 3.87 84.7 ± 4.98 84 ± 5.18 Mean = 82.8 ± 2.7	75 ± 1.25	1.10 A
			Fe-59	97.2 ± 5.38 75.8 ± 6.29 87.8 ± 6.72 Mean = 86.9 ± 3.6	81.4 ± 1.36	1.07 A
			Zn-65	108 ± 7.79 129 ± 10.6 106 ± 10.3 Mean = 114 ± 5.6	109 ± 1.82	1.05 A
			Co-60	198 ± 4.15 180 ± 5.46 198 ± 5.56 Mean = 192 ± 2.9	188 ± 3.14	1.02 A
			I-131**	72.9 ± 1.9 72.2 ± 1.88 73.8 ± 3.6 Mean = 73.0 ± 1.5	70.4 ± 1.18	1.04 A

(1) Ratio = Reported/Analytics.
A=Acceptable
U=Unacceptable
* Sample provided by Eckert & Ziegler Analytics
** Result determined by Resin Extraction/Gamma Spectral Analysis.

TABLE D-3 (Continued)
INTERLABORATORY INTERCOMPARISON PROGRAM
Gamma Analysis of Water

DATE	SAMPLE ID NO.	MEDIUM	ANALYSIS	JAF ELAB RESULTS pCi/liter ±1 sigma	REF. LAB* pCi/liter ±1 sigma	RATIO (1)
6/19/2008	E5939-09	Water	Ce-141	252 ± 3.35 235 ± 7.01 252 ± 2.93 Mean = 246 ± 2.8	237 ± 3.96	1.04 A
			Cr-51	213 ± 13.8 192 ± 23.4 215 ± 13.1 Mean = 207 ± 10.1	188 ± 3.14	1.10 A
			Cs-134	112 ± 1.71 115 ± 4.29 109 ± 1.58 Mean = 112 ± 1.6	104 ± 1.74	1.08 A
			Cs-137	160 ± 1.95 154 ± 4.46 161 ± 1.84 Mean = 158 ± 1.7	158 ± 2.64	1.00 A
			Co-58	90 ± 1.66 91 ± 3.85 89 ± 1.59 Mean = 90 ± 1.5	84 ± 1.41	1.06 A
			Mn-54	208 ± 2.22 192 ± 4.95 207 ± 2.11 Mean = 202 ± 1.9	184 ± 3.07	1.10 A
			Fe-59	139 ± 2.48 136 ± 5.47 133 ± 2.51 Mean = 136 ± 2.2	125 ± 2.08	1.09 A
			Zn-65	192 ± 3.29 185 ± 7.78 180 ± 3.12 Mean = 186 ± 3.0	172 ± 2.88	1.08 A
			Co-60	147 ± 1.4 145 ± 3.3 148 ± 1.35 Mean = 147 ± 1.3	142 ± 2.37	1.03 A
			I-131**	47 ± 4.17 37 ± 2.24 44 ± 1.04 40 ± 2.5 Mean = 42 ± 1.4	45.3 ± 0.756	0.92 A

(1) Ratio = Reported/Analytics.
A=Acceptable
U=Unacceptable
* Sample provided by Eckert & Ziegler Analytics
** Result determined by Resin Extraction/Gamma Spectral Analysis.

TABLE D-3 (Continued)
INTERLABORATORY INTERCOMPARISON PROGRAM
Gamma Analysis of Water

DATE	SAMPLE ID NO.	MEDIUM	ANALYSIS	JAF ELAB RESULTS pCi/liter ±1 sigma	REF. LAB* pCi/liter ±1 sigma	RATIO (1)
9/18/2008	E6249-05	Water	Ce-141	108 ± 6.03 113 ± 4.98 109 ± 4.9 115 ± 4.42 Mean = 111 ± 2.6	107 ± 1.78	1.04 A
			Cr-51	335 ± 31.3 268 ± 20.8 297 ± 23.3 307 ± 20.7 Mean = 302 ± 12.2	279 ± 4.65	1.08 A
			Cs-134	197 ± 5.89 143 ± 8.08 168 ± 4.9 176 ± 4.14 Mean = 171 ± 3.0	154 ± 2.56	1.11 A
			Cs-137	116 ± 5.11 114 ± 3.98 102 ± 3.88 110 ± 3.46 Mean = 111 ± 2.1	107 ± 1.79	1.03 A
			Co-58	128 ± 5.16 125 ± 3.98 119 ± 4 128 ± 3.77 Mean = 125 ± 2.1	118 ± 1.97	1.06 A
			Mn-54	122 ± 5.4 118 ± 4.02 131 ± 4.24 127 ± 3.68 Mean = 125 ± 2.2	110 ± 1.84	1.13 A
			Fe-59	111 ± 6.1 105 ± 4.37 103 ± 4.5 115 ± 4.11 Mean = 109 ± 2.4	96 ± 1.6	1.13 A
			Zn-65	218 ± 10.9 217 ± 8.18 239 ± 8.68 216 ± 7.7 Mean = 223 ± 4.5	211 ± 3.53	1.05 A
			Co-60	162 ± 4.47 149 ± 3.39 158 ± 3.52 163 ± 3.08 Mean = 158 ± 1.8	155 ± 2.59	1.02 A
			I-131**	109 ± 2.21 102 ± 2.06 105 ± 2.03 Mean = 105 ± 1.2	105 ± 1.75	1.00 A

(1) Ratio = Reported/Analytics. A=Acceptable
* Sample provided by Eckert & Ziegler Analytics U=Unacceptable
** Result determined by Resin Extraction/Gamma Spectral Analysis.

TABLE D-3 (Continued)
INTERLABORATORY INTERCOMPARISON PROGRAM
Gamma Analysis of Water

DATE	SAMPLE ID NO.	MEDIUM	ANALYSIS	JAF ELAB RESULTS pCi/liter ±1 sigma	REF. LAB* pCi/liter ±1 sigma	RATIO (1)
12/11/2008	E6361-09	Water	Ce-141	240 ± 4.38 229 ± 5.95 244 ± 4.4 Mean = 238 ± 2.9	224 ± 3.74	1.06 A
			Cr-51	324 ± 20.5 274 ± 26.6 254 ± 22.8 Mean = 284 ± 13.5	288 ± 4.81	0.99 A
			Cs-134	169 ± 2.4 162 ± 3.46 165 ± 2.76 Mean = 165 ± 1.7	157 ± 2.62	1.05 A
			Cs-137	139 ± 2.2 136 ± 2.95 140 ± 2.63 Mean = 138 ± 1.5	140 ± 2.34	0.99 A
			Co-58	123 ± 2.29 126 ± 3.24 125 ± 2.71 Mean = 124.7 ± 1.6	122.0 ± 2.03	1.02 A
			Mn-54	189 ± 2.59 183 ± 3.43 183 ± 3.01 Mean = 185 ± 1.7	178 ± 2.97	1.04 A
			Fe-59	136 ± 3.26 122 ± 4.29 126 ± 3.97 Mean = 128 ± 2.2	117.0 ± 1.96	1.09 A
			Zn-65	222 ± 4.54 228 ± 6.06 230 ± 5.21 Mean = 227 ± 3.1	214 ± 3.57	1.06 A
			Co-60	163 ± 1.79 162 ± 2.36 160 ± 2.16 Mean = 162 ± 1.2	156 ± 2.6	1.04 A
			I-131**	74.8 ± 7.12 58.3 ± 4.07 64.1 ± 7.2 Mean = 65.7 ± 3.6	64.1 ± 1.07	1.03 A

(1) Ratio = Reported/Analytics. A=Acceptable
* Sample provided by Eckert & Ziegler Analytics U=Unacceptable
** Result determined by Resin Extraction/Gamma Spectral Analysis.

TABLE D-3 (Continued)
INTERLABORATORY INTERCOMPARISON PROGRAM
Gamma Analysis of Milk

DATE	SAMPLE ID NO.	MEDIUM	ANALYSIS	JAF ELAB RESULTS pCi/liter ±1 sigma	REF. LAB* pCi/liter ±1 sigma	RATIO (1)
3/20/2008	E5846-09	Milk	Ce-141	240 ± 13.8 245 ± 11.9 236 ± 6.8 Mean = 240 ± 6.5	249 ± 4.2	0.97 A
			Cr-51	371 ± 65.6 384 ± 50.4 370 ± 30.2 Mean = 375 ± 29.4	359 ± 6.0	1.04 A
			Cs-134	115 ± 11.4 121 ± 8.0 124 ± 6.0 Mean = 120 ± 5.1	125 ± 2.1	0.96 A
			Cs-137	147 ± 10.9 143 ± 8.9 135 ± 5.1 Mean = 142 ± 5.0	146 ± 2.4	0.97 A
			Co-58	70.2 ± 10.1 64.2 ± 7.2 70.4 ± 4.6 Mean = 68.3 ± 4.4	71.0 ± 1.2	0.96 A
			Mn-54	95.2 ± 10.6 107 ± 8.1 102 ± 4.7 Mean = 101 ± 4.7	94 ± 1.6	1.08 A
			Fe-59	120 ± 15.2 125 ± 10.6 98 ± 6.6 Mean = 114 ± 6.6	102 ± 1.7	1.12 A
			Zn-65	119 ± 27.3 158 ± 15.1 128 ± 9.9 Mean = 135 ± 10.9	137 ± 2.3	0.99 A
			Co-60	239 ± 10.9 225 ± 8.4 229 ± 5.1 Mean = 231 ± 4.9	236 ± 4.0	0.98 A
			I-131**	59.6 ± 8.6 61.7 ± 6.5 60.7 ± 5.5 Mean = 60.7 ± 4.0	60.0 ± 1.0	1.01 A

(1) Ratio = Reported/Analytics.
A=Acceptable
U=Unacceptable
* Sample provided by Eckert & Ziegler Analytics
** Result determined by Resin Extraction/Gamma Spectral Analysis.

TABLE D-3 (Continued)
INTERLABORATORY INTERCOMPARISON PROGRAM
Gamma Analysis of Milk

DATE	SAMPLE ID NO.	MEDIUM	ANALYSIS	JAF ELAB RESULTS pCi/liter ±1 sigma	REF. LAB* pCi/liter ±1 sigma	RATIO (1)
6/19/2008	E5915-05	Milk	Ce-141	173 ± 6.4 177 ± 7.9 177 ± 6.8 Mean = 176 ± 4.1	174 ± 2.91	1.01 A
			Cr-51	185 ± 24.7 163 ± 30.8 152 ± 30.7 Mean = 167 ± 16.7	138 ± 2.31	1.21 A
			Cs-134	81 ± 3.6 80 ± 5.3 85 ± 4.4 Mean = 82 ± 2.6	77 ± 1.28	1.07 A
			Cs-137	113 ± 4.1 114 ± 5.5 122 ± 5.0 Mean = 116 ± 2.8	116 ± 1.94	1.00 A
			Co-58	59.6 ± 3.6 54.9 ± 4.3 70.1 ± 4.4 Mean = 61.5 ± 2.4	61.9 ± 1.03	0.99 A
			Mn-54	145 ± 4.5 146 ± 6.1 149 ± 5.5 Mean = 147 ± 3.1	135 ± 2.26	1.09 A
			Fe-59	94 ± 4.9 99 ± 6.9 97 ± 5.7 Mean = 97 ± 3.4	92 ± 1.53	1.05 A
			Zn-65	120 ± 7.5 132 ± 10.1 123 ± 9.3 Mean = 125 ± 5.2	127 ± 2.12	0.98 A
			Co-60	111 ± 3.2 104 ± 4.1 108 ± 3.8 Mean = 108 ± 2.1	104 ± 1.74	1.04 A
			I-131**	58.9 ± 2.7 66.6 ± 2.9 62.1 ± 3.0 Mean = 62.5 ± 1.7	71 ± 1.19	0.88 A

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** Result determined by Resin Extraction/Gamma Spectral Analysis.

TABLE D-3 (Continued)
INTERLABORATORY INTERCOMPARISON PROGRAM
Gamma Analysis of Milk

DATE	SAMPLE ID NO.	MEDIUM	ANALYSIS	JAF ELAB RESULTS pCi/liter ±1 sigma	REF. LAB* pCi/liter ±1 sigma	RATIO (1)
9/18/2008	E6251-05	Milk	Ce-141	168 ± 7.29 172 ± 7.69 168 ± 6.76 Mean = 169 ± 4.19	161 ± 2.69	1.05 A
			Cr-51	411 ± 34.9 429 ± 37.2 456 ± 32.0 Mean = 432 ± 20.1	421 ± 7.03	1.03 A
			Cs-134	241 ± 7.47 241 ± 7.81 236 ± 6.49 Mean = 239 ± 4.20	232 ± 3.87	1.03 A
			Cs-137	167 ± 5.86 173 ± 6.86 155 ± 5.23 Mean = 165 ± 3.48	162 ± 2.71	1.02 A
			Co-58	188 ± 6.03 177 ± 6.60 177 ± 5.34 Mean = 181 ± 3.47	179 ± 2.98	1.01 A
			Mn-54	193 ± 6.24 189 ± 7.16 184 ± 5.65 Mean = 189 ± 3.68	166 ± 2.77	1.14 A
			Fe-59	150 ± 6.92 143 ± 7.97 158 ± 3.63 Mean = 150 ± 3.72	144 ± 2.41	1.04 A
			Zn-65	326 ± 13.3 302 ± 15.1 342 ± 11.9 Mean = 323 ± 7.79	319 ± 5.33	1.01 A
			Co-60	242 ± 5.31 242 ± 6.25 231 ± 4.75 Mean = 238 ± 3.16	234 ± 3.91	1.02 A
			I-131**	61.3 ± 2.17 61.6 ± 1.73 59.3 ± 1.75 Mean = 60.7 ± 1.09	67.9 ± 1.13	0.89 A

(1) Ratio = Reported/Analytics. A=Acceptable
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** Result determined by Resin Extraction/Gamma Spectral Analysis.

TABLE D-3 (Continued)
INTERLABORATORY INTERCOMPARISON PROGRAM
Gamma Analysis of Air Particulate Filter

DATE	SAMPLE ID NO.	MEDIUM	ANALYSIS	JAF ELAB RESULTS pCi ±1 sigma	REF. LAB* pCi ±1 sigma	RATIO (1)
3/20/2008	E5821-05	Filter	Ce-141	204 ± 2.42 192 ± 4.23 189 ± 4.24 Mean = 195 ± 2.15	179 ± 2.99	1.09 A
			Cr-51	305 ± 10.7 300 ± 18.0 289 ± 20.9 Mean = 298 ± 9.86	259 ± 4.32	1.15 A
			Cs-134	102 ± 2.64 107 ± 4.06 110 ± 4.50 Mean = 106.3 ± 2.20	90.2 ± 1.51	1.18 A
			Cs-137	115 ± 2.40 116 ± 3.81 120 ± 4.42 Mean = 117 ± 2.10	105 ± 1.75	1.11 A
			Co-58	57 ± 2.00 56.4 ± 3.06 55.5 ± 3.48 Mean = 56.3 ± 1.68	51.0 ± 0.852	1.10 A
			Mn-54	80.6 ± 2.18 85.3 ± 3.48 85.1 ± 4.19 Mean = 84 ± 1.96	67.8 ± 1.13	1.23 A
			Fe-59	94.7 ± 3.03 86.3 ± 4.94 88.9 ± 5.80 Mean = 90.0 ± 2.73	73.7 ± 1.23	1.22 A
			Zn-65	116 ± 4.59 124 ± 7.13 111 ± 8.56 Mean = 117 ± 4.02	98.6 ± 1.65	1.19 A
			Co-60	182 ± 2.55 181 ± 3.91 176 ± 4.65 Mean = 180 ± 2.20	170 ± 2.84	1.06 A

(1) Ratio = Reported/Analytics.
* Sample provided by Eckert & Ziegler Analytics
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TABLE D-3 (Continued)
INTERLABORATORY INTERCOMPARISON PROGRAM
Gamma Analysis of Air Particulate Filter

DATE	SAMPLE ID NO.	MEDIUM	ANALYSIS	JAF ELAB RESULTS pCi ±1 sigma	REF. LAB* pCi ±1 sigma	RATIO (1)
9/18/2008	E6250-05	Filter	Ce-141	170 ± 4.28 170 ± 3.6 172 ± 3.95 Mean = 171 ± 2.3	159 ± 2.65	1.07 A
			Cr-51	431 ± 25.1 452 ± 21.2 497 ± 21.6 Mean = 460 ± 13.1	415 ± 6.92	1.11 A
			Cs-134	267 ± 7.48 257 ± 6.33 270 ± 6.1 Mean = 265 ± 3.8	229 ± 3.82	1.16 A
			Cs-137	163 ± 5.88 163 ± 4.96 162 ± 4.71 Mean = 163 ± 3.0	160 ± 2.67	1.02 A
			Co-58	179 ± 6.18 200 ± 5.36 191 ± 4.91 Mean = 190 ± 3.2	176 ± 2.93	1.08 A
			Mn-54	185 ± 6.69 196 ± 5.68 199 ± 5.21 Mean = 193 ± 3.4	164 ± 2.73	1.18 A
			Fe-59	169 ± 7.73 164 ± 6.55 160 ± 5.79 Mean = 164 ± 3.9	142 ± 2.37	1.16 A
			Zn-65	345 ± 14 371 ± 12.6 366 ± 10.8 Mean = 361 ± 7.2	314 ± 5.25	1.15 A
			Co-60	228 ± 5.87 238 ± 4.89 231 ± 4.45 Mean = 232 ± 2.9	231 ± 3.85	1.01 A

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TABLE D-3 (Continued)
INTERLABORATORY INTERCOMPARISON PROGRAM
Gamma Analysis of Soil

DATE	SAMPLE ID NO.	MEDIUM	ANALYSIS	JAF ELAB RESULTS pCi/g ±1 sigma	REF. LAB* pCi/g ±1 sigma	RATIO (1)
6/19/2008	E5916-05	Soil	Ce-141	0.359 ± 0.015 0.364 ± 0.014 0.381 ± 0.008 0.386 ± 0.013 Mean = 0.373 ± 0.006	0.380 ± 0.006	0.98 A
			Cr-51	0.345 ± 0.089 0.276 ± 0.056 0.346 ± 0.035 0.277 ± 0.059 Mean = 0.311 ± 0.031	0.302 ± 0.005	1.03 A
			Cs-134	0.173 ± 0.011 0.167 ± 0.010 0.164 ± 0.005 0.182 ± 0.006 Mean = 0.172 ± 0.004	0.167 ± 0.003	1.03 A
			Cs-137	0.317 ± 0.012 0.324 ± 0.012 0.334 ± 0.006 0.333 ± 0.007 Mean = 0.327 ± 0.005	0.340 ± 0.006	0.96 A
			Co-58	0.117 ± 0.011 0.122 ± 0.009 0.118 ± 0.005 0.123 ± 0.006 Mean = 0.120 ± 0.004	0.135 ± 0.002	0.89 A
			Mn-54	0.289 ± 0.013 0.301 ± 0.012 0.314 ± 0.006 0.294 ± 0.007 Mean = 0.300 ± 0.005	0.295 ± 0.005	1.02 A
			Fe-59	0.173 ± 0.015 0.194 ± 0.014 0.185 ± 0.007 0.190 ± 0.010 Mean = 0.186 ± 0.006	0.200 ± 0.003	0.93 A
			Zn-65	0.257 ± 0.020 0.289 ± 0.018 0.281 ± 0.009 0.256 ± 0.011 Mean = 0.271 ± 0.008	0.277 ± 0.005	0.98 A
			Co-60	0.220 ± 0.009 0.206 ± 0.008 0.214 ± 0.004 0.208 ± 0.005 Mean = 0.212 ± 0.003	0.228 ± 0.004	0.93 A

(1) Ratio = Reported/Analytics.
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TABLE D-3 (Continued)

INTERLABORATORY INTERCOMPARISON PROGRAM

Gamma Analysis of Vegetation

DATE	SAMPLE ID NO.	MEDIUM	ANALYSIS	JAF ELAB RESULTS pCi/g ±1 sigma	REF. LAB* pCi/g ±1 sigma	RATIO (1)
6/19/2008	E5918-05	Vegetation	Ce-141	0.381 ± 0.019 0.371 ± 0.015 0.358 ± 0.013 Mean = 0.370 ± 0.009	0.390 ± 0.007	0.95 A
			Cr-51	0.311 ± 0.081 0.371 ± 0.065 0.378 ± 0.054 Mean = 0.353 ± 0.039	0.309 ± 0.005	1.14 A
			Cs-134	0.171 ± 0.016 0.176 ± 0.013 0.184 ± 0.010 Mean = 0.177 ± 0.008	0.172 ± 0.003	1.03 A
			Cs-137	0.272 ± 0.015 0.257 ± 0.013 0.235 ± 0.011 Mean = 0.255 ± 0.008	0.260 ± 0.004	0.98 A
			Co-58	0.152 ± 0.013 0.142 ± 0.011 0.131 ± 0.009 Mean = 0.142 ± 0.006	0.138 ± 0.002	1.03 A
			Mn-54	0.293 ± 0.016 0.325 ± 0.015 0.306 ± 0.012 Mean = 0.308 ± 0.008	0.302 ± 0.005	1.02 A
			Fe-59	0.207 ± 0.018 0.215 ± 0.017 0.219 ± 0.014 Mean = 0.214 ± 0.009	0.205 ± 0.003	1.04 A
			Zn-65	0.306 ± 0.027 0.240 ± 0.022 0.282 ± 0.019 Mean = 0.276 ± 0.013	0.284 ± 0.005	0.97 A
			Co-60	0.216 ± 0.011 0.235 ± 0.011 0.212 ± 0.008 Mean = 0.221 ± 0.006	0.233 ± 0.004	0.95 A

(1) Ratio = Reported/Analytics.

* Sample provided by Eckert & Ziegler Analytics

A=Acceptable

U=Unacceptable

TABLE D-3 (Continued)
INTERLABORATORY INTERCOMPARISON PROGRAM
Gamma Analysis of Vegetation

DATE	SAMPLE ID NO.	MEDIUM	ANALYSIS	JAF ELAB RESULTS pCi/g ±1 sigma	REF. LAB* pCi/g ±1 sigma	RATIO (1)
9/18/2008	E6302-09	Vegetation	Ce-141	0.447 ± 0.023 0.447 ± 0.017 0.473 ± 0.018 Mean = 0.456 ± 0.011	0.474 ± 0.008	0.96 A
			Cr-51	1.200 ± 0.129 1.160 ± 0.086 1.170 ± 0.098 Mean = 1.177 ± 0.061	1.240 ± 0.021	0.95 A
			Cs-134	0.760 ± 0.031 0.738 ± 0.024 0.708 ± 0.026 Mean = 0.735 ± 0.016	0.683 ± 0.011	1.08 A
			Cs-137	0.407 ± 0.024 0.422 ± 0.017 0.417 ± 0.020 Mean = 0.415 ± 0.012	0.477 ± 0.008	0.87 A
			Co-58	0.552 ± 0.027 0.500 ± 0.019 0.492 ± 0.020 Mean = 0.515 ± 0.013	0.525 ± 0.009	0.98 A
			Mn-54	0.467 ± 0.027 0.503 ± 0.019 0.518 ± 0.022 Mean = 0.496 ± 0.013	0.489 ± 0.008	1.01 A
			Fe-59	0.382 ± 0.030 0.432 ± 0.021 0.428 ± 0.025 Mean = 0.414 ± 0.015	0.425 ± 0.007	0.97 A
			Zn-65	0.808 ± 0.056 0.917 ± 0.040 0.930 ± 0.046 Mean = 0.885 ± 0.027	0.939 ± 0.016	0.94 A
			Co-60	0.673 ± 0.024 0.659 ± 0.016 0.632 ± 0.018 Mean = 0.655 ± 0.008	0.690 ± 0.012	0.95 A

(1) Ratio = Reported/Analytics.
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A=Acceptable
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D.5 REFERENCES

D.5.1 Radioactivity and Radiochemistry, The Counting Room: Special Edition, 1994 Caretaker Publications, Atlanta, Georgia.

D.5.2 Data Reduction and Error Analysis for the Physical Sciences, Bevington P.R., McGraw Hill, New York (1969).